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THE following table, giving a key to the dates of issue and the page numbers of the BRITISH MEDICAL JOURNAL and SUPPLEMENT in the second volume for 1922, may prove convenient to readers in search of a reference.

Serial No.	Date of Issue.	Journal Pages.	Supplement Pages.
3209	July 1st	1 – 32	1 – 8
3210	,, 8th	33 – 70	9 – 20
3211	,, 15th	71 – 114	21 – 28
3212	,, 22nd	115 – 154	29 – 40
3213	,, 29th	155 – 194	41 – 64
3214	Aug. 5th	195 – 240	65 – 84
3215	,, 12th	241 – 288	85 – 92
3216	,, 19th	289 – 332	93 – 96
3217	,, 26th	333 – 406	97 – 100
3218	Sept. 2nd	407 – 454	—
3219	,, 9th	455 – 494	101 – 108
3220	,, 16th	495 – 538	109 – 112
3221	,, 23rd	539 – 582	113 – 124
3222	,, 30th	583 – 620	125 – 128
3223	Oct. 7th	621 – 666	129 – 140
3224	,, 14th	667 – 706	141 – 144
3225	,, 21st	707 – 780	145 – 148
3226	,, 28th	781 – 832	149 – 168
3227	Nov. 4th	833 – 898	169 – 172
3228	,, 11th	899 – 954	173 – 184
3229	,, 18th	955 – 1004	185 – 192
3230	,, 25th	1005 – 1054	193 – 200
3231	Dec. 2nd	1055 – 1100	201 – 204
3232	,, 9th	1101 – 1152	205 – 216
3233	,, 16th	1153 – 1200	217 – 220
3234	,, 23rd	1201 – 1248	221 – 232
3235	,, 30th	1249 – 1286	233 – 236

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31
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1922
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INDEX TO VOLUME II FOR 1922.

READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma, Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosuria, and Sugar; Light, Roentgen, Radium, *X* Rays; Status Lymphaticus and Thymus; Eye, Ophthalmia, and Vision; Bicycle and Cycle; Motor and Automobile; Association, Institution, and Society, etc. Subjects dealt with under various main headings in the JOURNAL have been set out in alphabetical order under their respective headings—for example, "Correspondence," "Leading Articles," "The Week," "Reviews," etc. Original Articles are indicated by the letter (O).

A.

Abdomen, the chronic (F. D. Saner), 923
Abdominal disease, chronic, surgery in (James Sherren), 455 (O)
Aberdeen. *See* Scotland
Abortion, septic, complicated by fibroids (F. Herbert Wallace and Geoffrey Wilson), 1028
ABRAHAMS, R. G.: Eclampsia and uraemia in the course of pregnancy, 1266
ABRAHAMSON, L.: Electrocardiographs of a case of auricular fibrillation, 45—Complete heart block, 45
ABRAM John Hill, appointed professor of medicine in the University of Liverpool, 27—The medical curriculum, 821
Académie de Médecine: The growing abuse of cocaine 314—Relation of tuberculosis to pregnancy, 1140

ACADEMY, ROYAL, OF MEDICINE, IN IRELAND:
Note on, 773
Accounts and report, 777
Section of Medicine.—Electrocardiographs of a case of auricular fibrillation, 45—Complete heart block, 45—Colloid therapy, 45—Rheumatoid arthritis, 45—Xanthoma diabeticorum, 1176—Myelogenous leukaemia, 1176— Sarcoma of the kidney, 1177
Section of Obstetrics.—Tuberculosis of the female pelvic organs, 1029—Gynaecological experiences, 1224—Adenomyositis of the uterus, 1224—Uterus with a large cervical myoma, 1225—Recent experiences in Vienna, 1225—Treatment of malignant disease by radium, 1225
Section of Pathology.—Acute leukaemia with intracranial haemorrhage, 45—A new micro-organism morphologically and culturally like the influenza bacillus, 45—The enteric-salmonella group of bacteria, 1122—Rhabdomyosarcoma of the kidney, 1268—Specimens of hearts, 1268—Banti's disease, 1268
Section of Surgery.—What makes for success in surgical treatment, 1121

Academy of Sciences of Madrid: Echegaray prize awarded to Ramón y Cajal, 69
Acetic acid (80 per cent. or higher) improperly excluded from articles chargeable under the Safeguarding of Industries Act, 493
Aches and pains of renal origin (Andrew Fullerton), 1190
ACOMB, J. (and Peter MACDONALD): Two cases of intracranial complication of acute ear disease, 458 (O)
Acromegaly, relief of pain in, 154, 240
Acromegaly after skull injury (Dr. Ball), 1266
Acting commanding officer decides in a case of (?) drunkenness, 954
Actinomycosis, bovine, its pathogenesis and treatment by vaccines (W. M. Scott), 1163
ADAMI, J. G.: Appreciation of Edward Collett Hort, 778
ADAMS, Douglas K.: The treatment of neurosyphilis, with special reference to the changes in the cerebro-spinal fluid, 630, 706—A correction, 706
ADAMS, P. H.: Retinal haemorrhages, 147
ADAMS, W. Stirk: Broncho-pulmonary complications following operations, 921
ADAMSON, James W. W.: Teaching of psychotherapy, 402—Psycho analysis, 825
Adder bite (Sir Thomas Oliver), 1114 (O)
ADDIS, Dr.: Adenomyomata of the recto-genital space associated with tarry cysts, 92
Adenoids and tonsils, the bacteria of (Nellie Wall), 1025 (O)
Adenomyoma or endometriomyoma of the ovary, 1039
Adenomyositis of uterus (Gibbon Fitzgibbon), 1224
Adrenaline: toxic dose (Frank R. Sawdon), 866
Advertisement, indirect (leading article), 1132—Correspondence on, 1195
Aerostatics and doctors (F. J. Poynton), 221
Aesculapius (leading article), 882
AFFLECK, Sir James, obituary notice of, 617, 664—Bequests of, 702
Africa, the poisonous snakes of (Lieut.-Col. H. Watkins-Pitchford), 54
Africa, South, medical organization in (leading article), 1037—Medical research in, 1185
Africa, West, health of European officials in, 653
After-care Committee. Special Schools (Birmingham), report for 1920, 769
After-care of tuberculous patients (leading article), 1272
AGNEW, Jean: The wastage of child life, 696
Air Force Medical Service, The Royal, information concerning, 848
Air, fresh and vitiated, the constituents of and their significance in problems of ventilation (J. P. Kinloch), 356
Air pollution, should it be tolerated? (W. B. Smith), 361—Discussion, 363
AITKEN, Charles J. Hill: Artificial eyes for ophthalmoscopic study, 154—Abnormal anterior fontanelle, 473—The general practitioner and refractions, 582—Open-air treatment of measles, an experiment, 617—The third stage of labour, 689—Strychnine and the heart, 1152
Alastrim or amaas, 65, 283. *See also* Small-pox, mild
ALCOCK, Colonel A.: Mansonia larvae, termites' nests, etc., 1030
Alcohol as a beverage and its relation to certain social problems (Edward Mellanby), 195—(Sir Frederick W. Mott), 199—(John T. MacCurdy), 204—(Edgar L. Collis), 244—(M. Hindhede), 248—(J. W. Ballantyne), 252—(Charles R. Stockard), 255—Discussion, 198, 206, 251, 259
Alcohol in its relation to disease (P. Gandhy), 127
Alcohol, expenditure on in hospitals (C. J. Bond), 142
Alcohol and industrial efficiency (Edgar L. Collis), 244
Alcohol in its relation to infantile mortality (J. W. Ballantyne), 252
Alcohol and mental disorders (Sir Frederick W. Mott), 199
Alcohol restriction and mortality (M. Hindhede), 248
Alcohol as a selective agent in the improvement of racial stock (Charles R. Stockard), 255
Alcoholic psychoses, general etiological factors in the (John T. MacCurdy), 204
Alcoholism: Congress of the Dutch Society for Combating, 118
ALEXANDER, Colonel John Donald, obituary notice of, 331
ALEXANDER, J. Finlay (and F. S. KIDD), prostatectomy in a case of diabetes insipidus, 642 (O)
ALEXANDER, M. E.: pernicious anaemia, 979
ALEXANDER, William Black, obituary notice of, 405
Alexander-Adams operation, 1096. *See also* Tuberculosis of the female pelvic organs
ALLBUTT, the Right Hon. Sir Clifford (and others): Appeal for the proposed memorial to Sir German Sims Woodhead, 18—Gold medal of the Association presented to, 171—The training of the medical student, 407—Medical education, past and present, 655—Animal and vegetable pathology in relation to human disease, 961—Accepts the presidency of the West London Hospital Post-graduate College, 1092—Expert witnesses, surgical and medical, 1244
ALLISON, Andrew: The importance of teaching medical jurisprudence to students of medicine and law, 368
ALLISON, Dr.: Bacteriolytic properties of tissues, 1187
ALLISON, T. M.: Serums by the mouth, 29, 999—Heliotherapy, 1281
ALLPORT, James, prosecution of, 331
Alopecia areata and strabismus (J. Goodwin Tomkinson), 505—Correspondence on, 616, 893, 1001
Altitudes, high, life at (T. G. Longstaff), 1235
Aluminium cooking vessels, 332, 538
Alvarenga prize, 954
Amaas or alastrim, 65, 283. *See also* Small-pox, mild
Amblyopia, eclipse (A. L. Whitehead), 147
Ambulance Service, the Home, 277, 1039
Anaemia aplastic, case of (Robert A. Fleming and James Davidson), 1074
Anaemia, cholesterol content of the blood in, and its relation to splenic function (William MacAdam and Cecilia Shiskin), 1170
Anaemia, pernicious (P. N. Panton), 978—Discussion, 978—(E. M. Brockbank), 1267
Anaemia, pernicious, the blood serum in (E. M. Brockbank), 124 (O)
Anaesthesia, chloroform, 982
Anaesthesia, ether, the introduction of, 701, 1086
Anaesthesia, obstetric, maintenance of by means of infundibulin and chloroform (A. F. Martin), 672
Anaesthesia, review of book on, 982
Anaesthetic drop-bottle collar, booked, 604
Anaesthetic vapour, effect of, on tissues (A. L. Flemming), 921
Anaesthetics and analgesics in labour (W. Osborne Greenwood), 667; (N. Hirschman), 669; (A. F. Martin), 672—Discussion, 674
Anaesthetics, general (Dr. Minnitt), 1080
Anaesthetization for Caesarean section (Herbert R. Spencer), 905 (O)
Anaphylaxis and asthma, 288
Anatomists, Méry's remark on, 406
Anatomy Act, the administration of (Alexander Macphail), 788—Discussion, 790
Anatomy, comparative, review of books on, 762
Anatomy, the Poet Laureate on the language of (leading article), 276
Anatomy: Papers read at the International Congress of the History of Medicine, 221
Anatomy, radiology in the teaching of (J. M. Woodburn Morison), 795—Discussion, 796
Anatomy, review of book on, 602, 762, 982
ANDERSON, A. Greig: Case of Milroy's disease, 1177—Lipo-dystrophia progressiva, 1177
ANDERSON, Dame Adelaide Mary: *Women in the Factory*, rev., 1225
ANDERSON, C. C.: Some notes on deep therapy, 36 (O)
ANDERSON, Dr.: Stillbirths and neo-natal deaths, 595
ANDERSON, Grace: Sequelae of lethargic encephalitis in the child, 1175
ANDERSON, Lieut.-Col. John A., Serbian Order of St. Sava conferred upon, 664
ANDERSON, J. S.: Meningismus, 947
ANDERSON, J. Wallace: High percentage of abnormal obstetric cases in general practice, 126 (O)
ANDERSON, Mrs: Occupation centres, 224
ANDERSON, Roy K.: *Drug Smuggling and Taking in India and Burmah*, rev., 645
ANDERSON, William: Case of subcutaneous rupture of the extensor communis digitorum, 1177
Andes, Peruvian, 538
ANDREWS, James, obituary notice of, 1098
ANDREWS, Russell: Stillbirths and neo-natal deaths, 595—Anaesthetics and analgesics in labour, 674—Treatment of eclampsia, 677
Aneurysm of aorta, intrapericardial (B. T. Parsons Smith), 1075 (O)
Angina pectoris (John Hay), 980
Animal diseases, research in, 1275. *See also* Pathology
Animal mechanism (Sir Charles Sherrington), 485
Animal pathology. *See* Pathology
Animals: Experiments on living, in 1921, 395—Correspondence on, 776, 827
Animals, humane slaughtering of, 318. *See also* Slaughter
Animals and plants, virus diseases in, 813
Ankylostomiasis amongst the Indian labourers on coffee plantations in Central America, 1077
Ante-natal clinic, prophylactic rectification and version at (J. W. Ballantyne), 845 (O)
Ante-natal deaths. *See* Neo-natal *and* Still-births
Anthrax Advisory Committee, 812, 1091
Anthrax, eradication of (Major-General Sir John Moore), 867
Anthrax prevention, 1947

Anthrax protection, note on the work done at the Liverpool station, 1128
Antimony in yaws (F. T. Auden), 83
Antitoxin, botulinus: where it may be procured, 604
Antitoxin, oral administration of (Louis Corbett and W. Henwood Harvey), 1265
Antivivisection Hospital. *See* Hospital
Antivivisection Society: An apology, 339
Aorta, intrapericardial aneurysm of (B. T. Parsons-Smith), 1075 (O)
Aortic incompetence, recognition of, 66
Aortic murmurs, 150
APERT, Dr.: *Vaccins et Sérums*, rev., 807
Apothecaries' Hall of Ireland: Information concerning the study of medicine, 427
Apothecaries' Society of London: Information concerning the study of medicine, 423—Degrees and pass lists, 536, 1147—Annual livery dinner, 1199
Apparatus for the estimation of the working capacity of an upper extremity (John Glaister), 380
Appendectomy, splenectomy, and Caesarean section in the same patient (Gerald Sichel and Gordon Ward), 866
Appendix wall, relation between *Oxyuris vermicularis*, appendicitis, and local eosinophilia of (E. H. Eastwood), 1170
Appointment of a medical officer. *See* Medical
ARCHIBALD, R. G. (and W. BYAM, editors): *The Practice of Medicine in the Tropics*, rev., 86
Archives Médicales Belges: seventy-fifth anniversary number, 604
ARDERNE, Master John, 1127
ARMITAGE, F. P.: *Diet and Race: Anthropological Essays*, rev., 566
Arms, asymmetry of (Matthew White), 871
ARMSTRONG, John: Radical prevention of venereal disease, 950

ARMY, BRITISH:
Army Medical Service, information concerning, 447
Auxiliary R.A.M.C. funds, 491, 1002
Disease in, during the war, 231
Information concerning, 447
Parliamentary notes on, 25, 231, 1188
R.A.M.C. war memorial unveiled in Westminster Abbey, 53, 94, 136, 143—Information concerning, 447—Promotion in, 615—Total number of Regular officers R.A.M.C. now serving in Great Britain, 1188—Commissions in, 1283
Territorial Army, medical appointments, 25
Territorial decorations, 68, 115, 779
Vaccination in (parliamentary note), 1188

ARNOTT, Lieutenant Henry G., French Médaille d'Honneur avec glaives en Vermeil, conferred upon, 664
ARNOTT, Captain Stanley, Order of the Nile conferred upon, 331
Arran war memorial: A cottage hospital, 107
Arsenic, sale of (parliamentary note), 230—Distinctive colouring for (parliamentary note), 231
Arsenic in cocoa, 1273
Arsenic compounds, organic, estimation of the toxicity of, 494
Arsenic, dangers of industrial preparations of (Sir W. H. Willcox), 371—Discussion, 374
Arsenic in ulcerative endocarditis, 402
Arsenic, the visceral content of, 609
Arsenical keratosis. *See* Keratosis
Arsenical poisoning, acute (Sir William Henry Willcox), 118 (O)
Arsenobenzol preparations, toxic effects of: Report by the Salvarsan Committee, 184
Arterio sclerosis, climate for, 1004
Arthritis, 1177
Arthritis, gummatous, of elbow (Mr. Fitzmaurice-Kelly), 44
Arthritis, rheumatoid (R. J. Rowlette), 45
Arthropathy, psoriatic, 609
Artificial dentures. *See* Dentures
Artificial eyes for ophthalmoscope work, 114, 154
Artificial Limbs and Amputation Stumps (Muirhead Little): The Queen accepts a copy of, 69—The Queen of Italy accepts a copy, 69—Review of, 271—Price of, 312
Artificial pneumothorax. *See* Pneumothorax
ASH, Percy Roberts, obituary notice of, 1158
ASHBY, Henry (and G. A. WRIGHT): *The Diseases of Children, Medical and Surgical*, rev., 874
ASHBY, Ruth T.: The pelves of rickety children as the precursors of the rickety flat pelves of women, 505 (O)—*Infant Mortality*, rev., 1034
ASHHURST, Astley Paston Cooper: *Reports of the Episcopal Hospital*, rev., 604
ASSMANN, Herbert: *Die Klinische Röntgen diagnostik der Inneren Erkrankungen*, rev., 692
Association, All-India Subassistant Surgeons' annual conference, 1031
Association, American Medical: president-elect, 51
Association, Australian and New Zealand, Medical: foundation of, 405—Information concerning, 942
Association, British: Annual meeting at Hull, 100, 481—President's address: Animal mechanism, 485—Work of the Sections, 524—Address on human efficiency, 524—*The Advancement of Science, 1922*, 572
Association of British Chemical Manufacturers: Exhibition at Caxton Hall, 31—Pamphlet on *Shall the State Throw Away the Keys?* an appeal, 1285
Association, British Medical, in 1922 (leading article), 1130
Association, British Medical: its aims, work, and constitution, 453
Association, British Medical: Annual exhibition, 181
Association, British Medical: Annual Meeting at Glasgow '19 21, 24, 57, 59 104, 155 *et seq.*, 226 239—Leading article on, 226—The Glasgow School of Medicine, 59—Bowling match, 63—Medico-historical treasures of Glasgow, 97—The coast and country around Glasgow, 104—President's address on brain surgery, 155—Presentation of Stewart prize to J. C. McVail, 170—"The Book of Glasgow," 170—Presentation of the gold medal of the Association to the Right Hon. Sir T. Clifford Allbutt, 171—And to Lieut.-Col. Arthur Martin Leake, 173—Annual Meeting notes, 180, 227, 276—Federation, 180—National health insurance, 180—Hospital policy, 181—Annual exhibition, 181—Excursions, 181, 228—Erskine House Hospital for the Limbless and Disabled, 227—University reception, 227—Civic reception, 227—Official religious service, 228—Surgical operations and demonstrations, 228—Medical Missions reception, 229—The Temperance Breakfast, 229—Ladies' golf competition, 239—Popular Lecture, 241, 277—Pathological Museum, 276—Reception and dance by the Royal Faculty of Physicians and Surgeons of Glasgow, 277
Association, British Medical: Annual Meeting at Portsmouth (1923), 1137
Association, British Medical, Australasian Congress of, 536
Association, British Medical: Council dinner, 832, 887

ASSOCIATION, BRITISH MEDICAL:
Birmingham Branch.—Clinical and pathological meeting, 1265—Election of officers, 1266—Pain in the left shoulder radiating into the fingers, 1265—Sclerodermia of hands and face, 1266—Acromegaly after injury to skull, 1266—Eclampsia and uraemia in the course of pregnancy, 1266—Cases of ectopia vesicae after transplantation of ureters into the bowel, 1266—Swelling of the thyroid gland for sixteen years, 1266—Heart in which the left auricle had undergone extreme dilatation 1266—Heart and lungs of a woman with haemorrhage due to placenta praevia, 1266
Brighton Division.—Clinical meeting, 44, 1172—Diverticulum of the bladder, 44—Volvulus of small intestine in a newly born child, 44—Pseudo-cyesis, 44—Lumbo-sacral meningomyelocele, 44—Three and a half inches of gastubing removed by suprapubic cystotomy, 44—Acute osteomyelitis of right clavicle, 44—Gummatous arthritis of the elbow, 44—Osteochondritis of the upper end of the femur, 44—Hypertrophy of the right upper extremity, 1172—Tuberculous meningitis, 1172—Symmetrically enlarged thyroid gland, 1172—Extensive peralysis of both legs, 1172—Acute anterior poliomyelitis, 1172—Case of equinus and pes cavus, 1172—Intussusception in a boy of 6, 1172
Fiji Branch.—The treatment and prognosis of leprosy, 35
Glamorgan, North, and Brecknock Division.—Miners' nystagmus, 1171
Lancashire, North, and South Westmorland Division.—Mental deficiency, 1171
New Zealand Branch.—Annual conference, 274—Maternal mortality in Dublin and New Zealand, 274
Southport Division.—The problem of the radium therapy of cancer, 33
Suffolk Branch.—The indications for, and limitations of, surgery in chronic abdominal disease, 455
Ulster Branch.—Aches and pains of renal origin, 1190
Wales, North, Branch.—Cardiac failure, 899
Willesden Division.—The chronic abdomen, 923

ASSOCIATION, BRITISH MEDICAL: THE SECTIONS:
Anaesthetics.—Summary of proceedings, 215—Report of proceedings, 787, 914
Anatomy.—Summary of proceedings, 216—Report of proceedings, 787
Children's Diseases.—Summary of proceedings, 215, 268—Report of proceedings, 846
Dermatology.—Summary of proceedings, 212, 267—Report of proceedings, 499, 752
Gynaecology.—*See* Obstetrics
Industrial Diseases and Forensic Medicine.—Summary of proceedings, 214, 269—Report of proceedings, 165, 368
Laryngology: Summary of proceedings, 217—Report of proceedings, 868
Medical Sociology.—Report of proceedings, 195, 244
Medicine.—Summary of proceedings, 207, 260—Report of proceedings 908 1055
Microbiology (including Bacteriology).—Summary of proceedings, 208, 261—Report of proceedings, 289, 718
Neurology and Psychological Medicine.—Summary of proceedings, 208, 262—Report of proceedings, 543, 621
Obstetrics and Gynaecology.—Summary of proceedings, 209, 264—Report of proceedings, 583, 667
Ophthalmology.—Summary of proceedings, 218, 270—Report of proceedings, 1153, 1249—Clinical meeting, 1265

ASSOCIATION, BRITISH MEDICAL: THE SECTIONS (*continued*):
Otology.—Summary of proceedings, 217—Report of proceedings, 459
Pathology.—Summary of proceedings, 215, 269—Report of proceedings, 305, 955, 1103, 1163
Physiology.—Summary of proceedings, 215, 269—Report of proceedings, 747
Public Health.—Summary of proceedings, 211, 265—Report of proceedings, 333
Radiology and Electrology.—Summary of proceedings, 215, 269—Report of proceedings, 506, 555
Surgery.—Summary of proceedings, 211, 266—Report of proceedings, 1005, 1264
Tuberculosis.—Summary of proceedings, 217—Report of proceedings, 733

Association, British Medical, War Memorial, 940
Association, British Orthopaedic: First meeting of session, 831—Annual meeting in London, 872—Papers and demonstrations, 872—Annual dinner, 872—A simple method of treating club-foot, 1115
Association, Canadian Medical: Annual meeting, 153—Election of officers, 153
Association, Canadian Medical Women's, 619
Association of Certifying Factory Surgeons: Annual report, 396
Association of County Medical Officers of Health for England and Wales: dinner, 1285
Association of Economic Biologists: Virus diseases in plants and animals, 813
Association, Far Eastern, of Tropical Medicine, 514. *See also* Tropical
Association, French, for the Advancement of Science: Next meeting, 1053
Association, International Midwives', 619
Association, Irish Medical Schools' and Graduates': Summer general meeting, 239—Autumn meeting, 1151
Association, London, of the Medical Women's Federation: Report to of the international meeting of medical women at Geneva, 769
Association of Medical Officers of Fever Hospitals decides to join the Society of Medical Officers of Health, 287
Association, Medico-Psychological, of Great Britain and Ireland: Annual meeting, 45, 177—Presidential address: Hospitalization of the Scottish asylum system, 134—Annual dinner, 189—The discovery of general paralysis, 1120—Treatment of general paralysis by malaria, and the use of speech inscriptions for early diagnosis, 1121
Association, Mental Hospitals: Annual meeting, 94—Obsolete lunacy laws, 94—Ex-service men in mental hospitals, 94—Mental defectives in mental hospitals and workhouses, 94—Election of chairman, 94
Association, Mexican Medical: Third anniversary of, 581
Association of Midwives, International, 619
Association of Military Surgeons of the United States: Thirty-first meeting 953
Association, National, for Supplying Medical Aid by Women in India: Report, 577
Association of Opticians. *See* Opticians
Association, Poor Law Medical Officers': Annual meeting, 188
Association, Sanitary, of Scotland: Annual meeting, 530
Association, Tuberculosis. *See* Tuberculosis
Association, Women Sanitary Inspectors' and Health Visitors': Winter school for health visitors and school nurses, 1247
Asthma, 582, 620, 666, 706
Asthma and anaphylaxis, 288
Asthma in children—the part played by local lesions of the chest (C. P. Lespagé), 1267
Asthma, problems of (W. Langdon Brown), 758—Discussion, 760
Astigmatism, a cross-wire axis finder in (Joshua Keyms), 689
ASTON, Francis William, awarded the Nobel prize for chemistry (1922), 995
Asylum, Barnsley Heath: Report, 769—"A good opening," 769
Asylum patients, discharge of (parliamentary note), 1188
Asylums, dietary in (parliamentary note), 1188
Asylums, ex-service men in, 280. *See also* Ex-service
Asylums, hospitalization of, 134—Leading article on, 139—Correspondence on, 240
Asylums, Scottish, pathological scheme: Dementia praecox, 530
ATKINS, Captain T. Gelston: The treatment of fever, 1097
ATKINS, W. R. G.: Estimation of the toxicity of organic arsenic compounds, 494
ATKINSON, Charles E.: *Lessons on Tuberculosis and Consumption*, rev., 1179
Atrophy of optic nerve. *See* Optic
AUDEN, F. T.: Antimony in yaws, 83
Auditory meatus, insects and foreign bodies in, 32, 114, 154. *See also* Ear *and* Foreign body
Auricular fibrillation, the process which results in (Sir James Mackenzie), 71 (O)—Leading article on, 96—Correspondence on, 189. *See also* Heart

AUSTRALIA:
Australasian Medical Congress, British Medical Association, 326, 890, 992—Information concerning, 442

AUSTRALIA (*continued*):
Medical students at the University of Melbourne, 326
Plague in, 233, 481
Post-graduate lectures on neurology, 326
Tropical Australia, 233. *See also* New South Wales

Australian and New Zealand Medical Association, foundation of, 405
Autogenous vaccines, 571. *See also* Vaccines
Auto-suggestion, Chelsea clinic of, 1003
Auto-suggestion and psychotherapy. *See* Psychotherapy
AXHAM, F. W., the case of, 39

B.

Baby Week Council, National, urges the Ministry of Health to take all possible steps to promote more universal vaccination of children, 1199
B. aertrycke in milk causing food poisoning (W. R. Wiseman), 728
B. dysenteriae Shiga, the toxins of (R. Cecil Robertson), 729
B. pyocyaneus infection simulating leprosy (S. Mallanah), 1023
Bacteria, the enteric-salmonella group of (W. D. O'Kelly), 1122
Bacterial cell, intimate structure of the (David Ellis), 751
Bacterial filtration, 616
Bacteriology of canned meat and fish, 700
Bacteriology and the vaccine treatment of chronic bronchitis (Leonard Mackey), 715 (O)—Correspondence on, 825
Bacteriolysis, the discussion on (leading article), 313
Bacteriolytic properties of tissues, 1187
Bacteriophage (bacteriolysin), the nature of (F. d'Herelle), 283—(F. W. Twort), 293—(J. Bordet), 296—(André Gratia), 296—(J. C. G. Ledingham), 297—(J. W. McLeod), 298—Discussion, 298—Leading article, 313
"Bad arms" after vaccination, 1054, 1100
BADCOCK, J. H.: Infectivity of artificial dentures, 150
BAILEY, Francis W., obituary notice of, 67
BAILEY, Kenneth M. G., appointed a Streatfeild scholar, 952
BAKER, Clement John, obituary notice of, 491
BALFOUR, Sir Isaac Bayley, obituary notice of, 1150
BALL, Dr.: Acromegaly after injury to the skull, 1266
BALLANCE, Sir Charles: Thomas Vicary lecture on *A Glimpse into the History of the Surgery of the Brain*, rev., 691
BALLANCE, Sir Hamilton (and others): Wood-Hill Fund, 403
BALLANTYNE, Arthur J.: *The Ocular Manifestations of Arterial Disease*, 1226—Interstitial keratitis in venereal disease clinics, 1264
BALLANTYNE, J. W.: Eclampsia, 89, 678 - Alcohol as a beverage in its relation to infantile mortality, 252—Ante-natal, intra-natal and neonatal deaths, 583—Prophylactic rectification and version at the ante-natal clinic, 845 (O)
BANDELIER, Dr. (and Professor ROEPKE): *Lehrbuch der spenzischen Diagnostik und Therapie der Tuberkulose*, 319
BANKART, A. S. Blundell: A simple method of treating club-foot (congenital talipes equinovarus), 1115 (O)
Banti's disease (Dr. Synge), 1268
BANTING, F. G.: Control of glycosuria by the islets of Langerhans, 140, 480
Bar, medical men called to the, 69, 1053
BAR, Professor: Relation of tuberculosis to pregnancy, 1140
BARBER, H. W. (E. P. POULTON and C. Putnam SYMONDS): *Taylor's Practice of Medicine*, rev., 128—The etiology of seborrhoea and seborrhoeic dermatitis, 754
BARCROFT, J., awarded a Royal Society medal, 1041
BARDSWELL, Noel D. (editor): *The Tuberculosis Clinic*, rev., 566
BARDUZZI, Professor, presentation to, 665
BARKER, Lewellys (and other editors): *Endocrinology and Metabolism presented in their Scientific and Practical Clinical Aspects*, rev., 873
BARKER, Nurse: Puerperal mortality, 346
Barking Hospitals' Welfare Fund, 493
BARLING, Sir Gilbert: The scope of diathermy, 1224
BARNES, A. Stanley: Treatment of neuro syphilis, 635
BARNES, Surgeon Captain William G. K., awarded a Greenwich Hospital pension, 1283
BARR, Sir James: The action of alcohol on the human economy, 199
BARRAS, W.: Broncho-pulmonary complications following operations, 921
BARRETT, Lady: *Conception Control and its Effects on the Individual and the Nation*, rev., 764—Report of the international meeting of medical women, 769
BARRIE, T. Stewart: Spontaneous cure of strabismus convergens, 147—The clinical significance and treatment of heterophoria, 1256—Monocular and binocular vision, 1260
BARRISKILL, J. R.: Foul breath, 493
BARRITT, Wesley (and Alfred Templer BARRITT): *Questions and Answers for Dental Students—Dental Surgery*, rev., 1124
Basal metabolism. *See* Metabolism
BASSETT-SMITH, Surgeon Rear-Admiral Sir Percy: Mediterranean or undulant fever, 902 (O)—Pernicious anaemia, 979—Venereal disease as a war casualty, 995
BASTIAN, Surgeon Commander W.: The sterilization of mental defectives, 490—Inheritance and mental defect, 661—The treatment of fever, 1097
Bath, visit of Bristol students to, 69—Graduate demonstrations at, 1189
Bathroom dangers, 494
Batteries, storage (E. C. McKinnon), 1042
BATTERSBY, Dr.: Anatomy of the bone marrow, 795
"Bayer 205" (leading article), 569
BAYLISS, Sir William M.: The mechanism of hearing, 785 (O)—The physiology of digestion, 939—The physiological effects of light, 1028
BEAMISH, Lieut.-Col. Robert Talbot, obituary notice of, 952
BEAUMONT, W. M.: The growing abuse of cocaine, 402
BEDDARD, Wm. Oliver: Periodicity of gnat bites, 951
BEDWELL, J. Cardew: Treatment of psoriasis, 32
Beer and lead poisoning, 179, 237, 279
BEERS, Clifford Whittingham: *A Mind that Found Itself: An Autobiography*, rev., 1271
Beit Research Fellowship, election of candidates, 183
Belfast, appointments, 702—Tuberculosis in, 702—Teachers in America, 1240
Belgium, campaign against venereal disease in, 523
BELILOVSKY, B.: Medical aid for Russian refugees, 898
BELL, Alexander Graham (the inventor of the telephone), obituary notice of, 281
BELL, Elizabeth: The wrong turning in public health 360
BELL, R. Gordon, academic robes of his doctorate in medicine of Glasgow University presented to, 780
BELL, W. Blair: Endometriomata of the ovary, 92—Tubal mole removed by incision of Fallopian tube, 92
BENAVENTE, Señor Jacinto, awarded the Nobel prize for literature, 1922, 995
Bengal, new medical colleges for, 578
BENNETT, C. (and J. W. S. BLACKLOCK and C. H. BROWNING): The action of flavine antiseptics on localized pyogenic infections, 306
BENTZEN, O. F.: The dry sterilization of instruments, 148
Bequests to hospitals and medical charities, 153, 542, 601, 665, 699, 702, 828, 831, 832, 881, 897, 1044, 1053, 1239
BERESFORD, A.: Acute osteomyelitis of right clavicle, 44
Berlin, tropical malaria in, 1151
BERNARD, Armand, obituary notice of, 704
BERRY, Dickinson: Broncho-pulmonary complications following operations, 918
BERRY, Sir George, elected a Member of Parliament (Scottish Universities), 1005, 1042
BERRY, James: Exophthalmic goitre, 911—The prognosis of surgery, 923
BERRY, Richard J. A.: The teaching of psychology and psychotherapy to medical students, 1142
BERTILLON, Jacques, obituary notice of, 193
BEST, C. H.: Control of glycosuria by the islets of Langerhans, 140, 480
BETT, Surgeon Rear-Admiral W.: Venereal disease as a war casualty, 994
BHALLA, Captain Daulat Ram, M.B.E. conferred upon, 1283
BICKERTON, Thomas H., degree of M.Ch. conferred on by the University of Liverpool, 148—Optic nerve atrophy, 1162—Conjunctivitis artefacta, 1265
BIDEN, Surgeon Captain Edward J., awarded a Greenwich Hospital pension, 1283
BIGGER, Dr.: The enteric-salmonella group of bacteria, 1122
BIGGS, George Nixon, obituary notice of, 1049
BIGGS, J. J. E., re-elected Lord Mayor of Cardiff, 1035
BIGLAND, A. Douglas: Treatment of disseminated sclerosis, 926—Therapeutics of quinidine, 1079
Bile salts and calcium, 1048
BILLINGTON, William: Surgical treatment of chronic ulcer of the body of the stomach, 34 (O)
Binocular vision. *See* Vision
Biochemistry, review of book on, 1125
Biology, a plea for the study of, in relation to public health (A. K. Chalmers), 333
BIRD, Matthew Mitchell, memorial service to, 279—Estate and bequests of, 897
Birds, body temperature of, 1040
BIRKETT, H. S.: The development of trans-Atlantic rhino-laryngology, 135
Birmingham: Special Schools After Care Committee's report for 1920, 769—Tuberculosis in, 996
Birth control: Conference in London, 69, 132—Dinner, 133—Sterilization of the unfit, 133—Conference at Deptford, 133—Correspondence on, 327
Birth rate in Germany, 498, 881
Birth rate and legitimate fertility in London boroughs, 1911 and 1921, changes in (T. T. S. de Jastrzebski), 1222
Birth registration after 7 years of age (parliamentary note), 103
BLACKHAM, Colonel R. J.: *Aids to Tropical Hygiene*, rev., 1034
BLACKLOCK, J. W. S. (C. BENNETT and C. H. BROWNING): The action of flavine antiseptics on localized pyogenic infections, 306
BLACKMAN, V. H.: Some similarities and dissimilarities between plant and animal diseases, 718
Bladder, diverticulum of (H. N. Fletcher), 44
Bladder in gynaecological cases (Alfred Gough), 1122
BLAIR, Dr.: Anaesthetics and analgesics in labour, 674
BLAND-SUTTON, Sir John: Sinolia memoralia, 932
BLECHMANN, Germain: The "creation" of "Sibson's notch," 522
BLENKINSOP, Sir A. P.: Venereal disease as a war casualty, 995
Blind children (parliamentary note), 26
Blind children (partially), education of, in myope classes (H. Wright Thomson), 1257—Discussion, 1258
Blind, National Institute for, annual report, 576
Blind Persons Act, 26, 576
Blind students pass massage and remedial gymnastic examinations, 331
Blind, welfare of: Report of Advisory Committee, 575, 940, 985—Final report, 985, 1035—Leading article on report, 1037—The Labour party's pamphlet, 576—The National Institute for the Blind, 576
BLOCH, Marcel (and P. Emile WEIR): *Maladies du Sang et des Organes hématopoiétiques*, rev., 1123
BLOMFIELD, J.: Anaesthetization of patients for Caesarean section, 925
Blood at 100 years of age (F. G. Macnaughton), 14
Blood, cholesterol content of in anaemia, and its relation to splenic function (William MacAdam and Cecilia Shiskin), 1170
Blood diseases, review of book on, 1123
Blood pressure, high arterial (Sir Humphry Rolleston), 1239
Blood serum in pernicious anaemia (E. M. Brockbank), 124 (O)
Blood stain for general practice (A. Knyvett Gordon), 43
Blood transfusion (J. T. Morrison), 1079
Blood transfusion in civil practice (Geoffrey Keynes), 1078—Discussion, 1078
Blood from a vein, twin needle outfit for collecting, 876
Blue sclerotics. *See* Sclerotics
Board, Central Midwives, 107, 233, 772, 1094—Midwives and chloroform, 772
Board, Central Midwives (Scotland), 324, 488, 890, 1044, 1240
Board of Control: Annual report, 779, 810—Leading article on, 810
Board of Control, Scottish, 488
Board of Education: Circular *re* school services, 105—Bill to carry into effect recommendations of the Oxford and Cambridge University Commissions, 257—Training of health visitors, 239—Issues a pamphlet giving a list of its recognized institutions for nursery schools, etc., 240—Circular *re* minor dental work in schools, 405—Annual report of the chief medical officer in *The Health of the School Child*, 809—Criticisms of the London School Medical Service, 996
Board, Metropolitan Asylums, annual report, 486
Body temperature of birds, 1040
BOHR, Niels, awarded the Nobel prize for physics (1922), 995
Bombay: Conviction under the Bombay Medical Act, 578
BOND, C. J.: Expenditure on alcohol in hospitals, 142
BOND, Hubert: Mental defectives in the courts, 223
BOND Surgeon Commander R. St G. S., called to the Bar, 1053
Bone disease, diagnosis of simple and malignant (C. W. Scott Sadler), 561—Discussion, 562
Bone grafting as an aid in treatment of tuberculous spinal caries (Sir Henry M. W. Gray), 73 (O)—Correspondence on, 284, 326, 533, 578
Bone grafting and the circular motor saw, 533
Bone and joint tuberculosis, treatment of (C. Lee Pattison), 925
Bone marrow, the anatomy of the (A. Piney), 752—Discussion, 795
BONNEY, Victor: Scope and technique of myomectomy, 804
BOOCK, E. (and J. W. TREVAN): The physiological effects of light, 1028
Bordeaux, chair of therapeutical hydrology and climatology created at the Faculty of Medicine, 69
BORDEN, Major F. R.: Treatment of warts of the scalp, 666
BORDET, J.: Concerning the theories of the so-called bacteriophage, 296
BORDET, Professor, honorary degree conferred upon by the University of Paris, 1199
"Born with a caul," 567
Borstal institutions administration (parliamentary note), 103
Botulinus antitoxin: Where it may be procured, 604, 889
Botulism, 491—Prevention of, 666

BOURNE, Aleck W.: Eclampsia, 90—Veratrone in eclampsia, 91—Treatment of acute salpingitis, 998

BOURNE, Geoffrey: A simple portable apparatus for continuous oxygen administration, 40 (O)

Bournville, medical arrangements at, 660

Bowel injury with recurrent haemorrhage (Maurice Horan), 689 (O)

Bowling match at the Annual Meeting, 63. *See also* Association, Annual Meeting

BOYCE, Charles: Fetid expectoration, 538

BOYD, Fulton: Broncho-pulmonary complications following operations, 919

BOYLE, E. G.: Anaesthetization of patients for Caesarean section, 925

BOYLE, Helen: Psychotherapeutics and psychopathology, 555

BOYLE, Nina: Occupation centres, 224

BRACEY, H.: Maternity and child welfare, 351

BRACKENBURY, H. B.: The economic difficulties which prohibit the development of special schools, 223

BRADLEY, O. Charnock: *The Topographical Anatomy of the Thorax and Abdomen of the Horse*, rev., 931

BRAGG, W. L.: The structure of metals as analysed by *x* rays, 1042

Brain, review of, 311, 1227

Brain, review of books on, 564, 691

Brain surgery (Sir William Macewen), 155 (O)—Leading article, 175

BRAMWELL, Byrom: Edinburgh in the sixties, 822—Remarks upon lethargic encephalitis, 1175—75th birthday of, 1189

BRAMWELL, Edwin: Medicine and credulity, 946—Hydrocephalus, 979—Influenza, encephalitis, and cerebro-spinal meningitis, 979

BRAMWELL, William: Periodicity of gnat bites, 1049

BRAND, A. T.: The differential diagnosis of small-pox and chicken-pox, 823—The cancer problem, 1280

BRASH, James C.: The administration of the Anatomy Act, 790—The relation of the ureters to the vagina, 790

Brazi: Congress on infant welfare, 31—Centenary of independence, 31

Breath, foul, 493

BREMNER, Alex. M.: Asthma, 666

BRENNAN, J. M.: The profession and the police, 28

Breslau Pasteur Institute, and the scarcity of rabbits in Germany, 989

Bridge grafts in treatment of ununited fractures (Donald Duff), 1215

BRIDGES, Robert: On the language of anatomy, 276—A casualty department forty-five years ago, 767

BRIERLEY, William B.: Comparative pathology of plants and animals, 721—The mutation of species, 722—Animal and vegetable pathology in relation to human disease, 962

BRIGGS, Professor Henry: Dinner to, 821—Scope and technique of myomectomy, 804—Pre-natal care, 1174

Bright's disease, etiology and treatment of (W. M. Crofton), 686 (O). *See also* Nephritis, non-pyogenic

BRILL, A. A.: *Psycho-analysis, its Theories and Practical Applications*, rev., 46—*Fundamental Conceptions of Psycho-analysis*, rev., 47

Bristol Medical School, 767

British Dominions, conditions of practice in, 450

British Empire Exhibition: Tropical Diseases Committee appointed, 1151

British Honduras, the healthiness of, 824

British Medical Association. *See* Association

BRITISH MEDICAL JOURNAL, Educational Number, new features, 319

BROADBENT, Walter: Tuberculous meningitis, 1172

BROCK, A. J.: Measures against tuberculosis, 65—Psycho-analysis, 1243

BROCKBANK, E. M.: The blood serum in pernicious anaemia, 124 (O)—Pernicious anaemia, 1267

BROCKWAY, A. Fenner (and Stephen HOBHOUSE, editors): *English Prisons To-day*, rev., 218

BRODRIBB, Major C.: Quinine necrosis of muscle, 109

Bronchitis, chronic, bacteriology and vaccine treatment of (Leonard Mackey), 715 (O)—Correspondence on, 825, 892

Broncho-biliary fistula (A. G. Yates), 1117 (O)

Broncho-pulmonary complications following operations (David Lamb), 915—Discussion, 918

Broncho-pulmonary spirochaetosis (J. M. Johnston), 1119

Bronchoscopy, direct peroral, for removal of a paper fastener (Herbert Tilley), 973 (O)—Correspondence on, 1100

BROOKING, Charles Henry, obituary notice of, 193

BROOKS, F. T.: Disease resistance in plants, 964

BROOM, R.: Unsuspected pregnancy, 1200

BROSTER, L. R. (and A. E. CRABBE): Surgery on the high seas, 717 (O)

BROWN, Alexander Crum, obituary notice of, 855, 951

BROWN, David: Serum treatment of veldt sores, 236

BROWN, Sir Robert Charles: *Sixty four Years a Doctor*, rev., 271, 312—A correction, 312

BROWN, W.: *Suggestion and Mental Analysis: An Outline of the Theory and Practice of Mind Cure*, rev., 645, 1179

BROWN, William, appointed honorary consulting psychologist to Bethlem Royal Hospital, 1151

BROWN, W. H.: Etiology of seborrhoea, 757

BROWN, W. Langdon: Problems of asthma, 758

BROWNE, Francis J.: Neo-natal death, 590

BROWNE, Sir Thomas, the skull of, 150

BROWNING, C. H. (G. BENNETT and J. W. S. BLACKLOCK): The action of flavine antiseptics on localized pyogenic infections, 306—Treatment of neuro-syphilis, 635

BROWNLEE, John: Interpretation of the death statistics of infancy and childhood in relation to development and environment, 342—Relation between rainfall and scarlet fever, 1079

BRUCE, Sir David, awarded the Royal Society's Buchanan medal, 1041

BRUCE, Robert: Defects in school children, 346

BRUCE, R. Wilson, obituary notice of, 113

BRYAN, Douglas: Psycho analysis, 776

BRYAN, M.: Occupation centres, 224

BRYCE, T. H.: The administration of the Anatomy Act, 790

Buccaneer surgeons, 397

BUCHANAN, Dona'd: Treatment of fever, 1097

BUCHANAN, Robert MacNeil: Remarks as president of the Section of Microbiology, 289—The bacteriology of influenza, 306

BUCKLEY, J. P.: Surgery of Meckel's diverticulum, 1267

Bucky-Potter diaphragm (H. E. Gamlen), 562

BUIST, H. Massac: Motor notes for medical men, 17, 69, 797, 877

BULL, Edwin George, obituary notice of, 1197

BULL, P.: Extrapleural thoracoplasty in the treatment of pulmonary tuberculosis, 1217

BURDON-COOPER, J.: The etiology of cataract, 147

BURGESS, E. (and J. F. DOCHERTY): The action of carbon tetrachloride on the liver, 907 (O)

BURN, J. H. (and H. H. DALE): Standardization of pituitary extract, 1087

BURNAND (and others): *Etudes sur la Tuberculose (5-ième série)*, rev., 474

BURNETT, Sir Napier: *Third Annual Report on the Voluntary Hospitals in Great Britain (excluding London) for the Year 1921*, 647

BURRELL, L. S. T. (and A. Salusbury MACNALTY): The treatment of pulmonary disease by inducing a pneumothorax, 606

BURROWS, Arthur: The problem of the radium therapy of cancer, 35 (O)—Treatment of gynaecological conditions by radiation, 682

BURROWS, Harold: Restoration of the sunken nose, 688 (O)

BUTLER, E. J.: Virus diseases in plants and animals, 813—Some characteristics of the virus diseases of plants, 963

BUTLER, G. R.: *The Diagnostics of Internal Medicine*, rev., 17

BUTLER, T. Harrison: Methods of operating for cataract, 148—Changes in refraction, 148

BUTTAR, Charles: Notification of infectious diseases, 869

BUXTON, J. B.: Grass disease and botulism, 528

BUZZARD, E. Farquhar: Pain and other sensory disturbances in relation to diagnosis, 1224

BYAM, W. (and R. G. ARCHIBALD, editors): *The Practice of Medicine in the Tropics*, rev., 86

BYERS, W. Gordon M.: The place of ophthalmology in the undergraduate medical curriculum, 4 (O)

By-product of the Jamaica hookworm campaign, 538

Byzantine cookery (E. Jeanselme and L. Deconomos), 274

C.

Caducée, Le, 98

Caesarean section, 67, 109, 150, 406

Caesarean section, anaesthetization for (Herbert R. Spencer), 905 (O)

Caesarean section, splenectomy, and appendectomy in the same patient (Gerald Sichel and Gordon Ward), 866

CAIGER, Herbert: The radical prevention of venereal disease, 661, 826, 1196—The clinical significance and treatment of heterophoria, 1255—Conjunctivitis artefacta, 1264

CAILLÉ, Augustus: *Post-graduate Medicine: Prevention and Treatment of Disease*, rev., 1033

CAIRNS, William Murray: Appreciation of Sir James Affleck, 664

Cairo, vaccinations and small pox in, 640

Calcium and bile salts, 1048

Calcium deficiency and cod-liver oil, 283

Calcutta School of Tropical Medicine, 392, 1134

CALDER, R. B. (W. G. SAVAGE and R. F. HUNTER): *The Bacteriology of Canned Meat and Fish*, 700

"Calderstones," report of, 822

CALVIN, J. K.: Proprietary vitamin products, 519

CALWELL, William: Psychotherapeutics and psychopathology, 555—Dementia praecox, 1080

CAMBELL A.: Twin needle outfit for collecting blood from a vein, 876

Camera and natural science, 572

CAMERON, Captain William Moore, O.B.E. conferred upon, 1283

CAMERON, Sir Hector: Glasgow University in the Sixties, 1189

CAMERON, Samuel J.: Caesarean section, 109—Treatment of salpingo-oöphoritis, 685

CAMMIDGE, P. J.: Insulin in diabetes, 997

CAMPBELL, G. J.: *First Aid in Childbirth and during Infancy*, rev., 1271

CAMPBELL, John: Treatment of eclampsia, 677—Treatment of salpingo-oöphoritis, 683—Treatment of acute salpingitis, 1096

CAMPBELL, John: Ulster medical services, 1095

CAMPBELL Colonel R. B.: The physical training of the soldier, 1186

CAMPBELL, W. R.: Control of glycosuria by the islets of Langerhans, 480

CANADA:

Plans for amalgamation of all institutions for higher education in the maritime provinces into a central university, 69

Canadian Medical Association annual meeting, 153

Canadian medical curriculum (leading article), 568

Canadian Medical Women's Association, 619

French scholarships offered to the universities, 963

Holiday visit to Montreal and Toronto, 1240

Hospitals of Canada, a visit to, 1240

McGill University, Montreal, 1141

Ontario, vital statistics of, 769

Radiological Society's Convention, 537

Radium institute for Montreal, 405

Venereal disease statistics in Toronto, 581

Victorian Order of Nurses, twenty-fifth anniversary of, 31

Cancer following arsenical keratosis (Henry C. Semon), 975 (O)

Cancer, experimental production of by arsenic (Archibald Leitch and E. L. Kennaway), 1107

Cancer, causation of: investigations to be made in America, 537

Cancer of cervix, vaginal involvement in (Archibald Leitch), 686

Cancer Congress, Interallied, 536, 1285

Cancer developing after cessation of irritant, 1279. *See also* Cancer, tar

Cancer, etiology of, 32, 114

Cancer, French Commission appointed to investigate the etiology, clinical study, treatment, and prophylaxis of, 320

Cancer home, proposed, for Sydney, 997

Cancer, house infection in (Lieut.-Col. A. G. McKendrick) 1265

Cancer, increase of (parliamentary note), 102

Cancer Institute, Dutch, International Conference, 883

Cancer a notifiable disease in Venezuela, 31

Cancer, occupational. *See* Cancer, paraffin

Cancer, paraffin, of the paraffin and shale workers of the Scottish shale industry (Alexander Scott), 1108

Cancer, paraffin and its experimental production (Archibald Leitch), 1104

Cancer problem, 1280

Cancer production by specific forms of irritation (J. A. Murray), 1103

Cancer, radium therapy of, the problem of (Arthur Burrows), 33 (O)

Cancer Research Fund, the Imperial, annual meeting, 185

Cancer, review of books on, 516

Cancer of the scrotum; the etiology, clinical features, and treatment of the disease (A. H. Southam and S. R. Wilson), 971 (O)—Correspondence on, 1047, 1146

Cancer, soot, experimental (R. D. Passey), 1112

Cancer and specific irritants (leading article), 1123

Cancer, statistics of (parliamentary note), 26

Cancer, tar, effect of cessation of the irritant on the development of experimental (Archibald Leitch), 1101 (O)—Correspondence on, 1279

Cancer, Tar, International Conference on, 768

Cancer and tobacco smoke, 66, 237, 330

Cancer, *x*-ray (Cecil Rowntree), 1111

Cancer and zymotic diseases (parliamentary note), 103

Cancerous growths, an organism from (James Young), 15

Cancers, deep-seated, *X*-ray treatment of, with special reference to Erlangen methods (J. E. Riddell), 506—(J. H. Douglas Webster), 507—(F. Herbaman-Johnson), 510—Discussion, 511

CANNON, Dominick: The treatment of malignant disease by radium, 1225

CAPPARONI, Dr., forgotten teachers at Salerno, 273

CAPPELL, D. F.: Intra-vitam staining, its application to pathological investigation, 1166

Carbon tetrachloride in hookworm infection (Lucius Nicholls and G. G. Hampton), 8 (O)

Carbon tetrachloride, action of on the liver (J. F. Docherty and E. Burgess), 907 (O)

Carcinoma. *See* Cancer

Cardiac disease, some aspects of (John Hay), 115 (O)

Cardiac failure (John Hay), 899 (O)

Cardiac. *See also* Heart

Cardiff out-patient clinic in psychiatry, 577

Cardiology, review of books on, 219, 703, 777, 824—Correspondence on review, 703, 777, 824

Carlsbad, present condition of and cost of treatment at, 332

Carnegie award to a medical man, 653

CARNWATH, T.: Notification of infectious disease, 870

CARRASCO-FORMIGUERA, R.: Insulin and diabetes, 1143

CARROLL, Joseph, obituary notice of, 581

CARR-SAUNDERS, A. M.: *The Population Problem: a Study in Human Evolution*, rev., 517

CARRUTHERS, Major V. T.: Chaulmoogra oil in tuberculosis, 666—Psycho-analysis, 898
CARSLAW, James: Surgical treatment of non-traumatic affections of the spleen, 1204
CARTER, F. Bolton: Degenerative diseases of the liver, 1171
CARTER, Godfrey: The importance of teaching medical jurisprudence, 371
CARTER, H. S. (and A. MASSEY): Terminal hyperpyrexia, 922
CARTER, William E. (and Langley PORTER): *Management of the Sick Infant*, rev., 565
CASSIDY, Louis: Surgical treatment, 1122—Recent experiences in Vienna, 1225
Casualty department forty-five years ago, 767
Cataract, etiology of (G. Burdon-Cooper), 147
Cataract extraction followed by panophthalmitis: recovery (Lieut.-Col. H. Kirkpatrick), 820)
Cataract, methods of operating for, discussion on, 148
CATHCART, E. P.: The efficiency of man and the factors which influence it, 524—Basal metabolism, 747
Cauls, superstitions connected with, 567
Cavan County Health Committee and the appointment of a medical officer, 400, 489
CAVVADIAS, Dr.: Greek medicine, 220
CAWSTON, F. G.: Emetine injections, 661
Celtium, element number 72, 14
Cement workers, dermatitis amongst, 826, 898, 1001
Census of France, 881
Census of Jamaica (1921), 614
Census of the four great towns of Scotland (1921), 399—Of Scotland (counties), 487, 659, 996, 1190, 1279
Census reports, 530
Cerebellum, review of books on, 564
Cerebral haemorrhage, prevention of, 401. *See also* Haemorrhage
Cerebro-spinal fluid in disease of the fundus (W. J. Wellwood Ferguson), 1259
Cerebro-spinal meningitis. *See* Meningitis
Certifying factory surgeons. *See* Factory
Cervical glands. *See* Glands
Chadwick chapter in the history of medicine (Sir William Collins), 220
CHALMERS, A. K.: Alcohol restriction and mortality, 252—A plea for the study of biology in relation to public health, 333—The economics of public health, 341—The training for the D.P.H., 365—Administrative requirements for tuberculosis, 368—Economics and tuberculosis, 868
CHALMERS, Dr.: Anaesthetics and analgesics in labour, 674
CHALMERS, James: The action of alcohol on the human economy, 199
Chalmers's Library, 23
CHAMBERS, E. R.: Bilateral colobomata of the macula, 564
CHAMPION, Selwyn Gurney (and Ethel MAVROGORDATO): *Wayside Sayings*, rev., 130
CHAMPNEYS, Sir Francis: Appreciation of Sir Edward Malins, 239
CHANCE, Sir Arthur: Surgical treatment, 1, 22
CHAPLIN, Arnold: The growth of the general practitioner, 21—The Harveian oration on medicine in the century before Harvey, 707 (O)—Merchant seamen, 764
CHAPMAN, A. Chaston: Pasteur Commemoration Fund, 482
CHAPMAN, Katharine: Treatment of gynaecological conditions by radiation, 681
CHAPPLE, W. A., elected Member of Parliament for Dumfries, 1042
CHARITY, A., memorial to at Toulouse, 581
Charities Register and Digest, rev., 876
Charity Organization Society: *The Prevention and Relief of Distress*, rev. 876
Chaulmoogra oil in leprosy, 607. *See also* Leprosy.—In tuberculosis, 655, 703
CHEATLE, Sir Lenthal, Keetley medal awarded to, 705
Cheese poisoning (leading article), 1038
Chelsea Clinic of Auto-suggestion, 1003. *See also* Auto-suggestion
Chemicals, exhibition of, 31
Chemicals, supply of (parliamentary note), 58
Chemist in the United States who most benefits science, annual award for, 831
Chemistry, review of books on, 806, 1083, 1271
Chenopodium oil, in gelatine capsules, 476
Chest, radiology of in children, 179
Chest surgery, thoracoscopy in (H. C. Jacobaeus), 1043, 1091
CHEVERS, Martin J.: The etiology of cancer, 32
Chicken-pox, "haemorrhagic" (W. McC. Wanklyn), 977—(W. F. Shanks), 1077
Chicken-pox and small-pox: differential diagnosis, 775 823
Childbirth mortality in women (J. Lamond Lackie), 1081
Child life, wastage of (leading article), 696
Child welfare. *See* Maternity
CHILDE, C. P.: Diagnosis and treatment of cholelithiasis, 1014
Childhood, death statistics of. *See* Death
Children, defective, schools for (parliamentary note), 58—Number of, 1285. *See also* Defective
Children, diseases of, review of books on, 565, 874, 929
Children, school. *See* School
China: Proposal to found a medical school at Shanghai, 337
Chiropractic and osteopathy (leading article), 479
Chiropractors arrive in the Philippines, 537
Chloroform and infundibulin in "obstetric anaesthesia" (A. F. Martin), 672
Chloroform and midwives. *See* Midwives
Cholecystectomy or cholecystotomy, 278
Cholecystenterostomy, indications for (T. C. Littler Jones), 980
Cholecystogastrostomy (J. Lionel Stretton), 600
Cholelithiasis, diagnosis and treatment of (Rutherford Morison), 1005—(Farquhar Macrae), 1008—Discussion, 1011
Cholera or dysentery, 1049
Cholera in the Ukraine, 42
Cholera, house infection in (Lieut.-Col. A. G. McKendrick), 1266
Cholesterol contents of the blood in anaemia and, its relation to splenic function (William MacAdam and Cecilia Shiskin), 1170
Choroid and ovary, melanotic sarcoma of (H. G. W. Dawson), 757
Chorio-epithelioma of uterus (Dr. Dible), 927
CHOSKY, N. H., presentation to, 578
Christian science (Rev. A. Boyd Scott), 1141
Christian Science practitioner in Ohio fined for practising medicine without a licence, 240
Chromic acid solution in treatment of rodent ulcer (A. Dingwall Kennedy), 894 (O)
Chrysops, the development of *Loa loa* in (A. Connal and S. L. Connal), 730
Church Congress: Sacramental healing and the psychology of conversion, 767. *See also* Sacramental
Circulation, review of books on, 764
CLARK, Daniel, estate and bequests of, 665
CLARK, Francis: Man's insect enemies, 395
CLARK, W. Adams: Urine tests, 706
CLARK, W. L., jun.: *Health Service in Industry*, rev., 983
CLARK-JONES, E.: The clinical thermometer in the prevention of pulmonary tuberculosis, 1026 (O)
CLARKE, J. R.: Measurement of high voltages, 1043
CLARKE, John S.: Warts on the scalp, 332
CLARKE, W. J.: *Our Homeland Prehistoric Antiquities and How to Study Them*, rev., 604
Class-conscious conscience, 494
CLAUDE, Henri (and Dr. LÉVY-VALENSI): *Maladies du Cervelet et de l'Isthme de l'Encephale*, rev., 564
Clayden *v.* Wood-Hill, 531, 614. *See also* Witnesses, expert, *and* Wood-Hill
"Clean the city campaign" in Australia, 234
CLEGG, J. Gray: Impressions of an International Congress of Ophthalmology, 147—Bilateral symmetrical congenital korectopia and melanosis of the eye, skin, and palate, 148—Optic nerve atrophy, 1161—The clinical significance and treatment of heterophoria, 1255
CLELAND, Professor John, 812
CLEVELAND, J. W., elected Mayor of St. Albans, 1005
Climate of the Portuguese Riviera for a bronchitic, 332, 620—For arterio sclerosis, 1004—Of mountains, influence of upon tuberculosis, 1126
Clinique et Laboratoire, first number, 17
CLOPPER, E. N.: *Rural Child Welfare*, rev., 693
Club, Edinburgh Medical Schools' and Graduates', inaugural dinner, 1195
Club, Epsomian, annual dinner, 1247
Club, Glasgow Medical Lunch, 577, 702, 823, 996, 1045, 1094, 1141, 1189, 1239
Club, Glasgow and West of Scotland Overseas Medical: Annual dinner, 890
Club-foot, a simple method of treating (A. S. Blundell Banks), 1115 (O)
Coal mines, first-aid in, 1100, 1152
COATES, Dr.: Two cases of dysentery, 1031
COATES, V. M.: Cysticercus cellulosa, 1177
Cocaine: Medical uses of (parliamentary note), 26, 231—Traffic in (parliamentary note), 58—Records of sales of (parliamentary note), 183—The growing abuse of (leading article), 514—Correspondence on, 402—*In India and Burma*, rev., 645—Sale of, prohibited to unregistered dentists, 1099
Cocoa, arsenic in, 1273
Cod-liver oil and calcium deficiency, 283
Cod-liver oil and vitamin A, 610
COKE, Frank: Problems of asthma, 760
Cold, common, the cause of, 1275
"Cold-water doctor," 494
COLE, Professor: Carlo Ruini, the father of veterinary science, 274
COLEMAN, Walter M.: Red fatigue, 1146
COLES, A.: Treatment of industrial accidents, 380
Collar for hooked anaesthetic drop bottle, 604
COLLEDGE, Lionel: Some difficulties presented by cases of septic sinus thrombosis, 460
College, Anderson, of Medicine: Information concerning, 437—Resignations, 577—Appointments, 660—Inaugural address, 773
College, Bradfield, resumption of the Greek plays at, 69
College, Epsom annual meeting, 27
College, King's: Worsley scholarships, 111—Information concerning the study of medicine, 431. *See also* Hospital *and* University of London
College, Livingstone, note on its work, 1199
College, North-East London Post-Graduate, information concerning, 442
College, Queen Margaret's: Information concerning the study of medicine, 436
College, Royal, of Physicians of Edinburgh: Honorary Fellows, 1002—Information concerning the study of medicine, 424, 436—Members elected, 1002—Victoria Jubilee Cullen prize awarded, 31
College, Royal, of Physicians of Ireland: Resignations, 152—Information concerning the study of medicine, 425, 437—Annual stated meeting, 828—Election of officers, 828—Appointments, 828—Annual report, 828—Harry Godfrey Massy-Miles prize (1922), 952—Admission of member, 1002
COLLEGE, ROYAL, OF PHYSICIANS, OF LONDON: Appointments, 238, 894, 1098—By-laws and regulations, alterations in, 884, 894, 1001—Censors, 238
Comitia, 238, 894, 1098
Communications, 894
Conversazione at, 1040
Correspondence on the new by-laws, 1001
Degrees and pass lists, 238, 894, 1098
Diplomas, 238
Examiners, 238
Harveian commemoration, 812
Harveian oration, 707, 894
Information concerning the study of medicine, 422
Licences, 238, 894, 1008
Licentiates' names expunged, 238
Licentiate's name restored, 894
Lloyd Roberts lectureship, 894
Members admitted, 238
Permission to photograph certain paintings, 1098
Reports, 894
Representative on General Medical Council, 1098
Resignations, 1098
College, Royal, of Surgeons, of Edinburgh: Appointments, 1283—Degrees and pass lists, 192, 528, 1283—Election of officers, 828, 1198—Information concerning the study of medicine, 424, 436—Annual meeting, 1198
COLLEGE, ROYAL, OF SURGEONS OF ENGLAND: Alterations in rules relating to College triennial prize and John Hunter medal, 152
Annual meeting of Fellows and Members, 895, 1051
Annual report, 779
Appointments, 1002
Calendar for 1922–1923, 828
Conjoint degree, alterations in the regulations for, 1002
Correspondence on, 1248
Council, 152, 779
Council election, 112
Degrees and pass lists, 894, 1246, 1283
Dental surgery, 1246
Diplomas, 1002
Election of officers and lecturers, 152
Exhibits at, 699
Information concerning the study of medicine, 422
International Congress of Otology, 152
Jenks scholar, 779
Lectures, 1041, 1246
Licences and diplomas, 152
Members and the Council, 1194, 1248
Museum of, report, 230
Ryall, the late Sir Charles, 779
Streatfeild research scholar, 1052
College, Royal, of Surgeons in Ireland: Degrees and pass lists, 405, 1198 1283—Information concerning the study of medicine, 426 437
College, Royal, of Veterinary Surgeons, and the right to hold examinations for admission to membership of the College, 194—Admits its first woman member, 1236
College, St. Mungo's: Information concerning the study of medicine, 437
College, Trinity, Dublin: Degrees and pass lists, 112, 152, 1283—Information concerning the study of medicine, 425, 437. *See also* University of Dublin
College, University, Bristol, 767
College, University, Cork: Information concerning the study of medicine, 438
College, University, Dublin: Information concerning the study of medicine, 438
College, University, Dundee: Information concerning the study of medicine, 437
College, University, Galway: Information concerning the study of medicine, 438
College, University, London: Awards in the Medical Faculty, 111, 237, 405—Information concerning the study of medicine, 432. *See also* Hospital *and* University of London
College, University, of South Wales and Monmouthshire, 433
College, West London Post-graduate, information concerning, 442
COLLIE, Sir John: *Medico-Legal Examinations and the Workmen's Compensation Act, 1906, as amended by Subsequent Acts*, rev., 875—Elected a Member of Parliament (Glasgow, Partick), 1003, 1042
COLLINGWOOD, F. W.: Anaesthetization of patients for Caesarean section, 925—The Royal College of Surgeons of England, 1248
COLLINGWOOD, Rear-Admiral George Trevor, obituary notice of, 536
COLLINS, Sir William: The Chadwick chapter in the history of medicine, 220
COLLIP, J. B.: Control of glycosuria by the islets of Langerhans, 480
COLLIS, Edgar L.: Alcohol and industrial efficiency, 244—Industrial fatigue and vocational selection, 355

Colloid calcium in treatment of tuberculosis, 283
Colloid therapeutics (Walter Smith), 45
Colloidal gold for the Lange test (Temple Grey), 1120
Colloidal silica (W. H. Tytler), 980
Colobomata of the macula, bilateral (E. R. Chambers), 564
Colon, treatment of non-malignant affections of (Sir W. Arbuthnot Lane), 1014—(George Waugh), 1016—(Sir Henry M. W. Gray), 1020—(Herbert J. Paterson), 1023—(A. J. Walton), 1024—Correspondence on, 1145, 1190
Colonial medical services (parliamentary note), 101
Colonial Office, appointments under, 450
Complement fixation test in pulmonary tuberculosis, value of (A. Lisle Punch and A. Hope Gosse), 79 (O)
COMRIE, J. D.: Anatomy in Edinburgh, 273—*Selected Works of Thomas Sydenham M.D.*, 320—Chronic renal disease, 1071
Conception, prevention of (parliamentary note), 231
Conception, review of book on, 764
Congress, Australasian Medical, 326, 890, 992
Congress on Cancer, Interallied, 536, 1285
Congress of Comparative Pathology, International, 224, 326
Congress of the Dutch Society for Combating Alcoholism, 118
Congress of French Alienists and Neurologists, 144, 1278
Congress of French-Speaking Dermatologists, 897
Congress of French-Speaking Physicians, 891
Congress, French Surgical, 891
Congress, French Urological, 891
Congress of the History of Medicine, 23, 93, 145. *See also* Medicine, History of
Congress of the Société Internationale de Chirurgie, 1236
Congress on infant welfare, Brazil, 31
Congress, Italian, of Medical Radiology, 1278
Congress of the Italian Society of Internal Medicine, 897
Congress, Italian, of Surgery, 706
Congress, Italian, of Urology, 706
Congress of Medical Practitioners at Rio de Janeiro, 1151
Congress of Medical Women, International, 287
Congress of Medicine, French: 1923 meeting, 989
Congress of Military Medicine and Pharmacy, International, 640
Congress of Nursing and Social Medicine, Bruge (1922), 619—International Midwives' Association formed, 619
Congress of Obstetrics and Gynaecology, British: Meeting in Liverpool, 88—Discussion on eclampsia, 88—Pathological session and exhibition of cases, 92
Congress of Ophthalmology, International, 1276
Congress of Otology, International, 101
Congress, Oxford Ophthalmological, 147—Annual meeting, 147—The significance of retinal haemorrhages, 147, 495—Artificial illuminants, 147—The spontaneous cure of strabismus convergens, 147—Impressions of an International Congress of Ophthalmology held in Washington, 147—The etiology of cataract, 147—Eclipse amblyopia, 147—Trachoma of the lacrymal sac, 148—Dry sterilization of instruments, 148—Methods of operating for cataract, 148—Bilateral symmetrical congenital korectopia and melanosis of the eye, skin, and palate, 148—Light sense, 148—A neglected factor in the etiology of miners' nystagmus, 148—Changes in refraction, 158—A useful point in squint operations, 148—Foreign body in the lens, 148—Exhibitions in the Scientific Museum, 148—Garden party, 148
Congress of Pediatrics, Italian, 194
Congress of Comparative Pathology, International, 224, 326
Congress, International Physiological, next meeting July (1923), 940
Congress for the Reaffirmation of the World's Moral Ideal, International, 523
Congress of the Royal Sanitary Institute, 69, 272, 279, 1053
Congress, Russian Surgical, 537
Congress, South African Medical, 22
Congress of Stomatology, Italian, 326
Congress of Surgery, Italian, 706
Congress of Tropical Medicine. *See* Tropical
Congress of the Universities of all Countries, International, 581
Congress of Urology, Italian, 706
Conjoint Board in England: Forensic medicine, 238—Information concerning the study of medicine, 422, 442
Conjoint Board in Ireland: Degrees and pass lists, 152, 405, 1283—Information concerning the study of medicine, 426
Conjoint Board in Scotland: Degrees and pass lists, 192, 779—Information concerning the study of medicine, 424
Conjunctivitis artefacta (Herbert Caiger), 1264—Discussion, 1265
CONNAL, A. (and S. L. M. CONNAL): The development of *Loa loa* in chrysops, 730
CONNAL, S. L. M. (and A. CONNAL): The development of *Loa loa* in chrysops, 730
CONNELL, Colonel Arthur M., Belgian Ordre de Léopold conferred upon, 664
CONNELL, Dr: Psychotherapeutics and psychopathology, 555
CONNELL, W. Kerr: The dimple on the condyle of the femur, 515—Some observations on the shape of the palate in children, 800
"Consultant," what is a (Gaster *v.* Hirsch), 96, 110—Leading article, 96—Report of case, 110
Consumption. *See* Tuberculosis
Convalescent Hospital for Edinburgh, 325
CONWAY, Ruth E., awarded the Ashby memorial research scholarship, Manchester, 287
CONYBEARE, J. J.: Pernicious anaemia, 979
COOKE, W. E.: Two cases of acute lymphatic leukaemia, 802
Coolidge tube, lead-glass shield for (H. E. Gamlen), 562
COOPER, Harry: Diphtheria prophylactic and immunity, 1244
CORBETT, Louis (and W. Henwood HARVEY): Oral administration of antitoxin, 1265
Cork, water supply of, 823
Corns and warts, 666
Coroner's court, discourtesy at (New Brighton), 100
Coroner's strictures (parliamentary note), 183
Corrections, 153, 192, 312, 533, 647, 706, 1004, 1150, 1146

Correspondence:
Advertising, indirect, 1195
Alexander-Adams operation, 1096
Alopecia areata and strabismus, 616, 893, 1001
Amaas or alastrim, 65, 283
Animal experiments, 776, 827
Anthrax prevention, 1047
Antivivisection Society: an apology, 329
Aortic incompetence, recognition of, 66
Aortic murmurs, 150
Arsenic in ulcerative endocarditis, 402
Artificial dentures, infectivity of, 150
Auricular fibrillation, the process which results in, 189
Axham, F. W., case of, 30
Bacterial filtration, 616
Bacteriology and the vaccine treatment of chronic bronchitis, 825
Beer and lead poisoning, 237
Bile salts and calcium, 1048
Birth control, 327
Bone-grafting and the circular motor saw, 533
Bone-grafting in tuberculous spinal caries, 284, 326, 578
Botulism, 490
British Honduras, health of, 824
Browne, Sir Thomas, the skull of, 150
Caesarean section, 67, 109, 150
Calcium deficiency and cod-liver oil, 283
Cancer developing after cessation of irritant, 1279
Cancer problem, the, 1280
Cancer of the scrotum, 1047, 1146
Cardiology, 703, 777, 824
Cerebral haemorrhage, the prevention of, 401
Chaulmoogra oil in tuberculosis, 703
Cholera or dysentery, 1049
Clayden *v.* Wood-Hill, 489, 531. *See also* Expert witnesses
Cocaine, the growing abuse of, 402
Colon, non-malignant affections of (intestinal stasis), 1145, 1190
Dangerous Drugs Act (1920), 826
"Dawn of the health age," 1192
Dentists Act and *Register*, 285
Dentists, registration of, 894
Dentistry in India, 65
Dermatitis amongst cement workers, 826, 1001
Diphtheria prophylactic and immunity, 1244
Diploma in Public Health, 66—New regulations for, 533
"Doctors in council," 284, 328
Dystocia due to gigantic foetus, 1145
Eclampsia, treatment of, 776
Edinburgh milk supply, 615
Emetine injections, 661
Eosinophilia, persistent, with splenomegaly, 1144
Expert witnesses, surgical and medical, 614, 651, 1244
Fever, treatment of, 1000, 1097, 1241
Foetal welfare, 149
General paralysis treated by malaria, 1197
Gnat bites, periodicity of, 951, 1049
Goite, etiology of, 532
Goitre, simple, prevention of, 235, 329
Haemolytic and water fevers, 328
Hallucinations, Lilliputian, 999, 1146
Heart symptoms, the nature and significance of, 29, 66, 109, 190
Heliotherapy, 1281
Hospitals: Voluntary *v.* State, 234
Hospital policy, the report of the Council, 1196, 1244, 1282
Influenza, 28—Cause of, 234
Inheritance and mental defect, 661
Insanity in criminal law, position of, 1193
Insulin and diabetes, 948, 997, 1143, 1193, 1241
Insulin, some armchair reflections upon, 1144
Insurance for daily newspaper readers, 109
Interstitial gland and sex problems, 29, 150
Kut, effects of chronic starvation during the siege of, 237
Legibility of printed matter, 660
Leprosy, treatment of, 892
Light sense with reference to navigation, 1036
Lister and fractures, 108
Longevity, some causes of, 491
Luminal in migraine, 893
Married medical women, 329
Medical Directory, 1923, 285
Muscle necrosis, 533

Correspondence *(continued)*:
National Association of Opticians, 330, 489
Naval Medical Service, 237—Senior surgeon commanders and the Admiralty, 617
Neo-salvarsan ampoules, alleged faults in the manufacture of, 949
Obstetrics, the place of version in, 489
Open-air treatment of measles, an experiment, 617
Ophthalmic examinations in general medicine, 578, 615
Paraffin, liquid, internal use of, 1280
Penal discipline, 1191
Plague, bubonic, treated with neo-salvarsan, 190
Post-graduate courses, 827, 891, 951
Pregnancy, unsuspected, 578, 661, 704, 776, 825
Profession and the police, 28
Professional secrecy, 1280
Prostatectomy, indirect results of, 1048
Psychiatric clinics, 1192, 1281
Psycho-analysis, practical, 328, 578, 616, 704, 775, 824, 894, 998, 1047, 1143, 1191, 1243, 1281
Psychology, the teaching of, 1047, 1142
Psychotherapy, the teaching of, 191, 235, 282, 327, 402, 1142
Public health, the economics of, 490
Puerperal infection, prevention of, 1095
Quinine necrosis of muscle, 109
R.A.M.C., promotions in, 615
Radiologists, the protection of, 190
Red fatigue, 1146
Rickets, etiology of, 1000
Royal College of Physicians of London, 1001
Royal College of Surgeons of England: Members and the Council, 1194
Russian profession, plight of, 67
St. Andrews Clinical Institute, the object of investigation at, 948
Salpingitis, acute, treatment of, 998, 1096
Senior surgeon commanders. *See* Naval Medical Service
Serum by the mouth, 29, 67, 703, 999
Serum in the treatment of veldt sores, 236
Sex, determination of, 616
Sight-testing opticians, 534
Small-pox and chicken-pox, the differential diagnosis of, 775, 823
Small-pox diagnosis, 1045
Small-pox outbreak at Poplar workhouse, 1001, 1045, 1097, 1146, 1195—A correction, 1146
Small-pox and vaccination, 1242
Squint treatment of, 236
Starvation during the siege of Kut, effects of, 237
Sterilization of mental defectives, 29, 64, 109, 285, 328, 401, 490, 531, 579, 615
Superfetation, case of supposed, 661
Tendon transplantation, 190, 237
Thyroid, the dose of, 948
Thyroid gland and diseased tonsils, 662, 704
Tobacco smoke and cancer, 66, 237, 330
Tuberculosis, measures against, 65
Tuberculosis treated with colloid calcium, 283
Vaccine treatment of chronic bronchitis, 892
Venereal disease, radical prevention of, 661, 777, 826, 950, 1047, 1196
White man in the tropics, 1011
Wood-Hill Fund, 403
X rays in hypertrichosis, of the face, 891, 949, 1049, 1242

Council, General Medical: Regulations concerning the study of medicine, 412, 414—Opening of the winter session, 1091, 1135—Indirect advertising, 1135

COUNCIL, LONDON COUNTY:
Attendance on firemen and drain workers, 399
Health of London in 1921, 574
Lying-in homes regulations, 399
Sanitary regulations for theatres and music halls, 63
Small-pox in London, report to on, 819

COUPLAND, W. H.: Mental deficiency, 1171
COURTOIS-SUFFIT (and René GIROUX): The growing abuse of cocaine, 314
COUTTS, Dr.: Economics and tuberculosis, 868
COWAN, John (and W. T. RITCHIE): *Diseases of the Heart*, rev., 1226
Cow-pox, Kaffir, 283, 813
Cows, Jersey, the milk of, 898
COX, Harold: Crime and mental deficiency, 223
COX, Michael F.: presentation to, 1045
CRABBE, A. E. (and L. R. BROSTER): Surgery on the high seas, 717 (O)
CRAIG, Alexander Righter, obituary notice of, 618
CRAIG, C. M.: Caesarean section, 406
CRAIG, Sir Maurice: Bradshaw lecture on mental symptoms in physical disease, 841 (O)—Public health legislation needed in Ireland, 1142
CRAMER, W.: The physiological effects of light, 1028
Cramp, treatment of, 288
CRAN, James: The healthiness of British Honduras, 824
Cremation in England, 608
Cremation authorities, conference of, 944—Cremation and death certification, 944
Cregsote treatment of pneumonia (W. A. M. Swan), 83
CRIDLAND, B.: Methods of operating for cataract, 148
Crime and insanity, committee appointed to report on, 101
Crime and mental deficiency, 222

Crime and psycho-analysis, review of book on, 1081
Criminal court and the medical witness (Bernard Spilsbury), 927
Criminal law and insanity, position of, 1193
Criminal Law Amendment Bill, 102, 230
Criminals, treatment of (James Devon), 1239
CRITCHETT, Sir Anderson: Methods of operating for cataract, 148
CROCKET, James: Administrative requirements for tuberculosis, 368—Differentiation of active from quiescent tuberculosis of the lung, 560—Diagnosis of phthisis and other respiratory affections, 738
CROFTON, W. M.: A new micro-organism, morphologically and culturally like the influenza bacillus, 45—The cause of influenza, 234—The etiology and treatment of non-pyogenic nephritis (Bright's disease), 686 (O)—Prevention of puerperal infection, 1095—Insulin, 1176
CROLL, Dr.: Case of mediastino pericarditis, 1177
CRONIN, Grattan Robert, obituary notice of, 1150
CROOKSHANK, F. G.: Influenza, 29
CROWTHER, Charles: Variations in chemical composition of milk, 820
CRUICKSHANK, J. N.: Syphilis as a cause of ante-natal death, 593
CUMBERBATCH, E. P.: The scope of diathermy, 1224
CUMMER, C. L.: *A Manual of Clinical Laboratory Methods*, rev., 1270
CUMMINS, S. Lyle: Administrative requirements for tuberculosis, 368—Diagnosis of phthisis and other respiratory affections, 738—*Plays for Children*, rev., 984
CUNNINGTON, C. W.: Administrative requirements for tuberculosis, 368
CURRIE, J. R., appointed to the Chair of Preventive Medicine in Queen's University, Kingston, Ontario, 488—Presentation to, 772
CUSHING, Harvey, awarded the Charles Mickle Fellowship of Toronto University, 492
CUSHNY, A. R.: The action of alcohol on the human economy, 198
CUTHBERT, Henry Pierce, obituary notice of, 1051
Cyst of mesentery of jejunal origin complicated by retrojejunal position of the transverse colon (John I. Hunter), 800
Cystitis in paraplegia, treatment of, 288
Czech Tuberculosis Society, 974
Czecho-Slovakia: Special courses in diseases of the heart and gynaecology, 331—Patients for Pistany to pay half usual fee for passport visa, 493

D.

D.P.H. *See* Diploma
DALE, H. H. (and J. H. BURN): The standardization of pituitary extract, 1087—The use of ergot in obstetric and gynaecological practice, 1172—Insulin, 1241
DALY, A. S.: Anaesthetization of patients for Caesarean section, 925
DALYELL, Elsie: The physiological effects of light, 1028
DALZIEL, Sir Kennedy: Surgical treatment of non traumatic affections of the spleen, 1209—Chronic duodenal ileus, 1222
DAMAYE, Henri: *Le médecin devant l'assistance et l'ensemencement psychiatriques*, 1182
Dangerous Drugs Act. *See* Drugs
DANYSZ, J.: *The Evolution of Disease; with a Discussion of the Immune Reactions occurring in Infectious and Non-infectious Diseases: A Theory of Immunity, of Anaphylaxis, and of Anti-anaphylaxis*, rev., 129
DART, G. H., called to the Bar, 1053
DART, R. A., appointed professor of anatomy in the University of Witwatersrand, 1003
DARWIN, Ruth: Working hostels and other institutional methods of dealing with defectives, 224
DAUVILLIER, M.: The element celtium, 14
DAVIDSON, H. S.: Eclampsia, 89
DAVIDSON, James (and Robert A. FLEMING): Notes of a case of acute myelogenous leukaemia and of a case of aplastic anaemia, 1074
DAVIES, David Llewellyn, obituary notice of, 535
DAVIES, Henry, appointed J.P. for the county of Glamorgan, 153
DAVIES, Sidney: Tobacco smoke and cancer, 66
DAVIES, Witridge: Oxygen want, 270
DAVIS, A. H.: Transmission of heat by radiation and convection, 1003
DAVIS, Arthur Nathaniel, obituary notice of, 113
DAVIS, O. C. M.: Some observations on the mechanism of drug action: a study in pharmaco-dynamics, 11 (O)
DAVISON, H. E.: Psychiatric clinics, 1192
Davos, Queen Alexandra Sanatorium Fund at, 698
"Dawn of the Health Age," 1152
DAWSON, H. G. W.: Melanotic sarcoma of the choroid and ovary, 757
DAWSON OF PENN, Lord: Certain developments in medicine, 781 (O), 803
DAY, Harold Benjamin, Order of the Nile conferred upon, 331
DEACON, Stuart: Mental defectives in the courts, 223
Deaf children (parliamentary note) 26
DEAN, Henry Roy, appointed to the Chair of Pathology at Cambridge, 484
DEANE, Brigade Surgeon Lieut.-Col. Andrew, obituary notice of, 1283
DEANE, Edmund: *Spadacrene Anglica, or the English Spa Fountain*, rev., 272, 694
DEARDEN, W. F.: Port sanitary administration, 338—Industrial fatigue and vocational selection, 356
DEARE, Major-General B. H., appointed honorary surgeon to the King, 193
Death, foetal, causes and prevention of, review of book on, 15—Leading article on, 19
Death, foetal, placental changes in relation to (Gilbert J. Strachan), 594
Death, foetal, due to toxaemia (A. Louise McIlroy), 589. *See also* Foetal *and* Stillbirth
Death, neo-natal. *See* Neo-natal
Death statistics of infancy and childhood in relation to development and environment (John Brownlee), 342
Decapitation, intrauterine? 1054, 1152
DECONOMOS, L.: Byzantine cookery, 274
Deep therapy. *See* Radiotherapy
Defective children, schools for (parliamentary note), 58—Number of, 1285
Defective school children (parliamentary note), 1136
Defectives, sterilization of. *See* Sterilization
Deformities, hereditary (G. Travers Kevern), 1223
Degrees for practitioners, information concerning, 440
DE JASTRZEBSKI, T. T. S.: Changes in the birth rate and legitimate fertility in London boroughs, 1911 and 1921, 1222
DE KORTE, W. E.: Anaas or alastrim, 65
DELF, E. Marion: The prevention and cure of scurvy, 1276
Dementia praecox (Ford Robertson), 530—(W. Calwell), 1080
Dengue in Texas, 1151
Dental Board of the United Kingdom, 193
Dental hygiene, lectures on, 491
Dental officers, R.N., 1098
Dental students, questions and answers for, 1124
Dental surgery, information concerning the study of, 451
Dental work in schools, Board of Education circular *re*, 405
Dentists Act, 1921: Purchase of cocaine prohibited to unregistered dentists, 1099
Dentists Act and *Register*, 285, 1199
Dentistry in India, 65
Dentistry, the practice of, 101
Dentists Act, first prescribed examination under, 194—The Act now in force, 1113
Dentists, registration of, 894
Dentures, artificial, infectivity of (W. D'Oyly Grange), 43—Correspondence on, 150, 408
DENYER, Stanley E.: Treatment of psoriasis, 32
Derbyshire shelter life for children in 493, 537
DERCUM, Francis X.: *An Essay on the Physiology of Mind: an Interpretation Based on Biological, Morphological, Physical, and Chemical Considerations*, rev., 1179
Dermatitis artefacta (George H. Lancashire), 504
Dermatitis amongst cement workers, 826, 898, 1001
Dermatitis, occupational (W. J. O'Donovan), 499—Discussion, 503
Dermatology, potassium permanganate in (James Avit Scott), 977
Dermatosis, occupation, of the paraffin workers of the Scottish shale oil industry (Alexander Scott), 381
DESCOUR, L.: *Pasteur and his Work*, rev., 475
DEVON, James: The treatment of criminals, 1239
DEWAR, T. F.: Puerperal mortality in Scotland, 544
DE WESSELOW, O. L. V.: Chronic renal disease, 1074
D'HERELLE, F.: The nature of bacteriophage, 289
Diabetes in the tropics, 332
Diabetes insipidus, prostatectomy in a case of (J. Finlay Alexander and F. S. Kidd), 642 (O)
Diabetes and insulin (J. J. R. Macleod), 833 (O)—Leading article on, 882, 991——(Sir Charles Sherrington), 1139—Correspondence on, 948, 997, 1143, 1193, 1241—Parliamentary note on, 1237. *See also* Insulin
Diabetes, review of books on, 645
Diabetics, Dishes for, rev., 220
Diathermy in treatment of lupus erythematosus (W. J. Harrison), 758
Diathermy, the scope of, discussion on, 1224
Diazo reaction, with special reference to urine in measles (George Hunter), 751
DIBLE, Dr.: Single cancroid tumour of the small intestine, 327—X-ray epitheliomatous warts, 927
DIBLE, J. Henry: The bacteriology of influenza, 305
DICK, J. Lawson: *Rickets: A Study of Economic Conditions and their Effects on the Health of the Nation*, rev., 565
DICK, J. Slavely: Vaccine treatment of chronic bronchitis, 892
DICKINSON, W. H.: Administrative requirements for tuberculosis, 368
Dictionary, medical, review of, 311
Diet, maternal, evil effect of excess of protein in, 939
Diet in rickets. *See* Rickets
Dietaries in mental hospitals: Inquiry committee, 1199
Digestion, the physiology of (Sir William Bayliss), 939
Digestive system, review of books on, 646, 1123
DIGGLE, Mr.: Growth of tonsil involving the larynx, 45
Dimple on condyle of femur. *See* Femur
DINGLEY, L. A.: Chronic duodenal ileus, 1222
Diphtheria carrier (C. L. Spackman), 516
Diphtheria prevention in Aberdeen, 659
Diphtheria due to infected milk (A. E. Porter), 906 (O)
Diphtheria prophylatic and immunity, 1244
Diphtheria, Schick method of prophylaxis in (parliamentary note), 144
Diphtheria, treatment and prevention of: Ministry of Health circular, 434
Diploma in public health, the training for, and the new regulations (Edward W. Hope), 363—Discussion, 365—Correspondence on, 533—A correction, 533—Information concerning, 446. *See also* Public health
Disabled men in receipt of special diet (parliamentary note), 280
Disclaimers, 1152
Disease, human, and animal and vegetable pathology. *See* Pathology
Disseminated sclerosis. *See* Sclerosis
Distress, review of book on relief of, 876
Diuresis, unilateral (Andrew Fullerton), 1045
DIXON, Montague: Internal use of liquid paraffin, 1280
DIXON, W. Arnott: Sterilization of mental defectives, 285
DIXON, W. E.: The action of alcohol on the human economy, 199—The place of pharmacology in the medical curriculum, 410—The dose of thyroid, 948—The use of ergot in obstetric and gynaecological practice, 1174
DOCHERTY, J. F. (and E. BURGESS): The action of carbon tetrachloride on the liver, 907 (O)
"Doctors in Council," 284, 328
Dodd *v.* Venner (humane slaughtering), 318
Dogs Act Amendment Bill, 26
DOIG, William, obituary notice of, 1285
"Dole," deputation from the People's League of Health *re*, 287
DOVELAN, James, obituary notice of, 580
DONKIN, Sir H. Bryan: Review of books on the English prison system, 218—Crime and mental deficiency, 222—Sterilization of mental defectives: the medical importance of clearly defined biological terms, 615—Reviews *The Psychology of the Criminal*, 1081—Psychoanalysis, 1191
DORLAND, Major A. W. Newman: *The American Illustrated Medical Dictionary*, rev., 311
DOTT, N. (and John FRASER): Hydrocephalus, 979
DOUGAL, Dr.: Hydrometra from a case of congenital absence of the vagina, 927—Chorionepithelioma of the uterus, 927
DOUGLAS, Carstairs: The training for the D.P.H., 365
DOUGLAS, Dr.: Treatment of eclampsia, 677
DOUGLAS, J. C.: Optic nerve atrophy, 1162
Doulton and Co., Ltd.: Beer and lead poisoning, 237
DOWDEN, J. W.: Present-day treatment of fractures, 1269
DOWNS, E. V.: *English Literature: the Rudiments of its Art and Craft*, rev., 876
Drain workers in London, attendance on, 399
DREWITT, F. Dawtrey: *The Romance of the Apothecaries' Garden at Chelsea*, rev., 1269
DREYER, Georges: Handling and pasteurization of milk, 820
Drop-bottle collar, hooked anaesthetic, 604
Drug action, the mechanism of (O. C. M. Davis), 11 (O)
Drugs Act, Dangerous: Ministry of Health circular to Poor Law authorities, 405—Correspondence on, 826
Drugs, dangerous, the international control of (leading article), 570
Drugs, dangerous, the League of Nations and the traffic in, 938
Drugs, dangerous, ships' supply of, required by the Merchant Shipping Act, 1199
DRUMMOND, David (and others): An appeal for the Russian doctors, 26—Exophthalmic goitre, 912
DRUMMOND, J. C. (and S. S. ZILVA): Studies of the nutritive value of the edible oils and fats, 514
Drunkenness: The acting commanding officer decides, 954
DRYLAND, Leslie W.: Rupture of quadriceps treated by suture, 473
DUCKERING, G. Elmhirst: Note on the disinfection of wool and hair at Liverpool, 1128
DUCKWORTH, Sir Dyce: Some old-fashioned remedies, 1135
Ductless glands. *See* Glands
DUDFIELD, Reginald: The notification of infectious diseases, 869
DUER, Lieut.-Col. C.: Tobacco smoke and cancer, 237
DUFF, Donald: Treatment of ununited fractures by bridge grafts, 1215
DUFFEY, Major Arthur Cameron, obituary notice of, 1147
DUNBAR, Ianthe (and J. W. HILLS): *The Golden River*, rev., 984
DUNBAR, W., death of, 194
DUNCAN, Ebenezer, obituary notice of, 112

DUNCAN, J. W.: Lilliputian hallucinations, 1146
DUNCAN, W. H.: Notes on some common ailments, 1177
DUNDAS-GRANT, Sir James: Septic sinus thrombosis, 464—Aural polypi, 468—Asthma, 520
Dundee. *See* Scotland
DUNHILL, T. P.: Intrathoracic surgery, 993
DUNKERLY, J. S.: Comparative pathology of plants and animals, 722—Mutation of species, 727
DUNLOP, Ernest M.: The Wassermann reaction in the diagnosis and control of treatment of neuro-syphilis, 632
DUNN, C. F.: Anaesthetization of patients for Caesarean section, 925
DUNN, J. Shaw, appointed to the Chair of Pathology in the University of Manchester, 523, 577—Chronic renal disease, 1073—Acute nephritis, 1080—Primary chronic interstitial nephritis and arterio-sclerotic kidney, 1166
DUNNING, W. McIlwaugh: *The Submucous Resection of the Nasal Septum*, rev., 47
DUNSTAN, Sydney, appointed House-Governor and Secretary of the Royal Victoria Infirmary, Newcastle-on-Tyne, 153
Duodenal ileus, chronic (D. P. D. Wilkie), 1219—Discussion, 1222
Duodenum, *x*-ray diagnosis of abnormal conditions of (W. Barrington Prowse), 980
DU PRÉ, W. H.: Acute proctitis causing general peritonitis and death, 1027
Durham County Convalescent Home opened, 148
DUTCH, Myer Akiba, obituary notice of, 1051
Dysentuffs Advisory Licensing Committee, appointments to, 831
DYKES, S. Norman: Dermatitis amongst cement workers, 826
Dysentery or cholera, 1019
Dysentery outbreak in Wales, 1235
Dysmenorrhœa as an industrial problem, 179
DYSON, H. G., elected to the Epsom Scholarship at University College, London, 287
Dystocia due to gigantic female foetus (Major E. L. Moss), 643 (O)—Correspondence on, 1146

E.

EAGER, Richard: *Hints to Probationer Nurses in Mental Hospitals*, rev., 931
EAMES, Surgeon Rear-Admiral W.: A strange "wild-fowl," 1100
Ear disease, acute intracranial complication of (Peter Macdonald and J. Acomb), 458 (O)
Ear, insects in, 32—Foreign bodies in, 114, 154
Ear, review of books on, 806, 1226. *See also* Auditory meatus *and* Foreign bodies
Earlswood Institution, the Royal, report, 530
East, the Near, conditions in (parliamentary note), 1092
EAST, C. F. T.: Pneumococcal influenza, 1117 (O)
EAST, Norwood: Crime and mental deficiency, 222
EASTWOOD, Arthur: Bacteriology of pneumonia and influenza, 388
EASTWOOD, Eric Hastings, obituary notice of, 1051
EASTWOOD, E. H.: The relation between *Oxyuris vermicularis*, appendicitis, and local eosinophilia of the appendix wall, 1170
"Ecco" in leprosy, 892
Eclampsia, puerperal, treatment of (leading article), 95
Eclampsia, report of London Committee on, 88
Eclampsia and other toxaemias (Gibbon Fitzgibbon), 91
Eclampsia, treatment of (Thomas Watts Eden), 675—Discussion, 677—Correspondence, 776
Eclampsia and uraemia in the course of pregnancy (R. G. Abrahams), 1266
Eclampsia treated by veratrone (G. T. Stevens), 91—(A. W. Bourne), 91
Eclampsia, venesection in (Edgar W. Sharp), 690
Eclipse amblyopia. *See* Amblyopia
Economics and tuberculosis (R. J. Ewart), 868—Discussion, 868—Note on, 884
Economy and information (price of Stationery Office publications), 176
Ectopia vesicae after transplantation of the ureters into the bowel (A. W. Nuthall and Bertram Lloyd), 1266
EDDOWES, Alfred: Hydroa aestivale in identical twins, 601
EDEN, Thomas Watts: Eclampsia, 88—Stillbirths and neo-natal deaths, 595—Anaesthetics and analgesics in labour, 674—Treatment of eclampsia, 675—Scope and technique of myomectomy, 804—The use of ergot in obstetric and gynaecological practice, 1173
EDGE, Frederick: Eclampsia, 90
Edinburgh. *See* Scotland
EDINGTON, G. H.: Polydactylism of the foot, 871—The temporary plating of fractures of the long bones, 1214
Educational Number, new features, 319, 396
EDWARDS, James, obituary notice of, 193
Efficiency, industrial. *See* Industrial
Egypt: Special *Sphinx* tourist number, 493—Ophthalmic work in, 886, 1259
EHLERS, Professor, honorary degree conferred upon by the University of Paris, 1199
EINSTEIN, Professor, awarded the Nobel prize for physics, 1921, 995
ELCUM, Lieut.-Col. Donald, obituary notice of, 492—Estate of, 601
ELDER, William: Psycho-analysis, 824, 1192
Election. *See* General Election
Electrical treatment in tuberculous disease (P. C. Collingwood Fenwick), 644
Electricity, static, and high frequency currents (F. Howard Humphris), 555—(W. F. Somerville), 557—Discussion, 558
Electrocardiographic interpretations, 1184
Elements, classification of, 14
ELGOOD, Mrs. Cornelius B. S., Order of the Nile conferred upon, 331
EL KATTAN, M. A.: Ophthalmic progress in Egypt, 1259
ELLINGWORTH, Dr.: The wrong turning in public health, 360
ELLIOT, Captain Thomas Stokoe, obituary notice of, 68
ELLIOT, Walter: Etiology of rickets, 858
ELLIOT, Walter E., elected Member of Parliament for Lanark, 1042
ELLIOTT, T. R., elected a Fellow of the Royal Society, 952
ELLIS, A. W. M.: The bacteriophage, 298
ELLIS, David: The bacteriophage, 299—Mutation of species, 726—The intimate structure of the bacterial cell, 731
EMANUEL, Dr.: Heart in which the auricle had undergone extreme dilatation, 1266
EMERSON, William R. P.: *Nutrition and Growth in Children*, rev., 86
Emetine injections, 661
Empire Municipal Directory and Year Book, 1922, rev., 130
EMRYS-ROBERTS, Professor, exhibits pathological slides and specimens, 1268
Encephalitis, influenza, and cerebro-spinal meningitis (Alexander James), 979
Encephalitis lethargica (leading article), 649
Encephalitis lethargica: Ministry of Health report, 654
Encephalitis lethargica, review of books on, 517
Encephalitis lethargica, sequelae of (Grace Anderson), 1175—(Byron Bramwell), 1175—Discussion, 1176
Encyclopaedia Medica, rev., 807
Endocarditis, ulcerative, arsenic in, 402
Endocrine defect possibly causing skin disease, 70
Endocrine and psychic factors in functional disorders (H. Crichton Miller), 551
Endocrinology and Metabolism, rev., 873
Endometriomyoma or adenomyoma of the ovary, 1039
England, health and health administration in, 323, 387, 477—Cremation in, 608. *See also* Health Ministry's report
ENGLISH, Major S.: Relation of the ureters to the vagina, 792
"English Spaw" and "The colde spring of Kinghorne Craig," 272, 694
Enteric-Salmonella group of bacteria (W. D. O'Kelly), 1122
Eosinophilia, persistent, with splenomegaly (Stuart McDonald and A. F. Bernard Shaw), 966—Correspondence on, 1144
Epidemics of Eastern Europe. *See* Europe
Epilepsy and gunshot wounds of the head (W. Aldren Turner), 640
Epilepsy, psycho-analysis in, 194
Epitheliomatous ulceration in industry (T. M. Legge), 1110
EPPS, William: *Anderson Stuart, M.D., Physiologist, Teacher, Builder, Organizer, Citizen*, rev., 47
Epsom College. *See* College
Epsomian Club, annual dinner, 1247
Ergot, use of, in obstetric and gynaecological practice (H. H. Dale), 1172—Discussion, 1173
Erlangen methods in *x*-ray treatment of cancer. *See* Cancer *and X* ray
Errata. *See* Corrections
Erysipelas treated by vaccines (J. Ronaldson Russell), 15
Eserine poisoning produced by intravenous injection, recovery (B. L. Slater), 1120
Estimates Committee (parliamentary note), 280
Ether anaesthesia, the introduction of, 1086
Ether, first administrations of in England, 701
Europe, Eastern, epidemics of (leading article), 523—Note on, 1199
European officials in West Africa, health of, 653
European student relief to co-operate with the Universities Library for Central Europe, 492
EVANS, Abel: Myotonia congenita, 1268—Myatonia congenita, 1268
EVANS, Charles Hobhan, obituary notice of, 952
EVANS, E. Parry, appointed J.P. for the county of Glamorgan, 153
EVANS, H. Muir: Venomous fishes, 54
Everest, Mount. *See* Mount
EWART, R. J.: Economics and tuberculosis, 868
Exhibition, Annual. *See* Association, British Medical, Annual Exhibition
Exophthalmic goitre. *See* Goitre
Expectoration, fetid, 538
Experiments on animals. *See* Animals
Expert witnesses. *See* Witnesses
Ex-service men: Under care (parliamentary note), 231—Removal of from asylums (parliamentary note), 280
Eye operations, the "open" treatment in (W. B. Inglis Pollock), 1262
Eyes, artificial, for ophthalmioscopic work, 114, 154
EYLES, Margaret Leonora: *The Woman in the Little House*, rev., 123
EYRE, Mary B.: *Psychology and Mental Hygiene for Nurses*, rev., 694

F.

Facial paralysis. *See* Paralysis
Factories, women in, review of book on, 1225
Factories and workshops: Annual report of Chief Inspector (1921), 312
Factory surgeons', certifying, remuneration, 537—(Parliamentary note on), 1136
Factory Surgeons' Association. *See* Association
FAGGE, C. H., Clayden *v.* Wood-Hill, 531
FAIRBAIRN, J. S.: Eclampsia, 90
FAIRBANK, H. A. T.: Tendon transplantation, 190
FAIRLIE, H. P.: Broncho-pulmonary complications following operations, 920
FALVEY, Lieut.-Col. John Joseph, obituary notice of, 331
Far Eastern Conference of Red Cross Societies. *See* Red Cross
FARNELL, L. R.: *Greek Hero Cults and Ideas of Immortality*, 882
FARR, E. A.: re-elected Mayor of Andover, 1003
Fatigue, industrial, and vocational selection (David McKail), 351—Discussion, 355. *See also* Industrial
Fatigue, red, 1146
Fats and oils, vegetable, the vitamin content of (leading article), 514
FEATHERSTONE, H.: Broncho-pulmonary complications following operations, 919
FEATHERSTONE, H. W.: Anaesthetization of patients for Caesarean section, 925
Federated Malay States. *See* Malay
Federation of Medical and Allied Societies: conference on hospital finance, 1139
Feeding of destitute families (parliamentary note), 26
Feeding of infants, review of work on, 1083
Fees, consultants' (Gaster *v.* Hirsch), 96, 110
Fellowship of Medicine and Post-Graduate Medical Association: Special post-graduate courses, 31, 114, 153, 405, 523—Annual meeting, 132—Information concerning, 441—Dinner to the Strasbourg medical deputation, 994. *See also* Post-graduate
Femur, the dimple on the condyle of the (W. Kerr Connell), 515
FENTON, V. N.: Case of congenital pyloric stenosis, 644
FENWICK, P. C. Collingwood: Electrical treatment in tuberculous disease, 644
FERGUS, Andrew Freeland: The light sense, with special reference to navigation, 783 (O)
FERGUSON, James Haig: The Alexander-Adams operation, 1096
FERGUSON, Mungo: Some medical manuscripts and early printed books, 97
FERGUSON, V. L.: Asthma and anaphylaxis, 288
FERGUSON, W. J. Wellwood: The cerebro-spinal fluid in disease of the fundus, 1259
Fever, enteric, water-borne, 56
Fever, glandular (S. F. Leavine), 43
Fever, Mediterranean (or undulant) (Surgeon Rear-Admiral Sir Percy Bassett-Smith), 902 (O)
Fever, rat-bite, 194
Fever, scarlet, epidemiology of (F. M. Turner), 1079—Discussion, 1079
Fever, scarlet, is the desquamation which follows infec ? 832, 954
Fever, scarlet, number of cases reported (parliamentary note), 280
Fever, scarlet, and rainfall (John Brownlee), 1079
Fever, treatment of, 1000, 1097, 1241
Fever, typhus, outbreak at Raasay, 189—In County Mayo, 1240
Fevers, haemolytic, and water, 328
Fibroids complicating septic abortion (F. Herbert Wallace and Geoffrey Wilson), 1028
Fibroids of uterus, myomectomy for (Arthur E. Giles), 803
Fibro-lipo-myxoma, lobulated (D. J. Harries), 1268
Field laboratories, Sheffield, 937, 941
FIGDOR, Philip (and D. Denham Pinnock): Quinine necrosis of muscle, 14
Filter-passing viruses, the nature of, 885. *See also* Virus
Finance Bill, 58—Amendments, 144
FINDLAY, Leonard: Etiology of rickets, 846—Treatment of rectal prolapse in children, 871—After-effect of lethargic encephalitis, 1176
FINKLESTONE, Hyman. *See* Sayliss
FINNEY, John M. T., appointed temporary surgeon-in-chief of Johns Hopkins Hospital, 779
FINNY, John Magee, obituary notice of, 1247
Firemen in London, attendance on, 399
First aid in coal mines, 1100, 1152
First aid, review of book on, 1227
FIRTH, Sir R. H.: *Birds and Blossoms*, rev., 931
FIRTH, Sydney, sentenced to penal servitude, 69
Fish, tinned, bacteriology of, 700
FISHER, Right Hon. H. A. L.: Address at the Conference on Mental Deficiency, 223
Fishes, venomous (H. Muir Evans), 54
Fistula, broncho-biliary (A. G. Yates), 1117 (O)

FITZGERALD, Marion (and E. D. SIMON): *The Smokeless City*, rev., 310
FITZGIBBON, Gibbon: Eclampsia and other toxaemias. 91—Tuberculosis of the female pelvic organs, 1029—Adenomyositis of the uterus, 1224
FITZMAURICE-KELLY, Mr.: Gummatous arthritis of the elbow, 44—Osteochondritis of the upper end of the femur, 44
Flavine antiseptics, the action of on localized pyogenic infections (C. Bennett, J. W. S. Blacklock and G. H. Browning), 306
FLECKER, H.: Radiotherapy, 494
FLEMING, Alex: Blood transfusion in civil practice 1078
FLEMING, Dr.: The bacteriophage, 298—The bacteriology of influenza, 306—Bacteriolytic properties of tissues, 1187
FLEMING, G. B.: Basal metabolism, 751
Flemish scientific congresses, 31. *See also* Congress
FLEMMING, A. L.: Broncho-pulmonary complications following operations, 919—Diffe ent effects produced by exposing tissues to various concentrations of anaesthetic vapour, 921
FLEMMING, Chas. E. S.: "Doctors in Council," 328
FLEMMING, Robert A. (and James DAVID ON): Notes of a case of myelogenous leukaemia and of a case of aplastic anaemia, 1074
FLETCHER, A. A.: Control of glycosuria by the islets of Langerhans, 480
FLETCHER, H. S.: Diverticulum of the bladder, 44—Volvulus of the small intestine in a newly born child, 44—Treatment of tuberculous cervical glands, 863—Diagnosis and treatment of cholelithiasis, 1014
FLETCHER, John: Unsuspected pregnancy, 516, 704
FLETCHER, N. Corbet: *Common Errors in First Aid*, rev., 1227
FLETCHER, Sir Walter: Medical research and national life, 317—Medical research and daily life, 939, 941
FLETCHER, Fleet Surgeon William Bainbridge, obituary notice of, 1283
FLINT, E. R.: The treatment of non-malignant affections of the colon, 1190
FLINT, H. L.: *The Heart: Old and New Views*, rev., 219
Foetal death, placental changes in relation to (Gilbert I. Strachan), 594
Foetal death due to toxaemia (A. Louise McIlroy), 589
Foetal death. *See also* Death
Foetal heart (Donald E. Morley), 601
Foetal maceration, pathology of (Gilbert I. Strachan), 80 (O). *See also* Stillbirth
Foetal syphilis (G. I. Strachan), 1267
Foetal welfare, 149
Foetus, gigantic female, causing dystocia (Major E. L. Moss), 643 (O)—Correspondence on, 1146
Fontanelle, abnormal anterior (Charles J. Hill Aitken), 475
Food and Drugs Acts, sale of, report by the Scottish Board of Health, 619
Food Investigation Board: Report to on the bacteriology of tinned meat and fish, 700—Report on the transmission of heat by radiation and convection, 1003—Report on food preservation, 1274
Food poisoning—at Loch Maree: Fatal cases, 394, 481, 527—By turtle, 552—By milk, caused by *B. aertrycke* (W. A. Wiseman), 728—Suspected cases at Rosewell; report of pathologist, 947
Food preservation, scientific researches in, 1274
Food, tinned, 1203
Food values, review of books on, 87
Foot, polydactylism of (G. H. Edington and W. B. Primrose), 871
Foreign bodies in the auditory meatus, 32, 114, 154
Foreign bodies in bronchus removed by direct peroral bronchoscopy (Herbert Tilley), 973 (O)—Correspondence on, 1100
Foreign body in urethra (J. H. Turton), 44
Foreign countries, conditions of practice in, 450
Forensic medicine and industrial diseases (John Glaister), 165—Leading article, 175
Forensic medicine, review of books on, 693
FORRESTER-BROWN, M. F. (and Sir Harold J. STILES): *Treatment of Injuries of the Peripheral Spinal Nerves*, rev., 474
FORSYTH, David: *The Technique of Psychoanalysis*, rev., 1124
FORSYTH, John Maitland, obituary notice of, 286
FOSTER, Michael: The pomander stick, 222
FOTHERGILL, E. Rowland: Alcohol as a beverage and its relation to certain social problems, 260—Hospital policy, 1282
FOULERTON, Alexander G. R.: The Antivivisection Society, an apology, 329
Foulerton professorship and studentships, 142—1133
FOWLER, Henry: Report on the treatment of leprosy, 607
FOX, L. Webster: Optic nerve atrophy, 1161—Clinical significance and treatment of heterophoria, 1251
FOX, R. Fortescue: Prevention of cerebral haemorrhage, 401
Fracture, hysterical, simulation of (H. C. Woodhouse and F. Carlton Jones), 1171
Fractures, and Lister, 108
Fractures of the long bones, temporary plating of (G. H. Edington), 1214
Fractures, operative treatment of (Archibald Young), 1209
Fractures, present-day treatment of (J. W. Dowden), 1269
Fractures, review of books on, 1032
Fractures, ununited, treated by bridge grafts (Donald Duff), 1215
Fragilitas ossium associated with blue sclerotics (Hall Stewart), 498 (O)

FRANCE:
Bordeaux Faculty of Medicine establishes a chair of therapeutical hydrology and climatology, 69
Cancer investigation, committee appointed, 320
Census, 881
Medical practitioners in, number of, 581
Minister of Health's visit, 287, 318
Post-graduate courses, 69, 1199
Scholarships offered to Canadian universities, 953
Spa physician in, 655
See also Paris
FRANCE, Charles F.: Psychical training, 1053
FRANCIS, Alexander: Asthma, 705
FRANCIS, John A.: Warts on the scalp, 493
FRASER, John: Treatment of tuberculosis of cervical glands, 858—(and N. DOTT): Hydrocephalus, 979
FRASER, J. S. (and Stephen YOUNG): Is it worth while to remove aural polypi? 467
FRASER, Lachlan George, obituary notice of, 896
FRASER, Mr.: Case of painful foot with a calcareous body, 1031—Case of epithelioma of the tongue, 1031—Case of suppurative dacrocystitis cured by operation from the nose, 1051
FREMANTLE, Lieut.-Col. F. E.: The economics of public health, 338—Puerperal mortality, 346—Maternity and child welfare, 351—The training for the P.H.S., 361—Elected Member of Parliament for St. Albans, 1042—Elected chairman of the group of medical members of Parliament, 1187—Appointed a member of the Rent Act Committee, 1199
French Riviera, 815
FRETTON, J. A.: Left-handedness and stammering, 1269
FRIEDRICH, W. (and B. KROENIG): *The Principles of Physics and Biology of Radiation Therapy*, rev., 518
FRIEL, A. R.: Zinc ionization as a disinfectant in local sepsis as illustrated by its use in chronic otorrhoea in children, 42 (O)
FRINK, H. W.: *Morbid Fears and Compulsions: their Psychology and Psycho-analytic Treatment*, rev., 875
FROST, Major A. T.: Venereal disease as a war casualty, 995
FULLER, A. L., exhibits various specimens, 1177
FULLERTON, Andrew: Unilateral diuresis, 1095—Aches and pains of renal origin, 1190—Notes on a visit to hospitals in Canada and the United States, 1240
Functional disorders, the psychic and endocrine factors in (H. Crichton Miller), 551
Fund, Barking Hospital's Welfare, 493
Fund, King Edward's Hospital: Distribution of funds, 897, 1238—Financial statement, 1238
Fund, Officers' Families, annual report, 1247
Fund, Pasteur Commemoration, 482
Fund, Royal Medical Benevolent, 138, 389, 478, 1126, 1238
Fund, Royal Medical Benevolent, Ireland, annual meeting, 28
Fund, 1897, Royal Medical Benevolent, 1151
Fund for Russian doctors. *See* Russian
Fund, War Emergency, 1147
Fund, Wood-Hill, 403. *See also* Wood-Hill
Funds, Auxiliary R.A.M.C., 491, 1002
Fundus, disease of, the cerebro-spinal fluid in (W. J. Wellwood Ferguson), 1259
FYFE, David, called to the Bar, 69

G.

GAIGER, S. H.: Comparative pathology of plants and animals, 721—Animal and vegetable pathology in relation to human disease, 961
GAINER, Joseph William, obituary notice of, 193
GAIRDNER, Dr., address by, 351
Galactorrhoea, treatment of, 493
GALBRAITH, Douglas: Etiology of rickets, 855
GALBRAITH, J. D.: Treatment of rectal prolapse in children, 871
Galen's knowledge of anatomy (E. T. Withington), 221
Gall stones, recurrent symptoms after removal of (R. P. Rowlands), 541 (O)
GALLOWAY, Sir James: Appreciation of Sir Charles Ryall, 535—Death of, 780—Obituary notice of, 829—Remarks on Hodgkin's disease, 1201 (O)
GAMGEE, Mr.: Swelling of the thyroid gland for sixteen years, 1266
GAMLEN, H. E.: Lead-glass shield for Coolidge tube and the Bucky-Potter diaphragm, 562—Treatment of gynaecological conditions by radiation, 682
GANDHY, P.: Alcohol in its relation to disease, 127
GANDY, E. W.: Anaesthetization of patients for Caesarean section, 925
Garage, warming the, 1004, 1053, 1100
Garden factory, medical arrangements at a, 660
GARDINER, Frederick: Occupational dermatitis, 503
GARDNER, J., presentation to, 69
GARRATT, G. C.: Hospital policy: the report of the Council, 1196
GARRETT, J. H.: Sterilization of mental defectives, 532
GARRETT, Percy C.: Spanish Popes, 154
GARROD, Sir Archibald: Degenerative diseases of the liver, 1066
GARRY, T. Gerald: The radical prevention of venereal disease, 1196
Gas inflation in *x*-ray diagnosis (F. Hernaman-Johnson), 511—Discussion, 514
Gas in peritoneal inflation, vacuum flask for warming, 620
Gas, poison, discontinuance of the manufacture of (parliamentary note), 185—Cost of manufacture of for the War Office (parliamentary note) 280
Gaster *v.* Hirsch, 96, 110
Gastric conditions, abnormal, *x* ray diagnosis of (W. Barrington Prowse), 980
Gastric test meals. *See* Meals, test
Gastro-jejunal and jejunal ulceration, surgical treatment of (Garnett Wright), 640 (O)
Gastro-jejunostomy for perforated gastric and duodenal ulcers, 537
GAUVAIN, Sir Henry: The physiological effects of light, 1028
GEMMELL, Dr.: Double uterus, vagina, and vulva, 92—Omental tumour, probably sarcoma, 92
GEDDIE, Dr.: Child of 15½ months with osteogenesis imperfecta, 1177
GEMMELL, A. C.: Professional secrecy, 1280
GEMMELL, Samson, estate and bequests of, 1044
General election, 887, 945
General Medical Council. *See* Council
General paralysis of the insane and locomotor ataxy (Donald Hall), 981
General practitioner, the growth of the, 21
General practitioner and refractions, 582. *See also* Opticians, sight-testing
General practitioners and medical officers of health (W. J. Howarth), 272
General practitioner's share in medical research, 813
Genito-urinary affections, pain in (W. K. Irwin), 457 (O)
Germany, abortive treatment of syphilis and salvarsan research in, 768—Birth rate, 938, 881—German periodicals, books, and treatment, cost of, 317—Poliomyelitis cases, 881—Tropical malaria in Berlin, 1151—The professors organize for an appeal for recognition of the strain on the health of the people, 1199
Gestation, interstitial, case of (John W. Heekes), 309
GHOSH, Pratul Kumar, obituary notice of, 778
GHOSH, Rakhaldas: *A Treatise on Materia Medica and Therapeutics, including Pharmacy Dispensary, Pharmacology, and Administration of Drugs*, rev., 693
GIBBONS, R. A.: Sterilization of mental defectives, 930
GIBBS, John Herbert, appointed honorary surgeon-dentist to the King in Scotland, 405
GIBBS, W. J., appointed to Committee of Inquiry on Dietaries in Mental Hospitals, 1199
GILES, Arthur E.: Myomectomy for uterine fibroids, 803
GILES, E. Broome: Sterilization of mental defectives, 64
GILLIES, Sinclair: Diagnosis of phthisis and other respiratory affections, 741
GILMOUR, J. B.: History of British pharmacy, 221
GIRDLESTONE, G. R.: Treatment of infantile paralysis in children, 596 (O)
Girls, physical education of, 316, 321—Report of Joint Committee, 321
GIROUX, René (and COURTOIS-SUFFIT): The growing abuse of cocaine, 314
GIVEN, J. C. M.: Recent work in palaeontology, 926
GLAISTER, John: Industrial diseases and forensic medicine, 165—Factors which make for industrial efficiency, 377—Apparatus for the estimation of the working capacity of an upper extremity, 380
Gland, interstitial, and sex problems, 29, 150
Gland, parathyroid, surgery of (A. J. Walton), 835 (O
Gland, thyroid, and diseased tonsils, 662, 704
Gland, thyroid, swelling of for sixteen years (Mr. Gamgee), 1266
Glanders, eradication of (Major-General Sir John Moore), 867
Glands, accessory sex, comparative anatomy of (Ernestine Walker), 84. *See also* Sex
Glands, cervical, treatment of tuberculosis of (John Fraser), 858—Discussion, 862
Glands, ductless, and skin affections (R. W. MacKenna), 980
Glandular fever. *See* Fever
Glasgow, Annual Meeting of the British Medical Association at, 59. *See also* Association *and* Scotland
Glasgow, The Book of, 144
Glasgow Medical Journal: Special number, 144
Glasgow School of Medicine, 59
Glass tubing 3½ inches long removed by suprapubic cystotomy (J. H. Turton), 44
Glass ware, scientific, standardization of, 114
Glycosuria, control of by the islets of Langerhans, 140, 480
GLYNN, Ernest: Myocardial disease, 1223

GLYNN, T. R., appointed Emeritus Professor of Medicine in the University of Liverpool, 27—Treatment of disseminated sclerosis, 926
Gnat bites, periodicity of, 951, 1049
Goitre, etiology of, 532
Goitre, exophthalmic (George R. Murray), 908—Discussion, 910
Goitre, simple, treatment of, 235, 329
Gold, colloidal, for the Lange test (Temple Grey), 1120
GOLDBLATT, Dr.: The physiological effects of light, 1028
"Gold-headed Cane" (with an introduction by Sir William Osler), 651
GOLDIE, W.: Bacteriology and the vaccine treatment of chronic bronchitis, 825
Golf competition for ladies at the Annual Meeting of the Association at Glasgow, 239
Golf: Llandrindod Wells Medical Challenge Cup, 287, 619
Golf: Manchester Medical Golfers' Association, 114
Golf, review of book on, 475
Golfing Societies, Medical, 154, 898, 1236
GOMES, A. Annesley: The white man in the tropics, 1001
Good opening, 769
GOODALL, J. R.: Subcutaneous vaccination, 1133
GOODWIN, Bernard: Case of pain in the right shoulder radiating into the fingers, 1266
GOODWIN, Engineer Vice-Admiral Sir George: Appointed a member of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research, 493
GORDON, A. Knyvett: A blood stain for general practice 43
GORDON, J. F.: Herpes with facial paralysis, 538
GORDON, Dr: Congenital dislocation of the hip, 1031—Infantilism, 1031
GORDON, Mary: *Penal Discipline*, rev., 929
GORDON, Mervyn H.: The bacteriology of influenza, 299
GORDON, R. G.: Psycho-therapeutics and psychopathology, 555
GORDON, W.: Prevention of anthrax, 1047
GOSSE, A. Hope (and A. Lisle PUNCH): Further evidence of the value of the complement fixation test in pulmonary tuberculosis, 79 (O)—Diagnosis of phthisis and other respiratory affections, 741
GOUGH, Alfred: The bladder in gynaecological cases, 1122
GOVER, W.: Relief of pain in acromegaly, 154
Government laboratory, 521
Government and the Opium Convention, 1184
GOW, A. E.: Blood transfusion in civil practice, 1078
GOYDER, F. W.: A method of reducing congenital dislocation of the hip, 497 (O)
Gratton and Co.: a disclaimer, 1152
GRAHAM, J. Gibson: X-ray treatment of deep-seated cancers, 511—X ray treatment of tinea tonsurans, 563
GRAHAM, Dr.: Anatomy of the bone marrow, 795
GRANGE, W. D'Oyly: Infectivity of artificial dentures, 43
GRANT, Graham: Unsuspected pregnancy, 661, 826
GRANT, Lachlan, address by, 331
GRATIA, André: Concerning the theories of the so-called "bacteriophage," 286
Graves's disease. *See* Goitre
GRAY, A. A.: Septic sinus thrombosis, 465
GRAY, A. M. H.: Etiology of seborrhoea, 756
GRAY, Sir Henry M. W.: Bone grafting as an aid in treatment of tuberculous spinal caries, 73 (O)—Treatment of non-malignant affections of the colon, 1020—Case of tumour of the right thigh for diagnosis, 1177
GRAY, St George, obituary notice of, 1193
GRAY, St. George B. Delisle: The Portuguese Riviera, 620
Greek medicine (Dr. Cavvadias), 220
GREEN, Mrs. Patrick R.: Mental defectives in the courts, 223
GREEN, Stephen: Treatment of fever, 1000
GREENE, A: A useful point in squint operations, 148—Case of foreign body in the lens, 148
GREENE, R. Latimer, presentation to, 287
GREENWOOD, Major: Economics and tuberculosis, 868
GREENWOOD, W. Osborne: The place of version in obstetrics, 489—Anaesthetics and analgesics in labour, 6-7
GREY, Egerton Charles: Alleged faults in manufacture of neo-salvarsan ampoules, 949—Colloidal gold for the Lange test, 1120
GREY, Temple: Bacterial filtration, 616
GRIFFITH, A. Stanley: Bovine tuberculosis and its relation to man, 820
GRIFFITH, Frederick: Bacteriology of pneumonia, 588
GRIFFITH, W. S. A.: Eclampsia, 91
GRIFFITHS, Ezer: Transmission of heat by radiation and convection, 1005
GROSS, Louis: *The Blood Supply to the Heart in its Anatomical and Clinical Aspects*, rev., 601
GROVES, Ernest W. Hey: *A Synopsis of Surgery*, rev., 875
GUEBHARD, Roland: A pharmacist's oath, 1100
Guild of Health, annual conference, 619
GUILLAIN, Georges: *Etude Neurologique*, rev., 1269
GUILLEMINOT, H.: *Electricite Médicale: Electrologie et Radiologie*, rev., 1278
GULLAND, Lovell: Addison's disease, 980—Polycythaemia, 980
Gunshot wounds of the head and epilepsy (W. Aldren Turner), 640
GUNTER, F. E.: Bile salts and calcium, 1048
GUSHUE-TAYLOR, G.: Twin tonsil-bed compression, 18
GUTHRIE, Douglas: Septic sinus thrombosis, 465—Plastic operations for nasal deformity, 473
GYE, W. E.: Silicosis and miners' phthisis, 1187
Gynaecological cases, the bladder in (Alfred Gough), 1122
Gynaecological conditions treated by *x* rays and radium (Robert KNOX), 678—Discussion, 681—Leading article, 695
Gynaecological practice, some aspects of pain in (R. J. Johnstone), 947
Gynaecology, review of books on, 928. *See also* Obstetrics

H.

HADFIELD, C. F.: Anaesthetization of patients for caesarean section, 925
HADFIELD, J. A.: The making of a neurotic, 546
Haemochromatosis, case of (S. Linley Heald), 542 (O)
Haemorrhage, cerebral, prevention of, 401. *See also* Cerebral
Haemorrhage from placenta praevia, heart and lungs from a case of (K. M. Tillyard), 1266
Haemorrhages, retinal, discussion, 147—(C. O. Hawthorne), 495 (O)
HAIG, H. A., exhibits pathological slides and specimens, 1268
Hair, commercial disinfection of, 812, 1128
Hair, loss of in seborrhoea, 1054
HAIRE, Norman: Sterilization of mental defectives, 109, 133, 328
HALDANE, J. S.: *Respiration*, rev., 981
HALL, Arthur J.: Relapsing pyrexias of lymphadenoma, 1175
HALL, Donald: Case of general paralysis of the insane and locomotor ataxy, 981
HALL, G. Stanley: *Senescence: the Last Half of Life*, rev., 875
HALL, J. C.: Lilliputian hallucinations, 1146
HALLAM, A. R.: X-ray treatment of deep-seated cancers, 511
Hallucinations, Lilliputian, 939, 1146
HALSTED, William Stewart, obituary notice of, 665—Estate and bequests of, 828
HAMBURGER, H. J., to deliver the first Charles E. Dohme memorial lecture, 975
HAMER, W. H.: Economics and tuberculosis, 868—Notification of infectious diseases, 870
HAMPTON, G. G. (and Lucius NICHOLLS): Treatment of human hookworm infection with carbon tetrachloride, 8 (O)
Hand infections, review of book on, 982
HANDFIELD JONES, R. M.: Diagnosis and treatment of cholelithiasis, 1014
HANDLEY, W. Sampson: *Cancer of the Breast and its Treatment*, rev, 516
HANSON, Henry, to advise re the eradication of bubonic plague in the United States, 852
HARAN, Dr.: Artificial eyes for ophthalmoscopic study, 114
HARFORD, Charles F.: The action of alcohol on the human economy, 198—Psychotherapy, with special reference to auto-suggestion, 554—Alopecia areata and strabismus, 616 Appreciation of Leopold George Hill, 951—The teaching of psychology, 1047—The clinical significance and treatment of heterophoria, 1254—Psycho-analysis, 1281
HARINGTON, Sir John: *Regimen of the School of Salernum*, rev., 951
HARMAN, N. Bishop, elected a corresponding member of the Société Nationale des Sciences Naturelles et Mathématiques de Cherbourg, 31—Optic nerve atrophy, 1161—Hospital policy: the report of the Council, 1244—The clinical significance and treatment of heterophoria, 1255—Education of partially blind children in myope classes, 1258—Monocular and binocular vision, 1261
HARMER, Bertha: *Textbook of the Principles and Practice of Nursing*, rev., 1084
HARPER, P.: The treatment and prognosis of leprosy, 39 (O)
HARRIES, D. J.: Lobulated fibro lipo-myxoma, 1268
HARRIS, F. W.: Modern methods of sewage disposal, 1094
HARRIS, I.: The process which results in auricular fibrillation, 189—Therapeutics of quinidine, 1079—Myocardial disease, 1223
HARRIS, R. W. (and L. S. SACK): *Medical Insurance Practice*, rev., 983
HARRIS, Wilfred: Luminal in migraine, 788 (O)
HARRISON, Colonel E. F., memorial to, 939
HARRISON, Herbert: *The Braganza Necklace*, rev., 1227
HARRISON, L. W.: The modern treatment of syphilis, 1 (O)
HARRISON, W. J.: Lupus erythematosus treated by diathermy, 758
Harrogate, review of book on, 272, 694
HARSTON, G. M.: The clinical significance and treatment of heterophoria, 1256
HART, Mrs Ernest: *Dishes for Diabetics*, rev., 220
HART, Keating, death of, 193
HARTWELL, Gladys: Evil effects of excess of protein in maternal diet, 939
Harvard School of Tropical Medicine, 493
Harvard University. *See* University
Harveian commemoration, 812
Harveian oration, 707
HARVEY, Dr.: Sarcoma of the kidney, 1177
HARVEY, Henry, jubilee of, 1149
HARVEY, W. Henwood (and Louis COBBETT): Oral administration of antitoxin, 1265
HARVEY-DIXON, C., elected member of Parliament for Rutland and Stamford, 1042
HAUBOLD, Herman A.: *Principles and Practice of Surgery*, rev., 602
HAWTHORNE, C. O.: Retinal haemorrhages, 147, 495 (O)—Ophthalmic examinations in general medicine, 615—Problems of asthma, 760—Exophthalmic goitre, 914—Etiology of optic nerve atrophy, 1153
HAY, John: Some aspects of cardiac disease, 115 (O)—Cardiac failure, 899 (O)—Angina pectoris, 980—Therapeutics of quinidine, 1079—Pre-natal care, 1174—Myocardial disease, 1223
HAY, Percival J.: Optic nerve atrophy, 1161—Monocular and binocular vision, 1262
HAYES, M. R. J., appointed to the Irish Army Medical Council, 400
HAYWOOD, Lieut. Col. Lewis, obituary notice of, 576
Head, gunshot wounds of, and epilepsy (W. Aldren Turner), 640
Head, vertebrate, the structure of the (W. B. Primrose), 796
HEALD, S. Linley: A case of haemochromatosis, 542 (O)
Health and health administration of Eng and. 325. *See also* Health Ministry's report
Health and housing in Dundee, 773
Health insurance. *See* Insurance, National
Health Instructions for Missionaries in the Tropics, rev., 1227

HEALTH, MINISTRY OF:
- Annual report, 184, 230, 323, 387, 477, 526
- Blind, report of Advisory Committee on the Welfare of, 575, 940, 985, 1035, 1037
- Botulinus antitoxin, circular *re*, 604
- Dangerous Drugs Act: Memorandum to Poor Law authorities, 405
- Dangerous drugs required for a ship under the Merchant Shipping Acts, 1199
- Diphtheria: Memorandum *re* treatment and prevention, 484
- Encephalitis lethargica, report on, 654
- Health visitors, memorandum on, 153, 619
- London refuse, memorandum *re* disposal of, 239
- Milk prosecutions, circular *re*, 232, 325, 612
- Minister of, 1188
- Parliamentary note, 1188
- *Reports on Public Health and Medical Subjects*: No. 7, The causation of foetal death (Eardley Holland), 15—No. 12, Water-borne enteric (W. Vernon Shaw), 56—No. 13, Bacteriological studies on pneumococci and streptococci (Arthur Eastwood and Frederick Griffith) 388
- Small pox, leaflet on, 316
- Tuberculosis administration, circular *re*, 148
- Vaccination, pamphlet of instructions on, 1091
- Water supply in a dry summer, 27

Health problems in the West Indies, 994. *See also* West Indies
Health visitors' duties and qualifications: Memorandum from the Ministry of Health, 153, 619—National Health Society's altered regulations for training, 239
Health visitors, winter school for, 780, 1247
Health week, 665
HEALY, J. J.: The clinical significance and treatment of heterophoria, 1255
Hearing, the mechanism of (Sir W. M. Bayliss), 783 (O)
HEARN, Reginald: The results of treatment in syphilis of the central nervous system, 37 (O)—Luminal in migraine, 893
Heart in which the left auricle had undergone extreme dilatation (Dr. Emanuel), 1266
Heart failure (John Hay), 899 (O)
Heart, foetal (Donald E. Morley), 601
Heart, review of books on, 219, 601, 703, 777, 930, 1226
Heart and strychnine, 1152
Heart symptoms, the nature and significance of, 29, 66, 109, 190
Heart. *See also* Auricular *and* Cardiac
Heat transmitted by radiation and convection (Ezer Griffiths and A. H. Davis), 1003
HEATH, Douglas: Etiology of seborrhoea, 756
HEATHCOTE, Reginald S. A.: Alleged faults in the manufacture of neo-salvarsan ampoules, 949
HEATHERLEY, Francis: The process which results in auricular fibrillation, 190
HEEKES, John W.: A case of interstitial gestation, 309
HEHIR, Major-General P.: Voluntary *v.* State hospitals, 234
HELFERICH, H.: *Atlas und Grundriss der traumatischen Frakturen und Luxationen*, rev., 1032
Heliotherapy in tuberculosis (A. Rollier), 741—Correspondence on, 1281
HELLIER, J. B.: An old wives' fable, 154
Helminth infection and sewage disposal in the tropics (M. Khalil), 360
Hemostyl, 1126

HENDERSON, B. L. K.: *Romney*, rev., 807
HENDERSON, D. K.: After-effects of lethargic encephalitis, 1176
HENDERSON, Colonel P. H.: Venereal disease as a war casualty, 995
HENDRY, Dr.: Method of preparing the bony pelvis for the museum, 92—Double uterus, vagina, and vulva, 92—Dermoid cyst of vulva, 92—Anæsthetics and analgesics in labour, 674
HEPBURN, Malcolm: *The Ophthalmology of General Practice*, rev., 85
HERBERT, Noël (and F. G. NORBURY): Complicated case of intussusception, 942
Heredity, Schauman bequest for the scientific study of, 320
HERIOT-HILL, Captain Eric D. M., Order of the Nile conferred upon, 351
HERNAMAN-JOHNSON, F.: X-ray treatment of deep-seated cancers, 510—Value of gas inflation in x-ray diagnosis, 511—A vacuum flask for warming gas in peritoneal inflation, 620
Hernias, difficult, operative treatment of (H. S. Souttar), 1024
Herpes with facial paralysis, 538, 620
Herpes and varicella, 954
Herpes zoster with paralysis of the facial nerve (C. T. Neve), 643 (O)
HERRINGHAM, Sir Wilmot, and the General Nursing Council (parliamentary note), 231
HERTWIG, Oscar, death of, 1150
HERZFELD, Miss: Treatment of tuberculous cervical glands, 863
HESS, Arthur F.: The effect of light on rickets, 85
HESS, J. H.: Proprietary vitamin products, 519
Heteroplasia, clinical significance and treatment of (Archibald S. Percival), 1249—(L. Webster FOX), 1251—Discussion, 1254
HEWAT, A. Fergus: Diagnosis of phthisis and other respiratory affections, 739
HEWETSON, Dr.: The place of the white man in the tropics, 885
HEWITT, J.: Cæsarean section, 151
HEY, Spurley: Occupation centres, 224
HEYNINX, A.: *Essai d'olfactique physiologique*, 521
HICKS, Seymour: *Difficulties: an Attempt to Help*, rev., 984
Hiera Picra (J. J. S. Thompson), 222
HIGHAM, T. Parkinson: National Association of Opticians, 489
High altitudes. *See* Altitudes
High frequency currents (W. F. Somerville), 557
High frequency currents and static electricity, therapeutic value of (F. Howard Humphris), 555—(W. F. Somerville), 557—Discussion 558
HILL, A. W.: The hot wire sphygmograph and the psycho-galvanic reflex, 1042
HILL, Leonard: Air pollution, 363—Basal metabolism, 751—The physiological effects of light, 1028
HILL, Leopold George, obituary notice of, 951
HILL, L. W.: *Practical Infant Feeding*, rev., 874
HILL, Sir Robert: Venereal disease as a war casualty, 995
HILL, William: Septic sinus thrombosis, 464
HILLIARD, Harvey, C.B.E. conferred upon, 1003
HILLS, J. W. (and Ianthe DUNBAR): *The Golden River*, rev., 984
HINCKS, Captain Thomas E., French Médaille des Epidémies en bronze conferred upon, 1283
HINDHEDE, M.: Alcohol restriction and mortality, 248
Hip, congenital dislocation of, method of reducing (F. W. Goyder), 497 (O)
Hip, osteo-arthritis of the (George Parker) 539 (O)
HIRSCHMAN, N.: The "standardized dosage" method of using scopolamine-morphine during labour, 669, 1100—A correction, 1100
Hirschsprung's disease (Alwyn Smith), 1268
History of medicine. *See* Medicine
HOARE, Cecil: The life cycle of *Trypanosoma melophagium*, 1030
HOBDAY, Frederick: Animal pathology in relation to human disease, 955
HOBHOUSE, Stephen (and A. Fenner BROCKWAY, editors): *English Prisons To-day*, rev., 218
HOBSON, Captain Hugh G., Greek Order of King George I conferred upon, 1283
Hodgkin's disease, remarks on (Sir James Galloway), 1201 (O)—Note on, 1233
HODGSON, T. R. (and J. E. PURVIS): *Chemical Examination of Water, Sewage, Foods, and other Substances*, rev., 1083
HODGSON-JONES, R. W.: Unsuspected pregnancy, 704
HODGSON, Sir James, presentation to, 233—Appointed honorary consulting surgeon to the Edinburgh Royal Infirmary, 399
Holland, rabies in, 953
HOLLAND, Eardley: *The Causation of Foetal Death*, rev., 15—Intra-natal deaths, 588—Blood transfusion in civil practice, 1078
HOLLICK, B. S.: Apparent absence of tumour in case of intussusception, 1054
Home Office pamphlet on the Opium Convention, 1184
HOLMES, James: Professional secrecy, 32
HOLT, L. Emmett (and John HOWLAND): *The Diseases of Infancy and Childhood, for the use of Students and Practitioners of Medicine*, rev., 566, 647—A correction, 647
HOME, Fleet Surgeon W. E.: *Merchant Seamen, their Diseases and their Welfare Needs*, rev., 692
Home ambulance service. *See* Ambulance
Honduras, British, the healthiness of, 824
Hong-Kong: Chair of medicine, 608
Honorary graduation in the olden time, 611
HONOURS:
30, 112, 331, 664, 1003, 1283
Royal Victorian Order:
C.V.O., 113
M.V.O., 113
Order of the British Empire:
C.B.E., 30, 1003
O.B.E., 1283
M.B.E., 1283
Foreign decorations, 331, 664, 1283
St. John of Jerusalem, 331
Promotions, 1283
Hookworm campaign in Jamaica, a by-product of, 538
Hookworm Disease, Bibliography of, rev., 1125
Hookworm disease, investigations on, in India, 1241
Hookworm infection treated with carbon tetrachloride (Lucius Nicholls and G. G. Hampton), 8 (O)
HOPE, Edward W.: The training for the D.P.H. and the new regulations, 363, 533
HORAN, Maurice: Injury to the bowel with recurrent haemorrhage, 689 (O)
HORDER, Sir Thomas: Comparative anatomy of the accessory sex glands, 84—Blood transfusion in civil practice, 1078
HORNE, Sir Andrew: Tuberculosis of the female pelvic organs, 1030
HORNER, N. G.: The growth of the general practitioner, 21—John Westover of Wedmore, 221
Horsley's war, 1200
HORT, Edward Collett, obituary notice of, 777
HORWOOD, Murray P.: *Public Health Surveys, what they are, how to make them, how to use them*, rev., 47
Hospital accounting, methods of, 282
Hospital administration, lectures on, 1151
Hospital Association: Princess Louise, Duchess of Argyll declines to be a patroness, 113
Hospital, Arran Cottage, 107
Hospital *v.* asylum, 240 *See also* Asylum *and* Hospitalization
Hospital, Belfast Royal Victoria: Appointments, 702—Inaugural address, 773
Hospital, Bethlem Royal: Course in psychological medicine, 288—Information concerning, 444
Hospital, Cardiff City Mental: Out-patient clinic in psychiatry at, 577
Hospital, Cardigan Memorial, 231
Hospital Central London Throat and Ear: Annual dinner, 897
Hospital, Charing Cross: Information concerning the study of medicine, 427—Annual report and prize-giving, 657—Annual dinner, 657
Hospital, Crombe Maternity, Dublin: Annual report, 1095
Hospital, Dublin City, for Diseases of the Skin and Cancer, report, 1279
Hospital, Edinburgh Royal Maternity: Monthly meeting of directors, 614
Hospital, Edinburgh, for Women and Children, note on, 823
Hospital finance, conference on, 1053, 1134
Hospital, Glasgow Children's: Report, 64
Hospital, Glasgow Royal Samaritan: Information concerning, 437
Hospital, Grangethorpe, Manchester (for Limbless Men) Orthopaedic, sports meeting at, 660
Hospital, Guy's: Information concerning the study of medicine, 427—Research on insulin to be carried out, 1285
Hospital, Horton Mental, Epsom: War memorial to fallen members, 1003
Hospital, an island (Arran), 107
Hospital, Johns Hopkins: Charles E. Dohme memorial lectureship, 975
Hospital, Kildare County: Report, 488
Hospital, King's College: Prizes at the Medical School, 238—Information concerning the study of medicine, 427—Opening of winter session, 658—War memorial, 772
Hospital, Limerick City Home: Meeting *re* dispensing with the services of two visiting surgeons, 947
Hospital, London: Prizes and certificates gained by students, 111, 664—Information concerning the study of medicine, 428—Annual dinner, 772—Liddle Triennial Prize, 1282
Hospital, London Fever: Extension of the nurses' home, 1151
Hospital, Manchester Children's: To establish a special orthopaedic department, 69
Hospital, Massachusetts General: Warren Triennial Prize, 953—Gift of a chairman's bell to, 1199
Hospital, Maudsley: Reopening of, 393, 1089, 1199—Information concerning, 444—Lectures, 619, 1285
Hospital for Mental Disease, the Lebanon (Syria): Annual meeting, 31
Hospital, the Middlesex: Information concerning the study of medicine, 428—Opening of winter session, 658—Annual dinner, 658—War memorial, 946—Co-operative clinic in psychiatry, 995
Hospital, National, for the Paralysed and Epileptic, Queen Square: Information concerning, 445
Hospital policy (leading article), 275—The report of the Council (British Medical Association), 1196—Correspondence on, 1244, 1282. *See also* Hospitals, voluntary, *and* Supplement index
Hospital, Prince of Wales's and North-East London Post-Graduate College: Annual reunion dinner, 1053
Hospital, Royal Dental: Annual dinner, 1091
Hospital, Royal Free (London School of Medicine for Women): Scholarships awarded, 238—Information concerning the study of medicine, 431—Opening of winter session, 656—Annual dinner, 1151
Hospital, Royal National Orthopaedic, establishes a country branch at Stanmore, 573
Hospital, St. Andrew's, Dollis Hill, founder's day, 51
Hospital, St. Bartholomew's: Information concerning the study of medicine, 429—Annual dinner, 657—The casualty department forty-five years ago, 767
Hospital, St. George's: Information concerning the study of medicine, 429—Inaugural address: Medical education, past and present (Sir Clifford Allbutt), 655
Hospital, St. Margaret's, for treatment of ophthalmia neonatorum, 224
Hospital, St. Mary's: Information concerning the study of medicine, 429—Annual dinner, 657
Hospital, St. Paul's Eye, Liverpool: Report, 63
Hospital, St. Thomas's: Prize-giving in the medical school, 27—Information concerning the study of medicine, 430—Annual old students' dinner, 1003
Hospital, University College, 111, 237, 405—Entrance exhibitions, 405—Information concerning the study of medicine, 430—Annual dinner, 701—The first administrations of ether, 701. *See also* College
Hospital, Westminster: Information concerning the study of medicine, 431—Opening of winter session, 658—Annual dinner, 658
Hospitalization of the Scottish asylum system (G. M. Robertson), 139—Leading article on, 139—Correspondence on, 240
Hospitals of Canada and the United States, a visit to (Andrew Fullerton), 1240
Hospitals, clinical, information concerning, 438
Hospitals, expenditure on alcohol in (C. J. Bond), 142
Hospitals, financial position of, 187. *See also* Hospitals, voluntary
Hospitals, mental, number of, with no women on the visiting committee (parliamentary note), 280—Voluntary boarders in (parliamentary note), 1136—Committee inquiring into dietaries in, 1199. *See also* Mental
Hospitals, pensions (parliamentary note), 25
Hospitals as sanctuaries, 1190
Hospitals, voluntary: Accounting, methods of, 282—Annual report (excluding London), 647—Combined appeal, 153, 282—Conference of representatives of local voluntary hospital committees, 114, 187—Correspondence on, 234—"Doctors in Council," 284—Grants to, 58—Parliamentary notes, 58—Policy, 275, 1244
Hospitals, voluntary, *v.* State, 234
Hour-glass stomach, types of (Owen Rhys), 1268
House infection in cholera and cancer (Lieut.-Col. A. G. McKendrick), 1266
HOWARD, Arthur, obituary notice of, 335
HOWARD, Ebenezer: Alcohol restriction and mortality, 252
HOWARD, Russell: *The Practice of Surgery*, rev., 272
HOWARTH, W. J.: General practitioners and medical officers of health, 272—Affections of the lower segment of the oesophagus, 470
HOWAT, R. Douglas: The interstitial gland and sex problems, 150
HOWLAND, John (and L. Emmett HOLT): *The Diseases of Infancy and Childhood, for the Use of Students and Practitioners of Medicine*, rev., 566
HUEPPE, Ferdinand: *Hygiene der Kürperübungen*, rev., 518
HUGHES, Dr.: Mental defectives in the courts, 223
HUGHES, P. T., appointed to committee of inquiry into dietaries in mental hospitals, 1199
Human efficiency (E. P. Cathcart), 524
Human life, the stages of, 1090
HUMPHRIS, F. R.: Position of insanity in criminal law, 1193
HUMPHRIS, F. Howard: Static currents, 555
HUNTER, Alison M.: Cæsarean section, 151
HUNTER, Dr.: Sanitary reforms in the time of Chadwick, 221
HUNTER, George: The diazo-reaction, with special reference to urine in measles, 751
HUNTER, John I.: A mesenteric cyst of jejunal origin complicated by retrojejunal position of the transverse colon, 800
HUNTER, W. B.: Unsuspected pregnancy, 1286
HUNWICKE, R. F. (W. G. SAVAGE, and R. B. CALDER): *The Bacteriology of Canned Meat and Fish*, 700
Hunyadi Janos water, 1003
HURLE, Mrs J. Cooke: Occupation centres, 224
HURRY, Jamieson B., presents a picture to the town of Reading, 1095
HURST, A. F.: Pernicious anaemia, 978
HURST, Walter: The treasures of the Royal Faculty of Physicians and Surgeons of Glasgow, 98
HUTCHISON, Major H. S.: Etiology of rickets, 857
HUTCHISON, Robert: Sterilization of mental defectives, 531—Etiology of rickets, 853
HUXLEY, Frances: Birth control, 125
Hydroa aestivale in identical twins (Alfred Eddowes), 601

suggestive of syphilis, and the Wassermann report on her serum was definitely positive. She had no symptoms of tabes. Mercurial inunctions and mercury by the mouth were soon followed by marked improvement, and on January 12th of this year she reported that she had had no attacks for six months or more. It should also be noted that a brother of this patient was submitted to an appendicectomy at the age of 16, and that his appendix was also found to be normal; no surgical condition was found in the abdomen. He died on the third day after his operation. The cause of his death was believed to be delayed chloroform poisoning.

CASE III.

Male, aged 42, married. I was called to see him on January 31st, 1921, when he was suffering from pain in the epigastric region and vomiting; he had never suffered from this before, and no cause whatever could be discovered for his illness. His pain and vomiting lasted for a week. He had no rise of temperature, but his tongue in time became furred and his pulse increased a little in frequency; his bowels moved normally. Pain was the outstanding feature; he became very impatient as regards the pain, and a surgeon's opinion was suggested but not insisted upon, for I could not convince myself that the condition was a surgical one. I could, however, make no diagnosis satisfactory to myself. The attack subsided, but left him very weak; he had had no nourishment and very little sleep for a week, for I had withheld morphine in the expectation of making a definite diagnosis. I received an urgent call to see him again on the afternoon of March 25th. Returning to his work after his usual midday meal, he had been seized with sudden severe pain in the epigastrium and violent vomiting, and had been carried home in a collapsed condition. He had crawled upstairs and lain on his bedroom floor in agony unable to get into bed. I saw him about 4 p.m., by which time the pain and vomiting had ceased. He was off work only two days. He informed me that he had had a similar attack, not so severe, at the end of February, and had then only been one day off work. Between these attacks he had had no complaints. I could get no definite history of syphilis, but he admitted having run the risk of infection in his youth. The Wassermann report was definitely positive; his wife's blood was also definitely positive, and I discovered she was suffering from a gumma. She had had three miscarriages and then one very delicate child, born twelve years after marriage. I failed to find, and still fail to find, any of the classical symptoms of tabes in this patient. He has had mercury by the mouth, from 6 to 12 grains daily, since April 1st. An attempt to use mercurial inunctions was followed by a severe dermatitis. Examined on January 18th of this year he was well, and had had no further attacks of abdominal pain.

Had these patients shown the classical symptoms of tabes, the attacks from which they suffered would have been diagnosed as gastric crises. They were the subjects of inherited and late syphilis. Their attacks yielded to antisyphilitic treatment, and quite frequently in the treatment of locomotor ataxia by vigorous antisyphilitic methods improvement is reported as regards the visceral crises, though there may be none as regards the ataxic symptoms. Visceral crises are relatively uncommon in locomotor ataxia, being observed in only about 10 per cent. of these cases. Syphilitic visceral crises such as I have described may be relatively frequent and may account for many vague conditions and many errors in diagnosis and fruitless laparotomies. In particular I shall look with grave suspicion upon every case diagnosed as "colic," "appendicular colic," "kinks," "bands" and "adhesions," "cholelithiasis without gall stones," and so forth. The investigation of the knee-jerks will not save us from error, but the application of the Wassermann test may do so. My conclusion is that visceral crises are a manifestation of inherited and late syphilis, and are not peculiar to tabes.

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IN Moseley's classification of the elements founded on x-ray spectra there were four vacant places of ordinal numbers—43, 61, 72, 75. Moseley himself suggested that the number 72 probably belonged to the element celtium previously described by Professor Urbain of Paris. In June, 1914, Professor Urbain, with the late Sir William Ramsay, went to Oxford in order to investigate these and other related matters along with Moseley. The results with regard to celtium were inconclusive, but Moseley was to have published a paper on the inquiry. He joined the army at the beginning of the war, and his death at Gallipoli was an irreparable loss to science. Professor Sir Ernest Rutherford, whose pupil Moseley was, has now written to *Nature* to accept Professor Urbain's identification of celtium with the element having the number 72. Proof has been given in a paper communicated to the Académie des Sciences by M. Dauvillier.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

QUININE NECROSIS OF MUSCLE.

THE interest of the following case relates to the early treatment of the patient by intramuscular injections of quinine and its unusual sequel. Necrosis took place, but in none of the other cases of quinine necrosis recorded has there been, as in this case, a definite separation and encysting of the necrosed muscle. The specimen is now in the museum of the Royal College of Surgeons of England.

J. S., an ex-soldier, contracted malaria in Salonica in October, 1916. Rings and crescents are said to have been found in his blood at various times. He was invalided to the United Kingdom in February, 1917, and had relapses about once a month till he came under specialist treatment, when the relapses gradually decreased in frequency, the last being in February, 1921. In 1916 he had about forty-nine injections of quinine into each buttock alternately every other day, but we are unable to discover the particular form of quinine used. About a month after the course of injections had ended he noticed a swelling in the right buttock "first feeling like a lot of little lumps," but shortly he noticed "one big lump," as was the condition when he first came under the notice of one of us (P. F.).

On examination, there was a cigar-shaped swelling some three inches long in the upper part of the right buttock, the skin moved freely over it, and the lump itself appeared to be movable on the deep structures. It was somewhat tender to the touch, and owing to its position frequently received slight blows and caused much discomfort and even pain. It was therefore decided to remove it.

Operation took place on February 7th, 1922 (D. D. P.). An incision was made over the whole length of the swelling, and on cutting through the skin and superficial fascia the tumour was found to be lying in, and parallel with, the upper part of the gluteus muscle. Cutting into it, an adventitious bursal sac was opened in which a greyish white cigar-shaped body lay quite free. This was removed. It was quite smooth, firm in consistence, somewhat elastic, and had a smooth glistening surface, similar to the space in which it lay. The adventitious sac was cut away from the surrounding muscle, and the space left closed with catgut; the fascia was sutured with catgut and the skin with silkworm gut.

The tumour measured 3½ inches by 3·4 inch by 1·2 inch. A longitudinal incision into it showed that it consisted of wavy bundles of fibrous-looking material, dry and bloodless, and there was some slight calcification at one part near the centre. A section was cut by Dr. H. H. Sanguinetti, and it was seen that the greater part of the tumour consisted of necrosed muscle fibre, much of it still showing striations. It appears to have been a fasciculus of the gluteus maximus, which died *en masse*, owing to the injection of the quinine into it. Necrosis was due probably both to the direct action of the drug and also to pressure of the injected fluid in the muscle bundle proving so great that the blood supply to the bundle was cut off. The dead part of the muscle must have remained sterile, a line of demarcation was formed round, it separated from the surrounding tissue but was not absorbed, and so acted as a foreign body and became encapsuled.

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THE BLOOD AT 100 YEARS OF AGE.

WHILE carrying on a research on pallor, the case of a lady aged 100 was encountered. As few people reach this age, and as records of their blood are seldom obtained, blood counts were done on two occasions. The following are the particulars:

	Feb. 9, 1922.	Mar. 2, 1922.
Red blood corpuscles	4,600,000	4,350,000
Haemoglobin	81 %	78 %
Colour index	0.88	0.90
White blood corpuscles ...	7,150	7,200
Differential count:		
Polymorphonuclear leucocytes ...	42.5 %	51.0 %
Eosinophil leucocytes	4.0 %	4.0 %
Basophil leucocytes	0·2 %	0.5 %
Small lymphocytes	43·0 %	37.0 %
Large lymphocytes	7.3 %	6.0 %
Large hyaline mononuclear ...	3.0 %	1.5 %

Remarks.

The red blood corpuscles are well formed and of normal appearance. One normoblast was observed on February 9th. The white blood corpuscles show a relative lymphocytosis in comparison with the blood of an average healthy adult and there are more eosinophil leucocytes than usually found. Except for an old ununited fracture of the neck of the femur

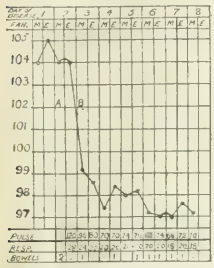
which limits her activity the patient enjoys good health and her mental faculties and memory are in no way impaired. Her age is fully authenticated.

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The St. Andrews Institute for Clinical Research.

TREATMENT OF ERYSIPELAS BY VACCINES.

A STATEMENT appeared recently in the BRITISH MEDICAL JOURNAL to the effect that antistreptococcal vaccine was of doubtful value in erysipelas. It might be of interest, therefore, to record a typical case of facial erysipelas treated successfully by antistreptococcal vaccine.



The patient was a young woman, aged 29, who was taken suddenly ill with rigors and a raised patch of erysipelas on the side of the nose. This rapidly spread over the forehead, and the patient's temperature rose to between 104 and 105°. Ichthyol was tried locally, but failed to stay the spread of the disease to the scalp. I obtained the help of a trained nurse, and procured a supply of antistreptococcal vaccine. At 9.15 a.m. on March 18th, 1922, I injected a dose of five million, with the result that in less than twenty-four hours the temperature fell from 104° to 99.2°. A second dose of twenty million was then injected, and the temperature fell to normal, remaining subnormal for several days. The patient made an uninterrupted recovery.

This was the first case of erysipelas in which I have tried antistreptococcal vaccine (supplied in this case by Messrs. Parke, Davis and Co.), and I was much struck by the immediate improvement in the local and general condition of the patient.

Westerham. J. RONALDSON RUSSELL, M.D.

Reports of Societies.

AN ORGANISM FROM CANCEROUS GROWTHS.

AT a meeting of the Edinburgh Obstetrical Society held on June 14th, with the President, DR. LAMOND LACKIE, in the chair, Dr. JAMES YOUNG read a paper on a further study of an organism obtained from cancerous growths. He had stated in previous papers that a similar organism was obtained from human and mouse cancer, and from three cases of leukaemia in the human subject. It grew in one phase as a small bacillus or as a long filament, and had been identified as belonging to the coli-typhoid group. He had found that the mouse strain when injected into mice produced a diffuse lymphomatous or lympho-sarcomatous lesion.

In the present paper he gave an account of the life-cycle as studied in the experimentally produced mouse lesions. In an animal killed while suffering from the early lesions the organism was found enlarging into forms suggestive of a blastomycete, and little colonies could often be seen in the tissues showing all the stages in the evolution. In animals killed when suffering from the chronic lesions, on the other hand, the smaller phases were usually absent, and the blastomycete phase alone was found—often only after a diligent hunt—as round or oval bodies that were usually structureless. Sometimes, when stained with a Romanowsky stain, they exhibited purple granules. When fully developed the body itself stained blue. Dr. Young had from an early stage been studying these bodies in cancerous tissues, and in previous communications had stated his belief that when the tumour tissue was incubated in a suitable fluid medium they could be seen to germinate into minute cocci, bacilli, or filaments, the actual mode of germination differing in different cases. He showed illustrations exhibiting the different forms of this germination process, as studied in human and mouse cancer and in the chronic lesions of experimentally infected mice. Dr. Young stated that, alike on experimental and morphological grounds, the investigations provided a strong body of evidence in favour of the etiological relationship of the organism to malignant disease. He then showed how the bacteriological investigation of his results as carried out in the Bacteriological Department of the Royal College of Physicians Laboratory, Edinburgh, had brought this aspect into direct conflict with bacteriological teaching. The organism which he used for his injection experiments, and which was obtained from mouse cancer, was identified by its sugar reactions as a *B. coli communis*. With this in a carefully controlled series of experiments he had obtained all the chronic lesions, and he felt justified in concluding that the results were directly related to the experiments. On the other hand, from only a few of the lesions had a lactose fermenter been recovered. In the majority of the cases examined a non-lactose fermenter had been obtained belonging to the paratyphoid B, Gaertner, and Aertrycke group. It was well known that an organism (or organisms) of this group were responsible for a common and acute epidemic in laboratory mice. The organism recovered from the chronic lesions when exhibited to mice produced death after periods varying from fourteen hours to eight days. In the animals, except those that died with very acute manifestations, a diffuse lymphoid lesion accompanied by active cellular proliferation was produced, varying only in its degree and in some other respects—that is, the signs of toxaemia—from the chronic lesions produced after injection of the lactose fermenter. Dr. Young said that he was unable to offer an opinion on this purely bacteriological aspect of the research. He felt, however, that it could not be without significance that he had found the blastomycete forms in the tissues of animals infected with the non-lactose fermenter.

Professor RUSSELL said that he had never wavered from the belief that cancer was due to a parasite and he was specially interested to find that Dr. Young was describing blastomycete-like forms in his research. It was now thirty-two years since he first drew attention to the existence of blastomycetes in cancerous tissues.

Dr. YOUNG, in reply, expressed his belief that Professor Russell's early observations would be proved to be correct.

Dr. H. S. DAVIDSON and Dr. DOUGLAS MILLER read a paper on a "Record of eclampsia in the Edinburgh Royal Maternity Hospital during the years 1912–1921."

Reviews.

THE CAUSATION OF FOETAL DEATH.

THE Ministry of Health has issued a report by Dr. EARDLEY HOLLAND on the causation of foetal death, with an introduction by Sir GEORGE NEWMAN.[1] It contains a special section on the "recognition of congenital syphilitic inflammation of the long bones" by Professor Hubert Turnbull, D.M.

The report is described as an investigation into the factors which determined death in a sample of three hundred foetuses of viable age. The specimens were obtained from fifteen of the metropolitan hospitals; the City of London Maternity Hospital supplied more than a third of the cases (102), and the London Hospital 69, or nearly a quarter. There were 122 other foetuses over and above the 300, but they were not used for the purposes of the investigation chiefly because they were not of viable age. The work was begun in 1914 by Dr. Holland and the late Dr. P. B. Ridge, and a great deal of the working up of the material had been accomplished before 1917, when Dr. Holland went to France in the R.A.M.C. The actual investigation, therefore, is considerably older than the date (1922) which stands on the title-page; indeed, the schedules of the order of examination of the mother, the foetus, the placenta, and the father which were drawn up by Dr. Holland have been used by other investigators, and results obtained from them have already been published.

Dr. Holland took great pains to get exact clinical and obstetrical details in all cases; they were entered on two printed blanks headed "The Mother" and "The Father" respectively; but it had to be confessed that the latter was "a most elusive person," and that not much was elicited regarding him. The results of the pathological examination of the foetus and placenta were recorded on two other blanks, special attention being paid to the search for the spirochaetes of syphilis. The research, therefore, is of high value in relation to the incidence of this disease as a factor in the production of stillbirth; it is interesting to note that the frequency given is much the same as that obtained by other workers.

The author is concerned with the definition of terms and

[1] *Reports on Public Health and Medical Subjects*. No. 7. Ministry of Health. The Causation of Foetal Death. By Eardley Holland, M.D., F.R.C.S., F.R.C.P., Surgeon to the City of London Maternity Hospital, Assistant Obstetrical Physician at the London Hospital. London: Published under the authority of His Majesty's Stationery Office. 1922. (Pp. 162, with 24 plates, 3 coloured. 10s. net.)

LEDINGHAM, J. C. G.: Concerning the theories of the so-called "bacteriophage," 296—The bacteriology of influenza, 306—Comparative pathology of plants and animals, 722—Mutation of species 727
Leeds, medical and surgical teaching at, 148—Princess Mary infants ward at the General Infirmary, 686
LEES, David: Treatment of neuro-syphilis, 635
Leeuwenhoek Vereeniging, the Institution of the, 885
Left-handedness and stammering, 1004, 1200
LEGGE, T. M.: Air pollution, 363—Training for the D.P.H., 365—Administrative requirements for tuberculosis, 368—Occupational dermatitis, 503—Epitheliomatous ulceration in industry, 1110
Legibility of printed matter. *See* Printed
LEGROS, Lucien Alphonse: *A Note on the Legibility of Printed Matter Prepared for the Information of the Committee on Type Faces*, 570
LEIGH, Hubert, appointed J.P. for the county of Glamorgan, 153
LEISHMAN, Sir William B.: The bacteriology of influenza, 305
LEITCH, Archibald: Appreciation of Sir Charles Ryall, 535—Vaginal involvement in cancer of the cervix, 686—Cancer of the scrotum, 1047—The effect of cessation of the irritant on the development of experimental tar cancer, 1101 (O)—Paraffin cancer and its experimental production, 1101—(and E. L. KENNAWAY): Experimental production of cancer by arsenic, 1107
LENNIE, R. A.: Caesarean section, 109
Lens, senile, early opacities in (Inglis Pollock), 871
Leonardo da Vinci's work on the structure of the heart (W. Wright), 221
Lepers in the United States, 118, 1285—In Sardinia, 922
Leprosy, "Ecco" in treatment of, 892
Leprosy in India (parliamentary note), 280
Leprosy, review of book on, 805
Leprosy simulated by *B. pyocyaneus* infection (S. Mallannah), 1223
Leprosy, treatment and prognosis of (P. Harper), 39 (O)
Leprosy, treatment of, 892
Leprosy, treatment of, by chaulmoogra and other oils, 607
Leukaemia, acute, with intracranial haemorrhage (T. O'Farrell), 45
Leukaemia, acute lymphatic (W. E. Cooke), 802
Leukaemia, acute myelogenous, case of (Robert A. Fleming and James Davidson), 1074—(Sir John W. Moore), 1176
Leukaemia, spleno-medullary (A. Dorothy Pocock), 802
LEVIS, J. S.: Fatty tumours of the arm, 1177
LEVIS, M.: Treatment of varicose ulcer, 1031
LEVY, A. Goodman: Anaesthetization of patients for Caesarean section, 925—*Chloroform Anaesthesia*, rev., 982
LÉVY-VALENSI, Dr. (and Henri CLAUDE): *Maladies du Cervelet et de l'Isthme de l'Encéphale*, rev., 564
LEWERS, Alexander, obituary notice of 1197
LEWIS, Dr.: Treatment of eclampsia, 678
LEWIS, Sir Thomas, delivers the Mellor lecture on electrocardiographic interpretations, 1184
LEWIS, W. H.: Unsuspected pregnancy, 777
LEWYS-LLOYD, Dr.: Puerperal mortality, 346
Leysin, clinical studies from, rev., 474
LEYTON, O.: Some armchair reflections upon insulin, 1144
LIDDELL, James: Dermatitis amongst cement workers, 898
Life assurance, assessment of elderly lives for (R. A. Young), 953
Life at high altitudes (T. G. Longstaff), 1235
Life tables in statistical research, value of, 609
Life tables in the United States for 1920, 582
Ligaments, round, restoration of (Arthur J. Nyulasy), 1118 (O)
Light, the physiological effects of (Sir William Bayliss), 1028—Discussion, 1028
Light and rickets. *See* Rickets
Light sense (Archibald Stanley Percival), 148, 1096
Light sense with special reference to navigation (Andrew Freeland Fergus), 783 (O)—Correspondence on, 1096
LILLINGSTON, Claude: The future of medical periodicals, 483
Limbless men hold a sports meeting at Grangethorpe Hospital, Manchester, 660
Lincoln, a medical sheriff of, 702
LISTER, A. E. J.: Sterilization of mental defectives, 29
LISTER, Lord, and fractures, 108
LISTER, L. Margaret: Sterilization of mental defectives, 285
Lister memorial in Glasgow, 1278
Lister Ward at Glasgow Royal Infirmary, 702
LITCHFIELD, W. F., obituary notice of, 352
LITTLE, E. Muirhead: *Artificial Limbs and Amputation Stumps*, rev., 271, 512
Liver, action of carbon tetrachloride on (J. F. Docherty and E. Burgess), 907 (O)
Liver, degenerative diseases of the (Sir Humphry Rolleston), 1055—Discussion, 1060—(F. Bolton Carter), 1171
Liverpool: British Congress of Obstetrics and Gynaecology, 83. *See also* Congress—Annual medical service at, 822—Wool and hair disinfecting stations, 812, 1128
LIVINGSTON, Philip C.: A case of conversion neurosis, 846 (O)
Livingstone College. *See* College
LLOYD, Bertram (and A. W. NUTHALL): Ectopic vesicae after transplantation of ureters into the bowel, 1266
LLOYD, Surgeon Lieut.-Col. J. D., appointed Knight of Grace of the Order of St John of Jerusalem, 331
Loa loa in chrysops, the development of (A. Connal and S. L. M. Connal), 730
Local Government Officers' superannuation (parliamentary note), 25, 58
Loch Maree, fatal cases of food poisoning at, 394, 481, 527. *See also* Food poisoning
LOCHRANE, C. D.: Treatment of gynaecological conditions by radiation, 683
Locomotor ataxy and general paralysis of the insane (Donald Hall), 981
Loeper, M.: *Leçons de pathologie digestive*, rev., 646
LONDON:
Attendance on firemen and drain workers, 399
Birth rate and legitimate fertility in the London boroughs, 1911 and 1921, changes in (T. T. S. de Iastrzebski), 1222
County Council. *See* Council
Health of, in 1921, 574
Lying-in homes, 399
Neurological clinic, temporary congestion (parliamentary note), 231
Post-graduate education, 57, 130, 140, 233, 523, 581, 650, 665, 831. *See also* Post-graduate
Red Cross activities in, 613
Refuse, disposal of, 239
School Medical Service, 996
Small-pox in, 819, 886, 937, 943, 993, 1001, 1039, 1093, 1136, 1239. *See also* Small-pox
Street accidents reported, 1003
Water supply, 398
Longevity, some causes of, 491
LONGHURST, F. W.: Anaesthetization of patients for Caesarean section, 925
LONGSTAFF, T. G.: Life at high altitudes, 1235
LOW, R. Bruce (and H. Franklin PARSON-): *Isolation Hospitals*, rev., 16
LOW, R. Cranston: The etiology of seborrhoea and seborrhoeic dermatitis, 752—Exhibits, cases of skin diseases, 980
LOWE, Godfrey, appointed Sheriff of Lincoln, 702
LOWMAN, W. H.: Vesicular mole and placenta praevia, 564
LUCAS, Herbert obituary notice of, 1284
LUKE, Thomas Davey, obituary notice of, 705
Luminal in migraine (Wilfred Harris), 786 (O)—Correspondence on, 893
Lunacy Act of 1890 and authorization of a medical practitioner to visit a patient (parliamentary note), 183
Lunacy laws, obsolete, discussion at the meeting of the Mental Hospitals Association, 94
Lunacy Visiting Committees Bill, 25
Lunacy. *See also* Insane *and* Mental hospitals
LUNDIE, C.: The past, present, and future of midwifery, 1248
LUNDSGAARD, Dr.: Methods of operating for cataract, 148
Lupus erythematosus treated by diathermy (W. J. Harrison), 758—(A. E. Milner), 1224
LYCETT, John: Arsenic in ulcerative endocarditis, 402
Lying-in homes, L.C.C. regulations, 399
Lymphadenoma, relapsing pyrexias of (Arthur J. Hall), 1175
LYLE, Thomas, obituary notice of, 1050
LYNAM, Robert Garner, obituary notice of, 1284
LYNCH, Arthur: Psycho-analysis, 775, 954—*Ethics: An Exposition of Principles*, rev., 1226
LYNDEN-BELL, Colonel Edward Horace Lynden, obituary notice of, 536
LYNN-THOMAS, Sir John: Expert witnesses, surgical and medical 614—Reviews a book on *The Thyroid Gland*, 1123
LYON, Murray: Psychotherapeutics and psychopathology, 555
LYTH, J. C.: Dermatitis amongst cement workers, 1001

M.

MACADAM, William (and Cecilia SHISKIN): The cholesterol content of the blood in anaemia and its relation to splenic function, 1170
MACBRIDE, Henry: Treatment of neuro syphilis, 6 4
MCBRIDE, P.: The teaching of psychotherapy, 282—Psycho-analysis, 704, 825, 999, 1143
MACCALLAN, A. F.: Ophthalmic progress in Egypt, 886, 1259—Optic nerve atrophy, 1161
MACCALLAN, A. L.: Trachoma of the lacrymal sac, 148
MCCALLIN, Wm.: Herpes and varicella, 554
MCCARDIE, W. J.: Remarks as President of the Section of Anaesthetics, 914—Anaesthetization of patients for Caesarean section, 925
MCCARRISON, Lieut.-Col. R.: Exophthalmic goitre, 913
MCCOLLUM, E. V.: Commercial vitamin preparations, 519
MACCURDY, John T.: General etiological factors in the alcoholic psychoses, 204
MACDONALD, J. H.: On the element of contrast in the psychic mechanism, 635
MACDONALD, Peter: "Doctors in council," 224—(and J. ACOMB): Two cases of intracranial complication of acute ear disease, 458 (O)—Conjunctivitis artefacta, 1265
MCDONALD, S. F.: Psycho-analysis in epilepsy, 1194
MCDONALD, Stuart (and A. F. Bernard SHAW): Persistent eosinophilia with splenomegaly, 966—Degenerative diseases of the liver, 1066
MACDONNELL, Inspector-General Henry, obituary notice of, 536
MACEWEN, Sir William: Address as President of the British Medical Association on brain surgery, 155 (O)—(and others) Appeal for the Russian doctors, 1228
MACFADYEN, Norman: The economics of public health, 341 390
MACGREGOR, A. S. M.: Administrative requirements of the various types of tuberculosis, 365—Diagnosis of phthisis and other respiratory affections, 741
MCILROY A Louise: Foetal welfare, 149 - Influence of alcohol on racial stock 259—Treatment of eclampsia, 677 Treatment of gynaecological conditions by radiation, 682—Treatment of salpingo-oophoritis, 683
MACILWAINE, Professor: A holiday visit to Montreal, Toronto, and the Mayo Clinic, 1240
MCKENDRICK, Lieut.-Col. A. G.: House infection in cholera and cancer, 1266
MACKINTOSH, Ashley: Case with the appearance of myxoedema, 1177
MCKINTOSH, James: The cause of influenza, 137—The bacteriology of influenza, 303
MACINTYRE, John: Diseases of the oesophagus, 472
MCKAIL, David: Maternity and child welfare, 351—Industrial fatigue and vocational selection, 351
MCKAY, J. Stewart: *Lawson Tait: His Life and Work*, rev., 1032
MACKENNA, R. W.: Etiology of seborrhoea, 756—The ductless glands and skin affections, 980
MCKENZIE, Dan: An old wife's fable, 194—Septic sinus thrombosis, 464
MACKENZIE, Dr.: Treatment of tuberculous cervical glands, 864
MACKENZIE, Ivy: After effects of lethargic encephalitis, 1176
MACKENZIE, Sir James: *L'Avenir de la Médecine*, rev., 17—The process which results in auricular fibrillation, 70 (O)—The nature and significance of heart symptoms, 109
MACKENZIE, J.: The object of investigation at the St. Andrews Clinical Institute, 948
MACKENZIE, J. J., obituary notice of, 618
MACKENZIE, Sir W. Leslie, appointed Crown representative for Scotland on the General Medical Council, 770
MACKEOWN, R. J.: Co-operative hygiene, 22
MACKAY, Leonard: The bacteriology and vaccine treatment of chronic bronchitis, 715 (O)
MACKIE, Lieut.-Col. F. P.: The bacteriology of influenza, 306—Comparative pathology of plants and animals, 722
MCKILLOP, Margaret: *Food Values: What they are and how to calculate them*, rev., 87
MCKINNON, E. C.: S orage batteries, 1042
MACKINTOSH, Colonel D. J., presentation to, 1278
MACKWOOD, J. Charsley: Unsuspected pregnancy, 825
MACLACHLAN, John T.: Solution of trinitrin in acute nephritis, 473—Etiology of rickets, 1000—The cancer problem, 1280
MACLAREN, Brigade Surgeon Lieut.-Col. George Gilbert, obituary notice of, 1147
MACLEAN, Alexander, obituary notice of, 536
MCLEAN, Captain Archibald Lang, obituary notice of, 153
MACLEAN, Ewen J.: Eclampsia, 89, 677—Stillbirths and neo-natal deaths, 583, 596—Anaesthetics and analgesics in labour, 674—Treatment of gynaecological conditions by radiation, 681—Treatment of salpingo-oophoritis, 685—Puerperal infection mortality in Wales, 976 (O)
MACLEAN, Hugh: Degenerative diseases of the liver, 1060—Prognosis and treatment of chronic renal disease, 1067
MCLELLAN, Arch. N.: Caesarean section, 150
MCLENNAN, Alex.: Treatment of tuberculous cervical glands, 863—Scoliosis, 864
MACLEOD, J. J. R.: Control of glycosuria by the islets of Langerhans, 1065—Insulin and diabetes, 833 (O)—(and others): *Physiology and Biochemistry in Modern Medicine*, rev., 1125
MCLEOD, J. W.: Concerning the theories of the so-called "bacteriophage," 298
MACLEOD, Colonel Kenneth, obituary notice of, 1246
MACMAHON, Cortlandt: Mechanical measures in intestinal stasis, 70
MACMICHAEL, William: *The Gold-Headed Cane*, 651
MCMURRAY, T. P.: Sacro-iliac tuberculosis, 926
MACNALTY, A. Salusbury (and L. S. T. BURRELL): The treatment of pulmonary disease by inducing a pneumothorax, 606
MACNAUGHTON, F. G.: The blood at 100 years of age, 14
MCNEE, J. W.: Degenerative diseases of the liver, 1062
MACPHAIL, Alexander: Remarks as President of the Section of Anatomy, 787—The administration of the Anatomy Act, 788—Radiology in the teaching of anatomy, 796

MACPHERSON, Major-General Sir William G.: American Distinguished Service Medal conferred upon, 664—and other editors): *The Medical History of the War, based on Official Documents*, rev., 691, 761

MACQUIBBAN, Charles Mitchell, obituary notice of, 330

MACRAE, Farquhar: Diagnosis and treatment of cholelithiasis, 1038

Macula, bilateral colobomata of (E. R. Chamberlain), 564

McVAIL, J. C.: Jenner medal of the Royal Society of Medicine presented to, 92—Awarded the Stewart Prize of the Association, 170—Port sanitary administration, 338—Treatment of industrial accidents, 385—Economics and tuberculosis, 868

McVEAN, Captain N. N. G. C., obituary notice of, 286

McVITTIE, R. B.: Influence of alcohol on racial stock, 259

MACWATT, Colonel Robert Charles, appointed Director General of the Indian Medical service, 831

Magic circle 55. *See also* Spirit photographs

Magistrates and vaccination exemption certificates (parliamentary note), 1188

MAITLAND-JONES, A.: Pernicious anaemia, 978

Malaria, epidemic, 1183

Malaria in the treatment of general paralysis (Edward Wheeler Scripture), 1121, 1197

Malaria research in India, 1241

Malaria in Russia, 1151, 1183

Malaria, tropical, in Berlin, 1151

Malay States, public health in, 522

MALINS, Sir Edward, obituary notice of, 192, 239; estate of, 619

Malignant disease, *x*-ray treatment of (Reginald A. Morrell), 1175

MALLANAH, S.: Infection by *B. pyocyaneus* simulating leprosy, 1223

Malta, soldier homes and hospitals in (parliamentary note), 231

MALTRIAN, Maurus: Exophthalmic goitre, 912

Manchester: Medical Golfers' Association, 114—Jubilee of the School of Medicine, 701—Radiology and electrotherapy meeting at, 946

Manganese in treatment of psoriasis (James Moore), 41 (O)

Man's insect enemies (Francis Clark), 395

MANSON, Sir Patrick, appreciation of, 97—Memorial medal, presentation to Lady Manson, 611

MANSON, R. L.: Meningitis due to Pfeiffer's bacillus, 83

MANSON-BAHR, P. H.: Case of *Filaria loa* infection, 1030

MANSOOR, Ram: Bubonic plague treated with neo-salvarsan, 127

MARIE, Pierre: *Questions Neurologiques d'Actualité*, rev., 310

MARKS, Charles Ferdinand, to retain the title of Honourable, 331

MARNOCH, Professor: Myositis ossificans, 1177—Sero-cystic disease of breast, 1177

Marriage and medical examination, bill passed by New Jersey (U.S.A.) legislature, 69

Married medical women, 329

Marrow, bone. *See* Bone

MARSDEN, R. W.: The determination of sex, 646

MARTIN, A. F.: On the maintenance of "obstetric anaesthesia" by means of infundibulin and chloroform, 672

MARTIN, C. J.: The physiological effects of light, 1028

MARTIN, James H.: Caesarean section, 67, 150

MARTIN, Thomas: Asthma, 582

MARTINDALE, W. H.: Urine tests, 953

MARTINET, Alfred, obituary notice of, 1140

MARTIN-LEAKE, Lieut.-Col. Arthur, awarded the gold medal of the Association, 175

MASON, G. B.: Health problems in the West Indies, 994

MASSEY, A. (and H. S. CARTER): Terminal hyperpyrexia, 922

MASSEY, Alfred Yale, obituary notice of, 1198

Mastoiditis, influenzal, followed by acute meningitis (Francis Muecke and W. H. Sarra), 1077

"Mastdubrkelbazilleneinheitsvakzine" and others, 319

Maternal mortality. *See* Mortality

Maternity insurance in Italy, 396

Maternal mortality. *See* Mortality

Maternity and child welfare, lectures on, 536—Instruction for the laity, 581—Review of books on, 693

Maternity and child welfare in Scotland (Mary J. Menzies), 348—Discussion, 351—In Glasgow (Jean Agnew), 696—In Edinburgh, 996

Maternity and unemployment conventions approved by Spanish Houses of Parliament, 113

Mandsley Hospital, reopening of, 393, 1089, 1199. *See also* Hospital

Mauritius, the case of sanitary reform, 774

MAVER, David, obituary notice of, 1098

MAVROGORDATO, Ethel (and Selwyn Gurney CHAMPION): *Wayside Sayings*, rev., 130

MAYLARD, A. Ernest: Lister and fractures, 108

Mayo, lymbus fever in, 1240

Mayo Clinic: Collected Papers of, vol. xiii, 1921, rev., 645

Mayo Foundation for Medical Education and Research and the Medical School, Papers from, rev., 230

MEAKER, Samuel R.: Dysmenorrhoea as an industrial problem, 179

MEAKINS, J. C.: Oxygen want 270—Basal metabolism, 751

Meat Poke, The New 814

Meals for children (parliamentary note), 1188

Meals, test, diagnostic value of gastric fractional (Hugh S. Pemberton), 7 (O)

Measles (parliamentary note), 280

Measles, open-air treatment of, an experiment, 617

Measles with multiple tuberculous manifestations, 332

Measles, urine in, the diazo-reaction and (George Hunter), 751

Meat, tinned, bacteriology of, 700

Meckel's diverticulum, surgery of (J. P. Buckley), 1267

Medical aid for Russian refugees, 898

Medical arrangements at a garden factory (Bournville), 660

Medical art patron, 1093

Medical barristers. *See* Bar

Medical club. *See* Club

Medical curriculum, Canadian (leading article), 568

Medical curriculum, the place of ophthalmology in the undergraduate (W. Gordon M. Byers), 4 (O)

Medical curriculum, the place of pharmacology in (W. E. Dixon), 410

Medical Defence Union, annual meeting, 648

Medical dictionary, rev., 311

Medical Directory, 1923, 285—Review of, 1126

Medical education, a new era in, 412

Medical education, past and present (Sir Clifford Allbutt), 655

Medical education in the United States: twenty-one years' progress, 571

Medical education of women. *See* Medical schools

Medical golfing societies, 154, 898

Medical group (parliamentary note), 1092

Medical History, Annals of, vol. iv, No. 1 (edited by F. R. Packard), rev., 311—Vol. iv, No. 2, rev., 984. *See also* Medicine, history of

Medical History of the War: New address of the office, 484—*Vol. i, Diseases of the War*, rev., 691, 761

Medical Insurance Agency: meeting of Committee of Management, 103, 1234

Medical jurisprudence, importance of the teaching of to students of medicine and law (Andrew Allison), 368—Discussion, 370

Medical magistrates, 153

Medical mayors, 665, 779, 1003

Medical officers of health, qualifications for, 1152

Medical men and Parliament, 1003, 1042, 1135. *See also* Parliamentary candidates

Medical missionaries, information concerning, 451

Medical museums. *See* Museums

Medical officer, appointment of, co. Cavan Health Committee and, 400, 489

Medical officers of health, information concerning appointments of, 445

Medical officers' holidays (Kilkenny), 488

Medical organization in South Africa. *See* Africa

Medical periodicals, the future of, 487

Medical playwright, 55

Medical practice in British dominions and foreign countries, information concerning, 450

Medical practitioners in France, number of, 581

Medical practitioners of co. Wexford, 400

Medical profession, the numbers of, 413

Medical progress, forty-five years of (Newton Pitt), 857

Medical quarterly, a new (*Medicine*), 24

Medical referees (parliamentary note), 25

Medical Register: Untraceable practitioners, 484

MEDICAL RESEARCH COUNCIL:
Report to on the etiology and pathology of stillbirth (Gilbert J. Strachan), 80
Report to on the cause of influenza (James McIntosh), 137
Report of the Salvarsan Committee on the toxic effects of arsenobenzol preparations, 138
The action of flavine antiseptics on localized pyogenic infections (C. Bennett, J. W. S. Blacklock, and C. H. Browning), 306
Report to on the treatment of pulmonary disease by inducing a pneumothorax (L. S. T. Burrell and A. Salusbury MacNalty), 606
The storage of child life in Glasgow (Jean Agnew), 696
Report to on the standardization of pituitary extract, 1087
Report to on the causation of industrial accidents (E. E. Osborne and H. M. Vernon), 1134—(B. Muscio), 1138
Siliqosis and miners' phthisis (W. E. Gye, W. J. Purdy, and E. H. Kettle), 1187

Medical Research and daily life (Sir Walter Fletcher), 937, 941

Medical research and national life (Sir Walter Fletcher), 517

Medical research in South Africa, 1185

Medical research, the general practitioner's share in, 813

Medical School of Manchester, 608. *See also* University

MEDICAL SCHOOLS AND COLLEGES:
Appointments under the Colonial Office, 450
Army Medical Service, 447
Canadian medical curriculum, 568
Clinical hospitals, 438
Degrees for practitioners, 440
Dental surgery, 451
Indian Medical Service, 449
Information concerning the study of medicine, 407 et seq.
Medical education of women, 436, 439
Medical missionaries, 451
Medical practice in British dominions and foreign countries, 450
Opening of the new session, 655
Pharmacology, place of, in the medical curriculum, 410
Post-graduation study, 440
Prison medical service, 450
Psychological medicine, 443
Public health services, 415
Public services, 447
Royal Air Force Medical Service, 448
Royal Army Medical Corps, 447
Royal Naval Medical Service, 449
Scholarships, 417 et seq.
Training of the medical student, 407, 439
Tropical medicine, 442

Medical science and the State, 1189
Medical science in New Zealand, 394
Medical sheriff of Lincoln, 702
Medical student, training of (Sir Clifford Allbutt), 407
Medical student, woman, the first registered in Turkey, 582
Medical students, shortage or overcrowding of, 67
Medical students: At the University of Melbourne, 326—In Paris, statistics, 1140

MEDICAL AND SURGICAL APPLIANCES:
Fine adjustment valve for oxygen, 476
Hooked anaesthetic drop-bottle collar, 604
Twin needle outfit for collecting blood from a vein, 876
Twin tonsil-bed compressor, 18

Medical women: International Congress, 287—Medical education of. *See* Medical schools

MEDICAL AND DIETETIC PREPARATIONS:
Chenopodium oil, 476
Hemostyl, 1126
Idozan, 1126
Opoidine, 1126

Medicine, certain developments in (Lord Dawson of Penn), 781 (O)
Medicine and credulity (Edwin Bramwell), 946
Medicine, first number of, 24
Medicine in the century before Harvey (Arnold Chaplin), 707 (O)—Leading article, 766
Medicine, forensic. *See* Forensic
Medicine, history of: Third International Congress, 23, 93, 145, 179, 220, 275—Lord Onslow's address, 145—Presidential address, 145—National delegates' reply, 145—Reception at the College of Physicians, 146—Prehistoric human skulls and the evolution of man, 146—Banquet, 179—The Plague, 220—Greek medicine, 220—The Chadwyck chapter in the history of medicine, 220—Anatomy, 221—Aerostatics, 221—An English rural practitioner of the seventeenth century, 221—History of British pharmacy, 221—Hiera picra, 222—The pomander stick, 222—Visit to Barbers' Hall, 222—St. Bartholomew's Hospital, 222—Entertainments, 222—Anatomy in Edinburgh, 275—Forgotten teachers at Salerno, 275—Inoculation for smallpox, 275—Byzantine cookery, 274—Veterinary medicine, 274
Medicine, a German History of, rev., 930. *See also* Medical history, annals of
Medicine and natural history, links between (J. Arthur Thomson), 775
Medicine, the profession of, 411
Medicine and the Renascenee (leading article), 766
Medicine, review of books on, 46, 128, 476, 1084
Medicine: *Nouveau Traité de Médecine*, fascicule vi: Intoxications, rev., 46
Medicine's debt to the fine arts, 1275
Medico-historical treasures of Glasgow, 97

MEDICO-LEGAL:
Allport, James, prosecution of, 331
Firth, Sydney, case of, 69
Gaster *v.* Hirsch, 96, 110

Mediterranean fever. *See* Fever
MEHTA, V. N.: Rat-bite fever, 194—Fetid expectoration, 538
Melanotic sarcoma. *See* Sarcoma
MELLANBY, Edward: The action of alcohol on the human economy, 195—The etiology of rickets, 849
MELLOR, J. W.: *A Comprehensive Treatise on Inorganic and Theoretical Chemistry*, rev., 806
MELVILLE, Lady Constance, bequest of, 831
Meningismus (J. S. Anderson), 947
Meningitis, acute, following influenzal mastoiditis (Francis Muecke and W. H. Sarra), 1077
Meningitis due to Pfeiffer's bacillus (R. L. Manson), 83
Meningitis, cerebro-spinal, influenza and encephalitis (Alexander James), 979

Meningitis, otogenic, benign forms of (Holger Mygind), 465—Discussion, 466
Meningo-myelocele, lumbo-sacral (J. H. Turton), 44
Mental defect and inheritance, 661
Mental defectives in the courts, 223
Mental defectives, a Lancashire institution for ("Calderstones") report, 822
Mental defectives, sterilization of, 29, 64, 109, 285, 328, 401, 490 531, 579, 615, 661—The medical importance of clearly defined biological terms, 615. *See also* Sterilization
Mental deficiency conference, 94, 222—Crime and mental deficiency, 222—Mental defectives in the courts, 223—Address by the President of the Board of Education, 223—Occupation centres, 223—*Report of Conference*, rev., 1084
Mental deficiency (W. H. Coupland), 1171
Mental disorders, alcohol in its relation to the problems of (Sir Frederick W. Mott), 199—(John T. MacCurdy), 204—Discussion 206
Mental Hospitals Commission, New York State, annual report, 478
Mental hospitals, dietary in, Committee of Inquiry, 1159
Mental hospitals, with no women on the visiting committee (parliamentary note), 280
Mental hospitals, public, administration of, report of Committee of Inquiry, 225
Mental hospitals, voluntary boarders in (parliamentary note), 1136. *See also* Hospitals
Mental Hospitals Association. *See* Association
Mental institutions (parliamentary note), 144—Voluntary boarders in (parliamentary note), 231
Mental service cases (parliamentary note), 231
Mental stresses of adjustment in women (Jane I. Suttie), 549
Mental symptoms in physical disease (Sir Maurice Craig), 841 (O)
Mentally defective children, report of Birmingham Special Schools After care Committee for 1920, 769
Mentally deficient children, review of book on, 603
Menzies, Mary J.: Maternity and child welfare in Scotland, 348
Mercantile marine, vision tests for the, 70—Review of books on, 692, 764. *See also* Vision
Merry On anemonists, 406
Mesenteric cyst. *See* Cyst
Messiter, Matthew Arden, obituary notice of, 153
Metabolism, basal (E. P. Cathcart), 747—Discussion, 751
Metabolism, review of book on, 873, 1123
Metallic structures analysed by *x* rays (W. L. Bragg), 1042
Metropolitan Asylums Board, annual report, 486
Mexican Medical Association, third anniversary, 581
Micro-organism, new, morphologically and culturally like the influenza bacillus (Dr. Crofton), 45
Midwifery, past, present, and future of (B. P. Watson), 712 (O)—Correspondence on, 1248
Midwifery, the whole art of (leading article), 765
Midwives Board. *See* Board
Midwives and chloroformists, 772
Migraine, luminal in (Wilfred Harris), 786 (O)—Correspondence on, 893
Migraine, ophthalmic, with unusual symptoms (A. R. Moodie), 1256
Milian: The visceral content of arsenic, 609
Milk adulteration in Edinburgh, 324
Milk, condensed (parliamentary note), 103
Milk Conference, National, 153, 482, 619, 771, 820—Discussions, 771, 820
Milk control and distribution in America (John Robertson), 105)
Milk and Dairies Amendment Bill, 25, 103, 182, 230, 1276
Milk and Dairies Order, 1276
Milk, food poisoning caused by, due to *B. aertrycke* (W. R. Wiseman), 728
Milk, grading of, 1239; in Scotland, 889
Milk of Jersey cows, 898
Milk, modified, re-establishment of the Walker-Gordon Laboratories for the preparation of, 1247
Milk prosecutions, Ministry of Health circular re, 232, 325, 612
Milk supply of Edinburgh, 615
Milk-borne diphtheria. *See* Diphtheria
Millard, C. Killick: Birth control, 133—The outbreak of small-pox at Poplar workhouse, 1001, 1097, 1146—A correction, 1146—Small-pox and vaccination, 1242
Millbank Fund and tuberculosis control, 133
Miller, Dr.: The economics of public health, 341—Defects in school children, 348
Miller, Dr.: Anæsthetics and analgesics in labour, 674
Miller, H. Crichton: The teaching of psychotherapy, 235—The psychic and endocrine factors in functional disorders, 551—The thyroid gland and diseased tonsils, 704—Problems of asthma, 786
Miller, Jas. B.: The small-pox outbreak at Poplar workhouse, 1195
Milligan, E. H. Marcus: The treatment of simple goitre, 235
Milligan, Sir William: Diagnosis of septic sinus thrombosis, 459—Aural polypi, 468
Mills, Arthur: Visceral crises, 13 (O)
Milne, Robert, obituary notice of, 1050
Milner, A. E.: Treatment of lupus by diathermy, 1224
Miners' nystagmus. *See* Nystagmus
Mines, conditions in (parliamentary note), 102
Ministry, the new, 814
Minnitt, Dr.: Some observations on general anæsthetics, 1080
Missionaries, medical, information concerning, 451
Missionaries in the Tropics: Health Instructions for, rev., 1227
Mistakes, instructive (in diagnosis and treatment), 1092, 1185
Mitchell, D. A.: Chronic osteomyelitis, 1177—Chronic bursitis, 1177
Mitchell, F. W. D.: *A Key to Health and Long Life (the Secret of Healthy Nutrition)*, rev., 1179
Mitchell, Mr.: Regeneration of the lower half of femur, 1177—Congenital club-foot, 1177
Mitchell, Alexander: Bone grafting in tuberculous spinal caries, 327—Treatment of tuberculous cervical glands, 862
Mitchell, T. W.: Psychotherapeutics and psychopathology, 543—*The Psychology of Medicine*, rev., 645
Mitchell, W.: *X*-ray treatment of deep-seated cancers, 511—*X*-ray treatment of tinea tonsurans, 563—*X* rays in hypertrichosis of the face, 949, 1242
Moffat, R. U.: Amaas or alastrim, 283
Mole, vesicular, and placenta praevia (W. H. Lowman), 564
Molloy, Major L. G. S., elected a Member of Parliament (Blackpool), 1003, 1042
Molson, J. E., elected a Member of Parliament (Gainsborough), 1042
Mond, Sir Alfred: The State and medical science, 1189
Monro, T. K.: Chronic renal disease, 1074
Moodie, A. R.: Case of ophthalmic migraine with unusual symptoms, 1256—Conjunctivitis artefacta, 1265
Moore, James: Treatment of psoriasis by manganese, 41 (O)
Moore, J. J.: Proprietary vitamin products, 519
Moore, Major General Sir John: The eradication of glanders and anthrax, 867
Moore, Jared Sparks: *The Foundations of Psychology*, rev., 6 2
Moore, Sir John William: Xanthoma diabeticorum, 1176—Myelogenous leukæmia, 1176
Moore, Sir Norman, portrait of, presented to the Royal College of Physicians, 177—Obituary notice of, 1148—Requiem mass for, 1197
Moorhead, Dr., exhibits specimens of hearts, 1268
Mo rhead, T. G.: Tuberculosis of the female pelvic organs, 1029—Surgical treatment, 1122
Morgan, G. T., appointed a member of the Dyestuffs Advisory Licensing Committee, 831
Morgan, Parry: Artificial pneumothorax in the treatment of pulmonary tuberculosis, 760
Morison, J. M. Woodburn: *X* ray treatment of deep seated cancer, 511—Gas inflation in *x* ray diagnosis, 513—*X* rays in skin diseases, 560—Lead glass shield for Coolidge tube and Bucky-Potter diaphragm, 563—Radiology in the teaching of anatomy, 795
Morison, Rutherford: Diagnosis and treatment of cholelithiasis, 1010
Morley, Donald E.: The foetal heart, 601
Morley, John: The use of Coley's fluid, 45—Intrathoracic goitre, 45—Œsophagus and diaphragm from a case of cardiospasm, 45—Cyst free in the peritoneal cavity, 927
Morphine, exportation of (parliamentary note), 103—Manufacture of (parliamentary note), 280
Morrell, Reginald A.: X-ray treatment of malignant disease, 1175
Morris, Dr: Puerperal mortality, 346—Defects in school children, 343
Morris, Sir Malco m, golden wedding of, 178
Morrison, J. T: Blood transfusion, 1079
Mortality and alcohol restriction (M. Hindhede), 248
Mortality, infantile, alcohol as a beverage in its relation to (J. W. Ballantyne), 252
Mortality, infantile, review of book on, 1034
Mortality, maternal, in Dublin and New Zealand (Henry Jellett), 274
Mortality, maternal, in India, 1231
Morton, William Cuthbert: *The Language of Anatomy*, 276
Moseley's classification of the elements, 14
Moss, Major E. L.: Aortic murmurs, 150—Dystocia due to gigantic female foetus, 643 (O)
Moss, Captain John Gregory Owen, obituary notice of, 113
Mothersole, R. D.: Diagnosis and treatment of cholelithiasis, 1014
Motor cars and income tax. *See* Income tax
Motor cars, Rhode "all weather" coupé, 581
Motor cars: Warming the garage, 1004, 1053, 1100
Motor notes for medical men (H. Massac Buist), 17, 48, 770, 877—The Motor Show, 877, 1004
Motor Show, 812, 877, 886, 1004—A correction, 1004
Mott, Sir Frederick W.: Alcohol in its relation to the problems of mental disorders, 199—Reviews *Maladies du Cervelet et de l'Isthme de l'Encéphale*, 564—Treatment of neuro-syphilis, 635—Accepts invitation to become honorary director of the Birmingham Mental Research Department, 779—Appointed lecturer in neuropathology and psychotherapy in the University of Birmingham, 779—*Archives of Neurology and Psychiatry from the Pathological Laboratory of the London County Mental Hospital, Maudsley Hospital, Denmark Hill*, vol. viii, rev., 931
Moullin, James Alfred Mansell, obituary notice of, 535
Moulton, H. Fletcher: *The Life of Lord Moulton*, rev., 1178
Mount Everest, the last high climb on, 20—Suggested use of the apparatus called oxinhalator, 78—Natural history of the region of, 141
Mountain climates, influence of, on tuberculosis, 1126
Mouth, serum by. *See* Serum
Movat, Vincent: Laparotomy for intestinal obstruction on board ship, 1077 (O)
Moynihan, Sir Berkeley: Appreciation of William Stewart Halsted, 663
Mucke, Francis: Septic sinus thrombosis, 464—Otogenic meningitis, 466—(and W. H. Sarra): Acute meningitis following influenzal mastoiditis, 1077
Muir, Ernest: *Handbook on Leprosy*, rev., 805
Muir, Robert: Degenerative diseases of the liver, 1065
Mumford, Mr.: Congenital dislocation of the hip in children, 1031—Kidneys removed for hydronephrosis, 1177
Mumps: is it parotitis? 70
Munich, opening of a new building for the surgical clinic at, 133
Munro, Archibald Campbell, obituary notice of, 192
Munro, John M.: Treatment of cramp, 288
Muralt, A. v.: Psycho-analysis, 936
Murison, Alexander A. W. P., Order of the Nile conferred upon, 331
Murphy, Lieut.-Col. Patrick, obituary notice of, 831
Murray, Farquhar: Treatment of eclampsia, 678—Treatment of gynæcological conditions by radiation, 682—Treatment of salpingo-oophoritis, 685
Murray, F. Anderson: Etiology of seborrhœa, 756
Murray, George A.: Exophthalmic goitre, 908
Murray, H. Leith: Eclampsia, 89—Unsuspected pregnancy, 926—Case of simulated disease, 927
Murray, J. A.: The production of cancer by specific forms of irritation, 1103
Murray, Margaret Alice: *The Witch Cult in Western Europe: a Study in Anthropology*, 1277
Murrell, William: *What to do in Cases of Poisoning*, rev., 1034
Muscio, B.: The relation of fatigue and accuracy to speed and duration of work, 1099, 1134
Muscle necrosis, 533
Muscle, quadriceps, rupture of, treated by suture (Leslie W. Dryland), 473
Muscle, quinine necrosis of (Philip Figdor and D. Denham Pinnock) 14—Correspondence on, 109
Museums, Medical, International Association of: Annual meeting of the American and Canadian sections, 56
Music halls, sanitary regulations for, 63
Mutation of species (William B. Brierley), 772—Discussion, 726
Muthu, C.: Diagnosis of phthisis and other respiratory affections, 740—*Pulmonary Tuberculosis: its Etiology and Treatment*, rev., 805
Mygind, Holger: Septic sinus thrombosis, 463—Benign forms of otogenic meningitis, 465—Aural polypi, 468
Myatonia congenita (Oppenheim's disease) (Abel Evans), 1268
Myocardial disease (John Hay), 1223
Myomectomy for uterine fibroids (Arthur E. Giles), 803
Myomectomy, scope and technique of (Victor Bonney), 804—Discussion, 804
Myope classes, education of partially blind children in (H. Wright Thomson), 1257—Discussion, 1258
Myotonia congenita (Thomsen's disease) (Abel Evans), 1268
Myotonia, some features of (leading article), 1232

N.

Napier, L. E.: Kala-azar, 392
Narbeth, Christopher Wesley, obituary notice of, 1198
Nasal deformity, plastic operations for (Douglas Guthrie), 473
Nathan, Mme Edouard: Gifts to University of Paris, 1236
National Association of Opticians. *See* Opticians
National Physical Laboratory, report, 21
Natural history and medicine, links between (J. Arthur Thomson), 773
Natural science and the camera, 572
Navigation and the light sense. *See* Light

Navy, Royal:
Dental hygiene, lectures on, 491
Greenwich Hospital pension awarded, 895
Health of, statistical report for 1915, 403
Medical Service, information concerning, 449
Medical service of, correspondence on, 237
Medical Service memorials, 396, 573, 699, 895, 1002
Senior Surgeon Commanders, case of (leading article), 52—Parliamentary notes on, 57—Correspondence on, 617

Navy, Royal: Dental Officers, R.N., 1098
Near East, conditions in (parliamentary note), 1092
Needle outfit (twin) for collecting blood from a vein, 876
NEETHLING, Andrew Murray, obituary notice of, 330
NEILD, Theodore: Action of alcohol on the human economy, 199—Influence of alcohol on racial stock, 259
Neo-Malthusian and Birth Control Conference, International, 69, 132 *See also* Birth control
Neo-natal deaths and stillbirths (J. W. Ballantyne), 583—(Eardley Holland), 588—(A. Louise McIlroy), 589—(Francis J. Browne), 590—(J. N. Cruickshank), 593— Gilbert & Strachan), 594—Discussion, 595—Leading article, 605
Neo-salvarsan ampoules, alleged faults in manufacture of, 982
Neo-salvarsan in treatment of bubonic plague (Ram Mansoor), 127—Correspondence on, 190
Nephritis, acute (Shaw Dunn), 1080
Nephritis, acute, solution of trinitrin in (John T. Maclachlan), 473
Nephritis, primary chronic interstitial, and arterio-sclerotic kidney (John Shaw Dunn), 1166
Nephritis, non-pyogenic (Bright's disease), the etiology and treatment of (W. M. Crofton), 686 (O)
Nerve, optic, etiology of atrophy of (C. O. Hawthorne), 1153—(J. Hogarth Pringle), 1156—(H. M. Traquair), 1157—Discussion, 1161
Nerve, optic, relation of, to the sphenoidal and posterior ethmoidal sinuses (Gavin Young), 1258
Nerves, review of books on, 474, 1124
Neurological clinic, London: Temporary congestion (parliamentary note), 231
Neurology, review of book on, 310, 931, 1269
Neurosis, conversion, case of (Philip C. Livingston), 846 (O)
Neuro-syphilis, the treatment of (Sir James Purves-Stewart), 621—(S. A. Kinnier Wilson), 628—(Douglas K. Adams), 630, 706—(Ernest M. Dunlop), 632—Discussion, 674—A correction, 706
Neuro syphilis, treatment of with special reference to the changes in the cerebro-spinal fluid (Douglas K. Adams), 630
Neuro-syphilis, Wassermann reaction in the diagnosis and control of treatment of (Ernest M. Dunlop), 632
Neurotic, the making of a (J. A. Hadfield), 546
NEVE, C. T.: Paralysis of the facial nerve with herpes zoster, 643 (O)
NEVEU, Dr: Plague in Tuscany in the fourteenth century, 220
New Brighton discourtesy of the coroner at, 100
Newcastle Medical Institute, the founder of, 141
New Jersey: Bill passed requiring applicants for marriage licences to submit to a medical examination, 69
NEWMAN, Sir George: Salary of (parliamentary note) 25—Annual report of, 230, 323, 387, 477—Food value of milk and its care in the home, 821
NEWPORT, Surgeon Commander Alexander C. W., M.V.O. conferred upon, 115
New South Wales: "Clean the city campaign," 231—Plague in, 233, 481—Sydney University commemoration, 255—Tropical Australia, 233. *See also* Sydney *and* Australia
New York: Decline in the alcoholic death rate since prohibition became operative, 113—Convalescent camp for whooping-cough patients opened, 400—Report of State Hospitals Commission, 478—Deaths from acute alcoholism in, 581
New Zealand: Maternal mortality in (Henry Jellett), 274—Medical science in, 394
NICHOLLS, Lucius (and G. G. HAMPTON): Treatment of human hookworm infection with carbon tetrachloride, 8 (O)—Treatment of leprosy, 892
NINNIS, Inspector-General Belgrave, obituary notice of, 30
NIXON, J. A.: Medicine's debt to the fine arts 1275
Nobel prizes (1921, 1922), 995
NORBURY, F. G (and Noël HERBERT): A complicated case of intussusception, 922
NORMAN, A. C.: The protection of radiologists, 190
NORTHCLIFFE, Lord, death of, 319
Northumberland Yeomanry, 1004
Nose, review of book on, 1226
Nose, sunken, restoration of the (Harold Burrows), 688 (O)
Notable trials. *See* Trials

Notes, Letters, Answers, etc.:
Acromegaly, relief of pain in, 154, 240
Acting commanding officer decides, 954
Aluminium cooking vessels, 332, 538
Alvarenga prize, 954
Anatomists, Mery's remark on, 406
Apparent absence of tumour in case of intussusception, 1054
Arsenic compounds, organic, estimation of the toxicity of, 494
Arterio-sclerosis, climate for, 1004
Artificial dentures, infectivity of, 406
Artificial eyes for ophthalmoscopic study, '14, 154
Asthma, 582, 620, 666, 706
Asthma and anaphylaxis, 288
"Bad arms" after vaccination, 1054, 1100
Bathroom dangers, 494

Notes, Letters, Answers, etc. (*contd.*):
Botulism, prevention of, 666
Breath, foul, 493
By-product of the Jamaica hookworm campaign, 538
Cæsarean section, 406
Cancer, etiology of, 32, 114
Carlsbad, information as to cost of treatment at, 332
Certifying factory surgeons, 537
Chaulmoogra oil in tuberculosis, 666
Class-conscious conscience, 494
Climate for nasal or chest case for winter months at Bordighera, 154—Of the Portuguese Riviera for a bronchitic, 332, 620—For arterio-sclerosis, 1004
"Cold water doctor," 494
Corns and warts, 666
Corrections, 705, 1004, 1100
Cramp, treatment of, 288
Cystitis in paraplegia, treatment of 288
Dermatitis amongst cement workers, 898
Desquamation after scarlet fever: is it infective? 632 954
Diabetes in the tropics, 332
Discolouration, 1152
Drunk: the acting commanding officer decides 954
Fetid expectoration, 538
First aid in coal mines, 1100, 1152
Food, tinned, 1200
Foreign bodies in the auditory meatus, 32, 114, 154
Galactorrhœa, 493
Gastro-jejunostomy for perforated gastric and duodenal ulcers, 537
General practitioner and refractions, 582
Herpes with facial paralysis, 538, 620
Herpes and varicella, 954
Horsley's wax, 1200
Hospital *v.* asylum, 240
Income tax 32, 70, 114, 154, 194, 240, 288, 332, 406, 493, 537, 582, 620, 666, 705, 780, 832, 898, 953, 1004, 1054, 1099, 1152, 1200, 1248, 1286—Motor car transactions, 582
Inoculation for the tropics, 666
Inquests in workhouses in Ireland, 493
Insects in the auditory meatus, 32, 114. *See also* Foreign bodies
Intestinal stasis, mechanical measures in, 70
Intrauterine decapitation, 1054, 1152
Left handedness and stammering, 1004, 1200
McIntyre's, Busk's, and Winchester's splints, 582
Manchester Medical Golfers' Association, 114
Measles with multiple tuberculous manifestations, 332
Medical aid for Russian refugees, 898
Medical golfing societies, 154
Medical Golfing Society, annual meeting, 898
Midwifery, past, present, and future of, 1248
Milk of Jersey cows, 898
M.O.H., qualifications for, 1152
Motor car show in London: a correction, 1004
Mumps: is it parotitis? 70
Northumberland Yeomanry, 1004
Old wives' fable, 154, 194
Oxygen apparatus, continuous, 494
Paper fastener removed from the bronchus, 1100
Peruvian Andes, 538
Pharmacists' oath, 1100
Physical training of the soldier, 1286
Plurihandicapped, the, 1053, 1100
Portuguese Riviera, climate of, 332, 620
Pregnancy, unsuspected, 1200, 1286
Psychical training, 1004, 1053
Professional secrecy, 32
Prostatic hypertrophy, 1004
Psoriasis, treatment of, 32
Psycho-analysis, 898, 954
Psycho-analysis in epilepsy, 194
Puerperal infection, prevention of, 1200
Radiotherapy, 494
Rash following hypophosphates, 666
Rat-bite fever, 194
Royal College of Surgeons of England, 1248
Salvarsan, a new substitute for, 1248
Samples and returns, 832
Samways's anchor tourniquet, 1152
Sanitary seat cover, 666
Schlatter's disease, 582
Seborrhœa, loss of hair in, 1054
Scopolamine-morphine during labour: a correction, 1100
"Serious case," 240
Sex, determination of, 1100
Shelter life for children, 493, 537
Skin disease possibly due to endocrine defect, 70
Small-pox outbreak at Poplar workhouse, 1152
Spa treatment for phlebitis, 538
Spanish Popes, 154
Sties, 953 1054
Stomatitis, epidemic, 537, 582
Strychnine and the heart 1152
Sweating in pulmonary tuberculosis, 780, 898, 953
Teeth, care of the, 582
Trichiniasis, 780
"Twilight sleep" confinements, danger to the child in, 288, 406
Urine tests, 620, 705, 953
Vaccination law, the violation of the, 1004, 1100
Vacuum flask for warming gas in peritoneal inflation 620
Varicose ulcer, painful, 1286
Venereal disease prevention, 706, 832, 1248

Notes, Letters, Answers, etc. (*contd.*):
Vision tests for the mercantile marine, 70
Warming the garage, 1004, 1053, 1100
Warts of the scalp, 240, 332, 493
"Wild-fowl," a strange, 1004, 1053, 1100
X rays in hypertrichosis of face, 1286

NOVA ET VETERA:
"Born with a caul," 567
Buccaneer surgeons, 397
"The English spaw" and "the colde spring of Kinghorne craig," 594
Ether anæsthesia, the introduction of, 1086
Honorary graduation in the olden time, 611
Master John Arderne, 1127
Renaudot, Théophrastus, 808
Spolia nemoralia (Sir John Bland-Sutton), 932
Style, 526
Sydenham, 320
Witchcraft 1277

NOVIS, T. S.: Diagnosis and treatment of cholelithiasis, 1013
Nursery schools, Board of Education's recognized list of, 240
Nurses Registration Act: register being compiled, 1151
Nurses, Victorian Order of, for Canada, twenty-fifth anniversary of, 31
Nursing, review of book on, 1084 1271
NUTHALL, A. W. (and Bertram LLOYD): Ectopia vesicæ after transplantation of the ureters into the bowel, 1266
Nutrition, review of books on, 86
NUTTALL, G. H. F., elected a Fellow of the Royal Society, 952
NUTTALL, H. C. W.: Sacro-iliac tuberculosis, 926
Nystagmus, miners' (Frederick Robson), 1171
NYSTRÖM, Anton: Birth control, 133
NYULASY, Arthur J.: Restoration of the round ligaments, 1118 (O)

O.

OBERNDORFER, Siegfried: *Pathologisch-anatomische Situs-bilder der Bauchhöhle*, rev., 1062
Obstetric anæsthesia. *See* Anæsthesia
Obstetric cases in general practice, high percentage of abnormal (J. Wallace Anderson), 126 (O)
Obstetrical practice, incidents in, 926
Obstetrics, the place of version in, 489
Obstetrics, review of books on, 385, 928. *See also* Gynæcology
Obstruction, intestinal, acute (Sir John O'Conor), 598 (O)
Obstruction, intestinal, laparotomy for, in a patient on board ship (Vincent Moxey), 1077 (O)
Obstruction, intestinal, modification of technique in (Frank Jeans), 1174
Occupation centres, discussion on 223
Occupational dermatitis. *See* Dermatitis
Occupational mortality (parliamentary note), 1188
O'CONOR, Sir John: Gastro-jejunostomy for perforating gastric and duodenal ulcers, 537—Acute intestinal obstruction, 598 (O)
O'DONOVAN, W. J.: Occupational dermatitis, 499—Etiology of seborrhœa, 756
Œsophagus, diseases of: their symptomatology and differential treatment (D. R. Paterson), 468—(Walter G. Howarth), 470—Discussion, 471
O'FARRELL, T. T.: Acute leukæmia with intracranial hæmorrhage, 45—Surgical treatment, 1122
Officers' Families' Fund. *See* Fund
OGILVIE, Colonel W. H.: Effects of chronic starvation during the siege of Kut, 237
OGLE-SKAN, H. W.: Intrauterine decapitation, 1152
Oil, chaulmoogra, and leprosy, 607—In tuberculosis, 666, 703
Oil, chenopodium, in gelatin capsules, 476
Oil, cod-liver, and calcium deficiency, 283
Oil, cod-liver, and vitamin A, 610
Oils and fats, vegetable, the vitamin content of (leading article), 314
O'KELLY, W. D.: Tuberculosis of the female pelvic organs, 1029—The enteric Salmonella group of bacteria, 1122
O'KINEALY, Lieut.-Col. Frederick, C.B.E. conferred upon, 30
OLDACRES, C. F., elected Mayor of Daventry, 1003
Old age, review of books on, 1031
Old age pensions and Poor Law relief, statistics of (parliamentary note), 102
OLDFIELD, Josiah: Some causes of longevity, 491
Old wives' fable, 154, 194
OLIVER, Sir Thomas: Alcohol restriction and mortality, 251—The importance of teaching medical jurisprudence, 371—Dangers of industrial preparations of arsenic, 374—Some factors which make for efficiency and for the social uplifting of industry, 374—Adder bite, 1114 (O)
OLLERENSHAW, Robert: Tendon transplantation, 77 (O), 257
Ontario, vital statistics of, 769
Open-air shelter. *See* Shelter
Ophthalmia neonatorum in London, in-patient treatment of, conference on, 224
Ophthalmic examinations in general medicine, 578, 615

Ophthalmic migraine *See* Migraine
Ophthalmic progress in Egypt. 886–(A. F. MacCallan), 1259—Discussion, 1259
Ophthalmology Congress. *See* Congress
Ophthalmology, the place of in the undergraduate medical curriculum (W. Gordon M. Byers), 4 (O)
Ophthalmology, review of books on, 85
Ophthalmology section (leading article), 1272
Ophthalmoscopic study, artificial eyes for, 114, 154
Opium Convention, the British Government and, 1134
Opium in India and Burmah, rev., 645
Opoidine, 1126
Oppenheim's disease (Abel Evans), 1268
Optic nerve atrophy, etiology of (C. O. Hawthorne), 1153—(J. Hogarth Pringle), 1156—(H. M. Traquair), 1157—Discussion, 1161
Optic nerve, relation of, to the sphenoidal and posterior ethmoidal sinuses (Gavin Young), 1258
Opticians, National Association of, 330, 489
Opticians, sight testing, 534—Report by the Council of British Ophthalmologists, 1081—Note on, 1089. *See also* General practitioner *and* Refractions
Oral administration of antitoxin. *See* Antitoxin
O'REILLY, A. J.: Appointment of a medical officer, 489
ORME, G. E.: Factors which make for industrial efficiency, 377
ORR, J. B.: Basal metabolism, 751—Etiology of rickets, 857
Orthopaedic sports meeting, 660
Orthopaedics, special course in, in Paris, 922
ORTON, J. H.: Causation of sex, 317
OSBORNE, Ethel E. (and H. M. VERNON): Influence of temperature and other conditions on the frequency of industrial accidents, 1099, 1134
OSLER, Sir William, the work and character of, 114
Osteo-arthritis of the hip (George Parker), 539 (O)
Osteo chondritis of upper end of femur (Mr Fitzmaurice-Kelly), 44
Osteomyelitis, acute, of right clavicle (A. Beresford), 44
Osteopathy and chiropractic (leading article), 479
O'SULLIVAN, H. D.: Danger to child in "twilight sleep" confinements, 288
Otitis media. *See* Ear
Otogenic meningitis. *See* Meningitis
Otorrhoea, chronic, in children, zinc ionization as a disinfectant in local sepsis in (A. R. Friel), 32 (O)
Ovary, adenomyoma or endometrio myoma of, 1039
OWEN, John: Treatment of disseminated sclerosis, 926
Oxalic acid included in the list of articles chargeable with duty under the Safeguarding of Industries Act, 1285
Oxford and Cambridge University Commissions, 237. *See also* University commissions
Oxinhalator, 78
Oxygen administration, continuous simple portable apparatus for (Geoffrey Bourne), 40 (O)—Correspondence on, 494
Oxygen, fine adjustment valve for, 476
Oxygen inflation in treatment of tuberculous conditions (Robert Purves), 1269
Oxygen want (J. C. Meakins), 270—(Witridge Davies), 270
Oxyuris vermicularis, appendicitis, and local eosinophilia of the appendix wall, relation between (E. H. Eastwood), 1170

P.

PACKARD, Francis R. (Editor): *Annals of Medical History*, Vol. iv, No. 1, rev., 311—Vol iv, No 2, rev., 984—*Life and Times of Ambroise Paré*, rev., 931
PAGEL, J. L.: *Einführung in die Geschichte der Medizin*, rev., 930
Pain in genito-urinary affections (W. K. Irwin), 457 (O)
Pain and other sensory disturbances in relation to diagnosis (E. Farquhar Buzzard), 1224
Paisley, health of, 530
Palaeontology, recent work in (J. C. M Given), 926
Palate, shape of, in children (W. Kerr Connell), 800
Palestine, public health in, 697
Panel conference (leading article), 810. *See also* Insurance *and* Supplement index
Panophthalmitis following cataract extraction, recovery (Lieut.-Col. H. Kirkpatrick), 82 (O)
PANTON, P. N.: Pernicious anaemia, 978
Paper fastener removed by direct peroral bronchoscopy after its impaction for twenty-one months in the left bronchus (Herbert Tilley), 76 (O)—Correspondence on, 1100
Paraffin cancer. *See* Cancer
Paraffin, liquid, the internal use of, 1280
Paraffin workers of the Scottish shale oil industry, the occupation dermatoses of (Alexander Scott), 381—Occupation cancer of (Alexander Scott), 1108
Paralysis, facial, with herpes, 538, 620
Paralysis of the facial nerve with herpes zoster (C. T. Neve), 643 (O)
Paralysis, general, the discovery of (G. M. Robertson), 1120
Paralysis, general, treated by malaria (Edward Wheeler Scripture), 1121, 1197
PARAMORE, R. H.: The treatment of eclampsia, 776—Non-malignant affections of the colon (intestinal stasis), 1145
Paraplegia, treatment of cystitis in, 288

PARIS:
Academy of Medicine 1140
Congresses of medicine and urology, 891
Examinations for resident hospital posts, 891
French Congress of Surgery, 890
Martinet, Alfred, obituary notice of, 1140
Medical Society of the Hospitals, 1141
Orthoraedics, special course in, 922
Problems of the medical students, 891
Statistics of students in Paris, 1140
Tuberculosis and pregnancy, relation of, 1140
See also France

Paris, Lyons, and Mediterranean Railway: Winter service to the south of France 1053
PARISOT: Autogenous vaccines, 571
PARKER, George: Osteo-arthritis of the hip, 539 (O)
PARKER, G. H.: *Smell, Taste, and Allied Senses in the Vertebrates*, rev., 872

Parliament, Medical Notes in:
Approved societies, surplus of, 1237
Army, British, disease in, during the war, statistics, 251—R.A.M.C. regular officers now serving in Great Britain, number of, 1188—Territorial Army, medical appointments, 25
Arsenic, sale of, 230
Asylums, patients, discharge of, 1188
Births, registration of, after 7 years of age, 103
Blind and deaf children, 26
Blind Persons Act, 26
Borstal institutions, 103
Cancer, statistics of, 26—Increase of, 102—And zymotic diseases, 103
Certifying factory surgeons, 1136
Chemicals, supply of, 58
Cocaine, medical uses of, 26, 231—Traffic in, 58—Records of sales, 183
Colonial medical services, 101
Conception, prevention of, 231
Coroner's strictures, 183
Criminal Law Amendment Bill, 102, 230
Defective school children, 1136
Dietary in asylums, 1188
Disabled men on special diet, 280
Dogs Act Amendment Bill, 26
Estimates Committee, 280
Ex-service men: Under care, 231—Removal of, from asylums, 280
Feeding of destitute families, 26
Finance Bill, 58—Amendments, 144
Health Minister, 1188
Herringham, Sir Wilmot, and the General Nursing Council, 231
Hospitals, voluntary: grants, 58
Incipient insanity: proposed Government bill, 24
Income tax repayment claims, 1188
Indian Medical Service, 58
Infanticide Bill, 26, 58
Infectious disease notification, 1188
Insane, care of the, 25
Instruments, dental, surgical, medical, and veterinary, declined value of imported, 183
Insulin for diabetes, 1237
Insurance, National:—
Administration of the Acts, 1136
The Bill, 25, 57, 183, 230
Drugs and medicines, 183
Expenditure, 280
Health and unemployment insurance, 144
Insurance practitioners and urgent cases, 25
Medical benefit, 102
Medical service, 1188, 1237
Number of workpeople insured, 1188
Unemployment insurance, 144, 1188
Jacoby and True, cases of, 58
Leprosy in India, 280
Local Government Officers' Superannuation, 25, 58
London Neurological Clinic, congestion at, 231
Lunacy Act, 1890: authorization of a medical practitioner to visit a patient, 183
Lunacy Visiting Committee's bill, 25
Malta, soldiers' homes and hospitals in, 231
Meals for children, provision of, 1188
Measles notification, 280
Medical groups, the, 1092, 1135, 1187—Election of chairman, 1187
Medical members of the new Parliament, 1042
Medical referees, 25
Mental hospitals, voluntary boarders in, 1136
Mental hospitals with no women members on the visiting committee, 280
Mental institutions, 144—Voluntary boarders in, 231
Mental service cases, 231
Milk, condensed, 103
Milk and Dairies Amendment Bill, 25, 103, 182, 230
Mines, conditions in, 102
Ministry, the new, 814
Morphine, exportation of, 103—Manufacture of, 280
Navy, Royal, senior surgeon commanders, 57
Near East, conditions in, 1092

Parliament, Medical Notes in (*contd*):
Newman, Sir George, salary of, 25
Occupational mortality, 1188
Old age pensions and Poor Law relief, statistics of, 102
Pension Medical Service, 1188
Pensioners, 58
Pensions:—
Administration, 280
Appeal resources, 26
Appeals, 183
Eligibility for, 231
Hospitals, 25
Medical department of, 1237
Medical men in the employ of the Ministry, 280
Staff paid by the Ministry, number of, 1 88
Pensions Ministry, the work of, 1135
Poison gas, manufacture of, 183, 280
Poisons, distinctive colours for, 231
Poor Law institutions, weekly cost of relief in, 1188
Port Sanitation Service, Scottish, 183
Prison administration, 103, 280
Prorogation, 1237
Quarantine Acts, 103
Radium the supply of, 26
Royal Irish Constabulary injured in the exercise of duty, medical and surgical expenses of, 183
Scarlet fever, number of cases reported, 280
Schick method of prophylaxis of diphtheria, 144
School children's attendance, 105
Schools for defective children, 58
Scientific instruments, cost of 103
Scottish Port Sanitation Service, 183
Senior surgeon commanders R.N., 57. *See also* Navy
Small-pox outbreak, 1136, 1237
Small-pox and vaccination, 1 187
Smoke Abatement Bill, 144, 183
Soldiers' homes and hospitals in Malta, 231
Spraying halls and places of public resort, 280
Suicides in prison, 103
Territorial Army. *See* Army
Theatres, etc, spraying of, 280
True, Ronald, the case of, 26, 58
Unemployment and the public health, 1136
Universities (Scotland) Bill, 103
Vaccination in the army, 1188
Vaccination, efficient, 26
Vaccination exemption certificates and magistrates, 1 88
Vaccine lymph, 1237
Voluntary boarders in mental hospitals, 1136
Work of the session, 279
Zymotic diseases and cancer, 103

Parliamentary candidates: Medical men as, 779, 887, 945, 1003—Result of the election, 1003, 1042, 1135
Parliamentary representation of Universities, 889, 945
Parliamentary and Stationary Office publications, consolidated list of, 492
PARNELL, Surgeon Commander R. J. G.: Treatment of fever, 1000
Parotitis: Is mumps parotitis? 70
PARRY, L. A.: Treatment of tuberculous cervical glands, 863—Hypertrophy of the right upper extremity, 1172—Appreciation of Reginald John Kyle, 1247
PARRY, R. H.: Diagnosis and treatment of cholelithiasis, 1013
PARRY, Thomas William, obituary notice of, 1002
PARRY, T. Wilson: *Dream Fairies*, rev., 647
PARSONS, H. Franklin (and R. Bruce Low): *Isolation Hospitals*, rev., 16
PARSONS-SMITH, B. T.: Case of intrapericardial aneurysm of the aorta, 1075 (O)
PASSEY, R. D.: Experimental soot cancer, 1112
Pasteur centenary, 897, 1247, 1273
Pasteur Commemoration Fund, 482
Pasteur Institute at Breslau, each person applying for antirabid treatment to supply at least two rabbits, 989
Pasteur and his Work: rev., 475
PATERSON, D. R.: Affections of the superior opening of the oesophagus, 468
PATERSON, Herbert J.: Broncho-pulmonary complications following operations, 919—Treatment of non-malignant affections of the colon, 1022
PATERSON, Marcus: Administrative requirements for tuberculosis, 367—Diagnosis of phthisis and other respiratory affections, 737—Sweating in pulmonary tuberculosis, 954
Pathologie Médicale, Précis de: Tome iv, *Maladies du Sang et des Organes hématopoïétiques: Maladies des Reins*, 1123; Tome v, *Maladies de l'Appareil digestif et de la Nutrition*, 1123
Pathology, animal and vegetable, in relation to human disease (Frederick Hobday), 955—(William H. Lang), 958—Discussion, 961—Leading article, 990—Note on, 1275
Pathology, review of book on, 1123
PATON, D. Montgomerie: Serum by the mouth, 703
PATON, D. Noël: The etiology of rickets, 853—Elected a Fellow of the Royal Society, 952
PATTISON, C. Lee: The local treatment of acute tuberculous disease of the hip-joint and vertebrae, 925
PEARSE, J. S.: Sterilization of mental defectives, 531
PEARSON, H. Laird: The small-pox outbreak at Poplar workhouse, 1152

PEARSON, Karl: The skull of Sir Thomas Browne, 150—*Questions of the Day and of the Fray: No. XI, Francis Galton*, 649
PEARSON, S. Vere: Economics and tuberculosis, 868
Pellagra, a notifiable disease in Venezuela, 31
Pelvesof rickety children as the precursors of the rickety flat pelves of women (Hugh T. Ashby), 905 (O)
PEMBERTON, Hugh S.: The diagnostic value of gastric fractional test meals, 7 (O)
Penal discipline, 1191
PENROLD, W. J.: Haemolytic and water fevers, 328
PENNETHORNE, Gwyneth: *Guide to Assistant's Examination in Materia Medica and Pharmacy, Apothecaries' Hall*, rev., 647
Pension medical service (parliamentary note), 1188
Pensioners (parliamentary note) 58
Pensions: Administration, 280—Appeal resources, 26—Appeals, 183—Claims, 193—Eligibility for, 231—Hospitals, 25—Medical men serving under the Ministry, 280—Parliamentary notes on, 25, 58, 183, 231, 280 1136, 1188, 1237—The staff of, 1118—The Medical Department of the Ministry, 1237
Pensions Ministry, the work of the, 1136
People's League of Health, deputation from *re* the "dole," 287
PERCIVAL, Archibald Stanley: Light sense, 148—A neglected factor in the etiology of miners' nystagmus 148—The light sense with reference to navigation, 1096—Remarks as President of the Section of Ophthalmology, 1155—The clinical significance and treatment of heterophoria, 1249
Periodicals, medical. *See* Medical
Peritoneal inflation, a vacuum flask for warming gas in, 620
Peritonitis and death caused by acute proctitis (W. H. du Pré), 1027
PERN, Sydney: Etiology of goitre, 532
PERRY, Lieut.-Col. H. Marrian: Developmental stages of *Bulinus contortus*, the invertebrate host of *Schistosoma haematobium*, 1030
Peruvian Andes, 538
PETERSEN, W. F.: *Protein-therapy and Non-specific Resistance*, rev., 128
Pfeiffer's bacillus causing meningitis (R. L. Manson), 83
Pharmacist, the training of the, 697
Pharmacist's oath, 1100
Pharmacy, British, a history of (J. B. Gilmour), 221
Pharmacology, place of in the medical curriculum (W. E. Dixon) 410
PHILIP, Sir Robert: Remarks as President of the Section of Tuberculosis, 733
Philippines: Small-pox and vaccination in, 22—Arrival of a number of "chiropractors," 537
PHILLIPS, Hubert C.: Notification of infectious diseases, 870
PHILLIPS, Miles: Anaesthetization of patients for Caesarean section, 925
Phlebitis, spa treatment for, 538
Photographs, spirit 55
Photography, review of books on, 603
Phthisis. *See* Tuberculosis
Physical disease, mental symptoms in (Sir Maurice Craig), 841 (O)
Physical education of girls, 316, 321—Report of Joint Committee, 321
Physical training of the soldier (Colonel R. B. Campbell), 1186—Correspondence on, 1286
Physically defective children, schools for, 1285. *See also* Defective
Physician: Naturalist, teacher, benefactor (J. Graham Kerr), 241 (O)
Physiology, review of book on, 1125, 1179
PICKEN, Ruby: Puerperal mortality, 346—The training for the D.P.H., 365
PIERCE, Frederick: *Our Unconscious Mind and How to Use it*, rev., 1180
PINEY, A.: The anatomy of the bone marrow, 792
PINNOCK, D. Denham (and Philip FIGDOR): Quinine necrosis of muscle, 14
PINSON, K. B.: Fine adjustment valve for oxygen, 476—Broncho-pulmonary complications following operations, 920
PINTO-LEITE, H.: Broncho-pulmonary complications following operations, 920
PIRIE, J.: Sweating in pulmonary tuberculosis, 898
PIROQUET, Clemens: *An Outline of the Pirquet System of Nutrition*, rev., 1271
PITT, G. Newton: Forty-five years of medical progress, 867
Pituitary extract, the standardization of (leading article), 1087
Pituitary gland, surgery of (A. J. Walton), 835 (O)
Placenta praevia and vesicular mole (W. H. Lowman), 564
Placental changes in relation to foetal death (Gilbert I. Strachan), 594
Plague: In Australia, 1081—In Java, 331
Plague, papers on, at the International Congress of the History of Medicine, 220
Plague, bubonic, treated with neo salvarsan (Ram Mansoor), 127—Correspondence on, 190
Plague, bubonic, advice to be given with a view to eradication of in the United States, 832
Plant and animal diseases, comparative pathology of (V. H. Blackman), 718—Discussion, 720
Plant diseases, some characteristics of the virus of (E. J. Butler), 963
Plant pathology. *See* Pathology
Plants and animals, virus diseases in, 813
Plants, disease resistance in (F. T. Brooks), 964
PLATT, Mr: Bone tumours, 45—The use of Coley's fluid, 45
Pleural adhesions, cauterization of under thoracoscopic control (H. C. Jacobaeus), 1043
Pluriglandular tablets, 1053, 1100
Pneumococcal influenza (C. F. T. East), 1117 (O)
Pneumonia, bacteriology of, Ministry of Health report on (Arthur Eastwood and Frederick Griffith), 318
Pneumonia, creosote treatment of (W. A. M. Swan), 85
Pneumothorax, artificial (leading article), 606—(J. S. Stewart), 1266
Pneumothorax, artificial, in the treatment of pulmonary tuberculosis (Parry Morgan), 760
POCOCK, A. Dorothy: Case of spleno-medullary leukaemia, 802
Poet Laureate on the language of anatomy (leading article), 276
Poison, rat, suicides from in Japan, 1126
Poison gas. *See* Gas
Poisoning, acute arsenical (Sir William Henry Willcox), 118 (O)
Poisoning, carbon monoxide (leading article), 1038
Poisoning, eserine, produced by intravenous injection, recovery (B. L. Slater), 1120
Poisoning, food, at Loch Maree, 394, 481, 527—Due to trifle, 652—By milk caused by *B. aertrycke* (W. R. Wiseman), 728—Suspected cases at Rosewell, report of pathologist, 947—By cheese, 1038
Poisoning, lead, and beer, 179, 237 279
Poisoning, white lead, 143
Poisons, distinctive colours for (parliamentary note), 231
Poisons, review of books on, 46, 1034
POLE, D. H.: Intrauterine decapitation ? 1054
Police and the profession. *See* Profession
Poliomyelitis in Germany, 881
POLLOCK, Major-General C. E., appointed Deputy Director-General Army Medical Services, 239
POLLOCK Inglis: Early opacities in the senile lens, 1—Optic nerve atrophy, 1162—The clinical significance and treatment of heterophoria, 1255—The "open" treatment in eye operations, 1262
Polydactylism of the foot (G. H. Edington and W. B. Primrose), 871
Polypi, aural (J. S. Fraser and Stephen Young), 467—Discussion, 468
Pomander stick (Michael Foster), 222
POOLE, Lieut.-Col. Walter Croker Thomas, obituary notice of, 581
POOLE, T. Dobson: The radical prevention of venereal disease, 950
POOLEY, Richard Charles Mason, obituary notice of, 530
Poor Law institutions: weekly cost per head of inmates (parliamentary note), 1188
Poor Law Medical Officers' Association, annual meeting, 188
Poor Law medical officers (Ireland), salaries of (co. Kildare), 187
POPE, Sir W. J., appeals for the support of the fine chemical industry, 1285
Popes, Spanish, 154
Poplar workhouse and small-pox. *See* Small-pox
Poppy selection, experiment on, 953
Port sanitary administration (Richard J. Reece), 335—Discussion, 338
Port Sanitation Services (Scottish) (parliamentary note), 183
PORTER, A. E.: An outbreak of diphtheria due to infected milk, 906 (O)
PORTER, Langley (and William E. CARTER): *Management of the Sick Infant*, rev., 565
PORTMANN, G. (and A. P. LACHAPÈLE): *La Roentgenthérapie des Tumeurs Malignes en Oto Rhino-Laryngologie*, rev., 1270
Portsmouth, Annual Meeting of the Association at, 1137. *See also* Association, British Medical
Portuguese Riviera, climate of for a bronchitic, 332
Post-graduate courses: At Bordeaux, 31—At Cambridge, 536, 640—At Carlsbad, 974—Correspondence on, 827, 891, 951—In Czecho-Slovakia, 331—In France, 31, 69, 1.99—At Franzensbad, 974—In Glasgow, 822—In London 31, 57, 130, 140, 233, 288, 405, 525, 581, 619, 650, 665, 705, 831, 1076—Deputation to Minister of Health), 57, 130—Leading article, 140—In Manchester, 619, 831—In Melbourne, 326, 890—In Oxford, 492—At Sheffield, 702—In Vienna, 1003—At Bath, 1189
Post-graduate medicine, review of book on, 1033
Post-graduation study, information concerning, 440
Post Office circular *re* the improvement of telephone facilities, 492
Potassium permanganate in dermatology (James Avit Scott), 977
POTTENGER, F. M.: *Clinical Tuberculosis*, rev., 805
POTTER, Irving W.: *The Place of Version in Obstetrics*, rev., 385
POTTS, W. A.: Crime and mental deficiency, 223—The teaching of psychotherapy, 235—(and G. E. Shuttleworth): *Mentality Deficient Children, their Treatment and Training*, rev., 603
POULTON, E. P. C. Putnam SYMONDS and H. W. BARBER): *Taylor's Practice of Medicine*, rev., 128
POWELL, Captain Charles Leslie Grove, obituary notice of, 492
POWER, Sir D'Arcy: The progress of surgery, 924—Translates *De Arte Phisicali et de Cirurgia*, 1127
POYNTON, F. J.: Doctors and the dawn of aerostation 221—Pernicious anaemia, 979
Pregnancy and tuberculosis, relation of (Professor Bar), 1140
Pregnancy, unsuspected (C. L. Spackman), 516—(Leith Murray), 926—Correspondence on, 578, 661, 704, 776, 825 1200, 1256
PRELL, Dr.: Anaesthetics and analgesics in labour, 674
Pre-natal care and puerperal mortality (A. Leyland Robinson), 1174
Presentations, 63, 233, 287, 578, 665, 666, 705, 772, 780, 1045, 1237 1278
PREST, Edward E.: Treatment of tuberculosis with colloid calcium, 283—Administrative requirements for tuberculosis, 368—Diagnosis of phthisis and other respiratory affections, 741
PRICE, Brigade Surgeon Lieut.-Col. William, obituary notice of, 618
PRICE-JONES, C.: Pernicious anaemia, 979
PRIESTLEY, Professor: Tropical Australia, 233
PRIMROSE, E. J.: A review of the work of the venereal diseases centre of the Glasgow Eye Infirmary, 1263
PRIMROSE, W. B.: The structure of the vertebrate head, 796—Polydactylism of the foot, 871
Prince of Monaco's bequests, 699
Prince of Wales becomes an Honorary Fellow of the Royal Society of Medicine, 1135
Princess Louise, Duchess of Argyll, declines to be a patroness of the Antivivisection Hospital, 113
PRINGLE, J. Hogarth: Atrophy of the optic nerve following diffused violence to the skull, 1156
Printed matter, the legibility of, 570, 660
Prison administration (parliamentary note), 103, 280
Prison Medical Service, information concerning, 450
Prison system, review of books on, 218, 929
Prison, suicides in (parliamentary note), 103
PRITCHARD, Eric: Appointed consulting physician to the Queen's Hospital for Children, 153—*The Physiological Feeding of Infants and Children*, rev., 1033
Proctitis, acute causing general peritonitis and death (W. H. du Pré), 1027
Profession of medicine 411
Profession and the police, 28
Professional Classes Aid Council, annual meeting, 100
Professional secrecy, 32, 1280
Professional appointments for Glasgow graduates, 577
Progrès médical, fiftieth anniversary of, 1 47
Promotion in the R.A.M.C. *See* Army, British
Prophet, The, a new play, 55
Prophylactic rectification and version at the ante-natal clinic. *See* Ante-natal
Prostate, hypertrophy of, 1004
Prostatectomy in a case of diabetes insipidus (J. Finlay Alexander and F. S. Kidd), 642 (O)
Prostatectomy, indirect results of, 1048
Protein in maternal diet, evil effect of excess of, 939
Protein therapy, review of books on, 128
PROWSE, W. Barrington: X-ray diagnosis of some abnormal conditions of the stomach and duodenum, 980
Pseudo-sexuality (J. H. Turton), 44
Psoriasis, treatment of, 32
Psoriasis treated by manganese (James Moore), 41 (O)
Psoriatic arthropathy, 609
Psychiatric clinics, 1192, 1281
Psychiatry, a co-operative clinic in, 995
Psychiatry, the progress of (leading article), 1182
Psychiatry, review of book on, 806
Psychic and endocrine factors in functional disorders (H. Crichton Miller), 551
Psychic mechanism, on the element of contrast in the (J. H. Macdonald) 635
Psychical training, 1263
Psycho-analysis, 328, 578, 616, 704, 775, 824, 894, 898, 954, 998 1047, 1143, 1191, 1 43, 1281
Psycho-analysis in epilepsy, 194
Psycho-analysis, practical, 328
Psycho-analysis, review of books on, 46 87, 272, 1081, 1124
Psycho-galvanic reflex and the hot-wire sphygmograph (A. V. Hill), 1042
Psychological analysis, the statistical method in (leading article), 936
Psychological medicine: Courses at Bethlem Royal Hospital, 288—Information concerning, 443
Psychology, review of books on, 602, 645, 1226
Psychology, the teaching of, 1047, 1142
Psychopathology, review of books on, 46, 645
Psychotherapeutics and psychopathology (T. W. Mitchell), 543—(J. A. Hadfield), 546—(Jane I. Suttie), 549—(H. Crichton Miller), 551—Charles F. Harford), 554—Discussion, 555
Psychotherapy with special reference to auto-suggestion (Charles F. Harford), 554
Psychotherapy, the teaching of, 191, 235, 282, 327, 402, 1142
Public health: Report of Ministry of Health. *See* Health Ministry
Public health administration in this country studied by the French Minister of Health, 287
Public health, a plea for the study of biology in relation to (A. K. Chalmers), 533
Public health, a diploma in, 66

Public Health Diploma (D.P.H.), the training for and the new regulations (Edward W. Hope), 363, 533—Discussion on, 365—Correspondence on, 533
Public health, the economics of (Lieut.-Col. F. E. Fremantle), 338—Discussion on, 341—Correspondence on, 490
Public health legislation needed in Ireland, 1142
Public health and medical subjects, reports on: The causation of foetal death (Bardley Holland), 15 - Water-borne enteric (W. Vernon Shaw), 56
Public health officers of certain countries invited to spend three months working in the health administrations of other countries, 239
Public health and port sanitary administration (Richard J. Reece), 335—Discussion, 338
Public health, review of books on, 1083
Public health services, information concerning, 445
Public health, the wrong turning in (Fred. E. Wynne), 357—Discussion, 360—Leading article on, 390
Public health and unemployment (parliamentary note), 1136
Public services, information concerning, 447
Publications, new and forthcoming, 153, 581, 604, 665, 897, 1003
Puerperal eclampsia. *See* Eclampsia
Puerperal fever, autogenous vaccine in (John Veitch) 644
Puerperal infection mortality in Wales (Ewen J. Maclean), 976 (O)
Puerperal infection, prevention of, 1095, 1300
Puerperal mortality and pre-natal care (A. Leyland Robinson), 1174
Puerperal mortality for Scotland (T. F. Dewar), 344—Discussion, 346
Pumphrey, Trooper J. L., information wanted as to, 1004
Punch, A. Lisle (and A. Hope Gosse): Further evidence of the value of the complement fixation test in pulmonary tuberculosis, 79 (O)
Pynnett, R. C., awarded the Darwin medal of the Royal Society, 1041
Purdy, W. J.: Silicosis and miners' phthisis, 1187
Purslow, Dr.: The scope of diathermy, 1224
Purves, Robert: Treatment of tuberculous conditions by inflation with oxygen, 1269
Purves-Stewart, Sir James: The treatment of neuro-syphilis, 621—Respiratory disorders of nervous origin, 927
Purvis, J. E. (and T. R. Hodgson): *Chemical Examination of Water, Sewage, Foods, and other Substances* rev., 1083
Putsey, Fleet Surgeon William Henry, obituary notice of, 1285
Pybus, F. C.: *The Survical Diseases of Children: A Handbook for Students and Practitioners*, rev., 929
Pyloric stenosis, congenital (V. N. Fenton), 644
Pyocyaneus bacillus infection simulating leprosy (S. Mallannah), 1223
Pyogenic infections, localized, the action of flavine antiseptics on (C. Bennett, J. W. S. Blacklock, and C. H. Browning), 306

Q.

Quadriceps muscle. *See* Muscle
Quarantine Acts, 103
Queen Alexandra Sanatorium Fund at Davos, 698
Quincke, Professor, death of, 68
Quine, Wm. J. Aitken: Shelter life for children, 537
Quinidine, therapeutics of (John Hay), 1079—Discussion, 1079
Quinine necrosis of muscle (Philip Figdor and D. Denham Pinnock), 14—Correspondence on, 109

R.

R.A.M.C. *See* Army, British
Ramsay, typhus fever at, 189
Rabies in Holland, 953
Race-renewal, National Council for the Promotion of, 523. *See also* Congress for the Reaffirmation of the World's Moral Ideal
Radiations in gynaecology (leading article), 695. *See also* Gynaecology
Radiologists, the protection of, 190
Radiology in the teaching of anatomy (J. M. Woodburn Morison) 795—Discussion, 796
Radiology of the chest in children, 179
Radiology, review of books on, 1270. *See also* Roentgen *and X rays*
Radiotherapy, 494
Radiotherapy, deep, some notes on (C. C. Anderson), 36 (O)
Radium institute for Montreal, 425
Radium, supply of (parliamentary note), 26
Radium therapy of cancer, the problem of (Arthur Burrows), 33 (O)
Radium therapy in gynaecological conditions (Robert Knox), 678—Discussion, 681
Radium therapy, review of books on, 386
Rai, Subassistant Surgeon Dilbag, Order of the Crown of Rumania conferred upon, 664
Railton, Thomas Carleton, obituary notice of, 896
Rainfall and scarlet fever (John Brownlee), 1079
Ramon y Cajal, awarded the Echegaray prize by the Academy of Sciences of Madrid, 69
Ramsay, A. Maitland: The clinical significance of falling sight, 804
Ramsay, Alderman J. T. T., elected Mayor of Blackburn, 665 1003
Ramsay, Sir William, memorial to, 940
Ramsbottom, J.: Comparative pathology of plants and animals, 721
Ransome, Arthur, obituary notice of, 285
Ransome, Percy: Treatment of disseminated sclerosis, 926
Rat control: Fourth annual national rat week conference, 1041
Rat destruction, conference on, 897
Rat bite fever. *See* Fever
Rat poison, suicides from in Japan, 1125
Rathbone, Eleanor Florence, Occupation centres, 224
Rathery, F.: *Le Diabète sucre*, rev., 646
Rats number of killed in the Port of London Authority's docks, etc., 536
Rattray, John Moysey, obituary notice of, 1002
Raw, Lieut.-Col. Nathan, appointed a medical visitor of lunacies, 897
Rawlings, Frederic: The interstitial gland and sex problems, 29
Rayner, Henry: Psycho analysis, 1143
Rayson, H. Knights: Muscle necrosis, 533
Rea, Lindsay: The clinical significance and treatment of heterophoria, 1256
Reading, valuable picture presented to the town by Jamieson B. Hurry, 1093
Records of the Chase, rev., 1125
Rectal prolapse in children, treatment of (Leonard Findlay and J. D. Galbraith), 871
Rectum, occlusion of following the administration of a simple enema (Fletcher Shaw), 926
Red Cross activities in London, 613
Red Cross, the Junior, 395
Red Cross Societies, Far Eastern Conference of Representatives of, 1085
Red Cross Society, the British: Report, 521, 613
Redding, J. Magnus: Gas inflation in x-ray diagnosis, 514
Red fatigue, 1146. *See also* Fatigue
Reece, Richard J.: Port sanitary administration, its development and its relation to public health in England and Wales, 335—The training for the D.P.H., 365
Reed, E. W.: X rays in skin diseases, 559
Rees, Ferdinand: Bonulism, 490
Registrar-General's report for 1920, 178 - For Scotland, 399, 913. *See also* Vital statistics
Reid, Sir G. Archdall: Sterilization of mental defectives, 401, 579—Treatment of fever, 1000, 1241
Reid, H.: Secondary carcinoma of the ovary, 92
Reid, J.: Hypertrophy of the prostate, 1004
Reigate: Diphtheria outbreak due to infected milk, 906
Remedies, some old-fashioned, 1135
Renal disease, chronic, prognosis and treatment of (Hugh Maclean), 1057—Discussion, 1071
Renal diseases, surgical diagnosis of (Henry Wade), 270
Renaudot, Théophrastus: Originator of newspapers, 808
Rendle, George, obituary notice of, 896
Rennie, G. E., retirement of, 997
Rénon, Louis, death of, 895
Rentoul, R. J.: Treatment of psoriasis, 32
Renwick, Rev. Adam: Etiological factors in the alcoholic psychoses, 207
Research Institute for India, 1241
Respiration, review of books on, 981, 1178
Respiratory disorders of nervous origin (Sir James Purves-Stewart) 927
Retinal hemorrhage, discussion on, 147—(C. O. Hawthorne), 495 (O).

Reviews of Books:

American Gynecological Society: Transactions, vols. xlv and xlvi, 474
American Pediatric Society: Transactions, 476—Vol. xxxiv, 1034
Anaesthesia, Chloroform (A. Goodman Levy), 982
Anatomy, Laboratory Manual for Comparative Vertebrate (L. H. Hyman), 762
Anatomy, Manual of Practical, in three parts (T. Wamsley), 982
Anatomy, Morbid: Pathologisch-anatomische Situs-bilder der Bauchhöhle (Siesfried Oberndorfer), 602
Anatomy of the Thorax and Abdomen of the Horse, Topographical (O. Charnock Bradley), 934
Annals of Medical History. *See* Medical
Annual Charities Register and Digest, 876
Apothecaries' Garden at Chelsea, the Romance of (F. Dawtrey Drewett), 1269
Archives Médicales Belges: 75th anniversary number, 604
Archives of Neurology. *See* Neurology
Artificial Limbs and Amputation Stumps (E. Muirhead Little), 271, 312—Price of, 312
Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry (Frederick Parkes Weber), 16
Assistant's Examination in Materia Medica and Pharmacy, Guide to (Gwyneth Pennethorne), 647
Reviews of Books (*continued*):
Association Psychology, History of (Howard C. Warren), 807
Birds and Blossoms (Sir R. H. Firth), 931
Blood Diseases: Maladies du Sang et des Organes hématopoietiques (P. Emile Weil and Marcel Bloch), 1123
Blood Supply to the Heart in its Anatomical and Clinical Aspects (Louis Gross), 601
Braganza Necklace (Herbert Harrison), 1227
Brain, 311, 1227
Brain: Maladies du Cervelet et de l'Isthme de l'Encéphale (Henri Claude and Dr. Lévy-Valensi), 564
Brain Surgery, a Glimpse into the History of (Sir Charles Ballance), 691
Cancer of the Breast and its Treatment (W. Sampson Handley), 516
Cerebellum: Maladies du Cervelet et de l'Isthme de l'Encéphale (Henri Claude and Dr. Lévy-Valensi), 564
Charities Register and Digest, 876
Chemical Examination of Water, Sewage, Foods, and other Substances (J. E. Purvis and T. R. Hodgson), 1083
Chemistry, Inorganic and Theoretical, a Comprehensive Treatise (J. W. Mellor), 806
Childbirth and Infancy, First Aid in (G. J. Campbell), 1271
Child Welfare, Rural (E. N. Clopper), 693
Children: Diseases of Infancy and Childhood (L. Emmett Holt and John Howland), 566, 647—A correction, 647
Children, Diseases of, Medical and Surgical (Henry Ashby and G. A. Wright), 874
Children: Management of the Sick Infant (Langdon Porter and William E. Carter), 565
Children: Practical Infant Feeding (L. W. Hill), 874
Children, Surgical Diseases of (F. C. Pybus), 929
Children. *See also* Infants
Chloroform Anaesthesia (A. Goodman Levy), 982
Circulation of the Blood, the Discovery of (Charles Singer), 764
Clinical Laboratory Methods, a Manual of (C. L. Cummer), 1270
Clinique et Laboratoire, 17
Conception Control and its Effects on the Individual and the Nation (Lady Barrett), 764
Critical Age: Les Maladies de la Cinquantaine: tome i, L'Age Critique (Arthur Leclercq), 386
Dental Anatomy and Dental Histology: Human and Comparative (T. W. Widdowson), 476
Dental Students, Questions and Answers for: Dental Surgery (Wesley Barritt and Alfred Templer Barritt), 1124
Diabetes, Dishes for (Mrs. Ernest Hart), 220
Diabetes: Le Diabète Sucré (F. Rathery), 646
Diabetes: Le Diabète et son traitement (Arthur Leclercq), 646
Dictionary: American Illustrated Medical Dictionary (W. A. Newman Dorland), 311
Diet and Race: Anthropological Essays (F. P. Armitage), 566
Difficulties: An Attempt to Help (Seymour Hicks), 984
Digestive Organs and Metabolism: Maladies de l'Appareil digestif et de la Nutrition Marcel Labbé and G. Vétry), 1123
Digestive System: Leçons de pathologie digestive (M. Loeper), 646
Dipsomania and Kleptomania: Impulshandlungen (W. Stekel), 1034
Distress, the Prevention and Relief of, 876
Dosage Tables for Deep Therapy (Friedrich Voltz), 1270
Dream Fairies (T. Wilson Parry), 647
Dreams and the Unconscious: An Introduction to the Study of Psycho-analysis (C. W. Valentine), 272
Drug Smuggling and Taking in India and Burma, Roy K. Anderson), 645
Durham University Calendar for 1922–23, 694
Ear, Diseases of (Philip D. Kerrison), 806
Electrical Action of the Human Heart (Augustus D. Waller), 930
Electricity: Science in the Service of Man (S. G. Starling), 567
Electricity. *See also* Radiology
Emotions, the: Vol. i of the Psychology Classics (Carl Georg Lange and William James), 1227
Empire Municipal Directory and Year Book, 1922–23, 130
Encephalitis lethargica: Sulla encefalite non-suppurativa e la considetta encefalite letargica (Giulio Tarozzi), 517
Encyclopaedia Medica, vol. viii, 867
Endocrinology and Metabolism Presented in their Scientific and Practical Clinical Aspects (by Ninety-eight Contributors; edited by Lewellys F. Barker and others), 873
English Literature: The Rudiments of its Art and Craft (E. V. Downs), 876
English Prisons. *See* Prisons
Episcopal Hospital, Reports of the (Astley Paston Cooper Ashhurst), 604
Ethics: An Exposition of Principles (Arthur Lynch), 1226
Evolution of Disease, with a Discussion of the Immune Reactions occurring in Infectious and Non-infectious Diseases; a Theory of Immunity, Anaphylaxis, and Anti-anaphylaxis (J. Danysz), 129
Financial Times Income Tax Guide, 567

Reviews of Books (*continued*):
First Aid in Childbirth and during Infancy (G. J. Campbell), 1271
First Aid, Common Errors in (N. Corbet-Fletcher), 1227
Foetal Death, Causation of (Eardley Holland), 15
Food Values: What They Are and How to Calculate Them (Margaret McKillop), 87
Forensic Medicine and Toxicology, Aids to (W. J. Aitchison Robertson), 693
Fractures: Atlas und Grundriss der traumatischen Frakturen und Luxationen (H. Helferich), 1032
From the Deep of the Sea (Surgeon C. E. Smith), 1125
Golden River (J. W. Hills and Ianthe Dunbar), 984
Golf from Two Sides (Roger and Joyce Wethered), 475
Gynaecology, Clinical and Operative (J. W. Munro Kerr), 928
Hand, Infections of the (Allen B. Kanavel), 982
Hay Fever and Asthma: Cause, Prevention, and Treatment (William Scheppegrell), 1271
Health Instructions for Missionaries in the Tropics, 1227
Health and Long Life, A Key to [the Secret of Healthy Nutrition] (F. W. D. Mitchell), 1179
Health Service in Industry (W. I. Clark, junr.), 983
Heart, The Blood Supply to, in its Anatomical and Clinical Aspects (Louis Gross), 601
Heart, The: Old and New Views (H. L. Flint), 219
Heart, Diseases of (John Cowan and W. T. Ritchie), 1226
Heart, Human, The Electrical Action of the (Augustus D. Waller), 930
Heart as a Power Chamber: A Contribution to Cardio-dynamics (H. Sainsbury), 601
History of Medicine. *See* Medicine
Hookworm Disease, Bibliography of, 1125
Income Tax Guide, The Financial Times, 567
Income Tax, Tabular View, 387
Individual and the Community (R. E. Roper), 1226
Infancy and Childhood, Diseases of, for the Use of Students and Practitioners of Medicine (L. Emmett Holt and John Howland), 566, 647
Infant Feeding, Practical (L. W. Hill), 874
Infant Life: Comment sauvegarder les Bébés. Enseignement de l'Hygiène Infantile donné à l'Institut de Puériculture et à la Goutte de Lait de Belleville (G. Variot), 86
Infant Mortality (Hugh T. Ashby), 1034
Infant, Sick, the Management of the (Langley Porter and William E. Carter), 565
Infants and Children, the Physiological Feeding of (Eric Pritchard), 1083
Infants. *See also* Children
Insurance Practice, Medical (R. W. Harris and L. S. Sack), 983
Internal Medicine. *See* Medicine
Intoxications, fascicule vi of Nouveau Traité de Médecine, 46
Isolation Hospitals (H. Franklin Parsons and R. Bruce Low), 16
Kidney: Maladies des Reins (Pasteur Vallery-Radot), 1123
Laboratory Methods, Clinical, 17, 1270
Lake of Geneva (Sir Frederick Treves), 87
Lawson Tait: His Life and Work (J. Stewart McKay), 1032
Leprosy, Handbook on (Ernest Muir), 805
Leysin, Studies from, 474
Massage and Exercises Combined (A. Jensen), 647
Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs (Rakhaldas Ghosh), 693
Mayo Clinic, Rochester, Minnesota, Collected Papers of the, vol. xiii, 1921, 646
Mayo Foundation for Medical Education and Research and the Medical School, Papers from, First Annual Volume, 920
Medical History, Annals of (edited by Francis R. Packard), vol. iv, No. 1, 311—Vol. iv, No. 2, 984
Medical History of the War Based on Official Documents: Diseases of the War, vol. i (edited by Sir W. G. Macpherson and others), 691, 761. *See also* Medicine
Medical Insurance Practice (R. W. Harris and L. S. Sack), 983
Medicine, Clinical, A System of, Dealing with the Diagnosis, Prognosis, and Treatment of Disease (T. D. Savill), 476
Medical Directory for 1923, 1126
Medicine, History of: Kurzes Handbuch der Geschichte der Medizin (Karl Sudhoff), 930; Einführung in die Geschichte der Medizin (Julius Leopold Pagel), 930. *See also* Medical
Medicine, Internal, The Diagnostics of (G. R. Butler), 17
Medicine: L'Avenir de la Médecine (Sir James Mackenzie), 17
Medicine: Nouveau Traité de Médecine fascicule vi, Intoxications (edited by G. H. Roger, F. Widal, and P. J. Tessier), 46
Medicine, Synopsis of (Henry Letheby Tidy), 1084
Medicine: Taylor's Practice of Medicine (E. P. Poulton, C. Putnam Symonds, and H. W. Barber), 128
Reviews of Books (*continued*):
Medicine in the Tropics, the Practice of (edited by W. Byam and R. G. Archibald), 86
Medico-Legal Examinations and the Workmen's Compensation Act, 1906, as amended by subsequent Acts, 875
Mental Nursing: Hints to Probationer Nurses in Mental Hospitals (Richard Eager), 931
Mental Deficiency, Report of a Conference on, 1084
Mentally Deficient Children: their Treatment and Training (G. E. Shuttleworth and W. A. Potts), 603
Merchant Seamen: their Diseases and their Welfare Needs (Fleet Surgeon W. E. Home), 692, 764
Mind that Found Itself (an Autobiography), (C. W. Beers), 1271
Morbid Fears and Compulsions: their Psychology and Psycho-Analytic Treatment (H. W. Frink), 875
Moulton, Lord, the Life of (H. Fletcher Moulton), 1173
Nasal Septum, the Submucous Resection of the (W. Meddaugh Dunning), 47
Nerve Injuries, Peripheral Spinal (Sir Harold J. Stiles and M. F. Forrester-Brown), 474
Neurology: Etude neurologique (Georges Guillain), 1269
Neurology and Psychiatry, Archives of, from the Psychological Laboratory of the London County Mental Hospitals, Maudsley Hospital, Denmark Hill, vol. viii (edited by Sir Frederick Mott), 931
Neurology: Questions Neurologiques d'Actualité (Pierre Marie), 310
"New" system of feeding, 1271
Notable Trials: George Joseph Smith, 1125
Nursing: Textbook of the Principles and Practice of (Bertha Harmer), 1084
Nutrition and Growth in Children (William R. P. Emerson), 86
Nutrition, an Outline of the Pirquet System of (Clemens Pirquet), 1271
Obstetrics, the Place of Version in (Irving W. Potter), 385
Obstetrics: Traité Pratique d'Obstétrique Normale et de Puériculture Pré- et Post-natale (Jules-M. Rouvier), 17
Old Age, Some Medical Aspects of (Sir Humphry Rolleston), 1031
Ophiha Taxobanica, or the Snakes of Ceylon (Colonel Frank Wall), 603
Ophthalmology of General Practice (Malcolm Hepburn), 85
Oto-Rhino-Laryngology for the Student and Practitioner (Georges Laurens), 1226
Our Homeland Prehistoric Antiquities and How to Study Them (W. G. Clarke), 604
Our Unconscious Mind and How to Use it (Frederick Pierce), 1150
Oxford Index of Therapeutics (edited by Victor E. Sorapure), 386
Paré, Ambroise, Life and Times of (Francis R. Packard), 931
Paris à la Carte: Where the Frenchman Dines and How (Sommerville Story), 387
Pasteur and His Work (L. Descour), 475
Penal Discipline (Mary Gordon), 929
Peripheral Nerves: Surgical and Mechanical Treatment of (Byron Stookey), 1124
Peripheral Spinal Nerves, Treatment of Injuries of (Sir Harold J. Stiles and M. F. Forrester-Brown), 474
Pharmacology and its Applications to Therapeutics and Toxicology, a Manual of (Torald Sollmann), 693
Photography in Colours (George Lindsay Johnson), 1083
Physical Training: Hygiene der Körperübungen (Ferdinand Hueppe), 518
Physico-Chemical Themes (A. W. Stewart), 1271
Physiological Feeding of Infants and Children (Eric Pritchard), 1083
Physiology and Biochemistry in Modern Medicine (J. J. R. Macleod and others), 1125
Physiology of Mind, Essay on; An Interpretation Based on Biological, Morphological, Physical, and Chemical Considerations (Francis X. Dercum), 1179
Pirquet System of Nutrition (Clemens Pirquet), 1271
Plays for Children (S. Lyle Cummins), 985
Poisoning, What to Do in Cases of (William Murrell), 1034
Poisons: fascicule vi of Nouveau Traité de Médecine, 46
Population Problem: A Study in Human Evolution (A. M. Carr-Saunders), 517
Post-graduate Medicine: Prevention and Treatment of Disease (Augustus Caillé), 1033
Précis de Pathologie Médicale, tome iv, Maladies du Sang et des Organes hématopoiétiques (P. Emile Weil and Marcel Bloch); tome v, Maladies de l'Appareil digestif et de la Nutrition (Marcel Labbé and G. Vitry), 1123
Maladies des Reins (Pasteur Vallery-Radot), 1123
Prehistoric Antiquities, Our Homeland (W. G. Clarke), 604
Prisons, English, under Local Government (Sidney and Beatrice Webb), 218
Prisons, English, To-day (Report of the Prison System Inquiry Committee, edited by Stephen Hobhouse and A. Fenner Brockway), 218
Reviews of Books (*continued*):
Protein Therapy and Non-specific Resistance (W. F. Petersen), 128
Psychiatry: Kurzer Leitfaden der Psychiatrie für Studierende und Aerzte (Ph. Jolly), 805
Psycho-analysis, Dreams and the Unconscious (C. W. Valentine), 272
Psycho-analysis, Fundamental Conceptions of (A. A. Brill), 47
Psycho-analysis, Practical (H. Somerville), 87
Psycho-analysis, the Technique of (David Forsyth) 1124
Psycho-analysis its Theories and Practical Application (A. A. Brill), 46
Psychology Association, History of the (Howard C. Warren), 807
Psychology of the Criminal (M. Hamblin Smith), 1061
Psychology, the Foundations of (Jared Sparks Moore), 602
Psychology of Medicine (T. W. Mitchell), 645
Psychology and Mental Hygiene for Nurses (Mary B. Eyre), 694
Public Health Surveys, what they are, how to make them, how to use them (Murray P. Horwood), 47
Radiation Therapy, the Principles of Physics and Biology of (B. Kroenig and W. Friedrich), 518
Radiation. *See also* Roentgen *and X* rays
Radiology: Dosage Tables for Deep Therapy (Friedrich Voltz), 1270
Radiology: Electrologie et Radiologique (H. Guilleminot), 1270
Radium Therapy (F. E. Simpson), 386
Records of the Chase ("Cecil"), 1125
Regimen of the School of Salernum (Sir John Harington), 931
Reports on Public Health and Medical Subjects: No. 7, Ministry of Health: the Causation of Foetal Death (Eardley Holland), 15—No. 12, Water-borne Enteric (W. Vernon Shaw), 56—No. 13, Bacteriological Studies on Pneumococci and Influenza (Arthur Eastwood, Frederick Griffith, and W. M. Scott), 388
Respiration (J. S. Haldane), 981
Respiratory Diseases: Etudes Cliniques et Radiologiques sur les Maladies de l'Appareil Respiratoire (Emile Sergent), 1174
Rickets, a Study of Economic Conditions and their Effects on the Health of the Nation (J. Lawson Dick), 565
Roentgen Rays: Die Klinische Röntgendiagnostik der Inneren Erkrankungen (Herbert Assmann), 692
Roentgentherapy: La Roentgen thérapie des Tumeurs Malignes en Oto-Rhino-Laryngologie (G. Portmann and A. P. Lachapèle), 1270
Roentgen. *See also X* Rays *and* Radiation
Romney (B. L. K. Henderson), 807
Rural Child Welfare (E. N. Clopper), 693
Senescence: The Last Half of Life (G. Stanley Hall), 875
Sixty-four Years a Doctor (Sir Robert Charles Brown), 272, 312—A correction, 312
Smell, Taste, and Allied Senses in the Vertebrates (G. H. Parker), 872
Smith, George Joseph, Trial of (edited by Eric R. Watson), 1125
Smith's Physicians' and Surgeons' Visiting List, Diary, Almanac, and Book of Engagements for 1923, 1180
Smokeless City (E. D. Simon and Marion Fitzgerald), 310
Snakes of Ceylon (Colonel Frank Wall), 603
Some Medical Aspects of Old Age (Sir Humphry Rolleston), 1031
Some Things that Matter (Lord Riddell), 128
Spadacrene Anglica, or the English Spa Fountain (Edmund Deane), 272
Stuart, Anderson, M.D., Physiologist, Teacher, Builder, Organizer, Citizen (William Epps), 47
Suggestion and Mental Analysis an Outline of the Theory and Practice of Mind Cure (W. Brown), 645; second edition, rev., 1179
Surgery of the Brain, a Glimpse into the History of (Sir Charles Ballance), 691
Surgery, Gynaecology, and Obstetrics, 311
Surgery of the Head and Neck: Chirurgie des Kopfes und Halses für Zahnärzte (Ernst Seifert), 931
Surgery, Practice of (Russell Howard), 272
Surgery, Principles and Practice of (Herman A. Haubold), 602
Surgery, a Synopsis of (Ernest W. Hey Groves), 875
Surgical Diseases of Children (F. C. Pybus), 929
Swiss Watering places, 87
Switzerland to the Mediterranean on Foot (J. B. Winter), 476
Syphilis, the Atlas of (L. v. Zumbusch), 566
Tait, Lawson: His Life and Work (J. Stewart McKay), 1032
Taylor's Practice of Medicine (E. P. Poulton, C. Putnam Symonds, and H. W. Barber), 128
Testicular Grafts: Greffes Testiculaires (S. Voronoff), 763
Therapeutics, Oxford Index of (edited by Victor E. Sorapure), 386
Thyroid Gland (edited by Amy F. Rowland), 1123
Tropical Diseases, the Diagnostics and Treatment of (Surgeon General E. R. Stitt), 1126

Reviews of Books (*continued*)
Tropical Hygiene, Aids to (Colonel R. J. Blackham), 1034
Tropics, the Practice of Medicine in (edited by W. Byam and R. G. Archibald), 86
Tuberculosis Clinic (edited by Noel D. Bardswell), 566
Tuberculosis, Clinical (F. M. Potteger), 805
Tuberculosis Conference, Transactions of the Second International, 17
Tuberculosis and Consumption, Lessons on (Charles E. Atkinson), 179
Tuberculosis: Etudes sur la Tuberculose 5-ième série. (Drs. Burnand, Grosjean, Jaquerod, Piguet, De Regnier, Rossel, Sillig, and J. V. Bergen), 474
Tuberculosis of Lungs, Fatal: A Contribution to our knowledge of the Clinical Course and Duration of (J. H. Wirtzen), 1083
Tuberculosis, Pulmonary: Its Etiology and Treatment (D. C. Muthu), 80
Tuberculosis themes for Great Britain and Ireland, Handbook for, 518
Urology: Propédeutique et Technique Urologiques (G. Wiener), 1179
Vaccination, the Student's Guide to (W. G. Aitchison Robertson) 476
Vaccins et Sérums (Dr. Aperl), 807
Vertebrate Anatomy, Laboratory Manual for Comparative (L. H. Hyman), 762
Voluntary Hospitals in Great Britain (excluding London: Annual Report of the Year 1921 (Sir Napier Burnett), 647
Water, Sewage, Foods, etc., Chemical Examination of (J. E. Purvis and T. R. Hodgson), 1083
Wayside Savings (Selwyn Gurney Champion and Ethel Mary Arregorard), 130
Women in the Factory (Adelaide Mary Anderson), 1227
Woman in the Little House (Margaret Leonora Eyles), 129
X Rays, the Practical Applications of (G. W. C. Kaye), 1031
X Rays. *See also* Radiation *and* Roentgen

REY, Jules F.: Is desquamation after scarlet fever infective? 954
REYNOLDS, H. P.: Violators of the vaccination law, 1004
Rhabdomyosarcoma of the kidney (Sir William Whitelaw), 12 8
Rheumatoid arthritis. *See* Arthritis
Rhino-laryngology, transatlantic (H. S. Birkett), 155
Rhode Island weather "coupé, 581
Rhodesia Scientific Association: The place of the white man in the tropics (Dr. Hewetson), 885
RHYS, Owen: Various types of hour-glass stomachs, 1-68
RICE, D. A.: Trichiniasis 780
Rickets, the effect of light on (Alfred F. Hess), 85
Rickets, etiology of (Leonard Findlay), 846—(Edward Mellanby), 849—Discussion, 853—Correspondence on, 1000
Rickets, environment and diet in the causation of (leading article), 1-31
Rickety pelves. *See* Pelves
RIDDELL, J. R.: X ray treatment of deep-seated cancers, 505—Exophthalmic goitre, 512
RIDDELL, Lord: *Some Things that matter*, rev., 128—The general practitioner's share in medical research, 813
RIDDELL, Scott: The records of the Aberdeen Medico-Chirurgical Society from 1789 to 1922, 947
RIDDOCH, George: Pernicious anaemia, 979
RIDLEY, Dr.: Sarcoma of the kidney 927
Rio de Janeiro, National Congress of Medical Practitioners at, 1151
RIST, E.: Clinical differentiation of pulmonary tuberculosis from other respiratory affections, 733
RITCHIE, W. T. (and John COWAN): *Diseases of the Heart*, rev., 1226
RIVERS, W. H. R.: estate and bequests of, 523
Riviera, the French, 815
ROBERTS, Ff.: Insulin, 1193
ROBERTS, Leslie: Occupational dermatitis, 504—Etiology of seborrhoea, 757
ROBERTS, Morley: Indirect results of prostatectomy, 1048
ROBERTS, Deputy Surgeon-General William Howland, obituary notice of, 491
ROBERTSON, A.: Stages in the development of *Trypanosoma cruzi*, 1030
ROBERTSON, D. G.: Haemolytic and water fevers, 328
ROBERTSON, Ford: Dementia praecox, 530
ROBERTSON, George: Bone grafting and the circular saw, 533
ROBERTSON, G. M.: The hospitalization of the Scottish asylum system, 134—Psychotherapeutics and psychopathology, 555—Treatment of neuro-syphilis, 635—The discovery of general paralysis, 1120
ROBERTSON, Lieut.-Col. James C.: Order of the Crown of Italy conferred upon, 664
ROBERTSON, John: Milk control and distribution in America, 1030
ROBERTSON, Katherine O.: Chronic renal disease, 1073
ROBERTSON, R. Cecil: The toxins of *B. dysenteriae* Shiga, 729
ROBERTSON, W. G. Aitchison: *The Students' Guide to Vaccination*, rev., 476—*Aids to Forensic Medicine and Toxicology*, rev., 635
ROBINSON, A. Leyland: Pre-natal care and puerperal mortality, 1174
ROBINSON, G. Drummond: Normal labour, 804
ROBINSON, Sir Thomas, appointed chairman of the Dyestuffs Advisory Licensing Committee, 831
ROBSON, Major Frank Blair, obituary notice of, 1284
ROBSON, Frederick: Miners' nystagmus, 1171
ROBSON, J. D.: A strange "wild fowl," 1100
ROCHE, Redmond: The Royal College of surgeons of England: Members admitted to Council, 1194
Rockefeller Foundation: Review of the work of for 1921, 143—Annual report of the International Health Board, 651—*Bibliography of Hookworm Disease*, 1125
Rodent ulcer treated by chromic acid solution (A. Dingwall Kennedy), 844 (O)
RODGER, T. Ritchie: Septic sinus thrombosis, 463—Otogenic meningitis, 466
ROE, Deputy Surgeon-General William Carden, obituary notice of, 952
Roentgenology made a compulsory subject for the medical curriculum in Rumania, 331
ROEPKE, Professor (and Dr BANGELIER): *Lehrbuch der spezifischen Diagnostik und Therapie der Tuberkulose*, 319
ROGER, G. H (F. WIDAL and P. J. TESSIER): *Nouveau Traité de Médecine: Intoxications*, rev., 46
ROGERS, Sir Leonard: Chaulmoogra oil in tuberculosis, 703
ROLLESTON, Sir Humphry: The clinical laboratory in the modern hospital, 573—Appreciation of Sir James Galloway, 830—*Some Medical Aspects of Old Age*, rev., 1031—Opens the new x-ray department at the Manchester Royal Infirmary, 1044—Degenerative diseases of the liver, 1055—Appreciation of Sir Norman Moore, 1149—Reflections on high arterial blood pressure, 1239
ROLLIER, A.: Bone grafting in tuberculous spinal caries, 578—The share of the sun in the prevention and treatment of tuberculosis, 741
ROPER, R. E.: *The Individual and the Community*, rev., 1226
ROSS, J. Stuart: Broncho-pulmonary complications following operations, 9-9
ROTH, Paul Bernard: Bone grafting in tuberculous spinal caries, 584
ROTHSCHILD, Baron Henri de: *Le Caducée*, 98
Round ligaments, restoration of (Arthur J. Nyulasy), 1-18 (O)
ROUT, Ettie A.: The radical prevention of venereal disease 777, 950 1248
ROUVIER, Jules M.: *Traité Pratique d'Obstétrique Normale et de Puériculture Pré- et Post-natale*, rev., 17
ROWAN, John: The clinical significance and treatment of heterophoria, 1256—Education of partially blind children in myope classes, 1258—Monocular and binocular vision, 1262
ROWAN, Marriott Logan, obituary notice of, 330
ROWDEN, Leonard A.: Remarks as President of Section of Radiology and Electrology, 505—Gas inflation in x-ray diagnosis 515—Static electricity and high frequency currents, 558—Diagnosis of simple and malignant bone disease, 561—X rays in hypertrichosis of face, 1286
ROWLAND, Amy F. (editor): *The Thyroid Gland*, rev., 1223
ROWLAND, F. M.: Lilliputian hallucinations, 999
ROWLANDS, R. P.: Recurrence of symptoms after removal of gall stones from the gall bladder, 541 O
ROWLETTE, R. J.: Rheumatoid arthritis, 45—Tuberculosis of the female pelvic organs, 1029
ROWNTREE, Cecil: Treatment of gynaecological conditions by radiation, 681—X-ray cancer, 1111
Royal Army Medical Corps. *See* Army, British
Royal College. *See* College
Royal Earlswood Institution: Report, 530
Royal Faculty of Physicians and Surgeons of Glasgow: Library of, 98—Admission of Fellows, 112, 705, 1199—Information concerning the study of medicine, 425—Annual meeting, 996
Royal Institute of Public Health: Lectures on maternity and child welfare, 536
Royal Institution: Election of secretary and of honorary members, 1151
Royal Irish Constabulary: Deduction of medical and surgical expenses in case of members injured in the exercise of their duty (parliamentary note), 183
Royal Medical Benevolent Fund. *See* Fund
Royal Sanitary Institute Congress, 69, 273 279, 1053—President's address: General practitioners and medical officers of health, 272—Lectures, 492—Next congress, 1053
RUINI, Carlo: The father of veterinary science, 274
Rumania, roentgenology made a compulsory subject for the medical curriculum in, 331
RUSSELL, E. N.: Case of supposed superfoetation, 661
RUSSELL, J. Ronaldson: Treatment of erysipelas by vaccines, 15
RUSSELL, William Barker, obituary notice of, 1197
RUSSELL-WELLS, Sir Sydney, elected Member of Parliament for the University of London, 1042
Russia, malaria in, 1151, 1183—Hospitals lack everything in the way of preventive equipment, 1199
Russian medical profession, the plight of (leading article), 19—An appeal for, 26, 1228, 1236—Response to appeal, 55—Correspondence on, 67—Note on, 98—Medical literature for, 178
Russian refugees, medical aid for, 898
RUTHERFORD, Lieut.-Col. Nathaniel J. C., Greek Order of the Redeemer conferred upon, 1283
RUTHERFORD, Sir Ernest, awarded the Copley medal of the Royal Society, 1041
RUXTON, Dr.: Anaesthetics and analgesics in labour, 674
RYALL, Sir Charles, death of, 484; obituary notice of, 534; memorial fund opened, 1003
RYAN, Lieut.-Col. Eugene, Order of the Crown of Rumania conferred upon, 664
RYLE, Reginald John, obituary notice of, 1247

S.

St. Andrews Clinical Institute, the object of investigation at the, 948. *See also* Institute
ST. JOHN, Captain Arthur: Etiological factors in the alcoholic psychoses 207
St. Louis Emergency Relief Committee makes a donation to the University of Halle, 619
St. Luke's Guild, 405—Annual medical service at St. Paul's, 814—Annual medical service at Liverpool, 822
St. Peter's Harbour appeal, 832
SABERTON, C. W. Scott: Points in the differential diagnosis of simple and malignant bone disease, 561
SACK, L. S. (and R. W. HARRIS): *Medical Insurance Practice*, rev., 983
Sacramental healing and the psychology of conversion 767
Safeguarding of Industries Act: "Acid, acetic, 80 per cent. grade or higher" improperly excluded from lists of articles chargeable for duty, 493—Oxalic acid, included in the list of articles chargeable with duty under, 1285
SAINSBURY, HARRINGTON: *The Heart as a Power Chamber; a Contribution to Cardio-Dynamics*, rev., 631—Cardiology, 7 3, 824
Salerno, forgotten teachers at (Dr. Capparoni), 273
SALOMÓN, Señor Oscar Victor: The Peruvian Andes, 538
SALOMONSON, J. K. A. Wertheim, death of, 581—His bequests to the University of Amsterdam, 1247
Salpingitis, acute, treatment of, 998, 1096
Salpingo-oöphoritis, treatment of (John Campbell), 683—Discussion, 685—Correspondence on, 998, 1096
SALTER, A., elected a Member of Parliament (Bermondsey West), 1003, 1042
Salvarsan Committee's report on the toxic effects of arseno-benzol preparations, 184
Salvarsan research and the abortive treatment of syphilis in Germany, 768
Salvarsan, a new substitute for (stabilarsan), 1248
Samples and returns, 832
SAMPSON, Major Patrick, obituary notice of, 492
SAINWAYS, R. W.: The nature and significance of heart symptoms, 66, 192—Sainways's anchor tourniquet, 1152
SANARELLI, Professor, elected rector of the University of Rome 224
Sanatoriums for tuberculosis: Queen Alexandra, DaVos 698—Loomis, New York, twenty-fifth anniversary of, 889
SANDERS, C.: Notification of infectious diseases, 870
SANDERSON, Meredith: The wrong turning in public health, 360
Sandfly, life history of the (Squadron-Leader H. E. Whittingham), 1030
SANER, F. D.: The chronic abdomen, 923
SANGER, Margaret: Birth control, 133
Sanitary Association of Scotland, Incorporated, annual meeting, 530
Sanitary Conference of the South American Republics, 828
Sanitary seal cover, 666
Sanitary Convention, International, of 1912, revision of, 50
Sanitary regulations for theatres and music halls, 63
Sanitation, review of books on, 47
Sarcoma of the kidney (Dr. Harvey), 1177
Sarcoma, melanotic, of choroid and ovary (H. G. W. Dawson), 757
Sardinia, number of lepers in, 922
SARRA, W. H. (and Francis MUECKE): Acute meningitis following influenzal mastoiditis, 1077
SAVAGE, William G (R. F. HUNWICKE and R. B. CALDER): *The Bacteriology of Canned Meat and Fish*, 700
SAVILL, T. D.: *A System of Clinical Medicine, Dealing with the Diagnosis, Prognosis, and Treatment of Disease*, rev., 476
Saw, circular motor, and bone grafting. *See* Bone
SAWYER, Frank R.: Adrenaline, toxic dose, 866
SAYLISS, Hyman Finklestone, assumed surname of Hyman Finklestone, 897
Scalp, warts of, 240, 332, 493
SCHAFER, Sir Edward Sharpey, presentation of portrait plaque and medal to, 1237

Schauman, Professor, bequeaths a large sum for the study of heredity, 320
Scheppegrell, William: *Hay Fever and Asthma: Care, Prevention, and Treatment*, rev., 1271
Schick method of prophylaxis in diphtheria (parliamentary note), 144
Schlatter's disease, 582
Scholarships for Indian medical women, 1241
School child, the health of (annual report of the chief medical officer of the Board of Education), 809
School children, defective (parliamentary note), 1136
School children's attendance (parliamentary note), 103
School children, defects in (Robert Bruce), 346—Discussion, 348
School medical service, information concerning, 446
School Medical Services: Board of Education circular re, 06—Board of Education's criticisms on the London school medical service, 996
Science, the advancement of (1922), 572
Science natural, and the camera, 572
Scientific and Industrial Research Department, Food Investigation Board of *See* Food
Scientific instruments, cost of (parliamentary note), 103
Scientific investigations, applications for Government grants for, 1053
Scleroderma affecting the face and hands (K. D. Wilkinson), 1266
Sclerosis disseminated, treatment of (W. Johnson), 926
Sclerotics blue, associated with fragilitas ossium (Hall Stewart), 498 (O)
Scoliosis (Alex. MacLennan), 864
Scopolamine-morphine during labour, the "standardized-dosage" method of using (N. Hirschmann), 669—A correction, 1100

Scotland:
Aberdeen: Census for 1921, 399, 487—Diphtheria prevention in, 659—Medico-Chirurgical Society, 947, 1094
Affleck bequests, 702
Anderson College of Medicine, 577, 660, 773
Arran Island Hospital, 107
Bell, Alexander Graham, death of, 281
Botulinus antitoxin, 889
Bramwell, Byrom, 75th birthday of, 1189
Caledonian Medical Society, 660
Census of the four great towns of, 399—Of Scotland (counties), 487, 659, 995, 1190, 1279
Central Midwives Board for Scotland, 324, 488, 890, 1044, 1240
Criminals, treatment of, 1239
Currie, Dr J. R., 488—Presentation to, 772
Death of the inventor of the telephone, 231
Diphtheria prevention in Aberdeen, 659
Dundee: Royal Infirmary, 107, 1239—Census for 1921, 399—Health and housing in, 773
Edinburgh:
Anatomy in (J. D. Comrie), 273
Census for 1921, 399
Child welfare in, 996
Convalescent hospital for, 325
Edinburgh in the sixties, 822
Health statistics in 1921, 107
Hospital and Dispensary for Women and Children, 823
Medical School's and Graduates' Club, inaugural dinner, 1199
Milk adulteration in, 325
Milk supply, 615
Royal Infirmary, 107, 1141
Royal Maternity Hospital, 614
Surgical Appliance Society, 1094
University General Council, 890
Visit of French medical men, 189
Food poisoning, suspected, 947
Glasgow:
Anderson College of Medicine, 577, 660, 773
Annual Meeting of the Association at, 59, 104, 226. *See also* Association, British Medical, in General Index
Appointments to hospitals, 64
Book of Glasgow, 144, 170
Bowling match, 63
Census for 1921, 399
Chair of Public Health, 1239
Christian Science, 1141
Employment of the tuberculous, 483
Glasgow and West of Scotland Overseas Medical Club, 890
Hospital for Sick Children, 64
Lister Memorial, 1278
Lister ward, 702
Medical Lunch Club, 577, 702, 823, 996, 1045, 1094, 1141, 1239
Medico-historical treasures of, 97
Post-graduate study in, 822
Professional appointments for Glasgow graduates, 577, 1239
Report of the medical officer of health, 528
School of Medicine, 59
Sewage disposal, 1094
Students' handbook to the university (1922–23), 1094
University in the sixties, 1189
Victoria Infirmary, 1141, 1278
Wastage of child life in, 696
Western Infirmary, 1278
Hodsdon, Sir James, presentation to, 233—and Edinburgh Royal Infirmary, 399
Island Hospital (Arran), 107

Scotland (*continued*):
Laws (Robert) of Livingstonia, 233
Mackintosh, Colonel D. J., presentation to, 1278
Maternity and child welfare in (Mary J. Menzies), 348
Medicine and credulity, 946
Medico-Psychological Association, annual dinner, 189
Milk, the grading of, 883
Natural history and medicine, links between, 773
Paisley, health of 530
Parliamentary representation of universities, 889
Puerperal mortality in (T. F. Dewar), 344
Royal Faculty of Physicians and Surgeons, 996
St. Andrews University and Dundee Royal Infirmary, 1239
Samson Gemmell bequests, 1044
Sanitary Association of Scotland, annual meeting, 530
Scottish asylums' pathological scheme: dementia præcox, 530
Scottish Board of Control, 488
Scottish Board of Health: annual report, 281
Typhus at Raasay, 189
Vital statistics of Scotland for 1920, 399, 613

Scott, Rev. A. Boyd: Christian Science, 1141
Scott, Alexander: Factors which make for industrial efficiency, 377—The occupation dermatoses of the paraffin workers of the Scottish shale oil industry, 381—The occupation cancer of the paraffin and oil workers of the Scottish shale oil industry, 1108—Cancer developing after cessation of irritant, 1279
Scott, G. Laughton: Psychiatric clinics, 1281
Scott, James Avit: Potassium permanganate in dermatology, 977
Scott, Sir Leslie: Mental deficiency, 222
Scott, W. M.: Bacteriology of influenza, 389—Bovine actinomycosis, its pathogenesis and treatment by vaccines, 1063
Scottish asylum system, hospitalization of (G. M. Robertson), 134—Leading article on, 139. *See also* Hospitalization
Scottish asylums' pathological scheme: Dementia præcox, 530
Scottish Board of Control, 488
Scottish Board of Health: annual report, 281—Milk adulteration in Edinburgh, 324—Report on the Sale of Food and Drugs Acts, 619—Supply of botulinus antitoxin, 889—The grading of milk, 889—Suspected food poisoning at Rosewell (report of pathologist), 947—Scottish war memorial, 488
Scripture, Edward Wheeler: Some recent medical work in Vienna, 988—Steinach's operation, 988—The treatment of general paralysis by malaria, and the use of speech inscriptions for early diagnosis, 1121, 1197
Scurvy, the prevention and cure of, 1276
Seat cover, a sanitary, 666
Seborrhœa, by-laws in, 1054
Seborrhœa and seborrhœic dermatitis, etiology of (R. Cranston Low), 752—(H. W. Barber), 754—Discussion, 756
Sections, proceedings of. *See* Association, British Medical
Seifert, Ernst: *Chirurgie des Kopfes und Halses für Zahnärzte*, rev., 931
Sella turcica, distortions of, in non-pituitary lesions (Geoffrey Jefferson), 927
Sellars, Dr., exhibits pathological specimens, 45
Semon, Henry C.: X rays in hypertrichosis of the face, 891, 1049—Case of arsenical keratosis followed by cancer, 975 (O)
Senior surgeon commanders. *See* Navy, Royal
Sensory disturbances in relation to diagnosis (E. Farquhar Buzzard), 1224
Serbia: Fiftieth anniversary of the Society of Serbian Medical Practitioners, 492
Sergent, Emile: *Études Cliniques et Radiologiques sur les Maladies de l'Appareil Respiratoire*, rev., 1178
"Serious case," 240
Serum by the mouth 29, 67, 703, 999
Serum treatment of veldt sores, 236
Serums, standardization of, resolutions adopted at the Paris Conference, 1180
Sewage disposal, modern methods of (F. W. Harris), 1094
Sewage disposal in the tropics, methods of, with special reference to helminth infection (M. Khalil), 360
Sex, causation of (J. H. Orton), 317
Sex, determination of, 616, 1100
Sex glands, accessory, comparative anatomy of (Kenneth Walker), 84 *See also* Glands
Sex problems and the interstitial glands, 29, 150. *See also* Gland
Shall the State Throw Away the Keys? 1285
Shanghai: Proposal to found a medical school at, 537—Small-pox in, 1041
Shanks, W. F.: "Hæmorrhagic" chicken-pox, 1077
Shannon, Dr: Puerperal mortality, 346
Sharp, Edgar W.: Venesection in eclampsia, 690
Sharpe, W. Salisbury: Factors which make for industrial efficiency, 377—Treatment of industrial accidents, 380
Shaw, A. F. Bernard (and Stuart McDonald): Persistent eosinophilia with splenomegaly, 966
Shaw, Fletcher: Adenomyomata of the recto-genital space associated with tarry cysts, 92—Occlusion of the rectum following the administration of a simple enema, 926
Shaw, W. Vernon: Water-borne enteric, 56
Sheen, A. W.: The progress of surgery, 924—An encapsulated tumour weighing 11 lb., 1268
Sheffield: Post-graduate courses at, 702—The field laboratories, 937, 941
Sheild, Arthur Marmaduke: Obituary notice of, 404—Estate and bequests of, 832
Sheldon, T. S.: Warming the garage, 1053
Shell shock. *See* Shock
Shelter life for children, 493, 537
Shera, A. G.: The present value of the Widal reaction in the inoculated subject, 1076 (O)
Sherren, James: Cholecystectomy or cholecystotomy, 278—The indications for, and limitations of, surgery in chronic abdominal disease, 455 (O)
Sherrington, Sir Charles: British Association presidential address on animal mechanism, 485—Awarded Anders Retzius medal of the Swedish Society of Physicians, 706—Re-elected President of the Royal Society, 952—Insulin and diabetes, 1139—Hon. LL.D. McGill University conferred upon, 1141
Shiga: The toxins of *B. dysenteriæ* Shiga (R. Cecil Robertson), 729
Shipway, F. E.: Anæsthetization of patients for Cæsarean section, 925
Shirley, H. J.: Anæsthetization of patients for Cæsarean section, 925
Shiskin, Cecilia (and William MacAdam): The cholesterol content of the blood in anæmia, and its relation to splenic action, 1170
Shock, Shell, War Office Committee on, completes its report, 69—The report, 322—Leading article on, 391
Shortage or overcrowding (medical students), 696
Shuttleworth, G. E. (and W. A. Potts): *Mentally Deficient Children, their Treatment and Training*, rev., 603
Sibson, Francis: The "creation" of "Sibson's notch," 522
Sichel, Gerald: Expert witnesses, surgical and medical, 661 (and Gordon Ward): Splenectomy, appendectomy, and Cæsarean section in the same patient, 866
Sight, failing, the clinical significance of (A. Maitland Ramsay), 804
Sight-testing opticians. *See* Opticians
Silica, colloidal (W. H. Tytler), 980
Silicosis and miners' phthisis, 1187
Simon, F. D. (and Marion Fitzgerald): *The Smokeless City*, rev., 764
Simonin: Autogenous vaccines, 571
Simpson, F. E.: *Radium Therapy*, rev., 386
Simpson, W. J.: Bubonic plague treated with neosalvarsan, 190
Simulated disease (Leith Murray), 927
Singer, Charles: *The Discovery of the Circulation of the Blood*, rev., 764
Singer, Mrs.: A thirteenth-century Latin translation of the sixth book of the *Epidemics*, 221
Sinus thrombosis. *See* Thrombosis
Sinuses, sphenoidal and posterior ethmoidal, relation of the optic nerve to (Gavin Young), 1258
Skin affections and the ductless glands (R. W. MacKenna), 980
Skin disease probably due to endocrine defect, 70
Skin diseases, *x* rays in (E. W. Reed), 559—Discussion, 560
Skulls, prehistoric human, and the evolution of man (G. Elliot Smith), 146
Slater, B. L.: Eserine poisoning produced by intravenous injection: recovery, 1120
Slaughtering, humane, 318
Sleeping sickness, treatment of (leading article), 1185. *See also* Trypanosomiasis
Small-pox and chicken-pox, differential diagnosis of, 775, 823
Small-pox diagnosis, 1045
Small-pox, inoculation for (Dr. Torkomian), 273
Small-pox menace: precautions in Dublin, 1045
Small-pox, mild, 65, 283, 316—Ministry of Health's leaflet on, 316. *See also* Amaas *and* Alastrim
Small-pox in some newspapers, 1186
Small-pox, notes on (W. McConnel Wanklyn), 1092, 1181, 1186, 1228
Small-pox, outbreak of 1922: in London and district, 819, 886, 937, 943, 993, 1001, 1039, 1046, 1093, 1097, 1136, 1146, 1152, 1239—At Poplar workhouse, 1001, 1046, 1097, 1146, 1152, 1195—A correction, 1146—Leading article on, 937—Parliamentary notes on, 1187, 1237
Small-pox in the past, 1274
Small-pox in the Philippines, 22
Small-pox in Shanghai, 1041
Small-pox and vaccination, 993, 1187, 1242
Smell, review of book on, 872
Smell, the sense of (leading article), 520
Smellie, J. C.: Prevention of puerperal infection, 1095
Smith, A. Lapthorn: Bathroom dangers, 494—Stillbirths and neo-natal deaths, 595—Anæsthetics and analgesics in labour, 674—Treatment of eclampsia, 677—Problems of asthma, 760
Smith, Alwyn: Child of 4 months with Hirschsprung's disease, 1268
Smith, C. E.: *From the Deep of the Sea*, rev., 1125
Smith, D.: Treatment of tuberculous cervical glands, 864
Smith, E. C. Temple: Note on the treatment of squint, 236
Smith, Major-General Sir F.: Veterinary medicine, 274
Smith, F. K.: Tibial bone graft used to replace the upper half of a humerus, 1177—Syphilitic ulceration of breast, 1177

SMITH, G. Elliot: Prehistoric human skulls and the evolution of man, 146
SMITH, G. F. R.: General anaesthetics, 1080
SMITH, George: A strange "wild-fowl," 1053
SMITH, George Henry, obituary notice of, 618
Smith, George Joseph, Trial of, rev., 1125
SMITH, Lieut.-Col. H.: Methods of operating for cataract, 148
SMITH, Lieut.-Col. Henry: Cholera or dysentery, 1049
SMITH, Colonel H. A., appointed honorary surgeon to the King, 193
SMITH, Heywood: The legibility of printed matter, 660
SMITH, J. W., memorial to, 141
SMITH, Lionel: Anaesthetization of patients for Caesarean section, 925
SMITH, M. Hamblin: *The Psychology of the Criminal*, rev., 1081
SMITH, Stephen, obituary notice of, 483
SMITH, Walter: Colloid therapeutics, 45
SMITH, W. B.: should we longer tolerate the pollution of the air? 361
SMITH, Wilbur B., to combine the appointments of "athletic director" and professor of anatomy at Tulane University, U.S.A., 581
Smith's Physicians' and Surgeons' Visiting List, Diary, Almanac, and Book of Engagements for 1923, rev., 1180
Smoke Abatement Bill, 144, 183
SMYLY, Sir William: Tuberculosis of the female pelvic organs, 1030
Smyrna fire and the Smyrna hospitals, 607
SMYTH, P. J., appointed to the Irish Army Medical Council, 400
SMYTH, W. Johnson: A "serious case," 240
Snakes of Ceylon (Colonel F. Wall), 603
Snakes and their venoms (Lieut.-Col. H. Watkins-Pitchford), 54
Société Internationale de Chirurgie, next congress to be held in London, 1236
Société Médicale des Hôpitaux, 1141
Society, Aberdeen Medico-Chirurgical: Records of the Aberdeen Medico-Chirurgical Society from 1789 to 1922, 947—Meningismus, 947—Joint hospital scheme for Aberdeen, 947—Annual meeting, 1094—Election of officers, 1094—Child of 15½ months with osteogenesis imperfecta, 1177—Regeneration of the lower half of the femur, 1177—Congenital club foot, 1177—Case with the appearance of myxoedema, 1177—Milroy's disease, 1177—Lipo-dystrophia progressiva, 1177—Subcutaneous rupture of the extensor communis digitorum, 1177—Tumour of right thigh for diagnosis, 1177—Arteriovenous aneurysm of the femoral artery and vein, 1177—Tibial bone graft used to replace the upper half of a humerus, 1177—Syphilitic ulceration of the breast, 1177—Myositis ossificans, 1177—Sero-cystic disease of the left breast, 1177—Calcinosis, 1177—Mediastino-pericarditis, 1177—Two cases of dextrocardia, 1177
Society, American Neurological: *Transactions*, vols. 45 and 46, rev., 474
Society, American Ophthalmological: The place of ophthalmology in the undergraduate medical curriculum, 940
Society, American Pediatric: *Transactions*, rev., 476, 1034
Society, Anatomical, of Great Britain: Some remarks on the anatomical structure of the stomach with special reference to gastric function, 22
Society, Bath Clinical: Neuroma of plantar nerve, 1031—Two cases of dysentery, 1031—Foot with a calcaneal spur, 1031—Epithelioma of tongue, 1031—Suppurative dacryocystitis, 1031—Congenital dislocation of hip 1031—Infantilism, 1031—Treatment of varicose ulcer, 1031—Chronic osteomyelitis, 1177—Chronic bursitis, 1177—Cystic-rus cellulosa, 1177—Gall stone causing acute intestinal obstruction, 1177—Kidneys removed for pyonephrosis, 1177—Notes on some common ailments, 1177
Society, Birkenhead Medical: Annual report, 976
Society, Boston Surgical: Henry Jacob Bigeland gold medal awarded, 1053
Society, Brighton and Sussex Medico Chirurgical: 700th meeting, 920—*X* ray diagnosis of gastric and duodenal conditions, 980—Sensory disturbances in relation to diagnosis, 1224
Society, Bristol Medico-Chirurgical, presents its library to the University of Bristol, 916
Society, British Psychological: Some recent medical work in Vienna, 3-8—Steinach's operation, 938—Psycho-analysis, 989
Society, Caledonian Medical: Annual dinner, 660
Society, Cambridge University Medical: Normal labour, 804—The criminal court and the medical witness, 927—The State and medical science, 1189
Society, Canadian Radiological: Annual convention, 537—Election of President, 537
Society, Cardiff Medical: Artificial pneumothorax in the treatment of pulmonary tuberculosis, 760—Puerperal infection mortality in Wales, 976, 980—Colloidal silica, 980—Foetal syphilis, 1267—Miliary disseminated tuberculous iritis, 1268—Myotonia congenita (Oppenheim's disease), 1268—Myotonia congenita (Thomsen's disease), 1268—Lobulated fibro-lipo-myxoma, 1 68—Encapsulated tumour, 1268—Hirschsprung's disease, 1268—Hour glass stomachs, 1268—Exhibition of blood films and specimens, 1268
Society, Charity Organization: *Annual Charities Register and Digest*, rev., 876—*The Prevention and Relief of Distress*, rev., 876
Society, Chelsea Clinical: Annual dinner, 1099
Society, Cremation, of England: Report, 608
Society, Czech Tuberculosis: Next meeting, 974
Society, Devonshire Hospital Research, Buxton: Clinical meeting and exhibition of cases, 1177—Arthritis, 1 77
Society, Dutch, for Combating Alcoholism, 118
Society, Edinburgh Medico-Chirurgical: Oxygen want, 270—Surgical diagnosis of renal diseases, 270—Hydrocephalus, 979—Influenza, encephalitis, and cerebro-spinal meningitis, 979—Addison's disease with a previous tuberculous history, 980—Polycythaemia vera at the onset of the menopause, 980—Diseases of the skin treated with massive doses of radium, 980—House infection in cholera and cancer, 1266—Artificial pneumothorax, 1266
Society, Edinburgh Obstetrical: An organism from cancerous growths, 15—President's address, 1081
Society, Edinburgh Royal Medical: Inaugural address, Edinburgh in the sixties, 822
Society, Edinburgh Surgical Appliance: Annual meeting, 1094
Society, Glasgow Royal Medico Chirurgical: Inaugural address: the clinical significance of failing sight, 804—Early opacity in the senile lens, 871—Asymmetry of the upper limbs, 871—Treatment of rectal prolapse in children, 871—Polydactylism of the foot, 871—After-effects of lethargic encephalitis, 1175—Discussion on the treatment of fractures, 1 69
Society, Harveian: The notification of infectious diseases, 869
Society, Herefordshire Medical: New quarters acquired, 665
Society, Hunterian, of London: Dinner, 927—Papers and discussions, 977
Society for the Study of Inebriety: Presidential address on the expenditure on alcohol in hospitals, 142
Society, Liverpool Medical: Surgical treatment of gastro-jejunal and jejunal ulceration, 640
Society, London and Counties Medical Protection: Change of address, 1285
Society, Manchester Medical: Surgical treatment of gastro-jejunal and jejunal ulceration, 640—Joint meeting with the Liverpool Medical Institution, 980—The ductless glands and skin affections, 980—Angina pectoris—980—Indications for cholecystenterostomy, 980—Asthma in children—the rôle played by local lesions of the chest, 1267—Pernicious anaemia, 1267—Surgery of Meckel's diverticulum, 1267
Society, Manchester Pathological: Laboratory meeting, 45—Carcinoma of rectum, 45—Bone tumours, 45—The use of Coley's fluid, 45—Specimens from the pathological laboratory, 45—Secondary carcinoma of the Gasserian ganglion, 45—Intrathoracic goitre, 45—Oesophagus and diaphragm from a case of cardiospasm, 45—Hydrometra from a case of congenital absence of vagina, 927—Cancroid tumour of the small intestine, 927—*X*-ray epitheliomatous warts, 927—Distortions of the sella turcica in non-pituitary lesions, 927—Sarcoma of kidney 927—Free cyst in the peritoneal cavity, 927—Acute nephritis, 1080
Society, Medical Assurance: The assessment of elderly lives for life assurance, 953
Society, Medical Golfing, 154, 898, 1236
Society, Medical, of London: 150th session, 699—Annual meeting, 699, 803—Certain developments in medicine, 781, 803—Discussion on pernicious anaemia, 978—Blood transfusion in civil practice, 1078
Society of Medical Officers of Health: Co-operative hygiene, 22—Association of Medical Officers of Fever Hospitals decides to join as the Group of Medical Officers of Fever Hospitals, 287—Annual dinner, 820—Milk control and distribution in America, 1030
Society, Medical Sickness, Annuity, and Life Assurance: annual meeting, 654
Society, Medical-Legal: Programme, 287—Annual meeting, 287—Subscriptions, 287—Suicide or *feto de se*, 1088—*Transactions*, 1088
Society, Midland Medical: The scope of diathermy, 1224
Society, National Health: Altered regulations *re* training of health visitors, 239—Courses for nurses, etc., 706
Society, Newcastle-upon-Tyne and Northern Counties Medical: Opening meeting of session, 772—Exhibition of cases and specimens, 772—Annual address: Some reflections on high arterial blood pressure, 1239
Society, North of England Obstetrical and Gynaecological: Incidents of obstetrical practice, 926—Occlusion of the rectum, 926—Unsuspected pregnancy, 926—Case of simulated disease, 927—Exhibition of specimens, 927—The bladder in gynaecological cases, 1122
Society Nottingham Medico-Chirurgical: Treatment by inhalation with oxygen of tuberculous affections, 1269
Society, Optical, to hold an exhibition on ophthalmic optics, spectacle frames, etc., 953
Society, Pathological, of Great Britain and Ireland: The effect of cessation of the irritant on the development of experimental tar cancer, 1101
Society, Pharmaceutical: New session of the school of pharmacy, 697
Society, Pharmaceutical of Ireland: Election of officers, 773
Society of Public Analysts: Experiments on poppy selection, 953
Society, Red Cross, British: Report, 613
Society, Research Defence: Medical research and national life, 317—Note on, 938—Pamphlet on small-pox and vaccination, 993
Society, Roentgen: Joint meeting with Electrotherapeutics Section of the Royal Society of Medicine, 946, 1042—The structure of metals as analysed by *x* rays, 1042—The hot wire sphygmograph and the psycho-galvanic reflex, 1 42—Measurement of high voltages, 1042—Cauterization of pleural adhesions under thoracoscopic control, 1043—Vote of thanks, 1043
Society, The Royal: The defensive spines of fishes, 54—Fullerton professorship and studentships, 142, 1113—Election of fellows, 952—Election of officers, 952—Award of medals, 1041—Insulin and diabetes, 1139—Bacteriolytic properties of tissues, 1187

SOCIETY, ROYAL, OF MEDICINE:
The Chalmers Library formally opened, 23
The poisonous snakes of Africa, 54
New order of associates instituted, 69
The effect of light on rickets, 85
Annual dinner, 92
Presentation of Jenner medal, 92
Spolia nemoralia, 932
The Prince of Wales becomes an Honorary Fellow, 1135
Discussion on the use of ergot in obstetric and gynaecological practice, 1172
Social evening and a wireless concert, 1247
Section of Anaesthetics.—Anaesthetization of patients for the classical Caesarean section, 905—Discussion on, 925
Section of Electro-therapeutics.—Joint meeting with Roentgen Society at Manchester, 746, 1042
Section of Epidemiology and State Medicine.—Economics and tuberculosis, 868—Epidemiology of scarlet fever, 1073
Medical Section.—Forty-five years of medical progress, 867—The eradication of glanders and anthrax, 867—Life at high altitudes, 1235
Section of Obstetrics and Gynaecology.—Myomectomy for uterine fibroids, 803—Scope and technique of myomectomy, 804—Joint meeting with the Section of Therapeutics, the use of ergot, 1172
Section of Surgery.—The progress of surgery, 923—Surgeons in camera, 1185
Section of Therapeutics and Pharmacology.—President's address on the problems of asthma, 758—Discussion on the physiological effects of light, 1028
Section of Urology.—Comparative anatomy of the accessory sex glands, 84
War Section.—First sessional meeting, 690—Exhibits at the Royal Army Medical College, 690—Venereal disease as a war casualty, 994—The physical training of the soldier, 1186

Society, Royal Photographic: Annual exhibition, 572—Natural science and the camera, 572
Society, Royal Statistical: The value of life tables in statistical research, 609—Changes in the birth rate and in illegitimate fertility in London boroughs, 1911 and 1921, 1222
Society, Royal Surgical Aid: Annual meeting, 1199
Society, Royal, of Tropical Medicine and Hygiene: Life history of the sandfly, 1030—Demonstrations, 1030
Society, Russian Pirogoff Surgical, of Petrograd: Congress of, 537
Society of Serbian Medical Practitioners, 50th anniversary, 492
Society, Sheffield Medico-Chirurgical: Demonstration of cases, 925—The local treatment of acute tuberculous disease of the hip-joint and vertebrae, 925—Relapsing pyrexias of lymphadenoma, 1175—*X* ray treatment of malignant disease, 1175
Society of Surgery, International: Next meeting, July (1923), 940
Society, Swedish, of Physicians, awards the Anders Reizius medal to Sir Charles Sherrington, 706
Society, Ulster Medical: Opening meeting of session, 947—President's address, 947—Special general meeting, 947—Financial statement, 947—Increased subscription, 947—Dementia praecox, 1080—Ulster medical services, 1095—Annual dinner, 1190—Notes on a visit to the hospitals of Canada and the United States, 1 40—Holiday visit to Montreal, Toronto, and the Mayo Clinic, 1240
Society of Urology, Italian, 706
Society for Prevention of Venereal Disease: Annual meeting, 49
Society for Venereal Disease Study: First general meeting, 278. *See also* Venereal
Society, West Kent Medico-Chirurgical: First meeting of session, 872—Election of President, 872—Operation for myeloma, 872—Patient with ascites suffering from mitral disease, 872—Ascites in a man who had been tapped seventeen times in eleven months, 872—Graves's disease with tachycardia, 872—*X*-ray plate of a gastric ulcer, 872—Pseudo-elephantiasis, 872—Respiratory disorders of nervous origin, 927

Society, West London Medico-Chirurgical: First meeting of new session, 705—Presentation of Keetley medal, 705 - Clinical meeting, 927
Sociology, review of book on, 1226
SODDY, Frederick, awarded Nobel prize for chemistry for 1921, 995
"Sodox," 78
Soldier, the physical training of (Colonel R. B. Campbell), 1185—Correspondence on, 1286
Soldiers' homes and hospitals in Malta (parliamentary note), 231
SOLLMANN, Torald: *A Manual of Pharmacology and its Applications to Therapeutics and Toxicology*, rev., 693
SOLOMON, Charles Edwin, obituary notice of, 1051
SOLOMONS, Bethel: Eclampsia, 89—Tuberculosis of the female pelvic organs, 1029—Uterus with a large cervical myoma, 1225
"Solus" Electrical Company's catalogue of *x*-ray apparatus of an original character, 31
SOMERS, C. D.: Violators of the vaccination law, 1100
SOMERVILLE, H.: *Practical Psycho-analysis*, rev., 87, 328
SOMERVILLE, W. F.: High frequency currents, 557
Soot cancer. *See* Cancer
SORAPURE, Victor E. (editor): *The Oxford Index of Therapeutics*, rev., 386
SOUTHAM, A. H. (and S. R. WILSON): Cancer of the scrotum, 971 (O)
SOUTTAR, H. S.: Diagnosis and treatment of cholelithiasis, 1014—The operative treatment of difficult hernias, 1024
SOWDEN, Geo. Smith: Warming the garage, 1100
Spa physician in France, 653
Spa treatment for phlebitis, 538
SPACKMAN, C. L.: A diphtheria carrier, 516
Spadacene: a Splash for the English Spa Fountain (Edmund Deane), 272, 694
Spain: Ratification of the maternity and unemployment conventions approved, 113—Cancer institute opened at Madrid, 1151
Spanish popes, 154
Species, mutation of (William B. Brierley), 722—Discussion, 726
SPENCE, John, awarded a Carnegie medal and annuity, 653
SPENCE, J. C.: Degenerative diseases of the liver, 1061
SPENCER, Herbert R.: Eclampsia, 89—Scope and technique of myonectomy, 804—The anaesthetization of patients for the classical Caesarean section, 905 (O)—The use of ergot in obstetrics and gynaecology, 1174
SPENCER, W. G.: An *Epitome* of Vesalius, 221
Sphinx, special *Egypt* tourist number, 493
Sphygmograph, hot wire, and the psycho-galvanic reflex (A. V. Hill), 1042
SPILSBURY, B. H., appointed honorary pathologist to the Home Office, 619—The criminal court and the medical witness, 927
Spinal caries, tuberculous, bone grafting as an aid in treatment of (Sir Henry M. W. Gray), 73 (O)—Correspondence on, 284, 326
Spirit photographs, 55. *See also* Photographs
Spirochaetosis, broncho-pulmonary, a possible case of (R. M. Johnston), 1119
Spleen, surgical treatment of non-traumatic affections of (James Carslaw), 1204—(E. H. Kettle), 1207—(Sir Kenneth Dalziel) 1209
Splenectomy, appendectomy, and Caesarean section in the same patient (Gerald Sichel and Gordon Ward), 866
Spleno-medullary leukaemia, case of (A. Dorothy Pocock), 8, 2
Splenomegaly with persistent eosinophilia (Stuart McDonald and A. F. Bernard Shaw), 966—Correspondence on, 1184
Splints, McIntyre's, Busk's, and Winchester, 582
Spolia nemoralia (Sir John Bland-Sutton), 932
Spraying of theatres, etc. (parliamentary note), 280
Squint, treatment of, 236. *See also* Strabismus
Stabilarsan, a new substitute for salvarsan, 1248
STACK, Edward Hugh Edwards, obituary notice of, 286
Stages of human life, 1090
Staining, intra-vitam, its application to pathological investigation (D. F. Cappell) 1166
Stammering and left-handedness, 1034, 1200
STANSFIELD, F. W.: The outbreak of small-pox at Poplar Workhouse, 1046, 1146
Star and Garter Home for Disabled Sailors and Soldiers now constituted an independent charity, 493
STARK, Nigel: Treatment of salpingo oöphoritis, 685
STARLING, E. H., appointed the first Fouleron professor of the Royal Society, 1133
STARLING, S. G.: *Electricity: Science in the Service of Man* rev., 567
Starvation during the siege of Kut, effects of, 237. *See also* Kut
State and medical science (Sir Alfred Mond), 1189
Static currents (F. Howard Humphris), 555
Static electricity and high frequency currents: Therapeutic value of (F. Howard Humphris), 555—(W. F. Somerville), 557—Discussion, 558
Stationery Office: Publications, price of, 176—Prints a consolidated list of parliamentary and Stationery office publications, 492
STEEDMAN, Mackenzie: A disclaimer, 1152
STEEN, R. H.: Psycho-analysis, 775, 894, 998, 1047
Steinach's operation (E. W. Scripture), 988
STEKEL, W.: *Impuls-Handlungen*, rev., 1034
Stenosis, pyloric, congenital (V. N. Fenton), 644
STEPHEN, Guy Neville: Promotion in the R.A.M.C., 615
STEPHEN, Mr. Justice: Expert witnesses, 1245
STEPHENS, G. Arbour, appointed consultant for investigation of the cause and incidence of heart disease among children, 779
Sterilization of mental defectives, 29, 64, 109, 285, 328, 401, 490, 531, 579, 615, 661—The medical importance of clearly defined biological terms, 615. *See also* Mental
Sterilization of the unfit: Discussion at the Conference on Birth Control, 133
STEVENS, Lieut.-Col. Algernon Francis, obituary notice of, 492
STEVENS, G. T.: Veratrone in treatment of eclampsia, 91
STEVENS, John: Scottish war memorial, 487
STEVENSON, A. C.: The cycle of *Fitaria loa* in *Chrysops dimidiata*, 1030
STEVENSON, Major-General William Flack, obituary notice of, 112
STEWART, A. W.: *Some Physico-Chemical Themes*, rev., 1271
STEWART, Dr.: Stillbirths and neo-natal deaths, 596
STEWART, Hall: Fragilitas ossium associated with blue sclerotics, 498 (O)
STEWART, Ian Struthers: Diagnosis of phthisis and other respiratory affections, 738
STEWART, J. S.: Artificial pneumothorax, 1266
STEWART, M. J.: Degenerative diseases of the liver, 1065
STEWART, Matthew J.: The healing of gastric ulcer, 1164
Stewart prize awarded to J. C. McVail, 170
STEWART, Purves. *See* Purves-Stewart
STIDSTON, Capt.: An outfit for immediate treatment of cases of poisoning, 1034
STIELL, Gavin, obituary notice of, 239
Sties, 953, 1054
STILES, Sir Harold J. (and M. F. FORRESTER-BROWN): *Treatment of Injuries of the Peripheral Spinal Nerves*, rev., 474
Stillbirths, etiology and pathology of (Gilbert I. Strachan), 80 (O). *See also* Death *and* Foetal
Stillbirths and neo-natal deaths (J. W. Ballantyne), 585—(Eardley Holland), 588—(A. Louise McIlroy), 589—Francis J. Browne), 590 J. N. Cruickshank), 593—(Gilbert I. Strachan), 594—Discussion, 595—Leading article, 605
STITT, Surgeon-General E. R.: *The Diagnostics and Treatment of Tropical Diseases*, rev., 1126
STOBIE, William: Treatment of pulmonary tuberculosis by tuberculin, 473
STOCKARD, Charles R.: Alcohol as a selective agent in the improvement of racial stock, 25
STODDART, W. H. B.: Sterilization of the unfit, 133
Stomach conditions, abnormal, *x*-ray diagnosis of (W. Barrington Prowse), 980
Stomach, hour-glass (Owen Rhys), 1268
Stomach, structure and function of (Geoffrey Jefferson), 1
Stomach, ulcer of the body of (William Billington), 34 (O). *See also* Ulcer
Stomatitis, epidemic, 537, 582
STONES, Wilfred, estate and bequests of, 897
STOOKEY, Byron: *Surgical and Mechanical Treatment of Peripheral Nerves*, rev., 1124
STOREY, William M.: Unsuspected pregnancy, 826
STORY, Sommerville: *Paris à la Carte: Where the Frenchman Dines and How*, rev., 387
Strabismus and alopecia areata (J. Goodwin Tomkinson), 505, 1001—Correspondence on, 616, 893, 1003
Strabismus convergens, spontaneous cure of, discussion on, 147
STRACHAN, F. J.: Hooked anaesthetic drop-bottle collar, 604
STRACHAN, Gilbert I.: The pathology of foetal maceration, 80 (O)—Placental changes in relation to foetal death, 594—Foetal syphilis, 1267
STRAHAN, P. D.: The nature and significance of heart symptoms, 29
Strasbourg medical deputation, 994
STRATHERN, J. Drummond: The importance of teaching medical jurisprudence, 371
STRAUSS, Paul, studies the public health administration of this country, 287—Luncheon to, 318
Streatfeild Research Scholarship, 31, 952, 1002
Street accidents reported by metropolitan police, 1003
STRETTON, J. Lionel: Cholecysto-gastrostomy, 600
STROGANOFF, Professor: Treatment of puerperal eclampsia, 95
STROM, S.: Psoriatic arthropathy, 609
Strychnine, distinctive colouring for (parliamentary note), 231
Strychnine and the heart, 1152
STURMER, Lieut.-Col. A. J.: Etiology of rickets, 1000
Style, 526
SUDHOFF, Karl: *Kurzes Handbuch der Geschichte der Medizin*, rev., 930
Suicide and *felo de se* (leading article), 1088
Suicides in prison (parliamentary note), 103
SULLIVAN, W. C.: Etiological factors in the alcoholic psychoses, 206
Sun in treatment of tuberculosis, 741. *See also* Tuberculosis
Superfoetation, a case of supposed, 661
SUPPLE, Colonel James Francis, obituary notice of, 491
Surgeons *in camera*, 1185
Surgery, Gynaecology, and Obstetrics, rev., 311
Surgery on the high seas (A. E. Crabbe and L. R. Broster), 717 (O)
Surgery, intrathoracic, 993
Surgery, the progress of (James Berry), 923—Discussion, 924
Surgery, review of books on, 311, 602, 691, 875, 951
Surgical treatment, what makes for success in (Sir William I. de Courcy Wheeler), 1121
SUTHERLAND, Halliday: Administrative requirements for tuberculosis, 368
SUTTIE, Jane I.: Mental stresses of adjustment in women, 549—Psycho-analysis, 1243
SWAN, W. A. M.: The creosote treatment of pneumonia, 83
Sweating in pulmonary tuberculosis, 780, 898, 954
SWEENEY, Lieut.-Col. Terence Humphrys, obituary notice of, 1147
Switzerland, number of persons suffering from tuberculosis in, 31—*Swiss Watering Places*, rev., 87—Small-pox in, 619
Sydenham, Sir Thomas, 320
Sydney: Cancer home proposed, 997—Industrial hygiene, 997—Rennie, G. E., retirement of, 997—University commemoration, 233. *See also* New South Wales *and* Australia
SYME, W. S.: Septic sinus thrombosis, 465—Otogenic meningitis, 466—Diseases of the oesophagus, 472
SYMES, J. Odery: Post-graduate courses, 891—Chronic renal disease, 1072
SYMONDS, C. Putnam (E. P. POULTON and H. W. BARBER): *Taylor's Practice of Medicine*, rev., 128
SYNGE, Dr.: Banti's disease, 1268
Syphilis, abortive treatment of, and salvarsan research in Germany, 768
Syphilis as a cause of ante-natal death (J. N. Cruickshank), 593
Syphilis, foetal (G. I. Strachan), 1267
Syphilis of the central nervous system, the results of treatment in (Reginald Heard), 37 (O)
Syphilis, modern treatment of (L. W. Harrison), 1 (O)
Syphilis, review of books on, 566
Syphilis. *See also* Venereal disease

T.

TAIT, Lawson, review of life of, 1032
TAKAMINE, Jokichi, death of, 581
TALBOT, F.: Infectivity of artificial dentures 406
Talipes equino-varus, congenital, simple method of treating (A. S. Blundell Bankart), 1115. *See also* Club-foot
Tar cancer. *See* Cancer
TAROZZI, Giulio: *Sulla encefalite non-suppurativa e la considetta encefalite letarg ca*, rev., 517
Taste, review of book on, 872
TAYLOR, E. Claude: The physical training of the soldier, 1286
TAYLOR, Gordon: Blood transfusion in civil practice, 1074
TAYLOR, James: Some aspects of the treatment of surgical tuberculosis, 746
TAYLOR, J. Lionel: *The Stages of Human Life*, 1090
TAYLOR, William Frederick, to retain the title of Honourable 331
Taylor's Practice of Medicine, rev., 128
Teeth, care of the, 582
TEALL, C. G.: The scope of diathermy, 1224
Telephone, death of the inventor of the, 281
Telephone facilities to be improved, 492
TELFORD, L., D., appointed to the Chair of Systematic Surgery in the University of Manchester 27
Temperature and industrial accidents, 1134
Tendon transplantation (Robert Gilbertson Shaw), 77 (O)—Correspondence, 190, 237
Territorial Army. *See* Army, British
TESSIER, P. J. and G. H. ROGER and F. WIDAL): *Nouveau Traité de Médecine: Intoxications*, rev., 46
Test meals. *See* Meals
Testicular grafts, review of books on, 763
TEW, John Scott, obituary notice of, 664
Texas, cases of dengue in, 1151
Theatres: Sanitary regulations for, 63—Spraying of (parliamentary note), 280
Therapeutics, review of books on, 386
Thermometer, the clinical, in the prevention of pulmonary tuberculosis (E. Clark-Jones), 1026 (O)
THOMAS, F. L., elected Mayor of Barnstaple, 779, 1005
THOMAS, J. W. Tudor: Case of miliary disseminated tuberculous iritis, 1 68
THOMAS, William, obituary notice of, 404
THOMAS, W. Thelwall, appointed emeritus professor of surgery in the University of Liverpool, 27
THOMPSON, C. J. S.: Hiera picra, 222
Thomsen's disease (Abel Evans), 1268
THOMSON, A. P.: Insulin and diabetes, 948

THOMSON, C. S.: Birth control, 133—Outbreak of small pox at Poplar workhouse, 1046, 1195
THOMSON, Dr.: Mental defectives in the courts, 225—Occupation centres, 224
THOMSON, H. J.: Caesarean section, 151
THOMSON, H. Wright: Education of partially blind children in myope classes, 1757
THOMSON, J. Arthur: Links between natural history and medicine, 773
THOMSON, J. G.: Stages in the development of *Trypanosoma cruzi*, 1030
THOMSON, John: After-effects of lethargic encephalitis, 1176
THOMSON, Rafe: Comparative anatomy of the accessory sex glands, 84
THOMSON, Sir St Clair: Tobacco smoke and cancer, 330—Diseases of the oesophagus, 472—Appreciation of Christopher Vise, 1098
Thoracoplasty, extrapleural, in the treatment of pulmonary tuberculosis (P. Bull), 1217
Thoracoscopy in pleural adhesions (H. C. Jacobaeus), 1043—In surgery of the chest, (H. C. Jacobaeus), 1091
THORBURN, Sir William: Appointed a member of the Advisory Committee under the administration of the Cruelty to Animals Act, 351
THORNLEY, Lieut.-Col. Michael Harris, obituary notice of, 952
THORPE, J. F., awarded the Davy medal of the Royal Society, 1041
Throat, review of book on, 1226
Thrombosis, septic sinus, diagnosis and treatment of (Sir William Milligan), 459—Lionel Colledge, 460—Discussion, 463—Leading article, 475
THURSFIELD, Hugh: Treatment of tuberculous cervical glands, 863
Thyroid, the dose of, 948
Thyroid gland and diseased tonsils, 662, 704
Thyroid gland, review of book on, 1123
Thyroid gland, swelling of for sixteen years (M. Gramfee), 1260
TIBBITS, H., re-elected Mayor of Warwick, 1003
Ticks, 1100. *See also* "Wild fowl," a strange
TIDBURY, Robert, presentation to, 666
TIDY, Henry Letheby: Exophthalmic goitre, 912—Pernicious anaemia, 979—Chronic renal disease, 1074—*A Synopsis of Medicine*, rev., 1084
TILLEY, Herbert: The removal of a paper fastener by direct peroral bronchoscopy after its impaction for twenty-one months in the left bronchus, 973 (O)
TILLYARD, R. M.: Heart and lungs from a case of haemorrhage from placenta praevia, 1266
Tinea tonsurans, x-ray treatment of (J. Gibson Graham), 563—Discussion, 563
Tinned food *See* Food
TIPPET, John A.: Psycho-analysis, 1244
TIRARD, Sir Nestor: The use of ergot in obstetrics and gynaecology, 1143
Tissues, bactericlytic properties of, 1187
Tobacco smoke and cancer, 66, 237, 330
TOBIN, Major William Joseph, obituary notice of, 618
TOMB, John W.: Calcium deficiency and cod-liver oil, 283
TOMKINSON, J. Goodwin: Alopecia areata and strabismus, 505, 1001—Etiology of seborrhoea, 757
TOMLINSON, J. H.: Transillumination lamp with a rheostat to run from the main, 148
TOMLINSON, Lieut.-Col. William Winslow, obituary notice of, 68
TOMS, Deputy Inspector-General Francis Yeates, obituary notice of, 1051
TONKS, Rev. C. F.: Alcohol restriction and mortality, 252
Tonsil-bed compressor, twin, 18
Tonsils and adenoids, the bacteria of (Nellie Wall), 1025 (O)
Tonsils, diseased, and the thyroid gland, 662, 704
TOPLEY, William W. C., appointed professor of bacteriology and director of the Public Health Laboratory in the University of Manchester, 27
TOREKOMIAN, Dr: Inoculation for small-pox, 273
Toronto, venereal disease statistics, 581
Torquay Marine Spa, 581
TOULMIN, Sir George: Alcohol restriction and mortality, 252
Tourniquet, Samways's anchor, 1152
TOYE, E. J.: Chronic renal disease, 1074
Trachoma of the lacrymal sac (A. L. MacCallan), 148
TRAQUAIR, H. M.: The clinical differentiation of the various forms of optic atrophy, 1157
TREVAN, J. W. (and E. BOOCK): The physiological effects of light, 1028
TREVES, Sir Frederick: *The Lake of Geneva*, rev., 87
TREVOR, A. H.: Occupation centres, 224
TREVOR, Surgeon-General Sir Francis Wollaston, obituary notice of, 1147
Trials, Notable: *Trial of George Joseph Smith* (edited by Eric R. Watson), rev., 1126
Trichiniasis, 780
TRICOT-ROYER, Dr.: Plague in the seventeenth century, 220
Trimitrin solution in acute nephritis (John T. Maclachlan), 473
Tropical Diseases Committee appointed in connexion with the British Empire Exhibition, 1151
Tropical diseases, review of books on, 86, 332, 1034, 1126, 1227
Tropical malaria *See* Malaria
Tropical Medicine, Calcutta School of, 392, 1134
Tropical Medicine, Far Eastern Association of, ongress 814
Tropical Medicine, Harvard School of, 493
Tropical Medicine and Hygiene, Wellcome Museum of, note on, 897
Tropical medicine, information concerning the study of, 442
Tropical Medicine, Liverpool School of, information concerning, 443
Tropical Medicine, London School of: Degrees and pass lists, 153, 1246—Information concerning, 443—Annual dinner, 897, 935—Proposed amalgamation with the new Institute of Hygiene, 897
Tropics, inoculation for, 666
Tropics, methods of sewage disposal in, with special reference to helminth infection (M. Khalil), 360
Tropics, the place of the white man in (Dr. Hewetson), 885—Correspondence on, 1001
TRUE, Ronald, the case of (parliamentary note), 26, 58
TRUMAN, Claude A. P.: Sterilization of mental defectives, 69
TRUMPER, W. A.: Epidemic stomatitis, 582
Trypanosomiasis, treatment of (leading article), 1183 *See also* Sleeping sickness
Tuberculin treatment of pulmonary tuberculosis (William Stobie), 473
Tuberculosis administration: circular from Ministry of Health, 148
Tuberculosis, administrative requirements of the various types of (A. S. M. Macgregor), 365—Discussion, 367
Tuberculosis Association, National, of the United States: Radiology of the chest in children, 179
Tuberculosis in Belfast, 702
Tuberculosis in Birmingham, 996
Tuberculosis of bones and joints, treatment of (C. Lee Pattison), 925
Tuberculosis of cervical glands: treatment of (John Fraser), 853—Discussion, 862
Tuberculosis, chaulmoogra oil in, 666, 703
Tuberculosis Clinic, rev., 566
Tuberculosis, colloid calcium in treatment of, 283
Tuberculosis Conference, Second International: *Transactions*, rev., 17
Tuberculosis control in America: Demonstration by the Millbank Fund, 133
Tuberculosis and economics (R. J. Ewart), 868—Discussion, 868—Note on, 884
Tuberculosis of the female pelvic organs (Rethel Solomons), 1029—Discussion, 1029—Correspondence on, 1096
Tuberculosis, heliotherapy in (A. Rollier), 741
Tuberculosis, history of (Percy Kidd), 987
Tuberculosis, International Union against, next meeting at Berne in 1924, 1031
Tuberculosis of the lung. *See* Tuberculosis, pulmonary
Tuberculosis, measures against, 65
Tuberculosis of miners and silicosis, 1187
Tuberculosis, mountain climates influencing, 1126
Tuberculosis officers, information concerning appointments, 446
Tuberculosis and pregnancy, relation of (Professor Bar), 1140
Tuberculosis, pulmonary, artificial pneumothorax in the treatment of (Parry Morgan), 760
Tuberculosis, pulmonary, clinical differentiation of from other respiratory affections (E. Risti), 733—Discussion, 737
Tuberculosis, pulmonary, the clinical thermometer in the prevention of (E. Clark-Jones), 1026 (O)
Tuberculosis, pulmonary, complement fixation test in (A. Lisle Punch and A. Hope Gosse), 73 (O)
Tuberculosis, pulmonary, differentiation of active from quiescent (James Crocket), 560
Tuberculosis, pulmonary extrapleural thoracoplasty in the treatment of (P. Bull), 1217
Tuberculosis, pulmonary, sweating in, 780, 898, 954
Tuberculosis, pulmonary, tuberculin treatment of (William Stobie), 473
Tuberculosis, review of books on, 474, 518, 566, 805, 1083
Tuberculosis, sacro-iliac (H. C. W. Nuttall), 926
Tuberculosis Schemes of Great Britain and Ireland, Handbook of, rev., 518
Tuberculosis, share of the sun in the prevention and treatment of (A. Rollier), 741
Tuberculosis, surgical, some aspects of the treatment of (James Taylor), 746
Tuberculosis in Switzerland, 31
Tuberculous conditions treated by inflation with oxygen (Robert Purves), 1269
Tuberculous disease, electrical treatment in (P. C. Collingwood Penwick), 645
Tuberculous patients, after-care of (leading article), 1272
Tuberculous people, the employment of, 483
Tuberculous spinal caries, bone grafting as an aid in treatment of (Sir Henry M. W. Gray), 73 (O)—Correspondence on, 283, 326, 533, 578
Tumour, encapsulated, weighing 1 lb. (A. W. Sheen), 268
Turkey, first woman medical student registered in, 582
TURNER, Douglas: Occupation centres, 224
TURNER, E. B.: The radical prevention of venereal disease, 827
TURNER, F. M.: Epidemiology of scarlet fever, 1079
TURNER, Grey: Treatment of tuberculous cervical glands, 862
TURNER, John Andrew, obituary notice of, 535
TURNER, W. Aldren: Treatment of neurosyphilis, 634—Epilepsy and gunshot wounds of the head, 640
TURTON, J. H.: Pseudo-coxalgia, 44—Lumbo-sacral meningo-myelocele, 44—Three and a half inches of glass tubing removed by supra-pubic cystotomy, 44
"Twilight sleep" confinements, danger to the child in, 288, 406. *See also* Labour
TWORT, F. W.: The bacteriophage: the breaking down of bacteria by associated filter-passing lysins, 293—The bacteriology of influenza, 356—Mutation of species, 727
Typhoid fever. *See* Fever, enteric
Typhus fever. *See* Fever
TYRRELL, Edgar J.: Bad arms after vaccination, 1103
TYSON, W. J.: Ophthalmic examinations in general cases, 578
TYTLER, W. H.: Colloidal silica, 980

U.

Ukraine, health conditions in, 12—Cholera in, 42
Ulcer, gastric, the healing of (Matthew J. Stewart), 1164
Ulcer, rodent. *See* Rodent
Ulcer of the body of the stomach, chronic, surgical treatment of (William Billington), 34 (O)
Ulcer, varicose, painful, 1286
Ulcer, varicose, treatment of (Mr. Levis), 1 31
Ulcerations, gastro-jejunal and jejunal, surgical treatment of (Garnett Wright), 640 (O)
Ulcers, perforating gastric and duodenal, gastro-jejunostomy for, 537
Ulster medical services, 1095
Unemployment and public health (parliamentary note), 1136

UNITED STATES:
Alcoholic death rate declines in New York since the prohibition, 113
Alcoholism, acute, deaths from in New York, 581
American Gynecological Society's *Transactions*, rev., 474
American Medical Association, 31
American Pediatric Society, *Transactions*, rev., 476, 1034
Anatomical teaching in, the beginnings of (Dr. Krumbhaar), 221
Association of Military Surgeons of the United States, thirty-first meeting, 953
"Athletic director" and professor of anatomy at Tulane University, appointments to be combined, 581
Cancer, investigation into the cause of, 537
Chemist in the United States who most benefits science, annual award for, 831
Christian Science practitioner fined in Ohio for practising medicine without a licence, 240
Colorado University Medical School and Hospital, contribution from Denver city council, 828
Harvard School of Tropical Medicine, 493
King's County Medical Society, Brooklyn, one-hundredth anniversary, 1278
Lepers in, 118, 1285
Life tables for 1920, 582
Loomis Sanatorium, New York, twenty-fifth anniversary, 889
Marriage and medical examination: bill passed by New Jersey Legislature, 69
Massachusetts General Hospital presented with a chairman's bell, 1199
Medical education in: twenty-one years' progress, 571
Milk control and distribution in (John Robertson), 1030
Plague, bubonic, efforts to eradicate, 832
State Hospitals Commission's report on mental hospitals in New York State, 478
Tuberculosis control: demonstration by the Millbank Fund, 133
Warren triennial prize, 953
Whooping cough patients, convalescent camp opened for, 400

Universities Library for Central Europe to co-operate with the "European Student Relief," 492
Universities (Scotland) Bill, 103
University of Aberdeen: Degrees and pass lists, 152—Information concerning the study of medicine, 423, 435—Alexander Anderson scholarship awarded, 828
University of Adelaide: Opening of the new Darling building, 493
University of Amsterdam, J. K. A. Wertheim Salomonson's bequests to, 1247
University of Belfast, Queen's: Degrees and pass lists, 152—Information concerning the study of medicine, 425, 438
University of Birmingham: Information concerning the study of medicine, 418, 432, 443—Psychological medicine, 443

University of Bristol: Degrees and pass lists, 152—Information concerning the study of medicine, 419, 433, 441—Post-graduate study, 441
University of Brussels: Information concerning, 440—Degrees for practitioners, 440

UNIVERSITY OF CAMBRIDGE:
Appointments, 664
Bequests to, 895, 952
Chair of pathology, 484
Commissions, 237
Degrees and pass lists, 30, 68, 191, 778, 827, 895, 952, 1052, 1147, 1198, 1282
Diploma in hygiene, 827
Dunn bequest, 952
Examination dates, 536, 778
Information concerning the study of medicine, 417, 432, 443
New students entered, 894
Post-graduate courses, 536
Prizes awarded, 1198
Psychological medicine, 443
Tropical medicine, 443
Lecturer in biochemistry, 952
Lectures for the diploma in medical radiology and electrology, 536
Draft regulations for the admission of women to the titles of degrees, 894
Number of students, 1147
University lecturer in embryology, 1198

University of Colorado Medical School and Hospital: Denver City Council's contribution to, 828
University Commissions, Oxford and Cambridge, 237
University of Dublin: Degrees and pass lists, 112, 152, 1285—Information concerning the study of medicine, 425, 437. *See also* College, Trinity
University of Durham: Degrees and pass lists, 68, 664, 1002—Information concerning the study of medicine, 4, 9, 433, 440, 443—Degrees for practitioners, 440, 1285—Psychological medicine, 443—*Calendar*, rev., 694
University of Edinburgh: Appointments, 1052—Degrees and pass lists, 112, 152, 191, 828, 1052, 1147, 1245—Fellowships and prizes, 191—General Council, 890—Information concerning the study of medicine, 423, 435, 441, 443—Women students, 435—Post-graduate study, 441—Psychological medicine, 443—Moncrieff Arnott professor's address on medicine and credulity, 947—University Court, 1052
University of Glasgow: Bursaries, appointments to, 1098—Chair of Public Health, 1239—Commemoration Day, 30—Degrees and pass lists, 31, 705, 779, 1052—Graduation ceremony, 30, 1245—Honorary degrees, 31—Information concerning the study of medicine, 423, 436, 441—Post-graduate courses, 441—*Students' Handbook*, No. xvii, 1922-23, 1094—The University in the sixties (W. L. Reid), 1189
University of Halle receives a donation from the St. Louis Emergency Relief Committee, 619
University of Harvard: Information concerning, 666
University of Hong Kong, chair of medicine at, 608
University of Ireland, the National: Information concerning the study of medicine, 426—Meeting of Senate, 1002—Awards, 1002—Conferring fee for Bachelors' and Masters' degrees, 1002
University, Johns Hopkins, bequests to, 828
University of Leeds: Appointments, 148, 895, 1053—Degrees and pass lists, 69, 1283—Information concerning the study of medicine, 420, 433, 443—Medical and surgical teaching at, 148—Psychological medicine, 443—William Hey medals conferred, 1283
University of Liverpool: Appointments, 27—Degrees and pass lists, 111, 148, 153, 1245—A correction, 153—Information concerning the study of medicine, 420, 434, 443—Tropical medicine, 443

UNIVERSITY OF LONDON:
Appointments, 30, 151, 1147
Brown Animal Sanatory Institution report, 151
Certificates for examination, 1147
Chair of Pathology at Guy's Hospital, 192
Committee of medical members, 192
Degrees and pass lists, 192, 239, 706, 1052, 1098, 1246, 1282
Degrees for practitioners, 440
Dengue in Texas, 1151
Election of Dean, 895
Examiners appointed, 151, 287
Examination requirements, 287
Gilchrist Scholarship regulations, 151
Graham Legacy Committee, 1052, 1147
Graham Scholarship in Pathology, 1001, 1147
Grants, 287
Histology, 192
Information concerning the study of medicine, 418, 440, 442
King's College, 111, 238
Labour party's candidate (H. G. Wells), 705
Lectures, 827, 895, 1098
Lindley studentship, 30
London Hospital Medical College, 111, 664, 1282
London (Royal Free Hospital) School of Medicine for Women, 238
Matriculation results, 239, 706
Meeting of Senate, 287, 827, 1052, 1147
Recognition of teachers, 151, 287, 1147

UNIVERSITY OF LONDON (*continued*):
Scholarships, 1001
School of Hygiene, 827
Semon lecture, 68
Site, 57
Tropical Medicine, 442, 1246
University College, 111, 237, 405
Vice-Chancellor, 30
William Julius Mickle Fellowship awarded, 1052, 1147

University of Lucknow, first convocation, 1240
University, McGill: New biological department, opening of, 618, 1141—Honorary degrees conferred, 1141—War memorial, 1141—Medical faculty, 1141—Dental faculty, 1141—Pathological institute, 1141—First women graduates, 1141
University of Manchester, Victoria: Appointments, 27, 68, 192, 779, 895, 1053—Ashby Memorial Research Scholarship awarded, 287—Degrees and pass lists, 111, 152, 1283—Information concerning the study of medicine, 420, 434, 443—Psychological medicine, 443—Jubilee of the absorption of the Royal School of Medicine with Owens College, 608, 701—Jubilee of the School of Medicine, 701—Resignations, 895—Leech Fellowship, 895
University of Melbourne: Medical students at, 326—New anatomy department, 890

UNIVERSITY OF OXFORD:
Announcements, 894, 1198
Appointments, 68
Board of Electors to the professorship of pathology, 1198
Board of the Faculty of Medicine, 1193
Commissions, 237
Correction, 192
Degree days, 894, 1198
Degrees and pass lists, 68, 111, 192, 287, 1245
Dunn bequest for a school of pathology, 1001, 1052
Elections, 894
Encaenia, 68
Gotch memorial prize, 1198
Honorary degrees, 68
Information concerning the study of medicine, 416, 432
New schools of pathology and pharmacology, 1052
Radcliffe Prize (1923), 664, 895
Radcliffe Scholarship in pharmacology, 68
Radcliffe Travelling Fellowship (1923), 1198
Undergraduates in residence, 780

University of Paris: Honorary degrees, 1199—Gifts to, from Madame Edouard Nathan, 1236
University of St. Andrews: Degrees and pass lists, 112—Graduation ceremonial, 112—Honorary degrees, 1, 2—Information concerning the study of medicine, 423, 437—And Dundee Royal Infirmary, 1239
University of Sheffield: Appointments, 779—Degrees and pass lists, 31, 1232—Information concerning the study of medicine, 421, 435—The field laboratories, 937, 941
University of Strasbourg: Delegation from, 886—Dinner to delegation at the Fellowship of Medicine, 994
University of Sydney: Commemoration, 233
University, Tulane, U.S.A.: The appointments of "athletic director" and professor of anatomy to be combined, 581
University of Wales: Information concerning the study of medicine, 421, 433—Degrees and pass lists, 779, 952—Bronze statue of the Prince of Wales unveiled, 1199
University of Witwatersrand, Johannesburg: Professor of anatomy appointed, 1103
Upper extremity, apparatus for the estimation of the working capacity of an (John Glaister), 380
Upper limbs, asymmetry of (Matthew White), 871
Ureters, relation of, to the vagina (James C. Brash), 790—Discussion, 792
Urine analysis reagents, soloid, 876
Urine in measles, the diazo-reaction and (George Hunter), 751
Urine tests, 620, 706, 953
Urology, comparative, 99
Urology, review of book on, 1179
Uterine fibroids. *See* Fibroids
Uterus, adenomyositis of (Gibbon Fitzgibbon), 1224
Uterus with a large cervical myoma (Bethel Solomons), 1225

V.

Vaccination, the art of, 1090
Vaccination, "bad arms" after, 1054, 1100
Vaccination, efficient (parliamentary note), 26
Vaccination law, violators of the, 1004, 1100
Vaccination: Efficient, 26—Parliamentary notes on and small-pox, 1187—In the army, 1188—Magistrates and exemption certificates, 1188
Vaccination and small-pox, 993, 1187, 1242
Vaccination and small-pox in the Phillipines, 22—in Cairo, 640. *See also* Small-pox
Vaccination, subcutaneous, 1133
Vaccination to be more universal, urged by National Baby Week Council, 1199
Vaccinations in Cairo, number of, 640
Vaccines, autogenous, 571, 644
Vaccine, autogenous, in puerperal fever (John Veitch), 644
Vaccine lymph (parliamentary note), 1237
Vaccine treatment of erysipelas (J. Ronaldson Russell), 15—Of chronic bronchitis, 715, 825, 892
Vacuum flask for warming gas in peritoneal inflation, 620
Vagina, relation of ureters to (James C. Brash), 790—Discussion, 792
Vagina infra septa, supra simplex (Stephen M. Lawrence), 1223
VALENTINE, C. W.: *Dreams and the Unconscious: An Introduction to the Study of Psychoanalysis*, rev., 272
VAL. ERY-RADOT, Pasteur: *Maladies des Reins*, rev., 1123
VAN MILLINGEN, James: Insects in the auditory meatus, 32
Varicella and herpes. *See* Herpes
Varicose ulcer. *See* Ulcer
VARNEY, G.: *Comment Sauvegarder les Bébés. Enseignement de l'Hygiène Infantile, donné à l'Institut de Puériculture et à la Goutte de Lait de Belleville*, rev., 86
Vegetable fats and oils, the vitamin content of (leading article), 514
Vegetable pathology. *See* Pathology
VEITCH, John: Autogenous vaccine in puerperal fever, 644
Veldt sores treated by serum, 236
Venereal disease in Belgium, campaign against, 523
Venereal disease centre of the Glasgow Eye Infirmary, a review of the work of (E. J. Primrose), 1265—Discussion, 1264
Venereal disease medical officers, information concerning the appointment of, 446
Venereal disease prevention, medical measures for, work of the committee appointed, 885
Venereal disease, radical prevention of, 661, 706, 777, 826, 832, 951, 1047, 1195, 1248
Venereal Disease, Society for the Prevention of, annual meeting, 49
Venereal Disease, Society for the Study of, first general meeting, 278
Venereal disease in Toronto, statistics, 581
Venereal disease as a war casualty (Surgeon Rear-Admiral W. Bell), 994
Venereal disease. *See also* Syphilis
Venesection in eclampsia. *See* Eclampsia
Venezuela, cancer and pellagra now notifiable diseases in, 31
Ventilation problems, the constituents of fresh and vitiated air and their significance in (J. P. Kinloch), 356
VENUGOPAL, Captain Sudanala Bashiam, obituary notice of, 193
Veratrone in treatment of eclampsia (G. T. Stevens), 91
VERCOE, R. H.: The control of birth control, 327
VERNON, H. M.: Industrial statistics and health, 572—(and Ethel E. OSBORNE): The influence of temperature and other conditions on the frequency of industrial accidents, 1099, 1134
Version in obstetrics. *See* Obstetrics
Vertebrate head. *See* Head
Vesalius, an *Epitome* of (W. G. Spencer), 221
Vesicular mole. *See* Mole
Veterinary medicine (Major-General Sir F. Smith), 274
Veterinary surgeon, the first woman, 1236
VICARS, Frederic: Continuous oxygen apparatus, 494
Victoria: Australasian Medical Congress, British Medical Association, 326, 890—Medical students at the University of Melbourne, 326—Melbourne University new anatomy department, 890—Post-graduate lectures, 326, 890. *See also* Australia
"Victory," 1805–1922, 811
Vienna: Some recent medical work in, 988—Steinach's operation, 988—Psycho-analysis, 989—Post-graduate courses, 1003
Vindication of the Victorians (leading article), 649
Virus diseases in plants and animals, 813, 963. *See also* Plant
Viruses, filter-passing, the nature of, 885
Visceral crises (Arthur Mills), 1310
VISE, Christopher, obituary notice of, 1098
Vision, monocular and binocular (T. Stewart Barrie), 1260—Discussion, 1261
Vision tests for the mercantile marine, 70
Vital statistics: Registrar-General's report for 1920, 178—For Scotland for 1920, 399, 613—Of Northern Ireland, 774—Of the Irish Free State, 823. *See also* Registrar-General
Vitamin A and cod-liver oil, 610
Vitamin content of vegetable fats and oils (leading article), 514
Vitamin products, some proprietary (leading article), 519
VITRY, G. (and Marcel LABBÉ): *Maladies de l'Appareil digestif et de la Nutrition*, rev., 1123
Voltages, high, measurement of (J. R. Clarke), 1043
VOLTZ, Friedrich: *Dosage Tables for Deep Therapy*, rev., 1270
VON TEBE, William, death of, 68
VORONOFF, S.: *Greffes Testiculaires*, rev., 763

W.

WADE, Henry: Surgical diagnosis of renal diseases, 270
WADE, T. W.: Report on the outbreak of dysentery in Wales, 1235
WADDINGTON, R., appointed a member of the Dyestuffs Advisory Licensing Committee, 831
WAFER, Lionel, 397
WALDO, F. J., completes twenty-one years' service as Coroner for the City of London and Southwark, 492

WALES:
Cardigan Memorial Hospital, 231
Dysentery outbreak, 1235
Puerperal infection mortality in (Ewen J. Maclean), 976
Welsh Board of Health, 325, 1235
Welsh National School of Medicine, 231—Information concerning, 443—Appeal, 946. *See also* College *and* University of South Wales

WALKER, H. S., re-elected Mayor of Louth, 1003
WALKER, Sir James: Appreciation of Alexander Crum Brown, 951
WALKER, Sir John Thomson: Comparative anatomy of the accessory sex glands, 84
WALKER, Kenneth: Comparative anatomy of the accessory sex glands, 84—Blood transfusion in civil practice, 1078
WALKER, Norman: Occupational dermatitis, 505—Etiology of seborrhœa, 756
WALKER, Robert Wynne Stanley, obituary notice of, 535
Walker-Gordon Laboratories, re-establishment of, 1247
WALL, Colonel Frank: *Ophidia Taprobanica, or the Snakes of Ceylon*, rev., 603
WALL, Nellie: The bacteria of the tonsils and adenoids, 1025 (O)
WALLACE, F. Herbert (and Geoffrey WILSON): Fibroids complicating septic abortion, 1028
WALLACE, J. Sim: Etiology of rickets, 856
WALLACE-JAMES, John George, obituary notice of, 897
Wallasey, health of, 63
WALLER, Augustus D.: *The Electrical Action of the Human Heart*, rev., 930
WALLIS, Surgeon Commander James Garfit, obituary notice of, 331
WALMSLEY, Thomas: Administration of the Anatomy Act, 790—*A Manual of Practical Anatomy*, rev., 1082
WALSH, N.: Measles with multiple tuberculous manifestations, 332
WALTER, R. Hensleigh: Simple goitre, 329
WALTON, A. J.: Surgery of the pituitary gland, 855 (O)—Treatment of non-malignant affections of the colon, 1024
WANKLYN, W. McC.: The differential diagnosis of small-pox and chicken-pox, 775—"Haemorrhagic" chicken-pox, 977—Small-pox diagnosis, 1045—Notes on small-pox, 1092, 1181, 1186, 1228
War, medical history of. *See* Medical
War memorial of the Association, 940
War memorials, Scottish, 487. *See also* Scotland
Warble fly, lecture on, 1041
WARD, Gordon (and Gerald SICHEL): Splenectomy, appendectomy, and Caesarean section in the same patient, 865—Persistent eosinophilia with splenomegaly, 1144
WARDEN, A. A.: Treatment of tuberculous cervical glands, 863
WARNER, Francis, awarded a civil pension, 331
WARREN, Howard C.: *A History of the Association Psychology*, rev., 807
WARREN, W. P., obituary notice of, 491
Warren triennial prize, 953
Warts of the scalp, 240, 332, 493, 666
Warts, *x*-ray epitheliomatous (Dr. Dible), 927
Wassermann reaction in the diagnosis and control of treatment of neuro-syphilis, 632
Water fevers. *See* Fevers
Water supply in a dry summer: Memorandum from the Ministry of Health, 27—Of London, annual report on, 398—Of Cork, 823
WATERHOUSE, Sir Herbert: Treatment of tuberculous cervical glands, 862
Watering places: of Switzerland 87
WATERS, Lieut.-Col. E. E.: Diabetes in the tropics, 332
WATKINS-PITCHFORD, Lieut.-Col. H.: The poisonous snakes of Africa, 54—Medical research in South Africa, 1185
WATSON, B. P.: The past, present, and future of midwifery, 712 (O)
WATSON, Eric R. (editor): *Trial of George Joseph Smith*, rev., 1125
WATSON, Standish J.: Treatment of psoriasis, 32
WATT, Henry J.: After-effects of lethargic encephalitis, 1176
WATTS, Thomas: Adopted as parliamentary candidate for the Withington Division of Manchester, 779—Elected a Member of Parliament, 1003, 1042
WAUGH, George: Treatment of non-malignant affections of the colon, 1016
WEBB, Colonel Sir A. Lisle, to devote himself permanently to the medical work of the Ministry of Pensions, 115
WEBB, Sidney (and Beatrice WEBB): *English Prisons under Local Government*, rev., 218
WEBER, Frederick Parkes: *Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry*, rev., 16
WEBSTER, J. H. Douglas: Relief of pain in acromegaly, 240—X-ray treatment of deep-seated cancers, 507

The Week:
Adenomyoma or endometriomyoma of the ovary, 1039
Advancement of science (1922), 572
Alcohol in hospitals, expenditure on, 142
Ambulance service, home, 277, 1039
Animal diseases, research in, 1275
Animal experiments in 1921, 395
Annual Meeting of the Association at Glasgow: Radiological Section, 24—Notification of attendance, 57—Annual Meeting notes, 180, 227, 276
Anthrax Advisory Committee, International, 1091
Arsenic in cocoa, 1273
Arsenic, visceral content of, 609
Association of Certifying Factory Surgeons, 396
Association's War Memorial, 940
Australasian Medical Congress (1923), 992
Autogenous vaccines, 571
Bacteriolytic properties of tissues, 1187
Beer and lead poisoning, 179, 279
Body temperature of birds, 1040
Bristol Medical School, 767
British Association at Hull, 100, 481
British Red Cross Society, 521
Caducee, Le, 98
Calcutta School of Tropical Medicine (1921), 392, 1134
Cambridge Chair of Pathology, 484
Carnegie award to a medical man, 653
Casualty department forty-five years ago, 767
Chalmers library, 23
Cholecystectomy or cholecystotomy, 278
Cleland, Professor John, 812
Cold, causes of a common, 1275
Commercial disinfection of wool and hair, 812
Congress of the History of Medicine, 23, 179
Congress of Otology, International, 101
Congress, South African Medical, 23
Conversazione at the Royal College of Physicians, 1040
Co-operative hygiene, 22
Coroner's courts, discourtesy in, 100
"Creation" of "Sibson's notch," 522
Cremation in England, 608
Crime and insanity: committee appointed, 101
Dentistry, the practice of, 101
Diphtheria, treatment and prevention of, 484
Doctors in Russia: a Christmas appeal, 1136
Dysentery outbreak in Wales, 1235
Dysmenorrhœa as an industrial problem, 179
Economy and disease, 884
Economy and information, 176
Educational Number, new features, 319, 396
Electrocardiographic interpretations, 1184
Enteric, water-borne, 56
European officials in West Africa, health of, 673
Everest the last high climb on, 20—Natural history in the region of, 141
Expert witnesses, 1234
Far Eastern Association of Tropical Medicine, 814
Field laboratories, Sheffield, 937
Filter passing viruses, the nature of, 885
First Foulerton professor, 1133
First woman veterinary surgeon, 1236
Food poisoning at Loch Maree, 394, 481
Food poisoning due to trifle, 652
Food preservation, scientific researches on, 1274
Foulerton professorship and studentships, 142
French Minister of Health, 318
General Medical Council, 1091, 1135
General practitioner's share in medical research, 813
German periodicals, books, and treatment, cost of, 317
Glasgow Medical Journal, special number, 144
Glycosuria, control of, by the islets of Langerhans, 140, 480
"Gold-headed cane," 651
Good opening, 769
Government laboratory, 521
Government and the Opium Convention, 1184
Graduate instruction in London, 523
Growth of the general practitioner, 21
Harrison memorial, 939
Harveian commemoration, 812
Health Ministry: annual report, 230
Health problems in the West Indies, 994
Hodgkin's disease, 1233
Home ambulance service, 277, 1039
Hong-Kong chair of medicine, 608
Hospital finance, 134
Humane slaughtering, 318
Huxley lecture, 887
Income tax: assessment to, of fees handed on to local authorities, 23
Industrial accidents, causation of, 1134
Industrial hygiene, 652
Industrial statistics and health, 572
Influenza, the bacteriology of, 315
Institution of the Leeuwenhoek Vereeniging, 885
Instructive mistakes, 1092, 1185
Insulin, the preparation of, 1233
Intrathoracic surgery, 993
Journal of Scientific Instruments, 24
"Kaffir cow-pox," 813
League of Nations and the traffic in dangerous drugs, 938

The Week (*continued*):
Legibility of printed matter, 570
Leprosy, treatment of, 607
Life at high altitudes, 1235
Life tables, 609
Malaria, epidemic, 1183
Manchester Medical School, 608
Man's insect enemies, 395
Manson, Sir Patrick, 97
"Masttuberkelbazilleneinheitsvakzine" and others, 319
Maudsley Hospital, 393, 1089
Meat poke, the *New*, 814
Medical education in the United States, twenty-one years' progress, 571
Medical golfing society, 1236
Medical insurance agency, 1234
Medical literature for Russian doctors, 178
Medical measures for preventing venereal disease, 885
Medical Museums, International Association of, 56
Medical periodicals, the future of, 483
Medical playwright, 55
Medical quarterly, a new (*Medicine*), 24
Medical Register, untraceable practitioners, 484
Medical research and national life, 317
Medical research in South Africa, 1185
Medical science in New Zealand, 394
Medical Society of London, 699
Medical Women, International Association of, 769
Medicine's debt to the fine arts, 1275
Medico-historical treasures of Glasgow, 97
Medico-Psychological Association, 177
Mentally defective children, 769
Milk and Dairies Order, 1276
Milk Conference, National, 482
Ministry, the new, 814
Moore, Sir Norman, 177
Morris, Sir Malcolm, golden wedding of, 178
Motor Show, 812, 886
Museum of the Royal College of Surgeons of England, 230, 699
National Physical Laboratory, 21
Natural science and the camera, 572
Naval Medical Service war memorials, 396, 629, 573
Newcastle Medical Institute, the founder of the, 141
New Meal Poke 814
Nobel prizes (1921-1922), 995
Northcliffe, Lord, death of, 319
Ontario, vital statistics of, 769
Ophthalmic progress in Egypt, 886
Ophthalmological Congress, International, 1276
Pasteur anniversary, 1, 73
Pasteur Commemoration Fund, 482
Pharmacist, training of the, 697
Physical education of girls, 316
Physical training of the soldier, 1186
Physiology of digestion, 939
Place of the white man in the tropics, 885
Plague in Australia, 481
Post-graduate courses, 650
Post-graduate education in London, 57
Prince of Monaco's bequests, 699
Princess Mary Infants' Ward at Leeds, 698
Professional Classes' Aid Council, 100
Protein in maternal diet, evil effect of excess of, 939
Psoriatic arthropathy, 609
Psychiatry, a co-operative clinic in, 995
Public health in Palestine, 697
Queen Alexandra Sanatorium Fund at Davos, 698
R.A.M.C. War Memorial, unveiling ceremony at the Abbey, 53, 143
Radiology of the chest in children, 179
Ramsay, Sir William, 940
Rat control, 1041
Red Cross, the Junior, 395
Red Cross Society, the British, 521
Registrar-General's Report for 1920, 178
Research Defence Society, 938
Rockefeller Foundation in 1921, 143
Rockefeller International Health Board, 651
Royal College of Physicians of London, new regulations of, 884
Royal College of Surgeons: Museum, 230—Exhibits at 699—Lectures at, 1041
Royal Dental Hospital, 1091
Royal Sanitary Institute Congress, 279
Royal Society medals, 1011
Russian Doctors' Fund, 53, 98, 178, 1236—Medical literature for, 178
Sacramental healing and the psychology of conversion, 767
Scurvy, prevention and cure of, 1276
Sex, causation of, 317
Shortage or overcrowding? 696
Sight-testing opticians, 1089
Silicosis and miners' phthisis, 1187
Small-pox in London, 886, 1032
Small-pox, mild, 316
Small-pox and vaccination, 993
Small-pox and vaccination in the Philippines, 22
Small-pox in some newspapers, 1186
Small-pox in Shanghai, 1041
Small-pox in the past, 1274
Smith, Dr. Stephen, 483
Smyrna fire and the Smyrna hospitals, 607
Snakes and their venoms, 54
Société Internationale de Chirurgie, 1236
Some old-fashioned remedies, 1135

The Week (*continued*):
Spa physicians in France, 653
Spirit photographs, 55
Stages of human life, 1090
Stomach, structure and function of, 22
Strasbourg medical deputation, 994
Surgeons in camera, 1092, 1185
Syphilis, abortive treatment of and salvarsan research in Germany, 768
Tar Cancer, an International Conference on, 768
Thoracoscopy in surgery of the chest, 1091
Tuberculous people, the employment of, 483
University of London, site, 57
University of Strasbourg, delegation from, 886
Urology, comparative, 99
Vaccination, the art of, 1090
Vaccination, subcutaneous, 1133
Venereal disease in Belgium, the campaign against, 523
Venereal disease as a war casualty, 994
Venereal diseases, study of, 278
Venomous fishes, 54
"Victory", 180–1922, 811
Virus diseases in plants and animals, 813
West Indies report, 99
White lead poisoning, 143
Wilson, Lieut.-Col. E. M., memorial to, 940
Wool and hair, commercial disinfection of, 812
Wren, Sir Christopher, centenary of, 393

WEEKS, Rev. C. C.: The action of alcohol on the human economy, 198
WEIL, P. Emile (and Marcel BLOCH): *Maladies du Sang et des Organes hématopoiétiques*, rev., 1123
WEIL, Professor, death of, 492
WELD, Lieut.-Col. Alfred E., Order of the Crown of Italy conferred upon, 664
Wellcome Physiological Research Laboratories remove to Langley Court, Beckenham, Kent, 705
WELLINGTON, Henslowe: Suicide and *felo de se*, 1088
Welsh Board of Health: Appointments, 325
Welsh. *See* Wales
West Africa, health of European officials in, 653. *See also* Africa
West Indies, health problems in, 994
West Indies Medical Service: Report of Parliamentary Under Secretary of State for the Colonies, 99
WEST, J.: The determination of sex, 1100
WEST-W R, John, of Wedmore (N. G. Horner), 221
WETHERED, Roger and Joyce: *Golf from Two Sides*, rev., 475
Wexford County medical practitioners, 400
What is a "consultant"? *See* Consultant
WHEELER, Sir W. I. de C.: Bone grafting in tuberculous spinal caries, 326—Tuberculosis of the female pelvic organs, 1029—What makes for success in surgical treatment, 1121—Rhabdomyosarcoma of the kidney, 1268
WHEELAN, Fleet Surgeon Joseph R., awarded a Greenwich Hospital pension, 895
WHITE, Clifford: Eclampsia, 90
WHITE, Surgeon Lieutenant Commander Henry E. Yeo, M.V.O. conferred upon, 115
WHITE, Matthew: Asymmetry of the upper limbs, 871
WHITE, S. S.: Hospital *v.* asylum, 240
WHITE, T. E.: A diploma in Public Health, 66
White man in the tropics. *See* Tropics
WHITEHEAD, A. L.: Eclipse amblyopia, 147
WHITLA, Sir William, elected a Member of Parliament (Queen's University, Belfast), 1003, 1042
WHITTINGHAM, Squadron-Leader H. E.: Life history of the sand-fly, 1030
WHITWELL, Hugh, obituary notice of, 896
WHITWELL, James R.: Sterilization of mental defectives, 61, 490—A strange "wild fowl," 1100
Whooping-cough, convalescent camp for, opened by New York City Health Department, 400
WHYTE, G. Duncan: The recognition of aortic incompetence, 1
WICKERSHEIMER, Dr.: Black plague in Strasbourg in 1349, 220
WIDAL, F. (G. H. ROGER and P. J. TESSIER): *Nouveau Traité de Médecine: Intoxications*, rev., 46
Widal reaction in the inoculated subject, present value of (A. G. Shera), 1076 (O)
WIDDOWSON, T. W.: *Notes on Dental Anatomy and Dental Histology (Human and Comparative)*, rev., 476
WIENER, G.: *Propédeutique et Technique Urologiques*, rev., 1179
WILBUR, Ray Lyman, chosen president-elect of the American Medical Association, 31
"Wild fowl," a strange, 1004, 1053, 1100
WILKIE, D. P. D.: Diagnosis and treatment of cholelithiasis, 1011—Chronic duodenal ileus, 1219
WILKINSON, K. D.: Case of sclerodermia of face and hands, 1266
WILL, J. G. Ogilvie, obituary notice of, 68
WILLCOX, Sir William Henry: Acute arsenical poisoning, 118 (O)—The importance of teaching medical jurisprudence, 370—Dangers to health arising from the use of industrial preparations of arsenic, 371—Notification of infectious diseases, 870—Cremation and death certification, 944—Degenerative diseases of the liver, 1064
WILLETT, George: Prevention of botulism, 666
WILLIAMS, Alfred: An unsuspected pregnancy, 578, 704
WILLIAMS, H. O: Trichiniasis, 780
WILLIAMS, J. H., elected member of Parliament for Llanelly, 1042
WILLIAMS, Major J. R., appointed Knight of Grace of the Order of St. John of Jerusalem, 331
WILLIAMS, J. Owen: Herpes with facial paralysis, 620
WILLIAMS, William Robert, obituary notice of, 331
WILLIAMSON, A. Maxwell: Edinburgh milk supply, 615
WILLIAMSON, Dr.: Economics and tuberculosis, 868
WILLIAMSON, Ninian Alexander, obituary notice of, 491
WILLMORE, Lieut.-Col. W. S.: The teaching of psychotherapy, 402
WILLS, Kenneth: Occupational dermatitis, 503—Etiology of seborrhoea, 756
WILSON, C. M.: Basal metabolism, 751—Exophthalmic goitre, 910—Degenerative diseases of the liver, 1061
WILSON, David: Interstitial keratitis and venereal disease clinics, 1264
WILSON, Lieut.-Col. Edmond Munkhouse, memorial to, 941, 940
WILSON, Geoffrey (and F. Herbert WALLACE): Fibroids complicating septic abortion, 1028
WILSON, George Haswell, appointed to the Chair of Pathology in the University of Birmingham, 523, 577
WILSON, J. A.: "The Dawn of the Health Age," 1192
WILSON, James Alexander: Optic nerve atrophy, 1162—The clinical significance and treatment of heterophoria, 1254
WILSON, J. T.: The administration of the Anatomy Act, 760—Relation of the ureters to the vagina 792—Anatomy of bone marrow, 795—Radiology in the teaching of anatomy, 796
WILSON, R. W., presentation to, 705
WILSON, S. A. Kinnier: The treatment of neurosyphilis, 628
WILSON, S. R. (and A. H. SOUTHAM): Cancer of the scrotum, 971 (O), 1146
WILSON, Thomas: Eclampsia, 90—Appreciation of Sir Edward Malins, 238
WILSON, Wemyss Grant: Penal discipline, 1191
WITTSHIRE, W. J.: The structure of metals as analysed by *x* rays, 1042
WINSTANLEY, Sydney A.: Danger to the child in "twilight sleep," 406
WINTER, J. B.: *From Switzerland to the Mediterranean on Foot*, rev., 476
Wintering abroad: The French Riviera, 815
WISEMAN, W. R.: An outbreak of food poisoning by milk caused by *B. aertrycke*, 728
Witchcraft, 1277
WITHINGTON, E. T.: Galen's knowledge of anatomy, 221
Witnesses, expert, surgical and medical, 531, 614, 661, 1234, 1244
Women as anatomists (Dr. Lander), 221
Women, mental stresses of adjustment in (Jane I. Suttie), 549
Women Sanitary Inspectors' and Health Visitors' Association, winter school for health visitors, 1, 47
Women's Medical Service (India) report, 577. *See also* Association
WOOD, C. G. Russ: Artificial illuminants, 147
WOOD, J. F. C., convicted under the Bombay Medical Act, 578
WOODCOCK, H. M.: The nature of filter-passing viruses, 885
WOODHEAD, Sir German Sims, proposed memorial to, 18
WOOD-HILL, Claydon *v.*, 531
WOOD-HILL Fund, 403, 489
WOODHOUSE, H. C. (and F. Carlton JONES): Hysterical simulation of fracture, 1171
WOODMAN, E. Musgrave: Removal of a paper fastener from the bronchus, 1100—The scope of diathermy, 1224
WOODS, Hugh: Dangerous Drugs Act (1920), 825
Wool, commercial disinfection of, 812, 1128
WORK, Hubert, dinner to, 536
Working capacity of an upper extremity, apparatus for the estimation of the (John Glaister), 380
Workmen's Compensation Act, review of book on, 875
WREN, Sir Christopher, centenary of, 393
WRIGHT, Sir Almroth E.: Insulin and diabetes, 99
WRIGHT, G. A. (and Henry ASHBY): *The Diseases of Children, Medical and Surgical*, rev., 874
WRIGHT, Garnett: Carcinoma of rectum, 45—Breast tumour, 45 — Surgical treatment of gastro-jejunal and jejunal ulcerations, 640 (O)
WRIGHT, W.: Leonardo da Vinci's work on the structure of the heart, 221
WURTZEN, C. H.: *A Contribution to Our Knowledge of the Clinical Course and Duration of Fatal Lung Tuberculosis*, rev., 1083
WYLIE, Andrew: Septic sinus thrombosis, 464
WYNNE, Fred E.: Alcohol restriction and mortality, 252—The wrong turning in public health, 357

X.

Xanthoma diabeticorum (Sir John W. Moore), 1176
X-ray analysis of metallic structures (W. L. Bragg), 1042
X-ray apparatus, catalogues of, 31
X ray cancer (Cecil Rowntree), 1111
X-ray diagnosis, value of gas inflation in (F. Hernaman-Johnson), 511—Discussion, 514
X-ray diagnosis of gastric and duodenal conditions (W. Barrington-Prowse), 980
X-ray treatment of deep-seated cancers, with special reference to Erlangen methods (J. R. Riddell), 505–(J. H. Douglas Webster), 507—(F. Hernaman-Johnson), 510–Discussion, 511
X-ray treatment of malignant disease (Reginald A. Morrell), 1175
X ray treatment of tinea tonsurans (J. Gibson Graham), 563—Discussion, 563
X rays in treatment of gynaecological conditions (Robert Knox), 678–Discussion, 681—Leading article on, 695
X rays in hypertrichosis of the face, 891, 949, 1049, 1242, 1286
X rays, review of books on, 518, 692, 1034
X ray in skin diseases (E. W. Reed), 559—Discussion, 560

Y.

YATES, A. G.: A case of broncho-biliary fistula, 1117 (O)
Yaws, antimony in (F. T. Auden), 83
YOUNG, Archibald: Diagnosis and treatment of cholelithiasis, 1012–A five years' survey of the routine treatment of fractures by operative methods, 1209
YOUNG, Gavin: The relation of the optic nerve to the sphenoidal and posterior ethmoidal sinuses, 1258
YOUNG, Lieut.-Col. James, obituary notice of, 331
YOUNG, James: An organism from cancerous growths, 15
YOUNG, R. A.: The assessment of elderly lives for life assurance, 953
YOUNG, Stephen (and J. S. FRASER): Is it worth while to remove aural polypi? 467
YOUNG, Col. William, obituary notice of, 665

Z.

Zeitschrift für Biologie, cost of, 317
ZILVA, S. S.: Studies of the nutritive value of the edible oils and fats, 314
Zinc ionization as a disinfectant in local sepsis illustrated by its use in chronic otorrhoea in children (A. R. Friel), 42 (O)
ZINOVIEFF, D.: Medical aid for Russian refugees, 898
ZUMBUSCH, L. v.: *Atlas of Syphilis*, rev., 566
ZWAARDEMAKER, H.: *Physiol. des Geruchs*, 520
Zymotic diseases and cancer (parliamentary note), 103

LIST OF ILLUSTRATIONS.

SPECIAL PLATES.

		PAGE
Arsenical Keratitis followed by Cancer (Henry C. Semon)	facing	971
Bacteriology of Influenza (Mervyn H. Gordon)	facing	300
Bone Grafting as an Aid in Treatment of Tuberculous Spinal Caries (Sir Henry M. W. Gray)	facing	76
Cancer Experimentally Produced by Arsenic (Archibald Leitch and E. L. Kennaway)	between 1106 and	1107
Cancer of Scrotum (A. H. Southam and S. R. Wilson)	facing	970
Eosinophilia with Splenomegaly (Stuart McDonald and A. F. Bernard Shaw)	facing	970
Flavine, Action of in Pyogenic Infections (C. Bennett, J. W. S. Blacklock, and C. H. Browning)	facing	301
Fractures Treated by Routine Operative Methods (Archibald Young)	facing	1208–1209
Fragilitas Ossium Associated with Blue Sclerotics (Hall Stewart)	facing	498
Gas Inflation in X-Ray Diagnosis (F. Hernaman-Johnson)	facing	499
Hodgkin's Disease (Sir James Galloway)	facing	1209
Macewen Sir William	facing	175
Moore, Sir Norman	facing	1148
Occupation Cancer of Paraffin and Oil Workers (Alexander Scott)	facing	1107
Occupational Dermatitis (W. J. O'Donovan)	facing	498
Paper Fastener Removed by Direct Peroral Bronchoscopy (Herbert Tilley)	facing	970
Paraffin Cancer and its Experimental Production (Archibald Leitch)	between 1105 and	1107
Pituitary Gland, Surgery of (A. J. Walton)	facing	838, 839
Tar Cancer, Experimental, Effect of Cessation of Irritant on Development of (Archibald Leitch)	facing	1106
Tendon Transplantation (Robert Ollerenshaw)	facing	77

ILLUSTRATIONS IN THE TEXT.

	PAGE
Address to Sir Clifford Allbutt, Photograph of Frontispiece	172
Anaesthetic Drop-bottle Collar, Hooked	604
Animal Pathology in Relation to Human Disease (Frederick Hobday)	956
Arderne, John	1127
Asthma, Problems of (W. Langdon Brown)	758
Auricular Fibrillation: The Process which Results in (Sir James Mackenzie)	71
Bacteriology of Influenza (Mervyn H. Gordon)	301
Basal Metabolism (E. P. Cathcart)	747
"Bayer 205"	569
Black, Joseph	61
Blood Serum in Pernicious Anaemia (E. M. Brockbank)	124
Bone Grafting in Tuberculous Spinal Caries (Sir Henry M. W. Gray)	75
Brain Surgery (Sir William Macewen)	163
British Medical Association Medal for Distinguished Merit	171, 172
Cardiac Disease, Some Aspects of (John Hay)	116
Cullen, William	60
Duodenal Ileus, Chronic (D. P. D. Wilkie)	1220
Galloway, Sir James	829
Gas Inflation and X-ray Diagnosis (F. Hernaman-Johnson)	513
Gastric Fractional Test Meals, Diagnostic Value of (Hugh S. Pemberton)	7
Glasgow and Neighbourhood, Views of	104
Gynaecological Conditions Treated by Radiation (Robert Knox)	679
Industrial Accidents, Treatment of (James R. Kerr)	378
Lowe, Maister Peter	59
MacKenzie, William	62
Manson Memorial Medal	611
Mesenteric Cyst of Jejunal Origin Complicated by Retrojejunal Position of the Transverse Colon (John I. Hunter)	801
Monocular and Binocular Vision (T. Stewart Barrie)	1260
Mutation of Species (William B. Brierley)	726
Needle Outfit, Twin, for Collecting Blood from a Vein	876
Nose, Sunken, Restoration of (Harold Burrows)	689
Oxygen Administration, Continuous: Simple Portable Apparatus for (Geoffrey Bourne)	40
Oxygen, Fine Adjustment Valve for	476
Portsmouth and Neighbourhood, Views of	1137
Restoration of the Round Ligaments (Arthur J. Nyulasy)	1118
Royal Army Medical Corps War Memorial	94
Schafer, Sir Edward Sharpey, medallion of	1237
Scoliosis (Alex. MacLennan)	864
Spleno medullary Leukaemia (A. Dorothy Pocock)	802
Spolia Nemoralia (Sir John Bland-Sutton)	932
Ureters, Relation of to the Vagina (James C. Brash)	791
Vertebrate Head, the Structure of (W. B. Primrose)	796
Woodhead, Sir German Sims	18

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A British Medical Association Lecture

ON THE

MODERN TREATMENT OF SYPHILIS.

BY

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MAY I be pardoned for starting my address with the truism that our primary object in treating syphilis, to be kept always before us, is to rid the patient of *Spironema pallidum* without poisoning him with the remedies employed. Before discussing the present-day treatment I should like to hark back to the days immediately preceding the introduction of "606." I do so because I think that some of the lessons we learnt then are apt to be forgotten to-day.

In 1909 we were relying for the treatment of syphilis mainly on mercury and iodides, and many of us found it a task which was full of disappointments. Frequently the patient relapsed whilst actually under treatment; frequently he displayed signs of intolerance in the form of stomatitis or albuminuria whilst showing active signs of syphilis, and no small ingenuity had to be displayed in steering many of our patients to recovery. At that time it was generally considered in this country that two years' treatment sufficed for most cases, though in some other countries four, five, or even more years were regarded as the minimum. Syphilologists in this country were beginning, however, to realize that two years' mercurial treatment carried out on lines that are practicable for the multitude was not sufficient for the average case, and I was able to show by Wassermann tests on over 400 soldiers, only three months after completion of two years' injection treatment, that over 40 per cent. were positive to the original test and over 70 per cent. to Stern's modification. These facts regarding the comparatively feeble effect of mercury and the insufficiency of two years' treatment by injections of mercury have certainly influenced my own attitude towards the place of mercury in the treatment of syphilis, causing me to continue the use of arsenobenzol remedies far beyond the stage when many workers suspend them.

In 1910 we saw the introduction of arsenobenzol compounds, and with it a revolution in antisyphilitic treatment, which is not yet over. The initial effect of "606," which, to us who were accustomed to relying on mercury only, seemed almost magical, accounts for a period during which large numbers of syphilitic patients were undertreated. When we saw lesions which had resisted our most carefully planned attacks by mercury disappear in a week or so after a first injection of "606," when we saw that spironemes had disappeared completely from the secretions of lesions in twenty-four hours or less, it was hard to resist the temptation to believe that here at last was the long-sought one-dose cure of syphilis. We learnt our error when we saw cases of syphilitic meningitis becoming much more frequent, chiefly in the form of cranial nerve paralyses, and since then we have been increasing gradually the period of treatment until, in many quarters, it has now become the two years of pre-salvarsan days.

At Rochester Row we carried out an investigation to discover the minimum amount of arsenobenzol and mercurial treatment required to cure an average case of early syphilis, and at the outbreak of the war we had arrived at the conclusion that a course consisting of one dose of 0.6 gram "606," five 1-grain doses of mercury, another dose of 0.6 gram "606," five more doses of mercury, and a final dose of 0.6 gram "606," was insufficient treatment, as it had been followed by about 25 per cent. of serological and clinical relapses within a year of suspension of treatment. We had learnt—from other workers' experience, I am glad to say—that if doses of 0.6 gram "606" are repeated too frequently, a certain toxic effect of "606" was apt to become uncomfortably frequent—namely, epileptiform convulsions, coming on within five days of the injection and often ending fatally. The pathology of this "encephalitis haemorrhagica" is a widespread thrombosis, or partial thrombosis, of cerebral capillaries, followed by multiple capillary haemorrhages. Some cases show also evidence of similar damage to renal capillaries, and the tubules are found to be packed with red blood cells. You will find in the literature that this is the chief bugbear of the German syphilologists, and is no doubt the reason for the recent edict of the Deutsche Reichsgesundheitsamt that a single dose should not exceed 0.4 gram "606."

My task in the war seemed at first only to devise a treatment which would enable us to increase on our pre-war treatment in the matter of dosage and yet decrease the length of the course without giving rise to a large percentage of "encephalitis haemorrhagica" and "haemorrhagic nephritis." So I split the doses, and at first gave eight doses of 0.3 gram "606" in twenty-eight days, with mercury. The event more than justified my hope that we should largely avoid encephalitis by this plan, because very few cases were recorded in the whole war, but we began to see other toxic effects which I had never witnessed before—namely, dermatitis and jaundice—and it can safely be said that these are the main toxic effects which we have to fear from arsenobenzol treatment to-day. It is true that we have also to reckon with vasomotor disturbances coming on during, or very quickly after, injections, but these, though sometimes alarming, are seldom, if ever, fatal.

Jaundice and dermatitis have certain features in common. Both are apt to be fatal, and both may appear long after a course of injections has been given—dermatitis as long as three months, and jaundice even twelve months later, though either may commence at any time during the course. It was this incubation period which caused me to introduce intervals of ten to fourteen days into the course of treatment, in the hope of catching the susceptible cases before too much arsenic had been given, and the course was lengthened first to forty-two days, then to fifty, and lastly to fifty-seven days. The result was that, by the end of the war, the incidence of both dermatitis and jaundice had become almost negligible in the military hospitals in this country. We learnt also that, if every patient is watched carefully during the course of treatment, and the injections are stopped on the first signs of an erythema, the incidence of severe dermatitis is very considerably reduced. Sicard has drawn attention to a sign of skin intolerance which I think may prove of some value. This sign is a patch of erythema provoked by the iodine which is painted on the bend of the elbow before the injection, and visible when the patient is about to be injected again. Sicard also considers that loss of the tendo Achillis jerk during the course of treatment is a sign that the patient is becoming poisoned by the arsenobenzol. Dermatitis has become much less frequent since the war, and I think it is because our patients are under less exposed conditions. I learnt quickly in France that dermatitis is much more severe in winter, and that, as soon as it commences, the patient must be protected, or he will die of pneumonia.

Jaundice, on the other hand, has become more frequ At first I thought jaundice of no great moment, but tw breaks in military hospitals in this country in 1917 ar 1918 made me think much more seriously of it.

hospital fifteen cases died in about nine months of acute yellow atrophy, and in another, three in about three months. The cause of these outbreaks is still rather obscure. They have been noted elsewhere, and have seemed to bear no relation to any change in technique or remedy. At first I thought acute yellow atrophy to be a liver disturbance of a different order from the liver disturbance we find in ordinary cases of jaundice following arsenobenzol treatment, but the evidence seems to point at present to the two types depending on liver poisoning of different degrees of severity. It is still uncertain whether this jaundice is due entirely to arsenobenzol, or whether there is another factor, either predisposing or precipitating. It seems strange that it should occur in small outbreaks if it is entirely due to arsenobenzol, and, just as in trinitrotoluene poisoning, which it resembles very closely, the theory of an intervening factor is very tempting. There is no doubt, however, that arsenobenzol does cause hepatic inefficiency, as Mackenzie Wallis at St. Bartholomew's Hospital and Spence and Brett at St. Thomas's Hospital have shown by the laevulose blood sugar test, and this inefficiency persists for as long as three months after a course of injections. The resemblance of what I may call arsenobenzol poisoning to that seen in the war amongst workers with T.N.T. has given rise to the idea that it is not due so much to the arsenic as to the organic complex of arsenobenzol.

Whatever the true etiology of jaundice, I am convinced that there is a relationship between the intensity of arsenobenzol treatment and the incidence of jaundice, as Bolam pointed out at the British Medical Association Annual Meeting in 1919, and it is on this that I have framed the course of treatment which I advocate for different types of syphilis. MacLean has suggested that empty liver cells are more likely to take up arsenobenzol than full ones, just as the livers of starving puppies are poisoned by chloroform and those of well-fed ones escape. It may be confirmatory of this theory that one's private patients do not seem to develop jaundice on the same course of treatment as that given to clinic cases. It is possible that this is due to the fact that the liver cells of the well-to-do are better fed and less likely to take up the poison, and it may be that we go too far in the number of hours we make our patients fast before injections. On the suggestion of Professor MacLean we have for some months given our female patients at St. Thomas's Hospital a drink containing 2 ounces of glucose half an hour before each injection. It may be a coincidence, but it is worth noting that since we adopted this practice nearly a year ago the jaundice in this department has become negligible.

I should like now to explain the line of treatment I adopt in average cases of syphilis of different ages of infection with reference to the tables which I have put up on the wall.

ROUTINE TREATMENT OF SYPHILIS CASES.

A.—Primary Cases with Negative Wassermann.

Alternative Arsenobenzol Treatment.

	Day of Treatment.	606 Iv.	914 Iv.	S Im.	SS Iv.	Hg Im.	KI
		gram.	gram.	gram.	gram.	grain.	grains.
(1)	1	0.3	0.45	0.48	0.20	—	—
	8	0.3	0.45	0.48	0.20	i	—
	15	0.3	0.45	0.48	0.30	i	—
	29	0.4	0.60	0.60	0.25	i	—
	36	0.4	0.60	0.60	0.25	i	—
	50	0.5	0.75	0.60	0.25	i	—
	57	0.5	0.75	0.60	0.30	i	—
	58–64	—	—	—	—	—	v t.d.s.
	65–71	—	—	—	—	—	vii t.d.s.
	72–77	—	—	—	—	—	x t.d.s.
	78	0.5	0.75	0.60	0.30	i	—
	85	0.5	0.75	0.60	0.30	i	—
	92*	0.5	0.75	0.60	0.30	i	—
(2)	93–126. Rest.						
(3)	127–133	—	—	—	—	—	v t.d.s.
	134–140	—	—	—	—	—	vii t.d.s.
	141–147	—	—	—	—	—	x t.d.s.

(4) Repeat treatment as from 1st to 92nd day.
(5) Suspend all treatment but test the blood every three months.
(6) At end of one year test blood and cerebro-spinal fluid after provocative injection.
(7) During second year test blood every six months.
(8) At end of second year test blood and cerebro-spinal fluid after provocative injection.

* Blood test on 92nd day.

In the headings of the tables—
606 = Salvarsan, kharsivan, arsenobillon, or diarsenol.
914 = Neo-salvarsan, neo-kharsivan, novarsenobillon, or neo-diarsenol.
S = Sulfarsenol. SS = Silver salvarsan.
Hg = Mercury. KI = Potassium iodide.
Iv. = Intravenous. Im. = Intramuscular.

B.—Primary Cases with Positive Wassermann.

	Day of Treatment.	606 Iv.	914 Iv.	S Im.	SS Iv.	Hg Im.	KI
		gram.	gram.	gram.	gram.	grain.	grains.
(1)	1-239* as in "A."	—	—	—	—	—	—
(2)	240–307. Rest.						
(3)	3 8–314	—	—	—	—	—	v t.d.s.
	315–321	—	—	—	—	—	vii t.d.s.
	322–329	—	—	—	—	—	x t.d.s.
(4)	330	0.4	0.60	0.60	0.25	i	—
	337	0.4	0.60	0.60	0.25	i	—
	344	0.4	0.60	0.60	0.25	i	—
	358	0.5	0.75	0.60	0.25	i	—
	365	0.5	0.75	0.60	0.25	i	—

(5) Suspend treatment and continue blood tests at intervals as in "A" 5–8.

* Blood test on 92nd day.

N.B.—This programme is based on the assumption that at the end of the first ten injections the Wassermann reaction was negative. If the Wassermann reaction was positive after the tenth injection proceed as laid down for cases with secondary signs.

C.—Cases with Secondary Clinical Signs.

	Day of Treatment.	606 Iv.	914 Iv.	S Im	SS Iv.	Hg Im.	KI
		gram.	gram.	gram.	gram.	grain.	grains.
(1)	1-365* as in "B" 1–4	—	—	—	—	—	—
(2)	366–433. Rest.						
(3)	434–441	—	—	—	—	—	v t.d.s.
	442–448	—	—	—	—	—	vii t.d.s.
	449–455	—	—	—	—	—	x t.d.s.
(4)	462	0.4	0.60	0.60	0.25	i	—
	469	0.4	0.60	0.60	0.25	i	—
	476	0.4	0.60	0.60	0.25	i	—
	490	0.5	0.75	0.60	0.30	i	—
	497	0.5	0.75	0.60	0.30	i	—

(5) Suspend treatment and continue observations as in "A" 5–8.

* Blood test on 92nd and 365th days.

D.—Tertiary and Latent Cases.

Day of Treatment.	
1– 57 ...	First course of 7 injections as in "A" 1.
53– 77 ...	Potassium iodide.
78–147 ...	Rest.
148–182 ...	Course of 5 as in "B" 4.
185–203 ...	Potassium iodide.
204–336 ...	Repeat 78–203.
337–469 ...	Ditto.
470–567 ...	Rest.
568–602 ...	Course of 5 as in "B" 4.
603–623 ...	Potassium iodide.
624–749 ...	Rest.
750–784 ...	Course of 5 as in "B" 4.

First, as to the various terms. In the "606" class we have an array of preparations known under various names, as follows: Salvarsan, arsenobenzol, arsenobillon, kharsivan, diarsenol, arsphenamine, etc. They are all dioxydiamido-arsenobenzol dihydrochloride, and require alkalization before use; they upset the patient more, but give much better therapeutic results than "914." They are not very popular for private practice and outdoor patient work because of their inconvenience.

The "914" class, chemically dioxydiamido-arsenobenzol monomethylene sulphoxylate of soda, known as follows: Neo-salvarsan, novarsenobenzol, novarsenobillon, neo-kharsivan, neo-diarsenol, neo-arsphenamine, etc. They are very convenient, because they can be given in comparatively small bulk and cause much less disturbance, and are therefore universally popular. Their disadvantage is that, when given intravenously, their therapeutic effect is less than that of "606." Closely allied is sulfarsenol, a preparation which has the great merit of causing little pain when given subcutaneously or intramuscularly. It is a preparation which I use greatly in private work, and one which has stood me well in cases with what is called an inveterate Wassermann reaction. I have always maintained that the subcutaneous injection of an arsenobenzol compound gives a better therapeutic result than if the same dose is given intravenously. The subcutaneous injection has the further advantage that it can be given without reference to a meal. The immediate toxic effect is also less, though animal experiments show that the lethal dose, as well as the curative, for animals is reduced by subcutaneous injection. Silver salvarsan is a combination of sodium salvarsan with silver, and appears to be twice as

powerful in equivalent doses. I have found it very useful in cases of tabes and other syphilitic diseases of the central nervous system.

Mercury I prefer to give in the form of mercurial cream or as salicylate by intramuscular injection, because it acts better than when given by the mouth, and injection is more convenient than inunction.

You will see from the table that I have divided my cases into different types:

Primary cases with negative Wassermann reaction.
Primary cases with positive Wassermann reaction.
Secondary cases.
Later or old-standing cases.
Nerve cases.

The treatment prescribed increases with the age of the infection. The scheme on which the unit course is distributed is very similar in all but the nerve cases. The start is with three moderate doses; that is to avoid encephalitis, of which I have personally seen only two comparatively mild cases. There are various gaps after the third, fifth, and seventh injections. These are in order to give susceptible cases a chance of showing signs of intolerance before too many injections have been given. I may say that in my clinic at St. Thomas's Hospital the skin and mucous membrane of all patients are examined and the urine tested before each injection, and to that I attribute our comparative immunity from serious toxic effects. The same routine was adopted, with similarly happy results, in my hospital in France and at Rochester Row as soon as it was realized how easy it is to overlook such signs of intolerance as slight erythemata and to pile fuel on fire by giving more injections.

At various points a course of iodide is given; that is in the belief that iodide assists the resolution of the process. I conceive the unit syphilitic lesion as a colony of spironemes surrounded by a wall of more or less fibrosed tissue, and so protected from agents circulating in the blood. I regard the iodide as an agent which will stimulate the tissues to break down that wall and let in the antisyphilitic remedy to the spironemes within.

The minimum treatment proceeds far beyond the stage when the Wassermann reaction has become negative. Many workers consider that, when the Wassermann reaction has been rendered negative, treatment may be suspended, or at least mercury can be relied upon to complete the cure. This implies a belief that, when the Wassermann reaction has been rendered negative, the germ of syphilis has been almost eradicated. I should like to contest this view, because if it is not correct thousands of syphilitics are to-day being treated insufficiently and will remain syphilitic to the end of their lives. It is useless to say that, if the initial treatment is insufficient, the error will be corrected when the patient relapses. All of us know quite well that a large proportion of insufficiently treated cases do not relapse with clinical signs but only serologically. We know also that, so long as no outward signs appear, very many patients do not trouble to come for blood tests, so that the serological relapse goes undetected for months, if it is ever discovered. I would remind you that the skin and mucous membranes are not the only parts of the body in which the germ of syphilis flourishes and that a patient may be a public danger as well as a candidate for future dependence on the charity of his friends and relations, though he may have shown no outward signs of syphilis for years.

With regard to the negative Wassermann reaction as a guide to cure, nobody knows how much spirochaetal activity is required to produce a positive Wassermann reaction. We know that it varies in different patients, and there are some who may show such gross outward signs of syphilis as a papular eruption, mucous patches, and condylomata, and yet give a negative reaction, and we know also that very many patients who have been treated only until the Wassermann reaction has become negative subsequently relapse, proving that the germ of syphilis was by no means eradicated by the time the reaction first became negative. Altogether, therefore, although nobody knows how much devilry is going on behind the veil of a negative reaction, everybody knows that it may be considerable, and I contend that we are not justified in assuming either that treatment may be suspended when the Wassermann reaction first becomes negative, or that it may safely be continued with mercury only to complete two years. I have given reasons for showing that mercury given for two years, administered in the only forms which are practicable for the multitude, leaves a high proportion of cases uncured, and I hold very strongly that every remedy at our disposal should be employed in the continuation treatment. The amount and length of the continuation treatment should, in my judgement, be that which observation in the past has shown to result in no relapses after prolonged suspension of treatment.

I do not believe in being guided by the progress of the patient except, of course, as regards signs of intolerance of treatment. That policy means giving a certain amount of treatment, which in some cases has apparently resulted in cure but in others has been followed by relapse, and then watching to see how it works in this particular case. If the patient does relapse he is in much worse case, and often by this time he has passed the disease on to some other person. It is not in this way that we shall eradicate syphilis. Most of the cases of syphilis we are treating to-day are under our care because of the introduction of a public health measure which aims to stop the spread of this disease by rendering the greatest possible number of persons permanently non-infective. It is not m rely the hiding away of a sore, a rash, or an ulcerated throat, or even the rendering of the patient temporarily non-infective, but the stopping of any further chance of that patient passing on the disease to others. If we merely introduce an interval of a few months of non-infectivity we are not fulfilling the public health ideal; in fact, the money spent on the treatment of the patient is largely wasted. Lastly, in favour of my plea for a treatment which does not stop until there are very strong reasons for believing that the disease has been eradicated, I would suggest to you that it is nothing less than this which would satisfy any of us if we were so unfortunate as to contract syphilis.

The plan I have laid down for later cases consists of a number of short courses. Many hold that it is useless treating an old-standing case with a positive Wassermann reaction beyond the stage when the symptoms have gone. They say that the Wassermann reaction will never be changed however much treatment is given. This is not correct: if the treatment is prolonged the reaction often does become negative, and the gradual change can be watched if the strength of the reaction is titrated out. Some ask, What, after all, does a positive Wassermann reaction matter? Many hale and hearty men, they say, have a positive Wassermann reaction and are none the worse for it. Other workers hold that a positive Wassermann reaction in late cases signifies only that the patient has at some time suffered from syphilis, and that it does not spell present activity of *Spironema pallidum*. If so, I would ask why the reaction diminishes in strength and may die out under prolonged treatment, and the patient's general health improves in the process. I do not agree that a positive Wassermann reaction is a trifling sign. If the apparently hale and hearty person with a positive Wassermann reaction is examined critically he is often found not to be so hale and hearty as he appears to a casual observer. He is of the type who drops down dead or begins some day to talk nonsense and act irresponsibly, and I agree with Stokes, who says that those who regard a positive Wassermann reaction as indicating nothing more than a high resistance should at least submit their cases of the kind to expert clinical examination before continuing to hold that belief. He found that such an expert examination disclosed a high percentage of disease, particularly cardiac and nervous, and I would again remind you that the skin and visible mucous membranes are not the only parts of the body on which the germ of syphilis acts. It is my experience that very many patients with a strongly positive reaction say on commencing treatment that they feel all right in themselves, but the same patients remark at a later date that they feel fitter now than they have done for years.

For nerve cases the course outlined shows a frequent repetition of small doses, preferably of silver salvarsan, which seems to act particularly well in getting rid of the lightning pains of tabes. Although the course commences very mildly you will see that the total amount administered is not small, and it is wise not to allow too long an interval between courses.

If general paresis be excepted I think the outlook for nerve cases is generally good, provided that the treatment is instituted fairly early, and I have had excellent results in tabes from long-continued arsenobenzol, mercurial, and iodide treatment. General paresis is a different matter, and I think that most workers are pessimistic regarding the outlook in these cases. Since the present prognosis is so hopeless, and any measure which offers a glimmer of hope is justifiable in general paresis, I may perhaps be pardoned for relating a case of my own in which I think that treatment has definitely

E.—NERVE CASES.

Arsenobillon Argentum or Silver Salvarsan.

	Day of Treatment.	Gram Intravenously.	KI Grains.
1st course	1	0.15	—
	4	0.15	—
	8	0.15	—
	11	0.5	—
	18	0.20	—
	22	0.20	—
	25	0.20	—
	29	0.20	—
	32	0.25	—
	36	0.25	—
	39	0.25	—
	43	0.25	—
	44-50	—	v t.d.s.
	51-57	—	x t.d.s.
	58-64	—	xv t.d.s.
2nd course	85-148	Repeat 1-64.	
	149-203	Rest.	
3rd course	204-257	Repeat 1-64.	
	258-350	Rest.	
4th course	351-413	Repeat 1-64.	
	414-511	Rest.	
5th course	512-575	Repeat 1-64.	

influenced the course for the better and has certainly had a profound effect on the serum and fluid reactions. It shows also the extraordinary amount of arsenobenzol which some patients may receive without apparent ill effect.

This patient came under my care in June, 1921. He had then been in a private asylum for eight months, with typical signs of general paresis. The history of syphilis dated to about thirty years previously. He was grandiose, had slight tremor of tongue and lips, Argyll Robertson pupil, and slight Rombergism. The blood-serum reaction and the cerebro-spinal fluid reactions were strongly positive. The cerebro-spinal fluid contained 230 cells per cubic millimetre, and the globulin content was marked. He had recently received seven injections of "914," and this treatment had then been abandoned as no improvement had resulted. I was asked to do anything which offered the slightest hope of cure, regardless of risk. I stipulated that treatment should not be abandoned unless no improvement had followed at least twenty arsenobenzol injections. I decided to combine injections with spinal drainage. The treatment and progress were as follows:

From July 3rd to July 31st, 1921, I gave 1.5 gram silver salvarsan in seven intravenous, and 0.6 gram sulfarsenol in two intramuscular injections, and drew off 140 c.cm. of cerebro-spinal fluid by three punctures. The patient then refused all further treatment, and showed generally no improvement; if anything he seemed slightly worse than when treatment commenced. During August and September he improved sufficiently to cause his wife to press for his removal to his home, where the further treatment has been carried out. Treatment was resumed on October 1st, 1921, when he was fairly quiet, though delusional on certain matters, such as religion, and grandiose on money matters. The cerebro-spinal fluid gave a strongly positive Wassermann reaction, but the cells numbered only 6 per cubic millimetre.

From October 1st to November 26th, 1921, I gave him 3.2 grams of silver salvarsan in seven injections, ranging from 0.3 to 0.6 gram, and drew off 275 c.cm. cerebro-spinal fluid by seven punctures. Under this treatment he improved very considerably, shedding much of the general paretic mental outlook and behaviour. The Wassermann reaction of his spinal fluid became weaker, giving a reaction only in a dilution of 1 in 2.5 and higher concentrations, and the cells numbered 2 per cubic millimetre. Lange's gold test, however, gave a strongly marked paretic curve. Treatment was suspended from November 26th, 1921, to February 18th, 1922, and it was interesting to observe how he relapsed gradually during the last month of this interval, becoming more and more general paretic, until at last he was quite as bad as on his first return home. I decided to push the treatment far more intensively, and from February 18th to April 4th, 1922, I gave 8.55 grams silver salvarsan in ten injections, ranging from 0.6 to 1.25 gram, and drew off 220 c.cm. spinal fluid by six punctures. The injections were well tolerated, mainly, I think, because they were given in 7 per cent. glucose, and 2 oz. glucose were administered by the mouth one hour before each injection.

The clinical improvement under this treatment has been most marked, and he is now more nearly normal than he has been since he was certified as insane about a year ago. He can criticize a book as intelligently as before his illness commenced and write a sensible letter with no omissions. His balance, formerly very unsteady, is now firm and he walked fifteen miles a few weeks ago. His conversation is generally rational and his memory good, but he is still rather delusional on religion and Christian Science. The improvement in his house manners is particularly marked. He is normally very considerate for others, but in the relapse preceding the last course of treatment he became definitely coarser in his general behaviour; after the treatment was resumed his normal refinement of behaviour gradually returned. His fluid now contains 1.3 cells per cubic millimetre, gives only a partial Wassermann reaction with one whole volume, and the gold-sol reaction is definitely weaker. The blood-serum reaction is now negative.

[*Note on Correction, June 11th, 1922.*—This patient is now normal in behaviour under all conditions, except in regard to the healing powers of Christian Science, in which he is definitely more optimistic than the average adherent of that faith.]

Of course, remissions occur in general paralysis of the insane without treatment, as everyone knows, but in this case it is difficult to attribute the second improvement, dating from the commencement of the last course and proceeding steadily to the end of it, to any other cause than the huge doses of silver salvarsan administered. The case is incomplete, but has proceeded far enough to show that colossal doses of silver salvarsan do affect adversely the deeply buried spironemes in general paresis, and that is my excuse for relating it at such a comparatively early stage.

THE PLACE OF OPHTHALMOLOGY IN THE UNDERGRADUATE MEDICAL CURRICULUM.*

BY

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"In education, most time is to be bestowed on that which is of the greatest consequence in the ordinary course and occurrences of the life the young man is designed for."

LOCKE.

WHAT part of ophthalmology shall be taught in the undergraduate medical course? How much time shall be devoted to the subject? These are important questions; for in seeking to determine the place of ophthalmology in the undergraduate medical curriculum one is faced at the outset, not only with the problem of what to do with the specialties in general, but also with the whole problem of undergraduate medical teaching.

A great deal of time and thought has been advantageously devoted in recent years to the subject of post-graduate ophthalmic studies, but apparently very little by comparison has been given to undergraduate work. The reason probably is that the post-graduate studies present a circumscribed field that falls largely to teachers in the specialties for solution, while undergraduate studies in any one subject are but a single factor in a much larger problem, in which workers in all the branches of medicine are interested.

It seems a duty for ophthalmologists to take part in the widespread deliberations that are shaping the policies of all medical schools; especially so as some of the proposals that have been made in regard to the disposition of special studies are obviously founded upon a misconception of values and of the primary purpose of undergraduate medical education.

Before beginning the study of the problem we must set clearly before ourselves exactly what we wish to accomplish in undergraduate teaching. We still touch hands with those for whom it was possible in their college years to gain a fairly comprehensive grasp of the whole range of the medical knowledge of the time; but the phenomenal development of medicine during the last few decades has made this less and less attainable. Students are now forced to confine themselves to phases of the old major subjects, to subjects of recent development, and even, again, to ramifications of them. We have, in a word, witnessed an extraordinary development of specialization. The problem of undergraduate work is to-day, therefore, much more complex. Men aim not at one goal, but aspire to varied fields of endeavour.

As a starting point we must classify students in accordance with what they have in view. This is not a difficult matter, for quite simply our students fall into three groups: Those who are destined to be general practitioners; those who will be clinical specialists; and those who will specialize in research, teaching, and public health.

The specific business of the general practitioner is to treat sick individuals—in other words, to grapple with distinctive medical problems. Some of these problems are of little or no moment; others are of vital importance; and many of them are clearly beyond the scope of the general practitioner. It is obvious that in order to see clearly what are the requirements of the general practitioner in the way of instruction and training, we must set forth his problems and make some kind of classification in accordance with their relative values.

Clearly, the only standard of classification one can adopt

* Read before the American Ophthalmological Society, Washington, May 2nd, 1922.

in this field is the bearing problems have upon the preservation of life and of function. On this basis medical disorders can be instantly separated into those that menace life and those that do not. Disorders that do not menace life can be subdivided into disorders which threaten complete and permanent disablement and those which do not. The first subdivision (disorders which threaten complete and permanent disablement) includes two sets of conditions: those which call for immediate recognition and immediate and effective interference, and those which do not. The second subdivision (disorders that do not menace life) embraces three classes: those which involve temporary disability but tend always of themselves to recover; those which do not involve temporary disability but cause discomfort in varying degree and lower efficiency; and those falling in the field of congenital deformities and cosmetics.

Although this classification is not intended for more than a suggestion, it yet suffices to throw into relief the relative importance of the disorders by which the general practitioner may be faced. But the classification covers the whole range of the problems of medicine and surgery; and since no man can at this day hope to master the entire subject, it must be determined which part of it the general practitioner can reasonably be expected to manage.

It is evident that the foremost place must be accorded to those disorders that carry with them a menace to life—namely, haemorrhages, suffocations, serious fractures, strangulations, virulent infections, poisonings, and cancerous growths. Scarcely less important are the conditions that lead to complete and permanent disablement, that deprive a man of his active life in society. No one will question the assertion that this state is regarded by mankind as among the great tragedies of life. Under these two headings are what may be called the major problems of medical practice. These problems vary in their degree of urgency, but they demand of the practitioner a knowledge so complete that it will express itself in immediate and fully effective action. Delay and partial recognition mean death and disaster.

On the other hand, it is equally clear that in a field that cannot in any event be fully covered the disorders that do not threaten complete and permanent disablement are those which should receive least consideration. At their head stand those conditions which are either extremely rare or require for their management a training beyond the power of the student to acquire. These belong of necessity to the province of specialization. If we eliminate these, as we reasonably must, we reduce the problems of our second division to a group made up largely of what we may call the minor ailments—that is, disorders which are neither menacing, complex, nor rare, but assume a certain importance because of the frequency with which they occur. In this minor field, then, and in the major field of menacing disorders, lie the problems that fall with reason to the general practitioner.

The segregation of his problems in this way reveals the educational requirements of the general practitioner. A distinctive problem in the field of practice implies in a broad sense a distinctive scholastic task. We are able, through our classification of medical disorders on the basis of what is of most importance, to design an undergraduate curriculum in accordance with the principle of what is of most worth. This principle requires, on the one hand, that the range of problems as determined shall shape the studies underlying their comprehension, and, on the other, that the amount of time and attention given to the mastery of a problem shall be proportionate to its importance as fixed. Major problems must always take precedence over minor problems, to the extent of entire neglect of the latter, if time be limited.

What applies to the design of the curriculum as a whole applies to the individual studies. This answers the question as to what part of the subject shall be taught. The time devoted to a subject is to be determined in accordance with this decision. The place of a subject in the undergraduate medical curriculum—the place of ophthalmology, for example—will be proportionate to the number and character of the problems which fall to it from the whole number as determined. These conclusions lead us to see how illogical is the practice of devoting an equal amount of time to the specialties simply because they are so classified, instead of apportioning time on the basis of relative values. They also dispose of the proposal that the specialties as such should be entirely eliminated from the undergraduate curriculum, to the end that the whole time available may be devoted to the major subjects.

In illustration of what has been said let me indicate the disorders that must shape the undergraduate course in ophthalmology for general practitioners.

Major Problems.

1. Disorders that menace life: intraocular tumours; malignant growths on and about the eye; wounds and injuries; orbital cellulitis and osteitis from extension or from metastasis. The student should have knowledge of, and be able to distinguish between, the various disorders of which exophthalmos or proptosis is the most striking sign.
2. Disorders that do not menace life but are signals of disorders that menace life: optic neuritis, or "choked disc"; the various types of systemic retinitis and choroiditis; paralyses of the intrinsic and extrinsic muscles of the eye; visual disturbances expressive of disease in the optic tract.
3. Disorders that threaten complete and permanent disablement and call for immediate recognition and immediate and effective interference: the purulent ophthalmias; trachoma; pterygium rarely; phlyctenular conjunctivitis; tuberculous and diphtherial conjunctivitis; ulcer of the cornea; interstitial keratitis; wounds and injuries and burns of the eye, including foreign bodies, or the field of industrial accidents; iridocyclitis; panophthalmitis; sympathetic ophthalmia; glaucoma; optic neuritis, of local origin, or axial; dacryocystitis; myopia.

Minor Problems.

Sties; chalazions; marginal blepharitis; chronic catarrhal conjunctivitis.

It will be noted that, apart from numerous other harmless and rare conditions, one excludes from this list almost the whole series of cataracts and congenital anomalies. Implied, too, is but a limited acquaintance with the subject of muscular anomalies, and the operative field is highly restricted. On the other hand, the work demands a fair mastery of refraction, ophthalmoscopy, and perimetry in the functional examination of the eye.

If we were dealing solely with the ophthalmic course the problem of how to present this work would not be difficult; but in undergraduate teaching we must view the matter from the standpoint, not of one but of all the subjects composing the undergraduate curriculum. Admitting that at the moment, and still more in the future as medicine develops, problems from the field of general practice must fall into the fields of specialization, when we come to include all that bear on general practice we are confronted by what is apparently a task of great magnitude. Nevertheless, this principle of what is of most worth leads us to conclude that at any given time the maximum feasible achievement in the field as outlined shall be the minimum requirement in the way of a curriculum for general practitioners.

Now professedly the colleges undertake to cover this field; but we know only too well how far they fall short of meeting the requirements—that there are annually graduated in large numbers men who are quite incapable of overtaking what should reasonably be expected of them in the field of general practice. I shall not now occupy time with an analysis of the causes of this lack of success. Mainly it has been due to failure in recognizing the diversity of aims that has arisen, to efforts that have been made to develop unduly the purely educational aspects of medical studies, as well as to the introduction of "cultural" subjects that are clearly outside the province of a medical curriculum. The consequence of this confusion of ideals has been to graduate men on the one hand with an inadequate knowledge of important problems and of the subject as a whole, and on the other hand with an unnecessary knowledge of minor problems and of things outside the practitioner's field. Because of the insuperable difficulties of the curriculum practical training has been neglected, facts have usurped the place of principles, and knowledge the place of education.

The consciousness of failure is a matter of concern and dissatisfaction to teacher and graduate alike; but behind the faculties and behind the practitioners is a third group whose interest in this matter has been apparently overlooked. In the end, medical education is a trust imposed on the schools and colleges of the country by the public, and one does not need to put one's ear close to the ground to learn that there is discontent with the manner in which practitioners are being trained to deal with the emergencies that arise in the community. From every point of view, therefore, the situation demands redress.

A curriculum designed in accordance with the decisions that have been reached offers a helpful measure for the solution of the difficulties. Taking the practitioner's problems as listed we shall develop courses of study that will cover as nearly as possible, not only the field as a whole, but what the student is expected to know of each individual problem. It is implied that at the beginning of each course the student

shall be given printed notes or a synopsis of the work to be done. Assistance may be had from the different departments; but in the end everything is to be carefully considered and brought into conformity with a prearranged plan. This work ought really to be entrusted to a small group of men, vested with considerable authority; and I suggest that it would be helpful for them to think of the problems, not as belonging to the various fields, but rather to medicine and surgery—to the mother subjects—as indeed they do.

Particularly important is the fact that under a unified direction it would be possible through co-ordination to eliminate completely the wasteful overlapping that now prevails, as well in the primary as in the final subjects. This process should be extended to its logical limit, through subject and problem to phase and element. It ought to be determined at the outset, in every instance, when and by whom a subject of this kind is to be taught. Students should be required to master a problem as defined, once and for all, and having mastered it, pass to something else. On completion the scholastic tasks would be distributed among the various subjects making up the curriculum. It really does not matter who does the teaching, though expediency would probably demand the services of experts in the special fields.

While what I have said applies particularly to the clinical subjects, which must be regarded as the basis for any arrangement of a curriculum, it also holds for the primary subjects; for the function of all primary teaching is to build concepts for the clinical work. The great fundamental principles will be taught as before; but with a classification of problems on the basis of what is of most worth, there will come to the primary teachers a scale of values that will be most helpful, as clearly indicating where emphasis should be laid in their work of preparation. It is not to be expected that all this could immediately be effected. Many difficulties can be foreseen. Adjustments and readjustments would be necessary; but eventually, with not one but many centres participating, there would develop a more or less standardized curriculum, which might be universally adopted.

But the adoption of a minimum medical curriculum implies certain specific obligations. One is, that the student must know everything of the subject as presented. It will not suffice that he recognize but two out of four essential problems, that he know but half of what is expected of him to learn of any one problem. This suggestion demands a very thorough system of examination, under which accurate and continuous records are kept of the work the student has done and the success with which he has done it.

A second and equally important obligation is, that if a specified task is set the student, the subject must be fully and systematically presented to him. With exceptions, of course, clinical instruction in medicine is still largely and generally of a haphazard character and based on chance. By this I mean that in many clinics cases are used for teaching as they appear, without any thought of fitting them into a well-defined curriculum. The practice is largely the outcome of a want of clear conception of the field to be covered. The result is that the students either do not see examples of disorders with which they should be familiar, or that the subject may be presented a quite unnecessary number of times. All clinical teaching should, from the outset, be brought into strict alignment with courses previously defined. This second obligation has also a very important bearing on the existence of a college; for no school is justified in carrying on clinical teaching if the community in which it is situated is not sufficiently large to furnish clinical material of the right kind in adequate amount.

But if, in its application, the principle of most worth brings a more circumscribed, yet equally comprehensive curriculum, it demands, on the other hand, a more thorough practical training. Granting that the most is made of the facilities afforded by the dissecting room, the *post-mortem* room, and operative courses on the cadaver—and it is not—we are bound to admit that attendance on hospital work as now generally practised does not produce satisfying results. Training to be effective must be much more intimate. There is daily evidence of the rapidity with which graduate internes are trained to deal competently with problems that are entirely beyond the scope of the man who leaves college immediately to enter practice. We must strive to secure for our students similar facilities in their undergraduate years. The hospitals at present engaged in teaching could with advantage to the work of the institutions add greatly to the number of internes; but when the limits are reached a great field of opportunity for practical instruction remains.

Arrangements with non-teaching hospitals in college centres, as well as with numerous hospitals in centres which do not support colleges, could undoubtedly be made to share in the practical instruction of students. This means the training of the staffs of these institutions, who would then take rank as extramural teachers. The value of this enlarged opportunity for training to the colleges and to the student is apparent; and the benefit that would accrue to the community, through the raising of the standard of practice in this way, is scarcely to be estimated. The hospitals of the entire country might advantageously be utilized for this purpose. The suggestion implies in a broad and more modern sense a return to the old system of apprenticeship. Just how this idea would work out could not be determined until the curriculum as a whole had been developed. The main difficulty would be in arranging a plan of rotation. The housing problem would only be a matter of subsidizing the institutions to enable them to erect the necessary residences. Maintenance, in any case, would fall on the shoulders of the students.

More seriously to be considered is the objection that the work as outlined would occupy more time than men could afford. There is no reason, however, why theoretical instruction could not be concomitantly and even more advantageously carried on during the period of residence. Then, too, the time necessary to cover the field would be less than would first appear. Careful work in medicine paves the way for accurate diagnostic work in surgery, and the general training in surgical technique and procedure goes a long way to make easy the difficulties of the specialties. The general principles and the technique cover the whole field. Moreover, when one has mastered the major problems the minor problems present no difficulties.

Speaking for ophthalmology, I am satisfied that, to a man who has had a year of active work in general surgery, one could give a satisfactory training in the course as outlined for general practitioners in approximately four months' whole-time work, the necessary instruction in refraction and in ophthalmoscopy included. The ophthalmic operations falling to the general practitioner in accordance with the decisions formulated are few in number, including as they do only enucleation of the eye, exenteration of the orbit, drainage of the orbit, opening of lacrymal abscesses, sties, and Meibomian cysts, removal of foreign bodies from the cornea, cauterization of the cornea, and iridectomy for the relief of glaucoma and for incarcerated iris. The last mentioned is the only one that presents any difficulties, but these could be largely overcome by practice on dead animals' eyes.

But before estimating what, if any, additional period is necessary for practical training, note should be taken of the saving of time that can be effected in various ways for this purpose by the utilization of time that is still largely wasted in attendance on operative clinics, the details of which are entirely indiscernible; by the ruthless exclusion of everything that is obsolete and trivial and irrelevant; but most of all by a rearrangement of the present curriculum as I have suggested, as well as by the introduction of more effective methods of teaching and study that grow out of this work. In the last analysis the argument calls for a matriculation standard that shall be no more than adequate if time demands consideration.

A few final words about undergraduate optional courses and specialization are now required. Under the plan as outlined the scope of the curriculum would be much more sharply defined; and it ought to be possible, in a measure at least, to grade students and to permit the more brilliant among them to proceed to advanced work in optional courses after satisfying the faculties that they had mastered the information of a minimum curriculum.

But specialization in undergraduate years is unthinkable. The interdependence of the various systems of the body being so well established a fact, it is clearly impossible that a man could intelligently practise in any special field without a knowledge of medicine and surgery as a whole. The only guarantee against narrowness of view, the bane of specialization, is a broad theoretical training. On the other hand, a general surgical training is the corrective for meticulous and careless methods in the special operative field.

Finally, from the point of view of public necessity—and that must always be the last court of appeal—it is not to be tolerated that men trained in limited fields of medicine shall be given the right to practise the art as a whole: for there is no guarantee that men so trained will always succeed, or that later they may not wish to establish themselves as general practitioners. The only conclusion is that men must qualify fully as physicians and surgeons before becoming specialists.

THE DIAGNOSTIC VALUE OF GASTRIC FRACTIONAL TEST MEALS.

BY

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THE following remarks are based on the examination of over two hundred fractional test meals undertaken during the last fifteen months. Nearly all these meals were withdrawn from patients presenting either symptoms or physical signs pointing to an abdominal lesion; other cases included persons thought to be normal and a few patients in whom the condition was definitely extra-abdominal.

The meal employed was that recommended by Ryle,[1] withdrawn by means of a Rehfuss tube; the material withdrawn was filtered, and (in the filtrate) estimations of total acidity and of free hydrochloric acid were made by the Töpfer method. If the presence of bile was obvious search was made for it with the aid of acetone and nitric acid; microscopic examination both of the unfiltered gastric residuum and of the meal was also carried out. In a number of cases the chloride content was estimated by the Volhard-Arnold method and hydrogen-ion concentration determined by the use of indicators. Correlation was also made, whenever possible, with clinical, radiographic, and verified findings.

Before setting out the actual findings, which are largely confirmatory of the work of others, it will perhaps be permissible to consider some points in relation to gastric secretion. Various views are held on the association between gastric secretory change and gastro-intestinal lesion, according to the supposed priority of one or the other event.[2] However this may be, it is certain that the amount of gastric secretion poured out in response to the stimulus of various substances introduced into the stomach is controlled to some extent by the operation of certain factors. The importance of one of these factors was emphasized by Boldyreff,[3] who suggested an explanation for the fact that the acidity of fluid withdrawn from the stomach has not the same value (in terms of total titratable acidity) as that of freshly secreted fluid. In the light of recent and past investigations some of these factors which influence the time-acidity curve of gastric secretion may be summarized.

1. *Rate and Nature of Secretion.*—In the first place this must depend upon the amount of chemical or psychic stimulus brought to bear upon the gastric mucosa. By the use of uniform test meals given at the same hour the chemical stimulus may be presumed to be, roughly, of constant value; psychic effect can in some measure be avoided by careful manipulation of the Rehfuss tube. Apart from these two factors, the rate and amount of secretion may be assumed to be a property of the particular gastric mucosa which is being examined.

2. *Rate of Evacuation of Stomach.*—It is this factor which, though not apparent in its influence in the earlier period of gastric secretion, is so largely effective in shaping the curve later on when the pylorus has opened sufficiently. Its effect on total acidity may be different from that on free hydrochloric acid content, as pointed out by Benneit and Venables.[4] Taken alone, its most potent effect would appear to be exhibited in the time-acidity curve of the duodenal ulcer with hurry; its influence may also be inferred from the inspection of curves in cases of pyloric obstruction where this factor is obviously in abeyance.

3. *Rate of Neutralization or Dilution brought about by Regurgitation from the Intestines.*—It is evident that this factor must operate in association with the preceding one, since both depend upon the opening of the pylorus, except in cases of gastro-enterostomy or gastro-colic fistula. The existence of this factor may be demonstrated by the finding of trypsin or bile in the stomach;[5] rate of dilution and rate of neutralization may be determined by total and inorganic chloride fractional estimations, as recently shown by Bolton and Goodhart[6] amongst others. It would appear possible that the excessive operation of this factor might produce an achylia, complete neutralization being perhaps evoked by an original gastric hypersecretion.

Leaving out of account other possible but unknown factors such as the part played by the vascular system, some sort of general relationship may be formulated between the above and the acid concentration (total acidity) of the fluid withdrawn from the stomach. If C represent any point on the total acidity curve, S the rate of gastric secretion, E the rate of evacuation, and R the rate of intestinal regurgitation, then it would appear that C varies directly as S and indirectly as E and R, or

$$C \text{ varies as } \frac{S}{E \text{ and } R}.$$

This relation cannot be considered as being in any way exact, because, although the associated factors E and R would appear to operate almost at once,[7] it is certain that they reach higher values at a later period.

In the following six types, into which most of the curves obtained were divisible, an attempt has been made to interpret the shape and significance by reference to the above expression. Alterations in the factors S, E, and R are commonly found in association with gastro-intestinal or other lesions; it is legitimate, therefore, to assume that a curve expressing the shifting values of C, which itself varies with these factors, may show some specific relation with these same lesions. At the same time it must be admitted that such specific curves are by no means invariably obtained.

Curve Type 1 (Fig. 1).

This is the normal curve obtained by most observers—from Schüle in 1895[8] to the present day. Here the factors S, E, and R would appear to have either fixed or balanced values, as it is obvious that the value of C would remain the same if there were similar increases in the values of S and R; this is, of course, the basis of the principle of automatic regulation advanced by Boldyreff.

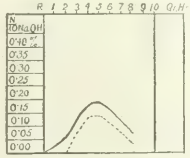


FIG. 1.—Curve Type 1. Case 139.

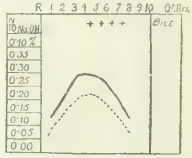


FIG. 2.—Curve Type 2. Case 32.

In each of the figures the total acidity is represented by a continuous line, and the free HCl by a broken line.

Curve Type 2 (Fig. 2).

Known sometimes as the curve of larval hyperacidity (Hawk), this type has been associated with gastric ulceration; in my own series 83 per cent. of cases proved at operation to be of gastric ulcer gave this picture. It would appear that an originally high value of S is reduced *later* by a rise in the value of R, as shown by the entry of bile. In one case of gastric ulcer a curve of Type 6 was obtained, indicating perhaps an excess of the neutralizing factor; unfortunately no chloride estimations were made in this case.

Curve Type 2 can be taken therefore to indicate hypersecretion without much disturbance of normal gastric evacuation, a condition often present in ulcers of the lesser curvature.

Curve Type 3 (Fig. 3).

Here it is obvious that the value of E is so great as to lead to a rapid disappearance of recoverable gastric contents. High resting acidity is also a feature of this type of curve, as observed by Ryle[9] and others; in my own series this picture with high resting acidity has been obtained in cases of duodenal ulcer, and, without high resting acidity but with a late rise in the inorganic chloride curve, after gastro-enterostomy. Out of seven cases of duodenal ulcer, a curve of this type was obtained in five instances, and of Type 5 in the remaining two.

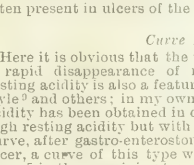


FIG. 3.—Curve Type 3. Case 30.

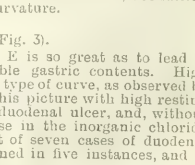


FIG. 4.—Curve Type 4. Case 119.

Curve Type 4 (Fig. 4).

This is the type of curve usually present in cases of maintained pyloric obstruction, where it is obvious that the factors E and R can have little or no influence on the value of C; associated with this may be a raised or normal secretion value. In cases of malignant obstruction the high free hydrochloric acid curve may be absent, being replaced by an organic acid curve. This type seems to be of considerable diagnostic value and is almost invariably obtained in severe grades of pyloric stenosis; all such cases in my own series gave this picture.

Case.	Clinical.	Radiographic.	Fract. Test Meal.	Verified.
6	Gastric ulcer	? Duodenal ulcer	Type 2	Pyloric ulcer.
13	,, ,,	? Duodenal ulcer	Type 5	Appendicitis.
17	,, ,,	Delay in emptying, otherwise normal	Type 2	Ulcer on lesser curvature.
18	Recurrent gastric ulcer	Gastro-enterostomy working	Type 6	Perigastric adhesions only.
20	Gastric ulcer	Two indentations on greater curvature	Type 2	Ulcer on lesser curvature.
22	?	Nil abnormal	Type 5	Nil found at operation.
27	?	Nil abnormal	Type 4	Pyloric cicatrix.
28	Gastric ulcer	? Pyloric stenosis	Type 4	Pyloric stenosis.
30	Duodenal ulcer	Small hypertonic stomach	Type 3	Duodenal ulcer.
32	Gastric ulcer	Hour-glass stomach	Type 2	Two ulcers on lesser curvature.
35	,, ,,	? Gastric ulcer	Type 6	Minute ulcer near pylorus.
37	,, ,,	? Duodenal ulcer	Type 2	Carcinoma on lesser curvature.
38	,, ,,	Pyloric ulcer	Type 4 and 5	Pyloric ulcer.
45	,, ,,	Nil abnormal	Type 1	Nil abnormal.
46	?	? Duodenal ulcer	Type 1	Nil abnormal.
56	Carcinoma of stomach	Nil abnormal in stomach	Type 6	Gall stones.
57	Gastric ulcer	Ulcer middle of greater curvature	Type 1	Small ulcer of fundus.
58	,, ,,	Duodenal ulcer	Type 3	Duodenal ulcer.
61	,, ,,	? Pyloric ulcer	Type 1	Gastric ulcer.
67	?	? Prepyloric ulceration	Type 6	Mobile kidneys.
72	Gastric ulcer	Gastric ulcer	Type 2	Large ulcer, lesser curvature.
77	?	Delay in large intestines	Type 5	Appendicitis.
78	?	Nil abnormal	Type 2	Nil at operation.
80	Gastric ulcer	Nil abnormal	Type 2	Ulcer near cardia.
82	?	Hour-glass stomach or ulcer	Type 1	Perigastric adhesions.
83	?	? Pyloric ulcer	Type 2	Distended duodenum (? Wilkie).
85	?	Nil found; ? duodenal obstruction	Type 2 and 5	Pyloric ulcer; appendicitis.
92	Gall stones	? Colitis	Type 5	Enteroptosis.
103	Gastric ulcer	Hour-glass stomach	Type 1	Cardiac ulcer.
106	,, ,,	No record	Type 5	Pyloric ulcer.
115	Pyloric spasm	Pyloric stenosis	Type 1	Nil found.
116	Gastric ulcer	? Pyloric ulcer	Type 3	Duodenal ulcer.
117	,, ,,	Nil abnormal	Type 1	Mobile kidneys.
118	,, ,,	Hypertonic stomach ? duodenal irritation	Type 6	Mobile kidneys.
119	Carcinoma of stomach	Fundal new growth	Type 4	Simple pyloric stenosis.
123	Gall stones	? Pyloric stenosis	Type 1	Gall stones.
141	? Nil	? Duodenal ulcer	Type 5	Duodenal ulcer.
142	?	? Pyloric stenosis; ? duodenal ulcer	Type 4	Simple pyloric stenosis.
151	?	? Duodenal ulcer	Type 2	Ulcer near pylorus.
152	Pyloric ulcer	? Duodenal irritation	Type 4	Pyloric stenosis.

Curve Type 5 (Fig. 5).

This is the "climbing" curve or curve of tardive hyperacidity (Hawk), due presumably to deficient relaxation or spasm of the pylorus of a non-continuous type; this picture has also been seen in what can only be called idiopathic hyperchlorhydria, since no spasm or cause for spasm could be recognized. A great majority of these curves were, in my own series, associated with either small pyloric ulcers (leading presumably to spasm), or with subpyloric conditions, such as appendicitis, where perhaps pyloric spasm was a reflex event similar to that observed in the experimental intestinal injuries of Cannon and Murphy. Removal of the subpyloric condition, which was postulated as a cause of the "reflex hyperchlorhydria" expressed by this type of curve, has, in my own series, been followed by an alteration approximating to Type 1.

Curves of this type were obtained in six cases which came to operation, and which exhibited lesions varying from a small pyloric ulcer to an inflamed appendix.

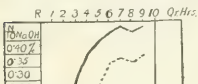


FIG. 5.—Curve Type 5. Case 81.

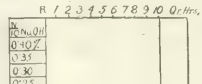


FIG. 6.—Curve Type 6. Case 108.

Curve Type 6 (Fig. 6).

The so-called achylic curve, which may mean deficient secretion or early and complete neutralization, has personally been obtained in a variety of conditions which appear unrelated. These included normal cases and cases of gastric ulcer, gastric carcinoma, gall stones, movable kidneys, gastroptosis after gastro-enterostomy, and, in six instances, of exophthalmic goitre. There does not, therefore, seem to be any great diagnostic value in this type of curve, since it can be obtained in so great a number of conditions: on the other hand, it can serve as an indicator of the efficiency of the stoma when a gastro-enterostomy has been made.

From a general consideration of these curves valuable help in diagnosis would seem to be given, particularly by Types 2, 4, and 5. A comparison of this and other evidence with the actual finding as discovered by operation will, however, best illustrate this statement. The accompanying table shows that the fractional test meal method is worthy of comparison with the recognized method of opaque meals and x rays. Forty cases have been taken at random; in each the clinical, radiographic, fractional test meal, and verified findings have been set out.

In concluding this note, I would wish to express my indebtedness to my colleagues at the David Lewis Northern Hospital for the provision of some of the clinical material.

Conclusions.

1. The acidity curves plotted from fractional test meals are of some value in obtaining knowledge of the factors which modify the acidity.

2. Alterations in these factors bear some sort of relation to gastro-intestinal lesions; hence the acidity curves may throw some light on these lesions.

3. These curves seem divisible into at least six types of varying diagnostic value.

4. By comparison with other methods the fractional test meal is at least admissible as an aid to diagnosis.

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TREATMENT OF HUMAN HOOKWORM INFECTION WITH CARBON TETRACHLORIDE.

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IN the *Journal of the American Medical Association* of November 19th, 1921, Dr. Maurice C. Hall, of the United States Bureau of Animal Industry, published a paper on the use of carbon tetrachloride for the removal of worms in animals. He stated that the results were satisfactory, and that almost all worms were removed by one dose. He recommended that 0.3 c.cm. should be given for every kilogram of weight of the animal. He tested the drug on monkeys, and gave two to five times this amount, and reported that no untoward symptoms ensued. Dr. Hall himself took in the morning 3 c.cm. of carbon tetrachloride, and afterwards did his usual day's work and was not inconvenienced in any way. He suggested that the drug would be valuable for the treatment of hookworm disease in man.

Several drugs are used at present for the treatment of this infestation, but all of them have disadvantages. Thymol and beta-naphthol, except in large doses, are ineffective, and are

difficult to administer to children, and occasionally deaths occur after their use.[1] [2]

Chenopodium has been used very largely in recent years, especially where extensive campaigns have been started among heavily infected populations in various parts of the tropics. It has these disadvantages:

1. It is objectionable to the patients.
2. It is frequently followed by depression, and it is necessary for the patient to remain at rest and away from work on the day that the drug is taken.
3. One day's treatment is ineffective with the majority of patients.
4. It is impossible to standardize chenopodium, which contains a large number of chemical bodies of unknown composition, and one sample of the drug occasionally is found to be more potent than another.
5. It is dangerous to administer to very young or very sick children.

Carbon tetrachloride, CCl_4, can be prepared cheaply and in a high degree of purity. It is a colourless liquid with a sweetish, pungent taste, and it produces a slight sensation of burning when it is taken into the mouth. Its boiling point is 76.74° C. and its specific gravity is 1.63195. It is soluble in alcohol and ether, and will dissolve a large number of organic substances, especially those of a fatty nature. Previously it has been used in the practice of medicine as an anaesthetic and as an inhalation for hay fever. It was much used at one time as a dry shampoo, but it fell into disrepute because a woman, aged 29, died suddenly during its use for this purpose. Dr. B. H. Spilsbury stated at the inquest that the deceased was at the time of her death in a condition of status lymphaticus.[3] The preparation used by barbers would not be the chemically pure drug; and the commercial preparation contains two very poisonous substances—carbon bisulphide and carbonyl chloride, and as much as 2 per cent. of the former may be present.

Most fat solvents, such as chloroform, tetrachlorethane, or carbon tetrachloride, if they are inhaled for long periods cause subacute hepatitis, which may be followed by advanced fatty degeneration of the liver.[4] But these effects do not occur after one or two doses of these drugs.

We decided to test this drug especially with a view to the treatment of school children and young children who are admitted to hospital with various diseases and who are also heavily parasitized by hookworms. One of us in association with Dr. Leach was the first to use the drug in Ceylon, and fourteen persons were treated for hookworm disease with doses ranging from 3 to 10 c.cm. The patients took the drug well and did not show the dislike to it that most patients show when chenopodium is taken. They did their usual day's work and complained of no untoward symptoms.

A murderer under sentence of death volunteered to take the drug, and 6 c.cm. were given one hour after the midday meal, and the same day he passed four worms (*Ascaris lumbricoides*); thirteen days later this dose was repeated at 7 a.m. before any food had been taken. The patient stated that at 11.45 he felt a little giddy and sleepy, but this soon passed. The execution took place a week after the second dose, and a *post-mortem* examination was done one hour after death. No hookworms or ascarids were found in the intestinal tract. Sections of his organs were examined microscopically, but showed no signs of degeneration of any kind. Therefore it is apparent that in single doses carbon tetrachloride is a safe remedy.

Next it was tried on the students of an agricultural school, who were from 18 to 25 years of age. A preliminary examination of samples of their faeces showed that all of them were infested with hookworms. No purgative was given on the preceding night. They all received a dose of 3 c.cm. of the drug at 6.30 a.m. before any food had been taken; no purgative was given after the drug was administered. They were instructed to carry on their usual mode of life, and restrictions were not placed upon their work, play, or diet. Not one of them was inconvenienced by the drug, and they all continued their day's work in the gardens or at the school house. They were supplied with "chatties," which were numbered, and they were instructed to pass their stools into these vessels. In this way all stools passed for three days after treatment were collected and carefully searched for worms.

A total of 719 hookworms, or an average of 36 for each student, were recovered. Besides these 13 *Ascaris lumbricoides*

TABLE I.

No.	Age.	Haemoglobin by Taiquist.	Examination of Faeces before Treatment.			No. Stools passed on Day of Treatment.	Worms present in the Stools.									Total Worms for 3 Days.			Examination of Faeces 10 Days after Treatment.		
							1st Day.			2nd Day.			3rd Day.								
			Hookworms.	Ascaris.	Trichuris.		Hookworms.	Ascaris.	Trichuris.	Hookworms.	Ascaris.	Trichuris.	Hookworms.	Ascaris.	Trichuris.	Hookworms.	Ascaris.	Trichuris.	Hookworms.	Ascaris.	Trichuris.
1	21	80	+	−	+	0				2						2			(−)	−	+
2	20	80	+	−	−	2	1						11			12			(−)	−	+
3	21	65	+	+	+	0				116	1		45			161	1		(−)	+	+
4	20	70	+	+	+	1	0			38			0			38			(−)	+	+
5	20	80	+	+	+	1	0			34			8			42			(−)	+	+
6	22	80	+	+	+	2	1			37	1		7			45	1		(−)	+	+
7	19	75	+	+	+	1	0	1		83			3			86	1		(−)	−	+
8	18	70	+	+	−	1	0			1			8			9			(−)	+	+
9	21	80	+	+	−	2	9			19			5			33			(+)	+	−
10	21	75	+	+	+	1	0			19	2		10	4		29	6		(−)	−	+
11	18	75	+	+	+	1	0			2			12			14			(−)	+	+
12	18	70	+	−	+	3	0			3			2			5			(−)	+	+
13	21	80	+	+	+	1	0			33	4		11			44	4		(−)	+	+
14	21	70	+	−	+	0				0			26			26			(−)	+	+
15	25	70	+	−	+	1	0			1			7			8			(−)	−	−
16	19	80	+	−	+	1	0			14			4			18			(−)	+	+
17	22	70	+	+	−	1	0			9			24			33			(−)	+	+
18	23	70	+	−	−	1	0			96			12			108			(+)	−	+
19	22	60	+	−	+	2	0			0						0			(−)	+	+
20	23	65	+	−	−	0				0			6			6			(−)	−	−
	Total					22	11			507	8		221	4		719	13				

+ = Plain smear positive for ova. (+) = Centrifuged deposit positive for ova. (−) = Centrifuge and salt flotation method negative for ova.

were passed. Microscopical examination of faecal specimens ten days after treatment showed ova of hookworms in only two specimens, which indicates that 90 per cent. were cured. Table I is a summary of this work. It will be noted that two-thirds of the worms were passed on the second day after the treatment.

Next the drug was tried on sixty-four male and female students whose ages were from 7 to 17 years. Samples of their stools were examined microscopically for the ova of worms: sixty were positive for hookworms and four were negative.

The method of examination adopted was to make smears from the stool, and if ova were seen this was signified opposite the number of the student by a *plus* sign; if no ova were seen a portion of the stool was stirred up in water and centrifuged; the deposit was smeared on a slide and examined, and if it was positive it was signified by a *plus* sign in brackets thus (+). If by this method it was negative, a remaining portion of the centrifuged deposit was stirred up in concentrated salt solution, for the high specific gravity of this causes the ova to float to the surface; when a slide is brought into contact with this surface the ova will adhere to it. This is known as the "salt flotation method," and when stools contain so few ova that this method must be used to reveal them the result is signified by a *plus* sign in brackets and an asterisk thus (+)*. When they are negative by this method it is signified by a *minus* sign in brackets (−).

A dose of from 1 to 3 c.cm. of carbon tetrachloride was given to each student at 6.40 a.m., before any food had been taken. The drug was given with a small quantity of water. There was no frowning or other evidences that the children objected to the drug, and an hour afterwards they took their regular morning meal. One twelve-years-old boy vomited when he had finished his meal, but the manager informed us that this child often vomited. Each child was furnished with a "chatty," on which was a number corresponding to a number on a tag tied securely to the child's wrist. A dispenser was present during the time this experiment was being carried out, and when a child wanted to use its "chatty" the dispenser compared the numbers, so as to prevent mistakes in the use of the vessels. The manageress assisted with the girls in the same manner. Two children failed to go to stool on the day the treatment was taken; the others had from one to seven stools each, with an average number for the sixty-four children of 2.93 stools; which indicates that the drug is a mild aperient. A dose of magnesium sulphate was given on the second morning after treatment to save time in collecting the stools. This purgative was taken before the early morning meal and all the stools passed that day were saved.

Four hundred and six stools were collected during the two days, which is an average of 6.34 stools from each patient. Each day a small quantity of formalin was poured into these vessels to preserve the stools. These were taken to the laboratory, where each collection of faeces was washed thoroughly on a sieve of fine wire gauze (forty strands to the inch); all that would not pass through the mesh was washed out on to a large full-plate photographic dish and searched for worms. It was washed again and placed in small quantities at a time in Petri dishes, and examined first upon a white and then upon a black background, because hookworms are dark when they are engorged with blood and preserved in formalin, and show up well upon a white plate, whereas those that contain no blood are discovered more easily on a black background.

A total of 2,776 hookworms, or an average of 43.3, were recovered from the 64 collections of stools. But of these 5 were negative. Besides these, 260 ascarids were obtained from 32; 15 trichuris from 6; and 4,945 *Oxyuris vermicularis* from 58 students. The discharge of trichuris and oxyuris indicates that the drug acts throughout the intestinal tract, for we have not previously seen trichuris expelled after the use of other anthelmintic drugs, or *Oxyuris vermicularis* passed in such large numbers.

Ten days after the treatment samples of the stools of 54 of the students were examined for ova (unfortunately samples of the other 10 were not available as the students had gone away on vacation); 2 of these were positive for hookworms by the simple smear method, and 4 were positive by the combined centrifuge and salt flotation method, which is a percentage of 88 probable cures.

The drug was given to a number of young children who had previously been treated with chenopodium on one or more occasions; the amount of chenopodium which was given to children of 4 years of age was 4 minims divided into two doses and taken early in the morning with an hour's interval between each dose. This is as much as may be administered safely to children of this age. Table II shows the result—namely, that carbon tetrachloride will remove all or a large number of hookworms which remain after treatment with chenopodium.

TABLE II.

No.	Age.	Sex.	Previous Treatment with Chenopodium.	Dose of Carb. Tetrachloride.	Worms Expelled. Hookworms.	Ascaris.	Trichuris.	Examination of Faeces after Treatment. Hookworms.	Ascaris.	Trichuris.
1	4	M.	Once, 10 days previously	10 minims	9	1	0	−	+	+
2	4	F.	Twice, 10 and 28 days previously	10 ,,	52	15	0	+	+	+
3	3	F.	Twice, 15 and 32 days previously	10 ,,	35	1	0	−	+	+
4	6	M.	Twice, 20 and 34 days previously	10 ,,	52	3	1	(+)*	+	+

(+)* = Centrifuge and salt flotation method positive for ova.

The drug was given to a number of children who had pyrexia from various causes, and were anaemic and emaciated; larger doses were used than with the children shown in Table II; the results were excellent and are shown for a few of the cases in Table III. None of the children were in any way inconvenienced by the drug.

TABLE III.

No.	Age.	Sex.	Disease.	Dose of Carb. Tetrachloride.	Temperature at Time of Treatment.	Worms Expelled. Hookworms.	Ascaris.	Trichuris.	Examination of Faeces after Treatment. Hookworms.	Ascaris.	Trichuris.
1	4	M.	Enteric	15 minims	102°	54	0	0	(−)	−	+
2	9	F.	Malaria	25 ,,	100.3°	167	4	4	(−)	+	+
3	5	F.	Continuous P.U.O.	15 ,,	101.2°	6	0	0	(−)	+	+
4	6	M.	Continuous P.U.O.	15 ,,	102.1°	31	0	0	+	+	+
5	4	F.	Irregular P.U.O.	15 ,,	100°	48	2	0	(−)	+	+

Conclusions.

1. Carbon tetrachloride is an efficient anthelmintic remedy for hookworms.

2. The drug may be administered safely in doses of 10 to 20 minims to children of 3 and 4 years of age, even when they are seriously ill from various causes.

3. It aids the expulsion of *Ascaris lumbricoides* if it is followed by a purgative, but it is not as effective as chenopodium in killing this worm.

4. The drug does not seriously deteriorate on keeping. Many children were given doses of carbon tetrachloride which had been stored in the laboratory for three years.

5. It is more valuable than chenopodium for campaigns against hookworm disease because—

(*a*) Patients do not object to its taste.

(*b*) It is not necessary to precede or follow the administration of it by a purge.

(*c*) It is more efficient than chenopodium and has not the depressing effects of that drug.

(*d*) It is much cheaper than any other drug that has been used.

(*e*) It can be prepared in a high degree of purity, and a chemically pure preparation should always be used.

(*f*) The person who is being treated can do his usual day's work.

Children when one year of age may be given 10 minims of carbon tetrachloride with safety, and this dose should be increased by 2 minims for each year of apparent age. Thus a child of ten would receive 28 minims, a youth of sixteen

40 minims (2½ c.cm.), and an adult dose should be from 50 to 80 minims (3 to 5 c.cm.), according to the size of the patient.

Finally, chenopodium is soluble in carbon tetrachloride, and a mixture of one part of the former in four of the latter should prove to be efficient for the expulsion of *Ascaris lumbricoides*.

Our thanks are due to Dr. W. P. Jacocks of the Rockefeller Foundation and Dr. Catherine Anderson of the Lady Havelock Hospital for much kindly assistance.

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SOME OBSERVATIONS ON THE MECHANISM OF DRUG ACTION:

A STUDY IN PHARMACO-DYNAMICS.

BY

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IT has long been recognized that certain chemical compounds have very little effect upon the animal organism, whereas others produce a marked reaction when administered under similar conditions. The object of the present paper is to bring together some scattered observations which help to throw some light on such facts as these, and to explain the mechanism of pharmacological action. The subject will be dealt with under several headings, and the first one is naturally a consideration of the question of

Toxic Properties in Relation to Atomic Weights.

About the year 1815 Prout, who was a physician, published a paper in the *Annals of Philosophy* pointing out that in many cases the atomic weights of the elements were approximately whole numbers, and deducing from this that hydrogen was the primary matter from which all elements are formed by various condensations. The observations of Prout and the work of Newlands, Lothar Meyer, Mendelejeff, and others led to the well-known periodic classification of the elements.

This classification led to much valuable research and to many important discoveries, but apparently little has been written from the point of view of pharmacological relationships. A careful consideration of the periodic table reveals the fact that there are many relationships between the pharmacological reactivities of the elements (and their compounds) and their periodic grouping. A few examples will illustrate this point; if we compare the elements of the magnesium group we notice that the tendency is towards increase of toxicity with increasing atomic weight, the greatest toxicity being associated with mercury compounds. The oxygen group is also of interest, passing from a gaseous element to a typical solid non-metal, sulphur, thence to selenium and tellurium, with certain metallic characteristics. The hydrogen compounds of this series illustrate well the increase of toxicity with increase of molecular magnitude, starting with the innocuous substance water, and passing to the extremely toxic telluretted hydrogen.

A very valuable research was carried out by Michet[1] in 1881 on the relative toxicities of a number of metals. He experimented upon fishes with solutions of metallic chlorides, diluting the solutions so that the fishes could survive forty-eight hours in the diluted solutions. He applied the term "limit of toxicity" to the weight of metal present in the form of chloride which would be contained in 1 litre of such a solution. In his original paper he deplores the fact that no relationships between toxicity and atomic weight were observed. Unfortunately this is a case where an excellent research was largely thrown away from a scientific point of view by misinterpretation of the actual findings. Had he tabulated his results in weights proportional to atomic weights many relationships would have been revealed, but he was presumably ignorant of the nature of "molecular solutions." One example shows this fairly well.

	Michet's Values.	Michet's Values Recalculated and Multiplied to give whole Numbers.	Atomic Weight.
Calcium	2.4	600	40.0
Strontium	2.2	250	87.6
Barium	0.78	56	137.4

It is clear from this table that the toxicity of an element belonging to the same periodic family increases with increase in atomic weight, but, needless to say, such a law is subject to variations. It is highly improbable that such periodic relationships as have been referred to are accidental, and with increasing knowledge more light may be thrown on this interesting branch of pharmacology.

Influence of Solubility.

One of the factors long recognized as influencing pharmacological activity is the solubility of the drug concerned. There are so many well-known examples of this that it is quite unnecessary to refer to them in detail; it is sufficient to point out that in practical pharmaceutical chemistry various methods are used to increase the solubility of insoluble compounds; thus slightly soluble alkaloids are converted into more soluble alkaloidal salts, and in the realm of synthetic organic chemistry various groups are introduced into the molecule with the object of increasing solubility.

It has also been recognized that certain constituents of animal organisms exert a selective action in dissolving drugs introduced into the organism, and thus certain tissues are specially affected.[2]

Vapour Pressure.

Its vapour pressure is a factor of the greatest importance in its effect on the reactivity of the drug. For instance, chloroform, ether, and other volatile anaesthetics would be useless for the purpose if they did not possess a high vapour pressure. During the recent war the question of vapour pressure was of the utmost importance in connexion with gas warfare. It is terrible to think of the calamitous possibilities of easily prepared toxic substances possessing a high vapour pressure.

Relationships between Chemical and Pharmacological Reactivity.

The increased attention given to the synthesis of organic compounds during the middle and later years of last century has enabled chemists to determine the structure of chemical compounds and in collaboration with pharmacologists to demonstrate relationships between the chemical and physiological reactivity of drugs.

Some years ago[3] the rates of hydrolysis of a considerable number of anilides were investigated by the writer. These compounds, of which acetanilide (antifebrin) and phenacetin are common examples, owe their activity in part to the fact that they are hydrolysed slowly within the organism with liberation of the parent base according to the general equation—

$$R.NH.Ac + H.OH \rightarrow R.NH_2 + Ac.OH.$$

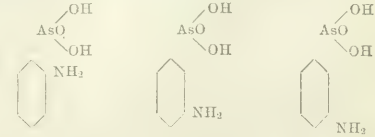
It was shown that there were definite relationships[4] between velocity of decomposition and degree of toxicity as previously determined by various pharmacologists.

Chemical Affinity.

In a further research[5] on isomeric substances having similar pharmacological action, it was shown that in certain cases chemical affinity and toxicity were quantitatively proportional. Such observations have more than a theoretical importance; for example, this difference in chemical affinity doubtless explains the differences observed by Breinl and Nierenstein when carrying out experiments upon trypanosomes with sodium salts of the isomeric amino-phenyl-arsenic acids. These observers found that the para compound, also known as atoxyl, is very reactive, the meta compound less so, and the ortho compound inactive.[6]

The relationship between the compounds is shown by the following formulae:

Arsenic Compounds.



Ortho—No effect. *Meta*—Slight effect. *Para*—Effective.

Another example of varying pharmacological activity is seen in the case of the isomeric hydroxy-benzoic acids, the ortho compound, better known as salicylic acid, being the only one possessing marked reactivity.

"Affinity Constants."[7]

Ortho-hydroxy-benzoic acid	0.102
Meta-hydroxy-benzoic acid	0.00867
Para-hydroxy-benzoic acid	0.00286

Rate of Formation of Excretion Products.

In a paper referred to above[8] it was pointed out that the toxicity of a drug must partly depend upon the relative velocities of formation of "cell-drug" compounds and excretion products. To take a well-known example, the toxicity of hydrocyanic acid doubtless depends to some extent upon relative slowness of formation of excretion products as compared with the rate of formation of an active "cell-drug" compound.

A case which supports this theory may be referred to here—namely, that of the three isomeric aceto-toluidides whose rate of hydrolysis and pharmacological reactivity have both been investigated. The hydrolysis rates are as follows, "K" being a constant expressing velocity of hydrolysis:

	K.
Aceto-ortho-toluidide	0.709
Aceto-meta-toluidide	3.14
Aceto-para-toluidide	3.11

If the relative toxicity of these compounds depended only upon rate of hydrolysis it is obvious that the ortho compound would be the least toxic. This is not so actually, since the meta and para compounds are both non-toxic, the ortho derivative alone possessing toxic properties. This apparent anomaly may be readily explained by a consideration of certain observed facts. It has been found[9] that all three of these compounds may be oxidized with potassium permanganate to acetyl-amido-benzoic acids according to the general equation—

$$C_6H_4\begin{matrix}CH_3\\NH.COCH_3\end{matrix} + 3.0 \rightarrow H_2O + C_6H_4\begin{matrix}COOH\\NH.CO\,CH_3.\end{matrix}$$

Furthermore, it is known that acetyl-meta-amido-benzoic acid appears in the urine of dogs after administration of meta-aceto-toluidide.[10] That is, it is easier for the organism to excrete this compound as a relatively non-toxic product obtained by direct oxidation, rather than by oxidation subsequent to hydrolysis. A series of laboratory experiments have been made by the writer which demonstrate that the rate of oxidation of the ortho compound by potassium permanganate is much slower than that of the meta and para isomers under similar conditions.

It is thus seen that the only toxic isomer is the one which is least readily oxidized; in other words, a physiological reaction is produced at a greater rate than an excretion product of diminished toxicity can be formed.

Unsaturated Valencies.

The question whether or not the carbon atoms, and sometimes other atoms, in a chemical compound are saturated or unsaturated may have an important bearing on the pharmacological action of the compound. It has been recognized as a general rule that open chain derivatives containing unsaturated carbon atoms are more toxic than isomeric saturated bodies; thus allyl alcohol is fifty times more toxic than normal propyl alcohol.

Thiele[11] holds that in unsaturated compounds the combining energy of every atom which participates in the double linking is not completely absorbed, so that the atoms still possess valency (partial valenz), and it is in this partial valency that the source of reactivity is to be found.

Some light is thrown on the phenomenon of increased toxicity of unsaturated substances by comparing the properties of certain oxygen and sulphur compounds. It has been shown by Peters[12] that the replacement of oxygen by sulphur may increase "the residual affinity" of a compound. Thus one gram-molecule of silver cyanate absorbs one gram-molecule of ammonia, whereas one gram-molecule of silver thiocyanate absorbs two gram-molecules of ammonia under similar conditions. In a recent paper[13] on the influence of sulphur as a colour-producing element numerous examples are given in which the replacement of oxygen by sulphur produces coloured compounds from colourless ones, and it is shown that the heats of formation of the sulphur compounds are less than those of the corresponding oxy-compounds, supporting the suggestion that the substitution of sulphur for oxygen gives rise to less stable compounds, and that the chromogenetic properties of sulphur depend upon the formation of compounds possessing residual affinity. These observations are very significant when it is remembered that the replacement of oxygen by sulphur in chemical compounds frequently increases their toxicity; thus paraldehyde is a safe hypnotic with no action upon the heart, but tri-thio-aldehyde is a powerful heart poison. Carbon disulphide is also more toxic than carbon dioxide, and sulphuretted hydrogen, unlike its oxygen analogue water, is a very toxic substance.

Adsorption Phenomena.

The subject of adsorption has been dealt with by numerous workers, and has given rise to a large amount of literature; many theories have been advanced to explain the phenomenon, and it has been shown[14] that adsorption may consist not only of a surface action, but that this may be accompanied by diffusion inwards of material deposited on a surface. Some of the experiments referred to above extended over a period of eleven years, and were finally completed by Professor J. W. McBain.[15] These and other experiments have led to the belief that adsorption may play an important part in pharmacological action and pathological processes. Moore and Roaf,[16] who made laboratory experiments with anaesthetics upon brain tissue, etc., concluded "that anaesthetics form unstable compounds or aggregates with the proteids of the tissue cells, and that anaesthesia is due to a paralysis of the chemical activities of the protoplasm as a result of the formation of such aggregates."

In a recent paper[17] it is suggested that certain pathological states are initiated by the adsorption of toxins on the surface of specialized cells, and that if these surface layers be not removed permanent damage to the tissues may be brought about by the inward diffusion of these superficial layers. In this connexion it must be remembered that an extremely thin layer of adsorbed material may alter all the properties of the solid so covered,[18] and experience in the field of chemical reaction known as catalysis has demonstrated that adsorption layers are the seat of enormously enhanced chemical reactivity.

Idiosyncrasy.

Such an article as this would be incomplete without brief reference to the undoubted fact that some people exhibit a marked intolerance towards certain drugs, and conversely other individuals may be able to tolerate abnormally large doses of some special drug, and this must be borne in mind when attempts are made to compare the relative potencies of a series of chemicals. The writer was for a considerable period associated with a scientist who was able to inhale concentrations of noxious gases at least twice the magnitude that a normal man could bear, but after two years' work at such research his resistance in this respect broke down, and his sensitivity to gases became normal. It is not possible to explain such idiosyncrasies as this, but they are certainly of great clinical importance.

In conclusion, it is to be hoped that with increasing knowledge of the constitution of chemical compounds, combined with increased activity of experimental pharmacologists, in the near future the sciences of chemistry and pharmacology will be more intimately associated, to the mutual advantage of both scientists and clinicians.

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HEALTH conditions in the Ukraine remain disquieting, according to a report received from the Health Section of the League of Nations. Contrary to former experience at this time of the year, a very pronounced upward tendency of the typhus wave, with a heavy mortality rate, is reported. Cholera is also increasing. The needs of the moment are more than ever in excess of the resources of the Ukraine health administration, which is being forced to close one hospital after another.

VISCERAL CRISES.

BY

ARTHUR MILLS, M.D.,

DUNDEE.

LOCOMOTOR ATAXIA, with its well-defined and uniform group of symptoms, has been familiar to us for a period of about seventy years. That locomotor ataxia is syphilis pure and simple is only now becoming a universally accepted fact, and it does not seem unreasonable that its clinical symptoms might be reconsidered—first in the light of our now certain knowledge as to its etiology, and secondly in the light of our increasing knowledge of the varied manifestations of inherited and late syphilis.

Not infrequently there is evidence that the morbid process in tabes is widely distributed. Atrophy of the optic nerve is common; atrophy of other cerebral nerves is frequently noted. There are instances in which tabes is associated with general paralysis, the cerebral cortex becoming involved, and quite frequently symptoms may be present the result of lesions in motor nerves and nuclei and of degeneration in peripheral nerves. We do not, however, look upon such symptoms as diagnostic of tabes. If, amid these various symptoms indicative of a widespread syphilitic involvement of the nervous system, we are unable to recognize others the result of an accidental selection of the posterior nerve root system, we are not warranted in making a diagnosis of tabes. The destructive process in this posterior root system leads to symptoms due to interference with and cutting off of afferent impulses from various parts of the nervous system, and these alone form the classical symptoms of tabes. Ataxia, hypotonia, Westphal's phenomenon, and sensory disturbances are usually interpreted as being due to impairment of function; hyperaesthesias, paraesthesias, and girdle pains present the character of irritative symptoms. The purpose of this paper is to point out that visceral crises should not necessarily be included in the last-mentioned group of posterior root irritative phenomena, but should be looked upon as evidence of the morbid process being probably present elsewhere. In particular it is desired to demonstrate that they are not peculiar to the condition of tabes.

Visceral crises are paroxysmal in character. There is a sudden disturbance in function usually with pain, lasting a variable time, hours or days, and terminating as a rule abruptly. Recurrence is a marked feature of these attacks, and no sufficient external cause for the attack can be found. They have frequently been mistaken for acute surgical conditions. So far as I can learn, the visceral symptoms of tabes have never been satisfactorily explained by reference to their anatomical basis, and yet there is a persistent tendency to group them with root pains and to regard them as of radicular irritative origin and of diagnostic importance.

Of all the classical symptoms of tabes, root pains, however, form probably the symptom which is most constantly met with. In a series of about 450 referred to by Starr,[1] 98 per cent. of these patients suffered from pains and only 10 per cent. from gastric crises. There appears to be as yet no generally accepted theory as to the mechanism of the production of these symptoms. Charcot originally attributed gastric crises to disease of the sympathetic, and many others adopted the same view. Dr. T. Buzzard suggested that they are due to a lesion in the vagal nucleus. Peripheral neuritis has also been offered as an explanation; Barker,[2] describing a case in detail and endeavouring to make a theory to fit the pathology, suggested irritation of dorsal root fibres causing a reflex vaso-constriction in the splanchnic area.

Purves Stewart[3] considers that the various visceral crises of tabes may be due to irritative changes in various parts of the autonomic nervous system. There is no reason that I am aware of to regard pathological irritative changes in various parts of the autonomic system as peculiar to tabes; in fact it is difficult to refer such changes to spinal or posterior root degenerations. They have little apparent connexion with these, and yet the same author, when discussing abdominal pain and the differential diagnosis between visceral crises and acute abdominal disease, looks to the finding of the classical symptoms of tabes to save us from error.[3] This indeed is the usually advocated procedure in textbooks of medicine and surgery. If in doubt as to whether the condition is a visceral crisis or not, we are asked to investigate the knee-jerks and ankle-jerks and to look for symptoms of ataxia and sensory disturbances characteristic of disease of the posterior columns and roots.

Étienne,[5] discussing the frequency of aortitis in syphilis, quotes a case where the pain was situated in the epigastric region and recurred in violent gastric crises as in tabes. The autopsy showed a suprasigmoid aortitis with stenosis of the coronary arteries. He admits that clinical symptoms in such cases are sometimes absent, but concludes that the aortitis was the cause of the crises in the case mentioned. Pathault,[6] in a communication entitled "Sur la fréquence des accidents gastro-intestinaux d'apparence banale qui doivent être imputés à la syphilis," describes a case where the patient suffered from painful attacks of colic and vomiting presenting all the characters of a gastric crisis of tabes. The patient had no other symptoms of tabes and made a rapid recovery with antisyphilitic treatment. He states further that had the diagnosis of syphilis not been made the patient would very probably have been subjected to a fruitless operation. This author is content in this instance with a diagnosis of gastric syphilis. Both these writers emphasize the similarity of their patients' symptoms to the gastric crises of tabes, but do not suggest that they may be of an identical nature.

Our advancing knowledge of the pathology of late syphilis may soon throw light upon this problem, and will probably show that these crises are due to a syphilitic infection of the autonomic nervous system. As described by Warthin,[7] this new pathology is based upon the demonstration that the essential tissue lesion of either late or latent syphilis is a mild irritative or inflammatory process due to the localization in the tissues of relatively avirulent spirochaetes, and that inflammations of this type may occur in all tissues and organs. We have to understand that the gumma is a comparatively rare lesion in old syphilis and that the pathological diagnosis of syphilis is microscopical and rarely to be recognized by the naked eye. Such a pathology opens up for us a limitless field for clinical manifestations, and only the universal application of the Wassermann or other reliable test, along with careful clinical observation, especially as regards the results of treatment, will enable us to come to some understanding of the vast symptomatology of this disease. Patients attending venereal disease centres and suffering from acute and manifest syphilis, chancres, secondary manifestations, and gummata, appear to be outside of this problem entirely, and we cannot therefore look for much assistance from these clinics. We have to find out what symptoms may be caused by inherited "latent" and late syphilis. The task appears to be one peculiarly associated with general practice.

Observation and consideration of the following cases suggest that syphilis may be the cause of the visceral crises hitherto associated with tabes, and that these attacks are not peculiar to the special pathology of tabes.

CASE I.

Female, aged 29, unmarried. She first came under my observation in March, 1919, her complaint being recurrent attacks of abdominal pain and sickness. Her first attack had occurred in the summer of 1916, when she was seized very suddenly with severe pain in the abdomen and with vomiting. Since then she had suffered from these attacks at very frequent intervals; usually they lasted under twelve hours. The pain would come on suddenly early in the morning, and by late afternoon or evening both pain and sickness would cease quite abruptly, and she would be ready to take an ordinary meal. They occasionally lasted two days or even three, but usually she was off work one day, back to work the next, and then possibly off the following day with another attack; she rarely had more than a week or two at a time of freedom from these seizures. She had consulted several doctors, and appendicular colic had been suggested. In October, 1920, she had a more severe and more prolonged attack than usual and was now very anxious to have something done. I could feel a freely movable right kidney and was inclined to attribute her attack to this, but fortunately I asked Mr. D. M. Greig to see her with me in consultation. He suggested a Wassermann test, and the report was definitely positive; her family history also indicated inherited syphilis. She received three injections of 0.6 gram neo-kharsivan at weekly intervals and was given mercury to take by the mouth. She has had no further attacks, and has been well for over a year. I have no doubt whatever that the case is one of inherited syphilis, and that her attacks were due to syphilis. She has had none of the classical symptoms of tabes.

CASE II.

Female, aged 27, unmarried. This patient was seen by me for the first time in June, 1919. Her troubles dated from childhood, the chief one being that she suffered from frequent attacks of pain in the abdomen, sometimes, but not always, associated with vomiting; between these attacks her stomach gave her no trouble. In March, 1917, an attack of abdominal pain more severe than usual led to an emergency laparotomy being done. The surgeon who operated and removed the appendix was able to show me his notes of the case. He found no surgical abdominal condition, and the pathologist's report on the appendix was negative. She continued to suffer from these attacks. Her family history was

suggestive of syphilis, and the Wassermann report on her serum was definitely positive. She had no symptoms of tabes. Mercurial inunctions and mercury by the mouth were soon followed by marked improvement, and on January 12th of this year she reported that she had had no attacks for six months or more. It should also be noted that a brother of this patient was submitted to an appendicectomy at the age of 16, and that his appendix was also found to be normal; no surgical condition was found in the abdomen. He died on the third day after his operation. The cause of his death was believed to be delayed chloroform poisoning.

CASE III.

Male, aged 49, married. I was called to see him on January 31st, 1921, when he was suffering from pain in the epigastric region and vomiting; he had never suffered from this before, and no cause whatever could be discovered for his illness. His pain and vomiting lasted for a week. He had no rise of temperature, but his tongue in time became furred and his pulse increased a little in frequency; his bowels moved normally. Pain was the outstanding feature; he became very impatient as regards the pain, and a surgeon's opinion was suggested but not insisted upon, for I could not convince myself that the condition was a surgical one. I could, however, make no diagnosis satisfactory to myself. The attack subsided, but left him very weak; he had had no nourishment and very little sleep for a week, for I had withheld morphine in the expectation of making a definite diagnosis. I received an urgent call to see him again on the afternoon of March 25th. Returning to his work after his usual midday meal, he had been seized with sudden severe pain in the epigastrium and violent vomiting, and had been carried home in a collapsed condition. He had crawled upstairs and lain on his bedroom floor in agony unable to get into bed. I saw him about 4 p.m., by which time the pain and vomiting had ceased. He was off work only two days. He informed me that he had had a similar attack, not so severe, at the end of February, and had then only been one day off work. Between these attacks he had had no complaints. I could get no definite history of syphilis, but he admitted having run the risk of infection in his youth. The Wassermann report was definitely positive; his wife's blood was also definitely positive, and I discovered she was suffering from a gumma. She had had three miscarriages and then one very delicate child, born twelve years after marriage. I failed to find, and still fail to find, any of the classical symptoms of tabes in this patient. He has had mercury by the mouth, from 6 to 12 grains daily, since April 1st. An attempt to use mercurial inunctions was followed by a severe dermatitis. Examined on January 18th of this year he was well, and had had no further attacks of abdominal pain.

Had these patients shown the classical symptoms of tabes, the attacks from which they suffered would have been diagnosed as gastric crises. They were the subjects of inherited and late syphilis. Their attacks yielded to antisyphilitic treatment, and quite frequently in the treatment of locomotor ataxia by vigorous antisyphilitic methods improvement is reported as regards the visceral crises, though there may be none as regards the ataxic symptoms. Visceral crises are relatively uncommon in locomotor ataxia, being observed in only about 10 per cent. of these cases. Syphilitic visceral crises such as I have described may be relatively frequent and may account for many vague conditions and many errors in diagnosis and fruitless laparotomies. In particular I shall look with grave suspicion upon every case diagnosed as "colic," "appendicular colic," "kinks," "bands" and "adhesions," "cholelithiasis without gall stones," and so forth. The investigation of the knee-jerks will not save us from error, but the application of the Wassermann test may do so. My conclusion is that visceral crises are a manifestation of inherited and late syphilis, and are not peculiar to tabes.

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IN Moseley's classification of the elements founded on x-ray spectra there were four vacant places of ordinal numbers—43, 61, 72, 75. Moseley himself suggested that the number 72 probably belonged to the element celtium previously described by Professor Urbain of Paris. In June, 1914, Professor Urbain, with the late Sir William Ramsay, went to Oxford in order to investigate these and other related matters along with Moseley. The results with regard to celtium were inconclusive, but Moseley was to have published a paper on the inquiry. He joined the army at the beginning of the war, and his death at Gallipoli was an irreparable loss to science. Professor Sir Ernest Rutherford, whose pupil Moseley was, has now written to *Nature* to accept Professor Urbain's identification of celtium with the element having the number 72. Proof has been given in a paper communicated to the Académie des Sciences by M. Dauvillier.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

QUININE NECROSIS OF MUSCLE.

THE interest of the following case relates to the early treatment of the patient by intramuscular injections of quinine and its unusual sequel. Necrosis took place, but in none of the other cases of quinine necrosis recorded has there been, as in this case, a definite separation and encysting of the necrosed muscle. The specimen is now in the museum of the Royal College of Surgeons of England.

J. S., an ex-soldier, contracted malaria in Salonica in October, 1916. Rings and crescents are said to have been found in his blood at various times. He was invalided to the United Kingdom in February, 1917, and had relapses about once a month till he came under specialist treatment, when the relapses gradually decreased in frequency, the last being in February, 1921. In 1916 he had about forty-nine injections of quinine into each buttock alternately every other day, but we are unable to discover the particular form of quinine used. About a month after the course of injections had ended he noticed a swelling in the right buttock "first feeling like a lot of little lumps," but shortly he noticed "one big lump," as was the condition when he first came under the notice of one of us (P. F.).

On examination, there was a cigar-shaped swelling some three inches long in the upper part of the right buttock, the skin moved freely over it, and the lump itself appeared to be movable on the deep structures. It was somewhat tender to the touch, and owing to its position frequently received slight blows and caused much discomfort and even pain. It was therefore decided to remove it.

Operation took place on February 7th, 1922 (D. D. F.). An incision was made over the whole length of the swelling, and on cutting through the skin and superficial fascia the tumour was found to be lying in, and parallel with, the upper part of the gluteus muscle. Cutting into it, an adventitious bursal sac was opened in which a greyish white cigar-shaped body lay quite free. This was removed. It was quite smooth, firm in consistence, somewhat elastic, and had a smooth glistening surface, similar to the space in which it lay. The adventitious sac was cut away from the surrounding muscle, and the space left closed with catgut; the fascia was sutured with catgut and the skin with silkworm gut.

The tumour measured 3½ inches by 3 4 inch by 1 2 inch. A longitudinal incision into it showed that it consisted of wavy bundles of fibrous-looking material, dry and bloodless, and there was some slight calcification at one part near the centre. A section was cut by Dr. H. H. Sanguinetti, and it was seen that the greater part of the tumour consisted of necrosed muscle fibre, much of it still showing striations. It appears to have been a fasciculus of the gluteus maximus, which died *en masse*, owing to the injection of the quinine into it. Necrosis was due probably both to the direct action of the drug and also to pressure of the injected fluid in the muscle bundle, proving so great that the blood supply to the bundle was cut off. The dead part of the muscle must have remained sterile, a line of demarcation was formed round, it separated from the surrounding tissue but was not absorbed, and so acted as a foreign body and became encapsuled.

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THE BLOOD AT 100 YEARS OF AGE.

WHILE carrying on a research on pallor, the case of a lady aged 100 was encountered. As few people reach this age, and as records of their blood are seldom obtained, blood counts were done on two occasions. The following are the particulars:

	Feb. 9, 1922.	Mar. 2, 1922.
Red blood corpuscles ...	4,600,000	4,350,000
Haemoglobin ...	81 %	78 %
Colour index ...	0.88	0.90
White blood corpuscles ...	7,150	7,200
Differential count:		
Polymorphonuclear leucocytes ...	42.5 %	51.0 %
Eosinophil leucocytes ...	4.0 %	4.0 %
Basophil leucocytes ...	0.2 %	0.5 %
Small lymphocytes ...	43.0 %	37.0 %
Large lymphocytes ...	7.3 %	6.0 %
Large hyaline mononuclear ...	3.0 %	1.5 %

Remarks.

The red blood corpuscles are well formed and of normal appearance. One normoblast was observed on February 9th. The white blood corpuscles show a relative lymphocytosis in comparison with the blood of an average healthy adult and there are more eosinophil leucocytes than usually found. Except for an old ununited fracture of the neck of the femur

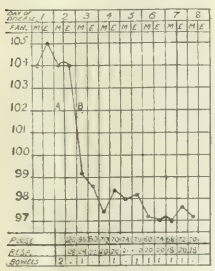
which limits her activity the patient enjoys good health and her mental faculties and memory are in no way impaired. Her age is fully authenticated.

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TREATMENT OF ERYSIPELAS BY VACCINES.

A STATEMENT appeared recently in the BRITISH MEDICAL JOURNAL to the effect that antistreptococcal vaccine was of doubtful value in erysipelas. It might be of interest, therefore, to record a typical case of facial erysipelas treated successfully by antistreptococcal vaccine.



The patient was a young woman, aged 29, who was taken suddenly ill with rigors and a raised patch of erysipelas on the side of the nose. This rapidly spread over the forehead, and the patient's temperature rose to between 104 and 105°. Ichthyol was tried locally, but failed to stay the spread of the disease to the scalp. I obtained the help of a trained nurse, and procured a supply of antistreptococcal vaccine. At 9.15 a.m. on March 18th, 1922, I injected a dose of five million, with the result that in less than twenty-four hours the temperature fell from 104° to 99.2°. A second dose of twenty million was then injected, and the temperature fell to normal, remaining subnormal for several days. The patient made an uninterrupted recovery.

This was the first case of erysipelas in which I have tried antistreptococcal vaccine (supplied in this case by Messrs. Parke, Davis and Co.), and I was much struck by the immediate improvement in the local and general condition of the patient.

Westerham. J. RONALDSON RUSSELL, M.D.

Reports of Societies.

AN ORGANISM FROM CANCEROUS GROWTHS.

AT a meeting of the Edinburgh Obstetrical Society held on June 14th, with the President, Dr. LAMOND LACKIE, in the chair, Dr. JAMES YOUNG read a paper on a further study of an organism obtained from cancerous growths. He had stated in previous papers that a similar organism was obtained from human and mouse cancer, and from three cases of leukaemia in the human subject. It grew in one phase as a small bacillus or as a long filament, and had been identified as belonging to the coli-typhoid group. He had found that the mouse strain when injected into mice produced a diffuse lymphomatous or lympho-sarcomatous lesion.

In the present paper he gave an account of the life-cycle as studied in the experimentally produced mouse lesions. In an animal killed while suffering from the early lesions the organism was found enlarging into forms suggestive of a blastomycete, and little colonies could often be seen in the tissues showing all the stages in the evolution. In animals killed when suffering from the chronic lesions, on the other hand, the smaller phases were usually absent, and the blastomycete phase alone was found—often only after a diligent hunt—as round or oval bodies that were usually structureless. Sometimes, when stained with a Romanowsky stain, they exhibited purple granules. When fully developed the body itself stained blue. Dr. Young had from an early stage been studying these bodies in cancerous tissues, and in previous communications had stated his belief that when the tumour tissue was incubated in a suitable fluid medium they could be seen to germinate into minute cocci, bacilli, or filaments, the actual mode of germination differing in different cases. He showed illustrations exhibiting the different forms of this germination process, as studied in human and mouse cancer and in the chronic lesions of experimentally infected mice. Dr. Young stated that, alike on experimental and morphological grounds, the investigations provided a strong body of evidence in favour of the etiological relationship of the organism to malignant disease. He then showed how the bacteriological investigation of his results as carried out in the Bacteriological Department of the Royal College of Physicians Laboratory, Edinburgh, had brought this aspect into direct conflict with bacteriological teaching. The organism which he used for his injection experiments, and which was obtained from mouse cancer, was identified by its sugar reactions as a *B. coli communis*. With this in a carefully controlled series of experiments he had obtained all the chronic lesions, and he felt justified in concluding that the results were directly related to the experiments. On the other hand, from only a few of the lesions had a lactose fermenter been recovered. In the majority of the cases examined a non-lactose fermenter had been obtained belonging to the paratyphoid B, Gaertner, and Aertrycke group. It was well known that an organism (or organisms) of this group were responsible for a common and acute epidemic in laboratory mice. The organism recovered from the chronic lesions when exhibited to mice produced death after periods varying from fourteen hours to eight days. In the animals, except those that died with very acute manifestations, a diffuse lymphoid lesion accompanied by active cellular proliferation was produced, varying only in its degree and in some other respects—that is, the signs of toxaemia—from the chronic lesions produced after injection of the lactose fermenter. Dr. Young said that he was unable to offer an opinion on this purely bacteriological aspect of the research. He felt, however, that it could not be without significance that he had found the blastomycete forms in the tissues of animals infected with the non-lactose fermenter.

Professor RUSSELL said that he had never wavered from the belief that cancer was due to a parasite and he was specially interested to find that Dr. Young was describing blastomycete-like forms in his research. It was now thirty-two years since he first drew attention to the existence of blastomycetes in cancerous tissues.

Dr. YOUNG, in reply, expressed his belief that Professor Russell's early observations would be proved to be correct.

Dr. H. S. DAVIDSON and Dr. DOUGLAS MILLER read a paper on a "Record of eclampsia in the Edinburgh Royal Maternity Hospital during the years 1912–1921."

Reviews.

THE CAUSATION OF FOETAL DEATH.

THE Ministry of Health has issued a report by Dr. EARDLEY HOLLAND on the causation of foetal death, with an introduction by Sir GEORGE NEWMAN.[1] It contains a special section on the "recognition of congenital syphilitic inflammation of the long bones" by Professor Hubert Turnbull, D.M.

The report is described as an investigation into the factors which determined death in a sample of three hundred foetuses of viable age. The specimens were obtained from fifteen of the metropolitan hospitals; the City of London Maternity Hospital supplied more than a third of the cases (102), and the London Hospital 69, or nearly a quarter. There were 122 other foetuses over and above the 300, but they were not used for the purposes of the investigation chiefly because they were not of viable age. The work was begun in 1914 by Dr. Holland and the late Dr. P. B. Ridge, and a great deal of the working up of the material had been accomplished before 1917, when Dr. Holland went to France in the R.A.M.C. The actual investigation, therefore, is considerably older than the date (1922) which stands on the title-page; indeed, the schedules of the order of examination of the mother, the foetus, the placenta, and the father which were drawn up by Dr. Holland have been used by other investigators, and results obtained from them have already been published.

Dr. Holland took great pains to get exact clinical and obstetrical details in all cases; they were entered on two printed blanks headed "The Mother" and "The Father" respectively; but it had to be confessed that the latter was "a most elusive person," and that not much was elicited regarding him. The results of the pathological examination of the foetus and placenta were recorded on two other blanks, special attention being paid to the search for the spirochaetes of syphilis. The research, therefore, is of high value in relation to the incidence of this disease as a factor in the production of stillbirth; it is interesting to note that the frequency given is much the same as that obtained by other workers.

The author is concerned with the definition of terms and

[1] *Reports on Public Health and Medical Subjects*. No. 7. Ministry of Health. The Causation of Foetal Death. By Eardley Holland, M.D., F.R.C.S., F.R.C.P., Surgeon to the City of London Maternity Hospital, Assistant Obstetrical Physician at the London Hospital. London: Published under the authority of His Majesty's Stationery Office. 1922. (Pp. 163, with 24 plates, 3 coloured. 10s. net.)

would like to do away with the words "stillbirth" and "deadbirth" altogether. The end of foetal life, he thinks, is not reached until pulmonary respiration has begun; therefore foetal death may occur not only before and during labour (ante-natal and intra-natal), but also after labour (post-natal), before the lungs have begun to act. Two definitions are given of viability: a foetal length from crown of head to heel of not less than 35 cm., and an age of not less than 28 weeks from the mother's last menstrual period. Some such changes in terminology and definition are desirable, and would help to clarify thinking on a rather difficult subject.

The classification of the causes of foetal death is no easy matter, for to reach a really satisfactory one would postulate a knowledge which is not yet possessed by any investigator. Death may occur at three periods—before, during, or immediately after birth (ante-natal, intra-natal, and post-natal)—and to some extent the causes are peculiar to each of the three; but Dr. Holland takes the "gross clinical condition," when there is one, as the "primary cause," and in its absence the pathological state of the foetus or placenta. Thus placenta praevia is a primary cause, and so is retroplacental haematoma; indeed, there may be four groups of primary causes—namely, maternal states, complications of labour, placental states, and foetal states. The primary cause may not, however, be the actually lethal cause, which may be found in one or other of the subsequent events or "consequent factors" as Holland terms them. Thus, whilst placenta praevia is reckoned as the primary cause, the consequent factor may be foetal anaerosis from separation of the placenta or from prolapse of the cord, or foetal haemorrhage from ruptured placental umbilical branches, or cranial injury and cerebral haemorrhage due to the method of delivery. Similarly eclampsia may be the primary cause, with toxaemia of the foetus, retroplacental haematoma, and birth injuries as consequent factors.

More than one consequent factor may be at work in any given case. It is in connexion with one of the consequent factors that Dr. Holland's research opens up new ground, and introduces the little understood condition of intracranial stress and resulting injury to the tentorium cerebelli during the progress of the foetal head through the maternal canals. The idea is attractive, almost fascinating, and it has perhaps charmed Dr. Holland to some extent. He found tentorial tears in 81 cases, with resulting subdural cerebral haemorrhage in nearly all. If it should be discovered that tentorial laccrations, associated with cerebral haemorrhage, occur with anything like the same frequency in the stillbirths of other obstetric centres this cause of death will at once assume immense importance. It will also bring a hopeful note into the preventive treatment of foetal death, at any rate in its intra-natal phase. But even if the association do not prove so common or so fatal as Dr. Holland thinks, he will have done a very useful service in focusing research upon the neglected subject of cranial stress in labour and upon the possible functions of the intracranial septa. The frequency of tentorial tears in breech deliveries is a fact of profound significance, and may revolutionize the management of these presentations.

Another extraordinarily interesting section of the report is that in which foetal syphilis is dealt with. It occurred certainly in 14 and possibly in 16 per cent. of the foetuses examined by Dr. Holland. Among 62 foetuses there were 37 spirochaete-positive and 25 spirochaete-negative; amongst the latter were at least 5 which were undoubtedly syphilitic, whilst the remainder were either probably or possibly so. This raises the pressingly important question of the diagnosis of foetal syphilis in the absence of spirochaetes, and both Dr. Holland and Dr. Hubert Turnbull (who deals with the bone changes) add many facts to the previous existing knowledge on the matter.

Every part of the report, however, has its own value. Even the suggestion that unusual smallness of the placenta may be a cause of foetal death is thought-provoking, although the known fact that a live infant may be born along with a placenta very largely degenerated and out of commission will cause some hesitation in coming to a decision. The weight ratios of the placenta form another valuable section, and the elaborate tables contain a mine of information on which others will find it profitable to work. There is an addendum containing a list of cases with the cause of death undetermined; on looking over the details one is depressed to find again and again the note (which is also the explanation) "placenta not examined," and one is tempted to ask when those who send foetuses for examination will recollect that without their respective placentas they are incomplete specimens. A word of praise is due to the illustrations of intracranial states, some of which are in colour. The work as a whole ought to stimulate research in what may turn out to be a most life-saving and hopeful sphere, for Dr. Holland's conclusion is that on the basis of the present series of 300 cases about half the number of foetal deaths are preventable—20 per cent. (the syphilitics) by ante-natal methods alone, 12 per cent. by combined intra-natal and ante-natal methods, and 20 per cent. by intra-natal methods alone. The most promising groups to attack would seem to be the complications of labour, syphilis, and the toxaemias of pregnancy.

ISOLATION HOSPITALS AND SANATORIUMS.

THERE is a touching coincidence in connexion with the publication of Dr. FRANKLIN PARSONS's work on *Isolation Hospitals*.[2] The proofs of the first edition were being passed through the press in 1913 at the time of the author's death, and the task of completing the volume quite naturally fell to Dr. R. Bruce Low; to him the editors of the series of which it is a part entrusted the preparation of a second edition. This had barely left the printers before the death of Dr. Bruce Low was recorded. Although the title of the volume may give the impression that it is concerned only with the structure of isolation hospitals and with their administration, this is far from being the case, for much space is given to a discussion on their utility, to the laws regulating their erection, to the advantages and disadvantages of large and small hospitals and of combining districts for the purpose of providing a joint institution. A very helpful chapter deals with the removal of patients to hospital and with the many difficulties associated with it. For example, some local authorities are still advised by their clerks that the Public Health Act, 1875, makes it imperative on the authority to recover the cost of maintenance in an isolation hospital from the responsible person, but it is pointed out in this book that the obligation has been removed by the Public Health Acts Amendment Act, 1907. This is only one of many instances of sound practical advice which abound throughout the book and render it at once a textbook and a reliable work for reference by those engaged in public health administration.

Since the appearance of the first edition great advances have been made in our ideas as to the utility, the construction, and the administration of sanatoriums for consumptives, and Dr. Bruce Low found that he had to rewrite almost the whole of this section, though he very prudently pointed out that what he had written could only be regarded as provisional. The early belief that all cases of pulmonary tuberculosis could be treated in one institution has now been displaced by the doctrine that different arrangements are necessary for patients in the "early," "middle," or "advanced" stage of the disease. The latest plans prepared by the chief architect of the Ministry of Health are reproduced and give an excellent design for a two-story pavilion sanatorium. Illustrations of army huts at the Durham County Council's sanatorium at Wolsingham show how these buildings may be economically converted to the purposes of a sanatorium.

The final chapter contains an account, with illustrations, of certain isolation hospitals erected prior to 1911, together with particulars of their cost, which are now rather out of date. A noticeable omission from this list of hospitals is the Cambridge Isolation Hospital, which includes buildings erected at successive periods, and which show in bricks and mortar the process of evolution that has been going on as regards the planning of these hospitals, beginning with the large wards and an entire absence of single-bed wards, and ending with the small wards with glazed partitions and facilities for treating two or more diseases in one building.

ASPECTS OF DEATH IN ART.

DR. PARKES WEBER'S *Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry*,[3] *Contributions towards an Anthology and an Iconography of the Subject*, is illustrated by reproductions of medals, engraved gems, ivories, and

[2] *Isolation Hospitals*. By H. Franklin Parsons, M.D.Lond., D.P.H.Camb. Second edition, revised and partly rewritten by R. Bruce Low, C.B., M.D.Edin., D.P.H.Camb. Cambridge Public Health Series, under the editorship of G. S. Graham-Smith, M.D., and J. E. Purvis, M.A. Cambridge: The University Press. 1922. (Demy 8vo, pp. 281; 55 figures. 25s. net.)

[3] *Aspects of Death and Correlated Aspects of Life in Art, Epigram, and Poetry*. By Frederick Parkes Weber, M.A., M.D., F.R.C.P., F.S.A. Fourth edition, revised and much enlarged. London: T. Fisher Unwin, Ltd. 1922. (Demy 8vo, pp. xliv + 851; 146 figures. 30s. net.)

antique pottery, and is dedicated to the late Sir William Osler, one of whose latest published writings was a review published in the *Annals of Medical History* in 1920 of the third edition of this encyclopaedic and scholarly work. In 1910 Dr. Parkes Weber brought out a book with a similar title which contained 160 pages and 50 figures in the text; in the present, the fourth, edition, which has really grown into a new book, there are 851 pages and 146 illustrations. Dr. Weber modestly deprecates the idea that his work contains all that has been said and could be said about the aspects of death, but though the truth of this must be admitted it would be extremely difficult to find any book nearly so complete, and it is remarkable that while so wonderfully full and detailed it is never tedious or dull. It is evidently a labour of love with the author to keep his text up to date and render it in every way worthy of his high reputation for erudition and thoroughness. As was pointed out in our review of the second edition (BRITISH MEDICAL JOURNAL, 1915, i, 725), this attractive anthology reminds the reader of the famous *Anatomy of Melancholy* by Democritus Junior (Robert Burton) in the profuseness and aptness of its quotations. It is divided into four parts: An introduction to the whole subject, commencing with the philosophical ideas of the ancients and ending with modern art in relation to death and a comparison of modern with mediaeval ideas. There are interesting accounts of "The Dance of Death," the *Danse Macabre*, and the *Ars moriendi*; the first of these, which probably had its origin in the thirteenth and fourteenth centuries as a morality play, contained dialogues between death and living characters typical of the various stations in life, and may have been intended by the ecclesiastical authorities to increase their worldly influence as well as to exert a religious effect. In the second and longest part of the volume the various possible aspects of death and the mental attitudes towards the idea of death are analysed and classified into a number of groups—such as the simple *memento mori* idea; death as the threshold of a future existence, in which reference is made to Samuel Butler and Maeterlinck's notion of a life before birth, with the conception of unborn souls awaiting their period of human life; survival after death in the minds of others, or posthumous fame; death as a friend, as a means of punishment, as the leveller of all mankind; for the sake of duty or honour; and from the standpoint of pessimism in regard to life. Part three contains a description of coins, medals, and medal-like tokens relating to death and to the various aspects of and attitudes towards death; it is profusely illustrated from ancient and modern sources, and brings in the satirical medals issued by the Germans in the great war. The concluding part is devoted to engraved gems, finger rings, jewels, ancient pottery, and small objects of art relating to death and to attitudes adopted towards death, and, like the rest of this wonderful storehouse of information, is admirably illustrated and interestingly written.

NOTES ON BOOKS.

DR. BUTLER'S book, *The Diagnostics of Internal Medicine*,[4] is a comprehensive but practical treatise, which has been carefully revised for its fourth edition. The third edition was reviewed at some length in this JOURNAL, February 26th, 1910, page 510. In the general construction of the book an attempt has been made to follow the evolution of the physician's thought from a consideration of symptoms to an exact and accurate diagnosis. Thus the first half of the book deals with the evidences of disease and describes approved methods of examination: the different organs of the body are taken in turn, and the diagnostic significance of each sign and symptom is discussed. The second part of the book is concerned with direct and differential diagnosis. The special features of the present edition are the chapters on renal function tests, blood chemistry, and the examination of the stomach and intestines. Recently studied diseases, such as epidemic encephalitis, diverticulitis, botulism, and war gas poisoning, have also received attention. The book is generously illustrated, lucidly written, and very efficiently indexed.

Professor ROUVIER'S *Traité Pratique d'Obstétrique Normale et de Puériculture Pré- et Post-natale*[5] is in its form the antithesis of the little book last mentioned. It is a massive quarto volume with not a single illustration. Based upon the lectures the author delivered during the war at Algiers, and prior to the war at Beyreuth, it is a very full and verbose description of normal obstetrics and the management of both mother and child in the puerperium and in the first year of infant life. Professor Rouvier has obviously read very widely, and through his pages are profusely scattered the names of those whom he has consulted, but as the source of their writings is not stated the value of these notes is very much diminished. We cannot conscientiously recommend this book to the student, still less to the nurse, unless they have abundance of time on their hands and take particular delight in reading French. It is unnecessarily long, and even regarded as an encyclopaedia for reference it is lacking, as we have said, in any proper bibliography. As a monument of painstaking labour on the part of the author it is most laudable.

Under the title of *L'Avenir de la Médecine*[6] Dr. F. FRANÇON of Aix-les-Bains has translated Sir JAMES MACKENZIE'S book *The Future of Medicine*, which was reviewed at length in our columns on August 16th, 1919 (p. 204). The views expressed by Sir James Mackenzie in this work involve an indictment of existing medical methods and education. The very independence of his convictions, however, and the opposition and discussion which they aroused in this country are all the more reason why the book should be translated into foreign languages. Sir James Mackenzie's work on cardiology is known in France as well as it is in this country, and by this translation his reputation as an independent thinker in the wider realms of medicine cannot but be enhanced abroad. Dr. Françon has done his work well; his translation reads fluently in French and yet it is faithful to the original, for the real Mackenzie tang has not been lost.

We have received the first number of a new French monthly publication, entitled *Clinique et Laboratoire*, described as an international review of the medical and pharmacological sciences. The first number contains papers by Dr. Nobécourt on the bronchi changes in typhoid fever, on the prophylaxis of influenza by Dr. Sézany, and on the serum treatment of pneumonia by Dr. Alibert. Abstracts from current literature are devoted to diseases of the digestive, circulatory, and respiratory systems, tuberculosis, syphilis, endocrine glands, and biology.

The *Transactions of the Second International Conference on Tuberculosis*,[7] held under the auspices of the British National Association for the Prevention of Tuberculosis in London, in July, 1921, have been published in a volume of 264 pages. A report of the proceedings of the conference was published in our issues of July 30th and August 6th, 1921.

[4] *The Diagnostics of Internal Medicine*. By G. R. Butler, M.D., Sc.D., LL.D. Fourth revised edition. New York and London: D. Appleton and Co. 1922. (Med. 8vo, pp. xxxvi + 1380: 4 coloured plates, 321 figures and charts. 45s. net.)

[5] *Traité Pratique d'Obstétrique Normale et de Puériculture Pré- et Post-natale*. Par Jules-M. Rouvier, Professeur de Clinique Obstétricale à la Faculté de Médecine d'Alger. Paris: A. Maloine et Fils; Algiers: J. Carbonel. 1922. (Imp. 8vo, pp. x + 852.)

[6] *L'Avenir de la Médecine*. By Sir James Mackenzie. Translated by Dr. Françon. Paris: F. Alcan. 1922. (Demy 8vo, pp. 272; 28 figures. Fr. 12 net.)

[7] London: Adlard and Son and West Newman, Ltd. (15s.)

MOTOR NOTES FOR MEDICAL MEN.

BY H. MASSAC BUIST.

SCOTTISH SMALL CAR TRIAL RESULTS.

THE Royal Scottish Automobile Club has completed the checking of the calculations in connexion with the six days' 1,020 miles international Small Car Trials for strictly standard vehicles, June 5th to 10th inclusive, the facts being the first indisputable ones available to the buying public in comparative fashion. Applications should be made to Mr. Robert J. Smith, Secretary, 163, West George Street, Glasgow, for a copy of the very interesting detailed report. In this connexion it must be understood that the route was much more severe, especially in regard to gradients climbed, than the average district covered by a medical man. But the weather was good throughout the test, otherwise some of the vehicles would have lost marks through becoming stuck in the more slippery surfaces of the steepest, worst foundationed hairpin and other abrupt turns. The fuel consumption figures are also notable, though, of course, the final award under this head did not go to the car making the best showing in the timed hill climbs and other speed tests. Therefore attention should be directed to the fuel consumption of those vehicles which did well under those heads. They will be found to be, proportionately, no less excellent. Another interesting point is that the Talbot-Darracq standard products here represented are no less successful in competition with other standard machines than the special vehicles of the make which have carried all before them in their categories in track and road tests at home and abroad, including the French Voiturette Grand Prix and the "Fifteen Hundred Trophy" in the Isle of Man last week, thereby giving a

complete and sufficient answer to criticism. As for the air-cooled car, the Scottish Trial shows that, under all heads, it scored in the cheapest category only. No gold medal was awarded for a class performance unless the given vehicle scored at least 90 per cent. of the maximum marks attainable alike for reliability and for hill climbing. The gold medals have accordingly been awarded as follows:

Class A vehicles, the complete selling price of which does not exceed £220:
To A-19, 9 h.-p. Stoneleigh, entered by Stoneleigh Motors, Ltd., Coventry, and driven by Mr. E. J. Herbert, which gained 926.255 marks.

Class C vehicles, the complete selling price of which exceeds £325, but does not exceed £420:
To C-8, 8 h.-p. Talbot, entered by Clement-Talbot, Ltd., Ladbroke Grove, London, and driven by Mr. H. G. Day, which gained 945.4 marks.

Class D vehicles, the complete selling price of which exceeds £420, but does not exceed £500:
To D-23, 11.9 h.-p. Star, entered by the Star Engineering Company, Ltd., Wolverhampton, and driven by Mr. R. Liste, which gained 983.05 marks.

Class E vehicles, the complete selling price of which exceeds £500:
To E-31, 11 h.-p. Riley, entered by Maxlee Motor Company, Edinburgh, and driven by Mr. Herbert Anderson, which gained 987.45 marks.

Silver medals, under the conditions, fall to be awarded to each car making full marks for non-stop and reliability. Silver medals have consequently been gained as follows:

Class C: By C-25, 10.5 h.-p. Galloway, entered by Galloway Motors, Ltd., Tongland, Kirkcudbright, and driven by Mr. V. Leverett.
By C-41, 10 h.-p. G.N., entered by G.N. Motors, Ltd., Wandsworth, London, and driven by Mr. L. A. Cushman.

Class D: By D-26, 10.5 h.-p. Galloway, entered by Galloway Motors, Ltd., Tongland, Kirkcudbright, and driven by Mr. W. Barver.

Class E: By E-13, 12 h.-p. Talbot-Darracq, entered by Darracq Motor Engineering Company, Ltd., and driven by Mr. G. Griffiths.
By E-31, 11 h.-p. Riley, entered by Maxlee Motor Company, Edinburgh, and driven by Mr. Herbert Anderson.

All five vehicles gained the maximum number of marks—namely, 750—for non-stop and reliability.

In respect of meritorious performances, the Trial Committee have awarded a merit gold medal to B-14, 7 h.-p. Wolseley, entered by Wolseley Motors, Ltd., Birmingham, and driven by Mr. L. A. Illiston; and have awarded merit silver medals to E-12, 12 h.-p. Talbot-Darracq, entered by Darracq Motor Engineering Company, Ltd., Acton, London, and driven by Mr. M. L. Livings; to B-5, 11 h.-p. Lagonda, entered by Lagonda, Ltd., 195, Hammersmith Road, London, and driven by Captain W. H. Oates; and to C-7, 10 h.-p. Swift, entered by Charles H. Jones, 108, Lothian Road, Edinburgh, and driven by Mr. Charles H. Jones and Mr. A. Alexander.

A special award for the most meritorious team performance has been made to the Darracq Motor Engineering Company, Ltd., Acton, London, in respect of the performances of two 12 h.-p. Talbot-Darracqs, driven by Mr. M. L. Livings and Mr. G. Griffiths respectively.

The Scottish Cup, for the vehicle showing the lowest fuel consumption per ton-mile over the whole trial, has been gained by C-47, 11.4 h.-p. Citroën, entered by Gaston, Ltd., Acton Vale, London, and driven by Mr. R. A. Richards, with a consumption of 0.04232 gallon per ton-mile, equal to 41.112 ton-miles per gallon of fuel.

MEDICAL AND SURGICAL APPLIANCES.

Twin Tonsil-bed Compressor.

MR. G. GUSHUE-TAYLOR, M.B., B.S., F.R.C.S.Eng. (Girls' Village Home, Barkingside, Essex), writes: After removal of the tonsils most surgeons, before looking for the individual vessels, will apply pressure by means of sponge-holding forceps, and most commonly will use two pairs of forceps crossed, exerting pressure on the tonsil-bed. This pressure kept up for a few minutes usually suffices to stop bleeding. I have recently devised an instrument which mechanically exerts the pressure of the operator's hands. The instrument, a "twin tonsil-bed compressor," is made of two sponge-holding forceps bent at an angle a short distance from the tip, so that when jointed together, approximation of the handles causes separation of the blades, which, holding gauze swabs or sponges, press on the tonsil-bed. When applied, the handles are locked by a simple device of a screw and nut fixed to one handle inserted into a slot on the other. The length of this bolt screw allows of regulation of the pressure exerted on the bleeding area. The compressor is simply made, easily applied and removed, light in weight, remains in position when applied, and can be used for bleeding after the patient has returned to bed. While the idea was mine, Messrs. Mayer and Phelps have, in making the instrument, added some mechanical devices which increase its efficiency.

MEMORIAL TO SIR G. S. WOODHEAD.

WE have received for publication an appeal for subscriptions to a proposed memorial to Sir German Sims Woodhead, K.B.E., M.D., late Professor of Pathology in the University of Cambridge. It is proposed that the memorial shall take the form of a portrait relief in bronze, to be placed in the library of the Medical School at Cambridge, and that it shall correspond in design to those of Professor Woodhead's predecessors in the Chair of Pathology, the late Professors Roy and Kanthack. The signatories to the appeal, whose names are given below, write as follows:

The proposed Memorial would consist of a slightly over life-sized portrait bust of bronze in low relief (the tablet 2 ft. 6 in. by 2 ft.) bearing the inscription, "Sir German Sims Woodhead, K.B.E., M.D., Professor of Pathology, Cambridge, 1899-1921." It is suggested that, if sufficient funds are collected, a reduced copy of the Memorial in bronze (measuring 9 in. by 7 in.) shall be presented to Lady Woodhead.

We propose to put the execution of the Memorial Tablet into the hands of Mr. John Pinches, who will work mainly from a photograph (a copy of which is reproduced) selected as the most suitable for the purpose, and which represents Sir German as his friends knew him at his best, and before the heavy work and responsibilities which the war threw upon him had undermined his constitution.



The cost of the Memorial, including its erection in the Medical School, and that of the replica, is estimated at £125, allowing for contingencies. If the subscriptions exceed the amount required, we suggest that the surplus shall be applied to the purchase of books for the Medical School Library, to which, during his life, Sir German contributed so liberally.

It is thought probable that many persons would like to possess a reduced copy of the memorial plaque. If a sufficient number of persons intimate their wish to do so reductions will be made in two sizes.

The cost of these to subscribers would be: (1) Mechanical reduction, 9 in. by 7 in., bronze cast, £3 10s.; copper electrotype, £2 10s. (not including frames or mounts); (2) small bronze plaques struck from a steel die, 2½ in. by 2 in., £1 10s.

Subscriptions to the Memorial Tablet (not exceeding 1 guinea) may be sent to the treasurer, Dr. L. Cobbett, Medical School, Downing Street, Cambridge. The names of the subscribers will be printed and circulated when the list is closed.

We appeal with confidence to the many, whether colleagues, students, or laymen, whom Sir German befriended and helped in his characteristic self-sacrificing manner, to aid us in erecting this affectionate tribute to his memory.

(Signed) Rt. Hon. Sir T. CLIFFORD ALLBUTT, P.C., K.C.B., M.D., F.R.S., Regius Professor of Physic, Cambridge.
Sir HUMPHRY ROLLESTON, K.C.B., M.D., President of the Royal College of Physicians, London.
Sir HUGH K. ANDERSON, M.D., F.R.S., Chairman of the Special Board for Medicine, Master of Gonville and Caius College, Cambridge.
H. BOND, LL.D., Master of Trinity Hall, Cambridge.
Rev. W. B. SELBIE, D.D., Principal of Mansfield College, Oxford.
J. G. ADAMI, C.B.E., M.D., F.R.S., Vice-Chancellor of the University of Liverpool.
J. LORRAIN SMITH, M.D., F.R.S., Professor of Pathology, University of Edinburgh.
J. RITCHIE, M.D., F.R.C.P.Edin., Irvine Professor of Bacteriology, University of Edinburgh.
ROBERT MUIR, M.D., F.R.S., Professor of Pathology, University of Glasgow.
Rev. H. C. CARTER, M.A., Minister of Emmanuel Congregational Church, Cambridge.

Prof. G. H. F. NUTTALL, Sc.D., F.R.S., L. COBBETT, M.D., F.R.C.S., } *Hon. Secs.*

British Medical Journal.

SATURDAY, JULY 1st, 1922.

THE CAUSES AND PREVENTION OF FOETAL DEATH.

DURING the past few years a determined attempt has been made to discover and classify the causes of the death of the foetus, and the attempt is still going forward. The Ministry of Health has made known Dr. Eardley Holland's report on the factors which determined death in 300 foetuses of viable age obtained from London hospitals, a research which was mostly accomplished before 1917, when the author when to France in the R.A.M.C. Under the Medical Research Council a number of skilled workers have been engaged since the war in examining series of stillbirths occurring in some of the large towns of this country, including London, Edinburgh, Glasgow, Liverpool, and Cardiff; and in part their results have been published or are being prepared for publication—for example, those of Dr. F. J. Browne[1] in Edinburgh and of Dr. A. M. Kennedy in Glasgow, now Professor of Medicine at Cardiff. In America, also, work under Whitridge Williams and others has been going on. Finally, at the Annual Meeting of the British Medical Association in Glasgow there is to be a discussion on intrauterine death, in which many of those who have been engaged in these researches will take part, and from which it may be expected that conclusions regarding causation and treatment will be forthcoming. Meanwhile, from the results already made known some things may be learned.

Holland's work, reviewed on page 16, prepares the way for a clearer conception of the problems involved, and also contributes much to their elucidation. Foetal death, for instance, is defined as the cessation of the heart beat, and it is pointed out that this may happen during the ante-natal time, in the intra-natal period, or in the short post-natal time which elapses between the birth of the foetus and the beginning of pulmonary respiration. An extension of the significance ordinarily given to the term foetus is thus established, but the change works for clearness of thought—no small advantage in the study of the death of an organism which in the legal sense is not yet, strictly speaking, alive. Dr. Holland has also rendered good service by distinguishing between the primary causes of foetal death and the "consequent factors"—between placenta praevia, for instance, as the primary cause, and separation of the placenta leading to foetal anaerosis as a consequent factor. It may be frankly admitted that the inter-relationship between primary and consequent factors is as yet by no means fully understood, and that the whole subject of foetal death is, on the side of pathogenesis, a most intricate and baffling problem. Even when the primary cause is interference by the obstetrician during the act of labour the mode of its operation and the mechanism by which the result is brought about are often obscure. There is, for example, the extraordinarily interesting effect of pressure on the foetal head by forceps or by the walls of a contracted maternal pelvis. Holland opens up new avenues for thought when he suggests that the intracranial septa have the function of enabling the head and its contents to resist excessive stress during its passage through the mother's canals. Cranial stress may, however, be too great, and the septa (for example, the tentorium cerebelli) may give way, intracranial haemorrhage then follows, and death during birth or soon afterwards ensues.

Another new line of investigation which promises to throw light upon certain morbid conditions discovered at birth has been suggested and begun by F. J. Browne.[2] It has long been known that the eyes of the foetus may become infected with gonococci during birth, but Browne has shown that if the foetal membranes be ruptured for a number of hours in labour other microbes, such as the pneumococcus, may invade the organs of the infant and produce diseases, such as pneumonia, which are found in active progress at birth and which may cause death then. It is conceivable that it may turn out that a group of such intra-natal maladies may be revealed, all of them of profound importance in the causation of early post-natal deaths, and all of them, let it be noted, capable of being prevented. To name only one other result of the work of Holland and Browne, it has been discovered that syphilis is hardly so great a cause of stillbirth as had been assumed by the Royal Commission on Venereal Diseases. Both these observers find that among the causes of stillbirth syphilis accounts for something like 16 or 17 per cent. It has, however, to be remembered that miscarriages are not included, so that whilst syphilis may account for only a comparatively small number of stillbirths, it may be fatal in a larger degree when regard is had to the whole duration of ante-natal life.

The prevention of foetal death, far from being a hopeless task, is a most promising subject. Holland's statement that "ante-natal methods are the strategy, whilst intra-natal methods are the tactics, of obstetrics" is not simply a piece of brilliant phrasing: it is the setting forth of the sober and the attractive truth. An analysis of the causes of death in the 300 cases of foetal death investigated by Holland (and the same holds true of Browne's 200) shows that half of them were preventable. Ante-natal treatment of syphilis could prevent 16 per cent.; the ante-natal and intra-natal treatment of the toxaemia of pregnancy could prevent 6 of the 10 per cent. due to that cause: the ante-natal, but chiefly the intra-natal, treatment of the complications of labour could prevent 30 of the 51 per cent. caused by pelvic contraction and *ante-partum* haemorrhage; and 1 out of 2 per cent. due to chronic renal and other maternal diseases could in all probability be saved by ante-natal management. Of the 22 per cent. due to undeterminable causes, to foetal deformities, and to relative placental insufficiency and retroplacental clot, Holland does not allow that any part could be saved. The employment, therefore, of ante-natal supervision and treatment in pregnant patients, combined with a rational application of the information thus gained to intra-natal methods of management of birth, should reduce the percentage of stillbirths by about a half. This is a very remarkable forecast, and if even a part of the saving is attained, thousands of young lives will be in the way of being saved. In the order of their hopefulness attempts to deal with the complications of pregnancy, with syphilis, and with the toxaemias of pregnancy, seem to invite immediate action. The first thing to be done is to correlate the information now being obtained through the ante-natal work with the conduct of the labours following upon such pre-natal supervision.

THE PLIGHT OF THE RUSSIAN MEDICAL PROFESSION.

"THEREFORE shall her plagues come in one day, death, and mourning, and famine." Those of our readers who read the report of its Proceedings printed in last week's SUPPLEMENT will be aware that the evidence brought before it at its last meeting satisfied the Council of the

[1] BRITISH MEDICAL JOURNAL, July 30th, 1921, p. 140.

[2] BRITISH MEDICAL JOURNAL, March 25th, 1922, p. 469.

British Medical Association that the reports to the effect that medical men and their families are starving in various parts of Russia are true. Our paragraph on this subject stated that the Council had very carefully considered an appeal from the Russian Pirogoff Medical Society for help for the Russian medical profession in its terrible plight. This pathetic appeal had been forwarded to the Association by the Russian Committee for Famine Relief, and was reinforced by communications from Russian medical men in this country, among them Professor Korenchevsky of the Lister Institute, who is chairman of the Russian Academic Group in Great Britain. This was the first attempt to get the medical profession in other countries to come to the help of the profession in Russia. The Russian medical societies have done their best to help their own colleagues; but they have now come to the end of their resources. The conditions by all accounts are appalling.

In turning a sympathetic ear to an appeal so tragic the Council has, we feel sure, interpreted the feeling of the Association and the British medical profession at large. The appeal is for the only form of aid which in the circumstances can be effective—namely, the sending of food parcels through the American Relief Administration to individual doctors and to groups for distribution among their members in greatest need. The only question debated by the Council was the manner in which this appeal should be put forward; for all were agreed that this was a case for prompt action, and an appeal to which every medical practitioner in this country ought gladly to respond. It was unanimously resolved that a direct appeal should be addressed to every member to send a subscription of five shillings. It was felt that this limitation to a small sum would go far to secure an immediate and widespread response. Steps were at once taken to act upon this resolution, and an urgent appeal, signed by the four officers of the Association, is now being issued to members. The text of the appeal is printed at p. 26.

We have been asked to bring the matter forward prominently in the JOURNAL, and we gladly do so. This is no occasion for delay in well-doing. The Medical Secretary has in his hands a list of Russian doctors, and families of deceased doctors, to whom food parcels must be sent at once if they are to be saved from death by starvation. The parcels, as we have said, will be forwarded through the American Relief Administration in London, which makes itself responsible for their delivery to the persons addressed, and obtains a receipt from them showing that the parcels have reached the persons for whom they are intended. Nine subscriptions of five shillings each will more than cover the cost of one parcel, including all charges. Contributions should be addressed to the Financial Secretary of the Association, 429, Strand, W.C.2, who will send a receipt. It will not be possible to acknowledge all the names of subscribers in our columns, but the amount of money collected will be announced from time to time. We feel sure that as soon as this desperate need is known our readers will respond. In an emergency of this kind questions of politics and nationality are forgotten.

THE LAST HIGH CLIMB ON EVEREST.

THE Mount Everest Committee has received further news from the expedition, and a report from General C. G. Bruce embodying an account by Mr. Finch of the climb by Captain Bruce and himself, using oxygen, to 27,300 ft. on Mount Everest was published in the *Times* of June 24th. It is a narrative of splendid courage and resource in overcoming endless difficulties and dangers. It also illustrates, if possible even more clearly than the narrative of Mr. Mallory, on which we commented last week, the extraordinary powers of adaptation of the human organism. The most significant fact in this connexion was that a number of native porters, carrying weights up to over 30 lb., were able to climb to 25,500 ft. and repeat the climb next day. Not one of them came to any harm. It was said ten years ago by the members of the Pike's Peak expedition that there seems to be no physiological reason why an acclimatized person should not climb Mount Everest without oxygen; and the recent experiences bear out this inference. Messrs. Finch and Bruce were provided with oxygen apparatus, which they used in a modified form during their climb. The compressed oxygen was carried on their backs in very light steel cylinders of the type constructed for the Royal Air Force and Royal Army Medical Corps during the war. Although these cylinders had done splendid service, and without, so far as we know, any accident from bursting, they were condemned as insufficiently safe for ordinary purposes. A supply of fully charged cylinders was, however, obtained for the expedition from the Royal Air Force, and this made the use of oxygen possible. It was out of the question to use the ordinary extremely clumsy cylinders, which make the efficient use of oxygen so difficult for medical purposes. To judge from a photograph which has been published, the oxygen was intended to be added to the inspired air in a face-mask of a Royal Air Force pattern. This mask is also fitted with an "economizer" arrangement similar in principle to that used for medical purposes, and described in its first form by Dr. J. S. Haldane in the BRITISH MEDICAL JOURNAL of February 10th, 1917. By this arrangement the consumption of oxygen is reduced to half what would otherwise be needed. The airman's apparatus was, however, designed for the use of unacclimatized persons, and as soon as it was tested by Mr. Finch after he was acclimatized at 21,000 ft. the air supply through it was found to be quite insufficient. There was no alternative but to discard the face-piece and take the oxygen through a rubber tube straight into the mouth, though this reduced the efficiency of the oxygen to half. Even with the reduced efficiency the benefits of the oxygen were very noticeable, but they seem to have been completely counterbalanced by the weight of the oxygen cylinders carried. In the final climb from the camp at 25,500 ft. the Gurkha N.C.O. Tejbir had 48 lb. to carry, while Finch and Bruce had 36 lb. At 26,000 ft. Tejbir broke down in spite of the oxygen. Finch and Bruce took his spare cylinders and pushed on with a weight of 48 lb. each. It was a "cruel imposition"; but they nevertheless got 1,300 ft. higher, in spite of the weight and insufficient oxygen supply. At this point the glass tube used in connecting up Bruce's oxygen tube broke without their noticing it at first, and Bruce could no longer cope with the weight. The tube was soon mended, but they very wisely went no farther. When they got down to the camp at 21,000 ft. they were absolutely exhausted, and all, we gather, more or less frostbitten. It is unfortunate that the present expedition was not provided with the means of investigating in any detail the very interesting physiological adaptations at high altitudes. In the expedition last year Dr. Kellas had everything needed for carrying out a number of observations, but owing to the calamity of his death—which occurred while, owing to illness, he was being carried by natives over a pass—the observations were never carried out. He had intended to ascertain how much the breathing is increased at very high altitudes; and from the data obtained it would have been possible to plan this year's attempt far more scientifically. Enough, however, was known from the data of the Pike's Peak expedition to show that it would be necessary to allow for an enormous increase of the breathing. Even on Pike's Peak the breathing was increased during climbing at a moderate rate to fourteen times the resting value at sea-level. The decision that oxygen should be used by the present expedition in climbing was reached very shortly before it left England, and for this reason, apparently, there was no time to consult physiologists about the apparatus. Owing to the monsoon no further attempts can be made this season; but the great achievements of the

present expedition have shown clearly that it is possible to reach the summit of Mount Everest by climbing. We hope, however, that in any future attempt due provision will be made for investigating the physiological problems of life at very great altitudes.

THE GROWTH OF THE GENERAL PRACTITIONER.

WE are indebted to Dr. Arnold Chaplin for the following note: "The study of the history of medicine has come into considerable prominence during the last two decades, and now this country may be said to possess a definite school of thought devoted to the subject. The time is not far distant when those interested in the history of medicine were regarded as amiable people engrossed in an innocent hobby, which, while it did no harm, was certainly of very little practical utility. Dr. John Freind, that learned and admirable physician, was the first in this country to write early in the eighteenth century, a history of medicine, and although we have travelled a long way since then, his work may still be consulted as an accurate guide to the history of medical endeavour during the period of which his book treats. After that the subject remained dormant in this country until John Aikin published his *Medical Biographies* in 1780, and from then onwards the history of medicine was confined to the biographical side. In this branch much valuable work was accomplished by Dr. Munk, who compiled the Roll of the Royal College of Physicians of London, Sir Norman Moore, and Dr. Payne. Lately, however, the history of medicine has been approached from a wider point of view, and now, largely owing to the work of Dr. Singer, the whole wide field of the history of medical and scientific ideas is being investigated with the prospect of a certain degree of finality being reached. But, although most of the various branches of medical history are receiving attention, an exception must be made in the case of the history of the origin of the various grades in the profession, and of the laws and regulations promulgated from time to time for the protection of those grades. Dr. N. G. Horner has recently supplied this omission. In an essay submitted as a thesis when taking the degree of M.D. at Cambridge and printed for private circulation, he has dealt with the important question of the rise and development of the general practitioner. The materials for this account are scanty and difficult to find. Indeed, with the exception of the work of John Mason Good, there seems to be no book dealing specifically with the subject, and even that work is deficient in many important respects. Dr. Horner has made a diligent search for the facts upon which he has founded his essay, and now we have for the first time a connected account of the development, rise, and progress of the grade of the general practitioner, together with a history of the laws and regulations made from time to time for its protection. This is admirable pioneer work; Dr. Horner will do well to continue his researches in the future. Although there is evidence that the grade of general practitioners was gradually being evolved, it was not until the passing of the 'Apothecaries Act' in 1815 that they became a definite body. This 'Charter' of the General Practitioners, as it may be termed, was the first of the medical Acts, and had far-reaching effects. The two Colleges had their charters and regulations, but they dealt with comparatively limited numbers. The Apothecaries Act, however, regulated the education and actions of by far the largest part of the profession, and although the Medical Act of 1858 took away from the Society of Apothecaries most of the powers conferred by the Act of 1815, the principle remained, and has been instrumental in welding together the finest body of general practitioners that any country can produce. The history of the development of any particular grade in the medical profession can only be known by a study of the legal enactments regarding the medical profession as a whole. This branch of the history of medicine is rarely studied, although much of the early history of medical laws and charters can be found in an admirable book written by Wilcock and published in 1830. The whole subject, however, is worthy of study, and it is to be hoped that Dr. Horner, who from his position is peculiarly qualified to perform the task, will direct his abilities to a consideration of that branch of the subject."

THE NATIONAL PHYSICAL LABORATORY.

THE annual report of the National Physical Laboratory for the year 1921[1] has reached us this week. It contains an account of the work done during the year and indications of what is to be done during this year. Perhaps the most impressive pages are those containing a list of the staff working in the several departments of the Laboratory under the general supervision of Sir J. E. Petavel, K.B.E., F.R.S., the Director, who is also the superintendent of the Physics department. The other departments are devoted to electricity, metrology, engineering, aerodynamics, metallurgy and metallurgical chemistry; in addition there is a special staff for the William Froude National Tank for experiments on the designing of ships and on their propulsion. The list of papers published by the Laboratory during 1920 and 1921, or communicated by members of the staff to scientific societies or technical journals, is also impressive, for it fills eight pages. In the Radiology Division of the physics department both radium and x rays are investigated; during the year the Division was installed in new premises at Elm Lodge, and, in spite of vibration troubles, the increase in space is found to add much to the efficiency of the working. An examination of radium contained in sealed metal tubes has rendered it possible to work out tables of correction for tubes full and partly full, and having different wall thicknesses and external diameters. The methods of measurement of the intensity of x rays are being improved, and an investigation has been made into the absorptive qualities of different samples of lead-glass, lead-rubber, and various compositions of heavy materials. The "lead values" (that is, the thickness of lead equivalent in absorbing power to one millimetre of the specimen) of different samples of lead-rubber varied between 0.1 mm. and 0.45 mm. Lead-glass is found to have on the average a rather smaller lead value, varying between 0.1 mm. and about 0.3 mm.; compositions of various kinds gave values up to about 0.4 mm. Lead-rubber tends to deteriorate with time, especially if the amount of opaque salt with which it is impregnated is out of proportion to the amount of rubber. For some purposes, therefore, the best material may not be that most heavily loaded with salts, but one which, while giving good density, has sufficient rubber in it to preserve it from unduly rapid deterioration. An X-ray and Radium Protection Committee, appointed to inquire into the degree of protection afforded by different x-ray protective appliances used in connexion with x-ray installations, has presented a preliminary report, and has made certain specific recommendations, which, it is stated, are being widely acted upon. The Laboratory has agreed to examine x-ray installations, and a number of hospitals have availed themselves of the facilities offered. The Director states that there is little doubt that the majority of the x-ray installations in this country are deficient from the point of view of protection, for stray radiations can generally be found in abundance throughout the x-ray room. Another matter to which the Division has given attention is the use of the barium platinocyanide pastille as an intensity measurer. It was found that the ionization method of measuring the intensity of a beam of x rays corroborated in every instance the results obtained with the pastille when the change of tint of the pastille was measured by means of a tintometer. Certain improvements in this instrument have already been made, but a few more refinements will be necessary before it can be put into use. The product of the ionization per minute—ascertained by the electroscope, and the time of dose—given by the pastille (that is the time taken to change the colour of the pastille from one fixed tint to another) proved to be a constant independent of the current

[1] London: H.M. Stationery Office, or through any bookseller. Price 6s. 6d.

through the tube, type of interrupter, frequency of interruption, interval between "make" and "break," and voltage of the primary current. These results have led to a simple method of testing the barium platinocyanide pastille after the standard dose has been established. Further investigations are being made, and it was hoped at the time the report was published that it would be possible very soon to undertake the testing of barium platinocyanide pastilles with unfiltered radiation.

STRUCTURE AND FUNCTION OF THE STOMACH.

AT the summer meeting of the Anatomical Society of Great Britain, held in Edinburgh at the close of last week, Mr. Geoffrey Jefferson, of Manchester, read a paper entitled "Some remarks on the anatomical structure of the stomach, with special reference to gastric function." After a brief description of the mucosa the speaker passed on to the musculature, of which he had made numerous dissections. There is no account of this musculature in the English language which can be correlated with the *x*-ray and physiological findings of stomach posture and digestion. Mr. Jefferson referred to the work of Forssell, whose findings agree closely with his own. Special attention was paid to the thickenings of the external longitudinal coat at the pylorus, the ligamenta pylori, with their strong adhesion to the circular fibres beneath. These form important intrinsic supports to this region and are plentifully interspersed with elastic tissue. The circular musculature was seen to consist of interwoven fibres and not of rings applied in contiguity. This arrangement was to be expected since the best evidence showed that the peristaltic wave was myogenic in origin and flowed from band to band. The connexions of the oblique muscle were next figured. This coat was seen to be a derivative of the circular muscle. The laying down of a third coat over the cardiac portion of the viscus required some explanation, for in the alimentary canal in general the processes of digestion are completed by two coats, an inner circular and an outer longitudinal. For what reason should the stomach have three, and why should the added third coat be laid down over a part of the stomach which is relatively inactive in peristalsis? Mr. Jefferson believes the answer to be that this coat is largely suspensory in action—that the gastric musculature has two functions: the first is that of rhythmic contraction (that is, peristaltic or phasic), the second is static or postural. These activities may be interchanged according to the needs of the case, or, indeed, may both be carried on at one and the same time. Thus peristalsis may become a feature of the fundus of the stomach in recumbency where food has to be passed along against the action of gravity.

SMALL-POX AND VACCINATION IN THE PHILIPPINES.

ONE or two recent questions in Parliament have called attention to this matter, which is dealt with in the Report of the Philippine Health Service for 1920. The Report for 1921 does not seem to have been yet issued. The population of the Philippines is about nine millions, including nearly 300,000 in the capital city of Manila, but not including some half-million in the southern islands, Mindanao and the Sulu archipelago. The statistics of small-pox prevalence and fatality are extraordinary.[*] In 1919 in the provinces there were recorded 60,612 cases with 43,294 deaths, or 71 per cent. What are called "relatively insignificant figures" for 1920 consisted of 10,448 cases with 4,386 deaths, or 42 per cent. In the southern islands, three provinces had in 1919 a total of 4,511 small-pox cases with 1,075 deaths, or 25 per cent., and in the following year 5,404 cases with 2,805 deaths, or 52 per cent. In the city of Manila small-pox had been practically absent for about nine years up to 1918, when there occurred 1,326 cases, but the number of deaths does not appear to be mentioned in the only report we have seen. The epidemic in Manila was, however, brought to an end within the year, there having been only 57 cases in 1919 and 5 in 1920. Next as to vaccination, small-pox appears to have given the usual stimulus to the practice. In the provinces, in two and a half years from the middle of 1918, about 4,300,000 vaccine units "had been distributed," with an "estimated positive result of 77 per cent." The negative results would therefore be 23 per cent. Elsewhere in the Report it is stated that in 1920 (included in the two and a half years) the total vaccinations were 3,222,460, of which 1,399,985 were positive, or 63.58 per cent., leaving a failure rate of no less than 36 per cent. These are remarkable figures, but they are not nearly so bad as for the southern islands, where only 10 to 15 per cent. of vaccinations had a positive result. The explanation given is that a trained staff was not available, and that there were difficulties in transporting the vaccine virus. But the effect of the high rate of failures on the mind of the vaccinators seems to have been disastrous. We are told that now "pulverized small-pox vaccine prepared by the Bureau of Science" has been adopted, and that "a complete success was obtained with the use of this kind of vaccine, according to the reports submitted by the district health officers, who estimated that 70 per cent. of the vaccinations gave positive results." Thus it turns out that a 30 per cent. failure is acclaimed "a complete success." The fact is that the whole subject of small-pox and vaccination in the Philippines requires thorough and competent investigation. In Parliament a member asked the Minister of Health whether he would not cause special inquiries to be made into the outbreak, but obviously the duty lies with the U.S.A. Federal Government, and we have no doubt that it will be adequately discharged. The small-pox fatality rates given in the Report are greater even than amongst the unvaccinated in the hospitals of the metropolis in the pandemic of 1870–73, the most virulent in Europe within living memory. The Philippine Islands are very well isolated by nature, but even so it is important to know whether the extraordinarily mild small-pox which the United States, Canada, South Africa, Australia, and Britain have experienced in recent years may now by any even remote possibility be displaced by a type of such severity as has not been seen in any white man's country since that which followed the Franco-Prussian war. Equally the United States will need to inquire into the whole practice of vaccination in the Philippines—the preparation, preservation, and distribution of vaccine material, the method of vaccinating, and the competence of the vaccinators. These, however, are primarily matters of domestic concern. The knowledge which Europe has gathered during the past hundred and twenty years of the effect of vaccination in controlling small-pox will in no degree be diminished in value by any extraordinary occurrences in the course of prophylaxis as practised in the Philippines.

[*] The gross figures were given by the Minister of Health to the House of Commons (BRITISH MEDICAL JOURNAL, April 8th, p. 579). The details in the report render it possible to analyse them a little further.

CO-OPERATIVE HYGIENE.

IN his presidential address[1] to the Southern Branch of the Society of Medical Officers of Health Surgeon Commander R. J. MacKeown, Naval Health Officer, Portsmouth, made a plea for closer co-operation among all health officers—civil, naval, military, and air force—with a view to safeguarding the health of the civil and service populations in time of peace, and to preserving a high standard of health among the forces mobilized in any national emergency. He pointed out that since the armistice the Admiralty had not been backward, and had appointed naval medical officers with special knowledge of hygiene as health officers to the great naval ports—Portsmouth, Chatham, Devonport, and Rosyth. These officers were on the staff of the respective commanders-in-chief, and their duties were to ensure the health of the naval population, to investigate outbreaks of disease, to assist the principal medical officers of the port, and to recommend measures for preventing the spread of disease in the commands. In Portsmouth an excellent understanding had been built up between the civil and military officers of

[1] *Public Health*, June, 1922, p. 245.

health in the command area and the naval health officer, and the chain of supervision and prevention was such that although six limited outbreaks of small-pox occurred in the command during 1919 and 1920 only one case occurred among the naval population; the disease was contracted in Portugal by a homeward-bound member of a drifter's crew. Surgeon Commander MacKeown thought it would be most advantageous if county councils would take up the question of a county sanitary survey, with a view to military exigencies. To apply this principle to small-pox he suggested that there should be set apart in each county a well-equipped and suitably placed hospital for the reception of cases and suspects. To such a hospital would be sent all cases which occurred in the county, whether civil, naval, military, or in ships arriving from overseas. Recent information should be available regarding such matters as camp sites, billets, water supplies in existence or projected, drainage and conservancy arrangements, accommodation for cases of infectious disease and contacts, and laboratories for bacteriological and other examinations. Notifications of communicable diseases should be reciprocal, and mutual assistance given in dealing promptly with such cases. He considered it most important that notifications should be prompt, and should apply not only locally, but to any place where service men might be proceeding or had dwelt while on leave. All disinfecting plant, irrespective of authority and situation, should be available whenever necessary. Measures for the prevention of such diseases as small-pox and venereal disease must not only be promptly taken but continuously maintained; by such co-operation as was suggested preventive medicine might become an active force in the production of individual fitness among those called upon to undertake the defence of their country at home, abroad, and at sea.

ASSESSMENT TO INCOME TAX OF FEES HANDED ON TO LOCAL AUTHORITIES.

ONE of the early leading cases on the income tax, quoted as the Mersey Docks and Harbour Board *v.* Lucas, laid down the general principle that if any particular income was liable to assessment as being within the description of chargeable income, its taxability was independent of its destination, subject to the specific exemption in favour of charitable bodies. A correspondent has drawn attention to the fact that a rigid insistence on this principle works unfairly when applied to a medical man engaged on a whole-time basis by a local authority. If in such cases he is to be assessed to income tax for the fees which he hands over to the authority as well as for the salary he receives from the authority, the result is that the total amount assessed is greater than the gross amount of his earnings—and that remains the case even if he hands over only the net amount of the fees after deduction of the income tax. To the extent to which the medical officer devotes his time to work which produces fees from other sources he ceases to do the work for the salary for which he is assessed—at least that is the assumption underlying the clause in his agreement which provides that such fees must be handed over—and we conceive that he should not be assessed for the earnings unless they are clearly additional and not substitutionary. It would seem that in the case of our correspondent sufficient weight has not been given to the fact that the agreement for service is the very instrument under which the fees have to be handed over. The only income assessable is that of the medical officer, and since it is a condition of his employment that other earnings have to be handed over, it seems to us that there is good ground for claiming that the payment of those sums to the authority should be regarded as expenses wholly, exclusively, and necessarily incurred in the performance of his duties; they were payments which he was bound to make in performance of the contract of service under which he receives the salary for which he is assessed. Whether that point was put to the Commissioners on appeal we do not know, but in any case it might be worth taking up if another practitioner should find himself in a similar unfortunate position.

THE CHALMERS LIBRARY.

THE collection of books from the library of the late Dr. Albert J. Chalmers, presented by his widow to the Royal Society of Medicine, contains about 1,800 volumes in all. It includes five volumes printed before the end of the fifteenth century, 64 printed in the sixteenth century, and 109 in the seventeenth century. The books he had collected fall into two parts—the early books already mentioned, and the remainder relating to the subject in which he was specially interested. Dr. Chalmers was at one time Director of the Wellcome Tropical Research Laboratories (Soudan) and was joint author with Dr. Castellani of the large *Manual of Tropical Medicine*. Among the older volumes are several fine herbals, including a fine copy of that issued by Fuchs in 1543 and by Brunfels in 1546. There is also Turner's *Greate Herball*, 1568, printed in Cologne, probably compiled by the author during his residence there. There is a complete collection of the writings of Culpeper and a fine copy of the book *De Contagione*, by Fracastorius (1546)—a rare volume. The gem of the collection is considered to be a copy of the first printed edition of Celsus, *De Re Medicina* (1478). The Chalmers Library at the Royal Society of Medicine was formally opened on June 23rd, when Mrs. Chalmers was warmly thanked for her munificent gift.

CONGRESS OF THE HISTORY OF MEDICINE.

THE Third International Congress of the History of Medicine will meet, as already announced, at the Royal Society of Medicine from July 17th to 22nd. It will be opened by Sir Alfred Mond, the Minister of Health, at 10.30 a.m. on the first day, when the delegates will be received, and Dr. Charles Singer, the President, will give an address. Academic dress will on this occasion be optional. The sessions will take place on the morning and afternoon of each day. The subjects chosen for general discussion are: The History of Anatomy, Veterinary as well as Human, and the History of Epidemiology from the Fourteenth Century. A large number of papers have been promised upon various topics of historical interest. The members will be received at the Royal College of Physicians on Monday afternoon; at the Mansion House by the Lord Mayor and Lady Mayoress on Tuesday afternoon; and at the Royal College of Surgeons by Sir Anthony Bowlby on Wednesday afternoon. Visits will also be made to the Barbers' Hall and to the Apothecaries' Hall, as well as to St. Bartholomew's Hospital. The congress will conclude with a banquet at the Hotel Cecil on Friday evening. Saturday will be devoted to an excursion to Windsor, and from thence by boat to Cookham, that the foreign visitors may see something of the beauty of the Thames in summer. The Wellcome Historical Museum will not only be open to members of the congress throughout the week, but Mr. Henry S. Wellcome issues an invitation to a conversazione on Wednesday evening. Those who desire to become members should communicate with Dr. J. D. Rolleston, the general secretary, 21, Alexandra Mansions, King's Road, Chelsea, S.W. The subscription is £1 12s. for members of the medical, dental, and veterinary professions, and 8s. for their wives, daughters, and sons as associates.

SOUTH AFRICAN MEDICAL CONGRESS.

THE eighteenth South African Medical Congress will be held, at the invitation of the Witwatersrand Branch of the British Medical Association, in Johannesburg, from September 18th to 23rd, with Dr. Charles Porter as president. The work of the Congress will be divided into five main sections, the names of which, with their secretaries, are as follows: Medicine, Dr. L. G. Irvine; Surgery, Dr. I. W. Brebner; Obstetrics and Gynaecology, Dr. R. W. B. Gibson; Public Health, Dr. A. Milne; Special Subjects, Dr. H. Gluckman; the address of all the secretaries is Johannesburg. The Congress will meet as a whole every morning to hear and discuss a paper on some subject of general interest. On the Monday of the Congress week the subject will be chronic rheumatism, introduced by Dr. Hugh Smith of Capetown;

on Tuesday a discussion on gastric ulcer will be opened by Dr. P. N. Vellacott of Bloemfontein; on Wednesday the subject of sterility will be introduced by Dr. E. R. Snijman of Kroonstad; on Thursday Dr. Park Ross of Durban will open a discussion on malaria; and on Friday the subject will be injuries and common diseases of the eye in general practice, introduced by Dr. Wood of Capetown. The sections will meet between 11 a.m. and 1 p.m., and each section will meet on two days; the early afternoons will be devoted to demonstrations. A programme of entertainments is being prepared. Every registered medical practitioner in South Africa is eligible for membership of the Congress, the subscription of visiting members being two guineas. Members wishing to read papers should communicate with the secretaries of the sections concerned at an early date. Further particulars may be obtained from the honorary general secretary of the Congress, Dr. Joseph J. Levin, 5, Anstey's Buildings, Kerk Street, Johannesburg.

A NEW MEDICAL QUARTERLY.

UNDER the title of *Medicine* there has just been published the first number of an analytical review of general medicine, neurology, and pediatrics, edited by Dr. David L. Edsall of Harvard and Dr. John Howland of Johns Hopkins Medical School. Such a publication as this gives a more adequate means than is possessed by journals addressed to a wider medical public to discuss at full length subjects that help to a better comprehension of disease processes. In the different fields of medical science there is no lack of periodical literature of authoritative standing, but the editors entertain the opinion that so far there has been no attempt at comprehensive reviews in the field of clinical medicine in the English language. It is the aim of their periodical to provide such reviews, not only of internal medicine but of subjects in the border zone between medicine and surgery. In the first number there are only two articles: Dr. G. Canby Robinson contributes an essay on the therapeutic use of digitalis; from the fact that it fills 137 large octavo pages an estimate may be formed of the fullness with which the subject is treated. Dr. Robinson discusses the potency of digitalis, its effects on animals, the newer methods of its clinical study, its toxic and therapeutic effects, its use in heart failure and infectious diseases, and its dosage and preparations. He winds up with a copious list of references filling seven pages. The other article is on the treatment of meningococcus meningitis; it is written by Dr. Kenneth D. Blackfan, of Johns Hopkins Hospital, who, in some 67 pages, treats of the meningococcus and its strains, the preparation of an antimeningococcus serum, the diagnosis of meningitis, prophylactic measures, and treatment. The new periodical is well printed, and is published by Messrs. Williams and Wilkins, of Baltimore, U.S.A.; it will be issued quarterly. It is intended to publish in 1922 one volume of approximately 500 pages, and the subscription price is, for foreign countries, five and a half dollars.

RADIOLOGICAL SECTION AT GLASGOW.

THE Section of Radiology and Electrology at the Ninetieth Annual Meeting of the British Medical Association at Glasgow will meet on Wednesday and Thursday, July 26th and 27th. The programme was published in last week's SUPPLEMENT (p. 251). Members who wish to take part in the discussion in this Section or to show skiagrams, etc., are asked to communicate at once with one or other of the honorary secretaries. The greatest care will be taken of all material, negatives, and prints, which should be sent to the local secretary (Dr. D. O. MacGregor, Langside Cottage, Glasgow) as early as possible, to allow of suitable arrangements being made for their exhibition.

"JOURNAL OF SCIENTIFIC INSTRUMENTS."

SOME six weeks ago we called attention to the project, fathered by the Institute of Physics after consultation with the Advisory Council for Scientific and Industrial Research and the Director of the National Physical Laboratory, for the foundation of the *Journal of Scientific Instruments*. We pointed out that there was a distinct need for such a journal; the designing of scientific instruments is both a science and a trade, and the demand for instruments of precision can only be met by the co-operation of the experimenter and the instrument maker. Both need trustworthy information as to what is being done by others. These needs the proposed journal would meet, and a preliminary number was issued to a large number of persons interested in scientific pursuits, who were invited to fill in a form undertaking to subscribe for the journal. The Institute of Physics asks us to invite all those who intend to subscribe to communicate with the Institute without delay, so that an estimate may be formed of the support which may be relied upon. Unless sufficient support be forthcoming it will be impossible to start the journal. The subscription price will be 30s. a year, post free. Communications should be addressed to the Secretary of the Institute of Physics, 10, Essex Street, Strand, W.C.2.

As already announced, the annual dinner of the Royal Society of Medicine will be held at the Hotel Victoria, Northumberland Avenue, on Thursday, July 6th, at 7.30 for 8 p.m. It will be the first annual dinner of the society since the war began. Among the guests who have already accepted the invitation of the President, Sir John Bland-Sutton, who will be in the chair, are the Minister of Health (Sir Alfred Mond), Lord Riddell, the Presidents of the Royal Colleges of Physicians and Surgeons of England, the Regius Professor of Medicine in the University of Oxford (Sir Archibald Garrod), and the presidents of the principal medical societies. Fellows are invited to bring guests. The charge is 12s. 6d. each, exclusive of wine, and the diners, if they send their names in advance to the Secretary of the Society, 1, Wimpole Street, W.1, can change at the hotel free of charge.

THE Semon lecture of the University of London will be delivered by Professor H. S. Birkett, Dean of the Faculty of Medicine, McGill University, Montreal, at the rooms of the Royal Society of Medicine, 1, Wimpole Street, W.1, on Wednesday, July 12th; the subject selected is "The development of transatlantic rhino-laryngology." Admission is free without ticket. The chair will be taken by the Vice-Chancellor of the University, Mr. H. J. Waring, M.S., at 5 p.m.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Incipient Insanity: Proposed Government Bill.

IT is understood that Sir Alfred Mond, as responsible for the Board of Control, has under consideration the draft of a bill to enable persons suffering from incipient mental disease to be treated in public or private mental hospitals without certification. As the result of some informal conferences, the Minister hopes that something like an agreed measure may be presented and in such short compass as to secure prompt passage. The proposal follows upon a pledge given by the inclusion of a clause to deal with this matter in the ill-fated Miscellaneous Bill which Dr. Addison submitted in September, 1920. All the various provisions of that bill had to be sacrificed, but the importance of this subject has grown rather than diminished in the interval. It remains to be seen exactly what is contemplated. Broadly, the idea is that while the rich have resources available for curative care and attention, the poor have not, and that to afford facilities should prove economical in the long run, while avoiding for many the stigma of insanity and so inviting a freer use of existing facilities for treatment. It is pointed out that 35 per cent. of the certified patients in asylums are discharged in the course of time as recovered, and this is held to encourage the institution of methods for dealing with such trouble at an early stage if the patient is willing to take advantage of the opportunity. If the project meets with support county councils might, under improved financial conditions, be willing to provide separate homes or annexes for such sufferers.

National Insurance Bill.

At the sitting of Grand Committee on the National Health Insurance Bill on June 27th, a compromise was reached on the financial matter upon which the Government was defeated at the previous sitting on June 22nd. Under the bill the Government proposed to transfer from the Treasury to the benefit funds of the approved societies the cost of the further provision made some time ago in respect of medical benefit. This was to have been done on the suggestion of the Advisory Council, as a better arrangement, until December 31st, 1923, than raising the amount of contributions. Mr. Cautley, however, carried at the sitting on June 22nd, by 20 votes to 14, an amendment to transfer the cost from the Treasury to the central fund. Sir Alfred Mond, at the sitting on June 27th, proposed that about £900,000, or a little less than one-third of the amount involved, should be drawn from the central fund and the rest from the benefit funds. The Committee stage of the bill was finished.

Territorial Army: Medical Appointments.

Lieut.-Colonel Fremantle asked, on June 21st, what compensation was proposed for those D.A.Ds.M.S. of the Territorial Army whose appointments, made for a period of four years, had been terminated at the expiration of two years or less. Sir R. Sanders replied that those Deputy Assistant Directors of Medical Service whose appointments, originally made for a period of four years, had been prematurely terminated from March 1st last, would be given as compensation a sum representing one-third of what they would have received in pay and allowances if allowed to complete the term of their appointment.

Milk and Dairies Amendment Bill.

The Earl of Onslow, on June 20th, introduced in the Upper House the Milk and Dairies Amendment Bill, which was read a first time. The second reading of the bill was moved by Lord Onslow on June 26th.

Lord Onslow said that the Government would have preferred to allow the Act of 1915 to come into force as was provided by the Act passed in 1917. The reason why its operation was to be postponed —it was not to be scrapped—was that at present the country could not afford the cost that would be involved. The Act of 1915 would place new duties on the county councils. An interdepartmental committee, which sat in 1920, estimated that the cost would be £700,000 a year. The Ministry of Health, which went into the matter separately, put the cost at not much less. In addition the amount of money necessary for the payment of compensation on account of tuberculosis was estimated at £150,000 a year. As time went on the expenditure would increase until the end of about three years, when it would begin to decline. Legislation was necessary, as otherwise the Act of 1915 would operate next September. Moreover, two orders of the Food Ministry as to the grading of milk and for the prevention of adulteration would expire in September. The present bill sought to do three things: (1) To prevent milk being sold which was contrary to the interests of public health; (2) to provide milk at a cheap rate, and plenty of it, from herds which were inspected and free from bacteriological contamination; and (3) to prevent the sale of milk from cows suffering from tuberculosis of the udder. Clause II would give power to local authorities to remove a retailer from the register if it appeared in the interest of public health; but he would have right of appeal to a court of summary judicature, and of further appeal to quarter session. Clause III would provide for three designations of milk—namely, "Certified," Grade A, and Pasteurized. The definitions would be made by orders after consultations with parties concerned. Clause IV would deal with colouring matter, and Clause V would prohibit the sale of milk from a cow suffering from tuberculosis of the udder. If the milk was sold knowingly there would be liability to a fine of £100 or imprisonment for six months. Clause VII would deal with the regulations to be made by the Ministry of Health in regard to the importation of milk. The bill would apply to Scotland.

Lord Strachie, on behalf of several agricultural bodies, opposed the measure on the ground that the Act of 1915 should be brought into operation; he submitted that the large expenditure talked of as required under that Act would not be necessary. Local authorities objected very much to "roving commissions." When prosecutions were contemplated from distant towns the first step by those intending to take action should be to communicate with the medical officers of the county areas.

Viscount Astor and the Marquess of Lincolnshire supported the bill, and it was read a second time, Lord Strachie not pressing his objection at this stage.

Local Government Officers' Superannuation.—The Local Government and Other Officers' Superannuation Bill (a private measure), as amended in Standing Committee, was considered in the Commons on June 23rd. On Clause 2 Sir A. Mond moved an amendment to provide that no superannuation scheme should be introduced by a local authority unless there were a majority of not less than two-thirds of the members of the council present and voting. On Clause 4, at the instance of Sir A. Mond, a paragraph was omitted which would have excluded from the proposed benefits under the bill an officer or servant of a local authority getting pension or superannuation right under a public general Act of Parliament—that is to say, for another office. Another amendment was moved by Sir A. Mond to define "service" in such a way as to enable officers to transfer from one local authority to another without loss of superannuation rights. An amendment by Sir F. Banbury to confine the operation of the bill to whole-time service was rejected. Sir A. Mond said the reason for including half-time officers was that there were people like medical officers of health, who in many cases were not whole-time officers, but who did come within superannuation schemes now, and it would be unfair to exclude them from benefits. On Clause 5—to permit combinations of local authorities—Sir A. Mond moved an amendment to allow combination where the areas of two or more councils were situated wholly or partly within one county. The clause would have made it necessary that the two areas should be entirely in one county.

Lunacy Visiting Committees Bill.—Sir Robert Newman, on June 21st, obtained leave to bring in a bill to enable local authorities to co-opt members of visiting committees, and to provide for the appointment of women as members of visiting committees. He explained that the object was to enable county councils and other local authorities thus to add a certain number of persons from outside their bodies to serve on their visiting committees. He referred to the precedent afforded by the powers given to county councils in regard to education committees and to limited powers of co-option possessed by boards of guardians. There were no fewer than 50 per cent. of the county councils which had no women members, and in less than 50 per cent. no woman had been appointed on the asylum visiting committees. Considering that the majority of the inmates were women, it seemed to him regrettable that in so many cases no woman should be serving on committees. There was a provision in the Act of 1913, enabling local authorities to appoint women, but this was conditional on their appointing their visiting committees to asylums as committees to deal with the care of the mentally defective. Councils often rather objected to reconstructing their committees to enable some woman to be appointed. The bill was backed by Mrs. Wintringham, Lieut.-Colonel Hurst, and Dr. Fremantle.

The Care of the Insane.—The Board of Control some little time since, acting with the concurrence of the Ministry of Health, appointed a committee which is now considering in what way the nursing service in mental hospitals can be improved. The Board has also appointed a committee to consider the dietary of these institutions and to report whether any improvements can be effected.

Sir George Newman's Salary.—Sir J. Leigh asked, on June 21st, on what grounds the salary of Sir George Newman, Chief Medical Officer to the Ministry of Education, had recently been advanced to £2,500 a year. Sir A. Mond said that under an arrangement made when the Ministry of Health was founded, and very much to the benefit of the public service, Sir George Newman performed the duties pertaining to the post of Chief Medical Officer of the Ministry of Health and Chief Medical Officer of the Board of Education. Before the posts were combined the salaries were £1,800 for the Principal Medical Officer of the Local Government Board and £1,500 for the Principal Medical Officer of the Board of Education, making a total of £3,300. It would be seen that under the present arrangement the cost to the Exchequer had been substantially reduced. The appointment was whole-time. The Medical Department of the Ministry of Health and the Board of Education were controlled by the Permanent Secretaries of those departments under the respective Ministers. Sir George Newman had the status of a Secretary in the Ministry of Health, and his salary was raised from £2,100 to £2,500 as part of the arrangements made for the whole service by the Treasury arising out of the report of the committee presided over by Mr. Asquith. Sir H. Craik asked whether this salary was not £500 in excess of the salary of the President of the Board of Education. Sir A. Mond said the comparison should be made with his own salary as an official subordinate to him. Colonel Ashley wished to know how the increase of £500 was justified in view of the statement that the country could not afford the present cost of education. Dr. Murray wondered whether it was observed that it was millionaires in the House who asked the questions about the salaries of men who had done great services for their country.

Insurance Practitioners and Urgent Cases.—Sir John Leigh inquired, on June 21st, whether it was the practice of panel doctors in certain parts of London to lock up their surgeries after a certain hour and depart to other districts, and thus to be inaccessible to patients requiring immediate attention. Sir A. Mond said his attention had been called to certain cases of this kind, and he was having further inquiries made. Such practice could not be regarded as complying with the terms of service of insurance practitioners.

Pensions Hospitals.—In answer to Sir J. Leigh, on June 22nd, Mr. Macpherson said that the number of Pensions Ministry Hospitals was fifty-two. Seventeen hospitals had been closed during the past twelve months and it was proposed shortly to close two others. The number of in-patients on June 3rd was approximately 10,000. On the same date in 1921 and 1920 the numbers were 11,700 and 7,650 respectively.

Medical Referees.—In a written reply to Sir H. Nield, on June 15th, Mr. Shortt stated that about eighteen months ago he considered the remuneration of medical referees appointed under the Workmen's Compensation Act (which Sir H. Nield stated stands at pre-war terms), but he concluded there were not sufficient grounds for asking the Treasury to make a revision. He appreciated the valuable and important services rendered, but having regard to all the circumstances, including the general financial situation, he did not think that an increased scale with its consequent addition to public expenditure could be justified.

Efficient Vaccination.—Dr. McDonald asked, on June 21st, if, in view of the increasing practice of many medical men to certify successful vaccination on the production of one vesicle with commercial lymph, the Minister of Health would authorize public vaccinators to use their discretion, in cases of objection to four marks, to insert a smaller number, but not fewer than two, in order that a larger number of children might become protected by the more effective and purer lymph supplied by the National Vaccine Establishment. Sir A. Mond regretted he could not do as suggested. It was essential that vaccination performed at the public expense should be maintained at a high level of efficiency. He was advised that the number, area, and character of the vaccination marks had an important bearing upon the degree and permanence of the protection afforded by vaccinations against small-pox.

Medical Uses of Cocaine.—Dr. McDonald asked, on June 21st, if the Minister of Health was aware that cocaine was not a drug which was essential to the medical and dental professions, inasmuch as many less toxic substitutes were manufactured. Sir James Baird (Under Secretary for the Home Office), replying, said that this department was in consultation with the Ministry of Health as to the need of cocaine in medical and dental practice, and he was not prepared at present to express any opinion on the suggestion that its importation should be entirely prohibited.

The Statistics of Cancer.—In reply to Mr. R. Young the Minister of Health said that he was fully aware of the importance of investigating the causes of cancer by all possible means, but there were insuperable difficulties in drawing accurate inferences from comparison of recorded cancer death rates in the different countries of the world. The question of international study of cancer prevalent was, however, receiving attention in the department, and was being brought before the international bodies concerned with public health questions.

The Feeding of Destitute Families.—Dr. Fremantle asked, on June 21st, if the Minister of Health was aware that the procedure whereby destitute families received relief in money and in kind from three separate authorities—namely, boards of guardians, education authorities, and borough or urban or rural district councils—commonly resulted in an uneconomic and defective dietary; and whether he proposed to take any steps to centralize the organizations concerned with a view to a better physiological use of the resources available. Sir A. Mond said he knew that in certain circumstances assistance might be given to destitute families from the three sources mentioned. Steps were being taken, as far as practicable, to prevent overlapping.

The Supply of Radium.—Sir E. Nicholl asked, on June 26th, whether, having regard to the uses of radium for medical purposes, the Minister of Health was making inquiries with the object of obtaining this hitherto scarce substance, and whether he knew that considerable quantities were to be found in England, notably in Cornwall, but largely undeveloped. Sir A. Mond said that the Medical Research Council had a provisional supply of radium at its disposal. An increasing demand was to be expected, but he was not in a position to recommend the development of its production in any particular area, as that obviously depended upon geological and commercial considerations.

Blind and Deaf Children.—Mr. Fisher, answering Mr. Stanton, on June 22nd, stated that notwithstanding the present financial difficulties, it will be possible to allow existing schools for the education of blind and deaf children to be used to the full extent of their accommodation.

Infanticide Bill.—This measure, originally called the Child Murder Bill, was read a third time in the House of Lords on June 27th.

Dogs Act Amendment Bill.—Colonel Burn, on June 26th, introduced a bill to amend the Dogs Act, 1906. It was backed by Mr. Joseph Green and Sir Frederick Banbury, and was read a first time.

Pension Appeal Resources.—On a suggestion by Major Kelley that specialists should be asked to make special inquiry as to the pre-war health of ex-service men deprived of pensions, Major Tryon, on June 20th, explained the existing resources of such a man for appeals. Every man dissatisfied with the assessment of his disablement had a right of appeal either to a medical appeal board or to an assessment appeal tribunal, and every man who was refused pension on the ground that his disability was not due to service had a right of appeal to an entitlement appeal tribunal. In the case of a medical appeal board a specialist sat on the board, and in the other cases the tribunal was empowered to consult a specialist when it considered that course necessary. The man's complete medical history, so far as obtainable, was always placed before the board or tribunal.

Blind Persons Act.—Sir A. Mond has stated that thirty-two local authorities have not submitted schemes under the Blind Persons Act, 1920. All schemes submitted had been approved or promised approval subject to modifications. Twenty-seven authorities had schemes under consideration, and he trusted that the remaining authorities, five in number, would reconsider their decision in the matter at an early date.

The Case of Ronald True.—Mr. Holmes, on June 19th, asked what course was pursued in the case of a man who, having been found guilty of murder, sentenced to death, reprieved on the ground of insanity, and ordered to be detained as a criminal lunatic, was subsequently certified as having recovered his sanity? Mr. Shortt replied that the Criminal Lunatics Act of 1884 provided that where a man was certified sane in the circumstances mentioned, the Home Secretary, if satisfied that it was proper to do so, might direct that he be remitted to prison to be dealt with according to the law.

THE PLIGHT OF RUSSIAN DOCTORS.

As recorded in last week's SUPPLEMENT the Council of the British Medical Association on June 14th considered a letter from the Russian Committee for Famine Relief, giving the substance of an appeal from the Pirogoff Medical Society for help for starving medical men and their families in Russia. During the course of discussion the Treasurer and other members of the Council urged that the quickest and most certain way of obtaining support would be by direct appeal from the head office to each member. It was unanimously resolved that an appeal should be issued to members on behalf of the fund, that the subscription asked for be 5s. a head, and that secretaries of Branches and Divisions be asked to give all assistance in their power. In accordance with this decision a letter is now being circulated to all members of the British Medical Association in Great Britain and Ireland. Needless to say, contributions from other members of the medical profession would be welcomed. Further reference to the appeal is made elsewhere in a leading article. The Association's letter is as follows:

AN URGENT APPEAL TO THE BRITISH PROFESSION.

British Medical Association,
429, Strand, London, W.C.2.

DEAR SIR OR MADAM,

The Council of the Association at its meeting on June 14th received a most pathetic and pressing appeal for help to the starving medical men and their families in various parts of Russia. The communications we have had with Russian medical men in this country and from the Russian Committee for Famine Relief, make it clear that the Russian medical societies have done their best to help their own colleagues so long as that was possible, but now they feel compelled to appeal to their brethren in other parts of the world. The conditions are truly appalling, as the Russian medical profession is to a great extent literally starving and losing a very large number of its members in the fight against epidemics of every kind.

The appeal is for the only form of assistance which under the circumstances can be effective—namely, food parcels sent to individual medical men, and to groups for distribution among members in greatest need. Lists have been given to us of doctors and families of deceased doctors to whom food parcels must be sent without delay if they are to be saved from actual starvation. The method of sending these food parcels is through the American Relief Administration, 67, Eaton Square, S.W.1, which makes itself responsible for the delivery of the parcel to the individuals addressed, and gets a receipt from them showing that the parcel has actually been received. The contents of each parcel have been decided upon, after much experience, by the American Relief Association. Each parcel costs £2 4s., inclusive of all charges.

The Council, on hearing these and other particulars, came unanimously to the conclusion that this was a case for prompt action and an appeal to which every medical man ought gladly to respond. The Council desires not only to send relief to our starving colleagues, but to show them that the response has been immediate and widespread, and for that purpose it has resolved to limit the subscription to 5s. and to ask every one of the members of the Association to subscribe that sum and to send in the enclosed addressed envelope a postal order or cheque *at once*, payable to Mr. L. Ferris-Scott, the Financial Secretary of the Association, who will send a receipt. Subscriptions were immediately received from each member of the Council present on June 14th.

It will not be possible to acknowledge all the names of subscribers in the BRITISH MEDICAL JOURNAL, but the amount of money collected each week will be notified there. The money received will be promptly used in the dispatch of food parcels to Russian doctors and their families through the American Relief Administration. It is most earnestly hoped that the response will be commensurate with the desperate need of those for whom this appeal is made.

Yours faithfully,

DAVID DRUMMOND,
President.

R. WALLACE HENRY,
Chairman of Representative Meetings.

ROBT. A. BOLAM,
Chairman of Council.

G. E. HASLIP,
Treasurer.

June, 1922.

EPSOM COLLEGE.

THE annual general meeting of the governors of Epsom College was held at 49, Bedford Square, London, on June 23rd, with Sir HENRY MORRIS, treasurer, in the chair. The names of successful candidates for foundation scholarships were announced as follows: Ian C. L. Watson, Robert C. Rees, John E. Stevenson, John C. Edwards, William J. Downer, and Frank J. Griffin. The successful candidates for pensionerships were Evelyn O. Cox, Catherine A. Kindon, and Louise B. Shells. The annual report states that the Rev. Walter J. Barton, who had held the office of headmaster of the school since 1914, had resigned, his resignation taking effect from the end of the Lent term, and that Mr. Arnold C. Powell, headmaster of Bedford Modern School, had been appointed in his place. Since the last annual meeting three boys had passed the first examination for medical degrees of the University of London, as well as one in chemistry and physics, and one in chemistry and biology; one boy had passed the first examination for medical degrees of the University of Cambridge.

In submitting the report of the council to the governors Sir HENRY MORRIS drew attention to the fact that owing to the small margin of profit on the income and expenditure account for the past year, and in view of the new scheme of superannuation allowances which had come into operation on January 1st last, the council had decided that the school fees of all boys entering the College after the summer term, 1922, should be raised as follows: Sons of medical men from 100 guineas to £120; lay boys from 120 guineas to £140; day boys £40 to £45. The applications received for the mortgage debenture bonds of £100 each at 5 per cent. interest on the security of the College land and buildings amounted to £24,000, so that there were only eight more debenture bonds to be allotted. He expressed the cordial thanks of the council to those friends who had responded to their application to help the College at a critical time. The council would, it was hoped, very shortly be able to put in hand the rebuilding of the nave of the chapel in harmony with the new chancel, as the cost of building had been materially reduced. He mentioned that the joint total of the War Memorial Fund and of the Chapel Building Fund available for this purpose was over £6,300.

Colonel J. Paul Bush, C.M.G., a member of the council and honorary local secretary for Bristol, was elected a vice-president of the College. At the close of the business a cordial vote of thanks was proposed by Mr. ERNEST PAGE, K.C., the chairman of the council, to Sir Henry Morris for the great service rendered by him to the College as treasurer; this was seconded by Sir WILLIAM CHURCH, and carried by acclamation.

England and Wales.

WATER SUPPLY IN A DRY SUMMER.

THE Ministry of Health issued last week to medical officers of health a memorandum on "conserving and supplementing existing supplies of water." Under the first head advice is given with regard to the prevention of waste, and it is suggested that water authorities should offer to replace, free of charge, defective washers to taps. It is extremely odd that this suggestion should have to be made, since it is the duty of the water authority to give an adequate supply, which obviously places upon the authority the duty of preventing waste. Suggestions with regard to restrictions of ordinary consumption are prefaced by the statement that an average domestic consumption of sixteen gallons a head a day is generally quite adequate in most towns under present conditions, whereas the consumption is in many places twice or three or more times this amount with no commensurate gain and much waste of pumping power, which means not only a risk of shortage in some seasons, but a constant waste of money. Various suggestions are made with regard to trade and compensation water. In the second part of the memorandum the water authorities are advised to consider the possibility of pooling their resources and are instructed when contemplating additional sources of supply to consult their medical officer of health with regard to water for domestic use. Finally the Ministry offers to help local and water authorities in carrying out the measures suggested. This offer was originally made in a circular letter dated March 29th, 1922; advice was then also given with regard to the measures which should this year be taken in consequence of the depletion of water supplies resulting from the prolonged drought of last year. Medical officers of health have also been supplied with copies of a circular letter issued last September on chlorination, and the methods of applying it are described in an appendix. All these documents are accompanied by a covering letter from Sir George Newman, chief medical officer to the Ministry, in which, among other things, the attention of county and district medical officers of health is called to the importance of public health questions arising out of shortage of water as it affects areas under their charge, including those which are essentially rural in character and do not possess piped water supplies. Where this has not been done already, inquiries, it is said, should be made as to the present condition of water supplies in any district in which the medical officer of health has reason to believe that material shortage of water exists or is likely to occur; he should advise his authority on the nature of the measures requisite for safeguarding the use of additional and unusual sources of supply, on the precautions which should be adopted if public services have to be intermitted, and on the public health considerations which should govern the selection of other special measures that may be proposed to prevent the waste of water.

MANCHESTER CHAIRS.

Mr. E. D. Telford, M.A., B.Ch.Cantab., F.R.C.S.Eng., has been appointed to the Chair of Systematic Surgery in the University of Manchester in succession to Professor J. W. Smith, who will vacate the chair in September. Mr. Telford is honorary surgeon to the Royal Infirmary and lecturer in surgery at the University. Mr. William W. C. Topley, M.A., M.D.Cantab., F.R.C.P.Lond., has been appointed professor of bacteriology in the University and director of the Public Health Laboratory. Dr. Topley at present holds the position of director of the Institute of Pathology and lecturer in bacteriology and pathology at Charing Cross Hospital, London, and was formerly demonstrator of morbid anatomy and assistant director of pathology at St. Thomas's Hospital. He was bacteriologist with the R.A.M.C. Mission that went to Serbia in 1915.

LIVERPOOL CHAIRS.

The Council of the University of Liverpool has nominated Professor T. R. Glynn to be emeritus professor of medicine, and Professor W. Thelwall Thomas to be emeritus professor of surgery. It has appointed Dr. John Hill Abram to be professor of medicine. He was one of the first students of University College, which originated in the Liverpool Royal Infirmary School of Medicine. Dr. Abram is senior physician to the Royal Infirmary and President of the Liverpool Medical Institution. During the war he was in charge of the military and naval beds at the Royal Infirmary and his medical services were in constant demand for the local temporary hospitals during that period. Professor W. Thelwall Thomas is succeeded by Mr. Robert Ernest Kelly, who was a Liverpool student; he graduated B.Sc. in the Victoria University of Manchester in 1899, and M.B., B.Ch. in the University of Liverpool in 1901. He took the M.D. degree in 1905 and became F.R.C.S.Eng. in the same year. He is honorary surgeon to the Liverpool Royal Infirmary. He served in the R.A.M.C. during the war, and in 1917–18 was consulting surgeon, with the rank of colonel, to the British Salonica Force. Jointly with Sir Crisp English he described his experiences with that force in our columns of March 16th, 1918. For his services during the war he received the C.B. in 1919.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.

Sir George Makins, G.C.M.G., consulting surgeon to the hospital, presented the prizes at St. Thomas's Hospital Medical School on June 22nd. The chairman (Sir Arthur Stanley, treasurer of the hospital) expressed regret at the absence of the Duke of Connaught, president of the hospital, which was due to the fact that he had gone to welcome home the Prince of Wales from his world tour. Sir Cuthbert Wallace, dean of the school, referred to the progress of the school. A very serious difficulty would, he said, arise if the financial position of voluntary hospitals caused them to be closed, and with them the medical schools. It was of the utmost importance that the voluntary hospital system should be kept alive. Unfortunately three wards in St. Thomas's had had to be closed for want of funds, and it was very urgent

that they should be reopened. After presenting the prizes Sir George Makins, in addressing the students, impressed upon them their responsibilities towards the school, and said that it was for them to justify the trust reposed in them.

Ireland.

MEDICAL BENEVOLENT FUND.

THE annual meeting of the Royal Medical Benevolent Fund Society of Ireland was held at the Royal College of Surgeons, Sir Wm. Wheeler presiding. During the past eighty years the Central Committee of the Royal Medical Benevolent Fund Society has worked for the benefit of members of the Irish medical profession in distress. The report of the society was read by Sir John Moore at the annual meeting. The committee points out that the society is a purely Irish one, and that its funds are allocated only to deserving cases arising in Ireland. It is, the committee says, a positive disgrace to the medical profession that three out of every four of their colleagues have no thought for their brethren in distress. Most of the donations and grants given from year to year were granted to widows and orphans of men who had never even contributed one penny. Last year the applicants numbered 72, the amount of the grants being £1,215 11s. The society's revenue for the year was £1,999 15s. 5d., as compared with £1,675 9s. 1d. the previous year, which was a record. The balance in the bank at the end of April was £1,200 12s. 2d. Dr. Ashe agreed as to the need for more support. On his motion, Dr. Croly seconding, the report was adopted. On the motion of Dr. Kirkpatrick, seconded by Mr. Blayney, a resolution was passed urging on members of the profession the importance of sending even a small annual contribution to the fund. The committee were empowered to give grants in deserving cases to orphans of medical practitioners. Sir James Craig, who took the second chair, pointed out that they knew nothing of politics or religion, and that the legacy of £2,000 from the late Mr. Musgrave, Belfast, was available for all Ireland.

Correspondence.

THE PROFESSION AND THE POLICE.

SIR,—I have lately ascertained that there is in this country an arrangement between the General Medical Council and the Home Office under which the "convictions of registered medical and dental practitioners are all reported to the Council and are duly recorded, including what may be regarded as trivial offences, such as those under the Motor-Car Acts, or those of which you speak" (a stray puppy). So that it is a fact that if during a doctor's round his chimney is fired and he is fined he is reported to the Council and his offence is "duly recorded"! This is not embroidery of mine. My little girl's puppy dog infringed a county by-law. I was summoned. The superintendent told the magistrates' clerk that if I were fined I must be reported to the Council. The clerk handed this information to the Bench, and they in consequence refused to convict and dismissed the case on payment of costs. (Oh, shade of W. S. Gilbert!)

I wish now to offer criticism, destructive and constructive, of this system; emphatically of the system, not of the Council itself. I speak as a practical magistrate of experience. I condemn absolutely the secrecy of this arrangement, savouring of the espionage of the dossier system. Medical men are entitled to know the rules of the game. No one to whom I have spoken is aware of this secret system. It should be made known to magistrates; their convictions are often modified by ulterior consequences—loss of pension, or employment, or some professional indignity, as in my case quoted above.

Then I am not satisfied that trivial offences *are* under the jurisdiction of the General Medical Council. Sec. 29, Medical Act, 1858, reads:

"If any medical practitioner shall be convicted in England or Ireland of any felony or misdemeanour or in Scotland of any crime or offence, or shall, after due inquiry, be judged by the General Council to have been guilty of infamous conduct in any professional respect, the General Council may, if they see fit, direct the Registrar to erase the name of such medical practitioner from the *Register*."

I submit that only actions which prima facie might subject the offender to the penalty of being struck off the *Register* are here included. That this was the intention of the framers of the Act in 1858 is evidenced by the fact that for nearly fifty years after only felonies were reported. Then in 1906 all indictable offences (tried by jury) were reported, and in 1912 all offences, however trifling. Is not this a good example of real bureaucratic government and departmental encroachment? I hold no brief for any black sheep in my profession, and if it be established that the General Medical Council *has* jurisdiction over the whole flock, from the blackest sheep to the lamb with a soupçon of grey in his fleece, then someone must diagnose the degree of blackness. I offer the following solution as one dealing adequately with real offenders, without subjecting anyone to indignity or injustice.

1. Convictions for indictable offences. These are provided for in the present system. They are reported (*a*) by prison governors in cases of commitment to prison; (*b*) by metropolitan police in London, where fine is imposed; (*c*) by chief constables in the country.

2. Convictions in courts of summary jurisdiction, before magistrates without jury. These cases are at present all reported to, and dealt with by, the Penal Cases Committee of the General Medical Council. In all English tribunals the evidence on both sides is heard; all details which aggravate or extenuate are before the judges of the case. This would necessitate a member of the Penal Cases Committee sitting with the magistrates in every case in which a doctor was tried, and retiring with them to consider the evidence. A conviction does not tell the whole tale; there are grades of guilt and grades of conviction. I assume that in the first instance only the fact of the conviction is now reported by the police. Any subsequent or additional information is supplied by them. *This is wrong.* Their information is at best *ex parte;* they are in no sense a judicial body; they are often the prosecutors. The chief constable takes no notes of evidence given; he does not enter the magistrates' room where evidence is sifted. He can only furnish the fact of a previous conviction (if any); other details are a matter of his memory. I give two practical cases within my own knowledge: A medical man when drunk struck his wife—conviction for assault. Another medical man struck his wife who was drunk—conviction for assault. It would require a super Sherlock Holmes to spot which was the cad and which the martyr from simple police reports of these two cases. Even in "drunks" there are degrees of guilt. If my son (now first year) were just qualified and celebrated the occasion "too well" and were fined, I should like him reprimanded by a magistrate and not classed in the records of the General Medical Council with a man drunk when in professional attendance. The solution I advocate is practical—namely, co-operation between the Council and the magistrates. The men appointed by the Crown to administer justice on oath are the only ones qualified in their judicial capacity to assess for the Council the gravity of their convictions. They would spare the doctor who struck his wife under the great provocation of her drunken habits the extra penalty—rather cruel—of being reported to the Council. It is, to my mind, unthinkable that the Council should fear lest magistrates would shield real culprits. A word from the Home Office would secure that all serious medical offenders would be duly reported to the General Medical Council by the convicting Bench through their justices' clerk. This arrangement would scrap for ever the reporting and recording of trivial offences—a consummation devoutly to be wished, in my opinion.

I trust that the Council will regard my criticism as written without malice in the best interests of my profession.—I am, etc.,

Stockport, June 26th. J. M. BRENNAN.

INFLUENZA.

SIR,—Controversy with reviewers is not to be pursued, but since in your columns (June 24th, p. 999) a defender of the Ministry of Health's Report on Influenza charges me with (1) definite error, (2) grave misunderstanding, (3) inaccuracy and (I think) misrepresentation, I trust that you will allow me, in fairness to my collaborators, some opportunity of rebuttal.

1. It is true that in two footnotes to the Report *bibliographical* reference is made to papers by Dr. Hamer and by myself; but the fact remains that in the Report there is nothing to indicate what are the general and special ideas

put forward by us in respect of the theory of epidemic constitutions, and nothing to indicate to the reader that these ideas are under critical discussion in the Report. I do not see my "definite error," therefore.

2. It is suggested that I have gravely misunderstood certain passages of the Report. The footnote on page 17, the sentence, "But little in written history can be brought forward as foreboding an impending change in the years immediately before 1890," and a perusal of private letters, now before me, written by the author of the passages I have criticized, show that there has been no misunderstanding whatsoever. The thesis writ large on page 17 is that the pandemic of 1889 and later years was heralded by no "prodroma" of an epidemiological nature; and this is the thesis I have refuted. If I am wrong, the footnote on page 17 is irrelevant.

3. I am told that another instance of my inaccuracy is my characterization of certain observations in the Report as an official theory. The observations thus alluded to are, in the Report, thus prefaced:

> "*Our* general theory of the epidemiology of influenza may now be enunciated";

and are thus dismissed:

> "Such is the general theory of epidemiology which *we are led to adopt as a working hypothesis*."

When an official writer, in an official report, uses the royal and editorial style, enunciates a theory, and says that it is adopted as a working hypothesis, then that theory becomes "official," whatever disclaimer may be elsewhere made in respect of intention and exposition. It is an abuse of criticism to charge an essayist, who refers to such a theory as "official," with inaccuracy. When asked some time ago to review the Ministry of Health's Report in your columns I refused to do so on the ground that my criticisms would appear over my own name. They have done so, and I will gladly modify any expression which any person aggrieved may show to be unjustified. But there would be no profit in continuing discussion with an anonymous reviewer who, with so little justice, uses the "prave 'orts"—definite error, grave misunderstanding, and misrepresentation.—I am, etc.,

F. G. CROOKSHANK.

London, June 23rd.

SERUM BY THE MOUTH.

SIR,—In the review of *Hormone Therapy by Sera, Vaccines, and Drugs*, by Dr. D. Montgomerie Paton of Melbourne, you say his experience "with the oral administration of antidiphtherial serum in various diseases" goes back for "twenty-three years." I venture to think that mine goes back for nearly thirty years, to 1892, and I have frequently spoken (as at the Edinburgh meeting many years ago) and written frequently on the subject. Perhaps the following conclusions may be of interest:

The oral administration of serums and vaccines (such as antiasthmatic) is better than the hypodermic. There is much less chance of anaphylaxis, and a small precautionary dose is much more readily given.

Absorption is readily effected. There is no pain, no puncturing of a vein, and no abscess, and one very striking benefit is the absence or modification of skin rashes.

I commenced giving serums by the mouth in 1892 from finding out the benefit of thyroid feeding, and my M.D. thesis was based on myxoedema treated in this way; and at the British Medical Association meeting in 1893 in Newcastle I showed a case treated with benefit by cooked thyroids, thus proving that the active principle is not destroyed by heat, and I am confident that the active principles of serums are not destroyed by digestion.

I regard antidiphtheria serum as a specific in raising body resistance, not only in diphtheria, but in other severe diseases as well—notably in pneumonia and influenza. I think 5,000 units of this serum is more powerful in this way than 20,000 units of any other variety, such as antistreptococcal. Why I do not know, but it cannot be the horse serum *per se*.

Other advantages are that it can be dispensed with a little aqua chloroformi as a draught, and a busy practitioner has not to return with, and inject, the serum.

Tuberculin is, I believe, altered or digested, and must be injected; but all other serums, and even vaccines, except, perhaps, that against small-pox, can, I think, be best administered orally.—I am, etc.,

T. M. ALLISON, M.D.,
Honorary Physician to the Wingrove Hospital, Newcastle-upon-Tyne.

June 19th.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—Mr. T. Davies, M.P. for Cirencester, a well-known worker in the cause of education in Gloucestershire, recently made a second attempt to call public attention to the urgent necessity of taking effective steps to deal with the increase of mentally defective persons. As his speech in the House of Commons was very scantily reported in the lay press I wish to draw the attention of the profession to it.

He called attention to the case of Martin Kallikak, who had an illegitimate son by a mentally defective girl, in the American revolutionary war. In 1912 there were known to be 480 direct descendants of this union; 36 were illegitimate, 33 were sexually immoral, 24 were confirmed alcoholics, and 8 kept places of ill fame. The explanation of so much immorality is that of the 480 descendants 143 were known to be feeble-minded, and many of the others were of questionable mentality. He also quoted the case of the Nam family. Briefly, of 784 descendants 658 were either alcoholics, licentious, or became prisoners. It was estimated that up to date these cases have cost the State one and a quarter million dollars. While fully realizing it is a strong measure to suggest, he pointed out that sterilization of both sexes is carried out with great benefit in fifteen States in America. In the county of Gloucester they have refused to take charge of mental defectives, though they have been told it is their duty under the Act, on account of the enormous expense. This means the defectives are living at home. He asked that a committee should be appointed to consider the question in view of the fact that these people have large families and increase rapidly.

I have been struck by the suffering of mental defectives with a criminal tendency. One man I knew, whose father was ultimately certified as insane, spent nearly twenty years in gaol. For many years he was a source of danger and contamination to the community. He finally induced another man, who had never committed crime before, to join in a robbery, which ended in violence and narrowly escaped being a murder. He was then sent to a criminal lunatic asylum.

Sterilization may inflict hardship on certain individuals, but such cases as this need to be put on the other side of the scales when the matter is being weighed. It is obvious that sterilization would only be one of the measures required, but it would be interesting and valuable to hear the views of those who have had experience of sterilization as to its effects on the health of individuals, as this is a matter of great importance and one on which the public would need to be satisfied before any such measure could pass into law.—I am, etc.,

A. E. J. LISTER, M.B., B.S.Lond., F.R.C.S.,
Lieutenant-Colonel I.M.S. (retd.).

London, W., June 22nd.

THE INTERSTITIAL GLAND AND SEX PROBLEMS.

SIR,—Lecturers and teachers sometimes would have us accept as theory what never was other than assumption or surmise.

Did all that Rumley Dawson wrote so thoughtfully upon "Causation of sex" ever carry us beyond hypothesis? Is there any demonstration of fact of a genetic male (right) and female (left) ovary? One had thought this notion had been relegated to the lumber room of interesting but exploded myths! An unmarried patient of mine, suffering for years severely with dysmenorrhoea, developed appendicitis, for which we operated, removing an affected appendix and also the right ovary studded with small cysts. Recovery uneventful, and a complete freedom from symptoms. After a period of eighteen months marriage was followed by the birth of a vigorous male child.

Did a shed right ovarian ovum wait in patience all those months for fertilization?—I am, etc.,

FREDERIC RAWLINGS.

Manchester, June 19th.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Sir James Mackenzie's recent articles on the nature and significance of heart symptoms must have been read with pleasure and profit by most of the practising physicians in the British Empire, and it may be said that those who have neglected to make themselves acquainted with the results of his epoch-making researches are hopelessly behind the times. We have every reason to be proud of another felt w

countryman, who takes rank with Harvey in the elucidation of circulatory phenomena.

It is therefore with some diffidence, and with all due deference, that I venture to express my regret that in his article of April 15th Sir James Mackenzie perpetuates an error in dynamical terminology which has been universal among English writers on the heart, and among teachers, ever since my student days. I refer to his use of the terms "reserve *force*" and "rest *force*," where "*power*," not "*force*," is what is meant. A motor car may be using ten horse-power when travelling at a moderate pace upon the level, and it may have other ten in reserve for high speeds and for hill climbing. No engineer and no dynamical expert would consider it correct to call the power of the car a force. It is true that the force or pressure of the petrol explosions is a factor in determining the power, but it is by no means the only one. Similarly the force of the muscular contractions of the heart is not the only factor in the determination of its power to do useful work for the circulation. No work is done by a force, however great or however long it may be exerted, unless something be moved by it. The force of gravitation between the sun and the earth, if the relativists will permit us to use the term, does no work so long as it does not increase the earth's mean velocity. A forceful contraction of the heart muscle does no work for the circulation if it drives half the content of the heart into the veins and the other half into the arteries; the blood as a whole is not moved.

The terms "energy," "power," and "force" in their metaphorical senses are much abused by literary men, being, in fact, treated as if they were synonyms.

If Sir James Mackenzie would substitute "power" for "force" in the terms referred to above he would in one respect put himself upon a higher plane than Euclid, being *ab omni naevo vindicatus*.—I am, etc.,

P. D. STRACHAN.

Screwe, Bechuanaland Protectorate,
South Africa, May 22nd.

THE CASE OF MR. F. W. AXHAM.

WE published in the JOURNAL of June 10th a letter from Dr. C. O. Hawthorne suggesting that attention should be directed to the position of Mr. F. W. Axham, whose name was removed some years ago from the *Medical Register* because of his active association with the work of Mr. H. A. Barker, an unregistered practitioner. On June 17th another correspondent, Dr. J. S. Manson, indicated a wish to know the names of the leading members of the medical profession to whom, it was said, the knighthood lately conferred on Mr. Barker owed, in part, its origin. Dr. Hawthorne, however, in his reply printed last week, asked to be excused from entering on controversial issues. We have since received communications upon this subject from several medical men, each of whom includes among other matters an answer to Dr. Manson's inquiry. The most explicit of these correspondents is Dr. L. Edward Williams, who reproduces verbatim a letter in commendation of Mr. Barker's war services, which he states was forwarded to the Prime Minister on November 5th, and was signed by Sir Henry Morris, Sir Alfred Fripp, Sir W. Arbuthnot Lane, Sir Bruce Bruce-Porter, and Sir Joseph Skevington. We take this opportunity of associating ourselves with Dr. Hawthorne in his desire to exclude controversial issues from the discussion to which his letter has given rise.

The Services.

LIEUT.-COL. FREDERICK O'KINEALY, C.I.E., I.M.S., chief medical officer to the Prince of Wales during His Royal Highness's Indian tour, has, on the occasion of the Prince's return, been appointed a Commander of the Order of the British Empire. On the same occasion Subadar Hira Singh, Rai Bahadur, Indian Medical Department, has been made a member of the Order.

DEATHS IN THE SERVICES.

Inspector-General Belgrave Ninnis, C.V.O., R.N. (retired), died at Streatham on June 18th, aged 84. He was the fourth son of the late Paul Ninnis of St. Austell, Cornwall. After taking the M.R.C.S. and graduating M.D.St. Andrews in 1861, he entered the navy as assistant surgeon in the same year, attained the rank of Deputy Inspector-General on May 5th, 1883, and retired, with an honorary step as Inspector-General, on September 1st, 1897. He served as naturalist on the imperial and colonial surveying schooner *Beatrice* on a survey expedition to the northern territory of Australia in 1864–66, receiving the thanks of the Legislative Assembly of South Australia; as staff-surgeon of H.M.S. *Discovery*, Captain Stephen, in the arctic expedition of 1875–76, under Captain Sir George Nares, receiving the Arctic medal; and was awarded the Sir Gilbert Blane medal in 1880. On June 14th, 1912, he received the C.V.O. He was a Fellow of the Royal Geographical Society and of the Society of Antiquaries. He was the author of *Remarks on the Ethnology, Natural History, Meteorology, and Native Population of North Australia*; of a report on diseases incidental to the Eskimo dogs of Smith's Sound, their diagnosis and treatment; and of a memorandum on the Welsh colony of Chubut, South America. He married Ada Jane, daughter of James Sutton, of Streatham, by whom he had two sons and one daughter.

Surgeon-Major Reginald Croft Lever, R.A.M.C. (retired), died at Denton House, Iffley, Oxford, on June 6th. He was born in London on September 15th, 1837, took the M.R.C.S. in 1859, and the M.B.Lond. in 1860, and entered the army as assistant surgeon in October, 1860. He served for some time in the 7th Hussars. He became surgeon-major in 1875, and retired on half-pay in May, 1877; he was afterwards for many years in charge of army medical work at Oxford.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT the second of the two congregations held on June 20th the following medical degrees were conferred:

M.D.—I. de B. Daly, A. B. Appleton.
M.B., B.CH.—E. Bryceson.
M.B.—F. B. Smith.
B.CH.—B. E. Jerwood.

The following candidates have been approved at the examinations indicated:

THIRD M.B., B.CH.—*Part I. Surgery, Midwifery, and Gynaecology:* W. F. T. Adams, E. F. Brooke, A. E. Clark-Kennedy, B. H. Cole, L. B. Cole, A. L. Crockford, C. B. S. Fuller, H. D. Gardner, J. H. H. Gough, C. A. Hovder, L. Lewin, J. H. Le Brasseur, G. S. Lund, F. H. Mather, T. D. Morgan, C. P. Oliver, C. V. Patrick, C. J. Penny, H. E. K. Reynolds, A. G. Story, J. A. Struthers, F. B. Sudbury, E. Tagoe, C. G. Taylor, T. M. Thomas, G. D. Thomson, N. G. Thomson, R. H. Yolland.

Part II. Medicine, Pathology, and Pharmacology: A. B. Bratton, S. P. Castell, H. Corsi, F. C. Cozens, J. C. Davies, L. S. Fry, H. D. Gardner, H. L. Garson, A. A. Gemmell, J. C. N. Harris, H. J. H. Hendley, R. C. Hewitt, T. L. Hillier, A. G. F. McArthur, T. D. Morgan, B. Mountain, A. D. Porter, A. E. Roche, H. W. Taylor, C. E. Whitting, D. W. Winnicott.

UNIVERSITY OF LONDON.

As briefly announced in our last issue, the Senate of the University has elected Mr. H. J. Waring, M.S., M.B., B.Sc., F.R.C.S., Dean of the Faculty of Medicine, and Vice-President of St. Bartholomew's Hospital Medical College, to be Vice-Chancellor for 1922–23, in succession to Sir Sydney Russell-Wells, M.D. A cordial vote of thanks has been accorded to Sir S. Russell-Wells for the services he had rendered to the University as Vice-Chancellor since December, 1919.

Mr. J. H. Woodger, B.Sc.Lond., has been appointed, as from July 1st next, to the University Readership in Biology, tenable at Middlesex Hospital Medical School.

The Lindley Studentship for 1922, value £120 and tenable in the Physiological Laboratory, has been awarded to Miss M. J. Wilson-Smith, B.Sc.; and the University Studentship in Physiology for 1922–23, value £50 and tenable in the Physiological Laboratory of the University or of one of its schools, to Miss M. M. A. Murray, B.Sc.

UNIVERSITY OF GLASGOW.

COMMEMORATION DAY AND GRADUATION CEREMONY.

COMMEMORATION DAY was observed at Glasgow University on June 22nd, when the customary oration was delivered by Professor Bryce, who chose for his subject "William Hunter and his museum."

Professor Bryce said that the bequest of William Hunter to Glasgow University of his library, coin cabinet, his small collection of pictures, and his zoological, geological, and ethnological specimens and anatomical preparations, which formed his museum, was the most valuable individual bequest which the university had ever received. The last twenty-five years had opened up new vistas; additions had been made to the collections in greater numbers than in any previous period, and a sum of money was now available annually for Treasury grants sufficient to carry out with some degree of adequacy the intentions of its founder for the utilization and extension of the museum, so that this generation was privileged beyond its predecessors. William Hunter was destined by his parents for the ministry, but he devoted himself to science, and left Glasgow University to become apprenticed to Dr. Cullen, afterwards professor of medicine. He turned to Edinburgh for his theoretical medical training, but the lure of London and a greater ambition carried him across the border. He was 21 when he went to London, and within ten years had made himself a leading teacher in the metropolis, and by the time he was 42 he had built up a very large and lucrative practice, was physician-extraordinary to the Queen, and a person of weight and influence in the country. A study of the museum in all of its departments indicated that William Hunter in founding it had intended that it should be organized for historical, literary, and scientific research, and that it should be extended with the growth of knowledge. They were forced to admit that his aim in presenting the museum to Glasgow had been but partially realized, but he was convinced that the growth latterly had been in the right direction, and the

Hunterian anatomical preparations now displayed in the anatomical museum were placed and utilized as William Hunter intended they should be. The natural history section, greatly enriched under Professor Graham Kerr, would soon be transferred to a zoological museum, and space would then be available for the valuable geological collections constantly expanding under Professor Gregory.

Following Professor Bryce's oration a graduation ceremony took place, at which a large number of distinguished personages received honorary degrees, including M. Venizelos, M. Raemaekers, and the Bishop of Manchester. It was announced that the fund for promoting the welfare of students by the provision of hostels, the enlargement of the unions, and the equipment of the athletic ground had now reached a sum of £5,000.

At a graduation ceremony held on June 21st the degree of Doctor of Medicine (with high commendation) was conferred *in absentia* on Cecilia Shiskin.

UNIVERSITY OF SHEFFIELD.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—N. Blackburn, Janet Breakey, Margaret I. Cannon, Dora Cocker, T. W. Frog.att, Doris Pindar, May P. Smith, Clara D. Tingle, F. A. Wrench (with distinction in Midwifery).

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

AT a meeting of the Royal College of Physicians of Edinburgh, held on June 20th, with Sir Robert Philip, president, in the chair, the Victoria Jubilee Cullen Prize "for the greatest benefit done to practical medicine" was awarded equally to Dr. John Thomson and Dr. Norman Walker.

Medical News.

THE special post-graduate course on diseases of children arranged by the Fellowship of Medicine and Post-Graduate Medical Association will begin, as already announced, on Monday next, July 3rd, and will continue throughout the week. The following hospitals will take part: East London Hospital for Children, Paddington Green Children's Hospital, Victoria Hospital for Children, Queen's Hospital for Children, and St. Marylebone General Dispensary, and the fee for the course is £4 4s. Those desiring to attend should apply to the Secretary to the Fellowship at No. 1, Wimpole Street, W.1. The next post-graduate lecture will be delivered by Dr. J. Strickland Goodall in the West Lecture Hall of the Royal Society of Medicine at 5 p.m. on Monday, July 3rd, the subject being "So-called functional diseases of the heart."

THE Association of British Chemical Manufacturers arranged an admirable little exhibition last week at Caxton House, Westminster, with a view chiefly to impressing upon members of Parliament the manifold applications of the fine chemical industry to the needs of the State. More than two thousand fine chemicals are now manufactured in Great Britain, and the most important of these were on exhibition, together with some pictorial indication of their various uses. The application to tropical and general medicine and surgery of those drugs of which fine chemicals are the basis was demonstrated with the aid of maps showing the geographical distribution of the diseases in which the drugs in question have been found effective. The many uses of salicylic acid were demonstrated, and another example of the same kind was vanillin, a by-product of the gas industry, obtained from phenol, and used in the preparation of certain kinds of confectionery as a flavouring agent. Many fine chemicals, indeed, are by-products of the gas industry, including benzyl acetate, used in making perfumes. A section of the exhibition was devoted to rare earths, and another to photographic developers, including the metol developer used in *x*-ray work. A large proportion of the fine chemicals were not manufactured in this country before the war, but the exhibition suggested that the fine chemical industry is now well established.

AT the meeting of the Society for the Study of Inebriety to be held at 11, Chandos Street, W.1, on Tuesday, July 11th, at 4 p.m., Mr. C. J. Bond, C.M.G., F.R.C.S., will deliver his presidential address on the influence of hospitals on temperance reform.

As announced in our advertisement columns, the Streatfeild Research Scholarship founded by Mrs. Eliza Streatfeild for the promotion of research in medicine and surgery is about to be awarded. The scholarship, with an emolument of probably £250 per annum, is tenable for three years at the discretion of the committee. Applications, stating nature and place of proposed research, and status of the applicant, should be addressed to the Registrar, Royal College of Physicians of London, Pall Mall East, S.W.1, by Monday, October 2nd, and marked "Streatfeild Scholarship."

MR. N. BISHOP HARMAN, M.B., F.R.C.S., has been elected a corresponding member of the Société Nationale des Sciences Naturelles et Mathématiques de Cherbourg in recognition of his researches into the origin of the facial musculature.

THE annual general meeting of the Professional Classes Aid Council will be held at Aubrey House, Campden Hill, W.8, on Wednesday, July 5th, at 5.30 p.m., under the chairmanship of Lord Phillimore.

A MEETING of the Tuberculous Society will be held on Monday, July 3rd, at 7.30 p.m., at the Margaret Street Hospital, W.1, when a discussion on "Care work" will be opened by Dr. J. Sorley.

ON the occasion of Founders' Day the Lord Mayor, the Lady Mayoress, the sheriffs and their wives visited St. Andrew's Hospital, Dollis Hill. Sir Norman Moore, Bt., thanked, on behalf of the hospital authorities, the City magistrates for their visit. In responding, the Lord Mayor expressed his satisfaction with all he had seen. This hospital for patients chiefly of the professional and middle classes, irrespective of creed or nationality, supplied a great want, and it was a pity it was not better known.

THE twenty-third annual meeting of the Lebanon Hospital for Mental Disease (Syria) took place at the house of the Royal Society of Medicine on June 1st. The director's report showed that the admissions (213) had doubled in number in two years, many soldiers of different nationalities being admitted for short periods of treatment. The chairman (Dr. Fortescue Fox) called attention to the large proportion (66 per cent.) of cases recovered or relieved, due to the early treatment given. All the patients entered voluntarily, without certification and on a paying basis. The duration of treatment for 136 cases out of 172 discharged was less than three months, and the commonest cause of breakdown, "prolonged mental and physical strain." The hospital had become a teaching centre under the American University of Beyrout, and it was hoped that knowledge and experience of early treatment of mental disorders would be spread into neighbouring countries, where at present only barbarous methods prevailed.

THE latest catalogue the "Solus" Electrical Co. (Judd Street, London) describes a number of pieces of *x*-ray apparatus of an original character. The illustrations are especially good. A high tension overhead switch for use with the Coolidge tube, and a piece of apparatus for fixing the head for sinus work, seem to be worthy of special mention. This firm supplies tubes and all kinds of *x*-ray apparatus.

THIS year the Victorian Order of Nurses for Canada celebrates its twenty-fifth anniversary as a voluntary national nursing service. The annual report shows that it is doing most valuable work throughout Canada; but for its services trained nurses would not be available for thousands of needy patients. During the past year a total of over half a million visits were made by its nursing staff, 16,165 maternity cases were attended, and 20,828 visits were paid to expectant mothers, and 52,562 for child welfare.

THE Flemish scientific congresses will be held this year at Bruges, from July 30th to August 7th. More than eighty communications and lectures are announced, on scientific and medical subjects, and many eminent scientists and medical men are to take part in the congresses. At the same time an exhibition will be held of medical and surgical instruments of all kinds, and of scientific books. The general secretary is Dr. G. Jonckheere, O.B.E., 18, Elisabethlaan, Bruges, Belgium.

DR. RAY LYMAN WILBUR has been chosen president-elect of the American Medical Association for the ensuing year. Dr. Wilbur is president of Stanford University, California, and was formerly professor of medicine in the medical school of that university, of which he is a graduate in arts and medicine. He was president of the American Academy of Medicine in 1912 and 1913, and during the war was head of a division of the United States Food Administration.

SINCE 1921 pellagra and cancer have been made notifiable diseases in Venezuela.

ON the occasion of the celebration of the first centenary of Brazilian independence next August the first Brazilian Congress on Infant Welfare will be held at Rio de Janeiro.

A POST-GRADUATE course on oto-rhino-laryngology will be held under the direction of Professor Moure and Dr. Portmann, of Bordeaux, from July 24th to August 5th; the fee is 150 francs, and particulars may be had from the secretary of the Faculty of Medicine, Bordeaux.

THE number of persons suffering from tuberculosis in Switzerland is estimated at 80,000. The annual death-rate from tuberculosis amounts to 20 per 10,000 inhabitants, and the total number of deaths from tuberculosis is about 8,000 among 50,000 to 55,000 deaths from all causes.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

TREATMENT OF PSORIASIS.

THE following are among the replies received to the inquiry from "A. B. S." published on June 17th (p. 982):

Dr. J. L. RENTOUL (28, University Square, Belfast) writes: Psoriasis is sometimes benefited by vaccine treatment, and, if all else fails, it should, I think, have a trial. The vaccine I use is one of *Staphylococcus albus* and *aureus*, both of which I have isolated from the skin below a "ripe crust." If "A. B. S." cares to try it, and writes to me, I will send him some.

Dr. J. CARDEW BEDWELL (Assistant School Medical Officer) writes that numerous cases of psoriasis have been very successfully treated at the Chesterfield School Clinic by giving one 1·2-pastille dose of *x*-rays to the worst areas. He adds: We formerly gave two or three 1·4-pastille doses to each case, but find now that *one* 1·2-pastille dose seems more efficacious.

Dr. STANLEY E. DENYER, C.M.G. (Hull), reports the case of a man aged 43, who had had psoriasis for eighteen years; the rash was very severe over the back, abdomen, head, nails, left knee, both elbows. "He had to spend one hour every night in a bath getting the scales off. The skin cracked and bled. He had seen many doctors, but had not improved; the case certainly looked hopeless. I suggested that a vaccine might be tried, but would not promise any relief. He agreed, and I made a culture from his skin, and prepared a vaccine of *Staphylococcus albus*, 50 and 500 million per c.cm. I began with 12½ million, increasing to 18 and 25 million, and so on. He began to improve in many minor ways, such as less pain and irritation, less cracking of the skin. I continued this for four months, and then put him on arsenic and thyroid tablets gr.1. Not much general improvement followed until the March of the next year, when instead of the rash increasing, it improved rapidly and nearly disappeared. My theory in this case was that the protection set up by the vaccine in the blood was stronger than the yearly incidence of psoriasis. I have lost sight of the patient since, so am unable to say if the protection was permanent."

Dr. STANDISH J. WATSON (Abercrave) writes: I would suggest he tries a course of cyllin ointment combined with cyllin lotion, the lotion being the most important of the two. I have had a very satisfactory result with this treatment in a very similar case to the one he describes.

INCOME TAX.

"A. B. C." states that the inspector of taxes has asked him to supply a "certificated copy of his income for the past year."

*** The inspector has no legal right to require statements supplied for income tax purposes to be certified by an accountant, although the Commissioners might have that authority if the assessment were appealed against by "A. B. C." Unless there are special circumstances, we do not consider that the independent certification of a practitioner's statement is a reasonable requirement, seeing that the matter is comparatively simple as compared with trade or manufacturing accounts. We should advise "A. B. C." to send in a carefully compiled statement and offer to support it by production of his books.

"R. C. P." inquires how the amount allowable for locomotion expenses should be calculated where the car is partly employed on non-professional uses.

*** The only practicable basis seems to be to calculate the total cost of the running, including licences, tyre replacements, etc., and to divide it between professional and private use on a mileage basis. This, however, necessitates the keeping of careful records. Another possibility is to calculate the cost of an alternative means of locomotion—for example, hiring or train service; that method is sometimes useful as supporting the reasonableness of a result arrived at on the mileage basis.

"J. B." bought a second-hand 14 h.p. car (original price £360) in 1914 for £149, and sold it in February, 1922, for £10, when buying a new car of 10.5-h.p. for £390.

*** Assuming the two cars to be of the same or equivalent makes the allowance due would work out as follows:

	£
Original cost of old 14-h.p. car	360
Estimated cost of new car in February, 1922, of similar h.p., £320 × 14/10·5	= 320
∴ Estimated equivalent second-hand cost, £320 × 149/360	= 213
∴ Allowance is £213 − £50	= 1 3

that sum to be regarded as a professional expense of the year in which the expenditure was incurred.

LETTERS, NOTES, ETC.

"THE ETIOLOGY OF CANCER."

DR. MARTIN J. CHEVERS (Manchester) writes: The leading article headed as above in the BRITISH MEDICAL JOURNAL of June 17th contains the following sentence: "Above all, closer co-operation between the research officers of the central departments and insurance practitioners holds out the promise of valuable clinico-statistical investigations." This statement has tempted me—though I have never been an insurance practitioner, but have been in general practice for over a quarter of a century—to be bold enough to mention a conclusion I have long since come to with reference to cancer, and it is this—that the chief predisposing cause is rheumatism, whether incipient (as it of course can be) or otherwise. I believe nearly all fibroid growths, including those of the skin and uterus, have a similar origin; whether this conclusion turns out to be right or wrong, I may state that I have not come to it without prolonged clinical observation, and I think the matter is worthy of further investigation.

INSECTS IN AN AUDITORY MEATUS.

DR. JAMES VAN MILLINGEN writes: Dr. Arthur Sheard's experience of a cockroach in the nasal passages brings to my mind the case of a farmer, aged 75, in the West Highlands of Scotland, who had suffered from deafness in one ear for a period of over 30 years. In syringing out the ear I brought out a full-sized wasp in a perfect state of preservation and completely encased in wax. The man recollected that thirty years previously, whilst working in the hayfields, he experienced a sudden and excruciating pain in the ear, which did not last long enough to prevent him from continuing at his work on that day. The auditory meatuses were remarkably large, and the canals were not tortuous.

PROFESSIONAL SECRECY.

WE are indebted to Dr. James Holmes, of Bury, for the following anecdote of an old practitioner who died many years ago, but whom he can just remember. This Dr. C. was a great stickler for what he thought was right, and especially strong on professional secrecy. The tale is as follows: "Dr. C. was attending a Mrs. D., a great friend of his wife. One evening his wife asked him how Mrs. D. was. In place of a direct answer he rang the bell; when the footman appeared he said: 'Give Mrs. C.'s compliments to Mrs. D., and inquire how she is.'"

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 30, 31, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 8.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
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Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

A British Medical Association Lecture

ON

THE PROBLEM OF THE RADIUM THERAPY OF CANCER.

BY

ARTHUR BURROWS, M.D.Lond.,

RADIOLOGIST, MANCHESTER AND DISTRICT RADIUM INSTITUTE.

[In the earlier portion of the lecture Dr. Burrows dealt with the physical properties of radium; he then went on as follows:]

A few facts have been established in respect to the action of radium on cancer cells during the last twenty years. The first is that cancer cells can be destroyed by rays, but this statement is modified by the knowledge that, given a sufficient dose, practically all tissue cells can be killed by radiation, and so arises the second point—namely, that there is a minimum dose which will just kill a cancer cell and will not, as a rule, kill an ordinary tissue cell. This is called the "minimum lethal dose," the "lethal dose," or the "cancer dose." This lethal dose varies with different tumours and different conditions.

Theoretically, given a known quantity of rays, the lethal dose of the cells of a certain cancer, and the size and situation of the tumour to be treated, it is possible to destroy almost any cancer, but unfortunately all these three conditions are variable and are made up of variables. Thus, with regard to rays, the beta rays from radium are not uniform, but are made up of groups of rays which are of different penetrability. Similarly the gamma rays are mixed, as also are *x* rays. Beta rays can be screened off entirely by using metal plates of a definite thickness, or they may be partially cut off by using thinner or less dense material. It is very difficult to cut off all gamma rays, but certain of them can be eliminated by a process of screening and an attempt made to obtain rays of a certain minimum penetrating power. In the same way by screening and by improving and standardizing apparatus an attempt is made to keep *x* rays as constant as possible, but unfortunately it is not known exactly what is the right type of ray for each tumour. A few facts are known—for example, that a rodent ulcer will do well with unscreened radium (that is, mostly beta-ray treatment), but gamma-ray treatment is also effective. I think, however, that if beta rays fail in the treatment of a rodent ulcer gamma rays will rarely be successful. Skin diseases are obviously most suited for rays of a longer wave-length. Most rays seem to affect lymphosarcomata, while carcinoma of the tongue as a rule yields best locally to beta rays, but of course with beta rays there is a strong caustic or destructive action. One of the claims of the Erlangen *x* ray treatment is that a correct ray for the destruction of carcinoma of the cervix of the uterus has been established. But the size, density, and depth of a tumour obviously affect not only the quantity of rays penetrating the whole of a growth—for that can be rectified—but also the quality, which cannot be thus adjusted when radiation is being applied from a distance. The actual insertion of a varying number of suitably screened radium tubes into a tumour is the only method of ensuring uniformity in the quality of the radiation applied. Some tumours are not suitable for the burying of tubes in their substance, and it is then seen how complicated the whole subject is, and how the question of the quality of the rays used, and the dosage, merge into a consideration of the size, density, nature, and position of a tumour.

Lethal Dose.

Assuming that beta rays are used to kill a cancer cell, it is probable that the lethal dose for these would be different from the lethal dose for gamma rays; or, pushing the matter farther, the lethal dose of soft *x* rays would be different from the lethal dose of hard *x* rays, as the destructive action of radiations must depend on the quantities of them which are actually stopped in the cells of a growth. Therefore, in fixing a lethal dose for a certain tumour, it must be established for a definite type of ray, and this does not in practical therapy depend altogether upon the operator, but upon the size, nature, and position of the growth he has to radiate. Thus, change the position of the growth by one centimetre and it may be necessary to alter the type of ray used, and with that the dosage if raying is being carried on from a distance. Then, again, the lethal dose for a tumour may be very near that of the ordinary tissues, and a very fine or no margin left between the quantity and type of rays destroying the normal tissue and the cells of the tumour.

As an example of this last possibility the secondary nodule which may be present on the chest wall following an amputation of the breast may be given. Over this may be stretched a thin and delicate covering of epithelium, and any application of rays given to the nodule may destroy the skin beyond repair long before the tumour cells in the nodule itself are killed.

Nature of the Tumour.

It is an established fact that some tumours are destroyed by rays more easily than others—for example, a small round-celled sarcoma is more easily caused to disappear by irradiation than a squamous-celled carcinoma; but absolute uniformity in respect to the behaviour of groups of growths under radiation does not exist, as other factors, such as the patient's general resistance to tumour growth, or the situation of the tumour, alter its susceptibility to rays and possibly also the stage of development and age of the tumour itself. Is, for instance, a rodent ulcer growing in the skin a different growth from one growing in bone? The same treatment will not cure them both. In fact rodent ulcers of the skin are easily cured by radium; rodent ulcers invading bone are only exceptionally cured.

Nor must the fact be forgotten that rays seem most markedly to affect the reproductive functions of cells. Therefore let the tumour grow quickly, and most often the local growth will rapidly diminish, and vice versa; but unfortunately the local tumour is not the only consideration, for growths such as encephaloid carcinoma of the breast, which grow very rapidly and respond well to radium, soon form secondary deposits, so that the ultimate result is not so good. Or again round-celled sarcomata are usually quoted as types of tumours which respond well to radium treatment, but the more slowly growing and difficult to treat spindle-celled sarcomata with perseverance give the best results in the end.

Size and Density of Tumours.

The size of a tumour is important from several points of view. If a tumour is exceedingly large commonly there is a poor blood supply at the centre (if it is a carcinoma), and there is a great tendency for the tumour to break down and slough under treatment, while at the same time a poor blood supply does not give adequate chance of repair following the treatment. Again, the size of the tumour has a marked effect upon the size of the dose of radiation which is given if an attempt is to be made to destroy all the cells it contains. A small tumour can fairly easily have an even radiation applied throughout its substance, but if it is very large, provided the rays are applied from one direction, the quantity falling on the near side of the tumour will be very much greater than that emerging from the far side. It is also apparent that the density of the growth will have a similar effect, for the denser the tumour the greater will be the difference between the entering and emerging rays.

In the early days of radium treatment Wickham and Degrais suggested the method of cross-fire as one of the means of getting over this difficulty—for instance, if a tumour can be treated from two sides, all other factors being equal, double the dose can be given to the tumour by applying radium to it on those two sides. If the tumour is accessible it may be radiated from more than two sides. What is done by the Erlangen method of *x*-ray treatment is very much the same thing. In order to get a sufficient quantity of *x* rays to the tumour, rays are directed through several different areas of skin towards the tumour, which areas are called "ports of entry." It is thus seen that the method is the same as the cross-fire system used by Wickham and Degrais.

With radium and radium-emanation treatment the difficulty is also partly met, as has already been mentioned, by burying radium or radium emanation in the growth, or by varying the distance of the applied radium from the external skin. In the foregoing reference to the size and density of a tumour it has been more or less assumed that the tumour has been regular in outline and of uniform density throughout. But in practice, of course, malignant growths are of many and varied shapes, and they have near and distant secondary deposits; also they are by no means of uniform density, so that the problem of dosage becomes very complicated, and the most that can be hoped for is to obtain an approximation to what is desired which will work in practice.

*Delivered before the Southport Division of the British Medical Association.

The Position of a Tumour.

Its position has a very similar influence to the size and density of a tumour upon its susceptibility to radiations. If, for instance, it lies beneath or in tissues such as muscle and bone, it may become almost impossible to give it adequate radiations from the surface. If such factors as these are not present it may be possible that radiations from one side where the tumour is nearer may, at least in part, make up for deficiencies in radiation from the other side from which the tumour is farther away; but to get a proper quantity of rays traversing the growth many ports of entry may have to be used, and it becomes very difficult to get absolute accuracy of dosage. When cancers invade or are adherent to certain structures and organs, such as bone, the stomach, bowel, liver, or lungs, treatment is rendered much more difficult, and often at the present time fails to produce a good result. It seems that not only is the nature of the tumour an important factor in ray treatment, but also the nature of the tissue and organs that it invades. The more accessible a growth is, as a rule, the better are the results, but growths of certain organs, such as the œsophagus, rectum, and tongue, seem to resist radium treatment more than elsewhere.

The consideration of the preservation of the skin is an ever-present problem to the radiologist. It has been already mentioned that under certain conditions it is possible that a stretched or ill-nourished skin may be more rapidly destroyed than a tumour, and, moreover, if the blood supply or ability of the skin to repair is bad, unless proper care is used the last condition may be worse than the first, from the formation of an intractable ulcer—not an x-ray or radium ulcer but a malignant one. That is to say, it may not be possible to give a suitable destructive dose to the ill-nourished tissues without risk. If one could be sure of destroying such a malignant growth beneath the skin there would be less difficulty in dealing with the factor of the skin, for it is almost certain that scar tissue would eventually form and fill up the gap; but the uncertainty of destroying the growth under these conditions makes the radiologist take more care in endeavouring to preserve the skin, and hence has arisen the so-called "erythema dose." The burying of radium tubes will often, but not always, obviate this difficulty. In the case of rodent ulcers and epitheliomata of the skin not invading bone or cartilage, the skin, as a rule, has been modified or destroyed by the growth. In such cases the preservation of the epithelium need not be considered and marked local destruction produced if necessary, with knowledge that good repair will take place afterwards and a soft, supple scar be formed.

It will be seen from the foregoing remarks that the whole system of ray treatment is exceedingly complicated. The difficulties of dosage are modified by nearly all the usual things which may take place in a tumour from its nature or position. The possibility of actually stimulating an outlying portion of a growth which has been only partially radiated must always be borne in mind, although it is not as a rule a difficult problem in practice, because fortunately the range of dosage producing stimulation is an exceedingly small one.

What is needed is a large number of physical measurements of the different parts of the human body and of pathological growths, and a full and complete investigation of the nature of the lethal dose for cancer cells; when these have been made an approximate idea may be obtained of the method of treating tumours in different situations, although even then it seems that a number of imponderable biological problems, such as the resistance of the organism as a whole and the resistance of tissues locally to cancer growth, remain to be solved.

But in spite of all these difficulties, and the disadvantageous position in which radiologists are placed in this country of treating practically only inoperable cases, many good results are obtained from radium treatment: 7½ per cent. of all the cancer cases (mostly inoperable) which come to Manchester for radium treatment are alive and well to-day after periods varying from two to seven years, and many cases of carcinoma of the cervix of the uterus, breast, skin, lip, and other regions are in perfect health who would but for radium be dead; while endothelioma of the parotid gland and spindle-celled sarcomata show still more gratifying results. Moreover, short of cure much valuable palliative work is done, while in non-malignant conditions, such as exophthalmic goitre, Hodgkin's disease (when young), keloid, cavernous and capillary naevi, the percentage of cures is high; finally, radium is specific for excessive uterine haemorrhage and spring catarrh.

THE SURGICAL TREATMENT OF CHRONIC ULCER OF THE BODY OF THE STOMACH.

BY

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THE surgical treatment of duodenal ulcer and pyloric ulcer can now be regarded as standardized and relied upon to give almost uniformly and permanently satisfactory results. Such a statement cannot yet be made in respect of ulcers situated in the body of the stomach. Their treatment has been difficult and disappointing, and the many and varied operative procedures advocated and practised have been gradually discarded as failing to give the results hoped for. Partial gastrectomy, involving excision of the segment in which the ulcer is situated, together with the portion of the stomach on the distal side of it, is strongly recommended by such eminent authorities as Sir Berkeley Moynihan and Mr. James Sherren as being the only method that can be relied upon to cure. On general grounds such a drastic remedy is only justifiable if we admit inability to succeed by simpler measures. The routine excision of an organ for a non-malignant lesion is at variance with the principles governing conservative surgical practice and is rather a confession of failure. That gastrectomy is advisable in certain cases of gastric ulcer may be admitted, but unless we are prepared to regard such ulcers as precursory of cancer its necessity in every case can only be accepted with great reserve. Further, even though partial gastrectomy is held to be the procedure of election the problem is not solved, for it is inapplicable in many of the worst cases of gastric ulcer and proves useless when most required.

For many years I was impressed by the uncertainty of the results that followed operations for gastric ulcer. Immediate and permanent relief of symptoms was obtained in some cases, while in others the results were only partially good or wholly unsatisfactory. Good or indifferent results bore no definite relationship to the size and character of the ulcer, nor to the particular operation performed. I tried posterior gastro-enterostomy with and without excision of the ulcer, excision of the ulcer without gastro-enterostomy, excision of the segment of the stomach in which the ulcer was situated by the "sleeve" method, and various other procedures that have been advocated from time to time. None of these methods gave uniformly good results, and it is of interest that my worst results occurred in a series of twenty-five cases in which small ulcers were excised freely and the opening carefully closed without the production of any appreciable deformity of the stomach. A very small proportion of these cases derived any benefit from the operation, and I have subsequently had to operate a second time upon nearly half of them.

Careful consideration of my cases gradually brought out the fact that the chief determining factor as regards result was the situation of the ulcer. My experience, which I believe to be in accord with that of surgeons generally, was that the relief of symptoms due to gastric ulcer becomes increasingly difficult the farther from the pylorus the ulcer is situated. The farther the ulcer from the pylorus the less satisfactory were the results obtained by the same operative procedure. There is no evidence that this is due to any essential difference in the morbid anatomy or the pathology of the ulcer. An ulcer in any part of the stomach is more or less subjected to the same physical conditions as regards chemical and mechanical irritation of gastric contents. If, then, there is a difference in the response of such ulcers to surgical treatment it can only be accounted for by variations of site and not of pathology, and treatment must be varied in accordance with that principle.

Following up the clue provided by clinical and operative experience, with the valuable assistance of Dr. Harold Black, radiographer to the Queen's Hospital, Birmingham, an endeavour was made to ascertain in what way an ulcer modifies the physiology of the stomach. That from a surgical standpoint any essential modification was in respect of its motility and not its chemistry I was convinced, and that the chemical part of gastric digestion could be modified by a surgical operation to the advantage of the patient appeared highly improbable on general grounds, and my operative experience confirmed this opinion.

Radiography brought out clearly the fact that an ulcer of the stomach causes spasm of the segment in which it is

situated. This spasmodic contraction may last for a long time and be associated with considerable delay in the passage of the meal past the site of the ulcer. It was also observed that spasm of the segment in which the ulcer was situated was accompanied by feebleness or absence of peristalsis in the rest of the stomach. The *x*-ray observations went to prove that the effect of an ulcer, whether at the pylorus or in the body of the stomach, was the same. In both cases there is spasm of the ulcer segment and damping down of general peristalsis.

The immediate and lasting relief that follows posterior gastro-enterostomy for pyloric ulcer, and its failure in many instances to give the same result when the ulcer is situated in the body of the stomach, seems to depend upon the relationship between the site of the ulcer and that of the new stoma. In cases of pyloric ulcer the artificial stoma is always situated well to the proximal side of the ulcer, while in proportion as the distance of the ulcer from the pylorus increases the less likely is this to be the case if the ordinary rule is observed that the new opening should be made at the most dependent part of the stomach where the cardiac and pyloric portions join. When the ulcer is situated far over to the left it may well be that the new stoma lies wholly distal to it. This failure to modify the site of the stoma as the situation of the ulcer varies is, I am convinced, largely responsible for the varying results of gastro-enterostomy for ulcers of the body of the stomach. For relief of spasm it is essential that the new stoma should be placed well on the proximal side of the ulcer, and ulcer and stoma should bear a definite relationship to one another. Radiography demonstrates that when this is the case practically all the meal passes rapidly and smoothly through the new opening, little or none passing into the portion of stomach on the far side of the ulcer segment.

Clinical experience proves, however, that drainage of the stomach on the cardiac side of the ulcer only is not altogether satisfactory. The distal pouch is a factor that has to be reckoned with. It appears to become a "dead" cavity and a kind of cesspool in which stagnant stomach contents which have passed beyond the ulcer segment in small quantity collect. Peristalsis is feeble and ineffective to empty this pouch either by forcing back its contents into the proximal pouch or on through the pylorus. The result is that the patient experiences a sense of discomfort and epigastric fullness. To remedy this it is necessary to establish a second anastomosis between the distal pouch and the jejunum, or to extirpate the pouch altogether. That the latter is effective is certain, but that it is essential is open to criticism.

Briefly stated, in my opinion chronic ulcer of the body of the stomach should be treated as though an hour-glass contraction existed at the site of the ulcer. The alternative operations are: (1) Partial gastrectomy, the distal pouch, together with the ulcer, being removed and the proximal pouch anastomosed to the jejunum; or (2) double gastro-enterostomy, openings being established between the stomach and jejunum on either side of the ulcer. The choice between these two procedures is to a large extent determined by the conditions found at the time of operation and by clinical evidence upon the question of malignancy.

For several years I have treated every case of chronic ulcer of the stomach on the above lines and have made no distinction between those cases in which definite hour-glass contraction existed and those in which it did not. At first I adopted partial gastrectomy as the procedure of choice, but in many cases, and those often the worst, it was impracticable. Where an extensive ulcer was adherent to the pancreas over a wide area or had penetrated through all the coats of the stomach into structures outside, gastrectomy would have been extremely difficult and dangerous. The same objection applied to cases in which the ulcer was situated far over to the left in the cardiac end of the stomach where closure of the proximal pouch could only be effected with considerable difficulty. Further, the general condition of some of the patients was such that it was undesirable to do more than was absolutely essential.

For these reasons it was often necessary to adopt the second alternative—that of drainage of the stomach on either side of the segment containing the ulcer. This is done by means of a single long opening or by two entirely separate anastomoses. The site of the ulcer is the sole determining factor, and so long as the openings are placed well to either side of it the most easily accessible portion of the stomach wall is selected. Often it is impossible to utilize the posterior surface of the stomach for the anastomoses owing to dense adhesions, and the anterior wall is then selected. Owing to the necessity for placing the anastomoses in definite relationship to the site of the ulcer the usual technique for securing the smooth flow of bile and pancreatic secretion along the jejunum and the avoidance of regurgitant vomiting is rarely practicable. To obviate this risk entero-enterostomy is performed between the ascending and descending limbs of the coil of bowel taking part in the anastomoses. A loop of jejunum is taken, sufficiently long to allow of this lateral anastomosis being comfortably carried out. The whole operation involves a minimum of disturbance, causes a negligible amount of shock, and is easily completed in fifty minutes.

The results of the operation were surprisingly good, immediate relief being experienced. Indeed, so free from digestive disturbance were the patients that it was with the greatest difficulty that they could be persuaded to exercise the care with their diet that was obviously advisable for some months at least, in view of the fact that the unhealed ulcer still existed. That such care is necessary was shown by temporary relapse in several cases after gross indiscretions of diet. So good were the results that I began to extend the range of the operation, and to carry it out in preference to partial gastrectomy in cases in which the latter was practicable. I have now treated between fifty and sixty cases of ulcer of the body of the stomach in this way, and although many have been operated upon too recently to draw positive conclusions as to the permanency of the benefit obtained the general result has been very encouraging.

In discussing the choice between partial gastrectomy and double gastro-enterostomy with entero-enterostomy, the question of malignancy must be considered. If cancer often becomes engrafted upon chronic gastric ulcer obviously the more drastic operation is preferable as more likely to remove this grave risk. The experience of English surgeons has been that ulcers which have existed for a considerable time rarely become malignant: that some ulcers are malignant from the onset is certain. Clinically it may be difficult to make a distinction, and I am accustomed to rely upon the duration and persistency of the symptoms. A short history with persistent and progressively severe symptoms is highly suspicious, while a long history with intermittency of the early symptoms makes primary malignant ulcer unlikely. The former history calls for gastrectomy, if at all possible, whatever the character of the ulcer at the time of operation. There is no reason, if the risk of secondary malignancy is feared and local conditions allow of it, why the ulcer should not be excised, or destroyed by the actual cautery as Balfour suggests, provided that the stomach on either side of its site is drained. Such local treatment is impracticable in the worst cases, and in the simpler ones I believe it to be unnecessary, the ulcer tending to heal rapidly when efficiently short-circuited. It is remarkable how rarely at a second operation carried out some time afterwards there is any evidence of the original ulcer beyond some scarring of the stomach wall.

That double gastro-enterostomy with entero-enterostomy has a real value I am convinced. It can be relied upon to give prolonged relief in the worst forms of gastric ulceration where partial gastrectomy is contraindicated on account of the difficulty and danger involved. My experience of it has been too short to claim a permanent cure, but the maintenance of satisfactory digestion at the end of two years encourages the hope that it may prove to be so in many cases.

As to whether it should be regarded as an alternative to partial gastrectomy where the latter is practicable is more controversial. If equally good results are obtainable by the less severe operation, it must be the one chosen. Partial gastrectomy is, however, so strongly advocated by some very experienced surgeons that one is diffident about criticizing their statement that it should be the procedure of election. Before, however, accepting this view as applicable to all cases of simple ulcer of the body of the stomach in which partial gastrectomy is possible, further evidence of its necessity must be forthcoming. Although in very experienced hands partial gastrectomy is not dangerous, it is a formidable operation for the ordinary surgeon and only justifiable if a cure is unobtainable by simpler, safer measures. For this reason I suggest a more extended trial of double gastro-enterostomy combined with entero-enterostomy.

SOME NOTES ON DEEP THERAPY.

BY

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IT had become evident before the war that if radiotherapy was to progress on a scientific basis some accurate method of calibrating the output from the Roentgen tube must be found. Kienböck of Vienna had introduced a method depending on the action of the rays on an emulsion containing a silver salt, but it gave variable results in the hands of different and even the same workers, and it became evident that if it was to become generally useful the reason for these variations must be ascertained. Professor Wintz at Erlangen found that just as these silver salts are more susceptible to certain rays in the visible spectrum, so there are certain rays of definite wave-length in the *x*-ray spectrum which exercised a selective action on the silver salts ($\lambda = 0.055 - 0.049$ A°*u*). This went a long way towards explaining the variations found, but did not overcome them. A step in advance was to measure the light given off by a screen containing platinum salts. Here the emulsion was protected from direct radiation by a heavy lead shield and only the light rays reached it. Though there were various objections to this apparatus, they were not so pronounced as in the case where the emulsion was acted upon directly by the *x* rays. Another method was brought forward by two Frenchmen—Villard and Szilard—who made use of the property that *x* rays have of ionizing air and so discharging an electroscope; they called their instrument the ionto-quantimeter. The rate of discharge was given as directly proportional to the output of the tube. The original instrument was both cumbersome and inaccurate, especially in clinical use; it was considerably simplified and improved by Wintz and Baumeister of Erlangen, and has proved remarkably accurate; it has since practically displaced all other methods of measuring the output of different tubes.

This, though a great advance, was only a means to an end. Treatment had been directed more to the surface of the body, and deep effects had taken a long time to obtain. To obtain these effects more rapidly a ray was needed that would exert a minimum effect on the skin but a maximal effect in the depths of the body. It was necessary to eliminate all the softer rays which are arrested in the superficial layers of the body before they reached the skin. This was effected by increasing the amount of filtration; it was found that a zinc filter 1·2 mm. thick gave the best result, especially when the time factor was taken into consideration. (This thickness corresponds to 11 mm. aluminium.) The next step was so to increase the output of the tube that the result was obtained in the shortest time. Apparatus could fairly easily be designed to give the required current, but it was some time before a tube was obtained which would stand up to the terrific strain of this continuous high voltage current. The tube evolved was the "self-hardening boiling water cooled tube."

Experiments to ascertain the optimum conditions under which the tube should be worked to give the best dose in the depths of the tissues showed that at the tension used a current varying between 1 and 2·5 ma. was the most satisfactory. Up to this time the condition of the tube had been regulated by an osmo-regulator controlled by the operator, but this method was found unsatisfactory because it allowed great variations in the condition of the tube. The automatic regenerator or regulator was therefore introduced by Wintz; in it the indicator of a current meter, introduced into the secondary circuit, impingeing on a long lever, makes and breaks a current going to a solenoid, whose plunger acts as a valve in the tube supplying gas to heat the osmo-regulator.

The aim has been all along to decrease the time required for the treatment and to maintain the dose obtained in the depth of the tissues. A great advance has been made by using the Coolidge tube in conjunction with a special resistance, which has not only shortened the time necessary but actually increased the proportion obtained deep down.

On the Continent the difficulty of efficient insulation of coils has been solved, and transformers which give a varying output—up to 250,000 volts—for twelve hours daily without breaking down are in use. Both low and high output types of apparatus are available, but for malignant conditions a type with the comparatively low output of 2 to 2.5 ma. seems the most favoured, for it allows the concentration of a number of small ports of entry upon a growth, enabling the operator to obtain practically any desired dosage. Generally speaking, apparatus of a higher output requires the use of larger ports of entry, with a corresponding diminution in the total amount of radiation obtained in the depths of the tissues.

Methods of Application.

The methods of application may be considered under three headings:

1. Roentgen irradiation alone.
2. Roentgen combined with radium irradiation.
3. Roentgen irradiation combined with physical agents to increase the efficacy of the applied rays: (*a*) electrolysis with metallic salts; (*b*) packing patient in paraffin blocks.

Methods 1 and 2 are in general vogue, though so far as I could ascertain for deep-seated tumours, especially of the rectum and the genito-urinary tract, the operators preferred to use radium to supplement the action of the Roentgen rays. This method, owing I think to insufficient screening, has unfortunately often been attended by unpleasant indurated scarring which sometimes leads to serious disability, and for this reason alone the use of radium has been practically abandoned in Erlangen, where it has been replaced by method 3 (*a*).

Not being altogether satisfied with results they attempted to increase the scattering—and hence the absorption—of the rays in the immediate neighbourhood of the tumour. It seemed that this could be accomplished most easily by the introduction of minute metallic particles in and around the tumour; it was found that one of the less irritating copper salts introduced by means of ionization was most suitable. Nothing has so far been published on this work[*]: but at the Erlangen Frauenklinik it is claimed to be possible to bring about an even distribution of fine copper particles to a depth of 10 cm. The exact manner, however, in which it acts, whether by secondary radiation or by producing other effects, is still a matter of surmise; but the fact remains that, whatever the manner of working, the condition of the patient is very much improved, and at the present time the method is being employed wherever possible.

The most recent modification is that employed by Chaoul in Munich. Relying on the fact that actively proliferating cells are much more susceptible to radiations, he exhibits a dose to the whole body which is just sufficient to stimulate the cancerous cells to greatly increased activity. He follows this with a full dose some eight days later. He surrounds the patient with blocks of paraffin and delivers the main dose directly over the tumour. By means of the paraffin blocks much of the radiation passing outside the port of entry is caught and deflected back into the body, thus greatly increasing the amount of radiation received by the tumour. Chaoul states that as this method has been in use for only twelve months, it is too soon to draw conclusions, yet his results are very much better and he has had no untoward circumstances. The unit of dosage is in all cases measured by the production of an erythema within four to eight days; the interpretation of the term "erythema dose" varies with the different clinics, but in the end one comes to the conclusion that they agree on the whole about the amount of radiation required to treat the various tumours.

A point that strikes me rather forcibly is the insistence on the opinion that intensive therapy is not to be lightly undertaken, and then not without an extensive clinical examination, supplemented where necessary by the laboratory. Owing to the very real danger of "Roentgen cachexia" supervening, the patient's blood picture must conform to a very definite standard, and when below this, general tonic treatment is instituted in the endeavour to build up his health to this required standard.

The all-important question, however, is that of results. In the earlier results from 1914 onwards radiotherapy appears, on the whole, to be slightly more successful than operation, and there is no doubt that with the improvements in technique the indication is still more in favour of radiotherapy, even more so than of therapy combined with operative procedures. By results cure is not necessarily meant; that is almost impossible, I think, but we can speak of relief being more or less permanent. I do not think that the five years' standard is

[*] I am indebted to Dr. Langer—Professor Wintz's first assistant—for permission to make use of these notes, although nothing has been so far published on this work.

sufficient indication, because in many instances a relapse occurs between five and eight years.

In widely extended disease the tumour must be treated in two or more sections at intervals of six to eight weeks, and one of the most important effects I have noted is the great improvement in the condition of the patient which follows even the first application. This indeed is sometimes so marked as to be a disadvantage, in that the patients either return to work and so damage the skin overlying the port of entry, which is not so healthy as the surrounding integument, or else fancy themselves cured and fail to return at the appointed date, so that it is only months later, when the disease is often out of hand, that they come back expecting once more—often in vain—the relief they obtained from the first application. Again, not only is there almost entire absence of disability following irradiation, but in most cases where the relief is only temporary—as is also often the case after surgical procedures—the period of improvement is in nearly all instances longer than the surgeon could have given, and that without the considerable discomfort of an operation.

Classification of Results.

Results should be classified according to the method employed.

1. *Roentgen Therapy alone.*—As it is only within the last eighteen months to two years that this method has been successfully employed it is too early to speak of results, which, however, lose nothing by comparison with combined Roentgen and radium therapy data, and there is the added gain that with correct technique there is practically no risk of burning the patient.

2. *Roentgen Therapy together with Radium.*—In Germany the practice is to follow up the radium with Roentgen therapy. Two cases, treated in 1916, were seen in Erlangen; they were both peasant women, and looked as if they had never been ill in their lives. Two other cases seen in Munich, treated at a slightly shorter interval, were equally well. In Stockholm Professor Forssell reserves radium to administer the *coup de grâce* following any exhibition of Roentgen rays.

3 (*a*). *Roentgen Therapy with Copper Electrolysis.*—This is proving the most satisfactory method of approach. There are some added dangers of burning the bowel owing to copper particles being excreted there; but the added benefits to the patient outweigh any disadvantages from this. It seems almost impossible to explain the reason for the great improvement in the condition of the patient, but there is no doubt about it. There is another advantage in that the scar resulting from this form of treatment is loose and supple, and in fungating conditions suppuration is lessened. This form of treatment is specially effective in malignant skin lesions which have resisted other forms of treatment, even including the application of radium.

One case I saw of a middle-aged man who had had an extensive ulcerative epitheliomatous growth of the skin overlying one scapula. He received the usual dose of *x* rays, which had not the slightest effect. After a period of eight weeks he was treated by copper ionization and again irradiated. Within a very short time an appreciable difference was noticeable, and the ulcerated area commenced to close in. This treatment was repeated after a further eight weeks and again after ten weeks. Within three months of the second treatment the lesion was healed and had remained so when seen two years later. Within the last few months, however, a recurrence took place in the middle of the scar, but this has been successfully treated again.

3 (*b*). *Roentgen Therapy and Packing with Paraffin Blocks.*—I was not able to see any results from this or even the apparatus in use, as the Surgical Clinic Roentgen Department was being rebuilt at the time of my visit; but despite its originator's claim and satisfaction, I think that a longer period than twelve months ought to elapse before any definite pronouncements can be made; but should it be successful it will lead to a very great simplification in the technique employed.

It is necessary to impress on workers the dangers as well as the benefits contingent upon the use of these newer methods. With the older methods there was very little if any danger of irritating a growth, but a carelessly focused application of the intensive rays may so stimulate an outlying portion of the growth that the patient soon succumbs to this rapidly growing portion.

Furthermore, the old days of haphazard application are gone—I hope for ever. It is no longer sufficient for the patient to come with a rough diagnosis and receive treatment; it is necessary that he should undergo an extensive clinical, laboratory, and if necessary radiological examination—first, to ascertain the exact situation and extent, so far as is possible, of the tumour; and secondly, the condition of the patient and his fitness to undergo treatment. One of the most important examinations is that of the blood, which serves as the principal indicator of the state of the patient's health, and unless or until this conforms to a certain definite standard treatment cannot be safely undertaken.

The secret of success by these methods is intimate co-operation between clinician, pathologist, physicist, and radiologist; this necessarily means that it is a method which can and should be employed only in large hospitals where this co-operation can be easily obtained. The ideal is that there should be one large central institute in each of the greater cities where these conditions obtain.

Nothing could be worse than the action of some of the smaller hospitals—probably assured by those who do not know that there is no danger attending upon the use of this apparatus—in installing an intensive high-tension outfit, the working of which is positively dangerous in untrained hands. The technique should be employed only when a competent, properly qualified, and trained radiologist can be in attendance the whole time. It is absolutely essential that the greatest care should be taken that the rays are accurately focused, and this entails an accurate knowledge of anatomical relations that cannot be expected of even the best sister or lay assistant. This alone means that this technique should be on no account employed in cottage or even the smaller town hospitals, but only in central institutes in larger towns, as in the former case the radiologist at the best can be only a part-time officer, while the treatment, if justice is to be done it, must have at least one whole-time officer, who must not only personally make every focusing, but must also observe the patient from time to time in order to see that the rays are reaching the desired spot. Apart from the saving in capital outlay, by preventing unnecessary and wasteful duplication of apparatus, the prevention of the tremendous wastage of human life and happiness which would ensue through the inefficient and incorrect treatment that would necessarily obtain at the small local hospitals, is alone an overwhelming argument in favour of the large central institute, where the large number of cases seen and treated, together with the trained staff and opportunities for research and co-operation, conduce to a very much better end-result.

There cannot be the slightest doubt that intensive therapy is a great improvement on older methods, nor that it has come to stay; but it must be remembered, above all, that good and lasting results are only to be obtained by constant care and unremitting attention to detail. It is to be hoped, now that deep therapy is an established fact, that any improvements which follow will come rapidly and be along lines which will allow considerable simplification of detail. It is to be feared, however, that much of the deep therapy apparatus that is being installed in this country will not be properly used and that much discredit will fall on a method that is of very great help in relieving, if not in curing, the dread scourge of cancer.

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THE RESULTS OF TREATMENT IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

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THE following paper is a review of one hundred cases of syphilis of the central nervous system treated at the London Lock Hospital during the last two years. All the patients were men. Many more have been treated, but as a great number of these have been lost sight of, and many have been irregular in their attendance, it has been thought advisable to concentrate on one hundred cases only. Space prevents each case from being reviewed in detail, but it is hoped that the illustrative cases are sufficient to prove the main premisses of the writer. These are as follows:

1. A man is much more likely to develop nervous syphilis if his primary sore is of the papulo-erosive type. In the 100 cases under review 64 showed no trace of any scar, 33 showed the slight and almost invisible type of scar which

follows a papulo-erosive chancre when it leaves any scar at all, 2 showed scars typical of a papulo-ulcerative chancre, and in only one case did the scar prove that the original sore was a primary granulating chancre. One may therefore suggest that the smaller and the more transient the original sore the more likely is the patient to develop a nervous manifestation in later years. This no doubt explains why it is that so many patients suffering from obvious nervous syphilis are unable to give any history of an original infection.

2. Seventeen were of the meningeal, interstitial, or late secondary type, and of these two were definite "neuro-recurrences" following salvarsan. In one case a facial paralysis appeared seven weeks after the last injection of neo-salvarsan, and fourteen weeks from the appearance of the sore, the treatment having consisted of 3.6 grams of neo-salvarsan administered in six weekly injections of 0.6 gram. The other case is described in detail later. Of the remaining 15 cases 10 had had no treatment worth mentioning, 3 had been well treated for nearly two years with injections of neo-salvarsan and mercury, and 2 had taken mercury internally—in one case for eighteen months and in the other for a year.

As the result of treatment all these patients were restored to normal health, so far as could be determined both by clinical and pathological means. There is, however, one exception to this statement. It was found that patients who complained of tinnitus aurium never lost this distressing symptom. The above good results only occurred provided the special treatment was followed up by an ordinary course of treatment for the syphilis. If this was neglected, the meningeal symptoms tended to recur and the cerebro-spinal fluid to become pathological again.

3. Degenerative or parenchymatous cases were materially benefited by treatment, so far as their subjective symptoms were concerned. Eighty-three cases were treated, but in no instance was it found possible to bring about any alteration in the physical signs, or to effect any permanent improvement in the pathological picture presented by the cerebro-spinal fluid. The question of treating this type of case was decided, not by the patient's physical signs but by his symptoms. If he complained of severe lightning pains, bladder trouble, or any other of the common symptoms of degenerative lesions, such as are met with in tabes or tabo-paresis, then it was found that the special treatment outlined below would almost certainly improve him. But if he complained of nothing, and the condition was discovered during examination, then it was found best to leave him alone.

4. The condition of the cerebro-spinal fluid was found to be of no value in deciding whether a patient suffering from degenerative neuro-syphilis should be treated. Four of the eighty-three cases were clinically typical tabetics, but the cerebro-spinal fluids were normal. All the same their subjective symptoms were greatly improved by treatment. It was found useless to gauge the efficiency of one's treatment by a progressive diminution in the cell count or in a reduction of the positivity of the Wassermann reaction. Broadly speaking, all the tests employed appeared to be uninfluenced by treatment. It is true that in two of the eighty-three cases the cell count came down to single figures, and in one the Wassermann reaction became negative, but this exception is not sufficient justification for assuming that the change wrought was necessarily the result of the treatment. It is too often forgotten that the tabetic lesion tends to come to a standstill, and in such cases the cerebro-spinal fluid may become normal once more.

5. In contradiction to the generally accepted view, general paretics were improved, and the onset of insanity postponed, provided that they were brought under treatment before they had become obviously stupid and fatuous. When the latter stage was reached treatment was worse than useless and only accelerated the fatal termination. Seven cases were treated in this series, of whom two were already stupid. These latter made no improvement: one is dead and the other in an asylum. But the other five are all holding their own, and three of them are certainly distinctly better. Their cerebro-spinal fluids, however, are just as pathological as on the day when they started treatment, and it may be mentioned in passing that when once the gold sol curve has assumed the paretic form it never changes again.

Rationale and Method of Treatment.

On the first day on which the patient was seen and a clinical diagnosis of nervous syphilis either made or suspected, the cerebro-spinal fluid was examined so as to correlate the pathological findings with what was noted on ordinary clinical examination. A week later the patient was given a maximum intravenous injection of one of the salvarsan substitutes, and, after a further interval of one week, the injection was repeated and immediately followed by drainage of the thecal canal. This method of alternate weekly injections and injections *plus* drainage was continued until the patient had received eight injections and four tappings. In addition most patients received one or more intramuscular injections of intramine to intensify the action of the salvarsan substitutes, and to ward off metallic intoxication. The patient was then put on a potassium iodide mixture (with mercury as well if the case was "meningeal"), and the course repeated in two or three months' time if he felt no better, or if the symptoms returned. Provided that a suitable interval had elapsed since the termination of the last course, it was found that the patient's symptoms were the best indication as to when it was advisable to begin another.

The method outlined above was used in preference to the intrathecal injection of salvarsanized or mercurialized serum, for the following reasons. The treatment adopted is extremely simple, it causes the patient little or no distress, and it can be done with complete safety in the out-patient department or the consulting-room. The patient can get down from the table immediately the drainage is finished, and he is able to go about his ordinary business for the rest of the day. Headache was but rarely met with, and one might add that headache following lumbar puncture was found to be most infrequent when the cerebro-spinal fluid showed evidence of nervous syphilis, whereas it was almost the rule when the fluid was normal.

Recent researches[1] tend to show that the function of the cerebro-spinal fluid is to drain away rather than to supply, and that its withdrawal by lumbar puncture creates a negative pressure with a resulting ultra-filtration of substances from the blood. If, therefore, a drug is injected intravenously and the thecal canal drained immediately afterwards, the drug should be drawn more rapidly through the choroid plexuses on account of the negative pressure thus set up. Furthermore, if one accepts this view of the function of the cerebro-spinal fluid, the whole rationale of intraspinal medication falls to the ground, and one must conclude that the good results which do undoubtedly sometimes follow intrathecal injections of salvarsanized serum are due not to the injections but simply to the drainage. In this connexion the work of Barbat[2] is most striking. He showed that in 26 patients who were given an intravenous injection of neo-salvarsan and tapped immediately afterwards, it was possible, after twenty-four hours, to demonstrate 0.025 part of arsenic per 100,000 in the cerebro-spinal fluids of 23 of them. While, on the other hand, Rieger and Solomon[3] showed that, if three hours were allowed to elapse after the injection, no arsenic could be detected in the cerebro-spinal fluid.

We can assume, then, that drugs injected intravenously do reach the cerebro-spinal fluid, provided that the injection is followed immediately by an auxiliary tapping. Finally, this treatment is absolutely harmless, while it was found that intraspinal injections of salvarsanized serum did in a few cases materially aggravate the lesions. It was because of this that Mr. McDonagh introduced the method now used at the Lock hospitals.

Illustrative Cases.

CASE I.

Male, aged 23. This was a true "neuro-recurrence." He developed a papulo-erosive chancre in the coronal sulcus in April, 1919, and was treated with nine injections of neo-salvarsan and a course of mercury for three months. In October, 1919, he first noticed headache which was worse at night—this was nearly ten weeks after his last injection of neo-salvarsan. When seen in December, 1919, he complained also of deafness, tinnitus aurium, and occasional attacks of giddiness. On examination both the vestibular and cochlear portions of the auditory nerve were found to be affected; there was obvious deafness. Furthermore, nystagmus was present, and the water and rotary tests for vestibular nerve involvement were positive. His course of treatment extended from December 9th, 1919, to the end of February, 1920. On December 9th an examination of the cerebro-spinal fluid gave the following result (a normal result is shown for comparison):

	Patient's C.-S. F.	Normal Result.
Cells	120 ...	1 to 5
Globulin	+ ...	—
Wassermann reaction ...	++ ...	—
Gold sol	0001122553 ...	0000000000

Examination on December 23rd showed: Cells 210, globulin and Wassermann tests positive, gold sol 0001122553.

From this time onwards the findings became less pathological, and when the cerebro-spinal fluid was examined at the end of February, 1920, it was found to be perfectly normal.

This, of course, was a case of meningitis with involvement of both vestibular and cochlear branches of the auditory nerve. From the first drainage the physical signs improved enormously, and, when examined fourteen days after the last, the headache, deafness, and nystagmus had entirely disappeared. The tinnitus aurium, however, persisted, as always happens in this type of case. The rise in the cell count after the first tapping is worth noting, as it was almost a constant phenomenon, especially in cases of meningitis.

CASE II.

A man, aged 34, developed a papulo-erosive chancre on the fraenum in 1917. When seen in February, 1920, he complained of intolerable headache and almost complete loss of memory for recent events. He had had two epileptic fits in the previous month. Clinical examination revealed nothing abnormal except that the deep reflexes were rather exaggerated. His cerebro-spinal fluid was examined on February 2nd and 3rd, 1920, and again on March 27th, 1921. The results are shown in the following table:

	Feb. 2, 1920.	Feb. 23, 1920.	Mar. 27, 1921.
Cells	100	154	3
Globulin	+	doubtful	—
Wassermann ...	++	doubtful	—
Gold sol	001234444	011332111	000000000

Treatment extended from February 2nd to April 27th, 1920. The patient's symptoms rapidly cleared up. He continued on mercury and potassium iodide, and, when seen a year later, looked in robust health. He complained of nothing, and had had no more fits. His cerebro-spinal fluid was again examined and, as will be seen by the table, was found to be perfectly normal.

CASE III.

A man, aged 50, developed a papulo-erosive chancre on the glans penis in 1891. He was treated with mercury for four months after infection, but had had no treatment since. When seen on September 20th, 1921, he stated that he had suffered from lightning pains in his legs for the last eighteen years, and from urinary incontinence for over five years. His physical signs were those typical of a case of tabes, and in addition he wore a portable urinal. An examination of cerebro-spinal fluid on September 20th, 1921, gave the following results: Cells 22, globulin test positive, Wassermann reaction strongly positive, gold sol 012441000.

Treatment was at once instituted, and, although it is now only two months since it was started, the patient's general condition has already vastly improved. The lightning pains have entirely disappeared, and, although he still has some frequency of micturition, his bladder trouble is very much better, and he has given up his portable urinal. There is no alteration, however, in the cerebro-spinal fluid picture, and when this was examined on November 16th, 1921, it was practically the same as on September 20th. He still, of course, shows the same physical signs as before, but from his point of view his life is now worth living, and he can pass water almost like a normal man instead of having to let it dribble into a urinal all day long.

CASE IV.

A man, aged 46, developed a papulo-erosive chancre on the glans penis in 1901, and was treated with mercury for eighteen months. When seen on April 6th, 1921, he showed the usual physical signs of tabes *plus* a greatly enlarged Charcot's left knee-joint, which had appeared after a kick from a horse in France in 1917, and for which he wore a special walking apparatus. He complained of lightning pains and headache, and could not exactly remember when they started. His first course of treatment extended from April 6th to June 1st, 1921. His cerebro-spinal fluid was examined on both of these dates, with the following results:

	April 6.	June 1.
Cells	67	36
Globulin	+	+
Wassermann reaction ...	++	++
Gold sol	234455210	122211100

By this time the lightning pains had greatly improved, but the most interesting thing of all was that the Charcot joint was now half its former size, the whole of the redundant synovial fluid having been absorbed. The expensive apparatus which he was wearing was now much too big for him, and he had to discard it. In August, 1921, he began to suffer from headaches again, so he was given a further course of treatment, which resulted in the disappearance of this symptom. At the present time he is free from symptoms, and the effusion in the Charcot's joint has not recurred. His cerebro-spinal fluid picture is still much the same as when treatment was first started.

CASE V.

A man, aged 36, developed a papulo-erosive chancre on the coronal sulcus in 1911, and was treated in Italy for three and a half years with weekly intramuscular injections of mercury (with occasional rests and potassium iodide by the mouth. He remained perfectly well until the beginning of 1920. At this time he began to neglect his work, and his friends and relatives noticed that he was getting slovenly and neglectful in his habits and appearance. These symptoms gradually progressed, and he was given a long holiday by his firm with instructions to "pull himself together." On June 29th, 1920, he presented himself at hospital. He talked volubly with a markedly slurring speech, the tendon reflexes were exaggerated, and the pupils sluggish and irregular. It seemed obvious that he had developed general paralysis, and this opinion was confirmed by an examination of the cerebro-spinal fluid, which gave the following result: Cells 55, globulin and Wassermann tests both strongly positive, gold sol 55555554342.

He was treated from June 29th to August 10th, 1920, with the result that his mental condition considerably improved. He was given another course in November and December, 1920, and it is worth noting that the pathological picture of his cerebro-spinal fluid on December 1st, 1920, was: Cells 50, globulin test positive, Wassermann reaction strongly positive, gold sol 55555544433.

By March, 1921, his general condition had improved so much that he returned to his work. During 1921 he has received two courses of special treatment. His speech is still slurred, but his mental condition is good. He finds no trouble with his work, and appears rational and intelligent. The last examination of his cerebro-spinal fluid was on November 29th, 1921, and the result was as follows: Cells 22, globulin and Wassermann tests both strongly positive, gold sol 55555555221. One can therefore say that a considerable part of the symptom-complex of general paralysis of the insane has for the time being at any rate disappeared, although the cerebro-spinal fluid picture is still absolutely pathognomonic of that condition.

The cases were all under the care of Mr. McDonagh, and my thanks are due to him for his kindness in allowing me to make use of them, and for his unfailing help and resourcefulness when difficulties were encountered. Without his co-operation the work could not have been done. Furthermore, I cannot conclude this survey without stating that I have merely carried on the work which was begun by the late Dr. Lawrence Shaw, and which was cut short by his untimely death in March, 1921. To him, therefore, belongs much of the credit for the good results obtained. The pathological work was done by Mr. Victor Corbett, and to him also I express my thanks.

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[1] McDonagh: *Venereal Diseases* (1920), chapter xii. [2] Barbat: *Journ. Amer. Med. Assoc.* (1918), i. 147. [3] Solomon: *Journ. Amer. Med. Assoc.* (1918), ii. 15.

THE TREATMENT AND PROGNOSIS OF LEPROSY.*

BY

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OF the general measures that can be taken for the benefit of lepers the following are essential:

(*a*) Regular meals of abundant food, including plenty of milk. Unfortunately I do not know what is the diet of the majority of patients at Makogai. I only know what the Government ration is, and that is certainly not the complete diet of the patients.

(*b*) A literally open-air life. At Makogai the wards, open-air as they are, are used merely as dormitories, the patients spending practically all their time in the shade of trees, or in shelters or in their gardens.

(*c*) Gentle exercise and daily baths. The latter are very important from the ease with which lepers get small wounds. If the skin is clean there is not much harm from them, but if the skin is dirty they may form the starting point of very serious infection.

(*d*) Happiness of mind, obtained by kindly personal interest, plenty of amusement, and remunerative work. There should be as little petty discipline and interference as possible, and there should be no talk nor hint, whether by staff, patients, or visitors, of the loathsomeness or incurability of the disease.

Leprosy is not incurable, nor is it nearly as loathsome as many other diseases. But though we disapprove, we must still recognize and allow for the stigma that is attached to leprosy, a stigma due in part to the rareness of the disease in civilized countries with a corresponding ignorance on the part of the general public. This stigma will, of course, soon pass away, just as the horror with which sleeping sickness was regarded twenty years ago has disappeared with the increase of knowledge. One can have nothing but praise for the humane campaign of the Hawaiian leprologists for the true education of the public and the consequent eradication of this mediaeval stigma. Leprosy is a disease of such low infectivity that it appears to me to be the ideal disease for treatment at the patient's home. I do not agree that complete compulsory segregation will ever succeed in wiping the disease out of Fiji, whereas segregation at home or in an

* A paper read at a meeting of the Fiji Branch of the British Medical Association, May, 1922.

asylum in the patient's own district (say, in an annexe to the provincial hospitals) might be much more successful.

There is a wide field for simple surgical measures, especially in the septic infections that are so troublesome. Perforating ulcers, often situated superficial to very chronic adventitious bursae, are best treated by excision with the bursae. Rhinitis, iritis, and neuritis are, after sepsis, perhaps the commonest symptoms calling for treatment. Often the intractable neuritis is enormously improved by cutting down on the nerve in the whole length of the enlarged portion and peeling the epineurium from the inflamed nerve. The wound is closed and the relief is immediate. The rhinitis, especially if very fetid, is much improved by irrigation twice daily and packing with sterilized gauze. Leprous iritis must be treated in the same way as iritis from other causes. Septic ulcers heal with remarkable rapidity if they are carefully tended, as is the case at Makogai, where our sisters and dressers perform an average of one hundred and fifty dressings daily.

Specific Treatment.

I have tried, amongst others, the following specific treatments:

(1) By the intravenous injection of tartar emetic. Although two cases were given 43 grains in thirty-five injections and 46 grains in thirty-seven injections respectively, there was no improvement which could be attributed to the tartar emetic. Therefore I regard this treatment as useless for leprosy.

(2) By the intramuscular injection of ethyl esters of chaulmoogra oil. This method is expensive and very painful, and is not as effective as methods 3 and 5 detailed below. I am now trying this drug intravenously. It is well borne, but I have not yet experience enough to give an opinion as to its value.

(3) By intravenous and oral administration of sodium hydnocarpate. This is also an expensive method. It is not as effective as method 5 detailed below, but if one misses the vein and gives the drug subcutaneously the resulting swelling is not so painful as in the case of the oil and is more rapidly absorbed.

(4) By the intramuscular injection of chaulmoogra oil in various mixtures, chiefly according to Heiser's formula. This is painful, and the injections cause a fibrous degeneration of the muscles. Further, there is no knowing how much is absorbed, for months after the injection the oil may be aspirated unchanged from the injection site. Nevertheless, this treatment is valuable and the patients do well on it.

(5) By the intravenous injection of crude chaulmoogra oil. A good average specimen of chaulmoogra oil at room temperature in Fiji consists of about equal parts of solid and liquid constituents. This is sterilized by heat. From 5 to 15 minims of the oil at body temperature are injected once, twice, or three times daily. My present plan is to give a fortnight's rest at the end of each four weeks' injections. The treatment is maintained until a "treatment reaction" occurs, when it is stopped until the reaction is over. I used to give the oil intravenously in a mixture with ether and iodine, or carbolic, but find the crude oil as above to be more satisfactory. During the last two years 35,000 intravenous injections of chaulmoogra oil have been given at Makogai. Syphilis, compensated heart diseases, tuberculosis, and the filarial diseases are not necessarily contraindications. Cases of albuminuria without casts have lost their albuminuria during treatment with this method. Chaulmoogra oil was first given intravenously by Varham, Stevenel, and Noc. They gave it in fine emulsion; but their doses were very small, being about one-hundredth to one-fortieth of the doses given by me. Nevertheless they obtained good results.

Chaulmoogra oil is so unpleasant to take by the mouth or subcutaneously that for years efforts have been made to find an unirritating active principle. One of the earliest of these was "antileprol," rediscovered recently and much praised as the ethyl esters or "Dean derivates" by the Hawaiian leprologists. Another rediscovery is Sir Leonard Rogers's sodium hydnocarpate and gynocardate, the sodium salts of hydnocarpic and gynocardic acids, which were used twenty years ago by Roux.

These derivatives of chaulmoogra oil seem to act in the same way as the oil itself, over which they have no real advantage. Their action is not, I think, due to the purely antiseptic action of the oil, which is stated to be selective for the acid-fast group. Injections of chaulmoogra oil cause a transient leucocytosis which might repay investigation. Whatever the mode of action may be, there is no doubt that chaulmoogra oil taken over long periods does ameliorate most cases of leprosy and cure some. After weeks or months of treatment a stationary case will have a "treatment reaction," evidenced by fever, eruption, and neuritis, hardly if at all to be distinguished during the fastigium from true leprotic fever. After the subsidence of the symptoms, however, a definite change for the better takes place. Treatment must be carried on for years.

Prognosis.

In early and mild cases there is a fair hope of cure or arrest of the disease. In pure nerve leprosy arrest of the disease has already taken place in a large number of the cases admitted to Makogai. I can see no justification for the segregation of these patients, many of whom are not capable of transmitting the infection at the time they are signed up. Yet if such a patient is admitted to the asylum the law requires that he remain segregated for a minimum of two years.

Advanced nodular cases or cases with marked nerve deformity are comparable to cases of generalized tuberculosis and cases of fibrous phthisis respectively, for in the one set of cases the body is little more than a culture medium for the bacilli, whilst in the other the disease, although it may have ceased to be active and infective, has caused immense loss of tissue and deformity. Such cases are, to use the layman's language, incurable.

In many cases leprosy actually prolongs life, for if a man contracts the disease he orders his life sanely with the idea of combating not merely his leprosy but also the possibility of other diseases and vices. I can give no figures for the length of life after infection, but from modern researches, especially those of Sir Leonard Rogers, it appears that in the vast majority of cases infection takes place during the first few years of life. Yet the majority of our cases die at an advanced age.

Lepers do not as a rule die of leprosy. The causes of death in the first 157 deaths at Makogai are as follows:

Tuberculosis 42, septic infection 31, nephritis 18, leprosy 14, exhaustion 5, undetermined 5, tetanus 4, senility 3, pneumonia 3, dysentery 3, suicide 3, amyloid disease 2, malignant disease 2, filariasis 2, peritonitis 2, influenza 2, mitral disease 1, angina pectoris 1, pulmonary embolus 1, cerebral tumour 1, duodenal ulcer 1, intestinal ulceration 1, bronchitis 1, renal abscess 1, general paralysis of the insane 1, epilepsy 1, hemiplegia 1, pharyngeal ulceration 1, diabetes 1, syphilis 1, anaesthesia 1, fatty heart 1.

From the above it is seen that tuberculosis and sepsis are the chief causes of death. The prognosis in civilized races is far and away better than in lower races. Osler, for instance, records the case of a clergyman performing his duties for thirty years whilst a leper, though none of his flock knew of his disease. Similar cases of lepers, unsuspected by the general public, living active beneficent lives, occur in most of the countries in which the disease is endemic, including Fiji.

A SIMPLE PORTABLE APPARATUS FOR CONTINUOUS OXYGEN ADMINISTRATION.

BY

GEOFFREY BOURNE, M.D.,

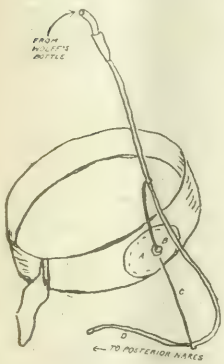
PHYSICIAN TO THE EAST LONDON HOSPITAL FOR CHILDREN, CHIEF ASSISTANT TO A MEDICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL.

For many years oxygen has been largely used in the treatment of pneumonia, but generally it is given sporadically and rather with the idea of meeting some crisis in the patient's condition. Its use as a continuous therapeutic agent came under the writer's especial consideration in the treatment of severe cases of bronchopneumonia, complicating pertussis and measles, in the wards of the infectious block of the East London Hospital for Children. Dyspnoea and cyanosis were of course predominant symptoms in many cases, and the lack of proper oxygenation of the blood appeared to be a serious, often a fatal, handicap to recovery. Physiological, pathological, and chemical work upon the oxygenation of the blood also point in the direction hinted at by these clinical signs. Pneumonia is certainly a condition in which there is often anoxaemia; the place of oxygen in its treatment should therefore be one rather of regular use than of spasmodic effort. The same is true of other conditions complicated by lack of oxygen, such as chronic bronchitis and emphysema, asthma, and many types of heart

disease. In the cases of bronchopneumonia above referred to oxygen was given at first by the usual funnel method. This, however, suffers from many disadvantages: the presence of a nurse is necessary; much oxygen is wasted owing to rapid diffusibility; it is doubtful whether the inspired air has a much raised oxygen tension; and the presence of a large funnel in close proximity to the face is often resented by a restless patient. These are all difficulties which it is essential to overcome in the production of an apparatus which will usefully administer oxygen. An oxygen chamber is, of course, ideal, for the oxygen tension can be exactly regulated. It is a luxury, however, which is restricted to a few institutions of sufficient wealth, and even in them it can only be used in a small proportion of cases, so that the lesser hospitals and the private practitioner must look elsewhere.

Description of Apparatus.

The diagram is nearly sufficiently explanatory of the apparatus which forms the subject of the present communication. A webbing or elastic circlet, whose size can be regulated by a buckle, grips the head firmly but not tightly. On the front of this is an aluminium plate, A, which acts as a firm base for the brass pin B. Through a vertical hole in this passes an aluminium rod, C, which can be fixed at any level by a screw. Loops at the extremities of this hold a rubber catheter (size 6), D; they grip it but allow it to be pulled through to any desired length. Oxygen passes from the cylinder through a Wolff's bottle containing fluid (water or brandy) and standing in a bowl holding warm water. From this it passes to the patient, who receives it intranasally through the rubber catheter.



Method of Use.

Attention to a few details is necessary when fitting the apparatus to a patient. The catheter must first be lubricated, and the best ointment for this has been found to be novocain 2 per cent. in vaseline; it should be inserted to the level of the posterior nares, or a little beyond, but must not touch the posterior pharyngeal wall. If a thread be tied round the catheter to mark the depth to which it is desired to introduce this, a nurse can easily see whether any slipping has occurred and can quickly and accurately readjust it. The lower loop in the aluminium wire should be as near the nostril as possible. The rubber tube to which the catheter is attached can be suspended, in which case the movements of the patient's head are quite unrestricted. The rate of flow of oxygen can be seen by the rapidity of the bubbles through the brandy or the water in the Wolff's bottle, and the speed need be no faster than about 70 to 80 bubbles a minute. Oxygenation is efficient at a much slower rate of flow than with an open funnel.

Mechanical Advantages.

The apparatus is a stable one. Since it moves with each movement of the head the patient is not worried, and soon becomes reconciled to it, eventually forgetting its presence. It is very light and portable. Oxygen is conducted to a position whence much of it is inspired; there is thus actually a very considerable saving in the amount of oxygen used. It is inexpensive.

Clinical Advantages.

It has been used in twenty-three cases of severe bronchopneumonia in children. Cyanosis is not seen in cases using it. Sleep is not interfered with. There is no increase in the number of paroxysms in cases of bronchopneumonia in pertussis; there is thus no local irritation from its presence. Other signs of irritation or resentment are not seen, as a rule, although occasionally it has been found necessary to tie the hands down. Oxygen can be given continuously and indefinitely in an effective and economical manner.

C

There appears to be no reason why its use should be restricted to children; they provide the more searching test, and success with them should promise at least an equal success in adult cases. It should prove of use in any pulmonary or cardiac condition complicated by anoxaemia and cyanosis. The instrument is made by Messrs. Maw, Son and Sons, of Aldersgate Street, who have agreed that all profits from its sale should go to the East London Hospital for Children.

TREATMENT OF PSORIASIS BY MANGANESE.

BY

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THE only specific treatment of psoriasis, up to the present, is the external use of chrysophanic ointment. Arsenic is useful in anaemic cases, sodium salicylate in cases with a rheumatic history, and thyroid extract in the obese or those with symptoms of hypothyroidism. These improve the disease by improving the patient's general health, but have no specific action.

In the autumn of 1920 I had under treatment two cases of chronic staphylococcic infection, who at the same time suffered from well-marked psoriasis. After six injections of gradually increasing doses of staphylococcic vaccine, my patient informed me that the skin was better than it had been for years. I continued the vaccine for another six injections, but with no appreciable improvement in the psoriasis.

The well-known benefit derived from the use of intramuscular injections of collosol manganese in staphylococcic infections, also the fact that collosol manganese, like staphylococcus vaccine, will bring about an acute recrudescence of streptococcal eczema, suggested its use to me in these two cases. The results were very satisfactory: one was cleared up completely after four injections, and the other after eight.

I have treated in all 35 cases of psoriasis in the past twenty months, of which the following is typical of the procedure adopted.

C., a strong healthy man, aged 43. Sixteen years ago a spot of psoriasis, the size of a sixpence, appeared on left leg, two inches above the external malleolus. In six months the disease had spread to the knee, and entirely surrounded the leg. After three years the other (right) leg was attacked in a similar manner. Six years ago the disease appeared in the lumbar region, and extended on the back as high as the scapula. At the same time both elbows became affected, and it extended on both arms almost to the wrist-joint on the extensor surfaces. About six months before consulting me a patch about four inches square appeared in the right inguinal region.

Such was his condition when he consulted me on January 6th, 1922. With the usual antiseptic precautions, I injected into the deltoid muscle (left arm) 1·2 c.cm. collosol manganese (1·4 c.cm. No. 1 sol., 1·4 c.cm. No. 2 sol. (Crookes), mixed in syringe) and ordered him to use vaseline to assist in removal of the scales, and allay the irritation. On January 10th 1·2 c.cm. collosol manganese was injected into the right deltoid; on the 17th 1 c.cm. into the left deltoid; on the 24th 1 c.cm. into the right deltoid; and on the 31st 1 c.cm. into the left deltoid. On this last date the inguinal patch had almost disappeared, and on the back and elbows islets of healthy skin were showing in the centre of patches.

On February 7th 1 c.cm. collosol manganese was again injected; the improvement continued. On February 14th a further 1 c.cm. was injected. On this date, with the exception of a small patch about two inches square, the disease had entirely vanished. I continued the weekly injections of 1 c.cm. collosol manganese up to the end of March, when the patient was completely cleared. In all the patient received thirteen injections. Vaseline was the external treatment.

From my study of psoriasis and its treatment by collosol manganese I have arrived at the following conclusions:

1. The clinical appearance and behaviour of psoriasis suggest a spirochaetal origin, but neither salvarsan, its congeners, nor mercury have any beneficial effect on the disease.

2. Mixed staphylococcic vaccine will improve the lesions, but will not bring about their complete disappearance, without the use of chrysophanic ointment.

3. Collosol manganese will clear up the disease in from six to sixteen intramuscular injections without the assistance of any external treatment. I prescribe vaseline where there is much irritation.

4. From the action of staphylococcic vaccine, and especially collosol manganese, I would suggest that psoriasis is probably due to a special staphylococcus, or at least bears an intimate relationship to chronic staphylococcic infection.

5. The disease is, in my opinion, auto-inoculable.

6. A number of cases in the same family can be accounted for by living under the same conditions, and subject to the same infection, rather than by heredity.

ZINC IONIZATION AS A DISINFECTANT IN LOCAL SEPSIS ILLUSTRATED BY ITS USE IN CHRONIC OTORRHOEA IN CHILDREN.

BY

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THE proof that zinc ionization is an effective treatment for surface or open septic lesions such as chronic otorrhoea, abscesses in various parts of the body, ulcers, endometritis, pyorrhoea, impetigo, etc., rests on considerations drawn from physics regarding the electrical current, the action of the zinc ion on albumin, the situation of the micro-organisms in the diseases in question, etc.; on laboratory experiments, designed to show that albuminous fluids as well as tissues can be sterilized by zinc ionization; and on clinical results. We owe its use to Professor Leduc.

In the last resort we found our judgement of the applicability of any method of treatment on the clinical results, but often it is difficult, on account of the complexity of conditions in disease, to present them in a convincing form. When we endeavour to do so it is desirable that we should specify the actual factor of the disease which we treat, and what is the actual effect of the remedy. If the disease in question presents one factor alone, or one factor preponderating greatly in its action over other factors, and if the remedy has only one action, or one action preponderating greatly over any other effect, we have a reasonable basis on which to form a judgement. The main factor in maintaining the otorrhoea is septic fluid in the ear. Zinc ionization is an efficient method of sterilizing an infected cavity.

When we are presented with a case of this disease we ask ourselves whether (1) the whole of the septic area is accessible: whether (2) there is any other factor present which would make it not worth while to sterilize the cavity; and whether (3) there is any condition in the patient which would lead to speedy reinfection.

If the sepsis is confined to the tympanum, and does not involve the attic or mastoid, and the perforation in the drum is large enough to allow fluid, such as zinc solution, to enter the ear, treatment by zinc ionization results in rapid and complete cessation of the discharge; this result is consistently obtained.

If besides sepsis another factor is present maintaining the otorrhoea, such as the irritation of a polypus or the exudation from large granulations, it is not worth while to attempt to sterilize the ear until the polypus is removed or the granulations have been treated. In these cases our first duty is to convert the complicated condition into the simple one of tympanic sepsis.

Under the third heading we may note that if the patient has inflamed tonsils, inflamed adenoids, purulent rhinitis or sinusitis, or pyorrhoea, we cannot expect the otorrhoea to cease until the infecting condition is removed.

Subjoined is an analysis of the cases showing the cause of chronicity and the results of treatment.

The clinical results obtained in cases of tympanic sepsis afford evidence of the efficacy of zinc ionization as a disinfectant suitable for applying to exposed tissues, or to mucous surfaces, as in addition to the results being rapidly, completely, and consistently obtained, the remedy (zinc ionization) is the sole or essential part of the treatment adopted.

The only treatment for tympanic sepsis employed at the ionization clinics is zinc ionization with or without the insufflation of boracic acid. In very slight cases the insufflation of boracic acid without ionization is adopted.

A word must be said about consistency. This implies similar, or identical, treatment in similar conditions. It is easy to use the same ionizing solution, but it is not possible to give each area of successive tympanic cavities an absolutely identical dose, as one tympanum may be larger than another and it is not possible to compare the size of each exactly. Again, with regard to similar conditions in successive patients: in one ear there may be a good deal of swelling of the tissues and in a second little, but with these provisos there is approximately similar treatment in similar conditions.

Of the 102 cases considered to be due to tympanic sepsis 83 were known to be cured, 14 were lost sight of, and 5 were still under treatment; 7 of the 14 only visited the clinic once, and 2 of the 5 had only made one visit. In none of the other 7 lost sight of or the other 2 still under treatment had the attendance at the clinic been of long duration. Of the 83 cases which were known to be cured 58 were cured with one treatment, and 12 more required only the insufflation of boracic acid on the second visit a week after the first treatment. The remainder required either a few more ionizations or insufflations of boracic acid, or both.

Cases of Otorrhoea in Children.

Classification of the "Cause of Chronicity" in each Case.	Total.	Cured.	Lost sight of.	Still under Treatment.	Referred for operation or other treatment.
A. CHRONIC MIDDLE-EAR SUPPURATION.					
I. Treated by Ionization.					
1. Tympanic conditions:					
Tympanic sepsis	102	83	14	5	0
Tympanic sepsis + granulations ...	40	23	6	9	2
Tympanic sepsis + polypi	19	5	3	5	6
Tympanic sepsis + cholesteatoma in tympanum	3	1		2	
Tympanic sepsis + pocket formed by adhesion	1		1		
Tympanic sepsis + caries of malleus	1		1		
2. Tympanic conditions + involvement of the Eustachian tube, pharynx, or nose	10	3	3	2	2
3. Tympanic conditions + involvement of the mastoid:					
(*a*) Mastoid	59	9	6	8	36
(*b*) Attic	15		2	5	8
(*c*) Radical (operation already) ...	1		1		
(*d*) Operation already (not radical)	5	2	1	1	1
4. Tympanic conditions + cause undetermined	3		1	1	1
5. Tympanic conditions + external otitis	5	5			
	264	131	39	38	56
II. Not Treated by Ionization.					
Tympanic sepsis	18	16	2		
Tympanic sepsis + granulations ...	1			1	
Tympanic sepsis + polypi	8		1	1	6
Tympanic sepsis + external otitis ...	1	1			
Tympanic sepsis + mastoid	1				1
Tympanic sepsis + radical mastoid cavity	7	1	0	1	5
	36	18	3	3	12
B. EXTERNAL OTITIS.					
I. Treated by ionization	3	3			
II. Not treated by ionization	3	3			
C. ACUTE OTITIS MEDIA.					
Not treated by ionization	1	1			
	7	7			
Totals	307	156	42	41	68

In all the cases of chronic otorrhoea sepsis is the basic factor causing chronicity; it is for sepsis that the use of zinc ionization is desirable. Zinc ionization is, in my opinion, as a result of what I have seen and read, the remedy *par excellence* for the septic factor present in endometritis, abscesses, boils, pyorrhoea, or accessible wounds. It should, I believe, be adopted in sepsis of the uterine cavity following infection in childbirth.

In treating the various conditions mentioned the doctor who intends to use this form of treatment should give the treatment himself. He alone knows the local condition, he alone has the requisite knowledge of the condition in his patient. The electrical knowledge requisite to practise ionization is easily acquired. The knowledge of the conditions in the patient takes much trouble to learn, and the only person who has a chance of gaining this knowledge is the person who is in charge of the case.

ACCORDING to a report received from the Health Section of the League of Nations there is a serious increase in the incidence of cholera in the Ukraine. During the last three days of May 360 new patients suffering from cholera were admitted into the Odessa hospitals, where 1,000 cholera cases were under treatment.

Memoranda:
MEDICAL, SURGICAL, OBSTETRICAL.

INFECTIVITY OF ARTIFICIAL DENTURES.

As an early and enthusiastic upholder of the opinion that dental decay is frequently the cause of a sepsis resulting in arthritis and periarthritic inflammations, as well as other inflammatory manifestations, may I draw more attention than is at present given to the fact that artificial dentures are also a cause of many inflammatory affections of the throat and intestinal tract? I would even go farther and say that they may be indirectly, if not directly, the cause of joint affections also. Having found out that a person is edentulous one is rather apt to pass on to other fields of inquiry, but it is well to inspect the dentures, for there is a good deal to be learnt from doing so: the mouth also should be inspected and all the more carefully if the throat seems somewhat inflamed. A stump of a tooth may be found—I have recently found in two elderly people who had arthritis a recently erupted wisdom tooth decayed. A decayed tooth amongst sound ones is bad enough, but under an artificial denture it is ten times worse. Apart, however, from the presence of a bad tooth, I am quite certain that dentures are far more frequently than is generally recognized the cause of pharyngeal catarrh and intestinal troubles, the latter being often erroneously put down to the patient not chewing food sufficiently, whereas it is really due to the infective nature of the teeth. I have examined a great many now, and closely questioned my patients, and I find that even those who go to the best, or at any rate the popular, dentists have not been instructed either as to the importance of caring properly for the teeth or the dangers of not doing so. Artificial dentures cannot be kept clean without the use of some disinfectant. Some people are very particular in cleaning them, and succeed pretty well at the expenditure of a considerable amount of time, but I have never seen any from which some of the peculiar fur which collects upon them could not be scraped off, and from which an abundant and varied crop of organisms may be cultivated, as has been done for me by Drs. Sinclair Miller and Johnstone, pathologists of this town. This fur is most tenacious, and seems to be a microbial and yeast growth embedding in its meshes the salts of the saliva, very much akin, no doubt, to the tartar which collects on natural teeth.

Some people retain their artificial teeth in the mouth at night; this helps to preserve the contour of the face, and in the case of suction plates helps to retain them more firmly in position, and in some cases is absolutely necessary, particularly for public speakers.

Artificial teeth ought to be put into an antiseptic all night if they are taken out of the mouth. If they must be kept in, they ought to be put into an antiseptic solution for half an hour at night, and again for half an hour in the morning. The toothbrush, or plate-brush, should always be kept in an antiseptic; it will be an important thing to get toothbrushes which will stand this; the best bristle ones seem to stand it pretty well. This appears to be putting an additional burden on the patient, but, as ought to be explained to him, it is quite the reverse. There is then no longer any trouble in keeping the artificial dentures clean, no fur collects on them, and all they require is to be lightly brushed with a toothbrush or rinsed under the tap. I am quite certain that if the mouth can be kept more or less aseptic intestinal troubles and throat irritations will often be found to clear up in a wonderful way. In regard to the nature of the antiseptic to be used, I think I must leave it to the dentists to find out what will not act upon the artificial teeth or gums they provide; boracic acid I have found to be not strong enough to arrest the growth. It is rather important that the disinfectant should be cheap, as used twice daily it soon runs up a rather formidable bill.

Harrogate. W. D'OYLY GRANGE, M.D.

A GLANDULAR FEVER.

By the term "glandular fever" I do not mean that disease so designated in our textbooks, but one which a recent correspondent in the JOURNAL (April 16th, 1921, p. 582) has mentioned, of which I have had the opportunity of seeing five cases. It is an infectious disease of children characterized by a gradual onset, in fact so gradual that patient may walk into the consulting room complaining only of an enlarged neck and malaise. The temperature is rarely over 101°, and a mild inflammation of tonsils and palpable cervical and inguinal glands are succeeded by a prolonged convalescence. That it is of infectious origin is borne out by the following evidence. There is slight inflammation of the tonsils, lymphatic extension, moderate leucocytosis, and moderate fever. I would say it was not contagious, inasmuch as my five cases were in widely separated families, and there was only one case in each family.

The first symptoms to appear are those of malaise and irritability, which last for a few days, to be followed by swollen cervical glands, which cause some difficulty in movement of the jaw. On the second or third day after this the inguinal glands become palpable and occasionally tender. On examination of the throat one finds a superficial redness of the tonsils, the tongue is coated, and in a severe case the gums and teeth are covered with sordes, the corners of the mouth crack, and the lips have herpes with a resulting slight exfoliation. I have not observed nausea, but anorexia and constipation are the rule. The spleen and liver are not enlarged. The cervical glands are most markedly enlarged below the angle of the jaw; in fact, in three cases they were so swollen that I feared suppuration. The enlarged chain follows the anterior border of the sterno-cleido-mastoid muscle down to the sternum; the glands are distinct. In the inguinal glands they never reach the size of the cervical. The urine in three cases showed albuminuria; and in all cases there was a leucocytosis of 12,000 to 15,000; the temperature ranges from 101° to 102°. There is a slight increase in heart rate, and the chest is clear. In two cases there was slight enlargement of the legs. In one case there was otitis media. The child complained of earache in both ears, but only the left ruptured and discharged. I will relate the course of the one fatal case of the series.

I was called one Sunday morning to see a male child of 4 years who had been sick about a week. The cervical and inguinal glands were enlarged; the tonsils slightly enlarged, some swelling; a rather solid oedema of the legs; the heart and chest were normal; no temperature; slight leucocytosis, and a trace of albumin. The following Tuesday, when passing the home of the patient, I dropped in. On this visit I found the tonsils normal in colour, the swelling in the legs gone, the inguinal glands reduced in size, and the child feeling much better. I felt optimistic, and was much surprised to get a hurried call that afternoon. The child after a moderate meal at noon had gone to bed for a sleep and on awaking was gasping for breath. When I arrived I found the child making desperate attempts to get its breath, all the voluntary muscles of respiration being brought into play. The extremities were becoming cyanosed; the heart's action was fast and feeble, and the child was at times delirious. This continued in spite of stimulation and inhalations for nine hours, when the child died. At times the cyanosis would clear up, the child would become perfectly conscious, and the efforts at breathing less laborious, only to be succeeded by the former condition.

Discussion.—Among the possibilities in the fatal case might be considered involvement of the mediastinal glands from direct extension with consequent pressure. Secondly, thymic death, the infection calling for marked action on the part of the thymus, which responded by oversecretion, which had a depressing influence on the central respiratory centre, and hypertrophy with tracheal pressure. I regret that I was unable, because of violent efforts, to make a proper percussion of the sternum for dullness. As there was no suppression of urine and only a trace of albumin I doubt if the condition of the kidneys contributed to the fatal issue. As heart changes only appeared after the signs of asphyxia had continued for some time, I do not consider that pressure of the cervical glands on the vagus was an important factor.

Treatment.—Iodine ointment was rubbed into the glands once a day, followed by a hot linseed poultice, a mild mouth-wash, and a gargle used every two hours. Internally much liquid was given as a diuretic, with small doses of calomel often repeated for the bowels, and a tonic of iron, quinine, and strychnine.

I very much regret my inability to obtain a *post-mortem* examination, and I did not obtain a differential blood count on the cases.

Sharbot Lake, Ontario. S. F. LEAVINE, M.D.

A BLOOD STAIN FOR GENERAL PRACTICE.

HISTOLOGICAL examination of a stained blood film is of more service in general practice than is usually supposed, but it is not employed as often as it should be because it demands the use of delicate (and incidentally expensive) reagents, which require careful control because different samples differ so widely in their histological reactions. The practitioner, however, can often derive valuable assistance from a study of the histology of the blood (I do not mean a total count of cells), and it is frequently important that this should be made as quickly as possible. All that is required for rough clinical diagnosis is to determine the presence or absence of a leucocytosis, the presence of abnormal forms, and the proportion of the different cells present in the film. By this

means not only can intrinsic blood disease be detected but valuable assistance can often be obtained in the diagnosis and prognosis of acute disease. For instance, internal suppuration and typhoid fever can be recognized in the early stage, in the latter case long before the Widal reaction is positive. Many other instances can be given.

After much experimental work I have succeeded in devising a stain which does not necessitate the use of fine chemicals or of a delicate balance and volumetric apparatus. The method is as follows: Two test tubes are half filled with ordinary methylated spirit. To one about a small salt-spoonful of ordinary commercial methylene blue, and to the other the same quantity of orange G, is added. The precise amount does not matter so long as there is more than enough to produce a saturated solution. The tubes are boiled over a spirit lamp for about a minute and allowed to cool; the solutions are then filtered. By this means a saturated solution of each dye is obtained.

Roughly, one-third of the orange G is then added to two-thirds of methylene blue, the precise proportion again not being of vital importance so long as the methylene blue is in marked excess. The mixed stain is then filtered on to the blood film and allowed to remain for two minutes. Approximately an equal quantity of tap-water is then added with a fountain-pen filler to the stain on the slide and the solution is mixed by rocking the slide or stroking the top of the fluid with a penholder. This dilute stain is allowed to remain for two minutes. The slide is then drained and flooded with tap-water and left for a further two to five minutes. The film is then drained and blotted on filter paper (or fluffless blotting-paper) and allowed to dry in the air; heat should not be employed. The stained film should appear of a yellow-green colour. If an immersion lens is not available the specimen should be mounted in balsam with a cover-slip and examined with 1·6 in. objective. The scrutiny of the dried film without a cover-slip with an immersion lens is, however, easier. The red cells are stained yellow and the nuclei of the white cells blue, the nuclear structure being well defined. The granular and non-granular cells are quite distinct, it being easy, for instance, to distinguish between a mononuclear cell and a myelocyte. This method is not intended to supplant a further detailed examination by the haematologist. For the detection of primitive forms and an estimation of the resistance of the patient to the particular disease, and in prognosis generally, the services of a haematologist are usually required, but unstained films can be sent subsequently to a laboratory if required. I suggest, however, that the use of this stain and the rough information that can be derived therefrom may be of considerable assistance to the busy practitioner, and obviate the postponement of the diagnosis until a report has been obtained from a laboratory.

London, W.C. A. KNYVETT GORDON, M.B., B.Ch.Cantab.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

SUSSEX BRANCH: BRIGHTON DIVISION.

THE final clinical meeting of the session was held at the Royal Sussex County Hospital on June 15th. Tea was provided at the hospital, and a hearty vote of thanks was proposed by Dr. L. A. PARRY, honorary secretary, to the members of the honorary staff for the great assistance they had given in making the series of meetings so successful.

Mr. H. N. FLETCHER showed two cases of diverticulum of the bladder.

In the first, a man of 63, the pouch was a large one, of practically the same size as the bladder itself, as shown by bismuth injection and x rays. It was lying to the left side of the bladder, and the two communicated by a neck the size of one's thumb about midway between their adjacent surfaces. The symptoms were an intractable cystitis, with foul urine following a preliminary wash-out of the bladder, and a residual urine of about 16 ounces. The pouch was discovered accidentally during an operation for stone. After an attempt to shut off the pouch from within the bladder, draining the former meantime through a small incision in the outer border of the left meatus, which failed after a week, the pouch was excised extraperitoneally through an incision as for exposing the lower end of the left ureter. The operation was tedious, owing to the adhesion between the chronically inflamed pouch and the peritoneum and extraperitoneal fat above, and the pelvic fascia below and around it.

The second case was that of a man of 67, who had had a stone removed from the bladder two years previously. A recurrence of frequency and pyuria had taken place eighteen months later. A skiagram showed two large stones, and per rectum a hard mass was felt just above the left lobe of the prostate. One stone was found at operation to be lying free; the second was firmly embedded in a diverticulum, the narrow neck of which was situated just to the outer side of the left ureteric orifice. Through the neck, and grasped by it, protruded an excrescence from the stone. The neck was dilated with forceps, and eventually had to be nicked with a hernia knife before the stone could be extracted. The position of the pouch rendered its removal a very difficult matter and it was not attempted.

Mr. Fletcher also showed a specimen of volvulus of the small intestine in a newly born child.

When first seen, forty-eight hours after birth, the child had passed nothing per anum, was vomiting meconium, and was very distended. A finger passed readily into the rectum. A laparotomy was immediately performed. Distended coils of small intestine presented, and at a point about eight inches above the caecum the bowel was half twisted upon itself. This was undone, but the child died twelve hours later, still vomiting meconium. At the necropsy the small intestine below the twist was contracted, and the whole colon was small, firm, and solid-feeling, and nowhere larger than one's little finger. There was no atresia and some bile had passed down to a point just beyond the hepatic flexure. Below this the bowel contained firm, light grey, inspissated mucus only. It was evident, therefore, that the volvulus had occurred at some period of intrauterine life, and had only caused trouble when peristalsis started at birth.

Mr. J. H. TURTON showed three cases:

1. A case of pseudo-coxalgia in a boy aged 14 years, with six weeks' history of pain in right hip with limp. No history of injury. General health unaffected. Slight limitation of abduction and of internal rotation, otherwise movement of right hip full, no tenderness or swelling. No visible wasting, three-eighths of an inch shortening. Radiograms showed marked flattening of the upper part of the femoral head with widening of the neck of the femur. This was considered to be a typical case of this condition, though the age was rather more than the usual.

2. A case of lumbo-sacral meningo-myelocele in female infant aged 4 months, with paralysis of lower extremities and commencing hydrocephalus.

3. A portion of glass tubing, 3½ inches long, removed by suprapubic cystotomy, and stated to have been broken off a week previously during irrigation of his urethra by the patient. Anterior urethroscopy showed no injury to the urethra and cystoscopy a few small haemorrhages only. Foreign body heavily encrusted with phosphates.

Mr. A. BERESFORD showed a case of acute osteomyelitis of the right clavicle in a boy aged 13 years; total diaphysectomy was performed, and re-formation of a new clavicle took place in six weeks.

The patient was admitted to hospital on May 3rd, 1922. He was very ill with temperature of 104°, pulse 120, and swelling and redness over right clavicle. He had been taken suddenly ill two days before with pain in right clavicular region. Emergency operation: long incision over clavicle; bone found denuded of periosteum and lying in a bag of pus. The whole bone was removed and the wound packed open. Patient nursed in bed with sandbag between shoulders. At the end of four weeks there was definite formation of a new bone. A radiogram showed traces of new bone. On June 15th the wound was completely healed. A new clavicle had been formed, together with complete restoration of function of the right arm. No early massage or movements were employed.

Mr. FITZMAURICE-KELLY showed a case of gummatous arthritis of the elbow.

The patient, a man 49 years of age, came to the out-patient department complaining of swelling and stiffness of the left elbow, of six months' duration, which he attributed to an injury three years previously. The movements of the elbow were limited, the range of flexion and extension being from 160° to 80°; pronation and supination about 50 per cent. of normal. All these movements were painless. There was general thickening around the joint; a large cystic swelling over the back of the external condyle, and several hard nodular masses, about the size of a Barcelona nut, above the olecranon and under the triceps. Over the ulna, two inches below the olecranon, was a scar, the site of a swelling similar to that over the external condyle which discharged six months ago and took two months to heal. He also complained of pain in the right leg. There was marked irregular thickening of the crest and subcutaneous surface of the tibia. Skiagrams showed periostitis of the tibia and the upper end of the ulna. There was a history of a venereal sore twenty years ago.

[The report of the Wassermann reaction, received since the meeting, was "Positive 4."]

Mr. Fitzmaurice-Kelly also showed a case of osteochondritis of the upper end of the femur.

The patient, a boy of 14, was brought up with an indefinite history of limping for several years, but the condition had become much more marked in the last two months. The boy walked with a considerable limp, but briskly, and without pain. On examination there was marked wasting of the right thigh, which was two inches less in circumference than the left, and the limb was shortened three-quarters of an inch on measurement. Flexion was free and painless; extension was limited, the permanent flexion at the hip-joint being 20°. Rotation was very limited, and no abduction was possible. The skiagram showed flattening of the upper surface of the head of the femur, some deepening and irregularity of the upper part of the acetabulum, and enlargement of the clear articular space.

Reports of Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

A MEETING of the Section of Pathology was held in May, when Dr. T. T. O'FARRELL read a paper on a case of acute leukaemia with intracranial haemorrhage, illustrated with microphotographs and lantern slides, and the organs of the case. The President, Dr. O'KELLY, believed that many cases of haemorrhagic inflammation might turn out to be acute leukaemias if the blood during life and the organs *post mortem* were properly examined. Dr. O'SULLIVAN said that leukaemia was to be looked on as a tumour, and the larger proportion of nucleated cells in the capillaries of the liver and spleen compared with those in other blood vessels, as well as the definite collections of cells round the vessels of the brain, resembled to some extent the formation of secondary growths. Dr. CROFTON discussed the rise of temperature in the case. He had lately had a case of puerperal fever in which he had failed to obtain bacteria from the blood. If the fever in this case was not due to organisms but was of the nature of a tumour, the reason for the rise of temperature was obscure. Drs. SPEARES, WIGHAM, and BOXWELL also discussed the classification of leukaemias, acute and chronic lymphatic, acute early and chronic myelogenic, and others, with the different cells observed; and Dr. O'SULLIVAN stated that Mallory had reported that a number of cases of acute myelogenous leukaemia had been taken for lymphatic leukaemia. Dr. O'FARRELL, in reply, said attention had been directed during life to a search for bacterial infection, so that any possible changes in the cytology of the blood had been overlooked. The most probable diagnosis had appeared to be cerebro-spinal fever, but no cocci had ever been found. The case had apparently no terminal infection.

Dr. CROFTON read a paper on a new micro organism, morphologically and culturally like the influenza bacillus, isolated from diphtheritic roup of fowl. With an antigen of this microbe he was able to prevent and cure the disease, and with a pure culture of the microbe to reproduce the natural disease and recover it from uninfected hens obtained from an uncontaminated source.

A meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland was held in May, with the President, Dr. A. R. PARSONS, in the chair, when Dr. L. ABRAHAMSON showed: (1) Electrocardiographs of a case of auricular fibrillation with normal rhythm still maintained five and a half months after treatment with quinidine; and (2) a case of complete heart-block with multiple ventricular extra-systoles.

Colloid Therapy.

Dr. WALTER SMITH read a paper on the principles of colloid therapeutics. He said that colloids were to be regarded as an intermediate stage between coarse dispersions of matter on the one hand and true molecular solutions on the other. They simply represented a realm of matter differentiated, for practical purposes, from a continuous series of systems. The line of subdivision between colloid and molecular systems was arbitrarily drawn at a magnitude of particles of 1 1,000,000 mm. in diameter. A large number of familiar examples of colloid dispersion among solids, liquids, and gases was afforded by such cases as foams, fogs and clouds, milk, smoke, liquid collosols, ruby glass, etc. The latent image on a photographic plate was a colloid phenomenon. Fine subdivision of matter involved an immense increase of surface area, and this was a point of capital significance in the interpretation of many chemical physiological phenomena. Several illustrations of the therapeutic action of colloids were given, and some experimental demonstrations illustrated—for example, the germicide action of colloidal silver, the influence of colloid manganese in controlling boils and other suppurative infections, and the use of colloidal copper. Any singularity in the operation of colloidal remedies might be ascribed to three chief factors: (1) Extremely minute subdivision (dispersion) of particles between the limits of 1 10,000 and 1 1,000,000 mm.; (2) consequent enormous increase in surface area (the reaction velocity of solids with liquids was proportional to the area of contact; adsorption played an important part); (3) activity of surface energy, the product of surface area and surface tension. Up to the present there was no good evidence that the chemical or pharmacological action of substances in the colloid state differed fundamentally from that in true solution, otherwise than in the gradual slow effect due to the minute size of the particles and the enormous increase of surface area.

Dr. R. J. ROWLETTE read a note on the subject of rheumatoid arthritis and allied conditions, and mentioned various doctrines that had been held as to the causation of rheumatoid arthritis; he expressed his own view that the various forms of subacute and chronic arthritis were infective in origin. In his own experience the primary focus was most commonly in the mouth. He regarded many cases of myalgia, lumbago, and sciatica as of similar origin. He recounted his experiences of treating rheumatoid arthritis and allied conditions by autogenous vaccines, and regarded the result as supporting his view of causation.

MANCHESTER PATHOLOGICAL SOCIETY.

A LABORATORY meeting of the Manchester Pathological Society was held on June 14th, the President, Mr. J. HOWSON RAY, being in the chair.

Mr. GARNETT WRIGHT showed a series of specimens illustrating varieties of carcinoma of the rectum, and in addition a curious breast tumour for diagnosis. Mr. PLATT showed three interesting bone tumours raising points of diagnosis and treatment. The use of Coley's fluid was discussed by the PRESIDENT, Mr. MORLEY, and Mr. PLATT, the last named speaker believing that the majority of alleged cures by means of this fluid to have been in cases of myeloma.

Dr. SELLARS presented a series of six specimens from the pathological laboratory of the Children's Hospital. One of these, after examination by members, was believed to be an intussusception of the appendix alone into the caecum. It was discovered by Mr. Warburton on exploring a palpable tumour in the right iliac fossa of a child of eight years. Resection was necessary. The specimen showed the appendix completely inverted within the caecum. Other specimens shown were bronchiectasis in a child, sarcomata of the small intestine and of the caecum, and the spleen from a splenic anaemia. Mr. DIGGLE showed a growth of the tonsil involving the larynx.

Mr. GEOFFREY JEFFERSON exhibited a histological section of a secondary carcinoma of the Gasserian ganglion. The primary growth was in the lung. The patient suffered from severe continuous facial neuralgia with hypoaesthesia, "anaesthesia dolorosa." The ganglion was explored, but nothing abnormal detected at operation. At autopsy six weeks later it was seen to be slightly swollen, and section proved it to be infiltrated with carcinomatous cells.

Mr. JOHN MORLEY showed two specimens of intrathoracic goitre and an acute perforative diverticulitis of the pelvic colon. He also showed a very instructive specimen—the oesophagus and diaphragm from a case of cardiospasm, the patient dying from perforated duodenal ulcer. The oesophagus was widely dilated, with thick muscular walls. Opposite the oesophageal opening in the diaphragm the gullet was strongly contracted. A histological section showed absence of fibrosis there. Mr. Morley thought that the crus of the diaphragm had not compressed the oesophagus, as the latter was not flattened but concentrically contracted. In discussion, Mr. JEFFERSON described a somewhat similar case, secondary to ulceration in the duodenum, but in this case the oesophagus was not hypertrophied. Mr. DIGGLE spoke of his own observations, and those of his colleagues at Ancoats Hospital, on the part played by the diaphragmatic crus in these cases.

THE eighty-first annual meeting of the Medico-Psychological Association of Great Britain and Ireland will be held from July 17th to 21st, inclusive, in the Royal College of Physicians and the University of Edinburgh. The first two days will be given up to meetings of the Parliamentary and Educational Committees and the Council. The annual meeting will begin at 10.30 a.m. on July 19th, at the College of Physicians; afterwards Dr. Ninian Bruce will read a paper on the treatment of early cases of mental disorder, and a luncheon will be given by the Chairman and Managers of the Royal Morningside Hospital. In the afternoon Professor George M. Robertson will deliver his presidential address on "The hospitalization of the Scottish asylum system," and the annual dinner will be held that evening in the Hall of the College of Physicians. On July 20th addresses will be given by Sir E. Sharpey Schafer, Sir F. W. Mott, Dr. David Orr, Professor J. C. Meakins, Dr. J. J. Graham Brown, and Dr. W. H. B. Stoddart. On July 21st a discussion on the treatment of mental diseases will be opened by Dr. Chalmers Watson.

Reviews.

POISONS.

THE scale on which the new *Traité de Médecine*,[1] edited by G. H. ROGER, F. WIDAL, and P. J. TESSIER, has been planned may be gathered from the fact that the sixth volume, wholly devoted to poisons, contains 506 pages, and that there are to be at least twenty-two volumes.

In a general introduction, occupying fifty-four pages, to the volume before us, Roger begins by making an attempt to give a definition of a poison. He opens with the proposition that any substance may be regarded as a poison which is capable of deranging the life of the anatomical units of the body by altering, directly or indirectly, the medium in which they live. Toxic substances, therefore, may come from without, or they may arise within the body. If this be accepted, poisoning would be defined as the sum of the disturbances induced, and would include the effects of lesions arising from a change in the chemical constitution of the internal medium. The human body is constantly on the verge of becoming poisoned. In evolving energy, and in the passage of bodily material from a complex and unstable condition to a simpler and more stable form, new substances arise within the cells and are thrown out into the lymph which bathes them; if not eliminated, they become possible causes of poisoning. The mineral salts in our food, the chemical and other products formed by intestinal ferments and by micro-organisms, may also give rise to intoxication. Roger describes at length several sources of auto-intoxication, and shows how some poisons, during their stay in the alimentary canal, are neutralized by the digestive juices: alkaloids, for example, may be precipitated and rendered harmless by any tannin which may be present; other materials, on the other hand, may become more toxic. Insoluble carbonates may be converted into soluble chlorides by the hydrochloric acid of the gastric juice, calomel may become sublimated, and potassium cyanide be converted into potassium chloride and hydrocyanic acid, and as the conversion of this last substance occurs mostly when the gastric juice is fairly free in the stomach this circumstance explains why potassium cyanide destroys life more quickly during digestion than when the stomach is empty. Roger reminds us that the conditions which regulate the absorption of general anaesthetics are of a physical order, as Paul Bert indicated, for the action of gases and vapours upon living tissue depends upon their partial tension. Blood circulating through the lungs absorbs any gas which reaches these organs until the tension of its vapours is equal to that of the gaseous mixture with which it finds itself in contact.

The various channels of absorption are discussed at length. Many attempts have been made to discover a relation between chemical constitution and the poisonous action of a substance, but no satisfactory result has yet been reached. In 1867 Rabuteau stated that metals are poisonous in proportion as their atomic weight increases and their specific heat becomes less, but this opinion is no longer held, for toxicity is now believed to be rather a question of the degree of the molecular dissociation of the salts of metals, estimated by their electrical conductibility. The complexity of organic bodies renders the determination of their toxicity difficult. It is known that the substitution of one radicle for another in such bodies considerably modifies the physiological action. As regards alcohols French chemists are of the opinion that their toxic properties increase with their atomic weight and point of ebullition. Before being absorbed into the blood poisons may undergo changes which may be favourable or unfavourable. A poison injected under the skin is less harmful than when passed into a vein. Strychnine can be injected into the foot of a guinea-pig after the particular vein of the leg has been tied, and when a few hours afterwards the ligature is removed no poisoning occurs, either because neutralization has taken place or because in consequence of the slow absorption of the poison elimination has kept pace with it. The harmful effects of a poison arise when it reaches the capillaries. Blood corpuscles have the power of transforming poisons; so too has the liquor sanguinis in consequence of its alkalinity. Poisons can be retained in the body for a long period; for example, lead in the intestine in the form of sulphide, in the skin as sulphate, and in the skeleton as lead phosphate. Objection may be raised to the chemical forms in which lead is thus stated to be combined, for after all only minute quantities of the metal are present in the body at a particular time. Roger's remarks concerning the retention of poisons in the foetus are interesting and valuable both as regards lead and carbon monoxide, also as regards the passage of toxic bodies from mother to foetus and from foetus to mother. In some instances the foetus shows more resistance to certain poisons than the mother. This is said to be true of chloroform, chloral, and carbon dioxide, the explanation being the poorer development of the nerve centres in the foetus.

The subject of lead poisoning is dealt with by Marcel Pinard. Lead has seldom been used as a poison by criminals. It used to be thought that elderly people and the dark races were to some extent immune to lead poisoning, but this is no longer accepted. The reviewer has met with rather a serious form of plumbism in a negro. On one point practically all physicians are in accord—namely, that alcohol predisposes to the production of lead poisoning. Pinard describes the various channels by which lead enters the body; the alimentary canal is, he considers, the most frequent. He is of opinion that particles of lead become encircled in the digestive mucus by macrophages, and are then carried into the lymph channels or by the blood vessels to the organs wherein they become fixed. The symptomatology of plumbism is fully described. During colic Pinard states that the liver shrinks in size owing to contraction of the hepatic blood vessels. He states, also, that glycosuria may occur during colic, but this is not the experience of British physicians. The presence of basophil red corpuscles in the blood, paralysis of muscles, and morbid states of the kidney receive adequate attention.

Balthazard is responsible for the articles on arsenic, mercury, carbon monoxide, and illuminating gas. In its pure state arsenic is not poisonous, but it is readily oxidized, and when this has taken place toxic properties develop; 2 mg. of arsenious acid per kilo weight of body may when absorbed cause death in twenty-four hours. There is a personal idiosyncrasy to arsenic. When given by the stomach the symptoms will vary according to the vomiting which has taken place and any diarrhoea which may possibly have been induced. Graduated doses create a tolerance to the drug, as was shown years ago among the Styrian peasantry. Occasionally arsenical poisoning occurs in an epidemic form, as happened in the Midlands of this country some years ago, owing, as Reynolds of Manchester showed, to the consumption of beer in the manufacture of which contaminated glucose had been used.

The acute and chronic forms of mercurial poisoning are fully considered. Balthazard mentions the two theories advanced to explain the action of mercury. Some writers believe that mercury can only act by becoming converted, after absorption, into corrosive sublimate, and that this salt circulating in the blood forms a chloro-albuminate of mercury peroxide; others are of the opinion that the salts of mercury are primarily reduced to the vapour of the metal, for only in this form is mercury said to be capable of being absorbed.

The subjects of carbon monoxide poisoning, and of poisoning by opium, alcohol, cocaine, war gases, etc., are all attractively discussed.

The volume is a valuable contribution to our knowledge of the various subjects dealt with, and ought to find a place in the library of medical men and physiological chemists who are interested in problems of industrial medicine and in the various intoxications to which the human body is exposed.

[1] *Nouveau Traité de Médecine.* Fascicule vi: Intoxications. Publié sous la direction de MM. les Professeurs G. H. Roger, F. Widal et P. J. Tessier. Paris: Masson et Cie. 1922. (Sup. roy. 8vo, pp. 506; 25 figures. 4 coloured plates. Fr. 35.)

PSYCHOPATHOLOGY.

THE volume on *Psycho-analysis, its Theories and Practical Application*,[2] by Dr. A. A. BRILL, one of the leading American exponents of Freud's teaching, has been considerably enlarged since it was first published in 1912. The most important additional matter is contained in a new chapter on paraphrenia. Under this heading Dr. Brill gives an account of a group of mild psychoses in which the subjects, though considered by their friends to be peculiar, eccentric, or crazy, seldom come under the observation of the physician. Such patients tend to be interested in "psychic" matters and thus sometimes come to the psychiatrist to discuss with him their views and experiences. The author finds that these individuals exhibit an attitude similar to that of the more

[2] *Psycho-analysis, its Theories and Practical Application.* By A. A. Brill, Ph.B., M.D. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1922. (Med. 8vo, pp. 463. 21s. net.)

severe cases of dementia praecox, though naturally in a less pronounced form. There is a dulling of affectivity, a restricted capacity for work, some weakness of judgement, and eccentric notions, but with no actual dilapidation of the inner unity of the psychic life as in the graver cases. Such types are deserving of study, particularly because they afford an opportunity of elucidating the points of difference between a mild psychosis and a psychoneurosis. The diagnosis is not always easy, but these mild paraphrenics, in contrast to psychoneurotics, cannot be influenced or moulded, are not impressionable, do not co-operate in treatment, and, as the author says, "a mental sclerosis runs through the whole life." Dr. Brill has had great experience in psycho-analytic therapy, and it is thus of interest to observe that he finds the paraphrenic type inaccessible to mental exploration. The impenetrability of these cases is a feature of diagnostic importance, and most psychiatrists have found them to be almost entirely uninfluenced by any of the usual forms of psychotherapy.

Dr. Brill, like all good Freudians, attaches much significance to the little mistakes in life. Amongst these, as he points out, are to be included misprints and the failure to notice errors in correcting proofs. There are several misprints in this volume, and a rather unfortunate misuse of the word "predisposed" for "presupposed" occurs on the first page of the preface. It would be interesting to know how the author explains this slip. He writes a little crossly of his opponents in the sentence preceding that in which the mistake occurs, and perhaps this may have something to do with it.

The same author has also written another volume, *Fundamental Conceptions of Psycho-analysis*,[2] which is intended for the information of non-medical readers. The material in this book is taken from lectures given at an elementary course in the Department of Pedagogics at the New York University. The book is clearly written, and the author's wide experience of his subject enables him to illustrate the theories he advocates by references to a number of concrete examples which serve to support them.

SANITARY INSPECTION.

THE systematic inspection of his district is one of the most important duties of a sanitary officer in this country, and many of the recommendations made to sanitary authorities result from that inspection. In the United States of America the inspection is given the more high-sounding title of Public Health Surveying, and its great importance is coming to be recognized by the American public health authorities. In *Public Health Surveys*[4] Dr. MURRAY P. HORWOOD, of the Massachusetts Institute of Technology, defines such a survey as "an investigation conducted by a trained corps of workers, in order to determine the exact status of those conditions that may affect the health of a community directly or indirectly." A cursory glance at this volume would stamp it merely as another public health textbook, but it is something much more than that: it indicates in a very practical manner under appropriate headings what defects should be looked for, where they may be expected, and precisely how they may be remedied. Water supplies, drainage and sewage disposal, refuse collection and disposal, milk supplies, food distribution, housing, school sanitation, and tuberculosis are among the subjects specifically dealt with. The chapter on milk supplies is of special interest to public health administrators in this country, for we are constantly hearing of the excellence of the American methods. We cordially agree with the author that a safe milk supply in a community is almost as important as a safe water supply; indeed, we would go farther and say that, at the present day, it is quite as important. He lays great stress on the advantages of pasteurization and goes so far as to say that one of the greatest boons conferred upon mankind was the introduction of this process, an opinion that is not held by a large number of health officers outside America. He is, however, wise enough not to rely entirely on pasteurization, for he is eloquent in advocating well-constructed, clean, well-lighted, and well-ventilated milking sheds, and urges the importance of absolute cleanliness in connexion with every stage of milk production. The system of score cards in vogue in America, though it has never found much favour in this country, is well described, and the various cards in use are reproduced. Illustrations are given of model cowsheds very much on the lines of those recommended by the Board of Agriculture and Fisheries in the Board's leaflet (No. 241) on the construction of cow-houses. Other illustrations depicting insanitary conditions, such as accumulations of manure right up to the walls and doors of cowsheds, testify to the fact that the milk supply of America is not produced throughout that continent as satisfactorily as some persons would have us believe.

Although this work is primarily intended for American public health officers, it contains a great deal of information of value to those of other countries. School medical officers especially should read the chapters on school sanitation and school hygiene. The problem of the drinking cup in schools is very difficult of solution, and one method is illustrated for use in those schools where running water is not available. A large jar with a tap at the bottom is provided, and a few inches below the tap a wide funnel is placed with the outlet emptying into a bucket. When the tap is turned on the water flows into the funnel, out of which the child drinks, as he does out of the more costly fixed "bubbling fountains" which are found in some schools. A foreword from the pen of the late Professor William T. Sedgwick and an introduction by Mr. George C. Whipple, Professor of Sanitary Engineering at the Harvard Engineering School, give an additional interest to this work, the value of which is further increased by the large number of illustrations; there is one on every fourth page.

SIR THOMAS ANDERSON STUART.

IN his biography of *Anderson Stuart, M.D., Physiologist, Teacher, Builder, Organizer, Citizen*,[5] Mr. WILLIAM EPPS, Secretary of the Royal Prince Alfred Hospital, Sydney, with which the late Sir Thomas Peter Anderson Stuart was intimately associated from the year after its opening until his death, gives an authoritative account, based on close personal knowledge of a many-sided and striking character. Anderson Stuart was born in Dumfries in 1856, and after an exceptionally brilliant career at Edinburgh, culminating as demonstrator of physiology under Rutherford, was appointed in 1882 professor of anatomy and physiology in the infant medical school of the University of Sydney, which owes its present highly developed state of efficiency to his labours; this was his life's work, and to accomplish it he to a large extent sacrificed original laboratory research, though he did a certain amount of work in connexion with the functions of the epiglottis, the internal structure of the eye, chromogenic micro-organisms in wool, the *mika* or *kulpi* operation practised by the aborigines (formerly called "Sturt's terrible rite"), and kymoscopes. On his arrival at Sydney in 1883 there was no school or students; in 1914 there were 604 students of medicine. His administrative and organizing ability, in conjunction with his pertinacity of purpose and his shrewd knowledge of men, was invaluable in the building up of the medical school and all that concerned it. His activities extended in wider directions, for he was President of the Board of Health of New South Wales, of the Royal Society of New South Wales, and of the University of Sydney Society for Combating Venereal Disease. This memoir, which contains much autobiographical material, and gives a graphic and sympathetic sketch of a forcible man and his personal traits, is illustrated by photographs and by four caricatures, thus throwing light on the respect felt for their teacher by the younger members of the university for which he did so much.

NOTES ON BOOKS.

IN a small monograph on the operation of submucous resection of the nasal septum[6] Dr. MEDDAUGH DUNNING gives a brief account of the anatomy and physiology of the nose and traces the development of the technique which he now employs for this operation. He advocates especially the use of a curette-elevator of his own design. The book is freely illustrated, but there is little in the text which is original and much which is irrelevant.

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[2] *Fundamental Conceptions of Psycho-analysis*. By A. A. Brill, Ph.B., M.D., Lecturer on Psycho-analysis and Abnormal Psychology, New York University. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. v + 344. 12s. 6d. net.)

[4] *Public Health Surveys, what they are, how to make them, how to use them*. By Murray P. Horwood, M.S., Ph.D. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1921. (Fcap. 8vo, pp. 403; 95 figures, 54 tables. 24s. net.)

[5] *Anderson Stuart, M.D., Physiologist, Teacher, Builder, Organizer, Citizen*. By William Epps, Secretary, Royal Prince Alfred Hospital, Sydney. Sydney: Angus and Robertson, Ltd. 1922. (Pp. xv + 177; 21 illustrations.)

[6] *The Submucous Resection of the Nasal Septum*. By W. Meddaugh Dunning, M.D. New York: Surgery Publishing Co. 1921. (Post 8vo, pp. 97; 25 figures.)

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

How to Read the Scottish Trial Results.

While the Royal Scottish Automobile Club, like the Royal Automobile Club, is unable to create what might be called new fashions in cars, nevertheless by recent enterprise both organizations are helping to pave the way to the production of vehicles that will suit the needs of owner-drivers in particular better than those hitherto available. Thus even in the case of the Manx motor racing for the Tourist Trophy and for the "Fifteen Hundred" Trophy, which is really one of the final phases of experimental work, very valuable progress has been made under three headings, among many others—namely, in the direction of the evolution and use of mixed fuels with power alcohol as an essential ingredient; in the evolution of brakes to all four wheels; and in the demonstration of the fact that the corded type of tyre makes for amazing durability and economy and will presently be available, without undue weight, on the straight-sided principle with light rim. The mixed-fuel proposals will interest medical men in very practical fashion at no distant date, for some of our largest fuel-distributing organizations have already completed plans for engaging in the business on a commercial scale. These mixed fuels are evolved in measure as the liquid-fuel internal-combustion engine is developed.

The Coming of Mixed Fuels.

If the standard car trial in Scotland, or the special racing cars run in the Isle of Man, or, more particularly, those which will be raced for the Grand Prix on the Strasbourg circuit in the middle of this month, be examined, it will be found that the greatest progress is being made in the direction of producing more power from smaller engines. This is made possible by the use of compression ratios far higher than those formerly employed. For example, when the war broke out a 5½ to 1 compression ratio was considered almost too high even for aircraft engines; whereas the Vauxhall cars raced in the Isle of Man had compression ratios of about 7 to 1, and several cars that will figure on the Strasbourg circuit will have at least that. One result is that we are getting 90 h.p. out of a 2,000 c.c.m. engine, or what we should call approximately a 14-h.p. type Treasury rating. But these powers, which are capable of propelling chassis at extraordinarily high speeds, are being developed with an amazing fuel economy, particularly if we cast our minds back to the days when we were racing with engines of ten times the volume that figured in the "Fifteen Hundred T. T.," the earlier vehicles achieving only 60 per cent. of speed on an easy course and under better weather conditions than obtained in the Isle of Man last month, when the miniature engined vehicles were raced. In other words, a glance at the story of racing reveals plainly that we have been reducing car weight, increasing reliability, and reducing the engine space in relation to the chassis space, as well as the fuel and tyre consumption in relation to the work done. Special bi-fuel carburettors are ready for standardization; and the motorist will have the opportunity of choosing either to develop greater horse-power or to save 25 per cent. of his fuel bill and develop as much power as at present, or to combine parts of the two gains.

But at present, though the straight-sided tyres certainly make for economy under the most severe test of all—namely, racing, wherein the wheels have to be skidded round the corners and the side strains are therefore at the maximum, nevertheless the weight of the detachable rims is at present an objection to their immediate universal use. Information of which I am possessed, however, leaves me no manner of doubt that this particular weight problem will be solved at no distant date. Further, the risk of the detachable rim rusting *in situ* is likely to be eliminated by the materials that will be employed. Already it is possible with the corded tyre on the beaded-rim principle to obtain an average of two and a half times the tyre mileage that was possible with canvas tread tyres. When it shall become possible to use a straight-sided tyre without extra weight and without any possibility of the rim rusting, tyre mileage will be increased still more. Thus already we have reached the point at which tyre costs are lower than they were before the war if we put them on the only possible scientific basis—namely, cost per car mile.

Points about Small Cars.

In the recent trial of standardized small cars by the Royal Scottish Automobile Club, the awards in connexion with which were published in these columns last week, it is interesting to note that, though under the heading of tyre trouble each competitor was allowed sixty minutes during the whole week in the course of 1,020 miles running without being penalized, only one competitor of the forty-four who started exceeded that allowance, and that by a margin of three minutes only. From this the conclusion might be drawn that these cars are adequately tyred as a class. But I think it would be an erroneous one. At least, the impression I gathered myself when watching some of the hill-climbing work in the Highlands was that there is a tendency by the trade to under-tyre small cars as a class. Curiously, in the other extreme there is a tendency in some of the middle-class cars to over-tyre. One useful result of the Scottish trials will, I think, be to cause some of the leading makers of small cars to fit larger tyres next year. But as long as we use the beaded-edge type of tyre, which is likely to be with us for another season or two in the majority of cases, there is no question that it is necessary to have proportionately somewhat larger tyres, both for comfort in riding and as to the air space, to ensure the necessary strength. Vast improvements have been made in the corded tyre, and I gained another impression in Scotland concerning tyres for small cars. I am quite sure some of the competitors strove to save their springs in what was certainly a punishing test—many of the road surfaces were of an extremely irregular character—at the expense of their pneumatics by running them somewhat slacker than the tyre makers specify. This is a foolish policy and is bound to lead to trouble. No car owner should ever slacken his tyres with a view to saving his springs; it is sure to result in nipping, ripping, or otherwise destroying the tubes, while the wrong sort of play occurs to the walls, particularly when corners are taken; therefore the treads get worn out untimely.

This Year—and Next.

In face of the very great proportion of hill climbing that had to be done in the course of the tour and of the fact that some of the ascents over which the competitors were not timed were of more severe gradient than those over which they were it means a deal for these little cars to average 20 miles an hour from point to point. Indeed, I have in mind one particular hill climb, not in the timed area, along the descent following which we were riding in a big 6-cylinder car at from 10 to 12 miles an hour only because the back axle was crashing against the side members of the car frame every now and again the moment we went any faster, so irregular was the surface of the mountain road. The driver of this non-competing, lightly laden car tried to soothe our anxiety when we hinted that we might be getting home somewhat late by saying that it was impossible that the small cars could go as fast as we over that route. I pointed out, however, that according to their showing they would keep up the schedule, though, admittedly, on some of the steeper ascents they could not average 20 miles an hour on the climb; therefore their only chance of keeping to schedule was to go over the ground we were traversing at 10 to 12 miles an hour at 25 or 35 miles an hour. That is precisely what they did, it being quite remarkable how closely these little vehicles kept to schedule. I saw them come in at the end of that day's run, as on other nights. Quite 80 per cent. of the competitors came in within a minute of their schedule time on a day's run of anything from 160 to 180 miles. The tests showed clearly that these little vehicles can be built to stand rattling over bad roads. Further, the club's method of examining the cars that appeared to do best in the Trials at the end of the test, to make sure that they really were in good condition before granting awards, is a wise move, and makes such awards of additional value.

Some would urge that the trials should be extended next year to embrace vehicles with engines up to 2,000 c.cm. volume, instead of setting the limit at 1,600 c.cm. as this year, but that would be a mistake. There is no particular need to try vehicles as large as 2,000 c.cm. engine volume in tests of this sort next year. There will be forthcoming then quite as many 1,600 c.cm. vehicles as even the Royal Scottish Automobile Club itself could handle because many members of the British, and European, industry who abstained this year have suddenly recognized the value of what is the most scientifically conducted and all-round test of standard small cars ever attempted; moreover, the relatively few awards given

increased their value. Next year also the American industry will have fully entered on the light car business, and as the Scottish classification of standard vehicles is on a price basis the Americans, with their low costs, would have every advantage in competing, and will assuredly do so in considerable numbers. We should therefore rather reduce the engine volume from 1,600 to 1,500 c.cm. than put it up from 1,600 to 2,000 c.cm. for the 1923 Scottish standard small car trial, in which German products are sure to be represented.

Aspects of Fuel Consumption.

The report on the trial published by the Royal Scottish Automobile Club occupies 39 foolscap pages, and is the most valuable document any intending purchaser of a small car can study. The figures under all heads are of extreme interest, including brake tests, acceleration, six different hill climbs, and fuel consumption tests. The last-named are particularly interesting when fresh forms of fuel and carburettors suitable for their use are about to be developed. The leading carburettor firms are fully prepared for the coming change, which will give us still further economy to an extent aggregating some 25 per cent. on present performances. Yet some of the present-day performances in the small car class, as now certified by the Scottish trial figures, are extremely economical.

It does not follow, however, that cars which are the most efficient as standardized in relation to one another, or to their classes, will necessarily make the greatest appeal under this head to the average user. It depends entirely on what the vehicle does. For example, if we take the order of merit in all classes for the entire competition, we find that the first place went, as was mentioned last week, to a 11.4-h.p. 4-seater Citroën car. It happened to be one of the heaviest cars in the trial, weighing 2,502 lb., and did 41.112 ton miles to the gallon; but because of its weight the actual road miles that car did to the gallon of fuel was 36.802. To the non-technical, therefore, there were plenty of cars that ran cheaper than this. For example, one 10-h.p. 2 seater G.N., which came out 19 in the order of merit of fuel consumption, and weighed 1,394 lb. when competing, did 30.342 ton miles to the gallon only, but travelled 48.723 road miles to the gallon. The motor owner has to pay the petrol bill for his vehicle in terms of road miles to the gallon; consequently one wants to consider the statistics under their two headings. Again, sometimes there are unexpected variations. Thus, a second 11.4-h.p. Citroën car, which weighed somewhat more than the machine that came out best under fuel consumption, scaling 2,527 lb., did 37.485 ton miles to the gallon and 33.243 road miles to the gallon as a 4 seater.

Ton Miles *v.* Road Miles.

I find that a 2-seater 10-h.p. G.N. which competed in the lowest class for cars costing not more than £250, did 35.123 ton miles to the gallon, which, however, in the case of this car, which scales 1,442 lb., worked out at 54.59 road miles to the gallon. The two 9-h.p. air-cooled Stoneleigh cars, which also competed in this class, and which did best on the hills alike on time and on formula and in many other respects came out first and second in their class, were notable for carrying three passengers throughout the trial, and weighed 1,691 lb. and 1,647 lb. respectively, did 35.990 and 38.582 road miles to the gallon respectively. Among the 2-cylinder water-cooled two-seater cars one 7-h.p. Wolseley weighed 1,647 lb., did 22.527 ton miles to the gallon, and did 30.623 road miles to the gallon; while a sister machine weighed 1,579 lb., did 21.71 ton miles to the gallon and 30.796 road miles to the gallon. The 10-h.p. 4-cylinder water-cooled Swift weighed 1,786 lb., did 35.178 ton miles to the gallon and 44.113 road miles to the gallon; but it did not distinguish itself on the timed hill climbs. One of the two-seater 8-h.p. 4-cylinder overhead valve engined Talbots weighed 1,778 lb., did 31.267 ton miles to the gallon and 39.425 road miles to the gallon, doing notably well on hills, as did the sister machine, which weighed 1,745 lb., did 31.524 ton miles to the gallon and 40.501 road miles to the gallon. By contrast one 10-h.p. 2-cylinder air-cooled B.S.A., which, like the sister machine, carried two persons throughout the trial, weighed 1,795 lb., did 30.565 ton miles to the gallon and 38.135 road miles to the gallon, but did not distinguish itself particularly on the timed hills. Nor did the sister machine, which weighed 1,817 lb., did 28.206 ton miles to the gallon and 34.767 road miles to the gallon. The 11.9 h.p. Star cars did notably well on the hills, and in other respects, one, we ghing 2,391 lb., doing 37.120 ton miles to the gallon and 34.727 road miles to the gallon; while the sister machine weighed 2,425 lb., did 31.492 ton miles to the gallon and 31.879 road miles to the gallon. The 11.9-h.p. A.C. weighed 1,953 lb., did 24.156 ton miles to the gallon and 27.712 road miles to the gallon, being thirtieth out of forty-four competitors in order of merit in fuel consumption in the whole trial, and last but one of its class in order of merit on hill climbs and speed tests on formula. One of the 12-h.p. Talbot-Darracqs, both of which carried four men throughout the trial, weighed 2,934 lb., did 35.932 ton miles to the gallon and 27.432 road miles to the gallon; and the sister machine weighed 3,018 lb., did 33.205 ton miles to the gallon and 24.655 road miles to the gallon.

Brakes, Acceleration, and Hill Climbing.

The order of merit in regard to the brake test showed that the following came out best in their respective classes:

9-h.p. Stoneleigh, 7-h.p. Wolseley, 10-h.p. Swift, 11.9-h.p. Star, and 12-h.p. Talbot-Darracq. The order of merit in each class in the acceleration test showed the following cars did best: 9-h.p. Stoneleigh, 8-h.p. Amilcar, 8-h.p. Talbot, 11.9-h.p. Star, 12 h.p. Talbot-Darracq. The hill-climbing and speed tests marks on formula showed the following cars to be the best of their respective classes: 9-h.p. Stoneleigh, 8-10-h.p. Rob Roy, 8-h.p. Talbot, 11.9-h.p. Star, and 11-h.p. Riley.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

The third annual meeting of the Society for the Prevention of Venereal Disease was held at the house of the Royal Society of Medicine on June 29th.

Lord Willoughby de Broke, who presided, said that the general situation was the same as when he addressed a similar meeting a year ago. The Ministry of Health had not found itself able to apply the teachings of science to the prevention of venereal disease. There were, however, some hopeful indications that the National Council for Combating Venereal Diseases might presently co-operate with the Society. He quoted from the eight-point manifesto of the Council, published in 1921:

"If an individual has incurred or has reason to think that he or she has incurred risk of infection, it is his or her bounden duty to cleanse himself or herself thoroughly and immediately."

This appeared to be a complete acceptance of the policy of immediate self-disinfection. Moreover, in the *Venereal Clinic*, edited by Dr. E. R. T. Clarkson, formerly a member of the National Council, it was stated that the National Council "have fundamentally moved from their original position to one which is practically shared by the Society for the Prevention of Venereal Disease." Even more telling evidence than this was available. A work by Sir Leslie Mackenzie, which had received the endorsement of the National Council, contained the following:

"It is absurd to say that there is any danger in teaching every person capable of being taught that the venereal diseases are each of them due to a definitely known germ; that, so long as the germ lies on the surface, it can be destroyed with a mild disinfectant or even mechanically removed by soap and water without much trouble; but that when one of those germs enters the channels of the body and infects the lymphatic glands or the blood, the destruction of the germ, which is another name for the cure of the disease, becomes, in at least two of these diseases, a matter of extraordinary difficulty and demands high technical knowledge and skill."

Lately (Lord Willoughby continued) there had been some decrease in the incidence of venereal disease in this country; the decrease synchronized with the public controversy on immediate self-disinfection, and the consequent publication of a great deal of knowledge which had hitherto been concealed from the public. In France, according to the report of the French commission of inquiry, one-tenth of the population were suffering from syphilis, the deaths due directly or indirectly to this cause numbered 140,000 a year, and the cost of syphilis alone was several milliards of francs. He rejoiced in the setting up of Lord Trevethin's Committee, and in this connexion he referred to a letter by Lord Dawson which had appeared in the press, and which urged that—

"Until some conclusion supported by a considerable preponderance of opinion has been reached it cannot be reasonably expected that the Ministry of Health should do otherwise than maintain impartiality and give a fair field and no favour to the two schools of thought and action. As a logical consequence grants of money should be made either to both or neither of the corresponding societies."

Lord Willoughby thereupon proposed a resolution that the Ministry of Health should again be approached with a request for financial support to assist the society in carrying out its policy.

This resolution was opposed by Mr. Harold Cox, who thought it would be more polite to await the decision of the Committee of Inquiry, and he was supported by Sir Bryan Donkin and others. Eventually it was agreed unanimously that as soon as the Committee of Inquiry had reached a decision the Ministry of Health should be approached on the subject.

Mr. Wansey Bayly, honorary secretary, gave an account

of the various activities of the society during the year, chiefly meetings and correspondence, and mentioned that Pembrokeshire had been added to the local authorities, now numbering twenty-one, which had adopted the society's policy. Sir W. ARBUTHNOT LANE, the treasurer, said that subscriptions had fallen below last year's level, but the work had been done at less cost.

Dr. MEARNS FRASER said that Portsmouth, of which he was medical officer of health, was the first large town to adopt officially the policy of instructing the public in methods of self-disinfection, which it did by means of leaflets and notices in public places. The result was reflected in the numbers attending the treatment centre. The centre was opened in February, 1917, and in that year 352 individuals applied for treatment. In 1918 the numbers applying were increased by 91 per cent. above this figure, and in 1919 by 62 per cent. above the figure for 1918. In 1920, in the latter part of which year the policy of instruction in self-disinfection was adopted, the increase upon the previous year's figure was only 13 per cent., and in 1921 there was no increase at all, but a decrease of 12 per cent. upon the figure for 1920. In the first five months of 1922 there had been a decrease of 23 per cent. as compared with the corresponding months of 1921. The figures were too small and the period too short to permit of absolute deductions, but he thought they had some significance.

The annual report was adopted unanimously, and various committees were reappointed.

REVISION OF THE INTERNATIONAL SANITARY CONVENTION OF 1912.

THE International Sanitary Convention signed at Paris on January 17th, 1912, marked an important stage in the gradual progress that is being made towards the adoption by all civilized countries of a national and uniform system of preventing the maritime spread of dangerous epidemic diseases. The official delegates of forty countries signed this Convention, but difficulties and delays arose in its formal ratification by the Governments concerned, and down to September, 1919, only twenty Governments had performed this act, some of them with, and some without, certain reservations.

In the meantime it had become evident that early revision of the Convention would be necessary in view of new political conditions and new developments of science. Plague, cholera, and yellow fever were the only diseases dealt with in it, and the additions to epidemiological knowledge since 1911, when it was prepared, were such that even as regards those diseases some of the technical provisions were out of date and did not conform with modern views and practice. The Office International d'Hygiène Publique was at that time, and still remains, the body primarily concerned with the preparation and formulation of international health agreements, and its committee, at its session in October, 1919, unanimously accepted the necessity and importance of an early revision. At the next session, in April, 1920, it was arranged that the delegates of the countries represented should prepare detailed proposals for amendments or alterations, and that these would form the basis of the preliminary studies necessary in order that a formal international conference might afterwards be convened to decide on the provisions of a revised Convention. Expert examination of the modifications proposed was begun at the October session of the same year and was continued at each subsequent session. The task of revision was greatly facilitated by working on the lines of a memorandum which was the outcome of combined action taken during 1920 by the delegates of all the British countries concerned. The aim was to produce an international document which should on the one hand provide a more efficient means of preventing the spread of epidemic diseases, and on the other hand keep fully in view the interests of commerce and traffic, by removing arbitrary "quarantine" rules and customs which are not justified by present knowledge. Most of the proposals in this memorandum were accepted and acted upon in the revision undertaken by the Committee, and the position at the end of last year was that the preparation of a revised draft of Articles 1 to 54 of the Convention, comprising Part I (general provisions), was completed. It is understood that the principal changes proposed include:

1. A better system of prompt international notification of the occurrence and progress of the epidemic diseases dealt with.

2. The addition of provisions relating to typhus fever, small-pox, and certain other diseases.

3. A rearrangement by which the action to be taken is stated separately for each disease in accordance with up-to-date knowledge of its natural history and epidemiology.

With regard to Parts II to IV (special provisions for Eastern and Far Eastern countries, pilgrimages, the Sanitary Board of Egypt, etc.), various circumstances made it impracticable to consider their revision until the technicians who had charge of the preparation of the new draft could acquire local knowledge of present conditions in the countries concerned. The Office International d'Hygiène Publique, owing to the limited funds at its disposal, was not in a position to appoint a Commission for this purpose, and the project only became feasible when the Health Committee of the League of Nations decided at a session held in Paris in October, 1921, to send a small Commission to collect information as to the risks of spread of epidemics from the Black Sea ports through the Straits, and from countries in the Near and Middle East through the Suez Canal. In consultation with the President of the International Office it was arranged that the reference to this Commission should include a study of matters bearing on the revision of Parts II to IV of the Convention and that its personnel should include members of the permanent committee of the Office who were specially occupied with that subject. The President (Dr. Th. Madsen) and Vice-President (Sir George Buchanan) of the Health Committee of the League of Nations were among the members appointed, and as technical adviser Dr. Granville, President of the Sanitary Maritime and Quarantine Board of Egypt, accompanied the Commission throughout its inquiry, which began at Alexandria on February 20th and ended at Constantinople on March 27th.

The League of Nations has just issued this Commission's report,* which describes from the point of view of international interests the measures necessary to prevent the spread of epidemic disease in regard to:

1. The Suez Canal and ports whose sanitary service falls under the Sanitary and Quarantine Board of Egypt.
2. The Red Sea (the Mecca pilgrimage and the Hedjaz railway).
3. The Mediterranean littoral of Asia Minor.
4. Constantinople and the Straits.

The report shows clearly the difficulties and delays arising from the post-war multiplication of different authorities whose present practice, not being governed by international or local agreement, causes vexatious and costly interference with commerce, but, in the absence of proper sanitary stations and equipment, is of little or no value in preventing the introduction and spread of disease. It relates that at nine successive ports of call during a voyage of nine days from Beyrout to Constantinople the ship was medically inspected under different regulations, and without reference, other than an examination of the bill of health, to the previous inspections. It describes new circumstances in Arabia which show clearly the need for comprehensive and co-ordinated measures of sanitary control if the annual pilgrimage to the sacred cities of the Hedjaz is not to continue to cause, from time to time, widespread prevalence of cholera and other epidemic diseases. It emphasizes the necessity of effective measures at the northern entrance to the Bosphorus, and notes that the present sanitary station at that entrance (Kavak) is inadequate, dilapidated, and otherwise objectionable from its restricted area and bad landing facilities. Suggestions are given for remedying in detail these and other local defects, with regard, in each instance, to the requirements of the International Sanitary Convention of 1912. An annexe contains the text of a draft revision of Parts II and III of that Convention.

This concludes the preliminary study which was required before all the civilized countries of the world could be approached with a view to holding a formal international conference for the revision of the 1912 Convention, and it is greatly to be hoped that the established procedure for this object will now be carried through without delay.

* League of Nations C.342 M.193, 1922, III. "Report of Commission to enquire into international arrangements regarding epidemic disease prevention in certain areas of the Near East (basin of the Eastern Mediterranean and Black Sea) and in connection with the Mecca pilgrimage."

British Medical Journal.

SATURDAY, JULY 8TH, 1922.

THE PROPOSED INCIPIENT INSANITY BILL.

IN our Parliamentary Notes last week (p. 24) it was stated that the Minister of Health had under consideration the draft of a bill to enable persons suffering from incipient mental disease to be treated in public or private mental asylums without certification. This proposal follows upon the inclusion of a clause dealing with this subject in Dr. Addison's ill-fated Ministry of Health (Miscellaneous Provisions) Bill, which was introduced into Parliament in the autumn of 1920. With the withdrawal of this bill all the proposals in it had to be abandoned, but the importance of the treatment of incipient insanity is a subject which has grown rather than diminished in the interval. At the Annual Meeting of the British Medical Association at Newcastle-upon-Tyne in July, 1921, an interesting discussion took place upon the subject in the Section of Neurology and Psychiatry. It was introduced by Professor G. M. Robertson of Edinburgh, who contrasted the English with the Scottish law; in the former, if an insane person be detained and restrained he must be certified, but in Scotland a "lunatic" may be detained and treated under certain conditions without being certified. He pointed out that private patients were entering such mental hospitals as Craig House in greater numbers voluntarily than under certificate, and that they came at an earlier and more recoverable stage. He suggested that if the lunacy laws could be so amended that patients of small means suffering from curable mental disorders could also enter mental hospitals and receive early treatment without being certified lunatics, as patients enter general hospitals, and as the majority of private patients in Scotland paying the higher rates of board now did, then a new era would be introduced. He did not suggest that the Scottish law upon the subject was ideal; the Act relating to admission of patients to mental hospitals in Scotland was sixty-five years old, and in Scotland, as in England, the Lunacy Acts had outgrown their usefulness, especially to the poorer classes of the community.

The discussion at last year's Annual Meeting was but the latest chapter in the long history of the close interest that the British Medical Association has taken in the treatment of incipient insanity. As occasion has offered the Association has either urged the need of legislation or has made representations to the Government of the day in respect of bills which have been introduced, and as the result the Association has had the satisfaction of seeing many of its proposals embodied in the law of the country. For example, several amendments were introduced into the Lunacy Amendment Act of 1890 as the direct outcome of representations made by the Association in response to the request of the Government. A committee of the Association in the years 1897–98, with the valuable co-operation of the Medico-Psychological Association, collated evidence as to the Scottish experience, and laid it before the Lord Chancellor (Lord Halsbury) with a joint recommendation from the two Associations that the English law should be modified in the same way.

The introduction into the Parliament of 1905 of a Lunacy Acts Amendment Bill indicated acceptance by public authorities of the principles for which the medical profession had long been striving. This bill incorporated, with other detailed improvement of the lunacy law, the methods of the Scottish Act for the treatment of cases of unconfirmed mental disease. Although, owing to the exigencies of public business, this and also Sir John Batty Tuke's bill for the early treatment of mental disease were not passed, their introduction showed that the time was opportune for the definite formulation of the views of the medical profession on the subject, and a small subcommittee was therefore appointed by the Medico-Political Committee of the Association in 1905 to consider amendment of the law concerning the treatment and detention of persons suffering from incipient insanity. In 1906 the Annual Representative Meeting in London considered and approved two special reports of the Medico-Political Committee dealing with amendments of the Lunacy Acts, and more particularly with the provision for unconfirmed cases of mental disease. In 1907 the Annual Representative Meeting at Exeter considered and approved a statement of evidence which was submitted on behalf of the Association to the Royal Commission on the Care and Control of the Feeble-minded. The report of the Royal Commission was issued in 1908, and in August, 1909, the Association was represented on a deputation to the Home Secretary to urge the necessity of early legislation to give effect to this report.

In 1911, following a communication concerning the care and control of the feeble-minded from the Manchester and Salford Sanitary Association, requesting the support of the British Medical Association in making representations to the Government as to certain methods of dealing with this matter, the Council of the Association gave instructions for a special report on the subject to be drawn up and submitted to the Representative Body. This report summarized the work the British Medical Association had already done during the previous ten years in regard to the care of the feeble-minded, and reviewed the representations which it had also made to the Government, with a statement of the reforms in the law which the Association advocated as a result of its experience.

The Medico-Political Committee continued to give close attention to the subject, and in 1912 the Association submitted a memorandum to the Home Secretary on its policy with regard to the amendment of the lunacy laws on the care of the feeble-minded, pointing out particularly its views on the new classes of patients which ought to be brought under the supervision of the Lunacy Commissioners, the composition of the Lunacy Commission, the need for one central authority, and the need for the treatment of unconfirmed mental disease. In the reply which the Home Secretary sent to the Association he stated that he had under consideration the details of a bill to provide for the care and control of the feeble-minded. Subsequently this bill was introduced into Parliament, in the session of 1912–13, and in general met with the approval of the Association. Though, owing to the demands on Government time, the bill was withdrawn, it was reintroduced in March, 1913, and subsequently became law under the title of the Mental Deficiency Act. The scope of this Act was limited, and in 1914 the Association appointed certain members to represent it in a discussion with representatives of the Medico-Legal Society upon the question of the treatment of incipient insanity without certification. A Voluntary Mental Treatment Bill was introduced into the House of Lords in July, 1914, and the Council of the Association expressed approval of this bill, which was intended to secure that persons whose mental condition was uncertain, but who required medical treatment to prevent their becoming lunatics, might receive such treatment in a manner at present impracticable owing to

the state of the law, which assumed that a person either was or was not insane, and took no notice of early symptoms of insanity. This bill, being an unofficial bill, had no binding effect upon anyone, and the only positive achievement of its introduction was that through it public information was given as to the legislation that was proposed in regard to the treatment of incipient insanity.

Another bill was introduced into the House of Commons in 1915 by Mr. Cecil Harmsworth, then Parliamentary Under-Secretary to the Home Office; its purpose was to facilitate the early treatment of mental disorder of recent origin resulting from wounds, shock, disease, stress, exhaustion, or any other cause. The object of the bill was to secure the proper treatment of such cases by making the law less rigid, and it was especially intended to apply to cases of soldiers and ex-soldiers whose unstable mental condition had arisen from war causes. In consequence, however, of opposition it was found impossible to proceed with the bill.

Although the details of the legislation now proposed have not yet been made public, it may be assumed that in general they will follow the provisions of the various bills dealing with incipient insanity that have come before Parliament during the past fifteen or twenty years, but have not been proceeded with. It is probable, therefore, that they will refer to patients in private as well as public mental hospitals approved by the Board of Control, and not only to patients who are willing to enter an institution, but also to those suffering from puerperal mental disorder and similar conditions where the patient has no clear power of volition. The procedure suggested is, we understand, that a declaration shall be made by two doctors, one of them approved by the Board of Control, to the effect that the patient is suffering from mental disorder, and is likely to benefit from temporary treatment in an institution, so that it is expedient for him to be received into an institution for this purpose. Such a declaration would hold good for a limited period—probably six months—at the end of which time another declaration might, under suitable safeguards, be made. The patient throughout would have the right to leave the institution, subject to giving forty-eight hours' notice. The measure, it is hoped, may help the public to look upon all mental institutions as hospitals offering increasing possibilities for the cure or arrest of mental disorders, and not as asylums in which persons are segregated for life. It has been difficult to convince the Legislature that the powers of the Board of Control may be usefully extended from "certified" to "uncertified" persons, in spite of the evidence from Scottish experience. Medical opinion is, however, unanimous that the present laws on the subject of insanity are in urgent need of reform in order that persons, particularly in the early stages of insanity, may reap the benefit of modern advances in the science of psychiatry, and this, it is to be hoped, may be gained from the new bill.

THE CASE OF THE SENIOR SURGEON COMMANDER.

NOT for the first time, we have to call attention to the hard case of certain medical officers of the Royal Navy. For more than two years this grievance has been before the Council and the Naval and Military Committee of the British Medical Association, and many efforts have been made to induce the Admiralty to redress it, but without avail. It now becomes our duty to set out the story and point the moral. The facts are briefly as follows:

In January, 1920, as a consequence of the report of the Jerram-Halsey Committee, new regulations for retirement came into force in the Royal Navy. It was at once seen that a great injustice had been done to a considerable number of surgeon commanders who were nearing or who had passed the new retiring age of 50. The grievance arose under two heads —age of retirement and rate of pension. Under the new regulations these medical officers were compelled to leave the service from one to five years earlier than would have happened under the original terms of their appointment. The effect of this was to penalize the senior surgeon commander in two ways. In the first place he was deprived of several years of service at a higher rate of pay, and in the second place his chances of promotion to higher rank—and therefore of increased pay and pension—were correspondingly diminished. A special hardship was inflicted on those officers who, when making provision for old age, had taken out endowment policies to mature at the normal age of retirement; they found themselves saddled with heavy insurance premiums, which had to be met out of a halved income. Again, the Jerram-Halsey Committee had recommended increases of retired pay for all branches. Now, up to that time it had been recognized, in fixing rates of pay and pension, that the medical officer, with his long professional education at his own expense, was entitled to substantially better remuneration than the executive and other officers who obtained their special training wholly in the Service. But whereas under the new regulations the officers of other branches got increases of pension varying from 26 to 100 per cent., the surgeon commanders received only 10 per cent. increase.

Thus these medical officers, who had entered the Service on the understanding that they would be allowed to serve until the age of 55, were compulsorily retired at 50, and their maximum pension was fixed at £600 a year, representing an increase of but 10 per cent. on the former retired pay of their rank. Here it must be noted that 20 per cent. of the new pension for all officers was stated to be in respect of the increased cost of living, and the pension was accordingly liable to a reduction of 20 per cent. should the cost of living fall to the pre-war level. It followed that if this provision were carried out to the full the surgeon commander might in the long run find himself with a pension lower than he would have drawn had the increase never been granted. It has taken more than two years to obtain an assurance from the Admiralty that in no case shall the retired pay of a surgeon commander who was on the list on July 1st, 1919, be reduced below the old maximum of £547 10s.

The whole grievance of the senior surgeon commander was fully set out in a communication made by the British Medical Association to the Admiralty at the end of 1919, when a request was made that a deputation might place the views of the Association before their Lordships. The Admiralty's reply contained much argumentative matter but no hope of redress, and the deputation was refused. The grievance was admitted, but with the cold remark that legislation for cases of individual hardship was not practicable. Now the Association's case from the first has been that the better pay of those remaining in the Service is no justification for ill-treating the officers who are removed before their time; and that this is not a matter affecting two or three individuals alone. The new regulations have been unjust to some eighty or more surgeon commanders who were or who are approaching the new age of retirement.

The Admiralty's answer was considered so unsatisfactory that in March, 1920, a further letter was sent, asking once more that a deputation should be received, but the Admiralty, in its reply, repeated its preference for written communications. A year later the Association wrote again, insisting that a distinct injustice seemed

to have been inflicted, and giving details in support of its case. This letter was sent direct to the First Lord of the Admiralty. In his reply Lord Lee said that he fully appreciated the very small extent to which the pension of these particular officers had been raised, and that he realized that even this small increase was reduced by the loss of pay which some of them had no doubt suffered as the result of compulsory earlier retirement; but the Board, he said, had to regard the new scheme as a whole, and could not modify it to meet the needs of a particular group without giving rise to similar claims from others. Efforts were next made to enlist the sympathies of members of Parliament, but as nothing came of this a further letter was sent to the Admiralty on February 24th, 1922, expressing the considered view that the treatment of these medical officers amounted to a breach of contract which, in the case of a private firm, would have led to the institution of legal proceedings. The Admiralty was now warned that if the question could not be settled satisfactorily the Association would feel obliged to place the facts before the profession, and to advise young medical men that if they entered the Royal Naval Medical Service they must do so in future with the knowledge that any agreement made with them by the Admiralty might be broken. The answer to this was that the Admiralty could not depart from its original decision. In the meanwhile a scheme for reductions in other branches of the Service had been issued, and this included provision for compensating officers who agreed to retire voluntarily before a certain date. This gave occasion for one more effort towards a just settlement, and the Council of the Association wrote asking that the senior surgeon commanders should be dealt with on similar lines, but again the Admiralty declined. Thereupon the Council at its last meeting resolved to make a final protest and to repeat in more emphatic terms the warning already given.

The matter is one of elementary justice. The complacent bureaucrats have refused to give way, heedless of the effect of their attitude upon the future of the Service for which they are responsible. It is the considered opinion of the British Medical Association that the Admiralty has inflicted a serious injustice upon senior surgeon commanders. The Lords of the Admiralty, it seems, are unmoved by words addressed to them. The Association must therefore now address itself to those from amongst whom the recruits for the Naval Medical Service are drawn. In the light of what has now happened its advice to medical students and young practitioners is to consider seriously the disadvantages to which they are liable if they place their careers in the hands of the Admiralty. This warning will be repeated in the annual Educational Number of the BRITISH MEDICAL JOURNAL, and elsewhere as occasion arises.

R.A.M.C. WAR MEMORIAL: UNVEILING CEREMONY AT THE ABBEY.

WE announced more than a year ago that the fund to establish a memorial to the officers and men of the Royal Army Medical Corps who lost their lives in the war amounted to nearly £19,500. Of this sum £1,500 was earmarked by the donors for the benefit of the families and dependants of the fallen. It was decided that the amount available for the purposes of the memorial itself should be used in three ways: to erect in Westminster Abbey a tablet commemorating the officers and men of the R.A.M.C., Regular, Territorial, and Temporary, who fell or died in the war; to inscribe their names in a "Golden Book" placed in the Chapter House of the Abbey; and to contribute the sum of £10,000 to the fund for the restoration of the Abbey. This project commended itself to all concerned, and its execution was entrusted to a committee consisting of the Director-General Army Medical Service (Chairman), Sir Norman Moore, Bt., Major-General Sir W. G. Macpherson, Sir Launcelotte Gubbins, and Staff-Sergeant Walton, with Colonel C. R. Tyrrell and Major E. B. Waggett as joint secretaries. The main part of the work has now been completed, and on Thursday next, July 13th, at noon, the Duke of Connaught, Colonel-in-Chief of the Corps, will unveil the memorial tablet in the nave of the Abbey. His Royal Highness will then present to the Dean and Chapter for the purposes of the Abbey Restoration Fund the sum of £10,000 in fulfilment of the third part of the scheme. Music will be provided by the Abbey choir and the band of the Welsh Guards. The memorial tablet is of marble, the work of Mr. Wilcoxson of the Royal School of Art, South Kensington; the inscription makes reference to the "Golden Book." The tablet is on the north side of the nave, near the west door and on a level with the foot of the Unknown Warrior's grave. The preparation of the "Golden Book" is in the hands of Mr. Grailly Hewitt. Service uniform, academic robes, or morning dress will be worn at the unveiling ceremony. Subscribers to the fund desiring seats should apply to the Royal Army Medical Corps Memorial Fund, Room 314, War Office, London, S.W.1.

THE FUND FOR RUSSIAN DOCTORS.

WE reproduced last week (p. 26) the appeal on behalf of starving medical men and their families in Russia addressed to all members in Great Britain and Ireland by the four officers of the British Medical Association. The Council on June 14th had unanimously resolved that this appeal should be made and that every member be asked to send a subscription of 5s. It was felt that the quickest and most certain way of obtaining subscriptions would be by direct appeal from the head office to each member and that the limitation to a small sum would go far to secure a prompt and widespread response. A leading article commending this appeal to the British medical profession was printed at page 19. The Association received a list of doctors and families of deceased doctors in Russia to whom food parcels must be sent without delay if they are to be saved from death by starvation, and this list has been taken to the American Relief Administration in London, together with the first instalment of the money already received. The American Administration makes itself responsible for the delivery of a food parcel to each of the sixty-five persons named in the list, and will get a receipt from them. It promises further that all moneys subscribed through the British Medical Association will be used for the relief of doctors or the families of doctors who are in urgent need of food. Nine subscriptions of 5s. each will more than cover the cost of one parcel, including all charges. Contributions should be addressed to the Financial Secretary of the Association, 429, Strand, W.C.2, who will send a receipt. It will not be possible to acknowlege all the names of subscribers in our columns, but the amount of money collected will be announced from time to time. The total sum received up to July 3rd in response to this appeal was £585. Many members have sent sums in excess of the 5s. suggested by the Council, and in view of the plight of the Russian medical profession and the urgent need of relief for those of its members who are threatened with starvation the Financial Secretary has not hesitated to accept these generous gifts. A large number of other members have inquired whether more money will be needed, and the Financial Secretary, while unable to reply personally to each, asks us to say that further sums would be gratefully received. One medical man in sending his cheque encloses a letter for publication, giving first-hand information of the sufferings of our Russian colleagues; we print this at page 67, and have respected the writer's preference for anonymity. We may add here that the American Relief Administration has informed the Medical Secretary that next to the necessity of the Russian doctors for food is their need

for medical supplies; it hopes shortly to undertake the sending of medical supplies for some 100,000,000 people and 175,000 hospital beds.

VENOMOUS FISHES.

DR. H. MUIR EVANS of Lowestoft, who has contributed several papers on the subject to our columns, brought the results of his investigations of the defensive spines of fishes, living and fossil, before the Royal Society at its meeting on June 15th. The existence of a poison gland in connexion with the serrated spine on the tail of the sting ray has been a matter of dispute since the days of Aristotle. It has usually been held that the toxic effects of a wound by this spine were due to the poisonous property of the mucus, and that there was no special poison gland. Sections of the spine showing the cellular structures of the two lateral grooves which lie on either side of the median ridge facing the whip-like tail are difficult to obtain. But complete sections show that the grooves are occupied in their deepest portion by alveolar connective tissue provided with blood vessels and lymph channels, and separated from the more superficial mass of special epithelial tissue by a pigmented capillary meshwork. This epithelial tissue contains columns of cells in an active state, the secretion of which is discharged towards the lateral dentate margin. A study of the dorsal fin spine of the spiny dog-fish, Acanthias, reveals a groove containing a glandular structure which discharges secretion through a median longitudinal pit. Further investigation discloses the presence of a more complex gland on the posterior aspect of the dorsal fin spines of the Port Jackson shark, Cestracion. There is some evidence, also, of a special glandular structure near the base of the lateral teeth of *Chimaera monstrosa*. The examination of the fossil fin spines of Cestraciontidae reveals the existence of a rough surface with either median or lateral teeth, which may have been occupied by glandular structures similar to those found in Cestracion. The surface of the spine is otherwise covered with enamel which shows bosses or ridges running in a longitudinal direction. The fossil fin spines of the Pleuracanthidae were also described and discussed in view of the probability of the presence of glandular tissue in the fresh state; and the similarity between the head spine of Pleuracanthus and the caudal spine of the sting ray was pointed out. The poisonous effect of the Malay sting rays and the uses that the venom is put to by the natives were described. Clinical observations on wounds by the spines of dog-fish have been confirmed by inoculation experiments. Fish inoculated in the lateral line showed a great increase in the respiratory rate, and passed into a somnolent condition. They showed a tendency to lie flat on the side of the puncture, and there was often a spastic condition of the muscles at the site of inoculation; if the fish recovered from the immediate effects of the venom, it developed an area of pink oedema of the muscles which did not go on to suppuration, and was not accompanied by intra-peritoneal or other haemorrhages. The venom of the weever is more deadly; it produces intense and agonizing pain, and there is haemorrhage in experimental inoculation both at the site of the puncture and in the peritoneum. Injection of the venom is followed in fish by paralysis of the muscles on the side of inoculation, and in small laboratory animals by paralysis of the hind quarters. If the dose is insufficient to kill the animal by its effect on the respiration, an abscess forms at the site of puncture, and *post mortem* there is found a pure necrosis of the muscular tissue. Weever venom is a powerful haemolytic poison, and is also leucotoxic and so breaks down the resistance and allows a rapid bacterial infection to take place. Dr. Muir Evans found that filtration of glycerin extracts of the venomous spines of the weever through filter paper or a Berkefeld filter removed a constituent of the venom and deprived it of its haemolytic power on washed red corpuscles. Haemolysis did not take place with filtered venom unless a small quantity of serum heated to 60° C. was added, or a solution of lecithin; with unfiltered venom, however, haemolysis took place without the addition of any activating substance. Experiments were described showing that the efficacy of the native remedy, Abrus, used against the effects of wounds produced by Synancée, a member of the Scorpaenidae found in Reunion and Mauritius, depended on a physiological antagonism between abrin and the haemolytic constituent of the venom. Practical methods of treating the wounds produced by venomous fish were described.

SNAKES AND THEIR VENOMS.

THE poisonous snakes of Africa were the subject of an "occasional lecture" at the Royal Society of Medicine on June 28th by Lieut.-Colonel H. Watkins-Pitchford, R.A.V.C. The lecture was not of the narrow, zoological character that the title might suggest, but contained a good deal of interesting fact and philosophy about snakes in general. Although there has been an age-long antagonism between the seed of the woman and the seed of the serpent, which finds frequent expression in classic sculpture (for instance, in the Laocoön in the Vatican), a truce has been called occasionally—witness the association of the snake with Aesculapius, perhaps also the raising of the brazen serpent by Moses in the wilderness, and the guarding of the sleeping Buddha by a cobra. The revulsion with which snakes are commonly regarded tends, the lecturer stated, to disappear among those who have to do with the reptiles in captivity; familiarity breeds tolerance, and even liking. The anatomy, especially of the mouth parts, of the two great classes of snakes—the viperine and the colubrine—was described. The viperine snake was capable of inflicting a much deeper wound than the colubrine. In the puff adder, one of the viperine snakes, he had seen five perfectly canalized fangs of decreasing size. As the viperine snake struck, the fang was brought into the erect position, but the ejection of venom was not a purely mechanical process, and some snakes at least had the power of preventing the expression of venom even when the fang was fully erected. The snake seemed to realize that the number of rounds in its pouch was limited, and it did not use its poison apparatus unless it was frightened or provoked. It killed its small prey generally by a stroke, and only when its victim was refractory or elusive did it emit the venom. With the exception of the Australian tiger snake, the snake with the most toxic venom was an African variety, the black mamba, whose venom had twice the toxicity of that of the puff adder. The amount required to kill a man, judging from the amount required to kill a rabbit, was one-fifth of a grain. He had dissected out from the poison fangs of the black mamba about 2½ grains of venom, so that this creature possessed sufficient armament at any one time to kill twelve or thirteen persons. The toxicity of snake venom, however, varied according to the time of year. There was a widespread belief that snakes were more poisonous in the spring, and it might be that seasonal changes influenced not only the activity of the gland but the contents of the secretion. The second most deadly African snake was the *Naja nigricolles*, or black-necked spitting snake, so called from its power to eject venom for some distance. Under excitement the neck structures of this snake became enormously swollen, but this was no more than intimidation, like the bristling of the lion's mane. The power of ejecting venom in a jet or spray was possessed chiefly, if not entirely, by the hooded snakes. Contact of this venom with the eye set up intense conjunctivitis and permanent loss of sight sometimes ensued. In the collection of venoms chloroform was not necessary if the operator was active and competent. The reptile was seized directly behind the head with a ratchet forceps, lifted from its cage, the mouth opened by depressing the lower jaw with the underside of a watch-glass, and the poison sac squeezed with the forefinger, the poison being caught by the glass as it dripped from the fang. The snake was then solaced with a raw egg and put back in its cage. This process could be repeated several times with the same

reptile. Venoms acted in various ways: colubrine venom acted primarily on the respiratory centre, and viperine primarily on the vasomotor centre. Evidently, to judge from the *post-mortem* indications given by Shakespeare, it was from colubrine venom that Cleopatra died:

> Here, on her breast,
> There is a vent of blood and something blown:
> The like is on her arm.

Not often was death so dramatic as Shakespeare pictured it:

> Tremblingly she stood
> And on the sudden dropp'd.

The fatal result with colubrine poisoning did not usually take place until after the passage of some hours. With viperine venom, should the fatal result be postponed or averted, the delayed effects were much more serious and pronounced than with colubrine venom, and there was widespread tissue involvement around the bite. Unfortunately, owing to the time limit, Colonel Watkins-Pitchford had to curtail his lecture, and to omit altogether what he had proposed to say about the preparation of antitoxins. Sir Leonard Rogers, in proposing a vote of thanks, said that he had investigated the action of the venom of the African puff adder some years ago and found the essential effect of the bite to be a vasomotor paralysis.

SPIRIT PHOTOGRAPHS.

THERE is a society or club known as the Magic Circle which consists of professional conjurers, but admits a few approved amateurs, to the kindness of one of whom, a distinguished member of the medical profession, we are indebted for a copy of a report, dated May 31st, issued by the Occult Committee of the Circle. This committee, which consists of expert conjurers, has been appointed to investigate what are called "spiritualistic phenomena," and at the suggestion of Sir Arthur Conan Doyle appears to have turned its attention first to spirit photographs. The report deals with the inquiries made by the committee into the claims of two people —a man and a woman—who it was alleged were producing spirit photographs of a remarkable nature in unopened packets of photographic plates. Neither of the mediums came out of the ordeal unscathed. When a fraud-proof packet was sent to the male operator he obtained no results. He stated that the packet had twice been "held," but that the "usual sensation" had not been felt. As soon, however, as a packet that could be tampered with was submitted, a "psychic extra," as it appears to be called, was obtained on one of the plates. Unfortunately for the performer the conjurers had tampered with the packet first. In addition to other tests, a straight line of red varnish (invisible in the red light of the dark room) had been painted across the top left side of the edge of the stack of six plates. On the return of the packet by the medium three of the red marks were found at the bottom, showing that these plates had been reversed. When the operator was asked for an assurance that the packet had really been returned unopened, he replied in the affirmative. He said that it was quite usual to get adverse remarks from persons who did not understand, and that such remarks were not worthy of notice. Shall we admire the power of spirits, or deplore the frailty of human nature? The lady medium was vouched for by Mr. and Mrs. Hewat McKenzie, who conduct an institution known as the British College of Psychic Science. Three sittings were held with this medium. First, two members of the committee secured a private sitting. It was required that the plates, enclosed in a sealed packet, should be sent for "magnetization" some days in advance, and at the sitting these plates were exposed, and on development "extras" were on most of them. On one a face was visible in the midst of a cotton-wool effect; the others had crude markings, ascribed by the medium to unformed "ectoplasm" or to "spirit lights." As will be observed, she had acquired some of the latest spiritualistic terminology. At the second sitting, arranged by Mrs. McKenzie, a sealed box of six plates, forwarded in accordance with instructions, was produced by the medium. The box was opened and the plates transferred to metal dark slides; a service was then held, hymns being sung, and the Lord's Prayer recited. The plates were then exposed and an "extra" appeared on one of them—on No. 1 plate—which the investigators satisfied themselves had been substituted for the first plate of the original package. The medium had by this time become suspicious and nervous, and in fact she was not equal to holding her own with professional conjurers. She, however, consented to a third sitting, and for this an unopened box of unprepared plates was sent. It therefore became necessary that the plates should be secretly marked before being placed in the dark slides. One of the investigators, having placed the open stack of plates before the medium under the ruby light, secretly attached a small pad of pink material, chemically prepared, to the ball of his right thumb, and in handing the plates one by one to the medium an invisible mark was impressed on each. The medium gathered up the slides, and going into the studio took them to a small table on which her handbag was standing. The ostensible object was to obtain the hymn-books for the service, but the move being anticipated, the members of the deputation placed themselves in convenient positions to observe her actions. The hand holding the slides was seen to be placed inside the bag; one slide was dropped into a side pocket and a duplicate slide picked up with the hymn-books. Four plates were developed, and on one which did not show the mark a "spirit extra" appeared. All this may be amusing to the cynic, but the conclusions the committee of the Magic Circle draw are that although spirit photographers, like conjurers, meet changing conditions by the adoption of new methods, there are at present at least two methods in general use by some, at least, of the mediums who devote themselves to obtaining photographic "extras." In the one case, when the plates are accessible before the sitting, the spirit form is impressed, in advance, by contact with a selected transparency. In the other, when the packet is not available beforehand, the exchange for a prepared plate is made by a subtle move after the original plates have been loaded into the dark slides. The committee assert that they have never imposed a test which would not have served to demonstrate the straightforwardness and honesty of the medium, and conclude with a promise to extend to any honest medium fair, impartial, and courteous treatment, and to give him a free hand to carry out the experiment in his own way.

A MEDICAL PLAYWRIGHT.

THE doctor as dramatist is a figure of considerable importance in the modern theatre, as witness Tchekhov in Russia, Arthur Schnitzler in Austria, Henri de Rothschild in France, and Somerset Maugham in England. The name of Frank G. Layton (whose new play, in six scenes, *The Prophet*,[1] has lately been published) is likewise favourably known, in the rather smaller if more eclectic world of the English repertory theatres, as the author of *The Parish Pump*, *The Ferriport Election*, and other character comedies of the present day. *The Prophet* is cast in a different mould; its action takes place at Jerusalem in the Old Testament times of the campaign of Sennacherib against King Hezekiah. A parallel may be drawn between this play and one written by Arnold Bennett a year or two ago. *Judith* was brisk and engaging enough to read, but it failed upon the stage, in spite of a highly spectacular and picturesque production and some excellent acting. Such might also be the fate of *The Prophet*, and for like reasons. We have enjoyed reading this play, but for acting purposes its interest seems a little too diffuse: the attention wanders from character to character, the scenes fall away instead of being cumulative, and the climax—when it comes—is disappointing. Again, the colloquial dialogue, while entertaining, is not always "in the picture." Dr. Layton can, of course, point to the successful employment of modern terms and dialogue in Shaw's *Caesar and Cleopatra* and in other plays, but not mixed thus: "*Poet:* This Prophet is hot stuff. . . . *Officer of Guard:* May the Lord God strengthen

[1] *The Prophet*. A play by F. G. Layton. London: C. W. Daniel, Ltd. 1922. (Cr. 8vo; pp. 91. 3s. 6d. net.)

his tongue." The same kind of criticism might be made of the farcical episode in Scene V, where the citizens of ancient Jerusalem take up unaccustomed arms and are drilled on the stage in military evolutions. Where, however, Dr. Layton is particularly interesting to us is in the application of his medical knowledge to dramatic purposes—curiously enough, not often done by other medical playwrights—for in his play the attack of Sennacherib's army against Jerusalem is beaten off by no feats of Jewish valour but by the outbreak of an epidemic of plague carried by rats. As a piece of literary work *The Prophet* has many merits and it will interest and amuse medical readers, although we may confess to preferring Dr. Layton in his other and more familiar dramatic vein. We have ventured to criticize this work because we regard him seriously as a playwright.

WATER-BORNE ENTERIC.

EPIDEMICS of enteric fever are not now so common in this country as they were, but when they do occur they are generally traced to specific pollution of a public water supply. An instance which occurred in 1921 at Bolton-upon-Dearne, in the West Riding of Yorkshire, was investigated by Dr. W. Vernon Shaw on behalf of the Ministry of Health, and his report has just been issued.[1] It appears that after almost entire freedom from the disease during the previous five years, enteric fever somewhat suddenly became prevalent in the urban district during the second half of July and the early part of August; a few cases were reported also in the adjacent urban district of Darfield and a few more in nearby villages in two rural districts bordering on Bolton-upon-Dearne. The epidemic began with cases of diarrhoea and gastro-intestinal disturbance, followed a fortnight or three weeks later by definite cases of enteric fever. This is not uncommon in water-borne outbreaks of enteric in which recent faecal contamination of the public water supply has occurred. The first crop of cases was followed by others due to secondary infection, and altogether the first outbreak comprised 137 attacks and 16 deaths. A second outbreak began early in October and cases were notified down to December, the total amounting to 260 cases and 29 deaths. The second outbreak was almost entirely limited to Bolton-upon-Dearne itself, which has a population of about 3,581, and is included in the urban district of that name, the total population of which is 11,947. Thus from July to December, 1921, some 351 persons were stricken down by enteric fever in the urban district, of whom 40 died. Including 46 other cases, which occurred in districts immediately adjoining Bolton-upon-Dearne, of which 5 were fatal, the grand total of the two outbreaks was 397 attacks with 45 deaths, giving a case mortality of 11.3 per cent. Dr. Shaw, after reviewing the various causes likely to have given rise to the outbreak, excluded everything but the public water supply. In 1875 the Dearne Valley Waterworks Company began to supply the district, and the original source, a deep well, was gradually augmented by other sources. In April, 1921, the Waterworks Company was superseded by the Dearne Valley Water Board, which supplies four urban districts and certain parishes in two rural districts. Different parts of the area receive their water supply from separate sources, and in 1921 the prevalence of enteric fever did not affect two of the urban districts supplied by the Water Board. The water for Bolton-upon-Dearne is pumped from some abandoned workings of the Dearne Valley Colliery. The colliery is still being worked, but there appears to be no danger of pollution of the water in the abandoned workings, which is locally known as the "clean" side of the colliery; the water is collected in an artificial pound built of brick and concrete, which is quite impervious to soakage from the workings. The colliery, however, lies under an inhabited area, only part of which has been sewered. In the inhabited area is a wood which, during the coal strike (April to July, 1921), was raided by the strikers for fuel. In the wood and its immediate neighbourhood the sandstone rock overlies the coal measures, is near the surface, and shows many cracks and fissures. A considerable amount of human excreta was observed among the undergrowth and in ditches. During the hot and dry weather of June, 1921, the ground overlying the colliery was baked and cracked, and it is suggested that after rain impurities were carried down the cracks and fissures in the rock and reached the water in the colliery. Bacteriological examination of samples of this water in August showed it to be contaminated. Bolton-upon-Dearne itself, to which, as has been said, the second outbreak was almost entirely limited, is regarded as the most insanitary portion of the urban district. The water in the public mains was chlorinated during the whole of September, and the bacteriological report on samples taken was favourable. It appears that the people in Bolton had for some weeks given up using the public supply, and had resorted to a public pump which drew water from a shallow well immediately beneath it in the sandstone rock. This well had undoubtedly become specifically contaminated. For many weeks the weather had been hot and dry, but on October 2nd and 3rd there was heavy rainfall; it is believed, however, that surface pollutions had been drawn into this well during September. Early in November the water was found on bacteriological examination to be contaminated. People also used wells, and the water from these also was polluted. Close to the pump well just mentioned is a disused quarry in which the rock shows extensive fissures some 12 inches wide. The lower part of the quarry, which is used as a playground, is 10 feet above the level of the well; the floors of privy middens in this part are all several feet above the bottom of the well. The village feast took place on August 20th, and itinerant showmen and others camped with their caravans and round-abouts in a field above and adjoining the quarry. A good deal of human excrement and refuse accumulated in one corner of this field. A heavy strain was imposed upon the Bolton-upon-Dearne urban district council in dealing with the epidemic, especially in finding accommodation for the 260 patients of the second outbreak. Fortunately the isolation hospitals of a number of local authorities became available. In addition, an infant school was made into a temporary hospital for 30 cases, and later was extended to accommodate 43 patients.

[1] Reports on Public Health and Medical Subjects, No. 12. H.M. Stationery Office. 1922. (Pp. 44. 2s. net.)

INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.

THE fifteenth annual meeting of the American and Canadian sections of the International Association of Medical Museums was held at the Army Medical Museum, Washington, D.C., on May 1st. There was a large attendance, including representatives of the medical services of the American and Canadian Governments. The chairman, Dr. James Ewing of Cornell University, emphasized the growing importance of the association because of its devotion to the interests of the science of morphology, which must ever remain the fundamental branch of medicine. The programme of scientific business dealt principally with museum technique and morphological pathology. Bulletin VIII ("Journal of Technical Methods") and Bulletin IX (the "Sir William Osler Memorial Bulletin") were ordered to be published. It was agreed that the Exchange Bureau and Bureau for the Preservation of the Results of Medical Research of this section of the International Association should be transferred from the McGill University Medical Museum to the United States Army Medical Museum in Washington. An interesting feature of the afternoon session was the presentation of a testimonial from the Medical Department, United States army, to Dr. Daniel Smith Lamb, assistant and pathologist at the Army Medical Museum from 1865 to 1920. The presentation was made by Brigadier-General Walter D. McCaw, Assistant Surgeon General, who outlined the work of Dr. Lamb and called attention to the results of his labours, as illustrated by the collections of the institution in which the meeting was being held. Dr. F. B. Mallory of Boston was appointed president, and the other officers were elected for

the ensuing year. At the close of the scientific programme the meeting adjourned to inspect the large recent accessions to the Army Medical Museum and a series of special exhibits from members of the American Association of Pathologists and Bacteriologists and its conjoint societies, the International Congress of Ophthalmologists, the Canadian Army Medical Museum, and the pathological museums of Pittsburgh and McGill Universities, which had been set up in the spacious halls of the Army Medical Museum under the aegis of the International Association of Medical Museums.

THE SITE FOR THE UNIVERSITY OF LONDON.

THE answers of the Chancellor of the Exchequer to a number of questions recently addressed to him in the House of Commons with regard to the possibility of reconsidering the arrangement to use the site at Bloomsbury for the new buildings of the University of London were unfavourable but not absolutely uncompromising. Sir Robert Horne said that the Board of Education was not reconsidering the question of the site, and that therefore the question whether the site at Holland Park could be looked upon as a possible alternative did not arise. Sir Cyril Cobb, who, it may be remembered, was once Chairman of the London County Council, asked whether, if the Senate of the University of London failed within the prescribed time to fulfil the conditions under which it had agreed that the Bloomsbury site should be handed over to the University, there was any intention of advising the purchase, out of money provided from the sale of the Bloomsbury site or otherwise, of the Holland Park or any other site to provide a permanent home for the University. To this Sir Robert Horne replied that the question related to a hypothetical situation with which he was not prepared to deal at present. He admitted, in reply to a question by Mr. A. M. Samuel, that the desirability of relinquishing the scheme for the Bloomsbury site, on the ground that it was not big enough for the purpose, was a matter of opinion, as was also the question whether the Government should act upon the three resolutions passed by the London Education Authority asking that the Bloomsbury proposal should be reconsidered. The matter of opinion and controversy was, he said, whether perseverance with the Bloomsbury site might not, as was suggested, end in disaster.

POST-GRADUATE EDUCATION IN LONDON.

THE Minister of Health, Sir Alfred Mond, has arranged to receive a deputation on July 13th to lay before him the present position of post-graduate medical education in London. It will be remembered that the Committee appointed by the then Minister of Health (Dr. Addison) under the Chairmanship of the Earl of Athlone made in substance two recommendations; one was that an institute or college of hygiene should be established in London. This has been made possible by the munificent gift of the Rockefeller Foundation, aided by the promise of the Minister of Health to make an annual grant of £25,000 for upkeep. A site has been selected and other arrangements are in progress. The other recommendation was for the institution of a post-graduate medical school to serve as a centre of a great teaching organization in which the special hospitals of London, the Poor Law infirmaries, and the medical schools, with their clinical units and research departments, would all find their place. It advised that as an integral part of the organization there should be a bureau or central office controlled by a committee of management and providing a library, a hostel, and all things necessary to afford full facilities for social intercourse. Nothing has been done to advance this second recommendation, and it is on this point that the deputation intends to make representations to the Minister. The members of the deputation will include the President of the Royal College of Physicians of London (Sir Humphry Rolleston), the President of the Royal College of Surgeons of England (Sir Anthony Bowlby), the President of the Royal Society (Sir Charles Sherrington), the President of the Fellowship of Medicine (Sir George Makins), Sir Berkeley Moynihan, Bt., Sir Robert Jones, Sir R. H. Luce (Chairman of the Committee of the British Medical Association on Post-graduate Education), Sir S. Russell-Wells (until recently Vice-Chancellor of the University of London), Dr. George Blacker (Dean of University College Hospital Medical School), and Dr. Charles Buttar.

THE GLASGOW ANNUAL MEETING.

THE attention of members who intend to be present at the Annual Meeting of the Association in Glasgow is directed to the forms for "Notification of attendance" at the annual meeting and at the annual dinner, which appeared in the SUPPLEMENT of June 3rd, p. 207. These forms should be filled in and sent to the Honorary Local General Secretary, British Medical Association Annual Meeting, 22, Sandyford Place, Glasgow, as soon as possible. Those who wish accommodation secured for them should consult the list in the present issue, and communicate directly with the Secretary of the Hotels and Lodgings Committee, Dr. James Hendry, 4, Clifton Place, Glasgow, W. We are asked to state that the local office-bearers of the Section of Ophthalmology desire to entertain the members of the Association attending this Section at luncheon in the Central Station Hotel on Thursday, July 27th, at 1 p.m. It will be a great convenience if members who are likely to be present at the meetings of the Section of Ophthalmology will inform the Honorary Local Secretary of the Section, Dr. W. H. Manson, 17, Royal Terrace, Glasgow, W., as soon as possible, so that some idea of the number likely to be present can be obtained.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Senior Surgeon Commanders R.N.

LIEUT.-COMMANDER KENWORTHY asked, on June 27th, whether the attention of the Parliamentary Secretary to the Admiralty had been drawn to the position of certain senior surgeon commanders of the Royal Navy, as a result of the awarding in the year 1919 of a 50 per cent. increase in pay and pension of officers; whether surgeon commanders who were over 50 years of age at the time of this increase now found themselves entitled to a pension less than 10 per cent. greater than the old rate, though by age and length of service they had earned up to 50 per cent. increase. Commander Eyres-Monsell, in a written answer, stated that the position of these officers had already come under the notice of the Admiralty. The Halsey Committee, on whose recommendation the changes made in the rates of retired pay in 1919 were based, did not propose an all-round percentage increase in the rates, but aimed at assimilating, as far as possible, the rates in the various branches, and with this object laid down a uniform scale of retired pay for all officers of the relative rank of commander, including surgeon commanders. On this scale the rate of retired pay was subject in each case to a maximum of £600 per annum. As the maximum obtainable by a surgeon commander under the old regulation was £547 per annum, the rates for certain surgeon commanders under the new regulations were increased by less than 10 per cent.; and the percentage increase generally was smaller than that in other branches where smaller maximums were previously in force. Such a difference, however, was inherent in any scheme which had for its aim the assimilation of the conditions in various branches, and while therefore some officers might have benefited more than others by the changes made, the Admiralty did not think it desirable to make any modifications in the scheme in order to meet the case of particular classes of officers. (This matter is discussed in a leading article at p. 52.)

National Health Insurance Bill.

The report stage of the National Health Insurance Bill was taken in the House of Commons on July 3rd.

On Clause 1 the Minister of Health, Sir Alfred Mond, at the instance of Major Mackenzie Wood, explained how it was that the proposed transfer of cost from the Treasury to insurance funds included not only the higher cost of medical benefits, but also some administrative expenses. As a matter of fact, the cost of the central administration had been reduced by no less than 5d. a head. The cost of the Insurance Committees up to now had been partly borne by the Treasury and partly by the approved societies. In 1920–21 the total cost, including the cost of the Central Index Scheme, was about 7s. per insured person per annum, made up of 4d. from the

societies and 3½d. from the Exchequer. In 1921-22 the cost was about 7d., of which 6d. was raised from the societies and 1d. from the Exchequer. Under the Report of the Geddes Committee it was proposed to abolish the Central Index Scheme and that the Exchequer grant for this purpose should cease. But the approved societies found the Central Index of great value. That was all the money that was being found; it amounted to about 1d. a member. He had pointed out that the cost of administration for the coming year was estimated at 6¾d.

On Clause 5, applying the bill to Scotland, Major Mackenzie Wood said the effect of the clause was that insured persons in Scotland had to pay more than those in England; the transferred figure in the case of Scotland being 2s. 9¼d. against 2s. 4d. in England. Including administration for medical benefits, Scotland was going to pay 2s. 11¾d., whereas England was going to pay 2s. 6d. including administration, and Wales 3s. 1d. He had thought the fundamental principle of the whole scheme was a flat rate.

Sir Alfred Mond said the difference was one of the first effects of the Scottish Home Rule movement. When the Act of 1918 was passed Scotland, as well as Wales, insisted on having separate benefit funds. The medical payment for doctors in Scotland and Wales had always been more than in England, for the simple reason that the population in those countries was more scattered and sparse and there were greater mileage rates. There had never been a flat rate in the sense indicated by Major Wood. The State had borne the difference between the rates in England, Scotland, and Wales. When that grant came to an end the alternatives left were either that poorer people in the sparsely populated districts in the Highlands or in Wales should have no medical treatment, or much less adequate treatment than they now received, or there must be a reduction in the mileage rates in England because there can be no pooling for England, Scotland, and Wales for medical benefit. The idea, no doubt, that Scotland could not indent on the English Fund was a novelty, but under the Act of 1918 Scotland insisted on having a separate benefit fund. Therefore either the medical profession in Scotland must come under an arrangement whereby they would receive less money or the patients receive less benefit.

In the course of further discussion, after speeches by Mr. Adamson and Mr. Hogge, Sir A. Mond pointed out that the bill did not affect the contract with the doctors. The bill altered the payment from the Treasury of a certain part of the medical benefit to the societies.

Mr. Rhys Davies again brought up the question of the position of approved societies in regard to agreements with the doctors, and asked for a further statement. Sir A. Mond replied: "On the second reading I made a very full statement on this question and also in Committee upstairs. When I made this arrangement with the approved societies I gave them clearly to understand that they would be consulted in the fullest sense before the Ministry entered into any further arrangement with the medical profession, and I wish now to repeat this statement. Most certainly the approved societies will be taken into consultation."

The bill was afterwards read a third time.

The Finance Bill.—In Committee on the Finance Bill, on June 28th, the Chancellor of the Exchequer informed Mr. Rose, who had moved a new clause, that originally only those entertainments the whole proceeds of which were given to a charity were exempt from the duty, but that had been modified to the effect that where not more than 20 per cent. of the proceeds had been spent upon expenses the entertainment should be exempted from the duty. He recognized that projects for many philanthropic and charitable objects were not pursued because the expenses could not be kept within the present narrow limits of concession. He was therefore willing to increase the amount of allowance for expenses from 20 to 30 per cent. A clause to that effect would be proposed on report. Subsequently the Chancellor of the Exchequer accepted a new clause, moved by Sir E. Bartley-Denniss, providing that Corporation Profits Tax should not be charged on the balance of an association registered as a company with limited liability but without the addition of the word "limited" to its name. The associations affected are Chambers of Commerce, University Colleges, and other educational institutions incorporated under the Companies Act. Such associations make no profit, but sometimes have a balance in hand from their subscriptions which the Inland Revenue authorities have sought to regard as profit.

Voluntary Hospitals Grants.—Sir Alfred Mond, on June 27th, in a written answer, gave a list of grants approved by the Voluntary Hospitals Commission up to June 17th, 1922. The following grants have been allocated to the teaching hospitals of the metropolis: Guy's £6,9.0, King's College Hospital £10,000, the London Hospital £10,000, the Middlesex £13,220, the Royal Free £12,000, St. Bartholomew's £5,665, St. Mary's £6,580, St. Thomas's £5,350, University College Hospital £12,000. The larger grants to other hospitals in London include £4,650 to the East London Hospital for Children, £5,780 to the Great Ormond Street Hospital for Sick Children, £4,000 to the Prince of Wales's General Hospital, Tottenham, £3,500 to Queen Charlotte's Lying-in Hospital, £5,480 to the Royal National Orthopaedic, £11,000 to the Royal Northern, £3,500 to the West London, £3,400 to the Hampstead General Hospital, £3,310 to the London Temperance Hospital, £2,270 to the Miller General Hospital, £2,250 to the Queen's Hospital for Children, and £2,000 to the Victoria Hospital for Children. The larger grants to provincial hospitals include £10,000 to the Sheffield Royal Infirmary and £7,650 to the Sheffield Royal Hospital, £8,300 to the Manchester Royal Infirmary, £8,000 to Birmingham General Hospital, £3,350 to Bristol Royal Infirmary, £2,925 to the Derbyshire Royal Infirmary. The Minister of Health added that the Commission was anxious that hospitals in the provinces should expedite the presentation of their claims.

The Cases of Ronald True and Jacoby.—On the Home Office vote, on June 29th, Mr. Shortt replied to further criticism as to his interpretation of his powers under the Criminal Lunatics Act, 1884, in the case of Ronald True. He maintained that there was no question of the certificate of a doctor upsetting the verdict of a jury. The verdict of the jury stood. If True were to become sane to-morrow he would go back to prison, and there was nothing in the law to prevent his being hanged. The Home Secretary again insisted that no discretion was open to him in regard to the course to be taken. Incidentally Mr. Shortt referred also to the case of Jacoby, to correct several misapprehensions. Jacoby had been described as a young man of seventeen. He was three weeks off nineteen. It had been said that no trouble had been taken to find out whether he was insane. That was not so. He was most carefully and thoroughly examined in Brixton Prison by a very highly experienced prison doctor who was one of the chief witnesses certifying to the insanity of True. Dr. East gave the Home Office a most carefully prepared report, certifying that Jacoby was absolutely sane and above the normal intelligence. Those responsible for his defence went to a well-known medical expert, one of the chief of those who gave evidence that True was insane. This doctor refused to say anything in evidence except that Jacoby was perfectly sane. That was what happened before the conviction. Afterwards Jacoby was examined for a third time—at the instance of the Home Office—by a highly experienced doctor who absolutely confirmed what the other two doctors said.

Pensioners.—Mr. Macpherson informed Mr. Gilbert, on June 29th, that during the years 1920 and 1921 the approximate number of deaths among pensioners was as follows: Men, 19,500; widows and other dependants, 16,000. On the same day Mr. Macpherson supplemented answers previously given as to the limitation of special diet allowed to pensioners. Additional allowances for special diet had not (he said) been withdrawn from pensioners suffering from tuberculosis or diabetes. The allowance was, indeed, expressly continued in those cases by the new regulations when the rate of pension or allowances and other circumstances justified a grant. The allowance was not provided for by the terms of the warrant, and had never been attached to any class of pensions. Hence no breach of faith was involved in a modification of the regulations. Mr. George Barker asked, on July 4th, whether the Minister of Pensions was aware that the Abertillery and district local committee had passed a resolution expressing alarm at the apparent tendency of medical officers of the Ministry of Pensions to certify men as fit for work, and as not requiring treatment after the pensioners' panel doctors had certified them as unable to work and in need of treatment. Major Tryon said the resolution appeared to have been passed under a misapprehension. Medical officers of the Ministry were required only to certify whether or not a man needed a course of special treatment, and whether he would in consequence of that treatment be unable to work, and would therefore become eligible for allowances under Article VI of the Royal Warrant. The question whether in any individual case the man needed special treatment which it was not within the competence of the insurance practitioners to give was, and must be, entirely one for the judgement of the medical officer of the Ministry who examined the man. The Ministry had no reason to doubt that the instructions in force provided for every man duly receiving the treatment necessitated by his case in accordance with the provisions of the Royal Warrant.

Indian Medical Service.—On June 27th Mr. Hogge asked the Under-Secretary of State for India whether he would consider the advisability of putting the Indian Medical Service on terms of equality with regard to pensions and commutation with members of the Indian Civil Service. Earl Winterton replied that officers of the Indian Medical Service were not alone affected, and promised to consider the whole matter. He returned a similar reply to Dr. Fremantle, who asked whether the difference would be remembered between Europeans and Indians in regard to attendance upon white patients.

The Supply of Chemicals.—Dr. Murray, on June 19th, asked the President of the Board of Trade whether in view of the statement by the Dean of the Faculty of Science, in University College, London, that certain chemicals were unobtainable in this country, and had to be imported from Germany, and duty paid on them, he would consider the expediency of seeking powers to exempt such chemicals from the operation of the Safeguarding of Industries Act. Mr. Baldwin said that his attention had not been called previously to this particular statement, but he was aware that certain chemicals were not at present manufactured in this country, a fact which was one of the main reasons for the Safeguarding of Industries Act.

Short Notes.

The Lords amendments to the Infanticide Bill, which was originally called the Child Murder (Trial) Bill, were considered in the Commons on June 30th, and were accepted. The bill was introduced in the Commons by the Labour party, and was in charge of Colonel Wedgwood.

The Local Government and Other Officers Superannuation Bill.—Sir H. Nield, on June 30th, moved the third reading of this bill, which was agreed to without division. Its objects were explained at the earlier stages.

The Minister for Education has found it possible to remove in nearly every case the restriction on the number of defective children who may be sent to existing special schools by local education authorities. A new circular is to be issued to the authorities in a few days.

In reply to a question as to the traffic in cocaine, Sir John Baird (Under-Secretary for the Home Department) has stated that he hoped before long to introduce a short bill increasing the penalties which might be imposed under the Dangerous Drugs Act.

NINETIETH ANNUAL MEETING
of the
British Medical Association,
GLASGOW, 1922.

THE GLASGOW SCHOOL OF MEDICINE.

THE Glasgow School of Medicine may be said to have arisen at a very definite date (1599), and to have been founded by one definite personality—Peter Lowe. At the close of the sixteenth century Glasgow was a town of about 7,000 people, holding only about the eleventh place of importance amongst Scottish towns. It was probably an insanitary town, not worse than others at the time: its houses built of wood and roofed with thatch; its drainage system consisting of primitive gutters or syvers in the streets; frequently visited by plague and possessing a persistent outcrop of leprosy. Medical practice was in the hands, in the first instance, of a few physicians trained in the schools of Italy, France, and the Low Countries; then there was a fairly large body of barber-surgeons, the general practitioners of the period, not banded together in a corporation, as in Edinburgh and London; then there were also a few barbers who practised surgery only, and, in addition to these, a horde of charlatans, pretenders, sellers of simples, and mediciners of all sorts.*

THE FOUNDING OF THE FACULTY OF PHYSICIANS AND SURGEONS.

In 1598 the Kirk Session urged the Town Council to institute some means whereby the skilled and unskilled practitioners of medicine could be distinguished. In April of the following year the Council appointed a committee (how curiously was that method of getting out of a public difficulty in vogue even then!), three bailies, three city ministers, and three university officers, "with other men skilled in the art to examine for the future those who practised in the town." It is probable that the influence of Peter Lowe was at the back of all this. He certainly found means of making some kind of representation to King James VI. The king—it was he who a few years later became James I of England—granted in November, 1599, letters under the Privy Seal empowering Peter Lowe and Robert Hamilton "to examine and try all who professed or practised the art of surgery to license 'according to the airt of knowledge that they sal be found wordie to exercise' those whom they judged fit and to exclude the unqualified from practice with power to fine those who proved contumacious." The Visitors, as Lowe and Hamilton were called (the Visitor is still the title of the Vice-President of the Royal Faculty of Physicians and Surgeons), reported to the city magistrates cases of poisoning or violent death, and excluded from the practice of medicine those who could not produce a testimonial from a famous university where medicine was taught. Associated with them was William Spang, an apothecary in Glasgow, who assisted in the regulation of the sale of drugs, especially poisons. Those licensing powers were strictly maintained, and extended far beyond the city to the baronies of Lanark, Renfrew, Dumbarton, and the various divisions of Ayrshire. Thus was created in 1599 the Faculty of Physicians and Surgeons of Glasgow. It is a curious fact that in Glasgow the two great branches of the profession were in those early days, and still are, associated together in one corporation, differing from the practice in Edinburgh, London, and Dublin, where physicians and surgeons are organized in different colleges.



MAISTER PETER LOWE.
From the portrait at the Royal Faculty of Physicians and Surgeons.

PETER LOWE.

Maister Peter Lowe was a Scot whose early manhood was spent abroad. He saw service in France and Flanders, and was surgeon-major to the Spanish regiments at Paris for two years. He published in London, in 1595, a book on the Spanish sickness. He came to Glasgow probably in 1598 and was town's doctor, for there is a record in the minutes of the Town Council of March 17th, 1599, that certain sums of money were to be paid to him for attending the poor of the town. He had been so long away from the country that when he returned he was possibly unaware of the changes in the Church government which had taken place and the introduction of the austerities of Calvinism. At all events he was for some offence sentenced by the Presbytery of Glasgow to stand "on the pillar." The offence must have seemed trivial, for the doctor paid no attention to the command of the clerics, apparently treating the whole matter as a jest. The Presbytery, however, was in no joking mood, for he was condemned to stand two Sundays on the pillar and pay his fine as well to the "thesaurer" of the kirk. Peter Lowe was probably the first to write a textbook on *Chirurgerie*, which was published in London in 1597. He claimed to belong to the College of Sworn Master Surgeons of Paris, the members of which were known as "Surgeons of the Long Robe," to distinguish them from the barber-surgeons, who were "Surgeons of the Short Robe." Lowe died in 1612. His tombstone can still be seen on the south wall of the cathedral churchyard. It is the property of the Royal Faculty of Physicians and Surgeons of Glasgow, and bears the following quaint inscription:

"Stay. Passenger. And. View. This. Stone
For. Under. It. Lyis. Such. A. One
Who. Cuired. Many. Whill. He. Lieved
Soe. Gracious. He. Noe. Man. Grieved
Yea. When. His. Phisicks. Force. Oft. Failed
His. Pleasant. Purpose. Then. Prevailed
For. Of. His. God. He. Got. The. Grace
To. Live. In. Mirth. And. Die. In. Peace
Heavin. Hes. His. Soul. His. Corps. This. Stone
Sigh. Passenger. And. Soe. Be. Gone

Ah Me I Gravell Am And Dust
And To The Grave Deshend I Most
O Painted Piece Of Liveing Clay
Man Be Not Proud Of Thy Short Day."

EARLY DEVELOPMENT OF THE MEDICAL SCHOOL.

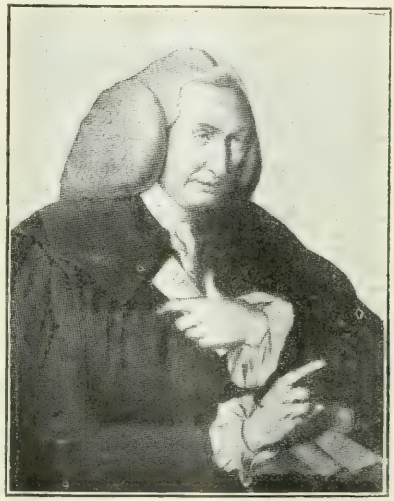
During the seventeenth century the Faculty of Physicians and Surgeons gradually developed some kind of organization and made its influence felt in the city. It retained the whole control of licensing of practitioners and surgical apprentices such as it was, and indeed more than two centuries afterwards, when medicine and surgery had long been recognized as subjects of study and examination in the University, the

* Previous articles, on the City and University of Glasgow and its medical institutions, have appeared in the BRITISH MEDICAL JOURNAL of December 3rd, 1921, p. 961, January 7th, 1922, p. 29, February 11th, p. 242, April 22nd, p. 649, and June 3rd, p. 883.

Faculty obtained a decision from the Court of Session that without examination and licence by them the holder of a university degree was not entitled to practise surgery within the fairly wide territory of the Faculty.

In this century the University had for itself begun to recognize the importance of the study of medicine. In 1637 Robert Mayne was elected Professor of Medicine. His duty was to "teache ane publickt lecture of medicine in the said Colledge once or twyse ewerie weik, except in the ordiner time of vacance." But in 1642 a Commission of Visitation of the General Assembly found that the profession of medicine was not necessary for the college in all time coming, but allowed Mayne to continue to be professor during his life. He died in 1646, a year in which there was a virulent outbreak of plague, so severe that the University migrated in a body to Irvine on the Ayrshire coast. In that year the plague-stricken people were deported to the Muir lands of Sighthill in the northern part of the city, where they were visited by John Hall, the principal surgeon of the day, a man plainly built in heroic mould, carrying out his medical duties with the courage of all medical heroes.

It is not till the first half of the eighteenth century that we come again upon the names of men who built up the Glasgow School. In 1714 Dr. Johnstoun was appointed by the Faculty of the University to the revived Chair of Medicine. With the beginning of the century the University began to give degrees in medicine, though not to teach the subject. In 1720 a Chair of Anatomy and Botany, two subjects curiously linked, was founded, and Thomas Brisbane was appointed. Brisbane, however, disliked anatomy and would not dissect; he appears to have had no great objection to teaching botany. In 1727 he was ordered to teach anatomy if even ten students entered—the whole story has a peradventure ring about it—but there is no record that he did so. He gladly handed over these duties to Mr. John Paisley, who taught anatomy for ten years in the Humanity classroom. One of Mr. Paisley's apprentices, William Cullen, was destined to make for himself an everlasting name as the founder of modern medicine, and was to a notable degree the fount and stimulus of the Hunterian inspiration.



WILLIAM CULLEN.

William Cullen was born in Hamilton, a county town ten miles south of Glasgow; he was the son of a lawyer, factor to the Duke of Hamilton of that day. After finishing his studies in Glasgow he spent a *Wanderjahr* in a voyage to the West Indies, and on his return pursued his studies in London, and later in the quickly growing medical school of Edinburgh. He began practice in Shotts, and then removed to his native town, and until recently the house in which he practised was standing at the corner of Castle Street and the New Wynd. His reputation spread, and in 1744 he came to Glasgow, notwithstanding the efforts and promise of a laboratory by the Duke of Hamilton. Almost immediately he began to lecture, and these lectures were apparently the first systematic attempt to teach medicine in the city. He broke new ground by discarding Latin and lecturing in English. He lectured on botany, physic, materia medica, and lastly, on chemistry. In 1751 he was appointed Professor of Medicine, an appointment he held but a short time, for four years later he was transferred to the Chair of Chemistry in Edinburgh University. In Edinburgh also he taught medicine, and introduced the epoch-making change of bedside teaching. His most important work was done in Edinburgh, but he had done great and notable work for the Glasgow school: he had set going classes of instruction in medicine, materia medica, botany, and chemistry; he had attracted large numbers of students; he had extended the reputation of the University amongst professional and scientific men not only in the United Kingdom but also on the continent of Europe. "He was one of the rarest species of the man of science—a masterless master." His influence on William Hunter was profound. They came together when Cullen was 27 years of age and Hunter 19. Cullen gathered the latest publications on medicine and chemistry, made frequent experiments himself, and (most extraordinary of all) kept accurate notes of every case in his practice, a plan adopted, too, by his senior, Smellie, in Lanark.

William Hunter studied both in Glasgow and Edinburgh, and in 1750 Glasgow conferred upon him the degree of M.D. His influence is perpetuated for all time in the Hunterian Museum, a storehouse of marvellous wealth in books, pictures, coins, as well as anatomical and pathological specimens. Sir William Gairdner always began his course of lectures by long quotations and references to Cullen's *Nosology*, for Gairdner regarded Cullen as the opener up of a new era in medicine, as the first to cast aside the old traditions and canons and to teach that the physician was the servant of nature, and that disease must be learned only from direct study of the patient.

The Hunterian Homeland.

Associated with that period and to some extent with Cullen himself was a group of men who left a lasting and deep impression on the world of medicine. All were not specially connected with the Glasgow School, but their influence on it must have been felt. It is remarkable that these small villages of the Clyde Valley—Hamilton, East Kilbride, Lanark, Bothwell—should at the same period have produced a group of minds of the highest scientific quality. We have pointed out that Cullen was born in Hamilton. William and John Hunter were born at Long Calderwood in the parish of East Kilbride. Mathew Baillie, nephew of the Hunters, was born in Bothwell. William Smellie, the famous London obstetrician, was a Lanark man and practised there before the desire for wider scope and opportunity drove him south. Hunter was an intimate friend of Cullen, worked as his pupil or apprentice for two years, and it was his intention to practise with him in Hamilton as his surgical partner. But an appointment with Douglas the anatomist proved so enticing that William Hunter remained in London. Another friend of Cullen, older than he, was Dr. John Gordon, a practitioner in Glasgow, President of the Faculty in 1755. He was friend and correspondent of Smellie. His pupil Tobias Smollett introduced him as "Potion" in *Roderick Random*. Smollett's place with Gordon was taken by John Moore, father of the hero of Corunna. He too with Smollett was found in London amongst the Hunterians.

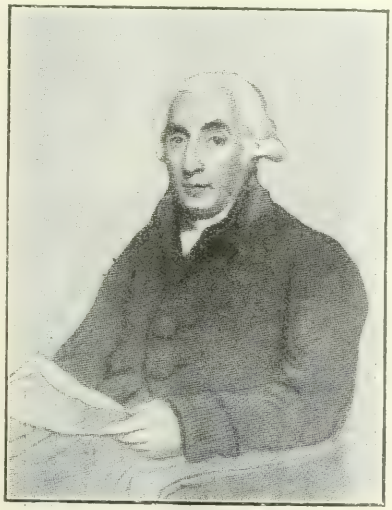
When Cullen and William Hunter dreamed of making Glasgow a great Medical School—Leyden and Edinburgh were the patterns—building the science of medicine on a foundation of chemistry, John Hunter, the greatest of them all—"the Shakespeare of Medicine"—was a rough, harum-scarum, auburn-haired lad, working on the farm at Long Calderwood, ignorant of books, but quick and apt to see and know the things of nature around him.

An Interesting Succession.

Another friend and pupil of Cullen was Joseph Black, of "latent heat" fame: Black was the discoverer of latent heat, but the first suggestions regarding it came from the fertile brain of Cullen. Black succeeded to the Chair of Chemistry in Glasgow when Cullen went to Edinburgh. One of his pupils in turn was James Watt, and so the torch was handed on. Dr. Freeland Fergus has fondly pointed out a most

interesting succession: Cullen taught Joseph Black; Black taught Thomas Thomson; Thomas Thomson when Professor of Chemistry taught Graham, afterwards Master of the Mint and for some time Professor of Chemistry in Anderson's College; Graham in University College, London, had as a pupil Joseph Lister. Thus the founder of modern medicine is linked *longo intervallo* with the founder of modern surgery. These men all belonged to the Glasgow School and their names are inscribed on the roll of Fellows of the Royal Faculty of Physicians and Surgeons.

Joseph Black.—When Cullen left Glasgow Joseph Black became the dominant figure in the University world. A student of Glasgow University both in arts and medicine, he attracted the notice of Cullen and became his pupil and assistant. His medical course was finished in Edinburgh. In 1755 he succeeded Hamilton as Professor of Anatomy and Botany, and a year later was appointed Professor of Medicine in addition. He succeeded Cullen as Lecturer in Chemistry, and that branch of science permeated all his other teaching. His great achievement in Glasgow was the discovery of latent heat. His experiments were closely watched by other professors and by another man of genius, James Watt, whose workshop was housed in the University grounds. It is in a way a matter of regret that Glasgow lost the great services of Cullen and Black on their successive removals to Edinburgh. When that change came, when Black removed to Edinburgh to succeed Cullen in the Chair of Chemistry, the Lectureship in Chemistry in Glasgow was held by John Robison, about whose name flits a story of another kind. In his youth he had been a middy in the Navy and was in the boat in which Wolfe went to inspect some posts before the storming of Quebec. He brought back the story of the great "General repeating aloud nearly the whole of Gray's 'Elegy,' then recently published, and declaring that he would rather be the author of that poem than conquer the French on the morrow." His career did not end as a University lecturer in Glasgow, as he became secretary to Knowles, who was then at the head of the Russian Admiralty, and finished as Professor of Natural Philosophy in Edinburgh University.



JOSEPH BLACK.

Thomas Thomson deserves special mention. He was a graduate of Edinburgh, M.D. in 1799. Before then he had achieved distinction, as he became editor of the *Encyclopaedia Britannica* in 1796 when only 26 years of age in succession to his brother. He was the introducer of the oxy-hydrogen blowpipe and of the system of chemical symbols and chemical equations. He was appointed to the Chair of Chemistry in 1818, and was Physician to the Royal Infirmary for two years only. He was a man of quaint enterprise, and stories are told of him by Dr. Freeland Fergus. He walked all the way from Edinburgh to Glasgow in 1808 to see the Tontine illuminated by coal gas. Once when on a paddle steamer on the Clyde, in the earliest days of steam, he had got hold of a bucket and a rope and went out on the wing of the paddle to draw a sample of the churned-up water after it had passed the paddle. Whatever his idea in making the experiment he seems to have forgotten one factor, for the pull on the bucket made him lose his balance and he was, with some difficulty, saved from a watery and inglorious end. He was popular, as he became the first chairman of the newly organized Medico-Chirurgical Society in 1844.

Thomas Graham brings the story of the Glasgow School down to the middle of the nineteenth century. Though not a doctor he required to become a Fellow of the Faculty to lecture on chemistry to students of medicine. He was the outstanding physicist and chemist of his time. He did not belong to the University but was Professor of Chemistry in Anderson's College. His work on *Diffusion of Liquids* appeared in 1846. In 1837 he was appointed to University College, London, and in 1854 he became Master of the Mint.

THE GLASGOW MEDICAL SCHOOLS.

The University.

At the end of the eighteenth century the University Medical School had a staff of six teachers, a Professor of Medicine, a Professor of Anatomy, and lecturers on chemistry, materia medica, midwifery, and botany. The medical students were nearly 200 in number. The Royal Infirmary had been opened in 1796 and provided an ample field for clinical work. The Napoleonic wars awakened the authorities to the needs of surgery, and in 1815 the Chair of Surgery was founded. The Chairs of Physiology or Institutes of Medicine and of Forensic Medicine were founded in 1839. The close proximity of the University to the Royal Infirmary made it easy to carry out the clinical teaching, and up till the removal of the University to the west end of the city the wards of the Royal Infirmary were crowded with students. To-day University students overflow from the Western Infirmary back again to the Royal Infirmary and to the Victoria Infirmary, in all of which the accommodation is taxed to the utmost, and the distribution is accomplished only by a precise limitation of the numbers admitted to the clinical classes. The story of the University has already been told in a previous article.

The Anderson College of Medicine.

The Faculty of Physicians and Surgeons, as we have indicated, was the licensing body of Glasgow, controlling the apprentices and the general practitioners. It was not a teaching body. In the eighteenth century any extra-academic teaching was occasional only. In 1764 Dr. Andrew Morris, a graduate of the University of Rheims, practised in Glasgow, and lectured on medicine in the Faculty Hall; and Mr. James Monteath lectured on midwifery from 1778 for a few years. With the establishment of Anderson's University, or as it is now called the Anderson College of Medicine, in 1795, extramural teaching became continuous. The founder of the College was John Anderson, M.A., F.R.S. This most ingenious and public-spirited man became at the age of 29 Professor of Oriental Languages, and shortly afterwards Professor of Natural Philosophy. He was the originator of the Mechanics' Institutes, and for forty years gave series of public lectures on experimental physics to the mechanics and operatives in the factories of Glasgow. He was the inventor of a gun carriage and the introducer of the balloon posts adopted by the French in 1791 in their effort to spread republican propaganda. It was to him that James Watt owed a great debt, as he befriended Watt and encouraged him in his researches and helped the establishment of his workshop in the University grounds. At Anderson's death he left the whole of his property "to the public for the good of mankind and the improvement of science in an institution to be denominated Anderson's University." The scheme for the University was complete, but it became grandiloquent when it was found that the bequest was only £1 000. However, after vicissitudes and hamperings for want of money the school began to prosper and by 1833 had a full curriculum, with more teachers than the University of Glasgow. Anderson's University was housed in a building in George Street, not far from the University of Glasgow. The popularity of the teachers and the variety of subjects induced many University students to take classes there. The classes have for many years been recognized as qualifying for University degree examinations and for the diplomas of the Colleges and Faculty. In 1886 the Medical School was separated from the other departments of work of the Anderson University, and the Technical College, now a magnificent building in George Street, City, the finest of its kind in the world, was established, the Medical School being removed to its present site close to the Western Infirmary.

The Royal Infirmary School of Medicine, and St. Mungo's College.

The removal of the University to the west and the opening of the Western Infirmary was a disastrous blow to the Royal Infirmary. Steps were accordingly taken in 1875 to rehabilitate the Royal Infirmary as a clinical school. The leading spirits in this praiseworthy effort were Dr. John Gibson Fleming, a former president of the Faculty of Physicians and Surgeons, and Mr. William MacEwan, both managers of the Infirmary. They were successful in obtaining a charter which included: "Powers to offer facilities and accommodation for the teaching of medicine and surgery and the collateral sciences usually comprehended in a medical education." At first the school was housed in temporary classrooms, and in 1883 the present commodious buildings were erected, adjoining the Royal Infirmary on its northern side. At a later period, 1889, the Royal Infirmary School of Medicine was converted into St. Mungo's College, the teaching being conducted in the same buildings. In 1912 the connexion of the Royal Infirmary with the University was re-established, when four new professorships—Medicine, Surgery, Obstetrics and Gynaecology, and Pathology — were founded. The association of the Royal Infirmary with the University is still more closely cemented by the appointment of surgeons and physicians of the Infirmary to be University lecturers and examiners. There were other extramural schools in Glasgow in former days—namely, the Portland Street Medical School and the Western Medical School—but these were on the whole short-lived, though serving a useful purpose in their day. The extramural schools of Glasgow have not only possessed teachers of their own of great eminence, but they have also provided an excellent training ground for men who rose to higher spheres in the University. Many University professors first made their name as teachers in these extra-academic schools, and when the time came they carried with them scientific and teaching reputations, the lustre of which was not as a rule dimmed by the more serene and stable atmosphere of the University.



WILLIAM MACKENZIE.

MODERN GLASGOW SCHOOL.

We may now return to consider the Modern Glasgow School. The name that stands out most prominently in the middle of the nineteenth century is that of Lister.

Joseph Lister was Professor of Surgery from 1862 to 1869, when he too, like so many of his academic forebears, yielded to the claims of Edinburgh—strong claims to him, both scientific and social. When he came to Glasgow to fulfil the duties of the Chair of Surgery he was in the anomalous position of having no wards in the Royal Infirmary, a condition of affairs which was not rectified for nearly two years. The story of his surgical achievement needs no repetition—it is sufficiently familiar. The ward in which his great work was accomplished is still extant, and quite a number of his pupils will be found in Glasgow to-day. There can be no doubt that Lister's investigations and discoveries during his term of office in Glasgow completed the discovery of antiseptic surgery. His work later was simply that of amplification and extension: it was in Glasgow, then, that modern surgery was born. In Glasgow the reception of the new ideas in surgery was more cordial and the adoption of the system more ready than probably in Edinburgh and certainly in London. With one exception, Lister's colleagues very soon came to see the true nature of the revolution, as they had been constantly in touch with what Lister was doing and heard his first expositions of the new theory. Besides, a genius like Lister attracted the younger men, and their actively receptive minds saw what a great thing it was and spread abroad the conception.

Assisting at the birth and bestowing infinite fostering care on these new ideas and practice in surgery, Sir Hector Cameron did much to maintain in Glasgow the work begun by Lister. Gifted with graciousness of manner and the silver tongue of the orator he was specially fitted for the task of advocate of the new surgical faith. A neat operator, an impressive teacher, and a man of unbounded social and professional popularity, Sir Hector held, and still holds, a position deep in the hearts of the Glasgow profession.

Sir George MacLeod, Lister's successor in the chair, belonged to a great Scottish family renowned in the Church and in social circles. His commanding presence (his nickname was "The Duke") and firm, impressive, incisive style of teaching are still remembered by many generations of students.

In anatomy Allen Thomson and John Cleland were towers of strength in Glasgow. The Glasgow School has not been regarded even by its *alumni* as essentially an anatomical school. But it had a great reverence for its teachers of anatomy. Allen Thomson was a member of a family which achieved great distinction: his grandfather was a Paisley weaver, his father became a professor in Edinburgh, his brother a professor in Glasgow, and his son a professor of chemistry in King's College, London. In anatomy he was well known as one of the editors of *Quain*, and was an early worker in embryology. He will always be remembered as having taken a most active part in the founding of the Western Infirmary.

That massive man, John Cleland, who succeeded him, made deep impressions on all his students, though it is just possible that they failed to appreciate his great capacity as an anatomist. In the subject of obstetrics and gynaecology the Glasgow School claims with pride that the first successful ovariotomy was performed by Mr. Robert Houston, Fellow of the Faculty, whose operation was performed in 1701. A complete account of the operation has been preserved in volume xxxiii of the *Philosophical Transactions*, London, 1733. And again, to Murdoch Cameron belongs the great credit of having made Caesarean section a successful, and now extensively performed, operation.

Another of the great men of the Glasgow School was Dr. William MacKenzie, perhaps the most distinguished ophthalmic surgeon in the United Kingdom of his time. Very shortly after receiving the diploma of the Faculty he went to the Continent, where he spent about two years, devoting himself chiefly to ophthalmology. In London he became a member of the Royal College of Surgeons, and began to lecture and practise in diseases of the eye. Fortunately for Glasgow, his success was so limited that he returned to the city. In 1824, with Dr. Monteath, he founded the Glasgow Eye Infirmary, an institution which has always played a large part in Glasgow medical life. MacKenzie was a clinician of the highest standard: he was probably the first to give an accurate description of glaucoma, and his observations on sympathetic ophthalmitis proved to be the first clear description of that disease.

Andrew Buchanan is a name which is written in gold in the annals of the Glasgow School. He was Professor of Physiology and also surgeon to the Royal Infirmary for a considerable number of years. He was the first to give a scientific explanation of coagulation of the blood, and his papers on this subject in 1844 attracted attention throughout the world. His rectangular staff for lateral lithotomy is a well-known instrument, and was used for that operation up till quite recently.

When the British Medical Association met in Glasgow in 1888 the presence of W. T. Gairdner, Professor of the Practice of Physic in the University and President of the Association, lent distinction to all its meetings. It is probably true to say that no man of the Glasgow School for the past two generations exercised such a wide influence and directed so

many minds along scientific paths of medicine. Glasgow men of middle age who meet in almost any capacity, social or otherwise, find even now a congenial subject of discussion in Gairdner's personality, his teaching, his philosophic mind, his scientific attainments, even, indeed, his absent-mindedness. The physician to him was first of all a naturalist. That, indeed, was the subject of one of his many addresses. His "Plea for Thoroughness" was in no sense a trite commentary on slipshod methods but was an earnest appeal for painstaking, careful, detailed investigation. "Old G." was in all essentials the "beloved physician." Gairdner was the first medical officer of health of the City of Glasgow; indeed it is almost certainly the case that he was the inventor of the whole idea of the special department of public health. His work in this department was characterized by energy and skill and imagination. Associated with him was Dr. J. B. Russell, under whose administration the public health department took first rank in the world. These two men instituted the fever hospitals, an efficient sanitary department, and the city improvement schemes, the result of which has been that Glasgow has been amongst the highest in the records of public health.

Closely associated with Gairdner and of like minds to his were Dr. Joseph Coats, the first Professor of Pathology in the University, and Dr. James Finlayson, a man of enormous clinical ability, whose learning in the bibliography of medicine was the wonder of all who came in contact with him. The Glasgow School of Pathology began to make a name for itself under Coats. He possessed the gift of surrounding himself with assistants and pupils fired with his own zeal. From the days when some of these left Glasgow to fill chairs of pathology in other schools there has been, under his successor, Robert Muir, a constant outgoing stream of pathologists from Glasgow to the medical schools of the Empire.

The School of To-day.

What the characteristics of the Glasgow School of Medicine are at the present day the visitors to Glasgow must decide for themselves. The School is fortunate in having Sir Donald MacAlister, the President of the General Medical Council, as Principal of the University. Sir Donald MacAlister's learning and accomplishments and great influence are directed to one object—the increasing glory and expansion of the University of Glasgow. As a physician himself he has more than a warm heart to the Medical School, and his activity is felt in many spheres outside the academic walls.

Of Sir William Macewen, the President of the Association, we do not presume to make an estimate. Let it be said that Glasgow is more than fortunate in possessing as its surgical head the greatest surgical genius of his day. From the time when he became surgeon to the Royal Infirmary as a very young man up till now his scientific enthusiasm has not abated nor his powers of investigation diminished. Perusal of his works on Osteotomy, Hernia, Pyogenic Diseases of the Brain, the Growth of Bone, leaves the impression on the mind that the last word has been said—that these works are classical.

What, then, will the British Medical Association find when it comes to Glasgow? A large, flourishing, virile school; a body of keen, enthusiastic teachers; students eager and anxious, interested in the profession they hope soon to enter, mingling in suitable proportions the academic and social sides of their life.

The Glasgow School makes large claims. Though Cullen did not begin clinical teaching actually in Glasgow, the clinical method and the essential foundation of medicine in the science of chemistry were established by him in his practice in Hamilton, and so the idea of clinical medicine came from Glasgow. Then Glasgow claims the birth of modern surgery through Lister. She claims the introduction of scientific midwifery through Smellie of Lanark. She claims the modern development of public health through Gairdner and J. B. Russell. And, last of all, she claims that the masters and pupils of the School of to-day are in no way behind their fathers in capacity for labour and for scientific investigation, in generous large-mindedness and imagination, and in devotion to what, after all, still is the noblest of the professions.

NOTE.—The writer of this article desires to express his indebtedness to Coutts's *History of the University of Glasgow*, Duncan's *Memorials of the Faculty*, Freeland Fergus's *Origin and Development of the Glasgow School of Medicine*, and to *The Medical Institutions of Glasgow*, published by Dr. Christie for the British Medical Association meeting in 1888.

England and Wales.

SANITARY REGULATIONS FOR THEATRES AND MUSIC HALLS.

THE Theatres and Music Halls Committee of the London County Council has been overhauling the regulations of the Council with regard to the construction of theatres, music halls, and other places of public entertainment, including cinematograph exhibitions. The regulations are chiefly directed to minimizing fire risk, but they include certain provisions for the health and convenience of the audience and of the performers and staffs. A new regulation has been inserted laying down the sanitary accommodation required in different classes of premises, according to the number of persons accommodated. Automatic flushing apparatus of a pattern approved by the Council must be installed, and all the floors of the sanitary apartments and the lobbies approaching them must be constructed of impervious material and sloped to a drain. It is also required that ventilation direct to the outer air shall be provided to the corridors in the dressing-room block, that permanent ventilation shall be provided to dressing rooms by means of flues built into the brickwork, and that dressing rooms shall be adequately heated and a supply of hot water provided. A new requirement is that natural lighting by means of windows and skylights must be provided in the auditorium and, where practicable, in all other parts of the premises, though during performances these may be obscured by curtains or shutters. A draft set of regulations dealing with the general ventilation of the auditorium, as distinct from the rooms for the performers and staff, is still under consideration.

ST. PAUL'S EYE HOSPITAL, LIVERPOOL.

The annual report of the hospital shows how successful the treatment of ophthalmia neonatorum has been during the past year. One case only, out of 222 infants treated for this disease, resulted in blindness. During the war period ophthalmia neonatorum increased, and this is the first decrease since 1915. The number of out-patients was 6,763, and it is noteworthy that there were 919 removals of foreign bodies from patients' eyes. Financially, during the past year the committee regretfully draws attention to the maintenance fund. This has been depleted to the extent of £337. A ladies' committee has been most useful in restricting expenditure; nevertheless, as the Lord Mayor pointed out, increased support was essential, and he looked forward hopefully to the immediate future when the finances of the Liverpool hospitals would be placed, each and all, on a satisfactory basis.

THE HEALTH OF WALLASEY.

This growing township, according to the annual report of the medical officer of health, Dr. T. W. N. Barlow, is in a salubrious condition. The death rate, 10.7 per 1,000, was the lowest on record. With regard to infant mortality, 59 per 1,000 births—this also was the lowest on record. Twenty years ago infantile mortality varied all over the country between 130 to 200 per 1,000 births, and 100 per 1,000 births was almost regarded as the irreducible minimum. In the case of Wallasey this irreducible minimum had itself become nearly one-half. The total number of births amounted to 1,610. The last census (1921) gave the population of Wallasey as 90,721.

Scotland.

PROPOSED INTERNATIONAL BOWLING MATCH AT THE GLASGOW MEETING OF THE BRITISH MEDICAL ASSOCIATION.

IN the SUPPLEMENT of the JOURNAL for June 17th it was stated that the Entertainments Committee proposes to have an International Bowling Match, North *v.* South, on the Willowbank Bowling Green on Thursday, July 27th, and those desiring to take part in the game were requested to send their names, with a note of their experience as match players, to Dr. William Snodgrass, 11, Victoria Crescent, Glasgow, W. The game is timed to take place between 2 and 4 p.m., thus allowing members to attend the morning Section work, have lunch and two hours' play, and thereafter be taken in a motor conveyance to the Municipal Buildings to attend the civic reception by the Right Hon. the Lord Provost and magistrates of Glasgow. So far only four members have

signified their intention of playing for the South, and it is hoped that a larger number will take part in the game so as to give it a more representative character. Notification of intention to play is requested at once, so that arrangements may be completed. Bowls will be supplied to those who do not prefer to bring their own.

GLASGOW HOSPITAL FOR SICK CHILDREN.

The annual report of the Royal Hospital for Sick Children, Glasgow, states that 12,583 patients were treated during 1921, an increase of 2,876 on the previous year. The number of in-patients was 4,749. X rays were used for diagnosis or treatment in 4,555 cases in 1921, as compared with 1,899 cases in 1920, and, of the total number of cases admitted, 1,679 were infants under one year. At the country branch of the hospital at Drumchapel 339 patients were treated, the average daily number of patients under treatment being 29, and at the dispensary 14,769 new patients received treatment, the average attendance for each day being 147. The total expenditure for the hospital, the country branch, and the dispensary was £34,051, and the ordinary income was £21,227, so that there was a deficiency on the ordinary income of £12,824. An extraordinary income of £17,773, which included several large grants which will not be repeated, enabled the hospital to have a balance on the year of £4,949, but the deficiency of over £12,800 in the ordinary income indicates a position which requires careful consideration by the people of Glasgow and the west of Scotland.

APPOINTMENTS TO GLASGOW HOSPITALS.

A number of important appointments have been made recently to various hospital staffs in Glasgow.

Western Infirmary.—Farquhar Macrae, M.B., C.M., visiting surgeon; Hugh Morton, M.D., F.R.F.P.S.G., assistant physician; Lawrence T. Stewart, M.B., Ch.B., assistant medical electrician; D. K. Henderson, M.D., F.R.F.P.S.G., consulting physician for mental diseases; G. Maitland Ramsay, M.D., F.R.F.P.S.G., consulting ophthalmic surgeon.

Victoria Infirmary.—John L. Howie, M.D., surgeon, and Alexander Strang, M.B., Ch.B., assistant surgeon for diseases of ear, nose, and throat.

Correspondence.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—The subject of sterilization of the so-called dysgenic classes is one that recurs periodically, and the same family histories are continually being brought forward with a refreshing sense of originality year after year. The person who advocates sterilization assumes, first, that we know exactly how heredity acts, and, secondly, that by sterilization we should only prevent the production of the unfit. The first assumption we need not discuss, as the statement carries its obvious denial. The second assumption is not based upon anything more than a general impression, added to the well-known histories of such families as the "Jukes" and the "Kallikaks": these are, of course, very striking, but a great many more family histories require to be examined in detail, before drastic, coercive action such as sterilization becomes the conclusion of the syllogism.

As an example I will quote one carefully examined series of families mentioned by Lange (Denmark). Forty-four families supplied seventy mental patients to his institution; the most numerously represented had four members, the majority only one, affected. In the ascending family lines of these patients, with their collateral branches, for a few generations, some 400 showed mental symptoms, varying from "excessive nervousness," "gloomy disposition," "variable temper," "excitability," and "eccentricity" to definite insanity. These same forty-four families, however, also produced two cabinet ministers, one ambassador, three bishops, eight prominent clergymen, three generals, several other high military officers, three admirals, several other high naval officers, three members of the High Court of Justice, two headmasters, two directors of well-known institutions, eight hospital physicians, nine university professors, at least twenty-three holders of academic doctorates, and a large number of eminent officials, business men, members of Parliament, physicians, teachers, and others of value to the community. Had, therefore, these mentally oblique persons in the earlier generations been sterilized, as recommended (and the parents of the defective as well as the defective must be sterilized), we should have lost not only the 400 mental patients but also a long array of highly valuable members of the community.

The statement that "sterilization of both sexes is carried out with great benefit in fifteen States in America" is, I believe, not correct. Recent information indicates that twelve States have limited sterilization laws on their statute books. In Indiana the revulsion of public feeling was so great that the law died a natural death: in some other States the law was promptly vetoed; in Washington it is a punitive measure for habitual criminals, and has never been put into force; in California it has been carried out more freely than elsewhere (634 insane, one criminal): the results are not known. In Connecticut, New Jersey, New York, North Dakota, and Kansas the law, though in existence, has practically not been made use of at all; in Michigan it has been applied to a few insane; in Iowa the law refers to a very large number of different classes of people, including "drug-takers" and "syphilities" (Popenhoe and Johnson): no operation has, however, taken place under the Act.

I would conclude by quoting the cautious statement of Goddard (to whom we are indebted for the history of the Kallikak family):

"At best sterilization is not likely to be a final solution of the problem. In using it we must realize that the first necessity is the careful study of the whole subject, to the end that we may know more both about the laws of inheritance and the ultimate effect of the operation."

—I am, etc.,

JAMES R. WHITWELL, M.B.,
Medical Superintendent, St. Audry's Hospital,
July 3rd. Melton, Suffolk.

SIR,—It is much to be hoped that Lieut.-Colonel A. E. J. Lister's letter in your issue of July 1st (p. 29) will draw very serious attention to this subject. Anyone working upon mental deficiency cannot but be impressed by the constant menace to society and to the nation from those defectives not actually under institutional care. It is certainly not generally realized how great an increase in our defective population is permitted under present conditions, and the "financial stringency" now obtaining will be felt in the near future by an increased burden. If Gloucester's example were followed by other counties the outlook would indeed be black. One hopes that Mr. Davies may yet be able to impress his constituency with the seriousness of the position. Unfortunately it does not follow that all Gloucester defectives will remain in their own county.

Colonel Lister's plea for sterilization is thoroughly sound. It is conceivable that individually it might sometimes result adversely as regards general health, but the State has to be considered as well as the individual. Moreover, endocrinologists will have something helpful to say as to whether, for instance, the endocrine balance would suffer as much as it is apt to at the menopause. It would meanwhile be of the greatest interest to have reports from the medical officers of health of those States of America who have given the lead as to these and other results.

I very much hope that Colonel Lister's letter will result in widespread discussion.—I am, etc.,

CLAUDE A. P. TRUMAN,
Medical Adviser on Mental Deficiency, Devonshire
July 2nd. County Council.

SIR,—"Rem acu tetigit" is, in my opinion, the deduction reached by Colonel Lister in his letter of June 22nd (p. 29) for these reasons:

1. I have practised the art of medicine for fifty-one years, and have witnessed for three generations the deplorable results of the procreative powers of mental deficients.

2. As a magistrate of forty years' experience in three counties I have at times been exercised in dealing with cases in which it was evident the delinquent had more or less mental obliquity to estimate what portion of the offence was due to the mental condition, and it is a matter for congratulation that such cases are to-day better understood, and that medical evidence can be obtained to consider which is the predominant factor—mental disease or crime?

3. As a visiting magistrate at a large gaol I know that many of the prisoners had hereditary mental defects which explained why they were chronic criminals. Here again it is a happy sign that the authorities recognize the fact, and that any recommendations of the prison medical officers are fairly considered.

4. As a member of a county hospital for mental cases I have learned that the mental condition of the parents of certain inmates was the origin of their present detention.

5. As a member of a County Mental Deficiency Committee since the passing of the Act, 1913, extensive and intimate experience has burned into my brain that no mental deficient should by law be allowed to be a parent.

6. During the war as commandant of two large military convalescent hospitals I realized that the so-called shell shock could often be traced to family mental weakness.

To-day it may seem a relic of barbarism to advocate "the survival of the fit." Still, I am certain the present benign policy in the treatment of the young mental deficient is not only wrong on eugenic principles but is an unjustifiable expenditure of public money, imperial and rate-paid, and if the desire is to obtain an A1 population it is a mistake; all possibility of any mental deficients becoming parents must be prevented. The present feeble segregation is childish as a remedy. If the segregation were effectual the absolute sexual negation would be cruel; effectual sterilization is the only real remedy. I know a village in which a mental defective impregnated four young girls.

In dealing with sterilization of mental deficients let us put all humbug on one side and go to the rock bottom of so many of the causes of hereditary disease and so legislate that everyone who is so unfortunate as to acquire syphilis shall at once on proof be sterilized: had the procedure been in vogue how many fewer mental deficients and tuberculous people we should now have.

In your issue of July 1st two admirable reports ("The causes and prevention of foetal death" and "Foetal death") conclusively prove that syphilitic parents are a national danger. These alone are sufficient evidence that Colonel Lister's letter is on right lines.—I am, etc.,

Folkestone, July 3rd. P. BROOME GILES.

AMAAS OR ALASTRIM.

SIR,—The application of special terms even to homogeneous groups of disease which differ only in severity from an acknowledged disease entity such as small-pox would confuse and not aid our nosology. If amaas and small-pox do not resemble one another in their principal features, then amaas is a separate entity, as Dr. Garrow maintains it to be, and it is entitled to a distinctive designation other than "small-pox of a mild type."

According to Bristowe, the real disease is not merely the organic lesion but a "complex," the "sum total of morbid changes in both function and structure."

If we compare small-pox and amaas according to this definition it must be confessed they differ in totality more in degree than in kind. The above definition, however, does not cover the whole case entirely, for it is probable, though not demonstrable, that there is a difference between the virus of small-pox and the virus of amaas, for on some such hypothesis alone can the marked contrast in severity and the other observed differences of their respective manifestations be explained.

Vaccinia teaches us that the virus of small-pox is susceptible of variation or mutation. By passage through a calf or other animal the virus of small-pox is changed into the virus of vaccinia. As the etiological agent is not known the actual changes cannot be demonstrated, yet all would allow that vaccinia is a different disease from small-pox.

If one could imagine a person covered to the same extent with vaccinia eruption as he would be if suffering from an attack of small-pox, it might conceivably be difficult to believe that the case was not one of small-pox but was a different disease—namely, vaccinia—and that the difference was due to a modification of small-pox virus.

In my original paper, which appeared in the *Lancet* of May 7th, 1904, after contrasting amaas with the infectious diseases of lascars and varioloid varicella described by Drs. Brownlee and Thomson and Dr. Izett Anderson, and stating that amaas could not be confounded with these varioliform diseases, the provisional conclusion arrived at on the relationship of amaas to small-pox was that the former is small-pox modified by some undetermined factor or factors. It must be remembered that amaas so called by the natives of South Africa has been endemic here for centuries. The word "amaas" means milk, and the pearly appearance of the vesicles gives them the appearance of containing a drop of milk, hence the descriptive term of "milk-pox" given by the natives to the disease. This malady gives the Kaffirs little concern, and beyond a few days' indisposition they are little the worse for the visitation. Amaas shows predilection for the aboriginal native, and half-castes and Europeans though unvaccinated are very much less susceptible to infection. The protection afforded by vaccination is indubitable, and it was chiefly for this reason that one held that amaas could not be a totally distinct disorder, but was related in some way or other to small-pox. On the other hand, the great mildness of the malady, its freedom from complications and low mortality, mark it, in these respects at any rate, as totally different from the formidable disease small-pox, which one had seen to decimate the unvaccinated, as occurred in Cape Town in 1881, when the Malays for religious scruples refused to be vaccinated. In July, 1911, Dr. Emilio Ribas of Brazil read a paper in London entitled, "Alastrim, amaas, or milk-pox" before the Society of Tropical Medicine and Hygiene. He observed it at Sao Paulo in agricultural labourers from Bahia, which is in direct trade communication with Africa, and concluded that alastrim was a disease *sui generis* and not modified small-pox.—I am, etc.,

Cape Town, June 16th. W. E. DE KORTÉ.

MEASURES AGAINST TUBERCULOSIS.

SIR,—As one who had the privilege of listening to Professor Calmette's tuberculosis lecture at Edinburgh on June 7th (fully reported in your columns of June 24th, p. 997) may I be allowed to add a word of appreciation and comment? The address may well become historical, and will perhaps be looked on in after-times as having given the official *coup de grâce* to the idea that tuberculosis is in itself a bad thing and that we are to be saved from it. On the contrary, Professor Calmette wants us all to have it, and from an early age, only in not too big or too strong doses, so that we may become accustomed to it gradually. He proposes that in future we should have our tuberculosis administered to us either through the mouth or by inoculation.

It is to be observed that the whole thesis of the eminent French bacteriologist indicated a sane tendency to return to the methods of Nature. Of the large audience of robust savants who followed his lecture it is safe to say that the majority must have had direct personal experience of the tubercle bacillus at some period of their lives, and each and all had obviously come satisfactorily through the ordeal. This immunity, be it noted, these persons had attained naturally—that is, if one may so say, subconsciously, without having attacked the problem directly.

Thus Professor Calmette's demand is that medical science in future should do—exactly what Nature is now doing; only that we should, if possible, control the tendency which Nature occasionally shows towards somewhat slapdash methods.

It is probable that our present large incidence of genuinely pathological tuberculosis is due much more to defective resisting power than either to too strong or too frequent doses of the "poison." Should not the main purpose of public health now be to raise our resisting powers? It is the response of the human organism rather than the circumstances to which it is subjected which seems to be the main element in our modern hygienic problem.

The further questions that now press for solution are, How far is the resisting power by virtue of which the individual satisfactorily tackles his tuberculosis problem a *specific* resisting power? Further, how far are mere laboratory methods in a position to deal with such a problem? I fancy we tend too much in this connexion to overlook the more empirical methods of acquiring pathological knowledge (less intensive but covering a wider field) which are used daily by the general practitioner.—I am, etc.,

Edinburgh, June 24th. A. J. BROCK.

DENTISTRY IN INDIA.

SIR,—Though there are three hundred and twenty millions of people in India, and though the provision of medical and surgical aid is a matter for which the State makes itself in some degree responsible, there is not in the whole of the British Indian Empire a single institution for the teaching of dentistry. There are in the larger towns a certain number of qualified practitioners, mostly European or Parsi. But the mass of the people if they desire anything more than an extraction have to rely upon the services of men who have served as clerks or mechanics to regular dentists, or maybe have picked up a few dental hints at random, and combine dentistry with a trade, such as watchmaking. For the

average Indian villager it is easier to get his leg amputated or a stone removed than to get a tooth filled.

I am aware that it is generally said that Indians have good teeth. Theirs are probably better than ours, but they could be a great deal better than they are without rendering dental aid superfluous. I have served twenty-five years in India and have looked, and I know.

The political situation has so dominated all considerations in India for many years that defects of the kind I have referred to have received no attention. There is room in India for at least five thousand practitioners of a rank corresponding to that of sub-assistant-surgeon. A dental training institution for each province is greatly to be desired, but a start might be made with one for all India. If Government will not undertake the work the object is one which is not unworthy of private beneficence. Why delay further? —I am, etc.,

June 27th. AN INDIAN CIVILIAN.

TOBACCO SMOKE AND CANCER.

SIR,—In the article on the "Etiology of Cancer" (JOURNAL, June 17th, p. 964) it is said:

"The comparison of cancer mortality rates upon smokers and non-smokers is also not demonstrative, because the habit of smoking is not distributed at random; . . . the minority of a population in respect of any widespread social custom are likely to differ from the majority in more ways than one."

I shall be glad if the writer of this article will kindly examine for himself the parts of my annual reports on the health of Woolwich in which I have endeavoured to show that cancer of the mouth and throat (not cancer as a whole) is closely connected with smoking. The argument depends on the following contentions:

1. Chronic irritation is an admitted cause of cancer.
2. Smoking causes a chronic irritation of the mouth and throat, by friction, hot air, nicotine, etc. The hot air is probably the chief factor.
3. Whereas 75 per cent. of persons dying of cancer of the mouth and throat were found to have been excessive smokers, only 16 per cent. of persons dying at advanced ages from other causes were large smokers. Persons dying of cancer of other parts only had 22 per cent. of excessive smokers.
4. Women rarely have cancer of the mouth and throat, and few women over 40 smoke.
5. The deaths from cancer of the mouth and throat have increased *pari passu* with the increased consumption of tobacco in the last twenty years.

It is not a question of smokers and a minority of non-smokers; it is a comparison between slight and profuse smokers. It is not a question of cancer as a whole, but of cancer of the particular part which smoking irritates.

I must allow that the number of the deaths investigated was not large, and I must admit the difficulty of getting accurate information; but I submit that my figures are sufficient to encourage further inquiry in the same direction, and that if such inquiry confirms the contention that there is a close correlation between smoking and cancer of the mouth and throat such correlation can hardly be brushed aside as of no importance.—I am, etc.,

Buckhurst Hill, June 21st. SIDNEY DAVIES.

*** Dr. Davies seems to mistake our meaning strangely. Why he should suppose that the passage quoted from our article supports the contention that a close correlation between smoking and cancer of the mouth if discovered can "be brushed aside as of no importance" we do not know. Our intention was to emphasize the fact that before we can tell what such a correlation means, before we can be sure that there is (in popular language) causation, not correlation, such statistics need a prolonged scrutiny, a scrutiny which is rarely rewarding unless the data are numerous and homogeneous.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Dr. P. D. Strachan, in the BRITISH MEDICAL JOURNAL of July 1st wrote:

"In his article of April 15th Sir James Mackenzie perpetuates an error in dynamic terminology which has been universal among English writers . . ., and among teachers, ever since my student days. I refer to his use of the terms 'reserve force' and 'rest force,' where 'power,' not 'force,' is what is meant."

In a letter published in the BRITISH MEDICAL JOURNAL of April 22nd, 1911, under the heading "Heart Failure," I made a like comment on a lecture delivered by Dr. Mackenzie before the Royal College of Physicians. I there said:

"The two new terms 'rest force' and 'work force' are both unfortunate. Dr. Mackenzie says, 'The rest force is the minimal force which the heart can exert to maintain the circulation at a level consistent with life.' Why call a force which the heart exerts a 'rest force'? A force in action may be small, but it is not a '*rest* force.' Moreover, 'rest force' and 'work force' are mutually confusing, since they are both working forces. . . . And why use the term 'force' where force is not meant? It is not 'the minimal force which the heart can exert,' but the minimal *energy* which the heart can expend 'to maintain the circulation at a level consistent with life,' with which Dr. Mackenzie is dealing. Better terms therefore would, I think, be 'minimal (or normal or standard) energy' and 'reserve energy.'"

Dr. Strachan's letter shows that my protest of eleven years ago has availed little. I hope his may have better success.—I am, etc.,

Clyst St. George, Devon, July 1st. D. W. SAMWAYS.

THE RECOGNITION OF AORTIC INCOMPETENCE.

SIR,—I have followed with great interest the discussion on the above subject which was initiated by Dr. Brockbank's paper. I must acknowledge to being a little surprised that practically no reference was made to blood pressure measurements, which make a Corrigan's pulse a measurable phenomenon: the difference between the crest of the wave and its lowest point corresponds to a measurable number of millimetres of mercury, which surely bears a direct relation to the amount of regurgitation.

What leads me to write, however, is Professor Rudolf's letter (March 18th) explaining his hypothesis that "in certain weakened states the pulmonary muscular ring is occasionally . . . relaxed . . . and . . . permits of leakage there." I wish to suggest that something similar happens sometimes in ankylostomiasis, but at the aortic valve.

Dr. Lyell and I have at present under our care a Chinaman, aged 27, admitted with the regular signs and symptoms of ankylostomiasis, including an advanced degree of anaemia. On April 10th, forty-eight hours after admission and before anthelmintic treatment had been administered, his systolic pressure was 140 mm. and his diastolic only 40 mm. The apex was beyond the nipple line, and in the sixth space.

After one treatment he returned home, but came back to hospital on April 30th; on May 1st his blood pressure was found to be systolic 110, diastolic 58, and the apex was in the nipple line.

At no time has any diastolic murmur been made out in this particular patient—even with a wooden stethoscope—no matter whether he was lying or standing. In other patients diagnosed as suffering from aortic incompetence, on admission such a murmur was heard, but after the blood condition had improved the murmur was lost and the "Corrigan" character of the pulse had disappeared, the systolic pressure having dropped 15 to 25 mm. and the diastolic having increased. In two such cases the Wassermann test was found to be negative.

I can conceive of no better explanation of these facts than that the aortic muscular ring was so relaxed as to permit of leakage.

Of course we also get cases of organic aortic incompetence, with positive Wassermann reaction, but they do not differ from similar cases seen in England.—I am, etc.,

Swatow, China, May 9th. G. DUNCAN WHYTE.

THE DIPLOMA IN PUBLIC HEALTH.

SIR,—I have been expecting every week that some D.P.H. better known and qualified to speak than myself would have publicly protested against the recent decision of the General Medical Council regarding the public health diploma, but as there is no indication that the profession seems to interest itself in the subject I crave your indulgence for a short criticism of the situation created by the Council.

It is quite true that the student of the present day has more than enough study imposed on him without increasing his burden, but the necessity for an extended knowledge of hygiene is becoming more apparent every day, and the ignorance of the newly qualified practitioner on the subject is, to say the least of it, disappointing. Why should the General Medical Council discourage the general practitioner from making himself conversant with the rules of public health and helping himself to understand the responsibility about which his duties often call upon him to express an opinion? A distinguished member of the Council declared that the

ordinary practitioner has no need for ornamental qualifications; such cheap sarcasm is unworthy of a gentleman holding such a distinguished position.

To abolish the D.P.H. for general practitioners I consider to be a most retrograde step. Reform is probably necessary; increasing the standard for those who wish to devote themselves to special work, but leaving the general practitioner a chance of expressing a qualified opinion in health matters.

Few young medical men know anything about school, institutional, or dairy hygiene; comparatively few can express an opinion on private water supplies, make a rough analysis of milk, or prepare a diet sheet for an orphan school; and yet these are questions that general practitioners are often consulted about. Again there are not many doctors outside the despised list of D.P.Hs. who can lay their hands on Acts of Parliament respecting health legislation, who can tell if drain pipes are correctly laid, or gauge the full significance of vital statistics. It may of course be contended that these subjects can be studied privately, but if there is not a definite object in view, it is not likely that a man already overworked will sit down to grind at new subjects.

Apart from its utility, the syllabus for the D.P.H. is most fascinating, and a candidate cannot help being interested and surprised at the possibilities it opens out to him. I quite agree that the diploma should not be taken within two years of registration. If the D.P.H. is too elementary for those who intend devoting themselves exclusively to this work a higher degree similar to a fellowship could be instituted which all medical officers of health in towns of over 50,000 should be required to possess. I would also urge that one of the essentials for this higher degree would be that the candidates should produce evidence that they had been engaged for at least two years in general practice.—I am, etc.,

Catford Hill, S.E., July 2nd. T. E. WHITE.

THE PLIGHT OF THE RUSSIAN PROFESSION.

SIR,—In answer to the appeal on behalf of the Russian medical profession, I have great pleasure in enclosing a donation. As one having worked for several months with Russian medical men in South Russia during 1919, I can testify to the awful conditions that must have overtaken them. Even in 1919 many thousands of doctors were without necessary clothing, and their families in dire distress. Out of the black cloud of revolution one bright star has always shone—namely, the work of the Russian medical and nursing professions. It is not necessary to bring further proof of the sad plight the medical men are in at present in Russia. However, one statement I can make which will afford further proof of the good work done by Russian doctors: when compiling statistics we found that from December, 1918, to August, 1919, the death rate from typhus fever was as follows:

Medical men	40 to 50 per cent.
Nursing sisters	30 per cent.
Patients	8 to 10 per cent.

Surely these figures tell the whole tale of heroic work carried out by the medical and nursing professions in Russia. What of the families of those left from the married doctors included in the 40 to 50 per cent.?

In conclusion, I can testify to the sterling good-heartedness and unfailing cheerfulness of these Russian medical men, and have personally received many kindnesses from their hands. —I am, etc.,

July 1st. G. K.

SERUM BY THE MOUTH.

SIR,—The practical advantages of the oral administration of vaccines and serums are of sufficient importance to justify the hope that the question raised by Dr. Allison in the JOURNAL of July 1st (p. 29) and by the review of *Hormone Therapy* (June 17th, p. 955) will receive further attention at the hands of those who have the opportunity of comparing the oral with the hypodermic method.

At times of epidemics, in the case of children, and in the Services the oral administration of prophylactic vaccines would save much time and trouble, and moreover it is perhaps not sufficiently recognized that many people are deterred from having vaccines by a dislike of the operation of hypodermic injection, simple and safe though it is.

Provided vaccines are not vitiated by the gastric juices there seems no reason why the absorption from the stomach should not be as effective as from under the skin, especially if some simple routine is adopted such as giving the dose on an empty stomach accompanied by a gastric stimulant.

This letter is written in the hope that more will shortly be heard of this subject with regard to effectiveness and dosages.—I am, etc.,

July 2nd. R. N.

CAESAREAN SECTION.

SIR,—My attention has been drawn to an article in the BRITISH MEDICAL JOURNAL, June 10th, 1922 (p. 911), on Caesarean section by Mr. S. J. Cameron of this city.

I congratulate him on having 79 consecutive sections, with one fatality, in his recent cases. He then proceeds to mention that in his later cases he has changed his abdominal incision to one through the right rectus, that he turns the uterus inside out to remove placenta and membranes, and that the patients are nursed in the Fowler position.

It is a well-known fact in Glasgow that some years ago I introduced these improvements in this operation at the Royal Maternity Hospital, Glasgow. I enclose a reprint from the *Glasgow Medical Journal* of my communication to the Royal Medico-Chirurgical Society of Glasgow, April, 1921, when these improvements were fully discussed, Mr. Cameron being present. An abstract of same appeared in the BRITISH MEDICAL JOURNAL, April 30th, 1921 (p. 641).—I am, etc.,

Glasgow, July 1st. JAMES H. MARTIN, M.D.

Obituary.

FRANCIS W. BAILEY, D.S.O., M.R.C.S., L.R.C.P.,

Anaesthetist, Liverpool Royal Infirmary; Lecturer on Anaesthetics, University of Liverpool.

WE regret to record the death of Dr. Francis W. Bailey, in his 50th year, after a long and lingering illness, borne with great fortitude. The elder son of the late Dr. Bailey, an esteemed practitioner in Liverpool, Francis W. Bailey was educated at the Liverpool College, studied medicine at University College, Liverpool, and qualified in 1894. After holding residential posts at the Royal Infirmary in the special departments, he devoted his life work to anaesthesia. In this subject he soon became a leading authority, and he contributed papers of practical value on the administration of anaesthetics by various methods to the BRITISH MEDICAL JOURNAL and the *Liverpool Medico-Chirurgical Journal*. At the outbreak of the great war he served first as an officer with the 3rd West Lancashire R.F.A. on the western front. For his gallant conduct he was awarded the D.S.O., and in subsequent battles he was twice mentioned in dispatches. He was wounded in the first series of battles of the Somme, and there is no doubt that the fatigue and hardship of the war left his constitution impaired. Previous to the war, in 1910, Dr. Bailey was elected, in the Conservative interest, a city councillor, and, with the exception of a year, held that position up to his death. He was a public-spirited man, and devoted much careful thought in the execution of his duties in the City Council.

Dr. Francis W. Bailey was a man of versatile interests. He was a member of the Historic Society of Lancashire and Cheshire. He took a keen pleasure in archaeology and was well acquainted with the history of his native city and the landmarks of antiquity in the two counties. He was an ardent cyclist, and there were few counties which he, in company with his brother, had not visited awheel, always devoting their attention to the historical features of the villages and towns they traversed.

His funeral was a military and civic one. As lieutenant-colonel, the rank he held up to the time of his death, full military honours were accorded. The Lord Mayor and other members of the City Council were present to pay their respect to one who had so assiduously fulfilled his civic duties. A great number of medical men, friends, and colleagues attended the service, which was conducted by the Rev. J. R. Beresford, who was with Colonel Bailey on the western front. The chaplain's short address set forth in simple language the high qualities Dr. Francis W. Bailey displayed on the field as a gallant soldier and a devoted medical man. At the graveside the Last Post was sounded, and a little farther away the sounds of the réveillé closed the impressive ceremony. He was a bachelor, and leaves behind a devoted sister and a brother, Dr. Reginald T. Bailey, to cherish the memory of a man who did his life work well and earned the affectionate regard of all who knew him. In demeanour quiet and by nature thoughtful, he seemed to be

a man who succeeded in making life worth while. His long illness drew forth much sympathy from his many friends, and to the last he interested himself in his kindly way in their doings.

J. C. OGILVIE WILL, M.D.,

Consulting Surgeon, Royal Infirmary, Aberdeen.

DR. J. C. OGILVIE WILL, one of the oldest and best known medical practitioners in Aberdeen, died, after a brief illness in a nursing home, on June 29th. Dr. Will, who was in his 78th year, was a son of the late Dr. James Will of Woodside, and was educated at the Aberdeen Grammar School and the University, taking the degrees of M.B. and C.M. in 1866, and proceeding M.D. in 1868. After graduation he went to Edinburgh, where he acted for some years as assistant to the late Sir James Simpson, and returned to Aberdeen to act as assistant to Professor Pirrie in his private practice. Later he became Assistant Professor and Examiner in Surgery at Aberdeen University. At a comparatively early age he was appointed surgeon to the Royal Infirmary, and held this post for eighteen years, when he was appointed consulting surgeon, having resigned on account of the growth of his private practice. Dr. Will held several public appointments: medical referee under the Workmen's Compensation Acts, consulting surgeon to the Great North of Scotland Railway, surgeon to H.M. Prison, Aberdeen. While attached to the Royal Infirmary Dr. Will was well known for the thoroughness of his clinical methods. He contributed numerous and valuable papers on various subjects, especially those connected with genito urinary surgery. Dr. Will had an extensive panel practice and was particularly well liked by all his patients; he had a bright and cheerful disposition. He was a most lovable and benevolent personality, very strong in holding his conclusions, at the same time always courteous and kindly to those who differed from him. A Justice of the Peace, he was also a Commissioner of Supply for Aberdeenshire. He is survived by Mrs. Will, two daughters, and one son, to whom the warmest sympathy is extended. Dr. Will was for many years a member of the British Medical Association.

PROFESSOR QUINCKE, who introduced lumbar puncture into clinical medicine and gave his name to a form of oedema, has recently died at Frankfort, at the age of 80.

PROFESSOR WILHELM VON TEUBE, well known for his work on the pathology of the digestive system and physiological albuminuria, has recently died at Stuttgart, at the age of 80.

The Services.

TERRITORIAL DECORATION.

THE King has conferred the Territorial Decoration upon the following officers of the Royal Army Medical Corps, Territorial Army, under the terms of the Royal Warrant, October 15th, 1920: Lieut.-Colonels A. L. Jones (ret.), H. Collinson, C.B., C.M.G., D.S.O., and T. Fraser, C.B.E., D.S.O. (ret.); Majors A. A. Martin (2nd Home Counties Field Ambulance), S. E. Rigg (ret.), W. B. Milbanke (ret.), and A. B. Whitton (ret.); Captains R. C. Clarke, O.B.E. (attached 4th Battalion, Gloucester Regiment), and T. J. Faulder (ret.).

DEATHS IN THE SERVICES.

CAPTAIN THOMAS STOKOE ELLIOT, M.C., R.A.M.C.(T.F.), died at Salisbury, Southern Rhodesia, on April 17th, aged 49. He was the son of the late George Stokoe Elliot, M.D., F.R.C.S.E., of Southwell, Notts, and took the L.S.A. in 1899, the M.R.C.S. and L.R.C.P.Lond. in 1905, the D.P.H. of the London colleges in 1904, and the D.P.H.Cambridge in 1905. Before the war he was in practice at Southwell. He took a commission as lieutenant R.A.M.C.(T.F.) in the North Midland (Derby) Field Ambulance on October 28th, 1914, was promoted to captain after six months' service, and to acting major on April 1st, 1918. He received the Military Cross on September 16th, 1918. On October 5th, 1920, he was appointed D.A.D.M.S. of the 46th North Midland division of the Territorial Forces at Derby.

Lieut.-Colonel William Winslow Tomlinson, R.A.M.C. (retired), died at Fern Hollow, Stoke Bishop, on May 28th. He was born on December 17th, 1843, educated at Trinity College, Dublin, where he was demonstrator of anatomy, and in the school of the Royal College of Surgeons, Ireland; he took the L.R.C.S.I. in 1862, and the L.K.Q.C.P. in 1864. Entering the army as assistant surgeon in September, 1864, he served in the old regimental days in the 2nd Foot, the Queen's Own West Surrey Regiment, became brigade surgeon in 1889, and retired in October, 1894. He served in the Egyptian war of 1882, was present at the battle of Tel-el-Kebir, and received the medal and the Khedive's bronze star.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT the Encaenia held on June 28th in the Sheldonian Theatre among the distinguished persons who received honorary degrees was Dr. F. Gowland Hopkins, Professor of Biochemistry at Cambridge, who received the D.Sc. In presenting him for this degree the Public Orator, Dr. A. D. Godley, spoke in Latin of Professor Hopkins's abstruse researches into the nature of the constituents of living bodies and of the foods that sustain them, adding that these investigations were not only of the highest scientific value, but had practical applications for the study of disease. After the ceremony the new doctors were entertained to luncheon by the Warden and Fellows of All Souls, and this was followed by a garden party in the grounds of Worcester College.

Appointment of Dean.—Owing to the increasing complexity of medical studies at Oxford, where medical students take an Honours Degree in Natural Science (usually in Physiology), in addition to the medical curriculum, the University has recently thought it desirable to assist the organization and co-ordination of the activities of the School by authorizing the appointment of a Dean. The Board of the Faculty of Medicine has accordingly appointed E. W. Ainley Walker, D.Sc., D.M., Fellow and Tutor of University College, Lecturer in Pathology in the University, to the newly instituted office of Dean of the School of Medicine.

Radcliffe Scholarship in Pharmacology.—The recently instituted Scholarship in Pharmacology, of the value of £50 for one year, has been awarded by the Master and Fellows of University College, upon the report and recommendation of the Professor of Pharmacology (Dr. J. A. Gunn), to Albert Arthur Fitzgerald Peel, B.A., University College: *proxime accessit*, (honorary scholar) Allan Warren Linford Row, B.A., Brasenose College (Senior Hulme Scholar).

UNIVERSITY OF CAMBRIDGE.

THE following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part II (Radiology and Electrology)*: R. W. Chalmers, A. Fiett, J. A. Geraghty, B. Grellier, S. M. Hepworth, A. Lambadarides, J. A. Thomson, O. R. Unger.

UNIVERSITY OF LONDON.

Semon Lecture, 1922.

THE Semon Lecture on "The development of transatlantic rhinolaryngology" will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, by Professor H. S. Birkett, C.B., M.D., Dean of the Faculty of Medicine, McGill University, Montreal, at 5 p.m. on Wednesday, July 12th. The chair will be taken by the Vice-Chancellor of the University, Mr. H. J. Waring, M.S., F.R.C.S. Admission is free, without ticket.

UNIVERSITY OF DURHAM.

AT the convocation held on June 27th the following degrees and diplomas were conferred:

Hon. D.C.L.—Professor Charles J. Martin, C.M.G., M.D., F.R.S., Director of the Lister Institute of Preventive Medicine, London.

M.D.—S. R. Chatterji (*in absentia*), G. A. Clark, W. D. Forrest, J. R. Hughes, H. A. Lake, I. M. Pirnie, R. Welch, S. K. Young.

M.D. (*for practitioners of fifteen years' standing*).—R. D. Attwood, A. Brownlee, J. L. Prichard, C. B. Rossiter.

M.S.—I. Gilmour, A. B. Jones, G. E. Lloyd.

M.B., B.S.—Florence Bentham, R. A. Brown, R. H. Burnett, R. N. Craig, H. B. L. Dixon, Anne Fairweather, Gladys H. Fletcher, Elizabeth Killian, Mona Kirkhouse, T. Kirsopp, G. McCoull, Ethie O. McCullagh, Mary J. McManus, Mary Manners, H. L. Mather, A. J. Moskow, Una M. Mulvany, P. Murphy, F. J. O'Connell, L. N. K. O'Neill, F. W. M. Pratt, J. V. Reuben, Jessie E. Sheret, G. W. Spark, N. H. Watson, J. Whillis, C. A. Wilson, G. Wilson, H. A. Wilson, Eleanor H. Wylam, Ella L. Young.

B.Hy.—G. Hurrell, Alice M. Stenhouse.

D.P.H.—G. Hurrell, Alice M. Stenhouse.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S. (*Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology*).—T. R. Aynsley, Kathleen A. M. Ayton, Elizabeth Bainbridge, Dorothy I. Brown, J. R. Campbell, J. Carse, O. P. Chapman, T. L. J. Coxon, Ethel W. Daniels, T. Fraser, G. A. Gilmour, A. Hanson, J. B. Hartley, Frances R. Heneman, G. C. Henry, J. A. Hislop, Madge Hopper, R. Keenlyside, Nora W. Kirk, J. W. C. Leech, F. J. Lorriman, F. W. Marshall, T. H. Meek, A. G. Ogilvie, Elsie L. Peet, G. Punshon, Margaret Rankin, J. Reay, F. P. Rust, M. Ryle, *J. H. Saint, J. A. Stobbs, T. E. Stoker, R. L. Stubbs, A. Swindale, G. G. C. Taylor, E. F. D. Walker, H. A. Wallace.

* Second-class honours.

UNIVERSITY OF MANCHESTER.

DR. JOHN SHAW DUNN has been appointed to the Proctor Chair of Pathology and Pathological Anatomy in succession to Professor H. R. Dean, whose resignation was recently announced. Dr. Shaw Dunn, after holding the post of Clinical Lecturer in Pathology in the University of Glasgow and Director of the Clinical Laboratories, Glasgow Western Infirmary, was appointed Professor of Pathology in the University of Birmingham, which post he now holds. During the war he was a brevet major in the R.A.M.C.

UNIVERSITY OF LEEDS.

A CONGREGATION of the University was held in the Town Hall, Leeds, on July 1st, when the following were among the degrees conferred by the Vice-Chancellor:

M.D.—G. Colin H. Nicol.

FINAL M.B., CH.B.—*H. P. Fowler, *Mary Hellier, *R. E. Jowett, *J. A. Trewick, Frances M. Bebb, H. Brostoff, T. S. Davy, G. Denton, S. Erdheim, M. Gordon, Doris M. Langley, H. E. Lapidus, S. Levy, Kathleen M. Peacock, H. Sugare, Margarite Ward, Bertha Wheatley, P. E. Woodrcofe.

* With second-class honours.

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part II:* E. Baron, Frances M. Bebb, J. Bernstein, F. Clegg, R. E. Crockatt, Dorothy M. Edgecombe, S. Erdheim, H. P. Fowler, A. Goodman, Christine M. B. Hare, Mary Hellier, R. E. Jowett, Doris M. Langley, H. E. Lapidus, E. Linfoot, P. Oberman, J. R. Oddie, J. E. Outhwaite, M. Sourasky, D. M. Sutherland, J. A. Trewick, G. M. Wadsworth, G. F. Walker. *Part I:* R. Chester, Florence Cusworth, E. L. H. Jones, F. Lipman, R. Marinkovitch, H. M. Petty, J. W. Pickard, B. Stross, H. Taylor, W. Thistlethwaite, S. Thompson, D. Yates.

D.P.H.—H. Simson, Marjorie Harris.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—C. W. Ewing, F. A. Kerr, G. C. F. Roe.

Medical News.

DR. ALEXANDER MILLS KENNEDY, who was appointed Professor of Medicine in the Welsh National Medical School last October, has been elected dean of the school, in succession to Professor David Hepburn, C.M.G., who has held the office of dean of the Medical School at Cardiff for a number of years.

DR. DAVID FYFE, of the Middle Temple, was called to the Bar on June 28th.

THE Academy of Sciences of Madrid has presented the triennial prize, founded in 1905 in memory of Echegaray, to Dr. Ramón y Cajal, who has lately retired from his chair in the Medical Faculty of the University of Madrid.

DR. T. CASPAR GILCHRIST, of Baltimore, will deliver the annual oration, on the progress of dermatology, before the London Dermatological Society, at St. John's Hospital, Leicester Square, W.C., on Thursday, July 13th, at 7 p.m.

A PARTY of final-year students from Bristol University recently paid a visit to Bath under the direction of Dr. J. Odery Symes. After a short lecture on the physiological effects of the baths and waters, the party was taken round the bathing establishment, where demonstrations were given.

PLANS for amalgamating all institutions for higher education in the maritime provinces of Canada into a central university at Halifax, Nova Scotia, with the assistance of the Carnegie Foundation for Research, have been announced, and representatives of the different colleges are at present considering the proposal.

THE Greek plays which used to be given by the boys in the open-air theatre, Bradfield College, were interrupted by the war; they have been resumed this summer, the play selected being the *Antigone* of Sophocles. The performance, which was most impressive, has been witnessed on four occasions by large audiences.

THE Queen, from whom the Convalescent Auxiliary Hospital at Roehampton takes its name, has been graciously pleased to accept a copy of the book on *Artificial Limbs and Amputation Stumps* by Mr. Muirhead Little, surgeon to the hospital. The Queen of Italy, who likewise takes a great interest in the subject, has also accepted a copy.

A BILL has passed the New Jersey (U.S.A.) Legislature requiring applicants for marriage licences to submit to a medical examination.

A CHAIR of therapeutical hydrology and climatology has been created at the Bordeaux Faculty of Medicine, with Dr. Sellier as its first occupant.

THE Governors of the Manchester Children's Hospital, Pendlebury, have decided to establish a special orthopaedic department, and have appointed Mr. Robert Ollerenshaw, F.R.C.S., to be orthopaedic surgeon to the hospital. Out-patients will be seen at Gartside Street on Friday mornings, and twelve beds will be reserved at Pendlebury for cases needing operative treatment.

THE War Office Committee on Shell Shock, which has been engaged in its inquiry for more than two years under the chairmanship of Lord Southborough, has completed its report; and the hope is that this will be presented to Parliament within a fortnight at latest. The report is voluminous (nearly two hundred pages), and the recommendations are unanimous.

THE thirty-third Congress of the Royal Sanitary Institute, which is to be held at Bournemouth, will be opened by the President, the Right Hon. J. E. B. Seely, M.P., on the afternoon of Monday, July 24th. Some 500 delegates appointed by public health bodies in this country and in the Dominions, and by certain foreign governments, are expected to attend. The work of the Congress will be conducted in sections and by conferences. Full particulars can be obtained from the Secretary of the Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.1.

DR. J. GARDNER, on the occasion of his leaving Mexborough, has been presented by his friends and patients with a gold watch suitably inscribed, and Mrs. Gardner with a gold wristlet watch.

A COURSE of lectures with instruction on orthopaedics will be given at the Institut Calot, Berck-Plage, Pas-de-Calais, France, from August 7th to August 13th. Particulars can be obtained from Dr. Fouchet at the institute.

PRACTICAL courses in dermatology and the treatment of venereal disease will be given next autumn in connexion with the clinic of the Hôpital Saint-Louis, Paris, under the general direction of Professor Jeanselme. The course in dermatology will begin on October 2nd, and that on venereal disease on November 13th.

DURING the fifth International Neo-Malthusian and Birth Control Conference a session to discuss contraceptive technique, open to the medical profession only, will be held in the Kingsway Hall on Friday, July 14th, from 2.30 to 5 p.m., and on the same morning there will be a discussion on the general medical aspects of birth control. Medical practitioners wishing to become honorary members of the conference should communicate with the medical secretary, Dr. B. Dunlop, 71, Harley Street, W.1. We are informed also that a conference on birth control, called by the Mayor, will be held in the Council Chamber of the Deptford Town Hall on Monday, July 10th, at 8.30 p.m. The M.O.H. for the borough (Dr. C. S. Thomson) will open the discussion.

THE annual meeting of the Poor Law Medical Officers' Association will be held on Thursday, July 13th, at 3.30 p.m., at the offices of the British Medical Association, 429, Strand, W.C. 2. The newly elected President, Sir Arthur Newsholme, will deliver an address. The council's report, to be presented at the meeting, states that much work on behalf of district medical officers throughout the country has been done during the year and many inquiries dealt with. The council throughout this period has held its meetings on the premises of the British Medical Association, and notes that this has coincided with larger and more profitable attendances. During the absence abroad, for reasons of health, of the honorary secretary, Dr. Withers Green, Dr. John Alcindor has undertaken his work.

THE Royal Society of Medicine recently instituted a new order of Associates open to qualified men and women (whether British or otherwise) who within five years of their first professional qualification apply to the Council of the Society for election. Associates are entitled to attend the ordinary meetings and take part in a discussion in any Section. They have the use of the reading, writing and smoking, conference, and dressing rooms, of microscopes and other facilities for the examination of specimens; they may also be granted the use of the Marcus Beck Laboratory. In addition they have all the advantages of the library, except that they may not borrow more than one volume at a time. Associates pay an annual subscription of three guineas, which becomes due on October 1st of each year, but no admission fee. Associateship terminates on the expiration of five years from the date of the associate's first professional qualification, but an associate then elected to the Fellowship is not required to pay an admission fee as such.

AT the Lincolnshire Assizes on June 29th, before Mr. Justice Branson, Dr. Sydney Firth, of Grantham, was charged on four counts with "using a certain instrument with intent to procure the miscarriage of a certain female." The prisoner pleaded not guilty. The prosecution was opened by Mr. Hugo Young, K.C., who said that in four separate cases Dr. Firth saw women who were pregnant, and at their request performed illegal and felonious operations on them with a view to procuring miscarriage. Evidence was taken from women with whom the prisoner had lodged or held rooms for the purposes of his practice, and from the four women who were alleged to have been operated upon. The latter corroborated counsel's statement as to the payment by them of sums of money. Other witnesses having been called for the prosecution, Mr. A. M. Lyons addressed the jury on behalf of Dr. Firth, and criticized the evidence. The jury found the prisoner guilty on all four counts, and he was sentenced to seven years' penal servitude.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"M. S." inquires whether the emoluments received by medical officers of asylums are assessable for income tax.

*** The answer is yes, except such emoluments as are receivable in kind, and consequently being inconvertible into money, do not fall within the principle laid down in "Tennant *v.* Smith."

"W. W." has been refused a deduction of 5 per cent. on gross bookings for bad debts.

*** An allowance can be claimed for bad debts estimated to be irrecoverable, but for that allowance it is probably necessary to estimate each debt separately. "W. W." may perhaps know that most practitioners base their returns on gross cash receipts, thus avoiding the necessity of dealing with bad debts which can seldom be even approximately estimated.

"J. A. A. R." inquires whether it is necessary to stamp an envelope directed to the income-tax collector or inspector.

*** We understand that where a stamp is not affixed the Post Office collects double the amount of the stamp charge on delivery of the letter, notwithstanding that it is marked "O.H.M.S." and contains nothing but official matters.

SKIN DISEASE POSSIBLY DUE TO ENDOCRINE DEFECT.

A CORRESPONDENT writing from Ireland requests suggestions for treatment in the case of a boy, aged 15 years, who has never previously suffered from any serious illness, but during the last two years has noticed small pustular spots on both ears. He has been treated with tonics containing, among other things, arsenic, and also with local applications, but without effect. During the last twelve months the nails of his fingers and both large toes have become brittle and cracked, with occasional suppuration round the matrices. Our correspondent inquires whether this may be a case of calcium deficiency or whether parathyroid is indicated.

*** A dermatologist to whom we have referred this problem thinks the condition probably due to deficiency of some internal secretion, and suggests a trial of one of the preparations made from the endocrine glands—for example, hormotone or polyglandin. He states that he has been disappointed with the results obtained from the exhibition of parathyroid.

VISION TESTS FOR THE MERCANTILE MARINE.

"A.K."—The vision tests for candidates for the mercantile marine are detailed in the pamphlet issued by the Board of Trade (Regulations relating to the Examination of Masters and Mates in the Mercantile Marine. London: His Majesty's Stationery Office, or any bookseller. 1921. Price 1s. net). It is described as a reprint, with alterations, of the 1918 edition. A general statement of the visual requirements is given on pp. 14–16, detailed information on the manner of taking the tests on pp. 76 and 77. For form vision the apparatus used is based on Snellen's test types, sheets of letters of graded sizes. Paragraph 6 gives the requirements thus: Standing at exactly 16 feet from the test type, which is exposed in an appropriate manner and illumination, the candidate is required "to read correctly at least nine letters in the sixth line and eight letters in the seventh line of a sheet. If the candidate does this he may be considered to have normal vision and passed. The candidate may use either or both eyes at his option." Inquiry shows that the sixth line of this test card is equal to 5/6.7, and the seventh line to 5/5 of Snellen's test types for use at 5 metres. Such test types are printed and can be obtained at several opticians'. The method of testing the colour vision is also given in detail; the whole of the test is made with a lantern by which coloured lights may be exposed, to be named by the candidate. If he mistakes red for green or green or red, he fails. If he mistakes a white light for red, but after correction makes no further similar mistake, he is passed. If he repeatedly calls red white, or white red, he is referred for further examination.

LETTERS, NOTES, ETC.

IS MUMPS PAROTITIS?

DR. G. WASHINGTON ISAAC (London, W.C.1) writes: On January 12th I saw a lad suffering from swollen submaxillary glands on both sides but with no visible swelling of the parotid, and no pain or tenderness. His throat appeared to be normal. He had come from a public school where there were many cases of mumps. Before I saw him he had been seen by a consulting physician who gave a tentative diagnosis of mumps. Three weeks later his mother was affected in an exactly similar manner. On April 5th I attended a typical case of mumps, and on April 22nd another in the same family. On May 1st I awoke and found I had a hugely swollen neck due to inflamed submaxillary glands. I also had slight fever, which lasted a few days, but no pain in or tenderness of the parotids. Three weeks later my daughter developed typical parotitis.

MECHANICAL MEASURES IN INTESTINAL STASIS.

MR. CORTLANDT MACMAHON, M.A. (Instructor for Speech Defects and Breathing Exercises at St. Bartholomew's Hospital), writes: By the courtesy of a member I was present when Sir Arbuthnot Lane spoke on May 30th, at the Royal Society of Medicine, on intestinal stasis. Sir Arbuthnot inquired what was suggested outside surgical aid to clear up the condition in severe cases. With the greatest deference I suggest that prophylactic treatment of a mechanical type would often prevent the possibility of the condition arising. I also suggest that many cases of intestinal stasis will yield to the same treatment. The origin of the condition is, I believe, either a constitutional or, more likely, an acquired weakness of the abdominal wall, for which there may be many causes. This soon develops visceroptosis, of which intestinal stasis is a constituent element. Medical treatment gives great relief; massage may relieve temporarily; paraffin and a belt no doubt in some cases do good, but in all these various treatments one great feature is missing, and that is, the accommodation for the displaced organs is not given. In visceroptosis examination will show, in addition to the giving-way of the abdominal wall, a marked falling-in of the lower ribs, which is a natural and inevitable consequence of prolapse of the great organs under the diaphragm; there is, therefore, no longer adequate room for the organs in the abdominal cavity. For recovery this accommodation must be re-established and, by daily exercises carried out quite easily in a recumbent position, the lower ribs are made to expand so that they are almost in a vertical line with the axilla, and in time this condition becomes permanent. When this occurs there is ample room for the organs once more. The abdominal muscles are trained to have an extraordinary power of contraction, so much so that the abdominal wall can be retracted almost to the spinal column. Further exercises, all in a recumbent position, are carried out by the operator with practically no exertion to the patient; the organs are replaced and supported and begin to function normally. After ten to twelve treatments with an operator the patient can carry on perfectly well, and if fifteen minutes a day is given to the exercises no recurrence should take place. Sir Arbuthnot Lane spoke of the terrible depression of these patients, amounting to almost a suicidal tendency. In the treatment set out above an improvement in the mental condition occurs in a few days. I suppose many children with the pot-belly condition are candidates for intestinal stasis, unless the abnormality can be controlled. I write as a layman only—with, however, some considerable experience of the physical treatment of visceroptosis patients sent to me by the kindness of the medical profession.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 33, 31, and 32 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 20.

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Observations
ON
THE PROCESS WHICH RESULTS IN AURICULAR FIBRILLATION.

BY
SIR JAMES MACKENZIE, M.D., F.R.C.P., F.R.S.
(From the Institute for Clinical Research, St. Andrews.)

IT is just twenty-five years since the condition now called "auricular fibrillation" was recognized as a clinical entity. Its study in the human subject threw a new light upon a great number of heart problems. It was found, for instance, that this abnormal state resulted in the greatly increased susceptibility of the heart to stimulation not only by agents which increase the rate of the ventricle but also by agents which diminish the rate. It was found also that the heart reacted to drugs of the digitalis group with a greater readiness than does the normal acting heart. Heart failure is more readily induced, and the character of the heart failure is peculiar, differing greatly from most of the forms of heart failure which occur when the rhythm is normal.

Distinctive as these features are, the condition is of importance from another point of view as it represents a form of abnormal activity which is common to other organs and which holds out the promise of revealing the nature of abnormal states which have hitherto baffled inquiry. This aspect of the subject has been obscured by the unfortunate use of the term "fibrillation," for a better understanding of the subject shows that fibrillation of the auricle is but one of a number of incidents that follow the inception of the new condition. In this respect the use of the term has but followed the traditional method in medicine of calling the diseased condition by its more prominent symptom. In this case the use of the term has hampered progress, as it gives the impression that fibrillation is the cause of the condition, and so has led to attention being concentrated on what is but one incident.

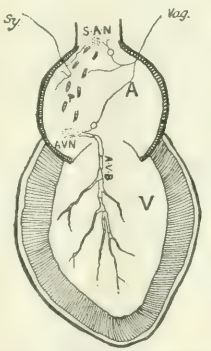


FIG. 1.—Diagram representing the two main systems concerned in the heart beat. (1) The conducting system, represented by the sino-auricular node (S.A.N.) and the auriculo-ventricular node (A.V.N.) and bundle (A.V.B.). In both auricles and ventricles are also Purkinje fibres which belong to this system, represented by the scattered cells (P) in the auricle. The vagus (*vag.*) and sympathetic (*sy.*) also belong to this system. (2) The contracting system, represented by the muscle cells of the auricle (A) and ventricle (V).

The Loss of Control.

There seems to be some law or principle which governs the functions of the organs of the body by which they are controlled by higher agencies. When this control is lost the functions of the organs become disturbed and their activities greatly modified. The phenomena produced by this disturbance vary with the organ affected. In an article recently published in this JOURNAL I suggested that the sino-auricular node and the conducting system exercised control over the muscles of the auricle and ventricles, and that the condition called auricular fibrillation was due to a loss of this control. Further research on these lines supports this view.

Retrospect.

In order to present the subject comprehensively, I give here a short review of the manner in which this condition was brought to light. It is now nearly forty years since I began an endeavour to solve the problem of pulse irregularity. Before I undertook this work many attempts had been made, with very little success. For a time I could make no progress, having no definite principle to guide me. After some years I recognized that in the study of irregularities, whether by the unaided senses or by the sphygmograph, it was only the left ventricle that was being studied. It occurred to me to inquire what the auricles were doing when the ventricle was irregular. The answer to this simple question revealed the principle which guided a research which has been successful in differentiating the great majority of irregularities. Means were devised by which the movements of the auricle could be registered at the same time as the radial pulse, so that it was possible to obtain simultaneous movements of auricle and ventricle. In this way a method was found by which we were able to differentiate most forms of irregularity.

During this time I was also watching coincident changes in the heart and their relation to heart failure. One patient with mitral stenosis I had been watching for about seventeen years. One day in 1897 her whole circulatory system suddenly underwent a change. The heart, which was perfectly regular before, became rapid and very irregular, pulsations in the veins and in the liver, due to the contraction of the auricle, disappeared, as well as the presystolic murmur, which had been unceasingly present for a great many years. At the same time there were signs of extreme heart failure—great breathlessness, blueness of the face and lips, swelling of the ankles, and enlargement of the liver. On account of the disappearance of all evidences of auricular activity I assumed that the ventricle had taken on the rhythm of the heart, and that the auricle had become paralysed, and in a book on the pulse published in 1902 I described this condition as "auricular paralysis."

I found among my patients others in a similar way, and so I came to recognize the condition as a distinct clinical entity. I watched the progress of these cases with particular reference to heart failure, and sought for the best methods of treating them, and in the course of this investigation I discovered the peculiar susceptibility of these hearts to the action of digitalis.

At the *post-mortem* examinations of the first few cases the walls of the auricle were so enormously distended and thinned that my idea of auricular paralysis seemed confirmed. But ten years later I had a *post-mortem* examination of a patient whom I had attended when the heart was normal in its action, and I witnessed the onset of this auricular "paralysis," and watched her progress seven years afterwards till she died. At the *post-mortem* examination the auricles were not dilated and atrophied, but seemed to be somewhat hypertrophied. I therefore concluded that if the auricle were hypertrophied it could not have been paralysed. This altered my conception, and I reasoned that the heart's contraction may have started at the auriculo-ventricular node, and that both auricle and ventricle had contracted together, and so called the condition "nodal rhythm."

In 1906 Cushny and Edmonds described the resemblance of the irregularity of the pulse in this condition with that of a dog's in whom they had produced auricular fibrillation, and suggested that both irregularities were due to the same cause. This view was confirmed in 1909 by Lewis, and from that time the term "auricular fibrillation" has been applied to this condition.

Continuing my observations on this condition I became gradually conscious that there was more in the matter than the auricle passing into fibrillation; but although I had studied a very great number of cases I could not see my way clearly to make any further progress until we began our systematic research in St. Andrews. Our methods of investigation led us to inquire into the mechanism of symptoms, and when we looked at the peculiar group of symptoms which resulted from this condition we were led to inquire into the nature of the stimulus which started the heart's contraction.

We considered the manner in which the stimulus for contraction arose in the normal heart; Keith and Flack had shown that it arose in a tissue specially developed for that purpose—the sino-auricular node, which is probably evolved from the sinus venosus of the lower animals. Accepting this view, we recognized that in auricular fibrillation this node is out of action and the stimulus for the contraction of the heart is produced in the fibres of the auricular muscle. Here, each fibre in its contraction stimulates its neighbours, and in this way an incessant movement is carried on by these fibres, and from this movement impulses are discharged which affect the auriculo-ventricular node. This node is in close relation to the auricle and from it a stimulus for contraction passes to the ventricle by the auriculo-ventricular bundle (see Fig. 1).

It will be seen that the whole fibrillating auricle is the source of the stimulus in this condition, while in the normal acting heart a specially evolved tissue of a minute size is the source of the stimulus. We can reasonably infer that the nature of the stimulus must be different in the two cases, and

we find evidences of this difference in the response of the ventricle to contraction.

Looking at the matter in this way, it seemed that the fibrillation of the auricle was the result of a process and not the process itself. The contraction of the auricle and ventricle are normally under the control of the sino-auricular node and other portions of the conducting system, and it seemed that the auricle passing into fibrillation was due to a loss of this control. The cause of the condition thus was not to be found in the study of the fibrillating auricle but either in the sino auricular node or its connexion with the auricle.

Langley's Observations on the Denervated Muscle.

One of the principles which guide us in our research is that when we find certain phenomena produced by one organ the mechanism of which is obscure we turn to the examination of other organs to see if similar phenomena are exhibited by them. We accordingly turned our attention to other organs of the body. In this search we recognized that while the mechanism which produced the phenomena would be the same, the phenomena themselves would be different, and would correspond to the function of the organ disturbed. A number of examples were revealed which seemed to favour this view, and to these I shall refer later. It was while on this quest I met Sir Edward Sharpey Schafer and discussed the problem with him, and he called my attention to some experiments by Langley which I had overlooked. Langley[1] had found that on the division of the motor nerve of a voluntary muscle the paralysed muscle which resulted therefrom was not an inert body, but that sooner or later the fibrils of the muscle showed constant movement. In other words, fibrillation of the muscle resulted when it was uncontrolled by the motor nerve.

There would thus seem to be a law which governs the activity of muscles, in that so long as a muscle is under control of the nervous system fibrillation does not occur. In the case of the ordinary muscles it is the nerves which exercise the control. The same law holds good for the heart, but in the case of the heart muscle it is the sino-auricular node and conducting system which exercise the control.

Difference between a Fibrillating Voluntary Muscle and a Fibrillating Auricle.

The voluntary muscle is not connected with any other organ, consequently no evidence of the fibrillation can be detected unless the muscle is exposed to view. With the auricles, however, the condition is different. They are hollow muscles and contain fluid, the slight movements of the wall are communicated to the fluid, and it is for this reason we can sometimes detect fibrillary waves in the jugular vein during auricular fibrillation. Moreover, the auricles are in direct communication with the very sensitive auriculo-ventricular node (Fig. 1), and therefore the impulses which arise from their movement act upon this node, which, being stimulated, sends impulses to the ventricle, and there results that peculiar irregularity of the ventricle which is characteristic of this condition.

Rhythmical Movements in the Fibrillating Muscle.

The minute study of fibrillation in the denervated muscle reveals that at times there are rhythmical movements which resemble flutter or the more rapid movements that are sometimes present in fibrillation of the auricle. Langley, in describing fibrillation in the voluntary muscle, states: "In close examination it is seen that the contraction of any one spot—as a rule, at any rate—has a perfectly regular rhythm, and that the apparently continuous movement of the surface as a whole is mainly due to the rhythm in adjoining fibres being different. The rate of movement and the intensity of contraction vary considerably in different parts of the muscle."

The Results on the Heart of Loss of Control.

When this loss of control occurs the heart becomes a different organ in respect of the way in which it maintains the circulation and of the manner in which it responds to outside stimulation and to remedies. The auriculo-ventricular node and the bundle become much more sensitive to stimulation, while the ventricle contracts in a manner which it never does when under the control of the conducting system. I have already dwelt upon the fact that the varying size of the pulse beats which occur so frequently in auricular fibrillation would seem to imply that all the fibres of the ventricle do not participate in the smaller contractions. I had reasoned that this is probably due to the difference in the stimulus, but it is quite possible that it may be due to an altered condition of the ventricle when it is removed from the control of the sino-auricular node.

Circumstances that cause Loss of Control.

These views are mainly suggestive, and intended to indicate the lines on which further investigation should be pursued. The investigation of this subject should be devoted to the consideration of the conditions which give rise to it. The change manifestly takes place in the sino-auricular node or in its connexion with the auricle. This is brought out particularly well from the consideration of some of the circumstances which induce this loss of control.

Many years ago I drew attention to the fact that digitalis acted upon the auriculo-ventricular node and bundle, causing sometimes the blocking of the stimulus from the auricle, so that ventricular beats dropped out. In 1906 I pointed out that this was due to the action on the vagus. This evidence was obtained from a man in whom digitalis caused a dropping out of ventricular beats. When the effect of the digitalis was passing off this action disappeared, but the patient could bring it back at once by the act of swallowing, a procedure which could only produce an effect by acting through the vagus.

I have recorded an account[2] of another patient in whom digitalis showed an instructive series of responses. The digitalis caused slowing of the whole heart for short periods —that is, the drug acted on the sino-auricular node, and the auricle and ventricle contracted at a slow rate. During some of these periods the standstill was so long that the ventricle contracted independently of the auricle. At another period the auricle passed into fibrillation—in other words, under the vagal influence the sino-auricular node ceased for a time to act, so that the ventricle contracted independently, and at another time the auricle, escaping from the control of the sino-auricular node, passed into fibrillation.

This observation throws a light upon certain experiments of Lewis and his colleagues. In one experiment[3] they stimulated the vagus nerve and took an electrocardiograph record of the auricular contraction. The record shows at first a great slowing or standstill of the auricle, followed by a sudden and enormous increase of the auricular rate up to 1,200 beats a minute. It seems almost certain that this great increase in rate was due to the auricle passing into fibrillation or into some other abnormal state in consequence of the suspension of the action of the sino-auricular node, just as happened in the patient under digitalis. It should be borne in mind that in stimulating the vagus nerve the slowing of the heart is due to the action of the nerve upon this node, and that as the node ceases to act a condition equivalent to cutting the nerve to a muscle results, and the auricle passes into fibrillation. Lewis, therefore, is scarcely justified in drawing the conclusion that the action of the vagus is to re-excite the auricular muscle and produce a shortening of the refractory period.

The importance of looking to the loss of control of the sino-auricular node as the state in which auricular fibrillation occurs directs attention to the immediate cause of the condition. It is manifestly vain to seek for the cause of paralysis of a muscle whose nerve is cut in the muscle itself, and it is therefore equally vain to seek for the cause of auricular fibrillation in the study of the movements of the fibrillating muscle. The mere fact that in auricular fibrillation there is a short refractory period does not justify the assumption that the shortened refractory period is the cause of auricular fibrillation. Trying to stop fibrillation by attempting to lengthen the refractory period is manifestly a procedure which is bound to fail, and is due to a misconception of the nature of the condition.

The Loss of Control of the Ventricle.

What happens when the auricle escapes from the control of the sino-auricular node also happens when the ventricle escapes from the control of the conducting system. This part of the subject has so far been very imperfectly investigated. At least two peculiar forms of ventricular contraction occur—one shown by a series of small beats apparently of the same origin as ventricular extra-systoles, another when the ventricle fibrillates and death occurs.

The Loss of Control in other Organs.

In the search for a similar condition in other organs I looked at the muscular system, and I find some very suggestive comparisons. Recently, while watching an operation for the removal of a small tumour from the vocal cords

by my friend Dr. Douglas Guthrie, I was struck by a peculiar movement in the neck. The patient had been for a short time under chloroform, and I observed what seemed to be the pulsation of a vein, which extended from the left clavicle near its inner end half-way up the neck. The movement was perfectly regular at 60 beats a minute. When I felt the pulse and watched the veins in the neck I discovered that there was no relation between this curious beating and the arterial and venous pulse, the latter beating about 80 a minute, with frequent intermissions due to extra-systoles. Looking more closely at the movement and feeling it with the finger, it became evident that it was due to a few fibres of the platysma muscle. These fibres were about an eighth of an inch across and appeared to be attached to the skin over the clavicle at the lower end, and they extended up the neck for three or four inches and caused a movement of the skin at the level of the thyroid cartilage. There was also a smaller movement of the same kind at the lower end, about an inch behind the larger movement. These movements continued for fully an hour—in fact, during the whole time the patient was under chloroform. As soon as he came out of the chloroform the movement ceased.

It is very likely that the paralysis of certain muscles, as in diphtheritic paralysis, is really due to this loss of control. Dr. Maitland Ramsay tells me that the ciliary muscle in certain cases of errors of refraction may suddenly cease to act, and it occurs to him that probably the same condition is present here. It is well known that in dangerous *post-partum* flooding the uterine muscle is in a state of extraordinary laxity. Dr. Orr has suggested that when this happens the uterine muscle is probably in a similar condition. The circumstances certainly favour its occurrence, for experience has shown that a common factor in the production of auricular fibrillation is great bodily effort; and the observation of Dr. Ramsay points the same way, in that the ciliary muscle ceases to act after the strain in attempting to correct the error of refraction, and the uterus has just ceased from a severe strain shortly before flooding occurs.

That other organs may show the same peculiarity seems reasonable. Loss of control results in the cells taking on an individual action and stimulating one another. Professor Herring has called my attention to the fact that when the nerve to the salivary gland is cut the gland is not inactive but continues to secrete, and this secretion is spoken of as "paralytic."

Probably the condition of epilepsy affords another illustration. It is manifest that in this state there must be the same direct cell to cell stimulation as occurs in the fibrillating muscle. As we watch the onset of an attack of epilepsy we observe that the finer movements of expression or of the fingers are first affected, and from here the attack spreads to all the muscles of the body. It is evident that no other cause but the disturbance of the cellular elements in a localized area of the brain can produce these effects, and it is likely that here also the condition is due to a loss of control of some higher centre. The same explanation probably accounts for migraine attacks.

These views are not put forward as if they were established, but merely to provide a guide for further investigation. They are sufficient to justify the suggestion that we have here an abnormal process which is common to a great many organs, and that the aim of the investigator should be to find out the nature of the process rather than to study its result.

Terminology.

Though the term "auricular fibrillation" is misleading, it has gained such a wide acceptance that for the present it is better it should be retained. It would be more appropriate to describe the condition by the process which produces it, and in a sense the original term "auricular paralysis" might be employed, seeing that it resembles the paralysed muscle. But as that term does not clearly describe the process the change of term would avail little. The important consideration is that the fibrillating auricle is but one result of a vital process, as yet not fully determined.

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1 "Fibrillation noticed during a Research on the Action of Physostigmine on Denervated Skeletal Muscle," Langley and Kato, *Journ. of Physiol.*, 1914-15, vol. 49, p. 425 et seq. "Observations on Denervated Muscle," J. N. Langley, Ibid., 1915-16, vol. 50, pp. 335-342. "Observations on Denervated and on Regenerating Muscle," J. N. Langley, Ibid., 1917, vol. 51, pp. 390-393. "Observations on the Atrophy of Degenerated Muscle," Langley and Hashimoto, Ibid., 1918-19, vol. 52, pp. 43-45 and 62 et seq.

2 Mackenzie, J.: *Diseases of the Heart*, p. 465, third edition.

3 Lewis, Drury, and Iliescu: *Heart*, vol. viii, p. 331, Fig. 5.

Remarks
ON
BONE GRAFTING AS AN AID IN TREATMENT OF TUBERCULOUS SPINAL CARIES.

[With Special Plate.]

BY

SIR HENRY M. W. GRAY, K.B.E., C.B., C.M.G., F.R.C.S.EDIN.,

SURGEON, ABERDEEN ROYAL INFIRMARY.

THE use of bone grafting as an aid in the treatment of tuberculous spinal caries is of comparatively recent origin. It was introduced by Hibbs and Albee, and naturally, in view of the reputation of the originators, was tried at once by those who sought more satisfactory methods of treating Pott's disease than were previously known. As is usual in such cases, strong opposition has been provoked in many quarters, and it is therefore not surprising that a distorted conception of the value of the treatment exists at present in the profession. We have to attempt to sift out the truth from the apparently contradictory views expressed on the subject. When, from reports by reputable observers and from my own experience, the facts become established that cases of Pott's disease of the spine are enabled to return to a normal mode of life in a shorter period of time after this than after any other previously adopted method of treatment, and that such cases maintain their capacity without recurrence of the trouble over periods of many years, I am forced to believe that this operation has a useful place in the therapy of spinal caries and to seek to define the cases in which it may be applied with good prospects of success.

GENERAL PRINCIPLES IN THE TREATMENT OF TUBERCULOUS DISEASE.

The present-day conception of the rational treatment of tuberculous disease of any tissue may be briefly stated as follows:

If there is reasonable prospect of attaining complete eradication of the disease without maiming the patient most surgeons prefer to operate in order to procure this end, in spite of the fact that radio-therapists and other advocates of conservative treatment claim excellent results from their treatment. The help of the radio-therapist, however, is usually also invoked by surgeons in order to make cure as certain as possible—that is, such cases are treated on the same plan as cases of accessible cancer. If tuberculous disease cannot be eradicated surgically without interfering materially with the capacity of the patient to lead a healthy, active life, conservative methods of treatment are tried, and are often successful. The chief drawback to such forms of treatment is that they take a long time when compared with surgical ablation of the disease. In young children this is not of the same importance as in older children and adults. Generally speaking, however, the best remedy is that which most rapidly brings the disease to a standstill and is followed by cure. No form of treatment apparently can ensure that the disease will not break out at any time in other parts of the body.

Whether "conservative" or surgical methods of local treatment are used, all are agreed that general treatment, providing suitable diet, good hygienic surroundings, open air, sun baths, possibly vaccine or other inoculations, etc., is also of the greatest importance.

Local treatment aims at producing rest of the affected part. When bones or joints are concerned, fixation in the best possible way is established. Fixation is essential to success. The sooner all such measures are carried out in an efficient manner the greater is the prospect of cure.

APPLICATION OF GENERAL PRINCIPLES TO THE TREATMENT OF SPINAL CARIES.

It is obvious that disease of the bodies of the vertebrae cannot be attacked surgically in the satisfactory way in which a focus, for example, in the tibia can be dealt with. At best the occasional removal of sequestra is all that has been attained, coupled, perhaps, with more or less inadequate scraping of the surrounding affected bone; even such measures are attended with considerable risk to the patient. It is evident therefore that Pott's disease must be treated expectantly so far as the actual *focus mali* is concerned, and

that all efforts must be directed to raising the patient's resisting and recuperative powers, and at the same time to procure as absolute fixation as possible of the diseased parts and their surroundings.

All are agreed on the difficulty of fixing the spinal column efficiently by external splinting so that movement is entirely prohibited. It has been abundantly proved that absolute fixation of the affected part of the column can be obtained by the operation of bone grafting. Obviously, the grafts and the new bone stimulated into being by the operation must be strong enough to bear, without bending, any strain put upon them. It is for this reason that I carry out the operation which I shall describe later in preference to Albee's or Hibbs's methods. I believe that unsatisfactory results of operation by bone transplants in young children may be attributed chiefly to the grafts obtainable from the tibia being too thin and pliable to be efficient.

Considerations regarding the Time Element in this Form of Treatment.

If bone grafting is carried out efficiently we can reckon that fixation will be adequate in two to four months, and that thereafter the patient can usually be allowed an increasing amount of freedom, so that in six to twelve months he may be leading a normal life except for the slight restrictions imposed upon him by the stiffness of the part operated on. The formation of new bone, fixing and reinforcing the grafts, can be, and ought to be, verified by *x*-ray examination before such freedom is allowed.

It is thus seen that by the employment of operative fixation much time is gained for the patient when compared with fixation by external splinting. As to when freedom should be allowed each case must be considered on its merits. I do not believe in taking risks, and have decided upon the following rules: In uncomplicated cases (and the most important and frequent direct complication is probably abscess formation) I believe that at the end of two to three months all fixation apparatus may be removed, so that the patient can move in bed, carefully, in the horizontal position. This obviously adds to his comfort and happiness. The slight strain put upon the graft will tend to stimulate the bone growth and strengthen the fixation. If abscess has developed the time taken in the process of cure largely depends on the behaviour of the abscess, which is uncertain. Until the abscess in connexion with the vertebral bodies is cured no relaxation of treatment should be allowed.

The time element need not be considered in young children, in whom external fixation can be made most efficient, and who become easily inured to their irksome position; but in older children, especially those who have to learn a trade, and in adults, time is practically always of great importance.

Risk Involved in the Method of Treatment Employed.

In comparing the two methods of treatment the question of danger must be taken into account. In my experience the operation has not proved dangerous. One death which can be attributed directly to the operation has occurred in twenty-eight cases. This happened in a young child who was going downhill rapidly in spite of treatment. The case was treated soon after Albee had published the first account of his operation, and it must be remembered that the operation is not now generally recommended in young children.

Shock has not occurred in my cases to any noticeable extent. I believe that it can be obviated by flooding the parts operated on with local anaesthetic solution in the way I shall describe.

Royal Whitman has said, "Pott's disease is the most dangerous of all the tubercular affections of the bones or joints." In 1901 he stated that "at least 20 per cent. of all patients die during the progress of the disease and within a few years after its onset, from causes directly or indirectly dependent on the local lesion." Lovett, in Keen's *Surgery*, 1907, states that "the mortality is probably not under 33 per cent. if ultimate results are considered." No doubt under modern treatment the mortality is considerably less, but all the same it must still be so high that any measure which makes for success should be used in the "treatment complex."

The sooner remedial treatment is instituted in tuberculous disease the better the results, so that an operation of this nature, although it may be abhorrent for various reasons to some minds, should not be regarded as a last resort. The less the extent of the disease the less the severity of complications—or, in other words, the sooner remedies are applied, and especially the more adequate the fixation, the more certain will be the cure. The operation is not difficult, but it must not be undertaken by surgeons who are unfamiliar with the technical essentials necessary for success in bone-grafting work. Hibbs (1918) reports 210 cases operated on down to three years before this date; there had been 31 deaths. Meyerding (Mayo Clinic, 1920) reports 100 operations down to two years previous (modified Albee operation); 86 per cent. had been relieved of symptoms, 3 were not improved, 3 were not heard from, and 8 had died since operation.

Advantages of Treatment by Operation.

To recapitulate briefly: Local treatment aims at establishing fixation of the affected parts. Operation by bone grafting effects this quickly and certainly, in a permanent manner, and, when carried out carefully, without undue danger to the patient, so that apparatus for external fixation can be discarded at a comparatively early period. The patient can resume a normal life much earlier, and, by reason of the bony fixation which extends beyond the diseased area, is less likely to suffer from local recurrence of the disease than after "conservative" treatment. Operation is not advisable in young children, but in older children and in adults it must be seriously considered.

Patients Unsuitable for Operation.

Patients I consider unsuitable for treatment by bone-graft fixation are:

1. Those in which there is *pronounced disease elsewhere* of a nature which would make one chary of performing any fairly severe surgical operation. I do not think slight or early tuberculous disease of other parts—for example, lung or other bone—precludes operation. In one case, indeed, a most gratifying result followed operation in a lady with fairly advanced phthisis. She was completely relieved of her spinal symptoms and was leading an active life when I heard of her five years later.

2. Those rare patients in whom it can be diagnosed that the *spinal cord* has become affected by *infiltration* by tuberculous disease in distinction from external pressure from tuberculous products. In one of my cases death followed several weeks after operation from spread of the disease in the spinal cord. In this case the pain and partial paralysis was at first thought to be due to extradural pressure. The onset of pressure paralysis, according to the late Mr. H. O. Thomas of Liverpool, increases the prospect of cure by means other than operation. This opinion is supported by Sir Robert Jones. I should advise operation at once if such paralysis developed during conservative treatment.

3. The operation is *not* indicated *in the case of very young children* for the reasons already mentioned. Well-nourished children of 10 or even younger are quite suitable for treatment in this way. At the same time I should not hesitate to use the operation in very young, otherwise healthy, children, when the patient does not show continuous progress towards recovery under non-operative treatment.

Operation Tends to Prevent Complications.

In other cases I believe that this operation enhances the prospect of rapid and permanent cure, and that therefore it should be performed by a capable operator as soon as possible after the disease is diagnosed. Patients in whom deterioration in various ways was pronounced before operation have usually begun to pick up again almost at once. On that account I feel that operation will prevent complications with greater certainty than conservative measures. Fixation by bone graft eliminates the danger consequent on restlessness of the patient, inadequacy of external splints, and movement of diseased parts when the necessary cleansing of the skin of the back is attended to.

A Probable Cause of Unsatisfactory Results.

I believe that many of the unsatisfactory results after operations are due to the fact that patients have been permitted to get up and walk too soon after operation. It seems to me to be "tempting Providence" to act on a belief that such a slowly developing and slowly improving condition as tuberculous disease of the bone can be regarded as cured in six to eight weeks, to say nothing of the probability that the grafts will not be solidly united in that time, and that therefore slight movement will occur. We do not allow the bones in fracture of a healthy femur or tibia to bear weight so soon, and it seems rather preposterous to expect grafts to be capable of bearing the strain of maintaining the trunk in

position, even when supported by external splints, any sooner than normally placed bone. I think that, for safety's sake, patients should not be allowed to walk or even to sit erect before four to six months after operation, even although exceptional cases may do so without apparent detriment at a much earlier stage. The disease is very insidious, and movement of the muscles attached to the front of the affected part of the spine may keep up or aggravate the lesion—for example, by causing abscess formation or increasing the size of abscesses already present.

Operation in Relation to Deformity.

Operation should be done before deformity occurs. If deformity is present before operation I try by postural methods to bring about gradual straightening. If these fail, and they frequently do, I deliberately break the grafts so as to adapt them accurately to the curvature. I have found that these fractures unite firmly. I never attempt to reduce the deformity forcibly. In rare cases tendency to formation of sores over a prominent spinous process may be prevented by removal of the process. After operation observations at frequent intervals should be made so that possible static deformity of the spine beyond the upper or lower end of the graft may be prevented.

Operation in Relation to Abscess.

Operation should be done if possible before abscess occurs, but in some cases the disease is so insidious that the development of abscess is the first reason for causing the patient to seek advice. Abscess usually dries up rapidly after operation is done, but in some cases it may be advisable to treat the condition by aspiration or by other remedies. If the abscess arises in the neck the head should be fixed by suitable apparatus; if in the lower dorsal or lumbar region, the lower limbs should be fixed, otherwise abscess may persist or develop. In one case I regret that I did not fix the lower limbs; the abscess increased so persistently that it had to be laid open and treated by instillation of antiseptics. I am glad to say that this patient is now thoroughly convalescent. I believe that movements of the diaphragm may have the same deleterious action as movements of cervical muscles or psoas muscles. One patient who had an abscess in the posterior mediastinum from mid-dorsal caries died two years after operation from pulmonary complications, the abscess having ruptured into the right pleural cavity.

On two occasions I have opened an abscess in the erector spinae mass while the bed for the graft on that side was being prepared. In both cases the graft healed firmly in position, although the abscesses went on developing and had ultimately to be laid open and treated by energetic surgical means. One of these cases (psoas abscess) is mentioned above. In the other case the abscess developed from caries of one of the lumbar transverse processes, a focus of disease additional to that in the vertebral bodies. Successful grafting under similar apparently unfavourable conditions has, of course, been noted by other operators.

Fate of the Graft.

It appears to be incontrovertible that the grafts grow in length, corresponding to the growth of the patient's spinal column and without producing deformity. It has always seemed to me to be rather misleading to say that all grafts become absorbed, although, no doubt, complete absorption may occur in badly placed or improperly cut grafts—that is, in grafts which do not "take," or, in other words, do not form osseous connexion with the bones with which they are placed in contact. I believe that ordinarily, in grafts which are properly cut and placed and take root, absorption and growth occur in a manner similar to that which takes place in the normal metabolism of bone. (See Plate, Fig. 1.)

THE WRITER'S OPERATION.

I have only once done Hibbs's original operation, and only once done Albee's operation, although I consider the latter to be the more satisfactory. I do not think, however, that bridging the tips of the spinous processes of the vertebrae, as is done in Albee's operation, gives sufficient fixation, as there must be a certain amount of "give" in these spinous processes and grafts, at all events in the dorsal region, where the disease is most frequently situated. Fixation of the diseased part seems to me to be rather uncertain owing to the graft being inserted at such a distance from the articular processes and intervertebral discs where movements can occur. I believe that this inadequate fixation is the cause of some of the unsatisfactory results following this operation, especially in younger children. In Hibbs's most recent method, if a continuous column of bone is formed between the laminae as well as between the spinous processes, fixation must be good, but the operation seems to me to be needlessly complicated and severe and not likely to be so uniformly successful as that which I have practised and now recommend. I described this operation at the meeting of the British Medical Association in Aberdeen just before the outbreak of the European war, and I may say that I had previously had and have since had such satisfactory results that I can see no reason for altering the procedure. I have tested it in twenty-eight cases. The results are equally good whether the disease affects the lower cervical, the dorsal, or the lumbar vertebrae. The method is as follows:

The Plaster-of-Paris Splint.

On the day before operation a strong, accurately fitting, plaster-of-Paris splint is made, covering the whole of the back and curving slightly round the sides of the body; in cervical cases it reaches up to the vertex of the skull. While it is being applied and fixed with bandages the patient, as a rule, supports himself on his hands and knees and thereafter lies prone until the plaster has set. Dressings should be previously applied in the same way as at the end of the operation, so that the splint will lie comfortably and at the same time exert equable pressure at each side of the spinous processes over the erector spinae muscles. In this way the best position for fixation is attained.

At the operation the patient lies in the prone position. It may be necessary for his comfort to place a thin pillow under his abdomen.

Injection of Local Anaesthetic.

The erector spinae muscles, close to the spinous processes and laminae of the area to be operated on, are suffused with 1/2 per cent. novocain solution with adrenaline. This is done whether a general anaesthetic is used or not. The procedure obviates shock and reduces the loss of blood to a minimum; it also renders the operation easier owing to the comparatively bloodless field produced. (I make this infiltration in all laminectomies.) A similar injection is made on the subcutaneous surface and adjacent edges of the tibia from which the graft is to be cut. I have done the whole operation repeatedly under local anaesthesia alone.

The Operation Described.

A median incision is made: the aponeurosis is incised on each side close to the spinous processes; the muscles are elevated off the spines and laminae—all to an equal extent—above and below the diseased vertebrae and to a total length equalling the longest possible graft available from the tibia. The periosteum of the spines and laminae is incised and reflected upwards and downwards off the outer and posterior aspects of these structures. The exposed bone is roughened by making small irregular incisions with a chisel and raising the edges of these incisions. Gauze packs are then inserted firmly into the cavities on each side of the spines while the tibial grafts are cut.

The leg is freely flexed on the thigh so as to give access to the front of the tibia. A skin incision is made along the whole length of the tibia and the periosteum of the antero-internal surface of the bone is exposed by dissection. In a child the epiphyseal lines are left intact when the graft is cut; in an adult the bone may be cut to within about half an inch or



Diagram to show line of incisions on periosteum and drill holes on antero-internal surface of the tibia. At (a) the small dotted lines show the directions in which drills and osteotome should cut.

so from the articular surface. Owing to the general shape of the tibia and its medullary parts the grafts must be cut in wedge form—the breadth of their bases together extends to about three-quarters of the breadth of the anterior tibial surface. The periosteum is incised as indicated in the diagram, and the edges of the incision are separated slightly with a rugine.

Drill holes are made, reaching into the medulla, along these incisions at intervals of half to two-thirds of an inch. The bone dust from these holes is carefully preserved in a spoon. The tibia is split with an osteotome along the lines of holes—at first superficially, then deeply. The holes tend to keep the line of cleavage from diverging. (They are unnecessary in the comparatively soft bone of a young child if a sharp chisel be used.) In this manner two strong grafts are cut, composed of periosteum and dense and cancellous bone with pieces of medulla adhering thereto. They are made purposely with jagged edges, as in this way a larger amount of potentially successful osteoblastic surface is provided than in the usual way of cutting grafts with a circular saw.

An assistant stitches the incision in the leg while the grafts are being placed and fixed in the back. In my experience the tibia has never failed to regenerate without mishap. At the end of a few months the scar on the skin is the only sign of any operation having been performed.

The operator removes the gauze packs from the wounds in the back, and in the spinal groove on each side the bone dust is smeared along the line of junction of the spinous processes and laminae, where the grafts are going to lie, being spread more thickly at the upper and lower ends of the wounds, in order to foster osseous fusion. Care is taken that the periosteum of the spines and laminae is properly reflected so that the graft comes directly in contact with the bones. The grafts are placed so that their periosteum is outermost.

The edges of the aponeuroses are approximated across the mid-line by catgut sutures and the wound is closed without drainage. The pressure of the muscles and dressings is usually enough to keep the grafts in place. I have never used special fixation by sutures or other means. Mastisol is painted over the wound and surrounding skin before the sheet of gauze dressing is applied. The advantage of this application is at once obvious to those who have seen it in use.

In order to prevent soiling of the wound from urine or faeces the following precaution is taken: a transverse area of skin across the back of the sacral and iliac regions, about two inches wide, is painted with mastisol. The lower edge of an appropriately large piece of batiste is made to adhere to this area and the remainder of the sheet of batiste is then folded down over the buttocks and thighs.

A thick sheet of cotton-wool is made to cover the back, smooth extra pieces being laid over the erector spinae muscles on each side of the skin incision. The plaster splint is applied and a binder placed in position, the patient is turned carefully on his back, and the binder is pinned tightly over the abdomen and chest. In cases of caries in or above the mid-dorsal region this splint is all that is required in tractable patients, but in children and in adults when the disease is low down the patient is fixed as comfortably as possible in a Jones's double abduction frame, so that the lower extremities are prevented from moving. No special splint is applied to the leg that has been operated on, but a very thick layer of cotton-wool is placed over a mastisol and gauze dressing and the whole mass is very firmly bandaged. The foot is included in the bandage so as to prevent oedematous swelling. The toes are left out for inspection. Occasionally when the dressings are removed from the leg there is a gush of dark blood from one or more of the intervals between stitches. If there is evidence of pent-up blood one or more of these intervals is opened. In either case the excessive accumulation of blood is squeezed out of the tibial cavity, the skin is thoroughly cleansed again, and fresh dressings are applied. Usually all dressings can be left off in, at most, three weeks.

The Method of Cutting the Graft.

This is not the occasion to discuss the problems of bone grafting fully, but, as it is evident that the success of this operative procedure depends on the way in which the bone grafts take root and persist, it may be permitted to draw attention again to the way in which I cut the grafts and to the method by which they are placed. I can truly say that I do not know of any failure in operation by myself in any situation with a bone graft cut in the fashion I have described. I have already indicated some of the reasons which, I think, ensure such success. The chief of these is the provision of a large area of bone on whose surface undamaged osteoblastic tissue is present. I believe that this is attained in greater measure by cutting the grafts in the manner I have described than by cutting them with a saw, especially a rapidly rotating circular saw, which tends to cauterize the cut surface of the bone by frictional heat. When orthopaedists try to prevent bone growth—for example, in arthro-plastic operations—they make the surfaces of the opposing bones as smooth as possible. Surely, then, it is of advantage, when bone growth is desired, to make the surface of a graft as irregular as is compatible with its future function, and to avoid damaging the exposed surfaces as much as possible. Because of the osteoblasts they contain the potential value of bone particles or shavings cannot be disregarded when we consider the formation of spurs or other osteomata after superficial injury to bone, or the formation of bony outgrowth in the muscles covering the amputation stump of a bone, which are almost certainly due to the bone dust scattered by the saw; this can be prevented by the use of a suitable guard retractor when the bone is cut during the amputation. I am convinced that the bone dust, used as described, plays an important part in the welding of the main grafts to their beds in the spinal grooves.

Results of Operative Treatment.

In the majority of the twenty-eight cases dealt with in this paper the disease had previously been treated by conservative methods. There have been three deaths in the series during ten years. One patient, a young, weakly child, 4 years of age, died on the third day after operation. This is the only death ascribable to surgical interference. The child was going downhill in spite of conservative treatment and belonged to a category of patients in whom, in the light of experience, I think operation should not be performed. One adult died within two months of operation from progressive disease in the spinal cord and canal. This patient would not have been operated on if it had been appreciated that the tuberculous disease was already infiltrating the cord. Another adult died two years after operation from empyema and pulmonary complications. In another adult psoas abscess continued to increase and was treated by open incision and disinfection of the cavity. She is now convalescent, the abscess cavity being almost obliterated. She is well in general health and is steadily putting on flesh. The bone disease is apparently cured. In one child operated on when 6 years of age the disease has apparently been cured, but deformity has increased as noted above. This child was operated on just before the war began, and did not receive the supervision which is necessary in such cases, owing to the fact that the mother did not bring the child for periodic inspection.

I do not think any patient should be pronounced cured unless free from complications and able to perform the ordinary duties of life at least two years after operation. The cure of the disease in the bone should be ascertained by *x*-ray examination. The remainder of the patients in my series do, I believe, satisfactorily pass these tests.

An Illustrative Case.

Most of the points I have discussed are exemplified in the patient from whom the skiagrams here reproduced were obtained.

The boy was 15 years of age, and the operation was performed on October 9th, 1919. There was well-marked angular deformity; the grafts were fractured, the left one in two places, so as to fit the deformity. In the concavity of the curve—that is, on the right side—a small extra piece of bone was inserted. Skiagrams (Plate, Figs. 2 and 3) show well-defined callus around the fractures of the grafts, growth from bone dust, fusion of grafts to the spinal grooves, and the persistence of the grafts in their original thickness after two and a half years. All this occurred in spite of the fact that an abscess, taking origin from a lumbar transverse process, was revealed at operation in the erector spinae muscles. It had ultimately to be laid open, scraped, and sutured; a sinus persisted for seven months, but is now soundly healed. On November 21st, 1919, he developed acute appendicitis, and appendicectomy was performed. No abscess or thickening was found over or near the site of disease in the spine. He was kept on his back for nearly four months. He has grown six inches in height since the operation. There is no detectable deficiency of growth in the lumbar region, and no alteration in the deformity and its relationships with the grafts. Unfortunately no local measurements were made before the operation. He has been playing modified golf and tennis for nearly twelve months in a careful way, and now (April 29th, 1922) applies for leave to play cricket, to swim, and to indulge in salmon fishing. He states that he has never felt better in his life. He writes: "I hardly notice two or three sets of tennis at a go, and certainly not in my back. I can do any amount of dancing and that sort of thing. As for walking, I can do as much as most people."



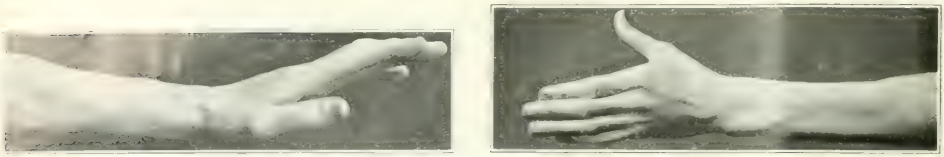
FIG. 1.—Skiagram showing persistence of grafts, in original thickness, nine years after operation. The two grafts, one long and one short, were put in the right spinal groove. The bony fusion of the grafts to the spinal arches and to each other is distinct. This patient is leading a normal life. She climbed a hill 2,000 ft. high on two occasions last summer.



FIG. 2. Skiagram two years after operation, showing well-defined callus around the fractures of the grafts. A, Growth of bone where bone dust was smeared most thickly. B, Caries of transverse process from which abscess in erector spinæ developed. C, Callus where grafts were fractured at different levels.



FIG. 3. Same case as Fig. 2, showing D, focus of disease.



FIGS. 1 and 2.—Complete musculo-spiral paralysis after tendon transplantation.



FIG. 3.—Paralytic talipes valgus after transplantation of peroneus brevis to inner side. The line of transplanted tendon can be seen.



FIG. 4.—Paralytic talipes varus. The tibialis anticus has been transplanted to the outer side and is here seen in action during dorsi-flexion of the ankle.



FIG. 5.—Paralytic talipes calcaneo-cavus before operation.



FIG. 6.—Paralytic talipes calcaneo-cavus. Same foot as Fig. 5 one year after subastragaloid arthrodesis and tendon transplantation.



FIG. 7.—Paralysis of left quadriceps extensor. Biceps and semi-tendinosus tendons transplanted to patella. Leg with muscles relaxed.



FIG. 8.—Showing extension of knee by transplanted biceps and semitendinosus.

A Clinical Lecture
ON
TENDON TRANSPLANTATION.

DELIVERED AT SALFORD ROYAL HOSPITAL ON APRIL 29TH, 1922.

[*With Special Plate.*]

BY

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THE operation of tendon transplantation, which is also known under several other names, such as tendon grafting, tendon implantation, and transference of muscle power, has gradually come to occupy a most important place in orthopaedic treatment. It is well, in dealing with such a subject as this, to refer to its origin and to mention briefly the pioneers who conceived the ideas which their successors have developed. In 1882 Nicoladoni[1] introduced the operation in the treatment of infantile paralysis; unfortunately, he appears to have first tried it in an unsuitable case, in which it proved to be unsuccessful. For this reason he did not follow up the idea any farther. Ten years later Parrish[2] in America and Drobnik[3] in Germany both revived it. Since that time the Americans, particularly Bradford, Lovett, Whitman, and Goldthwait, have worked extensively at the subject, as also have Hoffa,[4] Lange,[5] and Vulpius[6] in Germany. Our own country has taken its share in the development of the various methods: Little, Tubby, Jones, and, in this city, Montgomery, have all worked along lines which have defined the possibilities and the limits of the operation.

The transference of muscle power may be used: (1) in order to restore a movement which has been entirely lost through injury of the peripheral nerve supply or as a result of poliomyelitis; (2) to redistribute the power acting about a joint; and (3) to diminish the effect of the non-paralysed muscles which by their unopposed action are producing deformity. The removal of a distorting force is an important result of the operation, often as important as the transference of positive power. I propose to demonstrate seven groups of cases in order to illustrate the varied uses to which tendon transplantation may be put. In peripheral nerve palsy, such as occurs after division of the musculo-spiral nerve, it is possible to set down details for a complete tendon-transplantation operation which, when properly carried out and followed by correct after-treatment, can be relied upon to restore the lost function as effectively as possible. The treatment of infantile paralysis, however, is not a subject in which one can lay down definite rules as to the utilization of the various muscles as transplants. The loss of power in the muscles, in this disease, varies so much in distribution and in intensity that each case must be carefully studied in detail and the precise extent of the loss of power noted before any operative programme can be drawn up. It is not my intention to refer to the treatment of infantile paralysis in the early stages of the disease, and I have only to say that the operation of tendon transplantation is not to be advocated until it is beyond doubt that the affected muscles are paralysed beyond recovery. Correct splinting day and night with constant physio-therapy are to be utilized for a period judged to be sufficiently long. After such time, if no change is seen and no response can be elicited by any form of electrical stimulus, tendon transplantation, either alone or associated with other methods, may be advocated. A transplanted muscle does not, as is sometimes stated, increase in power by the greater demands made upon it in its new position. On the contrary, it is never so effective as in its normal place. As a result of tendon transplantation the active power present is actually lessened but more usefully distributed.

Indications for Operation.

The operation is chiefly indicated when the paralysis is limited to a group of muscles and where other muscles, of not antagonistic action, are available for transplantation. Very extensive cases with only a few weak muscles remaining are not suitable for the operation. In the case of transplantation about the ankle the operation must not be expected to do more than redistribute power. It will not produce stability of an ankle and foot which are inclined to "capsize" as soon as weight is put on them. The normal movements of the subastragaloid joints, added to those of the ankle-joint, permit such a variety of motion that they have been said to allow of what the engineer calls "universal" movement, such as is found in a ball-and-socket joint. The movements essential for locomotion are those of dorsiflexion and plantar flexion of the ankle-joint. After an attack of infantile paralysis the balance of the muscles is disturbed and the power diminished. When such conditions exist it is often found that too much uncontrollable movement is present and that the whole of this movement cannot be retained if stability is to be provided. In these cases it is therefore desirable to retain the essential movements of simple flexion and extension of the ankle and to fix the subastragaloid joints, which include astragalo-scaphoid and astragalo-calcaneal joints, by arthrodesis.

Technique.

As a preliminary measure to all tendon-transplantation operations, it is essential to correct all deformity. For example, in a case of paralytic equino-varus which has existed for some time it may not be possible, because of secondary contractions, to place the foot in a correct position. There may be contraction of the calf muscles necessitating elongation of the tendo Achillis before the equinus can be corrected; there may also be considerable shortening of the plantar fascia requiring fasciotomy in order to straighten out the sole of the foot.

Secondary changes in bones and joints following the prolonged malposition may call for wrenching and fixation in an overcorrected position for a time before the tendon transplantation can be embarked upon. For three days before operation the preparation of the skin is carried out. After thorough soap and water cleansing and trimming of nails the skin is well dried. A solution of iodine in rectified spirit (resublimed iodine 1/2 oz., potassium iodide 1/2 oz., rectified spirit one pint) is painted over the whole of the affected limb, which is then covered in a sterile cloth and bandaged. The iodine application is repeated on the day previous to operation, and, unless the operation is to take place during the early part of the morning, a further application is made on the morning of the day of operation. As to the theatre technique, all persons entering the theatre are required to wear boot-covers or theatre shoes, sterile gowns, caps, and masks, whether they expect to come close to the operation area or not. The limb which is to be operated upon is enclosed by sterile gauze, bandaged so as to cover the whole limb, including the foot or hand. The iodine solution is again applied to the gauze covering the operation area. The gauze is now cut along the proposed line of incision. After the skin incision is made skin towels are clipped to the edges of the wound so that the skin is entirely shut off. The skin knife is set aside and used only for any further skin incision which may be required; a second knife is used for the deeper dissection. Sutures, ligatures, and swabs are handled in forceps, and, so far as possible, none of these articles nor any part of the wound is touched even by the gloved fingers.

The best results are obtained by transplantation of the entire tendon, and not by transplanting slips of tendons. The transplant should be fixed as close to the insertion of the paralysed tendon as possible, suture to the actual bony insertion and periosteum giving the most satisfactory results. If the transplant is not sufficiently long to reach this position, the paralysed tendon is buttonholed and the transplant passed through and firmly sutured to it. The transplanted tendon must not be taken round corners; it must run in as straight a line as possible to its new insertion. To accomplish this, long incisions or multiple incisions are needed. Following operation, the limb is fixed by splints or in plaster-of-Paris in such a position as will ensure as much relaxation as possible of the transplanted tendon with no strain on the suturing.

After-Treatment.

Six to eight weeks' complete fixation is given, and at the end of this period removable supports are provided which can be taken off for treatment. In the physio-therapeutic department the re-education of the muscles is commenced. In some cases it proves a simple matter for the patient to produce the new action of the transplant, to be able to produce it at will, and soon to dissociate it from the action of muscle with which it was formerly associated. In other cases, particularly where antagonists have been transplanted, it is a matter of slow and patient work before such a result can be arrived at. A start is made by placing the limb in such a position that contraction of the transplant will be able to take place with no "load"

against it. Stimulation of the transplanted muscle by faradic current is carried out, and a small contraction produced. A gradual increase produces a small movement, which is demonstrated to the patient. He is taught to produce this movement voluntarily, and gradually to dissociate it. He begins to learn that a muscle which formerly everted, when he contracted it, now inverts, or that a former flexor now extends. As he becomes able to produce the new movement voluntarily a little resistance is offered to the performance of it, and so, by slow degrees, he develops the new power.

Illustrative Cases.

The first cases I wish to show you are patients in which the musculo-spiral nerve has been divided and where nerve suture was impracticable or where recovery has not taken place after suture was performed. In these cases, after trying several minor variations, I have found the following transplantation to produce the most satisfactory results:

(*a*) Pronator radii teres transplanted to the long and short radial extensors in the middle third of the forearm.

(*b*) Flexor carpi radialis transplanted to the three thumb extensors. In order to produce the best effect from this transplant I am in the habit of splitting the terminal two inches of the flexor carpi tendon. The outer half is then sutured to the extensor ossis metacarpi and extensor brevis pollicis tendons and the inner half to the extensor longus pollicis tendon. I find this arrangement to be mechanically more effective than passing the entire flexor carpi tendon through the three thumb tendons.

(*c*) Flexor carpi ulnaris transplanted to the common extensor of the fingers.

You will observe with what ease and strength the wrist and fingers can now be extended and flexed, and the way in which these patients have, with our help, educated themselves to dissociate the action of the transplanted flexors from the rest of the flexor group (Figs. 1 and 2). These results are extremely gratifying, so much so that it is safe to say that the results of a good tendon transplantation, in this class of case, are much to be preferred to a moderate recovery after nerve suture.

The second group of cases illustrates the treatment of paralysis of the adductors of the foot with overaction of the peronei and valgus deformity following anterior poliomyelitis. With these cases I usually transplant the peroneus tertius, or brevis, or both, and sometimes also the extensor longus hallucis, which generally escapes in these patients, and fix them to the scaphoid at the point of insertion of the paralysed tibialis anticus. If the extensor longus hallucis is so utilized the hallux is prevented from acquiring the "hammer" deformity which follows loss of its long extensor, by arthrodesing the interphalangeal joint in a straight line (Fig. 3).

The next cases illustrate the opposite condition to the preceding. In these there has been peroneal paralysis with consequent varus deformity following the unopposed action of the tibialis anticus and posticus. Here the tibialis anticus has been transplanted outwards and fixed to the periosteum of the cuboid. The everting action of the transplant is well seen (Fig. 4).

The fourth group demonstrates the result of transplantation in the treatment of talipes of the calcaneus variety—usually a calcaneo-cavo-valgus. In these cases it is my practice to arthrodese the subastragaloid joints and to transplant the flexor longus hallucis and peroneus longus to the insertion of the tendo Achillis and the os calcis. By means of these procedures you will see that the foot can be given a good shape and the general function very greatly improved (Figs. 5 and 6).

Talipes cavus, associated with overaction of all the long extensors of the toes consequent on loss of power in the short muscles of the sole, has been successfully treated in many cases by transplantation of the long toe extensors into the heads of the metatarsal bones. After such an operation it is seen that instead of pulling across the metatarso-phalangeal joints and forcing down the forefoot, these tendons now lift it and by their action straighten out the cavus deformity. The whole of the five tendons are transplanted, being approached through three incisions, one over the hallux, one between the second and third toes, and the last between the fourth and fifth toes. In each case the tendon is cut as long as possible and passed through a hole bored transversely through the neck of the metatarsal just behind the head. The tendon is pulled through and sutured to itself, forming a loop. The contracted plantar fascia is divided.

The sixth group of cases demonstrates the use of transplantation in the treatment of recurrent dislocation of the shoulder-joint, a method which I referred to in a paper read at a British Orthopaedic Association meeting in 1920.[7] This distressing condition, which is extremely difficult to cure, has been treated extensively by means of operations on the joint capsule, such as pleating and excision of sections, with subsequent suturing to diminish its size. In many hands these methods had not produced very satisfactory results; for a time there was improvement, but after varying periods redislocation occurred. I therefore determined to try the method of Clairmont and Ehrlich,[8] who devised an operation by which a portion of the deltoid is transplanted so as to sling up the head and neck of the humerus. The posterior strip of the deltoid, about one inch wide, is separated down to its insertion and passed through the enlarged "quadrilateral space" of the axilla, and the tendon fixed high in front of the joint. Clairmont fixed it to the separated edges of the anterior part of the deltoid. In performing the operation it seemed to me that the tendon would lie closer to the joint and give it more support if sutured up to the subscapularis tendon, and this modification I always carry out. I have performed this operation on seven occasions during the past four years; the most recent case was done seven months ago. With one exception there has been no recurrence. In that case the patient was a professional Rugby football player who came down on the outstretched arm and redislocated the shoulder. He had previously had a capsule operation which was followed by recurrence in a few months. After the transplantation he played football for a whole season, during which the joint remained stable before the unfortunate fall, which would have been sufficient to dislocate a perfectly normal shoulder.

The last group of cases demonstrates the transplantation of hamstring tendons to the front of the knee to replace a paralysed quadriceps extensor. Tubby reports, in his well-known book, that in nearly half the cases in which he performed this operation there was recovery of power of full extension of the knee both in standing and sitting. Many surgeons, however, even amongst those of large experience, are unconvinced of the good results which may be achieved by this transplantation, as is evidenced by the following quotation from a lecture given by H. A. T. Fairbank, which was reported in the BRITISH MEDICAL JOURNAL of April 9th, 1921:

"I am open to conviction, but I have still to see a shifted biceps contract alone at will and produce extension of the knee-joint. I have seen it contract with the flexors and interfere with the action of its fellows, but this is a very different thing from this muscle producing extension at the will of the patient."

Several patients I now show to you demonstrate the power of the transplanted biceps and semitendinosus to act voluntarily, producing full extension of the joint. They are able to hold it in this fully extended position, bearing the weight of the leg and foot, for periods varying from half a minute to two minutes, which is as long as you or I would care to hold out an extended knee (Figs. 7 and 8).

I think that the cases I have now shown you provide convincing evidence that tendon transplantation has a definite place amongst our orthopaedic methods, and a demonstration of the fact that, in properly selected cases, it is an operation which can be strongly recommended to our patients.

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IN connexion with the recent articles on the attempt to climb Mount Everest and the use of oxygen by the climbers, we have received a letter from Messrs. Oppenheimer, Son, and Company, Ltd., suggesting that the apparatus called oxinhalator, made by them, might be of use. They furnish a reference to the *Medical Annual*, 1910, from which it appears that the substance used to furnish oxygen ("Sodox") is a peroxide of sodium, which possesses the property of emitting absolutely pure oxygen in contact with water. The apparatus appears to be an adaptation of one invented by M. G. P. Jaubert, and first shown to the Academy of Sciences in April, 1912, by Professor Moissan. It has useful applications under ordinary atmospheric conditions, and was, we learn, used in the Pike's Peak expedition to yield small quantities of oxygen, but for the task of climbing Mount Everest we are advised that the weight would be too great, and that the water needed to decompose sodox would be sure to freeze.

FURTHER EVIDENCE OF THE VALUE OF THE COMPLEMENT FIXATION TEST IN PULMONARY TUBERCULOSIS.

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It is now nearly twenty years since Bordet and Gengou first demonstrated the presence of antibodies capable of uniting with tubercle bacilli and fixing complement in the serums of tuberculous animals. Since then numerous attempts have been made to utilize this fact in order to obtain a reliable biological test for tuberculosis in human beings, and many different methods of performing such a test have been described. Varying results have been obtained from these methods, but by none of them do the results obtained in definite cases of pulmonary tuberculosis, 10 to 30 per cent. of which have given a negative result appear to have been sufficiently accurate to cause the adoption of the test as a means of diagnosis for early tuberculosis.

A method of performing the test was described by one of us (A. L. P.)[1] in 1920; this test has been made use of frequently in both definite and doubtful cases for over two years by both of us. We have previously shown that a positive complement fixation test is obtained in 98 per cent. of cases with tubercle bacilli in the sputum. We have, moreover, subsequently collected evidence which suggests that this small error of 2 per cent. occurs in cases of very sudden onset and running a very rapid course, in which presumably the tubercle bacilli are so virulent and the invasion so massive that those cells of the body which are responsible for the production of the complement fixing substances are overwhelmed with toxins and unable to respond to the call made upon them. In the rare cases in which, with symptoms due to tuberculosis, the test is negative at first but later becomes positive it is reasonable to assume that a sufficiently long interval has not elapsed from the time of infection for the complement fixing substances to be developed.

We have also shown[2] that in a series of controls consisting of healthy persons or patients suffering from diseases other than tuberculosis the test was negative in 98.5 per cent.

Further, in a series of 50 Brompton Hospital cases with symptoms strongly resembling those of pulmonary tuberculosis, and sometimes even with apical signs, giving a negative result to the test, 49 showed no further evidence of tuberculous infection ten to twenty months later.[3] The one exception was a man who was living for a year subsequent to his first examination with a brother suffering from consumption, and it is reasonable to suggest that he became infected while under observation. The test was positive at the second examination six months before tubercle bacilli were found in the sputum. In the other 49 cases the test was negative at the second as well as at the first examination.

Recent Evidence.

The subsequent history of suspicious cases which give a positive result will now be shown to give further evidence of the value of the test, in this instance in the early positive diagnosis of pulmonary tuberculosis.

For this purpose we have recently investigated 50 of our Brompton Hospital cases in which the complement fixation test was positive in 1920 or early in 1921, and in which tubercle bacilli had never been found in the sputum, as far as we were able to determine, prior to the testing of their blood. They were unselected cases, and were consecutive so far as the above condition of a previous absence of tubercle bacilli in the sputum and a positive test were concerned.

Of the 50 cases a reply was received from relatives that 8 had died. None of them died while in-patients of the hospital, so *post-mortem* evidence is not available. In 3 cases tubercle bacilli had been found in their sputa. The result of the examination of the sputa in the other 5 is not known. These 8 deaths can be compared with the 2 deaths in the 50 complement fixation negative cases previously published, both of which showed malignant disease, at the necropsy, as the cause of death.

Of the remaining 42 cases 29 attended for re-examination, 10 failed to reply, and 3 replied but were unable to attend. No less than 13 out of these 29 cases had been proved definitely tuberculous between the first and second examinations by the finding of tubercle bacilli in their sputa; the notes of 5 of them were as follows:

Case 1.—L. E. June, 1920: Complained of cough, sputum, and loss of weight for three weeks; weight 7 st. 10 lb.; sputum streaked with blood; sputum negative three times. Complement fixation test positive. May, 1921: Streaks of blood again; weight 8 st.; sputum negative. Complement fixation test positive. September, 1921: Sputum positive; weight 9 st. 10 lb. The complement fixation test was still positive in May, 1922.

Case 2.—E. M. May, 1920: Complained of cough, sputum, slight haemoptysis; loss of weight; sputum negative. Complement fixation test positive. August, 1920: Sputum positive. May, 1922: Still cough and sputum; complement fixation test positive.

Case 3.—G. W. June, 1920: Complained of cough, sputum, and loss of weight; sputum twice negative. Complement fixation test positive. July, 1920: Sputum positive. May, 1922: Still cough and sputum. Complement fixation test still positive.

Case 4.—V. D. May, 1921: Complained of being languid; no cough; no sputum; impaired note and bronchial breathing at left apex. No crepitations heard. Complement fixation test positive. February, 1922: Still feels languid; cough and sputum present; crepitations at left apex; sputum positive. Complement fixation test positive.

Case 5.—E. C. June, 1920: Complained of cough and sputum. Complement fixation test positive. May, 1921: Has been in bed four months with pleurisy; two severe haemorrhages; sputum twice positive in sanatorium. Complement fixation test positive.

An analysis of the 16 as yet unproved cases shows that 5 were cases of pleurisy when first examined; in 3 no sputum was available; in 8 there were still symptoms, and in some further physical signs were present. But, however suspicious of pulmonary tuberculosis physical signs may be, they cannot be offered as definite evidence that the tubercle bacillus is the cause of the pathological change in the lung, as there is probably no combination of physical signs absolutely pathognomonic of pulmonary tuberculosis. In 2 cases there were no symptoms at the second examination. The notes of 5 further cases to illustrate these as yet unproved cases are as follows:

Case 6.—E. S. July, 1920: Pleurisy with effusion; weight 11 st. 2 lb.; sputum negative. Complement fixation test positive. Went to sanatorium. June, 1921: Physical signs of thickened pleura. Complement fixation test positive. November, 1921: Feels fairly fit; cough for few weeks; sweats a good deal; sputum negative. Complement fixation test positive.

Case 7.—C. H. November, 1920: Complained of haemoptysis, about 10 ounces on two occasions; no abnormal physical signs; no sputum available. Complement fixation test positive. April, 1922: Complains of feeling tired; no more haemoptysis; impaired note and crepitations at right apex; no sputum available. Complement fixation test positive.

Case 8.—E. M. R. September, 1920: Complained of tiredness and loss of weight: fine crepitations at both apices; sputum negative. Complement fixation test positive. July, 1921: Signs as before. Complement fixation test positive. May, 1922: Feels fairly well; cough and sputum present, but latter not obtained for examination. Complement fixation test positive.

Case 9.—E. N. K. July, 1920: In-patient for diagnosis; cough; sputum. May, 1921: Complement fixation test positive. February, 1922: Feels better; at light work; night sweats severe; sputum negative on fifteen occasions since first seen. Complement fixation test positive.

Case 10.—C. L. July, 1920: Cough; sputum streaked with blood; loss of weight; temperature 99.2°; crepitations at right apex. June, 1921: Feels well; no sputum. Complement fixation test negative.

It will be seen that it is difficult to state the percentage of these cases giving a positive test in conjunction with pulmonary symptoms, in which tubercle bacilli were subsequently demonstrated in their sputa, owing to the death of some and the difficulty of tracing others; but of those alive and able to attend hospital 13 out of 29, or 44.8 per cent., had tubercle bacilli in their sputum within a period of not more than two years after the test.

Discussion.

First we can say definitely that the test is positive before the tubercle bacilli can be demonstrated in the sputum.

Exactly what interval elapses between the invasion of the lung and the development of a positive test cannot be determined in human beings owing to the uncertainty of the date of infection. Since, however, pulmonary tuberculosis is as a rule a disease of gradual onset, the blood, generally speaking, reacts positively by the time symptoms are present. In a few cases in which the onset is more sudden—as, for instance, with an haemoptysis or pleurisy without any history of previous ill health—it is necessary, when such a case gives a negative result, to repeat the test after an interval of two or three months before definitely excluding tuberculosis.

Meaning of a Positive Result.—The presence of pulmonary symptoms with a positive test must be regarded as an indication of active pulmonary tuberculosis.

Duration of a Positive Reaction after Arrest of the Disease.—How long the test remains positive after arrest of the disease it is impossible to say, as there is no method of determining accurately the exact date at which the lesion has become arrested. Two of the cases in the above series offer evidence that the test does become negative after the disease is arrested. Both these cases had been free from symptoms for about a year. One case when seen in 1920 had a pleurisy with effusion from which 10 c.cm. were aspirated. He was sent to a sanatorium, where he remained for seven weeks. He brought up a pint of blood shortly after leaving the sanatorium, and entered another sanatorium for fourteen weeks. Since then for a period of sixteen months he has felt quite fit, and is now two and a half stone heavier than when seen on his first visit to the hospital. The clinical condition agrees with the negative test in these two cases, and we regard them both as arrested cases. A temporary freedom from symptoms does not, of course, necessarily indicate complete arrest of the disease. This is well illustrated by one of the cases in which the test was positive three times over a period of twelve months. In this case the patient was at one time during this period entirely free from symptoms, but later the symptoms returned and eventually tubercle bacilli were found in her sputum. We are collecting evidence bearing on this point of the duration of a positive reaction after arrest of the disease, but it must of necessity be slow in accumulating; so far it would appear that the period may not be more than twelve months.

The Value of Early Diagnosis.—It is generally accepted that early diagnosis is the key to successful treatment. All the 50 cases here published were treated as cases of active tuberculosis of the lung or pleura. Though the results are far from satisfactory, it is possible that some of the cases have been prevented by early treatment from progressing to "open" tuberculosis.

The Question of Latency.—The above considerations lead to the question of latency; 98.5 per cent. of our control cases gave a negative result to the test. All *post-mortem* evidence goes to show that in a certain number of these cases, variously estimated as from 10 to 97 per cent., old tuberculous foci existed. In what proportion of these old foci living tubercle bacilli would have been found we have no evidence upon which to form a definite opinion, but it may be said that they would have been found in a certain number. The explanation that we have to offer of the negative result to the test although tubercle bacilli may be present in the body is that, the formation of the complement-fixing substances being in all probability a property of the cells of the body, they are only formed when the focus which contains the bacilli is not shut off from the general circulation. In these old foci the bacilli when present may be entirely shut off from the general circulation by fibrous tissue resulting from chronic inflammatory processes, and so no complement-fixing substances are formed. We have shown that a positive reaction when the lesion is active does not mean a positive reaction ever after, as stated by others. In this lies the greater value of the test, and, taken in conjunction with the symptoms, it is an almost infallible guide to the presence or not of active tuberculosis.

We are again indebted to the lady almoner of the hospital, to whom we wish to express our gratitude for her valuable assistance in tracing the patients and asking them to attend.

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THE PATHOLOGY OF FOETAL MACERATION.*

A STUDY OF 24 CASES.

BY

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IN the first 100 examples of stillbirth examined there were 24 cases of foetal maceration; it is the results of the examination of these that it is proposed to discuss in this communication. Various grades and degrees of the condition were seen, from mere laxness of the limbs to an almost pulpy state of the foetus, with the skin almost entirely denuded and the cranial bones loose inside the scalp. In passing it may be noted that, as 24 cases were macerated and 52 asphyxiated, in 76 per cent. of the first 100 cases of stillbirth the evident condition present on examination was either maceration or asphyxia.

Of the 24 cases 22 were premature, ranging from twenty-four to thirty-six weeks. This is only what one would expect from a general consideration of the subject. The two cases born at full time were only slightly macerated, and labour came on in these cases at or about the expected date. Both these latter cases were eclamptic. The associated conditions in the 24 cases were:

Maternal albuminuria	...	...	10 cases
Syphilis	...	...	6 ,,
Maternal eclampsia	...	...	4 ,,
Extensive placental infarction		...	4 ,,

External Maceration.

From these figures it appears that, in our experience, albuminuria is the condition most commonly associated with maceration of the foetus; further, syphilis was present in only 6 (25 per cent.) of the cases. Now in the cases of syphilis previously considered maceration was found present in only 6 out of 14 (43 per cent.); therefore considering both these sets of figures we come to the conclusion that maceration alone is no index of foetal syphilis and is much more likely to be associated with albuminuria.

In this series all grades of maceration were present, allowing the various stages of the process to be studied. The first change observable after the death of the foetus was solution and disappearance of the vernix caseosa; in the very slightly macerated cases vernix was present in the flexures of the groins and knees, where it had, for the time being, been shielded more than in the more exposed parts from the solvent action of the liquor amnii.

There can be little doubt that the first action of the liquor amnii on the dead foetus is to dissolve the vernix caseosa; in life it acts as a coat of armour against such action; this is aided by the fact that in life the vernix is continually being secreted and renewed by the glands of the skin, an action which, of course, stops at death. Later on the superficial layers of the skin become waterlogged and the connexion of the epidermis with the deeper layers becomes loosened, so that on rubbing, or even at the merest touch, flakes of epidermis peel off, exposing the reddened and shiny underlying corium. In time this also becomes affected, and in the more advanced cases the skin looks as though eroded in patches, the underlying tissues being exposed here and there.

These changes are most marked in the abdominal wall, scrotum, and limbs, and least on the head and scalp; indeed it is only in the most advanced examples of maceration that any desquamation at all is present in the scalp.

Internal Maceration.

Contemporaneously with these external changes the internal organs are also undergoing changes—internal maceration—which in general terms may be described as consisting of tissue lysis resulting from the uncontrolled action of enzymes on the parenchyma of the various organs, the whole process being aseptic.

In the skeletal muscles such action is recognized at the very earliest stage, even before desquamation is evident: general slackness and limpness of the body and limbs result, allowing the macerated foetus to be bent and twisted in any direction. In the brain the earliest naked eye change consists of a brown staining of the dura mater, which is often slightly thickened and feels oedematous. The surface of the

* Part of a report on "The Etiology and Pathology of Stillbirth" to the Medical Research Council, 1922.

cerebral hemispheres also becomes stained brown from a diffusion of haemoglobin due to lysis of the red blood cells. Later the cerebral tissue becomes soft and easily lacerable, and later still quite diffluent, so that the brain now appears as a semifluid, grumous, brownish mass in which no differentiation between grey and white matter is possible and which cannot be removed intact. In the most extreme cases solution of the cranial sutures occurs, allowing the cerebral matter to run out and infiltrate the scalp, while in one of the specimens the scalp had become eroded at one point at the vertex and the fluid brain matter had escaped externally.

There is a great tendency in these cases to extravasation of blood-stained fluid into any body cavity or loose tissue space, and so the pleurae, pericardium, peritoneum, scrotum, and subcutaneous tissue, especially over the vertex of the scalp, were, in a well-marked case, almost invariably the seat of haemorrhagic effusion due to lysis of capillaries and of red blood cells, thus allowing the haemoglobin-stained fluid to be passively effused.

In all the other organs two changes were found: (1) softening of various degrees, and (2) a uniform brown staining, reducing all the organs to a uniform colour and obliterating the difference between cortex and medulla in each case.

1. This was present in all degrees corresponding to the degree of maceration; it was, however, always present to some degree and was demonstrated on attempting removal of the organs, when they would tear in the fingers unless very carefully handled. In a case of moderate degree softening would be least marked in the heart and lungs and most evident in the brain and liver.

2. The more advanced the maceration the more marked was this change. The process consists of a haemolysis with diffusion of altered haemoglobin throughout the various organs. This was present in all the organs, even in the intestines, although less marked there than elsewhere.

The Bones in Maceration.

On sectioning the long bones the main naked-eye changes were found at the extremities. Here the epiphyseal cartilage had lost its normal bluish-white glistening appearance and had become dull and opaque, with a tendency to brownish discoloration, which, however, was never so marked as in the case of the internal organs. But at the junction of the osseous tissue of the shaft and the cartilage of the epiphysis the line of demarcation was not as sharply defined as usual; it appeared as though the osseous tissue had become slightly eroded or digested along this junction, and it was easy in any case to separate the epiphysis from the shaft, the junction being softened. Now, this irregularity of the epiphyseal line is present in some cases of syphilis—chondro-epiphysitis—but here it is due to irregular *ante-mortem* growth of spicules of bony tissue into the cartilage, and close inspection will show the difference between the two conditions. The point to be emphasized is that a condition superficially resembling the chondro-epiphysitis of syphilis is to be found in the vast majority of foetal bones macerated from any cause, and that unless care be exercised in differentiating this condition from true chondro-epiphysitis a large number of cases will be wrongly regarded as syphilitic. In only one of the cases of syphilis was true chondro-epiphysitis well marked. In two cases — both premature — blood-stained effusion was present in joints; in one case the knee and in the other the hip was affected. In every case the ligaments were weakened and softened, sometimes markedly so.

The Placenta in Maceration.

Examination of the placenta was of the utmost value in deciding the cause of the foetal death. In eclamptic placentae large areas of intra-placental haemorrhage with extensive red and white infarctions were present in every case of this series. In albuminuria also similar appearances, but usually not so extensive or advanced in degree, were present, and in both of these conditions there were in a large proportion of cases old or recent haemorrhages on the uterine surface of the placenta.

These utero-placental haemorrhages constituted a marked feature in this class of case, and in one example there was a large cup like depression excavated from the uterine surface and full of clot. In these cases it was usual for the intra-placental haemorrhage in infarction to be in that part of the placenta related to the surface haemorrhage. In a third class of case large white and red placental infarctions were also present, but in these cases there was no maternal albuminuria; here also in several examples retroplacental haemorrhage and clots were present.

Now, placental infarctions have been shown by Eden, Williams, and others to be normally present towards the end of pregnancy, and, indeed, to form one of the changes preparatory to the placenta separating itself from the uterus. Eden regards infarctions as signs of senility in a short-lived organ, and is of opinion that they begin to form as early as the seventh month of gestation. But in the cases under consideration (1) the infarcts were very large, and *en masse* must have occupied a considerable area of the placental tissue available for foetal nutrition; (2) intra- and retro-placental haemorrhage cannot be looked on as normal changes; and (3) these changes were in almost every case well advanced by the seventh month, and not merely starting to appear then.

For these reasons, then, extensive infarction and haemorrhage in a premature placenta is to be regarded as a pathological condition and likely to be associated with the death and subsequent maceration of the foetus.

In the syphilitic placenta the appearances were quite different. In all these cases the placentae were thick and pale and usually of an even and solid texture. *In no syphilitic placenta was any infarction or haemorrhage present.* This is a most important differential point in seeking for the cause of the intrauterine death. The syphilitic placentae examined tended also to be larger and heavier in relation to the foetus than normal; this was never so marked in the cases under consideration as some authorities have found, but the presence of these features in association with pallor and increased thickness, which were constant features, strengthened the diagnosis of syphilis.

There is another naked-eye appearance to be noted, and it is common to all macerated placentae whatever be the cause of the foetal death prior to maceration; this consists of a greenish, slimy appearance of the amniotic surface of the placenta and membranes, and would appear to be due to continued contact with altered amniotic fluid. This also is described by some writers as being associated especially with syphilitic maceration, but in this series it was quite as well marked in the non-syphilitic cases.

The umbilical cord showed slackness; this was the first change noted, the normal spiral twisting having become undone and straightened out. Later on swelling, oedema, and congestion, as shown by a uniform dull red coloration, became evident, and this change was more marked at the foetal end of the cord.

Microscopic Findings.

On microscopical examination of the various organs the first change seen was a failure of the cell nuclei to stain properly; the outline became blurred and the chromosomes disappeared. The cell cytoplasm then became affected and in its turn stained irregularly, but this change appeared subsequently to the nuclear changes described. This cloudy or granular degeneration progressed so that in time the nuclei became invisible, while the cell showed irregular outline and stained very faintly indeed; in later stages still the microscopic field showed a mass of irregularly stained tissue in which the cell bodies were differentiated from the intercellular material only with difficulty. This was the appearance seen, for example, in albuminuric cases. In syphilitic cases—and in these maceration was seldom so advanced as in the others—the pericellular cirrhoses, as described in the section of the report dealing with syphilis, were seen, and in these cases cell degeneration was not so far advanced for the degree of maceration as in the other varieties of cases.

Again, in syphilitic cases staining by Levaditi's method usually demonstrated the presence of spirochaetes in the organs, especially in the lung and liver. While this description would apply generally to the various organs, in the individual organs certain special appearances were recognized.

In the *lungs* oedematous infiltration of the interalveolar tissue with desquamation of the alveolar epithelium was seen; along with this generalized capillary dilatation and irregular extravasation of red blood cells into the tissue spaces and also into the alveoli were present.

In the *liver* the changes described were well shown, but along with these the sinusoids were seen to be dilated, and many red blood cells in various stages of degeneration were present, infiltrating the interlobular and intercellular spaces.

In the *kidneys* the earliest changes were found in the glomeruli, which showed cloudy swelling going on, in the later stages, to almost complete disintegration, the glomeruli becoming shrunken masses staining badly and practically structureless. The intertubular connective tissue also showed

oedema and thickening, while desquamation of the tubular epithelium following granular degeneration was usually present in varying degrees.

In the *skin* the first change observed consisted of a swelling of the superficial layers of epithelium with inability of these cells to take up stains properly. This swelling would appear to indicate infiltration of the cell with fluid, and these changes progressed until the cells lost practically all structure and were cast off, the separation occurring just at the junction of epithelium and corium. In the latter layer the tissue fibres stained irregularly, and were separated by oedematous infiltration, while marked dilatation of capillaries with extrusion of red blood cells was also seen here. The epithelium of the sweat and sebaceous glands, and also of the hair follicles, retained their normal appearance for a surprisingly long time, and in regions where such structures were plentiful—the scalp—the degenerative changes described were never so marked as in skin from other parts of the body.

The *placenta* in syphilitic cases presented the microscopic appearances usually described in this condition: crowding of the field with villi, small intervillous spaces, the absence of blood vessels from the villi, or if present few in number and small, and the structure of the villi consisting of a uniform and loose areolar tissue. In the placentae showing infarctions and haemorrhages changes of two kinds were seen: (1) Fibrinous deposit between the villi, gluing them together as it were and associated with degeneration and disappearance of the Langhans's cells covering the villi. At a later stage the villi appeared as degenerated, light-staining areas embedded in a dark mass of fibrinous deposit. This is the type of infarction described by Eden and Williams as a normal process. (2) In the infarctions associated with utero-placental haemorrhage the first change observed was dilatation of the vessels in the villi, so that this part of the placenta looked red to the naked eye (red infarction); but in some cases this dilatation was so great that actual haemorrhage had occurred (haemorrhagic infarction or placental apoplexy). The primary event is considered to be the utero-placental haemorrhage which had suddenly interfered with the nourishment of the placenta and so had inflicted an acute vascular injury the reaction to which was dilatation of the vessels or even a haemorrhage into the substance of the placenta. The villi concerned, being separated from their uterine attachment and deprived of their nourishment, degenerate and are finally replaced by a fibrous scar, which develops from the periphery towards the centre of the involved area. These changes have been fully worked out by Young and others. Space will not permit a full consideration of these placental changes in relation to foetal death; they will be made the subject of a later contribution. Suffice it to say that in these cases intrauterine death followed by maceration is considered to be brought about by (1) the ablation of a certain amount of placental tissue sufficient to interfere with foetal nourishment, and (2) possibly by the absorption into the foetal (as Young has suggested in the case of the maternal circulation) circulation of certain degeneration products from the infarcted and necrosed areas.

In this paper, which is intended merely as a preliminary contribution to the study of this subject, the findings and the deductions from them are stated shortly. It would appear that maceration is brought about by soddening of the unprotected foetal skin by the liquor amnii, accompanied by an autolysis of the internal organs by enzyme action.

CONCLUSIONS.

1. Maceration is the result of retention of the dead foetus *in utero*, whatever be the cause of the death.

2. Maceration alone is no sign of the presence of syphilis.

3. In the investigation of any macerated foetus it is essential to have the placenta for examination also.

4. The bony changes in any macerated foetus bear a superficial resemblance to the chondro-epiphysitis of syphilis and have to be carefully differentiated.

5. The microscopic findings indicate a process of autolysis of the constituent cells of the various organs with oedema of the interstitial tissue and extrusion of red blood cells.

6. In the syphilitic cases the placenta will be thick and pale, while in the other cases haemorrhages and infarctions will often be present.

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RECOVERY OF VISION AFTER INCIPIENT PANOPHTHALMITIS FOLLOWING CATARACT EXTRACTION.

BY

LIEUT.-COLONEL H. KIRKPATRICK, I.M.S. (RET.).

THE recovery of useful vision in an eye which suffered from an early and virulent pyogenic infection after an operation for senile cataract is sufficiently rare to render it worth while to place the following case on record:

Mr. R., aged 69, was operated upon for senile cataract of the right eye on October 4th, 1921. Combined extraction was performed, the nucleus being easily delivered beneath a "bridge flap" of conjunctiva; the shreddy, shrinking cortex was readily washed out by the irrigator and the iris well replaced.

On the second day the eye was quiet, with a wide, black pupil, and the anterior chamber had re-formed. That night, in spite of having been warned, the patient got up unaided to pass water, and interfered with his dressings in order to see what he was about. Next morning the eye was still quiet, with a wide, black pupil. On the fourth morning a muco-purulent discharge was present, with conjunctival injection and chemosis. Aluminium goggles were substituted for the bandage, silver nitrate drops (0.75 per cent.) were instilled, followed later by argyrol. The chemosis and discharge increased during the day and the lids became greatly swollen. Eye baths of magnesium sulphate lotion (12 per cent.) were now ordered to be used for five minutes every two hours. On the morning of the fifth day, in addition to the swelling of the lids, the chemosis, and the purulent discharge, it was found that the lips of the wound were yellowish and infiltrated, and that the iris was cloudy; atropine was instilled and urotropine, 15 grains every three hours, was ordered. The aqueous became very turbid during the day. On the sixth day the infiltration of the section and the exudation in the anterior chamber had increased, but the purulent discharge and the swelling of the lids had diminished; 1 c.cm. of mixed catarrhal vaccine was injected, pneumococci and staphylococci having been found in the discharge. The intensity of the inflammation subsided from the sixth day, and on the eleventh day the eye was free from swelling and chemosis, but a deep exudate and ciliary congestion remained. Under the influence of hyoscine, etc., the pupil kept moderately dilated, though blocked by the deep inflammatory exudate; during the fifth week, however, contraction of the exudate began and the pupil became gradually drawn up. Some slight congestion persisted during the next two months, but the iris crypts were clear and corneal deposits were absent. Four months after the operation the eye was quiet, the ocular tension subnormal, the iris bombé, and the pupil drawn up and blocked. The projection remained good. An iridotomy after Ziegler's method was performed five months after the extraction and a wide, black pupil was made. The immediate visual result, however, was poor, since there was a considerable amount of opacity in the vitreous; this rapidly cleared after injections of mercury cyanide, and three months later the corrected vision was 6/12.

I have no hesitation in attributing this rather remarkable abortion of panophthalmitis and recovery of the eye very largely to the thorough use of eye baths of magnesium sulphate lotion. This form of treatment for purulent inflammations of the conjunctiva, cornea, and opened eyeball was introduced at the Madras Ophthalmic Hospital some eight years ago, and it has always been found of the greatest use in such cases. Although some surgeons stated, at the meeting of the Ophthalmological Section of the British Medical Association last year, that they had used it with benefit in the treatment of ulcers of the cornea, its great value as a remedy for septic conditions of the conjunctiva, cornea, and opened globe does not appear to be as widely known as it deserves to be. Its action in gonorrhoeal ophthalmia is especially striking. One of the chief dangers in the latter disease, as we all know, is ulceration of the cornea; this is greatly favoured by the intense chemosis or brawny oedema of the bulbar conjunctiva; the magnesium sulphate lotion appears to exercise a powerful osmotic action through the inflamed membrane, and its use is almost always followed by a very marked reduction in the chemosis and by the restoration of a healthy circulation in the conjunctiva.

Since using this treatment in combination with urotropine and vaccines, I have seen no eye lost from gonorrhoeal ophthalmia which had not reached a hopeless condition of corneal ulceration before seeking advice. Major Wright, the present superintendent of the Madras Ophthalmic Hospital, states in the annual report of the institution for the year 1920 that, using this treatment, not a single eye was lost from gonorrhoeal ophthalmia in the course of the year. It is, of course, essential that the lotion should be thoroughly applied, and to ensure this the eye bath should be used with the patient in the reclining position, and he should be instructed to keep opening and shutting his eye in order to maintain the

circulation of the fluid in the recesses of the conjunctival sac. Each application should last for at least five minutes, and should be repeated within two hours in bad cases. The administration of urotropine is a valuable adjuvant, as this is excreted in the tears and acts as a mild disinfectant.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MENINGITIS DUE TO PFEIFFER'S BACILLUS.

E. S., female, aged 7 months, was admitted to the Derbyshire Royal Infirmary on March 13th. The history was that the child had been ill for seven days with what seemed at first to be an ordinary cold. On the third day of the illness a red pin-point rash came out on the chest and back, and the child began to vomit. The rash disappeared quickly, but vomiting persisted, and the child began to have attacks of screaming.

On admission the temperature was 102° F. and the pulse uncountable; the child looked very ill, was fretful and restless; the head was markedly retracted; lifting the head off the pillow made the child scream; the fontanelle was bulging; the pupils reacted normally; there was no ptosis or strabismus; abdominal reflexes active; knee-jerks normal; no Kernig's sign; Babinski doubtful. The child had a very harsh and troublesome cough; breath sounds were harsh, and there were moist sounds all over both lungs.

Lumbar puncture showed the cerebro-spinal fluid to be under great pressure and that it was purulent. The cells were mostly polymorphonuclear, and a Gram-negative bacillus was also seen. Some cerebro-spinal fluid was sent to the county laboratory for culture.

The temperature ranged from 102° to 103° F., and the child died twenty-one days after admission to hospital.

The bacteriological report stated that cultures were obtained on human blood agar, ox serum, potato, egg, and plain agar, and subcultures on human blood agar. The bacillus showed a great variety of form—cocco-bacillary, bacillary, strepto-bacillary, and club-shaped forms. No growth was obtained on any of the above media anaerobically. The organism from cultural and microscopic appearances was proved to be the *B. influenzae* of Pfeiffer.

I am indebted to Dr. Barber, senior physician to the hospital, for permission to publish this case.

R. L. MANSON, M.B., Ch.B.Aberd.,
Late House-Physician, Derbyshire Royal Infirmary.

THE CREOSOTE TREATMENT OF PNEUMONIA.

IN the JOURNAL of June 10th (p. 940) Dr. F. C. McCombie relates his experience of the treatment of lobar pneumonia by potassium iodide and creosote, and gives results in a large number of cases. The slightly diminished percentage (2·2) of deaths during the eight months' trial of this treatment (with considerably fewer cases than in the previous year) was not an encouraging result, and does not support the claim for its specificity. My own experience with this treatment during the influenza pandemic of 1918–19 was equally discouraging, for though occasionally it seemed to do good it was by no means reliable, and I concluded that very little creosote is absorbed by the gastro-intestinal mucosa, and even that little must pass through the portal circulation before reaching the heart and lungs.

I have since adopted another and, I believe, more efficacious method of using creosote—namely, by inunction into the axilla. It is a highly vascular and absorptive part, and numerous veins, venules, and lymph ducts pass beneath the thin integument at a point close to the thoracic duct and large veins emptying directly into the right heart.

The mode of administration is very simple, consisting of the rubbing into either or both armpits of about 1 drachm of a creosote ointment about every four hours. I usually prescribe the ung. creosoti B.P.C., 33 per cent. creosote for adults and 25 per cent. for children. As the ointment has a tendency to chafe the skin it is well to use the right and left axillae alternately. The arm on the side treated should be brought across the chest to ensure absorption.

I have had very gratifying results with this method of treatment in both lobar and lobular pneumonia. When the case is seen early it virtually aborts the attack. Even when the disease is established the results are, in uncomplicated cases, remarkable. Usually the temperature falls to or below normal within twenty-four hours, the breathing becomes slower and easier, and toxic manifestations disappear. The usual physical signs are still to be found for several days after commencing treatment, but resolution begins earlier, and the affected lung clears up within a week.

I regret I am unable to publish particulars of cases treated during the past three years, but without making extravagant claims for this method I can say that it has rarely failed in my hands.

London, N.W. W. A. M. SWAN.

ANTIMONY IN YAWS.

I HAVE read with great interest Dr. Cawston's description in the BRITISH MEDICAL JOURNAL of February 18th (p. 266) of cases of syphilis successfully treated by antimony, and, it being one of my duties in this station to inject intravenously some 7,000 or 8,000 cases per annum of acute and so-called tertiary yaws, I was at once struck by the immense reduction of expense that might be effected if such a cheap drug as tartar emetic could be substituted for galyl and novarsenobillon, the two preparations that I have been using for the last twelve months. I accordingly took a few ordinary adult cases of acute yaws, for practical purposes exactly like Figs. 89 and 90 in Manson's *Tropical Diseases*, and gave them intravenously 1 grain of tartar emetic daily, no local applications being used; this was continued for from eight to ten days, one patient complaining of slight headache and nausea on the seventh, eighth, and ninth days; no amelioration whatever was noted; in fact, my assistant considered the fetor to be slightly increased. The patients, accustomed to see their friends cured within three days by one injection of galyl or novarsenobillon, became restive and had all insisted upon their discharge by the tenth day. No cases of (so-called) tertiary yaws were tried with the antimony treatment, the presumption being that if the very curable acute yaws was not relieved this very much more resistant form could not be benefited.

This investigation, though incomplete, is, I think, of interest, and I hope that Dr. Cawston may have an opportunity of also investigating the action of antimony in yaws in South Africa, where I have seen (in the Western Transvaal) many hundreds of acute cases of yaws and a corresponding number of ulcerations, periostitis, etc., following. Since 1891, however, I have noticed myself, and have heard from others, that the number of cases has greatly diminished.

I wish to thank Dr. Gilks (principal medical officer of this colony's medical service) for permission to publish this note, and also to subassistant surgeon Wilayat Shah for assisting in conducting the investigation.

Fort Hall, British East Africa. F. T. AUDEN, M.D.Edin.

ACUTE TORSION OF A HYDROSALPINX.

THE following case appears to be one of such rarity that its publication seems justified.

The patient, a female student, aged 19, was admitted to the Hospital of SS. John and Elizabeth on May 3rd, 1922. The history was that at the age of 7 she had an attack of pain in the right iliac fossa, the condition being diagnosed as appendicitis; she recovered without operation. Apart from this she had always enjoyed excellent health until August, 1921, when one morning at about 7 o'clock, before getting up, she had a sudden severe attack of spasmodic pain localized in the right iliac fossa. She had slight nausea but did not vomit; the bowels had been quite regular. From this attack she recovered in a day or two. From January to April, 1922, however, similar attacks recurred, becoming more severe and of longer duration; the bowels were quite normal, the menses unaltered, and micturition unaffected.

On May 2nd the patient was obliged to go to bed on account of an exacerbation of the previous symptoms, which took place at 10 a.m.; this attack, however, was far more severe than any of the previous ones. When admitted, on May 3rd, the temperature was 98.4° F., the pulse 80, and respirations 20. The patient's general condition was good. The tongue was slightly furred. The abdomen moved well with respiration; it was not rigid, but there was some increased resistance deep in the right iliac fossa, as well as fairly marked tenderness. The pelvis was not examined.

On May 4th the temperature had risen to 100.8 at 6 a.m.; the pulse was 100, and the respirations 23; tenderness was very marked in the right iliac fossa. Under general anaesthesia a gridiron incision was made, and on opening the

abdomen the appendix was found to be very small; there was no evidence of recent inflammation. Further examination revealed a cystic tumour 2½ in. by 2 in. by 1 in. resting on the anterior surface of the uterus, which was retroverted. The "cyst" had become twisted on its pedicle three times; it was cyanotic, and on closer inspection was seen to be a hydrosalpinx which had undergone acute torsion; the fimbriae could just be made out, the abdominal ostium being closed by many adhesions. Salpingectomy was performed. The other pelvic organs were normal, and the abdomen was closed in layers.

The hydrosalpinx contained blood-stained fluid, and microscopical examination showed some fibrosis and extravasated blood into the tissues of an otherwise normal Fallopian tube. Except for some slight pleural effusion, possibly due to an infarct, the patient made a good recovery.

For permission to publish this case I am indebted to Mr. G. A. Ewart, surgeon to the hospital, under whose care the patient was admitted.

F. JOSELIN JAUCH, M.R.C.S.Eng., L.R.C.P.Lond.,
Late Resident Medical Officer, Hospital of SS. John and Elizabeth.

Reports of Societies.

COMPARATIVE ANATOMY OF THE ACCESSORY SEX GLANDS.

A MEETING of the Section of Urology of the Royal Society of Medicine was held at the house of the Royal Society of Medicine on June 29th, with the President, Sir THOMAS HORDER, in the chair. Sir THOMAS HORDER gave a summary of the findings of the special committee appointed to report on evidence submitted at previous meetings of the Section on the subject of renal function tests. This résumé, he announced, would be published in the *Proceedings* of the Society.

Mr. KENNETH WALKER then read a paper on the comparative anatomy of the accessory sexual glands. In opening his subject Mr. Kenneth Walker said that he had embarked on this expedition into comparative anatomy with a definite object in view—namely, that of seeing whether comparative anatomy would throw any light on the subject of the function of the accessory sexual glands. Our ignorance of the physiology of reproduction was profound. What was the true function of the prostate? All that we knew was that the prostate provided a secretion which supplied a food and a favourable environment to spermatozoa. Spermatozoa remained active in saline containing prostatic secretion for a period of from seven to ten times longer than when in normal saline alone. With regard to the seminal vesicles we were in still greater ignorance. All that we really knew was that the term "seminal vesicle," in so far as it signified a sac in which semen could be stored, was a misnomer. The vesicles certainly took a more active part in reproduction than had previously been supposed, and contributed a secretion which although not essential was nevertheless important to reproduction. The experiments of Walker of Baltimore and of Steinach had shown that excision of the prostate and the vesicles had no effect on the sexual vigour of an animal. A male rat that had been subjected to excision was observed to indulge in coitus eighty times within the course of an hour on being allowed to return to the females. The rat was, however, undoubtedly sterile.

The lecturer said that he did not intend to discuss the accessory sexual glands of the lower members of the animal kingdom, such as fish, insects, and reptiles. It was, however, interesting to note that the accessory glands were well represented amongst fish by the cloacal glands. After emission of the sperm the cloacal glands evacuated a thick viscous material which provided for the delicate sperm a protective envelope. Here was foreshadowed the function of the prostate, which, inasmuch as it was developed from the cloaca, might be regarded as the analogue of the cloacal glands.

A series of drawings of the accessory sexual glands of selected animals was then shown on the epidiascope. The lecturer pointed out that in the ornithorhynchus both the prostate and the seminal vesicles were absent. The epididymis, on the other hand, was very highly developed, and might possibly discharge some of the functions of the absent glands. Amongst the marsupials could be seen the beginnings of a prostate. The long uro-genital sinus was definitely thickened in the kangaroo, and microscopical examination of its wall showed the existence of two coats—an inner glandular and an outer muscular. In the specimen of the wombat which the lecturer had recently dissected this was particularly well marked. Drawings were then shown which demonstrated the enormous development of the prostate and more especially of the vesicles amongst rodents. The greatest development of all would seem to be found in the case of the viscacha, a guinea-pig-like rodent found on the Argentine pampas. Here the vesicles by their size overshadowed the whole of the genito-urinary system and were suspended on mesenteries of their own.

The point of interest in the rhinoceros was the great similarity in structure between the prostate and the vesicles, both being solid multilobulated glands with no obvious line of separation between the two. In the rhinoceros, and still more in the case of the Red River hog, Cowper's glands reached an enormous size. What was their function? Their secretion had been said to neutralize and sweep out any urine remaining in the urethra before coitus, but surely such high development implied the existence of some more important function than this. The chief point of interest amongst antelope and deer was the presence of a very highly developed uterus masculinus. In the aard-vark (a species of wild pig living in South Africa) this structure was so large that it would almost appear to have some functional value. The elephant and the zebra were both of interest on account of the presence of well-marked ampullae to the vasa deferentia. A section of this ampulla in the zebra laid bare a structure that very much resembled the section of a seminal vesicle. This latter structure in the case of the zebra was a simple thin-walled sac, so that it would appear that the highly developed ampulla, so rich in glands, was performing in this animal the function normally discharged by the vesicle. Oppel's observation was of some interest in this connexion. Oppel had noted a relationship between the presence of an ampulla and the time taken in coitus. Those animals provided with a well-marked ampulla of the vas, like the horse, the ram, and the bull, had a very short period of coitus, whereas animals like the dog, the cat, and the pig, who had no ampulla in which semen could be stored ready for ejaculation, occupied a long time in the sexual act.

In conclusion the lecturer drew certain conclusions from the specimens shown on the screen. The first point worthy of note was the very marked variations that occurred in the degree of development of the accessory sex glands in different members of the animal kingdom. Moreover, it would appear that there was considerable overlapping in function between the prostate and the vesicles. This was suggested not only by similarity of structure but also by the fact that, broadly speaking, where the prostate was highly developed the vesicles were often rudimentary, and vice versa. This observation, which the lecturer for a short time had flattered himself by imagining to be original, was actually an observation of John Hunter's. Thirdly, it would appear that Cowper's glands, which in man were of such trifling importance, in certain animals performed a very important but unknown function. Finally, a study of comparative anatomy fully justified the inclusion of the epididymis and the ampulla of the vas amongst the accessory sexual glands.

Sir THOMAS HORDER, after congratulating the lecturer on what he considered to be a very original paper, declared the matter open to discussion.

Mr. RAFE THOMSON said that he considered the common explanation given of the function of Cowper's glands absolutely inadequate. There was very little urine left in the urethra and it was absurd to suppose that Cowper's glands were there simply to neutralize this moisture. He did not entirely agree with Mr. Kenneth Walker's views of the function of the verumontanum, which he (the speaker) believed to act merely as a mechanical means of preventing semen from passing back into the bladder during coitus. Finally, had Mr. Kenneth Walker noticed any relation between the size of the accessory sex glands and the size of the litter in different animals?

Sir JOHN THOMSON WALKER, after congratulating Mr. Kenneth Walker, said that he was somewhat doubtful of the significance of George Walker of Baltimore's excision experiments. But, after all, these experiments were repeated whenever a prostatectomy was performed in the human subject. It was well known that prostatectomy had no effect on virility, but it probably sterilized the patient. He had seen no case in which a patient had produced children after submitting to prostatectomy, and would be interested

to hear if any other member of the Section could cite such a case.

Mr. FRANK KIDD remarked that the sexual act was a very complicated one, and that he had always considered the chief purpose of the secondary sexual secretions to be that of lubrication. It was probable that some of the secretions might have the effect of coagulating others.

Mr. SWIFT JOLY said that he had records of a man who had produced children after prostatectomy. Nobody, of course, could exclude the possibility that another person had sired his family, but against this view was the fact that the children greatly resembled their supposed parent.

Mr. KENNETH WALKER replied to the various points raised in the discussion.

THE EFFECT OF LIGHT ON RICKETS.

DR. ALFRED F. HESS of New York lectured before the Royal Society of Medicine on July 7th on the subject of rickets, particularly from the point of view of light as an agent in its prevention and cure.

Dr. Hess admitted that no absolute deductions could be made as to the effect of light upon the incidence of rickets until certain questions relating to diet and diet deficiency had been solved, but the fact that breast milk failed to protect against rickets showed that food was not the controlling factor in the situation. He believed that one-half the breast-fed infants of the city poor showed some signs of rickets in the spring of the year, even when the mothers were well nourished and on varied diet. Breast milk furnished only an uncertain factor of safety, and the additional factor of protection needed was light, the supply of which, in modern cities, was far less adequate and normal than the supply of milk. One of the significant things about rickets was that it had a seasonal incidence. It made its appearance in the winter, reached its maximum at the beginning of spring, and disappeared in the summer. The infants in the New York institution with which he was connected showed practically no rickets in July. It was not enough even to speak of seasonal incidence, for the incidence of rickets changed markedly month by month. There was a great deal more rickets in January than in December, and still more in February and in March. It was worthy of note in this connexion that the ultra-violet energy in sunlight was very low during the first three months of the year. It was more depressed proportionately to its summer level than the blue-violet light, the ordinary visible light (the yellow rays), and the heat radiation from the sun during the same period, and it was lower in the spring than in the corresponding months of the autumn. Yet again there was a seasonal tide in the blood-phosphate content of infants. This was lower in January than in December, and lower in the two ensuing months than in January, beginning to go up in April, reaching its normal level at midsummer, and ebbing again with the approach of winter.

The lecturer detailed some experiments with light in the treatment of rickets, including full sunlight, the light of the carbon arc, which had a band spectrum, and the ultra-violet rays of the mercury vapour quartz lamp, which had a line spectrum. He had also tried x rays, but he had found them unavailing either to cure rickets or to produce it in animals, although in massive doses they produced a marked atrophy in the marrow. He had made some experiments also to determine which part of the spectrum was most useful from the point of view of the cure or prevention of rickets, and the result was to show that a certain special glass filter which allowed ultra-violet rays of about 290 $\mu\mu$ wave-length to pass gave absolute protection from rickets, even when the doses given were quite small, whereas rays of longer wave-length, up to the border of the visible spectrum, were less effective and certain. There were three factors which influenced the result. The first was growth: if an animal was growing rapidly it developed rickets much more readily than if it was growing slowly, and if growth were stopped altogether rickets might heal spontaneously. The second was a reciprocal action between the amount of phosphorus in the diet and the amount of light available. The third was pigment, which might prevent the therapeutic or prophylactic action of the light altogether. He had subjected white rats and black rats of corresponding age, all of them on some predisposing diet, to the radiations from the mercury vapour lamp, and he found, after a good deal of experiment, that at a certain regulated dosage all the white rats were protected from rickets and all the black rats developed rickets. It was evident that in the case of the black rats the pigment of the skin and hair prevented the action of the actinic rays. The same thing happened in the case of negro infants, who, in a temperate climate, were very susceptible to rickets. In New York the milk for the negro babies was supplied from the same dairies as the milk for the white children, yet the negroes developed rickets out of all proportion to the others. The negro child evidently needed the additional sunlight which was available in the West Indies, where rickets never appeared. It was also found on treating children by means of light that if the extremities were covered by a white cotton material the radiations were still effective, at least to some extent, whereas a black cotton material from the same loom withheld their action. The effect of the light was systemic and not local. If a rachitic infant were treated by exposure to sunlight, and one wrist was covered with an opaque material while the other wrist was bare, a radiograph taken a month later would show that the process of healing had taken place in both wrists alike.

Sir WILLIAM BAYLISS, in proposing a vote of thanks to Dr. Hess, said that what interested him in the lecture was the evidence which it afforded that the effect of light was to produce a chemical substance; the effect could not be purely physical. It was also perfectly clear that there were several factors involved in the prevention and cure of rickets, but that none of them alone, without light, was entirely effective. That seemed to negative the theory that the effect of light was to produce a synthesis of vitamin A, for no amount of vitamin A, according to Dr. Hess, was effective in rickets prevention without light.

Dr. HESS, in a few words of acknowledgement, said that in the United States the work which British investigators had carried out on rickets, from that of Glisson in the seventeenth century to that of Mellanby and others at the present time, was fully appreciated. There were now two ways of curing or preventing rickets. One was by means of cod-liver oil, which was quite as specific for rickets as mercury for syphilis or quinine for malaria, and the other was plentiful light. With these two resources it should be possible to eradicate rickets from the child population of British and American cities.

Reviews.

OPHTHALMOLOGY IN GENERAL PRACTICE.

THOSE who are engaged in general practice, especially in the more remote parts of the country, will be grateful to Mr. MALCOLM HEPBURN for his little book on the *Ophthalmology of General Practice*.[1] The author, at the outset of his career, was engaged in a busy general practice and so is thoroughly conversant with the difficulties which eye diseases present to the general practitioner; he has succeeded admirably in his aim of showing the family doctor what cases he can safely treat and in what cases it may be advisable to seek more expert advice. In large cities a family doctor can safely say that he makes no attempt to treat serious cases of ophthalmic disease, but it is far otherwise in a mining village or country hamlet, and those whose lot is cast in such places must know something about this subject. This book is just what he needs; it is pleasantly written, composed in simple language, and the mathematical formulae, which form so conspicuous a part of many of the textbooks on ophthalmology, are conspicuous by their absence.

The first four chapters deal with the examination of the eye, urgent cases in general practice, drugs, and operations; the succeeding chapters describe the various external diseases, injuries, fundus conditions, squint and errors of refraction and eyestrain; an index completes the work. In the chapter on operations the good advice is given that the general practitioner should avoid all intraocular operations, but the principles underlying their performance in the more urgent cases, such as excision of prolapsed iris and cases of increased tension from acute primary or secondary glaucoma, are outlined, while the operations for excision of the eye and the operative treatment of chalazion are described; the two last named are operations which the general practitioner may be called upon to perform. The chapters on diseases describe briefly but adequately the conditions met with; the illustrations are

[1] *The Ophthalmology of General Practice.* By Malcolm Hepburn, M.D.Lond., F.R.C.S.Eng. London and New York: Cassell and Co., Ltd. 1922. (Demy 8vo, pp. xi + 184; 9 figures, 8 plates. 12s. 6d. net.)

excellent, while the remarks on treatment are sound and to the point; much excellent advice is given in the chapters on squint and errors of refraction. We are convinced that few practitioners can afford to be without this work.

MEDICAL PRACTICE IN THE TROPICS.

ON February 25th last (p. 315) we announced the publication of the first volume of the *Practice of Medicine in the Tropics*,[2] edited by Colonel W. BYAM and Major R. G. ARCHIBALD. We then quoted from the preface a statement to the effect that the book was intended to serve students in English-speaking countries as an introduction to tropical medicine, pointed out that the scope of the work was not strictly limited to tropical diseases, and added that the standard set in the first volume was high. The second volume, which is now before us, opens with chapters on differential diagnosis and on certain bacterial diseases—enteric fevers, undulant fever, plague, cerebro-spinal fever, cholera, bacillary dysentery, leprosy, and tubercle. Following this comes a section on spirochaetal diseases—infectious jaundice, yellow fever, relapsing fevers, syphilis, yaws, bronchial spirochaetosis, and rat-bite fever. The next section deals with protozoal diseases, including those due to amoebae, trypanosomes, the leishmania parasites, and the intestinal flagellates of man; it deals also with coccidosis, malaria, and balantidiasis. The volume closes with an appendix on syphilis, a list of authorities, and a general index. A very large field, it will thus be seen, is covered, and many of the diseases, such as malaria, dysentery, leishmaniasis, etc., are of the greatest importance from a tropical point of view.

We may specially note the chapters on differential diagnosis by Colonel Byam, one of the editors. The importance of the subject is very evident to anyone dealing largely with tropical disease. The inexperienced are apt to forget that ordinary cosmopolitan maladies, such as syphilis and tubercle, are quite as common, if not more common, in the tropics than at home; mistakes are very frequently made on this account. There is also an obsession amongst people at home that when an individual who has been abroad becomes ill he must be suffering from some tropical malady, and common conditions such as tubercle, ulcerative endocarditis, and so on, never seem to enter their heads. This, we are told, has been specially noticeable since the war, and unfortunate individuals have been dosed with quinine, in some instances for as long as two years, for supposed malaria when they were suffering from some ordinary home complaint. Just in the same way any passage of blood and mucus is at once diagnosed as dysentery, though the real cause may be, and often is, malignant disease of the bowel, tubercle, or syphilis. Colonel Byam's interesting chapters and carefully selected charts should do much to counteract this tendency and lead to more careful general examinations being made on all patients from abroad—a Wassermann reaction, for example, should never be omitted.

The enteric fevers are well dealt with by Colonels Harvey and Tull Walsh, as is also undulant fever by Sir P. W. Bassett-Smith. Victor Heiser writes on bubonic plague, and Wu Lien Teh (G. L. Tuck) on the pneumonic type. The dysenteries, probably the most important group of diseases in the tropics, are well described—bacillary dysentery by Dr. Manson-Bahr and Colonel Perry, in collaboration with the late Sir Patrick Manson, and amoebic by Mr. Clifford Dobell and Dr. G. C. Low. The coloured plates in the latter article are the best we have seen and are the work of Mr. E. Schwarz-Lemoir.

Trypanosomiasis is well dealt with also, Dr. Blacklock and Professor Yorke being responsible for the text. Major Archibald, one of the editors, takes leishmaniasis. Malaria, the most important tropical disease after dysentery, is treated by Colonels James and Christophers and Drs. J. D. Thomson, Woodcock, and Parsons. The space (ten chapters) devoted to this seems a little out of proportion to that given to some of the other subjects. Still there is a great deal to say, and a perusal of the chapters does not reveal much that is redundant. Dr. Parsons condenses the consideration of prophylaxis admirably into a short chapter. The plates of the malarial parasites, illustrating the chapters by J. D. Thomson and H. M. Woodcock, are as nearly perfect as anything can be. Blackwater fever, we note, is placed, and we believe rightly, under malaria and not given a special heading of its own.

When we come to consider the work as a whole and ask what are the points in favour and against it, it is pleasant to have to say that those in favour completely outweigh any faults that may be noted. The whole tone of the work is excellent, owing in large measure to the care with which the editors have selected the writers of the different chapters. Everywhere there is evidence of careful and accurate work in bringing together the details necessary for the adequate description of each disease. We have already mentioned the excellence of some of its illustrations; all are good and will greatly increase the usefulness of the work.

The second volume, then, is quite up to the standard of the first, and might even be described as better. Adverse criticism of the work as a whole is confined to the point that it is too big for a general textbook; as a work of reference it will hold its own anywhere, and, as was said when reviewing the first volume, it should become a standard work in all English-speaking countries. We look forward to the third and final volume, which is now, we believe, in the press.

NUTRITION AND NURTURE.

IN *Nutrition and Growth in Children*[3] Dr. EMERSON of Boston discusses the problem of the ill-nourished child of school age, the child who is under weight, and yet not obviously ill nor suffering from any latent disease. His book is the fruit of careful thought and wide experience, and is written in a moderate and convincing way. He is satisfied that poverty, insufficient and badly cooked food, hereditary weakness, tubercle, and syphilis will not supply the clue to malnutrition in young children; it is, he holds, a question of over-fatigue, irregular and hurried meals, excessive use of tea and coffee and sweets, lack of fresh air, and faulty home control. The causes are thus complex and social, and deep-rooted in the whole environment of the child; they can be grappled with and removed only, he contends, by a thorough review and reversal of that environment. The problem of treatment is attacked by the "nutrition class," which consists of not more than twenty children, with their mothers, a lady voluntary worker, and the physician. Each child has previously been carefully studied; its daily programme of work and play and rest mapped out; the approximate caloric value of its daily diet calculated and the hygienic condition of the home looked into; finally, on a large chart, the actual weight of the child in relation to the average weight for the height is marked, and followed at the weekly sessions of the class. These charts are hung on the wall and the children placed in order of merit according to the amount of the weekly gain. By this ingenious use of the influence of competition and publicity, the interest and zeal of both parents and children are secured, and the various causes of malnutrition in the children are impressed upon the minds of all the mothers present. The plan is thus not only an elaborate investigation of the individual case but also one of combined education in all that concerns the diet and hygiene of young children. Dr. Emerson has little or no place for drugs among his remedial measures; these generally include the addition of extra food in the form of milk and wholesome cereal, leisurely and regular meals, the exclusion of unsuitable foods, and insistence on rest periods during the day. But sound as these measures are, they are perhaps less important than the way they are inculcated and enforced. A wise régime is indicated in such a way that moral compulsion is brought to bear upon the parent of the child. The book gives a full and clear account of the whole system of investigation and instruction, and is illustrated with many photographs and weight charts of the children; it describes a most interesting social experiment, and one that reflects credit upon the patience, enthusiasm, and wisdom of its author.

In a little book, whose title may be translated "The Conservation of Infant Life,"[4] Dr. G. VARIOT has collected and reprinted a series of addresses given at the Institute of Puériculture, which was founded in 1911 by the city of Paris in connexion with one of its infant hospitals. The scheme had its origin in the brain of Dr. Variot, and was a development of his Goutte de Lait de Belleville, which began in 1892, and was the model for many similar institutions in various French towns. In these dispensaries two novel principles were introduced: the provision of sound and suitably modified

[2] *The Practice of Medicine in the Tropics*. By many authorities. Edited by W. Byam, O.B.E., and R. G. Archibald, D.S.O. Vol. ii. London: H. Frowde, and Hodder and Stoughton. 1922. (Roy. 8vo, pp. xxx + 858-1682; 246 figures, 31 plates. £4 4s.)

[3] *Nutrition and Growth in Children*. By William R. P. Emerson, A.B., M.D. New York and London: D. Appleton and Co. 1922. (Demy 8vo, pp. xxix + 342; frontispiece and 44 illustrations. 10s. 6d. net.)

[4] *Comment Sauvegarder les Bébés. Enseignement de l'Hygiène Infantile, donné à l'Institut de Puériculture et à la Goutte de Lait de Belleville*. Par le Dr. G. Variot. Paris: Octave Doin. 1922. (4½×7½; pp. 400. Fr.10.)

milk, and careful instruction in the hygiene and care of infants. The Institute of Puériculture was the extension of this idea of education, and consisted in regular courses of infant hygiene and dietetics given to ladies, voluntary workers, and nurses, and even to medical men. The lead thus given is now being rapidly and widely followed. Funds presented by the American Red Cross to the Faculty of Medicine of Paris have enabled it to found a school of puériculture in connexion with its professorship of infant hygiene and medicine; and through all the departments of France institutes of puériculture have been created by legislative enactment. The French Red Cross also has now included in its programme courses of instruction in infant hygiene. Dr. Variot thus sees the prospects of a great expansion of this field of preventive medicine in which he was one of the earliest and most successful pioneers, though by the limit of age he is about to sever his official connexion with it. These popular addresses, most of them given during and subsequent to the war, at a time when the urgency of saving infant life was apparent to all, appear very timeously in their present form. They are bound to exercise an important influence upon the policy and programme of these multiplying centres throughout France, where both the mothers themselves and voluntary workers will receive instruction in all that pertains to the health and healthy nurture of young infants.

FOOD VALUES.

THE first edition of *Food Values*[5] by Miss M. MCKILLOP was published in 1916, and a second edition has now appeared. The book was originally written during the war with the purpose of providing those responsible for catering with information on the principles of dietetics, and with the facts about food composition necessary for the application of the principles. The writer's object was to provide the necessary facts in a cheap and easily readable volume, free, as far as possible, from technical terms. The first four chapters contain a general account of the principles of nutrition; in the fifth chapter are thirty-five tables showing the composition and calorie value of all the commoner foodstuffs; the final two chapters explain how these tables are to be used in actual catering, and very clear examples are given showing how to calculate the calorie value of a cooked food from the raw materials it contains.

The whole book is written in simple language intelligible to those with no special knowledge of physiology or of dietetics. This makes it admirably suited for providing those engaged in catering for families or for larger units with a working knowledge of the principles of dietetics.

Medical men interested in dietetics will find the tables in the book extremely useful, for they give in a very convenient form information which usually has to be extracted from large and expensive volumes. The only point that we feel is open to criticism is the manner in which the book has been revised for the second edition now before us; the text as a whole has not been rewritten, but notes on the various chapters are given in an appendix. The work done on vitamins since 1916 is thus dealt with in a ten-page note, and the new knowledge acquired during the war concerning the minimal diet on which it is possible to maintain health has been dealt with in a similar manner. The new knowledge in both of these two fields is of such fundamental importance for the whole subject of dietetics that it can scarcely be handled adequately in an appendix.

PRACTICAL PSYCHO-ANALYSIS.

DR. H. SOMERVILLE has written a small volume, *Practical Psycho-Analysis*,[6] which is designed to give the reader sufficient knowledge of its subject to enable him to commence an analysis. The author follows the teaching of Freud, but somewhat unnecessarily diverges from it in his usage of conventional terms. It is thus misleading to describe the "preconscious" as the seat of repressed experiences which can only be brought into consciousness indirectly, and to state that the mental processes included therein are concerned with the primary instincts and are largely of the nature of sexual wishes. Dr. Somerville suggests that it does not matter what terms are used so long as the reader knows in what sense the writer uses them; but it is surely better, when giving an elementary exposition of a particular school of thought, to define its technical terms as they are generally understood, as otherwise much confusion will arise. The volume is not intended to provide an account of the theoretical basis of psycho-analysis, but the author finds it necessary to explain its basic principles in order that the mechanism of the production of the neuroses may be made clear. It is very difficult, if not impossible, to present the theoretical aspect of psycho-analysis in a few short chapters, and though the author writes clearly in places, some of his explanations are confusing and may fail to convey any meaning. This is particularly the case in his treatment of *libido*, *affect*, and *desire*, much of which leaves the reader puzzled and far from clear in his mind as to the distinctive meanings of these terms.

On the whole the book contains more theory than would seem desirable in a small volume with definitely practical aims. It is true that all the chapters are freely illustrated by reference to actual dreams, but the practical information given as to the technique of psycho-analysis is scanty. Especially do we miss any reference to indications for psycho-analytic treatment. The author does not suggest what kind of cases are likely to benefit and what cases should be treated in other ways, and it is naturally in these respects that the practitioner will look for guidance.

THE LAKE OF GENEVA.

SIR FREDERICK TREVES would have his readers believe that he is a true lover of "the real country." In his new book *The Lake of Geneva*[7] he has a whole chapter to prove it, and writes of an idyllic country near Evian, of all gay places, that it is "little removed from that imagined land where shepherds played upon their pipes, where fauns and dryads gambolled in the glen;" but in truth we believe him to be more enamoured of the storied haunts of the past where he may sit him down "and tell sad stories of the death of kings," or in this instance counts, for that was the title borne by the rulers of Savoy, with which on the southern bank he is much concerned. It is a very picturesque strip of country, but looks to the north, and invalids and those who seek a mild winter climate rightly congregate on the northern shores, especially at Montreux, Vevey, and the towns near by, and at Lausanne. The discovery of this riviera is no new thing; its advantages were found out over a century ago. Byron, who with Shelley was nearly drowned in the lake, has an apostrophe to this beautiful sheet of water, in which, after mentioning other famous residents of the banks, he enumerates "Voltaire, Rousseau, our Gibbon, and de Staël." It was indeed soon after leaving the northern bank that Gibbon sighed as a lover but obeyed as a son, and jilted Mademoiselle Curchod, who afterwards became the wife of Necker and the mother of Madame de Staël. Among the copious and excellent illustrations Sir Frederick Treves has himself provided are photographs of the house at Crassier, where Mademoiselle Curchod's father was pastor, and of the chateau at Coppet, where Necker and his wife resided. Sir Frederick Treves shows himself a most agreeable guide to a beautiful countryside and we strongly recommend his book to our readers.

NOTES ON BOOKS.

SWITZERLAND used to be called by some of its most ardent English admirers the playground of Europe, and though the appellation was resented by some Swiss, the life-giving air of its mountain resorts will probably continue to be its chief claim on the affections of weary men and women in search of rest and health. But it also contains a number of mineral water stations, and to make these better known the Swiss Federal Railways (11b, Regent Street, London, S.W.1) have issued a pamphlet entitled *Swiss Watering Places*. It contains illustrated articles on nine watering places—Baden, Gurnigel, and Ragaz-Pfaeffers, all weakly mineralized waters; Passugg, Tarasp-Schuls-Vulpera, and Val Sinestra, weakly mineralized but containing some sodium bicarbonate; and St. Moritz, also a weakly mineralized water, but differing from the others in containing iron bicarbonate. The waters of the other two springs—Bex, in the Rhone Valley, and Rheinfelden, in the upper Rhine Valley—are saturated solutions of common salt, thus resembling the waters of Droitwich in this country. In the account of each watering place details are given with regard to the situation and climate of the place, its geology, the salts dissolved in the waters, their therapeutic action, and the indications and contraindications they afford.

[5] *Food Values. What they are and how to calculate them.* Margaret McKillop, M.B.E., M.A. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. Second edition. 1922. (Crown 8vo, pp. viii + 171. 3s. 6d. net.)

[6] *Practical Psycho-Analysis.* By H. Somerville, B.Sc., F.C.S., L.R.C.P., M.R.C.S. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. x + 142. 6s. net.)

[7] *The Lake of Geneva.* By Sir F. Treves, Bt., G.C.V.O., C.B., LL.D. London and New York: Cassell and Co., Ltd. 1922. (Roy. 8vo, pp. xii + 347; illustrated. 25s. net.)

BRITISH CONGRESS OF OBSTETRICS AND GYNAECOLOGY.

MEETING IN LIVERPOOL.

THE third British Congress of Obstetrics and Gynaecology was held at the Medical Institution, Liverpool, on June 30th and July 1st, 1922, under the presidency of Mr. HAROLD CLIFFORD (Manchester). The forenoon of June 30th was devoted to a discussion on the treatment of eclampsia and commenced with the reading of detailed reports regarding prognosis and treatment prepared by subcommittees representing the Royal Society of Medicine (Section of Obstetrics and Gynaecology), Edinburgh Obstetrical Society, Midland Obstetrical and Gynaecological Society, Royal Academy of Medicine in Ireland (Obstetric Section), North of England Obstetrical and Gynaecological Society, and the Birmingham Maternity Hospital respectively. In the afternoon visits were paid to the Royal Infirmary, the Hospital for Women, and the Stanley Hospital, to see operations by Professor Blair Bell, Dr. Gemmell, Dr. H. Leigh Murray, and Miss Frances Ivens. The annual dinner was held in the evening, with Mr. HAROLD CLIFFORD (President of the North of England Obstetrical and Gynaecological Society) in the chair, and Dr. J. G. Adami, Vice-Chancellor of the University of Liverpool, and Dr. J. Hill Abram President of the Liverpool Medical Institution, as chief guests. On July 1st Dr. BETHEL SOLOMONS presided at a pathological session, when a number of interesting specimens were exhibited and described.

DISCUSSION ON ECLAMPSIA.

After opening remarks by Mr. HAROLD CLIFFORD, President of the Congress, the chair was taken by Professor HENRY BRIGGS, President of the Section of Obstetrics and Gynaecology, Royal Society of Medicine.

LONDON COMMITTEE'S REPORT.

Dr. T. W. EDEN, in introducing the London report on the treatment of eclampsia, said:

This report deals with the whole of the cases of eclampsia admitted during the period of ten years 1911-21 at fifteen London hospitals. We have included in our analysis only those cases in which convulsions occurred, and we have endeavoured as far as possible to exclude cases of chronic renal disease complicated by uraemic fits in pregnant and parturient women.

During the selected period 547 cases of eclampsia were admitted to these hospitals, and of these 427 recovered and 120 died, the maternal mortality being therefore 22.1 per cent. The combined reports of the North of England, the Midland, the Edinburgh, and the London figures cover 1,640 cases, with a mortality of 23.66 per cent. It appeared to be a necessary preliminary to any exact study of the effects of treatment to devise a plan by which cases could be grouped as mild or severe, according to their gravity.

It being agreed that eclampsia is a disease which varies greatly in severity in different cases, if we are to compare the effects of different forms of treatment some such grouping is necessary, for if a particular treatment has been adopted in mild cases only, and another treatment in severe cases only, it is obvious that the results obtained in the two groups are in no way comparable. With this object in view we have examined the effects upon prognosis of the following phenomena: coma, the pulse rate, the temperature, the number of fits, the amount of albumin in the urine, the degree of oedema, and the blood pressure. The results of this examination are recorded in detail in our report.

From our study of these isolated symptoms we conclude that the following seven phenomena are to be regarded as signs of danger: coma, a pulse rate over 120, a temperature above 103° F., a number of fits greater than ten, a urine which becomes solid on boiling, the absence of oedema, a blood pressure above 200 mm. When a patient exhibited any two of the above phenomena the case has been grouped in our report as a severe one; when these phenomena were absent as a mild one.

Adopting this classification, and excluding 14 moribund cases, we have a total of 425 cases with a mean mortality of 16.2 per cent. If the cases are divided into mild and severe the figures are as follows: mild 264—mortality 6.4 per cent.; severe 161—mortality 32.4 per cent. The ratio of the mortality rate in mild and severe cases is therefore exactly 1 to 5. We regard this striking difference in the mortality rate in the two groups as a clear demonstration of the soundness of our basis of classification.

We next proceeded to examine the results of obstetric treatment. The cases fall into the following five groups:

1. *Natural delivery*—that is, spontaneous delivery without interference of any kind. Total 89; mean mortality 12.3 per cent. Mild 50—mortality 6 per cent.; severe 39—mortality 20.5 per cent.

2. *Induction of labour*, delivery thereafter being spontaneous. Total 83; mean mortality 9.6 per cent. Mild 59—mortality 5 1 per cent.; severe 24—mortality 20.8 per cent.

3. *Assisted delivery*. These are mostly cases of low forceps, with a small number in which version was performed. Total 151, of which 22 died; mean mortality 14.5 per cent. Mild 100—mortality 5 per cent.; severe 51—mortality 33.3 per cent.

4. *Caesarean section*. Of the total, 6 were vaginal operations; 5 recovered and one died. Total 88, of which 21 died; mean mortality, 23.8 per cent. Mild 51—mortality 9 8 per cent.; severe 37—mortality 43.2 per cent.

5. *Accouchement forcé*. (Nearly all cases of forcible manual dilatation of the cervix.) Total 14, of which 7 died; mean mortality 50 per cent. Mild 4—mortality 25 per cent.; severe 10—mortality 60 per cent.

In order to dissociate as far as possible the influence of the disease from the method of delivery, as factors in mortality, the results in the mild and severe cases may be compared.

The mean mortality in mild cases is 6.4 per cent., and in severe cases 32.4 per cent., a ratio of exactly 1 to 5. If the mild cases delivered by the three simpler methods (numbers 1 to 3) are put together and compared with the severe cases delivered by the same methods the mortality rates are 5.2 per cent. and 26.3 per cent. respectively—that is, the ratio of 1 to 5 is almost exactly maintained. If we compare in the same manner the cases delivered by Caesarean section we find that the mild cases showed a mortality of 9.8 per cent., the severe cases a mortality of 43.2 per cent., which also corresponds closely to the mean ratio of 1 to 5. The cases delivered by accouchement forcé are excluded, because the results are such as to condemn the use of this method under any circumstances. Hence it appears that cases which can be classified as severe may be expected to show a mortality rate five times greater than those classified as mild, no matter what method of delivery is adopted. It is also clear that the cases in which there was no obstetric interference, or in which simple methods only were adopted, show a much lower mortality than those delivered by Caesarean section.

Three conclusions may perhaps be drawn from this analysis of the results of obstetric treatment:

(*a*) That natural delivery or delivery by simple methods is attended by the smallest risk to the mother.

(*b*) That delivery by rapid and forcible dilatation of the cervix is bad treatment.

(*c*) From the evidence before us we concluded that Caesarean section impairs the patient's chances of recovery, whether the case be mild or severe.

One or two general observations are called for in regard to the medical treatment carried out in this series of cases.

It is clear that medical treatment has seldom been carried out upon any definite plan, and has also been, generally speaking, excessive. The patient has been subjected to a multiplicity of drugs, and to a succession of procedures such as venesection, saline transfusion, hot packs, and gastric and colonic lavage, which might be expected to reduce a parturient woman in good health almost to the point of death, and must have done serious harm to one suffering from a grave toxaemia.

An attempt has been made to glean from the records some information as to the value of medical treatment as a whole, and also as to the value of individual methods of treatment. For this purpose the various methods of medical treatment were grouped as follows: (*a*) Elimination (including purgatives, except croton oil, enemata, gastric and rectal lavage, rectal saline, etc.); (*b*) venesection; (*c*) intravenous saline; (*d*) morphine and other sedatives; (*e*) croton oil; (*f*) hot packs; (*g*) veratrone. In addition, starvation or strict limitation of food was frequently combined with other methods, but no details of food given are available.

We began by looking into the 120 cases in our series which died, and we found that in the large majority the treatment adopted ranged over three or more of the above groups. In only seven instances was simple treatment falling under one heading only adopted. It is impossible to avoid the conclusion that the majority of the fatal cases were overtreated, and that in a considerable number the excessive treatment must have been a contributory factor in bringing about the fatal results.

After some remarks on the causes of death in the fatal cases, Dr. Eden concluded by saying:

We regard the results set out in our report as being profoundly unsatisfactory and having, as we believe, cleared the ground by showing how much our methods have been at fault, we hope now to set out on the much more difficult task

of formulating better methods in their stead. From the data collected in our report we are not in a position to do so, but we intend, with the co-operation of our colleagues at the various hospitals in London, to test in a simple and comprehensive manner the application of one or more simple schemes of management over a series of consecutive cases. We hope to get a system of note-taking adopted which will facilitate our classification into mild and severe cases, because to this point we attach great importance, for in the case of a disease so variable as eclampsia comparisons are valueless unless we are sure that we are not attempting to compare entirely dissimilar things. It will, of course, take time, but if our colleagues in the North and Midlands would join us the necessary material would be quickly accumulated, and results of value might be reached without any considerable delay.

Northern and Midland Reports.

The reports of the subcommittees representing the Edinburgh Obstetrical Society, North of England Obstetrical and Gynaecological Society, and the Midland Obstetrical and Gynaecological Society were prepared on similar lines to those of the London report and on the whole pointed to the same conclusions.

The report from the Edinburgh Obstetrical Society, presented by Dr. H. S. Davidson, dealt with 148 cases, of which 37 died—a mortality of 25 per cent.

Professor Ewen Maclean read the report from the Midland Obstetrical and Gynaecological Society, based on 140 cases, the maternal mortality being 23.5 per cent. Analysis of treatment was impracticable owing to the widely scattered centres from which the cases were collected; but his committee was strongly of the opinion that medical treatment in the form of elimination, simple water diet, and natural delivery, assisted if necessary by low forceps extraction, gave a much lower mortality than induced labour or any of the forms of accouchement forcé or Caesarean action.

Dr. H. Leith Murray presented the report of the North of England Obstetrical and Gynaecological Society, comprising 804 cases from Leeds, Liverpool, Manchester, and Sheffield. The maternal mortality was 24.43 per cent. As regards the results of treatment the committee did not feel justified in making any statistical synopsis. They considered that the accumulated figures were capable of great misinterpretation and agreed that only those actually in charge in numbers of cases, and particularly those who had carried out a uniform line of treatment for the majority of cases under their care, were in a position to make useful recommendations. The figures showed, however, that medical measures, combined in some cases with mild obstetrical procedures, were being more generally adopted.

The Dublin Method.

Dr. Bethel Solomons read a paper on the results of the treatment of eclampsia by the Dublin method. The three maternity hospitals and various members of the profession in Dublin were circularized, and it was decided that the greatest value would be obtained by taking the intern statistics of the Rotunda Hospital as a working basis, as the treatment there is so fully supervised, and such reliance can be placed on its being carried out rigidly in every detail. The series comprised 204 cases from 1903 until 1921, and the method employed, with some slight exceptions, was uniform all through. He was especially enthusiastic about the treatment, for in the last two years of the mastership of Dr. Tweedy, which coincided with the first two years of his period as assistant master, there were 29 cases, many of a very serious nature, with no deaths. He specially dealt with the diagnosis of the disease, which rested on data as laid down by Dr. Tweedy (Tweedy and Wrench, *Practical Obstetrics*, p. 525).

The treatment must be meticulously carried out. The busy specialist summoned to the country may obtain results, life or death, having performed Caesarean section or induction of labour, and may then hurry back to his work; but surely he is not justified in this when the results obtained by the Tweedy treatment have been unsurpassed. The main points of the treatment are: (1) Starvation from everything except water. The food ingested and the toxic elements from the foetus require the same ferments in the blood to neutralize them; the foetal toxin takes some of the elements from the blood intended for the digestion of food, which leaves the latter with no ferment, and therefore the food acts as a toxin. The starvation should be continued for three days, after which, if there is no improvement, then, and not till then, should Caesarean section or induction be recommended. (2) Stomach lavage. (3) Bowel lavage. These are most important. The speaker emphasized the exact method of carrying out these manœuvres. (4) Morphine. The value of this drug is at present *sub judice*. (5) Injection of sodium bicarbonate solution under the breasts should be done in all but the mildest cases. (6) Close observation of the patient. This should be done if possible by a qualified doctor, or, failing him, by a senior student or nurse thoroughly trained in eclampsia. This care will avoid many deaths from drowning by mucus. Nothing must be given by mouth to the unconscious patient.

Dr. Solomons demonstrated that the less the number of fits the greater the chance of recovery, therefore fits must be controlled. The treatment suggested will control fits and allow time for the natural efforts of the body to split the toxins into some simpler product and thus render it innocuous.

With regard to mortality, in Dr. Tweedy's mastership the intern mortality rate was 8.82 per cent. in 68 cases, while if the extern results were included the rate fell to 8.0 per cent., and there were no deaths in the last 29 cases, showing the better results following improved technique. Dr. Jellett's percentage was 12.85 in 75 cases. Sir William Smyly and Dr. Tweedy jointly (during the war) had 33 cases with 9.09 per cent. mortality and Dr. Fitzgibbon has 33 cases with the same rate. The Coombe Hospital, which followed to some extent the Rotunda treatment, had 9 cases in four years with two deaths.

In conclusion, Dr. Solomons said there was no doubt that the death rate from eclampsia could be kept at a lower level by following closely the treatment suggested by Dr. Tweedy, especially by watching the patient as a cat would a mouse for any signs of interference with respiration by mucus. It was also beyond doubt that the practitioner must meet with some cases so saturated with this pseudo-acidosis that recovery was impossible, but the number of these would be greatly diminished were routine general examination insisted on, especially examination of the urine. The general practitioner required further education on this point.

General Discussion.

Dr. Herbert Spencer (London) said he thought the reporters were to be congratulated upon the enormous number of facts which they had set before the Congress. They had now very valuable material to consider in what had been reported upon this most important subject, which was one of the bugbears of the profession at the present time. A report that struck him very much was that from Dublin. He had only glanced at it, but the results were extremely interesting. He had always thought that Dr. Tweedy's method of treatment was one that should be adopted, and had himself used it for some years past with some modifications. Dr. Tweedy's method of treatment was on the right lines, but he would like to ask Dr. Solomons how many of the cases were said to be eclampsia although they did not have fits, simply because they were in a state of coma.

Dr. Lamond Lackie said he did not believe in using chloroform in eclampsia. In any toxic condition chloroform was a mistake. If an anaesthetic was needed he was quite certain that ether should be given. An anaesthetic was seldom required except in a few cases where fits came one after the other. The determining factor in producing the fits was of course high blood pressure and for the treatment of this he pinned his faith to veratrone. He was of opinion that 1 c.cm. was a dangerous dose and that not more than 1/2 c.cm. should be given. It was an extraordinary thing that in general medicine veratrone did not seem to have the same effect as in eclampsia. He had asked several physicians in Edinburgh to tell him their experience of veratrone in albuminuria, and with one accord they told him they got no result at all; in fact it almost seemed as if this drug, which was a strong nervous and cardiac depressant, had also a specific effect in the treatment of eclampsia. He did not like morphine, but it had its uses. He had found pilocarpine very useful in spite of its dangerous reputation, especially in cases where there was slight oedema or no oedema at all. Even in some cases where the oedema was marked he had found it act like a charm. He agreed that active obstetric treatment should only be employed when it was absolutely necessary to aid the forces of nature, and in the great majority of cases when the patient went into labour very little help was required.

Dr. J. W. Ballantyne (Edinburgh) said it was a very big and significant fact that although eclampsia was persistently resistant to curative treatment it was amazingly yielding to

preventive treatment. If sufficient time was available prevention was almost invariably successful. That was a very significant phenomenon. "Incurable but preventable" was a short description of the present position of eclampsia. Albuminuria was still the great distant danger signal; high blood pressure and epigastric pain were the near danger signals. Prevention was of the greatest value when called forth by the distant danger signal of albuminuria; it was of less value but still useful when called forth by the near signals of danger. In 1921, in connexion with the Edinburgh Royal Maternity Hospital, there were not more than 28 cases of eclampsia out of 2,700 women admitted. Rather more than 900, or about a third, of these women attended the ante-natal clinic or had treatment in the ante-natal beds, and of these 254 had albuminuria.

Only one of these patients developed eclampsia, and she had received no preventive treatment. She was the one patient who ignored the distant danger signal. He recollected the case well. He almost implored her to stay in, for her labour was due in a few days and matters were serious, but she obstinately determined to go home, and the best they were able to do was to counsel her to take nothing but milk and water and return the next day. She went home, had a full meal, and did not return to the ante-natal department the next day, but entered the general part of the hospital the following afternoon. She did not say that she had been at the ante-natal department, nor did she show the ticket she had received there. She was delivered by forceps, and during the night had two or three fits. Both she and her child did well, so that in a sense no damage was done. Still, she had eclampsia, and was the striking exception which in his opinion abundantly proved the rule that preventive measures prevented eclampsia.

He could speak also for the venereal diseases department. Notwithstanding the association of eclampsia with venereal disease, no case of eclampsia occurred in that department in 1921, although there were a number of albuminurics. This year there had been two cases, and neither had received ante natal treatment of any sort, either for venereal disease or albuminuria. One had a serious attack, the other a moderate one, and both recovered. Still, they were both capable of being prevented if they had been seen to.

Professor THOMAS WILSON (Birmingham) said that as far as he had been able to discover there was nothing new in the statistics which, after so much labour, had been brought before them that morning. The first remark he had to make had to do with the premonitory symptoms of eclampsia. Occasionally—very occasionally—there were no premonitory symptoms, but their experience in Birmingham at any rate was that in the immense majority of cases there were premonitory symptoms. The next point he wanted to make in view of the statistics that had been brought forward was this: a diagnosis of eclampsia without albuminuria was to be received with great distrust; he was very sceptical of regarding any such case as one of eclampsia in the absence of a *post-mortem* examination. It had been said that oedema was one of the important premonitory symptoms of eclampsia. In his experience high oedema was not very commonly found before eclampsia; usually the oedema was quite small in amount, often hardly determinable. There was another premonitory symptom of some importance which could be found if looked for: that was the increased diastase in the urine. When a patient began to pass a high quantity of diastase eclampsia was imminent. He looked upon severe epigastric pain and amblyopia, not as premonitory symptoms, but as symptoms of developed eclampsia—the disease was already present, and if a *post-mortem* examination was done at this time the liver, kidneys, and so forth would show the typical changes. The eliminative treatment was the one generally adopted in Birmingham, but he thought the hope in the future lay not in the treatment of eclampsia after it had fully developed, but, as Dr. Ballantyne had pointed out, in treating the albuminuria symptoms as soon as they arose. They ought to impress upon their students and fellow practitioners the immense importance of at once fastening on any suggestive symptoms and starting the treatment without any delay. Cases of albuminuria should be put to bed and treated seriously from the start. Only in that way would they be able to get an improvement in their results.

Dr. J. S. FAIRBAIRN (London) dealt with the degree of albuminuria in relation to prognosis. It would have been noticed that in most of the statistics a high degree of albuminuria corresponded to the severe cases. That was almost invariably the case. Every now and then, however, one got a case with a very slight degree of albuminuria and a high degree of kidney inefficiency, or on the other hand one with a considerable degree of albuminuria and comparatively efficient kidneys. Therefore he thought, in the management of their cases and in teaching their students, they ought to do what Professor Wilson laid stress upon: that was to make it plain that all cases of albuminuria, however slight, ought to come under observation and have careful investigation. He was sure that a large number of cases of eclampsia could be prevented, but was not sanguine that they were going to succeed by any means in preventing it more until they knew more about it. There were cases which came on with great suddenness and little warning. Apart from that, one had seen cases under observation in the ward where a question arose as to what ought to be done. They had been under treatment some little time, and then suddenly and unexpectedly they developed eclampsia. The rise of blood pressure was always a warning, but they had not yet got definitely to the stage when one could say, "This patient is safe from it." That was one of the difficulties, and until they got to that stage he did not think they would succeed in preventing the cases as Dr. Ballantyne would like.

Mr. FURNEAUX JORDAN (Birmingham) said reference had been made to warning symptoms. Out of 166 of their cases at the Birmingham Maternity Hospital 114 had warning symptoms, and only 5 out of the 114 had sent for a medical man until the last minute, just before they were admitted to hospital. The trouble lay not so much with the doctors as with the women. He thought every doctor and every midwife should be told that when a woman engaged them to attend her in her confinement she must be warned of the possibility of these symptoms, especially if she was an unmarried woman. He had a firm conviction that a great number of cases of eclampsia would be prevented if they could be taken in time. Sometimes after a woman had had eclampsia her husband came and asked if it would be safe for her to have another baby. He did not know whether he was right or not, but he always replied, "Certainly. If she has a diet of milk, butter, and cheese, and eschews meat, you need have no fear." He had not seen eclampsia occur twice in the same patient, but he knew of two ladies who had very bad eclampsia in their first confinements and who had since had respectively five and three children without any trouble.

Mr. FREDERICK EDGE (Birmingham) referred to the after-results of eclampsia, and thought that note should be taken of this aspect of the question in future reports. He knew a doctor's wife who had epilepsy following, as far as he could tell, a very marked eclamptic attack. He would also like to know the results on the eye, because he thought that in studying the eye they would learn a good deal about the damage done to the brain and other nervous tissues. It was quite certain that many of these people who got well suffered permanent damage. That would also influence them in advising a patient whether she was fit to have another child.

Miss FRANCES IVENS (Liverpool) referred to one point in connexion with treatment—Caesarean section. She was quite in agreement with those who considered that in advanced, almost moribund, cases Caesarean section was useless. But she was of opinion that in the extremely serious pre-eclamptic condition or in the early stages of eclampsia it was the most satisfactory method of treatment. Done under good conditions, the mother's interests were identical with the child's and there was a reasonable hope of saving both. Miss Ivens's experience of this method of treatment under such conditions was, she said, limited to three cases, and these she proceeded to describe in detail. She agreed that the after-history of cases of eclampsia should be gone into very carefully, and also thought that more pathological work should be done.

Mr. CLIFFORD WHITE (London) said that several speakers had laid stress on the importance of some special premonitory symptoms of eclampsia, and he wished again to emphasize the usefulness of the bicarbonate tolerance to which he had drawn attention in a short notice in the *Lancet* in 1920. It seemed to give the earliest indication of the presence of acidosis, and was very easy to carry out. He had recently had striking proof of its value in a case of a patient who was thought to have toxaemia, but who had a very low bicarbonate tolerance. After some days she developed other signs that proved the presence of encephalitis lethargica; but for the low bicarbonate tolerance, it had seemed during the first ten days to be a typical case of pregnancy toxaemia.

Dr. A. W. BOURNE (London) said the collection of this enormous amount of statistical material had been very valuable in consolidating their ideas of certain clinical and etiological facts, but obviously had not helped them further towards discovering the causation of the disease. They were

just as far from that to-day as they were twenty or more years ago. He supported the suggestion that there should be some unity of treatment, and could not help feeling that the excellent results from Dublin were not due so much to the precise method of treatment indulged in, which after all was largely based on an unproved theory, as to the fact that there was uniform treatment throughout. Until they got some unity of treatment not only could they not compare results but also he did not think they would make much further progress. The committee system which had been adopted for research on this matter had been of very great value, and was, he thought, immensely more valuable than research work carried on by one individual.

[The discussion was interrupted at this point to allow of the reading of three papers on eclampsia or allied conditions by Dr. Gibbon FitzGibbon, Dr. T. G. Stevens, and Dr. A. W. Bourne respectively.]

Eclampsia and other Toxaemias.

Dr. GIBBON FITZGIBBON (Master of the Rotunda Hospital) read a paper on the relationship of eclampsia to the other toxaemias of pregnancy. The paper dealt with observation during two and a half years in the Rotunda Hospital from the clinical aspect, and was based on a study of 40 toxaemic albuminuric cases, 16 eclamptic cases, and 4 toxaemic *ante-partum* haemorrhage cases.

The cases were all considered from the point of view that they were all toxaemias of pregnancy, and only became classified under a special heading because of the development of a dominant symptom.

The speaker had prepared tables showing the degree of the principal symptoms, the age of the patients, the period of pregnancy, and the condition of the foetus, the cases being divided in each table into primiparae and multiparae.

1. Primiparae are more liable to toxaemia than multiparae, but the age of the primipara has no influence on its development.

2. When a primipara becomes toxaemic, the tendency to develop eclampsia is in proportion to her youth. It is greatest under 20 years of age, and does not seem to increase in elderly primiparae.

3. The development of eclampsia in toxaemic women does not appear to be influenced by the pregnancy being primiparous or multiparous. If anything the multipara is more likely to develop eclampsia.

4. The period of pregnancy at which serious toxaemic symptoms or eclampsia develop is undoubtedly greatly affected by multiparity. It is relatively early in multiparae and late in primiparae. The longer the pregnancy continues the greater is the tendency to eclampsia.

Two eclamptic and six albuminuric cases had definite *ante-partum* haemorrhage besides the four cases classed under that head. These cases showed a marked preponderance of multiparae and an occurrence at an earlier period of pregnancy than eclampsia. No cases were classed as hyperemesis, but vomiting was severe in two and marked in nine cases.

The speaker referred to a column in one of the tables showing the maximum secretion of urine and the day on which it occurred, counted from the first day of treatment, and said that this was practically the point on which the recovery of the renal efficiency was judged. The maximum was not reached until after delivery, and did not altogether depend on the amount of the water drunk.

The treatment adopted in the Rotunda Hospital consisted of elimination and was based upon the belief that the toxin was the result of metabolic processes which were not abnormal to the pregnancy, but which accumulated owing to faults in management or deficient reserve power of the excretory organs and then produced toxic effects. There was practically no difference in the treatment of any of the toxaemic states beyond that called for by the immediate urgency of a symptom or the conscicusness of the patient, and any alteration was subsidiary to the main treatment.

The patient was kept in bed; free purgation was adopted and assisted by enemata. She was induced to drink as much water as possible—at least six pints in twenty-four hours, but preferably more. If the secretion of urine rose to normal and the albumin became moderate, milk was tried, and by the subsequent course of the case it was decided whether the pregnancy could be carried on or not. If there was vomiting enemata were persisted with, and in twenty-four to forty-eight hours purgatives by the mouth were retained. When the vomiting ceased the treatment was the same as for toxaemia. In eclampsia the variation in treatment was owing to the coma. The patient was kept on her side and nothing given by the mouth except by tube. The stomach was washed out and a purgative introduced with 12 oz. of sodium bicarbonate solution. The colon was washed out. This latter was not a prolonged rectal enema; the tube was actually passed into the colon by the aid of a finger in the rectum. This part of the operation was difficult and took twenty to thirty minutes to effect. The colon washing took altogether from one to one and a half hours and eight to twelve gallons of fluid. Colon lavage might be required one to three times at five-hour intervals, depending upon the degree of coma and the result of the purgatives. Other treatments were dependent on symptoms and persistence of coma. Morphine was given in the majority of cases, but was now excluded from the treatment as likely to cause respiratory complications and delay excretion, while it did not control the fits.

It was hoped that the treatment he had indicated would be universally adopted, as it and Stroganoff's,* which was based upon the same principles, were the only methods showing a mortality under 10 per cent.

Dr. G. T. STEVENS was not present at the Congress, but his paper on the treatment of eclampsia by veratrone (25 cases) was read by Dr. A. W. BOURNE, who also read a paper on a case of eclampsia treated by this drug.

Discussion Resumed.

The general discussion on eclampsia was then resumed by Dr. W. S. A. GRIFFITH, who asked Dr. Eden to explain what was meant by deaths from eclampsia. He thought the discussion was of great value and showed the necessity for uniformity on the part of the various committees who were undertaking this research. But were they all agreed as to what was meant by the term "eclampsia"? Were not convulsions merely one phenomenon of the general disease, which was more widespread and not confined to the appearance of convulsions? In Dr. FitzGibbon's communication toxaemic cases were included, but these were not strictly eclampsia, and the necessity for some generally agreed upon definition as to what they were discussing, and what the committees were investigating, was obviously of great importance.

Dr. T. W. EDEN, replying to the previous speaker, said the sentence in his report which spoke of deaths attributable to eclampsia referred to the clinical diagnosis of the cause of death which appeared in the record, and did not rest upon any *post-mortem* examination. What had been said that morning ought to prove of great value to those who had been working on the reports. They were a little discouraged when the results began to come out because it seemed, as one or two speakers had rubbed into them, that they had produced nothing new, and they felt that they had not advanced in the matter very much. As a matter of fact they had advanced a little in this way. There was a certain amount of unanimity of opinion nowadays that active interference was to be deprecated. If Caesarean section was looked at as a whole, he thought there was no doubt that it had come into increasing disfavour and the results were certainly not good. The most striking communication the Congress had received was from Dublin. They had sat under Dublin before, and personally he was prepared to do so as long as Dublin was producing work as valuable as this. He was not prepared to accept Dr. Hastings Tweedy's theory, but that did not detract from his admiration of the results which had followed from the treatment. In conclusion, Dr. Eden hoped that the inquiry would be continued, and said that they in London proposed to take the initiative, and had drawn up a series of suggestions to be sent to the other societies participating in the Congress, asking them to join in a technical inquiry into the results of the treatment.

Dr. BETHEL SOLOMONS, in reply, said he hoped that the visit of the Irish representatives would not be in vain and that the Tweedy treatment would be given a thorough trial on this side of the water. He again laid stress on the importance of carrying out every small detail of the treatment. In reply to Dr. Herbert Spencer, he said there were no patients with eclampsia without fits in his series of 204 cases. He did not believe there was much future in drugs such as veratrone and pilocarpine, and concluded by urging most strongly a thorough trial of the Dublin treatment.

Dr. GIBBON FITZGIBBON considered that toxaemia was the disease and eclampsia one possible symptom of it; eclampsia

* Professor Stroganoff's method is discussed in an article at page 95.

could not be treated in a separate water-tight compartment. He thought that in Ireland they had proportionately a smaller number of eclampsia cases, and that this was due to the fact that the disease occurred chiefly among the well-to-do artisan class, which was unquestionably a class of big feeders. They were not the really poor class. In conclusion, he insisted on the most careful observation of eclamptic patients, and referred to the very grave risks of suffocation. This complication was more likely to occur if patients were kept in a darkened room, as they sometimes were, because the light was supposed to bring on a fit.

PATHOLOGICAL SESSION.

The Congress held a pathological meeting on July 1st in the Liverpool Medical Institution, the chair being taken by Dr. BETHEL SOLOMONS (Dublin).

Professor BLAIR BELL (Liverpool) read a communication on endometriomata of the ovary, and Dr. HENDRY (Liverpool) described a method of preparing the bony pelvis for the museum.

Specimens were shown as follows:

Dr. FLETCHER SHAW and Dr. ADDIS (Manchester): Adenomyomata of the rectogenital space associated with tarry cysts arising in islands of adenomyomatous tissue in the ovaries.

Dr. LAMOND LACKIE (Edinburgh): *(a)* Uterus containing placental tissue retained for 19 months; *(b)* Chorion-epithelioma occurring in a tubal mole.

Drs. GEMMELL and HENDRY (Liverpool): Double uterus, vagina, and vulva.

Mr. H. REID (Liverpool): Secondary carcinoma of the ovary associated with four months' pregnancy.

Miss FRANCES IVENS (Liverpool): *(a)* Sections from a fatal case of *post-partum* eclampsia; *(b)* specimens illustrating necrobiotic changes in fibroids associated with pregnancy.

Dr. HENDRY (Liverpool): Dermoid cyst of vulva.

Professor BLAIR BELL: Tubal mole removed by incision of Fallopian tube, which was subsequently sutured.

Dr. GEMMELL: Omental tumour, probably sarcoma.

THE ROYAL SOCIETY OF MEDICINE.

ANNUAL DINNER.

THE annual dinner of the Royal Society of Medicine—the first to be held since the outbreak of the war—took place at the Hotel Victoria on July 6th. Sir JOHN BLAND-SUTTON presided, and about 260 Fellows, official guests, and guests of Fellows were present. Among the official guests were Sir Alfred Mond (Minister of Health), H.H. Maharaj Rana Sir Bhawani Singh Bahadur of Jhalawar, the Presidents of the Royal Colleges and of the principal medical societies, Mr. H. J. Waring (Vice-Chancellor of the University of London), Sir Archibald Garrod (Regius Professor of Medicine, Oxford), Sir David Murray (President of the Royal Institute of Painters in Water Colours), Sir Arthur Keith, Sir Rickman Godlee, Sir Dawson Williams (Editor, *British Medical Journal*), and Sir Squire Sprigge (Editor, *Lancet*).

Presentation of Jenner Medal.

After the toast of "Our Patron the King" had been duly honoured the PRESIDENT presented the Jenner Medal to Dr. J. C. McVail. It is awarded on the recommendation of the Epidemiological Section of the Society to some person who has made notable contributions to the prevention of epidemic disease. It has been presented on four previous occasions only, the recipients being Sir William Power, Professor Laveran, Sir Patrick Manson, and Sir Shirley Murphy. Dr. McVail, the President said, was eminently fitted to be the fifth recipient, for although one generation was always chary about accepting the conclusions of its predecessors, it might truly be said that vaccination to-day rested on a surer basis than ever before, and this was due in large measure to Dr. McVail's own admirable work.

Dr. MCVAIL, who was heartily acclaimed, expressed his gratitude for the honour done him, and mentioned that next year was the centenary of the death of Edward Jenner. The great conception of Jenner that cow-pox was a preventive of small-pox, formulated as it was at a time when small-pox was the most prevalent and destructive of all pestilences, had been the means of saving more lives and preventing more misery than any other discovery or the work of any other man from the dawn of history up to Jenner's day.

The Royal Society of Medicine and Kindred Societies.

The PRESIDENT, in proposing prosperity to the Royal Society of Medicine, said that it was now in a better position than at any period since the amalgamation in 1907. In consequence of the policy of the Council in raising the subscription and effecting economies, it now enjoyed an increased income, and with the help of a munificent legacy from Dr. Lloyd Roberts the treasurers had been able to reduce the overdraft at the bank. He spoke of the profit he received in his own early days from the library of the Royal Medico-Chirurgical Society. One of the first papers he remembered hearing read was on the harlequin foetus, and Dr. Samuel Wilks had then told him how the term originated. About eighty years ago a celebrated lecturer in midwifery at Guy's attended a poor woman who was delivered of a foetus of this kind. He said to her, "You must have been frightened by a harlequin," and she replied that that was exactly what had happened: the harlequin had startled her by jumping over the footlights at the Surrey Garden Theatre. That particular harlequin was very popular among the women of the neighbourhood, and Wilks believed that that was the reason why Guy's at that time possessed four of the six specimens of the harlequin foetus then to be seen in London. The speaker went on to picture Aesculapius on earth again, finding his way to No. 1, Wimpole Street, delighted at such a temple in his honour, delighted, too, at his statue in the reading room, though suffering momentary chagrin on finding that it was plaster and not marble, and congratulating Sir John MacAlister on his ambition to make the Society the centre for scientific medicine.

The toast of "The Kindred Societies" was proposed by Sir HUMPHRY ROLLESTON, who mentioned the curious fact that this year the Presidents of the Medical Society of London, the West London Medico-Chirurgical Society, and the Ophthalmological Society were all of them surgeons. He had a fitting word of compliment for each of these bodies, and for the others represented at the table: the Chelsea Clinical Society, the Veterinary Society, the Medico-Psychological Association, and the Fellowship of Medicine, which last had been singularly happy in its presidents—first Sir William Osler, and now Sir George Makins. In coupling the toast with the name of the President of the Medical Society of London, he remarked on the amicability of the relationship between the two societies.

Mr. JAMES BERRY, in response, said that the Royal Society of Medicine, which was a collection of societies, ought not to use the word "Society" in its title; a name like "The Royal Academy of Medicine" would be more appropriate. He liked to look upon the Royal Society of Medicine as a great central luminary, radiating light upon the other medical bodies. If he regarded his own society as corresponding to the earth in that solar system he might be forgiven. The Royal Colleges stood for Mars and Neptune; massive Jupiter was the British Medical Association, and its nine satellites were the Association's executive committees. Brilliant Venus was, of course, the Medical Women's Federation, while our own moon could be no other than the Medico-Psychological Association. The Fellowship of Medicine might be taken to be of the goodly company of minor planets, and the medical firmament was not without its splendid meteors and comets in the shape of distinguished strangers who came from distant realms from time to time.

The Ministry of Health.

Sir THOMAS HORDER mentioned the names of other notable visitors, including three medical men from overseas (Professor A. F. Hess and Dr. H. D. Chapin of New York, and Professor H. S. Birkett of Montreal), and in coupling with the toast of "The Guests" the names of Sir Alfred Mond and Lord Riddell, he remarked that some people were asking what the Ministry of Health was doing, but it was possible that any apparent lack of activity might be due to the fact that it was giving what was known as "expectant treatment," which was sometimes more beneficial to the patient than more active measures.

Sir ALFRED MOND could not agree that his department was in any way inactive. A Ministry charged with the duty of supervising the health of the country could never relax its vigilance nor free itself from anxiety, especially at a time when economy had to be considered. The Ministry had escaped somewhat lightly from the Geddes "axe," without curtailment of any of the great services. No doubt more could and would be done in more propitious times. One very important work in which the Ministry was interested was the provision of facilities for post-graduate education. He was very glad that the Rockefeller trustees had made a donation of two million dollars towards a building for an imperial school of hygiene, which would be a model of its kind in the Empire, and, he believed, in Europe. He had persuaded the Chancellor of the Exchequer to grant

the necessary endowment to make the school a living thing, and he looked forward to the accomplishment of much research in preventive medicine, not only such as directly concerned this country, but such as affected the tropical colonies. Upon such preventive work the future of the Empire in no small measure depended. Sir Alfred Mond went on to refer to the integration of medicine with social welfare, and to his duties with regard to the supervision of the 12,000 insurance practitioners. Very rarely, he was glad to say, was it necessary to use disciplinary measures. These practitioners were responsible for the health of a vast mass of the adult population, whose efficiency determined the economic and industrial prosperity of this country. The work of the insurance practitioner was arduous, but at least he had the satisfaction, unlike some of his West End colleagues, of receiving prompt payment and of having no entries in his books which failed to materialize into cash. The Ministry of Health had lately been closely concerned with the hospital problem. The devising of means for keeping the voluntary hospitals in existence had meant a great deal of anxiety to him and to Lord Onslow, who had occupied the chair of the Voluntary Hospitals Commission. The response of the general public had been very satisfactory considering the difficulties of the present time, and it seemed likely that hospitals would be placed on a more satisfactory basis than in the past, when they depended largely on spasmodic appeals by treasurers *in extremis*. His department had its international aspect, wherein it was well served by the able officers who represented it on international organizations and conferences. Science was healing the scars left by war. He had been appalled lately to read of the condition of things in Russia, where a vast territory was ravaged by typhus, relapsing fever, and cholera, and was threatened at the same time by starvation and lack of medical resources. The Russian medical profession had manfully stuck to an almost impossible task, but the epidemics in Russia must cause anxiety to all who were charged with the maintenance of health in other countries. He was co-operating at the moment in the provision of medical assistance for the Russian people under the auspices of the League of Nations. The help took the form of medical relief and the provision of drugs and serums, with a view to stemming the tide which had already flowed over the Russian borders into Poland and Rumania. He heard of populations of ten thousand people moving blindly about the country, many dying by the roadside, and the others spreading diseases wherever they went, finally reaching the Polish boundary, where they housed themselves in some old German dug-outs. Altogether the Ministry of Health was kept fairly busy, and not merely busy, but sometimes harassed. His own relations with the medical profession had been most cordial, and assistance had been given him most willingly on all subjects. The difficult controversy between rival societies on the question of venereal disease seemed likely to reach a definite conclusion, thanks to Lord Trevethin's Committee, appointed at the suggestion of Lord Dawson. Speaking as a politician, he thought it of enormous importance to medical science that medical men should agree—"at any rate in public." Patients in the consulting room were submissive and obedient, but the public generally was a little sceptical about the wisdom and knowledge of the profession, and if different sections of medical men continually contradicted one another in public it would give the opportunity to the layman to urge that the Ministry of Health should pursue a do-nothing policy. At present he was engaged in consultation with experts on lunacy reform; by general admission no subject was calling more urgently for amending legislation. He had no doubt that whatever he introduced would be criticized by one section or another, but he would beg medical men not to roughen his pathway when he went out to meet the Philistine.

Lord RIDDELL contrived, amid much amusing persiflage, to pay one little compliment to the medical profession. He said that it was not generally known that medical men were the chief subscribers to hospitals; not, indeed, in the total amount, but in the number contributing. It was surprising how substantial a part of the funds of the various institutions came out of the pockets of medical men. He had seen some discussion on the propriety of a doctor charging three guineas for a consultation, but when he remembered how in the mercantile world a trader would hold up an essential article to get a higher price, he did not think that doctors, who never held up their services, could justly be accused of fleecing the public.

The final toast was that of "The President," proposed by Sir JOHN GOODWIN, who laid stress upon the many outstanding qualities of Sir John Bland-Sutton as a surgeon and as a friend; and, the toast having been most heartily honoured, Sir JOHN BLAND-SUTTON, in reply, said that his presidency of the Society, which virtually ended with that function, had brought him one great delight—the opportunity of coming into touch with the younger members of the profession.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

ON several recent occasions we have mentioned the main items in the programme of the third International Congress of the History of Medicine, to be held in London during the third week of this month. We are now able to publish in more detail the time-table of the Congress.

Throughout the meeting the headquarters of the Congress will be the house of the Royal Society of Medicine (1, Wimpole Street, W.1). Objects of interest will be on view in the Library of the Society, and a special loan exhibition will be open daily from 10 a.m. to 5.30 p.m. in the Wellcome Historical Medical Museum, 54a, Wigmore Street, W.1. On the opening morning (July 17th) members should register at the Congress Bureau in the entrance hall of 1, Wimpole Street, and obtain their badges, cards of membership, and invitations. A Committee of Ladies has arranged to take ladies attending the Congress to various places of interest in London. The General Secretary of the Congress is Dr. J. D. Rolleston, 21, Alexandra Mansions, King's Road, S.W.3, and the Treasurer is Mr. W. G. Spencer, 2, Portland Place, W.1.

TIME-TABLE.

Monday, July 17th.

10.30 a.m.—Opening of the Congress at the Royal Society of Medicine by the Minister of Health. Reception of delegates. Address by the President, Dr. Charles Singer. Address on behalf of the foreign delegates by Professor Laignel-Lavastine.

2.15 p.m.—Reception and address by Sir Humphry Rolleston, President of the Royal College of Physicians, at the College, Pall Mall East, where books, manuscripts, and other objects of historical interest will be shown.

3.30 to 6 p.m.—Afternoon tea offered by Sir D'Arcy and Lady Power, 10a, Chandos Street, Cavendish Square.

9 p.m.—Reception by the President and Mrs. Singer at the Royal Society of Medicine. An address will be given during the evening by Professor Elliot Smith on palaeolithic skulls and brain casts.

Tuesday, July 18th.

10 a.m. to 12.30 p.m.—Papers on the history of epidemic diseases by Dr. Tricot-Royer of Antwerp, Dr. Cavvadias of Athens, Professor W. R. Simpson, Mrs. Singer, Dr. E. Wickersheimer of Strasbourg, Dr. Neveu of Paris, Sir William Collins, Miss Buer, and Dr. Michael Foster.

2.30 to 4.30 p.m.—Papers on the history of anatomy, etc., by Professor Laignel-Lavastine of Paris, Dr. de Lint of Gorinchem, Professor W. Wright, Dr. E. T. Withington, and Dr. F. J. Poynton.

4.30 p.m.—Reception by the Lord Mayor and Lady Mayoress at the Mansion House.

7 to 11.30 p.m.—Reception by Sir James and Lady Purves Stewart, 94, Harley Street.

Wednesday, July 19th.

10 a.m. to 12.30 p.m.—Papers on the history of anatomy by Professor Ménétrier, Dr. Villaret, and M. Fosseyeux of Paris, Dr. Krumbhaar of Philadelphia, Dr. Singer, Dr. F. K. Lauder, Mr. W. G. Spencer, Dr. T. Wilson Parry, and Dr. J. D. Comrie.

Afternoon.—Visits to the Barbers' Hall, Royal College of Surgeons, and Apothecaries' Hall.

8.30 to 11 p.m.—Conversazione at the Wellcome Historical Medical Museum.

Thursday, July 20th.

10 a.m. to 12.30 p.m.—Papers on the history of anatomy by Dr. Tricot-Royer of Antwerp, Dr. Torkomian of Constantinople, Dr. D. Campbell, Professor Jeanselme of Paris, and Dr van Gils of the Hague. Papers on various subjects by Professor Lindsay, Dr. de Lint, and Dr. N. G. Horner.

2.30 to 4.30 p.m.—Papers on the history of pharmacy by Dr. Dorveaux of Paris, Mr. J. B. Gilmour, and Mr. C. J. S. Thompson.

Friday, July 21st.

10 a.m. to 12.30 p.m.—Papers on various subjects by Dr. van Gils, Dr. Sigerist of Zurich, Dr. Wickersheimer, Dr. A. F. de Alcalde of Madrid, Dr. Le Clerc, Dr. Le Lorier, and Dr. Capparoni.

2.30 p.m.—Papers on the history of veterinary medicine by M. Sevilla of Paris, Major-General Sir F. Smith, M. L. Moule, Mr. F. E. Bullock, and Mr. F. J. Cole; and on various subjects by Dr. P. Delaunay of Le Mans, Professor Castiglioni of Trieste, Dr. Sunderland, Mme. Panayotatou of Alexandria, and Dr. Muthu.

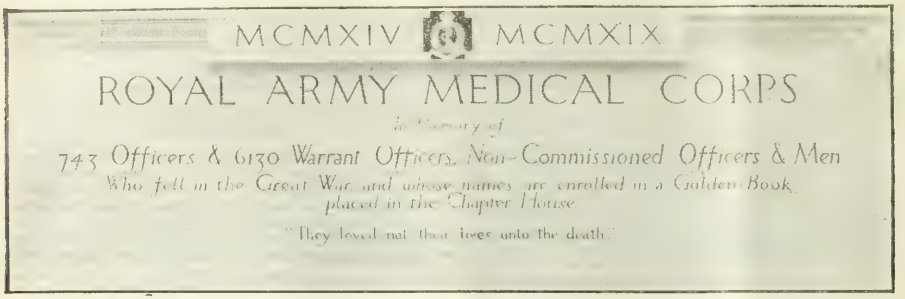
5 p.m.—Visit to St. Bartholomew's Hospital, and historical address by Sir D'Arcy Power.

7.30 p.m.—Banquet at the Hotel Cecil. (Tickets 10s. 6d. each.)

Saturday, July 22nd.

Excursion to Windsor Castle and up the River Thames.

THE ROYAL ARMY MEDICAL CORPS WAR MEMORIAL.



WHILE this issue of the JOURNAL is at the press the Royal Army Medical Corps War Memorial in Westminster Abbey is being unveiled by Field-Marshal H.R.H. the Duke of Connaught, Colonel-in-Chief of the Corps. As stated last week the amount available out of the memorial fund—in round figures £18,000—has been used in three ways: (1) to erect in Westminster Abbey the tablet commemorating the 743 officers and the 6,130 warrant officers, non-commissioned officers and men of the R.A.M.C., Regular, Territorial, and Temporary, who fell or died in the war; (2) to inscribe their names in a "Golden Book" placed in the Chapter House of the Abbey; and (3) to contribute £10,000 to the Abbey Restoration Fund.

We reproduce above a photograph of the marble memorial tablet. It has been placed on the north side of the nave near the west door of the Abbey and on a level with the foot of the Unknown Warrior's grave. It is the work of Mr. F. J. Wilcoxson, of the Royal School of Art, South Kensington. The Committee of the Fund has decided that a photograph of the tablet, together with a plan of the Abbey showing its position, shall be sent to the relatives of each officer and man mentioned in the "Golden Book."

An invitation from the Director-General Army Medical Services and the Committee of the Fund was addressed to the President and Council of the British Medical Association requesting their presence at the unveiling, and this has been accepted. An account of the ceremony will appear in our next issue.

MENTAL HOSPITALS ASSOCIATION.

THE annual meeting of the Mental Hospitals Association was held in the London Guildhall on July 7th. Alderman J. G. TAGGART, of Winwick, Lancashire, who presided, declared that the Association was unanimous in its demand for the reform of the obsolete lunacy laws. Under the present system only people who were certifiable—in other words, those who were far advanced in insanity—could be taken into mental institutions. It was imperative that there should be legislation whereby incipient cases of insanity could be properly dealt with.

Sir G. WYATT TRUSCOTT (City of London) said that it was not yet certain that the projected legislation would contain any adequate provision for early treatment, and therefore he moved that a letter should be sent from the Association to the Ministry of Health and the Board of Control expressing the strong hope that the promised bill for the amendment of the lunacy laws would contain a clause under which arrangements might be made for the early treatment of mental cases without certification. This was supported by other speakers, and carried unanimously.

Alderman H. E. WITARD (Norwich) urged that the attention of the Board of Control and the Ministry of Pensions should be drawn to the great hardship experienced by ex-service men admitted to public mental hospitals and denied classification as service patients on account of the interval that had elapsed between their demobilization or discharge from the forces and their readmission to the hospital. He said that several cases were known to him in which men had been discharged from the army and had taken up occupations in civil life, and then, breaking down, had gone into the mental hospital, where a medical board had decided that their mental disability was due to their war service, and yet, in spite of this finding, the Ministry of Pensions through the Board of Control had intimated that as the disability had not developed at an earlier period the men were not entitled to enjoy the privileges accorded to ex-service patients. This was penalizing the men who had struggled on after their discharge in an endeavour to avert the final breakdown. A resolution on this subject was agreed to unanimously.

Sir WILLIAM HODGSON, M.D. (Cheshire), brought forward a motion urging that in mental hospitals and workhouses where accommodation of a satisfactory character could be provided arrangements should be made for the worst cases of mental defectives to be received into such institutions. He said that it was very difficult at the present time to deal with the worst type of cases. He would not suggest that this course should be followed in the case of deficients who were educable, but there was a class of cases which was the despair of all concerned—some of the deficients being vicious, and others quite unable to take care of themselves, and these should certainly be housed in mental hospitals if satisfactory accommodation could be arranged. The motion, after some discussion, was agreed to.

A question which aroused a good deal of discussion was as to the status, duties, and rates of pay of mental hospital workers. A joint conciliation committee has been sitting and has formulated certain recommendations which have been agreed to by the executives both of the Mental Hospitals Association and the National Asylum Workers' Union, but a ballot on the subject is now being taken among the members of the latter body. The recommendations suggest that the working week should not exceed sixty-six hours, inclusive of meal times, for all members of the indoor staff; that each member of the indoor staff should be allowed twenty-one days' leave every year; and that the minimum wage to be paid to the male nurses in mental hospitals in rural areas should be 35s. a week. It is recommended also that the wages and increments of probationer nurses should be readjusted, and that in all cases the payments to female nurses should be 20 per cent. less than the payments to male nurses.

Mr. Francis Bate, J.P., of Reading, was elected chairman of the Association.

A CONFERENCE on Mental Deficiency arranged by the Central Association for Mental Welfare will take place in the Caxton Hall, Westminster, London, on Wednesday and Thursday, July 26th and 27th. The conference will be opened on July 26th by Sir Leslie Scott, K.C., M.P., Solicitor-General, and afterwards a paper on "Crime and mental deficiency" will be read. Dr. Norwood East, of H.M. Prison, Brixton, will discuss criminal defectives. At the afternoon session, under the chairmanship of Dr. Reginald Dyer, H.M. Commissioner of Prisons, papers will be read by Mr. Stuart Deacon, stipendiary magistrate of Liverpool, and Mrs. Patrick Green, J.P., Colchester, and on the conclusion of this day's proceedings an address will be given by Lord Justice Atkin. On Thursday, July 27th, the morning session will be devoted to the hearing of an address by the Rt. Hon. H. A. L. Fisher, President of the Board of Education, and a paper by Dr. H. B. Brackenbury, chairman of the Education Committee of the conference. Short addresses and a discussion will follow. On Thursday afternoon the chair will be taken by Sir Frederick Willis, K.B.E., C.B., chairman of the Board of Control. Papers will be read and a number of short addresses delivered. Those interested may obtain copies of the papers to be read at the cost of 1s. a set, post free, from the offices of the C.A.M.W., 24, Buckingham Palace Road, S.W.1, one week before the conference. Tickets, admitting on both days of the conference, may be obtained at the charge of 2s. 6d. each from the above-mentioned offices.

British Medical Journal.

SATURDAY, JULY 15TH, 1922.

TREATMENT OF PUERPERAL ECLAMPSIA.

IT will be seen from our report (p. 88) of the British Congress of Obstetrics and Gynaecology, held lately in Liverpool, that the first morning was devoted to a discussion on the treatment of eclampsia. This important debate centred round a number of reports prepared by special subcommittees, which have been studying the matter in London, in the North, and in the Midlands; and, as several speakers remarked, its chief value may prove to be the stimulus it must give to further research, along parallel lines, in the principal cities of Great Britain and Ireland. The wider aspects of the treatment of puerperal eclampsia we do not ourselves propose to discuss at this moment, but shall refer only to a particular line of treatment brought to our notice from another quarter.

We have received from Professor Stroganoff, Director of the Clinical Institute for Obstetrics and Gynaecology at Petrograd, a letter dated June 12th, expressing his desire to make his method of treating puerperal eclampsia better known in this country, and his hope that he may have an opportunity of coming here and treating a certain number of cases. According to the account in Eden's *Manual of Midwifery* (1919), Stroganoff gives the patient a quarter of a grain of morphine hypodermically, and an hour later 30 grains of chloral by the mouth; two hours later the morphine is repeated, and the chloral six hours after the first dose. In all, four doses of chloral and two of morphine may be given in twenty-four hours. As soon as the convulsions cease and the conditions are favourable labour is induced. In his first 360 cases, reported before 1908, the death rate was reduced to 6.6 per cent. for mothers and 21 per cent. for children, from previous rates of 20 to 25 per cent. for mothers and 30 to 55 per cent. for children. Professor Stroganoff states in his letter that during the last eight or ten years he has improved the method, so that the description above given probably no longer applies. The results obtained have been still more satisfactory. At the Clinical Institute of Obstetrics and Gynaecology, and at Professor Krassovski's lying-in hospital, 223 cases of eclampsia with fits have been treated, with only three deaths (1.3 per cent.); two out of the three patients who died had had numerous attacks (fifteen to twenty-eight) before admission, and expired within three to four hours. The third patient had only four attacks of eclampsia, but died of pneumonia and sepsis fifteen days after delivery. In the 220 cases which recovered there was rapid cessation of attacks, amelioration of the general condition, lowering of blood pressure, and return to consciousness. He therefore regards eclampsia as curable, except in cases in which treatment has been too long postponed. After a visit Professor Stroganoff paid to Vienna, Professor Leopold in 1910–11 treated 50 patients, with only four deaths, all in cases which were suffering from severe complications when admitted. Leopold's death rate had previously been 19 per cent. for mothers and 55 per cent. for children. At about the same time Professor Kapferer reported a series of cases from Professor Krönig's clinic in Freiburg, without a death. In 1913 Professor Zweifel, using the method in combination with bleeding, had a gross mortality of 8.5 per cent.; he states that, if accidental deaths are omitted, the mortality may be reduced to 2 or 3 per cent. In 1911 Professor Stroganoff went to Berlin and treated a certain number of cases; all the patients recovered, but in his letter he does not state the number.

Professor Stroganoff complains that the arrangements for testing his method in Vienna and Berlin were not satisfactory, and continues: "If the leading London lying-in hospitals agreed to place in my hands the treatment of all cases of eclampsia for a period of two, three, or four months, the total number would probably amount to as many as 20 to 40 cases, which, added to those already on record, would be conclusive evidence in favour of the new method, both from the point of view of its usefulness and as a demonstration of its technique." He adds that in 1918 he collected from the journals then available at Petrograd 2,208 cases of eclampsia treated by the method he describes in its original form, or slightly modified. The mortality of mothers was 9.8 per cent., and that for children 12 per cent. below the average for other methods of treatment.

In concluding his letter Professor Stroganoff makes an appeal to obstetricians in this country, and mentions the name of Dr. Herbert Spencer, to whom we have referred this note and the original letter. We are indebted to Dr. Herbert Spencer for the following observations:

"I have received your note on my return from the Obstetrical and Gynaecological Congress at Liverpool, where the important subject of eclampsia was discussed and the high mortality of this grave complication was emphasized by a large collection of statistics. At the Congress two important facts were elicited: (1) the danger of the operative treatment of eclampsia, and especially by abdominal Caesarean section; (2) the superiority of the eliminative method originated by Dr. Hastings Tweedy and practised with gratifying results at the Rotunda Hospital. Statistics were presented at the Liverpool Congress of 204 cases treated by the Dublin method, with a mortality of 21 (10.29 per cent.), which contrasts with the general mortality rate of over 20 per cent., and with the extensive statistics presented by the North of England Obstetrical and Gynaecological Society, in which the mortality in 804 cases was 24.45 per cent.

"No one has obtained results in the treatment of eclampsia approaching those stated by Professor Stroganoff, and it is a matter of supreme importance that these two methods (Tweedy's and Stroganoff's) should be tried on a large scale. One feature of Stroganoff's method on which he lays (or, at least, used to lay) stress—a dark lying-in room free from noise—is not easy to obtain. And I think there would be difficulty in getting for all cases the personal attention of Dr. Stroganoff even in the large lying-in hospitals, though I have no doubt that the staffs would be willing to allow their cases to be treated by him. The distances between the various hospitals would render early treatment by Dr. Stroganoff very difficult or impossible in some instances.

"No one can fail to be struck with Dr. Stroganoff's results. If they could be obtained universally they would constitute a very great advance in therapeusis. If you could obtain from Dr. Stroganoff details of his latest method I, and I am sure most other British obstetricians, will be glad to give it an extensive trial. I know Dr. Stroganoff and the excellent work he and Madame Stroganoff have done in obstetrics and gynaecology, and I remember well the impression made by his communication at the Berlin Congress ten years ago. But his latest results are so remarkable that the method ought to be tried by others, and the enthusiasm of the younger British obstetricians is such that, if full details of the most recent method can be obtained, I am sure they will give it an extensive trial."

WHAT IS A "CONSULTANT"?

On another page we reproduce in full from the *Times* the judgement delivered last week by Mr. Justice McCardie in the action brought by Dr. Anghel Gaster against Mr. Leopold Hirsch to recover fees for professional attendance. The learned judge dealt so fully with all the aspects both of the claim and of the defence that comment here on the individual case does not seem necessary. But certain broad questions, which arise out of the judgement, are of general interest and importance to the medical profession and demand further consideration.

It was admitted by the judge that, where there has been no agreement as to fees beforehand, the amount to be determined as a just and fair remuneration for medical services must depend, *inter alia*, upon the status of the doctor, and that a consultant is entitled to higher fees than a general practitioner. In mentioning the plaintiff's fees as 3 guineas for the first consultation and 2 gnineas for the second, Mr. Justice McCardie said that the range of fees must be remembered in the light of the resolution passed by the British Medical Association in 1919—that an increase of at least 50 per cent. on pre-war medical fees should be made. The British Medical Association, he added, had no statutory authority, but its opinions carried great weight throughout the medical profession.

Cases such as this accordingly involve a definition of the word "consultant," and it is probable that in similar actions in future the judgement given by Mr. Justice McCardie will be quoted by one or other side. It is, however, impossible to discuss the question without opening up wider issues. In more than one Government department with a medical branch medical men are employed in two grades—namely, those with a general knowledge of medicine and those with special knowledge or experience of a particular subject. The latter are sometimes described as "consultants" and sometimes as "specialists" and are paid at a higher rate. We are not aware of the conditions which the Government requires to be fulfilled before recognizing a medical man as a specialist or consultant, but we do know that in some instances the decisions of the departments have given rise to much dissatisfaction. We do not propose to attempt to frame a definition here, but some of the difficulties associated with the problem may be indicated.

In the course of his judgement Mr. Justice McCardie said: "In its rigorous significance, a consulting physician is one who acts only in conjunction with, or upon the introduction of, a family doctor." No fault can be found with this definition except the fact that it is not always observed. At one time the customary procedure of the profession seems to have provided a means of differentiation which was of very general application: the consulting physician diagnosed the malady or advised on treatment and left the family attendant to carry out the treatment; the consulting surgeon performed the operation jointly decided upon, and the family attendant took charge of the after-treatment. But more and more this custom is being departed from, particularly where the whole, or the major part, of the treatment is given by the consultant. Several branches of medicine in which the consultant frequently takes patients direct might be mentioned, but we may instance the more expert methods of psycho-therapy which have been developed during recent years. It is well known that many who have made a special study of psycho-analytic procedure are now practising as specialists, and do not consider it in any way incumbent upon them only to accept patients introduced by a general practitioner. We regret this tendency, and are of opinion that the interests of both the community and the profession would be best served by maintaining the older tradition, but all these practitioners cannot be refused the title of consultant because they have cast tradition aside.

Other criteria for determining the consultant status might be mentioned. There is, for example, the possession of the Membership of the College of Physicians. But some whose consultant rank would not be questioned do not possess this qualification, and some who hold it are admittedly engaged in a form of practice which cannot easily be distinguished from general practice. Again, the holding of an appointment on the staff of a hospital is often sufficient to connote the higher status, but this is not invariably the case, particularly in the smaller towns, and it could not be used as a universal means of distinction.

The remarks made so far apply mainly to London and other large cities with medical schools; when we come to smaller provincial towns other considerations must be admitted. In some such towns there is not work enough for a man of admittedly consultant rank to occupy himself fully in his own sphere, and he is obliged to go outside his specialty or devote part of his time to general practice. Again, we have to consider the position of the man who is primarily and avowedly a general practitioner, but has made a special study of some particular subject, and on this subject is frequently consulted by his colleagues in general practice. At one time he may act as a specialist to his own patient, and at another time as a consultant for the patient of another practitioner.

Sufficient has been said to show how difficult it would be to frame any hard and fast definition of a "consultant." If the line between consultant and general practitioner is hard to draw nowadays, the distinction between consultant and specialist is impossibly nebulous. We are, however, of opinion that it is important both for the community and the profession that a distinction should be drawn between one who is discharging the functions of a general practitioner and one whose opinion is sought because he possesses a special knowledge of some particular part of Medicine—a distinction which may be recognized by the application of one or more of the tests suggested above; but we strongly deprecate the view that a man becomes a consultant, and consequently entitled to charge higher fees, merely by living in or having a consulting room in a particular street or district. The distinction does in fact exist, and members of the profession themselves have rarely any difficulty in drawing it; but for legal or Government purposes we do not consider that it is possible to lay down a rule of universal application. Each case should be considered on its merits and a degree of elasticity recognized appropriate to the particular circumstances.

AURICULAR FIBRILLATION.

AURICULAR FIBRILLATION must always be a subject of very considerable interest to all medical practitioners, for it is the commonest and most important cause of cardiac failure.

In the Oliver-Sharpey lectures of 1921 Sir Thomas Lewis discussed the essential nature of this disorderly rhythm, and proved as the outcome of prolonged experimental investigations that there is a specific change in the activities of the auricles coincident with the onset of fibrillation, and that this change is of the nature of a simple circus movement around one of the venous orifices of the right auricle. The fact that his investigations had been undertaken with a bias against the theory of circus movement, as enunciated by Mines in 1913, lends additional weight to his final conclusions published in 1921.

In these lectures no opinion was expressed as to the cause of this remarkable and specific change. Sir Thomas Lewis dealt rather with the nature of the condition when

once established. Up to the present the investigation of fibrillation has been an attempt to understand the deviation from the normal activity of the heart and to explain the altered mechanism, and no one has done more to throw light on this than Sir James Mackenzie.

So far, however, investigators have not been able to discover the causal factors involved. The question is discussed by Sir James Mackenzie in a valuable and suggestive paper which we publish this week. He expresses the view that the auricle begins to fibrillate as the result of loss of the normal controlling influence exercised by the sino-auricular node and other portions of the conducting system. Freed from this control, the auricular muscle passes into a state of fibrillation; in other words, fibrillation is the result of a process and not the process itself.

This is in itself an interesting suggestion, but Sir James Mackenzie goes farther and makes the point that auricular fibrillation is only one example of a general law; and he compares the happenings in the auricles with those in other organs or tissues when freed from control. He relates, for example, the observations of Professor Langley on voluntary muscle after its motor nerve had been severed. Langley found that the muscle did not remain inert but sooner or later began to fibrillate. Sir James Mackenzie infers from this the existence of a law governing the activity of the muscles, and suggests that the law applies not only to the voluntary muscles but also to the myocardium. Control is essential to the well-being and normal functioning of the muscle fibre. Remove this control and fibrillation ensues. Reference is also made to the "paralytic secretion" of the salivary gland on section of its nerve supply, and other changes in muscular activity are mentioned as the result of similar interference. He suggests that "there seems to be some law or principle which governs the functions of the organs of the body by which they are controlled by higher agencies." This is a rather vague statement, but it is, perhaps, impossible to go farther at present. An influence of this nature is, of course, well exemplified in the functioning of the central nervous system, familiar to all, where the brain takes control of the spinal centres and the higher levels of the brain exert their influence on the lower.

It is indeed well that we should search for the laws underlying the manifestations of disease, and we are indebted to Sir James Mackenzie for this attempt to stimulate further investigations along these lines. An understanding of the signs and symptoms of disease is only possible when the mechanism by which these signs and symptoms are produced is clearly apprehended; the recognition of any law which has a general application will do much to forward our knowledge of medicine. He does not, of course, put his views forward as if they were established, but rather to stimulate thought and discussion.

SIR PATRICK MANSON.

THE mid-June issue of the *Journal of Tropical Medicine and Hygiene* is a special Manson number. It contains an introductory notice by Sir James Cantlie, one of the editors, who pays a warm tribute to Sir Patrick Manson as a scientific investigator, a physician, and a man. It contains also a number of other appreciations, including one by Sir Frederick Mott, in which he speaks of Manson as the founder of tropical medicine. There are tributes to him as a bacteriologist by Professor R. T. Hewlett, as a dermatologist by Dr. J. M. H. MacLeod, and as a helminthologist by Dr. H. A. Baylis, of the Natural History Museum. There are, in addition, papers by Dr. Giglioli on acclimatization and sunstroke, a synopsis of the family Linguatulidae by Dr. L. W. Sambon, a lecture by the same author on tropical and subtropical diseases, in which the part played by Manson is fully set forth, and an essay on the carriers of *Filaria bancrofti*, by Mr. F. W. Edwards, published by permission of the trustees of the British Museum. Mr. S. Honeyman, librarian to the British Medical Association, has contributed a bibliography of Sir Patrick Manson's writings, the first entry being dated 1878, and the last the seventh edition of his *Tropical Hygiene*, 1921. The pages to which the pupils of Manson will probably first turn are those which contain an autobiographical fragment dictated to Dr. Sambon. It begins by telling the story of Manson's early attempt to become an engineer, terminated by a breakdown in health. He passes lightly over his time as a medical student at Aberdeen and Edinburgh, and then takes us to Formosa, where he landed in 1866, and where his chief achievement was to become acquainted with Chinese customs and gain a colloquial acquaintance with the language. He then passes to Amoy, where, in 1871, he settled down among the European colony and lived for many of the most active years of his life. There he had the run of a large Chinese hospital, and devoted himself especially to the study of elephantiasis and to the life-history of filaria. Almost by accident he hit upon the fact of periodicity, and soon instituted an investigation during which blood examinations were made every three hours for six weeks. It is characteristic of Manson's power of influencing men that the experiment was made by two natives who themselves had filaria in their blood. "I trained them," he said, "in the use of the microscope, and set them to work to examine each other." As the filariae in the blood were immature, the problem was how and where these larval filariae, carried about in the blood stream, underwent development and became mature. "It was evident that, fettered in sacs (their outstretched, unbroken egg-membranes) and penned within the circulatory maze, they could not, of their own accord, leave the human body. . . . I set myself to speculate as to what that agency might be which removed and fostered the newborn filariae. It must be, thought I, something that draws out the blood and therewith the organisms in the blood; moreover, seeing that the filaria is confined to tropical and subtropical countries, this something must have a corresponding distribution. What might it be? A tropical blood-sucker. What tropical blood-sucker? The filaria is a common parasite within the tropical belt, and therefore this blood-sucker must be common there also. For reasons of distribution, season, and habits, neither leech, nor flea, nor bug seemed to answer the requirements. Could it be a mosquito, some species of mosquito widespread and common in the tropics? Thus I reasoned." He proceeded to make the crucial experiment upon one of his Chinese servants who was infested by the filaria and agreed to submit to the experiment in consideration of the payment of one dollar. Manson then went on to relate the discovery, while he was looking for filaria, of a new parasite, *Paragonimus westermanii*. "I was not," he wrote, "looking for this parasite when I found it, for a man may search for a shilling and find a sovereign. The important thing is to search." He then passes on to his investigations of leprosy and of various epiphytic skin diseases, and laments his poor equipment in microscopes; but in one respect his opportunities were unrivalled, and that was in the study of the great number of patients in the Chinese hospital; of these opportunities he took the utmost advantage, devoting to them all his spare time. "It was," he says, "my laboratory, my school." Here the autobiography breaks off.

MEDICO-HISTORICAL TREASURES OF GLASGOW.

AMONG those who propose to attend the ninetieth Annual Meeting of the British Medical Association in Glasgow this month there must be many who will be glad to know something of the medical manuscripts and early printed books and other historical treasures possessed by the medical institutions of that city. For their benefit the July issue of the *Glasgow Medical Journal* contains two interesting notes: one by Mr. Mungo Ferguson, M.A., Sub-Librarian of the University, on some medical manuscripts and early printed

books in the Hunterian Library; and the other, by Mr. Walter Hurst, Secretary to the Royal Faculty of Physicians and Surgeons, on some interesting possessions of the Faculty. The Hunterian Library of the University of Glasgow contains some 600 MSS. and 12,000 volumes of printed books. The printed works include about 500 volumes dated prior to the year 1500, and of these incunabula 12 were printed by William Caxton. There are many rare editions of the classical authors, works on general literature, and a large number of pamphlets, but the greater part of the library is made up of medical works by Arabian and Greek physicians and by well-known medical writers, English and French, of the sixteenth to the eighteenth centuries. The principal monument to William Hunter is, of course, the Hunterian Museum in Glasgow, but the Hunterian Library owns several of his manuscript works, amongst them his *Anatomy of the Human Gravid Uterus* and his *Journal of Attendance on Her Majesty Queen Charlotte as Physician Extraordinary*. Many of the volumes in this library contain interesting plates of parts of the human body, of operations, instruments, etc., and an effort will be made to exhibit as many of these as possible during the meeting of the Association. Mr. Ferguson in his note indicates some of the most interesting and earliest printed books and manuscripts in this collection. The former include *Tractatus de Venenis*, by Pietro d'Abano, printed at Mantua in 1473; the *Chirurgia* of Pietro d'Argleta (Venice, 1480); the first edition of Celsus, *De Medicina Libri VIII* (Florence, 1478); the *Chirurgia* of Guy de Chauliac (Venice, 1499); Salicet's *Tractatus de Salute Corporis*, printed in Holland, circa 1467; and a Latin translation of Avicenna's famous *Canon of Medicine*, dated 1482–83. The manuscripts include two other copies, written in the early thirteenth and the fifteenth centuries, of works by Avicenna; also the fourteenth-century MS. in a French hand of a work by the distinguished Arabian translator of Greek medical authors, Hunain Ibn Ishak, known during the Middle Ages in Europe as Joannitius. Among other manuscripts in the Hunterian Library are early versions of the *Practica Chirurgie* and the *Opera* of John of Arderne, the father of English surgery, and of Lanfranc's *Chirurgeria Magna*. The treasures in the library of the Royal Faculty of Physicians and Surgeons of Glasgow include a large number of books relating to medicine printed before the year 1600 and mostly in Latin. The Faculty possesses seven incunabula, and we may take Mr. Hurst's word for it that most of them are beautiful and interesting specimens of the art of printing. He gives the titles of these early printed works, bearing dates between 1472 and 1496; they include a copy of the first edition of the *Lilium Medicinae*, by Bernard de Gordon, whom we remember Dr. Fielding Garrison describes as "inferentially a Scotchman." Besides the incunabula, this library contains a fine specimen of the first edition of Vesalius, a number of books relating to the school of Salerno, and a fine first edition of Sir Thomas Browne's *Pseudodoxia Epidemica*. Here also may be seen the gauntlet gloves of Maister Peter Lowe, founder of the Faculty, together with other interesting relics, such as the manuscript clinical lectures of William Cullen, the case of instruments used on board the *Victory* at the battle of Trafalgar, and some mementoes of Lister in Glasgow.

THE FUND FOR RUSSIAN DOCTORS.

WE were able to announce last week that substantial progress had been made with the fund instituted by the Council of the British Medical Association for the relief of medical men and their families who are starving in various parts of Russia. The appeal, signed by the four Officers of the Association, has been sent to every member in Great Britain and Ireland, and its text was reproduced in our issue of July 1st at page 26. The appeal is for the only form of aid which in the circumstances can be effective—namely, the sending of food parcels through the American Relief Administration to individual medical men and to groups for distribution among members in greatest need. In order to secure a prompt and widespread response the Council has asked every member to send a contribution of 5s. to the Financial Secretary of the Association, 429, Strand, W.C.2, who will send a receipt. Nine subscriptions of 5s. each will more than cover the cost of one food parcel, including all charges, and the American Relief Administration in London has undertaken responsibility for its delivery to the person addressed. The following extracts from a statement by the Medical Director of the American Relief Administration will give an idea of the urgency of the need and of the means adopted to distribute relief: "I know of no class in Russia (he writes) more deserving of our admiration and assistance than the medical profession—doctors, nurses, feldshers, and assistants. A large percentage have died during the last three years from epidemic diseases to which they have been constantly exposed. . . . Undernourished and overworked, assuming the labours of their comrades who have succumbed, their weakened physical condition makes them a ready prey to infections, and their mortality rates are out of proportion to those prevailing generally. The mortality rate among physicians from typhus is reported 50 per cent., as against 15 per cent. for the general population. Though the local government nominally supplies rations for the personnel, actually doctors and nurses have to content themselves with what the patients leave on their plates. Very often even the patients' food is not forthcoming. Even when it is, it is meagre to the last degree. . . . Group relief as a means of reaching the artistic and professional classes, the most uncomplaining but by no means the least affected of Russian famine sufferers, takes the form of food packages which are distributed by the American Relief Administration in accordance with an approved plan. The method of selecting the most needy is the same for the cities and the provinces." After giving a detailed account of the method the administrator continues: "Three thousand packages have been distributed in this way to doctors alone in nineteen Russian cities. Each package contains 118 lb. of nourishing staples—white flour 50 lb., rice 25 lb., milk 20 tins, cooking fats 10 lb., sugar 10 lb., tea 3 lb. . . . Central warehouses from which American Relief Administration food packages are delivered to beneficiaries either in person or by mail are open at the following cities: Ekaterinoslav, Gomel, Kazan, Kharkov, Kiev, Minsk, Moscow, Odessa, Orenburg, Petrograd, Rostov-on-Don, Samara, Saratov, Simbirsk, Tzaritzin, Ufa, Simferopol, and Vitebsk." A recent message from Moscow states that famished Russian doctors are almost as hungry for modern medical literature as for food. Requests for English and American medical journals are constantly pouring into the Medical Director's office, and these, he says, are as urgently pressed as the application for food packages—in some cases even more urgently. Any British or American physician, he adds, who has files of medical journals for the past three years to dispose of could confer no greater boon upon the medical fraternity of Russia than to turn them over to the American Relief Administration for distribution. Many of the Russian doctors have not seen a medical journal from the outside world for years. They read them avidly and treasure any copy that chances to fall into their hands. Many touching messages of gratitude for the gift of food packages have been received by the American Relief Administration from members of the medical profession in Russia, and the evidence from various quarters amply confirms the Council of the British Medical Association in the steps it has taken to bring the plight of the Russian profession before their colleagues in this country. The amount of money received by the Financial Secretary up to July 10th was £1,253. The Council purposely suggested a small subscription, but many members have sent larger sums, and these have been gratefully received.

"LE CADUCÉE."

WE have more than once mentioned *Le Caducée*, by Baron Henri de Rothschild, M.D., of Paris, who now writes for the stage under the pseudonym of "André Pascal." A gala performance of this play was given at the Théâtre du Gymnase during the second International Congress of the History of

Medicine held in Paris last summer. It has now been adapted for the English stage by J. G. Levy under the title *The Risk*, and the first performance took place on the evening of July 5th at the Strand Theatre, with Mr. Arthur Bourchier in the part of Armand Revard, a medical blackguard whose unprofessional conduct forms the leading motive of the play. Two of the other doctors, Charrier and Professor Godefroy, are models of upright behaviour, and the professor is uncompromising on medical ethics. The fourth medical character, who is chief assistant in Revard's private nursing hell at St. Cloud, seems to have been a long time making up his mind, but in the end revolts against the scandalous goings on there, which include the performance of unnecessary operations upon rich patients, and the admission of actresses and reporters to the operating theatre. The whole story is disagreeable; without entering into details it may be summed up as the tragedy of a charlatan. We may be grateful to the translator for making no attempt to give the play an English setting, and a glance at the French text suggests that he has kept fairly close to the original version. The character of Revard is so grotesquely overdrawn that we doubt whether an English audience would suppose that such things occur even in a foreign country, and having now seen the play we can well imagine that our colleagues in Paris take the same view. Moreover, the irreproachable sentiments of the other doctors may perhaps be looked upon as something of an antidote to the infamous words and deeds of the "hero." The first-night audience seemed pleased with the actors, and possibly also with the play; but we scarcely think *Le Caducée* will affect the attitude of the public towards the medical profession in this or any other country. It may be well to add that fee-splitting (or dichotomy) is but one of Revard's many low tricks, and is only mentioned by him to be repudiated by his colleague; English playgoers should therefore not get the impression that this is a common practice either in France or in England.

THE WEST INDIES REPORT.

THE report of the Parliamentary Under-Secretary of State for the Colonies on his recent tour in the West Indies and British Guiana contains certain proposals for immediate improvement in the remuneration and general conditions of medical service in the Leeward and Windward Islands. The more important of these are summarized elsewhere (SUPPLEMENT, p. 22). It is therefore sufficient to remark in passing that they are long overdue, and that any delay in their adoption, whether by the Colonial Governments or the Colonial Office, will be a very grave error on the part of those responsible. The interest of the report is not confined to these concessions. In the first place its occasion is significant. For this tour marks a deliberate and successful attempt to establish a more vital relation between the Colonies and those ultimately responsible in this country for their administration. It is therefore a precedent of no small importance. It is also in itself a document of value in helping to an appreciation of the general circumstances determining the form taken by public health problems in the West Indies. The particular section which deals specifically with public health and medical services must be read in connexion with the sections covering respectively constitutional, economic, and educational conditions and certain problems peculiar to individual colonies, if it is to be fully understood. Public health conditions are characterized with considerable moderation as "not yet satisfactory." Whilst yellow fever has been eliminated by effective quarantine administration, malaria, dysentery, ankylostomiasis, yaws, typhoid, tuberculosis, and venereal diseases are prevalent, and combine to produce a deplorably high mortality rate. A lax standard of sexual morality and high incidence of illegitimacy, together with general ignorance and apathy in public health matters, tend to minimize the effects of the pioneer work done by the Rockefeller Institute, the local Baby Saving Leagues, the West Indian Conference, and the visit of Dr. Wright and Dr. Fairfield on behalf of the National Council for Combating Venereal Diseases. Mr. Wood rightly finds the key to the situation in the establishment of adequate medical and sanitary services, education of the public in the principles of hygiene and sanitation, and the stimulation of private effort. He emphasizes the necessity of making the conditions of appointment such as will in the first place attract competent candidates to the service, and, in the second, place adequate financial resources at their disposal in carrying out their duties. To this end he accepts the creation of a unified service as the ultimate solution of the first part of the problem; his solution of the second part must be deduced from other sections of his report. For education in hygiene and the stimulation of individual effort depend, after all, upon the general level of education, and can hardly be achieved whilst the majority of the population are illiterate, and the schools themselves present rather a warning than an example in the matter of sanitation. Moreover, it is unlikely that a sound appreciation of the relationship between individual and communal responsibility in public health questions will be secured until the constitutional problem of representative government has been solved. Meanwhile the public health and sanitary services cannot escape the adverse effects of the present acute economic depression. The improvement of economic conditions and the progressive influence of education will remove all obstacles from the path to an effective unified service, for there still remain geographical and political difficulties which are at present sufficient to remove political federation from the field of practical politics. Among the merits of the present report are that the immediate readjustments it recommends do in the main tend to make the way easier for the more radical reconstruction which is throughout recognized as necessary; that it proposes to give effect to the scheme for a unified medical service drawn up by Dr. K. S. Wise, Surgeon General of Trinidad, by an agreement similar to the West Indian Inter-Colonial Quarantine Convention, which could be adopted by two or more colonies as conditions become favourable; and that it does not presuppose a closer political relation than at present between the several colonies. Whilst the analysis of cause and effect contained in the section on public health is, in the main, convincing, there is one omission which calls for notice. It is nowhere specifically laid down that the Public Health Services are, as the Egerton Committee on the Colonial Medical Services pointed out, emphatically productive services. This point is the more important because it is apt to be overlooked, and those responsible for the utilization of the slender financial resources of the West Indies at the present time will do well to remember that successful economic development is in a very real and direct sense dependent upon a sound public health policy.

COMPARATIVE UROLOGY.

EACH of the many different departments into which the art of healing has become split works along its own lines, and too often independently of its neighbours. An advance in any one department of science may be unknown to workers in another, and valuable knowledge having a definite bearing on problems other than that to which it was originally applied may thereby be lost. For this reason any attempt to correlate knowledge gained in the different departments of science is to be welcomed. The Section of Urology of the Royal Society of Medicine has recently shown great activity in this direction. Not only have physicians and surgeons found there a common meeting ground, but the Section has also arranged discussions at which veterinary surgeons could give an account of those diseases that are common to man and the lower animals. At the May meeting of the Section Professor Hobday, of the Royal College of Veterinary Surgeons, read a paper on urinary calculi in domestic animals, and in the discussion that followed the paper more than one speaker drew attention to the fact that the etiology of urinary calculi was but one of the many problems that

were common to practitioners in human and veterinary medicine alike. At the June meeting of the Section veterinary urology gave place to what may be termed comparative urology. Mr. Kenneth Walker read a paper on the comparative anatomy of the accessory sexual glands, reported elsewhere (p. 84). As he explained in his preamble, this excursion of a surgeon into comparative anatomy had been made with a definite object in view—that of ascertaining whether comparative anatomy could throw any light on the difficult question of function. He asked, Would a consideration of the development and structure of the prostate in various animals furnish a clue to its purpose? It was in the hope of finding such a clue that Mr. Kenneth Walker had examined a large number of animals, and had studied the relative development of the various accessory sexual glands in a great many different species. Medicine can afford to neglect no line of study in the search for knowledge. The study of comparative anatomy has, in the past, yielded results of immense value, not only to that particular department of science, but to medicine and surgery in general. Indeed, one has only to turn to the writings of the great John Hunter to realize to what an extent medicine has become indebted to researches carried out in the field of comparative anatomy.

DISCOURTESY IN THE CORONER'S COURT.

We have repeatedly had occasion in these columns to call attention to irregularities committed by coroners and to the discourtesy displayed by some of them to medical witnesses. A recent case at New Brighton furnishes a further example of this attitude. The facts of the case are as follows: An unmarried maidservant in a private house gave birth to a child, which she placed in a bath under the bed. Her condition had not been suspected by her master and mistress, and the birth was only discovered because the woman was unable to carry on her duties. Dr. Barry was called in and certified the child as stillborn, and also gave a certificate for the removal of the woman to the infirmary, to which she was transferred in an ambulance during the day. Subsequently, it occurred to Dr. Barry that he should not have given a certificate in the case of an illegitimate child. Accordingly, he informed the coroner of what he had done, and an inquest was held. A verdict of stillbirth was found. During the course of the proceedings the coroner made some severe strictures on the removal of the mother from the house, and, referring to Dr. Barry's certificate that she was fit to be removed, remarked that he could only say that if complications followed the removal of a woman in a case like this he would advise the jury that he (Dr. Barry), as the medical man responsible for the removal, would be guilty of manslaughter. Several comments may be made on this case. In the first place, Dr. Barry need not have informed the coroner of the circumstances at all. The law does not require either a certificate of death or an inquest in the case of the stillborn child. In order to obtain burial all that is necessary is that the superintendent of the cemetery, or other person who has control over the burial, should be furnished with a certificate, to the effect that the child was stillborn, from the practitioner who was in attendance at the birth or who had examined the body. The position is not altered by the fact that the birth is illegitimate. In any case there is no statutory obligation upon a medical practitioner to give information to the coroner of a death under circumstances necessitating an inquest. The medical practitioner dealing with such a death may refuse to give a certificate, and even acts in strict conformity with the terms of the law if he gives a certificate stating the cause of death, even if due to violent or unnatural causes. In the first case the death would be reported to the coroner as an uncertified death, and in the second it would be the duty of the registrar to refer the certificate to the coroner as one relating to a death demanding an inquest. While, technically, either of these courses would be correct, the almost universally established custom is for the medical practitioner to give information direct to the coroner, and it is obvious that any other course might lead to serious delay and possible loss of important evidence bearing upon the cause of death. It is clearly in the interests of the community that medical practitioners should render all possible assistance to coroners. In the vast majority of cases they willingly do this, and give prompt information of any death which might require an inquest. Some coroners, however, either forget or are ignorant of the fact that information from the medical practitioner of a death is rendered solely as an act of courtesy. Such ill-mannered utterances as that made by the coroner for New Brighton seriously militate against harmonious co operation and are against the interests of the community, the medical profession, and the coroners. As regards the coroner's suggestion that the mother had been treated harshly, and even dangerously, we may point out that in this matter he was going entirely beyond his sphere, which was simply to inquire into the circumstances attending the death or stillbirth of the infant. The question as to whether or not the woman should have been allowed to remain in the house was one for decision by the master and mistress. They took the natural course of ascertaining from Dr. Barry that the woman was fit to be removed, and, in the absence of any evidence impugning the accuracy of Dr. Barry's opinion, the coroner's remarks were entirely unwarranted.

THE BRITISH ASSOCIATION.

THE British Association for the Advancement of Science, like the British Medical Association, is holding its ninetieth annual meeting this summer. The British Association will meet at Hull from September 6th to 13th, under the presidency of Professor Sir C. S. Sherrington, G.B.E., President of the Royal Society, who will deliver the inaugural address on "Some aspects of animal mechanism." The brief preliminary programme, just issued, gives the titles of the sectional addresses and a selection of the subjects put down for discussion in the various sections. Among the sectional addresses we may note that Principal J. C. Irvine will discuss research problems in the sugar group; Dr. E. J. Allen, the progression of life in the sea; Mr. H. J. F. Peake, the study of man; Professor E. P. Cathcart, the efficiency of man and the factors which influence it; Dr. Marion Newbigin, human geography, its first principles and some applications; Professor H. H. Dixon, the transport of organic substances in plants; and Dr. C. S. Myers will consider the influence of the late W. H. R. Rivers (President-elect of Section J) on the development of psychology in Great Britain. Other subjects for discussion include psycho-analysis and the school, mental characters and race, the present position of Darwinism, vitamins, economic periodicity, the possibility of increasing the food supply of Great Britain, and reforms in mathematical teaching. Professor W. Garstang will give an evening discourse on "Fishing: Old ways and new," and Dr. F. W. Aston on "The atoms of matter." Full particulars of the meeting may be obtained from the Secretary, British Association, Burlington House, London, W.1, or from the honorary local secretaries, British Association, Guildhall, Hull.

PROFESSIONAL CLASSES AID COUNCIL.

THE Professional Classes War Relief Council has been reconstituted as the Professional Classes Aid Council, and as such held its annual meeting, under the chairmanship of Lord Phillimore, on July 5th. Major Leonard Darwin, chairman of the executive, said that the decision to continue the work of the Council in peace time was due to the fact that distress still prevailed among large numbers of well-educated people. It was true that most professions had their own benevolent funds, but the Council served a useful purpose in referring many applicants, especially widows, to those sources, of which they had been unaware, and in helping others who were not eligible to benefit from the professional fund. All relief given by the Council was constructive; often it took the form of the education of children. About 1,000 children of the professional

classes had been enabled to continue their education by its means. In other cases the Council arranged for a period of needed rest or gave assistance to a person training for a vocation. There were not sufficient funds to give pensions in any cases. The Secretary of the Council reported that, in addition to those who continued to receive help, 327 fresh applicants had been advised, and 87 others assisted materially, during the past year. Co-operation was maintained with thirty-eight societies, including the British Medical Association and the Royal Medical Benevolent Fund. The work had its pathetic, but also its lighter side, as, for instance, the case of the widow who was asked whether her husband had been a Freemason, and replied indignantly, "Always the loving and faithful companion of his wife!" Speakers representing various professions testified to the timeliness of the help given to some of their unfortunate colleagues. The address of the Council is 251, Brompton Road, S.W.3.

TENTH INTERNATIONAL CONGRESS OF OTOLOGY.

THE tenth International Congress of Otology, the first to be held since 1912, will be held in Paris next week. It will continue from July 18th to 21st. One sitting will be devoted entirely to a laryngeal subject, and the choice has fallen on the treatment of cancer of the larynx. The social attractions of the gathering appear to be more than usually alluring. They begin with a reception at the Hôtel de Ville on the afternoon of July 18th. There will be another reception on July 19th, a banquet on July 20th, and a day's trip to Verdun on July 22nd. A very large number of British and overseas oto-laryngologists have already inscribed themselves. Further particulars can be obtained from the Secretary of the English committee, Mr. Lionel Colledge, 22, Queen Anne Street, London, W.1, or applications may be sent to the Secretary-General, Dr. A. Hautant, 28, rue Marbeuf, Paris (VIII).

COMMITTEE ON CRIME AND INSANITY.

THE Lord Chancellor has appointed a committee to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and whether any, and if so what, changes should be made in the existing law and practice in respect of cases falling within the provisions of Section 2, Subsection 4, of the Criminal Lunatics Act, 1884. The Chairman of the Committee is Lord Justice Atkin. The other members are Sir Ernest Pollock, K.C., M.P., Attorney-General; Sir Leslie Scott, K.C., M.P., Solicitor-General; Sir Herbert Stephen, Bt., Clerk of Assize for the Northern Circuit; Sir Richard Muir, Senior Treasury Counsel at the Central Criminal Court; Sir Archibald Bodkin, Director of Public Prosecutions; Sir Edward Troup, K.C.B., late Permanent Under-Secretary of State, Home Office; and Sir Ernley Blackwell, K.C.B., Assistant (Legal) Under-Secretary of State, Home Office. It will be observed that the Committee is a purely legal and administrative body.

THE PRACTICE OF DENTISTRY.

THE Registrar of the Dental Board of the United Kingdom informs us that a recommendation has been addressed to the Privy Council under Section 1 (4) of the Dentists Act, 1921, that this section shall come into operation on November 30th instead of at the expiration of one year from the commencement of the Act—namely, July 28th, 1923. It is expected that the decision of the Privy Council upon the matter will be announced very shortly. The section enacts that no person shall, unless registered in the *Dentists Register*, practise or hold himself out, whether directly or by implication, as practising or being prepared to practise dentistry. A person acting in contravention of this provision is, in respect of each offence, liable on summary conviction to a fine not exceeding £100. The section does not operate to prevent the practice of dentistry by a registered medical practitioner, or the extraction of a tooth by a duly registered pharmaceutical chemist, or duly registered chemist and druggist where the case is urgent and no registered medical practitioner or registered dentist is available and the operation is performed without any general or local anaesthetic. Nor does it prevent the performance in any public dental service of minor dental work by any person under the personal supervision of a registered dentist, and in accordance with conditions approved by the Minister of Health after consultation with the Dental Board set up by the Act.

A MEETING of the Physiological Society will be held at Glasgow on July 27th, morning and afternoon, in conjunction with the British Medical Association. The Section of Physiology of the British Medical Association will, on the morning of that day, hold a discussion on basal metabolism, to be opened by Professor E. P. Cathcart, F.R.S. In the afternoon there will be demonstrations in the Physiological Institute.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Colonial Medical Services.

IN the debate on the Colonial Office vote, on July 4th, Dr. Fremantle referred to the section of the Under-Secretary's report on the West Indies dealing with the Colonial Medical Services. An analysis of this report is published in the SUPPLEMENT at page 22, and some points it raises are discussed at page 99. Dr. Fremantle in his speech instanced the case of British Honduras as illustrating the evil results of the neglect of good advice. Seventeen years ago the late Sir Rupert Boyce had, as a result of a visit to British Honduras, described the extraordinary insanitary conditions existing and the prevalence of the stegomyia mosquito, involving the danger of outbreaks of yellow fever. Nothing was done, but outbreaks of yellow fever occurred, the most recent only last year. Dr. Fremantle then turned to the case of Mauritius. The Colonial Office, he said, had no staff of trained medical inspectors such as it ought to have, but last year sent out an unofficial inspector, who spent six months in the island and presented a long report; so far as Dr. Fremantle knew this had not been published, but it pointed out the various conditions dangerous to the public health, and advised the establishment of a proper water supply for Port Louis and the five towns; it also indicated that temporary measures to supply good drinking water could be provided at a cost of about £1,500. Nothing was done, and an epidemic of typhoid fever had since occurred. The Under-Secretary had commended the action of the National Council for Combating Venereal Diseases in sending out a commission. Last year a grant of £1,500 for the purpose was made, but this year it had been dropped. Dr. Fremantle observed that America did much more for the health services of her colonies, and the Rockefeller Foundation was doing magnificent work. The Colonial Office had sent out fourteen sanitary inspectors to Kenya and sixteen to the West Coast of Africa, but it had made no provision for training such inspectors; it depended on the one hand upon the Royal Sanitary Institute, which had done excellent colonial work for the last twenty-five years, and on the other upon the Rockefeller Foundation, which again had stepped in and made a noble gift. After speaking of the inadequacy of transport allowances, and of some other points not adequately dealt with, Dr. Fremantle said that the British Medical Association, which had done much to focus and to represent medical opinion on these subjects for many years, was grateful to the Under-Secretary for the instalment of improvement which he had brought forth. But it was only an instalment. A departmental committee on the Colonial Medical Service had reported in 1920, but nothing had yet been heard as to the action the Government proposed to take upon it. One or two little matters had been attended to, but no indication had been given as to the general policy to be adopted in regard to it. The Colonial Medical Service could not go on as at present. The condition affected recruiting and recruiting affected the whole service and other things in addition. There were certain obvious proposals which he had brought before the House last year. The first was that the Colonial Office required an Advisor-General. The report to which he had referred asked for a Director-General; the official reply was: "You cannot have a Director-General unless he has power to direct; these medical services belong to the Colonies and not to us, and it would not be easy for such a man to direct them from here." There were certain officers in authority for certain medical services

such as the West African, but an Advisor-General was wanted. The need was for some one man responsible for focusing the work and for training, and for advising the Colonial Office systematically. What he suggested was done in the army, the navy, and the India Office. A first step towards the adoption of the proposals of the departmental committee would be to have one, two, or perhaps three highly trained and highly experienced travelling medical inspectors to go to the colonies to study the conditions and to advise on the steps which should be taken to prevent epidemics. Expenditure on such measures would be economic, and would favourably affect the next generation. When America decided to take over a colony she swept it clean; health measures were deemed a matter of business. The result was that industry at once went to the places, knowing it could do so safely.

Medical Benefit.

Mr. Foot asked, on July 3rd, how many persons were insured under the National Health Insurance Act; how many of these had not selected a panel doctor; what amount of money in respect of such persons not attached to any panel was distributed annually among panel doctors; how many doctors participated in the distribution; and whether there were any statistics showing what work was done or what number of professional attendances were given by the participating doctors in return for the money so distributed.

Sir A. Mond said the number of insured persons in England and Wales entitled to medical benefit was estimated at approximately 13,250,000. The number of names on the lists of insurance practitioners and approved institutions was slightly over 12,800,000. The number of insured persons who had not selected a doctor was on this basis 450,000, or 3½ per cent., but in consequence of the difficulty of keeping any precise record of the movements of the insured population there was inevitably some inflation in the doctors' lists, and the actual number of unassigned persons naturally exceeded that figure. But the vast majority of unassigned persons were those who neglected to select a doctor until they were in need of treatment, and who then had a right to immediate treatment although not at the time on any doctor's list. Thus the panel practitioners collectively were at risk in respect of them. The number of insured persons who did not avail themselves of their right to medical benefit when they required treatment was believed to be a relatively insignificant and diminishing fraction. The remainder of the question was based upon a misapprehension. Under the agreement there was no such division of the practitioners' fund as Mr. Foot suggested. The total sum available in any area was based upon the total number of insured persons for whose treatment, irrespective of the numbers assigned or unassigned, the practitioners in the area were collectively responsible. The available statistics as to the work done by insurance practitioners did not distinguish between patients who were or were not on the list of a practitioner at the time treatment was given.

Criminal Law Amendment Bill.—On the Second Reading of this bill on July 5th, Mr. Shortt explained that in 1918 two Criminal Law Amendment Bills were referred to a Joint Select Committee of both Houses of Parliament, but the dissolution came before the Committee had reported. In 1920 the Committee was again constituted under the same chairman (Lord Muir Mackenzie) and made a report. Last year a bill, on the lines of its recommendations, passed the Lords, and was read a second time in the Commons, but unfortunately the two Houses disagreed as to certain amendments, and there was not time for a settlement before the end of the session. The Government thought it right this year to take up the bill. There was very little in the provisions which had not been debated thoroughly on previous occasions. Clause I dealt with the age of consent for indecent assault. The Government had come to the conclusion that the age should be made 16, the same as for consent for carnal knowledge. There were various other provisions, such as an increase in the punishment for keeping brothels, but most of these were entirely non-contentious. The main controversy had been over the subject-matter of Clause II, which provided that reasonable cause to believe that the girl in question was over 16 should no longer be a defence. A large body of opinion was in favour of the provision as it stood in the bill, but another body of opinion was that to take away that defence was unfair; but be believed that this body was, comparatively speaking, a small minority. Negotiations had taken place to exempt from this provision young men who might be tempted by girls more to blame than they were. Those very strongly in favour of the clause were willing to agree to some such exemption as this—that where the accused person was under a certain age, say 21 or 23, or whatever age might be agreed upon, a magistrate might instead of committing the man for trial, treat the case under the Summary Jurisdiction Act, and merely bind him over. That was not satisfactory to those who held that a young man under the specified age should still have open to him the defence that he was not guilty of a crime at all. The binding over being under the Probation Act, there need be no conviction. Mr. Shortt concluded by urging that what should be done for young men was a question for committee. The discussion which followed raised no particular medical considerations. Major C. Lowther moved and Lieut.-Colonel Moore-Brabazon seconded the rejection of the measure. Other critics included Major Sir George Hamilton, Mr. Dennis Herbert, Mr. Kidd, Mr. Holder, Mr. J. F. Green, and Mr. Macpherson; they spoke for the most part as to the possible danger that young men might be wronged by designing girls or blackmailers. Sir Donald Maclean, Mr. Wignall, Sir Arthur Steel-Maitland, Mrs. Wintringham, Lieut.-Colonel Hurst, and Sir Thomas Bramsdon spoke in favour of the bill, with the qualification proposed by Mr. Shortt. Ultimately the second reading was given without division and the bill referred to Grand Committee.

Statistics of Old-Age Pensions and Poor Law Relief.—According to a voluminous statement furnished by Sir John Baird, the total amount paid in old-age pensions during the year ended March, 1922, was approximately £26,009,500 (excluding Northern Ireland). The total number of old-age pensioners on the last Friday in March was 1,029,367, of whom 365,255 were men and 663,112 were women. The total number of persons of all ages in England and Wales receiving institutional relief was 222,268; the total number receiving domiciliary relief was 1,183,516. The number of persons over 70 years of age in institutions (other than lunatic asylums) was 42,695; the number receiving domiciliary relief was 21,278. The number of old-age pensioners receiving institutional relief was 3,190; the number receiving domiciliary relief was 19,084. The average weekly cost of Poor Law relief in England and Wales in the financial year 1920–21 was approximately per person: indoor (other than relief to lunatics in lunatic asylums), 35s. 6½d.; outdoor, 7s. 7¾d. In Scotland the total number of sane poor in poorhouses, on May 15th, was 10,407. As regards outdoor relief the numbers were: ordinary, 71,886; destitute able unemployed, 1,478. These figures excluded the insane. The average weekly cost of sane paupers and dependants in Scotland for 1920–21, on the basis of the number chargeable other than destitute able-bodied, on May 15th, was: indoor, £1 7s. 6d.; outdoor, 7s. These average costs were exclusive of general administrative charges. The number of sane paupers and dependants in Scotland over 70 years of age on January 15th was: in poorhouses, 2,395; outdoor, 4,126. The outdoor poor included 2,931 old-age pensioners. The average weekly cost of prisoners in England and Wales for the financial year 1920–21 was as follows: convicts, gross cost £3 3s. 9d. per week; net cost, after deducting value of labour and incidental receipts, £2 9s. 7d.; local prisoners, gross costs £2 2s. 4d.; net cost (after deductions as above) £1 12s. 6d.

Conditions in Mines.—In the debate on the Mines Department vote on July 6th Mr. Robertson, who formally moved a reduction on the sum, said that for the year 1920 (the last for which there was a full return) the fatal accidents numbered 1,103 and the non-fatal 117,000. These figures took no account of injuries to men not off duty seven days. Taking the rate according to the tons of mineral raised per man the accident rate for 1920 was as high as in any period of ten years since 1883. The great causes were falls from roofs and sides and haulage—not fire-damp. Mr. Cape, seconding, referred to nystagmus as a disease increasing considerably amongst the mining classes. A man having contracted it had little possibility of escaping from it for the rest of his life. It might be abated somewhat, but the recurrences which took place were serious, and in his own county he had known men who through the effects of the disease had had to be taken to the asylum. Mr. Bridgeman, Secretary to the Mines Department, said that questions of health and safety formed much the largest part of his work and the most interesting, and he thanked miners' representatives for giving him credit for good intentions. He differed from Mr. Robertson as to what were reliable comparative statistics as to accidents. He had had figures worked out which showed the death rate in the decade from 1873 to 1882 per million tons raised was 7.42; in 1903–12 it was 4.76, and in 1920, a year by itself, 4.60. He agreed, however, that in the last ten years there had been no big explosions. With regard to nystagmus Mr. Bridgeman quoted the report issued by the Medical Research Council of the Privy Council, whose main suggestion was that better light would probably have a good effect. On that the department had been carefully considering every possible means of improving the luminosity of lamps used by miners, and where it was possible to use electric lamps it was hoped to introduce them. He added that the Medical Research Council kept very closely in touch with his department on general questions. They had taken up with him the subject of weak hands and weak knees. Then there was the question of stone dust in the mines. He had a small standing committee of experts to which medical questions could be referred. That he thought a step in the right direction. The more they worked in harmony with the Medical Research Council the better pleased he should be. He was very grateful for the help they had given him so far. Mr. Bridgeman next touched upon the "Safety First" campaign undertaken in the mines. He had been astonished at the number of deaths which had occurred from tiny scratches—deaths which might have been avoided if first aid had been resorted to. After other speeches the amendment was withdrawn.

The Increase of Cancer.—Mr. Hurd asked, on July 10th, whether the Prime Minister was aware that many medical authorities had come to the conclusion that the alarming increase of cancer and similar diseases might, in part at least, be due to the increased consumption of tinned foods, chemically prepared, and largely of foreign origin; and whether he would submit the subject for investigation to a committee of independent experts who had no association with departments of State, and could view the problem without any preconceived ideas. Sir A. Mond said his answer to the first part of the question was in the negative, but he should be glad to consider any statements by medical authorities which Mr. Hurd could send him in support of the conclusion as to the increase of cancer and its association with the cause alleged. He was always prepared to consult experts other than those associated with his department, but as at present advised he did not think there was need for the appointment of a special committee to investigate this subject.

Zymotic Diseases and Cancer.—Mr. Lunn, on July 6th, asked for a return showing the death rate in the case of each of the zymotic diseases and also of cancer per million of the population for each decade since the registration of causes of death began in England, Wales, Scotland, and Ireland. Sir A. Mond said the desired information for each decennial period from 1851 to 1910 as regards England and Wales would be found in Table 10 of Part 3 of the Supplement to the 75th annual report of the Registrar-General, published in 1919. The figures for the last decennium, 1911 to 1920, had not yet been published, but the uncorrected death rates (per million living) during that period were as follows: small-pox 0, measles 275, scarlet fever 47, whooping-cough 184, diphtheria 141, enteric fever 35, diarrhoeal diseases 603, cancer 1,117. These rates were subject to revision. Questions as regards Scotland and Ireland should be addressed to the Secretary for Scotland and the Chief Secretary for Ireland.

Universities (Scotland) Bill.—Under the provision of the measure which came down from the House of Lords and was read a second time in the Commons on July 4th, the existing powers of the University Courts are to be enlarged. The universities are to be empowered, first, to pass ordinances imposing age limits upon the tenure of office of any principal or any professor in the university; secondly, to institute a new pensions scheme for principals or professors, in addition to or substitution for existing pensions schemes; and thirdly, to provide for the admission of lecturers or readers to the Senatus Academicus.

The Cost of Scientific Instruments.—Dr. Murray asked, on July 3rd, whether the attention of the President of the Board of Trade had been drawn to the statement in the last annual report of the Medical Research Council to the effect that its operation had been greatly hampered by the present high cost of scientific instruments and materials; and whether, in view of the fact that other eminent scientific workers had repeatedly stated that the Safeguarding of Industries Act was the chief factor in raising the cost of instruments and chemicals, the Minister would advise the Government in favour of repeal of the Act. Mr. Baldwin replied that the report containing the statement related to the year ended September 30th, 1921, when the Safeguarding of Industries Act was not in operation, and thus confirmed the view that the increased cost of research was not due mainly or even appreciably to that Act. Dr. Murray said the point of his question was that the Act had increased the already high cost of this material.

Exportation of Morphine.—Mr. Ramsden, on June 28th, drew the attention of the Home Secretary to a statement at a missionary conference in Derbyshire to the effect that sufficient morphine was being smuggled into China annually to give every man, woman, and child three injections, and that the sources of supplies were England, America, and Germany. Mr. Shortt said the export of morphine from this country was prohibited except under licence from the Home Office, and all possible steps were being taken to prevent its export for other than medical or scientific purposes. The traffic could only be successfully controlled, however, by international co-operation, and one means to that end would be the adoption and enforcement by all countries of the system of importation certificates recommended by the League of Nations. The Council of the League were urging the members of the League to bring the system into operation at an early date.

Suicides in Prison.—Replying to Lord Henry Cavendish-Bentinck on July 11th, Mr. Shortt said there was no doubt that among persons received into prison there was an abnormally high proportion prone to insanity and suicide, and before any comparison was made between the prison and the ordinary population this factor and many others must be taken into account. For example, the ratio among the prison population which consisted of persons over 16 years of age could not properly be compared for these purposes with the ratio among the ordinary population of all ages. Mr. Shortt described as "entirely misleading" Lord Henry Cavendish-Bentinck's statements that the suicide rate among prisoners was three times as high as among the ordinary population and the ratio of insanity five times higher than that of the ordinary population.

Condensed Milk.—Sir A. Mond, in reply to Mr. Hurd, on July 10th, said that the amount of condensed separated or skimmed milk imported during the first five months of this year was about 503,000 cwt. as compared with about 285,000 cwt. of condensed whole milk. The question of issuing regulations as to labelling was under consideration. He had no power to alter the present statutory requirement that condensed separated milk must be labelled as "machine-skimmed milk."

School Children's Attendance.—The Economy (Miscellaneous) Bill, which was read a second time on July 10th, includes a provision that no child need be sent to school before the age of six, but that if any parent desires to send his child to school at the age of five he shall still be entitled to do so. In the course of the debate, Mrs. Wintringham pointed out that one effect of the change would be that in the case of all the children effective medical inspection would be put off until six years of age, which would mean, in her opinion, that an extra year would have to be made up in the matter of health.

Short Notes.

Sir A. Mond has stated that the Quarantine Acts were repealed in 1896; the measures now adopted for preventing the introduction of infectious diseases into this country are based on the provisions of international conventions; no distinction is made between persons of British and foreign nationality.

The report stage of the Milk and Dairies Bill was reached in the House of Lords on July 10th, certain small amendments being made on the motion of the Earl of Onslow, who submitted them in redemption of promises.

The Minister of Health has stated that the regulation which precludes the Registrar-General from registering births after the age of 7 years will shortly be cancelled.

The Home Secretary has promised to consider a suggestion to inquire into prison administration and Borstal institutions, preferably by a Royal Commission.

MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the offices of the British Medical Association on Thursday, June 29th, when all the members were present—namely, Dr. G. E. Haslip (chairman), Dr. E. Weaver Adams, Sir John Bland-Sutton, Dr. Alfred Cox, Dr. H. A. Des Vœux, Lieut.-Colonel R. H. Elliot, I.M.S. (ret.), Dr. R. A. Gibbons, Dr. R. Langdon-Down, Dr. J. A. Macdonald, Sir Squire Sprigge, Mr. W. E. Warne, and Sir Dawson Williams.

The Chairman, Dr. G. E. HASLIP, in presenting the report, balance sheet, and accounts made up to December 31st, 1921, said he was glad to see that there was a full attendance, and felt sure that the committee would be equally pleased with the position of the Agency as disclosed by the accounts. The business had increased considerably during the year 1921, and its influence had thereby become the greater. The amount returned to medical men insuring through the Agency during the year was £1,697, making a total so returned since 1907 of £10,992. These rebates represented a direct and personal benefit to those insuring; the amounts so returned form a useful index to the progress of the Agency. During the first year of establishment the Agency made rebates of £140, during 1910 of £446, during 1915 of £838, and during 1920 of £1,453. It would, he continued, be remembered that the secondary purpose of the Medical Insurance Agency is to apply the balance of the commissions earned to the purpose of medical charities. The total amount distributed among the medical charities during the fifteen years of the Agency's existence was £8,412; the growing business of the Agency was thus also illustrated in the amounts so available. During the first three years it was not possible to make any distribution, during 1910 the sum of £47 5s. was voted, during 1915 the sum of £630, and during 1920 the sum of £1,015. Medical charities had benefited through the Agency during 1921 by no less a sum than £1,965.

Mr. FERRIS-SCOTT (Secretary of the Agency) reported that the business of the agency had been extended principally in life and motor car insurances. In life assurance the policies recommended by the Agency had been well taken up by members of the medical profession. New life policies were arranged during 1921 to secure sums amounting to £105,500, the total to December 31st thus amounting to £469,882. The progress of motor car insurance during 1921 had been most marked, and it would seem that the advantage of placing such insurances through the medium of the Agency was beginning to be more widely realized. Apart from the fact that by the giving of rebates the policies are obtained at a cheaper rate than could be secured if an insurer went direct to an office, it is in the equitable settlement of claims that the Agency is able to render valuable assistance to the insured.

The balance sheet and accounts were adopted unanimously, and the Committee of Management allocated out of the funds available further grants of 200 guineas each to the Royal Medical Benevolent Fund, the Royal Medical Benevolent Fund Guild, and the Epsom College Medical Foundation. These grants increase the total amount contributed by the Agency to medical charities to £9,030, and led to a proposal from Sir DAWSON WILLIAMS that further consideration should be given to the scope of allocation of available sums, particular attention being paid to the possibility of assisting in the education of the daughters of deceased practitioners, whose case was frequently more difficult and precarious than that of boys.

A resolution proposed by Dr. H. A. DES VŒUX, and seconded by Sir SQUIRE SPRIGGE, was adopted, that a small subcommittee should be formed with a wide reference to consider the matter and report to the Committee of Management in six months.

NINETIETH ANNUAL MEETING
of the
British Medical Association,
GLASGOW, 1922.

THE COAST AND COUNTRY AROUND GLASGOW.

OUR illustrated article last week on the Glasgow Medical School was the sixth of the series of descriptive and historical notes on the City and University of Glasgow and its medical institutions, which began in the BRITISH MEDICAL JOURNAL of December 3rd, 1921.* In last week's SUPPLEMENT we printed the full programme of the Annual Meeting, of which the scientific and social part opens on Tuesday, July 25th, and the medico-political part on the previous Friday.

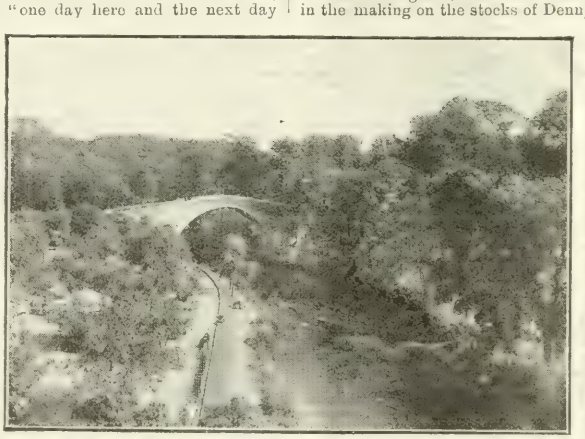
The following article gives some account of the interesting places to be visited on the last day of the meeting, in accordance with the brief itinerary printed at page 13 of last week's SUPPLEMENT. The whole-day excursions are three in number: (1) The Firth of Clyde and Kyles of Bute; (2) the Land o' Burns; (3) Stirling, Bridge of Allan, and Dunblane.

Comprehensive plans have been made for these pleasure excursions that are to mark the close of the Annual Meeting in Glasgow. There was a fear that the date (Saturday, July 29th), being a time of heavy holiday traffic, might affect the obtaining of special facilities; but all obstacles have been surmounted, and as a result capital outings to centres of great interest have been arranged. Early application should be made to the Hon. Local General Secretary, 22, Sandyford Place, Glasgow, W.

THE ANNUAL MEETING EXCURSIONS.

A DAY ON THE CLYDE.

The magnificently appointed turbine steamer, the *Duchess of Argyll*, has been chartered for the Clyde trip, and in the course of a single day's sail visitors will see the best of the varied scenery that is the charm of the famous Firth. The route has been chosen with the idea of packing the greatest possible pleasure into the time available. An American, touring on the principle "one day here and the next day elsewhere," could wish for no better route on the estuary than that beginning at Gourock, where the Caledonian express from Glasgow Central Station draws up at the large embarkation pier. It is a route that leads westward past Loch Long, Strone Point, and the Holy Loch to Hunter's Quay, Kirn, Dunoon, and Innellan, the clean little townships and villages that fringe the Cowal Hills; takes a turn at Toward Point, in towards Rothesay, and onwards through the Kyles of Bute to Loch Fyne; passes the Island of Arran, with its proud peaks, rounding the Garroch Head and opening up a fresh vista, in which the Cumbrae Isles and the Ayrshire coast resorts come into prominence, as the voyage is continued to the Cloch Lighthouse and Gourock once again.



Photograph by] BRIG O' DOON. *[Annan, Glasgow.*

Such is, in brief, the Clyde trip itinerary. None finer could be enjoyed even in a week's sojourn, for it embraces part of all the popular tours—the best part, as those who know could tell. The rail journey to Gourock makes it possible to avoid the inevitably slower sail down the river, where of necessity the traffic has to be regulated, and where, in a measure, the shipbuilding industry has bestowed its legacy of grime and noise on a once beautiful sylvan environment. But it has been considered wise, nevertheless, to embark at the Broomielaw quay in the City, and an opportunity will thus be afforded of seeing the busy area that lines the banks of the Clyde westwards for many miles, and some idea of the industrial activities of the lower reaches will be gained from sight of the shipyards at Port Glasgow and Greenock and across the water, where, from Dumbarton Rock, the ancient Scottish stronghold, Dumbarton Castle, looks down on ships in the making on the stocks of Denny's yard.

Gourock, where passengers will disembark on the homeward journey, is of itself a charming town with fine residential villas terraced on its heights, a wide esplanade, an excellent kursaal and bathing pond, a compact little sporting golf course, and all the attributes of a popular seaside resort. Here the Royal Gourock Yacht Club has its headquarters, and there is harbourage for pleasure craft of all types known on the Firth, from the little cutters of the artisan sportsmen who race annually for the King's cup, to the 50-tonners of the no less keen, though affluent, enthusiasts; while the waterway is seldom without the presence of luxurious steam yachts that add so picturesque a touch to the scene.

The Hills of Argyll.

Across the shining expanse of the Firth the hills of Argyllshire stand out against the horizon. In their rugged grandeur they are characteristic of the glorious scenery of the Scottish Highlands, and here, surely, it is to be found at its best. The jagged contours of the mountains overshadowing Loch Long and Loch Goil are known as "Argyll's Bowling Green," but history does not record who bestowed on them that facetious title. One of the most famous peaks in the range is "The Cobbler," so called because of the resemblance its formation

* The other articles of the series appeared in the JOURNAL of January 7th, 1922, p. 29, February 11th, p. 242, April 22nd, p. 649, and June 3rd, p. 883.

bears to a shoemaker working at his bench. The City of Glasgow owns a Highland estate in the territory adjacent to Loch Goil. It was the gift of Lord Rowallan, who for many years represented one of the Glasgow Parliamentary Divisions in the House of Commons. The estate combines in the activities it fosters a prosperous sheep farm and an extensive scheme of afforestation that is expected in due course to bring a handsome return to the civic purse.

Strone Point, past which the excursion route will lead, is the site of Dunselma, a mansion house associated with the memory of Mr. James Coats of Paisley, one of the family famous in the thread trade. The Holy Loch, across the entrance to which the voyage will be continued, owes its name to tradition. A cargo of soil (from the Holy Land, so it is said) destined to be laid on the foundation of Glasgow Cathedral fell short of that destiny. The vessel carrying it was wrecked here one stormy winter night, and all that was saved of the treasured earth was placed on the shore where Kilmun Church, the burial-place of the Argylls, was afterwards erected.

Hunter's Quay, headquarters of the Royal Clyde Yacht Club, presents itself with an air of well-being; a little cluster of houses, gathered round the miniature pier, with the fine club-house and hotel standing apart in their own grounds. Kirn is just a little farther on, sharing with Dunoon beauty of situation and the patronage of many visitors who find there all the holiday joys that go to the making of memorable vacation days. Innellan, with its impressive hotel-hydro, is just such another pleasure haven, and from here all summer steamer tracks lead either to or from Rothesay Bay, where for description we may turn to the old song:

"It's a bonnie bay at morning,
And bonnier at the noon,
But bonniest when the sun draps,
And red comes up the moon.
When the mist creeps ower the Cumbraes,
And Arran peaks are grey,
And the great black hills, like sleeping kings,
Sit grand roun' Rothesay Bay."

Rothesay, with what may pardonably be termed its suburbs—Craigmore and Port Bannatyne—is known as "The Madeira of Scotland." Amid the green glory of trees are set the villas, boarding houses, and hydros, pleasure gardens and promenades that have won for it high regard in the estimation of holiday makers. The wide pier is ever the scene of gay bustle and activity. Steamers are continually arriving or departing, and during Glasgow Fair there is no centre on the Clyde that attracts such crowds. Yet Rothesay is not merely a holiday place. Its equable climate has gained for it a reputation as a restful, health-giving resort. To Rothesay Sheridan Knowles, the dramatist, and Edmund Kean, the actor, retired in their later days, and many aged folk and invalids have blessed the healing quality of its fine air. Glenburn Hydropathic, near Craigmore, was the first institution of its kind erected in Scotland. It was the happy thought of Dr. W. Paterson, a graduate of Glasgow University, who had studied hydropathy in Germany under Priestnitz.



Photograph by] THE KYLES OF BUTE. *[Annan, Glasgow.*

The Kyles of Bute: Arran.

Description of the Kyles of Bute may be left for the individual fancy to fill in, but the surprises that await visitors there may surely be remarked upon. Passing the little village of Colintraive entry is made to a seemingly land-locked lake from which there is apparently no exit ahead. Suddenly, however, steering through a maze of little green isles, a choice of two exits is offered—to the right Loch Ridden, and, to the left the channel leading to Tighnabrüaich. The route, on this occasion, is the former, and after going a short turn up Loch Ridden the course leading to the left will be followed, and the two quaintly painted rocks, known as "The Maids of Bute," will no doubt be duly noted. Beyond Tighnabrüaich—which English visitors will find just as attractive as it is difficult to name—the Kyles are left at Ardlamont Point, the scene of a tragedy that culminated in the Monson case, a Scottish murder trial without parallel in the annals of the country.

If, as the poet has maintained, "there is a rapture on the lonely shore," it will assuredly be experienced when Arran comes into view. (A brief note of the Isle of Arran was included in the article on Glasgow and its neighbourhood printed in the JOURNAL of April 2nd, p. 649.) The island with its mountain grandeur, its glens and moorlands, haunt of the wild deer and grouse, its shepherds' cots and little farms, green wooded and sandy shores, is among the wonder pictures of the Clyde.



Photograph by] THE COTTAGE WHERE BURNS WAS BORN AT ALLOWAY. *[Annan, Glasgow.*

Corrie and Glen Sannox, Brodick and Glen Rosa, Goatfell, the highest peak in the mountain range, Lamlash and the Holy Isle—of these much might be written and the true estimate of the island's appeal be still far from complete.

Of the charms of the Isle of Arran a dreamer has sung:

"I dream't I saw the Arran hills again,
Heather, green woods, waves breaking on the shore;
An old farm kitchen with a grey stone floor;
The cattle in the fields, the stacks of peat;
Bracken, and bramble blossom, O how sweet. . . .
I saw the fishers hauling in their 'take'—
The water drip like silver in the sun—
A steamer, with the seabirds in her wake,
And then came friends . . ."

If the day be clear a glimpse may be had of the Ailsa Craig,

to the south, as the course is set for the Cumbrae Isles and the homeward run. Skirting the Ayrshire coast, with Saltcoats and Largs in the offing, Wemyss Bay and Skelmorlie will come into view, then Inverkip and the Cloch Lighthouse, with Gourock ahead and the express train in waiting to take the company back to Glasgow.

Burns's Birthplace.

To those who journey to Ayr for the tour through the Land o' Burns there will be pleasure indeed. The town of Ayr is within easy distance of Glasgow, and is the centre of a district that will ever be associated with the memory of Scotland's National Bard. It is a pretty town, with many modern features, yet retaining something of its old-world character in its buildings, its old-fashioned hostelries, its "Auld Brig," its haunted kirk at Alloway, scene of Tam o' Shanter's adventure, and the cottage where Robert Burns was born.

The cottage is now a national museum, housing relics of the past, and looked after by a trust under whose care it has been preserved. Near the cottage there are the Burns Monument and gardens, also the Brig o' Doon that spans the river that inspired one of the poet's finest songs.



Photograph by] BURNS MONUMENT, AYR. *[Annan, Glasgow.*

Ayr and Alloway do not constitute the entire Land o' Burns, nor do they exhaust the programme for the day. Opportunity will be taken to visit Mauchline and the Burns Memorial there, while after lunch the party will proceed to Maybole, via Culroy, visiting Crossraguel Abbey and Kirkoswald, and the return journey will be made by Culzean Castle and the Heads of Ayr. Ayrshire itself and Dumfries have many memories of Burns's life and work, but Ayr and Alloway rank supreme in interest.

Stirling and Bridge of Allan.

The excursion to Stirling will permit of visitors seeing Stirling Castle, which stands on a commanding eminence, across from which is the Wallace Monument on the wooded heights of Abbey Craig. From the castle may be seen the field of Bannockburn, the Ochil and the Sidlaw Hills, the mountains of Argyllshire and the west, and to the north the Grampians. The castle may be said to be "steeped in tradition." It was the ancient home of the Stuarts—the one-time centre of their gay court.

"We lingered," says a writer describing the old keep, "in the Palace, the Parliament House, the Chapel Royal, and shivered a little when we were shown the Douglas Room, where one of the Jameses murdered William, Earl of Douglas . . . then went with an American couple to Cambuskenneth Abbey. The Americans looked as if they would like to have bought the place and had it packed for transit across the Atlantic!"

Bridge of Allan is only a few miles from Stirling. It is in high favour as a health resort, and its natural mineral springs have gained for it a reputation among British spas. Beautifully situated, the town will certainly quicken admiration in those who make its acquaintance, and will probably—as in most cases it is wont to do—prompt a desire to return to it at the earliest possible opportunity. Beyond Bridge of Allan is Dunblane with its famous Cathedral, and on the way there a visit will be paid to the celebrated Gardens of Keir by permission of the proprietor, General Stirling. The return journey will be by the Wharry Glen, close to the battlefield of Sheriffmuir.

Loch Lomond and the Trossachs.

Loch Lomond—which may be taken either as the beginning or the end of the Trossachs tour, via Loch Katrine, Loch Achray, Loch Vennacher and either Callander or Aberfoyle—has had its praises sung the world over. It may be viewed from—but the task of tabulating the many and varied prospects of loch, mountain, and glen were too great to attempt here. The truth is that wherever on the shores or on the waters of "The Queen of Scottish Lakes" a dream of natural beauty unspoiled spreads before the eyes. There are miles of sequestered seclusion between Balloch and Ardlui at the head of the loch, and fresh charm at every stage of the pleasure steamer's journey to Balmaha, Tarbet, Luss, Rowardennan, at the foot of Ben Lomond, and Inversnaid, where the coaches start for the drive through the Trossachs.

Loch Lomond is gemmed with green isles—Inchlonaig, the "island of the deer," with its fine old yew trees; Inchtavannich, the "Monks' Isle"; Inchconnachan, or Inchmoan, where the peat is dug for the farm fires; and Inchcailloch, the "Island of the Dead," the burialplace of the Macgregors. These isles and many others give Loch Lomond its unique character.

It has been said that possibly Scotland owes one half of its reputation for fine scenery to the Trossachs, and while not included in any of the excursions doubtless many visitors will extend their stay and find their way thither. Sir Walter Scott has enshrined the sum of its beauty in romance, and few there are who are not familiar with *Rob Roy* and *The Lady of the Lake*. Of the glories of Loch Katrine with its "low stir of leaves and dip of oars and lapsing waves on quiet shores" one need not write. Tourists who visit Scotland from year to year find that the praise lavished on the Trossachs has not been pitched in too high a key—as visitors to the Annual Meeting who journey to these parts will discover for themselves.

There can be no doubt that Glasgow is ideally situated for excursions, and those arranged for the concluding period of the July meeting are such as should make strong appeal to members of the British Medical Association and their friends.

England and Wales.

School Services.

THE Medical Department of the Board of Education has issued a circular to education authorities stating that the sum put at the disposal of the Board by Parliament for grants towards the six special services of elementary education have now been compared with the detailed estimates of local education authorities. The Board issued a circular with regard to provisional meals a short time ago; the present circular deals with the remaining five services. The large economies already effected by authorities themselves as a whole have, it is stated, brought the aggregate estimates within the total on which the Board is in a position to make grants; it is now considering each authority's proposals on their merits. The circular continues as follows:

School Medical Service.

"In the case of the School Medical Service, the Board's scrutiny of the authority's proposals will be directed mainly to seeing that the arrangements are in themselves efficient and economical, and that the total expenditure in each area is reasonable and appropriate. While, however, the Board will not be able to approve arrangements which in their opinion are extravagant and unnecessary in existing circumstances, it should be understood also that they will not be able to accept proposals which reduce or leave the authority's arrangements for their essential services below a reasonable level of efficiency in respect of their scope or the maintaining of efficient administration."

Special School.

"The Board are glad to find that it will be possible to allow existing schools for blind and deaf children to be used to the full extent of their accommodation. No restrictions therefore need be placed on the number of children sent to these schools by individual authorities, as the aggregate expenditure is not affected by the locality from which the children come, and the Board wish to leave the system as elastic as possible. The Board will extend the same arrangement to schools for cripple children, to open-air schools, and to schools for mentally defective children. The only special schools, in fact, to which the Board cannot at present agree to apply this arrangement are the sanatorium schools for tuberculous children, and they must ask authorities to restrict their expenditure in 1922-23 on this type of child to the level of their expenditure in 1921-22. The Board, however, will be prepared to consider on their merits cases in which the circumstances are abnormal and give rise to peculiar difficulties."

Organization of Physical Training.

"This is a relatively new service, which is still in an early stage of growth. But even a short experience has been sufficient to show the great value of the service, and the Board would view its curtailment or the restriction of its gradual development with great regret. The cost of this service is so small that authorities, when exploring all possible sources of economy in the cost of elementary education, may well give very careful attention to its special claims. The Board's own view is that this service adds so greatly to the value of the work of the schools and, from the point of view of the child's health, is so potent an auxiliary in the prevention of debility and disease that projected savings on this service might reasonably be postponed till the possibilities of alternative savings on other special services or on ordinary services have been fully tested."

The Board intends very shortly to issue a circular with regard to the organization of physical training.

As to nursery schools it is said that the Board will not, as a rule, be able to approve the establishment of new schools.

In conclusion, the Board states that its scrutiny of the separate special services necessitated by the demand for strict economy has shown the need for a general review of these services and for the introduction of more system and balance into the work as a whole. To this end the Board proposes shortly to issue some suggestions to authorities.

CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales met on June 28th, the chairman, Sir Francis Champneys, presiding. The Penal Board did not sit, as only one case was cited, and the solicitor was unable to obtain the necessary evidence in time. At the ordinary monthly meeting a letter was read giving the Minister of Health's approval to the rules as they now stand for a further period of one year from July 1st. Among the matters considered by the Standing Committee was a letter from the Ministry of Health stating that the Minister notes that only the question of opium was dealt with in the memorandum recently prepared by the Board on the administration of drugs by midwives, and asking to be furnished with the observations of the Board on the use of pituitrin by midwives. The chairman drafted a reply, which was approved. A resolution was received from the Maternity and Child Welfare Subcommittee of the Manchester City Council regarding the administration of opium by midwives, and expressing the opinion that this was a dangerous practice, but the Board decided to take no action.

The Board recorded its deep sympathy with the relatives of the late Dr. Gordon Ley, and its appreciation of his valuable services as an examiner at the London centre.

Scotland.

EDINBURGH ROYAL INFIRMARY.

DR. W. T. RITCHIE, lecturer on clinical medicine in the University of Edinburgh and assistant physician to the Royal Infirmary, has been appointed physician; Mr. J. N. Jackson Hartley, F.R.C.S.Edin. and Eng., M.B., Ch.B., assistant to the professor of clinical surgery, has been appointed assistant surgeon.

DUNDEE ROYAL INFIRMARY.

Dr. Henry J. C. Gibson has been appointed medical superintendent of Dundee Royal Infirmary in succession to the late Dr. Hugh E. Fraser. Dr. Gibson, who graduated M.A.Glasg., 1909, afterwards studied medicine at Edinburgh, taking the degrees M.B., Ch.B. in 1914 and M.D. in 1920. He served in the R.A.M.C. from 1916 to 1919, when he was appointed medical officer of Craiglockhart Poorhouse, Edinburgh, which includes the medical superintendentship of Craiglockhart Hospital. He has also been for some time medical administrator of Balgreen House, which contains 60 beds for children of school age.

AN ISLAND HOSPITAL.

The people of Arran, some two years ago, resolved that their war memorial should be a cottage hospital. With the help of natives who had wandered to other and perhaps richer climes the islanders collected £14,000. The Marquess and Marchioness of Graham gave a site on rising ground at the northern end of Lamlash, commanding an extensive view of the town and bay and of the outside waters of the firth past the south end of Holy Island. The architect of the building is Mr. Archibald Cook, a native of the island, to whom the work has been a labour of love. The cost of erection was £7,779, and nearly all the furniture and equipment was given by Mary, Duchess of Hamilton, and the Marchioness of Graham. The building is of red sandstone, two stories in height, and consists of an administrative block, flanked by wings for male and female patients respectively. It contains two wards of four beds each, capable in time of pressure of accommodating six beds each, two single-bed wards, an operating room, a surgery, consulting room, accommodation for nurses and servants, and the usual domestic offices. A garage and engine house are provided, and the building is lighted by electricity and has central heating. It was opened on July 8th by Mary, Duchess of Hamilton, who said that the hospital was a fitting memorial to the eighty-one Arran men who had fallen in the war. A brief address was then given by Sir Harold Stiles, in the course of which he said that Scotland possessed three kinds of hospital—the large general hospitals associated with medical schools, the large general hospitals serving the thickly populated industrial centres, and the cottage hospitals scattered throughout the rural districts. All of them were supported by voluntary contributions. The large teaching hospitals had to look to the public to supply funds not only for the housing and treatment of the sick and injured, but for the maintenance of up-to-date equipment and facilities for research, in order that the community might have well-educated doctors to attend them. No money spent upon these highly organized hospitals was wasted. Cottage hospitals were, he was thankful to think, beginning to spring up all over the country, the reason being that as the doctors were highly educated they were well able to do a very large part of the work of these institutions. The people of Arran were particularly fortunate in having secured the right type of man for their hospital—a young surgeon who had large experience during the war. Dr. J. R. Currie, medical officer of the Scottish Board of Health, after recalling his ancestral connexion with the island, said that he had been sent in 1913 to make an investigation, with the result that two dispensaries were set up, which had proved highly beneficial, but the scheme was not complete without a hospital. That had now been provided; in addition to the treatment of patients in it, the nursing services of the island would be co-ordinated from the hospital. The Board of Health had cordially supported the proposal to appoint a resident surgeon. The surgeon appointed is Dr. E. L. Brandon Barrow, a graduate of St. Andrews and formerly house-surgeon to the Royal Infirmary, Dundee, who during the war served as radiographer, with the rank of Captain R.A.M.C., in the Egyptian Expeditionary Force.

HEALTH STATISTICS OF EDINBURGH IN 1921.

The Medical Officer of Health for the City of Edinburgh (Dr. A. Maxwell Williamson) has issued his annual report for the year 1921. The rates contained in it are founded upon the decennial census which was taken during the year, and they are therefore to be regarded as possessing a maximum degree of accuracy. The figures, further, are those of the city enlarged by the amalgamation with Leith and certain suburban areas which took place in November, 1920; comparisons with preceding years are therefore less easy to make, but in the report to obviate this they are instituted between the present city and the city before 1921 *plus* Leith and the suburban area. The population of the extended city is now 420,264, showing a decrease of 3,782, as compared with the same districts in 1911; there were increases (during the decade) of 1,130 and 3,568 respectively in Leith and the surburban area, but these were more than counterbalanced by the decrease of 8,480 in Edinburgh as it was before 1921. The ratio of females per 100 males was 118.9 in 1921 and 119.5 in 1911; the decrease in the male population in the decade was 0.6 per cent. and in the female 1.1 per cent.

Marriages and Births.

The marriage rate for 1921 was 11.0 per 1,000 of the population, a figure which justifies the Medical Officer's comment "the post-war boom in marriages has subsided," a comment which can be extended to Glasgow (10.7), to Dundee (10.0), and to Aberdeen (11.0). There was also signs of a subsidence in the post-war boom in babies, so to say, for the birth rate (corrected) for the extended city fell to 21.5 in 1921, having been 24.7 in the preceding year. The percentage of illegitimate to total births was 7.2 as compared with 7.1 for the whole of Scotland. The birth-rate of Edinburgh was lower than that of the seven other large towns and of Scotland as a whole (25.2); its illegitimate birth rate was lower than that of Aberdeen and Dundee, but higher than that of Glasgow.

Deaths.

The Medical Officer in his last report (for 1920) gave the death rate for the unextended city as 13.2 per 1,000; but the Census has shown that this should have been 14.2. For 1921 the rate for the unextended city was 14.8, for Leith 14.0, and for the Suburban Area 11.0; for the whole city it was 14.4—a slight increase. Glasgow and Dundee had rates of 15.1 and 15.3 respectively, whilst Aberdeen's rate was the same—namely, 14.4. Dr. Williamson, under this heading, returns to a matter upon which he has been persistently insistent—namely, the relation of bad housing to high death rates; with this as his text he makes the figures speak with emphasis, and had present circumstances been otherwise one might have wished that his improvement schemes for certain "black spots" could have been carried out in his term of office. As it is, one may hope that some of them may take form very soon. The cancer death rate rose from 1.4 per 1,000 living in 1920 to 1.5 in 1921, the highest ever reached; in 1898 it was 0.8 and 1904 1.0. The comment on the cancer-rate is as follows: "The advances which have been made during the past year in the reduction of death rates from practically all causes stand out in violent contrast to the history of the ever-increasing ravages made on human life by cancer." It is not alone that the cancer rate has risen from 0.8 in 1898 to 1.5 in 1921, but it has done so whilst the general death rate has fallen from 17.6 to 14.4. The deaths from cancer approximated to the total number from pulmonary tuberculosis, measles, whooping-cough, and all other forms of infectious disease.

Infantile Mortality and Child Welfare.

Infantile mortality for 1921 was 95 per 1,000 live births. Dr. T. Y. Finlay, who reports on this special part of the public health activities of the city, points out that only since the year when the Maternity and Child Welfare Scheme was put in working guise has the old-standing three-figure standard been departed from: it was on the average 110 between the years 1910 and 1919, and it fell to 89 in 1920. Dr. Williamson says:

"It is much to be feared that the extent of this work and the far-reaching nature of it, including its innumerable details, are not quite well known to the public at large. . . . It must always be borne in mind that the Child Welfare Scheme is carried out solely for the benefit of infants and young children under 5 years of age, together with expectant and nursing mothers; there could not be a section of the population more defenceless in time of need, or who more urgently call for assistance."

Dr. Williamson's remarks are called for, because within the past few months the zeal for economy has shown itself in certain quarters in a rather loud-voiced demand for curtailment of grants in respect of child welfare work. At any rate, Dr. Finlay's report tells the story of some fine preventive and curative success in this field. There is still room for further useful supervising work in the prematernity department, for at five out of the nine ante-natal clinics the new cases outnumbered the re-visits, a fact which showed that many expectant mothers were only seen once before confinement, and were therefore inadequately watched over in pregnancy. An interesting fact is that the percentage of deaths among legitimate infants for the first four weeks of life is greater than that among the illegitimate, whilst for the period four weeks and under three months the illegitimate percentage rises above the legitimate. In many cases the illegitimate infant in hospital enjoys during the first weeks of life the same care as the legitimate; when, however, the mother leaves hospital and he is boarded out or little cared for, he is more likely to die.

Venereal Diseases.

Another extraordinarily interesting and encouraging part of the report is from Dr. Lees's pen, and deals with the scheme for the prevention and treatment of the venereal diseases carried on mainly in the Royal Infirmary, but also to some extent in the Royal Maternity and in the Edinburgh Hospital for Women and Children. Both Dr. Williamson and Dr. Lees refer to one defect in the scheme as it is at present being worked. There is no means by which a patient who has come for treatment can be made to continue until cure has been assured. Too often the disappearance of the surface signs and the relief of the pressing symptoms is followed by the disappearance of the patient, who, still in an infective state, wanders at will in the general population and constitutes a danger. Such a state of matters is thought to afford an argument in favour of a modified form of notification of venereal diseases which might be enforced only when a patient refused or neglected to continue treatment. The total number of new cases treated under the Edinburgh Scheme in 1921 was 3,409, and the visits paid to the various hospital and dispensary clinics reached the large figure of 93,503.

The extension of the city boundaries led to a rearrangement of the various hospitals in the larger Edinburgh. The Royal Victoria Hospital was retained as a sanatorium for early cases of pulmonary tuberculosis; Pilton Hospital, formerly the General Fever Hospital at Leith, was set apart for the more advanced cases of that disease, and all the fever cases formerly treated there were transferred to Colinton Mains Hospital; some minor readjustments also were made.

Correspondence.

LISTER AND FRACTURES.

SIR,—It is not without interest to note that at the forthcoming meeting of the British Medical Association in Glasgow this month there appear in the programme of the Surgical Section no fewer than three contributions on the subject of fractures. That this particular subject should be discussed in Glasgow seems to find a very fitting setting, inasmuch as it was at the Royal Infirmary of this city that the initial step was taken by Lister to enunciate the great principles of antiseptic surgery. It was in that infirmary, in one of the wards—which fortunately is still in existence—that his now world-wide known case of compound fracture of the leg was successfully treated by his newly discovered method; and, as a result of this success, there has opened up in this department of surgery alone a field so vast that not only have countless lives been saved, but crooked limbs made straight and weak and wobbly "flails" rendered useful. Lister's own words in writing to his father about this epoch-making case are worth recalling. On May 27th, 1866, he thus wrote:

"There is one of my cases at the infirmary which I am sure will interest thee. It is one of compound fracture of the leg; with a wound of considerable size and accompanied with great bruising, and great effusion of blood into the substance of the limb causing great swelling. Though hardly expecting success, I tried the application of carbolic acid to the wound, to prevent decomposition of the blood, and so avoid the fearful mischief of suppuration throughout the limb. Well, it is now 8 days since the accident, and the patient has been going on exactly as if there were no external wound, that is, as if the fracture were a simple one. His appetite, sleep, etc., good, and the limb daily diminishing in size, while there is no appearance whatever of any matter forming. Thus a most dangerous accident seems to have been daily deprived of its dangerous element." (*Lord Lister*, by Sir Rickman Godlee, Bt., p. 187.)

Glasgow will have many interesting sights to show its visitors; but it is doubtful whether—more particularly to surgeons and medical men from distant parts—any sight would be more attractive than Lister's old ward in the Royal Infirmary and the theatre where he performed his operations. These are shrines at which the scientific world love to worship; and if—as suggested by a recent writer to the *Glasgow Herald*—either Sir Hector Cameron or Sir George Beatson, as once house-surgeons to Lister, could be induced to give a short address in the ward, a living picture of those halcyon days for future humanity could be presented which would enormously enhance the pleasure and profit of a visit to the ward and the many interesting relics which the local Lister Memorial Committee have succeeded in collecting.—I am, etc.,

Glasgow, July 5th. A. ERNEST MAYLARD.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Dr. Strachan calls attention in the BRITISH MEDICAL JOURNAL of July 1st (p. 29) to the employment by me of the term "heart force," and suggests that the more correct term would be "heart power." He is quite right, and I shall take his suggestion and use the word "power" in place of "force" in future.—I am, etc.,

St. Andrews Institute for Clinical Research, July 4th. J. MACKENZIE.

P.S.—I regret that I overlooked Dr. Samways's letter which he wrote eleven years ago.—J. M.

CAESAREAN SECTION.

SIR,—From Dr. James H. Martin's letter (BRITISH MEDICAL JOURNAL, July 8th, 1922, p. 67) it would appear that Dr. Martin claims to have introduced certain innovations in the technique of Caesarean section. This claim seems to me unjustifiable in view of the following considerations.

Dr. Martin's communication was made on April 1st, 1921, whereas incision through the rectus sheath in abdominal operations was recommended by me in my *Manual of Gynaecology*, published in January, 1915. This incision had been previously extensively practised by surgeons, and in my paper on Caesarean section (an abstract of which appeared in the JOURNAL) I distinctly stated my reason for making it on the right side—namely, the danger of severing the veins in the left broad ligament, as the uterus is usually rotated towards the right. The danger of this occurrence in an imperfectly lighted room is evidently not appreciated by Dr. Martin, as I fail to observe any mention of it in his article.

In the next place, as regards the manœuvre of turning the uterus inside out, I was taught this point in technique by Murdoch Cameron, who employed it over thirty years ago, but only in cases where separation of the membranes from the lower uterine segment proved difficult.

As I regard Caesarean section as an ordinary abdominal operation, I have always allowed these cases the same latitude as any other operation case. In the manual referred to it will be found that I recommend Fowler's position after abdominal operations, even if a case be not of a septic nature. While I employed these methods prior to Dr. Martin, who performed his first Caesarean section in 1915, I do not claim that I discovered any of them.

It is most regrettable that a communication of this description should have to be made, but the publication of Dr. Martin's letter leaves me no choice. Had he communicated with me privately it might easily have been averted.—I am, etc.,

Glasgow, July 10th. SAMUEL J. CAMERON.

SIR,—With regard to Dr. Martin's letter which appeared in the JOURNAL of July 8th (p. 67) I desire to state that as house-surgeon in 1914 in the gynaecological ward at the Western Infirmary and at the Royal Maternity Hospital I distinctly recollect Dr. Cameron in both institutions frequently opened the abdomen through the rectus sheath. His major obstetrical and gynaecological operation cases were encouraged to assume the lateral and sitting postures.

A considerable time before the reading of Dr. Martin's paper Dr. Cameron related to me the incident which caused him to abandon the incision through the left rectus sheath.—I am, etc.,

Glasgow, W., July 10th. R. A. LENNIE, M.B.

QUININE NECROSIS OF MUSCLE.

SIR,—It would be interesting to know the strength of the quinine solution used in the case recorded under the above heading in the JOURNAL of July 1st (p. 14). I well remember how frequently "little lumps" and "big lumps" used to be met with after giving intramuscular injections of strong solutions (gr. v in m xxx) of quinine. Some years ago I adopted the method recommended by MacGilchrist of the I.M.S.—namely, giving the injections dilute (gr. v in 10 c.cm.)—since when I have seen no induration follow the injections. I have also used this strength for intravenous injection with good results.

This method of injecting quinine is practically painless and rapidly effective. The rapidity with which the drug is absorbed is shown by the frequency with which vomiting occurs within a few minutes of the injection, with a strong taste of quinine in the mouth.

After an extensive experience of this method both in private and hospital cases, and having been the subject of it on several occasions myself, I have no doubt that it should entirely replace the old method of giving quinine in strong solutions, by injection, a practice which in my experience was neither safe nor effective.—I am, etc.,

Broadstairs, July 5th. C. BRODRIBB, Major I.M.S.

INSURANCE FOR DAILY NEWSPAPER READERS.

SIR,—I consider the schemes of free insurance for registered readers of some of our leading daily papers have taken advantage of the general practitioner and the residents in hospitals.

The type of case which receives these benefits—fractured legs, septic fingers, etc.—is often sent on by the general practitioner to hospital for treatment. The resident thus gets demands to have certificates filled up, and the details of information required are both numerous and complicated.

The newspapers must be doing well from the various advertisements of splendid benefits offered to their readers, but they or the insurance companies who transact the actual business concerned with these awards seem to have arranged that they shall not be responsible for the doctor's fee; this is stated at the top of one of the forms sent in respect of a claim in the following terms: "The fee for this certificate is payable by the registered reader." In the great majority of cases the patient is quite without funds but wants a certificate immediately in order that he can commence to benefit.

When they do receive such pay some patients do remarkably well. They are drawing £4 a week from a newspaper, sickness pay under the National Insurance Act, and also money from sick clubs. In the past the insurance companies have forwarded to the doctor the guinea or more in return for a certificate. A member of the poorer classes, even although he may be receiving a sum per week as much as £4, would think a guinea excessive for such a certificate, and won'd think the doctor was taking advantage of their sudden burst of wealth.

What, then, can the resident or practitioner do? The first class cannot follow up the patient and demand his fee, and if he is a good fellow neither can he withhold a first certificate knowing the benefits it will bring. I consider the newspapers or insurance companies have put the doctor in an awkward and thankless position, and should be compelled to pay the doctor's fee.

To anyone who is interested in medicine and surgery the steady demand for these certificates is the really unpleasant part of a morning's work in a casualty department.—I am, etc.,

July 7th. CASUALTY OFFICER.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—I write primarily to correct a number of misstatements in the letter of Dr. J. R. Whitwell in the JOURNAL of July 8th (p. 64).

Eugenic sterilization *has* been carried out with great benefit in a number of the States of the American Union. Dr. Whitwell's figures are quite incorrect. In California 2,558 cases have been sterilized, and not 625 as he states. In Connecticut, New York, North Dakota, and Kansas, where, he says, "the law, though in existence, has practically not been made use of at all," the figures are respectively 27, 42, 23, and 54. In Iowa, where, he says, "no operation has taken place under the Act," the figure is 49. In Indiana over 1,200 persons have been sterilized, and the Secretary of the State Board of Health there informed me in a letter last year that many of these were sterilized at the request of themselves or of their relations, and that the results of the operation were uniformly satisfactory.

We admittedly do not know yet exactly how heredity works, but we do know that by sterilizing defectives we can avoid the production of more defectives. I confess I consider it is of minor import that we may lose "three bishops," "eight hospital physicians," or even "a large number of members of Parliament" as well!

With respect to Dr. Truman's fear that "individually it might sometimes result adversely as regards the general health," I would repeat that no adverse results were reported in 1,200 cases in Indiana, while Lichtenstern of Vienna informed me last October that he had sterilized over 60 males without any adverse results, and I myself have sterilized 4 males and 4 females without any ill effects.

Of course, the results depend on the nature of the operation. Removal of the testicles or ovaries will affect the patient's health adversely; but the equally effectual and much less radical operation of vasectomy or salpingectomy are in no way deleterious. These are the methods so widely and beneficially used in the United States.

Sterilization of the unfit is an essential element of any comprehensive scheme which aims at ameliorating the present unhappy condition of the vast bulk of humanity.—I am, etc.,

London, W., July 8th. NORMAN HAIRE.

Medico-Legal.

CONSULTANTS' FEES.

IN an action brought by Dr. Anghel Gaster against Mr. Leopold Hirsch for £131 5s., fees for medical attendance on the defendant and members of his family, heard before Mr. Justice McCardie, the defence was that there was a verbal agreement for a special rate of remuneration, or alternatively, that the fees charged by the plaintiff were not reasonable. Mr. Justice McCardie delivered a reserved judgement on July 4th, and as it raises several points of considerable medical interest it is reproduced here from the report in the *Times*, which appears to be verbatim:

THE JUDGEMENT.

In this case the plaintiff, Dr. Gaster, sues the defendant for £131 5s. for services rendered as a medical man. The defendant admits that the plaintiff did the work charged for. He does not dispute the plaintiff's skill and care. The only question at issue is whether the plaintiff's charges were excessive. The defendant has fought the case as one of principle. He is a rich man. His defence represents a protest by business wealth against the theory that a rich man should pay unusual fees. The plaintiff's contention is (in substance) that a doctor's fees may, and should, vary with the financial status of the patient. The rich, it is forcibly said, should properly pay more than the normal fees because of the fact that poorer folk pay less and the very poor not infrequently pay nothing at all. A judge of the High Court is asked to fix the standard of medical fees and to settle the pecuniary relations between rich men and the doctors who heal them. The defendant has presented his case in a just and modest manner. He is perfectly willing to pay the amount fixed by the Court. The substance of the case turns on the illness of the defendant's son in April, 1921. The defendant was then absent from England. His brother acted on his behalf in calling in the plaintiff. For some years the plaintiff had been medical adviser to several members of the defendant's family. On April 23rd, 1921, the plaintiff examined young Mr. Hirsch. He saw him twice on April 24th. On that day Mr. Fagge (a distinguished surgeon) was called in. He diagnosed appendix trouble; an operation was necessary. It was performed on April 26th. It was successful. There was a risk, however, of complications. The plaintiff made many visits to the patient at the nursing home in Dorset Square where the operation had been performed. No other medical man was employed.

The Fees Charged.

Sometimes the plaintiff paid several visits in a day. His last visit to Dorset Square was on May 19th. He saw the patient again on June 4th. The recovery was then complete. For each visit to the patient the plaintiff has charged 2 guineas. The total number of visits was about forty-nine. For each of the two consultations with Mr. Fagge he has charged 3 guineas. For the attendance at the operation on April 26th he has charged 15 guineas. The items mentioned (together with three attendances on the defendant himself in June, 1921) show the matters in dispute. The case for the plaintiff is illustrated by taking the day of the operation. For that day the plaintiff has charged, first, the attendance at the operation, 15 guineas; and secondly, four visits to Dorset Square at 2 guineas each. The total for that single day, therefore, is 23 guineas. On other days the plaintiff has charged for four visits or three or two or one visit (as the case may be) at 2 guineas a visit. The defendant brings into court the total of £65 2s. In substance he says that 1 guinea per visit is enough, and that £9 9s. is sufficient to cover the two consultations with Mr. Fagge and also the attendance at the operation on April 26th, 1921.

I am fully satisfied that no verbal agreement was ever made, and certainly no agreement which touched the matter now at issue. The plaintiff, therefore, must rely on a *quantum meruit*. He is entitled to a just and fair reward for the services which he rendered. The case of young Mr. Hirsch was an anxious one. He gave it full and careful attention. Upon what scale should he be paid? This is a delicate and difficult matter for a judge to determine.

The Plaintiff's Status.

It is necessary, first of all, to consider the status of the plaintiff. He was born in Rumania. He is a doctor of medicine of Bukarest. In 1891 he came to England and secured an English qualification. He became a Member of the Royal College of Physicians. In 1891 he began to practise at St. John's Wood. His fees ranged from 7s. 6d. to £1 1s. In 1899 he went to Hampstead, and his fees grew higher—for example, they ranged from 10s. 6d. upwards. In 1913 he was established at Fitzjohn's Avenue, Hampstead. This district seems to be regarded as an area of accentuated opulence. The plaintiff's fees, therefore, grew higher still. His normal fee was 1 guinea. In 1914 the plaintiff took a consulting-room in Harley Street and began work as a consulting physician. His normal fees were £2 2s. for the first consultation and £1 1s. for the second consultation. But he still continued his practice at Fitzjohn's Avenue, Hampstead, and charged fees which varied greatly with the status of the patient.

In 1919 the plaintiff gave up his room in Harley Street and his house in Fitzjohn's Avenue and took a house in Devonshire Place, in the Harley Street district. His fees as a consultant were frequently £3 3s. for the first consultation and £2 2s. for the second. That range of fees must be remembered in the light of the resolution passed by the British Medical Association in the middle of 1919, that an increase of at least 50 per cent. on pre-war medical fees should be made. The British Medical Association has no statutory authority, but its opinions carry great weight throughout the medical profession.

The plaintiff is not, I think, a consulting physician in the strictest sense. In its rigorous significance, a consulting physician is one who acts only in conjunction with, or upon the introduction of, a family doctor. Not a few consulting physicians, however, do not insist on the above restrictions. I think that the plaintiff may be described as a physician who combined the diagnostic and advisory work of a consulting physician with that of a general physician, one who frequently visited the houses of patients in much the same capacity as a general practitioner, charging the same rate of fees. It was in this capacity that he had attended the wife and daughter of the defendant at a fee of £1 1s. per visit. It was in this capacity also that he continued to see or visit many of the patients whom he had gained during his practice at Hampstead. He charged them fees which varied with the position of the patient. It is just, however, to say that the plaintiff distinguished between new and old patients, and he did not, of course, undertake at any material time such matters as midwifery. He fully observed, moreover, the by-laws of the Royal College of Physicians, to which he belonged. I may also add that he generously fulfilled the beneficent and widely exercised privilege of a doctor in charging low fees to poor patients.

No Professional Standard of Fees.

In these circumstances what is the plaintiff entitled to charge? There is no rule of the profession which prescribes a standard. There is nothing in the medical profession which is equivalent to the scale of fees existing among architects, solicitors, or other professional men. Medical fees may be high or low. They vary greatly. They depend on locality, the status of the patient, the professional position and popularity of the medical man, and the general circumstances of the case. The General Medical Council has established no rule on the matter, nor has it indicated any requirement whatever as to the duty of a practitioner with regard to remuneration. (See Pratt *v.* the British Medical Association, 35 the *Times* L.R. 14 [1919] 1 K.B. 244.) If the fees are not agreed then the requirement of the law is that the charge shall be reasonable.

On what does reasonableness depend? To a large extent the matter must be determined by considering the amounts which by general custom are paid in normal circumstances. In its substance the question is sociological. The status of the medical man and his relation to society as a whole is one of deep importance. If his social status is to be high, his fees must not be unduly low. No one will dispute that a great profession should receive an adequate remuneration. On the other hand, the scale of fees demanded may outrun the financial resources of the general public and lead to well-based protest. It happens that the defendant here is, in fact, rich. But it seems to be the practice to presume a man's obligation for fees (within, of course, limits which should not be exceeded) not so much by his actual monetary resources as by the social position that he adopts. His house rent can be estimated. His bank-book is rarely seen. He who employs the apparatus of wealth may be fixed with the presumption of wealth. Perhaps this method is not on the whole an unjust one. The vast amount of work, moreover, which is done by the medical profession, not only without reward but also with generous self-sacrifice, must not be overlooked. The high cost of living imposed on one who practises his profession in a fashionable district is also to be considered, and the long and costly education of a medical man is a factor of serious weight. I must apply these considerations to the case and the body of evidence laid before me.

On one point I am clearly of opinion that the defendant is right. In my view the charge made by the plaintiff of £15 15s. for attending the operation on April 26th is excessive. I agree that the operation was one of a somewhat serious nature, and that the time given by the plaintiff was substantial. But Sir Thomas Horder, a consulting physician of the greatest eminence and experience, told me that he himself would not have charged a greater fee than £10 10s. I also think that the charge of 8 guineas for the four visits on April 26th is too much in the circumstances. On the other hand, I am of opinion that the fee of 3 guineas for each of the two consultations with Mr. Fagge is not excessive. Taking the case as a whole, I may say that I attach importance to the fact that when the plaintiff sent in his account to the defendant he only charged £75 instead of the £131 5s. now claimed by him in the action. If an actual mistake was then made I need only point out that it was made in circumstances which suggest that £75, rather than £131 5s., was nearer the mark as a just charge. In my view the present claim for £131 5s. would never been made but for the fact that Mr. Hirsch happens to be a very rich man. When the plaintiff was asked to give particulars of his charges he raised a strong objection. In my view particulars should have been given with courteous readiness. I shall not further analyse the case. In my opinion 93 guineas is a just and proper remuneration for the services rendered by the plaintiff. I desire to add two things. First, that the defendant has contested the case in a proper and considerate manner; secondly, that I recognize to the fullest extent the skill and experience of the plaintiff and his excellent work in the medical profession. I give judgement for 93 guineas.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following candidates have been approved at the examinations indicated:

FINAL B.M., B.CH.—*Materia Medica and Pharmacology:* H. N. Bradbrook, R. J. Brocklehurst, R. E. D. Cargill, A. F. Clarke, C. L. Ellgood, K. J. Franklin, C. J. Fuller, C. A. H. Green, L. N. Jackson, P. H. Leslie, G. F. L. Mitcheson, H. W. Pearson, A. A. F. Peel, V. P. Robinson, A. W. L. Row, G. P. Roxburgh, H. N. Stokoe, T. S. Townsend, H. P. Turney, W. R. Wood, C. R. Young, Alice E. B. Harding. *Pathology:* P. W. Boobbyer, R. J. Brocklehurst, R. S. Creed, A. D. Dyson, C. J. Fuller, P. H. Leslie, H. W. Pearson, G. F. Skinner, A. Q. Wells, G. I. Wilson, Dorothy J. Collier, Sybil R. Eastwood, Katherine M. Hodgkinson. *Forensic Medicine and Public Health:* W. B. Boone, W. R. Brain, D. S. Davies, H. A. Gilkes, E. H. Koerner, C. R. Lane, B. W. Williams, C. R. Young, Nancy B. Ockenden, Jean Orr-Ewing, Constance M. Ottley. *Medicine, Surgery, Midwifery:* C. W. C. Bain, W. Champneys, S. Hartley, R. F. Johnstone, D. G. Leys, T. L. Ormie od, H. A. Osborn, H. D. Paviere, B. W. Williams, Dorothy W. Crook.

D.P.H.—*Part I:* C. Buncombe, K. Falconer, R. B. Lal. *Part II:* E. H. Creed, R. B. Lal, N. B. Laughton, E. Newton.

M.CH.—L. R. Brester, E. A. Crook.

The Dr. Lee's Professor of Anatomy has awarded the Welsh Memorial Prize for drawing in relation to human anatomy to Olive Howland Lister. The Theodore Williams Scholarship in Anatomy has been awarded to T. C. Hunt, and the Theodore Williams Scholarship in Physiology to T. S. Townsend.

UNIVERSITY OF LONDON.

UNIVERSITY COLLEGE.

THE following awards in the Faculty of Medical Sciences have been made:

Bucknill Scholars, 1921: A. S. Wesson; M. Barer (additional). Medical Exhibition, 1921: Violet H. Comber. Gold Medal for Anatomy (Senior Class): Catherine Watterson. Silver Medal for Anatomy (Junior Class): R. M. Walker. Gold Medal for Physiology (Senior Class): M. Cutner. Silver Medal for Physiology (Junior Class): Nina Blackett. Silver Medal for Organic and Applied Chemistry (General Course): R. M. Walker. Silver Medal for Pharmacology (General Course): Mary Tyars.

KING'S COLLEGE.

Worsley Scholarships.—The Council of King's College, London, has instituted a special scholarship under the Worsley Foundation for the post-graduate training of a fully qualified medical man, with a view to his proceeding or returning to India as a medical missionary. The scholarship is of the value of £150, together with free medical education at some Post-Graduate Institute. The ordinary Worsley Scholarship, which is of the value of £100, paid in five annual instalments of £20 each, together with free medical education at King's College and King's College Hospital, is also offered. The scholarship was founded for the education of medical missionaries proceeding to India, and a scholar must on election obtain security for the purpose of ensuring that he will proceed as a missionary when his education is completed.

Applications for either scholarship, accompanied by testimonials, should be sent to the Dean of King's College, Strand, W.C.2, not later than August 31st, 1922.

LONDON HOSPITAL MEDICAL COLLEGE.

The following prizes and certificates gained by students of the London Hospital during 1921–22 were recently distributed by Mr. T. H. Openshaw, C.B., C.M.G., senior surgeon to the hospital:

"Price" Scholarship in Science (£100), F. W. Ta Bois. "Price" University Scholarship in Anatomy and Physiology (£52 10s.), G. L. Thompson. Entrance Science Scholarship (£50), H. Evans. Prize in Clinical Medicine (£20), W. R. Brain. Prize in Clinical Surgery (£20), L. B. Leibster; honorary certificate, Miss L. P. Gibson. Prize in Clinical Obstetrics and Gynaecology (£20), Miss M. C. N. Hadley; honorary certificates, Miss D. Cook, Miss K. Tresilian, R. M. Morris. Andrew Clark Prize in Clinical Medicine and Pathology (£26), W. R. Brain; honorary certificates, Miss D. Gibson, Miss C. M. Ottley, Miss M. C. N. Hadley. Letheby Prizes: (*a*) Organic Chemistry (£15), F. E. Kingston; honorary certificates, F. W. Ta Bois, Miss C. M. Hext; (*b*) Chemical Pathology (£10), F. F. Byrom. Buxton Prize in Anatomy and Physiology (£11 10s.), G. Kitt; honorary certificate, H. G. Wyatt. Dressers' Prizes (£5): (*a*) Elementary Clinical Surgery, Miss D. E. Buckmaster and Miss M. C. N. Hadley (aeq., prize divided), P. H. O'Donovan, J. T. Ingram; honorary certificates, S. Vatcher, J. T. Barrell, L. Mushin; (*b*) Minor Surgery, J. T. Fathi, G. L. Thompson, R. G. Strouts; honorary certificates, Miss C. M. Hext, W. Evans, C. E. Nicholas, F. W. Ta Bois, H. Evans. Anderson Prizes in Elementary Clinical Medicine (£5), S. A. Grant, R. K. Wilson (B. D. Hendy, L. P. Marshall, and B. H. Wooderson aeq., prize divided); honorary certificates, Miss C. M. Ottley, L. C. J. Edwards, N. M. Goodman, R. E. Wilson, J. T. Barrell, Miss D. Mason, A. R. Lister, J. T. Ingram, R. T. Brain, W. A. Lister, J. R. A. Madgwick, G. L. Thompson. Arnold Thompson Prize in Diseases of Children (£15), Miss K. E. Tresilian; honorary certificates, Miss D. E. Buckmaster, K. W. Todd. Practical Anatomy Prizes: (*a*) (£5), R. D. Summer; (*b*) (£1), E. C. Hudson; honorary certificates, H. Evans, D. V. Rice, Miss H. M. Horton, F. E. Kingston.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examinations indicated:

FINAL M.B. AND CH.B.—P. D. Abbatt, S. Adler, R. Anderton, J. H. Appleton, K. V. Bailey, J. B. Bennett, Doris H. Bentham, E. W. Clough, H. M. Coope, Margaret Derbyshire, Dorothy M. L. Dyson, ‡Beatrice L. Ellison, H. P. Fay, J. H. Fletcher, E. S. Frischmann, A. Ingham, A. A. Pomfret, ‡Hilda Pratt, A. Rosenstone, *F. H. Scotson, H. Southworth, J. H. Struthers, C. B. V. Walker, Margaret Wild. *Obstetrics:* Kathleen M. Eastwood, P. Fildes, R. Handley, Doris M. Hardman, Mary Keats, C. B. Kirkbride. *Surgery:* Kathleen M. Eastwood, J. Yates. *Forensic Medicine:* G. B. Lord, Greta Lowe.

THIRD M.B. AND CH.B.—*Pharmacology and Therapeutics:* R. S. Adam, J. H. Anderson, J. K. Barr, Margaret A. Bromhall, W. C. V. Brotherwood, C. V. Brown, Stella H. Brown, T. A. Brown, §Elsie Catlow, §T. E. D. Chadwick, W. Chadwick, Jenny D. Craig, J. A. Crowther, T. E. Davies, S. Devine, R. Ellis, J. D. Farquhat, C. R. Fielding, Miriam Florentin, A. G. Forbes, I. H. Freedlander, J. W. Graham, P. Gregory, Dorothy Guest, J. Haslam, G. H. Hayle, A. H. Heyworth, E. Holmes, W. L. Horton, J. N. Hudson, Elizabeth G. Humble, P. G. Johnson, Phyllis Kaufmann, D. Kemp, Dalley, M. Knight, G. F. Langford, Annie T. Leigh, E. M. Liddle, §Hilda Linford, F. R. Lockhart, A. M. MacGill, C. T. Marshall, W. Mottershead, Alice M. Orrell, H. Penman, S. Pope, L. J. Prosser, Olive A. Ransome, A. R. Addey-Redfern, T. W. Rothwell, Eileen Sheehan, J. Shlosberg, §J. Sims, H. T. Simmons, G. S. Smith, Lois Stent, R. F. Stubbs, J. Troup, H. M. Turner, J. Viljoen, C. L. Walker, R. Walshaw, S. E. Ward, S. Whalley, H. Whittle, C. Wilcocks, R. M. Williams, G. William-son, S. P. Wilson, K. K. Wood, P. B. Wood, F. Yates, J. M. Yoffey, N. A. T. Young. *Pathology:* C. N. Aldred, W. B. Bacon, ‡A. Barlow, C. E. W. Bower, B. Bowman, W. Broadhurst, J. F. Bromley, A. Brown, A. J. E. Cave, A. Coleman, Bessie E. Cook, G. Crompton, Mary S. Davies, C. Eccleston, N. P. Edwards, R. Fairbrother, W. E. Fildes, W. A. J. Fleming, E. J. Foulds, E. St. G. Gilmour, Anne H. Glaney, A. Glenn, Marjorie A. Grant, M. E. Heywood, Evelyn M. Holmes, W. G. Howson, K. H. Jackson, A. M. Jones, Bertha Kahn, L. W. Kay, A. C. Keily, V. F. Lambert, H. M. Levy, W. B. McKelvie, L. Morris, Marjorie M. O'Dea, R. W. Parker, M. Parkes, T. Pierson, D. Ramage, W. M. Roberts, Marjorie Robinson, Kate B. Scott, Agnes Seaston, G. E. Sharp, Margaret Simcock, Dorothy Simmons, E. E. Smith, W. Smith, W. G. Southern, Marjorie Thompson, Sarah Walker, E. Whiteside, Jane M. Wilde, ‖ L. J. Witts, E. J. Warburton, Marjorie Youatt.

* Second class honours and Distinction in Medicine.
† Distinction in Obstetrics. ‡ Distinction in Surgery.
§ Distinction in Pharmacology. ‖ Distinction in Pathology.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

M.D.—S. S. Sbri Kent.

M.B. AND CH.B.—*H. Cohen, †M. J. Cohen, †P. R. Hawe. *Part III:* Ethel Ashton, E. W. Ashworth, Eudora V. Beatty, R. H. Blair, A. Cathcart, Mildred M. Clegg, R. W. Cockshut, C. Cookson, Gladys W. Darlington, J. V. Hall, T. K. Hughes, W. D. Jeans, A. R. Jones, Irene E. Kenworthy, Eleanor Lancelot, N. H. H. Longton, B. L. McFarland, F. Q. Mckeown, Annie Mather, Muriel Pickering-Jones, J. K. Reid, D. Riding, C. F. H. Sergeant, Mary D. H. Sheridan, J. E. T. Shirlaw, Enid F. Stowell, E. Sykes, J. H. P. Tobin, C. H. Walsh, Dorothy A. Williams, Grace H. Wood. *Part I:* Y. C. Cornwall, L. Davies, R. Y. Dawbarn, Kathleen Edgecombe, C. K. D. Edwards, D. P. Finn, E. J. Foley, N. D. Fraser, S. C. Goldstone, W. F. Jones, T. S. King, D. Kippax, G. T. Krajewski, W. J. Laird, Lilian W. Massey, J. I. Noble. *Part II:* §B. Abe'man, A. R. D. Adams, J. Dixson, R. W. Brookfield, C. Hall, L. Bulmer, M. Byala, I. Casdan, §M. Cohen, R. G. Cooke, R. Cotter, I. H. Davies, Hilda M. Davis, F. Earlam, C. K. D. Edwards, D. P. Finn, D. Flenley, F. S. Fowweather, Susan Gluck, A. B. Griffiths, J. R. Griffiths, J. Hallam, C. W. Healey, S. Hesselberg, Enid M. Hughes, §Elizabeth Hunt, L. E. Johnson, F. H. Jones, T. J. Kirkpatrick, D. A. Levin, Eileen M. Lloyd, Marion R. Lunt, ‖D. Macfarlane, Mary M. McMillan, J. McWilliams, P. Malpas, G. H. Mann, J. I. Noble, T. V. O'Brien, §B. Ordman, ‖C. H. Owen, §D. U. Owen, Eleanor M. P. Pearson, W. E. Pennington, J. D. O'M. Poole, E. L. Roberts, J. Roberts, R. A. Roberts, Kathleen M. Robertson-Dunn, J. R. A. Tallack, Dorothy A. Taylor, Elizabeth M. Theron, B. A. Thomas, J. G. Thomas, R. W. Thomas, A. Tumarkin, H. Walker, A. E. Wall, F. J. Whybrark, H. P. Widdup, A. G. Wilkinson, E. B. Wilkinson, J. Williams, Mary G. T. Williams.

* First-class honours with distinction in Surgery and Obstetrics.
† First-class honours with distinction in Medicine and Surgery.
‡ Second-class honours with distinction in Obstetrics.
§ Distinction in Public Health.
‖ Distinction in Forensic Medicine and Toxicology.

D.P.H.—Evelyn F. Bebbington, Louise Denil, J. Flanagan, W. M. Frazer, S. C. Gracias, G. R. James, Annie A. Muir, Edith M. Seward, S. S. Shri Kent, Marion Thomson, J. C. Twomey, C. J. Young.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—S. M. Alexander, Margaret Allice, J. W. Anderson, W. L. Balfour, Davie Anne D. Bannerman, F. D. M. Beaton, Margery E. Bennet, J. H. van den Berg, Elizabeth S. Blair, Victoria E. Brander, Jean T. W. Bucknell, *E. Bulmer, Jane G. H. Burnet, C. W. Burns, J. C. Caird, Isobel J. Callender, I. G. Cameron, Esther J. Campbell, Grace Campbell, Helen T. Campbell, Mary C. Campbell, Elizabeth B. Clark, F. W. R. Clover, C. Cochrane, T. A. Cochrane, J. W. P. Collier, Jean M. T. Connochie, J. C. B. Craig, E. J. Crawford, F. G. Creaser, Margaret M. Creaser, Lilian M. Croskery, *B. M. Dick, Gladys H. Dodds, C. E. Dorsch, Jessie A. P. Dower, Jessie Eeles, E. L. Ewan, L. Feldman, T. Ferguson, Helen L. M. Fisher, J. E. F'etcher, *C. H. Fouche, Beatrice C. Galsworthy, Hilda R. Gibbs, E. S. Gordon, Alice J. Gray, Margaret A. Green, H. Greenberg, J. B. Gyle, J. S. Harris, G. A. Hart, Hilda R. Hay, Janet M. Henderson, J. M'A. Henderson, Enid M. Hern, J. S. Hovell, Sheila Hunter, W. M. Hyslop, R. G. Inkster, G. W. Ireland, H. Jamieson, E. M. Jenkins, Nora A. Jones, Elizabeth R. Kemp, Catherine G. Ketchin, A. J. Kilgour, Isabel F. King, N. Kretzmar, E. G. Lawrie, W. R. Levie, S. Lipetz, J. H. Louis, A. J. Lubbe, M. G. Lucas, P. L. Lucas, K. Lumsden, Betty Macdonald, *D. T. Macdonald, D. Macdonald, *J. R. M'Donald, A. M'Farlane, R. E. C. M'Intosh, D. P. MacIver, D. F. Mackenzie, J. F. Mackie, K. D. Mackintosh, R. A. MacNab, K. A. Macrae, *A. M. Marr, J. Martin, T. M'W. Millar, J. C. Moir, Janette C. Morrison, A. H. Mowat, Jessie E. M. Munro, R. Munro, J. K. Murray, Dorothea M. Nowell, Jessie R. H. O'Sullivan, Dorothy M. Patrick, H. Penn, Dorothy G. E. Potter, C. M. Rautenbach, F. W. Rawlings, W. M. Robb, Isabel M. Roberton, J. D. Robertson, Robina A. M'F. Scott, D. M. Scrimgeour, Marjorie K. Semple, S. Sieff, T. Skene, A. G. Smith, Marjorie V. B. Smith, Eva Stewart, H. G. Stockley, Jessie W. Strang, May D. Stranger, I. D. Stronach, P. W. Tait, Ruth M. A. Tait, Isabella Taylor, Florence L. Telfer, R. V. Thomas, C. M. Thompson, C. B. Thomson,

J. Thomson, Muriel J. Thomson, Annie R. Turnbull, Kathleen M. Turner, J. Waigcowsky, Georgina Waters, Annie E. Webster, Christian M. B. Welsh, Winifred Wight, Doris S. Williams, H. H. Wright, A. D. MacC. Young.

* Passed with distinction.

UNIVERSITY OF ST. ANDREWS.

SUMMER GRADUATION.

THE summer graduation ceremonial took place on July 7th, when the Principal, Professor J. C. Irvine, presided.

Honorary Degrees.

The honorary degree of Doctor of Laws was conferred on Dr. C. R. Marshall, Professor of Materia Medica in the University of Aberdeen, and on Sir Harold Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh.

In presenting Professor Marshall the following statement was made: After a distinguished undergraduate career in the Universities of Manchester and Cambridge and the tenure of an assistantship to the Downing Chair of Medicine, Cambridge, Professor Marshall came to St. Andrews in 1899 as Professor of Materia Medica, an appointment which terminated in 1919 with his transference to the Regius Chair in Aberdeen. As Dean of the Faculty of Medicine he had given ample proof of his abilities, his energy, his grasp of affairs, and his keen interest in the Medical School.

Of Professor Sir Harold Stiles it was said: The eminence of Sir Harold Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh, as a surgeon—as student, practitioner, and teacher of his art—needed no recital to give it warranty. Inspired with an enthusiasm for surgery by the example of two remarkable men, his grandfather and father in Lincolnshire, the latter of whom was a doctor of medicine of St. Andrews, he had been associated since his student days with the great Edinburgh school of surgeons, to whose high standing and long tradition he had added not a little fame. Since the first recognition of his skill by the awards of the Lister and the Walker prizes in his various offices as surgeon of the Sick Children's and the Chalmers Hospital, as charged in the war with the supervision of orthopaedic treatment in the Scottish military hospitals, and in the Regius Chair of Clinical Surgery in his University, he had been for twenty years a brilliant leader in the world of surgery, and had found time, amid the heavy demands of private practice, to advance by notable research the knowledge and treatment of cancer. To his exceptional and acknowledged skill as surgeon, and to his contributions to surgical and medical literature, he added in high degree that first attribute of the fine teacher, the power of inspiring both his colleagues—among whom they counted their own Professor of Surgery—and his students with something of his own energy and enthusiasm. To the honours of State and of academies which Sir Harold Stiles enjoyed, St. Andrews added with great respect her Doctorate of Laws.

Ordinary Degrees.

M.D.—J. Kinnear, W. G. Robertson, Amelia MacD. Thoms.

M.B., CH.B.—F. E. Anderson, J. C. Anderson, G. G. Buchanan, Katherine M. Campbell, D. C. Clark, G. R. M. Cordiner, W. M. Cumming, Frances Heron-Watson, L. Jacobs, W. L. Kinnear, N. M'Leod, Isobel M. Mansie, Margaret C. Muir, Bhagwant Singh Nat, Alan Pride, Agnes H. T. Shepherd, Edith M. D. Smith, W. L. Tullis.

D.P.H.—Georgina S. Craig, Janet H. Hodge, A. C. Meek, G. R. Ross.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have, after examination, been admitted as Fellows: A. N. Basu, J. Lipsey, N. B. Morris, C. Read.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the summer commencements in Trinity term, held on July 4th, the following medical degrees were conferred:

M.D.—R. D. FitzGerald, G. S. M'Conkey, H. Mitchell; Sir William Taylor, Regius Professor of Surgery (stip. cond.).

M.CH. *Honoris causâ*.—Dr. G. E. Armstrong, C.M.G., Professor of Surgery in McGill University, Montreal.

M.CH.—E. D'Arcy McGee.

M.B., B.CH., B.A.O.—Minnie Alper, A. G. Bewley, M. Bewley, G. Blackall, G. R. Burns, J. V. Carroll, Beryl F. E. Cockle, I. Cornick, J. R. Craig, A. E. Drotske, N. Mcl. Falkiner, J. C. Gillespie, H. Hall, J. Harte, J. Lait, M. P. Louw, J. E. McCormick, J. C. J. McEntee, D. L. H. Moore, G. S. Moran, R. N. Perrott, May E. Powell, S. G. Rainsford, J. G. Russell, S. G. Russell, M. Sayers, R. Seale, A. H. N. Todd, M. M. Viljoen, S. G. Wedon.

THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS.

AT a meeting of the Fellows of the Royal College of Surgeons of England on July 6th for the election of three Fellows into the Council, in the vacancies occasioned by the retirement of Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., Sir William Thorburn, K.B.E., C.B., C.M.G., and Mr. W. McAdam Eccles, 816 Fellows voted, out of whom 809 forwarded their voting papers by post, seven voting in person. The result was:

	Votes.	Plumpers.
Sir W. THORBURN	502 ...	57
SIR C. A. BALLANCE	435 ...	10
ROBERT PUGH ROWLANDS	280 ...	39
Mr. W. McAdam Eccles	272 ...	17
Mr. Victor Bonney	228 ...	15
Mr. John Herbert Fisher	207 ...	30

The President declared Sir W. Thorburn and Sir Charles Ballance duly re-elected, and Mr. R. P. Rowlands, O.B.E., duly elected into the Council.

Obituary.

MAJOR-GENERAL W. F. STEVENSON, C.B., M.CH.

MAJOR-GENERAL WILLIAM FLACK STEVENSON, C.B., Army Medical Staff (retired), died at Bournemouth on July 7th, aged 78. He was born in Dublin on May 29th, 1844, the son of John Stevenson, of Strawberry Hill, Dalkey, County Dublin, and educated at Trinity College, Dublin, where he graduated B.A., M.B., and M.Ch. in 1865. He entered the army as assistant surgeon on March 31st, 1866, and served in the Royal Artillery in the old regimental days; he attained the rank of surgeon-colonel on July 9th, 1896, and retired on August 1st, 1905. He was granted the temporary rank of surgeon-general while serving in South Africa in 1899-1900, and again when employed at the Royal Army Medical College in 1903, and was confirmed in that rank, on the retired list, on July 16th, 1913. He was assistant professor of military medicine at the Royal Army Medical School, Netley, in 1890-92, and professor of clinical and military surgery in 1892-95. He served in the South African war in 1899-1901, as principal medical officer of the lines of communication, and afterwards as principal medical officer at Lord Roberts's headquarters. He took part in operations in the Orange Free State, including the actions at Paardeburg in February, 1900, at Poplar Grove and at Driefontein; and in the Transvaal, including actions near Johannesburg and Pretoria, and at Belfast. He was mentioned in dispatches in the *London Gazette* of February 8th, 1901, and received the Queen's medal with five clasps, and the C.B. On retirement he was appointed honorary surgeon to the King. He was subsequently employed at home in the recent war. In 1897 he was selected to attend the International Medical Congress at Moscow, as representative of the British Army.

In 1897, soon after quitting his chair at Netley, he published a book, *Wounds in War, the Mechanism of their Production and their Treatment*, which was at that time and for many years afterwards the chief authority on the subject. A second edition appeared in 1904, and in it he was able to embody the results of his experience in South Africa. A third edition was issued in 1910. General Stevenson is survived by his widow and two daughters. His only son, who entered the I.M.S. in 1896, died of heatstroke in Lucknow in 1900. General Stevenson was a highly accomplished surgeon, and a widely read man, possessed of great charm of manner. These qualities combined to give him influence both during his two terms at Netley and afterwards.

EBENEZER DUNCAN, M.D.,

Consulting Physician, Victoria Infirmary, Glasgow.

WIDESPREAD regret is felt in medical circles in Glasgow and the West of Scotland that Dr. Eben. Duncan has passed away. He has been a member of the medical profession for fifty-five years, having graduated with honours at Glasgow University at the early age of 21. Throughout his professional career he occupied a prominent place in the life of the city. Essentially he was a publicist, and wherever medicine was in touch with civic or social questions he was actively interested. He was a good speaker, clear and forcible, and spoke always with the strength of conviction. When the British Medical Association met in Glasgow in 1888 he was one of the honorary secretaries of the Public Health Section, under the chairmanship of Sir Henry Littlejohn, and the few who remember that meeting will regret his absence from the coming one.

Dr. Duncan was for a time an extramural lecturer on medical jurisprudence, was a president of the Sanitary Association of Scotland, of the Philosophical Society of Glasgow, and of the Royal Faculty of Physicians and Surgeons. He was physician to the Victoria Infirmary, and an examiner in several medical subjects at the University and for the Scottish Conjoint Board. In the war he was a member of the Scottish Medical Emergency Committee, and took part in its meetings with his customary vigour. Between two and three years ago, notwithstanding his age, he made a strong fight for election as Direct Representative for Scotland on the General Medical Council, and though defeated he secured a large measure of support. For his years he was a remarkably young-looking man until not long ago, when he had to submit to a serious operation. He spent a long and useful life in the service of his fellow men, and now he has entered into his rest, leaving behind him a respected name and a high

reputation for ability, energy, and integrity in all he undertook. His wife died several years ago, but he has left a family of three daughters and five sons, of whom three are members of his own profession, two in Canada and one in Africa.

A. N. DAVIS, L.R.C.P. and S.,
Medical Superintendent, Devon Mental Hospital.

THE sudden death of Dr. A. N. Davis, medical superintendent of the Devon Mental Hospital, Exminster, on June 29th, was a great shock to the staff of the hospital and to his friends. His death was the more tragic inasmuch as on the following day, when his resignation would have taken place, he was to have been presented with a handsome silver salver as a farewell gift from the staff of the hospital. It had been noticed for some time that his health was not good, but he had never completely recovered from an injury to the hip sustained by a fall some twelve months ago. He had been unable, in consequence of the injury, to do full duty, and last Christmas had intimated his intention of resigning. He was induced to continue in office, but eventually the committee decided, with great reluctance, to accept his resignation as from June 30th, 1922.

Arthur Nathaniel Davis was born on June 14th, 1857, and took the diplomas L.R.C.P. and L.R.C.S.Edin. in 1880. He had seen over forty-two years' service in mental hospitals, beginning with Bethnall House Asylum, London, and passing to the Portsmouth Borough Asylum. In 1883 he married the daughter of the late General George Warren, and accepted a colonial appointment in Antigua. The climate, however, did not suit his health, and after a year he returned to this country and became the medical officer of the institution at Forston, which was in those days an annexe to the Dorset County Asylum. Afterwards he was for seven years medical superintendent of the Plymouth Borough Hospital, and in 1898 was appointed medical superintendent of the Devon Mental Hospital at Exminster, a post he occupied for twenty-four years.

Dr. Richard Eager, his successor at the Devon Mental Hospital, to whom we are indebted for these particulars, adds:

"During his tenure of office he gained the entire confidence of the county councillors of Devon as an organizer and administrator, and his opinion on these matters has often been sought outside the county. When the war came he found himself faced with peculiar difficulties, inasmuch as his senior and second assistant medical officers were immediately mobilized. In spite of this he not only successfully carried on the administration of this large hospital, but also managed to take an active part in recruiting work for the services, and was given the rank of Major in the R.A.M.C. These energies, it is feared, taxed his powers, for in the winter of 1915 he had a serious illness. From this, however, he seemed to make a satisfactory recovery, and he resumed his duties as medical superintendent with his usual vigour. At the termination of the war he devoted great energy to provide this village with a recreation hall, and it is largely due to his activities that 'Exminster Victory Hall' now exists. His name figures on one of the foundation stones of this building, and will be a lasting memento to his long and happy connexion with the hospital and village.

"When he made up his mind to retire he decided to live at Exmouth, bought a house there, and spent much of his time in that town, visiting the hospital when necessary. His last visit was paid on the day of his death, when he appeared to be in his usual health and spirits. He motored to Exmouth in the evening. After he had gone to bed he was seized with pain, collapsed, and died almost immediately. The staff of this hospital, of which he was head for so long, held him in highest esteem, and his loss is felt by all. Dr. Davis was an all-round sportsman of no small ability. He was an excellent shot, and his name has been well known for many years in the county of Devon as a first-class cricketer. Since his inability to take an active part in the game he has regularly attended the Mental Hospital matches and encouraged the younger members of the team. He extended his sporting instincts into the field of his work, and as an administrator was always anxious to overlook offenders and forgive rather than punish.

"The funeral took place at Littleham Cemetery, near Exmouth, on the afternoon of July 4th, and was largely attended by members of the committee and staff of this hospital. A memorial service was also held in the hospital chapel at the same hour to enable the patients and those members of the staff not able to go to the funeral to pay their last respects to one who had been so closely associated with them for so many years.

"He leaves no children, but a widow, to whom the deepest sympathy of the whole staff of this hospital is extended. Personally I feel that by his death I am only one of many who has lost a great friend."

DR. R. WILSON BRUCE, of Glasgow, died on July 8th in his seventy-eighth year. He was educated at Anderson College and the University of Glasgow, and took the diploma of L.R.F.P.S. Glasgow in 1872. He was well known in the north-western district of the city, and was for many years visiting surgeon of the Eastpark Home for Infirm Children. He also took great interest in medical mission work and was at one time surgeon to the Medical Mission Dispensary, Glasgow.

The Services.

THE Territorial Decoration has been conferred upon Major S. Grant Ogilvy, 10th Bn., Royal Scots (ret.), late Major, R.A.M.C.

Surgeon Commander Alexander C. W. Newport, M.V.O., R.N., H.M.S. *Renown*, has been created a Commander of the Royal Victorian Order, and Surgeon Lieutenant Commander Henry E. Yeo White, R.N., H.M.S. *Renown*, has been appointed a Member of the Fourth Class of the same Order.

DEATHS IN THE SERVICES.

Deputy Surgeon-General James Henry Jeffcoat, R.A.M.C. (ret.), died at Surbiton on July 5th, aged 85. He was born at Leamington and was educated at St. Mary's Hospital; and after taking the M.R.C.S. and L.S.A. in 1858 he entered the army as assistant surgeon on August 5th of that year. He became brigade surgeon in 1884, and retired, with a step of honorary rank, in 1885. In his early days he served in the 9th Foot, the Norfolk Regiment. He went through the Afghan war of 1878-80 with the Kuram Field Force, and at the capture of the Peiwar Kotah, receiving the medal with a clasp.

Captain John Gregory Owen Moss, Indian Medical Service (retired), died at Millbank Military Hospital on July 3rd, aged 32. He was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1912, taking also the special certificate in tropical medicine, and M.D. in 1917. After serving as junior assistant at the Royal London Ophthalmic Hospital, he entered the Indian Medical Service as lieutenant on January 31st, 1914, and was promoted to captain on September 1st, 1915. He had to take sick leave in January, 1919, and to retire on account of ill health in December, 1919. During the war he was surgical specialist in advanced operative surgery at Karachi Hospital.

Medical News.

IT has recently been reported that H.R.H. Princess Louise, Duchess of Argyll, had been elected Patroness of the Anti-vivisection Hospital. We are informed that the election was made without asking her leave and that she has declined to accede to the request. She is not, and never has been, a Patroness of the Antivivisection Hospital.

COLONEL SIR A. LISLE WEBB, K.B.E., C.B., C.M.G., who was seconded from the Royal Army Medical Corps in 1919 for three years to undertake the duties of Director-General of Medical Services in the Ministry of Pensions, has now been gazetted out of the army in order to devote himself permanently, as a member of the Civil Service, to the medical work of the Ministry of Pensions. Sir Lisle Webb entered the R.A.M.C. in 1899, served in the South African war, and was promoted Brevet Colonel in recognition of his services in the late war.

ACCORDING to the *Journal of the American Medical Association* of June 24th, the figures of the Bureau of Vital Statistics of the New York Health Department show that since prohibition became operative decline in the alcoholic death rate has assumed extraordinary proportions. In 1916 (when the licence system was in effect) there were 690 deaths from alcohol in New York City: in 1920, 127 deaths, and in 1921, 141 deaths—a decrease of 500 per cent. per annum.

BOTH Spanish Houses of Parliament have approved the ratification of the Maternity and Unemployment Conventions adopted by the first International Labour Conference held in Washington in 1919. The Maternity Convention lays down that a woman shall not be permitted to work six weeks before and six weeks after childbirth, and shall during that period be paid benefits sufficient for the healthy maintenance of herself and her child. In addition to this she is entitled to free attendance by a doctor or certified midwife.

THE Voluntary Hospitals Commission, of which Lord Onslow is chairman, has organized a national conference of representatives of Local Hospital Committees to be held in the conference room of the Ministry of Health on July 18th and 19th, to discuss, among other things, the question of hospital revenues. The Minister, Sir Alfred Mond, will probably attend.

THE last post-graduate lecture of the session arranged by the Fellowship of Medicine will be given by Mr. Victor Bonney at the house of the Royal Society of Medicine on Wednesday, July 19th, at 5 p.m. The subject will be "Myomectomy as opposed to hysterectomy."

As some of our readers are aware, a committee has been formed for the purpose of standardizing scientific glassware. The committee is as far as possible representative of all the interests concerned—namely, the users, the manufacturers, and the institutions and Government departments connected with the glass industry or engaged in research work or the testing of glassware. Three subcommittees have been formed and a programme of work has been drawn out. When the programme has been carried out, or possibly as portions of the work are completed, the results will be published. Sir Herbert Jackson is acting temporarily as chairman of the committee and Mr. V. Stott, of the National Physical Laboratory, Teddington, Middlesex, is acting secretary.

THE June issue of the *Canadian Practitioner* contains a group of signed articles on the work and character of Sir William Osler. Dr. Norman Gwyn discusses the early influences affecting Osler's career; Dr. Harold Parsons and Dr. Gibb Wishart contribute notes on Osler from the standpoint of a house-physician and of a student; Dr. C. D. Parfitt writes on Osler as an incentive, and Dr. H. B. Anderson on the debt of the Academy of Medicine, Toronto, to Sir William Osler.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

ARTIFICIAL EYES FOR OPHTHALMOSCOPIC STUDY.

DR. HABAN inquires if there are any forms of artificial eye suitable for the practice of retinoscopy and ophthalmoscopy.

*** There are several patterns of demonstration eyes designed for the purpose of the practice of retinoscopy. Reference to the catalogues of wholesale manufacturers of pre-war date shows that no fewer than four patterns were on sale at prices ranging from half a crown to some forty shillings. The cheaper patterns were made of cardboard, the more expensive ones of metal, fitted with iris diaphragms and removable fundus pictures. All these models had essentially the same construction. The "eye" is a box rather like a deep pill box; at one end a small opening is fitted with a high-power convex lens, at the side of the box there is marked a scale giving the "focus" of the eye according to the extent to which the inner part of the box is pushed into the outer part. The apparatus is very simple and can be made by anyone. Experience shows that these artificial eyes serve only a limited purpose in the practice of retinoscopy and ophthalmoscopy. With them the work is much too easy, so easy that it is but a poor introduction to the real work in view. Their use puts the practitioner into somewhat the false position of the man who practises his golf strokes with a captive ball: he gains an impression of his progress which is lamentably disappointed when he essays the real thing on the course.

INCOME TAX.

"PATER" asks whether he is liable to income tax on payments coming to hand from professional work which ceased, so far as he was concerned, as from May 4th, 1921.

*** In respect of the financial year ending April 5th, 1922, he is liable on one-twelfth of the full year's assessment and is not liable at all for 1922–23, so that no income from professional work should be returned by him for assessment as for that year. "Pater" cannot be assessed for professional fees as from May 4th, 1921—that is, from the date when the source of those earnings ceased.

"J. C. R.'s" car transactions have been as follows:

1914, bought 11.9 Coupe Humber for £450 (present price £125).
1921, sold it for £270, and bought second-hand 25-h.p. Buick for £600.

*** The out-of-pocket cost is £600 − £270 = £330, and that is the amount to be claimed and allowed.

LETTERS, NOTES, ETC.

FOREIGN BODIES IN THE AUDITORY MEATUS.

DR. JOHN JOHNSTON (Blackpool) writes: The cases recorded by Dr. Sheard and Dr. Millington recall a case in which a foreign body, a glass bead, has been in the auditory meatus for over thirty years without causing deafness. A boy then about 5 years of age was brought to me with a small glass bead in his ear which I attempted to syringe out, an operation which produced vomiting, with the result that the patient obstinately refused further treatment and went home with the bead in his ear, where it still is, syringing being declined from that day to this; the curious thing is that the patient's hearing has never been affected.

THE ETIOLOGY OF CANCER.

DR. REGINALD LARKIN (London, S.E.) writes: If Dr. Chevers (p. 32) will refer to a letter by me in the *Lancet* for March 26th, 1921, he will see that I definitely lay down that rheumatism or gout, or in some types both, are predisposing and actual persistent factors in the continued growth of the embryonic cells constituting cancer; and, further, I appended treatment for the same, and have had many successful cases of cures.

MANCHESTER MEDICAL GOLFERS' ASSOCIATION.

THE annual competition among members of the Manchester Medical Golfers' Association was decided at Hopwood on June 28th, when the challenge cup for the best score was won by C. B. Gerrard. There was a tie for the prize given by the captain for the second best net score. The gold medal for the best gross score by a player handicapped at under 10 went to C. B. Gerrard, and the silver medal for the second division to A. A. Smalley. The following are the scores:

	Gross.	H'cap.	Net.		Gross.	H'cap.	Net.
C. B. Gerrard ...	80	6	74	R. R. Duncan ...	94	16	78
A. A. Smalley ...	85	10	75	I. Scott	90	12	78
S. W. McGhee ...	87	12	75	H. Harris	96	17	79
A. Glen Park ...	81	5	76	J. W. Smith ...	90	10	80
Douglas Gray ...	94	17	77	B. Hawke-Genn	85	5	80
H. G. Cooper ...	82	5	77				

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at pages 27 and 28.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

A British Medical Association Lecture

ON

SOME ASPECTS OF CARDIAC DISEASE.*

BY

JOHN HAY, D.L., M.D., F.R.C.P.,

HONORARY PHYSICIAN, ROYAL INFIRMARY, LIVERPOOL.

So much of what appears in the journals dealing with the neo-cardiology, as it has been termed (a term applied partly, I think, in derision), is so technical and so difficult of comprehension that there is a tendency to miss those points which are of real and genuine practical value.

When one remembers that Mackenzie's book, *The Study of the Pulse*, was published in 1902, and that it is only ten years since the electrocardiograph began to be applied seriously to the elucidation of the arrhythmias, it is not difficult to understand why there is still so much haziness and even frank ignorance concerning the newer and more correct views of cardiac disorders. During the last twenty years the whole conception of the arrhythmias and their relation to cardiac failure has been changed.

If these views were nothing more than a revised nomenclature with little or no bearing on prognosis and treatment I would not trouble to discuss them with you; but the reverse is the case. Recent work has made diagnosis more certain, and correct knowledge of the heart is more concise, and as a natural corollary prognosis and treatment are placed on a surer and sounder basis.

I propose to discuss one form of arrhythmia, an irregular action which is extremely common, and which for this, if no other reason, is of considerable importance to us all as practitioners. I refer to auricular fibrillation, and may I make one point here—it is this: irregular action of the heart is not merely a matter of degree—there are definite, clearly demarcated types, varying fundamentally, and it is most important to be able to differentiate between those forms of irregular action which are of no moment and those which indicate serious changes.

Auricular fibrillation is not only of common occurrence, but it is also a serious handicap to the efficiency of any heart, healthy or diseased. The term "fibrillation" is unfortunately often applied rather loosely, showing a lack of appreciation of the fact that fibrillation is a sharply defined condition. An auricle is either fibrillating or it is not fibrillating, and the presence of fibrillation can generally be recognized during the ordinary clinical examination without any special instruments other than a stethoscope and a trained intelligence. At least 50 per cent. of all cases of persistent irregularity are due to fibrillation, and 60 to 70 per cent. of the patients admitted into hospital suffering from cardiac failure show this form of arrhythmia. Experimental work by Eyster and Swarthout on dogs has shown that fibrillation diminished the cardiac output by 40 per cent., and from clinical evidence it is clear that the inception of fibrillation means a sudden and definite increase in the load which the heart has to bear.

Before describing in detail the characteristics of this change and the method of its recognition may I first present a few clinical pictures?

In each of the five patients to be described the heart was beating in a frequent and disorderly manner—possibly with great frequency. It is well to remember that fibrillation may be associated with all grades of cardiac distress.

CASE I.

I have in my mind a man of 69, subject to attacks of "palpitation and fluttering action of the heart." These would come on at any time and without apparent cause, and last as a rule several hours. Their onset was sudden—he knew the moment they began and he knew also the moment of their cessation. He was not greatly distressed by them, but during an attack he did not feel quite himself and was conscious of the rapid and irregular action of his heart. Otherwise he was not inconvenienced and had no hesitation, for example, in setting out on a journey by train. (See Fig. 6.)

CASE II.

The second patient, a man of 80, was entirely, or almost entirely, unconscious of any change in his heart. On cross-examination, however, he admitted that he was more easily puffed, and that on effort he experienced a little palpitation; beyond that, nothing. The heart showed no deviation from the normal except the typical irregularity and slight increase in frequency. (See Fig. 4.)

CASE III.

In the third case the subjective symptoms were more definite. He was apparently a healthy man of 50. On May 19th he ran hard for a train—a distance of three-quarters of a mile. He caught it, but the shortness of breath and the palpitation caused by the extra effort did not pass off as he had expected. They persisted, and when I saw him on May 22nd he still complained of these symptoms and also of a peculiar "dithery and shaky feeling." On examining the heart I found the ventricular rate 140, many of the systoles failing to send a pulse to the wrist. There were no bruits and no increase in the cardiac dullness. Fibrillation had supervened in a heart which, up to that moment, had been for all practical purposes a sound heart with an ample reserve. (See Fig. 3.)

CASE IV.

The fourth example is that of a woman who had been under observation for years, suffering from mitral stenosis. Up to the present breakdown she has had, in spite of her valvular disease, good cardiac reserve, and has lived a useful and active life within her frankly recognized limitations. She will tell you that suddenly, naming the day and the hour, she became conscious of an irregular and rapid action—or she may describe it as a peculiar fluttering behind the breast bone. With this there were some precordial pain and a sense of shortness of breath. These symptoms increased and, as she was not treated, were followed by cyanosis, venous engorgement, and oedema, with distension of the abdomen and some abdominal pain, and an engorged and pulsating liver—all the signs of grave cardiac failure. On examination the action of the heart is found to be extremely rapid; the heart has become dilated, the typical presystolic murmur has disappeared, and the pulse is running, feeble, and irregular.

CASE V.

The last and fifth case is of a different type, but again one with which we are all only too familiar. I refer to the sudden onset of acute and overwhelming cardiac failure in a patient of middle age or of more advanced years. Such a man of, say, 60, in apparently good health, known to have a high blood pressure, awakes in the small hours in acute physical and mental distress. This is characterized by extreme dyspnoea and restlessness; his face is grey and pallid, he is bedewed with cold sweat, and his extremities are cold and clammy. There is no oedema and no engorgement of the liver. The heart is found to be beating tumultuously with extreme rapidity—the "delirium cordis" of the older writers. The radial pulse is irregular in force and frequency, and there are many small and almost imperceptible pulsations, in striking contrast to the apparently forceful action of the ventricles. He dies in a few hours of rapidly progressive cardiac failure chiefly affecting the left ventricle.

These instances are given as illustrations of the varied character of the clinical picture which may be presented by patients in whom auricular fibrillation has supervened. I hardly need to emphasize the fact that in each of these patients it was essential for correct treatment and prognosis that the nature of the sudden change in the heart should be clearly recognized.

What are the *characteristics by which it can be recognized?* They are largely embodied in the five cases related above.

Onset.—The onset is sudden. The transition from a normal rhythm to fibrillation is instantaneous and patients can often give a clear account of the commencement of the attack. Similarly in those patients in whom the fibrillation occurs in paroxysms the offset may be equally perceptible. On the other hand, fibrillation may not cause any sensations, pleasant or otherwise, until the reserve power of the heart is definitely encroached upon.

Irregularity.—The ventricular action is completely irregular and often frequent when the heart is free from the action of drugs; but the rate may vary within very wide limits, and when moderate the irregularity may not be very noticeable, though if the pulse be observed over a few minutes it is probable that the typical disorderly rhythm will manifest itself, and this will be more noticeable after exercise. It is also not unusual to find that the rate of the ventricular contraction is greater than the pulse rate, since some of the beats fail to be transmitted to the wrist.

Liability to Cardiac Failure.—It is the rapid and relatively inefficient action of the ventricles which increases the liability to cardiac failure, and if preceding the onset of fibrillation the myocardium is unsound, or if there is marked arterial hypertension, the onset of cardiac failure may be rapid and the distress great. It was this type of rapid and irregular ventricular action that was named "delirium cordis" by such writers as Balfour in his delightful book *The Senile Heart.*

Dilatation of the Heart.—When present dilatation supervenes as the result of the rapid and disorderly action and not as the cause, and if the fibrillation ceases the dilatation rapidly disappears. Similarly the heart shrinks when the

* Delivered before the Mid-Cheshire Division, June 15th, 1922.

ventricular action is slowed by digitalis, even if the fibrillation persists.

These, then, are briefly the clinical characteristics.

ETIOLOGY.

The etiology is simple. There are two large groups in which most of the cases may be included:

1. *The rheumatic*—in which the most common form of valvular disease is mitral stenosis, and the age period covers from 20 to 50.

2. *The senile*—in which males predominate. In this must be included patients suffering from myocardial degeneration, arterio-sclerosis, and chronic interstitial nephritis.

The remaining cases are those in which the fibrillation originates in infections such as pneumonia and influenza, or results from sudden physical strain.

A point I should like to emphasize here is that fibrillation is not confined to any one type of cardiac lesion. It may develop in any heart, though it is unusual to find it in the absence of some definite pathological condition.

The essential nature of auricular fibrillation is a specific and fundamental change in the activity of the auricles. Normally the auricles contract in response to a stimulus which originates at the sino-auricular node, and this contraction is a co-ordinated movement eventuating in the expulsion of the auricular contents. This ceases when fibrillation begins. The fibrillating auricle thus remains in a state of continued diasto'e and on inspection its wall is seen to be tremulous. It is not inactive, but its activity is no longer normal.

I do not propose to discuss the cause for this peculiar condition, but the explanation which is at present generally accepted is that of "circus movement," ably described by Sir Thomas Lewis in his Oliver-Sharpey lectures for 1921.

Essential Character of Fibrillation.

Whatever theory of fibrillation is accepted there is at all events no doubt that all evidence of presystolic contraction of the auricle disappears. With fibrillation, for example, the typical presystolic bruit of mitral stenosis is no longer heard—a mitral diastolic may and often does persist, but even when it is audible up to the first sound it has lost its presystolic crescendo accentuation, and in a lengthened diastolic pause the bruit generally fades away before the subsequent first sound.

An analysis of the jugular records taken from the vein shows that the wave *a* in the phlebogram, so characteristic

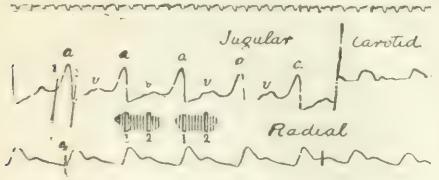


FIG. 1.—The jugular pulse is auricular in type; the wave *a* is well marked and occurs regularly. The murmurs are indicated on the tracing: presystolic, systolic, and early diastolic.

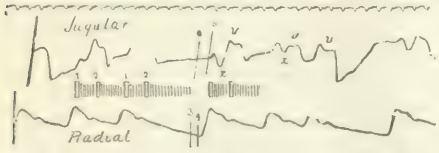


FIG. 2.—From same patient as Fig. 1 after the onset of fibrillation, showing an entire change in the character of both jugular and radial pulses. The rhythm is now disorderly. The wave *a* present in the previous tracing has disappeared. The murmurs are charted on the record. Note that the presystolic murmur has disappeared.

of systole of the right auricle, is no longer present. On the other hand, there may be, during diastole, peculiar small oscillations in the phlebogram.

Again, the electrocardiograph gives conclusive evidence of the cessation of normal activity in the auricle by the disappearance of the deflection *P*—a deflection due to auricular contraction and present in every normal record.

At the same time there are in the electrocardiograph numerous small deflections, *f f*, occurring at the rate of 450 to 500, which are caused by the peculiar electrical changes accompanying fibrillation, and are characteristic of the change.

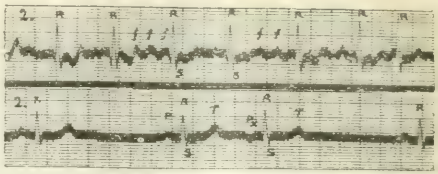


FIG. 3.—Electrocardiographic records showing result of quinidine sulphate in a patient suffering from auricular fibrillation. *Top record*, taken during fibrillation, shows irregular action of the ventricles, and the characteristic small deflections *f* due to the fibrillation. *Lower record* shows a normal rhythm after 0.4 gram of quinidine sulphate. The oscillations *f f* have disappeared. A premature beat arising in the auricle is shown at *Px*.

We have therefore this peculiar condition present in the auricles, and from this fibrillating mass impulses pour upon the ventricles through the normal channel—the auriculo-ventricular bundle. The ventricles respond as best they can

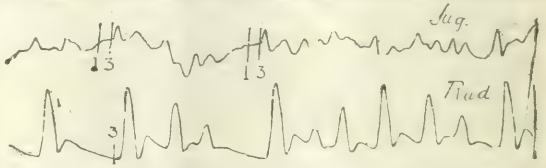


FIG. 4.—Simultaneous tracings of the jugular and radial pulses. Note the absence in the jugular tracing of any wave *a* preceding ventricular systole. From Case II. Typical disorderly rhythm.

to this irregular bombardment. The junctional tissues do, however, put some check on the number of stimuli passing through them, and the ventricular rate probably depends on the degree of block present. When this is marked the ventricular rate is infrequent, but when the impulses pass on to the ventricles with little hindrance the rate tends to become excessive. By judicious medication this can be controlled.

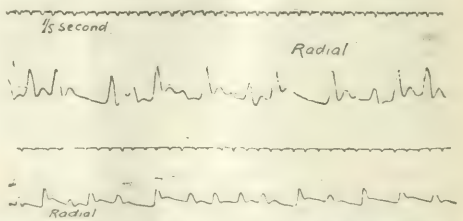


FIG. 5.—Typical radial tracings from case of auricular fibrillation, showing lack of correspondence between the length of diastole and the magnitude of the succeeding systole.

Whether the rate be frequent or the reverse the ventricular action is no longer regular—it is disorderly, a haphazard rabble of beats. Exercise increases both the cardiac frequency and coincidently the degree of the arrhythmia.

DIAGNOSIS.

The diagnosis of this condition during the ordinary clinical examination depends, therefore, upon a clear recognition of these essential characteristics which I have described. Careful cross-examination may elicit valuable information concerning the onset. The change in the character of the murmurs in the case of a patient suffering from mitral stenosis would of course be more than suggestive. But the most significant feature is the specific character of the arrhythmia, and in most instances palpation of the pulse should justify a positive diagnosis. The beats come hap-

hazard; the normal relation between the size of the beats and the antecedent pause no longer holds, and the rate of the pulse is no sure indication of that of the ventricles. The faster the heart the more obvious is the disordered character of the action. When the rate is within normal limits the arrhythmia is more subtle and is less arresting. Even then, however, sooner or later, with patience, the characteristic inconsequence of beats will appear, and suspicion passes into certainty.

Auricular fibrillation presents one other characteristic of great diagnostic value, and that is the specific response to the digitalis group—namely, a marked slowing of the ventricular rate, which is sometimes accompanied by the appearance of "coupled beats."

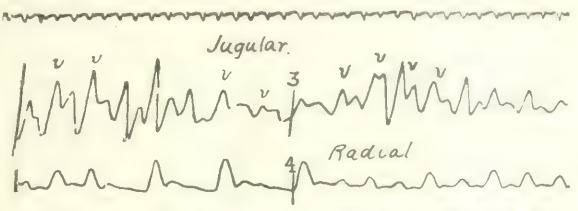


FIG. 6.—From Case 1 during a paroxysm. Irregularity complete; typical rate of small pulsations at wrist. No auricular waves preceding the systoles in the carotid record.

With these clinical characteristics clearly in mind it should be possible to arrive at a diagnosis, but there are certain forms of irregular action which may cause some little difficulty.

Sinus Arrhythmia.

Each respiratory movement may be associated with a decided arrhythmia, a quickening of the rate with inspiration and a lagging with expiration. When this is unduly exaggerated it may simulate fibrillation, but on holding the breath the heart becomes regular. A clear relationship to the respiratory phases is decisive. This form of irregularity is frequently present in adolescence and is of no moment.

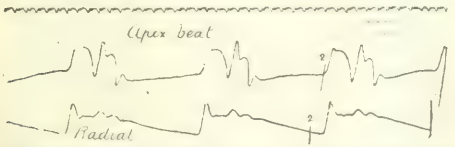


FIG. 7.—This record shows the coupled beat which often occurs when digitalis is pushed in cases of fibrillation of the auricle. It is an indication to stop the administration of digitalis. The second systole in each coupling is ectopic, and is just perceptible in the radial tracing.

Then, if *ectopic or premature beats* become numerous the arrhythmia simulates that of fibrillation. When occurring only occasionally or at regular intervals, giving rise to a premature or ineffectual beat every second, third, or fourth beat, it is obvious that there is a fundamental or dominant rhythm. Exercise, by increasing the rate, generally brings about a disappearance of this irregularity.

It is this form of arrhythmia which is that most likely to cause difficulty, and there is no doubt that when it is still further complicated by the appearance of "pulsus alternans" it may be impossible to make a confident diagnosis without a

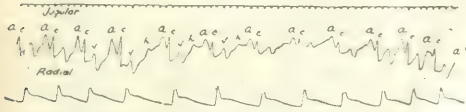


FIG. 8.—Polygraph record showing sinus arrhythmia. The rate is quickened with inspiration and slowed during expiration. *a* = wave due to systole of the auricle, *c* = record of carotid pulse.

polygraph or electrocardiograph record. Similarly cases of auricular flutter and cases of heart-block simulating fibrillation will probably require the employment of instruments of precision before a positive diagnosis can be made; but here again exercise and an increase of the ventricular rate tend to give a regular action.

TREATMENT.

When fibrillation is present the primary object of treatment is to reduce the ventricular contractions to a number within normal limits. In the most urgent cases of all, when the condition of the patient is so grave that it is obvious that unless the heart is slowed down at once death within a few hours is inevitable, strophanthin must then be administered intravenously in a dose varying from 0.5 to 1 mg. The result is sometimes as satisfactory as it is dramatic. Within an hour the condition of the patient is altered from one of acute distress to relative comfort: a liver obviously engorged and pulsating has shrunk materially; the cardiac thrust has moved inwards towards the nipple; the breathing is easier and the heart rate has fallen to a normal frequency.

In less urgent cases full dosage with the tincture of digitalis will probably be adequate: 5j or 5jss of the tincture as an initial dose, preceded by a purge, will generally give some relief within twenty-four hours; or the tincture may be prescribed in mxx doses three or four times in the twenty-four hours.

The digitalis group acts mainly by depressing the junctional tissues and hindering the passage of stimuli from the auricle to the ventricle. Digitalis should be continued until a specific response has been obtained; when the ventricular rate is down to 70 or 80 then the dose must be reduced until just sufficient is taken to maintain this speed. The most satisfactory response undoubtedly occurs in the rheumatic group. The danger is that the patient may cease to take digitalis when the symptoms have disappeared, or as it often happens, the doctor in charge discontinues the administration for fear of the so-called cumulative effects. The result is that within

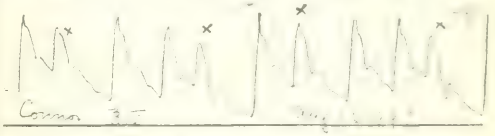


FIG. 9.—Premature beats.

a few weeks the ventricular rate mounts and the dyspnœa and other indications of cardiac distress return. Certain patients are dependent on the help to be obtained from digitalis, and must never entirely cease to take it in appropriate doses, for digitalis is essential to their well-being.

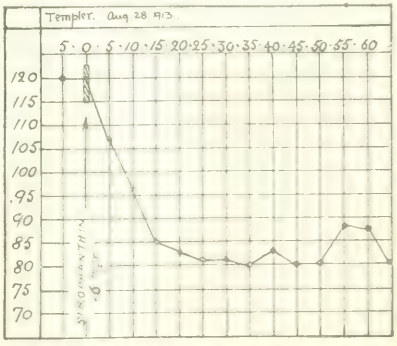


FIG. 10.—Shows the rapid drop in the heart rate after the injection of the strophanthin, from 120 to 80 in twenty-five minutes.

There are, of course, well-recognized indications for diminishing or stopping digitalis, such as: (1) a ventricular rate of 70 or under; (2) nausea or vomiting or diarrhœa; (3) a "coupled beat" which has appeared as the result of treatment with digitalis. This coupling is a specific response; it is an indication of saturation and that digitalis should be

stopped. The nausea and vomiting may be a true indication of toxic dosage or merely the outcome of the resentment of an engorged stomach to a nauseous drug. If there is reason to believe that the latter is the case, then the digitalis should be continued, but given well diluted or in a bland bismuth draught. When the tincture is badly tolerated the patient can sometimes take with comfort either Nativelle's digitalin granules or the tincture of strophanthus.

In the mildest cases of all, with only a moderate acceleration of the ventricular rate and no distress, regulation of the life and the exhibition of mild haematinics over a long period yield the best result. There are few better cardiac tonics than an adequate supply of good blood to the heart through the coronaries. This is especially applicable to the cases of fibrillation occurring in patients with high blood pressure and arterio-sclerosis.

Can we Stop Fibrillation?

Sometimes fibrillation ceases spontaneously and may never recur; more often it is permanent. Recently much has been written about the action of quinidine sulphate and its power of terminating fibrillation, and it may be of interest to you to refer to this line of treatment.

My experience covers 17 cases in which I have given quinidine with the object of restoring a normal rhythm. In 6 of the 17 the treatment failed. Either the patient could not tolerate the drug or the cardiac failure was accentuated by the quinidine. In 11 of the 17 a normal rhythm was obtained, but two of these relapsed and persisted in their fibrillation. Ultimately in 9 of the 17 patients the normal rhythm was maintained. (See Fig. 3.) It is possible if not probable that as time goes on some of these 9 may fall from grace. On resumption of the normal rhythm some patients feel materially improved, others do not admit to much, if any, benefit.

In my opinion the treatment is not free from danger, and the action of the quinidine should be most carefully checked. My practice is to have an electrocardiogram taken twice a day and the changes in the auricular and ventricular contractions noted. I give the drug in capsules in doses of 0.2 gram spread over the twenty-four hours, so that the patient receives ten doses, or 2 grams, a day. Its indiscriminate use is dangerous, and it should only be given in carefully chosen cases and with the patient under continuous observation. I should like to emphasize this as I have met several instances where, through ignorance, quinidine sulphate has been prescribed recklessly and without any attempt at adequate supervision.

Summary.

Irregular action of the heart is not merely a matter of degree. The types differ fundamentally and their significance varies widely.

The most important group is that of fibrillation of the auricle, characterized by a specific and fundamental change in the activity of the auricles, and a frequent and disorderly action of the ventricles. This increases the load of the heart and is the most common cause of cardiac failure. The recognition of this form of irregularity is not difficult, requiring only the fingers and a trained intelligence.

Fibrillation is not confined to any one particular form of cardiac lesion, but may occur at any age, and when once established tends to persist.

The digitalis group produces a remarkable slowing of the ventricular rate with consequent improvement in the patient.

Auricular fibrillation can in 50 per cent. of the cases be terminated by quinidine sulphate, but in many patients the fibrillation recurs, and the exhibition of this drug is not without danger.

THE Dutch Society for Combating Alcoholism will hold a Congress at the Hague on September 11th, when the following subjects will be discussed: Alcoholism and criminality, introduced by Professor Bonger, and treatment of chronic alcoholism, by Dr. F. S. Meijers.

ACCORDING to a warning issued by the U.S. Public Health Service, leprosy is on the increase in the United States. Statistics show that there are 1,200 lepers at large in twenty-five States, contact with whom may further spread the disease. It also appears to be prevalent in Latin America, for Dr. R. F. Parra, physician-in-chief of the Agua de Dios Leprosarium, Colombia, reports that there are now 2,726 lepers segregated there. Chaulmoogra oil is being used in the treatment of 122 of these patients.

An Address
ON
ACUTE ARSENICAL POISONING.*

BY

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DURING the last few years our knowledge of the physiological, therapeutical, and toxicological effects of arsenic has been greatly extended, owing largely to the greatly increased use of preparations of arsenic in the treatment of disease. Thus the use of arsenobenzol derivatives for the treatment of syphilis is worldwide, and many other organic arsenical compounds are largely used in pharmacology. In some cases toxicological effects have followed the therapeutic use of these powerful remedies, and a study of these effects has not only enlarged our conceptions of the physiological and toxicological action of arsenic generally, but it has also stimulated the study of the quantitative tests for the efficiency of important organs of the body—for example, the liver.

Application of advances in pathological and chemical technique has enabled the toxicological effects of arsenic to be studied with more precision and detail, and thus has led to an extension of knowledge.

It will be my endeavour to call attention to the recent advances in our knowledge of the toxicology of acute arsenical poisoning, to give a summary of the salient points, and to illustrate them where possible by classical examples. Acute poisoning by white arsenic and similar inorganic compounds will be considered, and reference will be made to poisoning by arsenobenzol derivatives. Arseniuretted hydrogen will not be dealt with.

Arsenic is one of the commonest and oldest known poisons. It is stated to have been discovered in the third century. Its toxicology overshadows that of all other poisons in importance. Its poisonous properties are known to everyone and its preparations are easily accessible. It is almost tasteless, and can be introduced into food without fear of detection. It produces symptoms which closely simulate natural diseases, and it is not therefore surprising that as a homicidal poison it has easily held the first place for centuries.

Arsenical poisoning may be homicidal, suicidal, accidental, or produced when taken for the purpose of causing abortion or as a quack medicine. Out of 1,000 recorded cases from 1752 to 1911 collected by Witthaus the reasons for taking the poison were as follows:

Homicidal...	42.6 per cent.
Suicidal	23.0 ,,
Accidental	20.0 ,,
As an abortifacient	3.3 ,,
Due to quack medicine	0.4 ,,
Motive unknown	10.7 ,,

These figures, however, cannot express the true proportions, since suicidal and accidental cases are commonly not recorded. Homicidal poisoning must represent only a small minority of all acute arsenical cases. It is certain, however, that as a poison used for homicidal purposes the absolute number of cases far exceeds those of any other poison.

Preparations Used.

Arsenious oxide (As_2O_3) is the preparation most commonly used for criminal purposes; it is a white inodorous powder, almost tasteless, and slightly soluble in water; about 1 2 grain dissolves in an ounce of cold water, and 6 to 12 grains in a similar quantity of boiling water. It can be added to food and drink without fear of detection, and persons wishing to use it for criminal purposes appear to have no difficulty in obtaining it.

When sold to the public the regulations of the Poisons Acts should be complied with, and one of the conditions of sale of white arsenic is that it should be coloured by the admixture of at least one sixteenth of its weight of soot or indigo. The evidence of recent notable trials shows that this rule is sometimes honoured in the breach rather than in the observance (Armstrong case).

An easily available source of white arsenic which is often forgotten is the chemical laboratory. The poison can be

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*Given before the Medico-Legal Society, July 4th.

obtained in any quantity from wholesale firms for laboratory purposes without any restriction as regards its sale. Every chemical laboratory possesses large quantities of arsenic easily accessible to anyone visiting or using it.

Arsenious oxide is sold in combination with sodium hydrate or carbonate as weed killer. This may be a strong solution of sodium arsenite containing 14 to 40 per cent. of arsenious oxide. The liquid preparation is usually coloured by the addition of aniline dye such as fluorescine, though during the war it was sold uncoloured. The solid form of weed killer consists of a fine powder usually coloured and containing a high percentage of arsenic. An example of this is Eureka weed killer, which was mentioned in the Greenwood case. A sample was found by Mr. J. Webster to contain 60 per cent. of arsenious acid and to be coloured with phenolphthalein. The powder was very soluble in water and formed a pinkish-red solution which was decolorized by acids.

These preparations are most poisonous; not only may they give rise to accidental poisoning but there is reason to believe that they have been used for criminal purposes on many occasions. An instance of several cases of accidental poisoning due to liquid weed killer occurred in Sussex in 1919, when a sack of sugar absorbed a quantity of liquid weed killer from a leaky tin placed beside it during transit in a railway carriage. The consumption of the contaminated sugar gave rise to acute arsenical poisoning.

In the case Rex *v.* Bingham, 1911, three fatal cases of arsenical poisoning were the subject of inquiry; these were undoubtedly due to weed killer.

In May, 1921, an inquest was held on a woman named Hanktelow at Beckenham, where death was found to be due to acute arsenical poisoning. In this case the source of the arsenic appeared to be Eureka weed killer.

Liquid preparations known as "wood preservatives," similar in composition to weed killer, are used for destroying insects infesting wood. Since these are not coloured there is great risk of accidental poisoning from their use. The liquid may accidentally contaminate food or drink and give rise to acute arsenical poisoning. An instance has recently been brought to my notice where, after treatment of the interior of a large hut with arsenical wood preservative, the dust of the hut was found to contain a considerable percentage of arsenic, and the air of the interior was also contaminated with arsenic. Arsenic in combination with alkali is used largely in the manufacture of sheep dips, and these preparations have sometimes given rise to acute arsenical poisoning.

A solution of lead arsenate is commonly employed in fruit spraying, and cases of severe arsenical poisoning due to these preparations have been under my care.

There is no doubt that the common use of these commercial preparations of arsenic is a frequent cause of fatal arsenical poisoning, and the time appears to have come when the mode of sale of these preparations should be carefully considered with a view to the safeguarding of the public against risk of accidental poisoning and to prevent dangerous homicidal poisons being so easily accessible to persons with criminal intentions.

Other preparations of arsenic such as sodium arsenite, metallic arsenic, arsenic acid and sodium arsenate, copper arsenite (Scheele's green), a mixture of copper arsenite and copper acetate (Schweinfurth green, Paris green, emerald green), arsenious sulphide (orpiment or King's yellow), have given rise to acute poisoning, usually of an accidental or suicidal nature; and the medicinal preparations of arsenic must not be forgotten as causes of acute poisoning when taken in excessive doses.

Symptoms of Acute Poisoning by Arsenic.

Arsenic is usually described as an irritant poison. It certainly is an irritant, but it does not kill by virtue of its irritant properties on the gastro-intestinal tract. Arsenic is a most powerful tissue poison, and it is to the toxic effect on the important organs of the body, especially the heart, kidneys, and liver, that a fatal result is due.

The importance of the toxic action of arsenic is too often lost sight of in the medico-legal inquiries concerning cases of acute arsenical poisoning, and attention is too much concentrated on the irritant effects of the poison. It is often assumed that the irritant symptoms of vomiting and diarrhoea are the chief cause of death owing to their exhausting effect on the body, whereas it is the toxic action of the poison on the heart and other organs which is usually responsible for the fatal issue. The vomiting and diarrhoea *per se* are rarely of themselves the cause of death, and indeed these symptoms can be controlled by medicinal treatment.

In his evidence in the Madeline Smith case, in 1857, that great toxicologist Dr. Robert Christison said, on being cross-examined as regards the large quantity of arsenic present in the stomach of the deceased: "The very fact of poison being found in the stomach at all in the case of arsenic shows that more has been administered than is necessary, as it is not what is found in the stomach that causes death but what disappears from the stomach." In other words, Dr. Christison considered that it was the toxic effect of the absorbed arsenic on the important organs of the body which caused death, not the local irritant effect on the stomach and intestines.

The symptoms of acute arsenical poisoning are very variable in their occurrence, and no hard and fast rule can be laid down as to precisely what symptoms will occur and the order of their occurrence. Thus the same toxic dose of arsenic may in one person produce vomiting first and diarrhoea afterwards, but in another person the reverse may obtain. An example of this has recently come to my notice. Then again some symptoms, such as burning in the throat, thirst, or cramp in the legs, may be prominent in some cases but entirely absent in others.

Criminal cases of arsenical poisoning commonly present symptoms which are due to a succession of doses, possibly each subletha1 but poisonous. In such cases the symptoms of acute arsenical poisoning, such as would occur from one single dose of arsenic, may be masked by the appearance of symptoms due to the prolonged action of arsenic—that is, to those of subacute or chronic poisoning. Thus symptoms of arsenical neuritis, or of renal or liver disease, may be superimposed upon those of the acute gastro-intestinal symptoms.

When a single poisonous dose of arsenic is taken by the mouth (one or two grains or over) the interval before the appearance of symptoms is variable. Possibly some peculiar taste of a slightly metallic nature may be noticed, but this is frequently absent. Nausea will probably be the first symptom, and this may occur within a few minutes of taking the poison. The onset of symptoms is dependent on the state of the stomach at the time of taking the poison. If empty there will be little if any delay in the appearance of the symptoms. Much depends also on whether the arsenic is in solution or in the solid state; in the latter condition the onset of symptoms will be delayed. Then again, if the arsenic is in the solid form there will be more delay if the solid is insoluble than if it is soluble.

If the stomach contains food the onset of symptoms will be delayed and also if the poison is taken with food, or if food is taken within a few minutes of the poison. Examples of the variable occurrence of gastric symptoms are shown by the recent Armstrong case, where after a possible poisonous dose there was a delay of one and a half hours before the occurrence of nausea, and of three and three-quarter hours before the occurrence of vomiting, and of eight and a half to ten and a half hours before the occurrence of diarrhoea. In this case (Mr. Martin) the poison was no doubt taken in the solid form (arsenious oxide) with tea and scones and bread-and-butter. In a recent very interesting case published by Dr. St. George (BRITISH MEDICAL JOURNAL, February 5th, 1921) a patient at 8 p.m. took about 180 grains of white arsenic in mistake for magnesia; the poison was mixed with hot milk, and half an hour later porridge and milk were taken for supper. It was not until four hours after taking the poison (12 midnight) that vomiting occurred, and this was accompanied by burning pain in the epigastrium and diarrhoea. At 4 a.m. cardiac failure was shown by coldness, feeble thready pulse, and general collapse; cramps in the legs also occurred. Under medicinal treatment the vomiting and diarrhoea were controlled. At 10 a.m. suppression of urine occurred. The patient recovered from the immediate acute symptoms, but a severe multiple neuritis developed, and the patient died from this three and a half months later. This case is a good example of the action of arsenic, which is that of a protoplasmic poison, the irritant effects not being of themselves fatal.

A remarkable example was mentioned by Dr. Christison in his evidence in the Madeline Smith case, in which a girl took a large dose of arsenic at 11 a.m.; though showing signs of uneasiness, she made a pretty good dinner at 2 p.m. Death occurred in thirteen or fourteen hours after administration. This was a French case and very unusual.

A scientific worker in a factory where large quantities of arsenic were used, and where it was impossible to avoid the inhalation and swallowing of a certain amount of arsenic.

told me that sometimes at night, when the exposure to poison during the day had been great, he suffered from vomiting and diarrhœa—that is, there had been a delay of many hours before the onset of the symptoms.

When a poisonous dose is taken in solution on an empty stomach nausea is likely to occur within a few minutes, vomiting within an hour, and diarrhœa within a few hours. A burning pain in the epigastrium is a fairly constant early symptom associated with the nausea and vomiting. A burning pain in the throat has been described as a symptom. This is usually not marked in arsenical poisoning, and then is only caused by the congestion of the pharynx and œsophagus consequent on the vomiting. In a recent case (Black) burning of the throat was a prominent early symptom, occurring apparently before the vomiting and diarrhœa. Arsenic is not a corrosive poison, and no direct local effects are produced on the pharynx or œsophagus, so that it is difficult to explain an immediate burning sensation except by reflex action.

The vomit will at first contain food and mucus, and may later be darkened in colour owing to the exudation of blood from the gastric mucous membrane; afterwards it may be yellowish and slimy owing to the presence of bile and mucus. The diarrhœa may be severe and accompanied by a good deal of abdominal pain and tenderness. The pain is often of a colicky nature and followed by profuse evacuation. The stools are watery, and may contain minute particles of mucus and blood. In suspected cases the vomit and stools should always be carefully reserved for analysis. The tongue is furred in the early stages, and later may have a silvery appearance, the papillæ showing through the fur.

In cases of continued doses, as in the Armstrong case, sordes may appear on the lips, as in a typhoid patient. Cramps in the legs are likely to occur when there is severe diarrhœa; where vomiting and diarrhœa are continuous, thirst may become marked owing to the draining from the body of fluid, the eyes sunken, and the face pinched. The appearance of the patient may resemble that seen in cholera, and the examination of the stools, both chemically and bacteriologically, may be necessary to establish the diagnosis.

Cardiac Symptoms.

A weak and rapid pulse is one of the early and most constant symptoms; it was a marked feature in the Black case and also in the Armstrong case (both Mr. Martin and Mrs. Armstrong). The tachycardia is accompanied by weakness, faintness, and a feeling of collapse. There is no doubt that arsenic has a direct toxic action on the cardiac muscle, and this effect is no doubt the cause of the early death in acute cases.

Hepatic Symptoms.

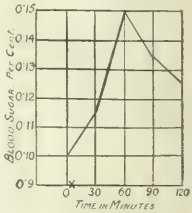
Arsenic is a direct liver poison, and a microscopical examination of the liver in fatal cases of acute arsenical poisoning shows very marked fatty degeneration. Dr. Spilsbury demonstrated this recently in the case of Mrs. Armstrong. One of the most important functions of the liver appears to be that of the protection of the body from circulating poisons. It is the first line of defence, and when the poison is taken by the mouth it is readily to be understood that since after absorption by the portal vein the poison first passes through the liver this organ receives the brunt of the attack and often is irreparably damaged in consequence. The effect on the liver is a degeneration of the cells and in consequence swelling, so that the bile capillaries become pressed upon and slight jaundice may occur. Jaundice is not a common symptom of acute poisoning by arsenious oxide, but it is likely to occur where there have been repeated attacks of poisoning extending over a few weeks. In the case of Mrs. Armstrong one of the nurses (Nurse Kinsey) described the appearance of the skin as being like that of a jaundice case, while the other nurse (Nurse Allen) said the skin was very dark and of a tawny colour.

There is no doubt that the hepatic function is diminished considerably as the result of the action of arsenic, and this accounts for the jaundiced appearance of the skin in protracted cases of arsenical poisoning.

In the Madeline Smith case (1857) Dr. Hugh Thomson, who saw the patient (L'Angelier) during life and who took part in the *post-mortem* examination, described the skin as being of "a distinctly jaundiced hue," both before and after death; in the joint *post-mortem* report of Dr. Thomson and Dr. James Stevens the skin is described as being of a tawny hue. Some discussion arose during the trial as to whether jaundice was due to arsenic, and in the evidence for the defence Dr. Maclagan stated that in arsenical poisoning there is no jaundice. The victim in the Madeline Smith case probably had three attacks of acute arsenical poisoning during the last five weeks of life—namely, on February 19th and 23rd and March 22nd, the last proving fatal within a few hours. It is now fully recognized that arsenic is a powerful liver poison and so much damage may result that a condition of extensive atrophy (acute yellow atrophy) may follow. The action of arsenobenzol compounds (salvarsan, etc.) on the liver is well known, and in all acute fatal cases where death occurs within two or three weeks of its administration marked fatty degeneration of the liver occurs. Dr. Spilsbury has found this change in several such cases.

It is interesting to note that when the arsenical poison is given into the general blood stream, as in the intravenous administration of arsenobenzol compounds, the liver still acts as the first line of defence against the poison, and in fatal cases the bulk of the poison is found in the liver.

As a consequence of the fatty degeneration of the liver jaundice may occur, and a very large number of cases of salvarsan jaundice have been described. The onset of this symptom is usually late—weeks or months after the administration. As the jaundice clears up usually a definite shrinkage in size of the liver is found, though there is often some swelling present at its onset.



Liver efficiency test. Case of post-galyl jaundice. X = 50 grams lævulose given.

Salvarsan jaundice has been found associated with a defective hepatic function, and in a case under my care at St. Mary's Hospital two months ago the lævulose test for hepatic function, carried out by Dr. Roche Lynch, gave a very marked reaction indicating hepatic deficiency (see chart). Salvarsan jaundice is a serious symptom and not infrequently fatal, the condition of the liver often, at necropsy, showing marked shrinkage due to atrophy following the previous fatty degeneration (acute yellow atrophy).

Renal Symptoms.

Arsenic is a powerful renal poison and acts on the kidney cells, causing fatty degeneration. Impairment of function of the kidney is shown by diminution or even suppression of excretion and the presence of albuminuria.

In the recent Black case albuminuria occurred during life, and fatty degeneration was found in the kidneys on microscopical examination after death. The kidneys also showed definite but not extensive arterio-sclerotic changes which must have been present before the onset of the arsenical poisoning. The action of the arsenic on the damaged kidneys so impaired their function as to be the direct cause of death.

In the Armstrong case albuminuria occurred during the acute illness of Mrs. Armstrong, and fatty degeneration of the kidneys was found by Dr. Spilsbury on microscopical examination. In 1920 a case of subacute arsenical poisoning due to arsenical fruit-spraying liquid was under my care; in this case persistent albuminuria with marked skin lesions occurred and death resulted after a long illness. Probably the lead present in the liquid accentuated the renal symptoms, but undoubtedly the marked albuminuria and other symptoms were mainly arsenical in origin.

Nervous System.

After a single poisonous dose of arsenic, unless this is large, nervous symptoms do not usually occur. Multiple neuritis may follow a single large dose. One instance of this has been described above. Another example came under my notice in Mesopotamia in 1916, where from accident a large quantity of drinking water became contaminated with sodium arsenite. A number of cases of acute arsenical poisoning resulted and in one a most severe arsenical neuritis followed.

In protracted acute arsenical poisoning due to repeated doses, multiple neuritis is a common symptom. It was marked in the case of Mrs. Armstrong, and in the Maybrick case some slight symptoms of neuritis occurred. The brain does not appear to be specially affected in acute arsenical poisoning, and usually the mental condition is unimpaired until a few hours before death.

As will be seen from the analyses of fatal cases, very little arsenic is found in the brain, and the cerebral symptoms in acute arsenical poisoning cannot be due to the direct action

of arsenic on the brain, but to the impairment of function of the other organs (liver, kidneys, and heart) and consequent indirect cerebral toxaemia.

Repeated Doses.

Where repeated doses of arsenic are given, as sometimes happens in criminal cases, symptoms of chronic arsenical poisoning (conjunctivitis, laryngitis, skin rashes and pigmentation—symptoms of multiple neuritis, etc.) may accompany the acute symptoms.

Fatal Dose.

A single dose of 2 grains of arsenious oxide has caused death in a healthy adult, and this is usually accepted as a possible fatal dose. It is common for much larger doses to be taken and recovery occur, owing, no doubt, to the rapid elimination of the poison by vomiting and diarrhoea. A given amount of arsenic if taken in solution and its administration spread over a short period is much more likely to prove fatal than if the whole amount is taken in one dose.

Fatal Period.

It is impossible to state this, since so many factors influence the time of death after a single fatal dose. Usually death occurs within three days, but in cases of repeated dosage death may not occur for many days. In one case after a large dose death occurred in twenty minutes; but in the case already mentioned after a dose estimated at 180 grains death did not occur for three and a half months.

Post-mortem Examination.

In cases where death has occurred some time previously careful search must be made for evidence of delayed putrefaction. This will be best shown by the condition of the internal organs. It is most marked in cases where there has been an illness prolonged over several days, the arsenic being widely distributed throughout the body; the drainage of the tissues consequent on the prolonged diarrhoea and vomiting also tends to delay putrefaction. In a case of illness where the diarrhoea is due to bacterial infection putrefaction will be accelerated, so that in this respect arsenical cases present a marked contrast.

Too much importance, however, must not be attached to delayed putrefaction, and in cases where a single dose only of arsenic has been taken and death has occurred quickly there may not be a marked delay. It depends on many factors—for example, the amount of arsenic distributed throughout the body, and the influence to which the body has been exposed after death, whether favourable or otherwise to putrefactive changes. The presence of inflammatory changes in the stomach and intestine should be carefully looked for, and especially the presence of petechial haemorrhages. It is important to remember that, as the result of putrefaction, these signs rapidly disappear after death, and it may be quite impossible to detect them when death has occurred many days previously. In a case of exhumation the absence of inflammatory signs in the stomach and intestines is not indicative of the absence of arsenic. The presence of any solid particles of arsenic or of a pigmented powder must be looked for. Where putrefaction is advanced marked yellow staining may be found in the stomach or intestines, due to the formation of arsenic sulphide.

Careful reservation of the organs for analysis and microscopical examination should be carried out. The stomach, the small intestine, the caecum with the ascending colon, and the remainder of the large intestine with the rectum should be separated by ligature and placed in separate jars with due precaution. The contents of these should be kept separate, since the amount of arsenic in each may give an indication of the time of administration of the fatal dose. The liver, kidneys, heart, spleen, and brain should be placed in separate jars. In addition, a portion of muscle, a piece of bone, some hair cut off close to the scalp, a portion of skin, and the nails should be separately reserved in appropriate vessels. Any fluid in the coffin in an exhumation case should be reserved. Also, any earth adherent to the coffin or around it should be reserved for analysis. At the time of the examination small portions of the liver, kidneys, and heart should be placed in normal saline containing 10 per cent. formalin for future microscopical examination.

Chemical Analysis.

Too much importance cannot be attached to the methods employed in the analysis of organs for arsenic in suspected poison cases. Only those methods should be used which are absolutely reliable and cannot give fallacious results.

As a qualitative test the Reinsch test is one of the most reliable. As a quantitative test where a weighable amount of arsenic is possible, a weighed portion of the organ is taken, the organic matter broken down by the usual method, and the arsenic precipitated as arsenious sulphide by treatment with sulphuretted hydrogen gas, the liquid being kept saturated with the gas for four days. The arsenious sulphide is filtered off, dried, freed from sulphur, and carefully weighed; its purity is confirmed by conversion into magnesium pyroarsenate, which is also weighed.

Where the quantities of arsenic present do not admit of weighing, a known amount of the organ is treated with nitric and sulphuric acids to oxidize the organic matter present. After evaporating off the acids the residue is submitted to the electrolytic Marsh-Berzelius test and the mirror obtained compared with the standard mirrors.

The above tests if carefully carried out are absolutely reliable. It is essential that all reagents should be free from arsenic, and control tests must be constantly done to ensure this. In toxicological work no test should be used which can possibly give fallacious results; for this reason I do not favour the use of the Gutzeit test, though it has been much used in pharmacological work.

The presence of traces of sulphide from putrefaction or of impurities in the chemicals used may lead to error. For the same reason the electrolytic test is to be preferred to the ordinary Marsh-Berzelius test.

It is particularly necessary that most accurate methods be used where only traces of arsenic are present in the material for examination, since the slight mirrors yielded in such cases might be produced by small traces of impurities in the chemicals used.

In toxicological work reliance should not be placed on a single method of testing—thus, if arsenic is found by the Marsh test, its presence should be confirmed by the Reinsch and other tests.

There have been instances in which arsenic has been found in the process of analysis of viscera, and the origin of the arsenic has been traced to the impure chemicals used. A very interesting example of such a mistaken diagnosis came to my notice in 1909.

M. F., a man aged 50, who lived in a large country house in the Midlands, and who was supposed not to have been on the best of terms with his wife, suffered from severe vomiting accompanied by some diarrhoea. The illness had lasted for four weeks, and during this time the wife was frequently in and out of the sick-room.

The patient had been addicted to alcohol for years, and even during his last illness took a fair amount of whisky, though not in great excess. The patient died, but before his death some suspicion rested on the wife, and in consequence the urine was collected and sent to a local pharmacist for analysis. The manner of collection of the urine was open to suspicion, and no especial care was taken as regards the cleanliness of the bottle or cork used. The urine was analysed by the Marsh test and a very large mirror of arsenic resulted. This mirror was much larger than would have been given by urine passed by a patient who had recently received a fatal dose of arsenic, and this of itself aroused my suspicions as to the danger of drawing any conclusions whatever from this piece of evidence. The presence of arsenic in the urine had not been confirmed by the Reinsch or other tests. The death of the patient resulted within two days of the collection of the sample of urine.

A *post-mortem* examination was made, and the organs were examined and analysed by me. The liver was greatly increased in size and of canary-yellow colour; microscopical examination showed that the cells were engorged with fat. No trace of arsenic was present in the liver or any of the organs of the body. The liver was in a state of very marked fatty cirrhosis due to alcohol, a condition commonly associated with most severe vomiting and a certain amount of looseness of the bowels. It is also commonly associated with symptoms of peripheral neuritis due to alcohol, and a fatal termination is by no means uncommon. The clinical picture is almost exactly like that of arsenical poisoning, and in the case of M. F., where arsenic was said to have been found in the urine in large quantity, it was not surprising that a confident diagnosis had been made of acute arsenical poisoning, and that a sensational second Maybrick case was supposed to have arisen.

The fact that all the organs of the body were free from arsenic at the time of death, even though submitted to the delicate Marsh-Berzelius test, showed conclusively that the urine passed two days before death must have been free from arsenic, since had it contained arsenic as suggested considerable amounts must have been present in the liver and other organs.

It was clear that the arsenical mirror obtained on the analysis of the urine had come from some extraneous source, either from a dirty bottle or from impurities in the chemicals used in the analysis. The facts of the case were carefully explained to the jury, and a verdict of death from cirrhosis of the liver was found.

This case was an excellent illustration of the ease with which a mistaken diagnosis of arsenical poisoning may be

made. It also emphasizes the necessity of taking the utmost care in analysis and collection of specimens, and the importance of relying neither on one test nor on the results of analysis of one organ.

In a fatal case of arsenical poisoning arsenic should be found in the liver, spleen, kidneys, and other organs of the body, in addition to being present in the gastro-intestinal tract.

Elimination of Arsenic.

In acute arsenical poisoning the vomit and faeces will contain arsenic in amount depending on the quantity of the poison taken. The absorbed arsenic will be found in the blood and serous exudations.

Thus in one case the blood collected one hour after the injection of 0.6 gram of salvarsan contained 0.5 mg. and in another 0.33 mg. per 100 c.cm. The blood will contain traces of arsenic as long as the poison is present in the liver and organs; in fatal cases the blood and serous exudations contain appreciable amounts of arsenic. The urine after the administration of arsenic will contain arsenic for several days. After medicinal dosage, usually at the end of fourteen days, arsenic cannot be detected in the urine, but I have found definite evidence of arsenic twenty-one days after the administration of a single dose of salvarsan (0.5 gram). Where repeated doses of an arsenobenzol preparation have been given arsenic may probably be found in the urine for several weeks or even months.

Dr. Chalmers Watson recorded a case in the *Lancet*, April 22nd, 1922, where traces of arsenic were found in the urine and faeces fifteen months after a course of ten injections of novarsenobenzol, and Dr. D. R. C. Shepherd recorded a case in the *Lancet*, December 17th, 1921, where arsenic was found in the urine 111 days after a course of seven injections of neo-salvarsan. In the beer poisoning epidemic arsenic was found in the urine by Dr. Dixon Mann in one instance fifty-nine days after admission of the patient to hospital.

It is probable that during the prolonged administration of arsenic a certain amount becomes deposited in the skin, hair, and nails, and that this is gradually reabsorbed, being excreted by the urine and faeces; hence the poison may be found for long periods after the administration. Usually in acute arsenical poisoning after a single dose arsenic ceases to be found in the urine and faeces after about three weeks. The late Dr. Dixon Mann, who had a very extensive experience of the toxicology of arsenic, wrote in his textbook:

"In cases of acute arsenical poisoning it is very exceptional to find arsenic in the urine longer than a week or ten days after the administration of the poison; and in those fatal cases in which the patient survived more than ten days arsenic has rarely been found in the tissues."

I believe from my own experience that this still holds true in the majority of cases of acute arsenical poisoning arising from the taking of a single dose by the mouth.

Arsenic has a strong affinity for the keratin tissues, and hence it is found in the hair, nails, and skin, especially in cases of prolonged administration. In the hair it is deposited in proximal portions which represent the growth during the period absorbed arsenic is in the body. The sweat and sebaceous secretion during this period will contain arsenic, and as the whole length of the hair comes in contact with these secretions the limitation of arsenic to the proximal portions of the hair is relative not absolute. The analyses in the Armstrong case illustrated this point. In the Seddon case Sir Edward Marshall Hall quite rightly raised the question of why arsenic should be present in the distal portions of the hair if the case was one of acute poisoning as suggested. In this case the distal hair had been lying in blood-stained fluid in the coffin, and as this fluid contained definite traces of arsenic I gave it as my opinion that the arsenic in the distal portions of the hair had been absorbed from the fluid in the coffin. The accuracy of this statement was confirmed by soaking some arsenic-free hair in the blood-stained arsenical fluid for twenty-four hours and then thoroughly washing it in water, alcohol, and ether, and submitting it to analysis. It was found that an appreciable amount of arsenic had been absorbed by the hair, thus explaining the presence of arsenic in the distal portion of the hair from the deceased.

Arsenic may be found in the sweat, saliva, and bronchial secretion in acute arsenical poisoning, and it has also been found in the milk of lactating women. In two cases where salvarsan was given to patients during lactation I found arsenic to be absent in samples of milk taken from five and a half to seventy-two hours after the administration, so that the benefit to the child resulting from the administration of salvarsan to the mother cannot be due to the presence of arsenic in the milk but to other causes.

TABLE I.

Patient E. M. Has taken liq. arsenicalis ♏ 3 t.d.s. from November 28th to December 25th; ♏ 5 t.d.s. from December 25th to January 1st inclusive; ♏ 7 t.d.s. from January 4th to January 8th inclusive. All specimens were collected from 8 a.m. to 8 a.m.

Specimen.	Urine. Amount of As per 100 c.cm. of Urine.	Urine. Total As in 24 hours Specimen.	Faeces. Amount per 100 grams.	Faeces. Total Amount in 24 hours.
	Mg.	Mg.		Mg.
January 5–6 ...	0.095	0.95	B.N.O.	—
,, 6–7 ...	0.48	4.01	*1.0 mg.	0.5
,, 7–8 ...	0.71	2.96	B.N.O.	—
,, 8–9 ...	0.09	1.1	*0.9 mg.	0.45
,, 9–10 ...	0.10	0.58	0.39 ,,	0.46
,, 10–11 ...	0.04	0.72	B.N.O.	—
,, 11–12 ...	0.03	0.25	0.4 mg.	2.6
,, 12–13 ...	0.04	0.31	*0.05 ,,	0.025
,, 13–14 ...	0.02	0.24	0.045 mg.	0.09
,, 14–15 ...	0.01	0.13	Trace too small to estimate	
,, 15–16 ...	0.001	0.01		
,, 16–17 ...	nil	nil		

* The total amount of faeces was about 50 grams.
B.N.O. = Bowels not opened—no specimen.

TABLE II.

Patient H. H. Has taken liq. arsenicalis ♏ 3 t.d.s. from January 4th to 10th inclusive.

Specimen.	Urine. Amount of As per 100 c.cm. of Urine.	Urine. Total As in 24 hours Specimen.	Faeces. Amount per 100 grams.	Faeces. Total Amount in 24 hours.
	Mg.	Mg.		Mg.
January 7–8 ...	0.06	0.4	B.N.O.	—
,, 8–9 ...	0.05	0.26	0.68 mg.	0.55
,, 9–10 ...	0.14	0.83	0.09 ,,	0.38
,, 10–11 ...	0.07	0.59	B.N.O.	—
,, 11–12 ...	0.03	0.17	0.069 mg.	0.69
,, 12–13 ...	0.035	0.22	B.N.O.	—
,, 13–14 ...	0.04	0.24	0.03 mg.	0.03
,, 14–15 ...	0.003	0.022	0.016 ,,	0.025
,, 15–16 ...	0.002	0.014	0.003 ,,	0.013
,, 16–17 ...	Less than 0.001	0.005	Not estimated.	

The accompanying tables of cases investigated personally illustrate the excretion of arsenic by the urine and faeces.

TABLE III.—*Excretion of Arsenic.*

Case 1.—P. L. June 2nd, 1914; 0.6 gram salvarsan given.

	Mil.igrams of arsenic (As_2O_3) per 100 grams. Urine.	Faeces.
June 3rd	1.0 ...	1.4
June 5th	1.0 ...	2.5
June 7th	0.17 ...	1.7
June 9th	0.17 ...	—
June 10th	0.07 ...	—

TABLE IV.—*Excretion of Arsenic.*

Case 2.—H. October 12th, 1914; 0.5 gram salvarsan given.

No. of days after salvarsan.	Mg. of As_2O_3 in 100 c.cm. urine.
4	0.3
7	0.3
10	0.15
13	0.03

TABLE V.—*Excretion of Arsenic.*

Case 4.—October 29th, 1914; 0.5 gram salvarsan given.

No. of days after salvarsan.	Mg. of As_2O_3 in 100 c.cm. urine.
4	0.4
7	0.4
10	0.2
13	0.1
16	0.03
21	0.025

TABLE VI.—*Excretion of Arsenic.*

Case 6.—F. October 12th, 1912; 0.5 gram salvarsan given.

No. of days after salvarsan.	Mg. of As_2O_3 in 100 c.cm. urine.
2	1.33
4	0.4
7	0.16
10	0.11
13	0.025

Distribution of Arsenic in the Body in Fatal Cases.

This is well illustrated by the accompanying tables (VII to XIII). No rule can be laid down for the exact proportion of arsenic found in the various organs, since this will depend on the mode of administration, whether in one or repeated doses, on the time that has elapsed since the last dose, and on the state of health of the patient at the time of administration. The distribution of arsenic along the alimentary canal is of great importance because it gives a definite indication of the time at which the last dose was administered.

The routine examination of the alimentary tract by *x* rays after an opaque meal has given us definite knowledge of the rate of passage of the gastro-intestinal contents. Thus after twenty-four hours the bulk of the arsenic will have passed through the gastro-intestinal tract, as illustrated by the three Bingham cases. In the Armstrong case the large amount of arsenic in the caecum showed that a poisonous dose had been taken within twenty-four hours of death.

The liver, as has already been mentioned, rapidly absorbs arsenic, and usually considerable amounts are found in it, as is shown by the Armstrong and three Bingham analyses. In the Seddon case the amount was relatively small, while the amount in the muscles was high, probably owing to there having been a break in the repeated dosage. The large amount found in the intestines showed that a dose had been given within twenty-four hours of death.

Arsenic is usually found widely distributed through all the organs. The brain, however, contains only very small amounts, and I have found this to hold good, not only for poisoning by inorganic arsenic, but also for the organic arsenobenzol compounds. Stevenson and Dixon Mann had a like experience. This explains the absence of cerebral symptoms in acute poisoning by inorganic arsenic, and also shows that

TABLE VII.—*Distribution of Arsenic.*

Maybrick Case.

	Grains.	Milligrams.
Stomach	nil	nil
Intestines	1·11	6
Kidneys	trace	trace
Liver	0·3	21
Total	43 100	27

TABLE VIII.—*Distribution of Arsenic.*

Rex *v.* Bingham. *Re* Margaret Bingham (deceased). Death in three or four days from onset.

Stomach	1 250 grain
Liver	1.1 grain
Kidneys	1 150 grain
Spleen	trace

TABLE IX.—*Distribution of Arsenic.*

Rex *v.* Bingham. *Re* James Bingham (deceased). Onset August 12th, 1911, 5 p.m.; death August 15th, 1911, evening.

Stomach	minute traces
Liver	1 2 grain
Kidneys	1 95 grain
Spleen	1 600 grain

TABLE X.—*Distribution of Arsenic.*

Rex *v.* Bingham. *Re* William Hodgson Bingham (deceased). Onset January 22nd; death January 24th, early morning. Duration 25 hours, about.

Stomach	1 12 grain
Small intestine	1 40 grain
Liver	1 grain
Kidneys	1 250 grain
Spleen	1 500 grain

TABLE XI.—*Distribution of Arsenic.*

Seddon Case.

	Grains.	Milligrams.
Stomach	0.11	7.30
Intestine	0.63	41.00
Liver	0.17	11.13
Kidneys	0.03	1.91
Spleen	0 007	0.44
Lungs	0.014	0.94
Heart	0.012	0 80
Brain	0.005	0.33
Blood (fluid from chest)	0.006	0 38
Bone	trace	trace
Nails	0.002	0.14
Skin (0.18 mg. per 100 grams)		
Muscle	1.03	67.20
Hair—proximal (3 mg. per 100 grams)		
Total	2.01	131.57

TABLE XII.—*Distribution of Arsenic.*

Rex *v.* Greenwood. *Re* Mrs. Greenwood (deceased).

	Grains.	Milligrams.
Stomach	0.009	0.6
Small intestine	0.067	4.33
Large intestine	0.008	0.55
Rectum	0 006	0.40
Liver	0.131	8.5
Spleen	0.006	0.4
Kidneys	0.019	1.21
Uterus	0.012	0.75
Heart	0.004	0 27
Lungs	0.012	0.79
Oesophagus	0.003	0.21
Brain	0.001	0.09
Total	0.23	18.07

TABLE XIII.—*Distribution of Arsenic.*

Rex *v.* Armstrong. *Re* Mrs. Armstrong, deceased.

	Milligrams.
Stomach	2.5
Stomach contents	2.0
Jejunum and contents	1.6
Ileum and contents	9.1
Caecum, ascending colon, and contents	37.6
Liver	138.0
Spleen	1 0
Kidneys	13.2
Left lung	0.5
Heart	0.6
Fluid from pleural cavities	0.9
Portion of brain (14 oz.)	0.1
Bone from left femur (4 oz.)	0.01
Skin from left thigh (3½ oz.)	0.25
Muscle, back of left thigh (3½ oz.)	0.21
Hair from head (3½ oz.)	0.54
Finger-nails	0.06
Toe-nails	0.03
Total	208.2

the cerebral symptoms in acute salvarsan poisoning are due to autointoxication and not to the direct action of arsenic on the brain. In acute arsenical poisoning very little arsenic is found in the bone, as illustrated by the Seddon and Armstrong cases.

Poisoning by Arsenobenzol Derivatives.

This subject has been dealt with by me in a paper published in the BRITISH MEDICAL JOURNAL, April 1st, 1916. The interest attaching to cases of acute poisoning by salvarsan and allied compounds is that here, instead of gastro-intestinal symptoms occupying the prominent position, it is the poisonous effects of the arsenical compound on the organs of the body which produce the fatal symptoms. The liver bears the brunt of the attack and is the organ to suffer most damage. In fatal acute cases marked fatty degeneration is found in the liver, and the kidneys and heart muscle also commonly show this change.

The symptoms of acute salvarsan poisoning exactly simulate those of icterus gravis, and they are in my opinion due to auto-intoxication from defective liver function consequent on the action of the poison on the liver cells.

Very extensive damage and impairment of function is necessary for fatal auto-intoxication to be produced, but these cases do occur, and the risk from salvarsan administration should always be borne in mind. Even when the poisonous effect of salvarsan is not so massive, yet in many cases the liver suffers from the effect of repeated doses, and this is proved conclusively by the frequent occurrence of jaundice due to liver damage. This jaundice may occur weeks or months after salvarsan administration and may be most serious.

I am of opinion that the toxic action of salvarsan compounds on the liver is not sufficiently borne in mind in the very extensive use of this drug at the present day. Professor Maclean has suggested that liver damage is less likely to follow salvarsan administration if the liver cells have stored in them a certain amount of glycogen, and he has recommended that danger may be avoided by taking glucose shortly before the drug is given. This precaution is undoubtedly of value, and it has been emphasized by the use of a drug having like effects on the liver—namely, chloroform in its production of delayed chloroform poisoning after anaesthesia.

I wish to express my sincere thanks to Mr. J. Webster and Dr. Roche Lynch for valuable and much appreciated help in the work connected with this paper.

THE BLOOD SERUM IN PERNICIOUS ANAEMIA.

WITH NOTES ON THE NATURE OF THE DISEASE AND ITS TREATMENT.

A Preliminary Note.

BY

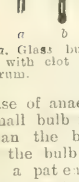
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Two years and a half ago, when making some observations on the phosphorus content of the corpuscles, clot, serum, and plasma of pernicious and other anaemias, I noticed that the colour of the plasma or serum of pernicious anaemia differed from that seen in the plasma or serum of any other anaemia or of normal blood. Since making the observation I have used it regularly in the diagnosis of pernicious anaemia and have found it a most useful and reliable, if not a pathognomonic, test of this anaemia.

By pernicious anaemia I mean a severe anaemia of unknown cause with high colour index, almost always above normal; urobilinuria; a tendency to megaloblast formation, and leucopenia; absence or great scarcity of blood plates (as seen on smears); and, judging from observations which are recorded in this paper, serum and plasma with special characteristics.

The serum in pernicious anaemia is always of a definite yellow colour, varying in tint from that of a cowslip to the deeper buttercup yellow of Canada balsam, whilst the serum of all other anaemias is much paler, and resembles straw-coloured water. The yellow colour is so distinct that it can be recognized in the serum or plasma if only two or three drops of blood are drawn into, and half fill, a small bulb made of thin glass with inlet and outlet of a narrow bore which can be closed hermetically by sealing-wax. Care must be taken not to heat the glass bulb and blood with the wax, for this would tend to haemolyse the blood; it is for this reason that sealing the ends of the bulb with heat is risky. For the past two years I have regularly carried these glass bulbs about with my blood slides, and used one in each case of anaemia examined. The blood runs freely into the small bulb from a needle puncture (when it is held lower than the blood drop on the finger), and when the ends of the bulb are sealed I stand it upright, or if taken at a patient's house I carry it upright in a small box in a waistcoat pocket until serum and clot separate. The colour of the serum is then seen, and, judging from a score or more of cases of pernicious anaemia and twice the number of other anaemias—Banti's disease, the leukaemias, secondary anaemia from any cause, purpura haemorrhagica—a diagnosis of pernicious anaemia from any other anaemia can be made. I have not applied the test to the anaemia of intestinal parasites which simulates pernicious anaemia, as I have never had any case of the condition under my care. A very important point is that serum from cases of severe secondary anaemia is pale straw colour, not yellow, in all the cases I have tried, whether due to septic infection, haemorrhage, or concealed malignant disease, which all have a high colour index (though not above 0.9) and a microscopic red blood cell appearance simulating pernicious anaemia but with leucocytosis. The blood in these severe secondary anaemias is specially referred to in the diagnosis of pernicious anaemia by Gulland and Goodall.[1]



a, Glass bulb; *b*, with clot and serum.

This serum bulb test is very simple and has been a most useful aid to me many times in the diagnosis of the type of anaemia under investigation. In its average appearance I can tell from the serum alone, and without the estimation of the colour index or an examination of the blood film, whether I am dealing with a case of pernicious anaemia; but, of course, I always make and examine a blood smear, and wherever possible estimate the colour index as well. On some occasions I have had my clinical opinion of a case confirmed or altered on my way home in a train by the colour of the serum which has separated from the clot.

There is no question of any pink colour in the deeper coloured yellow serum—nothing whatever to suggest the presence of any trace of haemoglobin or haemolysis; nor is it of a bile pigment tint.

In taking larger amounts of blood from a vein haemolysis is liable to occur in health or disease if there is any trace of alcohol or distilled water in the syringe or needle. This is avoided by drawing 0.5 c.cm. of sterile 5 per cent. sodium citrate solution through the sterilized needle into the sterilized syringe, and withdrawing the piston to its full extent, thus rinsing the barrel of the syringe with the citrate solution, which is then expelled from the syringe. The needle is then put into the vein, and blood withdrawn. Finally, the blood is expelled gently into a sterile test tube, which is handled very gently and laid down in a sloping position to facilitate separation of clot and serum. The serum is pipetted away from clot without disturbing red corpuscles and then well spun in a centrifuge.

Every precaution is taken to avoid haemolysis. Some of my specimens were taken with dry Wassermann outfit needles direct into a dry sterile test tube without any syringe; some were taken with an oiled syringe by Dr. Loveday, who has been director of our clinical laboratory for many years, and is thoroughly experienced in the dangers of haemolysis and the methods of avoiding it.

At first I could find no reference to the colour of the serum in pernicious anaemia in textbooks of medicine and pathology or monographs on blood diseases. There is no mention of it in Hunter's monograph, in French's full article on pernicious anaemia in Allbutt's *System of Medicine*, or in Gulland and Goodall's book on the blood. In the last named work a suggestion that the increased haemoglobin index may be accounted for by the presence of haemoglobin in the serum is mentioned, but no evidence is advanced in support of it.

In the section by Lazarus (p. 20) on the clinical methods of blood investigation in *Die Anaemie* (Ehrlich, 1909) there is no reference to the colour of the serum. The only mention of it that I have been able to find is in Panton's *Clinical Pathology*, where it is said:

> "The bile colour of some serums is more closely simulated by the greenish-yellow pigment present in the serum of nearly all cases of pernicious anaemia... A certain percentage of these cases are, in addition, actually jaundiced."

In none of my cases of pernicious anaemia has the serum had a greenish tint.

Cause of the Colour of the Serum.

A larger amount of serum than that obtained in the bulbs is necessary to make any observations on the cause of the colour; for this purpose 5 c.cm. of blood or more are withdrawn from a vein in the arm with the precautions already referred to. The colour of the blood serum and plasma in pernicious anaemia calls to mind the striking yellow colour of the fat in the body, and the question of any possible connexion between the two and of the colouring matter being a lipochrome naturally arises. There is also the possibility of the presence of some bile pigment in the serum even in cases in which there was no real jaundice. I therefore examined the serum with the spectroscope—using a simple pocket or straight vision instrument—and immediately saw two very distinct absorption bands in the position of those of oxyhaemoglobin, and a much less distinct narrow third band farther to the right in the green in some specimens. These absorption bands appeared in all the specimens of pernicious anaemia serum or plasma examined except the very pale ones. This difference may be due possibly to the small quantity used, but possibly, as I believe, to there being more than one form of the disease. In the deeper coloured serum the bands are very distinct when the depth of fluid is only one-third of an inch and the shadows are about the same intensity as those of oxyhaemoglobin in 0.01 per cent. solution as depicted in Starling's *Textbook of Physiology*. I never saw any bands to the left of the D line in the red. In normal serum and

plasma, with their paler colour, I found the same absorption bands, though generally less distinct.

No modern work of reference that I know of has any mention of the presence of oxyhaemoglobin in normal serum. MacMunn and Thudichum refer to it and attribute the third band in the green to "lutein," which is probably a lipochrome.

Spectroscopic Observations.

With the help of Mr. Ernest Jones, M.Sc., M.B., my house-physician in 1920, the observations with the pocket spectroscope were checked with a laboratory instrument with which we could measure the wave-lengths of the definite absorption bands. In all the cases examined these were identical with the absorption bands of oxyhaemoglobin—namely:

The band near	...	...	D 575 to 585
The band near	...	...	E 530 to 550
D line – 590	...	...	E line 530.

There was not the slightest indication of any absorption band in the red.

No absorption bands were seen in any other form of anaemia—Banti's disease; purpura haemorrhagica; septic anaemia; secondary anaemia from haemorrhage, malignant disease, or any other cause; the lenkaemias—and, especially, I repeat, as a very useful point of differential diagnosis, that they were not present in those forms of anaemia, previously referred to, which simulate by their high colour index (for a secondary anaemia) and by their microscopic blood picture pernicious anaemia. The yellowness of the serum, which contained enough oxyhaemoglobin to give its characteristic absorption bands, was striking: there was no trace of pink tint in it.

Haemoglobin, in the small quantity seen microscopically in a solitary blood corpuscle, is yellowish. Many such yellow corpuscles together give the normal pink blood colour, but I have been unable to find any statement in textbooks of physiology or works on the blood that haemoglobin is ever yellowish in solution. I have diluted normal blood with water so much that I could see no colour of any kind in the fluid, but only in the meniscus at the top of a small test tube, and this was pink. The question as to whether haemoglobin in the serum of pernicious anaemia which was yellow existed in some new combination or solution then arose, but I came to the conclusion that the deeper yellow shades of the serum of pernicious anaemia are produced by a weak pink solution of haemoglobin strengthening a lighter yellow pigment, possibly that which colours all the tissues of the body, especially the fat. This is seen by examining a specimen of the serum with the naked eye in the dark by artificial light. The dominant yellow colour is then less visible, whilst the haemoglobin is seen faintly pink, like weak laked blood, and not in the least brown.

The Nature of the Yellow Pigment.

It is difficult to carry out accurate chemical investigations with the small amount of serum which can be obtained from a case of pernicious anaemia, but Mr. Jones applied standard tests to some cases. He found that the yellow colouring matter of the serum was not extracted by ether. It remained after hydrolysis with alcoholic potash and subsequent precipitation of fatty acids by hydrochloric acid.

These two results suggest that the colouring matter is not a lipochrome. It is precipitated by reagents which precipitate proteins. This observation of Mr. Jones is interesting in view of the fact that a protein ricin when injected into the bone marrow produces blood appearances like those of pernicious anaemia. The identification of the pigment which colours the fat and other tissues might give a useful clue to the causation of the disease.

I have been unable to find any reference in recent English literature or textbooks to the spectroscopic examination of the blood serum of pernicious anaemia, and consequently of the absorption bands found therein. The classical work on the *Spectroscope in Medicine*, by MacMunn (1880), and *A Manual of Chemical Physiology*, by Thudichum (1872), though valuable and interesting, are out of date, especially in the nomenclature of the haemoglobin derivatives. I accordingly wrote to Sir Archibald Garrod, with whom I had previously had some correspondence about the spectroscopic appearance of the blood in enterogenous cyanosis. He kindly directed my attention to some work by Schumm in the *Zeitschrift für physiologische Chemie*, 1916, vol. 97. This observer recorded in this and previous volumes of the same journal his observations on haematin as a pathological constituent of the blood in certain diseases, including pernicious anaemia. He gives references to similar observations by Schottmüller in the *Münchener medizinische Wochenschrift*, 1914, No. 5, and by Hijmans van den Bergh and Snapper in the *Berliner klinische Wochenschrift*, 1915, No. 42. Schumm worked with a grating spectroscope and took photographic records of the spectra.

All these observers pay a great deal of attention to haematin as the chief spectroscopic feature of the serum of the various diseases, including pernicious anaemia, investigated by them, and say very little about the presence of haemoglobin, and, as far as I have seen, nothing about the colour of the serum. Schumm does refer to the brownish colour of any solution of haematin. After getting as far as this I was introduced by letter to Professor A. A. Hijmans van den Bergh of Utrecht by Sir Archibald Garrod, and he kindly offered to examine a specimen of the serum which I obtained from my patients. I sent him one, and received the following comments in reply, which I have his permission to print:

"I believe that the colour of the serum which you kindly sent me is due to a small increase of the bilirubin content and to the (oxy)haemoglobin dissolved in the serum. There was no haematin to be discovered in this specimen.

"We generally find a moderate increase of the bilirubin in the serum of patients with pernicious anaemia, especially during the periods of intensive blood destruction. Whereas the normal rate is found at about 0.2 to 0.3 or 0.5 of our units, in pernicious anaemia we find 1 to 1.5 or even 2 units. In your specimen the bilirubin value amounted to 1 unit.

"Haematin is not always present in the serum of pernicious anaemia, not even during the period of going downhill. In this disease it seldom is present in such a quantity that the colour becomes brownish, but in exceptional cases this condition is met with. (In other diseases the quantity of haematin may be so large as to give a brownish tinge to the serum—as, for instance, in some cases of anaerobic sepsis.) The quantity of haematin being only very small in pernicious anaemia, you will very seldom find a band in the red region of the spectrum. We demonstrate the haematin by adding ammonium sulphide, whereupon the very dark bands of 'haemochromogen' appear. (As they disappear rapidly, one has to look immediately after having added the sulphide or whilst an assistant adds it before the spectroscope.) But, as I have mentioned already, in your specimen there were no traces to be found, even in this way.

"Now as to the presence of the haemoglobin in the serum. This point is a very difficult and important one. We should be very careful, of course, in drawing conclusions from it. For it is always possible that the haemoglobin has escaped from the corpuscles because of the manipulations during and after collecting the blood. Therefore we always take the most careful precautions that we can for preventing artificial haemolysis (dry and warmed tubes, no shaking of the tubes, careful centrifugalizing, etc.).

"Might it not be possible that the presence of haemoglobin in the serum in your cases of pernicious anaemia is due to artificial haemolysis? For in our cases I do not remember to have found more haemoglobin than can be met with in every normal serum. Perhaps we did not look at it with sufficient attention. I must confess that the supposition of an artificial haemolysis as a cause of the presence of haemoglobin in your specimens of pernicious anaemia cannot explain the curious fact that you never find it in other anaemias.

"Theoretically, of course, it is quite intelligible that a slight intravascular haemolysis should occur in patients with pernicious anaemia. I think it would be of the greatest interest to repeat your experiments with the most careful precautions. I hope you will succeed in bringing this problem into clearness. I shall pay attention to it and let you know the results of our observations."

After receiving the letter I took blood from a patient with a sterilized and perfectly dry Wassermann outfit needle and rubber tubing, letting the blood flow into a paraffined test tube. This was carefully placed in an inclined position and the serum separated well; it was perfectly clear and of yellow colour. It was withdrawn by pipette introduced well away from the clot and well centrifuged. The oxyhaemoglobin bands were there as before. I could not get the haemochromogen bands by adding ammonium sulphide. This suggests that my previous methods were equally careful. I have purposely avoided the immediate treatment of the blood in a centrifuge, fearing that some traumatic haemolysis might be caused.

When the yellow serum of pernicious anaemia is kept in sealed tubes it begins to lose its colour in a few days, and by the end of a week the absorption bands of oxyhaemoglobin become much less clear and eventually indistinguishable. In one case it turned to a light cherry colour after being kept in a sealed tube a couple of months, and gave a spectrum of haemochromogen. I could not understand what had happened when the serum lost its colour and the bands of oxyhaemoglobin until I heard from Professor Hijmans van den Bergh of his methods of identifying haematin by reducing it with ammonium sulphide and production of haemochromogen. It

then became quite clear, especially when it is remembered that the spectrum of haemochromogen will appear in dilution of 1 in 25,000, and that its formation is even a more delicate test for blood than the spectrum of oxyhaemoglobin itself.[2] The explanation of the loss of colour in the sealed tubes seems to be that the oxyhaemoglobin changes to haematin in time, and this in weak solution does not deepen the colour of the serum to the same extent as the haemoglobin does. This explanation I put to the test by unsealing an ampoule of serum which I had kept for a couple of months, and which, from being quite yellow and giving good oxyhaemoglobin bands when fresh, had become pale and showed no spectrum. On adding to this some ammonium sulphide I obtained a very clear absorption spectrum of haemochromogen, clearer than that of oxyhaemoglobin had originally been. The change to the cherry red in the ampoules is probably due to the oxyhaemoglobin being changed to haematin, and this body being further changed, probably by decomposition, to haemochromogen, which has a cherry-red colour in solution, haematin being in the same strength nearly colourless.

Professor Hijmans van den Bergh says that he has not paid much attention to the oxyhaemoglobin in pernicious anaemia serum, being chiefly interested in the haematin. It is possible, however, that the haemoglobin is the forerunner of the haematin and its presence in the plasma in the blood vessels the essential feature of pernicious anaemia. Some haemoglobin compound most probably does circulate in the plasma ready to be deposited as haemosiderin in the liver. An explanation of the difference in my results and those of other Continental observers may be that there is more than one variety of pernicious anaemia, and clinical appearances of the disease, in my opinion, support this view.

In two or three of my original cases in which the serum was rather orange-coloured I found the oxyhaemoglobin bands more distinct than usual, but only in one, which I met with quite recently, have I seen a band in the red. I did not try Professor Hijmans van den Bergh's method of getting the haematin bands until the last month because I did not know of it earlier. I failed to get haemochromogen by adding ammonium sulphide in the ordinary way.

The fact that oxyhaemoglobin occurs in the serum of cases of pernicious anaemia obtained from the vein of a living person and separated from the clot in a test tube is, of course, no proof that the oxyhaemoglobin is present in the plasma of the circulating blood. It is quite possible that in spite of every precaution taken to prevent it some haemoglobin escapes from the red corpuscles during the process of withdrawal of blood from a vein; but even if artificial haemolysis does occur this does not affect the fact that oxyhaemoglobin appears in the serum of pernicious anaemia, but not in that obtained by identical methods and with identical precautions from any other form of anaemia. There is, however, some reason to think that oxyhaemoglobin does exist in the plasma of the circulating blood. It is an unquestioned fact that the red corpuscles in pernicious anaemia carry, on the average, more than the normal amount of oxyhaemoglobin, sometimes as much as 1.5 times this amount; and it is quite possible that more oxyhaemoglobin is manufactured in pernicious anaemia than there are red corpuscles to carry it, and that some circulates free in the plasma. In pernicious anaemia there is not such a deficiency of oxyhaemoglobin as there is in an anaemia of low colour index and low blood count.

Is Pernicious Anaemia a Malignant Disease of the Blood?

Pernicious anaemia may be a form of malignant disease of the blood—that is, a reversion to embryonic type of blood and blood formation. The scarcity of blood plates with such evidence of red-marrow activity always strikes me as peculiar. At most, the blood plates number very few, as compared with normal blood, and are insignificant as compared with the enormous numbers found in some cases of secondary anaemia, such as that due to moderate haemorrhage, chronic nephritis, and cancer. In some cases of pernicious anaemia scarcely any can be seen. As blood plates contain nuclein and resist peptic digestion, they are probably the remains of the nucleus of the bone-marrow erythroblast. Their presence, and that of nucleated red cells, is, in my opinion, an indication of an attempt by the bone marrow to regenerate red blood corpuscles, and when they occur the prospects of improvement in pernicious anaemia, temporarily at any rate, are good. But their small number conveys the impression that with all its apparent activity, judged from its appearance, the marrow in pernicious anaemia is not producing red cells well, and this raises the question, Are they being produced anywhere else? Some justification for this question is to be found in the resemblance which the megalocytes, microcytes, and poikilocytes of the disease have to similar forms met with in embryonic mammalian blood, as described by Emmel.[3] His observations are striking, and in my opinion support the view that in pernicious anaemia there is a reversion to embryonic type of blood and blood formation. I hope at a later date to go more fully into this question and discuss the bearing which the scantiness of blood plates has on the nature of the disease.

Treatment.

In conclusion, I may refer briefly to the very remarkable improvement which generally takes place for a longer or shorter time when pernicious anaemia is treated by liquor arsenicalis in graduated doses. I always begin with 4 minims three times a day after food, and increase the dose by one minim every forty-eight hours until 8 minims for each dose are being taken. Then by a similarly graduated decrease in dose the original 4-minim dose is reached. Forty-eight hours later the arsenic should be stopped altogether for a week and then the same graduated course of treatment carried out again. The patient should be kept in bed and in the open air as much as possible and have well-ventilated rooms. Arsenic should be given in this way on and off for several months. When there is any cardiac muscle failure, with dilatation of the heart and oedema, as there often is in pernicious anaemia, digitalis in doses of 1/240 grain digitoxin (Nativelle's granule) daily in addition to the arsenic soon brings about a wonderful improvement; and I have seen patients with both feet in the grave recover in six weeks comparative health and activity. They all tend to relapse, however. Very few patients suffering from pernicious anaemia cannot take liquor arsenicalis. Occasionally I have given it even when vomiting and diarrhoea were present when the case first came under observation, with improvement in the symptoms.

Conclusions.

1. The serum of pernicious anaemia is always definitely yellow and that of all other anaemias nearly colourless. The colour may be seen in two or three drops of serum in a small glass bulb.

2. Oxyhaemoglobin absorption bands appear in the serum of the great majority of cases of pernicious anaemia, and can easily be seen by a pocket spectroscope. They are not seen in the serum of other anaemias.

3. Continental observers have found haematin in the serum of some cases of pernicious anaemia, and they believe that bilirubin gives rise to the yellow colour.

4. There may be some free oxyhaemoglobin in the plasma of the circulating blood of the disease.

5. It is possible, judging from the serum, that there are at least two varieties of the disease.

6. Blood plates are generally very scanty or absent in the disease, but when present are a sign of potential regeneration of red cells by the bone marrow and indicate a good temporary prognosis.

7. The abnormal conditions of the red corpuscles suggest the possibility of pernicious anaemia being a malignant disease of the blood.

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HIGH PERCENTAGE OF ABNORMAL OBSTETRIC CASES IN GENERAL PRACTICE.

BY

J. WALLACE ANDERSON, M.B., CH.B.GLASG.

FROM January 1st to June 15th, 1922, the percentage of abnormal obstetric cases met with in my practice has been unusually high. Out of a total of 42 cases attended, 19 (45.2 per cent.) have presented some definite abnormality. These cases occurred in the ordinary course of practice, only one having been seen on the requisition of a midwife. The abnormal cases were as undernoted.

1. Primipara, aged 34. Great oedema of feet and legs for one week before confinement; very slight albuminuria. On commencement of labour great headache and flashes before the eyes. One

eclamptic seizure during late second stage. Anaesthetic immediately commenced and continued for two and a half hours, during which time forceps delivery was done. Complete recovery of mother and child, although the latter had icterus neonatorum for a time.

2. Primipara, aged 35. Hyperemesis gravidarum throughout pregnancy, and albuminuria for several weeks towards end. Two days in labour, which was practically painless; early rupture of membranes; uterine inertia. Forceps delivery; mother very toxic for three days afterwards, but completely recovered. Child apparently well for three days, then died in a convulsion.

3. Primipara, aged 29 (sister of No. 2). Hyperemesis gravidarum throughout pregnancy, but never albuminuria. Forty-eight hours in labour; slight general contraction of pelvis. High and difficult forceps delivery. Both well.

4. Multipara, aged 34. Persistent occipito-posterior delivery; both well. Eighteen months previously had suspension of the uterus (after Gilliam) with posterior colpo-perineorrhaphy and trachelorrhaphy.

5. Multipara, aged 32. Albuminuria, headaches, and oedema for three weeks. Breech presentation at term; four hours' labour. Delivery under anaesthetic accomplished in less than five minutes; no prolapse of, or pressure on, cord by head; asphyxia pallida. Prolonged artificial respiration and stimulation unfruitful. Recovery of mother, after being very toxic for first five days. At previous parturition, which was vertex, child was stillborn at term, without apparent reason.

6. Multipara, aged 26. Twins—one vertex, one breech. All well.

7. Primipara, aged 20. On first examination, os fully dilated, and flat pelvis discovered. No presenting part felt. Spontaneous rupture of membranes in a few minutes, followed by unaided and rapid delivery of an anencephalic monster, which survived for a few minutes only. Mother well.

8. Multipara, aged 29. Sudden haemorrhage without pain, at or near term. Marginal placenta praevia. Vagina packed twice under anaesthesia, with interval of twenty-four hours. Forceps delivery later. Both well.

9. Primipara, aged 26. Profuse haemorrhage at seven months, followed by labour. Central placenta praevia. Rapid delivery of stillborn foetus. Recovery of mother.

10. Primipara, aged 22. At six and a half months urine loaded with albumin, headaches, and sickness with flashes, but no oedema. Three weeks' rigid treatment, without improvement. Induction by bougies. Delivery in seven hours of a living child (breech), which, despite prematurity and icterus, has done well. Mother well, but still has some albumin.

11. Primipara, aged 22. Face presentation. Delivered herself in about twelve hours. Both well.

12. Multipara, aged 34. At six months, urine clear; at eight months, loaded with albumin, and very great oedema of face and legs. Abdomen notably enlarged. Rest and milk diet. Two days later, sudden large haemorrhage, followed by labour, and delivery of triplets, weighing 6½, 3½, and 3 lb. respectively. Mother and three children all well so far. At last parturition had placenta praevia, since when she has had an abortion, followed by dilatation and curettage.

13. Multipara, aged 25. Urine clear of albumin on several examinations before and at eight months. Natural delivery of living child at term. Oedema of legs and eyes noticed at labour. Child unnaturally quiet, and died twenty-four hours later. At previous confinement had a macerated full-time child.

14. Primipara, aged 39. Amenorrhoea for four months, with sickness for latter two months. Abdomen enlarged to above umbilicus. Profuse haemorrhage with colicky pains. Hydatidiform mole partially expelled, and partially extracted manually and by careful curettage. Second curettage nine days later, to complete the evacuation of uterus. Well to date.

15. Primipara, aged 30. Three weeks beyond calculated term. Intermittent labour for three days before being seen. Slight general contraction of pelvis (conjugate about 3½ inches). Large head felt, freely movable above pubis. Twenty-four hours later soft parts dilating, with finger-like membranes presenting, but still no attempt at engagement. Caesarean section. Living child weighing 9½ lb. Both well.

16, 17, 18, and 19 were cases in which delivery had to be completed by forceps and chloroform, owing to the length of the second stage.

Analysis of the Series of Cases.

1. As already stated, out of 42 cases, 19 (45.2 per cent.) presented some definite abnormality.

2. Of the 15 detailed cases, 9 (60 per cent.) were primiparae.

3. Of the 15 detailed cases, 7 (46.7 per cent.) were toxaemias of pregnancy (four were in primiparae).

4. Of the 15 detailed cases, the average age was just over 29.

Note.—One of the normal cases in the series was a patient whose first pregnancy was twins (with survival of both), whose second pregnancy was tubal, with consequent laparotomy and removal of one tube and ovary, and whose present (and third) was normal.

I wish to acknowledge my indebtedness to my assistant, Dr. P. B. Farrar, for his collaboration with me, both in the conduct of the cases and in extracting the details and statistics from my case-book.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ALCOHOL IN ITS RELATION TO DISEASE.

THE facts here stated are the outcome of observations made on a series of 150 cases treated in the medical wards of the London Temperance Hospital; they include 75 non-abstainers and 75 abstainers.

In a series of 76 cases of acute lobar pneumonia it was observed that the number of deaths among the 38 non-abstainers was proportionately greater. In these also relapse was found to be more frequent, and the disease ran a much more severe course. The temperature reached a greater height, with a tendency to fall by lysis and not by crisis. There was either leucopenia or a very negligible leucocytosis, showing that the resistance of the tissues to the infection was poor. Dilatation of the heart was more frequent and supervened earlier. In several cases there was a tendency to complications (pericarditis, otitis media, and pneumococcal arthritis). In those cases which recovered the convalescence was slow, there were irregular rises of temperature during convalescence, and the heart remained irritable in response to effort.

In a series of 30 cases of influenza, the tendency to post-influenzal bronchopneumonia appeared to be more marked in the 15 cases that were non-abstainers, the heart was similarly more affected, and noisy delirium often supervened.

Of 20 cases of chronic Bright's disease, with high blood pressure, half were habitual drinkers, and in these damage to the kidneys appeared to be proportionately greater, and it was with difficulty that one could appreciably lower the blood pressure.

In a series of 24 cases of valvular disease of the heart, among the 12 who were non-abstainers it was found that failure of compensation ensued comparatively earlier, and there seemed to be a lack of the normal "reserve power" of the heart musculature, and hence dilatation, and in a few cases failure of the heart ensued before any evident muscular hypertrophy could take place, as was confirmed *post mortem* in the cases that reached a fatal termination.

One cannot help being convinced from these observations that there must be a substratum of truth in the oft-repeated statement that habitual indulgence in alcohol is demoralizing to the system, and tends to lower the normal powers of resistance of the tissues to microbial toxins. On the other hand, I have been equally impressed with the part alcohol has played in two cases of grave collapse and impending "cardiac distress" which I came across in private work. In these I found that hypodermic injection of 10 minims of brandy had an almost miraculous effect in reviving the patient after an injection of digitalin and strychnine had failed. Facts like these equally lead one to hold the view that, in the light of our present knowledge, the time for scrapping alcohol as a valuable therapeutic adjunct has not yet arrived.

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BUBONIC PLAGUE TREATED WITH NEO-SALVARSAN.

IN India as a whole plague is endemic. In the North-Western and the North-West Frontier provinces it breaks out in the epidemic form, usually in the spring of every year, and lasts well up to the commencement of summer. If even in June or July there is a heavy rainfall, the epidemic has been known more than once to recur with a high mortality.

Prophylactic treatment by vaccines confers immunity for a very limited period, and even then the results are not very encouraging. Some years ago, in a small village in the Punjab, inhabitants were inoculated with vaccine, but unfortunately more than three-fourths died.

So far, we have no reliable serum for curative treatment, and in my opinion the failure is due to the fact that serum-yielding animals—namely, horses, cattle, and goats—are naturally immune to the disease. Plague being a disease of rats primarily, if amongst the rodent tribe we could find a big enough animal to yield an adequate amount of serum, it is probable that a serum as efficient as that for diphtheria or tetanus may be prepared.

Bubonic plague being septicaemic, it seems pathologically reasonable (in theory at least) to assume that if a drug were

introduced into the circulation which would destroy *Pasteurella pestis* and yet not harm the cells of the body, it would have a beneficial effect on the course of the ailment.

A young man, about 22 years of age, had a prominent painful bubo in the left groin, and fluid taken from this bubo proved positive for *B. pestis*. The patient was seen by me on May 11th, three days after the onset of the disease; his temperature was 104° F. at that time. At 3 p.m. I injected 0.45 gram of neo-salvarsan in 10 c.cm. distilled water intravenously, and 0.5 c.cm. pituitary extract subcutaneously. That very evening the temperature commenced to fall by lysis, and the symptoms (headache, sinking feeling, and restlessness) began to abate. On May 15th the temperature was 100° F., and on May 16th it was normal. The patient, except for the usual debility after the disease, is now quite well. The bubo was treated by the application of belladonna and glycerin.

The efficiency of the treatment cannot be strictly stated to be conclusively proved, yet the benefit shown in one case even may reasonably encourage further trial.

When going to a case of plague I always wear long boots over the trousers up to the knees, and anoint my hands, arms, and neck with eucalyptus oil. I refrain from scratching an insect bite, but bathe it with carbolic lotion 1 in 20, followed by the application of eucalyptus oil.

Peshawar City, India. RAM MANSOOR, M.B., B.S.Durh.

Reviews.

THE PHILOSOPHY OF SUCCESS.

UNDER the title *Some Things that Matter*,[1] Lord RIDDELL, so well known as a newspaper proprietor and representative of the British press at the Peace Conference, has brought together a series of articles which he contributed to *John o' London's Weekly*, on concentration, observation, thought, reasoning, and other mental qualities. These essays have attraction as conveying part at least of the philosophy of a shrewd student of affairs as well as a reader of books, who, happening to have been trained professionally as a lawyer, also looks at matters with a severe sense of practice and utility.

Lord Riddell would be the first to acknowledge that the conditions of their original publication have tended to make these contributions rather fragmentary, though none the less well worth reading. The first article, for example, is excellent, even if unintentionally humorous, in its Sandow-like recommendations for exercising the mind with "brisk, vigorous concentration for a quarter of an hour a day, extending to two hours a day by the end of the month," and it is, of course, quite sound in its reminder that the habit grows with interest, and that the interest may be increased with the habit: this is what the essay amounts to. But such a view must not be taken too absolutely, and might with advantage be expanded. Lord Riddell cites as his text Emerson's words, "Concentration is the secret of success." That is true enough so far as it goes, but mere concentration without the cultivation of mental initiative will not carry far. One of our greatest psychologists has pointed out that though restless men may prove to be failures, the most successful of human beings are men who in certain respects are prodigiously restless. The considerations are complementary to each other.

In writing on "Observation" Lord Riddell will probably surprise many of his readers by his disclosure of the lack of accuracy amongst educated persons. He gives as an illustration a test made in a university class. Dr. Munsterberg has related similar tests amongst professional men, including, if we remember rightly, a selected body of lawyers. It is desirable to urge development of all the senses; but apparent weakness may be due to preoccupation in other mental concerns. Lord Riddell, going on to advise young men "How to read," shows that his own groundwork was law books, and that by their study he learnt to judge the value of evidence. This capacity he holds to be one of the most valuable qualifications in life, and there is great force in what he says on this point. For that matter he might also have recommended some scientific books, for they have to be understood to be read at all, and this tends to clarity of definition. Himself an able controversialist and witty after-dinner speaker, Lord Riddell is quite at his best in dealing with the art of public speaking, recognizing, though he does not put it in these precise words, that it should make a threefold appeal—to the intellect, to the emotions, and to the will.

Other articles under various headings treat of circumstantial evidence, of logic, of relevancy, and of legal maxims. They form easy reading on what some are inclined to regard as dry subjects. They will doubtless be liked the better because the writer has drawn upon his store of anecdotes for illustrations. Sagaciously, too, he makes no claim to sum up the rules of action and conduct. His book is entitled "Some Things that Matter," not "The Things that Matter," and so he runs no risk to reputation by this adventure into authorship. The volume is not designed as a guide to life.

[1] *Some Things that Matter*. By Lord Riddell. London: Hodder and Stoughton, Ltd. 1922. (Demy 8vo, pp. 187; one portrait. 7s. 6d. net.)

TAYLOR AND POULTON'S "MEDICINE."

TAYLOR'S *Practice of Medicine*[2] first appeared in 1890. The twelfth edition has been wisely and extremely thoroughly edited by Dr. E. P. POULTON, who, recognizing that it is now beyond the power of an individual to cover the whole field of medicine, has delegated to Dr. C. P. Symonds the section on nervous diseases and to Dr. H. W. Barber the responsibility for the account of skin affections. It may be remembered that in Hilton Fagge's *Medicine* (1886) two parts—namely, those on valvular disease of the heart and on cutaneous diseases—were left unwritten by the author and were provided by the late Sir Samuel Wilks and the late Dr. P. H. Pye-Smith.

Although it is only four years since the late Sir Frederick Taylor brought out the eleventh edition of his book, the present volume has undergone very considerable changes, as is shown by the addition of twenty-four new articles and by the large number that have been practically rewritten. Of the twenty-four plates, of which twenty are radiograms and four sections of the spinal cord, nineteen are new. The revision has been remarkably successful and complete, and as evidence of its up-to-date character attention may be drawn to the inclusion in the appendix of van den Bergh's tests for bilirubin in the blood serum, with a reference to Dr. J. W. McNee's contributions to the subject in our columns so recently as May 13th last. The diseases of metabolism and those of the endocrine glands are considered together in a section prefaced by a short summary, which the editor is so specially fitted to contribute, of basal metabolism; the account of diabetes mellitus follows and is naturally both full and up to date, due credit being given to Dr. George Graham for the independent initiation of the method of treatment associated with Allen's name. Obesity is dealt with in this section, but gout comes under the diseases of joints next to infective arthritis. The tests for renal and hepatic function are described, and throughout the volume the clinical tests and methods of investigation are clearly outlined. Encephalitis lethargica, one of the new articles, is placed between acute poliomyelitis and hydrophobia and has been written by Dr. C. P. Symonds, who, as mentioned above, is responsible for the diseases of the nervous system; and Dr. J. J. Conybeare has revised and rewritten many of the articles on tropical diseases.

Dr. Poulton is to be congratulated on having admirably maintained the character of this successful work for students, whether qualified or not, of medicine.

NON-SPECIFIC PROTEIN THERAPY.

IN a review of his book *Hormone Therapy* (BRITISH MEDICAL JOURNAL, 1922, i, p. 955) it was said that the author, Dr. D. Montgomerie Paton, had for twenty-three years treated various diseases by the oral administration of antidiphtheric serum, and in a letter published on July 1st (p. 29) Dr. Allison of Newcastle-on-Tyne stated that he had employed the method since 1892, more than thirty years ago. Nevertheless the conception of non-specific protein treatment did not attract much attention until six or seven years ago. As Dr. W. F. PETERSEN of Chicago has had considerable experience of the method, to which attention has from time to time been directed in our columns, his *Protein Therapy and Non-specific Resistance*,[3] with its comprehensive review of the whole subject, is most welcome. The natural prejudice against non-specific therapy—for example, the treatment of

[2] *Taylor's Practice of Medicine*, twelfth edition. By E. P. Poulton, M.D., F.R.C.P., with assistance of C. Putnam Symonds, M.D., F.R.C.P., and H. W. Barber, M.B., F.R.C.P. London: J. and A. Churchill. 1922. (Roy. 8vo, pp. xiv + 98); 24 plates, 87 figures. 30s. net.)

[3] *Protein Therapy and Non-specific Resistance*. By W. F. Petersen, M.D.; with an Introduction by J. L. Miller, M.D. New York: The Macmillan Co. 1922. (Med. 8vo, pp. xvii + 314; 27 figures. 21s. net.)

gonococcic arthritis by typhoid and paratyphoid vaccine—as an illogical and haphazard method which opens the door to quackery has been forced to give way before the clinical results that are so striking and incontestable as to necessitate a broadening of our views on the problems of immunity. The non-specific reaction does not, of course, bring into play any new factor of resistance, but it deals with the stimulation of the forces of resistance by various substances, such as vaccines of bacteria other than those infecting the patients, milk, peptone, nuclein, and by other methods, such as the injection of colloidal metals, lipoids, enzymes, fixation abscess, heliotherapy, and even the old method of counter-irritation. Usually these bodies induce a general reaction, manifested by rigor, fever, and leucocytosis, the beneficial effect being often, but by no means invariably, in proportion to the reaction. Protein therapy is sometimes spoken of as "shock," "foreign protein," "colloid," or "hetero-vaccine therapy"; but v. Groer's term "ergotropie" is possibly more correct, inasmuch as it emphasizes the reaction of the patient and ignores the causal agent of this reaction. Dr. Petersen describes the general and the focal reactions that follow non-specific therapy, and then proceeds to epitomize the various theories put forward by Weichardt, Döllken, Nolf, and others as to the mechanism of the reaction, the mobilization of enzymes after injection being fully considered. In the chapter on the indications and contraindications of non-specific treatment it is pointed out that the method is purely one of stimulation, whereby the forces of cellular and humoral resistance are for a short time keyed up to the very highest pitch. The treatment is therefore naturally most effective at an early stage of infection before the cells of the body have become exhausted; the injections should be given slowly and the first dose should be relatively small. The author insists that this form of treatment should in no circumstances be considered as a rival or as a substitute for available specific measures of proved value. The clinical results of non-specific treatment of a large number of diseases are described in successive chapters devoted to arthritis (on which very considerable benefit has been obtained), typhoid and other infections, spirochaetal and protozoan infections, and miscellaneous affections. This work is clearly written, provided with an extensive bibliography, and supplies a definite want.

Professor DANYSZ, of the Pasteur Institute, Paris, is well known as a writer on what may be called the philosophy of pathology, and a few years ago we devoted a good deal of space to a book by him on the principles of the evolution of infectious diseases (BRITISH MEDICAL JOURNAL, September 21st, 1918, p. 323). This book has now been translated into English and condensed by Dr. F. M. RACKEMANN, and published with a very long title (transcribed below) which may here be abbreviated to the *Evolution of Disease*.[4] The subject is complicated and in spite of all the translator has done the difficulties of the presentation of the problems with which it deals remain to strike the reader. The first of the two parts of the book sketches the theories of immunity associated with Metchnikoff and Ehrlich's names, and gives the present day conception of immunity in the most general terms as a necessary reaction of the whole organism against each and every substance which is not a part of the organism when introduced into its interior in any manner. These substances fall into two groups: (*a*) the colloids, which after an incubation period produce specific antibodies in excess, and (*b*) crystalloids, which do not give rise to specific antibodies. Normally colloids when taken by the mouth are changed by gastro-intestinal digestion into amino-acids and thus absorbed, but when colloids pass into the circulation from failure of the alimentary canal or in other ways—for example, by hypodermic injection—the tissue cells have to undertake the process of digestion, and this leads to the formation of antibodies in excess and to anaphylaxis which should be regarded as a pathological reaction of the process of immunity, and as the cause of symptoms in infectious disease. Thus in enteric fever the anaphylactic crises last for weeks, a condition of actual anaphylaxis different from latent anaphylaxis in which the organism is surcharged with antibodies as the result of previous ingestion or injection of the antigen or as a result of remission of diseases with relapses and with long evolution, such as tuberculosis, syphilis, trypanosomiasis, and malaria. Anaphylactic shock or crises can be prevented by anti-anaphylactic inoculation, which leads to progressive neutralization of the antibody excess; this beneficial effect can be obtained not only by the injection of the original antigen, such as an autogenous vaccine, but by non-specific protein. In the second part of the book, which still contains a good deal of repetition, this non-specific form of treatment is further discussed, especially in chronic diseases such as skin affections and asthma. It is a pity that the arrangement and method of presentation of this interesting but intricate subject are not such as to minimize the inherent difficulties.

[4] *The Evolution of Disease; with a Discussion of the Immune Reactions occurring in Infectious and Non-infectious Diseases: a Theory of Immunity, of Anaphylaxis, and of Anti-anaphylaxis.* By Professor J. Danysz, translated by F. M. Rackemann, M.D. Philadelphia and New York: Lea and Febiger. 1921. (Demy 8vo, pp. xii + 194. 2.75 dols.)

THE SINGLE-HANDED HOUSEWIFE.

MRS. MARGARET LEONORA EYLES has written a book entitled *The Woman in the Little House*.[5] It is an account, based upon her own experiences and observations, of the manner of life of the mothers of the average working class. Mrs. Eyles has, according to the foreword written by NORAH MARCH, the editor of *National Health*, written a novel of some note, a novel with a purpose; and this book is a book with a purpose without any gilding of the pill. Her ideas of what ought to be and what is may be summed up in two passages:

"As in the old Eden legend, at the bottom of it all is the woman, the mother. Make her well, happy, comfortable, contented, whether she be queen or charwoman, and the world begins to go on smooth, oiled wheels. . . . We are not even a C3 nation to-day. There is scarcely one among us who is quite whole. The women are overburdened, the men discontented, the children born of parents not quite physically fit, brought up by parents spiritually quite unfit for their God-like duty."

The problem is to secure the happy and contented housewife, in the little house, or in apartments, where she is single-handed, and has no helper, but must fend for herself, for her man and her children, all day and every day, in sickness and in health. That is no small problem. The writer sets out the picture in somewhat lurid colours; she has plenty of paint and a vigorous arm, and withal a somewhat irritable temper as her own confession suggests.

"For five years of my life I was never alone for one single instant; in bed, in the kitchen, shopping, gardening, always was someone very near to me, touching me most of the time. I felt sometimes as though I would come to hate these crowding people who were really so dear to me. Is it in one of these momentary spasms of impatient desire to get alone for a few minutes that murders are sometimes done?"

The house, economics, shopping and food, amusements and routine, and the sex problem are dealt with in turn. The house is all wrong, for "it was designed by men architects, and men don't live and move and have their being in their own houses. They are more or less paying guests." To judge from her criticisms of the houses she knew, and they are not in the slums, the local sanitary authority must have been singularly sleepy.

On the economic problem she has many things of interest to say, not least as to the married woman who goes out to work to add to the family funds.

"The home-keeping woman has no economic position. If she goes out to work the case is different. I cannot here enter into the question of the employment of mothers, except to say one thing—that the death rate among babies in Bradford is very much the highest in all England, and Bradford is the town which *spends most* on infant welfare *outside the home*; there are excellent crèches in Bradford; there are very few women who don't go to work all day, bringing back the little ones to homes that they are too tired to clean, and scrappy meals that they are too tired to prepare after a hard day's work in the mill.' She adds that 'in looking through the archives of Dr. Barnardo's Homes I noticed that almost every child who was sent there for being out of hand, destitute, neglected, and so on was the child of a woman who went out to work; most of the thoroughly troublesome, unmanageable little ones one encounters in the day schools are the children of mothers who have not time to be mothers.'"

But difficulties are not avoided where the mother does not become an out-worker, for then "money—or the lack of it—seems to rule everything in their lives. . . . Unless they become conscienceless and drifting, or unless they get drunk and forget, they never know what it is to be free of money worry."

She has a good word to say for the big stores and multiple shops, where food is sold of the best quality and cheaply, but for cash only. The little corner shops are snares in allowing bills to run, and dear in the poorness of the quality of their goods. The family meals are described as most unattractive. There is a "gorge" of ill-cooked food on Sundays, and a diminuendo of provision during the week. "The mother has

[5] *The Woman in the Little House.* By Margaret Leonora Eyles. With a foreword by Norah March, B.Sc. London: Grant Richards, Ltd. 1922. (Cr. 8vo, pp. 167. Price 4s. 6d. net.)

no idea of originality: she buys cheaply and badly; she knows very little about either cooking or shopping, because there is no one to teach her." The author considers the solution is to come in communal kitchens. Of amusements the working mother appears to have none—"marriage ends all the camaraderie of courtship. As soon as the first baby nears the home, the cage begins to close round the Woman in the Little House." There is nothing left but routine—monotonous, unvarying routine. The author says, "In time it will be seen that it pays to let mothers have their cooking and washing done by specialists rather than by their own amateur efforts, while they look after the children." And the State is to pay the mothers to look after the children, and there are to be convenient crèches where the mothers can leave their babies while she shops or plays. She believes that "in time there will be in every street its communal nursery." When the cooking and the washing are done for the mothers and there is a communal nursery in every street, one is inclined to wonder what the mother will find to do. Will it not be a case where "Satan finds some mischief still for idle hands to do"?

The sex problem has a separate chapter. It begins: "I shouldn't mind married life so much if it wasn't for bedtime." This remark the author avers she has heard five times. A young married woman who lamented the absence of her man at the war is told by an older woman: "No, my dear, you don't know what you're up agen yet. But you wait till you've been to bed over three thousand nights with the same man like me, and had to put up with everything. Then you'd be blooming glad the old Kayser went potty." According to the author the women "are simply bursting with a sense of injustice." Strange that we heard of no weeping and wailing and gnashing of teeth when the men came home from the war! Training in sex hygiene by pamphlets she thinks utterly futile—they "won't read pamphlets." "Sex instruction will simply have to form a part of the school curriculum, without any possibility of interference from ignorant parents; in this way the muddles that may spoil the next generation can be obviated." This statement, and the author's confession of the feeling of murder at the proximity of her dear ones, indicate the general attitude of this "reformer." The parents are "ignorant" and "interfering"; there is a cure-all by "simply" cooking for them, washing for them, nursing for them, and giving sex instruction to them. It may be that her ideas are right, but we scarcely think so. At any rate we are sure that her book will go the way of the pamphlets which she says are not read, for her writing is too much that of the chronic scold—it is wearisome.

NOTES ON BOOKS.

THE small volume *Wayside Sayings*[6] is a collection of proverbs from many nations. The collectors say that they have preferred those which are comparatively little known, and on the whole this claim seems justified, though on the first page they do challenge the reader to catch a weasel asleep. A proverb has been said to be the wisdom of many and the wit of one; it therefore suffers in translation, but even in their English guise some of the foreign proverbs are stimulating. The publisher has his own definition, which is that "proverbs represent the inherited commonsense of a nation"; if that be true it is curious to-day to find that so many nations have a proverb about the evils which will befall a house where the hen crows. Very few proverbs with a medical reference are quoted, but "a mother's son is not her own until he has had the small-pox" is suggestive of a state of affairs in this country which has gone by. Another proverb, "drought never brought dearth to England," might, if quoted a few weeks ago, have stilled some fears. It is a pleasant book for an idle half-hour.

The *Empire Municipal Directory and Year Book*[7] for 1922-23 is the fortieth issue of a comprehensive and convenient handbook. Besides officially corrected lists of all municipal authorities and their chief officials throughout the empire, it contains much information of general interest, including concise records of the last twelve months' progress in the several branches of municipal enterprise, sanitation, and public health. The summary of Legislation, Orders, Regulations, Memoranda, and Circulars affecting local authorities, begun in the 1918 issue, and covering the period from 1914 onwards, is brought up to date. There is also a useful bibliography of municipal and public health literature.

[6] *Wayside Sayings.* Collected by Selwyn Gurney Champion and Ethel Mayne Cordato. London: Duckworth and Co. 1922. (Cr. 8vo, pp. 122. [illegible])

[7] *The Empire Municipal Directory and Year Book, 1922-23.* Published by the Sanitary Publishing Company, Ltd., 8, Bream's Buildings, E.C.4. [illegible]

POST-GRADUATE EDUCATION IN LONDON.

DEPUTATION TO THE MINISTER OF HEALTH.

A DEPUTATION was received by Sir Alfred Mond at the Ministry of Health on July 13th to discuss the facilities for post-graduate education in London, especially in view of the recommendations of the report of the Athlone Committee. The deputation, which was introduced by Captain W. E. Elliot, M.P., consisted of Sir Charles Sherrington (President of the Royal Society), Sir Humphry Rolleston (President of the Royal College of Physicians), Sir Anthony Bowlby (President of the Royal College of Surgeons), Sir George Makins (President of the Fellowship of Medicine), Sir Richard Luce (Chairman of Post-Graduate Committee, British Medical Association), Sir Berkeley Moynihan (Leeds), Sir Robert Jones (Liverpool), Sir Sydney Russell-Wells (until recently Vice-Chancellor of the University of London), Dr. George Blacker (Dean of the Medical School of University College Hospital), and Mr. H. J. Paterson (one of the honorary secretaries of the Fellowship of Medicine).

Sir GEORGE MAKINS said that the problem of providing a school for post-graduate study commensurate with the opportunities offered by London for instruction in medicine had exercised the minds of teachers in London and elsewhere for many years. Among those who had taken part in the earlier stages of this movement were Sir Jonathan Hutchinson, Sir William Broadbent, Sir Clifford Allbutt, and Sir William Osler. In 1918 a Fellowship of Medicine was started, at first as a social body, with a view to bringing graduates of different schools together. But it was quickly seen that it could fulfil a larger purpose, and accordingly it was amalgamated with the Post-Graduate Association, and Sir William Osler, who was president of the latter body, became the first president of the enlarged Fellowship. Since the end of 1918 some 1,300 graduates had been enrolled and had done a certain amount of post-graduate study in London. Of these students, 395 had come from civil practice in the United Kingdom, 167 from the services, 439 from the dominions, 247 from the United States, and 80 from various schools in Europe. A large number of appreciative letters had been received, acknowledging the help given by the Fellowship. The efforts of the Fellowship, however, had been hampered by insufficient financial resources. It was obvious that a post-graduate scheme of sufficient scope could not be maintained from voluntary resources alone. From the financial point of view the subject had two aspects—professional and administrative. With regard to the first, it was probable that the fees received from students would almost be sufficient to provide for the remuneration of teachers and lecturers and the cost of equipment. Administratively some capital grant was desired; such work as had hitherto been done by the Fellowship had been made possible through the generosity of the Royal Society of Medicine, which provided office and lecture rooms, and the medical journals, which freely inserted announcements. The Athlone Committee made seven specific recommendations, the seventh of which was already in process of realization, thanks to the Rockefeller gift. The Committee recognized that an existing individual school could not undertake the work of co-ordinating and regulating the numerous institutions which constituted the principal attraction of London for post-graduate students; moreover, if one school attempted to undertake these functions there might be jealousy and even opposition. For that reason the recommendation was made that a central bureau should be established, housed in a building containing not only offices, but some provision for social purposes, and that a principal officer—a medical man of standing—should be appointed to act as dean.

Sir A. MOND inquired as to the duties of this officer.

Sir GEORGE MAKINS said that it would be the task of such a dean to bring the whole of the hospitals and medical institutions into line, and to distribute people seeking post-graduate instruction among them.

Sir A. MOND said that surely a man who desired post-graduate facilities knew what he wanted. He did not undertake such study, which involved considerable expense to him, without a definite objective.

Sir GEORGE MAKINS urged that, nevertheless, the great majority of men who came from abroad or even from the provinces did not find it an easy matter in London to get the particular facilities they required.

Sir BERKELEY MOYNIHAN said that the Minister's question presupposed that a man was desirous of studying one particular thing under one particular teacher, but that was very exceptional, and he believed applied only in a very small proportion of cases. These men wanted guidance as to the lines they should follow. He agreed that if a man desired instruction in one particular branch of surgery the officer now suggested would not be necessary or would have a very limited function.

Sir GEORGE MAKINS said that the deputation laid considerable stress on the need for this dean or principal officer. On his work more than on anything else would depend the success or failure of the scheme. He agreed that in view of the present state of the public finances it might not be possible at the moment to carry out the first recommendation of the Athlone Committee relating to the establishment of the central post-graduate hospital, but he hoped that when conditions improved the University Grants Committee might be able to render aid in this connexion. He pointed out that the full development of a post-graduate scheme would have the effect of bringing together the students, at present scattered, who were undertaking post-graduate courses; it would create an academic atmosphere, and it would encourage the better use of the opportunities for research which London offered.

Dr. GEORGE BLACKER, speaking as a dean of an undergraduate medical school, said that a combination of post-graduate and undergraduate teaching was not advisable, or even feasible. Men engaged in post-graduate study did not like being taught along with undergraduates; this applied less to lectures than to clinical demonstrations and to classes conducted by question and answer. Owing to the large amount of work which had to be done in the medical curriculum, teachers of undergraduates were fully occupied, and if they were diverted to post-graduate teaching the teaching of undergraduates might suffer. Although there were a great number of patients in London teaching hospitals, the number suitable for teaching was not so vast as it might appear, and there was a danger, if post-graduate teaching were simply added to the other at the same place, that patients might be "over taught on." There was also considerable difficulty in providing the accommodation, many departments at present being overcrowded, and the lay authorities of hospitals could scarcely be expected to provide nursing facilities for teaching which was not a part of their own hospital schedule. It had been suggested that post-graduate teaching might be given in the units, but the proper function of the staff of the units was research and not teaching. The units could not deal with the "refresher" post-graduate who desired to rub up certain parts of his knowledge. He pleaded, therefore, for a separate institution to deal with post-graduate work.

Sir A. MOND said that it was rather a puzzle to him where the teachers for the post-graduate work were to come from without depriving undergraduates of some facilities.

Sir GEORGE MAKINS pointed out that although the undergraduate schools might be unwilling as schools to undertake post-graduate teaching, there were always teachers in those schools who would be willing to undertake such teaching for definite periods.

Dr. BLACKER also pointed out that there were a large number of honorary consultants attached to the London medical schools who would be willing to do this work, whereas the younger teachers, actively concerned with the undergraduate work, were fully occupied.

Sir BERKELEY MOYNIHAN said that it was very desirable that post graduate work should be organized in such a manner as to secure greatly increased efficiency. The achievements of English medicine in the past entitled them to ask for this. In medicine as in other sciences the distinguishing feature of English thought had been its originality. English thought was creative. The new idea had been born or the new vision had first been seen in English minds more often than in the minds of men of other nations. Fundamental discoveries owed their origins to England more than to any other land. In London the opportunities for post graduate work were unsurpassed. As a student in Berlin, and as a very frequent visitor to Paris, and with some knowledge of Vienna, he could say that the resources available for clinical work in London were unrivalled, although legislation continued so seriously to hamper research. These resources were undeveloped; they lacked organization, co-ordination, central direction, and inspiration, but with an enlightened policy and wise encouragement all these defects should disappear. Students attracted to the schools would be a great incentive to teachers, urging them to learn and appreciate other modes of thought and widely different experience. Such a school as the Fellowship desired to see established would be a centre of intellectual traffic, a clearing house for new views, which there would be discussed, tested, and appraised. Parochialism and self-satisfaction would wither in such an atmosphere. The necessity for wide views was never more urgent than now, and the effect of visitors upon teachers would be exhilarating and inspiring. In such a centre friendships would quickly form and ripen, not only among the graduates themselves but between teachers and pupils, to the great advantage of all. Internationally this would be of the greatest value. If men of different nations laboured together in medicine they learned to understand one another; all of them sought to emulate the zeal shown by the more ardent, to value the best things, and to condone many things which at first perhaps appeared repellent, provocative, or unlovely. The social advantages of such a school would be greatly increased by the provision of a central hostel, where men could see the most of each other and have informal discussion. Students who left after a few months' work would take away something more than knowledge. They would learn the English character by seeing its variety of expression at close quarters. They would carry with them an impulse to work on English lines. The English method had its peculiarities. It sought, not so much to impose, with authority, ready-made opinions upon its students as to encourage the mind of each student to seek its own method of inquiry and expression. A student was not so much taught as encouraged to learn. Education with us was not the provision of a meal but the creation of an appetite. English methods had therefore a stimulating and germinative influence.

Sir RICHARD LUCE dealt with the special needs of the practitioners in this country in the matter of post-graduate education. The needs of general practitioners who sought instruction in general courses of medicine and surgery, as distinct from special subjects, were of two kinds. In the first place, they needed instruction directed to the revision and refreshment of their general professional knowledge, which tended to become rusty after some years of immersion in professional routine, and, in the second place, they needed instruction directed to the bringing of their knowledge up to date in those branches of general medicine in which recent advances had been made. Other general practitioners sought instruction in special subjects; they were those who, after being in practice some time, desired to take up either partially or completely some specialty in which they had become interested. The need of this class was instruction either at a special hospital or in a special department of a general hospital. That there was a genuine demand among practitioners for post-graduate education was sufficiently borne out by the evidence given before the Athlone Committee, and by the fact that courses were already being successfully carried on both in London and the provinces. Two of his own immediate neighbours, country practitioners, gave up a portion of their annual holiday year by year to go back to their old school, one to Edinburgh and the other to St. Bartholomew's, for post-graduate vacation courses. That the practitioner needed and would be benefited by post-graduate instruction was even more certain than that he was asking for it. The present demand was certainly not as great as it ought to be. Post-graduate instruction could be made available for practitioners in three principal ways: (1) by courses of instruction, theoretical and practical, at special or general hospitals where the staff was prepared to give the necessary teaching; (2) by facilities for practitioners to be attached as clinical assistants for shorter or longer periods in the special and general hospitals; (3) by lectures given by approved teachers to groups of medical men at local centres, such as those arranged by the British Medical Association. The second method was specially useful for those practitioners who required instruction in a specialty. The causes which prevented post-graduate education from being more popular with practitioners were, in the first place, lack of stimulus, the doctor getting no very direct return for his trouble, no diploma or special prestige; in the second place, expense and lack of time, for the country practitioner could not afford more than a short annual vacation, and it was only the enthusiast who would take the "busman's holiday"; and, in the third place, the fact that facilities for instruction were not brought very close to the majority of practitioners. The practitioner seeking instruction in London required the assistance of some central organization which would help him to find the class of instruction he wanted and would give

him an approved introduction to teachers. The movement for post-graduate education could best be furthered by stimulating public opinion, both medical and lay, with regard to the need of it, by providing instruction as economically as possible, and making it intellectually and socially attractive, and by ensuring that the instruction was easy of access for the practitioner. The proposal of the Athlone Committee to establish a central post graduate hospital in London was not approved by the Council of the British Medical Association.

Sir A. MOND asked the reason for this attitude of the Council.

Sir RICHARD LUCE said that he thought the Council believed that a successful hospital of the kind would be impracticable. The Council's opinion was that the movement would best be helped by the official recognition of all the institutions giving post-graduate instruction, and by the issue to them through the University Grants Committee of a share of such funds as might be available. The establishment of a central bureau in London, however, on the lines of the Fellowship of Medicine, to co-ordinate the work not only in London but throughout the country, would be a great step, and would form a centre around which the movement could grow to worthy proportions.

Sir CHARLES SHERRINGTON said that he could claim to have some personal first-hand contact with the stream of post-graduates coming from across the Atlantic. These men came to this country practically all the year round, but especially in the early summer. The Fellowship of Medicine had dealt only with a comparative few. The practitioners who sought instruction included a great many of the younger teachers at the medical schools attached to the hospitals in the United States and Canada. They were people who knew what they wanted but did not know where it was to be obtained, and it often happened that through lack of proper direction they sought it in another country—that is, a Continental country—in spite of the difference of language and of professional and nursing régime.

Sir A. MOND said that he was very much obliged to the deputation and much interested in the information placed before him. Undoubtedly the better the organization the better the results. That was quite natural in view of the rather scattered character of the London teaching hospitals. He had no doubt that it would be a good deal more difficult for people to find what they wanted in London than in Paris or Berlin or Vienna. Many people seemed to be unable to discover where London University was; with the development of the Bloomsbury scheme some of this difficulty would disappear. The problem was largely one of organization. He confessed that he had come to have a constitutional objection to the creation of more offices, and he was disposed to be critical whenever he saw the word "office" mentioned in a scheme. But he had no doubt that this particular administration could usefully be set up. The question was as to the provision of the initial expense. He would suggest that the expense should be borne by the people who were to benefit from the provision. Why should not the Americans and others who wanted information pay for it? Surely it would be possible to have an organization in which a considerable proportion, if not the whole, of the expenditure would be recovered from those who benefited. He gathered from the Athlone report that the proposed official who was to run the central office was to have the duty of arranging the whole of the courses of instruction and the management of the central hospital. He could understand that that would be a task for an experienced man, who might properly be highly recompensed. It was a different case from the one to which Sir George Makins seemed to refer, in which the function of the officer would be merely to direct to the proper source those who sought post-graduate facilities; this, surely, did not require any special ability. He knew that the members of the deputation wished to attend, as he did himself, a function at the Abbey which was due to begin almost immediately, and therefore he could not enter into a long discussion. But it was no secret that these were days of departmental economy, and that so far from being able to spend large additional sums it was a matter of considerable difficulty to obtain even small allocations. If, however, he could do anything to assist the deputation he would be very pleased, because he appreciated the importance of the case which had been laid before him. He hoped that none of them would consider the scheme of a central hospital as being in any way dead. He had been greatly impressed by the points made by Dr. Blacker, and he realized the arguments in favour of a separate institution for post-graduate work. Some institution of this kind would be required if post-graduate work on a large scale were to be undertaken.

THE FELLOWSHIP OF MEDICINE.

The annual meeting of the Fellowship of Medicine and Post-Graduate Medical Association was held on July 14th at the house of the Royal Society of Medicine, under the presidency of Sir GEORGE MAKINS. The proceedings were very brief and formal.

Sir GEORGE MAKINS moved the adoption of the report of the honorary secretaries, which stated that 167 further enrolments of post-graduates had been made, including 22 from India and 27 from the United States. Berlin and Vienna were regaining their popularity as centres of post-graduate teaching, and Vienna especially attracted a great many post-graduate students from the United States, so that the majority of the American visitors who had taken courses in connexion with the Fellowship had stayed in London only for short periods on their way to or from the Continent. The recommendations of the Athlone Committee, if carried out, would make London a world centre for post-graduate students. The establishment of a post-graduate hospital and school might for the present have to be postponed, but no time should be lost in providing a central bureau with library and hostel. This had formed the subject of a deputation to the Minister of Health on the previous day. The events of the year included the affiliation of the South-West London Post-Graduate Association with the Fellowship, the organization of special short courses in medicine and surgery, and the extension of special facilities to post-graduate students by individual hospitals, apart from the courses organized by the Fellowship itself. The medical journals were to be thanked for all that they had done to make the Fellowship known, and thanks were due also to the deans and hospital staffs who had co-operated.

After Sir W. ARBUTHNOT LANE had presented the treasurer's report, which showed a credit balance of £1,430, the reports were adopted, and the council, which consists of about 90 representatives of the individual members and 37 representatives nominated by institutions and recognized as corporate members, was elected.

The revised constitution, the result of the labours of a committee which was appointed a year ago, was approved without discussion; it defines the rules of procedure for the admission to membership and the appointment of the executive committee and subcommittees and their terms of reference. The meeting closed after passing a resolution which placed on record the indebtedness of the Fellowship to the President and Council of the Royal Society of Medicine for their continued generosity in placing rooms freely at the disposal of the Fellowship.

CONFERENCE ON BIRTH CONTROL.

A NEO-MALTHUSIAN and Birth Control Conference, stated to be the fifth international gathering of its kind, though the first to be held in London, took place from July 11th to 15th. It was organized by the Malthusian League—a body which has now changed its title to "The New Generation League for Human Welfare through Birth Control," thereby suggesting a broader platform than the old Malthusian theory. The president of the conference was Mr. C. V. Drysdale, D.Sc., and among the vice-presidents were Sir James Barr, Sir Bryan Donkin, Sir W. Arbuthnot Lane, and Sir Archdall Reid. Dr. W. J. Robinson, president of the American Society of Medical Sociology, and two or three medical men from Holland, Germany, and Sweden were also present.

The conference did its work in six sections, which discussed the domestic, economic, moral, hygienic, international, and medical aspects of the question. The fifty papers ranged over such problems as migration, organized labour, psychological factors, and the coloured races, and it was interesting to observe the way in which people who were sharply divided on other subjects found a common meeting place in birth control. The matter was pressed to the same conclusion from the point of view of the socialist and the individualist, the nationalist and the internationalist, the feminist and the one indifferent if not antagonistic to feminism, the rationalist and the minister of religion, though it should be added that, with one or two exceptions, including a New York rabbi, ministers of religion held aloof.

The Conference Dinner.

In connexion with the conference a public dinner was held to celebrate the centenary of birth control, which was dated from the publication in 1822 by the radical reformer, Francis Place, of *The Principle of Population*, a book which was said by one speaker to have been banned from the British Museum Library, but we find that this is not so. Sir W. ARBUTHNOT LANE, in a brief speech at the dinner, said that much had been heard about the neo-Malthusian theory, but the theory would be of little or no use unless women could be provided with a fool-proof method of protecting themselves against impregnation. The medical profession seemed to have no knowledge of preventives, or, where there was not complete ignorance, there was dislike of the subject, an attitude which had unfortunate results.

Professor E. W. MCBRIDE brought the good wishes of the President (Major Leonard Darwin) and the majority of the council of the Eugenics Education Society, though he said that on the executive of the body founded by Francis Galton there were sentimentalists, some of them occupying high positions in the medical world, who were opposed to birth control. He believed that eventually the State would come to adopt some form of compulsory sterilization. Professor McBride expanded his ideas in one of the sessions, when he gave an address on birth control and biological law. There would always be a residuum of people, he said, so utterly careless of the welfare of the State as to breed, regardless of consequences, and look to the State to support their children. The only remedy for such conduct was sterilization. If the practice of voluntary birth control became more widespread, then an enlightened public opinion would be formed which would support measures of compulsory sterilization against those who persisted in having families at public expense.

Medical Section.

In the Medical Section Dr. NORMAN HAIRE spoke on the sterilization of the unfit. He believed that there was little hope of enlisting public sympathy in England in favour of legislation on this subject, but many would support a campaign in favour of voluntary sterilization. Sterilization was not synonymous with castration; it involved only the interruption of the continuity of the spermatic ducts in the male or the oviducts in the female; the individual was not unsexed. The procedure had been practised in some of the American States with apparent success, and from Indiana 1,200 cases were reported. The most important indication for sterilization was disease in either parent which might seriously prejudice the offspring; another was disease in the woman which would render pregnancy dangerous or harmful. Many would be of opinion that a further indication was stupidity or carelessness leading to reckless overfecundity.

Dr. W. H. B. STODDART gave an address in the same section on some psychological aspects of the birth control problem. He said that the methods of preventing conception were three in number: abstinence, coitus interruptus, and the use of contraceptives. The use of contraceptives he believed to be harmless; abstinence was harmless in the absence of sexual stimulation; coitus interruptus was harmful. The anxiety neurosis was largely attributable to repressed sexual desire, which had been pushed into the subconscious, and there gave rise to fears which spread themselves out far beyond the original cause, and also to physical manifestations, including increased frequency of heart beat and respiration, liability to attacks of asthma and air hunger, loss of appetite, and definite malposition of the stomach, consequent indirectly upon the effect of fear on the endocrine glands, especially the increased flow of adrenaline from the suprarenal. In persons who practised coitus interruptus the stomach was commonly low down in the pelvis, causing abdominal fatigue. This applied to both sexes, but especially to the female, for the male in coitus interruptus was usually gratified. The speaker went on to refer to Professor Arthur Thomson's paper in the BRITISH MEDICAL JOURNAL of January 7th, in which it was suggested that the male ejaculate, through absorption by the mucous membrane of the uterus, had other effects upon the female than, possibly, to render her pregnant. It had been his (Dr. Stoddart's) custom in patients who suffered from the anxiety neurosis, due to the use of contraceptives which prevented the ejaculate from penetrating the female tissues, to give tablets of orchitic and prostatic extract by the mouth to supply the secretion which was not obtained in other ways.

Other speakers were Dr. ANTON NYSTRÖM of Sweden, who pleaded for the definite introduction of this subject into the medical curriculum, and also for a state guarantee of contraceptives; and Dr. FRANCES HUXLEY, who dealt with birth control from the standpoint of a woman gynaecologist. A resolution was passed affirming that the provision of hygienic birth control instruction should become part of the recognized practice of the medical profession, and should be given especially at hospitals and public health centres to which the poorest classes and those suffering from hereditary disease or defects applied for relief.

The sessions of the conference were held in private, but the claims of birth control were advanced at a large public meeting presided over by Mr. H. G. WELLS, when the principal speaker was Mrs. MARGARET SANGER, president of the American Birth Control League. Mrs. Sanger gave an account of her recent visit to Japan, where, apparently, birth control ideas have found wide acceptance. In spite of the hostility of the Japanese Government, she believed she had interested large popular audiences in this subject. An organization is being established in Japan, and another in India, and one is projected in China. In some Western countries, notably France, according to Mr. Wells, the cause has suffered a positive set-back, owing to the development of nationalism. It was announced by Dr. C. KILLICK MILLARD at the same meeting that it was proposed to form in this country a medical society for the study of birth control, the main object of which would be to consider the best means of controlling conception.

In the Medical Section, of which he was president, Dr. KILLICK MILLARD reported on the replies received to a set of questions which he and Dr. Binnie Dunlop had addressed to some members of the medical profession in London and the provinces, chiefly gynaecologists. The first question was whether contraceptive methods were to be approved in the case of married couples who, on health or economic grounds, felt it necessary to limit the size of their families. To this question thirty-seven replied that such approval should be given, some of them added emphatically, while thirteen were against, and fourteen gave only a qualified approval, insisting, for example, that the couple should have had one or two children before contraceptive methods were applied, or that the grounds should be limited to health. Another question as to which contraceptive was believed to be most satisfactory elicited many diverse replies, some advocating certain pessaries and others douches, but it was worthy of note that only four voted for the check pessary, in spite of its advocacy in certain quarters as the best means of prevention. A third question was whether the theory was to be credited that the reduced birth rate in civilized countries was not really due to voluntary restriction by the use of contraceptives, but to retardation in natural fertility. To this question thirty-six replied that in their opinion the theory was not to be credited and eighteen that it was. The persons circularized were asked further whether they believed that chemical pessaries —such as quinine pessaries—when they failed to prevent conception might injuriously affect the resulting offspring. To this forty-six answered in the negative, three in the affirmative; of the three two gave no example in point, and the third knew of a case where such injury was alleged, but had no proof as to the cause. Dr. Millard thought that from these replies it could not be claimed that the medical profession condemned contraceptive methods, but he pleaded that the profession should awaken to this subject because, while it was silent, the solution of problems essentially delicate was being committed to laymen.

Conference at Deptford.

The results of another set of questions sent out to members of the profession and others were submitted at another conference on birth control, held during the same week at Deptford Town Hall, by Dr. C. S. THOMSON, medical officer of health for the borough. He said that he had been endeavouring to elicit the opinions of some medical officers of health and clergymen on the use of contraceptives, and whether, if their use was approved at all, they should be limited to the unfit. Six replies were received from clergymen, four of which were against the procedure. Of the eighteen replies received from medical officers, seven were in favour of birth restriction, five against, and six non-committal. Some of the medical officers considered the use of contraceptives unnatural, immoral, and physiologically wrong; others, while not objecting to their use, said that the real trouble was that they were used by the wrong people.

A NEW building for the Surgical Clinic at Munich has recently been opened under the direction of Professor Sauerbruch.

IT was announced by the secretary of the Millbank Fund, at a meeting of the National Tuberculosis Association in Washington, U.S.A., that between 300,000 and 400,000 dollars of the income from the investment of 10,000 000 dollars will be set aside by the Millbank Fund to demonstrate in several districts how tuberculosis can be controlled in American communities. This demonstration has been prompted by the successful results of the tuberculosis investigation conducted for the past five years at Framlingham, Massachusetts, by the National Tuberculosis Association.

THE HOSPITALIZATION OF THE SCOTTISH ASYLUM SYSTEM.

In his presidential address given to the Medico-Psychological Association of Great Britain and Ireland at its annual meeting in Edinburgh on July 19th, Professor G. M. ROBERTSON added another to the many appeals he has made for the conversion of the asylum with its prison stigma into the special hospital with its more human, its more sympathetic, and its more medical tone and atmosphere. A leader in these pages a couple of weeks ago* sketched in outline the various stages the proposals for reform had passed through before the draft bill to enable persons suffering from incipient mental disease to be treated in public or private mental asylums without certification was introduced into Parliament as a Government measure. It recorded the incidents in the long history of the close interest which the British Medical Association has taken in the treatment of incipient insanity; it told of the efforts of the Association's Medico-Political Committee on behalf of the care of the feeble-minded and of their success in one direction by the passing of the Mental Deficiency Act; it recalled the many bills, such as the Lunacy Acts Amendment Bill of 1905, Sir John Batty Tuke's bill for the early treatment of mental disease, the Voluntary Mental Treatment Bill of 1914, and the bill of the following year for the early treatment of mental disorder of recent origin resulting from wounds, shock, etc., which had not become Acts even when designed (as the last mentioned certainly was) to meet the exigencies of the war; and it touched more than once on the valuable lead which had been given by the experience gained in the management of the insane under the Scottish law and by the endeavours of Professor G. M. Robertson of Edinburgh. If there be any truth in the physiological and pharmacological theory of the summation of stimuli it will surely be visible in the rapid and uneventful passage of the bill now to be proposed by the Minister of Health. Whether this come to pass or not the phenomenon of the gradual hospitalization of the asylum which the President of the Medico-Psychological Association described last Wednesday has been a great historical event well worthy of record in the progress of the management of insanity.

In his introductory sentences Professor Robertson pointed out that the dominating motive which had for more than a generation directed the activities of the asylum authorities in Scotland had been the desire to make the asylum in that country an institution inspired by the same exalted principles and conducted on the same medical and nursing methods as those which existed in our great general hospitals. That ideal was simple, tangible, and high, for the voluntary hospital was the most perfect embodiment of practical humanitarianism and science, and it occupied a unique position among medical institutions. To reach the ideal meant to transform the asylum into a hospital for the treatment of a special disease. This was the meaning of the phrase "the hospitalization of the asylum" first used in 1902.

There had been difficulties in the way, and tradition in asylum management had been hard to overcome. The asylum had its origin in the prison, and neither in its construction nor in its control had it yet quite got free of its origin. The single rooms of the asylum took one's thoughts back to the cells, and so did the practice of confining patients in them. The exclusion of women and their non-employment in nursing the sick and the infirm in the male wards of asylums was another result of the past; it was a perpetual reminder that the original conception of an asylum was less that of a hospital for the care and treatment of a special disease than that of a safe place of detention for the custody of a dangerous class. The public had found mental patients unfit to be at large; it had officially through a judge or magistrate deprived them of their liberty; it had ordered their detention in special institutions primarily for the purpose of safety; it had, of course, expected them to be cared for kindly, but it had scarcely realized how difficult the task was, forgetting that the deprivation of liberty itself was a hardship. The public, therefore, had swung to and fro between sympathy for persons "illegally detained or harshly treated," and indignation that insane and dangerous people were not more stringently shut up.

"As liberty is the most cherished prerogative of the human being, it is not without good reason that persons of unsound mind are deprived of it. The measures required for their care very often involve questions of life and death. Every melancholic patient at one stage or another of his illness is a case of potential suicide; every patient suffering from hallucinations of hearing and from delusions of persecution is a possible homicide; while the weak-minded and the impulsive are all liable to commit irresponsible acts of a dangerous character. Were such patients treated with a sole regard to their wishes and feelings, tragedies would happen which would move the public to indignation. It has in a large measure escaped such experiences, and in consequence it seems probable that a section of it does not realize that any danger exists at all. The medical superintendent of an asylum is a man who walks on the edge of a precipice, who lives over a powder magazine, and he is wise to err on the side of safety."

In Scotland the medical superintendent was the sole authority over all that related to the medical care of the patients, and he alone admitted or discharged them. Quite properly he was controlled by a board of able men, and, naturally, expense had to be considered at every step, a fact which checked and limited extreme medical and philanthropic aspirations. It would be immensely for the benefit of patients in rate-aided asylums if the number of the staff were doubled; but public authorities would not submit to the extra expenditure. Many difficulties had to be overcome before reforms could be instituted, and prejudice against innovation was a recognized barrier; but the General Board of Control (the Government Department controlling the application of the lunacy laws) had done well in encouraging advances by refusing to stereotype an official system of treatment or of asylum construction. The Board had given freedom of initiative and scope for individual action to medical superintendents in Scotland, and many of them had struck out new lines in such directions as the amusement of the patients, their degree of freedom, the nursing of them, the clinical or laboratory investigation of their maladies, and the like; the Board had made known advances in one asylum to the workers in others.

The great and outstanding result of the innovations introduced by medical superintendents in various places had been the gradual abolition of the prison features of Scottish asylums. Professor Robertson's description of the order and manner of the changes which marked the transition from prison-like asylum to modern hospital for mental diseases was masterly. Soon after 1857 it was thought that the attachment of "airing courts" to asylums marked a noteworthy advance in asylum construction; so in a sense it did, but it was really a feature inherited from the prison, and therefore it had to be replaced by permitting the patients to walk freely about in the grounds round the institution, an advance due to the initiative of a single superintendent. Mechanical restraint by various means (strait-jackets, hobbles, muffs) was obviously the prison tradition again.

Then came the era of "non restraint," for which all honour is due to Gardiner Hill and Conolly; but they modified rather than abolished restraint, for Conolly invented the padded room—defined as "a room of which the floor is a bed and the four walls are padded"—and he used confinement in single rooms, euphemistically termed "seclusion." These improvements came in their turn to be abused, and about twenty years ago statistics of their employment in different asylums were published, and very soon, in Scotland, seclusion and padded rooms began to disappear generally. Another relic of the prison idea was the locking up of troublesome patients at night and the lack of any nocturnal treatment of mental symptoms even in convalescent cases; gradually the substitution of continuous personal attention for the mechanical safeguard of a locked and shuttered room was introduced, and instead of one night-watchman for both male and female sides of an institution a night staff sufficiently large for the efficient care of all patients who might require it was introduced. The locked doors of the asylums of the past increased the prison atmosphere: Sir John Tuke observed that in an asylum suitably constructed this unpleasant feature could be almost eliminated, and so the "open-door system" came into being, was extended to the use of detached villas without obvious institutional characters, and finally took the form of permission to go about freely on parole. The "boarding-out system" in country districts marked a further departure from the prison idea, and at the present time over 2,000 unrecovered but harmless patients were being so cared for in Scotland. "Here," said Professor Robertson, "our practice has gone as far away as it possibly could from any suggestion

* BRITISH MEDICAL JOURNAL, July 8th, 1922, p. 51.

of prison or restraint, and the unrecovered patient is replaced in a natural home under more familial and domestic supervision."

Professor Robertson passed next to the consideration of the introduction of hospital features into the asylum set free from its prison-like characters. In this matter the late Sir Thomas Clouston was a distinguished pioneer in Scotland. He taught that an asylum should be an institution for medical observation and treatment, and to enforce this idea his favourite recommendation was that every asylum should be provided with a separate hospital block; this would bring with it a medical atmosphere. At the present time the majority of modern Scottish asylums were provided with these separate and distinctive hospitals. Another advance towards the hospital idea was made by Dr. Campbell Clark in 1880 when he began courses of instruction for nurses and attendants, and published his *Handbook for Attendants on the Insane*; next came the Medico-Psycho'ogical Association's certificate of proficiency in mental nursing. "Thus," said Professor Robertson, "thirty years before the recent Act for the registration of nurses was passed, mental nurses through the agency of this association enjoyed practically all the advantages now being conferred for the first time on hospital and other nurses."

The next great movement towards the hospital idea was the bringing of women prominently into the staffing of the asylum. The appointment of hospital nurses as matrons of the female divisions of asylums not only improved the quality of the sick nursing, but also placed educated women with medical training and instincts at the head of the female staffs. At first these women had not the special knowledge necessary for the safe and proper care of the insane; but by the appointment of three hospital nurses as assistant matrons and their training in mental nursing and asylum management proper candidates for the matronship in Scotland were soon forthcoming. Matrons and assistant matrons who were possessed of hospital training quickly brought about the replacement of asylum methods by hospital ones equally good or better, and many features alien to hospitals thus disappeared. Then the change began to affect the male wards of the asylum; women with their "mothering" instincts began to find their way into the male portion of the institution, first as wives of charge attendants as "auxiliary female care," then in complete nursing charge during the day, then during the night (with auxiliary male care when it was necessary), and finally as matrons over a whole asylum (male and female sides), whereby "the analogy to the general hospital was rendered more complete." Professor Robertson's remark is: "A woman continues to exercise much the same subtle influence over an insane man who is not actually delirious and confused as she does over one who is supposed to be in his right mind." One scents a trace of humour here.

The approximation to the hospital idea was seen also in the increase in the numbers of the medical staff and in the more thorough study of the physical disorders associated with insanity by all the scientific methods of investigation in use elsewhere. Higher education in the science of psychiatry and the giving of diplomas in psychological medicine were other signs of approach to the hospital character. Curiously enough the State had taken little or no interest in the last-named advance in the treatment of insanity, although everything which makes for more successful treatment and for more effective prevention of insanity will save the State money. "One mental disorder alone—namely, dementia praecox—probably cost the country more in maintaining its helpless victims for life than any other single disease." Finally, hospitalization was needed in respect of the laws under which Scottish asylums were administered. The law was archaic: it was designed to suit a form of social life which no longer existed and which medical science and the art of nursing had left far behind. Professor Robertson's words on this matter were weighty:

"As the Board of Control has admitted the necessity for a new Act, let us hope that it will be framed on medical lines, and particularly that under its provisions it will be possible for any unfortunate person who is sick in mind to obtain the medical treatment and nursing his illness requires, without first being legally branded a lunatic, as at present, and then committed to detention by a judge or magistrate, as if he were a species of criminal. After all, such a procedure is not very different from the trial of the sick person in Samuel Butler's *Erewhon*, who, suspected of being consumptive, was apprehended and tried as a common criminal would be with us for burglary. Not till the cruel anachronism of these laws is removed, which after sixty-four years' service have outlived their purpose, will the asylum shed its last prison features, be cleansed of the prison taint, and be free to develop along purely medical and hospital lines. That it can be removed without evil consequences following is demonstrated by the amazing situation that has come to pass in Scotland, where the majority of private patients paying the higher rates of board are actually being admitted to the Royal asylums, not under medical certificates and judicial orders, as was intended by our well-meaning legislators of other days, but as voluntary patients. Why should it not be possible for the rate-aided poor to enjoy this privilege? Their need is just as great as those endowed with wealth, and, being without means, they are less likely to be the victims of designing persons or plots. But, as a matter of actual fact, no one, rich or poor, has ever been found by our courts of law to have been wrongly detained in a Scottish asylum."

Professor Robertson concluded his address by pointing out that the essential features in the changes in the asylum system of Scotland during the last two generations could be crystallized into two simple yet comprehensive ideas or formulae. These were, first, the abolition of prison features, which were an inheritance from the past, by the substitution of continuous personal attention; and secondly, the hospitalization of the asylum by the introduction, as completely as possible, of the methods employed in hospitals for investigating, treating, and nursing disease, which still remains the ideal for the future. A revolution had actually occurred, but it had come so gradually that it had had none of the inconveniences associated therewith; indeed, so quietly had it come and so insinuatingly that many were putting forward the query, "Had the type of insanity changed to one of milder symptoms?" Where were the raging maniacs of the past? The answer had unfortunately to be that their raging had been in some measure the result of the treatment accorded to them.

Professor Robertson did not close on the note of prevention, but it could be detected, if listened for, in every part of his address. How much better it would be for everyone if all cases of non-congenital insanity could be treated in the incipient stage; how much more economic in every sense for the country. Even congenital mental disorders may prove amenable to prevention, but in their case prevention must begin with the parents and be ante-natal in time. This address is an additional and a potent argument in favour of the long looked for Incipient Insanity Bill.

TRANS-ATLANTIC RHINO-LARYNGOLOGY.

PROFESSOR BIRKETT'S SEMON LECTURE.

THE Semon Lecture, under the auspices of the University of London, was delivered on July 12th by Professor H. S. BIRKETT, C.B., M.D. (Dean of the Faculty of Medicine of McGill University, Montreal), who took for his subject "The development of trans-Atlantic rhino-laryngology." The Vice-Chancellor of the University (Mr. H. J. WARING, F.R.C.S.) presided.

Professor BIRKETT began with a personal tribute to the man in whose memory the lecture was founded. It was now more than thirty years ago since he first met Sir Felix Semon, and during many visits to this side of the Atlantic the acquaintance ripened into friendship. Semon jealously guarded and strenuously upheld the dignity of the specialty to which he devoted his life. He was frank and decided in his opinions, and as an investigator in the field of laryngology and a contributor to its literature he stood pre-eminent.

The close ties existing between the English-speaking countries made it desirable that each should know more of the work done by the others, in this as in other directions. To the United States belonged no small share in the discovery and development of the fundamental principles which had placed laryngology in the foremost rank of specialties. Both the origin of the specialty and the conception and development of its important principles had been the product of the splendid speculative and inventive genius of America. He quoted Sir William Milligan as having stated that to their American colleagues past and present much credit was due, not only for pioneer work, but also for the persistent way in which they had kept the laryngological flag flying.

The lecturer then went on to instance the earliest papers appearing in medical publications in the United States on the subject of laryngology, dating from 1860 or thereabouts. The man who was entitled to be regarded as the father of American laryngology was Horace Green, who, at the time (about 1832) when the laryngoscope was regarded with more or less scepticism, foresaw its possibilities, and stated that he was confident that if the instrument could be brought into

general use the profession would be able to cure diseases which up to then had been frequently overlooked. Green had graduated in medicine in 1834, and he was the first medical man on the American continent to devote himself exclusively to diseases of the respiratory tract. In 1846 he published a treatise on diseases of the air passages. The name of Louis Elsberg must be associated with that of Horace Green. Elsberg was described as the most accomplished laryngologist in America, and he became the first president of the American Laryngological Association. The earliest classical textbook on the subject of foreign bodies in the air passages was by Samuel D. Gross, and was published in 1854 in Philadelphia. With the more general use of the laryngoscope the literature on the subject enlarged rapidly. In 1864 Elsberg brought out a little monograph on *Laryngoscopal Medication*, which was the first trans-Atlantic work on mirror laryngology. At that time Elsberg was lecturer on diseases of the larynx in the University of New York. For comprehensiveness and originality the treatises of J. Solis Cohen (from 1872 onwards) had not been beaten in American laryngological annals.

The first laryngological society was founded in New York in 1873. It was "A Society for the Study of Affections of the Larynx, Pharynx, and Adjacent Parts," and was merged later into the Section of Laryngology of the New York Academy of Medicine. Afterwards, under the presidency of Louis Elsberg, the American Laryngological Association was formed. As for instruction in laryngology, the first official teaching was inaugurated in Philadelphia (by J. Solis Cohen) and at Harvard, in both cases about 1866; but Elsberg, in the autumn of 1861, had started lecturing on laryngology in the medical department of the City of New York University, and this was the first regular instruction given in America. The Metropolitan Throat Hospital in New York was established in 1874. In 1875 the Harvard Medical School included laryngology as a separate subject in its curriculum. The first journal dealing with the subject was the *Archives of Laryngology* in 1880, but only four volumes were published. The photography of the larynx was successfully accomplished by French in 1882—a triumph of ingenuity, skill, and persistence. Another epoch-making advance was the introduction of Joseph O'Dwyer's intubation method in New York in 1885; and to Fletcher Ingals, Chevalier Jackson, and others much credit was due for work on bronchoscopy. Ingals was the first to make use of the distant method of illumination, and Jackson perfected this method.

Passing to rhinology, the lecturer said that the development of this subject was more gradual than the other, and it was only through the large number of contributions to literature by American workers that encouraging advance was at length obtained. An important piece of study was the removal of intranasal obstructions; the first to carry out this removal was J. Solis Cohen. W. H. Day was the first to call attention (in 1882) to the connexion between hay fever and nasal diseases. J. N. MacKenzie drew attention to the fact that in the nose there was a well-defined sensory area capable of producing an excitation which found expression in a series of reflex phenomena. The lecturer instanced other advances which had come from across the Atlantic, notably the discovery by W. H. Betts of New York, in 1896, of the value of extract of the suprarenal capsules as a haemostatic—a useful adjuvant in controlling bleeding in nasal operations.

As for undergraduate teaching in America, the subjects of laryngology and rhinology had been for some years past compulsory in the curriculum of most of the leading American universities. Instruction was given for one year, and an examination in this subject, written and oral, was held. Licensing bodies required an examination in these special subjects. Post-graduate teaching was first introduced in New York in 1877, and was gradually advanced until at the present time some of the chief medical centres had their own post-graduate institutions, in which excellent facilities were afforded for this special line of work. It was realized by Elsberg as far back as the seventies that the education of the specialist would require years of study, and a committee which was appointed to consider the matter made certain recommendations, which were adopted by the societies interested in the subject. The principal recommendation was that the student must have a minimum training of eighteen months in full-time work on this special subject, one half of the day to be devoted to the clinical study of cases in a well-equipped out-patient department of a general or special hospital, and the other half to the fundamental sciences and allied work, carried on in equally well-equipped laboratories. The early custom on the other side of the Atlantic was to unite otology with ophthalmology, and with the development of rhinology all three specialties were in many instances combined. In the late seventies an attempt was made to dissociate rhinology and otology from ophthalmology, and for the past twenty years, in most of the medical schools, these subjects were associated with laryngology in one chair. On looking back over the broad outline one could not but be impressed by the immense strides which had been taken, more particularly during quite recent years. Once the avenues of research were opened, the work and experience of one observer after another formed an arch through which gleamed ever-widening fields for investigation.

A vote of thanks to the lecturer was proposed by Sir J. DUNDAS GRANT, who said that American laryngologists had set a stimulating example. He also paid a tribute to Semon, who, he said, was one of the greatest of teachers—encouraging, stimulating, and often disturbing, through the activity to which he called his colleagues and pupils. Sir STCLAIR THOMSON, in seconding the vote of thanks, appreciated the lecturer's backward view. Those who looked forward saw only one way of advance; those who looked backward saw more than one. The vote of thanks was heartily accorded, and the Vice-Chancellor then handed Professor Birkett the Semon medal.

THE ROYAL ARMY MEDICAL CORPS.

UNVEILING OF THE MEMORIAL TABLET.

THE tablet placed in the nave of Westminster Abbey in memory of the officers and warrant officers, non-commissioned officers, and men of the Royal Army Medical Corps who fell in the great war was unveiled with simple ceremony by the DUKE OF CONNAUGHT, colonel-in-chief of the Corps, at noon on July 13th. The congregation which filled the nave included Princess Christian, and many representatives of the Government, the army, and the medical profession. The large number of ladies present were, in almost all instances, relatives of those who had died.

The tablet, an illustration and brief description of which appeared in our last number, is on the north wall, just beneath some large and tasteless memorials of eighteenth-century valour. It strikes a quieter note, in harmony with the tomb of the "Unknown Warrior" a few yards distant, and yet it arrests the eye, like the window recently dedicated to the fallen of the Royal Flying Corps, which is almost opposite.

The service under the grey arches was all the more impressive because there was no sermon or address: the occasion was allowed to speak for itself. The majority of those present wore either military uniform or academic robes, and these, with the white surplices and red cassocks of the choir, made a spectacle of colour not often seen even in the Abbey. The assembly in such a setting of so many men of distinction in arms and in medicine might well have formed the subject of an historical canvas. The music was provided by the band of the Welsh Guards, which before the service began rendered selections from Grieg, Sullivan, and Bizet, and also accompanied the hymns with which the service opened and closed; these were Charles Wesley's "Jesu, lover of my soul," the first verse omitted, sung to the tune "Aberystwith," and Bishop Walsham How's "For all the saints who from their labours rest," to the tune "Sine nomine." A word of praise is due to the party of buglers who, at the end of the ceremony, from behind the high altar, sounded "The Last Post" and "Réveillé." Those piercing notes must have brought to many present the most emotional moment of the service.

A guard of honour of the R.A.M.C. was posted outside the west door, and was inspected by the Duke of Connaught on his arrival. On entering the Abbey His Royal Highness was received by the Dean (Bishop Ryle) and the clergy and conducted to a seat in front of the tablet. After some opening prayers by the precentor the "Contakion of the Faithful Departed" was sung, and then the Duke, removing from the tablet the Union Jack which had covered it, said:

I have the honour to unveil the tablet erected in Westminster Abbey by the Royal Army Medical Corps in memory of the 743 officers and 6,130 warrant officers, non-commissioned officers, and men of the corps who fell in the Great War; and at the same time to announce that in due course the names of those who fell will be engrossed in a Golden Book, now being prepared, that will be kept

among the treasures of the Abbey in the Chapter House. The Royal Army Medical Corps has generously assigned the sum of £10,000 to the fund for the restoration and maintenance of the structure of Westminster Abbey.

The DEAN dedicated the tablet in the following words:

To the glory of God and in the name of Jesus Christ, we dedicate this memorial in proud and thankful memory of those officers and men of the Royal Army Medical Corps who fell in the Great War: in the name of the Father, and of the Son, and of the Holy Ghost.

The DEAN added:

On behalf of the Dean and Chapter of Westminster Abbey we desire to express our gratitude for the great and magnificent donation of £10,000 by the R.A.M.C. to the Westminster Abbey Restoration Fund, and it will be our pride and pleasure, in time to come, with the proper consents, to preserve in the Chapter House the great Golden Book among the treasures of Westminster Abbey.

Following the dedication a special collect was said:

O Almighty Father, Lord of heaven and earth: Vouchsafe, we beseech Thee, to accept this offering at our hands for the adornment of Thy house of prayer, and in thankful memory of our brethren of the Royal Army Medical Corps who fell in the Great War; and grant that as we dedicate this gift to Thy glory, so we may devote our lives to Thy service, for Jesus Christ's sake. Amen.

This was followed by a sixteenth-century prayer:

O Lord, support us all the day long of this troublous life, until the shades lengthen, and the evening comes, and the busy world is hushed, the fever of life is over, and our work done. Then, Lord, in Thy mercy, grant us safe lodgeing, a holy rest, and peace at the last, through Jesus Christ our Lord. Amen.

After the National Anthem the Duke of Connaught and Princess Christian proceeded to the Chapter House to inspect that part of the Golden Book which has already been prepared. The execution of this work has been entrusted to Mr. Graily Hewitt, one of the most talented scribes of the day. The book will consist of between two hundred and three hundred pages, each of them richly illuminated and bearing a different design, and the whole will be elaborately bound. The work is expected to take eighteen months to complete.

The Duke of Connaught was accompanied from the west door to the site of the tablet, and again, after the service, to the Chapter House, by Lieut.-General Sir John Goodwin Director-General of the Army Medical Service), Lieut.-General Sir G. M. W. Macdonough (Adjutant-General), Lieut.-General Sir Arthur Keogh, G.C.B. (late Director-General), Lieut.-General Sir W. Launcelotte Gubbins (late Director-General), Lieut.-General Sir Arthur Sloggett (late Director-General), and other officers of the Service.

Amongst those present in the congregation were Sir A. Mond, Field-Marshal Lord Methuen, the Right Hon. F. E. Guest (Secretary of State and President of the Air Council), Vice-Admiral Sir Robert Hill (Director-General, Medical Department, R.N.), Lieut.-General Sir Travers Clarke (Quartermaster-General to the Forces), Lieut.-General Sir William Peyton (Military Secretary to the Secretary of State for War), Major-General G. D. Jeffreys (Commanding London District), Sir Herbert Creedy (Secretary of War Office and Army Council), Sir Charles Harris (Permanent Head of the Finance Department of War Office), Bishop Taylor Smith (Chaplain-General), Major General Sir R. Havelock Charles (Medical Adviser to the Secretary of State for India), Major-General Sir A. P. Blenkinsop (D.D.M.S. Eastern Command), Sir Lionel Earle (representing the First Commissioner of Works), Sir Donald MacAlister (President of the General Medical Council and Vice-Chancellor of the University of Glasgow), Mr. H. J. Waring (Vice-Chancellor of the University of London), Dr. J. G. Adami (Vice-Chancellor of the University of Liverpool), Sir Humphry Rolleston (President of the Royal College of Physicians, London), Sir Anthony Bowlby (President of the Royal College of Surgeons of England), Sir David Wallace (President, Royal College of Surgeons, Edinburgh), Sir W. Wheeler (President, Royal College of Surgeons in Ireland), Sir George Makins (President, Fellowship of Medicine), Mr. James Berry (President, Medical Society of London), Sir Archibald Garrod (Regius Professor of Medicine, University of Oxford), Lord Dawson of Penn, Sir Berkeley Moynihan, Bt., Sir Charles Ballance, Dr. Andrew Balfour, C.B., Dr. W. F. R. Burgess (Master, Society of Apothecaries), Sir John MacAlister (Royal Society of Medicine), Professor Lyle Cummins (Welsh National University Medical School), Sir Charters Symonds, Sir L'Arcy Power, Sir Robert Jones, Sir John Lynn-Thomas, Sir James Galloway, Mr. Warren Low, C.B.

The British Medical Association was represented by Professor David Drummond (President), Dr. R. A. Bolam (Chairman of Council), Dr. Wallace Henry (Chairman of Representative Meetings), Dr. G. E. Haslip (Treasurer), Major-General Sir Richard Luce, Rear Admiral Sir Percy Bassett-Smith, Dr. T. Ridley Bailey, Dr. J. W. Bone, Dr. H. B. Brackenbury, Mr. W. McAdam Eccles, Lieut.-Colonel R. H. Elliot, Dr. A. C. Farquharson, M.P., Mr. N. Bishop Harman, Mr. E. B. Turner, Sir Dawson Williams (Editor, BRITISH MEDICAL JOURNAL), Dr. N. G. Horner (Assistant Editor), Dr. Alfred Cox, O.B.E. (Medical Secretary), and Dr. A. Courtenay Lord and Dr. A. D. Macpherson (Assistant Medical Secretaries).

Among the army medical officers present in addition to those mentioned above were: Major-General Sir G. B. Stanistreet (Deputy Director-General), Major-General Sir William B. Leishman, Major-General Sir W. G. Macpherson, Major-General Sir Hayward R. Whitehead, Major-General C. E. Pollock, Major General Sir W. Russell (late Deputy Director-General), Major-General Sir G. D. Bourke.

Representatives of the Red Cross Society and the Order of St. John were present; also the matrons-in-chief of the Queen Alexandra Nursing Service and the Territorial Nursing Service, and Colonel C. R. Tyrrell, C.B., and Major E. B. Waggett, D.S.O., (joint secretaries of the Memorial Committee).

All the medical faculties of universities in the United Kingdom not actually represented in the Abbey sent letters of regret, stating that the reason for inability to send a representative was that vacation had already commenced.

THE CAUSE OF INFLUENZA.

As influenza is among the foremost of the epidemic diseases that periodically ravage humanity, any further light upon its etiology is welcome, and the report to the Medical Research Council by Professor James McIntosh of his careful researches during the later stages of the pandemic of 1918–19 will be read with much interest and no little profit by a large circle of readers.

Professor McIntosh's object was to define the cause of influenza, and he outlines, in the first place, the conditions that must be fulfilled before a virus can be accepted as the cause of a disease, and refers to Koch's postulates. He points out, however, that in the case of influenza many difficulties arise in arriving at a correct conclusion. These are due in part to the present lack of clinical means of sharply differentiating influenza, but in part also to the difficulty of being sure that clinical changes and pathological lesions produced experimentally in animals constitute true influenza.

In illustration of the former point he remarks that when influenza first appeared among our troops in France in the spring of 1918 it was not at once recognized either by clinicians or by bacteriologists, and was put into the category of P.U.O.—pyrexia of uncertain, not of unknown, origin as stated.

Bacteriology.

The methods used by Professor McIntosh in the investigation described in his report consisted first of examining films of exudates—chiefly of sputum—after staining by Gram and using fuchsin or neutral red as counterstain. Having obtained information in this way as to the kind of bacteria predominant, he employed for culture either Matthews's trypsinized blood agar, boiled blood agar, serum agar, or ordinary agar. For preserving *B. influenzae* alive he employed boiled blood agar, and he gives exact particulars of its preparation. His results are summarized in a series of tables. When controls and cases not characteristic of the outbreak were excluded, he found the percentage incidence of various micro-organisms in forty-eight cases examined in the acute stage of influenza to be as follows:

B. influenzae	...	...	...	...	75 per cent.
Streptococci	...	...	...	...	33.3 ,,
Pneumococci	...	...	...	...	27.0 ,,
Gram-negative cocci	...	...	...	...	27.0 ,,
Staphylococci	...	...	...	...	22.2 ,,

The bacillus of Pfeiffer was also found in the nasopharyngeal secretion of 13 out of 17 cases of early acute uncomplicated influenza, in the sputum of 58 out of 70 cases of influenzal bronchopneumonia, and in 36 out of 48 cases examined after death from influenza. In a special series of 16 cases examined *post mortem* Pfeiffer's bacillus was found 15 times. In the pus of 12 empyemata it was detected twice.

Serological observations were found to furnish additional evidence of the close association between Pfeiffer's bacillus and influenza, since no less than 12 out of 19 unselected convalescents were found to give positive complement fixation with *B. influenzae*; and out of 22 similar serums tested for agglutinin to *B. influenzae* 8 gave positive results in dilutions up to 1 in 100.

It is important to note that serum of influenza convalescents when administered to acute cases in doses of 10 to 30 c.cm. was found to benefit the patients very considerably, and a number of temperature charts are given to illustrate this good effect. It is pointed out, however, that claims have been made that normal serum can produce a similar result, and Professor McIntosh refrains from expressing an opinion as to the mechanism of this therapeutic action.

Morbid Anatomy and Histology.

The morbid anatomy and histopathology of influenza is briefly reviewed and the statement made that epidemic influenza is essentially an acute inflammation of the respiratory tract with involvement of the lungs, the most striking

feature being a marked engorgement of the trachea and bronchi and a general congestion and oedema of the lungs. In sections bacteria were usually to be found in large numbers in the mucous exudate, on the surface of the mucosa, among the epithelial cells, or in the submucous exudate. In many instances only small Gram-negative bacilli (*B. influenzae*) were to be seen. In others numbers of different cocci were to be found, mostly in association with *B. influenzae*. In the lymphatics of the bronchi *B. influenzae* could be found either alone or associated with pneumococci or streptococci. It is noteworthy that the earliest changes in the lungs were found to be a dilatation of the capillaries and a pouring out of clear albuminous fluid, which in places completely filled the alveoli; apart from red corpuscles, cellular elements and bacteria of any kind were rare in this alveolar exudate at the early stage, though bacteria were present in the bronchi. These results agree with those of previous observers.

Pathological Experiments.

Having demonstrated the close association of *B. influenzae* with the disease in the manner described, Professor McIntosh attempted to produce influenza experimentally, and here, as might have been anticipated from his opening remarks, the chief difficulty was encountered. A study of the pathogenicity of *B. influenzae* for laboratory animals showed that this organism was fatal to mice when administered intraperitoneally in doses of 1 to 4 milligrams of a young culture. He then investigated the production of a soluble toxin by *B. influenzae*, and confirmed the observations of Julia Parker and others that a soluble toxin can be demonstrated in young cultures of this organism. The toxicity of filtered cultures to rabbits varied considerably, but as a rule 5 to 6 c.cm. of the filtrate was sufficient to make the animal seriously ill. In the case of guinea-pigs the average lethal dose was 2 to 3 c.cm., but with some batches of toxin the lethal dose was 0.5 c.cm. or less. Perhaps the most suggestive train of symptoms were those produced in an animal when death occurred in four or five hours. Immediately after injection the animal became collapsed, its fur ruffled, and its temperature subnormal. Some time later a discharge of frothy mucus was observed at the nose, and there was slight diarrhoea. *Post mortem* the lung lesions in rabbits and guinea-pigs were so constant that the toxin, it is thought, may be assumed to have a definite selective action on the respiratory mucous membrane. The lesions produced by the toxin were found to bear a close resemblance to those present in man when an attack of influenza causes death.

In discussing the nature of the soluble toxin formed by *B. influenzae*, Professor McIntosh expresses the opinion that its action is distinct from that of protein degradation substances produced by the growth of bacteria in the medium, and in support of this view he adduces the circumstance that the toxin is thermostable, and also that it produces in animals such definite histological changes. Further, he looks on the fact that it excites the production of specific antitoxin as convincing evidence on this point. It is interesting to note, however, that normal rabbit serum has some neutralizing action on the toxin, and further that it has not yet been found possible to neutralize multiple doses of the toxin with the antitoxin. It is possible that the toxin is a mixture, and Professor McIntosh is hopeful about further developments in this relation.

Having defined in this way the intimate association of Pfeiffer's bacillus with influenza, and the capacity of its toxin to reproduce experimentally the chief lesions found *post mortem* in that disease, Professor McIntosh endeavoured to produce influenza experimentally in monkeys, rabbits, and guinea-pigs. He used both filtered and unfiltered material from cases. The former series included both nasal and post-nasal secretion, blood, and freshly isolated pathogenic cultures of *B. influenzae*, and the filtered material comprised the filtrates of nasal washings, throat washings, and lung juice. The results were quite negative, with the exception of a doubtful result produced in a monkey by intratracheal insufflation with a culture of *B. influenzae*.

Dr. McIntosh sums up the results of this investigation in the following conclusions:

Conclusions.

1. The predominating micro-organism in the secretions and lesions of the late epidemic was *B. influenzae* (Pfeiffer), which could be demonstrated in over 80 per cent. of the cases.
2. Other members of the catarrhal group of bacteria (pneumococci, streptococci, Gram-negative bacteria, etc.) were much less frequent.
3. Serological examinations, in particular the complement fixation test, confirmed an infection by *B. influenzae*.
4. Epidemic influenza, as shown by the pathological lesions, is essentially an acute inflammation of the respiratory tract.
5. In the early stages the lung changes are more suggestive of a toxic action than bacterial. In the later stages the lung picture may be complicated by other microbic infections.
6. The therapeutic effect of injections of the pooled serums of influenzal convalescents, even in severe cases, was very encouraging.
7. *B. influenzae* is a pathogenic microbe, producing its main lethal effect by means of a soluble toxin.
8. The experimental inoculation of animals with filtered cultures of *B. influenzae* produced pathological changes which presented a close resemblance to the changes found in man.
9. Injections of *B. influenzae* vaccine can produce in susceptible individuals a typical influenzal attack of short duration.
10. No evidence was obtained in support of the view that influenza is due to a filter-passing virus.

Interpretation.

Professor McIntosh criticizes severely the evidence that has been brought forward in support of the view that a filter-passing organism is concerned in the causation of influenza, and he does not scruple to reject it *in toto*. He also contends that the minute bodies observed in cultures of filtered material derived from influenza cases have not been differentiated with certainty from inanimate particles present in all albuminous fluids. His survey of the literature, however, does not include the whole of the evidence; we do not, in particular, find an account of the recent work of Olitsky and Gates of the Rockefeller Institute, to which reference has been made in our columns (September 17th, 1921, p. 455).

While Professor McIntosh has demonstrated in a very convincing manner the important part played by Pfeiffer's bacillus, and thrown much light on the mode of its pathogenic action, he has not yet succeeded experimentally in producing with certainty influenza. This circumstance, and the admitted frequency of Pfeiffer's bacillus in conditions other than influenza, are difficulties that will cause many to hesitate before accepting Professor McIntosh's able and earnest plea for regarding the bacillus of Pfeiffer as the primary and essential cause of epidemic influenza. It is to be hoped that the forthcoming discussion on the bacteriology of influenza at the Glasgow meeting of the British Medical Association will throw further light upon this important subject.

ROYAL MEDICAL BENEVOLENT FUND.

A MEETING of the Committee was held on June 13th; 40 cases were considered and £540 granted to 38 applicants. The following is a summary of some of the cases relieved:

M.R.C.S.Eng., aged 60. Owing to an accident to the knee he had been out of employment since leaving ship service, and appealed to the Fund to help him to get back to Australia. Voted £5 towards passage money.

Daughter, aged 61, of M.D.St. Andrews who died when applicant was a child. She is a trained nurse and served through the Boer war, after which she opened a nursing home in South Africa, but had to give this up, and then took up private nursing. Came to England in 1914, and was refused by the War Office on account of age. Afterwards served abroad with various Red Cross units during the war. She now has £1 5s. a week from the United Service Fund, and a little help from friends. Voted £10 in twelve instalments.

Widow, aged 57, of M.B.E.Edin. who died suddenly in 1918. Applicant has been living on her late husband's life insurance money and the proceeds from sale of furniture. She tried to make a living by letting the rooms in her house, which is heavily mortgaged, but owing to ill health had to give this up. Applicant has gone back to her native place and is living in a cottage. Voted £5.

Widow, aged 94, of medical man who died in 1887. She is now confined to her house. She has only the old-age pension, and her rent amounts to 6s. a week. Voted £25 in twelve instalments.

Widow, aged 85, of L.R.C.P. and S.Edin. who died in December last. Applicant lives with married daughter, who only has £2 a week. Her late husband was a pensioner on the Fund at £26 a year. Voted £5.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1. The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for secondhand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

THE new building for the medical school at Porto Alegre, Brazil, is approaching completion, and classes will probably be held during the coming year in the building; the staff includes some forty professors and assistants.

British Medical Journal.

SATURDAY, JULY 22ND, 1922.

THE HOSPITALIZATION OF ASYLUMS.

IN a leading article published on July 8th (p. 51) it was pointed out that medical opinion is unanimous that the present lunacy laws are urgently in need of reform, and, in view of the fact that legislation to give facilities for the treatment of early cases of insanity will shortly come before Parliament, we do not hesitate to emphasize again the necessity for the removal of certain restrictions which at present constitute a barrier to the adequate treatment of mental disorder in its incipient stages. It must be remembered that the impulse towards reform did not originate from the general public; it originated from the psychiatrists themselves, who have been fully alive for a number of years to the limitations imposed upon them by the law. It is a significant fact, and one which cannot be ignored, that those who actually live amongst the mentally sick, and who are thus peculiarly cognizant of their needs, express themselves in no uncertain way as to the necessity for a policy more in harmony with the aspirations of modern medicine.

This dissatisfaction with existing conditions finds forceful expression in the presidential address delivered by Professor George M. Robertson before the Medico-Psychological Association on July 19th. As will be gathered from the report published at page 134, he began by saying: "The dominating motive which for more than a generation has directed the activities of the asylum authorities in Scotland has been the desire to make the asylum in that country an institution inspired by the same exalted principles and conducted on the same medical and nursing methods as those existing in our great general hospitals." Fortunately the aspirations thus expressed have been actually put into practice, and though Professor Robertson does not refer to his own work on behalf of the insane, the Scottish asylums owe a great deal to his courage, initiative, enthusiasm, and energy; they have been important factors in bringing the institutions to their present state of high efficiency. It is of interest in passing to note that some twenty years ago Professor Robertson expressed his ideals for the future of asylums in words almost identical with those quoted above.[1] It must be a source of much satisfaction to him to feel that his desires have been so largely realized.

In the course of his broad survey of the changes which have been introduced into the Scottish asylum system Professor Robertson observes with truth that their effect has been so great that they might be described as revolutionary were it not that the process of transformation has been so gradual. The prison features of the asylums have been largely abolished; an atmosphere has been created which is more medical, sympathetic, and human; and every effort has been made to hospitalize these institutions by the introduction of the methods employed in general hospitals for investigating, treating, and nursing disease. This record of progress is most gratifying, but there is still much to be accomplished before the treatment of mental disorder can reach that high level which psychiatrists regard as desirable. The process of hospitalization is still incomplete, and will so remain as long as the admission of patients in an early and recoverable condition continues to be obstructed by legal technicalities. Professor Robertson spoke most emphatically. "The Scottish asylums are administered under an archaic code of laws," he said, ". . . and not till the cruel anachronism of these laws is removed, which after sixty-four years' service have outlived their purpose, will the asylum shed its last prison features, be cleansed of the prison taint, and be free to develop along purely medical and hospital lines." He goes on to show that there is no necessity whatever to brand a person who is sick in mind legally as a lunatic, and then commit him to detention by a magistrate as if he were a species of criminal, before he can obtain the medical and nursing treatment his illness requires. He points out that such restrictions can be removed without evil consequences, as is demonstrated by the amazing situation that has come to pass in Scotland, where the majority of private patients paying the higher rates of board are actually being admitted to the Royal Asylums without certificates and judicial orders; and he contends, with justice, that it should be possible for the rate-aided poor to enjoy a similar privilege.

Since Professor Robertson has been intimately associated with the development of psychiatry in Scotland, it is natural that he should concern himself more particularly in his address with the asylum conditions which exist in that country. It should now be observed, however, that the aims and ideals he expresses in his presidential capacity are those which animate the Medico-Psychological Association as a whole, and the dissatisfaction he shows with the Scottish legal conditions is felt even more keenly by psychiatrists in England, where the position in respect to the lunacy law is much less favourable than it is in Scotland. The most comprehensive account of the position in England is that provided by Dr. C. Hubert Bond, the retiring President of the Medico-Psychological Association, in his Presidential address of 1921, the subject of which was "The position of psychological medicine in medical and allied services."[2] The possibilities of reform outlined in this address are deserving of close consideration, and may be regarded as authoritative; they carry much weight, since Dr. Bond writes not only as a psychiatrist who has taken a leading part in urging the hospitalization of English asylums, but also as a Commissioner of the Board of Control in this country. His experience enables him to appreciate the necessity for certification in certain cases, whether it be for the protection of the person and estate of the patient or for those with whom he is associated, and it also enables him to give a balanced estimate of the extent to which a relaxation of legal restrictions is possible. Dr. Bond laid emphasis on the meagre extent to which voluntary treatment for mental disorder is permitted in this country—at present, of course, only in licensed houses and registered hospitals—and strongly advocates an extension to county and borough mental hospitals of the system of voluntary admission. "The system of voluntary boarders in registered hospitals has," he said, "worked well; and, judging by the remarkable and probably exceptional circumstance that, at that moment, of the number of cases admitted into the oldest of these hospitals those received as voluntary boarders are as many as those admitted under certificates, the system finds favour. The explanation as to the difference between registered hospitals and licensed houses as respects stringency of requirements for voluntary admission is historical and accidental, and is not based on the respective merits of the two forms of institution; it would, indeed, be hard to find valid reason why the simple and formless procedure should not be available for voluntary admission to licensed houses, and equally

[1] *Journal of Mental Science*, vol. xlviii: "Hospital Ideals in the Care of the Insane."

[2] *Journal of Mental Science*, vol. lxvii.

hard—except as to chargeability questions—with respect to county and borough mental hospitals to which . . . no voluntary admission is permitted. As to this denial to public mental hospitals of what would be an unquestionable boon to poorer persons who are mentally ill and desire treatment, it is useful to remember that in Scotland voluntary boarders are admissible to these institutions."

It may here be mentioned that though all psychiatrists are agreed that the treatment of the mentally deranged is handicapped by antiquated legal restrictions, there is some divergence of opinion as to the status and function of asylums in the future. On the one hand it has been suggested that an entirely new form of hospital should be created for the treatment of incipient insanity. Dr. E. Goodall has been a vigorous advocate of a scheme along these lines; he would completely divorce the new clinics which he visualizes from the existing asylums and would develop them in the closest relation with the general hospitals. He feels that this is the only way in which psychiatry can hope to gain organic union with medicine as a whole, and he regards the suggestion that early psychoses should be treated in the asylums as "one of those compromises which are so dear to the Anglo-mentality." On the other hand, a number of psychiatrists share the aim which appears to be in the mind of Professor Robertson, whose wish is to convert the existing asylums into real hospitals by taking the general hospital as its model. It is considered to be much more practicable to bring these institutions, which have been specially built and designed to meet special features in the treatment of a particular disease, up to highest medical and scientific standard than to create entirely new institutions. The respective merits of these two schemes cannot here be discussed; there would seem to be no reason why separate clinics such as Dr. Goodall describes should not develop in course of time, but as far as asylums are concerned every legal facility should be granted to enable them to develop along hospital lines in the fullest sense of the term.

Thus in regard to the immediate future we would urge the necessity for extending the privilege of voluntary admission to all mental hospitals and to all classes of the community. We may be quite sure that both the general public and the medical profession will give their full support to any legislation which has for its aim the removal of those barriers which at present obstruct the treatment of patients in the early and curable stages of mental disorder.

POST-GRADUATE EDUCATION IN LONDON.

THE reply of the Minister of Health to the deputation which had an interview with him last week as to post-graduate medical instruction in London is not, we think, to be taken as a final answer. The proposal put before him, as will be seen from the full report (published at page 130), may be summarized as a request for financial assistance in maintaining a central office in London for the organization of post-graduate medical instruction, so that the best use might be made of existing facilities, which, as we have frequently shown, are very considerable. Sir Alfred Mond's answer to the request was in fact rather ambiguous; on the one hand he made play, as was to be expected, with the need for public economy, but on the other he practically told the deputation that its proposals were too modest. The matters on which he seemed to think the deputation not bold enough in its demands were in the main two: one was that the duties intended to be assigned to the dean or principal officer were not sufficiently responsible; and the other that the proposal to make a general hospital a part of any post-graduate medical institution in London seemed to have been dropped.

Sir George Makins, who spoke as President of the Fellowship of Medicine, had assumed as beyond argument that an adequate scheme of post-graduate education could not be financed from voluntary resources and fees alone, and the point has been so fully discussed in its bearing on higher education of every sort that he was no doubt justified in making this assumption. But Sir Alfred Mond called the principle in question when he suggested that the expense should be borne by the people who were to benefit, and asked why Americans and others who wanted information should not pay for it. It is true that he immediately qualified this by adding "in considerable proportion if not the whole." Sir Alfred Mond's second line of criticism had been answered in anticipation both by Sir George Makins and Sir Richard Luce, who spoke for the British Medical Association. The latter had pointed out that there was already a considerable demand among practitioners in this country, and that it would certainly develop further were the opportunities for obtaining such education made easier and the conditions more attractive. Sir Alfred Mond also, as has been said, called in question the view, more or less reluctantly accepted by members of the deputation, that the establishment of a central post-graduate hospital in London was not a practicable proposal. When promising the deputation to assist its propaganda in any way he could, he said that he appreciated the importance of the case laid before him, and expressed the hope that the scheme for a central hospital would not be considered as in any way dead. After this intimation the Association will probably think it desirable to go into the matter again and consider fully the arguments now advanced in favour of making a hospital an integral part of any post-graduate medical school or institution in London.

The medical profession has come to have confidence in Sir Alfred Mond's powers of getting things done when he is convinced that they ought to be done, and will not quarrel with him for proceeding with this matter at this time with caution. But caution too greatly prolonged becomes a fault; delay has already diminished some of the advantages with which London started a few years ago, and the question is not one which concerns London alone. The position in some other great teaching centres is better than in London, but in no instance has the provision for post-graduate medical instruction reached the full development which may be hoped for.

THE CONTROL OF GLYCOSURIA BY THE ISLETS OF LANGERHANS.

A NOTE on the pancreas in relation to diabetes was communicated to the meeting of the American Physiological Society at the end of last year and a brief report was printed in the *Proceedings*.[1] It described certain work done in the Physiological Department of the University of Toronto by Professor J. J. R. Macleod and Dr. F. G. Banting and Mr. C. H. Best. They started from the hypothesis that the reason why the usual extracts of pancreas do not satisfactorily demonstrate the presence of an internal secretion acting on carbohydrate metabolism was because the internal secretion was destroyed by the digestive enzymes also present in such extracts. That the islets might be the organ of pancreatic internal secretion was first suggested by Laguesse, a French anatomist. In 1912 Kirkbridge found that healthy islets were present in the atrophic tissue of the gland after ligation of the ducts, and in 1917 Kamimura confirmed the fact that the islets remained normal, and stated that the animal did not develop glycosuria as long as the islets were left intact.

[1] *American Journal of Physiology*, lix, p. 479. A full preliminary paper by Banting and Best is published in the February issue of the *Journal of Laboratory and Clinical Medicine*.

It is well known that excision of the pancreas produces in dogs severe and fatal diabetes. The conclusions to be drawn from previous work were considered to be that the secretion produced by the acinous cells of the pancreas is in no way connected with carbohydrate utilization, that all injections of whole-gland extract have been futile as a therapeutic measure in defects of carbohydrate utilization, and that the islands of Langerhans are essential in the control of carbohydrate metabolism. In order to test the hypothesis they had evolved the Toronto workers took advantage of the fact that acinous cells degenerate in seven to ten weeks after ligation of the ducts, whereas the insular cells were at that stage at least unaffected. Ten weeks after ligation of the pancreatic ducts the degenerated gland was removed and extracted with ice-cold Ringer's solution. This extract when injected intravenously or subcutaneously invariably caused marked reduction of the percentage of sugar in the blood and the amount of sugar excreted in the urine of diabetic animals. Extracts of liver, spleen, or boiled extract of the degenerated pancreas were found to have no effect. They found also that glucose given intravenously or by the mouth is retained by diabetic animals if adequate doses of the degenerated pancreas are also administered, and that the clinical condition of the animal is improved; the estimation of the amount of haemoglobin gave the same result before and after the experiment. Rectal injections were not effective. The neutral extract kept in cold storage retained its potency for at least seven days. Subcutaneous injections were found to have a less rapid but more prolonged effect. If these experimental observations prove clinically applicable to man, clearly a magnificent contribution to the treatment of diabetes will have been made. Ever since it was first shown that diabetes commonly depended on a pancreatic lesion some such remedy as that now described has been hoped for and sought after. We trust that before long sufficient clinical results will be forthcoming to show whether the sanguine expectations the Toronto observations will raise are well founded.

THE NATURAL HISTORY OF THE MOUNT EVEREST REGION.

NEWS reached London on Saturday last that the third and final attempt to scale the summit of Mount Everest had been given up. The leader, General Bruce, reported a disastrous avalanche which killed seven porters and nearly caused the death of Mr. Mallory, Dr. Somervell, and Mr. Crawford. The expedition has in consequence been abandoned; but Mr. Finch and Captain Bruce's achievement of reaching an altitude of 27,200 feet is some compensation for the failure to conquer the greatest mountain in the world. These recent events give special interest to the July issue of the *Geographical Journal*, which contains Sir Francis Younghusband's presidential address at the anniversary meeting of the Royal Geographical Society, an editorial general note on the Mount Everest Expedition, 1922, and a paper on the natural history of South-Western Tibet by Dr. A. F. R. Wollaston, the medical officer and naturalist of last year's reconnaissance expedition under Colonel Howard-Bury. As Sir Francis Younghusband remarks, the 1921 expedition thoroughly reconnoitred the approaches to Everest and settled beyond dispute the easiest line of assault on the summit; but besides having achieved its main object it accomplished much other work of value. A general survey of the whole unmapped region, a detailed survey of the immediate environs of Mount Everest, and a geological reconnaissance of the area were made. Dr. Wollaston formed a valuable collection of the mammals, birds, and plants, and together with other members of the party brought back beautiful and interesting photographs. His paper on the natural history of the region, read before the Society in February, is now published in full with pictures. A remarkable feature of Tibet is the tameness of the wild animals, and out of respect for the Buddhist religion the party had to refrain from shooting in the neighbourhood of monasteries and villages where birds mostly congregate; nevertheless, he made a considerable collection of mammals and birds. A large number of dried plants and seeds also were brought back, and many of the seeds have been sown in English soil. Naturalists will enjoy Dr. Wollaston's charming account of these mountainous regions. Above 14,000 feet the vegetation is stunted: "This is Tibet proper, and henceforward you may travel for many hundreds of miles and hardly see any plant more than a few inches high. . . . Animals are few and far between." The only mammals commonly seen are the small mouse-hares or pikas, sometimes called whistling hares, though they are not hares and do not whistle. During an excursion to one of the principal passes leading from Tibet to Nepal the party was astonished to find at 12,000 feet an abundance of very active leeches. An interesting plant found between 17,000 and 18,000 feet is a dwarf blue hairy delphinium. The Tibetans dry the flowers of this plant and use them as a preventive against lice, but without much success. "When a Tibetan dies his body is undertaken by the professional butcher, who cuts it up and exposes it on the hills to be disposed of by the vultures and wolves. A body tainted with the delphinium flowers is unpalatable to the scavenger, and it is well known that a man must have been wicked in life whose body is rejected by the vultures and wolves." Animal life above 17,000 feet is scanty. Birds of a few species visited the camps, and mice of some kind came into the tents at 20,000 feet and ate the food, but escaped without being seen. The tracks of fox and hare were seen still higher, and at about 21,500 feet the explorers came across the tracks of the legendary "snow men" which afforded such fun to so many people. There can be no doubt, Dr. Wollaston thinks, that these tracks were made by a wolf loping along at a good gait; the snow was soft, and the tracks had got partially merged together. The paper ends with a note about the smells of Tibet—some vile and others delightful. It was discussed from various points of view by Sir David Prain, then Director of the Royal Botanic Gardens, Kew; Sir Sidney Harmer, Director of the Natural History Museum; Mr. W. R. Dykes, Secretary of the Royal Horticultural Society; Mr. N. B. Kinnear; and Mr. Freshfield. The President closed the proceedings by thanking Dr. Wollaston for his most interesting address, and congratulating him upon the general good health of the party under his charge.

THE FOUNDER OF THE NEWCASTLE MEDICAL INSTITUTE.

LAST year, during the annual meeting at Newcastle-on-Tyne, Sir Clifford Allbutt opened the Medical Institute given to the profession in the district by Dr. J. W. Smith, of Ryton-on-Tyne, a former President of the North of England Branch of the British Medical Association, as a memorial to his son, Dr. J. Wilkie Smith, a young man of great promise who died some seven years ago. In the course of his remarks on this occasion Sir Clifford Allbutt said that he had felt all his life, especially in younger days, the isolation of medical men, particularly in country districts. Town men also were busy, their hours uncertain, and they too got isolated, with the consequence that misunderstandings arose which could be cleared away if they met each other socially in an institute such as that established by Dr. J. W. Smith. The founder hoped that in addition to the social side the institute would foster scientific interests also, and Sir Clifford Allbutt concluded by observing that it was a great pity that a good deal of knowledge possessed only by general practitioners never got into any books, simply because authors were ignorant of it. Professor David Drummond, who presided at the ceremony, spoke of the great value of such an institute to members of the profession in and about Newcastle. Its advantages have been widely appreciated, and many medical and social meetings have been held there. To mark their gratitude for so generous a gift the members have cordially accepted the suggestion of the committee of the institute that a portrait of Dr. J. W. Smith should be painted and hung within the building. The work has been undertaken by

Mr. Hodgson Campbell of Newcastle. A small fund has been opened, to which members of the institute have subscribed, but the committee think that there are other medical men and women who may wish to express their appreciation of Dr. Smith's effort to further the interests of the profession and promote that state of harmony and goodwill which is so desirable and essential. Donations, from 10s. 6d. to 2 guineas, will be gratefully acknowledged by the honorary secretary, Dr. Stanley Robson, the Medical Institute, 7, Windsor Terrace, Newcastle-on-Tyne.

EXPENDITURE ON ALCOHOL IN HOSPITALS.

A PAINSTAKING analysis of the expenditure on alcohol at two large voluntary hospitals over a period of more than a century was given by Mr. C. J. Bond in his presidential address to the Society for the Study of Inebriety on July 11th. The hospitals in question were the Leicester and Derby Royal Infirmaries, and the period was from 1810 to 1920. In both the histories there were certain more or less coincident periods in which the average yearly expenditure on alcohol for each patient admitted rose to a comparatively high figure or fell to a comparatively low one. In 1810 at Leicester the amount spent on alcohol was £530 for 700 patients and staff, or about 15s. per head. A relatively high expenditure on alcohol continued until 1825 at Derby and 1835 at Leicester; this was the lean and troubled period after the Napoleonic wars. The consumption of alcohol fell between 1830 and 1860, and rose again between 1850 and 1880, and in these twenty years the high-water mark of alcohol consumption, both institutional and national, was reached; the period corresponded to great industrial activity and prosperity. From 1880 to 1900 there was a low consumption of alcohol, due, Mr. Bond believed, to the fact that the years of temperance propaganda were at last bearing fruit. A further sharp decline took place from 1900 down to the time of the war. During the first part of the war, and in the case of Leicester down to the spring of 1918, the consumption of alcohol in the institutions was almost negligible, but both institutions showed a marked post-war reaction, which continued until the trade depression of 1921. This reactionary rise after the war years was almost entirely due to the increased consumption of wines and spirits. It had been argued that the rise could be accounted for by the admission and treatment of a considerable number of soldiers, many of them with severe wounds, but the continuation of the increase at Leicester after the period when soldiers were no longer admitted was not in harmony with this suggestion. Altogether there was a concurrence between institutional and national expenditure on alcohol, making it evident that hospital practice was not yet founded on scientific knowledge as to the action of alcohol on the human organism. It could not be claimed that the hospitals had acted as pioneers in moulding public opinion or influencing national conduct with regard to the use of alcohol, although they did seem to have discountenanced it as a beverage, especially in later years. But the use of alcohol in the treatment of disease by medical officers in hospitals had largely followed national habit and custom. Periods of high national consumption of alcohol coincided generally with periods of high institutional expenditure on alcohol. It must be said, however, that if the voluntary hospitals had not acted as pioneers in temperance reform, they had done salvage work in rescuing the victims of alcoholic excess. He had been at some pains to ascertain the magnitude of the call made on the accommodation and the medical and nursing services at Leicester Royal Infirmary from November, 1910, to April, 1913, by persons who were treated as patients there while under the influence of drink. During this period 243 drunken patients were treated, or an average of about 100 a year, and if this held good for the whole country—and Leicester was a soberer town than most—it meant that 10,000 people were admitted to the hospitals every year as a direct result of intoxication. This, of course, was only part of the levy which the drinking habits of the people exacted from the hospital services. Hospital wards and out-patient departments were largely used by those whose diseases and disabilities were the result of alcoholic indulgence. In conclusion, Mr. Bond expressed the opinion that the time had come for hospital authorities and administrators to speak out plainly on this matter. The public should know the magnitude of the financial burden and the great loss of institutional time, money, and service which occurred in remedying the injury done by ignorant, selfish, and anti-social conduct. It was also necessary that hospitals up and down the country should cease to be swayed by fashion and tradition in the matter of the use of alcohol in the treatment of disease.

THE FOULERTON PROFESSORSHIP AND STUDENTSHIPS.

THE Council of the Royal Society gives notice that it has created the Foulerton Research Professorship, and that the appointment of a professor will be made on the advice of a committee of Fellows called "The Foulerton Research Fund Managing Committee." The stipend will be £1,400 a year, and the duty of the holder of the professorship will be to conduct, in a place approved by the committee, such original researches in medicine or the contributory sciences, on lines approved by the committee, as shall be calculated to promote the discovery of the causes of disease and the relief of human suffering. The appointment will be in the first place for five years, but may be renewed for further periods of not more than five years at a time. The normal retiring age will be 60, but a professor may be continued in exceptional cases for a further specified period. Arrangements are being made for superannuation under the Federated Superannuation System for Universities, and the professor will be required to devote the whole of his time to research. The holder of a paid academic or other scientific appointment may, however, be nominated, provided the committee is satisfied that the duties of such other appointment occupy only a subsidiary portion of the applicant's time and that its retention would not interfere with the discharge of the duties of the professorship as essentially a whole-time research appointment. In such case the committee would recommend a reduction of the stipend, of such amount, however, as shall not reduce the total annual income of the professor from his paid appointment and from the fund below £1,400. The appointment will only be made if candidates of sufficient distinction present themselves. The Royal Society also gives notice that it is prepared to appoint one or more Foulerton research students, the stipend being £700 a year. The duties of a Foulerton research student will be to conduct researches in medicine or the contributory sciences under the supervision and control of the committee, to whom the student will be required to report from time to time on the progress of his work. The studentship will be for three years, but may be renewed from year to year until it has been held for a maximum period of six years from the first award. In recommending a person for appointment as student, the committee will have in view the expressed wish of the donor that awards should be made especially to young workers. The stipend is £700 a year, and a studentship will normally be regarded as a whole-time appointment, but in exceptional cases the holder may be allowed to retain a paid teaching post; in that case the committee may recommend the payment of such stipend as it may think fit. A candidate may be called upon to show that he or she is and that his or her father and paternal grandfather are, or were at the date of their respective deaths, of British nationality. Unless the Council directs to the contrary, arrangements will be made for the superannuation of a Foulerton studentship under the Federated Superannuation System for Universities. Applications for the Professorship or Studentship, for both of which members of either sex will be eligible, must reach the Royal Society not later than October 31st next. Further particulars will be found in our advertising columns, and full particulars can be had on application to the Assistant Secretary of the Royal Society, Burlington House, W.1.

THE ROCKEFELLER FOUNDATION IN 1921.

In his review of the Rockefeller Foundation's work for 1921 Mr. George E. Vincent,[1] the President, sums up its various activities under twenty-one heads, of which the following may be quoted: The formal opening of a complete modern medical school and hospital in Pekin, and assistance to twenty-five other medical centres in China; the provision of 157 fellowships in hygiene, medicine, physics, and chemistry to representatives of eighteen countries; campaigns against malaria, hookworm disease, and yellow fever; the appropriation of 3½ million dollars to rebuild and reorganize the medical school and hospital of the Free University of Brussels; and the supply of experts in medical education and public health for counsel and surveys in many parts of the world. These services were carried out partly by the Foundation directly, but chiefly through its departmental agencies—the China Medical Board, the International Health Board, and the Division of Medical Education. He quotes the aphorism of a successful American health officer, "Cure looks through the microscope, prevention through the telescope"; he anticipates the time when a case of illness will be regarded as a reflection upon the doctor's vigilance, and refers to the four stages in the progress of preventive medicine: first, the control of the physical environment through pure water, milk, and food supplies, and adequate sewage and refuse disposal; then control of diseases due to other factors, such as those of industrial origin; thirdly, personal hygiene; and lastly the dawning phase of economic, social, and mental influences. Mental hygiene is a part of public health, and the National Committee for Mental Hygiene has been liberally financed by the Rockefeller Foundation. An account is given of the School of Hygiene and Public Health at the Johns Hopkins University, which is supported by the Rockefeller Foundation, and supplements the activities of the Harvard school, where such pioneer work in industrial medicine has been carried out. With the support of the Rockefeller Foundation a "pay" clinic at moderate cost was opened by the Cornell University Medical School in New York in November, 1921, a complete diagnostic examination being provided for 10 dollars on cases sent there by medical men. On the day that the clinic opened there were 700 patients, and since then the number has steadily increased. The results in the prevention of yellow fever in South America are most encouraging, but one of the Rockefeller Institute workers, Dr. Howard B. Cross, died of the disease on December 26th, 1921, at Vera Cruz, where the Public Health Laboratory has now been named the Howard B. Cross Laboratory. The full report of the Rockefeller Foundation, including detailed reports of the International Health Board and the China Medical Board, for 1921 will when published later be sent to libraries, and may be obtained on application by other institutions or individuals.

WHITE-LEAD POISONING.

Among industrial diseases lead poisoning is perhaps that to which most persistent attention has been paid not only in recent times but in past ages. Until the end of the last century more attention was paid to the treatment of those affected than to the prevention of the ailment, but after the appointment of medical inspectors on the staff of the Factory Department of the English Home Office investigations were made with a view to the adoption of preventive measures. In 1908 Mr. Herbert (now Lord) Gladstone, who was Home Secretary at the time, appointed a departmental committee to consider the dangers attendant on the use of lead in the manufacture of china and earthenware and to report how far these could be obviated or lessened. A large number of potteries were visited by the committee, who were assisted in their inquiry by the evidence among others of representatives of the manufacturers and of the workpeople. After two years' painstaking investigation a most valuable report was issued, containing recommendations many of which have been adopted, with the best results. At later dates departmental committees have investigated and reported on the danger attendant on the use of paints, lead compounds, etc., and a more recent inquiry into the same question has been held by the New South Wales Board of Trade at the instigation of the Minister for Labour and Industry of that colony, which asked for a report as to whether white lead as used in the painting industry is so injurious to painters and other workmen engaged in the industry as to make it expedient or necessary to regulate, restrict, or prohibit its use in paints or pigments. The report of the Board, which has recently been issued, is an elaborate document of nearly 800 pages: much of this space is given to recording the 10,000 questions addressed to the fifty-two witnesses called before the Board and their replies thereto. Among the witnesses were seven medical practitioners, several Government officials, mining engineers, master painters, and operatives. The conclusion the Board came to was that lead as used in the painting industry—that is, lead principally in the form of a basic carbonate, or white lead—is a substantial cause of injury and death to painters and other workmen engaged in the painting industry, but that immediate prohibition or restriction of the use of white lead is not the appropriate remedy for these evils. There would, in the opinion of the Board, be no more reason for the prohibition of the use of white lead in paints than there would be for the prohibition of lead mining or indirectly for the prohibition of the mining of precious metals that are to be found in geological association with lead bodies. "Lead poisoning being a preventable disease, it would indeed be a desperate situation if the only means of prevention were the abolition of the use of lead." The report refers at some length to the regulations of the Home Office in force in this country, and recommends the adoption of somewhat similar regulations in New South Wales. Special stress is laid on the importance of attention to personal hygiene, of a properly arranged dietary, and the avoidance of intemperance. The part to be played by employers in reducing dust risks and providing efficient ventilation of factories, and installing suitable washing appliances and meal rooms, is emphasized, and proper medical supervision is recommended.

THE R.A.M.C. MEMORIAL.

The ceremony at the unveiling at Westminster Abbey of the memorial tablet to the officers and men of the Royal Army Medical Corps, which included, of course, a large number who were serving with temporary commissions or for the period of the war, was singularly simple, beautiful, and impressive, and few who were present can have been unmoved. The words spoken by the Duke of Connaught, Colonel-in-Chief of the Corps (as reported elsewhere in this issue), in making the gift of money to the Abbey and unveiling the tablet, and of the Dean in acceptance, were few, simple, and well chosen. The service consisted of a few prayers, two well-known hymns, and the singing of the contakion of the faithful departed. The music was exquisitely rendered by the Abbey choir, reinforced by the band of the Welsh Guards. As the term "contakion" is not well known in this country, we may explain that in the sense in which it is here used it is defined in the *New English Dictionary* as a short ode or hymn in praise of a saint which occurs in the offices of the Eastern Church. The invention of the contakion form is traditionally ascribed to St. Romanus, who lived about A.D. 500. The primary meaning of the word appears to be a roll or scroll, and the legend is that the saint was inspired to compose these hymns by the eating of a roll or scroll. But this is merely popular etymology, and it has been suggested that the word is, in fact, a corruption of the Latin *canticum*, a song. The words of the contakion sung on July 13th were as follows: "Give rest, O Christ, to Thy servant with Thy saints, where sorrow and pain are no more, neither sighing, but life everlasting. Thou only art immortal, the Creator and Maker

[1] *The Rockefeller Foundation: A Review for 1921.* By George E. Vincent, President of the Foundation. New York. 1922. (Pamphlet, pp. 59. No price.)

of man: and we are mortal, formed of the earth, and unto earth shall we return: for so Thou didst ordain, when Thou createdst me, saying, Dust thou art, and unto dust shalt thou return. All we go down to the dust; and, weeping o'er the grave, we make our song, Alleluia!"

SPECIAL NUMBER OF THE "GLASGOW MEDICAL JOURNAL."

THE July number of the *Glasgow Medical Journal* contains a number of articles bearing more or less directly on the Annual Meeting of the British Medical Association in that city next week. Of two articles, that by Mr. Mungo Ferguson, on some medical manuscripts and books in the Hunterian Library of the University, and by Mr. Walter Hurst, on some possessions of the Royal Faculty of Physicians and Surgeons, we published a preliminary note last week. The number also contains a paper by Mr. C. R. Gibson, F.R.S.E., on Dr. Charles Morrison of Greenock, who in 1753 published an article entitled "An expeditious method of conveying intelligence." It was, in fact, a method of electric telegraphy devised fifty years before the discovery of the electric current. Morrison's apparatus consisted of twenty-six metal wires, erected between two cottages and insulated from one another by fixing them in blocks of glass at short intervals along the route. At each station the ends of the twenty-six wires were fixed in a piece of solid glass, each wire projecting through the glass to a distance of about six inches; on the end of each was suspended a short vertical wire with a small metal ball at its extremity. Beneath each ball at a distance of about one-eighth of an inch was a letter of the alphabet. With this apparatus Morrison succeeded in spelling out words, and he even went so far as to suggest that the reading might be made by sound if the balls were replaced by bells. Mr. Gibson's account of the early history of electricity is extremely interesting, and he recalls the fact that it was to another doctor—Dr. William Gilbert of Colchester—that the earliest inquiries were due. The number also contains a paper by Dr. G. H. Edington on the "Discovrse" of Maister Peter Lowe, who, as has been mentioned in previous notes in our pages, was the founder in 1599 of the Faculty of Physicians and Surgeons. Dr. Edington gives extracts from Lowe's volume published in 1612 and accompanies them with a number of interesting comments. There are also two reminiscent articles, the one by Dr. Freeland Fergus of Glasgow, who has a good deal to say about "old G.," Professor (afterwards Sir) William Gairdner, President of the Association when it met in Glasgow in 1888; of Sir George Macleod, who on that occasion delivered the Address in Surgery; of Dr. George Buchanan, who was President of the Section of Surgery; of Dr. McKendrick, Professor of Physiology; of Dr. Joseph Coats, Professor of Pathology; of Lord Lister; and of Dr. Finlayson, about whom one uncanny story is told. He would make an unwary student write a prescription and when Finlayson foresaw that the result would be more than ordinarily awful he would have it made up and compel the prescriber to take a dose of his nauseating compilation. The other reminiscent article is by Sir Dawson Williams, Editor of this JOURNAL, who in response to a request to write an article on the "old lions" of the British Medical Association has written some notes on the men who were most active in its counsels during the ten years before and the ten years after its Annual Meeting in Glasgow in 1888.

A VERY attractive *Book of Glasgow* — the work of many hands—has been prepared under the direction of the Printing and Publishing Committee for the benefit of members of the British Medical Association visiting Glasgow during the Annual Meeting. It is a handsome book of more than 250 pages, with many illustrative plates, including as frontispiece a portrait of the President, Sir William Macewen. As the Chairman of the Committee, Dr. William Snodgrass, says in his preface, this is not intended to be in any sense a guide-book to the city and its institutions. The object has been to present a series of impressions of the second city of the Empire, though the university and medical institutions are treated with greater fullness than the word "impressions" might suggest. Next week we hope to discuss in more detail this interesting volume.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Mental Institutions.—Mr. R. Richardson asked, on July 12th, whether the Minister of Health proposed in his new Mental Bill to introduce into England the section of the Scottish Lunacy Act which authorized without certification the compulsory detention of an individual for six months in a mental institution on the word of one doctor without any provision for inquiry or appeal. Sir Alfred Mond said that no such provision was contemplated, nor must he be taken as accepting Mr. Richardson's interpretation of the Scottish Act, the proper construction of which was, he understood, a matter of considerable doubt. In reply to a further question by Mr. Richardson, Sir A. Mond said that on January 1st, the latest date for which figures were available, there were 127 voluntary boarders in licensed houses and 165 in registered hospitals in England and Wales. One hundred and sixty-nine voluntary boarders were certified during 1921, and 421 left of their own accord. The period of residence varied from a few days to several years, and the average was probably under six months. He had not the Scottish figures.

Health and Unemployment Insurance.—In answer to Mr. T. Thomson, on July 12th, Sir John Baird stated that out of every 20s. of the total amount received from all sources into the National Health Insurance Fund it was estimated that 12s. 2½d. went in benefit, 5s. 1½d. to reserve, and 2s. 8d. on administration. The corresponding figures for the unemployment fund were 17s. 10d. in benefit and 2s. 2d. in administration, including the cost of dealing with insured workpeople at unemployment exchanges. The amount estimated to be paid out in unemployment benefit during the current financial year was substantially greater than the total contribution, the balance being met by borrowing.

Finance Bill Amendments.—The Chancellor of the Exchequer, on July 12th, secured the addition of several new clauses to the Finance Bill on the report stage. One of these referred to the entertainments duty. Down to the present the amount of allowance conceded for expenses under the entertainments duty in respect of an exhibition for charity purposes has been 20 per cent. The Chancellor agreed to increase the limit from 20 to 30 per cent. of the receipts, as the smaller figure was not sufficient to encourage such exhibitions being given. Mr. Myers urged that where it could be established that all the net proceeds would go to a charitable object the Chancellor of the Exchequer should keep his hands off the entertainment receipts; to ensure the success of these events artists ought to be engaged. Sir Robert Horne replied that such a concession would leave a large loophole for abuse. People would be willing to give entertainments ostensibly for a charitable object, but from which in the end nothing appreciable would go to charity because everything was taken up by expenses. Another new clause was to the effect that allowances granted by the Minister of Pensions under a Royal Warrant order or order administered by him to widows of members of the naval, military, or air forces of the Crown in respect of their children should not be reckoned in computed income of such widows for income tax. On Clause 36, on July 13th, Sir Robert Horne moved an addition to exempt from Corporation Profits Tax "the profits of a company which is established solely for the advancement of religion or education, and which, under its memorandum or articles of association, is prohibited from distributing any part of its profits to its members." He said that the question had been raised by Mr. Rawlinson, member for Cambridge University, who had presented very cogent reasons. An instance had been given in which an educational organization had borrowed money and set up an institution, and was then compelled to borrow to pay the Corporation Profits Tax, although the institution was being run at a loss. The addition was agreed to. Sir Robert Horne promised to consider, before next Budget, the position of associations incorporated by Royal Charter.

Brief Notes.

Sir Alfred Mond, in reply to Mr. Betterton on July 18th, said he hoped to introduce the Smoke Abatement Bill at an early date.

Sir Alfred Mond has stated that the Ministry of Health is about to issue a memorandum on the Schick method of prophylaxis of diphtheria, containing information as to the proper use of the test. A description of this method, founded on a report made to the Ministry by Dr. S. Monckton Copeman, F.R.S., and Sir G. S. Buchanan, C.B., was published in our columns of December 10th, 1921 (p. 994).

THE Congress of French Alienists and Neurologists will be held at Quimper in the first week of August, when the following subjects will be discussed: (1) Mental disturbances in epidemic encephalitis, introduced by Truelle and Petit; (2) lesions of the central nervous system in motor agitation and in rigidity, introduced by Anglade; (3) welfare of the insane, introduced by Courbon.

THIRD INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

THIS Congress was opened at the Royal Society of Medicine on Monday morning, July 17th, by the Earl of ONSLOW, Parliamentary Secretary of the Ministry of Health. He was supported on the platform by Sir Humphry Rolleston, P.R.C.P., Sir Anthony Bowlby, P.R.C.S., the Master of the Society of Apothecaries, Major-General Sir F. Smith, Dr. Tricot-Royer (President of the International Society of the History of Medicine), Sir D'Arcy Power (Vice-President of Honour of the Congress), Dr. Charles Singer (President), Sir Arthur Keith, Dr. J. D. Rolleston (General Secretary), Mr. W. G. Spencer, F.R.C.S. (Treasurer), and others. There was an excellent attendance of members and friends.

Lord Onslow's Address.

Lord ONSLOW, after declaring the Congress open, gave an interesting address, the first part of which he delivered in French. He first apologized on behalf of the Minister of Health for his absence that morning. It was a great disappointment to Sir Alfred Mond that urgent public duties prevented him from being able to welcome the members in person. On the part of the Government, of the Minister of Health, and his colleagues at the Ministry he offered a most cordial welcome to the visitors from abroad and wished the greatest success for the Congress. That this was the third meeting of the kind which had been held was in itself a proof that the subject of the history of medicine was becoming more highly appreciated and understood. Previous meetings had been held in Paris and in Antwerp, and he hoped this would not be the last meeting on English soil. The whole subject of the history of medicine was being more highly appreciated—and this was of the greatest importance, for in all branches of human knowledge and experience, in politics and administration, no less than in science, the future could not be guided without both the knowledge and understanding of the past.

Lord Onslow then briefly reviewed the stages in the history of medicine from the time of Hippocrates and of Greek medicine in Rome, through the Middle Ages, when medicine was mainly the province of Orientals, up to the revival of learning in Western Europe after the fall of Constantinople. Here in England, he said, Thomas Linacre might perhaps be counted as the earliest of our great physicians and the founder of modern medicine in this country. Less than a century after his death came the discovery of the circulation of the blood by William Harvey, who laid the foundation of all modern physiology. Thirty years later Thomas Sydenham set out the great principles of observation of disease. In the eighteenth century John Hunter did for pathology what William Harvey had done for physiology; and in the nineteenth century three great steps in medicine were taken by men whose names were household words—Edward Jenner, James Young, and Joseph Lister. There were no greater events in the history of medicine since the age of antiquity than these three discoveries—vaccination, chloroform anaesthesia, and the antiseptic system.

Lord Onslow said in conclusion:

"This interpretation of the history of medicine, which gives a knowledge of its progress in the application of the laws of nature to the treatment of disease, is one of the most fruitful aspects that can be borne in mind. There is one other brilliant chapter of English medicine to which I may briefly refer, and that is the knowledge and application of the principles of preventive medicine. We have now had nearly a century of experience of the application of preventive medicine to the health of communities in this country. We have still much progress to make, but, speaking generally, the science of public health is as advanced in England as in any other country of the world, and future centuries will look back upon this time as a time of progress, when the history of medicine was widened to comprehend the large and urgent questions of sanitation, of the control of the food and water supply, the stamping out of epidemics, of the protection of maternity, of infant and child welfare, and of the establishment of a sanitary cordon and of international co-operation in questions of health. It is an honour as well as a pleasure to open this Congress and to wish for it the greatest possible success. It is hoped that it will stimulate the study of this question, that it will inspire research and investigation, and that it will add to the general culture and learning of the profession of medicine. Then there is another aspect or interpretation to the history of medicine—namely, the history of our knowledge of particular diseases and pestilences, a subject which has been worked at in this country in modern times by Dr. Charles Creighton, whose famous book on the *History of Epidemics in Britain* has for many years been a classic. We might well study the history of leprosy, of plague, of sweating sickness, of small-pox, and even of influenza, and from such a study we derive a knowledge of how these diseases have been dealt with in the past, which is full of interest and importance in regard to their control in the present. Much has been done in this regard, and we now know a good deal about the prevalence of leprosy and plague in past centuries. The foundations of old lazar houses and plague hospitals and plague pits are still to be found in all parts of these islands, and the records made by past observers of these scourges bring valuable information to the hands of the administrator. We recognize most gladly the splendid work which has been done abroad in this direction, but we are justly proud of our own history. For we have had in England not only famous historians of medicine such as Dr. Freind, the famous Richard Mead, Dr. Wilan, Dr. Greenhill, and Dr. Adams, but we have to-day happily still with us Sir Clifford Allbutt, the venerable Professor of Physic at Cambridge, and Sir Norman Moore, the historian of St. Bartholomew's Hospital, the President of Honour of our Congress. It is but yesterday that we had in our midst Sir William Osler, the brilliant Professor of Medicine at Oxford, whose work as historian of medicine and as the inspirer of the study of the history of medicine stands in the very front rank. With the medical profession in all countries we mourn the loss we have sustained in his death."

Lord Onslow then received and shook hands with each of the official delegates, who were present from the following countries: Belgium, Denmark, Egypt, France, Greece, Italy, the Netherlands, Portugal, Rumania, Spain, Switzerland, and the United States.

Presidential Address.

Dr. SINGER, President of the Congress, then took the chair, and welcomed the members to what he believed to be the first attempt at an international reunion of doctors in England since the great war. It was in the fitness of things that history should be the first branch of the science to bring men together again, and that Belgium, being on the borders of so many different linguistic regions, should be the first place of reunion. Those who assisted at such a Congress believed that the history of medicine was not only a subject worthy to distract them and amuse them, but a discipline full of humanity and philosophy, covering more than half of the field of studies known under the name of history of science. We were supposed to belong to the era of evolution, and science, amongst all the subjects which man interested himself in, was changing most rapidly. The thoughts of our century were separated from those of the past by the fertilizing doctrine of evolution. This doctrine was one way of presenting the truth, and at least it had contributed to stimulate the historian's studies in biologistic research. The history of medicine gave to the medical man in practising his profession or in carrying out his scientific researches the only footing to withstand the cynicism of this period of his life, when the ardour of youth had disappeared without being replaced by the mellowness of age. With this support the doctor could find joy in his work and pride in his profession. In England the foremost writers of the history of medicine had been men who gave the time they could spare from the exercise of their profession. The President of Honour, Sir Norman Moore, and Sir Clifford Allbutt were the two pioneers and veterans in England of the history of medicine. The Vice-President of Honour, Sir D'Arcy Power, and the Treasurer, Mr. Walter Spencer, by their skill, their knowledge, and their kindness had acquired the affection and respect of all doctors whose mother tongue was English; and with them he would associate the name of Dr. Raymond Crawfurd. In conclusion, Dr. Singer expressed gratitude to his indefatigable colleagues, Dr. J. D. Rolleston and Mr. C. J. S. Thompson.

National Delegates' Reply.

Dr. LAIGNEL-LAVASTINE, delegate from France, on behalf of the other national delegates, said, in reply: "To greet the British Government and doctors is for me an honour and pleasure; it is an honour to represent before one of the most powerful social organizations in the history of the world our society, born but yesterday, and the joy of saying aloud all the good things I think of my colleagues to myself. In the

name of all the delegates, present and absent, I address our heartfelt thanks to our present hosts, and express to them our pleasure in being here."

Sir D'ARCY POWER, in the name of the British section of the Society of the History of Medicine, offered a cordial welcome to all the members. England considered it a great honour that she should have been chosen for the third meeting, and he felt sure that this was a sign of the increasing interest in the history of medicine in this country. He hoped all the members would carry away with them recollections of a very pleasant meeting.

Dr. TRICOT-ROYER responded, saying he felt assured that the present Congress would be crowned with success. The increasing interest in the subject was noticeable in both the Antwerp and Paris meetings, but here there was the perfect discipline and organization to bring it to perfection. The next meeting of the society should be held at Brussels next year, when His Majesty the King of the Belgians would be pleased to take it under his patronage. Amongst the subjects for discussion would be Oriental, Greco-Roman, Byzantine, and Middle Age healing arts, and medical science during the war.

Reception at the College of Physicians.

In the afternoon a reception was held at the Royal College of Physicians of London. The President, Sir HUMPHRY ROLLESTON, in cordially welcoming the members of the Congress, conveyed to them the gracious message from Sir Norman Moore, "an entire lover of the College," whose great work in promoting the study of medical history in this country had been appropriately recognized in his position as President of Honour of the Congress. In 1518, when Thomas Linacre, perhaps the most learned man of his time, obtained a Royal Charter from Henry VIII, medicine was scarcely better than a mechanical art, and there was no society in this country, save the religious foundations and universities, solely devoted to the pursuit of knowledge. Anxious to raise the standard of the medical profession, Linacre founded the College on the lines of the Italian universities of Bologna and Padua, and the early Fellows of the College were first learned men and then physicians. From 1518 to 1614 the College occupied Linacre's house in Knight Rider Street, and John Caius, the founder of the science of anatomy in England, did much for the organization of the College. The next period (1614–66) at Amen Corner was noticeable for Harvey's Lumleian lectures, in which his discovery of the circulation was made public, and for the issue of the first pharmacopoeia of London in 1617. Sydenham and Thomas Browne were connected with the College; their fame reflected credit thereon. The fire of London destroyed the College, Harvey's museum, and most of the library in 1666, and for the next 150 years the College was lodged in Warwick Lane, in a building designed by Sir Christopher Wren, the dome of which was described by Garth as:

> "A golden globe placed high with awful skill,
> Seems to the distant sight a gilded pill."

Among the famous Fellows during this period were Sir Hans Sloane, President of the Royal Society, whose collections formed the nucleus of the British Museum; Richard Mead, the patron of arts and literature; Arbuthnot, who invented the character of John Bull; Garth, the author of *The Dispensary;* Matthew Baillie, who wrote the first book wholly devoted to morbid anatomy; Freind, the historian; Heberden, of the *Commentaries;* and Thomas Young, of the undulatory theory of light. In 1825 the College moved under the auspices of Sir Henry Halford to its present site, and since then the great names connected with the College included those of Bright, Addison, Thomas Watson, and William Jenner. The President then called on Dr. Chaplin to describe the library.

An interesting display of rare books, silver, plate, prints, and other objects was set out in the Library and Censors' Room, and the Harveian Librarian, Dr. ARNOLD CHAPLIN, in his brief but most interesting survey of the history of the Library, indicated some of its treasures. The members of the Congress were afterwards entertained to tea by Sir D'Arcy and Lady Power at their house in Chandos Street, Cavendish Square.

Prehistoric Human Skulls and the Evolution of Man.

At the largely attended conversazione given by the President and Mrs. Singer to the members of the Congress on the evening of July 17th, Professor G. Elliot Smith, F.R.S., gave an address on recent discoveries of fossil human remains and their significance in the evolution of man.

Professor ELLIOT SMITH said that the knowledge of extinct species of the human family was comparatively recent. Until 1848 no remains of any human being who did not belong to *Homo sapiens* had been discovered. In that year, while some work was proceeding on the defences of Gibraltar, an officer of the Royal Engineers unearthed the first human skull which did not belong to that order. The enormous importance of the discovery was not at first realized, and in the meantime, in the Neanderthal valley in Germany, another skull was found of similar characteristics, so that the name *Homo neanderthalensis* became attached to the Gibraltar specimen also. A few months ago there came to light in Rhodesia an extraordinary skull, so different from the other types that a new species, *Homo rhodesiensis*, had to be created to receive it. In most respects it was very much more primitive than the Neanderthal type, though the individual specimen suggested that it was more recent in date. But the most remarkable relic of ancient types of man was the Piltdown skull, recovered in Sussex about ten years ago, which threw a clearer light upon the early history of the human family than any other known fossil remains. A new genus of the human family, called *Eoanthropus*, or the "dawn man," was created on the basis of the Piltdown skull; it was more primitive than anything hitherto discovered, except the *Pithecanthropus* or "ape-man" of Java.

The Gibraltar specimen was much flatter than the skull of modern man, the eye sockets much larger, and the nose merged into the face without any distinct line of separation. The Rhodesian skull at first sight presented a striking resemblance to the Gibraltar specimen; the eyebrow ridges were enormous, much larger than in the most primitive type of living man—the Australian aboriginal—and the curve of the nostril resembled that of the gorilla. From the photographs which arrived in this country before the skull itself it appeared to be very like the *Pithecanthropus*, but an examination of the actual skull showed it to be much more modern than the Javan specimen. The Heidelberg jaw, discovered in 1907, which presented a close approximation to the ape, but had typical human teeth not much bigger than those of modern man, was 3 mm. too short and about the same distance too narrow to fit the Rhodesian skull, which therefore corresponded to a face of quite phenomenal proportions. There had been a good deal of discussion in the medical journals as to the meaning of two holes found in the Rhodesian skull, and it was suggested that the individual had suffered from mastoid disease. It was, however, impossible to attribute these holes to any such pathological condition. He had examined fifteen or twenty skulls of Egyptians of the pre-dynastic period—at least sixty centuries old—who suffered and died as a result of mastoid disease, and the lines of inflammation running along between the muscular planes marked out distinctly the way in which the disease had spread. In the Rhodesian skull there was no trace of any such inflammatory reaction. The holes were more consistent with the theory of the gnawing of beetles. The teeth of the Rhodesian man were affected by true caries, precisely of the modern type, whereas in pre-dynastic skulls from Egypt caries was practically unknown. The lecturer added some other details of the Rhodesian skull which he gave in a former lecture on a similar occasion (BRITISH MEDICAL JOURNAL, February 4th, 1922, p. 197).

The relative position of these different species and genera in the human family was next considered. The most primitive was represented by the Javan skull, above which stage the genus *Homo* separated, and three specimens of this genus were now known, including *Homo sapiens*, to which all the living members of the human family belonged. A great deal of controversy had taken place with regard to the Piltdown remains, and all foreign anthropologists appeared to assume that the Piltdown jaw was simian. Apart from the inherent unlikelihood that the jaw of a hitherto unknown type of chimpanzee should have been found within the same yard of earth as the skull, minus the jaw, of a hitherto unknown type of human being, an independent reconstruction of the skull, which had been made recently in his own department at University College by Professor Hunter of Sydney, proved that the skull harmonized perfectly well with the jaw. The skull presented a form absolutely unknown in any other member of the human family; although it had contained a brain of definitely human capacity yet it reproduced the form of an anthropoid ape, but the skull and jaw had now been harmonized, and there was no doubt whatever that the Piltdown fragments belonged, not to different creatures, but to one individual, the most primitive human with the exception of the *Pithecanthropus* of Java.

An *x*-ray photograph of the Piltdown jaw showed that the teeth were not typical of the chimpanzee, the pulp cavities were very large, and the walls comparatively thin, whereas in the chimpanzee the pulp cavities were smaller and the teeth much thicker.

The great interest of these fossil remains was that they enabled moulds of the interior of the skull to be made whereby the proportions of the different parts of the brain could be studied. Since the time of Charles Darwin, who himself made no such mistake, everyone who had discussed human evolution had overlooked the organ which was distinctive of the human family, for if there was one thing characteristic of the human being it was his intellectual powers. A study of the endocranial cast of the *Pithecanthropus* showed that the front part of the brain looked as though it had been crumpled or hindered in its growth. The same was true of the Rhodesian skull. All these skulls showed a deficiency of the high-domed forehead which characterized modern man. With the development of the human family there was a gradual expansion of the brain. The peculiarities of the human brain represented simply the culmination of a series of processes which began in the Eocene period. The apes and other creatures were not so much phases in the development of man's condition as specialized members of the order *Primates*, which had fallen out of the race and had adopted some specialization of habit and structure to save them from extinction. Man represented that particular group of animals which had not taken refuge in these specializations, but retained all the plasticity and the generalized structure which made it possible for him to take advantage of the opportunity to serve higher purposes when his brain had grown to a sufficient stage.

The lecturer sketched the rise of a particular group of arboreal animals, among whom the most primitive sense of smell first became less important and dominating, while that of sight came to be cultivated. The cultivation of vision led also to the cultivation of the powers of touch and of the motor region. Animals which began to trust to vision received an enormous stimulus to the growth of the cerebral cortex. With the vision becoming convergent the creature was able to guide its paws or hands in the performance of skilled movements; the auditory region also was enhanced in importance, and more significant still was the development of that part of the brain injury to which in the modern brain produced certain definite disturbances of speech. One of the distinctive powers which marked the transformation from the ape to the human being was that of communication by something more than merely emotional cries. The brain of the gorilla as compared with the human brain was singularly deficient in the pre-frontal region, the parietal region, and the temporal area. The expansion which converted the brain of the ape into the brain of the human centred chiefly in these three regions. It was also worthy of note that the part of the brain which developed latest in the human child was the part which was least well developed in the primitive members of the human family. He referred in this connexion to the recent work of Dr. Henry Head on the subject of aphasia and speech disturbances which threw an instructive light on these deficiencies. It suggested that in the Rhodesian brain the power of connected thought and speech had been acquired to some extent, much less so in the case of the Piltdown man and the *Pithecanthropus*.

The last type of development was the expansion of the pre-frontal region, which presumably indicated mental concentration, and the development of the upper part of the brain, which indicated an increased appreciation of the texture and form of objects, probably associated with the skilled movements of the hands. During the last fifty years it had been frequently discussed whether the assumption of the erect attitude and the freeing of the hands might not have been the responsible factor in bringing about the development of man. But the erect attitude had not been assumed in the most primitive members of the human family. Man became erect only after he became a human being. It was one of the results of the new powers associated with the growing brain. The lecturer concluded with a diagram showing the inclination of the medulla oblongata in the subcerebral plane, which was least acute in the gorilla, more so in the *Eoanthropus*, still more in *Homo rhodesiensis*, and at almost the same inclination in *Homo neanderthalensis*, and most acute in *Homo sapiens*. This showed in another way that the assumption of the erect attitude occurred within the human family itself, after members of definitely human rank had come into existence.

The lecture was illustrated by a series of transverse sections of endocranial casts to show the initial broadening of the primitive human brain and the lateness of the acquisition of the high-domed forehead; also a series of left halves of endocranial casts to demonstrate the process of expansion of the human brain in its phylogeny. This process was shown to include localized expansion of the posterior temporal area, growth of the inferior parietal area, beginning of superior parietal growth, progressive expansion of pre-frontal area, and sudden expansion of inferior temporal area.

On the motion of Dr. SINGER, Professor Elliot Smith was warmly thanked for a lecture which kept the attention of the large audience until within an hour of midnight.

OXFORD OPHTHALMOLOGICAL CONGRESS.

THE thirteenth annual meeting of the Oxford Ophthalmological Congress was held at Oxford on July 6th, 7th, and 8th. As in past years, the proceedings took place in the Department of Human Anatomy of the University Museum, kindly lent for the purpose by Professor Arthur Thomson, Professor of Human Anatomy, whilst Keble College was again available as headquarters through the courtesy of its Warden, the Rev. B. J. Kidd, D.D.

The meeting opened at 10.15 a.m. on Thursday, July 6th, with the Deputy Master, Mr. P. H. ADAMS of Oxford, in the chair. In declaring the Congress open Mr. Adams voiced the feelings of all present in expressing deep regret at the absence of the Master, Mr. Sydney Stephenson.

A discussion on "The significance of retinal haemorrhages" was opened by Dr. C. O. HAWTHORNE (London) from the point of view of the physician, and by Mr. P. H. ADAMS from that of the ophthalmologist. The two papers were followed with much interest and the subject was discussed by the following: Mr. ERNEST CLARKE (London), Dr. T. HARRISON BUTLER (Leamington Spa), Dr. LUNDSGAARD (Copenhagen), Mr. R. FOSTER MOORE (London), Dr. A. G. GIBSON (Oxford), Mr. N. C. RIDLEY (Leicester), Mr. J. JAMESON EVANS (Birmingham), Mr. D. LEIGHTON DAVIES (Cardiff), Miss MARION GILCHRIST (Glasgow), Dr. STOBIE (Oxford), Mr. MATHESON MACKAY (Hull), Dr. THOMSON HENDERSON (Nottingham), Mr. JOHN HERN (Darlington), Mr. B. CRIDLAND (Wolverhampton), Mr. TRAQUAIR (Edinburgh), and Mr. J. GRAY CLEGG (Manchester).

At the conclusion of the discussion the Annual General Meeting was held, when a resolution of regret at the absence of the Master was unanimously passed. The HONORARY SECRETARY reported that the finances of the Congress were in a satisfactory state, and it had therefore been decided by the Council to make a second donation of ten guineas to the Illustration Fund of the Ophthalmological Society of the United Kingdom; that twenty-six new members had been elected during the year; and that as the extension of the meeting to Saturday had proved so successful last year it had been repeated at the present meeting.

After lunch Mr. C. G. RUSS WOOD (Shrewsbury) read a paper on the comparative value of artificial illuminants embodying some valuable original work by him on the subject, and Mr. T. STEWART BARRIE (Glasgow) in a paper entitled "The spontaneous cure of strabismus convergens" drew attention to the diminution and not infrequently the disappearance of squint in children as shown by statistics obtained in school clinics between the ages of 5 and 14. Discussion followed both papers. The afternoon session concluded with a contribution by Mr. J. GRAY CLEGG (Manchester) in which he gave his impressions of an International Congress of Ophthalmology held in Washington, D.C., U.S.A., in April last, together with interesting experiences of various clinical centres in the United States and Canada.

On Friday morning the Doyne Memorial Lecture was delivered by Dr. J. Burdon-Cooper of Bath, the subject being "The etiology of cataract." After a fitting tribute to the late Robert W. Doyne, founder of the Congress, Dr. BURDON-COOPER reviewed the work already published by various authors on the subject, and then described his own research in this field, upon which he has been engaged since 1906. The lecturer was congratulated upon a valuable contribution to the investigation of the causes of cataract in its various forms, and the opinion was expressed that the address should be read with profit and interest by all ophthalmologists. At its conclusion Dr. Burdon-Cooper received the Doyne Memorial Medal of the year. Mr. A. L. WHITEHEAD (Lees's) described some cases of eclipse amblyopia and their after-history; Mr. A. L. MACCALLAN, C.B.E. (Cairo), referred to the

occurrence of trachoma of the lacrymal sac, and a paper on the dry sterilization of instruments by Dr. C. F. BENTZEN (Copenhagen) concluded the morning session.

After lunch members assembled at the Oxford Eye Hospital, where Sir ANDERSON CRITCHETT opened a discussion on methods of operating for cataract. In an extremely interesting address he reviewed the operations of the past. Referring to the various procedures in vogue at the present time, he urged eclecticism in operating as being of the first importance; he had advised this as early as 1883 in a paper published in the BRITISH MEDICAL JOURNAL, and his subsequent experience up to the present time strongly confirmed this view.

Dr. LUNDSGAARD (Copenhagen) described a subconjunctival method of extracting cataract which he had found of good service in a number of cases. Lieut.-Colonel H. SMITH, C.I.E., I.M.S., late of Amritsar, spoke on the intracapsular operation as performed by Dr. Barraquer of Barcelona, and discussed the subject in general. Dr. T. HARRISON BUTLER (Leamington Spa), Mr. C. KILLICK (Bradford), and Mr. B. CRIDLAND (Wolverhampton) referred to the value of cutting a bridge of conjunctiva in making the section, and gave their experience of cases. The subject was further discussed by Mr. E. E. MADDOX (Bournemouth), Mr. JOHNSON TAYLOR (Norwich), and Mr. A. H. H. SINCLAIR (Edinburgh).

On Saturday morning papers were read by Mr. J. GRAY CLEGG (Manchester) on bilateral symmetrical congenital korectopia and melanosis of the eye, skin, and palate; by Mr. A. S. PERCIVAL (Newcastle-on-Tyne) on (1) a note on light sense, (2) a neglected factor in the etiology of coal-miners' nystagmus; by Dr. T. HARRISON BUTLER on "Changes in refraction," a contribution which met with free discussion; and by Mr. A. GREENE (Norwich), who described (1) a useful point in squint operations and (2) a case of foreign body in the lens.

In the Scientific Museum Mr. J. H. TOMLINSON (London) exhibited a transillumination lamp with a rheostat to run from the main, and some interesting pathological specimens were shown by Mr. R. J. COULTER (Newport), Mr. N. PIKE (Cheltenham), and Mr. B. CRIDLAND. In the Commercial Museum a large collection of ophthalmic apparatus and instruments was on view. On Thursday afternoon at the close of the session a garden party was held at New College, where members and their friends were received by Professor Turner and the Hon. Mrs. E. F. Matheson. The annual dinner took place in the evening in the Hall of Keble College.

The meeting was highly successful and well attended, and amongst members from overseas were Dr. Lundsgaard (Copenhagen), Professor Fritz Ask (Lund, Sweden), Dr. C. F. Bentzen (Copenhagen), Dr. Saunte (Odense, Denmark).

England and Wales.

UNIVERSITY OF LIVERPOOL.

AT the recent graduation ceremony the degree M.Ch. was conferred on Mr. Thomas H. Bickerton, lecturer in ophthalmology. Mr. Bickerton two years ago retired from the post of ophthalmic surgeon to the Royal Infirmary, and was appointed honorary consulting surgeon. His services of many years' duration to the hospital were signally recognized by the conferment of the honour of President of the Royal Infirmary at its last annual meeting. Mr. C. Thurstan Holland, lecturer in radiology and medical officer in charge of the electrical and orthopaedic department, Royal Infirmary, also received the M.Ch. degree.

MEDICAL AND SURGICAL TEACHING AT LEEDS.

As indicated in recent articles by our Leeds correspondent, an important step has been taken by the University of Leeds with the object of assisting in the further development of the clinical teaching of medicine and surgery. Three new full-time officers have been appointed—one as medical tutor and registrar and two as clinical assistants in surgery. These officers will devote their whole time to teaching and research in the School of Medicine and in the General Infirmary at Leeds. The Council has made the following appointments to the new posts thus created: Dr. W. MacAdam has been appointed medical tutor and registrar; since July, 1919, he has held the appointments of lecturer in pathology at the University of Leeds and assistant pathologist to the Leeds General Infirmary. He has made a number of contributions to medical literature. Mr. H. W. Symonds has been appointed clinical assistant in surgery; he was made resident surgical officer at the General Infirmary in March, 1919, and part-time demonstrator in anatomy at the Leeds Medical School in January, 1921. He holds appointment at present as surgical specialist to the Ministry of Pensions, and has a commission as major in the Second Northern Casualty Clearing Station. Mr. P. J. Moir has been appointed clinical assistant in surgery; since 1920 has acted as house-surgeon, resident casualty officer, and resident surgical officer at the Leeds General Infirmary.

TUBERCULOSIS ADMINISTRATION.

Circular 304 (England), addressed by the Minister of Health to tuberculosis authorities, deals with the procedure for securing adequate diagnosis in doubtful cases of tuberculosis, the Ministry of Pensions system of Medical Record cards, the length of stay in residential institutions of ex-service cases of tuberculosis (under Memorandum 30 T), and leave of absence from residential institutions in such cases. Under the first head two cases are dealt with, that of the pensioner who is due for re-board in which the diagnosis is considered doubtful by the Ministry of Pensions Commissioner of Medical Services or by the Medical Board, and that of the ex-service man claiming under Article 9 of the Royal Warrant to be suffering from tuberculosis attributable to or aggravated by war service. In both cases the area D.C.M.S. will request the tuberculosis officer to furnish a report on form M.P.M.S.O.122, unless a report has already been furnished on form T.S.15A under Memorandum 30 T. A fee of 5s. is payable for each report on the new form. In the case of form T.S.15A the fee is only payable where attributability to or aggravation from service is finally established. Cases in which the Medical Board considers the evidence for or against the presence of tuberculosis inconclusive are to be referred to an expert officer of the Ministry for a decision. Five such experts have been appointed under the title Deputy Commissioner of Medical Services, Tuberculosis. These officers will be responsible for securing observation of doubtful cases in hospitals under the control of the Ministry of Pensions. In such cases the D.C.M.S.(T.B.) will notify the tuberculosis officer concerned and secure his co-operation in examination and diagnosis and decision as to attributability. Close liaison between the D.C.M.S.(T.B.) and the tuberculosis officers in his region is desired. In connexion with the length of stay of ex-service cases in residential institutions provision is made for the exercise by the D.C.M.S.(T.B.) of the right of the Minister of Pensions to call upon tuberculosis officers for special reports upon patients continuously resident in such institutions for six months or longer. No fee is payable for these reports.

The names and addresses of the D.C.M.S.(T.B.) and the areas for which they act are as follows:

Dr. D. G. M. MUNRO, 55, Lionel Street, Birmingham. Derbyshire, Herefordshire, Leicestershire, Lincolnshire, Northamptonshire, Nottinghamshire, Rutlandshire, Shropshire, Staffordshire, Warwickshire, Worcestershire.

Dr. G. B. PRICE, Burton Court, Chelsea, S.W.3. London, Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Essex, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Oxfordshire, Southampton, Suffolk, Surrey, Sussex.

Dr. W. L. LYALL, 122, George Street, Edinburgh. Cumberland, Durham, Northumberland.

Dr. F. WEBB, 76, Newton Street, Manchester. Cheshire, Lancashire, Westmorland, Yorkshire.

Dr. HALLIDAY SUTHERLAND, Clifton Down Buildings, Bristol. Cornwall, Devonshire, Dorsetshire, Gloucestershire, Somersetshire, Wiltshire.

OPENING OF DURHAM COUNTY CONVALESCENT HOME.

On July 1st Durham county celebrated the opening of the E. F. Peile Convalescent Home for nursing mothers and children under the age of 5 within its area. As the name implies, the house was a gift to the Maternity and Child Welfare Committee by the late Mrs. and Miss Fanny and Miss Helen Peile of Greenwood, Shotley Bridge. It was a great disappointment to all their friends that two of the donors were not spared to see the home opened, but their generosity and interest in the mothers and babies have now a permanent testimony. Dr. Ethel Williams, for Miss Helen Peile, declared the home open, and gave a most interesting address. Councillor Hedley Mason, chairman of the Maternity and Child Welfare Committee, presided, and warmly thanked all who had helped to forward the opening of the home.

Other speakers were Dr. T. Eustace Hill, county medical officer, and Dr. Mabel Brodie.

The home is situated in the middle of Shotley Bridge village. Only mothers actually nursing babies (not over six months old) are admitted. This is to help those finding difficulty in breast feeding or those recovering from illness following confinement. Children suffering from rickets and similar debilitating diseases, who are not hospital cases, will be admitted, provided they can be certified free from infection and non-verminous, for a period of not less than a fortnight. The maintenance fee has been fixed at 25s. for nursing mothers and 15s. a week for children without their mothers. The staff consists of matron, staff sister, two nursery trained nurses, and as the home is intended to be a training centre for nursery nurses three pupils will be taken. If later on it is thought practicable this number will be increased, and the domestic staff of three correspondingly reduced. The aim is to give at least six months' training to suitable girls over the age of 17, who wish to become children's nurses. They will be taught the general care of children, nursery routine, including all cooking and sewing necessary, the care of the nursing and the expectant mother, the management of breast feeding, etc., and the general principles of kindergarten and elementary child welfare work. It is intended that mothers in residence will also get a training in mothercraft. The senior welfare medical officer has been appointed visiting medical officer, while the medical officer of the Richard Murray Hospital is the medical officer to the home.

There is ample playing space in the grounds for children and shady corners in which the mothers can rest; the kitchen garden is a great asset. On the ground floor are the day nursery and mothers' rest room. Three night nurseries, to which the children will be apportioned according to age, together with the mothers' and the staff bedrooms, are on the first floor. A ward kitchen has been provided by utilizing part of the first floor landing, and isolation accommodation has been arranged in a cottage adjacent to and communicating with the rear of the main building. The whole building has been furnished as inexpensively as was consistent with the needs and comfort of the patients. Patients are being admitted mainly through the welfare centres, where the medical officers, aided by the health visitors, who have an intimate knowledge of their home conditions, can judge of the suitability of the applications.

Ireland.

IRISH MEDICAL SERVICES.

AT a recent meeting of the National Association of Insurance Committees a deputation was appointed to wait upon the Ministry of Health with regard to the unsatisfactory position of the Irish medical services. It was suggested that the housing scheme should not be segregated from any scheme for the treatment and prevention of tuberculosis, especially in rural areas. It was stated that a resolution was recently passed by the Cork Committee urging the Minister of Health that tuberculosis should be notifiable, as an infectious and contagious disease, by all members of the medical profession. It must, however, be borne in mind there has not been so far a Minister of Health appointed in either of the Irish Parliaments. In the northern Parliament a great deal of medical administration is done by the Minister for Labour, and in southern Ireland medical administration is, as heretofore, administered through the Local Government Department. Recommendations were made that in any tuberculosis scheme provision should be made for the detection of the disease in school-going children, and that affected children should be sent to an institution where they could be treated and educated at the same time. Another recommendation made was that schools should be provided with a room where children, who might get wet when going to school, could make a change of garment in order not to stand in wet clothes all day.

A memorandum was submitted by the County Dublin Committee for the consideration of the Association. The document contained the following recommendations, which it will be seen are much on the lines of the Report of the Irish Public Health Council:

(1) A medical service paid by the State.
(2) Central administration to be temporarily administered by the Local Government Board.
(3) A health council composed of representatives of local authorities and other bodies.
(4) The county or borough to be the minimum health unit, and a whole-time medical officer of health and veterinary surgeon to be appointed for each unit.
(5) Mandatory legislation on local authorities.
(6) District nurses for county health schemes.

SALARIES FOR POOR LAW MEDICAL OFFICERS.

The County Kildare Health Committee has decided to standardize the salaries for all Poor Law medical officers. In the county dispensary medical officers are to receive a minimal salary of £300 per annum, increasing by annual increments of £10 until a maximal salary of £400 is reached. The scale is made retrospective for existing medical officers. This scale is considered reasonable by the doctors concerned, and they have expressed their appreciation of the desire of the County Kildare Health Committee to treat their medical officials on an equitable basis. The scheme has not yet been sanctioned by the Local Government Department, and the Irish Medical Secretary (Dr. Hennessy) has been asked to wait upon that body in connexion with the question.

Correspondence.

FOETAL WELFARE.

SIR,—The subject of foetal welfare and foetal mortality is to be discussed in the Section of Obstetrics at the Annual Meeting of the British Medical Association in Glasgow, and it would make for considerable progress in this branch of preventive medicine if some definite and practical action were taken as the result of this discussion.

The few years in which the study of ante-natal physiology and pathology has been carried out have established very conclusively the two following points.

I. That there is a vast amount of ante-natal mortality which cannot be estimated by any other method than that of mere guesswork. Until obstetricians urge the necessity for the registration or notification of abortions no reliable information can be obtained as to the enormous wastage of child life. The thorns in the path of the medical practitioner, should such a notification take place, will not be in the violation of a patient's confidence, but in the diagnosis of early specimens of discharged ova. The registration of illegitimate births has not given rise to difficulties, and now that V.D. conditions are liable to notification surely no objection can be put in the way of any honest endeavour to combat the foetal mortality that is known to be so great. Notification of abortions might to a small extent curtail criminal methods of child murder which are so widespread in this country.

II. The further we carry out research upon ante-natal and intra-natal deaths the more are we convinced that a great number of such deaths are easily preventable if we had the means for their prevention at our disposal: such means being the adequate training of students and midwives, and also of post-graduates. All maternity hospitals should have an indoor and outdoor ante natal or foetal welfare departments, and facilities should be given for the necessary biochemical and bacteriological investigations of ante natal conditions. For it is mainly in the field of biochemistry that the harvest will be gathered. The life of the child should be cared for from the earliest conception of the ovum, and this attitude towards obstetrical problems will give results far beyond our present imagination, not only in ante-natal treatment but perhaps most of all in the prevention of intra-natal complications and operations. At the present moment the investigation of ante-natal problems is haphazard and uncontrolled by any central authority other than administrative. Workers are blindly seeking information upon reliable methods. Much time is wasted in following up ideas which prove themselves useless and profitless in the end. Sometimes a whole year's work has to be scrapped because a particular biochemical test has been condemned. The whole general teaching of obstetrics is at present chaos, and the public must be educated as to the great necessity for giving financial assistance to this branch of preventive medicine. The Medical Research Council is the first corporate body to give help in foetal welfare research, but what is required is co-ordination among workers.

I would suggest that the Ministry of Health and Medical Research Council be asked to co-operate with a central committee which has as its object the investigation of foetal

welfare, that it should be composed of representatives from the obstetrical societies of Great Britain, infant specialists, medical officers of health, and research workers both in physiology and pathology, and that a scheme should be drawn up for a definite line of research which could be undertaken, and that help and advice should be given as to the method and means of research.

This scheme would be an amplification of the present work of the Medical Research Council, and would bring in those who are engaged in the training of students and midwives and more especially those responsible for the health of the poor, such as medical officers of health.

I venture to make this suggestion as one suitable for discussion at the Annual Meeting in the hope that it may help towards the solution of our present difficult problems with regard to foetal welfare.—I am, etc.,

A. LOUISE MCILROY.

Obstetrical and Gynaecological Unit,
Royal Free Hospital, London.
July 17th.

THE SKULL OF SIR THOMAS BROWNE.

SIR,—It may be known to some of your readers that the skull of Sir Thomas Browne has recently been reinterred at Norwich, but that previously it came up to London, where careful measurements, drawings, and tracings of it were made. It is proposed to publish a full account of the skull in *Biometrika*, but it would much add to the interest of the proposed monograph if it were accompanied by a series of reproductions of the portraits and engravings of one of the most noteworthy of Englishmen who have combined the study of medicine with the pursuit of literature. The large number of plates required to illustrate adequately the relation of the skull to the portraits renders—under the present conditions of both printing and illustrative work—the appearance of a complete monograph, such as we desire to see issued, very difficult. We propose, therefore, to issue one hundred copies of the monograph at the price of 1 guinea each, if lovers of Sir Thomas Browne can be found in adequate numbers to subscribe for copies. Will you kindly permit us to appeal through your columns for the names of those who are willing to aid in this scheme for putting on permanent record the physical aspect of the author of the *Religio Medici*, who, by that and his other works, has won a unique position in the heart as well as in the mind of every cultured Englishman? Willingness to subscribe may be notified to either of the undersigned.—We are, etc.,

ARTHUR KEITH,
KARL PEARSON.

London, July 12th.

AORTIC MURMURS.

SIR,—I entirely agree with Dr. Thomas Lindsay that the aortic murmur he has written about recently ought to be more generally recognized to avoid a diagnosis of heart disease being made in healthy subjects by those who are unacquainted with this condition.

He doubts whether the murmur I described in the *Lancet* in 1909 is of the same character as that about which he wrote in the *British Medical Journal* of May 13th last. Having reread both of our descriptions and given them to others to read neither I nor they can see the difference. We both find that the murmur is bought into evidence by raising the arms, as in holding aside the clothes for examination of the chest, and that it disappears when the arms are hanging by the sides. It was for this reason I called it a "postural murmur."—I am, etc.,

E. L. MOSS,
Major, R.A.M.C.

Louise Margaret Hospital, Aldershot, July 6th.

INFECTIVITY OF ARTIFICIAL DENTURES.

SIR,—Dr. D'Oyly Grange is to be congratulated on calling attention to this most important subject (BRITISH MEDICAL JOURNAL, July 8th, p. 43). The efficient cleansing of artificial dentures is all too much neglected even by the better educated section of the public.

That this is so is very largely due to the very general omission of the dentist to give detailed instruction and timely criticism. A denture should be removed and brushed preferably after each meal, always after breakfast and at night; the gum covered by the plate, and so deprived of the natural friction of the tongue, and especially the gum margins round remaining teeth, should also be vigorously brushed. Before retiring the denture should be scrubbed with a stiff brush, dipped in water (preferably with a lump of soda added), rubbed on a piece of soap, and then charged with powder or paste. Special care should be given to the inside of clasps fitting round natural teeth, for which a pointed piece of cane should be used instead of a brush.

During the night the denture should be left in water to which some antiseptic has been added. For this purpose a chlorine preparation is suitable, for, though the taste is unpleasant, its effect, especially on gold, is almost magical, and greatly diminishes the trouble of brushing.

From Dr. D'Oyly Grange's statement that it is sometimes necessary to wear dentures at night I must differ emphatically, and have yet to see the case where it is so. Patients who study their appearance in bed may insist on wearing them, but that is another matter.

The contour of the face naturally suffers while the denture is out, but that is all; and the adhesion of the denture may not be so good immediately on insertion in the morning, but after wearing for a few minutes this is recovered. I regard it as a most pernicious practice.—I am, etc.,

J. H. BADCOCK, L.D.S. and M.R.C.S., L.R.C.P.

London, W., July 11th.

THE INTERSTITIAL GLAND AND SEX PROBLEMS.

SIR,—From the tone of Dr. Rawlings's letter in the JOURNAL of July 1st and from other communications I have received personally it would appear that my letter published on June 17th (p. 973) has caused some misunderstanding. The passage in my letter to which exception has been taken was intended merely as a supposition. It is as follows:

"If we are to accept Rumley Dawson's sex theory at all—and, so far as I have been able to ascertain, no later investigations have actually disproved it—then, instead of administering male interstitial gland, as Dr. Williams suggests, in cases of deficient 'maleness,' one would require to administer corpus luteum extracted from the right or male ovary, and from the left or female ovary in cases of deficiency in 'femaleness.'"

In the study of sex causation it is impossible to be dogmatic. But if one declines to accept the proffered proof of a theory on the grounds that it is insufficient or unorthodox, it does not necessarily follow that the theory has been "exploded." It requires as many hard facts to explode a theory as it does to prove it. Criticism is ever unduly severe on the unorthodox, and it is this feature that makes Rumley Dawson's work unacceptable to many. The idea of a pair of ovaries possessing heterosexual qualities is against one's conception of Nature, who, as Dr. Williams very neatly expresses it, "does not seem to have evolved dual organs with this kind of end in view."

Certainly Dr. Rawlings's case of a male birth following upon removal of the right ovary in no way disproves the theory of Rumley Dawson, for it is well known that it is impossible to be certain by mere inspection at the time of operation that the whole of the ovarian tissue has been removed. It is also an established fact that the minutest portion of ovarian tissue is sufficient to yield fertilizable ova. Hence the explanation of Dr. Rawlings's case.—I am, etc.,

R. DOUGLAS HOWAT, L.R.C.P. Edin.,

Denholm, Hawick, July 3rd. L.R.C.S. Edin., L.R.F.P.S. Glasg.

CAESAREAN SECTION.

SIR,—In your issue of July 8th Dr. J. H. Martin has claimed priority with regard to certain details of the operation of Caesarean section.

For the past ten years I have been in the habit of turning the uterus inside out to remove placenta and membranes, and also of putting the patient in Fowler's position during convalescence. These practices are not original on my part, because I copied them from other members of the staff who preceded me.

It seems to me that Fowler's position may be applied to any abdominal operation, and that the only person who should receive the credit of it is Fowler himself.—I am, etc.,

ARCHD. N. MCLELLAN, M.B.

Glasgow, July 15th.

SIR,—Mr. S. J. Cameron is apparently indignant about my claim to having introduced (not "discovered") three excellent improvements in this operation at the Royal Maternity Hospital, Glasgow. It is a pity he did not show this indignation at the meeting of the Royal Medico-Chirurgical Society: if he had, then this correspondence would never have taken place.

1. *Incision.*—Mr. Cameron refers me to his *Manual of Gynaecology*, "published in 1915," when I was in khaki, but gynaecological and general surgical incisions are outwith the

argument; even the Romans went through the right rectus muscle, I have read. I purposely avoided referring to the case where Mr. Cameron severed the veins of the left broad ligament, but in answer to his twitting my comment on this case is that the first time my uterine incision is so far out of place—light good or light bad—as to sever the veins in any broad ligament then I shall cease to perform Caesarean sections.

2. *Turning the Uterus Inside Out.*—Mr. Cameron states that his father, Professor Murdoch Cameron, employed this manœuvre over thirty years ago. I was house-surgeon to Professor Cameron at the Maternity Hospital for six months in 1909 and assisted him at all his Caesarean sections during that period. On no occasion was the uterus turned inside out, nor was this ever spoken of. As I write I have before me Professor Cameron's article, "Abdominal section as a substitute for the performance of craniotomy" (BRITISH MEDICAL JOURNAL, 1891—that is, thirty-one years ago), in which there is no mention of turning the uterus inside out. To avoid much bleeding after the child was extracted he advocates, "place the cut surfaces in apposition and press them tightly together." This was repeated after the placenta had been "extracted." In his third Caesarean he describes the same procedure and apparently it was followed in many others. I have also before me another article by Professor Cameron, published in 1901, where improvements in technique are gone into in detail, but still no mention of this manœuvre. Totally opposed to turning the uterus inside out is the following sentence: "On no account should the uterine cavity be washed out or medicated in any way; the less the parts are interfered with the better." I leave the matter there.

3. *Sitting Posture.*—Here I can only refer Mr. Cameron to the *Proceedings of the Royal Society of Medicine*—discussion on Caesarean section, 1920—and also to the *Transactions of the Glasgow Obstetrical Society* last year, where I get full credit from one of our seniors—namely, Professor Munro Kerr. Mr. Lennie's contribution is a thin echo of his chief's.—I am, etc.,

Glasgow, July 15th. JAMES H. MARTIN, M.D.

SIR,—I notice in the BRITISH MEDICAL JOURNAL of July 8th, amongst the correspondence, that Dr. Martin of Glasgow takes exception to the technique as described by Mr. S. J. Cameron in reporting his cases of Caesarean section in your issue of June 10th. I cannot allow this to go unchallenged, as Mr. Cameron carried out the methods described in his paper—namely, (1) the abdominal incision through the right rectus, (2) turning the uterus inside out to remove the placenta and membranes, and (3) nursing the patients in the Fowler position—ever since his appointment as operative surgeon at the County Maternity Hospital, Bellshill, a considerable time before the date of Mr. Martin's paper of January, 1921.—I am, etc.,

H. J. THOMSON,
Medical Superintendent,
July 11th. County Maternity Hospital, Bellshill.

SIR,—It is with considerable astonishment that I read a letter in your issue of July 8th from Dr. Jas. H. Martin, which implies that it was only after Dr. Martin's paper on Caesarean section was read to the Glasgow Royal Medico-Chirurgical Society in April, 1921, that Dr. Cameron followed the technique mentioned.

I had the honour to be Dr. Cameron's house-surgeon at the Glasgow Royal Maternity and Women's Hospital from November, 1920, to April, 1921, and the technique which he then employed and had followed for several months in all straightforward cases of Caesarean section was the same as that described in Dr. Cameron's paper which appeared in the BRITISH MEDICAL JOURNAL of June 10th—namely, the incision through the right rectus sheath, the turning inside out of the uterus for the removal of the placenta, etc., and the putting of the patient in Fowler's position after the operation.

While attending Professor Murdoch Cameron's clinic as a student I had also seen the uterus inverted as mentioned above.—I am, etc.,

Glasgow, July 11th. ALISON M. HUNTER, M.B., Ch.B.

SIR,—Dr. J. H. Martin in his letter published in the BRITISH MEDICAL JOURNAL of July 8th, 1922, claims to have introduced certain modifications in the technique of Caesarean section. Further, he couples with his assertion of priority the insinuation that Dr. S. Cameron, after hearing Dr. Martin's paper, has adopted the improvements detailed, and has recently published an account of this technique without recognition of its originator. Such a suggestion is entirely misleading.

As house-surgeon in the Western Infirmary in 1918, in the Maternity Hospital in 1919, and subsequently as assistant-surgeon in the latter institution, I have had ample opportunity of learning Dr. Cameron's operative methods. Ever since I have been associated with him it has been Dr. Cameron's constant practice to open the abdomen through the right rectus sheath, and a considerable period before Dr. Martin delivered his paper (April 1st, 1921) Dr. Cameron was in the habit of warning house-surgeon and students of the special danger of making the incision on the left side in cases of Caesarean section. To facilitate the removal of placenta and membranes the expedient of turning the uterus inside out was regularly employed by him, and in this he was not unique. As house-surgeon I never heard anyone remark on this procedure as of recent introduction; it was accepted, indeed, without comment as a well-recognized manipulation. Dr. Cameron's patients were nursed in Fowler's position as a routine, but this attitude was not strictly enforced. On the contrary, the women were allowed to assume any posture they might prefer as more comfortable.

In justice to Dr. Cameron I consider myself bound to communicate these facts.—I am, etc.,

J. HEWITT.

Research Department, Glasgow Maternity Hospital, July 12th.

Universities and Colleges.

UNIVERSITY OF LONDON.

MR. DANIEL T. HAR IS has been recognized as a teacher of physiology at University College, and Mr. J. H. Woodger, B.Sc., is appointed to the University Readership in Biology tenable at Middlesex Hospital Medical School.

Professor E. H. Starling, M.D., F.R.S., has been added to the Board of Examiners in Psychology for the B.A. and B.Sc. examinations in 1922.

Certain changes have been made in the constitution and powers of the Boards of the Faculties of Arts, Medicine, and Science. The changes in detail include: (1) That, whereas the existing boards can only report through their respective faculties, thereby often causing considerable delay, in future the boards will report direct to the referring body; and (2) that the secretary of each board will not, as heretofore, be a member of the board, but a member of the administrative staff appointed by the Principal Officer. The changes do not affect in any way the statutory powers of the boards of studies or of the faculties.

The following examiners for the examination for the diploma in Psychological Medicine were reappointed for the session 1922-23. For Part A (i) and Part B (i), Sir Frederick Mott and Dr. E. Farquhar Buzzard; for Part A (ii) and Part B (ii), Dr. W. H. B. Stoddart and Dr. R. H. Cole.

Mr. H. L. Eason, C.B., C.M.G., M.D., M.S., and Sir Sydney Russell-Wells have been appointed chairmen of the Academic Council and Commerce Degree Committee respectively.

The following have been appointed associate examiners for the M.B., B.S. Examination for the session 1922-23:—*Medicine*: Dr. C. Bolton, Dr. W. P. S. Branson, Sir Charlton Briscoe, and Dr. C. Wall. *Surgery*: Mr. C. C. Choyce, Mr. H. S. Clogg, Mr. W. S. Handley, and Mr. T. P. Legg. *Midwifery*: Mr. J. S. Fairbairn and Dr. Eardley Holland. *Pathology*: Mr. T. W. P. Lawrence and Mr. B. H. Spilsbury.

Clause 1 of the regulations for the Gilchrist scholarship for women has been amended as follows:

Candidates must have passed an intermediate examination or the first examination for medical degrees of the University; a candidate who has completed her twentieth year on or before June 14th in the year of the scholarships examination for which she enters will be disqualified if she has passed an intermediate examination or the first examination for medical degrees earlier than June of the previous year.

The regulations for the Gilchrist studentship for women have been amended by the addition of the following:

The selected candidate will be required to devote her whole time to her studies during her tenure of student-ship.

In its annual report the Committee of Management of the Brown Animal Sanatory Institution states that 5,700 animals were brought to the institution during the year 1921. Recent advances on the biology of bacteria was the subject selected for the five lectures delivered by the Superintendent at the Royal College of Surgeons in December, 1921, as required under the will of the late Mr. Brown. The superintendent, Mr. F. W. Twort, continued his work on influenza and on filter-passing lysins which are associated with and which dissolve up bacteria. He has also carried out some work on the ultra microscopic viruses on dysentery and on leprosy. Mr. Twort's appointment as superintendent of the institution has been continued for one year from June 1st, 1922.

Applications for the William Julius Mickle Fellowship, value of at least £200, must reach the Principal Officer of the University not later than the first post on October 2nd. It is awarded

annually by the Senate to the man or woman who, being resident in London and a graduate of the University, has in its opinion done most to advance medical art or science within the preceding five years, and has therein shown conspicuous merit.

UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part II (Completing Examination)*: J. R. Duerden. *Part I (Including Forensic Medicine and Toxicology)*: Georgina R. Dunn, Idris Williams. *Part I only*: Muriel V. Joscelyne, Dorothy Staley, F. K. Wilson.

D.P.H.—J. B. Adams, F. D. D. Davies. *Part II (Completing Examination)*: B. A. Astley-Weston. *Part I only*: F. P. Mackie.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

D.P.H.—Martha F. Barritt, F. da Cunha, Winifred I. Doherty, Florence M. L. Graham, T. H. Jones, W. H. Leigh, J. K. Lund, G. H. Roberts, Doris A. Taylor, Mary I. Turner, Frances G. Wilcocks.

The following awards have been made:

Tom Jones Memorial Surgical Scholarship, Eric A. Linell. Dauntesey Medical Scholarship, (1) Maurice Sheehan, (2) Kathleen Sheehan. University Prize in Medicine, divided between R. L. Holt, F. H. Smirk. Dumville Surgical Prize, Hilda Pratt. Sidney Renshaw Prize, F. H. Smirk.

UNIVERSITY OF EDINBURGH.

THE following candidates have passed the final examination for the Diploma in Public Health: G. G. Allan, Dora W. Gerrard, Mary H. M. Gordon, Margaret Gray, Helen R. T. Hood, J. S. Macbeth, Agnes B. MacGregor, Florence E. M'Kenzie, Janetta J. Powrie, Margaret M. Proudfoot, G. Stewart, J. D. Stewart.

UNIVERSITY OF ABERDEEN.

AT the graduation ceremony on July 13th the following degrees and diplomas were conferred:

M.D.—*John Smith, Charles Clyne.
CH.M.—A. V. R. Don.
M.B., CH.B.—†W. L. Hector, ‡‡R. N. Ironside, ||R. S. Cruickshank, ¶A. N. Gordon, |Gladys N. Watson, Isabella A. Baxter, A. F. Rothwell, Margaret P. Bowman, Agnes G. Bruce, A. J. Buchan, Janet S. Cameron, D. Campbell, R. J. Campbell, †J. G. J. Cogbill, Margaret J. Coutts, A. Cruickshank, B. F. Davidson, H. L. Duncan, R. J. Duthie, A. A. Eagser, Ethel R. Ensslie, Lyla C. Forbes, Winifred M. Foster, W. Gregor, H. J. Horne, R. A. Hutchinson, Annie M. Jack, J. B. Jessiman, J. C. Kerrin, F. H. Lakie, W. Lawie, N. H. Leslie, G. L. McCulloch, G. A. Macdonald, Isabella F. Mackenzie, W. Mc.C. Macpherson, Edith M. Macrae, R. McRobert, R. B. Milne, A. A. McI. Nicol, C. L. Noble, W. J. O'Connor, Alice Reid, C. E. Riddell, C. J. Royston, J. B. Samson, J. P. Shepherd, A. Stephen, R. Thomson, Alice M. Wall, Eleanor M. Watt, Gladys M. West.
D.P.H.—A. A. Duffus, Marjorie M. Milne.

* Honours for Thesis.
† First Class Honours.
‖ Second Class Honours.
‡ Completed Final Medical Professional Examination with distinction.
§ Completed Final Medical Professional Examination with much distinction.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., PART I.—*Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Pathology and Bacteriology*: *J. E. Elias, *R. A. D. Pope, M. Cohen, J. J. O'Grady, J. K. S. Thompson, J. M. Mounsey, R. A. Deuch, G. Robinson, O. G. Wilde, C. W. J. Ingham, J. A. du Toit, L. D. Dennard, L. E. J. Werner, C. J. McQuillan, R. Warnock, Sylvia B. Wigoder, J. M. Gordon, H. Rutten, J. Kalmanson, W. R. Aykroyd, Kathleen D. Murison, F. T. Easby, M. D. Fox, S. M. Greeves, J. J. Laing, T. Freedman, N. G. McAuliffe, Alice E. Dockrell, R. W. J. van Janse, C. R. Hillis, Dorothy I. Henry, A. Worinal, J. Wilson, R. E. Skeen. *Pathology and Bacteriology only*: A. W. Eksteen, L. Harris, N. J. V. van Druten, W. L. W. Smith, S. W. Jamison, M. Jaffe. *Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene*: S. McDermott, Gladys Weatherill, A. Y. B. Crawford, J. L. Stuart. *Materia Medica and Therapeutics only*: E. C. Downer. *Medical Jurisprudence and Hygiene only*: Eileen Brangan.

PART II.—*Medicine*: J. Beck, M. G. J. Powell, J. V. Carroll, M. Sayers, Beryl F. E. Cockle, M. P. Louw, D. J. Malan, G. S. Moran, J. H. Rauch, A. W. Eksteen, J. C. J. McEntee, M. Gallivan, J. G. Russell, Charlotte A. Stuart, G. Bewley, H. Hall, S. W. Russell, J. D. Wicht, R. Seale, A. H. N. Todd, L. Phillips, S. G. Weldon, J. M. O'Connor, Mary H. Harcourt, J. H. J. Stuart. *Midwifery*: *J. C. Earl, P. Gluck, E. M. Landau, J. J. N. McKenna, L. J. Coetzee, R. Lipschitz, R. H. Micks, Dorothy C. H. Dorman, P. Samuolsky, Maria E. Wagener, S. D. Gabbe, D. H. F. Milne, J. Lait, J. E. McCormick, C. W. R. McCaldin, D. L. H. Moore, J. D. Wicht, W. R. Burns, R. R. D. Crawford, R. Hegy, J. G. Russell, J. H. Rauch, A. W. Eksteen, J. H. Hodgman, P. F. H. Wagner, C. G. S. Van Heyningen, A. Asherson, B. Vivier, J. F. Van Staden, Alice M. A. Downing. *Surgery*: M. Bewley, N. McI. Falkiner, S. G. Rainsford, J. C. Gillespie, M. M. Viljoen, J. C. J. McEntee, S. W. Russell, Minnie Alper, J. Lait, G. Bewley, R. Hegy, G. Blackall, B. Vivier, M. P. Louw, W. B. E. McCrea, R. N. Perrott, J. V. Carroll, A. E. Drotske, May E. Powell, Florine I. Irwin, J. R. Craig, J. Harte, J. E. McCormick, M. Sayers.

D.P.H., PART I.—*Chemistry, Bacteriology, Physics, and Meteorology*: Catherine A. Goggin, Mary M. Galvin.

PART II.—*Sanitary Engineering, Practical Sanitary Report, Hygiene and Epidemiology, Vital Statistics and Public Health Law*: Margaretta T. Stevenson, Alice B. S. Smith, J. S. Dockrill, R. V. Dowse.

* Passed on high marks.

QUEEN'S UNIVERSITY OF BELFAST.

AT the graduation ceremony held on July 11th the following degrees were conferred:

LL.D. (*Hon. Causâ*).—Professor J. Lorrain Smith.
M.D.—W. Bryars, F. Campbell, W. Harvey (with gold medal), B. Lyons, F. MacSorley, J. P. Martin, S. Millar (with commendation).
M.CH.—H. B. Steen (with commendation).
M.B., B.CH., B.A.O.—*Rachel E. Bamford, *C. A. Calvert, *W. Carson, *Olive M. Darling, *W. G. Frackleton, *Ellen McC. Jackson, *J. F. Knox, *W. Lennon, *R. H. Longmoor, *J. J. McSorley, *R. A. Reid, *R. V. Robinson, *R. Thompson, A. Brown, W. F. Bryson, J. Campbell, J. Carrey, Winifred M. Chambers, W. B. S. Crawford, W. E. Crosbie, W. M. Farr, F. J. Ferguson, E. R. Frizelle, E. V. Greeves, T. V. Griffith, F. Halliday, J. W. Heney, J. Houston, R. Huey, Mary M. Hughes, R. Johnston, Mary J. S. Killen, Ida M. Kirker, A. W. J. Knox, T. Law, M. F. Leslie, J. C. Liston, Emily M. McCandless, H. J. McCavana, W. McCoach, N. McKibben, Evelyn M. McKinney, Maude W. McKnight, C. McShane, H. T. McWilliams, J. E. McWilliam, Margaretta McM. Macmillan, J. A. Moody, J. W. Nesbitt, Mary E. Patterson, J. Scott, A. C. Seymour, P. J. Shankey, Elizabeth G. Shillington, G. T. F. Slowey, S. E. Smyth, R. Watson, A. R. Wheeler, J. B. White, Mary A. White, A. A. Woods.

* Second class honours.

D.P.H.—Mary I. Adams, Frances E. Bell, S. McI. Bolton, C. L. Broomhead, J. S. Dudgeon, R. A. Elliott, Winifred E. Hadden, D. Jamison, J. McKay, S. E. Picken, Margaret W. Snodgrass, J. A. Smyth, H. Stewart, W. Tyrrell.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council was held on July 13th. The President announced the result of the election to the Council (see BRITISH MEDICAL JOURNAL, July 15th, p. 112).

Licences and Diplomas.

Licences in Dental Surgery were granted to sixty-four candidates found qualified at the recent examinations.

Diplomas in Public Health were granted jointly with the College of Physicians to twenty-five candidates recently found qualified.

The Diploma in Psychological Medicine was granted to one candidate jointly with the Royal College of Physicians.

A certificate of the Diploma of "F.R.C.S. (with Ophthalmology)" was granted to one candidate.

International Congress of Otology.

Sir StClair Thomson and Mr. Arthur Cheatle were appointed delegates to represent the Council at the tenth International Congress of Otology which is being held in Paris this week.

Alterations in the Rules Relating to College Triennial Prize and John Hunter Medal.

1. The John Hunter Medal executed in bronze shall be awarded with the Triennial Prize of £50.

2. The recommendation for the award shall be entrusted to a committee, which shall consist of three Members of the Council, in addition to the President and Vice-Presidents, to be elected triennially at the quarterly meeting of the Council in the July preceding the year of award.

3. The award may be made triennially by the Council to a Fellow or Member of the College, not on the Council, who has, during the preceding ten years, done such work in Anatomy, Physiology, Histology, Embryology, or Pathological Anatomy, as in the opinion of the Committee deserves special recognition.

4. The Committee shall report its recommendation to the Council not later than the quarterly Council in April subsequent to the expiration of the triennial period.

5. Should no work by a Fellow or Member of the College in the subjects selected be held by the Committee to be deserving of special recognition the Committee shall report to the Council accordingly.

Election of Officers and Lecturers.

Sir Anthony Bowlby was re-elected President, Sir D'Arcy Power was appointed Senior Vice-President, Sir Berkeley Moynihan was appointed Junior Vice-President, and the following appointments were made:

Pathological Curator, Mr. S. G. Shattock; Assistant Pathological Curator, Mr. C. F. Beadles; Pathological Assistant, Mr. C. E. Shattock; Physiological Curator, Mr. R. H. Burne; Honorary Curator of the Odontological Collection, Sir Frank Colyer.

Hunterian Professors.—Sir Arthur Keith: Six lectures on "Man's posture—its evolution and disorders." R. Lawford Knaggs: One lecture on "Osteitis fibrosa." L. B. Rawling: One lecture on "Remote effects of gunshot wounds of the head." E. M. Woodman: One lecture on "Malignant disease of the upper jaw, with special reference to operative technique." C. A. Joll: One lecture on "The metastatic tumours of bone." H. E. Griffiths: One lecture on "The relationship between disease of the gall bladder and the secretions and functions of the stomach and pancreas." G. L. Keynes: One lecture on "Chronic mastitis."

Arris and Gale Lecturers.—James Alanе Coupland: One lecture on "Observations on the human and comparative anatomy of the parathyroid gland, with investigation of its function and relation to post-operative tetany and the surgical technique its presence demands in thyroid surgery." L. R. Braithwaite: One lecture on "Lymphatic flow from the ileo-caecal angle, and its bearing upon gastric and duodenal ulcers and other forms of indigestion." F. N. Flint: One lecture on "Abnormalities of the hepatic and cystic arteries and of the bile ducts, and their surgical significance."

Erasmus Wilson Lecturer.—S. G. Shattock: Six demonstrations on pathological specimens in the museum.

Arnott Demonstrator.—Sir Arthur Keith: Six demonstrations on the contents of the museum.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT their meeting on July 14th the President and Fellows of the College accepted the resignation of Dr. Thomas Mather Thomson of London, of his Fellowship to which he was elected on April 1st 1921.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates have passed the examination of this school at the termination of the sixty-ninth session—April–July, 1922:

*Dr. S. M. Vassallo ("Duncan" medal), *Squad.-Leader G. S. Marshall, *Dr. E. R. Kellersberger, Dr. H. S. Lucraft, Dr. L. M. Moody, Miss C. Shepherd, Dr. O. Teague, Dr. H. Schwartz, Dr. B. C. Berrie, Indian Medical Dept., Major K. G. Gharpurey, I.M.S., Dr. V. Nath, Miss M. Young, Lieut.-Colonel S. Hunt, I.M.S., Captain B. F. Beatson, I.M.S., Dr. C. Dunscombe, Dr. T. M. M. Horsfall, Dr. N. L. Varma, Dr. P. Gupta, Major F. C. Barker, I.M.S., Captain H. J. M. Cursetjee, I.M.S., Dr. D. I. Cameron, Miss N. E. Bleakley, Dr. A. T. Kuriyar, Dr. M. Theiler, Dr. A. R. Cottrell, Dr. G. E. Peacock, Miss J. Cave, Dr. K. N. Choksy, Mrs. L. M. Cottrell, Dr. J. L. Gregory, Dr. J. Jones, Miss M. Norris, Dr. N. V. Pandit, Dr. W. M. A. Rahman, Dr. J. London, Miss M. Murphy, Dr. W. W. Wood, Miss E. O'Keeffe, Dr. Y. Maximos, Dr. A. H. Tawfik.

* With distinction.

Errata.

In the list of successful candidates for the M.B., Ch.B. degrees of the University of Liverpool published last week (p. 111), it should have been indicated that Mr. H. Cohen received first-class honours with distinction in medicine in addition to surgery and obstetrics.

In the University of Edinburgh pass list, also published last week, on p. 111 an asterisk should have been attached to Mr. W. R. Levie's name to intimate that he had passed with distinction.

Obituary.

ARCHIBALD LANG McLEAN, M.D.,
Late Captain A.A.M.C.

OUR Special Correspondent in Sydney writes: Archibald Lang McLean, who took a prominent place in the great war, and was also medical officer in the Mawson expedition to the South Pole, died in the Royal Prince Alfred Hospital, Sydney, in his 38th year. He was a native of Sydney, and was educated at the Sydney University, where he graduated B.A. with honours in 1906, and M.B., Ch.M. in 1910. After leaving the university he was a resident medical officer at the Lewisham Hospital, and subsequently at the Coast Hospital. He was chosen by Sir Douglas Mawson to accompany his Antarctic expedition as surgeon in charge and bacteriologist for one year, but at the request of Captain Davis he remained a second year. At the outbreak of war he was in England, and soon joined the R.A.M.C. While in France he served with the 13th General Hospital and the 20th Casualty Clearing Station, but was invalided to England in consequence of a poisoned finger. He was then discharged and returned to Australia.

In September, 1917, he joined the A.A.M.C. as captain. During the nine months he was waiting to be sent overseas he obtained the M.D., with the University Prize Medal. He accompanied the A.I.F. to Egypt and France, where he was attached to the 17th Battalion and the 5th Field Ambulance, and while serving in this capacity was twice gassed. He received the Military Cross for gallantry and devotion to duty, the official account stating that—

"During the attack on August 8th, 1918, of Villers Bretonneux, near Amiens, he followed the attacking troops with his section, tending and dressing wounded under fire on the way. Almost immediately after their objective had been taken he established his first-aid post in the village of Warfusé, where he worked continuously under great difficulties with great courage. Later during the advance on the following day, he established his first-aid post almost on the jumping-off line, where he tended and cared for the wounded under heavy artillery fire. His effort during the whole operation has been beyond praise, and had it not been for his tireless attention a large accumulation of wounded would have occurred. His bravery and devotion to duty was most conspicuous."

After his return from the war he was appointed medical officer in charge of the Red Cross farm colony at Beelbangera. He was editor and collaborator with Sir Douglas Mawson in the production of the *Home of the Blizzard*, and was author of a volume of bacteriological and other researches published by the New South Wales Government printing office in 1919.

THE death is reported of Dr. MATTHEW ARDEN MESSITER of Dudley. He was the son of the Rev. G. M. Messiter of Repton, and received his medical education at Queen's College, Birmingham. He took the diplomas of M.R.C.S. in 1873 and L.S.A. in 1874. He joined the late Dr. Houghton in practice at Dudley in the seventies, and early became one of the honorary surgeons of the Guest Hospital, in which institution he took great interest. He was justice of the peace for the county of Worcester, an ex-president of the Birmingham Branch of the British Medical Association and of the Medical Defence Union. Dr. Messiter took great interest in local charities. He leaves a widow and five sons, one of whom is a member of the medical profession, and another is rector of Kingswinford. At the borough police-court, on July 8th, the chairman referred to Dr. Messiter's work on the bench, and expressed the sympathy and regret of the justices.

Medical News.

THE Fellowship of Medicine and Post-Graduate Medical Association will hold a further two weeks' special course in general medicine from Monday, September 11th, to Friday, September 22nd. A morning and afternoon session will be held each day, and the following subjects will be dealt with: Pulmonary disease, including the *x*-ray aspect; cardiology; neurology and mental disease; pathology; medical ophthalmology, etc. Copies of the preliminary syllabus with further details can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

A MEMORANDUM by the Ministry of Health (65/M.C.W.) indicates the Minister's present requirements as regards the qualifications and duties of health visitors, and calls attention to a modification in the Board of Education (Health Visitors' Training) Regulations, 1919, extending approval to courses of less than a year's duration in the case of nurses with specified training. Points of interest in the memorandum are: the provision for dispensing for the present with the prescribed qualification in the case of health visitors with previous efficient service; a suggestion for reducing the number of inspectors who may visit a given home, and minimizing travelling by combining kindred functions with those of the health visitor, and the statement that the inspection of midwives, often carried out by health visitors acting under the M.O.H., should be under the direct supervision of a medical practitioner, preferably a medical woman. The Health Visitors (London) Order, 1909, will be rescinded as from January 1st, 1923.

DR. ERIC PRITCHARD has been appointed Consulting Physician to the Queen's Hospital for Children on his retirement from the active staff to take up the post of Medical Director of the Infants' Hospital.

IT was announced last week that the grand total so far received in response to the Combined Appeal for the Hospitals of London is now more than £260,000. This sum includes £60,000 contributed to the Mansion House Fund.

THE annual meeting of the Canadian Medical Association was held at Winnipeg from June 20th to June 23rd, under the presidency of Dr. Edward W. Montgomery. The following officers were elected for the ensuing year: President, Dr. David H. Arnott, London, Ont.; vice-president, Dr. Walter L. Muir, Halifax, N.S.; and secretary, Dr. John W. Scane, Montreal, Que.

IN the list of persons recently made magistrates for the County of Glamorgan are the names of five medical men—namely, Dr. Le Cronier Lancaster, Swansea; Dr. Henry Davies, Abergwynfi; Dr. Hubert Leigh, Treharris; Dr. E. Parry Evans, Llantwit Vardre; Dr. Arthur T. Jones, Mountain Ash.

MR. SYDNEY DUNSTAN, who for sixteen years has had charge of the dispensary and stores department of the Royal Victoria Infirmary, Newcastle-on-Tyne, has been appointed House Governor and Secretary to that institution in succession to Mr. R. H. P. Orde, who has resigned.

A NATIONAL milk conference will be held on October 16th, 17th, and 18th next in the Guildhall, London. A number of papers on the production of clean milk will be read; there will be discussions on contagious abortion, introduced by Sir Stewart Stockman, and on bovine tuberculosis and tuberculin tests, by Dr. Stanley Griffith and Dr. S. R. Douglas, F.R.S., respectively.

UNDER the will of the late Mr. Daniel Clark, of Cheltenham, the following bequests are made: £5,000 each to the Cheltenham General Hospital and the Leeds General Hospital, £2,000 to the Hospital for Poor Patients, Harrogate, £1,000 each to Dr. Barnardo's Homes and St. Dunstan's Hostel. The residue of the estate, which it is expected will exceed £20,000, will be equally divided between the following hospitals: St. Bartholomew's, Guy's, London, St. Thomas's, St. George's, King's College, University College, Charing Cross, St. Mary's, and Middlesex.

MESSRS. H. K. LEWIS AND CO., LTD., medical publishers and booksellers, of 136, Gower Street, London, W.C.1, have issued a small catalogue of the works on medicine and allied subjects sold by them. The books are grouped under subject headings.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediseva, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"PASTOR" asks for particulars of Bordighera, N. Italy, as a suitable climate for a nasal or chest case during winter months.

INCOME TAX.

"CYPHER" has had to employ an accountant to conduct his income tax appeal after preparing accounts for him. He asks if he can regard the accountant's fee as a professional expense for income tax purposes.

*** Yes—such expenses are properly allowed.

"CALEDONIA" wishes to know whether income earned under the Highlands and Islands Medical Service Board, varying according to services rendered, may be returned under Schedule D.

*** Yes; they may be included in one sum with the earnings of a general practice. Schedule D assessment, however, would probably be refused if the appointment in question were a whole-time one or nearly so.

"W. S. W." purchased in April, 1919, a 14-h.p. 1914 Austin touring car for £475; in August, 1921, he sold it for £230, replacing it with a new 20-h.p. Austin Coupé, price £850.

*** The difficulty is to ascertain what would have been the cost in August, 1921, of a car similar in condition, quality, and power to that purchased originally. The approximate cost may be calculated as follows, £*r* being the original—that is, new cost—of a 14-h.p. Austin touring car in April, 1919:

Estimated cost of 14-h.p. car in 1921, 14/12 of £*r*50 = £612.
Estimated cost of similar in second-hand condition to first car = $\frac{£642 \times 475}{x}$.

Allowance now due is therefore $\frac{£612 \times 475}{x}$ less £230.

"M. McM." has received "another form, Schedule E 1922–23, with a slip" implying that he will now be assessable on the amount of income for the current or preceding year.

*** Apparently the slip refers to the change effected by Section 15 of the Finance Act, 1922, transferring the assessment of income from all employments to Schedule E. If, however, as we understand, our correspondent's income is derived from his own medical practice, it is still assessable on the three years' average of that income, as the above section has no application to the assessment.

"W. H. N." writes with regard to the assessment of board and lodging.

*** The slip enclosed seems to have no reference to this point—see reply to "M. McM." above. Further, the Finance Act, 1922, appears to leave the law untouched as regards the chargeability of board and lodging—namely, that if the receipt is in kind so that it is not capable of conversion into money it is not taxable (Tennant *v.* Smith), but if the salary is in terms of money subject to a deduction for estimated cost of board and lodging then the whole salary is taxable as the amount retained by the "employer" is not paid for professional expenses.

RELIEF OF PAIN IN ACROMEGALY.

DR. W. GOVER (Hastings) writes: I have under my care a patient with acromegaly who is having the usual recurrent headaches but of most appalling severity; morphine gives some relief, but the condition of the patient is otherwise so good that she will long outlive the usefulness of morphine. I should be very glad for any suggestions as to *medical* treatment of this condition.

LETTERS, NOTES, ETC.

AN OLD WIVES' FABLE.

DR. J. B. HELLIER (Leeds) writes: I have lately been re-reading Mrs. Gaskell's *Cranford*, with its delightful presentation of early Victorian ways and notions. In Chapter V there is a curious obstetrical point. A mother writes to her daughter, who has just been confined, begging her when she left her room, whatever she did, "to go *up* stairs before going *down*." This curious and apparently irrational advice to make the greater exertion before the less is perplexing. Cranford is said to be Knutsford in Cheshire. I wonder whether any practitioner in that district, or in any other part of the country, has met with this superstition and can shed any light upon its origin and significance.

ARTIFICIAL EYES FOR OPHTHALMOSCOPIC STUDY.

DR. CHARLES J. HILL AITKEN, M.D. (Kilnhurst, nr. Rotherham), writes: I learnt the way to handle the ophthalmoscope and the retinoscope by using the artificial eye. When expert in handling the instruments I advanced to the human subject. From personal experience I can strongly recommend the artificial eye as the first step in ophthalmoscopy.

FOREIGN BODIES IN AUDITORY MEATUS.

DR. ARTHUR T. JONES (Mountain Ash) writes: May I also add a case that came to my notice? A woman over forty years of age came to my surgery complaining of deafness. On examining the ear there was something dark to be seen which I concluded was wax. I syringed the ear and out came a piece of slate pencil about half an inch long, which I showed the woman. She then exclaimed, "It must have been there thirty years. I remember it when I was a girl at school." It had apparently caused her comparatively little trouble.

SPANISH POPES.

DR. PERCY C. GARRETT, Cheltenham, writes: In the JOURNAL of June 24th, p. 1006, Calistus III is referred to as "the only Spanish Pope." Surely his nephew Rodrigo Lancol, afterwards notorious as Rodrigo Borgia, Alexander VI, was equally Spanish, both in birth and sentiment. I think I am correct in saying that Spanish was the language of his family correspondence and family life at the Vatican, and that his policy was mainly that of co-operation with Spain, until his ambition for his beloved Caesare, for whom he obtained a French dukedom and a French wife, led him to incline to the side of France.

MEDICAL GOLFING SOCIETIES.

THE Medical Golfing Society were entertained on Wednesday, July 12th, by Sidcup Golf Club, and played a match against that club. The match was one of eleven a side, and resulted in a win for Sidcup by 6 to 3, with two matches halved. In the first five matches T. P. Kolesar and H. Gardiner-Hill halved with J. Chilton and C. H. Pillman respectively. R. Bristow beat C. H. Myrtle by 4 and 3, while L. Bromley lost to A. M. Johnstone by 2 and 1, and Sir R. Cruise defeated A. S. Myrtle by 2 up. In each match the representative of the Medical Golfing Society is mentioned first. The thanks of the Society are due to Sidcup Golf Club for the kindness and hospitality with which they were entertained.

The tie for the *Lancet* and Henry Morris challenge cups was played off on June 8th, and was won by Mr. T. P. Kolesar, Mr. H. D. Gillies being one down.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page xo.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or [illegible]ers.

British Medical Association.

NINETIETH ANNUAL MEETING, GLASGOW, 1922.

President's Address

ON

BRAIN SURGERY.

BY

SIR WILLIAM MACEWEN, C.B.,

REGIUS PROFESSOR OF SURGERY, UNIVERSITY OF GLASGOW.

SPEAKING from the Presidential Chair my first words must be words of welcome on behalf, not only of the large body of the profession in and around Glasgow, but also of the many citizens who have joined us and who have wrought hard to express their good feeling towards our colleagues on the occasion of the Annual Meeting of the British Medical Association.

We welcome you to the city of Glasgow, the second city of the Empire, a city which within a radius of thirty miles is surrounded by half the population of Scotland.

Glasgow is governed by a civic corporation—a parliament of seventy members, composed of men of light and leading who devote their time and attention to the many problems of social life. They have blessed the city with one of the finest water supplies, obtained from a highland loch amongst the heather-clad hills, which pours its pure water into every home in the city, bringing an unlimited supply to rich and poor alike. One of the greatest sewage schemes has been carried out so successfully that the vast population is maintained in excellent sanitary conditions. Enteric fever has now no home in Glasgow. If the purity of the atmosphere is not all that it should be there are those among the corporation who are zealously searching for practical means of attaining that end. Nor can we doubt that those who by their foresight, energy, and indomitable perseverance brought the ocean to the feet of St. Mungo will in due time succeed in purifying the atmosphere. Of its further efforts much will be seen in the Health Exhibition in Kelvin Hall, given by the corporation.

Glasgow is one of the most cosmopolitan of industrial cities, and in the application of science can point with just pride to the multifarious industries which have here made a home. It is a literary as well as a great commercial centre.

THE BRITISH MEDICAL ASSOCIATION.

The British Medical Association—now holding its ninetieth annual meeting—is without exception the largest professional association of the Empire, and carries out the principle of voluntary combination for the consideration, not only of its own affairs, but also the readjustment of objects which are humane and public-spirited. It has also been the means of disseminating all that pertains to the science and art of medicine. It has about 24,000 members, drawn not only from the United Kingdom alone, but from all over the world wherever the British Empire extends.

It is no easy matter to succeed to the position filled by the long line of brilliant Presidents of the British Medical Association, amongst whom Sir Clifford Allbutt, Regius Professor of Physic in Cambridge University, and David Drummond, Vice-Chancellor of the University of Durham, in consecutive years filled the office with great distinction.

We have the honour to-day of receiving many distinguished colonials and representatives from overseas—men who are representative of those chivalrous peoples who abandoned their homes and callings and the many that were dear to them and flocked to the standard of the Mother Country in her struggle for the liberty of the world. We are also pleased to have associated with us to-day some of our American—we used to call them cousins, we now call them brothers—brothers who are to aid us by their fresh views on many topics of professional and social affairs. Last, but not least, we extend a very hearty welcome to the distinguished Continental savants who have honoured us by coming to share in and to enlighten our debates.

THE UNIVERSITY.

The University, in which we have been courteously permitted by the University Court to meet, is 471 years old, being founded in 1450 by Pope Nicholas V. With the exception of St. Andrews, it is the oldest university in Scotland. It has had a long roll of scholars, theologians, philosophers, scientists, and abstract thinkers among its professors and alumni, and one could profitably and fondly occupy many hours in reviewing the work they accomplished while playing their part in the history of the world. The exigencies of the hour, however, make it only possible to take a momentary glimpse, in passing, at a few of them.

Joseph Black.

Joseph Black, the greatest genius of his century, was an alumnus of Glasgow University and a pupil of Cullen. He was elected Professor in that university in the middle of the eighteenth century. In his Glasgow University lectures in 1757–58, he enunciated the doctrine of latent heat. The laws of specific heat and latent heat were discovered in Scotland. By a stroke of genius Black impeached the authority of the senses and idealized matter into force. In his investigations into the properties of heat he showed that heat ought to be removed from the jurisdiction of the senses, as heat was supersensual. Though we experienced its effects, we could only conceive of its existence. Latent heat baffles all our senses. While our feelings make us believe that heat is lost, our intellect shows that it still exists.

The process of reasoning adopted in this discovery had far-reaching effects, not only in natural philosophy, but in many other fields. An extension of it led to the recognition of the analogy of heat and light and much else. Einstein's theory of relativity is also founded on the impeaching of the evidence of the senses.

The flights of philosophy and the abstract reasoning had also a direct and practical issue. A model engine, which may still be seen in the library of the Hunterian Museum in Glasgow University, was used by Black in his lectures for the purpose of demonstrating the conversion of matter into force. The pent-up energy in a solid block of ice, by the application of heat, was converted first into liquid, then into vapour, and the vapour into energy which drove an engine—a primitive though non-productive steam engine. It was while repairing this model that James Watt, by the application of the economy of heat and the conservation of energy, invented the separate condenser that transformed the laboratory model into a practical machine capable of doing work.

The steam engine has transformed the world, adding to its material prosperity and being the greatest civilizing agency ever introduced. It would be an insult to the intelligence of Watt to deny that his work in that and other fields had been uninfluenced by the transcendent genius of Black, with whom he was for a short time associated.

Adam Smith.

Adam Smith, while Professor in Glasgow, delivered lectures in the University, containing the fundamental principles afterwards elaborated and published in his *Wealth of Nations*, a work which became the creed upon which the policy of this great nation was for many years founded, and which at that time added so much to its material prosperity.

The Brothers Hunter.

The brothers Hunter, the great anatomists and physiologists, we claim as Glasgow men. William Hunter, the elder, was an alumnus of our university. He was the better educated, the broader minded, and in some respects the greater of the two, though he has been overshadowed by his more brilliant brother. His anatomical and pathological collection is very fine, and contains some very beautiful preparations made by his own hand or under his direction. His work on the gravid uterus alone entitles him to a niche in fame, and is so true and so complete that it forms the basis of the text on that subject to the present day. William was otherwise a great collector and accumulator of treasures in art, in books, and in coins, as well as in comparative anatomy and pathology.

John Hunter was educated professionally by his brother, and through him was vicariously a student of Glasgow University. John Hunter owed his existence, as we know him, to his brother William, who instructed him in anatomy, pathology, and surgery. Not only did he do so, but, by making him collaborate with him in his penetration into the mysteries of nature, he taught him how to think and placed him on the rails of original research.

Thought is the creator and vivifier of all human affairs, and it is the progress of ideas which ultimately determines the progress of the world. Not only by his careful and persistent research, but by the boldness of his ideation and his philosophic methods, John Hunter has been placed in the same rank as Aristotle, Bichat, and Harvey. Yet during his life he stood alone—as possibly all such men must. He never had more than twenty students at his lectures, and at the beginning when a solitary student presented himself he had to ask the attendant to bring in the skeleton so that he might address them as "Gentlemen"!

At his death John Hunter's collection numbered 10,000 preparations illustrative of researches covering the whole range of the animal kingdom. That collection was given to the Royal College of Surgeons of England, and right royally those Englishmen have preserved and enhanced the donation, adding fresh increments and vivifying it by constant service. It has become one of the noblest museums of its kind.

William Hunter gave his museum and all its treasures to the University of Glasgow and left money to erect a suitable building for it.

The two brothers Hunter came from the farm of Long Calderwood, near East Kilbride, a few miles from Glasgow. On making a pilgrimage to the vicinity I called one day at a small cottage on the farm on the door lintel of which were the initials J. H. and a date, and asked the inmates whether they had knowledge of the Hunters who used to live at Long Calderwood, two of whom were great men. These folk had never heard of them! One of the inmates, a lady ninety years old asked—"What hae they been doin' that ye are speerin' for them?" *Sic transit gloria mundi!*

Lister.

Lister introduced and perfected the antiseptic treatment of wounds while he occupied the Regius Professorship of Surgery in the University of Glasgow, founding his theory on the researches of Pasteur on fermentation, believing that inflammation might be due to a somewhat similar process. How antiseptics revolutionized practice all over the world does not require to be repeated here.

After spending nine of the most active years of his life and those fullest of scientific fruition, Lister passed quietly away from Glasgow, without public recognition of his services, the general body of citizens being unaware that a great scientific achievement had been wrought in their midst. It was long afterwards, when all the world wondered, that Glasgow became alive to what it had possessed—and lost!

Kelvin.

The achievements of Kelvin the great physicist are too vivid and fresh to require reminder at this time.

BROADER VIEWS OF LIFE.

My late colleague, Sir William Gairdner, who was President of the British Medical Association in 1888, considered, in one of his erudite addresses, the Physician as a Naturalist; to-day I have to invite attention to the extension of our studies in the same direction.

Do we concentrate our studies too much on human phenomena to the exclusion of life as a whole?

Our so-called divisions of nature are purely arbitrary conveniences, having no existence except in our own minds. In the material world there is neither break nor pause. In a sense all matter is living and the term "death"—though correct as applied to individual existence—is a mere expression significant of transference into fresh forms of life.

We are but a bit of nature, and everything pertaining thereto must have a bearing on humanity. The history of the rocks, which are force in static form, affords much interesting material for the study of evolution. Aided by the disintegrating effects of myriad germs, the rocks crumble when in contact with the atmosphere, and the impalpable dust produced therefrom is converted by the action of other forms of micro-organisms into pabulum suited for plant life. The rootlets of the plants display their selective faculty on the material thus prepared. The matter of which rocks are composed, when dissolved and held in solution, is used for various purposes in the animal economy. The coral insect abstracts from the ocean calcareous matter which it deposits round itself and which collectively forms the solid structure producing the submarine basis of many islands in the warmer seas.

In higher forms of life specialized cells, the osteoblasts, exercise their selective influence in abstracting from the blood stream the lime salts which they deposit in an area in their immediate vicinity over which they have control, and in doing so arrange themselves in ordered sequence, carrying out the architectural design of bone construction according to hereditary law.

Comparative anatomy and physiology, much as they have been studied, still present many fields which have not been traversed, and from which a discerning eye may reap an abundant harvest—rich in itself, but also fraught with interest and of service in the elucidation of problems in the life of man.

Nor is it necessary to go far afield to begin such study. The lion, the elephant, and the duck-billed platypus are of great interest in themselves; but who knows about the fauna and flora of the dermal coverings and hirsute appendages of the ubiquitous mouse, which perseveringly installs itself in and near the haunts of man, and even penetrates the family circle?

What man thinks of the mouse may be summed up in the form of means of destruction—traps, gins, cats! What the mouse thinks of man would not flatter his vanity. The mouse regards man as an impotent animal who issues threats of destruction, and makes the most clumsy, short-lived attempts to carry them out; as a pusillanimous antagonist, a creature who for centuries has waged war on mice—with no effect! They are still as numerous, as bold, as intelligent, as agile, as beautiful, and as destructive as ever!

The "wee sleekit cowrin' tim'rous beastie" to this day pursues the even tenor of his way. No other animal has such opportunity of carrying disease into the domestic hearth. Mice of one kind or other attend the harvesting of grain in the field, follow it to the corn-rick or barn, infest the stores, mills, or bakeries, and are ready to attack the flour when made into bread. They go over the cots of children, diseased or healthy; they run from house to house; they lick every used plate, cup, or saucer on which there is a particle of sugar or crumb of bread. The mouse is a carrier of disease—but what are its pathological records? Is it subject to contagious diseases, and if so how does it disseminate them? Is it attacked by sarcoma or cancer, allied to that which attacks man? Even for the protection of humanity, apart from the intrinsic interest of the study, the mouse and its ways are worthy of the searchlight of scientific investigation.

Microbiology is only in its infancy. There are myriads of germs surrounding us of which we know little, and study of which offers fruitful fields for scientific research. The organisms contained in food, which are transmitted to the alimentary canal, are of many varieties, some benign and useful for the digestion, and others malignant and hurtful. The flora of the colon is a great field of study, and while there are organisms present which are not conducive to health, there are others which are necessary to the completion of digestion. The colon is an excellent incubating chamber, and instead of allowing it to grow weeds we ought to endeavour to sow in it plants which would be of use in the way of promoting digestion and in producing chemical compounds of service to man and combative of the weaknesses and diseases to which he is liable. This might be improved by introducing new organisms which would grow in the colon garden and produce therein beneficent cultures giving forth their enzymes and vitamins—inhibitory to the weeds in the canal and to their products in the system. Is it too much

to hope that such gardening, were it carried out successfully, would aid in the prevention of appendicitis, possibly might influence beneficially other diseases, such as arterio-sclerosis and rheumatism, and might even have an effect in inhibiting the deposition of carcinoma? A healthy colon contributes to longevity and a happy state of mind.

Our habits of thought are so interwoven that speculative or scientific inquiry introduced into one field influences and affects other fields of cognate thought. It was research into fermentation of the juice of the grape, instigated for utilitarian purposes by the wine growers of France, that led to the introduction of the antiseptic system of the treatment of wounds. While conducting in a chemical laboratory an abstract research into the properties of nitrous oxide gas it was the coincidence of toothache in the person of the investigator that led Humphry Davy to the discovery of general anaesthesia, and which he advised for the prevention of pain during surgical operations. Though this discovery was published broadcast in the works of Sir Humphry Davy, so irreceptive were the people of the period, especially the members of the medical profession, that for forty years that great discovery remained dormant—neglected and unused. Think of the inhabitants of the world, suffering for forty years pain and anguish that could have been prevented had the discovery been utilized!

The latter is but an illustration of many discoveries made by our own people which, after announcement, have fallen on deaf ears and have not been used until other nations have heard of them and have discerned their potentialities and turned them to practical account. Is this one of our national defects or diseases? Does it arise from want of scientific training or habits of thought among the people? Whatever it is, like our diseases, it is very costly. The nation not only loses prestige, but in one noted instance—the neglect of the utilization of the discovery of the basic salts—the nation has lost many millions a year; had we utilized it and all that followed therefrom in extended chemical research, we would have been better prepared for the great war and it would have aided greatly our economic position to-day.

Syphilis and Tubercle.

Syphilis and tubercle are both germ diseases which are still prevalent and sap the strength of the people. Is everything being done that ought to be done to stop their ravages?

Now that the Government, and the laity, have been educated by the medical profession to the fact that syphilis is a preventible germ disease, and can be stamped out by means made known to them, if this generation does not stop the disease it commits a crime against posterity.

With tubercle the problem is much more complicated, as it is a disease common to man and certain of the lower animals, and great efforts are being made by the sanitarians to combat the conditions leading to its production.

BRAIN SURGERY.

The Evolution of the Knowledge of Brain Function.

In my student days physiologists taught us that the brain acted as a whole, without recognition of localized areas within it endowed with specialized function.

In 1861 Broca demonstrated at the Anthropological Society in Paris the brain of a man who had for forty-one years lost the faculty of speech. The specimen showed softening of the third frontal convolution on the left side. Broca deduced from that and other observations that the base of the third frontal convolution on the left side was the seat of the faculty of articulate language, and further advanced the suggestion that there were probably other areas in the brain connected with localized function. Broca's discovery was iconoclastic; it shook the notion entertained regarding the unity of brain function to its foundation. Clinicians such as Charcot and Pitres were generally aware that lesions of one side of the brain were often associated with paralysis of the opposite side of the body; and Hughlings Jackson suggested that unilateral convulsions indicated in the same way disease of the opposite side of the brain. In 1869 Hughlings Jackson stated that, in his opinion, there were many limited areas in the brain connected with distinctive functions, founding his opinion on clinical experience and direct observation of pathological facts. He also foreshadowed the existence of higher psychic centres.

The views of Broca and Hughlings Jackson were subjected to much controversy and doubt. A new method of investigation was introduced by Fritsch and Hitzig in 1870, who applied the faradic current to the brains of dogs, and found that in response to such stimulation of certain localized areas co-ordinated movements were evoked in distinct groups of muscles on the opposite side of the body. Ferrier published in 1873 the results of his memorable research on the brains of the higher apes, mapped out definite areas (chiefly in the central convolutions) which responded to faradic current, producing definite movement of groups of muscles on the opposite side of the body, differentiating areas for the various parts of the face and upper and lower extremities.

Whether deductions made from the localization of function in the motor cortex of the brain of the lower animals were applicable to man had yet to be proved. This I had the opportunity of doing, by direct observation of the effect of injuries, especially those of a limited character. By the application of this knowledge and the deductions drawn therefrom, cerebral neoplasms were diagnosed, and the restoration of function after their removal aided in confirming the localization.

Opportunities afforded for observation on man convinced me that both in Broca's lobe and in the ascending central convolutions there were areas in the brain with specialized functions, and by deduction that the same existed in other parts of the brain.

In the early seventies numerous occasions presented themselves for noticing the effects of interference with the brain of man, and it was early apparent that injury to the ascending convolutions induced motor disturbances of the opposite side of the body ending in paralysis, when due to pressure or destruction of brain tissue; and to spasms when due to irritation of the cerebral cortex. Especially were these convincing when cases of limited lesion were followed by monoplegias on the opposite side of the body.* These were relieved by operation, the function of the part being restored by the removal of the lesion from the brain. This was also demonstrated in hemiplegias, due in some cases to extra- and in others to sub-dural haemorrhage exercising pressure on the brain, and the speedy recoveries following their removal; whereas, in the intra-cerebral haemorrhages in the same regions the recoveries after removal were protracted and incomplete in proportion to the damage done to the brain tissue itself. Such traumatisms were not always accompanied by external evidence of injury, and where external evidence of injury did exist it did not always correspond to the damaged part of the brain.

When motor function was interfered with by pressure it was found safer to operate over the area of the brain whose function was implicated than to take external injury of the scalp or skull as a guide. Lesions of an idiopathic kind, when they presented themselves with disturbance of localized cerebral function, were exposed in the same way and where practicable were removed. Several of these idiopathic lesions were found to present more definite symptoms of their localization than most traumatic lesions. Thus, when an abscess of the brain presented itself with symptoms of motor aphasia, it was diagnosed to be located in or near the base of the third frontal convolution, where it was found; and when a tumour with multiple symptoms indicative of primary involvement of the anterior part of the left frontal lobe with secondary extension to the ascending frontal convolution presented itself, the diagnosis, though more difficult, was made with sufficient approach to accuracy to enable the tumour to be located and removed by operation (1879), giving complete relief to the symptoms and curing the patient. There were several tumours in the motor cortex and one in the para-central lobe diagnosed (in 1883) and operated on. All of them were diagnosed and the neoplasm successfully removed from the brain with the restoration of function. One case, described as a focal lesion in the motor cortex from which blood and disintegrated tissue were removed, was probably a disintegrated glioma into which haemorrhage had occurred—though at that time the appearances of disintegrated gliomas had not been sufficiently recognized.

* As a student of Glasgow Royal Infirmary I was given the means of studying lesions in the base of the third frontal convolutions producing motor aphasia. Two such cases were in the medical wards during these years, the lesion afterwards being verified by the autopsy. In 1873 a man was seen who had received a blow from a sharp pick over the parietal region of the right side of the skull which had driven in a small portion of the inner table of the skull. He suffered from spasms of the left hand and forearm followed by paresis. The depressed bone was found to have penetrated the dura and was lodged in the middle part of the ascending frontal convolution. It was removed therefrom along with external débris. The spasms ceased and the paresis disappeared in a few weeks. Three other cases of injury to the brain of a limited nature were seen in the early seventies which verified cerebral localization—one from the blow of a pointed knife, one from glass, and one from delf; all had penetrated the skull and dura, and small portions had lodged in the brain—producing localized lesions.

At this period Ferrier visited the Royal Infirmary, making inquiry into the function of the brain in man. The question was raised as to whether the information laid before us by Ferrier in his work on the brain of the chimpanzee had borne fruit in our operations on man—especially as to whether the ascending convolutions in man had been found to correspond in function to the analogous parts in the brain of the chimpanzee. To this question an affirmative answer was given, and it was suggested that a demonstration such as we could give would be welcomed by the scientific world, where confirmation of these points was eagerly awaited.

In the year 1888 I had the opportunity of addressing the British Medical Association on the subject of brain surgery, and then presented lesions from many different regions of the brain which had been diagnosed by localization of function and had been removed by operation.

In the years that followed much work was done by surgeons toward the elucidation of the functions of the brain, the pathology of the lesions and their mode of removal. Hughlings Jackson, Mott, and Gowers continued to give inspiration from the clinical side. Ferrier and Horsley and Beevor did much painstaking investigation on the brains of a variety of animals, and their results were of much value. Horsley, Godlee, Ballance, and many of their London colleagues followed these by brilliant operations on man. Horsley was indefatigable in his research work, and everyone regrets that in his devotion to national duty his life was sacrificed on the burning plains of Mesopotamia. In these early days Ferrier in London was the *vis a tergo* to many of the surgeons and helped to stimulate and give them confidence.

In America there was likewise a vigorous growth of cerebral surgery, and those who took up the subject enlightened it, such as Allan Star, my old friend Keen—the youngest man in America—Harvey Cushing, and many others, all doing valuable and accurate work. D'Antona of Naples, Durante of Rome, Lucas-Championnière of Paris, Bergman and Krause of Berlin, were prominent at the earlier period of this evolution.

Sensory Phenomena—in the Post-Rolandic Convolutions.

From direct experiment on animals it was at first announced that both pre- and post-Rolandic convolutions were concerned in the production of movement, and were included therefore in the motor area. While accepting tentatively this conclusion founded on direct experiment, cases arose in man in which sensory impressions were the only phenomena produced by lesions in the cortex of the post-Rolandic convolutions. In other instances the lesion produced primarily sensory impressions, yet from extension forward the floor of the Rolandic fissure became involved and motor symptoms developed.

Such cases were recorded by me in 1888: in one of them a protospasm of the hallux was preceded by sensory impressions—what was described by the patient as a "curious sensation"—and pain in the great toe. The pain in the great toe was always present, but occasionally it became so severe as to make the patient cry out. The lesion was found mainly in the upper portion of the ascending parietal convolution; a smaller one of more recent origin was discovered in the upper part of the ascending frontal convolution, and this was the cause of the later motor spasm of the toe.

A somewhat similar instance appeared in another case in the same brain centres some years after. In this a sensory impression in the right foot heralded the invasion of the upper parietal convolution of the opposite side. The lesion was removed in a wedge-shaped portion of brain tissue. The patient quickly recovered under one dressing. The pain and previous discomfort in the foot entirely disappeared after the operation, but there was instead a numbness or—when the foot was left to itself—a "want of precise sensation of how to place the foot." Automatic associated movements, such as walking, were easy on a pavement, and when the patient concentrated attention on the movements of the foot they could be made according to will. After the first three months the patient walked very well, though she said there was still a trace of the defect "in the feeling" of the foot.

In several cases neoplasms and traumatisms in the post-central convolutions produced sensory impressions in various parts of the body without motor phenomena. In some the sensory impressions were associated with motor phenomena—monospasms or convulsions—and others with paralysis. In the majority, however, the lesions in the motor area involved both ascending convolutions, and the motor phenomena, being more obtrusive, were more noticed.

It was evident that a discrepancy, which required explanation, existed between the clinical data in man and those of direct experiment on the chimpanzee. Could it be due to the inability of the lower animals to express their sensations in language intelligible to man that the sensory phenomena were missed? Even were it so, it would not account for crediting the ascending parietal convolution with the function of producing motor phenomena when faradically stimulated.

From such clinical experience one was therefore prepared to accept the conclusion drawn from Sherrington's notable research on the brain of the higher apes in which, contrary to the deduction of other experimenters, he found that the ascending parietal convolution did not respond by production of movement when stimulated faradically. This was a comforting conclusion to the clinician, as it brought direct experimental research into line with the observation on man, and confirmed the latter in a way which would have taken many decades to have made *positive* by clinical observation alone. He showed that the ascending frontal and the floor of the fissure of Rolando alone responded to faradization, producing movements of the affected parts on the opposite side of the body. In clinical work the invading lesion does not always limit itself to special areas of localized function. When sensory symptoms, which do not prevent the use of the limb, appear primarily, they are apt to be overlooked or their importance minimized, and when by extension of the lesion into the pre-Rolandic area motor phenomena are presented, the sensory are apt to be overshadowed.

The cyto-morphology of the anterior central convolutions differs from that of the post-central. The Neister-Betz pyramidal giant cells exist in the anterior convolutions and not in the post-central. This may be made use of in examining specimens taken from the brain by operation, but cannot contribute to the primary diagnosis. The difference in the architectural arrangement of the cells in the two ascending convolutions would *a priori* indicate difference in function.

The sensory phenomena exhibited when other regions of the brain have been the seat of lesions have been previously recorded by me, and subsequent experience—by many others as well as myself—has abundantly borne out the conclusions there arrived at. The word deafness and psychic blindness have been particularly illustrated in one patient who had a lesion of the posterior area of the upper temporal convolutions with extension to the angular gyrus. This patient heard and saw physically, but did not comprehend what he saw and heard. "Hearing he heard not, and seeing he saw not." He asked for a drink and would persist in asking for it. Though the nurse had duly presented him with the drink and requested him to take it, yet he did not take it, but again repeated his request. When, however, his sense of touch was brought into play by placing the glass on his lips, he at once perceived and took it into his own hands and drank. When the lesion was removed he saw and heard correctly and appreciatively and tried to explain his previous difficulties.

Lesions in Silent Areas recognized by Distant Symptoms.

Though there are some areas of the brain whose functions we do not yet know sufficiently to enable us to determine when they are invaded by small neoplasms, yet when these neoplasms increase in size sufficiently to involve adjacent parts, by pressure or otherwise, the implication of these parts, in definite order, aids in indicating the position of the lesion in the silent area. Take, for instance, the invasion of the temporo-sphenoidal lobe by large neoplasm.

Localizing Symptoms of Large Abscess and Neoplasms in the Temporo-sphenoidal Lobe.

While localizing symptoms of a small abscess situated in the middle of the temporo-sphenoidal lobe above the tegmen are still insufficient to enable one to make a definite diagnosis, the symptoms occasioned by a large abscess (or tumour) in that region are quite pronounced. This symptom complex of large lesions in the temporo-sphenoidal lobe was pointed out by me in 1884 and again in my address in 1888. Since then it has borne the test of further experience. The symptoms are due to pressure extending upwards from the temporo-sphenoidal lobe to the adjacent structures and affecting them in ordered sequence. They are, first, a passivity over the face on the opposite side from the lesion, which as the lesion extends becomes a definite paresis, and may ultimately pass

into paralysis. The facial paralysis is, however, like that from all lesions of the facial centre of the cerebral cortex, not complete, as the power of emotional expression is retained to a slight degree, and the patient has the power of closing the eyelid by an effort of will, though it remains partially open during sleep. This is of importance as, in many cases where the temporal bone is affected, facial paralysis is present on the same side as the lesion, and as it arises in such a case from damage to the nerve trunk it is complete. The power of emotional expression is not retained in the upper part of the face.

The arm on the opposite side from the lesion becomes affected with paresis after the involvement of the face, and it may become completely paralysed—though in abscess it is seldom allowed to reach that stage. The leg is not affected.

Coincidentally with the facial paresis, and sometimes preceding it, there is dilatation of the pupil on the *same* side as the lesion, along with a degree of ptosis when the neoplasm is large. The pupil on the same side as the lesion is affected early, but at first so slightly that the degree of dilatation may easily be missed unless specially looked for and both eyes tested for accommodation. It soon becomes dilated, however, and very sluggishly responds to light and accommodation, and latterly it becomes fixed—stable mydriasis. The ptosis is usually very slight, and may be absent. The explanation of these phenomena is simple if one looks to the contour of the cavity which contains the temporo-sphenoidal lobe, which elsewhere has been described by me as a "box without a lid"—so that the way pressure from within can be relieved is upwards, and consequently the motor cortex becomes affected, while the third nerve is caught by pressure against the posterior clinoid process.

The same symptom complex was found by me to accompany a tumour growing in the temporo-sphenoidal lobe and displacing the brain tissue upwards.* The symptoms succeeded one another very slowly but in perfect sequence.

The varieties and characteristics of cerebral tumours are now well known. We have the simple subdural meningeal fibromata which exercise pressure on the brain and which are so easily removed—of which this is a specimen [tumour shown]. It was forcibly ejected so soon as the dura was opened, the cerebral pressure within speeding the parting guest. At the other extreme we find the sarcomas of the meninges and gliomata of the brain, which are both often difficult to eradicate. It would be impossible to go into these cases in series within the limits of this address. Attention is, however, drawn to one or two cases illustrating special points.

The size of the tumour of the brain ought not alone to determine the question of removal. The smaller the tumour the greater the credit in diagnosing and removing it, as extent of invasion and the pressure effects therefrom will be the less. The larger the tumour the greater is the destruction of brain tissue and the greater will be the encroachment on the membranes and cranial walls necessary to give relief. One ought not, however, to be deterred from operating on a large tumour merely on account of its bulk, as in most cases the opening of the cranial walls will at least give relief to symptoms and often will retard or prevent blindness ensuing upon optic neuritis with choked disc. Some of the larger tumours are amenable to removal with good results, as, though large, they are of a nature which lends itself to easy removal, because the tumour has undergone degeneration. After such operation many patients have experienced relief of symptoms and restoration of function. The following are examples.

A Glio-sarcoma of Large Size occupying the Fissure of Sylvius: Removal.

As an instance of this kind, take the case of a young man of 18 years, who had pressure symptoms for over two years before coming under observation. When seen by me he had inequality of the pupils, the left being dilated and fixed, and there was a degree of ptosis of the left eyelid. The sight was markedly diminished from choked disc and nerve atrophy. He would probably have had at an earlier period partial hemianopsia, but that could not now be determined.

There was marked paralysis of the right side of the face and paresis of the right arm which had come on subsequently to that of the face. There was slight motor aphasia and also psychic blindness and a degree of psychic deafness. The general symptoms of brain pressure were marked. The symptoms pointed to a tumour of large size in the fronto-temporal region involving the central convolutions. Percussion over that area elicited a differential "hollow" note.

The temporo-central region was freely exposed, showing flattened cerebral convolutions of a yellowish discoloration. There was no brain impulse to sight or touch. The cerebrum was under much pressure, and though the aperture in the membranes was large the cerebrum bulged considerably beyond the limits of the wound. On deep palpation a slight degree of semi fluctuation was detected. An incision into the brain itself, half an inch in depth, allowed the exit of a gelatinous amorphous material which, on first opening, was for the most part ejected with considerable force. The remainder had to be removed by spoon. The walls of this large cavity were very thin and friable and broke on removal.

When the tumour was dissected off the whole length of the Sylvian fissure with its vessels lay exposed, the tissues being flattened. The bases of the central convolutions were fused and crowded together so as to be barely recognizable. The island of Reil was not visible—whether it had been destroyed in the growth or had been pulped by pressure was a question. The temporo-sphenoidal lobe was much compressed and its convolutions fused together.

The structure of the tumour, judging from the fragments secured, was that of a glio-sarcoma which had undergone extensive cystic degeneration. It had probably sprung from the upper convolutions of the temporo-sphenoidal lobe and invaded the Sylvian fissure under the island of Reil and pressed the various convolutions aside. It had exercised forward pressure so as to implicate the third frontal convolution or the fibres therefrom, pressed the third nerve against the posterior clinoid process, and probably affected the chiasma. It occupied such a large space—from the posterior part of the temporal forward to the frontal lobe and upwards into the fissure of Sylvius—that one feared the effect of removal owing to its bulk. The patient, however, after recovering from the immediate effects of the operation, rapidly became conscious, and was greatly relieved that his headache and pain had vanished. The paralysis and paresis of the affected parts lessened after the first week and gradually disappeared. At the end of six weeks he was able to walk well and use his arm freely, the paralysis of the face having also cleared away—all but a slight passivity on smiling. The sight, however, did not recover, the atrophic changes in the nerves having been too pronounced. With this exception he lived well for six years, was able to take walks in the country every day, and had commenced typewriting and braille and music. He had no recurrence of the tumour formation. Death was due to what was reported as a severe attack of influenza with pulmonary trouble.

Deep-seated Tumour situated in the Conducting Sensory and Motor Paths of the Left Hemisphere, and involving the Lateral Ventricle.

The patient, whose powers of introspection were well developed, graphically described her sensations at the early period of her illness; the following is a summary:

She had a period of malaise lasting several months, toward the end of which she became aware of a "peculiar" sensation in the right hand, which extended somewhat up the right arm. At the early period, notwithstanding this sensation, she could use the hand "quite well." For nine months this sensory sensation was the only symptom. Then she became aware of defective appreciation of the size, form, and weight of objects touched by that hand, and somewhat later the astereognostic and baric sense were found to be defective. Tactile sensation was defective as far as the elbow. Afterwards the fingers and hand became stiff, though she could "make them move." A slight spasm was found in them, and almost coincidently the muscles of the face and those of the leg on the same side became affected with rigidity.

A year after the preliminary symptoms she had a convulsion described as general, in which she lost consciousness. In it the whole body was described as being arched backwards. Further seizures occurred at long intervals. She was unconscious in them all and the body was arched backwards in the severe ones.

There was a gradual extension of impaired sensory function to the leg and face—apparently simultaneously—though these were not so markedly affected as the arm. At a later stage tonic spasms extended to both leg and face, though in the leg it was more marked than in the face.

During all that period her mentality was clear. She had what she described as a fullness in the head, but no headache. Her sight was good and there was no optic neuritis. She had neither vertigo, sickness, nor vomiting. Gradually the motor phenomena predominated over the sensory, the tonic spasm in the arm and leg became pronounced, especially marked in the former. She could neither walk nor stand. Ultimately, about two years after the onset of the illness, she became unconscious, with involuntary evacuations. At this very late stage the friends consented to operation.

The history pointed to an extensive slow growing neoplasm situated in the deeper parts of the brain, involving the sensory and also the motor tracts issuing from the ascending parietal and frontal convolutions. The degree in which the sensory symptoms prevailed at the beginning of the case, and persisted throughout, indicated the posterior central convolution or its conducting paths as the parts primarily involved, and the convulsive movements which ultimately—occasionally—showed themselves were evidence of extension of the irritation to the anterior ascending convolutions, though the opisthotonic arching of the back described in the convulsion indicated involvement of the parts adjacent to the lateral ventricle.

The neoplasm had to be looked for in the conduction paths of the posterior and anterior central convolutions, the former connected with the lemniscus, the latter with the corona radiata. The size of the neoplasm was so considerable as to involve both these parts.

* Wernicke has subsequently also drawn attention to the affection of the pupil—dilatation and ptosis consequent on pressure on the trunk of the nerve on the same side.

In this unconscious state operation was performed, a large portion of the brain being exposed to give room for manipulation, the centre of the opening being over the ascending parietal convolution. The relation of the dura to the skull was normal and there were no adhesions to the pia. The brain substance and its pia matral covering were possibly somewhat paler than usual. Otherwise the cerebral surface was normal.

An incision was made into the brain substance in line with the fibres from the sensory arm centre—ascending parietal—so as to divide as few of them as possible. At the depth of an inch from the surface the instrument came in contact with a firm neoplasm markedly different in consistence from that of the surrounding brain. Further investigation showed that it was an elongated mass lying obliquely from above downwards, forwards, and inwards (mesially) toward the base, traversing the fibres passing toward the optic thalamus, and involving those of the corona radiata.

The lateral ventricle was freely exposed (a gush of brown-coloured fluid accompanying the opening), the neoplasm involving the external wall and being adherent to the choroid plexus, from which it had to be separated by ligature. It probably interfered by pressure with the internal capsule. It was difficult to remove, requiring, as many of these deeply seated tumours do, delicate manipulation, restraint of force, guided by intensive tactile sense. Several times during the procedure the pulse and respiration gave ominous warnings. For ease of manipulation in the confined space and to lessen the disturbance to the brain tissue during removal the tumour was divided into three pieces, gently raised, and its vascular connexion ligatured. These three pieces measured, after hardening in spirit: first piece, 2¾ by 1¼ in.; second piece, 2¼ by 1¾ in.; third piece, 1¾ by 1¾ in.

It was seen to consist of a fibro-endothelioma with slight encapsulation, some of the cells being larger and suggesting beginning of malignancy.

The external parts were carefully replaced. Owing to the fact that the greater part of the manipulation for the removal of the tumour had taken place in the brain substance, the pia matral investment being left intact, and also to the fact that the removal of the tumour mass had relieved the tension, the edges of the wound in the pia mater came into close apposition like a linear scar—a great point in the prevention of cicatrices becoming adherent to the dura. The dura matral covering was also ample and was carefully readjusted.

After the operation the breathing, which had previously been stertorous, became normal. Four hours after the patient wakened from sleep and it was found that she had recovered consciousness, asking where she was and how she had come into the nursing home. Her curiosity was gently satisfied, but she was not encouraged to make further mental effort at that time. She had long sound sleeps—the first satisfying sleeps she declared she had had for many months. Along with the restoration of consciousness, continence was restored.

Two weeks after, the tonic spasms of the leg had passed off, and three weeks afterwards she could lift her lower limb, and the function thereafter fairly quickly returned. The tonic spasm of the face disappeared. The tonic spasm of the hand remained, and though this lessened in time, the degree which remained, taken along with the defect in tactile sensation, was such that use could not be made of that hand for delicate manipulation. The astereognostic and baric sense were diminished. The patient was, however, able to use a stick in that hand to steady herself in walking.

After the operation her general health improved so rapidly and she felt so well that it was with difficulty she could be persuaded to remain in bed until it was deemed prudent to allow her to rise. When she did rise she was able to walk without assistance, and soon her agility in walking was marked. She could walk several miles very rapidly without fatigue. Though the defect in the hand remained permanent, she entered into and enjoyed life to the full for twelve years. Her mental powers were unimpaired. She remained clear-headed and took an active part in entertaining her friends and in sustaining conversation.

She afterwards died from an acute attack of appendicitis with general peritonitis.

It is difficult to make certain as to where this tumour originated. The sensory symptoms would point to the conducting fibres from the ascending parietal convolution. The elongated tumour itself formed part of the external wall of the left lateral ventricle, from which it extended downwards toward the base and upwards toward the vertex. The attachment to the choroid plexus was intimate. It did not grow from the membranes over the vertex, as it did not even involve the cerebral cortex on the surface.

Tumours of the Hypophysis.

Many such tumours have been reported as having been operated on with a considerable measure of success. Horsley had at an early period four cases. Their interest has been heightened by the growth of knowledge as to the influence of the pituitary body on growth and the production of acromegaly.

There have been four cases in my experience in which the pituitary body was diagnosed as being involved. Two of these were not operated on: one on account of the general weakness of the patient, the other as the progress was slow and the symptoms so slight that operation was not advised.

One of the cases operated on was a fibro adenoma growing from the hypophysis which had caused absorption of the sella turcica, as seen by *x* rays—the absorption taking place principally forwards toward the frontal lobe. The patient had a degree of bilateral temporal hemianopsia, unilateral loss of smell (anosmia), and severe frontal headache. The tumour was removed by the temporal route and the patient made a good recovery. Though the slight degree of acromegaly which was present before the operation did not seem to have been much relieved, there was, however, no increase after the operation.

The other case was of a peculiar type—a fibro-cellular tumour or bundle of tumours, of much elongated polypoidal form, springing from the membrane of the hypophysis and involving its substance. The radiogram showed much destruction of the sella turcica forwards and downwards. The sense of smell was absent on the left side and it was defective on the other; the sight was so defective on the left side that hemianopsia could not be made out, though hemianopsia was present on the opposite side. There was proptosis of the left eyeball, evidently from pressure in the orbital cavity. Patient complained of a constant heavy feeling in the left side of the brow and pain in the left eyeball and over the supraorbital nerve distribution. There was a slight degree of acromegaly: the hands and the lips and nose were thick.

The operation in this case was through the fronto-temporal route. On opening the dura and lifting the frontal lobe, what seemed at first to be a single tumour was exposed, but on attempting to remove it the mass separated into a series of polypoid growths with their base forwards, lying in line with the olfactory lobe. The longest of them measured one inch and three-quarters, the shortest one and a half inches. The breadth of the broadest part was about half an inch. They were deep red in colour and vascular and somewhat firm to the touch. There was a depression in the frontal lobe in which they lay. Four of these elongated masses within the subdural space, when elevated or turned aside, showed a fifth one, the base of which had softened and thinned the dura and made a depression through the orbital plate of the frontal by which it exercised pressure on the orbital cavity. The bone under this growth was dark coloured and vascular. The attenuated pedicles were attached to the membranes of the hypophysis, but also involved the tissue of the gland, a portion of which had to be removed with each. Free bleeding ensued from the veins of the cavernous sinus during and after removal, which pressure arrested.

The patient made an uninterrupted recovery. The hemianopsia and anosmia disappeared along with the pain in the head. He lost the appearance of acromegaly, though part of this might be due to the general thinning of the whole body. He lost flesh and weight, but remained healthy.

Polypoid growths are much more likely to arise in the sphenoidal cells, and, *a priori*, when growing from the membranous covering and body of the pituitary, one would have expected them at least to have invaded the sphenoidal cells in process of growth. This, however, they did not do in this case.

Points regarding the Subdural Space.

Questions have been asked, especially by foreign colleagues, as to what were the essential elements in brain surgery that promoted success, and how it was that pyogenic invasion of the brain in the form of brain abscess would be overcome. It is apparent that one must have an intimate knowledge of the brain and its function—its anatomy and physiology—and thereafter observe the rules whereby one may gain access to the structure with the least possible damage. The anatomy of the brain must be taken in relation to its envelopes, the head as it is normally; and not the soft contents of the cranium, separated from supports, lifted apart and altered in form by being laid on a flat surface.

As it is leptomeningitis that is the most fatal complication in abscess of the brain, attention to the pia arachnoid and the subdural cavity is necessary.

Not so long ago the peritoneum was supposed to be inviolable; its opening was to be avoided on account of peritonitis, which ensued from the entrance of organisms. Now, with asepticity, that problem has been overcome, and the peritoneum is invaded daily without evil consequences. The pleura likewise was not to be opened, as the physiological dogma of the day taught that the lung was only kept in place through atmospheric pressure, and to open the pleural cavity was to induce instant collapse of the lung. A different view of the physics of the lung recognized that molecular cohesion

—or surface tension—between the two layers of the pleura is the main factor in maintaining the lung in full expansion, and after the two layers have been separated, while performing operations on the lung, the aid of this force may be relied on to restore the lung to its normal state of expansion. So that, by making use of this force, operation on the lung can be freely undertaken, without resort to special apparatus.

The physics of the brain and its meninges are also worthy of attention, especially by those who desire to invade the subdural cavity—as anyone must who is going to perform an operation on the brain.

Doubtless everyone knows the elemental anatomical facts regarding the cerebral coverings and their relations, but do we fully realize and act upon them? We know that there is a subdural space, but there is a confused idea that the spider has spun its web with many attachments between the dura and the surface of the brain.

The arachnoid scarcely exists as a distinct continuous detachable membrane over the surface of the cerebrum, but rather as a few sparsely distributed cobweb strands of connective tissue bridging the surface of the sulci, and from which a few detached strands may occasionally be seen during life suspending the blood vessels on the surface of an oedematous brain. Therefore one agrees with Henle[*] rather than with Bichat in his views of the arachnoid. A slight extra separation of the pia from the dura by fluid, such as external hydrocephalus or a subdural haemorrhage, disrupts many of the cobweb strands, and a clear subdural space exists, extending from the vertex to the base, and from that to the spinal cord. When this free subdural space obtains, a subdural haemorrhage occurring on the vertex would be free to spread in a thin layer over the surface, and to envelop the brain, extending to the base, and might penetrate into the spinal canal and prove fatal by pressure on the respiratory centre. That this can take place with serious results the following record will show.

On one occasion when starting on a professional visit to the country, and having just left myself time to catch the train, I was taking a ticket at the booking office when I became aware of the people in the queue laughing at some remark which I had only partially caught. It was repeated, however, by an importunate man, who, addressing me, demanded that the "Professor should open his head." I had to go quickly to the train, and on reaching my carriage found that the man had followed, repeating his request. The officials, hearing him make the strange request and seeing that his equilibrium was not quite certain, were keeping him back from the carriage. I had, however, time to look at him for a moment and saw that he was ill—dazed and having inequality of the pupils. I had just time to take out a card, writing on it "Admit patient. Royal Infirmary, urgent, examine head, possible operation," asked the officials to put him into a cab and send him up, when the train departed.

On returning from the visit five hours afterwards I went straight to the Royal Infirmary and found the house-surgeon, who told me he had been coming to tell me the patient was ready for operation when he was overtaken by a nurse to say that the patient had just died suddenly.

Previously they had noted wide dilatation and fixation of the left pupil, and a hemiparesis of the right side of the body. He had given them the history of having fallen ten days previously and struck his head on a projecting stone. He had never, at that time, been unconscious, but suffered from great pain and feeling of weight in the head.

He had gone to his work—that of marble cutter—the following day, but was put off at dinner time as the foreman stated he was not cutting his lines straight. He was advised to return when he was "sober." The same thing happened when he again returned to work the next day, when he was dismissed. He stated that he was perfectly sober and had not been drinking. During the time he was being prepared for operation, not desiring to lie down, he sat on a chair, stating that he was easiest when he was leaning forward with elbows on his knees and his hands supporting his head—that he had sat that way since his injury and had never been in bed.

He afterwards went to bed in the ward, where he lay without a pillow, half prone and with his forehead over the side of the bed looking downwards. In this posture he was at ease and fell asleep. Shortly after his position was altered and he lay on his back, immediately after which his breathing became stertorous, his respiration suddenly ceased, and he died.

At the autopsy a subdural haemorrhage of large extent and fully a quarter of an inch thick was found, which had extended from the posterior part of the frontal lobe all over the external surface of the cerebrum, including the occipital lobe. This was semi-coagulated. It was seen that the clot, which had been somewhat adherent to the walls of the subdural space, had recently slipped backwards to the extent of an inch and a half from its original position, leaving vestiges of its presence in the shape of minute clots adhering to the meninges to mark its former place.

The semi-solid clot, which had slipped and shifted its position from the vertex toward the base, had extended through the aperture in the tentorium, crowded the pons and medulla, pressed on the contents of the rhomboid fossa, and arrested breathing. The cause of the bleeding was rupture of the posterior middle meningeal, which had been injured by a fissured fracture which extended from the base toward the vertex without encroaching on the middle ear.

How many times after traumatism does the blood effused into the subdural space spread and gain access to these vulnerable basal parts, especially where the practice obtains of placing an insensible man on his back, gravity thus aiding toward the fatal issue?

During the process of exposing the brain for the removal of neoplasms and while pushing aside the external coverings, if haemorrhage occurs into the subdural space it is serious, and the more so if, after wounding a large surface cerebral vessel, the free opening of the skull and its membrane is delayed. For this reason, among others, the ordinary trephine is seldom used, a large osteoplastic flap being raised instead. The dura is opened from the centre of the exposed surface, care being taken to do so without injuring any of the vessels of the pia mater. In this way a clear view is obtained of the fresh normal surface of the brain without obscuration by blood. The delicacy and tenuity of the superficial cerebral vessels is so great that they abrupt on very slight traction, and in order to ligature them successfully one ought to have previous practice, by ligaturing the strands of a suspended cobweb, and so realize how big and how forceful the fingers are. One has also to educate oneself to refrain from ligating any vessel that may be circumvented, as anaemia of even a minute area of the brain may lead to degeneration and perversion or destruction of its function.

Entrance of Pyogenic and Pathogenic Organisms.

Pyogenic organisms introduced into such a cavity would be disseminated along the loose strands of connective tissue of the pia arachnoid with great rapidity, so that in a few hours the whole pia arachnoid would be diffusely affected and the whole cerebro-spinal system involved. When the pia is affected the whole cerebral cortex is involved.

Though this is well recognized in the steps taken to secure asepsis from without, is it equally carefully observed when removing pyogenic or pathogenic organisms from within a walled-off area in the brain already guarded by defensive adhesion? Does the operator follow the rules he would observe were he about to deal with a localized abscess bound off by adhesions from the general cavity of the peritoneum? Presumably no one would care to open such an abscess through the healthy peritoneum and thereby expose the general cavity to invasion, even though it might be the easier route to follow.

In the earlier periods it was believed that abscess of the brain was pyaemic, and therefore regarded as hopeless.[†] Even were the abscess of the brain pyaemic in origin and located in the white substance it could be dealt with surgically, provided provision were made for the uncontaminated preservation of the subdural space by preventing pyogenic matter from coming into contact with the soft membrane and setting up a leptomeningitis. Therefore adhesions, natural or artificial, must be sought before opening the abscess through the subdural space.

It has been recognized that the majority of uncomplicated brain abscesses—such as those occurring in the temporo-sphenoidal lobe—form by continuity of invaded tissue directly from the point of origin, and soldering of the meninges occurs in process of, and in many cases prior to, the formation of the abscess. There is thus a route or pathway of invaded

[*] Henle describes the arachnoid as a connective tissue of extremely "loose make-up."

[†] At an early period it was said by a very eminent member of our profession that it was useless to attempt removal of a brain abscess as they were all pyaemic and would all prove fatal. Is this belief quite dead?

tissue between the point of origin and the abscess round which nature attempts to form a defensive barrier.

In endeavouring to relieve the contents of the abscess one must keep within the limits of the adhesions by traversing the parts through the affected area from the original focus to the abscess itself. The evacuation would then be accomplished under favourable conditions—as leptomeningitis would be unlikely to occur. It is doubtless more difficult to follow this tract to the abscess than to open directly through the skull, and the latter gives more room for manipulation. But in adopting this course one is opening the general subdural cavity and exposing it to contamination unless one affects the closures of the space by soldering the membranes artificially before proceeding to evacuate. As leptomeningitis is the most fatal complication of brain abscess it is of paramount importance to prevent its occurrence.

Subdural Space: Leptomeningitis from Violent Vibration in Opening the Skull.

The method of removing the osseous covering in order to gain access to the abscess is of importance as, if in so doing vibration of a rude kind is produced, the spicules of eroded bone at the seat of disease, being bathed in pyogenic matter, are apt to penetrate the soft membranes with their jagged edges, and to inoculate the pia arachnoid and set up leptomeningitis.

Instruments which do their work more gently without producing violent vibration, such as the surgical burr, which may be held lightly like a pencil in the guiding fingers, remove the bone in minute flakes without injuring the soft parts.

Though having used the osteotome and mallet in performing thousands of osteotomies on the bones of the extremities, it has never been used by me on the skull, as it was feared that the violent impact and vibration occasioned thereby would be detrimental to the delicate contents. Even for the removal of cerebral neoplasms the violent vibration in opening the skull by chisel and mallet must in many cases be detrimental to the softened cerebral substance and the enlarged thin-walled blood vessels in the vicinity of the tumour or abscess.

Post-operative Adhesions between the Brain and its Membranes: Can they be Prevented?

Having removed the neoplasm from the brain with as little interference of its structure or its blood supply as possible, one has to endeavour to mitigate the damage to the surface of the brain and to restore the subdural space to its normal conditions.

Can adhesions between the brain surface and the dura or skull itself be prevented?

In the abdominal cavity adhesions give rise to considerable and sometimes serious trouble. In the intracranial cavity adhesions between the pia mater or the nude brain and its rigid envelopes may mar the subsequent results of the most brilliant operation. By the constant dragging of these adhesions on the brain tissue extensive degenerative processes may be set up, giving rise to fresh brain areas being involved which may prove fatal. Normally the brain floats in its water bed and is contained within its covering like a specimen in a bottle which has been specially shaped to the form of the specimen; this economizes space and fluid. Its surface is not adherent to any part of its fixed coverings, though attached basally by certain nerves. This allows of accommodation to the varying conditions of the brain in expansion and contraction, in response to vascular conditions and to the varying positions of the body. When the brain becomes fixed by an adhesion to the rigid wall two things happen: the motor cortex at that point does not function properly, and secondly, there is a dragging at the point of fixture and for a considerable distance beyond, and as this dragging is repeated with varying conditions of the brain the mechanical interference tends to produce degeneration in the white substance as far as the strained brain fibres extend. This may be mitigated by guarding against sudden changes in cerebral vascularity and quick alterations of posture; the patient himself, realizing his altered condition, aids in these directions.

It is very desirable to prevent such anchoring of the brain, or if this be impossible to mitigate the evil by making the adhesions as long as possible, so that there would be a little play or yield in the cable; the brain would not then be so suddenly checked in response to its varying conditions.

In endeavouring to prevent adhesions one misses the arachnoid *membrane*. The spider's web would be useful to cover a wound in the brain and to intervene between the cerebral surface and the dura. Very occasionally by diligent search a tangible portion of the web has been found sufficient to cover a small surface. If one only had in the brain coverings an apron like a modified omentum, which is of so much service in preventing adhesions between parietal and visceral layers in the abdomen, it would answer the purpose admirably. On one occasion a thin portion of omentum was used to cover such a defect between a large nude portion of the brain and the dura. It was carefully prepared and easily applied, accommodating itself to its new situation, and apparently served its purpose, as this patient had no after-evidence of adhesion. The specimen was taken from a redundant omentum, removed during a radical cure of hernia. One of the most easily procurable substances is blood clot. It is bland, mild, and accommodating, and allows sufficient time to elapse for the healing of the wound in the brain before complete absorption takes place. Gold-foil is also of use, but it does not become absorbed and sometimes seems to occasion irritation. On one occasion a portion of gold-foil had to be removed by subsequent operation as it had occasioned irritation and slight spasms.

Whatever method is adopted the main point is to secure the closure of the defect in such a manner as to refloat the organ and to restore the free flow of cerebro-spinal fluid. Although brain anchoring does produce serious effects it does not affect all equally seriously. Some who have been operated on at an early period of the new era of brain surgery and had the misfortune of having a certain degree of brain anchoring, have lived many years of useful life—one patient over thirty years. They exhibited slight defects, such as vertigo and sickness on sudden changes of posture, such as stooping and then rising quickly. One had in addition occasional faintness, slight unconsciousness, and convulsive movements of the muscles of the opposite side, which only lasted a few minutes. Games such as tennis could not be played except with restraint. One patient had more serious fits and mental confusion whenever he took influenza. He had to remain in bed while the attack lasted. Otherwise he lived for over twenty years and did good work. He is still alive and at work.

It has been advised to leave the large aperture in the skull open to obviate some of the effects of cerebral adhesions, and though benefit in this direction may ensue, other more serious disadvantages obtain. The brain is never so happy as when at home contained within its own normal case. The restoration of the osseous covering by reimplantation of bone has long been practised by me.

It is hoped that by drawing attention to these simple details the prospects of recovery may be improved and the subsequent troublesome sequelae avoided.

Tubercle of the Brain: Can it be Advantageously Operated on?

Regarding the most frequent invaders of the brain, syphilis and tubercle, one is seldom called on to afford relief for such lesion by operation. They are diseases due to organisms which in the former are always and in the latter are apt to be generalized throughout the body. Though these diseases are amenable to medical treatment, yet both produce neoplasms which undergo degeneration and often caseate, and once such a necrotic neoplasm forms medicaments circulating through the blood stream, though they may affect the living tissue in their periphery, cannot penetrate into the dead mass, and therefore it remains. Though it might be otherwise quiescent, it presents itself in the brain as a foreign body exercising pressure on the delicate brain structure to its detriment, producing focal irritation or generalized symptoms according to its extent and distribution.

Tubercle is often meningeal, and in the form of acute diffuse cerebro-spinal tuberculous leptomeningitis so impresses itself as a hopeless condition which at least no operative measures can permanently relieve, that this picture overshadows other forms of tubercle in the brain which are apt to be placed in the same category. Yet tubercle is not always meningeal, and even when it is it may be localized.

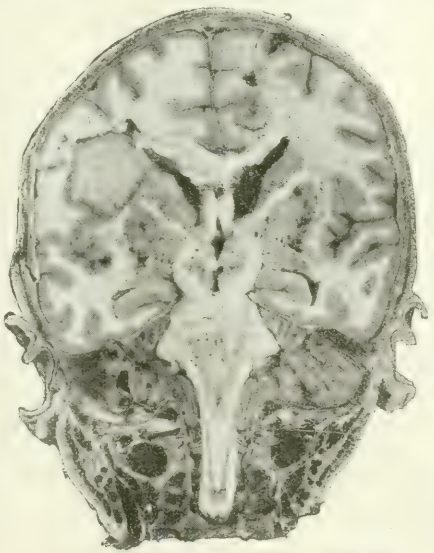
Tubercle may be deposited primarily in the brain substance, in the white matter, where the finer vessels penetrate, and there cause concentric nodules which grow occasionally into very large tumour-like masses. Some of the largest solid neoplasms in the brain are tuberculous, and from their size threaten life and do kill from pressure—mainly, if not alone. That is important, as in these cases there is no

meningitis or evidence of dissemination, and therefore had the bulk been removed relief and probably cure could have resulted.

When tubercle is deposited in the fine vessels of the white matter of the brain primarily, if near the cortex, the extension of the nodule peripherally may involve the meninges and set up a secondary leptomeningitis if soldering of the membranes had not preceded and prevented the invasion of the subdural space. This is a second source of danger from the primary cerebral tuberculous nodule and another reason why such nodules would be better removed were that possible, with a reasonable margin of safety and the prevention of dissemination. When possible one ought to secure adhesions of the membranes before removal of such foci.

A number of these deep-seated tuberculous neoplasms in the brain are single or solitary; this has been proved at the autopsy. Some of those that have been removed from the brain during life were apparently solitary, no others having signalled their existence, and the patient has either lived for years or has died from other causes, or from tuberculous attacks in other parts of the body without signs of recurrent cerebral involvement. Liquefaction of such tuberculous neoplasms occurs and forms one of the so-called "encapsulated abscesses" containing the characteristic white creamy emulsion-like fluid. The histories of many of these point to their long duration—many years, some a lifetime. If there be an exit through the meninges and skull through which they may empty themselves, it is possible they may do so at intervals over long periods, and when such an exit exists other organisms may enter. The pyogenic organisms, finding in the tuberculous emulsion rich pabulum, readily invade the cavity and set up therein an acute pyogenic action. In one instance the pyogenic organisms invaded the periphery of the encysted abscess, destroying the brain extensively in its circumference and forming a sea of pyogenic pus, in which the encysted abscess, containing its characteristic creamy tuberculous liquid, was seen floating intact and from which it was removed by operation.

One of the patients from whom an encysted tuberculous so-called "abscess" of the brain was removed thirty-five years ago is still living and at work. Presumably this was a "solitary" tuberculous brain lesion.



Tuberculous neoplasm in brain, showing the results of its presence.

When tuberculosis invades a localized portion of the brain the cortex of the strands therefrom are involved and sensory or motor impressions may result. When localized to restricted areas it may give rise to sensory or motor symptoms and to epilepsy of a Jacksonian type with the usual phenomena. Removal of the affected portions stops the epilepsy and prevents dissemination of the tubercle.

Tuberculosis occurring under the tentorium cerebelli, where it forms formidable neoplasms, presents quite another problem. Here the pressure of the growth gradually persists until it affects not only the vital centres—the respiratory and cardiac—but is far-reaching in its consequences. The whole cerebrum is benumbed from the distension of the ventricles with cerebrospinal fluid and the production of oedema of the brain. The eyesight is involved by the induction of optic neuritis and nerve atrophy which destroys the sight. In the later stages the patient presents a deplorable aspect—the earthy pallor of the face, the complete atony, scarcely able to move a limb, the disturbance of equilibrium so marked that while lying flat in bed the bed heaves, the furniture, the nurses, and the ward gyrating like a ship in a tumultuous sea. As the patient lies groaning with pain, headache, vomiting, scarcely able to breathe, with slow pulse, he completes a picture of agonizing misery which compels relief. He is virtually being crushed to death.

The free removal of the osseous envelope aids; the full opening of the dura affords much and instantaneous relief, which is increased by inducing the neoplasm to escape from the cerebellar contents. To this end the opening may be extended over the whole cerebellar fossa, the strong girders being left intact—and even, if need be, the opening may extend into the foramen magnum at its posterior aspects. This gives speedy and effective relief to pressure on the medulla, and the cut edges of the foramen are guarded by that portion of the cerebellum which normally dips through the foramen magnum into the upper portion of the spinal canal, and which does so to a much greater extent when the cerebellum is under *severe pressure* from abscess or neoplasms. When a patient after an operation of this kind has recovered from the sleep of exhaustion induced by his long suffering and is able to appreciate that he is actually free from his terrible ordeal with all its pain, vertigo, and sickness, the look of relief—the smile that lights his face—is worth much!

It is, however, at the very early period of invasion of the cerebellum that the diagnosis is of so much importance, as the disease could then be removed by a smaller operative procedure, and the prognosis would be much more hopeful; and even were the operation unsuccessful in affording permanent relief, it would prevent the patient from undergoing the crushing agony. At the early period, however, the diagnosis of tubercle in the cerebellum is difficult, and sometimes months elapse—sometimes many months—before symptoms occur sufficiently obtrusive to arrest attention. As these neoplasms form frequently in children, some of school age, their early indications are insidious and are often misconstrued. They occasionally occur in bright children who have done well in school, who after a time cannot maintain their place, appear careless and negligent, and are sometimes treated on this assumption. Later they become listless, dull, and apathetic, and no longer engage in the vigorous games they previously enjoyed. The tumour is in the cerebellum, yet it is the cerebrum that affords these early symptoms. The cerebrum has become affected by the distension of the ventricles and involvement of the optic tract. The differential percussion note reveals the presence of the distended ventricles.

In one such case—one of many seen—the wise teacher, instead of punishing the boy, sent him to the father, relating the change in his school behaviour and his seeming loss of interest in his work. The parents could not find anything the matter, but brought the boy to me for examination, as they said if there were nothing wrong with him mentally or physically they would know how to act. Much to his astonishment, the father was told that the boy was suffering from a form of tumour, probably situated in the posterior part of the brain, which would eventually declare itself in

* The fact that the cerebellum dips through the foramen magnum normally and protects the medulla was alluded to by me in 1839, and was thereafter illustrated in the *Atlas of Head Sections*, published in 1892. Professor Adami of Vienna had expressed disagreement and suggested that the method of preparation of the specimen—that of freezing—had expanded the brain and caused the extrusion. The freezing, however, was effected from without inwards, which would have a contrary result—if any. Had the expansion from within been so great, the tentorium would have been overstretched or burst, whereas it remained intact and normal; there would have been proptosis of the eyeballs, whereas they were rather contracted; and where the cerebellum protruded the medulla would have been equally affected, whereas it was found in its normal relations and size. Professor Symington, from independent and various methods of investigation, other than freezing, verified the observation that a portion of the cerebellum does normally pass through the foramen magnum into the upper part of the spinal canal.

certain directions unless it were relieved. Although the boy thought he could see quite well, yet the visual acuteness had diminished; there was slight turgescence of the optic discs. Though he had no ataxia at the beginning of the examination, it became distinct after his pupils had been dilated with homatropine, and the accommodation was suspended. He was aware of not being so sure of his movements in the dark as he used to be. The percussion note over the head—the pterion—revealed the presence of considerable fluid in the ventricles, and that, along with other phenomena, explained the cerebral symptoms.

The note elicited on percussion of the skull has been used by me since the early seventies in aiding in the determination of certain pathological conditions which alter the physics of the cranial contents, especially those of the distension of the lateral ventricles. Since then it has been employed regularly as occasion presented, and it has been found of particular use in children and in those whose skulls are sufficiently thin to vibrate on percussion. In such it has been found a valuable adjunct to other means of diagnosing intracranial contents physically. In this country it is only occasionally that one sees mention of its use, but it is now methodically practised abroad—in some quarters as a regular routine of the examination—and it has been found reliable. It is particularly useful as it is an early symptom often elicited when the signs of cerebellar neoplasm are still doubtful or in need of support by further evidence. Its presence has often determined the further search for causal neoplasms whose symptoms afterwards slowly evolved.

In Germany it has sometimes been described as the "cracked-pot sound"—this it is not. The "cracked-pot sound" is seldom heard on percussion of the head. In an experience of many injuries of the head, the genuine "cracked-pot sound" has only been heard by me on six occasions—at long intervals the one from the other. In one case, where it was very pronounced on percussion of the head, it was found at *post-mortem* examination that there was a fracture of the skull completely circular—passing through the base, including both petrous bones, and meeting over the vertex—the skull being completely divided into two halves. One does not find the "cracked-pot sound" except where there is an extensive fracture of the skull. The differential percussion note referred to, which is found where the lateral ventricles are distended, is generally best elicited by percussion over the pterion, and it alters its pitch according to the position of the head—the side that is undermost giving the clearer hollow note. It cannot be found in a hydrocephalic head where the bones of the skull have not been united.

Abscess of the cerebellum when small and limited is easily removed, the difficulties lying more in the early diagnosis of the location of the abscess than in the removal of it once the diagnosis has been made. When due to extension backward or pyogenic processes from the middle ear the location of the infected tract in the vicinity of the knee of the sigmoid sinus is so constant that it aids in determination of the point of access to the pus.

In large abscess of the cerebellum, however, pressure results ensue, though the pyogenic process being much more acute the pressure effects on the adjacent structures are intensified by the inflammatory action with its attendant oedema—hence the respiratory difficulties threaten life occasionally with tragic suddenness. Though usually there are premonitory signs of respiratory involvement sufficiently in advance to afford time to rectify the condition by operation, yet sudden access of oedema may precipitate a fatal issue. In four instances of large cerebellar abscess, so quickly had the respiratory difficulties ensued that operation had to be performed by me while artificial respiration was being carried on. In one of these a patient who had become unconscious before admission to the hospital had only reached the ward when his respiration ceased. Artificial respiration was commenced at once and continued until operation could be performed. The whole operation had to be conducted simultaneously with the performance of artificial respiration, and as the respiration was paramount the position of the patient had to be arranged to accommodate it. Consequently the operation had to be performed from below. No anaesthetic was given as the patient was unconscious. On reaching the abscess two ounces of pus escaped, and shortly after the first spasmodic respiratory gasp occurred, which was repeated, and gradually the automatic respiratory movement was re-established—much to the relief of the staff. While the house-surgeon and nurses, who had just been relieved from their arduous and fatiguing work of prolonged artificial respiration were still on the alert with drawn faces and strained anxious expressions, watching the man whom they had such great difficulty in rescuing from the brink, the patient recovered consciousness, and seeing his strange surroundings and the anxious theatre staff exclaimed, "What is all this damned fuss about?" It had a startling effect on the astonished staff—the unseeing eyes, which had been open all the time, suddenly saw! The removal of the pressure and the inflammatory oedema from the respiratory centre situated on the posterior part of the rhomboid fossa had relieved the cardiac and respiratory centres and the consciousness was restored by the relief of the ventricular pressure on the brain.

The Suprameatal Triangle.

The suprameatal angle above and behind the osseous auditory meatus with its apex forwards was proposed to be used by me as a guide or landmark to the position of the mastoid antrum. It was found that, when converted into a triangle by dropping a base line parallel with the posterior part of the external auditory meatus and operating within that area, the mastoid antrum could be safely reached without encroaching on the knee of the sigmoid sinus or endangering the facial nerve. The mastoid antrum is the key to opening the mastoid in gaining access to pyogenic lesions of the temporo-sphenoidal lobe. It is through the tegmen tympani and antri that abscess in the temporo-sphenoidal lobe of the brain may be reached within the area of the safeguarding adhesions, and through the posterior wall of the antrum that access may be had to the sigmoid sinus and to the adherent membranes in front of the cerebellar abscess.

Later experience in using this suprameatal angle as a guide has been extensive, and has always proved to be reliable. It has been advised that in perforating through the mastoid so as to strike the antrum the drill should be directed slightly upwards and forwards, and there are cases where this upward direction would be necessary, owing to sclerosed bone pressing the antrum upwards.

Extended scrutiny of the skulls of many nationalities, ancient and modern—from the pigmy of the African forest to the higher types of civilization—has been made since the suprameatal angle was proposed as a guide or landmark, and it has been found that the suprameatal angle has been universally present, though in some specimens it has been more distinct than in others: not only so, but in some of the higher apes (whose skulls have been examined) the suprameatal angle is also found. Through the courtesy of Sir Arthur Keith, Professor of Comparative Anatomy in the Royal College of Surgeons, several skulls of chimpanzee which had the suprameatal angle distinctly marked were sectioned—through the angle—and the sections were found to pass directly through the mastoid antrum. In one specimen of the gorilla, which had not such a distinct suprameatal angle, the section disclosed a small antrum surrounded by many smaller cells.

Doubtless the dome of thought ought to be left inviolate. It was built that way, but occasionally rude traumatisms and peccant matter invade the sanctuary and have to be followed and removed.

It has been said that the brain stands much handling. Possibly! One cannot open the skull as a box and rummage until the object is found. The accuracy of diagnosis is of paramount importance. Many errors of diagnosis may be rectified by exploratory incisions in the abdomen. This is much more difficult in the brain.

The more one sees of the intricate, delicate structure, the greater the reverence one entertains for it, and the less one is inclined to disturb its arrangements or to interfere with its function. When it does require to be touched it ought to be with the greatest gentleness, by an acutely sensitive finger, carefully trained and guided by the blessed gift of memory of tactile sensations, to which each new impression may be quickly relegated, grouped, and correlated in ordered sequence. When neoplasms have to be removed therefrom the endeavour is to do so with minimal disturbance of brain tissue. It is for this reason that the impetus received from the intrinsic cerebral pulsations are utilized to aid the extrusion of blood clot or neoplasm through the incision in the brain once adhesions have been loosened, as, though this method takes more time, it does less damage.

Cerebral surgery has been the means of adding to and confirming the knowledge of brain function in man, especially of the regions of the cerebral cortex other than motor, to which experimentation on the lower animals can with difficulty contribute. It has laid bare physical lesions in the cerebrum

producing mental aberration, and, by the removal of the lesion and the restoration of cerebral function, has thereby proved that the presence of the lesion was the cause of the perversion of function. In a sense some of these lesions produced in the brain of man may be regarded as experiments carried out by nature with a delicacy, accuracy, and refinement which no human experimenter could equal. Surgery of the brain has its limits, but these have not been reached. There is still a large field for careful observation and accurate work.

A period of growth in cerebral surgery has been touched on. It is hoped it may be concluded that the introduction of cerebral surgery with its scientific basis has been justified. It has been the means of saving many lives, and by removing the "blot" upon the brain—or by unravelling a tangled skein—has brightened existence.

Proceedings of Sections.

SECTION OF INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

PRESIDENT'S ADDRESS.

BY

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THE conjunction of the subjects of forensic medicine and industrial diseases in one Section may seem, to some at least, to be incongruous, but when it is remembered that forensic medicine is the application of the science of medicine to the purposes of the law, and that probably no Act of Parliament has ever given rise to so much litigation as the Workmen's Compensation Acts, the incongruity at once disappears.

The subject of compensation to workmen for injuries and for accidents in the form of industrial diseases has found a place in some textbooks treating of forensic medicine, but hitherto forensic medicine has been considered chiefly from the standpoint of the criminal law. It is, however, of importance that the medical student should know something of the purport and administration of the Compensation Acts in view of his possible appointment in the future as Certifying Surgeon and, later, as Medical Referee. It is necessary, therefore, that he should begin his medical career equipped with some knowledge particularly of industrial diseases, looking to the fact that the chief populous centres of the country are hives of industrial operations.

At the Seventeenth International Congress of Medicine, held in London in 1913, I read a paper in the Forensic Medicine Section—published in the Congress *Transactions*—on "The Workmen's Compensation Act, 1906, and its Operations in Great Britain." In that paper attention was drawn to the principal provisions of the Compensation Act, 1906, and of the Employers' Liability Act of 1880. Some consideration was also given to industrial diseases. The former Act came into operation in July, 1907, and the first completed statistics relative to its operation were published in 1909. This paper was illustrated by a series of fifteen tables collated from the returns of 1910 and 1911.

Dealing for the moment with forensic medicine, two subjects will now receive attention.

From time to time the question has been openly discussed: Whether the time has not now arrived for the inclusion under one group-subject of all matters which involve the application of the science of medicine to the purposes of the law, such as National Health Insurance, the Compensation and Employers' Liability Acts, and those portions of Public Health law briefly comprised under the headings of Nuisances, Unsound Food, and others relating to medical knowledge as applied to the law, with the title of State Medicine.

Much can be said on both sides of this subject, but the conclusion which may judiciously be come to at present is, in my opinion, that the time is not yet ripe for such general inclusion. It has to be borne in mind in this connection that the Workmen's Compensation Acts and the National Health Insurance Acts, which at their institution were revolutionary in principle, have not yet been established sufficiently to warrant a sudden change in the manner indicated.

Another subject canvassed at present is: Whether the teaching of forensic medicine to, and examination in that subject of, all students of law as well as of medicine should not now be made compulsory before they are recognized as qualified to practise their profession.

The regulations of the General Medical Council demand that medical students shall be taught and be examined in forensic medicine or, what is merely another designation, in medical jurisprudence. In Scotland it can be claimed that the subject receives its fair share of attention in the medical curriculum, and also in the examinations of the universities and medical corporations, but doubt may be expressed whether the same attention is being given in certain examinations in England.

In view of the fact that any general medical practitioner may suddenly be confronted with a set of circumstances which demand of him an accurate knowledge of medico-legal matters, and may thus become an important witness in the after-proceedings in the case, it is essential for the protection of the lieges and in the detection of crime that he should be familiar with the subject. Some recent cases do not exhibit that knowledge. Speaking from experience gained from over forty years' work as a teacher of forensic medicine, and from nearly a like period as a medico-legal expert engaged in Crown work, one has to confess that the importance of the subject to the average medical practitioner is not generally recognized. One cannot avoid the conclusion, moreover, that not a little litigation, especially as exhibited in medical evidence, could be avoided by a better acquaintance with forensic medicine. And what is true of the medical profession is, perhaps, still more true of the legal profession. In Scotland and, we understand, also in England the general practitioner in law—the law agent or solicitor—does not require to study nor be examined in the subject of forensic medicine before being admitted to the practice of the law. While this may not be essential for certain classes of legal practitioners—as, for example, conveyancers—it is highly essential for the general legal practitioner who undertakes the work of litigation in the lower courts in cases involving medical matters and medical testimony, as in compensation cases and in criminal work.

In Scotland a candidate for the Bar must study and must have passed in the subject of forensic medicine, but we are not aware of a like compulsion for admission to the Bar in England. While we cannot but admire the ability displayed by barristers for prosecution or defence in criminal cases tried before the higher courts, the feeling remains that previous acquaintance with forensic medicine would have been of advantage. From my experience in the law courts I have long since reached the opinion that the time is more than ripe for the institution of a regulation by the law societies, whose qualifications admit as law agents or solicitors, for the compulsory study of and examination in forensic medicine as part of the curriculum by all candidates.

INDUSTRIAL DISEASES.

I propose to look at this subject retrospectively and prospectively.

History of Compensation to Workmen.

The history of compensation to workmen may be thus compendiously stated: Until 1880 in this country the only legal remedy open to a workman who had sustained bodily injury in his employment was an action at common law against his employer. In 1880, however, Parliament passed the Employers' Liability Act, which modified the common law rules to the workman's interest. But, in an action raised under this Act by a workman or by his dependants, it was necessary to prove that the accident causing injury or death was caused by defects in the plant or machinery due to the negligence of the employer or of someone under authority of the employer. The workman or his dependants was liable to be met with the defence of "contributory negligence" on his own part or of that of a fellow workman, and also of the plea of *volenti non fit injuria*—that is, if the workman agreed expressly or by implication to accept the common risk of employment. This Act, therefore, did not provide a certain, easy, or inexpensive means of obtaining compensation.

In view of the foregoing, certain movements were made by

those in power to amend the Liability Act of 1880, and a bill was introduced into Parliament in 1893, which was passed by the House of Commons, but was abandoned by the Government when the House of Lords preserved the doctrine of "contracting out" in its amendment.

In 1897 the first Workmen's Compensation Act was passed, by which a remarkable change was made in the law relating to master and servant; indeed, as compared with the legal relationships as to responsibility embodied in the Employers' Liability Act, 1880, the provisions were revolutionary, for the Compensation Act imposed on an employer the liability to pay compensation to an injured workman, or to his dependants if the injury proved fatal, quite independent of the question whether or not there had been negligence on the part of the employer or of any fellow workman. This was a new principle established in law for the first time.

In 1900 the second Compensation Act was passed. This differed only from the first Act in that it included agricultural employees as beneficiaries under the law. This Act of 1900 had been in operation for three years when a Departmental Committee was appointed to inquire and report regarding: "What amendments in the law relating to compensation for injuries to workmen are necessary or desirable, and to what classes of employments not now included in the Workmen's Compensation Acts those Acts can be properly extended, with or without modification."

This Committee reported in 1904, and the Compensation Act of 1906 embodied their recommendations. In short, the Act of 1906 codified and extended the Acts of 1897 and 1900.

For the first time, however, in the history of these Acts, industrial diseases were brought within the scope of compensation, and procedure was improved for accidents generally by enabling a county court judge in England and a sheriff in Scotland to summon a medical referee to sit with him as assessor in disputed cases. Moreover, power was given to parties jointly to refer their dispute, as to the cause or extent of the incapacity of the workman, to a medical referee, and a provision in the Act enabled the Secretary of State to confer on committees representative of employers and workmen certain powers for arbitration otherwise conferred exclusively on county courts.

In this year (1906) there was no provision in the United States of America for compensation to workmen enacted by legislation. By 1920, however, no fewer than 42 out of the 48 States comprised in the Union had compensation laws in operation. Each State or province of the British Dominions has an Act for the like purpose. Russia came into line in 1913, and Portugal in 1919. Even in Hawaii, Porto Rico, Cuba, Salvador, and Japan does compensation law prevail. It may be concluded, therefore, that the most of the civilized world to-day has operative compensation laws.

Persons entitled to Compensation.

The Act of 1906 extended the scope of beneficiaries still further than the previous Acts by including practically all persons in employment other than casual workers, all persons employed in the service of the Crown as employer of labour or in any workshop under control of the Government, to masters, seamen, and apprentices to the sea service, and to apprentices to the sea-fishing service, in all vessels registered in the United Kingdom or of any other British ship or vessel of which the owner or manager resides or carries on business in the United Kingdom, and to pilots in terms of Part X of the Merchant Shipping Act, 1894; but the extension did not include members of the crew of a fishing vessel remunerated by shares in the profits or gross earnings of the working of such vessel, nor persons in the naval or military service of the Crown.

The following is an interesting definition of the expression "workman" given in the Act of 1906:

"Workman does not include any person employed otherwise than by way of manual labour whose remuneration exceeds two hundred and fifty pounds a year, or a person whose employment is of a casual nature and who is employed otherwise than for the purposes of the employer's trade or business, or a member of a police force, or an outworker, or a member of the employer's family dwelling in his house, but save as aforesaid, means any person who has entered into or works under a contract of service or apprenticeship with an employer, whether by way of manual labour, clerical work, or otherwise, and whether the contract is expressed or implicit, is oral or in writing."

The Departmental Committee on this Act reported in 1920 that they had arrived at the view that the sum of £250 which formerly included clerical persons in offices should, by reason of the rise in wages of recent years, be raised to £350, since by this cause of risen wages not a few have ceased to be eligible for compensation under the Act.

The 1906 Act was getting into full swing when the great war broke out in August, 1914, and for the next few years its operations were ruthlessly disturbed, so that statistical data for the years of the war can only be given approximately.

The aggregate number of persons within the scope of the Act who were employed in the seven large industrial groups in 1919 was upwards of eight millions (8,359,183), and in 1920 was 8,348,150.

The figures for the years prior to and after the war are shown in the following table:

TABLE I.—*Showing the Number of Workmen under the Compensation Act before and after the Great War.*

Year.	Number.	Year.	Number.
1910	7,025,074	1914	7,057,111
1911	7,305,997	* * *	* * *
1912	7,411,005	1919	8,359,183
1913	7,509,353	1920	8,348,150

The fall in number in 1914 is doubtless accounted for by the enlistment of workmen into army service, and that in 1920 by trade depression and other factors.

The monetary cost of compensation to employers of labour has also increased, as the following table indicates.

TABLE II.—*Showing the Total Sum paid in Compensation in the Seven Industrial Groups, the Number of Fatal Cases, and the Number of Disablement Cases.*

	1910.	1911.	1914.	1919.	1920.
Total sum ...	£2,700,325	£3,056,404	£3,465,361	£4,616,723	£5,978,000
Fatal cases ...	3,510	4,021*	4,216†	3,293	3,531
Disablement cases	378,340	419,031	437,910	365,176	391,916

* Hulton colliery disaster in late December, 1910, accounted for 344 lives.
† Another colliery disaster befell this year.

In 1919 the annual charge for compensation in these seven industrial groups averaged 10s. 6d. per person employed, but the figures varied in the different individual groups. Shipping, for example, averaged 14s. 10d. per person employed, compared with 16s. 2d. in 1914; factories, 7s. 3d. per head, compared with 5s. 2d.; docks, 20s. 5d., compared with 25s. 3d.; mines, 29s. 6d., compared with 28s. 7d.; quarries, 17s. 4d., compared with 11s. 5d.; constructional work, 9s. 2d., compared with 14s. 11d.; and railways, 9s. 5d., compared with 8s. 4d.

In 1920, however, the average annual charge per head for compensation in these combined groups had risen to 14s. 4d., and the charge per workman in each individual group averaged as follows: in shipping 16s. 6d.; in factories 9s. 3d.; in docks 29s. 5d.; in mines 37s. 3d.; in quarries 19s.; in constructional work 13s. 5d.; and in railways 14s. 8d. There has thus been a substantial increase in the amount to be paid in 1920 compared with that of the preceding year. It cannot be argued that this increase is due to enhanced wages, since high, if not higher, wages obtained in 1919 than in 1920. The oncost charge for compensation in the mining industry in 1919 worked out at 1·82d. per ton of coal raised, and in 1920 to 2·44d. per ton.

Leaving at this point consideration of compensation for all accidents, let me now draw attention to industrial diseases in particular.

To establish a claim for compensation for personal injury, a workman must show that the accident was either an "accident arising out of and in the course of the employment" or that it was one of the industrial diseases within the meaning of the Act and as scheduled. In the Compensation Act, 1906, six industrial diseases only were set down in the third schedule, but power was given to the Secretary of State for the Home Department to enlarge the list of such diseases as required from time to time. At present, the list embraces about five times

the original number. It includes such diseases as ankylostomiasis, anthrax, miners' nystagmus, compressed air illness, nickel carbonyl, lead, and other poisonings, cataract in glass-workers, writers' and telegraphists' cramp, beat knee, beat hand, and beat wrist, and certain forms of cancer and ulceration due to various dusts and liquids.

But in addition to the diseases named under the third schedule of the Act of 1906, another disease—fibroid phthisis or silicosis—has been dealt with by the Legislature in the special Act, the Workmen's Compensation (Silicosis) Act, 1918. This disease in workmen, however, is differently administered from those diseases under the Compensation Act, 1906.

Schemes have been made for the refractory industries—mining and quarrying ganister rock and manufacture of ganister or silica bricks—whereby a general compensation fund, contributed to and administered by a Mutual Association of Employers in these industries, takes over the personal rights and responsibility of contributing employers, pools its finances, and dispenses compensation to disabled workmen rightfully entitled from the said general fund. The scheme also provides for a system of periodic medical examination of workmen employed in silica works, in order to prevent the development of the disease and, if required, to suspend from the employment any workman evidencing symptoms of commencing attack. It establishes also for each district a local joint committee of employers and workmen with an independent chairman, along with an expert Medical Advisory Committee, of which I am a member in the scheme for Scotland, to deal with cases of the disease. Too little time, however, has yet elapsed to permit of any definite opinion being formed regarding the prevalence of silicosis amongst those employed in these industries, and the operative value of the schemes.

The principle on which the Home Secretary has hitherto proceeded in determining the scheduling of an industrial disease is this: "That the disease or injury must be so specific to the employment that its causation by the employment can be established in individual cases." This seems a sound, safe, and direct principle, since it operates advantageously in instances in which a claim is made for the inclusion of an illness or disability which, although admittedly an illness or cause of disablement connected with a given employment, is not exclusively connected therewith—as, for example, bronchitis in flax-workers, since bronchitis may originate from other causes than flax-working and in diverse ways.

It may now be asked to what extent do industrial diseases prevail, and what compensation falls to be paid for those disabled therefrom.

Tables III and IV state shortly these points for the years 1919 and 1920 respectively. Tables V and VI illustrate (1) the different Scheduled Industrial Diseases, (2) their Incidence in Occupations, and (3) the Total Cases in 1919 and 1920.

The foregoing Tables III and IV show that in 1919 the number of fatal cases from industrial diseases was 24, for which £4,722 were paid in compensation to dependants; and the number of disablements 10,074, for which £242,292 was paid; and for both classes of cases a total sum of £247,014 had to be paid. For 1920 the fatal cases numbered 27 and the disablement cases 10,425, for which the sums of £5,387 and £365,684 respectively were paid, making a total for that year of £371,671.

In 1919 the bulk of cases of industrial disablement occurred in the mining industry, chiefly due to nystagmus, beat hand, and beat knee. These numbered 9,175, or 90·9 per cent. of the total, nystagmus alone accounting for 6,449 of the 9,175. Dermatitis due to dust or liquids was responsible for 270 cases, or 2·7 per cent., and lead poisoning for 231 cases, or 2·3 per cent.

In 1920 the same was true of the mining industry, since 9,408 cases, or 90 per cent. of the total, was due chiefly to nystagmus and the other diseases named. From nystagmus alone there were 7,028 cases, being a marked increase in number from the previous year. Of the remainder, dermatitis showed 408 cases, or 3·9 per cent., and lead poisoning 265 cases, or 2·5 per cent. The 27 fatal cases included 18 from lead poisoning, 3 from anthrax, and one each from phosphorus, benzene, nitrous fumes, chrome ulceration, scrotal epithelioma, and nystagmus.

With regard to the increasing number of cases of nystagmus, the Departmental Committee of 1920 suggested for the consideration of the Home Office that some special inquiry into this subject was desirable.

As has already been indicated, a Departmental Committee was appointed in 1919, the reference to which was as follows:

"To inquire into the working of the present system of the payment of compensation to workmen for injuries sustained in the course of employment, and to consider and report whether it would be desirable

TABLE III.—*Showing Payments for Compensation in Cases of Industrial Diseases under the Compensation Act, 1906, and the Employers' Liability Act, 1880 (1919).**

Industry.	Fatal Cases.	Sum Paid.	Disablement Cases.	Amount Paid.
Factories:		£		£
Cotton	—	—	3	50
Wool, shoddy, etc.	3	445	45	426
Other textiles	1	300	3	25
Wood	—	—	4	96
Metals (extraction)	1	200	27	1,446
Engine and shipbuilding	—	—	30	1,330
Other metal work	2	600	113	2,488
Paper and printing	—	—	11	479
China and earthenware	5	803	48	2,077
Miscellaneous	9	1,565	534	7,331
Total factories	21	£3,913	668	£15,748
Docks	—	—	10	255
Mines	1	200	9,174	225,422
Quarries	—	—	3	9
Constructional work	1	300	8	316
Railways: Clerical staff	—	—	—	—
Other servants	1	309	11	541
Grand totals	24	£4,722	10,074	£242,292

* Statistics of Compensation for Year 1919. Cmd. 1185.

TABLE IV.—*Statistics of Compensation for the Year 1920.**

Industry.	Fatal Cases.	Sum Paid.	Disablement Cases.	Amount Paid.
Factories:		£		£
Cotton	—	—	—	—
Wool, shoddy, etc.	2	525	23	353
Other textiles	—	—	4	19
Wood	—	—	5	43
Metals (extraction)	1	287	61	2,110
Engine and shipbuilding	2	375	44	1,180
Other metal work	1	300	80	2,289
Paper and printing	—	—	7	70
China and earthenware	10	1,589	53	3,576
Miscellaneous	8	1,232	707	17,190
Total factories	24	£4,708	984	£21,935
Docks	1	300	12	151
Mines	1	79	9,407	343,091
Quarries	—	—	8	52
Constructional work	—	—	6	214
Railways: Clerical staff	—	—	—	—
Other servants	1	300	8	238
Grand totals	27	£5,387	10,425	£365,684

* Statistics of Compensation for Industrial Diseases for Year 1920. Cmd. 1345.

TABLE V.—*Showing the Cases of Industrial Disease for which Compensation was Paid, Classified according to Disease and Employment* (1919).*

Disease.	Occupation.	Total Cases.
Mercury poisoning ...	Mines, 1; metals (ext.), 3; other metal work, 2; miscellaneous, 2	8
Anthrax	Wool, etc., 17; other textiles, 3; docks, 9; miscellaneous, 10	39
Phosphorus poisoning	——	0
Arsenic poisoning ...	Engine and shipbuilding, 1; miscellaneous, 8	9
Lead poisoning ...	Railways, 5; wool, etc., 1; metals (ext.), 13; engine and shipbuilding, 14; other metal work, 50; paper and printing, 7; china, etc., 51; construction work, 9; miscellaneous, 1	231
Benzene poisoning ...	Engine and shipbuilding, 2; miscellaneous, 1	3
Nitro- and amido-derivatives of benzene	Metals (ext.), 1; other metal work, 25; miscellaneous, 52	78
Dinitrophenol	——	0
Nitrous fumes	Mines, 3; miscellaneous, 13	16
Dope poisoning .	Engine and shipbuilding, 3	3
Tetrachlorethane ..	——	0
Carbon disulphide ..	Miscellaneous, 3	3
Nickel carbonyl .	Paper and printing, 1	1
Goniema kamassi or African box-wood	Wood, 1	1
Dermatitis . . .	Mines, 3; cotton, 3; wool, 4; other textiles, 1; wood, 3; metals (ext.), 2; engine and shipbuilding, 5; other metal work, 28; paper, etc., 1; china and earthenware, 1; miscellaneous, 219	270
Ulceration of skin .	Mines, 1; wool, etc., 8; metals (ext.), 1; engine and shipbuilding, 2; other metal work, 3; paper and printing, 1; china and earthenware, 1; miscellaneous, 104	121
Ulceration of mucous lining of nose or mouth	Mines, 1; other metal work, 2; miscellaneous, 16	19
Ulceration of cornea	Miscellaneous, 1	1
Chrome ulceration ..	Wool, etc., 13; paper, etc., 1; miscellaneous, 37	51
Scrotal epithelioma (chimney - sweeps' cancer)	Other railway servants, 1; wool, etc., 4	5
Compressed-air illness	Mines, 1	1
Cataract in glass-workers	Miscellaneous, 1	1
Nystagmus	Mines, 6,449	6,449
Beat hand	Mines, 1,149; quarries, 3; railway servants, 4; wool, etc., 1; metals (ext.), 3; engine and shipbuilding, 3; paper, etc., 2; miscellaneous, 7	1,172
Beat knee (miners) ..	Mines, 1,285	1,285
Beat elbow (miners) ...	Mines, 159; railway servants, 1	170
Beat wrist (synovitis of wristand tendons)	Mines, 114; railway servants, 1; other metal work 2	117
Ankylostomiasis ..	——	0
Glanders	——	0
Telegraphists' cramp	——	0
Writers' cramp .	——	0
Epitheliomatous cancer	Other metal work, 1; miscellaneous, 43	44
Total cases... .	... ...	10,038

* Statistics: Annual Return for 1919. Cmd. 1185.

TABLE VI.—*Showing the Cases of Industrial Disease for which Compensation was Paid, Classified according to Disease and Employment* (1920).*

Disease.	Occupation.	Total Cases.
Anthrax	Other railway servants, 1; wool, 12; other metal work, 1; docks, 5; miscellaneous, 7	26
Mercury poisoning ...	Other metal work, 2	2
Phosphorus poisoning	Miscellaneous, 1	1
Arsenic poisoning ...	Metals (ext.), 2; miscellaneous, 1	3
Lead poisoning ..	Other railway servants, 5; mines, 4; metals (ext.), 47; engine and shipbuilding, 21; other metal work, 52; paper, etc., 5; china and earthenware, 61; docks, 3; constructional work, 3; miscellaneous, 64	265
Benzene poisoning ...	——	0
Nitro- and amido-derivatives of benzene	Wool, 1; other metal work, 1; miscellaneous, 52	54
Dinitrophenol	Miscellaneous, 1	1
Dope poisoning ...	——	0
Nitrous fumes ...	Mines, 2; miscellaneous, 19	21
Tetrachlorethane ..	——	0
Carbon disulphide ...	Other railway servants, 1	1
Nickel carbonyl ...	——	0
Goniema kamassi ...	——	0
Dermatitis	Mines, 5; wool, etc., 3; wood, 3; metals (ext.), 5; engine and shipbuilding, 4; other metal work, 16; paper and printing, 1; miscellaneous, 371	408
Ulceration of skin ...	Mines, 2; wool, etc., 6; other textiles, 3; engine and shipbuilding, 1; other metal work, 6; paper and printing, 1; china and earthenware, 2; metals (ext.), 1; miscellaneous, 81	103
Ulceration of mucous lining of nose or mouth	Mines, 1	1
Epithelioma	Miscellaneous, 22	22
Ulceration of cornea...	Other railway servants, 1; wood, 1; miscellaneous, 18	20
Chrome ulceration ...	Wool, etc., 3; wood, 1; miscellaneous, 63	67
Scrotal epithelioma ...	Mines, 1; metals (ext.), 2; engine and shipbuilding, 1; miscellaneous, 1	5
Compressed-air illness	Constructional work, 1	1
Cataract in glass-workers	Miscellaneous, 2	2
Nystagmus	Mines, 7,028	7,028
Beat hand	Mines, 762; quarries, 6; other railway servants, 1; other textiles, 1; metals (ext.), 3; engine and shipbuilding, 19; other metal work, 3; docks, 3; constructional work, 2; miscellaneous, 10	810
Beat elbow	Mines, 137	137
Beat knee	Mines, 1,387; quarries, 1; metals (ext.), 1	1,389
Beat wrist	Mines, 78; quarries, 1; metals (ext.), 1	80
Ankylostomiasis ...	——	0
Glanders	——	0
Telegraphists' cramp	Miscellaneous, 1	1
Writers' cramp ...	Mines, 1; miscellaneous, 1	2
Total cases... ...	... ...	10,453

* Annual Statistical Returns for 1920. Cmd. 1545.

to establish a system of accident insurance under the control or supervision of the State, and to report further, what alterations of the law will be required to remedy defects which experience has disclosed or to give effect to their recommendations."

The committee, after hearing evidence and procuring information from other sources, reported in 1920 (Report, 1920, Cmd. 816).

Several of the points dealt with in this report deserve some attention. The committee stated that the system of compensation, based upon the Workmen's Compensation Act, 1906, was of so comprehensive a character that it was a matter of immediate concern to the majority of the community, since it imposed a burden of upwards of £8,000,000 a year, and that its cost was an item which every business enterprise must take into account, as about fifteen millions of workers were reckoned to be within the scope of the Act.

It is more than likely that some of the recommendations of this committee will constitute amendments to the present Act, and therefore a consideration of some of these may with profit be reviewed.

One of the subjects of immediate interest to all interested in compensation work had relation to the question: Whether any modification of procedure under the existing Act was necessary or desirable. The conclusion arrived at, after reviewing the present procedure and suggestions for amendment thereof, was that there was no need for any radical revision of procedure. It was pointed out that at present the certifying surgeon was not empowered to give a certificate of disablement after the workman had recovered from his disablement, and that hardship was not infrequently experienced by a disabled workman merely because of his ignorance of the procedure which he ought to pursue. To meet this, the committee suggested that it should be made compulsory for an employer to exhibit in conspicuous

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places in his works notices directing the attention of the workman to the application of the Act to the scheduled diseases and the special steps to be taken by him for the purpose of claiming compensation, said notice also to contain information of the necessity for notice of any accident, trivial or otherwise, to be given to a designated person in the works, and adding that an accident book should be kept in which an entry shall be made of all ascertained accidents.

Witnesses drew attention to difficulties arising out of the issue by the certifying surgeon of a certificate in irregular form, and that in consequence substantial hardship to the workman followed. The committee recommended, first, that appeals to the medical referee on the ground of technical irregularity or flaw in the form of the certificate should not be permitted, and that it should be the duty of the registrar under the Act to scrutinize carefully every application for an appeal, and if he finds the certificate irregular in form, to return it to the certifying surgeon for amendment and notify the parties; and, second, that in any case where a certificate has been given in an irregular form, it should be open to the certifying surgeon at any time to issue a corrected certificate. Our experience is, that such amended procedure would be advantageous, as in not a few instances in which irregularity in form or flaw of certificate constituted the sole ground for allowing the appeal: there was thus delay in payment of compensation to the workman concerned.

According to the form at present prescribed (Form 15) for the decision of the medical referee on an appeal, a medical referee is not required to do more than state after inquiry whether he dismisses or allows the appeal; and when he allows an appeal against a refusal of a certificate of disablement by a certifying surgeon to a workman, to fix the date of commencement of the disablement.

The committee pointed out that an appeal may involve two or three distinct questions—namely, (1) whether the workman is or is not suffering from the scheduled disease; (2) whether or not he is disabled by it; (3) whether the date of disablement, if any, fixed by the certifying surgeon is correct. The committee concluded that the medical referee should be required to give his decision on each separate point referred to him, and they suggested that an opportunity should be taken to revise the form accordingly. It appears to me that the foregoing suggestions of the committee are likely to meet with the concurrence and approval of most medical referees who have encountered the points involved, but who have found themselves powerless to deal with them in Form 15 as at present framed.

This leads to other considerations affecting medical referees which came within the purview of the committee. The number of referees in England in 1919 was 238, in Scotland 81, and in Ireland 45. Seventy-five cases were referred to them for report by judges, arbitrators, and committees; 404 cases by parties' agreement for certificates; in 533 cases they sat with judges as assessors; in 282 cases they decided appeals against decisions of certifying or appointed surgeons in giving or refusing certificates of disablement on account of industrial diseases, and in 163 of these the certificates appealed against were confirmed.

In 1920 the number of referees for England was 206, for Scotland 80, and for Ireland 45. They sat as assessors in 414 cases (Schedule II, 5); 47 cases were referred to them for report by judges, etc., under Schedule II, 15; in 473 cases they were referred to by joint agreement of parties (Schedule I, 15); in 368 cases they decided appeals under Section 8 (1) (*f*), and in 205 of these the certificates appealed against were confirmed. Comparison of the figures for these years reveals a substantial increase in the numbers of references under Schedule I, 15, and Section 8 (1) (*f*), but a substantial decrease in the use of their services under Schedule II, 5 and 15.

The duty of a medical referee to make a report regarding a disabled workman on "any matter which seems material to any question arising in the arbitration" under Schedule II, 15, dates back to the Act of 1897, while that of giving a certificate in cases referred to him through the registrar on the joint application of parties (Schedule I, 15) and that of sitting as an assessor with a judge (Schedule II, 5) were enacted for the first time in the Act of 1906, and were based on the report of the Departmental Committee on the Act of 1900.

The committee of 1919 deem it of great importance that the fullest use should be made of the services of the medical referee in any dispute relating to the cause and extent of the workman's incapacity. They were of opinion that it was advisable to extend Schedule I, 15, so as to provide that on an application being made the application may be made by *either* party in the dispute and on payment of the prescribed fee, and that in such case the registrar may, after hearing the parties and subject to a right of appeal from his decision to the judge, refer the matter to a medical referee. Respecting the employment of referees as assessors, the committee recommended that it should be open to *either* party, on giving security for the payment of the fee due to the referee, to obtain as of right a summons to the referee to sit as assessor, and further, that the referee should be given the right of asking through the judge questions of the witnesses, and of making, where necessary, a more thorough examination of the workman than is possible in court or in the judge's room.

State System of Insurance.

Having fully considered the question of the advisability or otherwise of instituting in this country a State System of Accident Insurance, the committee concluded that they

"do not recommend the establishment of a State System of Accident Insurance," but they recommended that "every employer—other than the Crown, a local or other public authority, a statutory company, or a householder in respect of servants not employed by him for the purpose of his trade or business—shall be required to insure with an insurance company or in a mutual association against workmen's compensation risk, unless excepted as hereunder provided,"

the exceptions being employers whose annual wage roll averages more than £20,000 over a period of three years, and who file an application to that effect accompanied by a declaration to the above effect and a certified copy of their balance sheet for the last trading year. The committee recommended that a substantial penalty should be provided for default so as to enforce compulsory insurance.

Not a little evidence was put before the committee regarding the necessary conditions which must be proved by a workman to ensure compensation for accident, the first being that he has sustained personal injury from an accident, and the second that it was an accident "arising out of and in the course of the employment." Suggestions were made by several witnesses, including county court judges, that the form of expression "arising out of and in the course of the employment" should be deleted from the Act, and that there should be substituted the expression "in the course of the employment," since in their opinion this latter expression would cover every occasion in which the relationship of master and servant would arise. While the committee agreed that "it is safe to say that no other form of words has ever given rise to such a body of litigation," they would not recommend any alteration in the existing form of words, observing that it was not without significance that other States in recent years, adopting legislation for workmen's compensation, have imported into their Acts the British form of words in the existing Act. They cite the fact that in all but four of the States comprising the United States of America the law reads that the accident must arise out of or result from the employment, and in all of these States, including the four indicated, the accident must happen in the course of the employment. The committee, therefore, recommended that the words of the present Act—"arising out of and in the course of the employment"—should remain unaltered.

The only other subject dealt with in the report of this committee which I shall consider is that relating to medical and surgical aid. The committee were much impressed with the evidence of numerous representatives of employers, trade unions, and insurance companies, as to the need for a comprehensive system of medical and surgical services for the rehabilitation of an injured workman and the restoration of his earning capacity. It was put in evidence that in some of the United States of America extensive provision of this kind exists, but that in this country nothing beyond the restricted scope of medical benefit under the National Health Insurance Acts was in operation. These Acts cover about fifteen million insured persons. Apart from Ireland—where no medical benefit is provided and where about 700,000 persons are insured under these Acts—what all these persons are entitled, according to the Medical Benefit Regulations, to receive is—

"the treatment which a practitioner is required to give to his patients and comprises such treatment as is of a kind which can

consistently with the best interests of the patient be properly undertaken by a general practitioner of ordinary competence and skill."

This, however, as was pointed out, does not cover the needs of injured workmen, and further special services are required, such as massage, *x*-ray treatment, hydrotherapeutic treatment, in-patient hospital treatment, use of convalescent homes, and other forms. While the committee had no doubt of the great value of these in expediting the recovery of disabled workmen and their earning capacity, they did not think that the burden of providing these could be placed either on the shoulders of the workmen or of the employers, but were of opinion that the solution of the matter lay in the direction of an extension of the services under the National Health Insurance Acts. As they understood that the Ministry of Health had under consideration a further development of medical services for the insured population generally, they would recommend that the extra services for injured workmen under the Compensation Acts should come under such a scheme and be co-ordinated therewith. They did not, therefore, feel justified or able to formulate a scheme. This, it will be obvious, opens up a very large question, and we must await what the future will bring.

The Stewart Prize.

AWARD TO DR. J. C. McVAIL.

THE Stewart Prize of the British Medical Association was presented to Dr. J. C. McVail at the General Meeting of the British Medical Association in Glasgow on the evening of Tuesday, July 25th.

The prize was founded by the late Dr. Alexander Patrick Stewart, who graduated M.D. Glasgow in 1838, and afterwards became physician to the Middlesex Hospital; he was among the earliest to give attention to sanitary questions and among the first to distinguish between typhus and typhoid fever. The primary object of the Stewart Prize is to afford recognition of important work already done or of researches instituted and promising good results regarding the origin, spread, and prevention of epidemic diseases.

The prize has been awarded to Dr. McVail in recognition of the important work he has done during a long life devoted to public health. He began his professional career in 1873. He was first of all in general practice and his association with public health dates from the time when he began to assist the medical officer of health for Kilmarnock, whom he ultimately succeeded. He became the first medical officer of health for the counties of Stirling and Dumbarton in 1891, a position he held for over twenty years. His painstaking investigations, his lucid reports, and his wisdom in counsel displayed during the period of his appointment placed him in the front rank of public health officers. His reputation as a far-sighted and impartial investigator was so well established that when, in 1907, the Royal Commission on the Poor Laws and Relief of Distress desired to have special inquiries made into the methods of administering indoor and outdoor relief, Dr. McVail was chosen to make those inquiries, and his report to the Commission is a fascinating record of patient industry and clear thinking.

Dr. McVail's attention was first turned to vaccination by the study of statistics of Kilmarnock for the years 1723 to 1764. The records of death afforded appalling evidence of the great prevalence of small-pox among children in the eighteenth century. He was thus led to make an extensive study of vaccination: he embodied the results in a book entitled *Vaccination Vindicated*, the first edition of which appeared in 1889; it at once became the chief authority on the subject. His knowledge of the subject was so extensive that his evidence before the Royal Commission on Vaccination occupied no fewer than twelve days. In 1919 he brought up to date our knowledge of the subject in the Milroy lectures delivered before the Royal College of Physicians of London.

When the National Insurance Act of 1911 came into force Dr. McVail was appointed Deputy Chairman of the Scottish National Insurance Commission, a position he held with great advantage to the community generally until, on the abolition of the Commission and the creation of the Scottish Board of Health, he became the medical officer concerned with health insurance; he has just retired from the service. While Deputy Chairman of the Scottish Insurance Commission he was a member of the committee appointed by the Commission which inquired into the medical services in the Highlands and Islands, and he was also a member of the Astor Committee on Tuberculosis.

"THE BOOK OF GLASGOW."

EVERY member attending the Annual Meeting of the British Medical Association in Glasgow this week has received a copy of the *Book of Glasgow*,[1] whose appearance was briefly noted in our last issue. This handsome volume of 258 well-printed pages, with more than 50 illustrations on art paper, forms an agreeable introduction to the city and its institutions, and will be prized as a souvenir. Its object is to give the visitor a series of impressions of Glasgow from various points of view, and the Printing and Publishing Committee must be congratulated both upon their choice of authors and upon the excellence of the production. The material is arranged in nineteen sections, and each writer has followed the method best suited to his own outlook and style of composition, so that the general effect is one of pleasant variety. Thus the volume, as the chairman of the committee (Dr. William Snodgrass) insists in his preface, is not to be regarded in any sense as a guidebook but as a collection of articles on the most interesting features of Glasgow and its history, written by a group of distinguished journalists and literary authorities, with the general editorial assistance of Mr. R. T. MacLennan of the staff of the *Glasgow Herald*.

The first chapter, from the pen of Professor Glaister, gives an interesting historical sketch of the University from its foundation in 1451 down to the present time, with special attention to the development and progress of its medical school, and to the library and Hunterian collection. Dr. Oliphant describes the Royal Faculty of Physicians and Surgeons and its founder, Peter Lowe, who obtained a charter from the King in 1599. Dr. John Fergus gives a comprehensive account of the medical institutions of Glasgow, in somewhat fuller detail than his recent article in our columns. Readers of the JOURNAL will recognize also Dr. John Patrick's interesting article on the Glasgow School of Medicine, Mr. William Power's sketch of Glasgow to-day, and the poem on the arms of the city of Glasgow written by Dr. Robert Mayne, first professor of physick in the University from 1637 to 1646. Other verses comprise the "Kirkyard Eclogue" in honour of the old Royal Infirmary, written in the Doric by the late William Findlay, M.D. ("George Umber"), and the ingenious and well-turned lines by Dr. John Fergus, entitled "Maister Peter Redivivus," wherein the shade of Peter Lowe is supposed to be paying a visit to the Faculty:

> "Imagine Peter, as I say,
> Meeting our President to-day."

The remaining articles, with the exception of Mr. W. Stewart's remarks on Glasgow medical men and literature, give impressions of the city from standpoints other than the medical. They include brief historical notes on ecclesiastical Glasgow in pre-Reformation times, by John Edwards, LL.D., on Glasgow of old, by George Eyre-Todd, and on the traditions of the trade houses, by Harry Lumsden; a sketch of the Clyde, its shipping and its docks and shipyards, by Neil Munro; descriptions of business life in Glasgow and its municipal services, by G. B. Primrose and James Willock; notes on Glasgow artists and the works of art preserved there, by T. C. F. Brotchie and R. T. MacLennan; a study in contrasts entitled "Glasgow a frontier fort," by George Blake; and, lastly, an outline of the history of golf in this neighbourhood and of the courses open to members during the Annual Meeting.

[1] *The Book of Glasgow*. Prepared under the direction of the Printing and Publishing Committee for the Ninetieth Annual Meeting of the British Medical Association, July, 1922. Glasgow: Alex. Macdougall. (Pp. 258, with 53 plates. Price 5s.)

The Gold Medal of the British Medical Association.

THE Gold Medal for Distinguished Merit of the British Medical Association was presented to the Right Hon. Sir T. Clifford Allbutt and to Lieutenant-Colonel Arthur Martin-Leake, V.C., F.R.C.S., at the general meeting of the British Medical Association in Glasgow on the evening of July 25th, 1922. The presentations were made by the President, Sir William Macewen, F.R.S., on behalf of the Association. The medal for distinguished merit was instituted by the British Medical Association at its annual meeting in Manchester in 1877. The medal is awarded on the recommendation of the Council to some person who shall have conspicuously raised the character of the medical profession by scientific work, by extraordinary professional services, or by special services rendered to the British Medical Association. On this occasion the medal was in each case accompanied by a testimonial or address stating the grounds of the award, and this practice will be followed in future.



BRITISH MEDICAL ASSOCIATION MEDAL FOR DISTINGUISHED MERIT.

SIR CLIFFORD ALLBUTT.

The following is the text of the address presented to Sir Clifford Allbutt:

To the Right Honourable

SIR CLIFFORD ALLBUTT, K.C.B., M.D., LL.D., F.R.S., Regius Professor of Physic in the University of Cambridge, President of the British Medical Association, 1916–1921.

We delight to honour in you a great physician, a great teacher, and a wise friend in counsel. From the time when, as a young man, you joined the staff of the Leeds Medical School, the high reputation of which you were destined to enhance, you have never ceased to uphold the traditions of British Medicine, among whose leaders your name will always be numbered.

We recall how fifty years ago your book on the *Ophthalmoscope in Medicine* not only taught the profession the value of a new means of investigating disease, but revealed a new clinical observer whose future work, should his life be spared, could not fail greatly to benefit the science and practice of medicine. To these early days, too, belong your epoch-making investigations into the cause of certain forms of disease of the brain and spinal cord and into the effects of strain on the heart and great vessels. It was at this stage also of your career that you invented the short clinical thermometer, which at once superseded the clumsy instrument some of us can remember holding precariously in the mouths of reluctant patients; it was a mechanical improvement indeed, but one that greatly helped us in our daily work, and one the need for which could only have occurred to a physician actively engaged in clinical practice.

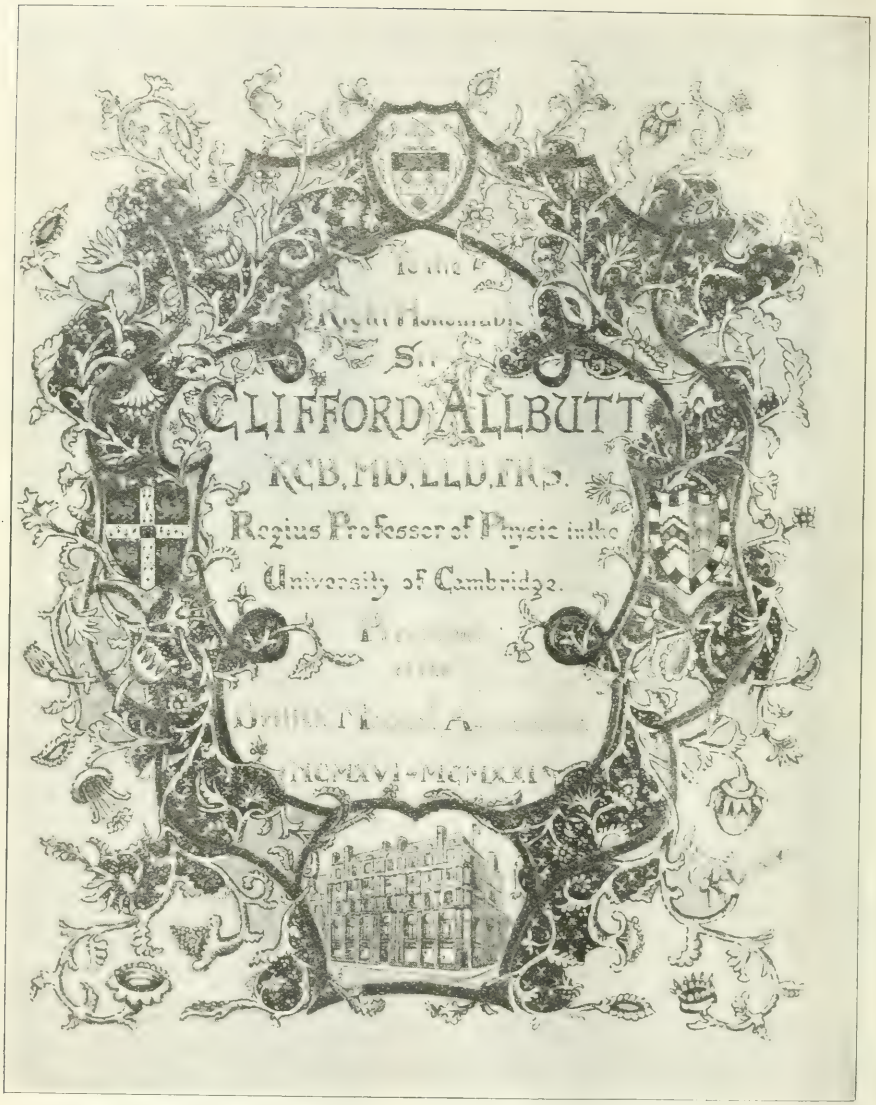
A little later the outspoken criticism contained in your Goulstonian lectures on visceral neuroses had a wholesome influence in moderating the extravagances of a passing phase of medical practice.

We recall also how in two addresses to the British Medical Association you unfolded ideas which have occupied a large place in your mind. In your address as President of the Section of Medicine in 1882 and again in the Address in Medicine, delivered in the hall of this ancient University, when the Association, in 1888, last held its Annual Meeting in Glasgow, you pleaded for a broader outlook, and demanded that our inquiries into the nature and causes of disease should not be limited to man, nor even to the animal kingdom, but should be extended to plants which present, in a simpler form, problems not dissimilar. That the dominant principle of this message, the need for unity in the study of disease in its widest aspects, had always remained with you is made clear by a passage in your Presidential Address at the opening of the Annual Meeting at Cambridge in 1920. Though you had then still to speak rather of your hopes than of their realization, you were able to point to some encouraging signs that the importance of the matter was beginning to be understood.

The expectations built on the originality and wide grasp of essential principles displayed during this early period have been more than justified. You have been granted long life, and every day of it has been full of labour, as congenial as it has been fruitful, to advance the science of medicine, full of service for the profession to which you have unsparingly given sympathy and help, and full, also, perhaps the greatest of your merits, of inspiration for others. Nor did you unwisely neglect due rest and recreation, finding them, after your energetic fashion, in the arduous sport of mountaineering.

After you settled in Leeds, your name as a helper in time of need quickly became known to your brethren alike in the great towns and in the northern valleys of Yorkshire. It was therefore with no little regret that the profession heard in 1889 of your acceptance of the position of Commissioner in Lunacy. Looking back we may, perhaps, perceive that this episode was needed to complete your experience of medicine in all its aspects. Everything that had gone before was, we may now see, but a preparation for the great office to which you were called in 1892.

You returned to Cambridge, your old University, at a time of transition, when the possibilities of science, not merely for its technical achievements, but as a mental discipline, were being forced by Humphry and



Photograph (by Mr. W. G. Parker) of the frontispiece of the Address presented to Sir Clifford Allbutt with the Gold Medal of the Association. The dominant colours in the original are red and blue, enhanced by gold. It has been designed and painted by Mr. Frederic G. Hulliett.

Michael Foster on the attention of those who stood in the ancient ways, and when a call to return to the study of nature was finding an echo in halls where for generations it had hardly been heard. We do not doubt that your own attainments as a scholar and historian, attributes the fruit of which are to be found in many addresses and have in these later days so eminently been displayed in your monumental work on *Greek Medicine in Rome*, contributed not a little to the achievement of the task you undertook. How great that task was, and in how large measure its accomplishment was due to your strength of purpose, and gentleness in method, to that combination of sweetness and light praised by Matthew Arnold, we will not stay to consider. It has already become part of the history of the University, and the chapter we rejoice to think is not closed.

But you have not allowed your exacting duties as Regius Professor of Physic to deter you from continuing to add to the store of medical knowledge, nor from taking an active share in its dissemination. The *System* with which you first endowed the profession in 1896, though the work of many minds, reflected everywhere the qualities of your own, and displayed an anxiety, while taking advantage of the latest results of laboratory work, always to maintain the supremacy of clinical methods in the practice of our art. The conception of hyperpiesis finally presented in your book on *Diseases of the Arteries and Angina Pectoris*, a work of your later years, would alone have sufficed to establish the reputation of a lesser man.

We, members of the British Medical Association, are proud and grateful that you were our President through the troubled years of war, and that after the great meeting of the Association in Cambridge in 1920 the Crown added to its earlier appreciation the further honour of calling to the Privy Council the youthful Nestor of our profession.

In token of our respect and affection for you as a man, of our admiration for you as a physician and teacher, and of our gratitude to you for the generous spirit in which you gave freely of your time and wisdom to the Association during a period of unexampled strain and difficulty, we ask you to accept at the hands of our President the British Medical Association's Gold Medal for Distinguished Merit.

July, 1922.

The Address is illuminated and written in a bound volume of fifteen pages, including title page. It is a very beautiful work of art, for the production of which the British Medical Association is greatly indebted to the artistic skill of Mr. Frederic G. Hallett. It has been to him, we know, a labour of love. The result is a production worthy of the occasion and one which, we feel confident, will prove grateful to Sir Clifford Allbutt as some memorial, with the medal, of his long connexion with the Association and of the great services he rendered to it while its President during so many years of the war.

Mr. Hallett has designed and illuminated the title-page, decorated panels, and tail-pieces; and the text of the address has been written in gold, colour, and black, by Miss Melinda M. Baker. The title-page, which is richly illuminated, contains in the upper border the arms and crest of the Regius Professor of Medicine, in the left border the arms of Cambridge University, in the right border the arms of Gonville and Caius College, and in the lower border a water-colour painting of the building of the British Medical Association. Page 1 has a decorated panel enclosing a water-colour painting of a corner of Park Square, Leeds, where Sir Clifford Allbutt practised when physician to the Leeds Infirmary; in the distance is a view of the Leeds Town Hall. The initial letter of this page encloses a water-colour painting of Lake Windermere. Pages 3, 5, 7, 9, and 11 have decorated panels enclosing water-colour paintings. On page 3 there is a painting of the front view of Caius College, Cambridge, with the Senate House. On page 5 is a water-colour sketch of the Gate of Honour, Caius College, at sunset. Sir Clifford Allbutt was an undergraduate of Caius College and is now a Fellow. On page 7 the panel contains a water-colour painting of the Eiger, Moench, and Jungfrau Mountains—a reference to Sir Clifford Allbutt's achievements as a mountaineer. On page 9 there is in the panel a water-colour painting of Tree Court, Caius College, and on page 11 a water-colour drawing of the "Backs" at Cambridge, showing Clare College Bridge over the Granta. On page 12 there is a tail-piece, including the monogram of the British Medical Association, and on page 14 a decorated panel, enclosing the signatures of the officers of the Association. The volume is bound in rich brown morocco leather and hand-tooled in gold by Messrs. C. and C. McLeish, and the ornamentation on the front cover, which includes the monograms of Sir T. Clifford Allbutt and the British Medical Association, is from the design of Mr. Hallett.

ARTHUR MARTIN-LEAKE, V.C. (WITH BAR), F.R.C.S.

The following is the text of the address presented to Lieutenant-Colonel Arthur Martin-Leake:

To ARTHUR MARTIN-LEAKE, V.C. (with Bar), F.R.C.S.

The British Medical Association in 1877 instituted a Medal "for Distinguished Merit" to be awarded under such conditions as the Council of the Association might determine. One of the conditions of the award was that the Medal should be given to any person "who shall have conspicuously raised the character of the medical profession by scientific work, by extraordinary professional services, or by special services rendered to the British Medical Association."

Members of the Association noted with great satisfaction that in 1902 His Majesty King Edward VII awarded to you the Victoria Cross under the following circumstances:

> "For great devotion to duty and self-sacrifice at Vlakfontein, February 8th, 1902, when he went out into the firing line to dress a wounded man under very heavy fire from about forty Boers only 100 yards off. When he had done all he could for him he went over to a badly wounded officer, and while trying to place him in a more comfortable position he was shot three times. He only gave up when thoroughly exhausted, and then he refused water until other wounded men had been served."

In February, 1915, the following notice appeared in the *London Gazette*:

> "*Bar to Victoria Cross.* For most conspicuous bravery and devotion to duty throughout the campaign, especially during the period October 29th to November 8th, 1914, near Zonnebeke, in rescuing, whilst exposed to constant fire, a large number of the wounded who were lying close to the enemy's trenches."

You were the first medical man and the first of His Majesty's subjects to be awarded a Bar to the Victoria Cross. This is a distinction of which not only yourself but the profession and the Association of which you are a member have every reason to be proud. On behalf of the Council of the British Medical Association we ask you to accept at the hands of our President the Association's Gold Medal for Distinguished Merit.

July, 1922.

The Address, suitably illuminated and engrossed, is contained in a volume bound in blue morocco, bearing in gold on the cover the symbol of the staff and entwined serpent and the monogram of the British Medical Association. The Address, as is that to Sir Clifford Allbutt, is signed by Professor Drummond, President, 1921–22; Sir William Macewen, President; Dr. Wallace Henry, Chairman of Representative Meetings; Dr. R. A. Bolam, Chairman of Council; and Dr. W. E. Haslip, Treasurer of the Association.

THE BRITISH PHARMACEUTICAL CONFERENCE.

PRESIDENT'S ADDRESS.

THE annual British Pharmaceutical Conference was opened at University College, Nottingham, on July 26th, when the President, Professor H. G. GREENISH, D.Sc.Paris, delivered an opening address on pharmacognosy and the pharmaceutical curriculum. The subject is especially his own by reason of his position as Professor of Pharmaceutics in the School of Pharmacy of the Pharmaceutical Society.

Pharmacognosy, he said, is a pursuit for which the pharmacist is particularly fitted by the nature of his vocation and the opportunities afforded him of becoming expert. The unique museums, herbaria, and library of the Pharmaceutical Society and its fine record of eighty years' work entitles it to be regarded as the headquarters of pharmacognosy in this country.

Definition of Pharmacognosy.

Explaining what pharmacognosy actually comprises, the President showed that its description as "to know what the drug is, what it costs, and how long it will keep," is inadequate. A proper knowledge of it required the study of botany, chemistry, physics, and zoology as well as a good acquaintance with geography, history, ethnology, and etymology. The practical application of pharmacognosy was the work of the pharmacist, who in learning the practice of his vocation should realize that the higher responsibility of those who provide the public with medicines calls for a complete understanding of the origin, mode of preparation, and constitution of his materials.

Preliminary Education.

He drew attention to the necessity of a good preliminary education, and deplored the decision taken by the Pharmaceutical Society in 1897 in reference to the entrance examination; the effect of an inferior standard in preliminary education during the last twenty years had been painfully evident to his own observation. The effort of teachers during this period to erect a solid edifice on insufficient foundation had in many cases proved to be an impossible task. The Royal Commission on University Education in London had reported to the same effect, and had pointed out that in the absence of a sound general education a large part of the benefits of university training are lost.

Scientific Training.

He next dealt with the arrangement of the scientific training to be followed. He placed botany foremost on account of its important relation to drugs. Should this knowledge, he asked, be acquired previously to pupilage in pharmacy or afterwards? Opinions varied: in Belgium the scientific training precedes the entrance to practice of pharmacy, in France the accessory sciences were taken up later; but in both cases the scientific training was continuous. In England the entrant into pharmacy was debarred from adopting the Belgian plan in its entirety, and had usually followed the French plan simply. Under the present (new) regulations he might adopt an intermediate course, but this would involve a two years' interruption in the continuity of his studies, and such interruption had been observed invariably to produce bad effects. The experience of those who had to interrupt their studies on account of the war afforded a notorious example.

Turning to the method of training in botany, he pointed out the need for a specialized course of instruction adapted to the particular objects in view. The Minister of Education in Austria had some years ago expressed the same view.

The President next described in some detail the scheme of training proper for students of pharmacognosy, emphasizing the importance of instruction in the use of the microscope. Referring to the syllabus of examination for pharmacists, he quoted from the report of the Royal Commission the statement:

"The syllabus is a device to maintain a standard among institutions which are not all of university rank. The effect upon the students and the teachers is disastrous. . . . They cannot pursue knowledge both for its own sake and also for the sake of passing the test of an examination. And the teachers' powers are restricted to the syllabus; their freedom in dealing with their subject in their own way is limited."

The syllabus, if such there must be, should be couched in terms as general as possible. Both teachers and examiners should be pharmacists, either men or women, who had received a thorough training in pharmacognosy.

Advanced and Post-graduate Training in Pharmacognosy.

For advanced training in pharmacognosy, or that by which men become leading authorities on sections of the subject, he commended to all students higher ideals than those merely sufficient to qualify them for the practice of their vocation. In this connexion the need of post-graduate work and opportunities for carrying out research should be recognized. It would not be too much to say that the training in pharmacognosy was incomplete until research had been undertaken and accomplished. There was now an incentive to students to continue in this aim, for by means of work accomplished in the Pharmaceutical Society's Research Laboratories they could proceed to the degree of Doctor of Philosophy. It was desirable that pharmacognosy should be accepted by universities as one of the subjects for the degree of Bachelor of Science, as had been done by the Universities of Manchester and Glasgow.

The field of pharmacognosy was wide, and the problems awaiting solution were diversified. They required men of varied qualifications and abilities such as Bourquelot, Power, Henry, Perrot, Farr, Wright, Goris, and that unrivalled master of botanical identification, E. M. Holmes. He deplored the lack in this country of an experimental station for pharmacognosy such as that at Wisconsin for the cultivation and study of drugs; that was a co-operative enterprise between the department of pharmacy of the university and a department of the Bureau of Plant Industry of the United States. It received 5,000 dollars a year from the Federal Government, and was aided by pharmaceutical firms interested in the work. At present the Pharmaceutical Society's Research Laboratories had no place where the material necessary for their work could be grown; they depended for assistance—always most willingly given—on the Director of Kew Gardens and the Curator of the Chelsea Physic Garden.

One of the most important of the subjects awaiting investigation was that of the part played by alkaloids in the metabolism of the plant. Until light was thrown on this question no rational scheme was possible for obtaining larger proportions of alkaloids from plants. The advantages for the prosecution of this work enjoyed by this country, with the variety of her colonial possessions, were recognized long ago, and were pointed out by Dr. Jonathan Pereira when appealing for the appointment of a scientific committee for the promotion of pharmacological knowledge.

University Degrees for Pharmacists.

Professor Greenish went on to describe the conditions under which degrees in pharmaceutics were granted by the Universities of Manchester and Glasgow. A proposal had been made for the establishment of a College of Pharmacy which should be recognized by the University of London. The President further reminded his hearers of the objects of the great men who were the founders of the Pharmaceutical Society, and alluded to the fact that the chemical laboratory established by them for the teaching of chemistry was the first in this country. At that time the Committee for Promotion of Pharmacological Knowledge consisted of fourteen members of the Society's Council, with fourteen honorary members and others, among whom no fewer than eleven were Fellows of the Royal Society; this showed the high recognition then paid to their body. For many years the Council of the Pharmaceutical Society had continued its endeavours to raise the Society to the rank of a learned body, and so to acquire the influence that it ought to possess, but recently that policy had receded into the background. At this moment, however, he felt hopeful of a revival of the former spirit; he could distinguish evidence of a determination to foster scientific work, and he expressed the hope that the Society, mindful of its great traditions, should set its educational policy steadfastly in the direction indicated by the wisdom of its founders, should foster the love of the calling which distinguished those early years, and so ensure for itself due appreciation.

A CONFERENCE of representatives of metropolitan county councils was held at the Islington Town Hall last week to consider the need for the amendment of the law relating to the sale of unsound food, so as to empower sanitary authorities to prosecute the wholesaler as well as the retailer. The conference adopted a resolution calling the attention of the Minister of Health to the necessity for the law relating to the sale of unsound food being amended by the addition of the following words at the end of section 47 (3) of the Public Health (London) Act, 1891, "and had taken reasonable steps to ascertain that the article was not in such a condition as to be liable to be seized and condemned under this section." It was further resolved to ask the Minister to receive a deputation on the matter.



Annan Photo, Glasgow.

William Macewen

British Medical Journal.

SATURDAY, JULY 29TH, 1922.

BRAIN SURGERY.

THE Presidential Address delivered to the British Medical Association by Sir William Macewen on Tuesday evening is published in full in this issue. Its main topic was the history and present position of brain surgery, and it will be read with interest by all—surgeons, physicians, and general practitioners alike—not only in Great Britain, but throughout the world. It is from the mouth of one of the pioneers, from one who all his life has laboured to advance knowledge with consummate precision, integrity, and skill.

It will be somewhat astonishing to the younger generation to realize that almost all of our modern knowledge of cerebral function has been built up within the lifetime of one still happily amongst us. Sir William Macewen tells us that he was taught as a student that the brain acted as a whole, and that there was then no recognition of functional localization. He goes on briefly to sketch some of the outstanding advances which have been made. Chief amongst these is the recognition that different physiological functions dwell in different parts of the brain. This discovery is paramount, because it was through it that surgical removal of pathological products became possible. For the successful treatment of cerebral tumours three conditions must be fulfilled: first, that the presence of a tumour be recognized; second, that the situation of this tumour should be accurately forecasted; and third, that a technique should be employed which will allow of its removal. The recognition of the presence of a cerebral tumour is often not difficult, especially to those who are able to make an examination of the optic nerve-head.

There is a general impression that brain tumours are rare, and not often to be thought of. Rarity is a comparative term, but in the sense in which the word is employed in the designation of rare diseases, it is not applicable to cerebral tumours. It is true that these neoplasms are not extremely common, but they are not rare in the sense, for instance, that spinal cord tumours are rare. If we turn to the statistics of the more famous neurological surgeons we get the impression perhaps that intracranial tumours are even plentiful. Dandy, for example, in a recent paper states that within a given period more patients were admitted to the Johns Hopkins Hospital suffering from tumours of the brain than from tumours of any other organ. In this instance there is a special reason for abundance—namely, the practice of ventriculography which Dandy has introduced and (perhaps unfortunately) popularized.

We have thought it just to make these remarks on the frequency of cerebral tumours because there are practitioners who feel that the occurrence of a cerebral tumour in their own practice is an unlikely contingency. It arises partly out of this that, as a general rule, cerebral tumours come to the surgeon too late. There is a feeling abroad that a decompressive operation is about as much as can reasonably be done for such a case. This is almost the same as saying that a gastro-enterostomy is the most that can be effected for a pyloric carcinoma—palliation, not cure. We must aim higher than that. We must aim at the actual removal of the tumour, just as we should were the growth elsewhere in the body. This can be done with least risk when the tumour is small, and we are thus brought back to the importance of functional localization. As Sir William Macewen says, an exploratory operation on the cranial chamber, after the manner of an exploratory coeliotomy, is not feasible. Within the abdomen it is possible to be upwards of twenty feet wrong in one's diagnosis—to believe the disease to be a duodenal ulcer and to find a diseased appendix—and, without detriment to the patient, to rectify matters through the one incision. Within the skull this happy state of affairs does not obtain. It is to a large extent the need for this nicety of knowledge which has attracted so many to what some of the more easy-going amongst us regard as an impossible allegiance. Sir William Macewen's name ranks amongst the highest of those who in these isles have worked to such purpose in this field. And this is no small thing to say, for the British school of neurology has always been in the very vanguard of scientific progress, and we are justly proud of it. The President's book on pyogenic diseases of the brain and its membranes, published many years ago, remains to this day the classical monograph on the subject. And his remarks this week, out of his ripe experience, complete the tale. What he has to say of cerebral tubercle is of great interest, particularly with regard to the secondary infection of latent tuberculous foci.

In the realm of brain surgery much remains to do. We have not yet by any means reached the limits of possibility in localization of tumours of the so-called "silent areas," but little by little even those fastnesses are being reduced. Nor have we reached anything like perfection in our methods of dealing with brain tumours even when exposed at operation. Earlier diagnosis should help us to effect cures rather than achieve only some amelioration.

It has been our President's lot to have worked courageously, long, and untiringly, and he is indeed fortunate to see such fruition before eyes which in the early pioneering days must often have been baffled and dejected.

INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

THE address by Professor Glaister, President of the Section of Industrial Diseases and Forensic Medicine of the Annual Meeting of the British Medical Association in Glasgow, published in full in this issue, touches on various matters of interest and importance, not merely to specialists, but to the whole practising profession of medicine. The scope of forensic medicine, as taught in the schools, has varied from time to time in accordance with the extending relations of medicine to the State, and it is clear that such changes are not at an end. Sometimes one subject within the course of lectures has come to bulk so largely as to make it desirable to establish a separate lectureship, especially in Public Health. At another time a teacher, looking to new demands, may have concluded that, as general practitioners are not likely to be called on, or to be qualified to make, a chemical analysis of the contents of a stomach in a case of suspected poisoning by an alkaloid, he might properly cut down the time devoted to toxicology. At present the doctor's responsibilities under the Acts relating to industrial diseases are becoming more and more onerous, and Professor Glaister has done wisely in directing special attention to the subject.

Before entering on it, however, he raised two general questions: one is whether all matters involving the application of the science of medicine to the law should not be included in the course of forensic medicine. While he reaches the conclusion that the time is not ripe, he admits that there is much to be said on both sides. It seems to us that here there need not be uniformity of method in all schools, but that every group of

teachers should agree between themselves as to the best system in the circumstances of their own institution. The essential is that the legal aspects of every part of his tuition should be made clear to the student. Whether the duty should be distributed, or be concentrated under one teacher, is a detail, though doubtless an important one, and, looking to pending demands on the student's time, overlapping should be most carefully avoided. The other general question is whether law students should not be required to pass an examination in forensic medicine as an essential part of their qualifying courses. Dr. Glaister urges that they should, and surely he is right. It appears that already in Scotland every candidate for the Bar must study and pass in forensic medicine. Law and medicine would then react beneficially on each other; a medical witness would be the better able to answer if counsel could in some measure meet him on his own ground. We have, indeed, heard it said of a famous teacher who conducted separate classes for law and medical students, that he had a very attractive way of dealing with his subject from the point of view, in the one class, of a doctor in the witness box, and in the other class, of a lawyer cross-examining the doctor. When two of his old pupils came against each other in a disputed case each would no doubt recognize, in thrust and parry, the influence of their common master, who was himself unsurpassed in skill of fence.

Professor Glaister's main subject was industrial diseases. He traced the history of compensation to workmen from the days when common law was the only resort, on through the successive Acts of 1880 (the Employers' Liability Act); the first Workmen's Compensation Act of 1897, which imposed liability quite independently of contributory negligence; the Act of 1900, which extended the law to cover agricultural employees; and the third Compensation Act, which has remained unaltered in terms, though not in administration, since it was passed in 1906. Though still excluding casual labourers and share fishermen, it embraces practically all other workers earning up to £250 a year under a contract of service. It also provides for the appointment of medical referees to sit with the tribunals in disputed cases as assessors, of whom, as it happens, Dr. Glaister is one, acting for the great industrial area of Glasgow and the West of Scotland. A table is quoted showing that the number of workmen under the Act was well over eight millions in 1920, and that the industrial diseases scheduled have increased about fivefold since 1906. In respect of silicosis a special Act was passed in 1918, and is notable for having applied to such workers the principle of periodical medical examination apart from existing illness, and solely for the purpose of disease prevention—a principle which, when suggested for general adoption, was rejected by the Royal Commission on the Poor Laws in its report in 1909, but is now in operation throughout the whole of school life.

An important Departmental Committee was appointed in 1919 to inquire into the present system of workmen's compensation, and to advise whether accident insurance should be adopted. Some of the findings of that Committee in its report of 1920 are discussed in Professor Glaister's address. He mentions without comment the Committee's reckoning that about fifteen millions of workers were within the scope of the Act. The table which he had already given states the figure for the same year (1920) as between eight and nine millions. Under the National Health Insurance Act fifteen millions must have been approximately correct for Great Britain even in the early years of that Act, whilst the wage limit of £250 a year, under the Compensation Act of 1906, together with its exclusion of casual labourers, would have led us to suppose the tabulated figure (8,348,150) to be correct, rather than the estimate of fifteen millions. The Committee recommended that the wage limit should be raised from £250 to £350, looking to the general rise in wages, but that was in 1920, and since then there has been a fall. The total annual cost to employers in the seven industrial groups increased from £2,700,325 in 1910, to £4,616,723 in 1919, and further to £5,978,009 in 1920, whilst the total burden of the Act exceeded £8,000,000 a year.

It is not surprising that the Departmental Committee reported in 1920 that special inquiry should be made as to miners' nystagmus. In 1919 compensation was paid for 6,449 cases of that affection, and in 1920 for 7,028 cases. Apart from Professor Glaister's address we may call attention to the fact that in the present year a special committee of the Medical Research Council issued a very important first report on the subject. It concluded that the essential cause of the disease is deficient illumination owing to the low power of ordinary safety lamps, and to absorption of light by coal and by dust-covered surfaces. The disease is very prevalent, but only a small proportion of cases are so severe as to cause even temporary incapacity for underground work. The Committee recommended that the illuminating power of safety lamps be greatly increased, or that an electric light be fixed on the miner's head or belt, and that the walls of the workings apart from the coal face be whitewashed. It expressed the belief that by such measures the disease as a cause of disablement might by degrees be entirely prevented. That is a most important deliverance.

As regards the Compensation Act in general, the Departmental Committee concluded, as pointed out by Professor Glaister, that there was no need for much revision of procedure, though employers should be compelled to give publicity within their works to the provisions of the Act, for the guidance of their workers in claiming compensation, and an accident book should be kept in every workshop. It considered also that the registrar should examine the factory surgeon's certificates in cases of appeal, and should return them to him for correction of any irregularities. This simple procedure, Dr. Glaister holds, would appreciably facilitate administration. The Committee further advised that every report by a medical referee should state specifically whether the workman was suffering from the scheduled disease, whether he was thereby disabled, and whether the certifying surgeon had correctly stated the date of disablement. Another recommendation was that additional facilities should be provided to render resort to the services of the referee easier. To meet the financial risks of smaller employers and of householders compulsory insurance is recommended. The Committee was favourably inclined towards extension of the scheme of the National Insurance Act to meet the needs of injured workmen, but this, as Dr. Glaister remarks, opens up a wide question.

The whole address is so packed with information which every practitioner ought to possess that the report of it in to-day's issue should be preserved for reference.

ECONOMY AND INFORMATION.

In our issue of June 24th we referred to the great increase in the price of Stationery Office publications, and pointed out the dangers, from the point of view of the medical profession, of the course upon which the Treasury had entered. We are very glad to see that Dr. Fremantle has taken up this matter in the House of Commons. On July 3rd he asked the Secretary to the Treasury to "state the reasons for the increase in price of the Annual Report of the Registrar-General for Scotland from 5s. to £2 17s. 6d.; if, in fixing the latter price, regard has been had to the restricted circulation that will result and the lessened use of the findings

of the Registrar-General's Department by local authorities and by the public at large; whether it is proposed to increase similarly the cost of the annual report of the Registrar-General for England and Wales and other official publications; and whether, before fixing prices, he will consult the Ministers concerned in regard to the value of the publications to the public welfare." Sir John Baird promised to make inquiries and subsequently wrote to Dr. Fremantle in the following terms:

Dear Fremantle,

As promised in my reply to your question on 3rd instant I have looked into the pricing of the Scottish and also of the English Registrar-General's Reports.

The reason for the large increase in the price of this and other Government publications is that the Government has decided that in view of the present financial condition of the country it would no longer be justified in selling official publications at prices far below cost. In calculating this nothing is included for the cost of preparation, and all copies used for official purposes are treated as sold at the published price. It is not as if the low prices hitherto charged had led to wide circulation. You will no doubt be surprised to learn that the sales of the previous report of the Registrar-General for Scotland (priced at 5s.) only amounted to 74 copies, the majority of the purchasers no doubt being local authorities, in whose interests very largely the report is published.

I must say, however, that the price of 57s. 6d. seems to me too high, and as I find that it is still not too late to make a reduction I am having it altered to 30s., and I will have careful note made of the sales to enable me to judge whether it would be to the interests of the Exchequer to fix it still lower next year. I may say, however, that our experience hitherto with publications of this character is that their restricted circulation is not very responsive to variations in price.

The real question to my mind is whether we are justified, in view of the very small demand for this work, in publishing all the elaborate tabular matter in the report, and I am pursuing this aspect of the matter. The corresponding English report, which has a considerably larger sale, is being issued at 20s.

As regards the last part of your question I would add that we are frequently in consultation with Government departments as to the prices of their publications.

Yours sincerely,

July 17th. JOHN BAIRD.

Sir John Baird's interesting letter shows that Dr. Fremantle has already secured a useful concession, and we hope that he will pursue the subject, for in our opinion the Secretary to the Treasury still does not fully realize the gravity of the issue. The price of the last report of the Registrar-General for England and Wales was 7s.; that of the report just issued is 20s., or nearly three times as much. It appears to us that the very small circulation of the Scottish Report at its old price, although not, we are afraid, very creditable to the Scottish public, is no argument for an increase, but proof that even the old price was too high. The intellectual level of discussion of public health problems must continue to be low so long as the general public are ill informed respecting the essential facts; they cannot be well informed unless they are familiar with the principal contents of the reports of the Registrars-General of Great Britain. Sir John Baird's expedient for meeting the difficulty by reducing the bulk of the reports is, we think, a dangerous one. There is perhaps a case in favour of issuing a new document summarizing the most essential facts and to be sold at a very low price, but this should be in addition to the present reports; the latter ought to continue to be within the purchasing power of both the new and the old poor. We are extremely suspicious of inquiries pursued by Treasury officials and other laymen into the value of "elaborate tabular matter." Such persons are not competent judges. It is for medical statisticians, including in that term not only the medical staff of the Ministry of Health but all medical officers of health, and for representatives of the medical profession as a whole to decide what is of value. We must say frankly that the creation of any suspicion that the whole of the data of mortality were no longer made available for the ordinary citizen would be, in our opinion, a great evil, and would play into the hands of anti-medical propagandists. We regard these blue books as important instruments of public education. They are instruments of which we should be proud: our official vital statistics are the best in the world. The medical profession regrets that they have not hitherto been utilized so fully as they might be by the general public, but cannot agree that this neglect ought to be accepted as a reason for still further restricting the unofficial circulation of the means of acquiring knowledge. A truer economy would be to seek means of increasing the demand. Were the publicity methods of the Stationery Office modernized, the reports of the Registrars-General would no doubt not become "best sellers," but they might find many more purchasers than they have at present.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE annual meeting of the Medico-Psychological Association of Great Britain and Ireland was held on July 19th, 20th, and 21st in Edinburgh, on the first and third days at the Royal College of Physicians, and on the second day in the physiology lecture room of the University. Professor G. M. Robertson of Edinburgh was elected president for the year 1922–23; a full summary of his presidential address was given in the JOURNAL of July 22nd (p. 134). At the opening meeting Dr. C. Hubert Bond, who was in the chair, referring to the committee which had been appointed in connexion with the True case, said that the Medico-Psychological Association some years ago had come to the conclusion that it was impossible for it to offer advice of utility with regard to such cases; circumstances had changed since then, however, and it hoped now to be able to offer something, if it were desired, to that important Committee. It had therefore been decided by the association to form a committee and to discuss and classify the medical aspects of the plea of insanity in criminal cases. Dr. A. Ninian Bruce read a paper on "The outside and the inside treatment of early cases of mental disorder." Professor G. M. Robertson presided at the morning and afternoon sessions of the second day, when in the morning Sir Edward Sharpey Schafer gave an address on "The influence of the endocrine glands on the nervous system," Sir Frederick W. Mott read a paper on "The investigation of the relationship of the reproductive and endocrine glands to mental diseases," and Dr. J. J. Graham Brown gave a paper on "Observations relating to the sympathetic and parasympathetic systems." At the afternoon session Dr. David Orr gave an address on "The inter-reaction of the endocrine, sympathetic, and central nervous systems in organismal toxaemia, with special reference to emotional disturbance"; papers were read by Professor J. C. Meakins on "The influence of chemical substances of the endocrine glands and nervous system," and by Dr. W. H. B. Stoddart on "The mental factor of some endocrinopathies." On the concluding day of the meeting Dr. Chalmers Watson gave an address on "The treatment of intestinal toxaemia," which was followed by an interesting discussion, in which Sir Frederick Mott, Dr. H. Crichton Miller, and others took part.

SIR NORMAN MOORE.

AT the comitia of the Royal College of Physicians of London held on July 20th the President, Sir Humphry Rolleston, announced that Lady Moore had offered to present to the College the portrait of Sir Norman Moore by Walter W. Russell, A.R.A., which has been on view this summer at the Royal Academy. The offer was gratefully accepted. This portrait shows Sir Norman Moore seated, and wearing the robe of black velvet and gold lace of the President of the College—the office held by him for four years, 1918 to 1922. An earlier portrait, by R. G. Eves, which was exhibited at the Academy some years ago, is reproduced as a photogravure frontispiece to the first volume of his great work, *The History of St. Bartholomew's Hospital;* for that he wore the black bonnet and scarlet gown of a Doctor of Medicine of the University of Cambridge. It is fitting that the portrait that will hang on the walls of the Royal College of Physicians should depict Sir Norman Moore in the Presidential robe. He has been a Fellow for forty-five years, and none of his illustrious predecessors have served the College with greater distinction, or with a higher regard for its honour. This picture will remind future generations that the learned physician was a living force in the intellectual world of medicine during the first quarter of the twentieth century.

SIR MALCOLM MORRIS'S GOLDEN WEDDING.

A LUNCHEON to celebrate the golden wedding of Sir Malcolm Morris and Lady Morris was held on July 18th at the Trocadero Restaurant, London. Sir George Newman presided, and was supported by Sir James Michelli, Dr. J. J. Pringle, Dr. J. J. Perkins, Mr. J. Grant Ramsay, and Dr. C. M. Wilson. The Chairman, after reading letters of regret for their absence from the Archbishop of Canterbury and Sir StClair Thomson, presented to the guests an inscribed George III silver tea service, together with a volume containing the signatures of the subscribers. The health of Sir Malcolm and Lady Morris was proposed by Dr. Pringle, who spoke of his unsullied friendship of forty years, and of the prominence of Sir Malcolm in the British dermatological world. Sir Malcolm Morris, who spoke with great emotion, referred to the early struggles of his life, when he was the youngest of fifteen children, and he told of his resolution at the age of 17 to enter the medical profession. Turning to Sir James Crichton-Browne, who was present at the luncheon, Sir Malcolm Morris told of how he had made his acquaintance in connexion with work at the mental hospital at Wakefield: "I got from him a bacillus of energy; that bacillus is still active, and its cultivation is entirely due to the co-operation of Lady Morris." Lady Morris also briefly responded, and a vote of thanks to the Chairman, proposed by Sir Thomas Horder, brought the very happy proceedings to a close. Amongst those present were the Columbian Minister, Lord and Lady Dawson, Lord Gorrell, Sir W. H. and Lady Willcox, Sir John and Lady McFadyean, Sir Henry and Lady Gauvain, Sir Arthur and Lady Conan Doyle, Sir Anderson and Lady Critchett, Sir Arthur Newsholme, Sir Squire Sprigge, Sir J. Thomson Walker, Dr. Mary Scharlieb, Mr. E. Rock Carling, and Professor C. C. Choyce, and several members of Sir Malcolm Morris's family.

MEDICAL LITERATURE FOR RUSSIAN DOCTORS.

IN a note on the Fund for Russian Doctors published in our columns of July 15th it was said that a recent message from Moscow stated that Russian doctors were in great need of modern medical literature, as their supply had been cut off for several years. British doctors who could spare files of medical journals for the past three years were invited to turn them over to the American Relief Administration for distribution. We are informed that this notification went further than was intended, and that the American Relief Administration in London finds itself unable to deal with the very numerous and generous offers it has received from medical men in this country. It proposes to limit its efforts in this respect to obtaining week by week spare copies of English medical journals, which it could then dispatch at short intervals by its couriers to Russia. The arrangements for this are not yet completed, and it is hoped to make a further announcement shortly. The total amount received by the British Medical Association for the Russian Doctors' Relief Fund down to July 24th was £1,503 0s. 11d.

THE REGISTRAR-GENERAL'S REPORT FOR 1920.

THE eighty-third annual report of the Registrar-General of Births, Deaths and Marriages in England and Wales has been published as a blue book of 531 pages.* The figures in each respect are remarkable. The marriage rate was 20.2 per 1,000, which is the highest recorded, being 0.5 above that of the preceding year, and 4.8 above the average of the last ten years before the war. The birth rate was 25.5 per 1,000, or 7.0 above that of the preceding year, which was the highest since 1909. The death rate was 12.4 per 1,000, or 1.3 below that of the preceding year, and is the lowest recorded. The number of deaths, 466,130, was the smallest for any year since 1862, when the population was little more than half that of 1920. As the number of births was 957,782, the natural increase was 491,652, as compared with 188,235 in the previous year, and 50,800 in the year before that. The amount of this excess, the largest in the history of the country, was due to the temporary rebound of the birth rate following demobilization, in conjunction with the exceptionally low death rate. It is expected that the latter factor will be repeated—the provisional figure for 1921 is even lower. A repetition of the 1920 birth rate is deemed unlikely. On ratio of population, however, the excess does not represent an absolute record; the birth rate for the whole quinquennium 1876–80 (when it reached its maximum) was 14·5, whereas in 1920 the excess was only 13.1 per 1,000 of population. The proportion of males to females born was 1,052 per 1,000, and so it continued much above pre-war experience. Dr. Stevenson, the superintendent of statistics, is able to point to another big step forward shown in the figures relating to infant mortality. The rate fell in 1920 to 80 deaths per 1,000 births, against 89 in 1919, which was the lowest previous corresponding rate. It is pointed out, however, that this improvement is partly due to the large increase of the birth rate during the year. A method adopted this year to correct such fallacy raises the rate from 80 to 85, which is, however, highly encouraging as an improvement on the lowest corresponding rate for any previous year (91 in 1916 and 1917). Under this method of tracing the mortality quarter by quarter it is found that the decline chiefly occurred during the second half of the calendar year. The year 1920 shows a rise in deaths from most forms of epidemic disease as compared with the rate in 1919, which was unprecedentedly low. The increase in respect of measles and whooping-cough is considerable, but slight in other cases; the only decrease is from enteric fever, which for the sixth year in succession was the lowest ever recorded in the country. In regard to tuberculosis it is satisfactory to learn not only that the death rate was considerably lower than in any previous year, owing to the circumstances of war and the pandemic of influenza, but that the ground lost in progressive reduction has now been substantially regained. The opinion is given that this advance will probably be found to have been kept up in 1921, but not materially improved. The increase in the birth rate is again mentioned to explain a slight increase in the crude mortality from syphilis, to which the deaths of infants normally contribute in a preponderating degree. But when the increase is discounted by standardization, the mortality attributable to this cause is found to have declined. The more general death rate under this heading shows a considerable fall since 1917. In regard to cancer mortality, some further increase is reckoned to have occurred in 1920. This statement is applied more to males than females, whose rate has hardly advanced during the last eight or ten years. The deaths allocated to encephalitis number 861, as against 663 in the year 1919, 366 in 1918, and 329 in 1913. Included in the table are 471 deaths ascribed in 1920 to encephalitis lethargica, as against 290 in 1919, 4 in 1918, and none in 1913. The total number of deaths under or connected with the administration of anaesthetics (366) is considerably higher than in any of the nine preceding years, for which alone the complete figures are available. The number is said to have been fairly constant, having varied only between 261 in 1915 and 306 in 1916. The chief increase in any one age group is in infancy, 28 such deaths having been reported in 1920 at ages under one year as against 11 in 1919. Of the 26 male infants, 11 were being operated on for hernia or intestinal obstruction, 8 for phimosis, and 3 for cleft palate. It is pointed out that the assumption must not be made that in all the cases death was due to the anaesthetic, though in many, owing to the nature of the condition occasioning the administration, there may be strong presumption. With the aid of the preliminary report of the census issued in August, 1921, the population in the middle of 1920, upon which figures are based, was reckoned to comprise 17,866,000 males and 19,658,000 females. A very large number of tables are appended, and one of these shows that the death rate of both sexes was very low in old age as well as at other periods of life. As usual, the volume includes classified statistics of various counties.

* To be purchased through any bookseller or directly through H.M. Stationery Office. (£1 net.)

DYSMENORRHOEA AS AN INDUSTRIAL PROBLEM.

In view of the large and increasing employment of women in industry, the industrial aspect of dysmenorrhoea, perhaps the commonest of all female ailments, is a matter which merits serious consideration. The *Journal of Industrial Hygiene* for June, 1922, contains a preliminary note on dysmenorrhoea as an industrial problem, by Dr. Samuel R. Meaker of Boston, U.S.A. It is highly suggestive and indicates the direction in which further investigation for the alleviation of the condition is necessary. Dr. Meaker investigated the industrial incidence of dysmenorrhoea with a view to determining its effects upon industry and the best methods for dealing with it. Industrial crippling from dysmenorrhoea occurred in three ways: (1) The girl remained at work, but with lowered general efficiency; (2) the girl was incapacitated for a short period of the day; (3) the girl was absent for a full day or longer. The first group does not entail any considerable industrial loss, while in the second group rather over 10 per cent. of the girls were found to seek relief at the rest room or hospital during any given month. Half of these girls were able to return to work after a hot drink and a rest of from ten to fifteen minutes, so that the amount of time lost was negligible; somewhat less than one half of them lay down for periods averaging about two hours; about one-eleventh of this group were sent home for the remainder of the day, the industrial loss in each such case being one day. The third group—those absent for a full day or longer—was found to be chiefly responsible for industrial loss; it was estimated to constitute more than 1 per cent. of the total time of the employees. Dr. Meaker considered that much could be effected by providing proper medical care for those seeking relief at work (Group 2) and by education among those who had to stay away from work (Group 3). Women, he says, are amazingly backward about seeking medical relief for their menstrual difficulties; the subject could, he thinks be brought to the notice of employees at the time of their engagement, and upon reporting at hospital; in this way nearly four-fifths of the female staff would be educated upon the problem during any one year. It was believed that once the industrial aspects of dysmenorrhoea and the possibility of successfully handling the problem were realized by employers their co operation in establishing facilities for care and treatment would be assured. The greater part of the suffering from dysmenorrhoea could be prevented by simple measures, and in most cases without pelvic examination.

RADIOLOGY OF THE CHEST IN CHILDREN.

In May, 1920, a small committee, consisting of three clinicians and three radiologists, was appointed by the National Tuberculosis Association of the United States to report on the *x*-ray and clinical findings in the chests of normal children from 6 to 10 years of age. The committee was asked to define a standard in order to facilitate by contrast the interpretation of the abnormal signs characteristic of active disease, particularly tuberculosis. Working in pairs at three different universities the members of the committee examined over 500 children of all grades of society and representative of both urban and rural communities; they were free from symptoms of disease, and of approximately normal height and weight for their respective ages. After nearly two years' work a full meeting of the committee was held, the results of each pair were correlated, and the report now issued drawn up in accordance with the unanimous expression of opinion of all those engaged in the research. From the clinical standpoint great stress is laid on the variable nature of the percussion note in children. In some cases it is fuller, more tympanitic, of higher pitch, and of greater resilience than that noted in adults, while in others it is indistinguishable in quality from that elicited over the lungs of fully grown individuals. Similarly with the breath sounds; though generally possessing a harsh sharp character with prolonged expiration they by no means infrequently display the usual vesicular murmur of adult life. In more than 50 per cent. of the children in which this latter type of breathing was heard examination with the *x* ray gave findings similar to those obtained by a study of normal adult chests. So close, in fact, was the agreement between the clinician and the radiologist that it was found possible to designate the chest of normal children as of "puerile" or of "adult" type. These variations and those of the percussion note are more generally found in children with a history of previous infection of the respiratory tract. It was noticed that after such infections as measles and pertussis areas of increased density radiating from the hilum to the base occurred with great frequency; these were observed even in uncomplicated cases, indicating that a general inflammatory process of the whole respiratory passages may be a common feature of these two diseases. That such shadows are evidence of healed processes and not of active lesions is indicated by the fact that they may remain unchanged and without the development of clinical symptoms for three to five years at least. D'Espine's sign as denoting the presence of enlarged tracheo-bronchial glands was found to be of little value, while Eustace Smith's sign is so generally elicited in normal children as to deprive it of diagnostic importance. Among the more important conclusions reached by the committee three may be stated. The first is that the normal chest of the child is, from the radiological standpoint, subject to such wide variations within normal limits as to be beyond the possibility of exact description. The second is that the conglomerate shadow commonly called the hilum shadow, when found lying entirely within the inner third or zone of the lung area, can be disregarded (or regarded as normal), except where it is made up of a solid mass of homogeneous shadow giving undoubted evidence that it represents a growth or mediastinal pleurisy. The third conclusion is that calcified nodes at the root of the lung, without evidence of lung disease, are of no significance except as a possible evidence of some healed inflammatory condition, possibly but not necessarily tuberculous. They are a common finding in normal chests. It is stated, further, that persistence of the bronchial shadows to the peripheral zone of the lung may be due to a variety of conditions, past or present, of an inflammatory nature or otherwise, but is not necessarily indicative of tuberculosis. In congratulating the National Tuberculosis Association on the thoroughness of the work conducted under its auspices, we may remark that once again we meet with an example of the extraordinary value of the co-operation of two classes of workers proceeding along different lines in elucidating problems which, regarded from one or other side alone, remain obscure.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

The International Congress of the History of Medicine held in London last week was a great success. It came to an end on Friday, July 21st, when a farewell banquet was held at the Hotel Cecil. We published last week (p. 145) an account of the opening of the proceedings, but owing to the pressure of matter from the Annual Meeting of the Association at Glasgow are compelled to defer publication of the remainder of our report until next week.

BEER AND LEAD POISONING.

Information has reached us of several cases of lead poisoning among men which it is considered are due to the drinking of beer. A modern development of the equipment of beerhouses is the provision of stoneware or earthenware troughs along which the beer flows or may remain for some time. It is suggested that the lead glaze on the troughs is so acted upon by the beer that a sufficient amount of lead is imbibed to result in definite symptoms of lead poisoning.

Owing to the pressure of matter from the Annual Meeting in Glasgow the issue of the Epitome is suspended for this week.

ANNUAL MEETING NOTES.

THE Annual Representative Meeting of the British Medical Association opened in Glasgow on July 21st with Dr. R. Wallace Henry in the chair. During the morning Sir William Macewen paid a visit to the meeting and welcomed the Representatives to the City of Glasgow on behalf of the Executive of the Reception Committee. A little later Sir Donald MacAlister attended and welcomed the British Medical Association to Glasgow on behalf of the University, of which he is Vice-Chancellor and Principal. Reports of the proceedings on that day and on Saturday, July 22nd, and of part of the proceedings on Monday, July 24th, are published in the SUPPLEMENT this week, and to them members are referred for a detailed account of what happened. We here refer only to a few outstanding matters.

The British Medical Association, being conterminous with the British Empire, is experiencing certain difficulties, similar to those encountered by the British Government, in the adjustment of its constitution to the fact that the Dominions have grown to man's estate. Last year one of the most anxious matters with which the Representative Meeting had to deal was the nature of the relations which might best be maintained with the Branches in the great Commonwealth. With the assistance of Dr. Todd, who had come from Australia to express the view of the Branches there, a solution was then found, and the Representative Meeting this year opened with the reading by the Chairman of a cable message conveying the best wishes of the Federated Australian Committee for a successful Representative Meeting. Early in the meeting Dr. J. F. Wilkinson, the Representative of the Victorian Branch, made a short speech, which was listened to with great pleasure by the Representative Meeting. He expressed the thanks of the Federal Committee and the members of the Australian Branches generally for the very friendly way in which they had been met in this matter, which they regarded as one of very great importance. The proposals made would enable them to work out their medical affairs in the way which seemed to them best, but without any break from the parent Association, which was for them a most vital factor. They desired that nothing should be done which would in any way weaken the link that bound them to the parent Association. The Representative Meeting then passed to a consideration of the relation of the British Medical Association to the organization of the medical profession in South Africa, a matter which presented some resemblances, but also some serious points of difference from the problem that arose in Australia. The Chairman of the Organization Committee, Dr. Morton Mackenzie, brought forward a resolution, which, with certain amendments, was eventually adopted; but before this stage was reached the meeting heard an interesting speech from Dr. Barnard Fuller, the Representative of the Cape of Good Hope Western Provinces Branch. He said that though Cape Colony was content with existing arrangements, there was in South Africa, not only among medical men, but among the general population, a large section to whom anything with the prefix "British" was distasteful. The difficulties were great, and he had found it far from easy to decide what would be the wisest course to take. Those who were most anxious to keep in intimate touch with the British Medical Association realized that in South Africa it was necessary to go warily both in general and in medical politics. He looked forward to a new association which would bring all South African medical men within its discipline and would be linked up with the British Medical Association. The resolution adopted by the Representative Body on July 21st reiterated the opinion it had previously expressed in favour of federation of any purely medical body or bodies representing substantially an ex-branch or group of ex branches of the British Medical Association outside Great Britain which desired it, and instructed the Council to continue the discussion of the scheme proposed to the South African Committee or any alternative scheme suggested by it.

The first part of the session of Friday afternoon was occupied by an animated discussion on the question of professional secrecy. It may be remembered that the Annual Representative Meeting last year expressed the view that the Association should use all its power to support a member of the British Medical Association who refuses to divulge without the patient's consent information obtained in the course of his professional duties, except where it is already provided by Act of Parliament that he must do so. This resolution was referred to the Council with an instruction that it should be submitted to the Representative Meeting this year with a view to considering the propriety of its becoming the policy of the Association. When the position came to be looked into by the Council various difficulties were encountered, and in its annual report the Council recommended that the minute should be rescinded and suggested an alternative declaration. The matter was accordingly brought before the Representative Meeting this year by the Chairman of the Central Ethical Committee, Dr. R. Langdon-Down, who set out fully the reasons which had induced the Council to come to the conclusion that it was undesirable to make the resolution of last year a declaration of the policy of the Association. On behalf of the Council he proposed an alternative form. This was accepted with only seven dissentients. Afterwards an extension put forward on behalf of the Kensington Division by Dr. Buttar was also accepted, and the resolution as finally adopted set out that since in the opinion of the Representative Meeting it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned, the Annual Representative Meeting declared its opinion to be that the proper preservation of professional secrecy necessitates a measure of special consideration being recognized for medical witnesses in courts of law, above and beyond what is accorded to the ordinary witness.

Later the meeting turned to the consideration of the sections of the Annual Report of Council dealing with National Health Insurance, and the recommendations of the Council were submitted by Dr. Brackenbury, Chairman of the Insurance Acts Committee. Two important decisions were reached: the first, which was carried unanimously, affirmed the Representative Body's insistence upon the continuance of the system of negotiation which has prevailed since the coming into force of the National Health Insurance system—namely, direct negotiations between the Government and the profession without the intervention of any third party—but at the same time expressing readiness to welcome the co-operation of all those interested in the development of the best possible medical service for insured persons. The second resolution, which was carried on a roll call by 81 to 21, stated that in the opinion of the Representative Body the measure of success which has attended the experiment of providing medical benefit under the National Insurance Acts has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system. It will be remembered that the Conference of Panel Committees last October unanimously passed a resolution in similar terms.

Monday morning was occupied by the Representative Meeting in the consideration of the sections of the Report of Council relating to the finances of the Association and to the work of the Medico-Political Committee. It has been found necessary to postpone the report in the SUPPLEMENT of the proceedings on these matters in order to make room for the conclusion of the report of the discussion of the hospital policy of the Association, which occupied the greater part of the afternoon session on Monday.

The subject which occupied more of the time of the Representative Meeting than any other was the hospital policy of the Association. It is not surprising that the Association has great difficulty in exactly defining its position. The fact seems to be that the practice of medicine is going through

a period of change which may be called, without exaggeration, revolutionary. It is not merely that the financial distress of the hospitals has become more acute than before, nor only that the insurance scheme introduced some ten years ago is lopsided, since it does not make provision for in-patient treatment in hospitals; but it is also that the increasing complexity of medicine has compelled the adoption of what is called the "group system" of treatment in all classes of practice. It had been beginning to develop rapidly in large hospitals before the war, and the movement was greatly accelerated by the war, when the medical officer in charge of a patient could obtain with ease the assistance of the combined investigations by physician, surgeon, radiologist, chemist, and bacteriologist. At present the only way in which these combined opinions can be obtained is, in the case of a patient who is not rich, to go to a hospital; while a rich patient must either go the round of the specialists or enter some private institution which will undertake a complete examination for a lump fee; and of such institutions there are not many. We will not here attempt to give a summary of the long and rather complicated discussion, the report of which in the SUPPLEMENT should be read by every member of the profession. It will be noted that the Association once more recorded its belief that the voluntary method of administration of the voluntary hospitals of the country is to the advantage of the public, medical science, and the medical profession, and should be maintained; and further, that the essence of the voluntary system is the independent and voluntary management, which is not necessarily related to conditions of service of the medical staff. It was also affirmed that the voluntary hospitals have grown up on a general understanding between the subscribers, the board of management, and the members of the honorary medical staff, that both funds and services were placed gratuitously at the disposal of those unable to pay for adequate medical treatment, but that the understanding for gratuitous service was mutual and reciprocal. This being so the general tendency now existing for the exaction of payment, however small, from the patient, necessarily modified the original understanding and fundamentally altered the basis of the relation between the honorary medical staff and the subscribers. The proposal for the formation of staff funds gave rise to much discussion and disclosed that there were two opposed and, as it would appear, fairly evenly balanced opinions in the meeting. An amendment by Dr. Brackenbury was carried but was not put as a substantive motion, the suggestion of the Chairman of the Hospitals Committee that the point at issue should be referred back to the Council being accepted. Dr. Brackenbury's amendment was to the effect that where payments of patients were made by rate aid or State aid, and where in other cases payments were of an amount exceeding the cost of hospital maintenance and accommodation, such charges should be considered to include payments towards maintenance and treatment and a percentage of all such payments passed into a fund, which should be at the disposal of the honorary medical staff.

It is interesting to record that a conference on the subject has recently been held between representatives of the medical staffs of ten of the London teaching hospitals; the result of this conference has just been announced, and it appears that it arrived at conclusions similar to those so far reached by the British Medical Association. The hospitals represented were St. Bartholomew's, St. George's, Guy's, King's College, St. Mary's, the Middlesex, St. Thomas's, University College, the Westminster, and the Royal Free. The first resolution, adopted without a dissentient, was: "That under present conditions in the case of patients who contribute towards, but pay not more than, the whole cost of their maintenance in a voluntary hospital, it is undesirable that any portion of such contribution should be allocated to a staff fund." The second resolution, from which Guy's, Middlesex, and University College dissented, was: "That when the State, a municipal or other public body pays towards the accommodation, maintenance, and treatment of a patient or group of patients in a voluntary hospital, a percentage of such moneys should be allocated to a staff fund." A third resolution, from which Guy's dissented, was also adopted, to the following effect: "That when a special clinic is held by a member of a hospital staff for the treatment of patients sent by the State, a municipal or other public body, the member of the staff taking such a clinic should be adequately paid."

The business of the Annual Representative Meeting was brought to a satisfactory conclusion soon after 3 p.m. on Tuesday, July 25th. That no curtailment of the time allowed to speakers had been found necessary was matter for congratulation in view of the complex and contentious nature of much of the agenda. On Tuesday, indeed, from the presentation of the Report under "Science," by Sir Clifford Allbutt, to the votes of thanks with which the meeting closed, Representatives had little to do beyond recording approval of the year's progress under the several heads remaining. That approval was especially wanted in connexion with the work of the Dominions and the Scottish Committees. One point only provoked discussion, and on that point, the compulsory retirement of Senior Surgeon Commanders of the Navy Medical Service without compensation, the meeting, whilst expressing cordial approval of past action, left the Council with no uncertain mandate for the future.

Great efforts have been made this year to ensure the success of the Annual Exhibition of instruments, apparatus, drugs, food, books, and medical accessories, which has long been a feature of the annual meetings of the British Medical Association. The exhibits at Glasgow have been arranged in a portion of the large Kelvin Hall, which adjoins the grounds of the University; a better building for this purpose can scarcely be imagined. The firms exhibiting number nearly eighty, and they have succeeded in bringing together a great deal of material of much practical interest to members of the medical profession. An account of the exhibits will appear in subsequent issues, but we may note here that the opening ceremony, presided over by the President, Sir William Macewen, on Tuesday morning, July 25th, was attended by the Bailie Allan, Sir Clifford Allbutt, the officers of the Association, and a very large number of Representatives, who were impressed with the general arrangement of the stalls and the good taste shown by the firms in displaying their goods.

The Municipal Departments of the Corporation of Glasgow arranged elsewhere an interesting exhibition. It grew out of a desire expressed by Sir William Macewen that the Public Health Department of Glasgow should illustrate the several directions in which municipal effort tends to further the health of the community. The suggestion was enthusiastically taken up by the Health Committee in the first instance, and thereafter by the other committees whose work runs on parallel lines, so that altogether twenty-two sections of Corporation activity were illustrated. We propose to publish a detailed account of this exhibition next week.

On the afternoon and evening of Sunday, July 23rd, a large number of Representatives and their wives and families had a delightful sail on the River and Firth of Clyde in the ss. *Skirmisher*. The afternoon was fine and the trip was greatly appreciated. Starting from Yorkhill Quay, the steamer passed the great shipyards of Clydebank. Next, the visitors saw Dumbarton Castle and had a peep at Ben Lomond in the distance; they then sailed past Port Glasgow and Greenock, and traversed Loch Long and Loch Goil, in the midst of the beautiful West Highland scenery. Nearing the head of Loch Long, the steamer turned and proceeded seaward as far as Hunter's Quay, returning thence up the Clyde to Glasgow. Yorkhill Quay was reached at nine o'clock, after seven hours' keen enjoyment. Tea, supper, and music were provided on board, and the general arrangements were perfect.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Milk and Dairies (Amendment) Bill.

THE Second Reading of the Milk and Dairies (Amendment) Bill, which had come down from the Lords, was moved in the Commons on July 19th by Sir A. Mond. The measure will further postpone the operation of the Act of 1915, which would otherwise come into force next September. The application of the original Act was delayed on account of the war, and the Minister said that one reason why it was not to be applied now was that it would require a large staff and place heavy duties upon county councils, involving a charge of something like £800,000 a year, rising to a million sterling, for administration. Moreover, it would put expenses on landlords and farmers which, in their present financial position, they were not ready to carry out. Farmers could not be compelled to produce milk, and if conditions were too onerous would not do so. The present bill was intended to encourage the supply of good milk, the policy being to endeavour to secure it by a form of persuasion rather than by compulsion. The best form of persuasion lay with the consumer. If he insisted on having a better standard of article he would get it. Practical experience shows this to be the case. Local authorities already possessed considerable powers for securing sanitary conditions in production, storage, and distribution of milk. The Milk and Dairies Order of 1885 gave very large powers, and if they were more generally enforced much more would have been done than was the case at present in the direction of obtaining clean milk. The orders of 1885-86 and 1899 provided for the registration of all dairies and milk shops, the lighting, ventilation, cleansing, drainage, and water supply of premises, and for precautions against infection or contamination. Section 6 of the Sale of Food and Drugs Act, 1885, made it an offence to sell, to the prejudice of a consumer, an article of food which was not of the nature, substance, and quality as demanded. Though the order of 1885 required local authorities to keep registers, it gave no power to revoke registration in any case outside London. It was proposed in the present bill to give such power, which would be extremely useful for enabling authorities to keep these places under better supervision and control. To guard against arbitrary revocations various provisions for reference to the courts by way of appeal were made. A main feature of the present bill was to encourage grading up. At present the Ministry had thirty-five grading stations in which a very strict inspection was made with tuberculin tests in regard to the cattle used. The number of licences for the certified grade and Grade A had increased from 17 in March, 1920, to 57 in July, 1922. But the milk so standardized was rather a luxury article than one useful to the mass of the people. He proposed to try and provide a system under conditions by which any reasonably careful farmer should be able to supply this quality of milk without any great additional cost. The aim was to set up, as a standard article, milk which for health purposes would be satisfactory. The grading would be done by orders to be drawn up when the bill was passed and, of course, submitted to the House. He wanted to get milk which was free from tuberculosis bacteria. It was not the case that every cow which reacted to the test gave tuberculous milk. The Medical Research Council, at his instigation, was carrying on an elaborate investigation into the whole question of the value of tests. He proposed to go on the lines of testing the milk rather than the cow. He was laying down a standard of a bacteriological kind in the milk test rather than dealing with the animal. In Clause 4 provisions were introduced to prohibit the addition of colouring matter or water. This was a continuation of a food control order of 1921 which would lapse on September 1st if not embodied in the bill. Under the clause it was made an offence to sell, or offer for sale, adulterated milk. Under Clause 5 it was made an offence for any persons knowingly to sell milk from a cow with tuberculosis of the udder. The penalties were severe. This continues Article 15 of an order of 1885 as amended in 1889. Clause 8 gave the Minister power to make regulations to prevent danger to health from imported milk. This was not a question of condensed but of fresh milk. Condensed fell under another category. The question of the standard of condensed milk was one more of food value than of liability to spread tuberculosis. Regulations not yet settled might lay down some standard, but he would not, at the moment, like to say what they should be. Under Clause 11 powers might be exercised by a county council where the district council failed to exercise them. The Minister of Health might, after inquiry, determine that all or any such powers should be transferred to the county council, either for a definite period or as he might direct. Up to the present the enforcement of orders had been very unequal. Not only would the orders have to be laid before Parliament, but consultations would have to take place between himself and the Minister of Agriculture as to their framing.

Mr. Acland, who, as chairman of the Agricultural Organizations Society, some months ago called a conference which broadly favoured the lines of this bill, gave the measure support but reserved the right of criticism in regard to certain matters. Referring to Clause 5, designed to prevent the sale of tuberculous milk, Mr. Acland said he had seen it stated as the opinion of Dr. Raw that so long as children could get enough milk a certain amount of cow tuberculosis infection in that milk was not harmful, but might be beneficial, because it tended to immunize the children who took it from human tuberculosis. If that were so, it revolutionized very many previous ideas, and the House ought not to hurry too quickly in making regulations.

Sir Watson Cheyne remarked that milk might be a carrier of disease in two ways. It might carry typhoid, not through the cow having typhoid fever, but because the water used to dilute the milk might have come from an infected well or because the milkman himself has typhoid. So with diphtheria or scarlet fever. In the case of tuberculosis, however, the milk carried the germs of an extremely serious disease from a cow infected with it, and no pains should be spared to prevent that happening. The difficulty in getting agreement with agriculturists or dairy people for special precautions in regard to tuberculosis was extraordinary. He thought it was due to the want of appreciation of the real danger. He was of opinion that the word "knowingly," in the clause which laid down that no person should knowingly sell the milk of a cow suffering from tuberculosis of the udder, left a loophole for evasion, because anyone could say he did not knowingly sell such milk. Ignorance was not allowed to be an excuse in other matters, as, for instance, when a person was taken ill from ptomaine poisoning from food eaten in a restaurant. He was afraid also that, although there was not much danger in the milk of a cow even if it suffered from a general tuberculosis disease unless the udder itself was affected, by putting these words into the bill the farmer would be misled into concentrating attention on the one question, and forget to see whether the milk was affected. Diagnosis for tuberculosis disease by external handling of the udder was almost impossible, and plenty of expert veterinary evidence would be given of contradictory character. He thought that a conviction could not be obtained unless there was a provision in the clause against milk containing tubercle bacilli. The farmer could know quite easily whether the milk was tuberculous by having it examined microscopically. Urging the importance of getting this security Sir Watson Cheyne said that he had lately met a doctor who had practised in America in one of the States where very stringent precautions were enforced, and during several years of private practice there with visitation at the large hospitals, that gentleman said he had never once seen a case of tuberculous glands in the neck. Great Britain had fallen behind in attention to this matter. If a milkman were to sell milk containing arsenic it would be thought a terrible thing, even though done accidentally. Why should he be allowed to sell milk filled with tubercle bacilli of the most virulent description?

Mr. Myers deplored the postponement of the operation of the Milk and Dairies Act of 1915, and believed that many of its provisions could be carried through without extra expenditure. He was strongly in favour of the provision in the 1915 Act whereby authorities might combine to employ a veterinary surgeon to look after dairy cows. He also objected very much to the word "knowingly" in Clause 5. Mr. Myers further touched upon the sale of low-grade milks which come from separators, and very much regretted there was no provision to enable authorities to undertake the supply of milk.

Dr. Addison described the bill as "a milk and water bill," his view being that it was inadequate for the purpose. As soon as public opinion was instructed it would begin to make its influence felt all along the line as far as the cowshed. The Act of 1915 tried to approach the problem to some extent from that end. He ridiculed Clause 5, holding that it would be inoperative. The only part of the bill which would, he thought, be of any use was that part which provided for grading, but the rest would give the public a false sense of security.

Viscount Elveden warmly supported the bill, and after some other speeches Sir A. Mond replied. He defended Clause 5, insisting that at any rate it would put the farmer on his guard against selling milk from cows which had tuberculosis of the udder. The Minister then explained broadly what was proposed in regard to grading. Certified milk would be graded very much on the present lines. Every animal would be subjected to the tuberculin test before being admitted to the herd, and certified as a non-reactor. Every three months the herd would be examined by a veterinary surgeon, and the

milk examined for tubercle bacillus. If there was evidence of tuberculosis the animal would be withdrawn from the herd. If milk from the group showed evidence of tuberculosis, the whole group would be withdrawn until the affected animal was identified. Milk was to be bottled on the farm immediately after production and delivered to the consumer within two days of production. Bottles were to be completely sealed before delivery, and must not contain more than 30,000 bacteria per cubic centimetre or any *Bacillus coli* in a tenth of a cubic centimetre. In the case of Grade A milk the health of the herd was to be the same as with certified milk except that there would be no tuberculin tests. The milk might be pasteurized, but if so it must be so designated. It must not contain more than 200,000 bacteria per cubic centimetre. These limitations involved the use of sterilized vessels with careful regard to cleanliness, especially to ensure freedom from manurial contamination. The examination would be a test of tuberculin milk. People who ask for Grade A milk would get milk which they could trust. If they continued to call for Grade A milk other grades would not be sold. The consumer would be interested.

The bill was read a second time.

Pensions Appeals.—Sir F. Hall asked, on July 17th, whether officers and men whose cases came before a medical appeal board were now entitled to appeal from the decision of such board to another tribunal. Major Tryon said that Sir F. Hall appeared to be under a misapprehension as to the respective functions of the medical appeal board and assessment appeal tribunal. The assessment appeal tribunals, which were constituted under Section 4 of the War Pensions Act, 1921, dealt only with appeals against a decision of the Minister that the award made in a given case was final. The medical appeal board dealt with appeal against the assessments made by other medical boards of the Ministry. They decided matters of assessment only, and did not pronounce as to the finality of the awards. There would consequently be no ground of appeal directly from the medical appeal board to the appeal tribunal. When the finding of a medical board was made final by the Minister, the pensioner was so notified, and was at the same time informed fully of his right of appeal to the tribunal. Lieut.-Colonel Watts-Morgan asked whether it would be correct to say that the assessment appeal tribunal was set up as recently as five weeks ago, and that as many as a hundred cases were now waiting in South Wales, unable to get any sort of appeal or assessment? Major Tryon said these final awards were only just now beginning to be given. The tribunals were ready to receive appeals, but so far very few had been made, and he understood that they were being dealt with satisfactorily.

Insurance Patients: Drugs and Medicines.—Sir John Leigh asked, on July 19th, what, if any, precautions were taken against the supply of drugs and medicines of inferior quality to panel patients by retail chemists; and whether the Minister of Health was aware that such patients were frequently informed that they could have drugs and medicines of superior quality by paying for them? Sir A. Mond said that tests were made from time to time to ensure that prescriptions were correctly dispensed, and severe penalties had been imposed in cases where chemists had supplied drugs of a kind different from that ordered by the doctor. As regards the latter part of the question, the Minister said that if Sir John Leigh would give the particulars of any cases in which such statements had been made, whether by practitioners or chemists, inquiry would be made with a view to disciplinary action if the facts could be established.

A Coroner's Strictures.—Mr. Rhys Davies asked, on July 20th, whether the attention of the Minister of Health had been called to the strictures passed by the West Essex coroner on a doctor who, after being twice requested to do so, declined to attend a patient and when he arrived at the man's home found the patient on the point of death, and whether the doctor or the man was on the panel. Major Barnston (for Sir Alfred Mond) said the Minister was informed that at the time of the occurrence the patient was not entitled to medical benefit nor had he ever been on the list of the doctor concerned; he was an insurance practitioner, but there was no question of any failure to carry out his obligations under his agreement with the insurance committee.

Smoke Abatement Bill.—The Earl of Onslow moved the second reading of the Smoke Abatement Bill in the House of Lords on July 25th, suggesting that the latest stages should be deferred till the autumn. The bill follows upon the report of the Smoke Abatement Committee, of which Lord Newton was chairman. It extends the Public Health Act so that all smoke and not merely black smoke may be dealt with. Larger fines are imposed for offences. The bill does not apply to Scotland. Lord Newton welcomed the measure as far as it went, but thought it inadequate. It ignored the recommendation that the enforcement of the law should be transferred from small local authorities to county and borough councils. He mentioned that England and Scotland were the dirtiest countries in Europe. In the London area 25 tons of soot fell per square mile per month. In Manchester alone the extra cost of washing collars due to the smoke was £50,000 a year. The bill was read a second time.

Brief Notes.

Sir Hamar Greenwood has stated that the question of the deduction of medical and surgical expenses in the case of members of the Royal Irish Constabulary injured in the exercise of duty is under consideration.

As the Port Sanitation Services are in large measure national services it has been decided to keep the provision by the State for Scottish port sanitation at £7,000. Under Section 23 of the Economy (Miscellaneous Provisions) Bill it was proposed to make the reduction of members in the Scottish Board of Health as recommended by the Geddes Committee.

Sir Alfred Mond has informed Mr. R. Richardson that, under Section 49 of the Lunacy Act, 1890, the Board of Control had full discretion to authorize any medical practitioner to visit a patient for the purposes of the section. In the exercise of their discretion the Board endeavoured to select medical practitioners who were, in their opinion, best qualified to act. The mere fact that the Board had not selected any particular medical practitioner whose name had been submitted to them was in no way defamatory, and there was no reason for consulting the law officers of the Crown in the matter.

The Prime Minister states that the War Department at Washington has recently ordered the discontinuance of the manufacture of poison gas for the purpose of equipping the United States army, but Congress has sanctioned the continuation of research and experimental work in this connexion. The proposed expenditure by Great Britain for the coming year is £169,700 for research and experimental work. Otherwise the manufacture in this country is discontinued.

The declared value of dental, surgical, medical, and veterinary instruments (except optical) registered as imported into the United Kingdom during the six months ended June 30th was £12,427. The value for the corresponding six months of last year was £20,592.

Mr. Shortt has informed Dr. McDonald that licensed importers of cocaine are required to keep records of sales, and these are inspected from time to time. The records, however, cannot show the areas of eventual distribution of the drug, as it may pass through several hands before it reaches the medical practitioner, dentist, or other person by whom it is used.

The National Health Insurance Bill went through Committee in the House of Lords on Wednesday, July 19th, and was reported on July 20th.

BEIT RESEARCH FELLOWSHIPS.

THE trustees of the Beit Memorial Fellowships for Medical Research have elected the following candidates to Junior Fellowships of the annual value of £350. The usual tenure of a Junior Fellowship is three years:

Ernest Basil Verney, M.B., B.Ch.Cantab., M.R.C.P.Lond., Assistant in the Department of Physiology, University College, London. Proposed research—The physiology and pathology of urinary secretion. (Institute of Physiology, University College, London.)

Frank Cook, B.Sc., M.B., B.S.Lond., F.R.C.S.Eng., Gynaecological Registrar, Guy's Hospital, and Demonstrator of Pathology. Proposed research—The neuro-muscular apparatus of the uterus: observations on "pregnancy toxaemia," with particular reference to the acidosis factor. (Physiological and Pathological Laboratories of Guy's Hospital, London.)

John Lewis Rosedale, B.A.Oxon., M.A., Ph.D., Holder of Research Scholarship of Ministry of Agriculture and Fisheries since October, 1920. Proposed research—The chemistry of normal and pathological tissues, with special reference to the protein and nuclein constituents. (Chemical Laboratory of St. Thomas's Hospital Medical School, London.)

Reginald Hilton, B.A.Cantab., B.Ch.Cantab., now studying the theory and practice of artificial pneumothorax in the clinic and laboratory of Dr. Rizt, Laënnec Hospital, Paris. Proposed research—The study of the blood gases in various stages of pulmonary collapse produced by artificial pneumothorax; the condition of the circulation in the collapsed lung. (Laboratory and wards of the Professorial Unit of St. Bartholomew's Hospital. The first two months to be spent at the Laënnec Hospital, Paris.)

Arthur St.G. J. McC. Huggett, B.Sc., M.B., B.S.Lond., Demonstrator of Physiology at St. Thomas's Hospital. Proposed research—An investigation of the function of the placenta in relation to the passages of gases and other substances from the mother to the foetus, and the cause of foetal apnoea. (The Sherrington School of Physiology, St. Thomas's Hospital, and the Brown Animal Institution, Vauxhall.)

Victor Douglas Allison, M.B., B.Ch., at present Research Student, Institute of Pathology and Research, St. Mary's Hospital, London. Proposed research—The investigation of the nature and properties of a hitherto undescribed substance which has a strong bactericidal, bacteriolytic, and bacterio-inhibitory action—named lysozyme. (Laboratories of the Institute of Pathology and Research, St. Mary's Hospital.)

The following Junior Fellows were elected to fourth year Fellowships of the annual value of £400:

David Keilin, D.Sc., who will study the life histories of protozoa pathogenic to insects; the life history, anatomy, and physiology of insects, at the Molteno Institute for Research in Parasitology, Cambridge, under Professor G. H. F. Nuttall, F.R.S.

Ivan de Burgh Daly, who will study auriculo-ventricular block, at the Institute of Physiology, University College, London, under Professor Starling, F.R.S.

No appointments have yet been made to the Senior Fellowships of the annual value of £500, which are only open to junior and fourth year Fellows elected on or after January 1st, 1920. The usual tenure is for three years.

All correspondence of candidates and Fellows should be addressed to Sir J. K. Fowler, honorary secretary, Beit Memorial Fellowships, 35, Clarges Street, Piccadilly, W.

TOXIC EFFECTS OF ARSENOBENZOL PREPARATIONS.

REPORT BY THE SALVARSAN COMMITTEE.

THE Salvarsan Committee appointed by the Medical Research Council has recently issued its Report* on the toxic effects following the employment of arsenobenzol preparations. The committee was established in 1918 on account of a peculiarly high incidence of fatal jaundice following the use of "606" or "914" in certain military hospitals receiving syphilitic cases. However, in spite of the fatalities occurring about that time, accidents following the use of salvarsan and its congeners have, on the whole, been very much rarer in this country than on the Continent. Especially numerous have been the deaths recorded in Germany, and public opinion was so seriously disturbed at one time in that country that two separate official inquiries were made in 1914 and 1917 concerning the value of salvarsan treatment and the injurious effects which were alleged to follow its use. The findings of these German committees of inquiry were of importance, and they receive full consideration in the report issued by the British Salvarsan Committee.

The chief statistics available to the Salvarsan Committee have been those obtained from military hospitals, as, for various reasons, less reliance can be placed on the records of civil venereal clinics. As a result of its investigations the committee has arrived at the conclusion that no special arsenobenzol preparation must be regarded as more likely than another to produce ill effects. Moreover, when accidents have occurred errors in technique in administration have seldom been found to be responsible. There have been fatalities even under the most careful control, and in large and well-equipped hospitals.

The most important ill effects which may end fatally were found to be encephalitis haemorrhagica, acute yellow atrophy of the liver, and exfoliative dermatitis and its complications. Encephalitis haemorrhagica usually occurs within two or three days after an injection, and most frequently after the second injection of the series. Disorders of the liver provide a very large number of the ill effects following arsenobenzol treatment, and may occur as an early jaundice or as a late and more dangerous lesion. The pathology of the latter lesion is still in some doubt, and it has even been suggested, especially in Germany, that it is not directly due to arsenobenzol. Skin reactions following salvarsan are fairly common, but fortunately they are light and transient as a rule, the only reaction or lesion of serious significance being exfoliative dermatitis. There exist certain other ill effects which may end fatally, but fortunately these are but rarely encountered; they include acute renal damage, ulcerative enteritis, polyneuritis, and aplastic anaemia.

Some of the ill effects which are recognized as being due to salvarsan may without hesitation be ascribed to the arsenic which it contains. The lesions capable of such explanation are gastritis, enteritis, and exfoliative dermatitis. The so-called "crises nitritoides," vasomotor phenomena, and liver lesions are, on the other hand, probably produced by arsenobenzol poisoning rather than by arsenic. An interesting point in connexion with the latter is the observation that cases of severe jaundice and liver atrophy appear to have occurred in the form of small outbreaks localized to one or another hospital, and restricted in time to a few months of its practice. This fact has led certain observers to suggest that these liver lesions are not directly due to poisoning but are caused by an intercurrent microbic infection of the liver. The committee does not, however, favour this view. Before stating its conclusions as to the relation of arsenobenzol compounds to the occurrence of jaundice and acute yellow atrophy of the liver, the committee has made an exhaustive study of the literature and the experimental work on the subject. A brief examination of this is sufficient to show that a great diversity of opinion still exists as to the pathology of the condition, many observers believing strongly that salvarsan is not responsible for the condition. It is, however, impossible to get over the fact that before salvarsan came into general use in the treatment of syphilis comparatively few cases of jaundice were encountered. It is difficult therefore to accept the view that the spirochaete rather than the salvarsan is responsible for the hepatic lesions. For the view that it may be produced by an infective cholangitis arising from the intestine there would appear to be more foundation. This supposition relies for support on the bacteriological findings of Stuart Macdonald and Fraenkel, who claim to have found organisms in the hepatic tissues of fatal cases. It is obvious, however, that little reliance can be placed on bacteriological examinations carried out after death and unsupported by blood cultures made during life.

But quite apart from the results of morbid histology, evidence is gradually accumulating that a course of arsenobenzol treatment is followed in practically every instance by a certain degree of hepatic insufficiency, not enough to give rise to active symptoms, but capable of recognition by means of special tests. Such tests have been carried out at St. Bartholomew's Hospital by Dr. Mackenzie Wallis, and by Spence and Brett elsewhere. For this purpose two tests have been employed—namely, laevulose toleration tests and the estimation of the lipase or fat-splitting ferment normally present in the blood. The main results obtained so far by Mackenzie Wallis may be summarized as follows: (1) The effects of one or two injections of arsenobenzol preparations are almost always very slight, and little evidence of hepatic damage may be found at the end of a course of six injections. (2) The most striking results are obtained when the tests are applied three months after the last injection. Evidence of hepatic insufficiency is then detected almost invariably, although no clinical signs of hepatic disorder may be discovered. Six months after the last injection all evidence of hepatic insufficiency has gone, in cases where three months before it was clearly in evidence. It is obvious that the importance of these findings, if widely confirmed, may be very great in connexion with the safe spacing out of courses of arsenobenzol treatment.

Whilst recognizing the importance of exercising great care in the administration of "606" and "914," the committee is completely in accord in expressing the view that arsenobenzol preparations are more efficacious than any other drug yet available for the cure of syphilis:

"Although it is true that even this preparation cannot be guaranteed to effect an absolute cure, except in the early stages of the disease, it is now well established that a considerably larger proportion of cures can be effected by salvarsan and its allies than by any other form of treatment."

The committee's report ends with the following conclusions:

"It is believed that the very small number of unavoidable deaths due to this treatment are immeasurably outweighed by the deaths and disabilities which would arise if the older methods of treating syphilis were alone practised. At the same time the facts which have been brought together in this report no less strongly emphasize the importance of the most scrupulous care in the administration of a drug which is necessarily employed in doses not far removed from the danger line."

* *Reports of the Salvarsan Committee.* II. Toxic Effects following the Employment of Arsenobenzol Preparations. Special Report Series, No. 66. H.M. Stationery Office. 1922. Price 2s. net.

MINISTRY OF HEALTH: ANNUAL REPORT.

FIRST NOTICE.

THE third annual report of the Ministry of Health relating to the year ended March 31st* has been issued. It consists of 166 pages, and embraces a large amount of information not covered by Sir Alfred Mond in his speech on the vote.

In the prefatory note on the conditions of economy mention is made of the appointment by the Government of a committee of inquiry under the chairmanship of Lord Meston, to report what system of Exchequer grants for locally administered services can be substituted for the percentage grant system wholly or in part. This year—as already announced—the course adopted in order to keep down expenditure is to give grants of fixed amounts for most of the services instead of percentage grants. In reference to National Health Insurance additional benefits it is stated that over twelve million insured persons in England were affected. The cash benefits of nearly four millions of these had been increased, over four million became entitled to new services, and nearly four and a half millions became eligible for advantages of both these kinds. Nearly £150,000 a year may be devoted to dental treatment, and nearly £300,000 a year to payments to hospitals or convalescent homes on behalf of members of societies which have included these additional benefits in their schemes.

Tuberculosis.

The first section of the report treats of health administration in England. Great Yarmouth and the North Riding County

* Cmd. 1715. Price 6s. To be obtained from H.M. Stationery Office or through any bookseller.

Council having completed their scheme during the year, arrangements have now been made by all the county councils and county borough councils for dispensary and residential treatment of insured and uninsured persons suffering from tuberculosis. The number of dispensaries has been raised to 421, an increase of 10. The number of tuberculosis officers working under schemes of local authorities on March 31st was 339. The total number of institutions provided by local authorities and by voluntary arrangement was 433 and the number of beds 18,884, showing an increase of 1,492 beds. The number of additional beds which have been or are being provided under the term of the circular letter of November 3rd, 1919, will, under financial stringency, be limited to under 5,000.

The cost of residential treatment of ex-service men is borne by the Ministry of Pensions. The number receiving it on April 1st was 2,789, as against 3,559 on April 1st, 1921. The Public Health (Tuberculosis) Act, 1921, enables county and borough councils to arrange for the after-care of sufferers, and up to March 31st schemes of thirty-eight local authorities for setting up committees have been approved. In London interim committees were constituted in each borough during the war, and suggestions have now been given to them to organize permanent care committees to work in co-ordination with tuberculosis dispensaries. The matter of extra nourishment for persons under treatment for tuberculosis now devolves upon local authorities. The report says:

"It was not contemplated that extra nourishment should be provided by local authorities in other than limited classes of cases where the provision was likely to be of material assistance to treatment; or that more than limited expenditure should be incurred on this form of provision."

So far 119 local authorities have undertaken the provision on the lines of the circular letter of November 3rd, 1921. The expenditure of local authorities on this service ranking for Exchequer grants is limited to a maximum of £2 per annum per thousand of the population of the area of the authority.

Venereal Diseases.

The outstanding features in the campaign against venereal diseases in England during the year were a large diminution in the number of new patients attending the treatment centres and an increase in the total number of attendances of patients. The number of patients dealt with for the first time in 1922 was 79,000, as compared with 99,000 in the previous year. The number of attendances at treatment centres was 1,534,000, as compared with 1,434,000 in the previous year. The returns of the work done at treatment centres during 1921 show that, out of 52,000 cases which were recorded as having ceased to attend at the centres during the year, 13,000 were discharged after completion of treatment and subsequent observation, 14,500 ceased to attend after completion of one or more courses of treatment but before final tests as to cure, and 24,500 ceased to attend before completion of a course of treatment.

Maternity and Child Welfare.

The report states that the whole of England is now covered more or less completely by schemes for maternity and child welfare carried out by local authorities. It is part of the duty of the medical officer of health to supervise the scheme, but the executive medical work is generally carried out by whole-time medical officers or by general practitioners. The department has, in the past, urged each authority to appoint an assistant medical officer, preferably a woman, with special aptitude and experience, to supervise the work under the direction of the medical officer of health. Ninety-three local authorities have one or more assistant medical officers for the purpose. The work of such an officer is not necessarily confined to maternity and child welfare, but is very often combined with other duties, such as the inspection of school children. The total number of women acting as health visitors on March 31st was 3,378. Of the 48,618 women on the Midwives Roll (covering the whole of England and Wales), 12,052 gave notice of the intention to practise as midwives in 1921. Eighty-two per cent. of the total on the roll are now certificated. In 1920, the last year for which figures are available, the percentage of births notified by midwives was 47.7 in London, 66.9 in the county boroughs, and 47.1 in the counties. Over 100 new district nursing associations were started in England during 1921, and only 12 of the existing associations ceased work. Of the rural population of England 71 per cent. is now provided with the services of a trained midwife. On a rough estimate, 1,400 more district nursing associations were needed to provide a complete service in rural districts, and it was hoped that as financial circumstances improved these associations would gradually be established, while others had authorized the medical officer of health to employ a nurse when necessary. Grant was payable in respect of the home nursing of maternity cases and for certain infectious diseases in young children, such as measles, whooping-cough, epidemic diarrhoea, poliomyelitis, and ophthalmia neonatorum. About 140 local authorities had contracted with the local district nursing associations. The trustees of the Carnegie United Kingdom Trust gave £100,000 to provide model centres at a cost of £25,000 each in Liverpool, Birmingham, Shoreditch, and Rhondda. It was a condition that the local authority should maintain the centre, and the department was unable to make a definite promise of grant in aid of maintenance until the estimates of expenditure on this service had been examined. It has now been found that a margin of public money is available, and steps are being taken to establish these institutions.

Welfare of the Blind.

Under the Blind Persons Act, 1920, which came into operation on September 10th, 1920, those who had reached the age of 50 were entitled to pensions as they would have been under the Old Age Pensions Act if they had attained the age of 70. On March 31st, 1922, nine thousand one hundred and seven blind persons in England and Wales between the ages of 50 and 70 were in receipt of old-age pensions. From the date of the operation of the Act to March 31st, 1922, 3,267 appeals relating to claims were received. Of these, 1,423 were referred to the regional medical staff and 45 to ophthalmic specialists on the question of the degree of blindness. The two inspectors are carrying out investigations into the voluntary agencies and are assisting local authorities to prepare schemes. The advisory committee has made numerous recommendations to the department. The committee appointed to investigate and report on the causes of blindness expects to conclude its deliberations at an early date.

Other Services.

Other sections covered in the report under the heading "Public Health" include the inspection and supervision of food, sanitary administration, housing and town planning. The report deals also with local government and local finance, the administration of the Poor Law, old-age pensions, and National Health Insurance. To this last-named part we shall recur on another occasion.

Welsh Board of Health: Public Health.

In regard to tuberculosis treatment it is stated that in Wales all the councils act for this purpose through the Welsh National Memorial Association. The contributions which the County and County Borough Councils have agreed to pay to the Association amount in the aggregate to £68,442, approximately equal to a rate of 1.34d. This represents an increase of 0.34d. on the rate agreed for the previous year. The residential institutions of the Association on March 31st consisted of four sanatoriums with 600 beds, and 10 hospitals with 501 beds. Arrangements are also made for the treatment of patients in 14 institutions belonging to other authorities or bodies. The conversion of Craig-y-Nos Castle, Brecknockshire, into a hospital with 300 beds was nearing completion, and hospitals at Sealyham, Pembrokeshire, with 30 beds, and at Machynlleth, Montgomeryshire, with 30 beds, were also nearly completed. The Association had been offered a mansion midway between Cardiff and Newport for conversion into a hospital with 100 beds, and had been authorized to proceed with the scheme. Approval had also been given for the acquisition of property at St. Bride's, Pembrokeshire, to provide accommodation for 100 children. When these hospitals were completed, two at Newport would cease to be used. There were now established in the principality 14 central dispensaries, round which were grouped 89 visiting stations.

IMPERIAL CANCER RESEARCH FUND.

THE annual meeting of the Imperial Cancer Research Fund was held at the Examination Hall, Queen Square, Bloomsbury, on July 19th, with the DUKE OF BEDFORD, K.G., President, in the chair. Amongst those present were Sir William Church, Sir Humphry Rolleston, P.R.C.P., Sir Anthony Bowlby, P.R.C.S., Sir George Makins, Sir John Bland-Sutton, Dr. William Bulloch, Sir D'Arcy Power, Sir Charles Ballance, Sir Thomas Barlow, Sir Frederick Andrewes, Dr. J. A. Murray (Director), Dr. Russell, and Mr. F. G. Hallett (Secretary).

Sir WILLIAM CHURCH, in moving the adoption of the twentieth annual report of the Fund, sketched the principal researches which had been carried on, as stated in the Director's report published in full below. The motion was seconded by Sir JOHN BLAND-SUTTON and carried.

The DUKE OF BEDFORD, in moving a vote of thanks to the executive and other committees and the treasurer (Sir

George Makins) for their services during the year, said that the income for the past year, including a legacy of £250 from the late Mr. William Crouch, has been the same within £5 as that of the previous year—in round numbers, £6,500. The treasurer, by careful economy, had been able to effect a reduction of £740 on the year's working, with the result that the excess of expenditure over income was only £12; but this sound finance has only been possible by lessening the activities of the Fund—a regrettable necessity. The financial future was brighter owing to two generous gifts for research work. The one from Lord Athol stan of £2,000 a year for ten years, which he desired should be devoted to special research; the line of this research has been decided upon by the Executive Committee on the recommendation of a special subcommittee. The other gift was one of £4,000, about to be presented to the Fund by Mr. and Mrs. Todman of Sydney, New South Wales, in memory of their daughter. Without these donations the Fund would have been compelled to have continued a policy of restricting the research work, or meeting an annual expenditure out of capital, both most undesirable. "In the early part of this year," the Duke of Bedford said, "there was a considerable correspondence in the press on the subject of cancer. All the letters, with I think one exception, showed an absence of knowledge of the facts, which have already been ascertained; indeed, it is remarkable that those who venture to address the public through the press on the subject of cancer do so without troubling to make themselves acquainted with the facts already determined. In this connexion it was thought advisable to send a letter to the *Times* on February 9th, setting out the various organizations engaged in cancer research in this country and abroad, together with a summary of the work already accomplished by our Fund." The Director's report, the Duke continued, showed that four different lines of research were being followed in the laboratories of the Fund, and it was hoped to initiate others. At present the real fundamental problems of the causation and prevention of cancer remain unsolved, and it was on these problems that the Fund was concentrating its resources. Meantime in the struggle against cancer it was of vital importance that the public mind should be impressed and seized with the enormous value of early diagnosis and treatment. Every effort therefore should be made to secure improvement in the early diagnosis of the disease. Precise methods of diagnosis involved knowledge of the mode of origin and nature of the disease, and the researches into these purely scientific aspects of the cancer problem have the greatest practical value. Thanks were due to Dr. Murray, the Director, and to Dr. Russell, Dr. Cramer, and Dr. Drew for their valuable work in carrying on the work of the Fund during the year.

Sir GEORGE MAKINS moved a resolution recommending the Royal Colleges of Physicians and Surgeons to reappoint Sir William Church and Sir Thomas Barlow, whose period of office had expired, as members of the Executive Committee; this was seconded by Sir CHARLES BALLANCE and adopted. Dr. William Bulloch, F.R.S., was re-elected a member of the Executive Committee, and Professor A. E. Boycott, F.R.S., was elected a member in place of the late Sir G. Sims Woodhead. Sir HUMPHRY ROLLESTON proposed a vote of thanks to the Duke of Bedford for presiding; this was seconded by Sir THOMAS BARLOW and unanimously agreed to.

REPORT OF DIRECTOR.

Vitamins and Cancer.—In continuation of his studies on vitamin deficiency, Dr. Cramer, in collaboration with Dr. Drew, and with Dr. Mottram of the Radium Institute, has investigated the effects of vitamin A deficiency in rats. They have found that the most constant change is a progressive diminution in the number of the blood platelets. When their number falls below half the normal (which for the rat is roughly one million per cubic millimetre) certain symptoms develop. Although there is not necessarily any loss in weight if vitamin B is supplied, the animals develop infections (such as the xerophthalmia, so frequently noted in vitamin A deficiency), characterized by the presence of micro-organisms which are non-pathogenic to normally fed animals. These infections clear up with magical rapidity when the missing vitamin A is added to the diet—for example, as cod-liver oil. Parallel to this improvement the number of platelets returns to the normal and may rise above it. If the platelets for any reason do not increase in number, the general condition does not improve and the local infections do not regress. So constant has this relation been between platelet number and the condition of the animals that the authors regard their diminution as the specific lesion of vitamin A deficiency, just as the diminution in lymphocytes measures the effects of vitamin B deficiency. The collaboration with Dr. Mottram has elicited a parallel between vitamin A deficiency and prolonged, repeated exposure to the gamma radiation of radium. Here, however, the concomitant effect on the number of lymphocytes necessitates careful spacing and dosage, to avoid the acute symptoms which accompany this blood change. When this is done a progressive diminution in the platelets is induced, accompanied by the symptoms characteristic of vitamin A deficiency. Dr. Mottram's studies, experimental and clinical, go to show that the aplastic anaemia of *x*-ray and radium workers is secondary to these changes in the lymphocytes and platelets, and is probably the consequence of similar infections with relatively non-pathogenic organisms. Repeated attempts have been made to ascertain whether vitamin A deficiency has any influence on the growth of malignant tumours. Unfortunately it is difficult to keep animals alive for any length of time after a severe degree of this deficiency has been established. In the experiments carried out so far the tumours take in the same percentage as in the control animals and grow progressively, even when the rats are moribund. The enhanced liability to otherwise innocuous bacteria frequently ends these experiments prematurely, but the results give no encouragement to the idea that withholding vitamin A could usefully assist in the control of the growth of cancer in man. They emphasize the danger of the insidious debility which vitamin A deficiency induces. The progressive atrophy of the cells and organs forming lymphocytes and blood platelets respectively, which results from the absence of vitamins A and B in the food, and which causes ill health, is also produced by exposure to *x* rays and radium. This is, in fact, one of the effects on the body as a whole which limit the degree of application of these rays in the treatment of new growths. If these blood changes develop radiation must be interrupted and the patient allowed to recover. This recovery is materially assisted by an ample supply of vitamins in the diet, which stimulate the production of lymphocytes and platelets.

Culture of Tissues in vitro.—Dr. Drew has published an account of some of the work of the past two years on the culture of normal and malignant tissues *in vitro*. He has found, as have other workers, that for continuous growth outside the body all tissues require, in addition to the ordinary food substances, certain substances only available at present in fresh embryonic extracts. Extracts of adult tissues, and possibly tumours, contain this activating principle in much lower concentration. Its nature is still unknown; it is destroyed by heating, and it cannot be replaced by glutathione. We are indebted to Professor F. G. Hopkins for a supply of this dipeptide both in the reduced and the oxidized condition. Dr. Drew has been able to prepare a liquid medium in which tissues can be cultivated, thus eliminating the use of blood plasma, which has been a great hindrance to progress in this kind of work. Cell division and differentiation can proceed normally in this medium, the essential peculiarity of which is a definite colloidal condition of the calcium salts. Interesting observations have been made on the conditions which determine differentiation of normal and malignant cells. Epithelial cells when growing alone in pure culture remain undifferentiated. When connective tissue cells are added to such pure cultures, differentiation sets in with little delay, squamous epithelium producing keratin in the familiar form of concentric corpuscles, mammary epithelium producing acinous branching structures, even when originally derived from a practically undifferentiated alveolar mammary carcinoma. These experiments, which are only at their beginning, break new ground in the experimental control of the behaviour of metazoan cells. Intimately bound up with this problem is the curious fact that the continued culture *in vitro* of malignant cells encounters difficulties not met with in the experiments with normal tissues. If degenerative changes are to be prevented the former must be frequently transferred to fresh nutrient medium. The exhausted fluid is found to have a poisonous action on the tumour cells, but normal cells can grow, apparently without damage, in these fluids. These results give the greatest encouragement to the hope that by this method of experiment the fundamental differences between normal and malignant growth will finally be elucidated.

Respiration of Tissues, Normal and Malignant.—Dr. Russell has published an account of the continuation of his researches on respiration of normal and malignant tissues, in the period of survival after removal from the body. It may be as well to repeat that earlier experiments, mentioned in last year's annual report, showed that rapidly growing tumours and certain normal tissues, notably kidney, showed such a gaseous exchange as indicated the combustion of carbohydrate, while slowly growing tumours gave respiratory quotients indicating

the combustion of fats. When, now, the emulsions of the latter group were made with solutions of glucose and certain other sugars, the respiratory quotient rose nearly to unity, showing that their parenchymata were able to oxidize these carbohydrates, if present in sufficient concentration. The attempt was made by subcutaneous injection of such sugar solutions, into animals bearing tumours, to find out whether in this way the rate of growth could be influenced. No alteration was produced.

Experimental Production of Cancer.—The experiments on the production of skin cancer by the external application of tar are being continued. They have resulted in the production of a large number of tumours, many exhibiting a high degree of malignancy, as evidenced by spontaneous lymphatic and blood-stream dissemination, but they have not advanced sufficiently far for publication, and nothing further need be said about them at present. Dr. Russell carried out an experiment on the effects of repeated inoculation of small quantities of coal tar in rats and mice. Two sarcomata were produced at the site of inoculation, one in a rat and one in a mouse, out of 50 mice and 40 rats inoculated. Autoplastic and homoplastic transplantation was successful with both these tumours, and metastases were found in the lungs of the primarily affected rat. An account of these experiments is in the press.

The recent correspondence in the lay press on cancer and cancer research exemplifies a distraction with which the worker on this subject has to contend. None of the more or less distinguished writers of the letters, with the exception of H.E. the Aga Khan, displayed any acquaintance with the results of the work of the last twenty years. The facts already known as to the occurrence of cancer in different races of mankind, and in different species of animals, published in the first, second, and third scientific reports of this Fund were treated as non-existent.

FINANCIAL POSITION OF HOSPITALS.

CONFERENCE OF LOCAL VOLUNTARY HOSPITAL COMMITTEES.

A NATIONAL conference of representatives of local hospital committees, arranged by the Voluntary Hospitals Commission, of which the Earl of Onslow is Chairman, has been held at the Ministry of Health. Representatives were present from every one of the committees now functioning in England and Wales, as well as a number of representatives from Scotland. Viscount Cave was in attendance at both sessions, as well as Lord Clwyd, Lord Somerleyton, Sir George Makins, Dr. R. A. Bolam (representing the British Medical Association on the Commission), and Captain W. E. Elliot, M.P.

Lord ONSLOW, in opening the proceedings, said that the policy of the Government was to maintain intact the voluntary hospital system. The first duty of the Commission was to administer the grant made by Parliament to meet the immediate needs of the hospitals, and the administration made local machinery necessary. Such machinery already existed in London in the shape of King Edward's Hospital Fund; elsewhere committees had to be set up, and there were now 54 such bodies and only eight areas in which committees were not functioning. It had been anticipated, largely on the basis of the figures for 1920, that the hospitals' deficit for 1921 would be £1,000,000, and the grant was intended to cover half that deficit. The Commission had decided that, subject to some final adjustment when all areas had sent in their claims, the sum of £225,000 should be allocated to London, and £275,000 to the rest of the country. It appeared, however, that the deficit might be only £750,000, and in that case a sum of £125,000 out of the £500,000 grant would remain to be allocated after half the 1921 deficiency had been met. The distribution of this residue would have the anxious attention of the Commission. All the information before the Commission tended to show that the cost of maintenance was declining and that the income was certainly being maintained, and in many cases increased.

A Standing Consultative Committee.

The first matter dealt with by the Conference, on the initiative of the Manchester Committee, was a proposal for the setting up of a standing consultative committee to represent all the local areas as far as possible, and to act as a liaison between the Commission in London and the local bodies. Dr. C. E. S. FLEMMING was anxious that every type of hospital, from the teaching institutions to the cottage hospitals, should be represented; and Sir ARTHUR MAY that representatives of the less populous areas should be included. This last suggestion was adopted as a rider to the main proposal, which was agreed to unanimously, and it was understood that this consultative committee, to consist of some twelve or fifteen persons, would be appointed in the first instance by the Commission itself.

Local Committee Administration.

Mr. H. N. CROUCH (Somerset) said that the committee areas should be regrouped; it was not desirable that city hospitals should be worked independently of country hospitals. A resolution that each area should be so arranged as to constitute a suitable unit for bringing about better co-ordination between existing hospitals was tacitly agreed to, and was referred to the local committees for their observations.

On a question raised at the instance of the North Wales Committee as to payment of administration expenses of local committees, Lord CAVE said that the committee over which he had presided had difficulty in recommending that the voluntary committees should have the right to payment of expenses from county or other public funds, but he thought the matter capable of amicable adjustment with the local authority in each area, and said that his own county council (Surrey) had provided a bank balance for the committee.

Hospital Extension.

It was agreed, on the motion of Lord ONSLOW:

That local hospital committees should not recommend any extension scheme to the public unless they are satisfied:

(*a*) That the extension is necessary and is planned on a reasonable scale and that the services cannot be provided by co-operation with other institutions;

(*b*) That sufficient funds will be available within a reasonable time for the execution of the scheme or an effective part of it; and

(*c*) That funds are or will be available to meet the cost of maintenance of the hospital, including any additional maintenance charges resulting from the extension, and that the appeal for capital expenditure will not prejudice the raising of the funds required for the maintenance of the hospital itself or other institutions in the area.

Administration of Government Grant.

A long discussion took place on the administration of the Government grant. The Devonshire Committee proposed that the average deficiency over a period of three years should be adopted as the basis of distribution instead of the deficiency in 1921, and the Manchester Committee that accumulated deficits should be taken into account in fixing grants. Mr. H. R. MAYNARD (secretary of the King Edward's Hospital Fund) said that in the case of any residue his Fund had given preference to cases in which the accumulated deficits had been such as to exhaust the borrowing powers of the hospital. A hospital might not be gravely hampered by a temporary deficit even if it extended over two or three years; the whole situation of the hospital must be considered. Lord CAVE agreed that any balance of the Government grant remaining after the deficit for 1921 had been met should be applied to the reduction of the accumulated deficits of previous years. Lord ONSLOW believed that the residue must be distributed on the basis of the accumulated deficits previous to 1921, but the distribution would in any case be difficult, and would probably give rise to criticism.

Workpeople's Contributions.

Mr. WALTER DAIN (Manchester) drew attention to the need for systematic collection from employers and workpeople. He suggested that the Commission should approach the Federation of British Industries and obtain the support of the trade union leaders also. Mr. F. M. OSBORN (Sheffield) gave particulars of the joint hospital council, embracing several hospitals in Sheffield, which in 1921 launched a scheme for workmen's contributions: the appeal to each workman was to set aside 3d. a week for the hospitals, and to the employers to add one-third to the workmen's contribution. Under this scheme last year £21,000 was received, and it was estimated that in 1922 the amount would be £28,000. There were 120,000 contributors: they had the right to treatment at a hospital on the presentation of a letter; non-contributors, other than the necessitous poor and children, were interviewed by lady almoners and asked to pay for their hospital treatment according to their means. Contributors were represented on the hospital boards and on the joint council. Unfortunately, municipal corporations were prevented from making the employer's contribution, and he hoped that this restriction would be removed. A representative from Chesterfield said that a scheme of contribution for employers and employees had been in operation there for twenty years. The workpeople subscribed at the rate of 2½d. a week, the employers generally added one-third, and during last year £12,000, or 60 per cent. of the hospital income, was raised by this means. The Norfolk representative said that in his county 80,000 people had contributed to a scheme, which had a paid organizer and was worked through the Hospital Saturday Fund.

Approved Societies.

Sir WALTER KINNEAR (Controller, Insurance Department, Ministry of Health) described the efforts which had been made to interest the 9,000 approved societies. Unfortunately, the issue of the valuations report synchronized with a period of high cost of living, and the majority of the societies decided to devote their surpluses to increasing the sickness benefit under the Insurance Act. Nearly a thousand societies and branches, however, had been persuaded to devote a portion of their surplus to hospital provision, and schemes had been approved for the next five years, which should bring in £200,000 a year. The scheme, however, was not working well, owing to certain technical difficulties which he described, and up to the present only about £50,000 had been paid out. The difficulty arose over the arrangements for members of the societies to get treatment.

Other Methods of Raising Revenue.

The Birmingham Committee drew attention to the need for collecting contributions from areas not possessing facilities for hospital treatment. The question of payments by patients was on the agenda, but was barely introduced, owing to shortness of time. No resolution was taken on these matters, but it was agreed that the Commission should issue a set of questions to all committees as to the methods of collecting contributions and publish the results.

Co-ordination of Hospitals in Areas.

Lord CAVE, at the close of the Conference, said that although the first function of the local hospital committees had come to an end, he hoped they would remain in being to bring about the co-ordination of hospitals in the different areas. It was wasteful to have two great hospitals close together, and also to have hospitals in the same area equipped alike. He looked forward to a scheme, somewhat on the lines of Lord Dawson's report, in which there would be considerable mobility in the transfer of patients from one kind of hospital to another, as required. The committees had an important part to play in organizing or inspiring the collection of funds. Another duty which might be thrust upon them was the regularization of the system of keeping hospital accounts. He hoped that the Commission also would remain in existence. It might be that in time it would be superseded by some body wholly unconnected with the Government, but for the present it was very desirable that it should be under the Government aegis.

POOR LAW MEDICAL OFFICERS' ASSOCIATION.

THE annual meeting of the Poor Law Medical Officers' Association was held at the offices of the British Medical Association, London, on Thursday, July 13th. At the opening proceedings, Dr. A. E. COPE (Chairman of Council) presided. Sir Arthur Newsholme was elected President in succession to the late Surgeon General Sir George Evatt. The annual report and balance sheet were approved and adopted. There being no other nominations the officers and Council of the Association were re-elected for the ensuing year.

Sir ARTHUR NEWSHOLME, the newly elected President, was heartily welcomed, and gave from the chair an interesting address. He paid a high tribute to the memory of the late President, referring to Sir George Evatt's persistent optimism and his longing to benefit his fellows. His fervent desire had been to do good and scatter the forces of evil and of disease.

The history of medical attendance on the poor in this country was regarded by Sir Arthur Newsholme as tantamount to the history of civilization. No one test of our distance from barbarism equalled that furnished by the care of the sick poor. Passing in review this progress from barbarism, he traced the history of the Poor Law service from feudal times to the present day. The Act of Richard II, in 1383, contained the beginnings of the principle of "settlement" which had been so mischievous in preventing the mobility of labour. During the reign of Charles II in 1662 this Act was renewed and extended. It made labourers cling to their parish under conditions allied to slavery, and caused untold injustice, fraud, ill will, and endless litigation, which had extended even up to the present time. Prior to the reign of Henry VIII the wanderings of vagrants had been controlled by terribly severe enactments. The drastic punishments, when no relief agencies existed, were found to provide no remedy. About this time a distinction was drawn between the sick and impotent who were unable to work and the lusty unemployed who could work. In the reign of Queen Elizabeth power was given to the magistrates to levy a tax on voluntary defaulters. The Church was utilized for this task, and thus in the earlier days going to the "parish" had an ecclesiastical rather than a modern Poor Law signification. Overseers were appointed to provide for the impotent and to provide work in exchange for relief. Thus the coupling of work with relief became firmly established. It was towards the end of the seventeenth century that the institution of workhouses led to a great reduction in the claims on the poor rate. By Gilbert's Act (in 1782) the management of poor relief was no longer to remain entirely in the hands of overseers and churchwardens. The administration of the funds was entrusted to the magistrates, who were to appoint visitors and guardians, the latter being paid officials with duties like those of the modern relieving officer. This altered the fundamental principle of the workhouse. In 1796 outdoor relief to the able-bodied was specifically legalized. Following this and similar changes the cost of relief bounded up. In 1834 the public funds were regarded as a regular part of the maintenance of agricultural labourers. These funds were administered in an absolutely uncontrolled manner. Then came the Royal Commission on the Poor Law in 1834, which concluded that the abuses and evils of the existing system were the direct result of indiscriminate outdoor relief to the able-bodied, and the condition was laid down that the pauper's economic situation on the whole shall not be made really or apparently so eligible as the situation of the independent labourer of the lowest classes.

Then followed the formation of larger Poor Law unions, and a rapid reduction of outdoor relief for the able-bodied. Sir Arthur Newsholme showed by statistics that the problem became one of old age, and when not old age it was sickness largely. Nursing by paupers had been prohibited in 1895. So rapid had been the organization of medical treatment that at this time there were twice as many beds in Metropolitan Poor Law infirmaries as in the voluntary hospitals, and nearly as many as in all the voluntary hospitals throughout England and Wales. The improvement in the quality of medical attendance and nursing in the best infirmaries had been no less remarkable. He considered it was only possible to solve satisfactorily the general hospital problem by securing more complete co-ordination of the work of the voluntary and special hospitals, thus relieving voluntary hospitals of a large number of chronic and incurable cases. Deterrent administration was legitimate for the able-bodied, though investigation of causes and conditions would often supply a more rational line of action, but for the actually sick the best which medical knowledge and devoted nursing could supply must be given. However the illness had been acquired, it was imperative, not only in the interest of the patient but also to secure the welfare of the community, that treatment should be prompt and adequate, and that no partial definition of what constituted medical treatment should be tolerated. To realize the full utility of Poor Law work it must be linked up with public health work by the closest bonds.

Quoting from his own last annual report as Medical Officer of the Local Government Board (1917-18), Sir Arthur said that Poor Law medical officers visiting the homes of the very poor, and familiar with their home conditions, became part-time Medical Officers of Health. But the attempt to combine prevention and treatment proved unsuccessful because the Poor Law medical officers visited only a small proportion of the dwellings of the poor, because they were not trained in prevention work, and because the good seed of preventive work was choked by the increasing competition of private medical practice. Ere long it should become practicable under more favourable conditions for medical practitioners engaged in clinical work, partially or entirely at the public expense, to be on the staff of the local public health authority in the district covered by their practice while carrying on their clinical work, to the great advantage of patients and of the public, as well as of the medical practitioners themselves. This would need to be organized in connexion with a general service, curative as well as medical. Its realization, though difficult, presents no insuperable difficulties.

Concluding his address the President considered that whatever changes were made the work and appointment of district medical officers must remain. Their present pay was inadequate. In the past they had been definitely exploited. Medical men had been found willing to undertake the work for insufficient pay so as to prevent the intrusion of rival practitioners. The preventive aspects of their work had not been sufficiently developed. Their relation to the institutional treatment of their patients had been unsatisfactory. The pressure in favour of reform would increase, and he looked forward to the time when their work would receive the acknowledgement, both socially and financially, which its national importance demanded.

Dr. ARTHUR DRURY proposed a hearty vote of thanks to the President for his inspiring address. This was seconded by Dr. RIDLEY BAILEY, supported by Dr. A. E. COPE, and enthusiastically carried.

Scotland.

VISIT OF FRENCH MEDICAL MEN TO EDINBURGH.

DURING the week ending July 22nd Edinburgh was visited by the Dean of the Faculty of Medicine of Paris (Professor Roger) and by the obstetric physicians who in 1921, and again in the present year, gave instruction in midwifery to the men and women students from Edinburgh who went to Paris. These teachers were Professor Paul Bar and Dr. Couvelaire, who taught the men students, and Dr. Brindeau, who cared for the instruction of the women. Reference was made in the JOURNAL (March 12th, 1921, p. 400) to the work in Paris at the Clinique Tarnier and at L'Hôpital de la Pitié, in which the men and women respectively were accommodated. Dr. Trelat of Lyons also formed one of the party visiting Edinburgh, and there were some four or five French undergraduates. Professor Lorrain Smith, Professor Alexis Thomson, and Drs. Haig Ferguson, Lamond Lackie, Arthur Sinclair, and Oliphant Nicholson acted as hosts. On Tuesday, July 18th, the French guests were shown over the University, the Royal Infirmary, and the Royal Maternity Hospital. At the last-named institution they were received by Drs. Haig Ferguson and Lamond Lackie, and a photograph of the party was obtained in the garden behind the Ante-natal Department. Various entertainments and excursions had been arranged for the following days, and these were all carried out comfortably, the weather remaining fine during the whole of the visit. On Friday Professor Roger received the honorary degree of LL.D. from the University of Edinburgh.

DINNER OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

The annual dinner of the Medico-Psychological Association of Great Britain and Ireland was held on the evening of Wednesday, July 19th, 1922, in the Hall of the Royal College of Physicians, Edinburgh, with the President of the Association, Professor George M. Robertson, in the chair. The guests included Lord Provost Hutchison, Principal Ewing, Professor Lorrain Smith, Dr. C. Hubert Bond, Professor E. W. White, Sir George Paul, Sir Arthur Rose, Sir Robert Armstrong Jones, Sir Robert Philip, Sir David Wallace, Dr. J. G. Soutar, Mr. J. G. Jameson, M.P., Sir John Findlay, Sir Frederick Mott, Professor Alexis Thomson, and others. After the loyal toasts, Dr. J. G. Soutar proposed the toast of "The City of Edinburgh." He spoke of the warm affection in which Edinburgh was held by all who had enjoyed its citizenship and their pride not only in the beauty of the city itself but also in its glorious past. Lord Provost Hutchison, in replying, said that the fame of the city was in great part due to its medical and surgical school; as the science of psychiatry became better known he felt sure that Edinburgh would take a foremost place in this branch of medicine also. He felt that the city was peculiarly honoured not only in having as their guests the members of the Medico-Psychological Association this year but also in the election to the presidential chair of Professor Robertson. He also cordially welcomed to Edinburgh the distinguished French physicians now on a visit to the city. Dr. C. Hubert Bond, in proposing the toast of the University of Edinburgh, spoke of the affection in which the Alma Mater was held by all alumni. Edinburgh had not only instituted a chair of psychiatry but by arrangement with the managers of the Royal Edinburgh Hospital at Morningside the post of Professor of Psychiatry and superintendent of that hospital were one, and the election was vested in the two bodies. The city and university were alike fortunate in having Professor Robertson as the first holder of this chair. Principal Sir Alfred Ewing, in reply, emphasized the imperial character of the university, drawing its students as it did from all parts of the empire and sending them forth with the torch of learning to diffuse knowledge to the ends of the earth. More and more the world was looking to the universities as its guide, and if civilization were to be rescued from the slough in which it found itself it would largely be due to the influence of the universities. The speaker emphasized the educational value of the chair of psychiatry, and the satisfaction the university felt in that the chair was filled by a man of such intellect and breadth of vision as Professor Robertson. In conclusion he welcomed as honoured guests the Dean of the Faculty of Medicine in the University of Paris and his colleagues. Mr. J. G. Jameson, M.P., in proposing the toast of the General Board of Control, referred to the good feeling which existed between the Board of Control and the local authorities. Sir R. Armstrong Jones and Sir Arthur Rose, D.S.O., replied. The toast of the Medico-Psychological Association was proposed by Sir R. W. Philip, who referred to the great advances and improvements in the asylum system and the altered point of view with regard to the mentally defective; he was now treated as a sick man whom we were out to help. As President of the Royal College of Physicians he welcomed the association to their hall, in which hung the portraits of Professor Laycock, Sir John Batty Tuke, and Sir Thomas Clouston. He congratulated the association on their choice of President. The Chairman, in replying, commented on the work that had been done by the association in the training of mental nurses in the duties of the profession. He also referred to the presence of representatives of France as the honoured guests of the association, and called on the company to join with him in honouring the toast of France.

TYPHUS AT RAASAY.

An outbreak of typhus on the island of Raasay was reported to the Scottish Board of Health last week. Although under the Highlands and Islands Medical Services scheme the island is under the supervision of Dr. Morison, Portree, the parish medical officer, there is no doctor resident on the island. On the occurrence of the outbreak the District Committee represented to the Board the desirability of arranging for the temporary appointment of a medical officer who would reside on the island to cope with the outbreak, and through the courtesy of the Midlothian and Peebles District Board of Control and of Dr. J. H. C. Orr, superintendent of the Rosslynlee Asylum, the Board were able to obtain the services of Dr. Francis Sutherland, M.B., Ch.B., D.P.H.

Correspondence.

THE PROCESS WHICH RESULTS IN AURICULAR FIBRILLATION.

SIR,—Sir James Mackenzie's article (July 15th, p. 71) is suggestive. May I draw the attention of your readers to the fact that the disparity between Sir James's conclusions and the theory of the circus movement is fundamental, each excluding the other?

Before I proceed further I should like to make one or two points clear in regard to the theory of the circus movement. We may readily admit that a serious attempt has been made by means of experiments to prove that the mechanism underlying fibrillation is a simple circus movement along one of the venous orifices of the right auricle. However, the conclusions arrived at by Sir Thomas Lewis and his co-workers in regard to the nature of the mechanism underlying fibrillation as expounded in the Oliver-Sharpey lectures and in *The Heart* are not based on experiments at all. They are based on a gratuitous assumption for which no attempt whatsoever was made to produce a shred of evidence.

Unlike some of the predecessors of Sir Thomas Lewis who adopted the circus movement theory, he assumed that the cause which gave rise to fibrillation disappears with the onset of the abnormal rhythm. The cause of the continuation of fibrillation is the circus movement itself, and there is no relation whatsoever between the pathological condition of the heart and the abnormal rhythm. The auricle continues fibrillating for years just because once the circus movement started there is nothing to interrupt its course. While the auricle is in a condition of fibrillation it is perfectly normal. Accordingly, all that is necessary in order to restore the normal rhythm is to interrupt the circus movement. It was thus a gratuitous assumption which led to the amazing conclusions and not experiments.

It is obvious that if fibrillation is due to loss of control of a "higher agency," as Sir James maintains, the cause which originally gave rise to fibrillation remains potent even after the onset of the abnormal rhythm. What use would there be in attempting to interrupt the circus movement in order to abolish fibrillation, as recommended by Sir Thomas, if the cause still remains? The moment the circus is interrupted it would be restored again. This is also evidently the opinion of Sir James, who knew my criticism of the circus theory.

Clearly the circus movement theory as expounded by Sir Thomas Lewis becomes untenable once an attempt is made to explain auricular fibrillation on lines similar to those of other pathological phenomena.—I am, etc.,

Liverpool, July 17th. I. HARRIS.

SIR,—After reading Sir James Mackenzie's article (July 15th, p. 71) I venture to think that as regards fibrillation in striated muscle a personal observation may be of interest.

Last summer, whilst working all day at the Liverpool Heart Clinic, I found myself getting out of condition through want of exercise and was frequently troubled with cramp in the lower extremities at night. To obviate this I went in for physical jerks of a morning in the bathroom, and in doing one of the exercises too energetically believe I ruptured some of the fibres of the left soleus, which caused me to be lame for about a fortnight and increased the frequency of the attacks of cramp in that calf.

Early one morning, after an unusually severe attack in which no sooner had I managed by manipulation to ease one spasm than some accidental movement would bring on another, I was sitting cross-legged on the outside of the bed idly staring at the leg, hoping that the disturbance was at an end, when a flickering of the skin over the affected parts, on which the sun was shining, attracted my attention. After putting on my spectacles I found that the flickering of the skin was limited to an area along the inner border of the tibia in its upper half about one inch by three inches. The flickering was rapid and of variable extent, sometimes just a little dimple, then a dimple and a short flash, then a multitude of flashes of all lengths. It waxed and waned like a display of aurora borealis, but I could make out no periodicity. After a time I shifted round so as to get the sun on the right leg. Here the corresponding area was quiet, but on flicking the posterior border of the tibia sharply with my middle finger-nail and thumb I managed to set up a similar display, but not so marked as in the injured leg. The above description is merely from recollection, as I cannot lay my hands on my original notes. I may say that I have occasionally seen a similar display over about the sixth and seventh left intercostal spaces in cases of effort syndrome in whom counting the ribs causes little flash-like horizontal ridges to appear along the left border of the sternum.—I am, etc.,

Manchester, July 22nd. FRANCIS HEATHERLEY.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Sir James Mackenzie, in the BRITISH MEDICAL JOURNAL of July 15th, in response to Dr. Strachan's letter of July 1st, says: "He is quite right, and I shall take his suggestion, and use the word 'power' in place of 'force' in future." It is not clear to me that Dr. Strachan is quite right, or that Sir James will do well to use the word "power" in place of "force" in future. "Reserve force" and "rest force" would then read "reserve power" and "rest power." I can understand what *reserve energy* or *potential energy* is, but "reserve power," and especially "rest power," have no apparent meaning.

The definitions of these terms are as follows:

"Force is that which produces (if unopposed) or tends to produce (if opposed) motion in matter."

"Energy is the capacity for doing work." It is measured by the amount of work done or doable.

"Power is the rate at which work can be done." Power, if uniform, is the amount of energy transformed divided by the time required for the transformation. The horse-power of an engine, or of the heart, depends on the amount of work it can do in a unit of time—that is, its rate of working.

Energy corresponds to capital, and power to rate of expenditure. As applied to the heart the term "force" would be used to express the effort of the heart to work, "energy" the amount of work the heart does or can do, and "power" the rate at which it does it.

When in 1911 Dr. Mackenzie said, "The rest force is the minimal force which the heart can exert to maintain the circulation at a level consistent with life," I pointed out that he should have said, "It is the minimal *energy* which the heart can expend to maintain the circulation at a level consistent with life." The word "power" might have done there as expressing the minimal work done at the minimal rate, but the term "energy" seems more clear and precise.

All three terms have their uses and values, and I hope that Sir James Mackenzie will not adopt "power" and exclude "force" and "energy," but be impartial in the use of all as occasion demands.—I am, etc.,

Clyst St. George, Devon, July 18th. D. W. SAMWAYS.

BUBONIC PLAGUE TREATED WITH NEO-SALVARSAN.

SIR,—In a memorandum on bubonic plague treated with neo-salvarsan, in your issue of July 22nd, Dr. Ram Mansoor states that "prophylactic treatment by vaccines confers immunity for a very limited period, and even then the results are not very encouraging. Some years ago, in a small village in the Punjab, inhabitants were inoculated with vaccine, but unfortunately more than three-fourths died."

A statement of this kind is apt to do an immense deal of harm, because anyone reading it who has not had experience of the great value of Haffkine's prophylactic in outbreaks of plague would likely conclude that the inoculations are not only useless but also dangerous. Dr. Ram Mansoor does not mention that the Mul Kowal tragedy happened twenty years ago, and was due not to the prophylactic prepared in the laboratory, but to an accident that occurred to the contents of one of the bottles just before use by which one bottle out of a brew of five became contaminated with earth and the tetanus bacillus. The circumstances attending this accident were that the assistant, when removing the cork of one of the bottles, let the forceps he was using for that purpose fall to the ground, and instead of immediately sterilizing by heat, as should have been done in the flame of the lamp before further use, he simply dipped the forceps for a moment in a solution of carbolic acid, and then proceeded to withdraw the cork, contaminating the contents of the bottle with the drippings from the soiled forceps.

As regards the period of immunity conferred by inoculation with Haffkine's plague prophylactic, it is longer than that conferred by either typhoid or cholera inoculations, while the results, instead of being, as Dr. Ram Mansoor asserts, "not very encouraging," are on the contrary very good and of much service, the average reduction amounting to three times fewer attacks among the inoculated, and should the inoculated take plague the chances of death are reduced at least twice. Accordingly, the chances of escape from death are six to one in favour of the inoculated, and in many cases they have been more than ten to one in favour of the inoculated.

For populations exposed to infection of bubonic plague and living under crowded and insanitary conditions my experience is that inoculation with Haffkine's prophylactic is one of the quickest and most powerful weapons we at present possess in preventing the spread of an outbreak of plague, and that it is quite harmless provided proper precautions are taken in its application.—I am, etc.,

London, N.W., July 24th. W. J. SIMPSON, M.D.

TENDON TRANSPLANTATION.

SIR,—In a clinical lecture on tendon transplantation, published in your issue of July 15th, Mr. Ollerenshaw refers to a statement made by me in a lecture published in the BRITISH MEDICAL JOURNAL of April 9th, 1921. The statement was to the effect that, though open to conviction, I had not at that time seen a transplanted "biceps contract alone at will and produce extension of the knee-joint."

I feel it is incumbent upon me to admit that since writing those words I have been convinced that such a movement *can* take place as the result of voluntary contraction of transplanted hamstrings. Early this year, at a meeting of the Orthopaedic Section of the Royal Society of Medicine, Dr. Pugh showed a case of poliomyelitis in which Mr. Trethowan had transplanted the biceps and, I think, the semitendinosus into the patella. In this case extension of the knee was undoubtedly produced by voluntary contraction of the transplanted muscles. The fact that some who saw the case thought they could feel evidence of slight return of power in one of the quadriceps muscles did not in the least disturb the general conviction that the movement was produced by the biceps and semitendinosus and not by the quadriceps. I still think that in the cases in which this operation is followed by an apparently successful result the quadriceps has almost invariably recovered some of its power unexpectedly.—I am, etc.,

London, W., July 21th. H. A. T. FAIRBANK.

THE PROTECTION OF RADIOLOGISTS.

SIR,—It is remarkable that, in the preliminary report of the X-ray and Radium Protection Committee, no warning has been given of the danger from unprotected valve tubes.

X-rays are emitted from nearly all valve tubes as they

become harder, hence the danger to workers is very considerable, especially in the case of powerful installations where a battery of a dozen or more valve tubes may be employed.

Workers would be well advised to remember that it is as essential to surround the valve tube with adequate protective material as it is the *x* ray tube itself.—I am, etc.,

A. C. NORMAN,
July 8th. Director, *X*-ray Institute of Iraq, Baghdad.

THE TEACHING OF PSYCHOTHERAPY.

SIR,—In the course of your admirable article entitled "What is a consultant?" you take occasion to reprove those of us who practise psychotherapy for accepting patients other than those who have been introduced by a general practitioner. Our reply to this is that "We must live," even though by that statement we lay ourselves open to the retort on the part of some at least of our medical brethren, "We do not see the necessity." The psychotherapist is in a peculiar position which marks him out from the consultant in general, and that is that he is not called upon to advise, but to treat. If he consider the case a suitable one for his specialty, he must of necessity replace the family practitioner and take over the case entirely himself. It is therefore only natural that the general practitioner, who is most probably himself somewhat distrustful of psychic methods, should hesitate before passing on his patient. It would be better, from the point of view of both the patient and the psychotherapist, if the specialty were looked at from the same angle as is a surgical operation.

The practitioner does not complain that the surgeon he calls in takes the case out of his hands and applies the treatment himself; nor does the patient complain of the long convalescence and the large fees which he has to pay. Both these things are looked upon as inevitable. It is far otherwise at present with psychotherapy. The public are in this matter somewhat ahead of the medical profession, and seek us out, albeit shamefacedly. But were they backed up by the confident recommendation of the family physician our task would be easier and more satisfactory. As matters stand we are either looked upon as quacks or expected to perform miracles of healing in the space of a week or so. The remedy obviously lies in the education of the profession in the scope and usefulness of psychotherapy. This can only be done through the medium of the medical schools and hospitals. As far as I am aware there is at present no medical school which gives any space to psychotherapy in its curriculum. No doubt this is partly due to the idea that the science is still in a state of flux, and that it cannot be taught until a more stable condition has been reached. This is a misconception, as examination of the teachings of the pioneers Freud, Jung, and Adler would show that the differences between the rival schools are those of technique rather than fundamental. The fact that so many of our leading neurologists now give full recognition to the value of psychotherapeutic methods proves that the groundwork of the new psychology is sufficiently firmly based to make it possible and profitable to teach it to students.

A further difficulty is this. Supposing the student to have had his interest in psychology and functional nervous disorders quickened and stimulated by a course of lectures, how is he to acquire the necessary technique? The nature of the psycho-analytic method makes it impossible to treat cases before a crowd of students, or, indeed, in the presence of anyone except the analyst. This difficulty will always remain, but although students cannot therefore be shown the science in working, it should be possible to exercise them in the interpretation of dreams, and if only some half-dozen keen spirits were to work systematically at the interpretation of their own dreams under the guidance of the lecturer their combined researches might shed light on many of the problems of dreaming which are still obscure. I do not suggest that any freshly qualified student should at once apply himself to the practice of psychotherapy as a specialty, however keen his interest may be. Experience in the treatment of general diseases, some knowledge of the world, and above all a thorough insight into his own personal problems are indispensable for the psychological physician. These things can only be acquired with time; but whether or no the student eventually takes up the specialty whole-heartedly his psychological training will stand him in good stead both in his professional and private life, and will not be the least part of the equipment which makes for success.—I am, etc.,

Birmingham, July 18th. R. MACDONALD LADELL.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on July 19th the following medical degrees were conferred:

M.D.—O. Heath.
M.B., B.CH.—T. L. Hillier, H. Spibey.
M.B.—H. E. H. Oakeley, C. B. Clarke.
B.CH.—A. A. Gemmall, A. G. F. McArthur, C. J. Fenny, B. Mountain.

UNIVERSITY OF EDINBURGH.

At the degree ceremony on July 21st the honorary degree of Doctor of Laws was conferred upon fourteen persons, including Sir Isaac Bayley Balfour, K.B.E., M.D., F.R.S., Professor Emeritus of Botany in the University; Sir J. Halliday Croom, M.D., F.R.C.S., F.R.C.P., Professor Emeritus of Midwifery in the University; Bretland Farmer, D.Sc., F.R.S., Professor of Botany and Director of the Biological Laboratories, Imperial College of Science and Technology, London; Professor H. Roger, Dean of the Faculty of Medicine of the University of Paris; Sir Charles Scott Sherrington, G.B.E., M.D., LL.D., F.R.S., Professor of Physiology in the University of Oxford, President of the Royal Society; and John Thomson, M.D., F.R.C.P.E., Consulting Physician to the Royal Edinburgh Hospital for Sick Children, formerly University Lecturer on the Diseases of Children.

The Senatus recently offered to confer the same degree upon Mr. J. Garton, who had accepted it, but died before he could be presented. Mr. Garton first showed that the common grain crops and many other plants are self-fertilizing; he also invented the process of multiple cross-fertilization of crop plants and produced hundreds of new and improved varieties, which greatly increased the yields of all the common crops of the farm. Twenty-two years ago Mr. Garton provided the means to establish the Garton lectures on Colonial and Indian agriculture, and subsequently permanently endowed them as an integral part of the work of the chair of agriculture.

The following degrees were also conferred:

M.D.—*J. Anderson, Rachel M. Barclay, †L. van R. Becker, *W. T. Benson, H. C. D. Cross, F. G. Foster, †F. R. Fraser, N. Hirschman, G. G. S. Johnston, †A. Langwill, *J. H. Lechler, T. Lindsay, M. Lipschitz, J. C. Macartney, *J. E. M'Cartney, *P. K. M'Cowan, Anne L. MacDonald, *G. Mackie, A. F. W. Millar, *G. F. B. Page, Dewan Hakumat Rai, H. E. Rawlence, Joan K. Rose, G. Stewart, S. J. Taylor, *P. Vieyra.
CH.M.—‡W. Q. Wood.
D.Sc.—G. W. M. Findlay.

* Commended for thesis. † Highly commended for thesis.
‡ Awarded gold medal for thesis.

M.B., CH.B.—S. M. Alexander, Margaret Allice, W. L. Balfour, Davis Anne D. Bannerman, F. D. M. Beaton, Margery E. Bennet, J. H. van den Berg, Elizabeth S. Blair, Victoria E. Brander, Jean T. W. Bucknell, †F. Bulbuc, Jane G. H. Burnet, C. W. Burns, J. C. Caird, Isobel J. Callender, I. G. Cameron, Esther J. Campbell, Grace Campbell, Helen T. Campbell, Mary C. Campbell, Elizabeth B. Clark, F. W. P. Cluver, G. G. Cochrane, T. A. Cochrane, J. W. P. Collier, †Jean M. T. Connochie, H. K. Corkill, J. C. B. Craig, E. J. Crawford, F. G. Creaser, Margaret M. Creaser, Lilian M. Croskery, *†B. M. Dick, Gladys H. Dodds, C. E. Dorsch, Jessie A. P. Dower, H. A. Eadie, *Jessie S. L. Evans, L. Feldman, A. J. Ferguson, Helen L. M'K. Fisher, J. E. Fletcher, †C. H. Fouché, Beatrice C. Galsworthy, Hilda R. Gibbs, E. S. Gordon, Alice J. Gray, Margaret A. Green, H. Greenberg, J. B. Gyle, J. S. Harris, J. A. Hart, Hilda R. Hay, Janet M. Henderson, J. M'A. Henderson, Enid M. Hern, W. N. Hood, J. S. Hovell, Sheila Hunter, W. M. Hyslop, R. G. Inkster, G. W. Ireland, H. Jamieson, E. M. Jenkins, Nora A. Jones, Elizabeth C. Kemp, Catherine G. Ketchin, A. J. Kilgour, Isabel F. King, N. Kretzmar, E. G. Lawrie, †W. R. Levie, S. Lipstz, J. H. Loots, A. J. Lübbe, M. G. L. Lucas, S. L. Lucas, K. Lumsden, Betty Macdonald, *D. T. M'Donald, D. Macdonald, *J. R. M'Donald, †A. M'Farlane, R. Aeneas C. M'Intosh, D. P. MacIver, D. F. MacKenzie, J. F. Mackie, K. D. Mackintosh, R. A. MacNab, K. A. Macrae, †A. M. Marr, J. Martin, †T. M'W. Millar, J. C. Moir, Janet C. Morrison, A. H. Mowat, Jessie E. M. Munro, R. Munro, J. K. Murray, Dorothea M. Norwell, Jessie R. H. O'Sullivan, Dorothy M. Patrick, H. Penn, Dorothy G. E. Potter, C. M. Rautenbach, †F. W. Rawlings, *W. M. Robb, Isabel M. Roberton, J. D. Robertson, Robina A. M'F. Scott, D. M. Scrimgeour, Marjorie K. Semple, S. Sieff, †T. Skene, A. G. Smith, Marjorie V. B. Smith, Eva Stewart, H. G. Stockley, Jessie W. Strang, May D. Stranger, I. D. Stronach, P. W. Tait, Ruth M. A. Tait, Isabella Taylor, Florence L. Telfer, R. V. Thomas, C. M. Thompson, C. B. Thomson, J. Thomson, Muriel J. Thomson, H. G. Triay, Annie R. Turnbull, Kathleen M. Turner, J. Waiggowsky, Georgina Waters, †Annie E. Webster, Christian Mary B. Welsh, Winifred Wight, Doris S. Williams, H. H. Wright, A. D. MacC. Young.

* Passed with first class honours.
† Passed with second class honours.

D.P.H.—G. G. Allan, Dora W. Gerrard, Mary H. M. Gordon, Margaret Gray, Helen R. T. Hood, J. S. Macbeth, Agnes B. MacGregor, Florence E. M'Kenzie, Janetta J. Powrie, Margaret M. Proudfoot, G. Stewart, J. D. Stewart.

Fellowships and Prizes.

The following fellowships, scholarships, prizes, etc., were presented:

Thesis Gold Medallists: James Elvins M'Cartney, M.D., and Walter Quarry Wood, M.D., Ch.M. The Cameron Prize in Practical Therapeutics: Frederick Gowland Hopkins, M.A., M.B., D.Sc., F.R.S., Professor of Bio-Chemistry in the University of Cambridge. The Syme Surgical Fellowship: Norman M'Omish Dott, M.B., Ch.B. The Gunning Victoria Jubilee Prize in Pathology: James Elvins M'Cartney, M.D. The Gunning Victoria Jubilee Prize in Physiology: Eric Haldane Ponder, M.B., Ch.B. The Ettles Scholarship and Leslie Gold

Medal: Joseph Owen Kelly, M.B., Ch.B. The Allan Fellowship in Clinical Medicine and Clinical Surgery: Bruce Mackenzie Dick, M.B., Ch.B. The Stark Scholarship in Clinical Medicine: Adam Cairns White. The M'Cosh Graduate's and Medical Bursaries: Harold Keith Corkill, M.B., Ch.B. The Beaney Prize in Anatomy and Surgery: Bruce Mackenzie Dick, M.B., Ch.B., and Thomas M'Walter Millar, M.B., Ch.B.—equal. The Mouat Scholarship in the Practice of Physic: Carl Hercules Fouché, M.A., M.B., Ch.B. The Conan Doyle Prize: Carl Hercules Fouché, M.A., M.B., Ch.B. The Annandale Gold Medal in Clinical Surgery: Ian Gordon Cameron, M.B., Ch.B. The Buchanan Scholarship in Gynaecology: Bruce Mackenzie Dick, M.B., Ch.B. The James Scott Scholarship in Midwifery: Florence Lindsay Telfer, M.B., Ch.B. The Scottish Association for Medical Education of Women Prize: Jessie Eeles, M.B., Ch.B. The Dorothy Gilfillan Memorial Prize: Jean Margaret Thomson Connochie, M.B., Ch.B. The Wellcome Medals in the History of Medicine: Gold Medal, Thomas Ferguson, M.B., Ch.B.; Silver Medal, Frances Agnes Redhead. The Pattison Prize in Clinical Surgery: David Grieve. The Wightman Prize in Clinical Medicine: William Reginald Levie, M.B., Ch.B. The Cunningham Memorial Medal and Prize in Anatomy: Sidney Elizabeth Croskery, B.Sc. The Whiteside Bruce Bursary: George Brown.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

M.D.—BRANCH I (*Medicine*): Dr. G. Churcher, J. Fanning, W. H. Grace, F. W. Hamilton, D. Hunter, Kathleen McC. McKeown, A. G. Maitland-Jones, F. N. Moos, Jal F. Padshah, M. J. T. Wallis, F. E. S. Willis.
BRANCH II (*Pathology*): Charlotte I. Fox.
BRANCH IV (*Midwifery and Diseases of Women*): G. F. Cooke, P. H. Mitchener, Lily D. Taylor, L. H. W. Williams.
BRANCH V (*State Medicine*): F. A. Knott, J. V. A. Simpson.
BRANCH VII (*Tropical Medicine*): C. V. Boland, H. Hingston.
M.S.—BRANCH I (*Surgery*): J. G. Jones.

Chair of Pathology at Guy's Hospital.—Professor Adrian Stokes, D.S.O., O.B.E., M.D.Dubl., F.R.C.S.I., has been appointed to the Sir William Dunn Chair of Pathology tenable at Guy's Hospital Medical School. Professor Stokes served during the war in the R.A.M.C., and was for some time in charge of the pathological work in the 2nd Army in France. He was particularly concerned in the elucidation of the nature of the form of infective jaundice known as spirochaetosis ictero-haemorrhagica, a subject upon which he wrote in association with Dr. J. A. Ryle in this JOURNAL in 1916 (vol. ii, p. 413). Since 1919 he has been Professor of Bacteriology and Preventive Medicine in University of Dublin. Two years ago he worked with the Rockefeller Commission on Yellow Fever in Nigeria.

Histology.—The title of Reader in Histology has been conferred on Dr. C. D. Da Fano, M.D., L.D., Lecturer in Histology at King's College, and the title of Reader in Morbid Histology on Dr. G. W. de P. Nicholson, M.D., M.A., Lecturer in Morbid Histology at Guy's Hospital Medical School.

Out of the Thomas Smythe Hughes Medical Research Fund grants have been made for 1922-23 as follows: To Miss C. L. Houlton, M.D., B.S., of the London School of Medicine for Women, £100 for an investigation of vaginal secretions, with a view to the discovery of some prophylactic method for the prevention of puerperal infection. To Mr. V. R. Khanolkar, M.B., B.S., B.Sc., of University College Hospital Medical School, £25 for an investigation of the presence of non-specific antibodies against proteins, with a view to further insight into the nature of non-specific immunity.

Committee of Medical Members.—The Committee of the Medical Members of the Senate have elected Mr. Raymond Johnson, O.B.E., B.S., F.R.C.S., to be their chairman for 1922-23, in succession to Mr. H. J. Waring, M.S., F.R.C.S., who has been elected Vice-Chancellor.

UNIVERSITY OF MANCHESTER.

The following appointments have been made: Lecturer in Practical Surgery, Mr. Charles Roberts, M.B., B.S. (London); Clinical Lecturer in Mental Diseases, Mr. J. A. C. Roy, M.B., Ch.B., F.R.C.S. (Manchester).

The Platt Physiological Scholarship has been awarded to Mr. Harry Zwarenstein.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the College held on July 24th the following successful candidates, having passed the requisite examinations, were admitted Fellows:

J. Allison, J. A. Berry, G. S. Davidson, D. G. Duff, W. F. T. Haultain, W. O. Lodge, J. Macarthur, J. M. Macpherson, V. Mahadevan, H. L. Marriner, J. B. Morrison, F. F. Peterson, Margaret S. Pirrie, W. Waddell, W. O. Walker, C. H. Wan, M. White, R. H. Williams.

Dr. J. Rao, L.M. and S.Univ. Calcutta, having passed the requisite examination, was admitted L.R.C.S.Ed.

CONJOINT BOARD IN SCOTLAND.

Final Examination.

THE following candidates, having passed the Final Examination, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P.and S.G.:

W. H. Lloyd-Wronsley, Chong Tak Nam, A. K. Tateson, A. C. A. Fernando, M. G. I. Lucas, J. M. Somasundrum, W. A. B. Clark, M. Macleod, M. Wilkin, C. W. de Villiers-Pritchard, Agnes T. Martin, W. A. McK. Stewart, H. J. Appleyard, W. Gray, W. D. Oswald, I. B. Cummings, and H. G. F. Cubitt.

CONJOINT BOARD IN IRELAND.

At the Conjoint Examinations in Ireland by the Royal College of Physicians and the Royal College of Surgeons the following candidates have been successful:

FINAL PROFESSIONAL EXAMINATION.—M. P. Moran, E. M. Dodd, Henrietta C. Fall, J. F. O'Connell, F. E. Preston, W. E. Rutledge, W. Sherowitz, R. T. Taylor, The O'Rourke, J. S. Matthews, Maggie M. Nelson, Gladys C. M. Marshall, J. J. A. Loftus, D. S. Magner, J. T. Barrett, M. Levy, V. E. Lee, P. J. Greene, J. A. Flynn, P. Fleming, S. S. Brass, H. T. Beggs, Mary F. J. Connolly.

D.P.H. OXON., PART I: *Correction.*

Mr. Clement Dunscombe calls attention to the misspelling of his name in the pass list published under the heading "University of Oxford" in the JOURNAL of July 15th (p. 111). It should be as now printed.

Obituary.

SIR EDWARD MALINS, M.D., M.Sc., F.R.C.P.Lond.,

Consulting Obstetric Physician, Birmingham General Hospital; Emeritus Professor of Midwifery, University of Birmingham.

WITH regret we record the death in Birmingham on July 23rd of Sir Edward Malins, after a long illness. He was the youngest son of Dr. Samuel Malins, one of the founders of the Liverpool School of Medicine, and came of a family long associated with the city of Birmingham. He was born in Liverpool in December, 1841; he received his early education at King Edward's School, Birmingham, whence he went to Edinburgh University, where he took the degrees of M.B., C.M. in 1866, and that of M.D. in 1869. He became a Fellow of the Royal College of Physicians of London in 1902, and received the degree of M.Sc. from the University of Birmingham in 1901.

In 1872 he settled in Birmingham, and in 1877 was appointed obstetric physician to the General Hospital, a post which he held until 1903, when he was elected consulting physician. Throughout his life he took an active interest in the Birmingham Medical School and in the establishment of the Birmingham University. When the old medical school of Queen's College was transferred to Mason College in 1894 he was appointed professor of obstetrics, and continued to hold the chair when the College was merged in the University. He was professor altogether for eighteen years. He retired in 1912, and shortly afterwards was made Emeritus Professor. For five years he was secretary of the University of Birmingham Graduates' Club and its president in 1886 and in 1913. He held many other appointments in and about the city; he was surgeon to the Birmingham and Midland Hospital for Women, consulting obstetric physician to the Hammerwich Cottage Hospital and the Corbett Hospital, Stourbridge. He also took an active part in local medical organizations and was president of the Midland Medical Society 1882–83, and president of the Birmingham Branch of the British Medical Association in 1901. He was president of the Section of Obstetrics and Gynaecology at the annual meeting of the British Medical Association at Birmingham in 1911. His energy and capacity carried his influence beyond the city; he was examiner in midwifery and gynaecology to the Conjoint Board and the Universities of Manchester and Bristol, and had been president of the Obstetric Society of London.

His activities, however, were not limited to his professional work, exacting though it was. In 1893 he was appointed a justice of the peace for the county of Warwick, and in 1896 first filled the like office in the city of Birmingham. He was also a Governor of King Edward's School, and numbered among his past appointments: Chairman, Wm. Dudley Trust; Bailiff, Lench's Trust, 1908; Sands Cox Trustee since 1906; and for many years Vice-President of the Birmingham Conservative Association.

ARCHIBALD CAMPBELL MUNRO, M.B., D.Sc., M.R.C.P.Edin.,

Medical Officer to the County of Renfrew.

EVERYONE connected with public health in Scotland will learn with sorrow that Dr. Campbell Munro has passed away. He was among the most prominent of the group of men who, under the newly passed Local Government Act of 1889, set to work to revolutionize the sanitation of rural Scotland. His own area was the non-burghal part of the thickly populated county of Renfrew. In those days it was necessary for the new medical officers not merely to justify their own unwelcomed official birth, and educate their masters in the administration of existing laws, but to press also for extended powers, and at the same time to block legislative proposals

ostensibly progressive, but in effect retrograde. In all such efforts the Renfrewshire medical officer bore a splendid part. The outcome of the crusade was embodied in the Local Government Amendment Act of 1894, commonly called the Parish Councils Act, and the Magna Charta of Public Health in Scotland, the Act of 1897. As a preliminary to that great achievement it had been found necessary to block a burgh police bill which contained as much public health reform as would have satisfied the towns for a long time, and would have deprived a complete health measure for the whole community of the stimulus of burgh support. Dr. Munro was no less effectual in helping to hinder the one measure than in advancing the others, and in the end the public health part of the burgh police bill was unwillingly dropped by the Government, who found that the block would not be removed on any lower terms. It was stimulating and exciting work to those engaged in it.

Within his own area Dr. Campbell Munro made a marvellous change in respect of the elementary necessities—water supply, drainage, scavenging, house sanitation, and isolation hospitals—whilst in later years he followed this up in planting and fostering the newer developments of public health. No detail was so insignificant as to escape his personal attention: his energy was unbounded, and his monument to-day is to be found in the health of the county as he left it on his retirement some three years ago. Much of his work was done under the serious handicap of poor health, but physical weakness never evidenced itself in duty neglected or incompletely performed. He was a good pedestrian and a keen cyclist, so that much of his travelling was done independently of railway or motor conveyance. He was a clear and convincing speaker, and a very effective witness before a law court or a parliamentary committee.

When he retired he went to live in Edinburgh, of whose University he had been an honours graduate in 1874. Up to the end he continued to take a keen interest in the welfare of the Scottish Society of Medical Officers of Health, whose president he had been, and he was a valued member of the Scottish Midwives Board. He was a past president of the Glasgow and West of Scotland Branch of the British Medical Association and of the Sanitary Association of Scotland. The deepest sympathy of those who knew him goes out to his wife and family in their irreparable loss. One of his sons—his own namesake—is in the Indian Medical Service.

DR. JOSEPH WILLIAM GAINER of Thrapston, who died recently, was born at Stonehouse, Gloucestershire, in 1858. He received his medical education at Edinburgh University, where he graduated M.B., C.M. in 1886 and M.D. in 1906. He began practice at Thrapston in 1888. He was medical officer and public vaccinator for the A district and workhouse of the Thrapston Union, certifying factory surgeon and honorary surgeon to the St. John Ambulance Association. Dr. Gainer took great interest in singing and was the first president of the local glee society. He suffered from a severe illness in 1919, which weakened his constitution and caused him to relinquish some of his professional work to his son Dr. Eric Gainer. In 1919 he was appointed a county magistrate and frequently sat on the Thrapston Bench. He was a member of the Northamptonshire Division of the British Medical Association and was held in high esteem by his private patients and by those whom he attended in his public capacities. He is survived by two sons and two daughters.

A MEDICAL centenarian, Dr. CHARLES HENRY BROOKING, died at Paignton on July 16th. He was born on April 3rd, 1822, and received his medical education at Guy's Hospital. He took the diplomas of M.R.C.S. and L.S.A. in 1843, and graduated M.D. St. Andrews in 1856. He formerly practised at Brixham, and is one of the last of the Volunteers of 1852; he commanded the Artillery Volunteers at Brixham in 1859. On the occasion of his attaining his hundredth year the Council of the Royal College of Surgeons of England sent congratulations to Dr. Brooking.

IN the death of Dr. JAMES EDWARDS the north of Liverpool has lost one of its leading medical practitioners. He had been in indifferent health for some time past, so that his decease was not unexpected. Dr. Edwards was the fourth son of Principal Lewis Edwards, of Bala College, a minister of eminence in the Methodist Church. He studied at St. Bartholomew's Hospital, and became M.R.C.S. in 1879, afterwards taking the Edinburgh L.R.C.P. and L.M. in 1881. He settled down in the north of Liverpool shortly after qualification, and through his assiduity and urbanity soon acquired a lucrative practice. He was a staunch advocate of temperance, and took a great interest in medical missionary work in connexion with the Welsh Calvinistic Methodist Church. He leaves a widow and a family of three sons and two daughters. One of the sons, Dr. Ivor Charles Edwards, has been in practice with his father since 1912.

DR. JACQUES BERTILLON, who had been statistician to the City of Paris for thirty years, died on July 4th in his 71st year. He was the son of Louis Bertillon, statistician, and the brother of Alphonse, esteemed the founder of anthropometry, who died a few years ago. In the course of his statistical work Jacques Bertillon became impressed by the steady decline of the birth rate in France, and in 1896 established a society to stimulate interest in the subject. In 1918 he founded a bi-weekly journal, *La femme et l'enfant*. During the war he sought to impress on the French Government the importance of collecting and studying the statistics of disease among the forces in the field, and was appointed director of the medico-chirurgical statistics of the French army.

THE well-known radiologist Dr. KEATING HART, who died in Paris last January, has been created posthumously a Knight of the Legion of Honour.

The Services.

PENSIONS CLAIMS.

WE are requested by the Ministry of Pensions to state that disabled officers, nurses and men, and the widows and dependants of those deceased, who desire to appeal to the Pensions Appeal Tribunal against the rejection of claims to pension, must do so, on the prescribed form, within a year after the date of the notification by the Ministry of the rejection of the claim, or before August 19th, 1922, whichever is the later. Any new claim to pension in respect of disablement under any Warrant, Order in Council, or Order administered by the Minister of Pensions, must be made within seven years after the claimant was discharged, or before September 1st, 1928, whichever is the earlier.

HONORARY SURGEONS TO THE KING.

THE following officers are appointed Honorary Surgeons to the King: Major-General B. H. Deare, C.I.E., I.M.S., vice Major-General the Hon. W. H. B. Robinson, C.B., I.M.S., deceased; Colonel H. A. Smith, C.I.E., vice Colonel J. Garvie, I.M.S., retired.

DEATHS IN THE SERVICES.

Captain Sadanala Bashiam Venugopal, Indian Medical Service, died at Poona on May 13th, aged 34. He was educated at Madras University and Guy's Hospital, and took the M.R.C.S. and L.R.C.P. London in 1914. He entered the I.M.S. as lieutenant on August 1st, 1914, and was promoted to captain on March 30th, 1915. He served on the North-West Frontier of India in operations against the Mahand Waziris in May 1917, and against the Warri tribe in March–April, 1918.

Medical News.

A MEETING of the Dental Board of the United Kingdom was held on July 14th, with the Right Hon. F. Dyke Acland in the chair. It was announced that Mr. James H. Stirling had been nominated by the Lord Lieutenant of Ireland as a member of the Board in the place of the late Mr. John Sinclair. The Board passed a resolution informing the Minister of Health that in its view any hospital approved by one of the licensing bodies in the United Kingdom for the instruction of medical students, and the dental departments of any university of the United Kingdom, together with a list of schools of dentistry which were enumerated, should be approved under Section 5 (5) of the Dentists Act, 1921. It was resolved also that information should be obtained from the deans of dental schools regarding any students who have been unable to obtain a qualification in consequence of the expiry of Government grants prior to passing their final examinations, with a view to giving financial assistance in deserving cases. The Board also resolved that in the case of applicants for registration who were unable to comply with the requirements of the Act in consequence of service in His Majesty's Forces, it would be willing that July 28th, 1922, should be substituted for July 28th, 1921, where mentioned in the Dentists Act, 1921, in connexion with such applications.

AT the present time the Royal College of Veterinary Surgeons has the sole right to hold examinations for admission to membership of the College. The Universities of London and Liverpool have sought the right to amend their charters so as to conduct corresponding examinations. The matter was argued before the Committee of the Privy Council on Wednesday, July 19th, Lord Dunedin, Lord Trevethin, and Sir Arthur Boscawen acting as the tribunal. Mr. J. D. Talbot, K.C., and Mr. Colam, K.C., were leading counsel for the College, and Mr. Tomlin, K.C., was for the University. The Committee came to the conclusion that the modification proposed by the Universities was *ultra vires*, and that the object sought could only be effected by legislation.

THE International Labour Conference (League of Nations) in a convention of last year laid down that after November, 1927, with certain exceptions as to railway stations and industrial buildings, white lead shall not be used in the internal painting of buildings. The Government of Tunis, unwilling to wait so long a period, have decided that within a year from now the use of white lead shall be prohibited in that country in external as well as internal painting, and that white lead shall not be used in other operations except in the form of a paste. Further, that dry scraping and dry rubbing down, which is believed to be responsible for much of the lead poisoning occurring among coach painters, shall not be allowed.

THE first prescribed examination under the Dentists Act, 1921, was held at Manchester on July 11th and 12th, when 65 candidates presented themselves and 45 passed. Of the 15 war service candidates 4 satisfied the examiners in Part (1) only, and one in Part (2) of the examination.

THE tenth Italian Congress of Paediatrics will be held at Milan from October 1st to October 4th, when the following subjects will be discussed: Active and passive immunization against diphtheria, introduced by Dr. Pincherle of Bologna and Dr. Frontali of Florence; prophylaxis of tuberculosis in childhood, introduced by Professor Cannata of Messina. Further information can be obtained from Dr. Grassi, 9, Via Commenda, Milan.

PROFESSOR W. DUNBAR, a well-known authority on hygiene, has recently died at Hamburg.

THE house and library of the Royal Society of Medicine will be closed during August.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 15, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS

INCOME TAX.

"W. G." purchased a 29.5 Hudson car in 1920 for £995. He has just bought a new F.I.A.T. for £550, the agents allowing £330 for the Hudson.

*** The amount allowable does not exceed the out-of-pocket cost of replacement, and consequently "W. G." cannot claim more than £550 − £330 = £220. That sum is a professional expense of the year in which the transaction took place, and presumably will not affect his average income tax liability for the present financial year.

"W. H. L." has purchased a partnership, and is told that he must pay his share of income tax on the debts collected and handed over to his predecessor. He asks whether this is correct.

*** Yes. The practice is evidently assessed to income tax on the usual basis of cash receipts—that is, the earnings of any particular year are measured by the cash received in that year instead of by the value of the fees booked. Although the tax to be paid by "W. H. L." is measured by the receipts from his predecessor's work, the "income" that is being assessed is the result of his own work in the year for which the assessment is made.

AN OLD WIFE'S FABLE.

DR. DAN MCKENZIE (London) writes: In reply to Dr. J. B. Hellier's question regarding the advice given to a newly confined woman "to go upstairs before going down," permit me to say that this is a very general superstitious practice, dependent upon sympathetic magic. If the mother or the baby or the invalid goes *up*, his or her health will also go up, and vice versa. There is of course no rational basis for these quaint ideas, but we are all subject more or less to their influence and must constantly be on the watch to avoid their power, for they spring from the same weedy corner of the human mind as what we know so well in scientific matters as "the personal element." If Dr. Hellier would like further information on this subject he will find enough in Sir James Frazer's *Golden Bough* to keep him busy for many weeks.

LETTERS, NOTES, ETC.

PSYCHO-ANALYSIS IN EPILEPSY.

DR. S. F. MCDONALD, M.R.C.P. (Brisbane), writes: A very great number of statements are being made at present praising the value of psycho-analysis in many forms of nervous disease. Having had a little experience of the extreme value of such treatment I am the more anxious that it shall not be allowed to gain disrepute by wild statements such as that at present being made about epilepsy. Those of us who have the misfortune to deal with epilepsy are only too anxious for any help at all in the matter—but we want solid facts. To say that an epileptic fit is a withdrawal from reality and a means of escape sounds splendid, but does it help us in treatment? We are told that this has been demonstrated by analysis: has it been demonstrated in the case of children?—for example, in a child of 5 with alternating attacks of *grand* and *petit mal*, which are only restrained by luminal. Again, in congenital syphilis one sees epileptiform attacks, indistinguishable from true epilepsy, which disappear with anti-syphilitic treatment. Can I extract from any of those now practising psycho-analysis even a few figures showing number of cases analysed, finding and results from analytic treatment? Every other method must submit to such a test: why not psycho-analysis?

RAT-BITE FEVER.

MR. V. N. MEHTA (Bombay Presidency, Viramgam) writes: I had recently a case of rat-bite fever, presenting all the typical symptoms after an incubation period of fifteen days—namely, swelling and inflammation at the bitten part, formation of vesicles, erythematous rash over the arm and abdomen, shooting pains in the joints, and a rise of temperature which continued for about a week, ranging from 104.5° to 100°. Throughout neo-salvarsan was to be injected, but owing to the high fever it was delayed till the apyrexial stage after a week, when 0.45 gram novarsenobillon was injected intravenously and the patient has since made very satisfactory progress. Our correspondent concludes by asking whether neo-salvarsan, in cases of rat-bite fever, can be injected during the pyrexial stage, and in that case up to what temperature it may be considered quite safe to inject.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 64.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICAL SOCIOLOGY.

E. ROWLAND FOTHERGILL, M.B., B.S., President.

THE PRESIDENT, in opening the proceedings of the Section, said that some twelve years ago the British Medical Association decided that amongst the other Sections at the Annual Meeting it should include one—the Section of Medical Sociology—to which the laity might be invited to contribute to discussions. The question of alcohol had been chosen on the present occasion, but it was obviously a subject on which the limits of discussion must be strictly defined. The question was:

> "To what extent, if any, can alcohol as a beverage be considered to have any influence on the human economy, mental disorders, industrial efficiency, and infant mortality?"

DISCUSSION ON ALCOHOL AS A BEVERAGE AND ITS RELATION TO CERTAIN SOCIAL PROBLEMS.

THE ACTION OF ALCOHOL ON THE HUMAN ECONOMY.

BY

EDWARD MELLANBY, M.A., M.D.Cantab.,
Professor of Pharmacology, University of Sheffield.

THE advantages of alcohol as a beverage are so obvious to some and its disadvantages so thoroughly realized by others that, until recent years, scientific discussions of an impartial nature of problems centring round it were rare. It seemed to the average man to be a subject which required no special knowledge in order that he should either strongly favour it as a great blessing to mankind or denounce it as the greatest curse. Fortunately the point of view is gradually altering, and, while we realize that the problems presented by alcohol in its relation to human existence are of the most pressing importance, we also believe that a true judgement can only be arrived at by a careful consideration of the facts.

As a preliminary to the more interesting papers and contributions to the discussion of the social problems which we are to hear to-day, and as affording a foundation for such discussion, it is my duty to describe some of the fundamental facts as to the action of alcohol on the human economy and to supply a summary of the views generally held by those who have made a close study of the pharmacology and therapeutics of alcohol.

Alcohol may be considered from various aspects—for instance, as a beverage imbibed extensively by healthy people, or as a medicine taken in sickness. It must be admitted that, whatever the point of view, our knowledge of the subject is still meagre. We have some knowledge of its action in health, but we cannot be certain that the known facts are always sufficient to explain its action in disease. It is probable that many of the effects produced by alcohol in health and disease can be similarly explained, and that the basis of its action in both cases is generally the same, but this does not mean that it is always the same. Some such warning seems necessary at the beginning of this discussion, for there is still much difference of opinion among those well qualified to judge as to the action of alcohol in various diseases, and it is probable that these differences do not depend on prejudice but on our limited knowledge. This point will be referred to again after the action of alcohol on the nervous system has been discussed and when its therapeutic properties are being considered.

It will be well at the outset to distinguish carefully between two properties, of a diverse and apparently independent nature, possessed by alcohol, both of which will be encountered in any discussion on the subject, either from a medical or sociological point of view. In the first place, if a food be defined as that which can supply useful energy to the body, then alcohol is a food. Secondly, in that alcohol has the property of modifying the function of living matter, it must be regarded as a drug. Alcohol is, in fact, to be classified as a food-drug. I shall consider these two properties of alcohol separately, taking the drug action first.

By far the most important action of alcohol as a drug depends upon its power to modify the functions of the nervous system. The special affinity of alcohol for this system is thought to be due to its high lipoid content, thus allowing the easier access of alcohol into the nerve cells. The fact that in discussing the action of alcohol attention is usually fixed on its power to modify the functions of the nervous system is no doubt due to the ease with which such modification of function can be detected. The activities of other organs are also altered by alcohol, but such changes are usually more difficult to detect, and only appear to be of sufficient interest to merit attention in acute and chronic alcoholic poisoning, or when the structure of the organ shows pathological changes. Alcohol is a popular beverage because of its property of inducing changes in the nervous system which are the basis of the altered sensations and outlook sometimes described as euphoria. Many investigations and much discussion have centred round this action. The effects are apparently very contradictory; whereas drowsiness is often produced even by the smallest doses, at other times excitement is more evident, and even in the same person periods of drowsiness and excitement may alternate according as the environment changes. There is but little wonder that two schools of thought have arisen among those studying the problem, one regarding alcohol as primarily a stimulant to the nervous system, and the other, led by Schmiedeberg, as a depressant in action from the first. This discussion might have been interminable had it not been that in recent times our knowledge of the functions and mode of action of the nervous system has developed to an extent which allows us to get a better understanding of the symptoms produced by alcohol, and to place in alignment facts which formerly seemed so contradictory. We know now that the outstanding function of the cerebral cortex is to restrain and inhibit many of the activities of the lower and earlier developed parts of the nervous system. It allows us to judge and to discriminate, and, by directly influencing the thalamus, controls our emotions. It is the great brake, both as regards activities associated with conscious effort and in those more automatic. It exerts a constant influence on the paracerebellar nuclei, thereby antagonizing overaction of the cerebellum, and, by bringing to bear a steadying effect on the spinal cord, it prevents spastic and inco-ordinate movement. Thus it is obvious that any narcotic whose primary action is to paralyse this part of the nervous system will produce just those symptoms which are seen in alcoholic intoxication. As the direct result of narcotizing the cells of the cerebral cortex we can easily understand the loss of judgement, memory, power of association, and the increased tendency to sleep. Similarly, the impairment by alcohol of delicate actions associated with concentration and mental effort—such, for instance, as setting up type and shooting at a target—can be explained along these lines. It is most noteworthy that the above-described effects of alcohol are produced by small doses, say 1 oz., when no one would suggest intoxication, or even suspect, from the general demeanour of the person tested, that alcohol had been drunk. In fact, in order to detect these changes produced by small quantities of alcohol, accurate scientific experiments must generally be made.

But in addition to these fairly self-evident facts we can now understand some of the nervous effects of alcohol on the emotional side, since we know from Head's work that the thalamus is particularly related to the emotions. Small quantities of alcohol by depressing the higher centres release the brake on the thalamus and so allow freer play to the emotions. Feelings of joy, misery, anger, and excitement are more easily called forth, and with cares and worries forgotten a feeling of light-heartedness usually develops. Self-consciousness and self-criticism are depressed by alcohol, and for this reason alcohol may make apparently ordinary people talk in a clever and interesting way and shy people bolder. All the latter results, which at one time were regarded as evidence of a stimulating action of alcohol, are now generally regarded as being the result of depression and partial paralysis of a normal inhibitory mechanism.

It is interesting to note that, unlike morphine, which picks out and depresses primarily that part of the brain which appreciates sensation, alcohol does not seem to have any selective effect in acting on the cerebral cortex. Whereas a

man is cut off to a great extent from his environment by morphine, so that his thoughts are largely concerned with past experiences, alcohol in moderate quantities has no such effect on the sensorium, and under its influence a man's thoughts centre round and are easily affected by his immediate surroundings.

With larger doses of alcohol the action on the nervous system is more obviously depressant—greater inco-ordination of movement, more or less anaesthesia, depression of reflexes and of the respiratory and other centres all appearing and becoming more strongly developed.

It is clear that alcohol must be placed among the narcotic drugs so far as its action on the normal human organism is concerned. To class alcohol as a narcotic may seem to some people to put it out of court as a substance capable of usefulness either as a beverage or as a therapeutic agent. This seems to me to be a wrong view, for narcotics have their sphere of usefulness just as certainly as have stimulants. Modern conditions of life, with its competition, acquisitiveness, and restlessness, have many undesirable features which make existence almost intolerable to many people. Alcohol is taken as a beverage by the average man in order to escape, at least for a time, from the strain of existence. Small quantities of alcohol are capable of dispersing temporarily many of the worries and troubles of life, and so may play a part in restoring to better working order various functions of the body whose action is known to be depressed by anxiety. For instance, nothing is more certain than that worry has a depressing influence both on the secretion and movement of the stomach, and thereby may induce or exaggerate a dyspeptic condition. Some cases of dyspepsia of this type may be favourably influenced by dilute alcoholic beverages, which obliterate the worry and so remove the factor responsible for the reduced secretion of gastric juice and the sluggishness of movement of the stomach walls.

Dale has recently suggested that the narcotic action of alcohol on the nervous system probably accounts for the instances where it is regarded as having a beneficial effect in disease, and where such an influence cannot readily be explained along lines compatible with its recognized pharmacological action. He argues that in sick people the functions may be depressed not only by actual weakness but by inhibition due to reflex action or to influences from the higher centres. For instance, in syncope due to fright or pain the heart and vasomotor centre are undoubtedly subjected to severe central inhibition, and alcohol may have a beneficial effect in these conditions because it weakens and removes this inhibition by its narcotic action. From the point of view of experimental pharmacology it has been difficult to understand some of the actions of alcohol described by clinicians in heart failure associated with pneumonia, typhoid, and other diseases. On the one hand, evidence of a direct stimulant effect of alcohol on the heart is not satisfactory, while, on the other hand, the beneficial effect of alcohol in some cases of heart failure is too widely accepted to be passed over lightly. The suggestion that the beneficial effect in these cases may depend on the power of alcohol to depress excessive inhibitions is worthy of further consideration. Dale has also pointed out that if rapid, shallow breathing produces anoxaemia and the baneful effects as stated by Haldane, then alcohol, by slowing the respirations and making them deeper, may be beneficial in diseases where this type of breathing occurs.

To sum up, although alcohol can no longer be regarded as a stimulant except in so far as it irritates the nerve-endings of such organs as the mouth, oesophagus, and stomach, its effects, whether as a beverage or as a medicine, may be no less important, even though they are to be explained by its narcotic action on the central nervous system.

Alcohol as a Food.

I shall now deal with alcohol as a substance capable of supplying useful energy to the body. It was shown by Atwater and Benedict, that nearly all alcohol, when drunk in moderate quantities, is completely oxidized in the body, and that only quantities of the order of 2 per cent. escape unchanged in the urine and expired air. Since the oxidation of 1 gram of alcohol gives rise to 7 calories of heat, as compared with 4.1 calories produced when either 1 gram of protein or 1 gram of carbohydrate is oxidized, it is evident that, if we can overcome the toxic effects of alcohol, the amount of energy it can supply to the body ought to be large. Alcohol has a further advantage in that it requires no digestion and is rapidly absorbed from the stomach and alimentary canal.

Two questions that require an answer are: (1) How much energy can alcohol supply to the body? (2) What is the best way to give alcohol in order to obtain the maximum amount of energy with the minimum of toxic action?

As regards the first question, some idea of the energy supplied by alcohol oxidation has been obtained by Völtz and Dietrich, who showed that in resting dogs 42 per cent. of the total energy was supplied by alcohol in a ten hours' experiment, and 35 per cent. in a fifteen hours' experiment. In one of my own experiments a dog weighing 13.5 kg. was given 50 c.cm. of alcohol in a 20 per cent. solution. This was oxidized in twenty hours, as shown by the fact that after this time the blood was alcohol-free—that is to say, 2.5 c.cm. of alcohol were oxidized each hour, thus supplying to the dog 1.04 calories of heat per kilogram body-weight per hour. This represents about 40 per cent. of the total heat lost during the period. A similar experiment on a man may be described. He drank in half an hour whisky containing 171 c.cm. of absolute alcohol (he could have drunk this quantity easily in five minutes). His weight was 70 kg. The amount of alcohol in his blood was estimated at intervals, and from the curve obtained the rate of oxidation of alcohol in his body was calculated. It was found that he oxidized about 10 c.cm. of alcohol an hour, and was thus supplied with 54 calories an hour, or, roughly, at the rate of 1,300 calories per diem. This would represent about 40 per cent. of his total heat loss.

In the above-described experiments on the dog and man, although a surprisingly large amount of energy was supplied to the organism by alcoholic oxidation, from the point of view of medicine the results are of but little interest, for intoxication of a severe degree was produced in both cases. Later I shall describe how the toxic symptoms can be eliminated and yet the body be supplied with a large amount of energy from alcohol.

I have shown in a previous publication that the rate of oxidation of alcohol in the body is independent of the amount present in the blood over fairly wide limits. The rate of disappearance of alcohol from the blood is almost the same in dogs, whether a large dose sufficient to produce profound intoxication (say 50 c.cm. of alcohol) or a much smaller dose (say 20 c.cm.) is given. This fact had previously been demonstrated by Higgins, using another method, for he found the respiratory quotient of men to be depressed to the same degree by 30 c.cm. and by 45 c.cm. of alcohol. Carbohydrates and fats do not act as foodstuffs in this way, for their influence on the respiratory quotient varies with the amount eaten. This difference between alcohol and other foodstuffs is important both from a scientific and a practical point of view.

As mentioned above, the man of 70 kg. weight when at rest oxidized 10 c.cm. of alcohol an hour, so that if the constant rate of oxidation holds also for very low concentrations, it would only be necessary to give doses of about 10 c.cm. an hour in order that the maximum amount of energy in unit time be obtained from the oxidation of this substance. The smaller the dose the less toxic the action, so it may be possible to get out of alcohol the maximum amount of energy in unit time and escape the effects due to its drug action. Experiments have proved this to be the case.

It is now well recognized that the food properties of alcohol can be made use of to the best purpose in diabetes mellitus. In the modern treatment of this disease the diet is so arranged that the urine is kept sugar-free, but in severe cases this generally means that the diet is extraordinarily small from the point of view of energy. When any attempt is made in such cases to increase the amount of food, sugar excretion usually commences. Alcohol can be oxidized by these diabetics without causing the production of sugar, and so is a useful adjunct to the dietary for supplying energy.

Southgate and I have recently investigated the best way to supply alcohol to diabetics of this type, and have found the amount of energy that can be provided without production of toxic action. The details of this work will be published elsewhere. We corroborated and made use of the fact discussed above and suggested by the animal experiments, that, even when small quantities of alcohol are drunk, the rate of oxidation is not greatly reduced. We found the amount of alcohol the diabetic patient could oxidize each hour, and then gave this quantity hourly throughout the day. The amount varies with the weight of the patient, and whether he be confined to bed or living an active life. The alcohol burnt up by the average diabetic is of the order of 7 to 10 c.cm. an hour. By this method of administration no symptoms of alcoholism are produced, for the alcohol in the blood and

nervous system is never more than a trace at any time of the day. If the amount is increased beyond that oxidized there will be a slight accumulation of alcohol in the body and the patient may become drowsy and sometimes flushed late in the day, but this can be avoided by reducing the amount. Thus, allowing the patient eight hours' sleep, a small dose of 7 c.cm. of alcohol or thereabouts can be given each hour for sixteen hours, in which case 112 c.cm. of alcohol are oxidized, supplying 630 calories of heat. This is a minimum, and in practice larger quantities of energy can be obtained from alcohol in specific cases. The energy supplied in this way without producing toxic symptoms or increasing the sugar in the blood makes all the difference to the treatment of severe cases of diabetes, and allows the patients to live a more active life and at the same time retain their weight.

It is most important in giving alcohol for therapeutic purposes, especially if drunk repeatedly and over any length of time, to dilute it well. In some cases, no doubt, the therapeutic effect most desired in prescribing alcohol is its irritant action on the mucous membrane of the mouth, oesophagus, and stomach. But it is usually necessary to eliminate this irritant effect, and in this connexion it may be stated that alcohol in concentration of 10 per cent. or over will produce gastritis if taken repeatedly, especially on an empty stomach. In diabetes, for instance, it ought to be diluted to 5 or 6 per cent. strength. Even where the drug action of alcohol is required for therapeutic purposes, except when it is specifically given as an irritant, it is best given in a dilute form; dilution of quantities up to 30 c.cm. makes but little difference to the intensity of its action. Vernon tested the relative effects of drinking 30 c.cm. of alcohol in 40, 20, and 5 per cent. solutions on the efficiency of typing memorized passages, and found that the 5 per cent. solution resulted in three-quarters of the increase in errors produced by the 20 and 40 per cent. solutions. Therefore, by diluting therapeutic doses of alcohol, its effect as regards the irritation of the stomach is lost, but its action after absorption is not greatly affected. It will be seen later that dilution becomes of still greater importance when larger quantities of alcohol are imbibed.

The foregoing facts as to the food value of alcohol throw some light on the condition of corpulency so commonly found among chronic alcoholics. While there is no evidence that alcohol itself is converted into fat, we have seen that it replaces and conserves fat already present in the body. In the case of malt beverages the constituents other than alcohol are an additional source of energy and their carbohydrate quota is readily converted into fat. Another factor of importance in this connexion is that alcohol diminishes activity by its narcotic action on the nervous system, and for this reason also encourages the accumulation of fat.

To sum up, alcohol can supply a large amount of energy to the body both in health and disease. This can be made use of especially in diabetes mellitus. In giving alcohol as a food in disease it is important to reduce to a minimum its drug action. This can best be done by (1) giving small doses frequently—for instance, hourly doses of 7 to 10 c.cm. that can be oxidized in this time, and (2) by diluting it down to about 5 per cent. strength.

Alcohol in Starvation and Exposure.

Considering the amount of energy that can be supplied to the body by alcohol, it might be thought that in the treatment of starvation and exposure this substance would have great merits. This idea is increased by the knowledge that alcohol in these conditions brings a sense of comfort such as no other drug can bring. The skin vessels are dilated by the alcohol, a sense of warmth pervades the body, and, in addition, anxiety and worry are forgotten. There is but little wonder that in these conditions alcohol is often regarded as a panacea. In some cases this is true, but in others the giving of alcohol is bad practice. We must see what the closer study of alcohol teaches in this matter.

While it is true that alcohol can supply a large proportion of energy to the body, it is different from other foodstuffs in that it has no stimulating effect on the metabolism. In other words, alcohol has no specific dynamic action, while, according to Rubner, the specific dynamic action of meat protein is 44, of fat 16, and of carbohydrate 10. Suppose, for instance, a man is starving and alcohol alone be given him, his production of heat will not increase. If he is given carbohydrates his production of heat will increase slightly. If given protein, the metabolism will be greatly stimulated. Although alcohol supplies heat as the result of its combustion, it does not make any more energy immediately available for the body; while protein, which gives less heat on combustion, stimulates the metabolism and affords on immediate increase in available energy. Alcohol conserves the stores of protein, fat, and carbohydrate. In the case of the starving man to whom alcohol is administered its first effect is to dilate the cutaneous blood vessels, thereby allowing a rush of blood through the skin. This affords a feeling of warmth and well-being but, by increasing the temperature of the skin, increases the heat loss. Since alcohol does not increase the metabolism, if no other food be available it is clear that the temperature of the body must fall, for the increased heat loss is not counterbalanced by increased heat production. If the alcohol also induces drowsiness and exerts its narcotic action on the neuro-muscular mechanism, the heat production may be still further reduced, with a corresponding increase in fall of temperature, and death may ensue. We see, therefore, that in cases of hardship and exposure, alcohol ought never to be given or taken unless there is an immediate possibility of obtaining more food and shelter. Where additional food and warmth are attainable, alcohol as a means of producing an immediate sense of comfort may be justifiable since the above reasons against its administration are no longer present.

Alcohol and Heredity.

I wish now to refer briefly to the work of Stockard, whereby facts of apparently fundamental importance as regards the relation of alcohol to certain problems of heredity have been brought to light. There has long been in the minds of people the idea that toxic substances such as alcohol and the virus of syphilis may injure germ-cells in such a way that the progeny, not only of the exposed parents but also of the unexposed succeeding generations, are abnormal. Stockard's investigations appear to lend strong support to these views and to supply a means for working out the subject by a scientific method. By placing male guinea-pigs in air containing alcohol vapour for periods of one hour each day—that is to say, until they are completely intoxicated—for six days in the week, and then crossing them with untreated normal females, Stockard was able to show that the progeny are often aborted, and that of those surviving there is a high percentage of abnormalities, including (1) absence of eyes, (2) defect and sometimes absence of brains, (3) nervous symptoms of the nature of paralysis agitans. These abnormalities, which must be the result of damage to the male germ cell, may be transmitted through several generations, although none of the succeeding parents are again exposed to the alcohol vapour. The damage to the germ cell is, in fact, transmitted to the offspring, and only slowly returns to the normal through succeeding generations.

The treatment of the male guinea-pigs was very severe, and an analogous state could only be found in human beings in very exceptional cases. Before these results are accepted as being directly applicable to man further careful inquiry and investigation must be made. But to have put a problem of this type on to an experimental basis seems to me to be an achievement of great value.

Alcohol and Drunkenness.

So far I have dealt with the effects produced by amounts of alcohol that could reasonably be given for therapeutic purposes, and I shall now deal with drunkenness, and briefly discuss some of the conditions which influence the development of this condition. Undoubtedly the same factors also influence the slighter effects of alcohol, but they become more prominent, and are more easily studied, in connexion with pronounced degrees of intoxication.

1. *Size.*

It takes more than the proportionate amount of alcohol to raise the alcohol concentration in the blood to a definite point in the case of a large animal, and especially a large fat animal, as compared with a small animal. If this result applies to man, as it probably does, then supposing there were two men, A and B, of weight 7 st. and 15 st. respectively, all other conditions being equal, it would be necessary to give B more than twice the amount of alcohol drunk by A to make them equally drunk. The corpulency and size of the chronic alcoholic is undoubtedly largely responsible for his apparent tolerance.

2. *Dilution of Alcohol.*

Whereas with small quantities of alcohol the rate of absorption into the blood stream and therefore the symptoms

of intoxication do not greatly differ whether it is drunk as a 5 per cent. or a 20 per cent. solution, with larger quantities such as will produce drunkenness the concentrated solution is absorbed more rapidly and reaches a higher maximum in the blood. Corresponding to this, the degree of intoxication produced by the strong solution is more intense. These differences in intoxication dependent upon concentration hold even when all the alcohol in each case is imbibed in the same time. In practice, however, another factor is introduced with dilution which is of greater importance in comparing the intoxication symptoms produced by weak and strong alcoholic solutions—namely, time of drinking. The volume of a concentrated alcoholic solution, such as whisky containing 20 per cent. alcohol, necessary to produce the most profound degree of intoxication can be drunk in a few moments, whereas to imbibe the same amount of alcohol in a dilute form such as beer may take hours of steady drinking. During these hours alcohol already absorbed is being oxidized, thereby preventing the alcohol concentration in the blood ever attaining the high maximum which is found in the case of the concentrated solution. The relative intoxicating power of concentrated and dilute alcoholic beverages—for example, whisky and beer—is very different when their action on man is compared, but the problem is not a simple one, and limitation of space prevents further discussion here. Diluting an alcoholic beverage already dilute—for instance, converting a 5 per cent. into a 3 per cent. beer—makes a very great difference in the intoxicating power for the same reasons. I have seen no evidence that there is any truth in the popular belief that mixed drinks have special intoxicating properties except in so far as more of each beverage may be drunk or the average concentration of alcohol increased.

3. *The Influence of Food.*

Food in the stomach and alimentary canal has a great influence on the absorption of alcohol into the blood stream, and therefore on the symptoms of alcoholic intoxication. Practically all foods have some effect in inhibiting the absorption, but milk stands in a pre-eminent position. Nor is it necessary that the milk be drunk with or immediately before the alcohol. Some inhibiting influence is seen even if taken as long as four hours beforehand. Experiments demonstrate that the most important inhibitory factor in milk is the fat. These results have been extended to and confirmed in man. The extent to which milk can modify or eliminate the worst symptoms of alcoholic intoxication is most striking. The popularity of a combination of rum and milk among north-country men is a clear indication that the empiricist has arrived at this fact before the scientist.

4. *Intervals between Drinks.*

If it is desired to reduce the symptoms of intoxication by introducing an interval between drinking periods instead of by diminishing the amount of alcohol drunk, then this interval ought to be long. The fact that the interval must be long depends on the slow rate of alcohol oxidation in the body as compared with the size of the intoxicating dose. After a good carouse it will take ten to eighteen hours for the alcohol to be cleared out of the circulation of a man. Its presence in the blood indicates the reason for the lack of appetite at breakfast on these occasions.

5. *Effect of Exercise.*

Muscular exertion increases the rate of oxidation of alcohol in the body and hastens its departure from the blood. With small quantities of alcohol in the body exercise increases its combustion at the same rate as that of carbohydrates and fats (Atwater and Benedict). With larger quantities, when its toxic action is greater, exercise does not bring about the same increase in rate of oxidation. A person taking exercise can drink larger quantities of alcohol than one leading a sedentary life because the rate of combustion is increased by the exercise. In conditions of inebriation walking "works off" the effects more rapidly. Probably a part of this action is due to the better opportunity of the central nervous system to restore a perfect co-ordinating mechanism as the result of practice, and partly to the increased rate of combustion of alcohol in the body due to exercise.

6. *Tolerance.*

So far as my experience goes, tolerance as regards alcohol is insignificant as compared with that which develops in the use of morphine. I have seen no evidence that the rate of oxidation is increased in those continually drinking alcohol, nor, if it is taken under constant conditions, have I seen evidence of the development of great tolerance. It remains true, of course, that many factors influence drunkenness—such as the rate of drinking, dilution, size and fatness of the individual, and the amount of exercise being taken. Even the novice can take large quantities of alcohol in the course of a day without being at all intoxicated if he takes it in the right way. If all the circumstances under which the habitué drinks be investigated, and the various influences described above be allowed for, it will be seen that alcohol tolerance is less than is usually thought.

GENERAL DISCUSSION.

PROFESSOR A. R. CUSHNY (Edinburgh) said that the discussion on this subject was to have been opened by the late Dr. Rivers, of Cambridge, whose untimely death they all deplored. Rivers had done some admirable work on the alcohol problem; he was the first to show that in examining the action of alcohol it was necessary to use controls. The discussion would be the poorer for his absence. He himself agreed almost completely with Professor Mellanby's argument. In connexion with the long-disputed question of the food value of alcohol, he recalled the storm which arose when Atwater and Benedict propounded their results. He thought that everyone now recognized that alcohol had some food value—that is to say, it really could yield energy. The body was able to use alcohol as a source of energy just as an engine used coal. This, however, did not mean that alcohol was a desirable food or one to be recommended. Professor Mellanby had given an extreme case in which the value of alcohol had been demonstrated, but that was a medical case, and did not refer to a normal condition at all. Many things could be used to give energy to the body, but regard must be paid to their effect upon the body in other ways as well, for some of them had a poisoning action. Green apples undoubtedly gave energy to the body, but it was a question whether they were good food. Although alcohol conferred energy, it weakened the brain. It was a food, but it was also a poison or a drug. He thought also that the value of alcohol as a food had been greatly exaggerated of recent years. The amount of food to be obtained in alcohol was surprisingly small. A good ordinary pre-war beer, which might be taken as a type, was about equivalent, pint for pint, in food value to a good sweetened cup of coffee containing milk. No one imagined that when he partook of his breakfast cup of tea or coffee he was absorbing a food of any particular value, and the value of beer was no greater. Nevertheless, in certain conditions, notably diabetes, alcohol might be very useful for its food value in a specific case.

THE REV. C. C. WEEKS, M.R.C.S. (Beckenham), said that human economy might be defined, generally, as relating to the science and art of managing the concerns and resources of society and its constituent units, so as to secure the highest degree of efficiency and well-being, and particularly to the operations of nature in the generation, nutrition, and preservation of life or the system under which the functions in health and disease were performed. The present rate of alcoholic indulgence was undoubtedly a powerful coefficient of disease and inefficiency, and when opportunities for drinking were restricted there was a marked diminution of all the conditions thought to be associated with alcoholic indulgence. It had to be remembered, also, that during the last hundred years a great body of experience had arisen as to the value of total abstinence. Professor Cushny's statement that although alcohol had some energy value it was not a recommendable article of food was well borne out by a reference to modern textbooks of physiology, where it was quite well recognized and agreed that alcohol did not repair, build up, or renew the tissues, did not increase the rate of absorption of food, did not promote body temperature, tended to upset the water balance of the cells, had no specific dynamic action, could not be stored in the body for future use, and failed to co-operate with other foodstuffs in stimulating the metabolic processes. On the other hand, alcohol was costly to produce and to purchase, and costly in its effects upon the human organism.

DR. CHARLES F. HARFORD referred to a paper he had contributed to the Society for the Study of Inebriety on racial psychology in its relation to alcoholism, in which he had put forward a theory of drug dissociation, to which he desired to return. The term "dissociation" was a fundamental one in

psychopathology, but it was not always used in the same way by different teachers, and he himself would give it a wider meaning than many. Cases which had been recorded under the heading of multiple personality were among the most conspicuous instances of this state, but a similar condition was produced by hypnotism, and in a sense there was a definite dissociation taking place in natural sleep. Obviously the condition was not always a morbid one, though in extreme forms it was one of the most striking signs of insanity. After relating particulars of a recent case in which a man convicted of fraud had put forward the defence that he was influenced by alcohol in such a way that it amounted to a case of dual personality, so that he was irresponsible for his actions—a plea the magistrates did not accept—the speaker went on to show that this process of dissociation was common to each stage of the alcohol habit. Three stages were described in the manual published by the Liquor Control Board, *Alcohol, Its Action on the Human Organism*. The first was a feeling of well-being, with a blunting of self-criticism, instanced by a public man, burdened with many cares, who delivered himself of a vivacious and rather irresponsible after-dinner speech, in which he seemed at peace with the world and oblivious to common cares. Dissociation was met with here at an early stage, but it was an important step in a habit which might assume a very different complexion. The power of concentration on one thing, and exclusion of others, was of the essence of self-control, but an artificial dissociation produced by alcohol and kindred drugs tended to weaken the control which was one of the primary factors in sanity and health. To adopt the phraseology of Freud, the "pleasure principle" under the influence of alcohol was in the ascendant, while the "reality principle," which should have served as a drag upon the wheels, was failing to fulfil its purpose. The second stage might be described as that of uncritical self-satisfaction, disregard of conditions normally evoking caution, trespass of conventions previously respected, impaired appreciation of the passage of time, loquacity, and an argumentative frame of mind. This stage was definitely within the domain of psychopathology. Every one of its distinguishing marks characterized also the cases in mental hospitals. These people were insane, but owing to the fact that the cause of the condition was known to be the taking of alcohol, and the symptoms were temporary, they were spoken of as intoxicated. This was a stage in which dissociation was most clearly marked; the "pleasure principle" had asserted itself, while the "reality principle" had become thoroughly ineffective. The third stage was an accentuation of all these symptoms, leading to somnolence and insensibility, or even to delirium. This was dissociation-alcoholism in its most hideous form. It was impossible to discuss the alcohol problem without recognizing its moral implications, and psychology made it necessary to take account of these. If it was true that alcoholism was in the main a disorder of the mind it must be dealt with by the best psychological methods. To attempt to kill the craving for alcohol by enforced confinement could only result in the repressions of Freud or the law of reversed effort of Coué and Baudouin. For his own part, he believed the greatest hope to be in the practice of auto-suggestion, but whatever method was adopted must depend upon the recognition of the psychological aspect of alcoholism.

Mr. THEODORE NEILD, M.A., felt, as a layman, that further information as to the action of alcohol on the body was needed. It was stated that only a definite quantity could be oxidized in unit time by a man of given size at rest, and that it was only with low concentrations that exercise increased the combustion of alcohol. Stronger concentrations seemed so to affect the cells of the body as to reduce the combustion to the low concentration order, and Atwater and Benedict set down only 2 per cent. as secreted. Where did the large balance, beyond the 180 c.cm. or so that could apparently be oxidized, go to? Professor Mellanby, in the Special Report (No. 31) of the Medical Research Council, remarked that with low concentrations it appeared as if some demand were first made on the small quantity of alcohol by some other tissues before the blood received its portion. Was it possible that some such tissue absorption might account for the mysterious disappearance of the balance of heavy quantities of alcohol drunk by some persons? The speaker further asked whether the experiments of Atwater and Benedict had not governed us long enough. The experiments were criticized when they appeared by Professor Gowland Hopkins, and the late Sir G. S. Woodhead had told him that he greatly desired to repeat them. Was it not possible now to repeat those experiments?

Professor W. E. DIXON (Cambridge) was convinced that a discussion such as that could lead to no useful purpose. As Professor Cushny had referred to some experiments by Dr. Rivers, perhaps as he (the speaker) was associated with Rivers in these experiments he might say a few words. Rivers measured the amount of work which men were able to perform, and did it in a very accurate manner; then he gave these men a certain quantity of alcohol and again measured their work. The work always increased under this stimulus. It looked as if, having got his "drop," the man set about to do his very best. But the man had to be given his alcohol every day—sometimes the alcohol was carefully masked—and it was found that the amount of alcohol had to be increased before it had any effect on increasing the output. To the man who had been taking alcohol, 20 c.cm., properly diluted, had no effect in increasing the work; it was not until he increased the potion to 40 c.cm. that the amount of work was increased.

Sir JAMES BARR (Liverpool) congratulated Professor Mellanby on a very able and temperate paper. The advantages of alcohol were not very obvious, and to the person who did not take alcohol it was very difficult to realize any advantages at all. While praising the temperate character of Professor Mellanby's paper, he thought that the doses given in his experiments were intemperate. Mellanby talked of giving 7 or 10 c.cm. of alcohol every hour. In whisky 10 c.cm. was equivalent to about $1\frac{1}{3}$ oz., and in 5 per cent. beer to about 7 oz., and a man who drank a glass of beer every hour of the day would not be in a fit condition for doing much. He did not think there was much use for alcohol in the pharmacopoeia. It was more as a beverage from the social point of view that alcohol should be regarded. He attributed a large amount of the present-day unrest to the expensiveness of alcohol, and added that the murderers and cut-throats in Ireland, Russia, and elsewhere were very largely teetotalers. He would be sorry to see the moderate use of alcohol abolished in this country.

Dr. JAMES CHALMERS (Sunderland) said that as a student he was taught that alcohol, well diluted and taken only with food, assisted digestion. As a medical practitioner of thirty years' standing he saw no great reason to depart from that conclusion. He himself, however, was a total abstainer, in the first place because it required all the wits he could summon to carry on his professional work without any mental handicap from indulgence in alcohol; secondly, because alcohol weakened the will, and if a man began to use it he did not know where he was going to stop; and, thirdly, because an abstainer was free from many degenerative changes from which alcoholics suffered, and if he did have any disease he had a better chance of recovery than the alcohol-consuming person, and the recovery was more complete. At the same time a little alcohol, well diluted, was a valuable adjunct to the treatment of pneumonia and enteric fever.

ALCOHOL IN ITS RELATION TO THE PROBLEMS OF MENTAL DISORDERS.

BY

Sir FREDERICK W. MOTT, K.B.E., M.D., LL.D., F.R.S.

I PROPOSE to discuss the subject of alcohol in relation to mental disorders under three headings, according to my experiences, first, as a member of the Scientific Committee of the Liquor Control Board; secondly, as Physician to Charing Cross Hospital and Pathologist to the London County Asylums; and thirdly, as a neurological expert in the army during the war.

PART I.

The Physiological Action of Alcohol on the Nervous System.

The main effects of alcohol that have any real significance are upon the nervous system. The action of alcohol on the nervous system is essentially sedative, and, with the possible exception of its direct influence on the respiratory centre, is not truly stimulant. The apparent stimulant effects are due to the narcotic effects of alcohol on the highest controlling

centres of the organ of mind, leading to a release from control of the evolutionary lower centres.

"The emotional dispositions or capacities of man are of very ancient racial endowment, and have their physiological localization in the basal ganglia, the lowest levels of the great brain, the parts which are alone represented in the lowest vertebrates. The higher intellectual faculties, on the other hand, are the latest acquired and are connected with the anatomically latest developed parts of the brain. Intermediate between these come, in the order of development, the sensory and skilled motor functions and their nerve centres."

Proportional to the degree of concentration of alcohol in the blood, and thereby in the cerebro-spinal fluid, is the effect in depression or suspension of the functions of the various evolutional levels in the inverse order of their phylogenetic and ontogenetic development. The last to come evolutionally, therefore the least stable and firmly organized, is the first to go. This highest functional psychic level, which is so varied in capacity in different individuals, has developed *pari passu* with progressive evolution of the social instinct. Now the feelings of a civilized human being are largely dominated, and his behaviour determined, by the customs, traditions, religion, and social usages of the community and race. Experience shows that disorders of conduct arising from the effects of alcohol—and in speaking of disorders of conduct I refer to all forms of antisocial conduct, whether it be crime or insanity—are dependent not only upon the quantity of alcohol consumed, and the period over which inebriety extends, but even more upon the inborn degree of organization and stability of this highest psychic level.

Evolutional Levels of Hughlings Jackson in Relation to the Effects of Alcohol.

Hughlings Jackson, in his philosophic paper on the factors of insanities, pointed out that the different depths of dissolution of the evolutional levels, and the positive and negative phases of symptoms arising as a result of successive dissolution of these levels, constituted a basis for the study of insanities. Maudsley has stated, "A drunken man notably exhibits the abstract and brief chronicle of insanity, going through its successive phases in a short space of time." Let us see how far these views accord with the facts.

Alcohol affects as a narcotic the synaptic junctions of all the neurones, but it affects first the synapses of this highest evolutional level, causing at first hypofunction, and later loss of function. The effects are not stimulant on this level, but sedative and narcotic; alcohol thus releases from control the lower levels, thereby permitting a positive phase in the lower levels—for example, a brisk flow of ideas translated into speech and action associated with self-confidence. There is, however, a diminution of self-criticism, deliberation, and judgement when this level is narcotized by alcohol: and this psychic level being inherently of a deficient organization and stability, a small quantity is sufficient to produce this effect. Experiments show that alcohol taken under conditions of restful environment and mental placidity—that is, where there is no external or internal exciting cause—has a sedative effect, and leads to drowsiness and sleep. Consequently, the apparent stimulating effects are due to the narcotic action on the highest psychic level and release of control over the lower levels, which are thereby much more easily roused by internal or external stimulation to activity.

As alcohol concentrates in the blood the second depth of dissolution occurs. This is a progressive falling off of awareness and self-criticism, which is manifested by excited talk, aggressiveness, and inflamed emotions, accompanied by fine sensory-motor disturbances as exhibited in difficulties of articulate speech, diminished acuity of aesthetic sense perceptions, and more or less clumsiness in the execution of fine skilled movements.

In the third stage of dissolution the negative condition of the higher functions of the organ of mind is very great. There is manifest evidence now of affection of lower levels by coarse sensory-motor disorders—for example, double vision, motor inco-ordination, instability of gait and station, incoherent ideas in conversation; on the emotional side the individual is either expansive and quarrelsome, or melancholic and maudlin, the *vin gai* and *vin triste* of the French, and the drunk and disorderly of our police courts.

In the fourth stage of dissolution there is a total dementia and stupor with stertorous breathing, and often incontinence of urine and faeces. Gradually these conditions pass over into a state of deep sleep, after which the patient usually returns to the normal condition. In some cases, however, when the quantity of alcohol taken is very large, the vital centres are so greatly affected that the drunkard may become comatose and die of failure of respiration. It is generally estimated that when the blood content is 0.6 per cent. of alcohol, which amounts to about 14 oz. of absolute alcohol, or nearly a pint and a half of proof spirit, there is a considerable likelihood of death ensuing. The quantity of beer which would contain this amount of alcohol would be over two gallons, so that it is easy to understand that a concentration in the blood sufficient to kill is not so likely to occur with beer as with spirits.

Tolerance to Alcohol of the Habitual Drunkard.

As a result of continued use, tolerance can be acquired, so that the habitual drunkard may consume, without becoming intoxicated, quantities of alcoholic beverages which would cause well-marked signs of drunkenness, or even prove fatal to the person not accustomed to it. The acquisition of tolerance, however, implies a removal of a protective mechanism, for it allows the drunkard to imbibe daily quantities of alcohol which he could not have taken if his brain had retained its normal power of reacting to it; eventually he becomes a chronic inebriate, and develops sooner or later pathological conditions.

PART II.

I will now pass on to my experiences as Physician to Charing Cross Hospital and Pathologist to the London County Asylums. These were the subject of a report to the International Congress of Psychiatry held in Amsterdam in 1907.

Unreliability of Asylum Statistics in Relation to the Influence of Alcohol in the Production of Insanity.

The statistics relating to alcohol and insanity in the London County Asylums (for thirteen years) show that the percentages of admissions in which alcohol was the asserted cause of insanity varied considerably in different asylums in the same years and in the same asylum for different years, and the differences were so great that the collected statistics derived from this source are not reliable. The personal equation of the medical officers who obtained the information and the friends who gave it, as to what constitutes alcoholic excess, and as to how far alcohol is an efficient cause, or merely a coefficient in the production of insanity, was variable. Thus in one year, 1902, from the same class of people, alcohol is the assigned cause of 25.6 per cent. of the admissions to Hanwell, and to Claybury 11.2 per cent.; but in 1906, in 28 per cent. of the admissions to Claybury intemperance is the assigned cause, while at Colney Hatch it is only 14 per cent. At Bexley, where the statistics appeared to be fairly uniform since its opening, intemperance as an assigned cause was high, the average being 22.8 per cent. for the seven years; but an analysis of the cases admitted during 1905 to this asylum, in which intemperance was the assigned cause in 25.7 per cent. of the total admissions, shows that there were many in which other causes were associated. Thus, out of 248 male admissions, alcoholic excess was the assigned cause in 46, or 18.5 per cent., and out of 246 female admissions alcoholic excess was the principal cause in 33, or 15.4 per cent.—a total percentage on the whole admissions of 17 per cent. But when we inquire into these cases, we find that 15 were imbeciles, 5 were cases of chronic delusional insanity, 5 were epileptic, 5 had organic dementia, and no less than 20 were cases of primary dementia. In fact, out of the 84 cases quite one-half were lunatics or potential lunatics and the subjects of an inborn tendency to mental disease. My experience at Hanwell, Claybury, and the other asylums I visited corroborated this statement.

The Histories in the great Majority of Cases in which Alcohol was an Assigned Cause show an Inborn or Acquired Intolerance.

I have found that the notes show hereditary insanity or epilepsy quite as frequently in these so-called alcoholic cases as in other forms of insanity, and more frequently than in general paralysis. In the histories of these cases of insanity as a result of intemperance we find frequently potential insanity, chronic alcoholism in one or both parents, inherent instability in the form of neuropathics, imbecility, criminal degeneracy, epilepsy, and intolerance of alcohol as manifested by previous admissions, when they were termed recurrent mania, recurrent melancholia, sometimes head injury, brain

disease, or incipient general paralysis. Suicidal tendency and active attempts at suicide, occasionally murderous assaults or homicidal tendencies, indecent assaults upon children, rape and other sexual crimes are occasionally met with in the histories. Again, the history frequently reveals that the patient has taken to drink on account of domestic troubles, bodily illness, loss of money, breaking up of the home, and all those conditions of life in which alcohol is at first taken to obtain temporary relief by those who are burdened with sorrow and despair, the ill-fed and miserable, subjects of mental and bodily suffering. Those, again, who, owing to a suspicious or melancholic inborn temperament, can perforce only see the black side of life, who are potentially insane, under the toxic influence of alcohol develop hallucinations and delusions of a persecutory character.

Polyneuritic or Korsakoff Psychosis, the Type of Insanity in which Alcohol is the Essential Cause.

The types of insanity in which alcohol is the *essential* cause are not nearly so frequently seen in asylums as is generally supposed; they differ but little from the cases met with in hospitals. They are delirium tremens, mania a potu, and polyneuritic psychosis, or Korsakoff's disease, which is generally regarded as a form of chronic delirium tremens, and affects women more frequently than men. Doubtless a considerable number of pure alcoholic cases are kept in the infirmaries, and only those in which the mental symptoms are pronounced and prolonged are sent to the asylums. We may thus divide the cases of alcoholic insanity met with in asylums into two great groups:

I. Those with intolerance to alcohol, owing to a *locus minoris resistentiae* in the nervous system, especially of the highest evolutional level. These cases are the most numerous.

II. Those in which chronic alcoholism, usually in conjunction with some other factor, such as syphilis, tuberculosis, microbial toxaemia, arterio-sclerosis, head injury, or organic brain disease, induces sooner or later either delirium tremens, polyneuritic psychosis, or alcoholic hallucinosis.

Consequently, cases belonging to Class I can very seldom drink sufficient alcohol extended over a sufficient time to produce advanced cirrhosis of the liver with ascites. A good many may drink sufficient to produce changes in the liver discoverable by microscopical examination, but very few sufficient to produce a change recognizable by the naked eye.

Class II, however, includes cases of alcoholism affecting persons of an inborn stable mental organization as a rule; consequently it is in such cases especially that we find the few cases of large, fatty, and cirrhotic liver on the *post-mortem* tables of asylums.

Statistics of Post-mortem Examinations in Hospitals and Asylums Compared.

If, now, we compare the statistics of hospital and asylum *post-mortem* examinations we are struck with the fact that in the former there are a large number of cases of advanced cirrhosis of the liver, whereas in the latter there are relatively few, and many of those only recognizable with difficulty. I will throw on the screen a statistical analysis of the results obtained in 1,099 autopsies on adults at Charing Cross Hospital, compared with 1,271 *post-mortem* examinations at Claybury. An analysis of the results obtained by Sir Humphry Rolleston and Dr. Fenton on *post-mortem* records extending over ten years at St. George's Hospital is given, and in the main it supports the opinion that the statistics derived from Charing Cross Hospital agree with those which could be obtained at other London hospitals.

The principal points of interest which this tabular synopsis of a comparative inquiry into the *post-mortem* incidence of cirrhosis of the liver at Charing Cross Hospital and Claybury Asylum afford in relation to the subject of alcohol and insanity may be thus summarized:

At Charing Cross Hospital the notes of the autopsies upon 1,099 adult cases were examined—735 males and 364 females. Of this number there were 85, or 7.7 per cent., cases of cirrhosis of the liver, which accords closely with the 8 per cent. in which alcohol was the immediate and direct cause of the disease for which patients were admitted to the hospital. The percentage of males was 9.1, and of females 4.9.

At Claybury Asylum the notes of 1,271 autopsies were investigated (627 males and 644 females). Of this number only 23 cases of hepatic cirrhosis were found (14 males and 9 females). The total percentage of cirrhosis of the liver works out at 1.8 per cent. (males 2.2 per cent. and females 1.3 per cent.).

There are a number of points of interest to which the synopsis refers, but I will limit my remarks thereon to the following more important facts which have been elucidated—namely, that no case of cirrhosis *with ascites* occurred at Claybury Asylum, whereas of the cases of cirrhosis at Charing Cross Hospital 66.6 per cent. had ascites, 22.2 per cent. with a history of paracentesis abdominis. At Claybury, in only one instance of the 23 cases was cirrhosis of the liver mentioned as the assigned cause of death, whereas at the hospital in 72.2 per cent. of the 85 cases cirrhosis of the liver was assigned as the cause of death. The cases of cirrhosis of the liver met with on the *post-mortem* table at the asylum were mostly cases of polyneuritic psychosis and alcoholic dementia, but there were also a few cases of general paralysis. The single case in which cirrhosis of the liver was the cause of death occurred in a chronic alcoholic billiard-marker, who was admitted to the asylum because he had attempted suicide. This man had previously given himself up to the police as having murdered a woman, which was a delusion. When in the asylum he knew that he suffered with cirrhosis of the liver, and he stated that he felt so miserable on this account that he had attempted suicide. The liver weighed over 2,000 grams. The relatively greater frequency with which acute and chronic gastritis and other inflammatory lesions of the stomach are met with in cases of alcoholic affections of the liver among the insane is shown.

There is a greater frequency of arterio-sclerotic changes associated with cirrhosis of the liver in the case of the insane, especially among the males. Atheroma and pearly fibrosis of the aorta is common on the *post-mortem* table, even in comparatively young people, in asylums. Probably this is explained by the fact that a large proportion of the deaths occur in the subjects of general paralysis, due to the syphilitic origin, acquired or congenital, of this disease.

It may be remarked that in only four of the fatal cases occurring at the hospital were there nervous symptoms associated. In fact, it is noteworthy that alcoholic cirrhosis of the liver with pronounced ascites and a history of prolonged intemperance, even excessive intemperance, frequently occurs in individuals who show absolutely no mental symptoms beyond a weakened will and loss of moral sense, shown by the indulgence of a vicious habit.

Regional Dissociation between Alcoholism and Insanity.

I would therefore agree with Dr. Sullivan[1] and Dr. Bevan Lewis[2] that alcohol as an *efficient* cause of insanity is not so great as the published reports of the Lunacy Commissioners indicate. In support of this I will briefly indicate some of their arguments. Dr. Bevan Lewis has shown a regional dissociation between alcoholism and insanity. Thus inland and agricultural communities were the least inebriate, but had the highest ratio of pauperism and insanity; while maritime, mining, and manufacturing communities above all others were the most intemperate, and revealed the lowest ratios of pauperism and insanity. Dr. Sullivan, by careful analysis and tables, shows conclusively that in the regional distribution of insanity it is difficult to trace any evidence of alcoholic influence such as might be expected if alcoholism really accounted for a sixth of the total number of cases. Thus Lancashire, Warwick, and Cheshire, which rank very high in the scale of alcoholism, and the mining counties, where drunkenness is very rife, are alike in showing very low rates of insanity. He concludes that alcohol, as the essential cause of certified insanity, falls a good deal short of the 16 per cent. at which it is rated in the official statistics, and may possibly be something under 10 per cent.

Intolerance of Alcohol in Mental Defectives.

Dr. Branthwaite, in his Report of 1905 concerning certified inebriate reformatories established under the Inebriates Acts, 1879, 1900 (p. 10), remarks:

"Upwards of 62 per cent. of the persons committed to reformatories under the Act are found to be insane or defective in varying degree. I am satisfied that the majority of our insane inebriates have become alcoholic because of congenital defects or tendency to insanity, not insane as the result of alcoholism, and that the drunkenness which preceded alcoholic insanity was merely the herald—the only obvious sign—of incipient mental disorder. In relation to the final insanity, drunkenness in such cases is the intensifier perhaps, but not the cause of the disease."

Concerning the congenital defectives, who are divided into two classes—(*a*) comprising degenerates, imbeciles, and epileptics, and (*b*) moral and social defectives—he remarks:

"A marked intolerance to the action of alcohol is present in both refractory and quiet class of defectives, very small quantities of

drink, no more than is taken daily without apparent physiological effect by an ordinary individual, being sufficient to cause disorderly and violent behaviour. Our experience in this direction has led us to accept the view that intolerance to the exciting effects of small quantities of alcohol may be considered a fairly certain sign of impaired mental equilibrium."

I think I have given sufficient evidence to show that the effects of alcohol depend not only upon the quality and quantity taken but also upon the personality of the individual who takes it.

The Different Pathological Effects of Alcohol upon Different Individuals.

We are prepared now to understand how very different is the effect of alcohol on different individuals. Let us consider first the well-fed workman, business or professional man of normal mental stability, who on account of his occupation becomes the victim of a vicious habit of indulgence in alcohol to excess. The normal sense of well-being in such an individual which comes from physiological nutritional equilibrium is gradually perverted and replaced by an artificial sense of well-being, owing to the effect of the alcohol. Sooner or later visceral disturbances—notably gastritis—lead to loss of appetite and failing nutrition, with more or less persistent *disorder of his organic sensibility*. The craving for spirits replaces the desire for food, and the vicious habit has so altered his nervous system that it can no longer function without stimulant. For a time the symptoms of disordered organic sensibility due to chronic alcoholism—namely, pain and oppression in the region of the heart, dyspepsia, anorexia, nausea, and morning vomiting, muscular weakness and tremors—may be relieved by alcohol, but the quantity taken has to be steadily increased to produce the desired effect. A head injury, microbial infection, an extra bout of drinking, and the sudden withdrawal of the alcohol, may lead to delirium tremens, when the drinker becomes dangerous to himself and others. Such subjects of chronic alcoholism may live until advanced cirrhosis of the liver with ascites occurs, from which they eventually die after repeated operations for paracentesis. It may be presumed that they possessed an inborn stable mental organization, and, without having any precise statistical data to prove it, I am of opinion that they would transmit to progeny the stable mental organization they inherited rather than the weakened will power which they had acquired by force of circumstance of environment.

The frequency with which crimes of violence, murderous assaults, and homicide occur as the result of chronic alcoholism indicates that, owing to the loss of control, the natural emotion anger, with its derived sentiment courage, are converted into fury and recklessness. Again, the frequency with which suicide occurs as a result of chronic alcoholism indicates that the normal sentiment of sorrow becomes despair owing to degradation and inability to struggle against adversity. The sentiments of joy and sorrow are strikingly exhibited by the effect of alcohol on two opposite temperaments, and the French speak of the *vin gai* and the *vin triste* types of drunkenness. The narcotic effect of the alcohol on the evolutionally highest psychic level in the chronic inebriate permanently weakens self-criticism, and leads him to become the subject of a vicious habit over which he has no control. Then an extra bout of drinking may lead to criminal actions; such a person, however, is not deemed insane.

Again, chronic alcoholics are very liable to sexual crimes, rape, and indecent assault, also to exhibitionism, assaults on children, and various sexual perversions. According to Dr. Sullivan (*Alcoholism*, p. 164):

"Prison statistics indicate that 60 per cent. of graver homicidal offences and 82 per cent. of assaults are attributable to alcohol, and that in nearly all the cases of the former class and in four-fifths of the minor offences the intoxication had attained a fair degree of chronicity."

To a less degree sexual crimes are due to chronic alcoholism. Thus we know that a chronic alcoholic may be more antisocial although uncertifiable than a certifiable lunatic. The release of highest control inflames the emotions, and it is not surprising, therefore, to find that alcoholism is responsible for a large proportion of the crimes of violence.

It may be asked, How is it that many of these chronic alcoholics in all stations of life are such good skilled workmen and artists? Because individual character also results from one or several inherited tendencies, and the master intellectual feeling—that with which his whole nature is imbued, and the actions of which have by conscious repetition become *subconscious and habitual*—may persist when other feelings have become perverted and gone. Even the *aesthetic feeling*, which is the last to come evolutionally, therefore normally the first to go, may, owing to its constant, habitual, and subconscious activities in associative memory, tolerate better the degrading effects of chronic alcoholism and resist longer the work of destruction than the moral sense; even the elementary feelings of right and wrong may be lost or perverted and the aesthetic sense remain. Thus a chronic alcoholic artist may by his conduct be antisocial and yet still delight the public by his art, whether it be painting, sculpture, music, poetry, or the drama. It is sometimes brought forward as an argument in favour of the use of alcohol that some of the greatest artistic geniuses have used it even to excess. It is assumed that it has stimulated their emotions and imaginative faculties, even if it weakened their will power, and having made them indifferent to social customs, their aesthetic feelings and passions were given full play without restraint. But "poets are born, not made," and their poetic imagination persists in spite of alcohol.

Chronic alcoholism may be manifested in the patient's conversation in various ways. There is often a remarkable tendency to wit and humour, but not infrequently the mental association is rather by rhyme and repetition of well-worn jokes, abusive epithets, and coarse, vulgar stories, with occasionally keen repartee and warm-heartedness. Again, boastful loquacity, untruthfulness, loss of power of attention, and the tendency to relate pseudo-reminiscences, is a common symptom of chronic alcoholism (the character of Falstaff).

Alcoholic Insanity.

Both in hospital and asylum practice delirium tremens is much more frequent in males than in females; whereas polyneurotic psychosis is much more frequently met with in females than in males. Both occur in the subjects of chronic alcoholism. Women often take to drink because of the pains experienced at the menstrual periods, and on account of disease of the reproductive organs following miscarriages, abortion, and venereal infection. I have, moreover, so often found, *post mortem*, metritis, parametritis, and salpingitis in cases of alcoholic paraplegia, that I have thought it probable that the toxins engendered by microbic infection, carried up the lymphatics of the nerves, have exercised an important causal relationship to the polyneuritis.

As a rule the convolutional pattern of the brain in these cases of polyneuritic psychosis denotes a fair order of intelligence, and the wasting of the convolutions and the thickening of the membranes is slight as compared with that occurring in general paralysis.

There is a form of alcoholic dementia of the expansive form that simulates general paralysis. The patient may suffer with delusions of grandeur associated with some evidence of neuritis, but a diagnosis can always be made by an examination of the cerebro-spinal fluid.

The changes in the brain in alcoholic dementia are not marked as a rule, and do not, in my opinion, account for the symptoms as they do in general paralysis, where the dementia is in great measure proportional to the cortical destruction.

The great proportion of cases which are statistically included under alcoholic insanity occur in persons of an inborn or acquired unstable mental organization—epileptics, degenerates, imbeciles, potential lunatics, general paralytics, subjects of head injury, local brain disease, syphilis, and arterio-sclerosis.

If alcohol is the essential factor, however, in the production of an insanity, there will be certain specific indications in the varied forms of insanity pointing to the more or less specific action of the alcohol. Even in the absence of a history of alcoholic indulgence there are certain physical signs and symptoms which point to alcohol as the cause. The more definite these signs and symptoms the more certain can we be that the cause is removable and the more hopeful the prognosis. These signs and symptoms are found most pronounced in the two conditions of mental and nervous disorder which occur in hospital practice—namely, delirium tremens and polyneuritic psychosis.

Polyneuritic Psychosis—Korsakoff's Disease.

Although every form of mental derangement may be closely simulated by alcohol when an insane temperament is acted

upon by a sufficient quantity of the poison, yet when alcohol has been an efficient cause in the production of the insanity there are certain indications in the character and constancy of the illusions, hallucinations, and delusions. Illusions of identification of persons are common. The hallucinations and delusions are generally of a persecutory nature, and are possibly due to a deranged and perverted organic sensibility of the body and viscera. In one case a woman with polyneuritic psychosis said her body was on fire and she tried to get out of the window. The next day blebs occurred on the body, and I found acute degeneration of the nerves going to these patches of skin. Often the woman fancies she hears the baby crying and that it is in the bed. Delusions of marital infidelity are especially common in men and may lead to homicidal assaults. Loss of orientation in time and space and of memory of recent events is usually met with, likewise a tendency to pseudo-reminiscences and mental confusion, which in some cases amounts to incoherence, and may then overshadow completely the disturbance of memory. Purposeful motor restlessness, hallucinations, and delusions are common, and tremors of the tongue and the small muscles of the face. Moreover, alteration of the deep reflexes, tenderness on deep pressure of the muscles, anaesthesia, paraesthesia, hyperaesthesia—indicative of neuritic affection—are frequently present, singly or combined.

Alcoholic Hallucinosis.

The cases of alcoholic hallucinosis may, however, show very little or no mental confusion and amnesia, and hardly any loss of orientation. They tend to recover within one to six months after admission, but relapses are frequent. Since auditory and visual hallucinations, especially the former, frequently occur in insanity in which there is no alcoholic factor, it is often difficult to decide simply by the hallucinations and delusions alone whether alcohol is the cause. Should they persist, however, while the mind otherwise becomes clear, it is highly probable that the case is one in which alcohol has only played a subordinate part, and the outlook of recurrent or chronic insanity is probable. This is all the more likely to be so if the hallucinations and delusions become systematized and if there is a complete absence of any peripheral cause.

Dipsomania.

A periodic form of alcoholic insanity, akin to recurrent mania, is met with, termed "dipsomania." Persons who in the intervals are decent sober members of society, leading, perhaps, a blameless life with no intellectual or moral defects, are seized with a craving for drink. Often long periods of normal conduct occur between periods of debauch, in which they go on drinking day after day, taking little food and getting little sleep, until exhaustion from want of food sets in, and, tremulous and miserable, the craving being at last satiated, they return to their home and occupation until another attack occurs. There is usually a morbid nervous inheritance in these cases, and it is regarded by many authorities as a form of manic-depressive insanity.

Alcohol and Syphilis.

Here I would call attention to the effects of alcohol in the spread of venereal disease. Syphilis is so often acquired as a consequence of alcoholic intoxication that the effects of the contagion are frequently attributed to the alcohol.

Part III.

Alcohol and War Neuroses and Psychoses.

An inquiry which I made regarding the influence of alcohol in the production of war neuroses and the value of the rum ration was of interest in relation to the inborn temperament and alcohol. By a card system I found that at least 60 per cent. of 147 cases which were admitted under my care to the Maudsley Neurological Section of the 4th London General Hospital in 1917 were total abstainers, which was double the percentage of 62 cases admitted to Ruskin Park Hospital suffering with wounds or diseases other than functional nervous conditions.

The high percentage of total abstainers among cases of war neurosis and shell shock was associated with fear of the consequences of drink, or a dislike of the taste of drink, consequently refusal to take the rum ration. Fear of the consequences, in a great number of instances, was due to the results in the home of paternal drunkenness, and in fewer instances of maternal drunkenness, or drunkenness in both parents.

It was observed that a number of total abstainers admitted that the rum ration had been beneficial, and that they had taken it when they had to "stand to" in the trenches wet and cold in the early morning, prior to getting over the parapet for an attack.

Moreover, I questioned a number of officers of all ranks, even including advocates of temperance, and with very few exceptions they were convinced of the value of the rum ration if it were given out by an officer who saw that no soldier obtained more than his ration. They emphasized its utility as a stimulant when the men were wet and cold and had to stand to at dawn; it put the feeling of warmth in them, and gave them the necessary stimulus and ardour to go over the parapet for an attack. The general recommendation was to give it in the tea, and the men preferred it so; only a few cared for it neat—it was too strong. Many officers and men were of opinion that on returning to billets, cold and wet through, a rum ration produced a comforting feeling and promoted sleep.

It was the almost unanimous opinion of the witnesses who gave evidence before the Shell Shock Commission that the rum ration given under the conditions above mentioned was most useful, and the conclusions of the Advisory Committee of the Central Control Board (Liquor Traffic) was as follows:

"*Alcohol, its Action on the Human Organism.*—The main effects of alcohol that have any real significance are due to its action on the nervous system. So far as direct action is concerned, alcohol, when administered in moderate doses in dilute form and with sufficient intervals, has no effect of any serious and practical account. The action of alcohol is not really a stimulant to the nervous system, but a sedative to the highest centres of control, and acts by causing a decrease of critical self-consciousness and anxiety.

"When stimulation of nervous function is really needed, and when the individual has to meet an emergency which calls for the exercise of his highest powers of perception and judgement, alcohol is not merely useless—it is certainly and unequivocally detrimental. On the other hand, there are emergencies when, though the individual may also imagine that he needs to be braced up nervously, he would be assisted far more by a relaxation than by an increase of tension; and here the sedative action of alcohol, so far as the immediate effect is concerned, may be advantageous. The value widely attributed to the rum ration, under the conditions of acute discomfort, cold, and strain inseparable from trench warfare, may be explained in this way."

Captain J. M. Wolfsohn,[3] of the American Army Medical Service, at my suggestion investigated the personal history and the leading nervous state in 100 of my cases of soldiers suffering with shell shock or war psycho-neuroses (neurasthenia and hysteria) and compared the same with 100 surgical cases suffering with wounds under the care of Captain Turner at the 4th London General Hospital, and found that the vast majority of the psycho-neurotic cases studied were among soldiers who had a neuropathic soil. In 74 per cent. of these cases a family history of neurotic or psychotic stigmata, including insanity, epilepsy, alcoholism, and nervousness was obtained, whilst a previous neuropathic constitution in the patient himself was present in 72 per cent.—a striking contrast to the percentages obtained in the wounded cases.

Finally, a quantity insufficient to affect the normal human being is enough to render the individual with an invalid brain antisocial; consequently cases of shell shock, mental deficiency, neurasthenia, epilepsy, and head injury are very susceptible to the toxic effects of alcohol. According to the experience of Major Hotchkiss at Dykebar Asylum, between cases of delirium tremens and the chronic delusional form of alcoholic insanity are those cases which show such varied symptoms as mental confusion, depression, subacute excitement, and in practically all cases hallucinations.

"The history of many of these cases suggested that though alcoholism was a prominent feature in predisposing to a mental breakdown, of still greater importance was the stress and strain of the campaign, and had it not been for this, breakdown would never have occurred or would have been postponed."

Probably the family history in many of these cases of alcoholic hallucinosis would show an inborn neuropathic tendency.

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GENERAL ETIOLOGICAL FACTORS IN THE ALCOHOLIC PSYCHOSES.

BY

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WHEN I was honoured with an invitation to read a paper to this important gathering on the subject of alcohol in relation to mental disease, my first thought was that, as an American psychiatrist, I would be expected to discuss the effects of prohibition on the incidence of insanity. Unfortunately the time was too short to allow of my getting the latest statistics on the subject, as that would involve considerable correspondence back and forth. Then it occurred to me that if I had the statistics I would feel it a most unsafe thing to draw any conclusions from them, and that you might be interested in having a discussion of aspects of the alcohol problem which social reformers and many medical men are apt to overlook.

When I express scepticism as to the reliability of current statistics I would not have you assume that I refer to the alleged failure of prohibition to prohibit, which is so much advertised in this country. No one imagined when the constitutional amendment was passed that all alcohol would spontaneously evaporate. Even enthusiastic reformers knew that certain sections of the population would endeavour to evade the law and often succeed; moreover, the possession of liquor was not banned, and those who wished and had the money were in a position to fill their cellars before the law was enforced. Further, one must remember that drinking in the home is not illegal. So, if a guest from this country be given a cocktail before dinner by his host, he has no right to assume that any law has been broken. Nevertheless it would be foolish to claim that there is no illicit traffic. Public opinion—if one can gauge that by the verdicts of juries—is ready to back up prosecution of those who import and sell alcoholic beverages for gain. It is not so antagonistic to their domestic manufacture. In consequence there are two sources for post-prohibition liquor, and these involve radical modifications in the type of drinking. "Boot-legging"—that is, illicit traffic in alcohol—means expensive liquor which must be concentrated to make it pay. Those who buy must therefore have money to spare and are often apt to consume what they can get more greedily than if future supply were assured. Further, the quality of what is secured in this unlicensed manner is not guaranteed. On the other hand the drinks most easily made in the home are beer and light wines. Those who demand alcohol and are not in a position to buy are reduced to beverages of low percentage. Some people with sufficient technical skill distil at home, and these are apt to consume raw and highly poisonous spirit. Above all, it must be borne in mind that the saloon, in the sense of a place where a man could stroll casually in to take one drink, be treated, stand treat, and eventually leave dead drunk—the saloon has disappeared, and in all probability for good.

We see, then, that drinking has changed both in quantity and quality. The rich man has good wines and spirits from pre-prohibition days or may buy stuff of indifferent quality. The poor man no longer has spirits, but can, if he takes the trouble, drink wines and beer. There is, probably, much less alcohol consumed now than there was. Even if more insobriety be observed in certain social sets there are fewer drunken people in the streets and hospitals. But, if one is to draw conclusions, one way or another, from the state of affairs now existing he would be liable to error, for the change in type of drinking is in progress. The evolution is not complete. The excitement of smuggling will certainly abate in time; social emulation as an incentive for the procuring of liquor may either be fixed as custom or entirely pass away. Domestic manufacture of mild alcoholic drinks may develop into a recognized household art, be legalized, and produce a nation of moderate drinkers. These are fields for pure speculation, and I have mentioned them only to indicate the folly of trying to draw conclusions of any permanent value from conditions obtaining in America to-day.

There is another factor which may tend to vitiate current psychiatric statistics. We have not yet finished with the war. This social upheaval tends both to increase and decrease the present incidence of insanity. Certain factors, such as the economic unrest and the violent changes in moral and social outlook, inevitably make difficult the maintenance of balance in the mentally unstable. On the other hand, the high proportion of insanity in military life may tend to reduce its incidence some years thereafter. In the American army, at least, the number of definite psychotic breakdowns has always been higher than in the same age group in the civilian population. When these patients are examined it is found that they had, many of them, typical dementia praecox personalities. It is not impossible that frank psychoses would inevitably have occurred anyway, and that the strain of adaptation to rigorously disciplined life merely brought them on earlier. In that case one would now expect a lower rate of chronic mental disease of the constitutional type since so many candidates have already met their fate. One could go on indefinitely with such arguments, always reaching the same conclusion: that we can infer nothing of permanent value from the contemporary insanity rate.

But this is not my theme to-day, which is rather consideration of the factors that always operate to confuse the study of alcoholic psychoses. The problem may be approached from two sides, although the same phenomena often seem of equal importance when viewed from the two angles. The first question is of the psychological need for excessive potation and the other is of the causes operating to produce the symptoms of so-called alcoholic psychoses. By discussing the latter first, we may from a study of the effects produced by alcohol deduce something which may throw light on the reasons for its consumption.

The simplest of all mental disturbances ascribed to alcohol is delirium tremens. Here we have a group of symptoms all of which point towards an acute intoxication of the central and involuntary nervous systems. It is not necessary to recapitulate these symptoms before this audience. It will be sufficient to point out that the mental aberrations take the form of clouding of consciousness, with disorientation, etc., and hallucinations. The latter are, in uncomplicated cases, usually of small moving objects; quite possibly these are false interpretations of entoptic phenomena. At any rate all the psychotic features are of a kind we are accustomed to speak of as "organic" rather than "functional." Functional symptoms are "psychogenic"—that is, they may be demonstrated to have a psychic history, to be products of the instinctive or emotional conflicts of the patient. For instance, if a thwarted ambition reaches fulfilment in a delusion we speak of this imagination as psychogenic or functional. Nothing of this kind may appear in delirium tremens, although the bizarre hallucinations which sometimes occur may have a symbolic significance suggestive of previous unconscious elaboration. On the other hand all the obvious symptoms point to an acute poisoning of the nervous systems. Some toxin is directly injuring the machine rather than there being a perversion of the forces which operate it.

Another condition in which the mechanism of the brain seems to be directly affected is that rarer state known as the Korsakoff syndrome. Here we have a sudden onset of delirium with polyneuritis. This delirium is of a definitely organic order with clouding of consciousness and occupational hallucinations. As it clears up the patient is left with a peculiar memory defect in which he cannot properly register or recall current impressions. This last symptom is, of course, of a purely organic order. The etiology of the Korsakoff syndrome is not simple, however. It may occur with other than alcoholic intoxications, although infrequently. Moreover, just plain hard drinking does not seem to produce it, for one finds that the patient has, as a rule, been eating no food for some weeks and has been subsisting on alcohol alone or nearly so. Finally, it has a seasonal incidence. The peak of the curve in New York State comes in the early fall, about the month of September.

The third plainly organic condition is that of gradual slowing of the mental processes, with memory and consequent judgement defect. That is usually due to an arterio-sclerotic affection of the brain, and, of course, when one is dealing with arterio-sclerosis one is always faced with a complicated problem in etiology. Alcohol in these cases is always only one, and often only a contributory, factor.

From these examples we learn that alcohol may affect the brain, either acutely or chronically, to disturb and retard the

intellectual or mechanical functions of the mind. This destruction may proceed to such lengths as grave dementia.

When we turn to the other alcoholic psychoses, to the ones which cause most social complications, a rather marked contrast is apparent. The simplest of these is known as the acute alcoholic hallucinosis. At the close of a spree the patient suddenly begins to hallucinate attacks being made upon him and to hear voices accusing him of homosexual practices. This mental content is extraordinarily stereotyped. As a rule the psychosis lasts only for a few days and may even clear up before the patient can be certified. In contrast to the psychoses we have been considering these cases show no clouding of consciousness, defect of memory, or any such symptoms. They seem merely to have been suddenly possessed with queer ideas of extraordinary vividness, and after recovery they seem just as normal as before. A few drinks in many normal persons will produce as much disorientation as is shown by these patients. On the other hand these attacks are apt to recur, and in later ones they may not lead to recovery but glide over into dementia praecox. Moreover, dementia praecox patients may show episodes with practically identical symptoms, although the subjects are abstainers; or the alcoholic hallucinosis may appear after drinking a relatively small amount of alcohol. Such facts have led some psychiatrists to think that this psychosis is virtually a psychogenic reaction liberated by alcohol; that it is, so to speak, an acute dementia praecox reaction, essentially constitutional, that appears when alcohol removes the normally acting inhibitions.

Probably the most troublesome of all alcoholic patients are those in the paranoid group. Such individuals may be normally sociable and good-tempered but after a drink or two imagine slights or insults and become dangerously quarrelsome. Many details lead one to suppose that here again we are dealing with constitutional anomalies. Even when free from alcohol or before drinking has begun the subjects are apt to show peculiarities. They are frequently women-haters and affect the society of men exclusively. (Many overt homosexuals are recruited from their ranks.) They have difficulty in adapting themselves to any kind of discipline and rebel at authority. The foreman or manager is apt to be regarded as a prejudiced tyrant. They are not well adapted people—that is to say, their adjustments to social life are not easy and automatic. The corollary to this is, of course, that antisocial tendencies are latently strong in them. Drink brings the latter to the surface. Marriage makes the most persistent demand for social adaptation that we know of. This is the reason why so many of these men begin to drink only after marriage. The innate rebellion at this bondage appears when alcohol has liberated their inhibitions. They first become querulous and beat or abuse their wives every Saturday night. Later, when drunk, delusions of unfaithfulness appear which may become fixed. It may only be when this last stage is reached that cognizance is taken of what was mental disease from the first. The fate of these creatures is often pitiable. They are certified and interned. Once in the asylum, which for them is a house of refuge, they are free from the demands that have been too much for them to meet, and consequently their mental symptoms clear up. So they are liberated. But after a few weeks or months in the old environment the temptation to drink becomes more than they can withstand. Soon the whole story is repeated, but the dénouement is reached more quickly. After a few such disillusionments the authorities cease their efforts to maintain such patients in the outer world and they are incarcerated for life although showing few if any gross symptoms. Nothing but forced detention in well-organized industrial colonies can ever solve this problem.

The last type of alcoholic mental disease which we shall consider is difficult to describe, for its symptoms are indefinite. It consists in a gradual deterioration, a degradation of emotional rather than of intellectual process. In this it is to be distinguished from the arterio-sclerotic type, where memory and intellectual capacity generally are primarily affected. Here, however, with such faculties intact, or relatively so, the patients gradually become indifferent to their responsibilities, lose ambition, their affections wane. Often some paranoid ideas are present, or they may merely become bad-tempered. They are pathological loafers, good-for-nothings. Most of these cases do not find their way into institutions. They are not mad enough to be regarded as dangerous, so they merely ruin the home in an undramatic way. This deterioration is a good deal like that seen in some cases of dementia praecox. Etiologically it is a question impossible to decide which is more important—the constitutional factor, or the physical effects of protracted poisoning with alcohol. If the latter operated alone we would expect to get a dementia of the arterio-sclerotic or senile type.

Even from this outline of the alcoholic psychoses it can be gathered that the etiology of these conditions is relatively pure only in the cases of delirium tremens and the Korsakoff syndrome. If, under this heading, one were to include these conditions alone the psychiatric significance of alcohol would be scientific rather than social, for these two psychoses are not of any great consequence statistically. The ravages laid at the door of alcohol are those attributable to other factors as well. In general terms one can formulate the rôle of this poison by saying that it liberates abnormal reactions that have been latent and at the same time increases whatever fundamental tendency to abnormality there may be. There is, then, a vicious circle.

To see exactly how this comes about a little analysis is necessary. We have seen that there are two general effects which alcohol produces. It dulls the intellect, either acutely or permanently; it stupefies. Secondly, by removing inhibitions, it liberates antisocial tendencies that have previously been unconscious. These antisocial tendencies are inextricably mingled as both cause and effect with general maladaptation. To prove this would require a long dissertation, but the nature of the argument may be indicated. Our individualistic strivings are repressed to the unconscious. If we are adaptable we can give some outlet to them in a socialized form as permissible personal ambitions. If we fail in adaptation these unconscious complexes tend to appear in a less permissible form. In other words, if we are happy and successful our unconscious minds are placated with indirect outlet and do not cause trouble, but if we are unsuccessful and unhappy we at once are apt to become antisocial. This disturbs adaptation, thus producing more failure and mental discomfort. Maladaptation and autonomous unconscious individualism therefore react mutually on one another as cause and effect.

We can now discern the psychological rôle which alcohol plays. Adaptation means contact with reality. When this is difficult to maintain one instinctively yearns to abolish reality or blot it from sight. Any drug which stupefies will do this. Hence the man who wants to forget the world drinks. He gains the desired release. If this were all, alcohol might be an unmixed blessing as an emergency measure. But unfortunately this release is purchased by impairing those very faculties that are needed to attain success, and, to make matters worse, antisocial tendencies are liberated at the same time, and these increase the maladaptation. The alcoholic drinks to forget and thereby increases that which he would forget. This is the vicious circle.

Although not ordinarily put into such definite and technical terms, all sensible people realize this to be true. That is why we hear people say, "If he could only keep away from whisky for six months!" Even if only vaguely understood these facts should be sufficient to keep rational people from excessive drinking. But we know that this knowledge avails relatively little. Why does it not? The answer goes right to the root of the problem of alcoholism. With normal people reason triumphs over impulse, and they imbibe in moderation. The alcoholic is, before he ever touches a drop, an abnormal person. Sometimes—and here economic factors play an important rôle—the abnormality is environmental in origin. A man or woman with a human soul is forced to lead the life of a beast. In normal times the numbers who, through no fault of their own, are doomed to such a life are relatively small. The bestiality of their existence is more often of their own or their father's making. The chief problem is that of the man who is essentially psychopathic, whose unconscious gets out of leash and forces him, willy nilly, to produce a state of mental obfuscation in which he may indulge in thoughts or behaviour incompatible with his conscious standards. The normal man may experimentally get drunk once or twice, but as a rule is a temperate drinker. This is the crux of the therapeutic problem. If the etiology of alcoholism were simply alcohol, mere abstinence would cure the condition.

Attempts at social reform must inevitably follow the principle of trial and error. But if experiments are to be at all intelligent, we should have in advance some notion of the factors involved, even if their relative strengths be impossible to gauge without experiment. Further, if the trial prove an error one should have some idea of what has caused the failure. Our last topic is, then, to discuss whatever inferences may be drawn from the psychiatry of alcoholism that would bear on the problem of drinking in general.

The normal man is a psychiatric fiction. He does not exist. All of us, in varying degrees, have the same difficulties in meeting the world as the unfortunates who demonstrate their incapacity dramatically in psychoses. In a caricature we may see peculiarities we miss in a miniature. Then, turning to the latter, we can discern what we previously were blind to. This is the larger function of psychiatry. The psychopath commits a kind of mental suicide in order to evade responsibilities too great for him, and to translate himself to a world of fancy where reality does not mock his efforts. We "normals" drug ourselves with cheap fiction, theatres, and moving pictures; we go to sleep; we take vacations; we indulge in vicarious prowess and adventure in watching games and prize fights. Above all, we forget ourselves in social intercourse. But when a man is tired or oppressed with care how can he forget his obsessing anxieties or his self-consciousness sufficiently to become sociable? He can take a drink, and he does. If he be normal, a small amount of alcohol will give the necessary relaxation. Conviviality is more important for the maintenance of our mental stability and effectiveness than we realize, as is witnessed, if we stop to think, by the fate of those who utterly lack that capacity. The invariably cheerful and friendly person is never morose, sensitive, overbearing, a hopeless crank, or violently prejudiced.

It is because alcohol contributes to sociability that it holds the strong position it does among so many peoples. Let us compare its status with that of the narcotic drugs. In real emergencies the latter are infinitely more useful. As a noted physician said, "Without opium, no doctor would have the heart to practise medicine." As to the harm they do, the narcotics rarely, if ever, induce actual dementia, and, pitiful though the state of the individual addict may be, the mental aberration or degradation and the economic losses these drugs produce are statistically negligible compared with the ravages of alcohol. Yet society has placed its taboo on them. Public sentiment not only approves but demands laws regulating the traffic in these medicines. The differing psychological effects of alcohol and narcotics explain this difference in social attitude. Only abnormal people use the latter drugs, and their effect is, as a rule, merely to wipe out reality, not to release impulses a too stringent consciousness is on guard against. An opium den shows little trace of sodality. Innumerable people, on the other hand, are made happier, and therefore, healthier, by moderate indulgence in alcohol.

Prohibition enthusiasts are prone to claim that the abolition of alcohol as a beverage would cause no one any harm and prevent all the misery now laid at the door of inebriety. If alcohol did nothing for the drinker except harm him their claims would be justified. But their unsound reasoning does not prove that prohibition is undesirable. The question is, Would the gain be greater than the loss? No one, I fancy, is wise enough to answer this question; I certainly would not attempt to do so. I am here neither as a propagandist nor an antagonist, but as an agnostic trying to consider factors often neglected in discussion of the problem. As such I shall close with a few remarks as to the possible evil consequences of prohibition.

One must remember that we live in an imperfect world, imperfect largely because we have not yet gained the capacity to govern our own instincts. Alcohol is a crutch that man has discovered to help him with this disability. Some patients find they can walk and even run when their crutches are taken from them, but the majority need some artificial support. Let us first consider the fate of the psychopath who has been a potator and becomes abstemious. His brain becomes clearer, his mind works better, he saves money, and has a chance to gain that happiness in successful adaptation which will maintain him in equilibrium. In other words, he is brought back to that point in his career when he began to drink. If his inebriety was accidental or a response to some calamity the consequences of which are past, he is a saved man, but if not there is a tendency towards instability that will express itself somehow: in crime, in a psychosis, in character deterioration, or in social agitation that is pursued merely for the excitement it brings. I am reminded of two cases in this connexion. One was of a ne'er-do-well whom I persuaded to abandon drink. To my surprise he did so; also to my surprise a florid paranoid dementia praecox appeared in six weeks' time. The other man was a dipsomaniac recognized by critical associates to have brilliance to the point of true genius. Psychological treatment resulted in a disappearance of his periodic attacks, but he began to deteriorate morally. In a few months he had sunk to the level of a tramp. His history showed that antisocial tendencies had existed from boyhood on. To what extent had his dipsomania been a more or less harmless substitute for what was his ultimate fate? These, of course, are unusual and striking cases, but they remind one of the parable of the house that was swept and garnished; seven devils entered therein and the last state of that house was worse than the first. But parables are all—like my arguments—purposely one-sided. If effective prohibition were enforced "alcoholic" insanity would, of course, no longer appear. But one would have to watch statistics of crime and the constitutional psychoses before he could estimate how much drain on the public purse had been avoided.

For one inebriate there are at least a hundred people who drink in moderation. What would their fate be in an alcohol-free State? The changes would not be obvious, but they might be serious. True congeniality being under the new régime essential for lively social intercourse, society would be split up into smaller groups, and many individuals would become quite seclusive. Sectionalism is not healthy for society any more than solitude is for an individual. Then, too, a certain proportion of moderate drinkers crave and need excitement. As we are now dealing with a type that is moderately well adapted, we may presume that such people would not turn to flagrantly antisocial activities. But there would be grave danger of their indulging in that kind of political activity where the mere excitement of strife is an end in itself. As for the truly well-adapted folk, those who approach real normality, we can rest assured that abstinence would produce no untoward results at all. If one could estimate their numbers, one could answer, more or less offhand, the great question, Would prohibition be worth while?

Finally we must consider the problem of heredity. The experience of any physician shows that the alcoholic is not fecund nor do his progeny thrive. We do not need experiment nor statistics except to prove with exactness what we already know. But, if we are to look on this matter dispassionately, can we avoid the question, Is this good or bad? There can be no doubt that it is bad for society in any generation. The production of defective, badly nurtured and reared offspring inevitably throws a burden on society. But there is the race to consider. Eugenics exists in name only. If the true alcoholic be a psychopath is it well to let him reproduce? Assuredly not. What we ought to do is actively to prevent it, which sentimentality forbids. Alcohol eliminates the unfit. If we fail to treat the race with intelligent care should we prevent Nature from working her way, albeit it is blind, slow, and unkind?

DISCUSSION.

Dr. W. C. SULLIVAN (Superintendent Medical Officer, Broadmoor Asylum) said that the papers which had been read showed the sense of proportion and level judgement which were so necessary in dealing with this question. Most of the difficulties and differences of opinion were really due to exaggerations or partial truth, or the making of generalizations from isolated observations. With regard to alcohol in relation to mental disorder, on the one hand it had been asserted that alcoholic excess was almost always the consequence of mental disorder, and, on the other hand, that mental disorder was the consequence of alcoholic excess. Surely, if a sense of proportion were maintained, it would be realized that the cases of psychopathic inebriety were a mere drop in the alcoholic ocean; they were negligible by the side of those cases in which alcoholic excess was due to environmental and above all to industrial conditions. It was almost certainly unsound to suggest that alcoholic excess was an important cause of certifiable insanity—as unsound as it would be to suggest that general paralysis was the cause of kleptomania on the ground that most general paralytics were

addicted to thieving. It had also to be remembered that if a comparison was made of the regional incidence of alcoholism and of mental diseases as measured by admissions to asylums there was no such correspondence as one would expect to find. Finally, there was the evidence of the war years, which offered, he thought, quite convincing proof that for the most part alcoholism was a negligible factor in the causation of insanity. The speaker showed a table giving figures relating to alcoholism, attempted suicide, and insanity, amongst women only, in England and Wales, from 1913 to 1918 (the figures for men were not available).

	Convictions for Drunkenness.	Deaths from Alcoholism.	Deaths from Cirrhosis of Liver.	Attempted Suicide.	First Admissions to Mental Hospitals.
1913	35,675	719	1,625	988	9,372
1914	37,311	680	1,773	1,049	9,702
1915	33,211	584	1,525	816	9,078
1916	21,245	333	1,163	436	8,850
1917	12,307	222	803	452	8,702
1918	7,522	74	579	400	9,725

Under the system of physiological liquor control enforced by Lord D'Abernon there was considerable reduction in alcoholism in this country—in some cases a reduction of 70 per cent. But the admissions (of women) to asylums during the same period showed no decrease at all, but a slight increase. These figures were consistent only with the conclusion to be drawn from the pathological evidence of Sir Frederick Mott, that alcohol was a negligible factor in certifiable insanity. There were certain specific alcoholic forms of disease, but these, numerically quite small, exhausted the rôle of alcohol as a cause of insanity. To state it in a way that perhaps might appear absurd, the only insanity due to alcoholism was alcoholic insanity. But there were mental disorders, not reaching the level of certifiability, which were of great importance because they were a source of conduct disorders. Attempts at suicide represented a very common condition, and there was a large and, he thought, a convincing amount of clinical and statistical evidence to show that the attempt to commit suicide was ordinarily due to alcohol. That was very much what would be expected. There was no other agency of the same widespread character which so favoured the suicidal impulse and at the same time prevented its execution. It reminded him of a preacher on the west coast of Ireland who said to his congregation, "What makes you shoot at your landlords? The drink! And what makes you miss them? The drink!" In the case of crimes of violence and lust the conditions were more complex, and the same statistical movement could not be traced; but evidence was clear that murderous attacks on women by their husbands and the violation of children were more often due to alcohol than to any other cause. Alcohol, at least before the war, was an important cause of mental disorders, not amounting to certifiability, but leading to serious crime. Nowadays, under the partial operation of the policy which was introduced during the war, the alcohol problem was not nearly so important as previously.

In reply to the Rev. Adam Renwick (Penzance), who asked whether the war had not introduced causes which explained the increase in cases of insanity among women, Dr. Sullivan said that his statistics were merely returns of first admissions, but he believed it to be the general view that the war did not affect the female population in any direction likely to produce a considerable increase of insanity.

Captain Arthur St. John (Stirling) described the procedure adopted in the State mental hospital in Massachusetts in dealing with alcoholics. The régime was arranged, in the first place, to bring about the physical improvement of the patient; secondly, to cancel out if possible the particular cause of his inebriety; thirdly, to sustain his interest in the world of affairs, and return him to congenial occupation and environment; and, finally, to give him an extended educational treatment in the out-patient department, the work of which department was a great feature of the system. The percentage of improved cases under these conditions was 64. The people thus received were 80 per cent. voluntary cases, and the remainder were custodian cases, committed to the hospital by the magistrates on the certificates of two medical men.

(To be continued.)

THE SECTIONS.

BRIEF SUMMARY OF PROCEEDINGS.

Arrangements have been made to publish full reports of the discussions in the Sections of the Annual Meeting at Glasgow during the next few months. Meanwhile, the brief notes of the first day's sessions which follow will enable those who were not present to gain a general view of the proceedings. Any errors to which attention may be drawn will be corrected in the full reports.

SECTION OF MEDICINE.

Wednesday, July 26th.

After a few introductory remarks by the President, Professor T. K. Monro, Professor Hugh Maclean (London) opened the discussion on the prognosis and treatment of chronic renal disease. He began by pointing out that in recent years our conceptions of renal disease with regard to prognosis and treatment had become greatly altered; this was chiefly due to the information which was now obtainable as to the efficiency of the kidneys by the renal efficiency tests now employed. In dealing with chronic renal disease Professor Maclean explained that he recognized two main types—namely: (1) Hydraemic nephritis, in which there was very marked oedema, retention of chlorides and water, but no retention of nitrogen and no increase of urea. He pointed out that this type was really not a chronic form so much as a subacute form. (2) Chronic interstitial nephritis, in which there was very little retention of water or salt and no oedema, but there was a tendency for retention of nitrogenous products and a great tendency for cardio-vascular changes to occur. Professor Maclean said, however, that it was not unusual to get a mixture of the two types. Prognosis. Professor Maclean went on to say, should be based upon three main factors: (1) the general clinical condition of the patient, (2) the state of the cardio-vascular system, (3) the biochemical tests. In discussing these factors Professor Maclean emphasized that in his opinion the tests for renal efficiency were of greater value than the clinical symptoms, and instanced many cases in which symptoms had been entirely absent but the efficiency tests had given the clue to the condition present. As a general rule he relied most upon the estimation of the blood urea and the urea concentration tests as the most valuable and the most practicable. He reminded his hearers that one single blood urea test was seldom of value, as it might indicate only a temporary state. He also employed the diastase test, but regarded its value only as confirmatory. He did not consider that as a test by itself it was reliable. The state of the cardio-vascular system, Professor Maclean said, must not be overlooked, but he pointed out there were many instances in which the cardio-vascular system might be partly affected without much damage having been done to the kidneys. As regards treatment, Professor Maclean discussed mainly our new conceptions as to diet in chronic renal disease. He pointed out that in the hydraemic variety if there was no retention of nitrogenous products the indication was to give proteins in full amount and not withhold them as was formerly practised. In the severe cases, however, it was best to stick to the low protein diet. Decapsulation of the kidney promised good results for the future.

Dr. Comrie (Edinburgh), who followed in the discussion, agreed with Professor Maclean as to the value of the biochemical tests. He placed great reliance on the phenolsulphonephthalein test, and held that a result of 50 per cent. indicated a good prognosis, and 30 per cent. and under must be regarded as indicating a bad prognosis. Dr. Symes (Bristol) confined his remarks to chronic parenchymatous nephritis, and pointed out that it was a bad name and one which he hoped to see disappear very soon. It was only a stage of diffuse nephritis, and not necessarily of so grave prognosis as the textbooks made out. He agreed with what Professor Maclean had said about the treatment of the condition, and urged also the value of iron and arsenic as drugs. Professor Shaw Dunn (Birmingham) dealt with the histology of the kidneys in chronic nephritis, and described the changes that occur as falling into two main classes—namely, alterative changes and destructive changes. He admitted, however, that most cases were a mixture of the two types. Dr. Katherine Robertson gave a description of six fatal cases which had been carefully considered clinically and at

necropsy. Dr. de Wesselow (London) pointed out that high blood pressure was not necessarily due to retention of toxic products, and instanced the polycystic kidney, in which there was no raised blood pressure in spite of high urea retention. He regarded the phosphates in the blood plasma and the calcium content in the serum as possibly important factors. Dr. Tidy (London) thought it was our duty to try to correlate more the clinical symptoms of the disease with the histology of the kidneys. He did not agree with former speakers that the histological types could be clearly divided into two classes. There were, he held, at least four types. He deplored that recognition had not been given during the discussion to the small white kidney. It was a definite clinical type with definite pathological changes. Dr. Toye (Birmingham) spoke of the value of the biochemical tests in general practice. Professor Mouro (Glasgow) reminded the Section that the old-established methods of investigation must not be given up because of the undoubted value of the new tests. Professor Maclean, in replying, made clear some of the points of controversy which had arisen during the discussion. Over 150 members attended the opening session.

SECTION OF MICROBIOLOGY (INCLUDING BACTERIOLOGY).

Wednesday, July 26th.

DR. ROBERT BUCHANAN, in opening this Section on July 26th, reviewed the development of bacteriological science and indicated the wide field to be covered by the programme.

Dr. F. d'Herelle, of the Pasteur Institute, opened the discussion on the bacteriophage. After stating the well-established fact that filtrates from organic material are capable of inducing lysis in bacterial cultures, he dealt with the possible explanations for this phenomenon and brought forward certain facts as proof of his contention that bacterial lysis is caused by the activity of a living ultra-microscopic parasite of bacteria, named by him the bacteriophage. He pointed out that the dissolution of bacteria under the influence of the bacteriophagic principle takes place in series and can be carried over from tube to tube; that the filtrable corpuscles multiply in the course of the bacteriolysis; that all bacteriophagic ultra-microscopic corpuscles, grown at the expense of any bacterial species, constitute one and the same antigen; that the ultra microscopic corpuscles possess a variable virulence that by successive passages it is possible to raise the virulence of a feeble strain; that the bacteria defend themselves and are even capable of acquiring immunity towards the parasite; and that the bacteriophage is capable of adaptation. He declared his opinion that the phenomena described by him as due to a parasite were different from the lytic phenomena described by Twort in 1915.

Dr. F. W. Twort began by stating that the bacteriolysis described by d'Herelle could not be differentiated from the processes described by himself in 1915, and attributed at that time to an acute infectious disease of micrococci. He reviewed his earlier work on ultra-microscopic viruses, and pointed out in particular that lysis had been observed in sealed cultures of micrococci kept for a long time and apparently pure. In such cases the lytic agent seemed undoubtedly to have been produced by the bacteria themselves, for they had not come in contact with any external agent. Whereas, he declared, the possibility of the lytic agent being an ultra-microscopic virus had not yet been disproved, it seemed possible, but by no means certain, that the active transparent material found in cultures was produced by the micrococcus. He brought forward evidence derived from his recent researches to show that in a bacterial colony special forms might develop possessed of special functions, and that more stable and resistant types might be separated from an apparently homogenous culture. Such special forms of bacilli might be dissolved up for the benefit of the bacterial community, and the lytic agent might be formed for the purpose of carrying out this lytic action and setting free toxins contained in the special forms. Dr. André Gratia of Brussels was of the opinion that the Twort and d'Herelle phenomena were identical. He found no evidence of the existence of a living organism, but attributed the phenomenon to a chemical substance excreted by the bacteria themselves, his reason being the parallelism between the activity of bacterial growth and the production of the lytic agent, the similarity to chemical affinity as shown by the absorption of the lytic agent by dead bacilli, and the fact that lytic agents are antigenically specific. Dr. Ledingham expressed himself as unconvinced of the existence of any ultra-microscopic bacterial parasite, and appealed for a more exact study of the simpler processes of bacteriolysis. Dr. McLeod described experiments on the inhibition of bacterial growth by the products of bacterial metabolism. Dr. Fleming demonstrated the existence of rapid bacteriolysis caused by egg albumen and animal secretions, such as tears. Dr. A. W. M. Ellis reported on some quantitative experiments which lead to conclusions contrary to d'Herelle's hypothesis. Professor D. Ellis described a form of bacteriolysis of sulphur bacteria due to degeneration. In his reply Dr. Twort expressed himself as still convinced of the identity of the so-called Twort and d'Herelle phenomena, whereas Dr. d'Herelle brought forward fresh evidence of their dissimilarity, derived chiefly from the experiments recorded by Dr. Fleming.

A short summary was read of a paper by Dr. Wiseman on an outbreak of food poisoning by milk, caused by *B. aertrycke*, the first example of such a form of food poisoning yet reported. The source of the epidemic was not determined, but the author laid great stress on the fact that the stools of the patients affected were very watery and contained much mucus, a fact which served to favour a diagnosis of dysentery rather than the paratyphoid group infection. Dr. R. C. Robertson read a summary of a paper on "The toxins of *B. dysenteriae* Shiga," describing experiments in the detoxication of cultures of Shiga's bacillus. By means of a special technique he succeeded in preparing a non-irritating vaccine possessed of marked protective qualities. Sir William B. Leishman spoke highly of this research, and congratulated Dr. Robertson on his results.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

Wednesday, July 26th.

THE President, Professor G. M. Robertson, in opening the proceedings on July 26th, deplored the separation of neurology and psychology, which was disastrous for both, and welcomed the combination of the Sections at the present meeting. Psychotherapy came to the fore during the war, the public taking a great interest in it, and the medical profession should express itself clearly on the subject. Psychotherapy was the oldest form of treatment—the methods of cure in the Bible were psychotherapy pure and simple; the successful medical man was the successful psychotherapeutist, though he might not know it. Dr. T. W. Mitchell (Hadlow) read a paper on "Psychotherapeutics and psychopathology," in which he traced the development and growth of psychotherapeutics from psychopathology, and claimed that psychotherapy not based on psychopathology could be little more than empiricism, and psychotherapy could only be fully developed when psychopathology was accepted as a necessary part of general pathology. The close relationship between mind and body was recognized in everyday life. The extent to which psychotherapy was of value in the treatment of organic and functional disease was only realized by those engaged in it. Many practitioners of psychotherapeutics had little knowledge of it before the war; in the war practically all cases were examples of neurosis, and as they have had very little opportunity of treating other types since the war their views are biased by war experience. In hypnotism and suggestion persuasion was largely adopted, and the appeal to reason; but for success explanation need not be true, though the patient must believe that it was. Clues to the origin and nature of illness were not within the patient's power of conscious recollection. In the treatment of war neurosis suggestion was often most unsatisfactory, and other means were required to restore health. Reassociation of dissociated memories, hypnosis to discover them, and suggestion as a means of restoring them were widely used. Suggestion in war cases by itself had no rational basis; mental conflict and repression together had accounted for many war neuroses. Psycho-analysis as a pathological and a therapeutic measure was considered, and the different standpoints of pathologist and therapeutist detailed.

Dr. J. A. Hadfield (London), in discussing "The making of a neurotic," said three phases were required: (1) the formation of complexes, (2) conflict of complexes, (3) the emergence of symptoms. Hereditary influences were at first considered of the greatest importance, but psycho-analysis and hypnotism had shown the influences to be in the main environmental: many conditions were handed down from parent to child by suggestion and imitation, not congenital in

reality, but due to influences of early environment. Environmental disturbances could be cured, and an hereditary cause should not be diagnosed until environment had been excluded; mental deficiency should, of course, be excluded. Psychoneurosis could not be inherited, but the soil might be transmitted; the nervous temperament was inherited, but was in itself not pathological. Instincts were psychophysical and inherited. Sentiments were those consonations which were acceptable to us—home, country, religion, etc. Organized together into "accepted self," will was the function of organized self. Complexes were consonations which were displeasing to us; they tended to become split off and were the cause and origin of psychoneurosis—fear, inferiority, and sex complexes. Most important were those which concerned self. Origin of all psychoneurosis was egotism—using the term in the widest sense—in some form. Psychoneurosis might date back to the third year of life, when self-consciousness was first developed; fantasies were then formed and became repressed, their occurrence was forgotten and only revealed by analysis. Failure to live up to a fantasy might cause a breakdown. Symptoms were not due to a single complex but to a conflict between two complexes. Biologist and psychologist looked at life from different aspects; a man broke down because he could not adapt himself to himself; a soldier broke down under shell fire because of the conflict between duty and fear. The conflict was endopsychic. Removal from environment was not sufficient to cure—recognition of the patient's change of attitude towards himself was essential, and in analysis both complexes must be traced.

Dr. Jane Suttie (Glasgow) read a paper on "The mental stresses of adjustment in women," which was highly appreciated. She said that certain stresses peculiar to women were commonly found in the neurotic: (1) The different maternal attitude to son and daughter. In present-day families girls were not valued as highly as boys, to the relative disparagement of girls. Childish jealousies produced the inferiority complex. Daughters were more influenced by the maternal preference. (2) Domestic skill had to be acquired by girls, but was not necessary for boys; the girlish virtues were repression, not expression, of self. (3) The contemplation of life from two sides—marriage or occupation—led directly to conflict. (4) The menopause exerted a variable influence depending on the previous mode of life. (5) Economic stress against biological instincts. Dr. H. Crichton Miller (London), in discussing the "Psychic and endocrine factors in functional disorders," began by saying that he used the phrase "functional disorder" in a purposely loose sense to avoid excluding a somatic etiological factor. All should aim at binocular vision, but the difficulties on both sides were serious; the psychic notoriously eluded scientific treatment. To an almost equal extent the endocrine factor baffled us. We could not ignore the evidence of universal human experience—the association of physical characteristics and mental traits. We should study in each case—(1) inherited endocrine pattern, (2) personal endocrine history, (3) personal emotional history. He suggested that the thyroid supplied the creative factor, the pituitary the imaginative "power urge," the adrenals the objective "power urge." From this could be framed a hypothesis of the various constituents of the human dynamic. Dr. C. F. Harford (London) regretted that there was no standard of medical psychology to go on; psychology was almost unformed. He referred to Dr. Rivers's lecture in Manchester on psychical determination. Students should believe in the law of causation; nothing is due to chance or accident, but the idea of psychical determinism does not interfere with some belief in free will. There were many points of controversy, but all should look for agreement. Three factors were common to all symptoms: (1) belief in the unconscious; (2) unconscious can only be reached through certain methods; (3) whatever the technique in the ultimate event, it must be acceptance of the individual, and the ultimate process is one of auto-suggestion. He appealed for study of the methods of Coué, and in association with Dr. Monier Williams he was at present testing his work and methods. Dr. Gordon (Bath) said there had not been much advance in psychotherapeutics during the last two years. Psychology and biology were not antagonistic, and all psychoneurosis was not due to sexual influences. The unit of any process corresponded to a reflex arc set in motion by a stimulus which might be a mental or biochemical change, and it was on these lines that psychopathology should be built up. Psychotherapeutists must work on a wide basis of physiology as a whole if progress was to be made. Dr. Murray Lyon (Edinburgh) said that hypnotism had been largely abandoned and suggestion was the main means of all treatment in one form or another; there was nothing new in what Coué said. Syphilitic neurotics were all potential tabetics or general paretics, but by suitable treatment the development of these diseases should be prevented. Insomnia, lightning pains, and ataxia of tabes had been controlled by suggestion. Dr. Councll (Edinburgh) agreed with Dr. Hadfield that every symptom was due to endopsychic conflict—sexual instinct was almost invariably involved as one factor. The environmental factor was of great importance. Dr. Calwell (Belfast) said that consciousness was of gradual evolution, and prenatal influences and forces acting in the first two or three years of life must not be neglected in discussing a causation of psychoses. Psychology was physiology of the higher centres. The influence of inheritance was very strong in disposition, tendency to thought, and mannerism. The influence of the state of the skin and muscles might be of importance as well as the condition of the endocrine glands. Dr. Helen Boyle (Brighton) thought Dr. Suttie had been unduly pessimistic about the outlook for women. Temperament played a very important part—"Give the child a start with no feeling of inferiority to her brothers, praise her for what she is good at, and she will do whatever she has to attempt well." Girls must know their limitation, whether submissive or aggressive; there was plenty of room in the world for all sorts. Dr. Smith (Peterhead) asked if there was any agreement in the profession as to whether the conscious or unconscious brain was the predominant part. The President said he was not disposed to answer Dr. Smith's question, and moved the following motion, which was carried unanimously:

> The members of the Section of Neurology and Psychological Medicine of the British Medical Association are of opinion that instruction in psychology and psychopathology (medical psychology) should form part of the curriculum of all medical students, and further, that this opinion should be brought to the notice of the General Medical Council and all the teaching bodies in the United Kingdom and Ireland.

He added that a course of lectures in psychology had been started in Edinburgh, and was being well attended.

Dr. Hadfield briefly replied to questions which had been raised on his paper.

SECTION OF GYNAECOLOGY AND OBSTETRICS.

Wednesday, July 26th.

The subject for discussion on July 26th was "Stillbirths and neo-natal deaths." In his introductory remarks the President (Professor Ewen J. Maclean of Cardiff) pointed out that the national importance of the subject only needed to be mentioned to be accorded. As fertility was the index of the present and the earnest of the future prosperity and strength of a nation, he thought that even the contraceptionists would approve of their objective, though it was anomalous from the national point of view that their propaganda should be allowed to proceed unhampered. He thought that so far as the population of the country was concerned the requirement might arise in the not distant future for the law to develop an ante-conceptional in addition to a post-conceptional application. In calling upon Dr. J. W. Ballantyne (Edinburgh) to open the discussion the President referred to him as "truly a pioneer of international status in ante-natal investigation." Dr. Ballantyne then read a paper on "Ante-natal, intra-natal, and neo-natal death: causes, pathology, and prevention, with special reference to ante-natal death." In opening, he remarked on the coincidence that in 1888, on the occasion of the last meeting of the Association in Glasgow, the discussion in this Section was also on ante-natal death, and he touched upon the limitations of the subject as they then existed. Dr. Ballantyne then proceeded to deal fully with the classification of the causes and the prevention of foetal death. He exhibited a most instructive table to illustrate how great a reduction in the stillbirth rate in Edinburgh had been brought about since ante-natal supervision and treatment had been practised. In conclusion, he urged strongly that every mother should be placed in the position to receive proper ante natal care. Dr. Eardley Holland (London), in following, dealt more particularly with intra-natal death. He emphasized that examination of a large number of stillborn foetuses proved that a larger number died from the complications of labour than from foetal or maternal disease. *Post mortem*, these foetuses showed evidence of cerebral or visceral haemorrhages. It was remarkable how frequently the tentorium cerebelli was torn. He had found that in 88 per cent. of deaths of the child in

normal breech deliveries this condition was found. He urged that delivery of the after-coming head should not be unduly hastened. In conclusion he showed a series of lantern slides to demonstrate the lines of stress in the falx cerebri and the tentorium cerebelli to illustrate where tears were most likely to occur as the result of the moulding of the head. Professor Louise McIlroy (London) dealt with the subject from the point of view of the toxaemias of pregnancy. She confessed that her work so far had only made her feel more ignorant of the subject than when she commenced. She felt that the causes must be sought, not in the *post-mortem* room, but in the metabolism of the mother. Her view was that the chief causes of toxaemia came from the intestine—for instance, septic teeth, constipation, and so on. She enumerated the various lines of investigation she was following at present. She urged strongly that a commission of inquiry should be set up to go into the whole question thoroughly and to lay down the lines of investigation and give rules to be followed in ante-natal work. Professor A. M. Kennedy (Cardiff) was unfortunately unable to take part in the discussion owing to an attack of influenza. Further papers were contributed by Dr. F. J. Browne (Edinburgh), who also showed a very illuminating series of lantern slides showing the microscopic changes found in the various foetal organs and the placenta as the result of syphilis; by Dr. J. N. Cruickshank (Glasgow), who discussed "Syphilis as a cause of ante-natal death"; and by Dr. Gilbert Strachan (Cardiff) on "Placental changes in relation to foetal death." A discussion then ensued, in which Dr. T. W. Eden (London), Dr. Lapthorn Smith (London), Dr. Russell Andrews (London), Dr. Anderson (Glasgow), Professor Munro Kerr (Glasgow), Professor R. J. Johnstone (Belfast), Dr. Stewart (Glasgow), and the President took part. Dr. Ballantyne then briefly replied.

In the afternoon there was a demonstration in the Pathological Museum of specimens illustrating ante-natal and neo-natal pathology by Drs. J. N. Cruickshank and Hewitt (Glasgow) and syphilis in the newborn by Dr. F. J. Browne (Edinburgh).

SECTION OF PATHOLOGY.

Wednesday, July 26th.

The President (Professor Robert Muir, F.R.S.) having welcomed the Section to Glasgow, Dr. J. A. Murray (Director, Imperial Cancer Research Fund, London) expressed the regret which all felt at the absence of Professor Fibiger of Copenhagen, who was prevented from coming to open the discussion in person. It was to Fibiger with his epoch-making experiments in the spiroptera cancer in rats that we owed the great advance that had since taken place in the particular aspect of research they were to consider that morning. During the war Japanese observers had claimed to have produced malignant tumours in rabbits by the long-continued application of coal tar; their evidence was not homogeneous, and it was fortunate that another Japanese worker, Tsutsin, repeated their experiments on mice and produced indubitably malignant tumours. The mouse was peculiarly suitable for such studies in that the duration of its life was about one-twentieth of that of the human subject, and one could elicit the whole story of malignant disease in that animal in a short period of time. Other laboratory animals were less satisfactory and more resistant to the process. Dr. Murray then discussed a single series of experiments with tar on mice. Using whole tar, alcoholic extract, and ether extract of tar, he found he got many more tumours with the last; and having applied simultaneously the three to different parts of the same animals he found that malignant tumours might result from any one of these, but not from the whole in any one animal, and he concluded that cancer, having once started in a single situation, conferred an "immunity" in the animal against the development of further primary malignant tumours elsewhere.

Dr. Archibald Leitch (Director of the Cancer Hospital Research Institute, London) then communicated for the first time to the Section the recent results he had obtained when endeavouring to establish on a broader basis the causal connexion of certain irritants with cancer. He pointed out that in certain industries, and in very striking instances, a specific substance had been implicated, and that the dispute seemed interminable between those who regarded such agents as a predisposing cause and those who maintained that such irritants were the proximate cause of the neoplastic response. He had endeavoured to apply the experimental method in these cases, and, while not claiming that the reply absolutely established a direct relationship, he maintained that it supplied considerable support to the theory of the irritant being the prime cause of tumour production. Apart from his tar experiments which had previously been communicated, he added two more successful cancer producers. Starting from the knowledge that cancer had been known for the last fifty years to occur in Scottish paraffin workers, he had applied for many months various distillation products of shale oil to the skin of large numbers of animals. The results, in mice in particular, were most interesting. In many of these animals, after a period of four months, wart formation took place, generally multiple, and these slowly gave place to true infiltrating malignant epitheliomata. In some instances, indeed, two or three independent epitheliomata developed in the same animal, and on one occasion he produced a spindle-celled sarcoma. Only one mouse in his whole series remained quite refractory to tumour production. Dr. Leitch then demonstrated an even more interesting series of experiments. Starting from the opinion of Jonathan Hutchinson that the long continued use of medicinal arsenical preparations could induce skin cancer, he related the success which he and his colleague, Dr. E. L. Kennaway, had obtained by painting mice with a solution of arsenic one hundred times weaker than Fowler's solution. They had produced in addition to papilloma a rapidly growing epithelioma with metastases in the lungs. To the already known agents that produced cancer experimentally in animals—the *Spiroptera neoplastica* of Fibiger, the tar of Yamagiwa, and the *Cysticercus fasciolaris* of Curtis and Bullock—he thus had the honour of adding two more—namely, paraffin and arsenic. He had used and was still using many other suspected agents, and he believed that they would discover a large number of substances, in no way related chemically, which were capable of directly inducing neoplastic reactions. Dr. Alexander Scott (Broxburn) gave the results of twenty-two years' experience among the Scottish paraffin workers, a paper which was excellently illustrated with pictures of paraffin dermatoses and tumours. He had seen and carefully studied from the beginning the development of epitheliomata on the exposed parts of the workmen in 19 cases, and had traced the occurrence of 44 cases altogether amongst the employees. Roughly speaking, 5,000 workmen formed the population in which such cases occurred; and of these cutaneous cancers 63 per cent. occurred on the arms, which were directly exposed, and 30 per cent. on the scrotum, from the oil-sodden trousers. Multiple growths were not uncommon, even on the scrotum, and in most cases these were not metastases or recurrences but independent developments. The pre-tumour stage of dermatitis erythematosa took from ten to fifteen years for its development; the workmen who developed epitheliomata had been working in the paraffin sheds for twenty to forty years. This interesting communication from a medical man in general practice was recognized as being the result of a study of the conditions which was unique. Owing to the measures adopted now the disease was in a fair way of being completely abolished.

Dr. T. M. Legge, of the Home Office, spoke of the incidence of cancer formation amongst workmen engaged in the pitch and tar industries. He said that such epitheliomatous ulcerations were not notifiable by law and that certain regulations had been drawn up for these trades. Owing to the representations that had been made, industries using blast-furnace tar were excluded. He had never seen nor heard of epithelioma occurring in association with blast-furnace tar; and, in reply to a question, Dr. Leitch had stated that though he could easily and frequently induce tumours with ordinary gas tar, he had not succeeded in obtaining a single positive result with blast furnace tar. During the last eighteen months 95 cases of epitheliomatous ulceration had occurred amongst workmen in the pitch, tar, and paraffin industries. But it was interesting to note that in the chrome industries, where severe and very chronic ulcerations were not infrequent, no case of epithelioma had ever been found.

Mr. Cecil Rowntree (London) communicated a paper on *x* ray cancer. He had traced all the cases that had been known to have occurred in England. In all these an *x*-ray burn had occurred at some time or other, and probably long-continued smaller doses were essential. It was curious that the disease was practically confined to the back of the hands, even the slender protection afforded by the sleeves being sufficient to exclude the kind of rays that produced epithelial changes. No case had occurred for a large number of years, and it was probable that owing to the precautions now universally

adopted no more cases would occur amongst *x*-ray workers. It did not follow that all who had an *x*-ray burn would develop epithelioma, as some radiographers who had met with such an accident as long back as eighteen years were still free of all suspicion of malignant changes. Dr. J. Cruickshank (Aberdeen) related some points that had impressed him in his experiments with tar. He had employed a sample of coal tar that was ten years old, and out of sixty-seven mice that formed the series in the experiment twenty developed malignant tumours. At least 50 per cent. of his tumours showed multiple sources of origin. Many were of a very chronic nature, and two showed lymphatic gland metastases. Both young and aged mice reacted similarly to the irritant. He was struck with the extreme degree of keratinization manifested, not only in the primary growth but in the metastases—a feature which was certainly uncommon in the skin cancers of man. He was of opinion that in most cases the tumours arose from the hair follicles, and not from the superficial epithelium, contrary to the opinions of Dr. Murray and Dr. Leitch, and in this way the multiple origin could be explained. Dr. Passey (London) stated that he had sought to obtain from soot an active tumour-producing fraction, and had found such a fraction by mixing the soot with lime and then extracting with ether. Applying such a fraction to mice he produced tumours in 50 per cent. of the animals in six months, warts beginning to appear at the tenth week. He took two series of mice, one fed on a diet deficient in fat-soluble vitamin, and the other on a ration rich in this vitamin, and applied the other fraction to both. There was nothing to choose between them in results, both giving about 45 per cent. of tumours.

In the informal discussion that followed these very important papers Dr. A. J. Campbell and Dr. Hollins held that three things were essential for cancer formation—an abundant blood supply, a degenerated epithelium, and an irritant, the last causing the cells to revert to the germinal type. Dr. McKail related two cases of pitch cancer; and Colonel Mackie, I.M.S., spoke of betel-nut cancer in India.

SECTION OF PUBLIC HEALTH.

Wednesday, July 26th.

THE Public Health Section opened on Wednesday, July 26th in the Natural Philosophy Department of the University, with a rather meagre attendance, but numbers rapidly increased. The President of the Section, Dr. A. K. Chalmers (M.O.H. Glasgow), occupied the chair, and delivered the opening address, entitled "A plea for the study of biology in relation to public health." As an introduction to the subject he reviewed the more striking advances that had taken place in public health administration since the British Medical Association last met in Glasgow thirty-four years ago, and this comparison led him to ask whether the horizon had lifted so as to disclose objectives then hidden, and whether the same spirit which inspired our predecessors remained still with us. He thought a comparison of the records of the former meeting and of this would supply a sufficient answer; but in addition there was the testimony of the falling death rate, the diminution in severity of the infectious diseases, and the gradual extinction of the "plague" diseases. Legislation had advanced, barriers of prejudice had been broken down, and one field after another had been brought within the scope of regulated effort; but though each had played its part in the control of disease they were not the only factors. "Do we not," he asked, "too often forget that Nature is silently at work, often doing better for us than we know?" And on this he based his plea for a fuller study of Nature's method of adapting life to its varying conditions. In conclusion he exemplified the "new horizon" by reference to recent work in connexion with infant mortality, tuberculosis, and venereal disease, at the same time returning an effective answer to the trite criticism of preserving the unfit so often levelled at preventive medicine.

The first paper in the Section was one by Dr. R. J. Reece of the Ministry of Health, which traced the development of port sanitary administration from the early days when the authorities of Venice first drew up a code of quarantine regulations down to the present day. He was careful to point out that merely restrictive measures were insufficient to prevent the ingress of sea-borne diseases, that much depended upon the probity of the officers of the mercantile marine, and that it was also a necessary part of the scheme to see that the general sanitation of the vessels was brought up to a reasonable standard. In the discussion which followed Dr. Dearden (M.O.H. Port of Manchester) complained that too little was known by the general public of the value of this "first line of defence," and that the powers of the port medical officer were not yet sufficiently large to make his work so effective as it might be. Dr. King, who represented the Public Health Service of the United States, followed with an interesting comparison of their methods and ours, and referred to the difficulties which arose when there was a conflict between trade interests and health interests. Major Jackson, R.A.M.C. (ret.), gave his personal experience of the control of plague, cholera, yellow fever, small-pox, etc., in Indian ports, and the great difficulty of getting the natives to understand or observe the simplest rules of hygiene. Dr. J. C. McVail drew attention to the advantage of the American system, whereby immigrants came under expert observation at the place of embarkation; and Dr. Herbert Jones emphasized the usefulness of the slips sent by port medical officers to their inland colleagues intimating the destination of contacts from an infected ship.

The second paper was by Lieut.-Colonel Fremantle, M.P. (Consulting C.M.O. Herts), upon "The economics of public health," in which he endeavoured to show, in cash values, the loss occasioned by sickness, disablement, and death; and, *per contra*, what saving could be effected by the elimination of a disease such as tuberculosis. Upon conclusion of the paper Dr. Macfadyen gave a lively impetus to the discussion by declaring that the work in Glasgow, though admirable, had gone beyond the point which was economical. With this statement Dr. Herbert Jones absolutely disagreed. Too much was *not* being spent on the public health services. If the amounts were expressed in terms of rateable value it would be found that extraordinarily little was being spent as compared with, say, the upkeep of roads. Dr. Miller (C.M.O. Radnor) advocated as a measure of practical economy the reconstitution of sanitary districts and the avoidance of overlapping duties between county and district medical officers of health. The next paper was that of Dr. Brownlee (Director of Statistics, Medical Research Council), in which he discussed the interpretation of the death statistics of infancy and childhood in relation to development and environment, but, as Dr. J. C. McVail observed in thanking and congratulating the author, it was one to be read studiously and not discussed in summary fashion.

The final paper for the session dealt with puerperal mortality in Scotland, the author being Dr. T. F. Dewar, C.B., of the Scottish Board of Health. In a masterly fashion he showed that in this respect there had not been the improvement hoped for; in fact, recent figures did not compare at all favourably with those of former years. It was not his place, he said, to apportion blame, but merely to state the position as disclosed by the statistics he had compiled. A lively discussion followed, in which the "blame" was successively placed upon insanitary surroundings (Dr. Herbert Jones), the want of surgical technique (Dr. Shannon of the Glasgow Maternity Hospital), too much handling of the patient (Lieut.-Colonel Fremantle), too free use of instruments (Dr. Picken, M.O.H. Cardiff); but Dr. Morris (M.O.H. Neath) protested against blame being placed on the medical practitioner, though he admitted midwifery practice was in need of improvement, while Dr. Lewys Lloyd (C.M.O. Merioneth) also lodged a protest against the loose phrasing used in assigning blame to doctor or midwife. Nurse Barker (Inspector of Midwives, Glasgow) brought the discussion to a happy conclusion in laughter by describing how midwives often came to her *in tears* over the injuries done by doctors in trying to hustle nature.

SECTION OF SURGERY.

Wednesday, July 26th.

THE large surgery classroom was completely filled on the first day of the Section meetings. Professor Alexis Thomson presided, and was supported by the officers of the Section. In introducing the discussion on cholelithiasis Professor Rutherford Morison (Newcastle-on-Tyne) sketched the recent history of the surgery of gall-stone disease, with especial reference to his own part in it and to the evolution of the present-day opinions. In searching for the causation of the formation of gall stones, he now thought that infection of the gall bladder—the universally popular acceptation—was insufficiently supported by the evidence adduced in its favour. Until the cause of calculus formation everywhere in the body could be explained, probably by the chemists, doubts as to the etiology of those in the gall bladder must persist. Some predisposing causes were more common than others: repeated pregnancies, sedentary life, obesity,

all played a part. Clinically there were three types of stone—multiple small stones, medium (few or single), giant stones. In diagnosis only one subjective symptom was of importance—pain. This pain must have special characteristics—severe, sudden in onset, referred to epigastrium, catching the breath, and on cessation leaving the patient completely well. Great advance in diagnosis was not likely till *x* rays demonstrated gall stones in the bladder and ducts as they did in the urinary tract. There was only one reasonable form of treatment—namely, operation—a fact not even yet sufficiently realized. When the cystic duct was patulous cholecystotomy was the best operation; this he had advocated from the earliest days, and he still did so. If the gall bladder was seriously infected it should be opened freely, the stones removed, drained, and unless the gall bladder was so obviously pathological that recovery seemed impossible it should have the benefit of the doubt. If a second operation were called for it was found that the first had increased the natural peritoneal immunity to such an extent that the consequences of the second operation were of less importance. At present he was opposed to cholecystectomy as the operation of election, and his objections were founded on the consideration of gall-bladder function and the after-results in some cases. The ducts of the body possessed a protective mechanism of considerable value to the viscus which they drained. Removal of the gall bladder often resulted in dilatation of the common duct. This disturbed the protective mechanism of a duct opening into a potentially septic area—the duodenum—and might even give rise to a form of hepatic cirrhosis.

Mr. Farquhar Macrae (Glasgow) thought that infection and stasis were the two main contributory factors in gall stones. The mode of infection was in dispute; two factors were of importance: the bacteria required to be attenuated, probably in the passage through the liver, and infection could reach the wall of the gall bladder by its lymphatics. The element of stasis was largely supplied by the drag of a mobile ascending colon. In pregnancy it was possible that the increased cholesterol in the blood and the direct pressure upwards of the uterus were active agents, though repeated pregnancies might quite well increase the ptosis. Repeated attacks of cholecystitis had been cured by fixing up the colon in the method advocated by Mr. Waugh. Practically all cases of gall-stone disease were associated with very persistent flatulent dyspepsia, and even though colic did not occur gall stones or chronic cholecystitis were commonly present. In regard to operation he remarked that all cases of cholelithiasis do not demand operation, but if definite colic occurs operation may then be urged. He was not a wholehearted advocate of routine removal of the gall bladder; so many and varied complications could follow that operation. He would like the general practitioners to narrate their experiences of the after-results of gall-bladder operations; so far as his inquiries went the family doctor did not prefer the complete removal of the bladder to the simpler procedure of drainage.

Mr. D. P. D. Wilkie (Edinburgh), in speaking on the question of diagnosis, thought that by the *x* rays gall stones could be demonstrated if the technique were rather different from that commonly employed, and that by the use of the duodenal tube the relaxation of the sphincter of Oddi and contraction of the gall bladder were accomplished and the problem of biliary sand and chronic cholangitis simplified. Gall-stone surgery was so difficult that it should be attempted only by men of experience, as, unless the surgeon were prepared to explore fully and deal with the varied and complicated conditions found, he should leave that class of case alone. Free exposure of the parts, with accurate assessment of the full extent of the pathological process and the adoption of methods adequate for this, were the two essentials. Beside these the question of removing or leaving the gall bladder was of secondary importance.

Mr. Archibald Young (Glasgow) thought that the introducer of the discussion should be prepared to advance some sort of more or less definite substitute for the bacterial theory in etiology. Nor did it appear that the diagnosis was quite so simple as he would wish them to accept. What was required was a coherent and consistent differential diagnosis. He advocated the Robson incision, which, if made large enough, gave adequate exposure, and if the patient were nursed in the bolt upright position gave efficient drainage. In regard to type of operation, each case must be judged on its merits. Mr. R. H. Parry (Glasgow) urged that gall-bladder cases should be sent to the surgeon after the first attack of colic, and in regard to the question of removal or drainage the answer depended on whether the infection were confined to the bladder or was one involving the ducts as well. Mr. Novis (Bombay), Mr. Mothersole (Bolton), Mr. Handfield Jones (London), Mr. Childe (Portsmouth), Dr. Arthur Jones (Mountain Ash), Mr. H. S. Souttar (London), Mr. Fletcher (Brighton), also contributed to the discussion, and Professor Rutherford Morison replied.

Professor Bull of Christiania followed with a most interesting paper on the operation of extrapleural thoracoplasty for pulmonary phthisis. He had a record of seventy-five cases, and his results justified the procedure. The indications for the operation were that the physician and surgeon working together should decide on the type of case suitable, that the operation should be performed only after failure of ordinary sanatorium treatment, including artificial pneumothorax repeatedly tried, and that the other lung should be, if not absolutely sound, nearly so. Details of the technique of the operation were given, and *x*-ray photographs and charts were exhibited on the screen. Perhaps the most interesting part of Professor Bull's contribution was the demonstration of the success of the operation on three patients who had come specially from Norway to Glasgow for the meeting. Sir William Macewen invited the Section to accord Professor Bull its heartiest thanks for his noteworthy paper and demonstration.

SECTION OF DERMATOLOGY.

Wednesday, July 26th.

AFTER the President had briefly welcomed the members, Dr. Cranston Low (Edinburgh) opened a discussion on seborrhoeic dermatitis. He first referred to the discussion on the same condition at the meeting of the British Medical Association held in Cheltenham in 1901. He said that the term "seborrhoea" should only be applied to the oily discharge of the sebaceous glands, which was often associated with increased sweating or hyperidrosis. Was this discharge due to hypertrophy or inflammation of the glands? Although bacilli were always present it was primarily an amicrobic process. Sometimes it occurred shortly after birth, and must then be acknowledged to be non-infective in origin; it was not common in childhood, but was frequent after puberty; several factors affected it. A carbohydrate diet was deleterious, as was also an excess of sugar in the food. Milk fats were worse than meat fats, because they raised the excretion of fats decomposable by bacteria. Alcohol, heat, woollen clothing, toxaemias of various kinds, and the endocrine glands were also factors which must be taken into account. On the other hand, according to Darier, "la kératose" was an anomaly of the skin and not a general disease at all, and this view was somewhat supported by Drs. Barber and Semon. Special forms of seborrhoea were: (1) true oily seborrhoea, which was always associated with acne; (2) seborrhoea capitis (*a*) sicca, (*b*) steatodes, with formation of crusts. He was unable to draw any clear opinion between the two: all conditions revealed the spore of Malassez. The connexion between seborrhoea capitis and ordinary baldness was interesting. Sabouraud connected baldness with seborrhoea oleosa, but it was more commonly associated with seborrhoea sicca. The lecturer discussed the causes of baldness, and suggested that it was much commoner in men because they wore the hair short; the wind blowing through the hair as it hung down the back was the normal stimulus to its growth. Seborrhoea corporis revealed the same organism as seborrhoea capitis, but whether it was the cause was very doubtful; the possibility of widely spread cases being due to sensitization to some protein must be considered. Some of the cases of extensive and resistant eruptions on eyebrows and beard occurring during the war might have been due to sensitization to protein or to the staphylococcus. He was inclined to think that in any case sensitization of some sort played an important part in the causation of seborrhoeic disorders.

Dr. Barber (London) said that he had been investigating the subject since 1917. Dr. MacCormac had pointed out that the seborrhoeic state was very common in the army. A distinction must be drawn between seborrhoeic dermatitis with secondary infection and eczematized impetigo. Most cases of severe mustard-gas dermatitis occurred in persons in the seborrhoeic state. These cases had gone on after the war but were now less numerous. Some of the patients had become seborrhoeic only while in the army, but others, the more severe, had been affected already while in civil life. It was difficult to define the seborrhoeic state. Excessive greasiness of the skin was a racial and familiar characteristic. There was also a pathological seborrhoeic state in which the secretion was altered as

well as increased. Alteration was the more important, for seborrhoeic dermatitis might occur in ichthyotic subjects. In acute cases there was increased acidity both of the secretions and of the urine. The resistance to the invasion of bacteria was diminished. The chief organisms were the *Staph. albus* and *aureus* and the acne bacillus, each of which produced characteristic eruptions. The best treatment was by means of autogenous vaccines. Large doses of alkalis were also recommended in less acute cases because of the diminished alkali reserve. He preferred to use this term rather than acidosis, which was used also for other conditions. The blood sugar, he found, was not as a rule much above normal, except when secondary pyogenic infections had occurred. It was highest in cases of sycosis barbae. The chief factors in the seborrhoeic state were: (1) faulty digestion, especially of carbohydrates, with consequent increase of acids; (2) hepatic insufficiency; (3) imperfect oxidation, lack of exercise, bad ventilation, and anaemia.

Dr. MacKenna (Liverpool) said that Dr. Barber and his colleagues were doing much to illumine an obscure subject; he did not think that the fact that acid was being eliminated proved that the alkali reserve was lowered, but he thought that Dr. Barber's later investigations had done so. He thought that the endocrine glands had something to do with every case of seborrhoeic dermatitis. He disagreed with Dr. Cranston Low as to the cause of baldness, but ascribed the earlier loss of hair in males than in females to differences in their endocrine glands. He uttered a word of caution against attaching too much importance to protein sensitization. Dr. Kenneth Wills (Bristol) desired to emphasize the infectivity of seborrhoeic dermatitis. He noticed that children who had seborrhoeic eczema were always associated with parent or nurses who had seborrhoea sicca of the scalp. He had seen striking instances of this in his practice. Dr. Douglas Heath (Birmingham) had also noted that large doses of alkalis improved acute seborrhoeic conditions. He also found that sulphur lotion was much improved in its action by being made up in an alkaline solution. He thought that olive oil, although a popular remedy, was highly deleterious in seborrhoea. Dr. Barber, on being recalled for his views on treatment, spoke in favour of autogenous vaccines, which he found extremely useful, notwithstanding the poor results which some dermatologists had reported from vaccine therapy. Dr. A. M. H. Gray (London) asked the meeting to define what was meant by seborrhoeic dermatitis and seborrhoeic eczema. He considered seborrhoea to be a mere excessive secretion of the glands, and he excluded conditions where there was any inflammation whatever. The term "seborrhoeic dermatitis" he applied to cases where there was some inflammation, most typically to the cases of circinate and figurate dermatitis in the centre of the chest and back. He refused to associate premature alopecia with the barber's shop and local infection, and in our present ignorance of the endocrine glands he preferred to stress the hereditary factor in these cases. Dr. Norman Walker (Edinburgh) held, on the contrary, that the local cause was responsible for the loss of hair. He believed in frequent washing of the scalp as a preventive of baldness. Moreover, he believed in the treatment of the scalp as the key of the treatment of seborrhoeic conditions, and above all, of rosacea. He also emphasized the importance of treating the oily seborrhoea of the scalp when dealing with acne vulgaris. Dr. O'Donovan (London) expressed gratitude to Dr. Cranston Low for his historical summary of the subject. He referred to the frequency of sugar excess in the blood in connexion with inveterate sycosis, but found that the exhibition of alkalis was of no therapeutic value. He had got the best results in such cases by painting them with liquid acid mercury nitrate. Dr. Murray (Glasgow) said that more treatment should be devoted to the scalps of children, and that seborrhoea of the scalp was often aggravated by working in watery solutions. Dr. Brown (Local Secretary of the Section) referred to two cases of his own in which gastric analysis had shown marked hyperacidity. Dr. Lancashire (Manchester), emphasizing the importance of preventive treatment, said that sulphur was best used as an ointment. He was disappointed with colloidal sulphur. Dr. Goodwin Tomkinson (Glasgow, Vice-President) referred to a case of seborrhoeic dermatitis associated with failure to pass an examination combined with a diet of sweetmeats.

The President then summed up the discussion. He said that the nature of seborrhoea remained obscure, but that Dr. Barber had started his researches on scientific lines. There were three possible lines of research: (1) clinical; (2) on the lines of comparative anatomy; (3) biochemical. The study of the glands in vertebrata revealed a correlation between keratosis and sebaceous activity. Probably the sebaceous glands were not purely fat glands but "moulting" glands. For the President seborrhoea signified alteration of the colour of the skin and cessation of the keratinization of the cell associated with loss of hair. When formation of keratin was exaggerated and a true exoskeleton was formed, as in reptiles, the sebaceous glands disappeared. So they did in birds, with the exception of the uropygial gland. On the biochemical side, he considered that the alkalinity of the tissues was an important point. All cutaneous inflammations were accompanied by acidity of urine because the exudation drained away the alkalis from the blood. He also considered relations of sugar to the blood important; probably the mischief was done by one of the di- or poly-saccharides as yet undiscovered. Dr. Cranston Low in his reply said that he still adhered to his opinion that men grew bald because they cut their hair short; he was disappointed with the result of the alkaline treatment of seborrhoeic conditions. Dr. Barber also replied.

After the discussion Dr. Lancashire read a short paper on "Dermatitis artefacta." He classified the disease into four types: (1) Hysterical subjects, who mutilate themselves with the idea of exciting pity and interest. (2) Those who appeared to suffer in order to please themselves and find a morbid satisfaction in the contemplation of their own infirmities. (3) Those who are victims of obsession and sudden uncontrollable impulse. (4) Those who practise the production of these lesions as a habit, comparable with nail biting. In treating these cases he, unlike many of his colleagues, found that the best course was to tell the patient that she had been found out.

SECTION OF DISEASES OF CHILDREN.

Wednesday, July 26th.

In opening the joint discussion with the Section of Physiology on the etiology of rickets, Dr. Leonard Findlay reminded his hearers of the work done on rickets by physiologists and clinicians, work in which Glasgow graduates had taken a large share. While not belittling the achievements of physiologists he thought the final battle as to the etiology of human rickets must be fought out in the clinical field. It was necessary to see how far theories of pathogenesis stood the test of clinical experience. Rickets had a definite geographical distribution and seasonal incidence. It was also, except in India, a disease of the poor. These facts must be reconciled with any theory of its origin. In his investigations into rickets Dr. Findlay had met with several perplexing facts. For instance, one child might be actively running about and yet *x*-ray examination showed a severe degree of deficient calcification at the growing ends of the long bones. In another case, ostensibly in consequence of some therapeutic measure, the bones showed signs of healing but the child remained helpless and disinclined to walk. This raised the question as to whether rickets was a disease which might implicate any part of the body or whether bone changes were necessarily always present. The dietetic theory of rickets was at present the most popular. Clinically the diets might be divided into three groups: prophylactic, provocative, and curative. The addition of cod-liver oil to the diet appeared to have a prophylactic effect in some cases but not in all. Certainly children brought up on diet deficient in fat did not necessarily develop rickets. The recent work of Hutchison in India made it difficult to understand how diet could be an important factor. As regards the curative effects of cod-liver oil Dr. Helen Mackay's work showed that no improvement followed addition of fats to the diet except during the summer months. If the absence of fat-soluble A were the cause of rickets keratomalacia should be seen in many cases, but in point of fact it was very rare. Environment and general hygiene had always seemed to be factors of importance. Dr. Findlay himself was inclined to lay stress on the absence of exercise. Sunlight had a curative effect, but in the cases ascribed to lack of sunlight lack of exercise had also been present. In Iceland rickets did not occur, although there was no sun for four months in the year. Dr. Findlay concluded that rickets was not a deficiency disease. He thought it was somehow associated with confinement, but suggested that in both experimental and clinical fields the idea of rickets being an infection should be more seriously entertained and investigations undertaken with this idea in view.

Professor Mellanby (Sheffield) considered rickets as a disease accompanying growth, and due primarily to defective feeding.

A rickets-producing diet was one that contained too little of those foodstuffs responsible for proper calcification of bone, and too much of those substances responsible for the growth of tissue. In diets containing a sufficiency of calcium and phosphorus the most potent influence for procuring the calcification of bone was a vitamin having distribution and properties similar to fat-soluble A. The essential factors of a diet were interdependent, and it was no longer possible to speak of excess or deficiency in an absolute way. The amount of fat-soluble vitamin which might be sufficient in one diet might become relatively deficient if more cereal were added. Similarly, calcium might become inadequate if excess of butter or cod-liver oil were given. In his experience rickets never developed on a good diet however bad the environment, and a really bad diet would result in rickets in the most perfect surroundings. He then discussed the interaction of fat-soluble vitamin, calcium, and phosphorus, and the relation of the experiments performed on rats by various investigators to his own work on dogs. With regard to cereals, he maintained that the severity of rickets produced by a deficiency of vitamin depended, if other things were constant, on the amount of carbohydrate ratio—the more carbohydrate consumed the worse the rickets. Adding more cereal to a diet already adequate caused young animals to increase in weight from deposit of fat in the tissues and to become lethargic. Addition of fat, on the contrary, stimulated metabolism. The fat was not deposited in the tissues. It was burnt, and the animal became more lively and took more exercise. It was probable that a child's activity depended on its diet, not on its environment. It was therefore not lack of exercise but the unsuitable feeding which produced lethargy in the child and caused rickets. Dr. Mellanby agreed with other workers as to the therapeutic effects of sunlight. He thought they might be explained by chemical changes in the skin whereby vitamin was liberated into the circulation. He was of opinion, however, that sunlight was of secondary importance and would only prevent rickets in cases that were receiving a mediocre "borderline" diet.

Dr. Robert Hutchison (London) said that he could only speak of rickets as a clinician. He was seeking the truth, which in this case appeared to be hidden very deeply at the bottom of a well. As regards the cure of rickets, clinicians had always succeeded in curing the majority of cases. Thirty years ago Dr. Cheadle had insisted on the importance of hygiene in rickets. The speaker agreed with Professor Mellanby that the dietetic factor could not be left out of account. If cures could not be obtained by altering the diet when other conditions remained the same, then work in hospital out-patient departments would be futile. Clinicians had long recognized that deficiency of fat and protein and relative excess of carbohydrates were important factors. He thought that adding oatmeal to the diet was of advantage in rickety children. There was, however, evidently another factor in the causation of rickets of which at present we were ignorant. He thought that rickets was a metabolic disease and not a microbic infection. Workers should concentrate on the study of metabolism in rickets, as was being done by Professor Paton and his associates. Professor Noël Paton (Glasgow) said that from the practical point of view there was no evidence of the existence of any antirachitic agent in butter and milk fat. Professor Mellanby had produced rickets in dogs on a diet of separated milk, but other factors were really involved, such as low calcium and low fat intake. The difficulty was that rickets so often underwent spontaneous improvement. He could not find any evidence that it was cured by butter. His experiments on puppies showed that those kept in the country on separated milk were free from rickets, whereas those kept in the laboratory on whole milk contracted the disease. Cod-liver oil had a curative action, but so had other agents, such as sunlight, ultra-violet rays, and fasting, and many cases were self-cured. Rickets in pigs cleared up when the salt content in the diet was altered. He had tested the infective theory by inoculation of blood and feeding with faeces, but with negative result. He concluded that we knew little more about the cause of rickets than Glisson or Soranus. He thought that workers should co-operate, avoid theories, and get to work on facts. Professor Korenchevsky (London) said that the results of his experiments agreed with those of Professor Mellanby. Deficiency of fat-soluble A might produce either rickets or osteoporosis. The action of vitamin A on the skeleton was the result of several factors, only some of which were known at present. First, it had the property of conducing to the normal deposition of lime salts in bone. Secondly, it was necessary to growth and normal nutrition of tissues. Thirdly, it had the power of inducing a normal state of appetite. Different individuals resisted the bad effects of deprivation of vitamin A in different degrees. The state of nutrition of the mother during pregnancy and lactation was a most important factor in the skeletal development of the offspring. Dr. J. B. Douglas Galbraith (Glasgow) gave the results of a clinical investigation carried out in different groups of children whose diets were carefully controlled. Some children were fed on a diet rich in fat, others on a diet deficient in fat, others were breast-fed. During the winter a large percentage of the children in each group developed rickets, but the percentage was slightly higher in the group on the diet rich in fats, and this group also had the disease rather more severely. Very few children developed rickets during summer. Cod-liver oil was not given, milk fat being used in all cases.

Dr. J. Sim Wallace (London) read a paper on the association of dental hypoplasia and rickets. Those well acquainted with the facts did not believe in the vitamin theory as regards teeth. The enamel was developed long before the eruption of the teeth. In feeding experiments the hypoplasia, which was thought to have been caused by the absence of vitamin, must have existed two or three months before the special feeding was begun. In rickety children there was no defect of enamel as a rule, and caries was not more frequent in them than in others. The only connexion between rickets and caries lay in the fact that excess of carbohydrates caused both. Dr. H. S. Hutchison (India) gave the result of his observations on dental caries in the Nasik district in India. Dental caries was rare among the natives, but its incidence was the same in all classes. Rickets, on the other hand, was six times as common in the upper classes, where purdah was the rule. He did not agree with Dr. Mellanby as regards the activity of children being due to fat in the diet. The children of the poorer classes in India who received scarcely any fat were extremely active. Dr. J. B. Orr (St. Andrews) limited his remarks to one aspect of the dietary factor in rickets—namely, the mineral content of the food. The requirements of individual species varied, the ideal proportion of minerals for each species being that found in the milk. The utilization of minerals depended on the form in which they were present in the food and their relative proportions. He had repeated Dr. Mellanby's experiments on pigs and had confirmed his results; but when he had adjusted the mineral ratio to the requirements of the animals no rickets developed, although the other factors in the diet remained the same. Dr. W. E. Elliot, M.P. (Glasgow), laid a special stress on the disturbance of balance in the diet in rickets. The mineral content was extremely important. The dietetic facts had not been as yet thoroughly investigated. It was impossible to dogmatize until they were known. Dr. Leonard Findlay replied.

SECTION OF INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

Wednesday, July 26th.

PROFESSOR GLAISTER, President of the Section, in his opening address (published in full in last week's JOURNAL, p. 165) referred to the conjunction of the subjects of forensic medicine and industrial diseases in one Section and pointed out that hitherto forensic medicine had been considered chiefly from the standpoint of criminal law. From time to time the question had been openly discussed. Whether the time had now arrived for the inclusion under one group-subject of all matters which involve the application of the science of medicine to the purposes of law, such as National Health Insurance, the Compensation and Employers' Liability Acts, and those portions of public health law briefly comprised under the headings of nuisances, unsound food, and others relating to medical knowledge as applied to the law, with the title of State medicine. He was of the opinion that the time was not yet ripe for such general inclusion. The remainder of the paper was devoted to the subject of industrial diseases and compensation considered retrospectively and prospectively, including the advisability of establishing a State system of accident insurance. Professor Allison read a paper on the importance of teaching medical jurisprudence to students of medicine and law. The necessity was emphasized by the medical jurist viewing disease, accident, and death from the legal as well as the clinical standpoint, and the need for acquaintance with medical matters on the part of lawyers pointed out. A plea was made for more frequent

post-mortem examinations where the cause of death was doubtful, even though lay evidence pointing to violence was not present. Suggestions were made for more thorough teaching of the subject to students, and it was specially urged that wherever possible they should be brought into more intimate contact with actual cases.

In the discussion which followed the address Sir W. H. Willcox agreed that more attention should be devoted to forensic medicine during the student's curriculum, and also entered a plea for more frequent *post-mortem* examinations. Mr. J. D. Strathern, Procurator-Fiscal for Lanarkshire, was of opinion that medical jurisprudence should be a compulsory subject for examination for all law students, and advocated the desirability of more frequent discussion of medico-legal subjects by lawyers and doctors. Dr. Godfrey Carter (Sheffield) advocated that in all large cities having a medical school the work of police surgeon should be delegated to the person holding the lectureship in forensic medicine. The President and Sir Thomas Oliver also took part in the discussion.

Sir W. H. Willcox read a paper on the dangers to health produced by the use of industrial preparations of arsenic. He enumerated the commoner preparations used, and showed how these might result in poisoning of an accidental, suicidal, or homicidal type. He pointed out that there had been a large increase in the number of cases of poisoning from industrial preparations of arsenic since restrictions with regard to the sale of certain arsenical preparations of arsenic were relaxed in 1908. Illustrative cases of accidental poisoning were adduced and some recent trials for murder referred to.

Sir Thomas Oliver and Professor Glaister, who took part in the discussion, agreed with Sir William on the urgent need for further restrictions on the sale of preparations of arsenic. The Section then passed the following resolution:

> The sale of arsenical preparations included under Section 2 of the 1908 Act should be limited (1) on the part of the seller to properly qualified and competent persons—namely, to registered pharmacists; and (2) on the part of the purchaser to those who have obtained a licence for the possession of such dangerous articles.

SECTION OF PHYSIOLOGY.

Wednesday, July 26th.

On Wednesday morning, July 26th, this Section (as recorded elsewhere) held a joint session with the Section of Diseases of Children for an important discussion on rickets.

In the afternoon a demonstration on rickets was given in the Physiological Institute. A large number of specimens illustrative of various aspects of the disease as occurring both in the human subject and in animals were on view. The chief exhibits were: (1) Experimental rickets (Mr. A. Watson and Professor D. Noël Paton). X-ray photographs and actual bones of normal and of rachitic puppies. Influence of various experimental conditions, chiefly dietetic. (2) Experimental rickets (Professor V. Korenchevsky). A fine series of microscopic specimens of rachitic changes in the bones of rats—mostly due to a diet deficient in vitamin. (3) Rickets in India (Dr. H. S. Hutchison and Dr. G. Stapleton). A most interesting series of photographs and skiagrams illustrating housing conditions and early and late cases of rickets amongst the native population. (4) Clinical rickets (Dr. J. B. Douglas Galbraith). Skiagrams and photographs showing the progress and cure of the disease in children.

RADIOLOGY AND ELECTROLOGY.

Wednesday, July 26th.

Dr. L. A. Rowden, the President of the Section, opened the proceedings with a brief address of welcome. He prophesied an increasingly important place for radiology in the treatment of disease in the future, although, on account of the very high initial and continuing cost of apparatus, it might be that the private radiologist and electrologist would have to give way to some form of institutional provision. Dr. J. R. Riddell (Glasgow) opened a discussion on the treatment of malignant disease by the Erlangen method of deep *x* ray therapy. He recounted a very large number of cases treated by this method, with results less favourable than those reported from Germany, but still with a high average of success. In 30 per cent. of the cases all evidence of the disease had disappeared, and in 52 per cent. the benefits secured were very great in the form of relief of pain and discomfort. Dr. Douglas Webster (Middlesex Hospital) also read a paper on the subject. The whole matter, he said, was one in which sure conclusions as yet were difficult to arrive at. A series of notable advances in *x*-ray instrumentation and in methods of quantitative measurement of depth radiation were being made, and these must in a short time result in a great increase in the knowledge of the subject. He was sure that some of the beneficial effects he had seen could not have been obtained with any other method of treatment. Dr. F. Hernaman-Johnson drew attention to some principles which were in danger of being overlooked. Cancer treatment must always be considered, not only in relation to the malignant cells, but to the surrounding tissues and to the general state of the patient. Too much attention was apt to be paid to the single large dose—the "knock-out blow"—and not enough to the series of small doses which would often give relief for years. A number of questions were put to the readers of the papers by Dr. J. Mitchell, Dr. Gibson Graham, the President, and others. Dr. Woodburn Morison (Manchester) then read a short paper dealing with the differential diagnosis of diseases of the diaphragm, and showed *x*-ray views of a number of cases. Dr. F. Hernaman-Johnson opened a discussion on gas inflation as an aid to *x* ray diagnosis. He described the uses of peritoneal inflation, the risks of the method, and the importance of careful technique, and then turned to the subject of perirenal inflation, the method introduced by Dr. Carelli of Buenos Aires. The advantage of being able to show the complete kidney outline, together with that of the suprarenal capsule, was obvious. It would often in itself clear up a doubtful diagnosis, and when combined, as Carelli suggested, with gas inflation of the ureters and pelvis, left little to be desired in the way of *x*-ray demonstration. Recently, in conjunction with Dr. Ernest Young, the opener of the discussion had made some experiments upon inflating the stomach and duodenum through a fine duodenal tube. So far as the duodenum was concerned, the gas appeared to distribute itself too quickly into the small intestine to permit of useful outlining. The value of stomach inflation was that, when combined with peritoneal inflation, it enabled comparatively small changes in thickness in the anterior wall of the stomach to be recognized. Dr. J. M. Redding (London) laid stress upon the need for careful selection of cases in the method of injection of gas into the peritoneal cavity. In such selected cases the method would furnish information not to be obtained by any other means short of an exploratory laparotomy. Dr. Hernaman-Johnson, in reply to the President and others, said that he regarded CO_2 as more desirable than oxygen; the only disadvantage of CO_2 was that the pictures must be taken very quickly.

SECTION OF ANAESTHETICS.

Wednesday, July 26th.

A well-attended meeting of the Section of Anaesthetics was held in the University Buildings on Wednesday, July 26th. The President, Dr. McCardie, in his opening address, after referring to the honour done him by choosing him as president of the Section and thanking Dr. Fairlie, the local honorary secretary, for the admirable arrangements made for the meeting, stated that he was led to believe that the official training of Glasgow medical students in the administration of anaesthetics was still in the hands of surgeons. This practice was in the best interests neither of the students nor of the patients. It was impossible for surgeons engrossed in the ever-widening field of their own activities to keep abreast of advances in the rapidly developing art of anaesthesia, much less to teach such developments. The life of a patient often depended not only on the choice of an anaesthetic but also on its method of administration. His fellow workers in Glasgow and other parts of Scotland had taken a full share in these developments, and he ventured to prophesy that this first meeting of the Section of Anaesthetics to be held in Scotland would be the precursor of many other meetings in her cities. Dr. David Lamb (Glasgow) then read his paper on "Bronchopulmonary complications following operations under anaesthesia." Whilst all Glasgow anaesthetists used ether freely, as well as chloroform, in their work, the students were still taught that whilst a few deaths occurred on the table from chloroform, far more occurred after the operation from pulmonary troubles and heart failure when ether was used. The number of fatalities occurring annually in this city from chloroform in the hands of comparatively inexperienced anaesthetists would probably surprise, if not startle, the adherents of this old doctrine. In regard to the *frequency* of

these complications, statistics were of little value unless based upon careful personal observation of all cases, and unless discriminating between clean and septic cases and between those beginning in the first twenty-four or forty-eight hours after operation and those occurring later on. The latter were almost always associated with sepsis. The most important contributory factor in the causation of broncho-pulmonary complication was the presence of more or less recent catarrhal affections of the upper air passages of the patient prior to the operation. Next in importance was exposure to chill before, during, or after operation, though there were other contributory factors, including aspiration of infective organisms from the mouth and throat ("aspiration" pneumonias). The later pulmonary affections were practically all septic in origin. With regard to the part played by the anaesthetic, opinion in this country and abroad varied considerably, but the general consensus of opinion was that prolonged administration alone (more especially of concentrated vapour of ether) gave rise, by direct irritation or by chilling due to evaporation, to any real danger. The vapour of ether, and of chloroform to a very much less degree, was an irritant to the lining membrane of the upper air passages and bronchi, but unless unskilfully administered hardly ever enough to set up a purely irritant bronchitis or broncho-pneumonia like that caused by poison gases during the war. But where the resistance of those tissues was weakened by chill or lowered vitality, or the presence of a mild catarrhal condition, or both together, this comparatively mild irritant action, more especially of ether, might act as the "last straw." For prevention Dr. Lamb advocated the employment of expert anaesthetists, who would be more likely to avoid the use of a too concentrated vapour and the administration of ether in cases in which its use, prolonged or otherwise, was contra-indicated. He also advised preliminary administration of atropine and avoidance of ether in "catarrhal" cases, lateral position of head when possible after operation, especially in mouth cases, to prevent aspiration troubles, avoidance of tight bandaging in heart and abdominal cases, and washing out the stomach prior to operations in "obstruction" cases.

The paper gave rise to an interesting discussion in which the following took part: Dr. Dickinson Berry (London), Dr. Flemming (Bristol), Dr. Paton Boyd (Glasgow), Mr. Herbert Paterson (London), Dr. Featherstone (Birmingham), Dr. Pinson (Manchester), Dr. Johnson (Aberdeen), Dr. Pinto-Leite (London), Dr. Fairlie (Glasgow), Dr. Barras (Glasgow), and Dr. Adams (Birmingham). The discussion was wound up by the President, who reviewed the various remarks made by the speakers, and commented upon them and upon the excellent paper contributed by Dr. Adams. On the invitation of the President, the members of the Section then met together at lunch in the Students' Union. A less formal meeting followed at which Dr. Flemming (Bristol) read his paper on "Different effects produced by exposing tissues to various concentrations of anaesthetic vapour," followed by a demonstration of these effects, illustrated by the microscope, photographs, and living plants. Subsequently Dr. Featherstone demonstrated his new airway, and Dr. Pinson his "bomb" apparatus for the administration of ether vapour.

SECTION OF ANATOMY.

Friday, July 28th.

The President, Professor Alexander Macphail (London), said that the British Medical Association had always identified itself with scientific work, and had included anatomy in its list of subjects for discussion whenever possible. He emphasized the value of anatomy to those in practice or working in other scientific fields. On the other hand, anatomists derived great benefit by contact with the practising profession. He wished to pay a tribute to the man who was his teacher in this University and under whom he had been senior demonstrator. Professor Cleland was a giant both in intellect and stature. He thought he would be interpreting the wishes of the Section if he asked the secretaries to transmit to Professor Cleland a message expressing the esteem, high regard, and affection which they felt towards him. Professor Macphail then went on to discuss the administration of the Anatomy Act, and the measures he had taken to obtain sufficient anatomical material for teaching. Only unclaimed bodies were asked for, and he deprecated any attempt to bring about any form of compulsion in the disposal of bodies. He thought that when those in charge of unclaimed bodies understood what they were wanted for no difficulty would be found in obtaining sufficient material. Professor J. C. Brash (Birmingham), discussing the relation of the ureters to the vagina, explained his method of dissection, which preserved this relation and also marked out the trigone in relation to the vagina. In the course of this work he had discovered several interesting facts. The relation of the last portion of the ureter to the vagina was variable. There was usually a portion of the ureter in front of the vagina lying for a short distance in the connective tissue between the vagina and bladder and then in the wall of the bladder itself. The vagina and bladder were usually not symmetrically related to each other. The result was an increase of this portion of the ureter on one side and a corresponding decrease on the other. In the majority of specimens examined the left ureter had the closer relation to the vagina and was occasionally found crossing the middle line of the vagina; it was therefore in a position of greater danger than the right. He explained the asymmetry of the uterus as due to pressure from coils of intestine distended with meconium during the latter part of intrauterine life.

Dr. Alfred Piney (Birmingham) discussed the naked-eye anatomy of the bone marrow with age changes, and gave the results of examination of the bone marrow in 1,700 necropsies. Dr. J. M. Woodburn Morison described the teaching of anatomy by radiology in the anatomy department in Manchester, and outlined his scheme of radiological demonstrations to anatomy students. He explained how the structure and growth of bones, the development of epiphyses, and the movements of the heart and intestines could be studied by this method. Research students were also enabled to use the *x*-ray apparatus for their work.

In his paper on the structures of the vertebrate head Dr. W. B. Primrose set out to show that the structure of the vertebrate head was based upon the first metameric segment of the body with which was combined an unsegmented structure, the face. Four different skeletons appeared during development, but although morphologically distinct they were not separable anatomically. They were: (1) The sclerotome skeleton, which was first formed at a time when the somatic or body wall mesoderm became segmented for the purpose of acting upon the segmented hydrostatic or water skeleton contained in the coelomic sacs of the Annelida. The hydrostatic skeleton disappeared, but the septa separating the coelomic compartments remained to give attachment to the segmented body wall muscles and, in fishes, became the sclerotomes. From the sclerotomes were developed two sets of arches, the neural and the visceral. In the head the sclerotome skeleton was represented by one neural arch—the occipital, and one visceral arch—the hyoid. (2) The axial skeleton, which was developed from the notochord. It formed the basi-sphenoid and the basi-occipital. (3) The splanchnic skeleton, which appeared when chordate animals evolved special respiratory organs. It was represented by the gill bars in fishes and the laryngeal, tracheal, and bronchial cartilages in pulmoniferous animals. In man it also formed the greater cornu of the hyoid. (4) The facial skeleton, which was evolved in connexion with the organs of special sense, with a supplement in the form of membrane bone to support the face. The existence of this skeleton was determined by the ectoderm in the form of sense organs, brain, teeth, and general skin covering, and as none of these structures was segmented, neither was the skeleton which supported them. The author then explained the relation of the myotome, somatopleure, segmental blood vessels, gut derivations, and ectoderm (with special regard to the cranial nerves) to the head segment and traced the development of each. A simple metameric segment was the morphological basis of the vertebrate head, but a condition of extreme specialization had been reached during evolution.

Dr. W. K. Connell's paper on the form of the palate in childhood was based on the impression taken in plasticine of the upper dental arcade in over a thousand children. The variations in shape of the arch were studied in normal and pathological states, as also the alterations which took place during growth and the relation of the size of the arch to the state of general development of the child. Nine principal shapes were found in normal children. Curiously enough, in children with adenoids no narrowing of the arch had been found. During growth the palate became actually narrower from 12 to 14. No relation had been found between size of palate and size and state of development of the child. Dr. John T. Hunter (Sydney), in discussing intestinal diverticulum with retroposition of the

transverse colon, showed drawings of the viscera of a child seven days old who had a large cyst in the mesentery. The cyst was attributed to the closing off of a diverticulum arising in the duodenum during development. The abnormal position of the colon was explained by the fact that the proximal part of the gut was bound down by the cyst and could not assume its proper position during development.

SECTION OF LARYNGOLOGY.

Thursday, July 27th.

THE discussion on the symptoms of œsophageal disease and their differential diagnosis was opened by Dr. D. R. Paterson (Cardiff) and Mr. W. G. Howarth (London). Dr. Paterson gave a survey of the symptoms connected with the more common affections of the upper opening of the œsophagus, whilst Mr. Howarth dealt mainly with the lower half of the œsophagus. The recent methods of diagnosis were described, the technique of using the fluoroscopic screen being dealt with in detail. Dr. Brown Kelly (Glasgow), in discussing these papers, described in detail his observations on cardiospasm and achalasia. Dr. William Hill (London) described primary spasm as an extra-metropolitan disease, never seen in London. He described his observations and experiments on the physiology of the cardiac orifice and the hiatus in the diaphragm. Dr. Ivy McKenzie (Glasgow) spoke of the problem of spasm at either end of the œsophagus. Sir William Milligan (Manchester) expressed the opinion that cardiospasm was due to spasmodic action of the left crus of the diaphragm, and related some experiments which confirmed that view. Dr. W. S. Syme (Glasgow) described a case of spasm of lower end of the œsophagus well above the opening through the diaphragm. Sir StClair Thomson (London) supported the views of Dr. William Hill. He advocated the formation of a school for the teaching of œsophagoscopy. Dr. James Adam mentioned a case of malignant disease of the hypopharynx that lasted fifteen years.

Mr. A. J. Wright (Bristol) read a paper on congenital choanal occlusion in two members of one family. Sir StClair Thomson related a case in which the obstruction was unilateral and the infant could only be suckled lying on the same side. The paper was also discussed by Dr. Young (Glasgow), Dr. Syme (Glasgow), and Dr. Hutchison (Brighton). Dr. H. H. Forbes read a paper on the present position of the use of radium in the treatment of cancer of the larynx and œsophagus. This was discussed by Dr. William Hill, who insisted on the importance of radiating the whole stricture in cases of malignant disease of the œsophagus. Sir William Milligan, who had had access to a large quantity of radium in Manchester, had on the whole been disappointed with the results up to the present time. He gave an account of his experience of the usefulness and limitations of this form of treatment. Sir StClair Thomson protested against the use of radium in operable cases.

SECTION OF OTOLOGY.

Wednesday, July 26th.

THE discussion on the diagnosis and treatment of septic sinus thrombosis was opened by Sir William Milligan, who dealt in detail with the diagnosis. The importance of early diagnosis and the danger of waiting for classical signs and symptoms to appear was urged, because of the much greater chance of recovery given by early operation. The anatomical conditions in which sinus thrombosis is more likely to occur were also described. Mr. Colledge followed with a paper on difficulties in dealing with such cases; he referred to some special points in the diagnosis, and especially the treatment, with some illustrative cases. In the discussion on these papers Dr. Ritchie Rodger confined his remarks to the cavernous sinus, referring to several illustrative cases. Dr. Mygind (Copenhagen) gave his experience of 144 cases, and advised exploratory operation in cases of doubt and microscopic examination of the sinus wall. He gave interesting statistics of his cases and concluded that ligation of the jugular had little or no influence in determining recovery. Dr. William Hill advocated free removal of bone in doubtful cases in order to expose adequately the sinus. He dealt with the great difficulty in deciding whether the sinus was thrombosed, and if so in what portion.

Dr. Dan McKenzie emphasized the importance of early diagnosis and the harmlessness of early exploratory operation. He advised ligation of the jugular in every case. Mr. Muecke (London) referred to 117 cases operated on by Mr. Hunter Tod and himself. He advised ligation of the jugular in every case, combined with the administration of anti-streptococcic serum. Sir James Dundas Grant opposed the ligation of the jugular as a routine procedure, and gave his opinion as to the indications. Dr. Andrew Wyllie (London) advised injections of corrosive sublimate in cases of septicæmia. He referred to the difficulty of knowing in some cases which ear was at fault. Dr. Syme (Glasgow) mentioned an instance of spontaneous cure, the case having been mistaken for puerperal septicæmia some years previously to a radical mastoid operation. Dr. Douglas Guthrie (Edinburgh) referred to unilateral perspiration as an important symptom. Dr. Albert Gray urged the importance of avoiding the slightest injury to the exposed lateral sinus and the use of antiseptics, especially eusol. Dr. J. S. Fraser and Dr. Stephen Young read a paper entitled "Is it worth while to remove aural polypi?" This paper was discussed by Sir James Dundas Grant, Dr. Ridout (Portsmouth), Sir William Milligan, Dr. Mygind, and Mr. Frank Wilson (Newcastle).

At the afternoon sitting Dr. Holger Mygind read a paper on benign forms of otogenic meningitis. This paper was based upon the observation of 210 cases of otogenic meningitis observed in Copenhagen during the last seventeen years. Special reference was made to the examination and characteristics of the cerebro-spinal fluid in this class of cases. The paper ended with a short description of the operative measures required for these conditions, especially the indications for opening the labyrinth.

SECTION OF TUBERCULOSIS.

Thursday, July 27th.

THE PRESIDENT, Sir Robert Philip, in his opening address dealt with the administrative advances which had been made in the control of tuberculosis since the date of the last meeting of the Association in Glasgow in 1883. Tracing the decline in the death rate since that date, he pointed out that the rate had declined 48 per cent. in England and 53 per cent. in Scotland—that is, the diminution had been proceeding more rapidly in the latter country. A discussion on "The clinical differentiation of pulmonary tuberculosis from other respiratory affections" was opened by Dr. E. Rist (Paris), who dealt with the changes which had taken place, mainly as a result of experiences during the war, in our theoretical and practical knowledge of tuberculosis. The necessities of war had put before us the duty of well-founded, uncompromising decision in matters of diagnosis, and for this medical officers were not well prepared in the early days of the war. Mistaken diagnoses were all too numerous. Dr. Rist gave examples from his own experience at a tuberculosis clearing station in France and at the Laënnec Hospital in Paris. At the former a diagnosis of tuberculosis previously made was found to be justified in only 27 per cent. of cases, and at the latter 82 per cent. were found not to be tuberculous. After quoting other figures Dr. Rist dealt in detail with various diagnostic methods. Tuberculin skin reactions could only be regarded as evidence of infection and not of disease. Further, it must be admitted that the individuals whom the von Pirquet test discovered were more protected against subsequent tuberculous disease than were the non-infected. A high place must be given to the *x* rays as aiding differential diagnosis. If used in association with physical examinations they were of great value to the clinician. Their use had enriched our knowledge of chest diseases, and modified our views of the practical value of other methods of physical examination. Methods of detecting tubercle bacilli in the sputum had improved also. Dr. Rist then dealt with the commoner diseases likely to be mistaken for pulmonary tuberculosis—for example, (1) diseases of the cardio-vascular apparatus; (2) non-tuberculous diseases of the lungs; (3) morbid conditions of the upper respiratory passages, which were probably the most common sources of error in diagnosis—indeed, over 50 per cent. of the cases examined at the tuberculosis clearing station belonged to this group.

Professor S. Lyle Cummins (Cardiff), in dealing with his own experience, pointed out the value of studies in vital capacity such as had been recently made by Professor Dreyer and Dr. Charles Cameron. He also hoped that serological tests would in time assist in diagnosis of active from inactive lesions. Dr. Marcus Paterson (London) referred to the great difficulty of distinguishing, in many cases, active from inactive tuberculosis. Some test for this was much needed. He gave

examples of erroneous diagnosis which were still too frequent, and agreed with Dr. Rist that a single positive spit in the midst of a series of negative spits was of little significance. Dr. Ian Struthers Stewart also considered that diseases of the upper air passages were often mistaken for tuberculosis. Dr. James Crocket was inclined to think that much tuberculosis was overlooked and erroneously diagnosed. Dr. A. Hope Gosse (London) gave an important contribution—the results of the recent work by Dr. A. L. Punch and himself—on serological diagnosis. In his hands, using living bacilli as antigen, this test promised great assistance in detection of activity, with very important practical results. Dr. Fergus Hewat (Edinburgh), Dr. C. Muthu (Mendip Hills Sanatorium), Dr. Lawson (Tor-na-Dee), Dr. MacGregor (Glasgow), Dr. Prest (Ayrshire), and Dr. Gillies (Australia), also took part in the discussion.

Dr. James Taylor (Glasgow) read a paper on "Some aspects of the treatment of surgical tuberculosis," in which he gave his experience as visiting surgeon to the Tuberculosis Hospital of Glasgow Corporation at Robroyston, where there is accommodation for 300 patients with surgical tuberculosis. The general treatment is based on that of Dr. Rollier of Leysin, with modifications appropriate to differences in climate. The speaker considered that rapidity of cure depended very greatly on climate—that is, insolation—and he was unable to get the phenomenal results obtained by Dr. Rollier, which enabled more conservative methods to be adopted. While the treatment of surgical tuberculosis must be essentially conservative, in hospitals with the most favourable climatic conditions operative treatment combined with general treatment would give the most speedy, though perhaps slightly less perfect, results. Some results of specific treatment of cold abscesses and sinuses were given. It was difficult to prevent sinus formation, especially during the winter months. Cold abscesses were treated by repeated aspiration with a measure of success. Some who did not respond to this were treated by open operation, with careful surgical technique, and the wound sutured. This was successful in one-third of the cases. The use of modifying fluids had given the best results in cold abscesses. Calot's fluid No. 1 gave the best results, though sometimes naphthol-camphor was used successfully. Dr. Taylor referred to the good results of deep *x*-ray therapy in massive cervical glands, as carried out by Dr. Henderson, radiologist to the hospital. Extreme care was needed in applying antisyphilitic treatment to patients with a positive Wassermann reaction and a definite tuberculous lesion.

SECTION OF OPHTHALMOLOGY.

Wednesday, July 26th.

At the opening of the first session on Wednesday, July 26th, the President, Mr. A. S. Percival, said that he considered it a high honour that he should be chosen to be President of this Section in so great a university city as Glasgow, and he believed that their proceedings would be worthy of the occasion.

The subject for discussion, "The etiology of optic atrophy," was introduced in a paper on the clinical side by Dr. C. O. Hawthorne of London, followed by Mr. J. Hogarth Pringle of Glasgow, who dealt with the more surgical aspects of the conditions responsible for the atrophy, and by Dr. H. M. Traquair of Edinburgh, who considered chiefly the finer points of diagnosis to be obtained by perimetry. Messrs. MacCallan (Cairo), Percival Hay (Sheffield), Webster Fox (Philadelphia), Bishop Harman (London), Grey C'egg (Manchester), Inglis Pollock (Glasgow), J. C. Douglas (New South Wales), J. A. Wilson (Glasgow), and Thomas H. Bickerton (Liverpool) continued the discussion, which was replied to by Dr. Pringle. A paper on the "Relations of the optic nerve to the sphenoidal and posterior ethmoidal sinuses" was read by Dr. Gavin Young of Glasgow, and specimens illustrating the relations shown. Mr. A. F. MacCallan (Cairo) read a paper on "Ophthalmic progress in Egypt," which was commented upon by Dr. M. A. el Kattan of Cairo and the President. Dr. Wellwood Ferguson of Glasgow read a paper on "The state of the cerebro-spinal fluid in disease of the fundus" and Dr. T. Stewart Barrie's paper on "Monocular and binocular vision," which was discussed by Mr. Bishop Harman (London), Mr. Percival Hay (Sheffield), and Dr. John Rowan (Glasgow). A paper by Dr. W. B. Inglis Pollock of Glasgow, on the "Open treatment in eye operations," completed the proceedings for the day.

Reviews.

THE ENGLISH PRISON SYSTEM.

Two books on the English prison system have recently appeared—the one by Sidney and Beatrice Webb, dealing nominally with English prisons under local government, but in effect with the English prison system up to date; the other, by Stephen Hobhouse, M.A., and A. Fenner Brockway, devoted wholly to the consideration of English prisons to-day. The preface printed in the first-named volume, and intended as an introduction to both works, occupies about seventy pages and is written by Mr. Bernard Shaw. From Mr. Shaw's first sentence, telling the reader of the right spirit in which these books should be read, it is easy to infer at once the uncritical spirit in which the books have been written.

Mr. Shaw assumes at the outset that the authors have established the fact that "imprisonment as it exists to-day is a worse crime than any of those committed by its victims," and advises all would be "reformers" who hold that "imprisonment is a necessary and beneficent public institution" not to read these books, but to go about their own business. He adds that such reformers have in the past converted the old common gaol "into that diabolical den of torment, mischief, and damnation, the modern model prison." Similarly the joint authors of the book entitled *English Prisons under Local Government*,[1] holding that imprisonment as a punishment for crime is unjustifiable, devote only twenty pages of their Epilogue to a slight sketch of constructive reform of penological methods, adding "that, when all is said and done, it is probably quite impossible to make a good job of the incarceration of a human being in the most enlightened of dungeons." Again, the compilers and writers of the larger book called *English Prisons To-day*,[2] both having been imprisoned themselves as "conscientious objectors," make it abundantly clear in their Concluding Chapter of less than half a dozen pages that they condemn not only imprisonment as a punishment for crime, but also, inferentially, any "punishment" for crime at all. Anent this concluding chapter it may be noted that it mainly consists of an abbreviated repetition of many previous arguments on one side only of the long controversy regarding the State's right to punish law-breakers, and in an implied, if not expressed, assumption that all crime should be regarded as curable, or at least tractable, disease, and treated otherwise than by deprivation of liberty.

These things being so, it follows that serious criticism of the essence of these books should be devoted to what seems to underlie the conclusions and assumptions of their writers, and that this method would involve several fundamental questions of social, psychological, political, legal, and even expediential import. It is equally clear that no one who does not accept the basic dogma of the mortal sinfulness and futility of the institution of penal imprisonment can possibly undertake to controvert that dogma seriously within the limits of any periodical, least of all a weekly journal. As I am such a person, I must therefore confine myself mainly to some short remarks on the constitution of the Prison System Enquiry Committee which produced the report now published under the name of *English Prisons To-day*;[2] on the nature of the evidence chosen by them as the apparent basis of their conclusions; and on only a very few of the fallacious arguments used by the writers of both volumes, among whom Mr. Shaw has a conspicuous place.

1. It is stated in the summary of the Report which Mr. Brockway, the secretary of the Enquiry Committee, has provided as a possible assistance to reviewers, that the membership of the Committee "is representative of the various schools of political thought." This statement may be accurate if the word "political" be intended merely to connote the thought of the officially recognized political parties only; but be this as it may, even a superficial glance at the names of the members of the Committee will detect that schools of thought which differ from the views promulgated in the Report on the main subjects are not represented at all. The Committee was plainly appointed to arrive at certain

[1] *English Prisons under Local Government.* By Sidney and Beatrice Webb; with Preface by Bernard Shaw. London: Longmans, Green, and Co. 1922. (Demy 8vo, pp. lxxiii + 251. 15s. net.)

[2] *English Prisons To-day.* Being the Report of the Prison System Enquiry Committee. Edited by Stephen Hobhouse, M.A., and A. Fenner Brockway. London: Longmans, Green, and Co. 1922. (Demy 8vo, pp. xviii + 728, 4 illustrations. 25s. net.)

conclusions, and therefore, quite logically, sought out only the evidence which was appropriate to their end. In the Foreword to the Report, but not in the Summary, it is stated that this inquiry was established by the Executive of the Labour Research Department, but it does not seem clear whether the possible implication that this appointment had a political origin was intended, or whether the Committee was virtually autogenous.

2. The Committee complain that they failed to acquire the information they wanted from the Home Office and the Prison Commissioners, but that they had considerable success from making inquiries for information from fifty members of the prisons staff—for example, chaplains (C. of E. and R.C.), visiting ministers (denominational), medical officers and warders of different grades, etc. They do not state what proportion among these were ex-officers. They add, however, that they believe they have collected substantially accurate information about every phase of the prison system. The genuine nature of their belief need not be doubted, but there is plenty of room to question the accuracy of their information.

3. As to evidence collected from 290 ex-prisoners it is stated in the Report itself, but not in the Summary prepared for purposes of the press, that among these ex-prisoners were "a large number of men and women who had been sentenced to imprisonment (mostly for terms of hard labour) for political offences, but it included also a number of ex-prisoners committed for criminal offences who had had experience of both local and convict prisons." The number of the "political" prisoners is not stated, though it is said to be "large." This justifies the inference that either by failure to find many "criminal" witnesses or by the readiness of the "politicals" to give evidence the net result of the testimony as a whole was likely to be strongly biased. In this context the following short quotations from a very long answer by a "political" prisoner to a "mental questionnaire" submitted to him may be regarded as significant. Among the innumerable effects on his mind, which he seemingly attributes to the prison life, he says: "I wrote more and perhaps better poetry than I had ever done before"; and, in another place, he says that he "entered prison accepting the ethical teaching of Christ and left it an agnostic," and adds, "many other conscientious objectors like myself came out agnostics who had entered with a definite belief in God."

4. Mr. Shaw's doctrine that imprisonment neither deters nor reforms, but manufactures criminals, seems to rest on the fact that large numbers of prisoners return frequently to prison. He ignores the fact that there is considerable evidence to show that about two thirds of once-committed prisoners do not return at all. It might therefore be more reasonable to infer that imprisonment can be an effective deterrent from continuance in crime, and also that the mere existence of prisons as penal institutions may prevent innumerable potential law-breakers from taking any risk of getting into them than to accept, or still less act upon, the logical method of Mr. Shaw. At any rate it is certain that in the prisons of to-day the mere loss of liberty constitutes by far the greatest element in the punishment of imprisonment; and that although among the class of prisoners described as political, as well as among some others, the loss of liberty as well as other deprivations must be felt more keenly than by the majority of prisoners, there are many more who suffer only from the want of freedom.

Any conceivable and effective substitute for imprisonment that would not involve the loss of the law-breaker's liberty would be welcomed by everybody; but no approximation to such a scheme has yet been even adumbrated. This is by no means to say that further modifications in the administration of justice cannot be made on the existing lines for preventing some offenders from being committed to prison at all, or that no more improvements are possible in the prison regulations themselves. There are, in fact, many desirable improvements which would readily be made were sufficient funds obtainable.

5. Mr. Shaw's method of reasoning in his endeavours to establish a point is well illustrated by the following example. He refers to the Lombrosian doctrine of a "criminal type," which he describes as teaching that criminals are not responsible for their actions, and therefore should not be punished for them. He proceeds to state that "the prison authorities saw their occupations threatened and so denied the Lombrosian doctrine"; and he then insists that if there is no *criminal* type there is a *prison* type manufactured in prison by the prison system. For this statement he gives no proof whatever, adducing as evidence only an irrelevant passage from a publication which is quite unconcerned with crime or prisoners.

After much attention to this familiar assertion, made very frequently at intervals for many years by persons who have visited prisons but once or perhaps twice, I can positively contradict Mr. Shaw's baseless announcement that "the simple truth is that the typical criminal is a normal man when he first enters a prison and develops the 'type' during his imprisonment" by the simple statement that such a type has no existence.

It may be gathered with sufficient clearness from the above notes that the authors of the Report of the Committee of Enquiry, and the rest of the investigators, must have started their work with certain postulates on ethical, social, and other questions which could not fail to influence them while collecting evidence and drawing up their conclusions for publication; and therefore the real matters at issue between the writers of these books and any critic or reviewer of them who cannot accept their initial assumptions are far too wide and fundamental for detailed treatment here. Such treatment of even the few pages of which the concluding chapter of *English Prisons To-day* consists would fill the space of a very lengthy pamphlet at least.

It is not to be denied that some possibly good result might conceivably be obtained if the scheme, slightly sketched in these books, for a practical conversion of prisons into educational and hygienic establishments devoted to the physical and mental examination and treatment of each individual law-breaker sent to them were realized; but considering that about 80 per cent. of committals are for only one month or less the question immediately arises whether the great expenditure thus involved might not be far more fruitfully devoted to the interests of better and wider education than obtains at present for the youth of the community at large. And, as we have already seen, all the five writers of these books are at one in their declaration that no good thing can come out of any form of incarceration.

H. Bryan Donkin.

THE HISTORY OF CARDIOLOGY.

In *The Heart: Old and New Views*,[3] by Dr. H. L. Flint, we have a presentation of the growth of knowledge of the heart and its functions, from the remote past to the present. The author's object has been to give a consecutive history, to link together the more or less isolated data, and to draw a clear picture. Dr. Flint has succeeded in doing this in a pleasing and satisfactory manner. He takes his readers back to 4000 B.C., when there appears to have been no clear distinction made between the heart and the liver. Later, in 1500 B.C., the soul in the form of a mannikin was believed to dwell in the heart. It was about this date that an Egyptian wrote that the vessels lead from the heart to the body.

The book before us is divided into two parts. The former deals first with the Hippocratic period, and traces the gradual growth of knowledge through the Galenic and the Vesalian, ending with an account of the discovery of the circulation by William Harvey. This is perhaps the most interesting section in the book. Though short, the story of Harvey's gradual perception of the vital facts of the circulation is admirably told. Stephen Hales is rightly credited with the first substantial advance in the physiology of the circulation since the time of Harvey, and from then on the outstanding landmarks of progress are noted.

The second and larger part is devoted to a concise description of instruments and methods. Here, as in Part I, the gradual advance in knowledge is recorded, beginning in 1861 with the method of Chauveau and Marey, by which they recorded the intracardiac pressure in the various chambers of the heart. The gradual development of the instruments for recording blood pressure is related, and there is an account of the sphygmograph, polygraph, and the electro-cardiograph. Normal records from these instruments are analysed and explained.

A section is usefully devoted to the five functions of the myocardium, first clearly described by Gaskell; then follows an account of the cardiac irregularities and abnormal rhythms, which is fully illustrated with characteristic records.

In the penultimate section Dr. Flint discusses the significance of the systolic murmur, and gives support to the contentions of Lewis and his co-workers, more especially as to the negligible

[3] *The Heart: Old and New Views.* By H. L. Flint, M.D. London: H. K. Lewis and Co., Ltd. 1921. (Demy 8vo, pp. 189; 65 plates. 15s. net.)

importance of such a bruit, both in prognosis and treatment, in the absence of any evidence of heart disease.

Sir Clifford Allbutt, in an introductory preface, expresses his appreciation both of the matter of the book and the manner of its presentation.

PAPERS FROM THE MAYO FOUNDATION.

The first annual volume of *Papers from the Mayo Foundation for Medical Education and Research and the Medical School*[1] covers the period 1915-20 of the Graduate School of the University of Minnesota and represents research work carried out, principally by the younger members of the staff, in the Mayo clinic and in the hospitals controlled by the medical school of the University of Minnesota. Nearly all the articles in this collection, which must be distinguished from the familiar *Collected Papers of the Mayo Clinic* now in double figures, were originally theses for the degree of Master of Science or Doctor of Philosophy in various pre clinical or clinical subjects.

The articles, sixty-five in number, are arranged under the ten headings of alimentary tract, uro-genital organs, ductless glands, circulatory organs, blood, skin and syphilis, the nervous system, the head, trunk, and extremities, metabolism, and general, the last including papers on bacteriology, serology, and the effects of inanition on albino rats. Some of the papers are published in full, others in abstract only, reference in all cases being given to the periodical in which they originally appeared.

The field covered is very extensive, as has already been suggested, and the articles treat aspects of the various sciences ancillary to medicine; this may be shown by mentioning a few of the subjects: the geotropism of the marine snail (*Littorina littorea*), growth of the human foetus (several papers dealing with various parts of the body), the development of the suprapericardial (post-branchial, ultimo-branchial) body in *Squalus acanthias*, and the development of the liver and pancreas in Amblystoma. There are also many papers bearing on ordinary medical practice, such as carcinoma of the prostate, the treatment of chronic empyema, and gastric cancer. Pathology receives due attention both from the point of view of morbid anatomy and in its experimental aspects: examples of the former are papers on the histogenesis of carcinoma in the islets of Langerhans by E. J. Horgan, and a study of 256 cases of squamous-celled epithelioma of the skin by A. C. Broders; and of the latter Dr. S. W. Harrington's paper on the effect on the kidney of various surgical procedures, such as double ligation and section of one ureter and decapsulation of the kidney; it is based on experiments on the dog because of the similarity of the anatomy, and especially of the physiology, to those of man. The volume is a record of enviable activity. As it is edited by Mrs. M. H. Mellish, whose work in this capacity for the *Collected Papers of the Mayo Clinic* is so well known, there is no need to say that it is admirably brought out.

NOTES ON BOOKS.

In fulfilment of a promise to the late Sir Lauder Brunton Mrs. Ernest Hart has published a booklet for the help of housekeepers and cooks in the preparation of food for diabetics.[2] At the outset we may say that it is a pity that the able authoress has set forth in her opening pages a list of "forbidden" foods, and at the same time laid down in general terms "permissible foods." The modern therapy of glycosuria and diabetes does not follow such simple rules. Nevertheless this collection of recipes is well calculated to enable a skilful cook to convert a bare catalogue of foodstuffs prescribed by the physician for an individual case into sufficiently appetizing dishes to make a strict regimen not merely tolerable but even tempting to the eye and the palate. Colonel Waters in his recent work on *Diabetes* (reviewed on June 24th, 1922, p. 1000) remarked: "It is of little moment in what form the various foods are given." Mrs. Hart's little book serves to remind us that to the patient there may be a vast difference between the same physiological food-values cooked in a dixie by the regimental cook, or placed on the table by a disciple of Brillat-Savarin.

[1] *Papers from the Mayo Foundation for Medical Education and Research and the Medical School.* Graduate School of the University of Minnesota. Philadelphia and London: W. B. Saunders Co. 1921. (Med. 8vo, pp. 859; 203 figures. 50s. net.)

[2] *Dishes for Diabetics.* By Mrs. Ernest Hart. London: J. Bale, Sons, and Danielsson, Ltd. 1922. (Cr. 8vo, pp. 43. 2s. 6d. net.)

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

The first session of the third International Congress of the History of Medicine was held at the Royal Society of Medicine on July 18th, the President, Dr. Singer, in the chair. The opening proceedings on July 17th were reported in our issue of July 22nd.

Plague.

Dr. Tricot-Royer (Antwerp) gave an account of the orders of the magistrate of Antwerp against the spread of the plague in the seventeenth century. In 1661, by the orders of the local authorities, the canals were constructed so that the contaminated water from the southern canals should not mingle with that of those of the northern district of Herenthals. Dr. Tricot-Royer described the method of filtering the water, and then gave a description of the lazar-house of Herenthals and the chapel dedicated to St. John the Baptist, patron saint of lepers, in the grounds. Twice yearly pilgrims visited the chapel, bringing gifts to the lepers.

Professor Jeanselme sent a paper in which he argued that in the history of the Byzantine Empire the climatic conditions were often the cause of plague; when the Greeks lost Egypt to the Arabs they were deprived of the greater part of their corn, so that famine arose and the people more readily succumbed to the plague. He attributed the distribution of disease to the fact that the rats, carriers of the plague, finding the granaries empty, left the sewers and subterranean areas and came into closer contact with man.

Dr. Wickersheimer (Strasbourg) described the visitation of the black plague to Strasbourg in 1349 and gave an account of the precautions taken. According to a contemporary account the disease attacked the population in the following manner: on the first day they were seized with sickness, the next day with shivering and fever, and the third day the glands appeared under the arms and on the legs. He gave an account of the various remedies given and also the carrying of musk, wormwood, and other aromatic substances as preventives. The death roll in Strasbourg from this visitation amounted to about 16,000 out of a probable population of 30,000.

Dr. Neveu (Paris) then gave an account of plague in Tuscany in the fourteenth century, and described the terrible onset and the great mortality from it during the Middle Ages, when so little was done in the way of rational treatment.

Greek Medicine.

Dr. Cavvadias (Greece) read a communication on the cult of Asklepios and medical science. He recognized two divisions of Greek medicine: the medicine of observation, that appealing to intelligence, what might be called rational or true medicine; and mystic medicine, faith healing, the power of suggestion acting with the hidden forces of the soul within ourselves—the cult of medicine shown in the religious medicine of the Greco-Roman period, of the Middle Ages, and in the Christian Science of to-day. The Greeks had their gods to cure disease and avert death, and of these Apollo, discoverer of medicine and physician to all Olympus, was the head. This alliance of the god of art and music with medicine showed that these three branches were considered by the early Greeks the foremost in the art of living. Asklepios, in some legends described as a son of Apollo, was not originally one of the Pantheon. He was a king with a great skill in medicine; he was deified and became foremost god of medicine. Though his followers practised their art by the temples of Asklepios they were not priests. For some time they passed their teachings from one to another orally, but later, probably about the second century A.D., written documents of medical advice began to be circulated, and culminated in the writings of the Hippocratic and Cnidian schools. The patient passed some days at the healing centres, where the united prayers of the priests and patient were offered up for a cure. The patient was also instructed by the priests in the religion and superstition to help a cure by suggestion. Then the patient was put to sleep in a certain place and the healing god, probably a priest, appeared to him.

The Chadwick Chapter in the History of Medicine.

Sir William Collins said that Chadwick might well be called the father of English sanitary sciences. He belonged to the noble army of early Victorians, and was born in 1801. His father was a journalist and editor of *The Statesman*, and

Chadwick himself after being called to the Bar wrote largely for the press. During the first great cholera epidemic (1831) he studied its causes. The conditions under which the poor lived and died, and the utter inadequacy of sanitary arrangements at that period, claimed his attention, and in 1832 the Commission was appointed to investigate the Poor Law, and Chadwick was appointed commissioner. He did a great work in ameliorating the conditions, and achieved legislation on the employment of children in factories. It was due to his survey of the overcrowded parts of our towns and cities that the sanitary reform was introduced into Great Britain which eventually led to this country giving the lead to the other nations of the world as regards sanitation. Chadwick's own work and that of his school stood for solid achievement in the advances of hygiene and sanitation, the great handmaidens of medicine. He lived to see the vindication of his theories, and died in 1890 after a most useful life; his name was remembered the world over as a pioneer in sanitary science, and was undoubtedly worthy of a place in the history of medicine.

Dr. Hunter gave an account, by a diagrammatic map, of the sanitary reforms made in the time of Chadwick. He pointed out that the death rate is now one-eighth of what it was fifty years ago. He gave statistics of the decrease of typhoid, scarlet fever, diphtheria, measles, and whooping-cough.

Anatomy.

Mr. W. G. Spencer described an *Epitome* of Vesalius on vellum in the British Museum Library; it was once the property of Richard Meade and about 1754 was sold for £8 12s. The only other known vellum copy was in the library at Louvain for 371 years, but there was proof that it was burnt when the library was destroyed in 1914. Vesalius apparently intended the text for the common man rather than for the use of artists and medical students; he demonstrated the nude male and female bodies, always taking the most perfect specimens of young adults. Afterwards five muscle diagrams were shown, giving the muscles contracting in motion, and two or three diagrams of skeletons.

Dr. Laignel-Lavastine (Paris) described how throughout the ages symbolism had been applied to anatomy. The astrologer established a relation between the planets and parts of the body. The moon dominated the brain, the sun the heart, Jupiter and Mercury the liver, Saturn the spleen, the skeleton, the joints, cartilages, and right ear, Venus the throat, the veins, the internal generative organs, the scalp and the features, such as chin and cheek. The Cabalists attributed the different organs and functions of man to the twelve simple letters of the Hebrew alphabet. This ancient mediaeval symbolism was not altogether to be despised, for it was the foundation on which scientific knowledge grew, the method of conserving it, the frame to incorporate it and transmit to our descendants the scientific inheritance laboriously acquired by observation of nature.

Professor W. Wright spoke on Leonardo da Vinci's work on the structure of the heart. Owing to da Vinci's interest in and great knowledge of mathematics it was only to be expected that he should have given special attention to the circulatory system. The three great anatomists of that period were Leonardo da Vinci, who died in 1519, Eustachius, who died in 1574, and Vesalius, who died in 1564. At that time the difficulties of research were very great owing to the lack of bodies to dissect and the lack of preservatives. Leonardo da Vinci mentions doing his dissections in the dead of night. One can imagine the scene taking place in the old stone buildings of Rome and Florence in the flickering candle light, the mutilated and quartered bodies, and the stench. The eeriness of the surroundings must have been greatly increased by the fact that the period was one of great superstition and appalling crime. Professor Wright concluded by giving a description of some diagrams of Leonardo da Vinci.

Dr. Lander, in a paper on women as anatomists, said that women students of anatomy might be divided into five groups, according as their objective was midwifery, surgery, philosophy, dilettantism, or professional anatomy. He gave short biographical accounts of the various famous women surgeons known in history, starting with Theodosia, martyred in the reign of Diocletian, following with women at Salerno, and coming down to the eighteenth century, when isolated women still continued to practise surgery in spite of the proceedings against them. In midwifery women had always held a prominent position, though often practising without knowledge and innocent of all anatomy. France was the first country to educate midwives adequately to their task, Louise Bourgeoise in the sixteenth century being perhaps the most famous. Amongst English midwives, Mrs. Jane Sharp, Mrs. Sarah Stone, and Mrs. Clark were advocates of teaching anatomy to midwives. The women philosophers went back to the time of Pythagoras, whose wife carried on his school after his death. From the fifteenth to the eighteenth century many women studied anatomy in the Italian universities; the University of Bologna produced several professional women anatomists, the most famous of whom was Anna Morandi, who married the painter and sculptor John Manzolini; she learnt modelling from her husband and far surpassed him. After his death she became a teacher of anatomy in the University.

Dr. E. T. Withington gave a very interesting account of Galen's knowledge of anatomy, tracing it back through his early work, and Mrs. Singer read a paper on a thirteenth-century Latin translation of the sixth book of the *Epidemics* in the library of St. John's College, Cambridge. It had a preface in Latin.

In a paper on the beginnings of anatomical teaching in the United States Dr. Krumbhaar said that anatomy was studied in the States from the early pilgrim times, but, as in other countries, there was a difficulty in acquiring material for dissection, and in 1647 Massachusetts passed a resolution to provide the body of a criminal once in four years. He illustrated his subsequent remarks by portraits of anatomists and pictures of buildings.

Aerostatics.

Dr. F. J. Poynton broke new ground in a paper on "Doctors and the dawn of aërostation." He enlarged on the part played by doctors in the conquest of the air since 1783. Amongst those whose scientific discoveries had aided flight were Joseph Black, Priestley, and Lavoisier. The Frenchman Pilâtre Rozier was the first to use hot air for a balloon, and the Scotsman Titler the first to do so in England. He gave some account of the invention of the Italian Lunardi, and of Jeffries and Blanchard, and concluded by a reference to the controversy between the adherents of flying by hot air and those of flying by gas.

An English Rural Practitioner of the Seventeenth Century.

Dr. N. G. Horner read a paper entitled "John Westover of Wedmore," based upon an old manuscript journal illustrating rural medical practice in the West of England at the end of the seventeenth century. John Westover belonged to a family which lived at Wedmore in Somersetshire for 300 years. He was born in 1643 and died in 1706, and left behind him in the house where he lived a journal, or day-book, which has been preserved ever since by the subsequent tenants. The book gives a daily record of his medical and surgical practice, and of the business of his farm, during fifteen years —1686 to 1701. Nearly every item contains a note of the fee charged and the amount actually paid. Dr. Horner showed the book and gave a few extracts from it, to indicate the range of Westover's practice and his fees, and also the manner in which he recorded his patients' ailments and the remedies he prescribed. The commonest complaints were "itch" and "wormes." He had no obstetrical practice, but treated a great many fractures and dislocations. In 1680, on the death of his father (who was also a chirurgeon), he built a stone outhouse for the accommodation of insane patients who came to board with him; many entries in the journal refer to these in-patients and the fees paid by their relatives. Westover's fees were sometimes paid in money, sometimes in work done on his farm, sometimes in goods. The debt was usually paid by instalments, and part of it was often forgiven. His handwriting is difficult to read, and the spelling is eccentric, but the document gives an idea of the work and character of a country general practitioner in England 250 years ago.

History of British Pharmacy.

Mr. J. B. Gilmour, in an historical sketch of British pharmacy, mentioned that the first apothecary's shop was established in London in the fourteenth century, and in Edinburgh in the fifteenth and sixteenth centuries, though drugs and spices were already being sold by grocers. Later a Royal Charter was granted, protecting apothecaries against this irregular practice. In the seventeenth century, in the time of Boyle, mercury was introduced into medicine, and chemical

laboratories were formed. Later, pharmaceutical laws were passed, and systematic inspection of shops to prevent impure drugs being sold was instituted; in the nineteenth century, after numerous cases of poisoning by arsenic, a bill was passed restricting the sale of poisonous drugs, and in 1921 a Dangerous Drugs Act came into force to attempt to safeguard the public from opium traffic. The Pharmaceutical Society of Great Britain was formed to raise the status of scientifically trained pharmacists and protect the public, which, on the whole, it has succeeded in doing.

Hiera Picra.

Mr. C. J. S. Thompson, M.B.E., in his paper on hiera picra, traced the history of this ancient remedy from the time of Themison in the fifth century B.C. The name meant "Holy Bitter," and according to tradition it was first used in the temples of Asklepios in Greece. Its chief ingredients were aloes and colocynth, and formulae were given by Pachius, Alexander of Tralles, Archigenes, Theodoretus, Galen, Rufus, Mesue, Myrepsus, and others. It became official in the first Pharmacopoeia in 1493. In was included in the London Pharmacopoeia of 1627 and continued in further editions down to 1851. Mr. Thompson said that there was still a demand for it in Great Britain, Belgium, France, and other parts of Europe, and it was sold in the pharmacies of these countries as it was in Damascus, Rome, and Alexandria before the Christian era. It had thus survived over two thousand years.

The Pomander Stick.

Dr. Michael Foster, in a paper on the pomander stick, described the sticks carried by doctors during the seventeenth and eighteenth centuries. The heads of these canes were of pear or apple shape and contained a receptacle for aromatic substances, which were regarded as a sovereign protection against plague and other diseases. He mentioned various types of pomander sticks, those with a top which could be unscrewed, in which aromatic substances could be placed, others with a perforated head like a vinaigrette, containing a sponge soaked in aromatic vinegar. He thought these canes were exceedingly rare, and only knew about twelve actually in existence. He mentioned that the canes carried by the beaux of that time differed greatly from the pomander stick, and the surgeons and apothecaries also carried a different type, the pomander stick being characteristic of the physician only.

Visit to Barbers' Hall.

On the afternoon of Wednesday, July 19th, members of the Congress visited Barbers' Hall, in Monkwell Street, and were received by the Master, who welcomed them to this interesting memorial of the ancient guild life of the City of London. He then called on Mr. Weston, a past master of the company, to describe the Hall, its history, and its treasures. Mr. Weston's learned address was listened to with great interest by a large company, seated under Holbein's famous picture of Henry VIII granting his Charter to the United Companies of Barbers and Surgeons. He described the Hall as the cradle of surgery in England, and briefly spoke of the origins of barbers and surgeons and their early craft guilds. The Hall of the Company had been on this site under continuous ownership since the end of the fourteenth century. He showed the first Charter granted to the Barbers by Edward IV, and the fifteenth-century Black Book of Ordinances of the joint Company, containing a copy of the earliest licence to practise surgery in England. He next showed subsequent charters and other valuable possessions of the Company, including the silver-gilt cup given them by Henry VIII as a new year's present; Charles II's gift of a silver cup in the shape of a crowned Boscobel oak; and the silver punch-bowl presented by Queen Anne and described by *Punch* as big enough to bath the baby in. Mr. Weston then told the story of Holbein's masterpiece—the most famous and most valuable picture in the City of London; how it was returned safely to the Hall after being borrowed by James I; how it was removed for safety to Moorfields during the Great Fire of London; how it was kept in the National Gallery strong-room during the air raids; and lastly, how it escaped purchase by an American millionaire. He pointed out Thomas Vicary and the other surgeons and barbers, the royal physicians and the King's apothecary, kneeling humbly on either side of their contemptuous monarch, and explained that the colours of the picture could not be restored in the usual way because it was painted upon a surface of gold-leaf laid on smooth oak panels.

St. Bartholomew's Hospital.

On Friday afternoon the members of the Congress visited St. Bartholomew's Hospital, when an historical address on the hospital was given by Sir D'Arcy Power.

Entertainments.

On Tuesday the Lord Mayor and Lady Mayoress held a reception at the Mansion House, and the Lord Mayor welcomed the members to the City of London in a few well-chosen words. In the evening a reception was given by Sir James Purves Stewart and Lady Purves Stewart. A musical conversazione was held at the Wellcome Historical Medical Museum on Wednesday evening. The visitors numbered about two hundred, and were received by Mr. H. S. Wellcome, Mr. C. J. S. Thompson, and Dr. Andrew Balfour. On Thursday evening the members of the Congress were entertained at a reception by the Vice-Chancellor of the University of London and Mrs. H. J. Waring. There was a large attendance at the banquet which was held at the Hotel Cecil on Friday evening. Dr. Singer presided, and was supported by Sir Humphry Rolleston, Sir Frederick Kenyon, Sir D'Arcy Power, and the Master of the Apothecaries' Company. The toast of "The International Society of the History of Medicine" was responded to by Dr. Tricot-Royer, and Sir Frederick Kenyon replied on behalf of the guests. On Saturday the members of the Congress joined in an excursion to Windsor Castle and up the river Thames.

(*To be continued.*)

CONFERENCE ON MENTAL DEFICIENCY.

A two days' Conference on Mental Deficiency, held under the auspices of the Central Association for Mental Welfare, was opened at the Caxton Hall, Westminster, on Wednesday, July 26th. Sir Leslie Scott, K.C., the Solicitor-General, presided.

Crime and Mental Deficiency.

Sir Bryan Donkin argued for attaching a more comprehensive meaning to the term "mental deficiency" than its present technical and artificial one. It should include every kind of insanity. Such co-ordinate arrangement of the various groups of mentally disordered or defective persons under one comprehensive heading might lead to a better understanding between thoughtful jurists and physicians on the matter of criminal responsibility. It seemed to him that the only proof of defective mind (in whatever category such may be classed) that a court of justice should require when a plea of responsibility was set up ought to be based on the same kind of evidence as is now required in cases of certifiable insanity. He was strongly opposed to any suggestion likely to lead to decision on a prisoner's responsibility to the law being left to medical evidence alone.

Dr. Norwood East said that his experience as a prison medical officer had led him to the opinion that the criminal defective might be considered from two points of view, according to whether the defect had been recognized before or after conviction and sentence. Those who escaped detection before conviction could be observed whilst serving their sentence, and transferred if necessary to an institution for defectives under Section 9 of the Mental Deficiency Act. Owing to the disadvantage of a conviction being recorded against such a person prison medical officers endeavoured to diagnose the defect before trial, and in this they were assisted by the frequency of magisterial remands for inquiry. A medical examination alone did not suffice. Information must be got of the individual's early history, especially of the years between leaving school and arrest. The manner of crime might assist in deciding whether insanity or defect was responsible for the offence. The vocabulary test was one of the most valuable single tests, but the most important was the prisoner's capacity to earn his own living and to conform to social requirements. The greatest difficulty arose in dealing with adolescents whose conduct suggested defect, but the experienced clinician remembered that some cases of this nature settled down normally after adolescence and proved a hasty early diagnosis of defectiveness to have been erroneous. The tendency to extend the description of certain types of defectives beyond the strict statutory definition might lead to complacency in diagnosis, to a false idea of knowledge, and a failure to study adequately the borderland group. In conclusion, Dr. East spoke of the desirability of establishing treatment clinics for cases of mental disorder and defect. Observation and treatment at a clinic would prevent many cases from committing a criminal action.

The CHAIRMAN said that the question of responsibility for crime in a case where there was mental defect was essentially one of degree. Whether enough consideration had been given to the acts of physical impulsion in crime he did not know; but there was paramount need for greater study of the subject. The Conference, however, was concerned not so much with legal punishment as with the treatment of the defective so as to prevent his commission of acts which in a normal person would be called crime. People must be made to realize that mental illness (of whatever sort) was not a disgrace. It was necessary to educate the public, and he would like to see this educational campaign launched. The problem was a health problem, and in his opinion the Board of Control should be under the Ministry of Health.

Mr. A. H. TREVOR (Legal Commissioner, Board of Control) then took the chair.

Dr. T. B. HYSLOP recognized the term "mental deficiency" as one of convenience derived from usage. Illustrating his remarks by reference to the teaching of that great pioneer, the late Dr. Hughlings Jackson, Dr. Hyslop said that in insanity as in mental deficiency we were apt to concentrate our attention on the abnormalities of action of the "undamaged remainder," and neglect the actual disease which resulted in disorder of the controlling mechanism itself. Now that the nation had reached the "stadium convalescens" after the war, efforts on behalf of those who, through no fault of their own, were deprived of the ability to maintain themselves should be increased.

Mr. HAROLD COX thought that steps should be taken to prevent mental defectives from being brought into the world. He advocated sterilization of mental defectives, but was opposed to compulsory sterilization.

The CHAIRMAN said the whole subject had been referred to the Medical Committee of the Association.

Dr. W. A. POTTS (Medical Adviser to the Birmingham Justices) agreed with Dr. East that not more than 5 per cent. of prisoners were defective. The remaining percentage should be studied. The solution of the problem regarding other prisoners would be got by a study of mental defect. Amongst others who took part in the discussion were Dr. RICKETT (Newcastle) and Dr. SHACKLETON (Bradford).

Mental Defectives in the Courts.

In the afternoon session, when Dr. W. A. POTTS presided, a paper on the need for correlation between the courts, the prison departments, and the Mental Deficiency Act Committees was read by Mr. STUART DEACON, stipendiary magistrate, Liverpool, who speaking from over twelve years' experience in Liverpool, declared his belief that the Mental Deficiency Act was a great boon, more particularly to the poorer members of the community. Many heart-breaking problems had been solved for magistrates by its provisions. He believed that the spirit of the police-court administration should be rather the cure of a patient than the punishment of an offender. In the wise administration of the Act in our police courts, more particularly with regard to children and young adults, there lay not only a certain reduction of the ranks of potential criminals, but the opening of an avenue of research into the causes of crime, the penetration of which by the joint and experienced minds of magistrates, prison officials, and mental experts acting in whole-hearted co-operation might lead to the diminution of the criminal population by numbers at present inconceivable.

MRS. PATRICK R. GREEN dealt with the difficult position of justices in regard to hearing petitions presented by the local authorities or by the guardians of the defectives. Justices generally acted on the principle that "prevention is better than cure"; if defectives were not safeguarded early enough they generally came before the courts sooner or later. Legislation was urgently needed by which it would be made obligatory to deal with the defective delinquent under the Mental Deficiency Act; in addition there should be a statutory obligation on all courts to provide the services of a medical expert to advise justices on the mental condition of persons charged. The visitors of the local voluntary associations had done magnificent work. Through their efforts the working of the Act had been made possible.

The CHAIRMAN differentiated the mental defectives and the psychopathic cases. The latter got no benefit from being in an institution for mental defectives, and their presence often led to unfortunate occurrences.

Dr. HUGHES (Stoke-on-Trent) thought that intelligence defect and moral defect were not so highly correlated as had been supposed. He referred to the various methods he had adopted to get hold of the delinquent as early as possible. He had got his best results in the cases brought by the parents themselves. In his opinion moral imbeciles should be sent to industrial schools. The moral effect of a conviction being recorded against anyone was enormous. To prevent this cases must be got early.

Dr. THOMSON (Birmingham) criticized Sir Leslie Scott's statement that mental deficiency was to be regarded as other diseases, and that the public should be taught that no stigma attached to it. This was a dangerous doctrine, for it was the stigma which prevented the amount of mental deficiency being greater than it was.

Dr. HUBERT BOND (Board of Control) urged the need of co-ordination between medical staffs of institutions and those occupying public positions. There should be correlation between the prison medical officers and the medical officers of mental hospitals. He reiterated his plea for fluidity of service. Regarding our present procedure, only the prima facie cases were sent for medical examination. The goal to be aimed at was that every prisoner when he came before the court and was found to have committed an offence should have his case medically inquired into. The discussion was continued by Dr. C. W. LITTLE (Newcastle), Dr. BREWER (Swindon), and others.

Address by the President of the Board of Education.

On the second day of the Conference the chair was taken at the morning session by Lieut.-Colonel W. E. RALEY, President of the Association Education Committees. The opening address was delivered by the Right Hon. H. A. L. FISHER, President of the Board of Education.

Mr. FISHER said that there was little difference of opinion with regard to the general principles which formed the public policy of the State. The first principle was that every child capable of profiting by a course of education in a public elementary school should go to one. The second, that every child unable, by reason of mental deficiency, to profit by that education should be removed; for not only did such a child derive no benefit itself, but its presence acted as a drag and an incubus upon the education of its schoolmates. The third principle was that the children who were so excluded should be divided into two classes—those who could be educated to earn the whole or a part of their livelihood, and could be taught to manage their own affairs and to take part in society as decent citizens, and those who failed to satisfy these tests. The first class, it had been decreed, should be educated in special schools under the Board of Education, while the second class should be handed over to the Board of Control, for supervision at home or custodial care. The Board was educating at present in special schools for the mentally defective 15,138 children, but it was calculated that the total number of such children in England and Wales was 31,000. The total cost of educating the children in special schools was £436 000; if an attempt were made to educate the whole body of 31,000 children who could be classed as mentally defective, day school provision of 19,000 and residential school provision of 12 000 would be required, and an additional expenditure entailed of £977,000, upon which the Board's grant would be approximately £480,000. The Board was not considering the abolition of the special teaching of feeble-minded children under proper conditions altogether, nor was it exploring the lowering of the school-leaving age in special schools from 16 to 14. It was, however, considering the reduction of the teaching cost in its special schools, and unless it could effect some reduction in the teaching cost, and obtain the assistance of the teachers' organizations in effecting this, it was vain to hope that they should be in a position, within a measurable time, of covering any considerable part of the fresh ground which they ought to occupy with as little delay as possible.

Occupation Centres.

Dr. H. B. BRACKENBURY (who was unable to be present) contributed a paper on economic difficulties which prohibit the development of special schools. He expressed a fear lest the Board of Education, in looking for a way to reduce its expenditure, might reduce the money spent on the care and education of mentally defective children. Admittedly, such care and education were costly, and it was only fair to ask for proposals by which a reduction in cost might be effected. After considering certain suggestions put forward to this end, Dr. Brackenbury urged that a plan deserving special attention was that of the attendance of low-grade feeble-minded

children at occupation centres for training and teaching. The advocacy of occupation centres involved no sinister intention of supplanting special schools. They would not replace or act as alternatives to special schools for high-grade children. Some such suggestion deserved consideration to prevent many thousands of feeble-minded children being neglected or abandoned.

The discussion which followed was opened by Mr. Spurley Hey (Director of Education, Manchester). Amongst those who took part were Dr. Thomson (Birmingham) and Dr. Douglas Turner. In the opinion of the latter the only way in which the present difficulties could be met was by extending the system of occupation centres.

In the afternoon the chair was taken by Sir Courtauld Thomson (Chairman of the National Council for Mental Hygiene). Mrs. Anderson (Case Secretary, C.A.M.W.) said that there were a great number of children between the ages of 7 and 16 who had been tried at a special school and "excluded," or in areas where there were no special schools had been turned out of elementary schools because they could not be taught there. If these children were left to themselves the inevitable result was deterioration in mental and moral condition. Occupation centres had been tried to meet this need. Low-grade defectives could be taught to do housework very well, and were happy in doing it. The occupation centre was an enormous boon to the overworked and nerve-wrecked mother. Mrs. Anderson related her experiences of occupation centres and considered it possible to run such a centre successfully at the rate of £7 a head. In her opinion defective children had a great deal of character and were very conscious of a right or wrong atmosphere. The earnest and devoted worker had a recompense in watching this unfolding and in the love and affection which these unfortunate little ones were so eager to give her.

Miss Ruth Darwin (Commissioner, Board of Control) read a paper on working hostels and other institutional methods of dealing with defectives. She believed that besides institutional treatment other methods should now be tried.

In support of the contention that numbers of high and medium grade defectives are capable after proper training of taking their place in the world as harmless and partly self-supporting citizens, Miss Darwin quoted extracts from pamphlets by Dr. Fernald, superintendent of the Massachusetts School for the Feeble minded at Waverley, and recounted the experiences of Dr. Bernstein of the Rome State School. The experience gained at Waverley showed that there was a class of adult defectives for whom permanent institutional treatment was unnecessary, uneconomical, and in some cases not conducive to happiness; these men and women were, however, unable to fend for themselves in the world. What was needed in many cases after the necessary training had been provided was a half-way house between unrestricted liberty and the wholly restricted life of an institution. This would be partly met by the provision of hostels for mentally defective men and women where they would be under detention, but from which they could go out to work by the day.

The Chairman said he had been very much impressed by a remark made by Sir Leslie Scott to the effect that parents ought to be taught that there was no stigma or disgrace in having mental disorder in their family. He did not think that it would be too much to ask that parents should be educated to the point of recognizing the earlier obvious symptoms of mental disorder so that they could call in medical advice or, what was of equal or greater value, educational advice at the earliest possible moment.

Short addresses were delivered on the work accomplished by occupation centres in their areas by Miss I. M. Bryan (Portsmouth), Miss Elfrida Rathbone (London), and Mrs. J. Cooke Hurle (Somerset). Miss Nina Boyle (Mothers' Defence League) considered that insufficient attention had been paid to some of the causes of mental deficiency such as underfeeding. The administration of some institutions for mental deficients called for the sternest criticism.

Mr. A. H. Trevor (Board of Control) said, in the course of discussion, that a proposal had been laid before the Treasury to allow an increased grant to voluntary associations for the purpose of starting occupation centres. He believed and hoped there would not be much objection to certain amplifications of the grants for this purpose.

Professor Sanarelli, director of the Institute of Hygiene, has been elected rector of the University of Rome.

The second International Congress of Comparative Pathology will be held in Rome on September 20th.

IN-PATIENT TREATMENT OF OPHTHALMIA NEONATORUM IN LONDON.

In 1918 the Metropolitan Asylums Board, at the request of the Ministry of Health, established an institution—St. Margaret's Hospital, Leighton Road, Kentish Town—for the treatment of cases of ophthalmia neonatorum. This hospital, to which certain open-air (balcony) wards were subsequently added, now contains accommodation for sixty cases, including beds for mothers, who are encouraged to accompany their babies, and treatment is available for those mothers who are willing to receive it. The accommodation provided at the hospital has, however, never been fully utilized, except for occasional short periods, and the Board has also experienced a continuous difficulty in securing the admission of babies in the earliest stages of the disease. From time to time various steps have been taken with a view to the more extended use of the hospital, but these have not met with such success as had been hoped for. The Board, therefore, recently convened a conference to discuss the measures which it might be thought could usefully be taken to secure that greater advantage should be taken of the facilities provided by the hospital. This conference took place at the office of the Board on July 19th, 1922, and was attended by the following:

Representatives of the Board.

Mr. Walter Eickhoff, J.P., Chairman of the Board.
Mr. C. Botterill, Chairman of the Infectious Hospitals Committee.
Dr. Lauriston Shaw, Vice-Chairman of the Infectious Hospitals Committee.
Miss M. E. Broadbent, Chairman of the St. Margaret's Hospital Subcommittee.
Dr. F. F. Cauger, Chief Medical Officer, Infectious Hospital Service.
Mr. M. S. Mayou, Ophthalmic Surgeon, St. Margaret's Hospital.
Dr. C. Price, Medical Officer, St. Margaret's Hospital.

Representatives of other Authorities.

Ministry of Health.—Mr. H. O. Stutchbury, Assistant Secretary; Dr. Janet Campbell, Senior Medical Officer.
London County Council.—Dr. Elizabeth MacRory.
Section of Ophthalmology, Royal Society of Medicine.—Sir John Parsons, C.B.E., F.R.S., Mr. J. B. Lawford, F.R.C.S.
Metropolitan Branch, Society of Medical Officers of Health.—Dr. T. Shallick Higgins, Medical Officer of Health, St. Pancras; Dr. C. Porter, Medical Officer of Health, St. Marylebone (Hon. Sec.).
Local Medical and Panel Committee for London.—Dr. W. Coode Adams and Dr. J. H. Traquair.
Central Midwives Board.—Dr. J. S. Fairbairn and Mr. H. G. Westley, M.A. (Secretary).
Midwives' Institute.—Miss Rosalind Paget and Miss Olive Haydon.

The proceedings were opened by the Chairman of the Board, who presided, and briefly explained the position.

The ophthalmic surgeon attached to the hospital (Mr. Mayou) said that roughly one-third of the cases of ophthalmia neonatorum notified in London were admitted to the hospital, the figures being:

	1919.	1920.	1921.	1922.*
Number notified ...	870	1185	1076	426
Number admitted ...	281	232	213	115

* To June 17th.

On an average cases were received on the ninth day of the disease, but in other large towns it was about the fifth day. Instances occurred in which cases were not sent to St. Margaret's Hospital until corneal ulceration had developed. The eyes could be saved by appropriate treatment if the cases were received sufficiently early. St. Margaret's Hospital had got the name of a hospital for venereal diseases, and objection had been taken to it by some on that account, but every effort was made at the hospital to avoid any difficulty on this score.

During the general discussion which ensued the work done at St. Margaret's Hospital was referred to in very appreciative terms, and the opinion was expressed that some time must necessarily elapse before the existence of such an institution became generally known in London. It was considered that the percentage of cases notified who were admitted to the hospital was not unsatisfactory, as a large proportion of cases did not need hospital treatment. Emphasis was, however, laid on the desirability of the more prompt notification of cases. It was also stated that many medical students were not adequately instructed in ophthalmology. The objection to the hospital on the ground of its association with the treatment of venereal disease was felt to be one which was very difficult to remove. Further, home duties prevented many mothers from entering the hospital with their infants.

Reference was made from various points of view to the dual control of midwives, who are required to notify the case to the borough medical officer of health where this has not been done by a medical practitioner, and also to inform their local supervising authority, the London County Council, under the regulations, of any emergency (such as the occurrence of ophthalmia neonatorum) in which they had called in medical assistance. It was urged that an institution such as St. Margaret's Hospital was valuable also as affording facilities for the training of midwives, who might, moreover, obtain further experience there after their training as to the best methods of treating ophthalmia neonatorum.

The Board was advised not to seek to extend the method of treating cases of the disease in an institution such as St. Margaret's Hospital until the Departmental Committee on Blindness had submitted its report, as it might be found that there was a better way of dealing with these cases.

THE ADMINISTRATION OF PUBLIC MENTAL HOSPITALS.

Report of the Committee of Inquiry.

The Committee of Inquiry into the Administration of Public Mental Hospitals presented its unanimous report to Parliament on July 31st. The Committee, which consisted of Sir Cyril Cobb (chairman), Dr. Percy Smith, and Dr. Bedford Pierce, was appointed by the Ministry of Health in December last to investigate the charges made by Dr. Lomax in his book, *The Experiences of an Asylum Doctor*. It has held twenty-three meetings, and examined thirty-eight witnesses, who included representatives of official bodies, medical superintendents, nurses, members of visiting committees, some independent persons, and seven ex-patients; Dr. Lomax refused to give evidence on the ground that the inquiry should have been by Royal Commission. The report is based on the evidence submitted by these witnesses, on information derived from memoranda, on the results of a questionnaire which was sent to the medical superintendents of twenty-one mental hospitals, and on the Committee's own observations on visiting eight institutions, in six cases without previous announcement.

Dr. Lomax's General Charges.

The Committee points out in its report that Dr. Lomax is not a specialist in mental or nervous disorders; that the experience on which his book is based was derived from his services in one mental hospital extending over a period of nineteen months under war conditions, when, with fourteen mental hospitals closed, there was overcrowding in the others, together with shortage of staff and difficulty regarding food; that many of his statements are based on hearsay evidence or no evidence at all; and that there are gross exaggerations and some statements which are demonstrably untrue. Dr. Lomax attacked what he called the "system," but the Committee points out that there is no "system" in the sense of an arrangement which produces uniform treatment, and therefore no justification for his assumption that what he found in one institution would probably be found in most others, if not in all. The Committee also finds that Dr. Lomax's suggestion that mental hospitals are barrack-like buildings, and that the patients are herded together without classification, is untrue of mental hospitals generally, and grossly exaggerated in the case of Prestwich (on which institution Dr. Lomax based his statements, and where the members of the Committee spent two days in investigation), although the arrangements for the reception of new patients at Prestwich are inadequate.

The Committee is satisfied that there is no ground for the allegation that systematic ill treatment by the staff prevails in mental hospitals (this was not a point very strongly made by Dr. Lomax, but the press gave prominence to sensational statements made by a few witnesses before the Committee). The Committee believes that the public fails to realize the exacting nature of the work which nurses have to do for patients, and the dangerous character of many of their wards. In the two decades before the war there were seventeen instances of one patient's death being caused by another patient, and eight instances of murderous assault upon the superintendents or other medical officers. It is often necessary, therefore, to use considerable force in restraining patients, but, apart from this, there is nothing to justify the allegations of brutal treatment.

Charges Affecting Medical Supervision.

A serious charge made by Dr. Lomax was that sedatives or purgatives were indiscriminately used, and that patients were kept drugged, and were purged with croton oil as a form of punishment. This charge could be investigated by means of very exact tests obtained from the prescription records of the institutions and from the audited statements of drug purchases. The results of the investigation, taking a period of three years, went entirely to disprove the allegation. At Prestwich Asylum the Committee asked for returns of sedatives administered in one week in 1921 and another week in 1922. The highest number related to a sedative drug, doses of which were given during the week in question to 55 women out of a total of 774 in the institution. The figures for other institutions showed that the administration of sedatives was limited. As for croton oil, this was used at Prestwich, but there was nothing to show that it was used without proper authority. Out of twenty-two institutions furnishing returns fifteen showed that they had not used it at all.

Another allegation referred to the unnecessary detention of patients in institutions. The Committee has discovered no evidence that persons who have recovered their sanity are detained in mental hospitals, but if arrangements for after-care could be improved, and if properly sheltered conditions were available outside, a certain number of patients who did not really need institutional care any longer might be discharged. With regard to the suggestion that no treatment is given, and particularly that there are no facilities for surgical operations, the Committee asks that it may be borne in mind that surgical operations cannot be performed with the same security on the insane as on the sane; but again it finds that there is nothing to show that facilities for surgical treatment are inadequate, or that every effort is not used to restore the insane to health and sanity. Finally, Dr. Lomax referred to the stationary recovery rate. The Committee finds that the recovery rate compares favourably with the recovery rate in general hospitals. One curious fact is that while in one asylum of the most modern construction and equipment the recovery rate is 28.2 per cent., in one of the oldest institutions in the country it is between 33 and 34 per cent. The present recovery rate, even if not improving, is nevertheless very creditable to those who have the care of the mentally afflicted.

The Committee's Recommendations.

Something more positive emerges from the report than the mere disapproving of Dr. Lomax's statements. One of the recommendations is that in future the size of mental hospitals should, as far as possible, be limited to the accommodation necessary for 1,000 persons. In the classification of patients account should be taken of home conditions and surroundings. The superintendent of the mental hospital should be a medical man, with undivided control of the medical and administrative work; and a small advisory committee, preferably associated with the Board of Control, should be available for consultation by visiting committees when making these appointments. The number of assistant medical officers should be increased, and facilities provided for study leave.

Certain other recommendations have to do with the nursing staff. The present rigid system involving short shifts of duty should be discontinued; the hours devoted by each member of the staff to nursing proper should be relatively few, and more time should be given to the nurse's social duties. Other recommendations favour a more varied diet; more attention to the employment of patients, which would be assisted by the appointment at each hospital of an occupations officer; and the strengthening and extension of after-care work. The co-ordination of higher research work by its concentration in a few fully equipped institutions is held to be worthy of consideration.

The opinion is also expressed that the Board of Control needs additional assistance to carry out its work, and that locally it is desirable for visiting committees to be strengthened by the co-option of persons with special qualifications and time to devote to the work, and that some small unofficial committee might be authorized to visit the mental hospitals from time to time. Another matter which has engaged the attention of the Committee is the system under which patients may be visited by their relatives and friends. As far as possible—having regard always to the fact that an insane person may suddenly become violent—friends should be admitted to see the patient actually in the wards, and not in a separate room or corridor. This would go far to disabuse the public mind of the idea that the mental hospital is a place rigidly enclosed and not available to public criticism.

British Medical Journal.

SATURDAY, AUGUST 5TH, 1922.

THE GLASGOW MEETING.

The reports we were able to publish last week will have told those who were not fortunate enough to be present that the ninetieth Annual Meeting of the British Medical Association was one of the most successful ever held. The attendance was very large, and the whole proceedings were marked with the energy and the air of goodfellowship so noticeable during the last two Annual Meetings at Newcastle and Cambridge. No more appropriate site for a congress of this size could be imagined than the splendid buildings of the University of Glasgow, which provided accommodation for all the scientific Sections, with the Bute Hall as a meeting-place for the Representative Body and the larger social functions. From all three aspects—the scientific and clinical, the political, and the social—the Glasgow meeting of 1922 will long stand out in the annals of the Association. Even the weather, of which great things were not expected, did its best to rise to the occasion.

It is right and fitting that the figure which stands out in the mind of every member who attended this meeting should be that of the President. Had he taken little active part in its proceedings, a medical congress presided over by Sir William Macewen would have gained distinction from his professional eminence and his commanding personality. But the President was the central figure of the week's work and pleasure, and his keen interest in all that went on was an inspiration to every one of the 1,500 members and their many guests. It is no exaggeration to say that Sir William Macewen personified both the spirit and purpose of the meeting and the hospitality of Glasgow. His address at the Glasgow meeting in 1888 was one of the most remarkable contributions to the surgical literature of the time. His presidential address this year on the same subject (with which his name and work will ever be associated) has been described by Sir Frederick Mott as a message to all English-speaking doctors which will be welcomed by them as the last thing said on the subject of brain surgery, and it was informed throughout with the philosophic understanding of a great mind.

The scientific sections, large though their number was, were well attended, and the topics chosen gave occasion for many interesting and profitable debates. We print this week a series of notes of the first day's scientific and clinical proceedings, which will serve to give a brief outline of the papers and discussions. A complete account of the earlier proceedings of the Medico-Sociological Section appears at page 195, and in subsequent issues we shall publish full reports of the work of the other eighteen sections. The afternoon demonstrations, which have become an established feature of the Annual Meetings, were again most successful, while the excellent Pathological Museum, the Public Health Exhibition, and the Trades Exhibition were visited by large numbers.

The publicity given to the proceedings of the Representative Body and of several Sections by the leading Scottish newspapers, and indeed by the lay press at large, was very noticeable. This is an advantage both to the public and to the Association—to the public by making known to it the general aims and methods of the organized medical profession; to the Association because much of its scientific and professional work is of a kind that flourishes best in contact with well-informed lay opinion. The Annual Meeting serves to remind us all that the chief object of Medicine is the public good. That this is appreciated by responsible newspapers is, we think, shown in the general trend of the comments upon the two principal topics debated by the Representative Body—professional secrecy and hospital policy. Each of these matters abounds in difficulties, but the second is the larger and in some ways the more complex, and a very big part of the Representative Meeting was spent in an attempt to build up an agreed policy within the scaffolding laboriously set up by the Hospitals Committee. A full account of the discussions and conclusions on the hospital question will be found in this and last week's Supplement. As we observed last week, it is not surprising that the Association should find great difficulty in exactly defining its position. Briefly put, the outcome of this meeting is that the Council's report and recommendations on the organization of voluntary hospitals were in the main accepted by the requisite majority, and with certain modifications have become the policy of the Association. But there was an evident cleavage of opinion on certain fundamentals, and one important recommendation was taken back for further consideration. We hope in an early issue to discuss more fully the directions in which policy has been modified, and to give some estimate of the practical effect of the decisions reached. Meanwhile we would add a word of praise to the Chairman of the Hospitals Committee for his indefatigable labours in committee, in Council, and in the Representative Body; Ministers piloting a contentious bill through the storms of Westminster might envy him his powers of endurance. Looking back on the four arduous days spent in medico-political business, we may compliment also the Representative Body as a whole, and its chairman, Dr. Wallace Henry, in particular, on completing a stiff course in workmanlike style.

Of the social side of the ninetieth Annual Meeting it should suffice to say that this was under the charge of Scottish hosts, who for months beforehand had spent themselves in perfecting local arrangements. Brief notes of some of the delightful entertainments are printed elsewhere; but it would be impossible to acknowledge all the hospitality offered to members and their families by the medical profession of Glasgow, by the University, and by the civic authorities. In the same way we can only mention a few outstanding names from among the groups of willing workers. The pivot of the whole meeting was the Honorary Local General Secretary, Dr. George A. Allan, whose tireless energy made him ubiquitous. All day and every day he seemed to be at the President's right hand and in a hundred places besides; no one was forgotten and nothing overlooked. Dr. R. A. Hendry was invaluable in dealing with accommodation in hotels and lodgings; this work was under his sole control. Dr. McCutcheon did fine work as transport officer; while Mr. Kay and Dr. F. W. Martin looked after the entertainments in general, with much help from others, notably from Dr. Shannon in the plans for the annual dinner. On the financial side, Professor T. K. Munro and Dr. James H. Martin must be mentioned; also Mr. Harold Yarrow, who acted as treasurer, and Sir John Reid, a member of the executive, who was constant in his attendance and always ready to help. In the organization of the reception room Dr. Allan and his deputy, Mr. James Russell, had valuable aid from Dr. McGregor Robertson. The printing arrangements owed much to Dr. John Patrick and Dr. Cruickshank, the former taking a large share in the production of the *Book of Glasgow* (reviewed by us last week) and

the latter in the *Handbook* of the meeting. In conclusion, we should like to name all the ladies who helped to make the meeting a success, but this would be invidious, for (as a member from a neighbouring island remarked) the Ladies' Executive worked splendidly to a man.

ANNUAL MEETING NOTES.

The Erskine House Hospital for Limbless and Disabled.

Perhaps not the least interesting of the many excursions organized for the Annual Meeting in Glasgow was that to the Princess Louise Scottish Hospital for Limbless and Disabled Sailors and Soldiers, Erskine House. A large party of ladies and gentlemen who visited Erskine House on the afternoon of July 28th were exceedingly pleased with the work of the hospital and charmed with the beautiful mansion house and surrounding scenery. This institution owes its origin to Sir William Macewen. Very early in the war he recognized that maimed and limbless sailors and soldiers in large numbers would require to be cared for, in regard to provision and repair of artificial limbs, and assisted to render themselves useful citizens by being taught suitable occupations. Sir William Macewen enlisted the sympathies of the citizens of Glasgow, and was supported by an influential committee, which included the Marchioness of Bute, the Marquis and Marchioness of Ailsa, Mrs. Pollock of Ayr, Sir John Reid, Mr. Harold Yarrow, Mrs. McCowan, Miss Anderson, Sir Thomas Dunlop (Lord Provost of the City Glasgow at the time), and many members of the medical profession. Erskine House, formerly the residence of Lord Blantyre, well known in Glasgow and the West of Scotland for his many legal contests with the Clyde Trust, was gifted by Sir John Reid, D.L., Deacon Convener of the Trades' House, for the purpose of the hospital. The mansion is on the left bank of the Clyde, in an estate of 500 acres, a situation in every respect ideal for the purpose. The hospital was ready for patients on October 10th, 1916, and formally opened by Princess Louise on June 6th, 1917. The magnitude of the work may be estimated from figures which have been supplied by Sir John Reid, vice-chairman of the committee. The total number of patients fitted with limbs from the opening until the end of May, 1922, was 6,263, and 4,384 limbs were repaired. The amount of subscriptions received up to the present date is £321,014 1s. 7d. The generous public of Glasgow made many contributions to the hospital. The *x*-ray room, for example, was completely equipped from the proceeds of a matinée performance in the Alhambra Theatre. The *Glasgow Evening News* organized a subscription list amongst its readers, chiefly in small sums; this fund amounted to £17,000. Mr. and Mrs. Morton of Troon presented the beautiful recreation hall, with stage, billiard tables, and cinematographic apparatus, in memory of their son. Many single beds were endowed by many donors and societies.

The hospital is governed by a voluntary committee, at the head of which is the Lord Provost of the City of Glasgow for the time being, and the committee includes most of the ladies and gentlemen already mentioned. The trades which are taught in the Erskine workshops include shoemaking, basketry, tailoring, saddlery, hairdressing, cabinet-making, and rural industries. After completion of training at Erskine many of the men, with the aid of a Government grant, have set up business for themselves in various parts of the country and abroad. A most important part of the work is the manufacture and fitting of artificial limbs and appliances. The furniture and other articles made are sold in the shops of the Erskine Hospital in Glasgow. At the meeting on July 28th the new President of the British Medical Association, Sir William Macewen, described how he was assisted by Messrs. Yarrow in the manufacture of limbs, and told how the drying of the wood, which was obtained from the neighbourhood, was accomplished, and how the workshops of Messrs. Yarrow's shipbuilding yard turned out parts for artificial limbs as quickly and as efficiently as renowned makers of these limbs. On the same occasion Sir John Reid invited the ladies of the party to inspect the kitchen arrangements, which he assured them (and they proved for themselves) are up to date in every respect, electric cooking and central heating being employed throughout. The thanks of the visiting party were offered to Sir William Macewen and the committee by Mr. Hempson, solicitor to the Association.

University Reception.

On the evening of July 26th the Principal and Vice-Chancellor, Sir Donald MacAlister, and Lady MacAlister welcomed the guests of the University of Glasgow in the Bute Hall. The hall itself, the Randolph Hall beyond, and the Hunterian Museum were soon well filled; and light and colour—the scarlet of academic robes preponderating—combined with music and the animation of reunion between old and new friends, to present a vivid contrast to the austerities of the Representative Meeting so lately concluded in the same setting. In the course of the evening the Chairman of Council, seconded by Mr. Harold E. Yarrow, C.B.E., honorary treasurer of the meeting, expressed the Association's appreciation of the generous hospitality offered by the Court of the University, claiming the Vice-Chancellor as arbiter of the destiny of the profession in another place (the General Medical Council). Sir Donald MacAlister's brief reply was warmly received by all present.

Civic Reception.

On the afternoon of July 27th the members of the British Medical Association were given a civic welcome in the handsome City Chambers, which occupy one side of George Square. The reception was attended by large numbers, many of whom wore academic dress. In the absence of the Lord Provost and Senior Magistrate, the guests were received in the Satinwood Salon by Bailie James A. Stewart, Acting Chief Magistrate, and a number of his colleagues. Bailie Stewart afterwards extended a formal welcome to the visitors in the Banqueting Hall, and expressed the Lord Provost's regret for his absence. Perhaps nowhere in the Empire, he said, could the British Medical Association meet more appropriately than in Glasgow, where successive generations of illustrious men had made outstanding contributions to the progress of medical and surgical science. The records of the city and its University contained the names of some of the most eminent surgeons and physicians of the world, and Glasgow was proud to think that to-day it still held in its midst men occupying the highest rank in the profession. He felt that it would be unpardonable in a gathering met to do honour to medical men if he omitted to mention the greatest of them all—one who had shed imperishable lustre upon the annals of surgery, who by his discoveries had been the means of saving hundreds of thousands of lives, and who would be regarded by future generations as one of the greatest benefactors of humanity. It would be an everlasting disgrace to the city if the historic Lister ward, with its beneficent associations, were ever demolished or removed. Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians of London, briefly offered the thanks of the British Medical Association to the civic authorities of Glasgow, adding that not only was Glasgow famed for enterprise in commerce, industry, and education, but also in hygiene. Sir Thomas Oliver, Professor of Medicine in the University of Durham, who associated himself with the expression of thanks, remarked that there were many directions in which medical research could aid the development of commerce, as, for instance, in the conquest of malaria; in such ways fresh opportunities would be given for the expansion of British enterprise. On the motion of Sir William Macewen a vote of thanks was accorded to Bailie Stewart. While the guests were taking tea music was provided by Mr. Meredith Kay's orchestra in the Banqueting Hall.

The Official Religious Service.

The official religious service (Presbyterian) was held in St. Mungo's Cathedral on Tuesday afternoon, when the President, the Chairmen of Council and of Representative Meetings, and a large number of members were present. Prayer was offered by the Very Rev. W. M. Clow, D.D., Principal of the United Free Church College, and the lesson was read by Sir Donald MacAlister, K.C.B., Principal and Vice-Chancellor of the University. The address was delivered by the Rev. James MacGibbon, M.C., D.D., minister of the cathedral, who took his text from the words: "The Son of Man came not to be ministered unto, but to minister, and to give His life a ransom for many" (Matthew xx. 28). The worth of a profession, he said, was determined by its purpose, and the supreme power in the world was personality. In no profession did a practitioner come into closer touch with others than in the profession of medicine, and there was no profession in which purpose and personality were more imperative. Hippocrates, the father of medicine, must ever remain the type of the perfect physician. It was said of him that he was learned, observant, humane, and of overmastering desire that his experience should benefit others, also that he was pure of mind and master of his passions. Such *philanthropeia* must be the motive of all *philotechneia*. The character maintained by Hippocrates was repeated two thousand years later by one much less renowned, whose name and memory were preserved in that cathedral—Peter Lowe, founder of the Faculty of Physicians and Surgeons of Glasgow, who flourished at the end of the sixteenth and beginning of the seventeenth century.

What had been said of religion (continued the preacher) was true also of medicine—it was an art as well as a science, and as such it implied that reason must work with faith, the emotion with the intellect, even as spirit with matter. The presence of many members of the British Medical Association in that house consecrated to the worship of God as revealed in His Son was a virtual acknowledgement that they believed that the ideal of the physician had been given them in Jesus Christ. In Jesus Christ purpose and personality were combined—pure purpose, perseverance in it to the utmost, with a power of personality which was immeasurable. Christ's efforts for the restoration of man were threefold—teaching, healing, suffering. Healing had been a science, more or less, ever since earliest times, but in all its history it had never revealed anything like the character it possessed in the hands of Jesus Christ. In His method of healing Christ had no forerunner and no successor. He used no drug, He performed no operation; of whatever law of healing He made use, it was a law which depended on Himself for its effectiveness. He was, as it were, the embodiment of the health He restored, just as He was the embodiment of the teaching He gave. It was probable that Christ selected expressly the character of the Son of Man in order that it might be clear to all generations that He claimed to act, not in virtue of powers which mankind could not share, but in virtue of powers which man might and should possess and exercise. "He that believeth on Me, the works that I do shall he do also, and greater works than these shall he do." The Greatest was unique, but no monopolist. He wrought to such effect because He was without sin. It had been said that if sin were to cease, suffering would also cease, but sin meant not only suffering, it meant waste of energy. A great consecrated personality was a channel of power. In conclusion the preacher said that what remained to be achieved in the medical profession was far greater than what had hitherto been accomplished. The domain of medicine bristled with Everests yet unscaled. The further conquests which they prayed God would be made, and to which, by God's help, the present Conference would in some measure point the way, would be no less costly than the victories achieved in the past, and those victories were most likely to be gained by those who humbly and resolutely found in Jesus Christ a noble purpose and a supreme example, and maintained as their continual habit a close fellowship not only with one another, but with Him.

Surgical Operations and Demonstrations.

As in the two previous years, the Surgical Section attended a series of demonstrations on the three afternoons of the meeting from 2.30 till 4. These demonstrations were arranged under the general direction of Mr. R. H. Parry, and most of the surgeons in the hospitals of Glasgow willingly assisted. On Wednesday and Thursday afternoons Sir William Macewen gave demonstrations in the Surgical Laboratory on hernia and on tumours, the latter with illustrated methods of teaching. On the afternoon of Wednesday, July 26th, demonstrations were carried out by surgeons of the Royal Infirmary. Two wards with side rooms attached were, by the courtesy of the superintendent, emptied of their ordinary patients, and all the cases and specimens for demonstration were collected together in groups. Each surgeon demonstrated his own cases, and the visitors circulated round the wards. The cases were of varied interest, including knock-knee, Albee's operation, oesophageal diverticulum, carcinoma of the stomach, congenital deformities. On Thursday afternoon, July 27th, demonstrations were held chiefly in the Royal Hospital for Sick Children, when Dr. Leonard Findlay showed methods of injection of alcohol in treatment of rectal prolapse and venesection of scalp veins in infancy for obtaining blood for Wassermann reaction and for administration of salvarsan. Mr. Alexander MacLennan gave a demonstration on scoliosis with cinematographic illustrations. Mr. Alexander Mitchell showed skiagrams of bone regeneration, and Mr. William Rankin showed various surgical cases. On Friday afternoon, July 28th, demonstrations were held both in the Western Infirmary and in the Victoria Infirmary. In the Western Infirmary Mr. Edington showed results of laparotomy by transverse incision, and Mr. Archibald Young showed cases of Perthes's disease, excision of upper jaw for sarcoma, colostomy, gastrectomy, and laminectomy. Mr. Young showed also a series of cases of fractures treated by operation, and cases of elbow fractures and epiphyseal separation treated by plating, pinning, etc. In the Victoria Infirmary Messrs. Farquhar Macrae and Robert Carslaw showed cases of mobile ascending colon operated on by the method suggested by Mr. George Waugh, and Mr. Waugh himself operated on an actual case. Mr. James Russell showed some orthopaedic cases—infantile paralysis, club-feet, congenital dislocation of hip—and cases of excision of colon for malignant disease.

A new feature was introduced by the Arrangements Committee at this meeting, on the suggestion of Sir William Macewen, who felt that the early morning hours before the meeting of Sections might be utilized. Accordingly, the surgeons of the infirmaries were approached, and nearly all intimated their willingness to perform operations from 8.30 till 10 each morning. These early morning meetings were generally well attended, and appeared to justify the innovation. Sir William Macewen himself led the way, operating on each of the three mornings, his operations being the radical cure of hernia, osteotomy, and mastoid operation; on these mornings also he demonstrated the end-results in cases of cerebral abscess and the end-results of complete removal of the tongue for carcinoma. In addition to the surgeons of the three large infirmaries—Royal, Western, and Victoria—morning operations were performed by the gynaecologists in these infirmaries, in the Royal Maternity and Women's Hospital, and in the Royal Samaritan Hospital for Women.

Saturday's Excursions at Glasgow.

The last day of the Annual Meeting was given over entirely to the enjoyment of whole-day excursions.

Firth of Clyde Excursion.—A party of 400 left the Broomielaw at 9.15 for a sail on the Firth of Clyde. It was only by mutual arrangement with the three railway companies that this was possible, as the last Saturday of July

is the busiest Saturday of the year. The turbine steamer *Duchess of Argyll*, the boat which carried the party, is "the baby" of the Caledonian Steam Packet Company's fleet, and played no mean part in the war; during the time when the submarine warfare was at its worst she conveyed over 300,000 officers and men to and from France without mishap, and in all made 655 trips. Captain McWaughton, who commanded the boat during the whole period of her war service, was in charge. The weather at the start of the trip left something to be desired, but fortunately it cleared up later, and a most enjoyable day was spent. The ship took the party down the Clyde, called at Gourock to take up a few passengers, and then sailed up Loch Striven and Loch Ridden and thence through the Kyles of Bute and round Bute into Rothesay. A party of about 150 left the steamer at Rothesay in order to be present at the ceremony of the presentation by Provost Eben MacMillan of the Freedom of the Royal Burgh of Rothesay to Sir William Macewen, a native of Rothesay. The ceremony took place in the courtyard of Rothesay Castle, and was thoroughly enjoyed by all present. Sir William was accompanied by Lady Macewen and by their three daughters, three sons (Dr. J. A. C. Macewen, Dr. Hugh Macewen, and Dr. William Macewen), and two small grandsons. The steamer meanwhile sailed round the Cumbraes and returned to Rothesay in time to pick up the party after the ceremony was over, after which she proceeded some little distance up Loch Long and thence down to Gourock, where the party disembarked and was conveyed by a special train to Glasgow, arriving at Glasgow about 7 p.m. Music was supplied on the boat by the kind offices of the Caledonian Railway Company. The arrangements for the trip were admirable, and all those present were delighted with the excursion.

Stirling Trip.—Another most enjoyable trip was the Stirling and Bridge of Allan trip. A party left Glasgow by train for Stirling, where motors were provided in order that the company might see the sights in Stirling, Bridge of Allan, and Dunblane. The Provost of Stirling and the Provost of Bridge of Allan attached themselves to the party at Stirling. General Stirling entertained the party at Keir and conducted it over the Castle, the Wallace Monument, and Dunblane Cathedral. A very enjoyable visit was also made to the famous Keir Gardens, and an opportunity was afforded of seeing the mineral wells at Bridge of Allan. The arrangements for the Stirling trip were in the hands of Dr. Hossack Fraser.

Ayr Trip.—Another party left Glasgow by train for Ayr, where motors were provided in order that the places of interest in and around Ayr might be visited. The arrangements for this trip were in the hands of Dr. G. Douglas McRae, President of the Glasgow and West of Scotland Branch, and the President of the Burns Federation, Mr. Duncan McNaught, LL.D., accompanied the party. Dr. Crerar of Maryport was another who contributed in no small measure to the success of the trip. Tea was kindly provided by the Marquess and Marchioness of Ailsa at Culzean Castle.

It was a wise move on the part of the local Entertainment Committee to have a transport section, which was presided over with great skill and energy by Dr. J. G. McCutcheon. In his work Dr. McCutcheon was ably assisted by, amongst others, representatives from the Caledonian Railway, the North British Railway, and the Glasgow and South-Western Railway.

Medical Missions Reception.

Sir Donald MacAlister presided at a meeting in the Randolph Hall on Friday afternoon, July 28th, after a reception given by Mr. and Mrs. A. Ernest Maylard to those attending the British Medical Association Annual Meeting. In a few striking sentences the Principal of the University commended the cause of medical missions. The original mandate to the first missionaries was "to preach the Kingdom of God and to heal the sick." This was recorded by a physician, and it was not for us to discuss our orders but obey them. Calling for an advance, Sir Donald MacAlister said that the Church that ceased to grow at the margin had begun to wither at the heart. The religion that did not strive to gain the whole world was doomed to lose its own soul. Like a forest fire, it must go on or go out. Propagation was the law of its being, not merely of its well-being. Dr J. Howard Cook, who had organized the meeting, explained that it was intended not to represent any one missionary society but the whole cause of medical missions. Dr Albert Cook, who had been the founder of the great mission hospital of the Church Missionary Society in Uganda in the year 1896, gave a graphic description of the hospital with which he and his brother who had just spoken had been long associated. The hospital as it is to-day occupies a series of buildings on a beautiful hillside; it embraces every branch of medical and surgical practice. There are the usual blocks containing wards for men, women, and children, with good facilities for operations, about 1,000 having been performed during the year. The Wellcome dispensary and the Roosevelt block were referred to, the former the gift of Mr. Wellcome, and the latter opened by Mr. Roosevelt on his visit to Uganda. Special blocks have been erected for English patients and for Indians, and a motor block secures the lighting of the hospital and contains a good x-ray outfit. A medical school and maternity training school form part of a scheme for supplying the whole country with needed help. Dr. and Mrs. Albert Cook had recently engaged in an educational tour on venereal disease at the request of the Government, and they believed that from 40 to 90 per cent. of the population were infected. Dr. Duncan Main, also of the C.M.S., spoke in the place of Dr. Christie of Manchuria, who should have represented Scottish missions. Both of them are graduates of Edinburgh University, and have built up great hospitals with medical schools in their respective centres. Dr. Main has recently received a gift of £10,000 from a generous Scottish donor for his medical school, and his great endeavour is to supply the medical needs of China through her own sons and daughters. Dr. Fletcher Moorshead, as medical secretary of the Baptist Missionary Society, suggested that the medical profession at home could best help the work (1) by influencing public opinion at home; (2) by helping to secure much-needed medical recruits; (3) by sending current literature such as the British Medical Journal to medical missionaries; (4) by helping to supply apparatus and equipment. Either he or Dr. Cook would be glad to put anyone in touch with doctors who needed help if members of the profession would communicate with them.

The Temperance Breakfast.

A large number of members attending the Annual Meeting were entertained by Lord Rowallan (better known as Mr. Cameron Corbett, M.P.) at the National Temperance League breakfast in the University Union on July 27th. Among those present were Mr. C. F. Childe (President-elect of the Association) and Dr. Wallace Henry (Chairman of Representative Meetings). Allusion was made by the host to the removal from their midst during the year of Sir Alfred Pearce Gould, whose address last year at Newcastle would be long remembered. The address on this occasion was given by the Rev. Courtenay Weeks, M.R.C.S., who anticipated the discussion in the Medico-Sociological Section the following day by speaking of the vast amount of damage to the human economy which alcohol brought about, and urging that there was no place for the old traditional routine use of alcohol, although a considerable number of members of the medical profession were still in a backwater in this respect. It was the supposed food value of alcohol which proved so alluring to many, but he thought it was now generally agreed that the substance was deleterious to the higher centres and impaired the mental functions. He referred in particular to the report of McDougall and Smith to the Medical Research Council on the effects of alcohol during normal and fatigued conditions. Mr. Weeks concluded his address by remarking that he had no doubt himself as to the energy-giving value of alcohol:

during his work in the slums of London he had seen too many women with black eyes ever to doubt it! As the hour for the beginning of the work of the Sections was approaching, the breakfast-table discussion had to be curtailed, and a vote of thanks was accorded to Lord Rowallan for his hospitality, on the motion of Dr. Wallace Henry, seconded by Mr. C. P. Childe, and supported by Mr. McAdam Eccles. Mr. Childe referred to the great progress in temperance reform which had taken place of recent years. When he first went to Portsmouth there was ten times as much drunkenness as there was now. It was also formerly the custom to find the sherry always set out on visiting the patient's house; now one only found it at the funeral! Lord Rowallan, acknowledging the vote of thanks, remarked how greatly he had enjoyed the experience of being a patient at Guy's Hospital after a recent cab accident, so that he came out feeling better than he had ever done in his life.

THE MINISTRY OF HEALTH.

The annual report of the Chief Medical Officer of the Ministry of Health for 1921 has just been published. We gave last week a preliminary notice of the annual report of the Ministry, but Sir George Newman deals more specifically with strictly medical matters; his report will afford to the medical profession, to the public health service, and to the general public much food for thought. Happily it is published by the Stationery Office at the price of 1s. 6d. (it can be ordered through any bookseller), so that both its price and mode of distribution place it within the reach of all interested persons. It consists of an introduction, ten chapters, and some appendices, but in the crowded state of our columns at present we cannot do more than give a brief indication of its general scope. Sir George Newman has written his introduction with full recognition of the limitations which the present financial position of the country imposes. Speaking generally, he says that in the present state of national finance it is clear that the expenditure on public health matters "cannot be allowed to increase indefinitely, and that the strictest economy must be practised. The immediate business, as it seems to me, of every local authority is not to take one step more in expenditure until and unless they are fully satisfied that the work they have already undertaken is thoroughly economical and is rendering full interest. The public expenditure in dealing with tuberculosis, venereal diseases, and maternity and child welfare has inevitably grown to serious proportions, and, though relatively small (only 1 per cent. of local rates) as compared with that of other services, it is absolutely essential that no money should be laid out which is not immediately necessary in the interest of public health. Every pound expended must be made to yield the full value of a pound. Such a standard is not only necessary but it is eminently desirable in the interest of the work itself." He reminds local authorities that thrift and wise expenditure are parts of true economy. "If there be a certain sum of money to spend on communal health, it is inexpedient to indulge in stunts or spasmodic efforts in this direction or that, which arrest attention at the moment, rather than on a carefully considered policy, the principal elements of which must be regarded in an ordered sequence." Here and there we find some characteristic thrusts *ad hominem*, as, for instance, that the question, "What is the use of all our expenditure on health?" is often asked by persons "who do not reflect that their welcome presence among us, alive, alert, and competent, is itself the answer." The first chapter deals generally with the state of public health in England, the next with maternity and child welfare, and others with general epidemiology, with infectious diseases introduced from abroad, with tuberculosis, with venereal diseases, with the relation of food to health, with the insurance medical service, and with medical and sanitary administration. The last chapter reviews briefly the work of the Ministry in relation to medical intelligence, investigation, and international health. We hope to deal more fully with the report in an early issue.

THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The annual report of Sir Arthur Keith, F.R.S., Conservator of the Museum of the Royal College of Surgeons of England, gives particulars of numerous additions made during the year and refers to the large amount of research work carried out, much of it in the Pathological Department, which is directed by Professor S. G. Shattock, F.R.S. The Conservator is able to report the completion of the arrangements with the War Office with regard to the army medical war collection. Under the agreement come to last November with the Secretary of State for War, the Council of the College becomes responsible for the housing, display, completion, upkeep, and cataloguing of the collection, which will form an intrinsic part of the College Museum and be made available for inspection and study at the same times as other parts of the Museum. Specimens, however, will be at the disposal of the professors at the Royal Army Medical College for teaching purposes. By structural alterations in certain buildings attached to the eastern part of the Museum it will be possible to provide a large room to accommodate the war collection, which when complete will comprise 2,000 wet specimens and 500 dry specimens, besides drawings, radiograms, photographs, models, and casts. The actual preparation and description of specimens has fallen on Professor Shattock, with the assistance of Mr. Cecil Beadles, to whose services a high tribute is paid. When complete the collection will include the more representative specimens illustrating the severer forms of facial injury and the methods of plastic surgery selected by Major H. D. Gillies from the specimens preserved at Sidcup. Progress has also been made with the preparation of the Onodi collection recently presented to the College; the work is being carried on under the supervision of Mr. T. B. Layton, F.R.C.S., who has undertaken to investigate, describe, and catalogue the specimens. Professor Shattock reports that the large collection illustrating special pathology, which had been removed to the basement for safety during the war, has now been restored to the Museum and rearranged in a slightly modified way. Specimens recently added will be placed on view in one of the rooms of the Museum from October 9th to November 10th.

The pressure of matter from the Annual Meeting of the Association compels us again this week to suspend the publication of the Epitome.

Medical Notes in Parliament.

[From our Parliamentary Correspondent.]

National Health Insurance Bill.—The Lords' amendments to the National Health Insurance Bill were considered in the House of Commons on July 26th and agreed to. These changes were of a small and technical kind.

Milk and Dairies (Amendment) Bill.—This measure, after being considered in Grand Committee, was taken on report in the Commons on July 28th, and was given third reading on August 1st. Very few changes were made from the text as originally presented, and as outlined in the British Medical Journal last week. On report on Clause 8, giving the Minister of Health power to make regulations to prevent danger to health from the importation of milk, words were added, at the instance of Sir Alfred Mond, to include in such power the right to make a regulation to prescribe the minimum percentages of milk fat and milk solids in dried or condensed milks.

Criminal Law Amendment Bill.—On report on the Criminal Law Amendment Bill on July 25th in the House of Commons, Clause II, laying down that reasonable belief that a girl is 16 years of age shall be no defence, was subjected to the following qualification: "Provided that in the case of a man 25 years of age or under, the presence of reasonable cause to believe that the girl was over 16 years of age shall be a valid defence on the first occasion on which he is charged with an offence under this section." This addition was adopted by 93 votes to 65. The understanding was that it represented an arrangement between some members who supported the bill and some who were critical of it. On the second reading in the Lords, on July 27th, the Bishop of London, on behalf of those who introduced a similar bill last year, accepted the change. The bill had third reading in the Lords on July 31st.

The Sale of Arsenic.—Dr. McDonald asked, on July 26th, if, in view of the fact that large quantities of arsenic could be obtained from chemists by individuals merely signing a poison book, the

Minister of Health would take steps to discontinue this practice. Sir A. Mond replied that the sale of arsenic was governed by Sections 1 and 2 of the Arsenic Act, 1851, and by Section 17 of the Pharmacy Act, 1868. It would require further legislation, which would be considered, to deal with the point raised.

Voluntary Boarders in Mental Institutions.—Sir A. Mond informed Mr. R. Richardson, on July 26th, that during the year 1921 315 voluntary boarders entered licensed houses and 330 entered registered hospitals. During that year 194 voluntary boarders left licensed houses and 227 left registered hospitals of their own accord. Unless a patient was suffering from mental disorder of so acute a character that he was unable to appreciate what was taking place it was practically impossible for him to be certified without his knowledge, as had been suggested by the hon. member.

Mental Service Cases.—Captain Loseby asked, on July 19th, whether the Minister of Pensions was aware that many ex-soldiers of good social position, and in no sense dangerous, who owed their state entirely to service during the war, were still confined in pauper lunatic asylums? Mr. Macpherson replied that both ex-service and civilian patients in mental asylums and elsewhere differed in social status. Some of them, though neither dangerous to others nor actually suicidal, were quite unable, on account of their unfortunate mental condition, to look after themselves, and could not otherwise be suitably cared for. Service patients were on the legal footing of private patients, and might therefore be removed at the instance of their responsible relatives unless the medical superintendent certified that they were dangerous to themselves or others. In reply to a further question, Major Tryon stated, on July 20th, that the lowest rate paid for the maintenance of an officer whose admission to an asylum had been arranged by the Ministry was 2 guineas a week. There were in addition seven officers in county and borough asylums at rates ranging from 28s. 10d. to 37s. a week. None of these cases had been placed in the asylum by arrangement with the Ministry, but were allowed to remain there for various reasons. The average cost of maintenance of a service patient in asylums in England and Wales was about 36s. a week. Mr. Macpherson stated, on July 20th, that the number of ex-service men of all classes under treatment in asylums, in respect of whom allowances are paid or credited was 6,800.

Ex-Service Men under Care.—In reply to Captain Loseby, on July 25th, Major Tryon said that when the condition of a patient in one of the Ministry Neurological Hospitals deteriorated towards insanity he was kept apart from the other patients, and every approved means of cure known to modern science was tried. Should the treatment fail to arrest the development of the malady and certification became necessary, steps were at once taken for the patient's removal to a mental institution approved by the Board of Control.

Soldiers' Homes and Hospitals in Malta.—Sir J. Randles asked, on July 26th, what steps had been taken to give security to those responsible for soldiers' homes, hospitals, seamen's rests, and such buildings as had been erected on lands held from the War Department in Malta, but which, under recent arbitration, were liable to be disturbed by the civil authorities. Mr. Churchill said the responsible government at Malta might be trusted to deal with the authorities in charge of these institutions in an equitable spirit. He would forward the question and answer to the Governor of Malta.

Prevention of Conception.—Mr. Hailwood asked, on August 1st, whether the Government intended to introduce legislation on the lines of the French law of 1920 making it a punishable offence to publish or distribute books or pamphlets advocating or teaching the prevention of conception, or offering for sale or advertising the sale of articles designed for the like purpose. The Home Secretary said that it was the duty of the police to take proceedings in any case where books of an obscene character were being circulated, but it could not be assumed that a court would hold a book to be obscene merely because it dealt with the subject referred to. There was no present intention of introducing legislation.

Brief Notes.

Major Tryon has stated that the recent resignation of one of the speech specialists employed at the London Neurological Clinic, Kensington, brought about a temporary congestion of the work, but steps had been taken to deal with the situation, and there was no reason to doubt that they would prove satisfactory.

In reply to Dr. McDonald, on July 26th, the Minister of Health said that he was satisfied from inquiries made that cocaine was essential to the medical profession, particularly in ophthalmic surgery and laryngology. Although dental surgeons were not unanimous, many regarded cocaine as essential for certain operations.

Sir A. Mond stated, in answer to Mr. Mills on July 27th, that Sir Wilmot Herringham was appointed a member of the General Nursing Council on the nomination of the Board of Education.

The Secretary of State for War has stated that the department for compiling statistics of disease in the army during the war has to deal with thirty million hospital cards, delay was therefore inevitable, and this explained why statistics as to small-pox cases and deaths had not yet been issued.

A man's eligibility for pension is not affected by his removal from duty on one or more occasions, except in so far as it may afford evidence of the existence of the disability, and thus help to establish connexion between the disability and military service.

The Home Secretary has stated that the practicability of employing distinctive colours for poisons such as arsenic and strychnine is under consideration.

England and Wales.

Welsh National School of Medicine.

The Committee of Management of the Examining Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England has made a report on the application from the Welsh National School of Medicine to be recognized for the complete curriculum. The Committee discussed various points arising out of the application with a deputation from the University of Wales, consisting of Lord Kenyon, Pro-Chancellor, Chairman of the Board of Medicine, Principal A. H. Trow, Sir William J. Thomas, Bt., Sir William H. Diamond, Mr. D. W. Evans, Professor A. M. Kennedy, Professor Ewen J. Maclean, and Professor A. W. Sheen. The Committee was generally satisfied with the provision made for teaching, and the Royal Colleges have resolved:

That the Welsh National School of Medicine be recognized provisionally for the complete curriculum from October 1st, 1922, for one year, and that provided the following conditions are fulfilled not later than October 1st, 1923, such recognition become permanent, namely:

1. The total number of beds, exclusive of cots, available for the teaching of medicine in King Edward VII Hospital, Cardiff, shall not be less than 80.
2. Of these 80 beds, not less than 30 shall be allotted to the professor of the medical unit.
3. All physicians, surgeons, assistant physicians, assistant surgeons, and physicians and surgeons in charge of special departments at King Edward VII Hospital shall be recognized as teachers of the University of Wales.
4. Clinical clerkships and dresserships shall be provided for all students in professorial and non-professorial units.
5. Courses of instruction in all special departments required by the Regulations of the Examining Board in England shall be provided.

Cardigan Memorial Hospital.

The people of Cardigan and adjacent districts resolved that the local memorial to men who had fallen in the war should take the form of a hospital in Cardigan, to serve the neighbouring districts of Cardiganshire, Pembrokeshire, and Carmarthenshire, for the town stands near the point where these three counties meet. A considerable sum of money was collected and the committee was able to command the enthusiastic help of Sir John Lynn-Thomas, who, since his retirement from the active staff of King Edward VII Hospital in Cardiff, has gone to reside permanently at a short distance from Cardigan. At his suggestion Cardigan Priory, a private house standing in its own grounds just outside Cardigan, was purchased, and under his supervision and with generous help from him has been fitted up as a hospital, possessing all the facilities and appliances necessary for surgical as well as medical work. He has become consulting surgeon to the hospital, as has also Mr. J. O. D. Wade of Cardiff, while Dr. Arbour Stephens of Cardiff has become consulting physician. The staff of the hospital consists of practitioners resident in the neighbourhood.

The hospital was formally opened on July 28th by Dame Margaret Lloyd George, D.B.E. She was received at the Cardigan Public Buildings, and a procession was formed to the hospital. Mrs. Lloyd George having opened the main door of the hospital with a silver key presented to her by Lady Welby-Parry-Pryse, president of the hospital committee, a meeting was held under the presidency of Alderman John Evans, chairman of the Memorial Committee. Mrs. Lloyd George congratulated Cardigan and the district on having chosen so practical a form of war memorial; such hospitals, she said, were greatly needed in Wales, and she was glad to know that they were being established in other districts also. Sir Robert Jones of Liverpool, who followed, spoke on the importance of preventive surgery, and said that there need hardly be a cripple in the country if all did their duty. Very rarely indeed should a pair of crutches be seen, and there was no cripple whose condition could not be ameliorated if he could have the advantage of sound surgical treatment. Sir Charles Ruthen, Director-General of Housing, expressed the view that much disease was due to bad housing conditions, and that if people could have better houses hospitals would become unnecessary. Sir John Lynn-Thomas, who spoke next, traversed this opinion; while admitting that tuberculosis might be enormously diminished if houses were better, there were, he said, other serious diseases due to quite different causes;

he instanced appendicitis, which was to be attributed to imperfect teeth. Dr. Arbour Stephens, who also spoke, dwelt on the means which could prove effective for the prevention of heart disease. A vote of thanks to Mrs. Lloyd George was proposed by the Lord Lieutenant of the County and duly acknowledged. The Chairman announced that Sir John Lynn-Thomas had presented the institution with radium which in pre-war days was of the value of £200. A cordial vote of thanks was passed to him for this gift and for the large share he had taken in the establishment of the hospital. The hospital has been started on a modest scale, but the number of beds can easily be increased, and already, we understand, many applications for admission have been received and a number of serious operations successful performed.

Milk Prosecutions.

Medical officers of health and others concerned with public health administration will read with some astonishment circular No. 325 issued by the Minister of Health on July 17th to authorities concerned in the Sale of Food and Drugs Acts.

The circular commences by stating that the attention of the Minister has been called to a case in which a milk vendor was prosecuted for selling milk deficient in fat; the vendor had previously held a good record, and on it being proved that special circumstances existed to account for the fat deficiency on this occasion the local authority withdrew the prosecution. The circular goes on to state that the Minister

"is advised that conditions of a purely temporary character may on occasion cause the milk from cows, which normally give milk of the proper fat content, to be below the limit laid down in the Sale of Milk Regulations, and that the results of an isolated test cannot be regarded as conclusive evidence that the milk in question is in general below this limit. The Minister is therefore of opinion that it is extremely undesirable that a prosecution should be based upon the results of an isolated test when other tests of the particular milk supply have proved satisfactory." It is suggested to local authorities that in the cases of "those vendors who are doing their best to secure that the milk they sell is of good quality," as judged by previous tests, prosecutions should be instituted only where a series of tests have shown repeated default.

This circular, provided attention is paid to it by efficient local authorities, which is, perhaps, doubtful, would virtually effect on this subject a change in the law by means of administrative action. The milk purveyor would have to be proved to the satisfaction of the local authority to be a systematic adulterator before proceedings could be taken against him. The circular does not state in what way it would be possible to make the evidence admissible so as to be able to prove in court the results of the repeated preliminary tests, taken formally or informally. Samples of milk are usually taken from purveyors at irregular and often at infrequent intervals, sometimes not more than once a year or even longer. Sometimes a considerable interval is allowed to elapse even after an adulterated or suspicious sample is discovered, before again testing the vendor's milk. Under the suggested procedure the purveyor would be protected if a first sample was reported to be not genuine and this protection would continue even if a second and possibly a third sample were taken within a reasonable time after the first sample and had yielded similarly unsatisfactory results. The existing law is that if anyone sells an article of food to the prejudice of the purchaser which is not of the nature, substance, and quality of the article demanded, he has committed an offence for which he is liable to be prosecuted. Members of local authorities and their officers as a rule act reasonably, and although there is no legal obligation on them, prior to taking out a summons, to ascertain why the milk sample is below the presumptive standard, nor to require an explanation from the vendor as is provided under the Milk and Cream Regulations (dealing mainly with the addition of preservatives), in practice before a prosecution is ordered consideration is given to such a point as the amount of adulteration, and to any circumstances bearing on the matter which may be known. It is a fairly common practice to take an "appeal to the cow," that is to say, a specimen is taken by the sampling officer at the farm with due precaution so that what he secures is a specimen of the milk which ordinarily should be dispatched from the farm. It is not customary to order prosecution for low amounts of adulteration; a caution is usually given. This often arises where "toning" is practised, and sometimes the vendor "overtones"—that is, he lets down the strength of his milk below the limits of 3 per cent. fat and 8.5 per cent. solids not fat laid down in the Sale of Milk Regulations. Below these limits the milk is deemed not to be genuine unless the contrary is proved.

In general it might be thought that some local authorities do not prosecute sufficiently often in milk cases, which is quite contrary to the suggestion of the circular. In the present state of the law on the subject, however, local authorities can hardly be blamed if often they refrain from instituting legal proceedings. According to the appeal cases decided in the High Court, any fluid proved to have been derived from the udder of the cow which appears to be milk is, legally speaking, milk, no matter how the cowkeeper has mismanaged his herd or what is the chemical composition of the fluid purporting to be milk.

The question of variations in the amount of fat in genuine milk is one which does not here arise; it depends upon a number of factors, but it is held that the mixed milk of a herd properly managed practically never falls below the low limits laid down in the Sale of Milk Regulations, 1901 (which after taking into account the above considerations were issued by the Board of Agriculture and Fisheries, a body which has little concern with the interests of the consumer, but in this matter has always been regarded as acting as the friend of the farmer), but if such milk did fall below these limits a satisfactory explanation could be furnished which would rebut the presumption that the milk had been adulterated; in other words, the producer already has ample legal protection according to the cases decided in the High Court.

Among the causes of fat deficiency in milk, most of which are within the control of the cowkeeper or milk vendor, may be mentioned "toning," irregular intervals between milkings, defective or improper feeding, breeding of cows for quantity of milk and not for quality, keeping the "strippings" (the after-milk, which is the richest) for the calves, and illness of the cows. Even if existence of any of these conditions can be proved (except "toning") the cow is held to be producing what legally is considered to be milk, whatever its composition. The defendant merely has to prove that the milk is sold as it came from the cow. (Hunt *v.* Richardson (1916) 2 K.B. 446, 85 L.J.K.B. 1036; Grigg *v.* Smith (1918) 82 J.P.R. 2; Williams *v.* Rees (1918) L.G.R. 159; Scott *v.* Knowles (1918) 55 Sc.L.R. 167.)

A further protection to a milk seller who is not the producer of the milk is that he can buy it under a warranty, and having proved this there is a sufficient answer to the charge so far as he is concerned.

Taking all this into account, it might be considered that instead of endeavouring to place further obstacles in the way of successful prosecutions, Sir Alfred Mond might have introduced legislation to cover the points referred to above; a suggestion to this effect was in fact thrown out by Lord Reading, when Lord Chief Justice, in his judgement in Grigg *v.* Smith, in order to prevent milk from being sold with an undoubted deficiency of milk fat as compared with the usual amount owing to the farmer, the successful appellant in this case, having, it was admitted, kept the "strippings" for the calves.

It must be assumed that all these facts were at the disposal of the Minister of Health, and he must be aware of the great difficulties experienced by the public in obtaining a reliable milk which reaches a reasonable chemical standard. Measures taken to secure a clean and tubercle-free milk have nothing to do with the present issue which, though involving a chemical point, is none the less of considerable importance.

A statement has appeared in the press to the effect that protests against the circular in the daily papers have been made under a misapprehension. This explanation though unofficial is represented to have been derived from official sources, and is to the effect that the circular very clearly and definitely refers to a particular type of case—namely, that in which regular inspection has been made which revealed that normally the milk from that place was satisfactory. The explanation proceeds further to refer to premises which are under official supervision, apparently the small number of those from which Grade A and Grade A certified milk is produced.

A careful reading of the circular leaves the impression either that this statement is designed to explain away and withdraw from the retrograde policy advocated in the circular, or that the circular was drafted in such obscure terms that its real import was obvious only to those who issued it.

No doubt questions will be put to the Minister of Health in House of Commons as to the source of the advice upon which he authorized the issue of circular No. 325.

Post-Graduate Courses in London.

As has been already announced, a two weeks' post-graduate course in general medicine will be held under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association from Monday, September 11th to Friday, September 22nd; the following hospitals will participate: Hospital for Consumption, Brompton, Hospital for Epilepsy and Paralysis, Bethlem Royal Hospital, National Hospital for Diseases of the Heart, Middlesex Hospital, St. George's Hospital, the Children's Clinic Western General Dispensary, and the Royal Eye Hospital. A syllabus giving full particulars can be obtained from the Secretary to the Fellowship at 1, Wimpole Street, W.1. A short course on common tropical diseases will be held at the School of Tropical Medicine, Endsleigh Gardens, in October next. It will consist of systematic lectures illustrated by clinical demonstrations on the pathology, symptoms, diagnosis, and treatment of the several diseases and their sequelae. Copies of a preliminary syllabus can be obtained from the Secretary to the Fellowship of Medicine, and the detailed programme will be issued later.

Central Midwives Board.

The Central Midwives Board met on July 27th, Sir Francis Champneys presiding, when a letter was received from the Manchester and Salford and District Branch of the National Council of Women forwarding the following resolution which had been passed by the Council:

> This Branch of the National Council of Women is convinced that the present training of midwives is entirely inadequate to fit them for the heavy responsibilities of their work, and urges upon the Central Midwives Board and the Ministry of Health the necessity for longer and more comprehensive training. It urges further that before making any such change careful investigations shall be made, in this and other countries, and the views of midwives and others in all branches of maternity and infant welfare work shall be considered.

The Board decided to take the resolution into consideration when the rules as to training are revised, and expressed the desire that any information at the disposal of the District Branch of the National Council of Women might be forwarded.

The following were approved as lecturers: A. C. Palmer, M.B., F.R.C.S., H. F. Parker, M.D., A. H. Richardson, M.B., F.R.C.S., and Miss Mabel G. Brodie, M.D.; Miss Lily A. Baker, M.B., was approved as a teacher. The Board recorded a vote of deep sympathy with the family of the late Sir Edward Malins, and its appreciation of the valuable services rendered by him as an examiner at the Birmingham centre.

Scotland.

Sir James Hodsdon.

Sir James Hodsdon, K.B.E., M.Ch., F.R.C.S.Edin., has, on the occasion of his retirement from the surgical staff of the Royal Infirmary, Edinburgh (he was senior surgeon) received a presentation from his old residents. It took the form of silver plate reproducing some of the vessels found at Traprain Law. Sir James Hodsdon was President of the Royal College of Surgeons of Edinburgh from 1914 to 1917, and represents that college on the General Medical Council.

Laws of Livingstonia.

On the morning of Friday, July 28th, more than a hundred friends sat down at breakfast in Edinburgh with Dr. Robert Laws, who is returning to his work as a medical missionary in Central Africa. It is forty-seven years since Dr. Laws went out to Lake Nyasa to establish there a mission in memory of Dr. Livingstone, and the history of that work so successfully accomplished and of the man who has been mainly instrumental in accomplishing it have been published within the past few months in the book entitled *Laws of Livingstonia*. During his visits home at rather long intervals Dr. Laws has always endeavoured to bring himself abreast with all recent work in medicine, and during the past winter session he was to be seen climbing the stairs with the other students to the pathology department in the University of Edinburgh to the study of tropical diseases. At the age of 71 there is something almost heroic in facing student life and in going back to work in Central Africa; but Dr. Laws has accomplished so many great things in his adventurous, pioneering, and devoted life that possibly he may not think so. At any rate he gave no hint of weariness or weakness at the breakfast, where he was surrounded by many old and new friends. Whilst the majority of the guests were members of the various churches and of missionary societies, the medical profession was represented by Sir James O. Affleck, Dr. J. W. Ballantyne, and Dr. Robert Thin. Dr. Laws, in addition to holding the degree of M.D., is D.D. and F.R.G.S.

New South Wales.

Sydney University Commemoration.

It was decided by the Senate of the University of Sydney and the Professorial Board that the proceedings in connexion with the annual commemoration should this year be spread over two days. In the Great Hall at 11 a.m. on May 18th there was the annual commemoration of benefactors of the University, and degrees were conferred. In the afternoon there was held on the Sports Oval the 'Varsity championship sports in the presence of the Governor-General and his Staff. In the evening there was a conversazione in the Great Hall, the guests being received by the Chancellor, Sir William Cullen, and Lady Cullen. On May 19th the students had a procession of humorous "side shows" through the city to the University, where it was inspected by His Excellency the State Governor, Sir Walter Davidson. Association Students' song in the Quadrange and a mock trial under the auspices of the Law School were held in the afternoon. At 4.30 lectures were given by Professor Griffith Taylor on native races in Australia, by Dr. Lovell on the modern theory of dreams, and Professor Fawsitt on catalysis; at 5.30 a farce was given by undergraduates in the Great Hall; and from 7.30 to 10.30 there was dancing in the Union Hall and in the Engineering School, and a concert. There has been a great fall in the number of new entries at the Medical School, only about 86 new students this year, as compared with over 240 a year ago. The fall is attributed partly to the increase in the fees, partly to the lengthening of the course, and partly to a general recognition that the profession is already overcrowded.

Tropical Australia.

Some interesting evidence was recently given before the Commonwealth Public Works Commission which is at present considering the question of the north-south railway. Professor Priestley, the professor of chemical physiology in the University of Sydney, stated that he had lived in the tropics of Australia for some years, while he was at work in the Institute of Tropical Diseases in Townsville, and that so far there is nothing to show any deterioration of health through living in the tropical climate of Australia. Investigations, particularly with children of from seven to fourteen years of age, yielded no evidence of any sort of physical deterioration: the subjects examined compared favourably with those of any other part of Australia. Although there was a noticeable pallor in the skin, examination of the blood did not reveal a special anaemic condition. There was, however, no doubt that, particularly among women, the skin becomes much coarser in the tropics. Women living in the tropics have to work under very unfavourable conditions, housing is bad, kitchens are frequently built entirely of galvanized iron, and domestic help is extremely hard to get and very expensive. Nearly all the tropical diseases found in other countries were absent, though at isolated places there was a little malaria. Professor Priestley further stated that he had examined up to the third generation of children born in the tropics and had found no signs of deterioration in them; during the war he had examined recruits from Central Australia and found them to be a fine body of men.

Bubonic Plague.

At a recent meeting of the members of the Sydney Division of the Public Health Association of Australia Dr. W. G. Armstrong, the Director-General of Public Health, stated that the worst danger of the plague, so far as New South Wales is concerned, is passed for the season, but there is serious danger of a virulent recrudescence during the next summer months unless all possible preventive measures are taken in the interval. He said that it had been definitely determined that the plague was spread mainly by two kinds of fleas—the rat flea of cold countries and the rat flea of hot countries.

The progress of the epidemic in India, and on previous occasions in New South Wales, had shown that there was a marked tendency for these fleas to die off during the cold weather, and they could therefore assume, with reasonable probability, that Sydney had at present passed the most critical period of the disease. The team work of the Block Associations had been one of the most remarkable examples of the help the people as a whole could give to the public health officials that he had ever experienced. Precautionary measures, however, must not be relaxed for a day during the coming months; not only in the way of eradication of rats, but by united efforts to render the offices and warehouses of the city rat-proof. Dr. Harvey Sutton, the City Health Officer, said one good result of the present preventive campaign was that it sought the co-operation of all sections of the community, from the architect who designed rat-proof houses to the housewife who kept her place clean and so deprived the rats of food. Dr. R. Dick, Senior Medical Officer to the Board of Health, urged the importance of making every effort to prevent the spread of the plague-infected rats to the country towns, where food was plentiful and the destruction of rats very difficult owing to the rank growth of vegetation. The danger of plague throughout the country had increased very much in recent years owing to the fact that New South Wales had become a large wheat-growing State, and so that there was always plenty of food for rats and mice. Professor J. D. Stewart, Professor of Veterinary Surgery in the University of Sydney, said that so many diseases affecting human beings were carried by rats and mice or their parasites that man for his own protection, quite apart from the damage done to property, should wage incessant warfare against these animals.

"Clean the City Campaign."

A "Clean the City Campaign" was recently organized by the United Block Association with a view to enlisting the full sympathy and efforts of the citizens in getting rid of rats, fleas, and dirt. In a series of practical suggestions issued by the United Block Association, emphasis is laid on the necessity of ridding the city of rats and fleas, and it is pointed out that this can be done only by killing the rats and by getting rid of all accumulations of dirt and garbage, either of the home or of the office, which give harbour to rats. The work could be facilitated by covering up all fragments of food so as to starve the rats, and by closing up the cisterns so that the rats could not get water. All fowl runs should be cleaned out and all garden refuse destroyed.

At a meeting of women, convened by the National Council of Women at the request of the Citizens' Block Association, to discuss the prevention of the spread of the plague, a large number of institutions were represented. Dr. K. A. Bryce spoke of sanitary methods of dealing with garbage. Dr. Grace Boeike complained that there were not enough health officers, and suggested the appointment of women to carry out health work. She urged the importance of attention to the tourist resorts, so that food and rubbish were not left lying about. It was eventually decided to appoint a subcommittee to go into the questions of forming Block Associations in the city and suburbs, and of giving health lectures in the poor and crowded parts of the metropolis.

At a large and representative meeting of business men to consider the best means which should be adopted to organize a thorough clean-up of the city, the Lord Mayor, who was in the chair, thanked the business men of Sydney for the promptitude with which they had responded to his appeal. He stated that the city had been divided into twenty-eight blocks, and already twenty associations had been formed. Dr. Armstrong, Director-General of Public Health, said the Board of Health was grateful to the business men for their energetic co-operation in regard to rat destruction, but he wished to emphasize the fact that for many years to come the danger of a plague outbreak would persist, and that the organization of the city into blocks could not be merely a temporary measure of protection. In case of any rat-infested premises coming under the notice of the Block Association, if the owner refused to do anything to rid them of the rats, the Health Department or the City Council would take the necessary action to compel him to do so.

During the campaign week many meetings were held and lectures and addresses were delivered in the city and suburbs. In addition the active sympathy of the clergy was enlisted, and special attention was directed in many of the churches to the important matters of health.

Correspondence.

THE CAUSE OF INFLUENZA.

Sir,—I was particularly interested in your *précis* of Professor McIntosh's report on influenza to the Medical Research Council which you publish in the Journal for July 22nd, 1922 (p. 137), because I had come to the same conclusions as his three years ago (British Medical Journal, March 1st, 1919). There is one piece of evidence not available in a laboratory which he leaves out, and that is the prevention and rapid cure (abortion) of the disease with a pure antigen of the bacillus. You say in criticism that the influenza bacillus appears in human beings apart from influenza. This is not my experience. I have never known a case harbouring the influenza bacillus that had not had an attack of influenza, and was therefore a carrier, or had been in contact with a case. In my laboratory the medium used for ten years—namely, unheated human blood agar, for growing all microbes for antigen purposes will always grow the influenza bacillus provided it is alive in the material, and, therefore, it is very striking that we never saw the influenza bacillus until the pandemic in 1918, and since then it appears with the epidemics and disappears with them.

As to the special filter-passing microbe, I hope we are getting away from the idea that filter passing is solely the property of a special class of ultra-microscopic microbes that never can become large enough to be seen. Probably very many microbes, if grown under suitable conditions, can become small enough to pass through filters. This has indeed been proved. Moreover, filters vary in the size of their pores, and some of them have cracks. Finally, we must seek postulates other than Koch's for the identification of the infectivity of at least 90 per cent. of human infections since the crucial experiment—namely, the infection of other human beings with the isolated organism—is not open to us.

I have suggested as a beginning that:

1. If the microbe is an epidemic one and the disease is prevented and aborted with a pure antigen of the microbe, that microbe is the cause of the epidemic. These criteria have been satisfied by the influenza bacillus and by a new microbe I have recently isolated—namely, that of fowl diphtheria very similar to it. And also, of course, by the *B. typhosus* and *paratyphosi*.

2. If the microbe is causing a definite lesion in the body, such as Bright's disease or encephalitis lethargica (British Medical Journal, March, 1920, and April, 1921), and a pure antigen produces a focal reaction at the site of infection, then that microbe is the cause of the disease if the infection is a pure one or one of the causes if the infection is a mixed one.

—I am, etc.,

W. M. Crofton,
Laboratory of Special Pathology,
University College, Dublin.

July 25th.

VOLUNTARY v. STATE HOSPITALS.

Sir,—The attitude adopted by the British Medical Association at their Glasgow Meeting in regard to the question of voluntary hospitals is one that should commend itself to every member and non-member of the Association; it is a question that seriously concerns not only them but the entire population of the United Kingdom. Those who can appreciate the great privileges connected with voluntary hospitals as opposed to State hospitals, and the overwhelming advantages of an independent medical profession, would bitterly lament the introduction of State hospitals and a State medical service. Once the State has to budget regularly for the support of the hospitals of the country, even if its allotments are not very material, it can legitimately claim to have something to do with their administration and organization. This is the initial stage—the insertion of the thin edge of the wedge; the next step will be the conversion of these institutions into State or national hospitals, and their medical and surgical staffs will become part of a State medical service. In my opinion this conversion of hospitals and the creation of a State medical service would be one of the most fatal blows that could be given to the progress of hospital administration and work and to the independence of opinion of the most talented medical men in the kingdom. I believe it is only medical men, who have been bound by the four corners of a series of "red books" for the greater part of a lifetime, who know how to value reasonable freedom of action and

liberty of personal opinion in professional matters. A State medical service, which must have some sort of definite policy, has to control within certain limits the published opinions of its officers. One of my functions as D.D.M.S., Army Headquarters in India, was to censor the papers which medical officers in military employ submitted for approval by the D.M.S. before they appeared in the medical press (articles for the lay press were, of course, subject to the rules laid down in the *King's Regulations*). It was seldom that we had to make any suggestions, but occasionally young and ambitious men, from lack of experience or other reason, went off the rails. One naturally admired initiative, personality, and independence, and fostered them when these did not clash with official considerations, and one felt it to be a serious matter to damp the ardour of a possible budding genius; in short, some sort of control is indispensable in a State service. Similarly, once State hospitals are introduced every article of their equipment must, for uniformity and convenience of supply, be scheduled, and practically everything required not on the list can only be procured after obtaining special sanction, which may take months or may be withheld. As a regimental medical officer I had to buy my own wash-hand basin for personal use, as only one was allowed for the whole hospital, and for fifteen years I had to purchase my own nail brushes because they were not included in the list of authorized articles.

State hospitals mean stagnation in progress in hospital work; a State medical service means suppression of initiative, personality, and independence; with both these factors the interests of the public are inseparably connected.

The public, and especially the classes for whose benefit voluntary hospitals exist, should, however, fully realize their personal responsibilities; if they are to continue the free use of these institutions and to have the very high standard of medical and surgical treatment obtained in them, they must provide the working expenses. Every person in the kingdom should pay something towards the upkeep of these hospitals. Those who cannot afford more should pay even a few shillings a year to their local hospital fund. Every practising medical man should avail himself of every opportunity of representing this duty to the people of the community in which he works. If the people do not meet the expenses connected with voluntary hospitals the change apprehended will, it is all but morally certain, become inevitable.—I am, etc.,

P. Hehir,
Major-General I.M.S.

Westward Ho, July 23th.

THE TEACHING OF PSYCHOTHERAPY.

Sir,—I wish to point out one or two possible fallacies in Dr. Macdonald Ladell's letter on this subject (p. 191). He rightly states that the remedy for lack of appreciation of psychotherapy lies in the education of the profession in its scope and usefulness, but goes on to say that this can only be done by teaching psychotherapy itself. Surely a more effective method is, as in the case of operative surgery, to let the practitioner see the patient before and after treatment. Dr. Ladell suggests that the specialty of psychotherapy should be looked at from the same angle as a surgical operation. But this is already done, and in the case of a fully qualified specialist the general practitioner is usually willing to let the case go out of his hands for a long time. Naturally, however, as the issue involved is in its way often no less serious than that involved in an operation, the medical attendant hesitates unless he has evidence that the specialist is as well qualified as the operating surgeon. In the case of the latter this is generally shown by the possession of a higher diploma and a hospital post at which good work is done. For a psychotherapeutist similar qualifications are not usually possible, nor are they desirable. But he should produce evidence of similar long training; he must go through a full analysis at the hands of a competent analyst, or adopt some equally satisfactory course. In addition he should study some or all of the allied subjects—neurology, insanity, and mental defect—and much else besides. This involves time, expense, and hard work.

Dr. Ladell recognizes that analysis cannot be taught before a crowd of students, but his suggestion that some half-dozen keen spirits should work systematically at the interpretation of their own dreams under the guidance of a lecturer does not offer a solution. The situations, and therefore also the dreams, dealt with in analysis are extraordinarily delicate and individual, and cannot be discussed profitably with anyone except the analyst. The six students working with their lecturer inevitably make the work machine-like and therefore valueless. They are not likely to shed any light on those problems of dreams which are still obscure. Certain typical dreams can be explained in a lecture, but no one can learn analysis from lectures, but only by living through the psychological experiences, emotions, and gradual enlightenment his patients must face later. Dr. Ladell seems to suggest that psychotherapy is now a science; analysis, however, never can become a science any more than the differences between the schools of Freud and Jung can be reconciled; some of these are fundamental, and not mere differences of technique.

In conclusion, I would agree with your article in the issue of July 15th that whenever possible specialists in psychotherapy should only accept patients through a general practitioner; if this is done they will not have to complain of the lack of recognition they get either from the public or their own profession.—I am, etc.,

W. A. Potts.

Birmingham, July 29th.

Sir,—I have been interested in Dr. R. Macdonald Ladell's letter on the teaching of psychotherapy. At the Tavistock clinic for functional nerve cases we naturally encounter the difficulties to which he refers, and our attempt to meet them has been on the following lines. If the practitioner who desires instruction in psychotherapy lives near at hand, and is in practice, we get him to attend a three months' course of lectures and suggest a course of reading for him. If at the end of that time his enthusiasm shows no signs of waning, we suggest that he should be analysed, either by a member of the staff or by some other analyst. It then becomes the duty of the analyst to say when he may begin treating other cases. He then starts with one or two cases, of which a provisional diagnosis has already been made by a senior member of the staff. He is expected to devote not less than two hours weekly to each case, and he has a weekly interview with me or with one of my colleagues to talk over his cases and discuss his difficulties.

When the practitioner has only a limited period of, say, three months at his disposal, as in the case of colonials, I.M.S. men on furlough, etc., the procedure has necessarily to be compressed, and not infrequently we postpone the practical part of the training to a subsequent furlough.

The main difficulty is to side-track without offence the enthusiasm of those who, in their ignorance, believe that in the course of a week or two they can acquire the technique of hypnotism, and with this equipment return to work as psychotherapists.—I am, etc.,

H. Crichton Miller.

London, July 31st.

THE PREVENTION OF SIMPLE GOITRE.

Sir,—The article on simple goitre by McCarrison in the British Medical Journal, April 22nd, 1922, and the note on the prevention of goitre in the *Medical Officer* for July 8th raise a question which medical men cannot honourably allow to remain unanswered.

We are given to understand that simple goitre is the easiest of all known diseases to prevent, and the method of prevention—the exhibition of iodine—one that could be applied almost anywhere.

There are, of course, as McCarrison says, a number of factors that combine to render the available iodine in the food relatively insufficient—for example, age, sex, puberty, pregnancy, menstruation, season, infections and climate, food, altitude, distance from the sea, food balance (excess of fats increasing the need of iodine), etc., and in any particular case these matters would have to be taken into account; we would, for instance, deal with a contaminated water supply or prevent constipation and oral sepsis.

If goitre, then, can be prevented let us as a profession, laying aside any rivalry, enthusiastically initiate and carry on a preventive campaign.

To those of us in the public health and school medical service certain measures of dealing with the problem will occur. In my report on the school medical work in Bath for 1919 I gave details regarding the prevalence of goitre among school children and certain factors relevant thereto, and in an article in *School Hygiene* (November, 1920) I considered the

question generally. Regarding prevalence, I give an extract from my paper in *School Hygiene*:

"During the years 1918-19 notes were taken of various matters relating to this disorder and its prevalence among 7,025 school children in Bath. The cases were distributed as follows:

Ages.	Boys.		Girls.	
	Numbers.	Goitres.	Numbers.	Goitres.
Over 14 years ...	63	1	46	2
12-14 " ...	1,094	11	1,173	25
10-12 " ...	226	2	192	6
8-10 " ...	910	1	912	11
6-8 " ...	355	0	336	5
Under 6 " ...	891	0	818	6

"There was thus 0.50 per cent. among the 3,548 boys, and 1.50 per cent. among the 3,477 girls. The percentage became higher in the pre-pubescent period after ten, no cases were found in boys under eight, and none recorded on the 190 cards received by me from infant clinics.

"An appendix on the subject by Dr. A. C. Turner in Dr. Warner's report for Leicester, 1919, showed 1.8 per cent. among 11,244 children, distributed as 0.2 per cent. in girl entrants, 0.3 per cent. in boy entrants, and in leavers 5.8 girls and 1.1 per cent. of boys. Dr. Turner thought the incidence greater in well-favoured residential districts, and although for Bath I thought so too, I am not now convinced of this

"In one Bath school there appeared to be a special outbreak, with 15.7 per cent. among the girls, 4.3 per cent. among the boys, and 1.9 per cent. among the infants; of these cases 8 were below and 10 above ten years old, and the disease appeared to have come on fairly rapidly.

"As regards other districts, Dr. Hutt, in an article in the *Lancet* (April, 1911), gave an analysis of cases in Warrington, and quotes figures for Brighton as 0.8 per cent.; Exeter 0.3 boys and 2.4 girls, average 1.4 per cent.; Middleton 0.2 boys, 0.7 girls, average 0.45; Burton 0.6; Warrington 0.93 boys, 1.6 girls; Derbyshire 0.5 girls of five and 4.0 girls of thirteen, boys 0.2 at five and 1.0 per cent. at thirteen; Dr. Williams in Worcestershire gives 0.5 boys and 1.7 girls, average 1.1 per cent., among 4,605 children.

"On the other hand the *Medical Officer*, April 19th, 1919, quotes enlarged thyroid 56.0 per cent., and very definite enlargement 13.0 among school populations in the Great Lake Districts of North America. Dr. Sutton in Australia found 7.0 per cent. slight and 5.0 per cent. very definite enlargement among Geelong high school girls. McCarrison quotes districts of prevalence in India, whilst a medical friend of my own, Dr. Metcalfe Chambers, tells me that he has not seen a case among 28,000 Asiatic hospital patients in the Malay States. McCarrison only counts visible enlargement of the gland; palpable glands not visibly enlarged he does not include as goitrous."

Since writing the above I have found in Glossop (Derbyshire High Peak) that, taking boys and girls as a whole, the percentage among 1,222 was 2.1 as compared with 1.02 in Bath. The number of boys examined as compared with girls was in Bath 3,548 to 3,477, in Glossop 600 to 622.

These figures will give a fair idea of the extent of the problem as regards school children. Regarding the general population in 1919, diseases of the thyroid body caused the deaths of 39 males and 232 females. The female sex, therefore, is very much more prone to thyroidal disease than the male.

Coming now to the steps to be taken to prevent the disease, I think that as regards the school medical service the suggestion made by me in the article in *School Hygiene* should be generally adopted: "That school nurses who inspect for vermin should be specially instructed how to observe and note the thyroidal gland condition."

If this were carried out we would have roughly a quarterly survey of all the elementary school children as regards the condition of the thyroid; where the gland was noted to be enlarged or beginning to enlarge the details should be given to the school medical officer, who could see that preventive treatment was carried out. The school medical officer could then either through a clinic or by arrangement with all the general practitioners in his area have iodine therapy and other general hygienic and remedial measures employed. As the school medical service will, however, in most cases leave the child at the age of 14 years it will be necessary to arrange to cover the gap between this age and the age for national insurance; would it be possible for children who left school to be considered for the purpose of medical inspection and treatment to be still school children, and under the care of the Board of Education? This gap for many other matters as well as goitre is one that should be bridged.

On arriving at the age of national insurance the details of the defect could be handed on to the panel practitioner, who in his turn could carry treatment to a successful conclusion.

I put these suggestions forward for general consideration, and I sincerely trust it will be possible for some satisfactory arrangements to be devised whereby the population at large will reap the benefits of applied medical science.—I am, etc.,

E. H. MARCUS MILLIGAN, M.D., D.P.H.,
M.O.H. Glossop and Glossop-dale.

Glossop, July 10th.

A NOTE ON THE TREATMENT OF SQUINT.

SIR,—In the issue of the JOURNAL of January 7th, 1922, there is a note bearing the above title by Lieut.-Colonel Henry Smith, lately of Amritsar. In that note he cites one case of divergent squint in a child in which he considered he got some relief of the squint by puncture of the supposed weak muscle and the administration of repeated faradic shocks. The real condition of the child's eyes was unknown, for he admits inability to make the necessary examination. On the strength of this one experience of a divergent squint—a type of squint notoriously variable in degree according to the health and state of nervous tension of the patient—Colonel Smith recommends us to "shake ourselves free from all that has been done" by generations of assiduous workers for the development of a rational and successful treatment of squint. The recommendation is such that I should not have troubled you with any comment if Colonel Smith had not at the same time made a specific attack upon one method of operating for squint of which I have valuable experience.

He says: "Tendon tucking . . . stretches one of the muscles of the eye and introduces a factor which cannot be gauged. From the surgical point of view any cutting operation leaves scar tissue which is subsequently liable to contract, and none is more likely to do so than tendon tucking." Tendon tucking, he adds, "almost invariably means muscle tucking." In my own experience tendon tucking is practically reserved for the lateral rectus in dealing with convergent squint. The lateral rectus has 8.8 mm. of tendon, and it is this which is tucked and not the muscle itself. No operation for squint can be gauged with precision, but Harman's reefing operation can be gauged with more precision than most. The scar tissue in this operation is minimal, and none is less likely to contract subsequently than this.

Why Colonel Smith should have a particular prejudice against the tucking or reefing operation I do not know. I have been interested in and operating on squint for over twenty years. For the last ten I have done Bishop Harman's reefing operation combined with his method of lengthening the medial rectus, almost to the exclusion of all other procedures, and I am satisfied that it is the best and most satisfactory operation in the field at present. I hope later on to publish my results, which must now run into some hundreds.—I am, etc.,

E. C. TEMPLE SMITH, F.R.C.S.E., D.O.Oxon.,
Senior Ophthalmic Surgeon to the St. Vincent's Hospital and to the Royal Alexandra Hospital for Children.

Sydney, Australia.

May 23rd.

SERUM IN THE TREATMENT OF VELDT SORES.

SIR,—A few months ago a fellow medical man a day's journey off, who was suffering from veldt sores, asked me to come to his help. He wrote:

"In spite of trying every method of treatment I can think of they have not got better; indeed, they have increased both in size and numbers until now my buttocks are almost covered with these sores. I think the only rapid cure would be to have them scraped and cauterized under an anaesthetic."

On examination I found the condition had not been overstated. The only antidiphtheritic serum available was 5,000 units of some old Merck's stuff, which must have been brought here by the Germans before August, 1914, and was therefore about seven years old at least.

After discussing the matter it was decided to take the risk of a failure with this old serum, and I injected 4,000 units subcutaneously in the neighbourhood of the sores, using the little serum left to swab over the buttocks. The injections were received unmurmuringly, but the swabbing immediately set up an intense reaction, causing the patient to jump up and stamp up and down the room. Two weeks later he wrote:

"My veldt sores are entirely healed now. The effect of the treatment was wonderful. They commenced to improve on the third day and healed rapidly, until by the end of a week they were dry with healthy scabs on them."

There has been no recurrence, and abrasions which the patient alleges would previously have been certain to develop into veldt sores have all healed perfectly.

The chief point of interest here perhaps is that serum which had been lying about without special care for at least six years, and that in the tropics, and would not have been used at all if other serum had been available, still retained its potency.—I am, etc.,

Central East Africa, May 25th. DAVID M. BROWN.

EFFECTS OF CHRONIC STARVATION DURING THE SIEGE OF KUT.

SIR,—The following points may be of interest to those who have read General Hehir's article (June 3rd, p. 865). They were noted during the famine of 1897 in the Jubbulpore district.

Condition of the Bowels.—Specimens of the large and small intestines of patients dead of starvation were sent to the Clinical Research Association. A report was received that the glandular element had atrophied. It is probable that once the atrophy has reached a certain stage the specific structure is not again reproduced. This would account for the fact that after a certain stage of starvation has been reached recovery is impossible, even with appropriate food.

Critical Point of Starvation.—This occurred in people who were still able to stand and even walk feebly. In children it was signalled by atrophy of the buttocks. Those who showed this sign never recovered whatever their general condition was.

Unsuitable Diet.—This was the actual cause of death in a large number, probably the majority, of cases during the famine. True cholera was present throughout the famine area, but the fatal complaint in the relief camps was of a dysenteric type, not choleraic, and hopeless to treat.

Cancrum Oris.—This was a scourge amongst the children in the relief camps. It did not apparently occur amongst the adults in Kut, nor was it noted amongst the starved Turkish prisoners after the final overthrow of the Turks in Palestine and Syria in 1918.—I am, etc.,

W. H. OGILVIE, M.B., D.Sc.,
Shillong, Assam, June 30th. Colonel I.M.S.

THE NAVAL MEDICAL SERVICE.

SIR,—In your recent article on the subject of the injustice which has been inflicted by the Admiralty on a certain group of senior surgeon commanders, R.N., you very rightly warn intending candidates for the Naval Medical Service of the treatment they may expect if they join the navy.

It does not seem to be consistent with your warning to continue to publish Admiralty advertisements for surgeon lieutenants for short service, especially as the advertisement states these officers will be considered for transfer to the permanent service under certain conditions.

Including the equipment allowance the terms offered amount to £600 per annum, and may appear reasonable; but it must be remembered that the Admiralty could have kept on the senior surgeon commander at a cost of £440 per annum—the difference between their maximum full pay of £1,040 per annum and their retired pay of £600—and at a saving to the country of £160 per annum.

I trust the Association will see its way to discontinue inserting the advertisement, which in itself does not appear to be free from criticism; the period of service is stated to be three years, with option to extend for further twelve months, and this seems to be open to a possible Admiralty interpretation that the option is theirs to keep on an officer, against his will, over the three years if he is serving on a foreign station or for other reasons, and we know from recent experience the officer would have no remedy.—I am, etc.,

London, July 16th. A VICTIM.

TENDON TRANSPLANTATION.

SIR,—I am entirely in agreement with Mr. Fairbank when he points out in your issue of July 29th (p. 190) that in some cases in which hamstring muscles have been transplanted to the patella to replace a paralysed quadriceps some recovery has subsequently occurred in the quadriceps.

One of the cases which I demonstrated at the clinical lecture reported in your issue of July 15th showed a slight recovery in the quadriceps, as Dr. Mennell, who was present, pointed out to me. I have never seen this recovery amount to anything more than a flicker of muscular contraction, and it has not been sufficient, in any case which I have seen, to produce any appreciable extension of a flexed knee.—I am, etc.,

Manchester, July 31st. ROBERT OLLERENSHAW.

TOBACCO SMOKE AND CANCER.

SIR,—Referring to a letter on "Tobacco smoke and cancer" in your issue of July 8th, Dr. Abbe of New York, an eminent surgeon and a pioneer in the medical and surgical uses of radium and its properties, once told me he had never met with a case of malignant disease of the lips, tongue, mouth, or throat in a non-smoker or one who did not chew betel-nut or indulge in similar habits. Great numbers of cases of malignant disease passed through his hands.—I am, etc.,

London, W., July 16th. C. DUER, Lieut.-Col. I.M.S.(ret.).

BEER AND LEAD POISONING.

SIR,—Our attention has been directed to a paragraph on page 179 in your current number with regard to beer and lead poisoning. It is suggested that poisoning may result from the use of lead glaze in stoneware receptacles.

As far as we are aware, we are the only manufacturers of stoneware containers for this purpose, and no lead whatever is utilized in the glaze of these vessels. Should poisoning have resulted from beer used in such containers it cannot, therefore, be due to the reason suggested, but must arise from some other cause.

As prominence has been given to the paragraph we feel compelled, owing to the authoritative nature of your JOURNAL, to ask for a correction.—We are, etc.,

London, S.E., August 1st. DOULTON AND CO., LTD.

*** We understand that the apparatus referred to in the note last week was not made by Messrs. Doulton.

Universities and Colleges.

OXFORD AND CAMBRIDGE UNIVERSITY COMMISSIONS.

THE President of the Board of Education introduced into the House of Commons on July 24th a bill to carry into effect certain recommendations of the Royal Commission appointed to consider the applications made by the Universities of Oxford and Cambridge for financial assistance from Parliament. The Commission reported on March 24th, 1922: It conducted the greater part of its inquiry in two sections, one for Oxford and the other for Cambridge, and at each place inquired into the financial resources of the University and the colleges, the administration of these resources, the government of the University, and the relation of the University to the colleges. It advised that two statutory commissions should be appointed to carry out the changes in University and college statutes recommended by the Commissioners.

The bill now introduced constitutes two bodies of commissioners, the one for Oxford and the other for Cambridge; in each case the number of members is seven. In the Oxford Commission science, including medicine, is represented by Sir Archibald Garrod, K.C.M.G., M.D., F.R.S., Regius Professor of Medicine; in the Cambridge Commission by Sir Richard Glazebrook, K.C.B., D.Sc., F.R.S., formerly Director of the National Physical Laboratory, and Sir Hugh Kerr Anderson, M.D., F.R.S., formerly lecturer on physiology in the University and now Master of Gonville and Caius College. The bill proposes that the powers of the Commissioners shall continue in force until the end of 1924, though the period may be extended by the King in Council to the end of 1926.

The duty of the Commissioners in each case will be to make statutes and regulations for the University, its colleges and halls, and any other institutions in or connected with the University; and also with regard to emoluments, endowments, trusts, foundations, gifts, and offices. The statutes and regulations are to be made in accordance with the recommendations of the Royal Commission, but with such modifications as may, after the consideration of any representations made to the Commission, appear to it expedient. After the expiration of the powers of the Commissioners the universities and colleges will resume their normal powers of government. The statutes now to be established may be altered by statutes made by the universities, but in the case of statutes which affect a college only with the consent of the college. With the permission of the Privy Council colleges also may alter their statutes. It will be remembered that the Cambridge committee of the Royal Commission recommended that women should be admitted on the same conditions as men to membership of the University, but with certain limitations. This matter will therefore have to be considered by the Commission now proposed to be established.

UNIVERSITY OF LONDON.

UNIVERSITY COLLEGE.

THE following awards of medical scholarships and exhibitions have been made at University College, London: Buckuill scholarship of the value of 135 guineas, to R. L. Midgley. Medical entrance exhibitions of the value of 55 guineas each to E. H. Madge and V. Freeman.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.

THE following scholarships and prizes have been awarded:

First Prize (divided): W. R. F. Collis, W. I. Daggett. Senior Scholarship (divided): N. W. Snell and Miss C. P. Francis. Jelf Medal and Tanner Prize: L. Dulake. Todd Prize (divided): L. Dulake and Miss C. P. Francis. Class Prizes—Diseases of Children, Miss E. C. N. Paterson, D. Davidson (proxime accessit); Orthopædic Surgery, N. W. Snell; Medicine, L. Dulake; Surgery, W. P. Shelson; Pathology, C. R. Lane; Obstetric Medicine, P. B. Atkinson; Forensic Medicine, A. C. T. Perkins; Hygiene, A. C. T. Perkins; Psychological Medicine, E. B. Strauss.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

The following scholarships have been awarded for session 1922–23:

Sir Owen Roberts's Memorial Scholarship: Miss D. Stewart (London School of Medicine for Women). St. Dunstan's Medical Exhibition: Miss M. H. Lester (Christ's Hospital). Mabel Sharman-Crawford Scholarship: Miss H. Newman (London School of Medicine for Women). Isabel Thorne Scholarship: Miss E. L. Hutton (Clergy Daughters' School, Casterton). Ellen Walker Bursary: Miss V. A. Roberts (London School of Medicine for Women). Fanny Butler Scholarship: Miss E. M. Oswald (Huddersfield College, Wimbledon).

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary comitia of the Royal College of Physicians of London was held on July 27th, the chair being occupied by Dr. Raymond Crawfurd, the senior Censor, in the absence of the President.

On the report of the Censors Board, and in accordance with By-law cxc, it was resolved:

1. That William Henry Starkie be declared to be no longer a licentiate of the College; that he forfeit all the rights and privileges of a licentiate; and that his name be expunged from the list of licentiates—during the pleasure of the College.
2. That John William Knaston be declared to be no longer a licentiate of the College; that he forfeit all rights and privileges of a licentiate; and that his name be expunged from the list of licentiates during the pleasure of the College; but that an application for restoration of his licence may be considered in two years from the date of the withdrawal thereof.

The following candidates were admitted Members:

Cyril Carlyle Beatty, M.B.Lond., L.R.C.P., Harold E. A. Boldero, M.B. Oxon., L.R.C.P., Harry A. Boyce, M.D.Ontario, Norman Brandon Capon, M.D.Liverpool, Francis Wm. Murray Cunningham, M.D. Edin., Jeuner Conway Davies, L.R.C.P., Oliver Charles Minty Davis, M.D.Bristol, Wm. Stovell Gross, M.B.Camb., L.R.C.P., Charles H. Kellaway, M.D.Melb., Christopher Amrita Shanta, M.B.Calcutta, Jehangir Munchershaw Surveyor, M.B.Calcutta, John Edwin Mackonochie Wigley, M.B.Melb., Harry George Everard Williams, M.D.Camb., L.R.C.P., Frederick Edward Saxby Willis, M.B.Lond., L.R.C.P.

Licences to practise Physic were granted to 115 candidates:

Licences.

S. Adler, N. A. Aiengar, J. V. D. Allin, G. W. Ballance, F. H. Bodman, P. W. Bobbyer, J. W. Briggs, G. L. Brocklehurst, *Gwendolen M. Brown, R. C. Brown, *Gladys L. Buckley, N. L. Capener, *Madeleine H. Clarke, E. A. Coldrey, L. B. Cole, R. H. Cooke, D. C. Corry, N. McL. Craig, P. P. Dalton, K. A. Darukhanawala, W. A. Date, T. H. R. Davies, F. D. Déjani, H. K. Denham, J. B. Devine, C. J. Donelan, L. Dulake, *Helen W. Duncan, *Beatrice E. Ebden, *Mary C. Elliot, D. C. Fairbairn, L. S. Fallis, A. R. Fox, *Christine P. Francis, W. F. Francis, C. B. S. Fuller, *Ada Furniss, H. J. J. Garrod, *Marie L. P. Goetze, *Alice M. F. Goldmann, S. Gordon, R. Hale-White, H. G. Hall, B. O. Hancock, T. H. J. Hargreaves, *Muriel M. Harris, S. G. Harrison, P. R. Hawe, *Hilda M. Haythornthwaite, E. C. Heap, M. M. Hegab, H. C. Hill, G. H. Hogben, J. P. Hosford, E. G. Housden, G. H. Howells, J. S. Hudson, E. N. Hughes, J. Jackson, A. E. Jenkins, A. J. Keevil, *Mary A. Keresztes, A. M. Khaleel, D. Levi, S. C. Levy, H. H. Longton, L. H. Mac Leod, A. C. Maconie, H. H. Marsden, P. de R. Mason, C. O. Minasian, R. J. Morris, D. C. Muir, H. A. Nathan, J. Ness-Walker, F. G. Nicholas, L. F. O'Shaughnessy, H. M. Palmer, D. H. Patey, F. Y. Pearson, R. C. Peate, G. P. Perowski, W. M. Ramsden, H. E. K. Reynolds, H. Richards, *Constance E. Ridout, S. D. Ridley, B. C. de S. Rupasingha, *Gladys M. Sandes, *Norah B. A. Sankey, Margaret C. Scrace, C. F. H. Sergeant, N. F. Shaw, Patricia H. S. Shaw, C. M. Short, J. Shulman, N. W. Snell, J. A. Struthers, C. Stuart-Low, F. H. Sudbury, M. H. Summers, D. B. Sutton, H. W. Taylor, H. R. J. Thomas, T. M. Thomas, H. K. Tucker, H. D. A. Utidjian, R. H. Wade, H. K. Wallace, J. Whitby, *Catherine M. Williams, C. P. Wilson, G. Wilson, D. A. Windemer, J. A. Young.

* Under the Medical Act, 1876.

Diplomas.

Diplomas in the subjects indicated were granted in conjunction with the Royal College of Surgeons to the following candidates:

PUBLIC HEALTH.—J. E. Bowen, D. S. Brachman, B. C. Dasgupta, P. Davies, A. M. El-Kirdany, R. F. Fagan, C. H. H. Harold, P. A. Jayne, F. B. Hobbs, C. R. Hogg, A. E. Ironside, Doris E. P. Jolly, B. L. Joshi, G. J. W. McMichael, M. C. Madhoe, J. Misquitta, W. Oats, G. R. Paterson, Barbara Richardson, J. P. Rocha, A. D. Soares, Ruth C. Townshend, J. R. D. Webb, H. G. Wiltshire, F. H. Young.

TROPICAL MEDICINE AND HYGIENE.—B. F. Beatson, H. G. Berlie, Nancy E. Bleakley, C. V. Boland, D. I. Cameron, V. M. Fisher, P. Gupta, S. Hunt, H. S. Lucraft, G. S. Marshall, L. M. Moody, E. R. Kelersberger, M. Schwartz, M. Theiler, S. M. Vassallo, M. Yacob, Margaret H. R. Young.

[redacted]

The Examiners for the Murchison Memorial Scholarship reported that Arthur Henry Douthwaite and Charles Frederick Terence East were equally deserving of the Scholarship.

College officers, members of committees, and examiners for the ensuing year were elected on the nomination of the President, Council, and Library Committee:

Censors.

Raymond H. P. Crawfurd, M.D., Horace George Turney, O.B.E., M.D., Herbert Morley Fletcher, M.D., Bertrand Edward Baron Dawson of Penn, G.C.V.O., K.C.M.G., C.B., M.D.

Examiners.

Chemistry.—William Bradshaw Tuck, D.Sc., Charles Stanley Gibson, O.B.E., B.Sc., F.C.

Physics.—Frederick Womack, M.B., B.Sc., Alfred Henry Fison, D.Sc.

Practical Pharmacy.—Alfred Ernest Russell, M.D., Edward Alfred Cockayne, M.D., Philip Hamill, M.D., Alfred Joseph Clark, M.C., M.D., Walter Ernest Dixon, O.B.E., M.D.

Physiology.—John Beresford Leathes, M.B., John Mellanby, M.D.

Anatomy.—Thomas Baillie Johnston, M.B.

Medical Anatomy and Principles and Practice of Medicine.—William Aldren Turner, C.B., M.D., Herbert Morley Fletcher, M.D., John Walter Carr, C.B.E., M.D., Joseph John Perkins, M.B., Arthur Philip Beddard, M.D., Arthur John Hall, M.D., Sir James Purves Stewart, K.C.M.G., C.B., M.D., Robert A. Young, C.B.E., M.D., Charles Bolton, C.B.E., M.D., Sir William Henry Willcox, C.B., C.M.G., M.D.

Midwifery and Diseases Peculiar to Women.—John Prescott Hedley, M.B., Ewen John Maclean, M.D., Thomas George Stevens, M.D., John Davis Barris, M.B., Harold Chapple, M.B., F.R.C.S.

Public Health.—Part I: Henry Wilson Hake, Ph.D.; Part II: David Samuel Davies, M.D.

Tropical Medicine.—John C. Grant Ledingham, M.B. (Bacteriology), John Brian Christopherson, C.B.E., M.D. (Diseases and Hygiene of the Tropics).

Ophthalmic Medicine and Surgery.—Gordon Morgan Holmes, C.M.G., C.B.E., M.D.

Psychological Medicine.—Part I: Henry Devine, O.B.E., M.D. Part II: James Taylor, C.B.E., M.D., Charles Hubert Bond, C.B.E., M.D.

Dr. Lauriston Shaw was appointed a councillor in the place of the late Dr. W. H. R. Rivers. At the request of the Royal Society of British Architects Dr. Dawtrey Drewitt was appointed representative of the college on a committee to consider the commemoration of the bicentenary of the death of Sir Christopher Wren. Sir Arthur Keith was given permission to photograph the portrait of Sir Thomas Browne in the possession of the college. At the request of Mr. Holman Wilson the college agreed to help in re-erecting in the church of St. Leonard's, Exeter, certain panels which formed part of the altar tomb of Dr. William Musgrave, F.R.C.P., F.R.S. Mr. T. J. C. Pomfret, K.C., was appointed senior standing counsel to the college. A report from the Censors Board concerning the Lloyd Robert Lectureship was referred to the college lawyers. The membership which Dr. R. A. Chisolm resigned in 1919 was restored to him. Sir William Church and Sir Thomas Barlow were reappointed members of the Executive Committee of the Imperial Cancer Research Fund, on the nomination of that committee, and Sir Frederick Andrewes was reappointed a representative on the same committee.

A report was received from the representatives of the two Royal Colleges on the International Congress of Ophthalmology, held at Washington in April last. (Mr. E. Treacher Collins, F.R.C.S.) An invitation to hold the next congress in London in 1925 was accepted. After some formal business the comitia was dissolved.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary council was held on July 27th, when Sir Anthony Bowlby, President, was in the chair.

Diplomas.

Diplomas of membership were granted to 113 candidates found qualified at the recent examinations. The Diploma in Tropical Medicine and Hygiene was granted to 17 candidates (jointly with the Royal College of Physicians) recently found qualified. The Diploma in Ophthalmic Medicine and Surgery was granted to 14 candidates found qualified (in conjunction with the Royal College of Physicians).

Examiners.

Mr. F. F. Burghard was re-elected a member of the Court of Examiners, and Dr. I. Lewin Payne was elected a member of the Board of Examiners in Dental Surgery.

Imperial Cancer Research Fund.

Sir William Church and Sir Thomas Barlow were re-elected members of the Executive Committee of the Imperial Cancer Research Fund.

CONJOINT BOARD IN ENGLAND.

Forensic Medicine.

THE synopsis of forensic medicine has been revised by the Committee of Management of the Conjoint Board in England, and has now been adopted both by the Royal College of Physicians of London and the Royal College of Surgeons of England. It is as follows:

Privileges and obligations of medical practitioners. Medical registration. Medical certificates and notifications. Medical evidence. Dying declarations. Proceedings relating to coroners' inquests.

Signs of death and the phenomena which follow death. Putrefaction in air. Putrefaction in water. Mummification. Formation of adipocere. Inspection of the dead body and *post-mortem* examination.

Medico-legal aspects of identification.

Modes of dying. Causes of sudden death.

Death from the following causes: Wounds and mechanical injuries. Hanging. Strangulation. Suffocation. Drowning. Electrical current and lightning. Starvation.

Indications of death from accident, suicide, or homicide. Methods of recognition of blood stains.

Poisoning.—Medico-legal duties of medical practitioners in cases of poisoning. Symptoms and *post-mortem* appearances produced by the common inorganic, organic, and gaseous poisons, and the treatment of the patient.

Method of *post-mortem* examination in cases of poisoning, and reservation of parts of the body for analysis.

Simple tests for common poisons. The sale of poisons.

Medico-legal questions relating to pregnancy, delivery, rape, criminal abortion, infanticide.

The lunacy laws in so far as they affect the medical practitioner in relation to the signing of certificates of lunacy.

Obituary.

THE LATE SIR EDWARD MALINS.

Dr. Thomas Wilson (Birmingham) has been good enough to send the following appreciation of his late colleague and friend:

Thirty years ago when I became his junior colleague at the old General Hospital Malins had already been in practice in Birmingham for twenty years, and his name was a household word in the city and a large surrounding district. I was at once impressed by the constant and punctual discharge of his hospital duties, and by his devotion to, and sympathetic interest in, his patients, as well as by his knowledge and skill. His patients looked up to him with esteem and respect, and returned his care with real affection. In the students he took a close and kindly interest, and to his colleagues, and especially the juniors, he was ever considerate and loyal. When illness or misfortune overtook those who had worked with him his ready sympathy, and when needed his generous help, were unobtrusively given. He became a specialist after a long and arduous general training, first by apprenticeship, then by the usual course in the University of Edinburgh, and afterwards by some years in busy general practice. Before leaving Edinburgh he had become assistant to Sir James Simpson, and so had acquired a sound practical acquaintance with the principles of midwifery and diseases of women. Through the whole of his life his mind remained open to new ideas, and he earnestly and successfully strove to keep abreast of advances in knowledge and practice as the specialty developed from the era of mechanical pathology and pessaries to that of surgical and more modern scientific methods.

As Professor in the University Sir Edward Malins took the greatest pains to keep his teaching on the highest and most advanced level, was most assiduous and punctual in the discharge of his duties, and possessed the esteem and regard of the students to a marked degree. As an examiner of students and nurses he was judicial and impartial, patient and considerate. He devoted a large part of his life to the service of the General Hospital and of the University, taking a profound interest in both and giving to them of his best. Outside his professional work he had many interests. A devoted and hard-working churchman, he practised his religion unobtrusively in his daily life. In political and social matters he took an active interest, and of general literature he was a diligent and widely read student. At the University Graduates' Club, of which he was twice President, he was a regular attendant, and was esteemed one of the most valued and interesting speakers. In daily intercourse he bore himself with quiet and unassuming courtesy. To him came many honours, unsought, modestly accepted, and sustained with dignity. Among them, the most welcome to his local brethren and I think to himself, was the highest in the power of the members of his specialty to bestow—the Presidency of the London Obstetrical Society, to which office he was the first provincial member to be elected. His presence and example will be missed in many circles, and in none more than in that of the brethren of his specialty. By them he was honoured and esteemed, and among them his place will not readily be filled.

Sir Francis Champneys writes:

The obituary notice of Sir Edward Malins, accurate as it doubtless is on matters of history, lacks the personal note which should give life to a biography. The fact that he had attained the advanced age of 80 is probably accountable for this. But there are some who remember their association with him in active work. Sir Edward was a very old member of the Obstetrical Society, and it must be forty years since I was first associated with him at that society, which has now become the Obstetrical and Gynaecological Section of the Royal Society of Medicine. He was, I think, the first provincial Fellow to become its president, and he discharged his duties remarkably well. His characteristics, indeed, were dignity, courtesy, firmness, sound judgement, uprightness, and public spirit. It was always a pleasure to work with him. He leaves the memory of a long and very useful life behind him, and he rests from his labours.

The death is announced of Dr. Gavin Stiell of Clapham, who was one of the best known medical practitioners in south London. Dr. Stiell was born in 1857, and was educated at Dunfermline High School and Edinburgh University; he graduated M.B., C.M. in 1881, and M.D. in 1897. After holding various appointments he settled in Clapham in 1887 and built up there a very large general practice. He kept himself well abreast of recent developments in medicine and surgery, and his sympathetic and kindly nature, with his unceasing care and devotion to his work, gained him the affection and esteem of all with whom he came in contact. He was an old member of the British Medical Association and one of the original Fellows of the British Balneological and Climatological Society, of which he remained a member until its amalgamation with the Royal Society of Medicine, of which he was also a Fellow. He is survived by his widow and two sons, both of whom have adopted the medical profession, the elder practising in Clapham in association with his father, and the other in Lincoln.

Medical News.

For the Ladies' Golf Competition in connexion with the Annual Meeting of the British Medical Association at Glasgow there were sixteen entries, but owing to the inclemency of the weather only eleven actually played. Miss Robertson, Elioch Lodge, Prestwick, won the prize for the best round; Mrs. Lamb, Mount Annan Drive, Mount Florida, won the prize for the hidden holes. The prizes were the gift of Mr. William Raukin.

Major-General C. E. Pollock, C.B., C.B.E., D.S.O., late R.A.M.C., has been appointed Deputy Director-General, Army Medical Services, vice Major-General Sir George B. Stanistreet, K.B.E., C.B., C.M.G., late R.A.M.C.

The National Health Society, in compliance with the alteration made in the Regulations of the Board of Education for the training of health visitors, is arranging a shortened course of training for qualified nurses and health visitors of three years' service under local authorities. The next course commences in September. Particulars may be obtained from the secretary, 53, Berners Street, W.1.

A conference on the disposal of London refuse was held at the Ministry of Health at the end of June, and the Minister has now issued a memorandum covering a poster detailing the precautions which should be taken, not only in London but elsewhere, in managing refuse tips to prevent the causation of nuisance. The principal precautions recommended are that the refuse should be deposited in shallow layers, and that each layer should be promptly covered with earth or other suitable material to prevent nuisance from fire, rats, flies, or smells.

At the suggestion of the Medical Director the Health Committee of the League of Nations Union has invited certain Governments to nominate commissions of some four or five public health medical officers to spend three months working in the health administrations of other countries.

At the June matriculation examination of the University of London there were 169 successful candidates in the first division and 1,258 in the second division, while 36 secured the supplementary certificate for Latin.

The summer general meeting of the Irish Medical Schools' and Graduates' Association was held in the Grand Hotel, Glasgow, on July 24th, the President, Dr. J. A. Macdonald, LL.D., in the chair. Forty-eight members and their friends had previously had lunch together, when the President said he had much pleasure in announcing that the number of new members enrolled during the previous twelvemonth was the largest recorded in any similar period in the history of the association, extending over forty-four years. He quite anticipated that the total number on the roll by the time his year of office had expired (next St. Patrick's Day) would be fully a thousand. When this total was reached they would be in a position to resume the "monopoly" fight, which in days gone by had been so successful. It would not be long, he (the chairman) felt sure, before the English lovers of justice would cause the barriers to be removed which now prevented the Fellows of Irish and Scottish Colleges from even becoming candidates for positions on the honorary staffs of general

hospitals in England. The toast of the King's health having been very heartily received, that of the Guests was proposed by Dr. James Stewart and responded to by Dr. Agnes Estcourt-Oswald, whereupon the meeting adjourned.

THE Board of Education has issued a pamphlet (price 3d. net) giving a list of institutions recognized by the Board under regulations for nursery schools, the training of health visitors, and the training of midwives; and a revised list of institutions for the welfare of the blind and of defective and epileptic children.

A CHRISTIAN Science practitioner was found guilty recently, in the municipal court of Cleveland, Ohio, of practising medicine without a licence, and was fined 100 dols. and costs.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocre, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"MEDICO" recently purchased a practice, and claimed £45 for expenses of drugs purchased on taking over. This has been disallowed as capital outlay.

*** The amount allowable is the cost of the drugs consumed in the year's work, and the cost of the total stock taken over is part of the cost of the practice as a whole and inadmissible for tax purposes.

"G. K." inquires whether he is correct in assuming that "flat-rate remuneration, National Health Insurance fees, and Parish Council salary are still assessable under Schedule D."

*** The last mentioned is technically assessable Schedule E, but the other two appear not to be profits of "employment" and consequently assessable Schedule D. If these two considerably outweigh the other source of income we conceive that the authorities would continue the practice of pooling the whole in one Schedule D assessment.

"F. A. A." sold a 1916 Overland Coupé 20-25 h.p. and bought a 1922 Rover 12 h.p. The latter car cost £200 more than the old car did, the net cost of the renewal being £425. The inspector of taxes refuses to allow more than £325 on the ground that £100 or more was expended on improvement.

*** The amount allowable is the 1922 cost of a 20-25-h.p. Coupé Overland less £225 received for the old car. On this basis the inspector's action seems justified.

WARTS OF THE SCALP.

"X. Y. Z." would be glad to hear of a satisfactory treatment of warts of the scalp. Snipping and the cautery have been tried without benefit, but treatment is hampered by the risk of losing the hair.

*** Warts of the scalp usually yield readily to an application of radium.

RELIEF OF PAIN IN ACROMEGALY.

DR. J. H. DOUGLAS WEBSTER (London) writes in reply to Dr. W. Grosser Hartmann, who inquired how the intolerable pain in acromegaly could be relieved: Any treatment often gives rise to relief to the symptoms headache, contraction of visual [illegible] etc. I have published a case, and others have recorded similar good effects from *x*-ray treatment. At the Scandinavian Radiological Congress in Copenhagen last year many good results were reported, in cases of intracranial tumours, from radium therapy.

LETTERS, NOTES, ETC.

A "SERIOUS CASE."

DR. W. JOHNSON SMYTH (Bournemouth) writes: Acutely apprehensive of only a brief span of life a lady consulted me lately and explained that a specialist recently discovered that she suffered from an "impalpable spleen" and that he took a very serious view of her ailment. I corroborated the specialist's discovery, prescribed a rich diet and a few noisy electrical remedies with which she was not familiar. Her recovery was rapid.

HOSPITAL *v.* ASYLUM.

DR. S. E. WHITE (London, E.) writes: The hospitalization of asylums is in the air. No lovelier thing could be devised than to remove the shadow that broods over asylum life; to give light to them that sit in darkness, and to introduce into that dim forsaken land methods by which the heart is cheered and health restored. Professor G. M. Robertson proclaims: "Let there be no more prison atmosphere! We do not call in a magistrate to sanction admission into a hospital." True, but the patient can in this case discharge himself. Does the professor intend that no greater measure of detention shall in the future be exercised over the unbalanced than prevails in hospitals for bodily disease? He can hardly mean that. He has a plan whereby those who enter voluntarily can be detained for six months on medical authority alone—the arrangements being strongly commended by the fact that there will be "no certification"—that means, no provision for any judicial intervention or appeal. This proposal is naturally accepted readily by those who keep asylums. But no roseate picture of the delights of hospitalized asylums can reconcile most people to the loss of liberty. The sense of the rights of the subject has entrenched itself so firmly behind English law that psychiatrists find it no easy matter to drive it out. Five times since 1905 the Lunacy Commission has essayed to pass this measure through Parliament, but without avail. The sense of fair play has been too strong. Fain would the Board of Control gather under its wing all early cases to detain them for their good; but the early cases refuse to flock to it. The Board is not at all satisfied with its function of looking after the certified—that is, the helpless whom they are supposed to protect—but would willingly find "half-way houses" for all those who are on the way to being certified. There exist at the present moment all over our land huge institutions into which are gathered a heterogeneous mass of people. Some of these indubitably require restraint, but an equally large number are housed therein who would recover much more speedily if invited to appropriately equipped cheerful sanatoriums and spared this iron rule. There ought to be called into being some suitable *alternatives* to asylums. It is a crying need. But the new hostels must be hospitals in fact, not semi-asylums. Once liberty is interfered with, it is all-essential that, to prevent injustice, something in the nature of an inquiry must be held; the "alleged lunatic" ought to be told what is being alleged, and be permitted to defend himself. This is only fair. As things are at present, everything is done in secret; and according to the proposals now issuing from the Health Ministry the proceedings are likely to become still more subterranean. This is a retrograde step. No measure of the kind is needed. *No legislative barrier stands in the way of running hospitals without detention.* Before committing a man to an asylum, he ought to be proved to be dangerous and unfit to be at large. For all others, the true hope of the future lies in the starting of real hospitals with reassuring atmosphere and free access to the air and light of heaven.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 30, 31, and 32 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 84.

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The Popular Lecture

ON

THE PHYSICIAN: NATURALIST, TEACHER, BENEFACTOR.

Delivered to the British Medical Association at Glasgow on July 28th,

BY

J. GRAHAM KERR, M.A., F.R.S.,

Regius Professor of Zoology in the University of Glasgow.

Some years ago at a dinner in this city I was called upon to propose the health of a distinguished company of physicians, and in doing so I recalled an incident that happened long ago during one of my early expeditions in South America. I had arrived in the country of a tribe of primitive red men and was engaged in the preliminary work of getting our relations on a satisfactory basis. One day I found myself traversing one of the great swamps of the region alone with one of the most potent members of the tribe. We arrived at a particular spot, and he indicated that he would fish: he bent the swamp vegetation out of the way so as to make a little clear pool a foot or two in diameter; then he baited his hook and patiently waited for the fish to nose their way into the pool through the surrounding vegetation. There we remained for an hour or two in silence, he from time to time pulling out a fish, while each of us regarded critically the other, sizing one another up, as the slang expression has it. And as we communed together—that naked red-skinned savage and I, a callow graduate of Cambridge—there gradually crept across my mind the thought that there beside me was a fossil man—a living fossil—the medicine man of the tribe, the evolutionary ancestor of our two professions, that of the naturalist and that of the physician, and of the priest by the way as well.

That after-dinner speech had—as perhaps most of my after-dinner speeches have not—a good effect, for one of the subsequent speakers made known to me that charming and scholarly address entitled, "The Physician as Naturalist," delivered by Sir William Gairdner when President of the British Medical Association in 1888. Indirectly, too, it was the cause, when I had the honour of being invited to deliver to-night's lecture, of my choice of title.

What I propose to do, then, is to glance at the physician in his rôle as a citizen of our community and to say something about three different aspects of him and his work—that of the naturalist, that of the teacher, and that of the benefactor.

The Physician as Naturalist.

The professional biologist or naturalist (I use the two words as synonyms) has necessarily a strong fellow-feeling with those who follow the profession of medicine, for in these days it is generally recognized—with every year it becomes more definitely recognized—that medicine is a branch of applied biology. The profession of medicine is the one great learned profession in which it is officially recognized that a training in the elements of biology, and an elementary knowledge of the methods and principles of that science, must lie at the foundation of professional training if that foundation is to be well and truly laid. And it is extraordinarily fascinating to watch the evolution of medical science, and see how more and more its problems become recognized as problems of natural history.

Take the general mechanism of the body. We see it in its simplest form away down in the protozoa of freshwater pools—single cells leading a solitary existence, or it may be attached to one another in little groups that blunder about in their watery environment. As evolution proceeds, bigger and bigger groups of these cells remain attached together, but as the cell community increases in size its movements become more precise, its activities more definite: it develops more and more strongly an individuality of its own. It evolves at length into one of these marvellous cell communities exemplified by the body of one of the more complex animals, such as a butterfly, a bird, or a man.

How does such an individual compare with the simple protozoan individual? In the first place, it is composed of an enormously greater number of cell individuals. In the second place, these cell individuals are no longer all alike; they have become specialized for different functions—some to form a rigid supporting skeleton, some to form muscles to move the parts of the skeleton on one another and so to bring about movements of the body as a whole, some to absorb food or oxygen, or to get rid of poisonous waste materials. In the third place, the enormously increased size of the cell community renders it necessary to have a special co-ordinating mechanism to knit the whole together into a coherent individuality—the nervous system. And, lastly, there is a point which is very usually overlooked—the primitive protozoon was aquatic; its surface was bathed directly by the water in which it lived. I said water, but of course it is not water in the precise chemical sense of the word. Water—pure water—is a substance which no one has ever seen. If it could be produced it would not remain for an instant of time: other substances instantly dissolve in it. If it falls as a drop of rain the gases of the atmosphere pass into it; if it trickles on the ground it dissolves other material as it goes. What we call water, then, in ordinary life is really a dilute watery solution of many different substances.

Now, as the animal body has proceeded along its evolutionary path, the majority of the cells composing it have become shut away from the external medium; it may be, as in the case of the butterfly or the man, that that external medium is no longer water but air. But yet we find that the cells of the body are still leading their ancient aquatic existence for the body has enclosed within it a certain amount of water—what was called the internal medium by the great French physiologist Claude Bernard—and this bathes the surface of every constituent cell. The ancestral watery pool was affected in composition by its living inhabitants, the more so the more crowded they were; they absorbed from the water oxygen and food material, while, on the other hand, they discharged into it the various waste products of their bodies, both food material and waste products being liable to differ according to the particular type of creature. And so also with the internal medium of the body. It bathes the surface of the myriad members of the cell community. Each takes from it the food that it needs for its special activities; each discharges into it the particular waste substances which happen to be the product of its own peculiar activities.

It follows, then, that the internal medium of the body is a fluid of extreme, although ordered, complexity, and the cell individuals are adapted to live in a medium of this particular complexity, just as one animal is adapted to live in fresh water and another in salt. The composition does not remain absolutely without change—nothing does in the living body—it is liable to alteration from time to time, as one or other type of its cell inhabitants is more or less active in what it discharges into it or takes away from it. And these little fluctuations in the composition of the internal medium are actually made use of in the normal activities of the body; they set agoing the appropriate reactions of the body necessary to meet the ordinary contingencies of life—for example, if the proportion of carbon dioxide becomes increased by ever so little it at once serves as a danger signal to the respiratory centre in the brain, and this instantly causes the breathing movements to be accelerated: or again, a little change in composition which normally follows the taking in of food at once brings about formation of the necessary digestive juices. While the reactions to these commonly occurring little changes in the composition of the internal medium form part of the ordinary life of the individual it is otherwise when changes of greater amplitude occur. Then uncomfortable, and it may be disastrous, effects are produced on the cell inhabitants, and the condition becomes pathological in place of physiological; it may be that all members of the cell community alike are affected, but more usually the ill effect will vary in different parts or different tissues of the body, according as the particular set of cell individuals is more or less exposed to the influence of the internal medium, or, on the other hand, more or less sensitive to the particular change that has taken place.

The modern physician, however, has come to be interested not merely in the natural history of the body of man in itself. He has been given cause to interest himself in the biological relations of man with the other living organisms of the world around him, for these relations affect in the most intimate way the health of mankind. How better could I illustrate this than by the familiar case of malaria? Reckoned in its direct and indirect effects the most destructive of all diseases, it has been estimated to cause one-half of the entire mortality of the human race. It is only a comparatively few years ago that the method to be adopted to combat malaria formed one of the most insistent problems confronting medical science.

I had the curiosity to look up the article "Malaria" in the ninth edition of the *Encyclopaedia Britannica* to refresh my

memory as to how this problem was regarded in the days immediately preceding the time when it found its solution as a problem of natural history, and this is what I read:

"The most prevalent hypothesis of malaria is that it is a specific poison generated in the soil. Perhaps not every soil is capable, under circumstances, of causing malaria, but it is difficult to assign limits to its potential presence. There are seemingly well-authenticated cases of malarial disease appearing during the making of railway cuttings, canals, and other excavations, in places where malaria had not previously been known; and there is sufficient evidence that malaria has appeared in the track of cultivation in the Western States of America, and that it follows the upturning of virgin soil, and even of soil that has been long fallow. Attempts have been made, without success, to separate a malarious poison from the gas generated by swamps, or from the air of malarious localities. Still more attempts have been made to discover the hypothetical poison among the numerous minute vegetable organisms that occur in the soil. . . . Another hypothesis is that malaria is a 'telluric intoxication,' generated by the vegetative power of the soil when that power is not duly exhausted by plant growth. Lastly, there is an hypothesis that malarial fevers are caused by the excessive and sudden abstraction of heat from the body under the influence of cold and damp. . . ."

Does it not seem *incredible* that these words fairly represent the views regarding the malaria problem that were current as late as the "eighties" and "nineties"—blind gropings without a suspicion as to the true solution?

How different to day: the problem solved in almost every detail—so that there is no disease which medical science can combat more effectively than malaria. And how has all this come about? Because the malaria problem came to be tackled as a problem in natural history. As you all know, it turns out that malaria is a possession not of man alone, but of a dual partnership—man and a particular type of mosquito. Man catches the disease from the mosquito: the mosquito catches it from man. If man were exterminated in a particular locality it would conduce to the health of the local mosquitos: they could no longer catch malaria. If, on the other hand, the anopheline mosquitos were exterminated from a particular locality, then the human inhabitants could no longer catch malaria. In the solution of the details of the problem many workers were concerned, but the all-important part—the demonstration of the relationship between the malaria type of microbe and the mosquito—was the work of our own countryman Ronald Ross, and it was that demonstration that pointed the way to the anti-mosquito campaigns by which Ross and his followers have been able to diminish, or even to clear out entirely, malarial disease in many of the most deadly spots in the warmer regions of the world.

I have mentioned malaria because it affords an extraordinarily striking case of a medical problem finding its solution along the lines of natural history. There are many other cases similar in nature, though less impressive in the scale of size. To us in Scotland naturally occur in this connexion the names of David Bruce and William Leishman, and of their younger followers such as Leiper and Muriel Robertson.

Instead of taking the case of a specific disease like malaria I might very well have taken some of the more general processes of the body in which medicine interests itself, such as, for example, the general protective mechanism of the body against microbes. As we have seen, the body consists of a cell community or cell republic. Its constituent cells are protected from the assaults of alien and hostile cells by their enclosure within an elaborate defensive envelope, the skin. Certain types of microbe, however, possess the power of making their way through the skin, while in any case the skin is liable to be breached by accident, the way being thus opened to hostile invasion.

It follows, then, that the cell republic of the body requires internal defensive arrangements to deal with invaders that have passed the outer defences, and the investigation of these defensive arrangements admittedly constitutes one of the most important chapters in modern medicine, associated as it has been with immensely important practical developments in the science of healing. But they also constitute one of the most fascinating chapters in modern biology, and perhaps the name to which posterity will accord the highest position in the history of these developments is that of a professional zoologist, Metchnikoff. In his early days Metchnikoff had worked at the embryology of a great variety of the lower types of animal and published a large mass of important embryological work.

In various of these simply organized creatures, on which Metchnikoff worked, he came across a phenomenon which we still call by his name, phagocytosis, and the recognition of this constituted one of the chief steps in his work on the defensive mechanism. This phagocytosis is really a primitive kind of feeding on the part of the individual cell. If you watch the simplest and most primitive of the protozoa—the creature called Amoeba, which is to be found creeping about in freshwater pools—you can sometimes see it feed. The soft protoplasm of its body simply flows round and engulfs the smaller creature which it devours. It may be that it is subsisting on these tiny plant cells which we call bacteria. These individually are too minute and too little resistant to be engulfed singly in the ordinary way, but a peculiar waste substance given out by the amoeba's body possesses the remarkable property of causing the bacteria to adhere together into a sticky mass which the amoeba is then able to devour in the ordinary way. The bacteria so taken in are destroyed (digested) within the protoplasm of the amoeba: a case of what is called intracellular digestion—digestion taking place within the protoplasm of an individual cell. Metchnikoff's great discovery was that certain of the cells in animals higher in the scale than protozoa retain this ancient power of intracellular digestion. These are the cells to which he gave the name phagocytes; and these phagocytes he found constituted an effective defence force in the animal body. He introduced little foreign particles into the body of a young starfish and saw how they were devoured and disposed of by the phagocytes; he studied a fungus disease which affected water fleas, and was able to see, as he watched the transparent body of the water-flea through his microscope, how the spores of the fungus which had found an entrance to the body were fallen upon and usually destroyed by the defence force of phagocytes. It would be fascinating to trace out how Metchnikoff proceeded from his basic studies on these lowly organized creatures into the domain of human pathology, but it will perhaps suffice if I say that this great figure in the history of modern medicine, whose foundation work was pure zoology, continued to the end of his days to be a naturalist in his methods and in his outlook.

But it is not merely these great outstanding figures in medicine, when they are tackling its outstanding problems, that show themselves to be naturalists. In the familiar problems of his everyday life the physician finds himself confronted at every turn with problems of natural history, and in grappling with them he uses at every step those methods of observation that are those of the naturalist. He remains, in fact, throughout his working life a naturalist.

THE PHYSICIAN AS TEACHER.

The physician of to-day is, then, like his far back forbear amongst primitive man, a naturalist. The point that I would next make is that in a human community like ours this fact confers upon the physician peculiar power and peculiar responsibility as a teacher. The physicians of to-day constitute the one big section of our citizens who, through their training and their daily work, have acquired a grasp of biological principles. To them, as to no others, falls the task of spreading these principles among their fellow citizens.

Human communities are organisms. Here and there, in remote and secluded corners, you may find them lingering on in early stages of their evolutionary progress—each little nomad company composed of only a few unspecialized individuals who readily dissolve partnership under the stress of circumstance. While still lingering on here and there in remote spots, where they are free from the pressure of competition, these little primitive communities are on the verge of disappearance. As time goes on they vanish away, often without leaving a trace behind, yielding their place to other communities that have reached a higher grade of evolution.

What, now, are the distinguishing characteristics of these more successful communities? They are precisely the same as those that characterize the more successful, or as we human beings usually call them the higher, types of animal organism. The community is composed of an enormously greater number of individuals, and these are not all alike but have undergone specialization for different functions in the community, and finally the individuals are knit together by a highly evolved social organization, so that the community is able itself to act as an immensely powerful individual of a higher order.

This organization that knits the individuals of the community together and that plays such an important part in rendering the community efficient is naturally exceedingly

complex and involves many potent though often elusive factors which work beneath the surface of our civilized society: factors which make for the smooth running and efficiency of the social mechanism; factors which have to be appreciated and fostered by the teacher of good citizenship; factors such as self-abnegation—the subordination of the interests of self to those of the community, patriotism, loyalty to comrades, Christianity.

Now the physician, naturalist, in daily touch with living processes, spending his life in the study and treatment of live human beings, knowing so well their frailty and their strength, an optimist, realizing how infinitely commoner is warm-heartedness than cold-bloodedness: *who* is there that can teach these principles of citizenship with such understanding and sympathy as he? And who, again, is in the position of making his teaching so effective as the physician? Coming into each house on his errand of mercy he necessarily establishes relations of such humanness and such intimacy as to give his words unparalleled power. In these days of unrest, when the air is filled with the discordant street cries of every kind of fadmonger, do we not greatly need the physician as teacher?

No one who interests himself practically in social problems can fail to realize to what an extent social trouble and friction are due simply to ignorance. The uneducated mind that is blank and yet receptive stands ready to absorb unquestioningly whatever is put before it. But, most unfortunately, the only members of the community that as a rule put anything before it are the extremists. Sometimes these extremists are inspired simply by evil and greed, but far more often—and these are the more dangerous—they are inspired by perfectly honest but lop-sided idealism. They use the simple arts of the demagogue; above all, the classification of their fellow men into sharply demarcated categories. Most usually these are only two in number. They may call them the saved and the damned, or they may use some other pair of adjectives nearly as sweeping; but whatever the pair of adjectives are, they connote respectively agreement and disagreement with the speaker. Those included in the one category are wholly good, those in the other category are wholly evil, and anything in the way of fair and calm judgement is rendered completely impossible.

The physician is eminently qualified to diffuse an atmosphere of sane common sense into the troubled discussion of social problems; his whole work conduces to sanity and common sense. He is accustomed to judge humanity undeceived. He is accustomed to strip off the clothing of humbug and pretence. His interests are with the real man himself, and he has learned that, apart from sex, Nature does *not* group human beings into absolute categories. He sees his fellow men all fundamentally alike with infinitely varying little differences in detail; he sees through all the same dominating strain of goodness, the same disturbing little elements of evil. Realizing always that men are human he appreciates what a factor in social trouble is the regarding them as so many soulless machines. His constant intercourse with men when they are in trouble makes him kindly and tolerant; at every step he is in touch with phenomena that he cannot comprehend—how much there is even in the simplest living body that no man understands!—and this makes for humility of spirit.

The physician has, then, in a community like ours, vast powers as a teacher of these principles that mean so much to communal society. He can do much by spreading these principles and also by spreading knowledge of what is really meant by science and the scientific method. He has these powers, and I for one believe that he is constantly, even if unconsciously, exercising them. He may not do ten minutes' formal teaching during his whole life, and yet as he goes about his daily work he is insensibly diffusing around him an appreciation of these principles and these interests. The great majority of our fellow citizens are steeped in the most profound ignorance of what these terms mean, and the result is incalculable loss to the community in all kinds of ways.

The Physician as Benefactor.

In ordinary life we are familiar with the benefits we owe to our medical man. He comes in and helps us in emergency. We pay him his fee, and to many a man that ends the matter. He does not feel constrained to be grateful; he feels he has bought the assistance that has been given him; he has paid for the advice and help of his doctor as he might pay for some material commodity or as he might pay for expert help in any skilled operation, such as a bit of engineering work. But what he is apt to ignore is that in the big things of medicine the monetary payment bears no relation whatever to the value received. If I am at death's door and am saved by an operation the fee that I pay is simply an honorarium graduated according to my means; it in no sense expresses the value of the life that has been given back to me. If I had to assess that value I should probably mention some figure of a totally different order; I might be willing to pledge all my future earnings in return for continued life.

I think we laymen are apt, as individuals, to forget this aspect of medicine—but how much more do we as a community consistently forget it! Just think of the value to the community of the work of a great pioneer in medicine. I will mention two because they happen to appeal to me particularly.

Lister.

Twenty-five years or so ago I had to read a paper of mine to a scientific society. The society was the Royal Society, and in the presidential chair there sat a man who, to my young, impressionable eye conveyed the impression not so much of overpowering greatness as rather of infinite kindness and goodness. There was no oppressive sense of vast knowledge; there was rather the humility of the man conscious of his contact with the infinite unknown. That man had been once a professor in the University of Glasgow. Thirty years before he had been responsible for what is probably the greatest event of world history that has ever happened in Glasgow. He worked in the Royal Infirmary, and there—his big mind able to grasp the practical possibilities that rested on the work of Pasteur—he laid the foundations and erected the main framework of the magnificent edifice of modern aseptic surgery. Most of us here, I dare say, know that grimy old building in which Lister worked—that priceless possession of the Glasgow Medical School, that sacred shrine to which in future ages pilgrims will come from the ends of the civilized earth.

What mankind owes to aseptic surgery can be realized vividly by anyone who cares to read of the horrors of hospital wards in pre-Listerian days. In the hospitals of London, Edinburgh, and Glasgow the death rate of amputation cases averaged about 40 per cent. During the Franco-Prussian war of 1870–71 there were slightly over 13,000 amputations recorded by the French military authorities; of these cases just over 10,000 died. One of the most skilful Prussian surgeons records an unbroken series of thirty-six amputations at the knee-joint, each one resulting in death. In the Munich State Hospital it is recorded that in the year 1874 80 per cent. of all the surgical cases were either killed or badly crippled by hospital gangrene.

However, it is hardly necessary to refer to these old records, for I suppose we may take it that to-day every educated man or woman realizes in a general way what the development of aseptic surgery has meant; most people probably realize that the total destruction of human life in the great war becomes almost insignificant when compared with the total saving of human life which we owe to aseptic surgery. I will therefore not dwell longer on Lister's work: I will pass on and give an example of benefit rendered to mankind from the other side of medical science. I cannot do better than take as my example the case of the mosquito-borne diseases, the successful combating of which we owe above all to Ross.

Ross.

Earlier in the lecture I referred to malaria as being declared by competent authorities to be the most destructive to human life of all known diseases. The malaria death rate in the United States was estimated as late as the year 1908 at about 12,000; the annual economic loss due to it as not less than twenty million pounds.

Now what has been the result of the Ross treatment where it has been applied? In the Panama zone the malarial death rate in 1881 was reckoned at over 2 per cent. of the population; in 1911 it had been reduced by the anti-mosquito campaign to less than 1 per thousand. A particularly interesting case is that of Ismailia. In this town, surrounded by arid desert, there was no malaria until the year 1877, when it was introduced by infected immigrants. In 1900 there were no less than 2,234 cases. Ross himself went out to supervise an anti-mosquito campaign, and the disease was completely eliminated so far as fresh infections were concerned. The general position now is that within any restricted area malaria can be completely controlled. Scattered all over the warmer parts of the world are localities that up to twenty

years ago were deadly to the white man from the prevalence of malaria and in which now the disease has either been completely abolished or reduced to such infrequency as to become practically negligible.

But malaria is not the only one of these mosquito-borne diseases. Yellow fever is another. From time to time this disease used to make its appearance in epidemic form and do dreadful damage. The epidemic of 1821 in Barcelona cost 5 000 lives; that of 1850 in Rio cost 4,160; that of 1853 in New Orleans cost 7,970; that of 1857 in Lisbon cost over 6,000. In Brazil during a period of thirteen years the deaths caused by yellow fever were estimated at 28,078; but in the single year 1899 that country lost 35,557. It was this disease which was the most terrible enemy of the French engineers at Panama; it was impossible to estimate the total number of deaths, but the scale of loss may be imagined from such a simple fact as that "in one ship eighteen young French engineers came over and in a month after their arrival they were all dead except one" (Howard).

Now what was the result of anti-mosquito measures? In New Orleans epidemics occurred in 1853 with 7,970 deaths; in 1858 with 4,854, in 1857 with 3,093, in 1878 with 4,056. Again in July, 1905, an epidemic made its appearance, and by August 12th there were 105 cases. This time, however, anti-mosquito measures were adopted, though no doubt far less efficiently carried out than they would be to-day, and the total number of deaths was kept down to less than 500. In the Panama Canal zone after the Americans had taken it over Gorgas was able to report in 1903 that as a consequence of the anti-mosquito work not a single case of yellow fever had developed during the preceding three years.

I am well aware that to some of my audience to-night these facts that I have been quoting are all well known—they are bits of an old familiar story; why, then, should I take up your time with them? It is because I think they require driving home into the minds of the lay public, not once but again and again and again. If I had my way there would not be a child in this country allowed to emerge from his school days without facts like these being dinned into his ears until they form a permanent part of his mental equipment.

Would it not, indeed, be an immense step forward in our educational methods if we could replace what at present forms so much of the teaching of history in our schools—the more or less legendary tales of the doings of long dead kings and chiefs—by the kind of history that really matters, the history of the intellectual achievement that marks off civilized man from savage? There are no tales more fascinating, more calculated to grip the interest and the imagination, than the stories of how some of the great advances in human knowledge have been made; the stories of how the heroes of science have carried on towards their goal, undeterred by failure and discouragement, it may be in circumstances of great personal discomfort and danger. The advantage that would accrue to science is, of course, obvious: with greater knowledge would come a fuller appreciation on the part of the public of what science really means, and the whole attitude of the community towards science and its encouragement would become entirely changed.

But would there not come also an immense gain to the individual himself? Could he possibly avoid being ennobled and made into a better citizen by being brought into contact with the lives of those who have toiled and fought, not for personal glory or wealth or power, but only for truth and for the good of their fellow men?

However, my purpose just now is not to make out a case for modifying the school curriculum so as to include these chapters of what I regard as *real* history. It is rather to continue to urge the less lofty, but in a commercial age necessary, argument, that the great pioneers in medicine have conveyed to mankind possessions of untold *material* value. What exactly that material value is can, of course, never be gauged. Our vision is limited. We see only what is close at hand. And our vision lasts only during the instant of our own lives. But still can we not in imagination project our minds back during these last few decades and on into the unbounded future, and become at least dimly aware of these unnumbered invisible hosts whose individual debts are their lives, or at the least their working efficiency? Suppose we had never received the benefaction of aseptic surgery. Suppose we transport ourselves back in imagination to the days of pre-Listerian horror. And suppose that by some supernatural means we became aware of aseptic surgery existing in another planet and of all that it meant—and that it was available to mankind for purchase after a fair valuation. What would a fair price be—a million pounds, a hundred million, a thousand million? I wonder. Is not any one of these sums obviously ridiculous?

No, the price of each one of these great benefactions of medicine is beyond all the rubies of the world. It is a price that can never be paid, that can never even be fairly assessed. But the benefaction is there: it is ours: and surely it is right that we should occasionally allow our minds to dwell for a little in very reverent gratitude upon the Physician as Benefactor.

I have finished. What I have said this evening hardly merits the title of lecture. It is little more than a group of headings: The Physician as Naturalist; The Physician as Teacher; The Physician as Benefactor. But if you will bear these titles in your memory they may at least serve as pegs upon which to hang future thoughts. And even a clumsily fashioned peg is sometimes sufficient to support a rare and wonderful work.

NINETIETH ANNUAL MEETING

OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICAL SOCIOLOGY.

E. ROWLAND FOTHERGILL, M.B., B.S., President.

DISCUSSION ON ALCOHOL AS A BEVERAGE AND ITS RELATION TO CERTAIN SOCIAL PROBLEMS.

(Continued from page 207.)

ALCOHOL AND INDUSTRIAL EFFICIENCY.

BY

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IN some introductory passages Professor Collis stated that he accepted the definition of alcohol set forth by the expert committee[1] appointed during the war by the Central Control Board (Liquor Traffic)—namely, that alcohol is used to mean ethylic alcohol C_2H_5OH, prepared by the fermenting action of yeast upon sugar. This is the basis of all alcoholic liquors, whether the beverage is consumed immediately after fermentation or at some later period, or whether, as in the case of brandy, whisky, gin, or rum, the spirit is subsequently distilled. Preliminary considerations might be summarized in the statement that alcohol is a substance which can supply the body with a limited amount of easily assimilated energy, but is a narcotic drug or intoxicant capable, if the dose be pushed, of acting as a poison. Alcoholic beverages have a pleasant taste and may be consumed convivially or industrially, but industrial drinking is seldom found dissociated from convivial. When consumed in high concentration the drug effects of alcohol are most pronounced.[2]

"Industry" is a word generally applied only to physical work connected with some particular form or branch of productive labour, or with some trade or manufacture. Productive labour and manufactures represent man's effort to modify his environment to his needs. Efficiency in industry means the carrying on of this productive labour with a minimum expenditure of energy, whether that energy be physical or mental, or be represented by wages paid to the workers for expending energy or by money expended on raw material or on necessary plant. Industrial efficiency is adversely affected if the return for wages paid is inadequate; if raw material is spoilt during manipulation; or if the plant is not tended so that it works to best advantage.

The subject for discussion, then, is whether the consumption of alcohol exerts any influence, and if so in what direction, upon these matters; we have also to distinguish between convivial and industrial drinking.

EFFECT OF CONVIVIAL DRINKING.

Sullivan has pointed out[3] that mortality directly due to alcohol, as measured by deaths ascribed to alcohol and diseases of the liver, places in the same group the agricultural worker (with a comparative mortality figure of 5), who if measured by convictions for intemperance cannot be held to be a great convivial drinker, and the coal-miner (with a comparative figure of 9), who by the same measure is a great convivial drinker (see Table I). For purposes of comparison

TABLE I.—*Comparison between Convictions for Drunkenness and Occupational Mortality due to Alcohol.*

Town or County.	Convictions for Drunkenness per 10,000 Population in 1911.*	Prevailing Occupation.	Occupational Comparative Mortality 1910-12 for Alcohol and Cirrhosis of Liver.
(1) Oxfordshire ...	6.5	Agricultural labour ...	5
Suffolk	11.9		
Gloucestershire...	12.0		
(2) Coventry	18.1	Cycle making	8
		Motor cars	6
(3) Tynemouth ...	173.1	Shipbuilding	7
(4) Yorkshire (West Riding)	59.7	Coal-mining	9
Glamorgan ...	63.1		
Merthyr Tydvil...	76 0		
(5) Stoke-on-Trent ...	52.4	Pottery	12
(6) Leicester	12.5	Boot and shoe	13
Northampton ...	16 8		
(7) Sheffield	29.9	Cutlery and scissors ...	12
		Iron and steel	13
		File making	15
(8) Reading	10.0	Biscuit making	14
(9) Rochdale	27.0	Cotton manufacture ...	14
Burnley	25.8		
Blackburn	32.8		
Oldham	42 3		
(10) Halifax	17.9	Woollen, worsted manufacture	15
Bradford	25.1		
(11) Swansea	54.3	Tinplate manufacture..	16
		Copper and zinc ...	0
(12) Birmingham ...	71.2	Gunsmiths	21
		Jewellery	26
(13) Birkenhead ...	125.7	Dock labour	30
Liverpool	152.9		
(14) Burton-on-Trent	51.2	Brewing	49

* Data abstracted from Alliance Year Book for 1913, edited by G. B. Wilson.

these occupations may be compared with the clergy, with a comparative mortality figure of 4, or with dock labourers with a figure of 30, and costermongers with a figure of 36, or with inn servants with a figure of 51, and inn-keepers with a figure of 156. (The figures quoted are for 1910–12.) Estimated by this measure convivial drinking would not appear to exert any marked effect upon health. This measure certainly tends to mask any effect exerted upon industrial efficiency, for few employers of labour would agree that the subject of a drinking bout overnight is as good a workman as usual next day. Nevertheless I am content at this point to leave aside the question of convivial drinking, and rather direct attention to industrial drinking.

EFFECT OF INDUSTRIAL DRINKING.

The habit of industrial drinking essentially represents chronic alcoholism, but when considering the effect of alcohol upon industrial efficiency the definition of industrial drinking must be widened to include working while the system contains alcohol, whether consumed during or before working hours; for the elimination of alcohol is not immediate, but takes anything up to twenty-four hours to be complete. If this definition be accepted consideration may be given under this heading to the effect of alcohol on physical and mental activities, those activities which determine the return for wages paid, the quality as well as the quantity of output, and the attention paid to plant—in other words, which should determine industrial efficiency.

Bodily activities are of two kinds, reflex acts and volitional acts; frequently the two are combined; but the effect of alcohol may be studied by considering them separately.

REFLEX ACTS.

Two forms of reflex, the knee-jerk and the eye-closing reflex, which have been studied by Dodge and Benedict,[2] may be taken as examples. These observers found that one hour or so after taking a dose of alcohol equal to about 2 oz. of whisky or 1½ pints of beer, the speed of commencement of the knee-jerk was retarded by 9.6 per cent., and the extent of movement was diminished by 48.9 per cent. If the dose was increased the speed reaction and amplitude were impaired still more. The more complex eye-closing reflex was found to be similarly affected as regards speed and extent of movement by similar doses; but in the case of those accustomed to control this reflex voluntarily (one subject was a boxer and another a revolver shot) alcohol weakened the acquired inhibitory control and allowed the reflex to be more active. This capacity for weakening inhibitory control probably accounts for that acceleration of the pulse rate which has been noted to follow a moderate dose of alcohol and has been quoted as evidence of a stimulating effect. In reality this acceleration represents weakening of the cardio-inhibitory tone which normally restrains the heart beat.

Study of the reflexes, then, displays alcohol as a drug which depresses. Direct evidence drawn from industry that interference with the reflex activity impairs efficiency is difficult to adduce. But indirect evidence is to be found in accident occurrence. Certain accidents actually result from or are accentuated by slow reflex action: of these the entrance of a foreign body into the eye or the withdrawal of a hand on feeling pain due to an abrasion, or on contact with hot metal, may be quoted as examples.

Some years ago Dr. Stehr[4] in Germany obtained figures showing the proportion of industrial accidents occurring on various days of the week. He found that the frequency of accidents on the average for the empire reached its highest point on Monday, and steadily declined until Saturday, which is the usual payday, when it quickly rose almost to the height of Monday. His other data showed with few exceptions that Monday stands at the top of the scale with a corresponding increase at the end of the week. In the milling trade, where Monday and Saturday changed places, payday usually falls on Friday. In Lower Alsace, where Friday stands next to Monday in number of accidents, there are many trades in which Thursday is payday. The distribution of convictions for assault in the empire which are generally ascribed to alcohol, show a weekly distribution agreeing with that for accidents; and convictions for drunkenness in Hildesheim, a city possessing most careful records, follow the same course. Dr. Stehr, after carefully weighing up

TABLE II.

Period.	Statistical Group.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
Proportion of accidents occurring on different days:							
1897	German Empire...	17.6	16.7	15.7	15.7	15.1	17.0
1885–1898	North Austrian building trades	18.7	15.6	15.6	16.2	16.6	16.2
1889–1899	General milling	16.7	15.9	14.9	14.6	15.9	17.3
1889–1893	Land and forest cultivations..	16.8	15.9	16.0	14.7	15.6	15.5
1897 (50 weeks)	Shipbuilding concern, Hamburg	19.2	16.9	16.3	14.9	15.2	17.5
1898	Lower Alsace	14.0	← Excess over weekly average →			10.0	.....
Average convictions for assaults:							
1898–1899	German Empire...	185	69	62	1	4	103
Convictions for drunkenness:							
1896–1902	City of Hildesheim	204	148	99	86	119	141

facts here quoted, as well as other evidence, concludes that the variations in accident frequency may safely be attributed to the use of alcohol, even though that use is not immoderate.

Dr. H. Vernon has investigated accident occurrence from this point of view,[5] taking advantage of the liquor restrictions during the war. He studied the occurrence of accidents during the first, second, and third shifts of night work. Before any restrictions existed there was the usual opportunity for drinking before starting work; at that time there were among men nearly twice as many accidents in the first spell of work as in the last, and among women 1.6 times as many. Under restrictions this proportion fell to 1.4 for both sexes (see Table III).

TABLE III.—*Ratio of Accidents in Three Spells of Night Work.*

Alcohol Consumption.	Period.	Men.			Women.		
		1st spell	2nd spell	3rd spell	1st spell	2nd spell	3rd spell
Rather less than pre-war.	February—July, 1916	1.9	1.0	1.9	1.6	1.2	1.0
74 per cent. of pre-war.	August, 1916—March, 1917	1.5	1.5	1.0	1.4	1.3	1.0
29 to 39 per cent. of pre-war.	April—October, 1917	1.4	1.0	1.0	1.4	1.2	1.0

Vernon also noted that before restrictions in 1915 there were far more accidents on Saturdays and on Mondays than on other days in the week; wages were paid on Friday afternoon. But during 1916-17 the number of accidents was nearly the same on each day of the week; during this latter period shorter hours provided opportunity for spending money on drink on any day of the week, and at the same time restrictions were limiting the amount of alcohol available. This evidence receives confirmation from America, where the National Steel Construction Company report[6] that whereas previous to the Prohibition Act, which came into force in July, 1919, 75 per cent. of accidents occurred on Monday and Tuesday, now the percentage of accidents is no higher at the beginning of the week than at the end.

The evidence thus far refers to the effect of alcohol upon the distribution of accidents; the inference being that the unequal distributions noted are due to the influence of alcohol in sending up the accidents at certain periods. The real test of course is the absolute prevalence of accidents occurring. Here some useful data are available[7] from the Department of Labour and Industry, Harrisburg, which show the number of fatal accidents in the last six months of each year for 1916, 1917, 1918, and 1919, only the last period falling within the provision of the Prohibition Act. The fall in that period, following upon a steady rise in the previous years, is marked; further, it occurred during a period of unusually good trade.

Industrial Accidents (Fatal).

Last six months, 1916	1,454
Last six months, 1917	1,537
Last six months, 1918	1,647
Last six months, 1919	1,238

Further definite evidence comes[8] from the United Pocahontas Coal Company, who state that:

"Our mines are in West Va., and we have had Prohibition there for about five years. We have had better service from the men than ever before; and, better than anything else, the accidents have been only about one-third as many. And when you think that the deaths by accident are but one out of three of what we had before we had Prohibition, it seems to me that anyone that loves his fellow man will favour the cause of Prohibition."

The President of the Gulf States Steel Company[8] has written that accidents in the plants of that company have been reduced since prohibition went into effect by at least 75 per cent.

Deduction.—The depressing effect of alcohol upon reflex acts is detrimental to efficiency if industrial accidents are used as a measure.

VOLITIONAL ACTS.

The efficiency of a willed act may be estimated in several ways: (1) by the power of the muscular effort; (2) by the ability of the subject to continue the effort—that is, to resist fatigue; or (3) by the accuracy of the effort having regard to its purpose. No definite evidence has been acquired under industrial conditions of the effect of alcohol upon the efficiency of willed acts as measured by either of these methods of estimation. Indeed, the requisite conditions for obtaining such industrial evidence are practically impossible to find or establish.

Experimental Evidence.

Evidence bearing on the subject is, however, forthcoming from laboratory research. The investigations of Rivers[9] are probably known to all; they were aimed at testing the effect of alcohol upon muscular contraction—namely, pure muscular fatigue. He used the ergograph and employed cleverly contrived control experiments; his results agree with those of earlier observers in failing to demonstrate that moderate doses of alcohol exert any appreciable influence upon simple muscular contraction. They also agree well with the indication to be drawn from Mellanby's later work that alcohol is not a source of energy for muscular contraction. This point is important since, if the combustion of alcohol only supplies heat to the body and not energy for the contraction of muscles, any claim is removed that alcohol is of use to the industrial worker, on account of its value as a partial food. Mellanby further found evidence that if the concentration of alcohol in the body is high the oxidation of other sources of energy is thereby limited when intermediate oxidation products accumulate and as a consequence expedite the onset of fatigue. He also noted that alcohol passes into the blood more rapidly if taken on an empty stomach, and that food, and especially cream, if consumed at the same time delays absorption.

The influence of alcohol upon the nervous tissues may be tested through neuro-muscular co-ordination. This aspect has received attention from Vernon and others.[10] They found that a quite moderate dose, such as a glass of wine or a pint of beer, was invariably followed by a reaction in the direction of diminished control of the muscles. No initial improvement, even of brief duration, was experienced; and the reaction was about twice as great if the dose was taken on an empty stomach. They conclude that

"in all work with the hands requiring skill and delicacy of muscular control one may be confident that, whilst strictly moderate quantities of alcoholic liquors taken by persons accustomed to alcohol may not appreciably reduce manual skill, they can seldom, if ever, improve it. Moreover, such persons continually run the risk of finding their manual skill quite appreciably reduced if they happen to take their alcohol on an empty stomach instead of a full one. It would be far better for them to avoid the risk altogether by postponing their consumption of alcohol till the day's work is over."

Particular interest attaches to another inquiry, carried out by McDougall and Smith,[11] who, after investigating the action of various drugs, group alcohol with chloroform, and consider that both act chiefly and immediately by raising the resistance of the synapses in all parts of the brain, so impeding nerve impulses. True stimulants such as strychnine and tea produce opposite effects. These observers also noted a new point—namely, that although alcohol acts deleteriously during the stages of increasing inefficiency caused by protracted fatigue, yet it acts beneficially as the subject begins later to regain his previous efficiency. This instance, which is the only one of alcohol improving efficiency, may have its importance in relation to recovery from overfatigue in industry; but since overfatigue should be avoided the value of alcohol with respect to it ought not to be needed.

Throughout the experimental work referred to one point is frequently noted—namely, that the subjects when reacting to alcohol were generally under the impression that the test was being performed unusually quickly and accurately, and could with difficulty be convinced to the contrary even when faced with the results. This point in itself indicates the narcotic influence of alcohol upon powers of judgement and discrimination.

These observations prepare the way for considering evidence gathered from industrial experience of the effect of alcohol upon efficiency.

Industrial Evidence.

Evidence from industrial experience is difficult to establish on a scientific basis. Experience during the war, when liquor restrictions were in force, might have afforded useful records had not other influences, such as long hours and pressure of work, also been at work simultaneously.

Appeal is often made to records of *lost time*, and the opinion has been expressed that this interference with industrial efficiency is markedly influenced by alcoholism. There can be little doubt that there is reason for this opinion. Lost time varies greatly in different industries; it tends, for instance, to be high in coal-mining, ship-building, metal-smelting, and dock labour, and these are all industries in which convivial drinking is high. Yet the evidence is not clear; for in these industries, owing to the need for physical fitness, a worker may wisely stay at home on account of some minor disability, such as a slight sprain or rheumatism, which, if he were a tailor or printer, he would disregard. Again, fatigue engendered by hard physical work or adverse conditions of employment may be a direct cause of turning to

alcohol; and so industry may tend to increase that alcoholic habit which, in its turn, acts detrimentally upon lost time. Apart from factory conditions and the amount of physical energy demanded, lost time is particularly influenced by the distribution of working hours; and Loveday has shown[12] that in comparatively light engineering work, when work is started before breakfast, the amount lost—10 to 20 per cent. of possible hours—may be as high as that which prevails in coal-mining, while if before-breakfast hours are not worked lost time is three or four times less in amount. Factory cannot, then, be compared with factory, or industry with industry, with regard to the alcoholic habits of the workers and the amount of time lost, unless information is available as to hours of work, the nature of the work, and the conditions of employment. Hence the difficulty of estimating accurately the effect of alcohol upon lost time.

Nevertheless Loveday, when investigating time lost before breakfast, found that Monday is universally the worst day. Stehr, whose work has already been quoted,[4] has pointed out that absenteeism resembles the occurrence of accidents in not being distributed evenly throughout the week. He gives the following figures for a colliery in Moravian Austria:

Days.	Percentage of Absentees. 1898.	1899.
Usual week days	5.0	6.9
Days following Sundays and holidays ...	7.5	9.3
Days following advance pay-days ...	8.9	10.4
Days following regular pay-days	10.4	12.9

Although more recent investigations into industrial fatigue may call for some modification of the interpretation Stehr places upon the data quoted and other evidence he obtained, he does establish that a day of recreation is frequently more "fatiguing" than a day of work, and that this phenomenon is most pronounced among habitual drinkers. In view of other evidence he is probably justified in attributing much of the loss of efficiency so indicated to the use of alcoholic beverages.

The best evidence is probably that forthcoming under prohibition from America, where the only variant has been the opportunity for obtaining intoxicating drink.

Thus the Chesapeake Marine Railway Company report[6] that: "Prior to Prohibition we always had what was known as Blue Monday in shipyards; there being so many workmen absent that it was a hard matter to carry on the work of the yard with any degree of efficiency. With Prohibition in force, we can accomplish as much on Monday as any other day."

The Kittanning Iron and Steel Manufacturing Company[6] say: "In our puddle mill department, for the first turn or so after each day, we seldom had more than 25 per cent. of our furnaces in operation; the number on each turn increasing towards the end of the week. Since Prohibition went into effect, we have found that between 90 and 100 per cent. of our men work practically full time, the only losses being due to possibly sickness or some element beyond the control of the men."

The Spang, Chalfant and Company,[6] who represent yet a different industry, declare that: "Monday mornings and Monday nights in the mill were periods of great difficulty and anxiety, because the week end drinkers would be absent from their posts of duty in such numbers as to make the operation of the mill almost impossible, and difficult at best. After the saloon was abolished this trouble disappeared."

A mining engineer at Iron River reports[8] that: "At our mines for the first nine months after the State of Michigan went dry the number of days of absence from work due to accidents fell off 68 per cent. This seemed so startling to me that I made an inquiry in a large organization near by and their results were practically the same."

These statements might be multiplied without materially strengthening the proposition that alcohol consumption conduces to lost time and so interferes with industrial efficiency. Before, however, leaving this point regard should be paid to the prevailing custom of paying wages at the week-end, just when the worker is tired and has free time ahead for indulging in alcoholic recreation. Probably lost time on Mondays would be greatly reduced by paying wages on Monday evening, a scheme put forward by Vernon as advantageous from other points of view.

Another great cause of lost efficiency is *labour turnover*. The financial loss so caused was crudely estimated[18] at the meeting last year at Newcastle. No evidence is forthcoming from this country as to how labour turnover is influenced by alcoholism; nor, indeed, is it directly obvious that such an influence must exist. Nevertheless the Appleton Company, Lowell, Mass., consider[7] that since prohibition their labour turnover has been reduced. So few industrial concerns ever consider the importance of labour turnover or calculate its amount that this statement has significance. As a set-off, however, the findings at Grand Rapids[14] must be quoted that the change has made for restlessness, especially among the younger workers, and in some cases it has slackened effort and swelled the labour turnover.

Lost time and labour turnover are, after all, only indirect methods of measuring industrial efficiency. The true test must be *work done*. Here, for lack of other evidence, we must turn again to America. A few statements made by firms representing different industries bear on the point.

J. Edward Horn and Company state[6] that: "When our war-time Prohibition went into effect, July 1st, 1919, we immediately saw big changes in the production of bituminous coal by our miners. As time passed we realized that each miner was producing more coal per day and worked far more regularly than he did when he was able to get strong drink."

The Potts Run Coal Company remark[6] that the efficiency of men has increased about 25 per cent.

The Ashland Steel Company have written[6]: "We beg to advise that we operate a Bessemer steel plant and wire rod mill. Since Prohibition has been effective in this country our scrap loss in our rod mill department has been reduced 25 per cent., and we have a better character of workmen than ever before."

The American Locomotive Company hold[6] that prohibition has caused considerable efficiency in all departments. The Sun Shipbuilding Company maintain[6] that their men "are worth 20 to 50 per cent. more to their company on account of their ability to give better services."

Alcoholism and Food.

Alcoholism affects industrial efficiency indirectly through yet another channel. The energy needed for industrial activity is obtained from food; but where the alcoholic habit prevails appetite is interfered with and wages are spent on drink which should be spent on food. Interest attaches to expenditure in the United Kingdom on food and on alcohol. The comparative figures for 1919 were as follows:[15]

Food.	Per head. £ s. d.
Beef and mutton	4 4 8
Bread and flour	3 11 8
Milk	2 14 4
Bacon	2 3 5
Butter and margarine	1 17 0
Sugar	1 1 8
Total	15 12 9
Drink.	£ s. d.
Alcoholic drink	8 8 0
Tea	0 19 7

Certain foods, such as fruits, vegetables, eggs, cheese, and potatoes, are not included in the expenditure stated; probably they may fairly be included at something over £1—say, for convenience, £1 3s. 3d. Then the comparative expenditure on food would be £16 16s., or only twice as much as is spent on the harmful luxury alcohol. These figures are referred to because the proportion of income spent on alcohol is greater as the social status of the spender is lower; in other words, manual labourers who expend energy and need more food to supply it, spend proportionately more on alcohol than do non-manual workers; and efficiency suffers.

Conclusion.

Alcohol possesses a charm for removing the irritating effects of industrial fatigue, but it is a charm purchased at great cost to efficiency. The evidence drawn from American sources as to the beneficial effect upon industrial efficiency of prohibition when taken as a whole can hardly be controverted, even though it may be criticized piecemeal.

Throughout the United States prohibition was established on July 1st, 1919, but some of the States went dry before then—for example, Kansas thirty-five years before, North Carolina in 1908—and the movement was spreading. Over here before the war the competition of America was being keenly felt, and the question was often asked how it was that in the States, although higher wages were paid, yet goods could be produced cheaper. Clearly their industrial efficiency was higher. If this greater efficiency depended in any way upon partial prohibition, it may become far greater under total prohibition. This country depends upon her industrial efficiency. All evidence points to this efficiency being materially affected by alcoholic habits. The time is not far distant, if it is not now with us, when, in the interests of efficiency, we may be compelled, if those habits are not rapidly brought within temperate limits, to follow the example of America.

SUMMARY.

1. Alcohol is a drug possessing energy which the body can use, but probably not for muscular work.

2. Alcohol interferes adversely with reflex acts and neuro-muscular co-ordination. The higher the concentration in which it is consumed the more pronounced is the effect.

3. Alcoholic habits vary with industries, and where most pronounced time-keeping is most irregular.

4. Industrial accidents are increased by the consumption of alcohol even though in moderate amounts.

5. There is no evidence, either experimental or practical, that alcohol is advantageous to industrial efficiency, and much that it is harmful.

6. Prohibition in America appears to be associated with greatly improved industrial efficiency, whether measured by accident frequency, lost time, or output.

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ALCOHOL RESTRICTION AND MORTALITY.

BY

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WHEN the total blockade came into effect in February, 1917, a very critical position developed in Denmark, as will be seen from the following figures:

Average Yearly Crop (Millions of Kilograms per Million Inhabitants).

	Germany, 1912–13.	Denmark, 1913–16.	Denmark, 1917.
Rye	175	105	76
Wheat	66	68	40
Bread grains	241	173	116
Barley	54	204	132
Potatoes	767	319	294

As we in Denmark before the war used to import nearly as big a quantity of grains as our own crop, and as our crop in 1917 on account of the drought was greatly reduced, one can easily see that the situation was very critical—indeed, a catastrophe was really pending. The situation seemed the more critical as we knew that the Germans were starving, in spite of the fact that Germany under ordinary circumstances raised 50 per cent. more of bread grains and over twice as many potatoes in proportion to its population.

It was a great satisfaction to me to be called upon to act as a member of the committee appointed to deal with the question together with Professor Holger Mollgaard and to share with him the responsibility for the physiological side of the question. Here we really would have a very rare opportunity for an exceptional experiment with three millions of people. Nothing could really be easier than to procure sufficient nourishment, if only the newer principles of nutrition were followed and the bill of fare made up principally of milk and vegetables. We recommended especially potatoes and barley porridge. Extensive experiments carried out in the laboratory of which I am the head have proved that young and strong men may live year in and year out exclusively on potatoes* and margarine or exclusively on barley porridge, sugar, and margarine, and continue in perfect health and vigour with a splendid capacity for work.

It is further proved through our experiments that a person may live for two years or longer in excellent health and good working capacity without fat if he only gets sufficient fruits and green vegetables, which contain the same vitamins as are found in butter. Further, we have proved that man can digest the bran of wheat and rye to the same extent as it is digested by the domestic animals. This seems to disagree with older experiments, but these were presumably not carried out in the right way—the mistakes can easily be demonstrated. Our experiments with bran have been repeated by Professor Johansson of Stockholm and Professor Wiegner of Zürich with quite similar results. Bran is, after all, one of our very best foods. Persons that I have employed in experiments have lived half a year on whole wheat bread (or rye bread) and margarine only. When the same persons tried to live upon white bread and margarine alone they became so weak after three weeks that they could hardly walk.

The said committee calculated that to produce pork and bacon by the help of barley and potatoes meant a loss of nourishment of 80 per cent., and such an extravagance would under the circumstances be perfectly unjustifiable. We also found it perfectly unjustifiable to use the same good foods for the production of alcoholic drinks. Space will not permit to go into details; I will only mention that the unanimous propositions of the committee were adopted by the Danish Government and Parliament. Professor Mollgaard had the main responsibility as far as the practical administration was concerned, and the speaker was given the task of writing a pamphlet of direction for housewives. This pamphlet was printed in an edition of 40,000 copies and sent out by the Government. The ration system was in its essentials carried through in Denmark without any particular opposition. People entertained no anxiety as to being undernourished.

Our chief measures were:

1. All bread cereals and most of the barley and potatoes were requisitioned by the Government to be used as food alone for the people.

2. As a result of this measure the raising of pigs was reduced to one-fifth. The small amount of pork which was available was eaten by the farmers. The city folk got hardly any pork.

3. The rye was ground out to 100 per cent., and thus rye bread contained all the bran. In addition to this, 12 to 15 per cent. bran of wheat was mixed into the baking of rye bread—that is to say, all the bran which was left over in making white bread was made use of in this way. Because of this the domestic animals had no bran in their feeds while the ration system was in force.

4. All production of alcoholic liquors for general consumption was prohibited. All supplies on hand were seized, and of the supply only 100,000 bottles (each containing 7·0 c.cm.) were given out every month, which meant 25 c.cm. of alcoholic drink for each person a month. In order to avoid any special fight for this dram, there was placed so high a tax on spirits that the price went up to an amount twenty times higher than was normally paid.

5. The production of brewing of beer was reduced to one-half the ordinary output, and the amount of alcohol contained therein was not allowed to exceed 3 per cent.

6. In addition to these regulations all export of fruit and vegetables was prohibited.

Through these measures we easily succeeded in making sufficient food available, and none needed to starve. In fact, we had a surplus of bread grains, so that we were able to render assistance to our needy neighbouring nations. But our bread-porridge-potato bill of fare did not appeal to the palate of our people as did the old meat diet, and as a result a reduction in weight of from 2½ to 5 kilograms was quite common.

The question which now presented itself was, What effect would this diet, which contained such small amounts of albumin, fats, and alcohol, have on the general state of health? We have made this matter a subject of a thorough-going statistical investigation, and we have made use of the mortality ratio as a standard.†

* An important point in this respect is that the water in which the pared potatoes are cooked shall be taken (as a soup) with the potatoes, especially on account of the vitamins.

† Hindhede, *Beretning til Indenrigsministeriet om Rationeringens Virkning paa Sundhedstilstanden.* [The influence of the rationing on the health. Report to the Minister of the Interior.] Short résumé in English. (København, 1920. Jakob Lund.) This work has been critically examined by an expert statistician, Professor Harald Westergaard, who in the preface writes: "By the request of Dr. Hindhede I have gone over the manuscript of his researches on the influence of rationing on the state of health of the Danish people, and I do not hesitate to say that in my opinion the research has been carried through on a perfectly scientific basis, and that the conclusions drawn by the author agree very well with the observations at hand. It seems to me desirable that the main result should appear in a language universally understood." The investigation reaches to the end of the year 1918. The figures are here made available to the end of 1921.

The Effect of Alcoholism upon Mortality.

This will clearly be seen from the following figures:

Yearly Consumption of Alcohol per Head in Litres (Denmark).

	1900–09.	1910–14.	1915–16.	1917.	1918.	1919.	1920.	1921.
Spirits (50 per cent.)	11.3	9.2	8.6	2.6	0.4	1.0	1.5	1.1
Pure alcohol in spirits, beer, and wine	7.8	6.6	6.2	3.2	1.5	2.3	2.8	2.5
*Cases per year in Copenhagen of—								
Delirium (reported) ...	760	565	390	124	11	11	17	20
Deaths from alcoholism	100	82	50	18	2	5	14	17

* Calculated per 500,000 inhabitants.

According to the old physiological views the theory was taught that a diet poor in albumin lowered the power of resistance against disease. While there was a drop in the death rate from alcoholism it was therefore difficult to know beforehand whether the total mortality would rise or drop. If the new theories were reliable then one might expect to find a falling off also in the total mortality. Unfortunately, however, the investigation was interrupted by the influenza epidemic which began to show itself in July of 1918, but did not get hold seriously till the last quarter of the year, but continued, with abating force, through 1919 and 1920. We have endeavoured to eliminate this interruption in two ways: (1) I have compared the death rate after the deduction of the figures for epidemic diseases; (2) I have made a special calculation for the year from October 1st, 1917, to October 1st, 1918. This year is the most typical of the years under the rationing system, as the most stringent measures were put in force on October 1st, 1917, and continued through 1918, until they gradually went out of effect in 1919. Alcohol restriction was already put in force in March, 1917. During the year of the rationing system only 100,000 bottles of spirits were given out each month, but in the fourth quarter of 1918 the allowance was raised to 300,000 bottles (the people had to have their Christmas spirits!), and this allowance has since been followed (see the figures below, also Diagram II).

Average Yearly Deaths per 100,000 in Copenhagen, Ages 25 to 65 Years.

	1900–09.	1910–14.	1915–16.	1917.	Oct., '17–Oct., '18.	1918.	1919.	1920.	1921.
Men.									
A. All diseases ...	1,455	1,369	1,386	1,236	985	1,426	1,201	1,242	953
B. Epidemic diseases	49	36	42	38	50	458	240	297	28
C. = A *minus* B ...	1,406	1,333	1,344	1,198	935	968	961	947	925
D. Tuberculosis and pneumonia	379	325	358	360	269	285	225	191	185
E. All other diseases (C *minus* D)	1,027	1,008	986	838	666	683	736	753	740
Ratio (1910–14 = 100)	102	100	98	83	66	68	73	75	74
Women.									
A. All diseases ...	858	886	899	899	760	1,113	971	973	773
B. Epidemic diseases	41	30	36	33	40	357	171	205	31
C. = A *minus* B ...	817	856	863	866	720	756	800	768	742
D. Tuberculosis and pneumonia	186	185	175	211	161	164	136	150	121
E. All other diseases (C *minus* D)	631	671	688	655	559	592	664	618	621
Ratio (1910–14 = 100)	94	100	102	97	83	8	99	92	92

Taking as our starting point the last five years before the war (1910–14), when the death rate was lower than ever before, we find, when we only take the male population into account and exclude epidemic diseases (B), from October, 1917, to October, 1918, a drop of 393 deaths, or 30 per cent. (C). A little increase is observed in 1919 and 1920, but in 1921 when the influenza epidemic is gone we find the death rate is still a little lower. The last drop, however, is due to the decrease in other diseases of infection, tuberculosis and pneumonia (D). Whether this drop has anything to do with the ration system cannot be stated with absolute certainty. The mortality has been on the decrease in the case of these diseases during the last generation. During 1890–99 the figures were 496, while, as will be seen, they had dropped 171 in 1910–14. The increase which was observed during the first years of the war can easily be explained because of the poor housing conditions and the scarcity of fuel. People had to crowd together in small rooms. While the same difficulties continued in 1918 we see a considerable drop in the death rate. From this we are justified in arriving at the conclusion that the diet, consisting mostly of vegetables, does not seem to have lowered the power of resistance against tuberculosis.

Because of many other factors which have to be reckoned with in this conjunction, we believe it to be correct, in order to make the effects of the rationing system clear, to subtract the last figures—that is, not to take the infectious diseases into account. By doing this we arrive at the figures as stated under E, which in the case of men from 1900–16 seem to be about constant until the rationing system was put into effect, when they drop 34 per cent., followed by a rise in 1921 of 8 per cent. In the case of women we can trace a rise during the first sixteen years of the century, but during the time of the rationing system we observe a drop of 17 per cent., followed by a new rise till 1921.

It will be noticed that the drop in the case of men is extraordinary. It cannot be an accidental year variation. When we take the figures for each year from 1900–16 we find that the figures in regard to "all other diseases," E, vary but 7 to 8 per cent. over or below the average. 34 per cent. is altogether too far outside the border of variation. There must be a reason for this, but what? There may be several reasons, but everything indicates that the main cause can be found in alcohol restriction.

1. The drop and the rise harmonize in the main with the decrease and increase in the consumption of alcohol. The objection can be made that in proportion to the drop in the use of alcohol the death rate from 1900–16, as far as men are concerned, ought to have been larger. In the case of women we find that there has been a noticeable rise. This fact, however, is not conflicting with the drop in the consumption of alcohol. The use of alcohol among women has, without doubt, been increasing, while it has been on the decrease among men. It is evident that especially among the so-called better or upper class of society it has become fashionable for the women to take spirits. It is very noticeable, too, that tobacco smoking is rapidly increasing among the fair sex.

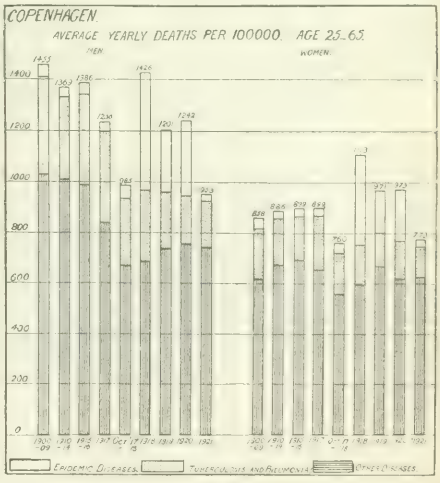


DIAGRAM I.

The increase and decrease in the use of tobacco and coffee will be seen from the official figures which cover the import of these articles. (See diagram II.) It should be observed that import and consumption do not always cover each other,

because of the fact that great supplies of tobacco were on hand and large quantities of tobacco were raised in Denmark during the war. Tobacco could for this reason always be had, while we had to be content with substitutes for coffee.

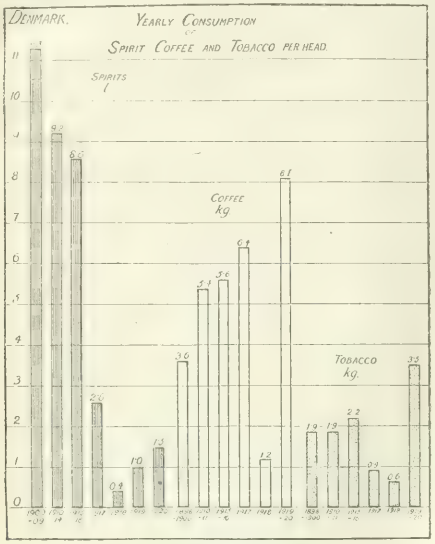


DIAGRAM II.

Denmark ranks normally next to Holland as the heaviest users of coffee in Europe, while the Englishman drinks an incredible amount of tea. The consumption per head in kilograms in 1913 was:

	Holland.	Denmark.	Belgium.	France.	Germany.	England.
Coffee	8.60	5.80	5.14	2.90	2.44	0.27
Tea	0.88	0.10	0.03	0.03	0.06	2.99
	9.48	5.90	5.17	2.93	2.50	3.26
Tobacco ...	3.56	2.20	2.61	1.11	1.50	0.94

2. The difference between the death rate among men and women was reduced to a minimum. Before the war the death rate of men in Copenhagen, in the ages from 25 to 65 years, was 50 to 60 per cent. higher than that among women. In a statistical work which I already had published before the war and made for the Sobriety Commission, I had, in conformity with others who have been doing research work on the alcohol question, arrived at the result that the difference in the main was probably due to the consumption of alcohol by the men, and not to the difference of occupation. For this reason I was naturally very eager to get hold of the results of the rationing system and to ascertain whether they would prove my point. They did so, as will be seen from the following:

	1910-14.			October, 1917-18.		
	A.	C.	E.	A.	C.	E.
Men	1369	1333	1008	985	935	666
Women ...	886	856	671	760	720	559
Difference ...	483	477	337	225	215	107

The difference, as will be observed, amounts either to one-half or one-third. In fact, if the death rate among the women had not fallen off, the difference would practically have disappeared.

	A.	C.	E.
Men, October, 1917-18	985	935	666
Women, 1910-14	886	856	671
Difference	99	79	+ 5

It is probable (compare the experiences of the English life insurance companies) that if the rationing system had been continued in the same manner the men would have overtaken the women—in fact, the possibilities are that the figures would have gone below the figures shown for women. This would mean that the death rate among men would have been reduced to one-half its former size. What this would mean for families, as well as for society in general, needs no further explanation.

But the most surprising is, in my opinion, not the reduction in the rate but the rapidity of the reduction. The most natural explanation of this seems to be that the effects of alcohol are not limited to drunkards only. It must be evident that the main effect lies in a lowered power of resistance also through a moderate consumption of alcohol, and therefore those who drink alcohol in moderate quantities die like flies when disease sets in. But the question might be raised, Is alcohol restriction the only cause of this remarkable reduction? I hold that the change of diet also plays an important part, and my supposition is based especially on observations made with reference to the death rate during the latter years of life.

Death Rate in Copenhagen at Ages 65 to 100.—Average Yearly Deaths per 100,000.

	1900-09.	1910-14.	1915-16.	1917.	Oct., '17-Oct., '18	1918.	1919.	1920.	1921.
Men.									
A. All diseases ...	910	872	904	926	674	682	794	875	820
B *plus* D. Infectious diseases	96	70	85	68	42	56	57	58	48
E. All other diseases	814	802	819	853	632	626	737	817	772
Ratio (1910-14=100)	101	100	102	107	79	78	92	102	96
Women.									
A. All diseases ...	693	706	786	778	619	622	654	745	710
B *plus* D. Infectious diseases	67	54	64	52	31	36	47	44	28
E. All other diseases	632	652	722	726	588	586	607	701	692
Ratio (1910-14=100)	97	100	111	111	90	90	93	108	106

Under the heading of infectious diseases are gathered all deaths from epidemic diseases, tuberculosis, and pneumonia. These diseases play a comparatively small part in old age. We find practically no deaths here from influenza. When we consider, as stated before, Group E, we find in 1918 a reduction of 21 to 22 per cent. in the case of men, and 10 per cent. in the case of women. The death rates of men and women come closer together. This may, of course, be due to alcohol restriction. But there is something else which does not harmonize—namely, the rise in 1920-21, and especially the rise in the case of old women. We cannot suppose that they consume very large quantities of spirits. In order that this problem might be solved, I have investigated the death causes which particularly might be the cause for this increase during the last two years. The answer is: *Heart diseases, bronchitis, bronchopneumonia, and senility*—that is to say, the real old-age death causes.

We notice how these old-age ailments invariably and regularly decrease both in the case of men and women during the time of rationing, while they return to normal as soon as the rationing system is abolished. Practically speaking, we find no difference between deaths of men and women in these diseases. From this we gather that there must be some cause for this invariable drop and rise, but it cannot be that alcohol is the guilty one. But where is the cause to be found then? I make my guess, On the Spartan, spare diet, together with the scarcity of coffee. I have no doubt but that it is advisable and wise, especially for old folks, who as a rule live

a comparatively quiet life, to eat but little, and it is not at all improbable that a lacto-vegetarian diet here is greatly to be preferred.

Three Main Causes of Death in Old Age in Copenhagen.
(Deaths per 10,000.)

	1909–02.	1910–14.	1915–16.	1917.	Oct. '17–Oct. '18.	1918.	1919.	1920.	1921.
Men.									
Diseases of the heart	108	123	136	123	89	85	106	120	115
Bronchitis, etc.	124	108	138	149	90	87	107	131	91
Senility	106	103	116	109	60	85	118	137	131
Total ...	338	334	390	381	239	255	331	388	337
Women.									
Diseases of the heart	99	121	137	134	99	102	113	112	127
Bronchitis, etc.	126	101	122	132	71	85	101	110	87
Senility	112	121	122	120	83	92	108	158	165
Total	327	343	381	386	259	279	322	380	379
Difference (men *minus* women)	+11	−9	+9	−5	−20	−24	+9	+8	−42
Ratio (1910–14 = 100)									
Men	101	100	117	114	72	76	99	116	101
Women	95	100	111	113	75	81	94	111	111

We can dispute the explanations, but the fact remains nevertheless that in Copenhagen, a city of about half a million inhabitants, 1,100 people over 25 years of age were saved during the time of the rationing system when we compare the figures with 1910–14. For the entire country, with a population of three millions, the saving of life for all ages amounted to 7,500, or if we reckon in proportion to the year 1913, the year the death rate was at its lowest, the figure stands at 6,300. In other words, the death rate for the entire country dropped from 12·5 to 10·4 per thousand, which is the lowest mortality figure that has been registered in any European country at any time. This is, therefore, probably the greatest hygienic advance ever made in so short a time. All hygienic measures are as a rule expensive, but the rationing system not only did not cost anything, but through our inexpensive diet and economy in regard to the use of alcohol the country saved hundreds of millions of kronen.

We have spoken only of the death rate, and have not touched upon the moral advantages which alcohol restriction has carried in its train. But anyone who will look at the figures presented can judge this for himself. It must be remembered that Denmark, as far as the mortality rate is concerned, already was one of the most favourably situated countries in Europe, and this notwithstanding the fact that 40 per cent. of her population was located in the cities. What it would mean to the larger nations, if through a similar mode of living they reduced their death rate to 10.4 per thousand, is self-evident.

Country.	Consumption. Alcohol (100%) (Litres).	Spirits (Litres).	Inhabitants (Millions).	In Cities per cent.	Mortality rate per 1000 (1913).	No. saved if Mortality is 10.4.
France	22.4	7.9	40	41.3	17.7	292,000
Great Britain and Ireland	9.3	2.5	47	63.2	14.3	185,000
Germany	6.7	5.8	63	47.2	15.0	313,000
Denmark	6.0	9.2	3	40.2	12.5	6,300
Sweden	4.2	6.7	5.7	27.2	13.7	18,800
Norway	2.7	3.4	2·5	28.5	13.2	6,500

Why should it not be possible in beautiful France, where the ratio of city and country dwellers is similar to that of Denmark, to bring the mortality rate down to a level with that of Denmark, such as was demonstrated during the rationing system there? If it were carried through, 300,000 lives would be saved annually—that is to say, the growth of the population would increase from 1 to 8 per thousand, and the critical question of repopulation in France would be solved.

The weak point in the Danish experiment lies in the fact that we not only restricted our alcohol consumption but we changed our entire mode of living. I would recommend to the British people that they should stop all production and consumption of alcohol for the next two years and continue to live as heretofore. If no essential difference is found with reference to the mortality rate at the end of this period, then I would say, keep on quietly and unconcernedly with your drinking. But should it be proven, against expectations, that 50,000 to 100,000 lives were spared, then I suppose that no intelligent and sensible man would wish to re-establish full liberty in a poison so dangerous. This is, at any rate, the situation in Denmark. There are hardly any, except the distillers and brewers, who desire to return to the o'd-conditions, and the fight will be between prohibition and a strong rationing system.

DISCUSSION.

Sir THOMAS OLIVER (Newcastle-upon-Tyne) said that there was little doubt that within the last fifty years all classes of society in this country had been marching towards sobriety. He compared life in the army four decades ago with the conditions prevailing to-day. The men were better paid, the discipline was more humane, the recruits were drawn, if anything, from a better class of society, or at any rate were better educated; also they were worked harder and had not so much time on their hands as their predecessors. He questioned whether the modern recruit could go through the hard training required of him if he consumed beer to the extent which was customary in former days. The same was true of the navy. Thirty years ago it was the common custom for many of the seamen who had been given leave of absence to return to their ship in a condition of physical unfitness from drunkenness; this was no longer so. A similar improvement was observable in the merchant service, although there were still many defaulters. In the field of industry absenteeism on Mondays was still one of the discomposing circumstances which employers had to face, and no doubt free indulgence in alcohol over the week-end was responsible. The amount of drink consumed was influenced to some extent by the state of the labour market. When casual labour was scarce the men who found employment received larger wages and were apt to spend more on drink. While high wages tended to social and moral betterment there were exceptions, in which high wages, especially for youths, laid the foundation of drinking habits. No wages at all, however, might be equally harmful, and week after week men who were receiving the dole were brought before the bench for drunkenness. A great responsibility rested upon foremen and heads of departments in the factories, since by their example the habits of the younger men were influenced. There were certain occupations in which the workpeople drank more than in others—occupations which had to be carried on in high temperatures or in humid atmospheres, causing perspiration, or in dusty trades, causing dryness of the throat. Each industry should tackle the question for itself. Many works canteens, offering cheap, wholesome food without stimulants, had gone far to solve the problem. More facts were needed, slowly accumulated and carefully tested, as to the extent of unfitness for work which alcohol produced in those who consumed it freely. The speaker quoted some figures which showed that in a coal-mine in South Wales the teetotal miners sent to bank 100 tons of coal for every 72 sent up by miners who indulged too freely in alcohol; also that in an electrical engineering works in the South of England, where all the employees were abstainers, the absenteeism only averaged 0·5 per cent., and the accident claims 8 per cent. of the premiums paid, whereas in workshops generally accident claims formed 66 per cent. of the premiums paid. Sir George B. Hunter, of the shipbuilding firm of Swan, Hunter, and Richardson, had given him the comparative number of hours worked by riveters who were abstainers and riveters who were known to be unsteady. The investigation extended over three weeks and included overtime. The average number of hours worked per week by six total abstainers was 67, 62, 61, 70, 70, and 55: and by four men who were known to be unsteady, 45, 51, 43, and 29. The number of hours worked overtime by the first six was 14, 11, 6, 16, 17, and 6, and by latter four, 16, 10, 3, and 3. Aschaffenburg showed that alcohol lessened the amount of work done; his experiments with the ergograph showed that before the alcohol which had been consumed had had time to lessen the amount of work done there was usually a primary but short-lived increase, as indicated by a larger number of movements

in a given time, but not an increased force or range of movements: there was increased speed without effectiveness. Once it was absorbed into the system alcohol acted upon the brain and spinal cord much in the same way as the products of fatigue, by dulling mental activity. With alcohol, as with other drugs, there was individual idiosyncrasy; in some persons it induced degenerative changes more rapidly than in others, but from these degenerative changes total abstainers were not altogether exempted. Long before these changes were established, however, repeated imbibition of alcohol had been slowly deranging the functional activity of the higher centres of the brain, whereby co-ordination of the muscular movements had become impaired, and the response of these centres to ingoing stimuli less prompt. This condition of the nervous system underlay many of the accidents which occurred in factories and shipyards, and for these, therefore, indulgence in alcohol must be regarded as more or less responsible.

No man could do his best, or even any reliable work, after the free use of alcohol. If as a result of the gigantic experiment which at present was being carried out in the United States of America that country was likely to secure a world lead in commerce and industry, then, for the sake of our own people and the future of the empire, some changes would have to take place in the drinking habits of the nation.

The Rev. C. F. Tonks (Organizing Secretary of the Church of England Temperance Society) said that the licensing statistics, just issued, for 1921, confirmed Dr. Sullivan's statements with regard to the close association of attempted suicide with the convictions for drunkenness, and also the relation of alcohol to industrial inefficiency. In 1920 the total number of convictions for drunkenness was 96,000, and in 1919 it was 57,000. In 1921 the number was 77,000, a decline of 19,000 upon the previous year. The figures for deaths from cirrhosis of the liver did not fall in 1921 at the same rate as the figures for convictions. Roughly, when trade was good and employment brisk, convictions were more numerous than in bad times. In 1921 the figures for employment showed a marked downward tendency, and the days lost by strikes a great rise. The figures for convictions fell considerably below the figures for the previous year in the months during which the great strikes occurred, and also in the regions particularly affected by the strikes.

Professor F. E. Wynne (Medical Officer of Health, Sheffield) said that what the Section was really discussing was the effect on efficiency of the abuse of alcohol. Many of them would agree that a certain amount of alcohol could be taken without any interference with efficiency, but beyond that amount alcohol immediately began to impair and finally to destroy the efficiency. Well-intentioned people were often so obsessed with the disastrous effects of excessive drinking that they ignored the social and other benefits which could be ascribed to the proper use of alcohol. To them alcohol was simply something to be abolished. The prohibitionist ignored the fact that by merely removing the temptation from the weak he was doing nothing to reinforce the infirm will. In the campaign against drunkenness the speaker had found one of the chief obstacles to be the teetotal propaganda which opposed any rational measures for the regulation of drinking habits. He still believed that the true solution would be found in the principle he put forward at the Annual Meeting of the Association in 1908—that the method of licensing should be logically applied to alcohol in the same way as to other commodities; it was not merely the vendor of alcohol, but the consumer who should be licensed.

Sir George Toulmin (Preston) referred to the early days of temperance propaganda in Lancashire. To-day, unlike the position as it was years ago, alcohol was on the defensive. No one recommended it for hard labour or keen sport. It had been argued that if alcohol were as injurious as it was supposed to be, nature would have eliminated alcohol drinkers. But he presumed that alcohol was only a poison if it was "pushed" (in the medical sense), and alcohol was not always "pushed"; moreover, the ranks of alcohol drinkers were continually reinforced by those who had not hitherto taken alcohol. He believed that alcohol drinkers were being continually eliminated, but more facts needed to be ascertained on this side of the question. Fifty years ago the pot-boy used to go round the composing room in the printing office; now it was more likely to be the tea-girl, and that meant a real benefit, a higher level of efficiency, and a lengthening of productive life. The call for alcoholic refreshment had its origin in the call for intermission of strain, and if the hours of labour were so rearranged that that strain did not arise the habit would cease to a large extent. To the social reformer it was interesting to find that no one to-day advocated alcohol as a means of increasing productivity; the discussion centred around the measurement of its bad effect.

Mr. Ebenezer Howard, J.P. (founder, Garden City Association), described the progress of the garden city movement, and particularly the improved health and industrial efficiency at Letchworth, where he had never seen a woman the worse for liquor, and very rarely a man. Housing under garden city conditions would tend greatly to diminish intemperance. The speaker, like Professor Wynne, who had just spoken, was prevented from elaborating his argument by the President, who said that the purpose of the discussion was not to consider what steps should be taken to improve the sobriety of the nation, but to elicit facts, based on experiment or personal knowledge, as to the effect of alcohol on industrial efficiency.

Dr. A. K. Chalmers (Medical Officer of Health, Glasgow) suggested that the human factor was rather being obscured in the discussion. At the time Lord D'Abernon made his inquiry, three or four years ago, in Glasgow broken time was a serious matter in the shipbuilding yards. On investigating as to the places of residence of the men who were irregular in attendance, it was found that the men who lived near the yards were as a rule steady, while the men whose homes were at a distance were unsteady. The men who lived near at hand were able to go home for meals; the men who came from a distance had to carry some sort of a meal in their pockets. Every doctor knew that when he gave alcohol to a patient the response was not in relation to the quantity he gave, but to the man's power to metabolize the whisky. One man was able to metabolize alcohol in his body better than another, and this had an important bearing on the problem. Men must not be regarded as entirely alike in this matter of alcohol effect.

ALCOHOL AS A BEVERAGE IN ITS RELATION TO INFANTILE MORTALITY.

BY

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Infantile mortality is a sensitive index of the well-being of a community. The higher it is the farther removed from healthful conditions is the life of the population in which it occurs; and in its fall everyone recognizes the record of the application of hygienic measures with success. It is when one comes to try to apportion the degree of blame among the various causes which are at work in raising or in maintaining the infantile mortality rate that one finds difficulty and invites difference of opinion. This is inevitable, because parental alcoholism, for instance, is only one among a number of medico-sociological conditions which influence adversely the lives of infants under a year. Bad housing is another; poverty is another; sexual immorality is a third; and so on. All these unite in raising the infantile mortality in any community; there is a reciprocal continuation and aggravation of one by another. To attempt to fix the part played by parental alcoholism as a cause of infantile mortality is really to try to evaluate an ill-defined segment of a vicious circle. At the same time it may not be worthless to survey the problem; even its mere statement may serve to clarify thinking on the matter.

It will be well, in the first place, to define the sphere of the inquiry. Infantile mortality means the deaths which happen in the first year of life, and it is conveniently expressed by the infantile death rate or the number of deaths in the first year per 1,000 live births. It is impossible, however, to exclude from one's thoughts the deaths which occur at or soon before birth, denominated rather unsuitably the stillbirths. It is true that they are foetal whilst the others are infantile deaths; it is true also that the mechanism by which they are brought about is different; but both these groups of disasters may be caused (directly or indirectly) by parental alcoholism, and one can hardly be conscientiously without the other. Of course

one might go farther and include the early foetal or embryonic deaths which are the inevitable result of abortions; indeed, there is a sense in which sterility, in some at least of its forms, is really the expression of germinal deaths; but the emphasis in the present inquiry is to be laid upon infantile deaths and stillbirths. At the same time it ought not to be forgotten that parental alcoholism is a factor in the production of the earlier ante-natal deaths as well as in the disasters which take place at birth and in the first year of post-natal life, although the results of its action in the former are meanwhile statistically inaccessible.

In the second place, one is thinking in this inquiry not of the consumption of alcohol at long intervals and on rare occasions, but rather of its habitual use to a greater or less degree of excess. Alcohol is so diffusible a stimulant that its irregular and infrequent introduction into the body, whether of the mother or the infant (unborn or born) is followed by little or no change in the tissues (the direct effect); its occasional consumption has not the same dire effect upon the family finances as habitual "soaking" has, and it therefore does not lead to serious depreciation in the home environment (the indirect effect). The evil effects of alcohol upon infantile mortality and upon stillbirths are to be looked for in the case of the habitual woman drinker and in that of the man whose alcoholic habits lead to poverty.

Causal Factors in Infantile Mortality.

Into the causation of infantile death three groups of factors may enter. In the first place, infants at birth and in the first year of life come under the influence of all the lethal conditions which prevail in post-natal existence. The new-born child finds himself in an environment in which the impact of pathological germs is immediate; they may gain entrance to his body through the umbilicus or by the gastro-intestinal or pulmonary mucous membranes; and by the diseases they produce they may cause his death. Their action will be favoured by many other things, including, of course, improper feeding, exposure to cold, errors in the hygiene of the home, and the like. In the second place, infantile deaths may be due to injuries or infections received during the act of birth. Birth is truly a *janua mortis* to many an infant. In some cases the death is immediate and the child is dead-born; in others it follows later from cerebral haemorrhage and birth infections whose full lethal effect is not reached at once. In the third place, infants may come into the world dead, or die after birth from causes which have been active in ante-natal life. It is true that the foetus *in utero* is extraordinarily well protected against morbid agents, whether these reside outside or inside the body of the mother who carries him; but he is not invulnerable. If the placenta, the dominant organ of ante-natal existence, remains healthy, foetal life and health are not in danger; but if it becomes diseased or if morbid germs begin to pass through it, risks are at once introduced and ante-natal death may follow as the immediate result, or such a weakening of tissues may occur as to prepare the way for infantile death as the later result. It has now to be seen whether alcoholism in the parents acts in any or in all of the ways which have been sketched above—whether, in a word or two, it allies itself with the lethal factors which impinge upon the child in his post-natal, his intra-natal, or his ante-natal life. It will be convenient to begin with the last-named time—ante-natal life.

Effect of Alcohol in Ante-natal Life.

Ante-natal life commences far back in the ovum and sperm of the parents, and the agents which adversely affect it have been termed racial poisons. Is there reason to believe that alcohol acts as a racial poison? Experimental work on animals gives a clear reply that it does; from the nature of the case it is more difficult to draw conclusions as regards the human subject.

Professor Taav Laitinen[1] of Helsingfors has experimented upon the seeds of white peas and barley in order to determine whether watering them with alcohol solution had any effect upon germination. He found that even comparatively weak solutions of alcohol checked germination, especially in the case of peas, although they were surrounded with a rather strong protecting skin; and he regarded the term "germ poison" as justly applied to alcohol. An effect produced upon vegetable germination is, of course, a far remove from what alcohol may produce upon the human embryo: but it is of some importance that Laitinen, who before the war had experimented upon guinea-pigs, should have carried his researches back to the influence of this agent upon life as it exists in plants. The observation completes, as it were, the range of the investigation.

In 1917 the present writer[2] summarized the experimental work which had been done up to that date by Féré (on the hen's egg), by Stockard and Laitinen (on guinea-pigs), and by Pearl (on fowls). Féré had shown that alcohol injected into the hen's egg in incubation produced monstrosities and non-developments and that these were more numerous as the toxicity of the alcohol was increased. Stockard administered alcohol to guinea-pigs (males and females) for prolonged periods by inhalation; the offspring of the first and succeeding generations were weakly, malformed, and affected with a neurosis resembling paralysis agitans; and the conclusion seemed to be clear that fuming with alcohol permanently injured the germ plasm, that of the male cells being more affected than that of the female ones.

In a more recent contribution (to the International Congress against alcohol at Washington in 1920) Stockard[3] gave further results obtained from the study of the descendants of the alcoholized guinea-pigs, according to which the evil effects (abortions, stillbirths, malformations, and neuroses) were progressively less marked in the second, third, and fourth generations; in fact the fourth generation might be better than the original pair, and if crossed with the third generation might give "a very superior pig." The explanation was the destruction of those unable to withstand the effects of the alcohol. It is necessary to remember that these conclusions were drawn from male guinea-pigs.

The effect of Stockard's more recent work is useful, for it is most undesirable to draw exaggerated inferences either in one direction or the other in so vital a matter as the effect of alcohol on the progeny. The same lesson is to be learned from Raymond Pearl's researches upon fowls.[4] This observer gave ether, ethyl and methyl alcohol to the birds by inhalation for one hour daily. The results were a reduction in the proportion of fertile eggs with an increased power of hatching among the fertile ones, except in the cases where both parents were alcoholized: "treated" males with "treated" females gave 59.2 per cent. infertile eggs, whilst "untreated" males with "untreated" females gave only 23.2 per cent.; the differences in hatching power were slight. Courtenay C. Weeks,[4] who has carefully analysed Pearl's experiments, believes that they show that alcohol has a selective power upon certain germ cells and that it affects the germ plasm, although in the dosage used the power was not sufficient to produce hereditary modifications. In other words, the alcohol acted to some extent as a racial poison, the effect being always heightened when both parent birds were alcoholized. Incidentally Stockard's and Pearl's researches yield some slight support for Archdall Reid's theory of the progressive destruction of individuals little able to resist the effects of alcohol and the consequent establishment of an alcohol-resisting race.

When one passes from vegetables, birds, and guinea-pigs to the human subject in the germinal stage of existence it becomes, of course, difficult to obtain direct evidence of experimental status and impeccability. Bertholet,[5] more especially in his later observations, has shown marked morbid testicular changes in drinkers as compared with non-drinkers, and something of the same sort in the ovaries. Kyrle and Schoffer[6] have supported this conclusion by experiments upon dogs. It is true that tuberculosis has the same effect, and this fact introduces an element of error into some of Bertholet's results; but the relation between alcoholism and tuberculosis is a complex one, and neither Wassak nor Neild thinks that the tuberculosis factor weakens the main conclusion—namely, that chronic alcoholism has a causal connexion with testicular degeneration.

It is difficult to demonstrate evil effects on the embryo from the use of alcohol by the mother, but so definite are the teratogenic effects of this substance in the case of eggs that it is probable that some teratological productions in the human subject have been due to this cause. In several cases the writer noted the coexistence of either maternal or

grandparental alcoholism in connexion with the birth of anencephalic foetuses. The bearing of such observations on the general question which is now under consideration is found in the fact that teratological developments lead directly to stillbirth, or, by interfering with nutrition, cause infantile death.

During the later months of foetal life it has been shown by Nicloux[7] that alcohol taken by the mother passes through to the infant, and others have confirmed this view. As a rule no recognizable evil effect follows unless the woman by previous drinking has damaged the placental tissue, and, of course, has possibly depreciated the ova in her ovaries. Whatever be the *modus operandi* the tendency to stillbirths, abortions, and premature labours is increased in the confirmed female inebriate who continues to drink in her pregnancies; this was clearly shown by Sullivan[8] a good many years ago. Bezzola[9] and Schweighofer[10] have demonstrated that the conceptions which occurred during times of carnival and vintage were apt to result in the birth of idiots or in actual dead-births. Wallace Wallin has pointed out that women inebriates with families showed an increasing number of stillbirths as they progressed from the first to later pregnancies; the number of stillbirths among the firstborn was 6.2 per cent. as against 17.2 per cent. for the later gestations.

Without multiplying references it is possible to reach the conclusion that in each of the three periods of ante-natal life—the germinal, the embryonic, and the foetal—the indulgence to excess in alcohol in either or in both parents is a danger to the new being. Sterility shuts it out from life altogether; abortion brings about a cessation of its vitality in early ante-natal existence; stillbirth is the signal that it has succumbed on the very threshold of its post-natal life, and when it does enter the door it passes in weakened and predisposed to infantile morbidity and mortality. As Dr. Boulenger[11] has put it: "l'alcool est un danger pour l'enfant depuis le stade de cellules germinatives jusqu'à sa naissance." Alcoholism, then, not only lessens the number of children coming into the world, but it damages those who survive birth so that they are more likely to succumb to other things in the first year of life. In some of the recent experimental work there is the hint that to some degree alcohol may have a selective effect upon ova and embryos and foetuses. It may be claimed that maternal alcoholism kills off the weaker ova, the so-called weeds; but if it does so, then does it not also weaken the strong ova, and so reduce them to the grade of the weaker ones, the weeds? It is dangerous to argue that alcohol by killing off the weak ova or embryos or foetuses is benefiting the race; if every killing off of the weak is accompanied by a weakening of the strong the race will not gain but lose. Such an argument is really sounding the note of retreat in the midst of the advance of hygiene; the "better dead" cry is an acknowledgement of defeat—it is the proclamation of pessimism.

Effect of Alcohol in Intra-natal Life.

In looking next at the infant or foetus in the intra-natal period—that is to say, in the act of being born—one must recognize that any effect of alcoholism then must be indirect. Birth is a more or less traumatic act. The full-time strong infant can pass through the birth canals without injury; but the infant who has had his tissues or those of his placenta weakened by parental alcoholism, especially if he be also born prematurely, will be far more likely to suffer from or succumb to the pressures and stresses of labour. In this way the number of stillbirths and of early post-natal deaths will be increased. If syphilis be superadded, as is not unfrequently the case, the integrity of the foetal organs, and especially of the vessels, will be seriously compromised. Such a foetus also may be, and no doubt is, more liable to infections during his passage from the uterus. It may be merely a coincidence that in New York in 1921 (the first year of prohibition) the stillbirths decreased by 19.7 per cent. as compared with the quinquennium 1913-17; but it is at least suggestive of a new hygienic factor coming into play. One must not, meanwhile, lay too much stress on it, for the coming of prohibition has synchronized in America with the culmination of a great attempt to reduce infantile mortality by all means.

Effect of Alcohol on Infantile Mortality.

When one comes to consider finally the effect of alcohol in the causation of death in the first year of life it is obvious that new factors are now at work. There will still be a continuance of the direct influence of parental alcoholism upon the tissues of the young infant, especially if the mother nurses her baby and continues to drink; but the indirect effects will now come to the front in the production of infantile mortality. The infant after birth is in a new environment: he is no longer protected by the placental filter from microbes and from some at least of the toxic or toxinic agencies which may be in his mother's blood, but is as open to their attack as anyone; he is subject now to the impact of physical agencies, such as heat and cold and injury; and errors in diet and defects in nursing all work their way with him—and how disastrous a way it may be everyone knows very well. In other words, the child is now at the mercy of the secret allies of alcoholism as well as being still the victim of that open enemy, the drinking habits of its parents, which has already weakened its tissues. Early post-natal life is made more rigorous for the infant by the action of these allies of alcohol. This becomes abundantly clear when one considers what they are.

In the first place, parental alcoholism interferes with the proper healthy housing of the young. When one or both parents spend money upon drink there is naturally less available for house rent, and so, sooner or later, the family passes into the one- or the two-roomed house. It is not under the circumstances there existing that an infant in arms runs the best chance of passing unscathed through the early months of life. Dr. Maxwell Williamson, the medical officer of health for Edinburgh, has said: "As may be expected, the influence of housing is reflected most rapidly upon the youngest and weakest members of the population." The four wards in Edinburgh which have the largest number of one- or two-roomed houses have the highest infantile mortality; and the ward, amongst these four, which has the fewest one-roomed houses has the lowest rate of the four. Further, the three worst wards have the public-house in prominence, possessing a very large proportionate number of licences to the population. Here, then, is seen alcohol in alliance with bad housing and overcrowding.

In the second place, drinking habits in the parents destroy health conditions in the home, whether it be a one-roomed, a two-roomed, or a many-roomed house. The National Society for the Prevention of Cruelty to Children has of recent years provided word pictures of the life in such houses which are hardly to be believed, so terrible are they. Sir John Kirk[12] has quoted one of these descriptions, and it is reproduced here in an abbreviated form:

> "The windows are broken and stuffed with rags; the walls are filthy; the beds, where there are any at all, are filthy and rotten; the odour of the rooms makes a visitor sick and faint. On the floor lies somebody drunk. On the table lies a beer-can; around it half-naked children stand perplexed, pale, hungry, and ill. . . . Their skin is alive with vermin. Their heads are sore with festerings. There is no food in the cupboard. The monotony of their existence is weekly broken by frenzies at midnight. . . . Baby is flung at the wall. Mother is felled with a chair. Sleeping youngsters are dragged from their bed, and, amid cursings and screams, the Sunday morning begins."

The young infant in such a "home" has a poor chance of surviving; every infantile malady has a better chance of proving fatal there; diarrhœa, bronchitis, the exanthemata, and whooping-cough all become more dangerous in such an environment.

In the third place, all accidents to child life are increased when drinking habits are found in the parents. There is, for instance, the overlaying of young infants, with its sinister frequency of occurrence on Saturday nights; Dr. Mary Scharlieb[13] attributes this week-end frequency to the receipt on Saturday of wages and to the remission of work on the Sunday conditions which favour drinking in the parents. But overlaying is only one of the many accidents which are apt to happen to infants in the lessened safety of the drunkard's home; there is the risk of fire, and other casualties. An intoxicated mother is as safe a guardian for a young infant as an insane one.

In the fourth place, the venereal diseases often reinforce the destructive effects of alcoholism in child life. The dire

influence of syphilis on ante-natal existence is well known and shows itself strikingly in abortions and stillbirths; but it also extends its unhappy power to the first year of life, and by producing prematurely born infants who are congenitally weak it increases infantile mortality. Gonorrhoea whilst less death-dealing is apt to lead to congenital blindness. It is unnecessary to state that the venereal diseases are more commonly met with in alcoholics than in the general body of the population.

In the fifth place, the young infant is in danger from the evil effects of the disturbance of feeding which accompanies alcoholism. The daughters of alcoholics are often unable to suckle their babies, and so in the early weeks of life artificial feeding has to be resorted to. If the mother herself is given to intemperate habits the details of bottle-cleaning, etc., are carelessly performed or omitted altogether, with ill consequences to the infant. Even when the intemperate mother is able to nurse she is only too likely to do so with irregularity and carelessness. In one respect there has been in recent years a marked change in belief and habit: it is no longer regarded as necessary that the nursing mother should consume alcoholic beverages such as stout in order that there may be a plentiful supply of milk in her breasts, and the custom of taking such drinks in the puerperium and lactation time is in abeyance. It is now accepted that the best milk producer is milk itself or milky foods.

In the sixth place, illegitimacy is not infrequently found allied with intemperance, and it is now a commonplace of statistics that the mortality (after the first month) amongst illegitimate babies is far higher than that amongst those born in wedlock; this is true both of infantile mortality and also of the stillbirth rate.

Conclusion.

From all that has been brought forward the place of alcoholism in the vicious circle of causation of stillbirths and infantile deaths has been only too surely established. An alcoholic ancestry is no blessing, but quite the reverse, to the child *in utero* or after birth. Even when the ovum and the sperm escape infertility the embryo is apt to suffer from malformations, and the foetus is endangered when the placenta has been damaged; if the infant is spared the effect of the trauma of birth he comes into an environment in which the influences which I have called the allies of alcohol are at work, and bad housing, overcrowding, bad hygiene in the home, the risk of accidents, the dangers associated with illegitimacy, the disturbance of breast-feeding, and the impact of the venereal diseases, all combine with inherited weakness of tissue, and possibly also with prematurity of birth, to increase infantile mortality. It is no unimportant segment of the vicious circle which is due to alcoholism. As has already been said, the evaluation of this alcoholic part of the circle is impossible; but it may be safely believed that it is not inconsiderable, and that between it and the other segments of the round there is reciprocal continuation and aggravation.

Prohibition and Infantile Mortality.

The whole world is at the present time occupied in the watching of prohibition, the great medico-sociological experiment which is being carried out in the United States of America. From the point of view of alcohol in relation to infantile mortality it is, of course, an attempt to cut the vicious circle of causation. Some of the prohibitionist press already claim that great benefit has accrued. One must be exceedingly careful about drawing deductions. It has to be remembered that although the eighteenth amendment to the Constitution was ratified on January 29th, 1919, the law did not come into effect till a year later; that before the amendment there were individual States where the use of alcoholic liquors was prohibited; and that at the present time there are only about 3,500 inspectors acting for its enforcement. Miss Ellen C. Babbitt, the Research Editor of the American Child Hygiene Association, has pointed out these facts to me. One has, further, to remember that for the past few years a great crusade has been going on in America, just as in this country, for the saving of child life, and that considerable reductions in infantile mortality have been from time to time recorded. Thus, Mr. Louis I. Dublin, the statistician of the Metropolitan Life Insurance Company of New York, has drawn my attention to the fact that 1920 showed a very remarkable decline in the infant mortality rate; in the New York State figures for 1921 there is a further satisfactory fall; but to ascribe this continuance in the fall to prohibition is surely to invite sharp criticism. Yet that is what a prohibitionist paper is doing. To quote *The American Issue* (May 6th, 1922):

"Babies had a much better chance in dry 1921 than in the wet quinquennium (1913-1917). Deaths at birth decreased 7.8 per cent.; stillbirths, 19.7; deaths of children under five years, 31; under one year 23.5; . . . in deaths due to congenital debility and malformation 21.2 per cent."

The writer has no doubt in his own mind that prohibition, by lessening the allies (secret and open) of alcoholism, will cause a fall in infantile mortality; but he would be the last to claim that the statistics of New York, where by the way enforcement is believed to be specially defective, for the year 1921 represent the effect of the stoppage of alcoholic habits. One must never forget the fact of the vicious circle; just as many maleficent things combined to keep up a high infantile mortality, so many beneficent things, including the restriction of drinking habits, will work together in drawing it down. To claim a premature victory for prohibition on insufficient, on erroneous grounds would deal a blow to all real efforts to check infantile mortality along these lines. At the same time the writer has no hesitation in predicting that American prohibition will yet be seen to be one of the factors in lessening infantile mortality as well as stillbirths in the United States, and in all other countries which may follow in her wake.

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ALCOHOL AS A SELECTIVE AGENT IN THE IMPROVEMENT OF RACIAL STOCK.

BY

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It gives me pleasure to have the opportunity of presenting to the British Medical Association some of the recent results of a long series of experiments on the influence of alcohol in development and inheritance. I am also glad to submit a simple scientific analysis of these results in order to dispel certain misinterpretations and exaggerations which have resulted from a popular exploitation of my findings by propagandists. The experiments were begun in 1909 in connexion with a series of studies on the modification of embryonic development. The author had no interest whatever in a sociological problem, and alcohol was used simply as an effective chemical substance easily administered to the material studied. A number of substances other than alcohol were used with similar results, but standard solutions of these were not so readily prepared and were not in all respects so favourably adapted to this work as were different strengths of alcohol.

By directly subjecting certain species of eggs which develop outside the body of the mother to a great number of chemical and physical treatments it was found that definite developmental modifications could be induced. The results were not specific for any given chemical substance but depended more directly

upon the developmental stage at which the embryos were subjected to the effective treatments. The developing eggs of marine fishes, in most instances those of *Fundulus heteroclitus*, a minnow of the eastern coast of the United States, were subjected to a graded series of alcohol solutions for various lengths of time during different developmental stages. By this simple experiment almost all known types of abnormalities were induced and the history of their development could be studied and analysed.

When eggs were placed in water containing from 1 to 5 per cent. of ethyl alcohol their rate of development was considerably inhibited and in the stronger solutions almost stopped. On later returning these eggs to the usual sea-water environment development was resumed at a normal or almost normal rate. Nevertheless, the arrests which had been experienced caused in many of the eggs the entire suppression of development, while in others the development of many organs and parts were greatly modified. The embryos developed abnormally and were monstrous in form.

An important fact to be noted is the great individual variation in the way the eggs react to the solutions. When any lot of one hundred eggs are examined after these treatments it will be found that a certain percentage of them are developing perfectly normally, as if these had entirely resisted the effects of the treatment; others are only slightly affected; others exhibit more marked modifications; and a number of the eggs have actually been killed. It is thus seen that the effect of the treatment varies with the hardiness of the egg. The poor eggs which would have, under usual conditions, developed into weak embryos are eliminated by the treatment, those of low average resistance are injured, while the particularly fine eggs are apparently not affected and live to hatch as vigorous young fish. This variable response occurs when eggs are treated with a sublethal dose of any chemical substance, and it is in no sense a peculiar reaction to alcohol.

Another fact that should be fully recognized in drawing general conclusions from the responses of these embryos to alcohol is that exactly the same injuries and developmental deformities are readily induced by the use of a great number of other chemical stuffs, and also by unusual physical conditions. The fact that such deformities are experimentally produced in embryos by the application of alcohol does not in any sense demonstrate that human deformities have been induced by a similar cause. The amount of alcohol in the solutions to which the eggs are subjected is greater than could be tolerated in the human blood stream. It is also a fact that common salt (sodium chloride), sugar, and many other constantly used substances in human food are equally as effective in inducing the same types of developmental modifications in these eggs as is the application of alcohol. The fact that an experimenter may use an effective dose of a certain substance to induce developmental disturbances has no direct bearing on the question of the use of this substance in very much smaller amounts by man or other animals.

These results should be considered in an impartial manner and should not be distorted for one purpose or another in a discussion of the use of alcohol by man. I can only say, as an embryologist, that the experiments give no certain proof that alcohol has ever caused abnormal development in the human embryo. Neither do they prove that it may not, except in so far as the doses here necessary to induce an effect are greater than we have reason to believe ever exist in the human body. One may ask, Why, then, were such experiments performed, and what is their value? The purpose was to analyse embryonic development by a study of the origin and differentiation of embryonic organs under modified and abnormal conditions.

The readiness with which structural formations may be modified in these externally developing eggs led me to attempt similar modifications in the internally developing embryos of mammals. With this end in view a series of experiments begun twelve years ago with guinea-pigs has been followed and expanded up to the present time. The records in this study now cover several thousand animals of pedigree stock, and probably no comparable experiments with mammals have been followed through so long a time with so large a number of individuals. The experimental method employed has been a daily inhalation of alcohol fumes up to a point of intoxication for the guinea-pigs. This method and the immediate effects of the treatment on individual guinea-pigs have been fully described in several publications. Dr. G. N. Papanicolaou has constantly been associated with the author in this work during the last eight years of the experiments.

The original purpose of simply affecting the embryo *in utero* soon became of secondary importance. Early in the work it not only seemed possible to affect the developing embryo by treatment of the pregnant mother, but it was also found that the spermatozoon of the male parent could be affected so as to modify the development of a normal egg with which it united in fertilization. The problem then assumed a broader aspect.

When the female mammal is treated with any injurious substance either before or during pregnancy the offspring may be injured in two different ways. In the first place, the strange chemical substance in the blood of the mother might pass directly through the placental membranes and act on the developing embryo, in much the same manner as do chemical solutions on the externally developing egg; or the foreign substance might disturb the metabolism of the mother to such an extent as to interfere with the proper supply of oxygen and food to the embryo. Under any condition this is an action on the developing embryo itself.

The second possibility in treating the female mammal is an injury of the ovarian eggs, the germ cells as such. This case, however, is difficult to differentiate from the first since the question always arises whether the effects of a treatment on the mother might not have persisted and acted upon the developing embryo *in utero*. Thus with the treated female it is difficult to attribute the abnormal development to an injury of the egg cells before fertilization rather than to an environmental influence acting on the embryo.

The treatment of the male, on the other hand, is a crucial test of injury or modification of the germ cells. On breeding treated males with normal females, abnormalities in the resulting offspring can only be attributed to the affected spermatozoa. With these general statements in mind we may proceed to a statistical presentation of the results of alcohol treatments on the progeny of the guinea-pigs.

I shall first present a demonstration of the fact that the treatments do actually produce effects on the offspring. In Table I records are given from normal animals paired alternately with normal and alcoholic mates. The first two columns show that when the same 35 normal male guinea-pigs were mated 81 times with normal mates and 81 times with alcoholic mates

TABLE I.—*Alternate Matings of Normal Animals with Normal and Alcoholic Mates.*

	Matings of 35 Normal Males Successively with		Matings of 44 Normal Females Successively with	
	Normal Females.	Treated Females.	Normal Males.	Treated Males.
Number of matings	81	81	77	81
Total offspring ...	196 2.42 Av. lit.	185 2.28 Av. lit.	195 2.53 Av. lit.	182 2.25 Av. lit.
Failure to conceive	6 7.90 %	6 7.90 %	3 3.89 %	10 12.34 %
Lived over 3 months	151 77.03 %	105 56.64 %	161 82.56 %	118 61.83 %
Died under 3 months	45 22.96 %	80 43.35 %	34 17.45 %	64 35.16 %
Defective	0	11 5.95 %	0	9 4.97 %

the records were widely divergent. The 196 young born from the normal combination showed a mortality during the first three months of only 22.96 per cent. and none of these offspring were defective. (The guinea-pig is mature at about 3 months old.) Of the 185 young produced by the same normal fathers mated with alcoholic mothers 56.6 per cent., or only a little more than half of them, lived to reach maturity. The mortality here was about twice as great as from the untreated mothers, being 43.3 per cent. as against 22.9 per cent. Eleven of these offspring, or almost 6 per cent., were structurally defective, while none from the normal combination showed any such defects.

The two columns on the right of Table I contain still more striking data, since these show conclusively that the male

germ cell or spermatozoon is definitely affected by the treatment. In this case 44 normal mothers were mated alternately with normal males and treated males. The same normal mothers produced all the offspring, but those recorded in the third column were sired by normal fathers, and those in the fourth column were sired by alcoholic males. The 77 normal matings produced 195 young, and there were only three failures to conceive. Eighty-one matings of the same females with alcoholic males gave only 182 young, and over 12 per cent. of these matings failed to result in conception. There was a mortality of only 17.4 per cent. among the offspring from the normal matings, while the alcoholic fathers sired offspring that suffered a mortality twice as high, being 35.1 per cent. Nine of the offspring from the alcoholic fathers were defective, but none from the normal sires.

This discrepancy between the records of offspring from the same normal individuals when paired with normal and alcoholic mates clearly demonstrates an injurious action of the experimental treatments on the germ cells of these mammals. We may further analyse very briefly in the following tables the action of these effects during later generations. In Table II are given the records of animals occurring in the different generations of the alcoholic stock. Section I contains data from the control or normal lines. These animals are of the same blood lines as the alcoholic stock—brothers and sisters and parents and offspring are in the two groups, and actually in cases the same individuals have first been used in the control and later in the experimental groups. There can be no doubt that any original defect or weakness that may have been in the stock from which the alcoholic animals were derived must also have been in the control stock, since the stocks are in all cases actually the same. All records in the present tables are of pedigree animals from thoroughly known blood lines and relationships. There is no inbreeding in either the control or alcoholic lines. It is as certain as experimental evidence can be that any differences between the records of the control and the treated groups must be attributed to the action of the alcohol treatment, since this is the only element of difference existing in the life histories or experiences of the two groups of guinea-pigs.

The records for the control show that the stock is strong and well. The average litter of young is about three, and the average litter weight is 188.85 grams at birth. The data from 506 control individuals show a total mortality before reaching maturity of only 22.72 per cent. One familiar with breeding guinea-pigs will recognize this as a very good record, far better than usual. In the last two columns of the table the total mortality has been divided into pre-natal and post-natal deaths. The absorbed embryos, premature births or absorptions, and stillborn young make up 53.91 per cent., or about half of the total mortality. The post-natal mortality, under three months of age, was 46 per cent. of the total. This equal division of pre-natal and early post-natal mortality is the normal expectation for these animals. But Section II of the table shows that in the alcoholic generations the pre-natal is double the post-natal mortality, and among the F_1 animals in Section III the pre-natal mortality is more than two and a half times greater than the post-natal.

Table II shows the size of litter in which the individuals occur. This is important, since animals born in large litters are at a disadvantage as compared with those born in small litters. The control section, for example, indicates that animals born in litters of two have a total mortality of only 17.5 per cent., while those born in litters of four suffer a mortality almost twice as high, or 33.3 per cent. The average litter size in the alcoholic groups is smaller than among the control. This fact actually benefits their records and the mortality readings are corrected for the differences in litter size in the total mortality line of the table.

Considering the successive generations it is seen that the offspring from directly treated parents present the poorest record of all. Almost 43 per cent. of their young are lost before maturity, and actually 70.3 per cent. of these are either absorbed as early embryos, aborted prematurely, or are stillborn. When these F_1 animals occur in small litters their chances for survival are greatly improved, so that of those occurring two in a litter only 28.5 per cent. died, but of those in litters of four 73 per cent. died. This fact conveys an idea of the great advantage possessed by members of the small litters. These are actually partial litters, the hardy survivors of an originally larger litter. When the records of the F_1 animals are corrected for litter size their mortality is about double that of the control.

Many of these F_1 animals are defective and many are sterile; thus only the best of them are available to give rise to the following generations. Yet in spite of this partial elimination of the defectives enough effect has been produced by the alcohol treatment on all individuals to cause the grandchildren to show an unfavourable record. When the records of the 747 animals of Section IV are compared with the control section the influence of the alcohol treatment is seen to be transmitted by the F_1

TABLE II.—*The Records of Animals occurring in the Different Generations of the Alcoholic Stock.*

	Total Number and Litter Size.	Lived over 3 Months.		Total Mortality under 3 Months.		Absorbed, Prematures, Stillborn.	Died within 3 Months after Birth.
I.		No.	%	No.	%		
Normal stock control:							
1	19	18	94.73	1	5.26	1	0
2	111	94	82.45	20	17.54	15	5
3	215	172	79.62	41	20.37	20	24
4	132	88	66.66	44	33.33	26	18
5	25	19	76.00	6	24.00	0	9
Average litter 2.72. Av. litter weight 188.85 g.							
Totals	505	391		115		62	53
Percentages (mean)			77.27		22.72	53.91	46.68
II.							
Alcoholic animals of all generations:							
1	58	45	77.62	13	22.37	9	4
2	316	241	76.26	75	23.73	51	24
3	579	354	62.86	215	37.13	137	78
4	204	78	38.23	126	61.76	83	43
5	40	11	27.50	29	72.50	22	7
Average litter 2.56. Av. litter weight 170.66 g.							
Totals	1157	739		458		332	156
Percentages (mean)			61.73		38.26	66.22	33.77
III.							
Alcoholic animals with treated parents (F_1):							
1	17	15	88.23	2	11.76	1	1
2	126	90	71.42	36	28.57	26	10
3	240	136	56.66	104	43.33	74	30
4	52	14	26.92	38	73.07	23	15
5	15	2	13.33	13	86.65	11	2
Average litter 2.56. Av. litter weight 165.89 g.							
Totals	450	257		193		135	58
Percentages (mean)			57.11		42.88	70.31	29.68
IV.							
Alcoholic animals with treated grandparents, great-grandparents, etc. (F_{2-4}):							
1	41	30	73.17	11	25.82	8	3
2	190	151	79.47	39	20.52	25	14
3	339	228	67.25	111	32.74	63	48
4	153	64	42.10	88	57.83	60	28
5	25	9	36.00	16	64.00	11	5
Average litter 2.56. Av. litter weight 173.73 g.							
Totals	747	482		265		167	98
Percentages (mean)			69.52		35.47	63.01	36.98
V.							
Alcoholic animals with treated great-grandparents and great-great-grandparents (F_{3-4}):							
1	19	16	84.21	3	15.78	2	1
2	70	56	80.00	14	20.00	9	5
3	120	88	73.33	32	25.65	16	16
4	68	32	47.05	36	52.94	21	15
5	10	7	70.00	3	30.00	2	1
Average litter 2.54. Av. litter weight 175.88 g.							
Totals	287	199		88		50	38
Percentages (mean)			69.33		30.66	56.81	43.19
VI.							
Alcoholic animals with treated great-great-grandparents (F_4):							
1	4	3	75.00	1	25.00	1	0
2	16	15	93.75	1	6.25	0	1
3	27	21	77.77	6	22.22	2	4
4	12	12	100.00	0		0	0
5	0	0		0		0	0
Average litter 2.46. Av. litter weight 183.43 g.							
Totals	59	51		8		3	5
Percentages (mean)			86.45		13.51	37.50	62.50

generation, although they had not been directly treated. The grandchildren of treated grandparents, the F_2 group, show a typical record closely comparable with that of the offspring from directly treated animals. The pre-natal mortality is here almost twice as high as the post-natal, and the total mortality is 64 per cent. greater than among the control.

Again, among the F_2 animals there are defective and sterile specimens. Thus another individual elimination and selection occurs in this generation and only the most vigorous individuals of the group are left to breed. These more vigorous specimens are in many cases mated with normal stock, so that the records of animals descended from treated great-grandparents are somewhat improved, yet the litter size is small and the mortality record for 287 such animals is 40 per cent. higher than among the control.

Finally, the constant elimination of the defective individuals through three generations and the matings with normal stock give animals descended from alcoholized great-great-grandparents which are superior in their records to the normal control animals. They are born in smaller litters than the control, but even when this is taken into account their mortality is actually only 64 per cent. of that of the control animals. Such animals actually have a total mortality before the age of maturity of only 13.5 per cent.

The fact that the F_3 animals from alcoholic ancestry are superior in record to the control is a point of actual significance. There can be no doubt that the offspring from treated parents are decidedly inferior as compared with the control; and further, that their offspring, or the progeny from treated grandparents, are also evidently inferior, but during these generations an individual selection is taking place through the elimination from the race of the defective and sterile specimens. This selection finally brings out a group of unusually strong specimens from which all the weaklings have been eliminated, and although they are not quite so productive as the control, their offspring show a record superior in vitality.

Should one desire to apply these experimental results to the human alcohol problem, it might be claimed that some such elimination of unfit individuals had benefited the races of Europe, since all of the dominant races have a definitely alcoholic history, and the excessive use of alcohol was decidedly more general three or four generations ago than it is to-day. That is, certain families that were alcoholic three generations ago have not been excessively so in the more recent generations.

Further evidence of significant importance regarding this selective action and the elimination of defective individuals is contained in Table III. This table was arranged to determine whether the alcoholic treatment of only male ancestors was as injurious to the offspring as the treatment of female ancestors.

The first three sections show the records of offspring from directly alcoholized parents. In Section I, when only the father was treated, the average litter was small, the total mortality was 71 per cent. higher than normal, and the pre-natal deaths were almost two and one-third times greater than the early post-natal mortality. The entire reaction is typical of the alcoholic line.

In Section II, where only the mothers were treated, the records are considerably worse than the records from the treated fathers. The average size of the litters was somewhat larger than from the treated males, but the actual litter weight of these larger litters was less. The individuals from alcoholic mothers were small at birth. The mortality among these offspring was 50.61 per cent., or almost two and a half times higher than among the control. For comparison, if we call the mortality of control animals 100, then the mortality of the offspring from treated fathers is 171, and from treated mothers 243.

Section III shows that the treatment of both parents does not greatly alter the results which would have followed if the mother alone had been treated. The total mortality is actually a little lower, but this is probably due to the small number of individuals recorded in this column.

The last three sections give the records of 747 descendants of the survivors from the first three sections. These records indicate the degree of transmission of the induced defective conditions. They supply the most striking data pertaining to the selective action which took place in the first filial generation of the alcoholic race to eliminate the defective individuals.

The records show the mortality to be highest among animals descended from treated males. And among such animals the pre-natal mortality is more than twice as great as the early post-natal mortality.

Animals having only female ancestors that had been subjected to alcohol treatment show in Section V a lower mortality than those from treated male ancestors. Here the pre-natal and post-natal mortalities are almost equal. At first sight it would seem as though the treatments had acted more severely on the male than on the female germ cells. None of the animals in the last three sections are the offspring of directly treated parents, so that all inferiority must be attributed to the action of the treatment on the ancestral germ cells. The superior record in the female treated section is, however, no doubt due to the more rigorous elimination of defectives that occurred among the F_1 animals in Section II.

The last section shows that the group of animals recorded as descended from both treated male and female ancestors have

TABLE III.—*Effects on the Progeny when only Male Ancestors were Treated, Female Ancestors Treated, or both Male and Female Ancestors Treated.*

	Total Number and Litter Sizes.	Lived over 3 Months.	Total Mortality under 3 Months.	Absorbed, Premature, Stillborn.	Died within 3 Months after Birth.
I. Only father treated:					
1	9	9	0	0	0
2	48	35	13	9	4
3	87	61	26	20	6
4	20	3	17	9	8
5	5	2	3	3	0
Average litter 2.43. Av. litter weight 175.79 grams.					
Totals	169	110	59	41	18
Percentages		65.03	34.91	69.49	30.50
II. Only mother treated:					
1	5	4	1	1	0
2	38	26	12	9	3
3	99	45	54	38	16
4	20	5	15	11	4
5	0	0	0	0	0
Average litter 2.61. Av. litter weight 162.82 grams.					
Totals	162	80	82	59	23
Percentages		49.38	50.61	71.95	28.04
III. Both parents treated:					
1	2	2	0	0	0
2	22	15	7	5	2
3	45	24	21	15	6
4	12	6	6	3	3
5	5	0	5	3	2
Average litter 2.69. Av. litter weight 160.84 grams.					
Totals	86	47	39	26	13
Percentages		54.64	45.35	66.66	33.33
IV. Only male ancestors treated:					
1	16	9	7	4	3
2	66	56	10	8	2
3	132	87	45	26	19
4	64	17	47	37	10
5	25	9	16	11	5
Average litter 2.66. Av. litter weight 175.63 grams.					
Totals	303	178	125	86	39
Percentages		58.74	41.25	68.80	31.20
V. Only female ancestors treated:					
1	8	7	1	1	0
2	62	47	15	6	9
3	114	90	25	14	10
4	44	19	25	14	11
5	0	0	0	0	0
Average litter 2.59. Av. litter weight 178.73 grams.					
Totals	223	163	65	35	30
Percentages		71.48	28.37	53.84	46.15
VI. Male and female ancestors treated:					
1	17	14	3	3	0
2	62	48	14	11	3
3	93	51	42	23	19
4	44	28	16	9	7
5	0	0	0	0	0
Average litter 2.40. Av. litter weight 165.81 grams.					
Totals	216	141	75	46	29
Percentages		65.27	34.72	61.33	38.66

also a bad record as compared with the control data shown in Table II. The results in this section are at first sight somewhat misleading, since they are better than those from only male ancestors treated and are worse than those from only female ancestors treated. But here again the elimination which took place in the first generation has ensured to some extent the quality of the survivors, and makes it improper to compare the total results as an actual measure of the original effect induced.

We may briefly compare the data in the two sets of sections to demonstrate the consequence of the severe elimination of unfit individuals which is taking place in these experiments. In the first three sections the size of litter was smallest from treated fathers, larger from treated mothers, and largest when both parents were treated. In the last three sections the litter size is exactly reversed; it is largest for those with male ancestors treated, smaller when female ancestors were treated, and smallest among animals with male and female ancestors treated. The mortality records show about the same relationship. Among the offspring of directly treated parents the mortality was lowest from treated fathers—171 against 100 as normal; the mortality was very high from treated mothers—243 against the normal 100; and high when both parents were treated—213. The descendants from the treated males which had suffered the lowest mortality in the first generation subsequently show the highest mortality in later generations—188 against 132 for descendants of treated females, and 165 for the descendants from both treated males and females. This simply means that when the action of the treatment is severe on the first generation, as was the case when the mothers were treated and the highest mortality among offspring obtained, only the comparatively hardy individuals survive. Their descendants later show a superior record in comparison with the descendants from treated males among which the eliminations in the first generation had not been so severe. Taking the mortality records of the first three sections and writing under them the records from the same lines in the last three sections we find that when the mortality is high in the first generation it is low for subsequent generations, and vice versa:

171	..	243	..	213
188	..	132	..	165
359	..	375	..	378

If the two numbers in the three sets of mortalities be added together the sum in each case is about the same.

When we consider the welfare of the race or stock rather than that of the individual it is found that the descendants of those groups of animals which suffered the highest mortalities and withstood the most rigorous selection are superior in quality to the descendants from the groups less severely affected. This individual selection furnishes a great advantage to the later generations, as is shown by the superior quality of the F_1 group of guinea-pigs in the Table II.

DISCUSSION.

Professor Louise McIlroy, M.D., D.Sc. (University of London), said that it was extremely difficult to dogmatize on this subject of alcohol, for the reason that it was so bound up with other questions, such as problems of illegitimacy and venereal disease, all of which meant a bad environment for the child after it was born. It was extremely difficult and dangerous to say that a particular condition was due to alcohol, and another condition was due to venereal disease, because they were all so much bound up together. But she wished to impress upon the Section the enormous importance of knowing what the condition of the mother was before the child was born. She had not the slightest hesitation in saying that if she were given the responsibility of looking after the children of the country, she would rather surrender the responsibility of looking after the children after they were born than give up her control of the conditions for the nine months previous to their birth. More pre-natal care would mean greatly lessened mortality after birth. She had been greatly disappointed to hear one speaker in the Section of Obstetrics say that it was extremely difficult to get ante-natal clinics formed in Glasgow. Ante-natal clinics offered one of the solutions of the alcohol problem. Alcoholism in the mother during pregnancy must have an enormous effect on the child. How could a mother soaked in alcohol be expected to bear a healthy child? The child came into the world with what was known in the insurance companies as a "bad life." This affected the State in two ways. In the first place alcohol prevented conception. Alcoholic women were very frequently sterile. If conception occurred, it was difficult to carry on the foetus to full term. During pregnancy abortion, which was a terrible wastage of child life, was very liable to take place. The placenta was poisoned, and, naturally, the child was poisoned also. Until there was some means of dealing with abortions, like their notification and registration, it would never be known how great a wastage of child life they represented. This was a most important question for the State. If the population was to be kept up sterility must be prevented by protecting the health of the potential mothers and of the potential fathers also. The effect of alcohol on the sperm or male cell must be guessed at to a certain extent. It was possible that alcoholic parents had devitalized children. She would not dogmatize on that point, but she did know that maternity cases in which the women were habitual drunkards gave those in charge of them enormous anxiety. In alcoholic cases, where the muscles were poisoned with the toxaemia, those in attendance were compelled to have resort to all kinds of obstetrical operation, and with every operation the chance of the child's life was diminished, and of its health if it survived the ordeal of birth. If the necessity of operative interference in births was to be diminished, those interested in the question of alcohol must get the State and the local authorities to establish and encourage ante-natal clinics. To her own mind foetal welfare and foetal mortality were far more important subjects than infant welfare and infant mortality. Ordinarily the giving of an anaesthetic such as chloroform or ether in a case of labour was fairly safe, but in the alcoholic subject it was dangerous, because the whole of the organs were clogged with the alcoholic poison. From the sterility among alcoholic women, and from the frequency of abortions and the difficulty of childbirth, one could see nature to a certain extent putting forward her efforts to reduce the number of children entering the world from alcoholic stock. Here some of them were faced with a moral problem which affected their conscience. Were they themselves to take any part in reducing the number of these children born into the world? This raised the whole question of the segregation of the people who were unfit for parentage, and how, if at all, they were to be prevented from propagating. The present-day teaching was that every individual should have liberty in this matter. But were men and women who were chronic alcoholics to be allowed to propagate children for the State to look after? A great deal of propaganda was going on at the present moment, which from the medical point of view, apart from the moral point of view, was extremely dangerous, calling for an artificial diminution of the birth rate, and she believed that this propaganda might produce very serious effects during the next few years if the public were not warned in time. But the production of devitalized children by alcoholic parents was just one of the things that would furnish that propaganda with its arguments.

Mr. Theodore Neild (Leominster) criticized certain points in, or omissions from, Dr. Stockard's paper, particularly the absence of any statement as to the direct effect produced upon the animal. He had had the great privilege, however, of meeting Dr. Stockard at Cornell University, and was shown by him some of his animals, which did not appear after vaporization to show the least sign of physical deterioration. He had had the opportunity of speaking with another investigator on this subject, Bertholet of Lausanne, who told him that in the case of animals which had been vaporized the children of an alcoholized father had a certain progeny, the children of an alcoholized mother a rather larger progeny, and the children of an alcoholized father and mother a slightly higher progeny still. This did not quite agree with the statement that children of alcoholized parents were less fecund.

Dr. R. B. McVittie (Dublin) said that infant mortality was very largely the result of ante-natal conditions, and it was difficult to form any correct estimate of the effect of alcohol, because the parents' statements had to be accepted, and alcohol did not make for truthfulness. Therefore statistics were likely to be even more misleading in these cases than they were under more favourable circumstances. His opinion was that alcoholics gave birth to a greater number of children than a corresponding number of temperate people, but that the death rate amongst those children

was much higher. But the whole subject seemed to be summed up in one word—metabolism. This most elaborate and complicated process was influenced in the human subject by such an extraordinary combination of social, psychological, emotional, and hygienic circumstances that it was very difficult indeed to allot the correct value to any individual factor. Some experiments on plants which the speaker had carried out seemed to be of some interest in this connexion. He grew six plants under exactly the same circumstances: two tobacco plants, two geraniums, and two veronicas. He watered one specimen of each group with a measure of water, and the other with the same measure of water together with a teaspoonful of whisky. At the end of a week the "whisky plants" looked decidedly greener and more healthy than the "teetotalers." He then increased the whisky to two teaspoonfuls to the dose, and at the end of the second week the "whisky plants" were still the more flourishing and slightly the taller. Then came a sudden frost, and within about four hours the "whisky plants" were withered, and next morning were dead, while the others which had had no whisky were quite well and lived for many months. Demonstrations on the influence of alcohol on the metabolic rate would be helpful in clearing away some of the clouds of opinion, which were often the result of the personal factor rather than of evidence which scientific observers could accumulate.

Closing Remarks by the President.

The President of the Section (Dr. Fothergill), at the end of the four discussions, said that it was not easy to sum up from the chair without tending to reiteration. The members of the Section had listened, much to their advantage, to scientists, scholars, and social workers, all of whom were well equipped and competent to speak upon the subject selected. As far as possible the discussion had been limited to defining to what extent, if any, the use of alcohol as a beverage affected physical and mental health, industrial efficiency, and infantile mortality—all of them important social problems, although they by no means exhausted the list. As was to be expected, the voice of the advanced school—the progressive school—had been heard. What would become of any social problem if such a school ceased to exist? The rest of them were debtors to the enthusiasm of that school. There seemed to be two classes into which social reformers interested in this question could be divided: There were those who concentrated on the individual and those who concentrated on the surroundings of the individual—that is to say, there were those who were interested in the environment of the individual character and those who were interested in the environment of circumstances. The medical profession of necessity tended to join itself with the latter class, and it would be from that aspect that its co-operation would be obtained. Given active, intelligent, preventive social work, which led to the improvement in the environment of circumstances, one might reasonably hope that the environment of the individual character would at last have its chance. Just as it was the case with individuals, so with groups, classes, and also with nations—no two were exactly alike. To each there had been given a unique personality, and this was essential in order to fulfil its unique part in the social adventure. The privilege, therefore, of a group or class, specially educated to express an opinion, carried with it great responsibilities. It should be recognized that there was lying at this moment ready to the hand of each such group or class something to be done with regard to the use of alcohol as a beverage, which something could not be done by any other group or class, and if it were not done a fully satisfactory solution of the problem would be prevented. Was it, therefore, too much to appeal, whilst the Association met in Glasgow, to employers and employees, to all groups in the Church, to the other learned professions, and, in fact, to all who were striving to perfect our empire, that they should busy themselves with that aspect of the question with which they were specially qualified to deal? Could they not all come together, there and then, to try and discover what preventive work they could combine to do? And, having decided on it, could they not take steps to secure informed and organized public opinion in its favour?

In conclusion, on behalf of the British Medical Association, he thanked the readers of papers as well as those who by their contributions to the discussion had helped toward what might well be considered a most successful double session. Especially he wished to thank the two honorary secretaries (Dr. Alex. Forbes and Dr. David McKail) for many months of strenuous, anxious, and unselfish work. (Applause.)

Before the meeting concluded the Rev. C. C. Weeks proposed and Dr. J. W. Ballantyne seconded:

> That the Council of the British Medical Association be requested to assist in the promotion of further inquiry into the effect of alcohol taken as a beverage on the individual and the community.

This was carried unanimously.

The Sections.

BRIEF SUMMARY OF PROCEEDINGS.

(*Continued from page 278.*)

SECTION OF MEDICINE.

Thursday, July 27th.

The Chairman, Dr. Hawthorne, in the course of a few introductory remarks, said that the subject for discussion—exophthalmic goitre—was one of great importance, not only to the physician, but also to the surgeon, ophthalmic surgeon, laryngologist, endocrinologist, and general practitioner. Professor G. R. Murray then read his paper on exophthalmic goitre. He began by urging the importance of a more full consideration of the prevention of the disease. In dealing briefly with the general pathology of the condition he discussed the possible cause of exophthalmos. The three main views as to its causation which had been put forward were those of (1) vascular engorgement, which, in his opinion, had little to support it; (2) increase of orbital fat; (3) over-action on the part of Müller's muscle. This last view was not, in Professor Murray's opinion, a probable one, since the fibres of this muscle were very feeble, the muscle too far from the globe to produce proptosis, and, furthermore, if it did, it should, from its anatomical position, do so in an upward and forward direction. He inclined to the second view—namely, that an increase of orbital fat was the most likely cause of the proptosis. He next dealt with some of the etiological factors. In a series of 300 cases he had found that the disease occurred more frequently in women—to the extent of three to one, but it was interesting to note, he said, that former statistics had shown a proportion of eleven to one, indicating, therefore, that sex was not as important a factor as was hitherto thought. He pointed out that a family history was sometimes obtained, and instanced a number of cases to support this. Nervous strain and shock were certainly factors, but the condition seldom resulted from physical injuries. He then went on to discuss the relationship of simple goitre to exophthalmic goitre, and urged the importance of treating many of the simple cases along the same lines as would be adopted in Graves's disease. He emphasized the importance of recognizing the symptoms of exophthalmic goitre in its early stages, as treatment, if adopted then, was much more likely to be of value than if the case was one of some duration. As regards treatment, Professor Murray said that almost complete rest was essential at the commencement. It was his practice as regards diet to allow no red meat or extracts, but he was in the habit of giving milk and fats in usual amounts. In discussing the value of *x* rays in the treatment of exophthalmic goitre, Dr. Murray emphasized the importance of discontinuing this method of treatment if no improvement had attended it after six months' trial. Radium he had found useful in many cases, but there was danger in acute cases. Surgical treatment was indicated if medical treatment had failed, if the thyroid gland was much enlarged, or if time was an important factor to the patient; but the risk of operation could not be forgotten.

Dr. C. M. Wilson (London) asked why it was that more progress was not made in the subject of exophthalmic goitre. He himself thought it was because all discussions centred round late cases, whereas attention should be riveted on the early recognition of the disease. He urged the importance of basic metabolic measurements in the early diagnosis of the condition, and showed several cases on the screen which illustrated the diagnostic value of the basic metabolic rate in relation to exophthalmic goitre. Mr. James Berry said that co-operation between physician and surgeon was of extreme importance in the successful treatment of Graves's disease. He admitted the danger in operative measures, and emphasized the importance of having the patient under personal observation for at least a few days before the operation was performed. He admitted the undoubted

benefit from rest and *x* rays in many cases, but warned his hearers against carrying on *x* rays too long. The longer the duration of the disease, the more unlikely was it to be successfully treated at the hands of the surgeon. In acute cases surgery should be avoided during the most acute stage unless there was definite evidence that no myocardial degeneration was present. During remissions of the disease operation gave the best results. Ether in small quantities was, in his opinion, the best anaesthetic; local anaesthesia was disappointing, and chloroform dangerous. Dr. Riddell (Glasgow) said that about 80 per cent. of patients suffering from exophthalmic goitre got relief from *x*-ray treatment. In some cases the thyroid gland might not show much decrease in size, but the amelioration of symptoms suggested that the *x* rays had been of benefit. He was in favour of giving fairly long applications at considerable intervals rather than minute doses frequently. He agreed that no good was got from continuing treatment for more than six months. Dr. Purves (South Africa) urged the importance of vaccine treatment in cases of exophthalmic goitre.

Professor David Drummond called attention to the frequency with which the condition of hyperlymphism was present in cases of exophthalmic goitre, and showed specimens from a recent *post-mortem* examination—the patient having died suddenly after operation—in which the lingual tonsil was much enlarged and the thymus gland nearly five times its normal size. This state, amounting to status lymphaticus, would often, he thought, prove to be the cause of sudden death after operation, and an attempt should be made to diagnose it. Mr. Mamourian (Ashton-under-Lyne) said that the longer *x*-ray treatment was practised the more difficult was the operation for the surgeon. He thought it important that the question of dosage should be in the hands of the physician or surgeon and not in those of the radiologist. Local anaesthesia was, in his opinion, the anaesthetic of choice. Dr. H. C. Tidy asked when exophthalmic goitre could be considered cured. He instanced cases where exophthalmos persisted and the thyroid glands still remained large, but the symptoms otherwise had apparently disappeared. Dr. Tidy also read a communication from Lieut.-Colonel McCarrison dealing with the present trend of research regarding the origin of exophthalmic goitre. Dr. Hawthorne said that the Section was fortunate in having had first-hand information on the subject of exophthalmic goitre, and welcomed the fact that so much emphasis had been placed on the subject of prevention of this disease. Professor Murray then replied and made clear certain points which had been raised by the speakers.

Friday, July 28th.

After a few introductory remarks by Sir Archibald Garrod, who was in the chair, Sir Humphry Rolleston opened the discussion on degenerative diseases of the liver. He began by dividing liver degenerations into two main groups: acute or subacute; and chronic. The main points raised by Sir Humphry Rolleston in his paper were: (1) Tests for functional efficiency of the liver: their scope, limitations, and results, especially in slight and latent degenerations of the liver. (2) The question whether the jaundice occasionally seen in early syphilis, in syphilitic patients after arsenobenzol treatment, and the jaundice of munition workers depended on inherent weakness of the liver, or were due to an additional factor—namely, infection. (3) The explanation of the delayed onset of symptoms in persons previously exposed to the action of poisons, such as trinitrotoluene in arsenobenzol preparations. (4) Whether changes in degenerative diseases of the liver were due to failure of the damaged cells to remove from the blood the bilirubin formed elsewhere, or whether the liver cells, as the result of disordered function, shunted the bile pigment into the lymph and blood capillaries instead of into the biliary capillaries. (5) If the anaemia in a hepatic degeneration was due to failure of the liver cells to resynthesize urobilin and iron into haemoglobin. (6) Intrahepatic formation of urobilin. (7) How far the incidence of cirrhosis after hepatitis accompanied by degeneration of the liver cells was obviated by concomitant hyperplasia of the liver cells. (8) Whether the interstitial hypoplasia in cirrhosis was initially a beneficial process. (9) The value of haemosiderinuria in the diagnosis of haemochromatosis. (10) The relation of primary carcinoma of the liver to a previous degeneration and de-differentiation of the liver cells.

Professor Maclean, who spoke next, confined himself chiefly to the tests employed for determining liver efficiency. Such tests differed very materially from those of the kidney because the functions of the liver were not yet fully understood. We did know, however, that the liver played the chief part in carbohydrate metabolism. The laevulose test was based upon that, and he found it useful as indicating deranged function of liver. The lipase test also was probably useful, but he himself had not had much experience of it. Dr. C. M. Wilson said that the real need was for a test which would give information indicative of liver damage before symptoms were evident. He thought that the laevulose test and the haemoclasic test were valuable, though positive results were got in conditions other than those of liver damage. Dr. Spence confined his remarks to a description of the laevulose test, and showed a series of cases on the screen illustrating results obtained with this test in cases of moderate, severe, and extreme liver insufficiency. The ultimate scope of this test was yet to be determined, but even now it undoubtedly served a useful purpose. Dr. McNee stated that a fuller knowledge of the structure of the liver was essential, for as yet it was far from being understood. He doubted very much whether all liver cells were the same. Great advances had been made in the knowledge of one type of cell—namely, the star cells of Kupffer, which lined the vascular capillaries. He demonstrated on the screen slides which showed these cells to be very numerous in the outer third of the lobules; they increased in number after poison had been introduced. He maintained that bile pigment was formed chiefly in Kupffer cells and in the endothelial cells of the spleen in man. The extent of jaundice in no way indicated the amount of damage to liver cells.

Professor Muir discussed the three chief factors in the production of jaundice—namely, obstruction to the bile ducts, blood destruction, and damaged hepatic cells. More knowledge was wanted on the part played by the hepatic cells in the production of jaundice. With regard to cirrhosis of the liver, Professor Muir did not agree with Sir Humphry Rolleston that the new formation of connective tissue was purposeful. In haemochromatosis he agreed that fibrosis was the first stage and pigmentation followed. Sir William Willcox spoke on the toxicological aspects of liver degeneration. He reminded his hearers of the great protective function of the liver against exogenous poisons. He held that the delayed onset of jaundice seen in patients previously treated with arsenobenzol preparations was not due to arsenic, but to the effects of that compound upon the liver itself. Professor Stewart described a series of cases of toxic jaundice which, with two exceptions, completely recovered after certain periods of time; this seemed to indicate that all the cases must have had at one time atrophy of the liver resulting in a fibrosis which was, however, not progressive. He suggested that haemochromatosis might possibly be due, in some cases at least, to congenital defect. Dr. Stuart McDonald spoke of the part played by bacterial infection in the production of acute yellow atrophy. Sir Archibald Garrod, in summing up, said that the subject had divided itself into two main parts—namely: (1) Functional tests on the liver, and (2) formation of bilirubin and the jaundice that occurred in the liver cells. Sir Humphry Rolleston replied very briefly to points raised in the discussion.

SECTION OF MICROBIOLOGY, INCLUDING BACTERIOLOGY.

Thursday, July 27th.

THE bacteriology of influenza was the subject discussed on July 27th. Sir William Leishman occupied the chair on the suggestion of the President, Dr. Buchanan. Dr. Mervyn Gordon first discussed the bacteriology of catarrh, and pointed out that no examination could be regarded as complete until films from its fresh material had been examined by Gram's stain and Giemsa, cultures made on agar enriched with ascites fluid, blood, etc., and when practicable a specimen of the secretion filtered through a Berkefeld filter and the filtrate cultured in Noguchi's medium. He discussed the general properties of filter-passing organisms less than 0.5 of a micron in size, drawing attention to the difficulty of staining them and securing cultures. Dealing first of all with acute coryza, Dr. Gordon recalled that Kruse in 1914 demonstrated the presence of a filter-passing virus in the common cold, and that Colonel Foster confirmed this work and grew an organism in Noguchi's medium from the filtrate of nasal secretions. Passing on to discuss influenza, Dr. Gordon considered that the many negative results obtained by experimental inoculation with Pfeiffer's bacillus and the frequent finding of this organism in other conditions constituted

strong reasons against regarding it as the primary infective agent. On the other hand, Yamanouchi and Olitsky and Gates showed that inoculation of a filtrate of the nasal secretion caused influenza and the virus could be cultured. Dr. Gordon's own observations concerned a sharp outbreak of influenza among the nursing staff of St. Bartholomew's Hospital when fifty-seven nurses were attacked. The diluted nasal secretion was passed through a Berkefeld filter and cultured in Noguchi tubes. In positive cases a cloudiness appeared round the tissue at the bottom after four to six days, and films from this cloud stained with Giemsa showed minute round specks. From 20 cases so examined a filter-passing organism was recovered in 14. Dr. Gordon drew attention to the great difficulty of staining and culturing this virus, but showed several lantern slides of microscopic preparations illustrating clearly the appearance of the organism.

Professor J. McIntosh referred to some work carried out in the winter of 1918-19 when Pfeiffer's bacillus was recovered from 80 per cent. of the patients examined, and found *post mortem* in 75 per cent. of patients dying from influenza. He failed to isolate any filtrable virus from recent cases examined, but produced typical influenza lesions by inoculating cultures of Pfeiffer's bacillus; he therefore still regarded Pfeiffer's bacillus as the primary infective agent. He criticized conclusions drawn from the appearance of "cloudiness" in cultures, since such cloudiness often appeared spontaneously; even if a filter-passing organism could be isolated from influenza cases, there was still no proof that it caused the disease. Dr. J. H. Dible recorded his study of the fermentation reactions of forty-six strains of influenza bacilli, which he found could be separated into several different groups. He obtained the characteristic blood picture of influenza by injecting bacterial toxin, and criticized the work of those who looked upon influenza as caused by a filtrable virus.

Sir William Leishman referred to evidence derived from preventive inoculation with *B. influenzae* vaccine. The results obtained were different in different parts of the world. In two reports presented the vaccine had conferred no benefit, but in a third instance marked protection seemed to have been derived from the vaccination. Professor Ledingham favoured Dr. Gordon's point of view, and criticized Professor McIntosh's results. Dr. Twort referred to the desirability of stating the exact conditions under which filtration was carried out. It was not necessary to use blood for the cultivation of the influenza bacillus, since it would grow well on ordinary nutrient agar in symbiosis with certain soil bacteria. Dr. Fleming remarked on the diversity of agents which might be responsible for initiating a common cold, and Colonel Mackie described the severe epidemic in India, when six million people lost their lives.

Dr. Buchanan recorded an experiment in which a plate was exposed in front of the mouth of an influenza patient, with the result that Pfeiffer's bacillus and pneumococci and streptococci all grew in culture. The case for the filter-passer was strong, but it was necessary to keep an open mind.

In his reply Dr. Gordon agreed that it was proved conclusively that experimental inoculation of Pfeiffer's bacillus could produce lesions identical *post mortem* with those found in influenza, but were there not other facts behind this? He did not claim that the filter passer was necessarily the cause of influenza, but that it was present, and he appealed for it to be looked for and carefully studied. His filtrations were carried out under a *minus* pressure of 10 to 12 cm. of mercury, the operation lasting only about five minutes. Undoubtedly a filter-passing organism was present: what its significance was we were not yet in a position to say. Sir William Leishman, in concluding the discussion, said that an organized attack on the problem from many different angles was about to be undertaken by the Medical Research Council.

Dr. Andrew Connal read a paper on the development of *Lucilia* in Chrysops, in which he described the development of the filaria from the time of its ingestion by the fly to full maturity. He recounted the technique adopted for catching and feeding the flies and the three phases of development of the filaria and its manner of escape from the proboscis of Chrysops. Sir William Leishman congratulated Dr. and Mrs. Connal on this brilliant research.

Friday, July 28th.

In opening the Microbiology Section on Friday Dr. Buchanan pointed to the importance of close co-operation between those studying plant and animal bacteriology. Professor H. V. Blackman opened the discussion on similarities and dissimilarities between plant and animal diseases by showing a series of slides illustrating the manner in which *Botrytis cinerea* and the rust fungi attack plants. The former of these secretes an enzyme which destroys the tissues in advance, the hypha of the fungus entering directly through the cuticle; the hyphae of the rust fungi, on the other hand, enter through the stomata, and the cells of the plant are not killed but stimulated to fresh activity by the symbiotic relationship which is established. No general body reaction to infection can be demonstrated in plants in response to infection such as that which occurs in the animal body under similar conditions. He referred also to the virus diseases of plants, and pointed out that some of these were known to be carried by insects. On the whole he considered that the dissimilarities were greater than the similarities when plant and animal diseases were considered, chiefly on account of the absence of a general body reaction in plants. Dr. W. B. Brierley discussed the general relationship between plant parasite and host, and declared that in plant pathology the more vigorous host often took disease more readily than the weaker, and the fungus under such circumstances was stimulated to greater activity. The final condition established was usually one of symbiosis. There was, he said, little in common between animal and plant pathology. Professor F. H. Gaiger was of the opinion that the dissimilarities were greater than the similarities when plant and animal diseases were compared. He pointed out how little was known as to how virus diseases were communicated from one plant to another. Dr. Ledingham said that man was particularly resistant to fungus diseases, and Professor Blackman had chiefly considered these. In the field of natural immunity there seemed to be a great deal of common ground, and bacterial invasion of plants had many similarities to human bacterial invasion. Professor Ellis pointed out that plant and animal protoplasm was essentially the same, and if lower forms were compared in each group many similarities must be found. Dr. Buchanan also thought that the similarities were greater than the dissimilarities, and expressed the opinion that a society for the study of comparative pathology and microbiology of plants and animals would serve a very useful purpose. In his reply, Professor Blackman agreed that fundamentally there must be marked resemblances, and that these would appear more numerous as knowledge advanced.

Dr. Brierley read a paper on the mutation of species, in which he appealed for a careful use of the term "mutation," explaining the limited sense in which this term was used in other branches of science. While not denying the possibility of mutation in micro organisms, he considered that no adequate proof of such mutation had yet been adduced, or could be in the present state of our technique and knowledge. Professor Ellis referred to certain remarkable changes in size, shape, fermentation reactions, etc., he had observed in bacteria in prolonged cultivation, but did not claim that these evidenced mutation in the narrower sense defined by Dr. Brierley. Dr. Twort pointed out how unreliable was information derived entirely from morphology, and referred to the difficulty of being certain of "genetic purity." In his reply Dr. Brierley described the manner in which genetic purity could be assured, and declared that there was no biological reason why true mutation should take place. At the adjourned meeting of the Section in the afternoon Professor Ellis read a paper on the intimate structure of the bacterial cell, and described the manner of formation and germination of spores and discussed the presence of nuclei in bacteria. He claimed to have converted non-motile cocci into motile organisms possessing flagellae by frequent subcultivation. A vote of thanks to Dr. Buchanan, President of the Section, was moved by Sir William Leishman and carried with acclamation.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

Thursday, July 27th.

THE President, in opening the Section, proposed a resolution of congratulation to the Dean of the Faculty in Paris on the occasion of the centenary of the presentation of the thesis by Bayle in which for the first time the view was expressed that the symptoms of paralysis complicating insanity were those of a distinct disease now known as general paralysis of the insane. The resolution was seconded by Sir Frederick Mott and carried unanimously.

Sir James Purves Stewart, in opening the discussion on the treatment of neuro-syphilis, said that neuro-syphilis comprised only those nervous or mental symptoms which were

actually due to the syphilitic virus or its toxin. The present-day classification should be into meningo-vascular syphilis and parenchymatous or degenerative neuro-syphilis and combinations of these. The former included gummata and syphilitic arteritis, and the second those toxic degenerations such as tabes and paralytic dementia. In treatment the physician had to decide on the drug and the channel of its administration. Present-day methods aimed at a combination of salvarsan and mercury. Gummatous lesions responded best to such treatment; in syphilitic arterial lesions the amount of recovery depended on whether thrombosis had occurred, for no amount of treatment would restore an infarcted area. Parenchymatous neuro-syphilis was singularly resistant to treatment, and arrest of the degenerative process was all that could be hoped for. Various supplementary methods of treatment, such as the production of fever, had been employed in association with salvarsan in cases of parenchymatous neuro-syphilis. Query's monkey serum and Dercum's spinal drainage method were referred to. The technique of intrathecal treatment was described and reference made to the various substances employed, and tables showing results of cases treated by intrathecal administration of the patient's salvarsanized serum or of mercurialized horse serum were exhibited. The method was not advisable in paralytic dementia, but in tabes and cerebro-spinal syphilis the results were very encouraging. Some of the clinical results by intracisternal injections in cerebro-spinal syphilis had been striking; it appeared to be the most satisfactory method of dealing with early cases of paralytic dementia. The direct intraspinal administration of arsenical preparations should be discarded.

Dr. Kinnier Wilson (London), in "Observations on the treatment of neuro-syphilis," spoke from the point of view of a clinician. The whole story of the spirochaeta was not known; often there was no sharp line of demarcation between meningo-vascular and parenchymatous neuro-syphilis. Tabes was not purely a parenchymatous degeneration, for there was an active granulomatous infiltration around the posterior nerve roots. Many cases tended to spontaneous arrest and made the result of treatment very difficult to gauge. Of the three methods of treatment—(1) Mercury by the mouth and arsenic intravenously; (2) mercury, and salvarsanized serum intrathecally; (3) mercury, and mercurialized serum intrathecally—the latter on the whole was to be preferred. Successes and failures in tabes were described; slight symptoms and signs at the onset were no guarantee of success in treatment. Treatment had not been greatly improved by the introduction of the arsenical preparation. In some cases the Wassermann reaction could not be influenced by treatment; the aim should be to render the reaction negative, but it was not always possible to do so. Dr. G. K. Adams (Glasgow) discussed the treatment of neuro-syphilis with special reference to changes in the cerebro-spinal fluid. He thought that arsenic given intravenously probably reached the infected focus, though perhaps not in sufficient concentration to be of use; no trypanocidal power was found in the cerebro-spinal fluid afterwards. The symptoms of onset were often overlooked or misinterpreted; if the disease could be recognized in the stage of symptoms before signs developed, much might be hoped for from treatment. Dr. Ernest M. Dunlop (Glasgow) dealt with the bearing of the Wassermann reaction on the diagnosis and the control of treatment in nervous syphilis. He detailed the result of examination of the blood and cerebro-spinal fluid in neuro-syphilis; of the cerebro spinal fluid in miscellaneous conditions; and of the cerebro-spinal fluid in treated cases of syphilis. In eight cases of tabes out of 107 a positive reaction would have been missed but for the examination of the cerebro spinal fluid. Dr. Aldren Turner (London) summarized the results of mass treatment of 200 cases of neuro-syphilis from the National Hospital, Queen Square. He divided the cases into: (1) Tabes of long standing with marked signs but a negative Wassermann reaction in blood and cerebro-spinal fluid; this group comprised 10 per cent. of cases. (2) General paralysis and tabes with a positive Wassermann reaction in both blood and cerebro-spinal fluid; 75 per cent. of cases. In this group no material improvement was observed as the result of treatment, and some cases progressed in spite of it. All had intravenous injections of N.A.B. and mercury injections. No intrathecal injections were given. (3) Tabes of short duration in young persons with Wassermann reaction positive in blood and cerebro-spinal fluid, 12 per cent. These improved clinically and serologically. Treatment must be begun within a few months of the onset. It must be continued for a sufficient time, and it must be repeated at intervals.

Dr. Stanley Barnes remarked that the results of the salvarsan treatment were a little better, but not much better, than those obtained in the old days with mercury alone: in 10 per cent. of all cases the disease tended to die out whether treated or not. The aim should be to find some drug which would percolate more easily. He suggested protein shock in addition to mercury and arsenic injections, in the hope of aiding the percolation of these drugs into the cerebro-spinal fluid.

Sir Frederick Mott doubted if there was much evidence that the arsenical treatment was much better than mercury inunction, and therefore prophylactic treatment—the prevention of the entrance of the organism—was of the greatest importance. In 66 per cent. of fatal cases of general paralysis of the insane organisms could be found in the substance of the brain and in the perivascular spaces; they were found especially easily in four cases treated by intrathecal injection. Mercurial treatment was extremely valuable and inunction the best way of giving it. He referred to the simple and effective Sicard method which gave small doses on alternate days of N.A.B. hypodermically or intramuscularly in glucose. Professor Browning (Glasgow) considered that no satisfactory experimental evidence had yet been offered of the existence of a neurotropic variety of spirochaete. The problem of therapy in nervous disease was very difficult; all cases attending a venereal clinic should be examined as to their nervous system to determine at what stage neuro-syphilis arises. Dr. David Lees (Edinburgh) spoke from an experience of 3,000 to 4,000 cases of early syphilis in which he had tried all methods of treatment previously mentioned except that by intracranial injection. He was not satisfied that any better results were obtained by spinal drainage than by the Sicard method, but in eight of nine cases of tabes in which Query's monkey serum was used intramuscularly very definite improvement followed. Dr. H. J. McBride (London) dealt with the changes in Lange's colloidal gold reaction as a result of treatment, and detailed the routine treatment of neuro-syphilis as employed at the National Hospital, Queen Square. Early optic atrophy should be treated with mercury and iodide.

Friday, July 28th.

In the absence of the President, Professor G. M. Robertson, the chair was occupied by Sir James Purves Stewart. Dr. J. H. Macdonald, in his paper on the element of contrast in the psychic mechanism, said that amongst associative bonds in ideation that due to contrast was very powerful, and had not received the consideration it deserved. From the dawn of consciousness till the end of life man was ever experiencing a contention of elements for and against the expansion and existence of the individual. The importance of contrast was tacitly recognized in the training and upbringing of the child, which to a large extent was based upon the principle of impressing definite ideas of thought and conduct. The capacity to criticize, largely founded upon play of contrasting images, varied greatly in different individuals. Forced inhibitions attendant upon ordinary educational schemes tended to discourage the critical capacity. Notions and doctrines laid down by teachers and parents were apt to be accepted without criticism. Those who wished to encourage the spread of anti-social and revolutionary ideas were fully alive to this fact and sought to impress them upon the child in his early years. The paper was discussed by Dr. Gordon (Bath) and Dr. Helen Boyle (Brighton). Dr. Donald Core was prevented by illness from reading his paper. In his communication on epilepsy and gunshot wounds of the head, Dr. Aldren Turner said that out of 18,000 cases of gunshot wounds of the head under the Ministry of Pensions, 800, or less than 5 per cent., had developed epilepsy. This was seen in two forms: (1) Following slight trauma without obvious injury to the skull or brain; (2) true traumatic epilepsy following injury to the skull or brain and associated usually with paralytic symptoms. In (1) it was often difficult to say how far the fit might be attributable to the head injury; its importance was due to the number of ex-service men who had received a minor gunshot wound of the head and now stated that they had in consequence become epileptic. Jacksonian epilepsy was rare in comparison with the incidence of ordinary traumatic epilepsy. Traumatic epilepsy following wounds of the brain was attributable in part to the injury, but in greater part to the constitutional disposition of the patient; the local conditions at the seat of injury only in part explained the phenomena.

In the discussion which followed, Dr. Kinnier Wilson said it was very significant that no less than 95 per cent. of head wounds escaped epilepsy; trauma was a grossly overrated factor in the causation of nervous disease. The mechanism of production of a fit was associated with transient vascular changes in the brain; blanching of the cortical surface had been observed to precede a fit. The neuropathic inheritance was of great importance; in many instances similar or dissimilar heredity could be traced. Dr. Wilson related a very striking case of psychogenic epilepsy. Dr. Gordon (Bath) said that all cases of epilepsy in ex-service men in the south-west district of England came into his view. Epilepsy in gunshot wounds did not depend entirely on instability of the nervous system. In dealing with the intelligent and better-class patient much good followed the re-establishment by training of general control. A direct family history of epilepsy was seldom obtained, but 75 per cent. of the epileptics had a neuropathic family history. Dr. Mary Barclay (Edinburgh) held that the fact that of individuals with a wound of the head 95 per cent. did not develop epilepsy was not of much importance apart from knowing what part of the brain was struck and how. Dr. Humphrey (Glasgow) referred to two cases of psychopathic epilepsy. Dr. Macdonald (Govan) inquired as to the relation between traumatic and idiopathic epilepsy; did the mental condition of the patient change in the former as in the latter?

Sir James Purves Stewart suggested that the time had now come to get rid of the term "idiopathic" as applied to epilepsy; its realm was gradually shrinking, and it should be banished. Dr. Aldren Turner, in reply, thought that the term "idiopathic" should not yet be abandoned; there was still a small group of epileptics which could not be satisfactorily classified. The experience of surgeons was eagerly awaited in these cases. Bone-grafting operations might be artistically perfect though therapeutically they left a great deal to be desired. An epileptic should not be considered cured till he had been free from fits for five years.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Thursday, July 27th.

THE proceedings of this Section were opened by a paper by Dr. W. Osborne Greenwood of Harrogate on anaesthetics and analgesics in labour. He pointed out that shock and exhaustion aggravated by pain and fear were the almost necessary accompaniments of every labour. Recent work had shown the profound effect of these factors upon the cells of the master tissues of the brain, liver, and suprarenals. Chloroform and ether given for a prolonged period not only did not give protection from shock, but actually intensified the very condition they were seeking to alleviate; they were actually prone to initiate and continue those cell changes of acidosis, and even disintegration which they were seeking to avert. With scopolamine and morphine they were able to secure that most important consideration, brain rest, while at the same time permitting the essential labour organs to perform their functions perfectly. By those means an ideal labour and a shockless operation could be attained. He then proceeded to enumerate the details of his technique, laying particular emphasis on the testing of the degree of amnesia obtained, and indicating what he regarded as the most important danger signs—analgesia, restlessness, and rapid pulse. These signs were the result of a faulty technique. He laid stress on the importance of regulating the dosage according to the individual patient. With a proper technique he had not met with any bad effects on either mother or child in a long series of cases. In the absence of Dr. Hirschman a paper by him on the standardized dosage method of using scopolamine-morphine during labour was read by Dr. H. G. Taylor, one of the honorary secretaries of the Section. He was followed by Dr. Martin of Bradford, who from the point of view of the general practitioner explained why he had given up employing the scopolamine-morphine method in favour of a method of his own wherein he employed the continuous administration of small doses of chloroform by means of Junker's apparatus, combined with the repeated injection of small doses of infundibulin. In the discussion which followed, the President and Drs. Lapthorn Smith, Chalmers, Ruxton, Blair, Russell Andrews, Lackie, Prell, Miller, Thomas, Hendry, and Eden took part. Dr. Greenwood, in a brief reply, said that the question of the employment of twilight sleep should not be regarded simply as one of supply and demand by the patient; he thought the method should be encouraged by the profession in the interests of the patient.

Dr. T. W. Eden (London) then read a paper on the treatment of eclampsia. He thought the time was now opportune for attempting to secure uniformity in this most important subject, in which up to the present the most chaotic views had existed, not only among the general bulk of the profession, but even among teachers themselves, with the result that the most divergent methods of treatment had been employed even in the hospitals. After a brief historical survey of the different modes of treatment given in times past, he quoted the figures which had been recently presented to the British Congress of Obstetrics and Gynaecology at Liverpool. In 1,800 cases treated in hospital in England, Scotland, and Wales there was a mortality of 24 per cent.; in 200 cases treated in hospital in Ireland the mortality was 10 per cent. He laid down a series of propositions: (1) That eclampsia was easier to prevent than to cure; prophylaxis was therefore imperative. (2) Prompt removal to hospital immediately after the first fit should be recognized as absolutely necessary. (3) That a proper classification of cases must be made in order to arrive at the correct indications for treatment. (4) That the minimum degree of obstetrical interference only should ever be carried out—that is, induction if labour were not spontaneous, and low forceps if circumstances demanded this. (5) That the simplest medical methods gave the best results—namely, water only by mouth, and lavage of the stomach and colon, to be repeated if necessary. The paper was discussed by the President, Dr. Campbell, Dr. Douglas, Professor McIlroy, Dr. Lapthorn Smith, Dr. Lawrie, Dr. Russell Andrews, Dr. Ballantyne, Dr. Prell, Professor Munro Kerr, Dr. Farquhar Murray, and Dr. Lewis.

Friday, July 28th.

The proceedings were opened by a paper read by Dr. Robert Knox (London) on the treatment of gynaecological conditions by x rays and radium. In dealing with the general question of radiation treatment he said that it would simplify the matter if it were assumed that the potency of the radiation employed was the important point, and that it made very little difference whether the radiation was produced by an x-ray apparatus or a quantity of radium. The essential thing was to be sure that the area treated should get a dose of sufficient intensity to produce the changes necessary for the cure or relief of the condition. The technique of the application and the estimation of dosage were therefore of the utmost importance. Dr. Knox then proceeded to explain the methods employed for arriving at a correct estimation of the dose and the method of application. He stated that the newer methods, particularly that known as the Erlangen method, involved a considerable strain on the patient. He then summarized the contraindications, advantages and disadvantages, and the dangers of x-ray or radium treatment. His own experience had been such that, though some remarkable results had been obtained by radiation, in all cases which were suitable for surgery he strongly recommended it. In the case of fibroids, removal of the tumour was not nearly so rapid by radiation as by operation, while the drain on the system, while not so sudden, might be as severe. He treated these cases in close collaboration with the gynaecologist. An animated discussion then took place, in which the President, Mr. Cecil Rowntree (London), Professor Johnstone (Belfast), Professor Munro Kerr (Glasgow), Dr. Burrows (Manchester), Dr. Farquhar Murray (Newcastle), Professor McIlroy (London), Dr. Chapman (Glasgow), Dr. Gamlen (Newcastle), and Dr. Lochrane (Derby) took part. Dr. Knox, in his reply, dealt with many questions which had been put to him.

A paper was then read by Dr. John Campbell (Belfast) on the treatment of salpingo-oophoritis. At the outset he claimed that no distinction should be drawn between acute salpingitis and acute appendicitis; both might burst and set up general peritonitis. In acute cases, therefore, he urged the necessity of early abdominal operation in preference to expectant treatment. In regard to chronic cases he classified them under two headings: (1) When sterility was the main symptom he thought that expectant treatment should be tried, and referred to the possible advantages of curettage and massage. (2) When pain was the main symptom then he advised that expectant treatment should give place to abdominal operation. As regards drainage after operation on these cases, he confessed that he felt safer in all acute and many chronic cases when he had packed the pelvis with gauze partly enshcathed in thin rubber. He was trying hard to persuade himself to discard drainage; there was much to be said for the method of filling the abdomen with

saline and completely closing the parietal wound, but he still thought that in certain cases drainage was absolutely necessary. He advised that a preliminary colostomy should be done on all cases when it was known that an abscess had been discharging into the rectum before the pelvic operation was undertaken. He regarded the use of vaccines as of secondary importance. Dr. Campbell's paper provoked a vigorous discussion, in which the President, Dr. Nigel Stark (Glasgow), Dr. Farquhar Murray (Newcastle), Dr. Cameron (Glasgow), Professor McIlroy (London), Professor Munro Kerr (Glasgow), and Professor Johnstone (Belfast) took part. Dr. Archibald Leitch (London) then made a short communication on vaginal involvement in cancer of the cervix.

In closing the proceedings of the Section, the President remarked that the importance of their discussions and the size of their audiences had fully proved the claim of their Section to sit on three days. A vote of thanks to Professor Ewen Maclean for the able manner in which he had discharged the duties of President was proposed by Professor Johnstone and carried with acclamation.

SECTION OF PATHOLOGY.

Thursday, July 27th.

A DISCUSSION on animal and vegetable pathology in relation to human disease was held on July 27th, with Professor J. H. Teacher in the chair. Professor F. G. Hobday (London) opened the discussion by insisting on the need of close co-operation of pathologists, medical and veterinary, in a united attack on disease common to man and the lower animals. He dwelt particularly on the communicable diseases. Glanders would soon be entirely eliminated from animals in this country, and consequently it could not again be communicable to the human subject. The stamping out of rabies showed what could be done by a collaboration of the two professions. Anthrax, for the occurrence of which amongst animals the importation of animal products was mainly responsible, was largely controlled by the precautions taken by the Ministry of Agriculture, and human cases might be even more satisfactorily diminished. Tuberculosis of milk cattle, responsible for so much of the tuberculosis of children, was unfortunately too rife, and Professor Hobday pleaded for a conjoint effort to get rid of this terrible scourge. Foot-and-mouth disease, cowpox, mange, and ringworm were other instances of animal diseases communicable to man. Professor W. H. Lang, F.R.S. (Manchester), said that it was difficult to make comparisons between diseases in plants and in animals, because the former possessed no anatomical systems comparable to the latter. The connexion, too, between plants and animals was so very remote: they had diverged and were separate as far back as geological evidence went. He demonstrated beautiful sections of ancient plants found in the Old Red Sandstone of Scotland, showing the proliferation of cells around the stomata caused by volcanic gases. The greater part of the paper dealt with the question of plant tumours, and Dr. Lang gave a very able criticism of the view that these crown-gall tumours were similar to animal cancers. The so-called "secondaries," which had been compared to metastases, were not in reality separated from the primary growth: it was only that the increase in length of the stem had separated what formerly had been adjacent tissues.

Sir Clifford Allbutt recalled that at the annual meeting in 1882, and again in his lecture to the Association at its last Glasgow meeting in 1838, he had pointed out the great advantage of the comparative method. No great advance in any department was possible without this method. If it had not been for animal experimentations pathology would have been non-existent. Arguing by analogy had been the bane of science and medicine. Disease was not an entity: it was a deviation of processes, an abnormal series, and not something from without. He thought that the absence of anatomical systems in plants comparable to those of animals was no drawback in the study of comparative pathology: it simplified the analysis of fundamental processes. Professor Gaiger (Glasgow Veterinary College) said that the more they studied animal and human diseases the more they agreed in ultimate detail. A study, too, of diseases peculiar to animals often shed considerable light on similar diseases in man. The difficulty of getting pure anaerobic cultures that delayed antiserum investigations during the war might possibly have been done away with by a study of some anaerobic conditions of the sheep. Mr. W. B. Brierley (Rothamsted), speaking from the botanist's point of view, held that more help would come from a mutual study of pathogenic agents rather than from investigations of their effects. Analogies between plant and animal diseases must be treated with careful circumspection. But much could be done by workers on both sides in improving technique, in classification of bacteria, in studies on virus diseases, in investigating the rates of dispersal of infective organisms.

Sir William Macewen (President of the British Medical Association) said that he had started that morning to make a tour of the Sections, but as the papers of the Pathological Section had proved so interesting he had remained there the whole time. He emphasized the importance of a combined medical and veterinary campaign against tuberculosis. Dr. Elliot and Mr. Orr briefly dealt with rickets in pigs, and maintained that it was due to deficiency of calcium in the diet, and not to lack of any vitamin. Mr. Gofton, speaking of tuberculosis in animals, stated that 43 per cent. of cattle were affected, but only in a much smaller percentage was the disease communicable. In about 7 per cent. of cows the tuberculosis was generalized. Only 1 in 147 cows had tuberculosis of the udder, and adding to that the number of cases that showed infection of the supramammary lymph glands, there were altogether about 1 per cent. of dangerous cattle. It was an observed fact that cows might excrete tubercle bacilli in their milk without clinical signs of tuberculosis or involvement of the udder.

Friday, July 28th.

Dr. Archibald Leitch occupied the chair on July 28th. Professor Stuart McDonald and Dr. A. F. Bernard Shaw (Newcastle) gave particulars of a unique case of persistent eosinophilia with splenomegaly. The blood condition before and after splenectomy was recorded, together with histological studies of the spleen and lymphatic glands. The authors were inclined to regard the disease as a leukaemia of eosinophiles. Professor J. Shaw Dunn (Birmingham) contributed an important paper on primary chronic interstitial nephritis and arterio-sclerotic kidney. Whilst arterio-sclerosis might cause shrinkage of the renal cortex, it did not produce a condition which resembled true chronic nephritis macroscopically or microscopically. Primary chronic interstitial nephritis or renal cirrhosis was quite distinct from even extreme arterio-sclerotic atrophy, and showed a greater degree of derangement of renal architecture. It was more difficult, however, to differentiate it from secondarily contracted kidney. Dr. E. H. Eastwood (Sheffield), from an examination of appendices removed by operation or obtained in the *post-mortem* room, found oxyuris as commonly present in the one case as in the other. With regard to the number of eosinophiles present in the wall, which might be taken as a sign of the pathogenic properties of the worm, these were quite independent of the presence of oxyuris, though they bore a definite relation to the duration of the appendicitis. Drs. Bennett, Blacklock, and Browning (Glasgow) gave a convincing account of the value of flavine in severe burn wounds. At no time did a pellicle form over the granulation tissue, as had been asserted, nor was the formation of granulation tissue in any way inhibited. Dr. W. MacAdam (Leeds) read a paper on the decrease of cholesterol of the blood in anaemia. Dr. D. F. Cappell (Glasgow), who had injected certain dyes into the animal body, found that the substances were actively taken up by the wandering connective tissue cells, by the endothelium of lymph sinuses, and the vascular endothelium of certain organs (liver, spleen, and bone marrow), whereas vascular endothelium elsewhere did not attract the dye. Professor M. J. Stewart (Leeds) stated that the healing of gastric and duodenal ulcers was a common event. He suggested that acute and chronic ulcers had an equally good chance of healing. The relation of carcinoma to gastric ulcer, the sequelae of ulcers, and the method of healing were carefully considered.

SECTION OF PUBLIC HEALTH.

Thursday, July 27th.

THE first half of the second day's proceedings was occupied by a discussion on the defects of infancy and childhood. Dr. Bruce (S.M.O. Glasgow) described in detail the extent and nature of the defects in local children at the age when they enter school, and several interesting comparisons with other areas were instituted by speakers who followed. Dr. Mary J. Menzies, of the Scottish Board of Health, followed with a description of the different welfare schemes in operation throughout Scotland, which called forth a criticism of the ultimate results of excessive zeal in this direction. The question of industrial fatigue and methods of inquiry were

next dealt with by Dr. McKail (Lecturer on Public Health, St. Mungo's College, Glasgow), followed by a rather technical paper, read by Dr. Paton (Assistant M.O.H. Glasgow) for Dr. J. P. Kinloch (Lecturer on Public Health, Aberdeen), on the constituents of fresh and vitiated air. The paper which gave rise to the liveliest discussion was that of Dr. Wynne (Professor of Public Health, University of Sheffield), who with much causticity, fortunately not unflavoured with wit, criticized the aims and methods of the present-day public health service. Near the close of the session time was found for the reading of an abstract of a somewhat lengthy paper by Dr. Khalil (London School of Tropical Medicine) on sewage disposal in the tropics, with special reference to helminth infections.

Friday, July 28th.

The last day's proceedings opened with a paper by ex-Bailie W. B. Smith (a member of Lord Newton's Committee on Smoke Abatement), which asked the question, "Should we longer tolerate this pollution of the air?" By means of diagrams, maps, and photographs Mr. Smith furnished convincing evidence of the deleterious effect on health of a smoke-laden atmosphere, particularly by the formation of fog, and showed how the prevailing winds cleared certain towns, but smothered others, according to geographical position. Professor Leonard Hill and Dr. T. M. Legge, of the Home Office, entered into the discussion from two opposite standpoints, which left little room for Mr. Smith to reply. The next paper, by Professor Hope (Liverpool), on the training for the diploma in public health, was read in his absence by one of the secretaries (Dr. J. J. Paterson, M.O.H. Maidenhead), and gave rise to considerable discussion as to whether practice or theory should be accorded the premier place in the preliminary training of a medical officer of health. The second half of this session was devoted to a joint discussion with the Tuberculosis Section upon the administrative requirements of the various types of tuberculosis. Dr. Macgregor (Assistant M.O.H. Glasgow) opened with a paper describing the various methods of treatment applied to a group of some seven hundred ex-service men notified in Glasgow as suffering from tuberculosis in one form or other. A number of medical superintendents from well-known sanatoriums took part in the discussion, from which it appeared that, as the President (Dr. A. K. Chalmers, M.O.H. Glasgow) expressed it in summing up, a fork in the path of treatment had been reached. The proceedings then closed with the customary compliments to those who had taken part.

SECTION OF SURGERY.

Thursday, July 27th.

The programme arranged for the second day's meeting of the Surgical Section, while of great and valued interest both to surgeons and practitioners, did not attract quite such large audiences as were present on the other days. But the scientific value of the session was none the less great. Sir Kennedy Dalziel, one of the vice-presidents, presided. The first subject discussed was the non-traumatic affections of the spleen, and was dealt with in the first instance by a physician—Dr. James Carslaw (Glasgow); then by a pathologist—Dr. E. H. Kettle (London); and the surgical technique was described by the Chairman. Dr. Carslaw, in referring to the lack of knowledge of the function of the spleen, pointed out that one function at least was known—namely, blood destruction, and the cases which seemed to call for splenectomy were those in which these blood-destroying processes were centred entirely, or almost so, in the spleen. Splenomegaly was a feature of many infections, and removal of the spleen was not called for simply because of its enlargement. There were two groups of cases where the disease, probably a toxic agent, seemed to be centred in the spleen: splenic anaemia and acholuric jaundice. Possibly there were other kinds of splenic anaemia, one example of which was Banti's disease. He referred in detail to some of the cases in which splenectomy had been successful. Some of those did not come under the two main categories mentioned. One was a spleen which, after removal, seemed to be tuberculous; whether primary or not he could not say. Another one was pernicious anaemia, though in that disease as a rule splenectomy was not recommended unless there were very definite enlargement of the spleen. There had been only one fatal case in the series and it was difficult to classify it, but he was disposed to place it amongst splenic anaemias, and although the patient's death took place a year afterwards he included it within the statistics. The greatest success for splenectomy was in acholuric jaundice, though it had to be kept in mind that many cases of this disease did not require operation.

Dr. Kettle discussed very fully the known physiology and pathology of the spleen. It was a scavenging organ for removal of destroyed or decrepit red cells from the circulation and for liberating haemoglobin and passing it through the liver. Probably the spleen had an important function in combating infective processes by inducing phagocytosis. Some organisms found a resting place in the spleen, and in infections immune substances were found in greater quantity in the organ. Its function had also to do with the digestive system and it was linked up with the ductless glands. Little more was known of the pathology of the spleen than of its physiology. It would seem that increased resistance of the red cells—that is, diminished fragility of the red cells brought about by splenectomy—tended to the disappearance of the disease most suitable for the operation—namely, acholuric jaundice. The position, however, was anomalous, because in many of the cases the fragility of the red cells actually persisted after splenectomy, although the patient was apparently cured. Banti's disease presented a difficult problem because it was divided into three stages by that author; the first of these stages might last twelve years, and he doubted if it were a clinical entity at all. Spleens in Banti's disease examined by him presented very little change; at all events the changes were not commensurate with the clinical manifestations. Before they stereotyped their treatment by splenectomy they should know more about the pathology, though operative treatment was often perfectly justified. The malarial spleen might be removed more often than it was because of the danger of rupture, and because it was a definite focus of infection. The operation was not in many instances an extraordinarily difficult or dangerous one. In children sudden death took place after splenectomy, but at a much later date, when the child had apparently been restored to perfect health; the cause of the sudden death was unknown.

In speaking of the technique of the operation Sir Kennedy Dalziel did not regard the operation as essentially dangerous. The only trouble likely to be met with was haemorrhage. He operated through the incision placed in the middle line supplemented with a transverse incision. He thought that the pedicle should be double-clamped and the spleen removed by cutting between the clamps, so that no blood was allowed to escape from the spleen itself, and the spleen having been removed the vessels caught in the pedicle could be dealt with seriatim. The post-operative leucocytosis found was not greater than that following other major operations. He had had no deaths after removing the spleen.

Mr. A. J. Walton (London) read a paper, illustrated with lantern slides, on the surgery of the pituitary gland. He discussed the anatomy, especially the relation of the arteries in the immediate neighbourhood, pointing out that textbook description was inadequate and generally inaccurate. Pathologically tumours were usually adenomata or cysts; primary atrophy was rare; it was generally a pressure atrophy. Treatment was advocated before general pressure took place. A tumour of the anterior lobe occurring before puberty resulted in gigantism, and after puberty in acromegaly. Another group of cases resulted from diminution in the anterior lobe secretion. Posterior lobe cases were of the type of adiposa dolorosa. He recommended attacking the pituitary by the frontal route, elevating the frontal lobe of the brain. He had operated on seven cases with no special technical difficulty; the mortality was 30 per cent. Three papers on the operative treatment of fractures, from different points of view, were presented by Messrs. G. H. Edington, Archibald Young, and Donald Duff. Mr. Edington was strongly in favour of regarding the plate as a foreign body to be removed between the third and fourth week. Mr. Young showed an excellent series of slides illustrating various methods of dealing with fractures, especially wiring, pinning, or nailing, sometimes using a long nail, sometimes a fine short sprig, plating and screwing. Open operation for fractures was carried out in 39.25 per cent. of the series of cases, which represented the work of the past five years. Of those cases treated by open operation, direct fixation of fragments was carried out in 37.86 per cent. He found that the number of cases in which open operation with fixation was required was increasing on account of the more satisfactory results obtained. Mr. Duff's paper, which was also fully illustrated, was a statement of the work carried out by him in bone operations resulting from the war. He discussed fully the different methods of bridging the gap in the bone; he thought

that the inlay graft gave on the whole the best results. At the close of the session Sir Arbuthnot Lane expressed his gratification at the results of the work of which they had heard that morning.

Friday, July 28th.

The subject chosen for discussion in the third session of the Surgical Section, the treatment of non-malignant affections of the colon, appeared to be the most attractive of all. The audience which assembled under the presidency of Mr. James Berry, a vice-president of the Section, was the largest seen for many years. Whether the subject itself attracted the audience or whether the prospects of a lively debate between such well known and distinguished surgical authorities as Sir W. Arbuthnot Lane, Mr. George Waugh, and Sir Henry Gray, provided attraction or not, is immaterial. In leading, Sir Arbuthnot Lane presented his now well-known theories in an exceedingly attractive and systematized paper. He said there were two great groups of conditions found in the living abdomen—namely, those cases of intestinal stagnation in which reaction took place, and those in which it was absent. The first of these was a group characterized by the formation of bands. The "first and last" kink, a band controlling the lumen and the lower parts of the bowel, was the most important acquired change in the whole body, since it was the primary cause of a vast amount of static trouble in the intestinal tract and elsewhere. Various other localities were affected by the development of bands: immediately above the iliac crests, at the splenic flexure, below the gall bladder, where the band held up and obstructed the transverse colon over the outer aspect of the caecum (Jackson's membrane), and lastly, on the under surface of the terminal mesentery of the small intestine (Lane's ileal band). All these so-called separate bands were evolutionary, and were due to the effort of the organism to meet with abnormal loading up of the bowel because of a distal obstruction. Then came the group characterized by the absence of bands. In this second type of the static colon the mechanical difficulties were the elongated pelvic colon and the obstruction consequent upon it and the inflammation of its mucous lining. The symptoms calling for operation were due to autointoxication, which was the result of infection of the contents of the small intestine. The simplest operative procedure might be to excise the surplus pelvic colon, but in the great majority of cases the best results were obtained by colectomy, or by dividing the ileum and uniting it to the pelvic colon.

Mr. Waugh presented a reasoned statement on the structural variations of the colon, based upon observations made in 518 operations and on a study of *post-mortem* examinations in 110 children under the age of 12 years. He discussed also the symptomatology of the cases presented, and came to the conclusion that undue mobility of the ascending colon was the prime factor in the majority, while others had, in addition, various prolapses affecting the transverse colon, stomach, and right kidney. The operative procedure performed in 210 cases was fixation of the ascending colon to the posterior abdominal wall in what approximated to the normal position. Sir Henry Gray maintained that all these various bands were developmental in origin. Abnormalities in the mobility in the various parts of the colon were due chiefly to the increase or decrease in the fusion of, or in the length of, various folds in the peritoneum formed in connexion with the development of this part of the bowel. Jackson's membrane he regarded as an exceedingly common structure, and it was present to a greater or lesser extent in the majority of patients operated on by him. Jackson's membrane he regarded as developmental, being simply the extension to the right of the omentum. He advocated strongly an extensive paracentral incision so that the variations of intra-abdominal structure might be thoroughly investigated and dealt with. Very few cases called for the complete resection of the colon advocated by Lane. This operation was justified only in grave stasis in various parts of the colon and when exploration showed that the colon was an unusually long and hypertrophied one, and affected by adhesions which interfered with its mobility. Mr. Herbert J. Paterson (London) and Mr. A. J. Walton (London) also spoke.

Mr. D. P. D. Wilkie (Edinburgh) read a paper on chronic duodenal ileus, illustrated with lantern slides. The paper was afterwards discussed by Mr. Dingley (Wednesbury), Mr. Clay (Newcastle-on-Tyne), and Sir Kennedy Dalziel (Glasgow). The last contribution to the work of the Section was by Mr. H. S. Souttar (London), one of the honorary secretaries, who described a method of dealing with difficult hernias, the essential feature of which was darning the opening with mercurialized silk. Mr. Berry formally closed the Section, expressing the gratification of the officers at its success, and at the good attendance not only by surgeons but by other members of the profession.

SECTION OF DERMATOLOGY.

Thursday, July 27th.

Dr. O'Donovan (London), in opening a discussion on occupational dermatitis, said that in skin diseases the industrial aspect was appreciated more than in any other branch of medicine. The effect of work and stress was more obvious as the cause of skin affection than in any other departments, but it was necessary to investigate the occupation of patients exactly in order to find out what they really did. It was not enough to know that the patient was merely a fireman or a baker without a statement of his exact work. Occupational dermatitis could be grouped according to the nature of the cause. He gave several instances of eruptions caused by rubbing; sometimes the rubbing was aided by syphilis. Dirt was not necessarily a cause of dermatitis. The necessary factor was a cleaning process in which the cleaning fluid came in contact with the skin; the fluid might be water, or acid, or alkali, or benzine, or naphtha, or petrol, etc. Dermatitis was caused by other things also—for example, by vegetable substances. Sugar itch and baker's itch, although well known, he had not often met with. The most chronic cases were those due to formalin and phosphorus. It must always be remembered that the types of industrial dermatitis met with in one's own practice depended on the industries of the neighbourhood. When starting a new industry dangerous to the skin it was essential, though perhaps brutal, to discharge at once all those workers sensitive to the noxious material. Thus a corps of workers immune to trouble would be gradually built up.

Dr. Legge (Chief Medical Inspector to the Home Office), after congratulating the first speaker, said that occupational dermatitis was a clinical rather than an administrative problem. He classified irritants into four kinds: (1) Chemical irritants, such as bichromate, acids, and certain finished dyes—for example, aurantia, which was last used in the German bombs dropped on London; (2) substances which resolve the natural fat in the skin—for example, turpentine, benzine, and its derivatives, the worst being dinitrochlorbenzine; (3) macerating substances—for example, water or watery solutions; (4) any process which mechanically injures the continuity of the skin, such as brushing, scratching, and rubbing.

The most interesting problem was that of prevention. He referred to the fetish of the wash-basin, which the medical inspector always asked for in the factory, but washing was bad for eczema when established. He thought the proper preventive treatment was, after work, to rub in a greasy preparation—for example, lanoline, to restore the fat washed out during work. Chrome ulceration was at least thrice as common as tar and pitch dermatitis, but never became carcinomatous. Workmen might find powder useful both on their faces and scrota for preventing the bad effect of tar. Dr. Norman Walker (Edinburgh) said he had been long interested in occupational dermatitis. He desired to say how much had been gained by co-operation with the Home Office, and from intelligent co-operation between the factory doctor and the workman. He gave a good instance of this in the paraffin industry. He thought the idiosyncrasies of various skins to various substances was a factor of great importance. Dr. Gardiner (Edinburgh) said that of all the cases of dermatitis seen by him at least 66 per cent. were due to occupation, but in 14 per cent. the dermatitis was preceded by a definite illness, and 63 per cent. showed a preceding skin abnormality—for example, seborrhœa or hyperidrosis. Slight alteration in the materials used and local injury were important factors. Dr. Lancashire said that the possible sources of irritation were legion. He mentioned novocain as an unusual one, although it had been described previously in America.

The President (Dr. Leslie Roberts, Liverpool) referred to the points mentioned, and desired to draw some general conclusions. He emphasized the importance of examining the entire surface of the body in every patient suffering from dermatitis. The basis of idiosyncrasy seemed to be chemical, often some foreign protein or carbohydrate. Hence in preventive treatment diet might play an important part.

Subsequently Dr. Goodwin Tomkinson (Glasgow) read a short paper on alopecia areata as a family disease. Out of eleven members of a family eight suffered in a varying degree, and seven had strabismus. This group of cases seemed to give support to the theory of the nervous causation of alopecia areata.

DISEASES OF CHILDREN.

Thursday, July 27th.

On July 27th the Section discussed treatment of tuberculosis of the cervical glands. Mr. John Fraser (Edinburgh) said that there existed a wide divergence of opinion as to the correct treatment of tuberculous cervical glands. Nevertheless it should be possible at a meeting such as this to formulate a definite scheme which would guide the practitioner in his advice to a patient. Lymphatic glands might be infected via the blood or via the lymph stream. The latter comprised about 90 per cent. of the cases, but the distinction was an important one, because in the former operation was contraindicated. Clinically it was possible to distinguish between the two groups, because with a blood infection multiple scattered glands were attacked, whereas with a lymph infection the disease remained for a long time confined to one or two adjacent glands. Pathologically caseation occurred in the centre of the gland in blood infections and at the periphery in lymph infections. In the lymphatic variety the primary focus was in the tonsil, nasopharyngeal adenoids, or in carious teeth. Unlike most other forms of tuberculosis, the early stages were not associated with a general infection. There were three pathological types of tuberculous infection in glands—the caseating, the lymphoid and the fibrous. The caseous variety was the most common. In children under one year the disease generally ran an acute course; with each successive year increasing resistance was developed. Tuberculosis of glands was preventable in 90 per cent. of the cases by sterilization of milk and care in seeing that the child did not come into contact with a case of open tuberculosis. As regards treatment, the speaker did not believe in complete cure by non-operative measures, although the disease might be rendered quiescent. There was no direct specific antibacterial agent for tuberculosis. That being so, he recommended thorough complete removal of the affected glands wherever operation was not definitely contraindicated. The results were eminently satisfactory, because in the lymphatic type of tuberculosis the disease was localized and therefore capable of complete eradication. Under certain conditions, however, operation was strongly contraindicated. These were: irregular, haphazard distribution of the disease, suggesting blood-borne infection; the fibrous type of disease, where incision or curetting had already been performed; and in the first year of life.

The President, Sir Herbert Waterhouse, agreed with nearly everything that had been said. He was especially glad that stress had been laid on the local character of cervical tuberculosis. This meant that the patient was radically cured when the glands were removed. As far as his experience went there was no other cure. The fibroid and lymphatic types of gland were, however, best left alone. As regards the type of bacillus, the human was relatively common in London, although it seemed to be rare in Edinburgh. He wished to enter a protest against treatment by *x* rays. In the lymphatic type of the disease, when glands were very large, they might do some good, but they rendered subsequent operation extremely difficult. He had never seen a cure follow their use. Mr. Grey Turner (Newcastle) said that he was sorry to be called upon at this early stage of the discussion, because he had found nothing upon which he could differ from previous speakers. He agreed with Mr. Fraser's grouping of cases, and thought that many of the bad results seen twenty years ago might have been obviated had the differentiation between local and general disease been understood. The tubercle bacillus usually gained entrance via the tonsil during the first year of life. It could be found in the tonsil in a large proportion of younger children, but seldom in older cases. He had no objection to operation under one year of age. He gave the after-results in a series of cases which had been operated on five to eighteen years previously. Out of 83 cases 54 were quite well, and 15 had one or two slightly enlarged glands mostly on the side opposite to operation. He recommended removal of the glands at as early a stage as possible.

Mr. Alexander Mitchell (Aberdeen) said that in Aberdeen, as in Edinburgh, tuberculosis of cervical glands was particularly common. He thought the milk supply was largely responsible. Unfortunately when milk was sterilized some children did not thrive; it was therefore better to eliminate tuberculosis from cattle. Tuberculosis of glands had diminished since the medical inspection of school children and the removal of diseased tonsils and adenoids. As regards treatment he first dealt with the focus of infection; he then exposed the case to sunlight for two or three weeks; if there was then no improvement he operated. He thought that all cases could be cured by thorough dissection, but that in a few suitable cases curetting was preferable: it was a less serious operation and left a smaller scar. Dr. Thursfield (London) said that he saw comparatively few cases of tuberculous cervical glands in London, probably because they generally went to the surgeons. The danger of insisting on bovine tuberculosis as a cause was that the very numerous cases due to the human bacillus might be overlooked. The cases of generalized tuberculosis in infants where the primary focus had been in the cervical glands were generally of the human type, and the child had nearly always been in contact with cases of open tuberculosis. Mr. MacLennan (Glasgow) said that the present treatment of milk was a disgrace, and Government interference to put a stop to the use of tuberculous cattle was urgently called for. Cases often began as a mixed infection. There might be tonsillitis, or rhinitis, and tubercle bacilli were introduced along with pyogenic organisms. In Glasgow a very large percentage of cases were due to the bovine bacillus. He did not approve of *x*-ray treatment, and advocated operation even when an abscess was present. He showed lantern slides illustrating various types of cases. Mr. L. A. Parry (Brighton) said the majority of cases in London were due to the bovine bacillus, and that 10 per cent. of samples of London milk were infected with active tubercle bacilli. Prevention of the disease was extremely important. The supply of non-tuberculous milk was a means to this end. Attention to tonsils and teeth had done much to diminish the incidence of the disease. Operation should be performed as soon as the diagnosis was certain. Dr. Warden (Paris) did not agree with the surgeon's point of view. The profession was greatly divided on the question of operation. Medical treatment had yielded magnificent results, especially from heliotherapy. Tuberculosis of glands of the neck was a symptom of social and economic disease. The public should be enlightened on the subject of tuberculous milk. Dr. Herzfeld (Edinburgh) had followed up a hundred cases of operation in her clinic. There had been only one recurrence. Natural cure might, however, take place. In her series 48 per cent. had recovered without operation, but it was too soon to say if the results were permanent. Dr. Mackenzie (Manchuria, China) said that in China there was no bovine tuberculosis because the people did not drink milk. Human tuberculosis was extremely prevalent and many girls suffered from tuberculosis of cervical glands. The boys were less liable because they lived a more open-air life. Dr. Denison Smith said that surgeons often did not see the first stage of the disease, which usually began as a mixed infection. He had obtained good results in 45 per cent. of cases by aspiration of single glands.

Demonstration at the Royal Hospital for Sick Children.

On the afternoon of July 28th the Section of Diseases of Children attended demonstrations at the Royal Hospital for Sick Children. Dr. Alexander Mitchell showed skiagrams of regeneration of bone following resection of the shaft for osteomyelitis. In one case the shaft of the tibia had been completely removed, and the bone had regenerated from the periosteum. There was no shortening and no disability. A similar result had followed resection of the lower half of the femur for the same condition. Mr. Alex. MacLennan showed a series of cases of scoliosis. Some were due to congenital malformations. In the acquired type heredity generally played a part. He discussed the various causes of acquired scoliosis, but had come to the conclusion that the accepted causes did not account for the majority of cases. In his view scoliosis was due to an overgrowth and elongation of the bodies of the vertebra while the posterior parts remained stationary. The only possible way in which the spine could accommodate itself to this state of things was by rotation of the vertebrae, such as occurred in scoliosis. Scoliosis was due to rotation of vertebrae, not to lateral curvature. He explained the treatment by the Abbott method and by operation. He then gave a cinematograph demonstration of the gait in various diseases affecting the hip-joint.

SECTION OF INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

Thursday, July 27th.

On July 27th a paper on some factors which make for efficiency and for the social uplifting of industry was read by Sir Thomas Oliver, who pointed out that the subject of "industrial efficiency" could hardly be discussed without its obverse "industrial inefficiency." There could be no industrial efficiency without healthy workpeople. Men must be fit for their job, and those who were fit must be kept fit. There could be no disassociation of employment from home life and the manner in which leisure hours were spent. What public health had accomplished industrial hygiene, its twin sister in the department of preventive medicine, was making an effort to attain. The periodical medical examinations of workers was a matter which called for attention. A medical examination should not be a deterrent but a guide as to the particular kind of work which should be undertaken, and the early years of life were to be considered the vulnerable period. The subject of "group life" insurance was considered in some detail. The paper was discussed by Mr. W. Salisbury Sharpe, who referred to the differences in blood pressure found in various occupations; also by Dr. Scott, Mr. G. E. Orme, and the President.

Dr. James R. Kerr gave a paper on the treatment of industrial accidents. He pointed out that the treatment of an industrial accident had a very close interest for the participants in both its immediate and its remote results. Reference was made to the organization of the factory medical service for dealing with industrial accidents as met with in England and in other countries. While there was good provision for the immediate and immediately subsequent treatment of accidental injuries, there came a stage in the progress of the case when there was no adequate provision for the next essential procedure towards the restoration of the patient to his working capacity, and organized hospital treatment was required. Dr. McVail, Dr. Salisbury Sharpe, and Dr. Coles took part in the subsequent discussion. Dr. John Glaister, jun., read a paper on some new apparatus for the estimation of the working capacity of an upper extremity, and demonstrated the apparatus, which consisted essentially of a box inside which were a number of weights which could be lifted by means of rods passing through the top of the apparatus, the person examined being ignorant of the nature of the weight he was lifting. Dr. Alexander Scott, in a paper on the occupation dermatoses of the paraffin workers of the Scottish shale oil industry, discussed occupation comedones, folliculitis, pustular dermatitis, papular dermatitis, erythema, and epitheliomata, and showed numerous lantern slides and photographs.

SECTION OF PHYSIOLOGY.

Thursday, July 27th.

At the morning session on July 27th Professor D. Noël Paton occupied the chair, and expressed regret for the unavoidable absence of the President of the Section, Professor J. A. MacWilliam, Aberdeen. The discussion on the subject of basal metabolism was opened by Professor E. P. Cathcart, who emphasized the importance of basal metabolism not merely for the physiologist but also for the practitioner. Basal metabolism was the minimum metabolism compatible with life. It might be expressed as oxygen intake or as energy expenditure. There was no such thing as *normal* basal metabolism; every individual had his own, which showed a remarkable constancy. Basal metabolism, however, was influenced by many factors. There was a diurnal and a seasonal variation. Athletic or sedentary mode of life played a part. But what was of greatest importance from the clinician's point of view was the factor of the patient's condition of nutrition. Clinicians generally saw people in an abnormal state of nutrition. On account of the numerous factors influencing basal metabolism there was a danger of the physician being overwhelmed with an accumulation of utterly worthless data. Dr. J. B. Orr referred to the difficulties of determining basal metabolism, and to the influence of the psychic condition of the subject and the state of the endocrine glands. When the lowest level of metabolism was reached they were dealing really with a pathological condition, intake of nourishment being a normal function of the cell. The conception of basal metabolism was really an abstraction, what was observed was different levels of metabolism. Professor J. C. Meakins said that the value of observations on basal metabolism depended on the care with which they were made. If proper precautions were not exercised a valuable method for the study of disease might fall into disrepute. He described the conditions of observation in his wards and emphasized the importance of mental apprehension as a factor. Sometimes dummy experiments were necessary to overcome this difficulty. He showed slides demonstrating the result of treatment on basal metabolism in cases of thyroid disease, and of the effect of adrenalin injections on basal metabolism, respiratory quotient, and blood sugar. Dr. G. B. Fleming discussed the influence of age and growth on the basal metabolism of children. The fact must not be overlooked that in such cases growth was going on during the course of the observations. Dr. Leonard Hill spoke of observations on basal metabolism, with special reference to the rate of cooling as observed with the kata-thermometer. Any obstruction to breathing raised the level. One of the greatest benefits of open-air treatment was that it raised the basal metabolism. This was due to the air and not to sunlight. Dr. C. M. Wilson referred to the question of depth of pulmonary ventilation and to subjects in a state of emaciation. He showed slides illustrating the benefit derived in a number of cases of menorrhagia of exposure of the thyroid to *x* rays. Professor Cathcart, in reply to a request from the Chairman, admitted the difficulties of determination. Basal metabolism was due to the interaction of a large number of factors. Personally he was inclined to associate it with muscle tonus.

Mr. G. Hunter contributed a paper on the diazo-reaction of the urine, with particular reference to measles. Various modifications of the diazo reagent were discussed. The importance of using sodium carbonate as alkali and the necessity of adding this to the acid reagent before the solution to be tested were pointed out. The diazo-reaction of a mixed measles urine was shown to be due—to the extent of about 85 per cent. of the colour value—to histidin. Approximately 0.1 gram of pure histidin monohydrochloride was isolated from a litre of urine estimated to contain 0.31 gram. The remaining colour was mainly due to some phenolic substance which was not isolated.

At the afternoon session a combined meeting of the Section and of the Physiological Society was held. The following demonstrations and communications were given: 1. A method of demonstrating arterial blood pressure to large classes. The action of guanidin on the cardiac inhibitory mechanism (Professor D. Noël Paton, Professor D. Burns, and Mr. J. McColl). 2. The influence of oxygen on the pulmonary circulation (Dr. N. Morris). 3. Notes of Thunberg's succinodehydrogenase (Dr. G. M. Wishart). 4. Laevulose in human foetal blood (Mr. A. P. Orr). 5. The influence of calcium on the absorption of phosphorus from the gut (Dr. S. V. Telfer). 6. Postural alterations in the respiration of the rabbit (Professor D. Noël Paton). 7. The effect of sunlight on rickets (Dr. Leonard Hill). 8. The influence of the type of work on mechanical efficiency (Professor E. P. Cathcart, Miss E. M. Bedale, and Mr. G. McCallum). Later in the afternoon Professor Cathcart showed (1) a new type of ergometer designed by Professor Cathcart, Dr. Wishart, and Mr. McColl; (2) the latest type of Benedict-Roth-Collins respiration apparatus for determining basal metabolism.

RADIOLOGY AND ELECTROLOGY.

Thursday, July 27th.

A discussion on the therapeutic value of static electricity was opened by Dr. Howard Humphris (London). He said that there were six chief modalities obtainable for therapeutic purposes: the static bath (also known as the static charge), the wave current, the static induced current, the brush discharge, the static spark, and the high potential vacuum. He described each of these in turn and pointed out their advantages for particular conditions, concluding with the remark that static currents were replaceable by no other form of electricity, and with a competent knowledge of their uses therapeutic effects could be obtained from them which appeared marvellous to anyone using them for the first time. To get these effects consistently, however, it was necessary to have a knowledge of the subject of static electricity and of the nature of the disease to be treated, and to have a static machine of efficient power. Dr. W. F. Somerville (Glasgow) gave an account of high-frequency currents. He brought forward evidence to show that under the influence of these currents definite physiological actions were produced in the

tissues and functions of the body, and that some of these actions were capable of actual demonstration and of precise measurement; also that certain forms of organic disease were favourably influenced by the application to them of high-frequency currents. He arranged the evidence under three headings: (1) the effects of high frequency currents on the surface temperature of the body; (2) their action on tissue metabolism, as indicated by qualitative changes in the composition of the urine; (3) their therapeutic efficacy in diseased conditions in which the element of suggestion either did not exist at all or was reduced to a minimum. After a brief discussion in which the President and others took part, a number of papers on *x*-ray subjects occupied the remainder of the session. The first of these was an account of the Bucky-Potter diaphragm and a lead-glass shield as used for the 7-inch Coolidge tube. This was read by Dr. H. E. Gamlen (Newcastle), who said that the function of the Bucky-Potter diaphragm was to absorb the scattered rays which were generated within the tissues of the body owing to the action of the primary radiation in passing through. The diaphragm prevented the secondary rays from reaching the film or plate, and thus caused better contrast and definition. Dr. C. W. S. Saberton (Harrogate) gave a description, assisted by many slides, of the *x*-ray appearances in bone disease, with a view to differential diagnosis between simple and malignant cases. His illustrations principally related to osteitis fibrosa, which was liable to be confused with certain other diseases which might simulate it; and in arriving at a diagnosis the clinical history must always be considered in conjunction with the *x*-ray findings. Dr. James Crocket (Glasgow) read a paper on the differentiation of active from quiescent tuberculosis of the lung. He traced the radiological development of advancing tuberculosis: first a diffuse haziness of the affected area and enlarged trunks radiating from the hilum, these trunks afterwards becoming more accentuated, while budding, rounded or oval in form, appeared on certain branches; the buds afterwards became larger and more numerous, the shadows more dense, and the whole lung at last became dark, save for the light areas significant of cavity formation. Dr. E. W. Reed (Manchester) spoke on the *x*-ray treatment of diseases of the skin. The conditions contraindicating *x*-ray treatment he divided into general, such as grave blood diseases, and local, such as acute inflammatory conditions: the prompt application of *x* rays was indicated when there were indurations and thickenings, itching, chronic infiltrations, lichenification, conditions requiring depilation, and, finally, new growth. The closing paper was read by Dr. Gibson Graham (Glasgow) and recounted the author's twelve years' experience of the *x*-ray treatment of tinea. Although he had treated children under two years of age, he had never seen any sign of impaired mental function which could be attributed to *x* rays.

SECTION OF OPHTHALMOLOGY.

Thursday, July 27th.

THE chair was taken on July 27th by Dr. John Rowan, a vice-president of the Section. The subject for discussion, the clinical significance and treatment of heterophoria, was introduced by Mr. A. S. Percival of Newcastle, President of the Section, who said that he would make his introductory remarks brief, so that their distinguished guest, Dr. L. Webster Fox of Philadelphia, might be able to develop his thesis at greater length. Dr. Fox was given a most enthusiastic welcome, and in his paper he dealt with those aspects of this complicated problem which they in the United States were at this time most actively following. A keen discussion followed, in which there participated Messrs. J. A. Wilson (Glasgow), Charles F. Harford (London), Inglis Pollock (Glasgow), Bishop Harman (London), Gray Clegg (Manchester), Herbert Caiger (Sheffield), Thomas H. Bickerton (Liverpool), J. J. Healy (Llanelly), G. M. Harston (Hong Kong), Stewart Barrie (Glasgow), Lindsay Rea (London), John Rowan (Glasgow). The discussion concluded by replies from Dr. Percival and Dr. Webster Fox. A paper on a case of ophthalmic migraine with unusual symptoms was read by Dr. A. R. Moodie of Dundee; and a paper on the education of partially blind children in myope classes, by Dr. H. Wright Thomson of Glasgow; this was discussed by Mr. Bishop Harman and Dr. John Rowan. Dr. Herbert Caiger of Sheffield communicated a note on conjunctivitis artefacta, which was discussed by Messrs. T. H. Bickerton, Peter Macdonald of York, A. S. Percival, and A. R. Moodie of Dundee. The final paper for the day gave an account of the venereal disease clinic of the Glasgow Eye Infirmary, and was communicated by Dr. E. J. Primrose; to this there followed remarks by Dr. Ballantyne of Glasgow, Dr. Wilson of Huddersfield, and Dr. John Rowan.

Friday, July 28th.

A clinical meeting was held at the Glasgow Eye Infirmary under the direction of Dr. A. J. Ballantyne, vice-president of the Section. A large series of demonstrations were arranged by officers of the Section besides clinical cases. Dr. John Rowan (Glasgow) showed stereoscopic photographs in natural colouring; Dr. A. J. Ballantyne showed drawings of abnormal retinal vessels; Mr. A. S. Percival gave a demonstration of the light sense test; Dr. George Mackay exhibited a motor trephine; cases were shown by Messrs. John Rowan, Wright Thomson, Garrow, Ballantyne, Leask, Hislop Manson, Inglis Pollock, Barbour Stewart, E. J. Primrose, and others. The arrangements made for the demonstration of the cases were excellent, and the thanks of the visitors were tendered to the officers of the Section and the staff of the hospital.

Reports of Societies.

OXYGEN WANT.

AT a meeting of the Edinburgh Medico-Chirurgical Society held on July 5th, with the President, Sir ROBERT PHILIP, in the chair, Professor J. C. MEAKINS read a paper on oxygen want, its causes, signs, and treatment, in which he discussed the importance of oxygen in physiological and pathological conditions. Having reviewed the means whereby the blood acquired oxygen from the lungs and the importance of the peculiar character of the dissociation curve of oxyhaemoglobin, he mentioned how the tissues acquired oxygen from the capillary blood. He then summarized the causes of oxygen want and demonstrated the close relationship between delirium in pneumonia and oxygen want as determined by the arterial oxygen saturation and cyanosis. The interference with the respiratory function in lobar pneumonia, bronchopneumonia, emphysema, and asthma was discussed in detail, while the protection of dyspnoea and cyanosis in cardiac diseases was interpreted both from the point of view of the oxygen saturation of the arterial blood and also of the minute volume of blood flow through the heart. Having demonstrated the causes of orthopnoea and Cheyne-Stokes breathing, and shown how these conditions could be relieved by the administration of oxygen, Professor Meakins next considered the influence upon the organism of abnormal composition of the atmospheric conditions in mines and other places. In carbon monoxide poisoning the grave results were consequent upon the formation of carbon monoxide haemoglobin in place of oxyhaemoglobin. When the individual was removed from the abnormal environment the carbon monoxide was soon removed from the body, and any after-effects were the result of oxygen want occurring during the period of poisoning.

Dr. WITHRIDGE DAVIES dealt with methods of oxygen treatment. He ascribed failure of oxygen therapy to its exhibition in unsuitable conditions or to faulty technique. The essential consideration was to raise the oxygen percentage, and therefore the partial pressure of oxygen in the air of the lung alveoli, thus giving the oxygen a greater *vis a tergo* in its passage through damaged lung epithelium. Dr. Davies then described the oxygen chamber, the Haldane apparatus, the nasal catheter method, and various emergency methods of oxygen administration.

Surgical Diagnosis of Renal Diseases.

Mr. HENRY WADE read a communication on the choice of methods employed in the surgical diagnosis of renal diseases. In only two types of cases—injury and acute fulminating pyonephrosis—was operative treatment justified without careful preliminary investigation. It was wise in such cases to open the abdominal cavity and examine the other kidney. His routine investigation in the ordinary case comprised the clinical examination, including chemical, cytological, and bacteriological examination of the urine, an *x*-ray photograph of the bladder and both kidneys and ureters, and the use of the cystoscope. Mr. Wade then discussed the indications for ureteral catheterization, pyelography, the use of the *x*-ray catheter, chromocystoscopy, and renal pelvic lavage. Ureteral catheterization was of value in investigating the source of

blood or pus in the urine. In intermittent haemorrhage his custom was to wait till the haemorrhage was taking place; while one had to remember the possibility of the catheter itself causing a little bleeding, a brisk flow of bright blood should suggest a neoplasm. In pyuria he favoured bilateral catheterization, and with certain precautions this procedure was without danger. Pyelography was useful in confirming the diagnosis of renal tumour because of the characteristic alteration in the shape of the calyces it produced; it was the only sure method of determining the nature of a suspicious shadow, such as that caused by stone, and was helpful in deciding whether or not an abdominal swelling was renal in origin—for example, a displaced kidney. He preferred the *x*-ray catheter to the wax-tipped bougie in investigating a doubtful shadow in the line of the ureter. The indications for and technique of renal pelvic lavage were also dealt with. To determine the renal function as a whole, blood analysis was of more value than chromocystoscopy, and in the elderly prostatic was an indispensable guide as to when operation could safely be performed.

Reviews.

ARTIFICIAL LIMBS AND AMPUTATION STUMPS.

Mr. Muirhead Little tells us that an artificial foot is referred to by Herodotus as in use as early as 500 B.C., and that at the Royal College of Surgeons there exists an artificial leg found in an Italian tomb at Capua and dating from at least 300 B.C., so that the history of prosthesis is certainly a very ancient one. A sixteenth-century artificial arm is in existence in the Nuremberg Museum, and Ambroise Paré gives descriptions of both arms and legs of considerable complexity, the artificial arms having mechanical hands and fingers working by springs, ratchets, and catches. During the nineteenth century much progress in prosthetic appliances was made, chiefly as the result of attempts to fit men who had been injured in the great wars. Baliff, after the Napoleonic wars, was the first to suggest the use of the shoulder and trunk muscles to work the mechanism of an artificial hand through connecting cords, a method which is now used very extensively in mechanical arms. After the Crimean and Italian campaigns of the French Empire de Beaufort devised several mechanical arms worked in this way, and also invented a very cheap and simple artificial leg. The recent great war has yielded an experience in the fitting of artificial limbs which is unique in history. The total numbers fitted under the auspices of the Ministry of Pensions, excluding members of the Overseas Forces, are:

Lower extremity	...	...	29,950 (72.5 per cent.)
Upper extremity	...	...	11,350 (27.5 ,, ,,)
Total		...	41,300

Mr. Muirhead Little has probably had a greater opportunity of gaining experience in the fitting of limbs than any other surgeon in this or any other country, and from this experience he has written so concise, lucid and complete a work upon the subject that his book, *Artificial Limbs and Amputation Stumps*,[1] must form a classic for a very long time to come.

It is impossible to do more than select from this work a few items for comment. A chapter on amputation stumps considered from the point of view of the fitting of artificial limbs gives a guide which is essential for every surgeon, for anyone may have to perform an amputation, and it is a confession of failure if the resulting stump is unsuitable for the fitting of an artificial limb. It is to be feared that cineplastic amputations, to which the author devotes the greater part of a chapter, have already become obsolete, the power of the motors being insufficient and the difficulty of fitting a useful prosthesis almost insuperable.

The British official prostheses, to which a considerable portion of the book is devoted, represent the result of all the accumulated experience of the recent and all past wars, but finality has not yet been reached. Only those types which are strong and useful have survived, and many inefficient appliances have been eliminated. The artificial arms are divided into three groups: those for hard work—"Heavy Workers' Arms," those for light work—"Light Workers' Arms," and those for ornament—"Light Dress Arms." The heavy workers' arms have, as a rule, detachable forearms and hands, so that tools may be fitted instead. The dress arms are shaped like a natural arm, the forearm and hand not being detachable. The metal parts are of steel or duralumin, the sheaths or shaped parts being of duralumin, leather, or certalmid—the latter a fabric and glue composition, which has been devised in the experimental workshops of the Ministry of Pensions, and which is very light and strong. Mechanical movements of the artificial arm and hand have been extensively developed, and show great ingenuity. The chief stimulus to the production of these has been the Carnes arm, a clever appliance introducing a wonderful imitation of flexion of the elbow, pronation of the forearm, and a mechanical hand grip. Appliances to be used instead of the hand are innumerable; the only apparent difficulty is the selection of those suitable for individual workers. Possibly too many of these have been devised, for, as Mr. Little says, "a visit to a workshop, where a large number of one-armed men are employed, shows that, as a rule, only simple appliances are used." For special work, however, implements of a more elaborate nature may be very useful; as an example may be cited the draughtman's appliance, made by Mr. N. B. Jones for his own use.

A prosthesis for the lower limb is a simpler matter than one for the upper. It is, as a rule, inadvisable to provide for all the normal movements in artificial hip and ankle joints, because the muscles that should control these movements are wanting. The simpler the mechanism of an artificial leg the better, and the British official types of limb may be said to standardize the simplest mechanism which is really strong and reliable. Much controversy has centred around the weight of artificial legs. Mr. Little has always maintained that prostheses, especially for the lower limb, cannot be too light, provided that they are strong enough. He has measured limbs systematically at the hospital at Roehampton, and has come to the additional conclusion that the distribution of the weight is even more important than is the total weight. It should be the aim of the designer and manufacturer to raise the centre of gravity as much as possible, so that the distal part of the limb is kept very light. A further point may be put in a patient's own words: "When the socket fits me properly the limb feels no weight at all, but when it is too loose it seems to weigh a ton." Light metal limbs made of duralumin were just coming into use at the beginning of the war. Until comparatively recently the price has been such as to prevent a general issue of limbs of this type, but this difficulty has now been got over, and a footnote in Mr. Little's book tells us that the Ministry of Pensions is now issuing a light metal limb with a wooden socket to those patients who have short thigh stumps and other conditions necessitating a particularly light limb.

Many of the short chapters upon special subjects are of great interest, and will be of immense value to the surgeon in helping him to deal with difficult cases. As examples may be quoted a chapter on appliances for mutilations of the hand, one upon permanent peg-legs, and others on amputation of both the lower extremities, complicated amputations, and the repair of artificial legs. In addition, a short account is given of experimental work by cinematography upon the mechanism of the normal man's gait, and there is a chapter upon re-education of the amputated.

In an appendix full working details are given. They include the specifications of the limbs which have been standardized by the Ministry of Pensions, an account of the method of using certalmid, and of the method of assembling a light metal limb made by the Ministry of Pensions.

[1] *Artificial Limbs and Amputation Stumps.* By E. Muirhead Little, F.R.C.S. London: H. K. Lewis and Co., Ltd. 1922. (Demy 8vo, pp. viii + 319; 267 plates and figures. 18 dols. net.)

SIXTY-FOUR YEARS A DOCTOR.

The lean and slippered pantaloon was a picturesque figure enough, but a thought useless, his shrunk shank being controlled by a shrunk mind. It may have been his picturesqueness that caused him to be enshrined in a poet's phrase, but he must have been deadly to talk to. In fact it does not appear that anyone ever did talk to him; which was a pity, because if he had scratched his head hard enough he could probably—even on a very low estimate of his remaining mental capacity—have awakened a few remembrances of the panorama of life which had passed before his eyes. Fortunately in these modern days he has only a small part, for it is no longer indecorous to remain young in spite of advancing years, and it is somewhat of a disgrace to grow old (except in wisdom). By growing old we mean a gradually increasing impermeability to current impressions, a slow withdrawal

into a bi-valvular shell which opens rarely, and may or may not contain a pearl. Such an old mind is content with its own fixed horizon, its own set background of thought; it has forgotten how to press on. To ripen in wisdom is a very different thing, for this involves the continually open mind for ever weighing in judgement the new and the old, so that the new is put on as it proves itself worthy of adoption, and the old is cast off as it becomes effete.

"Different things delight different people. But it is my delight to keep the ruling faculty sound without turning away either from any man or from any of the things which happen to man, but looking at and receiving all with welcome eyes, and using everything according to its value." Thus Marcus Aurelius. "There is not a more interesting occupation for the mind of a medical man who has been fifty years in practice than a consideration of the benefits which have resulted to humanity from the discovery of chloroform, aseptic treatment, . . ." Thus Sir Charles Brown, the honoured octogenarian of Preston. That is a far cry from the lean and slippered gentleman, *sans* everything; and it is entirely in keeping with the wisdom of the philosophic Emperor. But there is this profound difference: whereas Marcus Aurelius enunciated his precepts with obvious self-consciousness, Sir Charles Brown has equally obviously practised his with perfect naturalness.

His book, *Sixty-four Years a Doctor*,[2] written at the age of 86, reveals the quality of his mind. The book has no conscious art, but it takes the reader right into the presence of the author, as though it were a conversation. It is entirely uncritical, and is simply a record of the things he has seen during his long life. Some of the reminiscences are distinctly quaint:

"Professor A. F. McGill at a meeting of the British Medical Association at Leeds on August18th, 1889, described how he had already successfully performed the suprapubic operation for prostatectomy, and laid great stress on the fact that the mucous membrane was incised with scissors and the enucleation carried out with the finger. In an adjoining room there was the astounding and unique spectacle of seven or eight old men sitting on a bench with their prostates in bottles on their knees."

Again, with reference to a case of appendicitis (this, in December, 1886):

"I called into consultation the night before the patient died one of the most eminent surgeons in the north of England, and he wished me to inject into the patient's rectum an infusion made according to a prescription of which the following is an exact copy: Common shag tobacco 50 grs., boiling water 15 oz.: infuse for half an hour, cool and strain. Three drams to be used as an enema every half-hour till symptoms of collapse arise."

The author's subsequent comment on the situation thus created is as good as anything in the book. One more quotation must suffice:

"I recall the only occasion on which I saw paracentesis thoracis performed at King's College Hospital. It was in 1858. The fluid was conveyed not through a rubber tube into a basin, but through a piece of chicken's intestine, the distal end of which rested under the surface of water contained in a bucket."

To the layman, also, Sir Charles Brown speaks on many matters of general interest, such as the advances in means of transport; and of many well-known public men he has met, from famous medical men to the late General Booth. Indeed, much of the professional matter would be as intelligible as it would be profoundly interesting to anyone to whom the progress of medical science in the alleviation of suffering means anything.

The book is dedicated very appropriately to Sir Clifford Allbutt; and in a publisher's foreword it is stated that the profits from the sale are to be devoted to the Preston and County Royal Infirmary, with which the author has been associated since its inception. Thus Sir Charles Brown continues his benefactions, not the least of which has been in connexion with the Cambridge Research Hospital, which owes him much.

In September of this year Preston holds its famous Guild after the customary interval of twenty years. Sir Charles Brown must have seen as many of these celebrations as anyone else in the town, and it is to be hoped that Preston will use the occasion to further the object with which this book was written by one of its oldest and most widely honoured citizens.

[2] *Sixty-four Years a Doctor.* By Sir Robert Charles Brown, M.V.O., M.D., F.R.C.P. Pp. 192. Preston: Toulmin and Sons, Ltd. 1922. (Demy 8vo, pp. 192, paper cover; 3s. net, paper.)

"THE ENGLISH SPAW": HARROGATE.

DR. JAMES RUTHERFORD of Harrogate has laid students of the history of medicine under an obligation by reprinting from the first edition EDMUND DEANE'S *Spadacrene Anglica, or The English Spa Fountain*.[3] He has increased the debt by inducing Dr. ALEXANDER BUTLER, also of Harrogate, to contribute some biographical notes of Deane, who was an Oxford graduate and a physician in York, and on some others associated with the early days of Harrogate.

Deane's book is little known; very few copies of the first edition, which was published in 1626, seem to be in existence, and the commentators in this edition are able to show that an acquaintance with Deane's treatise would have prevented some errors that have become current about the early history of Harrogate. They establish the fact that the medicinal virtues of a spring on Harrogate moor were first, in modern times at least, recognized, not by Sir William Slingsby, who generally has the credit, but by an elder relative of his, also William, who had travelled much and found a resemblance between the water of Spa and that of the Tuewhit well, which was therefore given the name of "the English Spaw." The spring contained iron, as Deane and some other physicians of York were able to demonstrate by adding powder of galls, whereon, to the admiration of Mr. William Stanhope, an ingenious, that is to say curious minded, gentleman who accompanied the party, "the water changed colour, and seemed to blush in behalf of the country, who had amongst them so great a jewell and made no reckoning of it." There is still a Tewit well at Harrogate described as a weak carbonate of iron spring.

NOTES ON BOOKS.

MR. RUSSELL HOWARD'S *The Practice of Surgery*[4] has now reached its third edition. In it Mr. Howard has endeavoured to set forth the teaching of surgery current at the London Hospital. A work of this kind running to three editions in the course of eight years is one which may be said to have established itself. It is a good average textbook, free from violent prejudices and following the beaten track of established teaching. The illustrations are many, simple, and well chosen, but vary considerably in quality.

Dr. C. W. VALENTINE, Professor of Education in the University of Birmingham, has written a small volume, *Dreams and the Unconscious*,[5] in which he aims to give an account of the "new psychology" and to indicate what, in his opinion, is fairly well established and what is still speculative theory or hasty generalization. The book is readable and clearly written, but its subtitle, "An Introduction to the Study of Psycho-Analysis," is perhaps somewhat misleading, as the author does not accept the basic principles of Freud's teaching and only deals in a quite general and superficial way with his subject.

[3] *Spadacrene Anglica, or The English Spa Fountain.* By Edmund Deane, M.D.Oxon. The first work on the waters of Harrogate. Reprinted, with an introduction by James Rutherford, L.R.C.P.Edin., and biographical notes by Alexander Butler, M.B. 1922. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. (Crown 8vo, pp. 133. 6s. net.)

[4] *The Practice of Surgery.* By Russell Howard, C.B.E., M.S.Lond., F.R.C.S. Third edition. London: Edward Arnold and Co. 1922. (Med. 8vo., pp. 1230; 523 figures, 8 plates. 30s. net.)

[5] *Dreams and the Unconscious: An Introduction to the Study of Psycho-Analysis.* By C. W. Valentine, M.A., D.Ph. London: Christophers. 1921. (Cr. 8vo, pp. 144. 4s. 6d. net.)

GENERAL PRACTITIONERS AND MEDICAL OFFICERS OF HEALTH.

IN a presidential address delivered to the conference of medical officers of health held during the congress of the Royal Sanitary Institute at Bournemouth last month Dr. W. J. Howarth, M.O.H. for the City of London, reviewed the relation between medical officers of health and other members of the profession, especially general practitioners. The State, he said, had contracted with one section of medical men to provide treatment to a defined section of the community, and had also established centres for treatment by another section of the profession. The officer of the local authority, the medical officer of health, in establishing these centres, at which payment might or might not be required, acted under instructions, and the scheme evolved might appear to encroach on the sphere of the general practitioner. Such a position might create in the profession discordant sections instead of a united whole. No effort should be spared to establish a

federation of all sections of medicine. To achieve this honest compromises, backed up by unswerving loyalty, must be made. A former member of the Cabinet had rightly insisted that the views of the profession should be expressed by a body representative of all interests.

The general practitioner, Dr. Howarth said, was to be regarded as the backbone of English medicine; there was no doubt that public opinion in medical matters was materially influenced by his support or criticism; his close relationship to individual families and the esteem and admiration generally felt for his self-sacrificing work made him a real representative of medicine in the eyes of the British public. This fact, combined with the growing recognition of the medical ideal that prevention as well as cure is a responsibility of the general practitioner, rendered it essential that the medical officer of health should use every endeavour to secure the goodwill and active co-operation of general practitioners in his public health proposals. Differences which had arisen in the past had been due generally to misunderstandings. One group had failed accurately to appreciate the objects of the other because means for mutual discussions and criticism had been inadequate or had not been sufficiently used. Medical officers of health were associated in one body which had recently varied its constitution in order to enable all those engaged in the medical work of local authorities to take part in its affairs and management. As a consequence the society would undoubtedly in time to come be even more fully representative of all sections of preventive medicine. Dr. Howarth then continued as follows:

General practitioners have several societies representing their interests, but I believe that the British Medical Association, whilst not only claiming to be representative of all sections of medicine, does actually contain a greater number of members belonging to the group of general medical practitioners than any other society. Here is an organization which some minor change in constitution would probably admirably fit the part of the central body which could provide the necessary means for educating the different sections of medical men in their respective aims and difficulties. Particularly does the organization seem suited for bringing into closer touch general practitioners and medical officers of health.

The difficulties experienced are that the policy of the Association is decided by the representatives in annual council assembled. At such a meeting representatives of sectional interests are not present, unless, of course, as the representatives of areas; as a consequence a section may consider itself aggrieved by an adverse decision, since the decision was arrived at without that full appreciation of the position which would have been the case had direct sectional representatives been able to take part in the debate.

These few points will indicate the lines on which it might be possible for future difficulties to be avoided. The Association may and probably does consider it is rightly entitled to be regarded as the exponent of medical policy. The claim, or the desire, whichever it may be, is to be applauded, provided it can show how sectional interests can receive adequate consideration and ensure a suitable balance of judgement. This proviso is surely not a difficult one; it simply requires an arrangement with the sectional interests to join in its work in respect of matters which are of mutual concern and which require public advocacy and common action. For example, it might arrange for representatives of sections to be directly elected as such to the Representative Body, and even before any final decision as to policy is reached educational methods might be provided for by arranging that a representative of the section should be elected to the Divisions and Branches of the Association, and that corresponding nominees of the Association should have seats on the divisions of the sections concerned. This reciprocal privilege should extend even to the councils of the respective bodies.

A proposal of this kind would surely make for an agreed and uniformed policy, and no section would lose its individuality or freedom of action if provision were provided for separate action, though such a contingency ought to be safeguarded by requiring the most careful and deliberate consideration and an exact statement of the difficulties in joint conference before detached action could be possible.

In conclusion, Dr. Howarth said that it was necessary for all engaged in preventive work to practise economy in the expenditure of public money; their proposals must be sound, and must have the support of the stalwarts of the profession—the general practitioners. Proposals on which opinions were divided were more than ever certain of rejection; practitioners and medical officers of health must get into closer touch, and with this object a greater measure of discussion in the privacy of society deliberations must be arranged.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

(Concluded from page 222.)

THE following are some additional notes of the proceedings of the International Congress of the History of Medicine in London, which came to an end on July 22nd.

Anatomy in Edinburgh.

DR. J. D. COMRIE, in a paper on early anatomical instruction at Edinburgh, said that in the fifteenth century the brethren of the Guild of Surgeons and Barbers maintained an altar, where daily service was held, in the Collegiate Kirk of St. Giles, under the patronage of St. Mungo. In 1505 the guild received a charter of incorporation from the town council; it stipulated that every man before he became a freeman and master of the craft should submit to an examination in the following points: "Thatt he knaw anotomea, nature and complexioun of every member, in manis bodie. And in lykewayes he knaw all the vaynis of the samyn thatt he may mak flewbothomea in dew time. And als that he knaw in quhilk member the signe hes domination for the tyme." A noteworthy concession by the town council, as indicating the beginning of public teaching, was the grant to the guild "that we may have anis in the yeir one coudampnit man after he be deid to make antomea of quhairthrow we may haif experience ilk ane to instruct utheris."

Among the native Edinburgh surgeons mention was made of Anthone Brisset, who treated Queen Mary of Guise (1542); Gilbert Skene, who published a treatise on plague (1568); John Chisholm, who operated on the Regent Earl of Morton for strangulated hernia (1572); and Gilbert Primrose, chirurgion to James VI and Deacon of the Craft of Chirurgeons (1585). A museum was gradually formed in the College of Surgeons, and Monro presented a skeleton (still preserved). Specimens of normal and pathological anatomy gradually accumulated, and in the eighteenth century Barclay commenced his valuable collection of pathological and comparative anatomy, which on his death became the property of the College. In 1831 the University separated the Chair of Surgery from that of Anatomy, thus producing a necessary change in the scope of the anatomy lectures. In 1831 anatomical instruction entered upon the modern epoch in Edinburgh.

Forgotten Teachers at Salerno.

DR. CAPPARONI related how he had found in a manuscript belonging to the Cathedral of St. Mathew of Salerno many names of medical men unknown to Salvatore de Renzi when he wrote the history of the medical school. The manuscript contained a list, extending from the beginning of the second half of the eleventh century down to the sixteenth century, of the names of members of the brotherhood of St. Michael who died at Salerno. Some names and dates earlier than the eleventh century had been copied into the manuscript from the records of the Benedictines. The new names numbered altogether forty-five, but with regard to fourteen it was uncertain whether they were doctors. He had obtained fresh information with regard to the lives of thirty-six doctors mentioned by de Renzi, and was able to give those of sixty-three followers—English, Scottish, French, and German—who had visited Salerno. Most of the men whose names were given were monks or other clerics. When the practice of medicine outside the cloisters was forbidden, enthusiastic lay medical practitioners increased and guilds of medical men were formed. In his opinion the famous "women of Salerno" were chiefly midwives.

Inoculation for Small-pox.

DR. TORKOMIAN said that those interested in the history of inoculation for small-pox were unanimous in declaring that the practice had been known from time immemorial in China; from that country it was introduced into Persia, Circassia, and Georgia, but they omitted to mention Armenia, situated on the borders of the countries mentioned and in constant relations with them. Armenia had, however, the right to be considered one of the countries which propagated the practice. The method consisted in gathering the scabs of the variolous pustules at the moment of desquamation and preserving them in the pulp of raisins. At first this mixture was swallowed, but later the method of inoculation by incision or rubbing

was practised. He concluded his speech with a tribute to Jenner, whom he calls one of the greatest benefactors of humanity.

Byzantine Cookery.

Professor E. JEANSELME and Dr. L. DECONOMOS contributed a paper on Byzantine food and culinary recipes. The Byzantines, they stated, preferred ground and winged game, and made large use of sea fish and of shell fish. Their culinary methods were complicated. They inherited from the ancient Greeks and the Romans a taste for sauces and highly seasoned dishes, and they drank wines mixed with various ingredients, such as honey, pepper, cumin, cinnamon, and myrrh, and as a people they were far from healthy, and their diet predisposed them to congestion and gout. Great numbers fell victims to these diseases, both in Constantinople and in the principal towns of the Greek empire.

Veterinary Medicine.

Major-General Sir F. SMITH, who contributed a paper on the position of veterinary anatomy in England during the sixteenth, seventeenth, and eighteenth centuries, said that the veterinary knowledge in England during the sixteenth and eighteenth centuries was very small, but considering that anatomy was only beginning to be taught in the fifteenth century, and that no veterinary schools were formed until the eighteenth century, this was not surprising. In the middle of the sixteenth century Thomas Blundell published a book on the study of diseases of horses, but the information it contained was for the most part traditional and often absurd. An Italian, Ferraro, of the Neapolitan school of horsemanship, wrote a work on the diseases of horses, which contained two anatomical plates which showed a great lack of knowledge of anatomy. The father of veterinary anatomy was the Italian Ruini, whose anatomical diagrams showed that at least he really studied the subject, and had some conception of the circulation. France and Italy had led in veterinary knowledge, but in this country there appeared to be a national indifference to precise knowledge of the subject.

Professor COLE considered that Carlo Ruini was the father of veterinary science. He was born in Italy in 1530, and became a senator of Bologna. In 1598 he published the first real book on veterinary science and the infirmities of the horse. His diagrams showed that he was the first who really knew anything about the anatomy of the horse. His work went through four editions in Paris, was published in London in 1669, and was often plagiarized. M. LEON MOULE said that Greek and Latin writers had confused several serious diseases of horses with glanders. "Malleus aridus" corresponded to acute glanders, and "malleus humidus" to chronic glanders, but "malleus articularis" was a rheumatic affection, and the "malleus elephantiasis" resembled the elephantiasis of the Arabs. Mr. H. J. SEVILLA said that there was reliable evidence that the Greeks had a very good knowledge of diseases of the horse and of veterinary surgery.

MATERNAL MORTALITY IN DUBLIN AND NEW ZEALAND.

DR. HENRY JELLETT, whose name is honourably bound up with the Dublin school of obstetrics, read a paper this year (1922) at the Annual Conference of the British Medical Association, New Zealand Branch, on the subject of maternal mortality in connexion with child-bearing. His residence in New Zealand enabled him to compare practice in that country and in Dublin. His experience in New Zealand had led him to form certain opinions; one was that the general maternal mortality in New Zealand was somewhat excessive, allowing for all deductions. Others were that the percentage of labours in which the child was delivered artificially was many times greater than was necessary for purely obstetrical reasons, and that the percentage of cases in which there was interference with the physiological mechanism of the third stage of labour was also very high. In his opinion the maternity homes were usually unsuitable in construction and equipment. He noted also that gynaecological and obstetrical operations of every degree of gravity were done by the general practitioner, not merely where expert assistance was lacking but even where it was available.

Dr. Jellett discussed each of these opinions in turn and suggested remedies. He had been furnished with figures by the Board of Health from which it was apparent that the maternal mortality for 1920 was 1 in 154 births, and he had specially scrutinized the worst districts—that is to say, those in which the rate was above the average and those (16 in number) in which it was more than 1 in 100. In the last-named group 6,876 births were attended by 89 deaths (1 in 77). He analysed the causes of death, and found that 74 per cent. of the total were due to four conditions—namely, sepsis, eclampsia, *post-partum* haemorrhage, and placenta praevia. He instituted the following comparison in regard to these four causes between New Zealand and Dublin (Rotunda) for the past twenty-six years.

Causes.	Mortality Rate.	
	New Zealand (50,761 births).	Rotunda Hospital (44,581 births).
Sepsis	1 in 459	1 in 634
Eclampsia	1 in 851	1 in 1,168
Post-partum haemorrhage ...	1 in 1,051	1 in 7,397
Placenta praevia...	1 in 2,736	1 in 7,337

Dr. Jellett was of opinion that the large number of *post-partum* haemorrhages pointed to the excessive frequency of instrumental deliveries and hurried third stages; the high death rate in eclampsia suggested either a severer type of disease or unsuitable treatment, probably the latter (Caesarean section done too often); and the mortality from placenta praevia also suggested unsuitable treatment (forced delivery, etc.). His explanation for the high death rate from sepsis was threefold—namely, increased virulence and prevalence of septic organisms (a matter of conjecture), operative midwifery, and unsuitable surroundings. By unnecessary operative midwifery he meant prophylactic *ante-* or *post-partum* douching, excessive vaginal examinations, unnecessary forceps applications, and interference with the course of the normal third stage. Private houses adapted to the purposes of a maternity hospital and too small to pay for proper equipment and service constituted unsuitable surroundings. Other causes of the septic mortality were criminal abortion (practically absent in Ireland) and venereal infection. Immature gynaecology, by producing pelvic infection, caused another kind of mortality—namely, sterility.

Dr. Jellett suggested the following remedies for the diminution of a maternal mortality and a functional mortality which seemed to be excessive in New Zealand. He would alter the relations between the medical attendant and the patient in cases of normal labour. The present relation, as he understood it, was that the medical attendant was expected to be available or even present during a great part of the labour, to shorten the procedure so far as possible, and to be content with an inadequate fee. All cases did not need skilled attendance by medical men all the time; they were better employed in supervising pregnant women and in picking out the cases in which trouble was likely to occur in labour. "There was clearly a large field for ante-natal clinics, provided those who conducted them knew what to look for." In this conclusion it is interesting to note that Dr. Jellett was in agreement with the strong expression of opinion at the recent Glasgow meeting of the British Medical Association (in connexion with the discussions on stillbirths, on eclampsia, and on infantile mortality in connexion with alcoholism), in favour of adequate ante-natal supervision and (when necessary) treatment.

Dr. Jellett advised the erection of midwifery blocks for paying patients in connexion with the large general hospitals, and would abolish all homes which were too small to be run both efficiently and profitably, insisting on the careful examination of all existing homes and hospitals. He would like to see the teaching of obstetrics made far more practical, and urged the provision of post-graduate teaching so that the training of specialists would be possible. Dr. Jellett also expressed the belief that there was a place for obstetrical and gynaecological specialists in large centres, and pleaded for their recognition by the general practitioner. His conclusion is worthy of quotation: "Labour under normal conditions is a physiological process; we cannot interfere with it without making it a pathological process and introducing complications whose possibilities for harm are infinite; therefore the wise and skilful obstetrician avoids interference."

British Medical Journal.

SATURDAY, AUGUST 12TH, 1922.

HOSPITAL POLICY.

The very long and important discussion on hospital policy during the Annual Representative Meeting of the British Medical Association held lately in Glasgow has been fully reported in the Supplement of July 29th (p. 52 and p. 60) and of August 5th (p. 71). The foundations of the debate were the Council's special report on this matter printed in the Supplement of February 25th, 1922, and the relevant sections of the Annual and Supplementary Reports of Council published in the Supplements of May 6th and June 24th, 1922. Other stages in the process of collecting professional opinion were the Conferences of hospital staffs called by the British Medical Association in 1920, and again on March 22nd, 1922. We might mention also the discussion on hospital policy from a number of representative points of view in our two first issues of March last. It was claimed for the Council's special report on hospital affairs and the organization of voluntary hospitals that it pieced together a great number of scattered fragments of policy. Its main features were: (1) A general statement on the present-day purpose of the voluntary hospitals, with a definition of the voluntary principle; (2) a statement of the types of patients admissible for hospital benefit, particularly through contributory schemes; and (3) a sketch of the reaction of the new conditions upon the honorary medical staffs. This report was considered by the Divisions of the Association up and down the country, and the task of the Representative Body was to hammer out something that could be put forward as a working policy.

The report and recommendations of the Council were in the main accepted by the requisite two-thirds majority of the Representative Body. But this agreement was not reached without opposition. One important recommendation was taken back for further consideration, and the policy was finally adopted subject to certain definitions and limitations as to the method of its application. The modifications thus introduced are of sufficient moment to require close consideration. In estimating the value and the practical effect of the decisions taken, it is convenient to distinguish three aspects of the special report. In the first place, it may be looked upon as a summary of historical development. As such it met with general approval, and this in itself is no small gain. The facts must be common ground before agreement is reached as to interpretation and action, and it was one of the objects of the report to present a coherent account of widely differing conditions and experience. The reception given to the report in this respect shows that this aim has been attained.

The report next offered an interpretation of facts, whether in a narrower sense by the definition of terms, or in a wider by the analysis of social and economic tendencies, and their probable effect on professional development. Here more definite opposition might have been looked for, and did, in fact, arise, since divergence of experience is necessarily reflected in divergence of sentiment, and interpretation of facts must be more controversial than their record. Even here, apart from verbal amendments aiming at greater accuracy of definition, the report was accepted in its entirety, both as regards definition (notably the definition of the voluntary system and the classification of patients) and as regards the more far-reaching analysis contained in the preamble and the section on contributory schemes. Here two points of interest emerge: first, that opposition was directed rather to restatement of old policy (as in the case of private patients in voluntary hospitals) than to the enunciation of totally new policy (as in the case of contributory schemes); second, that the field of opposition had been narrowed, as was shown in the discussion on the classification of patients. Both these features of the debate might have been anticipated; for, on the one hand, it is around matters of less recent growth that a definite body of sentiment, based on experience, has arisen; and, on the other, it is only where the old and new systems meet and clash that acute controversy arises. The discussion on the sections dealing with tariff patients showed that even here, by closer definition, it might be possible to keep the controversy within still narrower limits; but it was not altogether clear that such a course would be advantageous at the moment. The final decision to accept the debated section, subject to the interpretation imposed by the withdrawal of paragraphs 33 and 35 (on the formation of staff funds), and the taking back of last year's policy in this respect for reconsideration, if it does not ensure an advance, at least entails no retreat from an established position.

Looking back over the course of the discussions we detect a feeling among the majority that the report offered a plan of action based upon the analysis and interpretation of facts. This plan has been accepted, not, indeed, in its entirety, and not without very definite opposition, but in such a way as to allow of practical development during the coming year. Interest here centres, on the one hand, in the recommendations about the staff fund (paragraphs 33 to 35 of the report), their withdrawal, the various amendments proposed, and the final instruction for further consideration; on the other hand, it rests in the definition and limitation of procedure during the coming year adopted by the Representative Body in approving the report as amended. A critical moment in the long debate was when paragraph 33 of the report was rejected in favour of Dr. Brackenbury's amendment, which excludes from assessment for the staff fund all contributions by or in respect of a patient where these do not exceed the full cost of maintenance and are not derived from State or rate aid. The original report suggested no such limitation, but had proposed that a percentage of all payments made by or on behalf of patients, from whatever source derived, should be passed into a fund which should be at the disposal of the honorary medical staff of the hospital. Now, the Council's recommendation on this point was a logical development of last year's resolution on the same subject—a resolution accepted in its original form by a narrow majority of the Conference of London hospital staffs convened by the Association in 1920, and in the revised form by a far greater majority of the Conference of hospital staffs of England and Wales in March of this year. At first glance, its rejection might seem to mark a retreat from an established position. Closer study, however, shows the decision rather as a recognition of the obstacles in the way of practical application, and the form of the reference back leaves the Council free to search out all paths to a more satisfactory solution of this very difficult problem. Meanwhile, the acceptance of the section on tariff patients in general—adopted with the interpretation needed to bring it into line with the staff fund decision—will, it may be hoped, suffice to meet possible developments.

The final resolution "That the carrying out of the hospital policy of the Association, as now approved, be proceeded with in stages; that during the ensuing session 1922–23, the education of the public in general, the hospital governors in particular, and the profession, be undertaken, and that progress be reported to the A.R.M.,

1923," is the measure of the advance made. The hospital policy of the British Medical Association has emerged as a coherent whole, definite enough to cope with the pressing difficulties of the moment, and flexible enough to respond to changing conditions. In the nature of things, its application, like that of certain Acts and Orders, must at first be permissive rather than compulsory, and the "appointed day," as the Chairman of Council has wisely said, is not yet specified.

In the present state of medical opinion the resolutions of a recent conference of the honorary staffs of London hospitals, published during the course of the Glasgow meeting,[1] are of much significance. While neither so comprehensive nor so explicit as the general policy accepted by the Representative Body at Glasgow, they do not, so far as we can see, conflict with it. They show, in the first place, recognition of changing circumstances. Thus the first resolution, excluding from assessment to the staff fund contributions not exceeding the cost of maintenance, is conditioned by the phrase "under present circumstances." Again, the succeeding resolutions mark the acceptance, not merely of the principle of payment of the honorary medical staff where a State-aided or rate-aided contribution is made, but also that of adequate remuneration for treatment at special clinics of patients for whom public authorities undertake responsibility. Whilst the second and third resolutions were not unanimous, they indicate movement along the lines followed in the development of the Association's policy.

THE POET LAUREATE ON THE LANGUAGE OF ANATOMY.

Just what is happening on the pavements of London streets to-day was enacted in the dissecting and examination rooms of Britain some fifteen years ago. "Keep to the right" had grown up to be a rule on London pavements until a self-elected body bounced the public and ordered it to "walk on the left." The result has been and will be confusion until the public decides whether the "right" or the "left" has it. Fifteen years ago English-speaking anatomists had reached a common system of names for the parts and structures of the human body; it was the accepted rule to use words borrowed from Latin and Greek as if they had become English words. In the hospital wards and in examination rooms the teacher and taught understood each other; at least, if they did not, it was not because of any discrepancy in the use of anatomical names. This happy state continued until the ill-starred Basle nomenclature was introduced. Then a confusion broke on the heads of medical students worse in its penalties than that which overtook the builders of Babel. The student could no longer speak in an English way of the "internal cutaneous nerve of the forearm," but must call it by its Basle name, *nervus cutaneus antibrachii medialis*. The new terminology, to be sure, gave the student certain advantages: he could, so far as his terminology was concerned, face examiners in Berlin, Basle, Rome, or New York—but not Paris. Also, when he was duly qualified, and had settled to practice, if he made researches then he could publish them in anatomical terms which could be understood in every country where the Basle nomenclature had come into use. At least, this was the belief which English-speaking friends of the Basle nomenclature urged on its behalf. These advantages, we fear, did not make a very strong appeal to the student.

The attempt to force the Basle nomenclature on the schools of Britain has given rise to controversy and to much learned discussion. It has been left to our Poet Laureate and Dr. Cuthbert Morton to bring the whole matter to a reasonable judgement. The pamphlet just published,[1] written in the easy clear style which makes one love our mother tongue, gives the English-speaking anatomist guidance to the right way out of the present dilemma. We must give the final opinion of our authors in their own words—it is necessary to use "authors," for it is somewhat difficult to tell exactly where the Poet Laureate leaves off and Dr. Morton begins in the pages of the pamphlet.

"It will be seen that the import of this disquisition is to condemn the action of those who are moving to introduce a *formal Latin international terminology* into the British schools of anatomy, on the false notion that it will be of service to international science. It is argued by us that such action is wrong in principle and harmful in practice, and that it cannot secure the advantages claimed for it. We contend that all scientific nomenclature must have its basis in every national language, and that whatever classical or foreign terms are introduced should be as far as possible adapted to the national speech. It is not denied that the work done by the German Committee (B.N.A.) may be of great service. Any combined effort of experts to fix the names of objects that have been variously, confusedly or awkwardly named is a first step towards the simplification and unification of nomenclature; and that is on all hands desired. But those who did this good work never themselves imagined that their attempt was final and in all details satisfactory, and while it should be fully considered and respected, it should be left to the common sense of the workers to take or refuse any suggestion on its own merits. In any case, common sense and convenience will in the end have their own way."

The Poet Laureate has never done medicine a better service than when he added his great influence and experience to the gallant and persistent efforts which Dr. Cuthbert Morton has made to bring order out of the terminological chaos into which British anatomy has been plunged. We should give an altogether misleading impression to our readers if we led them to think this pamphlet is merely for that small section of medical men who are professional anatomists. The authors have explained the principles on which the growth and evolution of the English tongue are based, and what they write of anatomy is applicable to every section of medicine. The "Language of Anatomy" is a pamphlet which every thinking medical man, whether he be reader or writer or both, will study not only with profit but also with pleasure. We sincerely trust it may find its way into every anatomical and clinical laboratory of the United States of America, in Canada, and in Australia, for the case for an idiomatic terminology has never been so justly or so explicitly stated as it has been now by Drs. Bridges and Morton.

ANNUAL MEETING NOTES.

The Pathological Museum.

The organization of the Museum Section reflected great credit on Professor J. H. Teacher and Dr. G. Haswell Wilson, who were responsible for the arrangements, and probably never before has one seen at the Annual Meeting such a large and representative collection illustrating all departments of medicine. Out of these exhibits of jar specimens, microscopic slides, photographs, drawings, casts, etc., it is difficult to select those for special mention, as the level of excellence was so high, but we may note some that attracted the most general attention. Of historic interest there were the old anatomical and pathological specimens of William Hunter recently arranged by Professor Bryce, especially those illustrating the anatomy of the joints, lymphatic system, gravid uterus,

[1] British Medical Journal, July 29th, p. 181.

[1] *S.P.E. Tract No. IX. The Language of Anatomy.* By William Cuthbert Morton, C.I.E., M.A., M.D. Edited with an introduction by Robert Bridges, M.B., F.R.C.P. Oxford: Clarendon Press. 1922. (Med. 8vo, pp. 27. 2s. 6d. net.)

and diseases of bones, now irreplaceable. The request of the organizers for specimens showing the influence of irritants in the production of tumours was well responded to by Dr. Alexander Scott of Broxburn, who showed photographs of the stages of development of epithelioma in paraffin workers under his care, by the lifelike wax models of irritation epitheliomata shown by Dr. Norman Walker, by the microscopic sections of Dr. R. D. Passey of experimental soot cancer, and particularly by the splendid collection from the London Cancer Hospital Research Institute. In the last case Dr. Archibald Leitch, the director, showed macroscopic and microscopic specimens of his successful experiments in the production of epithelioma, sarcoma, and papilloma by means of shale paraffin and coal tar, metastasizing epithelioma which he and Dr. Kennaway had produced by weak arsenical solutions, as well as various human tumours of theoretical and practical interest—notably a record case of late recurrence of breast cancer (twenty-three years). Mr. Cecil Rowntree, of the same laboratory, exhibited macroscopic and histological preparations of practically all the cases of *x* ray cancer known to have occurred in England. To illustrate the discussion on animal and vegetable pathology Professor Gaiger, from the veterinary side, and Messrs. Howells, Robinson, and Walkden from the botanical side, exhibited most interesting specimens of animal and vegetable diseases, especially tumour formations. Specimens of eosinophilia and splenomegaly (Professor S. McDonald and Dr. Bernard Shaw), and chronic interstitial nephritis (Professor J. Shaw Dunn) illustrated two of the important contributions to the last meeting of the Pathological Section. Professor Robert Muir showed what is probably a unique collection of specimens of diseases of the liver, and Dr. G. Haswell Wilson demonstrated embryonic tumours of the kidney and several neuroblastomas. Dermatological, gynaecological, otological, radiological, and surgical specimens were well represented, and special mention should be made of the exhibit from the Research Department of the Glasgow Maternity Hospital, illustrating ante-natal and neo-natal pathology. One could have spent, and many did spend, several hours in the profitable study of the museum specimens.

The Popular Lecture.

The Popular Lecture was delivered to a very large audience in the Lyric Theatre, Glasgow, on July 28th. Professor J. Graham Kerr, M.A., F.R.S., took for his subject, "The Physician: Naturalist, Teacher, Benefactor," and although there were no lantern views or any other of the usual concomitants of a popular lecture, the interest of the subject-matter and the charm of the lecturer's delivery were such that the audience would gladly have heard more. The lecture is printed in full at page 241. The President of the Association took the chair, and at the close called upon Sir Archibald Garrod to propose a vote of thanks.

Sir Archibald Garrod remarked that the picture of the physician which had been held up that evening would not, he thought, result in any swelling of the head on the part of the medical men who were present. Rather it would humble them, and they would go away thinking that the picture represented them not as they were, but as they would wish to be. In recent times they had learned to clothe science with terrible garments, and had wondered into what new dreadfulness science was going to lead the world. But that was not science, it was the abuse of science. Science herself was not dreadful; it was not even dry. There was in science a great region of fairyland, and the keys which opened the gates to that region were entrusted to a select few. Those who most frequently held the keys were, he thought, the astronomers and the naturalists. Darwin held such a key, and so did Tyndall, and Faraday, and, to come nearer to this generation, Robert Ball. But there were not many, and the key was a very choice possession. Evidently the lecturer of that evening held such a key, and he had opened up some fields much more wonderful than any fields of fancy. Professor Graham Kerr's remarks on the mosquito were most interesting. It was good for people to be taken away for a time from the strictly human point of view, for, after all, the mosquito or the bacterium could claim that the world was made for it just as much as for a human being. All these forms of life had their own interests, which they did their best to further. The tubercle bacillus had its way to make in the world, and men were always thwarting it, entertaining, apparently, strong prejudices against it, chiefly because it had the unhappy taste to thrive upon the people we could least spare—John Keats or R. L. Stevenson. Professor Graham Kerr had done them all good service by furnishing a new angle from which to view the world of nature and of men.

Sir William Macewen, before putting the vote of thanks to the meeting, said how greatly interested he had been in the lecturer's allusion to Metchnikoff's work on phagocytosis. The same process was made use of in surgery. Stitches were put in every day, and also certain kinds of drainage tubes, which, after serving their immediate purpose, were taken up by the phagocytes and carried away so far as they were not wanted. The husband of one of his patients complained to him that he was not very comfortable about his wife because more active measures were not taken to heal the operation wound. His reply was, "God does the healing, and we look on." That did not satisfy the gentleman, and he said that surely the stitches must be taken out, or at any rate the drainage tube. Sir William then asked him whether, when he was a boy, he had ever planted things in the soil, and, if so, whether he took them up every day to look at them. As for the stitches, his good lady would "eat them all up," and as for the drainage tube, since this was a chicken-bone drainage tube, the tissues would be trusted to deal with that also. The useful phagocytes would do their work, and at the end of a couple of weeks there would be nothing to be seen. Therefore, phagocytic action was of the greatest importance in surgery in taking away material that was no longer wanted.

Professor Graham Kerr, in responding to the vote of thanks, said that he felt greatly honoured by the presence of the President in the chair, for Sir William Macewen was the embodiment of the naturalist, the teacher, and the benefactor. Those who had visited Sir William's home in Bute or had gone into his laboratory knew him to be a naturalist through and through. He was also the teacher, keenly interested in the technique of teaching; about his teaching gifts his old students had a great deal to say. Finally, he was an example of the benefactor. "Uneasy lies the head that wears a crown," but those who followed the enthralling story of brain surgery in his Presidential Address must have felt that there were other crowns than material ones, the wearing of which did not make the head uneasy, but rather ministered to its repose.

Reception and Dance by the Royal Faculty of Physicians and Surgeons of Glasgow.

The last of the big social functions was held on Friday evening, July 28th, when the President and Fellows of the Royal Faculty held a reception and dance in the McLellan Galleries. This beautiful suite was filled with a gay and happy company of over five hundred, who were received by the President (Dr. W. G. Dun), the Visitor (Dr. W. R. Jack), and the Treasurer (Dr. MacDonald). Dr. Dun welcomed the members of the British Medical Association as the guests of the ancient and Royal Faculty. The arrangements were in the efficient hands of Mr. Walter Hurst, who had provided a short musical programme of songs by Miss King, Dr. T. D. Laird, and Dr. A. N. McLellan, to fill the interval pleasantly.

HOME AMBULANCE SERVICE.

The Joint Council of the British Red Cross Society and Order of St. John has issued a new edition of the list of home ambulance stations, organized by its Home Service Ambulance Committee. The aim is to distribute ambulances on such a scale that wherever illness or accident may occur there shall be a motor ambulance within a convenient distance to carry the patient with a minimum of disturbance and pain to the

point where medical and surgical skill can be most efficiently applied. The scheme is arranged on a county basis, and the list, which follows this arrangement, shows the places in which ambulances are stationed and the officer in charge at each place. The total number of ambulances in service on March 31st last was 309. The total number of patients carried during the year was 53,743. Not only is the number of persons carried increasing, but also the number carried by each ambulance; the average was approximately 133 in 1920-21, and 178 in 1921-22. The committee concludes that as the service becomes better known to medical men they are resorting to it more often for the benefit of their patients. In some instances patients have been moved long distances, as for instance from Plymouth to co. Tyrone, by ambulance. In other cases the patient has done the greater part of the journey by rail, but has been carried to the train and from the train by an ambulance. The method adopted in the matter of charges for the use of ambulances varies in accordance with local circumstances, and it is left within the discretion of the county representatives. In many cases the ambulances are maintained by voluntary weekly subscriptions from workmen, and no charge is made for their use. In other instances the costs are defrayed by institutions or by local subscriptions, but generally a charge is made and special allowances granted for necessitous cases. The lower cost of petrol and repairs, and especially the replacement of the heavy ambulances by lighter vehicles, have made possible a very general reduction of charges throughout the country during the year. The accounts received show that, in a well-organized county it is possible to maintain all the ambulances without making any call for subscriptions, or on county funds. The committee has gained much experience in ambulance work and is always ready to advise any organization which is proposing to do work of this nature. At the request of the Queen of Spain the committee undertook last year to supervise the building of four ambulances for the Spanish army; these were delivered at Christmas and gave complete satisfaction. The Government of Fiji also has adopted the plans and specifications in use for the committee's ambulances. Major E. W. Paget, C.B.E., acts as liaison and inspecting officer for the committee. Any medical man who wants an ambulance for the removal of a patient should apply to the officer in charge of the nearest station; if he has not got this information it can be obtained from the County Director. Application for ambulances for the transport of patients in the London area may be made to Mr. F. C. Davies, O.B.E., Secretary of the Home Service Ambulance Committee, 19, Berkeley Street, London, W.1. A branch of the ambulance work that has made steady progress in the country is that of carrying parties of children from outlying villages to clinics in neighbouring towns. The work, which has been carried out under the direction of the school medical officers, though rather outside the original scope of the committee, is fraught with so much advantage to the health and welfare of the children that the officers in charge of the ambulances have gladly undertaken it.

CHOLECYSTECTOMY OR CHOLECYSTOTOMY.

Removal of the gall bladder has now become the operation of choice, in preference to cholecystotomy and drainage, in disease of the gall bladder, on account of the benefit that results from removal of a faecal infection, of the diminished liability to recurrence of symptoms, to the further formation of calculi, and to primary carcinoma of the gall bladder. By analysis of his own cases Mr. James Sherren[1] has recently shown the superiority of cholecystectomy to cholecystotomy; thus among 184 cases of cholecystectomy carried out in the treatment of calculi confined to the gall bladder and operated upon more than three years ago there were 6 deaths, but no recurrence of symptoms; whereas among 152 cases of cholecystotomy during the same period there were 4 deaths, and among the 148 survivors 34 recurrences. He points out that it is the diseased gall bladder and not its products, whether infected bile or gall stones, that should be treated, and insists that drainage does not cure chronic cholecystitis. Cholecystectomy should therefore, he considers, be the treatment in all surgical diseases of the gall bladder, as a primary procedure where possible, or, when the risk to life is great, in two stages. The question might be raised whether in a physiological sense removal of the gall bladder is detrimental; in other words, has the gall bladder any functions other than the storage and concentration of bile and the addition to it of mucus? It is possible, as suggested by Rost, that while in the gall bladder the bile acquires some properties valuable in intestinal digestion, which the liver bile does not possess; the dilute state of the liver bile as compared with the gall-bladder bile renders this a reasonable possibility, but there is no proof thereof. From a practical point of view it is to be borne in mind that a diseased gall bladder fails to concentrate the bile or to add mucus to it, and it therefore appears that arguments applicable to a healthy gall bladder do not hold good as regards one in a pathological condition. Mr. Sherren does not attempt to go into those theories with regard to the function of the gall bladder and the changes inimical to the well-being of the patient that may result from its removal, but clinical experience has convinced him that cholecystectomy is safer for the patient, that the risk of recurrence is negligible, and that the loss of the gall bladder in no way interferes with well-being.

[1] J. Sherren, *Brit. Journ. Surg.*, 1922, x, 135–137.

THE STUDY OF VENEREAL DISEASES.

The newly formed Society for the Study of Venereal Diseases held its first general meeting in London on July 31st under the presidency of Dr. David Watson of Glasgow. It was announced that the society has 117 members, but the hope was expressed that this number would shortly be increased, as there are over 200 clinics, with between 300 and 400 clinicians, administrators, and pathologists attached to them. Dr. Watson, who was unanimously elected to the chair on the proposition of Mr. F. S. Kidd, said that whatever objections there might be to the recognition of venereal disease as a special branch of medical practice, facts had got ahead of arguments. It might seem that to group under the heading "venereal" such diseases as syphilis, chancroid, and gonorrhoea, which differed so greatly in their manifestations and ultimate effects, was an unscientific method of classifying disease; but they were properly linked together, because the infectious were mainly produced by venereal contact, and, what was more important from this point of view, they were amenable to similar methods of prevention and control by health authorities. Whatever might happen in the future, the acceptance of these diseases as a specialty was necessary under present conditions. The decree of the General Medical Council that medical students must receive a course of instruction in venereal diseases established the subject as a specialty. Sir William Macewen, in his Presidential Address to the British Medical Association, had stated with regard to syphilis that now that the Government and the laity had been educated by the medical profession to the fact that syphilis was a preventable germ disease and could be stamped out by known means, this generation, if it did not stop the disease, would commit a crime against posterity. Dr. Watson agreed with this statement, but added that gonorrhoea and chancroid should be placed in the same category. Everyone knew, however, that what Sir William Macewen demanded would not result in the present generation from the measures so far taken. The history of modern medicine proved that when a sufficient number of members of the profession became interested in a special branch of medicine it was a great advantage to bring them together for social intercourse, exchange of views and criticisms, and mutual stimulation of research. This was the aim of the new society; it would endeavour to obtain a correct perspective, and while encouraging minute attention to detail would not lose the

larger view. It would co-ordinate the administrator, the clinician, and the pathologist for the scientific study of the many problems that must be settled before the conquest of venereal disease could be announced. Colonel L. W. Harrison, who added a few words, said that diseases were mostly grouped together for convenience in management, but on account of its etiology and social importance venereal disease was worthy of a category to itself. In spite of current criticism of the venereal clinics he regarded them as a means of stopping the spread of the disease by rendering the greatest possible number of infective persons non-infective. The Presidents of the Royal Colleges of Physicians and of Surgeons, and of the Sections of Dermatology, Urology, and Obstetrics and Gynaecology of the Royal Society of Medicine were elected Vice-Presidents, together with Mr. Frank Kidd and Dr. Wilfrid Fox. Dr. E. R. T. Clarkson was elected honorary secretary, and Dr. Sydney G. Macdonald treasurer. It was agreed to hold six general meetings of the society during the year—on the last Fridays of November, January March, June, and July, and to hold the annual general meeting next year in London; the suggestion was made that in subsequent years the meeting should be held at the same time and place as the annual meeting of the British Medical Association. A further suggestion to form a local division for Scotland was referred to the Council.

BEER AND LEAD POISONING.

A fortnight ago we stated that we had received information of several cases of lead poisoning among men which it was considered were due to the drinking of beer. We are now able to state that during the last month a considerable number of cases of lead poisoning occurred in certain districts in the County of Middlesex which were traced to the consumption of beer supplied by a particular firm of brewers. A medical practitioner in one of the affected districts promptly recognized that an outbreak of lead poisoning was occurring amongst his patients and at once notified the medical officer of health. The latter found that the outbreak which was fairly widely spread in his district, was limited to persons resorting to certain public-houses in the cellars of which large iron tanks lined internally with white enamel had recently been provided for storing the beer. Samples of beer from these public-houses were taken for analysis and found to contain about one grain of lead per gallon. The beer as it left the brewery was found to be free from lead. It was ascertained that a lead glaze had been used in the preparation of the enamel, and that from this source, owing to the plumbo-solvent properties of its sugars, the beer became contaminated. The use of these tanks was at once discontinued by the brewery company, and risk of further danger from this source was arrested. The persons affected had drunk the beer containing lead for some two or three weeks before the cumulative effect of the poison produced the characteristic signs and symptoms. These included colic, constipation, jaundice, and a blue line on the gums. It is thought probable that cases of lead poisoning ascribed to unknown causes have occurred among persons who resided in other districts and frequented public-houses in which the contaminated beer was sold; but it is possible also that anomalous cases of illness which may have been instances of lead poisoning have been encountered by medical men in or near the districts in which the public-houses in question are situated. During the investigation it was found that another brewery company substituted tanks for barrels in their public-houses, but in this instance the tanks were of earthenware lined with leadless glaze, and no lead was found in samples of beer taken from them. The occurrence is a good illustration of the value of prompt action on the part of practitioners in reporting to the medical officer of health cases of illness which may be due to the contamination or infection of articles of food or drink. It is desirable that the medical officer of health should promptly inform the Ministry of Health of the occurrence of such cases. It sometimes happens that the same causes are operating simultaneously in widely separate districts, and it is only by co-ordination through the central authority that such occurrences can expeditiously be dealt with.

ROYAL SANITARY INSTITUTE CONGRESS.

The thirty-third congress of the Royal Sanitary Institute, which was held at Bournemouth from July 24th to 29th, was attended by some 500 persons, including delegates from the British Dominions and Colonies and from many foreign countries, as well as by representatives of Government departments, county and town councils, and other public bodies. The president of the congress was Major-General J. E. B. Seely, M.P., who in his presidential address protested against economics at the expense of the public health, and said that the three very important principles which lay at the basis of the congress were, first, the vital necessity of the health of the people to the maintenance of the British Empire; second, that national health required the organization of all the various agencies; and third, that the health policy of the nation should not be merely the prevention of disease and premature death, but the increase in human capacity and happiness. Great advances had been made in the provision of cleaner towns, better sanitation, good water supplies, food control, drainage and sewerage, but not enough had been done for the education of the people in a healthy way of life. The housing problem could be solved only by steady and persistent work in every district over a number of years. Curtailment in the school medical service had been spoken of in the interests of economy, but he considered that that service was not only saving the lives of hundreds of children, but was laying the foundation for a healthy nation in years to come. Meetings for the reading and discussion of papers were held in five sections: Sanitary Science, Engineering and Architecture, Maternity and Child Welfare including School Hygiene, Personal and Domestic Hygiene, and Industrial Hygiene. In the Section of Sanitary Science a discussion was held on methods of securing continuous treatment of persons infected with venereal diseases, in which papers were read by Dr. J. Johnstone Jervis, Dr. W. E. Facey, Mr. Kenneth Walker, and Dr. Joseph Cates. In the Section of Maternity and Child Welfare including School Hygiene, papers were read by Dr. John Robertson on the regulation of the distribution of milk and food at maternity and child welfare centres, and by Dr. D. C. Kirkhope on certain preventive and curative aspects of the school medical service. Papers were also read on different aspects of maternity welfare by Mr. Aleck W. Bourne, Dr. R. Veitch Clark, and Dr. R. J. Maule Horne. In addition to the meetings of the sections, a number of conferences were held of sectional representatives, such as sanitary authorities, medical officers of health, engineers and surveyors, veterinary inspectors, sanitary inspectors, and health visitors. The popular lecture, on "The value of clean fresh air," was delivered by Professor Leonard Hill, F.R.S., who said that physiologists could help greatly to point the way to a happy and healthy life, but ignorance and custom enveloped the people, and it was problematical whether our civilization might not stifle itself like older civilizations and die out. The discipline and the laws of health, which included moral restraints, alone could save it.

Medical Notes in Parliament.

[From our Parliamentary Correspondent.]

The Work of the Session.

The adjournment of the parliamentary session on Friday, August 4th, until Tuesday, November 14th, marks the passage of most of the bills and other proposals to which the Government committed itself in the King's Speech on February 7th. Some comparatively small measures are left over, and the text of the Irish Constitution has to await consideration some time hence, for the simple reason that the Irish Provisional Government has not been in a position to translate itself into a parliamentary assembly to frame and pass it on that side. The two outstanding features of the session at Westminster were the enactment of a bill ratifying

the Irish Treaty, and the embodiment in the Finance Act (the corollary of the Budget) of many of the recommendations of the Geddes Committee, with such modifications as appeared necessary to maintain efficiency while making for economy. In that regard it has been recognized that health must be deemed a supreme asset of the nation, in so far as it can be promoted by the State, and so the "cuts" in the Department primarily concerned with it were not so ruthless as was feared at first. Amongst the minor legislative achievements were the passing of the Criminal Law Amendment Act, the Milk and Dairies Amendment Act, and the National Insurance Amending Act, the provisions of which were explained in these pages while progress was being made. In accordance with its undertaking the Government submitted in the Upper House a series of resolutions giving in outline a scheme for the reform of the House of Lords; but nothing was done in regard to them, nor was anything expected to be done in this connexion at present. It need hardly be added that the statute book, particularly this session, does not convey a correct idea of the value of the contributions by medical members to the debates. They have given valuable knowledge and highly useful suggestions to both Houses in this way, and also by inquiries at question time.

Estimates Committee.—In a general debate on August 1st, on the Report of the Estimates Committee, Sir Frederick Banbury (who was chairman of this independent body) referred to the salary of the chief medical officer of the Board of Education. He receives a salary of £2,500, partly borne on the Education Vote and partly on that of the Ministry of Health, this being an increase of £400 a year upon the salary paid last year. The Estimates Committee did not think that, in the circumstances, the increase was justified. Mr. Fisher, taking this up, said there was no more distinguished public servant than Sir George Newman, no one to whom the health of this country owed a greater debt. Every penny of the salary paid to him was returned to the country over and over again.

Pensions Administration.—A discussion arose on the work of the Ministry of Pensions. Mr. Kennedy said he had evidence that cases passed by medical boards as cases in which the disability was due to or aggravated by war service had been considered by the Ministry at headquarters and the decision of the medical authorities turned down. He quoted a memorandum of the Bristol War Pensions Committee which said that if a man allowed twelve months to elapse before making a claim the invariable conclusion was that the disability had been contracted since discharge, although the man had struggled through this time hoping that his health would improve. Mr. A. Hopkinson, on the other hand, thought that the reason why the Ministry of Pensions was criticized was that it was efficient, doing its duty without fear or favour. Sir A. Warren, speaking from a large knowledge of administrations throughout the country, said that there were scores of cases of men trying to impose themselves upon the funds of the country, but there were thousands of the other kind, and he urged that there should be more consideration. Mr. Duncan Graham said that the views of panel doctors were entitled to as much consideration as those of the ex-service doctors on boards. Major Tryon, replying on behalf of the department, said that fresh claims to pensions were being admitted at the rate of three hundred a week; of that number fifteen to twenty were cases of tuberculosis. Cases of tuberculosis were treated on specially favourable terms, because even when a man was discharged from hospital he got 100 per cent. for six months, although he was very much better, and 50 per cent. for two years, even though he might be well. The policy had been that there should be no economy at the expense of the pensions, but that it should be made and pushed to the utmost on the cost of administration. For the lower estimates of this year there were various reasons, such as children getting beyond the age and widows remarrying. About one-fourth of the widows had remarried. The new scheme of administrative areas, replacing the work of the old local committees, was estimated to afford a reduction in expenditure this year of £300,000. When as a result of enormous expenditure on the part of the State in the provision of skilled medical attendance and so on a man got better his pension was reduced, but nothing was said in public about the fact of his being better. Up to a short time ago the net reduction of assessments over the whole range of the medical board was only 5 per cent., and the last figure he had seen was a little less than that. Mr. Adamson, an ex-chairman of the Labour party, spoke of a feeling of dissatisfaction amongst ex-service men in regard to pensions, and quoted certain cases of apparent hardship which, he said, could be multiplied. He suggested that the Government should set up a national appeal board. The Attorney-General pointed out practical difficulties in the way of the establishment of a national appeal board, and the discussion drifted to the problem of finding work for ex-service men. In reply to a question on August 3rd, the Attorney-General said that entitlement and assessment tribunals in dealing with appeals were empowered in any case involving a difficult medical or surgical question to send the appellant to be examined by a specialist who should report to the tribunal, or to take the opinion of a specialist upon a case stated to him.

The Manufacture of Morphine.—Replying to Viscountess Astor on August 2nd, the Home Secretary said that 64,985 oz. of morphine were made in England in 1920. No statistics of the amount used for home consumption were available. The Customs returns showed that 322,484 oz. of morphine and heroin were exported, but this did not include amounts exported by post or in the form of preparations. The manufacture of morphine could only be carried on under Home Office licence. Viscountess Astor inquired whether 96,000 lb. of special medical opium were sent by the Indian Government to the Secretary of the Revenue and Statistics Department, London. Sir J. Baird said that during the war Indian opium was imported into this country for the manufacture of morphine required by the army. It was sold to the manufacturers in this country. The balance of the stocks were reshipped to India early in 1920, and Indian opium was not at present being used by British morphine manufacturers.

National Health Insurance Expenditure.—At the instance of Mr. T. Thomson, Sir A. Mond, on August 3rd, gave the following particulars of National Health Insurance expenditure for the past two years:

	1920.	1921.
Total expenditure on benefits	£18,782,000	£ 1,564,000
Total cost of administration	£4,500,000	£4,827,000

Removal of Ex-Service Men from Asylums.—Mr. Macpherson has stated in a written reply that when a relative insisted on the discharge of a service patient from an asylum against the advice of the medical superintendent the relative was informed that should application be made for readmission of the patient to the asylum (which experience showed usually happened very shortly) the question of reclassifying the man as a service patient, and so entitling him to all the privileges of classification, must be considered afresh. This was a reasonable procedure; it was used with the greatest discretion, and solely in the interests of the patient's treatment and prospects of recovery; it in no way conflicted with the provisions of the Lunacy Act. The arrangement by which service patients were placed on the legal footing of private patients did not remove the Visitors' power of discharge, but it did confer additional powers of discharge by which the responsible relative of a service patient might direct discharge, unless the medical superintendent put in a barring certificate under Section 74 of the Lunacy Act.

Prison Administration.—Sir Thomas Bramsdon asked, on August 1st, whether, in view of the urgent need and insistent public demand for an inquiry into the prison system and the administration of His Majesty's prisons and Borstal institutions, the Home Secretary would consider the appointment of a thoroughly representative Royal Commission at an early date for this purpose. Mr. Shortt said the matter was under consideration, and he hoped to come to a decision shortly.

Leprosy in India.—Earl Winterton stated, on August 3rd, in answer to Sir C. Yate, that the amended Leper Act, passed by the Indian Legislative Council in 1920, empowered local governments to indicate places to be leper asylums, and the local areas from which lepers might be sent to such asylums. The treatment of lepers was a transferred subject dealt with in provincial administration by a minister responsible to the Legislative Council of the Province. The Act was therefore not compulsory. It was in force throughout Bengal and in prescribed areas of Bombay and Burmah. Its application was under consideration by the Governments of the United Provinces—Bihar and Orissa and the Central Provinces. It had not been applied in Assam, the Punjab, or the Madras Presidency. The exact number of the lepers segregated under the Act were not available, but 918 were reported to be in asylums in Bengal and 368 in the Bombay Presidency. In Bengal treatment by chaulmoogra oil and its derivatives, in Bihar intravenous injections of hydrocarpate of sodium and sodium morrhuate had been found satisfactory. In Bihar treatment by antimony was being tried. Recent research tended to show that deficiency in certain essential constituents in diet (vitamins) might be a factor in causing leprosy.

Brief Notes.

Poison gas is manufactured for the War Office now only in such small quantities as are required for research and experiment. The cost was £8,000 a year apart from research and experiment or protection against gas attack.

Mr. Macpherson has stated that subject to overriding considerations of special qualifications and experience—specialist or other—preference is given by the Ministry of Pensions to medical practitioners who served in the war, but by far the greater number of medical men in the employ of the Ministry have had no connexion with army service other than their temporary service in the late war.

In answer to Sir Robert Newman, on August 2nd, Sir A. Mond said that so far as the Board of Control knew, there were fifty-eight county and borough mental hospitals which had no women members on the visiting committee. In these institutions there were approximately 31,000 female patients.

In answer to Mr. Kennedy, on August 2nd, Major Tryon said that during the three months—March, April, and May—the average number of disabled men in receipt of special diet allowances was about 6,700, and in June about 4,200. Of the former 85 per cent. and of the latter 95 per cent. were cases of tuberculosis.

The Minister of Health, in reply to a question, recalled a memorandum issued in 1919, which was to the effect that the practice of spraying halls and places of public resort with a disinfectant fluid was of doubtful utility, and tended only to create a false sense of security.

Sir A. Mond has stated that the total number of cases of scarlet fever reported in the first six months of 1922 was 54,956; in the corresponding period of 1921 it was 56,023. No increase was shown in the more recent returns, the figures remaining fairly constant at about 2,000 weekly. Notification of measles was not compulsory throughout England and Wales, and consequently no reliable figures could be given.

Scotland.

Death of the Inventor of the Telephone.

The death is announced of Dr. Alexander Graham Bell, who made the telephone a practical instrument which could be used both for receiving and transmitting messages. His father and grandfather were both authorities on phonetics and defective speech, and Graham Bell was himself led to his remarkable invention rather through his interest in physiology than through his knowledge of physics or electricity. He had an early link with the medical profession through his mother, who was the daughter of Dr. Samuel Symonds, surgeon in the navy. Dr. Alexander Graham Bell was born in Edinburgh in 1847, and was educated at the Royal High School and the University of Edinburgh; afterwards he went to University College, London, but while still a young man removed with his father to Canada, proceeding later to the United States, where he took the degree of M.D. and was appointed professor of vocal physiology at Boston. It was at Brantford, in Canada, in 1874, that the germ idea of his discovery began to grow, and he linked up his experiments in telegraphy with his study of the movements of the tympanic membrane and bones of the ear during the utterance of sound. He showed a speaking telephone at the Philadelphia Centenary Exhibition in 1876, but it was unnoticed until a chance previous acquaintanceship of Bell with Dom Pedro, Emperor of Brazil, who was visiting the exhibition, brought it to the notice of the judges. In 1877 the University of Heidelberg gave Bell the honorary degree of M.D., but this was probably awarded in recognition of his invention of the photophone and of a telephone probe for detecting bullets in the body rather than for the telephone. In later years he made many other inventions, including the graphophone and a submarine chaser capable of travelling under water at the rate of seventy miles an hour; the laws of flight and the education of the deaf also engaged his attention. In 1906 he received the honorary degree of LL.D. from the University of Edinburgh, in 1918 the Hughes Medal of the Royal Society was conferred upon him, and in 1920, as was recorded in our columns at the time (December 11th, 1920, p. 908), when on a visit to Scotland he was presented with the freedom of his native city.

Scottish Board of Health.

Annual Report.[1]

The three hundred and sixty five closely printed pages which constitute the Third Annual Report of the Scottish Board of Health (1921) give some idea of its manifold activities. It was not, however, a year of extensions in the work, because the need for economy has dominated all things. At the same time grave unemployment following upon acute trade depression has called for immediate measures, and these have been provided in the Poor Law Emergency Provisions (Scotland) Act and the National Health Insurance (Prolongation Insurance) Act, both of 1921. By means of these Acts provision of food for mothers, infants, and school children has been secured, and large numbers of unemployed have been saved from falling out of insurance. The Board, however, is apprehensive of the effect of the continued industrial distress on the health of the people; and in increased claims for sickness benefit sees signs of lowered vitality. On the other hand, it is encouraged by the steady decline in infant mortality and in deaths from tuberculosis, by the increasing attention which the medical profession generally is devoting to preventive medicine, and by the spread of a knowledge among the people of the elements of personal hygiene.

The report pays a tribute to the services of Dr. John C. McVail, one of the two medical members of the Board. He retired at the end of last year. The Board notes that "when the Scottish Insurance Commissioners were constituted under the National Insurance Act of 1911, Dr. McVail was selected as Medical Commissioner. At that date he had already achieved distinction as a general practitioner, as a county and burgh medical officer of health, and as a medical investigator, teacher, and author. . . . We take this occasion to record our high appreciation not merely of his services as a member of the Board, but also of the distinguished part he has played in promoting the development of public health administration in Great Britain." It will be fresh in the memory of the profession that Dr. McVail was honoured at the general meeting of the British Medical Association in Glasgow by the presentation of the Stewart Prize.

Scope of the Report.

A glance through the list of subjects dealt with shows the wide ground covered by the report. There are eight large divisions: (1) Public Health; (2) Housing and Town Planning; (3) National Health Insurance; (4) Poor Law; (5) Local Government; (6) Prevention and Relief of Distress; (7) Old Age Pensions and Pensions to Blind Persons; and (8) Miscellaneous. These are followed by valuable appendices (pp. 223–365), containing tables and the like, to which students of vital statistics will go for information, as, for instance, under infectious disease notification (p. 246) and infantile mortality (pp. 248–251). Some surprise entries are found. Thus under "Miscellaneous" there is reference to the religious revival in the North East of Scotland in the following terms, as a result of an investigation by the Board's chief inspector and one of the district medical officers: "The conclusion arrived at by these officers was to the effect that, apart from the risks accompanying the attendance at prolonged crowded meetings, which, during the more fervent phase of the movement, broke up at a very late hour, the influence of the revival may be a factor in improved mental and physical health; there is overwhelming evidence against the suggestions that it has been in any way responsible for attacks of insanity" (p. 221).

Public Health.

Perhaps the most interesting part of the report to the general practitioner is that dealing with public health, although that on the National Health Insurance will doubtless attract not a few. Public health activities appear under the headings of infectious diseases (from tuberculosis to enteric fever, and including the venereal diseases), sanitary administration (including the question of water supply owing to the long-continued drought, and that of the housing of seasonal workers), maternity and child welfare (now a large and progressive and life-saving business), nursing (dealing with progress under the Nurses' Registration (Scotland) Act of 1919), school health administration (restriction of expenditure), the Highlands and Islands (Medical Service) Fund (with interesting remarks on the attack of whooping-cough in St. Kilda), welfare of the blind (schemes and grants in aid), and inspection and supervision of food. Under tuberculosis the main consideration has been economy, and all projects for new institutional provision have either been abandoned or severely curtailed.

The venereal diseases returns show a small increase in the number of new cases (due rather to the opening of new centres than to any growth in the incidence of the disease), and a larger increase in the number of attendances (a matter for congratulation, as it indicates a growing readiness to continue treatment till medically discharged). A useful table on p. 245 gives a list of institutions approved as venereal diseases treatment centres. Of the total population of Scotland (4,882,283) 4,530,035, or nearly 93 per cent., are resident in areas that now have approved venereal diseases schemes. The good effect of this widespread provision of means of treatment ought soon to be evident. The Board, it is to be noted, is considering the matter of professional secrecy in connexion with these maladies; the question has arisen in England (vide the Journal for June 18th, 1921, p. 904), but not yet in Scotland.

It is noted that encephalitis lethargica is compulsorily notifiable in England but not in Scotland, and the Board adduces the obscure nature of the disease, its low infectivity, and our present ignorance of any specific treatment in explanation of this difference of practice as between the two countries. Inquiry and report, however, by medical officers of health are invited.

Maternity and Child Welfare.

Under the heading of maternity and child welfare there is a distinct note of regret in the Board's comment on the restriction of public expenditure: "Restriction is doubly difficult in a service such as this, which has nowhere reached its full development." The regret is, of course, increased by the consideration of the good results already obtained. The infantile mortality for Scotland in 1921 was 90.3 per 1,000 live births, as against 92 in 1920, which was the lowest till then

[1] Third Annual Report of the Scottish Board of Health, 1921. Presented to Parliament by Command of His Majesty. Edinburgh: Published by His Majesty's Stationery Office. 1922. (Cmd. 1697.) Pp. 365. Price 10s. net.

recorded. Notice should be taken of the significant remark, "This figure excludes, of course, stillbirths and all ante-natal deaths"; it is good, therefore, in itself, but it is incomplete. It is to be hoped that through notification the stillbirths rate will soon be known and published. In the meantime the earlier ante-natal deaths can hardly be counted, and matters are scarcely ripe for an abortion rate. It is, however, a matter for the consideration of the Board whether the deaths in the first month of life should not be extracted and presented in the form of a new and separate rate. In the tables the deaths in the first week are stated, and those after the first week and under one month, but a neo-natal or primi-mensal rate put prominently forward under its own distinctive name would be of great value in estimating the health conditions in town and country. The neo-natal rate would probably be found to be the most sensitive index of general well-being in a community, especially if it were accompanied by a stillbirths rate.

The Board is concerned regarding the preventive treatment of ophthalmia neonatorum, and has issued a circular (Appendix iv, p. 231) regarding the treatment of the infant's eyes at birth with a solution of silver nitrate (1 per cent.). The Board ought not to forget that the true preventive treatment of this disease begins with the curing of the expectant mother's gonorrhœa.

Conclusion.

The report forms a remarkable record of health activities; and whilst the reader is led rather abruptly from the largest to the most trifling matters, his interest is never allowed to flag, and that is high praise of a more or less statistical work. The question of the Drug Fund under Medical Benefit is a big matter, whilst the proposed cinematographic installation in a Poor Law hospital (fireproof chamber needed for entertainments to the children) is a very small one; but each is dealt with intelligently and no doubt wisely by the Board. The fireproof chamber, it may be noted, was not forthcoming. The report, as a whole, is one upon which the Board may justly congratulate itself and receive congratulations.

England and Wales.

Methods of Hospital Accounting.

The Voluntary Hospitals Commission has under consideration the form of account to be recommended to local hospital committees in order to secure uniformity and so facilitate comparison of the real cost of maintenance of hospitals. In a pamphlet recently issued the Commission makes two recommendations: (1) Hospitals which can do so are advised to use the "Revised Uniform System" and no other though it have a similar name; (2) cottage hospitals and other small hospitals unable to keep the Revised Uniform System of accounts are urged to keep the "Simple Cash Account" which is shown in the appendix of the pamphlet now issued. It is impossible, states the Commission, to lay down any general rule as to the line of demarcation between the two classes of hospitals. The mere number of beds is not an adequate test of the ability to keep the Revised Uniform System, since some hospitals with a comparatively small number of beds and a large out-patient department may have a larger clerical staff than a general hospital with the same number of beds. It is suggested, however, that committees should not agree to the adoption of the Simple Cash Account in the case of hospitals with over fifty beds, except in exceptional circumstances.

Hospitals of London Combined Appeal.

A special meeting of the President and General Council of King Edward's Hospital Fund for London was held at the House of Lords on August 1st, to authorize an interim distribution on account of the proceeds of the Hospitals of London Combined Appeal. Mr. M. C. Norman, Governor of the Bank of England, presided. Sir Alan Anderson (chairman of the Revenue Committee of King Edward's Hospital Fund for London and chairman of the Organizing Committee of the Hospitals Combined Appeal) said that at the end of the first stage of the appeal the amount in hand closely approached what was expected. Before the appeal was started in April Mr. Sharpnell Smith hoped to get in £500,000 by July 31st. Including the money advised and intimated he now expected slightly to exceed £300,000; of this £271,000 was actually in hand, and large sums were coming in every day. On the other side of the account there were heavy expenses, amounting to date to about £30,000; this, however, was less than the Appeal Committee had been warned to expect. The free grant of space on hoardings had made it possible to reach the public by poster at about one-fifth the ordinary cost of such advertisement. The sum collected could not have been raised without the special advantages which the King's Fund had, and which no other appeal could have had. The support given to the appeal by the Royal Family was of immense value. The medical students also had been of enormous use, and had put life into everything they touched. The Hospital Savings Association, of which Lord Hambleden was chairman, was intended to bring regular weekly contributions from wage-earners to the hospitals. It was really to give the hospitals time to get those regular weekly contributions organized that the combined appeal was started. Sir Alan Anderson, in conclusion, mentioned that the temporary Government grant to hospitals had been subject to a fundamental condition that an equal sum should be raised from the public. The appeal had already succeeded in raising as much "new money" as the maximum amount of Government money at present available for London hospitals, and the newspapers and committees had been informed, accordingly, that the Government could no longer give "pound for pound" to balance new money contributed by the public. The Management Committee recommended that the King's Fund should pay to the co-operating hospitals cheques on account on some date between August 1st and August 15th, amounting in all to £150,000; and that a further payment on account should be made to each hospital after the holidays as soon as sufficient further information became available.

Correspondence.

THE TEACHING OF PSYCHOTHERAPY.

Sir,—Will you permit the intrusion into the discussion on psycho-analysis of one who is neither a neurologist nor a psycho-analyst, but who has in the course of desultory reading followed to a certain extent the literature dealing with the new method of interpreting dreams?

According to Freud (*Interpretation of Dreams* (translation), p. 483) "the interpretation of dreams is the *via regia* to a knowledge of the unconscious in the psychic life." It will be admitted, I think, that the existence of an unconscious mind in the sense that this is a storehouse of thoughts, is a prime factor in the psycho-analyst's position. Let us then for a moment examine the evidence.

In considering the process of thinking we must depend upon scientific analogy. Is not the most probable hypothesis that some stimulus sets up changes (chemical, and perhaps electrical) in a given cortical area, and that as associated areas become involved other thoughts are added, and that after the process is over these parts return to rest? This would explain conscious thinking, but leaves no place for the unconscious as the term is used by psycho-analysts. I have just read *The Psychology of the Unconscious*, by Jung, and found it a very interesting and learned study of myths and folklore, but as for the "unconscious" it is simply assumed. Psycho-analysts should therefore give us a statement compatible with physiology as to what they conceive to be the biological process involved. With regard to the interpretation of dreams, I presume that psycho-analysts still follow Freud. Now, this author seems to contradict himself with regard to a point of great importance. In his large work (*loc. cit.*, p. 454) we read: "We must therefore admit that the dream invariably awakens us"; while in the *Introduction to Psycho-analysis* (translation), p. 76, he writes: "We do not wake up out of all dreams."

It would unduly lengthen this letter to give details as to the symbiology employed in interpreting, but it really seems that psycho-analysts refuse to admit an innocent dream—long objects mean the male organ, short ones generally the female; rhythmic movements like riding and going upstairs signify coitus, and so it goes on. To show that this is not a travesty I may again quote Freud (p. 241): "We have already asserted elsewhere that dreams which are conspicuously innocent invariably embody coarse erotic wishes."

Much more might be adduced to show the trend of thought adopted by psycho-analysts, but I shall conclude by asking another question. As obviously their elaborate code of symbols cannot be known to their patients, who

suggests the meanings to be utilized in interpretation? It may be a good thing to have worries talked over, but is it desirable to suggest sexual problems? It may be replied that these are the difficulties of one not conversant with the "new science," but most of us dream dreams on occasion and are able to judge for ourselves how far this unpleasant element enters into them.—I am, etc.,

Harrogate, Aug. 6th. P. McBRIDE.

AMAAS OR ALASTRIM.

SIR,—The letter from my old friend Dr. de Korté in your issue of July 8th (p. 65) provokes me to break a lance with him. My own opinion, based on experience in Central Africa, has led me to the belief that the names "amaas" and "alastrim" are merely synonyms for small-pox in mild form, but I am, of course, open to conviction.

Dr. de Korté states that "amaas, so called by the natives of South Africa, has been endemic for centuries." Surely this is rather a sweeping assertion. If we except the Cape peninsula and a comparatively small area round it, our knowledge of South Africa and the kaffirs belong almost entirely to the last century. Moreover, an expert bacteriologist like Dr. de Korté would not, as a rule, attach much weight to diagnosis and nomenclature belonging to the pre-scientific period. Dr. Livingstone, an early and accurate observer, nowhere, as far as I recollect, mentions anything but small-pox.

A footnote to history may shed some light on the subject. In 1881, or thereabouts, small-pox broke out in Kimberley, which at that time depended upon bullock wagon transport for all its supplies, fuel and food. As a result rates soon rose to a prohibitive figure and lack of fuel threatened to bring the mines to a standstill, and probably, what was regarded by many as equally important, the liquor supply showed signs of shortage. The authorities were in despair, but eventually, backed presumably by some medical opinion, they gave currency to the statement that the disease had been recognized as "Kaffir pox," which "did not attack Europeans." The scare subsided, the epidemic went on its way, and things resumed their normal course, but there were left behind the germs of a myth now grown to such dimensions as to have acquired a high-sounding name. I would ask Dr. de Korté if he can name any medical authority who had recognized "amaas" as a separate disease before 1880.

That Europeans rarely contract small-pox from natives is true, for the simple reason that they are generally protected by vaccination. When not so protected they may become infected in virulent form from very mild cases of the disease, such as would, I presume, be called "alastrim." For the truth of this I can vouch from experience.—I am, etc.,

London, W., July 11th. R. U. MOFFAT, M.D.

*** We have received from Mr. H. A. Moffat, F.R.C.S., of Cape Town, a letter dated June 27th giving information very similar to that contained in the third paragraph of the letter printed above. He says that it was announced that "the disease was not small-pox but the comparatively harmless thing labelled 'amaas.' The scare subsided and the price of wood fell. Vaccination had been carried out and the cases isolated, and the epidemic also subsided."

CALCIUM DEFICIENCY AND COD-LIVER OIL.

SIR,—The investigations of Grove and Vines on calcium deficiencies and their treatment by parathyroid, the results of which were published in your issue of May 20th, 1922, may on further pursuit afford a rational basis for the treatment of some diseases at present carried out empirically with greater or less success.

One of these diseases is phthisis, and it is noteworthy that the treatment proved by long experience to be most efficacious in it is a combination of fresh air, sunlight, milk, eggs, and cod-liver oil, and it is significant that the recent work on rickets[1] has shown that cod-liver oil and sunlight exert a markedly favourable influence on the calcium metabolism of the body, which will no doubt on investigation prove to be definitely associated with an increase of ionic calcium in the serum, and it is well known that milk and eggs are foods particularly rich in organic calcium.

It is also highly significant that in the only case of tuberculosis recorded in their paper, Grove and Vines found a marked and intractable deficiency of ionic calcium in the serum, and that it was only on the restoration of the calcium content of the serum to normal that the process of healing commenced.

It is, moreover, stated by Fisac that few or none of those employed in lime works, and who therefore habitually inhale, and presumably absorb, large quantities of lime dust, ever contract phthisis, even though living in squalid dwellings and underfed, and this is corroborated in a striking manner by Tweddell.[2]

Pathology also teaches us that the complete healing of tuberculous lesions in the lungs is associated with the deposition in them of calcium salts. *Per contra*, pregnancy and lactation, which are known to impose a severe drain on the calcium resources of the body,[3] are recognized to be particularly fatal to those affected with pulmonary tuberculosis.

I would therefore suggest that the value of cod-liver oil, milk, eggs, and sunlight, in phthisis is in all probability due to their favourable influence on the calcium metabolism of the body, and that their effect in this respect may be found to be heightened by the simultaneous administration of parathyroid or other calcium-conserving endocrine substance. Cod-liver oil might advantageously be administered during pregnancy and lactation, and in other conditions associated with great calcium katabolism, where the ionic calcium of the serum is on investigation found to be persistently diminished.—I am, etc.,

Asansol, Bengal, June 22nd. JOHN W. TOMB.

THE TREATMENT OF TUBERCULOSIS WITH COLLOID CALCIUM.

SIR,—Since publishing my article in your JOURNAL (January 14th, 1922, p. 53) I have had a good many inquiries about the best methods of administering colloid calcium, and as I have been giving it largely since that time I think it would be well to add a little to the information given in that paper. I may say that since using this drug the running of the sanatorium has been much easier than formerly owing to the beneficial effects produced. In addition to giving injections I have for some months been giving it by the mouth; the preparation I have used was the same as that used for injections, except that it contained 3 grains of calcium lactate to the dose, the dose used being 1 drachm, given one, two, or three times a day. This method has been peculiarly successful in reducing sputum and getting rid of tubercle bacilli from the sputum. I have reason for supposing that given by this method the action is rather different than when injected; the dose is certainly much greater. It seldom produces any untoward symptoms, but it is well to keep a chart of the temperature whilst it is being administered. In one case of ischio-rectal abscess in which a deep sinus had persisted for weeks, and in which the injections, though otherwise beneficial to the patient, had not caused healing, administration of calcium by the mouth three times a day for thirty-six hours was followed by cessation of pus formation; the packing was taken out, and the sinus healed in a few days. In the case of children with persistent febrile temperatures the action of this drug given by injections is little short of wonderful, and in surgical tuberculosis it would seem in these northern latitudes to be able to take the place of heliotherapy.

With regard to the administration, I am of opinion that where injections are given it is quite sufficient to give 0.5 c.cm., and after the first injection it is well to wait a week to see if there is any reaction, as there seems little doubt that in some cases this drug either extracts toxins from the bacilli or else produces absolute lysis of the bacilli; indeed, this may be one of the causes of the benefit which ensues. In a number of cases the injections do not need to be given oftener than once a fortnight. In acute febrile cases caution is required, and smaller doses should be used or small doses of calcium by the mouth administered. As a rule, 0.5 c.cm. is sufficient to stop haemorrhage.

If medical men would treat their suspected cases by this method a great deal of avoidable sickness would be prevented, and if it were tried on chronic cases often great amelioration of symptoms would be produced.—I am, etc.,

New Cumnock, July 1st. EDWARD E. PREST.

[1] *Journ. Amer. Med. Assoc.*, January 21st, 1922, p. 159, and BRITISH MEDICAL JOURNAL, May 27th, 1922, p. 831.

[2] *Medical Record*, January 28th, 1922, p. 141.

[3] *Journ. Amer. Med. Assoc.*, May 13th, 1922, p. 1460.

BONE-GRAFTING IN TUBERCULOUS SPINAL CARIES.

SIR,—Among Sir Henry M. W. Gray's most interesting remarks in favour of bone-grafting in tuberculous spinal caries occur several statements open to serious criticism, to which I feel bound to call attention.

1. He states that "fixation is essential to success"; and then that "all are agreed on the difficulty of fixing the spinal column efficiently by external splinting so that movement is entirely prohibited." Let me say at once that fixation in the sense in which he uses it here is not essential to success, and that therefore the difficulty he alleges does not arise. Dr. Rollier at Leysin, between the years 1903 and 1913, treated 198 cases of Pott's disease, of whom 171 were cured, and in no case did he attempt such fixation; what he did try to obtain was physiological rest, which is prevented by absolute fixation.

2. Sir Henry Gray states that in six to twelve months after the operation the patient may be leading a normal life except for the slight restriction imposed upon him by the stiffness of the part operated upon, and that therefore by operative fixation much time is gained for the patient when compared with fixation by external splinting. At first glance he does seem to have found here a valuable argument in favour of the operation, for the average period of treatment by heliotherapy is twelve to eighteen months, but he ruins it at the end of the same paragraph by excluding from his statement all cases with abscess. He says:

"If abscess has developed the time taken in the process of cure largely depends on the behaviour of the abscess, which is uncertain. Until the abscess in connexion with the vertebral bodies is cured no relaxation of treatment ('that is, fixation by external splints') should be allowed."

Now, if any large number of cases of Pott's disease be investigated it will be found that abscess is present in a very large percentage; thus in Rollier's 198 cases there was abscess in 95, or 48 per cent; so that on Sir Henry's own showing, even if he is right, nearly half the cases would not be cured any quicker by operative methods.

3. He states that in his experience the operation has not proved dangerous, as only one death which can be directly attributed to the operation occurred in his series of 28 cases. He then quotes Hibbs (against himself it seems to me), with 31 deaths in 210 cases; and, not quite so bad, Meyerding, with 8 deaths in 100 cases. If we add these three sets together, 28 with 1 death, 210 with 31 deaths, and 100 with 8 deaths, we get 238 cases with 40 deaths, or 16.8 per cent. Does Sir Henry consider that an operation with such a mortality can be rightly described as not dangerous? As a contrast to the small mortality following operation he quotes (1) a statement made by Royal Whitman in 1901 that "at least 20 per cent. of all patients die during the progress of the disease"; and (2) a statement made by Lovett in 1907 that "the mortality is probably not under 33 per cent. if ultimate results are considered." Could he have not quoted from a more up-to-date book, as, for example, Rendle Short's *Index of Prognosis*, 1918, second edition, where we are told that we may take it that the mortality is about 5 to 10 per cent.?

4. He states that operation should be done before deformity occurs, but he surely must know that it is usually the onset of deformity which first draws attention to the presence of disease. If deformity be present he tries "by postural methods to bring about gradual straightening." "If these fail, and they frequently do," he deliberately breaks the grafts to adapt them accurately to the curvature. It is not surprising that the postural methods frequently fail, for how can he give them any chance when his advice is: Perform the operation "as soon as possible after the disease is diagnosed"? As regards leaving the deformity alone, is not this absolutely a retrograde step? Rollier has shown that in all active cases the deformity can be entirely reduced except in the cervical and lower lumbar regions. Can we then advise patients to have an operation to cure (*sic!*) them, and thereby force them to remain humpbacked for life, when another form of treatment can make them perfectly straight?

5. He states that by reason of the bony fixation the patient is less likely to suffer from local recurrence of the disease than after "conservative" treatment. This gives the impression that under "conservative" treatment relapse is frequent. Yet if we turn to Dr. Rollier's published statistics we find that between the years of 1903 and 1913, out of 171 cases of Pott's disease cured, there were only 2 relapses.

From the foregoing remarks, I think I have made it clear that there is everything to be said against this operation, in spite of Sir Henry Gray's optimism. If anything more were needed to open your readers' eyes to the real state of affairs, let them turn to the paragraph headed "Results of Operative Treatment," where occur the following sentences:

(*a*) "One patient, a young weakly child, 4 years of age, died on the third day after operation."

(*b*) "One adult died within two months of operation from progressive disease in the spinal cord and canal."

(*c*) "In another adult psoas abscess continued to increase."

(*d*) "In one child operated on when 6 years of age the disease has apparently been cured, but deformity has increased."

Many years ago an operation was invented for curing microcephalic idiots. The idea of the operation, called craniectomy, was that the brain could not expand because of the smallness of the cranial cavity, and so large portions of the cranium were cut away to give the brain room. Although it soon became known that many of the children died under the operation, that those who survived it ended up in asylums, and that the operation had been wrongly conceived—the size of the skull depending upon the size of the brain, and not vice versa—yet surgeons went on performing this dangerous and useless operation in ever-increasing numbers, and it was not until Dr. W. W. Keen wrote his famous paper entitled "Noli Nocere" that their eyes were opened and they were able to perceive the error of their ways. Is it too much to hope that this history may soon repeat itself?—I am, etc.,

PAUL BERNARD ROTH,
Orthopaedic Surgeon, Miller Hospital, etc.

London, W.1, July 25th.

"DOCTORS IN COUNCIL."

SIR,—The *Manchester Guardian* had a leader last week under the above title dealing with the deliberations of the Representative Meeting at Glasgow. Part of the leader dealt with the future of voluntaryism at hospitals and the position of the doctor in relation to any new arrangement of hospital affairs, and in this part it expressed the opinion that the discussion at the Representative Meeting was "unsatisfactory . . . because so much of it draws a kind of formal veil between us and realities." It went on to say that:

"Appointments on the staff of a great hospital are nominally honorary, but not really so, for, though they are unpaid, they are the recognized entrance gates to the most lucrative fields of private practice."

This view, which is, I believe, common to the laity, deserves more attention from the profession that it has yet received, for it will seriously interfere with the carrying through of hospital reform, and with the status of the staff of the hospital when reform is carried.

I wrote the enclosed letter to the *Manchester Guardian*, and it was published on July 28th; but as it pertains to matters which I believe are of still more importance to the medical profession than to the laity, and as it will become more and more necessary for the profession to educate the laity on this question, I am in hopes that you will consent to publish it along with this letter.—I am, etc.,

York, Aug. 1st. PETER MACDONALD.

THE VALUE OF HOSPITAL STAFF APPOINTMENTS.

To the Editor of the Manchester Guardian.

SIR,—In your generally well-informed leader of the 24th on "Doctors in Council" there runs through that part of it concerned with the position of voluntaryism the thought that the position of the honorary staff in voluntary hospitals is not essentially honorary, inasmuch as indirectly it is a source of emolument. In your own words "appointments on the staff . . . are the recognized entrance gates to the most lucrative fields of private practice." As this view, which is a common one, interferes largely with what I am convinced is the sound line for hospital reform, I trust you will allow me to comment upon it.

While there is a large although varying amount of truth in it, varying with the hospital concerned, it is on the whole misleading and indicative of confused thinking, especially on two chief lines. The first is that it confuses hospitals generally with the relatively few, although, of course, relatively very important, hospitals in the large centres, and especially those at which there are teaching schools. Here positions on the honorary staff are exceedingly valuable and indirectly lucrative, and far more than repay the services given in these positions. This relationship, however, between value of position to the member of the staff and value of his services to the community is not a constant one, but varies with the geographical position of the hospital, and the more peripheral (so to speak) the hospital is the lower becomes the value of the position on the staff relatively to the service—this even in the same city—until in the small hospitals in the smaller centres of population the value of the services far and away outweighs the indirect value of position on the staff. Now these smaller hospitals are

becoming, if they are not already, by far the most important class of hospital to the community, for even in the large cities the tendency is, or soon will be, to decentralize, and it is conditions at these, which should set the pace, and which should have the chief consideration in regarding the future, and not the conditions in the large hospitals, which bulk so largely in the public mind, and in your own also, if one may judge from your leader.

The second indication of confused thinking in your leader is that it fails to recognize that where hospital appointments are valuable to the holders they are so, not so much in themselves as in the fact that others are shut out from holding them; and unquestionably there has been and still is found evidence of action by honorary staffs which indicates a subconscious if not conscious endeavour to keep hospital appointments within a sacred ring. There is, in fact, a vested interest in voluntaryism which subconsciously interferes with the possibility of those who arrive at "the most lucrative fields of private practice" being able to have an open mind on the question.

This state of affairs is unlikely to persist; many things are tending to break it down, among them the recognition by some of us doctors that it is in the interest of medicine, of the doctors, of the community, that the largest possible access to hospitals, and not the least possible, should be given to doctors generally. Further, the nation may presently begin to recognize that public health demands the increase of hospital beds from 1 per 1,000 to 3 per 1,000 of the population, as Sir Napier Burnett advises, and with this the monopoly value of hospital appointments will largely disappear.

Your paper is generally so wise on the great public questions that I trust you will at least give this matter further consideration, and that you will recognize that the "doctors in council," though as yet only groping for a policy, may be groping towards the light. —I am, etc.,

Ouse Lea, York, July 26th. PETER MACDONALD.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—The correspondence on this subject initiated by Colonel Lister ought to fulfil a very useful purpose. The proposal is one which appeals to a great many people, and its apparent advantages warrant full discussion and unprejudiced consideration.

It is certainly unfortunate that already arguments diametrically opposed are being employed, based on differing reports of American experience. Mr. Norman Haire refers in the JOURNAL of July 15th (page 110) to the "methods so widely and beneficially used in the United States," and presents a very different picture from that given by Dr. Whitwell a week previously.

If it be true that sterilization by any method is used "widely and beneficially" in America, then an extremely powerful argument is provided for those who desire to introduce the procedure into this country. Last week I had the pleasure of meeting a New York hospital surgeon, a delegate to Europe of the American Red Cross, who takes a deep interest in all problems affecting the health of the community, and his opinion is that the results of sterilization of mental defectives in the United States are negligible.

In view of such a conflict of opinion it seems very desirable that statistics from America should be ascertained and published so that there may be some authoritative basis for discussion. It should be possible to find out for each State:

(*a*) For how many years the law under which these operations may be performed has been in force?

(*b*) Whether permission is required from the mental defective or relatives before sterilization can be effected?

(*c*) The total number of operations.

I hope this will be done.—I am, etc.,

Gloucester, July 16th. W. ARNOTT DICKSON.

SIR,—I was a school medical officer for two years in a large English county. In nearly every school I inspected there were from one to five or six mentally defective children, according to the numbers attending. There were others either quite imbeciles or epileptics not actually attending school. I feel that everyone who has been a school medical officer will support the plea of Lieut.-Colonel A. E. J. Lister, contained in his letter of July 1st, as to the necessity of taking effective steps to prevent the increase of these unfortunate people.

In one school I had a mentally defective boy of 13 years of age. He could learn nothing and could not even speak intelligibly. His mother came to me complaining bitterly that it was hard that he could not leave school to go to work. She did not in the least realize that he was mentally defective, because she said, "When I was at school I could never learn anything myself."—I am, etc.,

Clifton, Bristol, July 24th. L. MARGARET LISTER, M.R.C.S., L.R.C.P.

THE DENTISTS ACT AND REGISTER.

SIR,—There is reason to think that the postponement of the date on which the Dentists Act, 1921, will come into force from July 28th until November 30th this year has given rise to some misapprehension. I am therefore directed to write and say that any practitioner who has been registered comes within the jurisdiction of the Board, and should pay very careful attention to its warning notice in regard to advertising and canvassing. The extension of the Act does not permit any relaxation in regard to this.

It is possible that there are some practitioners who have been notified that they are eligible for registration who are refraining from completing their applications in order that they may be able to continue the practice of advertising and canvassing. If any such cases were brought to the notice of the Board this matter might have a bearing on the question of good personal character.

There are some practitioners who have in their employment assistants who are intending to pass the prescribed examination as soon as they can. The Board would be unwilling that these unregistered assistants should be penalized. At the same time the warning notice in regard to "covering" must be observed, and such assistants should confine their work to mechanical duties or to matters which do not require professional discretion or skill, and should perform them only under the immediate personal supervision of their employers.

I have to add that the concession that ex-service candidates may count work done up to July, 1922, instead of only to July, 1921, has no bearing upon the eligibility for registration of those who had not attained the age of 23 years on July 28th, 1921. The question of age is one upon which the Act is very definite, and the Board has no discretion in regard to this matter.—I am, etc., NORMAN C. KING,

London, W., Aug. 5th. Registrar.

THE MEDICAL DIRECTORY, 1923.

SIR,—The annual circular has been posted to every member of the medical profession. Most of the returns have already been received. If any practitioner has not yet sent us the latest information, we shall be glad to receive it by an early post.—We are, etc.,

7, Great Marlborough Street, London, W.1, Aug. 2nd. THE EDITORS.

Obituary.

ARTHUR RANSOME, M.D., M.A., F.R.C.P., F.R.S.

THE death of Dr. Arthur Ransome on July 25th, at the age of 88, has robbed the medical profession of one who brought it honour in many ways. He was the son of Mr. J. A. Ransome, and was born in Manchester. He received his early education at Manchester, went first to Trinity College, Dublin, and later to Caius College, Cambridge, of which he subsequently became an honorary Fellow. His career at Cambridge was distinguished. He was senior optime in the Mathematical Tripos, and in 1856 took a first class in the Natural Science Tripos; he was lecturer on biology from 1857 to 1861. From Cambridge he went to St. George's Hospital, London, and studied also in Paris. From 1880 to 1885 he was successively lecturer and professor of hygiene and public health at Owens College, Manchester, and for many years he was consulting physician to the Manchester Hospital for Consumption and Diseases of the Chest and Throat; later on he became physician to the Royal Victoria and West Hants Hospital. He was Vice-President of the Manchester and Salford Sanitary Association, and examiner in sanitary science at the Cambridge and Victoria Universities. In 1890 he delivered the Milroy lectures before the College of Physicians, when he took the etiology and prevention of phthisis as his subject. In 1897 he was the first recipient of the Weber-Parkes prize for an essay on tuberculosis.

This record gives but an inadequate impression of the achievements of a man who did fine pioneer work in connexion with the prevention and treatment of tuberculosis, and attained a reputation of cosmopolitan range. Arthur Ransome belonged to that not inconsiderable class of men who add much to the sum total of human knowledge but whose identity becomes merged in their work, so that posterity is apt to forget how great were their services. Ransome's gifts were great and many, and though he may not have laid any corner stone, his was the valuable work which fills in important gaps in the masonry, giving to it support and cohesion.

Comparatively early in his career he began to be interested in tuberculosis, and almost all his subsequent publications dealt with this subject. As early as 1876 he published a monograph on stethometry, and it is eloquent of the solid character of his work that it is still quoted in modern textbooks of diseases of the chest. In 1882—the year signalized by the discovery of the tubercle bacillus by Koch—Ransome published a valuable work on prognosis in lung disease, and two years later followed this up by an essay on the causes of consumption. Unlike many specialists in tuberculosis at this time, he did not take a partisan attitude with regard to the conflict raging over the respective merits of the "soil" and the "seed" in the genesis of this disease, for he was convinced that both played an important part. This capacity to see more than one side of a case at a time was characteristic of a man of many parts. For not only was he a mathematician and biologist, but he was also an anatomist and a chemist (he was Cuian scholar in anatomy, and Mecklenburg scholar in chemistry). Apart from the question of personal predisposition to tuberculosis, insanitary conditions were, in his opinion, an important factor; he once stated that he had never come across an instance of infection, direct or indirect, in a well-ventilated house in this country; where illness followed infection the rooms were always dark, dirty, and ill ventilated. He also showed that during the warmer part of the year tubercle bacilli can grow on damp wall-paper, and that a permanent source of infection might exist in this way. One of his experiments, which still stands as a specimen of first-class research, was in connexion with the action of sunlight on the tubercle bacillus. He exposed some virulent sputum to fresh air and sunlight on dry, sandy soil, and though the exposure was not long enough to pulverize the sputum, none of the specimens remained virulent. Other specimens, kept in a dark cupboard with very little air, remained virulent for nineteen and thirty-five days respectively, as shown by inoculation of guinea-pigs. When specimens were exposed to currents of air in the dark, their virulence was reduced, but to a less degree than by sunlight. In 1890 he again published a work on the causes and prevention of phthisis, and as late as 1914 he was adding useful contributions to our knowledge on this subject. We have already referred to his cosmopolitan reputation, and in Germany, at any rate, he was recognized as not only an authority, but a pioneer, in the study of tuberculosis; he was for many years, and up to the time of his death, an associate editor of *Zeitschrift für Tuberkulose*.

Though his sphere of activities was in the provinces, the last thing to be said of his work and outlook was that they were provincial. Indeed, much of his best work appeared at a time when it could with some justice be said that the attitude of his colleagues in London towards tuberculosis was a trifle reactionary, if not provincial, and he enjoyed the doubtful privilege of being ahead of his time, and more than a head and shoulders above the crowd.

EDWARD HUGH EDWARDS STACK, M.B., B.Ch.Cantab., F.R.C.S.Eng.

We regret to learn of the death of Mr. E. H. E. Stack of Clifton, Bristol, which occurred on August 3rd in London, at the age of 55. He was the third son of the Rev. Canon Stack, and was born at Langfield, co. Tyrone. He received his education at Haileybury, Pembroke College, Cambridge, and St. Bartholomew's. In 1892 he took the Conjoint qualification and the degrees of M.B., B.Ch.Camb. In the same year he won the Brackenbury Medical Scholarship at St. Bartholomew's and became house-physician to Dr. Gee. He subsequently held the posts of ophthalmic house-surgeon as well as extern and intern midwifery assistant. In 1897, after obtaining the F.R.C.S.Eng., he was appointed house-physician at the Bristol Royal Infirmary and later (1902) house-surgeon. In 1906 he was elected assistant surgeon, and in 1914 surgeon, to the Bristol Royal Infirmary. On the death of Dr. Alexander Ogilvy in 1914 Mr. Stack was appointed ophthalmic surgeon, and devoted himself entirely to this special branch of surgery during the remainder of his life.

In addition to his appointments at the Royal Infirmary Mr. Stack was surgeon to the Bristol Eye Hospital and consulting surgeon to the Cossham Hospital; for many years he had been surgeon to the Bristol Orthopaedic Hospital. He served as Captain R.A.M.C.(T.F.) during the war, and did excellent work as ophthalmic specialist at the 2nd Southern General Hospital in Bristol and at 56 General Hospital in France.

To few men has it been given to master so readily and to excel in any branch of clinical medicine that he essayed. Whilst in residence at the Bristol Royal Infirmary his successful coaching in midwifery seemed to point him out as a rising obstetrician. As a physician his clinical acumen and powers of diagnosis were remarkable, and no small part of his success as a surgeon might be attributed to his sound knowledge of internal medicine. He chose, however, the practice of surgery, and in this branch of the profession his skill in carpentry and wood-carving stood him in good stead; he had the perception of an artist combined with the hand of a craftsman. When in 1914 he turned to ophthalmology he soon showed that the teaching and example of Henry Power and Bowater Vernon were not forgotten. He was a neat operator, a gifted refractionist, and, above all, displayed a singular grasp of the medical aspects of eye diseases.

Throughout his life his enthusiasm for the welfare of the medical students had been intense. He was passionately loyal to his old hospital—Bart.'s—but was scarcely less devoted to Bristol, the school of his adoption. In athletics, in amateur dramatics, and in all the social activities of the medical school Stack was a leader and a mighty encourager of youth; and he spared himself neither time nor labour in teaching. His grinds and ward classes were always well attended, for he added to the knack of clear exposition a fund of apt anecdote that helped to fix the dullest facts in the dullest minds. His memory for patients' faces, names, and ailments was uncanny; it was said that he had on one occasion recalled a patient's name, address, and whole family history from mere inspection of the scar of an operation wound.

Stack was a warm-hearted impulsive Irishman, who made friends wherever he went. His early death will be widely and deeply mourned. He leaves a widow, three sons, and a daughter, to whom our heartfelt sympathies are offered.

We regret to record the death of Dr. John Maitland Forsyth, M.C., which took place at Singapore on June 26th. He was the only son of Robert C. Forsyth, of Tainanfu, North China, and graduated M.B., Ch.B. at Glasgow University in 1912. He was a captain in the R.A.M.C. during the war, his gallantry being twice recognized by the award of the Military Cross and bar. In 1920 he went out to Singapore to join Dr. Galloway in partnership, and during his two years' residence there he made many friends and earned the esteem of all. He was a prominent member of the local Branch of the British Medical Association and its representative on the Medical Council of the Straits Settlements and Federated Malay States.

Captain N. N. G. C. McVean, I.M.S. (ret.), died aged 42, on July 21st, at the house of his brother-in-law, Major H. B. Luard (I.M.S. ret.), at Little Baddow, Chelmsford, after a month's illness; he was buried on July 26th in the family grave at Oban, Argyllshire. He was the youngest son of the late Colin A. McVean of Kilfinichen, Isle of Mull, and was educated at Watson's College, Edinburgh, and Edinburgh University, and entered the Indian Medical Service in 1905, serving in the Punjab and afterwards in the Gulf of Persia as agency surgeon. When the war broke out he proceeded with the 62nd Punjabis to Egypt, when he was present in the action at the repulse of the Turks on the Suez Canal, and afterwards at Aden, whence he was invalided home in 1915. For the last seven years, after several operations, he led a life of much suffering in a state of extreme emaciation, borne with wonderful fortitude and good cheer. He had a very active mind and an indomitable spirit, which overcame the lassitude and exhaustion of his invalid state, and almost to the end continued to take an active part in his profession, acting as assistant in various practices, or on Pension Boards in London, or in hospitals, including, during the latter part of the war, service as a civilian practitioner at the Colchester Military Hospital, and in V.A.D. Hospitals at Bournemouth and at Glasgow. It may truly be said that he died for his country, and was an ornament to his distinguished service, in which he will be remembered by many friends as well as in this country, for he had a wonderful gift of friendship. He rests under the shadow of his native Highland hills, which he loved so well.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a Congregation held on August 4th the following degrees in medicine were conferred:

B.M., B.CH.—D. G. Leys, W. S. Tunbridge.

Degree days for next term are announced as follows: Thursday, October 19th; Thursday, November 2nd; Saturday, November 18th; Thursday, November 30th; Saturday, December 16th.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on July 19th.

The following were recognized as teachers of the University at the institutions mentioned and in the subjects indicated:

University College: Mr. J. L. Shellshear and Mr. R. A. Dart (Anatomy), St. Thomas's Hospital Medical School: Mr. T. Carnwath (Hygiene), Mr. P. H. Mitchiner (Surgery), Mr. W. Rushton (Biology).

London (R.F.H.) School of Medicine for Women: Miss Emily C. Lewis, Mr. L. E. C. Norbury, Mr. C. E. Shattock, and Mr. C. A. Joll (Surgery).

Dr. W. L. Symes was re-elected acting director, and Mr. H. L. Eason, C.B., C.M.G., M.S., treasurer of the physiological laboratory for 1922-23.

Professor A. J. Clark was appointed chairman of the Board of Examiners in pharmacology for the second examination for medical degrees for the year 1922-23.

Professor Adrian Stokes, D.S.O., O.B.E., was admitted to the Faculty of Medicine.

The following grants were made for 1922-23 out of the Thomas Smythe Hughes Medical Research Fund:

£100 to Dr. Charlotte L. Houlton, of the London (R.F.H.) School of Medicine for Women, for an investigation of vaginal secretions with a view to the discovery of some prophylactic method for the prevention of puerperal infection.

£25 to Dr. Vasant Ranji Khanolkar, of University College Hospital Medical School, for an investigation of the presence of non-specific antibodies against proteins with a view to further insight into the nature of non-specific immunity.

It was decided that, in and after October, 1922, the clinical examination in surgery at the M.B., B.S. examination be so arranged that each candidate shall have thirty minutes for examining two cases before he is questioned on them by the examiners, and that the length of the clinical examination be in all forty-five minutes.

Human anatomy has been added to the list of subsidiary subjects that may be offered at the choice of the candidate at the B.Sc. Honours examination in physiology for external students.

The Vice-Chancellor, Mr. H. J. Waring, has been elected chairman of the Co-ordination and Developments Committee for 1922-23.

Dr. T. G. Stevens has been appointed a staff examiner in obstetric medicine for 1922-23.

Medical News.

THE French Minister of Health, M. Paul Strauss, who is in London in connexion with the holidays of French children from devastated areas, is taking the opportunity of studying public health administration in this country. He was entertained at lunch by the First Commissioner of Works on Thursday last, when Sir Alfred Mond was in the chair.

A DEPUTATION from the People's League of Health waited on Sir Montagu Barlow, Parliamentary Secretary to the Minister of Labour, on August 2nd, to place before him some of the physiological and psychological effects of unemployment and of the "dole" upon the health and habits of the industrial community. Sir Bruce Bruce-Porter said that not only was the unemployment benefit insufficient to keep the worker fit, but it was not spent to the best advantage because the recipient was generally unversed in food values. He urged that means should be provided to enable the recipient to obtain by means of food tickets a standard balanced diet in part substitution for the money benefit. Professor Lyle Cummins dwelt upon the connexion between unemployment with its reduced income and ill health as instanced by the number of persons applying for tuberculosis benefit during times of industrial crisis or depression. Dr. W. A. Potts of Birmingham traced certain psychological disorders, which manifested themselves either in revolutionary agitation or in moral delinquency, to ill health caused by insufficient food. Sir Montagu Barlow said that while he fully appreciated the serious effect produced on health by prolonged unemployment, he thought that there would be danger of the improper use of the proposed food tickets, and that elaborate supervisory machinery would be required. Captain Donald Simson, who represented the British Legion, outlined a scheme whereby the sums now spent on unemployment benefit might be diverted into productive channels; the benefit would be paid to local authorities or private employers to cover partly the wages of unemployed men whom they had taken on. This scheme was supported by Dr. Fremantle, M.P.; and Mr. C. J. Bond spoke of the measures taken by the Leicester Distress Committee to institute public works, such as road widening, in order to provide for the unemployed; the secret of success in this instance lay in the integration of a certain amount of highly skilled labour with the unskilled. Sir Montagu Barlow reminded the deputation that the insurance fund was made up largely by the contributions of workpeople who were still in employment. These had contracted under the scheme for the payment to them of benefit when unemployed, and as trustee of the fund the Government, except by amendment of existing legislation, could not divert sums in its charge to purposes other than those provided under the scheme. He added, however, that schemes on the lines of Captain Simson's proposal were under the consideration of the Government.

THE principal functions of the Health Organization of the League of Nations, which was established in September, 1921, are to conduct an international epidemiological information service and to promote international co-operation in the control of epidemic diseases. It also advises the League in matters affecting health and co-operates with the International Labour Organization in promoting industrial hygiene. The International Health Board of the Rockefeller Foundation has now agreed to provide the Health Organization of the League with a sum not exceeding 32,840 dollars a year for a period of five years to maintain the intelligence service, and a further sum not exceeding 60,080 dollars a year for three years to put into effect the scheme for the international exchange of public health personnel, to which we recently referred.

THE Association of Medical Officers of Fever Hospitals has decided to join the Society of Medical Officers of Health as the Group of Medical Officers of Fever Hospitals. At a meeting of the group held on July 31st Dr. E. W. Goodall, O.B.E., North-Western Hospital, Hampstead, was elected president, and Dr. A. F. Cameron, Joyce Green Hospital, Dartford, Kent, honorary secretary of the group. Candidates for election as members of the group are asked to send their names to the honorary secretary as soon as possible in order that they may be included in the list of members for the coming year which is now being prepared.

THE programme of the forthcoming session of the Medico-Legal Society has been issued by the honorary secretaries, Mr. Ernest Goddard and Mr. B. H. Spilsbury. The first meeting will be held on October 17th and the annual dinner on December 15th. At the annual general meeting held last month it was resolved unanimously that the annual subscription be raised to one guinea, with effect from the beginning of next year.

ON the occasion of his retirement from the acting honorary staff of the Stratford-upon-Avon Hospital, Dr. R. Latimer Greene was presented with a silver salver, a cheque for £175, and a book with the names of the subscribers, in recognition of his services to the hospital for upwards of forty years. The governors have appointed Dr. Greene honorary consulting medical officer to the institution.

THE Ashby Memorial Research Scholarship in Diseases of Children of the University of Manchester has been awarded to Miss Ruth E. Conway, M.B., Ch.B.Manch., M.R.C.P., who will undertake an investigation into the reaction of the blood and its relation to the bicarbonate content in cases of clinical acidosis—(1) in relation to anaesthesia, (2) in relation to diabetes in children.

MR. H. C. DYSON, of Epsom College, has been elected to the Epsom Scholarship, tenable concurrently with the Carr Scholarship from Epsom College at University College, London.

AN international conference of medical women will take place at Geneva during the first week of September. The first congress was held in New York in 1919. The authorities of the University at Geneva have kindly granted accommodation for the meetings of the conference. Subjects of international medical importance on which the opinions of medical women of the world should prove of value will be considered. The members of the conference will also be invited to place the constitution of the International Medical Women's Association on a permanent basis. The proceedings will begin with an inaugural banquet on September 4th, and will extend for four or five days.

THE golf competition under handicap for the Llandrindod Wells Medical Challenge Cup, value 50 guineas, will take place on September 20th, 21st, and 22nd. The entrance fee is 5s., and the competition is limited to qualified medical practitioners. Entries, which will be received up to the first post on Tuesday, September 19th, should be sent to the Secretary, Golf Club, Llandrindod Wells. Further details will be found in our advertisement columns.

A COURSE will be held at Bethlem Royal Hospital, commencing on September 18th, of lectures and practical instruction for the Diploma in Psychological Medicine granted by various universities. It is proposed in future to give two courses each year—an autumn session of intensive character, commencing in September and completed in early December, and a spring session, commencing in the middle of January and completed in the middle of April. Each course consists of two parts: Part A includes lectures and demonstrations on the anatomy, histology, and physiology of the nervous system, with lectures on psychology and demonstrations in experimental psychology. Part B comprises lectures and clinical demonstrations in psychology, including lectures and demonstrations in the morbid anatomy of the nervous system, a series of lectures, with clinical demonstrations, on different branches of psychological medicine, and lectures, with clinical demonstrations, on mental deficiency. Entrants for the course who pay a composition fee of 15 guineas may, if due notice is given, attend either Part A or Part B of one course and postpone the other part until the next session. An entrant who wishes to attend one part only pays a fee of 10 guineas. An entrant who takes the complete course can attend the general clinical practice of the hospital on payment of 5 guineas for six months or 10 guineas for one year, but an entrant who does not take either part of the course, and desires to attend the clinical practice of the hospital, must pay a fee of 5 guineas for each three months of attendance. Further particulars may be obtained from the Physician-Superintendent, Bethlem Royal Hospital, S.E.1.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

DR. H. D. O'SULLIVAN (Burton-on-Trent) desires to obtain statistical evidence on the question of danger to the child in "twilight sleep" confinements.

TREATMENT OF CRAMP.

DR. JOHN M. MUNRO (Kingston, Ontario, Canada) writes in reply to "M.D.Edin." (May 6th, p. 744): I had a similar case which responded well to the following treatment, the patient now being able to be about without any discomfort and all the swellings having disappeared.

1. Antirheumatic diet and saline purge every other morning.
2. Paint joints with ung. iodi and ung. methyl salicylate, rubbing in well till colour disappears, and then cover with flannel—say, morning and evening.
3. Take internally—

℞ Ac. salicyl. 3ss
Ferri pyrophosphatis 3j
S dii phosphatis 3x
Aquæ ... ... ad 3vj
Sig.: A tablespoonful every two hours.

The mixture is taken as indicated until improvement justifies less frequent doses, or unless constitutional effects are produced.

TREATMENT OF CYSTITIS IN PARAPLEGIA.

"S. J. C." recently treated cystitis following catheterization for retention in a case of spinal paralysis, by perineal urethrotomy, cutting down on to a grooved staff where it entered the bladder. A large rubber catheter was kept in through the perineal wound for a couple of days and a sound passed by the urethra and the perineum for several days following. The cystitis cleared up almost immediately. The bladder is now readily emptied by pressure on the lower abdomen above the pubis. The wound was allowed to heal naturally. Our correspondent wishes to know whether this method of preventing catheter fever, cystitis, and nephritis as a sequela, has been used by others.

INCOME TAX.

"JUNIOR PARTNER" inquires as to the effect of the following car transactions: Bought, October, 1920, a second-hand Bavard car, 8–10 h.p., for £300; sold same in January, 1921, for £195, and bought a second-hand Swift, 10 h.p. Coupé, for £295; this he sold in August, 1921, for £235, and bought a new Lagonda, 11 h.p. Coupé, for £450.

*** We are of opinion that a proper claim would be as follows:

January, 1921, £295—£195	= £1'0
August, 1921, £295—£235	= £ 60
	£160

If "Junior Partner" can ascertain definitely how much extra he is paying for the privilege of spreading his total payments over five years on the hire purchase system, we consider that he is entitled to charge one-fifth of that sum in each of the five years as a professional expense.

"JAY-TEE" is employed as a county council school medical inspector; he has recently incurred expense in renewing his car; can he claim an allowance for tax purposes, seeing that his council allows him 7d. per mile for the use of his car?

*** There appears to be no ground for dealing with this expense as a separate item. If our correspondent can show that the council's allowance is insufficient to cover the full cost from year to year of his necessary locomotion expenses he would have a claim to deduct the difference, but to make a specific claim for the renewal is to assume that the 7d. per mile is intended to cover running costs only.

LETTERS, NOTES, ETC.

ASTHMA AND ANAPHYLAXIS.

DR. V. L. FERGUSON (Upper Norwood) sends a note on the etiology of asthma. Many articles, he says, are appearing from time to time on the etiology of asthma and allied disorders. That blessed and comprehensive term, anaphylaxis, has, he continues, been bandied about—but are not all forms of disease manifestations of anaphylaxis to some agent, external or internal, organic or inorganic? Why confine it to a certain set of diseases and a certain set of agents? There has been much talk of cat's hair and horse-dandruff and hen's feathers, yet I make bold to say that in order to discover the cause of every case of asthma tests would have to be carried out—tests with every known kind of matter in the animal, vegetable, and mineral worlds, and we might then be far from the truth. Indeed, what reliance can be placed on any kind of skin tests? An article has been published in the *Practitioner* on "foreign" proteins as causes of asthma, hay-fever, and the like. The next article is headed: "Hay-fever—the Essential Factor." Further inquiry discovers this factor to be a surgical condition, removable by operation! This only helps to convince me that these are hydra-headed diseases which cannot be destroyed at a single blow. There can be no question that the ceremony of numerous skin tests must have a profound effect on a patient's mind, and to this alone may, perhaps, be attributed any success that has attended the inquiry into the specific proteins. It would be interesting to see recorded the instances of failure as well as of success; or is this in line with Bacon's remarks on divinations and dreams: "That that hath given them grace and some credit consisteth in three things: First, that men mark when they hit and never mark when they miss; as they do, generally, also of dreams, etc."?

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 25, 28, 29, and 30 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 26 and 27.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 92.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
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Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MICROBIOLOGY (INCLUDING BACTERIOLOGY).

Robert MacNeil Buchanan, M.B., F.R.F.P.S., President.

PRESIDENT'S OPENING REMARKS.

I esteem it a great honour to have been asked to preside over this Section, and at the same time to have the privilege and pleasure of extending to you a cordial welcome. The city of Glasgow has many traditions for those of us who are its citizens, and we trust that our colleagues from a distance will each and all realize that one of the chief of these traditions is hospitality to sojourners within our gates.

In the directions for the conduct of our meetings the Council has laid a restraining hand on the presidents of Sections and asked them to forgo the delivery of a presidential address. It is an injunction in which I feel sure you will gladly acquiesce, and I will only refer to one or two points which I regard as of some interest in connexion with the origin of our Section and with the programme of its work.

In the thirty-four years since the British Medical Association held its annual conference in this city our conceptions of micro-organisms and the part they play in health and disease have undergone many developments. In that brief space of time microbiological science in its onward progress has exercised a profound influence in the realm of human, animal, and vegetable disease, explaining morbid processes, clarifying diagnosis, rationalizing treatment, and directing preventive measures; while in the realm of Nature it has revolutionized our ideas of the processes underlying growth and decay. Its place in our educational system has also become established, and each of our universities and medical and technical schools has a chair or lectureship devoted to its teaching, and almost all nations of the world have striven with each other in friendly rivalry in founding institutes devoted to its advancement by research.

Its early beginnings, which will be recalled by many present, may be likened to the waters that issued from under the threshold of the temple and that swelled with almost incredible rapidity to a mighty river bearing a tide of healing, enlightenment, and new hope. In keeping with this general advance and broadening out of the science, the executive has seen fit to introduce for the first time in the history of the Association a Section of Microbiology (including Bacteriology), with the view of bringing together in helpful conference workers in allied fields of research. The processes of human disease, whether of bacterial or protozoal origin, receive helpful elucidation from the study of kindred processes in animals and plants, while our veterinary and botanical colleagues, on the other hand, derive benefit in their researches from the work done in the realm of human medicine. It is of very special interest to us to recall that we are thus realizing a suggestion made by Sir Clifford Allbutt in his address in medicine on the occasion of the Association's last visit to Glasgow a generation ago.

Having this object in view, the programme of our Section has been designed to embrace phases of microbiology showing the intimate relationship which exists between its various branches and how they hang together in evolving our common stock of knowledge. Investigations in the past have been mainly concerned with what may be termed for convenience the macro-microbic, while in the last few years attention has been largely focused on what may for contrast be designated the micro-microbic or filter-passing micro-organisms. It is not a little remarkable, and may be construed as a reflex of the scientific thought of the time, that three of the discussions in our programme deal more or less directly with the evidences of this realm of microbic life and activity.

We are privileged in having with us at this meeting pioneers in the field of bacteriolysis—Dr. Twort of the Brown Institution, and Dr. d'Herelle of the Pasteur Institute—and our indebtedness to them is very great, in that they have accepted our invitation to discuss a problem weighted with so much interest and significance in the elucidation of the biology of bacteria, and one destined to give a new and more intimate meaning to the pathogenic action of individual species.

The bacteriology of influenza cannot fail to make a strong appeal to every one of us. It has been said that what is least understood is most feared, and such a truism may be very aptly applied to influenza. But I am able to assure you that much light will be let in upon this dark problem by the researches which Dr. Mervyn Gordon, of St. Bartholomew's Hospital, will lay before us.

On what may be called the comparative side of our programme Professor Blackman, of the Imperial College of Science and Technology, will deal with some similarities and dissimilarities between plant and animal diseases. The inclusion of this side of microbiology is a wholesome evidence of the broadening influences at work in bacteriology and parasitology, and which we confidently anticipate will illustrate the advantages of a closer collaboration between the microbiologists engaged in fields of work different, it may be, in materials, but identical in principles.

A subject of great interest to microbiologists—namely, the mutation of species—also finds a place in the programme on the day set apart for comparative work, and we are indebted to Dr. Brierley of Rothamsted for undertaking from his wide experience to open a discussion on this theme.

We will have presented to us interesting papers dealing with food poisoning and dysentery, by Drs. Wiseman and Robertson respectively, and with the intimate structure of the bacterial cell by Professor Ellis. An account of a brilliant piece of work done, one may say, in the African jungle, in elucidating the life-history of *Loa loa*, will be communicated by Dr. Andrew Connal.

The demonstrations connected with our Section have been arranged in the zoological laboratory adjoining, and I wish in your name to express our most cordial thanks to Professor Graham Kerr and Dr. Dunkerley for the excellent facilities they have provided for the display of the specimens.

DISCUSSION ON THE BACTERIOPHAGE (BACTERIOLYSIN).

I.—THE NATURE OF BACTERIOPHAGE.

By Dr. F. d'Herelle.
(From the Pasteur Institute, Paris.

Let us record first, in a few words, the essential facts relating to the present discussion.

There exist in the intestinal contents of all living beings principles which have the property of dissolving certain bacteria. These principles pass porcelain filters; hence it is possible to separate them from intestinal bacteria.

Each filtering principle, isolated from intestinal contents of normal individuals, dissolves a certain number of bacterial species, belonging generally to the coli-typhoid-dysentery group. The action, therefore, of these principles is not strictly specific; but belongs, for a given filtrate, to a certain number of microbial species. In convalescents from an infectious disease a principle endowed with an energetic dissolving action on the bacterial species which causes the disease is always met with.

It is not only towards the intestinal bacteria that these lytic principles exist: for instance, one can isolate from the excreta of convalescents from bubonic plague a principle which dissolves *B. pestis*; the same phenomenon exists in various animal septicaemias.

I cannot enter here into an examination of all the facts relating to bacteriophage,[1] facts most of which have been already confirmed by the investigations of other workers. But if the facts themselves have not been contested, it is not so in regard to the hypothesis which I have put forward to explain the nature of the principle which brings about the dissolution of bacteria.

A preliminary remark presents itself. Many authors who have formulated hypotheses as to the nature of the lytic principle have simply taken a particular fact supporting their own point of view and have neglected the whole assembly of experimental facts which renders such a thesis untenable, thereby forgetting that experiment is the final criterion of the truth of a theory. Let us try to resolve the question objectively.

The choice between the different hypotheses *a priori* possible to explain the origin of the lytic principle can only be made in accordance with a fundamental rule of logic—namely, in order that a hypothesis becomes admissible it is necessary that it should explain all the experimental facts and that it is not contradicted by any of them; further, in order that this admissible hypothesis may be considered as being in conformity with the nature of things, it must be proved that all the experimental facts cannot be explained if one abandons or modifies this hypothesis.

The bacteriolysis produced under the influence of the principle which we have named "bacteriophage" consists in a total dissolution of the microbial body; at the end of this action there remains no visible residue. A total dissolution of a microbial substance can only be due to a transformation or decomposition of the proteins of the microbe by proteolytic enzymes. Whence, it may be asked, come these proteolytic enzymes? Four hypotheses may be considered.

1. The enzymes may be derived from the animal organism which is attacked by the given bacteria. The enzymes would then be the result of a defensive reaction on the part of the organism.

This is the hypothesis of Kabeshima, Bordet and Ciuca, and Ann Kuttner. Kabeshima[2] does not specify the particular tissue of the animal from which the enzymes originate; Bordet and Ciuca[3] indicate the leucocytes; Ann Kuttner[4] incriminates any tissue.

2. The enzymes may come from intestinal bacteria as the result of a microbial antagonism. For instance, one knows the bacteriolytic action of filtrates of old cultures of *B. pyocyaneus*.

This is the hypothesis of Lisbonne et Carrère,[5] for whom the lytic enzymes are secreted by intestinal bacilli such as *B. coli*, *B. proteus*, etc.

3. The enzymes may be secreted by the bacterium itself which undergoes the lysis. These enzymes would therefore be autolysins.

This is the hypothesis of Weinberg and Aznar.[6] Under the action of a cause *x* the bacteria would acquire the property of secreting autolytic enzymes.

Bail[7] had already indicated a similar origin, but his hypothesis was more complicated, and that in order to harmonize his conception with certain experimental facts to which we shall refer later. The bacteria undergoing lysis would become fragmented into filtrable corpuscles (the "splitters" hypothesis of Bail). These corpuscles would secrete enzymes capable of dissolving the bacteria from which they spring.

With the same view, Otto and Winkler[8] have put forward a hypothesis closely related to that of Bail, but for them the question resolved itself into one of bacterial albuminoid micelles, which do not reproduce themselves, but which secrete the lytic enzymes.

4. The enzymes may be secreted by an ultramicroscopic virus, which is a parasite of bacteria. This is the hypothesis by which I have held since my first publication.[9]

These four hypotheses cover all the possibilities. Let us now see which hypothesis conforms best with the experimental facts, at the same time eliminating those which fail to do so.

FIRST FACT: *The dissolution of bacteria under the influence of the bacteriophagic principle takes place in series.*

That is to say, a filtrate containing the bacteriophagic principle, when added to a culture in liquid medium of a bacterium towards which the principle manifests its lytic action, provokes the entire dissolution of the bacteria. A trace of the latter, inoculated into a second bacterial culture, leads to the latter in its turn undergoing total lysis. A trace of this second dissolved culture, inoculated into a third bacterial culture, produces the same phenomenon, and so on *ad infinitum*. After more than a thousand passages, the thousandth bacteriolysed culture contains a bacteriophagic principle as active as, and generally much more active than, that of the primitive filtrate.

The phenomenon goes on in series in the same way, whether the culture is inoculated with the previously dissolved non-filtered culture, or with the dissolved culture filtered through a porcelain filter: the filtrate contains the bacteriophagic principle as active as the lysed non-filtered culture.

A simple enzyme action would cease to show itself from the first tubes of the series, because of the greater and greater dilution of the enzyme solution in the course of the successive passages. One calculates easily that at the thousandth passage (each passage being carried out on 10 c.cm. of bacterial emulsion inoculated with 1/1000 c.cm. of the preceding dissolved culture) the titre of the dilution in the thousandth tube of the series is given in cubic kilometres by the number 10^{3982}. To appreciate this incommensurable number it is interesting to note that, at the twenty-second passage only, the drop of primitive filtrate introduced into the first tube of the series finds itself diluted in 10^{70} cubic kilometres of liquid; such a cube of liquid is so great that a light ray would take one billion of years to cross one edge of it. It is impossible to conceive of an enzyme, contained in a single drop of primitive filtrate, still existing, without any diminution of its activity, after being diluted to this extent.

That the action may become manifest, each dilution must be allowed sufficient time (four to six hours) to permit the development of the bacteriophagic principle. On the contrary, when the dilution is utilized immediately, the bacteriophagic action ceases about the fourth or fifth dilution.

These experiments establish clearly that a regeneration of the bacteriophagic principle occurs at each passage. Consequently the lytic enzymes are produced by a living being, which regenerates itself in the course of the successive passages.

It will be obvious, then, that this transmissibility in series eliminates hypotheses 1 and 2. The authors who have put forward these hypotheses must admit that the principle derived from the organism which is attacked by parasites (hypothesis 1), or from the foreign bacteria (hypothesis 2), plays solely the rôle of a transformer—that is to say, it gives rise in the bacteria which undergo the transmissible lysis to a special state of "autolysability." We come now to the third hypothesis. Only Bordet and Ciuca have attempted to give an explanation of this. For them the leucocytic principle would provoke in the bacteria a "hereditary vitiation of nutritional nature." I must say that I do not understand how a filtered liquid can transmit a hereditary property. Besides, the whole theory of Bordet and Ciuca is based on an experience entitled "leucocytic exudates," which I have elsewhere stated it is impossible to repeat—a statement which has not been challenged by Bordet.[10] The result obtained by him in one experiment would appear to be purely accidental.[11]

But it is to no purpose to discuss here, point by point, the different theories; it is sufficient to show that they are contrary to the facts. Hypotheses 1 and 2 being eliminated, there only remain to consider hypotheses 3 and 4.

SECOND FACT: *The lytic enzymes emanate from material corpuscles which traverse filters; these corpuscles multiply in the course of the bacteriolysis.*

EXPERIMENT A.

In a well-developed bacterial culture, showing a marked turbidity, let us add a small quantity (say 1 10,000 000 c.cm.) of a filtrate containing the bacteriophagic principle, shake, withdraw 1/20 c.cm. and spread it over the surface of an agar slope. Thus we spread over the agar a great number of bacteria and a very small quantity of bacteriophagic principle. After incubation (eighteen to twenty-four hours at 37°) we note that the surface of the agar shows a bacterial growth with a certain number of circular bare spaces here and there, where the agar presents no trace of growth. These vacant spaces once formed are unchangeable; they never spread, and they are never invaded by the surrounding culture.

It is the presence of these immutable bare spaces, which are perfectly circular, that characterizes what we have named "bacteriophage." Before concluding that any bacteriolytic phenomenon is bacteriophagic, it becomes necessary to verify if it gives rise to such bare spaces on agar culture. If not, the bacteriolysis is not of bacteriophagic nature.

The number of spaces depends simply on the quantity of filtrate added to the bacterial culture. If into various bacterial emulsions we introduce variable quantities of the filtrate, the number of bare spaces is strictly proportional to the quantity of filtrate added. On the other hand, the number of the bare spaces is independent of the number of bacteria contained in the medium; whether one introduces a given quantity of filtrate into a bacterial emulsion containing one hundred millions or ten billions of bacteria per cubic centimetre, the number of bare spaces on the agar is practically always the same.

The phenomenon of these vacant spaces is only comprehensible on the supposition that the bacteriophagic principle is of corpuscular nature. The following experiments give the proof thereof.

Experiment B.

Given a filtrate containing the bacteriophagic principle, let us determine its force in the production of bare spaces.

It is well known that to determine the number of living bacteria contained in an emulsion agar plates are inoculated with a dilution of this emulsion; after incubation, the number of colonies which develop multiplied by the titre of the dilution gives the number of bacteria per cubic centimetre of the primitive emulsion. The enumeration of the bacteriophagic corpuscles contained in a filtrate is estimated in exactly the same way. But as the bacteriophage only grows at the expense of living bacteria, we must make the dilutions of the filtrate in a bacterial emulsion. For this we pipette over agar the bacterial emulsion containing a given quantity of filtrate: after incubation we obtain a bacterial layer strewn with circular bare spaces, each of these spaces being a colony of bacteriophage issued from one corpuscle. The number of bare spaces multiplied by the titre of the dilution gives the number of ultramicroscopic bacteriophagic corpuscles contained in 1 c.cm. of the primitive filtrate.

This experiment shows that the behaviour of the bacteriophage is exactly the same as that of any ordinary microbe. But this last develops at the expense of the nutritive substances contained in the medium; the bacteriophage develops at the expense of the bacterial bodies which constitute its nutritive medium. The bare spaces represent places cleared up by the growth of the ultramicroscopic bacteriophagic corpuscles.

Experiment C.

Now dilute a filtrate so as to obtain a dilution such that 1 c.cm. contains one bacteriophagic corpuscle. Dilute this 1 c.cm. with 9 c.cm. of sterile water, and inoculate ten tubes of bacterial emulsion each with 1 c.cm. It will be obvious that only one of the ten tubes will contain the generator of a bare space; the nine others will not contain any. Place the ten tubes in the incubator at 37° for twenty-four to forty-eight hours; it will be seen that only one of the ten microbial emulsions shows bacteriolysis; the nine others will remain unchanged, the bacteria remain living, normal, and subculturable.

The lytic action, therefore, is complete when only *one* generator of a bare space is introduced into a bacterial emulsion; the action is *nil* in the contrary case. This experiment can only be explained on the supposition that the bacteriophagic principle, the source of the lytic enzymes, is a corpuscle; and that each corpuscle deposited on the agar in the midst of the bacteria gives rise to a colony of these ultramicroscopic corpuscles, such a colony being represented by a bare space.

Experiment D.

Inoculate a bacterial emulsion with a bacteriophagic filtrate of known corpuscular strength (that is, of known bare spaces forming force); make agar slopes every hour in the same way as in Experiment A. In this way, after six hours, we will have six agar slopes inoculated, and, on incubation, it will be seen that the number of bacteriophagic spaces (each bare space corresponding to a corpuscle) increases in proportion as the lytic action progresses in the emulsion. The maximum number of bare spaces is given when the lysis of the original emulsion is complete; at this moment there are no longer any living bacteria in the emulsion—it is a pure culture of the ultramicroscopic bacteriophagic corpuscles. The bacteriophagic power of such a lysed culture remains at its maximum level during many weeks—it is practically "fixed."

The foregoing experiments show that the lytic enzymes are originated by ultramicroscopic corpuscles which multiply and reproduce themselves. Hence those hypotheses explaining the phenomenon as being due to a *soluble* autolytic enzyme become eliminated.

Of all the hypotheses put forward, only that of Bail, and perhaps that of Otto and Winkler, could not be incompatible with these experiments, since they suppose that the element which secretes the lytic enzymes can be furnished by ultramicroscopic corpuscles, but derived from the bacteria. It is difficult to reconcile these hypotheses with the fact that the bacteriophagic action is not specific, and that the same strain of bacteriophage can dissolve bacteria of different species. Indeed, if one can understand how a principle originated by a species of bacteria can provoke the formation of a similar principle in a culture of the same bacterial species, it is hard to admit how this principle could provoke the formation of the bacteriophagic principle in a culture of a different bacterial species. Besides, these two hypotheses are rendered untenable by the following fact.

Third Fact: *All bacteriophagic ultramicroscopic corpuscles, grown at the expense of any bacterial species, constitute one and the same antigen.*

I have up to the present isolated various strains of bacteriophage active towards different bacteria: *B. typhosus*, *B. paratyphosus* A and B, *B. dysenteriae* (Shiga, Flexner, Hiss), *B. coli*, *B. pestis*, *B. proteus*, *B. gallinarum*, bacteria of haemorrhagic septicaemias, staphylococcus, etc.

We have seen above what constitutes a culture of the ultramicroscopic bacteriophagic corpuscles. Inoculate an emulsion of *B. dysenteriae* with a filtrate containing an active bacteriophage towards this bacterium; after a few hours the medium becomes limpid, the bacilli are dissolved, and the bacteriophage corpuscles have multiplied; the culture of the bacteria has become a culture of antidysenteric bacteriophage. Similarly, a culture of *B. pestis* dissolved under the action of the bacteriophagic principle (isolated from the intestinal contents of a convalescent from bubonic plague) becomes a culture of antipestic bacteriophage. And so on for any other microbe.

One knows that the serum of a rabbit prepared by injections of *B. dysenteriae* contains an amboceptor towards *B. dysenteriae*, but does not contain any amboceptor towards any other bacteria—for example, *B. pestis*.

Now prepare a rabbit with a culture of *B. dysenteriae* dissolved by bacteriophagic action; one verifies that its serum does not contain any amboceptor towards normal *B. pestis*, but contains an amboceptor for *B. pestis* dissolved by the action of the bacteriophage. And this is true for no matter what bacterial species; the serum of an animal prepared by a culture of any bacterial species dissolved by bacteriophage contains an amboceptor which fixes itself on any other bacteriophaged culture. Hence the amboceptor is specifically *antibacteriophagic*, and not *antibacterial*. Therefore the bacteriophage is an autonomous antigen, and consequently must be considered, in the present state of knowledge, as a definite ultramicroscopic virus constituted by corpuscles, such a virus being necessarily an ultramicrobe.

Only the hypothesis of a filtrable micro-organism which is an obligatory parasite of bacteria is compatible with the foregoing facts. It now remains to show that this only admissible hypothesis is not contradicted by any experimental fact.

Fourth Fact: *The ultramicroscopic corpuscles possess a variable virulence.*

We have seen that the above ultramicroscopic organism, which we have designated by the name of "bacteriophage," is constituted by living corpuscles which multiply and which it is possible to count. Now, experience shows that the lytic activity of these corpuscles varies from one strain to another. For instance, certain strains recently isolated from the organism are unable to provoke the dissolution of a bacterial emulsion, and no matter what number of corpuscles are inoculated into this bacterial emulsion, one can only perceive the presence of these bacteriophagic corpuscles by the production of pin-point bare spaces on agar. On the contrary, with very active strains giving on agar large bare spaces (4 to 5 mm. in diameter), the inoculation of one corpuscle is sufficient to provoke a total dissolution of all the bacteria contained in the emulsion. It is easy to prove that this difference in action is due to a difference in the multiplication of the corpuscles inoculated. In the case of feeble strains reproduction is slow: in the case of strong strains it is rapid. The active particle, therefore, is endowed with a variable virulence, the term "virulence" being taken in its real bacteriological sense of "vegetative power *in vivo*." To explain this fact one must consider the active corpuscle as a microbe, because only a microbe possesses a variable virulence from strain to strain. Moreover, an enzyme only acts by its quantity; a microbe by its virulence and its toxicity combined.

Fifth Fact: *By successive passages, it is possible to increase the virulence of a feeble strain of bacteriophage.*

For instance, inoculate a feeble strain of bacteriophage into a culture of *B. typhosus*; filter the mixture after incubation; introduce a drop of this filtrate into a fresh culture of *B. typhosus*, which is filtered in turn, and so on for a few passages. The virulence is found to increase little by little, and after a certain number of passages the virulence becomes such that a trace of the filtrate is sufficient to provoke the total dissolution of a fresh emulsion of this bacillus. The technique of the exaltation of virulence is really the same as for any microbe: we exalt the virulence of a bacterium for a given animal by serial passages in this animal species; we exalt the virulence of the bacteriophage for a given bacterial species by serial passages in this bacterium. This fact is only compatible with the hypothesis that bacteriophage is a microbial parasite, since adaptation is the prerogative of living beings.

Sixth Fact: *Experience shows that bacteria attacked by bacteriophage do not remain passive; they defend themselves and are even capable, under certain conditions, of acquiring an immunity towards the parasite.*

This defence of the bacteria manifests itself by a double mechanism: the bacteria surround themselves with a capsule, and secrete "aggressines" capable of paralysing the lytic enzymes of the bacteriophage. Only the hypothesis of bacteriophage being a parasite of bacteria conforms with these facts.

Seventh Fact: *The behaviour of bacteriophage towards physical and chemical reagents is that of a living being, and does not agree with that of an enzyme.*

The resistance of bacteriophage to the action of physical and chemical reagents is intermediate between that of the vegetative and the spore forms of ordinary bacteria. The resistance is less than that of certain ultramicrobes, notably that of the tobacco mosaic. It is destroyed at 74°–75° C., but ceases to develop at 43°. Between 43° and 74° it possesses no lytic action. As to the action of the antiseptics, the bacteriophage is killed after twenty-four hours' contact with a 1 per cent. solution of a neutral salt of quinine, after forty-eight hours' contact with 95 per cent. alcohol, and by eight days' contact with glycerin. The last-named liquid is precisely the medium employed for preserving indefinitely an enzyme in soluble form.

Eighth Fact: *It is possible to extract the lytic enzymes free from the living bacteriophage micro-organism.*

If to one part of a culture of bacteriophage is added nine parts of absolute alcohol and the mixture left forty-eight hours in contact, a precipitate is obtained which contains bacteriolytic enzymes, while the bacteriophagic germs are killed, which is proved by the failure of transmissibility in series of the phenomenon. One can only understand this fact on the supposition of an ultramicroscopic microbial parasite: the bacteria are dissolved by enzymes secreted by the living ultramicroscopic germs, hence the action in series. In the above experiment the ultramicroscopic germs are killed, while the enzymes already secreted are preserved intact; hence only a lytic action is obtained which is not transmissible in series.

Ninth Fact: *Bacteriophage is capable of adaptation.*

The bacteriophage is very sensitive to the action of acids—much more sensitive than ordinary microbes. It can be accustomed progressively to live in media containing quantities of an acid which would have been destructive beforehand. The same fact is observed with glycerin. Adaptation is a prerogative of living things.

Tenth Fact: *The properties of bacteriophage are essentially variable.*

It is impossible to isolate two strains of bacteriophage which are absolutely identical as to their range of action on different bacterial species, and as to their intensity of action towards each of these bacterial species. For a given strain of bacteriophage one can vary experimentally this intensity. Variability is an essential characteristic of life.

We have seen, first, that of all the possible hypotheses concerning the nature of the bacteriophage, the hypothesis of an ultramicroscopic parasite of bacteria is alone admissible. Moreover, we have just seen that this hypothesis is not contradicted by any of the facts of bacteriophagic phenomena; and, furthermore, all of the facts cannot be explained if this hypothesis is abandoned or modified. It follows logically, therefore, that such a hypothesis becomes a certitude.

Further, I would remark that I do not specify in any way the species to which the ultramicroscopic organism, which I have given the name of *Bacteriophagum intestinale*, belongs; the name simply recalls its characteristic property and the place where it was at first found. Is it a protozoon, a fungus, a bacterium? Does it belong to a kingdom which is neither the vegetable nor the animal—a still simpler form of life than any which we at present know? These are questions which cannot at present be answered. All that we know of it is that it is an ultramicroscopic organism, a filtrable being, parasite of bacteria, endowed with functions of assimilation and reproduction—functions which characterize the living nature of the being which possesses these properties. That is all that experiment actually shows us.[1]

The foregoing discussion can only apply to the phenomenon of bacteriolysis in series presenting the special characters that I have indicated. This being so, a final question arises—that of the plurality of the serial phenomena.

In 1915 Twort[12] described a bacterial transformation taking place in series, under the influence of a principle which passes through porcelain filters. His researches have been made chiefly with a micrococcus isolated from vaccine. In addition he observed an identical phenomenon with two other bacteria—a large indeterminate bacillus, and a bacillus of the colityphoid group. Twort isolated the active principle in the following manner.

"Some interesting results, however, were obtained with cultivations from glycerinated calf vaccinia. Inoculated agar tubes, after twenty-four hours at 37°, often showed watery-looking areas, and in cultures that grow micrococci it was found that some of these colonies could not be subcultured, but if kept became glassy and transparent. On examination of these glassy areas nothing but minute granules, staining reddish with Giemsa, could be seen."

The transforming principle is contained in this transparent material.

"The transparent material when diluted (one in a million) with water or saline was found to pass the finest porcelain filters with ease, and one drop of the filtrate, pipetted over an agar tube, was sufficient to make that tube unsuitable for the growth of the micrococcus. That is, if the micrococcus was inoculated down the tube as a streak, this would start to grow, but would soon become dotted with transparent points which would rapidly extend over the whole growth. If in an infected tube small areas of micrococci are left—and this usually happens when the micrococcus has grown well before being infected—these areas will start to grow again and extend over the transparent portion. . . ."

According to this description of Twort, it is not a question of a real bacterial dissolution, but a transformation of a normal culture on agar into a glassy and transparent one. This phenomenon is totally different from that produced by *Bacteriophagum intestinale*. Indeed, under the influence of this latter—no matter what bacterial species is dealt with, no matter what virulence, feeble or strong, of the strain of the bacteriophage, operating exactly in the same experimental conditions as Twort—in no circumstances does one observe the formation of transparent material or anything presenting such an appearance.

Pipette over an agar tube a drop of a diluted filtrate containing a bacteriophage active towards staphylococcus; then inoculate this tube as a streak with a pure culture of staphylococcus; after incubation we obtain a surface growth of the organism, which macroscopically, microscopically, and biologically is normal. This normal bacterial culture is strewn here and there with circular clear spaces; in the interior of these spaces the agar is bare, without any visible trace of any material. These bare spaces never spread over the surrounding culture, even after months in the incubator. Furthermore, they never become invaded by the surrounding bacterial culture: once formed, the bare spaces remain immutable. Confusion, therefore, between the phenomenon observed by Twort and the phenomenon provoked by the bacteriophage is in no way possible.

What is the nature of the principle which acts in the phenomenon of bacterial tranformation observed by Twort? From a consideration of the observations made on this phenomenon, and in view of the fact that the lytic agent and the bacteria are destroyed at the same temperature, it is probable that it is derived from the bacterium itself, which is capable of splitting up into fragments. Twort himself favours this view, but further experiments will be necessary to settle this question.

This conclusion, however, does not detract in any way from the interest attaching to the important researches of Twort. One can already see that the phenomenon observed by this author may play an important rôle in the etiology of the so-called filtrable virus diseases, as he indeed seems to have foreseen. On the other hand, the bacteriophage undoubtedly plays a part in the defence of the organism in the course of infectious diseases, as I have shown elsewhere.

[1] I will mention, in passing, the hypothesis of Salimbeni: the enzymes would be secreted by a myxobacteria, microscopically and even macroscopically visible, given filtrable spores. All the workers who have studied the question have failed to observe this would-be myxobacteria, which besides, according to the description of Salimbeni, presents a mycelium (?). That can only mean an impurity, as I have elsewhere pointed out.

From a survey of the results already arrived at in the domain of scientific investigation, it is easy to foresee that there exists a whole series of phenomena, quite unsuspected a few years ago, whose study should play a large part in the advance of scientific medicine.

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II.—THE BACTERIOPHAGE: THE BREAKING DOWN OF BACTERIA BY ASSOCIATED FILTER-PASSING LYSINS.

By F. W. Twort, M.R.C.S., L.R.C.P.

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This phenomenon of bacteriolysis, which in France has been called the "bacteriophage," consists, as you know, of a breaking down and dissolving up of bacteria by a filter-passing material which in certain circumstances may be associated with pure cultures. My first experiments were carried out at the Brown Institution during 1914 and 1915, for the Local Government Board, and the results were published in the *Lancet* (December 4th, 1915) under the title of "An investigation on the nature of ultramicroscopic viruses." The condition, in my opinion, is distinct from the various degenerative changes which have been so often described in bacterial cultures, and it will be unnecessary for me to consider in detail experiments on degenerative changes. It is also impossible in the time at my disposal to discuss every aspect of the subject; moreover, other speakers will no doubt deal with the many interesting experiments which they have carried out. In this paper I propose to give you as shortly as possible my original experiments as they were published in 1915, and I shall pass on to consider certain aspects of the subject which have since become points of controversy between different workers, and shall then deal shortly with certain more recent experiments which I have been doing on the biology of bacteria, as these may throw some light on the use of the lytic material.

When starting the research my object was to discover, if possible, the nature and life-history of the ultramicroscopic group of viruses. The experiments were carried out with these views in my mind: In the first place we do not know for certain the nature of an ultramicroscopic virus. It may be a minute bacterium that will grow only on living material, or it may be a tiny amoeba which, like ordinary amoebae, thrives on living bacteria or animal tissue. On the other hand, it must be remembered that if the living organic world has been built up slowly in accordance with the theories of evolution, then an amoeba and a bacterium must be recognized as highly developed organisms in comparison with much more primitive forms which once existed, and probably still exist, in nature. It is quite possible that an ultramicroscopic virus belongs somewhere in this vast field of life where the organization is lower than that of the bacterium or amoeba. It may be living protoplasm that forms no definite individuals, or an enzyme with power of growth.

In the first instance attempts were made to demonstrate the presence of non-pathogenic filter-passing viruses. As is well known, in the case of ordinary bacteria, for every pathogenic micro-organism discovered many non-pathogenic varieties of the same type have been found in nature, and it seems highly probable that the same rule will be found to hold good in the case of ultramicroscopic viruses. It is difficult, however, to obtain proof of their existence, as pathogenicity is the only definite evidence we have at the present time of the presence of an ultramicroscopic virus. On the other hand, it seems probable that if non-pathogenic varieties exist in nature these should be more easily cultivated than the pathogenic varieties.

The first experiments were carried out with such materials as soil, dung, grass, hay, straw, and with water from ponds. Cultivations were made on a large number of special media and under special conditions. Experiments were also carried out with pathological material obtained from distemper in dogs, from vaccinia, and from various other sources. The first results of interest were obtained with vaccinia. Inoculations were made on to ordinary agar tubes, and on to tubes of special egg media such as I used in my experiments for the cultivation of Johnes's bacillus and the lepra bacilli of man and of rats. It will be impossible to describe all these in detail, but the essential part of one series consists in the incorporation in the media of the dead bodies of certain acid-fast bacilli such as *Bacillus phlei*, which proved to be so successful in the cultivation of Johnes's bacillus. The egg media usually grew a number of colonies of micrococci and diphtheroids, while the agar tubes grew only a few colonies of micrococci. In the case of the egg media it was noted that in a few days certain parts of the micrococcus growth sometimes became dull, and in appearance rather resembled bacterial growth in which amoebae were also growing. On the agar media the colonies of micrococci occasionally showed a translucent or transparent change, which started as more or less clear spots at the margins of the colonies. It was also found that some of these colonies could not be subcultured, but if kept the transparent change extended over most of the colony.

On examination of these glassy areas nothing but minute granules, staining reddish with Giemsa, could be seen. Further experiments showed that if a colony of the white micrococcus that had started to become transparent was plated out instead of being subcultured as a streak, then the micrococcus grew and a pure streak culture from certain of these colonies could be obtained. On the other hand, if the plate cultures (made by inoculating the condensation water of a series of tubes and floating this over the surface of the medium) were left, the colonies, especially in the first dilution, soon started to turn transparent, and the micrococci were replaced by fine granules. This action, unlike an ordinary degenerative process, started from the edge of the colonies; and further experiments showed that when a pure culture of the white or the yellow micrococcus isolated from vaccinia is touched with a small portion of one of the glassy colonies the growth at the point touched soon starts to become transparent or glassy, sometimes killing out all the micrococci and replacing these by fine granules. Experiments showed that the action is more rapid and complete with vigorous growing young cultures than with old ones, and there is very little action on dead cultures or on young cultures that have been killed by heating to 60° C.

Anaerobia does not favour the action, although it appears best in tubes that are capped with gutta-percha tissue. The transparent growth when diluted (one in a million) with water or saline was found to pass the finest porcelain filters (Pasteur-Chamberland F. and B. and Doulton White) with ease, and one drop of the filtrate pipetted over an agar tube was sufficient to make that tube unsuitable for the growth of the micrococcus—that is, if the micrococcus was inoculated down the tube as a streak, this would start to grow, but would soon become dotted with transparent points which would rapidly extend over most of the growth. The number of points from which this starts depends upon the dilution of the transparent material, and in some cases it is so active that the growth is stopped and turned transparent almost directly it starts. This condition or disease of the micrococcus when transmitted to pure cultures of the micrococcus can be conveyed to fresh cultures for an indefinite number of generations; but the transparent material will not grow by itself on any medium.

If in an infected tube small areas of micrococci are left—and this usually happens when the micrococcus has grown well before becoming infected—these areas will start to grow again and extend over the transparent portions, which shows that the action of the transparent material is stopped or hindered in an overgrown tube; but it is not dead, for if a minute portion be transferred to another young culture of the micrococcus it soon starts to dissolve up the micrococci again. Although the transparent material shows no evidence of growth when placed on a fresh agar tube without micrococci, it will retain its power of activity for over six months. It also retains its activity when made into an emulsion and heated to 52° C., but when heated to 60° C. for an hour it appears to be destroyed. It has some action, but very much less on *Staphylococcus aureus* and *albus* isolated from boils of man, and it appears to have no action on members of the *coli*

group or on streptococci, tubercle bacilli, yeasts, etc. The transparent material was inoculated into various animals, and was rubbed into the scratched skin of guinea-pigs, rabbits, a calf, a monkey, and a man, but all the results were negative.

When continuing my investigation of infantile diarrhoea and vomiting, for the Local Government Board in 1915, similar experiments were carried out with material obtained from the intestinal tract. After certain difficulties had been overcome it was found that in the upper third of the intestine, which contained numerous bacilli of the colon group, some larger forms were also present. In some cases these grew in far greater number than the ordinary types of bacteria, but this was only so when precautions were taken to eliminate the action of a dissolving substance which infected the colonies so rapidly that they were dissolved before attaining a size visible to the eye. Here, then, was a similar condition to that found in vaccinia, and the greatest difficulty was experienced in obtaining the bacilli free from the transparent dissolving material, so rapidly was the infection increased and carried from one colony to another. At first this bacillus was not believed to be a member of the dysentery-typhoid-coli group, but I have now no doubt that it was a special large form of a member of this group. Unfortunately I lost my cultures during the war before all the characters of the bacillus were completely worked out.

Similar though not such definite results were also obtained with a micrococcus and a member of the coli-typhoid group of bacilli which were obtained from the intestinal mucous membrane of a dog suffering from acute distemper, and I obtained some evidence that the difficulty often experienced in isolating certain known pathogenic micro-organisms might be due to the same cause. In my paper I also pointed out that results similar to those obtained with vaccinia and with bacilli from the intestinal tract would probably be obtained in cases of [true dysentery; but I was unable at the time to investigate dysentery, as my scheme for research on this disease which was submitted to the War Office in 1914 was not accepted. Shortly after the publication of my work, however, I went to Salonica in charge of the base laboratory. While there in 1916 the subject was again discussed on several occasions with the English, French, and Canadian bacteriologists; but at the time the phenomenon was not accepted as one of much importance, and my fresh proposals for continuing the work on dysentery failed to meet with approval. As, however, I had predicted, a similar condition was later found to occur in cultures of true dysentery bacilli, particularly by Dr. d'Herelle, who carried out a series of important experiments on these bacilli. Dr. d'Herelle's published researches appear to me to confirm in the main my own results with micrococci and members of the coliform group of bacilli.

I will now pass on to consider the conclusions I drew from my experiments. In the case of vaccinia it is clear that the transparent material contains an enzyme, and this is destroyed on heating to 60 C. for one hour. It also increases in quantity when placed on an agar tube containing the micrococcus, and this can be carried on indefinitely from generation to generation. If it is part of the micrococcus it may be either a stage in its life-history which will not grow on ordinary media but stimulates fresh cultures of the micrococcus to pass into the same stage, or an enzyme secreted by the micrococcus which leads to its own destruction and the production of more enzyme. The fact that the transparent portion cannot be grown except on the micrococcus makes it impossible to obtain any definite evidence on these points. There is this, however, against the idea of a separate form of life: if the white micrococcus is repeatedly plated out a colony from the last plates may give a good white growth for months when subcultured at intervals on fresh tubes; eventually, however, most pure strains show a transparent spot, and from this the transparent material can be obtained once again. Of course, it may be that the micrococcus was never quite free from the transparent material, or this may have passed through the cotton-wool plug and contaminated the micrococcus, but it seems much more probable that the material was produced by the micrococcus. Incidentally, this apparent spontaneous production of a self-destroying material which, when started, increases in quantity, may be of interest in connexion with cancers. In any case, whatever explanation is accepted, I do not think my experiments definitely disproved the possibility of its being an ultramicroscopic virus, because we do not know for certain the nature of such a virus. If the transparent portion were a separate virus, it might be vaccinia, or it might be some contaminating non-pathogenic ultramicroscopic virus, for it is conceivable that whereas a non-pathogenic variety might grow on micrococci or bacilli, a pathogenic variety might grow only in the animal it infects. As the animal experiments were negative, there is no evidence that it is vaccinia, although such a virus might lose its virulence when grown outside the body. On the other hand, no evidence was obtained that it was a non-pathogenic variety. On the whole it seems probable, though by no means certain, that the active lytic material is produced by the micrococcus, and since it leads to its own destruction and can be transmitted to fresh healthy cultures, it might almost be considered as an acute infectious disease of micrococci.

I have now described my original experiments and conclusions, and I will pass on to consider the views of other workers in this field. Where differences of opinion exist the controversy has centred chiefly round the experiments that have been carried out to determine the source and nature of the lytic material. I have already pointed out that when this material is diluted and filtered and pipetted on to a tube of medium just before inoculating the tube with the micro-organism to be lysed, then the action starts at definite points throughout the growth. Dr. d'Herelle obtained a similar result in his experiments with dysentery bacilli, and he considers this a strong point in favour of the view that the lytic material is a separate living micro-organism. I cannot, however, for several reasons, agree that such experiments prove this. First, it is well known, notably in the case of certain starches, that the diastatic enzymes do not in every case dissolve up the grains evenly, but start at certain points, causing pitting and erosion of the grains; at the same time some grains are more susceptible to the enzyme than others. In this case no one has suggested that the unevenness of the action proves the diastatic enzyme to contain a living ultramicroscopic virus. I have noted also with bacteria that not only does the lytic agent attack some members of a culture before it attacks others, but individual members may be pitted and eroded, and particularly is this so with certain large forms of dysentery bacilli which I shall consider later. Again, it is well known in the case of all bacteria that certain members of a culture are more resistant to chemicals and to specific lysins produced in animals, and it may well be that the lytic action on the bacteria starts from a number of distinct points because these points happen to contain specially susceptible micro organisms, and it is only when the action is started and the lytic substance increases in quantity and in concentration that the more resistant members become lysed.

Then there are the very interesting experiments of Professor Bordet and Dr. Ciuca. These workers found that when a lysin was produced by an animal against a coliform bacillus, this lysin not only dissolved up fresh cultures of the coliform bacillus, but the lytic effect could be transmitted from culture to culture. These results certainly do not favour the view that the lytic agent is a definite living micro-organism. Moreover, there are my own original experiments where, after obtaining normal growths of micrococci for a number of generations, eventually some fresh subcultures started to become lysed, apparently spontaneously. But these experiments appear to me to be evidence not only against the view that the lytic material is a definite living organism, but also against the view of Bordet and Ciuca that the lytic agent arises from an association of the bacterium with cells from the animal body. d'Herelle has also obtained the lytic agent by associating bacteria with filtrates of soil, etc., and I agree with him that these experiments do not support Bordet's view, although at the same time I do not think they support the view that the lytic agent is a definite living micro-organism. The apparent spontaneous production of the lytic agent in some of my pure cultures is, I think, evidence against both the views mentioned. It may, of course, be argued, as I mentioned at the time, that my cultures were never really quite free from the lytic agent, but if this view is accepted regarding my repeatedly plated cultures, then it is reasonable to suggest the same regarding the cultures used by d'Herelle and by Bordet.

Recent experiments, in fact, have in no way changed my views, and I repeat my original opinion regarding the lytic agent of the micrococcus—namely, that "the possibility of its being an ultramicroscopic virus has not been definitely disproved," and that "it seems probable, though by no means certain, that the active transparent material is produced by the micrococcus"; and I hold the same view regarding the

lytic agent which various workers and myself have found associated with the dysentery-typhoid-coli group of bacilli.

However, as I have already pointed out, it is just possible that an ultramicroscopic virus may be of the nature of an enzyme, and if so, the original source of such a virus might be the cell it infects: in remote ages possibly a normal enzyme which has gradually developed to take on a pathological action as it has passed through an infinite number of generations of cells, either bacterial, vegetable, or animal, according to its source, and which possesses the power either of directly increasing in quantity or of stimulating the cell to produce more pathological enzyme. On the other hand, it is conceivable that if this lytic agent be a pathological enzyme, it might bear the same relation to the normal enzyme that the cancer cell does to the normal cell. These possibilities may sound very improbable, but at the same time some such explanation would account for the extremely specific nature of many of the ultramicroscopic viruses, and it would certainly explain the absence of visibility and of growth on artificial media. After all, excluding such organisms as the lepto-spirillum of yellow fever, which probably belongs to an entirely different group, there are fundamental differences between the smallest micro-organisms known and the various ultramicroscopic viruses.

Cultivations of the minutest micro-organisms known show all the characteristics of ordinary bacteria. If these are obtained from the soil many of them grow well. On the other hand, if ultramicroscopic viruses are simply more minute members of the group of bacteria, there must be thousands of wild varieties in the soil, and yet no one has succeeded in obtaining a definite growth of a single variety on any solid medium. Minuteness of size might account for their being invisible, but it will not explain the absence of visible growth on artificial solid media. It is true that certain workers at one time claimed to have obtained growths of pathogenic varieties in Noguchi's medium, but in the absence of definite confirmation these experiments need not be considered here.

Professor Bordet and Dr. Ciuca have carried out some most important experiments with the dysentery-typhoid-coli group of bacilli on the specificity of the lytic material, and have obtained results which indicate not only that the lytic agent can be made to break down allied bacilli, but also that certain resisting and otherwise changed strains can be obtained. As I have already mentioned, my micrococcus lysin had little effect on *Staphylococcus aureus*; but I did not carry out many experiments of this nature after obtaining the apparent spontaneous production of the lytic agent in my pure cultures of micrococci, as this result appeared to me to make it difficult to draw definite conclusions from such experiments. Many other workers, but particularly Dr. d'Herelle and Dr. André Gratia, have also carried out important experiments in this branch of the subject, but I must leave other speakers to deal with it, as it is impossible in the space at my disposal to do justice to their work.

There is, however, another aspect of the subject which I should like to mention. As is well known, in pure cultures of such bacilli as dysentery, typhoid, and coli, one sometimes meets with forms which are considerably larger and longer than the average bacillus, and these may be found in pathological material containing these bacilli, being not uncommon in urine in cases of cystitis. Hort and others have described these large forms in considerable detail.

In certain experiments dealing with the lytic material I observed these long forms in greater number than usual, and it was thought that they might in some way be connected with the lytic agent associated with this group of bacilli. There was also the possibility that they might be distinct but symbiotic bacilli growing only with the dysentery or other bacilli forming the culture; they might be mutations, or, again, they might be special forms with special work to do, like bees in a swarm, and, alone or in association with the lytic agent, might prove to be of importance in connexion with the pathogenicity of cultures and the production of immunity in the host.

The work was interrupted by the war, but eventually the results were published in the *British Journal of Experimental Medicine* (October, 1920), and I shall do no more now than consider their possible relation to the lytic agent. In the first place, it must be noted that these large forms occur much more frequently in pathological material than they do in cultures on artificial media. In cases of infantile diarrhoea and vomiting I have found them in large number associated with a lytic agent in the upper part of the intestinal tract, and it is only after the action of the lytic agent is eliminated that they can be easily cultivated. The nature of the bacilli from such conditions is now being investigated.

Most of my experiments were carried out with the Shiga type of dysentery bacillus. The first point of importance to be noted is that the large or "special forms" occur in all pure cultures of bacilli belonging to the dysentery-typhoid-coli group, besides occurring in cultures of the influenza bacillus and other micro-organisms. Further, they are much more numerous in very young cultures than in older ones, and practically disappear in cultures that are twenty-four hours old. I observed also, in cultures that had been growing for six to twelve hours, that these "special forms" were often partially dissolved. From these early experiments I concluded that the bacilli normally produce "special forms," and that these, when presumably of no use to the bacterial community of a pure culture, are dissolved by a lytic agent which is also present, and that this lysin prevents the special forms from multiplying, and interferes with their isolation as growths free from the normal small bacilli. I found, however, two methods by which these "special forms" could be isolated. They may be obtained either by repeatedly plating out on litmus-maltose agar tubes, or by growing in an emulsion of dead coliform, typhoid, or some similar bacillus, and then plating out on the maltose agar medium. Three fairly distinct and stable types were isolated, but it will be unnecessary to consider these in detail. The chief points which I wish to bring to your notice are these: The large bacilli proved to be "special forms" of the bacterium from which they were obtained, and were easily agglutinated by the specific serums. I also obtained some evidence that they were more pathogenic when produced by the normal bacilli than after repeated multiplication by division. When isolated and grown they became more resistant to the lytic agent. In most of the cultures numerous free granules were present, while many of the bacilli contained similar looking granules in the fusiform and round swelling which they presented.

These researches seem to indicate another possible explanation of the lytic action of the substance under review. If this substance is, after all, not pathological to the bacterium, but is a normal product of its activity, then it must be produced for some special purpose which is advantageous to the life of that variety of bacterium. If the "special forms" of bacilli which are found in normal cultures and are so soon dissolved up are produced for the benefit of the bacterial community of a pure culture, then it may be that the lytic agent is formed for the purpose of carrying out this lytic action, and possibly setting free toxins contained in the special forms. Or it may be that it sets free "antitoxins," or substances that will neutralize the toxic substances of the host it infects, or such substances as are produced by other varieties of bacteria with which it struggles for existence when outside the animal body. Probably all bacteria produce substances of a toxic nature, but the possibility of their producing antibodies which will neutralize the toxins of other varieties is one that has interested me for some time. My experiments in this direction lead me to believe that this may be the case, but a research of this nature is rather difficult to carry out technically, and I shall do many more experiments before committing myself to this view. If, however, additional experiments should confirm my opinion, and if the special forms play some part in this process, one can quite understand that the special forms would be useless among the members of a pure culture growing on artificial media. In fact, they might be directly detrimental to the bacterial community, in that they would use up the food supply and overgrow the other bacilli which are necessary for a continuation of the life of that species or variety. In this case the lytic agent would perform a good purpose in getting rid of the useless special forms. It may be argued that this will not explain the lysis of the normal forms of bacilli, but then the conditions of cultivation on artificial media are not those of nature. In fact, in the process of evolution the bacterium did not develop its characters under the influence of cultivation in incubators, and an action that might be restrained to the limits of useful purposes in nature might very well extend beyond those limits under such an abnormal environment as that presented by an uncontaminated tube of agar.

Some of my views and the possibilities I have suggested are no doubt open to criticism, but I claim that the discovery of the filter-passing lytic agent in association with bacteria offers a large field for research, and I suggest that this field

has been further extended by the isolation of "special forms" of bacteria and by the possibility of demonstrating the production of bacterial antitoxins for the neutralization of toxins produced by other varieties of bacteria. Moreover, it must be remembered that all the vital processes of a bacterium have some relation to each other, and it is therefore necessary to study these problems together, or the true significance of any one may not be fully appreciated.

III.—CONCERNING THE THEORIES OF THE SO-CALLED "BACTERIOPHAGE."

By J. BORDET, M.D.,
Director of the Pasteur Institute, Brussels.

[THE following explanatory statement was read by Dr. Gratia for Professor Bordet.]

Through Dr. Gratia I obtained access to the paper Dr. d'Herelle intends to present on the lytic phenomenon due to the so-called "bacteriophage." I was not a little surprised to find that Dr. d'Herelle in this paper attributes to my co-worker, Dr. Ciuca, and to myself, as regards the intimate nature of this phenomenon, an opinion which is wholly different from what we felt entitled to uphold from the very beginning of our studies on the subject.[1] Dr. d'Herelle quotes our names next to Kabeshima's, and enlists us among the authors who assume that the lytic principle is a leucocytic secretion. In fact, this view seems to us altogether untenable, and is almost the reverse of the opinion we have constantly emphasized.

I think we were first to advocate the view that the lytic principle is produced by the microbe itself which shows the lysis—in other words, that the transmissible lysis is in reality an autolysis betraying a nutritive vitiation primarily started by external influences, an example of which may be the contact with a leucocytic exudate. No doubt it would be quite unnecessary to translate literally the many passages of our papers where this assumption is advocated. Some lines, however, may be quoted:

"External influences such as that of a leucocytic exudate modify the bacterium, inducing the latter to elaborate a lytic substance capable of diffusing itself and bringing about the same autolytic phenomenon through successive cultures. When the autolytic process occurs a large number of the microbes present may perish, but some of them, being more resistant, are, during a certain length of time, still capable of reproduction in spite of their producing the active principle, thus imparting to new cultures of the same microbe the same autolytic tendency."

In another paper we add:

"According to d'Herelle, the lysis is due to a living being, to a filtering virus. We, on the contrary, believe that the lytic principle originates from the bacteria themselves, which, when touched by this active substance, are capable of regenerating it, the factor responsible for the phenomenon being thus unceasingly reproduced—on the condition, however, that the bacteria be still living and provided with the alimentary substances necessary to their growth."

I wonder how Dr. d'Herelle could possibly give such an erroneous account of our work as in his paper. The many authors who have written on the subject did not, like Dr. d'Herelle, misinterpret a theory which we have so often and so distinctly outlined and explained. I shall allow myself to quote, for instance, the paper recently published by Dr. Bruynoghe,[2] who writes:

"According to Bordet and Ciuca, the microbes undergo—through the agency of a leucocytic exudate—a modification by which they are henceforth capable of elaborating an autolytic principle, this property being further transmitted to the following generations by the germs which were sufficiently resistant, and thus could multiply. This interesting view permits the understanding of the fact that the lytic principle is only regenerated when the bacteria are living, since the theory asserts that this principle is produced by the bacteria themselves."

I think there is no need to dwell longer on the subject. But one must agree that I could not refrain from correcting d'Herelle as regards our views, nor from presenting them again as they are expressed in all of our papers. The mere titles of these are clear enough; we always designate the phenomenon under the name of "the microbian transmissible autolysis."

REFERENCES.
[1] *C.R. Soc. Biologie*, October, 1920. [2] *Le Scalpel*, March, 1922.

IV.—ANDRÉ GRATIA, M.D.,

Pasteur Institute, Brussels.

1. The Twort phenomenon and the d'Herelle phenomenon are identical. They are two different aspects of one and the same phenomenon: the transmissible lysis of bacteria.

When the "dissolving material" of Twort found in diseased agar cultures of micrococci obtained from vaccinia lymph is transplanted into a young broth culture of staphylococci a dissolution of the latter occurs, and the filtrate of the dissolved culture exhibits all the characteristics of a typical staphylococcus bacteriophage according to the definition of d'Herelle.

On the other hand, typical staphylococcus bacteriophage could be obtained also by other means—namely, by the leucocytic exudate technique of Bordet and Ciuca, or by the puncture of a subcutaneous abscess. When small amounts of this staphylococcus lytic agent are introduced in melted agar which is afterwards slanted and seeded with sensitive staphylococci a culture results, apparently normal at the beginning, but which, a little later, turns into the typical glassy transparent material of Twort. In other words, the Twort phenomenon leads to the d'Herelle phenomenon, and, inversely, the d'Herelle phenomenon leads to the Twort phenomenon.

2. There are no unquestionable proofs that the bacteriophage is a living organism.

The assumption of the bacteriophage being a filtrable virus for bacteria was suggested by two main facts: (*a*) The power of reproduction possessed by the lytic agent, and (*b*) the localization of the lysis to certain round spots of clarification when a very diluted lytic agent is poured over the surface of an agar culture of sensitive bacteria. Although easily explained by the virus theory, yet both facts are not unquestionable proofs of the living nature of the bacteriophage, because they are by no means exclusive features of living beings.

Fire is not living, and yet fire is endowed with power of reproduction. When once lighted, thanks to an initial impulsion such as an electric spark or the mere striking of a match, it can be indefinitely reproduced if fuel is provided. A still more striking, because more biological, example is found in blood coagulation. Suppose a series of test tubes containing a stable plasma—bird's plasma, for instance—which will remain indefinitely fluid. To the first tube we add just a few cubic centimetres of distilled water. As a result of that initial thromboplastic action, which does not need to be repeated in the future, thrombin suddenly appears in the first tube and the plasma clots. If a few drops of the exudate serum in the first tube are pipetted off and poured in the next tube, this second tube clots, in its turn, with a new regeneration of thrombin, which, transferred in the third tube, brings about the coagulation of that tube with again a new production of thrombin, and so on indefinitely. In this way we realize the transmissible coagulation of blood in series, with the continuous regeneration of thrombin, and thrombin is not a living being.

The localization of the lytic action of diluted bacteriophage can be explained by the hypothesis of a chemical substance as well. It must be kept in mind that a culture is not a homogeneous whole, but made up of organisms showing all kinds of qualitative and quantitative individual differences—that is, as far as their susceptibility to the lytic agent is concerned. When a very concentrated lytic agent is poured over the surface of an agar culture an almost complete dissolution occurs, with the exception of just a few organisms resistant enough to overwhelm the strong action of the concentrated lytic agent. On the other hand, when a diluted lytic agent is used only the few extremely sensitive bacteria will be influenced, and each of them becomes a centre of regeneration of the lytic agent, which, diffusing evenly in every direction, produces perfectly round spots of clarification very often surrounded by a kind of halo of diffusion. Between these two extreme conditions all kinds of intermediate degrees exist. Further, any substance, living or not, is composed of particles, molecules, atoms, or ions. When we pour out a glass of soda water, there appear on the wall of the glass small round bubbles of gas, the size of which increases exactly as the so-called colonies of bacteriophage, and yet gas is not a virus.

3. The idea of the bacteriophage being a product of bacterial activity is suggested by the close parallelism existing between the regeneration of the lytic agent on the one hand, and the activity of growth of the bacteria on the other hand.

No regeneration ever occurs in dead cultures, nor in living cultures when put in such conditions that they cannot grow—in saline emulsions of bacteria, for instance, or at low temperature. A slight lysis, with but a small regeneration of lytic agent, is induced in the slow-growing culture of *B. coli* in a synthetic medium. On the contrary, an abundant regeneration occurs in a fast-growing culture in broth. A recently seeded broth culture to which is added just a trace of lytic agent will not be inhibited; but a few hours later, at the very moment the culture reaches its acme of growth, a rapid dissolution occurs with an abundant regeneration of lytic agent.

4. The conception of the bacteriophage being a chemical substance is favoured by the chemical-like affinity existing between a given lytic agent and the corresponding susceptible strain.

I first observed that small amounts of lytic agents lose a certain part of their activity when put together with too thick emulsions of sensitive bacteria. Bordet, with a different technique, could even obtain the complete disappearance of traces of lytic agent in the same condition. Still more convincing are the results of Vaumain and of Da Costa, who observed the absorption of relatively important amount of lytic agent by dead emulsions of the corresponding sensitive bacteria. This specific affinity which is the necessary condition for a lytic agent for inducing the dissolution of a given bacterium is not favourable to the virus theory, because we question how a virus could be definitely fixed by dead bacilli, which, however, it is unable to attack.

5. The bacteriophage is not one and the same antigen. Several lytic agents showing antigenic specificity must be considered.

The *coli* lytic agent can be completely neutralized by proper amounts of corresponding *coli* antilytic serum, but is not at all affected by staphylococcus antilytic serum, which, on the other hand, is only able to neutralize staphylococcus lytic agent and not *coli* lytic agent. This neutralization reaction is thus specific, and demonstrates the plurality of the bacteriophage.

The non-specific results obtained with the alexin fixation reaction and advocated by d'Herelle in favour of the unicity of the bacteriophage, are of no value, because they are vitiated, as can be easily demonstrated, by the presence in the bacteriophage of bacterial dissolution products which have lost their specificity and play therefore the rôle of common antigen between different lytic agents.

V.—J. C. G. LEDINGHAM, D.Sc., M.B., F.R.S.,
Chief Bacteriologist, Lister Institute, London.

The problem which has exercised the minds of all who have personally investigated the subject has been to elaborate some theory which will adequately explain the facts. Dr. d'Herelle maintains unaltered his originally expressed view that the phenomenon of transmissible lytic effect is fully explained by assuming that a living ultramicroscopic virus parasitizes and brings to solution the particular organisms with which it has most affinity, and that the apparent increase of lytic effect in passage is due simply to growth of the alleged live virus. Even if, as d'Herelle claims, his premisses warrant the conclusion to which he arrives, I should still hesitate in accepting it. I should desire to be satisfied that the alleged cause was a *vera causa* in the sense of the old logicians—that, in fact, it was a cause which did not tax too severely one's sense of the naturalness or likelihood of things. But are the premisses so indubitably established? Is no other general explanation possible? The investigations so far undertaken display an extraordinary variety of experiment, sometimes yielding uniform, sometimes highly conflicting, results, and I feel strongly that, throughout, there has been little attempt to study the phenomena on quantitative lines, with a view to eliminating or evaluating the various known possible factors and agencies that may, either in conjunction or separately, give rise to the end-result. It is possible, however, from the sheer mass of data recorded to take the following facts as presumably established.

1. That certain organisms, particularly those of the intestinal group, submit readily to lysis under the influence of a variety of primary stimuli. These may be filtered faecal extracts from healthy or diseased persons, or they may be extracts of normal tissues or body secretions. Filtrates of these organisms so dissolved are able to carry on the process.

2. That some strains of these same organisms are naturally resistant to these same stimuli.

3. That some strains of these same organisms show lytic changes normally. I attach great importance to this fact. Dr. Lepper, at the Lister Institute, recovered from the urine of a case of pyelitis a coliform strain which behaves in culture as if it were a mixture of bacilli and "bacteriophage." Its growth curve in broth showed repeated depressions, which can be explained only by autolytic effects. On agar the characteristic patchy growth of irregular nibbled colonies appears.

4. That the stimulus if not too strong causes a dissociation of the strain acted upon, into resistant and non-resistant types.

5. That potent lytic extracts can be prepared from the organisms themselves during artificial growth, the process being apparently facilitated by repeated filtration of the growth and reinoculation of the filtrate with the organism concerned.

6. That potent lytic extracts can be obtained from the filtered growth of organisms growing symbiotically.

In whatever way the initial stimulus is obtained the transmission in series can, in my view, be explained only on the assumption that potent autolytic ferments discharged from the lysed organisms are able to initiate similar effects in passage. My own work has been concerned with filtrates of *B. pyocyaneus*, which are known to dissolve readily organisms like *B. anthracis* and *V. cholerae*, but which may fail entirely with certain other species. I have not yet been able to show definite carry-over by ferments from organisms so dissolved, but it is probable that the proper conditions have not been secured. Malfitano, twenty years ago, showed that *B. anthracis* suspended in distilled water liberated autolytic ferments, and he pointed out what is of extreme importance in securing the carrying over—namely, that the organism must be so killed that the ferments discharged are not injured. It is important, therefore, if one wishes to eliminate superfluous factors, to seize on the simplest exposition of the experiment. The simplest exposition so far is, I take it, that in which the organism's own extract can initiate the "bacteriophagic" action. That extracts of organisms may exhibit lytic powers is, of course, no new observation, and it is helpful now to bring these older observations into line with new experiment. The second simple procedure which yields, apparently in a remarkably short time (in a matter of hours, in fact), a potent lytic stimulus is the inoculation of organisms into the circulation of an animal and the demonstration of "bacteriophagic" powers in the serum drawn a few hours later. If the results on this point are confirmed, we seem to have the phenomenon reduced to the simplest form, and it is remarkable that it fits in with certain phenomena the explanation of which has long puzzled us. I may refer, for example, to the extraordinarily rapid development of immunity to plague after inoculation of highly purified plague extracts in rats (Rowland), and to the remarkable though temporary increase of normal antibody which rapidly follows the injection into animals of autolysed bacterial bodies or refined substances like nuclein. I feel that here we have a promising link between "bacteriophage" work and certain previously recorded phenomena.

It is difficult at this stage to evaluate the alleged therapeutic results of these "bacteriophages." There is no doubt, however, that just as *pyocyaneus* filtrates can abort an anthrax infection in rabbits when injected simultaneously with the organism, so a similar local action may well be expected with the filtrates of d'Herelle. It seems to me unlikely, however, that much is to be expected from their therapeutic use in virulent infections in highly susceptible animals. I am not greatly impressed with the evidence of specificity of these "bacteriophages" based on complement fixation tests with immune serum. I take it that, from the work of Otto, Munter, and Winkler, the immune serums obtained by immunization with bacteriophage filtrates is essentially of the same kind, if not of the same order, as those obtained by immunization with the raw organism or its autolysate. Any alleged differences would seem to be due simply to the fact that the bacteriophage filtrates are in a highly refined colloidal state. To this high refinement, which is facilitated by repeated filtration and reinoculations, Otto, Munter, and Winkler attribute the potency of their products as compared with supernatants obtained by the centrifuge only. Just as the anaphylatoxin effect was whittled down to an interaction between two colloids, so I would urge for the investigation by quantitative

methods of the simplest form in which the phenomenon can be elicited. The two main factors in the problem are, to my mind: (1) the variability of bacteria in the matter of susceptibility to lytic change, and (2) the lytic action of extremely finely divided colloidal bacterial protein on susceptible bacteria. From such interaction would result the liberation of autolytic ferments capable of repeating the process in series.

VI.—J. W. McLEOD, O.B.E., M.B.,

Professor of Bacteriology, Leeds.

Dr. d'Herelle in his opening address brought forward some arguments to show that the phenomena which he has described are distinct from those previously described by Dr. Twort. This may be so in a limited sense, and the development of glassy areas in an opaque culture of a micrococcus on the one hand and the transmissible lysis of emulsions of Shiga bacilli on the other, appear to be new and important demonstrations of bacteriolysis by substances derived from the bacteria themselves, or closely associated with them, and in this respect unique phenomena.

The observations, however, on which d'Herelle based his case for proving the existence of an invisible bacterium parasite of the species under investigation—that is to say, the development of bare spaces amidst the growth on an agar slope when the latter was inoculated from a bacterial emulsion to which a small amount of a bacteriolytic filtrate has been added—do not appear to differ essentially from the older results of Eijkman on auto- and hetero-inhibitions in bacterial cultures. The chief points brought out by this worker were:

1. That most, if not all, bacteria produce in the course of their growth substances inhibitory of that growth.
2. That in the case of some bacteria the substances produced act as powerfully, or more so, on other bacterial species.
3. That these substances are thermolabile.

I have been working at intervals since 1918 on this subject of the production of bactericidal substances by bacteria, and I have come to the conclusion that they are diverse. In the case of the thermolabile bactericidal substances produced by pneumococci and many streptococci (studied in collaboration with Mr. Govenlock and Dr. Gordon [1]), which at the outset were thought to be of complex constitution and protein in nature, the quite unexpected conclusion has been reached that the substance responsible is hydrogen peroxide.

The substances inhibiting growth produced by the coliform group of bacteria are certainly different. It is not unreasonable, however, to consider the phenomena brought forward by Mr. Twort and Dr. d'Herelle as special types of the general class of phenomena first carefully investigated by Eijkman, and I believe that a more rapid elucidation of them is likely to be found if they are considered in the light of that worker's results.

Certain observations made in the winter of 1917–18—in some of which I was associated with Dr. A. G. Ritchie—may be of interest in this discussion. These observations dealt with the inhibition of the growth of *B. coli* by filtrates of dysentery cultures in fluid media, and vice versa. The object of the observations was to produce if possible a culture medium exhausted for the growth of *B. coli* but still capable of growing dysentery bacilli. In the course of this investigation it was found that all the coliform bacilli tested grew well in 20 to 25 per cent. dilutions of most samples of Allen and Hanburys' trypsin. The activity of the trypsin was confirmed in each sample. It was observed, however, on one or two occasions that the strain of Shiga's bacillus used grew well, producing frank turbidity in the first twenty-four hours of incubation, but that this turbidity would clear up on further incubation. Another observation was that such media and also tryptic digests of coagulated serums, etc., which were sterile but not inactivated, were those in which *B. coli* most readily produced substances inhibitory to its own growth. Filtrates from such cultures were about equally inhibitory to the growth of Shiga, Flexner or Y dysentery strains, however. With filtrates from growths of dysentery bacilli in such media, however, the results were much more specific—that is, filtrates from cultures of Shiga's bacillus inhibited the growth of Shiga bacilli, but not that of *B. coli* or Flexner's bacillus. Corresponding results were obtained with the other dysentery strains.

An attempt to determine the nature of the inhibitory substance in filtrates of *B. coli* cultures showed that it was not thermolabile but that it was readily thrown out of action by dilution or by addition of alkali. It did not, however, appear to be a matter of degree of acidity, since artificial acidification of culture media to a higher degree did not sensibly interfere with the growth of the bacilli concerned. There is evidence here of the rapid production in suitable fluid media of substances inhibitory to the growth of Shiga bacilli, and it may be that these bacilli when killed by an agent which does not interfere with their internal enzymes, or which may possibly stimulate these, does undergo a rapid autolysis, just as dead tissues in the animal body do. On the other hand, the bactericidal substances demonstrated by Eijkman's technique or modifications of it in ordinary culture media appear to be thermolabile, being at least partially destroyed by short periods of heating at 65° C. in the case of *B. coli* or the dysentery bacilli.

Of all the bacteria which have been investigated by Eijkman's technique Shiga's bacillus is the one most sensitive in its growth to inhibition by many varieties of bacteria.

Of course, it must be admitted that until a more complete explanation of these phenomena has been provided d'Herelle's hypothesis cannot be finally rejected. Inasmuch, however, as he has claimed for his micro-organism two characteristics which are without parallel in bacteriological observation—(1) a heat resistance on the part of the bacteriophagum greater than that demonstrated in connexion with any other ultramicroscopic virus occurring in the animal body, and (2) an organism which grows actively in fluid media without production of turbidity—I find it impossible to accept his theory without much more satisfactory proofs than those which he has advanced.

REFERENCE.

[1] *Journ. of Path. and Bact.*, vol. xxv, 1922, p. 139.

DISCUSSION.

Dr. Fleming (London) showed some agar plates illustrating the rapid bacteriolysis produced by egg albumen and animal secretions, such as tears. The chief characteristics of these reactions was the rapidity with which they took place, a rich bacterial growth being quickly clarified by the diffusion of the lytic agent.

Dr. A. W. M. Ellis (London) said: I desire at the outset to associate myself with the remarks of Dr. Gratia and Dr. Ledingham, who have already covered most of the ground on which I had planned to speak. I wish in particular to emphasize Dr. Ledingham's remarks on the necessity of quantitative measurements in working with this phenomenon. In all my work I have employed quantitative methods, the routine being investigation in serial dilutions, the following tubes being set up, the dilution in each being ten times that in the preceding:

10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}	10^{-8}	10^{-9}

With an active filtrate complete lysis will always occur up to 10^{-8}—that is, to a dilution of 1 in 100,000,000. In this way I have investigated the effect of variations in temperature, hydrogen ion concentration, suspending fluid employed, etc., upon the reaction; the results will shortly be published in detail.

To-day there are two points to which I would particularly like to draw attention, because I feel that in the solution of their mechanism lies in all probability the key to the nature of the processes involved in the phenomenon. The first is the occurrence of a zone phenomenon, so familiar to workers with colloidal reactions, and especially familiar in the case of immunity reactions, such as complement fixation and precipitation. That is, that the occurrence of lysis is restricted to a certain zone in the scale of dilutions, and that if high concentrations of lysin are employed lysis frequently fails. Thus, in the above-mentioned series of dilutions it is not unusual to find a failure of lysis in the tubes containing 10^{-1} or 10^{-2}, although lysis is complete below this down to 10^{-8}.

The other point is the question of the effect of dispersion of the lysate—that is, the bacterial bodies in the emulsion used. If one takes 10 c.cm. of thick emulsion of Shiga, divides it into equal parts, and adds to each an equal quantity of lysin, and then dilutes one of these equal parts in 1,000 c.cm. of broth, complete lysis will occur in the diluted one, none in the undiluted—that is, the occurrence of lysis

is dependent upon the degree of dispersion of the bacterial suspension.

In these two reactions we see phenomena which remind us at once of the behaviour of colloidal solutions, and it is in the realm of physical chemistry that we should look for a solution of this problem.

To d'Herelle's contention that a living virus is responsible I find myself in complete opposition. Of the arguments produced by d'Herelle in support of his theory, three seem to me particularly pertinent, and I would like for a moment to refer to them in more detail.

1. Colony formation. This, it seems, is readily explainable on the assumption that these points represent the sites of occurrence of highly sensitive organisms. We know the great variation in sensitiveness to lysin that occurs among the organisms of any given culture.

2. The isolation of a single individual. This merely means that the lysin is capable of division into a terminal unit, and that such a terminal unit—that is, single molecule or what not—is capable of initiating the reaction. It is no argument for the living nature of the lytic agent.

3. The effect of alcohol. d'Herelle has claimed that he can by the use of alcohol obtain the lytic products of the lytic agent free from the latter. That is, that after saturation of the lytic filtrate with alcohol he obtains a substance which is lytic, but capable of transmission, not lytic in series. If this is true it is of first rate importance. I have repeated the experiment many times, but always unsuccessfully. If lysis occurs it can always be transmitted in series.

As to the rôles of the lysin in recovery from disease I can only say in conclusion that my experiments have given entirely negative results, and that my own feeling is that it plays no part. My experiments have been with Gaertner's bacillus and infections in mice and have shown only an aggressin action for the lytic filtrate—that is, controls fed with "bacteriophage" prior to infection have died more rapidly than normal controls.

Professor David Ellis (Glasgow) said: When sulphur bacteria have used up all the food supply contained in the cells in the form of sulphur they eventually come to rest, and each filament breaks up into compartments by means of transverse walls. Each cell then begins to swell up and assumes a spherical form and literally disappears. Certain iron bacteria, such as *Crenothrix polyspora*, sometimes multiply with extraordinary rapidity and the whole organism breaks up into minute specks. The circumstantial evidence is very strong that these elements disappear completely.

The President (Dr. Buchanan) summed up the discussion and emphasized the necessity of collaboration between the various departments of biological science in the elucidation of this problem.

Replies.

In his reply Dr. Twort said that there were one or two points to which he would like very briefly to reply. It had been suggested that the bacteriolysin or bacteriophage would only act on very dilute emulsions of bacilli, and not on a thick growth, as is the case with the lysozyme of Flemming. This, however, was not altogether correct, for if a very active bacteriolysin which might be obtained from cocci from vaccinia was transplanted on to the edge of a young vigorous growth of cocci or mixed with the cocci scraped from the surface and transplanted to a fresh tube, then lysis would take place. A suggestion had also been made that the phenomenon of bacteriolysis might possibly be of the nature of a degenerative process and be somewhat similar to the swelling and degeneration observed with the sulphur bacteria. He did not, however, think this was probable, for it was important to remember that the bacteriolytic action was most marked on very young, vigorous growing cultures on good media, which was not what one would expect if it were a degenerative process. Dr. d'Herelle had pointed out what he believed to be differences in the nature of the substances as described by himself (Dr. d'Herelle) and as described by himself (Dr. Twort). Dr. Twort thought that these apparent differences could be accounted for by the slight difference in the technique used and in the undoubted difference in the degree of activity of the lysins in different cases. It also appeared to him that whereas the lytic action might not extend when the micro-organism had overgrown the tube of media and used up all the food supply in his specimens, the same lytic action would naturally extend where a very active lysin was present which prevented the micro-organism from growing sufficiently to use up the whole of the food supply. This explanation was consistent with our knowledge that the lytic substances would only act to any extent when the cultures were actively growing or in a medium suitable for active growth.

In his reply Dr. d'Herelle said it was impossible for him to answer without preparation the new objections put forward against his conception concerning the nature of the bacteriophage; he must in the first place carry out some cross experiments. As soon as they were finished, he would be able to give a formal reply. He wished, however, to make a preliminary remark: he thought the very interesting work of Dr. Fleming constituted a strong argument in favour of his own conception. If the dissolution of the bacteria in the serial phenomenon was due to an enzyme contained in the bacteria, as many bacteriologists believed, this enzyme must be detected in the filtrate obtained from a culture dissolved by the Fleming process. On the contrary, this last phenomenon was not a serial one. It was a proof that the bacteria did not contain in themselves the principle capable of producing the serial lysis. Concerning the rôle of the bacteriophage in immunity, brought up in discussion by Dr. Ellis, he declared that not only did his own experiments show this rôle, but many other authors had made successful experiments on this line. He cited those of Bruynoghe, Gratia, and others in connexion with staphylococcus infections; those of Bekerich and Hauduroy on typhoid; those of Bekerich and Hauduroy, Gorten, Philibert, and others on *coli* infections. In reference to the problem of the similarity or dissimilarity between the principle discovered by Dr. Twort and the bacteriophage, he repeated that the particularities of the two phenomena, as described by Dr. Twort and himself, were very different. It remained to make a close examination concerning the properties of the two principles, such as resistance to the action of physical and chemical agents, as well as to investigate the process of the destruction of the bacteria, etc., for definitively clearing up the question. In any case, the discovery of Dr. Fleming showed that the bacteriolysis could be produced by various different processes. Finally, he said a word about the claim of Professor Bordet. It seemed to him that he had described his conception of the phenomenon quite in the same way as Bordet himself, as it appeared in his own paper. "It will be obvious, then, that this transmissibility in series eliminates hypotheses 1 and 2. The authors who have put forward these hypotheses must admit that the principle derived from the organism which is attacked by parasites . . . plays only the rôle of a transformer—that is to say, it gives rise, in the bacteria which undergo the transmissible lysis, to a special state of 'autolysability.' Only Bordet and Ciuca have attempted to give an explanation of this. For them the leucocytic principle would provoke in the bacteria an hereditary vitiation of nutritional nature." This, he declared, was just the claim of Professor Bordet.

DISCUSSION ON THE BACTERIOLOGY OF INFLUENZA.

(Sir William Leishman, K.C.M.G., C.B., F.R.S., *in the Chair.*)

OPENING PAPERS.

I.—MERVYN H. GORDON, C.M.G., C.B.E., M.D.,
Bacteriologist and Lecturer on Bacteriology, St. Bartholomew's Hospital.

[*With Special Plate.*]

The pandemic of influenza during 1918–19 served to bring home very forcibly the importance of microbiological knowledge, for there is good reason to believe that the severe defeat then suffered by preventive medicine was due in great part to our ignorance with regard to the primary infective agent of this disease. In these circumstances it is clearly the duty of bacteriologists to make all possible use of opportunities that may occur of investigating cases of influenza, and to submit their observations for discussion and criticism at meetings such as the present one. I propose to bring before you some studies made during a recent outbreak, but before doing so will attempt to review the knowledge at present available.

As the differential diagnosis of influenza from purely clinical criteria is necessarily imperfect, it would appear that the best way of approaching the subject from the

bacteriological standpoint is to study not only influenza, but also as many forms as possible of catarrh of the respiratory passages. Because it is characterized at its onset by a condition of profound catarrh, measles also should be included within the purview. Such comparative observations are desirable first in order to gain perspective, and secondly because solution of the etiology of the common forms of catarrh may provide a key to the more virulent disease of this group which we call influenza. Moreover, since over a quarter of the annual mortality in this country is attributable to conditions resulting from infection of the respiratory passages—and perhaps a still larger proportion of the annual illness is due to respiratory infections—the systematic study of the bacteriology of this region is clearly a matter of great importance.

It may here be mentioned that, in view of recent advances in our knowledge, the methods of examining secretion from the upper respiratory passages bacteriologically should include examination of films of the fresh material stained not only by Gram's stain, but also by some specially intensive stain, such as that of Giemsa. For a similar reason cultures on agar enriched with ascites fluid, blood, etc., should be supplemented, when practicable, by diluting a representative specimen of the secretion, or a mixture of such samples, and then, after passing the diluted secretion through a Berkefeld or Chamberland filter, cultivating the filtrate in a medium enriched with fresh tissue, such as the well-known medium of Noguchi.

The Bacteriology of Catarrh.

Studies of individual cases, or of outbreaks of catarrh, have shown that a variety of bacteria occur in the respiratory secretions during this condition, among the most common being *M. catarrhalis*, pneumococci, and the diphtheroid organism first described by Cautley, and later renamed by Benham *B. septus*. From time to time also Pfeiffer's bacillus is met with. In the more chronic forms of bronchial catarrh, in addition to the above bacteria, streptococci, Gram-negative bacilli, and even anaerobic organisms of the streptothrix category, may be met with. The precise significance of non-haemolytic streptococci of the *salivarius* or *viridans* class is difficult to assess, because they are so constant and plentiful in normal saliva; but the importance of haemolytic streptococci in some of the more severe and fatal kinds of bronchopneumonia is beyond question. We are much in need of systematic observations on the relative frequency of the more prominent catarrh bacteria in different outbreaks, and especially of the carrier rate of them in communities before, during, and after severe outbreaks.

In addition to the bacteria referred to, evidence is accumulating that in the secretion of the upper respiratory passages during the acute stage of the common cold in the head there occur micro-organisms so minute that they traverse filters which hold up even the very small bacillus of Pfeiffer. It is to these "filter passers" that I wish especially to draw your attention.

General Properties of Filter-passing Micro-organisms.

If anyone makes a list of the infectious diseases and then crosses off those in which the infective agents have been established, he cannot fail to be impressed by the number in which the specific cause has still to be defined. Now the viruses of diseases such as measles, mumps, poliomyelitis, variola, etc., are known to be capable of passing through filters that hold up ordinary bacteria, and this fact indicates that their respective infective agents must be less than 0.5 of a micron in size. Such very minute objects will not be easy to make out even with the highest powers of the microscope, and the term "invisible" or "ultramicroscopic" which has been applied to them would appear to be premature until the possibility of staining them has been explored a good deal farther than appears to have been the case up to the present time. The majority of the filter-passing organisms that have been seen so far seem to bear a close resemblance to one another in size, shape, and arrangement. Thus the minute organisms observed in variola, vaccinia, poliomyelitis, and molluscum contagiosum vary between 0.1 and 0.3 of a micron in size. They are round or oval in shape, occur as single spherical elements or as diplococcal forms, may be grouped in little clusters, and exceptionally are arranged in a short chain. They fail to stain (or stain very feebly) by the staining methods in common use for demonstrating bacteria, and are negative to Gram's stain. From the excellent article of Lipschutz on these organisms it would appear that in order to demonstrate them it is advisable first thoroughly to fix the film in some powerful fixative such as methyl alcohol, osmic acid vapour, sublimate, etc. Next prolonged staining in Giemsa may be employed, followed by careful differentiation in acetone and xylol. Chief success, however, appears to have been obtained by Continental workers with Loeffler's flagella stain; so that, unless Giemsa is used, in order to render these organisms visible the preparation requires (1) fixation, (2) mordanting, and (3) intensive staining by a powerful dye such as freshly prepared hot carbol-fuchsin. A further point to be noted is that when they have been rendered visible by successful fixing and staining, these minute micro-organisms may be found present in the infective material in such enormous numbers that it is advisable to dilute this material as much as a thousand times before making films of it in order to examine individuals. So far these filter-passing organisms do not appear to grow to any extent on ordinary culture media; those of them that have been cultivated grow best under anaerobic conditions in a medium containing a piece of tissue such as Noguchi's medium. Their resistance to heat is comparatively low—they may fail to survive heating for half an hour to 55° C. On the other hand, they withstand glycerination for prolonged periods, and thus differ from the majority of the known pathogenic bacteria.

Von Prowazek has called these filtrable micro-organisms "chlamydozoa," but Lipschutz has suggested the name "strongyloplasma" (*strongylos*, round) for them. From their minuteness, their striking resistance to ordinary stains, and their strictly parasitic character, these micro-organisms are very difficult to investigate. Nevertheless there is reason to believe that progress is gradually being made with regard to their elucidation.

Observations on the Presence of a Filter-passing Virus in Acute Coryza.

The first person to demonstrate the presence of a filter-passing virus in the common cold was Kruse, who in 1914 succeeded in producing colds experimentally by means of a filtrate of the nasal secretion from a case of acute coryza. The nasal secretion was diluted fifteen times in normal saline, passed through a Berkefeld filter, and a few drops of the filtrate instilled into the nostrils of 12 men, 4 of whom developed acute coryza. The experiment was repeated on a larger scale, and out of 36 students into whose nostrils the filtrate was instilled 15 developed coryza within one to four days. Kruse was unable to demonstrate living organisms in this filtrate by ordinary bacteriological methods, and concluded that the common cold is due to a filtrable virus. During the winter of 1915–16 Colonel George Foster of the U.S. Army Medical Corps succeeded in confirming Kruse's observations. In the first place, he was struck by the paucity of ordinary bacteria in the nasal secretion at the onset of coryza—an observation with which others agree who have examined the secretion at that stage by the ordinary staining and culture methods. Nasal secretion from 3 cases in the acute stage of coryza was diluted in saline, passed through a

DESCRIPTION OF SPECIAL PLATE.

FIG. 1.—*Filter passer in culture.* Preparation from a primary culture in Noguchi medium inoculated with filtered nasal secretion at the onset of influenza. The culture was diluted 500 times before making this film. Note the minute size of the organism, its arrangement, and the diplococcal form. Giemsa's stain. (Magnification 1,000.)

FIG. 2.—*Nasal secretion unfiltered.* Nasal secretion at the onset of influenza, showing the filter passer and staphylococcus *in situ*. Giemsa's stain. (Magnification 1,000.)

FIG. 3.—*Vaccinia organism.* Vaccine lymph mixed with staphylococcus. Note the abundance of the organism described by Paschen, and its small size in comparison with the staphylococcus. Loeffler's flagella stain. (Magnification 1,000.)

FIG. 4.—*Nasal secretion* containing catarrhal bacteria. Nasal secretion from a case of subacute catarrh, showing *M. catarrhalis*, pneumococci, and Pfeiffer's bacillus *in situ*. Stain, Gram-fuchsin. (Magnification 1,000.)

FIG. 5.—*Pfeiffer's bacillus* from a culture on blood agar. Stain, Gram-fuchsin. (Magnification 1,000.)

FIG. 6.—*Noguchi cultures* from filtered nasal secretion at the onset of influenza. The right-hand tube shows a cloudiness near the kidney and extending for a limited distance up the tube. The left-hand tube was heated to 55° C. for thirty minutes after inoculation, and has remained unchanged. (Natural size.)

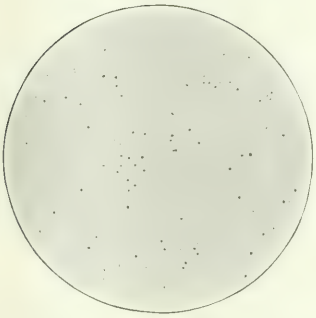


FIG. 1.—Filter passer in culture.

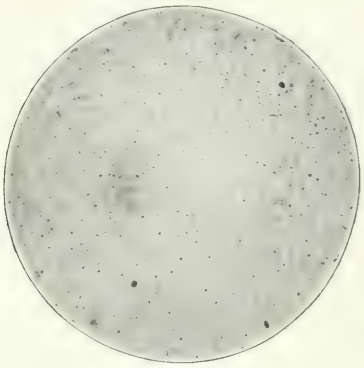


FIG. 2.—Nasal secretion unfiltered.

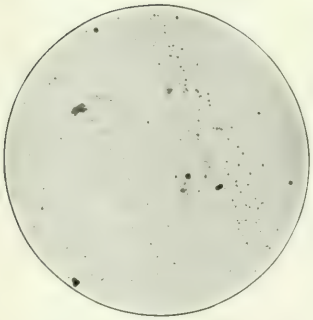


FIG. 3.—Vaccinia organism.

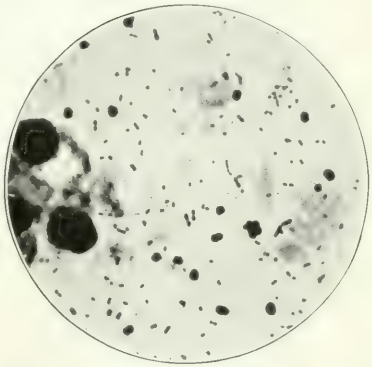


FIG. 4.—Nasal secretion containing catarrh bacteria.

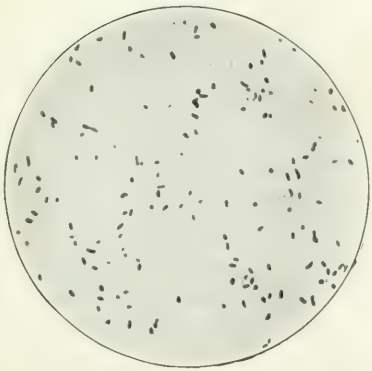


FIG. 5.—Pfeiffer's bacillus, from a cu'ture on blood agar.



FIG. 6.—Noguchi cultures from filtered nasal secretion.

Illustrating the paper by C. BENNETT, J. W. S. BLACKLOCK, *and* C. H. BROWNING.

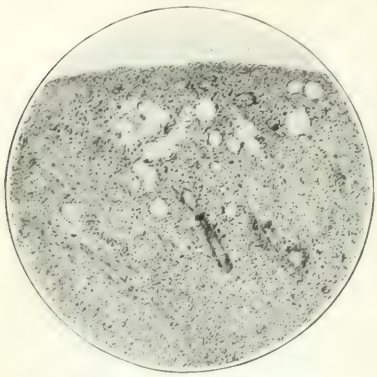


FIG. 1.—From a burn of the third degree on the forearm of a woman, aged 35 (due to paraffin oil), after seventeen days; treated by daily dressing with proflavine 1 in 1,000. Abundant formation of granulation tissue in fat is shown. (× 60.)

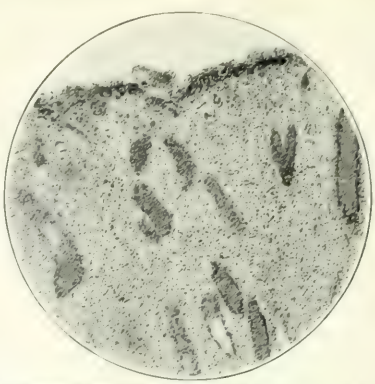


FIG. 2.—From a burn of the third degree in a man, aged 37 (due to burning coal); treated with acriflavine 1 in 1,000 for seventy-four days. Well-vascularized granulation tissue is seen; projecting from the surface there are blood vessels, which are filled with red blood corpuscles. (× 60.)

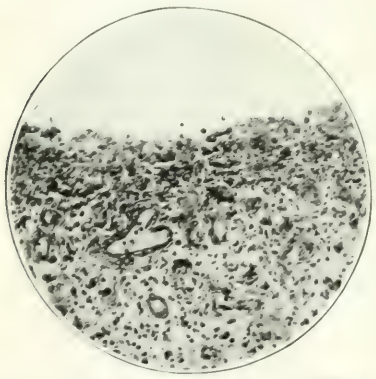


FIG. 3.—From a burn of the third degree on the arm of a girl, aged 12 (due to boiling water); specimen taken after application of proflavine 1 in 1,000 for sixty-four days. The section is stained with haematoxylin and eosin. Well-vascularized granulation tissue is seen, on the surface of which is a thin layer of cellular exudate which appears to be necrotic. (× 250.)

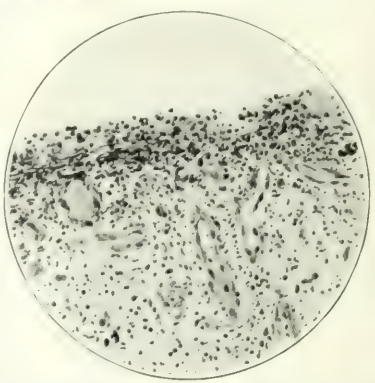


FIG. 4.—The same as Fig. 3, but stained with eosin and methylene-blue. By this procedure the polymorphs constituting the layer on the surface of the granulation tissue appear well stained, in contrast to [illegible] Fig. 3. (× 250.)

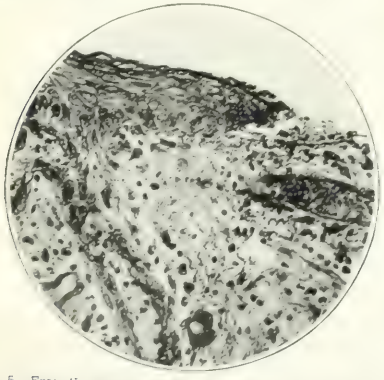


FIG. 5.—From the [illegible] Fig. 2, showing healing of the skin. The layer of extending epithelium [illegible] seen is in course of covering the [illegible] tissue, and presents a characteristic thin margin. The surface [illegible] continuously with acriflavine 1 in 1,000 for [illegible] four days. (× 250.)

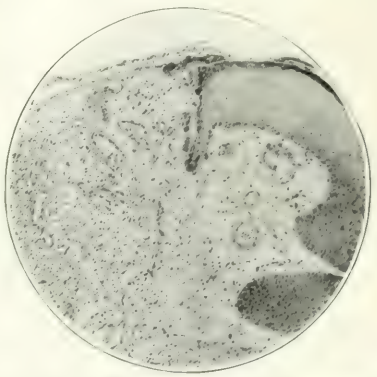
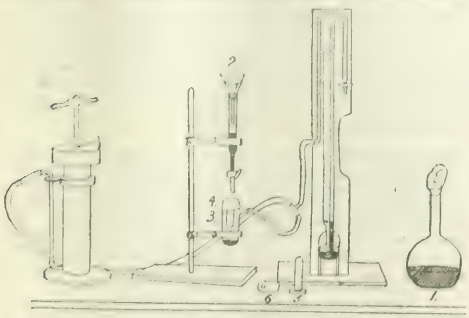


FIG. 6.—Another appearance presented by healing epithelium. From a case of suppurative osteo-periostitis of the femur in a boy aged 8; treatment with carbolic acid packing for two days after operation, thereafter with proflavine 1 in 1,000. Necrotic bone was removed after three weeks; the tissue was taken after application of proflavine for forty-two days. The healing epithelium, which shows a somewhat abrupt edge, had grown over the granulation tissue for three-quarters of an inch, and subsequently healing of the wound continued to

Berkefeld filter, and the resulting filtrate found to be sterile when sown on ordinary media. Three to six drops of it, nevertheless, when instilled into the nostrils of 10 healthy soldiers, resulted in 7 of them developing acute coryza within eight to thirty hours. The symptoms were quite typical: the majority developed a profuse rhinorrhœa on the second day, 5 developed a cough, 4 suffered from aching pains in the back or extremities, and in 6 the temperature ranged between 99.2° and 100° F. The duration of the symptoms was from three to six days. The experiment was carefully controlled, and there was no epidemic of colds at the time in the garrison where the experiments were made.

Having found that ordinary bacteriological methods failed to reveal any organisms in the filtrate, Foster proceeded to cultivate it in the tissue-ascites medium of Noguchi. It is to be noted that he devoted eighteen months to mastering the technique of this method, and that he warns investigators that for success the greatest patience and care are needed—a warning I can heartily endorse. In the outcome Foster succeeded in cultivating from the filtrate of the nasal secretion during the acute stage of coryza a minute organism which he describes as consisting of coccoid bodies 0.2 to 0.3 micron in diameter, arranged singly, in pairs and groups, and bearing a resemblance to the so-called globoid bodies found by Flexner and Noguchi in similar cultures from poliomyelitis material.



Apparatus for filtering. 1, Flask with saline gargle; 2, paper filter; 3, Berkefeld filter of shape shown in 5, held in position by rubber cap, 4 and 5. The receiver of the Berkefeld filter is connected to a manometer and air pump. A minus pressure of 10 cm. of mercury is ample.

A dilution of these positive cultures was passed by Foster through a Berkefeld filter and the filtrate instilled into the nostrils of 11 volunteers, 10 of whom, after an incubation period corresponding with that of the first series, developed symptoms of coryza that persisted for several days. The nasal secretion of this second series was filtered in turn, and the organisms recovered from the filtrate by culture in Noguchi medium. Foster concluded that the common cold is infectious; that its virus is present in the nasal secretion; that it is a "filter passer," and is represented in all probability by the minute micro-organism which he succeeded in cultivating. The lack of success of the later attempt by Branham and Hall to cultivate filtrable viruses from cases of colds and influenza may have been due to the fact that most of their material was taken after the second day of the disease; and, to judge from my own experience, it is probable that the ascites fluid used by them, though suitable for hardier organisms, was too alkaline for these exceedingly fastidious micro-organisms.

The Bacteriology of Influenza.

While the toxicity of Pfeiffer's bacillus is generally admitted, and also the important part which it plays in the majority of the severe cases of influenza, there are several points that militate against its candidature for the place of primary infective agent. The first is the significant fact that numerous experiments have been made, especially in America, by infecting human volunteers with Pfeiffer's bacillus without producing influenza. It is true that Blake and Cecil have shown that if the virulence of Pfeiffer's bacillus is raised by animal passage this micro-organism when introduced into the nose of a monkey can produce local and general symptoms and lesions broadly resembling those of influenza; but when Cecil and Steffen repeated this experiment by injecting the nares and pharynx of human volunteers with such a virulent culture, they found that while a condition resembling coryza was produced the symptoms were not quite those of influenza. A further point that tells greatly against Pfeiffer's bacillus is its absence in a proportion of cases of undoubted influenza, and another is the circumstance that bacilli having the morphological and cultural characters of this bacillus may be found in swarms in the bronchial secretion of a considerable proportion of the children who succumb during an attack of measles, the primary agent of which disease is known to be a filter passer.

On the other hand, there is definite experimental evidence that in influenza, as in the common cold, the primary infective agent is a filter passer. During the late epidemic several positive experiments were reported on human volunteers with the filtrate of material derived from cases of influenza, but perhaps the most striking were those of Yamanouchi and his colleagues. These Japanese observers made excellent use of 52 of their colleagues—doctors and nurses—who volunteered for experiment. Sputum from 43 cases of influenza was emulsified and injected into the nose and throat of 12 healthy persons, and the Berkefeld filtrate of the same material was injected in the same way into 12 more. The results were highly significant: 6 of the subjects had recently had influenza and these escaped; all of the remaining 18, after an incubation period of two to three days, developed influenza. A filtrate of blood from influenza patients was injected into the nose and throat of 6 more healthy persons, again with positive result. They next tried the subcutaneous route, using the filtrate of sputum or of blood of patients; all the subjects developed influenza except one, who had previously had the disease. Lastly, a pure culture of Pfeiffer's bacillus and a mixed preparation of the organism of Pfeiffer with pneumococci, streptococci, and other bacteria common in influenzal sputa, were injected into the nose and throat of 14 healthy persons, with the result that no symptoms or illness followed. The Japanese observers point out that in their experiments all persons who had had influenza or who had received the sputa emulsion or its filtrate became immune. These experiments are of great importance. Had an observation been made with the filtrate after heating it for half an hour to 55° C. they would have been still more complete.

Since it is the secondary lesions that kill in influenza, it was to be expected *a priori* that animal experiments to define the primary infective agent would be far less convincing. Thus Andrewes has pointed out that the lesions described by Gibson, Bowman, and Connor in animals that succumbed to inoculation with the filtered material from cases of influenza or from cultures in Noguchi medium are generally similar to those obtained by others with the filtrate of Pfeiffer's bacillus. The filtrate of Pfeiffer's bacillus, however, has been tried on human volunteers by Cecil and Steffen without effect.

The successful efforts of Gibson and others during the pandemic of 1918–19 to obtain cultures of a filter passer from cases of influenza indicated that during the first three days of the disease, but not later, a minute micro-organism similar to that found by Foster in colds is present also in influenza. These observations, however, were not conclusive. Since that time Olitsky and Gates have published a series of observations which have not only confirmed and added precision to those of previous investigators, but also promise to place the matter of the primary infective agent in influenza on a new and firm experimental basis. Starting with the nasopharyngeal washings of cases before the third day of the disease, they showed that this material *unfiltered* produced on intratracheal injection into rabbits a leucopenia falling especially on the lymphocytes, fever, and pulmonary lesions characterized by haemorrhage, emphysema, and œdema. The important point was that Olitsky and Gates were able to transmit this "syndrome" in series, and to carry it on from rabbit to rabbit even for as many as fifteen passages. Controls made in the same way with nasopharyngeal washings from 16 non-influenzal cases, including cases of coryza, also from cases of influenza after the second day, proved negative. Foreign protein (for example, human ascites fluid), *B. influenzae*, or its toxin prepared by Parker's method, all gave negative results. Having thus found that the nasopharyngeal secretion of patients at the onset of influenza has a peculiar pathogenic effect on the rabbit, they proceeded to show that this action is retained by the secretion when the bacteria have been removed from it by a Berkefeld filter. Still using this peculiar rabbit reaction as guide, they next showed that the pathogenic agent present in nasopharyngeal secretion resists 50 per cent. of glycerin for periods up to nine months, and finally that it consists of a minute "bacilloid" body

0.15 to 0.3 micron in length, which they cultivated in Noguchi medium, using ascites fluid having a pH of not over 8, and preferably 7.8.

In papers published during the present year Olitsky and Gates report that they have succeeded in growing the filter passer anaerobically in fluid media containing reducing agents such as ordinary bacteria or vegetable tissue, and also on ordinary agar without further enrichment than 5 per cent. of rabbits' blood. On the latter medium fine colonies are formed within a week and the organism may grow into a spindle-shaped rod as much as a micron in size. Furthermore, by cross-tests they have succeeded in obtaining evidence of the identity of the immunity resulting in the rabbit from injection with the nasopharyngeal secretion of influenza patients, the Berkefeld filtrate of this material, or the filter-passing micro-organism isolated from either of these materials. This immunity appears to endure in the rabbit for at any rate fourteen months. Lastly, they have succeeded in establishing experimentally the formation of specific antibodies such as agglutinin, complement fixing antibodies, and bacteriotropins to this anaerobic filter-passing micro-organism.

Personal Observations.

Early in the present year a sharp outbreak of influenzal illness occurred among the nursing staff of St. Bartholomew's Hospital. I am indebted to Dr. W. P. S. Branson for the following particulars of the epidemic: Between December 23rd, 1921, and January 23rd, 1922, 57 nurses were attacked, the majority between December 25th and January 3rd. The disease was characterized by its sudden onset and by the fact that for the time being it completely incapacitated those affected. The average duration was three days' febrile illness, necessitating a stay of altogether five days in bed and an average absence from duty of seventeen days. Signs and symptoms at the onset were congested conjunctiva and facies, coryza, furred tongue, rapid pulse, and pain in the back. The average highest temperature was 102° F. With regard to complications, these fortunately were rare; one case developed bronchitis that did not pass into pneumonia, and one case of mastoiditis occurred.

The diluted nasal or pharyngeal secretion of 4 nurses within thirty-six hours of the onset of illness was put through the Berkefeld filter, and 1 c.cm. amounts of the respective filtrates cultivated in ordinary media and in Noguchi tubes. While the former cultures remained sterile, the latter showed in each case on the fourth to sixth day a "cloudiness" near the piece of kidney, precisely in the manner described by Olitsky and Gates. In each case a control Noguchi tube inoculated with the same amount of filtrate and then heated for thirty minutes to 55° C. remained free of cloud over this period, as also did a control tube of the medium left uninoculated. On examining the positive cultures with Gram's stain no bacteria could be found, and subcultures on ordinary media failed to grow.

When films of material taken from the foot of the positive cultures were fixed in methyl alcohol for twenty-four hours, and then stained in 5 per cent. Giemsa for a similar period and lightly differentiated in equal amounts of acetone and xylol, swarms of minute round bodies, which had for the most part a purple or reddish tint, were revealed (Fig. 1). Having failed to find these bodies in the control tubes, I proceeded to look up the literature of filter-passing micro-organisms, and was much struck by the photographs of those found by Paschen in vaccine lymph, which are included in the review of filter passers by Lipschutz in Kolle and Wassermann's textbook. Having obtained some fresh vaccine lymph through the courtesy of Mr. Fremlin, I proceeded to examine films of it after the manner recommended by Paschen, and after some difficulty succeeded in finding these bodies by using a modification of Loeffler's flagella stain (Fig. 3).

Having come to the conclusion that these bodies in vaccine lymph are of the same order (as regards size, shape, and general appearance) as those present in the influenza cultures, I have since that time been endeavouring to acquire the necessary skill to enable me to investigate these most minute micro-organisms, and I am very conscious of the magnitude of the technical difficulties and of the comparatively slow progress that has been made. Results up to the present time are briefly as follows:

Primary Cultures.—Through the kindness of colleagues, and of the medical departments of the Ministry of Health and the London County Council, I succeeded in obtaining material during the late outbreak of influenza in London from 16 further cases within thirty-six hours of the onset of symptoms, and cultivated the filtrate from each in Noguchi medium as before. Out of the total of 20 cases (including the nurses) in which the filtrate of the nasal or pharyngeal secretion was examined in this way I obtained evidence of the presence of a filter-passing organism in 14. In addition, filtrates from the bronchial secretion were cultivated from three fatal cases of influenza, with positive results in two. The secretion that gave the best growth of the filter passer was literally swarming with Pfeiffer's bacillus; this bacillus, however, failed to pass the Berkefeld filter. In addition to the above cultures I have examined similar material from 7 cases of measles at the onset of the rash. In 3 of these cases the filtrate produced some clouding of the Noguchi tube on the fourth to seventh day, and in two of these cultures I succeeded in satisfying myself of the presence of a filter-passing micro-organism similar in morphology to that found in the influenza cultures. Both these positive cases, however, probably derived the infection from the same strain of virus; and there are clinical grounds for thinking that they were in reality cases of German measles.

Subcultures.—After three weeks' growth three of the primary influenza cultures were diluted, filtered, and the filtrate sown in fresh Noguchi tubes. Two gave a positive growth; in the third the result was doubtful.

Demonstration of the Filter-passing Organism in situ in the Secretion.—As neither Foster nor Olitsky and Gates mention any observations on this point, I have investigated the matter, and in both of the last two cases of influenza have succeeded in demonstrating the minute filter-passing organism in large numbers in the nasal secretion during the first twenty-four hours of the disease (Fig. 2). In both cases the secretion was clear and ordinary bacteria were scarce. The stain used successfully was Giemsa, the stained preparations being differentiated as before in xylol and acetone. Confirmatory results were obtained in both cases with methyl-blue and in the last one with Azur I as well. Both secretions were filtered and found to yield a positive growth of the filter passer on the third to fourth day. The first case developed symptoms of gastric catarrh two days later, but was well again in a few days, and when his nasal secretion was re-examined, eleven days from the onset, no certain filter passers were found either by film or by culture of the nasal secretion.

The morphology of the filter-passing micro-organism from the influenza cases has been referred to previously. I cannot help thinking that the name proposed for this organism by Olitsky and Gates, *Bacterium pneumosintes*, is somewhat premature. The feeling I have is that we are dealing with a new field, so to speak, and that the individual members had better not be given elaborate names until we have agreed upon some common name for the whole group, to which a distinctive name for each member may be added later.

It is, I think, self-evident that the relatively slow progress that has been made with the elucidation of filter passers is due to the fact that these micro-organisms require a technique far more difficult to acquire than that in use for dealing with ordinary bacteria. We are badly in need at present of some simple and fairly quick staining method that will tell us for certain whether these minute organisms are present or not in a given material. For this purpose Loeffler's flagella stain is too complicated, uncertain, and dirty. Giemsa's is far cleaner and less liable to error, but the long time required for fixing and staining is a drawback, and the final differentiation needs the greatest caution or the finest preparation may be ruined. Furthermore, Giemsa's stain may fail occasionally to reveal filter passers, even when these are present in large numbers. Olitsky and Gates use methylene-blue (either polychrome or Loeffler's), but the specimens of methylene-blue I have been able to obtain one and all refuse to stain filter passers. My best results so far have been obtained with a sample of methyl-blue obtained in 1912 from Grubler. It is of course essential to fix these organisms very thoroughly before attempting to stain them. A mixture of equal parts of absolute alcohol, acetone, chloroform, and ether makes a good fixative and seems to clear the ground—a great source of error in this work. After air-dried coverslip preparations have been immersed in this mixture for half an hour I place them in absolute alcohol for the same time, then dry them and place them in 1 to 5 per cent. acetic acid for a few minutes, after which they are left in 1 in 200 to 1 in 400 methyl-blue overnight, either at room temperature or at 37° C. When other methods fail I fix two preparations in the manner stated, then warm one in 1 per cent. acetic acid, the other in 1 per cent. NaOH, and after washing in water and alcohol stain both with hot well-filtered carbol-fuchsin for five to thirty minutes at 55° C. It would seem that the very reluctance of filter-passers to stain with the ordinary bacterial stains can be applied to differentiate them from bacteria. Thus a mixture containing 1 in 5,000 to 1 in 10,000 of ordinary basic fuchsin and 1 in 200 to 1 in 400 of methyl-blue has been found to stain staphylococci a brownish-red colour, and the accompanying filter passer a light blue. It is not every

specimen of methyl-blue, however, that is successful; so that the value of this and other stains for the purpose is a matter urgently calling for investigation.

Search for the primary infective agent in influenza, therefore, has led us into the realm of filter-passing micro-organisms, and is fast tending to place this disease in the same category as measles, variola, poliomyelitis, foot and mouth disease, and many others of this difficult and mysterious group. It would seem that the chief importance of Pfeiffer's bacillus and other catarrh bacteria is in relation to the severity of the disease.

It should be noted that these minute filter-passing organisms are distinguished from albumin precipitates by the uniformity of their size, by the sharpness of their contour, and also by their resistance to caustic potash, acetic acid, ether, chloroform, and trypsin. Further points to bear in mind are the constancy of these organisms in the particular pathological secretions in which they occur, their vast abundance in such materials (corresponding with the high infectivity), and their absence in control materials. Lastly, the evidence that has recently been brought forward by Olitsky and Gates to show that the filter passer of influenza excites the production of specific antibodies is a promising step forward, and is paralleled by the similar claim of Belin and of Paschen in respect of the filter-passing organism of vaccine lymph.

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The etiology of epidemic influenza has been in recent years the subject of much discussion and research, but many difficulties lie in the way of the complete elucidation of the problem. Perhaps the greatest difficulty arises from the fact that influenza is mainly a clinical concept and in all likelihood includes a number of respiratory infections.

Since Pfeiffer, nearly thirty years ago, claimed his *Bacillus influenzae* to be the cause of the disease much research has centred round this bacillus, and two parties have grown up, one of which favours this organism as the etiological agent, while the other considers that the cause is still to be discovered. Many of the latter believe that the virus is ultramicroscopic. The hope that the next great epidemic would decide definitely the part played by *B. influenzae* has not been fulfilled.

I propose here to give a short account of some personal observations on the bacteriology of epidemic influenza made during the late epidemic and forming the basis of a special report to the Medical Research Council.

The first wave of the late epidemic appeared in the early summer of 1918 at a most critical period of the great war, and found the majority of bacteriologists unprepared to tackle the problem. Much useful preliminary information was, however, obtained and greatly facilitated work at a later period. This is particularly true in regard to methods of isolation and cultivation of the bacillus of Pfeiffer. Naturally the majority of bacteriologists first turned their attention to this bacillus, and although the findings were at first conflicting, later they were more uniformly positive. The researches may for the sake of convenience be subdivided into cultural, histological, serological (relating to filter-passing virus), and experimental observations.

1. Cultural Observations.

The majority of the observations were made in the epidemic period from July, 1918, to April, 1919, when material from all types of influenza was examined.

Technique.

Film preparations were made and stained by Gram's method and counterstained by neutral red or weak fuchsin, and a rough estimate made of the various types of bacteria present. By this means valuable information was obtained as to the type of bacteria predominating.

For the actual isolation of the bacteria three different media—ordinary agar, serum agar, and Matthew's trypsinized blood media—were used. Matthew's medium has great selective power towards the growth of *B. influenzae*, at the same time inhibiting to a large extent cocci and other bacteria. In each case these three media were used, and after plating out and incubating an estimation of the different colonies was made.

Incidence of Various Bacteria.

As considerable numbers of bacteria are always to be found in any catarrhal condition of the respiratory passages a mere statement of their presence or absence is of little or no value. But by the use of the technique described above a good indication of the type of micro-organism predominating can be arrived at, as the following figures show:

(*a*) *Acute Uncomplicated Cases* (from a local epidemic among the nurses of the London Hospital).—As these cases had practically no bronchial secretion examination by nasopharyngeal swabs was carried out. The number of cases examined was 17; positive 13 = 76.4 per cent.

(*b*) *Acute Influenzal Bronchopneumonia* (sputum examination).—Seventy cases were examined and the following organisms found:

B. influenzae	82.8 per cent.
Pneumococci	31.4 ,,
Streptococci	34.2 ,,
Staphylococci	27.1 ,,
Gram-negative cocci	32.8 ,,

(*c*) *Post-mortem Material* (bronchial secretion and lung juice).—Sixty-eight cases were examined, of which 48 had lesions which were macroscopically characteristic of acute influenza.

B. influenzae	75.0 per cent.
Pneumococci	23.8 ,,
Streptococci	36.6 ,,
Staphylococci	22.2 ,,
Gram-negative cocci	28.8 ,,

A complete differentiation of the pneumococci and streptococci was not possible in this research, but fermentations were always carried out. Blood cultures were sterile unless the cases were *in extremis*, when occasionally streptococci were found. Pus from complicating empyemata contained streptococci or pneumococci, and on two occasions *B. influenzae*.

Observations on a series of cases of gastric influenza indicated that the condition was mainly toxaemic, and only once were definite lesions of an embolic nature found in the intestine *post mortem*.

Incidence of B. influenzae.

B. influenzae, therefore, proved to be the most frequent pathogenic microbe present in the various pathological secretions of acute influenza during the height of the epidemic. In the smaller wave of January, 1922, similar findings as regards the frequency of *B. influenzae* were obtained both in uncomplicated and fatal bronchopneumonic cases.

2. Relation of the Various Micro-organisms to the Pathological Lesions.

Histological examinations of *post-mortem* material showed that epidemic influenza is primarily an acute catarrhal inflammation of the respiratory tract with a maximum involvement of the lungs. Briefly, the characteristic lesion in the latter is a diffuse bronchopneumonia with a haemorrhagic oedema.

At a very early stage bacteria are to be found in considerable numbers in the upper respiratory tract, but are rare in the lungs. Later the lungs contain large numbers. In the mucosa of the trachea and bronchi bacteria were usually found in large numbers in the mucous exudate, on the surface of the mucosa, and deep amongst the epithelial cells. In many cases numerous small Gram-negative bacilli (*B. influenzae*) were found among the unshed epithelial cells. At times cocci of various types, alone or associated with *B. influenzae* types, were found in the exudates and lymph channels of the submucous tissues. The types of bacteria found corresponded closely with the cultural examinations.

3. Question of a Filter-passing Virus.

A search was also made for the presence of a filter-passing virus in acute influenza cases. The filtrates (Berkefeld) of nasal washings, throat washings, and lung juice were inoculated into tubes of Noguchi medium and into a number of

laboratory animals and monkeys. Three of these experiments may be quoted.

1. The filtered nasal washings from two early uncomplicated cases of influenza were inoculated into two *Macacus rhesus* monkeys, four rabbits, and two guinea-pigs.

2. The filtered throat washings from three early cases were inoculated in the same way, but 8 c.cm. was given subcutaneously to a *Macacus rhesus* and a Hussar monkey.

3. The filtered lung juice from three acute fatal cases was inoculated in the same way into a dog-faced monkey (*Macacus rhesus*) and two rabbits.

With one exception all the inoculations were without effect. The exception was the dog-faced monkey; this animal ten days later developed a running at the nose and a temperature of 103·2°F., but an uninoculated monkey in the next cage also had a bad cold. The animal gradually got weaker and died thirty-four days after the inoculation. A necropsy showed accumulations of fluid in the pleural and pericardial sacs. The lungs showed only a few consolidated areas. The spleen was slightly enlarged and showed a number of small yellow areas. Bacteriological and histological examinations showed a recent septicaemia with miliary abscesses. Passage inoculations were without result. I do not consider that in the above instance we were dealing with an infection of an influenzal nature. Similarly, the inoculated Noguchi tubes gave uniformly negative results when injected into animals.

During the recrudescence of January, 1922, I took the opportunity of repeating the search for a filter-passing virus. In this series a number of clinically acute influenza cases of only a few hours' duration were obtained from a large Government department, the average length of illness being only a few hours. The nasopharyngeal secretions were diluted to an adequate extent and filtered through a Berkefeld filter and then inoculated into Noguchi tubes and laboratory animals. A few of the Noguchi tubes developed a diffuse cloudiness; some of these proved sterile, but in others a slow-growing coccus or a small diphtheroid bacillus was found. The majority of the tubes remained sterile to ordinary tests, and with these animal inoculations were negative.

Table of Observations made in January, 1922.

No. 1. H.N.N., aged 15; ill for two hours. Pulse 100, temperature 93.5°.

No. 2. F.D.; ill one hour; rigors, coryza. Temperature 100°, pulse 108.

No. 3. J. J. B., aged 40; ill for twelve hours; rigors, pains in back, etc. Pulse 114, temperature 99°.

No. 4. F.W.; ill one hour. Temperature 100°, pulse 120.

Result of Noguchi Cultures.

1. All tubes remained clear as control; observed fourteen days.
2. Faint turbidity in one tube after forty-eight hours; later found large staphylococcus.
3. All tubes sterile.
4. All tubes showed very faint turbidity in twenty-four hours, which gradually spread up the tube. Subcultures yielded no further opacity and were sterile.

B. influenzae was seen and isolated in Nos. 2 and 4, while very suspicious forms were found in No. 3.

Serological Observations.

Agglutination and complement fixation tests were carried out on the serums of convalescent influenza patients and gave positive readings, chiefly again *B. influenzae* in many cases. In the case of the complement fixation test 12 out of 19, or 63.3 per cent., were positive. Only once definite lesions were found *post mortem*.

Attempts at Experimental Transmission of Epidemic Influenza.

In the section dealing with the search for a filter-passing virus it is noted that animal inoculation with filtered pathological secretion from cases of influenza failed to produce disease in the animals. In order to show that the virus was not held up by the filter a series of similar experiments was made using unfiltered nasal and nasopharyngeal secretions. The injections were made subcutaneously, but without result. Negative results were also obtained on monkeys even when the secretions were instilled direct'y into the nose. In one case the inoculated nasal secretion was shown to be heavily infected with *B. influenzae*. Similarly the instillation of cotton-wool soaked in pure cultures of *B. influenzae* failed to produce more than a mere transitory secretion of mucus.

Attempts at Producing an Experimental Influenza.

Experiments were carried out to test the pathogenic effects of cultures and filtrates of *B. influenzae* and the production of experimental influenzal lesions.

The failure of all attempts to demonstrate a virus—filter-passing included—which could reproduce an experimental influenza in animals led me to direct my attention again to the part played by *B. influenzae*, which was almost constantly present in the production of the lesions.

It has been known for some time that a number of influenza strains are highly pathogenic for animals, although they fail to produce characteristic influenza lesions in the lungs; the animals, however, *post mortem* show lesions strongly suggestive of the action of a toxin. Again, certain of the symptoms in influenza patients are suggestive of the action of a toxin—collapse, diarrhoea, etc. It was therefore thought advisable to test the effects of filtered and unfiltered cultures for the presence of a soluble toxin. At first not much success was obtained, but later, by using twenty-four hour old cultures in boiled blood broth according to the Parker method, lethal effects could be produced in rabbits and guinea-pigs on intravenous inoculation. In some cases death occurred in a few minutes after the injection; in others partial recovery occurred and the animal died in twenty-four to forty-eight hours, as the following table shows:

	Filtered Culture, Intravenous.	Result.
Experiment I.		
Guinea pig No. 1 ...	2 c.cm.	Died in a few minutes.
Guinea-pig No. 2 ...	2 c.cm.	
Guinea-pig No. 3 ...	1 c.cm.	
Guinea-pig No. 4 ...	0.5 c.cm.	Survived.
Experiment II.		
Guinea-pig No. 1 ...	1.5 c.cm.	Died almost immediately.
Guinea-pig No. 2 ...	1.0 c.cm.	Very ill, found dead next morning.
Guinea-pig No. 3 ...	0.5 c.cm.	Ill, but survived.

A similar result was obtained in rabbits if the dose was increased to 5 to 7 c.cm.

It has been suggested that the toxic effects of these filtrates might be due to an endotoxin or some protein degradation substance instead of a true toxin, although they have many points in common with true toxins and are thermolabile. The crucial test, however, is the production of an antitoxin. By the repeated injection of rabbits a serum was produced which had definite neutralizing properties against the toxin. Normal rabbit serum has only a slight protective power. Unfortunately the complete toxin-antitoxin test broke down, as owing to the relatively large dose of toxin required it was impossible to apply the multiple doses test. With more elaborate technique it is hoped that this may be done at some future date.

Whatever the exact nature of the toxic substances in the filtrates of *B. influenzae* the injection produces histological changes in the animals which bear a striking resemblance to the natural disease. A summary of these is given.

The most suggestive syndrome was observed in guinea-pigs which died four to five hours after the injection. As a rule the animals immediately after the injection became collapsed, the hair stood on end, and they crouched in a corner of the cage. An hour or two later the temperature was found to be subnormal, there was a frothy discharge from the nose, and slight diarrhoea. In the affected animals the pathological changes were often quite striking, particularly in those which died twenty-four to thirty-six hours after the injection. Similar, but less extensive, changes were found in the rabbits. The lungs, as a rule, were voluminous and did not retract fully when the chest was opened. On the surface were to be seen slightly sunken dark red areas of collapse alternating with the pale emphysematous areas. In many definite haemorrhages were seen which at times involved a whole lobe of the lung. On cutting into the lungs, blood-stained frothy mucus escaped in considerable amount.

Microscopically the affected areas showed a typical picture of bronchopneumonia. The bronchioles were plugged with desquamated proliferated epithelium, together with a few leucocytes. There were haemorrhages into the bronchioles, while the bronchial walls and the peribronchial interstitial tissues were infiltrated and contained small haemorrhagic areas. Groups of alveoli were filled with desquamated epithelium and leucocytes. Others contained haemorrhages and congulated albuminous fluid.

The suprarenals were oedematous and often showed multiple haemorrhages. The kidneys showed varying degrees of parenchymatous degeneration, with actual necrosis of the epithelium in places. The intestines were usually congested, distended with gas, and showing subperitoneal haemorrhages.

In another communication I have dealt fully with the pros and cons of various claims put forward as to what is the true etiological agent of influenza. *B. influenzae* was found in from 60 to 90 per cent. of cases of influenza in the late epidemic, a figure in close agreement with my own results.

The production of experimental influenza lesions in rabbits and guinea-pigs with the toxin of *B. influenzae* (by the Parker method), and the successful results of Cecil and Blake, who produced an experimental influenza in monkeys with virulent strains of *B. influenzae*, go a long way to establish *B. influenzae* as the primary etiological agent. Indirect evidence is the production in susceptible individuals of a typical influenzal attack of short duration by an injection of a vaccine of *B. influenzae*.

Amongst the arguments which have been put forward against the etiological importance of *B. influenzae* may be mentioned the failure to find the bacilli in a certain number of early cases, and the presence of the bacilli in other diseases and in the throats of a number of normal individuals. Time and further research alone can determine whether a filter-passing virus plays an important part in the etiology of the disease. The claims to a successful demonstration of these viruses have been more than counterbalanced by the negative experiments of others. Most of the successful workers claim to have obtained positive cultures in Noguchi medium, in which a cloudiness develops. It is recognized by those who have considerable experience with this medium that these growing opacities are frequently to be observed in uninoculated tubes, while particles demonstrated by prolonged Giemsa staining are to be found in most albuminous fluids. Again, the majority of the best-known filter-passing viruses have not yet been cultivated with certainty and their presence is only recognized by their lethal effects on animals (typhus fever, small-pox, etc.). Considering, therefore, that a number of these filter-passing viruses (Levaditi) are not infrequently to be found in the buccal secretion, any claims as to etiological importance are premature until it has been demonstrated satisfactorily that the virus on injection can produce proliferative changes in the lung such as are found in fatal cases of influenza.

Conclusions.

1. The predominating micro-organism in the secretions and lesions of the late epidemic was *B. influenzae* (Pfeiffer), which could be demonstrated in from 75 to 80 per cent. of the cases.

2. Other members of the catarrh-producing group of bacteria (pneumococci, streptococci, *M. catarrhalis*, etc.) were much less frequent.

3. Serological examinations confirmed an infection by *B. influenzae*.

4. The possibility of producing, experimentally, influenza-like lesions in the respiratory tract and lungs with filtered cultures of *B. influenzae* was demonstrated.

5. No evidence was obtained in support of the view that influenza is due to a filter-passing virus.

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DISCUSSION.

Dr. J. Henry Dible (Manchester) said that one of the initial difficulties in any work upon influenza was the lack of any definite criterion of this disease. Two distinct conditions, or rather two widely differing extremes in a graduated series of cases, were met with. First, there was the disease as it appeared in the early days of the 1918–19 epidemic—a short pyrexial condition accompanied by sore throat and prostration, but devoid of pulmonary lesions. Secondly, there was the condition so familiar in the later phases of the epidemic when pulmonary lesions were so extremely prevalent. The idea now accepted was that these pulmonary lesions were complications due to other organisms, notably pneumococci and streptococci, acting on lungs damaged by the true virus of influenza. It was preferable to study the uncomplicated form, of which lung lesions were no essential part. The only criterion for the disease under these conditions was the leucopenia, associated especially with a fall in the mononuclear cells, upon which Olitsky and Gates have laid stress in their experimental results. This they claimed to have produced by injection of their filter-passing virus, and considered its production evidence of the relationship of their virus to the clinical disease. Dr. Dible said that he had recently been examining the cellular response to Pfeiffer's bacillus. In all work with this organism it was necessary that the bacillus in question be a certain member of the Pfeiffer group. In examining the throats of normal subjects to ascertain the incidence of Pfeiffer's bacillus a group of organisms had been isolated which belonged to the haemophilic family but not, he considered, to be classed as Pfeiffer's bacillus. The latter was a minute organism, having a restricted ability to split sugars confined to certain monosaccharides. The other group contained large forms and also small organisms closely resembling the influenza bacillus, but they generally showed a much more active power of splitting sugars and a large proportion of them were, in addition, haemolytic. It was possible that some results obtained with organisms believed to belong to the Pfeiffer group might lead to error if the exact properties of the organism in use were not carefully defined. It is found that the intravenous injection of Pfeiffer's bacillus caused a leucocytosis. This infection, however, did not reproduce the conditions of the natural disease, in which the organisms did not invade the blood stream. The injection of small sublethal amounts of the toxins of the organism occasioned, on the other hand, a sharp fall in the leucocyte count, corresponding to the period of collapse and due to a very marked depression of the mononuclear cells. This result was constant and was the condition claimed by Olitsky and Gates to be found with their filter-passing virus and clinical evidence of a condition identical with influenza. Considering the evidence for Pfeiffer's bacillus as a whole, and especially in view of the results obtained by McIntosh with its toxins and the very striking results obtained by Cecil and Blake, who, with a pure culture of *B. influenzae*, were able to produce a catarrhal condition of the upper respiratory passages spreading spontaneously down the air passages and occasioning bronchopneumonic lesions of the lung in monkeys, Dr. Dible was brought to the conclusion that *B. influenzae* (Pfeiffer) could initiate a disease in all ways comparable to human influenza. On the other side of the subject there was a steadily increasing mass of evidence in favour of the filter passer. There were certain rather obvious criticisms which it was perhaps rather unkind to make in view of the great technical difficulties which surrounded this work, but which must nevertheless be realized. In the first place filtration was a crude procedure. A filter consisted of a mass of holes, and it was extremely unlikely that manufacturers could produce them constantly of any degree of uniformity. What would pass through depended upon the relationship of the largest hole in the filter to the smallest piece of viable bacterial tissue present in the culture. The whole matter was very difficult, and it was necessary to standardize technique as far as is possible. It should be a reproach to any scientifically trained worker to talk loosely of Berkefeld filtration without reference to the pressure under which it had been carried out and the time occupied in the process. Three out of four Berkefeld filters he had used passed Pfeiffer's bacillus. Apart from these considerations there were other difficulties. Olitsky and Gates stated that their virus was non-pathogenic for monkeys, whilst Gibson, Bowman, and Connor, who were presumably working with a similar virus, obtained many of their results with these animals. The extraordinarily large amounts of material used to produce the results in Olitsky and Gates's experiments were striking. They used, on an average, a dose of 3 c.cm. of fluid injected intratracheally into rabbits to produce comparatively trivial results. This would correspond to about 120 c.cm. of fluid introduced into the trachea of a 12 st. man, a volume of material which might well produce haemorrhagic lesions. Even with their cultures, in which the virus would be extremely concentrated, they had adhered to this enormous dosage. The results obtained by Cecil and Blake with relatively much smaller doses of Pfeiffer's bacillus were much more impressive. These aspects of the matter should be considered. The problem was still unsolved, and was one of extreme difficulty.

Sir William B. Leishman, K.C.M.G., C.B., F.R.S., stated that evidence as to the etiological agent in influenza might be derived indirectly from a study of the results of prophylactic treatment with *B. influenzae* vaccines. The results of the preventive measures carried out by the R.A.M.C. in different parts of the world showed that in some cases no

benefit was derived from a mixed influenza vaccine, whereas in other instances marked protection seemed to have been derived from the vaccination.

Dr. LEDINGHAM said that on the balance of the evidence he had no hesitation in subscribing to the view that the essential cause of influenza is something in the nature of a filtrable virus. Pure uncomplicated influenza, as he had seen it in Mesopotamia in the early epidemic wave of 1918, was a mild infection of two or three days' duration. The presence of Pfeiffer's bacillus in these mild cases was admittedly rare, and this fact could not be ignored simply on the ground that the cultural methods then practised were not satisfactory. Aside from culture the organism was not to be seen in stained smears. On the other hand, no one would deny the importance of Pfeiffer's bacillus as the chief contributory cause of the grave pulmonary complications in the later waves of the epidemic. The bodies described by Dr. Gordon and others in cultures from filtrates were of great interest, but the time was not ripe for judgement upon them. It was necessary to wait until the form and staining properties of protein and other aggregates and precipitates were more thoroughly studied and allowed for in all work of this kind. Even the position of the "globoid" bodies in acute poliomyelitis was still *sub judice*.

Dr. F. W. TWORT said that he had been working on influenza for several years. The evidence for and against the presence of an ultramicroscopic virus had been very ably presented, and he did not desire to say much on that subject. He, however, thought it most important in all filter experiments to determine the exact conditions under which filtration was carried out, as many factors influenced the results. In his own experiments on soil filtrates he had on many occasions grown some very delicate and minute organisms which would pass a Berkefeld filter with comparative ease when they were in a fluid emulsion or had been grown in a fluid medium for a short time; yet they showed no evidence of passage when an emulsion was made from a growth of solid medium and filtered immediately. Another point of interest was that these minute organisms would grow in symbiosis with *B. influenzae* on media containing no blood; this showed that blood was not essential for the cultivation of the influenza bacilli, and, moreover, indicated that the influenza bacilli might survive in such situations as soil, a point that might be of importance in connexion with the start of an outbreak. One other point which might be worthy of note: while he would not suggest that the minute micro-organisms obtained from soil were the ultramicroscopic virus, yet, as such a virus is believed by some workers to be the primary causative agent in influenza, it was, he thought, of interest to find that the influenza bacillus would grow so well and easily when cultivated in symbiosis with these minute soil micro-organisms.

Dr. FLEMING (London) remarked on the diversity of agents which might be responsible for initiating a common cold. He pointed to the frequency with which Pfeiffer's bacillus is encountered in other conditions, and expressed the opinion that there existed many different strains of influenza bacilli.

Lieut.-Colonel F. P. MACKIE, I.M.S., said that the epidemic of influenza in India was widespread and disastrous: millions of people died, whilst in some parts whole villages were wiped out. The reading of bacteriological reports on the subject produced a sense of bewilderment. Bacteriological workers in India had paid special attention to the frequency of Pfeiffer's bacillus and had obtained results similar to those detailed by Dr. McIntosh. The difficulties of working with filter-passing organisms were increased by the instrumental error, particularly the efficiency of filters; the personal factor was also of great importance; the value of the results obtained depended very largely on the technical ability and experience of the worker concerned.

Dr. R. M. BUCHANAN (Glasgow) commented on the marked variability of the conditions known as influenza from a clinical point of view. He recorded an experiment he had performed: a plate of nutrient agar was exposed in front of the mouth of an influenza patient, and Pfeiffer's bacillus, pneumococci, and streptococci all grew in culture. He expressed himself of the opinion that the *Bacillus influenzae* probably played some important part, and that, though the case for the filter passer was strong, it was necessary still to keep an open mind.

Dr. MERVYN GORDON said, in reply, that it was proved conclusively that experimental inoculation with Pfeiffer's bacillus could produce lesions *post mortem* identical with those found in influenza. But was there not some other factor behind it? It was not yet possible to say that the filter passer was the actual cause of influenza, but filter passers ought to be looked for in all cases of common cold and influenza. He explained that he carried out his filtrations under a minus pressure of 10 to 12 cm. of mercury, the operation lasting only five minutes. Small cup-shaped Berkefeld filters worked very well. Undoubtedly a filter-passing organism was present, but what its exact significance was he was not yet in a position to say.

Sir WILLIAM B. LEISHMAN summed up the discussion. He declared that there was a big problem still unsolved; there were many unsatisfactory points about Pfeiffer's bacillus still unexplained. He congratulated Dr. Gordon on the case he had made out for the filter-passing organism, and added that an organized attack on the problem was about to be undertaken by the Medical Research Council, from the filter-passing side, the cultural side, and the chemical side.

SECTION OF PATHOLOGY (HUMAN AND COMPARATIVE).

Professor ROBERT MUIR, M.D., F.R.C.P.Edin., F.R.S., President.

THE ACTION OF FLAVINE ANTISEPTICS ON LOCALIZED PYOGENIC INFECTIONS,

WITH SPECIAL REFERENCE TO THE PROCESSES OF HEALING.*

[*With Special Plate.*]

BY

C. BENNETT, M.B., J. W. S. BLACKLOCK, M.B., AND C. H. BROWNING, M.D.

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So much in the way of prevention of infection has been accomplished by aseptic methods that one is tempted to the conclusion that in dealing with septic conditions, after careful preparation of the operation area, the tissues may be left to combat infection by their own reactive powers. Accordingly it may be judged sufficient merely to protect the parts by means of aseptic dressings from external contamination. Adequate drainage is, of course, the essential requirement in the treatment of all septic conditions, and frequently drainage can be established only by properly directed surgical interference. Consider, for instance, the abscess in appendicitis; when good drainage channels have been made the peritoneum may usually be trusted to deal effectively with the infection. But other parts are much less efficient than the peritoneum in this respect; such is notably the case with the subcutaneous tissues, in which infective processes tend to spread. Here direct attack upon the infective agent by chemical antiseptics is called for. It is reasonable to suppose, and is indeed within the experience of most, that the difficulty of maintaining asepsis on a raw surface is roughly in proportion to the area. Small areas may be neglected, but it is very difficult to maintain a large raw area in a clean state, even if that large area has been produced originally under aseptic conditions. Therefore it is a problem of no small difficulty to combat successfully the infective process on a large area which is already in a septic condition when it comes before the surgeon. As illustrations there are burns, large ulcers, and the areas left after excision of carbuncles. From the treatment of these it is impossible in the present state of knowledge to exclude chemical antiseptics. Every surgeon who deals with large numbers of cases of pyogenic disease has long felt the need of an antiseptic which will fulfil the well-known complementary requirements—namely, maximum effect on organisms and minimum toxic action on body tissues. The powerful antiseptic or "bacteriostatic" property of the compounds of diaminoacridine (flavine antiseptics), together with their relatively low toxicity for mammalian tissues,[2-7] suggested that they might be used

* This work was carried out with the support of the Medical Research Council.

with advantage in the chemotherapy of local pyogenic infections. Opinions in regard to the value of these substances for the prevention of sepsis in contaminated wounds during the late war were practically unanimous,[10 14 15] and their usefulness in this direction points to a much wider application in many branches of surgery than has hitherto been attempted.[11 16] Their beneficial action in combating suppuration which has already become established has also been recorded by numerous observers.[6 8 12 15 16] But as regards their effect on healing observations have ranged from those, for example, of Pilcher and Hull,[13] who found under the influence of flavine "healthy granulating wounds, over which epithelium is growing naturally," to those of Bashford, Hartley, and Morrison,[1] according to whom "the processes differ in no essential feature from the production of an eschar by a destructive agent not liquefying the tissues." It appears, therefore, that further observations are apposite in regard to the influence of the flavines on healing, as observed in the treatment of suppurative conditions in hospital cases in civil practice. The following report records the results obtained in the daily use of flavine antiseptics (acriflavine and proflavine—principally the former) over a period of about four years in a series of over one thousand cases under the care of one of us (C. B.). The cases were of such severity as to necessitate their being treated as in-patients.

It would serve no useful purpose to record statistically the number of days or weeks required for healing in individual cases. No two are alike, and, therefore, were a statement as to duration to be made a very minute description of the disease condition would also have to be supplied. Even then the data would be incomplete if the patient's general state were not also detailed. At best it can only be said that healing occurred within a reasonable time or that it was not unduly prolonged. Accordingly, such statistics are omitted in view of the multiplicity of factors which would complicate their interpretation. Tissue was removed from patients at random and submitted to histological examination, the results of which are recorded below. Obviously specimens could not be obtained in even the majority of cases, but those which were taken represent fairly the average conditions met with in the series.*

Mode of Application.

Believing that the solution must continuously bathe the infected tissues, the simple method was adopted of soaking ordinary sterilized gauze in a 1 in 1,000 solution of the antiseptic in normal saline and, without wringing, applying it dripping to the part. The dressing was always changed before drying took place. In the early stage of treating an infected surface, when it requires to be "cleaned up," as the common phrase is, the dressing must be changed once or even twice daily whatever therapeutic agent be used. A covering of gutta-percha tissue is not therefore necessary, since there is no time for drying. When the necessity for a daily change of dressing has passed gutta-percha should be employed in order to minimize evaporation. Thus protected the dressing may remain unchanged for two or even three days.

Clinical Results.

Before proceeding to discuss the results, the disadvantages attending the use of flavine, which have been recorded by certain workers, will be dealt with. These comprise: (1) encouragement of haemorrhage; (2) the formation of a yellow pellicle on granulating surfaces; (3) delay in healing, which is coincident with pellicle formation; and (4) the occurrence of a rash on the normal skin surrounding a granulating surface.

Encouragement of Haemorrhage (Bashford, Hartley, and Morrison[1]). At no time has important haemorrhage been observed from a raw surface treated with flavine, which could not be fully accounted for by causes other than the antiseptic. Minute haemorrhages from the tips of granulations have frequently been seen; the significance of these will be discussed in the section dealing with burns.

Yellow pellicle (Drummond and McNee[10]) has never been seen. The absence of this phenomenon has also been commented upon by Pilcher and Hull[13] in their large series of war wounds. It would appear that the formation of such a pellicle is encouraged by the drying of flavine dressings on granulating surfaces. On several occasions where drying had occurred it was noticed that the dressing on removal was plastered on its deep surface with the exudate of the granulating wound; this doubtless represents the initial stage of the pellicle. Pilcher and Hull have also attributed pellicle formation to evaporation and consequent concentration of the antiseptic.

Delay in healing, which is associated with the pellicle, has not occurred in any case. In the case of war wounds treated with flavine, apparently by methods similar to that employed here, varying degrees of inhibition of healing have been noted by different observers. Thus Drummond and McNee,[10] Carslaw and Templeton,[8] and Depage and Maloens[9] have interpreted the onset of a stage of inhibition as the indication that flavine had done its work in preventing or overcoming pyogenic infection and that other treatment should then be resorted to. On the other hand, Bashford, Hartley, and Morrison[1] saw from the use of a 1 in 1,000 solution of flavine "very deleterious effects . . . on the entire process of healing, killing successive layers of the reacting tissue elements, including the essential vascular mechanism. . . . The only favourable feature has been that the patient is apparently protected in some way from the absorption of toxic products." It appears unlikely that differences in the commercial flavine products could account for this variety of results, nor have our biological examinations of many commercial samples supported such an explanation.[5] Owing to the entire absence of such phenomena in the present large series of cases it is impossible to throw much light on the deleterious effects described by Bashford, Hartley, and Morrison. It is possible that war wounds are especially liable to be affected in the manner they describe. But it is clear from the present work, as well as that of Pilcher and Hull,[13] Ligat,[12] and others, that such evil effects must have been due to complicating factors, and that they are not inseparably attached to the use of flavine antiseptics.

Rash similar to that described by Bashford and his co-workers has been seen in three cases. In these there was a rash of small impalpable spots of a deep red colour, which faded on pressure. In two of these it occurred where gauze saturated with flavine solution was covered with gutta-percha tissue, while in the third case there was no impervious covering. In all three cases the rash disappeared in several days when plain dry sterile gauze was used as the dressing; thereafter treatment with flavine was resumed without reappearance of the rash or any other untoward phenomenon.

The total number of cases in which flavine has been used is over 1,000; but all have been excluded from the present statement in which the antiseptic was not brought intimately into contact with the diseased focus—where, in other words, it might be said that the flavine dressing was only used as a receptacle for discharge. For example, when an abscess was opened by a puncture, this case, because of the small extent of diseased tissue in contact with the dressing, was ruled out. All the remaining 656 cases in the following list developed considerable areas of granulation tissue exposed to the dressing fabric and the antiseptic:

Burns	218
Ulcers of leg	14
Carbuncles	15
Cellulitis	96
Osteomyelitis	77
Acute suppurative bursitis	24
Abscesses (various sites)	120
Septic hands	80
Fistula in ano	14
Total	656

Burns.

Only those in which the true skin was involved are considered here. The healing of superficial burns occurs readily. But the cure of those which granulate has attracted much attention in recent years, as is shown by the number of published methods of treatment. During the first ten days, when the extent of tissue destruction is being determined and sloughs are separating, the surface is dressed daily with flavine solution. When obvious granulations develop the dressing in most cases need be changed only every second day. Burns offer an excellent field for observation of the effect of an antiseptic on granulation tissue and on the growing skin-edge. Destruction of the tips of granulations or the sloughing of considerable areas and delay in the advance of epidermis from the margin were the principal complications for which a watch was kept. Granulation tissue under the influence of flavine has without exception remained healthy throughout. So far is flavine from causing granulations to slough, that small spots of fresh bleeding have often been observed when the gauze was newly removed from the raw surface. This is regarded as an indication that the minute vessels are not damaged by flavine, and that therefore there is a perfect circulation of blood in even the most superficial parts. Such slight haemorrhage would, then, be fully accounted for by the injury to the capillaries when the gauze fabric adhering to the granulation tissue was removed. In this respect a striking contrast is presented to the pale, lustreless surface exhibited when such an antiseptic as carbolic acid (1 in 40 or weaker) is employed. The fact that severe haemorrhage is certainly not encouraged, and possibly even controlled, by the application of flavine is well illustrated by the following case: A woman with

* The patient's permission was always obtained before a portion of tissue was removed.

extensive burns of the trunk and lower limbs was kept under treatment in her own home for several weeks. During that time several severe haemorrhages occurred from the granulating surfaces, until an alarming loss of blood led to the patient being sent to hospital. There the burns were dressed with acriflavine and there was no recurrence of haemorrhage. Haemostatic effects have been recorded by others (Carslaw and Templeton[8]). There is no delay in the advance of epidermis from the edge; the rate of its growth compares favourably with that under any other form of treatment, as Carslaw and Templeton and others have also observed.

Surfaces for Grafting.

Whether epidermal or whole skin grafts were used it was found that surfaces treated with flavine afforded good ground for their implantation and growth. Any doubt as to the innocuous effects of flavine on the grafts was soon dispelled. It was found that no disadvantage attached to implanting grafts directly on to surfaces in course of treatment with flavine. Thiersch's grafts seem to be quite unaffected by flavine, as has also been noted by Lawson[11] in ophthalmological practice. They have "taken" quickly in almost every case. In the very few instances in which regrafting was required on account of a first failure there was an obvious reason for the result apart from the antiseptic—namely, the situation, at the point of the shoulder, over the sacrum, and over the trochanter. It was found that the pus-like discharge, which appears after a few days on any surface covered with Thiersch's grafts—the natural result of leaving the dressing unchanged in order that the grafts may remain undisturbed—was reduced considerably and in some cases totally prevented by applying a wet dressing of flavine on the top of the perforated protective tissue covering the grafts. Here a very severe test is imposed on the antiseptic when it is allowed to bathe thin shavings of epidermis before they have had time to establish connexion with a new blood supply. Of fifteen cases of grafts actually dressed with flavine fourteen were successful. There were only five cases of whole-skin grafting; the granulating area had been treated with flavine, but the grafts were dressed only with plain sterile gauze. In general, the results were at least as good as in cases which had never been touched by flavine.

Ulcers of Leg.

These were so-called varicose ulcers. Their healing under flavine has been eminently satisfactory. Varicose ulcers in general will, of course, heal under any mild antiseptic treatment if the patient be kept at rest in bed for a sufficiently long time. The need is for a means of shortening that period. With flavine dressings the ulcer develops a clean, bright, red base in from seven to ten days; but in most cases of ulcers large enough to command admission of the patient to hospital oedema must still be eliminated. When the oedema has disappeared grafting is begun. Thiersch's method is useless, very early recurrence being the rule when the patient returns to her usual mode of life. Whole-skin grafting provides a tough covering, which offers a fair resistance to recurrence. As might be expected, however, two or three attempts are sometimes required before the raw surface is successfully covered. That is not surprising in view of the situation and the quality of the tissues.

Carbuncle.

The disease involved the back of the neck in twelve cases and the right shoulder in one. All were treated by excision in the first instance. At the primary operation it is rare that all the diseased tissue can be removed; when the obviously diseased portion is excised there is no means of knowing the extent of the infection which is left behind. Thus it is the rule that acute inflammation continues for some days around the area of excision. Therefore the choice of an antiseptic is of special importance, since the liability to sloughing, which already exists, ought not to be aggravated by the use of any chemical agent which by itself tends to cause necrosis. Under the application of flavine small marginal sloughs continue to appear for several days; these are snipped off. In about eight days there is a clean base. The raw area then begins to contract and healing takes place with that rapidity which observers have frequently noted as characteristic in carbuncular areas. No case has required grafting.

Acute Cellulitis.

In the great majority the disease was in the upper limb, and in many of these the olecranon bursa was involved. Free incisions were made and large packs of flavine dressing were applied. The results were satisfactory and the duration of the disease was certainly not longer than would have been the case had other antiseptics been used. It was distinctly noticeable that the epidermis did not show maceration, and any sloughing that occurred could be accounted for by the virulence of the infective process, since it took place only in those areas in which sloughing was threatening before treatment was begun.

Septic Hands.

This loose term comprises all degrees of pyogenic infection about the hand, from involvement of part of one finger to that of the whole hand with extension to the forearm. The septic hand is a problem by itself, and, probably more than any other condition in the surgery of pyogenic disease, illustrates the need for efficient drainage. Drainage must be followed by antiseptic treatment. When carbolic acid was used there was the constant risk of resulting gangrene of the finger-tips. With flavine there is, of course, no such danger; healing has been invariably good, and although carefully sought for no complications attributable to flavine were discovered.

Acute Bursitis.

In all of these cases the prepatellar bursa was affected. Suppuration had extended considerably beyond the limits of the bursal membrane, as is the rule in the type of case which reaches hospital. Consequently wide incisions were necessary, and gaping wounds remained to be treated. Experience of cases of this kind treated with various antiseptics has indicated that healing is slow. With flavine the purulent discharge disappears in a few days, and in ten or twelve days bars of good granulation tissue are formed. The total duration of treatment is reasonably short if the skin is now undercut and secondary suture performed.

Abscesses.

Only those which required large incisions are noted here. Healing was reasonably rapid.

Fistula in Ano.

After operation the track was dressed with gauze soaked with flavine solution, which was changed frequently. Further trouble from infection of the wounds by faecal matter was not observed.

Osteomyelitis.

The cases were of the acute haematogenous type occurring in childhood or adolescence. They were dealt with on standard lines, which may be described as follows, for instance, where the tibia was affected. The necessary amount of bone was gouged out, and the gutter was sluiced with some bland sterile fluid to wash away pus and fragments of bone and other tissue. The cavity was then packed with gauze soaked in flavine solution, and over the packing a large amount of the same dressing was applied. This was not changed for at least forty-eight hours, lest recurrence of gross haemorrhage should be encouraged by the disturbance. The operation is exhausting, and the loss of blood is sufficiently serious without adding to it by further haemorrhage caused by disturbance of the dressing. It is important to note that in the cases treated with flavine no haemorrhage worthy of mention occurred. The cavity at the time of the first change of dressing appeared practically as at the operation. The dressing was then changed daily. It was found that granulation tissue rapidly covered the walls of the gutter, and occasionally some minute haemorrhages from the tips of granulations appeared at the change of dressing, as has been already noted in the case of burns. The gutter became filled with granulation tissue at a reasonably rapid rate, and if diseased bone had been judiciously removed healing was completed in at least the average time. The effect of the antiseptic on new bone developing from the carefully preserved periosteum was studied attentively. It was soon clear that no harmful effect on the process was attributable to the flavine. The periosteal granulation tissue stiffened in a few days with osseous deposit, and thereafter regeneration of bone advanced steadily.

DURATION OF TREATMENT.

The application of flavine has been continued in the present series of cases until the stage was reached at which it is safe to employ merely an inactive, sterile dressing. Flavine was employed therefore in individual cases for varying periods, frequently up to three months. In no instance was it found

necessary for any reason to substitute any other antiseptic —for instance, because the infection failed to be overcome or because healing was in abeyance.

Histological Observations.

Tissues were fixed in Zenker's solution usually within a few minutes after excision. Material from twelve cases was examined; these comprised burns of the third degree, carbuncle, cellulitis, osteomyelitis, and recurrence of sepsis in an old healed compound fracture. Inasmuch as the process of formation of granulation tissue and healing of epithelium occurred in uniform fashion throughout the series of over 600 cases, the dozen whose histology was investigated may be taken as fully representative of the behaviour of such wounds under continuous treatment with acriflavine or proflavine.

Granulation Tissue.—This shows the usual constituents, without significant abnormality either of a qualitative or a quantitative character (Figs. 1, 2, and 6). (In the depths conversion into more mature fibrous tissue is observed.) It is noteworthy that the embryonic capillary blood vessels as a rule extend right up to the surface, and there red blood corpuscles may be seen within their lumina (Figs. 2 and 6). This agrees with the clinical observation that in cases treated with flavine when the dressing is removed there is a tendency for minute oozings of blood to occur. Further, mitoses have been found repeatedly in the superficial layers. On the surface of the granulation tissue there is frequently an exudate of polymorphonuclear leucocytes of a few cells in depth (Fig. 4). Organisms, if present in it, are so scanty that they failed to be found on microscopic examination of eleven of the twelve cases in sections stained by Gram's method and by thionin-blue. An interesting observation was made with regard to the staining of this layer of leucocytes; it was found that in sections stained with haemalum and eosin the leucocytes, especially at the free surface, might show poor nuclear staining, and the cells appeared necrotic and disintegrating (Fig. 3). However, in sections of the same tissue which were stained with eosin and methylene-blue, all the leucocytes showed well stained, clearly defined nuclei (Fig. 4). The significance of this striking difference of behaviour toward the two reagents is not clear, but it indicates that caution must be employed in interpreting appearances of morphological degeneration. Small haemorrhages, when present, could justifiably be attributed to manipulative trauma. In some cases minute isolated deposits of fibrin, intensely cosinophile and retaining the violet stain by Gram's method, are present amid the layer of leucocytes, and sometimes they extend for a short distance into the granulation tissue. This, no doubt, is the microscopic rudiment of the pellicle of certain observers.

Epithelial Regeneration.—In some instances the epithelial margin showed that thinning out which is generally accepted as evidence that the cells are in process of covering the granulation tissue (Fig. 5). Clinical observation has demonstrated that the ingrowth of epithelium proceeded without interruption under the application of flavine; hence other microscopic appearances of the epithelial edge must not be interpreted as evidence of delay or inhibition of its growth. Thus an abrupt, relatively thick edge has been repeatedly seen in cases in which extensive epithelial ingrowth had already taken place and in which this growth continued to progress without interruption subsequently (Fig. 6). The absence of elastic fibres from the subepithelial tissue, as demonstrated by Weigert's method, afforded further confirmation that a region of newly formed tissue was being dealt with.

Summary.

The results are recorded of a series of over 600 severe burns and pyogenic conditions treated in hospital wards continuously with flavine antiseptics (acriflavine or proflavine) by a simple method. The points specially investigated have regard to the rate and progress of formation of granulation tissue, ossification, and healing of skin epithelium. Only those cases are considered in which intimate contact of the tissue with the antiseptic occurred. As compared with other methods of treatment, there was clinically no interference with formation of granulation tissue. There was no evidence of pellicle formation or necrosis. There was no tendency to haemorrhage beyond the slight oozing which occurs from the tips of well-vascularized granulations denuded of their surface in the act of changing dressings and which is to be regarded as evidence of their healthy state. Ossification proceeded actively in periosteal granulation tissue under application of flavine. Epithelial regeneration, both in the form of ingrowth from surrounding skin and from grafts proceeded actively in contact with dressings soaked in flavine solution. Histological examinations in representative, unselected cases have confirmed and supplemented the clinical observations.

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Memoranda:
MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF INTERSTITIAL GESTATION.

The whole history of the following case—amenorrhœa, passing of blood and decidua, and somewhat sudden onset—pointed even from the first to extrauterine gestation, but it was manifest that nothing short of abdominal exploration could possibly have revealed the exact cause. Interstitial pregnancy is very rare. Personally, I have only seen one other case, so that the unusual features of this one made it appear worthy of record.

On May 31st last I was asked to see Mrs. R., aged 29. She complained of pain in the left iliac fossa, and told me moreover that she was two and a half months pregnant, having had her last period on March 15th. During the night she had passed some blood and membrane per vaginam, the latter having every appearance of decidua. The previous menstrual history was quite normal, and she had had one child. On examination the temperature was 102° F., pulse 120, whilst the abdomen was rather tender over the left iliac fossa. On examination the uterus was found to be enlarged to about the size of an eight to ten weeks' pregnancy. There was nothing to be felt on either side of the womb to suggest ovarian or tubal trouble. I concluded that an abortion was threatening. Twenty-four hours' administration of ergot had no effect, so I admitted her to the Royal Hospital on June 2nd. The next day I examined Mrs. R. under an anaesthetic, dilated the cervix fully so as to admit the index finger, and was rather surprised to find she was not pregnant at all within the uterus. I removed some adenomatous tissue with a blunt curette and again examined the patient, with negative result. My colleague, Mr. R. Massie, who happened to be in the operating theatre at the time, examined her at my request, and agreed with me that beyond the enlargement of the uterus there was no swelling or tumour to be felt. The patient was then put back to bed. On June 4th and 5th her temperature was 99°, and she was fairly comfortable. On the evening of the 6th she began to complain of severe pain on the left side and generally over the pelvic region. The temperature rose to 104° and she had a severe rigor, and again the next morning with the temperature 105°. I saw her at 12.30 p.m. and she appeared very ill. I examined her per vaginam and found that she was extremely tender on the left side, and the left Fallopian tube seemed swollen. It was obvious that the patient was suffering from a very acute pelvic infection affecting the abdominal cavity, so I decided to operate at once.

Operation.—On opening the abdomen in the mid-line, I found the uterus enlarged, and in the left cornu was a cystic swelling, purple in appearance, from which was oozing, through a very small hole, some dark brown fluid. Both ovaries were perfectly healthy, as was also the right Fallopian tube and the distal four-fifths of the left one. On opening up the tumour bleeding was profuse. As the patient's condition was critical and the escaping fluid causing severe toxaemia, I decided to perform a supravaginal hysterectomy. At the close of the operation I inserted a rubber drainage tube at the lower end of the incision down into the pelvic floor. The patient is making an excellent recovery.

On examining the removed uterus, I found the whole organ perfectly normal except for the tumour, which was about 2½ inches in diameter, and situated four-fifths in the left cornu of the uterus itself, the other one-fifth involving the isthmus of the left Fallopian tube. There appeared to be no connexion between the uterine cavity and the tumour, but there was between the Fallopian tube and the sac. The tumour itself contained chorionic villi, but no embryo was visible. It was of the size of a three to four weeks' gestation, which had gone on to molar formation.

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Reviews.

NEUROLOGICAL PROBLEMS OF THE DAY.

A SERIES of lectures printed exactly as they were delivered to the Faculty of Medicine in Paris have been published in a volume with the title, *Questions Neurologiques d'Actualité*,[1] which may be translated, "Neurological problems of the day." They form a volume of the greatest value to the student of neurology. Each of the twenty lectures is from the pen of an acknowledged authority on the subject. Such a collection of monographs provides the reader with the personal views of the writers, as well as with a summary of the recent facts as to many different neurological problems. Within the limits of a review it is impossible to describe in full or to criticize in detail the manifold matters of interest discussed.

A graceful tribute has been paid to the British school of neurology by making the volume open with Dr. Kinnier Wilson's lecture on progressive lenticular degeneration and allied conditions. After reporting, with clinical details, two new cases of the disease which bears his name, the author proceeds to discuss the pathological anatomy and the pathogenesis; it is interesting to note that he is careful to distinguish the disease from pseudo-sclerosis, and to point out the analogies on grounds of morbid anatomy between progressive lenticular degeneration and such conditions as subacute combined degeneration of the cord and pellagra. The physiology of the condition, especially in relation to the involuntary movements, is only briefly discussed.

Dr. Chatelin's lecture on cerebral tumours is a useful general account of the subject. Important and valuable though it be to emphasize the danger to vision involved in delayed surgical interference, we cannot agree with the statement that in a patient who is the subject of a cerebral tumour the visual acuity will remain what it was at the moment of surgical intervention. Localizing signs are described very shortly, too cursorily, in fact, for this section of the lecture to possess any very great value. Though the effect of tumours of the temporal lobes on the optic tracts are mentioned, we find no reference to the important changes in the visual fields which have been found in such cases, and the author seems to us to exaggerate the diagnostic value in cerebral tumour of changes in the cerebro-spinal fluid. The statement that cerebral abscess is rarely accompanied by any intense symptoms of hypertension is rather too sweeping for general acceptance.

In the third lecture Dr. Claude deals with intracranial hypertension and gives in addition a very valuable account of serous meningitis and pseudotumor cerebri. In the etiology of the condition he lays stress on the part played by infections, especially those of the middle ear. His views as to the compression of the hypophysis by serous meningitis can less readily be accepted, and we may be permitted to doubt the frequency of a secondary endocrine defect from this cause. His remarks on treatment are excellent and full of details of practical value.

Dr. Roussy contributes the fourth lecture, on disturbances of sensation from cerebral lesions; here we are pleased to find a full acknowledgement of the valuable work of Head and Holmes. Beginning with an excellent summary of our present knowledge of the thalamic syndrome, Dr. Roussy goes on to give a very interesting account of the disturbances of sensation in lesions of the parietal lobes. In this connexion he lays stress on what he calls the longitudinal or radicular distribution of the sensory loss present in some cases; recent observations on this point would appear to recall the views expressed by Horsley a good many years ago.

A longer chapter on traumatic lesions of the spinal cord by Dr. Guillain follows. In general it may be regarded as an adequate presentation of a subject on which so much has recently been written; our knowledge of it has been much advanced by the lessons of the war. Many points of great practical value to the clinician are fully discussed, especially in regard to diagnosis; theoretical physiological questions are avoided, and we could perhaps have wished for a slightly fuller account of the phenomena of spinal automatism.

In the restricted space at his disposal Dr. Lhermitte gives a good general description of lethargic encephalitis; it is to be regretted that little mention is made of the sequelae, and that the whole domain of the mental symptoms is neglected. Dr. Souques's lecture on the Parkinsonian syndromes is wholly good, the usual chronic variety and that due to the virus of lethargic encephalitis being both fully discussed. A good but brief account of the anatomical connexions of the corpus striatum is a valuable addition.

Dr. Babonneix's description of the infantile encephalopathies is clear and concise, but it would have been well if the author had given some clinical details of the case of mongolian idiocy, a reproduction of whose brain is figured showing a gumma in the cerebral meninges; the reader is left to infer that this lesion was the cause of the mongolism, a view to which few could be found to assent. Dr. Léri's account of the muscular atrophies of syphilitic origin is very valuable and instructive, for the frequency of a syphilitic basis in such conditions as amyotrophic lateral sclerosis, for example, is only now beginning to be generally recognized.

In Dr. Sainton's remarks on exophthalmic goitre the reader will find many opinions expressed which differ from those generally accepted in this country. Thus few here would be inclined to assign so important a place to tubercle and syphilis in the etiology as he appears to do; again, we are surprised to find that in the account of the circulatory symptoms no mention is made of auricular fibrillation—surely an unfortunate omission.

The lecture by Dr. Sicard on the neuralgias and their treatment is a very clear, albeit somewhat dogmatic, account of a difficult subject. His practical lessons in diagnosis and treatment, however, may be heartily praised, although we cannot quite agree with his optimistic views as to the treatment of causalgia by alcoholic injections into the affected nerve trunks.

Of the remaining lectures those of changes in the pupils by Dr. Poulard and on spinal automatism by Dr. Foix are perhaps the most valuable. In the former we note the statement that the author has only met with the Argyll Robertson pupil in cases of syphilis of the central nervous system; there are, however, now on record a considerable number of cases in which this disease was not present and where some other pathological cause was clearly established.

Professor Pierre Marie concludes the volume by a brief but lucid summary of the subject of aphasia, in which he maintains his own now well-recognized views against the older and more classical conceptions.

It is hardly possible within any reasonable limit of space to do full justice, either by way of praise or criticism, to this volume. It can certainly claim to be a most interesting and valuable account of some of the more difficult and absorbing neurological problems of the day.

[1] *Questions Neurologiques d'Actualité.* Twenty lectures given at the Faculty of Medicine in Paris, 1921. With introduction by Professor Pierre Marie. Paris: Masson et Cie. 1922. (Med. 8vo, pp. vi + 551; Illustrated. Fr. 28.)

THE SMOKELESS CITY.

THE lay as well as the medical reader cannot but be attracted by a book entitled *The Smokeless City*,[2] written jointly by the Lord Mayor of Manchester and an Associate of the Sanitary Institute, with a preface by the Chairman of the Departmental Committee on Smoke Abatement, and presented in an art wrapper at the moderate price of 1s. 6d. The reader will not be disappointed in its contents; it is a credit to all who have contributed to its production, and is marked throughout as well by intimate scientific and practical knowledge of the subject as by full appreciation of the difficulties of getting the British house-builder and householder to give up even in part his fondness for an open coal fire.

Knowledge and moderation characterize the book from beginning to end. The value of sunlight as a health agency is referred to, and it is pointed out that though factory smoke is largely being brought under control, domestic pollution of the atmosphere is even more important in respect alike of cleanliness and economy. The present methods of obtaining heat in dwelling houses are criticized, and it is noted that this country has lagged far behind all others, partly owing to cheapness of coal—a factor which has for the time departed, probably never to return. Much regret is expressed that the Ministry of Health has not so far taken anything like sufficient advantage of the opportunity afforded by rate- and State-supported housing schemes to require scientific methods of heating, or to give due effect to modern knowledge of the subject, and in concluding his preface Lord Newton asks

[2] *The Smokeless City.* By E. D. Simon, M.I.C.E., M.I.M.E., and Marion Fitzgerald. London: Longmans, Green and Co. 1922. (Demy 8vo, pp. ix + 82. 1s. 6d.)

where is the logic of spending millions of money on so-called social reform "if this particular nuisance, expensive, unnecessary, and offensive, is to be permitted to continue unchecked." He answers his own question by saying that we are only just awakening to the fact that existing conditions are discreditable to a highly civilized community, though Sir Alfred Mond has the honour of being the first Minister to do his obvious duty in the matter.

As regards action which ought to be taken now by owners and occupiers, the authors devote useful and practical chapters to house warming, hot-water supply, cooking, and low temperature fuel. In doing so they discuss, in thoroughly competent fashion, radiation and convection, alleged "drying of the air," ventilation in relation to heating, slow combustion grates, gas fires, electric heating, central heating, and, in fact, every relevant question. They strongly recommend gas fires for most purposes, though not for hot-water supply, and they hold that the popular belief that gas heating is dangerous is "due to a newspaper stunt, and, like many such stunts, is untrue." At the same time they advise that at present one or two coal fires should be made possible in a moderately sized house, so as to avoid failure of reform by insisting on revolution. The importance of the subject for Manchester in particular is illustrated by the story of an M.P. who had an engagement to speak there, and, not feeling well, went to see a doctor as to whether he should risk the visit. The doctor replied: "Manchester? Certainly not. Nobody is well enough to go to Manchester." *The Smokeless City* is an excellent little book, and should be a valuable agent in attaining the object to which it is devoted.

DORLAND'S MEDICAL DICTIONARY.

WE have received the eleventh edition of the *American Illustrated Medical Dictionary*,[3] by W. A. NEWMAN DORLAND. The fact that the first edition saw the light in 1900 and that the editions are now nearly in their teens is sufficient proof that there is a constant demand for this very useful book. We do not envy the compiler of such a dictionary as this his almost Sisyphean task, for he is aware that, while an edition is still in the press, more terms are being coined by the restless workers in medicine and the allied sciences, and that to be of real value his work must be up to date. He therefore cannot rest, but must be for ever collecting and arranging these terms. This edition, we are told in the preface, contains several hundred new definitions, "most of which are not to be found in any other dictionary." The additions have been most numerous in the fields of biological chemistry, endocrinology, immunology, and neurology, though every branch of medical science has received its share of new terms. Among the valuable features of the work are the lists of micro-organisms, diseases, tests, operations, syndromes, etc.; the list of bacilli alone fills more than nine pages, and this in spite of the utmost condensation compatible with clearness. There are also many illustrations and plates, "chosen for their practical value in aiding the text rather than for their pictorial beauty."

In the search for new terms we looked in vain for "*Spironema pallidum*," the designation adopted by the Medical Research Council for the pathogenic organism of syphilis. We did, however, find "vitamin," with the alternative spelling "vitamine." As there appears to be no reason for adding the final *e*, and as the spelling first given is that generally accepted, it would perhaps be well if in future editions no alternative were given. The question of the final *e* in many words—for example, adrenaline, aniline, purine, etc.—is a very vexed one, and those engaged in passing for press collections of papers by various writers, such as those contained in this JOURNAL, are often much put about by the personal idiosyncrasies of the authors. American writers, we believe, as a rule take the short way and leave out the *e*—though we note that Dorland allows "purine" as an alternative spelling. We in England—or at any rate those who go to some pains in this matter—are largely governed by the rules laid down by the Chemical Society, which state that basic substances should invariably be indicated by names ending in *ine*, the termination *in* being restricted to certain neutral compounds.

The book is beautifully printed, on very thin but sufficiently opaque paper (the twelve hundred odd pages with covers form a volume less than two inches in thickness); in its flexible leather cover it is a pleasure to handle, and for its size is wonderfully complete. Dorland has for years been used in this office as a reference book, and it has rarely been consulted in vain. It may confidently be recommended to practitioners and students in need of a dictionary of moderate size.

[3] *The American Illustrated Medical Dictionary*. A Dictionary of Terms used in Medicine, Surgery, Dentistry, Chemistry, Veterinary Science, etc. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., Major, M.C., U.S. Army. Eleventh edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1921. (Med. 8vo, pp. 1223; numerous plates and tables. 35s. net; with thumb index, 37s. 6d.)

ANNALS OF MEDICAL HISTORY.

THE spring number of the fourth volume of the *Annals of Medical History*[4] bears on the cover the portrait of Velpeau, who was an ornament of the French school of surgery during the reign of Louis Philippe when Paris, with its thirty hospitals and five thousand medical students, was the medical Mecca; Dr. J. Chalmers Da Costa gives thumb-nail sketches of the giants of that day, and mentions that Dupuytren, who was a kind of emperor of surgery, annihilated Mellier's contention that inflammation in the right iliac fossa started in the vermiform appendix rather than in the caecum, and thus kept the clock back for fifty years. Most appropriately Dr. J. H. Gibbon of Philadelphia provides a companion account of London surgery in the early part of the nineteenth century, dealing first with the outstanding personality of Sir Astley Cooper who, like Abernethy, was a pupil of Dupuytren, Desault, and Lisfranc in Paris; he is described as the great practical surgeon of his day as contrasted with its great scientific exponent—Abernethy. Professor David Riesman writes on the influence upon American medicine of the Dublin medical school—Graves and Stokes, who are regarded as in large measure responsible for the popularizing of the stethoscope both in Britain and in America. Dr. W. S. Middleton describes the life and works of the great and gentle anatomist, Caspar Wistar, junior, whose memory is kept green by the Wistar Institute in Philadelphia and more familiarly by *Wistaria speciosa*, written Wisteria by the botanist Nuttall, who named it. In an authoritative article extending over sixty-three pages Knud Faber, Professor of Internal Medicine in the University of Copenhagen, traces the progress of nosography, or the systematic description of disease in modern internal medicine, commencing with Sydenham and the nosologists, and then discussing successively the anatomical, physiological, bacteriological, and functional eras. In his final section on constitutional pathology he remarks that the most recent advance in nosography, which is almost entirely a growth of this century, is directly associated with the influence exerted on pathology by modern research on heredity. In a short article Dr. Jacob Rosenbloom deals with the history of pulse timing and refers to Sir John Floyer and his physician's pulse watch. The editor contributes a number of interesting notes, and there are reviews of recent works on medical history.

[4] *Annals of Medical History*. Edited by Francis R. Packard, M.D. Spring number, May, 1922. Vol. iv, No. 1. New York: Paul P. Hoeber. (Pp. 1-113; yearly subscription 8 dols., single numbers 2.50 dols.)

NOTES ON BOOKS.

THE new number of *Brain*[5] forms the first part of the forty-fifth volume; it bears the name as editor of Dr. GORDON HOLMES, who recently succeeded Dr. Henry Head in that capacity. It contains a paper on Thomsen's disease, by Dr. J. Rosett of Columbia University; a contribution to the anatomy of spina bifida, by Dr. Violet H. Keiller of the University of Texas; observations on cerebellar stimulations, by Drs. F. R. Miller and F. G. Banting, from the Department of Physiology of the Western University Medical School, London, Canada; a report of three cases of supra-pituitary tumour presenting Fröhlich's syndrome, by Dr. Charles N. Armstrong, from the National Hospital, Queen Square; and a paper on the nervous control of the urinary bladder in amphibians, by Mr. F. J. F. Barrington, from the laboratories of the Surgical Unit, University College Hospital Medical School.

We have received for notice the May number of *Surgery, Gynecology, and Obstetrics*,[6] incidentally the official organ of the American College of Surgeons. This journal is probably well known to our readers, for on its first appearance some years ago it achieved instant popularity owing to its excellent format. The fine reproduction of illustrations has always been an especial feature of this periodical, and this, with its thick glossy paper and clear print,

[5] Macmillan and Co. Price per part 6s. net. Yearly subscription 24s. net.

[6] *Surgery, Gynecology, and Obstetrics*. Edition for the British Empire. London: Baillière, Tindall, and Cox. Monthly. (Annual subscription, including "International Abstract of Surgery," £3 15s.)

combine to give it a handsome appearance, at that time distinctly in advance of anything that we had in this country. Even to-day its illustrations compare very favourably with our own beautiful *British Journal of Surgery*. The May number contains a study of a case of intracranial cholesteatoma successfully removed by Harvey Cushing. An article by J. O. Polak follows on the abuse of the operation of Caesarean section. A. H. Bizarro reviews a fine series of 123 cases of carpal fractures; whilst amongst several other contributions may be mentioned a paper by Ott on cranial nerve palsies produced by tumours in the region of the jugular foramen, a paper on adult megacolon by Fowler, and a paper by Trout on the subsequent history of the breast remaining after radical amputation of its fellow for carcinoma. An important feature of this journal is its "International Abstract of Surgery," which embodies summaries of the more important articles appearing in the European and American press. These abstracts are very full, and are sometimes illustrated, to the reader's great profit.

"SIXTY-FOUR YEARS A DOCTOR."

Correction.

OUR attention has been called to an error in the review of this book published last week. On page 272, half-way down the first column, we say: "Again, with reference to a case of appendicitis (this in December, 1886)." The date should be December, 1868. As Sir Charles Brown says, there were no operations then for appendicitis, but in 1886 there were, and if the case referred to had happened at the later date the patient would have been operated on, instead of having to use an infusion of common shag tobacco.

The price of Mr. Muirhead Little's *Artificial Limbs and Amputation Stumps*, published by Messrs. H. K. Lewis and Co., Ltd., of London, is 18s., not 18 dollars, as by a clerical error was stated last week.

ANNUAL REPORT OF THE CHIEF INSPECTOR OF FACTORIES AND WORKSHOPS, 1921.

IN the Annual Report of the Chief Inspector of Factories and Workshops for 1921 the method of dealing with the year's work under sectional headings has again been adopted. A marked feature of the publication is the complete absence of superfluity, the impression conveyed being rather that the editor must have been at some considerable trouble to decide what might conveniently be left out. Every item of information given is of value and could not fail to prove useful to any reader, medical or other, who takes an interest in the health, safety, or well-being of those engaged in industrial occupations. As is usual, there is much in the contents of special interest to the medical profession.

The serious depression in trade, as might be expected, materially affected the statistics for the year. The examinations for the certificate of fitness dropped down from 403,660 (1920) to 221,536, medical examinations under special rules and regulations from 225,678 to 175,735, accidents from 138,702 to 92,565, and prosecutions from 1,081 to 573. Food manufacture (particularly sugar confectionery) and the textile machinery branch of engineering are the only trades which were doing any real business. It is curious to note, however, that in spite of these adverse factors the gradual evolution in industrial methods has not stopped; factories increased during the year by 2,685, whilst workshops diminished by 4,944, and there are records of the establishment of greatly improved processes of manufacture, particularly in steel industries. Owing apparently to the institution of a special engineering branch of the inspectorate, it has been found possible to devote a considerable amount of attention to a survey of safety measures and to improving the working of dangerous trades regulations. Combined efforts of this new branch and of the medical branch were directed particularly to the dust problem, and it would appear that some headway was made in devising closed automatic and semi-automatic processes and the improvement of local exhaust ventilation. There seems to be a fairly general opinion that the most frequent and undoubtedly the most annoying stumbling-block to real progress in preventive measures is a combination of the constitutional carelessness of the worker and the undoubted failure of the average employer to realize that the "spirit" equally with the "letter" of a regulation demands a conscientious observance. Some of the details given of what pure want of thought and attention can lead to are really astonishing. Dr. E. L. Middleton examined clinically the lungs and upper air passages of 1,000 workers engaged in metal glazing, grinding, and dressing, and when he has got through another 400 hopes to publish information of value on the medical aspect of the question. The nature and amount of dust given off in these processes is also being closely investigated, and Dr. Middleton made special inquiry into the incidence of silicosis amongst workers in refractory materials in places not coming under the Refractories Industries (Silicosis) Scheme, 1919, and also into the working of the medical arrangements in cases which do come within the scheme. The number of cases of lead poisoning recorded was 230; there were 23 deaths, but the general severity is reported to be below the average. A number of exceptional cases occurred in the cutting of steel plates on old warships by the oxy-acetylene flame owing to the volatilization of lead from the painted surfaces. From the analysis made, Dr. Legge estimates that a cutter doing this work inhales 18 milligrams of lead daily, or 16 milligrams in excess of the amount which can be inhaled without producing poisonous effects. It was also found that some of these cutters suffered from symptoms of "brass-founders' ague" through the lighter plates being galvanized. On the research side investigations have been reopened with a view to find out the exact diagnostic value of basophilia in cases of suspected lead poisoning.

Reference is made to the International Labour Conference in Geneva, which resulted in the adoption of a draft convention prohibiting, except under certain special circumstances, the use of white lead and lead sulphate in paints applied to interiors of buildings and regulating the use of these for other purposes. As regards anthrax, the Conference appointed a committee to study the subject in all its bearings, but particularly with a view to find out some means of eradicating the disease among animals. Reference is made to the successful treatment of East Indian goat hair and Egyptian wool and hair at the Anthrax Disinfecting Station, and also to the possible closing down of the establishment for financial reasons. Attention is drawn to the importance of requiring persons suffering from carbon monoxide poisoning to rest and not to walk about. Particulars are given of a series of investigations made by Dr. Henry on the effects of naphtha fumes and on aniline black dyeing processes. The seriousness of chrome ulceration is demonstrated by particulars collected from twenty-five dyeworks, which show that a total of 130 cases involved 1,144 weeks of lost time.

Dr. Legge devotes a considerable amount of space to certificates of fitness. He specially draws attention to the revision of particulars respecting disease and bodily infirmity supplied by the surgeon in his annual report, and states that the alteration was decided upon as a result of a representation from the Association of Certifying Surgeons pointing out that Section 122 (6) of the Factory and Workshops Act, 1901, asked for a report not on rejections alone but "as to the number of persons inspected during the year and the results of the inspections." As it was late in the year before the certifying surgeons principally concerned could be notified and take the necessary steps to collect the required information, Dr. Legge is of opinion that only about half the particulars respecting disease and defects requiring conditional or advisory certificates have been supplied. He has, however, considered it advisable to publish the table, which now provides a well-thought-out classification of the diseases and bodily defects found, and shows the number under each heading qualifying for rejection and for conditional certificates respectively. In spite of its incompleteness, out of a total of 15,689 requiring rejection or conditional certificates, 10,640 are recorded as having been dealt with on medical grounds, and 1,266 for unsuitable attire (including loose hair). It is noted that, although many occupiers are taking an increased interest in medical supervision, there is unfortunately a tendency to replace payment of the surgeon by contract by payment at piece-work rates. This is apparently regarded as bad policy, for the reason that "a contract enables certifying surgeons to do really good work in periodic examinations apart from that required by the law, to give advice and actually to supervise the work of first aid."

A definite opinion is expressed on the desirability of more co-operation among certifying surgeons and greater uniformity both in examinations and in dealing with defectives, and a strong point is made of the advantages to be derived from co-operation with welfare supervisors and nurses. As regards welfare work it is stated that reports from all over the kingdom show that this movement has held its own in face of the adverse circumstances of the times, and certain new orders have been issued during the year. A separate chapter deals with underground workrooms in London, and an excellent article on health and sanitation shows how much has still to be accomplished.

British Medical Journal.

SATURDAY, AUGUST 19TH, 1922.

THE DISCUSSION ON BACTERIOLYSIS.

The widespread interest which has been manifested in the subject of the breaking down of bacteria by lytic agents has been largely due to the fact that Dr. d'Herelle, of the Pasteur Institute, Paris, startled the bacteriological world with the hypothesis that this bacteriolysis is due to the agency of a living ultramicroscopic parasite of bacteria. That creatures so lowly as single and apparently undifferentiated bacterial cells should be preyed upon by organisms even lowlier than themselves and become the victims of parasites of inconceivably small dimensions was a conception that at once arrested attention. It was boldly put forward by Dr. d'Herelle in a paper published in September, 1917; in it he affirmed the existence of an invisible microbe which antagonized the dysenteric bacillus. His affirmation has since been the subject of numerous researches and, incidentally, much controversy. Briefly stated, the facts are that it is possible to extract from many forms of organic material an active substance which will pass through the pores of the finest filter, and possesses the property of inducing lysis in a bacterial culture. This active substance, which d'Herelle maintains to be a living organism, can be shown to multiply when in contact with living bacteria, and can be carried over from tube to tube, producing lysis in successive cultures. This is sometimes known as the "phenomenon of d'Herelle," but a similar process of bacteriolysis was described by Twort in 1915, and it was the almost unanimous opinion of those who took part in the discussion in the Section of Microbiology of the annual meeting of the British Medical Association at Glasgow that the Twort and d'Herelle phenomena are identical. Anyone who is at the pains to read the discussion, as reported in this issue (and a very fascinating story it is), will be disposed to accept the statement, and to agree that though d'Herelle cannot be given priority in the discovery of the phenomenon, he undoubtedly deserves credit for having awakened a lively interest in the question raised, and for having stimulated others by his imaginative reasoning to a closer examination of a subject of great scientific interest which may prove to be of great practical importance to medicine.

Concerning the broad facts, all who have worked at the subject are in complete agreement. A broth culture of such an organism as *B. dysenteriae* can undoubtedly be dissolved by the addition of a few drops of a sterile fluid obtained by filtering a faecal suspension through a Berkefeld or Chamberland filter. This is in itself a remarkable fact, but its unexpectedness is entirely eclipsed by the discovery that a drop of the lysed culture can induce exactly the same change in a second culture, and a drop from this in a third, and so on in series. The active substance must certainly have multiplied and regenerated itself at the expense of the bacteria. For d'Herelle the only possible explanation is that there passed through the pores of the filter an ultramicroscopic parasite which, added to a bacterial culture, attacks the organisms, dissolves them by its ferments, and so multiplies and regenerates itself. This organism he has named the "bacteriophage," and he claims that, on the one hand, its virulence can be increased by passage, and, on the other, that the bacteria themselves can be educated to develop protective substances and so defend themselves from the assaults of their enemy.

It must be conceded at once that we have little or no knowledge of forms of life smaller than can be observed with the highest magnifications of the microscope, of microbes more minute, for instance, than the *Micrococcus melitensis*. Yet the imposing list of filter-passing organisms justifies the belief that living things of smaller dimensions exist and may cause most serious disease when they attack man. We must assume that living organisms have been evolved from simpler forms, and no one imagines that this evolution began with a coccus. In the scale of evolution bacteria represent comparatively complicated structures, built up of innumerable living particles: doubtless more primitive forms have existed and probably exist to-day. The theory of d'Herelle cannot be dismissed because it presumes the existence of living agents of inconceivably small dimensions. But we have to ask ourselves if the faculty for regeneration, which is the main foundation on which the bacteriophage theory is based, is an attribute only of living organisms. Dr. André Gratia suggested two analogies for reproduction apart from living beings. "Fire," he said, "is not living, and yet fire is endowed with the power of reproduction. When once lighted, thanks to an initial impulse, such as an electric spark or the mere striking of a match, it can be indefinitely reproduced if fuel is provided." His analogy of the transmissible coagulation of blood in series is also worthy of consideration. The arguments for and against the existence of an ultramicroscopic parasite are set out in the discussion on the papers of d'Herelle and Twort; it is sufficient to remark in passing that the majority of those who have studied the phenomenon are not convinced that d'Herelle's premisses are fully established; they are still looking for a cause "which does not tax too severely one's sense of the naturalness or the likelihood of things."

Dr. Twort, when he first observed the appearance of bacteriolysis in culture, attributed it to an acute infective disease of micrococci, but "though the possibility of its being an ultramicroscopic virus has not been definitely disproved," he now declares that "on the whole it seems probable, but by no means certain, that the active transparent material is produced by the micrococcus." If so, we should expect that the bacteria would benefit by this rapid disintegration of some members of the colony, and Dr. Twort has observed certain long forms of *Bacillus coli* found associated with the lytic agent in the upper part of the intestinal tract which could be cultivated only after the lytic agent had been eliminated. These "special forms" were found to be more numerous in young cultures, and after six to twelve hours were partially dissolved. He suggests that the lytic agent is a normal product of the bacterial cell, formed for the purpose of causing lysis of the "special forms" and so setting free toxins or substances antagonistic to other bacteria. Such a theory presupposes the early differentiation of a bacterial colony into groups with special functions, some destined by a process of sacrificial autolysis to liberate poisonous substances and thus protect their more resistant relatives.

The discussion at Glasgow has undoubtedly done much to clear the air, and this free and open exchange of views of experts will be welcomed by workers at this subject in all parts of the world. Bacteriolysis may well prove to be of great practical importance to medicine, for whatever be the cause of this remarkable phenomenon it is obvious that when the problem is solved it may throw a flood of light on resistance to disease and open up new avenues of treatment. So far, however, the results of using the bacteriophagic element in combating infection have not been very convincing, and it cannot be expected that much practical advantage

will be obtained until we have a more precise knowledge of the factors involved. It is too soon to elaborate any comprehensive theory, for new manifestations of similar phenomena, such as the lysozyme reaction of Fleming, are being reported, and it will be necessary first to study the simplest examples of bacteriolysis by accurate quantitative methods. The problem is not limited to the domains of medical bacteriology, but has awakened the interest of students of all branches of biology, and the results of further researches will be watched with keen interest.

THE VITAMIN CONTENT OF VEGETABLE OILS AND FATS.

Vegetable oils and fats are assuming an increasing importance in nutrition, for fats are indispensable in a complete diet and animal fats are dear; hence the world is being ransacked for sources of vegetable fats and oils. Vegetable fats contain, however, very little vitamin A, and hence the replacement of animal fats by vegetable fats in human food raises important questions as to the adequacy of the supply of vitamin A in the diet. In a normal mixed diet vitamin A is contained chiefly in green vegetables and animal fats. Unfortunately the poorer urban populations often do not eat green vegetables with regularity and in sufficient quantity, and there is the tendency among them to substitute cheap vegetable fats for the more expensive animal fats; they tend, therefore, to live on a diet very poor in vitamin A.

Deficiency of this vitamin has not been shown to produce any well-defined disease, in the way that deficiency of vitamins B and C respectively produces beri-beri or scurvy; hence the serious effects due to deficiency of vitamin A are apt not to be fully recognized. It is known, however, that the deficiency produces increased susceptibility to infections, and is also one of the chief causes favouring the appearance of rickets. Partial deficiency of this vitamin may also produce sterility. Animals can store vitamin A in their fat and can draw upon this supply, and hence marked symptoms of vitamin A lack do not readily appear in a healthy adult animal. The animal in order to produce the store of vitamin A must, however, have obtained it at some period or another, and all the evidence available points to the fact that it is impossible to rear successive generations of healthy animals if they are fed on a diet seriously deficient in vitamin A.

These facts suggest that the experiment which is proceeding at present of feeding about half the population of this country on a diet deficient in vitamin A is likely to produce serious consequences. The vitamin content of vegetable fats and oils is on this account a matter of great practical importance, and Drummond and Zilva[1] have recently carried out an interesting research on the subject. They first investigated the vitamin content of the oil-bearing seeds; they found that linseed contained a fair amount of vitamin A, but that in seventeen other varieties of seeds examined there were at most only traces of this vitamin. Though most of the vitamin A present in the seeds passed into the crude oil, the quantity might be less than one-tenth the vitamin A content of butter. The only exception was crude palm oil; highly pigmented specimens of this oil in some cases had a vitamin A content equal to that of butter; unfortunately it was found impossible to render the crude palm oil palatable by any process which did not involve destruction of the vitamin. The result of these researches thus leads to the general conclusion that the amount of vitamin A in vegetable oils is low because there is very little of this vitamin in the seeds from which the oil is produced. No vegetable oil has been found which is at once edible and rich in vitamin, but the high vitamin content of crude palm oil shows that there is a possibility of such an oil existing. An oil of this kind would be of the greatest value, for it would afford a cheap source of supply of vitamin A in the manufacture of margarine.

The results of this research are to a certain extent disappointing, for it had been hoped that the absence of vitamin A from vegetable oils was due to destruction in manufacture; if this had proved to be true it would probably have been fairly easy to remedy the defect. Since the deficiency, however, appears to be due to the fact that the vitamin is absent from the raw material used, or present only in very small quantity, the only hope of achieving the object in view is to find some other oil resembling crude palm oil in its vitamin content but not in its taste.

[1] J. C. Drummond and S. S. Zilva, Studies of the Nutritive Value of the Edible Oils and Fats, *Journ. of the Soc. of Chem. Industry*, xli, 125T, 1922.

THE GROWING ABUSE OF COCAINE.

Not only do the columns of the daily press provide indubitable evidence of the growing abuse of cocaine, but a communication made last month to the Paris Académie de Médecine by MM. Courtois-Suffit and René Giroux serves to confirm the alarming increase in the illicit traffic of the "*poudre folle*," or "*respirette*," as it is colloquially called. In Paris alone the arrests of those caught pursuing this remunerative and degrading commerce have increased from 42 in 1917 to 212 last year. The bulk of the alkaloid is said to be imported from Germany, and among the troops occupying the Rhineland and employees on the European expresses there are alleged to be those who act as intermediaries. Many and ingenious are the tricks resorted to by cocaine hawkers in the Quartier Latin and the cafés of Montmartre. The trade is also said to flourish in Marseilles and Toulon, in Nice, Monte Carlo, and Biarritz, as well as in Alsace-Lorraine. The wholesale price of cocaine is about 1,300 francs a kilogram, and as it is retailed at 20 to 30 francs a gram it yields a rich profit to the agents in this clandestine business. The authors of the communication cited assert that in America cocaine vendors invade the universities and colleges and insidiously offer the students gratuitous samples of the alkaloid, feeling assured that its victims will resort to them again and again as they become addicted to it, and thus a regular custom is secured. In France, as in this country, severer penalties are called for to check this toxic peril. In a previous communication to the Académie, noticed in our columns on September 10th, 1921 (p. 414), Dr. Courtois-Suffit stated that under the present law in France the highest fine that can be imposed is 10,000 francs. He related an instance in which it had been possible to make 130,000 francs on a single transaction, so that even the maximum fine would have little effect; in practice the fines imposed are very much smaller, and the French courts very seldom exercise the power they have to sentence the offender to a term of imprisonment as well as a fine.

It is clear that, as the authors of the International Opium Convention of 1912 held, the traffic in dangerous drugs of addiction needs international co-operation and control from the source, in order to limit the use of opium, morphine, cocaine, their derivatives and allies, to medical and legitimate purposes only.

The members of the Council of the League of Nations have now before them the second report of their Advisory Commission and the answers to the set of questions they issued; these will also doubtless be considered by the forthcoming meeting of the Assembly. Some fifteen nations among the fifty-one members of the

League have not as yet brought the Convention, even partially, into operation. The amounts of these drugs required for legitimate purposes in each country or in the world at large remain undetermined, and very few statistics have as yet been furnished to the League giving details of the actual manufacture, import, export, and consumption of these drugs even in European countries. It is, however, known that enormous quantities of morphine and cocaine, largely of European and American origin, have been reaching China and Japan during the last few years, and China has again become, like Turkey, Persia, and India, a large producer of opium, despite the benevolent intentions of its feeble central government. Some of the figures vouchsafed in reply to the questions asked by the League of Nations are disquieting, and seem to show that the production of morphine and cocaine is out of all proportion to any probable legitimate requirement. Thus Great Britain manufactured 18,000 kg. of morphine in 1920, half of which was exported. While it is stated on one page that only half a kilogram was exported from Great Britain to Japan in 1920, on another page it appears that in the same year Japan imported 22,000 kg., of which 5,000 came from England and 9,000 from the United States. Again, in 1920 Japan, besides manufacturing 4,100 kg. of cocaine, imported 3,500 kg. of the same drug, about half of which came from the United States. The statistics from the United States had not been received at the time when the Advisory Commission compiled its replies to the questions. Attention is, however, drawn to the "serious discrepancies between the export of drugs from Great Britain to Japan as shown in the British returns, and the imports to Japan from Great Britain as shown in the Japanese returns," and the significant remark is made that "no light has been thrown on the methods by which such large quantities of drugs were apparently exported from Great Britain without the knowledge of the Customs authorities, and the matter calls for further investigation." A new law is said to have been enacted in Japan to take effect on January 1st, 1921, and it is hoped that it "will do away with the abuses indicated." A detailed study of the replies to the questions from which we have culled these extracts would serve to show the extent of the world-wide abuse of drugs of addiction which is going on, as well as the need for impartial international vigilance and effective international co-operation and control.

THE BACTERIOLOGY OF INFLUENZA.

When fifty years hence the progress of bacteriological discovery in the early years of the twentieth century comes to be reviewed the historian will probably call attention to the fact that whilst British investigators made many remarkable discoveries concerning the origin of diseases not met with in this country, they achieved little for the elucidation of the nature of the two commonest scourges of their native land—namely, the common cold and influenza. Such criticism would not be unjustified, for though we speak with confidence to-day of the causal agent of such diseases as malaria, sleeping sickness, and plague, great uncertainty can be detected in our discussions of nasal and bronchial catarrh. The explanation is not to be found in an altruistic commiseration of the sufferings of others accompanied by a neglect of our own. It is due to the fact that we are at present very ill-equipped for the study of those minute forms of life, organisms less than 0.5 micron in diameter, which will pass through the pores of a porcelain filter and yet cannot be satisfactorily stained or cultivated on solid media. An increasing volume of evidence has accumulated indicating that the common cold is caused by one of these ultramicroscopic viruses, and that the bacteria which are found in the secretions of nasal catarrh are no more than secondary invaders. From the paper on influenza with which Dr. Gordon opened the discussion on the bacteriology of influenza in the Section of Bacteriology of the Annual Meeting at Glasgow, reported in this issue, it will be seen that he has isolated a filter-passing organism from an epidemic of the disease, and has thereby confirmed and extended the experimental work of others, notably in America and Japan. Down to the time of the great epidemic which swept over the whole world in 1918 the assertion that Pfeiffer's bacillus was the causal organism had been very generally accepted. The many bacteriologists who turned to the study of influenza in this and subsequent outbreaks began with a bias in favour of Pfeiffer's bacillus, but two difficulties at once arose: one was that the organism was often not found in typical attacks of influenza, and the other that it appeared to be widely distributed, being found in normal throats, and in patients suffering from measles and pneumonia. It must be admitted that as knowledge of the requirements of Pfeiffer's bacillus has increased it has been recovered much more frequently, both from the catarrhal secretions and from *post-mortem* lesions; this is amply proved by Professor McIntosh's work for the Medical Research Council (British Medical Journal, July 22nd, p. 137), of which he gave a summary to the Section. Experimental inoculation into animals although yielding instructive results has not proved a final court of appeal, because, with the exception of the leucopenic blood response, these animals do not react to influenza quite in the same way as man. It may be said at once that all who have worked at this subject are agreed that influenza-like lesions can be produced in the respiratory tract and lungs by the injection of Pfeiffer's bacillus or even with filtered cultures of it. The point in dispute is, What initiates the attack? Is there not some other factor apart from the influenza bacillus, some agent which prepares the way, leaving damaged epithelium on which the influenza bacillus can act? No organism can continue to exist in the respiratory tract unless living in intimate biological relation with the respiratory mucous membrane and secretion, and it is possible that the influenza bacillus requires the co-operation of some other virus to enable it to act as a parasite to man. In this connexion the work of Dr. Twort is suggestive, for he has shown that Pfeiffer's bacillus will grow readily on media containing no blood when living in symbiosis with a minute filter-passing organism. The difficulties which beset the study of filter-passing micro-organisms are many. These living forms cannot be clearly seen—on culture the only indication of their growth is an appearance of "cloudiness" in a fluid medium; the only definite proof of their existence is that on inoculation they produce a disease which can be transmitted in series. There must be different species of ultra-microscopic viruses, for on inoculation they cause widely different symptoms; the only method of labelling a virus, however, is by the disease it produces. Moreover, as Levaditi has demonstrated, similar ultra-microscopic viruses may be found in normal buccal secretions. The only method of isolating these organisms is by passage through a filter, and filtration is obviously a very crude procedure, for no two filters can be proved to be wholly alike in the size of their pores. Clearly, in the face of so many technical difficulties, all claims made for the discovery of any ultra-microscopic infective agents must be accepted with caution, but the facts Dr. Gordon records are of great importance. He has grown an ultra-microscopic parasite from the filtered secretion of patients suffering from influenza; he has been able to detect these minute particles in fresh influenzal secretion; and he has succeeded in staining the virus recovered in his cultures. Though, as he says, the methods of staining these "parasites" leave much to be desired, yet something has been definitely accomplished along these lines. He does not claim that this ultra-microscopic virus is certainly the cause of influenza, but he has proved that it is present, and that, when once the necessary technical skill has been acquired, it can be recovered constantly from influenza and common colds. The study of these infinitely minute forms of life is still in its infancy, but now that attention has been directed to their importance we may feel confident that the

technical difficulties will be overcome. As for the common cold there will probably be plenty of opportunity for research in the coming winter, and investigators are not likely to be handicapped by an insufficiency of "suitable cases."

PHYSICAL EDUCATION OF GIRLS.

We publish elsewhere (p. 321) an account of the report on the effects of physical education on girls, prepared by a Joint Committee instituted on the initiative of the College of Preceptors. It is a really valuable contribution to a subject about which a great deal has been written, much of it of little or no value. Of the facts brought out in the evidence given by medical practitioners to the Joint Committee and analysed in the report of the Medical Committee, which is published in full, one of the most important was that, notwithstanding the very large number of girls who have played games and gone in for athletic exercises during the last twenty years, the number of instances in which there was definite evidence of any physical injury was extremely small. Even the number of cases of "accidents of the game," such as a hockey or cricket ball in the wrong place, were practically negligible. We are indebted to Mr. E. B. Turner, one of the Representatives of the British Medical Association on the Joint Committee, for the following observations. "It will be noticed," he writes, "that the committee has expressed no opinion on the advisability of boys and girls over the age of 14 playing together in mixed hockey matches and other competitive games. It seems that such games seriously undertaken will not be good either for the girl or the game, as if the game is slowed down to the capacity of the girl it suffers, and if the girl, with the large amount of pluck so many of them have, attempts to adapt her speed and capacity to that of the stronger boy, it is possible that she may be injured. Of course, this does not apply to country-house friendly games, but to serious matches. In regard to competitive athletic sports, if girls prepare themselves properly and are efficiently taught, no harm is likely to result, provided the distance and other conditions of the contests are properly adapted to them. Tug-of-war, however, is by no means advisable, and should be prohibited. Some of those who answered the questions with regard to rowing drew a distinction between 'rowing' and 'sculling,' considering sculling by far the better of the two. From an intimate personal knowledge of what was probably one of the best double-sculling crews that ever represented a women's college or university, I can say that nothing but good resulted from the racing competitions, but in this instance members of the crew took care to get and keep very fit. It must be understood with regard to the whole of this question that the physical conformation and structure of the young girl will not allow her to 'put up' such good performances as a boy; but there is not the slightest objection to girls taking part in practically all the same games as boys provided they take care to commence gradually and to continue keeping in condition. A man or a boy may do himself irremediable mischief by taking part in a strenuous game or athletic competition when untrained, and the same obtains with regard to the woman or girl; probably the greater number of the cases of injury reported were dependent on this cause. The reference in the report to the necessity of properly fitting a bicycle to the rider is most useful. Many girls for aesthetic reasons ride with the reach two or three inches too long for them, and this may cause mischief as well as interfere with the really effective control of the machine. It appears possible that excessive riding astride on horseback, especially in early youth, may prejudicially affect the muscles and bones of the outlet of the pelvis. The experience of one medical woman, based on her work with over 1,500 girls, was that when about 35 per cent. of the whole number of the girls took part in games, or went in for any hard exercise during the menstrual period, about 67 per cent. of the whole suffered from disturbances, functional and otherwise; but when 97 per cent. played games and took exercise during that time, only about 30 per cent. suffered any disturbance of the function. This is a matter of very great importance, more especially in its bearing on the treatment of dysmenorrhœa by exercise; considerably more investigation is required. The opinion of almost everyone who gave evidence was that 'team games' had a most beneficial effect upon the character and disposition of all the girls who took part in them; the spirit of sportsmanship thus inculcated was of untold worth. There is no doubt that the custom of the universities should be observed and that before commencing an athletic career at school girls should be examined and passed as fit by a medical practitioner who thoroughly understands the subject. My own experience convinces me that one result of the athletic movement among girls during the last thirty years has been a most noticeable increase in height and other physical developments. In many cases, as obtains among boys, girls who have been first class at their work and taken high honours, have also been very prominent athletes in their schools and colleges."

MILD SMALL-POX.

The Ministry of Health has issued a useful leaflet on outbreaks of small-pox of mild clinical type. It states that a few such outbreaks have occurred in England during the present year; that there have been no fatal cases; that constitutional symptoms have been slight even when the rash has been abundant; and that the mildness of type is not limited to the vaccinated nor to patients of any particular age, but is related to the character of the small-pox infection itself. Such cases are sometimes being reported as "varioloid" or "alastrim." Investigations have been made by local health officers and hospital physicians, by members of the Ministry's medical staff, and by other experts with special experience of small-pox. It is evident, the leaflet says, from their reports that the disease is really small-pox, and that the outbreaks are to be classed with the epidemics of mild clinical type which have occurred from time to time both at home and abroad. The incubation period has usually been that of variola, whilst the distribution of the rash distinguishes it from varicella. In a few instances there is some evidence that there has been an unusually long interval between the initial symptoms and the appearance of the rash; in some the rash has seemed to come out in successive crops. As regards the action which should be taken when an outbreak occurs it is stated emphatically that none of the customary and necessary preventive proceedings, including vaccination, should be omitted; that close inquiry should be made as to any concurrent prevalence of chicken-pox, so as to secure differentiation, and that to that end chicken-pox should be made temporarily notifiable wherever necessary; for administrative purposes all cases to which the terms "varioloid" or "alastrim" are applied should be looked on as small-pox. Attention is called to the fact that both in the international list of causes of death, and in the *Nomenclature of Diseases* of the Royal College of Physicians, "varioloid" is included under the generic term "small-pox," and so also in the weekly official returns of notified diseases, the two special terms when used being indicated in a foot-note. A good deal of correspondence regarding "alastrim" and "amaas" has been published in the Journal. The latter term comes from South Africa, and is equivalent to milk-pox. The derivation of the former is not so clear, but mild small-pox in Brazil was written of as alastrim a number of years ago. The first syllable of the word is perhaps the Arabic definite article, as in alcohol and alchemy. It is confusing to introduce such terms needlessly into the medical vocabulary. Where the disease is recognized in this country, however benignant in strain, the established term should be applied to it, with such words as "mild" or "modified" added in explanation. Last week we published a letter from Dr. R. U. Moffat showing that small-pox came to be called "Kaffir pox" in Kimberley forty years ago, because the place depended for food and fuel on bullock-wagon transport, and was threatened with starvation owing to the alarm of small-pox stopping the traffic. Then the authorities gave currency to the statement that the disease was only Kaffir pox, in order to allay fear. In his Milroy lectures in 1919, Dr. J. C. McVail discussed the

varieties of small-pox, and showed that mild types had existed and bred true in the eighteenth century, and that Jenner, before he introduced cow-pox, had suggested that material from one such outbreak should be used for variolation instead of the much more severe strains normally prevalent. In recent times mild small-pox has prevailed in many parts of the world—South America, the United States, Canada, Australia, and the midlands of England.

MEDICAL RESEARCH AND NATIONAL LIFE.

Sir Walter Fletcher's address at the annual meeting of the Research Defence Society has been published in the July number of the Society's journal, *The Fight against Disease*. He is able, as Secretary of the Medical Research Council, to speak with authority. He did well to praise "the beauty and interest of the work that is being done, the extraordinary skill and patience of the men who are doing it, the enormous services it is rendering to the country, and the great boon it brings us in lightening as it does the burdens of pain and disease." For want of time, he took only two instances—the study of the accessory factors of food, and the study and standardization of pituitary extract—two only, out of the host of instances of research pursued for the good of the country. But the whole address gives us a notable picture of a man who understands and admires and zealously helps the scientific work which is being done, as a State service for the health and efficiency of the nation. It is strange, for us who know the facts, to think of the opposition and the hatred which have lately been set going against the Medical Research Council. This ill-will is one of the chief products of the antivivisection societies. The work for the health and efficiency of the nation involves experiments on animals. Therefore it is attacked by the usual antivivisection methods. A few weeks ago 102 members of the House of Commons voted for Lieutenant Commander Kenworthy's ridiculous bill "to prevent the application of public money to vivisection experiments:" When we reckon how much public money is applied in payment of these 102 members we are the more sorry at the misuse of their votes. Happily, 170 members voted the right way. So the bill, drafted by the leader of one of the antivivisection societies, and sprung on the House, was properly defeated. It will doubtless turn up again. For our masters are in need of more education in these matters. Antivivisection is not content with mere opposition to experiments on animals. It goes on to assert that discoveries thus made are fallacious and valueless. By this impudent assertion it pleases its dupes. As the report of the Research Defence Society says, "The wild campaign" on which one of the antivivisection societies spent £2,000, to hinder the protection of the army against typhoid brought antivivisection into disgrace and contempt, from which it has not yet recovered. But our opponents have plenty of money, and they spend some of it in the propagation of slander and falsehood. Especially, they are trying to follow the advice of one of their leaders, 'Our hope is not in the idle rich; we must touch the heart of the people.' They seem to think that 'the people' will swallow any amount of nonsense, and they seek to persuade ill-educated hearers and readers that diphtheria antitoxin, and antiseptics, and the protective treatment against tetanus are wrong and absurd. Thus, the antivivisectionists are out, not only against experiments on animals, but against methods of practice which are used and approved in every country of the world. Our Society has to reckon with this false propaganda; we have to deal with antivivisection as an enemy of the people." This, indeed, is what antivivisection has become. Bad enough to pour out floods of abuse and slander. Bad enough to try to hinder physiology and pathology. Far worse to put a stack of tracts in the waiting-room of a railway station, advising the public to have nothing to do with diphtheria antitoxin. An immense amount of money is being spent on this evil sort of work. A little handful of experienced perverters of the truth has enlisted many credulous folk who do not realize that they have entered the service of the enemy of the people. It is all very well to call them cranks; but our immediate business is to undo the harm which they are doing.

THE CAUSATION OF SEX.

Those interested in the causation of sex will be glad to have their attention drawn to an investigation of the alternation of sex in the oyster which Dr. J. H. Orton is making at the Plymouth Marine Biological Laboratory. He has also made some curious observations on sex change in the American slipper-limpet (*Crepidula fornicata*). That alternation of sex does occur in these creatures seems to be established beyond doubt. The novelty of Dr. Orton's recent contribution to *Nature* (vol. 110, p. 212) lies in the evidence he advances of the rapidity with which the change may occur. He has made a large number of observations, and, though some are still incomplete, he is able to report several suggestive facts. In June, 1921, a sexually mature male oyster, not more than twenty-three weeks old, was collected from the river Blackwater. A number of its fellows of the same age were obtained on specially prepared shells and kept isolated in the sea until July, 1922. A large one among them, about an inch in diameter, was on July 3rd found carrying thousands of young oyster embryos. Dr. Orton assumes that this individual oyster, like its fellows, became sexually mature as a male, and spawned as a male in June, 1921. In July, 1922, as has been said, it had spawned as a female; but a fortnight later (July 18th) it "was again sexually mature and practically ready to spawn as a male. Thus this oyster has already had two and probably three experiences of sex alternating from male (?) to female and from female back to male within about one year." Dr. Orton is not yet in a position to explain why these sex changes occur in the oyster, but is indisposed to attribute them to changes in the environment; he thinks that "the factor for sex causation is within the control of the organism." In this opinion he is confirmed by a study of the slipper-limpet. The young male of this species which has settled on another slipper-limpet has, Dr. Orton says, a "beautifully shaped and well-developed healthy black penis." If the other limpet is a female the limpet settled on it remains male and functions as such for a variable time, which may be as long as five or six years or as short as one. If the male has settled on the left side of the female—the wrong side for copulation—it nevertheless retains its maleness and even develops "an unusually fat and extensible penis capable of stretching probably twice as far as usual." If, on the other hand, the young male falls on some indifferent object the penis is "reduced to a mere discoloured trace," and the individual becomes female. Dr. Orton therefore comes to the conclusion that "the males on the females knew that the latter were there and tried their best to reach them, whilst the totally isolated ones have resigned themselves unreservedly to a complete sex change." It is a far cry from the oyster and the limpet to man, but the failure under these very simple conditions to establish any influence of the environment is certainly significant.

THE COST OF GERMAN PERIODICALS, BOOKS, AND TREATMENT.

The anomalous condition of the European exchanges, which is threatening to upset some of the time-honoured teachings of political economy, is being exploited with not a little success by German publishers. The *Zeitschrift für Biologie* is a case in point. This useful periodical has approximately as many subscribers outside as inside Germany, and the honour in which it is held in Germany is shown by the fact that its publishers were recently voted a subsidy of 30,000 marks by the scientific committee appointed some time ago to watch over the interests of the most important German scientific publications, the existence of which was threatened by Germany's financial embarrassments. The publisher of this periodical has recently announced that, in spite of its limited circulation and the cost of printing, he is able to dispense with any subsidy and is in the position to double the

payments to contributors. He attributes this to the policy of charging foreign subscribers at the pre-war rate in the currencies of their own countries. Had he not adopted this policy, he would, he says, have been faced with a deficit of about 50,000 marks. His gleeful comments on this transaction should act as a sobering corrective to the slogan of "making Germany pay" dinned into English ears. We take this opportunity to reiterate the statement, made on several previous occasions, to the effect that intending purchasers of German books should not rely upon the price in German marks given by the publishers. Often, if not always, the price charged for volumes exported is much higher; what it is can only be ascertained in any particular case by obtaining information from one of the firms of book importers in this country. Readers who may be purposing to visit Germany will no doubt have noted the statement issued at the end of last week by the Foreign Office explaining the stringent regulations enforced by the German customs officials on travellers leaving Germany. Briefly stated they amount to this, that a traveller leaving Germany is forbidden to take across the frontier goods purchased in Germany of a value exceeding 1,000 marks, nor more than 20,000 marks in German currency, or the equivalent in foreign currency, or cheques, bills, or negotiable instruments, except upon the production of a certificate of importation signed by the German customs authorities at the place of entry not more than one month prior to the date of export. The certificate of importation is good only for the actual currency imported. In Germany the policy of "making the foreigner pay" has indeed got well beyond the stage of the newspaper headline, and in the *Deutsche medizinische Wochenschrift* for July 14th there is a notice about the policy adopted by doctors in Berlin towards visitors from "valuta-rich" countries. With a view to creating a uniform system of fees for foreigners, doctors with a foreign clientèle in Berlin are instructed by their representative committee to exhibit in their waiting-rooms the following notice printed in four languages: "To Our Foreign Patients! The Doctors of Berlin, in Accordance with the Views of Their Foreign Colleagues, expect from Their Foreign Patients Coming from 'Valuta-Rich' Countries the Same Fees for Their Services as Would Be Paid by These Patients in Their Own Countries." To ensure the successful working of this scheme in every detail, the medical profession in Berlin has been supplied with scales of fees stated to be those generally charged in foreign countries, and a sliding scale has been devised so as to differentiate between various classes of patients and various classes of doctors, from the general practitioner to the professorial consultant. This sliding scale also shows the fees appropriate to the treatment of various diseases. The doctors of Berlin are also advised to settle the delicate question of fees before giving their services, and to see that they are paid in German currency. It may possibly be argued in defence of this policy that for a doctor to receive a fee of the dimensions of a tip to a waiter is not to maintain the dignity of the profession. But of the wisdom of this differential policy towards visitors in Germany there must be doubts, even from the point of view of the Germans themselves.

THE FRENCH MINISTER OF HEALTH.

At the luncheon given by the Government to M. Paul Strauss, the French Minister of Health, on August 10th, Sir Alfred Mond, who was in the chair, said that the main object of M. Strauss's visit had been to inspect a number of vacation schools which had received French children from the devastated areas as the guest of various municipalities; but he had taken the opportunity also of studying some aspects of public health administration in this country. French people had every reason to congratulate themselves on having a public man possessed of so large an experience and endowed with so much acuteness of mind to grapple with the difficult health problems left to their country as a legacy of the war. It had been a great pleasure to him to accompany M. Strauss on some of his visits; the Minister would take home with him the assurance that the British people entertained the same feelings of friendship and sympathy with their great ally across the Channel as the people of this country were confident the French people entertained for them. M. Strauss spoke very warmly in reply. He thanked the English people for their hospitality to French children from the devastated areas. The privations suffered by the population of those districts had produced a most serious effect upon their health; he quoted among other evidences of this effect the great increase which had occurred in tuberculosis. It was not, he said, the first occasion on which he had come to this country to study public health administration, but he had found much to interest him on the present occasion; he referred especially to his visits to Bromley, Portsmouth, and Dover, and thanked the municipalities for their readiness to help. Among those present at the luncheon were the French Ambassador, the Earl of Crawford (First Commissioner of the Board of Works), the President of the Royal College of Physicians of London, Sir George Makins, G.C.M.G., Sir George Newman, Sir George Buchanan, Dr. F. E. Fremantle, M.P., and Dr. Nathan Raw, M.P.

HUMANE SLAUGHTERING.

A decision by the High Court, Dodd *v.* Venner, June 14th, 1922, has encouraged societies interested in the humane slaughtering of food animals to stimulate public interest in the subject. The usual method of killing cattle in this country is to knock them down with a poleaxe. In North and South America and in Australia a hammer is commonly used. Stunning by such methods, if done by an expert, must be accepted as humane, but unfortunately not all slaughtermen are experts, at any rate at the commencement of their careers as such. In this country sheep are almost always killed by cutting the throat, after which the spinal cord is dealt with, but consciousness continues for a time during the operation. Calves and pigs may or may not be stunned before slaughter. If not stunned they suffer after their throats have been cut until consciousness is lost as a result of cerebral anaemia. Nowadays the instruments recommended for this purpose are those which discharge a bullet into the brain of the animal to be slaughtered. A few years ago captive bolt pistols were recommended for the smaller animals, the stunning being effected by means of a rod, which was shot into the skull of the animal by discharge of a cartridge and automatically withdrawn therefrom by means of the recoil. The disadvantage of this kind of instrument was that, if not carefully attended to, the bolt was apt to jam, and at the present time the use of bullets is recommended; an instrument which discharges a bullet is, however, potentially dangerous to persons in the slaughterhouse unless properly handled. In 1915 the Local Government Board revised the model By-laws (Private Slaughterhouse Series), offering local authorities the option of adopting alternative clauses known as 9A and 9B. Clause 9A requires that specified kinds of animals must be stunned, effectively before slaughter. This requirement, as adopted by a local authority, nearly always excludes sheep, and quite often pigs also. Clause 9B provides that "a person shall not in the slaughterhouse proceed to slaughter any animal until the same shall have been effectively stunned, and such stunning shall, except as hereinafter provided, be effected with a mechanically operated instrument suitable and sufficient for the purpose." One of the provisos exempted sheep from the requirement for a period of three months from confirmation of the by-law. Animals slaughtered according to the Jewish method are exempted from the provisions of either clause; at the Metropolitan Cattle Market, Islington, some 80 per cent. of the cattle are slaughtered according to the Jewish method. The orthodox Jew, however, only eats the meat of the fore-quarter, so a considerable amount of the flesh of animals slaughtered according to the Jewish method is consumed by Christians. A meat inspector, however, pays attention to many matters not regarded as important from the standpoint of the Jewish ritual. A considerable number of local authorities, including

the County Borough of Reading, have adopted Clause 9B with the sanction of the Minister of Health. Early in 1922 a butcher in Reading, who was a bacon curer, declined to comply with By-law 9B on the ground that it was "unreasonable"—a valid objection in a court of law to a by-law, even though it had been sanctioned by the Minister of Health. The High Court, which is the ultimate court of appeal in this matter, decided that this by-law, if properly made, was "reasonable," and therefore enforceable by penalty; the case accordingly was remitted to the justices with instructions to convict. The societies mentioned are at the present time doing their best to persuade local authorities throughout the country to adopt Clause 9B, and the Minister of Health will no doubt resume his practice of sanctioning a by-law in that form. Efficient kinds of instruments are available for this purpose. For cattle the R.S.P.C.A. killer and the Greener gun are satisfactory; if properly applied there is no risk of accident. For sheep, pigs, and calves the Greener "Safeti" pistol appears to be the best instrument at present available. Medical practitioners whose advice may be sought on this subject will be glad to be reminded that the form of by-law dealing with humane slaughtering allowed by the Minister of Health has been held to be reasonable on appeal to the High Court.

"MASTTUBERKELBAZILLENEINHEITSVAKZINE" AND OTHERS.

FEW physicians have the time, opportunity, or inclination for following in detail the numberless publications dealing with the specific diagnosis and treatment of tuberculosis in the German medical journals. Whatever the quality of these publications, their quantity is imposing, and Dr. Bandelier and Professor Roepke[1] are to be congratulated on the courage and skill they have shown in collecting, summarizing, and reviewing all the recent German work on this subject in one volume. It weighs over 3 lb., but thanks to an orderly system of classification, and an index, it is fairly easy to find one's way and to get a bird's-eye view. Not only the number of specific remedies, but also the multiplicity of the methods of administration, is impressive. The physician has the choice of Koch's old tuberculin, albumose-free tuberculin, new tuberculin (T.R.), new tuberculin (B.E.), sensitized B.E., Selter's vital tuberculin, Landmann's tuberkulol, Klebs's, Rosenbach's, and Béraneck's tuberculins, Carl Spengler's perlsuchttuberkulintherapie, Deycke-Much's partial antigen treatment, Friedmann's turtle vaccine, and Strubell's "masttuberkelbazilleneinheitsvakzine." There is also a liberal choice of serums, including Maragliano's, Marmorek's, Strubell's, Bruschettini's serum-vaccine, and Carl Spengler's "I.K." This list is very incomplete. The methods of administration are almost equally numerous—there are the cutaneous, percutaneous, intracutaneous, and subcutaneous routes, and each of these main routes can be subdivided almost indefinitely. Bandelier and Roepke are remarkably fair in their judgement; the case for and against each remedy is given in abstracts from original papers, and then the evidence is summed up. A favourable verdict is seldom given. This is perhaps inevitable, for the outstanding fact is that, while the specific treatment of tuberculosis in Germany has become more and more complicated and variegated, the morbidity and mortality have gone up by leaps and bounds since the beginning of the war. Overwork and underfeeding are forces against which laboratory ingenuity is practically helpless where tuberculosis is concerned. The impression left by the perusal of this work is that research in the specific treatment of tuberculosis has lately gone competitively mad, and that team work has given place—if it ever existed—to privateering of a sadly unproductive character. Each investigator has his following, and the competitive clamouring of the followers in different camps has done much to obscure the issues. Though the total amount of work done is prodigious, it is only too obvious that an infinite capacity for taking pains does not always yield the fruits of genius.

[1] *Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose.* Leipzig. 1922. Curt Kabitzsch. Pp. 651.

LORD NORTHCLIFFE'S DEATH.

THE death of Lord Northcliffe from a typical attack of infective endocarditis, while in the prime of his life and activity, is all the more deplorable because if he had realized the significance of the early symptoms from which he must have suffered it is practically certain that treatment could have been adopted which might perhaps have prevented the development of the complication from which he died. The acute disease to which he was a victim was due to an infection of the heart by a streptococcus, and was therefore of the severest type of this intractable form of disease of the heart, which on that account is frequently called malignant endocarditis. What seems probable is that he had, in fact, suffered from streptococcal infection for at least a year. The origin of the infection in these cases is often very obscure, but not uncommonly it can be traced to a septic infection around the roots of teeth, and it may be that this is how it began in Lord Northcliffe's case. However this may be, there can be no doubt that he had a general streptococcal infection and that eventually the blood was invaded. Very often the history of this extremely fatal form of endocarditis suggests that the infection, having reached the blood, attacks one of the valves of the heart which may have been damaged, perhaps by rheumatism, many years before. It is known that Lord Northcliffe had a cardiac murmur at least fifteen years ago; how long it had been present before that is not known. It is one of those incidental discoveries which are not of very much significance unless, as in his case, the damaged valve of the heart becomes infected. Although, as has been said, it is possible that he may have had symptoms of septic poisoning which could have been recognized a year or so ago had he then sought medical advice, the fact remains that until the heart was attacked by the infection he was not himself aware that anything was wrong. Remittent fever, with all its well-known accompaniments, exhausting the physical and mental powers of the patient, is one of the usual manifestations of the disease, which, in this instance, followed its almost invariable course, for it is one little amenable to treatment. The symptoms, as already said, were typical, and that sums up the case.

THE EDUCATIONAL NUMBER: NEW FEATURES.

THE Educational Number of the BRITISH MEDICAL JOURNAL for 1922 will be published on September 2nd; it will contain certain new features. We shall have the privilege of publishing an introductory article, contributed at our request by Sir Clifford Allbutt, on the training of the medical student, and another, by Professor W. E. Dixon, on the place of pharmacology in the medical curriculum. In view of impending changes several sections have been rewritten and much enlarged. A special article on the new era in medical education foreshadowed by the resolutions and recommendations of the General Medical Council, which will apply as from the beginning of 1923, will be published, together with details of these resolutions and recommendations. The concise information annually provided for intending students of medicine and newly qualified practitioners has been revised throughout, with the co-operation of the deans and secretaries of the various medical schools and kindred institutions in Great Britain and Ireland. Any members of the Association who may have got into the habit of looking upon the Educational Number as an annual guidebook to the profession which appears in the holiday season would do well to revise their ideas this year. The names of the authors of the two opening articles in our forthcoming issue of September 2nd are a sufficient indication that their words will appeal to a wider audience than the prospective student and his guardians. We mention this matter a fortnight ahead in order that no reader may overlook through inadvertence the important new features which will be found in the Educational Number of the BRITISH MEDICAL JOURNAL for 1922.

Nova et Vetera.

SYDENHAM.

The classics of medicine are more talked about and less read than those of other ancient sciences, and there are good reasons for the neglect. The mathematician who is curious to know how theorems which he learned at school first saw the light has not to read Latin or even to wade through the collected works of defunct masters. Ostwald's *Klassiker der Exakten Wissenschaften* are available. At the cost of a few pence and a moderate knowledge of German he may read many of the best works of the best writers. The English medical practitioner in search of specimens of old and good professional works of pocket size has had Harvey on the Circulation available for some years, one work of Galen (in the Loeb series) since 1916, and now has Dr. Comrie's selections from Sydenham.[1] Dr. Comrie has done his work admirably. His volume is attractively produced; the illustrations are pleasing and the explanatory notes neither too concise nor overloaded with tedious erudition. No two students would be likely to agree as to what should be contained in an anthology—very likely some learned man will complain that Dr. Comrie has left out the best things; but the practitioner who puts Dr. Comrie's book into his pocket and uses the opportunities which this summer's weather is sure to supply will no longer have to take Sydenham's reputation on trust.

Nominally, Sydenham is one of the most accessible of classics. The old Sydenham Society's editions, Greenhill's text, and Latham's translation are in every library and not scarce in the second-hand book market. But Latham's translation is, as the author of *Rab* more than hinted, very dull, while the text is Latin—and, we think, remarkably unattractive Latin.

Why has Sydenham become immortal? Until now we should not have ventured to give reasons because the means of judging whether our reasons were right or wrong have not been in everyone's hands. Now, thanks to Dr. Comrie, anyone can tell whether we have hit the mark, so it may amuse Dr. Comrie's readers if we attempt to justify the title of "English Hippocrates" given to Sydenham.

We hope it is not irreverent to think that Sydenham is immortal because he applied to the art of medicine the spirit of Pauline Christianity as set out in four verses of Corinthians (i, 22–25); he separated himself both from the Jews who require a sign and from the Greeks who seek after wisdom; he believed that "the foolishness of God is wiser than men, and the weakness of God is stronger than men."

The part of the Jew seeking a sign was taken by the physician who wearied his brains "with curious and irrelevant speculations, which to fulfil the promise of medicine, to save men's lives, are not worth anything," and the seekers of wisdom were "the slaves and followers who like the first inventors of speculations do deadly battle over these whimsies, while not a man of them reaches the truth, because however hard we try, we mortals cannot learn, and I think never will learn, how Nature acts, but only what she does and where she does it." (*Epistolary Dissertation*, 56). Sydenham believed that there was no vicarious salvation to be found by the physician; very little was to be learned from books—hence his advice to read *Don Quixote*—nothing to the purpose from what we now call the institutes of medicine, from anatomy and physiology. There is much in his attitude which recalls an earlier revulsion from the wisdom of this world; his "Nature" is the "God" of the Christian fathers, a wisdom not to be comprehended by mortals. At this time of day we are in small danger of being misled by the exaggerations into which his philosophy of medicine beguiled him. But there is some risk of our forgetting that his doctrine is fundamentally true, that a physician becomes really wise by the study of individual patients, that the reading of many books and the performance of many experiments in laboratories can never be substitutes for the "practice and that alone" which "elicits the indications of cure out of the phenomena of the diseases themselves" (*Epist. Resp.*, 1, 51).

We can all remember the sort of thing we did when we were clinical clerks. The medical registrar or the house-physician had entered on the bed sheet of the patient "pleurisy with effusion," and we went home and looked up "Osler" and thereafter found in the patient the physical signs which he *ought* to show, but very often did not. This must be the way of beginners, but we need to guard ourselves from the habit of looking upon patients as the living "movies" of textbook descriptions, from the danger of being misled by the analogy of diseases with plants which may be "spotted" by aid of a textbook. Although Sydenham himself used that very parallel it never misled him in practice. "I confidently hold that the aforesaid species of disease, in particular the continued fevers, may vary so enormously that you may kill your patient at the end of the year by the method which cured sufferers at the beginning of it" (*Obs. Med.*, i, 2, 37). So it is not enough to identify your particular case of measles with the measles of "Osler" or "Taylor"; you must study your patients individually.

Some men of our time have dreamed that, whether by bacteriological, chemical, or perhaps physiological research, a great intellectual synthesis may be achieved, a new universal *organon* discovered, which will enable us to give an account of the changes of general and individual type of diseases, to foretell them, and so act appropriately. In the dialect of our theological comparison, such persons are like those who look for the immediate coming of the Kingdom of Christ. To Sydenham anything of the sort was an idle dream; whether what has been learned since his time is enough to warrant a change of attitude is a point which might be debated. But the discussion is idle, since, here and now, the method of Sydenham, the natural historical method of study, can be followed without hindering the work of those forging the *organon*. Were it permitted to Sydenham again to take coach exercise in Pall Mall and to visit the new home of his old college, he would surely recognize that the "philosophers" had produced something better than "curious and irrelevant speculations," that Lister and Pasteur owed more to them than to him. But we think he would again enforce upon general practitioners the lessons of which the college physicians of his time stood in need, and perhaps think better of Sir James Mackenzie and his school than of the apostles of "Epidemic Constitutions."

"I am fully convinced," he would say again, "that, for the formation of right judgement in these matters, there is nothing so beneficial as the exact observation of the natural phenomena of the diseases themselves, likewise of whatsoever helps or hurts, and lastly of the remedies themselves and of the method we adopt to try to drive away the disease. By diligently examining and weighing all these I learn the nature of the ill and from whence I am to take indications of treatment. I learn it much better and much more surely than if I took some speculation concerning the nature of this or that principle as my pole-star. The choicest dissertations of this kind are no more than pretty tricked out metaphors which will go the way of all figments of the fancy, not grounded in the nature of things; time will utterly destroy them. The decisions of Nature, grounded in the truth of things, these shall not perish save with Nature herself." (*Tract. de Hydrope*, 23.)

Hippocrates said that philosophy must be wedded to medicine and medicine to philosophy, that the physician who is also a philosopher is evened with the gods (*De habitu decenti*, cap. 5). The puritan Englishman was humbler minded, but his gospel is one of encouragement, and its message is this: That way of "research" which is open to every doctor, which needs neither ultra-microscopes, nor knowledge of Greek, nor familiarity with differential equations, is the best way of all. Perhaps the greatest of all discoveries will not be made by the "consultant" whom we recently found so difficult to define, but by a general practitioner who brings to the research neither the contents of the *Index Medicus* nor the arithmetical wisdom of the Registrar-General and his assistants, but the brains with which Opie mixed his colours and the courage of Sydenham, together with his humility. This courage and humility, we think, justify Sydenham's reputation; whether we are in the right, Dr. Comrie's readers can judge for themselves.

[1] *Selected Works of Thomas Sydenham, M.D.* With a short biography and explanatory notes by John D. Comrie, M.A., B.Sc., M.D. Edinburgh, 1922. London: Bale, Sons, and Danielsson. (Pp. 153. 7s. 6d. net.)

Professor Schauman, of Helsingfors, who was well known for his studies on bothriocephalus anaemia, pernicious anaemia, chlorosis, inequality of the pupils, and the etiology of appendicitis, has bequeathed a large sum for the foundation of a scientific institute for the study of heredity.

The French Minister of Health has organized a special commission to co-ordinate investigations as to the etiology, clinical study, treatment, and prophylaxis of cancer. The honorary president of the commission is Dr. E. Roux, of the Pasteur Institute, and Professor Quénu is the acting president.

THE PHYSICAL EDUCATION OF GIRLS.

At the instance of the College of Preceptors a Joint Committee was formed in October, 1921, to consider the effects of physical education on girls. Representatives were appointed by the Royal College of Physicians of London, the Royal College of Surgeons of England, the British Medical Association (Mr. E. B. Turner and Mr. R. C. Elmslie), the Medical Women's Federation, the British Association for Physical Training, the Ling Association, the National Union of Women Teachers, the Association of Assistant Mistresses in Secondary Schools, the Private Schools Association, and the College of Preceptors. The Association of Head Mistresses did not accept the invitation to send representatives.

The Committee issued a paper of questions to persons who might be expected to have special knowledge of the subject. Altogether 629 replies were received, and of these 233 were from medical practitioners and 158 from women medical students; 185 replies came from headmistresses, 96 from State-aided schools, and the others from independent schools. A report of an investigation by the Ling Association was also considered. A special set of questions were sent to medical practitioners and their replies submitted to a committee consisting of the medical members.

Amongst the schoolmistresses there was a general consensus of opinion that the effects of games and physical exercise on the disposition and character of girls were beneficial; but a small number thought there was a tendency to magnify the relative importance of games, to the detriment of character.

The question whether gymnastics with apparatus is suitable for girls was specially inquired into; about 66 per cent. of the schoolmistresses were in favour of such gymnastics, but about half of those who approved were of opinion that there was special need for careful supervision if apparatus was used. Amongst women students, medical or otherwise, 80 per cent. were in favour of the use of apparatus. Very few harmful results were attributed to it, though some, especially among the women students, thought that such gymnastics conduced to muscular strength and development without gracefulness. Gymnastics without apparatus was approved alike by mistresses and by students, medical or otherwise, though a few considered such training as less valuable than gymnastics with apparatus. The need for fully qualified gymnastic teachers was emphasized.

Of games, lawn tennis and netball received very general approval; hockey, though approved by the majority of mistresses and students, was regarded by some as suitable only for the older and stronger girls and by some as too rough or strenuous a game for girls. Several objected to it as inducing faulty positions.

Very little serious objection was raised to cricket; some of the disapproval expressed was based on the ground that it entailed too much standing and might thus induce faulty carriage. Lacrosse was approved by almost all who offered any information about it. Football met with less approval than any other game; of fifty-two schoolmistresses who expressed their views on this game, only two were in favour of it, and among women students, though a few approved, many more objected to it on physical or other grounds; in general it was regarded as entailing too much strain.

Swimming was generally approved, but many schoolmistresses and students recognized that harm might be done by remaining too long in the water and that swimming was an exercise entailing some strain on the heart, so that it is not suitable for all girls. The danger of heart strain was emphasized even more in regard to rowing, which, though approved by the majority of those who gave information on the subject, was thought by some to be too strenuous an exercise for girls in general. Racing in rowing was condemned by twenty-seven out of thirty-four women medical students, and ill effects were recorded. Cycling in moderation, the cycle being properly adjusted to the individual, met with a large measure of approval; some schoolmistresses pointed out that when girls have to cycle too long a distance to school, the strain makes them unfit for mental work. The value of dancing was generally emphasized, eurhythmics were approved by some, whilst others were in favour of horse-riding, fencing, golf, badminton, or fives.

Contests in games and sports were thought by many to require careful limitation and grading with a view of preventing overstrain.

There was very general agreement that ill effects would be less likely to occur from the more strenuous forms of physical education if previous medical examination were more general, and that the risk of such effects could be reduced if a short time was devoted to games or sports daily rather than a longer time once or twice weekly. Girls should not be subjected to strenuous physical exercises after hours of mental strain, and ample time should be allowed for rest after games and sports before beginning mental work again; facilities should be given for changing underwear after strenuous games. A wise and sympathetic tact is an essential factor in adequate supervision by the games mistress.

It was found difficult to summarize the opinions held as to the general, physical, and mental effects of games and sports upon girls. By many it was thought that apart from physical fitness they conduce to alertness, resourcefulness, and judgement, and encourage a public-spirited and healthy outlook. On the other hand, a minority thought that games and sports tended to foster a love of pleasure, detrimental to home and other interests and to lessen womanly qualities.

Medical Report.

The opinion of the medical members of the Committee, after consideration of the information before them, was as follows: Suitable physical education, including games and sports, is as generally beneficial to girls as to boys. There is, however, need for discrimination; individual girls may be unfit for particular forms of exercise, and on this account medical examination as to fitness is generally desirable.

Amongst the games the committee had under consideration, tennis, netball, lacrosse, golf, hockey, cricket, and football, only the last is considered unsuitable for girls. Of sports, swimming, rowing, cycling, horse-riding, are all good for girls, provided that they are carried out under suitable conditions and excess is avoided. Competitive games and sports are equally permissible, provided they are undertaken with due regard to the fitness of the individual.

Any game or sport may become unsuitable if practised in such a way or to such degree as to cause undue strain or fatigue. There is a balance between mental exertion and physical fatigue which cannot be altogether ignored. A girl who is working at high pressure for examinations may have to play games less strenuously, and fatigue by physical exercise is a bad preparation for mental work.

With regard to gymnastics, whether with or without apparatus, there is no doubt of the value of disciplined exercises under expert direction for promoting the harmonious development of the muscles and preventing faulty position and carriage. The use of apparatus entails special care, as injurious effects may come from injudicious exercise of this sort.

An important question in connexion with the physical education of girls is whether and to what degree there should be restriction of physical exercise during the menstrual period. Abstention from games and sports has been very generally recommended hitherto, but in recent years evidence has been brought forward to show that these restrictions are harmful rather than beneficial. The medical members of the Committee are not prepared at the present time to state any final judgement on the question, but consider that the evidence they have justifies more extensive trial of the voluntary continuance of games, sports, and gymnastics (swimming excepted) during the menstrual period.

The disturbance of functions so often observed during school life occur also in girls who do not take part in athletic pursuits, and the influence of physical exercises on these disturbances is quite open to doubt. The production of any internal displacement is probably very rare.

Perhaps the most important point which arises in connexion with the physical education of girls is its influence in after-life, if any, upon motherhood.

It is difficult to obtain conclusive evidence on this point. It might be thought that the increased muscular and bone development consequent on much physical exercise might increase the difficulties of parturition, and, whether for this reason or not, labour has been thought by some to be lengthened in such cases. On the other hand, the increased muscular power might serve to facilitate parturition, and some observers have attributed a good result in this way to strenuous physical education.

On the whole, it would seem that there is no clear proof that strenuous physical education has any special influence either upon the prospect of motherhood or upon the difficulty of labour.

The conclusions reached by the Joint Committee may seem less precise and positive than might be expected, but the Committee felt that the evidence available was not such as to justify dogmatic statement on many of the points under consideration. Nevertheless, they hope the investigation may not have been without value if it draws attention to the important problems of the physical education of girls, and particularly if it serves to stimulate further research, and to encourage the collection of what is much needed—namely, well attested facts and observations.

Signed on behalf of the members of the Joint Committee,
G. F. STILL, *Chairman.*

SHELL SHOCK.

THE report of the War Office Committee of Inquiry into Shell Shock[1] issued last week is a document which may well interest the general reader as well as those members of the military and medical professions to whom it makes a more direct appeal. It may be said at once that the Committee has been successful in producing a report of which it can be asserted that it deals with every aspect of a very important problem. Throughout the report the use of the term "shell shock" is deprecated as conducive to much misapprehension, and the Committee decided to divide the cases into three categories: (1) true commotional disturbances; (2) emotional disturbances; and (3) mental disorders. Owing to the prohibitive amount of labour and expense involved in their preparation statistical details are not included, and we agree with the Committee that this omission is not a serious fault.

After an interesting preliminary in the shape of an historical memorandum from the pen of the Hon. John Fortescue, we are introduced to a summary of the evidence of some of the many witnesses examined; these included combatant officers, both staff and regimental, medical officers of regiments as well as neurologists attached to special shell-shock treatment centres, several of the consulting physicians lately attached to the armies in the various war areas, and finally a large number of distinguished medical men who were responsible for the treatment in this country of cases of shell shock and other nervous disorders. The evidence also of certain patients suffering from the condition was included.

Etiology.

Sir John Goodwin was emphatic on the value of good discipline and training in the prevention of shell shock, while General Lord Horne agreed with the usual regimental opinion that a large number of shell-shock cases in a battalion was a sign of poor moral.

Professor Roussy laid stress on the hereditary or constitutional factor in many cases exhibiting psycho-neuropathic affections, and considers that mental defectives were very often to be found among the hysterical cases. Dr. Burton Fanning's evidence on the frequent occurrence of the neuroses in the Home Forces had the effect of emphasizing the emotional factor in the etiology. Dr. Hurst's experience of neurasthenia in the Eastern theatres of war exemplified the important part played by infections and exhaustion; he agreed also as to the great difficulty of distinguishing clearly in some cases between neurosis and simulation. It is quite impossible to review in detail all the evidence brought forward; many facts of great practical value emerge from its study, especially that of the combatant officers and of those medical officers whose duties lay in or near the front line. Here we find a consensus of opinion that a poor moral and defective training are one of the most important, if not the most important, etiological factors; also that shell shock was a "catching" complaint—so much so, indeed, that in the Ypres salient the Guards refused to go into the line with a certain battalion next them.

The influence of fear, again, is a cause upon which all witnesses were agreed, especially in regard to the mental conflict engendered between the natural fear on the one hand and the duties of discipline and patriotism on the other. The fact that the neurosis serves a purpose—that is, removal from the danger zone—is brought out clearly in the evidence.

All the witnesses were agreed that the cases belonging to the class of true shell concussion were few; emotional shock was the commonest cause, to which was to be added a general nervous and mental exhaustion as the result of the prolonged strain and hardships. Thus Dr. Gordon Holmes found that between 4 and 10 per cent. of the cases were commotional; Dr. Johnson found 5 per cent. of commotional cases, 1½ per cent. only of cases showing lesions of the central nervous system, and 1 per cent. of cases with rupture of the drum of the ear.

There was a general consensus of opinion, again, that neuroses were common as the result of the action of poison gases, especially by the production of conversion hysteria.

Shell Shock as Battle Casualty.

Regarding the important practical question as to whether shell shock should rank as a battle casualty or not the Committee makes the following recommendations:

1. That concussion or commotion attended by loss of consciousness and evidence of organic lesions of the central nervous system or its adjacent organs (such as rupture of the membrana tympani) should be classified as a battle casualty.
2. That no case of psychoneurosis or mental breakdown, even when attributable to a shell explosion or the effects thereof, should be classified as a battle casualty any more than sickness or disease is so regarded.
3. That in all doubtful cases it is desirable to have the classification determined by a board of expert medical officers after observation of the patient in a neurological hospital.

Treatment.

Questions as to the best treatment elicited a majority of opinion to the effect that cases should be kept as far as possible in the divisional areas and not invalided home; experience of cases treated for long in home hospitals showed that seldom were such men able to return to the line.

The value of the regimental medical officer is insisted upon, and it is further stated that he needs no special neurological knowledge; one witness insisted that "an intimate knowledge of human nature" was the most important requisite, a fact which few could be found to dispute.

As far as the actual methods of treatment are concerned we find that the majority of witnesses were not in favour of the Freudian method of analysis, but rather of the more simple methods of persuasion and explanation. The value of occupation and re-educative exercises was insisted upon. Indiscriminate sympathy from the general public is deprecated. Another important point in treatment is the harm done by the frequent transfer of a patient from one hospital to another, with the result that no consistent line of treatment can be adopted.

The Committee lays down recommendations under which a soldier should be returned to the line, and perhaps this may form a guide for future use.

It is pleasant to read the conclusion that true malingering was probably of rare occurrence, but the Committee goes on to say that exaggeration of symptoms or the prolongation of a condition that no longer really existed was far from uncommon, and that such a form of partial malingering was very difficult to deal with.

Shell Shock and Insanity.

Much has been written in the general press of the cases of insanity supposed to be due to shell shock. This supposition receives no support from the witnesses who were examined on this point. Dr. Stanford Reade adds the significant statement that of the service patients now in asylums the majority in his opinion are suffering from dementia praecox. Professor Roussy says in the same connexion that the war created nothing in the way of the psychoses.

Prevention of Shell Shock.

The prevention of or the lessening of the incidence of shell shock is a subject which receives much attention, and it is highly significant that the first factor regarded as tending to increase the incidence and severity of mental and nervous disorders in time of war is the perpetuation of the term "shell shock."

Important conclusions are detailed in regard to the great importance of good discipline and moral, in fact of a thorough and careful training, as prophylactic measures in the prevention of the condition. The value of adequate rest away from the line is another point upon which much stress is laid. Methods of recruiting, both in time of peace and war, are dealt with at some length, and the difficulties and deficiencies discovered by the war are fully described.

One conclusion reached in this connexion is that not enough attention has been paid to the mental and psychological aspects of military service.

There are three appendices, giving the questions issued for the guidance of witnesses, tables of statistics of cases of neurasthenia treated in the Neurological Department of the

[1] The Report of the War Office Committee of Inquiry on Shell Shock. 215 pp. (London: H.M. Stationery Office. Cmd. 1734.) Post free 6s. 3d.

British Salonica Force, and outlines of the principles of training considered desirable in the prevention of shell shock.

The report is one which in all its parts will amply repay careful study.

THE HEALTH AND HEALTH ADMINISTRATION OF ENGLAND.

A PRELIMINARY notice of Sir George Newman's report for 1921[1] on the State of the Public Health appeared in our issue of August 5th. The report is exceptionally short, but it takes note of all parts of the field of public health work in England and Wales. Its brevity makes possible, by further condensation, the presentation to our readers of an epitome of the health administration of England sufficiently short for convenient perusal and yet inclusive enough to avoid omission of anything of primary importance. It is very desirable that every practitioner of medicine should realize the scope and the variety of detail in modern work as carried on in this country for the maintenance of health and the prevention of disease.

The order in which the essentials of preventive medicine are stated in this report is unusual. To develop and fortify the physique and powers of the individual comes first; next we must seek to discover and then to prevent or remove the causes and conditions of disease, whether concerned with domestic or industrial environment or personal habits. As urbanization advances the fundamental necessities of a healthy community can only be provided by itself.

A Ministry of Health as a central co-ordinating department was proposed by Sir John Simon in 1854, but was established only in 1919. In addition, the country requires local authorities, voluntary agencies, the medical profession as instrument and interpreter of hygiene, and an educated people willing and able to practise the way of health. The voluntary element is invaluable, and not the medical profession but the local authorities, representing the people, must control expenditure. Wise expenditure is like a lifeboat or a fire engine, and is besides a long-term investment, yielding a thousandfold, but only in course of years or generations. Millions of persons in Russia and elsewhere died in 1921 because there was no sanitary service to save them. Wise expenditure is true economy. Here the author changes the order already noticed. "A sanitary environment and education in hygiene which affect the entire population obviously stand first." Next are maternity and child welfare, the health of the school child, industrial hygiene, the prevention and treatment of disease, both infectious and non-infectious, and research.

THE STATE OF PUBLIC HEALTH.

The birth rate in England and Wales in 1921 was 22.4, a decline of 3.1 from the previous year, but the 1920 rate was exceptionally high as a reaction from the war years. The death rate fell from 12.4 to 12.1, the lowest on record. The following table gives the figures for the principal causes of death:

England and Wales: Deaths from Principal Causes, 1921.

Disease.	Number of Deaths.	Proportion per 1,000 Deaths from all Causes.
Measles	2,241	5
Whooping-cough	4,576	10
Diphtheria	4,772	10
Influenza	8,995	20
Tuberculosis of respiratory system	33,575	73
Other forms of tuberculosis	9,173	20
Cancer	46,022	100
Diseases of nervous system and sense organs	48,217	105
Disease of the heart	53,707	117
Other diseases of circulatory system	14,571	32
Bronchitis	33,684	73
Pneumonia	34,703	76
Other diseases of respiratory system	5,707	12
Diarrhœa and enteritis	17,033	37
Other diseases of digestive system	18,329	40
Diseases of genito-urinary system	17,852	39
Premature birth and diseases of early infancy	26,442	58
Old age	27,405	60
Violence (all forms)	16,501	35
Other causes	35,1 5	77
Total	458.629	1,000

[1] On the State of the Public Health. Annual Report of the Chief Medical Officer of the Ministry of Health for 1921. H.M. Stationery Office; to be obtained through any bookseller. (Pp. 115. 1s. 6d. net.)

Infant Mortality.

Infant mortality was 83 per 1,000 births. This is higher than in the previous year, when it was 80; yet is even more satisfactory, looking to the hot and dry summer of 1921. The diarrhœa and enteritis rate under two years rose from 8.3 to 15.5, yet the total rate, including these figures, rose only by 3, so that in deaths from other causes there was a decided fall. A table given later in the Report shows the great progress made since the beginning of the century in diminution of deaths of infants. In the first four weeks of life, however, there has been little improvement. That age period has not yet come under effective control, no doubt owing to constitutional defect, part of which is due to insufficient antenatal attention; among illegitimate infants the rate was as high as 158 against 83, and the reasons are unfortunately easy to find.

Adult Mortality.

The lessons of the English life tables for the two periods 1838–54 and 1910–12 (unfortunately the latest available) are that the average lifetime of males has increased from 40 to 51 years, and of females from 42 to 55 years. But this is made up of a higher rate of improvement in the early years, and a lower in the later, so that at the age of 45 the extension of male expectation had only been from 22.76 to 23.92 years, and at 55 the condition was stationary. Sweden is much better off; at 45 a man there has three more years to look forward to than in this country, and at 55 the same difference exists. It was not always so. The Swedish expectation used to be lower than the English. Our largest single cause of death at these ages is pulmonary tuberculosis, and its decline has been much slower than in the earlier age groups. Respiratory diseases, including pneumonia, come next, and here manufacturing Lancashire has a bad pre-eminence not to be explained wholly by climate, as Cumberland is much lower. Neither is poverty the reason. Incomes in Bolton and Warrington, as shown by Professors Bowlby and Burnett Hurst for 1911–13, were a good deal higher than in the industrial town of Reading, yet the Reading death rates were much lower. Though there is more overcrowding in the two Lancashire towns, that can hardly account for Reading's more favourable health position; it has more overcrowding than Northampton, and yet has a lower death rate.

In summing up Sir George Newman does not profess to put his finger on the exact causes of the statistical facts. After discussing various relevant considerations he says:

> "Yet neither by physique alone nor by ventilation of workplaces alone will a security against disease be afforded. Temperance in food and drink is not alone a perfect defence. It is by the accumulation of all these safeguards, by temperance in food and drink, by the cultivation of good habits of body, by rational attention to the environment both of the workplace and the home, that an enduring defence against not one but all forms of disease is created."

Sickness and Invalidity.

Statistical tables of infectious disease for 1921, which, excluding tuberculosis, are responsible for about 10 per cent. of mortality, are followed by a brief consideration of sickness and invalidity. Two sets of data exist, one relating to school children, the other obtained from statistics supplied under the National Insurance Act. The number of school children inspected in 1921 was, in round numbers, 2,500,000, and about 40 per cent. were found with defects. The chief types of defect were malnutrition (3 per cent.), nose and throat disease (15 per cent.), enlarged glands (6 per cent.), serious dental disease (20 per cent.), anæmia (3 per cent.), deformities, defective hearing, and skin disease (2 per cent. each).

Under the Insurance Act the average annual amount paid for sickness and disablement benefit for men during the last nine years was £4,208,720. These figures represent a total of 9,163,613 weeks of incapacity; for women the corresponding figure is 5,312,461 weeks. The total for both sexes every year is more than 278,000 years of lost time, or the work of 278,000 persons for one year. Data selected from a special investigation of 226 practices in 116 towns give the causes of incapacity in 36,325 cases of illness, and the following table (p. 324) states the results.

Minor maladies, it will be observed, are more notable than tubercle, cancer, or organic heart disease. This fact, taken with all the ailments which do not cause unfitness for work, but in which the doctor is consulted, indicates the opportunity which the Act affords for the practice of preventive medicine.

Insured Persons in Representative Cities—Proportion of Certain Diseases to Total Cases—1916.

Disease.	Total.		Male.		Female.	
	No.	Per 1000 of Total.	No.	Per 1000 of Total.	No.	Per 1000 of Total.
Influenza	3,097	85.3	2,004	90.2	1,093	77.5
Tuberculosis, all forms	505	13.9	320	14.4	185	13.1
Organic heart disease	520	14.3	355	16.0	165	11.7
Anaemia	1,187	31.9	74	3.3	1,033	73.8
Bronchitis, bronchial and nasal catarrh, cold, etc.	7,739	213.0	4,988	224.4	2,751	195.2
Pneumonia and other diseases of the respiratory system	537	14.8	395	17.8	142	10.1
Diseases of digestive system	4,766	131.2	2,797	125.8	1,959	139.6
Diseases of genito-urinary system	912	25.1	339	15.3	573	40.6
Diseases of nervous system and special senses	1,775	48.9	1,088	49.0	687	48.7
Skin diseases	1,741	47.9	1,039	46.7	702	49.8
Injuries and accidents	2,871	79.0	2,358	106.1	513	36.4
Abscess, boils, and other septic conditions	2,503	68.9	1,647	74.1	856	60.7
Lumbago, rheumatism, etc.	3,181	87.6	2,201	99.0	980	69.5
Debility, neuralgia, and headache	1,999	55.0	855	38.5	1,144	81.1
Malignant disease	67	1.8	45	2.0	21	1.5
Other diseases	2,955	81.4	1,720	77.4	1,236	97.7
Total	36,325	1000.0	22,225	1000.0	14,100	1000.0

Maternity and Child Welfare.

Maternal deaths from sepsis in childbed have ranged from 2.18 per 1,000 births in 1920 to 1.45 in 1921. The movement is irregular, but is in the right direction. From causes other than sepsis the lowest year was 1908 with 2.09, and the highest 1900, with 2.63, but there is really little perceptible change. Of the 3,323 deaths in 1921 the main causes were sepsis (1,171), albuminuria and convulsions (604), haemorrhage (469), other accidents of childbirth (383), and embolism and sudden death (262).

Last year's hot summer supported Ballard's observation that infantile diarrhoea does not begin until the earth thermometer at 4 ft. shows a temperature up to or over 56° F. Factors of importance no doubt are cleanliness, destruction of flies, and the use of dried milk where storage is defective.

The special value of the education of mothers is testified from many districts. For economy's sake new child welfare centres are not being established. As regards the policy to be followed at existing centres, it is evident that the Ministry's experience is leading it in the same direction as in the United States. Treatment is not its function. There should be no giving of prescriptions, nor routine sale of medicines even when paid for at cost price. The sale of foods should be limited to cases in which they are ordered by the doctor and the mother cannot afford to get the article in the usual way. The distribution of free milk through the centre should be avoided as far as possible. In short, it is italicized that the centre's main functions should be "*the supervision of the healthy infant and the education of the mother.*" That is a very important declaration of administrative policy and is on thoroughly sound lines.

Health Visiting.

The number of whole- or part-time health visitors employed by local authorities in England and Wales was 3,378. About 74 per cent. are trained midwives and 67 per cent. trained nurses. "Their work may be of great value or practically useless, according to the way it is carried out," and "no visit can be of real value unless the visitor appreciates its purpose and possibilities and goes about the business of making friends with and of teaching the mother in the right way." No attempt is made to state what proportion of the work approximates to the principle thus set forth, but the emphasis given to it makes clear that the Ministry is of opinion that the work is not universally well done.

Infant Hospitals and Observation Wards.

About forty-five infant hospitals and observation wards have been recognized. They are intended for the less serious but more chronic type of case which cannot remain in the ordinary hospital yet needs institutional treatment, and the number of beds is limited. Once more the educational note is struck. "It is also desirable that the mother shall be taught how to manage her child when it returns home."

In the course of some comments on auxiliary services—day nurseries, homes for healthy babies and for unmarried mothers—it is pointed out that young children should as far as possible not be placed in institutions. Good foster-mothers are the best, and small cottage homes come next. This was the line taken by the Royal Commission on the Poor Law. Homes for unmarried mothers are not being fully utilized; girls cannot be persuaded to stay in them long enough; it may be necessary to close some homes or to use them for different purposes.

(To be continued.)

Scotland.

MILK ADULTERATION IN EDINBURGH.

THE Scottish Board of Health has issued its report on the administration of the Food and Drugs Acts during the year ended September 30th, 1921. Most local authorities give a good deal of attention to sampling and analysis, but in some places only a few articles are sampled, and in others the work is confined to milk. In certain areas samples are taken on only one or two days in the year, but these observations do not apply to the large centres or more important county areas. Of 6,327 "formal" samples (purchased for legal action if necessary) 514 were reported against. In the previous year the corresponding figures were 6,430 and 591, so that the percentage fell from 9.2 to 8.1. Of milk 4,418 samples were analysed, and of these 402, or 9.1 per cent., were found adulterated. The great bulk of them were of new milk, but among a few samples of skim milk, butter milk, and cream powder a certain number were found adulterated, whilst all of the few samples of condensed milk were genuine. The most remarkable fact about the figures is the extraordinary percentage of adulteration in Edinburgh. Whilst Dundee, Glasgow, and Aberdeen had 8.8, 7.3, and 5.8 per cent. respectively, Edinburgh had the amazing figure of 39.6 per cent.—that is, of every five samples taken two were not genuine. Surely the town council of the capital of Scotland will have something to say to this smirching of its fair fame. From the tables we find that the milk samples taken in Edinburgh numbered 149; 59 were adulterated, so that the high percentage cannot be excused as a chance result from insufficient data. In London, as shown in the Report of the Ministry of Health, the percentage of milk adulteration was only 5.1, whilst that for the whole of England was 8.6; the capital, therefore, was better than the provinces, whilst in Scotland the position was very much the reverse.

As to butter, 34 of 411 samples taken were adulterated, but only one of 202 margarine samples was not correct.

Egg powder is specially reported on by Dr. Tocher of Aberdeenshire. Basing his remarks on nine samples he says:

"Results show that the powders contain none of the constituents of eggs, and that therefore the title 'egg powder' is a misnomer. It is well that the public should know the composition of such 'egg powders,' so that purchasers may not be misled into thinking that the powder is in any sense an article of food. The statement that egg powder is the only real substitute for eggs is not warranted from the results of analysis, although the 'egg powder' may possibly be quite useful as a raising agent or for other purposes in cooking."

Among the 191 samples of drugs taken 11 were reported against; of the 191 no fewer than 118 were of cream of tartar, so that only 73 samples of other drugs were taken throughout Scotland, and the Board considers that this reveals very insufficient sampling. Mixtures of malt and cod-liver oil are the subject of an important paragraph. A certificate of analysis of one sample showed the percentage of oil to be only 2.82, while according to the *B.P. Codex* it ought to be 50, and the extract of malt with cod-liver oil should contain 15 per cent. of the oil. The Board communicated with the General Medical Council and received the reply that the question of including in the *British Pharmacopoeia* an emulsion of cod-liver oil and of an extract of malt and cod-liver oil would be considered during the preparation of the next edition, or earlier if an addendum to the *Pharmacopoeia* should become necessary. The report concludes with a series of statistical tables.

THE CENTRAL MIDWIVES BOARD FOR SCOTLAND.

The report on the work of the Central Midwives Board fo Scotland for the year ended March 31st, 1922, is signed by th president (Dr. James Haig Ferguson) and the secretar

(Mr. D. L. Eadie), and contains indications of considerable activity—for instance, the Board had thirty meetings (including committees) during the year; down to March 31st 452 midwives were enrolled after passing the examination of the Board, 7 were certified in virtue of *bona fide* practice, and 15 by approved bodies, making a total for the twelve months of 474, which, added to the previous enrolments 4,548, gave a grand total of 5,022. Of this total the larger part consisted of the 3,292 who had been admitted in virtue of certification under Sections 2 and 11 of the Midwives (Scotland) Act of 1915—that is, through holding recognized certificates or in respect of having been in *bona fide* practice at the passing of the Act. The number admitted under these sections is year by year dwindling, and before long they will cease. As evidence of reciprocity between the three parts of the British Isles it was noted that during the past year fourteen midwives holding the certificate of the Central Midwives Board for England after examination and one midwife holding that of the Central Midwives Board for Ireland after examination had been admitted to the Roll in terms of Section 11 of the Act. Nine midwives died during the year.

There were four examinations as usual at three of the centres—namely, Edinburgh, Glasgow, and Dundee—and three at Aberdeen. The greatest number of candidates (247) appeared at Glasgow and 32 were rejected, or 12.95 per cent.; the next largest number (198) were at Edinburgh, where 19, or 9.59 per cent., failed; 100 per cent. of the number (55) at Dundee succeeded in satisfying the examiners; and 4 out of 27 failed at Aberdeen (14.28 per cent.). The average of rejections worked out at 10.86 per cent.; and it was gratifying to find that the pass marks secured by the successful candidates averaged 62 per cent. of the possible. The statement appears in the report that "the Board have continued the regular system of visitation of examinations by selected members of the Board which was instituted last year and it has been found to be beneficial alike to examiner and candidate."

The penal cases were not numerous. As the result of the hearing of the charges the names of five women were removed from the Roll, while in addition three were prohibited from attending women in childbirth in any other capacity. In two of these instances the offence charged was that of failure to send for medical assistance in cases of inflammation of the eyes of the child and failure to notify these cases; in other instances failure to send for medical assistance in the cases of rupture of the perineum, *post-partum* haemorrhage, failure to notify contact with patient suffering from puerperal fever, failure to attend during full period of the puerperium, and in one case leaving the patient before the expulsion of placenta and membranes. There were two suspensions from practice for three months; and a large number of cases of minor offences were dealt with by warnings sent through the medical officers. Prosecutions against women who had been practising as midwives without having been enrolled or after having been struck off had been successfully instituted by the officers of the local supervising authorities, and had had a salutary effect in reducing unqualified practice in certain areas.

An interesting fact noted by the Board was that the practice of midwifery in certain districts was falling largely into the hands of midwives. There were, however, wide differences. In two places (Cockenzie and Prestonpans) 100 per cent. of the total births (probably not many in all) were attended by midwives; in Cowdenbeath, Port Glasgow, and Tain the percentage was from 80 to 90; in Dalkeith it was 75 per cent.; in Glasgow it reached 48.85 per cent.; in Bathgate it was 16.5, in Edinburgh 8.3, and in Moray County only 1.5. These differences point to interesting fluctuations in the distribution of practice between doctors and midwives, not always explicable on general principles. Some interesting statistics are supplied relative to the number of cases in which medical assistance was called in for emergencies, and to the number of cases of ophthalmia neonatorum, of puerperal septicaemia, and of stillbirths.

After meetings with representatives of the Scottish Board of Health, the Board decided, in connexion with the occurrence of ophthalmia neonatorum, to insert a rule making provision for midwives in all cases dropping a 1 per cent. solution of nitrate of silver or other approved silver preparation into the infant's eyes as a preventive. Appendices give the list of institutions at which midwives may be trained and the names of the examiners recognized by the Board.

Convalescent Hospital for Edinburgh.

The Edinburgh Royal Infirmary has (since 1867) had a convalescent hospital at Corstorphine with eighty beds; but through the setting free of a large sum of money left some twenty years ago by the late Mr. David Ainslie of Costerton, East Lothian, new beds for this purpose will soon be available. Mr. Ainslie left instructions that the money was to accumulate for fifteen years, and that then the principal and accumulated funds were to be used to construct a convalescent hospital to be called the Astley-Ainslie Institution. The fifteen years expired some time ago, but the prohibitive cost of building materials and labour delayed progress; now, however, a beginning has been made with the purchase, for a sum of about £70,000, of certain beautifully situated properties in the southern suburbs of Edinburgh. They cover about 25 acres and consist of Canaan House, Canaan Park School, Millbank and Southport Houses, and a ladies' golf course. When all the residences are completed there will be room for between 300 and 400 persons; but in the meantime only the school is to be prepared for use. It will provide accommodation for 50 convalescent women patients along with nurses and staff, and it will be ready by the beginning of 1923. The Governors of the institution will be appointed as follows: five by the Managers of the Edinburgh Royal Infirmary, one each by the Court of Session, the Royal College of Physicians, the Royal College of Surgeons, the Merchant Company, the Chamber of Commerce, the Chartered Accountants' Society, and the Church of Scotland Presbytery of Edinburgh.

England and Wales.

Welsh Board of Health.

The Minister of Health has made the following appointments (unpaid): Captain Ernest Evans, M.P., to be a member of the National Health Insurance Joint Committee; Professor Ewen J. Maclean, M.D., F.R.C.P.Lond., F.R.S.Edin., J.P., to be the Chairman of the Welsh Consultative Council.

Milk Prosecutions.

We referred at length on August 5th (p. 232) to Circular 325 issued by the Minister of Health with regard to prosecutions for selling milk deficient in fat. The matter has been under the consideration of the Special Committee on Foods of the Society of Medical Officers of Health, and its report was adopted by the Society at its annual provincial meeting at Bournemouth on July 28th. The circular of the Minister of Health recommended that in cases of milk adulteration prosecutions should be instituted only where a series of tests have shown repeated default. The Society in adopting the report of its Committee expressed its regret that such a circular should have been issued and its hope that the Minister on reconsideration will withdraw it. The Society is of opinion that the circular presents no advantages except to the unscrupulous milk dealer. "The honest trader," the report continues, "is amply protected since local authorities are always willing to consider exceptional circumstances. If he still feels aggrieved after a decision (it should be noted that the standard with which a milk seller is required to comply is only one of *presumption*), provision exists whereby, in such instances as those enumerated in the Circular, the milk seller may submit proof to the magistrate, in case of prosecution, that the circumstance is one arising from natural causes and not from wilful tampering with the milk." The report concludes by expressing the opinion that certain of the effects of the Circular will be as follows:

(*a*) Some unscrupulous dealers will take advantage of the concession and continue to extract fat from, or to add water to, milk until that series of tests which will show "repeated default" has been obtained.

(*b*) The probability of a positive series being obtained within a brief period will be decreased if the milk seller ceases to adulterate for a time after a positive result has been obtained. Such intermittency will reduce the probability of default being detected; or with the same intention such milk seller might only reduce the quality of the milk on certain days with obvious effects on the value of the sampling.

(*c*) Informal sampling cannot always be carried out, and the question arises whether in the case of positive results being thus obtained they can be used in court as evidence of "repeated default."

(*d*) Milk is the most important food of infants, and of many invalids, and inferior milk may continue to be supplied with the

knowledge of the local authority to certain persons to their serious detriment—that is, during the time the series of tests to prove "repeated default" are being obtained.

(c) The Food and Drugs Acts were never intended to bear this generous trading concession, and if such applies to the milk seller it ought to be held to apply to every other trade sample.

Victoria.

THE AUSTRALASIAN MEDICAL CONGRESS, BRITISH MEDICAL ASSOCIATION.

THE Australasian Medical Congress, which formerly met triennially in the capital cities of Australia and New Zealand, has been reconstituted as an Australasian Congress of the British Medical Association. The first session under the new conditions is to be held in the University of Melbourne from Monday, November 12th, to Saturday, November 17th, 1923, under the presidency of Mr. G. A. Syme, F.R.C.S. The general secretary is Dr. A. L. Kenny, 13, Collins Street, Melbourne, to whom all communications should be addressed. Members of the British Medical Association in Great Britain and Ireland, who may find it convenient to take a long holiday in Australia, will be particularly welcome at the Congress, and may be assured of a generous hospitality. As the great Melbourne Cup Race Carnival commences on Saturday, November 3rd, and terminates on Saturday, November 10th, overseas visitors to the Congress will be able to combine pleasure with business. Further, November is one of the most delightful months of the Australian spring. The sections of the Congress comprise Medicine, Surgery, Obstetrics and Gynaecology, Pathology and Bacteriology, Preventive Medicine and Tropical Hygiene, Ophthalmology, Otology, Rhinology and Laryngology, Neurology and Psychiatry, Diseases of Children, Naval and Military Medicine and Surgery, Dermatology, and Radiology and Medical Electricity. The names of the presidents and secretaries will be announced later.

POST-GRADUATE LECTURES ON NEUROLOGY.

The British Medical Association, Victorian Branch, in conjunction with the University of Melbourne has organized an excellent series of lectures on clinical neurology. The course has been well attended, the lectures were delivered by Dr. J. H. Anderson, Dr. R. R. Stawell, and Dr. Frank Andrew.

MEDICAL STUDENTS AT THE UNIVERSITY OF MELBOURNE.

The number of entries of first-year students of medicine for the current academic year shows a diminution, and for the first time since the origin of the war approximates more nearly to what may be regarded as normal. The following figures, which are not without interest, show the number of first-year students for the respective years:

1913	98	1917	163	1920	202
1914	116	1918	192	1921	151
1915	99	1919	209	1922	110
1916	127				

During the whole of this period no attempt has been made by the University Council to restrict the numbers to those for which the University has accommodation, nor has there been any increase in the fees. The results to the University have been somewhat disastrous, as the teachers have been overburdened, and the true function of a university—the advancement of knowledge by research—has become an impossibility.

Leave of absence for twelve months from last May has been granted to Dr. W. A. Osborne, Professor of Physiology, in order to visit America and Great Britain.

THE International Congress of Comparative Pathology, which was to have taken place at Rome in September, has been postponed till next spring.

THE eleventh Italian Congress of Stomatology will be held in Rome on October 1st under the presidency of Professor Piergili, when the following subjects will be discussed: Lesions of the masticatory apparatus in relation to the laws of industrial accidents, introduced by Professor Beretta; modern progress in facial orthopaedics, introduced by Professor D'Alise; the question of extractions in dento-facial orthopaedics, introduced by Professor Boggio; anaesthesia in dentistry, introduced by Dr. Cavina; modern views in the application of movable and immovable dental prosthetics, by Dr. E. de Vecchis.

Correspondence.

BONE-GRAFTING IN TUBERCULOUS SPINAL CARIES.

SIR,—Mr. Roth, in his letter published in the JOURNAL on August 12th, writes that certain statements made by Sir Henry Gray on the subject of bone-grafting for spinal caries are open to serious criticism, and he proceeds, with emphasis, to condemn the operation without reservation. Sir Henry Gray based his observations on a series of twenty-eight cases, and it so happened that when his paper appeared a communication of mine (made to the Royal Academy of Medicine in Ireland some months ago), dealing with twenty-seven similar cases, was in the hands of the printers. My deductions and results correspond in a large measure with those recorded by Sir Henry Gray, and I expressed an opinion in favour of operation in selected cases.

Before analysing Mr. Roth's "serious criticism," I can make my own position clear by quoting Royal Whitman (1919). He expresses admirably what I believe is the position of most surgeons when called upon to decide between the operative and non-operative treatment of spinal caries.

"One may conclude, therefore," he says, "that operative treatment, although of the greatest value in selected cases, particularly in the adolescent or adult class, is not to be undertaken as a routine measure in the treatment of Pott's disease, but that it is distinctly supplementary to conservative treatment."

And again: "Operations of this character are more likely to be successful in the curative sense in the adolescent or adult class than in early childhood."

I have read Mr. Roth's letter paragraph by paragraph.

1. He objects to the statement that fixation is essential to success, and adds that physiological rest is prevented by absolute fixation. He contends that the argument of easy operative fixation as against difficult mechanical fixation therefore does not arise. I wonder how many experienced orthopaedic surgeons will agree with Mr. Roth on the question of absolute fixation and physiological rest.

2. Sir Henry Gray points out that the behaviour of an abscess in cases of spinal caries treated by operation is uncertain. Mr. Roth reads into this statement the meaning (abscess, he says, occurs in 48 per cent.) that nearly half the cases derive no advantage from operation as compared with non-operative treatment. "On Sir Henry's own showing," he says, "even if he is right, nearly half the cases would not be cured any quicker by operative methods." There was nothing in Sir Henry's paper which conveyed this meaning to me. I have had four cases of spinal abscess, treated exhaustively without success, get rapidly well after bone-grafting the diseased spinal segment. I believe it was the absolute fixation which brought about so happy a result.

3. Sir Henry Gray quotes authorities and statistics which appear to show the higher mortality following the conservative form of treatment. Mr. Roth could have perhaps helped us in this matter, for accurate statistics with regard to mortality in this disease, for obvious reasons, are difficult to obtain. Whitman, according to Gray, said (in 1901), "At least 20 per cent. of all patients die during the progress of the disease." "Could he have not quoted from a more up-to-date book," says Mr. Roth, "as, for example, Rendle Short's *Index of Prognosis*, 1918, second edition, where we are told that we may take it that the mortality is about 5 to 10 per cent.?" I have before me Royal Whitman's book (1919), kindly sent by the author, and the 20 per cent. statement is repeated. If Mr. Roth desires still more recent literature the Mayo Clinic's 1921 volume has just arrived from the publishers. He will find in this a study of 166 patients treated by bone-grafting for spinal caries, and a statement from Henderson that the results of operative are better than the results of non-operative treatment. Henderson concludes his paper by saying, "I shall continue to advise operation in adults."

4. Mr. Roth says, "He [Sir H. Gray] surely must know that it is usually the onset of deformity which first draws attention to the presence of disease." Surely Mr. Roth does not intend this statement to be taken literally. It is common knowledge that the disease is, and should be, recognized in most cases long before deformity occurs. He quotes Rollier in support of the statement that in *all* active cases the deformity can be *entirely* reduced except in the cervical and lower lumbar regions, and pleads, "Can we then advise patients to have an operation to cure (*sic!*) them, and thereby

force them to remain humpbacked for life, when another form of treatment can make them *perfectly* straight?" (the italics are mine). How many surgeons can promise all kyphotic patients complete restoration when the disease is active? "'Tis a consummation devoutly to be wished," but I will quote Whitman once again: "When the deformity is present," he says, "it can be remedied only in part, and it may be difficult even to check its progress." At operation considerable reduction of deformity can often be accomplished, but I take it that most surgeons obtain all correction possible by postural and other methods before introducing the graft in cases selected for operative treatment.

5. Mr. Roth concludes his letter with a reference to the operation of craniectomy, which was tried and abandoned as a treatment for microcephalic idiots—"their [the surgeons'] eyes were opened and they were able to perceive the error of their ways." "Is it too much to hope," he asks, "that this history may soon repeat itself?" There is another side to this picture and it teaches a second lesson. In the past every step forward in surgery and medicine was obstructed by professional die-hards—as, for example, the introduction of antiseptics and anaesthetics. It is the same to-day: the die-hards are content if surgery and medicine remain in the well-worn rut.—I am, etc.,

Dublin, August 13th. W. I. DE C. WHEELER.

SIR,—May I enter a protest, if such be necessary, against the letter by Mr. Bernard Roth in the JOURNAL of August 12th? The question of the correct treatment of spinal caries is not yet settled, and I do not think that Mr. Roth's letter contributes in any way towards its settlement. While attempting to throw doubt on the value of the statements made by Sir Henry Gray, he asks us to accept without any question the statistics given by Dr. Rollier and to be guided by them. Is it not possible that there may be other optimists than Sir Henry Gray, and that Dr. Rollier may be one of them? Whatever may be the value of Dr. Rollier's figures, it is limited by the fact that it is impossible for us in this country to treat cases of spinal caries under the same ideal conditions as he does.

I have treated several cases without fixation of any kind, and found the method to be of value only when the disease had become quiescent, and when the weather conditions, particularly as regards the amount of sunshine, were more favourable than they usually are.

I have had several cases of abscess in which fixation, exposure to the sun, and aspiration (repeated when necessary) failed to give a good result, and in which the abscess was rapidly absorbed after a bone graft had been inserted by Albee's method. I regret that I have not the exact figure at hand, but I have operated on over twenty cases and there has not been any mortality. Operation should certainly be done before deformity has occurred. Usually the deformity is slight when the patients are first seen, and it can by a few weeks' postural treatment be modified to such an extent as not to be noticeable. With regard to cases where advanced deformity has taken place, when one reflects on what has actually happened to the body tissue of two or three vertebrae it is difficult to accept Mr. Roth's statement that "Rollier has shown that in all active cases the deformity can be reduced except in the cervical and lower lumbar regions."

Mr. Roth wonders "if anything more is needed to open your readers' eyes to the real state of affairs" than Sir Henry Gray's account of four cases in which the result of his treatment has been unsatisfactory. I should think that the obvious answer to this is that we need an equally candid account of a series of cases treated, under similar conditions, by non-operative methods.

We are not likely to arrive at a method which will cure every case of spinal caries, but I think we have in spinoplasty a method of treatment which, when used with judgement and discrimination, is of very great value.—I am, etc.,

ALEX. MITCHELL,
Surgeon, Royal Aberdeen Hospital for Sick Children.

Aberdeen, Aug. 13th.

THE TEACHING OF PSYCHOTHERAPY.

SIR,—I feel I am to be congratulated in that my letter has brought forth replies from two such authorities as Dr. Potts and Dr. Crichton Miller. I am sorry that Dr. Potts does not look upon psychotherapy as a science. That it is also an art, I agree; but if I did not believe that it were founded on sound scientific principles I, for one, would have nothing more to do with it. What I do object to is the attitude of mind which would make it a mystery as well. I believe that a certain amount of team work is possible in psychotherapy as in other branches of medicine. That the relations between a patient and his analyst must be of a peculiarly intimate and confidential kind goes without saying, but this should not be a bar to collective investigation in the way I suggested by men who approach the subject in a strictly scientific spirit. In the course of the analysis of their dreams they would have to learn to overcome their own repressions and to stand mentally and morally naked before each other; but once a man has progressed far enough to admit of the possibility of unsavoury complexes within himself the scientific frame of mind would carry him through. In such an investigation carried out by normally well-balanced individuals the question of transference would not arise. After all, I do not believe that every dream of the normally adapted individual shows necessarily either sexuality or antisocial tendencies. There are many egoistic impulses in us all which do not come under either category, and to my mind the problems of dreaming can be better studied in the normal than in the pathological.

I was very interested in Dr. Crichton Miller's account of the method of teaching employed at the Tavistock clinic. It is evidently on very sound lines. If such recognized centres could be allowed to grant diplomas the possession of such would be a valuable guide to the general practitioner in the selection of a specialist, although due provision should be made for those older men who, in the face of far more opposition than exists to-day, upheld the banner of psychotherapy in the years before the war. In conclusion, I am rejoiced to read that at the recent meeting of the British Medical Association in Glasgow a resolution was passed by the Section of Neurology and Psychological Medicine advocating the addition of psychology to the student's curriculum. This marks a big advance in the right direction.—I am, etc.,

Birmingham, Aug. 12th. R. MACDONALD LADELL.

THE CONTROL OF BIRTH CONTROL.

SIR,—The accumulated evidence is now overwhelming, both statistically and from many recorded individual experiences, that the present practice of voluntary birth control is entirely baneful in its dysgenic results. The regularity and care required for its successful employment renders it utterly ineffective among the worst classes, while the most highly civilized are the most easily tempted to substitute personal convenience for possible children. It is therefore high time for the scientific control of birth control, and some such definite system should be inaugurated, as, for example, the following:

1. A central committee should be appointed of medical men of approved status who should control the whole subject of birth control and decide the suitability of cases referred to them.

2. Mental defectives and habitual criminals should be compulsorily sterilized—for example, by operative ligation.

3. In cases unable to maintain themselves or their children the woman should be temporarily sterilized by compulsion for varying periods—for example, by the insertion of the spring wish-bone pessary.

4. The open sale of contraceptive books and mechanical devices should be prohibited in public places, such as general stores, etc., so that no unnecessary temptation should be put before parents to sacrifice their potential children to personal convenience or luxury.

Indiscriminate propaganda by irresponsible lay persons, journalistic or otherwise, should be similarly dealt with for similar reasons, as is now being done in France since the war.

5. Cases of normal people specially desiring contraceptives for urgent medical or economic reasons should be referred through their family doctor or welfare centre to the above central committee, who should supply limited quantities for limited periods to necessary cases, thus establishing control analogous with that of morphine and cocaine.

6. Where both parents were absolutely determined to employ contraceptives without justification, then these might be supplied in return for a stiff graduated tax, which should be applied for the benefit of larger families of the same class.

7. Stiffening of parental instinct should be stimulated, especially in the desirable classes—for example, professional—to cope with the attack of modern city conditions *plus* contraceptive inducements against their survival rate, on the analogy of the production of immunity against a lethal virus with a selective action.

8. The building up of a protective tradition is well seen in the Jewish code dealing with this matter, which constitutes a racial asset favouring their survival over surrounding groups less developed in consciousness.

The above is only a framework requiring much fuller elaboration and definition before becoming workable, but

something of the sort is urgently necessary in national interests.

The recent annual baby week, with its infant welfare schemes, and indeed all the organization for reduction of infantile mortality, are somewhat farcical if we remain inactive with regard to the poor survival rate of the professional and similar classes. It seems the height of inconsistency and incongruity that the birth prevention of more than half of the possible children of the better classes should excite less repression than the abortion of prostitutes and imbeciles, which is a criminal offence.—I am, etc.,

R. H. VERCOE, M.R.C.S., D.P.H.

London, N.W.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—With reference to Dr. Arnott Dickson's letter in the JOURNAL of August 12th (p. 285), I would refer him to a brochure entitled *American Sterilization Laws*, by Bleecker van Wagenen, issued by the Eugenics Education Society, London, and another entitled *Eugenical Sterilization in the United States*, by Harry S. Laughlin (1920), issued by the American Social Hygiene Association, 370, Seventh Avenue, New York. Later information will shortly be available in a book by Harold Cox, editor of the *Edinburgh Review*, which is now in process of publication. By the courtesy of Mr. Harold Cox I am able to quote the following particulars:

State.	Date Enacted.	Permission of Relatives.	Total No. of Operations.
Indiana	1907	Not required	1,220
Washington	1909	Not required	1
California	1909	Not required	2,558
Connecticut ...	1909	Not required	27
Iowa	1911	Not required	49
New York*	1912	Not required	42
North Dakota	1913	Not required	23
Michigan†	1913	Not required	1
Kansas	1913	Not required	54
Wisconsin	1913	Not required	76
Nebraska	1915	Required	155
Oregon‡	1917		127
Total			4,313

* Repealed 1920.
† Declared unconstitutional 1918.
‡ State refuses to issue marriage licence unless he or she submits to sterilization.

—I am, etc.,

London, W., Aug. 12th. NORMAN HAIRE.

HAEMOLYTIC AND WATER FEVERS.

SIR,—In your review of our article dealing with haemolytic and water fevers (EPITOME, April 1st, 1922, p. 52), you state that we conclude that no reliable evidence of pure haemolytic fever exists, and that, in consequence, the fever in paroxysmal haemoglobinuria must be due to some other cause.

This does not give our conclusion correctly. What we state is that the fever is due to some *unknown* cause. The evidence brought forward by Yamakami of being able to produce fever in rabbits by inducing haemolysis simply we showed to be unreliable. We are not prepared to say that haemolysis is not concerned in the production of the fever, but if this is the case no evidence has yet been adduced to prove it. No experiments have been done yet, so far as we are aware, to ascertain the effect of distilled water haemolysis in animals suffering from chronic infections. We believe it possible that the haemolysis in paroxysmal haemoglobinuria in the presence of an infection might induce fever, and many of these patients are known to be syphilitic. What we stated before and now restate is that no reliable evidence of pure haemolytic fever exists and that the cause of the fever in paroxysmal haemoglobinuria is still unknown.

It has already been shown by Hort and Penfold that a quantity of bacteria, unable in itself to produce fever in the rabbit, will produce a well-marked fever if it be administered intravenously in distilled water, or if the animal be sensitized by the previous injection of distilled water. This, however, cannot be looked upon as a haemolytic fever simply, for the bacterial poison must have been introduced simultaneously with or about the same time as the water. Moreover, it has not yet been proved that the sensitizing effect of the water is due to the haemolysis.—We are, etc.,

W. J. PENFOLD,
D. G. ROBERTSON.

Commonwealth Serum Laboratories, Royal Park, Victoria, June 23rd.

PRACTICAL PSYCHO-ANALYSIS.

SIR,—In your issue of July 15th there appears a review of my book *Practical Psycho-Analysis*. In this review the mode of criticism adopted by the writer is much to be deplored and deprecated. As, however, he is not the only sinner in this respect, perhaps you will generously grant me the privilege of some of your valuable space in order to put him and other sinners right in this very important matter—to lead them along the path of righteousness to the goal of reformation.

The main functions of criticism are, or should be, to illuminate and to inform. If it is necessary to destroy, the destructive process should be followed by a reconstruction. Purely destructive criticism is worthless. A critic, too, should avoid careless writing, cultivate a clear and literary style of composition and be alive to the responsibilities of the high duties of his office.

The following extract from the review in question, affords an excellent example of careless writing and of purely destructive criticism at the same time—

"Some of his explanations are confusing and may fail to convey any meaning. This is particularly the case in his treatment of *libido*, *affect*, and *desire*, much of which leaves the reader puzzled and far from clear in his mind as to the distinctive meanings of these terms."

Naturally, if the reader is puzzled he cannot be "clear in his mind." The criticism too is purely destructive and therefore worthless. To make it of any value, the writer should substantiate his statements by quoting from my book examples of confusing explanations, and he could then further add to the value of his criticism by substituting clear explanations for those that he finds confusing. He does none of these things, and therefore his criticism is worthless.

But the delinquencies of this gentleman who has done me the honour to review my little work, do not end here. He attributes to me expressions which I did not use—for instance, the expression "repressed experiences." For the sake of clarity it will be better to quote this passage in full. The reviewer writes:

"It is thus misleading to describe the 'preconscious' as the seat of repressed experiences, which can only be brought into consciousness indirectly, and to state that the mental processes included therein are concerned with the primary instincts and are largely in the nature of sexual wishes."

I never use or never have used the phrase "repressed experiences" as it is likely to give rise to ambiguity; for an experience may be an occurrence, an actual physical happening, in which case it cannot even be conceived of as being repressed, or it may be a mental process or a group of mental processes, for example, a phantasy—in either of which cases it may be repressed if it is intolerable to the personality. Also if it happens to be a mental process or a group of mental processes of the nature of an unpermitted sexual wish, it very often is repressed into the preconscious and as it is sexual it necessarily is concerned with the primary instincts.

If I leave unnoticed other observations of your reviewer, I feel sure you will understand that I do this out of regard for your space. It is for the same reason I compress my remarks. Almost every proposition he advances is of the nature of an unsupported opinion. Criticisms of this type are not worth the paper they are written on—they have no scientific or any other value and if you will excuse me, Sir, for saying so, they have no proper place in the columns of the BRITISH MEDICAL JOURNAL.—I am, etc.,

Shotley Bridge, Aug. 7th. H. SOMERVILLE.

"DOCTORS IN COUNCIL."

SIR,—I am glad that Dr. Peter Macdonald has drawn attention (August 12th, p. 284) to the supposed value of honorary hospital appointments. At the present time especially it is constantly being brought forward by laymen as an argument against paying the staff. There is no doubt that the advantages, repute, and profit said to attach to these appointments are much exaggerated; it is apparently always forgotten that what value there is is entirely potential and depends on the personality of the holder. This appointment is indeed his opportunity; he might use his chance for unremunerative scientific research, or for professional work on behalf of the patients in the hospital which may lead to lucrative practice. These appointments may be, as the *Manchester Guardian* says, "The entrance gates to most lucrative fields of private practice," but not everyone who passes through these gates

reaps this particular harvest; in any case if one does gather a crop that he sells at a good profit in the open market it is only by his skill and his industry that he is enabled to do so.

In the case of the smaller hospitals, so-called cottage hospitals, there are no gates open only to a select few, and leading to these "lucrative fields of practice"; every practitioner working there cultivates a crop for his own consumption—there is no outside market for it. In other words, a member of the staff of a cottage hospital attends there mostly his own private patients, the work he does there brings him little, if any, reputation outside the district in which he practises and no lucrative work in the way of consultations or operations. The work he does there is an advantage to him in that it makes him a more efficient practitioner, but this is equally an advantage to all his patients, and if both he and his patients do benefit the benefit is strictly proportioned to the industry and skill with which the doctor has pursued his hospital work.

There can be no doubt that even in the central hospitals these appointments should in the interests of all be open to as many as possible, and if the holder of one fails to make proper use of his opportunity there should be some means of replacing him by another who may do better.—I am, etc.,

Bradford-on-Avon, Aug. 14th. Chas. E. S. Flemming.

MARRIED MEDICAL WOMEN.

Sir,—Allow me to back up the remarks of Dr. Marion Mackenzie in your issue of May 20th, received rather late, as I am not in England. As a fellow Scotswoman, I admire her for speaking her mind. As myself a doctor of twenty-five years' and a mother of seventeen years' standing, I cordially agree with her remarks on the futility as well as the injustice of debarring a medical woman from certain posts because of her being married. The affairs of the married are only fully understood by the married. If the married treat the single, at least they have themselves been single once. Medical men usually find marriage benefit their practice. Simpson, for example, had to marry in order to obtain the chair of obstetrics at Edinburgh. This is not only a question of propriety—it is a feeling that the man who most nearly realizes what marriage and maternity mean to a woman is the man who unites the feelings of husband and father to the knowledge of the physician. Women have not this knowledge either till they marry. Medical women are all the better for having in their ranks, as they have had from the first, a certain number of married women. When all is said and done, married people frequently do not care to enter into many medical details with bachelors and spinsters.

There are signs that the much tried mother is rebelling against the constant dictation and inquisition into all her doings carried on by spinsters and sometimes by bachelors. I saw a book once on a stall entitled *A Book for Mothers by a Mother*. There is no doubt that patients frequently believe more in a doctor who is a parent—and faith counts for something still. The Chinese, indeed, regard medicine as an old man's and preferably as an old woman's trade. If "knowledge through suffering entereth" there is something to be said for this view. The multiplication of books for junior practitioners on sex surely proves the same. The money for maternity and child welfare clinics is found by townsfolk who, as a rule, are married; I fail to see that posts in charge of wives and children should be necessarily used as mere charities for childless women. There are many people who think that all such clinics, and also venereal hospitals, should be officered solely or chiefly by married people who are also parents. Many clinicians have sounded a warning against the mere laboratory worker. From the economic point of view, the wives of to day complain, "First the spinsters do our men out of a job. Then they forbid us wives and mothers to earn. Then they turn round and grab such children as we dare to have, and tyrannize over them and us. Are we to be mere machines for bearing children?" It is the home we are fighting for. Single professional people can earn a living—so can husband and wife, if they part and abandon the children. The mother, and the father in his measure, who have watched children develop, with eyes made wise by love and also sharpened by professional experience, know more than all the bachelors and spinsters put together, with the rare exception of "born" mothers and a very few "born" fathers, such as Froebel, Barnardo, Ozanam, and Vincent de Paul. The modern system of passing the child on from monthly to child's nurse, from unmarried woman doctor and health visitor to school medical officer, usually unmarried also, and nurse, and the kindergarten teacher to the preparatory and so to the public school, leaves the parent and family doctor and the priest (if any) the only persons who know the individual from birth to adult life; and of these the parent alone as a rule knows the family history. In the medical parent these opportunities are united. Is the public as a whole to lose the advantage of their experiences, or anyhow when that parent is a mother?

If the objection to married women is their possible state of health, may I inquire if Hunter was immediately made to resign on account of his aneurysm? The public in general benefits so much from the devotion of doctors to duty in spite of ill health that it seems a little absurd to press this point. Woman is usually penalized all round. The Post Office Insurance people, for example, and some others, go on making a woman pay at the rate of labour risks long after the climacteric. The yellow, black, and brown races do not penalize marriage. Are we sure enough of our ground to justify all or any of us in so much petty regulation as goes on to-day? If the plea for dismissal is the woman's health, let her husband and herself settle this—anyhow, in the case of a medical woman. If she cannot take care of her health, who can? And is the public always so considerate for doctors' health? Can temporary leave not be given?—I am, etc.,

Durban. Margaret Lamont.

THE ANTIVIVISECTION SOCIETY: AN APOLOGY.

Sir,—In the May, 1922, number of a journal, *The Animals' Defender and Zoophilist*, issued by the Antivivisection Society, there appeared an article, written by the Hon. Mr. Stephen Coleridge, in which it was suggested that the annual parliamentary return, made by the Home Office, of experiments on living animals performed by licensees under the Act 39 and 40 Vict. c. 77 (known under the short title of "The Cruelty to Animals Act, 1876") during 1920 represented "a deliberate *suggestio falsi*." The article proceeded with the suggestion that, with the connivance of the Home Office, certain licensees under the Act had made false returns of experiments performed by them on living animals during the year 1920. As the result of certain action taken by the solicitors representing one of the licensees referred to in the Hon. Mr. Stephen Coleridge's article, the following retractation of, and apology for, the untrue and libellous suggestions made therein was published in the July and August numbers of *The Animals' Defender and Zoophilist*:

Apology to Mr. A. G. Foulerton, F.R.C.S.

In the issue of this journal for last May, on pages 7 and 8, appeared an article entitled, "Is it only innocent credulity?"

The article contained statements which have been understood as accusing Mr. Foulerton of having knowingly signed false returns in returns made by him to the Home Office (in regard to experiments made on living animals under licences granted to him pursuant to statute), and of having committed criminal offences.

Our suggestions to that effect were made without any foundation, and we are satisfied that there is absolutely no justification for any accusation of the kind.

We apologize to Mr. Foulerton for having made the statements complained of, and sincerely regret the pain and annoyance which he has thereby suffered.

—I am, etc.,

London, W.C., Aug. 8th. Alex. G. R. Foulerton.

SIMPLE GOITRE.

Sir,—Gastro-intestinal infection as a causative factor in simple goitre is, on the authority of Lieut.-Colonel McCarrison (British Medical Journal, April 22nd, 1922), an admitted fact. His example of the European school in India, which became entirely free from goitre on being provided with a bacteriologically pure water supply, is sufficiently convincing.

In rural districts in this country it is not always possible, from economic and other reasons, to provide a pure water supply. The use of thymol and beta-naphthol has proved to be capable of causing the disappearance of recent goitres in young subjects (*The Thyroid Gland*, McCarrison, p. 94). The administration of these, however, requires constant supervision, which is somewhat difficult in a scattered rural population.

In a district where endemic goitre is very prevalent and the water supply indifferent I have used in a number of cases during the past twelve months keratin-coated capsules of oxygenated hydrocarbons of high boiling point of the tar-acid series from which the phenols and cresols have been distilled. The resultant antiseptic is of high germicidal efficiency (Rideal-Walker coefficient 30) and of low relative

toxicity to carbolic acid (1 to 90). I have found that in the majority of early cases treatment extending over a period of from four to six weeks causes a complete disappearance of the swelling. The capsules may be given for prolonged periods without giving rise to any ill effects.

Boiling all drinking water is not sufficient to eliminate the possibility of soil infection in an infected area.

In cases of long standing the administration of small doses of iodine to supply the iodine needs of the body and to relieve the strain on the thyroid hastens the reduction of the goitre.—I am, etc.,

R. Hensleigh Walter, M.B.

Stoke-under-Ham, Somerset, Aug. 12th.

TOBACCO SMOKE AND CANCER.

Sir,—In your issue of August 5th Colonel Duer quotes a New York surgeon as saying that he had never met with a case of malignant disease of the lips, tongue, mouth, or throat in a non-smoker. In common, doubtless, with all laryngologists, I have had numerous cases in patients who had never used tobacco. I have recorded six cases of intrinsic cancer of the larynx in females who had been non-smokers all their lives. In each case the diagnosis was confirmed by the microscope. They did not chew betel-nut or indulge in any similar habit, and they were either teetotalers or extremely temperate drinkers.—I am, etc.,

London, W., Aug. 15th. St Clair Thomson.

NATIONAL ASSOCIATION OF OPTICIANS.

Sir,—On July 10th I received a communication from the National Association of Opticians inviting me to examine their candidates in the anatomy and the abnormal conditions of the eye. I have found reason to suspect that this was probably part of an insidious attempt on behalf of this society to secure recognition for their members and to obtain for them a status similar to that which is possessed by midwives.

As a practising ophthalmic surgeon I have therefore thought it advisable to raise this matter in your columns lest others should be approached with the same object. We do not want this new class of practitioner. Recognition by the State, together with certificates of competence from members of our profession, would still further confuse the lay mind in its power to distinguish between an ophthalmic surgeon and the optician.—I am, etc.,

Manchester, Aug. 3rd. Cyril Jacobs.

*** For a craft to seek to ascertain or secure the efficiency of its craftsmen is not reprehensible. Two points are, however, essential: (1) that the craft shall have a well-defined and accepted sphere; (2) that those who practise it shall not pretend to be other than they are. In both these respects the movement initiated by the National Association of Opticians needs to be carefully watched, and it is desirable that further information with regard thereto should be supplied by our readers.

Obituary.

MARRIOTT LOGAN ROWAN, M.D.,

Medical Superintendent of Derby County Asylum.

His many friends will read with regret of the death of Dr. Marriott Logan Rowan, which occurred with tragic suddenness at St. Anne's-on-Sea on August 6th. He had been in poor health for some time, and had left Derby only two days before his death. Dr. Rowan was born at Carrickfergus, co. Antrim, in 1871, and was educated at Queen's College, Belfast. He graduated B.A. (with honours), and M.B., B.Ch. at the Royal University of Ireland in 1900; in 1903 he graduated M.D., and a year later he became assistant medical officer at Derby County Asylum. He was appointed medical superintendent in 1915, a post he filled with much distinction till the time of his death. The many improvements that followed his appointment bear witness to his deep interest in the staff and patients, and a touching tribute to his memory was the spontaneous gift of a beautiful wreath from the patients of each side of the institution. Possessing a generous and kindly nature, to all who were privileged to know him his death comes as a personal loss. Much sympathy has been extended to his widow and two little children.

We regret to announce the death of Dr. Richard Charles Mason Pooley, which occurred at his residence, 20, Park Road, Regent's Park, on July 30th. Dr. Pooley was born in Ireland in 1848, and received his medical education in Dublin; he took the diplomas of L.R.C.S.I. and L.R.C.P.I. in 1871, and the M.R.C.P.I. in 1900. In his earlier days Dr. Pooley had a busy and successful career as a surgeon in Rochdale, and held the appointment of honorary surgeon to Rochdale Infirmary; he was the author of a number of contributions to this journal on medical and surgical subjects. He was a justice of the peace, a Fellow of the Royal Society of Medicine, an old member of the British Medical Association, as well as a local representative of the London Panel Committee, in the work of which he took an active interest. At one time he was a keen Territorial officer, and retired from the R.A.M.C.(T.) with the rank of major; he held the Volunteer Decoration. His kindly nature and his professional ability made him beloved and respected by all who came in contact with him.

Dr. Andrew Murray Neethling, who died recently at Pretoria, was born in Cape Colony, and educated at Edinburgh University, where he graduated M.B. and C.M. about 1883, and subsequently took the degree of M.D. After studying on the Continent, he returned to South Africa, where he was in practice successively at Barberton and at Lydenburg until the South African war, throughout which he served. After the war he sat in the Cape Colony Parliament as member for Beaufort West. In 1914 he served under General Botha with the rank of colonel in the campaign which reduced German South-West Africa. After the capture of the capital, Windhoek, he was appointed chief medical officer of the conquered territory. He married a daughter of the late Mr. Duncan Wilkie Paterson, S.S.C., of Edinburgh, and leaves a widow and three children. His two elder sons served with him in the campaign in S.W. Africa, where the elder was killed in action at the pass of Kakanas.

Dr. Frederick Haycraft Berry of Watford died on July 29th, aged 66. He was the eldest son of the late Dr. H. T. Berry, of Amwell Street, London, and received his medical education at Guy's Hospital Medical School. He took the diploma of M.R.C.S. in 1878 and graduated M.B.Lond. with honours in 1880 and M.D. in 1886. After serving as house-physician and resident obstetrician at Guy's Hospital he joined the late Dr. A. T. Brett in practice at Watford in 1885. He took great interest in the establishment of the Watford District Hospital, of which he was for many years honorary medical officer; on his retirement from that post was appointed honorary consulting surgeon. He was president of the Watford and West Herts Medical Society, a member of the West Hertfordshire Division of the British Medical Association, and a representative for Watford on the Herts Panel Committee. Among his medical appointments were those of medical officer to the London Orphan School, the Post Office, and the London and North-Western Railway. He was a governor of the Grammar School and a trustee under the Morrison Charity. During the war his eldest son, Lieutenant P. H. Berry, R.A.M.C., lost his life in South Africa in an heroic attempt to save a private soldier from drowning.

We regret to announce the death, on July 30th, of Dr. Charles Mitchell MacQuibban, J.P., who was the oldest medical practitioner in Aberdeen, having been born in that city eighty-nine years ago. He was educated at Aberdeen University, graduated M.B. in 1861, and M.D. and C.M. in 1863; he took the diploma of L.R.C.S.Edin. in 1863. During the Crimean war he volunteered for service in the army, but as hostilities were approaching a termination his services were not required. In 1861 Dr. MacQuibban began a long military career by becoming attached as assistant surgeon to the 7th Volunteer Battery of the Aberdeen Artillery; he was later attached to the Gordon Highlanders (Militia), and finally retired with the rank of surgeon lieutenant-colonel in 1899. In 1913 he was appointed senior medical officer of the National Reserve. He was a very well known figure in the community, and enjoyed the genuine affection and respect of all classes. A few months ago he fell from a tramcar, and from the effects of this accident he never recovered. He is survived by two daughters.

We regret to record the death, suddenly, on August 8th, of Dr. William Robert Williams, of Machynlleth, Montgomeryshire. Dr. Williams was educated at Edinburgh, and took the diplomas of L.R.C.P. and L.R.C.S.Edin. in 1888. He was one of the best-known medical practitioners in his district, and held many public offices. He was a justice of the peace, honorary surgeon to the local cottage hospital, assistant medical inspector of schools for the county, and an ex-chairman of the local urban district council. He held a commission as Captain R.A.M.C.(T.), and was attached to the 7th Royal Welsh Fusiliers. He was a member of the British Medical Association. His funeral was attended by a firing party of the 7th Royal Welsh Fusiliers and by a very large assembly of people. He leaves a widow, two sons, and two daughters, with whom much sympathy is expressed.

The Services.

The King of Egypt has conferred the Order of the Nile (fourth class) upon Captains Eric D. M. Heriot-Hill and Stanley Arnott, R.A.M.C., in recognition of services rendered during the operations against Aliab Dinkas in the Mongalla Province.

DEATHS IN THE SERVICES.

Surgeon Commander James Garfit Wallis, R.N., died recently at Plymouth. He was educated at the London Hospital, where he was Buxton Scholar, and took the M.R.C.S. and L.R.C.P.Lond. in 1897, and the M.D.Lond. in 1899. After filling the posts of house-physician and clinical assistant in the aural, ophthalmic, and skin out-patient departments at the London Hospital, and assistant house-surgeon at Poplar Hospital, he entered the navy as surgeon, taking the prize for tropical diseases at Haslar. He attained the rank of surgeon commander on February 25th, 1914, and in April, 1920, was appointed health officer of the port at Devonport.

Lieut.-Colonel John Joseph Falvey, R.A.M.C. (retired), died on May 21st, aged 70. He was born at Tralee, educated at the Ledwich School of Medicine, Dublin, and took the L.R.C.S.I. and L.A.H. in 1876, and the F.R.C.S.I. in 1886. He entered the army as surgeon on August 10th, 1878, and became lieutenant-colonel after twenty years' service, and retired in 1900. He had a long list of war service: the Boer war of 1881 in the Transvaal, including the defence of Lydenburg, mentioned in dispatches; Egyptian war of 1882, medal and Khedive's bronze star; Sudan, 1884–85; Nile campaign, with the heavy camel corps, action of Abuklea, and engagements during return to Korti, two clasps; and South African war, 1889–1900, Queen's medal with clasp.

Lieut.-Colonel James Young, Bengal Medical Service (retired), died at Bedford on July 15th, aged 76. He was the son of John Young, of Bathgate, West Lothian, and was educated at Edinburgh, where he graduated M.B. and C.M. in 1868. He entered the I.M.S. as assistant surgeon on March 30th, 1872; he became surgeon lieutenant-colonel after twenty years' service, and brigade surgeon lieutenant-colonel in 1897; after officiating for some time in the administrative rank as A.M.O. of the Calcutta district he retired, with an extra pension, on March 31st, 1902. He served in the Burma war of 1885–86, taking part in the occupation of Manda'ay, and received the frontier medal with a clasp.

Colonel John Donald Alexander, C.B.E., D.S.O., Army Medical Service (retired), of Bideford, died in Queen Alexandra's Military Hospital, Millbank, on July 9th, aged 55. He was born at Callan, in Ireland, on April 11th, 1867, the eldest son of the late Very Rev. John Alexander, Dean of Ferns, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., and B.A.O. in 1889. He entered the R.A.M.C. as surgeon lieutenant on January 30th, 1892, attained the acting rank of colonel on March 23rd, 1916, while holding the post of A.D.M.S. of a Division, was confirmed in that rank on December 26th, 1917; placed on temporary half-pay on account of ill health on November 26th, 1919, and retired on February 3rd, 1920. He served on the North-West Frontier of India in the Tirah campaign of 1897–98, taking part in the capture of the Sampagha and Ashanga passes, the reconnaissance of the Saran Sar, operations round Dwatoi, against the Khanikhel Chamkannis, and in the Bazar Valley, and in the action at Shinkaman, receiving the frontier medal with two clasps. In the South African war of 1899 to 1902 he served in the relief of Ladysmith, action at Colenso, operations on Tugela Heights, action at Pieter's Hill, the relief of Mafeking, and the action at Frederikstadt, was mentioned in dispatches, and received the Queen's medal with five clasps, and the King's medal with two clasps. His services in the recent war of 1914–18 were mentioned in dispatches in the *London Gazette* of January 4th and May 29th, 1917; he received the D.S.O. on June 3rd, 1917, and the C.B.E. on June 3rd, 1919.

Captain Ernest Neville Keys-Wells, R.A.M.C.(T.F.), died in London on July 30th. He was the fourth son of the late Rev. William Keys-Wells, of Clifton Rectory, Penrith, and was educated at Edinburgh, where he graduated M.B. and C.M. in 1888. He served as a civil surgeon in the South African war, in the operations in Natal, receiving the Queen's medal with a clasp. In the late war he held a commission as captain R.A.M.C.(T.F.) in the 3rd London General Hospital from March 19th, 1915.

Medical News.

Sir Wm. Thorburn, K.B.E., C.B., C.M.G., F.R.S., has been appointed a member of the Advisory Committee under the Administration of the Cruelty to Animals Act.

The King of Egypt has conferred the Order of the Nile (third class) upon the following in recognition of valuable services rendered: Dr. Harold Benjamin Day, professor at the School of Medicine, Cairo; Mrs. Cornelius B. S. Elgood, M.B., senior lady medical officer, Egyptian Ministry of Education; and Dr. Alexander A. W. P. Murison, medical officer, Egyptian State Railways.

The King has approved the retention of the title of Honourable by Dr. Charles Ferdinand Marks and Dr. William Frederick Taylor, who have served continuously for a period of not less than ten years as members of the Legislative Council of the State of Queensland.

The following members of the British Medical Association have been appointed Knights of Grace of the Order of St. John of Jerusalem: Major J. R. Williams, Penmaenmawr (late High Sheriff of Carnarvonshire), and Surgeon Lieut.-Colonel J. D. Lloyd, Chirk.

Special courses in diseases of the heart and gynaecology will be held at Franzenbad (Czecho-Slovakia) from the 21st to the 24th of September by Drs. A. Ghon, R. Jaksch, R. Schmidt, and G. A. Wagner of Prague, J. Halban, F. Hitschmann, J. Pal, and H. Thalimer of Vienna, H. E. Hering of Kiel, R. T. von Jaschke of Giessen, H. Kehrer of Dresden, O. Minkowski of Breslau, Seitz of Frankfort, Volhard of Halle, G. Winter of Königsberg, and K. Zörkendorfer of Prague.

Among the recipients of civil pensions is Dr. Francis Warner, who in consideration of his circumstances receives £100 in recognition of services rendered in his investigation into the mental and physical condition of defective children.

The Scottish schools have been celebrating the close of the term by speech days. At the ceremony at Ballachulish Dr. Lachlan Grant not only gave an address, but supplied the prizes, which the education authority, for reasons of economy, had ceased to give. At the Morrison Academy, Crieff, the medal was presented to the dux by Dr. Gairdner, who, in an address, mentioned that he himself had received the medal in 1862, and that he had since been for fifty-five years medical officer for Crieff.

The annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil on Friday, October 6th, 7.30 for 8. The chair will be taken by Sir Dawson Williams, C.B.E., F.R.C.P., Editor of the British Medical Journal. The secretaries are Dr. A. M. H. Gray and Mr. Gwynne Williams, 30, New Cavendish Street, W.

Three blind students (two civilians and one ex-soldier), trained at the Massage School of the National Institute for the Blind, have passed the recent massage and remedial gymnastics examinations of the Society of Massage and Medical Gymnastics. Another civilian student, for whom the National Institute paid fees and expenses at a Liverpool massage school, has also passed the massage examination. Two blind women masseuses have passed in remedial gymnastics.

During last June 481 deaths from plague occurred in Java; in June, 1921, the number of deaths from this cause was 520.

Roentgenology has recently been made a compulsory subject for the medical curriculum in Rumania.

At Wimbledon police court, on August 8th, James Allport, described as a pathologist, of Cheltenham, was charged with unlawfully and wilfully pretending to be a registered medical practitioner. A full report appears in the *Wimbledon Boro' News* for August 11th. Mr. G. D. Roberts, instructed by Messrs. Hempson, prosecuted on behalf of the Medical Defence Union; there was not, he said, anything to prevent a man practising medicine, whether he was registered or not, if he could find people to entrust themselves to his tender mercies, but the law said it was an offence to pretend to be a registered medical practitioner if you were not. The accused was engaged through an agency as a locumtenent by Dr. Sweetnam of Wimbledon Park, who believed him to be a registered practitioner, and he attended patients and signed medical certificates. The accused said that he told the agents that he was not qualified for general work, and also that he had tried to get bacteriological or x-ray work. During the war, he said, he had been an acting medical officer at an infirmary. After evidence had been given of certain other charges against him Allport was fined £20, with the alternative of three months' imprisonment, on the charge of pretending to be a registered medical practitioner, and sentenced to three months' imprisonment on other charges.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"N. E." asks for information as to the present condition of Carisbad, and the cost of a course of treatment there.

"M.D." asks for information about the Portuguese Riviera as a winter resort for a patient subject to bronchitis. He desires information, among other points, on the cost of living and the sanitary and social conditions.

WARTS OF THE SCALP.

DR. JOHN S. CLARKE (Weobley) writes in reply to "X. Y. Z.": I can vouch for the efficacy of freezing by carbonic acid snow. I have recently had the treatment myself at the hands of a colleague. The effect is most gratifying. Rather deep freezing was employed. Practically no discomfort was occasioned. Very little hair had to be snipped away. After ten days the hair on the area treated was showing signs of growth.

ALUMINIUM COOKING VESSELS.

A CORRESPONDENT asks whether any danger can arise from the use of aluminium cooking utensils. He wishes to know whether acid or fruit juices may form poisonous salts or milk be contaminated.

*** Aluminium is the best metal next to gold or platinum for culinary utensils. It is better than silver, for silver is more quickly corroded by table salt than is aluminium by the acids of fruit. Moreover, the injury to be apprehended from the results of the corrosion suffered, even if the corrosion were considerable, is insignificant in the case of aluminium, since the product of corrosion would consist only of that which is a common constituent of almost every ordinary food as well as of drinking water.

INCOME TAX.

"R. S. V. P." is being pressed by the income tax inspector to employ an accountant to prepare statements of receipts and expenses and of assets and liabilities.

*** That course may be usual among traders holding substantial stocks and business assets of various kinds, but is not usual among medical practitioners. It is not clear why the inspector should ask for statements of assets, etc.; if the return has been correctly computed year by year on the basis of the total gross cash receipts, less specified expenses under the usual heads, it seems that the "assets" figures will serve no useful purpose.

"D. W." has been asked by the inspector of taxes to state the amount of his outstanding book debts for the adjustment of his cash basis return.

*** The authorities at Somerset House have officially acquiesced in the "cash basis" method of computation, subject to any particular cases in which that basis would for some special reason be an unfair index of the income accruing from the practice. We advise our correspondent to remind the inspector that the cash basis has official sanction and to ask why it should be refused in his case.

"O. H." is employed as an assistant and earns sundry fees in addition to his salary. Can he still claim the three year average?

*** If the fees are paid by the practitioner whom he assists the answer is, No; if otherwise he can average the fees but must accept assessment on the current year's basis as regards the salary.

"R. C. P." renewed his car in 1921 and was allowed the whole of the cost. He has since renewed it again, but the authorities claim to exclude one-third of the cost because to that extent the car is used for pleasure, though it was primarily bought for professional purposes.

*** The expense claimable is the amount necessitated by professional use. It would seem that the private use hastens the date when renewal becomes necessary, and that it is therefore right that some adjustment should be made in calculating the renewal allowance for tax purposes; whether one-third is a reasonable proportion we cannot, of course, say.

"FINANCE" "has set up in practice" for the first time and inquires as to allowances for (1) outlay on instruments, medicines, and books; (2) surgery, rent, and expenses; (3) hire of motor car in place of owning a car; (4) remuneration of locumtenent for holiday purposes.

*** (1) Not allowable—only expense of renewals can be claimed, the original stock represents capital outlay; (2) allowable in so far as actually incurred and within reason; (3) allowable; (4) allowable.

LETTERS, NOTES, ETC.

DIABETES IN THE TROPICS.

LIEUT.-COLONEL E. E. WATERS, I.M.S. (Calcutta), writes: In the kindly review of June 24th, 1922, on my book on diabetes, it is asked whether the book is on sale in England. Will you allow me to state that the publishers have arranged for its sale in London by Messrs. H. K. Lewis, and in Edinburgh by Messrs. Bryce?

MEASLES WITH MULTIPLE TUBERCULOUS MANIFESTATIONS.

DR. N. WALSH (Swindon, Wilts) writes: F. W., a girl, aged 8, when first seen, was suffering from coryza, slight cough, and pyrexia (103°); the pulse was rapid. The chest was carefully examined but only slight signs of catarrhal bronchitis were found. As there was at the time great prevalence of measles, it was thought that the patient might be suffering from that disease. She was put to bed and placed under expectant treatment. A few days later she vomited—mainly a green fluid—but not very violently, and on only one occasion. The temperature was 101° and the pulse 94. There were signs of conjunctivitis, photophobia was present, and pain was complained of in the region of "the back of the eyes." The slight cough disappeared, and although the chest was carefully watched, no signs of bronchitis or pneumonia were ever found. The following day the rash appeared. It was typical of measles, and was very abundant. It disappeared on the seventh day, but the temperature was still raised: it advanced to 104.5° and kept at that level for seven days. Then the cervical glands became enlarged and formed projections at both sides of the neck, about 4 in. by 3 in. Difficulty in deglutition and rapid emaciation ensued. The pulse became soft, rapid, and irregular, and in spite of stimulants the cardiac action showed signs of failing, which gradually became more and more evident. There was also extreme tenderness of all the limbs, the child moaning when they were merely touched.

Another feature was oedema of the right arm from shoulder to elbow. The abdomen, which had been normal, began to show signs of distension which rapidly increased; a little fluid was then made out. The surface veins were well marked, the stools became loose, and the whole condition of the abdomen became very suggestive of tuberculous peritonitis. The child now showed some retraction of the neck, dilated and unequal pupils, and a meningeal cry. Kernig's sign appeared; the temperature fell to 100.4°, and the patient died on the eighteenth day.

This case is interesting from the multiplicity of the lesions, and from their rapid appearance. It is remarkable that at no stage was there any serious chest trouble.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 25, 26, 28, 29, and 32 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 96.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF PUBLIC HEALTH.

A. K. CHALMERS, M.D., F.R.F.P.S., D.P.H., President.

PRESIDENT'S INTRODUCTORY REMARKS.

1888–1922:

A PLEA FOR THE STUDY OF BIOLOGY IN RELATION TO PUBLIC HEALTH.

A DESIRE to review the history of medicine in its preventive aspects during the thirty-four years which have come and gone since last our Association met in Glasgow is almost inevitable. But that it can be done adequately in the time at my disposal would require a power of focusing for which I claim no qualification. My purpose rather is to indicate a few contrasts; to ask how far the years between have established the views of our predecessors; whether the horizon has lifted and disclosed objectives hidden from them; most of all, to ask whether the same spirit of service which inspired our predecessors remains with us who aspire to follow them. A comparison of the record of subjects discussed at the former meeting with those of the present might alone supply the answers.

PUBLIC HEALTH THIRTY YEARS AGO: A CONTRAST.

Illustrations of the contrasts are readily found. The mean population of Scotland during the eighties decade was 3,880,610; at the last census it was fully a million more. In the former period the average death rate was 19 per 1,000. Had this rate obtained in recent years, we should have had almost 20,000 more deaths annually than were registered during the period 1916–20, although these included periods of pandemic influenza of great intensity. The large towns of Scotland have now (1916–20) a lower average annual death rate (16.34 per 1,000) than had the rural districts and smaller town areas in the later eighties (17.28 per 1,000).

The infant mortality during the eighties rose from 112 per 1,000 births in 1881 to 130 in 1890: during the last ten years the highest rate was 126 (in 1915), in 1920 it fell to 92, and was 97 and 99.8 in 1916 and 1918. But the birth rate has also fallen from an average of 32 during the eighties to 25.4 in the years 1911–15 and 22.7 in 1916–20. One result of this is that already by 1911 the proportion of the population over 15 had increased from 63 to almost 68 per cent. In other words, that portion of the population which has a steadily although at first slowly increasing death rate, is gradually increasing in volume, so that it now forms fully two-thirds of the whole.

Further contrasts may be drawn from the field of epidemic diseases. I need not recall the shrinkage in what were then called the major infections which has run parallel with these changes. The recurring prevalences of typhus fever, which formed so marked a feature of the epidemic history of the middle of last century, had largely ceased by the eighties decade, but even so it caused about 90 deaths annually in the years 1886–90; while in recent years (1916–20) the deaths averaged only one-tenth of that number, notwithstanding the great prevalence of the disease in Eastern Europe and Russia and in the Balkans during the war years and afterwards, and the many migrations both of soldiers and civilians determined by the war. Again, the deaths from enteric fever, which averaged 765 annually in the period 1886–90 and in three earlier years of the decade had exceeded 1,000, now average only just over 100 annually (109); in the former period over 7,000 deaths were on an average ascribed annually to pulmonary tuberculosis—now less than 5,000. Scarlet fever is less fatal, but its prevalence oscillates through long intervals; while measles and whooping-cough seem unaffected by any measures hitherto undertaken for their control.

Passing for a moment from results to machinery and equipment, there was in those days no county sanitation—no general provision of hospital accommodation for infectious diseases—a limitation, indeed, of the term "infectious disease" to the acute specific fevers and exanthemata. There was no Notification Act of general application; bacteriology was in its infancy; vaccine and serum therapy had to wait some years before their unrolment began. The part played by insects in the spread of disease was almost unsuspected.

The first Public Health Act for Scotland had already been twenty-one years on the Statute Book, but the sanitary enfranchisement of the rural populations was not yet accomplished, while the burghs were struggling with conditions for which the general Act provided no adequate remedy. So sanitary legislation formed the theme of the President, Sir Henry Littlejohn, and the late Sheriff Spens urged the creation of a Minister of Health. County sanitation became possible with the passing of the Local Government (Scotland) Act of 1889, and a Burgh Police and Public Health Act in 1892 gave a new stimulus to the sanitation of towns. The Housing Act of 1890 had barely begun to form round the nuclei supplied by the Torrens, Shaftesbury, and Cross Acts and some local ones of earlier years.

In another direction the horizon was limited by our insular position. Exotic disease in the form of cholera, it is true, had reached our shores so recently as 1866, and although the Venice Convention dated from 1897 it was not until 1900 that a limited outbreak of plague among our own people startled us out of our insular complacency and helped to stimulate the formation of port local authorities as a means of protecting our shores against sea-borne disease. More than all, and of special importance in view of the future, preventive medicine broke through the old barrier of insanitary surroundings and insisted on regarding the individual as himself the contributor to much of the disease which imperils our well-being, and brought venereal disease within the purview of administrative action.

THE FRUITS OF ADMINISTRATIVE ACTION.

One field after another has thus been brought within the scope of regulated effort, and may claim some consideration at least in a review of the causes of the decline in the death rate which has gone on contemporaneously with their application to administrative purposes. But when we endeavour to assess the precise value of any individual factor when many are operating, error may readily occur. Legislation and administrative effort are valuable adjuncts, but they are not the only factors which control disease. How, for example, are we to explain one of the profoundest problems in the history of tuberculosis in this country? I mean the sudden change in the direction of the death rate which took place in Scotland in the middle of the seventies. For fully a decade before the last meeting of the Association here the tuberculosis death rate was undergoing reduction at a rate which is not now equalled. No concerted administrative action was being directed against its prevalence—I do not, of course, forget the early clearance schemes, but they were wholly, I think, confined to the towns, whereas the fall was general—and the subject does not, I think, occur in the published record of the former meeting. On a former occasion elsewhere[1] I endeavoured to associate the antecedent increase in the rate with the migration to the towns which was so marked in Scotland in the middle of last century, and its subsequent fall with the growth of a locally born population endowed with greater resistance to local conditions than their immigrant parents; but the lack of information regarding the actual proportion of in comers among the population somewhat altered the apparent significance of the contrast.

If I seem to labour the point it is for the purpose of asking whether, in contemplating the superstructure we erect for public health purposes, we do not too often forget that Nature is silently at work often doing better for us than we know, and that our efforts will best be directed towards the control of disease when we know more of Nature's methods of adapting life to the varied conditions under which it exists. For Nature is a skilful nurse, and our best work will be done by a close study of her methods. Tuberculosis and infant mortality, indeed, form two illustrations of the play of biological forces but dimly apprehended. To these we might well add a third in the decline of the birth rate, and the common warning I think they give is against a too ready acceptance of the view that their decline is to be ascribed solely to administrative action on the one hand, or acts of volition sometimes called prudential on the other.

In the first decade of a falling death rate it was still too early to see that a process akin to geological denudation was in progress, and it was not, indeed, until the present century had begun that a high infant mortality rate was disclosed as at once persistent and refractory. So also with regard to tuberculosis, the discovery of the bacillus was still too recent for frank recognition of its rôle as an infecting agent to influence action for the prevention of its spread. But in connexion with both it is worth remembering that the fall in the general death rate coincided with the growth of our foreign meat imports, and that the fall in the infant death rate of this century is occurring among the children of those who grew up under the improved food conditions which these imports tended to make general.

The New Horizon.

Infant Mortality.

Since the present century began we have had in succession organized movements for the welfare of mothers and children, for the reduction of tuberculosis and the treatment of venereal disease. All of these reach down by separate channels to the roots of our social structure, but each also presents aspects which are biological before they are social. It is the recognition of this factor as influencing the whole field of preventive medicine that I think fills the future with hope. Let one but try to envisage the biochemical changes which set in directly the newly born child draws its first breath and produce within a few days closure of the ductus arteriosus and then ask himself whether Nature's alchemy is limited to this single and marvellous process by which the circulation becomes adapted to the demands of an air-breathing organism. Here the structural change is concrete and obvious, as is the alteration in physiological function which accompanies and depends on it. And if we ask ourselves regarding the great volume of infant deaths ascribed to immaturity under a diversity of names (prematurity, birth debility, and some others), mainly occurring in the first weeks of post-natal life, contributing about one-third of the total infant death rate, and distributed with apparent impartiality through every social group, the closed ductus arteriosus may stand as a type of the changes which in failing cause the death of so many newly born children.

Venereal Disease.

In venereal diseases again biology and disease are curiously intertwined. Treatment centres attract many social and biological types, from the youth whose early training has failed to develop habits of self-control which should find their beginning in the physiological inhibitions of the nursery, to the habitué who presents himself with a reinfection many times repeated. If we accept the one as but a reckless adventurer on the sea of desire who wilfully discards the rudder of self-control and abandons himself to the storm winds of passion, how can we regard the other but as an atavistic "throw-back" to a much earlier civilization which looked at the marvel of reawakening nature through the eyes of the phallic worshipper? Superficially these two men may be regarded as differing only in the degree of freedom with which they permit themselves to follow antisocial practices; in reality, although both are of one generation, from the point of view of social development they are separated by some thousands of years.

Tuberculosis.

I need not in this connexion anticipate the questions which surround the administrative treatment of tuberculosis, as full scope will be afforded for discussion in the joint conference with the Tuberculosis Section to be held during our meetings. But this much may be said on the general outlook, that no completely satisfactory explanation has yet been advanced of the change in direction of the death rate from all forms of tuberculosis which began with some suddenness in the mid-seventies, before schemes for its administrative control were in operation—before, indeed, widespread effort at sanitary reform was in operation beyond the town areas. Yet the fall was general and has been continuous, and in its beginnings at least must have been the expression of causes widely operative and not confined to particular sections of the population. One looks again for a biological explanation, whether it be in a reduced virulence of the organism or in increased resistance of the population as a whole. And it is a tempting hypothesis to regard as one among several factors of wide application the new sources of nitrogenous food supply, then beginning to be widely available by the importation of foreign cattle.

It seems to me that Loeb's investigations into the production of artificial parthenogenesis have opened up an entirely new aspect of the relation of cell life to the salinity of the fluids in which it is bathed, and may be found ultimately to have some bearing on the everyday question of food supply. For the present the adequate feeding of the population seems to me one of the public health problems still awaiting solution. Actual food shortage—that is, famine—in a general sense is unlikely in these islands in peace times, but reduction below subsistence diet among great masses of the population is a possibility in times of trade depression, and our machinery for meeting this is defective.

Industrial Fatigue.

In still another direction the horizon is lifting. Of recent years an entirely new field of research has been opened up by the application of physiological and psychological tests to the discovery of the causes of industrial fatigue.

Diseases referable to particular industries have long been recognized, but the need for correlating the rhythm of the work to the physiological rhythm of the worker, if not an entirely new conception, is at least a new application of the doctrine which Collis and Greenwood aptly, I think, illustrate by the picture of a boat race where the rowers "go to pieces" if the stroke is too slow to permit of sufficiently rapid breathing, and, on the other hand, cannot breathe efficiently when the rate exceeds 40 a minute. And as the conditions on which both efficiency and fatigue depend include the housing of the worker, his food, habits, and recreations, as well as the hours and method and conditions of labour, we seem at last to be within sight of a time when employer and employed can meet on a common platform and discuss the hours and conditions of labour in the light of the physiological conditions on which maximum efficiency may be reached with a minimum of fatigue.

Conclusion.

In conclusion, it would be unwise to forget that many of the aims of preventive medicine come under the general criticism so often applied to all schemes of social welfare. You are familiar with the argument: Racial fertility is in inverse ratio to the human value of the stock, and much of the work of preventive medicine is preserving the inefficient. Saved from the incursion of barbarian hordes, civilization is now imperilling its own existence by preserving the unfit. We are, it is alleged, accentuating the effects of a differential decline in the birth rate by an indiscriminate preservation of many unfit lives at the other end of the social scale. Natural processes of selection, we are told, are being arrested, and we are silting up civilization from the bottom.

But biological fitness to carry the burden of civilization cuts across all social stratifications. In America, because of the enormous complexity of the social problems which immigration is producing, they are probably reaching conclusions more quickly than in this country. During the late war the United States army authorities applied "intelligence tests" to nearly one and three-quarter million recruits, and "some of the best scores were made by illiterate ignorant Southern mountaineers who had never before been outside their native valleys. In other words, primitive conditions had held back a high-grade Anglo-Saxon stock, but the intelligence was there, passed on from generation to generation, and only awaiting a favourable opportunity to display itself."

It is right to state, however, that the main thesis of the author from whom I have taken this extract is the biological decline which threatens civilization, and the volume is a reasoned statement of the evidence which the work of Galton and Whetham among others in this country has made familiar to us.[2] But the quotation is of value, I think, if it serves to stimulate us anew to think what "primitive conditions" are, and induces us to ask how much biological capital of permanent value to the race is locked up in the unfavourable environment in evidence everywhere awaiting the opportunity which it is one of the aims of preventive medicine to afford.

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PORT SANITARY ADMINISTRATION:

ITS DEVELOPMENT AND ITS RELATION TO PUBLIC HEALTH IN ENGLAND AND WALES.

BY

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ONE of the primitive instincts of mankind is to protect itself from the possible introduction of pestilence. It is probable that in a very early period of civilization, when men first consorted together in communities, some sort of crude code existed for dealing with obviously diseased persons and outbreaks of disease with the object of preventing the spread of sickness. The best known example of such a code is given in the thirteenth and fourteenth chapters of the Book of Leviticus, which lay down the procedure for certain measures that should be carried out in regard to "lepers," and for their isolation.

As time went on and communications between countries became established and the trade of the world expanded, the adoption of methods designed to prevent the introduction of pestilence became general. These methods varied from time to time in accordance with the views that prevailed as to the manner in which disease was spread, but it was not until the middle of the nineteenth century, following the discoveries of Pasteur, Pollender, and Bavaine, that methods of "quarantine" became established on a scientific basis. The word "quarantine," although its modern practice differs materially from that of mediaeval times, is still retained to indicate those restraints placed on free intercourse on land or sea, and those measures taken to protect the public health by preventing the introduction of disease.

The first attempt to enforce maritime quarantine probably took place in Venice. In 1448 the Venetian authorities drew up a code of quarantine regulations which were directed against the introduction of plague into their city, and for centuries this code formed the basis for similar codes in other countries.

The study of the various measures adopted from time to time is an interesting one. It is, however, not possible to give a detailed account of them in this paper. Of the older methods Dr. John C. McVail wrote:

"Regarding the prevention of plague invasion in olden times, some places adopted measures which would not be permissible in the present day. The City of Aberdeen was nothing if not thorough in this matter. As recorded by Dr. Creighton, the townsmen in 1585 followed the Draconian example of Good Queen Bess at Windsor some twenty years before. They erected three gibbets, 'ane at the mercat cross, ane other at the Brig o' Dee, and a third at the haven mouth, that in case ony infectit person arrive or repair by sea or land to this burgh, or in case ony indweller of this burgh receive, house or harbour, or give meat or drink to the infectit person or persons, the man be hangit and the woman drownit.'"

In 1636, when the fear of plague occupied the public mind of this country, the Royal College of Physicians of London drew up certain directions, the second of which states that:

"It is likewise necessary that there be care taken that neither man nor goods may come from any suspected places without a certificate of health or else either to be sent suddenly away or to be put in the pest house (or such like place) for 40 days, according to the custom of Italy."

It is interesting to note that it was in August in this year that the distinguished Fellow of the College, William Harvey, who first described the movements of the heart and the circulation of the blood, was interned in a lazaretto at Treviso while on his way to visit the English Ambassador, Lord Basil Feilding, at Venice. His letters written from the lazaretto show how deeply he resented his detention.

It was not until 1710 that the first Quarantine Act was passed in England. Prior to this, regulations to prevent the introduction of disease into this country by placing restrictions on the free movement of persons and goods had been issued by an Order of the King in Council, and the Act of 1710 was passed hurriedly under the influence of panic occasioned by the prevalence of plague in the Baltic. It was followed by amending Acts, one of which gave power to order vessels coming from infected places, or laden with goods from such places, or having on board any infected persons, to be burnt, together with the whole or any part of the cargo. In 1752 a new Quarantine Act was passed under circumstances not associated with panic due to a prevailing epidemic. By the provisions of this Act all vessels infected with plague were required to proceed to one port—namely, New Grimsby. At that period reliance against the introduction of plague was placed on the opening out and airing of cargo, and this principle was adhered to; the landing was prohibited of goods or merchandise that had been brought from suspected areas and which had not been sufficiently opened and aired at the lazarets at certain specified places.

These quarantine regulations placed restrictions on the commerce of the country, and it was recognized by Parliament in 1752 that "the present system of quarantine by airing goods on hoys and vessels is not well calculated to prevent infection, and is inconvenient and expensive to the merchant," and later money was provided by Parliament to establish a lazaret for the performance of quarantine by persons and goods at Chetney Hill, in the county of Kent (in what is now known as Milton Rural District). This lazaret was never completed.

In 1783, plague became prevalent in Poland, and the Privy Council ordered vessels coming from that country to perform quarantine for forty days. Even in those times we were dependent to a certain extent on imported foodstuffs and some of the vessels from Poland were laden with grain. In a short time Edinburgh was threatened with a corn famine, and an order was hurriedly issued to allow vessels laden only with grain to discharge their cargoes without any quarantine restrictions, provided that the master of the vessel certified on oath that the crew of his vessel were free from infection, and that his vessel had not communicated with any vessel from an infected place.

With increasing overseas trade the impracticability of enforcing quarantine measures which seriously interfered with commerce became more and more evident, and this brought about a revision of the quarantine system. In 1824 a select committee appointed to inquire into the circumstances associated with our foreign trade drew attention to the serious financial burdens imposed on shipping by the quarantine charges, and in particular one case was cited in which there was no sickness on board the vessel yet nevertheless the quarantine charges exceeded 90 per cent. of the value of the cargo.

The report of this committee was followed by the passing of the Quarantine Act of 1825. This Act prescribed precautionary measures to prevent the introduction into this country of diseases such as plague, cholera, and yellow fever—diseases from which the country was free and which existed in countries with which we had maritime communications. Under the provisions of this Act and of the Orders in Council of the same year, all vessels coming from the Mediterranean or from the West Barbary on the Atlantic Ocean with clean bills of health, or any vessel from ports of Europe outside the Mediterranean or from America, were required to perform quarantine at various places specifically named according to the vessel's port of destination. The duration of quarantine was for fifteen days after arrival at the port or after discharge of cargo into "floating lazarets" or lighters, according to the nature of the cargo. All vessels whose bills of health were not "clean" had to perform quarantine at Standgate Creek in the Thames, or at Milford Haven. This Act remained on the Statute Book until repealed by the Public Health Act of 1896.

But long before 1896, as Dr. Bruce Low has pointed out, the Quarantine Acts had been regarded as a failure, and it was even then contended that quarantine could give but a false security for the purpose it purported to accomplish. In 1849 a suggestion was made that existing quarantine establishments should be abolished and that reliance should, in future, be placed exclusively upon the protection afforded against the spread of imported infection by a system of local sanitary improvements. From that time onwards the opinion of British sanitarians has been that the best way to prevent the dangers arising from imported infection is to maintain a high standard of sanitation and administration at our ports and inland districts, but it took the English advocates of the abolition of quarantine about twenty-five years to make any impression on other nations.

In this country maritime quarantine has been applied only to cholera, plague, and yellow fever—all three diseases of foreign origin. Against cholera the full quarantine procedure has not been enforced since 1858. Considerations of time and space do not permit of even a brief account being given of the

arguments adduced in favour of the substitution of "medical inspection" for "quarantine" and the steps taken to bring about the change.

In the year 1871 the Privy Council was succeeded as the central health authority by the newly formed Local Government Board, and in 1872 an Act was passed dividing the whole of England and Wales into urban and rural sanitary districts. The Board was given power to constitute port sanitary authorities for any customs port or for part of a customs port, and the provisions of this Act were reproduced with modifications in the Public Health Act of 1875, which consolidated and amended the various laws relating to public health in England and Wales.

The system of quarantine of ships formerly relied on to prevent the introduction of infectious disease into this country from abroad was replaced by the system of port sanitary administration so established, and by subsequent legislation. Under these various Public Health Acts every local sanitary authority whose district abuts on any part of the coast or on a navigable river is a riparian authority. Under Section 287 of the Public Health Act, 1875, the riparian authorities of the principal customs ports have been constituted port sanitary authorities by Order of the Local Government Board either singly or as joint boards. The expenses of the port sanitary authorities are met in the same manner as those of local authorities under the Public Health Acts. The London Port Sanitary Authority was established by a separate enactment.

It should be understood that the coastline of England is divided into several customs ports, and in a customs port may be comprised one or more port sanitary districts, or other sanitary districts not included in a port sanitary district. These other sanitary districts may be urban or rural, and are known for administrative purposes as riparian sanitary districts. In all customs ports there are boarding stations, appointed by the Commissioners of Customs and Excise, at which ships arriving from "foreign" are required to bring to for boarding by customs officers. The precise position of the official boarding station of the customs is clearly defined at each port. There are usually two such boarding stations at each port, one being "for vessels infected" or "suspected," as defined in Article I. Part I. of the Order of the Local Government Board, dated September 9th, 1907—to which is sometimes added "and vessels with dangerous infectious disorders on board," and the other "for all other vessels." By the latter is meant the place where the vessel is bound for discharge of cargo or passengers and for loading. In practice, vessels which are known and admitted by the master to be "infected" or "suspected" bring to at the customs boarding station. In other instances the port medical officer of health may inform the customs that he wishes to inspect vessels coming from certain ports or places where infectious diseases are prevalent, and in such circumstances the vessels are intercepted at the boarding station by the customs and detained for examination by the port medical officer of health. Otherwise the vessel goes straight to her place of "mooring, discharge or loading."

The port sanitary authorities exercise over the waters of the port and over the shipping therein the same functions as sanitary authorities exercise on land, with certain additional duties; and for the purpose of carrying them out all port sanitary authorities must appoint a medical officer of health and a sanitary inspector, and if necessary assistant sanitary inspectors, some of whom must have special qualifications as food inspectors, and provide isolation hospital accommodation for cholera, plague, small-pox, and other infectious diseases, either directly or by arrangement with other local authorities.

Cholera, *plague*, *typhus fever*, and *small-pox* are four among many diseases that may be introduced into the country from abroad through the agency of shipping. The far-reaching effects of the great war have extended to and influenced the prevalence and distribution in the world of these four diseases; the study of their behaviour under war conditions and afterwards is receiving the earnest attention of epidemiologists. We realize that these conditions have placed this country in a position that renders it more liable than usual to the introduction of disease.

It is known that *cholera* has established itself for the time being in certain parts of Russia and the Ukraine. The presence of this disease in Asia, or even in Europe in the neighbourhood of the Black Sea, has not in the past been a source of more than potential danger to this country. The short incubation period of cholera, the long sea passage through the Mediterranean Sea, or even the overland route finishing with a short sea voyage to this country, afford ample time for travellers to develop symptoms of the malady before reaching this country. It is a different matter when cholera appears in Europe in the area of the littoral of the North and Baltic Seas.

The circumstances of the war have led to the spread of lice-borne diseases, and at the present time there is widespread prevalence in Europe of these diseases. Of these the most important is *typhus fever*. Recently a man coming from Warsaw developed the disease immediately after his arrival in London, and cases of typhus fever have occurred in Birkenhead. But at the moment there is no typhus fever in England, and it will be realized that the increase of traffic with typhus-infected countries renders very strict precautions necessary to maintain this freedom.

Small-pox was present in many of the war zones and in the armies; and incidentally the civil population in these zones experienced attacks of small-pox limited in proportion to the extent of their protection by antecedent vaccination. Previous to the war this country had little fear of the possible introduction of small-pox through the agency of returning soldiers; for, in the past, British troops were vaccinated or revaccinated on joining the colours. During the war vaccination or revaccination was not made compulsory on men of the Territorial Force or of the new army; though the great bulk of our soldiers, owing to their common sense, willingly accepted this protection against small-pox. Nevertheless, this protection was not adopted by all, and, during the year 1919, outbreaks of small-pox occurred in England and Wales which were traced directly to returned soldiers.

The possibility of the introduction of *plague* through human cases is not very great; its introduction is more likely to occur through infected rats, brought on vessels to our ports, gaining access to the shore and conveying the infection to the rat population on land. The revision of the International Convention may have the effect of extending the duties of port sanitary authorities in the direction of rat destruction.

In addition to the four diseases already mentioned there are others intimately associated with shipping, with which port sanitary authorities have special concern. Two of these may be mentioned, for example—*beri-beri* and *malaria*.

Expert inquiry as to beri-beri brings to notice preventable conditions caused by improper dietary of the sailor. Malaria inquiries direct attention to preventable conditions of exposure to dangerous malaria infection—for example, in West African ports. In addition, humanity and the interests of the sailor require that cases of such disease, although not infectious in the ordinary sense, should receive hospital treatment at our ports.

The legislative machinery for the prevention of the introduction of cholera, yellow fever, and plague into this country is comprised in an Order of the Local Government Board—"Regulations as to Cholera, Yellow Fever, and Plague; Ships arriving from Foreign Ports"—dated September 9th, 1907. These regulations comply with the terms agreed upon at the International Sanitary Convention of Paris, 1903. Certain modifications in the terms of the 1903 Convention were made by the International Sanitary Convention of Paris, 1912, but, owing mainly to the war, the ratification of the latter Convention was delayed and was only recently completed. A further revision of the International Sanitary Convention is now in progress.

So far as the mercantile marine is concerned, one of the most important duties imposed on port sanitary authorities is that of dealing with conditions adversely affecting the health of crews and with the insanitary condition of ships.

The question often arises whether the port sanitary authority should exercise its powers as to nuisances on board ship where structural alterations would be required for the abatement of the nuisance, or whether they should leave the matter to be dealt with by the surveyor appointed by the Board of Trade. Clearly the powers of the surveyors are concurrent with those of the port sanitary authority; there are many cases where a nuisance on shipboard requires abatement which do not come within the provisions of the Merchant Shipping Acts. The port sanitary authorities are in no way responsible, nor

indeed is the Ministry of Health, for securing adequate facilities for the medical or surgical treatment on shipboard of sick persons.

When dealing with the local sanitation of harbours, waterways, docks, and other shore premises within their jurisdiction, port sanitary authorities are hampered by lack of adequate powers to deal with accumulations of refuse, scavenging, and like matters. From the public health point of view there would be advantage in investing these authorities with wider powers than they now possess in regard to such matters.

The examination of imported foodstuffs, which is of very great importance, is regulated by Orders made under the Public Health (Regulations as to Food) Act, 1907, and has effected improvement in the national food supplies by preventing the importation of undesirable and unwholesome food.

Other special duties of port sanitary authorities are the protection of shellfish from sewage pollution and the sale of shellfish for food from beds and layings that are known to be polluted. The fall in the enteric fever attack rate in this country can be attributed in part to the prevention of specifically infected shellfish reaching our markets, etc.

If the various duties performed by port sanitary authorities are considered seriatim it will be seen that except in regard to inspection of food the duties are in part national and in part local; and this is represented in the financial arrangements made for the performance of the duties.

In 1920, the Government agreed to a grant-in-aid being made to port sanitary authorities of 50 per cent. of their approved net expenditure. This grant is subject to regulations prepared by the Ministry of Health with the approval of the Treasury, and the Ministry can withhold or reduce the grant in cases where a minimum degree of efficiency is not attained. The cost of a serious cholera, plague, or typhus epidemic, whether at one of the ports or inland, might easily be far greater than any expense to which the country or the shipping industry is put by reason of an efficient port sanitary administration. This point is so self-evident that it need not be laboured.

Desired progress in regard to infectious diseases could not be obtained without conferring on port sanitary authorities and their officers some additional powers and duties. Draft regulations were drawn up and submitted to the principal port sanitary authorities, and a deputation was received at the Ministry of Health at which the object and scope of the regulations were discussed and agreed to. As a result of most careful consideration the Port Sanitary Authorities (Infectious Diseases) Regulations were issued in 1920, and additional duties as well as powers were imposed on port medical officers of health. Probably the most important matter dealt with in these recent regulations is the danger of the spread of infectious diseases by vermin, especially the deratization of ships, which is one of the most urgent problems that concern port sanitary authorities.

In this country the fumigation of vessels for the purpose of destroying rats is usually carried out with sulphur dioxide gas generated by burning ordinary sulphur in pots, or sulphur candles, under suitable precautions against fire. This is an efficient fumigant when properly employed, and gives good results in so far as the destruction of rats is concerned, but it damages machinery and spoils paintwork, and for this reason a passenger vessel has often to be redecorated after undergoing sulphur dioxide fumigation. A number of vessels have recently been fumigated at British ports with hydrocyanic acid gas, which, unlike sulphur, has no harmful effect on machinery or paintwork, but, needless to say, this method of fumigation has to be used with the very greatest care owing to the danger to human life involved in the process.

It is understood that at Rotterdam and other ports in Holland trial is being made to fumigate vessels by means of a liquid known as "cyclon," which is composed of methyl cyano-formate 90 per cent. and methyl chloro-formate 10 per cent. The liquid volatilizes rapidly when sprayed into the air, the methyl cyano-formate giving off hydrocyanic acid gas and the methyl chloro-formate a gas which is intensely irritating to the eyes and respiratory surfaces, and this serves to give warning of its presence before the hydrocyanic acid gas reaches dangerous proportions in the atmosphere. The cyclon is distributed through the space to be fumigated by means of specially constructed brass "watering" cans, each fitted with a fine rose. This method appears to possess advantages over the ordinary methods of hydrocyanic acid gas fumigation, but as yet it is only in the experimental stage.

As a general rule before the war the port medical officer of health acted as the medical inspector of aliens on behalf of the Home Office, by whom he was remunerated for his services. The only aliens medically examined were steerage passengers, and then only those entering the country on ships carrying twenty or more such passengers were liable to medical examination. No definite instructions were issued to the medical inspectors of aliens as to the medical standard to be adopted. During the war the medical inspection of aliens fell into abeyance.

After the armistice the conditions under which aliens should be permitted to enter this country were the subject of consideration by the Aliens and Nationality Committee, which met under the auspices of the Home Office. As a result of this Committee's deliberations, the Aliens Order of 1919 was issued and came into operation on September 1st, 1919. Later, when the Aliens Restriction (Amendment) Act, 1919, was passed, this Order was superseded by the Aliens Order of 1920, which came into operation on April 1st, 1920. Under these Orders the Home Office is responsible for the exclusion of any alien from this country, and all aliens, whether first-class passengers or otherwise, are liable to exclusion on medical grounds or for other reasons which are essentially Home Office affairs.

All aliens are now liable to medical inspection at one or other of the thirteen ports scheduled in England and Wales for the landing of aliens, and the Minister of Health, with the concurrence of the Secretary of State, is empowered to appoint "medical inspectors" at each scheduled port and to issue instructions to them.

The port sanitary authorities concerned agreed to their medical officers of health acting as medical inspectors of aliens, and a scheme was devised and put into operation. During the two years that the scheme has been working it has been subject to local inspection by medical officers of the Ministry, and conferences have been held with the local medical officers and with the officers of the Home Office, who are responsible for the aliens' work of that department. The result of the experience gained is now under consideration with a view to determining whether any amendments are desirable.

Considerations arising from the Foregoing.

In reviewing our port sanitary administration from the points of view of the prevention of the introduction of disease into the country and the effect of this administration on our commerce, it will be realized that restrictive measures on the movements of ships, persons, and cargoes that are regularly and satisfactorily carried out and are well known to shipping companies and the travelling public to be in operation, are less prejudicial to commerce and to international relationships than the disturbance to trade and commerce that follows an outbreak of pestilence.

The history of the world shows that when a disease which is capable of developing epidemic proportions and proves rapidly fatal to a large proportion of those attacked by it has been absent for several years, there is a tendency for the precautions against its introduction to become relaxed or to fall into desuetude. On the other hand, when such a disease suddenly reappears in pandemic form after an almost complete absence for a long period of time, countries, provinces, or cities take steps to prevent its introduction into their midst that are in excess of actual requirements. It is necessary to avoid laxity on the one hand and scare and panic on the other.

No measures short of absolute national seclusion can be relied on to prevent the introduction of pestilence, and this seclusion would cut off the country from its means of existence. It is not suggested that the system of medical inspection now in operation is "water-tight" and that no leakage can take place; it is realized that under certain conditions a chance case of disease may find its way inland and that in such instances we have to rely on our inland sanitary administration to prevent diffusion of infection. Nevertheless grave responsibility to the public rests on port sanitary authorities to maintain a high standard of efficiency in their administration.

It is not the known but the unknown that we are afraid of. Once we are satisfied that we are fully apprised of the health conditions of an incoming ship the necessary steps can be taken to deal with the vessel. The object of the inquiries made of

the master on the arrival of his vessel by officers of customs and officers of the port sanitary authority is to obtain knowledge of the sanitary condition of the vessel and of the happenings during the voyage, in order that reasonable and efficient steps may be taken to prevent spread of disease. The officers of customs, when putting the health questions to masters of incoming vessels, do not board the vessel. If the replies are satisfactory they board for excise purposes. In the event of the replies proving unsatisfactory, the customs officers, however, have the power to detain a vessel for visit by the port medical officer of health.

These arrangements have worked well in the past, but it is necessary from time to time to consider whether they can be improved, and if so, in what direction. At present a large proportion of merchant vessels are fitted with wireless apparatus, and therefore in the future it may be found feasible for information as regards health conditions of an incoming vessel to be transmitted by wireless from the vessel to the port for which she is bound or to some centre whence the information can be forwarded to the home ports. It would then be possible to give the master instructions as to taking his vessel to the official mooring station or to direct him to bring his vessel straight into dock. Further, the master could be advised as to the steps he should take to deal with the health conditions affecting his ship, and such advice would be particularly valuable when a surgeon is not carried on a vessel. The port sanitary authority, warned beforehand, would be in a position to take the requisite action to deal with the vessel immediately on her arrival.

During the last quarter of a century considerable improvement has taken place in the general sanitation of vessels, but much still remains to be done in this direction. Experience shows that many of the existing defects are the result of insufficient consideration and lack of expert advice. In many cases it would cost no more to construct the crew's quarters on sound hygienic lines than on the faulty lines which at present are too often met with. This condition of affairs would be rectified were the plans of all new vessels submitted for consideration by an expert in marine hygiene.

It has to be borne in mind that for the success of our port sanitary administration we rely to a great extent on the integrity and probity of the officers of the mercantile marine, and for this reason, if for no other, they are entitled to sympathetic consideration and to all possible assistance in carrying out the duties imposed on them for the protection of the public health.

DISCUSSION.

Dr. W. F. Dearden (M.O.H. Port of Manchester) thanked Dr. Reece personally, and on behalf of port medical officers generally, for his excellent summary of port sanitary administration. Too little was known by the general public of this "first line of defence," and his paper would help to remedy the defect. Early measures were too severe and restrictive, they hampered trade—hence their failure. The new regulations of 1920 had much improved the powers of port medical officers to control the importation of infectious disease, but there were still a few loopholes which required filling up. As examples of these he quoted the difficulty of ascertaining accurately the destination of contacts from an infected vessel, the responsibility of the ship's master to report cases of infectious disease which he was unable to diagnose, and the lack of facilities for isolation of cases on board ship. The port medical officer should be able to deal with insufficient and insanitary latrines provided for the use of seamen on the quays.

Dr. W. W. King (U.S. Public Health Service) spoke on behalf of the Surgeon-General of the United States Public Health Service, Dr. H. S. Cumming, who was unable to accept the invitation to be present. In Dr. Reece's address he had found many parallels in the duties, powers, and limitations of the port health officer. Quarantine he likened to a sieve intended to pass the harmless and stop the harmful. It was imperfect, and there was a constant endeavour to strengthen it without interfering with travel and commerce. When the fear of an epidemic occurred there was an opportunity for improvements in the service, and such was the case in America in 1893 during the prevalence of cholera in European ports. It was then that men were first stationed at American consulates abroad to deal with the sanitation of vessels, passengers, and crews destined for United States ports. Such health officers occupied the important position of outposts in the first line of defence.

Major R. W. H. Jackson (R.A.M.C., ret.) gave his personal experiences as a former Army Health Officer both at home and abroad. As special health officer in Calcutta in 1903 he could testify to the difficulties of diagnosing plague. He had had experience of cholera and small-pox in Karachi, yellow fever in the West Indies, typhus in Ireland, and leprosy in the East and West Indies. He had found that severe penalties for concealment of disease on board ship defeated their object. Enforcement of cleanly habits and a supply of wholesome water were the two great difficulties encountered in dealing with merchant vessels in foreign and tropical ports. He thought wireless telegraphy would be a useful adjunct in notifying sickness on board.

Dr. J. C. McVail expressed the opinion that to prevent interference with trade the ideal was to have the country made as far as possible sanitarily invulnerable to invasion. A main difference between the American and British systems was that the former took protective and preventive action at the ports of departure of immigrants, even though the amount of emigration from all parts of the world was very much greater to America than to Britain. In Scotland the only joint port authority was that of the Clyde. Each port on the Forth was independent, and therefore responsible in its own area only.

Dr. Herbert Jones referred to the excellence of the work carried out by the port sanitary medical service as the reason why it might not be well known. He was of opinion that the transmission to inland medical officers of health of notices giving the addresses of contacts on infected vessels was of very great use, and he hoped there would be no question of discontinuing the practice.

Dr. Reece, in reply, stated that it was unfortunate that only emigrant ships were obliged to provide hospital accommodation. Contact on board a ship at sea was very intimate, but attempts were being made in the newer vessels to disperse the sleeping quarters of the crew. The tracing of persons from infected ships was admittedly a difficult matter, and he could see no satisfactory solution of the difficulty. Much depended upon the probity of the master, and he deserved consideration for the many responsibilities which he undertook.

THE ECONOMICS OF PUBLIC HEALTH.

BY

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The need of economy after the war, both in national and private life, is so obvious that there is a danger of expenditure being reduced without regard to the return expected of it unless that return can be shown in pounds, shillings, and pence. This is especially the case in measures that aim at the promotion of mental and moral values, for whereas currency is but the financial language of material value, and economy in public affairs deals with material currency alone, mental and moral values have yet no counterpart in monetary language. In the promotion, therefore, of the public health the many intellectual and moral advantages that result from health cannot be represented in financial terms, and there is a danger, both in national and local government, of necessary services being curtailed as if the moral values were a matter of no importance. In certain other fields—as in education and in religious matters, for instance—this is even more serious than in public health, for in those spheres no material profit can be definitely shown as a result of suggested expenditure. But in public health we have this advantage, that there are definite material gains from wise expenditure which can be shown to be reduced by a reduction of that expenditure. This paper sets out to show—or rather to suggest as a basis for further study—the material loss occasioned by physical sickness and disablement and the material advantages that may be obtained, or have been obtained, from improvements in the public health. We

recognize definitely that this is only part—perhaps only a small part—of the advantages obtained and obtainable. But with regard to these material advantages much slipshod language is commonly used in support of the measures taken or proposed. The advantages claimed are usually set forth only in general terms, which do not appeal to the business man or to those responsible for public finances, and the cynic, who plays a most useful part in these hard times, has an overwhelming advantage unless the case for the material advantages of the public health services can be set out in the common language of finance.

In reconstruction of our public and industrial life the object must be to provide efficiency and a maximum and optimum output with the least present expenditure and without any sapping of individual effort. In this Section we are concerned with the improvement of health as a whole, resulting from improved social conditions and material prosperity—especially of the wage-earning classes, but by no means confined to them—through many agencies, guided, instructed, inspired, often directed and even directly promoted by the machinery of national and local government, mainly through the officials of their public health services, and more particularly by their medical officers of health. As the first appointment of a medical officer of health was that made by the city of Liverpool in 1847, and appointments only became general under the Public Health Acts of 1872 and 1875, the progress of the public health movement may be said to be concerned mainly with the past half-century. Farr's *Vital Statistics*, dealing generally with conditions before 1870, may be taken as our guide to conditions before the public health movement set in, and the figures of the middle of the last century may be contrasted with those of the present day.

With these qualifications we may embark on our inquiry under the following headings:

Present:

1. What do sickness and disablement cost by loss of patients' work?
2. What do sickness and disablement cost in care and treatment?
3. What does it cost to maintain public health services?

Past:

4. What has been gained by the reduced number of deaths in sixty years?
5. What has been gained by increased expectation of life in sixty years?

Future:

6. What saving could be effected, as a single definite instance, by the elimination of tuberculosis?

1. *What do Sickness and Disablement Cost by Loss of Patients' Work?*

Let us consider the following figures:

Male members of approved societies in England and Wales = 8,637,095 (2nd Annual Report of Ministry of Health, 1920-21, pp. 153, 168).

Expenditure upon sickness and disablement benefit among men = £4,771,702 (Annual Report of the Chief M.O. of the Ministry of Health for 1920, p. 19); this represents an average minimum of incapacitation for 8,916,059 weeks, which is equal to the loss of a year's work of 178,280 men, or 2 per cent. of the insured male population.

Now the insured men number nearly one-fourth of the population, and there is further loss for which benefit would not be claimed. Therefore the total sickness and disablement of the whole population corresponds to a permanently sick or disabled population of, say, five times 178,280 = 891,400.

A somewhat similar result may be obtained in another way. Farr concluded that the total number of sick at any time throughout the year was about double the number of deaths occurring during the year. The number of deaths in England and Wales in 1920 was 466,213, and the number of sick and disabled would therefore be 932,426.

These two estimates approximate to one another, and suggest that 2½ per cent. of the population are on an average incapacitated by sickness and disablement. Production would thus be reduced by sickness and disablement to the extent of 2½ per cent.

(*a*) What does this signify to the Exchequer? The Exchequer receipts from personal services and production, excluding the return from capital, may be put on a conservative estimate at £100,000,000, and the loss to the Exchequer, therefore, from the incapacity of those sick and disabled equals 2½ per cent. of this figure, or £2,500,000 per annum.

(*b*) What is the loss from sickness and disablement to the national income? Estimates of the national income vary between three and four thousand million pounds. Accepting the lower figure, and taking one-third of it as representing the yield of capital, we arrive at the national income from personal services as £2,000,000,000 per annum, and the loss to the national income, therefore, from the incapacity of those sick and disabled is 2½ per cent. of this figure, or £50,000,000 per annum. To this should be added, if we could estimate it, a very large loss from minor incapacity and from the lowering of health and moral from minor or temporary or incipient conditions of sickness and disablement.

2. *What do Sickness and Disablement Cost in Care and Treatment?*

The number of sick and disabled has been reckoned above as 932,426; of these the number in certain institutions is given in the census of 1911 as 434,843; the others are mainly being treated at home, and will number 497,583.

(*a*) *In Institutions.*—The number of patients and staff in workhouses, asylums, and hospitals (census 1911) = 506,723; of this number the staff = 71,880 and patients = 434,843. The cost of maintenance of the above institutions, at an average of £100 a year per head, would be roughly £50,000,000.

(*b*) *At Home.*—The number incapacitated, as estimated above = 497,583.

Number of doctors, subordinate medical service and nurses, by census	123,400
Number of chemists and druggists	60,851
Number of surgical instrument makers	9,155
Total	193,406
Deduct staff in institutions	71,880
Number professionally engaged in attending on home sick	121,526

To that figure of 121,526 should be added the number of attendants and those engaged in ancillary occupations (other than doctors, nurses, etc., shown above), and we may therefore estimate that the number concerned with the care of the home sick is as high as 200,000.

Cost of these (at £120 per annum)	= £24,000,000
Add maintenance of home sick (at £70 per annum)	= £35,000,000
(*a*) and (*b*) *Total* (£50,000,000 *plus* £24,000,000 *plus* £35,000,000)	= £109,000,000

But to this figure must be added the indirect effect of epidemics on industry, which at a low estimate we may place at £11,000,000, thus bringing the total material cost in care and treatment to £120,000,000. From this, however, should be deducted the cost of living of non-adults below 20, which is taken roughly as the beginning of the productive period of life, as such cost would in the main be a charge on the community also in health. If cost of living account for one-half of the cost of maintenance, one-third of which is in respect of persons under 20 years of age, then this deduction amounts to one-sixth of £120,000,000, or £20,000,000. The net cost, then, of care of treatment of the sick and disabled may be estimated at £100,000,000.

1 and 2. *Total Loss from Sickness and Disability.*—Add to this the loss to the national income from the incapacity of sick and disabled, already reckoned at £50,000,000. The total direct material loss to the community in England and Wales from sickness and disability is then £150,000,000.

This is of necessity but a rough estimate, but it is a minimum. Certain omissions, definite but difficult of estimation, have already been noted. Another very large omission is that of work lost to the community by the 71,880 staff of institutions and by the 200,000 persons engaged in professional and occupational attendance on sickness at home who would otherwise be free for productive work. The cost of maintenance and the loss of productivity of relations and friends attending on the sick have also been omitted. Such charges would not for some years be set free in case sickness and disablement could be eliminated from the community. But they figure largely among the expenses of the Sick Account.

3. *What does it Cost to Maintain the Public Health Services (Water, Drainage, Sanitation, and the Like)?*

This is a matter which we can hardly bring into our public health budget; but the following figures, taken from the second Annual Report of the Ministry of Health (p. 204), are suggestive:

Expenditure of Local Authorities in England and Wales (other than out of loans).

	£	£
Public health:		
Sewers and sewage disposal	6,183,101	
Collection and disposal of house refuse	4,588,666	
Hospitals, sanatoriums, dispensaries, etc.—		
For tuberculosis	1,310,698	
For venereal diseases	218,251	
For other diseases	2,241,668	
Maternity and child welfare	687,180	
Baths, washhouses, etc.	1,122,134	
Parks and open spaces	1,723,616	
Vaccination	120,578	—18,191,892
Lunatics and lunatic asylums		5,476,637
Mental deficiency		183,995
Housing of the working classes		1,072,488
Relief of the poor (excluding maintenance of lunatics in county and borough asylums)		14,863,024
Cemeteries		997,506
Waterworks		11,291,242
		£52,076,784

It is impossible to say what proportion of these services is debitable to public health, still less what proportion could be diminished if preventable diseases were prevented and, so far as possible, exterminated. Moreover, the expenditure on these matters from the public purse is inextricably mixed with expenditure from private sources—as, for instance, house construction and drainage, or in improvement of the food supplies. But it is this expenditure which must be set on the debit side of the account to be contrasted with the material value of the improved public health on the credit side.

4. *What has been Gained by Reduced Number of Deaths in Sixty Years?*

Let us for the sake of suggestion give the following figures taken from Sir George Newman's *Outline of the Practice of Preventive Medicine*, an official memorandum addressed to the Minister of Health and published in 1919 for 6d., and from the Registrar-General's quarterly return No. 292 dated January 31st, 1922.

	England and Wales.		London.	
	Death Rate.	Infant Mortality.	Death Rate.	Infant Mortality.
1851–60 ("the fifties") ...	22.2	154	23.7	155
1911–18 (60 years later) ...	14.8	105	15.5	106
1921	12.1	83	12.4	80

Compare (1921):	Death Rate.	Infant Mortality.
Bombay	54.7	9
Madras	33.8	281
Vienna	15.3	146
Paris	14.8	95
Berlin	12.4	135
New York	11.2	71
Amsterdam	10.3	54

Comparing, then, the deaths at the earlier period with those sixty years later (for these purposes the mortality in England and Wales 1847–50 is compared with that of 1901–10) the mortality rate in the first period applied to the population of the second period would have given 887,083 deaths; but the actual recorded deaths averaged in a year 575,515; therefore the number of lives saved yearly was 311,568. Of this number over one-third (namely, 119,377) lives were saved owing to the decline in mortality from small-pox, typhus, enteric fever, cholera, and diarrhoeal diseases—a reduction mainly due to sanitation.

Now these lives have a definite value, and I would ask the political economists to give me a good estimate for such value. The best figures I have been able to find are those provided by Sir J. Kay-Shuttleworth's "Return of wages of the best class of labourers in Norfolk,"* presumably in the middle of the last century, quoted under the heading "Value of a man's services" in Farr's *Vital Statistics*, p. 534.

At the age of 25, comparing professional men on moderate incomes with agricultural labourers, the following figures are given as the value lost by an individual death:

	Professions on Moderate Incomes.	Agricultural Labourers.	
		High Scale.	Low Scale.
	£	£	£
Future earnings	10,462	1,068	795
Present value of future earnings at 3 per cent.	5,329	627	481

Kay-Shuttleworth calculated that at the age of 20, on a 5 per cent. basis, the prospective value of an agricultural labourer in Norfolk was £482; but from that figure should be deducted the amount required for necessary maintenance (£248)—giving the net value of his future services to the community as £234. Supposing, then, we say that the labourer of Norfolk dying at the age of 20 (at the far lower value of his services sixty years ago than that of the present time) is over the average figure of present-day value for all lives lost, and taking such average to be £200, then the reduction of the last sixty years (311,568 deaths every year) is equal to a saving of £62,313,600 per annum.

Again I say that this is only a rough estimate of the value of the lives that have actually been saved. I hope political economists will compute this figure correctly. But that the lives saved have a value approaching the enormous figure given above, and that this saving is a result of the improved conditions of life and attention to health, is a fact.

5. *What has been Gained by Increased Expectation of Life?*

Another way of estimating the effect in improvement of health has been by calculating from life tables the increased expectancy of life. Comparing the life tables compiled respectively by Farr for the years 1838–44 and by King for the years 1910–12 (giving a contrast of seventy years), we find that

The mean after-lifetime of males aged 20 in 1838–44 was 40.0

and that

The mean after-lifetime of males aged 20 in 1910–12 was 44.2

Therefore the age of productive labour was increased in seventy years by over 10 per cent. As we have already seen that the national income from personal services at a conservative estimate is reckoned at £2,000,000,000 a year, the saving by increased age of productive labour during these seventy years amounts to £200,000,000 a year.

Moreover, a larger proportion of children born reach the productive age. In the earlier period out of every million males born 653,357 attained the age of 20 years; but in the latter period out of every million males born 793,435 attained the age of 20 years, so that in the later stage for every million born 140,078 more reached the productive age, and the community expends so much less a head relatively on the unremunerative period of life.

6. *For the Future what Saving can be Effected, as a Single Definite Instance, by the Elimination of Tuberculosis?*

Tuberculosis is one definite cause of sickness which gives us definite figures on which to base a financial inquiry. Whether the total extinction of tuberculosis mortality is within the realms of possibility is immaterial to this calculation; but it may be observed that the average tuberculosis mortality for the years 1831 to 1885 was twice as heavy as that of 1919. The extinction of tuberculosis would thus, at the present time, mean no more than a reduction equivalent to that which has already taken place. Moreover, the 1920 mortality rate from tuberculosis was over 10 per cent. below the 1919 mortality from the same cause, and may be considered as a 10 per cent. instalment of total extinction. Had, then, the 1919 death rate been reduced by an extent equivalent to the 1919 mortality from tuberculosis, it is shown in life table form that within the productive ages 16 to 65 the

* His life has recently been written by Mr. Frank Smith, Lecturer in Education, University of Aberystwyth, with an introduction by Sir Michael Sadler, K.C.S.I., and a chapter of reminiscences by Lord Shuttleworth (published by Murray). Sir James Kay-Shuttleworth (1804–1877) was the first Secretary of the Education Department and laid the foundations of national elementary education. His early life brought him into close contact with the social problems of his day; for, first as a physician in Manchester and then as an Assistant Poor Law Commissioner in East Anglia and London, he gained an intimate knowledge of the urban and rural conditions which followed the industrial revolution. Thus equipped in medical science, practical philanthropy, and wide experience, he accomplished great administrative work as a courageous pioneer in office and as a public man in Lancashire, notably during the cotton famine.

years of life actually lived would have been increased by 4.7 per cent. Production in the year in question could therefore have been increased 4.7 per cent.; the increase in the Exchequer receipts from taxation (on the most conservative estimate of £100,000,000) would, it might fairly be assumed, have been increased by £4,700,000, and the national income of £2,000,000,000 from personal services by £94,000,000.

But, furthermore, tubercle affects more especially the productive ages of life. Assuming that production is limited to the ages 16 to 65 and that all other ages are dependent, the elimination of the 1919 mortality from tuberculosis would increase the productive years of life by 0.48 per cent. more than it would increase the unproductive years. For with the 1919 mortality from all causes there were by the life tables 64.47 years of productive life to maintain a hundred years of life; and in case of the extinction of tubercle there would be 64.78 productive years of life to maintain a hundred years of life. The difference is 0.31 year of life, which is a percentage increase of 0.48. The following argument is then suggested to me from a distinguished quarter. Taking the conservative figure of £2,000,000,000 as the national income from personal services, excluding return from capital, it is suggested that the extinction of tuberculosis would add a further sum of £9,600,000 annually to the national income. Capitalized at 5 per cent., assuming that the above percentage surplus of 0.48 accumulated as capital, this would be worth £192,000,000. I pass on this suggestion for what it is worth and invite correction.

The subject has been worked out very thoroughly in the United States of America, and it is there estimated that at the age of 20 tuberculosis reduces the expectation of life for the whole population of the registration States by 2.4 years. Economists calculate that for the whole population of the United States each year of life expectancy lost is equal on the average to a net loss of £20 to the national wealth. On account of tuberculosis, therefore, each person is worth approximately £50 less to the national wealth, and the State loss is (on 1911–16 population of 106 millions) £5,300,000,000. or (as average lifetime in the United States is fifty years) £100,000,000 per annum from tuberculosis alone.

Conclusion.

It will be seen, then, that the ascertainable cost of sickness and disablement to the community in England and Wales amounts to no less than £150,000,000 per annum. To this should be added large sums which I have been unable to express in financial terms. Judging from the estimate of £94,000,000 a year as the loss from tubercle alone, the estimated loss of £150,000,000 from all forms of sickness would seem to be grossly underestimated.

It will be seen that the public health services cost many millions a year. It will also be seen that during the course of the public health movement in the past sixty years the improvement in health has given a very large possible increase in output, which, reckoned on the basis of lives saved and the average wages of an agricultural labourer sixty years ago, works out at £62,000,000 a year; but reckoned from the increased expectation of life amounts to £200,000,000 a year—several times more than the amount spent on maintaining the public health services.

It is not claimed that all the loss to the community from sickness and disablement could ever be abolished, nor the services of public health be materially, if at all, diminished; but as in the past sixty years, so now, a large amount of sickness and disablement is still preventable.

In America, where this subject has been explored more thoroughly than in this country or, so far as I know, in any other, it is estimated that sickness and death in the United States, with a population about three times as great as that of England and Wales, cost £600,000,000 per annum, of which at least one-third is regarded as preventable. The ratio of preventability is defined as "the fraction of all deaths which would be postponed if knowledge now existing in well-informed men in the medical profession were actually applied in a reasonable way and to a reasonable extent."

As an instance of what may reasonably be expected in the prevention of sickness in the near future, we have taken the possible elimination of tuberculosis and shown such elimination should add £4,700,000 yearly to the Exchequer and £94,000,000 yearly to the national income. It is obvious, therefore, that any effective measures that have yet been proposed for the reduction of tuberculosis would be financially justified if consideration be merely confined to the material profit and loss to the Exchequer.

Stress must, however, be laid on the epithet "effective." Many measures put forward in perfect good faith by experts and by the public are not yet sufficiently substantiated to merit their adoption as "effective." Many are advocated too much from the standpoint of those who seek to raise the material comfort of the workers out of the Exchequer. While improvement of feeding and of other social conditions may be expected to diminish tuberculosis and improve health, it might have a precisely contrary effect if the method adopted were to undermine initiative, moral, and personal care of the individual. It is imperative for medical officers of health and for the medical profession generally, as expert guardians of the public welfare, to stand between the public and the Government; to recommend to the latter only such measures as can be proved to have value, and, in putting forward suggestions and hypotheses to be most careful in stating the limiting conditions.

With these reminders I beg confidently to recommend a serious study of the subject (of which the present paper is only a preface) to the attention of this Section, of the whole medical profession, and of the nation at large.

Acknowledgement is due more especially to Dr. W. H. Hamer, Medical Officer of the London County Council, for notes which he furnished to me on the subject, and to others who have helped me with information.

Amongst the articles and papers used in the preparation of this paper are:

Vital Statistics, by Dr. W. Farr.

Public Health and Insurance, by Sir A. Newsholme, 1920.

"The Economics of Health," by Dr. James Niven (address to the Manchester and Salford Sanitary Association, April 25th, 1902).

"The Cost of Disease," by Dr. James Niven (being a paper read before the Manchester Statistical Society, March 8th, 1911).

The Economic Advisability of Inaugurating a National Department of Health, by J. Pease Norton, Ph.D. (Chicago Press of the American Medical Association, 1906); and

"Report on National Vitality, its Waste and Conservation," by Professor Irving Fisher, of Yale University. (Bulletin No 30 of the Committee of 100 on National Health. Washington: Government Printing Office, 1909.)

DISCUSSION.

Dr. Macfadyen (M.O.H. Letchworth) said that this kind of research would be excellent, but should be worked out first for a large city like Glasgow. He admired the work of Dr. Chalmers in this city, but was convinced that, though excellent, it had gone beyond the point when it was economical—in other words, Glasgow was too big and should be divided up. The cost of public health from a national point of view could not be divorced from the cost of police and Poor Law.

Dr. Herbert Jones disagreed absolutely with Dr. Macfadyen that too much was being spent on public health services. It would be found, if the amount were expressed in proportion to rateable value, that extraordinarily little was being spent, and in all probability the expenditure in the garden city of Letchworth, when so expressed, was as great as that in Glasgow when the difference in the municipal enterprises were considered. In rural districts the cost was rarely above an amount equal to a penny rate, and though in towns it might be much higher, even then, when so expressed, it was not alarming. Expenditure on public health measures, instead of being reduced, should be increased.

Dr. Miller (C.M.O. Radnor) thought it desirable that proper units for public health administration should be formed with a population of about 50,000 and of suitable area. The burden of providing proper water supplies and efficient sewerage systems for small urban and rural areas would be eased and simplified by combination. Improvement in health and increased expectation of life should be accompanied by greater output of work per person.

Dr. A. K. Chalmers (M.O.H. Glasgow) stated that so far as Glasgow was concerned the cost of public health works had risen from pence to shillings per head, but the death rate had been halved. Before comparing one place with another the kind and extent of the work done should be taken into consideration.

Dr. Fremantle, in reply, emphasized the fact that his paper was merely meant to introduce the subject and to encourage others to look at public health work from a standpoint which had not hitherto received much attention.

INTERPRETATION OF THE DEATH STATISTICS OF INFANCY AND CHILDHOOD IN RELATION TO DEVELOPMENT AND ENVIRONMENT.

BY

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The result of environment upon child life is an exceedingly complex subject. I would like to-day to direct attention to some of the main conclusions which can be drawn from the statistical side and to point out the relations these may have to the problems of administration.

The chief branch of the subject I wish to discuss is one which has specially interested me—namely, the manner in which the death statistics throw light upon the physiological changes which take place in the developing child. From conception onwards the physiological processes in childhood have certain obvious divisions, but there are others which are not so easily observable. The first of these is ante-natal. The second is the short period of actual birth with some few succeeding days. These are definite and easily recognized. But with birth a number of other risks are present. With their sudden change of environment the respiratory, digestive, and nervous systems have new and special work thrown on them. These changes are associated with very special dangers, dangers which must be still greater when the birth is premature. There is thus a very high mortality in the first month of life which rapidly declines. There is, however, a third group of changes which are truly developmental. Thus we find during the first year of life periods at which digestive and lung diseases are specially frequent, while with some of the specific fevers the highest rate of mortality may occur as late as the fourth year. These points will be discussed in detail.

The first period of life is the parasitic period in the uterus. In this period, to my mind, heredity plays the main part, and there is very little statistical evidence that the environment in which the mother lives produces much immediate effect. Thus the infantile death rate in the rural counties in the first month of life, as given by the Registrar-General for England, is very little different from that in the urban counties, the figures being respectively 36·9 and 39·9 per thousand births—an increase of 8 per cent., while the increase of the urban over the rural infantile death rate under one year for all causes is 30 per cent (see Table I). The figures published by the medical

Table I.—*Showing the Death Rates per 1,000 Living Births among Infants during the First Twelve Months of Life in the Urban and Rural Registration Counties from Infantile Diseases and Diseases due to Infection.*

	Infantile Diseases.		Diseases due to Infection.	
	Urban.	Rural.	Urban.	Rural.
Under 1 month ...	36.43	34.62	3.45	2.28
1-2 months	7.29	6.62	5.90	4.09
2-3 ,, ...	4.37	4.05	5.83	3.83
3-4 ,, ...	3.09	2.80	5.73	3.56
4-5 ,, ...	2.29	2.02	5.39	3.18
5-6 ,, ...	1.83	1.56	5.16	3.01
6-7 ,, ...	1.51	1.36	5.04	3.01
7-8 ,, ...	1.28	1.19	4.99	2.91
8-9 ,, ...	1.10	0.95	5.02	2.83
9-10 ,, ...	0.98	0.83	4.87	2.85
10-11 ,, ...	0.81	0.65	4.65	2.62
11-12 ,, ...	0.77	0.66	4.55	2.51

Infantile Diseases.—Premature birth; congenital defects; starvation; atrophy, debility, marasmus; injury at birth; convulsions; suffocation; other causes.

Diseases due to Infection.—Measles; scarlet fever; diphtheria; whooping-cough; enteritis; gastro-enteritis; gastro-intestinal catarrh; diarrhœa; tuberculous meningitis; tuberculous peritonitis; other tuberculous diseases; syphilis; erysipelas; rickets; meningitis; laryngitis; bronchitis; pneumonia; gastritis; gastric catarrh.

officer of health for Brighton, Dr. D. Forbes, show that only when the best class of house is reached is any special difference found; below this level the death rate is practically constant. Some figures collected by Dr. Findlay and Miss Agnew relating to Glasgow (in process of publication) show the same thing. The environment, therefore, of the mother during pregnancy is not of such great importance to the immediate welfare of the child as might be supposed. I do not of course maintain that there is no advantage to the child afforded by ante-natal care of the mother. Ante-natal care will probably diminish abortion and will undoubtedly save the lives of a certain number of children. The amount of saving, however, cannot in any case be very large. There is, apparently, for every thousand children born about thirty stillbirths, and of these Dr. Holland estimates that with better midwifery and with ante-natal treatment a half may perhaps be saved.

What is important to the child is its own environment after birth, and if that of the mother be bad the child's will be equally so. If the environment is good the recuperative force in a child born of parents of good stock is such that even when during the late months of pregnancy the nutrition of the child is bad, this is very generally rapidly restored after birth. The influence of the health of the mother upon the health of the child after birth, however, stands in a different category. The child is dependent for its growth upon healthy food, and an unhealthy mother is in most cases quite unable to produce milk in amount and quality required for the child's upbringing, with the result that artificial feeding must be adopted, and with artificial feeding the chances of alimentary disturbances are considerably increased. It is in this direction that it would seem that ante-natal care of the mother will be of the greatest importance.

Passing now to the act of birth, the child as it is being born is seen to be subjected to intense strains—strains in many cases sufficient to produce death, and in many other cases disturbances such as are not recovered from for some weeks or months; but these conditions, the result of trauma, do not concern us here. What does concern us is the change of environment which takes place as regards the child. The system which is first involved is the respiratory, the method for the provision of oxygen for the physiological processes being suddenly and almost in an instant changed. The change alone is sufficient in a number of cases to produce death, the heart of the child acting at birth, but respiration never becoming established, though this is commonly associated with cerebral injury.

In association with this there is the change in nutrition, the infant having to digest its own food. In many cases the response to the stimulus of food fails and the child dies of atrophy or inanition.

Much more interesting, however, are the changes which take place after birth. These changes may perhaps be best understood first by taking two typical examples. The first type, which may be called the true infantile mortality, decreases very rapidly after birth. Of this the best example is the course of the death rates ascribed to convulsions without predisposing cause. The death rates are illustrated in the diagram, in which the first entry refers to the second month of life, the death rate from convulsions in the first month being so great that it cannot be inserted. The progress of the fall in the death rate is perfectly regular. It is not only possible to graduate the death rates at each month under one year to a suitable mathematical curve, but when the curve has been fitted to these values of the death rates it is possible to predict the number of deaths in the next three years of life with very great accuracy. It can therefore be taken that the gain in stability of the nervous system with growth in the average child is regular and governed by very definite laws. These laws are fundamentally powerful, for it may be observed that there is no evidence that the period at which teething commences affects the number of deaths. What causes convulsions is of course not known. It must be related to an instability in the nervous system on which many different disturbances of health produce the same result. The whole environmental risks of the child, therefore, must be taken as acting on a nervous complex, but the factor which determines the likelihood of death at each age is to be found in the condition of the nervous system as it passes from instability to stability. It is further to be noted that the occurrence of convulsions is to a very great extent independent of hygienic environment, the children in the rural districts having an almost identical death rate at

each age from convulsions with that of the urban districts; the death rate under one year in the urban districts being 11.19, and in the rural districts 11.04. The above remarks are confined to deaths from convulsions when this is given as the chief cause of death. Deaths from convulsions in the ordinary summer diarrhoea or the ordinary pneumonia of childhood—causes given as the primary cause of death—appear under the heading of the primary cause and not under the heading of convulsions. Were this not the case, it is hardly probable that the progress from age to age would be so regular.



As convulsions may be taken as the type of one physiological change, so diarrhoeal diseases may be taken as a second type. The course of the death rate from diarrhoea is illustrated in the diagram. Here we find that ordinary diarrhoeal diseases are not common in the first month of life, but after the first month death becomes more and more common until the fourth month is reached, after which the decline in the death rate is slower and slower. In this case it is again possible to take the death rates under one year of life, fit them to a mathematical expression, and predict the death rate for the next two years of life. Here again we must have some cause determining the rate of change, a change shown by the different response of the child to this type of infection. It may be regarded in the light that in the growing child during the development of the digestive system some substance or condition of the alimentary tract which tends to instability is produced, and that the causes which lead to this instability are in their turn removed so that the digestive system resumes its stable condition. Another common abdominal disease of childhood, tuberculous peritonitis, also shows a similar course in the death rate. In tuberculous peritonitis, however, the maximum death rate is about a fortnight to three weeks later than in the case of diarrhoea, as is to be expected on account of the more chronic nature of the disease.

The changes which take place in the lungs, as shown by the presence of respiratory disease, fall next to be discussed. The two chief diseases are bronchitis and pneumonia, and in the young child there is a great clinical difficulty in differentiating them. At the present moment the pathology of this subject is in a very unsatisfactory state. Even when by clinical observation the diagnosis seems to be quite clearly bronchitis, microscopical examination may record more or less extensive alveolar infection. The course of the death rate from the combined respiratory diseases is shown in the diagram. There is a fall during the first few months of life, followed by a rise. Here a level is kept for a considerable time, to the end of the first year, and (if the statistics were available) probably for a few months into the second year. A marked hump like this on the curve of the death rate seems always to be due to a mixture of diseases. In the separate certifications bronchitis appears much more in the earlier months of the first year, pneumonia in the later months. I do not think, however, the certificates of death differentiate to the extent that might be possible. What has been done, therefore, is to take the death rates as they stand and make a rough analysis into two types of diseases, one of which—bronchitis—is a true infantile disease, the death rate from which decreases steadily from birth, and the second a disease in which the death rate rises to a maximum about the ninth or tenth month of life and thereafter declines. During development in the first two months of life elements causing instability predisposing to bronchitis pass away, possibly simply by the growth in the size of the tubes of the respiratory apparatus permitting mechanical cleansing more readily, but also possibly associated with the increasing local immunity of the mucous membrane enabling it to withstand infection. On the other hand, pneumonia, from being a less common cause of certification of death in the early months, rises to a maximum in the eighth and ninth months and thereafter declines. In the growth of the lung, therefore, there is a period during which a temporary instability appears, much the same as in the digestive system there is a period followed by the growth of a greater and greater power of resistance. On this interpretation an analysis of the combined cases of respiratory disease shown in the diagram has been made. Bronchitis is shown by a dotted line and pneumonia by a line of dashes, the sum making the combined graph of bronchitis and pneumonia and showing how the large hump on the graph in the latter months of the first year is to be explained. As regards the infective agent, it is natural at first to think that one class of organism will produce bronchitis and another pneumonia, but this is not necessary. If there be two kinds of instability—an instability which gradually disappears and an instability that develops—it is, I think, quite possible that the same cause might produce both bronchitis and pneumonia and also account for the fact that it is very difficult to differentiate the two diseases. But that there are two diseases, in the sense of two responses to irritation, I have no doubt. This is made certain when the death rate from pneumonia, as given by the analysis, is compared with that of measles. If the curves of these death rates are placed above one another they are almost identical. During the early months of life death from measles is exceedingly uncommon, but it begins to be more common at the fifth month, has its maximum about the twelfth month, and remains high during the first year of life, thereafter decreasing very markedly. Now deaths from measles in young children are nearly always associated with that suffocative catarrh which occurs when the rash appears in the lungs, and which in many cases, if the children do not die at that stage, passes into bronchopneumonia.

All the other diseases of infancy come into one or other of these two classes with the exception of some of the specific fevers. With these diseases there is a quite definite increase of susceptibility with age, the maximum susceptibility to scarlet fever occurring apparently between the ages of 5 and 6 years; to diphtheria between the ages of 4 and 5 years; and to whooping-cough between the ages of 2 and 4 years. It is to be noted, however, that in all these diseases the mortality steadily declines though the susceptibility increases.

The importance of the phenomena just shown lies in the light they throw on some questions of immunity. It is commonly stated that children continually receive small infections of different kinds and thus develop immunity. In this manner

the age variation of susceptibility to disease is explained. In one case, fortunately, the case of summer diarrhœa, this can be completely eliminated. The incidence of the disease is here practically confined to two months in the summer, so that children of all ages under one year of age are exposed for the first time to infection during a narrow interval. The course of the death rate, therefore, must be associated with something else than the child's acquired immunity, and it seems practically certain that the susceptibility to death is due to some physiological condition in the individual. Another explanation offered to account for the smaller number of deaths from diarrhœa under the age of four months is that more children are being fed on the breast at the earlier ages; this also seems to me to be difficult to accept, since the progress of the susceptibility to death from age to age can be so uniformly graduated, the graduation describing not only the death rate under one year but permitting prediction of the death rate for the two following years of life. Taking, again, the deaths from convulsions, where the death rate follows just as rigid a course—that the cause must be sought in the physiological development of the child is strongly suggested.

TABLE II.—*Mean Infantile Mortality in Groups of Registration Districts, with the Actual Mortality between 2 and 3 Years of Age and a Calculated Mortality, if the Mortality at the latter Age Rose Correspondingly to the Infantile Mortality.*

Males.			Females.		
	Mortality 2 to 3 Years.			Mortality 2 to 3 Years.	
Mean Infantile Mortality.	Actual.	Theoretical.	Mean Infantile Mortality.	Actual.	Theoretical.
84	9.7	8.9	76	9.5	8.9
96	8.8	9.8	85	10 0	9.9
105	10.4	10.4	95	10.9	11.0
115	10.7	11.2	105	12.0	12.1
125	11.8	11.9	114	13.1	13.1
135	12.8	12.7	124	16.2	14.2
144	14.3	13.3	134	17.5	15.4
154	15.0	14.1	145	00.5	16.6
165	18.4	14.9	155	23.5	17.7
175	21.7	15.7	163	25.3	18.6
185	13.9	16.4	175	27.0	19.9
191	16.3	17.1	186	37.2	21.2
201	25.7	17.3	192	34.9	21.8
214	29.4	18.6	205	38.3	23.3
225	26.7	19.4			
237	40.4	20.3			

The chief infectious diseases of children—namely, whooping-cough, diphtheria, and scarlet fever—however, also offer some information. In these diseases up to a definite age the child becomes gradually more susceptible to the disease while at the same time it becomes much less susceptible to death. On the immunity hypothesis just described, frequent small infections must thus tend to render the child more susceptible to an attack of the disease but less susceptible to a fatal attack. The decay in the death rate, however, is described by the terms of a geometrical progression. This suggests a law of its own quite independent of the variation of susceptibility. The whole of the general argument of small doses producing immunity seems to me to be insecurely founded, and in one instance it can be definitely proved wrong. With small-pox an increasing immunity to the disease develops after the age of 15 years, and there is in this case no question of small immunizing doses being constantly present. The only case in which anything approaching experimental verification of the theory exists is that of diphtheria.

Having thus noted the physiological changes which take place, a further question remains to be investigated—namely, the progressive effect of an unhealthy environment on the development of a child. The usual measure of the effect of environment on child life is called the infantile mortality, which is the number of deaths out of each thousand births. All such measures are open to some statistical objection, but this measure is as good as any other and may be taken as a criterion. Taking this, then, as a criterion and arranging the registration districts in England and Wales in groups according to the order of the infantile mortality, and comparing the infantile mortalities of those groups with the mortalities in the following years of life, the progressive effect of an unhealthy environment may to some extent be estimated. It is found that, with each increment to the infantile mortality, the increment of the mortality in the second year of life is greater than the infantile mortality would lead you to expect. In mathematical language, a term in the square of the infantile mortality must be added. During this period, therefore, there is progressive deterioration in the child's life. The excess of the real values over proportionate values is shown in the accompanying table (Table II). The greatest effect seems to be about the age of 1.8 years. When the succeeding years of life are examined the difference becomes less marked, the factor multiplying the second power of the infantile mortality halving itself with each year of life until, when the age of 4 to 5 years is reached, increments in the mortalities are very nearly directly equivalent to increments in the infantile mortality. Whether this represents a gradual stiffening of resistance to disease with growth or whether it represents survival of the fittest is a matter on which it is difficult to express an opinion.

Dr. J. C. McVail, in thanking and congratulating Dr. Brownlee for his paper, remarked that the author was in the singularly fortunate position of being at once a medical man and a mathematician, a rather rare combination. He would not venture to criticize or even discuss the paper, for it was one to read and study carefully.

PUERPERAL MORTALITY IN SCOTLAND.

BY

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Maternal mortality may be expressed in terms of maternal deaths per 1,000 persons living; more usefully in terms of maternal deaths per 1,000 women of child-bearing age—conventionally reckoned as from 15 to 45; but best and most accurately and conveniently of all, in terms of maternal deaths per 1,000 living births or 1,000 births of viable children. To secure accuracy for purposes of comparison, it is necessary to define the term "maternal deaths"; that term must obviously include deaths of all natures, alike those that have a definite connexion with child-bearing and those that have only a presumptive association therewith or none at all; and it must be arbitrarily restricted on the one hand to deaths occurring after a certain stage of pregnancy, and, on the other, to those occurring within a certain number of days after delivery. The former period may be put at seven months, the latter at twenty-eight days. This interval of four weeks has the advantage over the period of thirty days that the days of the week are an assistance to the memory; for example, if delivery takes place on a Monday, the period after which death ceases to be reckoned as "maternal" ends on a Monday also.

It is clear that these time limits secure uniformity for purposes of fair comparison at the cost of artificial and arbitrary distinctions. It is true that a certain proportion of deaths associated directly with the puerperal state will not ensue until more than four weeks have elapsed after delivery; but it is also the case that a number of maternal deaths occurring within twenty-eight days after delivery will have no essential association but merely a coincidental connexion with the fact of motherhood.

Fair comparison between the puerperal death rates in various countries or at various times can only be made if the method of expressing that death rate is the same in each case. There is reason to fear that this uniformity of method has not been achieved.

Further, comparative statements of puerperal mortality according to the specific nature of the cause of death can be reliably made only if every possible source of fallacy has been excluded. On first thought it may seem that the group of

septic puerperal deaths might be defined with some ease and precision; but reflection shows that typical puerperal septicæmia, a septic pneumonia in the puerperal period, a septic condition of remote origin (that is to say, local origin not connected with the organs of generation), an attack of acute infectious fever such as measles, or indeed of any pyrexial malady occurring at or soon after delivery or precipitating delivery—that these form a chain or series which it is not easy to sever artificially at any point.

With these reservations as to the inductions that may profitably and fairly be made from them, let me place before you some facts.

In the year 1919 the rate of puerperal mortality in England was greater than for any year since 1905—namely, 4·12 per 1,000 births. The regrettable pre-eminence of this rate over those of the previous thirteen years applied both to puerperal mortality as a whole and to the mortality from puerperal sepsis taken separately; indeed the increase of the whole puerperal mortality rate in 1919 as compared with that of previous years was preponderantly due to septic disease.

For the year 1920, in England, the total maternal mortality rate was the same as in the previous year, 4·12 per 1,000 births; but while the rate for deaths from "other accidents and maladies associated with maternity" fell from 2·36 to 2·25 per 1,000 births, the rate for septic maladies associated with maternity (including phlegmasia dolens) rose from 1·76 to 1·87 per 1,000 births. These figures the Chief Medical Officer of the Ministry of Health regards, not unnaturally, as extremely disquieting. In his annual report for 1920 he points out that in that year the number of notifications of puerperal fever in England was 2,898 and the deaths were 1,750, "which indicates either that the fatality was extremely high or, what is more likely, that the notifications did not represent the number of cases of puerperal fever which actually occurred"; and that the deaths from puerperal fever by no means represent all the evils for which it is responsible. The Chief Medical Officer's report states that "undoubtedly the solution of this grave situation is mainly dependent upon improved midwifery."

During the decade 1911-20, 6,913 deaths ascribed to diseases and accidents of pregnancy and parturition were registered in Scotland. Of these, 1,831—fully one-fourth—were certified as due to puerperal sepsis. The annual rates for each category per 1,000 births are shown in the following table:

Year.	Deaths from Puerperal Sepsis per 1,000 Births.	Deaths due to other Diseases and Accidents of Pregnancy and Parturition per 1,000 Births.	Year.	Deaths from Puerperal Sepsis per 1,000 Births.	Deaths due to other Diseases and Accidents of Pregnancy and Parturition per 1,000 Births.
1911	1·42	3·74	1916	1·69	4·03
1912	1·57	3·92	1917	1·72	4·26
1913	1·33	4·55	1918	1·15	5·85
1914	1·85	4·18	1919	1·41	4·80
1915	1·94	4·19	1920	1·77	4·36

From the above it may be seen that the death rate from puerperal sepsis in Scotland in three of the years of the last decade is higher than it was in England in any year of the same period save the last. Moreover, there is good reason to believe that in Scotland, at least, some of the deaths which might properly be certified as due to puerperal sepsis are so certified as to fall into the group of "other diseases and accidents of pregnancy and parturition."

In Glasgow the number of cases of puerperal fever *notified* in the years 1914-19, the proportion per 1,000 births, and the number of cases terminating fatally are as follows:

Years.	Cases Notified.	Proportion per 1,000 Births.	Fatal Cases.
1914	218	7·4	81
1915	188	6·7	73
1916	195	7·2	69
1917	194	6·8	51
1918	168	7·1	45
1919	182	7·0	53

From this table it appears that out of the total of 1,115 cases notified in the six years, 372, or almost precisely one-third, proved fatal. From this high case-mortality rate it is clear that, as a rule, only those cases that are of considerable gravity or threaten to have possibly a fatal issue are notified. But the proportion of deaths to notifications (33·3 per cent.) is in satisfactory contrast to that previously quoted for England, where in 1920 the proportion of deaths to cases notified was fully 60 per cent.

In Glasgow for the five years ending 1919, the notified cases of puerperal fever were attended as follows:

By doctor	120
By midwife	189
By nurse and doctor	89
By institutional nurse	43
In institution	38
Others (including cases from outside the city)	21

No apportionment of blame can be based upon these or similar statistics, since (1) the total number of confinements in each class is not shown; (2) institutional cases may be and doubtlessly frequently are infected before admission to hospital; and (3) midwives unaided attend normal cases only, while doctors not only have in their own charge a larger proportion of difficult or abnormal cases than midwives have, but also render assistance to midwives in their difficulties. I am assured, however, that in special institutions such as maternity hospitals, where, of course, labour is attended with all due precautions as regards sepsis, it is rare or unknown for cases to develop puerperal sepsis unless opportunity of acquiring such infection had occurred prior to admission.

The Fourth Annual Report (for the year 1920) upon the Administration of the Midwives (Scotland) Act, 1915, in the Middle Ward District of the county of Lanark shows that 61 cases of puerperal sepsis were notified out of 7,562 births, or about 0·8 per cent.; 54 per cent. of these occurred among cases attended by medical practitioners. Cases of notified puerperal sepsis occurred in the practice of doctors at the rate of 8·3 per 1,000 births (one case per 121 births), in the practice of midwives at the rate of 7 per 1,000 births (one case per 143 births). These figures have to be interpreted in the light of the proviso already stated.

In Scotland, for the year 1919, as has been stated, the total death rate from puerperal conditions per 1,000 births was 6·21. That proportion is maintained with approximate equality in the various parts of the country.

For the larger burghs it is	6·4
For the smaller burghs it is	5·9
For the country districts it is	6·2

Among the cities and large burghs it ranged, in that year, from 4·6 in Paisley to 8·2 in Edinburgh. These figures deal with the total puerperal death rate; septic conditions accounted for 23 per cent. of the whole.

In a recent article (April, 1922) on the infant and maternal mortality in Montana, issued by the United States Public Health Service, wherein the maternal death rate is expressed in terms of the female population of child-bearing age (15-44), it is stated that for the four-year period 1910-13 and among eleven European countries the rate ranged from 29·3 deaths per 100,000 in Sweden and 32·0 in Norway, to 62·2 in Scotland and 63·8 in Belgium.

It is further stated that (expressing the rate in deaths per 1,000 births), in 1910, in fifteen foreign countries the highest rate recorded is from Scotland with 5·7, the lowest Italy with 2·4. (These figures are given primarily in order to furnish a basis of comparison with similar statistics for the State of Montana and the United States generally.)

It may be noted that in the United States, as here, septic conditions cause about one-fourth to one-third of all the deaths associated with the puerperal state.

In New Zealand, according to the official periodical of the Ministry of Health of that country, the mortality associated with childbirth and the diseases of pregnancy has remained high for several years and has recently been rising. The rate in 1920 was 6·48 per 1,000 live births. For the last quinquennium 36 per cent. of the average maternal mortality was due to puerperal infection. A committee specially appointed to deal with these alarming figures makes a number of recommendations, of which one is that "every case of maternal death shall forthwith be personally investigated by the medical officer of health, who shall report to the Director-General of Health"; and another that "every case of notified puerperal sepsis shall be forthwith personally investigated by the medical officer of health."

In the city of Aberdeen since the beginning of 1917 a full inquiry has been made, so far as practicable, regarding every death of a woman occurring within four weeks of confinement. During the five years in which such inquiry has been made, the total puerperal death rate and the septic puerperal death rate, per 1,000 births, have been respectively as follows:

Year.	Total puerperal death rate per 1,000 births.	Puerperal sepsis death rate per 1,000 births.
1917	9·8	2·7
1918	7·9	2·1
1919	6·7	0·3
1920	6·0	1·0
1921	6·0	1·4

From the annual report for the year 1920 of the Chief Medical Officer of the English Ministry of Health (already repeatedly referred to) it is learned that an investigation into the whole question of maternal mortality in England has been arranged for. In New Zealand, as I have mentioned, a commission was appointed to deal with the subject and has reported. It would seem that in this country of Scotland also inquiry regarding the causes of the high rate of maternal mortality, and the means of lowering it, might be desirable.

DISCUSSION.

Dr. HERBERT JONES regretted that Colonel Dewar had not expressed his own views as to the remedy for the deplorable conditions he had detailed. He had related what was being done in New Zealand, and had quoted Sir George Newman's dictum that "the solution of the situation was mainly dependent upon improved midwifery." But was that the case? We had had improved midwifery now a good many years, but not much lessening of puerperal sepsis. We were too apt to forget the importance of removing insanitary surroundings — providing water supplies to every house, removing manurial accumulations, etc. It could not be expected that the necessary standard of cleanliness could be achieved in cottages where every bucket of water required had to be carried 100 or 200 yards.

Dr. SHANNON (Maternity Hospital, Glasgow) said that he was of the opinion that incidence of sepsis would be reduced if every case was looked upon as a surgical operation and the same care exercised. He insisted on the better teaching of obstetrics and urged that longer time should be spent by the student in his training of midwifery from its clinical side. He deprecated the so frequent use of forceps and urged that nature should do its job. He thought all major cases of obstetrics should be treated in hospital or by the specialist.

Lieut.-Colonel F. E. FREMANTLE, M.P., doubted if any share in blame for the increased puerperal mortality should be attributed to sanitary conditions. Surgical operations were now done in most insanitary conditions, stress being laid on the need of personal asepsis and little on the sanitary character of surroundings. It might be suggested that the improvement first resulting from the operation of the Midwives Act was due to the use of antiseptics and to aseptic teaching, and that the recent change for the worse might be due to an increased practice of vaginal examination, owing to the increased knowledge by midwives and by the public of what could be learnt thereby. In any case he believed the personal element would best repay investigation as accountable for the increase in puerperal mortality.

Dr. PICKEN (M.O.H. Cardiff) drew attention to the importance of not unduly incriminating the midwife in this matter. The majority of cases appeared to occur among abnormal cases where medical practitioners found it necessary or advisable to adopt instrumental interference. In this disease home sanitation seemed to be of less importance than specific prevention by improved midwifery.

Dr. MORRIS (M.O.H. Neath) protested against laying the fault at the door of the medical practitioner. Thirty years ago maternal morbidity was extremely great. To-day it was almost non-existent. Midwifery practice was in need of improvement, but domestic sanitation was of less importance in its effect on incidence of septic infection. There was great need of improving the conditions of livelihood of midwives.

Dr. LEWYS-LLOYD (C.M.O. Merioneth) protested against the loose phraseology used in assigning blame to midwives or to doctors. The number of cases occurring in any area should be correlated with the number attended by doctors or midwives, alone or together.

Nurse BARKER (Inspector of Midwives, Glasgow) caused some amusement by stating that midwives often came to her "in tears" because of the injuries done by doctors in the inconsiderate use of forceps. She was of the opinion that more patience should be exercised and instruments resorted to less frequently in an unnecessary attempt to assist nature.

Dr. DEWAR, in reply, said that as a civil servant his mouth was sealed so far as suggesting a remedy, even if he knew one. The doctor in attendance might occasionally be guilty in a physical sense, but he was often the victim of circumstances. The whole subject was one that demanded close investigation.

DISCUSSION ON DEFECTS IN SCHOOL CHILDREN.

OPENING PAPER

BY

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IT is my intention, in the time at my disposal, to deal with the diseases affecting school children, more especially the 5-year-olds.

In the first place I shall draw your attention to the conditions disclosed by the routine medical inspection of entrants to our schools, and afterwards to the consideration of the conditions which produce crippling at school age. I use the word "crippling" in its widest sense, in fact to cover all conditions which so affect the health of the child as to prevent his being educated in the ordinary school. The figures which I shall give you are obtained from the results of routine examinations carried out during the session 1920-21, and also from the medical reports on those children found unfit for attendance at ordinary schools during the same period.

The total number of children on the register in the session 1920-21 was 198,282—the average attendance being 170,522, or 86 per cent.; 15,605 children were examined at the age of 5 (7,828 boys and 7,777 girls), and the conditions enumerated in the following table (p. 347) were disclosed.

These are the conditions found among the 5-year-old children attending ordinary schools. Let us now consider the conditions found amongst these children who for one reason or another are unfit to attend school. When the attendance officer finds that, owing to alleged disability, certain children have not been enrolled at any school he arranges for their examination, so that they may be allocated to special schools, or entirely exempted from school attendance if necessary. During the session 1920-21 out of a total of 1,252 children so examined 454 were 5 years old. Before proceeding to analyse the conditions found, I would explain that in the following cases, where two or more conditions are present in the same child, only the primary crippling cause is referred to; 454 children of 5 years of age were examined in this way, and the following conditions found:

Rickets	263=57·9%
Non-pulmonary tuberculosis: "bones and joints affected in 22, glands in 12, abdominal tuberculosis 5, skin infected in 2 "..	41=9·0%
Lung conditions: "chronic bronchitis 26, suspected phthisis 3, empyema 1 " ..	30=6·6%
Mentally defective: "3 idiot and 26 imbecile —2 mongols and one a cretin '	29=6·3%
Nervous diseases: "infantile paralysis 13, hemiplegia 5, epilepsy 5, spastic paraplegia 2, chorea 1, neuroses 8 "	34=7·4%
Anæmia and malnutrition	18=3·9%
Valvular heart disease: "5 congenital, 3 acquired "	8=1·7%
Eye diseases: "strumous ophthalmia 9, congenital cataract 1 "	10=2·2%
Congenital deformities	11=2·4%
Deformities the result of injury	4
Hernia	2
Osteomyelitis	2
Chronic eczema	1
Deaf-mute	1

Age Group 5 Years.	Boys.	Girls.	Totals.	Percentage
Number of Children examined	7828	7777	15,605	
Cleanliness:				
Head verminous	165	1336	1501	10.2
Body verminous	32	33	65	0.4
Condition of Skin:				
Head: Ringworm	17	11	28	0.1
,, Impetigo	133	113	246	1.5
,, Favus	—	1	1	—
,, Other diseases	43	27	70	0.4
Body: Ringworm	5	5	10	—
,, Impetigo	36	28	64	0.4
,, Scabies	20	36	56	0.3
,, Other diseases	15	34	49	0.3
Average height in inches (Anthropometric Committee's standard in brackets):	40.2 (41.0)	39.8 (40.8)	—	—
Average weight in lb.	75.9 (40.8)	78.1 (39.6)	—	—
Nutrition: Bad or very bad	501	560	1031	6.9
Teeth:				
1 to 4 decayed	4351	4417	8768	56.1
5 or more decayed	1593	1417	30.0	19.2
Throat:				
Tonsils: S. enlarged	576	621	1197	7.6
,, M. enlarged	277	220	497	3.1
Lymphatic Glands:				
Submaxillary: P. enlarged... ...	450	643	1093	7.0
,, M. enlarged ...	29	22	51	0.3
,, Suppurating ...	2	2	4	—
,, Cicatrices	10	8	18	0.1
Cervical: P. enlarged	402	659	1062	6.8
,, M. enlarged	18	56	74	0.4
,, Suppurating	—	3	3	—
,, Cicatrices	16	14	30	0.1
External Eye Disease:				
Blepharitis	128	127	255	1.6
Conjunctivitis	39	52	91	0.5
Corneal opacities	15	7	22	0.1
Strabismus	185	204	389	2.4
Other diseases	21	23	44	0.2
Ears: Otorrhœa	95	102	197	1.2
Hearing: Slightly deaf	42	55	97	0.6
Markedly deaf	5	6	11	—
Speech: Defective articulation / Stammering ...	113	61	174	1.0
Heart and Circulation:				
Organic disease—Congenital ...	10	11	21	0.1
,, ,, Acquired ...	43	40	83	0.5
Functional disease	28	30	58	0.3
Anæmia	129	136	265	1.6
Lungs:				
Chronic bronchitis	544	490	1034	6.6
Tuberculosis	—	—	—	—
Tubercle suspected	4	3	7	—
Nervous System:				
Epilepsy	3	—	3	—
Chorea	1	—	1	—
Infantile paralysis	6	7	13	—
Other diseases	13	12	25	0.1
Tuberculosis (Non-pulmonary):				
Glandular	4	2	6	—
Bones and joints	4	6	10	—
Abdominal	5	2	7	—
Skin	3	—	3	—
Rickets:				
Slight	71	71	142	0.9
Marked	421	390	811	5.1
Knock knees	143	177	320	2.0
Bow legs	225	192	417	2.6
Curved tibia	124	71	195	1.1
Pigeon breast	44	9	53	0.3
Deformities:				
Congenital	10	5	15	—
Acquired (non-rachitic)	16	11	27	0.1

Rickets.

From these figures there emerges, first of all, the striking fact that at 5 years of age 58 per cent. of the crippling found to exist in school children is due to rickets, and to rickets of the most pronounced type. The children affected are twisted and deformed, stunted in body, and retarded in mental development. Many of them are quite unable to walk, or even stand. After a few months in our special schools many of these children improve markedly in their general physical condition, feel fit and well, and for the most part can run about—a striking contrast to their helpless state at the time of admission. Unfortunately, however, their deformities remain, although in later years even these improve in varying degree.

Now, whatever may be your views on the causation of rickets, whether you agree with Professor and Mrs. Mellanby that it is due to the deficiency of fat-soluble vitamins, or with Professor Noël Paton, Dr. Leonard Findlay, and other workers in the Glasgow School, that it owes its origin to lack of fresh air, sunlight, and exercise, you will, I am sure, agree with me that there is something seriously wrong when a disease, which makes its appearance at such an early age and is so eminently curable, is still found in its acute form producing such an enormous percentage of the total crippling found at the age of entering school.

Over forty years ago my father, Dr. R. Wilson Bruce, who had an exceptionally large and unique experience of the conditions existing among children in Glasgow, both as medical officer to the school board of Glasgow and as medical superintendent of Eastpark Home for Infirm Children, came to the conclusion after observation of a large number of rachitic families, that the constant factors in the causation of rickets were overcrowding, hermetically sealed windows, and lack of sunlight—the mothers in the majority of cases being unable or unwilling, either because of weariness or laziness, to take the children out. Nowadays the education authority has powers to treat and feed all necessitous cases, and it may be somewhat difficult to decide how much of the rapid improvement noticed in rachitic children attending special schools is due to the feeding and cod-liver oil supplied, and how much to the superior hygienic conditions under which they spend a large part of their day. When I was first appointed medical officer in charge of the special schools under the former school board of Glasgow these powers did not exist, and in consequence children whose parents were unable or unwilling to pay for the feeding had to go without. Children suffering from rickets who were not receiving feeding nevertheless made marked progress towards recovery. The very fact of their being taken from their dark stuffy homes and brought into the bright, cheerful, well-ventilated schoolrooms had undoubtedly a curative effect. Another point which I have noticed is that once rachitic children have been fairly set on their feet by attendance at special schools, they very rarely relapse, although they return at once to ordinary schools and their old home and feeding conditions. This I attribute to the fact that once they are able to run about sufficiently well to climb up stairs to their three or four storied tenement houses, the children see to it themselves that they get plenty of fresh air and exercise.

While I do not for a moment doubt that prolonged lactation, defective dietary, and other debilitating influences play their part in the causation of rickets, I cannot help feeling that the reason that so much active rickets is present among school children at the age of 5 is that nothing short of early removal from their unhygienic overcrowded homes will be of any service in the prevention or curing of this disease. This measure I am afraid in the present state of the country's finances is outwith the bounds of practical politics. These opinions have been greatly strengthened by the researches of Professor Noël Paton, Dr. Leonard Findlay, and others of the Glasgow School, and more recently by a paper on rickets in India read before the Royal Medico-Chirurgical Society of Glasgow by Dr. Harry Hutchison, in which he proves that in India rickets is only found among the wealthy purdah classes in spite of a plentiful dietary rich in vitamins, whereas among the poorer classes who practically live in the open air it does not exist.

Tuberculosis.

The next most frequent cause of crippling among 5-year-olds is tuberculosis, which is responsible for 9 per cent. of the total crippling. There is, of course, no doubt that the ideal treatment for these cases is prolonged residence under hygienic conditions in suitable sanatoriums, with plenty of fresh air and sunlight. Unfortunately in this part of the country the sunlight is a very variable quantity and we can hardly expect the brilliant results obtained at the Treloar Cripples' Hospital, Alton, Hants.

For many years in Glasgow there was, with the exception of the limited accommodation at Eastpark Home, no intermediate place between the general hospital and the special school for the prolonged treatment of surgical tuberculosis, but a short time ago the Corporation of Glasgow opened a large hospital at Robroyston where these cases can undergo treatment for long periods under the best hygienic conditions. Arrangements have been made in conjunction with the medical officer of health for the education of school children in Robroyston Hospital.

If we accept the statement that two-thirds of all surgical tuberculosis is due to bovine infection, it behoves us to see to it that our milk supply is beyond suspicion.

Lungs.

(*a*) *Tuberculosis.*—When we come to consider diseases of the lungs as a cause of crippling, we find that pulmonary tuberculosis is conspicuous by its absence. Routine medical inspection revealed no evidence of definite pulmonary tuberculosis and only seven suspected cases out of a total of 15,605 children examined. Even among the crippled children at this age pulmonary tuberculosis was not definitely found though it was suspected in 0.6 per cent.

(*b*) *Bronchitis.*—Chronic bronchitis is responsible for 6 per cent. of the whole crippling. These cases of chronic bronchitis range in severity from cases of winter cough accompanied by snoring and wheezing rhonchi to the most advanced cases of bronchiolectasis and bronchiectasis with large cavity formation, fibrosis and contraction of the lung. It is these latter cases which are responsible for most of the lung crippling; they are almost invariably the result of bronchopneumonia following measles, whooping-cough, and influenza, and are very apt to be diagnosed phthisis pulmonalis, especially when seen soon after the bronchopneumonia, when emaciation is marked. After long observation of many of these cases I have come to the conclusion that they are not tuberculous, the spit is invariably negative, and in spite of the most extensive cavity formation the general health improves under favourable conditions, and it is no unusual thing to find a child after prolonged treatment, apparently in robust health, with a chronic basal catarrh of both lungs associated with fibrotic change. Many of these cases I have submitted to my friends the tuberculosis officers for further observation and inquiry, and their conclusions have agreed with mine—namely, that the cases are non-tuberculous.

In my experience, then, phthisis pulmonalis is rarely found in children at 5 years of age, and I attribute the high incidence of this disease reported from some districts to the inclusion of these cases of chronic bronchitis and fibrosis.

Nervous Diseases.

As I have already mentioned, nervous diseases are responsible for 7·4 per cent. of the crippling found at this age. Unfortunately there is very little that can be done for these cases except in so far as we can prevent the formation of contractures in hemiplegias and spastic paraplegias, and by supplying suitable apparatus in the case of infantile paralysis enable the child to make the most of what power he has.

Mental Deficiency.

Mental deficiency comes next in the order of frequency, with a total percentage of 6·3. The cases which are diagnosed at this age are, of course, gross cases of low grade amentia which are obviously for institution treatment and care. Unfortunately these do not nearly account for all the mental deficiency present among 5-year-olds. The higher grade cases which exist cannot be diagnosed till the child has been some time under observation in the infant department. In Glasgow we do not care to label the higher grade cases mentally defective till they have been given a two years' trial among normal children.

Anaemia and Malnutrition.

The cases of anaemia and malnutrition, which account for 3.9 per cent. of the total crippling, are those which show no symptoms of other disease, the debilitated conditions usually following on pneumonia or one of the infective fevers. In some of the cases a tuberculous family history can be elicited.

Miscellaneous.

The remaining 9 per cent. of crippling, due to eye conditions, mostly strumous ophthalmia, a few cases of heart disease—the acquired of those due to scarlet fever and rheumatism—and other miscellaneous conditions such as congenital and acquired deformities, need not be discussed in detail.

From the facts that I have laid before you you will see that by far the largest amount of crippling is due to entirely preventable causes. As we know rickets, surgical tuberculosis, anaemia and debility, and strumous ophthalmia to be curable under ideal hygienic conditions, I am convinced that it is by the same means that these diseases could be prevented, and that those cases of chronic bronchitis which develop so frequently in debilitated children after bronchopneumonia would be reduced to a minimum. What we want, therefore, is first of all the provision of open spaces to allow of the free access of sunlight, a tubercle-free milk supply, better feeding conditions, the provision of good houses with every convenience for cleanliness, and the total abolition of the slum.

DISCUSSION.

Dr. MILLER (C.M.O. Radnor) commented on the comparatively small number of children with suspected phthisis, and inquired whether these were kept under observation. He also asked if Dr. Bruce could furnish any information as to the prevalence of rickets amongst breast-fed infants.

Dr. MORRIS (M.O.H. Neath) expressed the opinion that lack of exercise had much to do with the causation of rickets. He strongly condemned the carrying the baby in a shawl wrapped tight against the mother, a custom which he noticed was as prevalent in Glasgow as in South Wales. The "shawl" babies always had rickets; the pram was infinitely better.

Dr. BRUCE, in reply, stated that all cases of suspected phthisis or malnutrition were kept under observation at the clinics before being passed on to the Tuberculosis Department. Some had been under observation for nine years without showing definite signs of tuberculosis. He could always tell by a child's legs whether it was a "shawl" baby or a "pram" baby, but the ricket-producing class seldom if ever possessed a perambulator. He frequently found rickets amongst the breast fed babies, but could not at the moment give exact figures.

MATERNITY AND CHILD WELFARE IN SCOTLAND.

BY

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THE object of this paper is to furnish a short record of the steps taken by local authorities in Scotland to create maternity and child welfare services under powers conferred upon them by the Notification of Births (Adoption) Act, 1907, the Notification of Births (Extension) Act, 1915, and the Maternity and Child Welfare Act, 1918.

In the application of the 1915 Act to Scotland very wide powers were conferred on the local authorities concerned, in that they were empowered "to make such arrangements as they think fit and as may be sanctioned by the Local Government Board for Scotland for attending to the health of expectant mothers and nursing mothers and children under five years of age within the meaning of Section 7 of the Education (Scotland) Act, 1908."

By a circular letter issued in 1915 the Local Government Board for Scotland invited local authorities to "submit schemes of arrangements in terms of the Act."

For the purpose of inspiring and assisting local authorities a comprehensive memorandum expounding the purpose of the 1915 Act was issued in 1916. To this were appended the regulations governing the payment of the 50 per cent. grant allowed by the Treasury. These regulations, apart from the clauses securing the administrative control of the Board retained in the regulations of later date, are rendered interesting when regarded in the light of the developments of after years by the nature of arrangements therein specifically excluded from grant. These were (1) residential treatment in hospitals, (2) operative treatment in hospitals, and (3) expenditure on food and milk.

For the further assistance of local authorities, a circular letter was issued in October, 1916, defining more clearly the nature of the arrangements that might suitably be included in schemes. On the terms of this circular, and on those of the circular letters of 1917 and 1918 containing revised regulations under which grants would be payable, have been based the schemes submitted for approval by local authorities.

These schemes, which only include arrangements made for attending to the health of expectant mothers and nursing mothers and children under 5 years of age, follow therefore certain general lines that can best be indicated by summarizing the expenditures defined by the regulations as grant earning.

These are, in short, expenditures on (1) salaries of medical officers, health visitors, nurses, and midwives engaged in maternity and child welfare work; (2) the provision for necessitous women of a midwife, or of a doctor for illness connected with pregnancy or aid during the period of confinement; (3) centres providing medical supervision and treatment; (4) institutions for the day care of children; (5) the temporary boarding out of children; (6) accommodation in maternity hospitals and provision for securing proper conditions for the confinement of necessitous women; (7) hospital accommodation for children; (8) accommodation in convalescent homes; (9) the provision of homes and other arrangements for attending to the health of children under 5 years of age whose parents cannot provide a satisfactory home for them; (10) experimental work; (11) educational work; (12) food to the necessitous; and (13) contributions made by the local authority to voluntary institutions.

Before expenditure on arrangements can rank for grant it must conform to certain conditions and be specifically approved by the central authority, now the Scottish Board of Health. Since 1918 there have been extensions of the regulations to admit the provision of nursing care and massage for children and the cost of accommodation and treatment in hospitals for cases of measles and whooping-cough.

During a period of acute distress occasioned in certain areas by unemployment in the coal-mining industry and the resulting trade depression, it became necessary for the central authority to define from time to time the conditions under which relief in the form of rations, food and milk, might be given to mothers and children. The special increase in expenditure due to the industrial crisis cannot be regarded as appropriate to a maternity and child welfare service carried on under normal conditions.

The absorption in the disbursement of relief of the attention of local authorities and of the members of their staffs normally employed in maternity and child welfare services, combined with the concurrent clamour for economy, has prevented the development of new services, but has not seriously interfered with the expansion projected in previous years and in course of being put into operation.

The population of Scotland (census 1921) is 4,882,288. The number of births in 1920 was 136,546, and the deaths under 1 year of age were 12,565. The infantile mortality rate in burghs varies from 0 to 208, and in county districts from 30 to 102. For 1921 the rate for Edinburgh was 96, for Glasgow 106, Aberdeen 108, and Dundee 114; for Scotland it was 90—the lowest rate recorded so far for the country as a whole.

Almost 3,000,000, or about three-fifths of the population, are maintained by the industries dependent on coal and iron centred in the Forth and Clyde valleys. They live for the most part in overcrowded conditions calculated to produce a high infantile mortality rate. It is therefore mainly in this area and in the cities of Dundee and Aberdeen that local authorities, supported by the pressure of public opinion, have since 1916 drafted schemes that are still in the course of development and go far towards providing an adequate service for the care of mothers and children.

The local authorities within the meaning of the Notification of Birth Acts, 1907 and 1915, are the 201 town councils, 8 county councils, and 99 district committees. Owing to the power to combine allowed by the 1915 Act as applied to Scotland, schemes fall into four groups, but there are differences in the nature of the schemes and in the extent to which particular services included have been developed, resultant on the diversity in the industrial character of the areas concerned.

Types of Schemes.

The following are the four types of schemes:

1. The one-burgh scheme, in which the administrative control is retained by the local authority. There are 84 burghs, 16 with a population over 30,000, with such schemes. The schemes of the smaller burghs within this group cannot be regarded as self-contained, since institutional accommodation has to be obtained without their areas.

2. The one-district scheme, in which local administrative control is retained by the district committee. There are six such schemes, situated in Dumbarton, Renfrew, and Lanark Counties. For the most part they are not self-contained, since institutional accommodation has to be obtained in other areas.

The most important of these one-district schemes is that of the Middle Ward of Lanark, with a 1921 census population of 218,789, and a birth rate in 1920 of 34.4. Its local authority, well known for initiative and progress, has since 1916 been gradually putting into operation an extensive scheme which, if expansion continues, should in course of time become self-contained. For the purpose of providing a maternity and child welfare service in this district, two medical officers and eighteen health visitors, including a superintendent of health visitors, are employed whole-time. Eight maternity and child welfare centres held in premises afforded by public halls that can be rented for the purpose are in operation. These centres are open once a week with a doctor in attendance for consultations, assisted by health visitors, and by voluntary workers who provide a supplementary social service. Close supervision is exercised over the midwifery service. A maternity hospital and training school for midwives has been established at Bellshill, with an annexe in the form of a hospital for infants at Blantyre. A rest and convalescent home for mothers and babies at Calderbank House completes the present arrangements.

3. The district combination scheme, in which burghs have combined with the county district in which they are situated. There are seven such schemes. In the Upper Ward of Lanark and in the districts of the County of Fife, administrative control is retained by the district committee. In Haddington County administrative control is delegated to committees on which the authorities concerned are represented. Twenty small burghs have thus secured economical services.

4. The county combination scheme. There are eleven such schemes sanctioned—namely, for the Counties of Aberdeen, Ayr, Berwick, Clackmannan, Dumfries, Kincardine, Kirkcudbright, Midlothian, Moray, Perth, and Stirling. Whilst the Aberdeen County scheme is administered locally by the county council, the other county schemes are administered by joint committees representing the authorities concerned.

All of the county districts and the majority of the burghs within these counties have entered the respective combinations, forty-one districts and fifty-six burghs being thus provided with services. In Clackmannan and Kincardine Counties all the burghs are within the combination, whilst in Moray, Dumfries, Berwick, and Kirkcudbright counties, Elgin, Dumfries, Duns, and Maxwelltown burghs respectively remain outside. Most burghs with a population under 5,000, realizing their inability unaided to furnish an adequate service, have sought economy and efficiency by combination with larger authorities. There still remain, situated for the most part in the northern and western sparsely populated areas where the infantile mortality rates are low even when judged by the present improved standard, forty-one burghs without child welfare services and seventeen counties in which no provision is made for the landward areas.

In order to bring into relief the results of the energy, initiative, and enterprise shown by the public health authorities during the succeeding years it is necessary to refer to the official provision existing in 1915.

Medical Officers and Health Visitors.

There were at that time, officially employed on duties dependent on the adoption of the Notification of Births Act, 1907, two women doctors and twenty-nine women visitors whole-time, and nineteen women visitors part-time. Now, in 1922, in addition to the medical officers responsible for the administration of the 108 sanctioned schemes, there are eleven medical officers employed whole-time on child welfare work—one each in Edinburgh, Dundee, Aberdeen, Greenock, and Paisley, four in Glasgow, and two in the Middle Ward of Lanark. There are at least sixteen whole-time medical officers of local authorities and twenty-six part-time medical officers of health taking an active practical part in maternity and child welfare work by serving as medical officers of clinics.

A large number of general practitioners are drawn within the services as medical officers of centres, whilst specialists are attached to hospitals established by local authorities and to other institutions included in schemes. Engaged officially in home visiting are 172 whole-time, 201 part-time, and approximately 800 voluntary health visitors. Inspection of midwives, which has resulted in a marked improvement in the standard in some areas, is performed by medical officers of health and by health visitors appointed to assist.

Maternity and Child Welfare Centres.

In June, 1916, there were 14 maternity and child welfare centres in Glasgow under municipal control; and, provided by voluntary effort, there were 5 in Edinburgh, 5 in Aberdeen, 3 in Dundee, and one in Motherwell, those in Aberdeen being in close touch with the public health department. There are now 166 centres almost entirely maintained by the public health authorities.

Institutions for the Day Care of Children under 5 Years of Age.

There has been no marked increase in the number of institutions of this type, but by the reconstruction of old buildings and the provision of new buildings for existing institutions, transferred from the voluntary associations by which they were established to the public health authority, the standard has been much improved. For example, a model day nursery, intended to replace one existing in unsuitable premises, has by its presence, converted, in the Cowcaddens, Glasgow, an ugly piece of waste ground, formerly a noisome slum, into a picture that delights the whole neighbourhood and charms every passer-by.

An old-fashioned square-built house with a large garden presented to Stirling Burgh and converted into a centre, day nursery, and, by the aid of the Carnegie United Kingdom Trust, a garden play centre, is another example of a beauty spot in a rude neighbourhood.

It must be deeply regretted by all workers familiar with the conditions of life for young children in slum areas, where children under 5 are kept in bed undressed, unwashed, and without toys, games, or other amusements, until mid-day, whilst the mother does her housework—the only available playground being the common stair or the gutter—that more effort has not been made by public health or education authorities to bring, by the establishment of nursery schools, within the reach of these little ones the ordinary training afforded by games and toys to the child of the middle class.

There is a model nursery school at the Phoenix Park, Glasgow, established by voluntary effort and now maintained by the public health authority. There are three in Edinburgh, established and for the most part maintained by voluntary effort. Toddlers' play centres serving a somewhat similar purpose exist to the number of six in Edinburgh, one in Stirling, and one in Elgin, established by voluntary effort, but, with the exception of that in Elgin, assisted by grants from the local authorities.

Institutional Accommodation for Maternity Cases.

Of the six maternity institutions existing in 1916, five have now some form of agreement with one or more local authorities and are thereby included in schemes. In conjunction with the local authority, an ante-natal annexe to the Aberdeen Maternity Hospital has been established. In agreement with the Edinburgh public health authority, the Royal Simpson Memorial Hospital has provided ante-natal beds and an ante-natal out-patient department of great benefit to the community. This hospital has also agreements with other local authorities in regard to the admission of cases from areas outside the burgh.

Agreements have been made by the Glasgow Maternity Hospital with the Glasgow Town Council and with other authorities for the admission of cases.

The increasing demand made for institutional accommodation for maternity cases has led to the provision of new institutions by local authorities. The district committee of the Middle Ward of Lanark has converted Bellshill Hospital into a maternity hospital of forty beds. The Town Council of Paisley has provided a maternity hospital of eighteen beds in Barshaw House, its own property situated in the public park. The Joint Maternity and Child Welfare Committee of the Ayr County Combination has twelve maternity beds in Seafield House Hospital, a mansion house purchased and equipped by the authority. Greenock Town Council converted a house gifted for the purpose into a hospital of six beds.

Maternity homes for normal cases, providing in all about forty-eight beds, have been established by Airdrie and Coatbridge, by Kirkcaldy, Dunfermline, and Dumfries.

Hospital Accommodation for Children under 5 Years of Age.

The large voluntary hospitals for sick children have not made official agreements with local authorities and are not directly included in schemes. They, however, deal with cases referred to them, that by their nature have a claim on in-patient or out-patient treatment. To meet a clamant want, special hospital provision for infants has been made by the local authorities of Aberdeen, Paisley, the Middle Ward of Lanark, and Ayr County, and has been secured in Dundee by arrangement with the infant hospital, and in Greenock by a small voluntary hospital partly maintained by and managed in close co-operation with the public health department.

The arrangements of local authorities generally are supplemented by a vast amount of voluntary effort of inestimable value, represented by organizations for the purpose of providing assistance in the clerical, social, and educative services of child welfare centres; by the provision of accommodation in hospitals, convalescent homes, and other institutions for mothers and children, utilized by local authorities for cases coming under their care for which they have not themselves made other provision; by nursing associations that furnish the part-time health visitors that are employed in rural areas; and by associations in Edinburgh and Glasgow that supply about 800 voluntary health visitors.

Various methods of procedure have been followed by local authorities putting into operation child welfare schemes, and that of Edinburgh may be regarded as one type. There the local authority, in accordance with the scheme drafted by the medical officer of health, proceeded to include and co-ordinate such voluntary associations and institutions within the burgh as were suitable and were willing to enter into an agreement. These included voluntary health visitors, infant health centres, consultations for women and children, dispensaries, day nurseries, nursing schools, play centres, hospitals, and homes for mothers and infants.

A policy of non-interference with the private management of institutions providing special services under terms of agreement, followed by the town council, encouraged institutions that were at first reluctant to do so to come into the scheme. In order to cope with the increasing work of the service, a whole-time medical officer was appointed and the clerical and whole-time health visiting staff increased. With a view to improving the standard of the service, premises were reconstructed, institutions were transferred to other premises, and additional centres opened. A beautiful home was provided for delicate children at Gogarburn. On the fusion of Edinburgh and Leith, the institutions provided by the latter town council automatically came within the scheme.

No report on maternity and child welfare services in Scotland would be complete without a reference to Motherwell, where since 1912 home visiting has been undertaken by a part-time service organized by the Motherwell Nursing and Ambulance Association on behalf of the local authority. As home visiting developed, an extension of the nursing service was needed to meet the requirements of the statutory work: and whereas in 1912 there were three nurses employed in district nursing, there are now thirteen nurses including a superintendent engaged in the co-ordinated service for voluntary and statutory home nursing and visiting. The new combined burgh of Motherwell and Wishaw, Clydebank, and Falkirk are the three larger burghs in which this arrangement obtains, the women employed in these home-visiting services being Queen Victoria Jubilee Nurses.

To Motherwell was offered the model maternity and child welfare centre bestowed on the Scottish people by the Carnegie United Kingdom Trust. This important institution includes a maternity and child welfare centre, a very complete treatment centre, a cleansing centre, and provision for a mothers' club and other suitable educative activities.

The scheme put into operation by the combining authorities of Ayr County presents certain points of interest, since it arranges for a maternity and child welfare service almost entirely staffed by part-time officers. The four district committees and the town councils of all the burghs within the county, except Ayr, Irvine, and Kilmarnock, agreed to combine and to exercise their powers through a joint committee containing representatives of the combining authorities, and fifteen co-opted members, of whom five must be women. The population of the area, including that of the burghs served by the arrangements made by the joint committee, is according to the census taken in 1921, 215,931, and the births were 5,722 for the year 1920.

In order to secure an adequate health visiting service, a County Nursing Association had to be brought into being, stations for district nurses fixed, and areas to be served determined until

the whole population of the county was grouped into areas for the purpose of being supplied with a nursing service. Nursing associations had to be constituted in the areas not provided with such. For the purpose of aiding in the creation of additional associations and the co-ordination and supervision of the statutory work of all the nurses, a superintendent of health visitors was appointed. There are now thirty-five stations for district nurses, and forty-one nurses are employed part-time in health visiting. Four whole-time health visitors are, however, also required for wide areas in which district nurses are not available. In burghs and mining villages twenty-six maternity and child welfare centres have been opened at which consultations by doctors in general practice are held, for the purpose of the prevention of defect and disease in mothers and children.

The combined local authorities have shown initiative and resource by establishing a maternity and a sick children's hospital at Seafield House, Ayr, where in an institution, equipped as a hospital, situated in delightful surroundings that will allow of future expansion, twelve maternity beds and accommodation for thirty-four children is provided.

A most interesting scheme is that of the Western District of Haddington, wherein the local authorities of the four burghs—Cockenzie, Haddington, Prestonpans, and Tranent—have combined with the district committee. The scheme is administered by a joint committee representative of the local authorities. Under this scheme the home visiting is carried out by three whole-time health visitors employed by the county council, who give part time to health visiting, part time to tuberculosis, and part time to school nursing. They therefore have the care of the children from birth to 16 years of age, and not only are valuable agents in the prevention of disease, but also have a most beneficial influence in the homes throughout the area. The value of the child welfare centres, three in burghs and three in mining villages, held in public halls with inexpensive equipment, with a doctor and health visitor in attendance, is undoubtedly greatly appreciated by the mothers of the community.

Hospital treatment is obtained by sending maternity cases to the Royal Maternity Hospital and by referring sick children to the Royal Hospital for Sick Children in Edinburgh.

DISCUSSION.

Dr. McKail (Lecturer on Public Health, St. Mungo's College, Glasgow) applied a note of interrogation as to whither all this public health work tended. Was it towards the Spartan system of taking the children from the parents and doing everything for them? We should not drift into this without definitely visualizing the result.

Dr. H. Bracey (Assistant Schools Medical Officer, Warwickshire) asked if Dr. Menzies had correlated the infantile mortality rates of different areas with the infant welfare schemes on the one hand and the general sanitation of the areas on the other, in order to discover the relative importance of the former and the latter in reducing infantile mortality.

Lieut.-Colonel Fremantle, M.P., hoped that Dr. Mary Menzies would not occupy too much of her time in mathematical inquiries, as suggested by Dr. Bracey, as these, as a rule, only proved what was already known. It was the existence of these appalling conditions which called forth the best welfare effort. Of the remarkable schemes recorded in the paper under discussion the most satisfactory feature was the use made of all the various agencies—national, municipal, voluntary, part-time and full-time. It was co-operation of this kind that led to efficiency. We must also remember that the greater the responsibility thrown on the parents the more likely was parenthood to be discouraged, the birth rate depressed, and the recruiting of the nation arrested.

Dr. Mary J. Menzies, in reply, said that Dr. Fremantle had already given more than a sufficient answer to Dr. McKail and Dr. Bracey. Less than 1/10 per cent. of the population were engaged in looking after the others. The recent fall in the infant mortality rate for England had more than improved sanitation behind it. The sanitary improvements which had been going on for the previous thirty years had not been accompanied by a similar reduction in infant deaths. The infant death rate should be considered along with the defect rate amongst children admitted to school, and a fall in the former should be associated with a fall in the latter.

DISCUSSION ON INDUSTRIAL FATIGUE AND VOCATIONAL SELECTION ON A BASIS OF PHYSICAL INQUIRY.

OPENING PAPER

BY

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The study of industrial fatigue is the study of a very complicated problem, and one beset by many difficulties.

In the first place, what do we mean by the term "industrial fatigue"? The words themselves connote, taking them reversely: "fatigue"—weariness, tiredness, or exhaustion from bodily labour or mental exertion; and "industry"—habitual diligence in any employment, either bodily or mental; steady attention, careful application, activity, assiduity. Taken together, they denote the worn-outness due to physical toil or bodily exertion or mental effort, either from its intensity or violence or from its continuance or protractedness. Such fatigue was undoubtedly common when the hours of labour were prolonged to twelve, fourteen, or even sixteen a day, and when heavy loads and exhausting tasks were almost entirely moved or accomplished by the use of human power. Even to-day there are numerous examples of arduous toil, while, on the other hand, the hours of labour are, for the most part, markedly shortened. This kind of fatigue is such that it tends to produce physical deterioration in those engaged in it, so that the wastage is excessive, and, if not absorbed by lighter industries in the neighbourhood, leads to heavy calls on the communal provision for the disabled. It therefore borders on the pathological, because it taxes the recuperative powers from day to day and from week to week. The worker is thus always partially intoxicated with the products of exertion, excretion lagging behind production. In this state he is more liable to the commoner infections and in a less fortunate position to bear up against them. His resistance to infection is depressed and his response to attack is enfeebled. While other consenting causes are at work in effecting these results—namely, the unhygienic conditions often associated with indoor manufactures—the toxaemia is probably the most important individual cause. The provision of more fresh air inside the factory might only result in increased production of effort and so of toxin, whereas the tiredness resulting from the toxaemia makes the worker unwilling to exert himself further in his leisure to take "exercise" in the open air.

But it is undoubtedly true to say that the present generation is emancipated from much irksome labour that the preceding ones could not avoid, however much they might wish to do so. And in the last few years the reduction of the hours of labour to eight in many employments has, with the increasing use of motive power, practically eliminated this exhausting form of fatigue in these, and reduced the opportunities of its study very considerably. With the improved conditions, the problem has developed along physiological lines. The ill effects of the fatigue of exhaustion were often marked and obvious: those of the minor form are mostly subjective and personal to the worker and therefore not easily recognizable to the observer. It has thus been necessary to redefine the meaning of the term "industrial fatigue," and the definition now in general use is that of the Health of Munition Workers Committee, to wit, "the sum of the results of activity which show themselves in a diminished capacity for work"; or, to paraphrase this somewhat sibylline utterance, "activity, mostly muscular in character, but with the attendant and necessarily associated nervous action, when persisted in, as in the performance of a definite task or amount of work, produces consequent changes in the bodily structures involved, which in their accumulated effects reduce the rate of output of work." In some forms of activity this diminution of power or capacity is readily observable and can be used as a measure of the "industrial fatigue" produced.

It is needful to remind ourselves that "fatigue" in some degree follows every action of the human organism. When the rate of its production does not exceed the rate of its removal by the appropriate mechanism, then activity might be indefinitely prolonged. As a matter of fact, however, there is

always a lag in its removal, rest of the affected parts being an absolute requirement for full repair. If the fatigue is in reasonable measure, the nightly rest is sufficient to bring back the vivacity, and the person starts refreshed to his labours. Any daily lag can usually be overtaken by the weekly rest-day, which has no doubt been evolved from long observation by mankind as a necessity for man and beast when working to a daily programme. Otherwise, there are large bursts of output of energy, followed by pauses or rests.

The limitation of industrial fatigue to this minor form has this result, that a considerable body of research of past years is already available for application if the various interested parties are willing to utilize it. "All that is new is not true, and all that is true is not new" is an aphorism to be well remembered in these times. Numbers of men have applied themselves to the problems of the fatigue of exercise and work in the past two generations, and some have left valuable observations thereon. Unfortunately, much of the applied knowledge has perished with the persons themselves, belonging to that vast amount of discovery which is made in each generation but is not transmitted in permanent form.

Alongside of all this is the work of the physiologists, such as Waller, the inventor of the dynamograph, Mosso of the ergograph, and many studies in fatigue which have been widely applied in the field of education. In a series of researches in the industrial field Professor A. F. Stanley Kent has brought all this knowledge to bear in a masterly way on actual working conditions. Numerous succeeding observations have served to confirm and extend these, and there exists at present a well-attested body of knowledge concerning what are the best industrial conditions for many employments: the next step is to put them into practice. But that, unhappily, is not yet, for the present confused economic conditions have dealt a death-blow to many welfare schemes and the day of deliverance is deferred. The field of usefulness will thus be limited to ameliorating the extremely defective conditions where they exist, and in assisting in those trades and industries where the economic pressure is not so prohibitive. Not uncommonly, the occupations in which interference is most needed are those in which least is allowed, whilst in many luxury trades, with admirable conditions, the provision of extra comforts and facilities is spontaneous and considerable.

The work begun under the Industrial Fatigue Research Board in 1918 opened a promising field in which much useful spade-work has already been accomplished. This is still largely in the observational stage, and a considerable time must elapse before accurate deductions can be arrived at. It will be useful to quote the terms of reference to this Board, as a basis for further remarks:

> "To consider and investigate the relations of the hours of labour and of other conditions of employment, including methods of work, to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers."

When we proceed to attack these problems, certain difficulties at once arise. In some industries the pace of work is made by the individual, in others by the machine; in some the work is arduous, in others light; in some the output is easily measured, in others this is difficult; and so on. Other factors emerge which disturb the solution—namely, the differences in original endowment of strength and vitality among the workers; the varying reactions to their work and environment; the home conditions, especially whether work is demanded there after the day's toil; and the social habits in regard to rest, sleep, exercise, food, and amusements, all of which cast an influence on the amount of work done, the attention bestowed on it, the liability to accident, and the incidence of sickness. The many possible combinations and variations among all these parts of the individual's life-cycle make comparisons from worker to worker a matter of difficulty, and enforce the need for caution in drawing conclusions. As the reporter wisely says on page 6 of the Second Annual Report:

> "The difficulties of industrial research of this kind are formidable, and can only be fully realized by such as have had actual experience of it. Almost the whole of the investigations deal with a number of variables, none of which can be wholly controlled, and consistent results can only be secured by taking immediate advantage of opportunities as they offer, which under the industrial conditions of the last few years may suddenly lapse before investigation is complete."

Let us, then, "consider and investigate the relations of—

(*a*) The hours of labour,
(*b*) Other conditions of employment,
(*c*) Methods of work,

to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers."

A. The Hours of Labour.

The claim by the coal miners for an eight-hour day, made statutory in 1908, familiarized the nation with this part of the problem—namely, the consideration of the hours which should be worked at arduous employments. The seed thus sown was suddenly ripened into fruit in the post-war period, when, early in 1919, the adoption of an eight-hour day became an accomplished fact in most of the industries in this country. Incidentally, the shortening of hours worked raises the important questions of the arrangement of spells of work, rest pauses, and pace of work, as well as output and wages inquiries. The whole subject is thus intimately bound together, and interference with a part involves the whole. Accepting the eight-hour day, and leaving aside any economic considerations, what is the best division of the hours of the day between work and food and rest and sleep? To bring the matter to a point, I venture to put forward the following alternative arrangements, based on a wide variety of reasons, as the most suitable. I prefer the first, as conforming more to established meal hours in the general life of the community. Other reasons are indicated in the argument.

Rise, wash and dress; light breakfast	6 a.m.	7 a.m.
Morning spell of work ..	7 to 9 a.m.	8 to 10 a.m.
Breakfast and rest pause ..	9 to 10 a.m.	10 to 11 a.m.
Forenoon spell of work ..	10 a.m. to 1 p.m.	11 a.m. to 2 p.m.
Dinner and rest pause ..	1 to 2 p.m.	2 to 3 p.m.
Afternoon spell of work ..	2 to 5 p.m.	3 to 6 p.m.
Tea and rest pause ..	5 to 6 p.m.	6 to 7 p.m.
Rest and recreation ..	6 to 10 p.m.	7 to 11 p.m.
Sleep	10 p.m. to 6 a.m.	11 p.m. to 7 a.m.

The maximum working spell shown above is three hours. For work requiring steady application and attention, I would reduce this to two and a half hours. Where the work is intermittent, it may be lengthened to three and a half hours, but certainly not to four hours. Even where the duties are so mild as to make four-hour spells possible, there are other reasons why we should prefer the shorter period. Want of variation and confinement induce languor and dullness, and continuance of work thereafter can only be done by the exercise of superior or excessive mental stimuli, and the resulting fatigue is more slowly recovered from. This is more observable in work accomplished in fixed—that is, in sitting or standing—positions, and occasioning local fatigue of hand and eye. In arduous work, a four-hour spell should not be allowed where the labour is continuous. In any case, the work should be arranged with frequent pauses to allow of rallying. Certain occurrences in such employments suggest that men are at times overcome with faintness following excessive exertions. There is no doubt that the heart is dilated under bodily strain, but when the latter is not too great or too prolonged, or too often repeated in a given time, it quickly recovers its elasticity. With increase of years, this power of recovery deteriorates and this should be definitely recognized in all such workers.

But the final appeal as to the length of such spells is the testimony of the individuals subjected to them. At present, unfortunately, it is difficult to get such testimony from the persons concerned, because they for the most part are unused to describing their sensations or of analysing or estimating their relative importance. The investigator, likewise, is, as a rule, at the considerable disadvantage of having no practical acquaintance with the employment, and is thus unfamiliar with its special difficulties. It is interesting in this connexion to note that Miss May Smith, the investigator allotted to the laundry industry by the Industrial Fatigue Research Board, took an early opportunity of "gaining first-hand experience by working personally in a laundry for a few weeks" (First Annual Report, p. 18). Speaking from personal experience, I can testify that when engaged, as a lad of 15, for several weeks in a holiday period, at the somewhat strenuous task of pressing Glasgow bricks (about 10 lb. weight), I managed the

6 a.m. to 9 a.m. and the 3 p.m. to 6 p.m. spells all right, but the 10 a.m. to 2 p.m. spell I found too long, and from 1 p.m. on felt wishful to stop. The work was done by the piece, by a gang of three, one of whom worked the hand-press and the other two placed the bricks and carried. The pace was steady, with changing of tasks and occasional pauses when called for. I still vividly remember the sinking feeling which came on after 1 p.m. daily. But, it will be objected, and rightly too, that the experience was short-lived, and in the language of the Second Annual Report of the Industrial Fatigue Research Board, p. 7:

"Any considerable change attendant on labour conditions is followed by a period of readjustment which continues for a long time before constancy and equilibrium become re-established. It is therefore only with quite special caution and circumspection that inferences can be drawn from results obtained during such a period, although they may very probably be of special value for collation with normal results obtained later on."

A later experience of six months' duration in recruiting and national service boards has convinced me that when there is steady pressure of work with little or no intermission, spells of two and a half to three hours should be a maximum. In this as in some forms of industry there is a steady alertness of attention, combined with a moderate output of muscular energy. The "other conditions of employment" were probably often similar to that of a dusty employment, and no doubt conduced to the fatigue of attention that supervened in the third hour.

With regard to the morning period of 7 a.m. to 9 a.m. I adduce the following points. Collis and Greenwood (*The Health of the Industrial Worker*, p. 25) quote Dr. Edward Smith as writing in 1861:

"In our opinion no laborious occupation should be followed in this climate before 7 a.m., and it ought in all instances to be preceded by the breakfast. . . . The period of the day in which the human system is the most vigorous and fitted for labour in our climate is from about 8 or 9 a.m. until about 4 or 5 p.m., but it is sufficiently vigorous for a longer period."

Again:

"Rest is a necessary alternative to labour, and as small meals are conducive to muscular exertion, it is worthy of consideration if those who are engaged in manual labour for many hours would not perform it with more ease if there were more frequent but shorter intervals for rest and for meals, instead of the three meals a day at long intervals with the single long interval of rest between 8 p.m. and 6 a.m. It is very probable that more work would be done, and at less cost to the workman."

Now of these two statements, the first seems against the scheme suggested, and the second in its favour. But the opposition is only apparent. The important points are to have more frequent intervals for rest and meals, and to have breakfast before starting work. To take the last point first, it is a thing not easily to be attained by nine-tenths of the labouring classes under present conditions. And why? Because, so long as work begins before 9 or 10 a.m. there will be two factors to contend with—want of appetite for a reasonable sized meal, and the household preparation of the same. Whether it is late hours or late feeding, or unhygienic sleeping conditions, or fatigue or exhaustion, or insufficient or improper diet, or climatic conditions, or late rising, or any combination of these, there is a widely prevalent inability to take breakfast immediately on rising, and more especially among women. Even in children mothers commonly state that the child takes little or nothing before going to school. For children and adults the advice is similar: if starting work at 8 a.m., and no travel time required beyond a few minutes, get up at 7 a.m. at latest, and if possible have your meal cooked for you and set for 7.30 a.m. But this introduces the problem of the mother, who in general is the home comfort provider, and would have to rise at 6.30 a.m. Then there are the unmarried men and women, and widows, many of whom have to provide for themselves. On the other hand, with the suggested programme, the person can take a light repast before going out to start work at 7 a.m., and come back for a prepared breakfast at 9 a.m., or have it at the works' canteen.

But this advice runs counter to many presently established customs, chief of which is the lateness of city hours. That is why I prefer the 5 p.m. stoppage of work in the scheme, in the hope that the various recreative outlets for the young person and adult may have the chance of an earlier start, and so release their devotees to get to bed by 10 p.m. as in former days. This would be the true daylight saving, and not the spurious article, which is detrimental to the young and old in the cities.

Before leaving this point I give two real experiences. The first is personal. When in the R.A.M.C. (for a period, January to April, 1916) I was in medical charge of a Reserve Infantry Brigade. The plan of duties was: Sick parade, 7 a.m. to 9 a.m.; inspection and vaccination of arrivals, 10 a.m. to 1 p.m.; inspection of drafts, inoculation for typhoid, etc., 2 p.m. to 4.30 p.m. I only claim that the duties were constant from the start; later they became more so. I got up at 6.15 a.m., dressed, and walked almost a mile to the medical hut. There was an offer (which I refused on account of its unpalatableness) of a morning cup of tea. I breakfasted at 9 a.m., lunched at 1 p.m., had afternoon tea at 4.30 p.m., and dinner at 7.30 p.m. Now the point I wish to make is that, contrary to my expectation, I felt quite well for practically the whole of the time, at all the sessions, the early one included. I still believe that a pleasant morning drink would probably have been of value. Over the whole period I only missed one morning, and then it was due to a cold. It is true that the experiment was limited in duration, but it was also abrupt in its onset from a 9 o'clock start, preceded by breakfast.

The second experience is one which was elicited in the course of a visitation for other purposes. The patient was attended by the sharer of her single apartment, a Mrs. M. McB., aged 69 years. Something the latter said attracted my attention, and I soon found myself in the act of cross-examining her on the life of a weaver. I specially avoided leading questions and cautioned her against answering unless she had a definite opinion on the subject. I found that she readily understood my position, and the following summary represents her own views on the various points dealt with.

Mrs. M. McB. started work at 14 in a warehouse, but was advised by a doctor to change to weaving on account of her "chest." About 15 years of age she started as a learner in a weaving factory, making muslins and blue cloth. The hours of labour were: 6 a.m. to 9 a.m., 10 a.m. to 2 p.m., and 3 p.m. to 6 p.m. About eight years later she was married, and kept her home for the next sixteen years. She had five children. Her husband died at this time, and as the parish only allowed a shilling a head a week for the children who were not of working age, and nothing for herself, she went back to the "mill" two days after his burial. (He had been ill and off work for a long time previously.) She continued up till 1919, always at the same hours, except from 1917 to 1919 (two years), when the hours were: 8 a.m. to 12.30 p.m. and 1.30 to 6 p.m. During these two years she was weaving khaki cloth. Her wages latterly were 14s. weekly but after the bonus 23s. She preferred the hours starting at 8 a.m. for the later start. She was always a late bedder, sitting up to 12 midnight, and liked to read at night. With these longer spells she managed the first all right (except below *re* food) but in the afternoon about 4 p.m. she got tired and sleepy and for half an hour had a fight to keep alert (she would be about 65 years at this time), but this feeling would then pass and for the rest of the time she was "at herself" again. In spite of the later start she could not take a proper breakfast. Owing to the long spell from 8 a.m. to 12.30 p.m. she found she could not exist until the end of it without some food; but no break was allowed, so she bought about half a pint of milk in a can, and sipped it at intervals. Sometimes she had a biscuit. Her whole diet at this time was something like this:

Breakfast, 7.30 a.m.: Cup of tea and half slice of bread with or without egg.
Forenoon, 10 a.m.: Half pint of milk and biscuit.
Dinner, 12.30 p.m.: One slice of bread or a scone and tea, and cheese.
Tea, 6.30 p.m.: Porridge and milk, bread, and tea.

Asked if she had anything to say in favour of the old hours she volunteered the statement that after the morning spell (6 to 9 a.m.) her appetite for breakfast was better. She had no specially vivid recollections of the other spells, except that there was often a wish that it was stopping time. The early morning rush to work, however, she spoke of with great feeling: how she often left the house and her children about 5.30 a.m., with little or no food, hurrying along the streets for a mile and three-quarters to the weaving factory. Many times she arrived there in an exhausted state, and for the first half-hour of work was quivering and unbalanced and with imperfect vision. On other mornings, behind time, she saw the gate shut as she drew near; she was "quartered"—that is, had to wait outside the gate until 6.15 or 6.30 as the case might be—and had 1d. deducted from her wages: if later than 6.30 a.m., then the next time of entrance was after breakfast, or 10 a.m., with a deduction of 3d.

This unvarnished tale points its own moral. One would like to see this morning spell abolished altogether, and so have the manual worker placed on the same plane as the office or bureau worker. That would mean a six or seven hours day. There are no doubt some forms of industry in which it could be done "having regard to industrial efficiency." From the point of view of "the preservation of health among the workers," who that has seen the nation's manhood as it presented itself for recruitment from foundry and factory can doubt that those young-old men of 40 to 50 years owed their premature ageing largely to the stress of long-continued toil from the earliest years?

Further inquiries have but served to confirm the main points evoked in the above recital. There are still some who would prefer a return to the old long hours, from various reasons. But the majority prefer the later hour of starting (generally 8 a.m.), while admitting that they could not carry on but for a "piece" or cup of tea about 10 a.m. One worker liked the old hours worked (ten a day) as being less anxious then about her output. There had been no speeding-up of the machinery, so the inference seemed to be that she was missing the "rests" which she could afford on the longer spell.

Another objection to the 7 to 9 spell is that it increases the stoppages and starts, and working time is always lost then. Thus before breakfast and dinner, those who do not go home for meals begin to prepare their tea, etc. Those who go home, on the other hand, work on. It seems unnecessary to point out that if any favours are going, the workers who have to leave the factory and travel home and back again should get them, and that the stay-ins have all the time to prepare and take their food.

The main objection to the three-period day with two breaks will come from those who believe that after every start there is a "warming-up" time required, and that the repetition of this results in serious loss of working time. This is still a matter for further investigation. Different workers show different habits, but there is no doubt that, in the mass, the start is gradual at the first period. After that the observations are too variable to make a definite statement. In any case it seems to me that this is an individual characteristic which is likely to show itself in another form when we try to evade it. As long ago as 1884, Mosso, when studying ergographic tracings of muscular contraction, found that (*Fatigue*, Drummond's translation, 1915, p. 90 et seq.):

"The profile of the curve, that is the line which is obtained by uniting the summits of the contractions, forms a curve which varies in different people. I have been unable to find a reason for this fact, and have ended by convincing myself that it is in truth a *constant* feature which indicates the diversity which every one presents, *in his way of becoming fatigued*. . . . Some suddenly feel tired and give up work, while others, more persevering, gradually expend their energy until by degrees complete exhaustion supervenes."

Now, it may be objected that there is not much real fatigue, in Mosso's sense, in these times and in many forms of industry. Whether that is so or not, there can be no doubt that the repetition of muscular acts, however simple, unless followed at appropriate intervals by a period for recuperation, will produce that fatigue which shows itself "in a diminished capacity for work." In the heart muscle we have the great example of unceasing action, but on analysis this proves to be a perpetual alternation of a period of effort immediately succeeded by a pause period, twice as long in point of time. We must choose therefore one of two conclusions:

1. The worker must be permitted to work in an unsystematic manner, working and resting as the natural feelings dictate; or,
2. We must provide spells of work with definite rest pauses, and these must bear a relation to each other, which will vary with the other conditions of the work.

The first solution is the one adopted by the old-time home worker, and is a well-known one among intellectual workers, who are prone to overwork when the mood is on, and then have to lie fallow until reinvigorated. This method, however, did not fuse well with the introduction of power-driven machinery and factories, and has practically disappeared except in the smaller country districts, where the home worker can arrange his day's programme as his wishes dictate.

The second conclusion is therefore the only one left, and the object of this discussion is to elucidate the various parts of it.

B. *Other Conditions of Employment.*

The other conditions of employment are undoubtedly influential in the onset of fatigue, in industrial efficiency, and in the preservation of health among the workers. Many of them are not so subtle of solution as the problem we have just been studying, and their improvement is largely a matter of ways and means. Such are good buildings, furnishings, lighting, heating, and ventilation. For most factories the application of the well-known principles of hygiene are sufficient. In a few, special difficulties arise: heat and moisture in cotton-spinning; excessive heating in glass-blowers and iron and steel workers; dusts and poisonous gases and liquids; and poor lighting in mines. Even here much can be done by willing co-operation on the part of master and man, although, unhappily, lack of this still exists. Professor Gilman Thompson, of Cornell University, New York, writing in 1914 (*The Occupational Diseases*, p. 77), divides employers of men in hazardous trades into three classes:

(*a*) Those willing and sometimes eager to co-operate in the betterment of their working conditions.

(*b*) Those who have already adopted all practical means of avoiding disease hazards for their workmen.

(*c*) Those who assert, through indifference or ignorance, that such alleged evils as industrial diseases do not exist, at least in so far as their own establishments are concerned, or that, if they do, they are solely due to the workman's own negligence.

Our latest authoritative writers on *The Health of the Industrial Worker* (Collis and Greenwood), 1921 (p. 40), make the following remarkable statement:

"Looked at from another point of view, the student of the human machine and of its requirements to maintain health and efficiency is astonished, first, to note how the reasonable recommendations of important committees and Royal Commissions are passed by unheeded, while attention is paid to subjects pressed to the front by the uneducated voice of labour, or required in the interests of production. . . . Next, legislation is observed seldom, if ever, to lead reform, but to follow in the wake of progress, adopting the procedure of the more advanced employers of the time."

Let us leave it at that. Progress is slow. We still need a Carlyle to thunder out that "Supply and demand is not the one Law of Nature: Cash-payment is not the sole nexus of man with man" (*Past and Present*: The Modern Worker, chapter ix).

C. *Methods of Work.*

Under this heading is included such things as (1) the organization of the workshop or factory for the task in hand; (2) the adjustments of the worker and the machinery to each other; and (3) the different movements in each worker's task. All these are highly important in abolishing waste of energy on the larger as well as on the smaller scale. So much is this the case that in large factories with a standardized output the production can be enormously increased, thus allowing for reduction of hours with increase of pay. Although this highly desirable result cannot be generally obtained, valuable amelioration of working conditions have already been effected and more is in prospect. The training of the worker in the most approved manner of performing any set of motions which are in repeated use at the employment is now admitted to be of economic as well as of physiological value. But here as elsewhere caution must be exercised. The adjective "clumsy" is often used to stigmatize efforts which are markedly awkward or ungainly; the danger lies in using it for some set of motions which are unusual, and different from the "herd" method. The writer has been informed of a girl in a toy factory, who came from a mentally defective class, and whose mode of working attracted attention by its being different from the common one. On close study it was seen to be an improved method, and when all the girls were taught it the output was definitely increased.

Workers engaged in complicated co-ordinations and when speeding-up on piece-work sometimes adopt swaying or rhythmic movements of the trunk to accompany the movements of the hands and arms. This is seen notably in making chocolate biscuits, where the worker sitting at a table takes a biscuit with the left hand, places it under a shaped opening, through which

it receives a layer of chocolate cream, smeared over it from a spoon held in the right hand. She then removes the biscuit, inverts it over another biscuit which adheres to it, and places the completed article on a tray (all with the left hand), and immediately starts the process afresh. The whole action is not unlike the problem of touching the top of one's head at regular intervals with the right hand while the left goes through a series of performances unrelated to this act and requiring a greater expenditure of nervous energy. An imbalance is produced with increased excitability. Relief to one's feelings is got by dispersing the pent-up energy in other movements, which in this case is often a circumduction of the trunk on the hips, producing an effect not unlike that of the "belly-dance" of some savage tribes. This added movement is closely related to the lip and tongue movements seen in children learning to write, due to the excess of energy put into the task, some of which overflows into adjoining motor centres. To see such a girl at work suggests the possibility of untoward results from undue speeding-up, most likely to take the form of "neurasthenia," or being "run down" as the workers themselves would phrase it. The body motion itself, when excessive, might likewise originate other symptoms, allied to those attributed to the old treadle sewing machine. Perhaps some of our welfare workers may have had voluntary evidence on this point; it is not one on which suggestive or leading inquiries are admissible when dealing with young persons.

In this connexion—namely, employments in which there is a considerable attention required while the muscular effort is not in the usually accompanying proportion—it is interesting to note that shirt machinists in factories are in the habit of singing in unison at their work; and that employers state that they like to hear this occur, because the output of work is usually good under such conditions. There is still room for much investigation to be done under this heading, more especially to set the upper limits to "speeding-up" and if possible to devise some test or tests to determine this for each worker, for the individual variations are a source of much industrial difficulty. If the output is rated too high, the worker is sweated to make a living wage; if too low, the master may go to the wall.

Vocational Selection on a Basis of Physical Inquiry.

In the middle and working classes the choice of a vocation is conditioned by one's environment for the most part, and in a secondary way by chance. A worker hears of a vacancy in some factory for a boy or girl and reports the matter to friends who have young people about to leave school. Application is made for the post, and the foreman or manager selects or rejects the candidate according to various points which his experience has taught him. But the influence of the person recommending may cause engagement to take place in spite of obvious defects or other better material offering. The whole process is more or less haphazard. Nevertheless, it preserves the individual's freedom of choice, however little it may be exercised. It is now proposed to select the worker for the vocation on the basis of intelligence and physical tests, although in the first instance they are only to be advised "as to the occupations for which they are naturally fitted." Very great caution and circumspection will have to be exercised in this matter, the adviser bearing constantly in mind his own severe limitations of knowledge of the different aptitudes required; and moreover that a child who may fail to shine in his test scheme may nevertheless display peculiar adaptability to a branch of manufacture. The case quoted above of the child classed as mentally defective illustrates this, although one has to remember that at present such classifications are not universally reliable.

While this is so there are certain defects which are such as to demand that the individual's freedom of choice should be curtailed, in his own and the employer's and the public interest. We are here limited to the physical side. Certain broad generalizations can be laid down: the stronger and more robust should be advised to the more arduous and trying occupations; those subject to bronchial conditions should have indoor non-dusty jobs; while those with heart affections would be advised to the clerical or such-like tasks. Children of small size might still be of service in work done in the sitting posture, as the sitting height is usually good, the shortness being commonly in the legs. In this connexion it must be remembered that such children often grow considerably for the first year or two after starting work, whether from improved feeding or other causes. Then children with serious defects of sight should be excluded from all work with moving machinery. Squint or strabismus is associated with defective sight in the squinting eye, up to practical blindness. All such cases should be carefully examined and their position definitely defined. Want of cleanliness of the head and body should be an absolute bar to all work connected with foodstuffs. It is not sufficient here that the children should be examined within a week after starting work. To have an odd child with scabies engaged in the manufacture of chocolates is bad enough, but some young persons, very dirty as to head and body, but with a surface cleanliness, are so engaged. An inspection should take place prior to engagement, and can be most efficiently done by the welfare master or mistress.

Special problems arise, such as persons with perspiring hands, with odoriferous bodies and feet, and so on. These must be settled on their merits. They will not arise as a rule in open-air jobs, but where work is carried on in enclosed spaces with increasing temperature and poor or no ventilation.

It may be said that these precautions are obvious ones. No doubt that is so to the trained observer, but we must remember that the engaging of young persons is still practically anybody's job, and that experience gained is lost to the firm when the person gaining it is promoted to another task where this is not one of his duties.

Summary.

Hours of labour: Spells of work to be normally two to three hours in all occupations demanding steady application and attention. In arduous work there must be rest spells after excessive exertions, and the latter must not be unduly prolonged.

Definite intervals for meals must be provided. For work starting before 9 a.m. two meal periods should be interposed in the time-table, owing to the fact that few persons take a normal amount of food in the morning, and it is too long to work a three or four hours spell before again getting food.

For the eight-hour day a three-spell day is therefore recommended, the first of two hours and two of three hours each. For a nine-hour day the first spell may be two and a half hours and the others three and a quarter hours each. If an industry can give a "living wage" on shorter hours this should be done, and the morning spell abolished.

Conditions of employment, especially in hazardous occupations, should be good. If such conditions cannot be secured, the industry should be suppressed.

Methods of work are worthy of study, to eliminate waste of energy, to find "best" methods, and to avoid harmful movements.

Vocational selection is at present limited to the "don'ts" department. Young persons with certain defects should not be permitted to engage in specified employments.

ADDENDUM.—Since the information in this paper was published, and as a consequence thereof, much additional information has been conveyed to me in regard to food difficulties in connexion with the morning start at 7.30 or 8 a.m. and working without a break for four, four and a half, or four and three-quarter hours. In some cases the breakfast, of whatever kind, is partaken of one hour to one and a half hours before the starting time. In an engineering works, after three years of the 8 a.m. start, numbers of the men have discovered for themselves the value of rising at 6 a.m. and leisurely making their old breakfast of porridge and milk which their wives formerly made for them at 9 a.m. This fact is a valuable confirmation of the advice given in the paper; for though tendered to many mothers during the past dozen years none have reported its adoption or the result. (D. McK.)

DISCUSSION.

Professor E. L. COLLIS (Cardiff) described fatigue as a negative term and activity as the real subject of inquiry. Maximum activity and maximum health went hand in hand. The end and object of the doctor and the employer were really identical. Hours of labour must be distributed so as to produce maximum activity or output; health would follow. Study of industrial output showed that, as in athletics, the record-holder proceeded at a steady even pace and not by fits and starts. Schemes for hours of work must stimulate an even pace. Vocational selection to-day should be more confined to physical and physiological characters and less to the newer science of psychology. Not until the former were exhausted should psychology be appealed to.

Dr. W. F. Dearden (M.O.H. Port of Manchester) referred to the statement that workpeople did not get to bed sufficiently early to get the necessary night's rest, and was of opinion that this must be due to local conditions more than to daylight saving. He had himself noticed the late hours kept by Glasgow people, the streets being quite alive with promenaders at 11 p.m., and these had not all disappeared at midnight. This was quite different from what obtained in Manchester and other Lancashire towns, which in the evening had more the appearance of dead cities. The last remnants of the inhabitants were on their way home at 10.30 p.m., and were at home if not in bed at 11 p.m.

Dr. McKail, in reply, thanked Professor Collis and Dr. Dearden for their illuminating and kindly criticism. The suggestion thrown out by the former, that it was the steady pace that paid, was a valuable one. As to the lateness of the hour for retirement in Glasgow as compared with Manchester and other Lancashire towns, perhaps Glasgow's late car service had a deal to do with it. Late hours were certainly detrimental.

THE CONSTITUENTS OF FRESH AND VITIATED AIR AND THEIR SIGNIFICANCE IN PROBLEMS OF VENTILATION.

BY

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[*Abstract.*]

In view of the benefit derived from exposure to fresh air in the open as contrasted with the air of occupied rooms, it has appeared useful to investigate the value of the so-called "active oxygen." To this end a series of oxidation experiments have been devised. Cubes of phosphorus of equal surface area and equal freshness were prepared and were exposed in specially designed flasks for half an hour to atmospheres of fresh and expired air respectively, the amount of the resulting oxidation being measured in terms of phosphoric acid. Under such experimental conditions it was found that oxidation in fresh air exceeded oxidation in expired air in the proportion roughly of about 4 to 1 instead of in the proportion of 4 to 3, as might have been expected from contrasting the oxygen content of the two air samples.

The interpretation of such results is difficult. It is at once obvious that the law of mass action is not applicable to action at a surface, surface being concerned in this case and not volume. Moreover, allowance must be made for migration or diffusion of the reacting substance in the oxygen content of air towards the surface. Finally, the oxidation of phosphorus is known to present certain physical anomalies that make it impossible to arrive at a definite conclusion from the oxidation results obtained. Experiments with several other rapidly oxidizable substances failed to give proof of the presence of an especial "active oxygen" content in fresh air. It may be of interest to note that the phosphorus cubes first used in these experiments were graded and polished by file under water. It was found, however, that comparable discs of equal surface area were best prepared by moulding under hot water. It is only right that I should acknowledge here the assistance I have received from Dr. Brownlee, statistician to the Medical Research Council; he designed the initial experiments here described.

It is evident from previous experiments of other workers that the ill effects resulting from a vitiated atmosphere are not due to a diminution of oxygen or to an increase of carbon dioxide. As regards impurities in the atmosphere, the general consensus of opinion based upon the evidence presented excludes such poisonous bodies in expired breath as a factor explaining the malign effects of vitiated air. All the experiments devised to demonstrate such an effect have failed apart from the demonstration of sensitization to proteins. It is concluded, therefore, that the ill effects produced by vitiated air are due to physical changes only. The work of Leonard Hill and others makes it obvious that the vital element in ventilation problems consists in regulating the temperature, moisture, and motion of the air.

Chemical analysis having failed to demonstrate the cause of the "deadness" or want of freshness in air, and the effort to demonstrate clearly an "active oxygen" content of fresh air by means of oxidation experiments having been indefinite, it appeared that it might be of advantage to test further the physical changes in vitiated air. In this connexion it was evident that, while the presence of radio-active substances in the air had been demonstrated by Elster and Geital, and that it was known generally that air and soil and certain mineral springs contained certain radio-active substances, nevertheless the accurate measurement of the radio-active changes in the air had not been accomplished, nor had any effort been directed towards determining the possible effect of such radio-active changes on biological activity. In view of the otherwise extensive and intensive investigation of the physical components of air and their effect on human well-being, the investigation of the radio-active properties of air appeared to be urgently desired.

An apparatus was put at my disposal by Professor Soddy of Oxford University in the form of an experimental electroscope of one of the types used for radio-active measurements. With such an apparatus two points may first be demonstrated—namely, (1) air washed through water in a wash bottle before being passed through the experimental air tube of the electroscope is deprived of its ions, as a result of which the electroscopic leak is diminished; and (2) air passed through a rubber tube before being admitted to the experimental air tube is similarly deprived of its ions. It is obvious, therefore, that the modern system of artificial ventilation, wherein air is washed by passing through a water screen and thereafter conducted through a series of ducts, must deprive the air of whatever ionic content it initially had. Moreover, it is further demonstrated by this experimental electroscope that expired air is destitute of ions as judged by the delayed discharge of the electroscope. It is evident, therefore, that should the ionic content of air have any benignant effect on human well-being its treatment in any modern system of artificial ventilation serves but to deprive it completely of such energy content.

It has been found that the passing of a continual stream of expired air through the tube of the experimental electroscope results in the production of a negative radio active effect. Thus a continual stream of expired air, instead of causing a slowing of the discharge of the electroscope, a result to be expected on account of its lack of ion content, although such slowing might have been compensated for by the increased leak due to the influence of condensation water that rapidly covers the under surface of the insulation of the electroscope, causes a complete arrest of electroscopic leak and results in a cessation of the leak for the period of a quarter of an hour, the duration of the experiment. This result, amounting to an increased charge on the electroscope, has been continually experienced when a current of expired air has been passed through the tube of the electroscope. The existence, however, of such a thing as negative radio-activity is according to modern theory an impossibility, and the effects observed in the electroscope were attributed to instrumental or other experimental error.

In order to test for such experimental error, the following points were determined:

1. Any possibility of the result obtained being due to the nature of the original electrical charge on the electroscope was negatived by finding that the same effect always occurred, whether the charge was negative or positive.
2. Any possibility of an induced electrical charge due to the passage of the air current being the cause was negatived by earthing the tube of the electroscope.
3. Any possibility of the so-called apparent charge on the electroscope being due to any thermal currents was negatived by (*a*) first boxing the apparatus so that the contiguity of the experimenter should be obviated as a cause, and (*b*) by enclosing the entire apparatus in an incubator constantly maintained at a temperature of 37° C.; it was found that no alteration in the results occurred under both these conditions, the apparatus continuing to record an increased charge so long as a current of expired air was passed through it, and no matter whether the electroscope had originally received a negative or positive charge.
4. Finally, it might be suggested that the increased charge shown on the leaf of the electroscope when expired air is passed directly through the tube is to be explained by the assumption that there is a diminution of the dielectric capacity of expired air as compared with fresh air. This is negatived, however, when it is recognized that the alteration in charge should appear whenever the air of the tube is replaced by expired air—namely, at the end of the first expiration. This is not the case. Moreover, the variation of dielectric capacity in gases such as oxygen, nitrogen, and carbon dioxide is so small, 0.000+°, that it is clearly altogether unlikely that decreased dielectric capacity of expired air is the cause of the phenomenon observed.

In connexion with the observations on my part, which are entirely independent of the work of other observers, as to the effect which expired air has on retarding the rate of discharge of the electroscope, the findings of electroscopic

retardation by two other observers are of interest. Thus Lazarus-Barlow has announced similar findings in connexion with the examination of carcinomatous and non-carcinomatous tissues. Similarly Buchner communicated on the same day to the Royal Society a paper on a mineral which retards the rate of discharge of an electroscope. I am convinced that, similar findings having been described by three independent workers, renewed observation is urgently required. Intensive investigation of all the principles concerned in the differences between fresh and vitiated air have until now failed, and, it being the general consensus of opinion that the so-called fresh air of any artificial system of ventilation is dead, it is my opinion that the ionic differences, both physical and physiological, between fresh and vitiated air should be further investigated.

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THE WRONG TURNING IN PUBLIC HEALTH.

BY

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THE administration of public health in its beginnings, and indeed up to quite recent times, was essentially what it was often called —"preventive medicine." That term has almost dropped out of use, and the "wrong turning" I allude to in my title is the tendency for the ideals of prevention to be obscured in our solicitude for the treatment of individuals already diseased.

Communal disease is the last term in a faulty social metabolism; to alleviate or cure it in the individual is the function of the physician and the surgeon. To seek its origin, to discover where the social metabolism goes wrong, to direct our social evolution along the channels that make for health in the community, is the function of government, both national and municipal.

The principal cause of communal disease is poverty, and poverty is increased by waste. It is admitted that excessive taxation, both national and local, is one of the causes that is preventing trade recovery, and is thus both directly and indirectly increasing and maintaining poverty; and with poverty, public ill health. Every penny spent on public health administrations, as on education or any other object admirable in itself, is as much waste, if it cannot be justified by results, as if it were spent on any other form of extravagance. When Government or municipal organizations begin to deal with individuals the tendency to waste is enormously multiplied, for public funds can never deal with the whole of the individuals suffering from disease. We shall always be attacking our problems on mere fragments of the periphery, and as can already be seen the cost of this kind of skirmishing is so excessive that in these days funds must be diverted from what should be the main attack on disease at its source and origin.

This modern tendency is all to the credit of our consciences, of the emotional side of our natures. In spite of the callous delight in murder, the recrudescence of the belief in violence and destruction as a means to political ends which has disgraced the post-war period of our history, there was perhaps never so much pity for suffering, never so many consciences awake to the rights of helpless people, "of women labouring with child and young children," of the maimed and crippled and diseased, as there are in this distracted generation. Industry is no longer allowed to grind wealth out of needlessly inflicted suffering, even soldiers are cared for, and possibly merchant seamen will one day be treated as human beings when the public learns how they are treated even now. It is not very long since torture was regarded as a therapeutic measure for lunatics. Now if we hear of an asylum attendant losing his temper with a patient it is regarded as a national scandal and a Royal Commission is demanded. All these are but instances of what even the pessimist must regard as a genuine evolution proceeding in social morality. If it does lead to the formation of endless committees and innumerable so-called "national councils" for doing the same thing under slightly different names, the majority of these organizations are quite harmless, and if they waste money it is largely money which would otherwise have been wasted on something else.

We have thus in the promotion of public health a greater backing of enthusiasm than probably our predecessors ever knew. But enthusiasm to be effective must be guided by expert criticism, and I think it is the duty of public health administrators to resist the temptation to yield to popular clamour in favour of purely eleemosynary schemes, or methods of advertisement, which tend to divert public funds from the prevention of disease to tinkering with disease when it has developed.

It is to me humiliating that the sole check on public health administration should be financial control. And of this we have recently had unpleasant though fully justified examples. The value of human health, if reckoned only in terms of money, is so immense that public opinion would not long tolerate a refusal to finance any proposal which would certainly result in a lessening of disease or an increase in the expectation of life. Unfortunately at present money is most lavishly spent in the very directions where it is least possible to demonstrate the value of the results.

The difference between these two theories of public health progress has been admirably put by Sir George Newman with his invariable instinct for the just word. Speaking to a post-graduate class for school medical officers recently, he said: "The centre of gravity of public work must swing more and more from the environment to the individual." It is just this deflection of the centre of gravity of our activities that I think we should view with a certain amount of distrust, especially in these days when expenditure in new directions necessarily involves curtailment of other functions.

The principal developments in public health administration of late years have been the National Insurance Act, with its provisions for the treatment of sickness generally, and in especial of tuberculosis; the medical inspection and treatment of school children; the great development of maternity and child welfare work; and lastly, the free treatment of venereal diseases.

The whole of this work, all most laudable in intention, is directed to the individual. Its cost has been almost incalculable, yet when it was found necessary to tackle the impossible environmental conditions into which our population had drifted at the termination of the war, the whole of our housing schemes broke down for want of money. Overcrowding and slum conditions are to-day engendering tuberculosis, drunkenness, venereal diseases, rickets, pneumonia, measles, and other diseased conditions in quantities which our breathless efforts at dealing with end-results are powerless to overtake.

On the other hand, public health administration of what I may call the old-fashioned sort aimed almost entirely at the environment. The improvements effected by it affected whole masses of the population, not selected individuals, although of course there was none of the cowardly callousness towards the individual which characterized ruder ages—as, for instance, in the treatment of lepers, where the suffering individual was deliberately and ruthlessly sacrificed in the interests of the rest of the community.

Public health in the sense in which we know it, including all factory and industrial legislation, is practically the product of the nineteenth century. The unexampled increase of population resulting from the industrial revolution; the mad rush for wealth which welcomed a teeming and half-starved population as an unlimited reservoir of cheap labour in peace and cannon fodder in war; the utter want of foresight which permitted this population to develop uncontrolled in conditions of squalor almost inconceivable to us now, had its reward in the epidemics of fever and cholera which at last terrified our rulers into passing legislation directed to the serious improvement of the environment of the people. The various measures passed during the first three quarters of the century were consolidated in the Public Health Act of 1875, which has from time to time been amended, and was quickly followed by further legislation in the Infectious Diseases Prevention Act and the Housing Acts.

Every medical officer of health knows the depressing effect, the sense of almost hopelessness, that is apt to crush him in his visits to insanitary property, the indignation that is apt to possess the twentieth-century bosom in the presence of overcrowding, dilapidation, dampness, darkness, dirt, unpaved yards, privy-middens, open ash-pits, above all the acquiescence

in squalor, the indifference to filth, the utter carelessness that makes the worst of foul conditions which is displayed by a generation that is the product of over fifty years of what we retain the habit of describing as "education."

When I am most depressed after such a tour I turn to a manuscript report in my possession on the sanitary conditions of Sheffield. This report refers to the condition of the town in 1846. I learn then what were the problems our fathers had to face.

This very ably written document gives in elaborate detail the condition of yards ankle-deep in putrefying ordure from privy-middens used by from fifteen to twenty families. In this the children played and the liquid material drained into the houses. There is one case of a privy serving nineteen families and the children attending a *school built over it*, a frequent arrangement in those days. Everywhere in the poorer parts of the town there were rotting piles of vegetable and other refuse, unremoved except by the natural processes of decay. One court is mentioned in which the whole of the inhabitants were suffering from "low fever." People were forced to live in these places

"because of the lowness of the rents.* In nearly every case we found on inquiry" (say the authors) "the people resolved to remove as soon as they were able. Too often, however, that time never arrives. From constant ill health and loss of labour their circumstances are seldom improved but become worse and worse, and if death take off the main branch of the family nothing remains for the survivors but the union workhouse."

That quotation is a very complete indictment of the principle of leaving the environment alone and dealing with individuals. The water supplied to the town is described as being of good quality, but

"the supply of water in many parts of the town is not kept up for more than two hours at a time, twice or three times a week, and this being distributed to the humbler classes by means of public stand pipes, many find great difficulty in procuring a sufficient quantity for ordinary domestic purposes, much less for scouring their houses and courts. Many persons are in the habit of storing the water in wooden tubs placed before their doors, when it soon becomes foul from the deposit of soot and other foreign matters so as to be unfit for use."

The well water is described as being freely polluted by putrid material from the conditions enumerated in the first part of the report.

Ventilation of the houses was "by apertures in doors and windows," and even these had to be kept closed owing to the abominable stench from outside. Ventilation of schools, workshops, and public buildings was quite simply ignored.

It is not surprising that in 1832 Sheffield was visited by an epidemic of cholera which caused over 400 deaths in six months, and that the normal death rate of the town at the time of this report was *over 25 per 1,000*.

Such were the conditions with which early public health legislation had to cope, and no one who is familiar with the Public Health Act can fail to be impressed with the comprehensive and radical ideas of the men who framed it.

In all the legislation of that period almost the only attempt to deal with the individual was the provision of isolation hospitals for infectious disease, and that was undertaken primarily not in the interest of the patient but for the protection of the community against the spread of the disease. Even vaccination, though necessarily applied to the individual, was, in the days before sanity was ousted by sentimentality, made compulsory for the whole population.

It is interesting, therefore, to glance at the results achieved by this tremendous attack on environment and to compare them with the results so far achieved by our modern method of treating the individual.

The history of the general death rate in England and Wales during the fifty-two years 1870 to 1921 shows that the highest figure was 23, in 1870. This is almost equalled in 1875, the date of the passing of the Public Health Act, and from that time on the decline has been continuous, so that in 1921 the rate is practically only one-half that of 1870—namely, 12 per 1,000, against 23 per 1,000. If it were possible to take the figures for the great towns only, this decline would be very much more marked. But populations in the great centres have altered so much during this period that accurate comparison is very difficult. Had the death rate remained during this half-century at the 1870 figure with the progressively increasing population, the number of years of human life which would have been lost is almost incalculable. It seems to me impossible to find any factor in bringing about the change which can compare in importance with the steady pressure of public health authorities in improving environment.

The history of the decline in the death rate from some of the more important infectious diseases from 1851 to 1920—a period of seventy years—shows that at all ages the death rate from the group of diseases known as "Fever" has declined from 980 to 25 per million. This group includes the exanthemata, and in the earlier decades relapsing fever and other forms of continued fever, which were not always diagnosed with accuracy. Many of these cases were probably typhus and typhoid. It is quite likely that the group includes cases which would now be classed as influenza, pneumonia, appendicitis, and other abdominal conditions not accurately understood in those days.

Small-pox, with a sudden rise in the late sixties, has declined from 250 per million to nothing; enteric from 375 in 1870 to 25, and typhus from 75 in 1870 to nothing.

In the age groups 0 to 15, the mortality from scarlet fever has declined from 2,700 in 1865 to 25 in 1919. This is without any corresponding declension in the attack rate: it is almost entirely a lessened fatality representing a change in the type of the epidemics. The only factors we know of to account for this are environmental improvements and isolation in hospital. It seems not unlikely that as the more severe cases would be more certainly diagnosed and isolated, it was the milder strains, the missed cases, that had the opportunity of propagating a milder type of the disease.

Diphtheria has declined from 1,400 in 1865 to 500. Here, of course, an important factor has been the introduction of antitoxin, essentially an example of treatment of the individual, but the high death rate from this cause remains an unsatisfactory feature of our statistics.

Measles, for which nothing has been done directly, has hardly declined at all. The comparatively low figure of 600 in 1919 has no guarantee of permanency, and measles remains the most deadly disease of infancy; all the more dangerous because it seems impossible to teach the public that it is not a trifling disease, although even in the sixties it was claiming nearly five times as many victims as small-pox.

These are records of great achievement, and it would, of course, be unfair to expect the curve of progress to maintain the same steep angle. It is also impossible to make a just comparison between recent developments, with a record of only a few years, and the comparatively long periods we have been discussing.

In the decline in infant mortality from 1870 to the present day what I may call the individualist school of public health has its greatest triumph. Investigation shows that all the sanitary work of the last thirty years of the nineteenth century did nothing at all to protect or prolong infant life; in fact, during this period it actually reached its maximum in 1899. This is not very surprising, for the child's environment is its mother or its nurse, and to this day hygiene and mother-craft are not considered "educational subjects." The management of infants remained a matter of tradition expounded by the handy woman and her colleague the lady next door.

Doctors who seldom saw a sick baby before they were qualified absorbed their clinical teaching from the same exalted source. Convinced that Nature did not know how to make a baby that would not come unstuck after it was born, they continued to compress ribs and abdomen with flannel binders, to deprive the child of Nature's colostrum, to dose it with indigestible starch in the form of barley water; when the child got indigestion accordingly they repeated the midwives' dictum that it was "sucking wind," and acquired a reputation for practical wisdom and being a "very clever doctor." Then of course the child had to swallow drugs of one sort or another, or wherewithal could the quarterly bill be furnished forth? Then when the child was weaned, prematurely or otherwise, the only available food was the emulsion of cow-dung and house-flies known as fresh milk.

Our child welfare centres have done an immense amount to change this state of affairs. To them and their staffs, and to the unremitting toil and devotion of armies of health visitors, must, I think, be given the main credit for the fact that the

infantile mortality of England and Wales in 1921 was almost precisely half what it was in 1899.

But mere saving of child life is not enough as an end, unless we make these lives worth living; and I do not believe that life in a slum on the margin of subsistence is worth living. I think most of us, if we had to be born again as a slum child, knowing what we know now of the prospect before us, would say "an enemy hath done this thing," and desire greatly to be put to death before the weary pilgrimage began. The very fact that we are causing so many infants to survive seems to me only to emphasize the duty of providing them with an environment in which they can be happy.

The story of the death rate from pulmonary and other forms of tuberculosis from 1859 to the present shows very clearly the seldom appreciated fact that tuberculosis was a steadily decreasing disease for at least a generation before the public became excited about it. I think it is probable that the apparent reduction in mortality is to some extent neutralized by increased accuracy in diagnosis. This, however, is a factor which cannot be demonstrated, but must be assumed, so that in all probability the progressive decline is even more marked than would at first appear. There was a temporary interruption of the decline during the years 1915 to 1918, but I do not think it would be fair to attribute this increase entirely to the introduction of sanatorium benefit. War conditions and pensions claims increased both incidence and notification, and a change in public opinion had removed the desire for concealment of the true cause of death. Phthisis, in fact, became much more remunerative as a cause of disablement than chronic bronchitis or emphysema. At the same time I have no doubt, having personally witnessed its effect, that the system of three months' treatment in a hospital or sanatorium of infective cases, by slightly prolonging the lives of the sufferers, increased their opportunity of disseminating the disease when returned to "domiciliary treatment," and that this tendency was not neutralized by any training or discipline which was inculcated in the hospital. The whole of our tuberculosis administration is in fact a classic example of the ill effects of neglecting environment in favour of dealing with the individual. Well-intentioned but untrained people awoke to the fact that very large numbers were dying of tuberculosis, and about the same time open-air treatment and sanatoriums were boomed as a method of cure. There was an outbreak of "national societies" through which influential members of society demanded the immediate provision of sanatoriums for all, and this to a great extent was done at an enormous cost in the days when there was "money to burn."

The thing must be done on a "national" scale; there was to be no waiting for the result of experiment on a smaller scale, and the still small voice of criticism and warning was ignored. But the warning voice was there. Many who had long experience of tuberculosis were sceptical, and as long ago as 1910, when the Insurance Bill was still under discussion, Messrs. Elderton and Paton had published the third series of their *Study of the Statistics of the Mortality of the Tuberculous and Sanatorium Treatment*, under the auspices of the Department of Applied Mathematics of London University. Their conclusions were as follows:

1. The mortality of tuberculous patients who are undergoing or have undergone treatment is much heavier than that of the general population, and even when the disease is taken in an incipient stage the mortality is about four times as heavy.

2. The mortality of the apparently cured cases is about twice as heavy as that of the general population.

3. The mortality among sanatorium patients does not show any improvement on that of Williams and Pollock's cases—that is, cases treated in pre-sanatorium days.

These conclusions are fully borne out by the more recent statistics of Dr. Bardswell and others, and I think it is now commonly held that the most hopeful function of the sanatorium is the isolation of infective cases. Yet we have been landed in the position of spending some millions a year on the treatment of tuberculosis, while there is no money available for the elimination of the insanitary areas where we cultivate more tuberculosis in a week than all the sanatoriums could house in a year.

This is largely due to the eleemosynary idea, admirable in itself, but cruel in its results. In my experience hard heads contain more real kindness than soft hearts. Improved sanitation has helped the natural tendency to the elimination of tuberculosis which statistics prove to be in operation. The only practical sanatorium for the people is a reasonably healthy environment in their own homes. It is on the people themselves that the cost of all this business eventually, if indirectly, falls, and by increasing poverty we are creating more disease than we relieve.

I must now refer briefly to that very important branch of modern public health work—the school medical service. Here again I speak from an experience of over ten years as a school medical officer, and I am satisfied that as a result of the work of the school medical service a very large number of individuals has been benefited. We have only to read through Sir George Newman's most valuable reports to realize the vast scale on which the work is now organized, a development of which some measure may be found in the fact that the cost of the service has increased from £325,735 in 1913 to £885,625 in 1920.

Even the latter figure would be by no means excessive if it were producing a harvest of health, if it were being spent in directions which could be relied on to produce successive crops of school children with a declining sickness rate, so that the cost of discovering and treating ailments would be a steadily diminishing amount. But among all the tables published in these annual reports I can find none that shows a comparison between the percentage of children found to be suffering from some form of defect in each of the years since school medical inspection has been in force. The materials for such a table must be available, but there is no reason to suppose that it would show any decline. The number of cases of disease treated in one generation of school children will not lessen the number of defects in the next.

The best test of the educational success of the school medical service is probably the promotion of personal cleanliness and the reduction of verminous conditions. In the ten years' retrospect included in his 1917 report Sir George Newman claims that ten years' work has "revolutionized this matter," and in support of this statement he is able to quote some very remarkable achievements in London, Torquay, and Carlisle. But the comparison is not given for the whole country. In the districts with which I have been familiar, while there has been some improvement it has been much less marked. And the improvement has been something imposed upon the parents by the authority, not emanating from themselves, and therefore not indicating an advance in civilization.

The diagnosis of vermin is still met by parents as an insult, and denied even in the face of the demonstration of lice actively parading the scalp. I was once assured that the child could only have obtained these companions from myself. It is scarcely surprising that we are still confronted by the parent who admits the presence of "nits" but assures us that there is "nothing living," since this extraordinary distinction is apparently official and is retained in the annual reports. What would we think of a sanitary inspector who reported "eggs" as being present on one farm and "eggs and hens" on another? Personally I should consider that his powers of observation did not justify his retention on my staff.

At the date of this report Sir George was evidently deeply impressed with the importance of environment. He says:

"Here is an unclean child to be cleansed by the authority, but it returns to a verminous home. Here is a child provided with spectacles, but it continues to be taught to read small type in a badly lighted classroom. Here is a scheme for providing school meals, but the arrangement bears no relation to the food supply of the home of the child or the social condition in which the child lives."

Again he says:

"It is well to cure ringworm, remove adenoids, and correct defective vision; but it is still more important by unity of effort and co-ordination of agency to secure the essentials of health for the whole body of the six million children in the State schools."

Yet in 1920 he tells us, "The school medical service finds its fulfilment only in the service it can render to the individual child."

It is only a few months ago that I had to protest in vain against the continued use of a school where the only playground for boys was an underground space between the foundations of the building. On a bright summer day there was only the light available from some narrow dirt-encrusted windows on the level of the adjoining footpath, and into this space both urinals and water-closets ventilated direct. I was told that it was impossible to close the school because there was no other accommodation for the children, and as to making improvements—it

was a "non-provided" or denominational school, and the managers had no funds. That, of course, is typical of hundreds of schools all over the country. If the millions that have been spent on medical inspection and treatment had been spent on knocking these places down and building decent schools, schools comparable to the modern admirable "Council schools," we would then have had some right to start curing ailments as they arose. As it is we compel thousands of our children to spend a quarter of their childhood under conditions of sanitation which if permitted in a prison would set every sentimentalist in the country howling with indignation.

There is no reference in the annual reports of the chief medical officer to the sanitary conditions of existing schools, for the simple reason that no reference to this painful subject is made in the individual reports of the school medical officers; and I know why. I once published an accurate survey of the sanitary conditions of the schools in my area. I was young then and did not understand the mentality of our "educationists." But I never did it again, and would advise my colleagues to postpone any such report until they are on the eve of resigning their appointment. Perhaps the National Union of Teachers is strong enough to take the matter up in the interests of its own members as well as of their pupils. Personally I hold that the time has gone by when children should be forced into utterly insanitary surroundings in the interest either of sectarian religion or the process described as education, and to give "instruction in hygiene" under such circumstances is merely a cynical farce. It is the old story of deliberately creating disease and establishing costly methods of treating it. If the treatment is carried out by a State service it is "preventive," presumably if done by the general practitioners it does not deserve this label.

Time forbids anything but a passing reference to our latest and probably our least successful "stunt"—the campaign against venereal disease, on which we are now spending, I believe, a little short of a million a year, but it is difficult to obtain anything like accurate figures. Professor Robertson of Birmingham has rightly protested against the statement that 10 per cent. of the population were suffering from venereal disease. This estimate, solemnly adopted by a Royal Commission, was made when there were no data available for making any estimate at all, and it is obviously contrary to common experience. Practical preventive measures are objected to by those who regard the fear of disease as in some way a buttress of morality, so we spend our money on a method of treatment which we are now told is not effective unless the patient is kept under observation for at least two years. It therefore differs from the old-fashioned treatment by mercury and iodides only in being more troublesome, more costly, and more dangerous. These were the diseases for the cure of which patients were most willing to pay, but now the taxpayer must meet the bill in order to minimize a risk which very few incur except deliberately. Now that venereal disease has become a fashionable topic for drawing-room conversation, it is surely time that we pulled our head out of the sand, adopted compulsory notification, and made the subjects of disease pay for their treatment according to their means. Here again we preach a conventional morality to people for whom we have made marriage a practical impossibility by the promotion of poverty and the failure to provide economic housing.

My conclusion from all these considerations is that we have turned away from the ideals of the Public Health Act, from the improvement of environment which produced such incontestably good results, long before work in this direction was completed—when, in fact, it was little more than begun—and that we are depleting the funds required for this work by a costly and partial treatment of the end-results of the processes inaugurated by faulty environment; that we are bleeding the taxpayer and the ratepayer by expenditure that does not give an adequate return in improved health and prolonged life; that we are undermining responsibility by providing services at the public expense which should be paid for by the individual, and incidentally depriving the private practitioner of a large part of his legitimate opportunity of exercising his calling.

DISCUSSION.

Dr. MEREDITH SANDERSON (Sanitation Officer, Nyasaland) commented upon the fact that often the greatest public health benefits resulted from the use of some simple and inexpensive measure applied at an opportune time. As an illustration he described how he had dealt successfully with widespread ankylostomiasis in his district by the installation of pit latrines that were carefully supervised.

Dr. HAROLD KERR (M.O.H. Newcastle-upon-Tyne) admitted that Dr. Wynne's contribution contained much truth, but it was tinged with bile. Newspaper "stunts" were of some value in so far as they were indicative of public interest in health subjects. All medical officers of health suffered at times from the misdirected efforts of amateur enthusiasts, but the fault lay with the medical profession in passively maintaining a vested interest in established disease. An infusion of the principles of preventive medicine into the profession at large would counteract this tendency. He advocated well-organized propaganda—such as was found in the chief health departments in America—as a means of educating public opinion in the essentials of hygiene.

Dr. W. W. KING (Public Health Service, U.S.A.) deprecated the pessimistic view of public health. Imagination was necessary to see things from a future standpoint. Present-day public health work was open to the charge of being too individualistic, but then it was only in the swaddling-clothes stage. Improvement in environment was necessary to correct the disabilities it produced in infants, school children, and factory workers. The facts could only be obtained by a study of the individual. When the conditions were known the methods of prevention could easily be determined.

Dr. ELIZABETH BELL (Belfast) and Dr. ELLINGWORTH (Melbourne) also took part in the discussion, after which Dr. WYNNE replied to the effect that we should pay more attention to relative values in public health, and not strive after the perfection of particular branches to the exclusion of fundamental aims.

A CONSIDERATION OF METHODS OF SEWAGE DISPOSAL IN THE TROPICS,

WITH SPECIAL REFERENCE TO HELMINTH INFECTION.

BY

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[*Abstract.*]

DURING the recent expedition to British Guiana from the London School of Tropical Medicine the helminthological aspects of sewage disposal were investigated. The inhabited part of British Guiana is a primitive country, lying for the most part below sea-level and without any organized general sanitary system. In certain of the towns and villages the following methods of sewage disposal have been introduced: (1) pit latrines, (2) pail closets, (3) latrines erected on drainage trenches, and (4) septic tanks. Dr. Khalil described the different methods and discussed them from the point of view of helminth infection. He discovered that hookworm ova are not destroyed by these methods and subsequently continue their normal development. He arrived at the following conclusions:

Sewage disposal has been considered in England and Europe chiefly from the point of view of bacterial infection, particularly as regards the enteric group of organisms. The protozoal and helminthic infections propagated by faecal contamination have received no attention. In textbooks on sanitation and hygiene the entozoal parasites of man are dismissed in a few lines, mostly incorrect, and copied from one edition to the next without keeping pace with the rapid progress in tropical medicine. There is a tendency in England to dissociate sanitation and hygiene of warm climates from that of cold climates. With the facilities of communications now available this distinction is unjustifiable. Tropical diseases are being introduced into colder climates and vice versa. Moreover, this country contributes a high percentage of the medical men and sanitarians located throughout the tropics. They are apt to copy what is done or what they were taught in England, neglecting the new factors appearing in their new environments. It is not surprising that in British Guiana and elsewhere sanitarians have diligently made cultures to isolate *B. typhosus* and other organisms from drinking water and sewage effluent, and were totally unconscious of the presence of the comparatively gigantic ova of hookworm and other parasites. In tropical countries the

disasters brought about by hookworm disease often surpass those due to bacterial infections. Hookworm disease retards the development of children, handicaps their mental capacity, deteriorates the value of adult manual labour, predisposes the community to various diseases, and in addition claims a grave toll of mortality. It is not to be concluded that bacterial investigation of water and sewage is unimportant, but it is claimed that protozoal and entozoal infections must receive due attention as well.

Bacterial purification of sewage is apparently inefficient as regards Helminth ova. It is unjustifiable to turn the effluent from such installations into rivers or canals which are used for drinking purposes, as is the routine in England. It should be kept in mind that filtration is inefficient in excluding hookworm larvae, which are capable of passing through several layers of filter paper and can penetrate the human skin. Sewage farms ought not to be encouraged in the tropics as they act as veritable concentrated cultures of hookworm larvae. One cannot wholly condemn these methods of sewage disposal, because so far there is nothing better to replace them. It is only urged that their limitations must be kept in mind till further research and observations rectify their defects.

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SHOULD WE LONGER TOLERATE THE POLLUTION OF THE AIR?

BY

EX-BAILIE W. B. SMITH, O.B.E.,

Glasgow.

THERE are many reasons why we should not tolerate any longer the pollution of the atmosphere. The most important of them all is the one specially suitable for your consideration as medical men, and that is the effect on health and life of living in air polluted by smoke and noxious vapours.

Many people seem not to realize that we are constantly passing air through our bodies; breathing goes on so automatically that we forget that we pass through our lungs about 516 cubic feet of air, weighing 38¾ lb., per diem. We are conscious of taking solid food and liquid—probably about 6¼ lb. weight per diem—and we take great precautions against them being in the least degree impure or contaminated. We have the Food and Drugs Act in operation and our water supply is under strict supervision. We select for use only water that is pure enough to be safe; contaminated water is not allowed to get into the mains. But we have only one supply of air; we cannot get air from any other source, or even filter it; we must breathe what is around us wherever we happen to be, no matter what its impurity or condition.

Many theoretical opinions have been given about the effect of smoky air on health. I have heard it stated that it causes no injury to health; some have even asserted that it is a benefit, because a smoky atmosphere acts as a disinfectant. We know that sulphurous acid is a disinfectant, and would be quite good if it could be sprayed on where it is wanted; but these people forget that we have to inhale this disinfectant, and that its presence in the bronchial region and lungs is irritating and harmful, just as inhaling or swallowing any other disinfectant would be. An atmosphere of chlorine would be a more powerful disinfectant, but it would be still more harmful to inhale; in fact, we may say generally that the more powerful a disinfectant is, the more deadly it would be if taken into the body, either by the lungs or stomach.

But I prefer to take practice rather than theory, and to illustrate the effect on health I will take one of the worst examples I have experienced. This was a most extreme case, but the same thing goes on in a lesser degree every winter, in every town in Great Britain, but not in some other countries.

In Glasgow, during the winter of 1909, we had a series of exceptionally bad fogs: we have had nothing like them since, and I hope we never will. It is usually very difficult to get a true standard of comparison in such matters, but I claim that I have it here. The Registrar-General, in his returns, forms a group of the eight principal towns in Scotland; they are Glasgow, Edinburgh, Dundee, Aberdeen, Paisley, Leith, Greenock, and Perth. The population of Glasgow at that time was estimated by the Registrar-General at 872,021, and that of the other seven towns combined at 993,550. In all but one of these towns the conditions are practically alike: they are planned and built in the same style; they have about the same proportion of crowd and even slum areas; they have good water supplies, similar systems of sanitation, the same forms of control and inspection; the methods of heating and cooking are similar; and the general habits of their inhabitants are very much alike. Even the working conditions are comparable, as most of the industries in Glasgow are also carried on in one or more of the other seven towns. But their geographical positions make it improbable that they all should have quite the same conditions of atmosphere at the same time. A glance at the map will show this—three are on the west, two on the east, and three north-easterly; five are on the coast, and three are inland. A drift of air from the east will carry smoke over some while it carries it away from others; from the west it will pollute some and clear others. I have made no comparisons with rural or semi-rural areas, because many of their conditions vary from the large towns.

I remember reading what the late Dr. Russell, Medical Officer of Health for Glasgow, once said: "That during winter every city was in danger of a catastrophe if certain weather conditions occurred—a combination of keen frost, fog, and a still air for days together." Having experienced that condition, I got the Registrar-General's returns as soon as published and studied them; I compared them with the atmospheric condition in Glasgow as I had noted it day by day, checking it with the meteorological records, and I submit them for your consideration.

During the summer of 1909 in Glasgow we reached the lowest death rate recorded up till that time—about 11 per 1,000. It rose a little as the winter came on; for the five weeks ending October 30th the weekly average number of deaths from all causes was 223, equal to 13·4 per 1,000 per annum; and for the other seven towns the number was 233, equal to a rate of 12·2 per 1,000.

On October 30th and 31st we had a fog, and for that week, ending November 6th, the number of deaths was 304—equal to 18·2 per 1,000—while the rate for the other seven towns was only 12·7. The following week, ending November 13th, the Glasgow rate remained at 18 per 1,000, the other seven towns rising to 13·9.

From November 15th to 19th we had one of the worst fogs I remember, and for the week ending November 20th the number of deaths was 416—equal to 24·9 per 1,000—while for the other seven towns it was 15·3. For the following week, ending November 27th, Glasgow had 547 deaths—equal to 32·7 per 1,000—while the other seven towns were 16·7 per 1,000. During the week ending December 4th the Glasgow death rate dropped to 27·3 per 1,000, the rate for the other seven towns rising to 17·8; but during the following week, on December 6th, 7th, and 8th, Glasgow had another fog, and for this week, ending December 11th, the number of deaths in Glasgow rose to 529—equal to 31·7 per 1,000—while in the other seven towns it fell to 16·7. From then it began to decline in Glasgow, but increased in the other seven towns.

The next point was to see what class of diseases had caused this abnormal increase of deaths, and it was found that those affecting the respiratory organs, called bronchial diseases, including bronchitis, pneumonia, and pleurisy, were accountable for most of it. [The speaker showed a diagram which indicated that the increase of deaths was caused by the diseases of the organs principally liable to injury by impure air.] No doubt cold caused an increase in deaths from these causes, but that applied even more to the other seven towns, where the temperature was slightly lower than in Glasgow, but there was something more than cold, and as every other condition was similar except the impurity of the atmosphere, I am convinced that was the cause.

After increasing the Glasgow death rate for November and December above the October rate in the same proportion as the other seven towns, there was still an excess over that increase of about 1,000 actual deaths, and those were mostly among the very young and the old; these excess deaths I attribute to the impure atmosphere that the population of Glasgow were compelled to breathe. This was an extreme example, but it indicates what occurs in a lesser degree in any district whenever

the air is polluted, and probably the death rate from bronchial diseases in excess of that due to cold and damp will be in almost direct ratio to the amount of impurity. I have said nothing about the effect on phthisis or other forms of tuberculosis; owing to the lingering nature of this disease weekly or even monthly returns would be unsuitable for comparison.

If that was the death rate, what must the case rate have been? Your experience will tell you for each death how many cases of illness there probably were that caused suffering and distress but did not end fatally. Then there is the injury caused by the absence of direct sunlight and the weakening of the actinic properties of light.

Why do we continue to tolerate such a condition of atmosphere that injures and kills so many? Partly because there being nothing conspicuous or dramatic about its effects we hardly realize the connexion between the cause and the effect. If a chimney stack occasionally fell down and killed a few people we would immediately get laws passed that none but steel chimneys should be erected, and that they should be so efficiently stayed that a fall would be impossible. Partly also because we do not realize our own individual responsibility. Most people say, "somebody should do something," but many of those who shout the loudest do nothing themselves.

From whence does most of this death-dealing smoke come? Very largely from the chimneys in our own houses, offices, warehouses, hotels, etc., wherever raw coal is burned in a kitchen range or open grate of the domestic type. Even in most manufacturing towns more smoke comes from the domestic chimneys than from the factories. In Glasgow in winter time as much as 70 to 80 per cent. of smoke is domestic, except when the wind is east and smoke from the Lanarkshire "black country" is blown over the city.

We have laws to prevent factory smoke, though by many local authorities they are not put into operation and never by the Ministry of Health; but we have no powers to take action against domestic smoke, and there you can help us. Your profession takes you into the houses of all classes of our people and you have their confidence, so that suggestions and advice from you carry more weight than from others.

Fortunately we have now methods of cooking and heating that are smokeless, more convenient, save labour, and are not more costly, sometimes even cheaper, than the old-fashioned cooking range and open grate. In the construction of all new buildings, whether factories, warehouses, offices, or dwellings, all smokeless methods cost less to install than the old smoky methods.

To change over from old conditions to new does entail some expense; new fittings and their installation have to be paid for; but even then the saving of labour and the curtailment of other expenses, with the increase of convenience and cleanliness, in time will repay the outlay. In most existing buildings one hesitates to recommend putting in an installation of central heating, as it entails considerable alteration and expense, although for new buildings it is an ideal system; but gas and electricity are easily installed without much trouble and at a fairly moderate cost, and with reasonable care economical in use. The greatest obstacles to change are apathy and prejudice. The apathetic generally regard attempts to improve anything as hopeless and they want to be let alone.

Against the use of gas there has been a strong prejudice in the minds of many—a prejudice now without reason. In the earliest forms of gas fires, and in their indiscriminate adoption, there were some grounds for complaint. In many instances, where a coal grate did not do well, owing to some defect in the chimney causing the smoke to come into the room, a gas fire was put in because there was no smoke from it, but as the products from combustion came into the room, the gas fire was blamed and not the chimney. Then gas fires were put into fireplaces where the area of the chimney was far too large. The flue from a coal fireplace was made much larger than was actually necessary to carry off the products of combustion, because room had to be left for a considerable amount of soot to deposit on the sides without quickly choking up the flue and curtailing too much its area, so that it would not require to be swept at too frequent intervals. Such a flue area is too large for a coal fire under normal conditions, and is one cause of down draught, especially when a fire is being kindled, owing to the weight of the column of cold air in the flue chilling and pressing back the small volume of warm air trying to rise. A proof of this is that nearly all cases of blowing down of smoke are caused by putting on the top of the chimney a galvanized iron "narrowing can" to curtail the draught.

When a gas fire is put in place of a coal grate, the top of the chimney should be narrowed to a diameter that will allow all the air in the room to be changed about four times an hour, which is quite sufficient for ventilation. A coal fire usually passes enough to change the air about ten times an hour, much more than is necessary, causing draughts and even lowering the temperature in some parts of a room, between the door or window and the fireplace.

To ascertain if there were any grounds for prejudice against gas fires, the Corporation of Glasgow, in 1908, instructed Mr. Harris, the corporation chemist, Mr. Fyfe, chief sanitary inspector, and Mr. Wilson, gas engineer, to investigate and report. Under their direction, in two houses similar in every respect, a long series of tests were made with a coal fire in one and a gas fire in the other, which proved that a gas fire was as healthy in the house as a coal fire; that it did not "dry the air," but that the humidity of the air in each room was practically the same; that fumes did not come into the room in one case more than in the other. That after lighting, the temperature rose much more quickly in the gas-fired room and remained constant and under complete control, while in the coal-fired room it fluctuated considerably and was not under control. They found that with a coal fire "at least 75 per cent. of the total heat generated by the combustion of coal in an ordinary fire is lost in the form of flue heat"—that is, at least 75 per cent. of the heat went up the chimney, only 25 per cent. being radiated into the room. With a good gas fire 26 per cent. of the heat generated went up the chimney, 74 per cent. going into the room. Since then improved forms of gas fires lose still less heat up the chimney and radiate more into the room. As to cost, they said:

"We are of opinion that, even when fires are required for continuous daily use, if gas is burned in properly constructed grates or stoves, and the cost of service for attending coal fires, and the extra work entailed in dusting, sweeping, and washing because of them, are added to the price of the fuel, the cost of heating by gas compares very favourably with the cost of heating by coal. When domestic cooking alone is the consideration, or when rooms require to be rapidly heated and kept at an even temperature for short periods, gas fires are not only more convenient, but will cost less than coal fires, even with gas at its present price."

As to the effect on the atmosphere Mr. Harris's analysis of the flue gases proved that over 5 per cent. of the coal used passed up the chimney into the air as solid impurities, consisting of:

Mineral matter	22·0 per cent.
Carbonaceous matter	41·1 ,,
Oily hydrocarbons	36·9 ,,

"These impurities are most objectionable, as besides being conducive to the formation of that abomination—black fog—they retard its dispersion, because on a reduction of atmospheric temperature they are condensed and precipitated with the accompanying moisture, forming an oily envelope surrounding the globules of condensed water, which prevents evaporation to a very considerable extent."

They concluded the report by saying:

"We feel assured that, after a careful study of the facts and figures herein presented, the citizens will readily acknowledge that the smoke-producing, wasteful domestic coal fire must be replaced by the more cleanly, evenly, and healthy gas fire before we can hope to obtain a purer atmosphere, or even begin in earnest with the work of air purification."

Then we have electricity, which now has become quite practicable for domestic purposes, and, used intelligently, is quite economical for cooking and heating. One of its advantages in a house is its adaptability. It can be used for cooking, warming rooms, doing the washing and ironing, running the vacuum cleaner, and driving the sewing machine. Electric radiators can be placed anywhere as no flues are required; it is not necessary to warm the whole of the room, the radiator can be placed just beside one so that anywhere in the room one may be "sitting at the fireside."

In many places, unfortunately, the charge for current is still too high. In Glasgow we find it pays the electricity department

to sell current to domestic consumers—who are paying 4½d. a unit for lighting—at the rate of 1d. a unit for all other purposes, because for these uses it is generally taken at hours of the day when we have plenty of current to spare; very little is wanted when the lighting load is on.

No one can know better than you the advantages of gas or electric heating in cases of illness—a constant source of heat, day and night if required, with the temperature under control; the patients not disturbed and the attention of the attendants not taken up by frequently putting on coal and removing ashes; no danger of causing a down draught by having the window open or closed as desired.

As there are so many advantages that smokeless methods in the house possess over the old dirty coal fires, possibly compulsory legislation may not be required—the change may come of itself without compulsion.

As regards industrial smoke, there is a constant change over to smokeless methods because they are more efficient and more economical. Now it does not pay a manufacturer to produce his own power, to have his own boiler, chimney, engine, and all the necessary shafting and belting to carry the power through the the factory, and the whole kept running when perhaps only a few of the machines are actually working. These can be dispensed with, and the room they occupy saved, the power being led through the factory by a pair of thin wires and applied by a small motor attached to each machine or tool, and current only used while that machine is in use. This also results in a great saving of coal: our electricity department can supply at the factory one horse-power for one hour with a consumption of less than 1½ lb. of coal; a boiler and engine in a factory would use three to four times this amount of coal per horse-power. But there is need for more stringent legislation and for more compulsion on local authorities to use the powers they already possess.

There are Acts of Parliament making it an offence to emit smoke from factories, etc., but they contain many defects and some of them are difficult to put into operation, and very many local authorities absolutely refuse to take any action to enforce them. So much has this been the case that it has been recommended in the Report of the Departmental Committee on Smoke and Noxious Vapours Abatement, that the Minister of Health should be given clearly defined powers to compel a local authority to take action against offenders, and failing their taking action the Minister of Health should take the necessary action.

It was clearly proved in the evidence given to that committee that nearly all industrial smoke was unnecessary and wasteful, and could be avoided. There are a very few processes in which the presence of a certain amount of smoke is necessary, such as rolling thin sheet steel, or where a reducing flame is necessary to prevent oxidation. In such cases, I recommended "that the Government should stimulate and if necessary subsidize research with a view to discovering an efficient method of catching or consuming the smoke before it passes into the atmosphere. When such a method is found, its adoption by manufacturers should be made compulsory, and local authorities should be empowered to make a contribution, if they desired, towards the cost of installation and its maintenance."

If it could be shown that in any process it would add to the cost of production to treat the smoke and prevent it getting out into the atmosphere, I am of opinion that the cost of so treating the smoke should be paid to the manufacturers out of the health rate of the area in which the works were situated. The chances of having to make any payment are remote, and could only occur in a very few cases throughout the whole country; and even then the amount would be small. With the exception of certain operations in steel workings, all the evidence has proved that methods that prevented smoke saved money to the manufacturers. To quote one instance of this: We were told by certain witnesses that in making and glazing certain kinds of pottery ware it was impossible to fire it without making a great amount of smoke; that gas was not suitable for firing such articles; yet, within a few hours of hearing that evidence, we saw the firing being done with gas quite successfully and with a considerable saving in the cost of fuel.

We in Glasgow spent a capital sum of about 2½ millions and a charge of £300,000 a year on our sewage purification scheme that we might have a clean river, and we spend annually in the health department about £750,000 to prevent illness by the spread of infection; therefore it seems to me reasonable that a community might pay a little to prevent illness and improve the amenity of their district by preventing any pollution of the air by smoke and noxious vapours, should such a contribution be necessary.

If other cities and towns care to continue to wallow in a filthy atmosphere, their improvement seems rather hopeless. We in Glasgow have decided that we will not do so; we are doing all we can to make our atmosphere clean, and we are going to insist that our near neighbours shall not be allowed to send pollution into the air that is carried from them over our city—air that we have to breathe and live in.

DISCUSSION.

Professor Leonard Hill initiated the discussion by stating that smoke abatement should be one of the fundamental objects of public health. From every point of view a smoke-laden atmosphere was detrimental. The presence of smoke indicated excessive waste of thermal energy. A comparison of thermal units used in the ultimate production of electric light from burning coal and those expended by a glow-worm showed how very far this country was from the economy of nature. Distillation of coal on a grand scale would save the valuable by-products and still produce sufficient thermal units for manufacturing and heating. Smoke caused fog, and fog caused delay, annoyance, and financial loss, as well as loss of health. It destroyed vegetation in the neighbourhood of towns where it was most needed; it shut off sunshine in the places where it was most necessary; its effect generally was depressing and lowering; it was unnecessary, and, most important of all, preventable.

Dr. T. M. Legge (Home Office), in undertaking a partial defence of the smoke bogy, protested against the lack of a sense of proportion in this indictment of the smoke nuisance. There was a "stunt" just now in favour of the gas fire against the open fire. The open fire meant a free current of air in the living room, and he could imagine nothing more unwholesome or disgusting than the smell of cooking from the gas stoves installed nowadays in almost every little tenement. Coal was essential to most metallurgical processes, and the pall of smoke which lay over manufacturing towns was a monument to man's industry and his triumph over matter. He was not in favour of substituting gas for coal in heating. Gas supplied for this purpose was highly dangerous on account of the carbon monoxide it contained, and deaths from gas poisoning were occurring with increased frequency. The smoke problem had gradually grown up with the progress of industry, and could not be instantly abolished.

Ex-Bailie Smith, in reply, said the speakers had left him little room for reply. He had studied this question for a long time, and was absolutely convinced that smoke did far more harm than was realized. He hoped everyone in his own district would do a little to "clear the air."

DISCUSSION ON THE TRAINING FOR THE D.P.H. AND THE NEW REGULATIONS.

OPENING PAPER

BY

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Prior to the passing of the rules which will in due course become operative, certain observations were submitted by me from which it will be seen that the broad general lines decided upon were in my view necessary.

I have had an experience, extending over a great many years, of the teaching of the subject of public health, and the course of instruction in Liverpool has been modified and moulded upon such lines as are calculated to meet the needs of the modern medical officer of health.

As a present or past examiner in the subject in various universities—namely, Liverpool, Manchester, Belfast, Cambridge, Edinburgh—and at the examination of the Royal College of Physicians of London and the Royal College of

Surgeons of England I have been impressed with the fact that, either from lack of opportunity or want of attention on the part of the candidate, he or she is frequently deficient on matters more or less essential, of which, given the opportunity and reasonable diligence, a full knowledge might have been acquired.

The existing regulations of the General Medical Council are themselves revisions and advances upon those first called into operation, and I am of opinion that, in so far as they relate to the two important subjects of chemistry and bacteriology as applied to public health administration, they do not call for change. These courses are short—namely, three months for each—and consequently they do not make a great demand upon the time of the candidate. I fully recognize that the medical officer of health has in almost every case the opportunity to consult with those upon whom the duty of chemical analysis and bacteriological examination falls, but notwithstanding that, it is in my view an incalculable benefit to the medical officer if he has acquired a sufficient knowledge of these subjects to enable him to appreciate the methods and results. It is quite likely, however, that some modifications in the examination may be thought desirable.

The modern medical officer of health is most concerned with practical administrative details, and with the methods of application of various Acts of Parliament and the numerous orders of the Ministry of Health and of the various Government departments designed with a view to improve the public health. It is with the daily application of these that the medical officer of health to-day is chiefly interested, and the curriculum should afford to every candidate opportunities, full and varied, to become practically familiar with them.

In my view, the time allocated—namely, six months—is sufficient for the purpose, notwithstanding that either chemistry or bacteriology may be taken during part of this period. The difficulty, however, consists in the lack of opportunity at some of the districts in which the student may be placed. At present the population basis alone is taken as a criterion of adequate teaching equipment, without regard to the fact that a population of 50,000 may be, and frequently is, so happily placed as to render active sanitary operations unnecessary, whilst other examples are not far to seek where a very partial sanitary equipment appears to meet local needs. The consequence is that many candidates are received for instruction in localities with very limited scope for training, and the conditions are widely different from those districts in which the maintenance of the public health presents constant and insistent demands. I would suggest, therefore, that, if a population basis is retained, it should only be on condition that adequate opportunities for training are available to the entire satisfaction of the Public Health Committee of the General Medical Council. Alternatively, the propriety of combining areas for teaching purposes with the mutual agreement of the authorities concerned might be considered. It is most desirable that all sanitary authorities, especially the larger ones, should give facilities to students to acquire practical knowledge. There has been one conspicuous instance where opportunities were withheld.

In deciding the districts in which the students may be allowed to train for their practical work it is worth considering whether the authorization to undertake the practical training of students for the Department of Public Health should be limited to whole-time medical officers of health. This would obviate the necessity for combining areas, but it would not wholly meet the difficulties experienced.

One further point deserves consideration. Many candidates who present themselves for examination have obviously been handicapped by reason of the fact that they were carrying on other onerous duties during their period of study. The General Medical Council might think it expedient to advise candidates to limit their extraneous duties, during their period of study, to kindred subjects, such as attendances at welfare, venereal diseases, or tuberculosis centres, or at fever hospitals, or to school medical inspection—always provided that these duties are not of so extensive a character as to make undue claims upon their time. Possibly some recommendation of a similar nature in regard to general practice might be advantageous. It is not suggested, however, that the candidate should be barred absolutely from undertaking any other duties, but a timely warning as to their limitation would be useful.

As an indication of the field over which the practical instruction ought to extend, a draft of the syllabus followed in Liverpool is appended. No doubt it represents fairly closely the course adopted in many of the large teaching centres.

The rules as finally approved will, I am sure, be highly beneficial. The extension to two years of the interval between the attainment of a registrable qualification and the admission to the examination for the diploma is very necessary, and the lengthening of the curriculum will ensure for the candidate reasonable time in which to obtain the necessary knowledge. It will be noted also that under Rule 6 many of the "schemes," though of comparatively recent introduction, are yet highly important and receive due emphasis, while the increase in the population limit is, I think, very wise.

The General Medical Council is to be congratulated upon taking this important step in improving the curriculum for the Diploma in Public Health.

CITY AND UNIVERSITY OF LIVERPOOL.

Department of Public Health.

Syllabus of Practical Course in Public Health Administration, etc.

I. Interviews with Ministry of Health as often as possible.—Forms and methods of official reports; correspondence.

II. *Housing and Town Planning.*—Housing and town-planning operations.—Lay-out, width of streets, houses per acre, etc.—Artisan and labourers' dwellings.—Cellar dwellings, courts, and alleys.—Unhealthy areas and insanitary property.—Rehousing schemes.—Transport.

III. *Planning and Inspection of Buildings.*—Building by-laws.—Building construction, materials, foundations, etc.—Better-class houses.—Public buildings, ventilation, etc., of.—Emigration houses, common lodging houses, and sublet houses.—Methods of examination of sanitary arrangements, smoke test, etc.—Ventilation, heating, lighting, water supply.

IV. *Water Supply, Sources, etc.*—Baths and wash-houses.

V. *Scavenging and Cleansing.*—Collection and disposal of refuse.—Destructor.—Electric power station.—Utilization of waste products.—Street washing.

VI. *Sewage Disposal.*—Sewers and drain construction.—Cesspools.—Sewage farms.

VII. *Disposal of Dead.*—Mortuaries, cemeteries, crematoria.

VIII. *Food Supplies.*—General Administration.—Methods of procedure under Public Health Act and orders relating thereto.—Sale of Food and Drugs Acts.—Sampling, etc.; margarine and butter blending factories.—General milk supply.—Cowsheds: registration, control, and regulation.—Abattoir and private slaughter-houses; meat inspection, evidences of unsoundness; wholesale markets.—Preparation of foods; for example, sausage factories, shops, and sale of meat retail.—Fruit and fish markets: construction, arrangement, and inspection.—Importation of foodstuffs; cold storage (see Port Sanitary Department).

IX. *Industry and Occupation.*—Bakehouses, factory and "underground."—Margarine works, biscuit factories, etc.—Workshops, administration of, etc., under Shop Hour Acts, Employment of Children Act, etc.—Offensive trades, knackers' yards (disposal of unsound meat and of diseased animals).—Stables.—Hide markets, gut scraping, etc.—Suppression of smoke nuisances (boilers, furnaces, steamers, etc.).

X. *Infectious Diseases.*—Hospitals, planning and administration.—Grafton Street and Fazakerley Hospitals (construction and administration).—Infectious diseases inquiries (sources of infection, contacts, library books, etc.).—House to house inspection.—Disinfection and cleansing of infected houses.—Disinfectors.—Small-pox, measles, whooping-cough, etc., special preventive measures.

XI. *Venereal Diseases.*—Clinics and hospitals.—Other centres.—Details of scheme as approved by the Ministry of Health.

XII. *Tuberculosis.*—Special preventive measures.—Colony.—Sanatoriums.—Institutes and dispensaries.—Scheme as approved by the Ministry of Health.—After-care.

XIII. *Infant and Maternal Welfare.*—Infant welfare centres, day nurseries and hostels.—Ante-natal centres.—Rest homes.—Administration of Midwives Act; stillbirths, ophthalmia wards.—Milk for infants: depots and distributing centres.—Welfare schemes, as approved by the Ministry of Health.

XIV. *Child Welfare.*—Schools, elementary and industrial: construction, accessory buildings.—Medical inspection of schools and of school children.—System of supervision and after-care school clinics (ringworm, minor ailments, eye, dental, etc.).

XV. *Port Sanitary Administration.*—General procedure in regard to infectious disease.—Special methods under plague, etc., orders of the Ministry of Health.—Boarding stations and quarantine grounds.—Aliens' Immigration Orders.—Sanitation of vessels;

crews' quarters; emigrants' quarters.—Disinfection of ships; deratization.—Supervision of dock areas.—Cargoes, and disposal of waste.—Importation and storage of foodstuffs.—Canal boats, registration and supervision.—Transport of live animals, cattle boats, trucks, lairages, etc.

XVI. *Executive Duties.*—Sanitary and special inspectors, and of health visitors and female inspectors.

XVII. *Health Enactments and their Application.*—Acts of Parliament and orders made thereunder affecting the public health.—Statutory notices.—Preparation and nature of evidence.—Attendances at law courts, at proceedings, and at inquiries.

XVIII. *Vital Statistics.*—Methods of compiling mortality statistics.—Estimation of population.—Calculation of birth and death rates.—Preparation of Government returns.—Records of infectious cases.—Hospital registers.

XIX. *Special Reports* by students on some of the foregoing.

XX. *Special Visits* to cases of plague, small-pox, or tropical diseases when opportunities arise.

DISCUSSION.

Dr. T. M Legge referred chiefly to Rule 6, and questioned whether the full-time medical officer of health was the best person to give instruction to the pupil, for he was divorced from the general practice of medicine and fulfilled so many other offices that there was danger of his being jack of all trades and master of none.

Dr. Harold Kerr (M.O.H. Newcastle) expressed his admiration for the excellent and thorough training given at the Scottish universities, but he wondered how it was carried through and how candidates could be induced to take it up. In his experience about half the entrants, after paying the fees and taking the course, did not sit for the examination. The ordeal was hardly worth while, for the public health service offered the poorest financial outlook and very little chance of professional distinction. The new regulations, in his opinion, were overloaded with preliminary technical work, valuable no doubt, but not essential to a medical officer of health. As to Dr. Legge's objection to the full-time medical officer of health as a teacher, he took that as a compliment to his voracity for work, for in the public health service there were no "soft jobs" either in the way of work, worry, or wealth.

Dr. R. J. Reece (Ministry of Health) said that the net effect of the new regulations was to add another year of technical training at school. His experience as an examiner convinced him that the great defect in the majority of candidates was the lack of practical knowledge. He was certain that the new rules would cut down the number of candidates, and very likely those who did take up public health would take it up as a hobby and not as an occupation. As to the remarks of the previous speakers, he reminded them that industrial hygiene did not begin and end in a factory: the whole circumstances of family life must be taken into consideration.

Professor Carstairs Douglas (Glasgow) agreed that a revision of the regulations for the diploma in public health was necessary, and on the whole he was satisfied with it. As a teacher and examiner he felt that though the successful candidates deserved their diplomas, they had very little real knowledge of what public health work meant. In spite of adverse criticism he thought it was right to make an interval of two years between obtaining a registrable qualification in medicine and entering for the final D.P.H examination. A year or two spent partly in hospital and partly in general practice was an excellent preparation for public health study. As to the training in chemistry, he thought this might with advantage be confined to a sound grounding in the analyses of water, sewage, milk, butter, and similar processes which the medical officer of health might be called upon at any time to perform.

Dr. Picken (M.O.H. Cardiff) maintained that public health students should devote the whole of their time to the work, otherwise they could not acquire a thorough knowledge. There was real difficulty in giving practical instruction in administration, for even the whole-time assistant was usually employed in a special branch, and was no better off in this respect than the man engaged in work outside the department. It was, nevertheless, almost absurd to ask men to give up more remunerative branches of the profession and devote their whole time to study so long as the attractions of the public health service were so small.

Lieut.-Colonel Fremantle, M.P. (Consulting C.M.O. Herts), protested that the D.P.H. course should be on broader, more academic, and truly scientific lines. First, applied physiology should be the basis, not chemistry or bacteriology, which were only useful accessories. Secondly, rural conditions should be considered the basis of healthy living, and everyone should work toward the decentralization of industry. Thirdly, the conception of health and disease in this temperate climate and in this congested country were cramped as compared with tropical and oriental life. Tropical conditions and experience played a large part in the general practice of public health. Fourthly, industrial hygiene must be taught by those experienced in it, but it was absurd for a Ministry of Health and for local health authorities and their officers to be excluded from that most important factor in public health.

Dr. A. K. Chalmers (M.O.H. Glasgow), President of the Section, in closing the discussion, pleaded for a wide view of public health. It was not the six or eight hours a day spent in a factory that comprised the whole of a man's health circumstances; that was one aspect only, and it gave an imperfect view. He wished particularly to refer to Rule 6, which he considered awkwardly worded. If strictly interpreted, it would be impossible of application, but he understood that the certifying medical officer of health merely had to satisfy himself that adequate instruction had been given, though not by himself personally.

DISCUSSION ON ADMINISTRATIVE REQUIREMENTS OF THE VARIOUS TYPES OF TUBERCULOSIS.

OPENING PAPER

BY

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Tuberculosis schemes aim at providing treatment of one kind or another for patients suffering from tuberculosis in its various forms, and are elastic enough to permit of a measure of what is called preventive treatment. The different types of case and the various stages of the disease have their several requirements, administratively described, in the terminology introduced with the National Insurance Act, as sanatorium, hospital, dispensary, or domiciliary treatment. At present these form the main component elements of tuberculosis schemes, the part played by each varying according to local conditions, and the conceptions of those responsible for administering individual policies. Schemes may be said to be complete when every eligible patient is able to obtain appropriate treatment with reasonable promptitude. Judged by this standard few schemes are adequate, and are in general mostly lacking in provision for the advanced consumptive, and for non-pulmonary forms of the disease.

This discussion is concerned, however, not so much with the rôle played by these services as with the various types of patient met with, and the manner in which official schemes, in operation or conceived, may be said to fulfil their requirements. For convenience, we may consider (1) what patients require administrative treatment; (2) the nature of this treatment (including isolation); (3) various accessories to treatment—for example, industrial employment, etc.

1. At the outset we are met by a fairly large class who require diagnosis. Precision in administration depends to a large extent on accurate as well as early recognition of the true nature of the patient's illness. It is necessary to say, though it may seem an obvious and trite remark, that, before qualifying for treatment, a patient should be suffering from tuberculosis. There is no doubt that many errors in diagnosis are made, partly because discrimination between tuberculosis of the lung and other affections which simulate it is often a matter of considerable difficulty, but partly also because of bias towards his particular specialty by the tuberculosis physician. The function of a tuberculosis dispensary should be as much to prevent erroneous diagnosis as to secure the early recognition of tuberculosis. A good many patients are treated as tuberculous owing to misreading of the symptoms manifested and of the physical signs detected. The medical

officer responsible for routine diagnosis should therefore be a competent physician and should have at his command adequate facilities for differential diagnosis, among which *x* rays have a very important place. Radiographs are extremely valuable, if studied in conjunction with the clinical evidence, and have an educative value in checking over-refinements in diagnosis, unless, of course, they are subjected to bizarre interpretations. In most doubtful or suspected cases observation at the dispensary will usually suffice, although there is a considerable group which require observation in a hospital ward before the true nature of the case is disclosed. Stress is laid upon this aspect of administration because recent experience has shown the importance of placing diagnosis and facilities for it in the forefront of a tuberculosis scheme. In a great industrial city like Glasgow there is a very large amount of chronic respiratory affection both in children and adults, sequels of successive waves of measles, whooping-cough, and bronchopneumonia, while the latter are particularly prone to chronic bronchitis and its complications. For another thing, one must bear in mind the grave consequences, material and mental, which often follow a diagnosis of tuberculosis. As an illustration of these remarks I may mention the following data from the experience of the past eighteen months at one of the tuberculosis dispensaries. Out of 109 cases sent for diagnosis to the dispensary by medical men in the neighbourhood, 20 were suffering from tuberculosis; the remaining 89 were variously diagnosed as follows—chronic bronchitis 63 cases, cardiac disease 9 cases, bronchiectasis 4 cases, the others being variously classified as pneumonia, no disability, silicosis, aneurysm, empyema, and gunshot wound of chest with fibrosis.

A brief reference may be made to another clinical group (where administration is rather helpless)—that is, those whose disease has made considerable progress before it is recognized. This class of case has not much lessened in number among the civilian population since tuberculosis schemes came into being. Unless the disease is introduced by a haemoptysis, or unless it is detected in a contact, the tendency is for the sporadic case to be recognized late rather than early, and by that time mischief to other members of the family has very often already been done.

Administration has also a duty, difficult to define, towards contacts in general. Apart from those who have definitely sickened, whether the infection which they may be presumed to have received will result in immunity or not there is no means of knowing. We can at least endeavour to maintain their general health in whatever way may seem best. In France, for instance, under what is known as the Grancher system, the children of consumptive parents are boarded out in the country. This procedure recognizes the fact that between reception of infection and sickening there may intervene a period of many years, the finally declared focus in the lung being the termination of a long process, the story of which is difficult to read. It was thought at one time that preventive treatment could be applied during this intervening period to certain selected clinical types with some degree of precision. Hence arose the effort to detect that very vague entity, the pretuberculous child, but it did not meet with much success. Short of the radical procedure of the Grancher scheme, the danger of massive infection may be reduced when the infective patient is taught to observe the rules of prevention, or, better still, when he is removed to an institution especially from a small overcrowded house.

2. We now come to the administrative requirements of the various types of the definite case. Institutional treatment here takes the form of the sanatorium or hospital. Generally speaking, the early case or case with good resistance goes to the former, and the advanced or hopeless case to the latter. Between these two types, however, there exist numerous clinical varieties of patient belonging to a vague generic group known as the "middle" or "ambulant chronic" type, composed of patients whose disease progresses slowly or fitfully, with intervening periods of quiescence, during which they are fit for moderately light tasks. This is a difficult group from an administrative point of view.

The various aspects of the declared case can best be discussed by reference to a concrete study of a definite section of a city population. Some time ago an analysis was made by Dr. J. A. Wilson and myself of the considerable group of ex-service men then in the city who were suffering from pulmonary tuberculosis, with special reference to their clinical condition and degree of disablement at the time. It is difficult to give an even approximate idea of the great variety of clinical types, but the following broad grouping may serve as a basis for discussion. There were in the city 785 ex-service men who had been notified as suffering from tuberculosis of the lung. Among these were 122 (15 per cent.) who could not be regarded as definite cases. Their disability was due partly to other lung affections, or to other than lung affections. The remaining 663 patients, accepted as definite cases, were in a variety of stages of the disease, as follows:

	Turban Classification:			
	I.	II.	III.	Totals.
Arrested	38	11	—	49
Quiescent	98	175	52	325
Active	36	133	120	289
Totals	172	319	172	663

The "arrested" group contains those who had been free from symptoms of toxaemia for over eighteen months, and the "active" group those who showed recent or present signs of activity. The "quiescent" or stationary group, composing one half of the total, is in the majority, while as regards extent of disease, a similar proportion falls into Stage II. An average adult male population would probably sort themselves out in much the same way, though there might be among them a higher proportion of advanced types. The chronic moderately advanced case is therefore the preponderating clinical type. A good many, probably the majority, of those in this group are fairly fit and able to do a fair day's work, their disability being proportional to the extent of the fibrotic change in the lung. Many of them have ceased to excrete bacilli in the sputum, or do so intermittently; they are constant attendants at the dispensaries in winter and infrequently during the summer months, when their symptoms become greatly alleviated or almost disappear.

But this is not the whole story as regards disablement. In a considerable proportion of cases the tuberculous affection of the lung is not the sole handicap. Where the major disease is active and advancing the presence of a complication may be a subsidiary element in the case, but it often happens that a mild and retrogressive tuberculous affection is overshadowed by the presence of a concurrent disability. This is particularly so where chronic bronchitis and tuberculosis coexist. In the above series of 663 cases the principal concurrent disabilities, excluding minor affections and including only those which gave rise to definite physical handicap, were: chronic bronchitis 104, other tuberculous lesions 11, other affections 15, heart disease and aneurysm 8, poor physique and deformity of chest 15, recurring pleurisy 8. Many with chronic bronchitis are quite markedly disabled; the tuberculous element is retrogressive; they appear to excrete bacilli often at odd intervals; if admitted freely to institutions they tend to silt up the accommodation; they are susceptible of scant improvement; and were it not for the fact that they are commonly homeless or indifferently housed, they would have little claim on administrative attention.

On the institutional side, tuberculosis schemes meet the requirements of these various groups by the provision of sanatoriums and hospitals either as separate or combined institutions. There is no doubt about the necessity for institutional provision for the advanced infectious case. The extent of this will, of course, vary with local conditions, and especially with housing conditions. Hospitalization of this type of case has always been one of the main objectives of the Glasgow scheme, principally because so large a proportion of the population live in small houses (13 per cent. in one apartment, 49 per cent. in two apartments, 21 per cent. in three apartments). Hospital, as apart from sanatorium, beds for tuberculosis of the lung in Glasgow have now reached the approximate number of 520 under the local authority, and 250 in Poor Law institutions by arrangement with the local authority. Apart from the public health value of this procedure, it is a much appreciated humanitarian policy. It will be observed that the large chronic ambulant group

described above receive such institutional treatment as they require in hospitals, and are often "in and out" several times during their long career. Whether this is the best way of meeting their requirements will be discussed presently.

3. Various schemes have more recently been proposed for amplifying administrative measures in the direction of training the consumptive in a suitable occupation, with which to re-enter employment, or actually providing him with a definite occupation suited to his physical capacity—this taking the form of the hygienic workshop or the village settlement.

We may now consider the various types of case to whom these proposals might apply. In regard to industrial training as an avenue to re-entry into employment, careful selection of candidates is essential. It will be convenient to discuss this with reference to the material comprising the group of 785 notified cases referred to above, taking them as an average sample of a male industrial population from whom candidates might be drawn. Of these, some 122 cases, not regarded as definitely suffering from tuberculosis, would first be discarded. Eliminating next those who are frankly disabled by advanced disease or reduced to low working capacity by other infirmities, a group of 230 patients would fall out of consideration. Apart from physical fitness, however, a man's suitability for training depends also on his character and temperament. For the purpose of training in a new occupation, in which a candidate has to make good in the future, a scheme should be such as to attract the best type of patient. From this point of view we were led to compile a group of some 191 cases who, from our knowledge of them, and apart from questions of physical fitness, would be unlikely to be suitable for a scheme requiring initiative and co-operation on the part of those participating in it. Some were quite frankly unsuitable, while others who seemed to have suffered loss or enfeeblement of the will power as a result of their disease would scarcely be fitting candidates, unless the psychological aspect of the disease was dealt with at the same time.

After eliminating these groups, there remain 242 patients, out of whom on careful scrutiny we might select 127 as representing the best possible types, both physically and temperamentally, composed of 18 "probably arrested" cases, 75 quiescent cases, and 34 with some activity still present. Looking at the members of this group more closely, it is necessary to consider the nature of their present occupation, the conditions under which it is carried on, and also the fitness of each to continue at his particular trade. All but twenty of these men were employed in skilled or semi-skilled occupations, many of which were not at all unhealthy. In the case of others, continuance at a particular trade would depend not so much on its nature as on the conditions under which it is carried on, so that the question becomes rather one of re-employment under more favourable conditions than one of training in a new occupation. In a few the trade itself was frankly unsuitable. All these considerations make the question of selection for retraining a somewhat complicated one. An important aspect of the question is the point of view of the men to be trained. The workman, in this part of the country at any rate, is shrewd enough to show concern as to his future prospects in the proposed new sphere of employment, and is averse to retraining without some assurance on this point. For these reasons training for the purpose of re-entry into employment would appear to be limited in its scope and might not attract the best types of workmen, unless associated with a scheme of "placing" the trainee later on. This is one of the points emphasized by Dr. Noel Bardswell in a recent report, in which he states that with the exception of twelve men settled at or by the institutions to which they had been sent for training, none of the 160 London men who had passed through training centres during 1918-21 were now employed at the occupation in which they received their training.

On the other hand, the village settlement would meet many of these points. It implies permanent employment under sheltered and hygienic circumstances, associated with housing conditions for the patient and his family beyond reproach. It would, further, by permitting adaptation of the character and amount of work to the physical fitness of the worker, allow of a fairly wide selection of candidates from among the various types of case, including many of the "chronic ambulant" group. Social suitability would then become the principal factor in selection. This scheme is subject to the broad criticism that, apart from the difficulties in administration and organization which would attend its adoption on a large scale, it would secure for the consumptive and his family every possible hygienic and economic advantage, quite beyond what could be attained by the majority of the population. On the financial side the initial cost would certainly be high. As regards running cost, the claim has been made—and it is possible that experience might show—that the combined expenditure now incurred in respect of invalidity due to tuberculosis in adult males suitable for such a scheme by the local authority, the Poor Law authority (in respect of the maintenance of dependants), and under the Insurance Act, might be little less than that of a measure of this kind, taking into account on the credit side the revenue which would accrue from the labour of the settlement. These points could only be tested by actual experiment. However admirable schemes of this kind would be for the individual, sufficient is not yet known about the natural history of tuberculosis to make it certain that, as a public health investment, they would justify their cost.

Reverting to the large ambulant chronic group described above, composed of me with more or less extensive disease, very often with other infirmities, and with a working capacity that varies with the season, we have seen that the only form of treatment provided is the hospital, which is commonly an annexe of a fever hospital where lack of interest and occupation tends to create a feeling of boredom and pessimism. If the problem of administration were simply the provision of employment, this could be accomplished by the hygienic workshop, whose scope and aims are well known. It is, however, impossible to deal administratively with this group without reference to their housing conditions, and the hygienic workshop would require to be associated with some simple residential accommodation for those who are indifferently housed. As a solution of the problem, this would be less expensive, though less ideal, than the creation of village settlements.

In the face of so many different aspects of the disease, with varying requirements, administration finds it difficult to choose definite lines of action. For an affection like tuberculosis, which is complex in its causes, there is no simple and straightforward policy. Administration tends to be cautious and to look for definite preventive and public health sanctions when confronted with new schemes of uncertain dimensions and cost, and to regard new policies in their widest possible application before allowing them to assume undue preponderance over other aspects of public health policy, among which improvement in the general health and in the conditions of life and work of the population generally take a prominent place.

In conclusion, reference may be made to the claim to treatment of the non-pulmonary forms of tuberculosis. Institutional facilities for this group are very inadequate, and the large number of advanced surgical affections met with will not diminish until there is sufficient and appropriate accommodation for treating them in their early stages.

DISCUSSION.

Dr. MARCUS PATERSON (Frimley Sanatorium) complimented Dr. Macgregor upon the clearness with which he had explained the present situation. There was one point upon which he (the speaker) claimed to have exceptional experience, and that was the hospitalization of the advanced case. The two difficulties which troubled him most were the local health authority, with their officers, and public opinion. Voluntary segregation was comparatively easy for the "good" patient, but the majority became impatient of the restraint of an institution. If, by way of reward for good behaviour, or of reconcilement to restraint, he allowed a patient to return home for a short time, the M.O.H. and his subordinates were up in arms against him for reinfecting the premises which they had so carefully disinfected. It was unfortunate that every patient in an institution had to be tectotal: if only public opinion would allow a wet canteen hospital administration would be an easy matter. Hygienic conditions and good food converted many of the very bad cases into freely ambulant cases. If these had had some special treatment—for instance, a new serum—the serum would get the credit, not the wholesome régime.

Professor CUMMINS (Cardiff) said that Dr. Macgregor, in calling attention to the large group of ambulant chronic cases, had put his finger upon the outstanding problem of all tuberculosis schemes. These cases were too advanced for sanatoriums and too well for constant residence in hospital. They were the most dangerous of all, for they invariably came from poor homes and were the source of repeated and formidable infection to younger members of the family. He attributed the high tuberculosis death rate amongst children under 4 years of age in large towns to the presence of these cases. He considered the village settlement the ideal scheme provided the necessary financial provision could be made and patients persuaded to go there. These were the objections raised by every member of the medical staff—all of them experienced tuberculosis officers—to the scheme which he had recently propounded to the Welsh National Memorial Association. Hope, he said, would entice the early case to the sanatorium, and despair would drive the late case to the hospital, but nothing short of compulsion would bring the chronic ambulant case into the chill efficiency of the village settlement. There were depressing facts to be discovered in all tuberculosis schemes, but there was no reason to lose heart. Both the public and the medical profession generally were beginning to take a more intelligent interest in the work. Earlier diagnosis, better accommodation for patients, better conditions of housing, pay, and food, contributed to bring some measure of success to the efforts to combat tuberculosis.

Dr. PREST (Ayrshire Sanatorium) pleaded for concentration on the early case. It was too late to wait for the discovery of tubercle bacilli in the sputum or *x*-ray demonstration of lesions in the lungs. Definite diagnosis should be made at an earlier stage by consideration of the symptoms of toxaemia. He himself placed great reliance on the rectal temperature, which was the only reliable way of taking the temperature. Unfortunately, as Dr. Macgregor had found out in Glasgow, it was extremely difficult to provide accommodation for early cases, on account of the large number of chronic ones.

Dr. CROCKETT (Bridge of Weir Sanatorium) agreed as to the importance of getting the cases early. Tuberculosis was very difficult to diagnose in its initial stages. There should be observation houses where doubtful cases could be thoroughly gone into and decided upon. Length of treatment was most important; two or three months was seldom of any service. Considerable liberty should be given to patients under treatment as an inducement to continue, but he did not believe in "week ends," as that tended to unsettle the patient.

Dr. HALLIDAY SUTHERLAND (Ministry of Pensions) repeated the dictum of Emile Sergent of Paris to the effect that no clinician, however experienced, could make a firm diagnosis of early tuberculosis by means of percussion and auscultation alone. *X* rays, which should be installed in all tuberculosis dispensaries, the subcutaneous tuberculin test, repeated examination of sputum, should all be employed, and he would add a fourth, the complement fixation test. Public health authorities should wait for the results of the gigantic experiment now being performed by the Ministry of Pensions. Through that body adequate treatment and financial assistance were being provided for all cases. If it failed nothing short of the abolition of slums and poverty would be likely to succeed.

Dr. T. M. LEGGE (Home Office) suggested a wider extension of medical supervision in the factories and workshops to detect the early cases and to keep them under supervision with regard to the physical condition of the workman, the nature of his work and the conditions under which he worked. At present, under the National Health Insurance Act, the workers streamed to the panel doctors when they became ill, but there was no return stream from the doctors into the factory to detect and remedy the illness which must ultimately fall upon the Insurance Fund.

Dr. W. H. DICKINSON (Tuberculosis Officer, Newcastle-upon-Tyne) also insisted upon early diagnosis being placed in the foreiront, which meant adequate staffs and proper facilities, especially *x* rays. The administration of domiciliary treatment required improvement. Over 80 per cent. of the treatment under sanatorium benefit was given in the home. Examination of contacts should be made an essential part of every scheme, and he suggested the granting of assistance being made conditional upon the performance of this part of the work, especially in cases where there was a death from tuberculosis in the home.

Dr. C. W. CUNNINGTON (Hampstead) said he, as a general practitioner, spoke with some diffidence amongst so many experts, but he was impressed with the importance of the food factor. As the price of food went up so the tuberculosis death rate rose after it, and declined similarly. In his humble opinion the checking of tuberculosis had more to do with good feeding than all the administrative action that had been taken.

Dr. A. K. CHALMERS (M.O.H. Glasgow), President of the Section, said he also was impressed by the influence of improved food supply. It was much more important than the factor of heredity, for only one in three cases had a hereditary history. He also called attention to the anomaly of providing a pension for the tuberculous soldier, but none for the similarly afflicted civilian. Humane sentiment was against sending a person into an institution to die; that was the difficulty in dealing with the advanced case. The general impression he had obtained from the discussion was that they had now, in the matter of treatment, come to a fork in the road.

Dr. MACGREGOR, in reply, said that the majority of the speakers had simply stroked the "t's" and dotted the "i's" of the present-day schemes. Nobody could say what the next step ought to be. He agreed with Dr. Halliday Sutherland that we should wait and see what results came from the Ministry of Pensions' efforts, but he was quite convinced that segregation of the advanced cases was essential.

SECTION OF INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

JOHN GLAISTER, M.D., F.R.F.P.S.Glasg., D.P.H.Camb., F.R.S.E., President.

THE IMPORTANCE OF TEACHING MEDICAL JURISPRUDENCE TO STUDENTS OF MEDICINE AND LAW.

BY

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MEDICAL jurisprudence has been defined as the application of medical knowledge to the purposes of law. It is a compulsory subject of the medical curriculum, but the scope of the teaching and the extent of the examination vary considerably. With some examining bodies the questions on medical jurisprudence form only part of a paper which is devoted to the combined subjects of medical jurisprudence and public health. In other cases separate papers are set for each subject. Entrance to the legal profession is possible without a knowledge of forensic medicine. The subject is not compulsory for those seeking to become solicitors or reading for the English Bar, but it is a compulsory subject of examination before admission to the Faculty of Advocates in Scotland.

While medicine, surgery, midwifery, and the other subjects of medical study all lend their aid to the medical jurist, scarcely any of the standard textbooks refer to points of medico-legal interest, and the practitioner who has given no consideration to medico-legal problems will find his position as a witness far from satisfactory. The physician and surgeon are concerned with the healing of the sick, but the medical jurist must view disease, accident, and death from a different standpoint and be prepared to assist the law in arriving at a just decision. The questions which have to be answered in the witness-box are often such as have received no attention during clinical practice, and no practising member of the medical profession is exempt from being called as a witness in any of the numerous cases, civil and criminal, in which medical evidence is indispensable.

To the lawyer engaged on a case involving medical questions the advantage of a knowledge of medical jurisprudence is obvious,

as he can hardly be expected to understand medical science by intuition. Much useless controversy would be avoided if the lawyer and the doctor had each some knowledge of the subject and function of the other.

It is interesting to note that discussion of medico-legal questions is not common in the various professional societies. The Medico-Legal Society, which holds its meetings in London, is the only one which devotes itself entirely to such topics. Scotland, with its different laws and legal procedure, has no such society.

The importance to the medical practitioner of a knowledge of the statutes which affect him in the practice of his profession is too evident to require discussion. Questions of registration, professional privilege, and professional secrecy, the functions of the General Medical Council, the obligations imposed regarding death certification, and similar matters are essential subjects in any course of medical jurisprudence.

Clear thinking is essential for both lawyer and doctor, and is impossible on medico-legal subjects unless these have been studied and their legal and medical aspects understood. While the doctor should understand the precision that is required by law, it is equally important that the lawyer should appreciate the limitations of medical evidence. Failure to recognize these principles is one of the reasons why medical evidence is sometimes regarded as unsatisfactory.

It is often extremely important to fix the time at which a person died and thereby associate an accused person with the commission of a murder. To do this with accuracy is beyond the power of science, yet how often does one find the medical witness pressed to state that death must have taken place at least a given number of hours before the time of his examination. Suppose he says twenty-four hours: a well-informed cross-examiner would certainly want to know what difference there would have been in the signs if the person had only been dead for twenty-two hours. It is, however, within the ability of the medical examiner to state that the signs found on a body are under the circumstances consistent with death having taken place within a specified period. That is all the help medical science can afford and the only opinion the court has a right to expect.

It is not uncommon for counsel, particularly defending counsel, to ask a general question and to utilize a favourable answer in his pleading. The results obtained from an average can never be applied to a particular case, and this line of examination defeats the object of medical evidence, which is to place before the court, regarding a technical matter, the truth, the whole truth, and nothing but the truth.

Sexual offences afford excellent examples of the need for minute observation, accuracy in describing the conditions found, and clear thinking in arriving at conclusions. In such cases the punishment meted out to the guilty can scarcely be too severe, but from the nature of the case the jury are often biased against the prisoner, and loose medical evidence may help to cause a miscarriage of justice. During the course of a trial for rape a medical witness stated that the hymen had been ruptured and that complete connexion had taken place. Neither the examination-in-chief nor the cross-examination elicited any information regarding the presence of a fresh tear; nor was the question of blood about the parts discussed, and this in spite of the fact that the girl was aged about 10 and her alleged assailant of adult age. In another case the witness thought the girl had been tampered with because the entrance to the vagina was somewhat lax. Truly a laxness of description hard to beat. In charges of rape undue importance is often given to the presence of seminal stains on the clothing of the accused. The possibility of their having been produced during legitimate sexual intercourse should always be placed clearly before the jury. In cases of alleged indecent assault on young girls marks of violence are, in the experience of the writer, only occasionally found. This can be accounted for by the nature of the interference, and the absence of positive medical evidence does not mean that the child has not been subjected to indecent practices. Clinical evidence of venereal disease should always be confirmed by bacteriological tests. In these cases consideration should also be given to the factor of time—namely, the period which has elapsed between the alleged assault and the onset of symptoms. The presence of similar disease in the accused does not prove that he communicated it but merely that he was capable of doing so.

Cases involving compensation for injury bring doctor and lawyer into contact more frequently than any other type of case, and it is here, even more than in criminal work, that the lawyer tends to regard the medical expert of the opposite side as a hired partisan. Too much has probably been made of the differences of opinion of medical men in these cases. It must be granted that doctors may honestly differ, also that even well-informed doctors may make mistakes; lawyers do both. Fashion at present tends to regard all claimants for damages as malingerers, or at least guilty of exaggerating their symptoms, and accuses the medical witnesses, particularly the much maligned general practitioner, of bolstering up a questionable case. It is doubtful if the evidence for the insurance company can justly be claimed to be less partisan than that for the claimant. Such accusations of bias are difficult to substantiate, and are probably no better founded than the popular belief that insurance companies are always eager to make a settlement favourable to themselves but unjust to the injured. The reports presented by the different medical witnesses are often substantially the same and the alleged difference of opinion only becomes acute on cross-examination, as the lawyers emphasize the points favourable to their respective clients. The meaning of the phrase "fit for work" is a common stumbling-block. When the pursuer pleads that he is unfit for a particular occupation it is not unusual for the employer to bring forward as a witness a workman suffering from a similar disability and employed on the work in question—cynics would say *for* the work in question. Viewed scientifically this line of evidence does not carry conviction and is not infrequently an attempt to compare things which are unequal and therefore cannot be compared. Valuable evidence bearing on the average capacity for work would be got if the employers brought forward statistics showing, for each class of injury, the nature of the employment before and after the accident.

That the legal mind is often more impressed by the claim which a client has than by the nature of his injuries is well illustrated by the following case. A wooden shutter fell and struck a man while he was walking along a public street. I examined him in the police office within half an hour of the accident and found no signs of physical injury and no evidence of shock. He ceased work, and many months afterwards his case came up for trial in the Court of Session. The evidence of his own medical attendant was unfavourable to him, but a hospital physician who had seen him once testified that he was suffering from arterio-sclerosis which might have been aggravated by the accident. It was not disputed that the pursuer had been struck by the shutter, and a remark by the judge, that as liability had been admitted he could not understand why the case had been brought to trial instead of being settled out of court, apparently determined counsel for the defence not to call witnesses. It is clear that there was here no real medical proof of disability resulting from the accident. An interesting feature of the case is that I had been asked by the agent for the pursuer to give evidence for his client and had refused on the ground that I could say nothing which would be helpful to him. Our conversation ended by his remarking, "Well, he at least suffers from neurasthenia." The court awarded his neurasthenic client £200 and expenses.

Instead of allowing a man's disability to be determined by a forensic duel the assessment of injury and incapacity might, with advantage, be referred to a medical referee or board of referees having no connexion with either side, the court stating the questions to which answers were required. The provision of medical referees under the Workmen's Compensation Acts is an admission of the fact that the assessing of disability is a medical matter. It is not the fault of the medical profession that only a small proportion of cases are referred to these officials.

The criminal responsibility of the alleged insane has given rise to sharp conflict of opinion between law and medicine. The difference is due largely to failure to recognize the standpoint of the other side. A criminal act implies the existence of intention, will, and malice, and involves punishment. But if the accused is proved to have been insane at the time he committed the act he is either sent to an asylum or handed over to the care of his friends, depending on the nature of the offence. The difficulty lies in determining what constitutes insanity. According to the law of England "to establish a defence on the ground of insanity it must be clearly proved that at the time of committing the act the accused was labouring under such a defect of reason from disease of the mind as not to know the

nature and quality of the act he was doing, or, if he did know it, that he did not know that what he was doing was wrong." To the jury is left the task of deciding. This legal test of insanity arose out of the McNaughton case and is based on answers given by fourteen judges in 1843 to certain questions put to them by the House of Lords.

The idiot and the maniac may satisfy the legal test, but certainly not the majority of the certified insane. Medical men recognize that there is no infallible symptom or character which will distinguish the criminal of unsound mind from the sane criminal. It has been truly said that "the mad and the bad pass by insensible gradations the one into the other."

Not all judges have found the McNaughton decision acceptable. With regard to the man Ware, who murdered a fellow patient in an asylum, Mr. Justice Hawkins remarked:

"It would be impossible to say that Ware did not know that he had killed a man, because he said himself that he had, and it would be impossible for anyone to urge that he did not know it was wrong, for he wanted a promise that he should not be punished, but unless one put a totally different construction on the law that would have to be proved, although no man in his senses would suppose that any jury would find Ware responsible for what he had done."

The late Lord Chief Justice Cockburn expressed himself as follows:

"I have always been strongly of opinion that, as the pathology of insanity abundantly establishes, there are forms of mental disease in which, though the patient is quite aware he is about to do wrong, the will becomes overpowered by the force of irresistible impulse: the power of self-control, when destroyed or suspended by mental disease, becomes, I think, an essential element of responsibility."

In Scotland, as long ago as 1863, Lord Justice Clerk Inglis told the jury that if they were satisfied that a person charged with murder, as was the prisoner, was the victim of insane delusions at the time of commission they had no need to inquire whether he knew what was right from what was wrong or whether he knew what was murder in the eyes of the law, or what was a punishable act. The state of the law is clearly unsatisfactory. The jury are swayed by many considerations and no one can tell what their verdict may be in a particular case. There is always the danger that the merely vicious may escape punishment while the mentally unsound may be sent to imprisonment or even to the scaffold. Mere recriminations will not cause the difficulties to disappear, and it is the duty of the medical and legal professions to assist each other in reaching a satisfactory conclusion. The fact that the plea of insanity usually succeeds where epilepsy can be proved shows the appeal that is made to both legal and lay minds where something is brought forward which can be easily apprehended and appears to indicate that the interpretation of the term "insanity" will become more liberal as the nature of unsoundness of mind becomes better understood.

It is a presumption of law that a medical man can answer any question of a medical nature. A coroner may call on the nearest practitioner to make a *post-mortem* examination, though such practitioner may be far from familiar with pathological changes and may not even have been present at a *post-mortem* examination since his student days. Or a doctor may be required to give evidence regarding the only case of homicidal wounding he has met with during many years of practice. The opportunities available of becoming acquainted with the practical aspects of forensic medicine are therefore of considerable importance. Lectures must be largely relied upon but should be illustrated by photographs, lantern slides, microscopic preparations, museum specimens, and demonstrations of the methods of testing blood and seminal stains. Sometimes a small amount of practical toxicology is included, but it is doubtful if it is worth while teaching the analytical side of the subject, as the time available is not sufficient to make the teaching of practical value. The symptoms, treatment, and *post-mortem* appearances of the commoner poisons should be taught, and also the method of making a *post-mortem* examination in a case of suspected poisoning. It would be an advantage if some definite provision were made for clinical teaching in connexion with cases of poisoning. These cases when admitted to hospital may pass to any of the medical wards and thus the study of poisoning in the living is to a large extent lost as the students are scattered throughout the various clinics. Where a medical school is attached to a hospital it would be an advantage if all such cases were admitted to the same ward and if the lecturer on medical jurisprudence were given the privilege of demonstrating them to his class.

The chief clinical material of the medical jurist is the dead body, but the utilization of this for teaching purposes is beset with difficulties, and safeguards are necessary before a class of students can be introduced to a necropsy made for legal purposes. Nevertheless, all will agree that the student should be brought into contact with realities as much as possible. More frequent *post-mortem* examinations are greatly to be desired. Where there is any likelihood of a criminal charge being made a dissection of the body is always carried out, but this is not done in many cases of accident, suicide, and sudden death. The great majority of cases of poisoning in this country are accidental or suicidal, and if few *post-mortem* examinations are made, where do the authorities expect to find their experts when the occasional case of homicidal poisoning arises? There are many cases of sudden death where the probable cause is apparent after ordinary inquiry and where a necropsy is unnecessary. In those where there is doubt regarding the underlying pathological cause a *post-mortem* examination should always be made. Had one been made on Chapman's first victim antimony poisoning would probably have been discovered, and there would have been no subsequent victims. In cases of accident the apparent cause of death is not always the real cause, which can only be definitely discovered after dissection.

Unless a *post-mortem* examination has been made the verdict "Found drowned" is unjustified and consigns a body to the grave with the true cause of death undetermined. The excessive infantile mortality among illegitimate children as compared with those born in wedlock indicates the need for more thorough investigation. Owing to the difficulty of proving criminal neglect very few prosecutions would be likely to result, but the information of the true causes of death would be of the greatest value. With more frequent *post-mortem* examinations, cases of accident, suicide, and others not likely to involve criminal proceedings could be used for teaching purposes and medical evidence would be correspondingly improved.

The creation of a Central Institute of Medical Jurisprudence has sometimes been advocated. Such an institution would be useful in providing for the investigation of matters of special importance and for the training of a body of men specially skilled in the problems of legal medicine, but the necessity for teaching medical jurisprudence to students of medicine and law would still remain.

DISCUSSION.

Sir W. H. WILLCOX considered that the teaching of forensic medicine in the medical schools and universities at the present day required serious attention. The amount of time and thought which the medical student paid to forensic medicine was largely determined by the examination test which he must satisfy before qualification. There could be no question but that there had been a great deterioration in the requirements of the examining boards in the subject during the past fifteen or twenty years, and a corresponding diminution in the time and attention which the medical student devoted to it. For example, at the University of London there was formerly a separate paper on the subject of forensic medicine, a practical examination of two hours in the laboratory, and an oral examination. About fifteen years ago the examination was entirely altered and replaced by a joint paper in forensic medicine and public health, with a joint oral examination, the practical examination being abolished. Reduction in the scope of an examination inevitably led to deficient study of the subject of examination, and it was to be feared that in many of the qualifying examinations in medicine the test applied to the candidate's knowledge of forensic medicine had become more or less of a formality. The inevitable result had been that too often medical students had become qualified with a knowledge of forensic medicine quite inadequate for the practical application of the subject when called upon to give evidence in a case or assist in a medico-legal investigation. There were many indications that the legal profession was beginning to realize the increasing importance of the subject in the legal curriculum and to the practising lawyer. Dr. Spilsbury had recently given to the legal profession a course of lectures on forensic medicine of which high appreciation had been expressed at the discussion at the Medico-Legal Society. He considered it most important that the practice of forensic medicine should be centralized more than it had been. In England little centralization existed, but in Scotland medico-legal work was more centralized. Centralization would ensure the

pathological investigations being carried out by experts. It would lead to more accurate work, would promote and facilitate research and the more extensive publication of new observations. It could not be too strongly insisted upon that *post-mortem* examinations should wherever possible be made by pathological experts who were constantly engaged in the work.

Mr. J. Drummond Strathern (Procurator-Fiscal, County of Lanarkshire) took part in the discussion, on the invitation of the Section. He said that it was important that the medical practitioner should have a clear appreciation of what the law required of him in the ordinary walks of his professional vocation. The conditions found on the most casual or incidental examination might prove of very great consequence in determining a question which might subsequently arise. It was no doubt true that lawyers were inclined to expect too exact knowledge from medical witnesses, and it might be that lawyers failed to appreciate the limitations of medical science. On the other hand, it frequently happened that medical men were most unsatisfactory as witnesses, by reason of the fact that they did not appreciate the importance of a point, even when it depended for its statement on the result of their own observations. Two or more medical witnesses examining the same condition at or about the same time frequently differed materially on the facts; but in the realm of opinion based upon the same observed facts, opinions frequently differed widely, especially so when pressed under expert cross-examination. He accordingly thought that, in so far as medical jurisprudence was taught to medical students, there should be included in it some at least of the elementary principles of law, particularly those of evidence. Where a malingerer recovered compensation, in nine cases out of ten his case was supported by medical opinion which was apparently reliable, and if lawyers did err their blunder consisted merely in this, that they accepted the considered opinion of the wrong set of medical witnesses. Questions of insanity were questions of fact *plus* medical opinion. It could not be suggested that medical opinion on this matter had not varied from time to time, and in these days it was very difficult to obtain clear evidence on many cases of alleged insanity. Dr. Allison had suggested referring the assessing of disability to a medical referee or board of referees. That, in his (Mr. Strathern's) view, should not be encouraged, as it was inconsistent with the spirit of our law. There was great justification for the extension of the practice of having medical assessors when questions of that kind were under consideration. The fact that very few cases under the Workmen's Compensation Acts were referred to medical referees was the best evidence that such procedure did not command public confidence to the same degree as a court.

Dr. Godfrey Carter emphasized the importance of more consideration being given to the study of forensic medicine by all medical graduates. He advocated that in all large cities the posts of divisional surgeons to the police should be abolished and the duties placed in the hands of one man. This official would devote most of his time to that work, and the appointment should carry with it the lectureship in forensic medicine where that post existed. He urged that students should be given permission to witness *post-mortem* examinations made at the public mortuary in cases presenting a possible medico-legal aspect, unless secrecy was necessary, and that these students should afterwards attend the local courts to hear the evidence and particularly to study the giving of medical testimony.

Sir Thomas Oliver said he was glad to learn from Professor Carter that arrangements were now being made in Sheffield whereby cases coming under the head of medical jurisprudence were to be dealt with by the professor of that subject in the university. This had been the case in Scotland for many years, for between the Crown and the university professors of forensic medicine there had always been, in criminal matters, the closest connexion. Sir William Willcox had stated that his colleague, Dr. Spilsbury, had in London given lectures on some of the medical aspects of forensic medicine with great acceptance to lawyers. He himself would like to see similar sets of lectures on the legal aspect of forensic medicine to medical men. There was only one other point to which he would refer—namely, Dr. Allison's allusion in his remarks under the Workmen's Compensation Acts to men partially recovered, "fit for work." The question of "light work" was always a difficulty, for if men who were partially recovered were allowed to do light work the trade unions interfered and prevented these men doing light work and receiving money from compensation or other sources.

Dr. Allison, in reply, emphasized the fact that in cases under the Workmen's Compensation Acts he did not advise that the function of the court should be entirely abolished, but merely that the medical aspect of the case, the assessing of the degree of a man's disability, should be left to a medical referee or board of referees independent of both plaintiff and defendant. This mode of assessing disability was practised with regard to those who had served during the war, and appeared to meet with general acceptance. He also thought that the small number of cases referred to medical referees was not to be accounted for by any want of confidence in the fairness of these officials, but by the fact that both sides had to agree to the reference. Lawyers had frequently admitted that when the "other side" desired a reference to a medical referee they invariably opposed it because they knew that their opponents' case must be good, and they preferred to take their chance in open court.

DANGERS TO HEALTH ARISING FROM THE USE OF INDUSTRIAL PREPARATIONS OF ARSENIC.

By Sir W. H. Willcox, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P.,

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Industrial preparations of arsenic are largely used at the present time, and numerous instances of poisoning by them have been reported during the last few years. The types of poisoning to which they may give rise are accidental and criminal. Thus, either acute or subacute arsenical poisoning may occur, and this will be either of an accidental, suicidal, or homicidal type, or chronic arsenical poisoning may result, usually of an accidental type.

It cannot be doubted but that there has been a large increase in the number of cases of poisoning from industrial preparations of arsenic since 1908, and it appears certain that the ease with which very poisonous preparations of arsenic can be obtained for agricultural or horticultural purposes has been mainly responsible for this large increase.

The Poisons and Pharmacy Act of 1908 removed many of the restrictions with regard to the sale of arsenical preparations, and there can be no doubt but that, as a result of the increased facilities afforded by that Act for the sale of industrial preparations of arsenic, the public has been exposed to increased dangers from arsenical poisoning. It appears that the time has come when the mode of sale of these preparations should be carefully reconsidered with a view to the safeguarding of the public against risks of accidental or criminal poisoning. Reference will be made to this aspect of the subject later.

Industrial Preparations of Arsenic.

Arsenious oxide (As_4O_6), often called arsenious acid or white arsenic, is the most important compound of arsenic for industrial purposes, and forms the basis of most of the industrial preparations. It is a powerful poison, two grains being a possible fatal dose. It is a white, inodorous, almost tasteless powder, and so may be taken in food or drink without any suspicion arising from alteration in taste, smell, or colour. It has on various occasions been used in the preparation of food in mistake for baking powder, sugar, salt, cream of tartar, flour, and meal. It can be bought in any quantity from pharmacists, or from persons licensed to sell it. If sold in quantities of less than 10 lb. it must be coloured with at least one-sixteenth its weight of soot or one-thirty-second its weight of indigo. The evidence of recent notable trials shows that this rule is not always followed (Armstrong case). If sold in a single quantity of over 10 lb. it is not necessary for the arsenic to be coloured if its usefulness would thereby be impaired. The provisions of the Poisons Act must of course be complied with, and the sale duly recorded in the poisons register.

An easily available source of white arsenic which is often forgotten is the chemical laboratory. The poison can be obtained in any quantity from wholesale firms for laboratory purposes without any restriction as regards its sale. Every chemical laboratory possesses large quantities of white arsenic easily accessible to anyone visiting or working in it.

When arsenious oxide is used for industrial purposes it is frequently used in combination with an alkali such as caustic soda or sodium carbonate, when the very soluble sodium arsenite is produced.

Examples of its Industrial Preparations.

These include weed killers, which may be in the liquid or solid form. Liquid weed killers are strong solutions of sodium arsenite, and may contain from 14 to 40 per cent. of arsenious oxide. The solution is usually coloured by the addition of an an line dye such as fluorescine, though during the war it was sold uncoloured. There does not appear to be any legal requirement to colour the liquid preparations. Solid weed killers are on the market and are sold in tins as a fine powder, usually coloured and containing a high percentage of arsenic. There would appear to be a legal requirement to colour this preparation. An example of the solid weed killer is "Eureka weed killer," which was mentioned in the Greenwood case. A sample was found by Mr. J. Webster to contain 60 per cent. of arsenious acid, and to be coloured by phenolphthalein. The powder was very soluble in water, and formed a pinkish-red solution which was decolorized by acids.

Arsenical weed killers are most poisonous, and not only have often given rise to accidental acute poisoning, but there is reason to believe that they have been used for criminal purposes on many occasions. An example of several cases of accidental poisoning due to liquid weed killer occurred at Haslemere in April, 1920, when a sack of sugar absorbed a quantity of liquid weed killer from a leaky tin placed beside it during transit in a railway carriage. The consumption of the contaminated sugar gave rise to an outbreak of acute arsenical poisoning. About sixty cases occurred, but no deaths ensued. In the case of Rex *v.* Bingham (1911) three fatal cases of arsenical poisoning were the subject of inquiry, and these cases were undoubtedly due to poisoning by liquid weed killer. In May, 1921, an inquest was held on a woman named Hanktelow at Beckenham, where death was found to be due to acute arsenical poisoning. In this case the source of the arsenic appeared to be Eureka weed killer. In the recent Greenwood case (1920) and the Armstrong case (1921) both liquid and solid weed killers were the subject of careful investigation as regards the origin of the arsenic found in the bodies of the deceased persons.

Arsenical Wood Preservatives.

Preparations of this type are on the market and consist of solutions of sodium arsenite which are not coloured. In 1920 I investigated an interesting example of the possible dangers of arsenical poisoning from the use of these preparations. An immense wooden hut in which 2,000 girls were employed became infested with bugs, and in order to destroy them the interior of the hut was sprayed with a well-known wood preservative, and it was stated that the men who did the spraying suffered from "sores on the hands." The undiluted preparation was reported to contain 32.1 per cent. of arsenic. A month after the treatment of the interior of the hut a white incrustation was observed on the surface of the wood, and this led to suspicion and an examination of its nature. A portion of the white deposit was scraped off and was found on analysis to contain 61 per cent. of arsenious oxide. Dust from near the top of the roof of the hut contained 11.5 per cent. of arsenious oxide, and dust from a file rack contained 3.6 per cent. of arsenious oxide. The air of the hut at the level of the working tables contained an appreciable amount of arsenic (0.07 mg. per 100 cubic feet). It was obvious that there was great danger from arsenical poisoning to those working in the hut, and continued working under such conditions would be certain to be followed by an outbreak of arsenical poisoning. Prompt measures were taken for dealing with the arsenical deposit on the wood. Several washings of the whole interior with a warm solution of sodium carbonate followed by several washings with warm water were efficient in the removal of the sodium arsenite deposited on the surface of the wood. After this treatment it was found that the contamination of the air and dust of the hut with arsenic ceased, and it is interesting to record that not a single case of arsenical poisoning occurred amongst the occupants of the hut, and that their work did not have to be stopped while the cleansing processes were being carried out.

Careful statistics of illnesses which might have been due to chronic arsenical poisoning, such as gastritis, skin diseases, diarrhœa, neuritis, etc., were kept during the whole period, and medical examinations were carried out, but no instance of arsenical poisoning was discovered.

Arsenical Sheep Dips.

These are either solid or liquid preparations of a mixture of arsenious oxide and sodium carbonate or caustic soda; sometimes they contain sulphur in addition. The undiluted preparations contain a high percentage of arsenic, and numerous cases of accidental and criminal poisoning have occurred from them. The same risks apply as with weed killers. There is risk of chronic arsenical poisoning, such as arsenical skin rashes, to those who carry out the sheep-dipping process.

Fly Papers and Fly-killing Solutions.

Fly papers are prepared by soaking bibulous paper in a solution of sodium arsenite, to which is sometimes added infusion of quassia. Fly papers usually contain from 3 to 7 grains of arsenious oxide per sheet. In the Seddon case analyses were made of fly papers from five different manufacturers, and percentages varying from 3.8 to 6.6 grains per paper were found in the different samples.

Sodium arsenite in solution, mixed with sugar or treacle, is used for moistening canvas sheets or screens in order to kill flies. This method was found of great service to the sanitary departments in the war.

An instance of accidental poisoning from sodium arsenite came to my notice during the war. In 1916 a cask of sodium arsenite intended for purposes of fly destruction lost its label, and some of the material was added to drinking water in mistake for alum, the latter being necessary for the clarification of the turbid water, which was the only kind available for drinking purposes. The sodium arsenite had the effect of clarifying the water, but those who drank it suffered from symptoms of acute arsenical poisoning. Fortunately the symptoms were at once recognized and the supply of contaminated water stopped, so that no fatal case of poisoning occurred.

On September 16th, 1916, I saw a very severe case of arsenical neuritis in a soldier who had been on duty at the drinking water station, and on August 20th, 1916, had drunk freely of the contaminated water. This man had a rapid pulse (112) with some cyanosis. There was marked wasting of the muscles of the hands, feet, forearms, and legs. There was peeling of the skin of the hands and feet and some thickening of the skin of the palms and soles. The conjunctivæ were also injected. He had suffered from severe diarrhœa and vomiting on August 20th and 21st, 1916.

The case is of interest and is unusual since it shows the *rapid development* of severe arsenical neuritis and skin lesions following the taking of sodium arsenite in solution over a period of a few hours only.

Preparations of Arsenic.

Arsenical powders, pastes, and liquids for destroying animals and insects are extensively used. The active principle of these is arsenious oxide. Thus "arsenic rat paste" is a mixture of arsenious oxide, breadcrumbs, lampblack, and glycerin. Arsenical rat powders are made with a mixture of arsenious oxide and flour, to which is sometimes added strychnine and barium carbonate. Arsenical mouse powders contain white arsenic, oatmeal, or flour, to which sugar or powdered cheese is added. Sometimes these contain strychnine in addition to arsenic. "Liquid arsenical ant destroyer" is a mixture of arsenious oxide, sugar, glucose, and water; and "arsenical ant paste" is a mixture of arsenious oxide, sugar, glucose, and flour.

Arsenical soaps and pastes, the active constituent of which is arsenious oxide, are used by taxidermists in the preservation of skins. Solutions of arsenic at one time had a reputation as cosmetics, and in the Maybrick trial this use was alleged as an explanation of the possession of arsenic by the accused. Arsenical preparations are not at present used for external application to the skin.

Veterinary Uses.

Arsenious oxide has been used by grooms and horse dealers for internal administration to horses in the belief that it improves the appearance of the coat. It is scarcely necessary to add that the unskilled use of this powerful drug is frequently attended by disastrous results to the unfortunate animals.

Fruit Tree Sprays.

Arsenical preparations are most extensively used at the present time for spraying fruit trees in order to destroy harmful insects. Arsenious oxide and sodium arsenite are too destructive to the foliage of the trees to be of value. Insoluble preparations of arsenic, such as lead arsenate or calcium arsenite, are generally used, the liquid consisting of

a fine suspension in water of the active substance. The combination of arsenic and copper, as exists in the preparation known as "Paris green" or "Schweinfurth green," is of especial value for fruit-tree spraying, since it combines the insecticide properties of arsenic with the fungus-destroying properties of copper salts.

Perhaps the arsenical spraying liquid in most common use at the present time is lead arsenate. It is prepared by mixing a solution of lead acetate with a solution of sodium arsenate in the required proportions, and the fine suspension of the insoluble lead arsenate is used as a spray for fruit trees. The lead arsenate spray is applied by means of a spraying engine to the trees in the spring and early summer. A man using a spraying engine will be engaged in this occupation for several weeks, and in the process it is impossible for him to avoid the inhalation of the spray and to avoid its contact with his skin. Spraying is done before the leaves come out, and before the bloom comes, and also after the petals have fallen from the bloom. I have reason to believe that poisoning from lead arsenate fruit-tree sprays is fairly common in districts where this method of treatment is in use. Two interesting cases of poisoning from fruit-tree sprays have been under my care where severe illness, and in one case a fatal result, occurred.

Case I.

F. W., a man, aged 40, was first seen by me on November 6th, 1919. He had lived in a fruit-growing district in the East of England and had followed the occupation of market gardener for many years. He had used in the spring of every year a spray for his fruit trees containing lead arsenate. For the last seven years he had been troubled with an erythematous rash on the hands and face. In April, 1919, the skin eruption became worse and was accompanied by marked swelling of the face and eyelids. In 1913 he was operated on for appendicitis, but previously had enjoyed good health. On November 6th, 1919, I found a marked erythema of the dorsum and palms of the hands and some thickening of the nails and tenderness of the finger-tips, and erythema and swelling were present on the face and neck. The patient stated that this condition had been present since April, 1919. On the face and neck and ears some exfoliation was present and also patches of brown pigmentation.

My colleague, Dr. Graham Little, saw this patient with me in November, 1919, and showed the case at the Dermatological Section of the Royal Society of Medicine in that month. On November 6th the urine was of specific gravity 1014, albumin was present in considerable amount (1 10 on boiling), and epithelial and granular casts were found. On November 27th the urine was found by Mr. J. Webster to contain arsenic in amount 1 200 mg. per 100 c.cm., and the hair contained a considerable proportion of arsenic, 2·8 mg. per 100 grams.

On March 3rd, 1920, in spite of the utmost precautions to avoid any contact with arsenical sprays, the urine was found to contain traces of arsenic, 1 500 mg. in 100 c.cm. In the middle of March, 1920, the patient came to reside in London for a few weeks so as to be away from any possible absorption of arsenic. On March 29th the urine still contained 1 20 albumin on boiling, but was now free from arsenic. On April 6th there was considerable improvement in health; the urine was free from albumin, and contained no arsenic. The patient returned home in April, 1920, and soon became worse.

On July 20th he was admitted to St. Mary's Hospital under my care. At this time the skin eruption had become altered, there being marked swelling of the face, eyelids, and skin around the ears, with brown discoloration and desquamation. The axillae had also become involved, and the affected skin in this region and on the face and neck showed a commencing vesicular eruption with sero-purulent discharge. There was also a discharge from each ear, due to involvement of the skin of the external auditory meatus. The skin of the lower part of the back showed desquamation and brownish pigmentation. The hands on the dorsal and palmar surfaces were red and painful, and the skin showed desquamation. Dilatation of the heart was present, and the urine contained albumin. The patient only remained in hospital for four days, and returned home at his own request. His condition became gradually worse, and he died on September 22nd, 1920.

I have no doubt that the illness of this patient was due to chronic arsenical poisoning caused by absorption of lead arsenate from the spraying preparations with which he had been in contact for years. The temporary disappearance of albuminuria in April, 1920, when there had been freedom from possible absorption of arsenic for a few weeks, is characteristic of arsenical albuminuria. It is probable also that the marked pathological affection of the kidneys was partly contributed to by the lead present in the arsenical spray.

Case II.

A man, aged 44, a working fruit grower, who had used lead arsenate sprays for several years, was first seen by me on December 11th, 1919. He gave a history of epigastric pain and nausea since August, 1919. In October, 1919, attacks of running of saliva from the mouth occurred. These attacks occurred about once a week, and lasted from twelve to fifteen hours. During an attack the patient would discharge from 4 to 7 pints of salivary excretion. On December 11th, 1919, the urine was analysed by Mr. John Webster and found to contain a considerable trace of arsenic, 1·40 mg. in 100 c.cm.

On February 13th, 1920, a specimen of urine was again examined and found to contain 1·300 mg. of arsenic in 100 c.cm. The salivary excretion passed at this time contained no arsenic. On February 25th the urine still contained arsenic, in amount 1 600 mg. per 100 c.cm. On June 4th the urine was again examined and was found to contain a considerable amount of arsenic, 1·50 mg. per 100 c.cm. This patient had no albuminuria or skin rashes, and beyond the gastric symptoms and paroxysmal hyperptyalism showed no symptoms of chronic arsenical poisoning. I have no doubt that the paroxysmal attacks of hyperptyalism were due to chronic arsenical poisoning, but I do not know of any previously recorded cases.

Calcium arsenite is made by boiling a mixture of water, arsenious oxide, and quicklime together; the suspension of the calcium arsenite produced, when appropriately diluted has been found to be an efficient spraying liquid for fruit trees.

London purple is a coloured arsenical residue obtained in dyeworks; when mixed with lime and water it forms an effective spraying liquid which owes its efficiency to the calcium arsenite present. *Paris purple* is a similar preparation.

Scheele's green (copper arsenite) when mixed with water has been used for fruit-tree spraying. Since it is destructive to the foliage its use has been almost abandoned.

Paris green, also known as Schweinfurth green, emerald green, mitis green, or French green, is copper aceto-arsenite. It is prepared by mixing boiling solutions of arsenious oxide and copper acetate, when the Paris green is precipitated as a fine green powder which is practically insoluble in water. The suspension of this powder has been extensively used for fruit-tree spraying. Owing to its insolubility it is not destructive to foliage, and by virtue of the arsenic and copper present it has both insecticide and fungus-destroying properties.

Preparations Formerly Used.

Arsenical pigments such as Scheele's green, Paris green, and the sulphides of arsenic were at one time much used for colouring wall-papers, artificial flowers, etc. Owing to their poisonous properties these substances are fortunately rarely used for such properties at the present time.

Arsenic tri-sulphide was at one time used as a depilatory, but since certain non-poisonous mixtures are more efficacious its use for such purposes has been abandoned.

Metallic arsenic powder known as "cobalt" was at one time used for killing flies. Its virtues were due to the presence of the arsenious oxide produced by oxidation in the air, and the substance often gave rise to accidental or criminal poisoning. Its use has been abandoned in this country for many years.

Arsenious oxide and other arsenical compounds are used in many commercial manufacturing processes other than those mentioned, and in such uses they may give rise to arsenical poisoning in the workers. The consideration of these risks would be outside the scope of this paper.

Arseniuretted Hydrogen Poisoning.

The dangers to health from arseniuretted hydrogen poisoning have been very fully dealt with by our President, Professor Glaister, in his admirable work on the subject. Mention must also be made of the risk of poisoning by the mixture of arseniuretted hydrogen and phosphoretted hydrogen which results from the action of moisture on the preparation known as *ferro-silicon*, which is imported from Germany for the purpose of hardening steel. The very careful regulations made by the Home Office and Board of Trade regarding the precautions necessary for the transport of this substance have been most successful in removing risk of poisoning. (Vide H. Wilson Hake, *Lancet*, July 23rd, 1910.)

The Contamination in Transit of Foodstuffs with Arsenical and other Poisons.

In consequence of the occurrence of numerous cases of poisoning due to the contamination in transit of articles of food by poisonous substances such as liquid weed killer, liquid sheep dip, etc., the Ministry of Health, in April, 1919, recommended the railway companies to increase the stringency of regulations relating to the carriage of these dangerous substances. It was decided that in future these poisonous substances should only be accepted for transit when contained in iron cans or drums of between five and fifty gallons capacity, securely closed so as to prevent leakage, and on no account should they be allowed to be conveyed by rail in wooden casks. Previously to the war, regulations were in force by the railway companies which ensured the transit of poisonous

substances in separate wagons, but since the war, owing to the dearth of rolling stock, this has not been possible. On August 10th, 1920, notice was given in the *London Gazette* of a new regulation to supersede No. 14 of the regulations made under Section 2 of the Poisons Act, 1908. The new regulation was as follows:

"A poisonous substance shall not be sold except in an enclosed vessel or receptacle as received from the manufacturer, *which vessel or receptacle must be of sufficient strength to withstand rough usage, securely closed, and free from leakage*, distinctly labelled with the name of the substance and the word 'Poison,' and with the name and address of the seller, as provided by Section 17 of the Pharmacy Act, 1868, and also with a notice of the special purpose for which it has been prepared. For the purposes of this Regulation the person on whose behalf any sale is made shall be deemed to be the seller."

The Sale of Industrial Preparations of Arsenic.

By the Sale of Poisons Act, 1868, the sale of arsenical preparations used for industrial purposes was only permissible by qualified pharmacists. The Poisons and Pharmacy Act of 1908 removed many of the restrictions relating to the sale of these preparations, it being then thought that certain advantages might accrue to the public from the greater freedom for purchase, and it was not at that time realized that these advantages might be accompanied by serious and grave dangers. By Section 2 of this Act it was enacted that "poisonous substances to be used exclusively in agriculture or horticulture for the destruction of insects, fungi, or bacteria, or as sheep dips or weed killers, which are poisonous by reason of their containing arsenic, tobacco, or the alkaloids of tobacco," may be sold by persons postessing no pharmaceutical qualification, provided that they are duly licensed by a local authority, and regulations were framed which dealt with the sale of these substances under such conditions.

Fourteen years have elapsed since the passing of this Act, and the time has come when the effect of the provisions of Section 2 of the Act may be carefully considered in the light of a fairly long experience. As would be expected, no serious objection can be offered to the sale of tobacco preparations, since their smell and taste are sufficient safeguards against the risk of poisoning. In the case of arsenical preparations sold under Section 2 of the Act it must be conceded that very serious and grave dangers to the public have resulted. A large number of fatal cases of accidental and suicidal poisoning have resulted from the removal of some of the previous restrictions relating to the sale of arsenical preparations used in agriculture and horticulture, and there is reason to believe that in not a few instances these preparations have been used for criminal purposes.

Dangers to the Public.

It must be admitted that persons who have had no proper training in the uses and dangers of poisons cannot appreciate the dangers likely to occur from their use, nor can they understand the necessity for special care in the storage of such poisonous preparations. Such persons are not capable of deciding whether an arsenical preparation is likely to be used for a legitimate purpose by an intending purchaser, nor can they with the confidence of experience warn such a purchaser of the dangers from poisoning of the article which they are selling. They probably have much less knowledge on this subject than the person who is desirous of purchasing from them an arsenical preparation, and could therefore not be expected to utter any warning.

The foundation principle of the sale of poisons should be that the seller has had an adequate training, and has a sufficient knowledge of the dangerous properties of the article which he is selling—in other words, he should be a proper and competent person for such sale. This foundation principle is quite destroyed by the provisions of Section 2 of the 1908 Poisons Act.

It is a very dangerous principle to assume that poisons when packed and labelled such as "weed killers" or "sheep dips" can safely be sold and distributed like articles of ordinary merchandise. The dangers to the public from the sale of industrial preparations of arsenic have during the past fourteen years been proved to be so great that it appears to me that the time has come for the safeguarding of the public against the dangers of arsenical poisoning.

Suggested Safeguards.

The first safeguard is that the sale of arsenical preparations should be limited to properly qualified and competent persons—namely, to registered pharmacists—as sellers. A second and important safeguard would be that the sale of dangerous poisons, such as the industrial preparations of arsenic, should be limited to purchasers who obtain a licence for the possession of such dangerous articles. A tin or packet of weed killer or sheep dip is at least as dangerous a possession as a firearm, and the number of persons requiring such articles is not great. It would be little hardship to them and a very great safeguard to the public if persons requiring to use industrial preparations of arsenic were required to obtain a licence for the possession of these dangerous substances. It would be quite certain that were such an enactment made a law then very much greater care would be taken by those possessing poisonous preparations of arsenic, and the risks from arsenical poisoning would almost entirely disappear.

DISCUSSION.

Sir THOMAS OLIVER said that he was struck by the large amount of industrial arsenical poisoning which was taking place in this country. We were familiar with its frequency where arsenico-copper solutions were sprayed upon vines, and the skin eruptions on the hands of market gardeners as the result of handling soot, which we knew often contained arsenic. Sir William Willcox had drawn attention to paralysis in acute arsenical poisoning, which was rather unusual and served to remind him of a similar series of symptoms, but due to another cause, which occurred in a youth who fell while carrying a barrel of red lead. The barrel burst and he was enveloped in a cloud of red dust. Sir Thomas Oliver then alluded to the immunity to arsenic acquired by the Styrian peasantry. The Tyrolese peasantry commenced with small doses to improve their virility and found that this gave them greater respiratory powers in climbing the mountains.

The following resolution, proposed by Professor GLAISTER and seconded by Dr. RUXTON, was carried unanimously:

That the sale of arsenical preparations included under Section 2 of the 1908 Act should be limited (1) on the part of the seller to properly qualified and competent persons—namely, to registered pharmacists; and (2) on the part of the purchaser to those who had obtained a licence for the possession of such dangerous articles.

SOME FACTORS WHICH MAKE FOR EFFICIENCY AND FOR THE SOCIAL UPLIFTING OF INDUSTRY.

BY

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THE subject of "industrial efficiency" can hardly be discussed without its obverse "industrial inefficiency." There can be no industrial efficiency without healthy workpeople, and the conditions under which labour is carried on being hygienic. Men must be fit for their job, and those who are fit must be kept fit. Physical ability is the outcome of several circumstances co-operating towards a common end. There can be no dissociation of employment from home life and the manner in which leisure hours are spent. Public health has already achieved much in regard to the housing of the people, the provision of adequate supplies of drinking water and healthy surroundings, also by inspection of dairies. Public health has added to the longevity of the race; it has averted epidemic disease, diminished the death rate, and improved the chances of infantile life. Its advocates have acted upon the assumption that prevention is better than cure. What public health has accomplished industrial hygiene, its twin sister in the department of preventive medicine, is making an effort to attain. For the moment we are concerned with the individual and his employment. It is the function of industrial hygiene to see that work is carried on under the healthiest conditions possible, and that the dangers incidental to occupation are either removed or reduced to a minimum. Since work is service rendered to humanity as a whole its influence ought to be uplifting. To-day there are few trades which can be regarded as degrading, but it was not always thus—as, for example, in the early part of last century, when women, employed about coal mines, dragged like beasts of burden trucks of coal, and when men were engaged for long hours on end in the puddling of iron. I remember visiting a large ironworks in the north of Europe one evening close upon midnight. The darkness was only broken by the flare gleaming

from the numerous furnaces in which the iron was being smelted. In the lurid light thus emitted there could be seen, flitting about like demons, the workmen clad only in a tunic. There were two shifts of work—a day and a night shift, of twelve hours each. The fires were never extinguished, except when the furnaces required repairing. The men had no weekly day of rest—Sunday was the same as any other day. Only once a year, on Christmas Day, were the fires allowed to become low. The heat from the furnaces was intense, the work was hard, and as a consequence the men were old and obliged to give up work before they reached the age of 40. The company owned scores of miles of land, and when the men were no longer able to work the firm granted them gratis the use of a piece of land, part of which they could till and the other use for pasture. For a precipitated old age and corresponding physical infirmity the beneficence of the employers, considerate as it might be regarded, was after all but a poor recompense for the best years of life spent, but broken, in the service of the company, and with nothing therefore for the men to look forward to. Years of hard and unremitting toil had taken the soul out of these men and left them physical wrecks. I plead for the uplifting influence of work, and that through it the standard of mankind may be raised, also for the dignity of labour of which our Scottish poet Burns sang. Since his day methods of work have changed. The subdivision of labour and the introduction of machinery on an ever-growing scale have abolished craftsmanship, so that it is given to few men to see the finished article towards the production of which they have contributed. Work has thus been robbed of one of its incentives. However much it may be admired the artificers can take little artistic pride in an article in the completion of which machinery, and not the personality of the worker, has played the greater part. While the individuality of the worker has thus to some extent disappeared, it is for us to see that the monotony of factory labour is reduced to its lowest level. There are certain occupations which instead of infusing the worker with enthusiasm rather tend to depress and unduly fatigue him.

The fact that men and women are physically affected by the trade which they follow raises the question as to whether working men should be periodically medically examined. There are three points of view at least from which this subject may be approached: (1) the attitude of the workman concerning his rights, to which he would probably subordinate all questions concerning his health and his industrial future; (2) the attitude of the employer; and (3) the general medical aspect of the question. I do not think that the working men themselves would accept medical examination on the lines which have hitherto been proposed. If this is the case, then it would be difficult to make an examination compulsory. Men in one particular factory, however, might try it voluntarily as an experiment. This at any rate would supply us with experience for future guidance. On the other hand employers would probably raise objections on the score of expense and temporary suspension or dislocation of work. There are probably few employers who would object to an entrance medical examination of apprentices, also to the examination being repeated periodically during the years of apprenticeship, since physical or other defects might be detected, so that the youth, not yet too old, could be removed and given the opportunity of taking up other occupation. There is the feeling where a workman has passed through his apprenticeship and has undergone the periodical examinations that, even if after twenty years of service he is found to be the subject of heart disease, for example, he should be allowed to carry on, so long as the weekly returns of the factory show no signs of a decline in the man's output and no indications of failing health. The firm in the circumstances would of course accept the responsibility.

The health aspect of the periodical medical examinations also calls for consideration. Children commence factory work in this country at the age of 14 years; by the time they reach 18 they are spoken of as "young persons." There would be advantages to the youths themselves if, after completing their apprenticeship and having attained the age of 18 or 19 and they have decided to continue at a particular trade, they were medically examined and pronounced fit to remain in the employment. It may be that for the physical breakdown in health of many young persons during the past years the non-repetition of the medical examination of children after having been drafted into factory life has been to some extent responsible.

The early detection of disease or of some unfitting deformity would be helpful alike to the worker and to the employer. The examination might in the case of the older employees also show whether the individual was fit for the particular work, and whether the occupation was suiting him, for men and women cannot go on working for several years in succession without some structural changes occurring in the body as indicated by a rise of blood pressure or an impairment of the action of the heart which dietetic and medicinal treatment accompanied by a respite from work might possibly remove. It would be interesting to know whether the tendency for the blood pressure to rise is greater in male than in female workers, and whether in this country the morbidity rate between the ages of 15 and 50 is higher for women than for men, since this is stated to be the case in the United States of America. The blood pressure of operatives in our own country has been dealt with by a Governmental Committee,* and a table showing the findings obtained by Pembrey and his colleagues appears in Professor Collis's book *The Health of the Industrial Worker*. A comparison is made of the blood pressure of men employed in the tin-plate trade with that of men employed in metal-grinding. Taking the average blood pressure of men as 130 mm. Hg, I give briefly the average blood pressures of men in tin-plating:

Between the ages of	20 and 24	=	151 mm. Hg.
,, ,,	25 and 29	=	158 ,,
,, ,,	30 and 34	=	158 ,,
,, ,,	35 and 39	=	160 ,,

For corresponding age periods in metal-grinders the blood pressures are 143, 152, 159, and 155. In the weaving trade both men and women are employed: the work is carried on in a heated and humid atmosphere, and as a consequence blood pressures are considerably lower:

For females of 20 to 24	= 105;	for males	= 127
For females of 25 to 29	= 100;	for males	= 118
For males only 30 to 34	.. ..	..	= 126
For males only 35 to 39	.. ..	..	= 106

In weavers the blood pressure is generally speaking low, and in the first decade of working life it is lower in females than in males. The data are interesting, but in view of the American experience we require further information. In male workers engaged in tin-plating and metal-grinding the gradual rise of blood pressure is in keeping partly with the advance of age and the nature of the employment.

With these facts before us and the necessity of observing the physical changes which occur in men who have followed a trade for several years, can there be any serious objection to a medical examination of men on their taking up work for the first time in a factory and a record given and kept of the results of such an examination? The men would enter upon their industrial career with a fairly accurate knowledge of their own physical condition. There are some sections of the Labour party who might not approve of this, and yet there are certain trades at the present time in which a pre-occupation examination is already required. No men, for example, are allowed to undertake caisson work without submitting to such a medical examination, and such is required, too, of men who are applicants for railway appointments, for the police service, for work in white lead factories, and also in the gold mines. A medical examination should not be a deterrent but a guide to an applicant as to the particular kind of work he should undertake, and yet I must admit that, so far as the taking on of datal labour at the factory gate is concerned, an experienced foreman is a better judge of an applicant's special fitness for the particular kind of work than a doctor can be. The foreman can at once spot the individual who is likely to do the work satisfactorily. A careful medical examiner, however, can be of assistance in occasionally detecting beneath the strong frame and the healthy appearance of the workman the existence of some serious disease, such as thoracic aneurysm or aortic regurgitation, which would unfit a man for labour involving heavy strain. Pulmonary tuberculosis also might be detected and the individual be given the opportunity of treatment. It might be objected that the medical examination, by preventing men taking up certain trades, would increase the number of the unemployed; but opposed to this would be the fact that only the fittest men

* Departmental Committee on Humidity and Ventilation in Cotton Weaving Sheds, Second Report, 1911.

would be recommended to take up the harder trades and the less physically fit sent to those which are less arduous. This may sound very well, but is it likely for one moment that labour would consent to such an assignment and distribution of applicants for work? Men are neither machines nor draught animals, nor is there the slightest reason why physical fitness should thus be penalized. Quite apart from physical fitness the personality of the worker must be considered, always remembering that his health is his capital.

I have suggested that there ought to be a re-examination of all young persons employed in factories at an age of 18 or 19—that is, after they have been working a few years. Shortly before the war I was struck by the large number of deaths of female workers between the ages of 18 and 25 which had been occurring in Germany, but on investigation I found that a similar event was taking place in this country, and at the present time it is occurring in the United States of America. It is generally held that girls develop more quickly than boys, but in the United States it has been found that a larger number of girls than boys are the subjects of serious malnutrition, the percentages being 6.5 for boys, and for girls 9.2; also that orthopaedic defects, such as curvature of the spine and other deformities, are more common among girls than boys. The high mortality rate of young female life alluded to a moment or two ago is not, as I have already indicated, confined to one country. In Vienna there was observed a rise in the mortality rate from tuberculosis in female workers between the ages of 15 and 20, believed to be the result of hard work, poor food, and factory environment. Young females working in the cotton mills of the United States are said to have a higher death rate from tuberculosis than those not similarly employed. Among the industrial policy holders of one large American society it was found that between the ages of 15 and 19 the rate of tuberculosis of the lungs among male wage-earners was 7.5 and the rate among females was 14.6 per cent. higher than the rates for the same period among the general population. The experience of the American authorities *re* the high rate of pulmonary tuberculosis among female workers in the cotton mills is not that of Dr. W. A. Daley, the medical officer for Blackburn.

It is none the less desirable, however, that during the early years of their employment in a factory young persons should be medically examined, for that this is a vulnerable period, particularly of female life, is shown by the tables of the Metropolitan Life Insurance Company of America during the last decade in the increase in the number of deaths of girls between 15 and 20 years of age, while other age periods show a decrease; also that while there has been an increase in the tuberculosis death rate amounting to 5 per cent. in adolescent girls, the mortality rate from the same cause in boys of the same age has decreased 25 per cent. There is no satisfactory explanation of this rise in the tuberculosis death rate in young women. The modern style of dress has been suggested as a cause of illness, but there is nothing to support this statement; nor can it be an aftermath of the war. Whether the physiological conditions in operation at this period of life have anything to do with it I am not prepared to say.

Should a medical examination of the workers during their factory career ever be established in this country, might then the health risks not, in some way or other, be brought within the range of life insurance so as to give to the examination an additional useful purpose? In a recent address delivered elsewhere I drew attention to "group life insurance," whereby a whole factory of workers could be insured at the rate of 6d. per head per week, so that in the event of the death of a worker from any cause the dependants of the deceased could receive £100. There are insurance companies in this country willing to take the risk. In the United States, where the scheme is in operation, it has diminished the labour turnover in the factories, and it has improved friendly relationships between employer and employed. In America it is run at the employer's expense, but there is no reason why it should not be made contributory. The Life Extension Institute of America* provides an annual health examination of its policy holders; it also arranges for a medical examination by its board of workers engaged in factories, also of persons employed in commerce. The idea is to detect disease in its earliest stages. The institute maintains that by this means it has prolonged life and extended the period of a working man's career. Each member of the institute is carefully gone over, even to the extent of an *x*-ray examination, and treatment is arranged in co-operation with the member's own doctor, to whom a medical report is forwarded. At first private medical practitioners raised objections to the scheme, but the antipathy has gradually subsided. While the scheme combines "group life" and "group health" insurance, the men and the employers sharing the expenses equally, the management of the fund is entirely in the hands of a Mutual Aid Association of the employees. The medical reports go direct to the individual workers who have been examined, and are not seen by the employers, who therefore have no information of the physical fitness or of the health of the men which could be made an excuse for disqualifying them for work. Upwards of 200,000 examinations have been made by the Life Insurance Institute in ten years, during which many persons believed to be quite healthy were found to have physical defects or disease capable of cure or of being benefited. In women, for example, cancer in its early stages was detected and removed, with the result that many of the women are alive to-day.

As further illustrating the importance of periodical medical examination of the workers Dr. W. B. Fisk of Chicago gives the results of the examinations during 1921 of 3,676 employees, many of whom had been over thirty years in the service of his firm. Among the 3,676 examined 1913 defects were found, of which 768 were likely to cause loss of efficiency, and, of these, 471, or 11 per cent., were incurable. Notwithstanding these figures, defective employees are not, except under special circumstances, discharged by the firm. The men are given lighter work or they are pensioned. There is much to recommend the scheme; the subject is at any rate worthy of consideration at a friendly conference of employers and employed, and of medical men who are interested in industrial hygiene.

One of the greatest stimuli to industrial efficiency is work—regular work carried on under hygienic conditions; on the other hand, as causes of industrial inefficiency we cannot overlook individual slackness, prolonged unemployment, and frequent "strikes." The apparent light-heartedness with which strikes are sometimes entered upon, and to many of us the unconvincing excuses offered for the attitude assumed by the classes concerned, amaze many thoughtful persons among the community, who, looking impartially upon the varied aspects of labour problems, have serious misgivings as to the future prosperity of the country. This is not the place to discuss the legitimacy of strikes, but the growing disinclination in these days to fulfil obligations and to recognize the dignity of service is almost certain to bring its own Nemesis of unemployment and discontent. Apart from the physical suffering which strikes impose upon families, also the depressing effects upon the men who are incidentally involved, the longer the men are away from work the flabbier become their muscles, the softer their hands, and less the desire of the men to return to work. Prolonged strikes and unemployment are therefore serious causes of industrial inefficiency.

Time will not permit of me discussing the subjects of alcohol and work, also of food and efficiency, nor the relation of industrial inefficiency to fatigue. Welfare supervision and the rendering of "first aid" have done much to humanize industry. Roughly speaking, factory output is the result of the united effort of machinery and the person who guides it. There may be a thousand machines running at one and the same time in a particular factory, and yet experience shows that although the machinery is running the while at the same speed, the output varies, even in the same room, according to the individual behind it. In other words, although inanimate machinery is driven by regulated force, the work accomplished is largely influenced by the alertness of the individual who is superintending it. However much we may admire the beauty and mathematical precision with which a machine works, man is superior to the object which his intellect has designed and by which it has been given executive form. Always repeating the same process, the running of machinery becomes monotonous, and this monotony is reflected upon the individual who superintends it. Metal, we know, when overused is liable to exhibit something akin to fatigue, and as a consequence the output may be imperfect, but in the moving frame and rolling cylinder there is no sentience. Therein lies the difference between the human body and a factory machine, and an explanation of why the nervous system of the mill

*The Survey, August 16th, 1921, *The Life Extension Institute*, by Michael M. Davis, Junr.

worker breaks down under the regular running and persistent noise of machinery. The trend of human legislation is in the direction of the humanization of industry, of lightening burdens which are oppressive, and of removing dangers which threaten or destroy life. We are marching on, taking care meanwhile not to confuse sentiment in industry with the humanizing of it, for the two are not one and the same. There is much yet to be done, but in its desire to solve problems concerning industrial hygiene labour must co-operate with factory ownership, factory management, and medical inspection, for the problems cannot be settled by sentiment, but by reason and experience, and by an impartial consideration of all the circumstances involved.

DISCUSSION.

Dr. W. Salisbury Sharpe said he was much interested in the table in Sir Thomas Oliver's paper which showed the differences in blood pressure and presumably of heart wear in different occupations. In connexion with railway work he had found differences in these respects in different grades, but his analysis was not yet complete enough to indicate whether physical type or occupation was the predominating factor. He hoped to be able to throw light upon this point and also upon the early signs of heart wear before the usually recognized signs of defect were apparent. He was referring to active and apparently healthy men and not to sick men.

Dr. Alexander Scott said that the medical examination of workmen depended largely on the personality of the doctor. The examination was at first looked on with suspicion as a possible danger, tending to lower wages or otherwise to injure unfit or unsuitable workmen. By interesting the workmen in the examination and explaining the advantages of early recognition of conditions requiring to be remedied he had been able to establish a happy relationship between the workmen and himself, which allowed the examinations to be carried out under agreeable conditions.

Dr. G. E. Orme said that amongst the various factors tending to increase the sickness incidence and death rate in women mill workers as compared with men were (1) changed conditions of home life, lack of parental influence and control, and lack of early domestic education; and (2) increased consumption of alcohol, especially amongst young women.

Professor Glaister referred to the legal relationships of employment in which there was a contract of service, written or implied, between master and workman. The employer was entitled to expect from the employee "a fair day's work for a fair day's wage," these being mutually arranged. He was of opinion that the time had arrived for medical examination of workers following upon the examination of young persons, as required by the Factory Act, and in view of the responsibility incurred under the Workmen's Compensation Act. This examination could not, he thought, be legitimately objected to by the trade unions. He held the view that occupational mortalities were not quite of the value attributed to them, in respect that the personal equation of the individual workman was swamped in the slump. He considered that important factors in the fitness for work were the conditions of home life and the personal habits of employees. He thanked Sir Thomas Oliver for the views put forward, as they afforded important subjects for consideration.

Dr. James R. Kerr emphasized the importance of the physical efficiency of the worker in the general efficiency of the factory as estimated by output. The incidence of scoliosis to which Sir Thomas Oliver referred probably occurred in the young female workers as a direct physical result of neglect of recreative exercise in the presence of wrong postural tendencies. The benefit of facilities for recreation in connexion with factories should be better known, and the more artificial the nature of the occupation, and particularly if it involved asymmetrical use of trunk or limb muscles, the more essential it was to have adequate and experienced medical supervision of games, physical drill, and gymnasium exercises. As regards welfare work, he was glad that Sir Thomas Oliver laid down the serious warning that the greatest care must be taken not to confuse sentiment in industry with the humanizing of it. It was of primary importance that medical opinion should direct and guide all efforts and schemes for the welfare of the factory worker. The medical examination of employees demanded the proper spirit and personality on the part of the doctor associated with frankness and fairness towards the employee in order to obtain the most beneficent results.

THE TREATMENT OF INDUSTRIAL ACCIDENTS.

BY

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From among the subjects which naturally fall to be discussed under the title of this paper I am forced by the exigencies of time to select only a few of the more fundamental.

In the first place, we have to bear in mind that the treatment of an industrial accident has very close interest for the many participants in its immediate and remote results; that, in fact, the victim of the accident and the attending surgeon are only the centre points round which circles of sentimental, financial, and economic interest are created. It is recognized that the appropriate setting for the entire picture can only be one in which complete harmony of purpose and mutual support exist among all those concerned.

I cannot refer here to the methods of accident prevention beyond the general statement that the first line of defence of the workman against himself and for the safety of his fellow workmen is the systematic medical examination of employees, and in this connexion to record my experience that workmen readily appreciate that the opportunity of being examined at the factory does not turn out to be the disservice to them which at first sight they may have been encouraged to believe it would be.

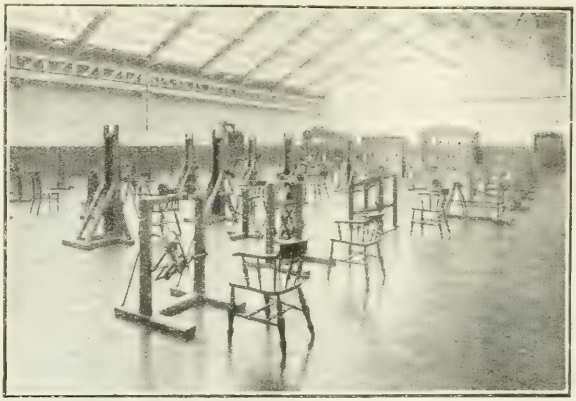
In this country we have not written so much regarding the treatment of industrial accidents and the organization of factory medical service as has been done in America. No doubt the large plants that are set down and the mushroom growths of great industrial communities round new and probably somewhat hazardous manufacturing or engineering enterprises have made it more obvious to the employer that the provision of ambulance and hospital service must be reckoned in with the cost of production. No doubt also the very fact that these medical arrangements were started there *de novo*, not grafted on to pre-existing and probably inadequate arrangements as is the case in an older country, has given our colleagues in the United States a Factory Medical Service very inclusive in its efforts and housed in first-aid rooms and works hospitals which compel our admiration. On close examination, however, it would probably be found that in our densely populated coal-mining, iron, pottery, etc., areas the arrangements for the care of accident cases are of an unsuspectedly high standard. It falls to my lot to see a very large number of accident cases from a considerable portion of industrial England, and the feeling I have is that although there is good provision for the immediate and immediately subsequent treatment of accidental injuries of all kinds, there comes a stage in the progress of the case when there is no adequate provision for the next essential procedure towards the restoration of the patient to his working capacity. In this matter of subsequent treatment I feel that we are behind France and Germany.

To come back to my opening remarks, I would repeat that it is essential for us to appreciate the far-reaching consequences which result from an accident to an employee. The employer is concerned in the loss of the man's work and output, and the community has got to bear the burden of supporting a non-producing member. The amount of the compensation payment is of subordinate importance to the loss of the man's service as a workman, a skilled artisan—that is, "a producer," whatever his job may have been. The situation thus broadly outlined has been of late years squarely faced by employers, insurance companies, and friendly societies representing the workers. These various interests are agreed that, quite apart from its humanitarian and medical aspects, adequate attention to injured operatives is an economic proposition. The weight of opinion represented is so great that arrangements on the best lines are certain to be made on a wide scale at a relatively early date. The workmen of this country are sharply alive to the fact that during the war nothing, from the moment they were wounded, was spared in the endeavour to re-establish their fitness for service. They know what hospitals mean, and their appreciation of what orthopaedic surgery has done for them

and their comrades is ever present. When wounded in the industrial conflict these men will not accept with equanimity the compensation payment of 35s. a week with inadequate or haphazard after-treatment. Their desire will soon become a demand which in the last resort the State dare not disregard.

Organized hospital treatment of accidents and disablements, even should it not be above the level of that provided for the injured German worker, as seen by me in 1912, is bound to come. Confirmatory words are found in the report of the Departmental Committee appointed to inquire into the system of compensation for injuries to workmen (Part 5, Section 2), which also states that:

"The expenses of such extra services should be provided by the employers because the need for them has been created directly by the risks of employment, and they will have a material effect in reducing the amount of monetary compensation payable under the Act."



The Hall for Mechanotherapy (lower end). These special appliances are used for helping the movements of stiff joints and the development and re-education of injured muscles. All are finely poised and capable of delicate and gradual adjustments to suit the individual cases.

Having thus disposed of the question of the cost of treatment of industrial accidents I turn to the practical treatment of the injured workman. I must leave out of consideration meantime such factors contributing to accidents as monotony of employment; overtime; the shift factor; piece work; the illumination factor; and the risk factor involved in the particular occupation itself. The teaching of first-aid methods is taken up with such enthusiasm in this country, and so many laymen are efficient in this work, that treatment on the spot and conveyance to the dressing station, the works surgery, or the doctor's surgery, are well carried out.

In cases of "shock" the time which elapses between the accident and the induction of a morphine analgesia is of vital importance, especially in younger employees, and I think it well to have at each dressing station a supply of hypodermic doses of morphine ready for immediate injection. As a practical point I find the convenience and economy of the Tubunic outfit, which has the prepared solution ready to be expressed from the flexible capsule through the needle which is fixed to it, without any delay from a rusty needle, or a broken syringe, or an insoluble tablet, etc. These capsules can be kept in an envelope sealed and initialled by the works doctor, and are used only by him or under his orders.

The supply of cottage and other local hospitals throughout industrial areas is, as a rule, very good, and the surgical lessons from the war are reflected in the procedures adopted. I am not aware, however, that the heated resuscitation chamber is sufficiently used. In every hospital liable to receive accidents some such provision should be made, and probably the most convenient is the electric quilt, which should be kept hot in readiness night and day, the resistance interposed between the main supply being used as a heater for a two-pint container of a normal saline or a sodium bicarbonate solution.

The posture of burned, scalded, lacerated, or crushed limbs should be considered from the first with a view to the ultimate function, and it will be found much easier to place the affected limb in an orthopaedically correct position at once than to wait till later. As the patient is presumably under the influence of morphine there will be less pain on movement than on the following day. In view of the brilliant results of modern orthopaedic surgery, as tested out by the difficult and numerous cases of the war, one can confidently plead for the most advanced conservatism in the treatment of injuries. On the other hand, to those who, on account of the circumstances of any case, are in perplexity as to whether they can just manage a Syme's amputation as the least mutilating result of an injury, I would say that a "below knee" is an amputation that readily lends itself to the application of a serviceable artificial limb. It requires no special ankle fitting, and therefore no conspicuous boot, as does the artificial appliance for the Syme's amputation. Incisions for drainage, etc., must of course be kept away from the bearing surface of the head of the tibia, although even when these have been made they can be accommodated for in the design of the bucket.



The Hall for Hydrotherapy; the Warm Pool. This pool, 36ft. long by 20ft. broad, contains warm water at 98° F., and is maintained in turbulent motion by great volumes of compressed air forced into it through orifices in long pipes lying at the sides. Patients are exercised in this water, which at the same time provides hydro-massage. Active movements of shoulder and hip joints are thereby encouraged. The limb is floating, supported by the water, and thus there is minimal resistance to its movement. This gives weak muscles a chance of exercising themselves as power returns. Certain helpless cases are wheeled down the incline into the water, which is 3 ft. 6 in. deep, and placed on lounge seats along the sides.

We may pass to what is known as the *after-treatment*. Many of the cases require movements, active and passive, possibly massage and faradic stimulation, re-education of muscle, and graduated exercises. The rate of recovery is very satisfactory and the only difficulty which arises is that many doctors do not take advantage of the treatment at as early a date as the condition of their patient would actually permit, and that time and opportunity are to some extent lost thereby. However, with the provision of the facilities one finds that the demand increases.

Most of the hospitals of this country owe their inception and continued existence to the anxiety of all thinking men to provide against the turn of Fortune's wheel. These excellent institutions

are tributes to the forethought and thrift of the worker and to the broad views of the employer. They provide an immediate haven for the sufferer. The history of these hospitals is a long and honourable one, but it is obvious that they can never supply the need for the specialized after-treatment—operative or by physiotherapy—which has been brought into great prominence and found to be of inestimable service during and since the war. The splendid recovery of our soldiers and sailors from crippling war wounds is well known, and the surgical experiences of the war have widened and advanced the range of restorative treatment. The variety and severity of factory accidents bear close comparison with those of modern warfare, and it has only to be mentioned to receive universal acquiescence that the benefits of the proven best treatments should be available for the victims of industrial injuries; and, what is more important, that there should be continuity of after-treatment and after-care. While surgeon to one of the large orthopaedic and limb-fitting centres I have simultaneously had the opportunity of applying to industrial accident cases the methods and resources of orthopaedic surgery, and for several years now we have been providing specialized treatment of the sort to which the Departmental Committee on Industrial Accidents refers. It is very satisfactory to be able to report to this Section that insurance companies, employers, the patients, and their doctors are most appreciative of this new phase of specialized surgical work.



Thermotherapy: Hot Dry Air Treatment. Here are shown patients with limbs being subjected to hot dry air (250° to 300° F.). The asbestos-lined cabinets which enclose the parts under treatment are supplied with compressed air which has passed through regulated electric heaters.

It may be useful to consider the course of treatment followed in typical cases referred to me for after-treatment. The doctor referring the case, and probably also a doctor acting for the insurance company or the employers, provide reports which give preliminary information. The examination of the patient includes a detailed measurement of the range of movement of each joint, including of course metacarpo-phalangeal and inter-phalangeal joints, etc. The state of any nerve lesion, if present, is investigated. Stereoscopic x-ray photographs are taken, and frequently photographs and plaster casts, to serve as records for comparison later. In a certain number of cases the paralysis present is found to be due to want of proper posturing during the probably long period of previous treatment—for example, a case of fracture of the humerus presented itself with so marked a condition of drop-wrist that the musculo-spiral nerve was suspected. Appropriate splinting for three weeks resulted in some flicker of voluntary recovery, and further treatment completed the case. On the other hand, a fall of coal had severely excoriated the outer side of the upper arm but had crushed the tibia and fibula, fracturing them. The patient was up and walking about with a very serviceable leg before treatment was sought for the condition of drop-wrist which was manifest. In this case exposure of the musculo-spiral nerve discovered it to be adherent to the bone, ingrained with pieces of coal, and constricted in a dense fibrous tissue mass. Surgical interference was essential before physiotherapy could be of any avail. The recovery then followed a normal and rapid course. Fractures at the elbow likewise present themselves with marked ulnar wasting, etc., on which no amount of massage would make any impression until the nerve lesion has been dealt with. It must therefore be understood that the function of an orthopaedic hospital is not "glorified rubbing." On the contrary, the orthopaedic hospital should be a centre, available to the doctors of a wide area, for reference in difficult and tedious cases, to treat which they have neither time nor adequate opportunity. Corrective osteotomy, arthroplasty, arthrodesis, tendon transplanting, and all the surgical devices to restore limbs to usefulness must be in the armamentarium. It is obvious, therefore, that the after-treatment of industrial accidents covers a wide field in operative procedures, quite apart from the physiotherapy measures.

In contrast, one has the type of case in which fibrous tissue, the result of prolonged and profound sepsis, holds the limb or the hand in an unyielding grasp. In view of length of time it may be that shrinkage of joint capsules, ligamentous structures, etc., demand certain preliminary operations, and all manner of devices for overcoming contractures or adaptive shortenings. The end-results in such cases after prolonged and intensive physiotherapy treatment have surprised most competent observers.

Having thus examined the patient and carried out such preliminary treatment as I have just suggested where required, we shall follow him through his physiotherapy course.

[Dr. Kerr here gave a description of the physiotherapy treatment rooms and equipment at the Pilkington Special Hospital, St. Helens, probably the largest installation in this country, and showed photographs illustrating the warm pools, the multiple baths for arms and legs, the hot-air cabinets, the electro-room, the mechano-therapy room, plaster casts, etc.]



The Hydro Room: Multiple Baths for Arms and Legs. In foreground and to right are sets of baths for leg cases. Behind are multiple, "waterfall," baths for arms. Four are in action. "Contrast" foot baths are shown.

Should we seek for adjectives to characterize the details of modern orthopaedic treatment we might without offence speak of the methods as purposive, co-operative, insistent, intensive, cumulative, and of the results not merely as full of promise but even now justifying beyond cavil the adoption of the title "Orthopaedic" by hospitals of the type I have had the pleasure to describe to you.

In conclusion, the efficient treatment of industrial accidents is of vital importance to the community and to the State. The figures showing the loss in man-power and in wages and the concomitant burden on industry are at present enormous. The employer, I assert, is willing and anxious to co-operate with you because the great factor of industrial success lies in the efficiency of the worker, which means maximum output, and is well aware that scientific and controlled experiments have proved that it pays handsomely to cultivate the physiological best in the employee. The larger insurance companies also now realize

that the victim of an industrial accident is not profitably reckoned as merely a "claim" to be badgered and harassed into what is called a "settlement" by a slow process of starving out. A long and intimate acquaintance with injured workmen discloses to me that a disabled employee makes an excellent and appreciative patient. But you must not talk medical nonsense to him. Explain briefly and plainly what the situation is, and do not minimize the severity of the injury or the length of time required for recovery to be gained. From the moment of his injury he has before him a vision of the future of his dependants, and it is our privilege to give the utmost of our skill and ingenuity to his and their service. I am fortunate in having a hospital, probably pioneer, devoted to the treatment of all sorts of crippling—children and adults—but chiefly crippling resulting from industrial accidents. The acquired orthopaedic experience of our staff is now concentrated on civil problems, and the great value of the service is widely recognized by those who have the treatment of industrial accidents in their minds as one important factor towards the success of our industries in international competition.

DISCUSSION.

Dr. John C. McVail said that what impressed him in Dr. Kerr's interesting paper was the illustration it provided of the influence of Government policy on the prevention and treatment of industrial accidents and disease. The increase of the employer's financial responsibilities through the superimposing on common law of the Employer's Liability Act and then of the successive compensation Acts had been accompanied by a tremendous advance in the control, by means of orthopaedic surgery and otherwise, exercised over such accidents and diseases, in the direction both of prevention and of cure. Dr. Kerr's paper was an admirable exposition of the good work that was being done.

Dr. W. Salisbury Sharpe said that cases frequently came under notice in which compensation was demanded for incapacity, the extent and duration of which was due to bad treatment and not to the initial injury, the employer being made responsible for the effects of treatment over which he had no control. He would like to know how the special hospital which Dr. Kerr represented was supported.

Dr. A. Coles said that much loss of time was due to a trivial injury becoming serious by neglect. If, instead of washing a wound immediately it happened, it was painted with iodine, much septicaemia would be avoided. If a system of partial employment for the partially disabled was encouraged, the injured person would return to work at an earlier date, to the mutual advantage of employed and employer.

Dr. Kerr, in reply, agreed with Dr. McVail that a great advance in the treatment of injured workmen had been achieved by placing responsibilities on the employers. He considered it important that the first dressing applied to a wound should be a sterile one. He explained that the Pilkington Special Hospital specialized in the after-treatment of industrial accidents, and that cases were admitted on a simple payment basis, which had proved acceptable to insurance companies, employers, and private patients.

APPARATUS FOR THE ESTIMATION OF THE WORKING CAPACITY OF AN UPPER EXTREMITY.

BY

JOHN GLAISTER, Junr., M.B., Ch.B.Glas.,

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The civil aspect of medico-legal practice presents many difficulties, more especially that branch of this specialty which deals with the perplexities of the medical aspect of the Workmen's Compensation Act. For the purposes of awarding compensation one is frequently called upon to examine individuals who have sustained injuries to an upper extremity, and to express an opinion as to their capacity for work. In the past few years from the many cases coming under my observation in this respect there have been a considerable number who have during examination given the impression of unwillingness to demonstrate their capacity for work. After careful scrutiny and consideration of the existing tests, I came to the conclusion that perhaps the quality and character of these tests were partly to blame on account of their inaccuracy and difficulty of application.

We may now consider for a moment a method commonly employed for estimating the working capacity of the upper extremity as a whole by means of weights. The examinee is usually requested to lift weights of different sizes, and the amounts of the weights lifted are carefully noted by the examiner. Assume for the moment that the patient is a willing one, there is a strong objection to this test as described, inasmuch as it does not permit of estimating the work done by the extremity of the individual. To state that a man is able to lift a weight of 28 lb. without complaint of pain or discomfort is of course stating a useful fact in relation to the power of the extremity, but it would have much greater import if stated in terms of work actually done, which can be satisfactorily expressed in foot-pounds, because it is with the working capacity that we are chiefly concerned. Another strong objection which is apparent is that in the case of the none-too-willing patient—and there are many—he appreciates the size of the weight, and if he is astute, which is not uncommon in this class of case, he may easily read the amount of the weight engraved upon it. These factors frequently undermine any little moral courage a man may have to attempt to lift.

After careful observation of the cases so tested by me and by others, I endeavoured to overcome these objections by having a suitable and simple apparatus constructed. This construction was carried out for me by the local branch of the Surgical Manufacturing Company, Mortimer Street, London. My aims of this apparatus were:

1. To have the weight lifting test recorded more or less automatically in terms of foot-pounds of work done by an extremity.
2. To obviate the objections already mentioned.
3. To check attempts at malingering.
4. To record uniform results.

I have arranged for this apparatus to be before you to-day, so that it can be demonstrated. For purposes of description it might be more or less accurately described as a box having the following dimensions: length 36 inches; breadth 12 inches; depth 20 inches.

It should be noted that you see this cabinet in its experimental stage with its accompanying crudeness, as many changes have been effected in its structure since it made its first appearance. On one side there are two sliding doors fitted, having such dimensions that when opened ready access to the interior is obtainable. On the upper surface of the cabinet are six holes or apertures, supplied with metal collars, through which pass six steel rods to the inside of the apparatus. At the uppermost portion of the rods is fitted a short, comfortable steel handle, which has been acetylene welded to the rod ring. This ring is formed by the upper portion of the rod itself being curved, and its object is to accommodate a finger in order to add additional security to the hand grip. The lowermost portion of the rod is hook-shaped, for the purpose of suspending the weights. Each rod measures exactly twelve inches from the base of the finger ring to the commencement of the hook. It should be noted that the finger ring can be utilized to allow the fingers to operate on the weights individually if so required for a purpose to be considered later. The rods are made of steel which has been semi-tempered in order to permit of them suspending a 56 lb. weight without straining them. At the base of the finger ring a rubber washer will be noted; the object of its presence is to eliminate noise during the operation of the weights. The weights suspended are ordinary standard weights, weighing from 1 lb. to 56 lb. Weights from 1 oz. to 1 lb. have also been supplied for testing the power of the individual fingers, and for the retoning of the intrinsic muscles of the hand. Each of the larger weights is fitted with a U-piece which is welded on to the bar of the weight; this measure prevents the hook slipping from side to side when the weight is being lifted.

The following merits are claimed for this piece of apparatus, as the results of using it for a considerable period in many cases:

1. The examinee is unable to observe the weight he is lifting: in many instances it would appear doubtful if he realizes that he is lifting an ordinary weight at all. I have been frequently

asked whether the gripping of the "black handle will give a shock."

2. Any standard weight can be fitted to the machine.

3. The order of the weights can be altered practically *ad infinitum*, thereby preventing a man becoming familiar with the order of the weights at a subsequent examination.

4. When volition is present it is foolproof against malingering.

5. The results are constant.

Each time an individual fully raises a handle with a weight suspended he performs an accurate amount of work—that is, the number of pounds raised is expressed as foot-pounds of work done, as each pound is lifted through the space of one foot.

The apparatus is applied in the following way: The examinee is requested to lift a certain handle as often as he can on which is suspended the heaviest weight which he has proved capable of lifting. The number of times the weight is fully lifted multiplied by the weight lifted gives the total work done by that upper extremity expressed in foot-pounds.

In cases of suspected malingering the test should be applied as follows: Test the claimant's ability to lift the various handles. Assume, for the purpose of example, that the man states that he is unable to lift a handle on which a 1 lb. weight is suspended; ask him to lift an ordinary 1 lb. weight from the floor; if he does so readily and without complaint of pain or discomfort malingering can be strongly suspected. In a case of this kind the best procedure is merely to open the sliding door of the cabinet and show him the 1 lb. weight which he alleged he was unable to lift. In certain circumstances it may be found excellent to make a note of the fact and not demonstrate this act of deceit to the man.

An alternative method of detecting malingering is to place two or more of the same weights in the cabinet at the same time. The man may easily raise one of these and fail to raise a duplicate one when its turn comes.

In conclusion it should be mentioned that, judging from practical results, it would appear that the apparatus should prove extremely useful for exercises which have for their object the retoning of the intrinsic muscles of the hand or the muscles of the upper extremity following injury.

In cases where men will not attempt to operate the apparatus the examiner must of course rely on the objective signs of injury and its sequelae in conjunction with the general attitude of the man, and form an approximate opinion of the efficiency of the hand for work.

THE OCCUPATION DERMATOSES OF THE PARAFFIN WORKERS OF THE SCOTTISH SHALE OIL INDUSTRY.

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THE skin lesions due to contact with oily paraffin in a crude or semi-refined state may be described as conforming to the following types, of which one only or several may be found on the same individual:

1. Occupation comedones.
2. Folliculitis and follicular dermatitis.
3. Dermatitis pustulare.
4. Dermatitis papulare (erythema papulare).
5. Erythema simplex.
6. Dermatitis erythematosa.
7. Epithelioma (paraffin workers' cancer).

These, which include all forms of occupational eruptions met with in the Scottish shale oil industry, will be described under their various heads.

1. *Occupation Comedones.*

Comedones occur in parts exposed to contact with paraffin products, especially over the flexures of elbows, posterior aspects of elbows, upper aspects of shoulder-joints, and occasionally over knees. Their origin is purely mechanical, being due to obstruction of the sebaceous ducts with semi-solid paraffin substances, or to thickening of the superficial layers of the epidermis, causing obstruction of ducts. They are larger than comedones met with under ordinary conditions, more closely packed together, and confined to circumscribed areas, being most prevalent on the anterior aspects of the body and limbs. The outer layers are pigmented and hardened. The comedones are easily expressed, but if left unattended are apt to be followed by the development of sebaceous concretions of a cystic nature, which are most commonly found over the flexures of the elbows. There is not the same tendency to acne formation as under ordinary circumstances, possibly owing to the fact that the materials obstructing the ducts are sterile and practically antiseptic, and it is only after they have persisted for lengthened periods that any tendency towards acne formation is seen.

2. *Folliculitis: Perifolliculitis: Follicular Dermatitis.*

Folliculitis consists of destruction of the hairs and hair follicles as the result of a mild inflammatory reaction set up by the action of shale oils. The follicles become somewhat dilated and are filled with epithelial débris and dirt, so that they appear as closely grouped clusters of black points over the parts affected. Occasionally a slight perifolliculitis occurs, in which the inflammatory condition extends to the surrounding skin, which becomes slightly raised above the rest of the skin tissue, and which ultimately becomes somewhat indurated and thickened. The most common sites are the backs of fingers and hands, and to a less degree on the forearms, the legs around the ankles, and the dorsal aspects of toes and feet, especially on the line of the extensor tendons of toes. There is never any tendency towards suppuration or sloughing, the condition persisting as described indefinitely. The usual appearance of dryness of the hands, with clusters of black points on backs of fingers and hands, is very characteristic among paraffin workers.

3. *Dermatitis Pustulare.*

Two types have been observed:

(*a*) One in which the condition is characterized by the appearance of numerous small pustules over the anterior aspect of the body and limbs, and

(*b*) One in which the pustular eruption is due to the breaking down of the typical papule, which is the most prevalent form of occupational eruption.

(*a*) *Primary Dermatitis Pustulare.*—A widely distributed pustular dermatitis has been noted among youths beginning work in the paraffin departments. This condition appears to be due to contact with semi-refined oily paraffin, which sets up an acute irritation of superficial layers of epidermis with pus formation. The channel of entrance appears to be by the hair follicles, as generally a hair is found in the centre of each pustule. It is most probable that there is an idiosyncrasy towards the action of paraffin in some of its forms, causing one individual to be acutely affected while by far the larger proportion escapes. Pustular dermatitis readily disappears on removing the individual from his particular form of work or on taking precautions as regards cleanliness. The tops of the pustules dry and are shed as crusts, without further return.

(*b*) *Papulo-Pustule.*—These occur as small pustular elevations on the sites of papules, the suppuration taking place at the apical part of the papule. As a rule these are not numerous, and are usually seen in conjunction with a papular eruption. They are not surrounded by an inflammatory areola, and are due to the breaking down of papules, either from a staphylococcal or streptococcal infection, or to the separation of a small necrotic area from the centre of the papule, after which the papulo-pustule disappears.

4. *Papular Dermatitis (Erythema Papulare).*

This is by far the most common type of skin lesion met with among the paraffin workers of the Scottish shale oil industry, between 40 and 50 per cent. of the workers being affected. The papules are known in the trade as "paraffin plukes," and are most typical of an occupation condition both in history and distribution.

Papular dermatitis consists of an eruption of small rounded elevations of a reddish colour, varying in size from that of a small peppercorn to that of a small pea. They correspond in every way to the typical primary lesion described as a papule, being solid, superficial, rounded in shape, and containing no fluid. As a rule the tops are convex, but occasionally there is apparent a minute central depression, from which a tiny thread-like core can be expressed or removed, and which corresponds to a necrosed hair follicle or sweat duct. I have seen in a very few instances small, soft papules with tiny horny excrescences

on top, giving the appearance of diminutive cutaneous horns, such being situated on the scrotum.

The entrance of irritant to the superficial layers of the skin appears to be most commonly through the sweat ducts, but very frequently the hair follicles are involved, in which case they occupy the central position in a papule. There is as a rule no inflammatory areola around the typical papule. The papular eruption differs from other lichenoid eruptions, in that there is no itching or irritation, the papules do not tend to coalesce, and as a rule heal spontaneously. It has been frequently noted during the routine examinations of the workmen that the sites of papules vary from time to time, and that between the examinations some have healed and others have appeared in different situations. The papules may be present singly, or in twos or threes or in larger numbers until there may be a diffuse eruption of discrete papules. Between 40 and 50 per cent. of the workmen are affected with this type of eruption, and of those affected approximately 50 per cent. show not more than three or four papules, 45 per cent. have a limited extent of eruption confined to a small area, and 5 per cent. have a diffuse eruption.

The distribution of the papular eruption is very typical. In the great majority of cases it is confined to the forearms, and as a rule is most pronounced over the ulnar aspect, though it is also prevalent over the anterior and posterior aspects, around the wrists and on the backs of the hands. Less frequently a few papules are present on the shoulders, legs, and dorsal aspects of the feet. In old-standing cases they are seen over the lower thirds of the arms and around the elbow-joints, and occasionally on the anterior aspects of the body, thighs, and on the face and neck. The palms of the hands and soles of the feet are never affected. Approximately 75 per cent. of those affected have eruption on the hands and arms only, 20 per cent. have both arms and legs affected, and about 5 per cent. have some eruption on the body, as well as on the arms or legs. The most typical position in which the papular eruption is found is over the ulnar aspect of the forearms, this being the part most in contact with the paraffin in its semi-refined state. On two occasions I have seen papules on the scrotum.

The earliest appearance of papules after men begin work in paraffin sheds occurs in from ten to twelve days, and they may persist throughout the duration of employment. They disappear a few weeks after ceasing work among the semi-refined paraffin. Occasionally in old-standing cases the papules instead of healing assume a warty appearance, due to proliferation of superficial layers of epidermis, and to growth of connective tissue cells, forming scaly warts, at first soft, but gradually becoming harder and more indurated, with a covering of dry scales which are readily detached. This warty appearance is of a permanent nature. In the most chronic types of this condition of warty papule there is occasionally a tendency to increase in size, accompanied by the formation of a central necrotic area, which may separate and be followed ultimately by the disappearance of the warty growth, with atrophy of the skin tissue and the formation of a scar. These more chronic types are as a rule associated with an old-standing induration of skin, due to chronic erythematous dermatitis. As a still more advanced stage of the condition described the warty papule, instead of disappearing, grows until it assumes the characters of an epitheliomatous growth, with the usual clinical and pathological features of that condition.

5. *Erythema Simplex.*

This consists of a mild hyperaemia, in which the redness is distributed uniformly over the parts affected. The first appearance is a slight blush, followed by a greater degree of redness, which in the early stages disappears on pressure, to reappear when pressure is withdrawn. This hyperaemia is almost always limited to the forearms, which show a generalized redness, there being no "patchiness" in its appearance. In exceptional instances a slight degree has been seen on the feet. Associated with the increase in colour is a marked dryness of the skin. In the later stages there is a tendency for the erythema to become slightly purplish and to remain on pressure, the pigmentation of the skin being permanent. This condition may persist for years without alteration. In addition, there is a scaliness of the arms, in which the superficial cells of epidermis are readily rubbed off in fine scales. There is frequently seen a [illegible] condition of skin, giving the arms a polished appearance. There is never at any time any tendency to moistness or exudation, and seldom are there any subjective symptoms, such as itching or irritation, along with the erythema. This type of lesion frequently exists alone without the presence of other form of occupation eruption, and is somewhat prevalent among the paraffin workers.

6. *Dermatitis Erythematosa.*

This is essentially a dermatitis venenata of a subacute or chronic type, due to the irritant action of semi-refined paraffin on the tissues of the skin prolonged over a lengthened period—for years in practically every instance. It represents a further extension of erythema, in which the congestion gradually merges into a chronic inflammation of the various layers of the epidermis and cutis vera, followed by induration, and, in the most advanced stages, by partial or complete destruction of small areas of the skin in the affected parts.

In the first stages, the lesion consists of dull red erythematous patches distributed irregularly over the anterior aspects of forearms, either broadly linear or roughly circular in shape, giving a honeycombed appearance to the skin. They are slightly raised above the surface of the skin, are very dry, and somewhat scaly. At first the condition is limited to small areas, but, as it becomes more old-standing, involves larger areas, the whole surface of the forearms being frequently affected. Associated with this erythematous condition there is usually pigmentation occurring in small patches over the parts involved. This erythematous stage may persist for long periods without further change, or healing may take place, the redness disappearing, being replaced by some induration of the superficial layers of the skin, with a characteristic dry scaliness which is practically permanent.

Frequently the erythematous dermatitis progresses so that the deeper layers of the skin are infiltrated, and as the inflammatory process subsides small patches of atrophied skin, white in colour, appear, or there may be scar formation, according to the depth of the inflammatory changes. There is frequently a tendency to the formation of small flay scaly warts, usually oval or circular in shape. In advanced cases the whole surface of the forearm appears indurated, hard, and thickened, giving a tanned leathery appearance. These warts, if injured by abrasion or mechanical damage, are apt to become irritated and undergo excessive epithelial proliferation, with subsequent growth in size.

The advanced condition of dermatitis may persist for many years or for a lifetime, with permanent roughness and wartiness of skin and a chronic desquamative progress going on. The tendency towards the formation of warts may persist long after workmen have ceased to work in paraffin departments and have not been further exposed to causes of irritation.

Chronic dermatitis as described above usually coexists with old-standing papular dermatitis, in which the papules are of the indurated type, being hard and scaly. Thus in an advanced stage the forearms show pigmented patches, small white areas of atrophied skin, scars, scaly warts, and indurated papules.

The distribution of erythematous dermatitis is confined solely to parts in contact with paraffin substances. The forearms principally are affected, either in parts (especially over ulnar aspects) or generally. In advanced cases, the lower thirds or halves of the arms are usually also affected. Occasionally the dorsi of the feet show the condition to a slight degree, but there has not been seen the same amount of induration, the feet being better protected. The palms of the hands may show a slight tendency towards exfoliation of the epidermis, which becomes thickened and fissured as a result of the dermatitis.

The erythematous dermatitis of paraffin workers differs from others forms of dermatitis venenata in that there is never any tendency towards moistness of surface. There is never vesiculation or any formation of bullae, the general tendency being to assume a chronic course, and induration is of frequent occurrence. Dryness of the affected parts is the feature of paraffin workers' dermatitis, but an occasional slight excoriation of scar tissue, from injury or climatic conditions, may be seen. While a considerable proportion of the older workmen show evidence of healed or old-standing dermatitis, the condition has become less evident in recent years, and is practically confined to those who have been paraffin workers for years, the recent employees being free from this type of skin lesion.

7. *Epithelioma (Paraffin Workers' Cancer).*

Epithelioma as seen among the paraffin workers of the Scottish oil industry occurs in workmen about or over middle life who have been paraffin workers for long periods. It usually arises from the scaly warts which form as a result of the chronic dermatitis already described, or from an old papule, especially of the indurated type. The warts or papules giving rise to this lesion have as a general rule existed for a number of years in a benign form, until the epithelial covering begins to proliferate more rapidly, with increasing growth of the primary lesion, until the characters of malignancy develop. In the early stages of the degeneration the naked-eye appearances vary according to the primary condition, so a short outline of the development from a wart and a papule may conveniently be described.

(*a*) *Arising from Scaly Wart.*—In the benign condition the wart is somewhat oval or circular, about the size of a sixpence. It is covered by small scales which are readily removable, leaving a somewhat indurated base. The wart does not protrude to any extent above the level of the surrounding epidermis. As the epithelium undergoes proliferation, the wart increases in area and also becomes more raised above the level of the surrounding skin, until it gradually assumes the size of half a crown in area, raised about a quarter of an inch or more above the surface, and covered with thick horny scales. On reaching this size there is a tendency for the formation of fissures, or abrasions of the surface, from which a serous fluid exudes, causing crusting of the surface. The crusts are readily removed by any slight injury but re-form. This appearance persists for some months, the area gradually increasing until the incrustation and warty covering of the growth eventually slough and disappear, leaving a superficial ulcer, from which sero-sanguineous fluid exudes. Subsequent growth of the ulcer in depth and size takes place slowly.

(*b*) *Arising from a Papule.*—An indurated papule has been already described as occurring in old-standing erythematous dermatitis. The papule as a rule persists in this benign form for many years. A central necrotic area may form, accompanied by the gradual growth of the primary lesion. After separation of the slough it may grow until it assumes much larger proportions than formerly, the growth having a central ulcer, surrounded by indurated edges. The growth of the ulcer extends peripherally and also in depth, the edges being indurated and undermined, until all trace of elevation of tissue above the level of the surrounding skin disappears, so that a large open ulcer is formed, with a base of red, angry-looking granulation tissue, bleeding profusely on the slightest touch.

When the growth is situated on the scrotum there is, as a rule, in the ulcerative stages, an overgrowth of epithelial tissue forming large masses, protruding above the surrounding surface, giving the appearance of a cauliflower excrescence, and, being very vascular, they bleed profusely. Ultimately the lymphatic glands are involved in this excrescence, so that in the latest stages the whole inguinal region is invaded by a large ulcerating cauliflower-like mass. The malignancy for a long time is not great as the lymphatic glands do not become involved till a late stage, but this varies according to the situation, the glands being involved earlier when the lesion is situated on the scrotum than when the site is on the arm or forearm. The most common situation is on the back of the hand or on the lower third of the forearm, but it also occurs on the scrotum, and it has been seen on the face, and at the outer and inner angles of the eyelids, in which latter case the features of a rodent ulcer may be assumed.

Epitheliomata also occur among retortmen, labourers, and stillmen. In these men the epitheliomatous growth does not arise from a previously existing condition due to the action of paraffin, such as a papule or wart as already described, but generally begins as a reddish pea-shaped nodule, in which the typical "cell-nests" are present practically from the onset, or on the site of an ordinary simple papillomatous wart or mole, or small cyst. There is the usual epithelial proliferation, accompanied later by the degenerative changes associated with an epitheliomatous growth. The epitheliomata which occur in oil workers and labourers, as distinguished from paraffin workers, without any primary condition of dermatitis, are as a rule found among those men—such as retortmen, labourers, stillmen, oil workers, etc.—who come into contact with ash, coke, or other gritty material. The scrotum is most frequently the site of such lesions, this being due to the difficulty of ensuring cleanliness of this region.

I have made a list of all cases of paraffin epithelioma which have occurred since 1900. In all 65 cases have occurred, of which 19 have been in paraffin workers proper, and 46 among the other grades of labour employed, such as retortmen, labourers, etc.

In the oil works comprised under Scottish Oils, Limited, there have been employed approximately five thousand workmen annually for many years, which number includes all forms of labour necessary in the distillation of oil shale and the refining of its products. It will be thus seen that the cancer incidence is approximately 1½ per cent. in twenty-two years, or under 0.1 per cent. per annum. Nineteen of these cases have occurred among those definitely known to have been employed in green sheds (paraffin sheds or crude paraffin departments), there being approximately two hundred men thus employed annually by Scottish Oils, Limited, during those years. The incidence of this condition among these workers is thus 0.5 per cent. per annum approximately. The ages of the cases recorded vary from 37 to 79 years.

Three were under 40 years of age.
Thirteen were between 41 and 50 years.
Twenty-six were between 51 and 60 years.
Sixteen were between 61 and 70 years.
Ten were between 71 and 79 years.

The sites of the epitheliomatous lesions were:

Scrotum	31	47.7%
Arm, forearm, and hands	21	32.3%
Face	4	6.0%
Ear	3	4.6%
Nose	2	3.0%
Groin	1	1.6%
Lip	1	1.6%
Anus	1	1.6%
Leg	1	1.6%

Of the nineteen cases among paraffin shed men the lesions were most prevalent on the arms, forearms, and hands thus:

Hands, forearms, and arms	12	63%
Face, neck, and ear	3	16%
Scrotum	3	16%
Groin	1	5%

These figures are in accordance with the facts stated that among oil workers, retortmen, and labourers the tendency is for the primary lesion to occur on the scrotum, being malignant practically from its early stages, while among paraffin shed workmen, as a general rule, the lesion occurs as a degenerative stage of warts or papules, which are most commonly situated on the forearms.

ETIOLOGY: EXCITING CAUSE.

Paraffin Scale.—It has hitherto been believed that the scale itself was the cause of the dermatitis (H.M. Factory Department Reports, 1913), but recent experiments with animals have clearly shown that the actual cause is the oil, before and after separation of the scale, and that the scale itself is not the cause of the dermatitis. While the exciting cause has been found to be the oils, the actual constituent of those responsible has not yet been determined. Various theories have been advanced, but so far no one has been definitely substantiated with any degree of certainty.

1. *That Nitrogenous Compounds may be the Exciting Cause.*[1]—In criticism of H. C. Ross's paper it may briefly be stated that all nitrogenous compounds are eliminated during the process of manufacture of the various final products, so that nitrogenous compounds as a cause of paraffin dermatoses may practically be dismissed from further consideration.

2. *Arsenic as a Cause of Paraffin Dermatoses.*[2]—As far as the paraffin workers of this industry are involved it may be said that arsenic is found in the raw material, oil shale, but only to an infinitesimal extent. It is also true that the dermatoses have some similarity to arsenic conditions, but nevertheless it can be said with certainty that the paraffin workers' dermatoses are not due to arsenical poisoning. On analysis of an average sample of oil shale it has been found that arsenic is present to the extent of 0.00056 per cent. by weight, or 0.0392 grain per lb., and that in the blue oil, which the workmen handle, it is present

[1] H. C. Ross, in paper on occupational cancer, *Journal of Clinical Research*, vol. iii, No. 4, October, 1918, p. 321.

[2] Dr. Bayet, of Brussels—*Comptes Rendus Académie des Sciences*, Paris, 1919, vol. clxviii, pp. 701-706.

to the extent of 0.000015 per cent. As the process of manufacture of the finished products of shale involves repeated distillations, and frequent treatment with acid and soda, it is certain that any arsenic, if present, is eliminated, and, on the other hand, no skin eruptions occur in the crude oil department, in which they might be expected to appear, if due to arsenic intoxication.

3. *Light in the Form of Radio-active Substances as Cause of Paraffin Dermatoses.*—The influence of light and actinic rays is well known as the cause of epidermic hyperplasia. In the tropics conditions known as solar keratoses are found, due to the heat and high actinic power of the sun's rays. It is improbable that a radio-active substance is the determining factor in the causation of the various forms of paraffin dermatoses described, as these would be much more widely distributed, and it might be expected that many of those coming into contact with the various grades of oil, refined wax, burning oils, and other final products would also be affected, all these products being hydrocarbons from a common source.

Organic Sulphur Compounds as a Probable Cause.—The presence of sulphur, in the form of organic sulphides, is constant in oil shale, in the crude and semi-refined products, and to some extent in the finished products as well. These exist as thio-alcohols or mercaptans, and are present throughout the different processes of distillation and treatment of the intermediate products. Similar types of lesions are found among tar workers, these also being engaged in distillation of hydrocarbons, with a considerable proportion of sulphur impurities. The possibility of sulphur as a cause of paraffin dermatoses must therefore not be overlooked.

The position may be summarized thus: The various forms of dermatitis, whether papular, pustular, or erythematous, found among paraffin workers are due to direct contact with some chemical substance which, by the formation of warts and indurated growths, acts as a predisposing cause of epithelioma, and that the determining factor or exciting cause of epitheliomatous degeneration is, in common with all other forms of cancer, unknown.

Predisposing Causes.

Age.—The influence of age is slight as a predisposing cause of papular or erythematous eruptions. On the other hand, it has a decided influence on the occurrence of epitheliomatous lesions, these practically never being got on men under 40 years of age, and as a rule these appear at more advanced ages than this.

Length of Service in Paraffin Departments.—Length of service is of considerable importance in determining the nature of the skin lesions. As previously stated, the primary form of pustular dermatitis appears after a few weeks' work in the paraffin sheds. The papular types likewise appear after a few weeks' service in these departments. The presence and degree of erythematous dermatitis are in proportion to the length of service. The less extensive and less indurated conditions begin to appear after seven or eight years, while the more indurated and more chronic types are only seen on men who have completed many years of service, the worst cases having been continuously thus employed for terms varying from twenty to forty years. Epitheliomatous conditions are only found after long terms of service, these usually arising from chronic warts or papules, which may exist in a benign state for many years before undergoing epitheliomatous changes. Those affected during recent years have been paraffin workers for periods from thirty to forty years.

Idiosyncrasy and Predisposition.—Accumulated evidence tends to show that some workmen have a greater tendency to be affected than others, the working conditions otherwise being the same. It has already been suggested that there may be an idiosyncrasy on the part of a few youths towards the action of semi-refined oils, by their having pustular eruptions soon after beginning work, while the majority escape. Likewise the fact that only approximately half of those working among the same materials and under the same working conditions suffer has never been otherwise explained, and the only reason that can be advanced is that there is greater tolerance on the part of some than of others. I have had occasionally under observation large warty growths with central necrosis, and suggestive of the stage immediately preceding malignancy, which instead of undergoing epitheliomatous degeneration have healed after separation of the necrosed area. Cases such as these might be considered as only lacking in the personal factor, which must have a certain amount of influence in determining the development of a benign into a malignant condition. These facts are suggestive that an idiosyncrasy may exist towards the action of paraffin substances, and that the personal element is a factor of some importance in the further development of warts and papules into epitheliomata. The following table shows clearly the proportion of those unaffected at four recent examinations since 1919:

	Green Shed Men (Crude Dept.)	White Shed Men (Refining Dept.)	Green and White Shed Men.
February, 1919 ...	28.7%	71.2%	42.0%
August, 1919	29.5%	83.6%	44.5%
March, 1921	25.4%	94.3%	49.3%
August, 1921	39.1%	91.4%	47.9%

It will therefore be seen that a considerable proportion of men escape, many of whom have been paraffin workers for long periods. On the other hand, a number of those having eruptions have been paraffin workers for short periods only.

Want of Cleanliness.—In recent years very considerable attention has been paid to the importance of cleanliness, and facilities have been freely given for this purpose, as will be described later. Notwithstanding strict attention in this respect it cannot be said that the incidence of early or papular eruptions has been more than slightly diminished, but on the other hand, there has been a marked diminution in the frequency of the more chronic types, such as erythematous dermatitis—so much so, that recent erythematous dermatitis is now uncommon, while the more chronic and old-standing conditions may be said to be more prevalent among those whose habits of cleanliness in the past might have been improved—that is, the influence of greater attention to cleanliness has been followed by a lessening of this form of occupational eruption.

Table showing the Results of Five Examinations of Green Shed and Sweating Shed Workmen Combined.

(Workmen in crude paraffin departments and in paraffin refineries.)

Dates of Examinations.	March-April, 1919.	July-August, 1919.	March, 1921.	Sept., 1921.	Feb., 1922.
No. of men examined	188	146	148	113	80
Group 1 ...	79 = 42.0%	65 = 44.5%	73 = 49.3%	60 = 53.1%	31 = 38.7%
Group 2 ...	29 = 15.4%	46 = 31.5%	24 = 16.2%	31 = 27.4%	15 = 18.8%
Group 3 ...	55 = 29.8%	24 = 16.4%	42 = 28.4%	21 = 18.6%	27 = 33.7%
Group 4 ...	21 = 11.2%	11 = 7.6%	9 = 6.1%	1 = 0.9%	7 = 8.5%
Group 5 ...	3 = 1.6%	None	None	None	None

The average frequency of eruption for the five examinations is:

Group 1. Those having no occupational eruption 45.5%
Group 2. Those having a few papules only... ... ... 21.4%
Group 3. Those having limited degree of eruption ... 25.1%
Group 4. Those having extensive eruptions 7.6%
Group 5. Those showing presence of warty growths ... 0.4%

Seasonal Conditions.—As a general rule occupational conditions are worse during winter months. As might be expected, cold, by lowering the vitality of the skin, accentuates old-standing eruptions, especially those of the nature of dermatitis erythematosa and erythema simplex. In the former condition the skin is more roughened and scaly, and the warty excrescences are more numerous during winter and spring than in summer months.

Measures Adopted for the Protection of the Workmen.—During recent years a great deal has been done for the protection of the workmen in the paraffin departments in the various works. These consist of the provision of adequate facilities for ensuring absolute cleanliness of bodies and clothing of the workmen, the use of protective applications for the exposed parts, and regular medical inspection every three months.

Protective Applications.—So far as is at present known, the best protective application is castor oil, especially in its semi-crude thick state. This is insoluble in any of the paraffin series, and so forms an impervious covering for the arms, etc. Before beginning work each workman smears his hands and arms, and

occasionally his legs, with castor oil, and occasionally throughout the working day after washing. This has been in use for a long time in the paraffin departments, as nothing better has yet been found.

Protective Clothing.—No practical form of clothing has been found that can withstand the extremely searching and solvent action of the paraffin series. Leather, rubber, and other waterproof materials are readily acted on, and rapidly become saturated with oils, and are not of any real use, though some of the workmen place layers of brown paper inside their boots before beginning work, this being discarded each day.

Treatment.

The various methods of treatment, all of which are purely local, are carried out on the ordinary lines of treatment for skin diseases generally. Occupational comedones are readily removed by the usual method of expression. Papular conditions readily disappear on ceasing work in paraffin sheds, and as a rule require little or no treatment, as in the early stages these tend to heal spontaneously. Mild antiseptic pastes, such as boric ointment, suffice to prevent septic infection, though this is uncommon, as the oily materials worked with are themselves both aseptic and germicidal. In the more acute forms of erythematous conditions sedative applications are of use, the most effective being ichthyol and lead preparations. In the more chronic types these are also useful, or pastes of zinc oxide and salicylic acid, and if wartiness is a prominent feature stronger preparations of salicylic acid are beneficial. In the more rapidly proliferative warty conditions, salicylic and chromic acids readily remove superficial warts, but when these extend more deeply into the skin tissue carbon dioxide snow is of greater service. On any appearance of warts or nodules proliferating too rapidly with excessive growth, removal by excision is a sure method of treatment, and it is exceptional to find recurrence.

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Reviews.

THE PLACE OF VERSION IN OBSTETRICS.

Obstetricians will receive Dr. Potter's monograph on *The Place of Version in Obstetrics*[1] with an interest born of the stir which his methods and writings have caused in the United States, whereof rumours have reached us on this side of the Atlantic. Those who peruse the volume will find it to be well written, illuminated with much quiet humour, and wholly devoid of any apparent resentment or rancour against critics who have sometimes dealt more faithfully than politely with the author.

The plan of the book is a survey of the history of the operation of version from the earliest times to the present day, with a rather more detailed consideration of the position which the operation holds in the accepted teaching of obstetrics at present. This is followed by a full and well-illustrated description of the author's own method of performing internal version, by a reply to certain of the criticisms which have been made, and by a chapter on indications and the author's general conclusions. The historical sections are admirably done, and provide most interesting and entertaining reading. In his description of what we may call the revival of version in the early nineteenth century, the author relates with sympathetic fullness the story of Sir James Y. Simpson and Mr. Figg. Apparently Mr. Figg is the direct intellectual ancestor of Dr. Potter, because after Simpson had, by means of internal version, successfully delivered of a living child a woman whose previous three children had been born dead after long forceps and embryulcia, he was so filled with enthusiasm for the operation that he began to adopt it more and more frequently until it became practically his one method of delivery. The reason was, apparently, that if version can be so successful in the case of contracted pelvis it ought to be much more successful in normal conditions! So far as one can see, Dr. Potter's reasoning is on very similar lines, and his conclusions are identical. His method, however, varies in some important respects from that of his predecessor. Dr. Potter now delivers at least 90 per cent. of his patients by internal version, and in his last 938 cases the maternal mortality was *nil*, and the foetal mortality certainly not greater than that associated with good obstetrics on recognized lines. Whatever criticism, therefore, we may have to offer upon Dr. Potter's thesis, we cannot withhold a tribute of admiration to the individual skill he has attained in this method of treatment, and of congratulation upon his admirable results.

The special points in his method to which we would refer are, first, the necessity of very careful surgical preparation in regard to antiseptics and asepsis, and the use of long rubber gloves up to the elbow. Secondly, the patient is put in a modified Walcher position; the limbs are held by two nurses, if available, otherwise they rest on chairs. Next, deep anaesthesia is a *sine qua non*, and for safety this of course necessitates the assistance of an accomplished anaesthetist. The operation is begun by "ironing out" the vagina by a process of stroking and stretching with the gloved fingers. The hand is then introduced through the fully dilated cervix, the membranes separated from the uterine wall all round and ruptured as high up as possible without disturbance to the placenta. *Both* feet of the infant are then brought down to the vulva in the ordinary way. No haste is exercised in delivery after the umbilicus has come into view. The anterior arm is delivered first, and the body then rotated until the posterior arm comes underneath the pubic arch. Suprapubic pressure is not exercised until the head actually enters the cavity of the pelvis, the author believing that extension of the arms and head is often the result of premature interference with the natural powers at this particular stage. Extension of the head is overcome by gentle traction by the fingers in the child's mouth. No rough or violent methods of artificial resuscitation are employed, the author's experience having taught him that nearly all the babies begin to breathe spontaneously when let alone, provided the heart is beating. Blue babies give him no anxiety, but white babies do.

Dr. Potter claims that 60 to 70 per cent. of his cases are occipito-posterior, and he explains his figures by saying that he examines his cases early, before rotation has occurred. He also has apparently no confidence in any diagnosis of position based upon the palpation of the fontanelles and sutures. He relies solely upon the palpation of the ear and other portions of the child's gross anatomy after he has introduced his hand into the uterus. While believing that occipito-posterior positions are considerably more common than the usually quoted percentages indicate, we regard this claim as somewhat staggering. Dr. Potter does not really examine his patients earlier than do others, who, without introducing the hand into the uterus, are, we venture to assert, quite as capable of making a correct diagnosis of the position of the head as is Dr. Potter with his hand in the uterus.

In the last two years Dr. Potter claims to have personally delivered 2,243 cases, and to have performed version on 1,872. In his practice, therefore, almost every condition except those calling for Caesarean section is to be regarded as an indication for version, and this being so it is not surprising to find that the chapter on "Indications" is perhaps the feeblest in the whole book, and displays a lack of judgement. The author states that malpositions of the child were present in more than half his cases. It is of course self-evident from his figures that a very large number of the occipito-posterior positions, at any rate, would have righted themselves if left alone, and probably without undue prolongation of the labour. The author is, therefore, in the main driven back for justification upon his desire to eliminate the second stage of labour, to diminish shock and trauma, and to dispel the fear of childbirth from the minds of his patients. We are disposed to think that the dread of childbirth is not so great as Dr. Potter would have us believe. However this may be, the proper administration of morphine and hyoscin does, in British experience, abolish both this fear and all *post-partum* shock

[1] *The Place of Version in Obstetrics.* By Irving W. Potter, M.D., F.A.C.S. London: Henry Kimpton. 1922. (Sup. roy. 8vo, pp. 138; 42 figures. 25s. net.)

without risk to either mother or child. The deliberate policy of interference with the natural course of labour in perfectly normal cases is, we hope and feel sure, one which will not commend itself to British medical practitioners. We cannot do other than condemn utterly Dr. Potter's wholesale employment of version, despite the excellent results that the author personally has obtained. At the same time, it seems that Dr. Potter's technique is in some points an advance on the ordinarily accepted method of internal version—in particular, in the avoidance of hurry (and the usual attendant flurry) in delivery of the thorax, arms, and aftercoming head, and in the avoidance of violent methods of resuscitation of a "blue baby." It is well for us to be reminded of the value of version, carefully executed, in many conditions in which at present recourse is had to the forceps operation, almost without thought of any possible alternative. While, therefore, we wholly disapprove of Dr. Potter's thesis, we think that his ardent advocacy of version will have no ill effect upon the teaching of obstetrics—possibly the reverse. Certainly he has produced a book which, however much we may disagree with the teaching, is eminently readable. He is to be congratulated upon the excellence of his illustrations and the charm of his style.

RADIUM THERAPY.

A VERY comprehensive book entitled *Radium Therapy*,[2] the work of Dr. FRANK EDWARD SIMPSON, Professor of Dermatology of the Chicago Policlinic, is intended primarily for those actually engaged in radium therapy, but the author wishes it also to serve as a reflex of the current practice in this branch of medicine. Following upon chapters which teach of radio-active substances and radium itself from the historical point of view, the physics and the properties of the alpha, beta, and gamma rays are described in detail; in chapter vii the author's experimental work on the absorption of gamma rays in water as measured by two types of ionization chambers is set forth, and illustrated by means of diagrams.

There are two chapters on the biologic effect of radium rays which largely consist of a summary of the more important work which has been done by various research workers. References are made to the stimulation of tumour growth by insufficient radiation, but the author's clinical experience has not convinced him that any actual stimulation of tumour growth by radium rays occurs. He doubts, indeed, whether this would be possible under the modern method of large primary dosage. In discussing the problem of immunity to malignant disease it is suggested that it is possible that the different response of similar tumours to radiation depends to some extent upon the systemic defensive powers of the organism, and that the lymphocytic system is of importance in connexion with the disappearance of malignant growths under the influence of radiation. The chapter on dosage is written largely from the mathematical point of view, and the results of many mathematical calculations considered to be of value in estimating the intensity of radiations from different apparatus at different distances are set forth in tabular form.

We come next to the main portion of this book, which deals in separate chapters with radium in general surgery, in gynaecology, in dermatology, in ophthalmology, otology, rhinology, and laryngology; there is also a chapter on the treatment of the ductless glands, and one on radium in internal medicine. Reference is made also to professional injuries due to radium. A bibliography which is comprehensive and takes up nearly sixty pages brings the work to a conclusion. Full-page illustrations of cases before and after treatment afford striking proof of the good results which can sometimes be brought about by radium treatment and serve to emphasize its value as a therapeutic agent. The author shows many examples of naevi and angiomata of the face treated with unusually good cosmetic results.

The book is well printed on excellent paper, and the numerous illustrations are finely reproduced. The general arrangement of its text should make this a valuable book of reference for anyone requiring hints for the treatment of individual cases; and as a whole it is a very complete textbook of the present position of radium therapy.

[2] *Radium Therapy.* By F. E. Simpson, A.B., M.D. London: Henry Kimpton. 1922. (Roy. 8vo, pp. 591; 166 figures. 36s. net.)

THE CRITICAL AGE.

DR. ARTHUR LECLERCQ has written an attractive volume[3] on the rather depressing subject of the affections specially prone to appear at the turning point of life when, as he pictures, the traveller, having at last reached the summit of the hill, begins to descend, and thereafter does so with increasing rapidity. At this period the organism usually—though there are exceptions, and of course many will consider their case to prove the rule—is beginning to show signs of exhaustion, and the functional vigour of the organs is on the decline. The pathology of the critical age is regarded as comprising three main groups of diseases: First, those of endogenous origin, gout and "paragouty" affections, which cover a wide field and recall Murchison's lithaemia—namely, asthma, bronchitis and emphysema, eczema, herpes, acne, prurigo, dyspepsia, pharyngitis, tonsillitis, hepatic congestion, mucous colitis, haemorrhoids, renal colic, cystitis, urethritis and calculous pyelonephritis, migraine, facial neuralgia, sciatica, arthropathies, and myalgias. In this first category are also included obesity, diabetes, arterio-sclerosis, and granular kidney. The second group contains the exogenous affections due to infections, such as syphilis, enteric, rheumatic fever, and influenza, fifteen to twenty years previously, the effects of which accumulate and show themselves in cardio-vascular and renal lesions. The third group, the exo-endogenous, due sometimes to an external cause, such as alcohol, lead, or tobacco, or to premature age, does not appear to be a very sharply cut one; it is described as including the manifestations of arterio-sclerosis, such as dyspnoea, angina pectoris, cerebral attacks, and uraemia. The lesion is referred to as the result of the rust of life and as attacking the internal coat alone of the vascular system. Descriptions are given of gout, "paragouty" affections, and obesity; on the first page of the section on the pathogeny of gout there is a well-meant tribute to the labours of British physicians, among whom Murchinson, *Luff*, Dyce-Duckworth, and Lathan have suffered from the printer's unfamiliarity with our spelling.

An interesting, if not entirely convincing, distinction is drawn between obesity in males which is regarded as alimentary, and that in women which is in the main referred to toxaemia caused by ovarian or polyglandular defect and by failure to eliminate the poisons in the menstrual flow.

It should be explained that this is a first volume of a new edition of a work on the diseases of the fifties published by the same author eleven years ago and reviewed in the second volume of this JOURNAL for 1911, p. 74.

[3] *Les Maladies de la Cinquantaine.* Tome I: *L'Age Critique.* By A. Leclercq. Paris: G. Doin. 1922. (Demy 8vo, pp. 175. 10 francs.)

AN INDEX OF THERAPEUTICS.

IT was a happy idea to include in the series of Oxford Medical Publications a volume such as the *Oxford Index of Therapeutics*,[4] edited by Dr. VICTOR E. SORAPURE. The purpose of the book is, in the editor's words, "to extend the interchange of ideas and of the methods of practice of each of the great branches of the English-speaking practitioners of medicine." Dr. Sorapure claims to have had exceptional opportunities of judging the needs and interests of both British and American doctors, and no one will deny the justice of his claims. The book is designed first, foremost, and all the time as an up-to-date book of reference for the general practitioner, embodying the best teaching of England and America. With this object the editor has secured the services of a number of distinguished contributors from Great Britain and the United States, all of them recognized as authorities on the subjects with which they treat. The aim of each of them is to give simply and briefly what he considers to be the best method of dealing with the particular condition he may have under review.

The work is arranged in four sections. Part I. on methods, occupies by far the largest portion of the volume. It consists of a series of monographs arranged in broad groups wherever the clinical relation is such as to justify it. Thus, under "Obstetrics" we find discussed the treatment of all the normal and abnormal conditions pertaining to pregnancy and parturition; similarly with genito-urinary conditions, diseases of children, heart conditions, and so forth. Such subjects as do not fall conveniently into these groups are arranged in alphabetical order. The editor insists that "the alphabetical

[4] *The Oxford Index of Therapeutics.* Edited by Victor E. Sorapure, M.B., Ch.B., F.R.C.S.Edin. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1921. (Demy 8vo, pp. xvi + 1126; 109 figures. £2 2s. net.)

order . . . is not intended to serve mainly for purposes of reference. This is the function of the index." It must be conceded that there are certain advantages in arranging the subject-matter in this way. For instance, it admits of a subject like radio-therapeutics being dealt with in a thoroughly comprehensive manner under a single heading. But on the other hand, a book of this kind is more often used for making a reference to some particular subject, possibly in the course of a round of professional visits, rather than for continuous reading. A strict alphabetical arrangement such as is generally adopted in works of this character will generally be found more simple and expeditious by the reader and will frequently save him any necessity to refer to the index. This is only a minor criticism of the manner in which the matter is presented.

As regards the subject-matter itself nothing but praise can be accorded. The names of the authors are sufficient guarantee for the soundness of the advice given, and it is amazing how much valuable and practical information has been crammed into the space available. Only those methods of treatment which are by common assent agreed to fall within the province of the general practitioner are recommended. The teaching throughout is based on accepted principles and well-tried methods, and therapeutic stunts find no place in these pages. Where need arises useful illustrations, generally in diagrammatic form, have been inserted in the text. Part II is a pharmacopoeia of those drugs only which have been mentioned in Part I, while in Part III these drugs and preparations are classified under their pharmacological properties. The practitioner should find Parts II and III most useful as adjuncts to Part I. Part IV consists of an excellent index which permits at once easy and rapid reference being made to any subject in the text. It can truthfully be said that the editor and his collaborators have worthily achieved their object in providing English-speaking practitioners with a handy and reliable book of reference. They are heartily to be congratulated on the successful result of their labours.

NOTES ON BOOKS.

Messrs. Oliver and Boyd have issued a fifth edition of a folder entitled *Income Tax—Tabular View*.[5] It is a concise statement, has evidently been carefully prepared, and supplies a mass of useful information in a most accessible form. The tables include the past and present rates of income tax and super-tax, the money value of various totals of allowances, and the tax borne on and the gross equivalents of various net (that is, tax-free) dividends; but most taxpayers will find even more useful those sections which are designed to set out as briefly as possible the various claims which can be made, or the thirteen succinct paragraphs of reminder and advice. It should be said that in the main the information given is directed to enabling the reader to ascertain the proper amount of tax payable in various circumstances on a known amount of income; even the ingenuity of the authors could hardly provide, within the limits necessarily set by conditions of production, much information on points arising on the ascertainment of the amount of the income to be assessed, though it is in that connexion that the need for a concise means of reference is sometimes most keenly felt.

In *Paris à la Carte: Where the Frenchman Dines and How* Mr. Sommerville Story[6] supplies a real want by conveying the information so essential to visitors to the capital which he designates as the city *par excellence* of restaurants. He writes in a pleasant, gossipy strain, with anecdotes about the history of the famous restaurants, cafés, and houses, their proprietors, habitués, and special plats. The atmosphere of Paris is so successfully created in the first chapter on "the apéritif hour" that many readers will mentally eat their dinners over again with a pleasant sense of reminiscence. The ground is fully covered without tiresome detail, and all tastes are catered for. *La Tour d'Argent*, whither only true gourmets go, and which, as it never advertises, is little known to the ordinary tourist, and Duval's numerous establishments, where it is still possible to get a modest meal, with half a bottle of wine or mineral water, at a reasonable price, receive equal attention. There are attractive chapters on "The traditions of *la haute cuisine*," and on "The romance of some famous dishes." When a second edition appears—and it cannot be long before it is called for—an index would add to its utility, though it would be difficult to increase its charm.

[5] *Income Tax—Tabular View.* London and Edinburgh: Oliver and Boyd. (1s. net; post free 1s. 2d.)

[6] *Paris à la Carte: Where the Frenchman Dines and How.* By Sommerville Story. London: A. M. Philpot, Ltd. 1922. (Fcap. 8vo, pp. 220. 4s. 6d.)

THE HEALTH AND HEALTH ADMINISTRATION OF ENGLAND.

(*Continued from page 324.*)

In continuing our notice of Sir George Newman's report on the State of the Public Health in 1921 we may take next the section dealing with tuberculosis.

Tuberculosis.

The basis of preventive action is laid down as twofold—first, to fortify the powers of resistance by nutrition, hygiene, and immunization, and secondly, to prevent spread of infection by persons or materials, including meat and milk. Steady progress is claimed for this policy in 1921, especially as to (*a*) earlier notification, (*b*) selection of patients for institutional treatment and in its duration, and (*c*) economical utilization of the various parts of the national system. A substantial reduction of expenditure is hoped for, with reduction of the disease.

Following the war increase in the mortality there was a rapid drop in 1919 to the lowest rate on record, and a further considerable fall in 1920. In 1921, however, there was a small rise in deaths from phthisis, though in those due to other forms there was a small decrease. Sir George Newman suggests that the increase may have been associated with unemployment and inadequate nutrition, as illustrated in Germany and Poland.

Notifications of new cases, both pulmonary and non-pulmonary, were in 1921 the lowest on record, though the rate of diminution was not so rapid as in the two previous years. Notification is still incomplete and delayed. At Barnsley 87 per cent. of the fatal cases were either unnotified or notified only within six months of death. At Bath, of 54 fatal cases only 35 had been notified, 9 of them within three months of death. In one district 208 of 350 notifications were not received until after the stage when a cure could be expected, owing to delay either in getting a medical opinion or in recommendation for treatment. In Lancashire, however, 70 per cent. of new cases were intimated for the opinion of the tuberculosis officer before notification. Examination of contacts is still insufficiently carried out, sometimes owing to want of staff, but often because cases are retained too long at dispensaries instead of being handed over for domiciliary treatment subject to occasional consultation with the tuberculosis officer.

Tuberculosis Schemes.

Dispensaries number 421. Residential institutions are 443, of which 210 are provided by the local authorities, and the rest are voluntary. The beds in the former are 11,262 and in the latter 7,681, a total of 18,943. Owing to local circumstances a considerable margin are at any given date unoccupied.

Administration often lacks co-ordination; "there is still in many areas too much of the out-patient room atmosphere in the dispensary, too little examination of contacts, and insufficient preventive work." The tuberculosis officer should be in close touch with the general practitioner, who should treat as many cases as possible at home. The officer, it is pointed out, should consult with the practitioner and use the reports under the Medical Benefit Regulations; he should also report his periodical examinations to the practitioner. Valuable as are the reports of health visitors, the tuberculosis officer should occasionally visit himself, but this is not done everywhere. Supervision of patients using shelters should be effectively carried out.

Sanatorium benefit was transferred on May 1st, 1921, from the insurance administration to the county or county borough councils; and the Public Health (Tuberculosis) Act of 1921 imposed on councils the duty of providing treatment schemes, and circulars and regulations were issued for the new arrangements. Preferential treatment of ex-service men has been continued.

The reports of a number of medical officers of health lead to the opinion that the proportion of persons alive and employed five or more years after residential treatment is relatively large, looking to the late stage at which the majority came under treatment, and "residential treatment should not be lightly condemned as a failure—rather we should be encouraged that the results have been so good." It may prolong life and working capacity, even where admission is at too late a stage for arrest.

Care and After-care.

Investigation by the Ministry shows that excellent work is being done. The sociological problems require early treatment as well as the patient. Various pertinent hints are given as to training sections for ex-service men; 410 places have now been provided, and will shortly be occupied. They are intended to teach men to work on their own account in suburbs, country towns, or villages, at market gardening, rural carpentry, furniture repairing, house repairing, tin-smithing, brush and basket making, jewellery, and watch and china repairing. It is not expected that the work will be commercially successful at once: the men are mostly damaged lives. The new plans differ from industrial colonies in that the men will have to return to normal competitive life.

In his conclusion as to tuberculosis Sir George Newman says: "The solution of the problem will be found in a social evolution, in the broad acceptance of the way of health, domiciliary and industrial. Tuberculosis is a harvest, the effect of a cause, a seed sown in a favourable soil. We must restrict the seed sowing, and we must make the soil unfavourable and resistant."

General Epidemiology.

In classifying preventive measures Sir George Newman places sanitary environment first, individual resistance second, and avoidance of infection third.

Small-pox.—The number of cases of small-pox notified was 343. Of these 7 were notified at ports; 23 more were discovered, 3 of them at ports; 30 notifications were withdrawn on revision of diagnosis, so that the net total was 3.6. The centres were Nottingham, Middlesbrough, and the Colne Valley. The Nottingham area had 142 cases with no deaths. School children to the extent of 42 per cent. were unvaccinated, but 10,000 persons were successfully vaccinated or revaccinated at the public expense. In the Colne Valley there were 94 cases of a mild type, but a group in the New Forest was of virulent type, and vaccinal condition made the usual distinction. The same remark applies to a statistical table relating to the cases throughout the year. The term "alastrim" was used in reporting three of the cases.

Enteric Fever.—Details of a serious outbreak of enteric fever at Bolton-upon-Dearne and contiguous districts in the West Riding were published in our note on Dr. W. Vernon Shaw's special report to the Ministry (British Medical Journal, July 8th, 1922, p. 56). Shellfish caused various small outbreaks in the course of the year.

Scarlet Fever.—The number of notifications of scarlet fever was 137,073, an increase over 1920. The disease was mild and the mortality low. Administrative measures in scarlet fever are being considered by the Ministry in view of the heavy call the disease makes on institutional accommodation.

Diphtheria.—Stress is laid on the Schick test.[1] The classification of carriers in accordance with their infective ability is receiving attention. Emphasis is laid on the advisability of giving antitoxin as soon as a diagnosis is reached on clinical grounds, without waiting for the laboratory report; the minimum initial dose, it is thought, should be 8 000 units, followed by another administration in twelve hours if notable improvement has not occurred.

Influenza.—The report on this disease covers, in addition to 1921, the first quarter of 1922, as the epidemic which began in October, 1921, only then attained its climax. In the early part of 1921 the disease was very little prevalent. The last outbreak, it is said, bore the same relation to the pandemic of 1918 as did the epidemic of 1895 to the pandemic of 1892. In the recent epidemic few divisions of the country remained ultimately unaffected. The strain was less severe than in 1918-19; lung involvement was comparatively infrequent; fatality was most marked at the two extremes of life, and generally the type was interpandemic, though gastro-intestinal disturbances were rather frequent, especially in the northern and midland areas. Rashes also occurred, and there were instances in which jaundice in children preceded the epidemic by four or six weeks. But the main stress was on the respiratory system, though pneumonia was not specially prominent.

Encephalitis lethargica, polioencephalitis, poliomyelitis, and *cerebro-spinal fever* are briefly reported on. A progressive increase of the number of cases diagnosed as encephalitis lethargica has occurred during the last three years; polioencephalitis and poliomyelitis were also more frequent than in the previous year, but cerebro-spinal fever showed a steady diminution from 1915, when the number was 2,566, to 1921, when it was only 411. The Ministry has been co-operating with the Medical Research Council in trying to get an effective curative serum against Type II meningococcus.

Relation of Food to Health and Disease.

Milk.—The conditions of milk production in seventeen districts were examined. Producers of "certified" milk (the highest standard) increased from 9 in 1920 to 23 in 1921, and of Grade A milk from 11 to 15. Retailers of the former increased from 7 to 44, of the latter from 5 to 6, and of both from 3 to 5. One producer's licence was revoked. Bacteriological standards, as for "certified" milk, are found very efficacious, and less troublesome to supervise than the detailed requirements for Grade A, which ought also to have a bacteriological standard. The National Institute for Dairy Research at Reading is doing good work.

Meat Inspection.—The report of the Departmental Committee, published in July, showed that there is no conflict between public and legitimate trade interests. The Committee agreed that better and more uniform inspection at slaughtering is needed, and can be carried out economically. Sanitary inspectors should be specially educated in such work. Facilities for practical study are being extended by the larger authorities.

Food-poisoning inquiries have been the subject of arrangement with the Medical Research Council, and medical officers of health have been circularized. Various outbreaks were reported, and some were investigated under the arrangements made. Two instances of belladonna poisoning were met with, one of them due to eating rabbit snared where belladonna grew; in this case atropine was found in the liver.

Sale of Food and Drugs Act.—Over 113,000 samples were reported on by public analysts; 6.7 per cent. were found to be adulterated, as against 7.1 in 1920. The percentage of milk adulteration found was highest in Sheffield, Birmingham, Salford, and Derbyshire, and lowest in Derby, the extremes being 10.97 and 1.85. The difference between the average composition of milk and the standards under the Sale of Milk Regulations gives the adulterator a margin to work on.

(To be continued.)

[1] See British Medical Journal, 1921, vol. ii, p. 991.

BACTERIOLOGY OF PNEUMONIA AND INFLUENZA.

The Ministry of Health has issued a report* containing three contributions to the study of pneumonia and the pneumococcus and one on the serological characters of influenza bacilli.

Pneumonia.

Pneumonia is a disease which calls urgently for further bacteriological study because it is a substantial cause of national mortality. In 1921 it was primarily responsible for 34,708 deaths in England and Wales, apart from those due to diseases in which it is the chief secondary complication, such as measles, whooping-cough, and influenza. Moreover, the important advances achieved by the grouping of pneumococcus types and the preparation of antiserums against each group have already resulted in modifications in the treatment of this disease and a considerable reduction in the mortality of those cases in which it was possible to administer an appropriate serum. Attention has been frequently directed in the pages of this Journal to these researches as they have been published. The report before us contains a concise historical account of what has so far been achieved, together with an account of further contributions to the laboratory study of allied problems. When the international conference on the standardization of serums and serological tests was held in London in December, 1921, it was agreed that international co-operation was needed to ascertain the distribution of different types of the pneumococcus and to determine the best criteria for the production of effective therapeutic serums. The report answers some of the questions raised at that conference and indicates lines for further investigation.

The first report by Dr. Arthur Eastwood, entitled "A brief review of recent bacteriological work on pneumococci," points out that in the earlier work, to which Washbourn and Eyre made important contributions many years ago, attempts were made to produce antipneumococcus serum of therapeutic value, but it was not until Neufeld and Händel in 1912 demonstrated that pneumococci could be divided into groups that much progress was made; they showed that an immune serum was not possessed of any protective qualities except towards the same group against which it had been prepared. Investigations at the Rockefeller Institute subsequently showed that pneumococci could be divided into four groups, of which Types I and II possessed sharply defined serological characters and were rarely encountered apart from disease. The American Type III, or *Pneumococcus mucosus*, had distinctive morphological and cultural characteristics and was found to occur commonly in normal mouths. A large number of other strains were found which exhibited a great diversity of serological reactions, and did not belong to any of the above groups; this heterogeneous collection was termed

* Reports on Public Health and Medical Subjects. No. 13. Bacteriological Studies on Pneumococci and Influenza. London: H.M. Stationery Office. To be obtained through any bookseller. Price 2s. 6d

Type IV. The following table shows the frequency with which these types were encountered and their virulence:

	Incidence per cent.	Mortality per cent.
Type I	33	25
Type II	31	32
Type III	12	45
Type IV	24	16

The Rockefeller workers were able to produce a serum efficacious only for Type I infections, and in these infections the mortality has been reduced to 10 per cent. The serum must be given intravenously in doses of 90 to 100 c.cm., repeated every eight hours until there is a satisfactory fall of temperature and improvement in the symptoms. In infections due to Types II, III, and IV no benefit followed administration of serum prepared against these strains.

Dr. Eastwood's review of the researches of other workers brings out certain facts of considerable importance. Thus it has been found by employing the absorption tests that serological relationship exists amongst strains which are usually regarded as antigenically distinct, and that prolonged culture in homologous serum may modify profoundly the agglutinability of different strains; these changes in the serological reactions are accompanied by loss of virulence and reduction of antigenic capacity. That there may be little relationship between agglutination titre and protective power in a serum is another fact emphasized by many workers.

Although the Rockefeller investigators were only able to produce a protracted serum against Type I infections, other workers employing different methods claim to have produced antipneumococcus serum protective against all strains. An entirely new departure in serum therapy has been made by Preston Kyes, who appears to have cured human pneumonia by the injection of serum from fowls immunized with massive doses of pneumococci. Truche has described a method for preparing a polyvalent antipneumococcal serum by inoculating horses with an antigen treated with alcohol and ether. The apparent diversity of antigenic structure amongst strains of pneumococci presents difficulties which have not yet completely been overcome, but there is an indication that ways out of these difficulties may be found, and the benefits of serum treatment secured for all forms of pneumococcus infection.

The second paper is by Dr. Frederick Griffith on "Types of pneumococci obtained from cases of lobar pneumonia." In order that workers in different parts of the world may be able to compare the results of their investigations into the prevalence of types of pneumococci in different countries and at different seasons it is necessary that some uniform method be adopted for the isolation of the organism, the preparation of the agglutinating serum, and the carrying out of the test. Dr. Griffith makes the following suggestions towards the formulation of a uniform diagnostic test. Since much confusion has already arisen from the comparison of results obtained by fundamentally different methods, he recommends that a standard method should be based on that of the Rockefeller Institute, the results of which have been confirmed in many countries. He considers it preferable that the pneumococcus should be isolated by the intraperitoneal injection of a mouse and the recovery of the organism from the heart's blood rather than by direct plating on laboratory media, one reason being that more than one type of pneumococcus may occur at the same time in the sputum, and the predominant virulent type, which will multiply in the mouse, is most likely to be the cause of disease in the human being. His experience indicates the value of the following technical details:

1. The suspensions used for agglutination should be whole broth cultures, since they give the sharpest results.
2. Agglutinating serums should be prepared in the rabbit, since this animal yields the most specific serums.
3. Strains used for immunization should be maintained in virulence and should therefore not be subcultivated for long periods on solid media.

In a series of 150 cases of lobar pneumonia, taken mainly from the London area, Dr. Griffith finds that the American Types I, II, and III occur in about the same proportion as in the United States, and he agrees that these types are serologically distinct. There remain, however, a large number of strains which differ from these three types and present many varieties amongst themselves. These unclassified strains are placed in Type IV, and it is interesting to note that these organisms are responsible for cases of pneumonia somewhat more frequently in this country than in America. In carrying out protection tests in mice the test culture should be administered intraperitoneally to ensure accuracy of dosage; such protection tests confirm the serological independence of the types of pneumococci. Protective serums act equally well, whether inoculated subcutaneously or intraperitoneally, and whether the test culture is injected immediately after the serum or after an interval of eighteen hours. The mode of action of antipneumococcal serum is still unknown, since it has been shown by absorption tests that there is no firm union between antigen and antibody and no apparent neutralization of the protective properties.

The third report is by Dr. Eastwood on "The significance of serological differences amongst pneumococci." Here are passed in review all the current general ideas about antigens and antibodies, these being considered from both the chemical and physical points of view. In Dr. Eastwood's opinion the "mosaic pattern" theory, or theory of multiple antigenic components, as an explanation of the nature of antibodies and their relation to antigens, has been pushed a great deal too far. Though of value in explaining the behaviour of other groups of bacteria showing some serological relationship, it is definitely an encumbrance when applied to the four groups of pneumococci which in their serological reactions appear to be so independent. It may be that the common antigenic element probably present in all strains of pneumococci is masked in each group by the acquirement of some secondary factor which prevents the characteristic response to the common antigenic element. There is always the possibility, also, that the pneumococcus may be changed in the living body from one type to another, for the persistence of type in prolonged subculture does not show that mutation cannot occur in the living body. The practical question involved is whether or not it will be possible to produce antipneumococcal serum for strains other than those belonging to Group I, and on this subject Dr. Eastwood expresses himself as follows:

"I think the study of serological differences amongst pneumococci has not led to any final conclusions such as would justify the opinion that no serum will be therapeutically efficacious unless it contains an antibody corresponding to the antigen which is peculiar to the infecting strain."

Influenza.

The fourth report, by Dr. W. M. Scott, deals with the distribution and serological characters of influenza bacilli and embodies the results of a study which has extended over the four years 1918–21, of which the main conclusions are:

1. Influenza bacilli have been recovered from the normal nasopharynx in over 30 per cent. of persons examined.
2. Influenza bacilli have been found in the sputum or lung in about 60 per cent. of cases of lobar pneumonia, in 88 per cent. of cases of simple bronchopneumonia and bronchitis, and, during the epidemic of January, 1922, in 65 per cent. of cases of influenza and influenzal pneumonia.
3. Agglutination tests have revealed great diversity in serological types, but certain common antigenic characters occur in a proportion of the different strains.
4. There is no satisfactory evidence of special serological types being associated with disease nor with epidemic prevalence of influenza.
5. The serological diversity of influenza bacilli cannot be used as an argument either in favour of or against their etiological relationship to influenza.

ROYAL MEDICAL BENEVOLENT FUND.

At the meeting of the Committee held on Tuesday, July 11th, 1922, 23 cases were considered and £273 voted to 20 applicants. The following are a few of the cases relieved:

Widow, aged 40, of L.R.C.P. and S.Edin. who died from pneumonia in February last. She is left with two boys, aged 9 and 6 years. From February she has earned £9 9s. from fees for teaching piano and singing, and has received £25 10s. from investments. When the estate is realized applicant expects an income of £150 to £200 a year. She asks for assistance towards the education and keep of the two boys. Voted £2, and the case referred to the Royal Medical Benevolent Fund Guild.

Widow, aged 68, of L.R.C.P. and S.Edin. who died in 1898. She suffers from ill health and failing eyesight. She has no income now, and is living with a widowed daughter who has to maintain herself and her two children. Voted £18 in twelve instalments.

Daughter, aged 51, of M.D.Edin. Had to give up dressmaking business owing to ill health and want of money. Applicant's eyesight is bad and she can only work two or three hours at a time. Voted £18 in twelve instalments.

Daughter, aged 42, of L.R.C.P.Lond. who died in 1901. She has phthisis. At present she is a lady help at a small salary as she is not strong enough to do much work. Voted £18 in three instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

British Medical Journal.

SATURDAY, AUGUST 26TH, 1922.

'THE WRONG TURNING IN PUBLIC HEALTH."

It is curious to note how the present financial stringency is influencing current literature on public health. Without doubt it was constantly present to Sir George Newman when he was writing his report on the state of the public health in 1921, and not less to Professor Wynne and Dr. Fremantle, M.P., when they were composing the papers they read before the Section of Public Health at the Annual Meeting at Glasgow. These papers are printed in full in this issue, and, together with Sir George Newman's report,[1] form a symposium which cannot but stimulate, though perhaps also a little bewilder, the reader anxious to clear his conception of the profit and loss account presented by sanitation and preventive medicine. Sir George Newman writes under a sense of official responsibility; Dr. Fremantle is not only a member of Parliament, but a consulting medical officer of health, and Dr. Wynne is both medical officer of health for Sheffield and Professor of Public Health in the University of that city. Each in his own way has the same purpose at heart—that while the country shall get the best possible return for its expenditure, and unprofitable outlays shall cease, there shall be no panic discontinuance of work making for communal welfare.

It is the last-named object that Dr. Fremantle has specially at heart. He demonstrates by a series of propositions and calculations that sickness and disablement are immensely costly to the nation. Under the Insurance Act in England and Wales the time lost by the employed male population in the year 1921 was equivalent to a year's work of 178,000 men. He accepts Farr's conclusion that the total number of sick throughout any year is about double the deaths occurring in the year, and this figure applied to 1920 would give a total of over 900,000 sick and disabled. Under this heading he calculates the loss at £50,000,000 per annum. Care and treatment in institutions must cost, roughly, another £50,000,000, while treatment and maintenance of home cases would add a further heavy burden. After allowing for various deductions, he estimates the total direct material loss to England and Wales from sickness and disability at £150,000,000 a year. Taking note of the reduction of death rates in sixty years, he calculates, roughly, that the money saved thereby is over £62,000,000 a year. But the life-table expectation of the working period beginning at 20 years—the age of productive labour—has increased by 10 per cent. in the seventy years ending 1912, and as the national income from personal services is reckoned at two thousand million pounds, the 10 per cent. increase means two hundred millions a year. The elimination of tuberculosis, if it were possible, would, on a conservative calculation, add over ninety millions a year from personal services to the national income. In the United States the estimated loss of wealth from tuberculosis is £100,000,000 a year; the total cost of sickness and deaths is about six times as much, and one-third of it is regarded as preventable.

Dr. Fremantle wisely concludes his paper on a note of warning. "Many measures," he says, "put forward in perfect good faith by experts and by the public are not yet sufficiently substantiated to merit their adoption as [illegible]. Many are only cried too much from the standpoint of those who seek to raise the material comfort of the workers out of the Exchequer. While improvement of feeding and of other social conditions may be expected to diminish tuberculosis and improve health, it might have a precisely contrary effect if the method adopted were to undermine initiative, moral, and personal care of the individual."

Professor Wynne, in his paper with the striking title, "The wrong turning in public health," has been thinking on different but parallel lines. For him the wrong turning was taken when ideals of prevention were allowed to be obscured by solicitude for the treatment of individuals already diseased. His argument may, we think, be briefly stated to be that the chief cause of communal disease is poverty, that poverty is increased by waste and excessive taxation, and that, therefore, every penny spent on public health, on education, or any other object admirable in itself, is waste if not justified by results. Waste, he contends, is enormously multiplied when individuals are dealt with instead of their periphery. Endless committees and national councils are created and much energy expended, but Dr. Wynne finds a rather cynical consolation in the thought that the money they waste would otherwise be wasted on something else. He is on sure ground when he maintains that popular clamour for eleemosynary schemes should be resisted, and enthusiasm guided by expert criticism. Public opinion would not tolerate refusal to finance any proposal certainly useful, but at present money is lavished on schemes of which it cannot be said that this is true

Professor Wynne demurs to Sir George Newman's dictum that "the centre of gravity of public work must swing more and more from the environment to the individual," though he is ready to admit that national health insurance, maternity and child welfare, school medical work, free treatment of venereal disease, are all laudable in intention, but directed to the individual, whilst the whole of our housing schemes broke down for want of money, and slum conditions are engendering diseases in quantities "which our breathless efforts at dealing with end results are powerless to overtake." The old ways—improvements of environment—were better. But when unduly depressed by such thoughts Dr. Wynne finds consolation in reports showing that conditions in Sheffield were much worse in 1846. He describes them vividly, and, coming to recent times, he admits that in the decline of infant mortality since 1870 "the individualistic school of public health has its greatest triumph." Ingeniously, however, he claims that as the child's environment is its mother, infant welfare is after all environmental, whilst formerly the management of infants was a "tradition expounded by the handy woman and her colleague the lady next door," and after the child was weaned (here we are again driven to quotation) "the only available food was the emulsion of cowdung and house-flies known as fresh milk." Of tuberculosis he says that the whole administration is "a classic example of the ill effects of neglecting environment in favour of dealing with the individual," and he declares his disbelief in the assertion that training inculcated during three months in a hospital or sanatorium would neutralize the increased opportunity of subsequently disseminating the disease during the slight prolongation of life when the patient returns to his home. When open-air treatment and sanatoriums were boomed there was "an outbreak of 'national societies,'" which demanded immediate provision of sanatoriums for all, "and this to a great extent was done" at a time when there was money to burn. But now we are, Dr. Wynne avers, spending some ten millions a year "when there is no money available for the elimination of the insanitary areas, where we cultivate more tuberculosis in a week than all the sanatoriums could house in a year."

[1] See page 323 of our issue of last week, and page 387 of this week.

Next, as to the school medical service, he urges that "the number of cases of disease treated in one generation will not lessen the number of defects in the next," whilst the admitted improvement in personal cleanliness (which is much less in districts known to Dr. Wynne than Sir George Newman claimed in 1917 for London, Torquay, and Carlisle) "is something imposed upon the parents by the authority, not emanating from themselves, and therefore not indicating an advance in civilization." He regrets that the Ministry's chief medical officer, who was deeply impressed with the importance of environment in 1917, wrote in 1920 that "the school medical service finds its fulfilment only in the service it can render to the individual child." But his own early experience of publishing an accurate survey of the sanitary conditions of the schools in his area taught him how painful this subject would be to "educationists."

His general conclusion is that "we have turned away from the ideals of the Public Health Act" long before environmental work was completed, and "that we are bleeding the taxpayer and the ratepayer by expenditure that does not give an adequate return in improved health and prolonged life; that we are undermining responsibility by providing services at the public expense which should be paid for by the individual, and incidentally depriving the private practitioner of a large part of his legitimate opportunity of exercising his calling." Professor Wynne has, in fact, delivered in terse and vigorous terms a bold attack on many aspects of latter-day policy in health administration. No one can refrain from sympathizing with some of his regrets and aspirations. He longs for a strong housing policy, and so do we all. It is not necessary to contest his view that the money spent on the treatment of cases of tuberculosis would have yielded a richer harvest if it had been devoted to the clearing away of slums and their substitution by good healthy dwellings. Neither, for the present purpose, need it be denied that disappointment has damped the hopes and the enthusiasm of any who made the largely erroneous assumption that because tuberculosis is an infectious disease it could be successfully controlled by the isolation and institutional measures which have, on the whole, been so valuable in the case of the acute zymotics. Whether Professor Wynne is right in holding that even three months' sanatorium treatment does not accomplish Sir Arthur Newsholme's purpose of educating the tuberculous patient against spreading infection when he returns home we do not pause to discuss. But, be the school of infectionists right or wrong, we do not think any of them would admit that the demand for "sanatoriums for all" has even yet been met, nor is there any probability, under existing conditions, that it ever will be met. Is it not far more probable that the money, had it been devoted with business economy to housing schemes, would have given better results?

This brings us to the consideration of a very essential political question. Supposing not a penny had been spent on tuberculosis dispensaries or sanatoriums, farm colonies, domiciliary treatment, or after-care, would the money so saved have been devoted to housing? Would the price of the box of spikenard ointment have been given to the poor? Was the country alive to the need for housing reform? Professor Wynne writes graphically of the despair and indignation which seize the health officer to-day when he visits insanitary property and realizes the acquiescence in squalor and filth displayed by the present generation. It is all too true; but has it not been at least equally true at any time since the present public health service began? Neither house owners, nor rent payers, nor local health authorities realized in the past the importance of thorough housing reform. When the country was wealthy it would not open its eyes; now they are open it is poverty-stricken. When, two or three years ago, the politicians and the press and the public outvied each other in their shoutings for houses, what was the result? The Government took up the matter, and with the enthusiastic support of builders and brickmakers and bricklayers entered on a course of reckless extravagance, which was brought to a stop when the nation came to realize that this was a post-war method of fleecing it, such as had hardly been surpassed by the great army of profiteers during the war itself. Straightway prices began to fall, and now houses can be built for half, a third, or even a fourth of what the country had to pay for grandiose schemes which played into the hands of extortionists. Dr. Wynne's own well-recounted experience with regard to schools illustrates another phase of the same question. The "educationists" were not ready for new school buildings, so he desisted, and has advised others similarly, but surely it was right to institute school medical inspection even in defective buildings. The fact is that a public official cannot usefully go too far in front of his controlling authority, local or central; if he does he runs the risk of acquiring the reputation of an amiable visionary, and will accomplish nothing. Dr. Wynne says that increased personal cleanliness of children "imposed upon the parents" does not indicate an advance in their civilization, but what would he have? Should the children of uncivilized parents be allowed to remain verminous (and so infect the offspring of the civilized) until the fathers and mothers learn—if ever they do—to appreciate cleanliness for its own sake? Will not the children by the very imposition on them of cleanliness be civilized in that respect and be the means of civilizing the next generation?

But let us not be misunderstood. We rejoice in Professor Wynne's brilliant attack, and enjoy his hyperbole, as in that entertaining description of fresh milk already quoted. In particular he is right—and here he is in entire agreement with Dr. Fremantle, and has also the sympathy of Sir George Newman—in insisting that there should be the most strenuous avoidance of the sapping of personal and parental responsibility by the bestowal of gifts of food and milk and medicines, unless in cases of the most absolute necessity. Here, indeed, is a real danger, and the Americans are becoming alive to it as well as ourselves. Education of mothers in the nursing of their babies and the rearing of their children is excellent, but when it is avoidably supplemented by doles in money or in kind it is to be condemned. Government grants in aid of local authorities have two sides—an evil and a good. The evil side is that they foster the vicarious benevolence of sloppy sentimentalists everywhere, who argue that as only a half or a quarter of the cost falls on the local rates, and the rest is obtained from the national purse, there need be no hesitation in a free distribution to all concerned of everything they can be plausibly alleged to need. That, however, opens up a wide question which cannot be entered on here.

SHELL SHOCK.

In our last issue (p. 322) we published a summary of the Report of the War Office Committee of Inquiry into Shell Shock. As we then said, it is a document which will appeal to a wider circle of readers than those comprised within the medical and military professions. The report is unanimous, and this somewhat unusual result of an inquiry on a subject which has aroused a great deal of public attention ought to enhance the value of the conclusions reached. Whatever may have been the immediate motives that led the Government to institute the inquiry, there can be no doubt that one of the most

influential was the fact that a feeling of dissatisfaction had been expressed in certain quarters with regard to the treatment of mental disorders amongst ex-service men where the disorder was supposed to have been produced by shell shock. We seem to remember that when the Committee was appointed certain newspaper criticisms were levelled at its constitution, one being that regimental and other combatant officers were not sufficiently represented, and that there was an undue preponderance of medical members. Whatever weight there may have been in this criticism—and we are not to be understood as admitting that it had any—was compensated by the fact that among the witnesses examined by the Committee were many combatant officers, as well as some actual sufferers from the condition under consideration. The nature of the conclusions reached by the Committee, and the fact that its members were unanimous, will, we venture to hope, dissipate any feeling of the kind we have indicated.

The conclusions reached by the Committee are, indeed, identical with those generally reached alike by medical observers and combatant officers who have had any extensive experience of shell shock, whether in patients under their care or in soldiers under their command. The very fact that the conclusions stated by the Committee are similar to those reached by those best qualified to judge may, however, possibly diminish the effect of the report on those members of the general public whose indiscriminate sympathy with the victims of so-called shell shock has done much to perpetuate their condition. When we come to examine carefully the Committee's recommendations and conclusion, it is significant to find that the very term "shell shock" is whole-heartedly and unanimously condemned. The number of cases which could be held to be due to actual concussion from the results of shell explosions were found to form a very small proportion of the total; the proportion is variously stated by different witnesses, but no witness puts it higher than 10 per cent. of the total number of cases from all causes. From the facts and evidence before it the Committee concluded that by far the greatest number of cases are produced by emotional disturbances, to which the effects of fatigue and the general nervous and mental exhaustion induced by strains and hardships of every kind are rightly held to have contributed. The particular kind of emotional disturbance principally to blame is naturally that of fear. The evidence of all observers, especially of those whose duty kept them in or near the front line, is unanimous on this point. To the emotion of fear is added the mental conflict naturally engendered between that emotion and the rival forces of discipline and moral. A third group of cases consists of men suffering from definite mental disorder. The attempt of some members of Parliament, backed up by certain newspapers, to make capital out of the fact that ex-service men have been and are being treated in asylums, received no support from the evidence of witnesses, military or medical, who were closely examined on the point; nor is it countenanced by the Committee, whose conclusions it may fairly be hoped will do something to alleviate any public anxiety on this score. One very eminent authority, indeed, went so far as to say that "the war created nothing in the way of psychoses," and another stated that those service patients who were still in asylums and whose histories he had been able to follow, were nearly all suffering from dementia praecox.

The immense importance of the condition loosely termed "moral" in the prevention of shell shock was emphasized again and again in the evidence given by combatant and medical officers alike, and the Committee wisely points out how moral can be fostered by careful training and discipline. The very great practical difficulty in distinguishing between shell shock and actual cowardice was discussed by several witnesses, who showed themselves fully alive to its importance. In civil life it is often far from easy to decide in certain cases between hysteria and malingering; in the field similar difficulties are encountered when men are charged with cowardice. Unfortunately the Committee has done little to enlighten or guide us on this matter, and we gather that in actual practice it often became impossible to rebut a defence of shell shock.

As was to be expected, some divergence of opinion emerged with regard to the merits of the various methods of treatment, but one of the main conclusions reached is that it is better to keep such cases as far as possible in the divisional areas; men invalided away from a war area and retained for long in hospitals at home rarely recovered sufficiently to return to the line. Much harm was done also by the frequent transfer of men from hospital to hospital, a policy which made continuity of treatment impossible. While the great value of psychological treatment is recognized the weight of opinion is not in favour of the Freudian method of psycho-analysis; emphasis is laid rather on the therapeutic advantages of occupation and re-education.

Methods of recruiting and the deficiencies of the British system, both in peace and war, receive full consideration in the report, and the Committee has provided some valuable suggestions in regard to the principles of training. Though consideration of the problem of the shell-shock pensioner may not have been directly included in the reference to the Committee, yet we could have wished that an opinion on this thorny subject had been expressed.

We may hope that the recommendations of the Committee on prevention and treatment will be carefully studied and will become a part of the special education of officers in the navy and army, both medical and executive. It is to be desired, also, that in the deplorable event of another struggle between the nations the inevitable problem of the future pensioner may be borne in mind by recruiting authorities, and every care taken to avoid the reappearance of the difficult problem with which the nation is now confronted.

THE CALCUTTA SCHOOL OF TROPICAL MEDICINE, 1921.

Under the endowments given by the Indian Tea, Jute, and Mining Associations (at the suggestion of Sir Leonard Rogers) for the investigation of diseases affecting the health of their labour forces important researches have been carried out at the Calcutta School of Tropical Medicine, and are briefly recorded in the report for 1921 which has recently been issued. Dr. L. E. Napier, who has been investigating kala-azar, which is still affecting some tea estates in Assam, has attempted to infect animals and to transfer the infection from one to another by biting insects, but so far without much success. He succeeded in infecting two monkeys (*Macacus rhesus*) by intravenous injection of 10 c.cm. of an emulsion of a kala-azar spleen; they developed only a very mild infection, which produced no symptoms and disappeared within a few months; it is not surprising therefore that the insect-carrying experiments gave negative results. Much work has also been done at diagnostic blood tests for kala-azar, the globulin precipitation test and the haemolytic test proving of no practical value. On the other hand, a new aldehyde test described by Napier has furnished valuable results: 1 c.cm. of the serum of the patient is placed in a small test tube, and one drop of commercial formalin is added; if the case be one of kala-azar the serum becomes solid and opaque like the white of a hard-boiled egg in from three minutes to two hours; 88 of 90 kala-azar cases verified by spleen puncture gave positive results, while only 1 of 60 cases negative on spleen puncture was positive to the test. Much work has also been done on the treatment of the disease by antimony salts, and

an important advance has been made in the discovery that a 2 per cent. solution of a chemically pure scale preparation of sodium antimony tartrate can be injected intramuscularly with only slight temporary pain and no inflammatory reaction. Five cases in children, all under the age of 7, in whom repeated intravenous injections are very difficult, have been cured by this method. If on further experience the plan proves feasible on a large scale, it will make it much more easy to stamp the disease out of infected districts than is the case at present. Dr. J. B. McVail, in his report on the work of the hookworm research laboratory, deals first with the finding of ankylostoma eggs in stools; for this purpose Lane's levitation method gave the best results, although a simpler plan, requiring less apparatus, has been worked out in the laboratory and adopted for routine work. About half a gram of emulsified stool is allowed to stand for ten minutes on a slide between grease pencil marks; it is then gently immersed in water to float off the débris and examined under the microscope; in this way even mild cases can be quickly diagnosed by finding the ova. The effect of various conditions and chemicals on cultures of the larvae has been tested; a temperature of 90° to 96° F. prevented all development, but the septic tank, even with 1 in 400 chlorinated disinfectant, failed to do so; wet sand seven inches thick was traversed by active larvae in a week. They can penetrate wet clothing and even wet shoe-leather, although boiled linseed oil will protect the latter against them. Methods of treatment have been tested to find the most suitable plan for dealing with a large, apparently healthy, labouring population as out-patients. It was found that three treatments, at seven to ten days' intervals, with 30 minims in three equal doses at hourly intervals, commencing one hour after a meal without any preliminary purge, removed 98.2 per cent. of the worms; the sample was previously tested to ensure that it was non-toxic. The wholesale cost of the full course is 4d. per patient. The plan should make it possible greatly to improve the health and working powers of labourers in Lower Bengal, where 80 per cent. are infected. Both inquiries were handicapped during 1921 because the Carmichael Hospital for Tropical Diseases was not opened until December. Much good work was, however, accomplished, and the progress of this important experiment in the endowment of medical research in the tropics by the large employers of indigenous labour must be pronounced to be very encouraging.

THE MAUDSLEY HOSPITAL.

The renovation of the Maudsley Hospital after its service as a military hospital during the war and subsequently as a neurological centre under the Ministry of Pensions has now been completed, and the hospital is equipped for its original purposes—namely, the early treatment of cases of acute mental disorder, the promotion of exact scientific research into the causes and pathology of insanity, and the clinical instruction of medical students. At its last meeting before its summer recess the London County Council decided that, at any rate at the beginning of its work, the hospital shall be entirely dissociated from certified lunacy. Cases under certificate are not at present to be received, and if possible there is to be no certification in the hospital either for retention or transfer. This will involve making arrangements for speedy removal by relatives accepting responsibility, and possibly arrangements with Poor Law authorities when this responsibility is not discharged. This will mean the exclusion of some cases of the most suitable class for teaching and for treatment to recovery, and until legislation is introduced to provide for the reception without certification of certifiable cases, the work of the hospital will be seriously hampered. The Council has decided to make representations to the Government that such legislation should be hastened. The Maudsley Hospital has in-patient accommodation for 157 persons. One ward on each side of the hospital is set aside for acute cases. The staff will consist of the medical superintendent (Dr. E. Mapother), a deputy medical superintendent, a senior assistant medical officer, and two assistant medical officers. The remuneration of these four members of the assistant medical staff will be respectively £650, £450, £350, and £300 on pre-war economic conditions, and for one of the junior appointments women candidates will be eligible. No definite proposal has been submitted with regard to clinical assistants; it is thought that they may be obtained without payment when the hospital is in being, but they will be engaged so as to afford them opportunity for the study of psychological medicine, and not with a view to avoiding the appointment of necessary staff. The medical superintendent proposes that junior assistant medical officers of the London mental hospital service should be seconded for service at Maudsley Hospital as part of the course for the diploma in psychological medicine. The appointment of assistant medical officers will be subject to review at the end of each year of service. The services of certain consultants will be retained, and for these and for dental services a sum of £500 a year will be provided. The nursing staff will consist of a matron, assistant matron, seven sisters, 18 female staff nurses, 23 female probationer nurses, and 12 male probationer nurses. Cases will be admitted principally through an out-patient department and through Poor Law institutions, the medical officers of which will be asked to notify what appear to be suitable cases with a view to such cases being interviewed by one of the hospital medical staff; another source of admission will be cases seen privately. The out-patient department is to be opened, if possible, in advance of the wards; the letter of a doctor or similar recommendation will be required, except in the case of an ex-patient of a London county mental hospital. Patients in a position to do so will pay a moderate sum. Facilities will be given for the admission of poor people, so that there may be no suggestion that the hospital is reserved chiefly for paying patients. The cost of maintenance of the whole hospital, with the full complement of staff and patients, will be £37,500 a year, but it is expected that part of this will be recouped by patients' payments. It has been arranged to retain the services of Sir Frederick Mott, who was due to retire on October 23rd, until March 31st, 1923, so that the Council may have the advantage of his advice in connexion with the scheme for the administration of the Maudsley Hospital. After March 31st his services are to be retained for a further six months in an advisory capacity at a remuneration to be determined.

A CENTENARY OF SIR CHRISTOPHER WREN.

Sir Christopher Wren (1632–1723) has for the medical profession a double interest—general and special—over and above that which every educated man must have for his outstanding genius. In the first place, early in his life, before he entered as an undergraduate at Oxford, he assisted Sir Charles Scarburgh, physician and mathematician, in making and demonstrating anatomical preparations and in various experiments for his anatomical lectures at Surgeons' Hall. Wren, like his early master, was one of the original Fellows of the Royal Society—in fact, his rooms at Gresham College, where he was Professor of Astronomy, served as a meeting place for those who subsequently founded the Royal Society. Another point of general medical interest is that when 21 years old Wren executed a number of elaborate drawings which appeared in Thomas Willis's famous "*Cerebri Anatome Nervorumque Descriptio et Usus*" (1664). The special and somewhat restricted point of interest to the medical profession is that Wren was the architect of the third home of the Royal College of Physicians of London, that in Warwick Lane, Newgate Street (1672–1825), with its fine theatre erected at the expense of Sir John Cutler, a City merchant, who was an example of that not unknown combination of "petty personal parsimony" and large benevolence and public spirit. This theatrum Cutlerianum was described in James Elmes's memoir of Sir Christopher Wren as "a perfect study of acoustical and optical architecture," an example, it may be added, that might be more constantly imitated in some modern buildings. Sir Christopher Wren died on February 25th, 1723, and accordingly the Royal Institute of British Architects is making arrangements for a commemoration week beginning on Monday, February 26th

next. It has formed a "grand committee," on which, it is hoped, representatives of appropriate Government departments, the great artistic, scientific, and archaeological societies, and the universities will serve. It is therefore fitting that the medical profession should take part in this bicentenarial commemoration, and at the request of the Royal Institute of British Architects the Royal College of Physicians recently appointed Dr. R. Dawtrey Drewitt as its representative on the grand committee. It is proposed to organize a procession from the Mansion House to St. Paul's Cathedral, where a memorial service will be held and a visit made to the crypt, when the President of the Royal Institute of British Architects will lay a wreath on Wren's tomb. There are, it may be mentioned, two other memorials in the cathedral to its great architect, one being the well-known inscription over the door of the north transept, which directs the visitor who desires to see a memorial to Wren to look around. On the evening of this day a meeting of the Royal Institute of British Architects will be held for the reading of papers on the life and work of Wren, and an exhibition of his drawings, manuscripts, and relics will be on view for several days at the house of the Institute in Conduit Street. A pageant illustrating his times is to be arranged, and visits are to be paid to the buildings erected under his direction.

THE FATAL CASES OF FOOD POISONING AT LOCH MAREE.

Public attention has been very forcibly directed to the subject of food poisoning by the tragic occurrences last week in an hotel at Loch Maree, Gairloch, remotely situated in Rossshire, where eight persons have died with symptoms suggestive of botulism. According to the information at present available the facts seem to be as follows: On Monday, August 14th, a number of persons staying in the hotel started on fishing or walking expeditions and took sandwiches with them. Some of these sandwiches were made with meat paste, and it appears that only those who consumed these potted meat sandwiches suffered. The sandwiches were eaten for lunch on August 14th by eight persons, and the earliest symptom, diplopia, was observed in one of them before breakfast on August 15th, so that the shortest interval between ingestion of the sandwiches and the development of the earliest symptom was about eighteen hours. The seven other persons affected began to suffer during the course of August 15th; two, both of them ladies, died on that day; the others were men—two died on August 16th, two on August 17th, and two on August 21st. In addition to diplopia, which seems in all instances to have been the first noticed, the symptoms mentioned are ptosis, dizziness, paralysis and feeling of constriction of the throat, vomiting and collapse. Vomiting, however, does not appear to have been a marked feature, and no mention is made of diarrhoea. These symptoms do not resemble those of food poisoning due to one or other of the members of the Gaertner group of bacilli, but are like those produced by *B. botulinus*, an anaerobic organism which causes the disease known as botulism. This name was given to the disease in Germany, where the first cases were observed, because they were traced to the eating of certain sausages (*botulus*, a sausage). A few years ago Dickson, in a report to the Rockefeller Institute for Medical Research,[1] stated that *B. botulinus* could exist in material not containing any animal protein; he detected it in canned vegetables and fruit. Cases have been reported within recent years in California, where the disease was thought to be due to the eating of olives, or french beans, preserved in cans or bottles. In an outbreak in Idaho, mentioned not long ago in our columns (June 3rd, 1922, p. 893), six persons died after eating greens which had been canned at home. The early symptoms in these cases included dizziness, blurring of vision, and unsteady gait, followed by vomiting; later, blepharoptosis, paraesthesia of the extremities, weakness of the arm, leg, and especially neck muscles, dysphoea, dysphagia, and aphonia were noted. Dilatation of the pupils was observed and was accompanied by sluggishness of the light reflex; Babinski's sign was present, and the knee-jerks were exaggerated. The organism which causes botulism is destroyed by boiling. It has been isolated and an antitoxin has been prepared, but so far little benefit appears to have been derived from its administration in man, although animal experiments have encouraged perseverance in its use. So far as we can ascertain no other form of treatment has been proved to be of any avail in botulism. In the north of Scotland a fatal disease has recently occurred among horses, and it has been stated that the symptoms resemble those of botulism. Fortunately, portions of the suspected meat paste have been secured. It is stated to have been supplied originally by a large firm of manufacturers, and it is possible that the infection arose locally in some way as yet unexplained. As soon as the fact that an outbreak of food poisoning had occurred became known the Scottish Board of Health dispatched medical officers to the spot, and Dr. Dittmar, one of its medical inspectors, was able to obtain first-hand information from medical men on the spot, among whom were included several visitors on holiday in the neighbourhood. A public inquiry will no doubt be held, although the exact form it will take had not been settled on August 22nd. The Lord Advocate has power under the Scottish Accident and Sudden Deaths Enquiry Act to order a public inquiry into any case of sudden or suspicious death in Scotland. The Scottish Board of Health would also have power to hold a public inquiry; whatever the final decision on this point may be, there can be little doubt that the most important evidence will be with regard to the results of the bacteriological inquiries now being carried out. The outbreak was first reported in the lay press as "ptomaine poisoning," a term which had its origin in a theory soon proved to be erroneous, and long ago abandoned by the medical profession. Outbreaks of food poisoning are due to infection. If the outbreak is one of botulism, it is, we believe, the first that has occurred in Great Britain.

[1] British Medical Journal, 1918, vol. ii, p. 695.

MEDICAL SCIENCE IN NEW ZEALAND.

In the *Proceedings of the University of Otago Medical School*[1] for 1922 there have been collected in one volume some fourteen recent articles by members of the school, first published chiefly in the *New Zealand Medical Journal* and the *Transactions* of the New Zealand Institute. They cover a wide field, and show that a high standard of scientific research and clinical work is being attained in Dunedin. The editor of the volume, Dr. D. W. Carmalt Jones, who is professor of systematic medicine in the University, contributes an interesting article on the meaning of the word "symptom," and also shorter notes on amoebic dysentery, on two cases of peripheral neuritis, on syphilis of the nervous system, and (with Mr. J. Renfrew White) on two cases of laminectomy. Professor W. P. Gowland writes on the surgical anatomy of the thyroid gland, Dr. J. W. Hall on diabetes mellitus, Professor L. E. Barnett on hydatid thrill, Dr. A. P. Marshall on the selection of an anaesthetic, and Professor A. M. Drennan on aneurysms of the larger cerebral vessels. Dr. A. J. Hall and Dr. E. H. Williams contribute short notes on cystic disease of the accessory sinuses and on diaphragmatic hernia respectively. The physiological action of tutin—the active principle of the tutu plant, which has had an unenviable notoriety in New Zealand as a poisoner of sheep and cattle from the days of the earliest settlers—is reviewed by Dr. Frank Fitchett and Dr. John Malcolm, and Mrs. Dorothy E. Johnson examines the food values of New Zealand fish. The fact that the numbering of the pages of each reprint is independent will cause some difficulty to those who may wish to quote the articles, and this defect should, if possible, be remedied in any future issues of the *Proceedings*. Professor Carmalt Jones and the University of Otago are to be commended for their enterprise and their achievement.

[1] *Proceedings of the University of Otago Medical School, 1922*. Dunedin, New Zealand.

THE JUNIOR RED CROSS.

The July issue of the *World's Health*, a monthly magazine issued from Geneva by the League of Red Cross Societies, is devoted mainly to an exposition of the history and organization of the Junior Red Cross and to advocacy of its international extension. Its objects are to inculcate in the children of the country where the movement is adopted "the ideal and practice of service, especially in relation to their own health and that of others, the understanding and acceptance of civil responsibility, and the cultivation and maintenance of a spirit of friendly helpfulness to children in all countries." The basic purposes of the League of Red Cross Societies itself are "the improvement of health, the prevention of disease, and the mitigation of suffering throughout the world, and to secure co-operation for these purposes." Naturally it will occur to the reader to ask what may be the relation of this excellent scheme to the Boy Scout and Girl Guide movement, and it is satisfactory to learn that the Junior Red Cross is believed to make for solidarity among all the organizations of Youth. In various countries groups like Boy Scouts have found Red Cross aims entirely in accord with their own. In the United States membership of the Junior Red Cross is regarded as part of the training for citizenship and helps to recruit adult members for the Red Cross. Teachers play an important part in the Junior Red Cross. Many of them have found it an ideal instrument for influencing the young generation aright. A specimen plan of organization is given, but it is a principle of the whole scheme that in different countries divergences of method are not only necessary but desirable, as every variety of experiment has its value. The cost of junior membership may often at first have to be met by the national organization concerned, but the real benefits of it are obtained when the juniors have become adults. Also it is a humanitarian work for which the resources of a national Red Cross Society may be considered available, though it is better that at least part of the administrative costs should be borne by the juniors themselves. Members may be enrolled either by classes or by groups. Overlapping with other organizations being avoided, the scheme has every appearance of being a valuable addition to the voluntary agencies which do so much to supplement the activities of public departments, whether State or rate supported.

ANIMAL EXPERIMENTS IN 1921.

The annual return showing the number and nature of experiments on living animals during the year 1921[1] gives a list of all "registered places" where such experiments may be performed, the names of all persons who hold licences during 1921, together with the registered place for which the licence was in force and the number and nature of experiments performed. In the year 1921 twenty new places were registered for the performance of experiments and thirteen places were removed from the register. The total number of licensees was 812, of whom 219 performed no experiments. The experiments may be divided into two main groups, according to whether or not an anaesthetic was used. It should be noted that the granting of a licence only permits the licensee to perform experiments under an anaesthetic, for the law declares "the animal must, during the whole of the experiment, be under the influence of some anaesthetic of sufficient power to prevent the animal feeling pain; and the animal must, if the pain is likely to continue after the effect of the anaesthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anaesthetic which has been administered." To perform other experiments or even to observe the subsequent course of experiments undertaken with an anaesthetic the licensee must be possessed of special certificates. Special certificates are also necessary for experiments on dogs, cats, horses, asses, mules, and other large animals. The total number of experiments with anaesthetics was 8,165, and of these 2,053 were simple inoculations into the skin of guinea-pigs, which were anaesthetized in order to keep the animals motionless during the introduction of a minute quantity of the fluid to be tested for the purpose of standardization. Of the remaining 6,112 experiments, comprising all the cases in which any serious operation was involved, 2,751 were performed under the licence alone, and were subject therefore to the restrictions above mentioned. In all operations, with the exception of a few special cases dealing with the efficiency of antiseptics, the law demands that the operation shall be performed antiseptically so that the healing of wounds shall, as far as possible, take place without pain. If the antiseptic precautions fail, and suppuration occurs, the animal must be killed. The following "pain condition" is attached to the licence under special certificates: "If an animal, after and by reason of the said experiments, is found to be suffering pain which is either severe or is likely to endure, and if the main result of the experiment has been attained, the animal shall forthwith be painlessly killed. If an animal, after and by reason of the said experiments, is found to be suffering severe pain which is likely to endure, such animal shall forthwith be painlessly killed, whether the main result of the experiment has been attained or not. If any animal appears to an inspector to be suffering considerable pain, and if the inspector directs such animal to be destroyed, it shall forthwith be painlessly killed." The total number of experiments without anaesthetics was 67,097. These were mostly simple inoculations and hypodermic injections, but included also some feeding experiments and administration of various substances by the mouth or by inhalation or by external application, and the abstraction of blood by puncture or simple venesection. In no instance was a certificate dispensing with the use of anaesthetics allowed for an experiment involving a serious operation. The total number of experiments was 75,262, being 4,895 more than in 1920. The objects for which these experiments were performed were very diverse. A large number, almost wholly simple inoculations, were performed either on behalf of official bodies, with a view to the preservation of the public health or directly for the diagnosis and treatment of disease. Experiments conducted at a sewage farm to test the character of the effluent by its effect on the health of fish is an example of work carried out for the preservation of public health. Nearly 20,000 experiments were performed for the preparation and testing of antitoxin serums and vaccines and for the testing and standardizing of drugs. The several registered places were visited frequently by the inspectors, usually without previous notice, and they report that the animals were suitably lodged and well cared for, and the licensees generally attentive to the requirements of the Act and the conditions attached to their licences.

[1] *Experiments on Living Animals.* Return for 1921. London: H.M. Stationery Office (to be obtained through any bookseller), price 1s.

MAN'S INSECT ENEMIES.

We have received a copy of an address entitled *Man's Insect Enemies* which was delivered last May to the undergraduates of the University of Hong-Kong by Dr. Francis Clark of London, formerly professor of medical jurisprudence and dean of the Faculty of Medicine. Dr. Clark pointed out that while the treatment of disease was a matter solely for trained physicians and surgeons, the prevention or avoidance of disease vitally concerned the whole community, and was worthy of study by everyone. He went on to deal with the more important diseases conveyed by the agency of insects. In regard to bubonic plague, he outlined the best methods of controlling the rat population, the only safe way of doing so being by reducing to a minimum their food supply by efficient scavenging, combined with the rat-proofing of buildings. He told his audience that it was in 1894, when working in Hong-Kong, that Manson suggested that the parasites of malaria, then recently discovered by Laveran, were carried by mosquitos; the truth of this was later conclusively established by Ronald Ross. Dr. Clark mentioned that in a recently published interview, Sir

Ronald Ross stated that the best work which was being done in the practical prevention of malaria had been accomplished at Khartoum, at Klang (F.M.S.), and at Hong-Kong. Turning next to yellow fever, Dr. Clark observed that the spirochaete which caused it was also conveyed by a mosquito, which bred chiefly in collections of water around houses; on this account it was important not to place the legs of the household ice chest in cups of water, as was frequently done in the tropics to prevent the access of ants to the food, but to fill the cups with kerosene. He brought a serious indictment against the common house-fly as a carrier of the infection of typhoid fever, dysentery, enteric, occasionally of cholera, and probably of several other diseases. Flies were largely responsible, he said, for the spread of the various forms of ophthalmia from man to man in tropical regions. They were agents, also, in the propagation of hookworm disease, as it was found that when fly eggs which had been laid in polluted earth developed into larvae they churned up and aerated the soil so that the hookworm eggs hatched out more readily. Dr. Clark had high hopes of the efficacy of carbon tetrachloride for the treatment of hookworm disease, as recent information from Fiji was to the effect that even a single dose might free the victim of 98 per cent. of the parasites. This treatment was due to a suggestion made last year by Hall, a veterinary surgeon of Washington. The methods of infection in filariasis, relapsing fever, trench fever, typhus fever, and sleeping sickness were in turn described, and preventive methods were outlined. In regard to infantile paralysis Dr. Clark said that some light had been thrown on the subject by the recent research work of certain American veterinary surgeons, for it had been shown that wry-neck, a fatal paralytic disease in poultry, was caused by an infection conveyed by a certain small fly which occurs all over the world. This suggested that infantile paralysis might be disseminated in a similar manner.

ASSOCIATION OF CERTIFYING FACTORY SURGEONS.

The excellent work the Association of Certifying Factory Surgeons does for its members is well exemplified in the Annual Report for 1921, which has recently been issued. The Home Office recognizes this Association as representative of factory surgeons, as is shown by the account given of the negotiations with the Factory Department that resulted in a complete revision of the part of the Home Office Annual Report which deals with the examinations for certificates of fitness. Particulars are given also of a joint conference between the Chief Inspector and the Secretaries of the British Medical Association and of the Factory Surgeons' Association on the matter of fees and the necessity for medical supervision of first-aid arrangements in factories. In these circumstances it seems regrettable that the more recently appointed surgeons are not taking the trouble to become members. The report for 1921 should be sufficient to convince any factory surgeon that he will be well advised to join this special organization. The part of the report dealing with the "Future of the certifying surgeon" is very much to the point. The first paragraph definitely lays down that the only way to deal with the great amount of industrial sickness and mortality is by abolishing the unhygienic conditions of occupation, that it is an obligation on the Government to create the necessary medical supervision in the factories themselves in order to ascertain the faults and devise the remedies, and that the certifying surgeon could be made into a useful adjunct in carrying out a workable scheme. It is claimed that industrial preventive medicine is a branch of State medicine and must be taken in hand by the State if it is to prove universally effective; in support of this contention it is pointed out that the remarkable results following the introduction of the medical element into the study of specific dangerous trades were not attained without establishing statutory notifications and regulations, aided by a large amount of valuable work done by the certifying surgeon. It is considered logical to infer that machinery and methods similar to those mentioned could be utilized to prevent certain general diseases which now single out particular industries and produce heavy mortality. At the same time it is recognized that financial reasons will prevent the discharge of any State obligation in this direction for some considerable time to come. It is therefore suggested that the correct policy of the certifying surgeon is to make himself acquainted with such voluntary efforts as are being made to improve the hygienic conditions of factory employment. The certifying surgeon should carefully consider the practicability of undertaking by private arrangement, particularly in factories which he is already visiting at regular intervals, a considerable portion of what may be regarded as the essential medical supervision. The report also points out the wisdom of co-operation with welfare supervisors, and how each can render assistance to the other to the advantage of both. We are informed that any person interested can obtain a copy of the report on applying to the secretary at 40, Brazennose Street, Manchester.

NAVAL MEDICAL SERVICE MEMORIAL.

A memorial tablet to over two hundred naval medical officers and members of the nursing staff who were killed or died on active service during the war was unveiled on August 17th by Sir Robert Hill, Medical Director-General, R.N. The ceremony was attended by many relatives of the fallen and by a number of medical officers. Sir Robert Hill said he could conceive no more suitable spot in which to place the tablet than in the gateway of Haslar Royal Hospital, built in the eighteenth century, and itself a memorial to the most glorious days of English history. To Haslar Hospital were brought the sick and wounded from the battles of Copenhagen, St. Vincent, the Nile, Trafalgar, the Crimea, and the Baltic; during the great war it was filled to overflowing. Through its gateway passed every probationer surgeon, and future generations would pay their tribute to the sacrifice of their brother officers and the nursing sisters who gave their all for King and country, and left for ever an example of patriotism. Similar memorials are to be erected at Chatham and Devonport.

THE EDUCATIONAL NUMBER, 1922.

Our next issue will be the annual Educational Number of the British Medical Journal. As briefly indicated last week, the usual features will be supplemented by an important introductory article on the training of the medical student, written at our request by Sir Clifford Allbutt; a note by Professor W. E. Dixon on the future of pharmacology and its place in the curriculum; a full account of the forthcoming changes in the scheme of study and examination prescribed by the new resolutions and recommendations of the General Medical Council; and a short statement of the numbers of the medical profession year by year during the past forty-five years. The customary sections, giving a summary of the requirements of the universities and other licensing bodies in Great Britain and Ireland, have been brought up to date, and the information showing the opportunities offered by the various medical schools and teaching institutions has been corrected by the authorities concerned. The Educational Number will include also articles on the public services and the medical education of women to-day, and on post-graduate study; and on some general aspects of professional study and the practice of medicine, addressed mainly to prospective students and their parents.

Italy is taking measures to ratify the conventions of the International Labour Conference of the League of Nations with regard to women. As soon as compulsory insurance against sickness has been established all women will be entitled to six weeks' rest before the probable date of childbirth, and the provision will apply to women employed in commercial undertakings. Maternity insurance, which will affect these women, and also those employed in minor industries, will provide grants for six weeks before and six weeks after childbirth, as well as free attendance by a doctor and midwife. A bill is to be introduced to make the Italian law with regard to the employment of women and young persons at night conform with the terms of the convention.

Nova et Vetera.

BUCCANEER SURGEONS.

In giving an account some months ago (February 18th, 1922, p. 280) of the career of Thomas Dover, buccaneer and inventor of the powder which bears his name, it was said that he rescued Alexander Selkirk, the skin-clad hero of *Robinson Crusoe*, who had been marooned on the island of Juan Fernandez. Probably, however, the credit should be given to William Dampier, who had known Selkirk long before, and, moreover, was well acquainted with the island, which he calls John Fernando's.

More than a quarter of a century earlier Dampier had taken part in the great buccaneering expedition across the Isthmus of Panama to the South Sea and after various excursions and adventures had been one of the party which returned on foot to the Caribbean Sea. Wherever he was and despite all difficulties this remarkable man seems to have kept a journal in which he noted not only daily events but descriptions of the manners and customs of the natives, of the flora and fauna, the weather and the chief physical features of the country. In his descriptions of the voyages of the buccaneers (or privateers, as they preferred to call themselves) there are frequent references to the surgeons, which show how much their services were valued. Thus Dampier states that on one occasion a ship's company refused to put to sea because they had no surgeon; and when "our Surgeon, Mr. Wafer," was injured "we allowed him a slave to carry his things, being all of us the more concerned at the accident, because liable ourselves every moment to misfortune and none to look after us but him."

When the buccaneers landed to attack a town the surgeons accompanied them, and it is recorded by Dampier that in an attack on an Indian town in Mexico "our surgeon and one man more were wounded with arrows." In the disastrous attack on Arica in 1680 the surgeons had occupied a church as a hospital, where they found a store of wine. Possibly this discovery accounts for the fact that they were left behind when their comrades retreated. They were, however, released by the Spaniards on their consenting to settle down to practice in the city.

In the reign of Charles II the professional education of the average practitioner in England probably consisted almost entirely of the acquirement of precepts and experience in the service of a master under the apprenticeship system. Theoretical knowledge was at a discount. Anatomy, physiology, and chemistry were then far outside the ordinary curriculum, and even seventy years later, when the practice of surgery had made great advances, Roderick Random's master is represented as preferring the knowledge of "how to bleed and give a clyster, spread a plaster and prepare a potion," to that of the causes of muscular action and the mystery of the brain and nerves.

The surgeons of the buccaneers probably worked by rule of thumb and gained their knowledge not from books, but from their masters and their own hardly won experience. The crews were probably less liable to scurvy than those of less law-abiding vessels, for they relied for food largely on such fish and turtles as they could catch, and were frequently ashore, where they got fresh vegetables and cattle. The beef they did not eat fresh they smoked and stored on board, and the name of buccaneer is said to be derived from a Brazilian word signifying "smoked meat." Yet they were not immune from scurvy, for Dampier tells us that—

> "At John Fernando's our sick men were ashore all the time" (sixteen days) "and one of Captain Eaton's Doctors (for he had four in his Ship) tending and feeding them with Goat and several Herbs, whereof here is plenty growing in the Brooks: and their diseases were chiefly Scorbutick."

No wonder it was thought worthy of record that in a certain prize they took seven or eight tuns of marmalate of quinces, for marmeloes or quinces had been recommended fifty years earlier by Captain John Smith in his *Accidence, or the pathway to experience necessary to all Young Seamen.*

One of the buccaneer surgeons, the Lionel Wafer above mentioned, left an account of his experiences in *A New Voyage and Description of the Isthmus of America*, London, printed by James Knapton, at the Crown, in St. Paul's Churchyard, 1699. It is not known where he was born, but he appears to have been an Englishman with some knowledge of Scotland and Ireland. His first voyage, "being then very young," was made "in the Service of the Surgeon of the Ship" to the Strait of Malacca in 1677. Two years later he went in a similar capacity to Jamaica, where for some time he practised surgery, but falling in with two privateering captains there he was tempted to try his fortune with the buccaneers, and after some adventures on the Atlantic coast of Central America he crossed the isthmus with Dampier and others under the command of Captain Bartholomew Sharp. In the Pacific he went as far as Juan Fernandez and Drake's Island, but after various adventures on sea and on shore he and Dampier joined the party of some fifty men who were dissatisfied with Sharp's leadership, and in a ship's longboat and native canoes started to return to the isthmus and recross it on foot to the Caribbean Sea. On the fifth day of the journey Wafer was disabled. The accident is best described in his own words:

> "I was sitting on the ground near one of our Men, who was drying of Gunpowder in a Siver Plate. But not managing it as he should, it blew up and scorched my Knee to that degree, that the Bone was left bare, the flesh being torn away, and my Thigh burnt for a great way above it. I applied to it immediately such Remedies as I had in my Knapsack: And being unwilling to be left behind my Companions, I made hard shift to jog on, and bear them Company for a few days; during which our slaves ran away from us, and among them a Negro whom the Company had allowed me for my particular Attendant, to carry my Medicines. He took them away with him, together with the rest of my Things, and thereby left me deprived of wherewithal to dress my Sore: insomuch that my pain increasing upon me, and being not able to trudge it further through Rivers and Woods, I took leave of my Company, and set up my Rest among the *Darien* Indians."

To this accident we owe the interesting account of the Indians which Wafer has given. At first he and his four companions were objects of some suspicion at the Indian settlement and were rather roughly treated, although, as he says, "Not that they were naturally inclin'd to use us thus roughly, for they are generally a kind and free-hearted people." When, however, the natives heard of the good treatment which some of their fellows had received from Dampier and his party they became kind and hospitable. The Darien Indians seem to have been generally well disposed towards the English, partly because they hated the Spaniards, with whom the buccaneers waged war, and partly because, as it seems, the English had the good sense—perhaps the humanity—to treat them well. Had the natives been hostile travelling by land would have been made more difficult than it was, if not quite impracticable.

Wafer seems to have been much impressed by the presence of albinos among the Indians; their numbers he estimated at one to every two or three hundred of the population. He seems to have been quite ignorant of the existence of albinism in Europe, and of course does not use this term, but he quite accurately describes it, including the visual troubles which are incident to it, and he realized that the albinos were not a separate race. Much as he liked the Indians, he did not extend his affection to their arborcal cousins, the monkeys of the isthmus, who, he says, are—

> "a very waggish kind of Monkey, and played a thousand antick Tricks as we march'd at any time through the Woods, skipping from Bough to Bough, with the young ones hanging at the old ones Back, making Faces at us, chattering, and if they had opportunity, pissing down purposely on our Heads."

The buccaneers found the monkeys very good eating and taught the Indians to overcome their repugnance to this kind of meat.

One of Wafer's party was a Mr. Richard Gopson, who had served an apprenticeship to a druggist in London. This bold buccaneer carried with him a copy of the Greek Testament; he occupied his leisure in its study, and would read aloud in English to anyone who cared to listen. Gopson is an instance of the heterogeneous composition of a privateer's crew, to which Dampier alludes when he says that one ship's company comprised skilled artisans in every craft, so that they were capable of all sorts of constructive work as well as of the wanton destruction with which the buccaneers are generally credited.

No doubt many of them were not criminally inclined, but took to the life from sheer love of adventure, tinctured with the hope of gain. Their life was hard at sea, and no less hard when travelling on the isthmus carrying all their belongings on their backs. Crossing a river in flood, loaded with a heavy musket, ammunition, and three or four hundred pieces of eight (or dollars), was no child's play, and at least one of them owed his death to his load of silver, which must alone have weighed more than twenty pounds.

His dressings and drugs being lost, Wafer submitted to an

Indian method of cure, which consisted in the application of poultices of chewed herbs of unknown origin; in this way he was cured in twenty days, except for a persistent weakness and numbness. Native surgical methods seem to have been less simple, for Wafer gives the following account of the way in which a patient was bled:

"The Patient is seated on a Stone in the River, and one with a small Bow shoots little Arrows into the naked Body of the Patient, up and down; shooting them as fast as he can and not missing any part. But the Arrows are gaged, so that they penetrate no further than we generally thrust our Lancets: And if by chance they hit a vein which is full of Wind, and the Blood spurts out a little, they will leap and skip about, showing many Antick Gestures, by way of rejoicing and triumph."

A similar method has survived in New Guinea up to the present time for opening abscesses. Specimens of the bows and arrows employed are to be seen in the Wellcome Historical Museum, 54A, Wigmore Street, London.

There is a quaint illustration in the original book showing this operation. It having been decided that one of the wives of Lacenta, the Indian king, should be blooded in this manner, Wafer persuaded the king to allow him to bleed from a vein in the usual way. Alarmed by the sudden gush of blood, the Indian at first threatened to take the operator's life, but when the arm was bound up and the patient happily recovered he was delighted with his new Court surgeon. Just as Dr. Gabriel Boughton is said to have gained the confidence of the Emperor of Delhi and his viceroy by his successful treatment of their womankind, so on a much smaller scene did Wafer gain the confidence of the King of the Darien Indians, to the no small advantage of himself and his companions. So successful was he that the king could not for a long time be persuaded to part with him, but kept him about his person, offered him his daughter in marriage (as soon as she should be old enough), and took him with him on all his expeditions. Wafer "lived in great Splendour and Repute," and adopted the Indian full-dress of a coat of paint, a gold nose-plate clipped on to the septum nasi and hanging down over the upper lip, and a funnel or horn concealing the penis, but leaving the scrotum exposed. The painting was done by the women, usually by tattooing: to this Wafer would not submit, but he had the colours laid on in little specks, "red, yellow, and blue, very bright and lovely."

Lacenta was at length persuaded to part with the Englishmen on a plausible pretext and sent them to the north coast, where they found Dampier and his friends with a vessel, which they had acquired in the usual way. (Convey, the wise it call!) The journey across swollen torrents and a lofty mountain range was difficult, and in traversing the mountains the Europeans seem to have suffered from the rarity of the air.

Wafer had been some hours on board ship in his coat of paint and his nose-piece before he was recognized with the joyful shout of "Why, it's our doctor!" He says that a month elapsed before all the paint had worn off.

For six years more he was with the buccaneers: in Virginia, on the Guinea coast, and round Cape Horn to the Philippines, and then back to London. Besides the account of his life among the Indians his book includes descriptions of the country and its products, and of his adventures in the South Sea, but these are of little interest compared with those of Dampier, and it is to be remembered that, as he says, he kept no journal, whereas Dampier made notes of his observations at the time. No doubt Wafer was induced to publish his book by the interest excited at home by Paterson's disastrous attempt to colonize Darien. The main facts of his story are corroborated by Dampier, and there seems no reason to doubt his substantial accuracy.

With the advent of peace between France and Spain and a better understanding between Great Britain and that country, the buccaneers' occupation soon became too hazardous. The more desperate characters among them became pirates of the indiscriminating and uncompromising type with which writers of fiction have made us familiar, many of whom ended their careers at Execution Dock, instead of, like Wafer and R. L. Stevenson's Industrious Pirate, "retiring and being respected by his neighbours."

As for Dampier, he became a recognized authority on geography, oceanography, and meteorology, and as such was consulted by the Government, and was given the command of a king's ship with which to explore New Guinea and Australia, where he gave his name to Dampier's Straits, but accomplished little else of note.

England and Wales.

London's Water Supply.

Sir Alexander Houston's report to the Metropolitan Water Board for the year ending March 31st, 1922, shows that by that time the acute anxieties caused by the great drought of 1921 had been much allayed by the rains of the early months of this year. In a note on the subject in our issue of June 24th we ventured to hint that a change of weather might come in time to replenish London's sources of supply, and this is what happened. But the peril escaped is not being forgotten, and the problem of how to provide against future dangers is occupying the mind of the authorities. It is now some thirty years since Lord Balfour of Burleigh's Committee considered the great scheme for settling once for all London's difficulties by impounding a practically inexhaustible supply from the mountains of Wales, and leading it across England to the metropolitan area. The cost would have been enormous, and in spite of the weighty considerations urged in its favour the scheme was rejected. Fate has been kind to the tribunal which reached that momentous decision. Enteric fever, which was then almost endemic in this country, has very greatly diminished, and London's present water supply cannot be charged with having been the means of conveying that or any other of the water-borne diseases to the inhabitants. The double principle of prevention of pollution at the sources of supply, and purification after caption, has been wonderfully successful. Yet the possibility of a breakdown cannot be ignored, and Sir Alexander Houston urges now, as in former reports, the risks of an accident and the need for ceaseless watchfulness.

"If the true history of all past water epidemics could be learnt," he says, "in nearly all cases something in the nature of an accidental circumstance would be found to be the explanation. Further, in many cases, it is to be feared it would be true that the accident was not wholly divorced from lack of forethought or breach of common-sense precautions, even if the charge of culpable negligence were not admissible."

That mental attitude should always be maintained. Continuous alertness towards even the remotest chance of disaster is the best safeguard against its occurrence.

The other constant problem is the maintenance of an adequate supply. The term "adequate" cries out for definition. Is it to be measured by the standards of great cities so fortunately situated as to have water abundantly available, so that they have at command such quantities as to make waste of no account and economy a profitless virtue? Or is it to be measured by the actual necessities for health and cleanliness and comfort, including such services as the watering of gardens and the washing of motor cars, as well as for manufacturing and trade purposes? All this, of course, subject to regular inspection, and to persistent education of the public in the individual duty of avoiding the running to waste of what is an absolute necessity for the welfare of the community at large. If the former, then the London water supply is hopelessly inadequate; if the latter, a fair case can be stated for its minimal sufficiency. From present sources there is no possibility of obtaining the fifty or sixty gallons a head a day of which some great populations can boast; but London may be able to work away, at least until better times come. Sir Alexander Houston indicates that the Ministry of Health would regard the low figure of sixteen gallons a head a day as not inadequate for domestic purposes, and in London manufacturing requirements are not nearly so great as in the industrial areas. At the best the position cannot be regarded with entire equanimity, but it may be taken for granted that the experience of last year will result in the whole position of the supply being reviewed and every effort made to provide against the risks which attach to the vagaries of the rainfall. Last year it was only about 17 inches, a figure which has no parallel in the sixteen years for which the records are tabulated in Sir Alexander Houston's report.

The report deals in the usual careful and detailed fashion with all the activities of the water department. Chlorination continues to be a main factor in the protection of the consumer against pollution. Three main objections to it are a sentimental dislike of "doped" water, an occasional unpleasant taste, and the fact that its use may be regarded as a short cut to purity. But the author of the report holds that chlorination has a great future—that it saves pumping, supplements other measures which are apt to fail under adverse weather conditions, can probably make almost any

water epidemiologically safe, has led in a number of instances to the reuse of abandoned sources of supply, can be resorted to as a temporary measure in emergencies, can be applied for protection of water in difficulties which arise in the cleansing of low-lying filter beds, and, when combined with rapid filtration, gives a safer result than slow filtration without chlorination. The methods—gaseous, liquid, and solid—of administering chlorine to water are stated as constituting a brief reply to many queries which the author of the report has received.

The diminished prevalence of enteric fever has already been referred to, but the statistics which Dr. Hamer, medical officer of the London County Council, has furnished to Sir Alexander Houston are so striking that some of them may be noted here, though the area to which they refer is not conterminous with "Water London." In 1900 the cases numbered 4,292, and the rate per 100,000 living was 95. By 1903 the cases had fallen to 2,339, and the rate to 51. During the next eight years, 1904 to 1911 inclusive, the cases gradually diminished from 1,896 to 1,022, and the rate from 41 to 23. Then the cases fell below 1,000 per annum, and have steadily gone down from 704 in 1912 to 329 in 1921, the corresponding rates being 16 and 7 per 100,000 inhabitants. It is not alleged that all this is due to the work of the Metropolitan Water Board, for a great reduction in enteric fever has taken place throughout the whole country. The point is made to indicate how much less risk there now is of contamination of a water supply by that infection than there was at the beginning of the century.

Lying-in Homes.

A by-law has been added by the London County Council under its General Powers Act, 1921, to the regulations governing lying-in homes. The new by-law, which does not take effect until it has been confirmed by the Minister of Health, prescribes the records which are to be kept with regard to the persons received and the business carried on at a lying-in home, and requires the notification to the Council of any death occurring at such a home. The keeper of a lying-in home will be required in future to keep a register of patients received and to state the date and hour of the delivery of the patient, the name of the doctor or other person in attendance, and the date of the patient's discharge. The register must also contain particulars of the death of a patient or of any infectious disease from which she was suffering while in the home.

Attendance on Firemen and Drain Workers in London.

The London County Council provides free medical attendance for its firemen and the men employed on the main drainage (altogether about 2,170 persons). The county is divided into twenty-five districts, and a medical officer is appointed for each. Before the war the district medical officers were paid at the rate of 10s. a year for each man entitled to medical attendance. This rate has been increased since December, 1918, to 11s. 6d. a year. The fee includes the provision of all requisite medicines and simple surgical appliances, as well as ordinary certification. It is reckoned that the Council's fees approximate to the capitation fee for insured persons (9s. 6d., exclusive of medicines and dressings), while they are considerably less than the fees paid by the Metropolitan Water Board (15s. a year for each person). It was resolved at the last meeting of the Council to continue the present fees until December 31st, 1923, when they will be reconsidered.

Scotland.

Sir James Hodsdon and Edinburgh Royal Infirmary.

At a meeting of the Board of Management of Edinburgh Royal Infirmary on August 7th a minute was adopted in regard to the retirement of Sir James W. B. Hodsdon, senior surgeon of the infirmary, from its active staff. The Board placed on record its deep appreciation of the great services which he had rendered to the institution, not only by his dexterity as a surgeon, but by the sagacity and sound judgement with which he had exercised his skill, by his broad sympathy with the suffering, and his courtesy to his fellow workers. He was invited to become an honorary consulting surgeon to the infirmary.

The Vital Statistics of Scotland for 1920.

The Scottish Registrar-General's Report for 1920, referred to in our issue of July 29th (p. 176), has now been issued. Its completion was delayed until the results of the 1921 census of Scotland were available for use in the compilation of statistics. The year was one of maxima and minima. The births and marriages were the highest ever recorded; the death rate and the infantile mortality rate were the lowest. This must surely be a unique as well as a most satisfactory grouping of statistical facts relating to one and the same period of time. But the Registrar-General evidently regards it as outside his province to indulge in any kind of jubilation; he ploughs steadily on, looking neither to the right hand nor the left, through what a bad punster would call his figurative volume. We, however, take the liberty of congratulating all concerned, especially the Registrar-General and the Scottish Board of Health, on their *annus mirabilis* of 1920, and in a later issue we shall endeavour to garner some of the fruits of their labours. It is told of a famous health officer in the northern kingdom that on one occasion, meditatively marching along with his sanitary inspector to visit the scene of a nuisance, he suddenly broke the silence as follows: "Macpherson, have you noticed that the death rate in our town has been remarkably low this last month?" "Yes, Sir, I have noticed that." Then another half-minute of silence, ending again with: "Macpherson." "Yes, Sir." "Nae thanks to either you or me." It is the utter and obvious irrelevance of this story to the present occasion that gives us the safe opportunity of telling it.

The Census of the Four Great Towns of Scotland.

A preliminary report on the Scottish census of 1921 was published before the end of that year. Additional reports are now in course of issue, and include those of the four great towns of Scotland—Glasgow, Edinburgh, Dundee, and Aberdeen. It is a very notable fact that, apart from extension of boundaries, three of the four show a decrease in population, the only increase being in Glasgow. Unfortunately, however, the data are vitiated by the date on which the census was taken. Until 1921, April was the census month, but in that year a labour strike made it necessary to defer the numbering of the people until June 19th, when many folk are already on holiday at the coast or in the country, though of course the rush does not occur until later—July and August in Glasgow, and August and September in Edinburgh.

Glasgow.

The population in 1911 was 784,496, but in 1912 extension of boundaries added areas of which the population at the census of 1911 was 223,991, making a total of 1,008,487 at that time. In 1921 the total was 1,034,174, being an increase of 25,687. This is a growth of only 2.5 per cent., but it is estimated that a census at the proper time would have shown at least 30,000 more. In 1801 the population of Glasgow proper was only 46,779, but the suburbs of Barony and Gorbals, long since included, made with the city a total of 77,385. At that time Edinburgh's population was 67,288, so that the two cities were much on a par. Now, even with Leith added, Edinburgh is not much more than two-fifths the size of Glasgow. Including extensions Glasgow is about fourteen times as large as in 1801. Its extended area is 18,589 acres, so that the population per acre is 55.63 persons. But such statements of density are of comparatively little value, because the centre may have a density many times that of the outskirts, and an extension of boundaries makes only a statistical change in that respect. The slums are as before, and the outer fresh air is brought no nearer to them than when the annexed areas were regarded as being within the territory of neighbouring authorities. Glasgow includes the whole or part of no less than eight parishes, varying in population from 587,030 downwards. It rejoices in fifteen members of Parliament, in whose divisions the populations range from 48,376 to 92,856. For every 100 males in Glasgow there are 105 females, whilst in Edinburgh the ratio of females is 119, in Dundee 125.4, and in Aberdeen 118.6, per 100 males.

The effect of the war is seen in the age constitution of the population. Males from 40 upwards have increased, but from 20 to 40 they are fewer. The mean age of the population, including both sexes, was 28.7, against 27.1 in 1911. In females the mean age was slightly higher than in males. In Edinburgh the mean age was 31.2, in Dundee 30.5, and in Aberdeen 29.8. As to conjugal condition, at ages from 15 upwards, the unmarried women were only 2.4 per cent. more numerous than the unmarried men, whilst in Edinburgh the excess percentage of unmarried women was 3.5.

Housing.—In Glasgow 12.8 per cent. of the population are living in houses of one room, 49.8 per cent. in two-roomed

houses, 20 per cent. in three-roomed, 6.1 per cent. in four-roomed, 2.9 per cent. in five-roomed, and 1.6 per cent. in six-roomed.

The chief *occupations* are: Workers in metals, 101,540; in transport and communication, 54,598; in commercial occupations (excluding clerks), 53,954; clerks (not Civil Service nor local authority), 39,360; personal service, 35,969; textiles, 26,590; wood and furniture, 23,271; professions, 17,850, including 666 medical practitioners.

Edinburgh.

The census population was 420,264, against 320,318 in 1911. The addition of close on 100,000 is more than accounted for by extension of boundaries, the added areas having had a population of 103,728 in 1911, so that there is a real decrease of 3,782 in the extended city. The added area itself, however, made an increase from 103,728 to 108,426, so the diminution in Edinburgh's former area was all the greater. The Edinburgh of to-day has six times the population it included in 1801, and double what it had in 1881. The area of extended Edinburgh is 21,524 acres, or very nearly the double of what it was before the extension, and is nearly 3,000 acres more than that of extended Glasgow, so that its nominal density is only 12.97 persons per acre, but that aspect of the matter has already been mentioned in relation to Glasgow. There are in Edinburgh 36,238 more females than males, the ratio as already noted being 118.9 to 100. Of the female population over 15 years of age 45.41 per cent. were unmarried, 42.04 married, 12.40 widowed, and 0.15 divorced.

In one-roomed houses 4.7 per cent. of the population live, in two-roomed 32.9, in three-roomed 22.5, in four-roomed 13.9, in five-roomed 6.0, and in six-roomed 3.7 per cent. These figures are much better than Glasgow's. Amongst occupations the professions bulk largely in Edinburgh, the total being 15,199, male and female. They include 4,461 teachers, 2,048 sick nurses, 972 lawyers, 612 doctors, 579 ministers, clergy, monks, and nuns, 167 dentists, and 3,680 professional students.

Dundee.

The census population was 168,315, being a nominal increase of 3,311 over 1911, but in the interval extensions of boundaries took place, bringing in a population of 11,347, so that in the extended area there has been a diminution of 8,036, or 4.6 per cent. In 1801 the population was 26,084, or about one sixth of what it is now. The extended area of the city is 6,555 acres, and the nominal density 25.68 per acre. The excess of females over males is 18,957, the ratio being 125.4 females to 100 males. Over 15 years of age the excess of females is 36.9 per cent. In one-roomed houses there live 8.9 per cent. of the population, in two-roomed 50.8 per cent., in three-roomed 20.9, in four-roomed 7.0, in five-roomed 3.1, and in six-roomed 2.1. The chief occupations are textiles (flax, hemp, and jute workers) 35.8, per cent. of the total, metal workers 10 per cent., commercial occupations (not clerks) 8.7, transport and communication 7.2, and personal services 5.9. Of the textile workers three-fourths are females, and the total number of persons in this employment is 36,659.

Aberdeen.

The population numbered 153,965, being a decrease of 4,928, or 3.0 per cent. In 1801 the population was 26,992, and this is the first census which breaks the continuous growth since then. There is an excess of females over males of 13,523, or 118.6 to 100. The average age of the entire population is 29.8 as against 27.6 in 1911. In one-roomed houses there live 4.4 per cent. of the population, in two-roomed 32.6 per cent., in three-roomed 31.5, in four-roomed 12.5, in five-roomed 3.5, and in six-roomed 3.7. The figures are better than those of 1911. The principal occupations, stated as a percentage of the total occupied persons, are: transport and communication, 12.8; commercial occupations (excluding clerks), 11.6; personal service, 9.3; metals, 8.4; clerks (not Civil Service nor local authority), 6.6; professional occupations, 5.8; wood and furniture, 5.5; and textiles, 5 per cent. Workers in stone are 4.3 per cent., and fishermen 2.8 per cent. Of the transport workers 1,264 are connected with railways, 2,826 with roads, and 2,956 with water transport.

Housing.

The following table shows for each of the four cities the percentages of population living in houses of from one to six rooms stated separately.

No. of Rooms:	One.	Two.	Three.	Four.	Five.	Six.
Glasgow	12.8	49.8	20.0	6.1	2.9	1.6
Edinburgh ...	4.7	32.9	22.5	13.9	6.0	3.7
Dundee	8.9	50.8	20.9	7.0	3.1	2.1
Aberdeen ...	4.4	32.6	31.5	12.5	3.5	3.7

In this respect it will be observed that Glasgow and Dundee are in decidedly a worse position than Edinburgh and Aberdeen, but according to English standards none are good. Speaking broadly, the same system of housing exists in all the four cities—great buildings (curiously called "lands") three or four stories high, each with multiple dwellings on every floor, opening off a common stairway. Much improvement in detail is to be found in the more modern houses, but the system in its essentials remains. It goes far back into the past. Curiously, the terms "house" and "tenement" are in common speech used in opposite senses in Scotland and England. In England the actual dwelling is the tenement, whilst (if it does not stand apart as a cottage) the building of which it is a part is the house. But in Scotland the dwelling is the house, and the great building on one of whose floors it is situated is the tenement, or "land." If one of these blocks is for sale it may be described as "a land of houses," though the description is falling out of use.

Ireland.

IRISH ARMY MEDICAL COUNCIL.

DR. M. R. J. HAYES, F.R.C.S.I., Lieut.-Colonel B. Forde (retired, R.A.M.C.), and Dr. P. J. Smyth, Fitzwilliam Street, Dublin, have been appointed whole-time officers of the new Irish Army Medical Council. The main duties of the Council will be to formulate a scheme for the organization of a medical corps for the Irish Free State Army.

APPOINTMENT OF A MEDICAL OFFICER.

The co. Cavan Health Committee, when a vacancy occurred recently in the Dowra Dispensary District, advertised the post at a salary reduced by almost 50 per cent. Several abortive attempts were made to fill the post. The Irish Medical Secretary made representations to some intending candidates—mainly women doctors—who withdrew their applications when the position of affairs was explained to them. The Health Committee, however, in spite of the efforts of the medical organizations, succeeded in filling the appointment, and elected Miss O'Reilly, L.R.C.S.I., Dublin. The facts of the case were put before Miss O'Reilly, and she was informed of the withdrawal of the other candidates.

COUNTY WEXFORD MEDICAL PRACTITIONERS.

The following resolutions were passed unanimously at a recent meeting of medical practitioners held at Enniscorthy:

1. That we are of opinion the notification of tuberculosis by the medical attendant should be with the consent of the patient unless the position of the patient is such as to be a danger to the community.
2. That the fees proposed to be paid to the profession for the notification of tuberculosis are altogether unacceptable for profes sional work, and inadequate when the importance of the duties is considered.
3. That in the circumstances we are of opinion that the professions in Ireland should await the directions of the Irish Medical Committee with regard to the scheme proposed by the Local Government Department for the notification of tuberculosis.
4. That we avail ourselves of this meeting to state that we have learned with much disappointment the decision of the Local Government Department to disqualify medical officials of the County Health Board from acting as representatives of the local profession on these boards. That we consider this decision as reactionary, and contrary to the precedent of medical representation, without any official disability, as provided under the Insurance Acts in the case of County Insurance Committees, and also contrary to the recommendation of the Irish Public Health Council that officials should be eligible to act as representatives of the profession on the local health bodies.

When the resolutions came before a meeting of the co. Wexford Health Board it was decided to send the resolution of the medical practitioners dealing with the notification of tuberculosis to the Dail for its observations.

THE New York City Health Department, on June 26th, opened a riverside convalescent camp on North Brother Island for patients suffering from whooping-cough, a disease with which about 500 children in the city were reported to be affected. Few of the hospitals have facilities for treating them during convalescence, but in the new camp there is accommodation for 2,000 children, who will be kept there for six weeks or longer without expense to their parents.

Correspondence.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—Dr. J. R Whitwell writes (BRITISH MEDICAL JOURNAL, July 8th, p. 64): "The person who advocates sterilization assumes, first, that we know exactly how heredity acts, and secondly that by sterilization we should only prevent the production of the unfit." Doubtless none of us "know exactly how heredity acts," but surely all medical men know sufficient for the purpose. May I set down a few commonplaces of knowledge?

The individual is derived from a germ cell. Therefore he can inherit only through it. In the germ are none of the characters (for example, head, scar knowledge of Latin) which he subsequently develops, but only powers (potentialities, capacities) for developing them. Therefore he inherits not characters, but only potentialities. Characters arise in response to nurture—for example, food, moisture, light, heat, use, injury, internal secretions. The sum up of the individual's powers for development is his *nature*. The sum up of the influences which play on him and cause development or change is his *nurture*. The nature of the individual is rigidly fixed and limited and, therefore, he can develop only within the limits imposed by it. Thus the germ of a man can develop only into a man. But his nurture may vary within wide limits, and, therefore, he need not, and commonly does not, develop all that his nature permits. For example, he must develop a head, for without it he could not exist, but lacking the right injury, or teaching, he may not reproduce a particular scar or item of knowledge. Obviously, then, inheritance is one thing, and reproduction quite another thing. There may be inheritance without reproduction, but there cannot be reproduction without inheritance. Thus a germ which has inherited everything may perish before it has developed anything.

Offspring invariably differ from their parents somewhat. These differences are natural or nurtural, or a combination of both. Thus a man may be darker than his parent by nature, or by nurture, or by both. Technically, natural differences are termed "variations" and nurtural differences "modifications." It is agreed on all hands that variations are transmissible. The statement that modifications are transmissible is neither true nor untrue. It is merely nonsensical (see *Nature*, November, 1920, to May, 1922). It involves a play on words. The germs of some living beings (for example, plants, insects, fish, and reptiles) are cast naked into the world, exposed to all its vicissitudes; the germs of other types (for example, mammals) are sheltered within the body of the parent till development is far advanced, yet individuals developed from the former display, as far as is known, no greater range of variations than those developed from the latter. Thus, in a litter of puppies may be found as great a range of variations as in fish hatched from naked ova. The fact that some species that void naked ova have existed almost unchanged from geological time indicates how obstinate is the resistance of germs to enforced change of nature. Of course, every germ is liable to injury or other enforced change; but, like other living beings, it tends, if it survive, to recover and return to the normal. If it does not recover it tends to perish and leave no descendants. It follows that nearly all variations are "spontaneous"—that is, not caused by the action of nurture. They are experiments made by blind nature, groping towards improvement.

We are now in a position to formulate a law, which I think no one will dispute, and which covers the whole range of heredity. "Offspring vary spontaneously from parents; variation is the sole cause of non inheritance; apart from variations, like exactly begets like if parent and child develop under like conditions."

But this law does not cover reproduction. For example, if white and negro mate, the offspring is mulatto. Mulattos, interbred, have mulatto offspring. With every infusion of white the touch of the tar brush grows fainter. There is blending in nearly all particulars. The most conspicuous exceptions are in sex and in eye colour. The child is a boy or a girl—hardly ever, if ever, hermaphrodite; and the eyes are black. But there is massive evidence derived from many species of animals that male is undeveloped female, and vice versa. Some sort of nurture, occurring early in life, turns the scale and makes the individual male or female. In aphides heat is the factor; for during summer only females are present which produce parthenogenetically; but, with autumn chill, males appear. In hothouses only females occur for any number of years. It follows that the females inherit, but do not reproduce, the male characters. There is not alternate inheritance, but alternate reproduction—alternate patency and latency. As regards eye colour, when white and negro mate, black is prepotent; but the prepotency is weakened with each infusion of white; so that at length blue eyes suddenly appear. If there were alternate inheritance, not merely reproduction, the prepotency could not be weakened, and black eyes would occur in all descendants.

Of course, the patent sexual characters of the male do not tend to blend with the patent characters of the female. They belong to different sets. The patent characters of the male blend with the latent male characters of the female; and vice versa. There is, thus, universal blending. Now there is massive evidence that, when mating individuals differ sharply in a particular other than sex, the reproduction in that particular often follows the sexual pattern. Sometimes the latency of such a character is prolonged. Man, as Darwin noted, has often seized on such sharp differences to create his cultivated plants and domesticated animals and, therefore, in them long latent ancestral traits tend to appear. Thus plants reproduced from seed often revert to the wild type. Pure-bred poultry and pigeons sometimes reproduce the ancestral coloration of *Gallus bankiva* and *Columba livia*, and if a horse be crossed with the broad-striped Burchell zebra the narrow stripes of the enormously remote Somali zebra are seen. Crossing is one of the conditions which cause latent ancestral traits to reappear. Hence the frequent reappearance of them when fancy varieties of plants and animals, which are largely founded on abnormalities, are crossed. They never appear when wild types are crossed. It would seem that the horse has descended from the Somali zebra.

As all medical men know, the reproduction, not inheritance, of many human abnormalities (for example, club-feet, hare-lip, idiocy) is alternate. The abnormality may be latent for many generations, but at last conditions, probably analogous to those which govern eye colour, may occur which render it patent. Idiocy and its lesser degrees, imbecility, feeble-mindedness, and natural stupidity are particularly interesting. Man is the educable animal. The normal man can learn and has learned. The newly born normal infant can learn, but has not learned. The idiot cannot learn, and has not learned. There in a nutshell is the difference between the extremest of human mental types. The perfect idiot cannot learn even to walk or speak. He differs from the normal man merely in this matter of learning; but the difference is enormous. He has lost *the* distinctively human character. Great abnormalities, occurring spontaneously, are rare. But idiocy is common, and becomes more so every year. It is impossible to account for its frequency except under the supposition—confirmed by the high proportion of idiots in tainted families—that idiocy is rarely a spontaneous variation, but is commonly the patency of an often latent trait. It does not matter in the least that bishops and ambassadors occur in families tainted with idiocy. Idiocy may be latent even in these exalted personages. Moreover, dignity of that sort does not usually imply genius, but, as a rule, only a golden spoon.

I do not know if Dr. Whitwell can find any error of fact or reasoning in the above. I have dealt only with matters within common experience. If I am correct, a single idiot may taint a whole race, and in that case doubtless we in England are extensively tainted. But it is possible by careful breeding to render an abnormality almost permanently latent—as in the case of the wild coloration of poultry and pigeons. I can imagine no way of effecting this in the case of mental defect except through sterilization.—I am, etc.,

Southsea, Aug. 15th. G. ARCHDALL REID.

THE PREVENTION OF CEREBRAL HAEMORRHAGE.

SIR,—The death from cerebral haemorrhage of a public man aged 50 at a time of political crisis suggests the inquiry whether we are doing all that is possible to avert or at least postpone such disasters. It seems that brain workers everywhere, including prominent figures in the medical profession, are becoming more subject to these melancholy accidents, at the height of their powers and influence. Every year we see not a few men of the greatest experience and distinction lost thus prematurely to the country. Is it always inevitable? I think not.

There are not always obvious signs that a man is "on the verge of a stroke." He may indeed seem and feel exceptionally well, although not usually. It has fallen to me to

examine a large number of middle aged men. They were not ill, but they came, as all men in middle life ought to do periodically, to be "overhauled." Many observers besides myself have no doubt been warned in such cases by a spasmodic and irritable condition of the arteries. The state of contraction sometimes called "hypertonus" is clearly at first entirely spasmodic, for it may be readily relaxed under treatment (for example, venesection), or on the other hand increased by nervous and other disturbances. The arterial blood pressure naturally follows every wave of vascular contraction and relaxation. If the tension continues to mount there must come a time when, following perhaps on some mental or physical exertion or even a change of posture, an unsupported blood vessel gives way somewhere, if not happily on one of the mucous membranes then perhaps in the more delicate tissues of the brain.

In a paper read this year at a congress of physicians at Washington I suggested the systematic use of *blood-pressure charts*. Upon these charts the readings of systolic and diastolic pressures should be entered from year to year, or more often, and the resulting curve plotted out, so as to ascertain in cases under periodical observation whether the vascular mechanism showed signs of strain beyond the limits of safety. I pointed out that in many cases followed for a series of years a venesection at the right moment had produced an arterial relaxation out of all proportion to the amount of blood removed, and that the early symptoms of vascular breakdown had been entirely and promptly removed. The observations on which these conclusions are founded may, I hope, be published later. My object in this letter is to encourage the resort to venesection in cases of high tension as a preventive of cerebral haemorrhage. Some patients so affected ought to be bled once or twice in every year. For others a fairly free venesection at longer intervals seems sufficient. To find any ill effects from such a practice one must go back to the absurd excesses of former times. Its good effects are sometimes almost startling both to the patient and the medical man.—I am, etc.,

London, W., Aug. 15th. R. Fortescue Fox.

THE TEACHING OF PSYCHOTHERAPY.

Sir,—Dr. McBride's letter in your issue of August 12th (p. 282) is most interesting, since he proves the very point he questions—the existence of the unconscious.

The reduction of dreams to the sexual is unacceptable to him, and he therefore seeks to prove that Freud contradicts himself by unconsciously quoting a sentence without its context. If he will reread the whole of the paragraph on page 454 of Freud's *Interpretation of Dreams* he will find that Freud is referring to a dream becoming a perception as the result of the sensory stimulus having directed part of the energy of the foreconscious in the form of attention on the stimulant. It is to this that Freud refers when he says on page 197: "The dream is the guardian of sleep, not the disturber of it. We shall justify the conception with respect to the psychic factor of awakening elsewhere. . . ." Dr. McBride makes the mistake of regarding the mind as an anatomical entity, whereas it is the psychic link between perception and action.

The sexual theory of dreams is not by any means accepted universally. Even Freud says, "the *majority* of dreams of adults treat of sexual material and give expression to erotic wishes." Jung, one of Freud's foremost pupils, disagrees with the whole-hearted sexual theory and standardization of symbols. On the other hand, nobody denies that some dreams are of sexual origin and in any case a whole dream or part of it may be overdetermined.

No analyst suggests a sexual or any other interpretation to his patient—the interpretation must be that of the dreamer or the value of free association would be lost. The analyst's part consists almost entirely in keeping his patient from wandering too far from the subject and urging him on when resistances present themselves. It is in the latter connexion that auto-analysis usually fails, which is to be expected from the nature of conflicts.—I am, etc.,

Cannock Chase, Aug. 12th. James W. W. Adamson.

Sir,—Dr. McBride accuses Professor Freud of making contradictory statements. The latter is stated to have said in the *Interpretation of Dreams*: "We must, in fact, admit that the dream invariably awakens us," and again, in the *Introduction to Psycho-analysis*: "We do not wake up out of all dreams."

May I suggest that it is not fair to any writer to drag such remarks from their contexts? The former quotation occurs in the exposition of a wonderful attempt to formulate a theory of the mind which calls aloud for consideration as a whole. The meaning implied is that the perception in consciousness of the dream is equivalent to the awakening of the fore-conscious; it does not necessarily involve the termination of sleep. One of Freud's definite view-points is that dreams are the protectors of sleep.

Again, with regard to symbolism, symbols are not "the elaborate code of the psycho-analysts"; they are the conscious and unconscious property of us all. I believe a recognition of the unconscious is admitted by psychologists of most schools of thought.

Is it permissible to add that Freud cannot be understood from "desultory reading" by "one who is neither a neurologist nor a psycho-analyst"?—I am, etc.,

W. S. Willmore,
Bournemouth, Aug. 13th. Lieutenant-Colonel I.M.S.

ARSENIC IN ULCERATIVE ENDOCARDITIS.

Sir,—Having retired from practice since April, 1918, after many years of active work, I feel some diffidence whether to write this letter upon the subject of ulcerative or malignant endocarditis, in the hope that the great fatality attending this affection may be minimized. I can only recall some three or four cases in my practice, and therefore conclude that, fortunately, the disease is not common; nevertheless, considering the great mortality, it was my intention to try the influence of arsenic as a sort of forlorn hope in overcoming the causes of this mortality, which undoubtedly to a great extent is due to the septic poisoning resulting from an open raw surface in a vital channel containing the necessary purifying blood for the life of the body. The question naturally arises, How is this poisonous secretion to be purified and the healing of an open wound thus promoted? Most of our antiseptic remedies cannot be tried in sufficient strength to be of any use. Arsenic, however, from its great power, judiciously administered, is worthy, in my opinion, of a trial, though we will be sailing between Scylla and Charybdis. The preparation used should be the sodium salt, which is preferable to any other; the earlier this fatal affection is treated thus the better the prospect of success, and it should be given in a liquid form and in as large doses as the patient can safely tolerate; as soon as evident improvement is manifested the dose should be gradually diminished, never giving more than what may be absolutely necessary.

This is an open letter to the profession for due consideration as a possible means of mitigating the influence which a foul wound would have upon the system. Hitherto I have not seen any statement of this remedy having been tried, hence the reason of my suggesting a trial being made by the profession.—I am, etc.,

Leamington Spa, Aug. 15th. John Lycett, M.D.

THE GROWING ABUSE OF COCAINE.

Sir,—An article in the British Medical Journal of August 19th draws attention to a subject of importance to those of us who have occasion to prescribe cocaine for legitimate purposes. The present law hedges its prescription by irritating documentary formalities. Cannot the abuse be attacked at its source?

For many years substitutes for cocaine—such as alypin, stovaine, eucaine, novocain, and others—have been suggested. Each has claims, each objections, and none approaches cocaine in general efficiency.

In a recent number of the *British Journal of Ophthalmology*[1] I called attention to a new synthetic preparation, butyn, which, as far as ophthalmic surgery is concerned, seems to me, after six months' experience of it, to be a perfect substitute for cocaine. During that period I have had no occasion to go beyond it in any case requiring local anaesthesia. In the United States a committee of well-known ophthalmic surgeons appointed by the American Medical Association has reported on butyn in a most enthusiastic way, pointing out that for practically all purposes it is superior to cocaine.

Is not the time also ripe in this country for an authoritative investigation of its claims? I would suggest that a committee appointed by the British Medical Association or by

[1] Vol. vi, p. 316.

the Royal Society of Medicine should consider the whole question of local anaesthesia, with especial reference to substitutes for cocaine.—I am, etc.,

Bath, Aug. 20th. W. M. BEAUMONT.

WOOD-HILL FUND.

SIR,—This fund being now closed with the publication of the tenth and last list of subscriptions, it would seem desirable to make some comments on the importance to the profession of the verdict given in this case, and to give some details about the fund itself.

An action was brought against Dr. Wood-Hill of Beccles for alleged negligence in the treatment of a lady who was suffering from a fractured femur, the result of an accident. The case was reported in your issue of November 26th, 1921. Notwithstanding that evidence was brought forward to show that Dr. Wood Hill treated the case by approved modern methods, and that when the lady left his neighbourhood to go to her own home he urged her to consult her own doctor, and to be guided by his advice before she put any weight on the limb, the jury returned a verdict for the plaintiff with damages to the amount of £750.

The verdict at once excited widespread sympathy with Dr. Wood-Hill, as it was felt that a serious miscarriage of justice had taken place. Unfortunately, Dr. Wood-Hill had neglected to join one of the medical defence societies, and for this lack of foresight no excuse can be offered. The costs of the action with the damages awarded came to the large sum of £2,250. The fund to assist him in this serious emergency was started by a letter of appeal signed by us in your issue of December 3rd, 1921.

The verdict is of great importance to the medical profession. It proves that although a medical man may have exercised all the skill at his disposal, and adopted approved modern methods in the treatment of a case, yet he still has to run the risk of an adverse verdict if the case does not finally do well. We feel this to be an unjust widening of a medical man's responsibility in the practice of his profession. Prior to the case of Clayden *v.* Wood-Hill a medical practitioner might feel fairly confident that if in the treatment of a case he used the ordinary care and skill which could rightly be expected of him he ran small risk of an adverse verdict in an action for alleged negligence. This is no longer so.

The moral to be drawn is that in no circumstances should a medical man engage in practice without being a member of one of the medical defence societies. Further, no medical man, after the warning which the profession has received by the case of Clayden *v.* Wood-Hill, need expect in any future similar case to be treated by his fellow practitioners with the generosity accorded to Dr. Wood Hill.

A few details about the fund may be of interest to your readers:

	£	s.	d.
Total amount subscribed	1,717	4	4
Bank interest	19	13	10
	1,736	18	2
Expenses	6	5	0
Net total	1,730	13	2

A cheque for this amount has been forwarded to Dr. Wood-Hill.

The fund was made up of the following amounts:

	£	s.	d.
33 Divisions of the British Medical Association subscribed...	320	14	6
4 Branches of the British Medical Association subscribed...	66	14	10
14 Medical societies subscribed	150	17	0
14 Honorary medical staffs of hospitals subscribed	132	7	0
4 Local Medical and Panel Committees subscribed	56	19	6

Subscriptions from individuals were responsible for the remainder of the fund. The highest individual subscription was 25 guineas; the lowest 2s.

The widespread interest taken in this case is shown by the fact that subscriptions were received from such far distant places as New Zealand, Tasmania, Queensland, Toronto, Oporto, Nigeria, Khartoum, South Africa, and Baghdad.—We are, etc.,

ROBERT JONES (Liverpool).
GEORGE E. GASK (London).
R. C. ELMSLIE (London).
JOHN LYNN-THOMAS (Cardiff).
HAMILTON A. BALLANCE (Norwich).
WILSON TYSON (Lowestoft).

August 18th.

Tenth List of Subscriptions.

Amount previously acknowledged, £1,573 4s. 4d.

£30 9s. 6d.

Members of the Ipswich Local Medical and Panel Committee, per Dr. W. L. Hibbert, Hon. Sec.: Drs. Fryer, Hibbert, Pretty (second donation), J. de Staddon, Cecilia Williamson, Cameron Young, £2 2s. each. Drs. Adams, Baylor (second donation), Bellward, R. O. Eades, A. R. Hill, McKinnon, £1 1s. each. Drs. Cresswhaite, S. O. Eades (second donation), Wal-h, 10s. 6d. each.

£15.

Fifteen members and four non-members of the South Middlesex Division of the British Medical Association, per Dr. T. Ruddock-West, Hon Sec.

£11 11s.

"Some sympathisers, per J. H. P."

£10 11s. 6d.

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£10 9s. 6d.

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£7 17s. 6d.

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£6 10s.

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Drs. de Nysschen and Aylen, Halesworth.

£4 14s. 6d.

Members of the Brighton Division of the British Medical Association, per Dr. L. A. Parry, Hon. Sec.: Drs. Charles Simpson (Hove), A. H. Dodd (Hove), Donald Hall (Hove), and Walter Broadbent (Brighton), £1 1s. each. Dr. Florence Edmonds, 10s 6d.

£3 3s. 6d.

Further contribution from members of the Chichester and Worthing Division of the British Medical Association (see list published April 29th), per Dr. H. J. M. Milbank-Smith, Hon. Sec.

£3 1s.

Members of the Wiltshire Branch of the British Medical Association, per Dr. F. F. Bond, Hon. Sec.: Drs. Bond and Jones, 10s. 6d. each. Drs. Ward and Semple, 10s. each. Drs. Haydon, Vivian, Adeney, and Johnstone, 5s. each.

£2 2s.

Further contribution from members of the Rochdale Division of the British Medical Association (see list published April 29th), per Dr. James Melvin, Hon. Sec.: Drs. J. Dunlop (Rochdale) and F. W. Hartley (Heywood), £1 1s. each.

Dr. F. Fowler Ward, Ipswich.

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£1 1s.

Dr. James A. Ainscow, Birmingham.
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Dr. A. G. Osborn, Windsor.
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Dr. St. George B. Delisle Gray, Oporto.
Dr. James W. Smith, Ryton-on-Tyne.

Further contribution from the Hartlepools Division of the British Medical Association (see list published June 3rd) (Hon. Sec., Dr. J. E. Mitchell), per Dr. Alfred Cox, O.B.E.

10s. 6d.

"S. W."
Dr. D. Kennedy, Newbury.

The Services.

STATISTICAL REPORT OF THE HEALTH OF THE NAVY FOR 1915.

THIS report was only published in 1922, the delay being due to the pressure of work on the Medical Department during the war and to the great accumulation of material since. It is, however, greatly to be deplored that the figures should not have been available before. The report covers a very interesting period of the war, when large numbers of ships were employed and the casualties from injury and disease from the Gallipoli peninsula were very heavy, though, as stated on page 168, the returns of the Expeditionary Force of the Royal Naval Division are not included.

The average strength of the total force was 236,500, the total number of cases of disease and injury was 146,865, giving a ratio of 620.73 per 1,000, a decrease of 5.72 in comparison with the average of the previous five years. The average number of men sick daily was 5,289, or 22.1 per 1,000, being 2.1 less than that of the previous five years; each person is computed to have lost 8.16 days' service for the year. The total number *finally* invalided from the service was 5,689, the invaliding ratio showing an increase of 9.26 in comparison with the average of the previous five years; but it is

pointed out that this is largely due to the fact that many of the R.N.R., R.F.R., and R.N.V.R. who had been called up in the war were found to be physically unfit. The total number of deaths was 5,216, giving a ratio of 22.05 per 1,000, which was considerably less than that of 1914; of these, 825 were due to disease, and 4,391 resulted from injury, including those killed and wounded in action; in the latter category were 834 wounds and fractures, 2,536 wounds in action, 23 burns and scalds, 922 drowned, and 33 suicides; 539 were from the *Formidable*, 511 from the *Goliath*, 196 from the *Bayano*, 127 from the *India*, 56 from the *Triumph*, 42 from the *Majestic*, 66 from the *Lynx*, and many smaller numbers from isolated ships, trawlers, etc. A full and interesting list of these casualties is given, stating the geographical position of the ship, and whether the casualties were due to torpedo, mine, or other cause.

The zymotic diseases were practically all contracted on the home station and in the Grand Fleet. Influenza is recorded in 6,235 cases, with only 4 deaths; this is a great increase of cases over that of the previous five years' average; there were also 14,400 cases of catarrh. Diphtheria caused 85 cases with 4 deaths, and cerebro-spinal fever 115 with 67 deaths—a very high mortality, probably due in part to the overcrowding of the Royal Naval Barracks at Portsmouth, Chatham, and Plymouth, which returned respectively 24, 20, and 13 cases. There were 446 cases of enteric fever, of which 62 were diagnosed as paratyphoid A and 1 as paratyphoid B, but it was often impossible to determine properly the differential diagnosis. The *Venerable* returned 32 cases among men drawn from the beach parties on the Gallipoli peninsula, the *Blenheim* 20 cases, mostly from men of the R.N.R. and R.F.R. from tenders; these were not inoculated, whereas from the ship's company there were only 2 cases. Mediterranean or undulant fever gave 27 cases, a great increase over the average of the previous five years—namely, 0.11 per 1,000 as compared with 0.04. Dysentery yielded 951 cases, of which 723 came from the Mediterranean; the majority are said to have been amœbic, and the results of emetine treatment were satisfactory. Malaria produced 1,607 cases, but only two deaths are recorded; most of the cases were of African origin, contracted on the west coast. The tuberculosis return shows a very slight decrease over the average; a specially interesting table gives the number of cases and ratio per 1,000 for the different ratings: for commissioned and warrant officers it was 1.3 to 1.5, for seamen, marines, and general hands it was 2.0 to 3.0, but for the sick berth staff it rose to 5.4 and for ship's stewards and cooks to 19.5; the reason for this requires explanation. The total number of cases of venereal disease was very high, but one reads with pleasure that there was a noticeable decrease in the case ratio per 1,000 for *each separate disease*; the highest rate was on the China station and the lowest on the Cape station; the total number of days lost to the service was 223,947. A table showing the ratio of sickness per 1,000 in the different fleets is instructive: Home 28.6, Grand 18.3, Mediterranean 24.9, West Atlantic 16.5, China 41.3, East Indies 26.3, Cape of Good Hope 29.4, Irregular 30.4. The highest ratio was found on the China station and was largely due to venereal disease; the total force was averaged at 720 men, employed in a receiving ship, a depôt, and two sloops.

The hospitals both at home and abroad were fully occupied, and many subsidiary hospitals had to be used. The eleven hospital ships treated in all 26,614 men, of which 15,747 were military; the *Rewa*, *Somali*, and *Soudan* were employed in the eastern Mediterranean and were worked to the fullest capacity both for surgical and medical cases.

Obituary.

ARTHUR MARMADUKE SHEILD, M.B., B.Ch.Camb., F.R.C.S.,

Consulting Surgeon to St. George's Hospital.

The announcement of the death of Arthur Marmaduke Sheild at the hotel in the Island of Colls, Hebrides, on August 5th, after a seizure on July 30th, recalls a striking personality and the disappointment of that full measure of success which was confidently anticipated for him when ill health necessitated his premature retirement in 1907. He was born in 1858 at Landawke, Lougharne, Carmarthen, and was the son of William Henry Sheild of Gilfach, Pembrokeshire. He was educated privately, and entered the medical school of St. George's Hospital in 1875; he had a most distinguished career as a student, winning the Brackenbury prize in surgery and the William Brown (£40) exhibition in 1878, and the William Brown (£100) exhibition in the following year, when he took the M.R.C.S. and L.R.C.P. and became house-surgeon. In 1881 an important event in his life occurred, for he obtained the appointment of house-surgeon at Addenbrooke's Hospital, Cambridge, and thus came under the influence of that great teacher, Sir George Humphry, whom he assisted in private and in many respects resembled. His three years at Cambridge left their impress on his shrewd character and gave him a university experience and degree, for he was contemporaneously, as was then possible, an undergraduate at Downing College. In 1883 he achieved the feat of passing the two parts of the F.R.C.S. in the same month, and in 1884 he returned as resident obstetric assistant to St. George's, where he was also anæsthetist and in 1886 curator of the museum, a recognized step to the staff. In the same year, however, he was attracted away as assistant surgeon to the Westminster Hospital, but soon after migrated to Charing Cross Hospital, where for the next seven years he was assistant surgeon, aural surgeon, demonstrator of anatomy, and lecturer on practical surgery in the medical school. At this period of his career he was associated with the late Dr. Montague Murray as a private coach, many men up for the surgical examinations passing through his hands, and was busily engaged in many other directions. In June, 1893, he was called back to St. George's as assistant surgeon, becoming later (1895) surgeon to the throat department, and in 1900 full surgeon. He held also the posts of surgeon to the Waterloo Road Hospital for Women and Children, and to the Hospital of SS. John and Elizabeth, and was secretary of the Medical Society of London, the old Dermatological Society, and of the Surgical Section of the British Medical Association at its annual meeting in London in 1895. He was also an additional examiner in surgery at his old university and an examiner at the Apothecaries' Society. In 1907 he had the terrible experience of inoculating himself during an operation, and his health was so gravely affected that he was obliged to give up work, at the age of 49, and to retire to the country. After a long illness, necessitating many operations, his health improved, and during the war he gave his services as consulting and operating surgeon to a military hospital at Exmouth, near Budleigh Salterton, where he had settled down.

Sheild's literary output corresponded with his all-round activities and bore witness to his ability as a general surgeon with special knowledge in oto-laryngology and dermatology. His efficiency in these special departments was shown by his books on *Diseases of the Ear* (1894), his *Lectures on Nasal Obstruction*, and the articles in the first edition of Allbutt's *System of Medicine* on diseases of the nails and tumours of the skin; his contribution on dislocations and joint injuries to Treves's *System of Surgery* and on diseases of the breast to Quain's *Dictionary of Medicine* prove that he was regarded as a prominent general surgeon. He also published a volume of *Surgical Lectures and Essays*, but his chief work, embodying observations and collection of cases over many years, was *A Clinical Treatise on Diseases of the Breast*, which appeared in 1898 and was a well-balanced, practical, and up-to-date account of this important and extensive subject.

His wide experience made Sheild a popular and most successful teacher of students; he was above all things practical, and, besides insisting on the principles of surgery, laid stress on matter that would eventually prove of importance in private work. His method of instruction was arresting and impressive, like that of his old teacher Sir George Humphry, and his fund of humour and anecdote was often utilized to drive home his points and, indeed, rendered them difficult to forget.

A man of strong and independent character, he was no respecter of persons, certainly never sought favour by knuckling under to seniors, and had fearlessly fought his way up by his unaided efforts. In spite of some adverse conditions, among which must be reckoned threatened tuberculosis in early professional life, the struggle was successful, but he emerged a watchful and resourceful opponent in debate and often appeared somewhat cynical, and so hid his real kindliness of heart. His brilliant conversation and power of mimicry rendered him welcome socially, and he had close friends; but these gifts made others, possibly with reason look uneasily to the weak points in their armour and wonder what comments they might excite. Apart from his profession he had many interests: he was devoted to fishing, played golf, and had an intense love of the country, to which he always intended to retire long before his full time at the hospital was run. As it was, an evil fate determined that this should occur prematurely, and his career, interesting from its high promise and achievements, rather sadly illustrates the changes and chances that may beset a consulting surgeon.

H. R.

WILLIAM THOMAS, F.R.C.S.,

Birmingham.

By the death of Mr. William Thomas of Birmingham the medical profession of that city loses one of its oldest and most esteemed members. He was the son of Dr. Robert Thomas, and was born near Leeds in 1840; he entered Queen's College, Birmingham, as a medical student in 1862, and had a very distinguished career. In 1865 he obtained

the diplomas of L.S.A. and M.R.C.S.Eng. He then held the post of resident medical officer to the Bradford Infirmary, where he remained for two years, and on returning to Birmingham he took the M.B.Lond. in 1867 and the F.R.C.S.Eng. in 1869.

He was professor of anatomy at Queen's College, Birmingham, from 1874 to 1884, being given the title of emeritus professor on his retirement from the chair. He was pathologist to the Queen's Hospital from 1874 to 1878, surgeon to the Children's Hospital from 1874 to 1894, and surgeon to the Orthopaedic and Spinal Hospital from 1883 to 1908; to both of the last-named institutions he remained a consulting surgeon up to the time of his death. In 1888 he was appointed Ingleby lecturer for the year. He was a past-president of the Midland Medical Society, and his contributions to medical literature were numerous and important. He is survived by his widow, three sons, and two daughters.

Dr. William Black Alexander died in a nursing home in Edinburgh on August 18th at the age of 78. He was educated at the Edinburgh Institution and University and took the diploma of L.R.F.P.S.Glasg. in 1869, and carried on a large practice in Edinburgh for forty years. He was also for many years a district medical officer under the Edinburgh Parish Council, and since 1911 surgeon apothecary to H.M. Household at Holyrood Palace. At one time Dr. Alexander was physician to the City Fever Hospital. He was elected a Fellow of the Edinburgh Obstetrical Society in 1882. His favourite recreation was golf, which in his earlier days he played with enthusiasm. Dr. Alexander's wife died some twelve years ago; one of his four sons is medical superintendent of the Aberdeen City District Asylum.

Universities and Colleges.

UNIVERSITY OF LONDON.

University College Hospital Medical School.

The Goldsmid Entrance Exhibitions, 1922, of one hundred and twelve guineas each, have been awarded to Mr. P. M. D'Arcy Hart and Miss Janet Vaughan.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The following candidates have been approved at the examinations indicated:

Primary Fellowship Examination.—R. F. J. Henry, Lucy M. Joly, A. J. Mooney, A. Ff. O'Carroll, R. W. Power, F. H. Whyte, W. K. C. Wynne.

Final Professional Examination.—C. D. Dykman, H. O. Mackey, S. A. McSwiney.

CONJOINT BOARD IN IRELAND.

The following candidates have passed the examination indicated:

Final Fellowship Examination.—Henrietta C. Ball, J. T. Barrett, H. T. Beggs, S. S. Brass, Mary F. J. Connolly, E. M. Dodd, P. Fleming, J. A. Flynn, P. J. Greene, V. E. Lee, M. Levy, J. J. A. Loftus, D. S. Magner, Gladys C. M. Marshall, J. S. Mathews, M. P. Moran, Maggie M. Nelson, J. F. O'Connell, The O'Rourke, F. E. Preston, W. E. Rutledge, W. Sherowitz, R. T. Taylor.

Medical News.

The King has appointed Mr. John Herbert Gibbs, F.R.C.S.Edin., to be Honorary Surgeon Dentist to His Majesty in Scotland.

The Mayor of Weymouth, on August 17th, unveiled a bust of Dr. James Macpherson Lawrie, until recently senior physician to the Princess Christian Hospital, Weymouth, which has been presented to the hospital by a committee formed to commemorate Dr. Lawrie's great services to the hospital. It was originally founded by Dr. W. J. Smith for the treatment of diseases of women and children; through Dr. Lawrie's exertions it was rebuilt on a more appropriate site; a short time ago it was amalgamated with the other hospital in the town, the Royal Hospital. The bust was accepted on behalf of the hospital by Mr. Watts, chairman of the Hospital Committee. Dr. Du Boulay, at present senior surgeon to the hospital, expressed the pleasure of the medical staff and of the profession in Weymouth when they heard of the proposal, and the gratification with which they witnessed its realization. Dr. Lawrie, in acknowledging the compliment, said that he was glad to know that his bust would in future stand opposite that of Dr. Smith, the original founder of the hospital, a very exceptional man and one of his own best friends.

The vacation course in general medicine, arranged by the Fellowship of Medicine, will begin on Monday, September 11th, and continue daily for two weeks until September 22nd. Copies of the syllabus and other information can be obtained on application to the Secretary to the Fellowship of Medicine at No. 1, Wimpole Street, London, W.1. A short comprehensive course on tropical diseases will be given at the School of Tropical Medicine, Endsleigh Gardens, N.W.1, during October. Copies of the preliminary syllabus are now ready and further details as to days and hours will be published shortly. Those desiring to attend the course should notify the Secretary to the Fellowship of Medicine as soon as possible.

An Australian and New Zealand Medical Association in England has been founded to assist medical visitors to this country with information and, if it be desired, with advice. The Association is open to all medical graduates or undergraduates born in Australia or New Zealand and resident in or visiting England. The fee is one payment of 5s. Further information can be obtained from the honorary secretaries, Mr. E. T. C. Milligan, F.R.C.S., and Mr. Bedford Russell, F.R.C.S., 86, Harley Street, London, W.1.

Courses of instruction in the diagnosis and treatment of fevers will be given at seven of the hospitals of the Metropolitan Asylums Board during October, November, and December. The fee for a two months' course is £3 3s., and for three months £4 4s. A three months' course of lectures and demonstrations on hospital administration will be given at the North-Western Hospital, Hampstead, by the medical superintendent, Dr. E. W. Goodall, on Mondays and Thursdays, at 5.15 p.m., commencing on Monday, October 2nd; the fee for the course is £3 3s. A two months' course of instruction in the diagnosis and treatment of fevers by the medical superintendent, Dr. F. M. Turner, will commence on Friday, November 3rd, at 11 a.m., and be continued on succeeding Tuesdays and Fridays; the fee is £3 3s. for the course. Further particulars can be obtained from the clerk of the Metropolitan Asylums Board, Embankment, E.C.4.

The Ministry of Health has sent a circular to Poor Law authorities, transmitting a memorandum explaining the application of the Dangerous Drugs Act, 1921, to Poor Law institutions. The regulations made apply to the use of cocaine, heroin, opium, and their salts and preparations, but certain named preparations and prescriptions containing them are exempted. The medical officer of a Poor Law institution is required to sign all orders for these drugs, and to sign or initial all prescriptions containing them; he is further required to take all necessary precautions to ensure the safe delivery of the drugs, and is required to keep certain records concerning them.

A circular has been issued by the medical department of the Board of Education with regard to the conditions under which minor dental work may be performed in connexion with the school medical service, by persons who are not registered dentists. The work must be performed under the personal supervision of a registered dentist, and must be limited to cleaning or polishing teeth, removing dressings or temporary fillings, and keeping records. The person concerned must be either a dental student who has received an approved degree of training (and who may be employed for not more than six months), a dental nurse of approved training, or a person already employed under arrangements previously approved. The registered dentist under whose personal supervision the work is performed must always be present when operative work is being done, must supervise a limited number of persons only, and must prescribe and be responsible for the treatment carried out.

The Guild of St. Luke was founded in 1864, its object being the mutual encouragement and support of medical practitioners and medical students in leading a Christian life by communion, prayer, personal influence and example, and the promotion of works of mercy. It consists of students and practitioners of medicine, men and women, who are communicants of the Church of England or of any church in communion with it. The provost of the council of the guild is Mr. George Cowell, and a London hospitals' branch of the guild has been founded, with Mr. Raymond Johnson as master. The guild desires to appeal specially to medical students, by whom and for whom it was founded. The entrance fee is one shilling and the annual subscription not less than half a crown and not more than a guinea; further particulars may be had from the secretary, the Rev. H. Kirkland-Whittaker, M.D., Chaplain's House, Banstead Downs, Sutton, Surrey, or from the secretary of the Women's Ward, Dr. Isabel Pulteney, 2, Bryanston Place, W.1.

The *Times* announces that the Quebec Government has decided to set apart 100,000 dollars (about £22,000) for the purpose of establishing a radium institute, under the control of the University of Montreal, for the experimental treatment of cancer.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

DANGER TO THE CHILD IN "TWILIGHT SLEEP."

DR. SYDNEY A. WINSTANLEY (Urmston, Lancs) writes in reply to Dr. H. D. O'Sullivan (August 12th, p. 288): "Out of a series of 239 cases in the last five years, I have not known any case in which 'twilight sleep' has endangered the child. There was only one stillborn child in the series. This was an impacted breech presentation, in which there was great difficulty in delivery. One child with congenital heart disease died after living twenty-four days. The remainder were all healthy children when I ceased to attend. Thirty-four cases were conducted in nursing homes, 6 in my own house, and the remaining 199 in the patients' own homes. Nearly half the cases were terminated by forceps, and in about half of these a general anaesthetic ($CHCl_3$) was given in order to keep the mother still. A few, perhaps fifteen, of the babies required some artificial respiration, but only one caused any real anxiety. This was an eight months premature baby; it eventually survived, and is now a healthy boy. In no case did the mother feel any pain or remember anything which occurred more than twenty minutes after the first injection. I would advise Dr. O'Sullivan to omit the use of morphine if he can expect the child to be born within 1½ hours of the first injection. It is in these cases that I have generally found the child needs some artificial respiration or stimulation before it cries lustily. In such cases a few drops of $CHCl_3$ given with each of the early pains will take the place of the morphine and will greatly aid the scopolamine in its action."

INCOME TAX.

"W. B." is a district medical officer to a parish council (part-time)—under condition that he resides and has a consulting room in his district. What allowances can he claim?

*** He can claim an allowance not only for a proportional part of the rent—on any reasonable basis—but also for similar proportions of rates, lighting and heating, cleaning, and other general expenses.

"W. E. B." inquires whether he can legally claim an allowance for depreciation on an *x*-ray transformer.

*** No; that mode of allowance cannot legally be extended to the case of professional earnings. "W. E. B.," however, should bear in mind that he can claim a deduction for the expense of maintaining the *x*-ray equipment by replacements from time to time.

"J. W. E. O." bought a practice which had deteriorated in his predecessor's hands. It had been assessed to tax at £300, but the current year's working should show a larger profit than that.

*** Our correspondent is entitled to assessment on the basis of the three previous years, but unfortunately has not complete evidence as to what those earnings were. We suggest that he get together what figures he can showing the probable gross receipts and expenses of his predecessor—the amount paid for the practice would be some evidence as to receipts—and see the local inspector with the statements. It seems to be a case where an amicable settlement should be possible.

"S. R. P." expects to be in the United Kingdom from May 18th to November 17th, 1922—that is, 185 days, but less than six calendar months. Will he be liable for British income tax?

*** In our opinion, No; unless he establishes a residence here.

"L. H." asks (1) whether the three years' average still applies to 1922-23, and (2) inquires as to the allowance due to him for a car renewal.

*** (1) Yes, except to the earnings of an "employment," which are now assessable on the amount of the salary, etc., for the current year; (2) apparently the car purchased is of a superior quality and the amount of the allowable expense is therefore the 1921 cost of the old car less £330, the amount allowed for it.

LETTERS, NOTES, ETC.

WE anatomists, said Méry, are like the porters of Paris, who know every street but nothing of what goes on inside the houses.

INFECTIVITY OF ARTIFICIAL DENTURES.

MR. F. TALBOT (Highgate, N.) writes: Mr. J. H. Badcock's advice (July 22nd, p. 150) as to the care of dentures is undoubtedly salutary, but it fails to make sufficient allowance for human frailty—perhaps one ought to say, for the decencies of social life. Before the tribunal of hygiene the wearing of artificial dentures at night is quite indefensible; but it will infallibly be practised by people who are very sensitive about their appearance. Mr. Badcock denounces this motive as vanity, but it might sometimes fairly be called refinement of feeling. I venture to suggest a practicable compromise. On retiring to bed replace the dentures, after they and the mouth have been thoroughly cleansed in the way Mr. Badcock suggests. Now, few people who are of an age to require artificial teeth sleep uninterruptedly throughout the night. At the first opportunity, then, let the dentures be removed and deposited in a metal box of platinum encrusted with jewels, of gold, silver, or aluminium, according to the means of the patient, which can be silently closed and secreted under the pillow. Or, still better, let them be placed in a little china toilet-box containing a mild antiseptic fluid and standing at the bedside. They can be reinserted at the first approach of dawn, the rosy-fingered. Then, in recommending that the gums should be thoroughly brushed, Mr. Badcock, I think, overlooks the fact that patients cannot be trusted to sterilize their toothbrushes, and are consequently liable to inoculate their gums with a prolific bacterial flora. I suggest the use of a rubber brush which can be kept permanently, except when in actual use, in antiseptic solution; or more simply, perhaps, the gums may be thoroughly massaged with the forefinger protected by a finger-stall, lubricated with a soft tooth-paste or dentifrice containing potassium chlorate. For the purposes of this discussion I am disregarding the undoubted danger contingent upon the wearing of small and insecure dentures during sleep.

CAESAREAN SECTION.

DR. C. M. CRAIG (Kendal) writes: The correspondence on Caesarean section in your recent issues makes melancholy reading, and I wonder—doubtless along with many others—why you allow such fireside effusions to be printed in the JOURNAL. I have never had the misfortune to read in the JOURNAL a more childish letter, and one in worse taste, than the letter which appears over the signature of James H. Martin, July 22nd date. Only a month past I assisted a colleague, a general practitioner, to perform Caesarean section in two urgent cases. He employed an incision through the rectal sheath, right side in one case, left side in the other. The uterus was likewise everted to facilitate removal of membranes, and the patients were nursed in the Fowler position. Let me add both did well. My colleague, so far as I can tell, does not suffer from the delusion that he was original in his methods, and I can guarantee that the fame of Dr. J. H. Martin had not reached him. I really think, Mr. Editor, you do owe us an apology for publishing such correspondence.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 25, 26, 27, 30, 31, and 32 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28, 29, and 30.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 100.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

THE

British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, SEPTEMBER 2ND, 1922.

EDUCATIONAL NUMBER, SESSION 1922-1923.

THE TRAINING OF THE MEDICAL STUDENT.

BY

THE RIGHT HON. SIR CLIFFORD ALLBUTT, K.C.B., M.D., LL.D., D.Sc., F.R.S.,

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE.

IT is the desire of the Editor of the JOURNAL that the Educational Number for the next academical year should begin with some general reflections on Medical Education as it now is; this task, a difficult task indeed, he has laid upon me. At the present time the many inquiries, controversies, and opinions on the subject, like a multitude of remedies for a disease, do but prove how unsettled are the ideas and the methods of this education, how variable the conditions of it, how vacillating our values of its means and ends. We lament the burden laid upon the student, yet each reformer begs leave to add to the pile.

MAIN PRINCIPLES.

In undertaking to try to unravel so tangled a subject we must endeavour to lay hold on some main principles. Three principles of all professional education seem to be fundamental: first, to secure a good general education; secondly, a good scientific education; thirdly, a good technical education. The period of each of these makes by itself a large demand; all three of them together a very large one; indeed, we are but too well aware that a complete general and medical education occupies already more than a quarter of the student's life! Before he can enter upon his career a quarter of his life is gone: let us think of that!

DIVERSITY OF INDIVIDUAL GIFTS.

Speaking generally, and within civil societies, individuals vary more than circumstances; in other words, out of similar circumstances individuals draw different advantages; so that although up to a certain period of life education may be laid out on broad indiscriminate lines proper for all young persons, yet for adolescents by rapid degrees it must become more and more diverse and several, dividing itself into the education of classes, of groups, and of individuals. A uniform development of all the faculties can pertain only to the earlier stages even of school life; the abilities of the older boy, as he matures, will, if he is worth much, betray some bias, in one way or another.*

ACADEMIC *v.* TECHNICAL TRAINING.

The human child is born with potencies and capacities rather than with efficient abilities; he does not take up an independent life almost from birth, as the chicken does. In the beginning even the very instruments of sense, action, and thought are rudimentary, and must be developed before the mind can enter upon its proper functions. Not till then can the several courses of learning be commenced; and in Man each of these again is deep and slow, and the conditions manifold and intricate. Dexterity, language, philosophy, science, technical furniture, each of these, if given its own way, might arrogate the devotion of a lifetime. Some compromises then—some trenchant compromises, must be made, and some innate capacities sacrificed. Sad to say, the all of each of us is not wanted. How then in medical education is some measure of accommodation to be made without rejecting altogether the fertilizing virtues of each element? Shall we not answer that even in some of the ancillary professional subjects we must compromise by illustrating and instilling principles, with the sacrifice of all but the most significant detail? In part perhaps we must do even more, and cut away from certain of the preliminary subjects even the principles of some divisions which, precious as they may be, are not immediately concerned with the practice of Medicine. In school mathematics, for instance, parts, such as logarithms and the calculus, are usually omitted; so again in some departments of physics experiment might be carried so far only as to illuminate the broader principles, and to implant a due respect for the universality and exactness of this department of science. In chemistry the medical student must needs go farther and deeper; both larger and lesser principles must be clothed more richly with detail; yet even here, for the ordinary curriculum, some parts may be taken more in principle than in detail: the average student need not undertake it on the scale of a "pure science." In the final courses of Medicine proper, instruction must be thorough and comprehensive, both in principle and detail. The ordinary student then may content himself with the principles of certain departments of study, but on condition that he learns a few subjects thoroughly—those that bear directly upon his profession; and these not for their practical use only, obligatory as this is, but also for intimate training in accuracy of observation and thought; that he may be forced into conflict with the rigour and complexity of natural laws and events. This discipline the ordinary student will find first in anatomy and physiology.

* See my little book on *Professional Education* (Macmillan, 1906).

THE SCIENTIFIC MAN AND THE "PRACTICAL" MAN.

But how is even this economical course to be distributed? I have said before, and unwillingly repeat the opinion, that we may have to provide frankly for two classes of medical men: for a class of accomplished physicians (I refuse to divide surgeons from physicians), or medical scientists such as pathologists, and another class of dexterous resourceful kindly practitioners, all-round men well equipped with sound doctrine, but without pretensions to breadth or depth, to research or erudition. This class we see around us already, a class of trustworthy competent family physicians who in difficulty can call to their aid colleagues more intimately conversant with scientific theory, or with one or more special departments of medicine. Such a primary division, both of men and function, is represented by Diploma and University degree respectively. In answer to the daily needs of social life, and the various endowments of individuals, we see the "practical man," deft, shrewd, unanalytic, untheoretic, working with the reflective, learned, widely or specially experienced colleague. The one is stationary, and his invaluable practical skill and resource largely die with him; the other is of those who extend the boundaries of knowledge. If we can educate the men of the first kind in five years, to the studies and training of those of the second kind we must add half as long a time again. Not only so, but as from boyhood talent and capacity promise to be stronger and richer, the plan of education should be the longer, wider, and more arduous. Of geniuses I do not speak; they transcend all our reckonings.

UNIVERSITY *v.* TECHNICAL SCHOOL.

Not for all students then, even students of some promise, may it be worth while to take a university course with its greater cost in time and money; some very valuable members of our profession have a turn for craft rather than for intellectual study. The two varieties of boy can be discerned at school, and severally provided for. Both varieties would be the better for the amenities of a university education, even if one of them aimed at no academical distinction; but means may be scanty, and for the bookless boy no scholarships available. What must not happen is the lowering in any degree of the university standard to accommodate the less intellectual or less fortunate students. In Cambridge we often meet with students who had better not have taken a university course, but been content with a diploma, such as that of the "Conjoint Board."

LACK OF GENERAL EDUCATION.

Not only so, but many, most perhaps, of these undergraduates who drag through our course with burden to themselves and to us, fail not so much in natural talent as by lack of that general education which, if lost in boyhood, can hardly be recovered later. The schools are improving, and improvement they certainly need. Secondary education has been shortsighted, ill planned, and dislocated: dislocated especially in the neglect of english for a factitious classicism; ill planned inasmuch as abstractions—impalpable to the boy—have been substituted for the concrete, book-learning for practice. No boy ever learnt cricket from a book, but many cricketers would enjoy a demonstration of the mathematics and mechanics of their game. At last, in secondary schools, it is now recognized that science must be a part of every boy's education; in Cambridge therefore we expect all poll men to pass the "Preliminary Scientific." The science brought up from the schools is far better than it was; but of his own language the boy is more ignorant than ever; he is worse in so far as he brings with him a second-rate journalese instead of that spontaneous vernacular formerly his own.

ALL TEACHING BASED ON PRACTICE.

The innermost need of practice, to develop the educational tree in root and stem, should guide all our methods. I have said elsewhere that in its exercise the hand seems to achieve a little more than its mental message; it explores, and in each new use or adventure discovers a somewhat wider range of function and choice than the will had dictated.* "Things outward draw the inward quality after them." Without these tentative excursions it seems that development of faculty, and of its instruments, either does not occur, or occurs in much less measure and substance. The boy, bewildered by a table of triangles and ciphers, would be delighted to survey the back garden. Whether in medicine, law, or religion, our individualist folk desire "applied" before "pure" intellect.

THE DIPLOMA.

It is for this reason that I think the diploma student would do best to begin his first year's medical course with anatomy. By this study the hand, eye, and mind are trained together; and the minute precision, symmetrical complexity, and exquisite adaptation of every part in a consummate whole call forth a like perfection of observation and record. Upon this, as sure foundation, can be built some wider conceptions of morphology, evolution, and physiological function; anatomy and physiology being studied as two aspects of one subject.

THE UNIVERSITY DEGREE.

For the larger or university course, the student with ampler means in time and money will provide himself with a larger groundwork; he will give time first to the study of Physics; especially to mechanics, optics, molecular processes—such as osmosis, catalysis, interface actions, and so on—and electricity; studies essential to comprehension of life, of records, of functions, and of therapeutics: if these studies are to be carried to university standard. And so on for the later subjects, for biochemistry, pharmacology, and the rest. But this extended course means from six and a half to seven years' pupilage.

BAD SECONDARY EDUCATION.

But whether the student undertake the shorter utilitarian course, or the longer academic, it is essential that he should be equipped with a good general education, and I repeat that it is here that we find our pupils so sadly wanting. A boy learns latin, let us say for ten years, yet at the university he betrays at once his innocence of the derivation and pronunciation of the simplest technical terms of his professional studies. Not that this matters essentially; a good school education can be given without either latin or greek; the undergraduate may know nothing about Plato, Aristotle, Thucydides, or even Hippocrates, but he may know something of Newton, of Locke, of Hume, and of Mill: still as we know that "Classics" are taught after a fashion at school, and that modern philosophy and English literature are not, we suspect that, if he hardly knows the names of the great ancients, neither is he conversant with great ideas, or with history in any age; not even in his own. Can we be surprised then that an eminent scientific teacher recently declared "that education and culture need not be associated with bygone civilizations"? Even on the science side, what would ethnologists, psychologists, nay even anatomists, say to that? But it is true that modern languages and literature, treated seriously, can form a sufficient training for a profession; at the least let the schoolboy be taught his own language: now he almost always leaves school barbarous, whether in the use of his own tongue or in the knowledge of English history, scientific or literary.

* C. A., loc. cit., p. 18.

The Imagination, Its Kinds.

We must lay the more stress upon general education as we see that intensity of particular study, for which I suppose we must use the ungainly word "specialization," must be the lot more or less of all of us; of it I will speak presently. But it is of the utmost importance, before this contraction of field comes about, that the youth should be trained in his imagination, a faculty which at school lies almost dormant. Yet the intellect and the imagination are the two chief coefficients of mind. Now the imagination is of two kinds: the creative and the abstractive; as of Dante and of Galileo, as of Hardy and of Darwin; the one potent in art, the other in science. As the abstractive imagination will find more nurture in a scientific calling, for these boys perhaps the creative should be nourished at school on the stories of great men, great events, and great thoughts; whether "classical" or "modern." How much more fertile is the mind endowed with imagination of either kind we see in every laboratory. Not only so, but those who have less of this animating and constructive endowment need at least so much culture as to open their eyes to the best. The second-rate comes and goes with us continually; it rises and falls, is courted and neglected; the first-rate rises slowly, and needs some inspiration to conceive it, but it abides; surely withstanding not only the treachery or indifference of men but fire also, the moth, and the edge of the sword.

Even analysis has its relation to form; almost as soon as we can observe carefully and accurately we must begin to select, and as we select we depend on the imagination for tentative concepts, and for some vision or order. For instance, let us remember that diseases are not "morbid entities" but states of many persons, multitudinous states, no two alike, but of which we form general concepts; there is no such *thing* ("entity"), for example, as typhoid fever—which is a concept, a necessary figment of the imagination. Again, in Medicine, we have continually to act on probabilities, probabilities divined by observation and sagacity; and we shall judge well or ill as we have built our concepts well or ill; that is, as the harvest of eye and imagination is rich or poor, crude or cultivated. If the imagination is animating and enlightened so the subordinate faculties will be led forth, and take each its own place. Now this quality in both kinds depends on some occupation with both the matter and the manner of great authors, literary and scientific; that is, on "General Education."

Specialisation.

The harm then of "specialisation," the scorn of "the school of infinitesimal research," lies not in Nature but in narrowness of the student's mind, be he old or young. Enter into the realm of nature by whatsoever gate you please, you will find yourself in the presence of infinity. If the mind of the student is dwarfed it is because of his short sight, not for lack of horizons. If, on entering into practice, the student qualifies as a "specialist" by falling into ignorance of all else, his pretension is vain; if he is to look his problems fully and intelligently in the face, he must take up the all else into that special study. Unless perhaps in respect of a few clever devices of handicraft, this means an academic education. A critical and flexible judgement comes of a familiarity with, and an appreciation of, the relative values of ideas, present and past. The examination candidate begs his coach to tell him how to answer, but not for heaven's sake to explain the reasons of the answer. He wants knowledge which can be sawn into planks for the examination platform. The harm of specialism lies then not in a limited field, this it is not; no side or adit of nature is limited; but because the specialism is reached not by carrying the whole into the part, but by stopping short at the turn. For this reason in Cambridge we have declined to grant Diplomas on subjects which belong to the ordinary course of instruction; such as diseases of the eye, tuberculosis, and so forth; with us they are restricted to subjects lying outside the ordinary curriculum, such as Tropical Medicine, Public Health, or Mental Diseases.

Examinations.

To close this chapter without some allusion to *Examinations* would be to forget a very serious part of the burden of Medical Education. How to secure the unquestionable gains of these tests without the evils of them is a dilemma of which no one as yet has ventured to propose a solution. The question is, How much of an evil may it be necessary to tolerate? The three chief Examinations, with some three more subordinate, impose a great strain on the student by concentrating into a few severe and intense trials at long intervals tests which might and ought to be more gradual and continuous, and better integrated with regular work. To keep up a number of subjects *at examination pitch*, as a conjuror keeps many balls in the air, is a very exacting effort. The harass and anxiety of them waste some of the energy which ought to be devoted to calm and assiduous work; to be returned from one of them means also a serious setback in time and expense. This is not the place to offer an alternative method, even were so difficult an undertaking possible for me. But the relief will have to be made by throwing more responsibility on the teachers for frequent and formal class examinations, by requiring the students' notebooks from laboratory and ward to be submitted under proper guarantees to the qualifying body; and so forth. In Cambridge, more than once, we have suggested to outside teachers that the clinical notebooks of the students should be submitted to us, but the answer is that at present there is no organization to carry out such a system.

Reciprocity in Medical Schools.

In conclusion I desire to ask the hospital schools in London to consider the great advantage, both to themselves and to their students, of free access from one school to another; of an intercollegiate reciprocity. Why should not a student of one school, duly accredited by card, be permitted freely to visit the clinics or lectures of another? The loyalty of a student to his own hospital would not be sapped by availing himself occasionally of certain courses of another; particularly in special subjects such as cardiology, neurology, tuberculosis, and so on. Do not let us flatter ourselves: his loyalty depends more on the school football than on our lectures. The fee difficulty could easily be arranged at a Clearing Office. By such free opportunities the active and competent teachers would be encouraged, and perhaps the natural powers of some of them aroused; the good teacher would draw larger classes, the less capable would be amended, or lose artificial protection. The student on his side would have his views enlarged, and his mind furnished, by the various gifts of various teachers. Each school has its strong points, each its incidental advantages. *Non omnia possumus omnes.* Moreover, there are certain subjects, such as the History of Medicine for example, which cannot, or need not, be comprehended in every school, but, if established on the open system in one or two, would do much to further medical culture.

But, after all our preparations, we have to counsel our pupils that "It is impossible you should take true root but by the fair weather that you make yourself; it is needful that you frame the season for your own harvest." *

* *Much Ado*, I, 3.

THE PLACE OF PHARMACOLOGY IN THE MEDICAL CURRICULUM.

BY

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MEDICINE has as its ultimate aim the prevention or cure of disease: the practical aspect so far dominates every other that not infrequently it is termed the healing art; indeed, it is difficult to think of medicine as other than something connected with treatment. Nor is it necessary to refer back to many decades of medical history to discover that it was then nothing but a healing art, a system of recipes, of panaceas, of rituals, sometimes priestly, sometimes philosophic, but all devised to combat the symptoms and signs of ill health.

In their beginnings physiology and pathology, which now form the scientific basis of medicine, were merely natural history, their facts were empirical, they were independent entities set apart from other knowledge, for a science is independent in proportion as it is imperfect. When these sciences passed from simple observation to deduction and experiment they naturally attracted the more eager minds in medicine, and the text of the writings of the nineteenth century deals with changes in structure and function. Treatment was neglected, the old shibboleths were discarded, and there was nothing with which to replace them. One important result of this open scepticism of the value of treatment was the growth of systems of treatment, like homoeopathy, and the rush of an ever credulous public to irregular practitioners. The textbooks of the period told with considerable precision what was happening in the body during disease and what was likely to happen, but no word as to how to prevent it; treatment was dismissed in a few curt lines. This state of affairs was unavoidable; there was no specific treatment, there was no science of treatment, for such a science could only come into existence when physiology and pathology had reached some degree of precision. The science of treatment or pharmacology is therefore relatively new; it includes knowledge of all kinds dealing with the treatment of disease or alleviation of suffering. It is the climax of physiology and pathology, devised to subserve a practical end, and forms an important part of the great biological topic of the influence of conditions on the living organism.

To state that the future of medicine lies in pharmacology may sound fanciful, but it is certain that the most hopeful of all signs of the progress of medicine of to-day is to be found in the progress of the science of treatment. Few drugs now exist the mode of action of which is not understood, and the goal is not so far distant when it will be possible to introduce into the animal economy a factor which will exaggerate or retard the function of any tissue or collection of cells in the body, leaving the others unaffected.

At one time hopes ran high that the chemical structure of the molecule might indicate action, an idea by no means new since Paracelsus directed chemistry into new courses by stating, "The real object of chemistry is not to make gold but to prepare medicines." During the last fifty years most laborious researches have been conducted to this end, so to modify the molecule that it may conform to some required action. But the mystery remains as mighty as ever. It is not improbable that subtle energy factors binding the molecule—factors not displayed in a formula—control the action: certain it is that drug action is not determined directly by chemical combination with body constituents, but rather by delicate physical processes such as those of adsorption, solution, and surface tension. Chemists have not yet determined the requirements of the molecule even for the production of colour. On the other hand, slight alteration of a molecule already complicated and with a known action has led to the production of many useful compounds, and not infrequently we may foresee the type of action which will occur under such special conditions. Considerations of this nature have led to the synthesis of the new local anaesthetics, antiseptics, antipyretics, diuretics, tropeines, and many others.

The general outlook and significance of drug therapy was led into new channels when it was revealed that the animal body elaborates its own drugs, stores them generally at the seat of formation, and doles them out to the tissues to meet the needs of the economy. Some of these drugs are of the nature of true crystalline alkaloids; thus adrenaline is formed in the suprarenal glands and thyroxine in the thyroid. Some others the properties of which we know something, have yet to be prepared in a pure form: for example, the ovary and pituitary body each contains some drug invaluable to the animal. Pituitary extract of animals exerts a wonderful tonic action on the uterus: for several years the physician has employed this substance in his clinics to contract the uterus. But now it is revealed to us that pituitrin manufactured in nature's laboratory is the drug used by nature to contract the uterus. Ovarian conditions determine its liberation; the ovarian drug is set free in the circulation, it causes the liberation of pituitrin, and the uterus is affected. Can a more convincing example be offered of the inner meaning of drug actions? The normal functions of the body are regulated at least partly by these natural drugs, and it has been suggested, not without reasons, that all functionings are of this nature and that the object of a nerve supply is to localize the liberation of the active drug in the neighbourhood of the nerve terminations.

The patients whom the physician of to-day is called upon to treat may be divided into two groups: (1) Those suffering from active disease, excess or deficiency of one of the natural alkaloids, poisoning by improper food, or poisoning by micro-organisms or their products. (2) Those whose tissues are functioning badly because of scars left by previous active disease; this group includes many paralyses, joint troubles, and cardiac disease. To cure an old scar is difficult, though much may be done to render the patient's life tolerable and useful: the pity is that the scar stage is ever reached. It is with the first group that the hopes of medicine and the future of pharmacology principally lie. Already it is possible in many instances to destroy the causal agent of some diseases, but not, we believe, by the direct action of the drug on the causal agent. The organic compounds of arsenic have no marked effect on the spirochaetes of syphilis in the test tube, but they destroy them in the body; emetine does not kill the amoebae of tropical dysentery except in the human body. A still later production of the laboratory is a derivative of trypan-blue which destroys trypanosomes in the body of both men and animals: the introduction of this substance into medicine initiates a new era in trypanosomiasis and promises the opening up of vast tracts of tropical Africa now prohibited to man by sleeping sickness and to animals by the bite of the tsetse fly (nagana), and by other forms of trypanosome disease. The attack by drugs on bacterial diseases lies in the future: ethyl-hydrocupreine administered to men in appropriate doses destroys the micro-organisms causing pneumonia, and even the drawn blood of patients so dosed will destroy these pneumococci. This is as yet our only instance of specific drug therapy in acute general bacterial disease, but it proves that the problem is not insoluble.

These facts show that pharmacology cannot be taught with any value until the principles of physiology have been attained; also, so intimately is it concerned with pathological processes and clinical medicine that to divorce it from them is to lose much of its value. Taught as a science complete in itself, pharmacology becomes all but valueless to the student of medicine. Its proper place in the curriculum is during the first year of clinical studies, when laboratory work can be supplemented by clinical demonstrations. With general pathology and bacteriology it should form the connecting link between the science and art of medicine; such an arrangement might do much to destroy a system of water-tight compartments, for each branch of medicine is mutually dependent on the others.

Nevertheless, science alone does not make the good physician; too great stress can hardly be placed on the fact that it is not the disease but the patient who is treated. Sympathy, understanding, a knowledge of life and men, are of no mean value to those who aspire to treat the sick, and I for one should regret the day when my revered juniors, imbued with all the sciences, treat their patients with no other considerations than those laid down in the manuals of experimental pharmacology.

THE PROFESSION OF MEDICINE.

THE approach of October reminds medical men and women that the opening of a new Session is at hand, and for long past the annual Educational Number of the BRITISH MEDICAL JOURNAL has appeared at this time of year. Our brief remarks here, on the profession of medicine, are addressed more particularly to intending students and their parents. A few notes also are added on current matters affecting professional study and practice, which may interest those who think of devoting their lives to medicine, and help them to judge of their fitness for the calling and of the prospects it holds out.

While our present issue is largely a guide to the steps that must be taken in order to become a legally qualified practitioner of medicine, certain parts are written for younger members of the profession who may be in doubt as to the path in medicine they should choose as a career. The information given under these two main heads follows the customary lines; but some of the sections have been much amplified this year, and several wholly new features are included. Thus we are fortunate in having persuaded the doyen of British Medicine, Sir CLIFFORD ALLBUTT, to contribute, out of the wealth of his wisdom, an introductory article on some fundamental principles in the training of the student. His message will be pondered by all thoughtful members of our profession, and should help parents to grasp something of the true purpose and meaning both of medical education and of education in general. We would draw attention also to Professor W. E. DIXON'S valuable note on the place of pharmacology in the teaching of medicine, and to the review at page 412, by an authoritative hand, of the important changes now being made in the medical curriculum at large and in the requirements for the public health course.

Apart from these and other special articles, the student will find in subsequent pages an account of the course of education required of him, the places where this training can be obtained, and the universities and other bodies which test the knowledge gained and stamp successful candidates with their several hall-marks. The medical courses of all the universities and corporations in Great Britain and Ireland run on parallel lines, and the obligatory curriculum is much the same for all students. But within these broad lines there are many differences between the requirements of the various teaching and examining bodies. The choice must therefore be made early. To prevent a false step at the outset the student and his advisers should have a clear idea of the object to be aimed at, of the relative value of the degrees and diplomas open to him, and of the comparative difficulties they present.

The conditions with which those wishing to enter the medical profession must comply are regulated by the General Medical Council, which is a statutory body established under the Medical Acts; a statement of its requirements is given at page 414. It will be observed that many changes are about to be made, and this section should be studied with care. The examination of candidates as to their fitness to practise medicine is left to the universities and to certain corporations in England, Scotland, and Ireland. But the Council endeavours to make sure that the tests at each stage do not fall below a certain standard, and that the persons examined have undergone prescribed courses of instruction at a recognized medical school. Successful candidates at such examinations eventually receive from the body holding them either degrees, in the case of the universities, or diplomas or licences, in the case of the corporations, entitling them to claim insertion of their names in the *Medical Register* kept by the General Medical Council. Holders of diplomas and licences once made up the great majority of all medical men, especially in England and Wales. But universities have greatly multiplied, and so many practitioners are now graduates that a student at the threshold of his career will do well to aim at a university degree, though it may be desirable to take also a diploma or licence.

Beyond the qualifications on the strength of which the General Medical Council admits to the *Medical Register* most of the examining bodies bestow on candidates who have passed further tests such higher titles as Doctor of Medicine and Fellow. As a rule these are well worth obtaining, though the difficulty of doing so, and the added professional status they confer, vary. The man who looks forward to a career as a consulting physician should obtain the M.D. degree of a recognized university, and also the membership of one of the three Royal Colleges of Physicians, according to the part of the British Isles in which he means to practise. If he wishes to devote himself to surgery he must in like manner seek the Fellowship of one of the Royal Colleges of Surgeons. There are also diplomas in a growing number of special branches of work, such as public health, tropical medicine, and psychological medicine, which are superfluous for most practitioners, but either useful or indispensable for those who wish to specialize in these subjects.

What, asks the parent, will it cost to make my son a doctor? The answer to this is not easy to give in a single precise statement, because the outlay varies within wide limits. Besides differences in the charges made by medical schools for instruction there are differences in examination fees, as well as in those payable for the certificates of qualification. Again, not all students, however industrious, pass examinations with equal facility. Since in any case professional education must continue for five years at least (a period exceeded by the vast majority), and since the cost of living in different parts of the country varies much, while personal expenditure varies still more, it can only be said in a general way that anyone who thinks of entering the profession must assume that a medical education—first and last—will cost at least £1,500. On the other hand, the number of scholarships now offered is larger than in the past; in the Scottish universities bursaries are numerous, and the Carnegie Trust gives assistance to many Scottish students. It will be seen, however, that, as compared with other professions, the period of training in medicine is long, and for most students costly. There is also to be remembered the time of waiting after qualification when income is apt to lag behind expenditure.

Having obtained a registrable qualification, many paths are open—for example, general practice, Government service at home or abroad, and special work in public health or mental disorder, in scientific research, or in one of the many modern subdivisions of medicine and surgery. Most of these different paths in medicine are considered in detail in the later sections of this Educational Number, where an account will be found also of the facilities for post-graduation teaching in London and other large centres; but a few words may be said here about general practice and the work of a consultant or specialist.

General practice is still the goal of the great majority of all medical students, and it has been well said that this country produces the finest body of general practitioners in the world. The work is hard and none too well paid; yet it appeals to many of the very best students, which is fortunate, both for medicine and for the public. This career is usually entered upon in one of three ways. The newcomer may take a house and wait for patients to seek his services; he may purchase the goodwill of a practice rendered vacant by retirement or death; or—perhaps best of all—he may become a partner in an established practice. Success in the work of a private practitioner demands, however, a great deal of knowledge other than that gained at the medical schools, and consequently a man is more likely to be accepted as a partner, or to succeed on his own account, if he has already some experience of family practice as an assistant or deputy. An all-round knowledge of practical medicine, surgery, and obstetrics should, if possible, be supplemented by skill in some particular branch of practice,

while the value to a general practitioner of having held one or more resident hospital posts is incalculable. As for the man whose aim is to become a consultant or specialist, his path, though full of interest, is seldom smooth. For him success will depend in the long run not only upon mental gifts and capacity for hard work, but, as is true of practitioners of all branches, on the possession of those qualities which inspire confidence both in patients and in colleagues. Moreover, since he cannot expect at first to pay his way as a specialist, he must either have the means to support himself for an uncertain period or be prepared by teaching or in other ways to defray expenses. Anyone who enters our profession with the sole idea of making money has, of course, mistaken his calling. The competent practitioner can always earn a living, but the main reward of the medical life is the knowledge of good work well done. Whatever the branch of practice chosen, few doctors make more than a moderate income, and the earnings of even the most successful compare but ill with those won by men of equal ability in other walks of life.

One effect of the war was a great increase in the numbers of medical students, both men and women, but especially women. This matter has been fully discussed in these pages, but we give here a short summary of the position as it appears to-day. It may be read in conjunction with the note at page 413 on the numbers of the medical profession. In the thirteen years before the war the annual entry of first-year medical students in Great Britain and Ireland averaged 1,400. From 1914 until 1920, although many left to serve with the Forces, the whole number actually studying in the medical schools grew steadily larger; in May, 1916, this total was 6,103; in May, 1918, it was 7,630; and in the following January it had risen to 9,490. Then, during 1919, when demobilization was in active progress, 3,420 new students were registered, being 1,105 greater than the "record" entry of 1891. The number of new students registered in 1920 fell to 2,531, and in 1921 to 1,608. The great increase after the armistice was largely due to the return to their studies of those who had been on naval or military service. As a result many of the schools became overcrowded, and some were obliged to turn away applicants. The recent fall in the entries has therefore been welcomed, both by the over-strained teaching institutions and by those who doubted whether there would be work enough to go round when the present generation of students becomes qualified. After 1914, as has been said, the number of women going in for the study of medicine grew very rapidly, and in consequence the proportion of medical women has increased and is increasing. But their services, it seems, are less in demand than during the war, while the ratio of medical practitioners to population is now greater than at any time in the past half-century. Hence, all the women students now nearing qualification may not find professional work ready to their hand. These are points for parents to consider before encouraging their daughters to embark on the study of medicine.

The prospects held out by the various public medical services are briefly indicated in later sections. Our profession as a whole seems to be passing through a stage of transition, and it is especially difficult to foresee clearly the future of private practice. The fundamental importance of the work done by the general practitioner is better understood, and the Medical Consultative Council of the Ministry of Health agrees with the British Medical Association that an efficient medical service for the community must be based on that. Two years ago there was thought to be some likelihood that the Government would bring in a Medical Service Bill, but a comprehensive measure appears now more remote than ever, and it is improbable that the present Government would wish to set up a whole-time salaried State medical service against the opposition of a large majority of the profession and the public. Nevertheless, the position of the private doctor has changed and is changing. It was profoundly affected by the national insurance scheme, and great inroads into the sphere of family practice have been made by the spread of specialism and the growth of special services. It is very plain, therefore, that in these times of social and professional change the doctor needs a strong sense of *esprit de corps*. The effect of many modern measures is so far-reaching that no practitioner, whatever his work or position, can safely stand aside from his fellows. Medicine is a calling which the general public and public authorities have come to look on as partly a form of philanthropic service; the compliment is deserved, but would be more welcome if it were less often a cloak for meanness. Furthermore, the aims and requirements of modern medicine are still imperfectly understood by many lay persons. Thus the financial interests of the profession and the objects and methods of medical science are in constant risk of attack from one quarter or another, sometimes openly, sometimes insidiously. It follows, therefore, that medical men and women must band themselves together for the common protection of themselves and their profession. The first step after qualification should be to join the British Medical Association.* The Association was founded in 1832 to promote the progress of medical science and to maintain the honour and interests of the medical profession. Its record of ninety years' work shows that it has well fulfilled these aims, and the strength and vigour of the organization are greater to-day than ever.

A NEW ERA IN MEDICAL EDUCATION.

A FULL account of the resolutions and recommendations of the General Medical Council which apply as from the beginning of 1923 is given in the present issue of the JOURNAL. Here we propose to call attention to some of the salient features of the new scheme, both of study and of examination.

The Revised Curriculum.

The matriculation age is increased from 16 to 17 years. Formally, the length of the curriculum is not added to; practically it is, by transferring to preliminary study and examination the subjects of elementary physics and chemistry in their purely scientific aspects. In their applications to the professional courses—as in biophysics, biochemistry, and pharmacological chemistry—appropriate instruction is to continue throughout the curriculum, and is to be tested by examination, so that the student shall no longer be able to put behind him as passed and done with the knowledge which he acquired as a preliminary. If he has had no facilities at a secondary school or otherwise for obtaining what is necessary for the preliminary examination in these subjects then he can come for it to the university or college, but study there will not count for the medical curriculum.

In biology it is understood that comparatively few secondary schools are equipped for elementary tuition, but the Council has suggested an ingenious arrangement for utilizing the work of such schools as are qualified for the purpose. The examination will not be "pre-curriculum," but the instruction may be so, and a licensing body can allow students who so desire to sit for the examination immediately after matriculation. Here again, however, the applications of biology to medicine, surgery, and midwifery will continue throughout the courses.

The Council attaches great importance to the reservation of sufficient time for the later subjects of study, free from all worries about passing the examinations of the earlier parts. To that end it recommends what is practically a block system. A minimum of three years should be available, not merely after the courses of anatomy and physiology have been taken, but after the professional examinations have been passed. The value of this proposal is obvious.

* The ordinary subscription to the British Medical Association is 3 guineas a year for members resident in the United Kingdom. A member who joins within two years of registration as a medical practitioner pays 1½ guineas a year up to the end of the fourth year after registration; members joining after July 1st pay half the subscription for that year. All duly qualified British medical practitioners are eligible for election. Full particulars can be obtained from the Medical Secretary, 429, Strand, London, W.C.2. A brief note on the objects and constitution of the Association will be found at page 453.

Examination Reform.

Another notable feature is that in assessing marks in the several examinations account may be taken of "duly attested records of the work done by the candidate throughout his course of study" in the subject. This is an effort to meet the long felt difficulty that a man's mental agility, or the want of it, counts far too much in his being passed or rejected. The difficulty is real, but the remedy is not easy, and the Council is wise in the cautious approach it made towards a solution. Where, as in the colleges, a student will only by chance come before his own teacher as an examiner, absolute impartiality in the attested records will be necessary. A teacher must not play for popularity with students by too easy certification of diligence. On the other hand, at the universities, where the teacher is always one of the examiners, no personal like or dislike of a student must influence the report of the internal to the external examiner. The scheme will indeed put a serious ethical obligation on all concerned, and the Council will doubtless watch its operation with keen and critical interest. This leads to the remark that the teaching of medical ethics is now an acknowledged part of the curriculum.

Besides the Resolutions of the Council in regard to professional education and examination (see pp. 414–416), a series of additional Resolutions were adopted on May 26th, 1922, as follows:

> (*a*) That throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of Medicine;
>
> (*b*) That each Licensing Body should make adequate arrangements for the effective correlation of the several subjects of study throughout its curriculum;
>
> (*c*) That the teaching of Anatomy and Physiology should include as a regular part of the courses the demonstration on the living human body of structure and function;
>
> (*d*) That the curriculum should be so arranged that a minimum period of three years shall in every case be available for study after the completion by the student of the Professional Examinations in Anatomy and Physiology held at the close of the second year;
>
> (*e*) That the curriculum should be so framed as to afford sufficient opportunities for the study, during the last three years of the course, of Physics, Chemistry, Biology, Anatomy, and Physiology in their practical applications to Medicine, Surgery, and Midwifery, and that the student's knowledge of these applications should be subject to test in the Final Examination;
>
> (*f*) That before the student is admitted to his clinical appointments he should have received practical instruction in clinical methods and in the recognition and interpretation of physical signs;
>
> (*g*) That instruction should be given, in the courses of Forensic Medicine and Public Health or otherwise, on the duties which devolve upon Practitioners in their relation to the State, and on the generally recognized rules of Medical Ethics. Attention should be called to all *Notices* on these subjects issued by the General Medical Council.

Training in Preventive Medicine.

The first of these resolutions is that "throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." This should be borne in mind by every teacher throughout the whole curriculum, and not merely in the clinical subjects. As indicated in a questionnaire issued by the Council in 1918, all the earlier subjects—Physics, Chemistry, Biology, Physiology, Anatomy and very obviously, Pathology, Bacteriology, and Therapeutics—afford opportunities from the very beginning for instilling into the mind of the student the necessity for his constantly keeping in view, in all the advice and treatment he may give throughout his life, the primary importance of promoting the general health of those who entrust themselves to his care, and of preventing trivial ailments from developing into definite disease. In his presidential address in November, 1918, Sir Donald MacAlister pointed out that if "the efficient practice of their profession" by doctors was "to be judged by new civic standards, and to be carried on under new conditions," the student would have to be trained accordingly. The era of that training begins formally in 1923. Though no details are given in the resolution already quoted, and though it may require some change of orientation by any teachers who may have hitherto given no special heed to the bearings of their subject on the maintenance of health and prevention of disease, yet it is not to be doubted that they will now join heartily in what will indeed be an epoch-making advance in medical education in this country. Its reflex and reward will surely be found as time passes in a diminution of sickness and prolongation of life, in the raising of the present standards of physical health and national welfare.

New Rules for the D.P.H.

It is important to note the bearing of this development of the teaching of disease prevention to all students of medicine on the stringent rules which will come into force at the beginning of 1924 for the obtaining of diplomas in public health. Fears have been expressed that the stiffening of the requirements will discourage those who intend to go into ordinary medical practice from taking the additional qualification which would specially fit them for co-operation with the health officer of their district. The reply is twofold: From now onwards all new practitioners will have received tuition which will qualify them generally for such co-operation, and in addition they are already being systematically educated in "the duties which devolve upon practitioners in their relationship to the State." The balance, therefore, seems clearly on the right side as to the ordinary practitioner, and it is unquestionable that there will be advantages in strengthening the education of those who aspire to a life spent in the public health service. In America, it may be mentioned, the standard of study for the "doctorate" of public health will at most medical schools probably correspond with that for the new health diploma in this country.

THE NUMBERS OF THE MEDICAL PROFESSION.

A Review of Forty-five Years.

Since 1876 the General Medical Council has kept an analytical record of the number of persons whose names were entered in, added to, or removed from the *Medical Register* in each year. The *Medical Register* has been in existence since the Council was constituted under the provisions of the first Medical Act of 1858; but up to 1876 no such data as these were ascertained or preserved.

The figures for each year since 1897—showing (*a*) the number of names added by registration in each part of the United Kingdom, (*b*) those added to the colonial and foreign lists, (*c*) the number of names restored, and (*d*) an analysis of those removed—are given in a statistical table published in the current *Medical Register*. The corresponding figures for the earlier years are to be found in copies of the *Register* published previous to 1898.

In order to gain a general view of the numerical strength of the medical profession during the past forty-five years (the period for which these figures are available), we have extracted from the tables and set down in parallel columns the total number of names in the *Medical Register* on December 31st of each year since 1875, and the total number added annually by registration between 1876 and 1921.

Numerical State of the "Medical Register."

Year.	Names added in Year.	Total No. on Dec. 31.	Year.	Names added in Year.	Total No. on Dec. 31.
1875 ...	...	22,200	1899 ...	1,251 ...	35,836
1876 ...	1,009	22,713	1900 ...	1,345 ...	36,355
1877 ...	910	22,841	1901 ...	1,318 ...	36,912
1878 ...	996	22,600	1902 ...	1,275 ...	37,232
1879 ...	996	22,516	1903 ...	1,233 ...	37,878
1880 ...	1,123	22,936	1904 ...	1,168 ...	38,492
1881 ...	1,053	23,275	1905 ...	1,240 ...	39,060
1882 ...	1,171	23,801	1906 ...	1,197 ...	39,729
1883 ...	1,304	24,517	1907 ...	1,221 ...	39,827
1884 ...	1,388	25,321	1908 ...	1,137 ...	40,257
1885 ...	1,377	25,993	1909 ...	1,143 ...	39,818
1886 ...	1,451	26,452	1910 ...	1,062 ...	40,483
1887 ...	1,531	27,246	1911 ...	1,042 ...	40,913
1888 ...	1,184	27,939	1912 ...	1,157 ...	41,439
1889 ...	1,305	28,348	1913 ...	1,168 ...	41,940
1890 ...	1,266	29,163	1914 ...	1,433 ...	42,378
1891 ...	1,345	29,555	1915 ...	1,526 ...	43,225
1892 ...	1,513	30,590	1916 ...	1,202 ...	43,481
1893 ...	1,579	31,644	1917 ...	1,134 ...	43,819
1894 ...	1,426	32,637	1918 ...	1,077 ...	43,926
1895 ...	1,446	33,601	1919 ...	1,322 ...	44,510
1896 ...	1,385	34,478	1920 ...	1,457 ...	44,761
1897 ...	1,230	34,642	1921 ...	1,760 ...	45,408
1898 ...	1,210	35,057			

In order to gauge the varying proportion of registered medical practitioners to population during the period under review we put down the total population of the United Kingdom at each decennial census and the corresponding figure showing the total number of names on the *Medical Register*:

Year.	Registered Practitioners.	U.K. Population.
1871	—	31,845,379
1881	23,275	35,241,482
1891	29,555	38,104,975
1901	36,912	41,976,827
1911	40,913	45,370,530
1921	45,408	46,000,000*

* Conjectural; probably an under-estimate. The census of 1921 was taken only in Great Britain.

It will be seen from these parallel columns of figures that the general tendency during the past forty-five years has been towards an increase in the ratio of doctors to population. The number of registered practitioners at the end of last year was almost exactly double the number at the end of 1876, but the population within that period only increased by about 50 per cent.

THE GENERAL MEDICAL COUNCIL.

THE General Medical Council was set up by the first Medical Act of 1858, and consists of thirty-eight members, six of whom are elected by the medical profession, five nominated by the Privy Council, and the remainder are representatives of the universities and such medical corporations of the United Kingdom as have a statutory right to issue diplomas. Under the Dentists Act, 1921, three additional members have been appointed by the Privy Council for dental business; they must be registered dentists and members of the Dental Board. Its headquarters are at 44, Hallam Street, Portland Place, W.1, and it has branch offices at 20, Queen Street, Edinburgh, and 35, Dawson Street, Dublin. Its duties are to control the medical and dental professions in the interests of the general public, and to that end to maintain a register of legally qualified practitioners. It is admission to this *Register*, and not the possession of a degree or diploma, that constitutes a person a legally qualified practitioner. The Council is bound to admit to the *Register* those who hold the qualifications granted by the bodies represented among its members, but it exercises supervision through the Privy Council over the terms on which those bodies grant such diplomas or degrees, and it can erase from the *Medical Register* or the *Dentists Register* the name of any medical man or dentist who has been convicted before a court of law of an ordinary crime or of a serious offence against public order, or who is proved before the Council itself to have been guilty of certain actions which the Council regards as professionally "infamous." Its disciplinary powers are limited to legally qualified practitioners, and it has no control whatever over irregular practitioners of any kind. In that respect it differs from the Midwives Board in England and Scotland, which can penalize unqualified midwives, even if they make no pretence to be on the register, and the Dental Board of the United Kingdom, which, when the Dentists Act, 1921, is enforced, can prosecute unregistered persons practising dentistry.

An account of the Recommendations that the Council has drawn up in respect of the education of medical students here follows.

REGISTRATION OF MEDICAL STUDENTS.

The Council recommends that every intending student of medicine should be registered as such at one of its three offices.

On or after January 1st, 1923, candidates will have to produce evidence (*a*) that they have attained the age of 17 years; (*b*) that they have passed an examination in general education which is accepted for matriculation in a university in the United Kingdom, or the Responsions or the Previous Examination; (*c*) and in addition thereto that they have passed an examination in chemistry and physics conducted or recognized by one of the licensing bodies.

Application for registration should be addressed to the Registrar for the division of the United Kingdom in which the applicant is residing, England and Wales, or Scotland, or Ireland. It must be made on a special form, which can be obtained from one of the offices of the General Medical Council itself or from one of the various licensing bodies and medical schools.

The regulations with regard to registration apply equally to medical and dental students, with the exception that in the case of the latter pupilage with a registered dental practitioner may be regarded as a commencement of professional study, and that applications for registration should be addressed to the London office only.*

PROFESSIONAL EDUCATION.

The rule is that it is only from the date which appears against his name in the *Students Register* that the medical student's career officially begins; thereafter five years must pass before he can present himself for the final examination for any diploma which entitles its lawful possessor to registration as a qualified medical practitioner under the Medical Acts, but to meet the circumstances brought about by the dates at which sessions of the medical schools begin and end, the close of the fifth year may be reckoned as occurring at the expiration of fifty-seven months from the date of registration. In any case, the period of five years must be one of bona fide study, and in every course the following subjects should be included:

(i) Elements of General Biology, including an introduction to Embryology. This course, if the Licensing Bodies permit, may be taken before registration, and the examination may be passed immediately after registration.

(ii) Chemistry, Physics, and Biology in their application to Medicine.

(iii) Human Anatomy and Physiology, including Histology, Elements of Embryology, Biochemistry, and Biophysics.

(iv) Elementary Bacteriology, prior to regular clinical appointments.

(v) Pathology, general, special, and clinical, and Morbid Anatomy.

(vi) Pharmacology and Materia Medica, to be taken concurrently with clinical instruction.

(vii) Forensic Medicine, Hygiene, and Public Health.

(viii) Medicine, including applied Anatomy and Physiology, Clinical Pathology and Therapeutics. Children's Diseases, Acute Infectious Diseases, Tuberculosis, Mental Diseases, Skin Diseases, and Vaccination.

(ix) Surgery, including applied Anatomy and Physiology and Clinical Pathology, Anaesthetics. Diseases of the Eye, Ear, Throat and Nose, Radiology, Venereal Diseases, and Orthopaedics.

(x) Midwifery and Diseases of Women, including ante-natal conditions and infant hygiene.

The Council recommends that in the last three of the five academic years clinical subjects shall be studied.

The first two years must be passed at a school of medicine recognized by any of the licensing bodies enumerated in the schedule to the Medical Act of 1858, and the remainder must be devoted to clinical work at any public hospital or dispensary at home or abroad which is recognized by a licensing body.

SPECIAL CONSIDERATIONS.

The requirements of the General Medical Council in respect of the education of those who desire to enter the medical profession have now been given in outline, but before leaving this part of the subject the steps which the aspirant should take may be rehearsed in their due order:

(1) Pass an examination in arts;

(2) Pass an examination conducted or recognized by a licensing body in elementary physics and elementary chemistry.

(3) Enter himself at a medical school or other scientific institution approved by the Council;

(4) Get himself registered as a medical student;

(5) Study for a minimum of five years certain prescribed subjects;

(6) Meanwhile pass sundry intermediate examinations; and at the end of the fifth year pass a "qualifying examination" which will entitle him to receive from a licensing body a legal authority to practise.

The Minimum Period.—It must be remembered that the period of five years is a minimum; more is often required even by the man of good abilities and reasonable industry. Besides these qualities a student, to obtain a registrable qualification in the minimum period of five years, or fifty-seven months, must have a considerable amount of good luck; in other words, he must keep in good health through every term, and never fail at a single examination. Thus, for instance, before presenting himself for any examination he must be "signed up" for the subjects covered by that examination; this means that his teachers have to certify

* See the Registrar's memorandum printed below at page 415.

that he has diligently attended the required number of lectures or classes in the subjects in question. If, however, the student happens to be ill during the term when such lectures or classes are taking place he may miss enough of them to make it impossible for him to be signed up. Then, again, should he fail to satisfy the examiners at some examination, he cannot present himself for re-examination for at least three months. This generally entails further consequences, because, apart from the student's success at the next stage in his career being imperilled by the need for restudying the subjects in which he has failed, the Examining Boards usually insist upon a definite interval elapsing between one examination and the next. Further, many Boards have refused to recognize lectures and classes which have been attended before the student has passed the requisite examination in earlier subjects, and the Council now recommends that the professional examinations in anatomy and physiology be passed before the minimum period of three years' subsequent study be entered on. In other words, no clinical study should count as such until these examinations have been successfully completed. Failure at an examination may thus not only mean deferment of the date of examinations, but deferment of the beginning of the student's study of certain subjects. It is thus exceedingly easy for a student to fail to qualify in five years, and, as a fact, the majority of students take longer.

In speaking of the minimum period, it is to be remembered also that that time is only sufficient to gain a registrable qualification, such as a Bachelorship of Medicine or Surgery or the diplomas of the Royal Colleges. Those who wish to take a higher qualification—for instance, the F.R.C.S.Eng. —must prolong their work for another year or more. So, too, must in some cases those who desire to convert their Bachelorship into a Doctorate. This may entail further formal examination, but at some universities the M.D. is obtainable on presentation of a thesis when the Bachelor has attained a certain age and has practised for a certain number of years. However, a student's career proper may be considered, perhaps, to have ended when he obtains his first registrable qualification, for while preparing himself for any further tests he can, and usually does, hold some junior appointment which more or less covers his expenses.

MEMORANDUM ON STUDENTS' REGISTRATION.

The following memorandum has been drawn up by the Registrar of the General Medical Council as to the procedure for those who desire to be registered as medical or dental students.

The requirements for the registration of medical and dental students are the same, and every intending student should, in his own interest, register as soon as he commences his professional curriculum.

A recognized examination in general education must first be passed. If the student intends to obtain a university degree, he should apply to the university he selects for information as to its matriculation requirements in arts or pure science, or as to any examinations which may be accepted in lieu of its matriculation examination. If the student intends to obtain a qualification from one of the licensing corporations (these are the Conjoint Boards in England, Scotland, and Ireland, the Society of Apothecaries of London, and the Apothecaries' Hall of Dublin), any of the examinations in Appendix A will be accepted. The subjects required are (1) English, (2) Mathematics (elementary), (3) a language other than English, and (4) an additional subject or subjects, as required by the regulations of the particular examination, to be chosen from the following—namely, History, Geography, Physical Science, Natural Science, Latin, Greek, Hebrew, French, German, or other language accepted by the university for matriculation.

The requirements of the preliminary examination in general education being satisfied, it is then necessary to pass an examination in Elementary Chemistry and Elementary Physics, which is conducted or recognized by one of the licensing bodies—that is, university or corporation. The student should write to the body whose qualification he desires to obtain (a list will be found in Appendix B) for information in regard to its requirements for this examination.

These two examinations having been passed, and the student having attained the age of 17 years, he should apply to one of the universities in Appendix B or one of the medical schools in Appendix C for admission in order to commence therein his professional curriculum. Immediately his course of medical study has been begun, he should apply to the Dean of the school, or to the Registrar of one of the branches of the General Medical Council, for a form of application for registration as a student, and should have it completed and sent in to one of the Branch Councils as soon as possible. There is no fee for this registration. The medical curriculum will extend for at least five years, and the dental curriculum for at least four years, from the date of registration as a student.

A student who has studied the subject of elementary biology at an institution recognized by one of the licensing bodies may, if the body sees fit, be admitted to the professional examination in this subject immediately after his registration as a student. For information in regard to this, he should apply to the body whose medical qualification he seeks.

A *Dental Student* may commence his curriculum, if he so desires, as a pupil with a registered dental practitioner; but it is desirable, if possible, that he should commence professional study at a dental school. If, however, he is apprenticed to a dental practitioner, he may have to take out a course of four years of mechanical dentistry, and this will have the effect of lengthening the duration of his curriculum to five or six years instead of four.

The addresses of the Branch Registrars are:

General Medical Council, 44, Hallam Street, Portland Place, London, W.1.
Scottish Branch Council, 20, Queen Street, Edinburgh.
Irish Branch Council, 35, Dawson Street, Dublin.

APPENDIX A.

[The following is a list of the examining bodies in preliminary education, with the names of the examinations—in parentheses.]

Registrar, Queen's University of Belfast, Belfast. (Matriculation.)
Registrar, The University, Bristol. (Matriculation, School Certificate, or Higher School Certificate.)
Assistant Registrary, The University, Cambridge. (Previous.)
Secretary, Cambridge Local Examinations, Syndicate Buildings, Cambridge. (School or Higher School Certificates.)
Director, Central Welsh Examination Board, Cardiff. (Senior Certificate.)
Registrar, University of Dublin School of Physic, Dublin. (Junior Freshman, Special Preliminary, Junior Exhibition, or Examination for first, second, third, or fourth year in Arts.)
Dean, University of Durham School of Medicine, Newcastle-on-Tyne. (First School Certificate or Matriculation.)
Registrar, Irish Conjoint Board, Royal College of Surgeons, Dublin. (Preliminary Examination.)
Registrar, National University of Ireland, Dublin. (Matriculation.)
Joint Commissioners, Intermediate Education Board of Ireland, 1, Hume Street, Dublin. (Middle and Senior Grade Examinations.)
Academic Registrar, The University of London, South Kensington, London, S.W.7. (Matriculation or General Schools Certificate.)
Secretary, Northern Universities Joint Matriculation Board, 315, Oxford Road, Manchester. (Matriculation or Senior School Certification.)
Registrar, The University, Oxford. (Responsions or Moderations.)
Secretary, Oxford and Cambridge Schools Examination Board, Schools Examination Office, Balliol College, Oxford. (School or Higher School Certificate.)
Secretary, Oxford Local Examinations, University Press, Oxford. (School or Higher School Certificate.)
Secretary, College of Preceptors, Bloomsbury Square, London, W.C.2. (Senior Certificate.)
Secretary, Educational Institute of Scotland, 47, Moray Place, Edinburgh. (Preliminary Medical Examination.)
Secretary, Scottish Education Department, 14, Queen Street, Edinburgh. (Leaving Certificate.)
Secretary, Scottish Universities Entrance Board, 81, North Street, St. Andrews. (Scottish Universities Preliminary Examination.)

APPENDIX B.

Officials of Licensing Bodies.

Secretary, English Conjoint Board, 8, Queen Square, Bloomsbury, W.C.1.
The Clerk, Society of Apothecaries, Blackfriars, E.C.4.
Registrar, The University, Oxford.
Registrary, The University, Cambridge.
Secretary, University of Durham School of Medicine, Newcastle-on-Tyne.
The Principal, University of London, South Kensington, S.W.7.
Registrar, Victoria University, Manchester.
Registrar, The University, Birmingham.
Registrar, The University, Liverpool.
Registrar, The University, Leeds.
Registrar, The University, Sheffield.
Registrar, The University, Bristol.
Registrar, University of Wales, Cathays Park, Cardiff.
Secretary, Scottish Conjoint Board, 49, Lauriston Place, Edinburgh.
Dean of the Faculty of Medicine, The University, Edinburgh.
Registrar, The University, Glasgow.
Secretary of the Medical Faculty, The University, Aberdeen.
Secretary, The University, St. Andrews.
Secretary, Irish Conjoint Board, Royal College of Surgeons, Dublin.
Registrar, Apothecaries' Hall of Ireland, 95, Merrion Square, Dublin.
Medical Registrar, The University, Dublin.
Registrar, National University of Ireland, Dublin.
Registrar, Queen's University of Belfast, Belfast.

APPENDIX C.

Medical Schools and their Officials.

Secretary, University of Durham College of Medicine, Newcastle-on-Tyne.
Secretary, Armstrong College of Science, Newcastle-on-Tyne.
Dean of the Medical School, St. Bartholomew's Hospital, London, E.C.1.
Dean of the Medical School, Charing Cross Hospital, W.C.2.
Dean of the Medical School, St. George's Hospital, S.W.1.
Dean of the Medical School, King's College, Strand, W.C.1.
Dean of the Medical School, King's College Hospital, S.E.5.
Dean of the Medical School, London Hospital, E.1.
Dean of the Medical School, St. Mary's Hospital, W.2.
Dean of the Medical School, Middlesex Hospital, W.1.
Dean of the Medical School, St. Thomas's Hospital, S.E.1.
Dean of the Medical School, University College Hospital, W.C.1.
Dean of the Medical School, Westminster Hospital, S.W.1.
Dean of the Medical School, Royal Free Hospital, London, W.C.1.
Secretary, Bedford College for Women, London, N.W.1.
Secretary, Royal Holloway College, Virginia Water.
The Principal, Imperial College of Science and Technology, London, S.W.7.
Dean of the Medical School, University College, Aberystwyth.

Dean of the Medical School, University College, Bangor.
Dean of the Medical School, Welsh National School of Medicine, Cardiff.
Dean of the Medical School, University College, Swansea.
Dean of the Medical School, University College, Dundee.
The Mistress, Queen Margaret College, Glasgow.
Registrar, School of Physic, Trinity College, Dublin.
Registrar, University College, Cork.
Registrar, University College, Dublin.
Registrar, University College, Galway.

PROFESSIONAL EXAMINATION.

The Council's Recommendations.

The following Recommendations of the General Medical Council in regard to professional examinations for medical and surgical qualifications were adopted on May 27th and 29th, 1922:

1. In order to secure due continuity and sequence in medical study, two or more Professional Examinations in the earlier subjects should be held antecedently to the Final Examination in Medicine, Surgery, and Midwifery.

2. Three years at least should intervene between the date of passing the Professional Examination in Anatomy and Physiology and that of admission to the Final Examination in Medicine, Surgery, and Midwifery.

3. A candidate remitted in any subject of a Professional Examination should, before he is readmitted to examination therein, be required to produce satisfactory evidence that he has, during the interval of remission, pursued the study of the subject in which he was rejected. Candidates who obtain less than 30 per cent. of the marks in any subject should be remitted for a longer period than three months.

4. In all the Professional Examinations sufficient time should be assigned to practical work, in order to test the thoroughness of the candidate's knowledge and to encourage practical methods of study.

5. Candidates in all their examination work should be carefully supervised.

6. Two examiners should always participate in the oral examination of a candidate, except in subordinate parts of practical examinations.

7. In all written examinations the questions in each subject should be submitted for the approval of all the examiners in that subject.

8. In all written examinations an average of at least half an hour should be allowed for a candidate to answer each question.

9. It is desirable that examiners, and in particular those for the Final Examination in Medicine, Surgery, and Midwifery, should be appointed or re-elected for at least three consecutive years.

10. Whatever may be the system of marking, the percentage for a pass in each subject should be not less than 50.

11. In the regulations for the several examinations it should be provided that examiners, in assessing marks, be empowered to take into account the duly attested records of the work done by the candidate throughout his course of study in the subject of the examination.

12. The Final Examination in Medicine, Surgery, and Midwifery, with the exception of the Clinical and Practical Examination in Midwifery and Gynaecology, must not be passed before the close of the fifth academic year of medical study.

13. The three portions of the Final Examination in Medicine, Surgery, and Midwifery should not be further subdivided into sections which may be entered for or passed separately.

14. Compensation in respect of marks as between the three different portions of the Final or Qualifying Examination—namely, Medicine, Surgery, and Midwifery—is contrary to the intention of the Medical Act (1886).

15. The Final Examination should include clinical and practical examinations in Midwifery and Gynaecology.

16. The clinical examination in Medicine, Surgery, and Midwifery should be held in properly equipped hospitals or examination halls well provided with suitable patients.

17. In the examinations in clinical medicine at least one hour, and in clinical surgery at least half an hour, should be allowed to the candidate for the examination of, and report on, his principal case.

18. In Medicine, in Surgery, and in Midwifery, no candidate should be allowed to pass who fails to obtain 50 per cent. of the aggregate marks assigned to the whole examination; or who fails to obtain 50 per cent. of the marks assigned to the clinical examination; or who fails to obtain 40 per cent. of the aggregate of the marks assigned to the written and oral examinations.

In Midwifery, where a clinical examination is not held, the duly attested records of the work done by the candidate in clinical midwifery must be presented to the examiners for assessment in the Final Examination; and no candidate should be allowed to pass who fails to obtain 50 per cent. of the aggregate marks assigned to Clinical and Practical Midwifery and Gynaecology.

19. The Final Examination should include the examination of secretions, the testing of urine, clinical microscopy, and prescription writing, and there should always be an oral examination in Medicine, Surgery, and Midwifery, which should include an examination on pathological specimens.

20. At the Final Examination each candidate should be submitted to a practical and oral examination in Pathology (macroscopic and microscopic), unless this has been included in a Professional Examination preceding the Final Examination.

21. Whatever be the method of entry for the Final Examination, all candidates should be required to complete the three portions of the Final Examination within a period of nineteen months.

The English Universities.

THERE are eleven universities in England and Wales, and some account of each of them follows. They all have now fully developed medical faculties. Until recently the only exception was the University of Wales, whose constituent colleges are those of Aberystwyth, Bangor, Cardiff, and Swansea. This university grants degrees, and has laid down a six years' curriculum for candidates for the M.B. and B.Ch. degrees, and it now provides, at the Welsh National School of Medicine at Cardiff (see p. 421), instruction in all the subjects of the medical curriculum.

UNIVERSITY OF OXFORD.

THE professional degrees conferred by this university are those of Bachelor of Medicine (B.M.), Bachelor of Surgery (B.Ch.), Doctor of Medicine (D.M.), and Master of Surgery (M.Ch.). It also grants a diploma in Public Health and a diploma in Ophthalmology. On receiving the B.M. the candidate is entitled to registration by the General Medical Council. In favourable circumstances this degree and the B.Ch. may be obtained in six or seven years from matriculation. Before receiving either, the candidate must have taken a degree in Arts (B.A.), for which three years' residence within the university is necessary. This, however, does not necessarily mean deferment of professional study for that period, for some of the subjects chosen for the final stage of the arts course may be the same as those in which examinations would in any case have to be passed for the medical degrees.

In accordance with a statute which came into force on October 7th, 1920, women may be matriculated and admitted to degrees in the university. The statute is retrospective under certain conditions. Before matriculation a woman must have been admitted as a member of one of the five societies of women students (Lady Margaret Hall, Somerville College, St. Hugh's College, St. Hilda's Hall, or the Society of Oxford Home Students). Women members of the university are admitted to all degrees, except those in Divinity, under the same conditions as those laid down for men in regard to examinations, courses of study, and fees, and under corresponding conditions as to residence at the university. Among the university diplomas open to women are those in anthropology, ophthalmology, and public health.

A candidate may obtain the B.A. degree in either of the following ways, of which the latter constitutes the normal course for medical students:

(*a*) By passing Responsions (or one of the examinations which are accepted as equivalent), Moderations, a Scripture examination, or, in the event of a candidate objecting, an examination on some substituted book; and the Final Pass School in three subjects, two of which may be the same as two of the preliminary examinations in natural science.[1]

(*b*) By passing Responsions, the Scripture examination, some of the preliminary examinations in the Natural Science School,[1] or the Honour School of Mathematics in the first public examination; and one of the final honour examinations. The Final Honour School of Natural Science (Physiology) is that usually taken.

Responsions and the preliminary examinations in Natural Science may be passed before a candidate is a member of the university;[2] Moderations and Scripture can be passed in or after the second term; the final pass school may be taken any time after Moderations; a final honour school may be taken at the end of the third or fourth academical year—that is, within nine or twelve terms respectively; the preliminary examinations of the Natural Science School may be taken as soon as Responsions have been passed.

PROFESSIONAL DEGREES.

To obtain the B.M., B.Ch. degrees the candidate must first pass in four of the subjects of the Preliminary Examination of the Natural Science School—namely, physics, chemistry, zoology, and botany.

He then has two further examinations to pass—the First B.M. and the Second B.M. These take place twice a year, the first on the Thursday, the second on the Wednesday, of the eighth week of Michaelmas and Trinity terms. Every

[1] The four subjects of the medical preliminary examinations are four of the subjects in the natural science preliminary, and can be commenced directly after passing Responsions.

[2] Membership is constituted by matriculation and by becoming either a member of a College or a Hall or a non-collegiate student.

candidate at the First B.M. is examined in human anatomy, in physiology, and in organic chemistry, but is excused from physiology if he has obtained a first or second class in the Honour School of Physiology, and from organic chemistry if he has satisfied the Examiners in Part I of the Honour School of Chemistry. Once he has passed this examination he can, on production of certain certificates, be examined as soon as he pleases in pathology, forensic medicine, and hygiene, materia medica, and pharmacology (subjects of the second examination), but cannot present himself for the remaining subjects—medicine, surgery, and midwifery—until the eighteenth term from the day of his matriculation, and not until a period of at least twenty-two months have elapsed from the date of his passing the first examination, and he must take all the three subjects at one and the same time.

Before admission to the Second B.M. examination the student must produce certificates of instruction from a medical school recognized by the university of having acted as clinical clerk and dresser, each for six months, and as *post-mortem* clerk for three months, of attendance on labours, of instruction in infectious and mental diseases and ophthalmology, and of proficiency in vaccination and the administration of anaesthetics. He must also produce certificates of attendance in laboratory courses in pathology, bacteriology, and pharmacology, either in Oxford or in a recognized medical school.

D.M. AND M.CH. DEGREES.

A Bachelor of Medicine who wishes to proceed to the D.M. must have entered his thirtieth term and must present a dissertation for approval by the appointed examiners on a subject previously approved by the Regius Professor of Medicine. If a candidate for the M.Ch. he must have entered his twenty-first term and must pass an examination, which is held in June.

Examinations for the Diploma in Public Health are held in Trinity and Michaelmas terms; that for the Diploma in Ophthalmology is held annually, commencing on the third Monday in July. For the Diploma of Ophthalmology attendance on a course of instruction in Oxford lasting two months is obligatory. Candidates must have their names on the *Medical Register* of the United Kingdom, unless, being Bachelors or Doctors of Medicine of universities outside the United Kingdom, they have obtained special permission from the Board of the Faculty of Medicine.

TEACHING.

The several colleges provide their undergraduate members with tutors for all examinations up to the B.A. degree. In addition, the university provides certain courses of instruction, including lectures, demonstrations, and practical work, which cover all the subjects of the Preliminary Examination and First B.M., and in part those of the Final Examination.

SCHOLARSHIPS.

Most colleges grant scholarships open to intending medical students of £80 a year, tenable for four years, in natural science, chemistry, physics, and biology. Exhibitions of varying value are also awarded in these subjects. At two colleges (University and Pembroke) there are medical entrance scholarships of £100 a year. Particulars can be obtained on application to the college tutors. Scholarships for women are also offered by the various women's colleges, from the principals of whom details of the examinations may be obtained. A Radcliffe Travelling Fellowship of £300 a year, tenable for two years, is conferred annually; candidates must have taken the B.M. degree. A Philip Walker Studentship in Pathology of £200 a year, tenable for two years, is awarded biennially for the encouragement of research in pathology, as also are the Rolleston Memorial Prize and the Radcliffe Prize (£50), for research in natural science (including pathology), and the three Theodore Williams Scholarships in Anatomy, Physiology, and Pathology, of the value of £50 each, tenable for two years. A Radcliffe Scholarship in Pharmacology of £50 for one year, open to the University, is awarded annually by the Master and Fellows of University College. A Burney Yeo King's College Hospital Scholarship of £80 is awarded annually.

FEES.

An annual fee of £4 10s. is paid to the university for the first four years, being reduced to £1 when the B.A. has been taken. For the degree the fees are: the B.A., £7 10s.; the B.M. and B.Ch., £14; the D.M., £25; the M.Ch., £12. College fees, varying in amount, are paid for the first four years of membership and in taking degrees. Tuition fees vary from £21 to £30. The minimum annual cost of living during the three university terms may be regarded as not less than £180, or for women not less than £140.

For further information application may be made to Dr. E. W. Ainley Walker, Dean of the School of Medicine, University of Oxford.

UNIVERSITY OF CAMBRIDGE.

THE professional degrees given by this university are those of Bachelor of Medicine (M.B.) and Bachelor of Surgery (B.Ch.), each of which entitles the possessor to admission to the *Register* by the General Medical Council, and the higher degrees of Doctor of Medicine and Master of Surgery. It also grants diplomas in Tropical Medicine, in Public Health, in Hygiene, in Psychological Medicine, and in Medical Radiology and Electrology to medical practitioners, not necessarily graduates of the university. Information regarding these diplomas will be found in later sections under the headings Tropical Medicine, Psychological Medicine, and Public Health. A candidate for the M.B., B.Ch. degrees need not possess a degree in arts; it is sufficient if he has passed the previous examination or some other examination accepted by the university as its equivalent. Most students, however, are advised to take the B.A. degree, preferably by obtaining honours in the Natural Sciences Tripos at the end of their third year.

New regulations are being drafted for Medical and Surgical degrees, to come into force in October, 1923.

PROFESSIONAL EXAMINATIONS.

To obtain the M.B. degree the candidate must pass three examinations, of which the latter two take place twice a year, in the Michaelmas and Easter terms; those who are finally successful may receive the B.Ch. degree (which is a complete registrable qualification) without further examination.

First M.B., or Preliminary Examination in Science.—This comprises (1) chemistry, (2) physics, (3) elementary biology. The parts may be taken together or separately. In either case the candidate before admission to examination must have satisfied the requirements in respect of the previous examination, paid the matriculation fee, and entered on his first or some later term of residence. During the continuance of the war students could be admitted to this examination though they had not commenced residence. The examination is held three times a year—in October, December, and June.

Second M.B.—This examination, which cannot be passed until the first examination has been completed, comprises Part I, human anatomy and physiology; Part II, elementary pharmacology, including pharmaceutical chemistry and the elements of general pathology. No one may enter Part II unless he has passed Part I. The candidate must be signed up in both subjects and have dissected for six months. The examination for Part I is held in December and June; that for Part II in October and April.

Third M.B.—This is divided into two parts, to neither of which is the candidate admitted until he has passed the examinations previously mentioned. A candidate for the first part, which deals with surgery and midwifery, must have completed five years of medical study and be signed up in these subjects and have completed two years of hospital practice. Before admission to the second part the candidate must have completed five years of medical study and be duly signed up in all subjects and have completed three years of hospital practice. He must also possess certificates showing that he has fulfilled all the recommendations as well as the requirements of the General Medical Council. The examination is in the principles and practice of physic, pathology, and pharmacology.

Act for the M.B.—Before receiving his M.B. degree a candidate who has been successful at the final M.B. examinations has to write a thesis. This he reads in public on an assigned day, and is then questioned concerning it and other subjects of medicine by the Regius Professor of Physic. If approved at this test he is then certified as having "kept the Act" satisfactorily, and in due course receives his degree. Medical degrees may be taken in absence, the candidate sending to the Regius Professor of Physic a thesis, which is laid before the Board.

THE HIGHER DEGREES.

The M.D. degree may be taken by a bachelor of medicine of three years' standing after writing a thesis approved by

the M.D. Degree Committee and keeping a further Act. Previously to the thesis being read a topic taken from the general subject of his thesis (whether it be physiology, pathology, pharmacology, practice of medicine, State medicine, or the history of medicine) is submitted to the candidate, on which he is required to write an extempore essay.

The M.Ch. degree may be granted to a candidate who has qualified for the B.Ch. at least three years previously; he is then examined in pathology, surgery, surgical anatomy, and surgical operations, or submits books or writings of his own which constitute original and meritorious contributions to the science and art of surgery.

FEES.

In addition to college fees, tutorial fees, and the expenses of living, the following examination fees are payable: First M.B., £4 4s.; Second M.B., £4 4s.; Third M.B., £10 10s. For schedules referring to the examinations, lists of schools recognized by the university, and other information, application should be made to the University Registrary, Cambridge.

UNIVERSITY OF LONDON.

UNDER the regulations of the University of London the degrees obtainable in the Faculty of Medicine are those of Bachelor of Medicine and Surgery, Master of Surgery in two branches, and Doctor of Medicine in six different branches. The university has its own matriculation examination, and this is of so peculiar a kind that candidates should secure and carefully study the booklets relating to it.

In no circumstances is a degree granted to anyone in less than three years after the date at which he passed the Matriculation Examination or obtained registration in some other way; and, unless they are already registered medical practitioners of a certain age and standing, all students must pass not less than five and a half years in professional study subsequent to matriculation.

PROFESSIONAL EXAMINATIONS.

M.B., B.S.—There are three examinations, the last two being subdivided. They are held twice a year.

The First Examination covers inorganic chemistry, general biology, and physics, there being two papers, a practical test, and a possible oral test in each subject. The names of successful candidates are placed in alphabetical order, with a note as to any subject in which a candidate has distinguished himself or herself.

The Second Examination, Part I, cannot be passed within six months of the passing of the First Examination. It covers organic and applied chemistry, the candidate's knowledge being tested as in the earlier examination. It is a pass examination, but a mark of distinction may be won. Candidates for Part II must have passed the First Examination at least eighteen months previously, besides having completed Part I of the Second Examination. The subjects are anatomy, physiology, and pharmacology, the tests being written, oral, and practical. Candidates who fail in one subject may sit for re-examination in that subject alone if the examiners think fit.

No candidate is admitted to the Third M.B., B.S. Examination within three academic years from the date of his completing the Second Examination. The subjects are medicine (including therapeutics and mental diseases), pathology, forensic medicine and hygiene, surgery, and midwifery and diseases of women. They may be divided into two groups, one comprising medicine, pathology, forensic medicine, and hygiene, and the other surgery and midwifery and diseases of women. Either group may be taken first at the option of the candidate, or the groups may be taken together. Only candidates who show a competent knowledge of all the subjects comprising a group are passed. There is no separate examination held for honours, but the names of successful candidates are divided into an honours list and a pass list, and a university medal may be awarded the candidate who has most distinguished himself in the whole examination.

THE HIGHER DEGREES.

M.D.—An examination for the M.D. is held twice yearly—in December and July. Every candidate must have passed the examination for the M.B., B.S. unless he became M.B. before May, 1904. He may present himself for examination in any one of the following branches: (1) Medicine, (2) pathology, (3) mental diseases and psychology, (4) midwifery and diseases of women, (5) State medicine, (6) tropical medicine, and, if he wishes, may pass also in another branch at a subsequent examination.

The period that must elapse between acquiring the M.B. and sitting for the M.D. in any branch varies between one and two years, according to the nature of the candidate's previous work, and in all cases evidence must be afforded of special study of the subject chosen; both written and practical examinations must be passed, though exemptions can be obtained from the former in exceptional circumstances. In each branch the scheme of examination is the same: two papers on its special subject, a paper on an allied subject—for example, medicine in the case of branch (4), pathology in branch (1)—an essay on one of two suggested topics connected with the special subject, and a clinical or other practical test. In any branch of the M.D. Examination a gold medal of the value of £20 may be awarded.

M.S.—The regulations with regard to the Mastership in Surgery are of a corresponding kind, but there are only two branches in which it may be obtained—General Surgery and Dental Surgery.

FEES.

The examination fees have been raised from pounds to guineas for all examinations held after September 1st, 1918. For Matriculation: 2 guineas for each entry. First Examination: 5 guineas for each entry to the whole examination. For re-examination in one subject the fee is 2 guineas. Second Examination, Part I: 2 guineas for the first and each subsequent entry. Second Examination, Part II: 8 guineas for each entry to the whole examination. For re-examination in one subject the fee is 4 guineas. M.B., B.S. Examination: 10 guineas for each entry to the whole examination, and 5 guineas for examination or re-examination in either group. M.D. and M.S. Examinations: 20 guineas, and 10 guineas on re-examination.

Inquiries should be addressed to the Registrar, the University of London, South Kensington, S.W.7.

UNIVERSITY OF BIRMINGHAM.

THIS university confers the ordinary medical and surgical degrees—M.B., Ch.B., M.D., and Ch.M.—and also diplomas and degrees in State medicine and dentistry. It has a plan, too, by which, extending his study to six instead of five years, the M.B., Ch.B. candidate may become a Bachelor in Science as well. Of the five years' curriculum, the first four must be spent, as a rule, at the university itself, the fifth being passed at any approved school or schools. Occasionally, however, the Senate will reduce the period of enforced residence to three years and exempt from the First M.B. those who have passed elsewhere an examination considered to be its equivalent. A degree of Ph.D. is also conferred for research study in medicine under special regulations. Candidates must be graduates in medicine of a recognized university.

Students entering the Medical Faculty for the M.B., Ch.B. degrees must have passed either (*a*) the matriculation examination of the Joint Board of the Universities of Manchester, Liverpool, Leeds, Sheffield, and Birmingham; (*b*) some other examination recognized as equivalent to the matriculation. Candidates for medical degrees are recommended to take Latin and a science subject—chemistry or physics—at the matriculation examination, although these subjects are no longer compulsory. The matriculation examination of the Joint Board is held in July and September. The regulations and the list of examinations accepted in lieu thereof will be sent on application to the Secretary to the Board, Joint Matriculation Board, 315, Oxford Road, Manchester.

PROFESSIONAL EXAMINATIONS.

The candidate for the M.B., Ch.B. degrees has five examinations to pass. In the second and final examinations the candidate must pass in all the prescribed subjects or undergo the whole examination again.

The First M.B. deals with chemistry, physics, and elementary biology; it may be passed before the student commences residence at the university, provided the regulations as to matriculation have been met. The Second M.B. deals with anatomy and physiology, and the student must pass in both simultaneously. The Third M.B. deals with general pathology and bacteriology, materia medica, and practical pharmacy. The Fourth M.B. takes place at the end of the fourth year, the subjects being forensic medicine, toxicology, public health, therapeutics, and special pathology.

Final M.B.—This comprises medicine, surgery, midwifery and diseases of women, ophthalmology, and mental diseases. The candidate, in addition to more ordinary certificates, must

be prepared with a certificate of having acted as a *post-mortem* clerk for three months, and received special instruction in anaesthetics and clinical instruction in diseases peculiar to women, asylum ward work, and ophthalmology. In respect to the latter he must show that he has learnt refraction work. He also has to present to the examiners reports by himself on six gynaecological cases, and certificates drawn up by himself regarding four actual cases of lunacy and notes on two others.

M.D.—An ordinary candidate for this degree must be a M.B., Ch.B., of not less than one year's standing. He presents an original thesis for approval, and then passes a general examination in the principles and practice of medicine. From the latter the Board of Examiners may exempt a candidate whose thesis is of exceptional merit. The regulations respecting the Ch.M. are of the same general character. Subject to certain requirements as to special research or other post-graduate study, graduates of other universities may obtain the M.D. and Ch.M. in the same way as holders of the Birmingham M.B., Ch.B.

FEES.

The fee for matriculation is £2, and £2 10s. for each of the first four professional examinations; M.B., Ch.B. degree fee, £10; M.D. and Ch.M. examinations, £12 10s. each. For further particulars application should be made to the Dean of the Medical Faculty, University of Birmingham.

UNIVERSITY OF BRISTOL.

THE university grants the following degrees: In medicine and surgery, M.B. and Ch.B., M.D., Ch.M. (the M.D. may be taken in State medicine); in dental surgery, B.D.S., M.D.S. Diplomas in public health (D.P.H.) and dental surgery (L.D.S.) are also granted. Candidates for degrees must qualify for matriculation in the university by passing either one of the school certificate examinations held twice a year in July and in September by the university itself, or the *Higher School Certificate*, or any one out of a list of similar examinations which will be found in the university regulations for matriculation. Candidates over the age of 23 may, under certain circumstances, be permitted to matriculate without examination. The winter session opens on September 29th, 1922.

Candidates who possess a *Higher School Certificate* approved by the Board of Education in physics, chemistry, and biology may count the first year of the curriculum and the first examination—the curriculum being thus reduced to four and a half years in the university.

PROFESSIONAL EXAMINATIONS.

M.B., Ch.B.—There are three examinations for these degrees. They must be passed in proper order, and before admission to them the candidate must be duly certified as having attended in the subjects involved. The first M.B. comprises chemistry, physics, botany, and zoology. The second M.B. comprises organic chemistry, elementary anatomy (Part I), advanced anatomy, physiology (Part II). The two groups may be taken separately or together. The Final Examination includes materia medica and pharmacy, pharmacology, and therapeutics, general pathology, morbid anatomy and bacteriology (Part I), special pathology, forensic medicine, toxicology and public health, obstetrics (including diseases of women), surgery (systematic, clinical, practical and operative), medicine (systematic, clinical, and practical), including mental diseases (Part II). The two groups may be taken separately or together. At the option of the candidate, forensic medicine and toxicology may be taken either with Group I or Group II. First or second class honours may be obtained by a candidate whose work is deemed of sufficient merit, but cannot be awarded to one who has recorded against him a failure at any examination after the first M.B.

M.D.—A candidate must be a M.B. and Ch.B. of at least two years' standing. He has a choice between presenting an original dissertation, undergoing a general examination in medicine (including medical anatomy, medical pathology and bacteriology, systematic and clinical medicine), or passing an examination in State medicine.

Ch.M.—A candidate must have attended, since becoming M.B., Ch.B., and for not less than two years, a public institution affording opportunities for the study of practical surgery, and produce certificates to that effect; the candidate shall be required to pass a general examination in surgery (including surgical anatomy, surgical pathology and bacteriology, operative and clinical surgery), and to present a dissertation in some department of surgery. He must be of two years' standing as a M.B., Ch.B. The degree is also awarded after examination in general surgery and in special subjects—for example, oto-rhino-laryngology, ophthalmology, and gynaecology.

Applications for other information should be addressed to the Dean of the Medical Faculty.

DENTAL DEPARTMENT.

The university grants the degrees of Bachelor and Master in Dental Surgery (B.D.S., M.D.S.) and a Diploma in Dental Surgery entitling to the letters L.D.S. The courses of the university are available equally for these qualifications and for those of other licensing bodies. Both courses are open to men and women alike.

Fees.—For the entire curriculum, including the mechanical laboratory, lectures, laboratory work, and hospital practice, if paid in one sum: For the B.D.S., 215 guineas; for the L.D.S., 180 guineas. Fee for the mechanical laboratory if taken alone, 20 guineas per annum. Further details may be found in the prospectus.

UNIVERSITY OF DURHAM.

To its own graduates, who may be of either sex, this university grants the degrees of Bachelor of Medicine and Bachelor of Surgery (M.B., B.S.), and Doctor of Medicine (M.D.), and Master of Surgery and Doctor of Surgery (M.S. and D.Ch.); it also grants special degrees and diplomas in Public Health, Psychiatry, and Dental Surgery. To become a graduate, however, at the university it is not necessary to pass the major portion of the five years' curriculum within its precincts, or even to commence that period by matriculation. It is sufficient if, before he presents himself for his final examination, the candidate has passed at least one year in study at the University of Durham College of Medicine, Newcastle-on-Tyne, including the practice of the Royal Victoria Infirmary in the same city. The earlier examinations may be passed while the student works elsewhere, but not less than a year must elapse between the date when the student satisfies the requirements of the university as regards matriculation and his presenting himself for the Final M.B., B.S. Examination.

The university has its own matriculation examination, but accepts the tests of a considerable number of other educational bodies as a full or partial equivalent. A list may be obtained on application.

PROFESSIONAL EXAMINATIONS.

There are four professional examinations for the M.B., B.S. degrees. Each is held twice a year—in March and June. The first deals with elementary anatomy and biology, chemistry, and physics; the second with anatomy and physiology; the third with pathology, elementary bacteriology, medical jurisprudence, public health, materia medica, and pharmacy. At the final M.B., B.S. the candidate is examined in medicine and clinical and psychological medicine; surgery and clinical surgery; midwifery and diseases of women and children; clinical and practical gynaecology; therapeutics; diseases of the throat, nose, and ear; diseases of the skin; and diseases of the eye.

M.D.—A Bachelor of Medicine who wishes to proceed to this higher degree must be of at least two years' standing, and must comply with the regulations printed in the Calendar of the College of Medicine for 1921-22. If the candidate is not a M.B. of the university, he must be a practitioner of fifteen years' standing, 40 years of age, and submit to special tests.

M.S.—Candidates for this degree must have been engaged in practice for at least two years subsequent to becoming M.B., B.S.Durham. They are submitted to an examination which covers the whole range of surgical knowledge.

FEES.

The following fees are payable: Matriculation or its equivalent, £2; First, Second, and Third M.B., B.S. Examinations, each £5; Final M.B., B.S., £10; M.D. and M.S., £5 for each examination and £6 6s. for the degrees of M.B. and B.S. The fee for the degree of M.D. is £10.

Further information may be obtained from Professor Howden, Registrar, University of Durham College of Medicine, Newcastle-on-Tyne.

UNIVERSITY OF LEEDS.

THE degrees granted in the Medical Faculty of this university are Bachelor of Medicine, Bachelor of Surgery (M.B. and Ch.B.), and Bachelor of Dental Surgery (B.Ch.D.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), and Master of Dental Surgery (M.Ch.D.). It also gives diplomas in public health, in psychology, and in dental surgery.

Candidates for the M.B. must have attended courses of instruction approved by the university for not less than five years, two at least of such years having been passed in the university, at least one year being subsequent to the date of passing the first examination. They must also have matriculated by satisfying the examiners in (1) English composition and literature: (2) English history; (3) mathematics; (4) three of the following, one of which must be a language: (*a*) Latin, (*b*) Greek, (*c*) French, (*d*) German, (*e*) some other modern language approved by the Board, (*f*) either mechanics or physics, (*g*) chemistry, (*h*) geography, (*i*) natural history or botany, (*j*) general experimental science. Exemption from the examination may be granted to applicants holding certificates of having passed examinations of a standard deemed by the Matriculation Board to be at least equal to the Board's examination.

PROFESSIONAL EXAMINATIONS.

The examinations for the M.B., Ch.B. number three. The first deals with (1) physics and chemistry, (2) biology. In each subject laboratory work is included, but the two parts can be taken separately. For neither can the candidate present himself until after matriculation and a period of approved work in the respective subjects.

Second M.B.—This examination may be taken in two parts: (*a*) anatomy and physiology, including practical work; (*b*) materia medica and pharmacy, including actual compounding of drugs. The candidate's certificates must show, among other things, that he has dissected during at least five terms.

Final M.B.—This may be divided into three parts. The first (pathology and bacteriology) may be taken at the end of the tenth term; the second (forensic medicine and public health) and the third (medicine, surgery, obstetrics, and pharmacology and therapeutics) cannot be taken before the end of the fifth year; before admission to the examination in its subjects the candidate, besides ordinary certificates, must produce proof that he has done both intern and extern maternity work, and received clinical instruction in gynaecology, in diseases of the eye, skin, or larynx, and in the administration of anaesthetics. This division covers all branches of surgery, medicine (including mental diseases and diseases of children), and obstetrics and gynaecology. First and second class honours may be obtained in this division.

M.D.—A candidate for this degree must be a M.B., Ch.B. of the university of at least one year's standing. He presents a dissertation embodying the results of personal observation or original research, and, if this is approved, he may be required to write a short extempore essay on some topic connected with medicine, and may be examined orally on the dissertation or other work submitted.

Ch.M.—The candidate for this degree must have been admitted to the M.B., Ch.B. of the university not less than a year previously, and during that time must have held for at least six months a surgical appointment in a public institution affording full opportunity for the study of practical surgery. He must also have attended certain courses, including one on ophthalmology and one on bacteriology; he is then examined on the subject of surgery in all its branches.

FEES.

The matriculation fee is £2, and on readmission £1 10s. For each of the other examinations £6 (£7 for Ch.M.); and £3 on readmission. On conferment of the degree of Ch.M. £7 is payable, and £6 for the M.D. degree.

UNIVERSITY OF LIVERPOOL.

THIS university, besides granting degrees in medicine (M.B. and M.D.) and in surgery (Ch.B., M.Ch.Orth., and Ch.M.), gives degrees in dental surgery (B.D.S. and M.D.S.), a degree in hygiene (M.H.), and degrees in veterinary science (B.V.Sc., M.V.Sc., and D.V.Sc.). Diplomas are awarded in dental surgery (L.D.S.), tropical medicine (D.T.M.), public health (D.P.H.), veterinary hygiene (D.V.H.), and medical radiology and electrology (D.M.R.E.).

MATRICULATION.

The Matriculation Examination is governed by the Joint Matriculation Board, 315, Oxford Road, Manchester, which accepts under certain conditions the test of several other bodies as its equivalent. The Faculty of Medicine has power to exempt from examination in corresponding subjects in the first M.B. examination any student who has obtained a certificate at a Higher School Certificate examination in the group including chemistry and physics, and who has reached a standard deemed satisfactory in the subject of exemption. Of the five years' curriculum, not less than two must be passed in the university itself, one such year being subsequent to the date of passing the first M.B. Examination.

PROFESSIONAL EXAMINATIONS.

Candidates for the M.B., Ch.B. degrees have three examinations to pass, the first including (1) chemistry, inorganic, organic, and physical; (2) biology, including zoology and botany; (3) physics. Section 2 may be taken alone or in conjunction with Sections 1 and 3.

Second M.B.—This test covers (*a*) (1) anatomy, (2) physiology, including physiological chemistry and histology; and (*b*) (3) materia medica and pharmacy, (4) pharmacology. Candidates may present themselves in (*a*) and (*b*) separately.

Final M.B.—The subjects of the Final Examination are: (1) General pathology, morbid anatomy, and bacteriology; (2) forensic medicine, toxicology, and public health; (3) obstetrics and diseases of women; (4) surgery, systematic, clinical, operative, and practical, including ophthalmology; (5) medicine, systematic and clinical, including mental diseases and diseases of children and therapeutics. The examination is divided into three parts: Part I, subject 1; Part II, subject 2; Part III, subjects 3, 4, and 5. Candidates may present themselves for examination in the three parts at the same time, or in any two parts together, or in each part separately. Part III may not be taken until five years of study have been completed.

M.D. and Ch.M.—Candidates for these degrees must have received the M.B. and Ch.B. at least two years previously. Students holding equivalent degrees of other approved universities may become candidates for the M.D. degree after two years' study in the university or clinical school of the university. The M.D. candidate submits for approval a dissertation covering original work, and Liverpool Graduates in Medicine who have been in practice for five years may be admitted to the degree by examinations. The M.Ch. candidate undergoes an examination. Other information concerning the diplomas of this university and its medical school will be found on page 434.

FELLOWSHIPS, SCHOLARSHIPS, AND EXHIBITIONS.

The university awards Fellowships annually to students of distinguished merit, as follows:

(1) John Rankin Fellowships in Anatomy; two, each of the value of £120, tenable for two years. (2) Ethel Boyce Fellowship in Gynaecology, value £100 and tenable for one year, open to fully qualified medical students of either sex. (3) John W. Garrett International Fellowship in Bacteriology, value £100 and tenable for one year. (4) Robert Gee Fellowship in Human Anatomy, value £100 and tenable for one year. (5) Holt Fellowships in Physiology and Pathology, two in number, value £100 each and tenable for one year. (6) Johnston Colonial Fellowship in Biochemistry, value £100 and tenable for one year. (7) Thelwall Thomas Fellowship in Surgical Pathology, value £150 and tenable for one year. (8) University Fellowship, £100.

There are, in addition, scholarships and exhibitions open to medical students.

VICTORIA UNIVERSITY OF MANCHESTER.

THIS university grants the four ordinary degrees in medicine and surgery, M.B. and Ch.B. and M.D. and Ch.M.; a diploma and a degree (B.Sc.) in public health; a certificate in factory and in school hygiene; a diploma in psychological medicine; and a degree and diploma in dental surgery. Candidates for degrees must pass the special Matriculation Examination prescribed by the Faculty of Medicine (or some equivalent examination accepted in lieu thereof; see the prospectus of the Joint Matriculation Board), and study at the university itself for at least two years of the five years' curriculum, one such year being subsequent to the passing of the first M.B. Examination. The Matriculation Examination comprises (1) Latin, (2) mathematics, (3) the English language, its literature and history; (4) English history; (5) two subjects at choice, one of which must be a language approved by the Joint Board, the other being elementary mechanics *or* physics, chemistry, geography, natural history, *or* botany. It is held in July and September.

PROFESSIONAL EXAMINATIONS.

M.B., Ch.B.—There are four examinations for this degree. They must be passed in proper order, and before admission to them the candidate must be duly certified as having attended in the subjects involved. At all examinations the subjects, or groups of subjects, prescribed can be taken separately or together, as the candidate pleases. The first M.B. is divided into Part 1, inorganic chemistry and physics; Part 2, biology (including animal and vegetable morphology, physiology, and laboratory work); Part 3, elementary organic chemistry and biochemistry. The parts may be taken separately or together. At the second M.B. the candidate is examined in anatomy and physiology; at the third in pathology and pharmacology (including materia medica and practical pharmacy). The Final Examination is divided into two parts, which may be taken separately, and includes medicine, systematic and clinical, mental diseases, and diseases of children, surgery (systematic, clinical, and practical), with a separate paper on ophthalmology), obstetrics and gynaecology, preventive medicine, forensic medicine and toxicology.

M.D.—A candidate for this degree must be a bachelor of medicine of at least one year's standing. He has a choice between presenting an original dissertation or undergoing a written (as well as practical and clinical) examination in medicine, and a written and practical examination in pathology, and one other subject selected by himself.

Ch.M.—A candidate must have held, since becoming Ch.B., and for not less than twelve months, a post in a public institution affording opportunity for the study of the branch of surgery in which examination is desired. The examination in Branch I comprises the general field of surgery; Branch II obstetrics and gynaecology; Branch III ophthalmology; Branch IV otology, laryngology, and rhinology.

FEES.

The following fees are payable: Matriculation, £2; on re-admission, £1 10s. Each M.B. examination, £8 8s.; on readmission, after failure, £3 3s. M.D., including the conferring of the degree, £15 15s. Ch.M., £6 6s. for the examination and £9 9s. for conferment of degree. Application for further information should be addressed to the Dean of the Medical Faculty.

UNIVERSITY OF SHEFFIELD.

THE degrees of this university (M.B., Ch.B., and M.D. and Ch.M.) and the diploma in public health are open to candidates of either sex. Candidates for a degree must have matriculated in the university or have passed such other examination as may be recognized for this purpose.

PROFESSIONAL EXAMINATIONS.

A candidate for the degrees of M.B., Ch.B. must produce certificates that he will have attained the age of 21 years by the day of graduation; that he has pursued the courses of study required by the university regulations during not less than five years subsequent to the date of his matriculation or exemption from matriculation, three of such years at least having been passed in the university, one at least being subsequent to the passing of the first examination. The following examinations must be passed in due order.

First Examination.—The subjects are chemistry, physics, and biology. The intermediate examination in science—chemistry, physics, and zoology—will, on payment of the required additional fee, be accepted instead of this examination. Candidates on presenting themselves for this examination are required to furnish certificates of having attended for not less than one year approved courses of instruction, after matriculation, in (i) chemistry, inorganic and organic; (ii) physics; (iii) biology.

Second Examination.—The subjects are anatomy and physiology. The candidate must have completed the second year of professional study, must have passed the First Examination, and must have attended (1) lectures on anatomy, and dissections during three terms; (2) lectures on practical, experimental, and chemical physiology and histology during three terms.

Third Examination.—The subjects are pathology and pharmacology, anatomy and physiology. Candidates must have completed the fourth winter of medical study and the requisite courses in these subjects, including *post-mortem* clerkship for three months.

Final Examination.—The subjects are medicine (including forensic medicine, public health, mental diseases, and diseases of children), surgery, and obstetrics (including gynaecology). Candidates must have completed the fifth year of study and must satisfy the examiners in all subjects at the same examination.

M.D.—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the Professor of Medicine, and must pass an examination in the principles and practice of medicine.

Ch.M.—Candidates for the degree of Master of Surgery must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, and must, since taking the degrees of M.B., Ch.B., have held for not less than six months a surgical appointment in a public hospital or other public institution affording full opportunity for the study of practical surgery. The subjects of examination are systematic, clinical, and operative surgery, surgical anatomy, surgical pathology, and bacteriology.

Other information concerning this university will be found in the section devoted to Provincial Medical Schools.

UNIVERSITY OF WALES.

THE Charter and statutes of the University of Wales provide *inter alia* for a Faculty of Medicine and for the granting of the following degrees: Bachelor in Medicine (M.B.), Bachelor in Surgery (B.Ch.), Master in Surgery (M.Ch.), and Doctor in Medicine (M.D.).

A candidate for the M.B., B.Ch. is required to pursue a course of study of not less than six academic years subsequent to matriculation in the university, and of these years at least three must have been passed as a student in one of the constituent colleges of the university. These are the University College of Wales, Aberystwyth; University College of Wales, Bangor; University College of South Wales and Monmouthshire, Cardiff; and University College, Swansea. He must also hold an Arts or Science degree of the University of Wales, or of some other university approved for this purpose. Certain of the courses of study pursued for a B.Sc. or B.A. degree may be counted as part of the courses required for the degrees in the Medical Faculty.

The courses for the M.B., B.Ch. are divided into two sections, of which the first includes the preliminary subjects—physics, chemistry, botany, zoology; and the ancillary subjects—organic chemistry, human anatomy, and physiology. Study of the preliminary subjects and of organic chemistry must extend over at least one academic year; study of physiology and anatomy must extend over at least two academic years, and cannot be commenced until all the preliminary courses have been completed; hence the first section of the course must occupy not less than three years. The second section includes courses in pathology, bacteriology, pharmacology, medicine, surgery, and obstetrics and gynaecology, and cannot be commenced, except in the case of pharmacology, until the examinations relating to the preliminary and ancillary courses have been passed. Examinations in the earlier subjects are held at the end of each academic year, and in the subjects of the second section each July.

WELSH NATIONAL SCHOOL OF MEDICINE.

Students can complete the whole of their curriculum in the Welsh National School of Medicine, which is an integral part of the University College of South Wales and Monmouthshire, and qualify for the degrees of M.B., Ch.B. in the university.

The Committee of Management of the Examining Board of England of the Royal College of Physicians of London and the Royal College of Surgeons of England has recently made a report on the application from the Welsh National School of Medicine to be recognized for the complete curriculum. The Committee discussed various points arising out of the application with a deputation from the University of Wales, and expressed itself as generally satisfied with the provision made for teaching. The Royal Colleges have accordingly resolved:

That the Welsh National School of Medicine be recognized provisionally for the complete curriculum from October 1st, 1922, for one year, and that providing the following conditions are fulfilled not later than October 1st, 1923, such recognition become permanent, namely:

1. The total number of beds, exclusive of cots, available for the teaching of medicine in King Edward VII Hospital, Cardiff, shall not be less than 80.

2. Of these 80 beds, not less than 30 shall be allotted to the professor of the medical unit.

3. All physicians, surgeons, assistant physicians, assistant surgeons, and physicians and surgeons in charge of special departments at King Edward VII Hospital shall be recognized as teachers of the University of Wales.

4. Clinical clerkships and dresserships shall be provided for all students in professorial and non-professorial units.

5. Courses of instruction in all special departments required by the Regulations of the Examining Board in England shall be provided.

Further information may be obtained from the Registrar, the University Registry, Cathays Park, Cardiff.

English Medical Corporations.

THERE are three medical corporations in England—the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London. The first two combine for certain purposes to form what is known as the "Conjoint Board." Details concerning this body, its component Colleges, and the third licensing body here follow.

THE CONJOINT BOARD.

THIS body deals with the qualifications of all candidates for the Licence of the Royal College of Physicians of London and for the Membership of the Royal College of Surgeons of England. It prescribes for them certain periods of study, and recommends those who satisfy it for the Licence and for the diploma of Membership respectively. The successful candidate is then entitled to register as L.R.C.P.Lond., M.R.C.S.Eng. It performs the same task in connexion with diplomas in State medicine, tropical diseases, ophthalmic medicine and surgery, and psychological medicine, jointly issued by the two Colleges in question. It obliges all candidates to pass one of a large number of examinations which it considers satisfactory, tests of general education, and thereafter to pass five years in professional study at a recognized medical school, allowing, however, six months to be spent at any institution which may be recognized by the Board as giving efficient education in chemistry and physics. A list of such institutions, as also of the tests accepted in regard to general education, can be obtained from the Secretary of the Board at the Examination Hall, Queen Square, Bloomsbury, W.C.1.

PROFESSIONAL EXAMINATIONS.

There are three examinations for the Conjoint diploma, or L.R.C.P., M.R.C.S., which are commonly known as First Conjoint, Second Conjoint, and Final.

First Conjoint.—This examination is in three parts: (1) Chemistry, (2) physics, (3) elementary biology. A candidate must present himself for examination in Parts 1 and 2 together until he has reached the required standard to pass in both, or in one of these parts, but he will not be allowed to pass in one part unless he obtains at the same time half the number of marks required to pass in the other part. A candidate may take Part 3 separately, or he may present himself for the whole examination at one time.

Before admission to any part the candidate must show that he has undergone certain courses of theoretical and practical instruction, but these courses need not be completed within one year, nor need they run concurrently, and they may be commenced or attended before the candidate passes the required preliminary examination in general education. A candidate referred in any part or parts will not be admitted to re-examination for three months. He must produce evidence of further instruction in the subjects in which he was referred. Those who are already graduates in medicine, or who have passed an examination in the same subjects before a university board for a degree in medicine, may obtain exemption from re-examination in those subjects at this examination.

Second Conjoint.—This examination is in two parts—namely, Part 1, anatomy and physiology; Part 2, materia medica and pharmacology. A candidate must have attended, at a recognized medical school, lectures on anatomy, physiology, and a course of practical physiology and histology, and have dissected for twelve months during the ordinary sessions. He must also attend three months' lectures or demonstrations in pharmacology, and receive instruction in practical pharmacy. Part 2 may be passed at the same time as Part 1 or before or after that part, provided the conditions of admission to the whole examination have been fulfilled. The study of anatomy and physiology before passing in two of the three subjects of the first examination is not recognized. If rejected, a candidate before being admitted to re-examination must continue his studies at a recognized medical school for not less that three months.

Final Conjoint.—This examination consists of three parts: Part 1, medicine, including medical anatomy, pathology, therapeutics, forensic medicine, and public health; Part 2, surgery, including pathology, surgical anatomy, and the use of surgical appliances; Part 3, midwifery and gynaecology. The examination may be passed at one time or in each part separately. Evidence of attendance at courses of instruction in the subjects of the three parts must be produced, and also of having conducted twenty labours. A candidate will be admissible to Parts 1, 2, and 3 of the Third or Final Examination at the expiration of two years (twenty-four months) from the date of passing the Second Examination, and on production of the required certificates of study, provided that the examination is not completed before the expiration of five years (five winter and five summer sessions) from the date of passing the Preliminary Examination. A rejected candidate must produce evidence of further instruction during at least three months.

Note.—New Regulations will come into force on January 1st, 1923, which will apply to all candidates who have not passed a recognized Preliminary Examination in general education before that date. Under these new Regulations candidates will be required to pass a Pre-Medical Examination in Chemistry and Physics, and to complete five years of professional study at a recognized medical school and hospital after passing such examination. The new Regulations will be obtainable from the Secretary in November next.

NOTE.—A person holding a Colonial, Indian, or foreign qualification which entitles him to practise in the country where such qualification has been obtained is, after a course of study and examination equivalent to those required by the Regulations of the two Royal Colleges, admissible to the Second and Third or Final Examinations without any interval. Members of an English, Scottish, or Irish university are under certain conditions eligible for admission to the Third or Final Examination two years after passing at their university the subjects included in the First and Second Examinations of the Board. A member of an Indian, Colonial, or foreign university recognized for the purpose, who shall have passed examinations at his university for the degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second Examinations of the Conjoint Board, will be eligible for admission to the Third or Final Examination two years after passing in the said subjects.

FEES.

First examination, £10 10s. Re-examination in chemistry, £3 3s.; re-examination in physics, £2 2s.; re-examination in biology, £3 3s. Second examination, £10 10s. Re-examination in Part I, £6 6s.; re-examination in Part II, £3 3s. Third Examination, £21. Re-examination in Part I, medicine, £6 6s.; Part II, surgery, £6 6s.; Part III, midwifery and diseases of women, £4 4s. Members of English, Scottish, or Irish universities, £5 5s. for first admission to the examination, and £36 15s. for the diplomas.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THIS College has three grades—its Licentiates, its Members, and its Fellows. The Licence is now only issued through the Conjoint Board. The Membership is only granted to those who have passed the final examinations for the Licence, or those who are registered practitioners and graduates of a recognized university; in any case they must be persons over 25 years of age, who do not practise in partnership, dispense medicines, or engage in trade. Candidates are examined in pathology and the practice of physic, partly in writing and partly viva voce. Those under 40 are also examined in Latin, and either Greek, French, or German. The examination fee is £6 6s.; the Membership fee is £42, or the difference between that sum and what the candidate has already paid as a Licentiate. The body of Fellows is maintained by election from among the Members.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THIS College has two grades—Members and Fellows. The Members are admitted as stated in the section dealing with the Conjoint Board. The Fellowship is granted after examination to persons at least 25 years of age who have been engaged in professional studies for six years. There are two examinations for the Fellowship—the first in anatomy and physiology, which may be passed after the

third winter session; the second, chiefly directed to surgery, which may be passed after six years of professional study. Candidates must pass the Final Examination of the Examining Board in England and be admitted Members of the College before admission to the Second Examination for the Fellowship, except in the case of graduates in medicine and surgery of not less than four years' standing of universities recognized by the College for the purpose, who are required to attend for one year the surgical practice of a general hospital recognized by the College after obtaining their degrees.

Fees.—At first examination, £8 8s.; for re-examination, £5 5s. At second examination, £12 12s. Diploma fee for non-members, £10 10s.

The College also issues a diploma (L.D.S.) in dentistry.

SOCIETY OF APOTHECARIES OF LONDON.

THIS body confers a registrable diploma in medicine, surgery, and midwifery, now known as the L.M.S.S.A. (Licentiate in Medicine and Surgery of the Society of Apothecaries), on those successful at the following examinations:

Primary Examination.—This is divided into two parts, of which Part I includes elementary biology, chemistry, chemical physics, practical chemistry, pharmacy. Part II includes anatomy, physiology, and histology, and cannot be passed before the completion of twelve months' practical anatomy with demonstrations. Candidates will be excused any or all the subjects of the primary examination on producing evidence that they have passed equivalent examinations before an examining body recognized by the Society. Candidates referred in anatomy will be required to produce evidence of further work in the dissecting room before being admitted to re-examination.

Final Examination.— This is divided into three parts. Part I includes clinical surgery, the principles and practice of surgery, surgical pathology, operative manipulation, surgical anatomy, instruments and appliances. Part II includes clinical medicine: (*a*) The principles and practice of medicine (including therapeutics, pharmacology, and prescriptions), pathology, and morbid histology: (*b*) forensic medicine, hygiene, theory and practice of vaccination and mental diseases. Part III includes midwifery, gynaecology, and diseases of newborn children, obstetric instruments and appliances.

The fee for the primary examination is £5 5s.; for the final, £15 15s. The regulations and synopses relating to the several examinations, and other information, may be obtained from the Secretary, Court of Examiners, Apothecaries' Hall, Blackfriars, E.C.4.

The Scottish Universities.

THERE are in Scotland four universities, each possessing a faculty of medicine, and having the right to confer degrees which admit the holder to the *Medical Register*. In essential points the regulations in their medical faculties for undergraduates are much alike, so that a general account can be given of all of them together.

The universities are those of Edinburgh, Glasgow, Aberdeen, and St. Andrews. The provision each of the cities in which these universities are situated makes for the education of medical students will be found in the section on Medical Schools in Scotland; here it need merely be said that degrees in medicine from Scotland as a whole have always enjoyed a high repute.

The degrees granted in medicine and surgery to candidates of either sex are four in number—Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.). The two former are not obtainable one apart from the other. Besides these degrees a diploma in tropical medicine and hygiene is obtainable from the University of Edinburgh, as also diplomas in psychiatry and public health. As for public health, registrable degrees in this subject are granted by the Universities of Edinburgh and Glasgow, while diplomas in public health may be obtained from the Universities of St. Andrews and Aberdeen.

The conditions for admission of graduating students of medicine are the same as those in the Faculties of Arts or Science (for degrees in pure science).

After January 1st, 1923, prospective medical students will also be required to pass a pre-registration examination in chemistry and physics.

PROFESSIONAL EDUCATION.

The regulations comply in all respects with the requirements and recommendations of the General Medical Council, and in addition necessitate definite study for stated periods of diseases of children, of the larynx, ear and nose, of the skin, of ophthalmology, and of mental diseases. In respect of the various courses certificates must be obtained showing that the student has not only attended regularly, but has duly performed the work of the class. Out of the necessary five years of medical study, not less than two must be spent at the university whose degrees the student hopes to obtain, and the balance at any place officially recognized for such purpose. In each academic year there are two sessions—one lasting from the beginning of October to the middle of March, and the other from the beginning of May to the middle of July.

PROFESSIONAL EXAMINATIONS.

The distinctive feature of the Scottish curriculum is that, though nominally there are only four examinations, each of these may be, and habitually is, split up by the student into sections. Hence, a student may complete some stage of his career during the course of nearly every session. Thus, by the end of the first winter session the student may pass in zoology and chemistry. At the end of the first summer session he can finish with botany and physics, and with anatomy and physiology at the end of the second. Pathology and materia medica he will pass at the end of the third year, and so on, until the final examination in midwifery, surgery, and medicine, and the corresponding clinical subjects at the end of the fifth year of study. At each examination the candidate may pass "with distinction," and a record is kept of the merit displayed, so that, when the time comes for the candidate to graduate, one who has done well throughout can be declared as graduating with first or second class honours. A further point in the system is that the student's own teachers commonly take some part in his examination.

Of the four examinations, the first deals with physics, botany, zoology, and chemistry; the second with anatomy and physiology; the third with materia medica and pathology; the fourth with medicine and surgery (clinical and systematic), midwifery, forensic medicine and public health, and clinical gynaecology. The first three examinations are held three times a year; the final twice a year.

Exemption from the first professional examination can be obtained by candidates who have passed an arts or science degree examination in its subjects at any recognized university. When a candidate presents himself for an examination in several of its parts, but is not successful in all of them, he is credited at the next examination with those subjects in which he has already been approved.

THE HIGHER DEGREES.

It is open to those who are already M.B., Ch.B. to proceed either to the M.D. or the Ch.M. A candidate for the former must have been engaged for not less than one year in work in the medical wards of a hospital, or in scientific research in a recognized laboratory, or in the Naval or Military Medical Services, or have been at least two years in general practice, and he must be 24 years of age. He has to write a thesis on any subject not exclusively surgical, and is examined in clinical medicine and in some one or other of its special departments. The regulations for candidates for the Ch.M. are of a corresponding character, a period of surgical work in a hospital or elsewhere being substituted for medical work, and the thesis being on a surgical rather than a medical subject. He is examined in surgical anatomy, clinical surgery, operative surgery, and in some of the special departments of surgery.

FEES.

It is estimated that the class, examination, and other fees for the M.B., Ch.B. come altogether to about £247, the separate examination fees included in this calculation being as follows:

	£	s.	d.
First Professional	9	9	0
Second Professional	7	7	0
Third Professional	6	6	0
Final	11	11	0

Re-entry in any subject in which the candidate has failed entails a fresh payment of £1 1s. Candidates for the M.D. and Ch.M. pay £21, and on re-entry £5 5s.

More detailed information with regard to the University of Edinburgh can be obtained from the *Medical Programme*, price 6d., which is published by Mr. Thin, 55, South Bridge, Edinburgh, or on application to the Dean of the Faculty of Medicine. Similar information about Glasgow should be sought from the Assistant Clerk, Matriculation Office, Glasgow. With regard to Aberdeen, application may be made to the Secretary of the Medical Faculty, Marischal College. In respect of St. Andrews information can be obtained either from the Secretary of the University, or, alternatively, the Secretary of the United College, St. Andrews, or the Secretary of University College, Dundee, these being the two constituent colleges of the University of St. Andrews.

Finally, it should be mentioned that in connexion with all the Scottish universities there are valuable bursaries and scholarships, some information as to which will be found in the article on Medical Schools.

The Scottish Corporations.

THERE are three medical corporations in Scotland—the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Their licences can be separately obtained only by persons who are already in possession of a recognized qualification—in surgery in the case of the College of Physicians, and in medicine in the case of the College of Surgeons and the Faculty of Physicians and Surgeons of Glasgow. All others must submit to the examinations held by the Conjoint Board which the three corporations have combined to form. Details concerning this Board and its component colleges follow. The conditions on which their higher qualifications are granted will be found set forth separately in connexion with each corporation.

THE CONJOINT BOARD IN SCOTLAND.

THIS body has charge of all questions connected with candidates for the Conjoint Licences of the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. Those finally approved by it are entitled to registration and to the initials denoting the Licences of the three bodies concerned—namely, L.R.C.P. Edin., L.R.C.S.Edin., and L.R.F.P.S.Glasg. The Board requires all candidates to comply with the regulations of the General Medical Council. It has an arts examination of its own, but is prepared to accept in its place any of the other educational tests approved by the General Medical Council.

PROFESSIONAL CURRICULUM.

Subsequent to registration as a medical student the candidate must pass not less than five years in medical study, each comprising a winter and a summer session. The Board does not insist that candidates shall pursue their study at any particular place, and is prepared to accept certificates of having attended the necessary courses from any recognized medical school.

Its examinations are four in number, each of them being held four times every year, and these will fall to be held twice in Edinburgh and twice in Glasgow during the next period; it is open to candidates to present themselves for examination at either place. The first examination deals with physics, chemistry, and elementary biology; the second with anatomy and physiology, including histology; the third with pathology and materia medica, including pharmacy; and the final with (1) medicine, including therapeutics, medical anatomy, and clinical medicine; (2) surgery, including surgical anatomy, clinical surgery, and diseases and injuries of the eyes; (3) midwifery and diseases of women and of newborn children; and, if it has not been passed previously, (4) medical jurisprudence and hygiene. Candidates may also be examined on diseases of children, diseases of the ear and throat, insanity, vaccination, etc.

These examinations must be passed in due order, and before admission to any of them the candidate must supply certificates showing that he has completed the due periods of study of their subjects. He can present himself in any single subject of the first three examinations. As regards the final examination, a candidate can present himself in medical jurisprudence and hygiene at any time after completion of the third examination and of his study of these subjects; but in medicine, surgery, and midwifery he cannot present himself until the completion of five years' study, and he must take them all simultaneously. A candidate who takes up several subjects of an examination or the whole of the subjects at one time, but fails in some of them, is credited at the next examination with those subjects in which he has been approved.

Part or entire exemption from the first three examinations may be granted to those who have already passed before other bodies examinations deemed by the Board equivalent to its own: but all candidates for the Conjoint licence must sit for the final examination, and at no examination can a candidate present himself within three months of his rejection by some other licensing body.

FEES.

It is estimated that the total cost of lectures and fees for the conjoint licence is about £152. The separate examination fees are as follows: First, Second, and Third Professional, £5 each; Final £15. On re-entry for any of the first three examinations £3, and on re-entry for the Final, £5. If the re-entry is only in one or two subjects the fees are smaller.

Information concerning this Board should be sought either from Mr. D. L. Eadie, 49, Lauriston Place, Edinburgh, or from Mr. Walter Hurst, Faculty Hall, 242, St. Vincent Street, Glasgow.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THIS College has three grades—Licentiateship, Membership, and Fellowship—all of which are open to men and women. The regulations applying to candidates for the Licentiateship have already been generally indicated. If desirous of receiving it apart from those of the other two corporations they must be holders of a surgical qualification recognized by the College, and must pass an examination corresponding to the medical part of the Final Examination of the Conjoint Board, and conditioned in the same way, and also an examination in materia medica. The fee for examination is 15 guineas, a special examination being obtainable on due cause being shown, and on payment of 5 guineas extra. Ordinary examinations take place monthly on the first Wednesday, except in September and October. Candidates for the Membership must be either Licentiates of a British or Irish College of Physicians, or alternatively graduates of medicine of a university approved by the Council, and in either case not less than 24 years of age. Candidates are examined in medicine and therapeutics, and in one further subject at choice. This may be either (*a*) one of the departments of medicine specially professed; (*b*) psychology; (*c*) general pathology and morbid anatomy; (*d*) medical jurisprudence; (*e*) public health; (*f*) midwifery; (*g*) gynaecology; (*h*) diseases of children; or (*i*) tropical medicine. Licentiates of the College pay £21, others £36 15s. The examination is held quarterly, and application for admission to it must be made a month previous to its date. For the Fellowship the candidate must have been a member of the College for at least three years, and, if accepted, pays fees, including £25 stamp duty, amounting altogether to £64 18s. Further details can be obtained on application to the Secretary of the College.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THIS College has two grades—its Licence and its Fellowship. Licentiates may be of either sex, and for the Fellowship women are eligible also.

Licence.

As an original qualification the Licence is only granted after fulfilment of the regulations of the Conjoint Board, but as an additional qualification it can be obtained by those already possessed of a registrable qualification in medicine. In this case the candidate has to pass a written, oral, and clinical examination in surgery and surgical anatomy, and may be asked to operate on the dead body.

The fee is £15 15s., of which £10 10s. is returned to unsuccessful candidates. On due cause being shown, a special examination may be granted, the fee being £20, of which £10 is returned to a candidate if he is not approved.

Fellowship.

Candidates for the Fellowship must be not less than 25 years of age, and have been in the practice or study of their

profession subsequent to registration for at least two years, and must hold either a surgical degree from a university recognized for that purpose by the College, or a registrable diploma obtained as the result of an examination which includes surgery as well as medicine and midwifery. Candidates are examined in (*a*) the principles and practice of surgery, including surgical anatomy, (*b*) clinical surgery, and (*c*) one optional subject, which they may choose from among the following: surgical pathology and operative surgery, ophthalmology, laryngology, otology, and rhinology, gynaecology, obstetric surgery, anatomy, and dental surgery and pathology. The examination is written, oral, and clinical or practical. A candidate who desires to be examined must give one month's notice, his application for admission being supported by two Fellows of the College, one of whom must be resident in Edinburgh, or, in default, by testimonials obtained specially for the purpose.

Licentiates of the College pay £35, and others £45. For further information application should be made to the Clerk of the College, Mr. D. L. Eadie, 49, Lauriston Place, Edinburgh.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THIS body possesses two classes—Licentiates and Fellows. The regulations applying to the former correspond with those respecting candidates for the Licence of the Royal College of Surgeons of Edinburgh. Candidates for the single Licence are examined in surgery (including clinical surgery and surgical anatomy). The fee is £15 15s., and examinations are held quarterly. Candidates for the Fellowship must be qualified medical men of not less than two years' standing and 24 years of age. Candidates approved at this examination are then eligible for election as Fellows. Special regulations are in force for medical practitioners who served in the late war. The Faculty can also elect four Fellows annually without previously submitting them to examination, providing they "have highly distinguished themselves in medical science or practice." They must be of not less than ten years' standing and 40 years of age. Further information can be obtained from Mr. Walter Hurst, Faculty Hall, 242, St. Vincent Street, Glasgow.

The Irish Universities.

THERE are three universities in Ireland, each with a medical faculty. These are the University of Dublin (usually known as Trinity College, Dublin), the Queen's University of Belfast, and the National University of Ireland. The two former teach students, examine them, and grant degrees; while the third is an academic body only, inasmuch as its practical work is divided among three constituent colleges, situated, one at Cork, another at Galway, and the third in Dublin. Information as to the arrangements for the education of medical students will be found in the section relating to Irish Medical Schools.

UNIVERSITY OF DUBLIN: TRINITY COLLEGE.

THIS university grants two degrees in medicine (M.B. and M.D.), two in surgery (B.Ch. and M.Ch.), two in midwifery (B.A.O. and M.A.O.), and a post-graduate diploma in public health. It also grants a post-graduate diploma in gynaecology and obstetrics, for which one year's study is required. The degrees are granted to those who, having passed the Professional Examination, have also graduated in arts.

PROFESSIONAL EXAMINATIONS.

A candidate for the Final Examination for the M.B., B.Ch., and B.A.O. degrees must be a matriculated student of at least five years' standing. At least three of the five years' medical curriculum must be pursued at the School of Physic of the university. The examinations which students must pass are the Preliminary Scientific, the Intermediate Medical, and the Final. Before admission to any of these examinations students must have completed the courses of study in the subjects involved.

Preliminary Scientific.—This covers (*a*) chemistry, (*b*) physics, (*c*) botany and zoology; the three divisions may be taken together or at different times.

Intermediate Medical.—This is divided into two parts: (*a*) anatomy, physiology, organic chemistry, and histology; (*b*) applied anatomy and applied physiology. The two parts may be taken separately or together.

Final Examination.—Part I: Hygiene and medical jurisprudence, pathology and bacteriology, materia medica, and therapeutics. *Part II:* (*a*) Midwifery and gynaecology; (*b*) medicine and mental diseases; (*c*) surgery in all branches, including clinical ophthalmology. The three sections of Part II may be taken separately or together. In either case the full curriculum must have been completed, and the final examination cannot be completed before the end of the fifth year.

M.D.—The candidate must have passed all the qualifying examinations in medicine, surgery, and midwifery, and have taken, or have been qualified to take, the degree of B.A. three years previously. He must send in a thesis for approval. Subsequently the Regius Professor of Physic and an assessor will discuss with him questions connected with the thesis, and may also examine him viva voce on other medical subjects of a more general nature.

M.Ch.—The candidate must be a B.Ch. of not less than three years' standing, and have been engaged in practice for two years.

M.A.O.—The candidate must be a B.A.O. of not less than two years' standing and must produce satisfactory evidence of having been engaged for two years in obstetric science. The examination is specially directed to obstetrics and practical gynaecology.

Dental Degrees.—The University of Dublin gives two degrees in dental science—namely, B.Dent.Sc. and M.Dent.Sc. The course for the former has a minimum duration of four years; for the latter, five years.

Further information regarding courses of instruction, etc., may be obtained from the Registrar of the School of Physic, Trinity College, Dublin.

QUEEN'S UNIVERSITY, BELFAST.

THE degrees granted by the Medical Faculty of this university are as follows: Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), Master of Obstetrics (M.A.O). The university also confers a diploma in public health. The first three degrees mentioned serve as a qualification for admission to the *Medical Register*, and are not granted separately. In addition to matriculating and passing his professional examinations, a candidate for these degrees must have passed three of the regulation five years as a student at the Belfast School of Medicine. Degrees in dental surgery (B.D.S. and M.D.S.) are conferred by the university and also a diploma in dental surgery (L.D.S.).

PROFESSIONAL EXAMINATIONS.

The examinations for the M.B., B.Ch., B.A.O. are four in number. The first deals with: (1) Inorganic, organic, and practical chemistry, (2) experimental and practical physics, (3) botany and practical botany, (4) zoology and practical zoology. It is divided into two parts, of which botany and zoology form one. The Second Examination covers anatomy and physiology, and may be taken at the end of the second year of the student's career. The Third Examination includes: (1) Pathology, (2) materia medica, pharmacology, and therapeutics, (3) medical jurisprudence, and (4) hygiene. To be valid a certificate in regard to the study of the subjects of this examination must show that the work has been done after the first examination has been passed.

The Final Examination includes: (1) Medicine, (2) surgery, (3) midwifery, (4) ophthalmology and otology. The student may pass in all subjects at once at the end of his fifth year, or he may divide the examination into two parts—namely, (1) systematic, (2) clinical, practical, and oral. The first part may be taken at the end of the fourth year, but for the second part the candidate may not present himself until the end of his fifth year, but students invariably take both parts at the end of their course. No certificate in regard to the study of the subjects of this examination will be valid unless the work was done subsequent to passing in all the subjects of the Second Examination.

THE HIGHER DEGREES.

Candidates for the degree of Doctor of Medicine must be graduates in medicine of at least three years' standing, unless they hold also a degree of the university in arts or science, in which case a standing of two academic years will suffice. Moreover, candidates must be able to show

that the interval has been passed in the pursuit of such courses of study or practical work as may be prescribed. The degree may be conferred either (*a*) after a formal examination, or (*b*) in recognition of the merits of a thesis or of some piece of original study or research carried out by the candidate, followed by an oral or other examination in its subject. When an ordinary examination is imposed it will include (1) a written paper on the principles and practice of medicine, (2) a commentary on a selected clinical case, (3) a clinical and viva voce examination, and (4) a written paper and clinical or practical and viva voce examination on a subject chosen from the following list: (*a*) Human anatomy, including embryology, (*b*) physiology, (*c*) pathology, (*d*) pharmacology and therapeutics, (*e*) sanitary science and public health, (*f*) forensic medicine and toxicology, (*g*) mental diseases. The regulations for the degrees of M.Ch. and M.A.O. are of the same general nature.

NATIONAL UNIVERSITY OF IRELAND.

THE National University of Ireland carries on most of its educational work through three constituent colleges—one in Dublin, one in Cork, and one in Galway. Each of these provides a full medical curriculum, and all candidates for the medical degrees of the university must pass three of their five years of study at one or other of them. These years do not count except after matriculation or recognition as a student of the Medical Faculty obtained in some other fashion. The candidates at each constituent college are examined thereat by the university, and a common standard of education is secured by all courses of instruction and the regulations concerning them having to be approved by the Senate, after considering report thereon from the Board of Studies of the university. In addition to the ordinary degrees in medicine and surgery, the university grants those of Bachelor and Master of Obstetrics, Bachelor and Doctor of Science in Public Health, and Bachelor and Master in Dental Surgery, as well as diplomas in Public Health, in Mental Diseases, and in Tropical Medicine.

Further information can be obtained on application to the Registrar, National University of Ireland, Dublin.

The Irish Corporations.

THERE are three licensing bodies other than the Medical Faculties of the Universities, and in Dublin, just as in London, there is a Royal College of Physicians of Ireland, a Royal College of Surgeons in Ireland, and an Apothecaries' Hall. In Ireland, as in England, the two Colleges have formed an examining Conjoint Board, which is responsible for the recommendation of candidates to the two bodies for their respective licences. The Apothecaries' Hall of Ireland, like the Apothecaries' Society of London, gives its licence separately.

THE CONJOINT BOARD IN IRELAND.

THIS body requires of candidates the passage either of its own preliminary examination in the subjects of general education or proof that the candidate has passed one of the tests accepted by the General Medical Council.

PROFESSIONAL EXAMINATIONS.

There are four professional examinations, the first of which cannot be passed earlier than the end of the first winter session, nor the fourth before the conclusion of full five years of medical study. Before being admitted to any of them the candidate must show that he has studied the different subjects in practice and theory for the requisite periods, certificates to this effect being accepted from the authorities of most of the recognized medical schools at home and abroad. The first and second examinations deal respectively with (*a*) chemistry and physics, and (*b*) biology; and (*a*) anatomy, and (*b*) physiology and histology. All parts of these examinations, as also of the following one, which deals with (*a*) pathology, (*b*) materia medica, pharmacy, and therapeutics, (*c*) public health and forensic medicine, may be taken separately.

Final Examination.—This is divided into three divisions, which cannot be completed until at least four years have passed in medical studies other than those for the first examination, and five years at least since the beginning of the curriculum. The divisions are (*a*) medicine, including fevers, mental diseases, and diseases of children; (*b*) surgery, including ophthalmic and operative surgery; (*c*) midwifery, including diseases of women and newborn children, and the theory and practice of vaccination. Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the divisions (*a*), (*b*), or (*c*), provided he has completed his curriculum as far as concerns the division in which he presents himself.

Fees.—Preliminary Examination, £2 2s.; re-examination, £1 1s. First Professional Examination, £15 15s.; Second, £10 10s.; Third, £9 9s.; Final, £6 6s.; re-examination fee is £2 2s. for each division.

Further information can be obtained from Mr. Alfred Miller, Secretary of the Committee of Management, Royal College of Surgeons, 123, St. Stephen's Green, Dublin.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

THOSE whose names already appear on the *Medical Register* can obtain the separate Licence in Medicine of this College, and its Licence in Midwifery. In either case an examination has to be passed in the subjects indicated, questions on midwifery, hygiene, and jurisprudence being included in the examination for the Licence in Medicine. For the Licence in Midwifery practitioners of over five years' standing are exempted from examination by printed questions. The other grades of the College are Members and Fellows. The former are admitted after an examination which is open to all university graduates in medicine and Licentiates in medicine of Royal Colleges of Physicians, and deals with the general subjects of medicine. Fellows are selected, by vote, from among the Members of the College, irrespective of sex.

Fees.—For the Licence in Medicine, 15 guineas; Special Examination, £21; for the Licence in Midwifery, 8 guineas; Special Examination, 16 guineas. For the Membership, 20 guineas to a Licentiate of the College, 35 guineas to others; a special examination costs 10 guineas extra. The Fellowship, £35, in addition to stamp duty, £25.

Information as to special examinations and other matters can be obtained from the Registrar, the Royal College of Physicians, Kildare Street, Dublin.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

THIS body, besides granting a Licence in Surgery, admits those possessed of registrable surgical qualifications to its Fellowship under certain conditions. Its Licence is usually granted conjointly with that of the College of Physicians, but it is given separately to holders of a registrable qualification in medicine, provided the College is satisfied that adequate courses of study have been pursued, and provided its own provisional examination is passed. This examination is held on its behalf by the Conjoint Board, and is identical with the ordinary surgical portion of the examinations imposed by that body.

The Fellowship.—Candidates for the Fellowship must pass two examinations, of which the first is in anatomy (including dissections), physiology, and histology; and the second in surgery (including surgical anatomy) and pathology. Both examinations are partly written, partly practical, and partly viva voce; while the final examination includes the performance of operations. All subjects of either examination must be passed at one time, and to neither can a candidate be admitted who has been rejected in any of its subjects by any other licensing body within three months. Candidates are not admitted to the Primary Examination except on evidence that they have already passed an examination in anatomy, physiology, and histology, held by some university or other body whose degrees or licences entitle the holder to admission to the *Medical Register*; if, however, the candidate's name is on the Colonial or Foreign List in the *Medical Register*, at the discretion of the Council. Candidates for the Final Examination must be over 25 years of age, produce a certificate of general good conduct signed by two or more Fellows of the College, and, if successful, must make a declaration before admission to the effect that they do not conduct dispensing practices, and will not do so as long as they are Fellows.

Fees.—Candidates for the Licence pay 5 guineas for examination, which sum, if they pass, is counted as part of the fee payable on admission to the Licence, this being 25 guineas. Candidates for the Fellowship pay 5 guineas for each examination, the total of 10 guineas being reckoned as part of the fee payable on admission to the Fellowship. That fee is 25 guineas in the case of those who are already Licentiates, and 40 guineas in the case of others.

APOTHECARIES' HALL OF IRELAND.

A DIPLOMA is granted by this Hall which entitles the holder to be registered as a practitioner of medicine, surgery, and midwifery, and confers also the privileges of an apothecary. Two periods of dissection, each not less than six months, must be included, and twenty-seven months of hospital attendance, or its equivalent. Three professional examinations have to be passed; they are held three times a year. The Primary Examination deals with biology, physics, and chemistry, practical and theoretical; the Intermediate Examination is in practical anatomy and physiology, and histology and materia medica. A candidate who has passed tests in any of the subjects of these examinations before another licensing body is exempt from further examination in such subjects. The Intermediate Examination, Part II, consists of pathology, medical jurisprudence, and hygiene. The Final Examination deals with medicine, surgery, midwifery, and pharmacy. The Hall's own examination in all these subjects must be passed. Women candidates are eligible.

Fees.—Primary Examination, £10 10s.; Intermediate Examination £10 10s.; Final Examination, £21; Final alone, when the others have been passed elsewhere, £26 5s.

Application for other information should be made to the Registrar, 95, Merrion Square, Dublin.

MEDICAL SCHOOLS AND COLLEGES.

LONDON.

INFORMATION as to the fees at each of the various metropolitan medical schools, and the scholarships, prizes, and junior appointments which they offer, will be found in the following pages. The courses they provide are fundamentally the same, and in all of them the arrangements made are such as to meet the requirements of students of every class—of those who are aiming at the diplomas of the English Conjoint Board or the Apothecaries' Society, not less than of those who have London or other university degrees in view. At all, too, special facilities are offered to students who have commenced their professional education at Oxford or Cambridge. Apart from these facts, the only point to which attention can usefully be directed here is that on personal inquiry and investigation reason may be found for regarding the teaching accommodation and general arrangements for students at some schools as superior to those at others.

CHARING CROSS HOSPITAL.

THIS school, with its hospital, is situated in the centre of London, and is easily accessible. Primary and intermediate students attend lectures and practical work at King's College. The final studies are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for the qualifying examinations. Departments are also available for the other final subjects of bacteriology, clinical pathology, materia medica, toxicology, public health, operative surgery, and for research work. An Institute of Pathology, with a whole-time staff of scientific workers and fully equipped laboratories, has been established in the school. Students receive their training in preventive medicine, pathology, and bacteriology here, and are encouraged to undertake research.

Women students are admitted to the school and hospital upon the same terms and conditions as men, and after qualification are eligible for resident hospital appointments. A separate common room and a female attendant are provided, but beyond this no further distinction is made.

Fees.—An entrance fee of 10 guineas and 8 guineas is payable by full course and final course students respectively, and an annual fee of 35 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital. Membership of the Students' Club is included in these fees.

Further information may be obtained on application to the Dean of the Medical School, Charing Cross Hospital, London, W.C.2.

GUY'S HOSPITAL.

THE hospital contains 643 beds in constant occupation. Thirty-three beds are set apart for diseases of the eye, and 40 for the most urgent and interesting medical cases, which form the subjects of the weekly clinical lectures. There is a special ward of 32 beds for the reception of cases of diseases of women and for cases of difficult labour. Beds are also allotted to the throat and ear departments, the orthopaedic department, the department for the treatment of diseases of the genito-urinary system, and the children's department; there are also some special beds for the treatment of syphilis.

The residential college fronts the east gate of the hospital, providing accommodation for 60 resident students. This contains a dining hall, reading rooms, a library of general literature, and a gymnasium for the use of the residents and of the members of the Clubs Union. The athletic ground at Honor Oak Park is reached from the hospital in twenty minutes. The Gordon Museum of Pathology, the Wills Library, the Departments of Chemistry, Physics, Pathology, and Pharmacology, and the school buildings in general, afford opportunities for a liberal education and for research and provide the full curriculum for a medical qualification. Special classes are held for the First and Second Examinations for medical degrees of the University of London and for the first F.R.C.S. Eng. Special teaching is provided to meet the requirements of the Universities of London, Oxford, and Cambridge in general pathology and pharmacology.

Appointments.—All appointments are made according to the merits of the candidates, as determined by a committee of the medical staff. Sixteen out-patient officers, eight house-physicians, twenty assistant house-surgeons, eight house-surgeons, two ophthalmic house-surgeons, and nine resident obstetric assistants are appointed annually. The house-physicians and house-surgeons, obstetric residents, and ophthalmic house-surgeons hold office for six months each, and receive free board and lodging in the college. Every student is provided with rooms and commons in the hospital during the period of his "take in" as dresser. In addition to the clerkships and dresserships in the medical and surgical wards, students are appointed to the posts of clinical assistant, dresser, or clerk in the special departments of ophthalmology, laryngology, gynaecology, diseases of children, diseases of the nervous system, dermatology, otology, electricity, anaesthetics, dentistry, orthopaedics, vaccine, tuberculosis, and genito-urinary and venereal disease; clinical assistantships in the various special departments are open to post-graduates

Scholarships, Prizes, etc.—The following scholarships in Arts and Science are awarded. A. Open Junior Scholarships: (1) An Arts Scholarship of the value of £100, (2) a Science Scholarship of the value of £100; these are awarded annually in September. (3) A War Memorial Scholarship of the value of £200, awarded alternately in Arts and Science. This scholarship is open every other year; the next award will be made in September, 1922, in Science. B. Confined Scholarship in Science: A Junior Science Scholarship of the value of £100 is offered for competition, annually in September, to candidates who have attended preliminary science classes at this school. Candidates for these scholarships (male students only) must be under 21 years of age on October 1st of the year of the competition. C. Open Senior Science Scholarships: (1) A War Memorial Scholarship of the value of £80, (2) an Open Scholarship of the value of £80; both of these are awarded annually in September. Full particulars as to the scholarships may be obtained from the Dean of the Medical School. Junior prizes for general proficiency, £20, £15, £10; Hilton prize for Dissection, £5; Michael Harris prize for Anatomy, £10; Sands-Cox Scholarship for Physiology, £15 for three years; Wooldridge Memorial prize for Physiology, £10; Beaney prize for Pathology, £34; Treasurer's gold medal in Medicine, Treasurer's gold medal in Surgery, and the Golding-Bird gold medal and scholarship for Bacteriology (£20), are awarded annually after competitive examination. The Gull Studentship in Pathology of the value of £250 per annum, the Beaney Scholarship in Materia Medica, of the annual value of about £50, and the Anderson Demonstratorship in Clinical Chemistry, value £150 per annum, are awarded without examination to enable research to be carried on in these subjects. An Arthur Durham Travelling Scholarship of £100 is awarded triennially. The Griffiths Demonstratorship in Pathology of the value of £320 per annum, and the Hilda and Ronald Poulton Fellowship, value £140 per annum, are awarded without examination.

An annual composition fee is paid by all students until a registrable qualification is obtained. Further information may be obtained from the Dean of the Medical School, Guy's Hospital, London Bridge, S.E.1.

KING'S COLLEGE HOSPITAL.

THE medical school of this hospital, which is situated at Denmark Hill, deals with the advanced or final subjects of the medical curriculum. The hospital was opened in 1913, and is the most modern and best equipped in England. In the education at the hospital a special feature has always been the individual attention given to each student. The studies are co-ordinated under the direction of senior members of the honorary staff, assisted by medical, surgical, and obstetric tutors. There are special departments for diseases of women and children, nervous diseases, ophthalmology, otology, laryngology and rhinology, dermatology, radiology, and physico-therapy. The laboratory and pathological department are specially noteworthy.

Appointments.—Fourteen resident medical and surgical officers are appointed half-yearly, as well as dressers and clerks in the wards, out-patient departments, *post-mortem* rooms, and special departments. Each of the special departments has several clinical assistants. There are three registrars and four tutors, all of whom receive salaries. The Clubs and Societies Union combines athletics, music, and other societies connected with the school, and provides also a common room.

Scholarships, etc.—At entrance: Arts Scholarship, £50; Science Scholarship, £50. At commencement of Final Studies: Anatomy and Physiology Scholarship, £50; Pathology and Pharmacology Scholarship, £50; two Burney Yeo Scholarships, each £80 (for Oxford and Cambridge students); Senior Scholarship, £40; Todd Prize, Tanner Prize, Class Prizes and Medals.

Fees.—The composition fee is 93 guineas if paid in one sum. Entrance fee 10 guineas, includes membership of the Clubs and Societies Union.

The calendar of the school can be obtained on application to the Dean, H. Willoughby Lyle, M.D., F.R.C.S., or to the Secretary, S. C. Ranner, M.A., King's College Hospital, Denmark Hill, S.E.5.

THE LONDON HOSPITAL.

THIS hospital, with its medical college and dental school, is situated in the Mile End Road, E.1. The hospital contains 950 beds, and during 1921, 18,770 patients passed through the wards and 108,153 out-patients received treatment. Of the latter number, 32,036 received treatment in the departments for diseases of the ear, nose, throat, eye, skin, and teeth, and in the obstetric, orthopaedic, venereal, radiological, electro- and physico-therapeutical and inoculation departments. The number of major operations which were performed amounted to 7,466.

The hospital presents, therefore, a large field for clinical instruction, and in its wards and out-patient and special departments exceptional opportunities are afforded for acquiring an extensive and practical experience of all phases of disease.

The clinical units in medicine and surgery co-ordinate the teaching of their subjects in the hospital. The directors and their assistants give practical instruction in elementary clinical medicine and surgery to all students before they are allowed to enter the wards and out-patient department. Senior students are encouraged to work with the units. Special courses of lectures and demonstrations are arranged in medicine and surgery and in their ancillary subjects. Opportunities for research are provided under the supervision of the staffs of the units.

All the departments are modern and adapted for the teaching of all subjects in the various curricula. Special courses of instruction are held in preparation for the examinations of the University of London, for the Fellowship of the Royal College of Surgeons, and for the Membership of the Royal College of Physicians. A course of post-graduate training is held in the work of school clinics for school medical officers (actual and intending) and others. Special entries can be made for the medical and surgical practice of the hospital. A residential hostel on hospital ground is provided for the convenience of students who wish to live near the wards and casualty departments. The athletic ground, of over thirteen acres, is at Highams Park, and is open to all members of the Clubs Union.

Appointments.—The salaried appointments open to past students of the Hospital are those of assistants to the clinical units, medical registrars, surgical registrars, obstetric registrar; medical, surgical, and obstetric tutors; clinical assistants in the medical, surgical, ophthalmic, aural, light and skin, orthopaedic, and electrical departments, and in the Pathological Institute. There are appointed annually 4 resident accoucheurs, 14 resident house-physicians, and 24 resident house-surgeons, 14 resident receiving-room officers, 8 resident emergency officers, 8 clinical assistants to the medical out-patient department, and 16 clinical assistants to the surgical out-patient department, also paid and unpaid clinical assistants in the various special departments. In addition, there are numerous assistantships, clerkships, and dresserships in the departments of medicine, surgery, gynaecology, and obstetrics.

Scholarships and Prizes.—The following is a list of scholarships and prizes:—At Entrance: Price Scholarship in Science, £100; Price Scholarship in Anatomy and Physiology, £100; Oxford and Cambridge Universities, £52 10s.; Entrance Scholarship in Science, £50; Epsom Scholarship, "Free Medical Education." After Entrance: Buxton Prize in Anatomy and Physiology, £31 10s.; Letheby Prizes in Organic Chemistry and Chemical Pathology, £25; Prizes in Clinical Medicine, Surgery, and Obstetrics and Gynaecology, £20 each; Duckworth Nelson Prize, in Practical Medicine and Surgery, £10; Hutchinson Prize in Clinical Surgery, £40; Sutton Prize in Pathology, £20; Sir Andrew Clark Prize in Clinical Medicine and Pathology, £26; Anderson Prizes in Elementary Clinical Medicine, £20; Dressers' Prizes, £40; Practical Anatomy Prizes, £10; Arnold Thompson Prize, in Medical and Surgical Diseases of Children, £15; Harold Fink Prize in Dental Surgery, £5 5s. The London Hospital Medical College and the Eliza Ann Alston Medical Research Funds amount to over £26,000.

Fees.—Entrance fee, 20 or 15 guineas, according to examinations passed; annual fee, 40 guineas.

Full information may be obtained from the Dean at the London Hospital Medical College, Mile End, E.1.

THE MIDDLESEX HOSPITAL.

THE school and hospital are in Mortimer Street, W., close to Oxford Circus, Goodge Street, and Great Portland Street stations. There are prosperous athletic clubs and a gymnasium within the hospital precincts. The hospital contains over 450 beds, including a wing containing 92 beds for patients suffering from cancer. There are special wards for maternity and gynaecological cases, for cases of venereal disease and for diseases of children and of the skin and eye.

The medical school, which includes the Bland-Sutton Institute of Pathology and the cancer research laboratories, is completely equipped for teaching the entire medical curriculum, including the preliminary science course. The Bland-Sutton Institute, under the charge of the Professor of Pathology, contains large pathological and public health laboratories, and smaller rooms for original investigation as well as a pathological and anatomical museum. Bacteriological, chemical and microscopic examinations of material from the wards, operating theatres, and out-patient departments are carried out in the laboratories, and senior students are eligible for clerkships in connexion with this work. Every facility is given for original research. The cancer research laboratories offer unrivalled opportunities for the study of this disease, in both its clinical and pathological aspects. Several valuable scholarships are awarded in this connexion. Students also receive special instruction in the electro-therapeutic and electro-cardiographic departments.

Appointments.—Twenty-two resident appointments are open annually for competition among students of the hospital. The officers reside and board in the residential college free of expense. Two casualty medical and two casualty surgical officers, and two resident officers to the special departments, are appointed annually. Eight house-surgeons are appointed every year at intervals of two months, after examination; six house-physicians are also appointed annually at similar intervals. An obstetric and gynaecological house-surgeon is appointed every six months. In the out-patient departments the appointments are: clerk and dresser to the physicians and surgeons to out-patients; clerk in the departments for diseases of the skin and nervous diseases; dressers to the department for diseases of women, to the ophthalmic surgeon, to the throat and ear department, and to the dental surgeon. Extern midwifery clerks and *post-mortem* clerks are also appointed. The appointments are so arranged that every student may, during his course, hold all the out-patient and in-patient clerkships and dresserships. Students must have held an out-patient clerkship and dresserships before holding in-patient clerkships or dresserships. Non-resident qualified clinical assistants are appointed in the Medical, Surgical, Skin, Neurological, Ophthalmic, Throat and Ear, Odontological, Children's, and Electro-therapeutic Out-patient departments.

Scholarships.—There are three Entrance Scholarships, value £100, £50, and £25 respectively. An annual Entrance Scholarship, of the value of £50, is open to students of the universities of the United Kingdom who have completed the curriculum for, or passed the examinations in, anatomy and physiology. Students joining the school in the previous April are eligible. The Freer Lucas Scholarship is annually awarded on the nomination of the head master to a pupil of Epsom College who has passed the first examination for medical degrees (Preliminary Scientific Examination). There is also a scholarship, value £50, awarded annually to students from New Zealand. In addition to the Entrance Scholarships, there are numerous other valuable scholarships, prizes, and exhibitions open to students of the hospital, including the Brodrip Scholarships, value £60 and £40; Lyell Gold Medal and Scholarship, value £55 5s.; Freeman Scholarship, value £30; John Murray Gold Medal and Scholarship, value £25; Hetley Clinical Prize, value £25; Leopold Hudson Prize, value 11 guineas; and the Second Year's Exhibition, value 10 guineas.

Fees.—(*a*) Preliminary Science students: For one year or less, £15. (*b*) Students who have completed the Preliminary Science course: Entrance fee, £15; four annual fees of £42. The annual fee for further attendance at the medical school, if a registrable qualification has not been obtained, is £21. Three-quarters, one-half, or one quarter of the last annual fee may, at the discretion of the School Council, be returned if the student obtains a registrable qualification within three, six, or nine months of the annual payment becoming due. (*c*) Oxford and Cambridge and other students who have completed the Intermediate course: Entrance fee, £10; two annual fees of £42; further annual fees as above.

Further information may be obtained from the Dean.

ST. BARTHOLOMEW'S HOSPITAL.

THIS institution fills one side of Smithfield and Giltspur Street, sharing with the Post Office buildings a large island of ground separated practically from all other buildings; it is on the edge of the City, and easily reached from all parts of London. The hospital contains 757 beds. Extensive new buildings, opened in July, 1907, occupy part of the ground acquired from the old Bluecoat School, and these materially enhance the attractions of the hospital as a place of medical study. The medical school buildings, including the library and the chemical, physical, biological, and physiological laboratories, and anatomical department, have now at their side a very large building, which includes club rooms for the Students' Union, a writing room, luncheon and dining halls, new quarters for the resident staff, and an out-patient department and accommodation for special departments of such large size as to be unsurpassed by any hospital in the kingdom. During the year 1909 a second block of new buildings was completed. These form the pathological department, and include, in addition to a new extensive *post-mortem* room, large and well-equipped laboratories for clinical pathology, pathological histology, bacteriology, and chemical pathology, altogether forming the most complete pathological department in the country. Within the precincts of the hospital also there is a residential college for a large number of students. The Students' Union owns, moreover, grounds of some 10 acres in extent for recreative purposes at Winchmore Hill, which is easily accessible from the hospital.

Special classes are held for students preparing for the Preliminary Scientific and other examinations, for the M.B., M.D. of the Universities of London, Oxford, and Cambridge, and for the higher surgical degrees at the same universities, including the M.Ch.Oxon., M.Ch.Cantab., M.S.Lond., and F.R.C.S.Eng. Special laboratory instruction for the D.P.H. of Cambridge, Oxford, Durham, and London is also given.

Clinical Units.—Special Clinical Units have been established in Medicine and Surgery, each under the charge of a professor and director who devotes the whole of his time to the purpose of hospital practice, teaching, and research. In each unit there are an assistant director and four assistants, for whom special laboratory accommodation is provided. The appointments of clerks and dressers are open to all students in these departments, and arrangements are made for all students to study in these units during a part of their clinical course.

Appointments.—Clinical clerks to the physicians and to the physician-accoucheur, and dressers to the surgeons and in the casualty department; are chosen from the students: clerks and dressers are also selected from the students to attend in the out-patient rooms, in the special departments (Ophthalmic, Orthopaedic, Gynaecological, Children's, Laryngological, Aural, Dermatological, Venereal, Electrical, and Dental), and in the *post-mortem* room. Chief assistants and clinical assistants are selected from qualified men appointed yearly to help in the general medical, surgical, and in the special departments. Ten house-physicians and ten house-surgeons are appointed annually. During their first six months of office they act as "Junior" house-physicians and house-surgeons, and receive a salary of £80 a year. During their second six months they become "Senior" house-physicians and house-surgeons, and are provided with rooms by the hospital authorities, and receive a salary of £80 a year. A resident midwifery assistant, an ophthalmic house-surgeon, a house surgeon to the skin and venereal department, and a house-surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year. Three resident assistant anaesthetists are appointed each six months. Each is paid a salary at the rate of £80 per annum, and is provided with board and rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year.

Scholarships.—Four entrance Scholarships are annually awarded after an examination held in September. The subjects of examination and conditions of eligibility for these scholarships are: (1) One scholarship, value £75, in not fewer than two and not more than three of the following subjects, Chemistry, Physics, Botany, Zoology, Physiology, and Anatomy, limited to students under 25 years of age who have not entered on the medical or surgical practice of any London medical school. (2) One scholarship, value £100, in not fewer than three of the following subjects, Chemistry, Physics, Botany, Zoology, and Physiology, limited to students under 21 years of age who have not entered on the medical or surgical practice of any London medical school. (3) The entrance scholarship in Arts, of the value of £100, will be given in Latin and mathematics, with one other language—Greek, French, or German. (4) The Jeffreson Exhibition in Mathematics, Latin, and one other language—Greek, French, or German—of the value of £50. The value of the scholarships and prizes is over £900 annually.

Further information and a handbook can be obtained on application to the Dean of the Medical College, St. Bartholomew's Hospital, E.C.1.

ST. GEORGE'S HOSPITAL.

THIS school is at Hyde Park Corner, and is carried on in connexion with St. George's Hospital, an institution having a service of 436 beds, of which 100 are at the convalescent hospital at Wimbledon. It provides for the instruction of its students in the preliminary and intermediate subjects of the curriculum at the teaching centres of London University established at King's College and University College. The school at Hyde Park Corner is devoted entirely to the teaching of clinical subjects, great attention being paid by the members of the staff to individual teaching. A number of special courses are given, in which the requirements of university and all other examinations receive careful attention.

The St. George's Hospital Club consists of an amalgamation club, with smoking and luncheon rooms on the hospital premises, and other students' clubs, with an athletic ground at Wimbledon. Students have the advantage of a well-filled library of medical and scientific books. A register of accredited apartments, and a list of medical men and others willing to receive St. George's men as boarders may be seen on application to the Dean.

Appointments.—Four house-physicians, four house surgeons, and two casualty officers are appointed every six months. The house officers receive salaries at the rate of £50 per annum, in addition to board and residence. The casualty officers are non-resident, and receive salaries at the rate of £200 per annum. After the student has held a house appointment, the following are among others open to him: Medical registrarship at £200 per annum; surgical registrarship at £200 per annum; assistant curatorship of the museum, £100 per annum; obstetric assistantship, resident, at £50 per annum; the post of resident anaesthetist at £100 per annum; the posts (2) of junior anaesthetist, each at £30 per annum.

Scholarships.—Two university entrance scholarships in anatomy and physiology (90 guineas and £70) are awarded at the commencement of each winter session. The William Brown Exhibition of the value of £135 per annum (tenable for two years) is awarded by examination to a perpetual pupil of the hospital every second year. The William Brown Exhibition of £49 (tenable for three years) is awarded by examination to a perpetual pupil of the hospital every third year. Other prizes to the value of £200 are awarded annually to the students of the hospital.

Fees.—First year, £36 15s.; second and third years, £36 15s. each. For the course of clinical study, in the fourth and subsequent years, entrance fee, £10 10s; annual composition fee, £42. No entrance fee is payable by St. George's students who have studied at King's and University Colleges.

Further information may be obtained from the Dean of the Medical College.

ST. MARY'S HOSPITAL.

THIS hospital and medical school are situated close to Paddington Station (G.W.R.), having on one side a poor district of 500,000 persons, and on the other side the residential district of Kensington and Bayswater. The hospital contains 305 beds, and, by a scheme of affiliation, for teaching purposes, of the Paddington Infirmary, Paddington Green Children's Hospital, and Maida Vale Hospital for Nervous Diseases, the teaching facilities extend over 1,000 beds. The athletic ground (10 acres) is situated at Wembley, and can be reached in thirty minutes by a constant service of trains; a large pavilion has recently been erected.

Clinical Facilities.—Clinical Units in Medicine and Surgery were established in 1920, and have now been formally recognized by the University Grants Committee, St. Mary's being

one of the six medical schools in London which enjoy this privilege. Lying-in beds have been recently added, and provide special facilities for the teaching of Practical Midwifery.

Institute of Pathology and Research.—Students specially interested in pathology and bacteriology have singular advantages at St. Mary's. The Institute comprises seven special departments, the whole being under the personal direction of Sir Almroth Wright, F.R.S. Three research scholarships of £200 each are awarded annually to students working in the departments of the Institute; and research beds are provided. Clerkships in Pathology and Bacteriology and Chemical Pathology, lasting for a period of three months, are open to students of the fifth year, and enable them to carry out the pathological and bacteriolcgical investigations of the wards, and learn the necessary technique under supervision. Seventy-two of these posts are available annually.

Complete Curriculum.—The medical school provides complete courses of instruction, and students can join at once on passing a Preliminary Examination in Arts. Terms begin in October, January, and April.

Entrance Scholarships.—Five Scholarships (value £100, £52 10s., £52 10s., £50, £50) are awarded annually by competitive examination in September.

Fees.—Composition fee for entire curriculum (5½ years), £200 in one sum, or £210 by five annual instalments. Composition fee for clinical curriculum (2½ years), 90 guineas in one sum, or 95 guineas by two annual instalments. As an alternative, students may pay an annual fee of 40 guineas, with an entrance fee of 10 guineas.

St. Thomas's Hospital.

This school and hospital are situated in Lambeth, on the south bank of the Thames, facing the Houses of Parliament, and form one of the well-known architectural features of London.

The school buildings, which are separated from the hospital by a quadrangle, comprise lecture theatres, laboratories, and classrooms well adapted for the modern teaching of large bodies of students in the subjects of the medical curriculum. A splendid library and reading room and a complete museum are open to all students from 9 a.m. to 5 p.m., on Saturdays to 1 p.m. The Students' Club premises contain a dining room and smoking and reading room supplied with daily and illustrated weekly papers, and a gymnasium. Good meals are obtainable at a moderate tariff. The Terrace affords facilities for exercise and recreation. The sports ground, of more than nine acres in extent, is at Chiswick. It can be reached in forty minutes from the hospital; it is admirably adapted for football, cricket, lawn tennis, and athletic sports.

The hospital proper contains 632 beds. In addition to the ordinary provisions of a great hospital there are connected with the out-patient department physicians' and surgeons' rooms provided with ample sitting accommodation, so that students are enabled to follow closely the practice and teaching of the out-patient staff. There is a full complement of special departments, and connected with the hospital a special tuberculosis department gives opportunity for instruction of students. There is a clinical theatre, centrally situated, so as to facilitate the illustration of lectures by patients from the wards and out-patient room; it is arranged also for lantern demonstrations. The maternity ward, containing 20 beds, gives students full facilities for maternity training, under supervision, within the precincts of the hospital. This obviates any necessity for supplementary instruction elsewhere, and fully prepares the student for the extern maternity practice of the hospital district. The revised regulations of the examining bodies can thus be fully complied with.

Appointments.—All hospital appointments are open to students without charge. A resident assistant physician, a resident assistant surgeon, and a resident anaesthetist are appointed annually at a salary of £200 each per annum. Two hospital registrars, medical and surgical, at an annual salary of £250 each, are appointed yearly. The tenure of these offices may be renewed for a term not exceeding two years. An obstetric tutor and registrar, an ophthalmic registrar (at an annual salary of £50 each), and an orthopaedic registrar (unpaid) are appointed yearly. Ten resident casualty officers and anaesthetists (including two senior) are appointed every six months. Seven house-physicians (including two obstetric house-physicians, and one house-physician to the department of diseases of children) and eight house-surgeons (including two ophthalmic house-surgeons, one orthopaedic house-surgeon, and one house-surgeon to the ear, nose and throat department) are appointed every six months. Eight clinical assistants in the special departments are appointed every three months, and hold office for six months if recommended for re-election. Two research assistants (bacteriological and chemical) are paid £200 per annum each. Clinical clerkships and dresserships to the in-patient and out-patient departments are available to the number of 400 each year.

Scholarships.—There are five entrance Scholarships: Two in Arts, giving one year's free tuition; one of £150 and one of £60, in Chemistry, Physics, and Biology, for students who have not received instruction in Anatomy or Physiology; one of £100 in any two of the following subjects: Anatomy, Physiology, or Chemistry, for students who have completed their examinations in Anatomy and Physiology, for a medical degree in any of the universities of the United Kingdom or the colonies, and have not entered as clinical students in any London medical school. Valuable scholarships, prizes, and medals are open for competition throughout the whole career of a student, including the Louis Jenner Research Scholarship of the annual value of £60 for Pathological Research.

Fees.—The annual fees are: For each year of study, £50. These fees cover all tutorial classes, but do not include instruction in infectious fevers, pharmacy, and vaccination. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the Medical Secretary.

Special courses of instruction are given for various examinations, and a register of lodgings is kept at the school. Further information may be obtained from the Medical Secretary of the School, St. Thomas's Hospital, Albert Embankment, S.E.1.

University College Hospital.

The school, which forms part of the Corporation of University College Hospital, is in immediate proximity to the hospital in University Street, and opposite University College. It comprises departments of medicine and clinical medicine, surgery and clinical surgery, midwifery and gynaecology, pathology including morbid anatomy, chemical pathology and bacteriology, cardiography, forensic medicine, mental physiology and mental diseases, dental surgery, practical pharmacy, and other departments for the study of special diseases, such as those of the eye, skin, ear and throat, venereal diseases, and for instruction in anaesthetics, electro-therapeutics, and skiagraphy. The Hospital and School have acquired the National Dental Hospital and College as their Dental Departments, thus providing every facility for the study of dental subjects. The Royal Ear Hospital, Dean Street, Soho, has also been amalgamated as the Ear, Nose, and Throat Department.

The school thus provides the final course of study for the degrees of the Universities of London, Oxford, Cambridge, Durham, and other British Universities, and for the diplomas of the Royal College of Physicians and Surgeons in Medicine and Dental Surgery, and the Licence of the Society of Apothecaries. Special bacteriological classes are also held in preparation for the various diplomas of public health. Each department is also equipped for more advanced work, and provides facilities for research.

Whole-time directors of Medical and Surgical Units have recently been appointed, and are responsible for the systematic teaching of the principles of medicine and surgery. The teaching of practical medicine and surgery and of their special branches continues to be conducted by the honorary staff of the hospital.

The school has recently been the recipient of a large donation from the Rockefeller Foundation, which will enable it largely to increase its facilities for clinical and pathological study, and also to establish an Obstetrical Unit on similar lines to those of Medicine and Surgery.

Scholarships.—The following scholarships and prizes are open to competition: Two Entrance Exhibitions of 112 guineas each, awarded after a competitive examination in anatomy and physiology; Radcliffe Crocker Travelling Scholarship in dermatology for one year, value about £280; the Graham Scholarship in pathology of a sum not exceeding £400 per annum; Leslie Pearce Gould Research Scholarship in surgery for one year, value about £200; the Atkinson Morley Scholarship of £45 a year for three years, awarded after examination in the theory and practice of surgery; the Atchison Scholarship of £55 a year for two years for general proficiency in medical studies; the Magrath Clinical Scholarship, value about £100; the Filliter Exhibition in pathology of £30; the Percival Alleyn Prize for the advancement of surgery by research, value about £60; the Graham Gold Medal for research work; four Fellows Medals in clinical medicine; Liston Medals in clinical surgery; the Bruce Medal in pathology and surgery; two Tuke Medals in pathology; and the Erichsen Prize for practical surgery.

Fees.—The fee for the full course of final studies at the school is 112 guineas if paid in one sum, or 115 guineas if paid in two instalments. Fees for vaccination and fevers not included.

Appointment.—The qualified appointments, in addition to a number of posts as house-physicians and house-surgeons and obstetric assistants, include the appointments of resident medical officer, surgical registrar, obstetric registrar, casualty medical officers, casualty surgical officers, assistants in ear, nose and throat, ophthalmic, skin and venereal diseases departments, and house anaesthetists.

Particulars of general and special courses can be obtained on application to the Dean of the Medical School, University College Hospital, University Street, W.C.1.

Westminster Hospital.

This school, with its hospital, situate in Broad Sanctuary, opposite Westminster Abbey, provides for the education of its students in the preliminary and intermediate subjects of the University of London at King's College. The rest of the work is done in the school buildings near the hospital. The number of in-patients averages 3,000 and out-patients upwards of 30,000 annually, and the hospital and school afford ample facilities for instruction in all branches of medicine and surgery.

Appointments.—A medical, surgical, and obstetric registrar are appointed annually, each with a salary of £50. Two house-physicians, three house-surgeons, one assistant house-physician, one assistant house-surgeon, and a resident obstetric assistant are appointed after examination, and are provided with rooms, commons, and salary of £50 per annum, except the assistant house-physician and the assistant house-surgeon, who are provided with commons only. The assistant house-physician after three months' service becomes house-physician for a further period of six months, and the assistant house surgeon after three months' service becomes house-surgeon for a further period of six months. Clinical assistants to the assistant physicians and assistant surgeons, and to the officers in charge of special departments, are appointed from among qualified students. Every student must perform the duties of out-patient dresser for four months, and afterwards hold the office of in-patient dresser for four months. He is also required to serve two terms of four months each as medical clinical clerk to in-patient physician and one term as gynaecological clinical clerk. Two pathological clerks are appointed every four months to assist in the *post mortem* room. No student is eligible as an in-patient dresser or clinical clerk until he has passed the Second Examination of the Conjoint Board, or an equivalent examination. Clerks and dressers in the special departments of hospital practice are periodically appointed. So far as vacancies permit, students of other hospitals are admitted to in-patients' dresserships or clerkships.

Scholarships.—The following scholarships are offered for competition during the year 1922-23: In the summer session two natural science scholarships, £60 and £30, and one in Arts, £60. In the winter session two scholarships in anatomy and physiology, £50 each. In the spring two scholarships in anatomy and physiology, £50 each.

Fees.—The annual composition fee is 35 guineas. An entrance fee of 10 guineas is payable by all students—namely, primary and intermediate students, £10 10s.; students entering for the final subjects, £8 8s. These fees include subscriptions for membership of the Clubs Union.

Further information and a prospectus can be obtained on application to the Dean at the Westminster Hospital, Westminster, S.W.1.

The Governors of the Hospital propose in the near future to carry out extensive improvements and alterations to the Hospital which will render it a still more efficient teaching institution.

London (Royal Free Hospital) School of Medicine for Women.

The school is situated at 8, Hunter Street, Brunswick Square, W.C.1, close to the Royal Free Hospital. An agreement has also been made under which a certain number of students of the school can receive clinical instruction at St. Mary's Hospital, Paddington. It is, like all the other London schools which have so far been mentioned, one of the constituent schools of London University. The school buildings have recently been enlarged. The laboratories are extensive and well lighted, and are fully equipped for the examination courses of the University of London. Research laboratories are attached to all departments. A large, well-equipped library, common room, Union room, and refectory are provided for the use of students. Resident accommodation for 50 students is provided in students' chambers attached to the school.

The Royal Free Hospital, Gray's Inn Road, W.C.1, has 240 beds, all of which are available for clinical instruction. A new block contains the Obstetrical and Gynaecological Unit, which, with the Marlborough Maternity Department, controls 68 beds. There are separate departments for diseases of the eye, ear, and skin, massage, electrical and *x*-ray work, dentistry, and casualty. The instruction given covers the full curriculum for the M.B., B.S. degrees of the University of London. Students attending at St. Mary's Hospital (305 beds) are admitted to the full clinical course and educational facilities of that hospital. Students attend the practice of one of the fever hospitals of the Metropolitan Asylums Board and receive special instruction in lunacy at Bethlem Hospital; they are also admitted to the practice of a number of special hospitals.

Arrangements are made for students to hold clerkships and dresserships at the Elizabeth Garrett Anderson Hospital, the Cancer Hospital, Hospital for Sick Children, the National Hospital for Nervous Diseases, and the South London Hospital. The work of the school includes preparation for the Primary Fellowship examination, and also for the medical school and general hospital course for dental students.

Appointments.—Qualified students of the school can obtain appointments as house-physicians and house surgeons, obstetric assistants, surgical, gynaecological, and medical registrars, assistant pathologists, assistant anaesthetists, medical electrician, skiagrapher, and clinical assistants and demonstrators in various subjects.

Scholarships.—The Isabel Thorne Entrance Scholarship value £30, the St. Dunstan's Medical Exhibition value £60 a year for three years, which may be extended to five years, and the Mabel Sharman-Crawford Scholarship value £.0 a year for four years, are offered for competition in each year. The Sir Owen Roberts Memorial Scholarship of the value of £75 a year for four years, the Mrs. George M. Smith Scholarship of the value of £50 a year for three years, which may be extended to five years, the Dr. Margaret Todd Scholarship of the value of £37 10s. a year for four years, and the Sarah Holborn Scholarship of the value of £27 a year for three years, which may be extended to five years, are awarded in alternate years. The Bostock Scholarship, value £50 a year for two or four years, is awarded by the Reid Trustees on the result of an examination held in May by the University of London every fourth year. The holder of the scholarship must enter the London School of Medicine for Women. The Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, of the value of £25 a year for four years, is awarded every fourth year. The Ellen Walker Bursary of £25 for two years is awarded each year to a student beginning her fourth year of study. The John Byron Bursary of £20 a year for two years, the Helen Frideaux Prize of £40, the Mabel Webb Research Scholarship of £50 for two years, the Fanny Butler Scholarship of £4 10s. a year for four years, together with many other scholarships and prizes, are offered on sundry conditions. The Dr. Edith Pechey-Phipson Post-Graduate Scholarship of £100 is awarded annually. Various missionary societies also offer scholarships on certain conditions, and assist ladies who wish to go to India and other countries as medical missionaries.

Fees.—Courses for the University of London degrees and the diplomas of the Conjoint Board in England, and other qualifications: First medical examination, £35, course for second and third, £205; course after the second medical examination, £115. These sums include library and laboratory fees.

The Students' Union exists to promote corporate action of the students on matters of common interest, and to promote and maintain athletic and other clubs. All students are required to become members of the Union.

Further information can be obtained from the Warden and Secretary.

King's College.

Since the incorporation of King's College in the University of London the instruction given to medical students is carried out there in the classes of the Faculty of Science (Medical Division), and deals only with the subjects of the preliminary and intermediate parts of the curriculum. King's College Hospital (see p. 427) is now a separate institution, and the studies for the final examinations only are carried out there. A special class for the Matriculation Examination is also held.

There is a large athletic ground at Mitcham, managed by the Students' Union Society.

Scholarships.—The entrance Scholarships are: 1. Two Warneford Scholarships, each £30 for four years; subjects—selected from mathematics, classics, divinity, and science. 2. One Sambrook Exhibition of £25 for two years, open; subjects of examination—mathematics, elementary physics, inorganic chemistry, botany, zoology, and geology. The holders of the preceding awards must proceed to King's College Hospital. 3. Worsley, £100, paid in five

annual instalments. 4. Rabbeth Scholarship, value £20, in July, for the best student of the first year. 5. Second year's scholarship, value £20, for the best student of the second year. 6. Daniell Scholarship, £40, awarded on the results of the University Honours Examination.

Women Students.—King's College is now open to women students for the Preliminary and Intermediate portions of the medical curriculum. Applications for admission should be made to the Dean.

Information as to fees can be obtained from the Dean of the Medical Faculty at the College, Strand, W.C.2.

Information as to scholarships and subjects of examination can be obtained from the Secretary of the College.

University College.

THIS institution, one of the principal component parts of the University of London, possesses a Faculty of Medical Sciences whose work covers all the subjects included in the group commonly known as the preliminary medical sciences—namely, physics, chemistry, botany, and zoology; and also the intermediate medical sciences—namely, anatomy, physiology, and pharmacology. The Department of Hygiene and Public Health prepares for the diplomas in public health of the Royal Colleges and of the various universities. Research work is undertaken in all the above-named departments. The College undertakes the education of students in all the subjects mentioned, leaving them free to complete their education in the strictly professional subjects—medicine, surgery, and the like—at any one of the recognized schools of advanced medical studies. The work is somewhat differently arranged, according to whether the student has in view the degrees of the University of London or the diplomas of the Royal Colleges. In either case the whole work to be done is divided into courses devised to meet the requirements of different examinations, and students can join the College for any of them. Women students are admitted to all courses on the same terms as men. The general arrangements for the benefit of students include membership of the Union Society or the Women's Union Society with the College gymnasium and the athletic grounds. There is also a collegiate residence for about fifty-five men students at Ealing, and for about seventy women students at Byng Place, Gordon Square.

Scholarships.—The scholarships and exhibitions obtainable include the Bucknill Scholarship, value 135 guineas, in chemistry, physics, botany, and zoology (the successful student must complete his work at University College Hospital Medical School), and two entrance exhibitions in the same subjects, each of the value of 55 guineas.

Fees.—The fees for the courses covering the work of the First Examination for medical degrees of the University of London, and in both parts of the Second Examination, amount to 115 guineas. The fees for the courses covering the corresponding examinations held by the Conjoint Board in England also amount to 115 guineas. These fees may be divided into payments for the different courses which it may be desired to take out, but do not cover tuition for more than a stated period.

A handbook specially relating to this faculty may be obtained on application to the Secretary of University College, Gower Street, London, W.C.1.

THE PROVINCES.

THERE are in England and Wales, not counting London, ten medical schools, each, with one exception, supplying instruction in the full medical curriculum. Accounts of them here follow. In several cases there is appended information concerning hospitals other than those directly connected with the school in question; such hospitals, officially and unofficially, play a part in the education which the students of the school receive, and in any case serve as places of additional or post-graduate study.

Oxford and Cambridge.

BOTH at Oxford and Cambridge there are medical schools which furnish unsurpassed opportunities for obtaining a good knowledge of the preliminary sciences and of anatomy, physiology, and pathology. The laboratories are excellently furnished, and the teaching staffs most distinguished. Both schools provide a full medical curriculum, and there is no essential reason why the student should not complete his career at either of them, but this is not commonly done. The local hospitals, though well equipped, are comparatively small. The university authorities therefore encourage the students, as soon as they have completed the earlier examinations and taken a degree in Arts, to join some London school, and thus spend the time of their preparation for the final examinations in a city where the opportunities for gaining clinical knowledge are greater and more varied. A considerable proportion of Oxford and Cambridge medical students take the London Conjoint diplomas before graduating in medicine and surgery at their own university.

Birmingham.

THE school in this city is carried on by the Medical Faculty of the University of Birmingham, its students having an adequate number of good laboratories, classrooms, and other necessaries devoted to their use by the university. The clinical work is done at the General and Queen's Hospitals, which are amalgamated for this purpose. Together they have upwards of 600 beds for medical, surgical, and special cases, and with an array of special departments of all kinds, including one for lying-in women. Clinical instruction is given in the wards and out-patient and special departments daily, and formal clinical lectures delivered weekly throughout the winter and summer sessions. Special tutorial classes are also held alike for the degrees of Birmingham and some other universities and for the diplomas of corporations.

Appointments.—The large number of appointments open to past or other students includes the following:—At the General Hospital: surgical registrar, £200 a year; one resident medical officer, salary £155 a year; one resident surgical officer, salary £180 a year; one resident pathologist, salary £100 a year; two visiting anaesthetists, salary £50 a year; four house-surgeons, office tenable for nine months, £100 a year; one house-surgeon to the gynaecological and one to the special departments, each tenable for six months, £100 a year; three house-physicians, post tenable for six months, £100 a year. At the Queen's Hospital: three house-physicians and three house-surgeons (posts vacant in January and April); one obstetric and one ophthalmic house-surgeon (posts vacant in April and October). These appointments are tenable for six months. Salaries at the rate of £90 per annum, with board, lodging, and washing. One resident dresser, tenable for three months; candidates must previously have attended their third year lectures, etc., and need not be qualified; honorarium, £13 13s. on completion of duties. Four non-resident obstetric students who hold office for one month and receive board only at a payment of £1 1s. a week. At the Maternity Hospital: one house-surgeon, salary £50 a year. At the City Workhouse and Workhouse Infirmary: five resident medical officers. At the Birmingham General and Branch Dispensaries: twelve resident surgeons. At the Birmingham Mental Hospitals: five assistant medical officers. At the City Fever Hospitals: three assistant medical officers. At the Children's Hospital: one resident surgical officer, one resident medical officer. At the Birmingham and Midland Eye Hospital: four resident surgeons. At the Orthopaedic and Spinal Hospital: two clinical assistants (non-resident). At the Ear and Throat Hospital: one house-surgeon, £70 a year; four clinical assistants (non-resident). Four non-resident Poor Law appointments are in the gift of the Board of Guardians.

Scholarships.—There are numerous money and other awards for students of sufficient merit, among them being the following: The Walter Myers Travelling Studentship of £300, offered in 1922, and in each alternate year succeeding, tenable at home or abroad; the Sands-Cox Scholarship of £42 (an entrance scholarship in the Faculty of Medicine, awarded on either matriculation or First M.B. marks); four Queen's Scholarships of £10 10s. each, awarded annually at the second, third, fourth, and final university examinations respectively; one or more Sydenham Scholarships, allotted on entrance to students who are the sons of deceased medical men; the Ingleby Scholarships (two) of £10 for proficiency in midwifery and diseases of women; the Arthur Foxwell Memorial Gold Medal (Clinical Medicine) at Final M.B. examination. There is also an entrance scholarship of £37 10s. for students proceeding to a degree in dental surgery. University Clinical Board Prizes are awarded annually as follows: Senior Medical prize, Gold Medal; Senior Surgical Prize, Gold Medal; Midwifery Prize, Gold Medal; Junior Medical Prize, Silver Medal; Junior Surgical Prize, Silver Medal.

Fees.—The composition fee for university classes is £106 5s. This covers all the work required for the degrees of Birmingham and some other universities, and for the ordinary qualifications of licensing corporations, but not the additional courses required for the Fellowship of the Royal College of Surgeons of England, the diploma and degrees of the university in State Medicine, and some other special work. The total cost for the five years' curriculum, including hospital and examination fees, is estimated at £197 0s. 6d.

Other information should be sought from the Dean of the Medical Faculty, University, Edmund Street, Birmingham.

BRISTOL.

THE school is carried on by the Faculty of Medicine of the university, and provides full instruction for all its degrees and diplomas. The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for diseases of women and children, and those of the eye, throat, and ear, in addition to arrangements for dental work and large outdoor maternity departments. At each of these institutions there are well-arranged pathological departments, comprising large pathological museums, *post-mortem* rooms, and laboratories for morbid anatomy. There are also laboratories for work in clinical pathology, bacteriology, and cytology, in which special instruction is given in these subjects. Departments are provided and well equipped for *x*-ray work both in diagnosis and treatment, the various forms of electrical treatment, including high-frequency currents, electric baths, Finsen light treatment, and massage.

The students of the school have also the advantage of attending the practice of the Royal Hospital for Sick Children and Women, containing 108 beds, and that of the Bristol Eye Hospital, with 40 beds. Excellent facilities are thus afforded to students for obtaining a wide and thorough acquaintance with all branches of medical and surgical work. Each student has the opportunity of personally studying a large number of cases and acquiring practical skill in diagnosis and treatment. All classes are open to women.

Appointments.—(1) Undergraduate: Clinical clerkships, dresserships, also ophthalmic, obstetric, and pathological clerkships, are tenable at the Bristol Royal Infirmary and the Bristol General Hospital. In these institutions the dressers reside in rotation free of charge. (2) Post-graduate—At the Bristol Royal Infirmary: Four house-surgeons, £120 each per annum; two house-physicians, £120; resident obstetric and ophthalmic house-surgeon, £120; throat, nose and ear house-surgeon, £120; dental house-surgeon, £120. All these appointments are made for twelve months. From the resident officers a senior resident officer is appointed at a salary of £200. At the Bristol General Hospital: Senior resident medical officer, £300 per annum; casualty house-surgeon, £175 per annum; two house-physicians, £175 per annum; house surgeon, £175 per annum; obstetric house-surgeon, £175 per annum; dental house-surgeon, £300 per annum. All these appointments are for six months, except that of senior resident medical officer, which is for two years.

Scholarships.—The following are among the scholarships and other awards open to students of the school: Two Martin Memorial Pathological Scholarships of £10 each; the Tibbits Memorial Prize, value 9 guineas, for proficiency in practical surgery; the Committee's Gold and Silver Medals for fifth-year students for general proficiency; the Augustin Prichard Prize, value 7 guineas, for proficiency in anatomy; the Henry Clark Prize, value 11 guineas, for proficiency in gynaecology; the Crosby Leonard Prize, value 7 guineas, for proficiency in surgery; the Suple Surgical Prize, a gold medal and 7 guineas; the Suple Medical Prize, a gold medal and 7 guineas; the Henry Marshall Prize, value £12, for dressers; the H. M. Clarke Scholarship, value £15, for proficiency in surgery; the Sanders Scholarship, value £22 10s., for general proficiency; the Barrett-Roué Scholarship for proficiency in diseases of the eye, ear, nose and throat, value £14.

Fees.—The fee for all the courses required for the medical curriculum, including hospital practice, is 205 guineas, paid by annual instalments.

UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.

The Welsh National School of Medicine.

STUDENTS can complete the whole of their curriculum in the school. The courses of instruction are fully adapted to meet the needs of those students studying for the degrees in Medicine and Surgery of the University of Wales, and also for the degrees of other universities and for the diplomas of licensing bodies. All classes are open to both men and women students.

Medical men wishing to prepare for the Diploma in Public Health or the Tuberculous Diseases Diploma of the University of Wales can attend complete courses of instruction in the school.

Prospectuses can be obtained on application to the Dean of the Faculty of Medicine, or to Mr. D. J. A. Brown, Secretary, at University College, Cardiff.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

THIS, the Medical School of the Faculty of Medicine of the University of Durham, is in the neighbouring city, Newcastle-on-Tyne. Its classes and lectures are arranged to meet the requirements of the university in all the degrees which the latter grants, and also those of the other examining bodies. The students do their work in the preliminary sciences at Armstrong College, also part of the university, and their clinical work in the Royal Victoria Infirmary, an institution with over 600 beds and special accommodation for the benefit of students. In a Heath wing of the school itself there are the departments of bacteriology and physiology. There are also in this wing a gymnasium and a set of rooms for the use of the Students' Union.

Appointments.—Assistant demonstrators of anatomy and prosectors for the professor of anatomy, assistant physiologists, pathological assistants, assistants to the dental surgeon, and assistants in the eye department, throat and ear department, and department for skin diseases, are elected annually. Clinical clerks and dressers are appointed every three months.

Scholarships.—A University of Durham Scholarship, value £25 a year for four years, for proficiency in arts, open annually at the beginning of the winter session to intending students. The Pears Scholarship, value £150, for proficiency in arts (when vacant). The Dickinson Memorial Scholarship, interest of £400, with a gold medal for medicine, surgery, midwifery, and pathology, open to perpetual students in their fifth year. The Tulloch Scholarship, interest of £400 annually, for elementary anatomy, biology, chemistry, and physics, for students at the end of their first year. The Charlton Memorial Scholarship, interest of £700 annually, open to full students entered for the class of medicine, at the end of their fourth or fifth winter. The Gibb Scholarship, interest of £500 annually, for pathology, at the end of summer session. Gibson Prize, interest of £250 stock, for midwifery. Outterson Wood Prize, interest of £250, for psychological medicine. The Goyder Memorial Scholarship, proceeds of £325; subjects: clinical medicine and clinical surgery. Luke Armstrong Memorial Scholarship, proceeds of £680, for best essay in some subject in comparative pathology. The Stephen Scott Scholarship in Surgery, interest on £1,000 annually. The Heath Scholarship in Surgery, of the value of £200, awarded every other year. First award in 1896. Philipson Scholarships (2), the interest on £1,800, to the candidates who obtain the highest marks in the Final M.B., B.S. examinations held in March and June respectively.

Fees.—The composition fee for lectures at the college is £122. Composition fee for hospital practice, £46, *plus* £2 2s. yearly for three years, payable to the Committee of the Royal Victoria Infirmary. Other information should be sought from the Registrar of the College of Medicine at Newcastle.

LEEDS.

THE School of Medicine—which is open to both male and female students—in this city forms the teaching centre of the Medical Faculty of the University of Leeds, and is situated in immediate proximity to the General Infirmary, where students sufficiently advanced receive their clinical instruction. The buildings were opened in 1894, and contain excellent dissecting rooms, several well-arranged laboratories for physiology, pathology, and bacteriology, three lecture theatres, and several similar classrooms. In addition, there are a library and reading room and two museums, one being devoted to pathology and the other to anatomy. The comfort of the students is secured by common rooms and a refectory in which they can take meals. The General Infirmary has 620 beds, and includes gynaecological and ophthalmic wards and a large out-patient department. The Ida and Robert Arthington Semi-convalescent Hospitals, Cookridge, attached to the Infirmary, have 88 beds. The West Riding Lunatic Asylum at Wakefield is also open for the study of mental diseases. Students can, in addition, attend the practice of the Leeds Public Dispensary (where the practical instruction in dental subjects is also given), the City Fever Hospitals (800 beds), the Hospital for Women and Children, and the Leeds Maternity Hospital.

Appointments.—One senior anaesthetist, £50; seven anaesthetists, £25 each; a medical and a surgical tutor, at £125 each per annum;[1] one resident medical and one resident surgical officer, each at £150 per annum; one casualty officer, at £125 per annum; one resident ophthalmic officer, at £100 per annum; one resident aural officer, at £100 per annum; one resident obstetric officer, at £50 (attached to the gynaecological ward); one ophthalmic house-surgeon, at £50 per annum; three house-physicians, each holding office for six months, and four house-surgeons, held ng office for six or twelve months. Surgical dressers are appointed every six months; physicians' clerks, ophthalmic and aural dressers, gynaecological ward clerks, gynaecological out-patient clerks, maternity clerks, assistant physicians' clerk, dermatological clerks and assistant surgeons' dressers, dressers in the

[1] New arrangements are being made from October next.

casualty room, *post-mortem* clerks, and laboratory assistants every three months, and dressers in the venereal clinic every month. A resident medical officer (honorarium at rate of £60 per annum) is also appointed every six months for the Ida Semi-convalescent Hospital. Appointments are also open to students at the Leeds Public Dispensary (four resident medical officers, with salaries commencing at £80), at the Hospital for Women (two house-surgeons, at £50 per annum, and two anaesthetists, £20), and at the West Riding Asylums.

Scholarships.—The university awards annually a scholarship in the form of a free admission to the lectures and classes given in the university, which are covered by the composition fee. The university also awards a scholarship on the results of the first examination, of the value of £68, in the form of a free admission to the clinical teaching of the infirmary.

Fees.—It is estimated by the authorities that the approximate cost of medical education to a student in this university is £300, *plus*, of course, the expenses of living during the five years covered by the curriculum. The fee for a complete course for the First M.B. is £41; the composition fee for the course for the second and third examinations, and for the clinical work at the infirmary, is £174. The composition and clinical fee for those who have passed the second examination is £130.

Further information can be obtained from the Dean and Clinical Subdean, School of Medicine, Leeds.

LIVERPOOL.

THE Medical School of this city is part of the university, and, owing to the enlightened liberality of several men of wealth, is exceptionally well provided with special laboratories, as well as with ordinary spacious and well-equipped classrooms and laboratories for the instruction of students proceeding to medical degrees and diplomas in special and ordinary subjects. All the laboratory and other rooms are situated close to one another and intercommunicate, together forming large blocks of buildings. The work of students throughout all stages of their career is arranged upon very satisfactory lines, and the teaching hospitals, of which an account is given below, have amalgamated to form the clinical school of the university.

Appointments.—The nature of the appointments open to past and other students at this school will be gathered from the account which follows of the hospitals forming its clinical department.

Scholarships.—The awards made each year to successful students total over £1,500. They include the following: Two Holt Fellowships, one in Pathology, the other in Physiology; a Robert Gee Fellowship in Anatomy; two John Rankin Fellowships in Anatomy; a John W. Garrett International Fellowship in Bacteriology; a Johnston Colonial Fellowship in Biochemistry; an Ethel Boyce Fellowship in Gynaecology; and a Thelwall Thomas Fellowship in Surgical Pathology; one University Fellowship (value of Fellowships: one at £150, two at £120, seven at £100); a University Scholarship of £25, awarded on the results of the Second M.B. Examinations; a Scholarship in Mechanical Dentistry of £20; two Lyon Jones Scholarships, of the annual value of £21 each for two years, one for the junior and the other for senior students; the Derby Exhibition of £15; the Clinical School Exhibition of £15; the Owen T. Williams Prize; the Torr Gold Medal in Anatomy; John Rankin Exhibition in Practical Anatomy, £25; the George Holt Medal in Physiology; the Kanthack Medal in Pathology; Mitchell Banks Medal in Anatomy; the Robert Gee Prize of £5 5s. in Children's Diseases; Mary Birrell Davies Memorial Scholarship, £60 per annum for four years; two Robert Gee Entrance Scholarships, each of the value of £25 per annum for two years; Dental Operating Prizes (four); Orthodontia Prizes (two); Samuels Memorial Scholarships, three at £20 each; one Thomas H. Bickerton Prize in Anatomy: Dr. N. E. Robert Prize in Zymotic Diseases; Ash's Prize in Dental Surgery, value £2 2s.; Gilmour Medal; and other Entrance Scholarships.

Fees.—Information as to the fees for the courses of instruction provided by the schools should be sought from the Dean of the Medical Faculty.

The Clinical School.

As many as nine hospitals have combined to form the clinical school of the university, these being: The Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, the Stanley Hospital, the Royal Liverpool Children's Hospital, the Hospital for Women, the Eye and Ear Infirmary, St. Paul's Eye Hospital, and St. George's Hospital for Diseases of the Skin. Between them they provide about 1,140 beds.

MANCHESTER.

THE staff of the Medical School in this city constitutes the Medical Faculty of the Victoria University, all the arrangements for the instruction of students, both in their earlier and their later studies, being of an elaborate nature. The clinical work of the undergraduates is done chiefly in connexion with the Royal Infirmary, an institution which itself contains about 670 beds, and has associated with it a large convalescent home (136 beds), and the Royal Lunatic Asylum at Cheadle (430 beds). Instruction in practical gynaecology and midwifery is given at the Royal Infirmary and the St. Mary's Hospitals.

Appointments.—The following are among the appointments open to past and present students of this school in connexion with its arrangements for clinical tuition: A surgical registrar, at £150 per annum; a pathological registrar, at £350 per annum; two medical registrars, at £150 per annum; a surgical tutor, at £30 per annum; a director of the clinical laboratory, at £400 per annum, and one assistant director at £300; three assistant medical officers and three assistant surgical officers, each at £35 per annum; one assistant surgical officer, aural department, at £35 per annum; five anaesthetists, two at £75 and three at £100 per annum; one radiological registrar, at £250 per annum; one resident medical officer, one year, £250 per annum; ditto at Cheadle, one year, £300 per annum; one resident surgical officer, one year, £250 per annum; two resident medical officers for Central Branch, £200 and £100 per annum; one accident room house-surgeon, six months, £200 per annum; one assistant medical officer at the Convalescent Hospital at Cheadle, appointed every six months, at a salary of £80 per annum; ten senior and ten junior house surgeons and ten house-physicians, appointed during the year for a term of six months, at a salary of £50 for the first six months, and £100 for the second six months. Resident officers are appointed to the gynaecological, the eye, and the ear and throat departments every three months. Clinical clerks and surgical dressers are appointed to the various departments of the hospital every three months.

Entrance and other Scholarships.—The following are among the scholarships obtainable by students of the school: Rogers and Seaton Scholarships in Arts (in alternate years), £40 per annum, tenable for two years. Derby Entrance Scholarship in Mathematics, tenable for one year, value £25, one being awarded annually, except in such years as a Cartwright Scholarship is awarded. Cartwright Scholarship, £35 per annum, tenable for three years. Three Hulme Scholarships, tenable for three years, of £35, one being awarded annually for proficiency in subjects of general education. Two James Gaskill Scholarships of £35, tenable for two years, one being awarded annually for proficiency in the branches of Mechanics and Chemistry. A Dora Muir Scholarship, £30 per annum, tenable for three years, and open to the competition of women students only. This is awarded triennially. Sir J. P. Kay-Shuttleworth Scholarship, £30 per annum, tenable for three years, awarded triennially, open to the competition of scholars from Sedbergh School, Giggleswick School, and Burnley Grammar School. Subjects: Mathematics, Chemistry, and Mechanics. Dreschfeld Memorial Scholarship, value £20, tenable for two years and awarded triennially on the result of the Entrance Examination. A Theodores Modern Languages Exhibition, £20, awarded annually. Two Dauntesey Medical Scholarships, value £45 and £35, tenable for one year, for candidates who have not commenced the second year of study leading to a medical qualification. Subjects: Zoology, Botany, and Chemistry. Two Entrance Scholarships in Medicine, value 160 guineas, awarded annually for proficiency in Arts or Science respectively. One Research Fellowship in Public Health of £100, awarded annually. Tom Jones Exhibition in Anatomy, £25, offered annually. A Robert Platt Physiological Scholarship of £90, tenable for one year. A Leech Fellowship of £100 for original research after graduation. A Graduate Scholarship in Medicine, value £25, tenable for one year, awarded annually for proficiency shown at Final M.B. Examination. A Dumville Surgical Prize, value £15, awarded annually at graduation. The Tom Jones Memorial Surgical Scholarship, value £60, tenable for one year, awarded usually annually. The Turner Medical Prize, value £20, awarded annually for proficiency in certain subjects of the Final M.B., Ch.B. Examination. The John Henry Agnew Scholarship of £30, awarded annually for proficiency in the Diseases of Children. The Ashby Memorial Scholarship tenable for one year (£100), for research in the Diseases of Children; offered triennially. Sidney Redshaw Exhibition in Physiology: one offered annually. The details and regulations of the Dickinson Scholarships—(1) for Anatomy, (2) for Pathology, (3) Research Scholarship in Surgery, and (4) Travelling Scholarship in Medicine—may be obtained from the Secretary to the Trustees. The Sam Gamble Scholarships—the trustees are prepared to award four scholarships of not less than £40 per annum, tenable for not more than four years, to women students who have passed the first M.B. Examination; the conditions can be obtained from the Registrar. The Knight Prize of £50 for original research in the psychological factors in the causation of mental disorder—open to holders of the Diploma in Psychological Medicine or medical practitioners who have been registered in the university as candidates for that diploma.

Fees.—The composition fee for the university course in medicine is 104 guineas, payable in four instalments of 26 guineas, but this sum does not include the fee to cover the work required for the first M.B. Examination. This is 36 guineas, payable in one sum. Hospital fees are additional and usually amount to about 77 guineas.

A prospectus and further information about the school and scholarships may be obtained from the Registrar.

Clinical Work.—The Royal Eye Hospital, the Hospital for Diseases of the Skin, the Manchester Northern Hospital for Women and Children, the well-known Hospitals for Children at Pendlebury, and St. Mary's Hospital for Diseases of Women and Children, all make arrangements for the instruction of students.

SHEFFIELD.

In this city the Medical School is one of the departments of the University, being conducted and controlled by its Medical Faculty, and occupying practically the entire north wing of the quadrangle of the university buildings overlooking Weston Park. The laboratories and lecture rooms connected with the subjects of the first and second examinations—namely, chemistry, physics, biology, anatomy, and physiology—are, both as regards structural arrangement and scientific equipment, on the most modern and complete lines.

For students of pathology and bacteriology there are laboratories replete with everything necessary for the most advanced work, and a large pathological museum which is open daily. In addition, there is a museum devoted to materia medica specimens, and a large library and reading room. There are a number of recreation, athletic, and other societies, all under the management of an annually elected students' representative council, and large and comfortable common rooms both for men and women students. In the university buildings there is a refectory open to all students of the school, and a university journal is published each term. The ordinary clinical work of the school is done at the Royal Infirmary and Royal Hospital, which have amalgamated for the purpose of clinical instruction, and provide over 500 beds for medical, surgical, and special cases, including diseases of the eye.

In addition, the Royal Infirmary has special departments for the treatment of diseases of the skin and ear, with beds assigned to them; whilst at the Royal Hospital there are special out patient departments for diseases of the throat, ear, skin, orthopaedics, and mental diseases. The medical and surgical staffs attend daily, and give clinical instruction in the wards and out-patient rooms. Clinical lectures in medicine and surgery are given weekly. Instruction in the practical administration of anaesthetics is given at either institution by the anaesthetists, and the *post-mortem* examinations at both institutions are in charge of the Professor of Pathology, and afford ample material for study of this subject. Students are able to attend the practice of the Jessop Hospital for Diseases of Women and the Hospital for Sick Children, while special courses on fever are given at the City Fever Hospital, and on mental diseases at the South Yorkshire Asylum.

Appointments.—The following appointments are open to all students who have passed their examinations in anatomy and physiology: (1) Casualty dresserships, (2) surgical dresserships, (3) medical clerkships, (4) pathological clerkships, (5) ophthalmic clerkships, (6) clerk to the skin department, etc. These appointments are made for three months, commencing on the first day of October, January, April, and July.

Scholarships.—Entrance Medical Scholarship, value about £180, open to both sexes. Four Edgar Allen Scholarships of £125 a year for three years may be held by students taking the degree course in Medicine. Two Town Trustees' Scholarships, each of the value of £50, tenable for three years, for boys or girls under the age of 19 years who have been educated in a Sheffield secondary school for a period not less than two years immediately preceding the examinations. Four Town Trustees' Scholarships, value £50, for boys or girls under 19 years of age, educated in any school in Sheffield, secondary or otherwise. Town Trustees' Fellowship, value £75, tenable for one year. Mechanics' Institute Fellowship, value £50 (with remission of fees), tenable for one year, and renewable for a second year. The Frederick Clifford Scholarship, value about £50, tenable for two years. Kaye Scholarship, for proficiency in anatomy and physiology, value £22 10s. Gold and bronze medals are also awarded for proficiency in various subjects.

Fees.—Students in the Faculty taking their complete course in the university pay an inclusive composition fee of £38 for each of the five years. The fees for special courses taken separately can be ascertained by inquiry of the Dean.

SCOTLAND.

As will be gathered from the following paragraphs, the facilities for acquiring a medical education in Scotland are very ample, whether the student be proceeding to a university degree or to a diploma. To the descriptions of the different Scottish medical centres is in some cases added an account of hospitals which either play an official part in the education given to students as yet unqualified or offer valuable opportunities for post-graduation work.

ABERDEEN.

THE school is conducted by the Faculty of Medicine. This comprises twelve chairs, from which instruction is given in all the main branches of medical science—namely, botany, zoology, physics, chemistry, anatomy, physiology, materia medica, pathology, forensic medicine, surgery, medicine, and midwifery. Courses of instruction in public health and in tropical medicine are conducted by lecturers appointed by the University Court. Special opportunities for practical instruction are afforded in the laboratories and museums attached to the departments.

Clinical instruction is obtained in the Royal Infirmary (accommodating 270 patients), the Royal Lunatic Asylum (900 patients), the Sick Children's Hospital (85 patients), the City Fever Hospital (250 patients), the General Dispensary, Maternity, and Vaccine Institution (10,000 out-patients annually), and the Ophthalmic Institution (3,000 patients annually). Courses of practical instruction are given in diseases of children at the Sick Children's Hospital; in fevers at the City Fever Hospital; in insanity at the Royal Asylum; in diseases of ear, nose, and throat at the Infirmary and Dispensary; in diseases of the eye at the Infirmary and Eye Institution; in venereal diseases and diseases of the skin at the Royal Infirmary.

The degrees granted in medicine are: Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Surgery and Bachelor of Medicine (M.B., Ch.B.). A Diploma in Public Health is conferred after examination on graduates in medicine in any university of the United Kingdom.

Bursaries, Scholarships, and Fellowships, to the number of fifty and of the annual value of £1,180, may be held by students of medicine in this university. They range from £8 to £100 per annum, and are tenable in most cases for two or three years. The winter session begins on October 11th, 1922; the summer session on April 23rd, 1923.

Fees.—An inclusive fee of 126 guineas is payable for instruction within the university, and the fee for the degrees of M.B., Ch.B. is 33 guineas. The total cost, including hospital fees, class and matriculation fees, and degree fees, is about £247.

EDINBURGH.

THERE are three Schools of Medicine: the School of the University, the School of Medicine of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Edinburgh School of Medicine for Women.

THE UNIVERSITY SCHOOL.—This school, in addition to other resources of the university, has the following means of affording practical instruction: Royal Botanic Garden, Herbarium, and Museum; Zoological Laboratory and Museum of Science and Art; Physical Laboratory; Chemical Laboratories; Dissecting Room, Bone Room, and Anatomical Museum; Physiological Laboratory; Medical Jurisprudence Laboratories; John Usher Institute of Public Health; Materia Medica Museum and Laboratory; *Post-mortem* Department of the Royal Infirmary and University Pathological and Bacteriological Laboratory; Tutorial Classes of Practice of Physic, of Clinical Medicine, and Clinical Surgery, Surgery, and Midwifery; and the practice of certain other hospitals.

Fees.—The sessional fee for chemistry, anatomy lectures, physiology, pathology, materia medica, surgery, medicine, and midwifery is £6 6s. each. Physics, botany, zoology, forensic medicine, and public health, £5 5s. Practical zoology, practical anatomy (summer), morbid anatomy, practical materia medica, mental diseases, practical pathology, and medical entomology and parasitology, £4 4s. Experimental physiology, diseases of tropical climates, practical botany, histology, operative surgery, clinical surgery (per term), experimental pharmacology, and invertebrate zoology, £3 3s. Practical anatomy (winter), £6 16s. 6d. Clinical medicine, £3 13s. 6d. first term, subsequent terms £3 3s. Practical chemistry, £4 14s. 6d. Regional anatomy, chemical physiology, surgical pathology, and applied anatomy, £1 11s. 6d. Tuberculosis, diseases of children, diseases of the eye, diseases of the larynx, ear, and nose, diseases of the skin, and venereal diseases, £2 12s. 6d. Advanced bacteriology, £7 17s. 6d. Clinical gynaecology, £2 2s. Infectious diseases, £1 1s.

Scholarships.—There are many funds for the assistance of students by means of bursaries, scholarships, exhibitions, and money awards from the beginning to the end of their undergraduate career. In addition there are funds which help those who have taken a first degree in medicine and surgery to continue at work as research students. The value of these awards, and the conditions attaching

to them, are so varied that those interested should consult the prospectus of the school itself. No other university is in a better, even if in as good, a position to smooth the financial path of earnest students.

THE SCHOOL OF MEDICINE OF THE ROYAL COLLEGES.—This school is composed of lecturers licensed by the Royal College of Physicians and the Royal College of Surgeons, and also recognized by the university through their *licentiæ docendi*; for the sake of convenience they lecture in separate buildings near to the Royal Infirmary, but form a single corporate body governed by a board consisting of five members elected by the Royal College of Physicians, five members elected by the Royal College of Surgeons, and five members elected by the lecturers in the school. This board, with the assistance of the standing committees of the school, supervises the whole management and especially the maintenance of the efficiency and discipline of the school. The different buildings at present utilized for the purposes of lecturing are the following: (1) Surgeons' Hall, Nicolson Street; (2) New School, Bristo Street; (3) Nicolson Square; (4) Marshall Street; and other places. The teaching is similar to that of the Scottish universities, and the students receive similar certificates at the close of each session. The courses on the special subjects not included in the curriculum of the Examining Boards are also conducted by teachers specially qualified in each branch, and have for the last quarter of a century formed a special feature of the school. The fees payable for class and other instruction, and including the sums payable on admission to the examination of the Conjoint Board for the triple qualification, amount to about £180. The Calendar, giving full information regarding classes and fees, can be obtained (price 6d.) on application to the Dean of the School, 11, Bristo Place, Edinburgh.

WOMEN STUDENTS IN EDINBURGH.—Until the close of the summer session of 1916 women students intending to proceed to graduation in the University of Edinburgh, as well as those entering for the triple qualification of the Royal Colleges of Edinburgh and Glasgow, received their training in the Edinburgh School of Medicine for Women. Now women students study under the same conditions as men, and may obtain either the university degree or the diploma of the Royal Colleges. In the university systematic lectures are given to them by the professors in the ordinary classes, which are therefore mixed; but in the subjects of midwifery and gynæcology the women are lectured to separately from the men. From the appearance of women's names in the lists of winners of prizes, scholarships, and bursaries, it is evident that women are held to be eligible for these distinctions. The women students also have the same privileges as in the past have been given to the men of attending a certain proportion of the extramural classes taught by the lecturers of the School of Medicine of the Royal Colleges.

GLASGOW.

THE UNIVERSITY SCHOOL FOR MEN.—The whole course of study required for graduation (M.B., Ch.B.) at the University of Glasgow can be taken here. Besides ample provision for lectures there is practical and clinical work at the hospitals, and practical courses are conducted in the laboratories of the following departments: Surgery, Pathology, Public Health, Pharmacology, Physiology, Anatomy, Chemistry, Zoology, Physics, and Botany; the Botanic Garden and the Hunterian Museum (Zoology and Pathology) are also open to students. New buildings and equipments have been provided for botany, for practical anatomy, for operative surgery, as well as for pathology; the very large additions made a number of years ago to the Chemical Laboratory rendered it one of the most extensive in Scotland. The classrooms and laboratories for the departments of Physics, Physiology, Pharmacology, Materia Medica, Medical Jurisprudence and Public Health, and Zoology are also of recent erection, and are elaborately equipped. Four additional chairs of Medicine, Surgery, Obstetrics, and Pathology have been recently established, the Professors being specially attached to the Royal Infirmary; and a number of University Lectureships in Clinical Medicine, Clinical Surgery, Venereal Diseases, Laryngology, Dermatology, Otology, Psychological Medicine, Tuberculosis, and Electrical Diagnosis and Treatment have been founded there. Four other chairs have been founded at the University, in Bacteriology, Organic Chemistry, Physiological Chemistry, and Applied Physics. There are also lectureships on the Surgical and Medical Diseases of Children, and on Electrical Diagnosis and Therapeutics. The university, in short, has made great and successful efforts to extend and improve the accommodation of the medical departments, to strengthen the teaching staff, and to encourage post-graduation and research work. Three very extensive general hospitals in the city afford exceptional opportunities for clinical instruction—namely, the Western Infirmary (600 beds), near the university, to which the Regius Professors are attached; the Royal Infirmary (630 beds); and the Victoria Infirmary (260 beds); while the Royal Asylum (460 beds), the Royal Hospital for Sick Children (200 beds), the Royal Maternity and Women's Hospital (108 beds), the Glasgow Eye Infirmary (100 beds), the Ophthalmic Institution (35 beds), the fever hospitals at Belvidere (680 beds) and Ruchill (540 beds), and other institutions afford facilities for the practical study of special branches. The large general hospitals of the Parish Council are now also available for clinical instruction in Medicine and Surgery. Information regarding post-graduate study will be found at page 441.

Bursaries.—Bursaries confined to the Medical Faculty amount in annual value to about £1,000, while bursaries in any faculty, amounting to about the same annual sum, may be held by students of medicine, a number of both sets being open to women. Several valuable scholarships may be held by medical students who have graduated in Arts.

The following bursaries are open to undergraduates of both sexes: The Gibson Bursary, annual value £36, tenable for four years. This is open to medical students who are preparing for service as medical missionaries in connexion with the Church of Scotland and will be awarded to the eligible candidate who has gained the highest number of marks in the First Professional Examination. The Arbroath Bursary, annual value £40, tenable for three years, is awarded by the Senate, on the recommendation of the Faculty of Medicine, to the student who is of the highest merit among the candidates, as shown by their class records and their performances in the First and Second Professional Examinations. One Logan Bursary, annual value £16, tenable for four years; appointment by the Senate. The Mackintosh Mental Science Bursary in medicine, of the value of £31, is awarded annually to the student (of either sex) attending the class of insanity who stands first in an examination in that subject, the bursar to continue the practical study of the subject to the satisfaction of the Faculty of Medicine. The Gardiner Bursary, annual value £14, tenable for two years, will be awarded after the autumn professional examination to the candidate who has passed in physiology at the Second Professional Examination, and whose aggregate of marks in that subject and in chemistry and physics of the First Professional Examination is the highest. Of the eight James A. Paterson Bursaries two are awarded each year; they are of the value of £25 and £20 respectively, and are tenable for four years; examination in mathematics and natural philosophy in June for students entering the first or second year of medical study. The following are tenable in any faculty: Two Pratt Bursaries (each £20 and tenable for four years) and two Taylor Bursaries (each £10 and tenable for four years). Andrew and Bethia Stewart Bursaries (£50 each, tenable for three years); candidates must have taken the M.A. degree of Glasgow. There is a special examination. Nine Glasgow Highland Society's Bursaries, for students of Highland descent, of the annual value of £25, and tenable for five years; two vacant each year.

The Carnegie Trust for the Universities of Scotland is empowered to pay the whole or part of the university ordinary class fees of students of Scottish birth or extraction, under conditions given in the *University Calendar*. The Dobbie Smith Gold Medal is awarded for the best essay on a prescribed subject within the science of botany. The Brunton Memorial Prize of £10 is awarded annually to the most distinguished graduate in medicine of the year. The University Commissioners issued an ordinance to make regulations for the admission of women to certain bursaries, scholarships, and fellowships. Scholarships and Fellowships are offered by the Carnegie Trust in science and medicine for post-graduation study. There are also four McCunn Medical Research Scholarships (two of £200 and two of £400) for graduates in medicine of the Scottish universities; one Faulds Fellowship for Research in Medical Science of approximately £200 for three years; and one Strang Steel Scholarship value £160 for one year.

Fees.—The matriculation fee for each year is £2 2s. In most cases the fee for each university class is £6 6s., but in some cases it is £4 4s. For hospital attendance students pay an entrance fee of £7 at the Western Infirmary, with an additional fee of £5 5s. for each winter and £2 12s. 6d. for each summer clinical course; at the Royal Infirmary the fees are somewhat similar. The university fee for the four professional examinations is £34 13s. For the whole curriculum the fees for matriculation, class attendance, hospital attendance, and professional examinations amount to about £225.

For further information apply to the Registrar, Glasgow University.

QUEEN MARGARET COLLEGE.—In this, the Women's Medical School of the University of Glasgow, the courses of study, degrees, regulations, fees, etc., are the same as for men. Women students have their own buildings, with classrooms

reading room, library, etc. They are taught in some classes apart from male students, in others together with them, but in either case have all the rights and privileges of university students. Their clinical studies are taken in the Royal Infirmary, where wards containing 520 beds are available for their use, and in its dispensary; and similarly in the Western Infirmary and in the Victoria Infirmary; also in the Royal Hospital for Sick Children, the Glasgow Ear Hospital, the Royal Asylum, Gartnavel, Hawkshead Asylum; the Ophthalmic Institution, the City of Glasgow Fever Hospitals, Belvidere and Ruchill; and the Glasgow Royal Maternity and Women's Hospital.

Scholarship.—The Arthur Scholarship, annual value £20, tenable for three years. Open to competition by medical students of first year at the First Professional Examination in October, 1922. This scholarship is restricted to women medical students.

Full information can be obtained from the Mistress, Queen Margaret Hospital.

Board for Students.—A house of residence for women students, Queen Margaret Hall, is situated near the college, in Bute Gardens. The cost of board and residence is from 27s. to 32s. 6d. a week, according to accommodation. Application to be made to the Lady Superintendent. Another hostel near the college is South Park House, Ann Street, belonging to the Student Christian Movement, and open to women students of all colleges in Glasgow. Cost of board is from 28s. to 30s. weekly. Applications to be made to the Warden.

ST. MUNGO'S COLLEGE.—This is the Medical School of the Royal Infirmary, which is the largest general hospital in Glasgow. The infirmary is situated in Cathedral Square, Castle Street, and has car communication with every part of the city. St. Mungo's College is in the infirmary grounds and affords full courses in all the subjects of the medical curriculum, and in all the medical subjects of the dental curriculum.

The infirmary has (including the ophthalmic department) over 700 beds, the average number occupied in 1920 being over 600. There are special beds and wards for diseases of women, of the throat, nose and ear, venereal diseases, burns, and septic cases. In the out-patient department the attendances in 1921 numbered 168,610. In addition to the large medical and surgical departments, there are departments for special diseases—namely, diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. There is also a fully equipped electrical pavilion, with the latest and most approved apparatus for diagnosis and treatment.

Appointments.—Five house-physicians and eleven house-surgeons, who must be fully qualified, are appointed every six months, and board in the hospital free of charge. Clerks and dressers are appointed by the physicians and surgeons. As many cases of acute diseases and accidents of a varied character are received, these appointments are very valuable.

Fees.—The average class fee is £3 3s. for summer classes and £4 4s. for winter classes. The fees for all the lectures, practical classes, and hospital attendance necessary for candidates for the diplomas of the English or Scottish Colleges of Physicians and Surgeons amount to about £80. The classes are open to male and female students.

A syllabus of classes can be obtained on application to the Secretary to the Medical Faculty, St. Mungo's College, 86, Castle Street.

THE ANDERSON COLLEGE OF MEDICINE.—This school provides education in all subjects of the curriculum both for medical and dental students. The school buildings are situated in Dumbarton Road, immediately to the west of the University and Western Infirmary. The hospital practice and clinical lectures are provided in the Western or Royal Infirmary; pathology in the Western or Royal Infirmary; vaccination and dispensary practice in the Western or Royal Infirmary Dispensary. These classes are recognized by all the licensing corporations in the United Kingdom, also by the Universities of London, Durham, Glasgow, and Edinburgh (the latter two under certain conditions stated in the school Calendar). The courses (lectures and laboratory) in public health are recognized by the Scottish Licensing Board, the Universities of Oxford, Cambridge, and London, and the London and Irish Colleges.

Fees.—The fees for the lectures and practical work required by ordinary students range between 2 and 5 guineas a session. In the Public Health Department the fee for a six months' course is £14 14s. The Carnegie Trust pays the fees of students at Anderson's College on conditions regarding which particulars may be obtained from the Secretary, Carnegie Trust Offices, Edinburgh.

A Calendar will be sent on receipt of a postcard by the Secretary to the Medical Faculty, the Anderson College of Medicine, Glasgow, W., who will forward any further information which may be desired.

The Royal Samaritan Hospital for Women, with over 90 beds, offers facilities for clinical instruction in the diseases peculiar to women. Particulars may be obtained from the honorary secretary, 149, St. Vincent Street, Glasgow.

ST. ANDREWS AND DUNDEE.

THE medical departments in these two teaching centres cater specially for students proceeding to the degrees of the University of St. Andrews, but admit other students as well. In the former city the United College provides education in all subjects of the first two years. In Dundee, University College provides for the needs of students from the beginning to the end of the five years' curriculum. Its buildings are modern, and contain fully equipped laboratories. The clinical work of the school is facilitated by various institutions. The class fees are from £6 6s. to £5 12s. 6d. for systematic classes, and from £4 14s. 6d. to £4 4s. for practical classes. The hospital ticket is £1 8s. for three months, £4 4s. a year, or perpetual £13 6s. 8d. in one sum. The inclusive or composition fee for the curriculum is £182. In connexion with both institutions there are bursaries and scholarships of considerable value, which are awarded after competitive examination. Information as to these can be obtained from the Secretary of the University of St. Andrews. Information regarding the clinical facilities may be obtained from the Dean of the Medical Faculty, Medical School, Dundee.

Clinical Work.

Good opportunities for clinical work are afforded by the Dundee Royal Infirmary, the instruction given thereat being recognized for purposes of graduation by all the Scottish Universities, the University of London, the University of Cambridge, the National University of Ireland, and by the Royal Colleges of England and Scotland.

IRELAND.

THERE is a choice of six schools for those pursuing their medical studies in Ireland. For clinical instruction the choice is equally satisfactory and varied, though the hospitals themselves are comparatively small. Some account of the schools follows.

DUBLIN.

School of Physic.

This school is in Trinity College, Dublin, and is carried on under the joint auspices of the University of Dublin and of the Royal College of Physicians in Ireland, the King's professors of institutes of medicine (physiology), practice of medicine, materia medica, and midwifery being appointed by the latter. Clinical instruction is given at Sir Patrick Dun's Hospital, and some twelve other metropolitan hospitals and asylums are recognized by the Board of Trinity College. The courses of instruction are open to all medical students whether they belong to the university or not.

The Schools of Surgery.

These are schools carried on in Dublin under the supervision and control of the Council of the Royal College of Surgeons. They are formed of the College's own school, combined with two famous old medical schools—Carmichael and Ledwich; they are attached to the College by charter. The buildings contain spacious dissecting rooms, special pathological, bacteriological, public health, chemical, and pharmaceutical laboratories. Advantage can be taken of the lectures and instruction afforded by students otherwise unconnected with the College.

Prizes.—Among the prizes annually awarded are: The Barker Anatomical Prize (£26 5s.); the Carmichael Scholarship (£15); the Mayne Scholarship (£8); the Gold Medal in Surgery, the Stoney Memorial Gold Medal in Anatomy, the H. Macnaughton Jones Gold Medal for Midwifery and Gynaecology; class prizes, accompanied by silver medals, will also be given in each subject.

A prospectus can be obtained post free on application to the Registrar, Royal College of Surgeons, Dublin.

University College, Dublin.

This is one of the constituent colleges of the National University of Ireland, and at present conducts its work at buildings on St. Stephen's Green. It possesses a good library, and the arrangements for the teaching of medical students from beginning to end of the curriculum are adequate. Applications for information may be addressed to the Secretary and Bursar, University College, Dublin.

Clinical Work.

There are numerous well-arranged hospitals in and around the city, and almost all of these are recognized for teaching purposes by the Conjoint Board of Ireland, the University of Dublin, the National University of Ireland, and by like bodies elsewhere in the British Isles. Among them are the Mater Misericordiae Hospital, with 345 beds; Dr. Steevens's Hospital at Kingsbridge, with 200; Meath Hospital and County Dublin Infirmary, with 160; Mercer's Hospital, close to Trinity College, with 120; the Royal City of Dublin Hospital, with 124; the Adelaide Hospital, with 140; the Royal Victoria Eye and Ear Hospital, with 100 beds; Sir Patrick Dun's, which has a direct connexion with the School of Physic, and the combined institutions formed by the Hardwicke Fever Hospital, the Richmond Surgical Hospital, and the Whitworth Medical Hospital, with an aggregate of 230 beds.

As for the famous Dublin medical institution known as the Rotunda Hospital, this practically consists of two distinct hospitals, and is believed to be the largest combined maternity and gynaecological hospital in the British Isles. It receives nearly 3,000 patients every year, and, apart from ordinary out-patient work of a gynaecological order, annually attends some 2,000 women at their own homes during their confinement. It possesses residential quarters for students, and, taken as a whole, offers exceptional opportunities for study both to ordinary students and to medical graduates of any nationality.

BELFAST.

THE Medical School is part of the Faculty of Medicine of Queen's University, Belfast, and provides a complete medical curriculum for all purposes. The laboratories in connexion with the departments of biology, chemistry, physiology, pathology, anatomy, physics, and materia medica are all excellent, and there is a Students' Union which gives students the advantages of dining rooms, reading rooms, a library, and various recreation rooms. Women are eligible as students. Clinical instruction is given at the Royal Victoria Hospital, which was rebuilt a few years ago and has 300 beds, and the Mater Infirmorum Hospital, which has 150 beds. Other hospitals open to the students of the university are: The Maternity Hospital, the Ulster Hospital for Women and Children, the Hospital for Sick Children, the Ophthalmic Hospital; the Benn Ulster Eye, Ear and Throat Hospital; the Union Infirmary and Fever Hospital; the Fever Hospital, Purdysburn; the District Lunatic Asylum, the Samaritan Hospital, Forster Green Hospital for Diseases of the Chest, and the Belfast Hospital for Skin Diseases.

Scholarships.—(1) Twelve, of the value of £40 each, are assigned as Entrance Scholarships in the Faculties of Arts, Science, and Medicine, tenable for one year; (2) sixteen Professional Scholarships, value from £15 to £40 each; (3) one Hutchinson Stewart Scholarship, £12, in mental diseases; (4) one Mackay Wilson Travelling Scholarship, £100, awarded triennially; (5) Isabella Tod Memorial Scholarship, tenable for three years, awarded triennially to a woman student; (6) Magrath Clinical Scholarship, awarded annually, value about £112; (7) two Musgrave Studentships of £200 in Physiology and Pathology; (8) numerous sessional prizes. There is also a post-graduate research fund, open to all graduates of not more than three years' standing. Gold medals are awarded at the M.D. examination.

Fees.—The cost of the curriculum intended for students proceeding to the degrees of the Queen's University of Belfast is, approximately, £150. This includes examination fees and a perpetual ticket for attendance at the Royal Victoria Hospital or the Mater Infirmorum Hospital, and fees for the special hospitals. The course for the Conjoint Board costs about the same amount.

The Calendar containing full information can be obtained on application to the Secretary, Queen's University, Belfast, price 2s.

UNIVERSITY COLLEGE, CORK.

THIS institution, formerly known as Queen's College, Cork, is one of the constituent colleges of the National University. It holds examinations for all the faculties of that university, in addition to continuing the work which it has hitherto performed, namely, that of providing education adapted to the needs of medical students at all stages of their career. Its first aim is to fit students for the degrees of the new university, but students proceeding for the examinations of the Conjoint Boards of England, Scotland, or Ireland, the Society of Apothecaries of London, or the Apothecaries' Hall of Ireland, or London University, can arrange the courses of lectures which they attend, and the order in which they attend them, to meet the requirements of those bodies. Certificates of attendance at the college courses are also accepted by the University of Cambridge. Clinical instruction is given at the North and South Infirmaries (each 100 beds) and at the Cork Union Hospital (1,200 beds). Students can also attend the Mercy Hospital (60 beds), the County and City of Cork Lying-in Hospital, the Maternity, the Hospital for Diseases of Women and Children, the Fever Hospital, the Ophthalmic and Aural Hospital, and the Eglinton Lunatic Asylum. The session extends from October to June.

There is a Dental School in which the degree of Bachelor of Dental Surgery of the National University of Ireland can be obtained. There is a large well-equipped Dental Hospital in connexion with the school.

Scholarships.—Over £4,000 are available annually for scholarships in the College. Particulars as to each of them can be obtained on application to the Registrar.

Fees.—The fees for the lectures and hospital attendances required by the National University of Ireland course, including examination fees, come to about £120.

Further information can be found in the college regulations, or obtained on application to the Registrar.

UNIVERSITY COLLEGE, GALWAY.

THIS institution is one of the constituent colleges of the National University of Ireland, and includes Faculties of Art, Science, Celtic, Engineering, Commerce, and Medicine. The college buildings are well lighted and well ventilated, and contain dissecting rooms, an anatomical theatre, and laboratories for the study of physiology, chemistry, physics, and other departments of medical science. For pathology and chemistry new laboratories are now provided. It has good grounds surrounding it, and there are many arrangements, such as a library, a college union, and an athletic union, for the benefit of those belonging to the Medical Faculty, as well as for students in other departments of the college. The clinical teaching, which is recognized as qualifying not only for the degrees of the National University but for those of London University and the diplomas of the various colleges in the three kingdoms, is carried on at the Galway County Hospital, the Galway Union Hospital, the Galway Fever Hospital, and the Galway Dispensaries. The Galway County Hospital is a general hospital, and at the other two hospitals and at the dispensaries students have ample opportunities of studying zymotic and chronic diseases. The Union Hospital has a special ward for diseases of children. Each year the governing body offers about £1,500, and the County Councils of Connaught offer about £3,500, in scholarships. These scholarships are tenable in any faculty. Additional information regarding these scholarships can be obtained on application to the Registrar, and to the Secretaries of the Connaught County Councils.

CLINICAL HOSPITALS IN ENGLAND.

THERE are a great many hospitals in Great Britain and Ireland which, though not connected with any medical school, open their doors either to those who have yet to become qualified, to those who are doing post-graduation work, or to both. The facilities they offer for gaining practical clinical experience are very great, and should not be overlooked. Their honorary staffs commonly make a point of giving such instruction as opportunity offers, and at those situated in the larger towns there are often appointments as clinical assistants to be obtained. In addition, they all have to offer, at shorter or longer intervals, appointments for resident medical officers, house-physicians, and house-surgeons. These are usually paid offices, which may be held for periods varying from six months to a year. Some of those situated in the great medical centres in the provinces, and in Scotland and Ireland, have already been mentioned in speaking of the medical schools in these localities, but it should be added that there are many other provincial hospitals where admirable work is done, and at which much valuable experience can be gained by both senior and junior students, and by

those already qualified. Cases in point are the Royal Infirmary, Bradford; the Royal Sussex County Hospital, Brighton; the Royal United Hospital, Bath; the Kent and Canterbury Hospital; Derbyshire Royal Infirmary; the Royal Albert Hospital and Eye Infirmary, Devonport; the Royal Devon and Exeter Hospital; the West of England Eye Infirmary, Exeter; the Gloucestershire Royal Infirmary and Eye Institution; the Royal Infirmary, Leicester; the County Hospital, Lincoln; the General Hospital, Northampton; the Norfolk and Norwich Hospital; the General Hospital, Nottingham; the Royal Portsmouth Hospital; the Royal Berks Hospital, Reading; the Royal South Hants and Southampton Hospital; the Staffordshire General Infirmary, Stafford; the North Staffordshire Infirmary at Hartshill; the Royal Hants County Hospital, Winchester; the Wolverhampton and Staffordshire General Hospital; the County Hospital, York; and the Coventry and Warwickshire Hospital.

London Clinical Hospitals.

As for hospitals in the metropolis, so many of these take a share in the giving of clinical instruction that it is worth while to classify them.

General Hospitals.—These include the Dreadnought Hospital at Greenwich, and its annexe at the Albert Dock, which form the headquarters of the London School of Clinical Medicine, and the London School of Tropical Medicine with its hospital at Endsleigh Gardens; the West London Hospital and the Prince of Wales's General Hospital, Tottenham, both of these being described in the article on post-graduate work; the Royal Northern Hospital, Holloway Road, an institution containing 185 beds; and the Temperance Hospital in Hampstead Road.

Children's Hospitals.—There are at least seven of these, the leader among them being the Hospital for Sick Children, Great Ormond Street, which has 240 beds. There are also the East London Hospital for Children, Shadwell, with 124 cots; the Queen's Hospital for Children, Bethnal Green, with 134; the Victoria Hospital for Children, Chelsea, with 104; the Belgrave Hospital for Children, which has a considerable out-patient department, but in-patient accommodation for only 40 children; the Paddington Green Children's Hospital, an institution of about the same size; and the Evelina Hospital for Sick Children, Southwark Bridge Road, with 76 beds.

Hospitals for Women.—Queen Charlotte's Lying-in Hospital, Marylebone Road, with 70 beds and a residential college for students and practitioners, specializes in the teaching of midwifery. The Samaritan Hospital for Women, Marylebone Road, admits qualified practitioners as clinical assistants to both the in-patient and out-patient departments; demonstrations are given daily in both departments, the fees—payable in advance—being £3 3s. for three months; full particulars may be obtained from the secretary. In addition may be mentioned the Hospital for Women, Soho Square, whose teaching is confined to post-graduates in limited numbers; the Chelsea Hospital for Women, Arthur Street, Chelsea; and the Elizabeth Garrett Anderson Hospital for Women in Euston Road, the latter being in the nature of a general hospital so far as concerns the class of case treated.

Eye Hospitals.—The largest of these is the Royal London Ophthalmic Hospital (Moorfields), City Road. At this hospital two complete courses of instruction are given during the year—October to February and March to July—comprising the following subjects: anatomy, physiology, and optics; ophthalmic medicine and surgery—(1) external diseases, (2) motor anomalies and squint, (3) ophthalmoscopic conditions (weekly classes), (4) pathology; practical refraction classes; methods of examination (practical); operative surgery; practical pathology; practical bacteriology; *x* ray and radiotherapy; clinical lectures; discussion classes. A fee of 24 guineas entitles the holder to one full five months' course (with the exception of practical pathology and practical bacteriology), together with a permanent ticket for the practice of the hospital. Fee for the practice of the hospital (permanent), £5 5s.; for three or six months, £3 3s.; for two months, £2 2s.; for one month, £1 1s. Gentlemen are eligible, under certain conditions, for the posts of chief clinical assistant, clinical assistant, and junior assistant. Clinical work takes place every morning at 9 o'clock, and operations at 10 every morning. An additional special course in the preliminary subjects (namely, anatomy, physiology, and optics) for the D.O.M.S., and other ophthalmology examinations, will be held immediately preceding the date of the examination. The fees for this course will be 12 guineas, or £5 5s. for any subject separately. Further particulars may be obtained from the Dean of the Medical School. Other eye hospitals are the Royal Westminster Ophthalmic Hospital near Charing Cross, the Royal Eye Hospital, Southwark, and the Central London Ophthalmic Hospital, Judd Street, W.C.1, each with about 40 beds.

Fever Hospitals.—The Metropolitan Asylums Board has under its control a good many institutions in and around London for the treatment of the more serious zymotic disorders; it makes special arrangements for the instruction of students in this subject, and grants certificates at the end of the courses. Detailed information should be sought from the Clerk to the Board, Victoria Embankment, E.C.4.

Chest Hospitals.—The largest of these is the Brompton Hospital for Consumption, which has 333 beds and a large sanatorium at Frimley with 150 beds. There is also the City of London Hospital for Diseases of the Chest, Victoria Park, with 175 beds, and the Royal Hospital for Diseases of the Chest, City Road, which has recently decided to become amalgamated with the Royal Northern Hospital, Holloway Road.

Nose, Throat and Ear Hospitals.—The institutions which confine their work to disorders of the throat, nose and ear all make special arrangements for the benefit of senior and post-graduate students. They are the Metropolitan Ear, Nose and Throat Hospital, Fitzroy Square; the Royal Ear Hospital, Dean Street; the Central London Throat, Nose and Ear Hospital, Gray's Inn Road; and the Hospital for Diseases of the Throat, Golden Square—the latter, which possesses 75 beds, being the largest of the four institutions.

Miscellaneous Special Hospitals.—Among these are the Bethlem Royal Hospital, St. George's Fields, S.E.1, which confines its work to the treatment of mental diseases, and includes a department for nervous and early mental disorders; St. Peter's Hospital for Stone and Urinary Diseases, Henrietta Street, Covent Garden; St. Mark's Hospital, City Road, which devotes itself to the treatment of diseases of the rectum, including cancer and fistula; the National Hospital for Diseases of the Heart in Westmoreland Street, W.1; St. John's Hospital for Diseases of the Skin, in Leicester Square; the Hospital for Diseases of the Skin, Stamford Street, Blackfriars; and the National Hospital for the Paralysed and Epileptic, Queen Square, W.C.1, an institution possessing 200 beds and a world-wide reputation.

Detailed information as to the teaching arrangements of all these institutions may be obtained on application to their secretaries.

MEDICAL EDUCATION OF WOMEN.

WOMEN are admitted to all the medical examinations of the following qualifying bodies: all the Universities of Great Britain, with the exception of Cambridge; the Royal College of Physicians of London and the Royal College of Surgeons of England; the Society of Apothecaries of London; the Conjoint Boards of Scotland and of Ireland. The regulations of the various universities and colleges and those of the General Medical Council set out above apply to women in the same way as to men.

The schools which admit women only are the London (Royal Free Hospital) School of Medicine for Women, which is one of the constituent schools of the Medical Faculty of the University of London. Glasgow University (see p. 436) has Queen Margaret College for the use of students of the University, and where some of the classes are restricted to women, such as practical anatomy. The clinical classes and university lectures in the Royal Infirmary are open to students of both sexes. Women are also admitted to the schools of medicine in connexion with King's College, Charing Cross Hospital, and St. Mary's Hospital, London; and in restricted numbers to University College Hospital Medical School. The medical schools of the English, Scottish, and Irish Universities and Colleges are open to women. The arrangements for women students in Edinburgh are indicated on page 436. Women enrolled in this university are, however, not guaranteed a course in Practical Obstetrics in the Maternity Hospital. Women can also attend the medical school attached to University College, Cardiff. As regards the London School of Medicine for Women, particulars will be found at page 431 in the article on London Medical Schools.

Women hold many appointments as residents in general hospitals, in hospitals for women and children, and in a large number of sanatoriums, infirmaries, fever hospitals, and asylums. Many medical women are also engaged in public health, tuberculosis, and school inspection work, as well as at infant welfare centres and venereal disease clinics; they can also become prison medical officers and inspectors of the mentally deficient.

In view of the very great increase during the past seven years in the number of women medical students it may, perhaps, be well to direct the attention of those who contemplate entering the profession to the word of caution given in our introductory article on the Profession of Medicine. It is desirable that women who contemplate the study of medicine should reflect carefully on the keen competition for posts which has existed since the war, and when qualified, consider the wisdom of seeking a wider field than hitherto in general practice and specialization, more especially in obstetrics and gynaecology. There is a large field opening in India, both in practice and the women's services in that country.

The British Medical Association was the first of all professional organizations to lay down the principle that no distinction should be made on the ground of sex as regards the emoluments to women members of the profession. In its constant efforts to maintain this principle the Association works in close co-operation with the Federation of Medical Women. In defence of the principle the Association has at

various times fought—usually with success—Government departments and local authorities of all kinds. Where the authorities concerned have declined to recognize the justice of the claim that equal pay should be given for equal work the machinery, local and central, of the Association has been put into operation, and as a result the authority has generally seen fit to drop the proposed distinction between men and women practitioners or give up the attempt to fill the post.

DEGREES FOR PRACTITIONERS.

At one time it was almost the universal custom for medical students educated in London and aiming at general practice not to seek a university degree, and as that custom still prevails to a considerable extent a large proportion of medical men in England possess diplomas or licences to practise but not degrees in medicine. This is a fact which they sometimes find reason to regret, and to such practitioners the following paragraphs may be of interest. It should be noted, however, that the M.D. degree of the University of Brussels, if obtained subsequently to June, 1886, is not registrable, and that the University authorities have decided to discontinue granting it under special conditions to foreign medical practitioners from Great Britain and British Dominions.

University of London.

Registered medical practitioners who have passed the First Examination for medical degrees and the Second Examination for medical degrees, Part I, may proceed to the Second Examination for medical degrees, Part II, and M.B., B.S. Examinations without observing the intervals prescribed by the regulations, on producing certificates that they have gone through the required course of study at a school of the university; subject to the proviso that no degree of the university can in any circumstances be granted by examination to anyone in less than three years after passing the Matriculation Examination or after admission by the university of the candidate's right to exemption therefrom.

University of Durham.

The degree of M.D. is granted by the University of Durham to registered practitioners of not less than fifteen years' standing, who have been qualified and in practice for that period, upon the following conditions without residence: The candidate must be 40 years of age, and must produce a certificate of moral character from three registered medical practitioners. Should he not have passed an examination in arts previously to the professional examination in virtue of which his name was placed on the *Register*, he is examined in classics and mathematics; if otherwise, he is required to translate into English passages from any one of the following Latin authors: Cæsar, *De Bello Gallico* (first three books), Virgil, *Æneid* (first three books), or Celsus (first three books). Natives of India or the British Colonies are placed on the same footing as natives of Great Britain. Natives of India must produce evidence from an Indian university that they have passed within one year an examination in Latin.

Professional Examination.—The candidate must pass an examination in the following subjects: (i) Principles and practice of medicine, including psychological medicine, hygiene, and therapeutics; (ii) principles and practice of surgery; (iii) midwifery and diseases of women and children; (iv) pathology, medical and surgical; (v) anatomy, medical and surgical; (vi) medical jurisprudence and toxicology. The examination is conducted by means of printed papers, clinically, and viva voce, at the College of Medicine, Northumberland Road, Newcastle, and in the Royal Victoria Infirmary. The classical part of the examination may be taken separately from the professional on payment of a portion (£10 10s.) of the full fee.

The examinations are held twice a year, towards the end of March and of June. Notice, accompanied by the fee and certificates, must be sent to Professor Howden, Registrar of the University of Durham College of Medicine, Newcastle-on-Tyne, at least twenty-eight days before the commencement of the examination.

Fees.—The inclusive fee is 50 guineas; if a candidate fail to pass, 20 guineas are retained, but if he present himself again, 40 guineas only are required.

University of Brussels.

Until recently this university granted its M.D. degree to such foreign candidates as were already duly qualified in medicine and surgery in their own countries, provided they passed the three examinations imposed. The examinations were conducted solely viva voce and in English. The secretary of the University of Brussels, however, announced last year that these special examinations will no longer be held, nor will the diploma of the degree be granted by the university to foreign medical practitioners as formerly. It is understood that the university authorities have decided that all foreigners seeking medical degrees shall be called upon to fulfil the same requirements, and that special privileges cannot henceforward be conceded to practitioners from Great Britain and the British Dominions.

POST-GRADUATION STUDY.

Many facilities for post-graduate study already exist in London and in certain other centres. In London the real difficulty has been that the facilities have not been co-ordinated, and that only lately has it been possible for a graduate wishing to join classes in London to learn where he could obtain instruction in the subject in which he was particularly interested. The difficulty has been the greater because formerly very little attempt was made to discriminate between the two main classes of post-graduate students—those who desire advanced or special courses, either for the purpose of "finishing" their medical education or acquiring knowledge of the technique of special subjects, and those who, having been in practice for some years, desire to revise or increase such general medical knowledge as is useful in their professional work. For the latter class the courses now given at the West London Hospital Post-Graduate College and the North-East London Post-Graduate College are eminently suitable; some of the large undergraduate teaching hospitals provide short post-graduate courses for their former students during the summer vacation, and at the Charing Cross Hospital arrangements have been made with the London Panel Committee whereby weekly post-graduate instruction is given to insurance practitioners

Towards the end of 1918 the Fellowship of Medicine was founded in London. Its object was to draw together the members of the medical profession of all the inter-allied countries for the exchange of medical knowledge and the advancement of medical science. An emergency post-graduate course was arranged in the early part of 1919 for the benefit of medical men who had served as temporary officers of the Navy, the R.A.M.C., the Royal Air Force, and of the Dominions, the United States, and the allied countries. The teaching schools in the metropolis co-operated in the course, and daily lectures and demonstrations on general and special subjects were given.

Proposals for a permanent post graduate organization in London had been put forward by the Post-Graduate Medical Association, and in October, 1919, this body and the Fellowship of Medicine were amalgamated. After the matter had been fully discussed, and after the amalgamated body had learnt a good deal from experience, it resolved to make representations to the Government, and in response to these the then Minister of Health, Dr. Christopher Addison, appointed a committee under the chairmanship of the Earl of Athlone. This committee recommended that a school attached to a hospital centrally situated in London should be devoted solely to post-graduate medical education, that it should be a school of the University of London, and that it should receive financial assistance from Parliament. After indicating how the school should be organized, the committee went on to advise that an Institute of State Medicine should be organized in London to give instruction in public health, forensic medicine, industrial medicine, and medical ethics and economics. This last recommendation is about to be realized, owing to the munificent gift by the Rockefeller Institute of two million dollars to defray the cost of building and equipping an Institute of Hygiene. When accepting the offer on behalf of the Government the Minister of Health undertook to provide £25,000 a year for upkeep. A site has been acquired in Bloomsbury, the district which it is hoped may become the university quarter of London; but it must be two years or more before the buildings can be available for research and teaching.

With regard to the other recommendation of the Athlone Committee no definite progress has yet been made. The Fellowship of Medicine continues to arrange courses of post-graduate instruction in London of various kinds, and its monthly *Bulletin* contains a list of many hospitals which welcome the attendance of graduates. By the

kindness of the Royal Society of Medicine the Fellowship of Medicine has its offices in the Society's house, 1, Wimpole Street, W.1, and there the inquirer will obtain information as to classes and clinical practice which may be open to him at the time of his visit to London. Last July the Fellowship took the initiative in sending a deputation to the Minister of Health to urge on him the expediency of helping to realize the recommendation of the Athlone Committee with regard to the establishment of a post-graduate school and hospital in London. The deputation received an ambiguous but on the whole encouraging and sympathetic reply. There for the moment the matter stands.

Nevertheless, the graduate who visits London will find that many opportunities are at his disposal. For ophthalmic work Moorfields Hospital and the Royal Westminster Ophthalmic Hospital are available. Practical work in diseases of the throat, nose, and ear is obtainable at the Hospital for Diseases of the Throat, Golden Square, and intensive courses, as well as three-monthly attendances in the practice of the hospital, exist at the Central London Nose, Ear, and Throat Hospital, Gray's Inn Road. At the Brompton Hospital for Consumption there are many post-graduate students. The Hospital for Women, Soho Square, has special courses lasting six weeks, and clinical assistantships are available at the Samaritan Free Hospital for Women. At the Hospital for Diseases of the Skin, Blackfriars Road, demonstrations are given daily, and there are similar demonstrations and a course of lectures during the winter months at the St. John's Hospital for the Skin. Post-graduate instruction in the diseases of children is given at the Hospital for Sick Children, Great Ormond Street, and at the Paddington Green Children's Hospital. At the London Hospital there is a six months' course for school medical officers (actual and intending), and for general practitioners who desire to undertake the work of school clinics. The opportunities afforded in London to prepare for the diplomas in psychological medicine are mentioned in the article on that subject (p. 443).

This is very far from being a complete list of the facilities existing in London; it will serve as a general indication, to be expanded by reference to the following paragraphs and to the *Bulletin* of the Fellowship.

Post-graduate courses are held at Oxford, Manchester, Birmingham, and Bristol. In Scotland post-graduate classes in Edinburgh are conducted by the teachers of the University and Royal Colleges, and in Glasgow a post-graduate medical association has been formed under the management of the post-graduate teachers and of representatives of the institutions granting facilities for instruction.

In Wiltshire and the neighbouring counties an interesting experiment is in progress, under which members of hospital staffs in Bristol visit various centres and lecture to the local practitioners. Post-graduate instruction of a somewhat similar character is given in South-West London, where members of the staff of the Bolingbroke Hospital give demonstrations and lectures at the St. James's Municipal Hospital, formerly the poor law infirmary.

The remarks above refer almost entirely to comparatively short courses in the nature of revision classes. This country has not so far followed the example of America in establishing long courses extending into years, with a view to making men specialists in the various branches. It is questionable whether any attempt in this direction will be made in this country, where such training is usually obtained by holding junior appointments such as that of clinical assistant.

Fellowship of Medicine and Post-Graduate Medical Association.

The Fellowship has arranged with the medical schools in London and other hospitals for a post-graduate course admitting to their general practice, including clinical instruction in the wards and out-patient departments, clinical lectures and demonstrations, *post-mortem* demonstrations, laboratory work, etc. Tickets can be obtained from the Secretary at the rate of one month, 6 guineas; two months, 10 guineas; three months, 13 guineas; six months, 18 guineas; and one year, 20 guineas. They admit the holder to certain of the London hospitals to which medical schools are attached, and to a large number of other London hospitals and institutions. The Fellowship issues a monthly bulletin containing a programme of the work in these hospitals, specifying the names of teachers or lecturers, together with the time and place at which their instruction is given. This list is arranged under the headings of the various sections of the course—for example, diseases of the chest, ophthalmology, radiology, venereal diseases, etc. There are also occasional short courses in general and special subjects, notice of which is given in the *Bulletin* and issues of the BRITISH MEDICAL JOURNAL. Announcement is also made of special courses of clinical lectures, some of which are occasionally held out of London.

The offices of the Fellowship are at 1, Wimpole Street, W.1 (telephone Mayfair 2236). The Secretary, Miss M. A. Willis, is in attendance daily from 10 a.m. to 5 p.m., excepting Saturday. The annual subscription for membership of the Fellowship of Medicine and Post-Graduate Medical Association has been fixed at a minimum of 10s.

Edinburgh Post-Graduate Courses in Medicine.

In connexion with the University and Royal Colleges Post-Graduate Courses have been arranged this year from July 31st to September 9th inclusive, comprising: (*a*) A Course on Diseases of Children from July 31st to August 11th; (*b*) a General Medical Course; (*c*) a General Surgical Course. Courses (*b*) and (*c*) will extend for four weeks from August 14th to September 9th.

The Course on Diseases of Children will include Medical and Surgical Clinics and Special Clinics on Diseases of the Skin, Venereal Diseases, Child Welfare, Mental Defect, Ear and Throat, Dental Clinics, and Ante-natal Clinics. The General Medical Course will include Lecture-Demonstrations, and, where possible, practical instruction on Medical Anatomy, Medical Side-room Work, Examination of the Blood, X-Ray and Electrical Therapy, Morbid Anatomy, and *Post Mortems*; Clinical Instruction in Medicine, Diseases of Children, Diseases of the Skin, and Infectious Diseases; and Special Instruction in the Diseases and Methods of Examination of the Nervous, Circulatory, Respiratory, Alimentary, and Renal Systems, and in Diseases of the Ductless Glands. The General Surgical Course will include Lecture-Demonstrations on Surgical Anatomy, Surgical Pathology, and Surgical X-Ray Diagnosis; Clinical Instruction in Surgery at the Royal Infirmary and Royal Hospital for Sick Children; Clinical Instruction in Venereal Diseases; Surgical Out-patients; Surgical and Gynaecological Operations and Special Instruction in Abdominal and Genito-Urinary and other branches of Surgery.

A series of Special Lectures, open to all graduates, will be delivered thrice weekly during the month, on subjects of general Medical and Surgical interest, including recent advances in treatment. The following special courses have also been arranged: Examination of the Blood, Vaccine-Therapy, Physiological and Biochemical Methods in Clinical Medicine, Diseases of the Ear, Nose and Throat, and Venereal Diseases.

Particulars regarding the courses, dates of commencing, fees, etc., may be had on application to the Honorary Secretary, Post-Graduate Courses in Medicine, University New Buildings, Edinburgh.

Graduate Medical Teaching in Glasgow.

Organized post-graduate medical teaching is available in Glasgow under the auspices of the Post-Graduate Medical Association. This association is composed of practically all the teaching institutions in Glasgow and the various teachers giving post-graduate instruction, and its business is managed by a board elected periodically by them. The chairman of the board is Principal Sir Donald MacAlister, K.C.B., M.D., and the vice-chairman Sir Hector C. Cameron, C.B.E., M.D. During the winter months special courses in various subjects are conducted, and there is a series of weekly demonstrations specially designed for local practitioners. A comprehensive scheme of Clinical Courses is carried out during the summer months, from May till October, and arrangements have also been made whereby a limited number of graduates may become attached to wards or out-patient departments nominally as clinical assistants for definite periods throughout the year. As such they work under the direct supervision of the physician or surgeon in charge, and carry out such detailed investigations as directed. Those desiring further information should apply to Dr. J. N. Cruickshank, Acting Secretary, Post-Graduate Medical Association, University, Glasgow.

Courses for Medical Graduates at Bristol.

The University of Bristol provides courses of post-graduate study for practitioners. Details of set courses at the Royal Infirmary and General Hospital are announced locally. In addition, practitioners may become clinical assistants in

medicine, surgery, or special subjects for periods of a month or more.

The University also holds courses of demonstrations in outlying centres in the West of England. Resident practitioners form themselves into a committee and consider the type and extent of demonstrations required. The University furnishes the lecturers and makes all the necessary arrangements.

All inquiries should be addressed to the Director of Post-Graduate Studies, Pathological Department, Bristol University.

West London Post-Graduate College.

The work of this institution is carried on at the West London Hospital, the first in London to devote its clinical material solely to the instruction of qualified medical men. The college started in 1895; it is provided with lecture, reading, writing, and class rooms, and accommodation of all sorts for the convenience of post-graduate students. In the five years before the war the yearly entry averaged over 220. The work of the college is eminently suitable for men who wish to revive their general clinical knowledge after war work.

As for ward work, the students accompany the senior staff on their visits to the wards at 2.30 p.m. daily, and also go round with the resident medical officers in the morning. Out-patient work begins at 2 p.m. This department is large, and affords ample facilities for post-graduates to see and examine patients. There are the usual special departments. Post-graduates are appointed to act as clinical assistants for three or six months. There is no charge to members of the college. Special practical classes are held in medicine, general practical surgery, gastro-intestinal surgery, medical and surgical diseases of children, analysis of blood and urine, cystoscopy, venereal disease, tropical diseases, retinoscopy, ophthalmic operative surgery, and, when material is available, in operative surgery. The size of the classes is limited. A special clinic for the treatment of venereal diseases (male and female) is held every evening (Saturdays included) at 5.30. Graduates are admitted to the work of the clinic free, and certificates of satisfactory attendance and work are given.

Operations take place at 2 p.m. daily, the surgeons often availing themselves of the assistance of the post-graduates, and in any case making arrangements so that they can readily see what is going on. The anaesthetists give instruction in the administration of anaesthetics, including spinal analgesia, on the operating days, students being allowed to administer them under supervision, while special classes are held in each session. The pathological laboratory is in charge of a pathologist who attends every day.

Demonstrations are ordinarily given in the morning by the assistant physicians and surgeons, and by the medical and surgical registrars. Lectures of a practical kind are given daily.

Fees.—Hospital practice, including all ordinary demonstrations and lectures, £1 11s. 6d. for one week, £4 14s. 6d. for one month, £6 6s. for six weeks, £9 9s. for three months, £15 15s. for six months, £23 12s. 6d. for one year, and £45 for a life ticket. Every year in August there is a special vacation class lasting four weeks, for which the fee is £4 14s. 6d. Instruction in the administration of anaesthetics is given at the rate of £3 3s. a month.

The certificates of the school are recognized by the Admiralty, the War Office, the Colonial Office, the India Office, and the University of London (for higher degrees). A prospectus can be obtained on application to the Dean.

North-East London Post-Graduate College.

The headquarters of this post-graduate school are situated at the Prince of Wales's General Hospital, in the midst of a densely populated North London district. It contains 125 beds, and is within a few minutes' walk of South Tottenham Station on the Midland Railway, Seven Sisters Station on the Great Eastern Railway, and Tottenham Hale on the Great Eastern main line. It is readily accessible by electric tram from Finsbury Park and Hackney, and from Dalston, Edmonton, and other parts of North London.

The college is recognized by the Admiralty and the India Office for the purposes of study leave, and by the University of London as a place for advanced study for the M.D. and M.S. degrees; the course of practical teaching of bacteriology is approved by the University of Cambridge for its D.P.H. Diploma, and there are ample arrangements for the convenience of men who are thus working, or who, being in active practice, are desirous of getting themselves into touch with modern methods. The hospital as a whole affords excellent facilities to qualified medical practitioners who wish to take part for a time in the work of an active general hospital, or to obtain special instruction in the several branches of medicine and surgery, since it is open to them to study diseases of the eye, ear, throat, nose, skin, fevers, children's diseases, psychological medicine, dental surgery, radiography, the application of electricity in disease, and the administration of anaesthetics. Throughout the sessions into which the year's work is divided, clinics, lectures, and demonstrations are given by members of the teaching staff in the lecture room. Operations are performed every afternoon of the week except Saturday. Special classes are arranged in modern methods of the investigation and treatment of disease, and special intensive courses are held at intervals throughout the year, each lasting two weeks, clinical instruction being arranged for each hour of each day.

Fees.—Two guineas for a three months' course of study in any one department, which may be begun at any time; a fee of 5 guineas admits to the whole practice of the hospital for a similar term (one month, 2 guineas, and one year, 10 guineas), and a perpetual ticket for the practice of the hospital may be obtained for 15 guineas.

Additional information can be obtained from the Dean of the Post-Graduate College, at the hospital, or at 19A, Cavendish Square, London, W.1.

Australian and New Zealand Medical Association.

Some members of the profession born in Australia or New Zealand and now resident in England have formed an Australian and New Zealand Medical Association to give information and advice to medical visitors from the Commonwealth and Dominions with regard especially to attendance at special clinics, post-graduate work, and facilities for preparing for examinations such as the M.R.C.P., F.R.C.S. (England and Edinburgh), and the D.P.H., and also as to house appointments and clinical assistantships in London and the provinces. Information will also be given as to lodgings, sports, and social opportunities. All medical graduates or undergraduates born in Australia or New Zealand and resident or visiting England are eligible to become members. The fee is one payment of 5s. Further information can be obtained from the joint honorary secretaries, Mr. E. T. C. Milligan, F.R.C.S., and Mr. Bedford Russell, F.R.C.S., 86, Harley Street, London, W.1.

TROPICAL MEDICINE.

There are large and important schools of Tropical Medicine in London and Liverpool, and several universities and other examining bodies have instituted diplomas or degrees in the subject. The Colonial Office now expects all nominees for the Colonial Medical Service to pass through one or other of the two schools mentioned before their appointments are confirmed, and commercial firms engaged in tropical enterprise commonly demand from medical applicants for employment corresponding evidence of special knowledge. Information with regard to these schools and diplomas and degrees follows.

Diplomas and Degrees.

London University.—Tropical medicine is one of the six branches in which the M.D. degree may be obtained. The regulations relating to the curriculum and examination correspond to those applying to the other branches.

London Conjoint Board.—This body grants a diploma in tropical medicine to candidates after an examination usually held in the months of April, July, and December. Ordinary candidates must present evidence of having attended, subsequently to obtaining a registrable qualification in medicine, surgery, and midwifery, (1) practical instruction in pathology, protozoology, helminthology, entomology, bacteriology, and hygiene in relation to tropical medicine, in an institution recognized for this purpose, during not less than three months; (2) the clinical practice of a hospital recognized for the study of tropical diseases during not less than three months. These conditions may be modified in the case of candidates who have had practical experience in tropical countries. The fee for admission to the examination is £9 9s. The Board also grants diplomas in psychological medicine and in ophthalmic medicine and surgery. Candidates must hold a medical qualification registrable in the United Kingdom or be graduates in

medicine of an Indian, Colonial, or foreign university. Particulars and conditions of admission to these examinations, fees, etc., may be obtained from the Secretary of the Examining Board, Examination Hall, Queen Square, Bloomsbury, London, W.C.1.

UNIVERSITY OF LIVERPOOL.—A diploma in tropical medicine is given by this university to students who have been through the courses provided by the Liverpool School of Tropical Medicine and have passed the examination held twice yearly by the university examiners. The subjects of examination are (*a*) tropical pathology, parasitology, and entomology; (*b*) tropical and applied bacteriology; (*c*) tropical hygiene and sanitation; (*d*) tropical medicine, including etiology, symptoms, diagnosis, and treatment of tropical diseases. Further information can be obtained from the Dean of the Faculty of Medicine, University of Liverpool.

UNIVERSITY OF CAMBRIDGE.—This university grants a diploma in tropical medicine and hygiene to any person whose name has been on the *Medical Register* for not less than a year provided that he passes the examination of the university in this subject. Previous to admission to the examination he must produce approved evidence that he has studied pathology (including parasitology and bacteriology in relation to tropical diseases), clinical medicine and surgery at a hospital for tropical diseases, and hygiene and methods of sanitation applicable to tropical climates. Examinations are held in January and August each year, and last four days. The fee for the examination and diploma is 9 guineas on admission or readmission. Application for further information should be made to Dr. G. S. Graham-Smith, Pathological Laboratory, Cambridge.

SCHOOLS.

LONDON SCHOOL OF TROPICAL MEDICINE.

This school is under the auspices of the Seamen's Hospital Society. The laboratories, museum, library, etc., are within the building of the Hospital for Tropical Diseases, Endsleigh Gardens, N.W.1, and excellent opportunities are afforded to students and others who may be desirous of studying diseases incidental to tropical climates before entering the services or going abroad. In the wards of the Hospital for Tropical Diseases are to be found cases of tropical disease such as may be met with in actual practice in the tropics. There are three courses in the year lasting three months, beginning September 25th, January 9th, and April 24th approximately. The course is so arranged as to equip men for the Cambridge D.T.M. and H. and the D.T.M. and H. of the Conjoint Board. Tropical Medicine has been admitted as a sixth alternative subject for the M.D. of the University of London, and the school curriculum is adapted to afford facilities for candidates desirous of taking out the M.D. in this subject. Further information may be obtained from the Dean, London School of Tropical Medicine, India Office, Whitehall, London, and the Secretary, London School of Tropical Medicine, Seamen's Hospital, Greenwich, S.E.10.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.

This school is affiliated with the University of Liverpool and the Royal Infirmary of Liverpool. Two full courses of instruction are given every year, commencing about January 6th and September 15th, lasting for the term of about thirteen weeks, and followed by the examination for the diploma of tropical medicine given by the University of Liverpool. Two courses in veterinary parasitology are also given, commencing about the same dates as the diploma courses. In addition to the full courses, an advanced course of practical instruction in tropical pathology and medical entomology, lasting a month, is given every year in June; it is of such a kind as to be very useful to medical men returning from the tropics on short leave. A special course of instruction in entomology, etc., is also given three times a year to officers of the East and West African Colonial Services. Students of the school who do not care to undertake the examination held by the university at the end of each term for the diploma in tropical medicine are given a certificate for attendance if the latter has been satisfactory.

Fees.—The fee for the full course of instruction is 20 guineas, with an extra charge of 1 guinea for the use of a microscope, if required. The fee for the Diploma Examination is 5 guineas, for the Advanced Course 6 guineas, and for the course in veterinary parasitology 15 guineas.

The new laboratories of the school adjoin the university and the tropical ward of the Royal Infirmary. The dimensions of the building are 162 ft. in maximum length by 84 ft. in width. In addition to the basement, in which are accommodated the photographic department and large storage rooms, there are four floors. The ground floor has: (1) Lecture theatre, with accommodation for about seventy students; (2) library; (3) a spacious museum, with preparation room adjoining. The first floor has twelve rooms, in which are housed the Departments of Tropical Medicine and Entomology. The second floor has the main class laboratory, 69 ft. by 58 ft., excellently lighted, and three other rooms, devoted to the Department of Parasitology. The third floor has a large research laboratory and two research rooms. On the roof is an insectarium, a mosquito-proofed house, and other accommodation.

Since it was instituted the school has dispatched to the tropics thirty-two scientific expeditions, many of the workers having been taken from among its students. The work done by them has been published in twenty-one special memoirs, besides textbooks and numerous articles in the scientific press, also in the *Annals of Tropical Medicine and Parasitology* of the school. In connexion with the school are (1) the Manáos Research Laboratory in Brazil, and (2) the Sir Alfred Lewis Jones Tropical Laboratory, Sierra Leone, which was opened on January 10th, 1922. Further information may be obtained from the Hon. Dean, School of Tropical Medicine, Pembroke Place, Liverpool.

PSYCHOLOGICAL MEDICINE.

THE study of mental diseases has been somewhat neglected in the past, and its importance has been scarcely recognized by the student as it has received so little emphasis in his medical curriculum. Of late years, however, it has become apparent that mental disorder constitutes a social and medical problem of great significance, and there is little doubt that in the future it will be recognized as one of the most important specialties. It should be understood that by mental disorder is not only meant those severe forms which are to be found in the asylums, but the term also includes the mental defectives of all grades, the mild and often unrecognized psychoses, and also the various types of psychoneuroses. The student who proposes to go into general practice should therefore make every effort to acquire a knowledge of mental disorder, and those who intend to take up a career in the prison service or, still more importantly, the school medical service, will find such knowledge an almost essential part of their equipment.

Instruction and Diplomas.

The facilities for the study of psychological medicine are now much greater than in former years. Most of the teaching hospitals have out-patient departments for the treatment of mental disorder, and in many of these hospitals special lectures are devoted to this branch of medicine, in addition to the usual and compulsory courses in insanity. In London post-graduate courses of instruction of a comprehensive kind are given at the Maudsley Hospital and at Bethlem Hospital, and at the National Hospital for the Paralysed and Epileptic, Queen Square, courses are arranged to meet the requirements for the diploma in psychological medicine in regard to nervous diseases. Courses in mental deficiency are arranged by the University of London. There are also post-graduate courses at the Universities of Edinburgh, Cambridge, Birmingham, Leeds, Manchester, Durham, and elsewhere. Those who are taking up psychiatry as a career will find it desirable to obtain a diploma in psychological medicine. Such a diploma is not at present compulsory for a permanent position on the staff of a mental hospital, but it will probably become so in course of time, just as it is now essential to obtain the D.P.H. if a career in public health is contemplated. Psychiatry is one of the branches of medicine which candidates for the M.D. degree of the Universities of London and Edinburgh can take up, and, in addition, diplomas in psychological medicine, to which reference has been made, can be obtained from the Universities of Cambridge, London, Edinburgh, Durham, Leeds, Manchester, and the National University of Ireland, and from the Conjoint Board in England. The Medico-Psychological Association of Great Britain and Ireland also grants certificates of proficiency after examination and encourages the study of psychiatry by the offer of prizes for original and research work.

Mental Hospital Appointments.

Those who take up psychiatry as a career work as medical officers of public or private mental hospitals, or similar institutions. Except in the larger institutions, such as those under the control of the London County Council, where a number of the medical officers are allowed to live out if married, the medical staff are resident officers, having board, lodging, etc., either in the hospital itself or a residence in the grounds. Junior assistant medical officers receive about £300 to £400 per annum, and senior assistant medical officers about £500 to £700, in both cases with board, lodging, laundry, etc., in addition; if married, the board, etc., is commuted for cash. As the mental hospitals are under local control the salaries show considerable variation in different asylums. Medical superintendents, whose pay commonly ranges between £800 and £1,500 per annum, are provided with a house in the grounds of the hospital and draw various allowances.

Since the passing of the Asylum Officers' Superannuation Act in 1909, all officers and others of the established staff of a public (county or borough asylum) mental hospital may retire at the age of 55 on a pension varying from one-half to two-thirds of the value of their pay and emoluments, or one-fiftieth for every year served, paying as contribution 3 per cent. of the value of their appointments annually. This very favourable prospect may not appeal to junior practitioners joining the services, but will eventually prove to be a valuable asset.

Prospects in the Public Service.

Appointments to the public mental hospitals are made by the Visiting Committees, and in most cases only the junior posts are open to those who have not had previous experience in psychiatry. Since the public mental hospital service is a local and, except indirectly, not an imperial one, the promotion tends to be slow and uncertain, and the higher positions are not always advertised and thus thrown open to competition. For this and other reasons mental hospital work has undoubtedly not been in favour with newly qualified men in years past, but the general conditions of service have tended to show a progressive improvement and will in all probability continue to do so in the future.

In March, 1920, the Board of Control did useful service by issuing to visiting committees of asylums a circular upon the three following matters: (*a*) The dearth of suitable applicants when vacancies occur for the post of assistant medical officer, and the probable causes thereof; (*b*) the need of provision for the more effective treatment upon modern lines of recoverable cases of mental disorder; (*c*) the necessity for raising the standard as to the training of existing and future assistant medical officers in asylum practice, and of affording facilities for such training.

Under (*a*) the Board of Control, after pointing out some of the disadvantages of the present state of affairs, made the following suggestions:

(i) That an improvement be made in the salaries of the assistant medical officers, at least to such an extent that in the cases of all those who have been in the service above a certain number of years and are regarded as permanent officials, the salary should be reasonably sufficient for a married medical man, and that in the case of the deputy superintendent it should more closely approximate than at present to that of the superintendent.

(ii) That, in the case of a permanent official, application for permission to marry be not required; that, according to circumstances, proper accommodation for a married man be provided, and that subject to rules approved by the Secretary of State for the protection of the patients, and with due regard to the proper administration of the institution, permission to live out may be granted.

(iii) That to the title of assistant medical officer the words "and deputy superintendent" should be added to that of the one selected to be in charge during the absence of the medical superintendent.

(iv) That the use of the title "senior assistant medical officer" should not be restricted as at present to the post of first assistant, but should be extended and be indicative of a certain standing and expert knowledge. By the adoption of this suggestion there would in many asylums be two senior assistant medical officers, and perhaps even three or four in the largest asylums.

(v) That except where there has been previous asylum experience, appointments to posts of assistant medical officers should in the first instance be temporary in character.

Under (*b*) the Board suggested that the treatment of recent recoverable cases should be carried out by members of the medical staff conversant with modern methods, and that the number of the medical staff should be sufficient to ensure that none of them is required to undertake the treatment of more than fifty recent cases at any one time. Under (*c*) suggestions were made with a view to encouraging assistant medical officers to obtain a diploma or degree in mental diseases, including provision for study leave on full salary. The attitude of the Board of Control is clearly shown in the following sentence:

"If the welfare, treatment, and recovery of patients is not to be jeopardized and the study of mental diseases is not to lag behind the study of other branches of medicine, the Board feel the necessity of initiating measures to maintain progress and to secure the best possible treatment of the patients."

Readers who wish to go farther into this subject may be referred to an interesting paper by Dr. C. Hubert Bond in the *Journal of Mental Science* for January, 1920, in which he insisted on the need for mental clinics and schools of psychiatry, and reviewed the progress made towards realizing the measures, powerfully advocated in 1908 by Lieut.-Colonel D. G. Thomson, for supplying adequate instruction in the institutes and practice of psychiatry.

Both the British Medical Association and the Medico-Psychological Association are working separately and together to improve present conditions of service, and have, for example, already removed the "celibacy" objection to the service. The salaries have also been considerably increased, especially in the junior ranks, and contrast favourably with those which were paid before the war. During the next few years considerable progress may be anticipated in the conditions under which the insane are treated. The asylums will tend to develop an atmosphere approximating more closely to that of the general hospitals, and there is a strong impulse towards the creation of clinics, attached to general hospitals, for the treatment and study of mental disorder in its early stages. If these most desirable changes are brought about, the mental hospital service will become more attractive, and will afford greater opportunities for the medical graduate who proposes to specialize in psychiatry.

Finally, it may be said that while routine, administrative, and clerical work bulk largely in mental hospital duties, as they do in other public medical services, there is ample material, time, and scope for purely medical work and research—difficult as the subject may be—in psychiatry as one of the branches of medicine open to young graduates.

MAUDSLEY HOSPITAL, DENMARK HILL.

A number of courses of instruction for the Diploma in Psychological Medicine have been given at the Maudsley Hospital, the details of the last course being as follows: The course consisted of two parts, Part I being conducted by Sir Frederick Mott, Dr. F. Golla, and Dr. Henry Devine. Sir Frederick Mott gave eight lectures on the anatomy of the nervous system, followed by practical instruction and demonstrations on methods of staining nervous tissue and preparing it for microscopical examination; microscopic sections were distributed, illustrating the principal diseases of the nervous system, for mounting as a permanent collection. Dr. Golla gave eight lectures on the physiology of the nervous system, followed by practical instruction and demonstrations on physiological chemistry (including the chemistry of the nervous system, physico-chemical methods, blood and urine analysis, and gastric contents analysis), and practical physiology (including the recording of reflexes and tremors in man and the action of drugs on the autonomic system). Similarly, Dr. Devine gave eight lectures on psychology, followed by practical instruction and demonstration of psycho-physical methods and memory and intelligence tests. In Part II of the course Sir Frederick Mott gave six lectures on the pathology of mental diseases, including brain syphilis, its symptomatology and treatment. Dr. Bernard Hart gave eight lectures on the psychoneuroses. Sir Frederick Mott and Dr. F. Golla gave twelve clinical demonstrations in neurology; the first six demonstrations were given by Dr. Golla at the Hospital for Paralysis and Epilepsy, Maida Vale. Dr. F. C. Shrubsall gave eight lectures on the practical aspect of mental deficiency. Dr. W. C. Sullivan, medical superintendent of Broadmoor Asylum, gave six lectures on crime and insanity. Dr. C. Hubert Bond and Dr. E. Mapother gave a course of lectures on the differential diagnosis and treatment of mental disorders and the legal relationships of insanity. The fee for the whole course (Part I and Part II) was 15 guineas, or for either part separately 10 guineas; for one single series of lectures in Part I the fee was 4 guineas, and in Part II 2 guineas. Inquiries as to lectures, etc., should be addressed to the director of the pathological laboratory, Maudsley Hospital, Denmark Hill, S.E.5.

BETHLEM ROYAL HOSPITAL.

A course will be held at Bethlem Royal Hospital, commencing on September 18th, of lectures and practical instruction for the Diploma in Psychological Medicine. It is proposed

in future to give two courses each year, an autumn session of intensive character, commencing in September, and completed in early December, and a spring session, commencing in the middle of January and completed in the middle of April. Each course consists of two parts: Part A includes lectures and demonstrations on the anatomy, histology, and physiology of the nervous system, with lectures on psychology and demonstrations in experimental psychology. Part B comprises lectures and clinical demonstrations in psychology, including lectures and demonstrations in the morbid anatomy of the nervous system, a series of lectures, with clinical demonstrations, on different branches of psychological medicine, and lectures, with clinical demonstrations, on mental deficiency. Entrants for the course who pay a composition fee of 15 guineas may, if due notice is given, attend either Part A or Part B of one course and postpone the other part until the next session. An entrant who wishes to attend one part only pays a fee of 10 guineas. An entrant who takes the complete course can attend the general clinical practice of the hospital on payment of 5 guineas for six months or 10 guineas for one year, but an entrant who does not take either part of the course and desires to attend the clinical practice of the hospital must pay a fee of 5 guineas for each three months of attendance. Further particulars may be obtained from the physician-superintendent, Bethlem Royal Hospital, S.E.1.

National Hospital for the Paralysed and Epileptic, Queen Square.

A post-graduate course, which fulfilled the requirements of the regulations for the Diploma in Psychological Medicine in regard to instruction in nervous diseases, was held at the National Hospital for the Paralysed and Epileptic, Queen Square, Bloomsbury, W.C.1, from May 15th to June 30th, 1922, and other courses will be duly announced. Dr. J. G. Greenfield delivered lectures on the pathology of the nervous system; Dr. Gordon Holmes, Dr. Hinds Howell, and Dr. Kinnier Wilson lectured on the anatomy and physiology of the nervous system; Dr. W. J. Adie demonstrated methods of examination of the nervous system: out-patient clinics were held at the hospital on the afternoons of Mondays, Tuesdays, Thursdays, and Fridays; and clinical lectures and demonstrations were held on Wednesday afternoons. An inclusive fee of 10 guineas was charged for the whole course, but any part of the course could be taken separately at a special fee. A special arrangement was made for those unable to attend the whole course, and for details applications should be made to the dean of the medical school. Fees are payable to the secretary of the hospital on entering for the course.

PUBLIC HEALTH SERVICES.

General Considerations.

THE Public Health Service, to use the term in a strict sense, consists of medical officers of health appointed by local public health authorities and holding office under varying conditions of tenure. In addition there are county medical officers appointed by the county councils. The latter are not, strictly speaking, public health authorities; the duties of their medical officers are somewhat similar to those of other medical officers of health, but include few executive functions. In many of the county boroughs and counties assistant medical officers of health or assistant county medical officers are appointed, and such appointments may afford stepping stones for promotion to higher offices. The service is, however, not unified throughout the country, and there is no regular system of promotion; appointments are to be obtained only by application to some particular local authority which has advertised a vacancy.

Three other services also ungraded have been brought into existence by recent legislation; their members are charged with duties which bring them into more or less direct relation with public health authorities or county councils and their officers. They are school medical officers, tuberculosis officers, and venereal disease medical officers. Appointments as school medical officer are made by local education authorities, while appointments as tuberculosis officer and venereal disease officer are made by the county councils and the county borough councils.

The medical department of the Ministry of Health for England has been organized under the control of a chief medical officer who has the status of an assistant secretary; it contains six sections, with a senior medical officer at the head of each. These sections are concerned with general health and epidemiology, maternity and child welfare, tuberculosis and venereal disease, the supervision of food supplies, and sanitary administration in relation to infectious disease. There is a separate section concerned with insurance practitioners. Lastly, there are medical officers employed in the Poor Law department and several whose services are available for special purposes but who are not "established" officers. Medical officers and medical inspectors are also employed by the Ministry or the corresponding Board in Wales, in Scotland, and in Ireland. Appointments to these posts are not open to public competition; they are made by the Minister of Health in England and Wales and by the corresponding head of the department in Scotland and Ireland. They are civil service appointments, and come under the superannuation scheme of the service.

Medical Officers of Health.

The first appointments of medical officers of health were made for limited periods, the holder of the office having to risk re-election at the expiration of his term of office. This pernicious practice, so far as it applies to whole-time officers, owing to the persistent endeavours of the British Medical Association, in co-operation with some other bodies, ceased to exist after April 1st, 1922, as regards medical officers of health appointed prior to May 1st, 1921: it is not in operation as regards those appointed after the latter date. The Public Health (Officers) Act, 1921, which was promoted by the British Medical Association, provides that a whole-time medical officer of health shall not be appointed for a limited period, and shall not be removed from his office except with the consent of the Minister of Health. This Act came into operation on April 1st, 1922, but an order of the Minister of Health dated April 12th, 1921, makes a similar provision with respect to those officers appointed after May 1st, 1921.

A medical officer of health who does not devote his whole time to the duties of his office, and a portion of whose salary is obtained from Exchequer grants, may be appointed without limit of time, in which case he cannot be removed from office without the consent of the Minister of Health. If he is appointed for a specified term, say one year, he continues to hold office from year to year unless the Minister consents to his removal or the electing authority gives him three months' notice to resign his office, but the notice must take effect at the same period of the year as that at which the original term of appointment expired. Where the electing body pays the whole of the salary of a medical officer of health he may be dismissed from office without reference to the Minister of Health.

An increasing number of local authorities have established schemes for the superannuation of their officials, but there is no general scheme throughout the country. During the past twenty years the British Medical Association has on several occasions succeeded in getting introduced into Parliament a bill providing for the superannuation of medical officers of health, but the measure has always been opposed by the Government of the day, latterly on the ground that all municipal officers should be superannuated, and that sectional legislation was undesirable. In this connexion it may be stated in passing that medical officers of health are the only State-paid (whole-time) medical officers who do not come under a superannuation scheme.

A medical officer of health of a county or of a district or combination of districts with a population of more than 50,000 persons must hold a diploma in public health. This diploma is now generally required from all applicants for whole-time appointments of medical officers of health and assistant medical officers of health, and very frequently in the case of school medical officers, tuberculosis officers, and venereal disease officers. A medical man who desires to enter the public health service as a career must as a first step obtain such a diploma.

Position in Scotland.

The above statement applies specially to England. In Scotland the position is different in several respects. The central authority is a Board of Health which has at present five members, with offices in Edinburgh. One of the five is a medical man. It is now proposed to reduce the membership to three as existing appointments expire, but one of the three will be medical. The "Board" system is the rule in central government north of the Tweed, there being also Boards of Agriculture, Fisheries, Education, and Control (of lunatics). The Secretary for Scotland, whose chief office is in Whitehall,

is over all, and there is a Parliamentary Secretary. Both of these are members of the Board, the Secretary for Scotland being President, and one of the Edinburgh members Vice-President. The Board has a staff of medical officers and of referees for insurance work. Under the Public Health (Scotland) Act, 1897, no one can be appointed as medical officer of health for any area, burghal or rural, however small, unless he possesses a diploma in public health. One result is that small burghs often appoint the county M.O.H. as their officer. No medical officer or sanitary inspector can be removed from office except with the sanction of the Board of Health. A "proper" salary must be paid, and it is incompetent for the local authority to bring about a resignation by indirect means, such as reducing a salary, or attaching conditions to the appointment. The Act says nothing about superannuation, and specifies no retiring age. The appointment, however, is not *ad vitam aut culpam*. Most counties in Scotland are smaller than in England, and the county medical officer is also district medical officer, being therefore both administrative and executive in function.

The School Medical Service.

School medical officers are appointed by local education authorities under schemes of medical inspection of school children which must be approved by the Board of Education. Primarily their duty is to detect among the children attending the public elementary schools any physical or mental defect which may retard the education of such children, and to inform their parents of its existence. But practically their duties vary considerably in different areas. This is because most approved schemes of inspection include systems of work which aim at facilitating the task of parents in obtaining for their children the necessary treatment, at checking the results of the latter, and at keeping each defective child under skilled observation both at home and at school until it has passed altogether out of the education authority's hands. The general object of all schemes alike is to make the inspection imposed by law of benefit not merely to the individual child but to the community at large, by preventing conditions which lead to the existence of a large proportion of inefficient citizens among the adult population. In short, the work is so far related to that of a medical officer of health that in most areas the senior school medical officer fills both appointments, his work, when necessary, being supplemented by that of whole- or part-time assistants. Whole-time assistants are commonly paid salaries commencing at a minimum of £500 a year or less, the chief attraction of the posts being that they may lead on to appointment as medical officer of health, but we fear that not many actually do reach that position. Yet it is desirable for a prospective whole-time school medical officer to obtain a diploma in public health. In some counties and county boroughs it is now the practice for the officer to undertake certain minor ameliorative work, notably prescription of glasses when necessary, the removal of adenoids, and treatment in connexion with certain diseases of the skin. The added interest thus given to the work appears to make for increased efficiency and also enhances the value of the post. Otherwise the monotony of filling up record cards in the absence of any duty of treatment is apt to become intolerable, and if no public health functions belong to the post it gives little chance of developing into a health officership.

Tuberculosis Officers.

Before sanatorium benefit was transferred to the public health authorities the prescribed duties of tuberculosis officers were to act as advisers to Insurance Committees in connexion with the operation of the National Insurance Act and to take charge of the work of the tuberculosis dispensary, which is the main unit of the Departmental Committee's scheme. A tuberculosis officer is a whole-time officer, who should have special training in tuberculosis work, and be of suitable age and attainments to command general confidence. At present the number of appointments is small, and the salary generally attached to them is about £500 a year with an occasional bonus addition. In many instances they are now appointed on the staff of the medical officer of health, so that the work of prevention and cure of tuberculosis may be made part of the general health work of the Municipal Council.

Venereal Disease Medical Officers.

Schemes for the diagnosis and treatment of venereal disease are administered by county councils and county borough councils. A few of these authorities have appointed whole-time medical officers at a salary of £600 to £700 per annum. In some cases the officer is on the staff of the medical officer of health and in others he is an independent official. Specialized practical experience in the treatment of venereal disease is essential, and it is an advantage if such experience has been obtained in the navy or army. His duties usually include not only the diagnosis and treatment of cases of venereal disease at one or more central clinics, but also the instruction and supervision of the treatment by general practitioners attached to local clinics.

Diplomas in Public Health.

New rules for study and examination for these diplomas come into force on January 1st, 1924, but it will be convenient in the first place to state the present position. Most of the universities and licensing corporations now grant diplomas in public health to candidates who pass the examinations imposed by them. Since all such tests must conform to the requirements of the General Medical Council, there is considerable similarity in their nature, though they differ not a little in their reputed difficulty. All of them aim at excluding any candidate who does not appear to have a thorough knowledge of his work in theory and in practice, for the regulations of the General Medical Council demand that the granting of a diploma in Sanitary Science, State Medicine, or Public Health shall be proof of the "possession of a distinctly high proficiency, scientific and practical, in all the branches of study which concern the public health." The tests, in short, are supposed to constitute an honours and not a mere pass examination. As regards the special tuition required, it is now easy to obtain this in practically every centre of medical education, and at almost every medical school of any importance. It is desirable to note in this connexion that the chemical and bacteriological examinations for many of the health diplomas are so practical, and the time allowed so short, that unless a candidate—even though familiar with the duties of M.O.H.—has a considerable amount of manipulative dexterity only to be acquired by ample work in a laboratory, he would not be likely to satisfy the examiners.

The present rules of the General Medical Council remain in force until January 1st, 1924. They require that every candidate (subsequent to obtaining a registrable qualification in medicine and surgery) shall have passed through a stated curriculum in the subjects of sanitary science. This must last not less than nine calendar months, and include four months' study in a laboratory in which chemistry, bacteriology, and the pathology of diseases of animals transmissible to man are taught, six months' practical study of the duties involved by public health administration, and attendance at least twice weekly for three months on the practice of a hospital for infectious diseases at which instruction is given in methods of administration. These rules do not apply to practitioners registered or entitled to be registered before January 1st, 1890, while that regarding six months' practical study of public health administration is waived in the case of a candidate who has himself been in charge of a sanitary district with a population of not less than 15,000 for a period of not less than three years. The study in question must be passed under the personal supervision of a medical officer possessing certain definite facilities for affording it, these being carefully described in the regulations. The period may be reduced to three months in the case of a candidate who has undergone a corresponding period of study in the public health department of a recognized medical school, or who has been resident medical officer at a hospital for infectious diseases with accommodation for 100 patients for not less than three months. The laboratory study must include at least 240 hours' work, not more than half being devoted to practical chemistry. The examinations imposed by the diploma-granting bodies must extend over not less than four days, one at least being devoted to practical work in the laboratory, and one to practical examination in, and reporting on, subjects within the duties of a medical officer of health, including those of a school medical officer.

The steps which examining bodies take to ascertain the candidate's fitness for a diploma are in all cases much the same, though the order in which the subjects are taken is not always identical. Every candidate therefore should, when he has settled what diploma or degree in State medicine he wishes to obtain, seek the schedule relating to it from the authority concerned. A certain number of the universities grant degrees in the subject as well as diplomas.

The new Rules will apply after January 1st, 1924. They require that not less than two years shall elapse after

obtaining a registrable qualification before admission to the Final Examination for a public health diploma. The curriculum shall extend over not less than twelve calendar months. At least five months must be given to practical laboratory instruction in an approved institution in (*a*) bacteriology and parasitology, including entomology, especially in relation to diseases of man and to those transmissible to man from the lower animals (180 hours); (*b*) chemistry and physics in relation to public health (90 hours); and (*c*) meteorology and climatology (10 hours). Not less than 80 hours' instruction in an approved institution, or by approved teachers, must be given to the following subjects, the approximate hours being as bracketed: Principles of public health and sanitation (30), epidemiology and vital statistics (20), sanitary law and administration (20), sanitary construction and planning (10).

There is required three months' attendance—30 daily attendances of not less than two hours in each week—on the clinical practice of a recognized hospital for infectious diseases, with instruction in methods of administration. Six months' practical training under a medical officer of health is an important feature of the new scheme, and the time cannot be reduced by attendance on lectures as at present. Three hours on each of sixty working days are the minimum, and the instruction is to include maternity and child welfare, the services relating to school life, venereal disease and tuberculosis, industrial hygiene, and food, meat and milk inspection.

The examination will consist of two parts, each lasting for at least two days. Part I covers bacteriology, parasitology (with medical entomology), chemistry, physics, meteorology, and climatology. Part II includes hygiene and sanitation, epidemiology and infectious diseases, sanitary laws and vital statistics, and public health administration. There will be practical examinations in infectious diseases, food inspection, and inspection of premises. Neither part can be entered on until the relative courses of instruction (after registration in medicine) have been completed, and Part I must be passed before admission to Part II.

THE PUBLIC SERVICES.

THE ARMY, AIR FORCE, AND INDIAN MEDICAL SERVICES.

THE Medical Departments of the Royal Navy, of the Army, and the Indian Government normally employed between them before the war some 3,000 medical men, and vacancies in the ranks of these services were filled by offering commissions for competition once or more each year. In the abnormal circumstances arising out of the war and the period immediately following it the usual regulations for recruiting the permanent medical staff of these services were, for the most part, in abeyance. Now that a return has been made to peace establishments we publish somewhat fuller information than we have given in recent years for the guidance of those who think of applying for regular commissions in the Royal Air Force Medical Service, the Royal Army Medical Corps, and the Indian Medical Service. Further details should be sought from the respective medical departments. The usual information regarding the conditions of service, pay, and prospects in the Medical Department of the Royal Navy is omitted this year for the reasons stated at page 449.

ARMY MEDICAL SERVICE.

ENTRANCE by competitive examination into the Royal Army Medical Corps has not yet been reintroduced, the strength of the Regular Establishment being maintained by the appointment of officers serving on temporary commissions who are selected to fill vacancies as they occur. This source of supply of officers will shortly be coming to an end, when Entrance Examinations on the same lines as those laid down in the Regulations for 1912 will again be held.

The prospects of the newly qualified medical man taking up the army as a career have been much improved by changes that have come into force since the war. The rates of pay and pension are given in the subjoined tables, and it will be found that they compare favourably with those that obtained in 1914.

Pay and Allowances.

	At Home.		In India.
	Married. £ per annum.	Unmarried. £ per annum.	Rupees a Month.
Lieutenant	615	541	650
Captain	711	557	800
Captain after 6 years' service	769	675	900
Captain after 10 years' service	824	730	950
Major	877	818	1100
Major after 15 years' service	988	939	1250
Major after 18 years' service	—	—	1400
Lieut.-Colonel	1170	1091	1550
Lieut.-Colonel after 20 years' service ...	1216	1137	1650
Lieut.-Colonel after 25 years' service ...	1232	1183	1850
Colonel	1489	1422	"According to appointment."
Major-General	2163	2091	

At Home.—An officer under the rank of lieutenant-colonel holding an appointment as specialist receives 2s. 6d. or 5s. a day (according to subject or group of subjects). An officer in charge of a hospital receives charge pay, the daily amounts being: in excess of 50 beds, 2s. 6d.; in excess of 150, 5s.; in excess of 300, 7s. 6d.; in excess of 500, 10s. An officer in charge of a medical or surgical division of a general hospital with not less than 300 beds receives half these rates. Professors at the Royal Army Medical College receive £200, and assistant professors £80 a year, in addition to pay and allowance of their rank.

In India.—The specialist pay is 60 rupees a month; charge pay is from 60 to 240 rupees a month, according to the size of hospital.

Retirement.

A lieutenant-general or major-general must retire on attaining the age of 60 years, a colonel at 57, and other officers at 55. A major superseded for promotion retires on the completion of twenty-five years' service, or, if he fails to qualify for promotion, on the completion of twenty years' service. A captain who fails to pass the examination for promotion to major on a second trial must retire at once with any gratuity for which he may be eligible, or, if not, on completing five years' service. A lieutenant who does not qualify for promotion within three and a half years is required to resign. A candidate who has been specially employed in consequence of a national emergency will be allowed to reckon such service towards retired pay and gratuity. The maximum rates of retired pay are as follows:

Captain and subaltern	£300
Major	£450
Lieutenant-colonel	£600
Colonel	£800
Major-General	£1,000
Lieutenant-General	£1,200

Voluntary retirement on retired pay is not allowed until after twenty years' service. Earlier retirement on gratuity is allowed as follows:

Major or captain:	Gratuity.
After 8½ years' commissioned service ...	... £1,000
,, 3 years' service in the rank of major	... £1,800
,, 6 years' service in the rank of major	... £2,500

Seconded Service.

An officer may be permitted to accept employment in the Foreign or Colonial Offices; when so seconded he is not eligible for pay or allowances from army funds, but his service continues to reckon towards promotion and, under certain conditions, towards increase of pay, pension, or gratuity. Among the capacities in which R.A.M.C. officers may be employed are:

(1) The medical service of the Egyptian army.
(2) The sanitary service of the Egyptian Government.
(3) The medical services of the various foreign and colonial Governments.

Service on the West Coast of Africa.

Officers for service in West Africa are usually taken from a list of volunteers for such service. An officer at present receives, while actually serving in West Africa (which service may include ordinary leave not exceeding sixty-one days in a year, and any time spent at Madeira or the Canary Islands on sick leave), additional pay at the following daily rates: lieutenant-colonel 12s., major 9s., captain 7s. 6d., lieutenant 6s.

King's Honorary Physicians and Honorary Surgeons.

Six of the most meritorious officers of the Army Medical Service on the active list may be appointed honorary physicians to His Majesty the King, and six honorary surgeons may be similarly appointed. On appointment as an honorary physician or honorary surgeon an officer under the rank of Colonel in the Army Medical Service may be promoted to the brevet rank of colonel. The appointment of honorary

physician or honorary surgeon is relinquished on retirement. A lieutenant-colonel so appointed receives pay at the rate laid down for a colonel of the Army Medical Service.

The professional work of the corps has received a great impetus through the Directorates of Hygiene and Pathology. Specially selected and trained officers have now been appointed as assistant and deputy assistant directors of hygiene to all commands and garrisons at home and abroad. Junior officers appointed on probation will undergo a course of instruction in hygiene on entering the service, at the army school of hygiene, where lectures and demonstrations are given on the methods of sanitation, including entomology, applicable to the various climates and countries, special attention being paid to tropical hygiene.

The Directorate of Pathology offers many attractions to those officers who are desirous of taking up the scientific side of medicine. Officers who show aptitude in this direction are encouraged to continue their scientific studies during the whole course of their service. As junior officers the posts of clinical pathologists to hospitals at home and abroad are available, while, after their first tour of foreign service, they are given the opportunity of qualifying as specialists in bacteriology and pathology at the Royal Army Medical College; having so qualified they become eligible for the appointments of assistant or deputy assistant director of pathology, posts which carry with them specialist pay or temporary promotion.

Appointments to the staff of the directorate of hygiene and pathology at the War Office are open to officers who have served in these scientific branches—the senior posts carrying the rank of colonel, colonel-commandant, or major-general as the case may be. All such staff appointments, either at the War Office or in commands at home, have a fixed tenure of three or four years should the exigencies of the service permit.

Arrangements have been made for the appointment of consultants in both medicine and surgery, and the ranks of colonel and major-general are now open to such officers. This will encourage officers of outstanding ability in these subjects to continue to devote their attention to medicine and surgery, in which previously there were no openings for officers above the seniority of lieutenant colonel.

The question of specialists has also undergone review and a great improvement in the method of training and selection has been affected. Captains undergo a six months' course at the Royal Army Medical College for promotion to major in the subjects of hygiene and pathology, together with general medicine and surgery. Of those officers who pass the Combined Examination in these subjects, the first 50 per cent. are now eligible to take out a further six months' specialist training, provided that they can prove to have had past experience in a particular subject and to have shown special aptitude for that subject. Results so far achieved by this system have, we are informed, been most encouraging. The training is undertaken by selected teachers of the various London general hospitals, as well as the army professors at the college.

It is recognized that, apart from purely professional work, it is most important that officers should receive administrative training, and the inclusion of officers of the Royal Army Medical Corps in the classes that undergo courses at the recently instituted School of Army Administration at Chisledon will be of great advantage to the Medical Service. Many appointments of an administrative character are open to officers who show zeal and capacity for this side of the army medical officer's duties.

ROYAL AIR FORCE MEDICAL SERVICE.

THE Royal Air Force Medical Service offers a career for medical men which should prove both attractive and interesting. The rates of pay and allowances are good, and a new field of scientific interest is opened up by the manifold problems which the circumstances of aviation produce. The physical and mental fitness for and reaction to the varied conditions under which the flying personnel perform their functions provide much scope for research.

As promotion to the higher ranks of the service is to be entirely by selection, and as a certain proportion of the higher ranks will be reserved for purely scientific as opposed to administrative appointments, it will be seen that there are excellent prospects for the young medical officer who exhibits ability and energy in scientific research, as well as for those who develop a talent for administration.

Commissions.

The establishment will consist partly of permanent and partly of short service officers.

Short service officers will be admitted by direct entry for a period of two years, which may be extended to four years at the discretion of the Air Council on recommendation of the Director of Medical Services. Those who are not selected for permanent commissions will pass into the Royal Air Force Medical Reserve at the expiration of their period of service on the active list, and will then receive the gratuity to which their service entitles them. Short service officers who are approved for permanent commissions, but for whom there are not vacancies in the Royal Air Force Medical Service, may under certain conditions transfer to the Royal Army Medical Corps, counting their time served in the Royal Air Force towards increments of pay and retired pay in the Royal Army Medical Corps.

Officers who have been selected for permanent commissions will be granted leave for a period not exceeding nine months for post-graduate study in general medicine and surgery, tropical and preventive medicine, and other special subjects. Such leave will be granted during the first six years of permanent service, and during such leave officers will remain on full pay and allowances.

New entrants into the Royal Air Force Medical Service will be commissioned as Flying Officers (Medical), and will be eligible for promotion to the rank of Flight Lieutenant (Medical) after two years' service. Officers selected for permanent commissions will be promoted to the rank of Squadron Leader after ten years' total service. Accelerated promotion may be carried out, in a limited number of cases, of officers who show exceptional ability after completion of eight years' service. Promotion to the rank of Wing Commander will be by selection at any time after sixteen years' total service, and to that of Group Captain by selection at any time after twenty-two years' service.

There will be no competitive examination on entry; candidates must be under 28 years of age; be nominated by the Dean of a recognized medical school or teaching hospital; and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance. Each candidate must produce:

1. Birth certificate.
2. Medical registration certificate.
3. A declaration containing the following information:
   - (*a*) Age and place of birth.
   - (*b*) That he is of pure European descent and the son of a subject of the British Empire.
   - (*c*) That he labours under no constitutional or mental disease or disability which may interfere with the efficient discharge of the duties of a medical officer in any climate in peace or war.
     (All candidates will be required to pass a medical examination as to their physical fitness before acceptance, to ensure that they fulfil the standard laid down in this declaration.)
   - (*d*) That he is ready to engage for general service at home or abroad as required.
   - (*e*) The qualifications he is possessed of and what medical or other appointments he has held (if any).
   - (*f*) That he is willing to fly whenever called upon to do so, and to qualify in such aviation test as may be required.

If the applicant is in possession of a certificate of training in an Officers' Training Corps this should be submitted.

An applicant who at the time of application holds or is about to hold a resident appointment in a recognized civil hospital may be seconded for the period, not exceeding one year, during which he holds such appointment. Whilst seconded he will not receive pay from Air Council funds, but his seniority will count from the day on which he is seconded to the civil hospital.

Uniform and Equipment.

Medical officers will be required to provide themselves with the uniform of their rank, and with the distinguishing badges of the Royal Air Force Medical Service. They will be required to provide themselves with service dress and mess dress. The provision of full dress is entirely optional.

An outfit allowance of £50 will be granted to officers if they have had no previous commissioned service. If they have had previous commissioned service in the Royal Navy, the Army, or the Royal Marines, but not in the Royal Air Force, they will receive an outfit allowance of £25.

Rates of Pay.

The rates of pay in the Royal Air Force Medical Service are set out in the following tables:

Rank and Years of Service.	Rate per Diem.
	s. d.
Flying Officer:	
On joining	24 0
Flight Lieutenant:	
On promotion	26 0
After 2 years in the substantive rank	28 0
,, 4 years ,, ,, ...	30 0
Squadron Leader:	
On promotion	31 0
After 2 years in the substantive rank	36 0
,, 4 years ,, ,, ...	39 0
,, 6 years ,, ,, ...	42 0
Wing Commander:	
On promotion	46 0
After 2 years in the substantive rank	50 0
,, 4 years ,, ,, ...	52 0
,, 6 years ,, ,, ...	54 0
Group Captain:	
On promotion	60 0
After 2 years in the substantive rank	64 0
,, 4 years ,, ,, ...	68 0

Rates of Pay in India.

	Rs. per Mensem.
Flying Officer	650
Flight Lieutenant	750
After 2 years as such	850
,, 4 years ,, ...	900
Squadron Leader	1,050
After 2 years as such	1,100
,, 4 years ,, ...	1,150
,, 6 years ,, ...	1,250
Principal Medical Officer	1,950

The scale of *Retired Pay* for Group Captains and lower ranks is given in the following table:

Age.	Service Counting for Retired Pay.	Rate of Retired Pay.	Addition for each Extra Year of Service.*	Reduction for each Deficient Year of Service.*
		£	£	£
55	24	720	22	15
54	24	765	22	15
53	24	742	22	15
52	23	720	22	15
51	22	697	22	15
50	22	675	15	15
49	21	647	15	15
48	21	600	15	15
47	20	562	15	15
46	20	525	15	15
45	19	487	15	15
44	19	450	15	15
43	18	412	15	15
42	18	375	15	15
41	17	337	15	15
40	17	300	15	15

* Limited to five years.

Group Captains retire at 55; maximum retired pay £900
Wing Commanders retire at 51; ,, ,, £600
Squadron Leaders retire at 48; ,, ,, £500

There will be a minimum qualifying period for retired pay of twenty years.

Gratuities.

Short-service officers will receive gratuities at the rate of £100 for each of the first two completed years of service, and at the rate of £150 for the third and fourth completed year. If granted permanent commissions these gratuities will not be payable, but the period of service under the short-service commission will count for retired pay.)

Medical officers holding permanent commissions may, at the discretion of the Air Council, be allowed to withdraw from the service after ten years' service with a gratuity of £1,250, or after sixteen years with a gratuity of £2,000 in lieu of retired pay.

Allowances.

The usual allowances will be payable to medical officers under the same conditions as to officers of other branches of the Royal Air Force.

INDIAN MEDICAL SERVICE.

For some years before the war the pay and conditions of service in the I.M.S. were unfavourable. The pay, furlough pay, and pensions were inadequate; leave was difficult to obtain; the status of administrative medical officers was unsatisfactory. The new terms offered by the Secretary of State for India were announced in 1920, and the Representative Body of the British Medical Association, finding that they satisfied the Association's demands, resolved unanimously to accept them.

Under the reform scheme now being brought into effect medicine is a transferred subject—that is to say, it will in future be under the control of the Provincial Governments and legislatures. In the present state of transition the position which the Indian Medical Service will in future occupy is not well defined, and it seems unnecessary, therefore, to reproduce here in full the conditions of service. Full details and particulars can, however, be obtained from the Secretary, Military Department, India Office, Whitehall, London, S.W.1.

It is, we understand, possible that a scheme of appointments to the Indian Medical Service for a limited period may be promulgated before long.

THE ROYAL NAVAL MEDICAL SERVICE.

A Warning.

In January, 1920, as a consequence of the report of the Jerram-Halsey Committee, new regulations for retirement of officers came into force in the Royal Navy, and new rates of pay were laid down. The new regulations inflicted a great injustice upon a considerable number of surgeon commanders who were nearing, or had passed, the new retiring age. The grievance arose under two heads—age of retirement and rate of pension—and frequent remonstrances were addressed to the Admiralty by the British Medical Association. An account of the matter will be found in a leading article in the British Medical Journal of July 8th, 1922 (p. 52).

The Grievance of the Senior Surgeon Commander.

Very briefly stated, these medical officers, who had entered the Service on the understanding that they would be allowed to serve until the age of 55, were compulsorily retired at 50, and their maximum pension was fixed at £600 a year, representing an increase of but 10 per cent. on the former retired pay of their rank; it should be particularly observed that officers of other branches got increases of pension varying from 26 to 100 per cent. In reply to representations by the British Medical Association the Admiralty admitted the grievance, but declined to remedy it, on the ground that legislation for individual cases of hardship was not practicable. So far from the matter affecting two or three individuals alone, we would point out that the new regulations were unjust to some 80 or more surgeon commanders approaching the new age of retirement. The Council of the Association at length warned the Admiralty that if the question could not be settled satisfactorily it would be obliged to place the facts before the profession, and to advise young medical men that if they entered the Royal Naval Medical Service they must do so with the knowledge that, with its present policy, the Admiralty cannot be trusted to keep any engagement it may make with its medical officers.

The Moral.

The matter, as has been pointed out in these columns, is one of elementary justice. The Admiralty is responsible for the Naval Medical Service. Remembering the treatment of senior surgeon commanders, the Association's advice to medical students and young practitioners is to consider seriously the disadvantages to which they are liable if they place their careers in the hands of the Admiralty.

The Representative Body of the Association during its Annual Meeting at Glasgow this summer heard an account of this grievance from the Chairman of the Naval and Military Committee, and the subsequent debate was reported in the Supplement of August 5th at page 76. It will be seen from this that the Council's warning to recently qualified medical practitioners was fully approved, and indeed the feeling of the Representative Body was in favour of even stronger action. Speaker after speaker reprobated the treatment of naval medical officers by the Admiralty, and condemned the breaking of the definite undertaking given to senior surgeon commanders. A former Chairman of the Organization Committee, recalling the action taken by the British Medical Association some years ago in connexion with the Army Medical Service, made the significant remark that it was the failure to procure candidates for that service which brought the War Office to reason. The outcome of the debate was an emphatic endorsement by the Representative Body of the policy put forward by the Council.

It may be hoped that long before next year's Educational Number appears the Admiralty will have seen the wisdom of putting itself right in the eyes of the medical profession. If

this is done, we shall be able to include once again a statement of the conditions under which commissions are granted in the Medical Department of the Royal Navy, and in other ways give encouragement to prospective candidates.

PRISON MEDICAL SERVICE.

CANDIDATES for the medical staff are approved by the Secretary of State for the Home Office on the recommendation of the Prison Commissioners. The Chairman of the Board is M. L. Waller, Esq., C.B. Application for employment may be made to the Board on a special form, which can be obtained from the Secretary, Prison Commission, Home Office, London, S.W.1.

In the smaller prisons the medical officer is usually a local practitioner, but in the larger the members of the medical staff are required to devote their whole time to the service. In the case of those required to give their whole time to the service the appointment in the first instance is to the post of medical officer Class II, and from the seniors of this rank the medical officers Class I are selected as vacancies occur.

The pay of the whole-time prison medical staff is: Medical officer Class II, £300, rising by annual increments of £15 to £500; medical officer Class I, £550, rising by annual increments of £20 to £700. Unfurnished quarters are provided, or an allowance in lieu is made. The Civil Service bonus is paid on the salary. There are 15 medical officers Class II, 10 medical officers Class I, and 33 part-time medical officers.

The number of vacancies is never large, and promotion is slow. Although there has recently been some improvement in the scale of pay, the remuneration both of whole-time and part-time prison medical officers is unsatisfactory.

MEDICAL PRACTICE IN BRITISH DOMINIONS AND FOREIGN COUNTRIES.

MEDICAL Acts have now been passed in almost all places forming part of the British Empire beyond the seas, and registers of duly qualified practitioners are consequently maintained. To these registers medical men educated in the United Kingdom are always admissible merely on payment of a registration fee, providing they produce evidence that they are of good repute and are either registered or eligible for registration in the United Kingdom, as the local requirement may be. The only exception to this statement that need be made relates to the Dominion of Canada. Each of its provinces acts in medical matters as an independent State. The result has been that reciprocity of practice has been established between this country and all the Provinces of Canada except British Columbia, where certain obstacles still remain to be overcome. We would advise any medical man proposing to practise in Canada first to communicate with the Provincial Registrar, stating what degrees or diplomas he holds, and asking for information as to the precise steps he must take in order to obtain admission to the Provincial Register.

Italy, Japan, Egypt, and (within certain limitations) the Principality of Monaco, are the only foreign States which accord a right to practise in virtue of British degrees and diplomas, though the authorities of Holland and Greece sometimes exempt British practitioners from portions of the examinations imposed on ordinary candidates for registration. In all other Continental countries a British medical man desiring to exercise his profession therein must pass practically the same examinations as those imposed on natives of the country. The same observation applies to all foreign States in the South American continent. Each of the United States of North America has its own laws and regulations governing medical practice; some of the States admit any holder of a degree or diploma to their Register, but the majority require a candidate for registration to submit to an examination.

A pamphlet showing the conditions under which medical and dental practitioners legally qualified in their own country may practise abroad can be obtained from the office of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1, price 2s. 6d., or 2s. 9d. post free in the United Kingdom. Practitioners who think of going abroad to practise will find therein much useful information, including the names of the official in each country to whom requests for further particulars should be addressed. The last edition was published in January, 1921.

MEDICAL APPOINTMENTS UNDER THE COLONIAL OFFICE.

APPOINTMENTS to the Medical Services of the Colonies and Protectorates under the administrative control of the Colonial Office are made by the Secretary of State for the Colonies. Such appointments are to the service of a given colony or colonies, for there is no unified service directly administered from the Colonial Office. It follows that conditions of service and superannuation are in the main determined by the economic resources and general public health policy of the individual colony and its local government, and vary almost as widely as do conditions of climate. Moreover, the extent of the control exercised by the Colonial Office varies according to the constitutional status of the particular colony, and the detailed information available centrally is not always complete. The intending candidate, therefore, should make comprehensive inquiries as to local conditions before applying for an appointment, and will do well to supplement official information by reference to the central office of the British Medical Association, where reports obtained from time to time from the local Branches are available. This is the more necessary because facilities for transfer from the service of one colony or group of colonies to that of another are as yet practically non-existent, except in connexion with a few specialist and senior appointments; this sets strict limits upon the opportunities for promotion.

The bulk of the medical appointments made by the Secretary of State in this country are to the services in the East and West African Colonies and Protectorates, the Straits Settlements and Malay States, the East Indies, and Fiji and the Western Pacific. In general, candidates for such appointments must be between the ages of 23 and 35; and whilst these limits are not for the moment absolute, an officer over 35 years of age on first appointment may be required to serve on a temporary and non-pensionable footing; regular appointments are, subject to a varying period of probation, for the most part permanent and pensionable. There is no entrance examination, but practitioners selected for appointment must obtain a certificate of physical fitness from one of the Medical Advisers of the Colonial Office. In the case of the West African Medical Staff and the East African Services successful candidates are required to undergo an approved course of instruction in tropical medicine.

Colonial Service: The Outlook.

Whilst colonial service offers undoubted attractions to some practitioners it also presents very definite disadvantages, and not the least of these is, at the present time, uncertainty as to the future. Before the war conditions in several of the services gave rise to considerable anxiety; the greatly enhanced cost of living during the war resulted in certain more or less inadequate temporary advances in remuneration, but consideration of the radical reforms required was postponed until the succeeding period of reconstruction. In 1919 a Departmental Committee under the Chairmanship of Sir Walter Egerton was appointed to consider the position of the Services generally, the means of securing contentment within them, and the maintenance and increase of the supply of candidates. The Committee found that the ideal to be aimed at was the creation of a unified Colonial Service, recruited by competitive examination and represented on the staff of the Colonial Office by a Medical Director-General. As an immediately practicable step in this direction it recommended the assimilation of the medical services in neighbouring colonies, and more especially those in the East African and Malayan groups. A permanent increase of salaries with a general minimum of not less than £600 a year on first appointment was recommended; the necessity for study leave was recognized, as was the need for the development of facilities for research; an increase in the number of specialist appointments and adequate provision for promotion by transfer from the service of one colony or group to that of another were other points emphasized.

Progress along the lines laid down by the Committee, which correspond broadly to the policy adopted by the British Medical Association, has undoubtedly been made since the report of the Committee was issued. With the exception of the West Indian Services, the Fiji and Pacific Colonies, and a few of the smaller dependencies which each offer only one or two medical appointments, the adoption of the £600 minimum or its equivalent in local coinage has been achieved. The commencing pay in the West African Medical Staff is £660 a year. For all practical purposes the Services

in the Malay Peninsula have been unified, and some steps have been taken towards the assimilation of the East African Services, whilst there has been an appreciable increase in the number of specialist appointments and the facilities for research. The Services, however, remain understaffed. Opportunities for promotion, failing means of transfer from one service to another without loss of pension, must remain inadequate. Certain services, notably those in the West Indies and Fiji, have not yet secured that measure of reform essential to a minimal standard of efficiency, and it seems clear that the final unification of the East African Medical Services under conditions approximating to those of the West African Medical Staff will be indefinitely postponed.

Moreover, the acute economic depression of the last two years has affected many of the colonies with almost crushing severity, and has in some cases brought about the indefinite postponement of projected reform, and in others practically neutralized advances in remuneration that were at one time thought to be permanent, besides imposing disastrous restrictions on the public health programme in many places. Nor do economic difficulties, radical though they are, stand alone. The constitutional status of the colonies is under review. Schemes for regrouping and for the concession of greater local autonomy may be temporarily delayed pending economic recovery, but it is not unreasonable to suppose that until such questions are settled there can be little progress towards the unification of the Colonial Medical Service. Their adoption, on the other hand, may entail the formulation of a new solution for the admitted difficulties. The future is therefore extremely uncertain, and in spite of the definite advance recorded above it is impossible at present to modify the warning that prospective candidates should consider carefully whether they may not be well advised to look elsewhere for a career. Caution is especially necessary in connexion with appointments in the West Indies and Fiji. The position as regards the West Indies was fully discussed in these columns in connexion with the Report of the Under-Secretary of State for the Colonies on his recent tour in the West Indies (BRITISH MEDICAL JOURNAL, July 15th, 1922, p. 99, and SUPPLEMENT, p. 22). The position in Fiji is at the moment engaging the attention of the Dominions Committee of the British Medical Association in connexion with representations received from the Fiji Branch.

The condition of the Colonial Medical Services has for some time been a matter of the gravest concern to the Association, which gave evidence on the subject before the Egerton Committee, and has been in constant communication with the Colonial Office on matters touching their welfare since August, 1921. During this period the Association has, in effect, been recognized as the mouthpiece of the Services, and has received copies of all official documents primarily affecting medical officers, and also the gazettes of the various local governments. It has therefore been possible to supplement the activities of the Overseas Branches by the exercise centrally of unceasing vigilance over all tendencies likely to affect the development of the Colonial Services. It cannot be too strongly emphasized, however, that present conditions render immediate advance impracticable.

Official Sources of Information.

All inquiries in connexion with colonial medical appointments made by the Secretary of State for the Colonies should be addressed to the Assistant Private Secretary (Appointments), Colonial Office, Downing Street, S.W.1. Any vacancies occurring in Iraq, Palestine, and Aden are recruited through the Colonial Office, and information can be obtained at the same address. Vacancies also occur, though at rare intervals, in the Sudan, and inquiries as to these should be addressed direct to the Civil Secretary, Sudan Government, Khartoum. Inquiries about any medical appointments made by the Egyptian Government should be addressed to the Director-General, Public Health Department, Cairo.

Information as to medical appointments in the self-governing Dominions and their dependencies can be obtained on application to the High Commissioners or Agents-General for the Dominions. Intending applicants are also recommended to consult the Colonial Office List and the Professional Handbook (price 6d.) issued by the Overseas Settlement Office, 6, St. James's Square, S.W.1.

There remain a number of medical appointments made by mining companies and other commercial undertakings in various parts of the tropics. Much caution should be exercised in accepting such posts, and the form of contract should be subjected to very careful scrutiny. Advice in this connexion should always be sought at the central office of the British Medical Association.

MEDICAL MISSIONARIES.

To medical men suitably endowed the mission field offers opportunities for interesting work. There are now 415 medical practitioners holding British degrees or diplomas employed in different parts of the world by missionary societies, and the latter seem to stand in constant need of men and women to fill vacancies as they occur, and also to enable them to take advantage of fresh openings. Since the conclusion of the war there has been a large number of such vacancies, as most of the mission hospitals are working with depleted staffs. Further, the development of native medical schools as training institutions in connexion with some of the larger mission hospitals affords excellent scope for most useful work to medical men who are qualified to teach. It is not usually expected or desired that a medical missionary should take a position such as would otherwise be occupied by an ordained clergyman or minister. But it is essential that he should be prepared to take his share of definite missionary work in any hospital in which he may be placed. As for scientific and other qualifications for the work, a medical missionary, in addition to being physically capable of sustaining what may prove to be a trying life, should be a thoroughly well trained physician and surgeon. It is very desirable that he should have held a resident appointment at a general hospital and have a good knowledge more particularly of practical surgery, tropical medicine, and the treatment of eye diseases. Societies from whom useful information can be obtained are the London Medical Missionary Association, 49, Highbury New Park, N.5; the Edinburgh Medical Missionary Association, 56, George Square, Edinburgh; the Church Missionary Society (Medical Mission Department), Salisbury Square, London, E.C.4; the Society for Promoting Christian Knowledge, Northumberland Avenue, W.C.2; and the Medical Missions Department of the Society for the Propagation of the Gospel in Foreign Parts, 15, Tufton Street, Westminster, S.W.1.

Dental Surgery.

UNTIL the passing of the Dentists Act, 1921, the profession of dentistry in this country was regulated by enactments very closely similar to those relating to the practice of medicine—that is to say, there was no direct prohibition of the act of practice; and the Dentists Act gave the same degree of protection to legally qualified and registered dentists as was accorded to registered medical practitioners—namely, the reservation of the use of certain titles. The Dentists Act, 1878, provided (1) that no person should take or use the name or title of "dentist" (either alone or in combination with any other word or words) or of "dental practitioner," or any other name, title, or description expressed in words or by letters implying that he was specially qualified to practise dentistry, unless he was registered, under a penalty of £20; and (2) that an unregistered person could not recover any fee or charge in respect of any dental operation, attendance, or advice. But, in the case of the practice of medicine by unqualified and unregistered persons, certain deterrent factors came into play—such as the inability to give a death certificate—and these did not operate to the same extent in the case of dentistry; hence, unqualified practice has been far more prevalent in dentistry than in medicine, and this increased after a decision of the House of Lords placing a narrow interpretation upon the words "specially qualified to practise dentistry," by defining the word "qualified" as not referring to competence but to the possession of a recognized diploma.

The Dentists Act, 1921.

This unsatisfactory position has now been remedied by the passing into law of the Dentists Act, 1921; its provisions are based largely on the recommendations of a Departmental Committee appointed in 1917 by the Privy Council "to investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not

qualified under the Dentists Act." After November 30th, 1922, no person may practise or hold himself out, whether directly or by implication, as practising or as being prepared to practise dentistry unless he is on the *Dentists Register* provided for by the Dentists Act, 1878. The practice of dentistry is defined as including "the performance of any such operation and the giving of any such treatment, advice, or attendance as is usually performed or given by dentists," and the performing of any operation or the giving of any "treatment, advice, or attendance on or to any person as preparatory to or for the purpose of or in connexion with the fitting, insertion, or fixing of artificial teeth." The maximum penalty incurred by an unregistered dentist is £100 for each offence. There are, however, certain important exceptions to the requirement of registration. A registered medical practitioner may practise dentistry without being on the *Dentists Register*, and a registered pharmaceutical chemist or chemist and druggist may extract a tooth where the case is urgent and where no doctor or dentist is available, but the operation must be performed without any kind of anaesthetic; further, any person may carry out minor dental work in a public dental service under the personal supervision of a registered dentist provided it is in accordance with conditions approved by the Minister of Health after consultation with the Dental Board.

There are certain persons other than those qualified by examination entitled to be registered under the new Act. They must be of good personal character and 23 years of age before July 28th, 1921 (the commencement of the Act), and they must have been engaged for any five of the seven years preceding that date as their principal means of livelihood in the practice of dentistry in the British Islands, or have been admitted to membership of the Incorporated Dental Society not less than one year before the commencement of the Act. The passing of "the prescribed examination in Dentistry" within two years of the commencement of the Act will be considered as equivalent to practising for five years, and a registered pharmaceutical chemist or a chemist and druggist who immediately before the commencement of the Act had a substantial practice as a dentist, including all dental operations, will also be treated as though he had practised for five years. A dental mechanic who for the five years has been carrying on his work as such may be registered provided within ten years of the commencement of the Act he passes the prescribed examination.

Dentistry may be carried on by a corporate body provided the majority of the directors and all the operating staff are registered dentists, and that no other business than dentistry or only some business ancillary to dentistry is carried on by the company. Companies carrying on the business of dentistry at the present time are permitted to continue to do so with certain restrictions, provided that the names of the directors have been entered in a list kept by the registrar for the purpose. Every director or manager of a company convicted of an offence under the Act will be held to be guilty of the offence unless he proves that the offence was committed without his knowledge, and the court may, in addition to a fine, order that the name of any director convicted shall be removed from the list of directors aforesaid.

THE DENTAL BOARD.

The Dental Board of the United Kingdom has been established for the purpose of administering the new Act. The first members hold office for three years, subsequent members for five years. The Privy Council has appointed the chairman and two members, the latter being dentists not registered under the principal Act. The General Medical Council has appointed three members who must be members of the Branch Council for England, Scotland, and Ireland respectively. Three persons who are neither medical practitioners nor dentists represent England, Scotland, and Ireland, and four registered and qualified dentists have been appointed—two by the Minister of Health, one by the Scottish Board of Health, and one by the Lord Lieutenant of Ireland. At the end of three years the two members being dentists not registered under the principal Act, and the four members registered under that Act appointed by the Minister of Health (two), the Scottish Board of Health, and the Lord Lieutenant of Ireland, will be replaced by four members who will be elected by qualified dentists practising in the three countries and two by registered dentists who are not qualified.

On the establishment of the Dental Board, which began its first session on December 7th, 1921, certain powers and duties of the General Medical Council were transferred to it, including the duty of erasing from the *Dentists Register* any entry which has been incorrectly or fraudulently made. An inquiry into the case of a person alleged to be liable to have his name erased from the *Register* will be made by the Board, which will report its finding to the General Medical Council, the order directing the erasure being made, as at present, by the Council. A name erased from the *Register* can only be restored by the Council upon a report made by the Board. An appeal to the High Court may be made by any person aggrieved either by refusal of the Board to register his name or by the removal of his name from the *Register*. The first registrar was appointed by the General Medical Council with the approval of the Privy Council, and he holds office for three years; subsequent appointments will be made by the Board. The administrative expenses of the Board are to be defrayed from the registration fees and annual retention fees, but any surplus may be allocated to purposes connected with dental education and research or to any public purpose connected with dentistry. The office of the Dental Board is at 44, Hallam Street, London, W.1.

DENTAL EDUCATION AND EXAMINATION.

The preliminary examination in Arts is the same for medical and dental students, and the early stages of their education embrace much the same subjects[1]; and, as the dental student is required to obtain a knowledge of the broad principles of medicine and surgery, it is necessary for him to pursue some portion of his studies at a medical school as well as at a special dental school, the latter not undertaking the teaching of these subjects. Registration as a dental student is not in all cases compulsory, though it is to be advised as convenient as affording proof of the commencement of professional education, and it is required by most of the licensing bodies, all of whom insist upon a curriculum covering four academic years.

Qualifying licences are granted by the Royal Colleges of Surgeons of England and of Edinburgh and of Ireland; by the Royal Faculty of Physicians and Surgeons, Glasgow; and by certain of the universities in the United Kingdom.

Recognized dental schools are numerous. In London there are those connected with the Royal Dental Hospital, Leicester Square; the National Dental Hospital (now the University College Hospital Dental School), Great Portland Street; Guy's Hospital; and the London Hospital. In the provinces there are the Birmingham Dental Hospital; the Royal Infirmary and the General Hospital, Bristol; the Dental Hospital and the Public Dispensary, Leeds; the Dental Hospital, Liverpool; the Dental Hospital, Manchester; the Dental Hospital, Newcastle-on-Tyne; the Royal Hospital, Sheffield; in Scotland there are the Dental Hospital, Dundee; the Dental Hospital, Edinburgh; and the Dental Hospital, Glasgow; and in Ireland the Dental Hospital of Ireland and the Royal College of Surgeons in Ireland.

Study may also be commenced in the dental department of any university of the United Kingdom.

There are considerable variations in the order in which the different licensing bodies require the various subjects of the curriculum to be taken up, and every prospective dental student should study not only the regulations of the General Medical Council but also those of the body whose licence he hopes to obtain. This is the more important as in the case of some licensing bodies changes in the curriculum, with the view of making it more closely adapted to the needs of the practising dentist, have either already been made or are in contemplation.

Recommendations of the General Medical Council.

The Dentists Act still leaves to the General Medical Council the duty of controlling the course of study and examinations required for dental qualifications.

The following recommendations as to the course of study and examinations to be required of candidates for degrees or licences in dentistry or dental surgery were adopted by the Council on May 27th, 1922. They are intended to come into operation on January 1st, 1923.

Preliminary Examination and Registration.

1. That every dental student shall, at the commencement of his studentship, be registered in the manner and under the conditions prescribed for medical students.

2. That before registration in the *Dental Students Register* every applicant shall be required to have passed, in addition to the examination in general education, which shall be the same as that required for medical students, an examination in Elementary Physics and Elementary Chemistry, conducted or recognized by one of the licensing bodies, which shall also be the same as that required for medical students.

3. That before registration as a dental student every applicant shall produce evidence that he has attained the age of 17 years.

Professional Study.

4. That every candidate for a degree or licence in dentistry or dental surgery shall be required before admission to the final or qualifying examination to produce certificates showing:

(i) That he is at least 21 years of age.

(ii) That he has been registered as a dental student.

(iii) That he has, subsequently to the date of registration as a

[1] See the Registrar's Memorandum, printed in the article on the General Medical Council at p. 415.

dental student, been engaged in professional study for at least four years, of which three years at least shall be spent at a school or schools recognized for professional study by one of the licensing bodies.

(iv) That, subsequently to the date of registration as a dental student, he has attended at a recognized medical school courses of instruction, which shall be the same as those required for medical students, in the following subjects: (*a*) Chemistry, and (*b*) Physics, in their application to Medicine; (*c*) Elementary Biology.[1] That he has attended at a recognized medical school courses of instruction in the following subjects: (*d*) Human Anatomy (with dissections and demonstrations) for three academic terms; (*e*) Physiology (with laboratory instruction, including practical Histology) for two academic terms; (*f*) General Pathology (including Bacteriology) for two academic terms; (*g*) Medicine for two academic terms; (*h*) Surgery for two academic terms; (*i*) the practice of a recognized general hospital or hospitals of not less than eighty beds, with certified instruction in Clinical Medicine and Clinical Surgery, for four academic terms.[2]

(v) That he has attended at a recognized dental school courses of instruction in the following special subjects: (*a*) Dental Anatomy and Physiology, human and comparative. The course should comprise a minimum of twenty meetings of the class. (*b*) Practical Dental Histology and Morbid Histology. The course should comprise a minimum of sixteen meetings of the class. (*c*) Dental Pathology and Surgery. The course should comprise a minimum of twenty meetings of the class. (*d*) Dental Materia Medica and Therapeutics. The course should comprise a minimum of sixteen meetings of the class. (*e*) Dental Metallurgy (with practical work and demonstrations). The course should comprise a minimum of twenty meetings of the class. (*f*) Dental Mechanics (with practical work and demonstrations). The course should comprise a minimum of twenty meetings and twenty demonstrations. (*g*) A course of instruction in the use of Anaesthetics, general and local, employed in Dental Practice.[3] (*h*) A course of instruction in Radiology as applied to Dentistry.

(vi) That he has for at least twenty-four calendar months attended, during the ordinary academic terms, the practice of a recognized dental hospital or of the recognized dental department of a general hospital.

(vii) That he has received for not less than twenty-four calendar months, or for 2,000 hours, practical instruction in dental mechanics.[4]

Professional Examinations.

5. That the examination for a degree or licence in dentistry or dental surgery shall be partly written, partly oral, and partly practical, and shall include the following subjects[5]: (*a*) Chemistry, Physics, and Biology, in their bearing on Medicine and Dentistry. (*b*) Human Anatomy and Physiology. (*c*) General Pathology, including Bacteriology. (*d*) Medicine and Surgery. (*e*) Dental Anatomy and Physiology, Dental Pathology, Dental Surgery (including Orthodontics), Dental Materia Medica and Therapeutics, and Dental Mechanics and Dental Metallurgy. (*f*) Practical Examination in Dental Surgery. (*g*) Practical Examination in Dental Mechanics and Metallurgy. (*h*) Anaesthetics, general and local, employed in Dental Practice.

6. That the prescribed subjects of examination may be combined or distributed at the discretion of the licensing bodies, and may be taken at two or more successive stages during the course of professional study; provided that no candidate shall be admitted to any final Examination in Dental Surgery and Dental Mechanics until he shall have completed the required four years' course of study.

[1] A student who has diligently attended an approved course of Elementary Biology in a secondary school or other teaching institution recognized by a licensing body may be admitted to a professional examination in elementary biology immediately after his registration as a dental student.

[2] The teaching in Anatomy, Physiology, Pathology, Medicine, and Surgery should take cognizance of the special needs of dental students. The certificates of teaching at general hospitals should furnish evidence of the student having acted as medical clinical clerk and surgical dresser, and of attendance in the out-patient or casualty department. A certificate of clinical instruction in venereal disease should be required.

[3] A candidate should produce a certificate of having administered general anaesthetics on at least ten occasions.

[4] No portion of such practical instruction which is taken prior to the date of registration shall be reckoned as a portion of the four years of professional study required. It is recommended that instruction in dental mechanics be taken at a recognized dental hospital and school. If any part of such instruction be taken by the candidate as a pupil with a registered dentist, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school. Where in the foregoing the expression "course" is used, it is not intended that this should be read as necessarily implying lectures only: the licensing bodies and the schools are left free to arrange their methods of instruction in the manner they find most efficient.

[5] It is recommended that a synopsis of the general subjects of the Professional Examinations be issued by the licensing bodies.

The British Medical Association:

ITS AIMS, WORK, AND CONSTITUTION.

THE British Medical Association (as briefly stated at the close of our introductory article) was founded in 1832 to promote the medical and allied sciences, to maintain the honour and interests of the profession, and foster a feeling of friendship among its members. To attain these objects it holds periodical meetings for the discussion both of medical and scientific subjects, and of professional affairs; it publishes the *British Medical Journal*; it maintains a reference and lending library; it has instituted lectures, scholarships, and grants for research work; and does an immense amount of work on behalf of practitioners. The British Medical Association is the oldest, largest, and most powerful British organization devoted to the welfare of the medical profession. It owns a large freehold building, centrally situated in London, and its funds and resources are commensurate with a membership of more than 24,000.

Constitution and Administration.

The Association has Branches and Divisions throughout Great Britain and Ireland, and also in the Dominions, Colonies, and Dependencies. The Divisions are arranged territorially, and number, in all, 282. For certain purposes of administration or of scientific and clinical work, the Divisions are combined into 92 Branches. Members of Divisions elect Representatives on the Branch Councils and also a member or members of the Representative Body, which is the governing body of the Association and determines its policy.

The Council is the executive of the Association. It is elected partly by the Divisions and Branches and partly by the Representative Body, and includes representatives of the Navy, Air Force, Army, and Indian Medical Services elected by the Representative Body. The Representative Body and Council elect standing Committees to take charge of different subjects. Among these may be mentioned the Science, Medico-Political, Ethical, Hospitals, Public Health, and Naval and Military Committees. There are Committees also for the Dominions, Scotland, Ireland, and Wales; and for the working machinery of the Association, such as the Organization, Finance, and Journal Committees. The Insurance Acts Committee, elected partly by the Association and partly by insurance practitioners, is financed by the Association.

Privileges of Members.

A member of the British Medical Association has the right –

1. To attend the annual and other general meetings of the Association and the meetings of the Division and Branch to which he or she belongs.
2. To take part by personal vote (or in some Divisions by voting paper) in the election of the representative of his or her Division in the Representative Body, and also in the election of members of the Council.
3. To receive by post the *British Medical Journal*, published weekly, which gives a full record, with commentary, of progress in clinical and scientific medicine, and of medico-political affairs throughout the British Empire.
4. To receive the help and advice of the central office in any professional difficulty.
5. To use the library as a reading room, and to borrow current medical or scientific books on payment of postage. Besides modern works and periodical medical literature—foreign as well as English—the library contains many books of historic interest.

The full benefits of the Association can only be secured by the co-operation of large numbers of the medical profession, who by their annual subscriptions provide the necessary funds. The greater the membership and the funds the more efficient and influential the organization. The Association during the past ninety years has been the direct means of benefiting every class of medical men and medical women. In asking for new members it looks not only to the older practitioners but also and especially to those recently qualified. To these a generous concession is made as regards subscription, and there is a special claim to their recognition of the work of the British Medical Association in improving the conditions under which they may hold appointments in the public services or in civil life. The Association's work for the Services is well known. It considers itself to be in

a special sense the guardian of the interests of those members of the profession who by reason of their position are precluded from taking common action. At the present time, when nearly all the Imperial services are being cut down both in numbers and in remuneration, it is ordinary prudence for every medical officer to join his professional organization.

Subscriptions and Applications for Membership.

The ordinary subscription to the British Medical Association is 3 guineas a year for members resident in the United Kingdom, but this is subject to various exceptions. Thus, newly qualified practitioners elected within two years of registration pay half this sum up to the end of the fourth year after registration; commencing on January 1st, 1923, medical officers on the active list of the R.N., R.A.F., R.A.M.C. (Regular), and I.M.S. will pay 2 guineas; concessions are made also to members (in the United Kingdom) of forty years' standing, to members of ten years' standing who have retired from practice, to medical married couples residing together, and, from January 1st, 1923, to whole-time teachers and research workers. The ordinary subscription for members living abroad is 1½ guineas, but some Branches have special local subscriptions.

All duly qualified British medical practitioners are eligible for election as members. Full particulars can be obtained on application to the Medical Secretary, British Medical Association Building, 429, Strand, London, W.C.2; the Scottish Medical Secretary, 19, Rutland Square, Edinburgh; or the Irish Medical Secretary, 16, South Frederick Street, Dublin.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS: Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediocera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (3 lines).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

7 Thurs. London: Insurance Acts Committee, 2.30 p.m.
8 Fri. London: Organization Committee, Special Meeting, 2.30 p.m.
22 Fri. London: Science Committee.
26 Tues. London: Central Ethical Committee.
27 Wed. London: Hospitals Committee, 2.30 p.m.
29 Fri. London: Public Health Committee.

OCTOBER.

3 Tues. London: Organization Committee.
4 Wed. London: Medico-Political and Parliamentary Committee.
6 Fri. London: Dominions Committee.
7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tabes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.
10 Tues. London: Naval and Military Committee.
20 Fri. London: Central Hall, Westminster: Annual Conference of Representatives of Local Medical and Panel Committees at 10 a.m.
25 Wed. London: **Council**.

VACANCIES.

BEDFORD COUNTY HOSPITAL.—House-Surgeon (male).—Salary, £220 per annum.

BIRMINGHAM EDUCATION COMMITTEE.—Part-time Aural Surgeon. Remuneration, 3 guineas per half-day.

BRISTOL EYE HOSPITAL.—House-Surgeon. Salary, £150 per annum.

BRISTOL ROYAL INFIRMARY.—Assistant Anæsthetist. Honorarium, £120 per annum.

BURNLEY COUNTY BOROUGH.—Venereal Diseases Medical Officer and Assistant to Medical Officer of Health. Salary, £250 per annum.

CARDIGANSHIRE MENTAL HOSPITAL, Fairbourne.—Senior Assistant Medical Officer (male). Salary, £350 per annum, rising to £400.

CARDIFF, KING EDWARD VII HOSPITAL.—House-Surgeon for Ear, Nose, and Throat Department. Salary, £153.

CARDIFF INFIRMARY.—Obstetric Resident Medical Officer (male), six months as House-Physician, six months as House-Surgeon, salary at the rate of £175 per annum; and Resident House Physician, salary at the rate of £175 per annum; and six months as House-Surgeon, salary at the rate of £200 per annum.

DERBY COUNTY ASYLUM.—Medical Superintendent. Salary, £1,000 per annum and emoluments.

DORCHESTER: DORSET COUNTY HOSPITAL.—House-Surgeon. Salary, £150.

EXETER: ROYAL DEVON AND EXETER HOSPITAL.—House-Physician (male). Salary at the rate of £150 per annum.

HASTINGS UNION.—Medical Officer of the Poor Law Institution Children's Homes, District Medical Officer, and Public Vaccinator. Combined salary, £450 per annum, rising to £550, with extra fees.

HEREFORD: VICTORIA EYE AND EAR HOSPITAL.—Honorary Surgeon.

IPSWICH: EAST SUFFOLK AND IPSWICH HOSPITAL.—(1) House-Surgeon for Ear, Throat, and Nose Department. (2) House-Surgeon for general surgery. Salary in each case at the rate of £50 per annum.

KNOWLE MENTAL HOSPITAL, Fareham.—Third Assistant Medical Officer (male). Salary, £300 per annum, rising to £350.

LONDON TEMPERANCE HOSPITAL, Hampstead Road, N.W.—(1) House-Surgeon. (2) Casualty Officer. Salaries, £200 and £100 per annum respectively.

MANCHESTER CHILDREN'S HOSPITAL.—(1) Resident Medical Officer for a period of six months. Salary at the rate of £150 per annum. (2) Resident Surgical Officer. Salary, £100 per annum. (3) Assistant Medical Officer (non-resident) for Out-patients' Department. Salary £100 per annum.

MIDDLESEX HOSPITAL.—Surgical Registrar.

NORTHAMPTON: ST. ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Second Assistant Medical Officer. Salary, £400 per annum, rising by £25 a year to £450.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—House-Surgeon. Salary, £150 per annum.

ROXBURGH DISTRICT MENTAL HOSPITAL, Melrose.—Assistant Medical Officer (male), unmarried. Salary at the rate of £300 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road.—(1) and (2) First and Second Assistants to the Medical Officer in charge of the V.D. (Female) Department. Salaries, £200 and £100 per annum respectively. (3) Medical Registrar. Salary, £100.

ROYAL HALIFAX INFIRMARY.—Second and Third House-Surgeons (male, unmarried). Salaries, £250 and £175 per annum respectively.

ROYAL NORTHERN HOSPITAL, Holloway, N.—Anæsthetist. Honorarium, £10 10s. per annum.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.—Laboratory Research Worker. Salary, £500 per annum.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House-Surgeon. Salary, £160.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street.—Honorary Medical Officer in charge of the Electrical Department.

WEST LONDON HOSPITAL, Hammersmith Road, W.—(1) House-Physician. (2) Two House-Surgeons (males). (3) Non-resident Casualty Officer. Salary for (1) and (2), £100 per annum each, and for (3) £5 5s. a week.

WESTMINSTER HOSPITAL, S.W.—Medical Registrar and Casualty Medical Officer. Honorarium, £150 per annum.

WORCESTER GENERAL INFIRMARY.—Resident Medical Officer. Salary, £200 per annum.

YORK CITY COUNCIL.—Assistant Medical Officer of Health and Assistant School Medical Officer (female). Salary, £500 per annum, or £400 if resident in Maternity Hospital.

CERTIFYING FACTORY SURGEON.—The following vacant appointment is announced: Pontardawe (Glamorgan).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

ANDERSON, J. S., M.B., Ch.B.Aberd., D.P.H., Assistant Medical Officer of Health, City of Aberdeen.

MIDDLEMISS, K. C., M.B., Ch.B.Glasg., Medical Superintendent, Monsall Hospital, Manchester.

CERTIFYING FACTORY SURGEONS.—M. W. Paterson, O.B.E., M.C., M.R.C.S., L.R.C.P., for the Hyde District, co. Chester. F. B. Croucher, M.B., C.M.Aberd., for the Oxted District, Surrey.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTH.

CLARK.—On August 21st, at "Roscona," Lichfield Street, Walsall, the wife of James A. M. Clark, M.D., D.P.H., of a son.

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An Address
ON
THE INDICATIONS FOR, AND LIMITATIONS OF, SURGERY IN CHRONIC ABDOMINAL DISEASE.*

BY
JAMES SHERREN, C.B.E., F.R.C.S.,
SURGEON TO THE LONDON HOSPITAL, ETC.

In speaking of the indications for, and limitations of, surgery in chronic abdominal disease I am using the word "surgery" to mean operative surgery—in itself a limitation, as this form of treatment involves the removal of organs or parts of organs, their drainage, short-circuiting, or fixation. We appear to have reached a stage at which operative technique has progressed more than diagnosis, and treatment is often in advance of, and may be more severe and dangerous than, the "disease" for which it is recommended.

Surgery, of course, is not so limited and cannot be divorced from medicine. The surgeon needs to be a physician, and it rightly falls to his lot to suggest and supervise courses of treatment other than operative. At the present time, however, most patients are sent to him when rest, diet, and drugs have failed to relieve, to see if by his art he can remove the cause *of the symptoms* or in some way alter the relationships of organs that it ceases to act.

Our aim should be to discover the cause *of the disease*, and so prevent the development of lesions necessitating for their treatment mutilating operations, such as removal of the gall bladder, spleen, portions of the stomach or intestine. We know that long life in comfort and perfect health is possible after all these procedures, but he would be a bold man or surgeon who would assert that the patient who has lost portions of his internal anatomy or whose internal physiology was altered by short circuits is in no way worse off than one not so treated, although we know that he is infinitely better off when disease has been cured or relieved by these means.

It may be with us surgeons as with the sailors of the last century. When the art of building sailing ships and sailing them reached its zenith, so the need for these arts declined, and is now almost lost. It is possible that operative skill will become similarly unnecessary, except in dealing with the result of accidents.

We should not be obsessed with the idea that there must be an operative cure for all abdominal ills, and allow the fact that many abdominal operations can be done at small risk and with little discomfort to lead us to perform or advise operations on speculative grounds.

There is no doubt of the necessity of operation at the present time in dealing with many forms of chronic abdominal disease. In malignant disease its localization is an indication, its secondary deposits a limitation. Although we are still ignorant of its cause, I have no doubt that in the abdomen its onset may be prevented in many cases. There is a preventive surgery as well as a preventive medicine. Timely appendicectomy will, I am convinced, anticipate the development of many ulcers of stomach and duodenum and disease of the gall bladder; but the appendix must be a diseased one—wholesale removal of this organ in cases of visceroptosis, sacro-iliac strain, etc., only brings surgery into disrepute. The early and efficient treatment of acute gastric ulcer may hinder its change into the chronic type, and early operation on the latter will certainly prevent later malignancy. Similarly, removal of the diseased gall bladder will do away not only with the risk of recurrence of gall stones, when undertaken in cases with this complication, but the possibility of the later development of carcinoma—a risk by no means negligible following cholecystostomy. Drainage of the gall bladder is not curative; all sufficiently diseased to need operation need removal, and there is no more satisfactory operation in surgery that can be undertaken at so slight a risk.

It is essential that diagnosis precede treatment, although that diagnosis may not be made until the abdomen has been opened, but no lesion diagnosed then on symptoms only should ever be treated by surgical procedure; no organ should ever be removed or any mechanical alteration made except for disease that can be definitely recognized—never for symptoms thought to be attributable to a certain organ.

Although diagnosis may be impossible until the abdomen has been opened, every endeavour must be made, by every method at our disposal, to come to a pre-operative decision as to the cause of the symptoms. We must at any rate be able to say, Surgery will benefit this patient; there is a lesion here that needs operative treatment. It should not be a case of look and see if anything can be done. We should blush to find on opening the abdomen that no demonstrable lesion is present.

In abdominal surgery attention must not be directed only to the organ thought to be at fault; the viscera have interrelationships. When operating for chronic disease the whole abdomen must be explored, and the exploration must be thorough. I have frequently given examples of this and have often had to operate on patients with disease of the gall bladder, stomach, or duodenum in whom I have been informed that this was absent because an incision had been made, the appendix removed, and these organs investigated by touch. It cannot be said too often that disease of the gall bladder—including one of its results, stones—cannot always be diagnosed by touch, and it is often necessary to open it and inspect, even to discover these. Only last week I operated on two patients; in both the gall bladder to the onlooker looked healthy. In one there was thick bile, cholesterin deposits in its mucous membrane, and polypoid cholecystitis; in the other, stones that could not be felt externally. If I suspect gall-bladder disease I always open it and investigate.

Again, how many ulcers of the duodenum or stomach is it possible to feel with the tips of the fingers from below, and how many are missed through making a small incision and exploring digitally? Surgeons should not limit themselves in this way. We used to pride ourselves on being able to remove an appendix through an inch incision; it can be done, but is not surgery.

In treating chronic gastric and duodenal ulcer we should remember that we are dealing with the end-result of disease of which we can at present only discern dimly the cause. The future treatment I believe will not be operative; its indication now is failure to cure or alleviate by medical means. This includes treatment of all foci of infection—rest in bed, diet, etc.; when all these fail surgery is indicated. We must realize that this necessarily involves interference with the physiology of digestion, whether the operation is a short circuit or removal of a portion of the stomach. Operative success in treatment is impossible without altering normal relationships, and the human organism has to adapt itself to it, and does so very well.

Each disease has its own dangers, and operation is indicated on failure of medical treatment because of the grave risk in chronic gastric ulcer of the development of carcinoma, of haemorrhage and less, of perforation. The risk of the development of carcinoma is a very real one. It is no uncommon thing to find on operating on patients with long standing histories pointing to gastric ulcer that carcinoma has supervened and is now beyond the skill of the surgeon. I have found, in a fairly extensive operative experience, that in at least 45 per cent. the carcinoma has followed on chronic gastric ulcer. Others put the figure much higher. Haemorrhage from *chronic* ulcer is a complication second in severity only to perforation, and one that should be prevented by timely surgical intervention. When it has occurred, operation should be carried out so soon as the condition of the patient will admit. I like to do it within twenty-four hours of the first attack. Many of these resemble secondary haemorrhage, with which you were unfortunately so familiar during the late war; after a warning there is a latent period followed by haemorrhage which not infrequently continues to a fatal issue. I am speaking now of haemorrhage in patients suffering from chronic ulcer—that is, in those with a long standing history of attacks of indigestion separated by periods of health. It does not apply to haematemesis arising in some cases from acute ulcers, that can be conveniently grouped under the heading of gastrostaxis. These do not need operative treatment. We must not, however, let ourselves be hypnotized by such a word, but always be on the lookout to recognize the cause in each case, and remember that an acute haematemesis is sometimes the first symptom of carcinoma of the stomach and the first symptom attracting attention in splenic disease amenable to surgical treatment.

Operation is advisable in chronic duodenal ulcer, because of the great risk of perforation and haemorrhage. All who have had much experience in the treatment of this grave disease will recall instances in which perforation occurred during a period of latency, between the attacks, when the

* Given at the Annual Meeting of the Suffolk Branch of the British Medical Association on June 30th.

patient considered himself well. No one with this disease, whatever precautions he may take, can consider himself safe from this complication. In many patients the attacks may not interfere much with their life, but it is the risk that makes me advise operation in every case that has resisted efficient medical treatment.

After operations for chronic gastric or duodenal ulcer, notwithstanding altered relationships, the patient is relieved in the majority of cases, and in 90 per cent. is cured, whether the treatment applicable has been posterior gastro-jejunostomy or partial gastrectomy. Failures there must be in everything in this life, in surgery as in all other mundane affairs; these are our limitations, and are mostly due to the impossibility of discovering a still active causative agent, and the recurrence of ulceration in the region of the new opening after operation for chronic duodenal ulcer, or, in still rarer instances, to mechanical changes which may arise in the region of the anastomosis due to the formation of adhesions and resulting in vomiting.

The indications for removal of the appendix are obvious in chronic disease of the type associated with attacks of general abdominal pain with tenderness in the right iliac fossa. It is in these cases that it is justifiable to operate through a small muscle-splitting incision.

It is still necessary to remonstrate against removal of the appendix for pain confined to the right iliac fossa or right side of the abdomen; this is still being diagnosed as due to the appendix, and this organ is being removed without success in its treatment. Hardly a week passes in which I do not see patients in whom this operation has been done unnecessarily and unsuccessfully. Appendicectomy is now so safe that there is very great danger of it being carried out indiscriminately for discomfort rather than for disease and after insufficient investigation. A pain in the right side and tenderness on palpation are not sufficient justification for operation.

It is at present one of our limitations that we have not discovered a satisfactory cause for many of the pains in the right iliac fossa, met with particularly in women. Kidney diseases, ovarian tumours and tubal disease, atony and prolapse of the caecum, intestinal stasis may all be considered responsible, and if due to the first three groups can be cured by surgical means; it is doubtful, however, if this is possible with the remainder; in the majority of these we cannot discover any really satisfactory cause. All, however, need the closest investigation, and care must be taken not to overlook pain due to disease of the kidney and to chronic obstruction, particularly in the pelvic colon, in which the pain may be confined to the right iliac fossa.

Removal of the appendix cannot be expected to cure disease of the gall bladder, stomach, and duodenum; yet how often do we see patients with obscure abdominal symptoms in whom the appendix has been removed through an incision which makes thorough abdominal exploration impossible. Our tactile sense will not diagnose early, and sometimes even late, conditions here. I have long taught, and will once again repeat it: You may diagnose appendix dyspepsia, you should never act on it—that is, you should never remove the appendix alone in these cases and wait for events, but examine every other abdominal viscus. These are the cases of chronic appendicitis in which it is not justifiable to operate through the muscle-splitting incision in the right iliac fossa. For example, last week I operated upon a male patient of 25 with a history of attacks of indigestion for four years, whom I had been asked to see as a case of appendix dyspepsia. The report of the barium meal was a normal stomach: his test meal gave normal gastric acidity. I removed a thickened appendix becoming obliterated at its distal end and then prolonged the incision upwards. I found a chronic ulcer on the lesser curvature about an inch from the pylorus. This is the most recent example, but I have had a similar experience on many occasions, on more have had to reoperate after others, and have found not only chronic ulcers and gall-bladder disease, but even carcinoma of the stomach, after the appendix had been removed on the diagnosis of appendix dyspepsia.

It is one of the limitations of abdominal surgery at the present time that it is impossible to exclude disease without examining by sight and touch the suspected organs. When abdominal symptoms are present they may be definite enough for us to say they are due to disease of the gall bladder, the duodenum, the stomach, or the appendix, but we cannot say that there is no disease in either of the other organs without looking. In the type of case, by no means uncommon, in which, in spite of every method of investigation, we are uncertain of our diagnosis, all have equally to be examined. Our limitations will be fewer if we remember that the days of small incisions are over. If a paramedian incision is used, pulling the rectus out its length does not matter. I would remind you that in chronic abdominal disease the organs with which we have to deal are situated principally to the right of the mid-line, yet I still see patients who have had a "gastro-jejunostomy" performed or even an exploration carried out through a left-sided incision.

When dealing with the colon one enters at once into a region where there has been and still is fierce controversy. We are, however, on absolutely solid ground when we give as an indication for surgical treatment the removal of portions of the colon that are so diseased as to be incapable of performing their function. The operative surgery of malignant disease here, as elsewhere, has its limitations in spread of the disease outside the limits of the organ; the problem of treatment consists in removing sufficient bowel together with its lymphatic area of drainage. In non-malignant conditions every endeavour should be made to conserve the colon, and, if excision is necessary, to remove as little as possible. In dealing with the caecum and ascending colon we must bear in mind that removal of the ileo-caecal valve profoundly alters intestinal digestion. Removal of the colon or its right half must interfere seriously with the functions of the alimentary tract. The colon is necessary in the human economy; it should never be removed unless its retention threatens life.

In chronic ulcerative diseases not cured by medical measures appendicostomy in my hands has given brilliant successes, but there are failures. In these I have brought up a coil of the ileum about a foot from the ileo-caecal valve and drained it so as to give the colon absolute rest, and not restored the continuity of the alimentary canal until examination of washings has proved the ulceration to be healed. Ileo-sigmoidostomy is useless in the treatment of ulcerative colitis; it is an operation that is rarely, if ever, justifiable; it does away with the action of the ileo caecal valve, and does not prevent overfilling of the colon proximal to the anastomosis. If a short-circuiting operation is necessary in the treatment of irremovable carcinoma of the colon it should be colon to colon.

We come now to a group of cases with which all are familiar, under the term "visceroptosis." Much more often met with in women than in men, it is a continual source of invalidism, if not of real ill health. It is therefore not surprising that patients seek, and surgeons have endeavoured to find for them, relief by operative means. Many are the operations that have been devised and carried out: division of adhesions, plications, fixation of stomach and colon, even to colectomies, partial or complete, with. I believe, no more success than will attend a similar compulsory rest in bed. The more experience I have in abdominal surgery the less success do I expect from operation in these cases and the more loath am I to undertake it. We are driven to it sometimes by the limitations of our knowledge; it may be quite impossible to exclude other and more serious disease without exploration. Gall-bladder disease is common in this type of case. Chronic gastric ulcer high on the lesser curvature is not infrequent, and carcinoma may develop.

Always remember that it is not a disease that shortens life: carry out nothing that may do so. I believe many of these patients are suffering from disease of their autonomic nervous system—that the visceroptosis, the dropped stomach, atonic and prolapsed colon are not causes. They may all exist without producing symptoms, and those that occur cannot always be explained by their presence. Diagnosis has outrun treatment here. Surgeons were justifiably eager to seize upon these "misplacements," just as in earlier years displacements of the uterus were looked upon as the source of chronic ill health. From the experience we have gained in its surgical treatment I believe that in its management such operations as fixation of colon, partial colectomy, plication of caecum, will disappear.

We must realize our limitations here, while trying in every way to improve our methods of diagnosis. There are still pains and discomforts in the abdomen that cannot be removed with the appendix or by fixing viscera or dividing adhesions.

To pass now to the gall bladder. Here our limitations are less, as we are able to deal with the disease and not only remove its results. At the present time, only operation can demonstrate the condition of the gall bladder. I would again lay particular stress on the fact that until the gall bladder

has not only been seen but explored by opening, it is impossible to be certain that disease is absent. In the early stages of gall-bladder disease cure by surgery is sure and safe; in the presence of such complications as stone in the common duct and acute infections the risk becomes greater, and malignancy may be the termination of chronic simple gall-bladder disease.

When the gall bladder is diseased its removal is indicated—in two stages, if life or the integrity of the common duct is threatened if done in one. Drainage alone will not certainly cure, nor will it prevent the later onset of carcinoma in gall bladders believed, on external examination, to be healthy at the time of drainage, after removal of calculi. I have known it to arise from one to four years after drainage of what was considered a sufficiently healthy gall bladder to leave after the removal of calculi.

One of the most recent advances in abdominal surgery is that dealing with disease by splenectomy. Although we know that removal of the spleen is followed by restoration to health in suitable cases, until we are fully cognizant of its functions we cannot understand the part it plays in disease and why removal in certain cases is efficacious. That long life was possible after removal of the spleen in man we owe to clinical observation after splenectomy for injury. Interference next followed in such conditions as wandering spleen with torsion of the pedicle or the rare tumours. More recently, diseases of the spleen associated with blood changes have been successfully treated; I allude to such groups as splenic anaemia, Banti's disease, and splenomegalic jaundice. In the former, restoration to health occurs, and so far as we can ascertain no evil effects follow; we can justifiably speak of cure. It may be otherwise when operation is carried out in the later stage of the disease when cirrhosis of the liver has supervened. With this complication, when haemorrhages have taken place before operation, although apparent restoration to health is the rule, yet death from haematemesis at a later date is not unknown, in spite of the fact that splenectomy has been suggested as the treatment for certain cases of haematemesis in the absence of gastric or duodenal ulcer, splenomegaly, or recognizable hepatic cirrhosis. Our limitation here is due to neglect of treatment in the early stages of the disease.

Of the cause of the disease and the splenic enlargement, whether due to thrombosis—and if so, the infecting agent and its organ—we are in ignorance. Why removal of the spleen alters the blood picture is also beyond our ken. We are sadly limited in our dealings with diseases associated with splenic enlargement in not knowing their cause.

I know of no condition in which recovery is so dramatic as in splenomegalic haemolytic jaundice. In the familial type discoloration may have persisted from the early years of life, and yet within forty-eight hours of removal of the spleen it has disappeared. The fragility of the red cells, part of the disease, may be unaffected by splenectomy. As in other chronic abdominal diseases, general exploration has to be carried out, particular attention being paid to the gall bladder and ducts, as these cases are often complicated by pigment calculi.

Splenectomy in pernicious anaemia and in leukaemia is experimental, and until more evidence is forthcoming we should stay our hand.

Surgery has many legitimate triumphs in the abdomen. Let us see to it that it is not brought into disrepute by operations for trivial complaints, and that removal of the appendix or gall bladder, or fixations of the colon, do not become common procedures in every discomfort in this region.

PAIN IN GENITO-URINARY AFFECTIONS:

ITS VARIATIONS AND THEIR INTERPRETATION.

BY

W. K. IRWIN, M.D., F.R.C.S.EDIN.,

HONORARY CASUALTY OUT-PATIENT SURGEON, ST. PAUL'S HOSPITAL FOR GENITO-URINARY DISEASES.

THE variations of pain in genito-urinary affections are so numerous and often so misleading that their interpretation may be difficult. It is hoped that the following notes will facilitate the early recognition of the causes at work.

Pain arising in this system frequently shows itself in parts other than the seat of the lesion, and it may be well at the outset to emphasize the distinction between (1) *site pain*, which is felt in or over the lesion, and (2) *referred pain*, which through abnormal perception by the senses is assigned to the region supplied by an anastomosing nerve trunk or to the distribution of an irritated nerve.

Renal and Ureteric Regions.

Affections of the kidney are comparatively painless if the ureters remain patent. *Renal calculi* may give rise to three varieties of pain: (1) site pain, (2) referred pain, (3) renal colic. The site pain, which is more prominent during the diurnal hours of activity, is a dull ache, and is felt in the front of the loin, in the posterior renal angle behind, or in both places. The referred pain may be assigned to the healthy kidney (reno-renal reflex), testicle or labium, bladder, urethra, thigh, knee, calf, inside of foot, sole or heel, and may be of a burning nature. In renal colic the pain, which may be described as "tearing or griping," is characterized by agonizing paroxysms radiating down the line of the ureter and along the urethra, or referred to the external abdominal ring and into the testicle, causing contraction of the cremaster muscle.

Oxaluria may cause unilateral pain similar to that of renal calculus. Such pain as there may be in *tuberculous kidney* is a dull lumbar ache described as toothache-like, though tuberculous débris in a ureter may cause ureteric colic. *Movable kidney* is characterized by a dragging ache, aggravated by movement, but the kinking of a ureter in a Dietl's crisis may produce pain resembling the colic caused by a calculus. In *kidney tumour* pain, which is not increased by movement, may result from increased intrarenal tension, from ureteral obstruction by blood clot, or from pressure on surrounding structures. *Ureteral calculi* usually give rise to symptoms akin to those of renal calculi, the pain being due to the distension and spasmodic contraction of the kidney pelvis and of the ureter above the stone rather than to the irritation produced by the stone itself. Pain of a similar character may be caused by an aberrant blood vessel, by stricture or kinking of the ureter, or by its becoming blocked by tuberculous débris, blood clot, or a villous growth of the kidney pelvis.

Vesical and Urethral Regions.

Apart from acute blocking of the ureter genito-urinary pain as a rule has its source in the bladder, prostate, or prostatic urethra. Pain originating from the upper half or more of the bladder is usually felt above the pubis, but pain from the ureteric orifices and adjacent part of the bladder wall is sometimes referred to the corresponding inguinal ring or along the corresponding side of the penis. Perineal pain suggests disease of the vesical base or neck, of the prostate, prostatic or membranous urethra, or of some structure intimately associated with one of them, constant chronic pain being in most cases due to prostatitis, or to carcinoma or calculus of the prostate, and pain increased at the end of micturition to calculus, inflammation or ulceration of the bladder; but in any of these conditions the pain may be referred to the end of the penis. Urethral pain if before micturition is usually caused by obstruction from impacted calculi, etc.; if only during micturition, by inflammation or ulceration of the urethra.

Pain due to *vesical calculus* occurs principally at the end of micturition, and may be described as burning and stinging or sharp and cutting. It is usually felt at the neck of the bladder and in the urethra slightly behind the external meatus, but may be felt in the perineum and at the root of the penis. In children it is often very severe, the patient screaming and pulling at his foreskin, especially at the end of micturition; but in old patients if the stone lies in a post-prostatic pouch, so as not to come in contact with the vesical neck, little if any pain may be felt. The pain may gradually decrease owing to the calculus becoming larger and smoother by the deposit of phosphates around it. The effect of rest upon pain due to vesical calculus is so great as to be an important diagnostic sign.

Such pain as is caused by *calculi of the prostate* is usually felt only during and after micturition, but there may be a constant ache increased by defaecation and unconnected with micturition, while in *calculi of a seminal vesicle* painful defaecation and seminal ejaculation may occur. *Acute cystitis* produces scalding pain along the urethra during micturition, while at the end of the act, or if the patient tries to hold his water, there may be pain in the region of the vesical neck. In tuberculous cases severe pain as a rule indicates ulceration of the trigone or the onset of mixed infection. The features of pain in *acute urethritis and prostatitis* are too familiar to need any description. *Acute spermatocystitis* is associated

with deep pain in the perineum, pain on defaecation, and perhaps pain in the sacrum, testicle, or hip-joint. In *vesical tumour* there may be pain due to cystitis, blood clot blocking the urethra, ureteric obstruction, or pressure upon nerves. The pain may at first be unilateral, pointing to the growth being on the corresponding side of the bladder. In *carcinoma of the prostate* the pain, which is unconnected with micturition or movement, is usually a constant dull ache, but is sometimes severe and lancinating. It may be referred to the suprapubic region, urethra, perineum, hip-joints, thighs, testicles, etc., and is liable to be mistaken for sciatica.

Patients may complain of agonizing pain in the bladder, perineum, etc., and of other symptoms for which no adequate explanation can be found; but before diagnosing the condition as neurotic careful search must be made for an organic cause, and commencing spinal disease must not be forgotten.

TWO CASES OF INTRACRANIAL COMPLICATION OF ACUTE EAR DISEASE.

BY

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THE two cases described below of intracranial complication of acute otitis media were in-patients at the York County Hospital, one under the nominal care of one of us, the other of the other. The treatment, however, operative and other, as well as the process of diagnosis, was the joint work of both of us, so that they may be regarded as patients common to us jointly. They both present unusual features which seem to us to make them worth recording.

E. L., a man aged 36, was admitted on January 19th, 1922. Ten days previously he had had "influenza," and about a week previously, about January 12th, he became deaf in the right ear, and this ear began to discharge. A day or two later he became deaf in the left ear; but this ear did not discharge. There was a doubtful history of a rigor on January 18th, the day before admission.

On admission, both mastoid processes were somewhat tender; the patient was very deaf in both ears. The right drum membrane was acutely inflamed, and there was discharge from the tympanum. The left meatus was full of wax, and on removal the membrane was found somewhat inflamed, but not apparently bulging. The temperature was about 100°. There was some very slight swelling and redness of the right optic disc, and a doubtful swelling of the left disc. The patient was somewhat dull and lethargic, but did not appear very ill.

The right mastoid process was operated on the same evening. The mastoid cells were inflamed, and many of them contained granulations; but there was very little, if any, free pus. The lateral sinus was laid bare, but appeared to be healthy. The left drum membrane was freely incised.

Next day the conditions seemed to have improved, and there was but little change for a week, the temperature fluctuating between 98.4° and 100°. There was little, if any, discharge from the left ear. The general condition improved; there was less drowsiness and lethargy. The swelling of the optic discs, however, increased, and on January 23rd a haemorrhage was noticed in the neighbourhood of the left disc.

On the evening of January 26th he had a rigor, and the temperature rose to 105.8°. A diagnosis of thrombosis of the lateral sinus, which had formerly been suspected, was now definitely made, and it was decided to explore the sinus. The right sinus was suspected, there being but small evidence of any serious trouble on the left side. There was, in fact, little evidence, except deafness, of any trouble on the left side. The right sinus was accordingly laid bare at greater length. It looked healthy, but a needle was inserted into the sinus and blood aspirated from it. Blood came away freely, and it was evident that the sinus was not thrombosed, at least above the level of the jugular bulb. It was thought that the vein might be thrombosed at the bulb, and so the internal jugular was exposed in the neck, but it was quite evident that there was no thrombosis.

In view of the presence of the optic neuritis we decided, although there was no other evidence of brain abscess, to explore the temporo-sphenoidal lobe. The tegmen antri was removed, and an area of dura exposed. There was no extradural abscess. The dura appeared to be bulging. We opened it and passed a sinus forceps in several directions into the temporo-sphenoidal lobe, but no pus was found.

We were nonplussed. We had found nothing to account for the condition, and after a hurried consultation we decided to explore the left mastoid and left lateral sinus. The mastoid process was found to be rapidly opened. The mastoid cells were inflamed and many of them filled with granulations, and on laying the sinus bare it, too, was not seen to be healthy. A grey needle was inserted into the sinus, and no blood could be aspirated from it. The jugular vein was rapidly exposed in the neck and tied above the common facial, and the clot curetted out of the sinus until blood flowed freely from its upper end. The petrosals were evidently not thrombosed, so that the upper portion of the jugular vein had to be kept tied, and we were unable to wash through from the sinus. The temperature next day was normal. It rose on January 28th, and remained between 99° and 100.5° until February 9th. It is probable that this was due to pus in the upper portion of the jugular vein and bulb into which the septic thrombus broke down.

The pathologist's report showed that the blood aspirated from the right sinus was sterile, and a culture from the thrombus on the left side contained streptococci.

The condition of the patient continued to improve, except that the optic neuritis persisted, until February 20th, when he became drowsy and lethargic, and further operation was arranged for on February 21st. But on dressing the right ear on the morning of that day a copious discharge of pus was found in the right mastoid wound, apparently from the region of the exposed dura of the temporo-sphenoidal lobe, although the wound had so closed up that the source could not be precisely determined. From this time the patient made an uninterrupted recovery, and the optic neuritis rapidly disappeared. He was discharged on April 22nd, with both wounds healed, and hearing in both ears was good. He has been seen recently, and is in good health.

The course of events can now, in retrospect, be fairly well established. An infection of both middle ears was contracted, and while there was no violent inflammation of either mastoid process, there was an extension of the inflammatory process on the right side into the temporo-sphenoidal lobe, setting up a slow abscess there, and on the left side to the lateral sinus, setting up a septic thrombosis. By opening up the right temporo-sphenoidal lobe we allowed of an ultimate escape for the pus there, although we did not actually strike the abscess, which was undoubtedly present. On the other hand, had we struck the abscess at the time of the operation on January 26th it is quite likely that we might have been satisfied that we had found enough to account for the symptoms, and might not have attacked the thrombosis of the left sinus until too late. Had the abscess not evacuated itself spontaneously on February 21st we should most likely have attacked the left temporo-sphenoidal lobe before going back again to the right in view of the presence of the neighbouring septic condition in the right sinus. As it was, we did just enough to allow of recovery, and freely admit that this was largely a matter of good fortune in what was a puzzling case.

The second was a case of middle-ear disease, complicated by infection of the mastoid antrum and cells, and sinus thrombosis. The special feature was the extent of the thrombosis and the comparative mildness of the symptoms.

H. H., male aged 19, had a history of earache from the age of 6 years with intermittent discharge from the right ear, especially after he had "contracted a cold."

He was admitted to the hospital on November 19th, 1921, suffering from a scanty discharge from the right ear, and was feeling ill and shivery. The temperature was 102°, pulse rate 84, respiration rate 20. The right tympanic membrane was incised and a discharge of serum and blood came away. The following day he felt better, but later he had a rigor, with a temperature of 105° falling, with profuse perspiration, to 99.5°. We decided to open up the mastoid and explore the sinus. The mastoid cells and antrum were found to contain pus and granulations. The sinus was pulsating freely and appeared normal. It was explored and found to contain thin pus. The internal jugular was exposed in the anterior triangle; it had become practically converted into a bag containing fluid pus. The vein was divided, but it was found impossible to reach the lower limit of the clot although the vein was followed down to the level of the sterno-clavicular articulation. The sinus was followed backwards and to the bulb; it was opened and as much of the clot and thin pus removed as possible. Neither end of the vein was tied.

Bacteriological examination of a specimen taken at the time of operation was reported as a pure culture of streptococci. Intravenous injections of polyvalent antistreptococcic serum were given. Three days after operation streptococci were reported as being present in a blood specimen taken. An autogenous vaccine was prepared and given.

The progress of the case was uneventful, and on February 1st, 1922, the patient was discharged, his condition, according to our notes, being as follows: "Looking very fit. No dressing needed for mastoid or scar in the neck."

The remarkable features appeared to us to be the mildness of the symptoms considering the extent of the disease, the absence of pain over the classical sites, the extent of the thrombosis, the absence of pyaemic complications despite the presence of fluid pus in the jugular vein and of streptococci in the general blood system, and the impossibility of removing the whole of the infected material.

Our thanks are due to our house-surgeon, Dr. Janet Nicol, for her supervision and notes of these cases.

NINETIETH ANNUAL MEETING
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Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF OTOLOGY.
ALBERT A. GRAY, M.D., F.R.F.P.S., President.

DISCUSSION ON SEPTIC SINUS THROMBOSIS: ITS DIAGNOSIS AND TREATMENT.

OPENING PAPERS.

I.—DIAGNOSIS OF SEPTIC SINUS THROMBOSIS.

BY

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MR. PRESIDENT AND GENTLEMEN,—The presence of a thrombus in the lateral sinus is in effect an effort on the part of Nature to protect deeper-seated and more vulnerable structures. The most usual site of its location is in its sigmoid section, the next most frequent in its bulbar portion. So long as the thrombus remains sterile no particular harm results; but when infected, as practically invariably happens within a few days of its formation, a state of affairs detrimental to the health and inimical to the life of the individual is at once established. That its presence is at times overlooked, and a diagnosis of typhoid fever, bronchopneumonia, or malaria made, is unfortunately still too true.

The causative organism is, in my experience, invariably the streptococcus, and frequently the *Streptococcus haemolyticus*, but that its virulence and its toxicity vary in different stages in the progress of the disease is, I think, undoubted. I am disposed to think, however, that the ever-varying anatomical structure of the temporal bone and the relative position of the sinus to adjacent mastoid cells is of even more importance in the incidence of the disease than the virulence of the causal organism. A preliminary *x*-ray examination gives in certain cases a general idea of the geography of the petromastoid region and sinus groove, but, generally speaking, owing to the more or less acute illness of the patient it is seldom applicable as a diagnostic aid.

Thrombosis of the sinus is more likely to occur in the pneumatic than in the diploëtic variety of mastoid. In typical and in advanced cases diagnosis is as a rule not difficult, the remittent type of temperature, the rigors, the profound asthenia, the localized pain over the sinus and along the course of the jugular vein, at times accompanied by torticollis, presenting an almost unmistakable clinical picture. The right sinus is more frequently involved than the left, and sinus infection is more common in males than in females. It is the atypical case and the latent case, both by no means uncommon, which present diagnostic difficulties to even the most experienced, and yet it is an early and accurate diagnosis which tells almost more than anything else in the successful treatment of this particular affection.

Atypical cases, which, in my experience, are more frequently met with in children than in adults, are due at times either to dehiscences in the tympanic floor or to its extreme thinness with consequent infection of the bulb. In such cases no demonstrable symptoms of mastoid infection may be present. At other times the presence of a very forward sinus and an almost complete absence of mastoid cells is the responsible factor. To await the development of the full array of classical signs and symptoms is merely to court disaster. An intelligent appreciation and anticipation of the course of pathological events will materially assist in helping to make an early diagnosis, and an early diagnosis should spell early operative interference in order to prevent the advent of general septic poisoning.

The stage at which sterility of the existing thrombus gives place to infectivity is the all-important phase of the disease, and the one to which our thoughts should be mainly directed, for if only we could assure ourselves from clinical data of the precise moment at which this change takes place the chances of saving the patient's life would be materially increased. It is to this problem that I desire more especially to direct your attention.

On examining my records of intracranial complications secondary to purulent otitis media I find that thrombosis of the lateral sinus occurs in, roughly speaking, 50 per cent. of these cases, while septic meningitis occurs in nearly 60 per cent. Both complications tend to be solitary complications, but whereas meningitis is almost invariably fatal, sinus thrombosis has, if operated upon at a sufficiently early stage, the merit of being more amenable to surgical interference than any of the other intracranial complications usually met with.

The special proclivity to sinus infection as a complication of purulent otitis media is, I hold, to be explained mainly on anatomical grounds, the actual position of the sinus being very inconstant—at times situated quite superficially and approaching close to the posterior meatal wall, at other times lying deeply and separated from it by a considerable thickness of cellular bone. In brachycephalics it is said to be situated farther forwards and outwards than in dolichocephalics.

In the first place, the peculiar and intricate structure of the middle ear tends to prevent free drainage of tympano-antral suppuration; in the second place, and as a direct consequence of the frequent absence of free drainage, the temporal bone is peculiarly prone to septic infection; while in the third place, the relation of the lateral sinus to the mastoid antrum and to the numerous venous radicles which, running through the temporal bone, ultimately enter it, renders it specially liable to organismal attacks. Moreover, as the sinus is an interdural structure it is consequently more vulnerable than a structure separated from an existing septic focus by the full thickness of a normal dura mater.

While thrombosis of the sinus almost invariably occurs as the result of a chronic infective process, it must be borne in mind that it is by no means infrequently encountered during the acute stage of an otitis media, when its presence is prone to be overlooked, the infective path being either directly along venous radicles between the middle ear and the sinus, or by way of small venous tributaries connecting the tympanic mucosa with the petrosal sinuses.

Thrombosis secondary to acute septic otitis media is, in my experience, however, less dangerous than when secondary to chronic otitis media. It also occurs in cases where there has been merely a fleeting tympanic suppuration, or where it has entirely ceased, and the previously ruptured membrane healed. This is due to the fact that in the course of the tympano-antral suppuration the middle ear becomes occasionally entirely shut off from the antrum as the result of the fusion of granulation tissue in the "iter." I have seen several such anomalous cases myself, and others have been recorded by Mollison, Piolti, Friedmann, Greenfield, and others.

While sinus infection is usually due to extension of an existing bone lesion, it may also result from direct venous infection—for example, by way of an unobliterated petro-squamosal sinus, by way of the petrosal sinuses, or as the result of pus spreading between the dura and the petrous pyramid upon either its anterior or posterior surface. The resulting phlebitis may end in the formation of mural thrombosis or in complete obliteration of the sinus.

Thrombosis of periphlebitic origin is not only more gradual in its onset on account of the frequent presence of a barrier of protective granulation tissue, but is also more likely to end in perforation of the coats of the sinus wall, with the ultimate formation of an abscess in continuity with the area of suppuration within the mastoid cells.

Thrombosis of endophlebitic origin, where the infection is conveyed directly by the blood stream, is unattended for a considerable time by visible changes in the superimposed tissues or in the vessel wall, produces general infective symptoms more rapidly, and is thus the more dangerous type of infection. It is of the utmost importance that we should endeavour to discover from clinical signs and symptoms that phase of the disease where we have to deal with a non-infected clot and that phase when the clot has become infected. The presence of a non-infected clot is an actual safeguard, and if only the local disease be removed at the psychological moment its presence need not give rise to anxiety. If, however, the focal disease be not removed at once secondary infection of the clot is only a matter of a few days.

In any case of middle-ear suppuration, acute or chronic, where reasonable drainage exists, the occurrence of a rigor should always excite suspicion: it is a danger signal of the first importance. Moreover, the continuance of a high temperature for several days after a mastoid operation, especially if the patient be a child, should be regarded with equal suspicion.

The temperature record is, to my mind, one of the most important and reliable of diagnostic signs. To get real assistance from it an almost continuous record should be kept, but failing this at least a two-hourly record. The swinging morning and evening temperature with which we are all so familiar certainly indicates that thrombosis is in full bloom; but what the chart ought to show, and does show if records are made frequently enough, is the time at which disintegration is taking place. Sudden oscillations of more than one to one and a half degrees are unusual in uncomplicated suppurative mastoiditis, but frequent oscillations of from one to three degrees are quite common in commencing peri- or endo-phlebitic thrombosis, and their presence should at once put the clinician on his guard. In young people, among whom, as I have already stated, atypical cases are most frequently met with, temperature is a less exact guide than in adults, the tendency being for it to be continuously high rather than remittent. The pulse rate varies more or less regularly with the temperature, except in cases where an intracranial abscess is also present, when it may become almost unduly slow.

Too much stress is frequently laid upon the absence of rigors. Their presence, more especially if they recur frequently, is practically diagnostic; but their absence, providing certain other leading indications are present, should certainly not negative exploration. They occur only in about one-half of the cases. So long as the system is capable of throwing off the accumulating toxins there is no special reason why there should be any rigors; when overcharged, however, rigors are frequent. In children they are frequently absent throughout the whole course of the disease.

Chills and a feeling of chilliness are very important symptoms too often overlooked, although they are present in nearly 80 per cent. of cases. Frequent inspection of the hands, feet, and knee-caps should be made, as they are often found cold when the temperature is quite high.

Profuse sweating is by no means always present. At first it occurs as the temperature is subsiding, but in very severe cases may be almost continuous.

Important information, too often ignored, is to be obtained from a daily examination of the retinal veins. Ocular changes occur in some 75 per cent. of sinus cases, but are frequently so slight—although so important—that they may not be appreciated unless frequent examinations are made. An actual optic neuritis, however, occurs in only about 30 per cent. of the cases. As the sinus becomes gradually occluded the ipsolateral veins become slightly engorged owing to the venous "backwash," the contralateral veins remaining normal. A sudden diminution of engorgement indicates either that the thrombus has contracted or that it is breaking down, with the result that infective particles are being floated away in the blood stream. In the former event no rise of temperature takes place, in the latter it suddenly shoots up, and may or may not be accompanied by a rigor. For similar reasons the temporal, occipital, and facial veins, and at times the emissary mastoid vein, may get blocked, with a resulting slight oedema or puffiness of the adjacent subcutaneous connective tissue. When the sinus is occluded the normal venous hum over the internal jugular disappears, but is audible upon the opposite side.

The sign described by Crowe is also at times of value. Pressure upon a normal internal jugular vein produces demonstrable dilatation of the superficial veins of the forehead, eyelids, and temples, and to some slight degree of the retinal vessels, whereas pressure upon an already obstructed jugular vein has no such effect.

If on exposure of the sinus it be found to have a dark bluish colour it must not be taken for granted that no thrombus is present. In thrombosis of endophlebitic origin the walls retain for a considerable time their normal appearance; when of periphlebitic origin, however, their colour is usually grey or a yellowish-grey, protective granulation tissue being also frequently present.

Pulsation of the sinus synchronous with the respiratory movements may or may not be present. Whether present or absent, I have found the sign to be of little value. Diagnostic information of value is, in my experience, very rarely obtained from a blood count. The presence of a high degree of leucocytosis, or of large numbers of mononuclear leucocytes, is suggestive of pus, but by no means necessarily of pus in the sinus, or even around it. When, however, associated with other suspicious symptoms, it may be looked upon as a helpful aid.

Certain paralytic phenomena are also at times present, as, for example, paralysis of the hypoglossal nerve from the pressure of a thrombosed condyloid vein as it emerges from the anterior condyloid foramen.

When thrombosis of the jugular bulb is present the existing pressure may cause paralysis of the vagus, spinal accessory, or glosso-pharyngeal nerve. Should extension to the cavernous sinus take place paralysis of the abducens, the oculo-motorius, or the trigeminus may result.

Differential Diagnosis.

The disease with which sinus thrombosis is most likely to be mistaken is, in my experience, typhoid fever. During the first week of an attack of typhoid many of the symptoms are almost identical with those of sinus thrombosis, and if by chance the patient happens at the same time to have a suppurating ear confusion becomes confounded. The presence, however, of a Widal reaction and petechiae and the absence of very marked variations of temperature with rigors or chills are as a rule sufficiently distinctive.

At times it is difficult to distinguish thrombosis from a central bronchopneumonia. The persistent cough, the rusty sputum, and the more even temperature serve, however, as useful differential diagnostic aids. From malaria it is to be distinguished by means of a blood examination and the discovery of the *Plasmodium malariae*.

In rare cases in infants and young children severe gastric attacks, especially if at the same time the patient has running ears, are liable to mask an existing thrombosis and to confuse diagnosis.

While, Mr. President, all present will probably agree that typical cases present no great difficulty in diagnosis, all will, I think, equally agree that atypical and latent cases present extremely complex problems to the clinician. The value of an early and accurate diagnosis cannot be overestimated. My own practice is to attempt to unravel the complexities of the case as far as possible from clinical signs and symptoms, but when reasonable doubt exists I have no hesitation in performing an exploratory operation, in exposing or actually slitting up the sinus, purely and solely for diagnostic purposes. I have never had any reason to regret adopting this course of action, and have on quite a number of occasions had every reason to be thankful for having adopted it. Surgical surprises are still not uncommon in even the best regulated clinics, and the old adage *humanum est errare* is quite as true to-day as it was in days gone by.

II.—SOME DIFFICULTIES PRESENTED BY CASES OF SEPTIC SINUS THROMBOSIS.

BY

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MR. PRESIDENT,—It was at your request that I wrote for this meeting a short paper on some difficulties in dealing with cases of sinus thrombosis. Unfortunately, since then Mr. Hunter Tod, who was to have seconded Sir William Milligan in opening the discussion, has found himself unable to fulfil this engagement. Your loss is a severe one, since he has a large experience of this complication of aural disease and the power of clear exposition, so that you would have received from him something far more illuminating and worthy of discussion than I can give you. I have, however, endeavoured to supplement the paper by reference to some of the literature of recent years, so that if it now smells somewhat of the lamp the blame is partly yours, but I hope to present to you some points which will arouse discussion.

Difficulties in Diagnosis.

(*a*) The condition may be confused with malaria, especially if rigors occur.

A soldier was invalided home from Salonica in order that a mastoid operation might be performed for the cure of chronic otorrhoea accompanied by persistent pain. After three days in England he passed a medical board and was dispatched to the western front, where he served in the trenches for a short time before being once more evacuated. On admission to a clearing

station he was suffering from slight diarrhoea, pyrexia, and severe pain in the left ear, from which there was a foul discharge; his pulse was 120. He stated that he had had malaria in Salonica. Soon after admission the temperature rose still higher, and the patient had a rigor. A radical mastoid operation revealed the ordinary type of caries of the middle ear and antrum; the lateral sinus appeared healthy. This operation caused no alteration in the general condition, and a microscopic examination of the blood, obtained on the following day, revealed numerous malaria parasites. The patient rapidly recovered after the administration of quinine. In this case no harm was done, as the operation was needed in any case, though not perhaps at that moment; but it was felt after consultation with a physician that a mistake in the contrary direction might cost the patient his life.

This difficulty in diagnosis seems to be quite common in America, and perhaps since the war it may have become commoner in this country. Quite recently a young lady developed a temperature of 105° after a mastoid operation, and it was only then learnt that she had been in a tropical country and had had malaria.

(*b*) It may be mistaken for typhoid fever. My friend Mr. Jasper Blaxland of Norwich has given me the following record:

A woman, aged 32, had been ill for ten days, complaining especially of headache, but had no pain. Her doctor thought her illness might be typhoid fever, but the Widal reaction was negative. She had had bilateral otorrhoea for twenty years following scarlet fever and was very deaf. It was not until the tenth day of the illness that tenderness was noticed over the left mastoid. At the operation performed the same day the antrum and cells were found to contain pus and cholesteatoma. The lateral sinus was covered with granulations. There was at first some apparent improvement, but subsequently the patient had a rigor, and six days after the first operation the jugular vein was ligatured and divided. The lateral sinus, which contained pus, was followed back almost to the torcula. The inner wall of the sinus eventually sloughed, leaving the cerebellum exposed, covered with granulations. A few days later oedema of the eyelids, cheeks, and upper lip seemed to indicate spread of the thrombosis to the cavernous sinus, but these symptoms gradually disappeared. This patient remains well up to the present time, nine years later.

The following case presented great difficulties in diagnosis. Fortunately no mistake was made or the patient's life would have been lost.

A girl, aged 13, had measles. On the ninth day she had a rigor with a temperature of 105° and signs of pus in the right antrum of Highmore. The following day the maxillary antrum was punctured and thick pus washed out. Two days later signs of suppuration in the right mastoid appeared and Schwartze's operation was performed, the mastoid cells and antrum being found full of pus. An opening was also made through the nose into the maxillary antrum with a burr. The antrum was afterwards washed out a few times and gave no further trouble. The patient remained very ill with a high temperature and pulse rate, and there appeared signs of suppuration in the left mastoid four days later. The Schwartze operation was therefore performed on this side also. After this the condition of the patient showed no improvement, the temperature rising to 104° at night from normal in the morning, whilst the pulse rate varied from 120 to 140. The lateral sinuses, which had been exposed on either side, appeared healthy, but the wounds remained absolutely inactive with no sign of healing nor the formation of granulations. Applications of hypertonic saline with the object of stimulating the wounds had no effect. The condition of the patient became desperate and a rapidly fatal result seemed almost inevitable, but she improved slightly and a blood culture was taken. The culture showed next day a pure growth of *B. typhosus*. The patient was seen by a physician, who refused at first to entertain the diagnosis of typhoid since the swinging character of the temperature, the extreme rapidity of the pulse, the condition of the abdomen, the nature of the stools, and the absence of rose spots and enlargement of the spleen were all against it. He was, however, unable to dispute the evidence of the blood culture. The patient eventually recovered after a somewhat stormy convalescence, and she remains well with perfect hearing.

Mason[1] has reported a case of thrombosis of the jugular bulb caused by the *B. typhosus*, probably starting in the third week of typhoid fever. The *B. typhosus* was grown in pure culture. This patient recovered after operation.

Although in the exceptional case just mentioned the blood culture proved of great value it is not as a rule of much assistance in the diagnosis of sinus infection. Kopetzky[2] has well defined its limitations as follows:

"In the finding of streptococci in the blood stream there is substantiation of a diagnosis of sinus thrombosis, all other sources of infection being eliminated; but in the event of negative findings then it is better to operate on the clinical findings than to let pass the time when surgical intervention will result in a successful issue."

(*c*) Sinus thrombosis most commonly occurs as a complication of chronic otorrhoea, in which case the onset and symptoms are more likely to indicate the diagnosis than if it follows acute middle-ear suppuration, which may mask the presence of the complication. A remarkable case has been recorded by Dunbar Roy[3] in which bilateral inflammation of the external auditory canal was followed by bilateral sinus thrombosis from direct extension to the mastoid emissary veins. There were no inflammatory changes whatever either in the middle ears or in the mastoid cells.

Perhaps insufficient importance has been attached to the mastoid emissary veins. Kieler[4] has recorded a case of septic thrombosis of an exposed mastoid emissary vein secondary to a simple mastoid operation. Ligature and resection of the emissary vein cured this patient, and he regards this as a more common focus of infection than is generally supposed.

(*d*) Sinus thrombosis may be difficult to distinguish from or it may be accompanied by other intracranial complications. Numerous cases have been reported in which meningitis and especially cerebellar abscess have been associated with this condition, and I wish to refer here to the occurrence and significance of optic neuritis. Usually the fundus oculi is normal or shows merely some congestion of the retinal veins. Crockett, quoted by Kerrison,[5] found optic neuritis in 25 per cent. of cases (in 16 out of 60). Kerrison states that this is a larger percentage than has been recorded by other observers. Milligan[6] states that optic neuritis is present in nearly 40 per cent. of the cases. My own experience has been that it is at least as frequent as Crockett states and that it is not necessarily a sign of ill omen. The important point is that optic neuritis may occur without the presence of any other intracranial complication but septic thrombosis. It might be thought unnecessary to draw attention to this, but I have been present at a discussion by the bedside on this point by those who might have been expected to be better informed. The patient in this instance recovered after the sinus had been opened and the jugular ligatured.

The swelling of the optic disc almost always subsides, but Friedenwald and Downey[7] have reported a case in which a subtemporal decompression became necessary on account of persistent choked disc following lateral sinus thrombosis with progressive failure of vision. They refer also to another case from a German source. The necessity for this must be very uncommon, because lumbar puncture would usually give relief to a coexistent serous meningitis.

Difficulties in Determining the Condition of the Exposed Sinus.

If the wall of the lateral sinus is found to be sloughing there can be no doubt regarding the nature of the disease and the treatment required. The wall of the sinus may, however, be found covered with granulations forming the boundary of a perisinous abscess, or it may be apparently normal. In these circumstances Professor Moure[8] attaches great importance to pulsation in the sinus as an indication of the presence of a thrombus within. Granulations on the wall should be carefully searched for any tiny visible spot through which the infection may have reached the interior. If rigors have begun it is better to assume that an intravenous infection has commenced and act accordingly. If the symptoms are equivocal it is justifiable to wait. The following case illustrates this:

A boy, aged 7, had suffered from acute otitis media for a week. He was seen about 10.30 on a Thursday evening. The Schwartze operation was performed and revealed a perisinous abscess, the sinus wall being covered with granulations. As the pyrexia continued for thirty-six hours, although there was no rigor, on the following Saturday morning the sinus was opened and found full of septic clot. After this recovery was uninterrupted.

It is futile and dangerous to aspirate the sinus or puncture it with a hollow needle, since this proceeding cannot be relied upon to give any definite information, and it may well of itself induce a septic thrombosis by injuring the intima of a previously healthy sinus. Therefore it is better to do nothing or else deliberately incise the sinus. Aspiration of the sinus seems especially dangerous, since accidental injuries, though usually innocuous when properly dealt with, may lead to septic thrombosis. The following is an example:

A soldier, who was a driver in the Tank Corps, suffered from chronic otorrhoea on the right side. This caused him pain and headache, and he was unable to bear the noise and vibration of the machinery inside the tank. He agreed therefore to have a radical operation. It was found that the knee of the sinus lay so far forward that the posterior wall of the bony meatus was only one-sixteenth of an inch in thickness. I was at first inclined to abandon the operation; it was completed, however, by employing the method of Stacke, but the sinus was wounded before the end of the operation. The thrombus in the sinus afterwards became

septic, and it was necessary to tie the jugular. The patient recovered, but the ligature of the jugular was followed by perichondritis of the auricle, which caused some trouble.

Too much care cannot be taken to avoid manipulating an exposed but healthy sinus, since a very slight injury, not sufficient to open the lumen, may occasionally cause a septic thrombosis. Hunter Tod[9] has drawn attention to such cases, in which the symptoms begin to appear about ten days after the mastoid operation. The following is an example:

A woman, aged 36, had a discharge from the right ear for many years. She had periodical attacks of pain and headache and the meatus was filled with polypi and granulations. At first she refused operation and attended the out-patient department for six months, but finally changed her mind. At the operation the sinus was exposed but was not known to be injured. On the tenth day an unexplained pyrexia commenced and its significance was not realized until the patient had a rigor. Five minutes before the time fixed for reopening the wound and probably tying the jugular vein a pulmonary infarct occurred. The shock of this was so great that at first it appeared as though a fatal result would ensue immediately, but a little later it was possible to carry out the operation. The patient ultimately died from an empyema and lung abscess, no doubt caused by the septic embolus. It must be assumed that there was some slight injury to the lateral sinus at the first operation.

Difficulties Connected with Further Complications.

The ordinary pyaemic complications are familiar. These patients cannot be watched too carefully for metastatic abscesses and effusions into the serous cavities. One of my patients developed most insidiously a large pyaemic abscess in each buttock; an ankle and an elbow-joint were also infected, but he ultimately made a complete recovery.

A complication to which I understand you desire that some reference should be made is the spread of the thrombosis to the petrosal and cavernous sinuses. It seems that in these circumstances the chief difficulty is to determine whether the cavernous sinus is occupied by aseptic or infected clot. The first condition is undoubtedly not rare, and explains the cases of recovery. On the other hand, if the clot be infected the only possibility of saving the patient is by operation, and that with very little delay, since the infection will readily cross by the circular sinus to the opposite side, and once that has happened there can be no hope of success.

Ritchie Rodger[10] and F. G. Wrigley[11] have each reported a case in which the lateral sinus contained fluid blood, and the thrombosis was apparently primary in the superior petrosal sinus. The rush of blood from the lateral sinus in each instance carried the clot out of the petrosal sinus, and Wrigley's case recovered. They go so far as to suggest that this might be deliberately employed as a method of treatment, but I think that the amount of blood to be spared for this purpose should be very limited.

As soon as thrombosis has occurred in the cavernous sinus the corresponding side of the face and eye present a characteristic picture which Sir William Milligan has well described to you just now. The question immediately arises whether operation on the cavernous sinus is to be undertaken—this certainly should not be done without careful consideration. A number of cases of recovery have been reported, and when the direction of the blood stream is taken into consideration it must be the case that the head of the clot advancing against the stream is at first aseptic. It may so remain and recovery take place, the symptoms being due simply to blockage of the cavernous sinus and not to sepsis. In a case of my own the signs and symptoms were quite characteristic and I proposed to do the operation to which I shall refer shortly. I consulted a senior colleague who restrained me. This patient made a complete and unexpected recovery, no doubt because the clot was aseptic. If, however, it is reasonably certain that the cavernous sinus contains infected clot the only hope lies in early operation, and it should certainly be undertaken. Various routes have been proposed, but the most rational method is that recommended by Sir Charles Ballance.[12] It is the only one at present worth consideration in an otogenic case, since it is the posterior end of the cavernous sinus which must be attacked. The sinus is reached by the Hartley-Krause method of exposing the Gasserian ganglion. In Ballance's second case, although the patient died of septicaemia, the operation effectively dealt with the cavernous sinus. My colleague Mr. Frankau has attempted the same operation in two cases, of which he has kindly given me brief notes. In each case the condition followed a mastoid operation, one four days, the other five days previously. The cavernous sinus was reached in each case, the septic clot evacuated, and the cavity drained. Both cases succumbed. Meningitis was present in the first case, but in the second case, which occurred in private practice, a necropsy was not obtained.

The condition is a desperate one, and I do not think that the failure to save life by operation so far, except in Bircher's case, should deter from further efforts in this direction. It is not to be expected that any large proportion of attempts will ever be successful in face of the difficulty of dealing at the same time with the bulb, the inferior petrosal sinus, and possibly other complications, such as meningitis and septicaemia. (A full discussion of the subject may be found in the papers to which reference has been made.)

Difficulties in Determining the Necessity and Nature of the Operation on the Jugular Vein.

It is possible for spontaneous recovery from lateral sinus thrombosis to occur, though no surgeon having once recognized the condition would await such a result. Nevertheless, the number of recorded cases is surprising. Ewing Day,[13] for example, reported 6 cases of spontaneous healing out of 45 cases of sinus thrombosis; that is to say, the sinus was obliterated by a clot which had been completely transformed into aseptic fibrous tissue. Friedenwald[14] has collected a number of cases and reported one of his own, in which a septic thrombus formed, but was shut off from the circulation by healthy clots, and the pus escaped through the mastoid emissary vein, producing simply a localized abscess. This tendency to recovery indicates that the operation should not be more extensive than is necessary to assist the efforts of nature. At the other extreme are cases of pyaemia, and a case is mentioned by C. E. West[15] in which the septic thrombus was so extensive that ligature of both jugulars was necessary. Whitehead[16] has reported a case in which both lateral sinuses and the longitudinal sinus were blocked. This patient recovered.

Many cases recover without ligature of the vein, and personally I have not lost a case in which the vein was not ligatured. Professor Moure, reporting on fifteen cases of suppurative phlebitis to the Belgian Otological Society in 1906, stated that he never ligatured the jugular, and Pierre Pietri,[17] in a report from Professor Moure's clinic in 1918, writes as follows:

"Inutile contre l'entrée de l'air, les hémorragies et les embolies, inefficace contre la pyohémie et les metastases, la ligature de la jugulaire n'est pour le chirurgien qu'une complication opératoire et pour le malade qu'un traumatisme surajouté. Les résultats des statistiques sérieusement établies confirment pleinement cette manière de voir; la proportion de guerisons est la même avec ou sans ligature. Bien plus dans un certain nombre de cas, elle devient même dangereuse."

There is therefore an important school which considers ligature of the jugular a useless and dangerous proceeding, unless the clot has actually reached the neck, whilst a few surgeons tie the vein as a precaution in every case. The truth surely lies between these extremes. The gravity of this addition to the operation has been exaggerated, since in an ordinary case it adds but little to the severity, whilst, as Firth[18] has written, "Unfortunately it will always be in cases of sinus thrombosis of the severest type and the longest standing, those in which the patient is least able to bear a prolonged operation, that ligature of the vein will be most essential for successful treatment."

The vein may be ligatured in continuity, divided between two ligatures, resected, or after division the upper end may be brought out on to the surface. Much has been written on the indications and contraindications for these various methods, but the following considerations cover the field briefly.

It should be clearly understood that the operation on the vein has two distinct ends in view: first, to provide free drainage for any septic material in the sigmoid sinus, bulb, or jugular vein; and secondly, to cut off the escape of septic material into the general venous circulation. The most rational and efficient method of attaining these two objects is that recommended by Sir Charles Ballance. The vein is divided between two ligatures. The upper segment is dissected up, any tributaries, of which the common facial is the most important, being also tied and divided, and is fixed in the upper angle of the wound. The end is left hanging out of the wound and the ligature is taken off as soon as possible so that free drainage is provided. I do not see any indication for the elaborate and severe operations which have been described and practised on the bulb. They do not appear to give any real assistance towards the object

in view which cannot be equally well attained by simply following the sigmoid sinus towards the bulb and dealing with the vein in the neck in this fashion. The indications for this operation have been so clearly stated by the same authority that I cannot do better than close these remarks with the following quotations from his writings:

"The view that operation on the vein is never required, and the view that operation on the vein is always required, are equally erroneous. It is as absurd to tie the vein for a local abscess, which should be dealt with in the sinus region as in other parts of the body by simple evacuation, as it is to decry all operations on the vein, when it may contain a spreading infective clot which has been known to reach the heart."[19]

"Operation on the vein should be undertaken (*a*) in acute pyaemia and septicaemia, whether the sinus is occupied by clot or by fluid blood; (*b*) if the sinus wall is gangrenous, or its contents are putrefying, unless it is perfectly clear that on both sides of the area of inflammation the sinus is completely blocked by non-infected thrombi (how seldom this qualification will be operative must be obvious to all who have had any considerable experience of these cases); (*c*) if it is proved or even suspected that the blood in the jugular bulb is in part or wholly clotted; and (*d*) if the jugular vein is thrombosed."[20]

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DISCUSSION.

Mr. T. RITCHIE RODGER (Hull) said: It is difficult to estimate from a survey of the literature of the subject what proportion of cases of cavernous sinus thrombosis are an extension from a thrombosis in the sigmoid sinus and jugular bulb by way of the superior and inferior petrosals. Dwight and Germain concluded that 43 of their 182 collected cases were so caused; but as their review included the earliest cases reported details are wanting in many. In January, 1921, I reported four cases of cavernous sinus thrombosis to the Otological Section of the Royal Society of Medicine, of which cases one was an illustration of such extension, while in one other we were able to demonstrate a direct infection of the superior petrosal sinus by way of the small tympanic veins which drain into it. In this case rigors and extreme variations of temperature indicated a sinus thrombosis, and I exposed the sigmoid sinus accordingly. It appeared quite healthy, however, and I aspirated liquid blood from it, contenting myself with ligature of the jugular vein till the blood removed should be examined. Pneumococci were reported to be present, and I presumed I was dealing with either a mural clot, not yet large enough to occlude the sinus, or a clot in the lateral sinus posterior to the point where the superior petrosal empties itself. Two days later I therefore opened the sigmoid sinus, which was now filled with clean red clot as a result of the ligation of the jugular, and when this had been scooped away, and the flow of blood from above established, two small worm-like pieces of grey-black clot were washed out, just of the calibre of the superior petrosal sinus. We presumed that the superior petrosal had been primarily infected, and that from that seat was being discharged into the blood stream the organisms which gave rise to the rigors and high temperature usually associated with sigmoid sinus thrombosis. The previous history of the case supported this, as the patient had giddiness and facial paralysis before admission, indicating infection of the petrous. The other two cases were infected from in front—one from a facial carbuncle, the other from a frontal sinusitis. Since then I have had under my care two more cases, both of them illustrating infection from below, from an acute suppuration of the sphenoidal cell. Thus only in one case of six has there been extension of sepsis from the sigmoid sinus to the cavernous. The two cases last seen were almost identical in course and symptomatology, although different in onset.

CASE I.

A male, aged 29, was referred to my out-patient clinic by one of the general surgeons, with very large glands in the neck and below the lower jaw on the right side, the question being whether the obviously diseased tonsils might be the cause of the glandular condition. He had also been referred to the dentist, who had earlier in the same day on which I saw him extracted twelve teeth. I advised removal of the tonsils, but recommended postponement till the mouth should have cleaned up somewhat. He was admitted under the surgeon's care, and I was again asked to see him three days later, as he had developed a purulent discharge from the right side of the nose and was running a high temperature. The right antrum was found to be full of pus, infection having occurred through a perforated tooth socket. Lavage by the nasal route having failed to produce any improvement, the intranasal antrum operation was performed. A week later severe frontal headache on the same side developed and a few days later the frontal sinus was quite dark on transillumination. The middle turbinal was amputated with the hope of establishing drainage, and the headache was at once improved and the temperature fell. He was discharged from the ward to come up as an out-patient, but failed to report for three weeks, when he came back looking very ill, with marked proptosis and oedema of the face. The radical frontal sinus operation was performed, no pus being present, but the mucous membrane was found to be gangrenous. The same condition obtained in the ethmoid cells, and from the antrum, which now communicated with the mouth by a large alveolar opening, the whole gangrenous mucosa was extracted in a mass by forceps. Death occurred after a few days. On *post-mortem* examination the antrum, ethmoid labyrinth, and frontal sinus were clean. The dura over the sella turcica was dark-coloured; the cavernous sinus on the left side was full of grey clot, that on the right was indistinguishable, the pituitary body and its surrounding structures forming a soft grey indefinable mass. The sphenoidal sinus was full of caseous material and its lining showed the same gangrenous condition as was found in the other sinuses operated upon. The extreme anterior tip of the temporo-sphenoidal lobe of the brain was discoloured greenish-grey and softened.

In this case, had we succeeded in clearing out the sphenoidal cell and its gangrenous lining with the same thoroughness as we finally attained in the case of the other sinuses involved, it is probable that the intracranial condition would not have ensued.

CASE II.

A female, aged 38. This case was very similar to Case I, except that the onset seemed to be due to an acute infective rhinitis. When first seen the patient had swelling of the right eyelids, with temperature 103° and tenderness over the right antral wall under the cheek. The right nasal fossa was completely blocked from general turgescence of the mucosa, and there was pus present. The left nasal fossa was normal. The left antrum and both frontals illuminated well, while the right antrum was completely dark. Several drachms of clear straw-coloured fluid were withdrawn from the latter on exploration. After a few days of unavailing conservative treatment the antrum was opened and the middle turbinal removed, the tissues being found necrotic. The general condition became gradually worse and frontal sinus symptoms developed. The radical frontal sinus operation revealed the same gangrenous condition as in the other case. The eyes became more and more proptosed and immobile, and death ensued four weeks after the patient was first seen. Necropsy was not allowed, but there seems little doubt that this case was almost an exact parallel of the other.

Sir StClair Thomson has pointed out the probable frequency of this mode of infection of the cavernous sinus. When one thinks of the thin plate of bone, sometimes even wanting in parts, which forms alike the roof of the sphenoidal cell and the floor of the cavernous sinus—a bony plate certainly no thicker than that which separates the sigmoid sinus from the posterior mastoid cells—the possibility of extension of infection by erosion or by lymphatic or venous spread is apparent. Of course, the sphenoidal cell has a more or less efficient natural opening, an advantage denied to the posterior mastoid cells; and, moreover, infection of the sphenoidal cell is probably much less common than mastoiditis, hence the infrequency of one condition as compared with the other. Probably extension to the cavernous sinus from the cell beneath is more likely to occur in cases such as these two, where, all through, the accessory sinus infection was characterized by an acute gangrenous condition of the mucosa with very little formation of pus. Pus can escape from the ostium sphenoidale, but this opening is a very poor safeguard where the lining of the cell is gangrenous. Moreover, in these gangrenous cases bone erosion doubtless takes place readily. The antrum and ethmoid operations in both these cases gave one the impression of tearing through wet brown paper rather than bone.

Dr. HOLGER MYGIND (Copenhagen) said: I agree entirely with Sir William Milligan that the sigmoid sinus ought to be exposed and the interior explored in all doubtful cases. I would even go farther and say that if there is only the slightest doubt this exploratory operation ought to be performed. As far as the surgical treatment is concerned, at the first period of my surgical experience I was not very inclined to tie the internal jugular vein; then I saw several

cases where the ligature seemed to have stopped the progress of the disease and I applied the ligature very frequently. For the last five years I have, however, gone back to my old view and only use ligatures in cases where there is pus in the bulb, so that the upper part of the internal jugular vein may serve as a drainage tube. I do not go so far as to say that ligation is an injurious procedure, but my experience now is that it is generally useless, as will be seen from the 144 cases I have operated upon. Of these, 54 were treated with ligature, and of those 51.6 per cent. recovered, while amongst 90 treated without ligature 48.8 per cent. recovered, which practically shows no difference. My statistics also show that metastatic diseases of the lungs—the most fatal complications of sinus-phlebitis—occur in 27.7 per cent. of the cases treated without ligature and in 28 per cent. of those where ligature was applied. A very important factor as far as the prognosis is concerned is the question of whether the sinus phlebitis is complicated or not with other intracranial diseases, as the following statistics show:

	Total.	Recovered.
Sinus thrombosis (uncomplicated) ...	69 ...	54=78.3%
Sinus thrombosis + meningitis	42 ...	16=38.1%
Sinus thrombosis + subdural abscess ...	3 ...	1=33.3%
Sinus thrombosis + brain abscess ...	2 ...	0
Sinus thrombosis + brain abscess + meningitis	15 ...	0
Sinus thrombosis + subdural abscess + meningitis	6 ...	0
Sinus thrombosis + subdural abscess + meningitis + brain abscess	7 ...	1=17.3%
Total	144 ...	72=50.0%

Age also is of very great importance as far as the prognosis is concerned, for in the period of from 20 to 29 years all cases of uncomplicated sinus thrombosis I have operated upon recovered, while from 30 to 39 years only 71 per cent. recovered, and the two patients over 50 years I have operated upon both died.

Dr. WM. HILL remarked on the want of uniformity in practice, not merely as regards tying the jugular vein, but also as to the extent of exposure and the exact clinical method of examining and exploring the sinus with a view to determining whether (1) the sinus wall was normal and its contents normal blood; or (2) there was clot, infected or otherwise; or (3) suppurating contents. It was desirable to remove enough bone to expose the sigmoid sinus for an inch. Pulsation, seen and felt, might appear to be absent in an exposure of the size of a threepenny bit when obviously seen and felt in a larger exposure; this pulsation rather pointed in favour of a normal condition of the wall and of contents. Where there was a doubt was it considered justifiable to insert a small hollow needle and aspirate and examine its contents? What precautions should be taken to prevent contaminating the sinus by the aspirating? Should not this preliminary aspiration precede slitting up the sinus, and should the exploratory incision in the first instance be a small one and then later enlarged if found diseased? The jugular vein was much less frequently dealt with in the neck than five-and-twenty years ago. If the thrombosis could be felt in the neck that was one indication for bringing the dissected upper portion of the vein out of the wound; also when it was certain that there was pus or a very septic clot in the jugular bulb.

Dr. DAN MCKENZIE said that the diagnosis, particularly in the early stages of lateral sinus thrombosis, was frequently difficult, but the problem might be avoided by operating on the sinus on suspicion. This might be the more readily done, as exploratory operation was remarkably free from danger. The sinus should be exposed, freely opened up by a long incision, and, after arrest of bleeding, the interior of the vein carefully inspected. As regards the resection of the jugular vein in the neck, he always employed it when exploration of the sinus had revealed a clot. This step did not seriously add to the risk of the operation, and, in spite of opinions to the contrary, jugular resection did close the direct route between the lateral sinus and the general circulation. To this practice he had come, having been taught by fatal cases, which he attributed to the omission of this simple step.

Mr. FRANCIS MUECKE said that sinus thrombosis almost entirely prevailed among the poorer classes; it was in fact a disease of neglect. Only about 2 per cent. of the cases occurred in the better classes, and then generally they were of the acute streptococcal type. Among the symptoms he pointed out the almost constant appearance of sordes about the gums and mouth, and herpes on the lips, and the false "general well-being" of the patient. He seldom saw the textbook symptoms of mastoid tenderness, swelling, and redness. The ordinary visible aural discharge frequently stopped some three or four months before the sinus symptoms appeared, but an aural examination would reveal a bead of pus sheltering small granulations. The mop on withdrawal would be found to have a peculiarly penetrating and disgusting odour; that part of the meatus close to the posterior edge of the drum would be red and granulating. Common mistakes in diagnosis were those of pneumonia, typhoid, or pyaemia of unknown origin, the absence of visible discharge having put the medical attendant off the scent. He was certain that a number of cases so called were not sinus thrombosis but rather meningo-phlebitis only, and would clear up entirely with the ordinary mastoid operation. He frequently found the sinus covered with profuse granulations and bathed in pus, and it was difficult to decide whether thrombosis was present. A simple method that he had found very efficacious was to push the sinus in with a blunt instrument, and if it sprang back quickly and evenly he left it alone, for even a thin parietal clot would prevent an even return. This method had seldom failed him. When clot was definitely present he plugged well above the clot and plugged the bulb if necessary. After eliminating the clot he freed the upper plug for a moment to give free flow. He always tied the jugular vein, for he knew of no way of being sure that some portion of clot would not escape. It seemed to him to be the only surgical procedure; it in no way added to the danger of the operation. There was no need to syringe through the vein or pull out the upper end. As a routine measure he gave four doses of 10 c.cm. of polyvalent antistreptococcal serum. Speed in operating he considered an essential feature of success owing to the toxic condition. As to the prognosis, 80 per cent. of cases uncomplicated by lung or cerebral conditions recovered. Pneumonia was a fatal complication—he only knew of one recovery. Joint complications were by no means unfavourable. Marked optic neuritis was seldom present—generally a slight dilatation of the vessels only. Blood tests were of little diagnostic value. Streptococci were more often found in the urine than in the blood. Following a mastoid operation sinus infection generally occurred about the tenth day. He believed dressing and antiseptics were more often the cause than operation injury. If he had cause to think sinus thrombosis present he operated as soon as he possibly could rather than wait for special tests to be done.

Sir JAMES DUNDAS-GRANT welcomed Professor Mygind's views in regard to ligature of the jugular vein, which agreed with his own expressed opinion. He would consider sordes (as pointed out by Mr. Muecke) of greater significance when associated with preservation of mental clearness. Sir William Milligan in his admirable exposition had referred to the rarity of sinus phlebitis in infants. This was explained by the great distance at which the sinus in infants was behind the mastoid. Macewen's line would in them lead to the cerebellum, as shown by some German investigations reproduced in Ballance's work on the temporal bone. The ligature of the vein was an important incident, but not the essential part of the operation, which was free exposure of the sinus, examination as to refilling after compression (refilling from below indicating absence of thrombotic obstruction of the bulb), and free incision. If (as often observed by Sir William Macewen) there was found a mass of broken-down purulent clot with healthy clot (or free normal haemorrhage) the broken-down portion might be cleared away without ligature of the jugular. If the jugular was ligatured it was imperative that the lower end of the upper part should be brought to the surface to permit of subsequent drainage. He had seen signs of danger persist until spontaneous extension of a ligature and escape of pus took place. He had opened the bulb (Grunert's operation) on two occasions and recovery followed each time, but it was very rarely necessary to do this. A catheter might be passed up the jugular vein to the dome of the bulb and suction exercised by means of a syringe. Koerner recommended, a number of years ago, for the treatment of cavernous sinus thrombosis the encouragement of free haemorrhage from the lateral sinus in hope of bringing away the clot.

Dr. ANDREW WYLIE remarked that there was very little to say after such excellent papers had been read on the subject, but he might mention that most of his cases had been

females. Hunter Tod in 1919 demonstrated that such complications developed on the tenth day, and therefore no mastoid case should be allowed out of bed until after that time. They were all agreed that no needles or syringes should be used; the sinus should be freely opened, and if the temperature did not drop and the case was one of pure septicaemia, then into one of the veins in the arm 20 c.cm. of 1 in 2,000 solution of corrosive sublimate should be injected. This would cure the case unless a septic bulbar clot was present. Mr. Colledge remarked that malaria and septic sinus conditions had been complicated, and he (Dr. Wylie) remembered once opening a sinus which was quite healthy, the rigor and fever having been caused by malaria. There was sometimes also a difficulty, in cases where a suppuration in both ears was present, to know which to open when symptoms of sinus infection appeared. The eye symptom must be relied upon in such cases. He did not ligature the jugular in the first place, merely opening the sinus freely, but if there was no improvement, then a more thorough operation should be performed and the vein ligatured.

Dr. W. S. SYME (Glasgow) said that spontaneous cures of lateral sinus thrombosis might result was exemplified by a case which came under his care. A woman, following the birth of a child, developed what was thought to be puerperal septicaemia, and she was treated accordingly, and after some time recovered. Several years later he performed a radical mastoid operation on her for otorrhoea of many years' duration. The sigmoid sinus was extensively exposed by the disease and was found to be completely converted into a firm fibrous band.

Dr. DOUGLAS GUTHRIE (Edinburgh) described a case in which removal of an aural polypus was followed by sigmoid sinus thrombosis. The earliest symptom was pain on swallowing in the region of the tonsil on the affected side. He was unaware of any mention of this symptom in cases recorded in literature. Another interesting phenomenon which was noted in the above case was that the profuse perspiration was unilateral. It was confined to the side of the lesion and affected the side of the head and neck and also the arm. This continued for several days after the temperature, as a result of operation, had subsided, and was unaccompanied by any other signs, such as dilatation of the pupil, suggesting a lesion of the sympathetic system.

The PRESIDENT, Dr. A. A. GRAY, drew attention to the importance of not injuring the sinus in ordinary mastoid operations. It was possible that highly penetrating antiseptics—for example, eusol—might cause thrombosis in an exposed sinus.

BENIGN FORMS OF OTOGENIC MENINGITIS.

BY

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[*Abstract.*]

THIS paper is based upon the observation of 210 cases of otogenic meningitis of all forms treated in the ear and throat department of the Copenhagen Commune Hospital during the last seventeen years. These cases were divided according to age and the number of recoveries in the following way:

Under 1 year	6, of whom	1 recovered	= 16.6	per cent.
1–4 years	12	,, 1	,, = 8.5	,,
5–14 ,,	61	,, 28	,, = 42.6	,,
15–19 ,,	23	,, 8	,, = 35.0	,,
20–29 ,,	34	,, 10	,, = 30.0	,,
30–39 ,,	27	,, 8	,, = 30.0	,,
40–49 ,,	15	,, 3	,, = 20.0	,,
50 years and over	32	,, 2	,, = 6.2	,,
Allages	210	59	28.0	,,

If the material is divided into groups as the meningitis was either uncomplicated or associated with other important intracranial diseases, the number of recoveries is as follows:

	Cases.	Recoveries.
Meningitis (uncomplicated)	115 ...	38 = 33.0 per cent.
Meningitis + sinus-phlebitis	42 ...	16 = 38.1 ,,
Meningitis + brain abscess	21 ...	4 = 19.0 ,,
Meningitis + subdural abscess ...	2 ...	0 = 0.0 ,,
Meningitis + subdural abscess + brain abscess	2 ...	0 = 0.0 ,,
Meningitis + sinus-phlebitis + brain abscess	15 ...	0 = 0.0 ,,
Meningitis + sinus-phlebitis + subdural abscess	6 ...	0 = 0.0 ,,
Meningitis + sinus-phlebitis + subdural abscess + brain abscess	7 ...	1 = 14.2 ,,
Total ...	210 ...	59 = 28.0

Chronic suppuration of the middle ear was decidedly more frequently the cause of benign meningitis than of malignant. Streptococcus infection was predominant in the benign cases, while pneumococcus infection played a comparatively important part in malign cases.

The benign forms of otogenic meningitis do not, however, appear only amongst patients who recover. In a series of cases of meningitis complicated with other intracranial diseases which ended in death, the meningitis was seen to disappear before death after having presented distinct objective meningitic symptoms.

Pathological Definition of Meningitis.

The usual definition of meningitis as a diffuse inflammation of the leptomeninges with the formation of a purulent exudate in the subarachnoidal spaces does not hold good in all cases, and the author quotes several examples of this from his own experience. Examples are especially quoted of cases where the cerebro-spinal fluid was distinctly meningitic, and where the macroscopical examination *post mortem* showed no exudate or other signs of inflammation of the leptomeninges, while the microscopical examination revealed the existence of inflammation of the leptomeninges. The paramount significance of lumbar puncture is emphasized.

Clinical Definition of Meningitis.

Based upon experience with about 2,000 lumbar punctures, the author gives a synopsis of the different characteristic features of the cerebro-spinal fluid in meningitis, and draws up two forms, from which there are, however, many exceptions:

	Cerebro-spinal Fluid.	
	Malignant.	Benign.
Appearance	Turbid.	Clear or opalescent.
Type of pleocytosis ...	Polynuclear.	Mononuclear.
Bacteria	Present.	Absent.
Pressure	Very high.	Moderately high.

As to the number of cells which constitutes a pleocytosis, the author has come to the conclusion that if there are three or more cells in each cubic millimetre, and if there are diffuse brain symptoms, meningitis is sure to be present. Three to fifteen cells must be considered as slight pleocytosis; 15 to 150–200 does not generally make the cerebro-spinal fluid turbid, and can be considered as moderate; while a number exceeding these figures must be considered as high pleocytosis.

Using lumbar puncture as a diagnostic means the author defines otogenic meningitis from a clinical point of view as an acute febrile brain disease, caused directly or indirectly by an acute or chronic middle-ear suppuration, exhibiting diffuse brain symptoms and a cerebro-spinal fluid with pleocytosis.

Lumbar Puncture not Infallible.

In this part of the paper the author deals with the exceptional cases, where there is a distinct contradiction between the benign character of the cerebro-spinal fluid emptied by lumbar puncture and the grave state of the patient. Three cases are especially mentioned of fatal uncomplicated meningitis where the cerebro-spinal fluid assumed a benign character *sub finem vitae;* in each case considerable plastic and thick exudates were found on the base of the brain at the *post-mortem* examination. In such cases it is easy to understand that the free connexion of the cerebral fluid with the spinal fluid has been interrupted, and the lumbar puncture principally indicates the state of the leptomeninges in the spinal canal.

Benign Uncomplicated Meningitis with Turbid Cerebro-spinal Fluid ("Benign Purulent Meningitis").

This group consisted of 22 cases, which all recovered. The average age was 23.6 years, the oldest 50, the youngest 2 years of age.

In all except one polynuclear cells were present in the cerebro-spinal fluid, predominating in 16 cases, while in 4 an equal number of both was present, and in 2 an excess of mononuclear cells. Bacteria were present only 4 times.

The initial symptom was generally vomiting, sometimes shivering. The temperature was never normal, but was in

a few cases only slightly raised, while in one-third of the cases it was 104° and beyond. Drowsiness was a very prominent symptom: deep sopor appeared twice. Rigidity of the neck was generally present, and so was Kernig's sign, while Babinski's sign only appeared five times. Optic neuritis was observed seven times. In one case a piece of the brain was removed for microscopical examination, which revealed the existence of a considerable acute leptomeningitis with fibrinous exudates on the surface (but no encephalitis as expected).

All these cases ended with complete recovery after operation, but in one case concerning a child aged 2 operation was refused and the child still recovered. This very rare and remarkable case shows that there may be a tendency to spontaneous recovery in some forms of otogenic meningitis.

Benign Uncomplicated Meningitis with Clear Cerebro-spinal Fluid ("Collateral Meningitis").

The 16 patients belonging to this group all recovered after they had been operated. They were on an average 20 years old, the oldest being 50 years old, the youngest 20 months.

The number of cells in the cerebro-spinal fluid varied from 3 to 198 per cubic millimetre; eight times only were mononuclear cells present; five times there was an excess of these, and three times an excess of polynuclear cells. In no case were bacteria found. The pressure was normal only twice, generally it was 300 to 500 mm., but in one case it rose to 950 mm.

The temperature was normal only twice; in the majority of cases it was slightly raised, and in five it was about 104°. Also within this group vomiting was frequently the initial symptom, and often appeared later in the course of the disease, even when the patient otherwise did well. Drowsiness is also an important symptom, though often slight and easily overlooked. Rigidity of the neck appeared eleven times, Kernig's sign only five times, while Babinski's sign was present six times. Five patients had optic neuritis; paresis of the abducent nerve appeared twice. The recovery often took a long time, the pleocytos's frequently disappearing very slowly.

As the true nature of this form of meningitis may be doubtful, the author proposes to call it "collateral meningitis," this name involving a distinct interpretation neither of the character nor the extension of the inflammatory process of the leptomeninges. Further, "collateral meningitis" expresses the dependence of the process upon a primary focus and also its tendency, like other collateral inflammations, to recede when the primary focus disappears.

Benign Meningitis in Cases of Sinus-phlebitis.

This group embraces 16 cases of recovery, of which 8 exhibited clear and 8 turbid cerebro-spinal fluid. The predominant formule was polynuclear. Bacteria were only found once. They all recovered completely, but one patient died a year after from uncomplicated meningitis originating from the other ear. The brain symptoms were often covered by the symptoms of the phlebitis.

In one case with slightly turbid cerebro-spinal fluid, microscopical examination of a piece of brain tissue extirpated during operation revealed the existence of considerable inflammation of the leptomeninges of the cerebellum. In several cases where there was a combination of sinus-phlebitis, which terminated fatally, and meningitis, the latter showed a benign character, being either very slight or disappearing entirely before death. In two cases of collateral meningitis as complication of lethal sinus-phlebitis, the *post-mortem* examination showed no macroscopical signs of lepto-meningitis, while the microscope revealed the existence of this complication.

Benign Meningitis in Cases of Brain Abscess.

The cerebro-spinal fluid obtained by lumbar puncture was generally of a benign character. The principal feature of the cerebro-spinal fluid is, however, that it changes from one lumbar puncture to another, being now clear and now turbid, now containing principally polynuclear cells, and at another lumbar puncture mononuclear cells principally, etc. Whether uncomplicated brain abscess may give a meningitic cerebro-spinal fluid by lumbar puncture must still be *sub judice*.

Operative Measures.

The most important factor is, of course, the *early* elimination of the primary focus, whether this is in the middle ear alone or also in the petrous bone, the labyrinth, etc.

But in many cases even an operation performed as early as possible is not able to avert the fatal course of the disease. There seem to be really two forms of otogenic meningitis. In the one, and by far the most frequent, the inflammatory process in the leptomeninges spreads like the explosion of a barrel of gunpowder ignited by a spark, and any operative measure is useless. In a minority of cases, say one-third, the spark—that is, the inflammatory products from the primary focus—is not able to cause the explosion before the fire has been nourished for some time from the focus. If in such cases the latter is eliminated, the further feeding by inflammatory products ceases, and the nascent inflammation of the leptomeninges recedes.

This idea has been the author's principal guide during the last decade in operative treatment of otogenic meningitis. For seven years previously all sorts of supplementary operations were tried. The author now considers them not only as useless but even as injurious, and the results seem to be better now.

As, however, craniotomy involves no danger when the dura mater is not opened, this operation is to be recommended to enable the operator to examine the dura minutely. If this membrane shows no sign of a deeper-going disease, the author now always makes a halt here, when there is no suspicion of subdural or cerebral abscess.

Formerly the author always performed "radical mastoid operation" also in acute cases in order to examine the labyrinth minutely; now only simple mastoid operation is performed in acute cases, as we nowadays possess means of accurately testing the function of the labyrinth.

Repeated lumbar punctures the author considers not only useful as means of following the decrease or increase of the meningeal process, but also beneficial, especially when the pressure of the cerebro-spinal fluid is very high or the patient is suffering from severe headache or nausea.

DISCUSSION.

Mr. FRANCIS MUECKE had always looked on aural meningitis as an almost fatal condition, and was surprised at the author's excellent statistics. He would like to mention a method he used lately in a case of meningitis with advanced symptoms. He inserted a tiny gauze wick through a very small hole in the dura above the tegmen antri and another behind the sinus into the posterior fossa, changing them every day for four days, when all meningeal symptoms had disappeared and an ordinary mastoid recovery took place. He only mentioned this so that others might try it if they wished and see whether this case were a lucky chance or not.

Dr. W. S. SYME had three cases of recovery from what was generally called purulent meningitis. In two this result followed translabyrinthine drainage. In both the cerebro-spinal fluid was very turbid, but no organisms were found, nor did any grow. These two cases might be classed as serous meningitis, though it seemed difficult to imagine that so turbid a condition of the spinal fluid could be found in that condition. The third case was more difficult to understand. This case recovered after repeated lumbar puncture. In the fluid organisms were found, but these did not grow. It seemed to him that in that case a definite bacterial meningitis had to be dealt with which recovered. From that case it seemed to follow that, treated early, it was possible for a case of definite purulent otogenous meningitis to recover.

Mr. T. RITCHIE RODGER said that Professor Mygind had succeeded in producing a very different atmosphere from that of the Newcastle discussion on the same subject last year. There the discussion resolved itself into that of the different methods of draining the meninges, and the impression conveyed was that the sooner this was done the better, if meningeal symptoms were present at all. Professor Mygind, however, recognized that evacuation of the primary forms in the antrum or middle ear might be followed by rapid recession of the symptoms of meningeal irritation. This could be easily understood if we thought how frequently we found acute mastoid cases with tenderness and oedema over the mastoid process, and oedema of the superficial mastoid cells, but no pus till the antrum was reached. If a drop of pus in the antrum could produce such marked collateral symptoms at a distance of an inch on its superficial aspect, what was to be expected on the far side of the tegmen antri? Was it not likely that there oedema and serous effusions could be presumed, designed by nature for protective purposes, but capable

in certain cases of producing symptoms of irritation, even of pressure? He had had two such cases where draining of the mastoid antrum was followed in a few hours by clearing up of the meningeal symptoms, and both of these cases showed the Kernig and Babinski signs confined to the opposite side of the body, a restriction to which Professor Mygind had referred as occurring in some cases.

IS IT WORTH WHILE TO REMOVE AURAL POLYPI?

BY

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THIS paper is based mainly on the results obtained by the removal of aural polypi during the period 1915 to 1921 at the Ear and Throat Department of Edinburgh Royal Infirmary, under the charge of Dr. Logan Turner.* It should be stated that during the years 1907 to 1910 aural polypi were, as a rule, removed in the out-patient department by means of the cold wire snare, and thereafter the patient was instructed to carry out the usual conservative treatment of chronic middle-ear suppuration by means of syringing and the use of spirit drops. The results were not satisfactory, as in almost all cases the polypus returned. It was therefore at this time considered useless to continue treatment on these lines, and accordingly patients suffering from chronic middle-ear suppuration with aural polypus were, as a rule, advised to submit to the radical mastoid operation. It was found, however, during this operation that in some cases there was little or no disease in the mastoid antrum and that the malleus and incus were healthy. As a result of this finding it was determined to give a further trial to removal of aural polypus through the external meatus. (It is important to note that the term "aural polypus" is used to indicate only cases in which there is a definite projecting polypoid growth. Cases in which a large perforation was present and the inner wall of the tympanic cavity was seen to be covered by red "granulations" are not included.) Removal of the polypus allows the surgeon to see the site of the perforation in the drumhead and the type of middle-ear suppuration present. If the perforation is central, then we may hope for a cure of the suppuration by means of conservative treatment after removal of the polypus. If, on the other hand, the perforation is marginal or in Shrapnell's membrane, then we cannot expect a good result from removal of the polypus alone.

Technique of Removal.

The methods employed in the removal of aural polypi can be divided into two groups: (1) In the early cases of the present series Neumann's local anaesthesia was employed alone, and the polypus was removed with the cold wire snare and ring knife. (2) Later, a general anaesthetic (ethyl chloride) was employed in addition to Neumann's local anaesthesia, and the stump of the polypus was cauterized by means of a chromic acid bead. After removal of the growth the ear was treated daily, first of all with hydrogen peroxide drops; secondly, by syringing with a dilute solution of lysol (half a teaspoonful to the pint of lukewarm water); thirdly, by drying out the meatus with cotton mops; and, lastly, by the instillation of boric acid in rectified spirit. Before the polypus was removed, the cochlear and vestibular apparatus were tested to make sure that the inner ear was healthy and that no symptom of fistula was present.

During the years 1915 to 1921 there attended the Ear and Throat Department of the Edinburgh Royal Infirmary 2,072 cases of unilateral and 685 cases of bilateral chronic suppurative otitis media, giving a total of 3,442 suppurating middle ears. In 102 of these cases aural polypi were removed.

We have attempted to find out the frequency of aural polypus in chronic middle-ear suppuration, and for this purpose have taken the period 1915 to 1917 (inclusive), during which 1,430 chronic suppurating middle ears were investigated at the department. Of these, 311 showed aural polypi—that is, 22 per cent.

*The writers are indebted to Dr. Logan Turner for permission to publish the results.

Results Obtained by Removal.

Of the 102 cases in which the aural polypus was removed 70 reported after a period sufficient to enable us to say whether the operation had been successful. The results of removal may be classified into three more or less distinct groups: (*a*) those in which the removal of the polypus, followed by conservative treatment, resulted in cure—that is, cessation of discharge and non-recurrence of the polypus—15 cases, or 22 per cent.; (*b*) those in which there was no recurrence of the polypus but in which the ear continued to discharge in spite of conservative measures—15 cases, or 22 per cent.; (*c*) those in which there was continued discharge from the ear, associated with recurrence of the aural polypus—38 cases, or 54 per cent.; (*d*) there were two deaths. These are dealt with later.

Site of Origin of the Polypus.

Kerrison states that, while occasionally springing from the promontory, this site is exceedingly rare as compared with the outer wall of the vault or the diseased inner end of the bony meatus. McBride, Hunter Tod, Politzer, Gleason, Barr, and others agree, on the whole, that the commonest site of origin is some part of the inner wall of the tympanic cavity. In a previously published report on the radical mastoid operation (*Journal of Laryngology*, 1919, vol. xxxiv, p. 373) one of us (J. S. F.), in conjunction with Dr. Garretson of Detroit, U.S.A., stated that of 156 cases in which the condition of the tympanum was noted at the time of operation, in 69 there was a polypus growing from the promontory and in three from the attic.

Of the 102 cases of the present series in which an aural polypus was removed 31 came eventually to the radical mastoid operation. As far as could be ascertained, the site of origin of the polypus in these cases was as follows: inner wall of tympanum, 16; attic, 2; doubtful, 13. The 13 cases where the site of origin could not be stated definitely belonged to the group in which the aural discharge continued without the recurrence of the polypus. In 9 of the 31 cases which came to the radical mastoid operation cholesteatoma was found in the middle-ear spaces at operation.

Dangers Associated with Aural Polypi.

(*a*) *Danger of Mastoid and Intracranial Complications.*—Packard and others have stated that obstruction by aural polypi to the escape of discharge increases the risk of mastoid and intracranial complications in chronic suppurative otitis media. In the report by Fraser and Garretson (mentioned above) it was noted that the tympanic membrane was obscured by a polypus in 129 out of 248 cases of chronic middle-ear suppuration in which the mastoid operation was performed. Further, an aural polypus was present in 8 out of the 25 cases of intracranial complication, and in 21 out of 26 cases with labyrinthitis recorded in the paper. There seems to be little doubt, then, that the presence of an aural polypus in a case of chronic middle-ear disease is at least a predisposing cause of mastoid, labyrinthine, and intracranial complications.

(*b*) *Danger Connected with Removal of Aural Polypi.*—In two of the 102 cases recorded above removal of the polypus was followed by the death of the patient. The clinical records of these two cases are as follows:

CASE I.

D. R., male aged 58, was first seen on February 16th, 1918, suffering from chronic suppurative otitis media (bilateral). Both drumheads were obscured by large polypi. With the noise apparatus in the left ear the raised voice was heard close to the right ear; hearing in left ear similar. On February 20th, under Neumann's local anaesthesia and general anaesthesia by ethyl chloride, polypi were removed from both ears. The patient became restless when recovering from the anaesthetic. At 3.30 p.m. he became unconscious, with paresis of the left side. He died the next day.

Post-mortem Examination.—Atheroma of the cerebral arteries. There was a large haemorrhage into the basal ganglia on the right side of the brain. Death in this case was not directly associated with the removal of the aural polypi but with the atheroma of the cerebral arteries.

CASE II.

J. M., female aged 27, was first seen on June 6th, 1919 suffering from chronic suppurative otitis media (right) with polypus. With noise box in left ear the raised voice was heard at one foot. Rotation both to right and to left produced after-nystagmus of twenty seconds' duration. On July 3rd a polypus was removed from the right ear. The next day the patient was well and was discharged. On her return home she developed a rash (diagnosed as scarlet fever) and died within a short time. She had no sore throat at the time of admission, but was apparently operated on during the incubation period of scarlet fever.

A third case, although it did not occur during the period under examination, is we think of sufficient interest to deserve mention. The record has been previously published in the *Proceedings* of the Royal Society of Medicine, 1916, vol. ix (Otological Section), p. 75.

CASE III.

C. G., female aged 6, had discharge from the left ear following an attack of measles at the age of 3 years. On December 25th, 1911, she had severe pain in the left ear, followed by vomiting, dizziness, and headache. (This was probably an attack of labyrinthitis.) The symptoms gradually improved, and by January 8th, 1912, she was fairly well. When seen for the first time, on January 13th, the left external meatus contained pus and polypoid granulations. There was no mastoid tenderness. The tonsils were enlarged and a mass of adenoids was present. Adenoids and tonsils were removed on January 15th. Unfortunately, at the same time the granulations in the left ear were also curetted, a procedure which should be strictly avoided unless the labyrinthine function has been tested and found normal. On January 17th, 1912, the patient was cyanosed and vomiting: temperature 103·2° F., pulse 160. Next day complete deafness was noted in the left ear; giddiness was present; there was rotatory and horizontal nystagmus to the sound side (right). The pulse was feeble, the tongue furred, diarrhoea present. The cerebro-spinal fluid was under increased tension but clear; films showed streptococci and bacilli. Operation was considered hopeless. On January 19th antistreptococcus serum was given; facial paralysis was noted on the left side, and death ensued.

Post-mortem Examination.—Cloudy swelling of kidneys, heart, and liver; petechial haemorrhages in lungs; the mesenteric glands showed recent acute inflammation in addition to chronic enlargement. No obvious meningitis. The appearances were those of acute septicaemia.

The case appears to have been one of septicaemia and malignant serous meningitis following removal of tonsils and adenoids and curettage of ear granulations in a patient suffering from latent labyrinth suppuration. Microscopic examination of the left ear confirmed the presence of labyrinthitis.

Conclusion.

In a case of chronic middle ear suppuration, with aural polypus, if (1) there are no acute symptoms (earache, headache, mastoid tenderness, giddiness, vomiting, shivering, etc.), (2) the labyrinth is found to be healthy on functional examination, and (3) it is possible for the patient to have efficient conservative treatment, we hold that it is advisable to remove the polypus through the external meatus in the first instance. If the growth recurs after efficient removal followed by careful after-treatment, the radical mastoid operation is called for.

DISCUSSION.

Dr. HOLGER MYGIND said that he had had a few unpleasant experiences connected with the removal of polypus of the ear. In one case a facial paralysis occurred at once after the removal, and in two other cases labyrinthitis with loss of hearing appeared directly after the operation. He did not think, however, that such cases should prevent surgeons from removing polypi; he always did it in cases where it was not a polypus recurring after having been removed by a competent specialist; in such cases radical operation was to be recommended.

Sir JAMES DUNDAS-GRANT said that as a matter of routine he insisted on the instillation of drops of zinc chloride and alcohol for a week before the removal of a polypus when it was bathed in pus. He recalled a case in which, after the removal of what seemed to be a granulation polypus, the symptoms of an existing cerebellar abscess developed. For the examination of the labyrinth he recommended the case of his own "cold-air" apparatus. The removal of polypi was decidedly important.

Sir WILLIAM MILLIGAN attached great importance to antiseptic treatment of the meatus and middle ear for a week before the removal of an aural polypus.

Dr. J. S. FRASER, in reply, said: I agree with the President that it is very difficult to state with accuracy the site of origin of the aural polypus in many cases. With regard to the danger of removal of the polypus, I can only say that I have, fortunately, not met with any cases of facial paralysis or of uncontrollable bleeding as a result of this small operation. I fail to understand the stress Sir William Milligan lays on the importance of antiseptic treatment before removal. In a great many cases the polypus is really acting as a tight cork in the external meatus, and I do not see how one is going to render antiseptic the inner end of the meatus, much less the tympanic cavity and other parts of the middle-ear cleft. I am glad that most of the speakers agree that it is advisable to remove polypi in uncomplicated cases; just as every dog is allowed one free bite, so I think an aural polypus may be allowed one removal, granted that the labyrinth is healthy and that there are no acute symptoms.

SECTION OF LARYNGOLOGY.

JOHN MACINTYRE, M.B., C.M., F.R.F.P.S., President.

DISCUSSION ON DISEASES OF THE OESOPHAGUS, THEIR SYMPTOMATOLOGY AND DIFFERENTIAL DIAGNOSIS.

OPENING PAPERS.

I.—AFFECTIONS OF THE SUPERIOR OPENING OF THE OESOPHAGUS.

BY

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My first and pleasing duty is to express my thanks for the honour you have done me in asking me to open this discussion. At the London meeting of the Association in 1910 I had the privilege of taking part in introducing a discussion in this Section on the technique of the direct examination of the oesophagus, then in its earlier stages. Since that time a great deal of work has been done on the subject of oesophageal disease in which members of this Section have taken a conspicuous part, and it is perhaps not inappropriate to-day to indicate in a short survey some of our advances and some of the problems which still await solution. For this purpose it has been thought desirable to approach it from the clinical side with a view to making an attempt to assess the value of symptoms as they appear to the practitioner in his daily work. In discharging the duty laid upon Mr. Howarth and myself we have thought it might be of advantage if I confined myself mainly to affections of the superior opening of the gullet whilst he dealt with those of the lower segment. This is not an ideal division, but it has certain practical advantages, as each section presents some special features of its own. It will be understood, therefore, that the following remarks are concerned chiefly with the upper orifice.

The semeiology of oesophageal disease is comparatively simple. What may be termed the oesophageal syndrome consists essentially of two symptoms—dysphagia and regurgitation of food. The gullet plays an active part in the mechanism of deglutition, the maximum effect of the movement being produced where the sphincter fibres are most developed—namely, at the entrance and at the lower end. It is, however, a canal of transmission, and anything which interferes with the movement of food may produce difficulty of swallowing or dysphagia. This is a condition common to all diseased states of the gullet, and is generally the initial symptom. Its onset may be gradual, commencing with difficulty in passing solids, extending later to semi-solids, then liquids, and finally, it may be, to complete inability to swallow. Where the seat of obstruction is high up at the orifice of the canal, fits of coughing are apt to accompany the attempt to swallow from food finding its way into the air passage, making the patient nervous and disinclined to eat, except in small quantities. On the other hand, the appearance of dysphagia is sometimes sudden and often related to spasm. This may be transitory and very variable, appearing and disappearing suddenly, though in cases where it is well established it may become more or less permanent. Dysphagia may thus be due to organic obstruction or to spasm at the superior opening, or to a combination of both; for it is not unusual—for example, in early malignant disease—to find an element of spasm which is largely responsible for the dysphagia. Its onset in a hitherto healthy person is always important and its significance should not be overlooked. In certain general states—for example, where there is pronounced anorexia—there may be disinclination, amounting to declared inability, to swallow, and a somewhat similar condition may likewise be met with in certain neurotic states, but as a rule there is not much difficulty in their differentiation. On the other hand, where dysphagia is not very pronounced and attention is monopolized by the presence

of a prominent external swelling such as enlarged cervical glands or infiltration of the thyroid, its presence may be overlooked, and instances are not unknown where such secondary glands have been removed and the thyroid operated on in ignorance of the primary disease in the gullet—a diagnostic pitfall, one need hardly say, to be avoided. It must of course be borne in mind that difficulty of swallowing may be due to other affections, such as post-diphtheritic and bulbar paralyses, retropharyngeal abscess, tuberculous and malignant disease of the larynx, cicatricial malignant obstruction of the hypopharynx, even to pressure by external tumours; their differentiation, however, does not as a rule remain long in doubt.

Regurgitation of food may be a sign of considerable value. If it takes place at once and the food returns unaltered, it points to the seat of obstruction being high up. The regurgitation of fragments of food undigested, after several hours or days, is of course diagnostic of a pharyngeal or pressure pouch.

Of the symptoms of less value, painful sensations, such as burning in the region of the larynx, a feeling of tension or constriction, etc., are not uncommon. More significant is more or less continuous pain, increased by swallowing, in the region of the cricoid—a symptom often associated with malignant disease. With it there may be pain in the ear, often distressing and difficult to relieve, and probably to be explained by the intimate relations of the facial and glossopharyngeal nerves. When this occurs in dysphagia of long standing it too often indicates the supervention of grave disease in the lower pharynx or cricoid region.

Salivation sometimes attracts attention. It may be reflex from a traumatic lesion around the introitus, or due to great obstruction there, as by the impaction of a foreign body. In well-established malignant disease it may be profuse and productive of great discomfort. The clinical picture of a patient mopping the saliva from the lips with a towel is familiar to most of us. A most distressing instance of this nature which came under my own notice was a young married lady, six months pregnant with her first child, and suffering from advanced malignant disease in the post-cricoid region.

Of the physical examination in such cases I need say but little. Careful palpation of the neck and the region of the larynx should be carried out. Internal palpation is often of great value, for it ought not to be forgotten that disease in the hypopharynx is within reach of the finger. The laryngeal mirror is indispensable in ascertaining the presence or absence of disease in the post-cricoid region and should always be made use of in the first instance. In many cases it may establish the diagnosis at once. With its aid the upper margin of a growth may be visible. The advantages of radioscopy are well known to you. The fluorescent screen is invaluable in the preliminary examination. With the patient in the oblique position—that is, with the head and upper part of the body turned half-way to the left and the right shoulder in contact with the screen—the dense shadows of the spine and of the heart and aorta are displaced and a good picture of the bismuth meal obtained. We can get a clear and distinct view of the hypopharynx and much useful information of the way in which the bolus behaves at the mouth of the gullet. Even a new growth may be outlined by the small particles of bismuth arrested in its fissures and erosions. I need hardly emphasize the value of an *x*-ray installation as a normal adjunct to a modern throat clinic. Some Continental hospitals are already ahead of us in this.

As a diagnostic means the use of the bougie in a blind fashion is not to be recommended. Its value is not great, it tells us much less than other more accurate methods, and it is not without danger in certain states. Personally I always like to reconnoitre well the local condition before using the bougie for the purposes of treatment.

On the value of endoscopy it is unnecessary to enlarge. It is now well established as a routine method in the examination of the oesophagus. We know its advantages and its limitations, and as a specialty it is permissible to congratulate ourselves and claim some measure of credit for making an important contribution to practical medicine. Its later development—suspension laryngoscopy—is especially adapted for investigation of the post-cricoid region.

If we now consider shortly some of the more important affections of which the above symptoms are an outward expression, it would be well to remember that the element of spasm plays an important part in many morbid conditions of the gullet. It runs through all its pathology, though there has perhaps been a tendency to exaggerate it as a primary condition. Symptomatic spasm we are familiar with in such general states as hydrophobia, tetanus, and in certain poisons. The endoscope has taught us that a spasmodic stricture of the upper opening may be secondary to a small local lesion such as an ulcer or the impaction of a fish bone. It may even have a more distant cause, and I have had the experience, like some of my colleagues, of regarding a spasm at the cricoid opening as primary and overlooking for a time the presence of graver disease at the lower end of the canal of which it was but a reflex expression. Spasm may thus be the outcome of a simple or a serious lesion, though the resulting dysphagia may be equally marked in both.

Of the group of spasmodic dysphagias in which no local exciting cause can be made out, those of a more or less temporary character are not infrequent. They occur chiefly in young people, generally of the female sex. Their onset is usually sudden, often accompanied by choking attacks, and they usually pass off equally rapidly. Dysphagia is rarely complete and usually limited to solids. Emotional states are often the exciting cause, and it is commonly regarded as a manifestation of hysteria. The fluorescent screen may show a little holding up of the meal which the endoscopic tube shows to be due to a certain degree of spasm at the mouth of the gullet.

Of greater importance are cases where spasm at the upper opening occurs in women, usually about middle age. Dysphagia here is prominent, and may be the only symptom for years until loss of weight, anaemia, characterized by diminution of haemoglobin, and poor health set in. A long history is frequent and characteristic; it may date from ten, fifteen, or even thirty years. The patient has "a small swallow," she takes progressively longer at meals until it becomes a social disability. The passage of a tube may relieve it for a time, but it often gradually returns. Occasionally its beginning may be sudden—for example, in several cases under my own care it came on after a complication of childbirth, such as severe flooding. As a rule the patient has no doubt as to the seat of obstruction, which she refers to the region of the larynx. A certain degree of variation in the dysphagia may be noted; swallowing may improve for a time, only to be affected again by an intercurrent illness. This variation is apt to deceive the practitioner, who regards the patient as fanciful, and leads him to make a diagnosis of hysteria, for which there is rarely justification.

On a former occasion I dwelt on its not infrequent association with changes in the buccal and pharyngeal mucosa. From the smooth glossy upper surface of the tongue with whitish patches, and a tendency to dryness in advanced cases, it has been termed chronic glossitis, but it is important to note that this change is by no means confined to that organ, as the mucosa of the mouth, pharynx, and even the upper section of the oesophagus is likewise nearly always involved. This change does not seem to be related to nasal disease—it is absent from the larynx; in short, it is an affection of the upper food passage.

In this type of spasmodic dysphagia the bismuth meal is arrested at the mouth of the gullet. Swallowing movements may be seen to allow only small portions at a time to escape through, the picture on the screen being interesting and instructive. With regard to the appearances seen by the endoscope I am in entire agreement with the description given by Brown Kelly. The rigidity of the tissues at the upper opening, characteristic of spasm, is a notable feature, and the thin mucosa may crack and bleed even on careful examination. In my experience such cases are entirely confined to women not by any means emotional or to be regarded as neurotic or hysterical, and the association of this dysphagia with the mucosal changes above alluded to is a subject worthy of consideration. Do the changes in the mucous membrane lead in some way to interference with the reflex movement of swallowing and so call forth spasm? It is within our knowledge that injury to the pharyngeal mucous membrane—for instance, by scalding—may sometimes be associated for a period with difficulty of swallowing. The time has come, I think, to claim for this clinical type of spasmodic dysphagia an entity of its own, to point out its essentially chronic course, its limitation to the female sex without being a manifestation of an hysterical state, the possibility of its material relief by suitable treatment, and the clinical fact which I shall allude to presently, that it may be the precursor of malignant disease in the post-cricoid region. Until this is done and its position clearly defined, it will continue to be misunderstood, with regrettable consequences both to

patient and practitioner. This service I commend to the Section.

The commonest cause of dysphagia due to an organic lesion is malignant disease at the upper opening, which is almost always squamous-celled epithelioma. Here an interesting parallel may be noted with dysphagia of the spasmodic type. Both affect the superior opening very frequently in the female sex. They are comparatively rare at this site in men, in whom the incidence of malignant disease increases as we descend the œsophagus. Carcinoma is met here at a much earlier age in women; I have found it in a woman of 23. Its duration is said to be much longer, but here we are faced with the undoubted clinical fact that spasmodic dysphagia in women sometimes terminates in malignant disease. The earlier stage of the not uncommon long history in such cases is almost certainly referable to a state of spasm. I have been able on more than one occasion to determine the presence of spasm and to relieve it for a time, even some years, by the passage of a tube, and to find later the increase of dysphagia with pain and loss of flesh explained by the supervention of malignant disease in the post-cricoid region. In more than one such case the patient could assign a comparatively recent date for the alteration in her condition.

Logan Turner's statistics clearly establish that while cancer in the tongue and in the lower œsophagus is much more common in men, it shows a striking tendency in women to affect the mucosa of the oral pharynx and hypopharynx. Here again I would direct attention to the similar distribution of chronic glossitis, and raise the question whether they are related conditions. The liability of this affection in the tongue to result in epithelioma is recognized by surgeons, and there is no reason why it should not do so lower down.

In the diagnosis of carcinoma of the post-cricoid region examination by the laryngeal mirror will reveal its presence in a large proportion of cases. The upper margin of growth may be visible, or deeper-seated disease may be revealed by impaired mobility of the vocal cords. The fluorescent screen is helpful in determining the presence of such a growth and in outlining its extent downwards. Where the presence of a tumour has been ascertained we ought not to forget that the finger may be a useful means of determining its character. By means of the endoscope and suspension laryngoscopy more complete information may be gathered as to its relations and extent.

Of dysphagia produced by cicatricial contraction the result of traumatism by a foreign body or swallowing caustic fluid or from syphilitic ulceration little need be said. The etiology taken in conjunction with the local appearances seen by the endoscope will usually suffice to establish the diagnosis.

Regurgitation of food is the prominent symptom in a pressure pouch, often called œsophageal pouch, though its point of origin is always in the hypopharynx, above the upper opening of the gullet. Here the return of food is a constant sign, part of the meal being regurgitated unaltered after some hours or even days. Swallowing often produces a gurgling noise in the throat. As the pouch is nearly always on the left side fullness of the neck on that side may be noticeable and pressure over it elicit gurgling. The fluorescent screen after a bismuth meal gives a characteristic outline of the pouch, which may be more carefully explored by the endoscope tube.

This completes a short survey of the more important affections met with at the superior opening of the gullet. The problems presented by them are of the greatest importance from the standpoint of practical medicine. I have necessarily confined my remarks to a few; others will doubtless occur to members of the Section, and I may express my confident belief that discussion of them by a body of observers possessing special training and knowledge will materially contribute to their solution.

II.—AFFECTIONS OF THE LOWER SEGMENT OF THE OESOPHAGUS.

BY

WALTER G. HOWARTH, M.A., M.B., F.R.C.S.,
Surgeon to the Throat Department, St. Thomas's Hospital.

Of late years our knowledge of the œsophagus has in certain directions advanced enormously, and from time to time an intensive focus has been directed on certain aspects of œsophageal disease. Your Council has now thought that the time has arrived when we should make a more general survey and crystallize our ideas with a view to arriving at some consensus of opinion with regard to symptomatology and differential diagnosis of the various diseases that arise in this region. Everyone will, I think, agree that it is very important that such a step should be taken; but there can be none, I imagine, who will under-estimate the difficulties of such a task.

The organ with which we have to deal is a tube of singular complexity when its developmental history, its variety of muscular structure, and nervous control are considered, whilst anatomically and physiologically its exact limit, at least as regards its lower end, is singularly difficult to determine. Moreover, it is placed so deeply and in such close proximity to so many important structures that a number of external considerations must inevitably be taken into account. These facts may help to explain to some extent why the normal physiology of its working is even now by no means agreed upon.

Under such conditions the investigation of pathological phenomena is apt to be fraught with many difficulties. Dr. Paterson has dealt with œsophageal disease mainly as it affects the upper part, and though it is impossible satisfactorily to divide the subject in such an arbitrary way, I propose to consider generally the lower half. The manifestations of disease in this section of the gullet are usually due to cicatricial or compression stenoses, to the various forms of malignant disease, or are a complex variety of phenomena of nervous origin. Let us consider in the first place the symptoms that we may meet with in such conditions.

In all types—I do not say in all cases—dysphagia is in the forefront of the picture; this may or may not be attended with pain, usually referred to the cricoid or to the back of the lower end of the sternum. Regurgitation of swallowed food, if not actual vomiting, is usual. Irritable, useless cough may be present, whilst persistent hiccup, choking sensations, and a feeling of suffocation are often noted.

Excessive salivation is often troublesome, and this is sometimes blood-stained in character.

If the condition is at all prolonged, inanition may be a prominent feature, but marked cachexia is seldom seen.

When we come to the interpretation and relative value of these symptoms, difficulties begin to arise. Select from and group these symptoms how we will, it is impossible to present a clinical picture that is pathognomonic of any single condition. Any of them or practically all of them may be absent.

Dysphagia, usually a prominent symptom in malignant disease, may be entirely absent, as it was in one of my patients, whose only complaint was of incessant cough and occasional suffocation attacks. He had a left recurrent paralysis, and œsophagoscopy confirmed the diagnosis of malignant disease; but it remained for the *post-mortem* examination a few weeks later to reveal that the anterior wall of the œsophagus from the aorta to the cardia was a mass of growth. And then again dysphagia may be out of all proportion to the size of the growth, for we know that in obstruction due to ulceration resulting from new growth there are two factors to be taken into consideration—the organic lesion itself and the spasm induced thereby. Very often the latter is responsible for nearly the whole of the symptoms.

The character of the dysphagia may be helpful, and dysphagia to solids is more usual in organic strictures and dysphagia to fluids in achalasia and allied conditions, but this is not always so. The most useful point to note about dysphagia is, I think, its variability. Dysphagia varies more often and over a wider excursion in nervous phenomena than in organic disease. This is, I think, generally true, and yet we can recall cases of cicatricial stenosis in which periods of marked disability alternated with periods of comparative ease. Persistent hiccup may be a valuable early symptom in malignant disease, and I have known it precede any other by three weeks, but I have also known it as the first sign of all in achalasia.

A point of considerable clinical interest is the frequency with which the earliest symptoms of disease in the lower half of the œsophagus are referred to the upper end, so that sudden choking attacks at the beginning of a meal may be the first warning of disease in the phreno-cardiac segment. I have mentioned on a previous occasion cases of such a nature where the disease was entirely below the diaphragm.

Symptoms, however helpful they may be, are, we are told, merely disordered reflexes and so may be initiated from any portion of the tube and by a variety of stimuli, so that in our

endeavour to arrive at an exact diagnosis we must have recourse to other methods of investigation. The most helpful are *x*-ray examination, oesophagoscopy, and the use of the bougie under direct vision. The time has surely passed when the crude barbarity of pushing a bougie blindly into the oesophagus could be contemplated.

X-ray examination should, I think, always be conducted at the fluoroscopic screen. After the general thoracic survey has been completed in the upright position, the patient should be turned into the right half lateral position for the oesophageal examination. The value of careful and prolonged examination at the screen is very great and should always be conducted under the supervision of the surgeon himself. For this purpose, thickish bismuth emulsion is probably the best; the bismuth cachet seems to me to be not only valueless but misleading, owing to the abnormal spasm that it so often excites.

In the diagnosis between organic and functional stenosis at the lower end the shape that the bismuth takes is important. In the nervous group the shadow is very broad, regularly conical, or with a round end that bends to the left and projects somewhat below the cupola of the diaphragm; often no spot of bismuth passes into the stomach, even if examined for half an hour.

The conical form may sometimes be difficult to distinguish from malignant stenosis, but in the latter the cone is not of a regular smooth outline, but is often irregularly notched and funnel-shaped: moreover, there is usually a gradual leakage of bismuth into the stomach. A point that may be useful is the injection of atropine or papaverine. In one case in which we often watched the bismuth held up at the phreno-cardiac level for half an hour, dilating the oesophagus above it, the hypodermic injection of 4 grains of papaverine caused almost immediate relaxation, and the whole of the bismuth was in the stomach within five minutes. Atropine is apt to be disappointing, but I doubt if we use it in anything like large enough doses.

Another point that may be helpful: as the oesophagus turns forward and to the left to enter on the diaphragmatic part of its course there is a triangular space behind it. In malignant cases this space is often obliterated, whilst in spasmodic cases it is usually clear. It is, however, on oesophagoscopy that we must rely for the more exact diagnosis of many conditions, as by it alone can we determine the nature of the mucous membrane and the exact situation of any obstruction.

The characteristic white, firm, yet elastic web, often with extra fibrous strands stretching to the oesophageal wall, is typical of the cicatricial stenosis, and its level is readily ascertained, whilst compression of the oesophagus from outside, though often difficult to differentiate from intramural growths, may be conjectured from the deviation of the lumen, the shape of the slit, the mobility of the mucosa, and other appearances. In this connexion valuable help may ensue from the inflation of the oesophagus with the aid of the Mosher oesophagoscope.

The most difficult, and in some ways the most interesting, part of the investigation concerns the differentiation of the various forms of stenosis that are met with quite at the lower end of the oesophagus. Here our main task is to distinguish between organic obstructive lesions with dilatation above them, and the dilatations that result without anatomic stenosis.

It is outside my province to discuss the actual site of the obstruction in the various forms of non-anatomic stenosis, or to mention the relative importance of extrinsic or intrinsic factors; but it would be as well to suggest that achalasia, cardiospasm, hiatal oesophagismus, and other suggestive names do not connote definite diseases, but are merely manifestations of local or general disease which have led to a dysfunction of the vegetative nervous system whereby the normal reflex sequence is interrupted and the interdependent musculature of the hiatal oesophagus and the cardia put out of gear.

Even when we have diagnosed the occurrence, the interpretation thereof may be very far to seek, but this, too, may be at least helpful in turning our attention to other organs or systems for analogous phenomena and possible explanations.

These manifestations are, I think, far more common than is usually supposed and the etiology singularly obscure. This latter need not detain us now, but we should, I think, try to come to some definite conclusions as to the variety of oesophagoscopic appearances and the range of abnormality that they present.

In the long standing well-marked case we are all familiar with the pendulous oesophagus, often sagging to the right, the mucosa thrown into folds and inflamed by the presence of the stagnant food, particles of which adhere to the walls; but when we turn our attention to the region of the hiatus the conditions that we meet with are apt to vary, and there seems to be but little agreement as to what is a typical picture.

The appearance at the hiatus, its rhythm of opening and shutting, the influence of cocaine, of acids, alkalis, and other stimuli upon it, the presence of hyperaesthetic areas and the effect of their stimulation, are all points about which we have not nearly enough systematic recorded investigations, and without which we are like sailors in an uncharted sea. At the present time these cases are coming to us for investigation at a much earlier stage, often before any great degree of dilatation has taken place, and it is, I think, from the careful investigation of these rather than from the very long standing ones that one is likely to learn the most.

Time does not permit of more than a brief mention of malignant disease, though this unfortunately provides the great bulk of the cases that we are asked to see. When fungating and projecting into the lumen of the oesophagus, the friable, freely bleeding growth presents few difficulties in diagnosis. It is the firm infiltration, sometimes localized but often diffuse, of the intramural growth that is the difficulty, and here it is that the fine bougie is particularly helpful, not only in detecting an eccentric position of the hiatus, but also in appreciating the kind of resistance that is met with, and whether or no it is possible to overcome it by gentle pressure and reach the stomach. In some cases the hiatus seems pushed up towards us as though bulged by the pressure of a firm collar, and though this condition has, I think, been described as occurring in old-standing spasmodic cases, it is, in my opinion, more commonly seen when there is a malignant growth of the subhiatal region bulging the diaphragm from below.

There is one clinical point that I should like to mention, though it is not an oesophagoscopic appearance, and that is the extraordinary frequency with which cancer of the oesophagus is associated with foul septic teeth. Looking through one's cases it is really remarkable how close is the association.

Of other conditions that are found in the lower end of the oesophagus I have of course omitted all mention of congenital atresia, of the paralytic conditions that we meet with in lesions of the central nervous system, of the various forms of oesophagitis, of syphilis and tubercle, whilst the merest suggestion of a foreign body has been suppressed. But all these conditions must naturally be taken into account in attempting to arrive at a diagnosis.

DISCUSSION.

Dr. A. BROWN KELLY (Glasgow) said:

In cardiospasm one sometimes is in doubt as to whether the closure at the lower end of the oesophagus is due to spasm or to malignant disease in the stomach. *X* rays and the oesophagoscope assist in the differentiation. I shall deal only with the appearances in the hiatal region observed by means of the latter.

On introducing the oesophagoscope, usually a quantity of cloudy fluid and food débris is ejected, and more or less dilatation of the lower two-thirds of the gullet is noted. On approaching what is often termed the cardia, but is really the upper part of the hiatal or diaphragmatic oesophagus, this is seen in the normal subject to be constantly opening and closing with inspiration and expiration. Even when the tube is pushed down so as to encircle the gullet this rhythmical action continues until the lumen is enlarged by the pressure so as to allow the tube to pass into the stomach.

In cardiospasm precisely the same opening and closing of the hiatal oesophagus goes on as long as the tube is kept at least 3 cm. above the hiatal oesophagus, but when it is pushed down 1 or 2 cm. farther the wall of the hiatal oesophagus gathers itself together so that the mucous membrane forms a closed rosette. This closure becomes firmer when the tube is pressed down more strongly. If moderate pressure is maintained for about a minute, the closed oesophagus usually yields and the tube glides into the stomach. In old and severe cases more pressure is needed than in early mild ones. In several instances I have been unable to get into the stomach, and in one in which this difficulty and the pain in the epigastrium led me to suspect

malignant disease, gastrostomy was done, but the stomach proved healthy. These features all point to spasm as the cause of the obstruction and do not suggest achalasia.

Various objections have been raised to the view that the affection under consideration is due to spasm. The question is asked, Why does the constant spasm not produce hypertrophy of the sphincter? Sometimes it does. But the spasm is not constant; it is intermittent, as has just been stated, and apparently it is excited by pressure for the time being above the hiatus. In the more advanced cases when the gullet always contains fluid and food the constant pressure may, of course, excite constant spasm.

But turn for a moment to the upper end of the gullet, where constant spasm may be present for ten, twenty, or more years. I have never heard that hypertrophy occurred in these cases; the investigation of the condition of the muscles involved would, however, be interesting. In passing I should like to ask the members whether they have found two varieties of spasm at the upper end, one in which the closure is effected by the gathering together of folds of mucous membrane, and another in which the greatly reduced lumen is surrounded by a sharp edge of mucous membrane, the upper surface of which is smooth so that it looks like a thin web (? contracture).

Another objection to attributing to spasm the affection known as cardiospasm is that in such cases a weighted bougie passes through the cardia easily, whereas if spasm existed there would be resistance and withdrawal would be difficult (Hurst). The resistance has been compared to that offered by the anal sphincter in a state of spasm to the introduction of the finger. Spasm of a muscle, such as the external sphincter of the anus, is not comparable with that of the cardiac sphincter, which is composed of unstriped muscle fibres. Further, there are all degrees of cardiospasm, and, as I emphasized years ago, some of these are slight and little more than a state of non-relaxation. Still, even the mild degrees of cardiospasm offer more resistance to the endoscope than does the hiatal oesophagus in the normal subject.

The contraction of the hiatal oesophagus, when pressed upon by the oesophagoscope, is apparently not due to hyperæsthesia of the mucous membrane, as I at one time believed. For the end of the pump can be passed along the hiatal oesophagus, cold water can be squirted against it, and it can be painted with cocaine without the rhythmical opening and closing being affected.

These observations and considerations seem to me to prove the following: (1) That the obstruction at the lower end of the gullet in the affection commonly termed cardiospasm is due to spasm; (2) that this spasm is predisposed to by a state of irritability of the muscle fibres, or of the nervous mechanism controlling them, in the wall of the oesophagus above the hiatus; and (3) that all the endoscopic appearances are against the theory of achalasia.

Sir STCLAIR THOMSON pointed out the improvement in methods of diagnosis possessed by the present generation. Last century disease of the gullet had to await attention until it had produced a stricture. The latter could only be investigated by the blind use of a bougie. Now, with the *x*-ray examination and direct endoscopy matters were very different. He quoted two cases to show that the progress of malignant disease may be very slow and that spontaneous improvement and increase of weight may occur even in a case of epithelioma. He made an appeal for the routine examination of the oesophagus in all affections of the chest and abdomen, pointing out that he had made an analogous appeal in regard to the accessory sinuses of the nose many years ago. He also deplored that students had not the opportunity in this country, which they had in America, of acquiring the art of endoscopy by practising on live but anaesthetized dogs.

Mr. W. S. SYME (Glasgow) said that he certainly thought there was a definite condition of spasm of the lower part of the oesophagus. Moreover, this was not such a rare condition as was supposed, and in consequence he could not subscribe to the opinion that such a large proportion of cases of oesophageal obstruction as 90 or 95 per cent. were due to malignant disease. The spasm of the oesophagus was not always at the opening through the diaphragm. In one case which he was able to demonstrate the spasm occurred about an inch above that opening; it could not therefore be due to spasm of the crus of the diaphragm. In dealing with spasm of the upper opening of the oesophagus he did not think it mattered for practical purposes whether this arose first at the lower part of the pharynx or the upper part of the oesophagus. It would overflow from one to the other. The spasm might be set up by various conditions, and might vary in severity. In one case it was so severe that almost complete starvation was caused. It was cured by the amputation of an elongated uvula. Many cases of spasm of the upper part of the oesophagus were due to irritation by post-nasal discharge due to nasal accessory sinus disease or other cause. To return to what was called cardiospasm he thought it should be stated that there was not by any means always dilatation of the oesophagus above. Dr. Kelly inquired as to the presence of a web at the upper end of the oesophagus. He had seen such a case. The condition in which folds of the mucous membrane were found at this part was not uncommon. On passing the oesophagoscope the impression was obtained that this was the oedematous mucosa above malignant disease, which as the oesophagoscope passed onward was found to be absent.

The PRESIDENT said that he agreed with Dr. Syme and other speakers in saying that the selection of the subject of discussion had proved very fortunate. Some doubt had been thrown upon this, but the result of the papers read by Dr. Paterson and Mr. Howarth, with the remarks which had followed subsequently from the different speakers, showed that the subject was of great interest, that there was much to learn, and he ventured to think that the result of the discussion would be a great stimulus to further investigation of many points we did not fully understand because of the apparently simple action or function, the explanation of which was taken for granted.

For example, he thought that the question of reflex action causing great spasm of the oesophagus and often difficulties in diagnosing, as well as cardiac spasm, should be very carefully reinvestigated. One thing, the President said, was quite certain—that a search would have to be made farther afield for causes of spasm.

He mentioned the case of a patient who suffered from severe chronic obstruction in the oesophagus, who had been to a number of the hospitals in London, and the specialists in each hospital, many of them distinguished men, diagnosed organic stricture of the oesophagus. He fell latterly into the hands of Mr. Mayo Collier, who brought the case before the British Rhinological, Laryngological and Otological Association. The man came to his wards dying; a *post-mortem* examination was made, and the parts showed that the ulceration was not in the oesophagus at all, but at the cardiac end of the stomach. So here there were errors in diagnosis by a number of skilled experts, but it shed light upon severe spasmodic stricture of the oesophagus. Of course, the methods of examination were crude as compared with the direct examination by means of the oesophagoscope of to-day and the *x* rays.

The President said that in certain cases of this kind we had to go farther afield, and he mentioned the case of a young man who was greatly troubled with obstruction of the oesophagus and cardiac spasm, and where the *x* rays by means of the screen had thrown great light upon the case. The patient was in a darkened room on a table, with the tube below; the bismuth meal was administered and passed fairly easily into the stomach. Almost immediately the stomach assumed a vertical position, and it became pear-shaped, with a large dome pressing against the diaphragm. After a few minutes the heart began to flutter and violent movements were easily seen on the screen, and it was important to note that this disturbance of the heart action was seen before the patient said, "That is the fluttering of my heart coming on again."

The President said that before proceeding farther he would like to point out what the normal function was and what took place after food entered the stomach. The cardiac end of the stomach was closed by the action of the sphincter in the region of the lower part of the oesophagus and stomach. At the same time the pyloric end of the stomach was closed, and afterwards the movement of the viscus for digestion proceeded. After a time the stomach contracted and food was passed into the duodenum, going over in a mass. This action at both ends of the stomach took place again during the movements for digestion, and at the proper time the food again passed downwards into the bowel. It was a function of the oesophagus to prevent the food coming back into the mouth. In other words, the action of closing the cardiac end of the stomach and oesophagus was necessary to the passage of the food in the right direction, or regurgitation would take place.

They were apt to consider that the function of the œsophagus consisted in a simple opening of the tube to let the food into the stomach, a period of rest following, but that was not the case. The œsophagus in conjunction with the pyloric end of the stomach was constantly in action to keep up the proper tension and direct the food onwards.

The President assured Dr. Paterson and Mr. Howarth that the members of the Section of Laryngology had genuinely and thoroughly appreciated all their work and were very grateful to them.

PLASTIC OPERATIONS FOR NASAL DEFORMITY.

Dr. DOUGLAS GUTHRIE showed a series of photographs illustrating the results of plastic operations in fourteen cases of nasal deformity. In three cases the disfigurement was the result of syphilis, in two cases lupus was the cause, and the remaining nine cases were of traumatic origin. The photographs demonstrated the superiority of costal cartilage transplantation over the injection of paraffin, in the treatment of saddle or sunken nose. The majority of the cases had stood the test of time, the cartilage remaining unaltered in its new position.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SOLUTION OF TRINITRIN IN ACUTE NEPHRITIS.

I DESIRE to call attention to the great value of liquor trinitrini in the treatment of acute tubular nephritis, accompanied with dropsy. It is said that there is nothing new under the sun, but I struck upon this remedy by pondering over the question: What prevents a speedy cure of our cases of acute nephritis? I have watched my cases for the last twenty-five years in Glasgow; and, in my experience, to remove the last trace of albumin from the urine of these patients is by no means easy. I think I can safely say that it is quite a common experience to treat the patients with iron tonics and diuretics for six to twelve months before we accomplish our purpose.

The last four cases cleared up so quickly—from a few weeks to a few months—that I venture to state how this was achieved. Three of the patients were up in years, but one was about 30. The urine contained a good deal of albumin. Two of the cases had orthopnœa, due to œdema of the bases of the lungs. One—an old hemiplegic—passed a good deal of blood. His pulse tension was so high that I predicted that he might have a fit, and he had a seizure that night. All the patients made a speedy recovery. Iron tonics were given as soon as the albumin left the urine. The diet was light, limited to fluids, either milk or soups. Purgatives were not employed. The following mixture was given:

R	Pot. acetat.	ʒv
	Liq. trinitrini	mxxxij
	Tr. card. co.	ʒiv
	Aq.	ʒviij

Half an ounce of this mixture, in water, was given every three hours until the symptoms abated, then thrice daily.

Glasgow. JOHN T. MACLACHLAN, M.D.

RUPTURE OF QUADRICEPS TREATED BY SUTURE.

THE following somewhat rare accident, and the treatment adopted, may be of interest. On June 6th Mrs. E., aged 62 years, slipped on going down some steps, and after making a violent effort to recover her balance fell down.

In bed at home, shortly afterwards, she stated that she could not lift her right leg, in which she suffered considerable pain. There was some swelling at and above the right knee-joint, and there appeared to be a gap in her quadriceps extensor muscle about an inch above the patella. She was unable to put this muscle in action. An *x*-ray screen showed no fracture of the patella. I decided to explore the tear in the quadriceps extensor, and under ether a large flap of skin was raised above the patella, and a complete division of the muscle was discovered, but, curiously, no blood clot or bleeding was found at the point of division. Mattress sutures of thirty-day catgut were used, and the wound healed by first intention. She has now complete use of her leg, can lift her heel off the bed with the knee extended, and the gap felt above the knee after the accident has entirely disappeared.

The only similar case I have ever seen during thirty years of practice was that of an old gentleman over 70 years of age; in his case no operation was performed, a back splint and strapping being applied; the muscle never united, and a gap remained permanently.

Kettering. LESLIE W. DRYLAND, L.R.C.P., M.R.C.S., D.P.H.

ABNORMAL ANTERIOR FONTANELLE.

ON making a vaginal examination in a case of labour lately I felt anteriorly what I took to be the posterior fontanelle. There was a depression and three sutures and nothing more. There was no caput succedaneum. Later, as I put on forceps, I was surprised to find the posterior fontanelle lying posteriorly. That this was so was proved by the long rotation of the head as I delivered very easily. After birth I discovered the reason of my mistake. The anterior fontanelle was represented by a dimple where the four sutures met. It was not as usually found and described: for example, in Shears's *Obstetrics* the anterior fontanelle is said to be distinguished in that it is large and soft, and in Berry Hart's *Guide to Midwifery* the anterior fontanelle "is known by its shape and size." There were of course four sutures, but the possibility of such a fontanelle was not known to me, so I had not searched for the fourth suture. There was no head moulding.

CHARLES J. HILL AITKEN, M.D.

Kilnhurst, near Rotherham.

THE TREATMENT OF PULMONARY TUBERCULOSIS BY TUBERCULIN.

OPINIONS as to the value of tuberculin in lung tuberculosis are so conflicting that the following figures may be of interest. They refer to the present condition of patients treated during the years 1910 to 1915. Only patients who had tubercle bacilli in the sputum are included; no "doubtful" cases are considered. They came under my care while holding the post of medical officer to the Oxfordshire Association for the Prevention of Tuberculosis, and were domiciled not only in the city of Oxford, but also in the surrounding country districts. Owing to the distances from the central dispensary at which the patients lived only a certain number could attend for treatment by tuberculin. Thus, with the exception of a few cases in which the patient's own doctor undertook the administration of tuberculin, it was possible, by virtue of geographical considerations, to have the advantage of a control series. The following table shows the results of treatment of 429 cases of pulmonary tuberculosis; of these, 346 were treated without tuberculin, and 83 with tuberculin.

	Treated without Tuberculin.		Treated with Tuberculin.	
	No.	Per Cent.	No.	Per Cent.
Dead	311	89.9	33	45.8
Alive	18	5.2	41	49.4
Lost sight of ...	17	4.9	4	4.8
Totals	346	100.0	83	100.0

From the table it will be seen that of the 83 patients treated with tuberculin there are 41 (49.4 per cent.) now alive, as against 5.2 per cent. of the 346 patients who received "general medical treatment." Included among the 38 cases who were treated with tuberculin and who are now dead are 3 patients who died from causes other than tuberculosis—one from *post-partum* haemorrhage, and two during the influenza epidemic, having enjoyed up to their death a very reasonable amount of health. One of the 311 cases was killed in the war.

The enormous mortality among the "open" cases of tuberculosis of the lungs in the dispensary class of patient, after a period of years, will be observed, notwithstanding the advantages these patients had of living in the country. The method of tuberculin administration employed was on the lines of that recommended by Camac Wilkinson—namely, gradually increasing doses, twice weekly, of bovine tuberculin (P.T.O. and P.T.), commencing with 0.0005 c.cm. of P.T.O., and continuing up to 1 c.cm. of P.T., with, in some cases, a few injections, at the end, of Koch's old tuberculin (T.A.) until 1 c.cm. was given. The course of treatment consisted of about forty injections, lasting roughly six months, at a cost of less than a week's stay in an institution.

Oxford. WILLIAM STOBIE, M.D.

Reviews.

INJURIES OF THE PERIPHERAL SPINAL NERVES.

DURING the last few years numerous monographs have appeared dealing with the treatment of injuries of the peripheral nerves, and, although by this time most of the problems which confronted us in the early months of the war have been solved, each new publication appears to add some information to our knowledge of this fascinating subject. In the *Treatment of Injuries of the Peripheral Spinal Nerves*, by Sir HAROLD STILES and Dr. FORRESTER-BROWN,[1] we have the most complete and detailed account of the operative treatment, and almost two-thirds of the book is devoted to this aspect of the subject.

Part I contains a very concise and accurate account of the anatomy of the spinal nerves, and attention is carefully directed to most points of greatest significance for accurate diagnosis. The indications for operation and the choice of the type of operation are clearly set out, and these, together with the section on the factors which influence prognosis, are in agreement with the conclusions arrived at by most workers in this field. In their discussion on recovery the authors state that they have found Tinel's sign valuable, although its absence was no proof that recovery was not occurring. It is doubtful whether this statement will meet with general approval, since some workers have found Tinel's sign of very limited service and regard it as not infrequently misleading. The table showing the recovery after suture in sixty-nine patients would be more valuable had information been included as to the interval which had elapsed between the reception of the injury and the time of the suture, and had it been possible to follow the recovery after operation for fully two years in more than fourteen of the cases.

Part II is devoted to a most complete account of the operative treatment. The best exposure for each nerve at different levels, the surgical anatomy, and the fullest details of the methods which have furnished the best results are all admirably presented. This part represents a very valuable contribution to knowledge, and includes much original matter which is based upon a very extensive experience of the surgical treatment of peripheral nerve injuries.

Part III deals with the operation of tendon transplantation, and here again the fullest details are included and attention directed to all factors which may influence the functional result. To compensate for the loss of the intrinsic muscles of the hand an ingenious operation is described by which the insertion of one of the flexor tendons is sutured to the extensor communis tendon, just distal to the knuckle, so as to make it a flexor at the metacarpo-phalangeal and also an extensor of the interphalangeal joints.

The volume contains a good index, and is well and freely illustrated by diagrams, photographs, and coloured plates. We have read this monograph with much interest and pleasure. We commend it to surgeons, who, we believe, will be unanimous in agreeing that it is a very agreeable contribution to surgery.

CLINICAL STUDIES FROM LEYSIN.

THE new volume of the series published under the title *Études sur la Tuberculose*[2] consists of a collection of thirty-one papers by no fewer than eight workers at the well-known Swiss station of Leysin. Since the publication of the last volume six years have elapsed, during which the war made severe inroads on the time and occupation of those on the staff of the public sanatoriums, and it is a matter for congratulation that during such a period they have found it possible to accomplish so much original work; a considerable part of it has involved the careful observation of cases over stretches of several months. The book is divided into three sections. The first, dealing with clinical studies, is opened by Dr. Jaquerod, who considers the relation between erythema nodosum and tuberculosis. While holding that the skin lesion is of a tuberculous nature, he regards it as due to no more than a temporary bacillaemia occurring in a patient suffering from a latent focus. So far from being of grave prognostic significance, there would appear to be no more danger of the supervention of active tuberculosis than in the case of patients who have never suffered from the disease. In a later section Dr. Burnand explains the classical antagonism between mitral stenosis and the development of tuberculosis by showing that it is apparent rather than real. In fact, the opposite is the case: the two are frequently associated. The valvular lesion itself is, he holds, of tuberculous origin occurring in a subject having a small focus in the lung, which pursues a slow, benign, non-destructive course, and hence is generally overlooked in the clinical examination. However suggestive his clinical studies on this question may be, he would carry more conviction if he could bring to his aid the confirmation of pathological observations. The effect of the influenza epidemic of 1918 on the patients undergoing treatment is shown to have been comparatively slight, and there is little evidence to indicate that it was responsible for the activation of more than a small proportion of cases which developed tuberculosis in the subsequent few months.

The second part of the book is of particular interest, dealing, as it does, chiefly with the question of artificial pneumothorax. For the greater part of the work on this subject Dr. Burnand, the medical director of the sanatorium, is responsible. Regarding it mainly from the point of view of its curative effect, he brings forward his own statistics relating to 133 patients treated by this method during the course of the last nine years. The discrepancy existing between the immediate and the after results is striking. However excellent may be the effect on the lung during the two or three years of compression, the ultimate prognosis for the patient is by no means too bright. Only too common is it for those in whom the disease has been arrested for three, four, or five years to succumb eventually to tuberculosis. Not the least point of interest is the obvious disagreement noticeable between the views of Dr. Burnand and those of Dr. Jaquerod on the subject. The latter still regards the operation as of only occasional value, and is very emphatic in stating that a cure obtained by hygieno-dietetic measures alone, without the assistance of artificial therapy, stands a far greater chance of remaining permanent than one obtained by the help of new-fangled methods, however skilfully applied. He, however, recognizes the value of tuberculin, and, indeed, deals with it in a very luminous manner, the indications for its use being definite and precise.

Finally, in the last section various studies are presented, such as those dealing with blood pressure, Wildbolz's uro-intradermal reaction, and certain prophylactic aspects of the disease. To all those whose interest lies principally in clinical medicine this book will make a strong appeal.

THE AMERICAN GYNECOLOGICAL SOCIETY.

THE forty-fifth and forty-sixth volumes of the *Transactions of the American Gynecological Society*[3] contain much that is of great interest. The meetings of the society are reported more or less verbatim, and where space is not a matter of consideration this method adds a piquancy to the reading which is lacking in condensed reports. Moreover, they show that this society is no mere mutual admiration society, some of the criticisms being distinctly trenchant. One of the most interesting items in the volume is a report presented by Dr. G. W. Kosmak of a committee appointed to consider how best the society could advance gynaecology and obstetrics. It is full of suggestions which are of general applicability and will assuredly prove fruitful. The discussions reported cover a wide range of subjects, mostly obstetrical. Obstetric anaesthesia is discussed by Dr. E. P. Davis with particular reference to the more modern nitrous oxide-oxygen and ether-oxygen methods. Induction of labour is discussed by Dr. C. B. Reed, who advocates the use of Vorhees's bag, and Dr. B. P. Watson, who recommends repeated doses of pituitary extract 0.5 c.cm. at intervals of twenty to thirty minutes. The congress apparently felt apprehensive at the thought of employing such large doses of so potent a drug, but Dr. Watson said that he had had no bad results and a high percentage of success. Professor De Lee described his conduct of a confinement *de luxe* by the prophylactic use of forceps and episiotomy, followed by rapid expression of the placenta. This procedure was vigorously and almost unanimously condemned. Professor Whitridge

[1] *Treatment of Injuries of the Peripheral Spinal Nerves.* By Sir Harold J. Stiles, K.B.E., F.R.C.S.Edin., and M. F. Forrester-Brown, M.S., M.D.Lond. Oxford Medical Publications. London: Henry Frowde, and Hodder & Stoughton. 1922. (Demy 8vo, pp. viii + 186, 58 figures. Ls. net.)

[2] *Études sur la Tuberculose.* Deuxième Série. Station Climatérique de Leysin. Par les Docteurs Burnand, Grosjean, Jaquerod, Piguet, Rosset, Rossel, Secrétan, et M. de Y. Ingala, Docteur en Sciences. Paris: Masson et Cie. 1922. (Demy 8vo, pp. 518; illustrated. Fr. 15 net.)

[3] *Transactions of the American Gynecological Society.* Edited by G. G. Ward, Jr., M.D. Vols. 45 (1920) and 46 (1921). Philadelphia: W. J. Dornan. (Med. 8vo, pp. lxxiv + 482; illustrated.)

Williams contributed a valuable paper on the Wassermann reaction in obstetrics, in which he emphasized the value of active antisyphilitic treatment during pregnancy. Extraperitoneal Caesarean section, the operative treatment of sterility, artificial insemination, acidosis in operative surgery, the stages in the transition from benign to malignant conditions in the ovary, uterus and vulva (by Dr. T. W. Eden), the microscopic anatomy of the pregnant tube, the value of a "follow-up" system for obstetric hospitals, haemorrhage into the pelvis not due to tubal pregnancy, radium and cancer, lutein cysts and hydatidiform mole, the status of the intrauterine stem pessary, pregnancy and labour associated with cardiac disease, the teaching of obstetrics in a modern medical school, basal metabolism in pregnancy and the puerperium, pneumoperitoneum and roentgenology as aids to more accurate obstetric and gynaecological diagnosis (by Dr. Reuben Peterson), endocervicitis and eversion treated by the nasal cautery tip (Dr. R. L. Dickinson)—these are only some of the papers included in these volumes, but the enumeration will serve to show the catholicity of the society's interests. Gynaecologists on this side of the Atlantic will find much of interest in these volumes and not a little of real importance. The society is to be congratulated on its vitality and on the financial strength which, in these days of high prices, permits the publication of such handsome volumes.

PASTEUR AND HIS WORK.

M. L. DESCOUR in his book *Pasteur and his Work*[4] gives an account of Pasteur's researches extending from his early studies on crystallography to his crowning triumph in the production of immunity. His epoch-making contributions to the advance of science are, to quote the words of Dr. Émile Roux, "described with a precision, an orderliness, and an emotion worthy of so great a subject." The book deals almost entirely with Pasteur's work, but it contains many quotations from his writings and those of his critics, so that a living interest is imparted; especially is this true of the chapters on fermentation and spontaneous generation. Other books on Pasteur give a better insight into his character and habits, of which in this volume we only gain occasional glimpses, but none do better justice to his prodigious labours and the amazing success of his researches.

Pasteur was born nearly a hundred years ago (December 17th, 1822), and the centenary is to be celebrated next spring. He showed no particular promise in his youth, and in 1842 he became "bachelier ès sciences" with the least possible distinction, the future chemist receiving for his medical paper the comment "médiocre." Nevertheless, the thoroughness, originality, and conclusive results of his early researches on crystals made a great impression on the minds of his teachers. From the study of crystallography he turned to fermentation, and from this to the then much debated question of spontaneous generation. He always had in view the practical outcome of his laboratory labours, and M. Descour has clearly indicated how Pasteur's discovery of bacteria as the cause of fermentation led him on step by step first to the diseases of silkworms, and next to the study of the contagious diseases of man.

The medical profession was, on the whole, slow to appreciate the value of his work on bacteria as the cause of disease, but Pasteur knew how to defend his point of view and could retaliate with vigour when attacks were made on him. When engaged in the study of puerperal infections he was sitting one day in the lecture theatre of the Paris Maternity Hospital listening to a discourse from one of the physicians on the causes of epidemics in maternity hospitals: "What causes epidemics is nothing of the sort: it is the doctor and his assistants who carry microbes from a sick woman to a healthy one," he cried. Later in life he had received recognition and homage from all branches of the medical profession, and at his jubilee in 1892 Lister expressed the admiration of all the world when, addressing Pasteur in public, he said, "Truly there does not exist in the whole world an individual to whom medical science owes more than to you."

We recommend M. Descour's book in its English dress to the general reader, to medical practitioners, and to those bacteriologists who, coming to the study of the science after its foundations had been well and truly laid, are perhaps not sufficiently acquainted with the labours of their predecessors.

[4] *Pasteur and his Work.* By L. Descour. Translated from the French by A. F. and B. H. Wedd, M.D. Second edition. London: T. Fisher Unwin, Ltd. 1922. (Med. 8vo, pp. 256; 1 illustration. 15s. net.)

GOLF.

ABOUT three weeks ago at the end of one of the many atrocious rounds of golf for which I have been responsible I came to the conclusion that my case was incurable. On the advice of *Punch*, and believing "Ex America semper aliquid novi," I studied *What is the Matter with Your Golf Game?* by Joseph Collins, M.D., neurologist. No benefit resulted. The Editor of the BRITISH MEDICAL JOURNAL suggested that I should try the WETHEREDS' book.[5]

It was an unusual idea that two people of opposite sexes should combine to write a treatise on golf. Mr. H. N. Wethered, who writes a short prefatory note, tells us that the original idea was that his daughter Joyce should write some sort of treatise on golf for young players. To avoid narrowing the field his son Roger contributed the technical sides of iron and wooden club play, and chapters on Oxford and American golf. In some respects this subdivision has not improved the volume; there is a tendency to repetition, and the error is almost unavoidable in a co-operative arrangement of this description.

In an interesting and entertaining chapter on "Ladies' golf" Miss Wethered raises the question of the difficulty which women have in the art of overhand throwing. She believes that this manœuvre is closely related to the action of iron club play, with which, according to Miss Wethered, women have considerable difficulty. It is of interest to medical men to notice that Miss Wethered suggests that the difficulty may arise from the "absence" of some necessary muscles. Possibly this is the story of Adam's rib in another form, but Miss Wethered may be comforted to know that her sex is under no handicap in this connexion; "want of development" would be a more correct description.

While the volume is in many ways very charming, it is not a book which can be confidently recommended to beginners. Neither of the authors possesses the art of making description easy to follow, and the male member of the combine may even be accused of unnecessarily complicating what will always remain sufficiently difficult.

It is unusual for our instructors in the art of golf to recommend a wooden club because of the size and shape of its striking face. Roger Wethered advises for the beginner a club which he describes somewhat as follows: "A fine breadth of face which is shaped in the form of a bulge designed to counteract a tendency to slice or pull. The hitting surface is deep enough to satisfy the foozler, who is inclined with the ordinary club to strike the ball below its centre." The wisdom of inserting advice of this description is doubtful. No one appreciates better than Mr. Wethered that the rhythm and the movement of a wooden club stroke are too complicated to be materially affected by minor structural details of the club head.

The book will arouse the old controversy as to the parts which the wrists play in the beginning of the driver swing. Both authors are opposed to an early movement of the wrist; this is contrary to the teaching of many first-class professionals, and it is interesting to notice that the photographs which demonstrate Miss Wethered's drive would appear to indicate early turning of the wrists. The advice to late beginners to cultivate a short back swing is good. A great deal of bad language would be avoided if this precept were more often followed.

The reader will be disappointed to observe that in the chapter which deals with American golf, and alludes more especially to the American invasion at Hoylake, no mention is made of Mr. Hunter, the amateur champion of last year. No amateur has done more for the fighting spirit of British golf. Surely it is savouring of exaggeration to draw such a strong distinction between the styles of the British and American amateurs as is done by Mr. Wethered. He leaves one with the impression that he ascribes the excellence of American golf to certain peculiarities of the American technique, but it is to be hoped that his deductions in this respect are incorrect.

The book is written for amateurs, and therefore it makes much of the faults of the game. A greater clearness of description, combined with simplicity of language, would have increased the value of the book; it is, nevertheless, an interesting contribution to the literature of the game, as representing the views of two leading British amateurs.

J. F.

[5] *Golf from Two Sides.* By Roger and Joyce Wethered. London: Longmans, Green and Co. 1922. (Demy 8vo, pp. 197; illustrated 10s. 6d. net.)

NOTES ON BOOKS.

A System of Clinical Medicine,[6] compiled by the late Dr. T. D. SAVILL, maintains its popularity under the editorship of his widow, Dr. Agnes Savill; the sixth edition has just appeared. The special feature of this work is that the diseases are dealt with primarily from the point of view of the symptoms they present, the symptoms being afterwards traced to their causes. With the assistance of experts in various subjects the new edition has undergone a thorough revision, and a number of additions have been made. The chapter on diseases of the lungs has been revised by Dr. James Torrens, and those on immunity and clinical bacteriology by Dr. Skene Keith. Dr. Harry Campbell, who for a previous edition had rewritten the section on nervous diseases, has again brought it up to date. As has been said, the book in its construction has a character which will continue to appeal to many readers.

In the small book entitled the *Students' Guide to Vaccination*[7] Dr. AITCHISON ROBERTSON gives a clear and concise account of the whole process of vaccination. He gives advice as to the examination of the child, the instrument to be used, the preparation of the skin, the progress of the pock, and the abnormalities which may in rare instances occur. He briefly discusses also human and calf lymph and the glycerination of lymph, the duration of vaccinal protection, the need for revaccination, and the law in England, Scotland, and Ireland. But the little work is more than a mere guide to the practice of vaccination. About one-half of it is devoted to the subject of small-pox, its symptoms, varieties, diagnosis, prevalence, mortality, and prevention. The brief historical notes on the prevalence and fatality of small-pox in pre-vaccination times, the practice of inoculation introduced through the influence of Lady Mary Wortley Montagu, the discovery of vaccination by Jenner, and its marvellous effects on prevalence and mortality, ought to stimulate some of the readers of the book, after they have graduated, to follow up the subject as a special study in epidemiology and preventive medicine.

It might be expected that a notebook for students and a ready work of reference for the busy practitioner—this is Mr. T. W. WIDDOWSON'S description of his *Notes on Dental Anatomy and Dental Histology*[8]—would contain a valuable array of facts helpful in daily practice. But this is not the case; the subjects dealt with are essentially examination subjects, and, as far as the student is concerned, he will find a large range of extremely interesting, but oftentimes very academic, subjects, briefly but thoughtfully noted. The varieties of teeth, enamel, and dentine found in birds, beasts, and fishes; the theories concerning the evolution of the cusps of the human molar; the structure of whalebone: these and a hundred similar subjects form the great bulk of the book, and one is left wondering, not why Mr. Widdowson has set them forth in compressed form, but what purpose they serve in an overcrowded curriculum. While the general execution of the work is good, there are a few errors and ambiguities which should be removed. What value has such a statement as, (enamel) "being an epithelial structure the same poison which is produced by the germ of scarlet fever, etc., causes the death of epithelial cells, of the skin, of the hair bulb, of the mucous membrane, and of the enamel organ," as an explanation of hypoplasia of enamel? What interglobular spaces are referred to on page 15? Is it a fact that syphilis, struma, and exanthemata accelerate eruption of the teeth? On page 34, under the heading "lamellae," we read, "they are more numerous in young than in completed cementum. As age advances the lamellae increase in number and the cementum in thickness"—apparently contradictory statements. Is the author perhaps thinking of pathological increase in later life? Why, on page 43, is a description of the glands draining the tooth-bearing areas thrust into a note on the question of the existence of lymphatic vessels in the tooth-pulp? We may ask, too, why such words as "Zahnleiste," "Lippenfurche," "anlage," need be used? The illustrations are clear and appropriate, but we wonder why, in the diagram showing the state of calcification of the teeth at various ages, the enamel is depicted as calcifying first at the tip of the finished tooth and not at the tip of the dentine papilla. At the "cram" stage students will find the book useful.

[6] *A System of Clinical Medicine, dealing with the Diagnosis, Prognosis, and Treatment of Disease: For Practitioners and Students.* By T. D. Savill, M.D.Lond. Sixth edition. London: E. Arnold, 1922. (Med. 8vo, pp. xxviii+951; 172 figures, 4 plates. 28s. net.)

[7] *The Students' Guide to Vaccination.* By W. G. Aitchison Robertson, M.D., D.P.H., F.R.C.P.E. London: A. and C. Black, Ltd. 1922. (Cr. 8vo, pp. 88. 2s. 6d. net.)

[8] *Notes on Dental Anatomy and Dental Histology (Human and Comparative).* By T. W. Widdowson, L.D.S. Fourth edition. London: John Bale, Sons, and Danielsson, Ltd. 1922. (Fcap. 4to, pp. viii+238; 86 figures. 15s. net.)

From Switzerland to the Mediterranean on Foot[9] is the story of a tramp of an unusual kind, for it can have occurred to few people to walk from the Rhone Valley to the Riviera, and to fewer still to choose midwinter for the expedition. Dr. J. B. WINTER and his wife started from Sierre on December 3rd, 1919, and reached Cannes on February 5th, 1920; of the sixty-five days thirty-six were actually spent in walking. The total distance was 488 miles, and the average for each walking day was 13½ miles, so that it was not a hurried journey, and the travellers were afforded an opportunity of admiring the scenery, which in winter is, we can well believe, more imposing than in the summer. The travellers experienced no serious hardships, though many discomforts, and Mrs. Winter on one snow-covered pass suffered from frost-bite; on a few occasions they ran some risk. It is not everyone who would care to trust to telegraph poles as a guide down an unknown valley through fresh snow, and at one point a risk was taken on a frozen slope which was, perhaps, not justifiable. The route was down the Rhone Valley and along the southern shore of the Lake of Geneva to Thonon, then south to Annecy and Grenoble, thence south-west to Briançon, and then more or less south to Vence, Grasse, and Cannes. Dr. Winter has told an interesting story in a simple direct way. He has appended some notes on a few mountaineering expeditions in Switzerland.

The American Pediatric Society has published its thirty-third volume of *Transactions*, containing a report of the proceedings of its annual meeting held last year. It is edited by Dr. JOSEPH BRENNEMANN. The papers it contains, numbering forty-two, deal with a wide range of subjects; as is proper, many are concerned with the feeding of infants and children. A paper by Blackfan-Little of Cincinnati on the thymus in infants seems worthy of special mention; it is founded upon clinical and radiographic studies; it would appear that the application of *x* rays is of advantage when symptoms are believed to be due to persistent or enlarged thymus.

[9] *From Switzerland to the Mediterranean on Foot.* By J. B. Winter. London: T. Werner Laurie, Ltd. 1922. (Cr. 8vo, pp. 124; illustrated. 5s. 6d. net.)

MEDICINAL AND DIETETIC PREPARATIONS.

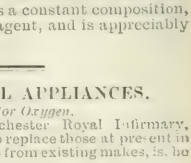
Chenopodium Oil.

CHENOPODIUM OIL has been adopted by the International Board of Health as a remedy for hookworm, and is recognized as having specific value in treatment for round worms; different varieties of the oil have been found to possess varying degrees of toxicity. Since the active constituent ascaridole is highly susceptible to decomposition there are good grounds for presuming that the toxic constituents consist of products of decomposition formed during distillation. We have received from Messrs. Burroughs Wellcome and Co. a specimen of chenopodium oil in gelatin capsules. They have been examined analytically with results showing that the oil contains not less than 90 per cent. of unaltered ascaridole. This high percentage is a trustworthy indication that the oil has suffered no appreciable decomposition in the preparation, and further that a concentration of the active constituent has been effected, for the average proportion of ascaridole in chenopodium oil is about 60 per cent. It is not certain whether ascaridole may not itself be toxic, particularly to idiosyncratic patients, but whatever the toxic effects of the substance itself as distinct from those of associated constituents, it will be a satisfaction to have an article in which the latter are greatly reduced in amount, which has a constant composition, is rich in the important therapeutic agent, and is appreciably free from products of decomposition.

MEDICAL AND SURGICAL APPLIANCES.

Fine Adjustment Valve for Oxygen.

DR. K. B. PINSON, Anæsthetist, Manchester Royal Infirmary, has designed the valve here illustrated to replace those at present in use. The action, which is quite different from existing makes, is he states, easy and fine, and the closure absolute. The spindle is rustproof, the milled head is marked by divisions, and the nose contains a filter to prevent the entry of gritty particles from the cylinder itself. Dr. Pinson believes that the use of this valve will prevent much waste of oxygen and give a very delicate control where such is needed. The valve is made in several different types to fit all makes of cylinders. Cylinder valves of similar internal construction, for use with a foot key, are also made, the control of which, while quite satisfactory, is not so nice. The price of the former is 15s. and 16s. 6d., according to type, and of the latter 20s. The makers are the Condensed Gas Co., Ltd., 59-63, Grosvenor Street, All Saints, Manchester.



THE HEALTH AND HEALTH ADMINISTRATION OF ENGLAND.

(Continued from page 388.)

THE INSURANCE MEDICAL SERVICE.

CONTINUING our notice of Sir George Newman's report on the state of the public health (1921) we may take next the sections dealing with the insurance medical service. He is of opinion that the principal necessity is "a period of composure free from frequent modification and administrative change." Some changes, however, are inevitable, and some development in certain directions is generally desired. He observes that the insurance practitioner treats the patient, furnishes returns, demonstrates loss of time and work due to sickness, and contributes to knowledge of the causes of morbidity. It is desired also that he should co-operate with the medical officer of health, and advise and educate his patients in the manner of healthy living. In all these respects substantial service is being rendered.

Of the total 13,485,000 insured persons in England and Wales in 1921 there were on doctors' lists 12,506,000 and on approved institution lists 159,700, whilst 42,500 made their own arrangements for medical treatment. The insurance doctors numbered 12,079. In every area there is a fixed maximum, which can never exceed 3,000, and is often 2,000 to 2,500. About 34 per cent. of doctors have less than 600 on their lists, about 30 per cent. between 600 and 1,200, and only 14 per cent. (many of them with partners or assistants) have over 2,000. The chemists giving service are numbered 9,105, and the prescriptions dispensed about 29,450,000; the estimated cost of drugs £1,283,000.

Medical Records.

The keeping of records was resumed at the beginning of 1921, new forms being adopted. They are necessary in relation to an expenditure of £8,000,000 a year, and are said to be of value in the future interest of the patient. Collectively they may have statistical value in regard to disease incidence. About 9,000 visits were paid to doctors by the Ministry's medical staff for inspection of records, and it is recognized that an honest endeavour is being made to keep them properly. They are proving of great value.

Regional Medical Staff.

There are thirty-one regional and five divisional officers, who act as referees regarding incapacity for work, and discharge other duties. More than a year's experience of their work is said to prove that their appointment was amply justified; they have gained the general confidence of all concerned.

Certification of Incapacity for Work.

The statistics of referees' experience as to incapacity for work must be of particular interest to insurance practitioners. The total number remitted to the regional medical officers in 1921 was 69,543, of whom 1,543 were referred by practitioners, 153 by Insurance Committees, and the rest, amounting to 97.6 per cent. of the whole, by approved societies. The reason presumably was that they were doubtful of the medical attendant's certificate that the member was unfit for work. The results are striking. Including cases carried over from 1920, and omitting cases not completed at the end of 1921, we find from Sir George Newman's figures that 68,277 cases are in question. Of these 26,935 were found incapable of work, and 14,562 were not incapable; 26,780 "either voluntarily declared off the funds or for some other reason failed to present themselves for examination." Reducing the figures to rates, it thus appears that of 1,000 referred insured persons who had been receiving certificates of incapacity for work, and presumably obtaining sickness or disablement benefit from the funds of approved societies, only 392 were really found incapable, whilst 213 were found not incapable, and 395 went back to work of their own accord, or at least did not venture to submit themselves to the ordeal of the medical referee.

Disciplinary Cases.

Reports submitted to the Ministry by Medical Service Subcommittees in accordance with the Terms of Service numbered 339; of these 129 related to alleged failure to give adequate treatment, 83 to complaints of improperly charging fees, and 92 to medical certificates. In 48 cases deduction was made from Exchequer grants, and took effect against the practitioner's remuneration. Against decisions of Insurance Committees there were 16 appeals, 11 of them by doctors and 5 by insured persons or societies; 6 of the 11 were allowed, 4 dismissed, and 1 withdrawn. In 10 cases doctors appealed against the withholding by Insurance Committees of part of their remuneration on the ground of extravagant prescribing; 2 appeals were dismissed, 1 was allowed, in 3 the amounts withheld were reduced, 1 appeal was withdrawn, and 3 were still undecided. Eleven representations were made to the Minister for removal of names from the medical list: three were based on convictions in courts, and the rest related to allegations of neglect of patients or failure to give proper service; two names were removed from the list, one was allowed to resign on condition of not reapplying without consent, one was continued for twelve months, one died before inquiry, three were withdrawn, and three did not disclose any grounds for reference to a tribunal.

INFECTIOUS DISEASES INTRODUCED FROM ABROAD.

The weekly reports supplied by the Ministry to port medical officers are proving of material assistance.

Plague has been absent from this country, and India has been exceptionally free from it, though Northern China had a severe epidemic, which spread to Vladivostock. There were few cases on the continent of Europe, but the disease was discovered in several parts of Australia in September, 1921. Experience continues to confirm the importance of rats and rat-fleas as carriers of infection.

A serious epidemic of *cholera* prevalent in the famine-stricken areas of Russia in June and July underwent an abrupt decline in August; there has been no prevalence in the rest of Europe, though in parts of Russia and in the Ukraine it seems to have again become epidemic.

Malaria of exotic origin was notified in 1,644 instances in the year ending February 25th, 1922, against 4,168 in the previous year, and nearly 16,000 in 1919. Only 12 indigenous cases were discovered, against 103 and 36 in 1919 and 1920. It was found, however, that the malaria mosquito could accommodate itself to a dry year in South-Eastern England by resorting to exceptional breeding places, such as the river Wey at Guildford and deep pools in abandoned quarry pits in Kent. The other English anopheles showed a similar adaptability, so that the problem of control requires further biological study.

Typhus fever in 1921 was almost world-wide in distribution, largely owing to repatriation and refugees. Though there had been much diminution from the estimate of 20,000,000 cases in Russia in 1919-20, yet recrudescence occurred in November, both in Russia and Poland. The disease, however, was absent from England.

Dysentery.—The number of cases of dysentery reported was 1,228, against 1,353 in 1920 and 1,657 in 1919. Most of the cases were due to relapsing amoebic dysentery among ex-service men in July, August, and September.

Trench fever was notified only among discharged soldiers, and only to the number of 13 cases, against 39 in 1920 and 99 in 1919.

VENEREAL DISEASE.

Sir George Newman records that schemes of treatment on the lines laid down by the Royal Commission of 1916 have now been instituted in 61 counties, 80 county boroughs, and the City of London, making 142 in all. The treatment centres established number 194 (151 in voluntary hospitals, 15 elsewhere, and 28 in special premises), with about 800 weekly sessions. In 120 clinics there is provision for immediate treatment of gonorrhoea. The medical staff of the clinics consists of 384 approved officers. At most of the hospital clinics some beds are available for in-patients. There are 15 hostels for receiving 259 women and girl patients, and the number treated was 770. Nine institutions take in pregnant women with venereal disease, and valuable preventive results have been achieved as to ophthalmia neonatorum and infantile syphilis. The work of 1921 consisted mainly of consolidation by improvement of methods, increase of facilities, bettering of arrangements and equipment, and changes of personnel. The difficulty in getting patients to attend long enough is mentioned, and it is said in this respect much depends on the personality and efficiency of the medical director, and on the adequacy of the premises, especially for irrigation in gonorrhoea; special premises attached to hospitals are best. Most practitioners, it is stated, fail to take advantage of the facilities provided for examination of pathological specimens, and fewer qualify themselves for obtaining free supply of salvarsan substitutes, or attend with patients for consultation. There is lack of collaboration between medical officers of health and the venereal diseases officer.

The statistics show a significant reduction in the new cases dealt with in 1921 (roughly of about 20 per cent.). In 1920 the new cases numbered 105,185, and 84,715 in 1921; on the other hand, persistence in treatment is greater. It is claimed that the clinics are proving centres of enlightenment and education, and that the majority of cases of syphilis are

rendered temporarily non-infectious; it is believed by experienced officers that the reduction in new cases is due to this cause, and that a substantial proportion of syphilitic cases are cured even according to the rigorous standard of the Ministry. Sir George Newman concludes this part of the report by a statement of his views on the still more important subject of the prevention of venereal disease, which ought not to be separated from the treatment.

MEDICAL AND SANITARY ADMINISTRATION.

The survey of port and riparian districts was continued, and conferences with local authorities were held. Medical examination of aliens continues to work smoothly. Schemes as to isolation and small-pox hospitals were a subject of inquiry, and 140 inspections were made. The Public Health (Officers) Act, 1921, gives increased security of tenure to certain whole-time medical officers of health and sanitary inspectors. A qualification is now for the first time required for sanitary inspectors outside London, and, subject to exceptions allowed by the Minister, all medical officers of Health must now hold a diploma in public health or have three years' experience of the duties of the office. In Scotland, it may be remarked, every medical officer of health, whether his area be large or small, appointed under the Public Health Act of 1897 has been required for the last quarter of a century to hold a diploma in public health.

Poor Law Medical Service.—Systematic inspection is now made, at reasonable intervals, of all institutions. This, it may be remarked, is a great advance on the position when the Royal Commission on the Poor Law issued its report; at that time medical inspection was very much subordinate to lay inspection, both in amount and in authority. The treatment of the sick and the care of children under the Poor Law is receiving special attention, as are also the facilities for medical education at Poor Law institutions in the neighbourhood of medical schools. Need for improving the nursing service is noted, and for combining areas or pooling existing institutions so as to allow better classification of patients and the provision of special treatment. That also is an old recommendation.

Smoke.

Lord Newton's Committee recommended in 1921 that the Minister of Health should be empowered to act in the place of a recalcitrant local authority and to fix standards, contravention of which would raise a presumption that an offence had been committed. The Committee recommended that no housing scheme should be approved unless it contained specific provision for smokeless methods, such as were indicated in the Committee's interim report. In the book *The Smokeless City*, reviewed recently in this JOURNAL, mention was made of Lord Newton's regret that the opportunity for introduction of smokeless heating had not been taken advantage of by the Ministry, notwithstanding the Committee's recommendation.

Water Supply Shortage.—The drought of 1921 resulted in contaminated water causing a great outbreak of dysentery in the Ogmore Valley in Wales, where 700 cases occurred, none of them, fortunately, fatal. Scavenging defects, especially the dumping of city refuse in rural areas, received attention, and gratification is expressed that local authorities tend to substitute direct administration for contract work in dealing with refuse. Rat extermination at great refuse tips is impossible.

MEDICAL INTELLIGENCE, INVESTIGATION, AND RESEARCH.

The number of consuls and other British representatives abroad who gave information as to infectious diseases increased from 170 to 182, and nearly 5,000 dispatches were received. Information is also obtained through the international office and foreign governments.

Investigation and Research.

American types of pneumococci in this country are under observation in the Ministry's laboratories, also the influenza bacillus. Dr. Scott is endeavouring to ascertain whether any relation exists between the virulence of outbreaks of diphtheria and the type of bacillus concerned. At the vaccine lymph laboratories the results of differences in technique and new methods of preparation and storage were studied.

Honorary Scientific Investigation Fund.—The causes of stillbirth, encephalitis lethargica, the Schick reaction, rheumatism, and the pneumococcus were dealt with. Liaison is maintained with the Medical Research Council in respect of tuberculosis and other matters.

Statistical investigations included the charting by areas of the notifications of infectious disease, the issue of notes to districts as to undue prevalence of disease, and the summarizing of foreign statistical records. Other questions included the estimation of the prevalence of venereal disease, district mortalities of cancer, the economic effect of abolition of particular diseases, and the factors of infant mortality.

Epidemiological inquiries included one as to encephalitis lethargica, and a comprehensive report will be published shortly. The Departmental Committee on Rheumatism instituted field inquiries by the regional medical officers and insurance practitioners in various parts of the country.

International Work.

The scope of this work has already been incidentally referred to. Requests for advice on public health subjects from foreign, colonial, and home offices and the British Dominions have been complied with. For the Foreign Office Sir George Buchanan represents the Ministry on the Interdepartmental Committee on Quarantine. In September, 1921, the League of Nations established a Health Committee with a medical director and a small staff. It has made progress in the standardization of therapeutic serums and the serological tests for syphilis. It has also arranged for epidemiological inquiry in the near East, and the League's medical section organized a conference last March in Warsaw regarding epidemics of cholera, typhus, relapsing fever, small-pox, etc., in Russia and Eastern Europe. The League appointed an epidemic commission in 1920 to help Poland and other States on the western border of Russia to combat epidemics; Britain's contribution to the cost was £50,000. The funds were exhausted at the end of 1921; an influx of refugees from Russia to Poland was followed by a spread of typhus and relapsing fever. As Sir George Newman says, in concluding his report, there are two questions—What can be done internationally to help the States west of Russia? and, What can be done to deal with the present appalling health conditions in Russia itself?

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on August 8th, 1922, 37 cases were considered and £477 voted to 35 applicants. The following is a summary of some of the cases relieved:

Daughter, aged 56, of M.R.C.S. and L.R.C.P. who died in 1918. Applicant has earned her living as a companion, but owing to ill health has had to give up her occupation. She is now in the Nightingale Hospital. Her only income is from the Health Insurance. Voted £18 in twelve instalments.

Daughter, aged 48, of L.S.A. and F.R.C.S. who died in 1913. Applicant was formerly a governess, but gave this up in order to look after her mother and attend to the home. Her father left her £200 and she has been living upon this, but it is nearly spent. Rent 3s. a week. Voted £8 in twelve instalments.

Widow, aged 53, of M.R.C.S.Eng. who died in 1920. Applicant has been supported by her eldest son, who has just died quite suddenly. She has had to borrow £15 for funeral and other expenses connected with his death. Her only income is £70 from the Widows' and Orphans' Fund and 10s. a week allowed by her son who is a clerk. The daughter is only able to support herself. Voted £15.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., M.S., at 11, Chandos Street, Cavendish Square, London, W.1.

THE State Hospitals Commission, which controls all the mental hospitals in New York State, has issued its thirty-second annual report. The number of patients under treatment during the year was 49,376 (an increase of 852). The recovery rate based on first admissions was 25 per cent.; on the same basis those benefited formed 55 per cent.; 3,830 died. The total cost of upkeep was 15 million dollars; over three-quarters of a million was received from paying patients. The average payment of the paying patient was about one-half the average cost of maintenance. Each institution is visited twice yearly by the Commissioners and four times by the medical inspector. Quarterly conferences are provided for by law between Commissioners and superintendents and managers; at these clinical papers are read by members of the staffs. The medical staffs number 169, an increase of 27, but there are 44 vacancies. Excluding superintendent and interns, the ratio of physicians to patients is 1 to 277. The number of alcoholic first admissions decreased from 594 in 1917 to 122 in 1920, and the rate from 6 per 100,000 of general population to 1.2. There has been some diminution in the entry of combined cases of general paralysis and cerebral syphilis, from 962 in 1918 to 874 in 1920, "probably the direct result of the campaign against venereal disease which has been waged by the Federal and State Health Departments during the past two years."

British Medical Journal.

SATURDAY, SEPTEMBER 9TH, 1922.

THE DIAGNOSIS AND TREATMENT OF SEPTIC SINUS THROMBOSIS.

THE discussion on septic sinus thrombosis in the Section of Otology at the Annual Meeting of the British Medical Association in Glasgow is reported in full in our present issue; it should be read carefully not only by those who devote themselves to the special study of diseases of the ear, but by the medical profession at large. Septic sinus thrombosis is, in the vast majority of cases, a disease of neglect, and the condition is very much more common among the poor than among the more fortunate classes. The incidence of this, as of all intracranial complications, will be greatly lessened as the true importance of aural suppuration becomes more widely recognized and its adequate treatment is more generally adopted.

In his Presidential Address on brain surgery (JOURNAL, July 29th, 1922, p. 155) Sir William Macewen reviewed the modern history of the surgical treatment of intracranial diseases, our knowledge of which—like that of all other diseases—has been gained by clinical observation, *post-mortem* investigation, and experimental research. Brain abscess and meningitis were known to the Greeks and Romans and to the mediæval surgeons; and Morgagni, early in the eighteenth century, showed clearly that intracranial suppuration was secondary to aural suppuration. Before the era of Lister occasional attempts had been made to cure intracranial suppuration by following up the track of a fistula, but the work of the modern brain surgeon, made possible by Pasteur and Lister, had to follow that of the research worker on brain function. So Macewen in 1881 followed Ferrier in 1873.

The complication of sinus suppuration was not recognized until the early years of the nineteenth century, long after brain abscess was known to arise from aural suppuration. Robert Hooper, in his *Morbid Anatomy of the Human Brain* (London, 1826), gives an illustration of suppuration in the lateral sinus, and says, in the description which accompanies the plate, that the condition had probably never before been observed. John Abercrombie, however, in *Pathological and Practical Observations on Diseases of the Brain and Spinal Cord* (Edinburgh, 1828, p. 45), gives in some detail the history of a patient suffering from this condition which he had recorded in August, 1816. Wilde and Toynbee—pioneers of aural surgery—observed cases of sinus suppuration, but without distinguishing them from other intracranial complications, and the first account of the condition in a work on general medicine was given by Lebert in 1859 (*Traité d'Anatomie Pathologique*).

Zaufal, at a medical meeting in Prague in 1880, recommended that in cases of sinus infection the internal jugular vein should be tied and the sinus opened, but his suggestion was not taken up except as a point for merely academic discussion. It remained for Arbuthnot Lane in 1888 to put this idea into practice; he had at the time no knowledge of Zaufal's recommendation. He was followed by Charles Ballance, who likewise was not aware of the earlier work of Zaufal or Lane. The operation soon became generally adopted.

During the discussion at Glasgow Sir William Milligan and Mr. Lionel Colledge touched upon some important points in the diagnosis of septic sinus thrombosis. The diagnosis in a typical case is not difficult: in any case of purulent otitis media a sudden rise of temperature, accompanied by a rigor, should always suggest the beginning of a septic sinus phlebitis. But atypical cases are not infrequent, particularly among children, and merely to await in such cases the development of the typical signs and symptoms would be disastrous. Often the aural discharge may have ceased for some considerable time, and the condition may be diagnosed as typhoid fever, pneumonia (especially a central pneumonia), pyæmia of unknown origin, or malaria. Various diagnostic tests can be employed to eliminate certain of these diseases; examination of the retina may show optic neuritis (which is present in about 30 per cent. of cases of sinus thrombosis), and a careful examination of the ear may reveal unsuspected pus and small granulations. There was general agreement in the discussion that in doubtful ear cases where there is any suspicion of sinus thrombosis it is better to operate and expose the sinus than to wait. Sir Charles Ballance well said on a former occasion in this JOURNAL (September 10th, 1921, p. 399) that persistence of disease in the temporal bone is the indication for operation; the indication for operation is not, and ought never to be, the onset of an intracranial complication. We do not await the onset of general peritonitis before removing an inflamed gall bladder, a suppurating Fallopian tube, or a diseased appendix.

In regard to the operative treatment of septic sinus thrombosis, the discussion in the Section of Otology ranged mainly around the subject of tying the jugular vein. There is a certain school of opinion—chiefly on the Continent—that ligation of the jugular vein is to be condemned unless the clot has actually reached the neck. On the other hand, certain surgeons tie the vein in all cases as a precautionary measure. The consensus of opinion at Glasgow was that the best practice lies somewhere between the two extremes. By ligating the vein the main channel of systemic infection is shut off, and free drainage is also provided for any septic material in the sigmoid sinus and the jugular bulb or vein. This procedure should be adopted when the jugular vein is obviously infected or when infection of the jugular bulb has been diagnosed; and when, after operation, it is found to be impossible to clear out the whole of the infected clot, or, the sinus having been cleared, the symptoms of infection continue.

OSTEOPATHY AND CHIROPRACTIC.

THE members of the medical profession in Britain and in the United States, while they have many points in common, have at the same time different problems and different difficulties confronting them. The fight against "medical clubs," which went on for so many years in this country until it subsided into the comparative placidity of National Insurance practice, has had no counterpart in America. On the other hand, the campaign against cheap medical schools and inferior medical qualifications, in which—almost entirely through the efforts of the American Medical Association—complete victory has now, we may hope, been gained, has been unnecessary in the British Empire. One of the most urgent problems to-day in the United States is the growth of medical "cults," with the assistance of newspaper and other propaganda, and certain of those "cults" have obtained so firm a footing, even upon the medical boards of certain States, that it appears to be almost impossible to dislodge them.

From time to time exponents of American "paramedical" theories have made guerrilla warfare upon this country, and one of these sporadic raids, aided by the ever-present publicity agents and advertising experts, appears to be in progress at the present time. Some months ago a well-attended (and well-reported) meeting

was held in London where among others a gentleman (reputed to be the funniest comedian in London) made a speech explaining how osteopathy had practically saved his life. It may be useful, therefore, for British medical practitioners to have some knowledge of what the brave words "osteopathy" and "chiropractic" really mean. They will find material for this in the *Boston Medical and Surgical Journal* of March 2nd, 1922, which contained the report of a committee of the Massachusetts Medical Society, who investigated these subjects fully.

Osteopathy was founded, it is said, by a doctor of medicine, and rests upon the assumptions that the human body contains all the elements necessary for health, and that if the circulation within the body is normal these elements will maintain health. The impairment of circulation, preventing the proper supply of these elements to all parts, is cons dered to be the cause of disease; this impairment is attributed to the action of the vasomotor nerves, which are assumed to be affected by direct pressure from bones, muscles, or ligaments in the region of the spine, or by reflex irritation from disturbance in visceral organs or other parts of the body. The founder of the cult stated that there was no need for the vast amount of medical knowledge which had been accumulated for centuries, because it was only necessary to discover the "lesion" that was causing the disturbance in the circulation, and to correct this, when health would result. It is hardly necessary to point out that there is, of course, absolutely no experimental or other scientific evidence in support of this notion—although a so-called "research institute" in osteopathy has been established in California. It appears that some of the more educated osteopaths are now condescending enough to allow that their "theory" need not replace all medical knowledge, and in very recent osteopathic writings some use is made of general medical knowledge, especially in regard to diagnosis.

Osteopaths vary somewhat in their conception of the so-called "osteopathic lesion"; but in general they agree that the lesion consists in certain abnormalities of the muscles, ligaments, or joints, and claim that in the presence of this combination of abnormalities the "lesion" should be found at some point along the spine in practically all diseases, although there is no specificity of the lesion for different diseases in the same organ. According to this crude doctrine tumour of the kidney, nephritis, tuberculosis of the kidney, and pyelonephritis would present a similar "lesion." The osteopathic method of treatment is to endeavour by manipulations "to correct displacement of the bony surfaces, if any exist, and to relax the muscular spasm and remove the point of tenderness." It is possible, even probable, that in a certain limited number of vaguely defined conditions—chiefly in those painful backs which every medical practitioner in industrial practice knows so well and which were so common on early sick parade in the army—the osteopathic "treatment" may afford a certain relief, just as simple rubbing would; but beyond that it has not been proved to be of any value whatever in diseases of known pathology, while it is also evident that it can do serious harm in various conditions, especially when applied without a general medical knowledge.

Chiropractic, which after osteopathy appears to be the most popular of the medical cults, likewise depends upon a "theory," and this theory consists in the claim that all diseases result from pressure upon nerves as they emerge from the spinal canal. One of the leading chiropractors says in his writings that he does not want a diagnosis, the idea being that if pressure is relieved from the nerve roots health will result, irrespective of the type of disease. This notion can obviously have no experimental or other evidence to support it, either in the published chiropractic writings or elsewhere. The committee of investigation goes farther than this, for it places on record that it is not convinced that the leaders in chiropractic are sincere, and it feels that the whole movement may be a gigantic fraud which has carried off their feet a certain number of sincere individuals. The procedure of the chiropractor is to examine the spine by palpation—and even by *x* rays—in order to locate "subluxation or malposition" of the vertebrae, and to profess to trace the course of the nerves for tender spots; the treatment consists in an attempt to reduce by manipulation the alleged malposition of the vertebrae. There is no evidence that this form of treatment is of any value whatever in any kind of disorder or disease. That the patient appears to receive a certain measure of comfort from the "treatment" appears probable from the tremendous growth of the cult throughout the United States, but any comfort that results must certainly be the effect of suggestion reinforced by a form of massage.

The committee of the Massachusetts Medical Society conducted its investigations in a particularly open-minded and unbiased manner. It may appear, however, to observers at a greater distance, that osteopathy and chiropractic are little more than terminological adaptations of bone-setting, with the site of operation cleverly transferred from the knee or the ankle, where results (if any) can at least be seen, to the backbone, where they cannot.

THE CONTROL OF GLYCOSURIA BY THE ISLETS OF LANGERHANS.

On July 22nd (p. 140) we gave under this heading a preliminary account of important experiments into the etiology and treatment of glycosuria which had been carried on in the Physiological Department of the University of Toronto, under the direction of Professor J. J. R. Macleod, who had long been interested in diabetes and had made many investigations with regard to it. Early observations had shown that injections of extract of the whole pancreas were of no therapeutic value in the prevention of glycosuria, and Professor Macleod was driven to the conclusion that in all probability the islets of Langerhans were essential to the control of carbohydrate metabolism. Taking advantage of the fact that ligation of the pancreatic duct produced degeneration of the acinous cells but not of the insular cells, he, with the assistance of Dr. F. G. Banting and Mr. C. H. Best, arrived at the conclusion stated in our previous note. They found that when an extract of the gland, in which the acinous cells had degenerated while the islets of Langerhans remained intact, was injected, intravenously or subcutaneously, into dogs artificially rendered glycosuric marked reduction of the percentage of sugar in the blood and the amount of sugar excreted in the urine occurred. In later experiments it was found that the pancreas of foetal calves of under five months' development did not contain proteolytic enzymes, and by extracting such foetal pancreatic tissue a highly potent preparation was obtained; the evidence supported the conclusion that the active principle was essentially the same from whatever animal it was prepared. The comment was made in our previous note that if the experimental observations proved clinically applicable to man they might provide a very important means of treating diabetes. More recently there has been published[1] a joint paper by F. G. Banting and C. H. Best from Dr. Macleod's laboratory, by J. B. Collip from the Department of Pathological Chemistry, and by W. R. Campbell and A. A. Fletcher of the Department of Medicine of the University of Toronto, relating to results obtained in the treatment of diabetes mellitus. Collip succeeded in preparing an active extract, which retained its potency for at least one month, from normal adult ox pancreas, and this had been used by Campbell and Fletcher down to the time of the publication of the report in the treatment of seven cases of diabetes mellitus in the Toronto General Hospital. A fall in blood sugar took place in all cases, and in two,

[1] *The Canadian Medical Association Journal*, vol. xii, No. 3, p. 141.

repeatedly examined, there was a rise in the respiratory quotient, indicating carbohydrate utilization; it occurred more or less coincidently with the attainment of a normal blood-sugar level. Decrease in the amount of sugar excreted was observed in all, and it disappeared entirely if the dose was adequate. Ketonuria also was abolished. The patients reported complete relief from the subjective symptoms of the disease and clinically an improvement was shown in the better appearance of the skin and eyes and in the increased mental and physical activity of the patients. Only one case is reported at length—that of a boy, aged 14, who had suffered from symptoms of glycosuria for a little over two years. The amount of sugar excreted in the urine diminished rapidly after the injections were begun, but rose again when the injections were withheld. When they were resumed the sugar in the urine diminished again, though not to the same extent, but the doses given were smaller. The general conclusions of the authors are that by this treatment blood sugar can be reduced—in some cases even to the normal proportion; that sugar and acetone bodies can be made to disappear from the urine; and that the respiratory quotient affords evidence of increased utilization of carbohydrates. At the same time there is a definite improvement in the general condition of the patients.

FATAL CASES OF FOOD POISONING AT LOCH MAREE.

THE Scottish Board of Health has received a preliminary report from Dr. F. Dittmar and Dr. Gerald Leighton, two of its medical officers, who investigated the recent cases of food poisoning at Loch Maree, and has issued a statement which has been published in full in many newspapers. The Board accepts the diagnosis of botulism, and states that the symptoms commonly produced in the condition recurred in the cases at Loch Maree with painful uniformity—dizziness, headache, and perhaps nausea and sickness, double vision, ptosis, dilatation and sluggish action of the pupils, paralysis of the bowel producing constipation, paralysis of the lips causing difficulty of speech, of the muscles of the throat causing difficulty in swallowing, and of the muscles of the larynx causing loss of voice. The tongue also was paralysed. Respiration was affected, so that dyspnœa occurred; ultimately paralysis of respiration and the heart produced death. The temperature remained normal or subnormal. The Board praises highly the care and consideration shown by the local medical practitioner, Dr. Knox, and by Professor Monro and Dr. Carnegie Dickson, who happened to be staying at Loch Maree. The Board states that this is the first recorded outbreak of botulism in Great Britain and accepts the view that the symptoms were due to a toxin produced in the food before it was eaten. The *Bacillus botulinus* is an anaerobic organism, and could therefore grow in a sealed tin of preserved food, the taste and aspect of which would not be altered. The shortest interval between the ingestion of the food and the onset of symptoms in the Loch Maree cases was from sixteen to eighteen hours: the longest, we gather, was forty hours. Over a year ago the Ministry of Health and the Medical Research Council combined to make arrangements for the fuller investigation of the conditions which give rise to illness produced by the various forms of bacterial food poisoning. It was arranged that the investigation should be conducted in laboratories in the University of Bristol. The research there is directed by Dr. A. W. J. MacFadden of the Ministry of Health, in co-operation with Dr. W. G. Savage, medical officer of health for Somerset, and the work is carried out, under Dr. Savage's supervision, by Mr. P. Bruce White, B.Sc., who, according to the last report of the Medical Research Council, gives his whole time to it. Sir George Newman, Chief Medical Officer of the Ministry of Health, issued about a year ago a memorandum (C.L.1) to medical officers of health, describing the nature of the arrangements and including a memorandum by Dr. W. G. Savage with regard to the collection and transmission of samples. The Scottish Board of Health last year came into the scheme and the specimens from the Loch Maree cases were accordingly sent to Bristol. The pathological and bacteriological investigations are being conducted there, and their results, it may be hoped, will throw light on a form of food poisoning with regard to which there is still much to be learnt. The public inquiry opened at Dingwall on Tuesday.

THE BRITISH ASSOCIATION AT HULL.

THE ninetieth annual meeting of the British Association for the Advancement of Science is being held this week and next at Hull under the presidency of Professor Sir C. S. Sherrington, G.B.E., M.D., President of the Royal Society. The President's inaugural address on "Some aspects of animal mechanism" was delivered on the evening of Wednesday, September 6th, and an account of it appears elsewhere (p. 485). The Sections, of which there are again thirteen this year, began their work on Thursday morning. In the Section of Anthropology Mr. H. J. E. Peak gave his presidential address on "The study of man." In the Section of Physiology the first day's programme included a paper by Dr. T. Ritchie Rodger on "The effect of loud noises on the cochlea," indicating the results of his investigations into the deafness of boilermakers, and giving a comparison of these with the findings of other observers who have experimented with animals exposed to loud sounds. Dr. Rodger's contention is that the changes, indicated clinically and demonstrated *post mortem*, support the theory that the cochlea is adapted for the differentiation of sound. Bearing on the same subject, Dr. G. Wilkinson described the mechanism of the cochlea with special reference to the inertia of the contained fluids. Dr. J. E. Bannen described the physiology of the gastro-intestinal tract from the radiological aspect, and Professor A. V. Hill read a paper on athletics and oxygen supply. On Friday, in the same Section, Professor E. P. Cathcart gives his presidential address on "The efficiency of man and the factors which influence it," and a joint discussion on the vitamins is being held with the Section of Agriculture. The opener of this discussion is Professor J. C. Drummond, and the other speakers include Dr. A. Seidell, Professor T. B. Wood, and Dr. J. B. Orr. At the afternoon session Professor Storm van Leeuwen is discussing experimental studies on hypersensitiveness to drug action, to be followed by a paper on the cause and treatment of bronchial asthma, hay fever, and allied conditions. The Section of Psychology opened its proceedings on Thursday morning with a paper by the President, Dr. C. S. Myers, on "Industrial psychology and the efficiency engineer"; Dr. G. H. Miles discussed breakage problems in industry and Mr. Eric Farmer "Output curves as measures of fatigue." In the afternoon Dr. C. H. Northcott discussed "Instincts and society," Miss May Collins gave an account of experiments on colour blindness, and Dr. D. Wynn Jones described the technique of "group testing." To-day (Friday) a joint discussion is being held with the Section of Education on "Psycho-analysis and the school," the principal speakers being Dr. C. W. Kimmins, Dr. Crichton Miller, Dr. Hamilton-Pearson, Dr. R. G. Gordon, and Professor T. H. Pear. A feature of this year's meeting is the daily exhibition in the Reception Room, by arrangement with the Air Ministry, of synoptic weather charts and forecasts. The weather data employed are received by wireless telegraphy from the broadcasting stations in this and other European countries. Demonstrations of the reception and of the decoding and charting of the reports are given by representatives of the Meteorological Office and of the Air Ministry. The meeting closes on September 13th; we hope to publish further notes in our next issue.

PLAGUE IN AUSTRALIA.

AN outbreak of plague which occurred in Sydney has been carefully investigated and efficiently dealt with. Infection was traced to a steamer which arrived from Brisbane in September, 1921, on which there had been a fatal case of plague. Six dead rats were found on this ship, and one of these on bacteriological examination was found to be plague infected, but the others were too putrid for examination. In the two months before the arrival of this ship rats were being continually caught and examined in the neighbourhood

of the wharf at which the ship unloaded, and these animals had never shown evidence of infection, but soon after the arrival of the ship infected rats were caught on the same wharf and in neighbouring workshops. Sixteen cases of plague subsequently developed amongst the civilian population round about the docks; by systematic study of the rat infection in the different localities in which these cases occurred it was possible in nearly every case to trace the connexion between human patient and infected rats. The details of this work are reported in the *Medical Journal of Australia*, May 20th, 1922. We wish to draw attention particularly to the administrative methods adopted to check the epidemic and the new form of antiplague serum employed in treating the cases. Dr. Armstrong states that past experience in New South Wales and Queensland has demonstrated that quarantine measures cannot secure ports from invasion without imposing on commerce such restrictions as would seriously interfere with trade. During non-epidemic periods the measures which must be insisted on are the rat-proofing of wharves and buildings and the maintenance of a detective rat-catching staff whose duties are, not to exterminate rats, but to keep going a continuous nightly trapping of the area which in a seaport town is certain to be the first attacked —namely, the water front. No city, it is argued, would be attacked by plague in which all the buildings were constructed on rat proof principles, provided care was afterwards taken to prevent rats breeding in them. In Sydney a process of reconstruction is gradually being carried out, and much has already been accomplished in rendering storehouses and other buildings on the wharves as nearly as possible rat-proof by means of concrete flooring and sheeting. When in September, 1921, the fact that Queensland had been invaded by plague was made public the rat intelligence staffs were largely increased; their operations were practically confined to the threatened area, but as the epizootic extended the disposition of the staffs was modified from time to time. Wherever a plague rat was found the premises were immediately quarantined and disinfested. The quarantine consisted in closing up the premises so as to prevent the escape of rats, and forbidding access to the public until the process of disinfestation was completed. This process, which consisted in the destruction of rats and fleas, took several days or a few hours according to the method employed; meanwhile an area comprising several street blocks around the infected premises was intensively searched by the official staff for rats, which were poisoned and trapped. The best method of disinfestation was found to be fumigation with hydrocyanic acid gas; the process is rapid, and kills both rats and fleas. Control rats in cages and fleas in test tubes were buried deeply amongst the goods in the warehouse, and after fumigation was completed the cages uncovered to see if the rats and fleas had been killed. The other method which sometimes had to be resorted to was the turning over of all the stock and movable materials by a gang of workmen and the destruction of rats as discovered. This process took several days, and owing to the survival of the fleas was not so efficacious, but it had to be employed where the hydrocyanic acid gas might possibly reach human beings. Whichever method was used the premises were not released from quarantine until all defects in the buildings had been made good by the owner and rat holes filled up, basements concreted, and the premises put into rat-proof condition. The antiplague serum used for the treatment of the hospital cases was prepared in Sydney by Dr. Burton Bradley, who used a modification of Yersin's method, horses being immunized by dead, and later by living, cultures of virulent plague bacilli. Every plague patient admitted to hospital received the antiplague serum immediately; the results are described as very satisfactory. The total mortality of cases in the outbreak was 25 per cent.; amongst patients admitted to hospital and treated with serum it was 15.4 per cent. In the opinion of the medical officers who had experience of the plague epidemic of 1900-1904 the type of disease in the present outbreak was of equal severity; the mortality of the patients treated with the serum employed at that time was 24 per cent.

PASTEUR COMMEMORATION FUND.

MR. A. CHASTON CHAPMAN, F.R.S., hon. treasurer (in this country) of the Pasteur Commemoration Fund, writes to inform us that a sum of £848 14s. 6d. has been subscribed to this fund, in addition to sums which had previously been sent to France in response to earlier and direct appeals. In accordance with a resolution passed at a recent meeting of the Pasteur Commemoration Committee, presided over by Sir Charles Sherrington, P.R.S., a draft for the above amount is being forwarded to Monsieur Héring, the general treasurer, at Strasbourg, with an intimation that should the amount prove more than the French Committee desires to expend upon the monument the excess should be devoted to some other form of permanent memorial of Pasteur in the University of Strasbourg. We observe that the list of subscribers to the fund includes the names of many well-known firms of brewers, testifying to the debt owed to Pasteur by the brewing industry. Among the individual subscribers is Dr. Horace T. Brown, F.R.S., whose researches into the problems of fermentation, begun more than half a century ago under the inspiration of Pasteur, did so much to apply the methods of science to the art of brewing. The great influence exercised by the pioneers of scientific brewing upon the development of the science of bacteriology in the sixties, seventies, and eighties of the last century is apt to be forgotten. Medicine and surgery, and science at large, owe much to the fermentation industries.[1]

THE NATIONAL MILK CONFERENCE.

A NATIONAL Milk Conference has been convened by the National Clean Milk Society, with the support of a number of other organizations interested in public hygiene, milk production, and the breeding of cattle. The representative appointed by the Council of the British Medical Association is Dr. T. W. H. Garstang, and among the other public bodies represented are the County Councils' Association, the Society of Medical Officers of Health, the Royal Institute of Public Health, the Royal Sanitary Institute, the National Association for the Prevention of Infant Mortality, and the Veterinary Medical Association. The conference will be held in the Council Chamber of the Guildhall, London, on Monday, Tuesday, and Wednesday, October 16th, 17th, and 18th, from 10 a.m. to 1 p.m. and from 2.30 to 5.30 p.m. each day. The President, Viscount Astor, will deliver his inaugural address at the opening session on Monday morning, October 16th, and Sir Arthur Griffith-Boscawen, Minister of Agriculture, will then take the chair. At the afternoon session, under the chairmanship of Mr. Wilfred Buckley, Sir Stewart Stockman will read a paper on "Contagious abortion and other diseases of cattle," and Dr. Stenhouse Williams will open a discussion on the production of clean milk. The morning session of Tuesday, with Sir Alfred Mond, Minister of Health, in the chair, will be devoted to discussions on bovine tuberculosis and its relation to man, opened by Drs. A. Stanley Griffith and Nathan Raw, and on tuberculin tests, introduced by Captain S. R. Douglas, I.M.S.(ret.), F.R.S. The chairman at the afternoon session will be Viscount Elveden. On Wednesday morning, with Sir Walter Morley Fletcher in the chair, a debate on pasteurization and other methods of treating milk will be opened by Professor Georges Dreyer, Dr. Charles North of New York, and Dr. Eric Pritchard. The chairman of the afternoon session will be Sir George Newman, when discussions on the food value of milk and its care in the home will be introduced by Dr. Robert Hutchison and Dr. Leonard Hill, and on education of the public and of the dairy industry in regard to milk by Sir Daniel Hall and Professor H. R. Kenwood. All applications for membership or inquiries for further particulars should be addressed to Miss H. M. Willans, honorary secretary, National Milk Conference, 3, Bedford Square, London, W.C.1.

[1] See "Bacteriology and Brewing," BRITISH MEDICAL JOURNAL, May 20th, 1916, p. 767.

THE EMPLOYMENT OF THE TUBERCULOUS.

THE Glasgow Health Department has issued a valuable report on the employment of the tuberculous. It has been prepared by Drs. A. S. M. Macgregor and John A. Wilson, two of the officers of the department, and records the results of an inquiry into the various types of tuberculous patients with reference to their training and employment. It has a preface by Dr. A. K. Chalmers, the chief medical officer of health. The report investigates the suitability and practicability of the training colony and village settlement system for ex-service men who have the initial advantage of a supplementary source of income as pensioners, and who therefore seem prima facie well fitted for either colony or village settlement. The cases passed under review numbered 785, and the way in which, for one sufficient reason or another, the great bulk of them were held to be unsuitable makes a very interesting story. As being only doubtfully tuberculous on clinical observation and *x*-ray examination, 122 were rejected. Of the remaining 663, in 49 the disease was arrested, in 325 quiescent, and in 289 active, a high standard being applied in making the classification. On the Turban scale 26 per cent. fell into stage I, 48 per cent. into stage II, and the remaining 26 per cent. into stage III. Complications and concurrent affections, especially bronchitis, existed in 161 patients, the great majority of whom were therefore unfit for training in a suitable occupation, and the total cases regarded as medically ineligible were 230. This left 433 for consideration. Most of the cases had been under institutional treatment or otherwise under observation, and the careless, indifferent, or worthless types could, in that way, be separated out. The number rejected or reserved for further consideration on this ground was 191. This left 242. To them there was applied the standard of the Inter-Departmental Committee—namely, training for reintroduction into employment, and of the 242 only 127 could be regarded as eligible. Of these, 110 were already engaged in occupations, many of which were not at all unsuitable—gardeners, tram drivers, travellers, postmen, and the like—while among certain others the exact conditions of employment would be the criterion of suitability. Family ties were an important consideration in making a man stick to his own trade rather than undergo training for a better one. In short, the investigation has led Drs. Macgregor and Wilson to attach weight to the experience of Dr. Noel Bardswell in a report to the London County Council; he stated that of 160 men who passed through the training centres in 1918–21 only nine were still at their newly acquired calling at Christmas, 1921, the remainder of those still alive living on their pensions and being in a state of unemployment. These are anything but encouraging facts. The reporters put the practical question which is being applied to all public health problems in the present circumstances of this country. As to a village settlement they ask, "Would the preventive results be commensurate with the cost?" and they cautiously reply, "The village settlement as a method of treating the individual is admirable; as a public health investment it might not justify its cost."

DR. STEPHEN SMITH.

THE Nestor of Public Health in America has passed away while only a few weeks short of the hundred years which he regarded as "the birthright of every child fully developed."[1] Apparently he had not been very healthy in his early years, as he recorded that, on medical advice, he adopted the profession of medicine "as a preventive measure against the recurrence of a form of indigestion of which I had been a victim from childhood"; and he adds, writing last year, "To that advice I attribute my activities in middle life and the comparatively comfortable age to which I have attained." Indeed, more than half a century ago Dr. Stephen Smith was practising and preaching that combination of conservation of individual health and improvement of environment which is the twofold ideal of the sanitarian to-day. As regards the individual, he set forth ten maxims for longevity, thus: "Eat hardly any meat; drink lots of milk—if it disagrees with you drink more; take a ten or fifteen minutes' nap after luncheon and dinner; sleep ten hours; sleep outdoors when the weather permits; don't smoke; don't eat sweets; take no alcoholic or other stimulants; avoid the easy chair—absence of work is the first step to the grave; finally, just be natural, quit all foolishness." He often said, epigrammatically, "Every man who dies before a hundred practically speaking dies by his own knife and fork." Sometimes a man who has professed to teach the science of longevity has demonstrated in his own death the failure of his scheme; it was not so with Dr. Stephen Smith. So much for the individual. As to environment, he showed in his contribution to the Jubilee Historical Volume of the American Public Health Association (whose first president he had been) that he was both pioneer and leader in the public health movement which began in the United States in the sixties and seventies of last century. His death will be deeply regretted throughout the American continent, but of few men can it be said that, before the end came, life's programme had been carried out as it was in the case of Dr. Stephen Smith. On this side of the Atlantic the sympathy of the public health service in particular will go out to the American Public Health Association in the loss of its doyen sanitarian and first president.

[1] BRITISH MEDICAL JOURNAL, May 20th, 1922, p. 804.

THE FUTURE OF MEDICAL PERIODICALS.

IN the capacity of English correspondent to the journal of the Norwegian Medical Association Dr. Claude Lillingston[2] contributed early this year an essay on the present and future of medical journalism, to which some reference may now be opportune. His main thesis is concerned with the unwieldiness and vain repetitions of medical writings; for every paper containing information both important and new there are, he says, very many that possess neither of these virtues. With journals as with mammals fatness is apt to lead to sterility, and with the growing volume of publications it is becoming increasingly difficult to discover a discovery. Illustrative examples of this state of affairs are given. How, he asks, can the 99 per cent. irrelevant publications be suppressed and the less than 1 per cent. new and valuable information be given the prominence it deserves? The solution which he considers most promising is the development of the abstract—the severely pruned and edited summary of an original article. He finds most abstracts at present dull and lifeless; but as their importance becomes more generally appreciated the work expended on them should, he thinks, improve. An abstract may be made by the simple expedient of "lifting" whole chunks out of the beginning and end of a paper, and adding any sentence the author may have been obliging enough to print in italics. Or the abstractor may read through the original carefully once or twice, pick the whole structure to pieces, and then build up a faithful replica of the original in miniature. Dr. Lillingston suggests that publications such as this journal's weekly *Epitome*, and the monthly publications *Medical Science* and the *Medical Review*, should do something to meet the difficulties discussed, and the tripartite scheme of *Tubercle*, which prints (1) original articles, (2) abstracts, and (3) a bibliography giving only the titles and references of original articles on tuberculosis, ought to satisfy the digestive capacity of every reader in this particular field. But it is doubtful if Dr. Lillingston will prove correct in his forecast that the journal which devotes its pages to abstracts alone will become the generally acknowledged court of final appeal towards which publication *in extenso* elsewhere will be but a preliminary step. Time was when the prophecy was confidently made that man would reduce his dietary to a few compressed tablets a day, but he still prefers his food in bulk; and, however conscientious an abstractor may be, his digest is apt to lack literary vitamins and other intangible, though valuable, properties possessed by the original article.

[2] *Tidsskrift for den Norske Laegeforening*, March 15th, 1922.

TREATMENT AND PREVENTION OF DIPHTHERIA.

A SHORT memorandum on diphtheria[1] recently issued by the Ministry of Health deals with the supply and administration of diphtheria antitoxin, the use of the Schick test, and methods of active immunization for the prevention of diphtheria. In August, 1910, the Diphtheria Antitoxin Order of the Local Government Board authorized local authorities to provide medical practitioners with antitoxic serum for use in the prevention and treatment of diphtheria; the Order required that the arrangements should be made under the supervision of the medical officer of health, and should secure that the medical practitioner who needs a supply of antitoxin from the local authority shall always obtain it without delay. In every case where a provisional diagnosis has been made a dose of at least 8,000 units should be injected as early as possible, without waiting for bacteriological confirmation of the diagnosis. The injection may be subcutaneous or intramuscular, but the latter is to be preferred, as absorption is more rapid. Although no stereotyped procedure can be laid down for subsequent doses it is stated that the experience of the Metropolitan Asylums Board hospitals is that when, in a case seen early in the attack, an initial dose of 8,000 units is followed by definite improvement at the end of about twelve hours further administration of antitoxin is unnecessary. Should there be no evidence of improvement, or if it is clear that the disease is advancing, a second dose of similar magnitude should be given, followed by a further dose if no distinct improvement occurs. Diphtheria antitoxin should not be administered to a person not presenting local signs or symptoms of diphtheria in whose throat or nose the diphtheria bacillus has been found, for there is no evidence that antitoxin has any effect in causing the disappearance of diphtheria bacilli from a chronic carrier. Some abnormality of the throat is often present in such persistent carriers, and this should receive special attention and treatment. A prophylactic dose is rarely necessary for "contacts" if they can be kept under daily observation and antitoxin administered at short notice if symptoms develop. This is especially true of adults. Should a prophylactic dose be deemed necessary it should be 500 to 1,000 units. When the Ministry of Health Report on the Schick Test was published it was considered at length in this JOURNAL (December 10th, 1921, p. 994), and it may be sufficient to point out at present that its object is to determine whether or not healthy persons possess a natural antitoxic immunity, for it has been found by experience that the blood of individuals who possess a natural immunity to the disease contains per cubic centimetre not less than 1/30 unit of antitoxin. To determine whether or not this is present 0.2 c.cm. of a freshly made dilution of standardized diphtheria toxin is injected into the skin, and as a control a similar amount of the same solution, previously heated to destroy the toxin, is also injected intradermally into the opposite arm. If the reaction is positive, indicating a susceptible individual, a circular area of more or less deep red colour appears round about the site of injection in twenty-four hours, while no change occurs on the control arm. This is due to the irritant action of the toxin acting on tissue cells not protected by antitoxin, and indicates that little or no antitoxin is present in the patient's blood, and in consequence susceptibility to diphtheria exists. If there is no change at the site of inoculation the test is negative, indicating immunity to diphtheria. The object of injecting heated toxin into the other arm is to make sure that any inflammatory reaction that appears is not due to a non-specific susceptibility to foreign protein; such a non-specific reaction usually reaches its height in twenty-four hours, and may have faded by the fourth day, whereas a true positive reaction is often most pronounced after ninety-six hours have elapsed. The Schick test has many useful practical applications to diphtheria prevention, more particularly in the case of nurses and others specially exposed to risk of diphtheria infection, and on the occurrence of diphtheria in residential schools and institutions. In susceptible individuals showing a positive Schick reaction active immunity may be induced by inoculations of "toxin-antitoxin," this being a carefully standardized mixture of diphtheria toxin and protective serum. Three separate inoculations of 1 c.cm. should be given at intervals of a week; in adults such injections may be followed by a local reaction or mild constitutional disturbance. The immunity takes some time to develop to its maximum, which is reached in a period of from two to six months, and has been shown to persist for more than six years. Such active immunization is especially valuable for protecting susceptible individuals who are likely to be exposed to infection; because of the slow development of the immunity the work of active immunization should be carried out in interepidemic periods.

[1] Ministry of Health Memorandum No. 58/Med. *Diphtheria*. H.M. Stationery Office. To be obtained through any bookseller. 1d. net.

THE CAMBRIDGE CHAIR OF PATHOLOGY.

THE Chair of Pathology in the University of Cambridge, vacant since the death of Sir German Sims Woodhead at the end of last December, has now been filled by the election of Henry Roy Dean, M.D., F.R.C.P., Professor of Pathology in the University of Manchester and Pathologist to the Manchester Royal Infirmary. The Chair of Pathology at Cambridge was established in 1884. The first holder was Charles Smart Roy, who died in 1897; the next was A. A. Kanthack, who died at the end of 1893, and was succeeded by Sims Woodhead. As Sir Clifford Allbutt said in his introductory note to the *Handbook* of the last Cambridge meeting of the British Medical Association, this professorship "was founded for Roy, a brilliant leader, early stricken down by ill health; as soon afterwards was his no less brilliant successor, Kanthack." The fourth holder was born in 1879, and has had a distinguished career as student, investigator, and teacher. Educated at Sherborne and at New College, Oxford, where he won first-class honours in the Natural Science School in 1900, he was later elected a Senior Demy of Magdalen College. He entered St. Thomas's Hospital with a university scholarship, and afterwards held the posts of medical registrar and resident assistant physician. Tenure of a Radcliffe travelling fellowship was followed in 1912 by Dr. Dean's appointment to the Chair of Pathology and Bacteriology in the University of Sheffield; this he resigned four years later to take up the corresponding post in Manchester. A great opportunity, we believe, awaits him at Cambridge.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS.

We publish in the SUPPLEMENT this week, at the request of the Registrar of the General Medical Council, a list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. The list includes all untraceable names from A to G in the body of the *Medical Register*, as it is only this section which has come under review in the present year. Any medical practitioner who finds his or her name included in this list should communicate immediately with the Registrar of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1, of the Scottish Branch Council, 20, Queen Street, Edinburgh, or the Irish Branch Council, 35, Dawson Street, Dublin, according to the part of the British Isles in which the name was registered. Since this list was prepared many further inquiries have been sent out, but every practitioner whose name appears in the list would do well to communicate with the Registrar.

We regret to announce the sudden death on September 5th, while on a visit to Dornoch, of Sir Charles Ryall, C.B.E., senior surgeon to the Cancer Hospital, and a member of the Council of the Royal College of Surgeons of England.

THE office of the *Medical History of the War* is being moved to-day from Stanhope House, Keau Street, Drury Lane, to Imperial House, Tothill Street, Westminster, S.W.1, where it will be opened for work on September 11th, in Rooms 79c, 80, 81, and 83, on the fifth floor.

ANIMAL MECHANISM.

SIR CHARLES SHERRINGTON'S PRESIDENTIAL ADDRESS TO THE BRITISH ASSOCIATION.

AT the inaugural general session of the ninetieth annual meeting of the British Association for the Advancement of Science, which opened at Hull in the City Hall on September 6th, Sir Charles Scott Sherrington, G.B.E., M.D., P.R.S., gave his presidential address on "Some aspects of animal mechanism."

He began by observing that once a year, at the gathering of the British Association, science tried to remove the reproach that it lived too much to itself. These occasions gave the opportunity of talking in wide gatherings about scientific questions and findings. The questions most difficult to answer were often those that could be quite briefly put. Thus, "Is the living organism a machine?" "Is life the running of a mechanism?" The answer certainly could not be stated as shortly as the question, but he proposed to examine some of the points raised.

Mechanical Adjustments in the Human Body.

It might be thought that the problem was presented at its simplest in the simplest forms of life; yet it was in certain aspects more seizable in complex animals.

Our own body is full of exquisite mechanism. Many exemplifications could be chosen. There is the mechanism by which the general complex internal medium, the blood, is kept relatively constant in its chemical reaction, despite the variety of the food replenishing it and the fluctuating draft from and input into it from various organs and tissues. In this mechanism the kidney cells and the lung cells form two of the main submechanisms. And one part of the latter is the delicate mechanism linking the condition of the air at the bottom of the lungs with that particular part of the nervous system which manages the ventilation of the lungs. On that ventilation depends the proper respiratory condition of the blood. The nervous centre which manages the rhythmic breathing of the chest is so responsive to the respiratory state of the blood supplied to itself that, as shown by Drs. Haldane and Priestley some years ago, the very slightest increase in the partial pressure of carbon dioxide at the bottom of the lungs at once suitably increases the ventilation of the chest. And dovetailed in with this mechanism is a further one working for adjustment in the same direction. As the lung is stretched by each inbreath the respiratory condition of the nervous centre, already attuned to the respiratory quality of the air in the lungs, sets the degree to which inspiration shall fill them ere there ensue the opposite movement of outbreath. All this regulation, although the nervous system takes part in it, is a mechanism outside our consciousness. Part of it is operated chemically; part of it is reflex reaction to a stimulus of mechanical kind, though as such unperceived.

The President then turned to another instance of mechanical adjustment, mainly nervous. The postural action of muscles was produced by nerve centres forming a system more or less their own. Maintenance of the erect position involved due co-operation of many separate muscles in many parts. Even in the absence of those portions of the brain to which consciousness was adjunct the lower nerve centres successfully brought about and maintained the co-operation of muscles resulting in the erect posture. He showed how the various harmonies of posture were provided by mere reflex action.

Problems of Animal Mechanism.

All these delicate adjustments and reactions worked involuntarily as a pure mechanism, their analysis being owed mainly to Magnus and de Kleijn of Utrecht.

True, he continued, in such a glimpse of mechanism what we see mainly is how the machinery starts and what finally comes out of it; the intermediate elements of the process we know less of. Each insight into mechanism reveals more mechanism still to know. Thus, hardly was the animal's energy balance in its bearing upon food intake shown comfortably to conform with thermodynamics than came evidence of the so-called "vitamins." Unsuspected influence on nutrition by elements of diet taken in quantities so small as to make their mere calorie value quite negligible; thus, for the growing rat, to quote Professor Harden, a quantity of vitamin A of the order of 1/500 milligram a day. Again, as regards sex determination, the valued discovery of a visible distinction between the nuclear threads of male and female brings the further complexity that in such cases sex extends throughout the whole body to every dividing cell. Again, the association of hereditary unit-factors, such as body colour or shape of wing, to visible details in the segmenting nucleus seemed to simplify by epitomizing. But further insight tends to trace the inherited unit character not to the chromosome itself, but to balance of action between the chromosome group. As with the atom in this heroic age of physicists, the elementary unit assumed simply proves, under further analysis, to be itself complex. Analysis opens a vista of further analysis required. Knowledge of muscle contraction has, from the work of Fletcher and Hopkins on to Hill, Hartree, Meyerhof, and others, advanced recently more than in many decades heretofore. The engineer would find it difficult to make a motive machine out of white of egg, some dissolved salts, and thin membrane. Yet this practically is what Nature has done in muscle, and obtained a machine of high mechanical efficiency. Perhaps human ingenuity can learn from it. One feature in the device is alternate development and removal of acidity. The cycle of contraction and relaxation has been traced to the production of lactic acid from glycogen and its neutralization chiefly by alkaline proteins; and physically to an admirably direct transition from chemical to mechanical effect. What new steps of mechanism all this now opens! To arrive at one goal is to start for others.

Nerve Regeneration.

But knowledge, while making for complexity, made also for simplification, and there seemed promise of simplification in regard to the mechanism of reflex action. Fuller knowledge of the mechanism of the nervous impulse, many of whose physical properties were now known, was leading to a view that nervous function throughout the system was simpler than had formerly been thought. Yet for some aspects of nervous mechanism the nervous impulse offered little or no clue; for instance, the regeneration of the nerve fibre after severance.

Can we, he asked, trace the causes of this beneficent yet so unaccountable reaction? How is it that severance can start the nerve regrowing? How does the nerve fibre find its lost muscle microscopically miles away? What is the mechanism that drives and guides it? Is it a chemotaxis like that of the antherozooid in the botanical experiment drawn towards the focus of the dissolved malic acid? If so, there must be a marvelously arranged play of intricate sequences of chemically attractive and repellent substances dissolved suitably point to point along the tissue. It has recently been reported that the nerve fibre growing from a nerve cell in a nutrient field of graded electrical potential grows strictly by the axis of the gradient. Some argue for the existence of such potential gradients in the growing organism. Certainly nerve regeneration seems a return to the original phase of growth, and pieces of adult tissue removed from the body to artificial nutrient media in the laboratory take on vigorous growth. Professor Champy describes how epithelium that in the body is not growing when thus removed starts growing. If freed from all fibrous tissue its cells not only germinate, but, as they do so, lose their adult specialization. In nerve regeneration the nerve-sheath cells, and to some extent the muscle cells which have lost their nerve fibre, lose likewise their specialized form, and regain it only after touch with the nerve cell has been re-established. So similarly epithelium and its connective tissue cultivated outside the body together both grow and both retain their specialization. All seems to argue that the mutual touch between the several cells of the body is decisive of much in their individual shaping and destiny. The severance of a nerve fibre is an instance of the dislocation of such a touch.

Nevertheless, marvellous though nerve regeneration was, its mechanism seemed blind. Its vehemence was just as great after amputation, when the parts lost could, of course, never be re-reached. Its blindness was sadly evident in the suffering caused by the useless nerve sprouts entangled in the scar of a healing or healed limb-stump. There was a great difference between growth of such regeneration and the growth impulse in pieces of tissue isolated from the body and grown in media outside. New ground was being broken in the experimental control of tissue growth. The following of all clues of difference between the mechanism of malignant growth and of normal growth was fraught with importance which might be practical as well as theoretical.

The regenerating nerve, he continued, rebuilds to a plan that spells for future function. But throughout all its steps prior to the actual reaching the muscle or skin no actual performance of nerve-function can take place. What is constructed is functionally useless until the whole is complete. So similarly with much of the construction of the embryo in the womb for purposes of a different life after emergence from the womb; with the construction of the butterfly's wing within the chrysalis for future flight; of the lung for air breathing after birth; of the reflex contraction in the foetal child of the eyelids to protect the eye long before the two eyelids have been separated, let alone ere hurt or even light can reach it. The nervous system in its repair, as in its original growth, shows us a mechanism working through phases of non-functioning preparation in order to forestall and meet a future function. It is a mechanism against whose seeming prescience is to be set its fallibility and its limitations. The how of its working is at present chiefly traceable to us in the steps of its results rather than in comprehension of its intimate reactions; as to its mechanism, perhaps the point of chief import for us here is that those who are closest students of it still regard it as a mechanism. But if to know be to know the causes we must confess to want of knowledge of how its mechanism is contrived.

Mind and Body.

At this point the President turned to consider briefly the action of the mind upon bodily mechanism, mentioning that his theme had been partly chosen at the instance of the

late Dr. Rivers, who, as a biologist, viewed mind as a biological factor. While mental actions could not at present be dealt with in terms of nervous actions, or vice versa, something might be gained by considering certain points of contact between the two. His first instance was the so-called expression of the emotions.

The mental reaction of an emotion is accompanied by a nervous discharge which is more or less characteristic for each several type of emotion, so that the emotion can be read from its bodily expression. This nervous discharge is involuntary, and can affect organs, such as the heart, which the will cannot reach. Then there is the circumstance that the peculiar ways and tricks of the nervous machinery as revealed to us in the study of pure reflex reactions repeat themselves obviously in the working of the machinery to which mental actions are adjunct. The phenomenon of fatigue is common to both, and imposes similar disabilities on both. Nervous exhaustion and mental exhaustion mingle. Then, as offset against this disability, there exists in both the amenability to habit formation, mere repetition within limits rendering a reaction easier and readier. Then, and akin to this, is the oft-remarked trend in both for a reaction to leave behind itself a trace, an engram, a memory, the reflex engram, and the mental memory.

Taking examples from various fields the President showed how the features of nervous and mental working resembled each other over and over again. Was it, he asked, mere metaphor to speak of mental attitudes as well as bodily? Or was it mere analogy to liken the warped attitude of the mind in a psychoneuritic sufferer to the warped attitude of the body constrained by an internal potential pain? Yet all this similarity did but render more succinct the old enigma as to the nexus between nerve impulse and mental event. The practical man had to accept nervous function as a condition for mental function without breaking his heart over ignorance of their connexion. The doctor, the lawyer, and the scientist accepted it. Decade by decade the connexion became more ascertained between certain mental performances and certain cerebral regions. The cortex of the forebrain was the main seat of the mind. That cortex, with its twin halves corresponding to the two side-halves of the body, was really a single organ knitting those halves together by a still further knitting together of the nervous system itself. From very small beginnings this great integrating system had become steadily a larger and larger feature of the nervous system, until in adult man the whole rest of the system was relatively dwarfed by it. Physiologically the supreme development of the brain, psychologically the mental powers attaching thereto, seemed to represent to the biologist the very culmination of the integration of the animal mechanism. Moreover, the mental attributes of the nervous system did not stop at the individual; from individuals they integrated communities. That this integration was still developing was obvious from the whole force of human pre-history and history.

The Living Creature a Unity.

In concluding his address Sir Charles Sherrington observed that in some of its aspects animal life revealed mechanism the how of which, despite many gaps in knowledge, was fairly explicable. Of some processes of the living body it might reasonably be expected that further application of physics and chemistry would yield a competent key. But other aspects of animal mechanism still passed comprehension, and the how of the mind's connexion with its bodily place seemed utterly enigma. The lesson nevertheless appeared to be that despite great differences of difficulty in understanding different aspects of animal life it was as a single whole that the animal (and the plant, too) must finally be envisaged. For the living creature was fundamentally a unity, and if for purposes of study it had to be split into part-aspects and part-mechanisms that separation was artificial. To try to comprehend the how of the living creature as a whole was one of the great privileges of the human intellect.

The problem is ambitious, but its importance and its reward are all the greater if we seize and we attempt the full width of its scope. In the biological synthesis of the individual it regards mind. It includes examination of man himself as acting under a biological trend and process which is combining individuals into a multi-individual organization, a social organism surely new in the history of the planet. For this biological trend and process is contracting a social organism whose cohesion depends mainly on a property developed so specifically in man as to be, broadly speaking, his alone, namely, a mind actuated by instincts but instru-Lankester has luminously said), can, viewing this great supra-individual process, shape even as individual his course conformably with it, feeling that in this instance to rebel would be to sink lower rather than to continue his own evolution upward.

England and Wales.

METROPOLITAN ASYLUMS BOARD.

THE report of the Metropolitan Asylums Board for the year ending May 31st, 1922,[1] shows that the Board has had an exceedingly busy time. Into its fever wards in 1921 there were admitted 47,859 cases, against 35,916 in 1920 and 21,962 in 1919. The lowest number under treatment during the year was 5,423 (on September 3rd), and the highest 9,599 (on November 8th). The autumn and winter of 1920–21 had brought the biggest epidemic up to that time experienced in the history of the Board, but it was much exceeded in 1921–22. In fact, the minimum on September 3rd exceeded the maximum of nineteen of the last twenty-five years. The maximum on November 8th was composed of 6,277 cases of scarlet fever, 3,025 diphtheria, 23 of enteric fever, 196 of tuberculosis, and 78 of other diseases. It was only the river ambulance service which made it practicable to deal with these large numbers. As regards scarlet fever, after a conference with the Ministry of Health and the metropolitan medical officers of health, it was arranged that applications for admission would be made in the first instance to these officers, who would advise the Board as to the most urgent cases, preference being given to the poorer and more crowded districts, especially to cases from homes where there was unemployment. This arrangement lasted from October 25th to December 10th, when the need for it ceased. Every case of diphtheria was admitted without the postponement of a single case over a single night.

Experience of cross infection has shown that when scarlet fever, diphtheria, and measles have prevailed simultaneously, 25 per cent. of the total accommodation of the "acute hospitals" should be available for isolation, and the Board has taken special steps to that end. The fatality rate from scarlet fever was only 1.03 per cent., from diphtheria it was 8.25 per cent., from measles 8.44 per cent., and from enteric fever 18.18 per cent. Medical instruction in fever was given to 487 students, and in hospital administration for the diploma in public health to 81.

The admissions to St. Margaret's Hospital for ophthalmia neonatorum were 121 mothers and 213 babies. For ear discharges Mr. T. B. Layton, F.R.C.S., was appointed otologist in 1920, and a special report which he has made is printed in full as an appendix to the Board's report. Of venereal disease 136 cases were admitted to the Sheffield Street Hospital and 60 were treated at the Thavies Inn Infirmary. For influenzal pneumonia two wards were allocated at each of the nine town hospitals, with a total provision of 150 beds, which was found more than sufficient.

Of tuberculosis there were under treatment at the middle of the year 1,906 cases (756 adults and 1,150 children). The institutional accommodation for different classes of cases is stated to be 2,138 beds in all, of which 1,261 are for children and 877 for adults. Of the 877 there are 598 for males and 279 for females. For surgical tuberculosis there are 164 adult beds, and for pulmonary 713: of the latter 321 are for advanced cases and 392 for sanatorium cases. Special provision has been made at Queen Mary's Hospital, Carshalton, for the treatment of surgical tuberculosis in childhood by direct sunlight. For change of air and scene suitable cases can be sent from Carshalton to the seaside home near Littlehampton. At Princess Mary's Hospital at Margate of 271 beds 200 are now in verandas. For surgical tuberculosis in adults a hospital of 164 beds has been equipped at Lowestoft.

Part III of the Report consists of a copy of the statement submitted by the Board to the Royal Commission on London Government. It is naturally an *ex parte* document in support of the Board's own existence as against the views of the London County Council. The Board's presentation of its case is moderate and well argued, and is just such a submission as cannot fail to receive very careful consideration from a Royal Commission. The following is the summary of conclusions given at the end of the statement:

(i) That the interests of efficiency and economy will best be served by making the fewest possible changes in the machinery of local government for some time to come;

(ii) That it is undesirable to concentrate under one authority the whole of the central administrative work whether for the present County of London or for the proposed enlarged county;

[1] Metropolitan Asylums Board: Annual Report for the Year 1921–22. Published from the Office of the Board, Victoria Embankment, E.C.4. (Pp. 176. 5s.)

(iii) That the scheme propounded by the London County Council whether regarded as a whole or so far as it proposes to give any additional administrative work to the Council depends upon—

(a) The devolution upon the local authorities of administrative duties in connexion with education, the setting up of an education department under each local authority, and as a necessary consequence

(b) The reorganization of the boundaries of the local authorities both of the existing metropolitan borough councils and of the authorities in the area proposed to be added to London, and their substantial reduction in numbers.

(iv) That the proposed devolution is undesirable in itself, and would be costly in working; and even if carried out to the fullest possible extent would not make room for all the additional work which the Council propose to acquire.

(v) That the area proposed for Greater London (taking, for example, the Metropolitan Police area—the smallest so far suggested) cannot be regarded as constituting a "town" for purposes of local government, but would be a province, and that an entirely new form of local government would have to be devised for it.

(vi) That so far as the work of the Metropolitan Asylums Board is concerned the changes immediately desirable are—

(a) The representation upon it of the metropolitan borough councils and the London County Council;

(b) The transfer to it of the mental hospitals now managed by the London County Council and of any other institutions which it may be decided to centralize.

(vii) That if further changes are eventually decided upon the setting up of a central Poor Law authority or of a board of public health should be considered.

Scotland.

THE CENSUS OF SCOTLAND, 1921.

County of Aberdeen.

THE county census reports forming part of vol. i of the report on the thirtieth census of Scotland are being issued separately in alphabetical order, so, following the reports of the four great towns (BRITISH MEDICAL JOURNAL for August 26th, p. 399), Aberdeen is the first county to be dealt with.[1] It is amongst the largest and most important, and outside the city of Aberdeen had a population in 1921 of 153,392. Compared with 1911, this is a decrease of 4 per cent., made up of 4,179 males and 2,143 females, totalling 6,322. The highest population recorded was in 1881, when it was 162,801. The area of the county is 1,255,652 acres, so that there are approximately 12 persons per 100 acres. But the county, exclusive of the city, has various burghs, and the burghal population is 1,017 per 100 acres, whilst the non-burghal area averages only 9 per 100 acres. Such figures, it may be noted, have a bearing on the question of medical attendance and mileage allowances in rural districts. In the Deeside district there are only 3 persons per 100 acres, and in the Alford district 5. On a parish basis (some parishes include burghs) there are extreme variations in density. Indeed the term "density" is wisely avoided in the report; "sparsity" would usually be more applicable, but the census confines itself to the phrase per "100 acres." In Fraserburgh parish there are 196 persons per 100 acres, in Peterhead 176, in Inverurie 87 (all these having burghs); at the other extreme, Crathie and Braemar parishes have only one person per 100 acres, Glenbuchat and Strathdon 2, and several others 3 and 4 persons.

Sex and Age.—The ratio of females to males in the county (excluding the city) was 108.4 to 100, as against 105.3 to 100 in 1911. Of the male population 32.9 per cent., and of the female 29.5 per cent., were under 15 years of age. The average age of males was 29.5 years and of females 31.1, as against 27.8 and 29.3 in 1911. Of male children under 15, 9.2 per cent. had lost one parent and 0.6 per cent. had lost both. The 9.2 per cent. is made up of 5.9 fatherless and 3.3 motherless. The orphanhood of female children is similar. Of males aged 15 and over, 50.6 per cent. were married and 6 per cent. widowed. Of females over 15, 45.3 per cent. were married and 10.9 per cent. widowed.

Housing.—The average number of persons per occupied house was 4.7. The number of persons per 100 (windowed) rooms was 107, the lowest on record, the figure in 1861 having been 165; in 1871, 149; in 1881, 139; in 1891, 126; in 1901, 118; and in 1911, 111. This shows a very steady and important improvement in room density, though the position differs in different areas, the statistical worst being Fraserburgh with 161 and Peterhead with 140. Of the total population (excluding the city), 1.9 per cent. live in one-roomed houses, 14.6 per cent. in two-roomed, 24.6 per cent. in three-roomed, 15.1 per cent. in four-roomed, 13.9 per cent. in five-roomed, and 9.7 per cent. in six-roomed houses. These figures are definitely better than those of 1911.

Occupations.—Of the population 12 years old and upwards, 57.8 per cent. had remunerative occupations. The principal occupations, stated as a percentage of the total persons in occupation, were: agriculture, 34.3; personal service, 14.8; commerce (clerks excluded), 6.4; transport and communication, 6.2; wood and furniture, 4.2; making of food, drink, and tobacco, 4.1; fishermen, 4; and professional occupations, 3.8.

County of Argyll.

The population returns of the great but widely scattered West Highland county of Argyll[2] have been seriously affected by the postponement of the census from April 24th to June 19th, there being at the latter date considerable inflation owing to summer visitors, especially in certain localities. The total population was 76,862, or 8.4 per cent. more than in 1911. From 1801 to 1831 the population rose steadily from 81,277 to 100,973; afterwards it gradually diminished to 70,902 in 1911. The burghal population at the 1921 census was 30,111 and the landward 46,751. In the former there was an intercensal increase of 33.9 per cent., but in the latter a decrease of 3.4 per cent. There are six burghs, one of which, Dunoon, a favourite holiday resort in summer, had a June census population of 14,731, being an increase as compared with April, 1911, of no less than 114.8 per cent. The only county district with an increase is Cowal, which adjoins Dunoon. A decrease of 12.7 per cent. in Lorn district is largely explained by an inflation ten years previously of 1,009 men of the Royal Navy. Of the total county population of 76,862, the mainland parishes had 64,242 (12.6 per cent. increase), and the island parishes 12,620 (8.8 per cent. decrease). Omitting two parishes, the mainland shows a decrease from 61,130 in 1831 to 37,176 in 1921—equal to 39.2 per cent. The decrease in the island parishes since 1831 has been from 34,591 to 12,620, or 63.5 per cent.—fully one-third of a mainland loss and nearly two-thirds of an island loss. Indeed, a special recruiting ground of one of the great Highland regiments, the Argyll and Sutherland Highlanders, is sadly affected.

The area of the county is 1,990,472 acres, and the average number of persons per 100 acres is 4. In the burghal portion the average is 914, and in the landward it is 2.

Sex and Age.—The proportion of females to males is 115.5 to 100. In 1911 it was 100.1 to 100, but that census included 1,839 men of the Royal Navy. The average age is 33.6 years—males 32.8, females 34.2, being an increase compared with 1911 of 1.9 for males and 1.5 for females. Of children under 15, 12.6 per cent. had one parent dead, and 1.1 per cent. had lost both parents. Of the male population aged 15 and upwards, 45.5 per cent. were married and 5.6 per cent. widowed or divorced. The corresponding figures for the female population were 39.8 per cent. and 12.5 per cent. The divorced were 10 males and 19 females.

Housing.—The average number of persons per house is 4.59, and of persons per 100 (windowed) rooms 105—a marked improvement on previous censuses. In 1861 the proportion was 181; in 1871, 151; in 1881, 135; in 1891, 121; in 1901, 112; and in 1911, 106. In one-roomed houses there lived 3 per cent. of the population, in two-roomed 22.4 per cent., and in three-roomed 21.1 per cent.

Gaelic Speech.—Gaelic speakers are 32.7 per cent. of the county population, but all these, excepting 0.7 per cent., speak English also. Persons who speak both Gaelic and English have since 1911 diminished by 18.8 per cent. and speakers of Gaelic only by 58.4 per cent. In the islands the Gaelic-speaking population is 77.3 per cent.—a much higher rate than on the mainland, yet a decrease of 11.3 per cent. since 1911. The largest number of persons who can speak Gaelic only are younger children or old people.

Occupations.—Persons aged 12 and over having some occupation were 55.3 per cent. of the population—of males 88.7 per cent. and of females 27.6 per cent. The principal occupations, stated as a percentage of the total persons in occupations, were: agriculture, 22; personal service, 16; transport and communication, 10.2; commerce (clerks excepted), 9.4; metals, 5.7; and professions (clerks excepted), 5.2.

SCOTTISH WAR MEMORIAL.

There is a proposal, for which considerable funds have been collected, to erect a Scottish war memorial on the Castle Rock, Edinburgh. On this subject Dr. John Stevens of Edinburgh addresses us the following letter:

Sir,—With no special claim to criticize the proposed war memorial on the Castle Rock, and without imagination which soars to sky lines, the writer's only comment is that such a large demolition and reconstruction is inopportune in view of the urgent need of dwellings for the heroes. A Scottish war memorial would, however, be more in keeping with present conditions of national finance and public sentiment were it devised actively to promote the well-being and betterment of the people, not least of those who served and suffered in the war and of their dependants.

[1] Vol. I, Part 5, of Census of Scotland, 1921. H.M. Stationery Office, Imperial House, Kingsway, W.C.2. 9s. net, 9s. 2½d. post free.

[2] Report obtainable as for Aberdeenshire. Price 7s. net, 7s. 2d. post free.

The purpose of this letter is to make a suggestion on these lines. It is this:

That, as a thank-offering for deliverance from grave national peril and for the maintenance of freedom, a Scottish fund be raised to place on a secure and enduring basis the provision of trained nursing for all who cannot obtain this benefit for themselves. The establishment of Queen Victoria's Jubilee Institute for Nurses has conferred inestimable blessing on the people of Scotland, but, like the voluntary hospitals, this institution labours under serious financial difficulties. The time is ripe to remedy this as well as to extend the scope of its work.

Let sufficient capital be raised to create a permanent endowment for this institution, which would enable it to provide trained nursing for Scotland adequate to the public requirements, and to continue as a voluntary agency independent of State interference or control. This would constitute a living memorial worthy of Scotland in the highest sense, and it is one which should appeal to the whole population. What investment could yield a comparable return? Such a memorial would form a fitting recognition of all—both men and women—who in any way "did their bit" in the war.

A central building would be required for administrative purposes. This would be the mural evidence of the war memorial, and would bear on its frontage a beneficent answer to the old-world question, "What mean these stones?"

The Queen Victoria Institute for Nurses (Scottish Branch), 26, Castle Terrace, Edinburgh, has for its president and honorary treasurer Princess Louise, Duchess of Argyll. It provides trained nurses for the sick poor all over Scotland. It carries on its work in entire harmony with and under the direction of Scottish medical practitioners, who, we are assured, value very highly the nursing services rendered to their patients. The scope of the work could be greatly extended if funds were available. The institute, which has recently issued an appeal for £27,000, was founded by Queen Victoria, who gave her jubilee gift from British women to improve the nursing of the sick poor. The Scottish council is composed of representatives of a very large number of public bodies, including the medical faculties of Edinburgh and Glasgow, the County and District Nursing Associations, the County Councils' Association, and several trade unions. Its affairs are managed by an executive committee of nineteen persons, of whom four are members of the medical profession; one of the honorary secretaries is Mrs. Chalmers Watson, C.B.E., M.D. All the nurses are fully trained in hospital and have received additional training by the institute to test that they are by temperament and otherwise suitable for district work, and to instruct them in medical work not usually taught in a general hospital but essential to a district nurse. There are at present 450 nurses working from the 315 branches of the institute throughout Scotland.

DR. J. R. CURRIE.

Dr. J. R. Currie, a senior medical officer of the Scottish Board of Health, has been appointed to the Chair of Preventive Medicine in Queen's University, Kingston, Ontario. After graduating M.A.Edin. (1891) he went with a scholarship to Lincoln College, Oxford, and took the B.A. there in 1896 (First Class in Classical Honour Moderations); he proceeded to M.A. in 1910. He resumed his medical education at the University of Glasgow (M.B., Ch.B. with commendation in 1898, and M.D. with high commendation in 1910). While in practice in Birmingham he took the D.P.H. of that University. His early experience of preventive medicine was gained in the sanitary department of the city of Glasgow under Dr. A. K. Chalmers, and in the counties of Stirling and Dumbarton, where he acted in 1906 and 1907 as medical officer of the two counties during the absence of Dr. John C. McVail. In 1909 he was appointed medical officer of health of the city of Chester, and from 1911 to 1912 held the same office in the counties of Fife and Kinross. In 1912 he entered the service of the Scottish Insurance Commission. During the war he held for three years a commission in the R.A.M.C., and saw service in France and Italy. He acted for some months as Chief D.C.M.S. (Scotland) in the Ministry of National Service, while Dr. Norman Walker was C.M.S. On demobilization he returned to duty with the Insurance Commission, and in 1919 he passed into the service of the Scottish Board of Health. He has written a history of medical recruiting in Scotland during the war which will be published shortly.

SCOTTISH BOARD OF CONTROL.

The annual report for 1921 of the General Board of Control for Scotland, which has just been issued, states that there were in Scotland, on January 1st, 1922, exclusive of insane persons maintained at home by their guardians, 18,027 insane persons of whom the Board had official cognizance. Of these 2,975 were maintained from private sources, 14,981 by parochial rates, and 71 from funds voted by Parliament; as compared with the previous year there was a total increase of 221. Excluding transfers, 3,855 patients were admitted to the different establishments: this was 72 more than the previous year and 418 more than the average for the years 1915 to 1919. In addition, 346 persons voluntarily entered establishments for the insane during the year; these persons were not registered as lunatics, and could not be detained for more than three days after giving notice of their desire to leave; 305 private patients (53 less than in the previous year) and 1,005 rate-aided patients (35 more than in the previous year) were discharged as recovered during 1921, and 199 private and 293 rate-aided patients were discharged unrecovered; 1,695 deaths took place during the year, the percentage being 10.1. On January 1st, 1922, there were 2,046 mental defectives on the Board's register, 462 being in certified institutions for adults, 853 in certified institutions for juveniles, and 731 boarded out in private houses.

CENTRAL MIDWIVES BOARD FOR SCOTLAND.

At the recent examination of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, 133 candidates appeared. Of this number 115 were successful and 18 were rejected.

Ireland.

KILDARE COUNTY HOSPITAL.

DR. P. J. WILLIAMS, medical officer of the Kildare County Hospital, in his report to the hospital committee stated that since his last report there had been 115 patients admitted to the County Hospital, and 88 patients were discharged after treatment. During this period seven patients died.

"On this date [Dr. Williams continues] there are 78 patients undergoing treatment. I desire to draw the attention of the Board to the fact that there is absolutely no equipment yet supplied to the County Hospital, not even that necessary for the treatment of urgent accident cases. I referred to this matter in my last report, when an order was made by the Board that the necessary equipment be supplied, but this has not yet been done. Owing to this lack of equipment I am very heavily handicapped in my work. The Board will realize the gravity of this matter when it is pointed out that during the period covered by this report ten urgent accident cases have been admitted. In all of these cases the proper equipment for treatment was not available. In one case of a young child suffering from a complicated fracture of the femur, I was compelled, owing to the absence of the necessary appliances, to requisition the aid of the carpenter in improvising a splint. This was not a satisfactory method of dealing with the case, and is unfair both to the patient and to myself. Furthermore, in an urgent case brought here by the police, notwithstanding the fact that the patient was in a very weak condition from loss of blood, I was compelled to subject him to a further journey to Kildare Infirmary owing to the absence of instruments or appliances necessary for his treatment here. I would suggest the Board give this whole matter their very serious attention, as complete equipment for the hospital is urgently required."

The Committee made an order that the matter should be immediately forwarded to the Local Government Department with a request that it should sanction the necessary articles without further delay.

MEDICAL OFFICERS' HOLIDAYS.

Arising out of the decision of the co. Kilkenny Board of Health to reduce the remuneration of medical locumtenents a meeting of the co. Kilkenny medical practitioners was recently held, when the resolution was unanimously passed:

> That we, the medical practitioners in the County Kilkenny, refuse to do ordinary vacation or sick-leave duty at a smaller fee than £6 6s. a week.

It was also agreed that the fee of £8 8s. a week be charged for temporary duty for the combined offices of Thomastown dispensary district and the county home. The following undertaking was also drawn up and has been signed by practically all doctors practising in the co. Kilkenny:

> I hereby promise not to accept any appointment from any public body unless the terms of the appointment are in agreement with the opinion of the medical profession in the co. Kilkenny and not to act independently of the profession in any matter in which the interests of the profession are concerned.

APPOINTMENT OF A MEDICAL OFFICER.

We have received the following letter with reference to a paragraph published on August 26th (p. 400):

Swanlinbar, co. Cavan.
August 28th, 1922.

SIR,—I notice in your issue of August 26th (p. 400) a note *re* the appointment of the medical officer at Dowra Dispensary District, co. Cavan. Evidently you have not been informed by your Irish correspondent that I at once sent in my resignation to the committee when informed of the true facts of the case.—I am, etc.,
A. J. O'REILLY, L.R.C.S. and P.I.

We congratulate Dr. O'Reilly on the course she has taken. In such matters it is of the utmost importance to maintain the solidarity of the profession.

Correspondence.

THE PLACE OF VERSION IN OBSTETRICS.

SIR,—Your review (August 26th, p. 385) of Dr. Potter's monograph *The Place of Version in Obstetrics* raises a number of interesting questions. Most obstetricians will agree with you that the results quoted are excellent. But while one is compelled to accept the percentages, it does not by any means follow that the method which in his hands gives such results would give the same if universally adopted. It is not, at present, every midwifery case attended in this country which has the advantages of the surgical preparation and the aseptic precautions which are absolutely demanded by version as a routine practice, and I therefore think your criticism is very salutary.

Then, again, while there has been no maternal mortality in 938 cases, what is to be said about the morbidity? It is unthinkable that the morbidity is as low by routine version as by the usual conduct of a labour, because there must be a certain proportion of cases where in any intrauterine interference infection is carried from the vagina by a perfectly sterilized finger or hand or rubber glove. A glove is no guarantee against an infected vagina, and in ideally conducted midwifery cases, of the total number of infections, a large percentage must have their origin in the vagina and not in forceps, etc.

It is not an easy matter to impress students with the vital importance of not attempting to extract an infant rapidly (which usually results actually in prolonged effort) when such an excellent handle for traction is apparently provided by the partially born infant's legs. I should think there is no stronger temptation to the inexperienced in the whole range of midwifery, and to perform version unnecessarily is only inviting this temptation.

Respecting the diagnosis of presentation and position, one can only say that reliance entirely on the sutures and fontanelles is surely somewhat archaic. Almost every case can, by the experienced, be diagnosed accurately by abdominal palpation, and there is no excuse for the repeated vaginal examinations in vogue some years ago. My practice is to examine abdominally about four weeks before term and again a few days before. Such examination reveals that the textbook statements of the percentage of occipito-posterior presentations is far too low; at the same time there are certainly not 60 to 70 per cent. of presentations that are occipito-posterior—at least, not in this country. Without consulting my records I would roughly estimate occipito-posterior presentations at 20 to 25 per cent. Then a further number occur where the head must fairly be described as occipito-transverse, a few of which certainly first rotate to occipito-posterior. If one could be sure that any given case would remain persistently occipito-posterior, version would be an excellent treatment, but there is no means of knowing certainly that such a case will be persistent, and by the time this is certain version is, of course, impossible. I agree that palpation or an ear, if it can be reached easily and if one must diagnose by the vagina, is an absolutely final word on the presentation.

But why internal version? If one decides to do version, external version is, in the majority of cases, quite simple. It is to be noted that when an anterior arm is brought down and the body rotated to bring the posterior arm forward, if the position up to this point has been occipito-posterior it means either that the head is rotated into the opposite posterior occipital position or that the occiput must in all cases be rotated at least a full half circle, which latter is not always easy. If this is always possible there is no object in performing internal version as distinct from external version in order to secure an occipito-anterior presentation of the aftercoming head.

Malposition must always be a somewhat relative term; thus, a slightly more oblique uterus than normal would give a slightly increased tendency to transverse presentation when labour began, but as a fact the majority still remain vertex presentations.

In spite, however, of these criticisms I believe, as does the writer of the review, that the interest in version will be stimulated, for it might with advantage be resorted to more often than it is.—I am, etc.,

W. OSBORNE GREENWOOD, M.D., F.R.S.Edin.

Harrogate, Aug. 28th.

CLAYDEN *v.* WOOD-HILL.

SIR,—Will you kindly allow me to thank the Council of the British Medical Association for the help it gave me, on the announcement of the verdict given against me in the case of Clayden *v.* Wood-Hill? Its offer of legal assistance and its sympathetic attitude I most deeply appreciated.

I owe a great debt of gratitude to Sir Hamilton Ballance and the signatories of the appeal fund, which raised so large a sum (£1,731) to meet the financial loss which the case entailed.

As may be realized, the sum so subscribed has been of the greatest relief to me; but, great as that relief has been, the feature that has given me the more satisfaction is that the leading men of the profession, with so vast a number of my professional brethren—men representative of all parts of the British Empire, and mostly personal strangers—should have rallied so generously to my aid. It bespeaks the view taken by our profession as to the injustice of the verdict. As an expression of good fellowship it is most remarkable. It has been to me a rainbow in a stormy sky.

The practice of our profession calls for courage and confidence; my colleagues have helped me to retain both. They may rest assured that I shall apply my powers, such as they are, conscientiously and in good faith, without regard to fortune, good or bad. "Of good fortune man should not be proud, for it is a present to him; at bad fortune he should smile, for the Fates have singled him out, to try his courage."—I am, etc.,

Beccles, Suffolk, Sept. 2nd. H. WOOD-HILL.

NATIONAL ASSOCIATION OF OPTICIANS.

SIR,—I read with interest Mr. Cyril Jacobs's letter in the JOURNAL of August 19th on the National Association of Opticians, a subject of great importance to all ophthalmic surgeons.

I quite appreciate Mr. Jacobs's feelings, but now that the optician is an established entity it is too late to say, "We do not want this new class of practitioner!" What we must say is, "We do not want this class of practitioner to exceed the limits of his province!" It is quite true that the qualified opticians are actively trying to get State recognition, and I, for one, will welcome the day they obtain it, provided the craft have a definite limitation of activities—namely, sight testing and spectacle making only.

I agree that the movements of the National Association of Opticians need to be carefully watched. It was instituted about 1910; why, I do not know. All opticians rushed to join it without thinking, and at the present time the qualified optician is pretty well disgusted to find that the majority of the members are unqualified by examination, and that they make a prominent display of a certificate as "Member of the National Association of Opticians." This, of course, is misleading to the public. I cannot help feeling that the National Association is very misleading altogether, and if it is not I should like to see its hand exposed.

At present there are two highly estimable bodies which conduct very difficult examinations for opticians—namely, the Worshipful Company of Spectacle-makers and the British Optical Association. The papers set are a revelation in optics, and only those who go through a protracted course of study and who work hard can ever hope to pass, the result being that unqualified opticians far outnumber those who have passed one of these examinations.

Now what happens? The National Association, having in view a probable legal status for opticians, institutes a very elementary examination, compared with the Spectacle-makers' Company and the British Optical Association, and so

enables one who is unable to pass the aforesaid to style himself "qualified by examination." My own view is that this is wrong and altogether undesirable.

Between the unqualified and the qualified there is such competition that one finds innumerable examples of "not playing the game." It is astounding what one does come across in the way of patients being imposed upon.

There is only one solution to the problem, and that is to give the opticians a charter, and bind them down to observe strict etiquette, as in the case of the medical profession. This would act as does the *Dentists Register* and stop any but the qualified practising.

Opticians are now here to stay. No medical man can prevent any of his patients going to an optician to be tested for a pair of glasses, even though he advise them not to do so. It behoves the medical profession therefore to try and get a Register for Opticians, allowing them reasonable privileges. It is a duty also to the public, who are not conversant with the limitations of the optician's skill. The lay person always attributes failing sight to the want of spectacles, and not infrequently visits an optician, often to his detriment.

I have known a qualified optician sell a pair of glasses to a man with double optic atrophy, who was only able to distinguish light. I have also known a qualified optician sell glasses to a girl of 12 years who was suffering from double lamellar cataract, and whose best vision with glasses was 6/36. This girl's mother was told that it was a difficult case, and that the glasses would have to be changed frequently in order to work gradually up to the required strength of lens. Again, I have known an unqualified optician supply frequent changes of glasses to a man with simple glaucoma. This person on examination was found to be blind in the right eye, and to see only 6/36 with the left eye.

The Spectacle-makers' Company and the British Optical Association supply certificates to those who have passed their examinations on the following conditions:

1. That they refer to a medical man all cases of subnormal vision that cannot be brought up to normal with glasses; all cases of squint in school children; all cases of obvious disease.
2. That they do not canvass for spectacles.
3. That they do not use drops for purposes of refraction, except in collaboration with a medical man.

I have known every condition violated by diploma holders. I think it is high time something was done by the medical profession to get an Opticians' Register. This would mean the optician conforming to a definite code of ethics and tend to produce a better class of work; moreover, it would stop the travelling quack optician who goes up and down the country, and who is helped by many newspapers publishing astounding advertisements—a type of optician who is a menace to the public.

There is a growing tendency to teach the optician to recognize fundus disease, and with this I am in agreement, but I do want an assurance that there will be no attempt to treat disease of any kind. If an optician wishes to do more than test refraction, then it is up to him to qualify in medicine and surgery.

What is this movement that is afoot to form a kind of panel with the backing of approved Insurance Societies, in which the optician is to be paid so much for supplying glasses and so much for sight testing? Does the British Medical Association know anything about it?

Now that the matter of optician *versus* oculist has been opened up for discussion I hope it will be thoroughly thrashed out.—I am, etc.,

Middlesbrough, Aug. 21st. J. PARKINSON HIGHAM.

*** The movement referred to in the penultimate paragraph is within the cognizance of the Insurance Acts Committee, and is being carefully watched and dealt with as far as possible.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—In the interesting letter of Sir G. Archdall Reid in your issue of August 26th he says that if he is correct in his reasoning, a single idiot may taint the whole race. That is exactly my contention; therefore the sterilization of mental defectives, although excellent, is not enough. We ought to prevent their advent in the future by sterilizing those who are certain, from pronounced family history, to produce idiots. The strongest argument in favour of my suggestion is heredity. Naegeli calls the hereditary substance represented by the sexual pro-nuclei which fuse together in the act of fertilization by the name of "idioplasm." The resulting germ contains the images of two individuals, and is therefore capable of transmitting by heredity their characters to the individual developed from it. Professor Luciani says that we are forced to admit the hypothesis that the development of the germ does not consist in a new form, or epigenesis, but rather in the transformation of a model or rough sketch into a complete organism, capable, in its turn, of forming a model similar to that from which it was itself derived.

My suggestion means a State certificate of marriage, and the power of withholding it in the case of either the male or the female who refuses sterilization, which would in no way interfere with married life. At the present moment there are over 12,000 registered mental defectives for whom we are taxed. The logical conclusion is that the effect of a State certificate of marriage would be a healthy race, with no necessity for sterilization. But although the majority may agree to this State certificate, it will take a long time to make it law, for the general public, in spite of the natural desire to have healthy children, are indifferent.

I must not further trespass on your space, but may refer anyone interested in the subject to the paper on "Sterility with reference to the State" recently brought by me before the Obstetrical Section of the Royal Society of Medicine, and published in your issue of March 18th (p. 427); the discussion which followed was reported in the same number (p. 438). —I am, etc.,

London, S.W., Aug. 28th. R. A. GIBBONS.

SIR,—In his interesting and instructive letter published in your issue of August 26th Sir Archdall Reid tells us that the statement that acquired characters are (or are not) inherited depends on a misuse of terms. He further declares that the reproduction (not inheritance) of abnormalities (for example, idiocy) is alternate. As this statement is directly contrary to Mendelian teaching, and as Sir Archdall Reid's views on this important subject appear to be entirely unorthodox, it would be interesting if he would tell us why he thinks that the statement that acquired characters are (or are not) inherited depends on a misuse of terms. His reasons for disagreeing with the Mendelians are not apparent.—I am, etc.,

W. BASTIAN,
Portsmouth, Aug. 28th. Surgeon Commander R.N.

SIR,—It would indeed be surprising if it were possible to find a flaw of fact or reasoning in a letter by so erudite a scholar as Sir Archdall Reid on a subject in which he is *facile princeps*. It is only in the last line of his letter that difference of opinion can occur—namely, that the necessary conclusion is sterilization.

Segregation has not so far been properly tried in the case of mental defect, and, although expensive, if our data are correct it should be a steadily diminishing expense, and should be, as it has been put, "a good long-term investment." Taking legislation, of a sterilization type, as against mental defect, I would fear the results to the community of the former more than the latter.—I am, etc.,

Melton, Suffolk, Aug. 28th. JAMES R. WHITWELL.

THE ECONOMICS OF PUBLIC HEALTH.

SIR,—In the discussion (p. 341) on Colonel Fremantle's admirable paper the report might suggest that I said that "too much was being spent on public health services." Such was not the meaning intended at all events. Glasgow was only intended as an illustration, but now we know (see JOURNAL for August 26th, p. 399) that out of a population of over a million over 600,000 persons live in one-roomed or two-roomed tenements. Such a state of affairs passes the comprehension of the most imaginative, but no wonder that Glasgow is a centre of unrest. It all emphasizes the point, however, that large sums of money will have to be spent to remedy these ills, and that from the statesman's point of view economy in spending the money will only be achieved by getting the utmost value for the money spent. This may mean bold and imaginative action; but who can doubt that such action, which would give a large measure of health to all, will really result in immediate economy to the State in lives saved, and a higher quality of life for thousands?—I am, etc.,

Letchworth, Aug. 27th. NORMAN MACFADYEN.

BOTULISM.

SIR,—With regard to the eye symptoms in botulism, I would like to mention the following case:

At midnight on August 8th I was called to see Mrs. C., aged 32. About 6 p.m. she had eaten a portion of corned beef from a three-quarter pound tin, and with it some

tomatoes. About 7 p.m. she had a feeling as if she had been hit on the right side of her head. When she went up to bed at 8 p.m., she fell full length on the bedroom floor. At 10 p.m. she vomited the beef and tomatoes. When I saw her she was hot and flushed; could not raise her head without feeling everything in the room going round. She complained of diplopia. There was very marked nystagmus. She was retching from 2 p.m. till 1.30 p.m. next day. She did not sleep for two nights. There was no diarrhoea. The nystagmus lasted till Thursday, August 10th, and the diplopia till Saturday. On Sunday she could read steadily. On August 26th there was still some pain on the right side of the head, but otherwise she was quite well. I have never seen before such a combination of symptoms. Two children partook of small portions of the same food, but suffered no ill effects. —I am, etc.,

Helston, Cornwall, Aug. 28th. FERDINAND REES, M.D.

SOME CAUSES OF LONGEVITY.

SIR,—It is important that scientists should not be led astray by the popular ideas of the passing day.

In this decade, when men's minds tend to become obsessed with the potency of suitable injections and inoculations, it is well to recall the important problems of dietary in their relation to longevity.

Dr. Smith, the first graduate of the American College of Physicians, who has just died as a centenarian, laid down as his first maxim of extended life and health, "Eat hardly any meat," and as his second, "Drink lots of milk."

My experience in dietetics would lead me to modify and add to these maxims as follows: (1) Eat no flesh food. (2) Drink fresh milk or naturally soured milk, but avoid all milk which is prevented from souring by antiseptic preservatives or by boiling. (3) Use oils freely. (4) Make use of days of abstinence and periods of fasting.

These are modifications of old sanitary laws of dieting evolved by age-long experience and are based upon the principle that the commoner causes of illness and early decease result from the presence of pathogenic organisms in the intestines, whence they become ambulatory and invade other organs, and that an alimentary canal should permanently contain only those organisms that are beneficial to the functions of digestion.—I am, etc,

London, W., Aug. 30th. JOSIAH OLDFIELD.

Obituary.

WE regret to record the sudden death on August 17th of Dr. W. P. WARREN of Enfield from cerebral apoplexy. He was born at Cork in 1860, and studied first at Queen's College and subsequently at Edinburgh and St. Bartholomew's Hospital. He took the diplomas of L.R.C.P., L.R.C.S. and L.M.Edin. in 1882, and the D.P.H. in 1908. He settled in practice at Enfield Highway in 1888, and lived and worked there for thirty-four years. In the course of some years he became the senior partner in a firm of four men who had in their hands the whole medical practice of the huge and now thickly populated district between Waltham and Tottenham. In 1908 he was appointed medical officer of health for Enfield, a post in which he was eminently successful and did most valuable work in the district which came under his care. His personal popularity with his colleagues made them all most eager to help him. He paid special attention to the spread of epidemics, and had a keen gift of tracking down and isolating carrier cases which were helping to spread disease. By his efforts infantile mortality decreased considerably in the district and the general death rate as well; for some years Enfield had the distinction of smaller infantile and general death rates than any other place in London or England and Wales. His wise advice and experience were often sought by his colleagues in cases of outbreaks of infections and were readily and cheerfully given; it is doubtful if there was a medical officer of health in any town or district who was a more general favourite amongst his colleagues. Personally they will all miss him very much; he was *persona grata* at all medical meetings and dinners in the neighbourhood. He filled many posts, such as police surgeon, surgeon to many Oddfellows' and Foresters' lodges, parish medical officer and vaccinator, and was a very eminent member of the Masonic Order. He leaves two sons who worked with him of late years in his practice.

WE regret to record the death of Dr. CLEMENT JOHN BAKER, which took place on August 7th at sea while he was on his way home from Uganda. He had almost completed twenty years in the Uganda Medical Service. He was born at Yoxall Rectory, Staffs, in 1872, and was educated at Bury St. Edmunds Grammar School and Middlesex Hospital. He took the diplomas of M.R.C.S.Eng., L.R.C.P.Lond. in 1893; he was house-surgeon at Middlesex Hospital, and after two years in private practice went to the Boer war as civil surgeon (1901–2). While medical officer at Entebbe he found a trypanosome in the blood of a prisoner, and was the first to announce publicly the discovery of trypanosomes in human beings in Uganda. Dr. Baker was appointed the first chief sanitary officer for the Uganda Protectorate, and held this post at the time of his untimely death. He was a most popular officer, and will be much missed among all classes of the community of Uganda. He leaves a widow, and we extend our sympathy to her, and also to his mother and other relatives.

NINIAN ALEXANDER WILLIAMSON, M.D., late Assistant Surgeon A.M.D., died at Carzield, Kirkmahoe, Dumfriesshire, on August 12th, aged 80. He was born on November 16th, 1841, and entered the army as assistant surgeon on March 31st, 1868, serving for eight years in the 7th Dragoon Guards, or Black Horse, but resigned his commission early in 1877, since when he had resided on his property at Carzield. He took an active part in public affairs, and was, or had been, a member of the Dumfries County Council, of the Kirkmahoe Parish Council, of the Kirkmahoe School Board, and a director of the Crichton Royal Institution, Dumfries. His wife predeceased him some eighteen months ago.

The Services.

AUXILIARY R.A.M.C. FUNDS.

AT the last quarterly committee meeting of the Auxiliary Royal Army Medical Corps Funds grants were made to cases in the Benevolent Branch for the orphans of officers amounting to £500, and grants in the Relief Branch for the widows and children of rank and file amounting to £3167. These funds are for the relief of widows and orphans of commissioned officers and non-commissioned officers and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely disabled in the late war that they need help for the education of children. Requests for relief should be addressed to the Honorary Secretary at the offices of the Funds at 11, Chandos Street, Cavendish Square, W.1.

LECTURES ON DENTAL HYGIENE.

THE Admiralty, with the view of encouraging proper care of the teeth and to maintain a high standard of dental health, has given orders that dental officers are to supplement, by a series of lectures on oral hygiene, the individual instruction given to patients attending for treatment. Suitable lantern slides for lectures will be supplied by the Lantern Lecture Department at the Royal Naval College, Greenwich, and special slides will, if necessary, be prepared from illustrations. The lectures are to be given monthly at the training establishments and dépôts, or as frequently as the commanding officer may consider desirable. All new entries must attend as part of their general instruction; the attendance of other ratings is voluntary.

DEATHS IN THE SERVICES.

Deputy Surgeon General William Howland Roberts, Madras Medical Service (retired), died at Chelsea on August 16th, aged 87. He was born on September 29th, 1834, and educated at Edinburgh, where he graduated as M.D. in 1855. Entering the I.M.S. as assistant surgeon as July 23rd, 1858, he became D.S.G. on July 1st, 1888, retiring on July 1st, 1893. He served in the Burma war in 1886–87, was mentioned in dispatches in G.G.O. No. 424 of 1887, and received the medal.

Colonel James Francis Supple, C.B., R.A.M.C.(ret.), died suddenly at Haywards Heath railway station on August 8th, aged 78. He was born at Waterford on December 14th, 1843, and educated in Dublin, and after taking the L.R.C.S.I. in 1865 and the L.K.Q.C.P. in 1866, entered the army as assistant surgeon on April 1st, 1867. In the regimental days he served in the 1st Foot, the Royal Regiment, or Royal Scots. After thirty years' service he attained the rank of colonel on May 29th, 1898, and was granted the local rank of surgeon general while serving as P.M.O. at the base in Cape Town in the South African war, on November 18th, 1899, retiring on December 14th, 1903. He served under Sir Garnet Wolseley in the Ashanti campaign of 1873–74, in the defence of Foomanah, medal with clasp; in the Afghan war of 1878–80, medal; in the Burma campaign in 1886–87, as senior medical officer of the 6th Brigade, mentioned in dispatches, *London Gazette*, September 2nd, 1887, medal; and in the South African war in 1899–1900, as P.M.O. at the base, mentioned in dispatches, *London Gazette*, April 18th, 1901, Queen's medal with clasp, and C.B.

Lieut.-Colonel Algernon Francis Stevens, Bengal Medical Service, died of cholera at Gaya on August 20th, aged 51. He was born at Arrah in Behar, on August 30th, 1869, the son of the District magistrate, Mr. C. C. Stevens, afterwards Sir Charles Stevens, K.C.S.I., Lieutenant Governor of Bengal. He was educated at Bart's, and took the M.R.C.S. and L.R.C.P.Lond. in 1893, after which he entered the I.M.S. as surgeon-lieutenant on January 29th, 1895, attaining the rank of lieutenant-colonel after twenty years' service. His first five years were spent on military duty. In 1900 he entered civil employ under the government of Bengal and Bihar, and served as civil surgeon of many stations—Arrah, Gaya, Hughli, Ranchi, and others. In October, 1915, he reverted to military duty, at which he remained for the rest of the war, and up till December, 1920, when he returned to civil work. He served in medical charge of the hospital ship *Erinpura* from June, 1916, to December, 1918. His elder brother, Lieut.-Colonel C. R. Stevens, also of the Bengal Medical Service, after also serving in the late war, died on November 18th, 1919.

Lieutenant-Colonel Donald Elcum, Madras Medical Service (retired), died in a nursing home in London on August 11th, aged 69. He was born on May 28th, 1853, the son of Dr. Charles Frederick Elcum, of Cheltenham, educated at Cheltenham College and at Guy's, and after taking the L.S.A. in 1875 and the M.R.C.S. in 1876, entered the I.M.S. as surgeon on March 31st, 1877. He retired as surgeon-major on March 10th, 1895, but was promoted to lieutenant-colonel from October 18th, 1902, for services in England in connexion with the South African war. He served in the Afghan war of 1878–80, medal; in the Burma war in 1886–87, mentioned in dispatches, G.G.O. No. 434 of 1887, medal; and in the war of 1914–19, mentioned in dispatches in *London Gazette* of January 22nd, 1919, and June 5th, 1919. For some years past he had held the appointments of examiner of surgical instruments and extra member of the Invaliding Board of the India Office.

Major Patrick Sampson, D.S.O., R.A.M.C., died at Cricklade on August 30th, aged 41. He was born on January 4th, 1881, the son of M. Sampson, Esq., of Knocklong, Limerick, and educated at Queen's College, Cork, taking the double qualification of the Irish Colleges in 1903, and subsequently their D.P.H. in 1913. Entering the R.A.M.C. as lieutenant on January 30th, 1906, he became captain after three and half years, and major after twelve years' service. He served in the war of 1914–18, was thrice mentioned in dispatches, in the *London Gazette* of December 1st, 1914, February 17th, 1915, and January 1st, 1916, was wounded, and received the D.S.O. on December 1st, 1914.

Captain Charles Leslie Grove Powell, M.C., R.A.M.C., died of heatstroke at Multan on July 18th, aged 30. He was born on February 17th, 1892, and educated at St. Thomas's. He took the M.R.C.S. and L.R.C.P.Lond. in 1915, and immediately entered the R.A.M.C. as a temporary lieutenant on May 7th, 1915, becoming captain after a year's service, and received a permanent commission, ranking as captain from November 7th, 1918. He served in the recent war, was mentioned in dispatches in the *London Gazette* of June 15th, 1916, and received the Military Cross on November 17th, 1917.

Medical News.

DR. F. J. WALDO has received many congratulations on the completion of twenty-one years' service as coroner of the City of London and Southwark. Dr. Waldo, who is a barrister as well as a medical man, was the first medical officer to the Inner and Middle Temples. At its last meeting the Court of Common Council, in order to mark its appreciation of his services, voted Dr. Waldo an annual increase in his remuneration of £150.

AT the opening of the winter session of the Middlesex Hospital on Tuesday, October 3rd, at 3 p.m., the introductory address will be given by Professor Sidney Russ, D.Sc. (Joel Professor of Physics), after which the prizes will be distributed by H.R.H. Princess Alice, Countess of Athlone. The annual dinner will be held at the Trocadero at 7.30 p.m. on the same day. Mr. Sampson Handley, M.S., will preside. Those wishing to be present at the dinner should communicate with the Secretary-Superintendent of the hospital.

THE annual dinner of the past and present students of Westminster Hospital will be held at the Wharncliffe Rooms, Hotel Great Central, on Monday, October 2nd. Mr. Arthur Evans, M.S., F.R.C.S., will take the chair at 7.30 p.m. The secretary is Dr. Adolphe Abrahams, 17, Harley Street, W.

A POST-GRADUATE course in medicine, surgery, and pathology will be held at the Radcliffe Infirmary, Oxford, from October 2nd to October 7th. The course will comprise morning sessions from 10.30 a.m. to 1.30 p.m., and afternoon sessions at 2.30 p.m. and 4.30 p.m. Tea will be provided in the library each afternoon at 4 p.m. A dinner will be held in Queen's College Hall at 7.30 p.m. on October 7th. A limited number of those attending the course may be accommodated in rooms at Queen's College, for which early application should be made to the Bursar, Queen's College. The fee for the course is 4 guineas for practitioners in the hospital area and 2 guineas for new members from elsewhere. Further information may be obtained from the secretaries of the post-graduate course, Radcliffe Infirmary, Oxford.

THE annual dinner of the past and present students of St. Mary's Hospital Medical School will be held at the Connaught Rooms, Great Queen Street, W.C., on Monday, October 2nd, at 7 for 7.30 p.m. The chair will be taken by Sir Leonard Rogers, C.I.E., F.R.S. The secretary is Dr. A. Hope Gosse, 15, Queen Anne Street, W.1.

THE programme of the North-East London Clinical Society for the session 1923–23 has been issued. The opening meeting is arranged for Thursday, October 5th, at 4.15 p.m., when a lantern lecture will be given by Sir Archibald Reid on "The *x*-ray examination of the pyloric end of the stomach and its vicinity." The annual dinner will be held on October 12th, at 8 for 8.15 p.m., at the Prince of Wales Hospital, Tottenham. Subsequent clinical meetings will be held at the beginning of each month from November to June inclusive.

DR. HARVEY CUSHING has been awarded the Charles Mickle Fellowship of the faculty of medicine of Toronto University. He has stipulated, however, that the money, which amounts to 1,000 dollars, shall be used to send a graduate of Toronto University to Harvard to work with him. The Charles Mickle Fellowship, endowed by the late Dr. W. J. Mickle, is awarded annually to the member of the medical profession anywhere who is considered to have done most during the preceding ten years to advance sound knowledge of a practical kind in medicine. The first award was made last year to Professor Pavlov of Petrograd.

THE following courses of lectures and demonstrations will be given during the coming autumn term at the Royal Sanitary Institute: a course for sanitary officers, commencing on September 27th; a course for meat and food inspectors, commencing on October 6th; and a course for women health visitors and child welfare workers, commencing on September 29th. Dr. Louis C. Parkes will give an introductory lecture to the students in the several courses on September 25th at 5.30 p.m. Further information can be obtained from the Secretary of the Institute at 90, Buckingham Palace Road, S.W.1.

THE Post Office has issued a circular stating that it is endeavouring to make up leeway, and is, in particular, actively engaged in developing telephonic facilities in rural districts. It is estimated that out of 3,110 existing exchanges 1,930 serve purely rural districts. In addition the service has been extended in the form of a public call office to 2,250 villages where no exchange exists. Attention is being given to the extension of automatic telephony. Automatic exchanges are already working in sixteen places. The largest automatic exchanges are at Leeds, with 9,600 lines, and Portsmouth, with 5,000 lines. Works are now in hand for converting to the automatic principle the exchange systems at Sheffield, Dundee and Broughty Ferry, Gloucester, Gosport and Brockhurst, Kirkcaldy and Dysart, Shrewsbury, Southampton, Swansea, Torquay, and York, while over thirty other schemes are being developed. The sum of £2,230,000 is being spent this year on the development of the trunk wire system.

THE "European Student Relief" of the "World's Student Christian Federation" has appointed a committee to co-operate with the "Universities' Library for Central Europe," co-ordinating the work of securing by gifts, exchange, and purchase, British books, journals, etc., for students, professors, and libraries in the universities of Central Europe. Donations of books, periodicals, and money will be gratefully received by Mr. B. M. Headicar, Universities' Library and Student Relief for Europe, London School of Economics, Houghton Street, London, W.C.2.

H.M. STATIONERY OFFICE has printed a Consolidated List of Parliamentary and Stationery Office Publications issued from January 1st to May 31st, 1922. In it the net price and the price with postage are both given. Publications issued by the Stationery Office can be obtained through any bookseller, but a bookseller is not always disposed to obtain a copy of one of the shorter papers published at the price of a few pence; it may often be convenient to obtain such a paper by writing to the Stationery Office. Its addresses are Imperial House, Kingsway, London, W.C.2, and 28, Abingdon Street, London, S.W.1; 37, Peter Street, Manchester; 1, St. Andrew's Crescent, Cardiff; and 23, Forth Street, Edinburgh.

THE 50th anniversary of the Society of Serbian Medical Practitioners will be celebrated at the University of Belgrade on September 21st. On the morning of that day there will be a solemn commemoration of medical men who died in the discharge of their duty during the war, followed by an address by the vice-president and an historical statement of the development of the society by the secretary. Afterwards addresses will be delivered by delegates. In the afternoon visits will be paid to various public health institutions in Belgrade, and in the evening a banquet will be held.

PROFESSOR WEIL, who gave his name to the Weil-Felix reaction, has recently died from typhus, which he contracted during his experiments on the disease.

LECTURES on "Health of the Mind and Body—How to Obtain and Preserve it," are being delivered by members of the Medical Council of the People's League of Health at Wormwood Scrubs, Wandsworth, Pentonville, and Holloway Prisons, London. The work has the sanction of the Home Office, and will be extended during the coming autumn and winter to all prisons throughout the country.

THE new Darling Building in the Medical School of Adelaide University, South Australia, was opened recently by Sir George Murray. It is to be devoted to the departments of the fundamental sciences in the faculty of medicine, as there has been inadequate accommodation for the teaching of anatomy, physiology, and pathology. The family of the late Mr. John Darling contributed £15,000 towards the erection of the building. In declaring it open Sir George Murray gave an account of the development of the medical school from the establishment of a lectureship in physiology down to the present extension of the school. The library of the Darling Building will accommodate the library of the South Australian Branch of the British Medical Association, as well as the medical library of the university.

THE courses in the Harvard School of Tropical Medicine, Boston, U.S.A., will begin on September 25th and continue until June 1st, 1923. The courses are open to graduates from recognized medical schools. Properly qualified students (not necessarily graduates of medicine) are admitted to single courses or to any number of courses which they may select from the various subjects offered. The school aims at giving an adequate preparation to those who intend to practise medicine where tropical or exotic diseases may be prevalent or occasionally encountered, to pursue original investigations in relation to exotic disease, and to organize prophylactic measures against infectious diseases. Candidates who are graduates of medical schools of recognized standing, and who have completed the full course in tropical medicine, have passed the required examinations, and have also complied with all other requirements, will be given a diploma in tropical medicine. Applications for admission to the school should be made to the director.

THE first annual balance-sheet of the Barking Hospitals' Welfare Fund shows the excellent results that may be attained by a well-organized system of collecting a penny a week from house to house in aid of the voluntary hospitals. Barking has some 31,000 inhabitants, mainly of the working classes, and its Welfare Fund amounts to over £1,283; of this, £400 has been allocated to the London Hospital, £275 to Poplar Hospital, £100 to St. Bartholomew's, and the balance to eleven other hospitals in varying proportions.

THE Government of Czecho-Slovakia has decided that patients proceeding to Pistany shall, on production of a doctor's certificate, pay half the usual fee for a passport visa.

THE Star and Garter Home for Disabled Sailors and Soldiers, which was established by the British Red Cross Society, and has hitherto been managed by a committee of that society, has recently been constituted an independent charity under a scheme prepared by the Charity Commissioners on the application of the society. It will be administered by a body of governors comprising the former members of the Star and Garter Committee, with the Hon. Sir Arthur Stanley as chairman and Sir William H. Bennett as vice-chairman. The appointment of additional governors is vested in the British Red Cross Society. Field-Marshal Lord Grenfell, Lord Leverhulme, the Mayors of Richmond (Surrey) and Folkestone, and the Chairman of the Sandgate Urban District Council have consented to become vice-presidents.

IT is announced that Engineer Vice-Admiral Sir George Goodwin, K.C.B., late Engineer-in-Chief of the Fleet, and Dr. James Colquhoun Irvine, C.B.E., F.R.S., Principal of St. Andrews University (formerly Professor of Chemistry, Glasgow), have been appointed members of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

THE *Sphinx* has published a special tourist number, entitled *Egypt*, in anticipation of the Cairo season of 1922-23. Among the articles it contains is one recommending the country as the world's winter playground. Dr. Gerald Garry contributes another on Egypt as a health resort, and this, as well as other articles on various aspects of life in Egypt and the Sudan, are copiously illustrated. Copies can be obtained on application to the Secretary of the Egypt Promotion Association, Post Box 930, Cairo, or to tourist agencies in this country.

THE Board of Trade has received a notice of complaint that "acid acetic 80 per cent. grade or higher" has been improperly excluded from the lists of articles chargeable with duty under Part I of the Safeguarding of Industries Act. Any person directly interested should communicate with the Assistant Secretary, Board of Trade (Industries and Manufactures Department), Great George Street, London, S.W.1.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"ALPHA" asks if it would be beneficial and safe for a child of 4 years to sleep in an open-air shelter, about 1,000 feet above sea level, in a Derbyshire district. The atmosphere is at times very foggy and cold during autumn and winter. The child is suffering from tuberculous glands, which have been twice operated upon, and has benefited by open-air treatment in the daytime during the summer.

DR. J. R. BARRISKILL (Sydney) writes, in reply to "Baffled" (April 15th, p. 629), to suggest that if the patient gives up smoking and takes a small dose of a saline laxative in half a tumbler of cold water the foul breath will cease to trouble him.

TREATMENT OF GALACTORRHOEA.

"X." asks for advice as to the treatment of galactorrhoea in a woman aged 24, with one child born twelve months ago. Belladonna, purgation, and dry diet, as well as binding the breasts tightly, have been tried with no marked effect. The quantity of milk varies from 2 to 4 pints a day, sometimes more. Treatment reduces the quantity to half only.

INQUESTS IN WORKHOUSES IN IRELAND.

"R. G. M." asks if a medical officer in charge of a hospital who is notified by the coroner to give medical evidence as to the cause of death at an inquest (in the case of a man killed in an accident and brought dead to the hospital) is entitled to a fee.

*** We are informed that the medical officer of a workhouse hospital in Ireland is not entitled to a fee for inquests held on bodies placed in any part of the workhouse buildings—even when the dead body is brought in from outside for convenience in holding the inquest.

WARTS OF THE SCALP.

DR. JOHN A. FRANCIS (London) writes to suggest that "X. Y. Z." (August 5th, p. 240) might try the following mixture:

R Magnes. carb. lev.	...	...	...	...	ʒiij
Pulv. tragac. co.	...	...	...	...	ʒss
Aq. chlor.	...	...	...	ad	℥viij

ʒj three times a day.

He says that in one case of a man with an uncountable number of warts on the scalp, and in a case of a young woman with the same condition on the face, the warts all disappeared in a few days. The treatment does not seem to have any effect on the ordinary warts on the hand.

INCOME TAX.

"R. W. S." is a partner in a practice in connexion with which a house is occupied of which five rooms are used for the practice and only two bedrooms, the kitchen, and part of one of the five "professional" rooms are used for private purposes. He asks whether he can claim two-thirds of the rent, rates, etc.

*** Yes; two-thirds would seem to be a reasonable proportion in the circumstances. The authorities usually refuse any additional claim based on the ground that the house is more expensive than would normally be required, and there is no clear justification for including any *special* charge on that account. "R. W. S." might, however, put forward the argument that the cost of the professional portion is not less than three-quarters of the total amount paid. In such a claim as this everything turns on the actual circumstances of each case.

"L. D. P." holds an appointment in Government service abroad. He proposes to spend eight months in this country from March 25th, 1923. What income-tax will he be liable for in this country?

*** It is assumed that "L. D. P." does not maintain a residence in this country during his absence abroad, and that the present rates of tax will remain in force for 1922-23. The tax payable would be as follows:

Amount of pay in United Kingdom between April 5th, 1923, and date of departure (say)		£700
Deduct—Earned income allowance	£70	
Personal (married) allowance	£225	
Child allowance	£36	
Dependent relative (say half—*i.e.*, proportion—of £25)	£12 10 0	
		£343 10 0
		£355 10 0
Of which £225 at 2s. 6d. in £ = ...	£28 2 6	
And balance £131 10s. at 5s. in £ = ...	£32 17 6	
		£61 0 0

"T. N. R." bought a secondhand car in 1921 for £140, and sold it in July, 1922, for £90, buying a new light car for £275.

*** The allowable expense is £140—£90—that is, £50; the additional expenditure actually incurred represents capital outlay in improving the equipment of the practice. It should be understood that the expense is taken into account in computing the year's profits, and not deductible in one sum from the average profits of the previous three years.

LETTERS, NOTES, ETC.

Estimation of the Toxicity of Organic Arsenic Compounds.

DR. W. R. G. ATKINS (Marine Biological Laboratory, Plymouth) writes with reference to the difference in toxicity of different batches of the same organic compound of arsenic, which has made it necessary to test the toxicity of each fresh sample by injections, to suggest that since the compounds in question are hydrochlorides of weak bases or sodium salts of weak acids, it may be possible to differentiate between pure preparations and those either originally impure or which have become so through oxidation, by determining the hydrogen ion concentrations colorimetrically. These determinations may be made with rapidity by adding a few drops of a suitable indicator. The results might be correlated with those afforded by the more tedious and costly toxicity tests. The hydrochlorides are customarily neutralized with sodium bicarbonate before injection, but it may be remarked that if subsequently sterilized by boiling, the loss of carbonic acid may result in producing a reaction considerably more alkaline than that of the body (about pH 7.4). In this connexion the results of Williams and Swett (*Proc. Soc. Expt. Biol. and Med.*, 1922, 19, No. 6, 266-268) are of interest. These workers found that several preparations of salvarsan when prepared according to the directions of the manufacturers, ranged from pH 11.53 to 11.99. Silver-salvarsan, pH 10.71; neo-salvarsan pH 8.55 to 9.22. Solutions of glucose were found to be markedly acid, being under pH 5, and normal saline varied from pH 6.4 to 4.95, and it is recommended that they should be brought more nearly to the reaction of the blood by adding mono- and di-potassium phosphates. Williams and Swett state their belief that the difference in the pH value of the injection and the blood is the main cause of sore arms following subcutaneous injections.

Bathroom Dangers.

DR. A. LAPTHORN SMITH writes: In the aggregate many valuable lives have been lost by accidents similar to that which caused the death of the late Sir Arthur Pearson. A leading lay journal has asked whether the medical profession cannot offer some suggestion by which this accident might be prevented. What probably happens in most, if not all, the cases is as follows: The bath is filled with very hot water and the person steps into it, not counting that the bottom is concave and very slippery, so that as soon as his full weight rests on the bottom of the bath it slips from under him and he falls, striking the head on the taps at one end, or on the solid rim of the bath at the other. This stuns him for a few seconds, during which he slides down in the bath and is completely covered, and while in this helpless condition is quickly drowned. Many bathrooms are fitted with an electric bell on purpose to call for help, but naturally this is of no use in such a case. The accident can, however, be prevented by a simple and inexpensive appliance which I have fitted to my own bath—namely, a strong steel hook screwed firmly into a beam in the ceiling immediately over the centre of the bath, from which is suspended a strong piece of rope knotted at the lower end. One soon becomes accustomed to seize this rope firmly in the hand, so that the bather can swing himself into the bath quite independently of his footing on the slippery bottom. It would certainly render impossible such regrettable accidents as caused the death of Sir Arthur Pearson and many other well known and useful people. Another cause of danger to which I think the profession should call the attention of patients is the extremely high temperature at which they, especially women, have accustomed themselves to take their bath. This high temperature draws an enormous amount of blood away from the head and towards the skin. This may produce a fainting spell, and as the water is oftimes much deeper than is necessary the person is easily drowned.

"The Cold-water Doctor."

DR. C. JOYCE (Pinjarra, W. Australia) writes: I was delighted to see the letter by Dr. Thos. Carruthers in your issue of May 13th, p. 786, and to know that others have seen the folly of attempting to administer nourishment which is not assimilated in acute febrile disease. About twenty years ago I began withholding all food in the acute gastro-enteritis of infants. The wonderful success of the plan led me to stop food in any other condition where the digestive function is in complete abeyance. I have been in charge of the Government hospital of seven beds at Pinjarra for nine years. During that time all cases of acute febrile disease have been allowed no food but lemon and orange juice, and are encouraged to drink plentifully of cold water until the appetite returns, which is synchronous with the return to a normal temperature. The results in pneumonia are comparable to the results in diphtheria before and since the introduction of antitoxin: having unfortunately had considerable experience of diphtheria before that happy day, I realize the magnitude of the statement. Until 1918 I had not the opportunity to try the plan extensively in influenza, but I had the unique experience of finding every patient make a complete recovery in that epidemic. I had taken the precaution of warning the public through the medium of the local paper, advising everyone who felt ill to drink water only *plus* a good dose of Epsom salts; consequently all my patients had water only from the inception of the disease. I fully appreciate Dr. Carruthers's remarks about the difficulty of getting the profession to break away from textbook tradition.

Continuous Oxygen Apparatus.

DR. FREDERIC VICARS (Wimbledon) writes: The apparatus described by Dr. Geoffrey Bourne in your issue of July 8th (p. 40) is only an elaboration of a simpler one invented some years ago by my friend the late Dr. George Stoker. This consists of a rubber bag with a capacity of one cubic foot. Attached to it is a rubber tube, and at the further end of the tube is an ordinary rubber teat. The bag is filled with equal parts of oxygen from a gas cylinder and of air introduced by an ordinary spray bellows. The teat is fitted into one nostril and held there by a piece of tape passing over the ears and tied behind the head. The other nostril is plugged with cotton-wool. The bag of diluted oxygen (50 per cent.) gradually collapses under the pressure of a light weight placed upon it. When empty it is refilled as often as necessary. The apparatus is very simple and the results attending its use are very satisfactory. It can be obtained from the original maker—Fellows, chemist, Hertford Street, Mayfair.

Radiotherapy.

MR. H. FLECKER, F.R.C.S. (Melbourne), writes to express his disagreement with a statement in a paragraph published in the BRITISH MEDICAL JOURNAL of May 13th, 1922, p. 776. It gave the substance of a notice with regard to the early treatment of cancer, issued by Dr. C. K. Millard, M.O.H. Leicester. It was said that treatment by radium or *x* rays, though hopeful, is still in the experimental stage, and that "although many alleged 'cures' have been announced, there are none which have so far substantiated the claims made for them." Mr. Flecker is of opinion that no worker who has had actual experience of, or who has actually witnessed, the work done by various radiologists working with high-tension currents of about 200,000 volts, will fail to admit a vast improvement in the results as compared with older methods.

A Class-conscious Conscience.

A CORRESPONDENT tells us that a conscientious objector submitted the following grounds for obtaining exemption of his child from vaccination in a district not far distant from London: "Vaccination is a trick of the capitalist to get the workers' children innoculated so that their brain will not develop so that they will remain serfs."

Vacancies.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 31, 34, 35, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32, 33, and 34.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *108*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

Observations
ON
THE SIGNIFICANCE OF RETINAL HAEMORRHAGES.*

BY
C. O. HAWTHORNE, M.D.Glasg., F.R.C.P.Lond.,
CONSULTING PHYSICIAN, CENTRAL LONDON OPHTHALMIC HOSPITAL.

As, in a generous but perhaps unduly sanguine mood, the Master of the Congress and his colleagues have placed in my hands the responsibility of opening this discussion, I must conclude that in their judgement it will be an advantage to have a statement of the problems affirmed by the existence of retinal haemorrhages as these present themselves in the practice of a physician. The issue arises in two different circumstances: (1) when, in consequence of the discovery of one or more haemorrhages in the retina, there appears the question whether these are of purely local significance or whether, on the contrary, the haemorrhage is an announcement of some diseased condition either affecting the body generally or situated in some more or less remote organ; and (2) when, the patient's health being in one fashion or another admittedly unsatisfactory, the recognition of retinal haemorrhage imposes itself as an additional fact, and one that demands consideration in the discussion of the diagnostic and prognostic aspects of the case. In the one instance the question is, Is there, in addition to the retinal haemorrhage, any other evidence of disease, and if so, what is the relation between the two observations? In the other, What aid or influence does the retinal haemorrhage contribute to the clinical interpretation of the facts taken as a whole? Both in the one position and in the other it is obvious that a retinal haemorrhage in its clinical meaning can be judged only when all the facts—positive and negative—relative to the individual patient have been duly collected and studied; in other words, it is a claim for nothing less than a complete and thorough clinical examination. Not that in this respect retinal haemorrhage stands in a peculiar or exceptional position. On the contrary, it comes under the general rule that, important as an examination of individual organs may be, still more important is the examination of the patient.

The first question in our discussion must necessarily be, May retinal haemorrhage exist without clinical significance? The answer, I think, must be in the affirmative. That is, routine ophthalmoscopic examination now and again discovers retinal haemorrhage in quite exceptional circumstances; and the circumstances are so various, and the event itself so occasional, that it seems impossible to attach to such haemorrhages any precise meaning and value. In my own notes I find records of retinal haemorrhages—few in number and slight in degree—in individual cases of pneumonia, pyonephrosis, malignant disease of the viscera, mitral disease, and ill-defined clinical conditions that had to be content with such an unsatisfactory label as "anaemia." As the routine use of the ophthalmoscope becomes more general under the influence of the conviction that inspection of the fundus oculi is an essential part of every complete clinical examination, it may be anticipated that unexpected retinal haemorrhages in various circumstances will be a more familiar experience.

In a second group of retinal haemorrhages the significance is obvious. I refer to haemorrhages due to violence. Of the consequences of direct violence applied to the eyeball or to the skull I say nothing, as such cases have for many years been outside my experience; nor do I know anything directly of the retinal haemorrhages said to be frequently found in newborn infants. My reference is to what may be called general bodily violence or physical shock without evidence of injury to the head. Retinal haemorrhages may be observed in these cases, and they have this practical aspect—that as the defect of sight to which they may give rise may be postponed or delayed, the responsibility of the violence for this defect is apt to be contested unless the fundus oculi has been examined in an early stage of the case. The experience is one more argument for the routine use of the ophthalmoscope even when no local claim for this procedure seems to exist.

As a third group, I mention retinal haemorrhages so severe as obviously to endanger vision, yet not provoked by violence, and not accompanied by signs of organic disease in other parts of the body. The most characteristic members of this group fall into the class described by Mr. Eales of Birmingham in 1880; the patients, lads or young men, the victims of severe, perhaps recurrent, retinal haemorrhage in one or both eyes, but otherwise apparently healthy though often giving a history of more or less extreme epistaxis. Upon cases of this order I propose to offer three remarks.

First, in Mr. Eales's original records every patient is said to have shown a "trace," or "a faint trace," of albuminuria. Happily no individual observer, I take it, sees many of these cases, but in my own experience, limited in this respect as it is, I have not detected albuminuria, and I suggest the point as one upon which members might give the Congress the benefit of their observations.

Secondly, Mr. Eales described in the retina, in cases that he named examples of "temporary functional albuminuria," "white specks . . . presumably from previous haemorrhages," the patients being males of 11 to 28 years of age. Now albuminuria in apparently healthy persons is a problem often presented to the physician, the question being, Is the albuminuria an expression of mere functional disturbance or is it a signal of organic renal disease? Personally I should say that one of the notes of functional albuminuria is the absence of retinal change, and retinal haemorrhages or "white specks . . . presumably from previous haemorrhages" would make me hesitate at so innocent a diagnosis. There must be, I imagine, many members of the Congress who have been asked to report on the ophthalmoscopic facts in case of albuminuria of more or less uncertain significance, and experiences gathered in this direction would, I am sure, be a valuable contribution to the present discussion.

My third remark is: If the essential note of Eales's disease is retinal haemorrhage unprovoked by violence and unaccompanied by evidences of organic change, then it will be very difficult to confine this name in any scheme of logical classification either to youthful patients or to the male sex. For, undoubtedly, retinal haemorrhage, strictly under the conditions just defined, occurs in middle-aged and even in elderly persons; and some of the victims are women. In other words, while the most extreme and disastrous examples of what may be called spontaneous or unexplained retinal haemorrhages are found in young men, this fashion of haemorrhage is not restricted to the earlier years of life, nor is it confined to the male sex. If a line of division is to be drawn between true cases of Eales's disease and other cases of apparently spontaneous retinal haemorrhage, I ask members of the Congress to say exactly where it is to be drawn. The difficulty is a real one. It is illustrated, to take but a single example, in a paper written some years ago by Mr. Leslie Paton and Dr. Erasmus Paramore, where, in a short series of unexplained haemorrhages, the writers include two women, one aged 27 years and the other 34 years. The point is one that seems to invite discussion.

At first sight it might appear that uncomplicated and unexplained retinal haemorrhage forms purely an ophthalmological problem. But really it is not so. On the contrary, it occupies merely one page of a fairly considerable chapter. For haemorrhages apart from violence, and unaccompanied by appreciable organic change, occur in almost all parts of the body.[1] Epistaxis, for example, without nasal lesion is so well known that its occurrence is little more than a mildly exciting domestic incident; haematemesis does not always mean ulceration of the gastric or duodenal mucous membrane; there are cases of haematuria, not infrequently recurrent haematuria, in which no structural alteration can be found in the urinary passages; even haemoptysis sometimes stands in a similar enigmatic position; and cerebral and cerebellar haemorrhages in adolescents are by no means altogether unknown. Thus retinal haemorrhages existing as an isolated clinical event have their parallels if not their explanation. An explanation is indeed difficult. So far as I have followed the discussion the key seems to have been sought in one direction, and in one direction only—namely, in an attempt to determine an alteration in the coagulation rate of the blood. The results have not been encouraging, for, while on one side it is announced that coagulation is hastened, we hear from other quarters that coagulation is delayed; and the confusion is increased by a

*Introduction to a discussion at the Oxford Ophthalmological Congress, July 6th, 1922.

[1] See Sir Wm. Hale-White, *Lancet*, 1912, i, p. 416; and Professor George R. Murray, *British Medical Journal*, 1913, ii, p. 1521.

third statement to the effect that no departure from the normal can be appreciated. With all respect I dare to say that even were this point finally and authoritatively settled we should still be without an explanation of the haemorrhage. For, while the readiness, or the difficulty, with which the blood coagulates must be a large influence in determining the volume or duration of a haemorrhage, no modification in either of these directions will account for the actual occurrence of haemorrhage. To produce this there must be rupture of vessels, and rupture of vessels, in the absence of violence and of increased intravascular stress—and neither of these factors is in issue here—can only follow changes (nutritional or structural) in the vessel walls. It is therefore in the direction of agencies calculated to damage the walls of the vessels that an explanation of these quasi-spontaneous retinal haemorrhages must be sought. There are here two considerations which may appropriately be borne in mind.

First, it is beyond doubt that the walls of the finer blood vessels are particularly susceptible to the influence of pathological changes in the blood quality; and it would seem that in at least many of these changes each has its special or selected area of mischief. Thus in typhus we get haemorrhages in the skin; in scurvy, in the gums; in Henoch's purpura, in the intestinal wall; in influenza, epistaxis; and in cantharides poisoning, haematuria. Evidently in each of these instances the blood vessels in a particular area have been damaged by a poison that has to the affected vessels a specific pathological relationship. Is it not probable that in similar fashion the retinal blood vessels, or the retinal blood vessels in some persons, may be damaged by modifications of the blood quality that are at present beyond our power of detection and recognition?

A second influence possibly related to these spontaneous retinal haemorrhages is that the blood vessels in different persons possess different degrees of fragility. In some a mere friendly grasp of the arm is followed by ecchymosis, while in others a much greater degree of violence is necessary to produce a bruise. Once again, may it not be that there are individuals in whom the retinal vessels are unduly fragile as the result either of an inherited peculiarity or of an acquired defect, and that upon such vessels minor and perhaps unperceived degrees of violence act with disastrous consequences?

Summing up, therefore, this part of the discussion, I submit the following propositions: That retinal haemorrhages existing as an isolated clinical fact are strictly parallel to other haemorrhages which occur in various parts of the body apart from obvious violence and without appreciable organic lesion; that a departure, even if it exists, from the normal rate of blood coagulation will not account for these haemorrhages; and that the probable explanation is rupture of vessels following damage to their walls, this damage in turn resulting either from some subtle change in the blood quality or from slight degrees of violence—perhaps mere changes in intraocular tension—acting on vessels which for one reason or another are particularly susceptible to the destructive influence of mechanical forces. Possibly it may be suggested that the event immediately antecedent to the haemorrhage is thrombosis; and this may well be true. But thrombosis in its turn requires an explanation, and it may be doubted whether intravascular blood clotting ever occurs in vessels which possess a healthy and undamaged endothelial lining. So that once again there is need for prior damage, nutritional or mechanical, to the vessel wall. Given this, either direct rupture is conceivable, or thrombosis, this latter establishing circulatory conditions which mean a breach in the integrity of the vessel and the escape of the fluid contents into the neighbouring tissues. In a word, whether the rupture immediately responsible for the haemorrhages is direct or is secondary to thrombosis, there is necessary as an antecedent event some preliminary prejudice to the anatomical or physiological values of the vessel wall.

I now propose to find support for the order of events just suggested—that is, damage to the vessel wall, thrombosis, rupture, haemorrhage—in the retinal haemorrhages (a well-known class) consequent on thrombosis of the central retinal vein. I have had the opportunity of examining for my surgical colleagues a considerable number of cases of this order, and with three exceptions (to be mentioned later) the patients have been elderly—50 years and upwards—and have exhibited evidences, and often conspicuous evidences, of cardio-vascular degeneration—thickened and deformed arteries, high sphygmometer readings, left cardiac hypertrophy, and sometimes albuminuria, though rarely convincing signs of nephritis. Here, then, we have manifest and undeniable evidence of structural alterations in the vascular apparatus, and even apart from actual pathological demonstration—and this is by no means wholly wanting—there is a moral certainty that with evident arterial degeneration changes of a similar order will be present in the walls of the veins. Upon such damaged areas clot formation may readily be implanted, with, as a natural consequence, blocking of the circulatory movement, further prejudice to the vessel wall, rupture, and haemorrhage.

It may, however, be said that the argument here presented cannot apply to the occasional cases of thrombosis of the central retinal vein occurring in young persons free from obvious vascular disease and offering normal or approximately normal sphygmometer readings; and it must be admitted that in such cases we cannot claim the overt evidence of vascular disease seen in elderly persons affected by retinal venous thrombosis. On the other hand, it is certain that young persons are not altogether free from the risk of thrombosis, as is seen, for example, in the case of chlorotic girls. Such thrombosis must be either primary—that is, spontaneous—or secondary to changes in the vessel wall at the site where the clot formation takes place. But spontaneous intravascular blood-clotting is, for reasons already given, highly unlikely. Hence it seems necessary to admit that even when objective evidence of change in the vascular structures is wanting the occurrence of thrombosis implies that such change as a fact has actually taken place. In other words, retinal venous thrombosis, in the younger patients as in the elderly, is secondary to some fashion of alteration in the vessel wall. My suggestion, therefore, is that such cases form, as it were, a connecting link between the group of unexplained haemorrhages already considered and the cases of retinal venous thrombosis as this is more commonly seen in elderly patients. In all, I assume as the primary event pathological changes in the vessel walls, and following these changes either direct rupture or thrombosis prior to rupture. The groups, however, differ from one another in the site of the preliminary vascular damage and in the degree of clinical evidence available for the recognition of this damage.

I now pass to retinal haemorrhages—other than those consequent on retinal venous thrombosis—found in association with high sphygmometer readings. Personally I speak of "high sphygmometer readings" rather than of "high blood pressures," for the sphygmometer reading is a fact, whilst its translation into terms of blood pressure involves an inference, and an inference, moreover, which has not wholly escaped an accusation of inaccuracy. If in scientific terminology names having a descriptive quality are selected, clearly they should be descriptive of facts and not of opinions about facts. Our immediate point, however, is the significance of retinal haemorrhages in patients yielding high sphygmometer readings. This group is a fairly considerable one, but its constituent members differ widely from one another both in character and in outlook. At one extreme are cases of renal disease without dropsy—the so-called small white kidney—occurring in young adults, often marked by epistaxis, and leading almost invariably in the course of a few months to a fatal issue. At the other extreme is a single haemorrhage in, say, a middle-aged or elderly patient, possibly destructive of central vision in the affected eye, but, as proved by the subsequent course of events, quite consistent with health and activity prolonged over a considerable term of years. And between these two extremes lie various degrees and gradations of arterial change and various degrees and gradations of renal mischief. In either extreme, as well as in the intermediate cases, retinal haemorrhage may be the first event to attract attention, or the haemorrhage may be found on examination, although the patient has not recognized any visual disability. Does the occurrence of retinal haemorrhage render any substantial assistance in the differential diagnosis or in the prognosis of the members of this large and varied group? I doubt it. Guidance in these directions is to be sought, not in the presence or the absence of retinal haemorrhage but in the state of the heart, the condition of the arteries, and in the efficiency or non-efficiency of the renal excretory functions.

In connexion with this last-mentioned group of cases it is well to remark that high sphygmometer readings, and even very high readings, by no means necessarily involve retinal haemorrhage; indeed, in the majority of cases of this order the fundus oculi is normal, or at least free from haemorrhage;

and this is true even when so disastrous an event as cerebral apoplexy is the commanding fact in the clinical picture. Thus it seems safe to say that retinal haemorrhages are not produced by the "bursting" of healthy blood vessels—or for the matter of that of degenerated blood vessels—under the stress of increased intravascular pressure, even allowing—what is a disputed point—that a high reading obtained from the brachial artery means increased blood pressure within the retinal vessels. Retinal haemorrhages, as I have already argued, mean, indeed, rupture of vessels, but the essential cause of this rupture is, not increased intravascular stress, but degenerative changes in the vessel walls. Support for these propositions is found in yet another group of cases—namely, those in which there is manifest arterial degeneration without high sphygmometer readings; for in such cases retinal haemorrhages may be present—may be present, that is, when, at least so far as the sphygmometer can be trusted, the blood pressure is not abnormal. In other words, high sphygmometer readings—or, if you will, high blood pressures—do not *per se* involve vascular rupture, while vascular disease may lead to rupture even when the alleged measurement of blood pressure is well within normal limits. It is change in the value of the vessel wall that is the necessary preliminary to rupture and haemorrhage, and this change either may or may not be associated with a high sphygmometer record.

Perhaps here I may be allowed a word in appreciation of the work done by ophthalmic surgeons on the pathology and clinical evidences of degenerative disease of the blood vessels. It has helped towards the solution of not a few obscure problems.

Of retinal haemorrhages in glycosuria there is little to be said. They are found, as everyone agrees, not in the typical diabetes of the earlier years of life but in middle-aged or elderly persons with slight or moderate symptoms and non-extreme degrees of glycosuria. They may or may not be accompanied by retinitis. When, as sometimes happens, the glycosuria disappears for a more or less prolonged interval the ophthalmoscopic picture may be a very puzzling one for an observer ignorant of the patient's earlier history. Upon prognosis in glycosuria retinal haemorrhage as such exerts little or no influence; the haemorrhage is quite consistent with active life continued during many years.

In the course of our discussion we are likely to hear of the differences—the diagnostic differences, as some affirm—between retinal haemorrhages in glycosuria and retinal haemorrhages in albuminuria. I admit the interest of the comparison as a subject for ophthalmoscopic contemplation and as an opportunity for the cultivation of the sporting spirit in the art of diagnostic adventure. But the observation has little clinical value. At best the conclusion suggested is a probability, and a probability which no one will say is invariably justified by the event. Moreover, the procedure is an offence against a sound and sensible rule—important in medicine as in law—that second-rate evidence ought not to be accepted when first-rate evidence is available.

I have now briefly to refer to certain clinical situations in which the discovery of retinal haemorrhages has a high practical value, inasmuch as such a discovery may save the practitioner from error and may indicate the route along which an accurate diagnostic conclusion is to be sought. Experiences of retinal haemorrhages as the first clinical event in renal disease, in glycosuria, and in arterial degeneration, are obvious illustrations of this proposition. A few others may be mentioned.

First, a doubtful or ambiguous appearance at the optic disc will be confidently interpreted if the suggestion of a possible commencing optic neuritis is accompanied by one or more small linear haemorrhages. They may require close observation, but once detected there can be no question of their significance.

Next I mention septicaemia and septic endocarditis. Quite a number of such cases are clinically, and for a more or less prolonged period, cases of unexplained temperature—fever without physical signs; and such diagnoses as tubercle, enteric fever, paratyphoid, and *Bacillus coli* infection of the urinary passages come up for discussion; or, again, with the fever are joint pains, and acute rheumatism offers itself as an appropriate label; and once more, in a patient known to be the subject of a chronic valvular lesion occurs an outbreak of febrile temperatures, and a recrudescence of active rheumatism is a tempting explanation. Yet in every one of these instances an ophthalmoscopic examination may promptly and confidently alter both the diagnostic position and the prognostic outlook, for retinal haemorrhages are not to be expected either in tuberculosis, or in enteric fever, or in paratyphoid, or in *B. coli* infections, while in septicaemia and in septic endocarditis they are quite frequent events.

Another disease in which the presence of retinal haemorrhages affords much help is pernicious anaemia. Here again, though rarely I admit, the problem presents itself in the form of unexplained pyrexia, and the anaemia and weakness are readily regarded as consequences of the high temperature, and for this an explanation is sought in the directions already indicated; the detection of retinal haemorrhages in such circumstances is of great practical value. On the other hand, a more or less severe and prolonged anaemia may be attributed to chlorosis, to dyspepsia, to malnutrition, or to some other more or less indefinite influence. The recognition of retinal haemorrhages here ought to sound a note of alarm, for such haemorrhages are frequent in pernicious anaemia, whereas in chlorosis and in secondary anaemias they are either absent or, if occasionally present, are slight in degree, few in number, and confined to extreme and advanced cases. Even a wider generalization may be ventured—namely, that retinal haemorrhages in the absence of renal disease, of glycosuria and of arterial degeneration mean either sepsis or one of the so-called blood diseases, and particularly pernicious anaemia and leukaemia. Rarely they are due to malaria, and very rarely to syphilis; personally, I have not seen them in haemophilia or in Hodgkin's disease, and only once in purpura haemorrhagica. Retinal embolism and thrombosis of the retinal vessels perhaps ought to be mentioned, but in each of these there are in the history and in the ophthalmoscopic examination characteristic facts which reduce the attendant haemorrhages to a purely subordinate position. In addition, the generalization just proposed is qualified by the "unexplained" haemorrhages to which reference has already been made, and by the necessary remark that propositions which pretend to absolute values in the field of clinical medicine, however serviceable for general guidance, are apt now and again to suffer in their dignity by the arrival of events and combinations which contradict them.

In a congress of ophthalmic surgeons it would be gratuitous to insist on the importance of examining each fundus oculi, and yet it may be well to remark that even in so generalized a disease as pernicious anaemia retinal haemorrhages may have, at any rate for a time, a purely unilateral distribution.

Conclusions.

Finally, I submit the following practical conclusions—namely:

1. That retinal haemorrhages may exist without recognized prejudice to vision, and ophthalmoscopic examination is therefore a necessary part of every clinical examination.

2. That such haemorrhages may be the first objective signs of serious disease, and a discovery of them, therefore, demands a complete examination of the patient.

3. That the recognition of retinal haemorrhage is often of high value in directing the observer to a correct interpretation of the clinical facts, while the prognostic significance of the observation *per se* is indeterminate.

4. That retinal haemorrhages do occasionally exist as isolated clinical facts, and when so existing are comparable to haemorrhages in other parts of the body (haematemesis, haematuria, haemoptysis, etc.), for which no ready explanation is at hand.

A METHOD OF REDUCING CONGENITAL DISLOCATION OF THE HIP.

BY

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Reduction of a congenital dislocation, except in very young children, is not always the simple matter described in the textbooks. When the ordinary methods of pulling, lifting, and levering are employed the operator works under mechanical difficulties, and, unless well equipped physically, is likely to fail. So much energy is expended in pulling that proper control over the movements of the head of the femur is lost, and if the help of an assistant be utilized there is often want of complete co-ordination between the manipulators. In any case much energy is wasted. The method here described appears to me to avoid misdirected effort and

to put the movements of the head of the femur completely under the control of the operator. I can find no procedure exactly like it mentioned in the literature, except perhaps Hoffa's "pump-handle" method, but the idea seems so simple that it must have been tried before. Even if it is not new, I can claim to have discovered it for myself.

It requires some strength to pull the head down to the level of the acetabulum, and more strength to maintain it there. It occurred to me, therefore, that it might be much easier to push than to pull, and that if I could, by downward pressure of one hand on the fully flexed knee, push the head below the ill-marked lower rim of the acetabulum, I might with the other hand guide the head into the socket. I was surprised at the control so gained, and at the amount of downward pressure possible.

The method adopted for the left hip is as follows: The patient's sacrum may be placed on a sandbag; the pelvis on the right side must be steadied by an assistant. The knee and hip are flexed, the latter as fully as possible till the knee lies as nearly as can be managed beside the trunk. The right hand of the operator is put upon the patient's left knee and has two functions—first, by downward pressure to push the head towards the acetabulum, and, secondly, by rotation at the knee to direct the movements of the femoral head. The palm of the operator's left hand is placed against the great trochanter with the thumb in front and the fingers on the neck of the femur behind. While downward pressure is maintained with the right hand to keep the head of the femur as low as possible an attempt is made, by lifting with the fingers of the left hand, and depressing the right hand with or without rotation, to put the head below the acetabulum. A little time and some preliminary stretching of the tissues below the acetabulum may be needed, but no great force. The next manœuvre consists in maintaining the forward position of the head while gradually relaxing the pressure on the knee, when the head sinks noiselessly into the acetabulum, often at the first attempt. This done, external rotation at the hip-joint brings the limb into the usual Lorenz position. The thigh should finally be approximately at right angles to the body, and the knee more dorsally placed than the pubic symphysis, so that the head of the femur is fairly prominent in the groin. Reduction should be repeated a few times, noting the degree of prominence of the posterior and superior margin of the acetabulum by the "shock" of redislocation, and the amount of movement possible at the hip-joint without producing redislocation. It will often be found at this stage that reduction has become possible by the more usual method of lifting the head of the femur over the posterior lip of the acetabulum.

The considerations just given appeared at first sufficient in themselves to account for the success of the manœuvre, but an additional explanation of the comparative ease of reduction by this method was afforded by a short but important paper by Mr. A. H. Tubby, published in the *Lancet* of December 20th, 1919, describing an open operation for refractory cases. He emphasized the fact that in older children the ilio-psoas tendon is, after the adductors, the greatest bar to reduction, because it produces a virtual, and in late cases an actual, narrowing of the capsule of the hip-joint where the tendon crosses. This constriction prevents the head from passing through the "button-hole" in the capsule and lodging in the acetabulum. The tendon divides the capsule of the dislocated hip-joint into two communicating cavities—an inner one, of which the acetabulum is a part, and an outer one containing the head of the femur. Full flexion in my method relaxes the grip of the tendon; downward pressure puts the head of the bone to the acetabular side of the relaxed ilio-psoas, and, unless there is real narrowing, relaxation of downward pressure allows the head to enter the acetabulum without the intervention of the folded capsule of the hip-joint. It is important to remember that the success of reduction by this method does not necessarily obviate an open operation, because when the leg is extended the tendon again becomes tight, perhaps sufficiently so to cause redislocation. But that point does not apply to the more limited purpose of this paper.

I have found this method of the greatest value in neglected cases of congenital dislocation. It renders unnecessary long-continued extension of the limb and exsection of portions of the adductors and other muscles. In younger children it may avoid a preliminary division of the adductors. Hence I commend it to all who have encountered difficulties in reduction by the well-established methods.

FRAGILITAS OSSIUM ASSOCIATED WITH BLUE SCLEROTICS.

BY

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[*With Special Plate.*]

THE publication of Dr. J. B. Alexander's paper on "Fragilitas ossium associated with blue sclerotics" in the BRITISH MEDICAL JOURNAL of April 29th, 1922, leads me to report the following series of cases:

Case 1.—L. G., a girl with blue sclerotics, aged 7 years, has been treated in this hospital on different occasions for ten complete and two greenstick fractures. She was first admitted in 1917 when 2 years old, suffering from a fracture of her left femur, and since then has been treated for the following fractures: right femur, six complete and one greenstick; right humerus, two complete; right tibia, one complete and one greenstick.

Case 2.—T. McV., a boy with blue sclerotics, aged 2 years, half-brother of L. G. (Case 1), is at present in hospital suffering from a fracture of his right femur.

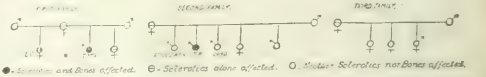
Case 3.—T. R., a boy with blue sclerotics, aged 7 years (cousin of L. G. and T. McV.), has had six fractures of his leg bones. In 1917, when 2 years old, he was admitted to this hospital with his right tibia and fibula broken. Since that time he has been treated for the following fractures: right femur, two complete; right tibia, one complete; left tibia, one complete; right fibula, one greenstick.

These three children are poorly developed and have prominent foreheads. The only other member of the family to which Cases 1 and 2 belong is a female infant, aged 5 months. She also has blue sclerotics.

The broken bones united at about the normal rate. Union was firm, though callus formation was scanty. X-ray photographs showed the cortex of the bones to be excessively thin and the medulla somewhat diffuse. The fathers of these children showed no apparent abnormality.

The mother of L. G. and T. McV. (Cases 1 and 2) has blue sclerotics and has suffered from partial deafness since childhood. She gives a history of having had her right femur fractured on two occasions. The first fracture occurred when 2 years old, and the second two months later. She has seven sisters and two brothers, all younger than herself. None of them suffer from undue fragility of their bones. The three eldest of these are females, and have blue sclerotics. The second member of the family is the mother of T. R. (Case 3).

The relation of these individuals to each other is shown in the following tree:



The points of interest in this series of cases are:

1. The four eldest members of the family have blue sclerotics; the children of the two eldest suffer from fragilitas ossium and blue sclerotics, while the children of the third are apparently normal. The fourth sister, who died some years ago, was unmarried.
2. The great preponderance of right-sided fractures.
3. The leg bones are chiefly affected.
4. The first fracture in each case occurred at 2 years of age.
5. Only one case of deficient hearing.
6. All cases with brittle bones have blue sclerotics, but several cases with blue sclerotics have apparently normal bones.

I am indebted for access to these cases to Mr. S. T. Irwin and Dr. R. J. McConnell, under whose care they have been.

BEFORE the war the birth rate in Germany and the natural increase—that is, the excess of births over deaths—were greater in Germany than in this country. The death rate also was higher. The *Morning Post* has recently published some interesting statistics of the German rates in the second quarter of this year. For the forty-six great towns of Germany the birth rate was 18.5, whereas in England and Wales it was 22.2. For the same period the death rate in Germany was 13.5, and in this country 12.7. The rate of annual increase in England and Wales in the period 1904-13 was 11.2; in the second quarter of this year it was 9.5. In Germany before the war the rate was 15.1, but in the second quarter of this year it was only 5.



FIG. 1.—Electric burn, due to contact of gold ring with transformer.



FIG. 2.—Chrome ulcers after one week's work.





FIG. 3.—Eruption of one week's duration, pustular and scaling, due to yellow chrome.



FIG. 4.—Hyperkeratosis of palm of hand, due to use of a scraper; the patient was a painter.

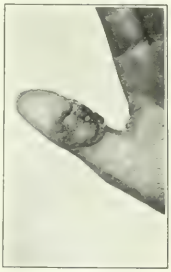


FIG. 5.—Epithelioma of thumb, due to handling a hot iron poker.



FIG. 6.—Purple discrete and confluent papular erythema with adherent crusts; the patient was engaged in filling boxes with phosphorus matches. (Patient was ten months under treatment.)



Right humerus of Case 1.



Structure of bone and sites of fractures in right femur of Case 1.

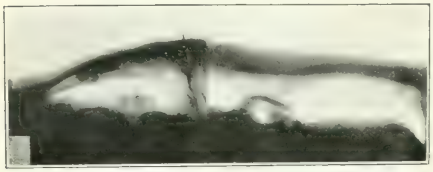


FIG. 1.—Composite radiograph of peritoneal cavity in profile. Note adhesion near needle. Profile of liver is well shown.

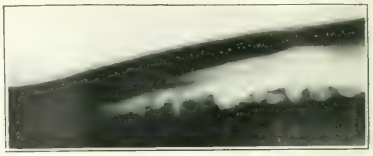


FIG. 2.—Normal lower abdomen seen in profile.

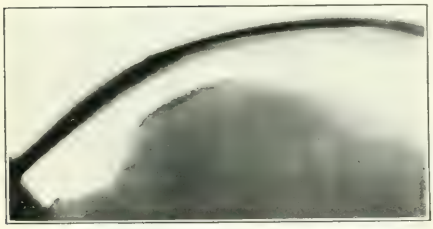


FIG. 3.—Abdominal tumour in profile (Dr. Finzi's case).



FIG. 4.—Calculus, showing one large and five small stones (tube above).

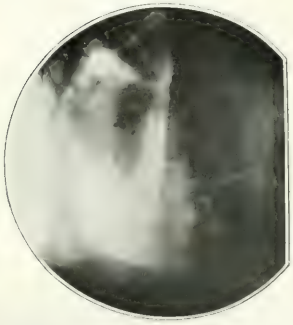


FIG. 5.—Calculus. Same case as Fig. 4, but with tube below. Note that only three small stones are shown in this plate.

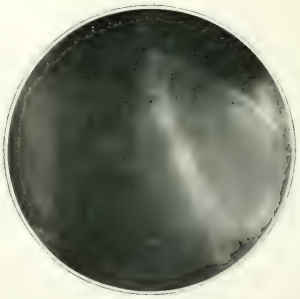


FIG. 6.—Perirenal inflation, showing suprarenal body.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF DERMATOLOGY.
H. LESLIE ROBERTS, M.D., C.M., President.

DISCUSSION ON OCCUPATIONAL DERMATITIS.

OPENING PAPER
BY
W. J. O'DONOVAN, O.B.E., M.D., M.R.C.P.,
First Assistant in the Skin Clinic, London Hospital.

[*With Special Plate.*]

STUDENTS of skin diseases, once they have mastered and appreciated its historic nomenclature, are stimulated in their work by the consciousness that cause and effect are demonstrated before their eyes in a manner paralleled only by the practice of Tropical Medicine. Preventive medicine, the keynote of to-day, is based fundamentally on accurate knowledge of etiology, and I appreciate that the Section in asking me to read a paper on Industrial Dermatitis is really paying tribute to an etiological factor recognized in dermatology but not pursued as it should be in this country, whose civilization and prosperity are now founded on industry.

It is fair to say that my hospital, the London Hospital, is favourably situated for an industrial study, since around it are grouped not one main type of industry, as in a mining centre or a fishing town, but hundreds of separate industries that employ their thousands resident about the hospital. The tonnage of the Thames and the barge transport of the Lea Valley bring within our ambit industries as far apart as fig pulping and explosives making. The proximity of the Home Office, too, is of importance to us in London, since without the kind and constant encouragement of Dr. T. M. Legge the collection of material for this special study would have flagged in the onrush of ordinary but overwhelming hospital dermatological work.

Technique of Study.

In the first place, every man or woman who comes to the skin clinic at the London Hospital is asked his or her occupation—not in general terms, but an attempt is made to find out their actual occupation, what they handle, what is the name of the acid or dye or wood they use, how long they have been at this, and whether other workers are similarly affected. When possible they are asked to bring for inspection a sample of the substances which may be the cause of their lesions, and, but rarely, we have been able to visit the factory, wharf, or workshop concerned. A record in writing is, of course, made of the nature and extent of the lesions, and their present state and progress are recorded by photographs—the only way of saving any skin department from the labour of interminable verbiage and for bearing which expense we (Dr. Sequeira and myself) are most grateful to the Governors of the London Hospital.

Industry is complex and technical, varying trade names cover identical formulae, and years of wide experience have made these details known and appreciated at the Home Office, whose mine of special knowledge I gratefully own is almost inexhaustible. A worker's knowledge of his own industry is often an empty ignorance—"chemicals," "drugs," "red dye" is often all the description he can supply of a substance he has handled for years; hence I have often found it necessary to write to a man's employers, and, should they fail, to the Factory Department of the Home Office, to find out what was the actual dye or other substance implicated.

Industrial dermatitis is not at present a wide field for compensation cases, and therefore truth-telling among workers, their unions, and their employers, is fortunately prevalent at present. Statistics we have not attempted to keep, since to be of value they must be complete and widespread in their survey, and this can only be done by statutory notification. We ourselves make a habit of notifying all our interesting cases to the Home Office, in return for the help we receive and because we realize that these diseases cannot be prevented until their type and prevalence are recognized. We realize that prevention is best left in the hands of experts familiar with factory technique and managerial difficulties, the habits of the workers, and medical administration. I feel that this study is the type of observation on which prevention must be based, but that this prevention is no function of dermatological study.

In this paper I make no references to literature, which in English is very scanty, save for Prosser White's invaluable and pioneer guide-book, now in a second and much improved edition. I propose to attempt to add perhaps a little to knowledge by recording solely my own clinical experiences.

Friction: Hyperkeratosis and Cancer.

Two instances of local palmar keratoses have been seen.

A painter, aged 40, showed a triangular patch of dark, very thick, and fissured skin, having its base along the ball of the right thumb; this he had had for over fifteen years, and of late it had become sore and painful while at work. It was due to the constant, almost daily, use of a scraper held always against the right palm, while working with a blow-lamp in the left. His left hand was unaffected. The Wassermann reaction was negative. Temporary rest and salicylic acid ointment gave rapid relief. (See Fig. 4 in Special Plate.)

Mrs. R. P., aged 48, was a stout woman, by trade a boot-soler. Her work consisted of holding pieces of wet leather in her left hand and hammering it out with a short hammer held in the right hand. The constant rubbing of the short handle caused a great thickening of the palmar skin, which was sore, tender, and rough; its fissures were all deepened, widened, and excoriated, and she was unable to continue her occupation.

The connexion between occupational trauma and carcinoma could hardly be more beautifully illustrated than in the following case.

C. K., aged 65, an alien baker in the East End. For certainly over thirty years he had been employed in a small bakery, and for over ten years had noticed the development of a small wart at the middle joint of his left thumb, where a long and hot iron poker was continually rubbing during his daily work. For the last six months this wart had grown rapidly and ulcerated, and because of occasional haemorrhage he had sought hospital assistance. A microscopic section from the edge (see Fig. 5) showed the growth to be a squamous-celled carcinoma. The patient refused operative relief.

The following is, as far as I can find, a unique case, but perhaps the experiences of the meeting may bring other wedding-ring carcinomata to light.

Mrs. W., aged 78, came to our clinic this year suffering from a squamous-celled epithelioma of the left ring finger; it had existed for twelve months, and extended for half an inch, as a nodular hard growth, above and below a shallow irregular ulcer in the site of her recently removed wedding ring. There were no enlarged lymphatic glands, the finger was amputated and she is now well.

A third case of what I would term friction carcinoma of the tongue.

G. H., a boot repairer aged 48, has repaired boots since the age of 18 and has always when at work held a supply of "brads" or small rivets of iron or brass in the right side of the mouth. He used to work them one at a time forward towards his lips so as to have one always to hand and so save time. For three months the right side of the tongue has been sore and painful. He could protrude his tongue easily and on the right side was a raised, firm, slightly ulcerated tumour, circular in shape, about the size of a shilling; the diagnosis of carcinoma was confirmed by the microscopic finding of prickle-cell processes in the tongue muscle. In addition the surface of the tongue showed a mild condition of superficial glossitis—it was mostly white, glistening, and smooth, with some transverse furrowing; there was no fissuring or erosion of the tongue generally, and it did not resemble the usual advanced syphilitic infiltration of the tongue on which carcinoma is only too common an epiphenomenon, but the Wassermann reaction was positive, and the patient was treated by both operative and anti-syphilitic measures. This is a case of local long-continued trauma producing a carcinomatous overgrowth in a tongue damaged, though slightly, by syphilis. The patient remembered a venereal sore when a young man, treated as a chancre, but not perseveringly.

After syphilis, tubercle.

H. K., a taxi driver, aged 44, has large sheets of long-standing lupus on his limbs, but he developed a carcinomatous ulcer on the front of his left wrist, where for years a lupoid dry patch of skin had

rubbed against the driving wheel. Six months of discomfort drove him to seek medical aid. He died under a general anaesthetic in 1920.

Dermatitis and Dirt.

Contrary to one's expectations dirty work in the ordinary use of the term does not particularly predispose towards dermatitis. Quite the dirtiest factory I ever visited was one employed in the breaking down of used or damaged anti-gas masks. The masks arrived in hundreds often covered with mud, dust, or blood-stained or stinking, and were separated into their components by scores of women without protective appliances or anything like adequate washing facilities. On the day of my visit there was no soap and the towels on view were dripping wet, yet save for an outrageous case of dermatitis artefacta no cases of sore hands occurred at this work. The cleaning and repairing of old sacks gives employment to many women about the hospital, yet only two cases have come before us in which the work could be held to be responsible.

G., aged 32, had an outcrop of large tense bullae on the hands, which was attributed to the work, which the patient said was very dirty. She showed bullae, varying in size from 2 mm. to 3 cm. across, on both sides of both hands, most being present along the outer border of the thumb; a very large one was situated across the centre of the palm. They contained either clear or turbid fluid, and small burst blisters showed adherent impetiginous crusts.

The mending of old oat sacks was attended with very serious ill effects in the case of Mrs. H. H., aged 52, who had worked at this from December 5th, 1917, until early in January, 1920. When seen on January 13th, 1920, the tips of all her fingers were red, sore, and scaling, and on the palmar aspects of her fingers were numerous closely set minute vesicles; all her nail-beds were infiltrated with pus, and she had shed two nails from her left and three from her right hand; no fungus was found on scrapings; red lines of lymphangitis were present on the right forearm with epitrochlear adenitis.

Dirty work is common, yet dirt dermatitis is rare. Coal-mining is dirty work, yet "miners' itch" needs, in addition to coal dust, the maceration of the skin by standing in water at work. At a brass-rolling mills I examined in 1918 over fifty men blackened all over by a deposit of zinc dust sublimated from many crucibles in a room that was an inferno of heat and clouds of opaque metal fumes, yet though these men were unselected and had been at this work for over twelve months, I saw no dermatitis among them; yet by absorption zinc "bends" (or agues) were common amongst them.

Water Rashes.

As a strong antithesis to the above one can say confidently that occupations in which water comes into frequent or prolonged contact with the hands are attended with a very real hazard of dermatitis in either sex at any period of life. The addition of any cleansing agent, whether acid or alkali, adds notably to the risk.

A. P., a healthy male of 21, was a fishmonger's assistant, and had worked at this for over twelve months; he says his hands were constantly in running water but he did not handle brine. His hands when seen had troubled him with itching and soreness for about a week; they presented a beautifully symmetrical eruption of reddened excoriated papules aggregated into irregularly oval areas on the ulnar sides of the backs of both hands. This eruption cleared up in a week of rest from work and the application of calamine lotion, and, without inquiry into his occupation, would have been termed an eczematous dermatitis.

Four weeks later L. D., aged 18, came to the clinic with an eruption very much resembling that of A. P.—similar in distribution on the backs of both of her hands and extending up over the backs of the inner three fingers. Her trouble had come and gone at intervals over three years; during all this time she too had worked in a fishmonger's shop, handling wet fish throughout the day.

It is hard to associate the displayed enamel advertisements on the railway stations with an occupational risk, but the following case is evidence that such a risk exists.

T. W., aged 41, had had no skin trouble until in destitution he accepted the job as a cleaner of these signs; for three months he had been at this work, using as a rule water only, but when the dirt was very adherent it was his habit to add an uncertain amount of spirits of salts to his pailful of cleaning water. This produced an inflammatory reaction extending from the backs of his fingers up both forearms half way to the elbows. The palms and nails were unaffected. About the wrists the skin was red, thickened, excoriated, and scabbed, but as one looked critically farther up the rash resolved into discrete red papules either with an excoriated surface or with a small adherent whitish scale. Here, as is almost the rule in occupational dermatitis, a rapid cure followed rest from work and the application of calamine.

The skins of the young seem particularly sensitive to continuous immersion in water.

Emma M., aged 19, had worked for two and a half months near the hospital washing out jam jars in hot weak soda water. When seen on March 30th, 1920, there were large turbid bullae on the backs of her little fingers and chains of small blisters, some broken, some excoriated and septic, along the contact edges of her other fingers; there was no adenitis and no perionychia in this case.

Among elderly women many find constant employment as scrubbers, and a few develop an eczematous condition of their forearms and backs of the hands and fingers; the skin is reddened and thickened, it shows many erosions and fissures over sites of flexion, but higher up discrete follicles are discoverable. I mention this type of case to sound a warning against their re-employment at this work once their skin has become vulnerable. A well-established eczema of the hand, renewed by an immersion into hot soda water, may put the worker on the sick list for an intolerable period of time; a short dose of x rays is the best means of hastening a cure in indolent cases of this character.

It was in a professional scrubber, Sarah W., aged 48, that I saw at the base of the left palm a prominent oval bursa covered by a thick broad callosity; occupational bursae are not common, and this, though out of place, may perhaps be recorded here.

Two *dental mechanics* have come under my notice: both had lesions similar in appearance and distribution to many other cases of "professional" dermatitis; both showed thickening, redness, fissuring, and scabs on the backs of the hands, knuckles, and fingers of both hands, Mr. A. B. having perionychia of the nail of the left index finger; yet, considered together, they illustrated what appears to be a maxim in industrial dermatitis—namely, that *skin reactions may be constant to varied irritants.* Jessie W., aged 30, handled plaster-of-Paris, rubber, benzine, and "green acids" for cleaning metal plates; whilst A. B., aged 34, handled plaster, rubber, hydrochloric and nitric acids; both may have been reactions to an acid irritant, but benzine is not innocuous, as is shown by the case of Kitty R., aged 19, who had been a golf-ball painter for over six months and who cleaned her hands after work in the naphtha used as a paint solvent: on the backs of both her hands and fingers were circular areas made up of aggregated small red follicular papules with abraded surfaces and small adherent scabs. It took from October 4th, 1919, to December 22nd of that year before these lesions were well, although she was kept from work and the hands were dressed daily with zinc carbonate and lanoline ointment. Naphtha and phosphorus (Fig. 6) appear to give rise to very chronic resistant affections.

The Food Industry.

The food industries that have come before us as cases of dermatitis have been singularly few. Barley, peas, figs, flour, and sugar have been the only agents brought to my notice.

T. S., aged 49, was a case of barley itch. He had been engaged in unloading a cargo of barley from Morocco and had had an itching eruption for about two days; others of his mates were, he said, similarly affected. On both his arms and on the outer sides of his thorax was a heavy outbreak of close-set, large red papules, many unbroken, many with scabbed or bleeding apices. The whole eruption cleared away quickly on the application of 2 per cent. naphthol ointment, but when, three days later, he brought us a sample of the grain no parasites could be obtained.

June is the season of pea picking, and a Romford resident aged 51 came to Dr. Sequeira's clinic on June 30th, 1921, with extraordinarily large bullae on her left elbow and both wrists, due to the irritating effects of the May weed. Although this affection is known in certain localities, and the irritant effects of this plant are known to botanists, yet so unique was it in our experience that Dr. Sequeira published a full and illustrated clinical note in the *Lancet* of September 10th, 1921.

The *Carpoglyphus passularum*, or "sculptor of figs," is not recognized as a parasite of dermatophilic tendencies, and S. S., aged 24, is possibly the only case of this on record. This was a sturdy workman employed in shovelling up a store of figs that were to be made into jam for domestic use. Of twelve workers on this job eight were similarly affected. On June 17th, 1920, on the forearms, backs of the hands, and on his face, were close-set reddish and pink itching papules of small size; they had been present for six days. S. S. kindly brought for us a sample of the figs, which were small and

apparently dusted over with a fine brownish deposit, which on close inspection appeared endowed with movement. Microscopic examination of this dust revealed the fact that it consisted of a countless horde of parasites, many alive, many dead, and many in fragments; larval, pupal, and adult forms could be seen. It is some comfort to reflect that jam, even from cheap figs, is made by a sterilizing process.

My friend Dr. Ingor Willey, who is the medical officer to a very large baking firm, tells me that he has seen many cases of bakers' itch, yet I have seen only one example of this affection; it may be that the condition responds well to simple treatment, and these cases do not reach hospital, for certainly bakeries are numerous throughout the East End and their washing facilities are but moderate. Individual susceptibility appears to play a great part, for my only patient suffering from bakers' itch had two previous attacks, one before and one since the war, and now showed an erythematous condition, of four days' duration, on both his hands, wrists, and forearms, with numerous follicular pustules of the epidermis, which, however, rapidly subsided with repeated fomentations. This man had always worked in a hand bakery, and handled only flour, yeast, and salt, and no preservatives. He was of clean habits, and careful examination in bed revealed no other septic foci. He was very nervous, with glib knee-jerks and tremulous, sweating hands.

Sweets and sweet biscuits are manufactured near the hospital, and there are big sugar refineries close by. The only case of "sugar itch" I have seen was as follows:

A sugar warehouseman, J. P., aged 37, when first seen on May 13th, 1922, had an acutely red inflamed condition of both hands, fingers, and wrists; over the backs of his wrists were numerous linear breaches of the surface, and between the fingers the skin was sour and sodden. By May 25th this eruption had spread to the face and neck, but at the end of another week he was able to cease treatment.

Preservatives and Antiseptics.

The following case was indubitably due to a too zealous use of a stock disinfectant, which indeed the boy admitted:

A boy, aged 15½, had been employed as a barber's assistant for one week, and had been thoroughly lectured as to the necessity for the use of antiseptics. His hands were a bright pink colour, they sweated freely, and were covered on the posterior surface of both hands and fingers with innumerable close-set small clear vesicles; on the palmar aspect of the fingers the vesicles were fewer, and in the palms of the hands were only a few widely separated sago-grain-like nodules. The eruption subsided rapidly on the application of calamine liniment.

Paper that is to be sent abroad is almost invariably passed by a machine through a solution of formalin in water and glycerin; a 4 per cent. formalin solution is usually used. In January of last year my attention was called to a little outbreak at one factory employed in making such paper.

Mary S., aged 23, had been at this work for two years, and says that she has had a rash on and off ever since she was so employed. She *alternates* on this employment, one week on and two weeks off, but during the off time wraps the finished rolls in paper and so is still exposed to formalin, though to a less degree. There was a coarsely papular rash with apical scabs profuse on both wrists behind, together with bad perionychia of the right middle finger and a little about the thumb and middle fingers of the left hand. Ethel C., aged 21, had also tended this process for two years, and alternated, as did all the girls employed on this particular work. There were numerous fissures in reddened skin over the joints of her fingers and thumbs, with a very little reddening about the bed of the right thumb nail. There was much redness, fissuring, scaling, and slight scalding between all her fingers. When seen at the factory her sister showed a milder similar state, and three other girls showed mild cutaneous reactions to their employment—that is, cracking of the skin, soreness of the backs of the hands, or cracks beside the nails.

The inveteracy of formalin dermatitis, and the extraordinary sensitiveness of the skin to this agent once a reaction has been established, is well known by experience in their own person to all histologists. The most careful attention and cleansing of the skin, the application of emollients, the early abstention from all contact when the skin is affected, is a method of relief that should be urged by all doctors who meet with such cases in their industrial practice. At the factory, girls with moist soft palms seemed to experience no trouble, whereas Ethel C., the worst affected, had had a dry ichthyotic harshness of her palms and soles from birth. Ethel C., removed from work and given calamine liniment and a zinc ointment, was well in a month.

G. C. described himself as a "chemical worker," but on further interrogation said that it was his duty to make and fill barrels with a solution of SO_2 in water for sale to fruit preservers. He showed on both his forearms, on the backs of his hands, and to a much less extent on his face and neck, very irritable close-set pink follicular papules of varying size with a little cracking and soreness of the large folds of the palmar skin. His hands were sweating very freely, a point of clinical moment in similar cases arising in dye workers and in the explosives industry.

Oil Dermatitis.

I would preface my remarks on oil rashes by short notes on three recent cases I have seen.

1. G. B., aged 32, is a die and staple maker. His lesions had only troubled him for two days. Both his forearms showed numerous but discrete red papules, many of which have black plugs in their centres.

2. C. O., aged 38, was a skilled tool-setter. He showed several discrete indolent boils on both his forearms of three months' duration; this (May 25th, 1922) was his third attack; previous similar attacks had dated fifteen and eight years previously.

3. L. T., aged 24, was a motor fitter. He came to the hospital first in July, 1920, with boils on his forearms, and the occupational factor was overlooked. He relapsed and came again in November, 1921, with large indolent follicular pustules on both his forearms and extending a little way up his arms. There was slight acne of the face without pustulation.

The distinctions between soluble oils, cutting compounds, cutting emulsions, and cutting oils are technical and need not detain us—they are fully set out in a memorandum of the Department of Scientific and Industrial Research in 1918—save that in the "cutting compounds" free alkali up to 2 per cent. of caustic soda may be present. These substances are used by the hundred gallons in engineering workshops for cooling, lubricating, and cleansing purposes. A report by my assistant, Dr. J. B. G. Skelton, will show how essential it is to have an insight into actual factory conditions in order to come to any opinion whatever as to the causative factors in oil dermatitis—uncleanliness, mechanical injury, and the oil itself all being intertwined. I would like particularly to call attention to the washing arrangements.

"I visited this factory on account of a report from the manager that cases of dermatitis were occurring there. The first two cases that I saw were typical scabies, and the next was a typical impetigo contagiosa. All the other cases consisted of a diffuse erythema over the backs of the hands, between the fingers, and on the under surface of the forearms and elbows. All these cases were occurring in girls cleaning shells with a turpentine substitute, and a diagnosis of oil rash had been made. The girls complained of much irritation and itching of the hands and between the fingers. On examination there was a diffuse reddening of the skin over the backs of the hands and between the fingers, and in some cases along the under surface of the forearms and elbows. The hands and arms of the workers were covered with the dirty oil, and in this oil was embedded a large number of very fine steel filings, easily seen with a lens, and which had been washed from the shells during the process of cleaning with the turpentine substitute. The hands, arms, and in some cases the legs of these workers were covered with oil, and a few had marked dryness of the skin over these areas. The turpentine substitute used contains spirit, but no exact analysis was obtainable.

"I think that there are two factors in the production of these cases: (1) a dryness of the skin due to the spirit in the turpentine substitute, and (2) the irritation and minute abrasions caused by the steel filings which are held on the skin by it. The erythema around the elbows and forearms is accounted for by the girls leaning while at work and thus rubbing in the fine steel particles.

"I saw one case where the skin of both palms and the backs of the hands had desquamated, preceded, so I was told, by the original irritation and redness. At this factory 850 workers are employed. The medical arrangements are looked after by a local doctor, who goes to the factory when required. No preliminary examination is made, and records of cases are kept in book form. The welfare and nursing arrangements are looked after by Miss D., who has under her three nurses.

"In attempting to deal with these cases the washing arrangements are of first importance. There are 21 washbasins in the factory, and roller towels, which were extremely dirty and oily; also there is no soap kept in these washhouses. Tins of antiseptic soap are given to the workers, who are expected to bring them daily. I was told by the welfare supervisor that a very large proportion of the girls do not bring this soap, so that the washing, in a large number of cases, consists of holding the hands under a stream of water and then wiping them on the roller towels. In addition there are three

baths, originally built for the foundry men, but which can be used by the girls on special days during the week. I was told that these were well patronized."

Of another engineering factory I have a note:

The cases I saw were of one type—namely, follicular impetigo affecting the hair follicles over the hands and forearms and in some cases the legs. The arms and hands of these workers were coated with oil and in this oil were embedded large numbers of steel particles (July, 1917). The oil used is very dirty and is only changed about every two weeks. For 360 girls 10 washbasins and 6 very dirty roller towels are supplied. There is no washing accommodation for the men and boys; some of the latter aged 16 work ten hours a day and cannot wash through this period. As the factory conditions seem to me so important in the consideration of oil dermatitis, may I add a third note I made at still another engineering factory?

I visited this factory on Wednesday, September 19th, 1917, to investigate a complaint of poisoned arms among men working on greased wire ropes. The trouble complained of originated in a room about 25 by 10 yards, in which are four (there will be eight) wire-winding units. These units consist of a drum holding a supply of twisted iron wire, which is passed through a box full of a mixture of oil and graphite and then wound on a second drum. Two men are usually at work on each unit hammering and pushing the wire into good alignment and working the various levers. Twenty-five men all told work in this room, and their hands and arms are all covered with this oily composition. Their clothing is protected by boiler suits and mackintosh aprons. There is no washing accommodation for these men. I examined two men at work.

(1) William D., aged 21, had a whitlow on the left forefinger of a week's duration. (2) Frank S., aged 35, had an indolent boil 2 cm. across on his right wrist. Both these cases were badly dressed with soiled rags; metallic particles could be seen in amongst the grease on their forearms and hands. The wire arrives more or less greased from various sources.

It is difficult to find words strong enough to express the lamentable state of the washing and lavatory accommodation for men here. That for the women has been well designed, is conveniently situated, and is sufficient. It consists of a special building with trough and basin facilities for forty workers, under the special charge of one woman, and in addition in the shell-case-making department is a room where five tin basins are supplied on a leaden shelf; but for the 200 and more men employed at this factory a bucket of water is brought up to the wire-rope-winding room, and one basin is provided in the watercloset shed. There is a row of six waterclosets, two only with doors, that suffice for the working staff of this factory. They are situated in a dark lean-to with a muddy earthen floor. For the male office staff and 18 inspectors one watercloset suffices.

In another factory (A. T.) there were in one year twenty-six cases at least of oil dermatitis, three of which developed cellulitis. An irritating erythema, follicular pustulation, acne, and multiple symmetrically distributed indolent boils may result from work involving continuous exposure to oil. It is remarkable, however, in children how few rubbings with camphorated oil will produce grouped comedones with pustulations on the chest, and I have seen an elderly gentleman whose head was covered by large close-set comedones, due to the application for seven years, morning and night, of a pomade he had sent over to him specially from Nice to London.

Dr. McLachlan, in a paper in the *Glasgow Medical Journal* of April, 1922, draws attention on page 217 to the ease with which these cases may be missed; up and down the country they must be overlooked in scores to-day. If work is suspended these cases get well quickly, otherwise it is the experience of many that they are most rebellious to treatment. Dr. McLachlan stresses, and I most emphatically agree, that "the workers' habits are themselves a danger."

Occupational Tinea.

Of these I have seen but two noteworthy cases.

R. S., a labourer aged 47, works at the Victoria Docks unloading hides, and he was sent to the London Hospital by a local practitioner as a case of anthrax. His lesion has existed for fourteen days and when seen was a ringed reddish eruption about 1½ inches in diameter over the base of the left thumb. It was a definite case of tinea circinata—the fungus was found in scrapings.

The case of C. M., aged 36, is a little more startling, however, for he is a barber in the active practice of his art, and he is known to us to have had tinea of his finger-nails since at least 1915. Three nails are affected on his right hand, and only since suppurating eczema has developed have we been able to remove even his right thumb-nail.

Some barbers are greatly troubled by stiff short hairs working under their nails, and find that if these hairs are not pulled out daily with tweezers suppuration quickly follows. On mentioning this to a large farmer recently he took me to see a labourer who cuts up haystacks and stacks of straw and in so doing frequently drives fragments under his nails or lacerates the nail margin. To obviate this he wears leather thimbles when he thrusts his hand through the stacks.

Tar.

"Epitheliomatous ulceration due to tar and pitch, bitumen, mineral oil of paraffin, or any compound, product, or residue of any of these substances" was made compulsorily notifiable to the Home Office in November, 1919. The tar industry is essentially a healthy one, and a far larger proportion of greybeards are found in this industry than in any other I know. I have seen tar cancer develop in the following occupations:

Pickling telegraph poles.	Chemical factory labourer.
Tar distilling.	Gasworks labourer.
Pickling sleepers in creosote.	Pitch bed breaker.
Gasworks stoking.	Barge loader.
Anthracene labourer.	Road sprayer.

I have reviewed all the cases that have occurred at the London Hospital since 1903 to August, 1920. The parallel between tar carcinoma and *x*-ray carcinoma is close and striking. In both, years of occupational exposure are the rule, in both the end is a squamous-celled carcinoma, and both may show, singly or combined, pigmentation of the skin, multiple telangiectases, small keratoses, warts, and often multiple cancerous lesions.

All tar and pitch workers complain of irritation of the skin on washing, and owing to this the older worker in the tar trade is generally a rather dirty fellow; some men will apply whitewash to their face as a protection before commencing the day's work. The tar warts, histologically, are always carcinomatous; warts the size of a pea show epithelial downgrowths with cell nests; yet for years they show a very benign character, having a natural tendency to fall off, leaving white, clean, pit-like scars. It is the habit of many workers to carry about a lump of soda and spit on it and rub it on their warts—when they remember them. Ten to forty years of employment in tar are needed to bring on these epitheliomatous changes, and warts may precede the appearance of any obvious carcinomatous ulcer by anything from two to twenty-five years. The ages of men affected with tar cancer varied in my collection from 33 to 75 years of age, and a feature of interest which I cannot attempt to explain is the latency that these cases may show. I can best illustrate this by an example. T. L., aged 68, had been a railway booking-office clerk for twenty-eight years past; for twenty-eight years before this he had been employed as a gasworks labourer; for the last two years he had a wart on the left side of his scrotum, which grew slowly and was excised as a carcinomatous ulcer in 1908. Bland-Sutton (*Tumours Innocent and Malignant*, 1917, p. 215) mentions a case of soot cancer with a similar clear latent period of thirty-five years.

In order of frequency the sites on which these lesions form were face, scrotum, and forearm, and all sites may be affected in the same patient. I have said that these lesions have a very low grade of malignancy; in a paper on this subject in the *British Journal of Dermatology* in 1920 I stated (p. 14) that in no case had secondary deposits been found in the regional lymphatic glands removed at operation. This year, however, in a case of tar epithelioma of the scrotum, the lymphatic glands were enlarged in both groins, and after the removal of the primary growth continued to enlarge, and one ulcerated through the skin and has every appearance of secondary carcinoma. These tar carcinomata respond extraordinarily well to radium; a growth the size of a shilling will generally disappear after a single sitting of two hours' exposure, though it is advisable to repeat this in six weeks' time. In all respects, save multiplicity of cancerous lesions, anthracene workers carry the same liability and the same favourable prognosis as workers in tar and pitch; these workers need supervision in order that their lesions may be treated in their early stages; to secure this result a quarterly short visit by a practitioner to every tar factory would ensure that no cases were allowed to run on and become incurable. Tar cancer, as far as present knowledge goes, is not preventable, but should not kill.

Dyes.

Of dye dermatitis we see far too many cases. Mostly they occur in young workers, the ages of our last six cases being 28, 18, 19, 20, 24, and 40 years of age. They are fur sewers, fur dyers, or fur dealers. The causal agent is suggested at once by a glistening deep brown staining of their nails and of the pads of their fingers; sometimes the whole hand is brown in colour. Generally their palms are moist and show free perspiration; the lesions produced vary from a general erythema with raised red follicular papules to a gross pompholyx eruption on the palms and fingers with concomitant fissures, impetiginized erosions of the cuticle, and acute perionychia. Subjective symptoms are slight, and if the patient will refrain from work a rapid recovery on simple treatment is the rule. It is not uncommon when the hand lesions are in an acute phase to see an eruption on the face and neck in the form of sheets of scaling erythema. It is difficult to account for the onset of these symptoms except by supposing that after repeated assaults the threshold of tolerance of the cuticle becomes lowered, for many of these workers have been in the industry for from three years upwards. The source of the dye may vary, but never is a whole workroom laid out at any one time.

Susceptibility.

In establishing any new industry having its own health hazard a largely immune body of workers can be secured by eliminating persistently at the first onset of symptoms every worker showing signs of intolerance. A. H., an unskilled labourer aged 32, was employed by a local foreign employer in a small way of business for a week on staining wood with potassium bichromate; the next week he came to us with the stained, ulcerated, and inflamed condition of his hand as shown in the photograph (Figs. 2 and 3). He said that in the last three months twelve men had been sacked by his master for the same misfortune. This sounds ruthless, but, if this stain is to be used, those with susceptible skins must be eliminated, and men who by skill, cleanliness, and extra tolerance can stand this work will stay by this industry. On a large scale this experiment has been worked out in the manufacture of tetryl at Waltham Cross, near London, and at Queensferry, near Chester. At Waltham Cross factory tetryl, a high explosive, had been manufactured for years before the war and had acquired a set of immune skilful workers. Queensferry was started during the war with unskilled labour; its preventive welfare and medical care reached a very high standard indeed, yet the incidence of tetryl dermatitis was appallingly heavy so as to lead to grave difficulties in the obtaining of labour and in appeasing the workers with "danger money" that satisfied their appreciation of the risk to health and limb that they were running. Every new industry has at first a heavy industrial casualty list.

A skilful worker can do a piece of work in much less time and with less distribution of noxious material on himself and on his surroundings than a newcomer to a job; hence it is that adequate instruction in correct methods of work is in itself a great preventive measure against industrial ill health of many kinds. Complete protection is assured when by inventive genius and engineering skill all hand contact is eliminated.

I have collected these cases from many sources, and I owe more than I can express adequately to the assistance and consideration of Dr. J. H. Sequeira.

The chief lesson that I would like to press home is the ever-present need of being alert for an industrial origin in cases of dermatitis of the hands and face; and secondly, that there is little or no specificity in the skin reactions—erythema, pustulation, perionychia, powder holes, and carcinomata may each be due to varied industrial causes, and until the etiological aspect of every case is adequately realized curative and preventive medicine are alike impotent.

DISCUSSION.

Dr. T. M. Legge (Chief Medical Inspector, Home Office) said he had been helped by a classification (for which he did not claim any originality) of the causes of industrial dermatitis as due to (1) certain chemical substances like potassium bichromate, arsenious acid, and certain finished dyes; (2) substances which soften and macerate the skin, such as alkalis; (3) substances which dissolve and remove the natural grease from the skin, like turpentine, petroleum, benzine, benzene and its homologues, and their nitro and amido derivatives; and (4) processes which mechanically injured the continuity of the skin, such as brushing, scratching, and rubbing. In the prevention of these on factory premises much more medical supervision was desirable to prevent secondary infection. With the substances which dissolved the natural fat from the skin he believed in the attempt to restore, as far as possible, the natural lubricant, by the use of an ointment of equal parts of lanoline and castor oil after the work of the day had ceased; and in dermatitis due to unavoidable dust in the air, by the use of powders rather than ointments while at work, so as to introduce a mechanical obstacle against the alighting of the injurious dust. He referred to the specific effect of pitch, tar, and paraffin in setting up irritation of the skin which eventually might become malignant, and to the absence of such effect in the manufacture of bichromates and their use in dyeing and tanning, which also set up intractable ulceration, but showed no tendency at all to malignancy.

Dr. Norman Walker (Edinburgh) said that he had long been interested in occupational dermatitis. It had always been his practice to inculcate on all students the necessity of ascertaining the exact occupation and work of all patients complaining of "eczema." He desired to say how much we had gained by intelligent co-operation with the Home Office. Intelligent co-operation between the workmen and the doctor was also highly desirable, and in certain instances had been very successful in avoiding and preventing the dangers associated with the paraffin industry. In other cases where that co operation had been lacking these dangers had been much more real and had led to serious disasters. He had also been much impressed by the idiosyncrasies of the skins of different patients, some of whom were sensitive to one thing and some to another. He considered this idiosyncrasy a factor of great importance, and he believed that any idiosyncrasy once developed remained permanent for the individual affected. The best fat or grease for use in preventive treatment was also a matter of idiosyncrasy—some did best with lanoline, others with olive oil.

Dr. Frederick Gardiner (Edinburgh) had also been interested in this subject for a number of years. He had found that of all the cases of dermatitis seen by him at least 66 per cent. were cases of occupational dermatitis, but in 14 per cent. the dermatitis was preceded by a definite illness, and 63 per cent. showed a preceding abnormality of the skin—for example, seborrhœa, hyperidrosis, or psoriasis—which no doubt made it more sensitive to the action of the irritant. He had found that slight alterations in the materials used would often cause an outbreak in a workman who had used with impunity for years a formula not very different from the one newly introduced. He had found that there were two types of case: one where the workman became affected as soon as he entered the works, the other where he became affected only after he had been engaged in his occupation for many years.

Dr. G. H. Lancashire (Manchester) said that the possible sources of irritation were legion. He merely desired to mention certain out-of-the-way substances which had come to his notice. One of these was novocain, which he had found to cause dermatitis in a dentist. He did not know of another case of the kind in this country, but it had been previously described in America. He had also seen two cases of "Inecto" dermatitis in barbers. Although it was common enough among women or men who dyed their hair, these were the first cases he had known among barbers.

Dr. Kenneth Wills (Bristol) said that he had had exceptional opportunities of observing linseed oil dermatitis, because the Bristol Infirmary was next door to a linseed oil factory. It was a not uncommon idiosyncrasy. He quoted a remark by Dr. Palmer that it was marvellous how dirty people avoided skin disease; he felt sure that anything tending to dry the skin and make it crack made it more liable to dermatitis; hence he deprecated too much washing. He was interested in the case of barley itch described by Dr. O'Donovan because he had himself met with a small epidemic of barley itch among men employed in unloading a cargo of barley. He had found that it was due to the barbs of a certain weed which had got mixed up with the barley. One other interesting and unique case he had noticed—that of a man whose hands were sensitive to hemp.

The PRESIDENT (Dr. Leslie Roberts, Liverpool) said that many important points had been mentioned by the previous speakers, and he hoped that they would be able to draw some general conclusions from the discussion. For himself, he was of opinion that there was no such thing as a local disease, although there might be a disease confined to a small area. The cause of these eruptions he regarded as twofold: (1) A defect in the external defence—in other words, a defect in the keratin membrane of the skin, which therefore ceased to be a complete protective organ. (In this connexion he desired to emphasize the importance of examining the whole surface of the skin in any patient suffering from dermatitis.) (2) The personal idiosyncrasy of the patient, which he considered chemical. The introduction of foreign proteins into the body from various septic foci was an interference with the chemistry of the skin and reduced its resistance. Also foreign carbohydrates of the di- and poly-saccharide types, ingested with the food, might, since they did not enter into the normal sugar metabolism, sensitize the skin to certain irritants. Hence he thought that the question of diet might form an important part of the preventive treatment of dermatitis. He did not agree with the use of ointments as advocated by Dr. Legge.

DERMATITIS ARTEFACTA.

BY

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A RECENT survey of the literature on this subject leads me to think there may be points still worthy of discussion. Moreover, a more complete type classification may be attempted, and a clearer line of treatment indicated.

In this brief paper I shall exclude the ordinary forms of malingering practised for a definite and reasonable object—evasion of army service and the like—and also cases, of which we have all seen instances, where a man or woman seeks to defraud the Workmen's Compensation Act. As a subdivision of this class may be placed those, of whom I have seen several examples, who artificially stimulate a genuine eruption so as to prolong their stay in hospital. These acts are sane, if immoral, but in the dermatitis artefacta we are considering the bulk of the subjects are approaching or have reached the border-line of insanity.

A fair proportion of the subjects are hysterical, and may show the usual stigmata of that condition, but a number of cases that I have seen have not been of the hysterical or even neurotic type. They have not had the facies or manner suggesting any departure from the normal, and some have even discussed their skin lesions with an engaging frankness that was no doubt meant to be most disarming. On the other hand, the subject may have a sullen expression, with furtive and hang-dog manner when interviewed. The point I wish to make is that manner and expression in these people are not to be relied on for diagnostic purposes in the same way that one relies upon them in other psychopathic conditions.

In a number of cases, as is well known, the suggestion of self-mutilation has come to the patient in the first instance during a genuine attack of skin disease, which has furnished lesions to be copied. No doubt a higher percentage of these cases would be noted could they be seen or traced from the beginning.

I would suggest, as a psychological attempt, the following classification of cases:

Class 1.—Composed in the main of hysterical subjects who mutilate themselves with the definite object of exciting pity and gaining notoriety of sorts. This class comprises individuals who are prepared to go to the utmost limits of their endurance in order to keep up appearances, and some of the worst examples of self-mutilation belong to it. The most extreme case on record is described in *La Presse médicale*, June 10th, 1908:

It is that of a man of 30 who produces black gangrenous patches on his arm by the use of caustic potash. He consults fifteen doctors in turn, and preserves their names and diagnoses, which include trophic skin trouble, neuritis, myelitis, hysteria, syphilis, tubercle, spontaneous gangrene, and so on. He has various treatments, including stretching of the brachial plexus, and finally consents to amputation of the limb. The remaining arm subsequently becomes affected, and about this time he arrives at Professor Dieulafoy's clinic, where the real condition is recognized. The professor talks to the man on sound lines and he is cured.

I believe that with proper handling the prognosis in cases of this class is good.

Class 2 includes a more irrational type, where the motive is indeed hard to find. These people would appear to suffer only to please themselves, and to find a morbid satisfaction in contemplating their own infirmities. They make no effort to secure the pity of others, and are content to play to an empty house. Some of them come definitely within the province of the alienist, and in most cases the prognosis is bad.

Class 3.—In this class motive again would appear to be entirely absent. The patient is not anxious to pose as an invalid, but on the contrary would generally appear ashamed and distressed by the appearance of lesions. There is an entire absence of the self-satisfaction shown usually in Class 1. These cases, of which I have seen several examples, appear to be examples of obsession and sudden uncontrollable impulse. I will briefly quote one instance.

A young lady was brought to me a few years ago by her parents. Her face and neck were much disfigured by oval-shaped excoriations and crusts, all in the same stage of evolution and obviously suggesting factitious dermatitis. The young lady was a professional musician, a hard worker, and anxious for success. I learned that she had had repeated attacks of the eruption, and that these appeared always on the day she was billed to appear at a concert. In a private interview she confessed to me that some uncontrollable impulse made her mutilate herself in this way on the very day that would prove most disastrous for her.

There would appear to be in this type of case something akin to the impulse which drives certain people to jump from a precipice. I find, too, that the victim is relieved when the secret is shared by the doctor, and that subsequently the cases have done very well.

Class 4.—This class has not, I believe, received attention before. I will illustrate it by a recent example.

A young lady, a governess in a private family, was sent to me by her medical man suffering from an eruption on the face and neck, which it was feared might be contagious. The lesions—oval and linear excoriations—appeared to be self-inflicted, and I learned that they were produced by rubbing the skin. I may add that the patient herself appeared quite relieved when she was able to make the confession, for which she had never been asked before. She told me that the rubbing was a pure "habit" and not done with any wrong motive—indeed, she would be very glad to be cured of the practice. After full inquiry I came to the conclusion that this was indeed a simple case of a habit to be placed in the same category as nail-biting.

Diagnosis.

The diagnosis of dermatitis artefacta may be easy or otherwise, according to the skill which the patient has used. People of a low order of intelligence commonly manipulate in the clumsiest fashion, and there is no difficulty in recognizing the hand-made article when one sees a fresh lesion from which a gravity-made streak of corrosive fluid is depending. On the other hand, one sees artefacts which are extremely difficult to certify, and there may be about them merely an undefinable something which rouses one's suspicion. These are, of course, cases which must be carefully watched—perhaps with the skin under a protective covering—before a pronouncement can be made. The main points of diagnosis include the history of the patient and the case, the distribution, shape, and character of the lesions, and especially their uniformity. Suggestion to the patient of a new site for the next eruption is also a useful guide.

Although one sees cases in which chemical irritants and corrosives have been used—acids, alkalis, and so on—in some cases the mildest irritant seems to suffice. I have seen eau-de Cologne produce alarming lesions in one lady, and this probably points to a predisposition, psychic in origin, on the part of the skin. Many cases are the result of simple rubbing, as we know, and it is probable that the same amount of friction in a normal skin, with a normal mind behind it, would give negative results. To pursue the same line of thought, one is reminded of the Nancy experiments where under hypnosis suggestion alone produced eruptions. In fact the whole question is one perhaps more for the psychologist than the dermatologist when once the latter has pronounced his diagnosis. I have referred it to Professor Pear, the distinguished psychologist at Manchester University, who, while much interested in the subject, reports that as yet it does not happen to coincide with the lines along which he has accumulated any special knowledge. He writes:

"From a psychological point of view the interest is, of course, in the nature of the motive, or combination of motives, which bring about the production of such an unpleasant experience. . . . It seems to me quite certain that the motive is of a nature more

complex and probably different in quality from those which actuate an ordinary person. It is quite probable that the whole problem is susceptible of illumination by psycho-analytical methods, and it would be extremely interesting if a dermatologist and a psycho-analyst could co-operate in a case of this kind. Beyond mentioning this I am afraid I have nothing of value to contribute to a subject which interests me very much indeed; except, of course, the reflection that the eternally returning problem of the line between functional and organic is raised again in a very challenging form."

Pernet, at the annual meeting of the American Dermatological Association in 1909, suggested that in some cases of dermatitis artefacta there might be a "dual personality," the patient in his normal state being unaware of his delinquencies. I do not know how far this suggestion may be considered fantastic, but quite recently I saw a lady whom I had attended twenty years ago for this condition, and who still bears many disfiguring scars as a memento. She told me that she had not the slightest recollection of ever mutilating herself, though at the time she used a powerful caustic, producing deep and painful ulcers. I give you her statement for what it is worth.

It is unnecessary to labour the importance of being sure of one's diagnosis. At the meeting of the American Dermatological Association (1909) already referred to, Duhring commented on the few cases he had seen, but recalled cases which had been wrongfully labelled as dermatitis artefacta. My own impression is that probably more cases are overlooked than recognized. As would be expected, more examples turn up in private than in hospital practice, since the condition is more apt to accompany an aimless and idle life in pampered individuals.

Treatment.

As regards treatment I find no unanimity of opinion here. Ormsby (*Journal of the American Medical Association*, November 6th, 1915) does not advise confronting the patient with the charge, but telling her that there is no question whatever of the cause and instructing her as to dressings, etc. In lieu of expert treatment by the psycho-analyst, of which I have no experience, it appears to me that the only commonsense and honest procedure is to tell the patient, in private, that he or she is found out. I believe a *laissez faire* attitude, which, of course, is an easy one, is far too commonly practised. Nevins Hyde said he had always failed to secure a confession from the patient. That has not been my experience; indeed, in some cases relief has been expressed that the secret has been discovered. It would certainly be wrong to publish one's knowledge to the patient's family and friends, and such a course has been known to lead to suicide. But a pact may be made between doctor and patient which should offer success. At times a threat is justifiable—that should the evil practice not cease the parents or others would be informed; this I have seen effective. In this by-way of dermatology there is the greatest call on the doctor's tact and psychological powers, though, as we are all aware, these attributes are by no means needful only in the case of dermatitis artefacta.

ALOPECIA AREATA AND STRABISMUS:

A FAMILY GROUP OF CASES.

BY

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A SERIES of cases of alopecia areata occurring in one family has come under my notice during the last few years, presenting points of interest which appear to justify my making this contribution to the proceedings of the Section of Dermatology.

The family, the majority of whom reside some twelve miles or so from Glasgow, consists of eleven members—father, mother, and nine children. I have seen seven of them. Of the remaining four, two children, both adults, are inaccessible, having emigrated to Canada; the father and one son have not yet responded to my invitation to appear for examination. The following is a very brief history of those members whom I have seen.

Case 1.—Mrs. A., aged 48 years, states that she has suffered from "bilious headaches" all her life. At about 9 years of age a bald patch appeared in the occipital region, as nearly as she can remember, and extended to the whole of the scalp. She remained bald until 15 years of age. The hair then grew again spontaneously. About five years ago a bald patch developed in the occipital region and in both parietal regions, which quickly cleared up under ordinary local medication. On April 30th, 1921, I have this note: "Hair is generally thin, especially over left parietal area. Eye and knee reflexes appear to be normal." Since the age of 40 she has suffered from intermittent increased frequency of micturition. In April, 1921, she was under treatment for "no feeling in hands and head."

Case 2.—Son, aged 19 years. At about 10 years of age a bald patch appeared in the upper occipital region, and extended to the whole of the scalp. He remained bald for four years. After prolonged treatment with the vacuum electrode the hair regrew, save on a small area in the occipital region, which still remained bald on June 21st, 1922.

Case 3.—Daughter, aged 16 years. At about 8 years of age a bald patch appeared in the occipital region. She lost almost all her hair for two years. After ordinary local medication and prolonged treatment with the vacuum electrode the hair regrew and remained for about four years, when two very small bald patches developed. On June 21st, 1922, she appeared to be cured.

Case 4.—Son, aged 13 years. He is a somnambulist, and talks in his sleep. At about 9½ years of age a bald patch appeared at the vertex and extended to the whole of the scalp. Ordinary medication and finally the vacuum electrode were applied. All the hair regrew, but on June 21st, 1922, there had been some relapse.

Case 5.—Son, aged 10 years. At about 9 years of age a bald patch developed at the vertex and several other bald patches followed. Ordinary medication and the vacuum electrode were applied. On June 21st, 1922, there was still some evidence of the disease.

Case 6.—Daughter, aged 29 years. Has never had bald patches. There is a small traumatic cicatrix in the right parietal region.

Case 7.—Son, aged 7 years. No history of bald patches, but when seen on June 21st, 1922, a small area in the right occipital region showed hair of lighter colour and possibly of weaker growth. I am informed by the family doctor that a bald patch subsequently developed.

It will be observed that the disease appeared, in the majority of the cases, in the occipital region. This, however, is based mainly on the mother's evidence, as is the incidence of the affection at from the age of 7 to 10 years.

Mrs. A. states that she has a married son, aged 21, whose hair is thin, but he has never had any bald patches; another son, aged 26 years, whose hair is thin, is in Canada; and a daughter, aged 23 years, who has a good head of hair, is also in Canada. Mr. A., aged 50 years, has never developed bald patches. The family doctor states that none of the family has been under treatment for tonsillar hypertrophy or for postnasal adenoids.

Hairs from the scalp in Cases 1, 3, 4, and 5 were microscopically examined by Dr. G. Haswell Wilson of the University Pathological Department, who also attempted to make cultures on Sabouraud's medium, but failed to discover anything microbic or mycotic by either of these procedures.

It was noticed that several of the patients squinted, and as many members of the family as could be induced to attend the Glasgow Eye Infirmary were examined by Dr. W. Hislop Manson, who kindly reported as follows:

1. Mrs. A., aged 49, strabismus convergens, right.
2. Daughter, aged 16, strabismus convergens, right.
3. Son, aged 13, strabismus convergens, alternating.
4. Son, aged 10, strabismus convergens, right.
5. Son, aged 19, strabismus convergens, left (occasional).
6. Daughter, aged 29, strabismus divergens, right, cum myopia.
7. Son, aged 7, no evident strabismus, but mother states he occasionally squints.

Note.—Nos. 1, 2, 3, 4, 5, 7 suffer or have suffered from alopecia areata. Nos. 1, 3, 5 were completely bald. No. 2 was almost bald.

The first five of these cases have been under treatment for alopecia areata. The sixth has never developed it. The seventh, when seen by me on June 21st, 1922, showed a light-coloured patch of possibly weaker hairs in the right occipital region. I am informed by the family doctor that this seventh case has since developed a bald patch, presumably on the light-coloured thin area just mentioned.

Mrs. A. states that of the remaining three children, one, a married son, squints a little and has thin hair, but no bald patches; another adult son has thin hair, but does not squint; the third, an adult daughter, has no squint and a good head of hair. The family doctor states that Mr. A. has no eye affection except presbyopia, for which he wears + glasses.

From these records it appears that eight of the family, including the mother—and this might indicate an hereditary factor—have shown a pathological condition of the hair, which in six assumed the form of alopecia areata. Seven of these eight persons are strabismic. Mrs. A. states that her last five children are very nervous. All of them developed

alopecia areata. Mrs. A. also says that some of the children did not squint until after beginning to go to school.

Is there a causative factor in these cases common to the two conditions, strabismus and alopecia areata? It might be advanced that their association is merely coincidental. If so, it is certainly coincidence on an unusually grand scale.

With respect to the microbic theory Dr. G. Haswell Wilson's negative findings are against it. Also, were this family scalp condition contagious and the mother the source of infection, one would have expected an incidence earlier than the age of 7 to 10 years in the affected children, and also that the remaining children and the husband would not have continued immune.

In discussing these cases with Dr. Hislop Manson he agreed that the percentage of squinters in the family was large, and stated that the greater strain upon the nervous mechanism controlling convergence and accommodation, after beginning to go to school, might account in some degree for the development of squint where it was deferred until that time. One of the theories of squint is that the equilibrium between the powers of convergence and accommodation is disturbed. These powers are dependent upon innervation.

It will be recalled that there is a possible maternal hereditary influence operating, and also that Mrs. A. suffered at one time from "no feeling in the hands and head," as she described it; also that five of her children are very nervous, one being a somnambulist. All of these squint and have suffered from alopecia areata. Possibly further investigation might elicit other neurotic symptoms.

With evidence such as this it would be difficult to exclude the hair affection from the picture produced by nerve disturbance. Indeed it is strongly in favour of its inclusion as resulting from involvement of the function of trophic nerves. There is possibly some physiognomical suggestion of congenital specific disease in the mother, but I am not aware of any faulty obstetrical history. I doubt if she would submit to a Wassermann test. What the ultimate cause common to these optical and cutaneous manifestations is, if such cause exist, I have as yet been unable to discover.

In conclusion, this group of cases appears to lend strong support to the important part played by the nervous system in the causation of at least some cases of alopecia areata.

My heartiest thanks are due to Dr. G. Haswell Wilson, Dr. W. Hislop Manson, and Dr. John Fotheringham for their very willing co-operation in making these investigations.

SECTION OF RADIOLOGY AND ELECTROLOGY.

LEONARD A. ROWDEN, M.B., C.M., President.

PRESIDENT'S INTRODUCTORY REMARKS.

DR. ROWDEN, after welcoming the Section to Glasgow, from whose university he had himself graduated some thirty years ago, said that there was so much work of real importance before the Section that it would not be right for him to occupy the time with any opening address. There were, however, a few points which he would like to mention for the future consideration of the members. Radiology and electrology had made rapid strides during the past few years and were occupying an increasingly important place in medicine. There was now hardly a single disease in which they were not of service in diagnosis or treatment. There was an ever-increasing demand upon these departments. The question was how such a demand was to be met. Would it be met by private enterprise, or by public institutions such as the large infirmaries, or by some scheme under the national health insurance system? He must leave that for the consideration of others, but he foresaw the danger of the almost complete extinction of the radiologist as a private consultant. The initial cost of plant and the cost of its efficient working were becoming so great as to be beyond the purse of the private practitioner. Another point for consideration was the status of the radiologist and electrologist. He thought that radiologists and electrologists should only give their services to those who were referred to them by other practitioners. He believed that there was a much greater tendency for patients to be referred to the public institutions, more especially by the honorary staffs.

DISCUSSION ON THE X-RAY TREATMENT OF DEEP-SEATED CANCERS,

WITH SPECIAL REFERENCE TO ERLANGEN METHODS.

OPENING PAPERS.

I.—J. R. RIDDELL, F.R.F.P.S.GLAS., L.R.C.P., L.R.C.S.EDIN.,

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THE essential differences between the Erlangen method and the older one in *x* ray therapy lie in the facts that the object in the newer system is to attain homogeneity in the rays used, to administer an equal dose to all the diseased tissues, and to do so at one sitting. The quantity given is predetermined, and is such that it will destroy the diseased but not the healthy tissues; they will be damaged to a greater or less degree according to their *radio-sensibility*, but the quantity must be short of that which will destroy them.

Homogeneity is attained (1) by using rays of very high penetration (short wave-length)—the equivalent to a 16-inch spark-gap between blunt points in air, and (2) by filtration. The thickness of the filter depends to some extent on the apparatus used. For a gas tube and coils 0.5 mm. of zinc is employed. With a Coolidge tube greater thickness is necessary.

Much research has been carried out by several investigators independently to determine just what doses will destroy the diseased cells in various conditions, and the conclusions to which they have come are approximately the same.

The measurement of the dose is regulated by time, which means that the apparatus must be run under standard conditions; any change in the conditions would naturally alter the output, and consequently the time necessary to deliver a certain quantity. The unit propounded by Seitz and Wintz is that quantity of radiation which will produce a slight redness after a week and leave a slight tanning on the skin after a month. This is called E.S.D., and is taken as 100 per cent. On this basis the doses that have been determined are:

	Per cent.
1. To produce the menopause (called the castration dose)	34
2. To destroy sarcoma (the sarcoma dose) ...	70
3. Tuberculosis dose	50
4. To destroy carcinoma (the carcinoma dose) ...	110
5. To damage seriously the bowel	135
6. To damage seriously muscle tissue	180

The problem is to give the full dose to all the diseased tissues, and it is not always possible to do so. It means that the radiologist must attempt to visualize the location of the disease to its extreme limits and include all this area in the dose.

The rays in passing inwards from the surface lose in volume as the distance from their source increases; also they lose by absorption in the tissues through which they pass; on the other hand, they gain to some extent by the secondary radiation which they set up in the tissues. Obviously this secondary radiation will be greater with a large port of entry than with a smaller one. It is thus evident that the estimation of the dose arriving at a given point below the surface is a very complicated one indeed. It is still further complicated by the fact that each tube has its own "percentage deep dose"—that is to say, that two tubes may, to all appearances, be exactly the same, yet it is found experimentally that they do not give the same percentage at a given point beneath the surface; for example, one may give 17 per cent. and the other 24 per cent. To give the full dose to a carcinoma with the former tube it would be necessary to find seven ports of entry (and this would probably be impossible); while with the latter five ports would be sufficient.

The percentage can be improved by increasing the "tube skin distance"; thus a tube giving 15 per cent. at a point 10 cm. deep from the surface when placed 23 cm. away from the skin would give 26.2 per cent. if it were placed 100 cm. away. If at the first distance the time taken to give the "unit skin dose" were thirty minutes, at the last it would be nine hours.

The difficulty in determining how many ports of entry to employ, and at what angle to direct the beam of rays, is great. For example, suppose one is treating a carcinoma of the uterus, and determines to use four ports of entry at 35 cm. "target skin distance," and that each beam gives 26.4 per

cent. at 10 cm. deep—namely, at the centre of the tumour—that point would receive 105.7 per cent., which may be sufficient. But if the two beams from the front are so directed that they overlap at a point 3 cm. beneath the surface, this more superficial point will receive 136.75 per cent.

Now, if bowel happens to be there (and it is quite conceivable that it might be in a thin person) there is every likelihood of damaging it seriously—possibly producing ulceration.

I think I have said enough to show that while there are difficulties arising from the apparatus, such as the standardizing and keeping constant of tubes, the chief difficulty is so to arrange the skin tube distance, the number and sizes of the ports of entry, and the exact direction of the beams, that *all* the diseased tissues receive the full dose of rays, while none of the healthy tissues receive too much.

In the Frankfort clinic an ingenious instrument, known as the "field selector," has been elaborated. I have not seen it, but I imagine it should be of great assistance in this connexion. It is described in the *American Journal of Roentgenology* (June, 1922, p. 343) in the following terms:

> "To make possible a graphic study of each problem we have constructed in the Frankfort clinic a device which we have named a field selector. This consists of a box illuminated with electric bulbs from beneath. Over it is placed a translucent plate of glass upon which are printed certain figures which are used as signals. They are printed in one colour with the different symbols in percentages of strength of colour. A drawing upon a glass plate representing a cross-section of the body and showing the location of the growth is now placed over the illuminated plate on which the symbols are printed. We have prepared a series of celluloid dummies representing beams of *x* rays produced at different voltages and through different values of filters at different distances from the body and of different dimensions of field, on which are shown by decreasing intensity of colour, starting with one hundred at the surface, the percentage depth dose at varying depths. These are stained with the same colour as the symbols printed upon the plate, and when two or more of these dummies are laid upon the diagram in such a way as to cover the lesion, one observes whether the different symbols are visible or whether they have become invisible when viewed through the superimposed celluloid films. The triangles disappear when 30 or 40 per cent. of the standard skin dose is reached in the colour values of the dummies. The quadrangles disappear at 60 to 70 per cent. of the standard skin dose, and the points at 105 to 115 per cent. The danger signals which are represented by the double dots should at all times be visible. When they are no longer visible, then the dose has exceeded 135 per cent. of the standard skin dose, and represents an amount of radiation which will cause a burn."

When the application is to be made to a part where it is not possible to irradiate from different angles—as, for example, the breast—the proper distribution of the dose is obtained by increasing the "target skin distance," thus reducing to a minimum the difference in density between the rays falling on the skin and those reaching the farthest border of the disease.

The necessity of giving the full dose at one sitting is emphasized strongly by Seitz and Wintz. They say that a dose sufficient to kill a cell, if administered at one sitting, is insufficient if it be divided over a number of days, as in the intervals the cell has time partially to recover, and, it may be, even to develop a certain amount of resistance or immunity. Considerable difficulty is sometimes experienced in getting the patient to lie quietly for the long time necessary, and no effort must be spared to have the patient thoroughly comfortable and resting in a relaxed position before beginning treatment. Sometimes vomiting sets in before the dose is completed and makes it impossible to give the full dose at one sitting. The question arises whether a narcotic should be used as a routine. It has not so far been my practice.

Of the patients treated for malignant disease between June, 1921, and May, 1922, 52 suffered from carcinoma and 8 from sarcoma. The parts affected were the breast, bladder, vulva, uterus, mouth, prostate, rectum, abdomen, larynx, neck, tonsil. It is unnecessary for me to say that the time is yet too short to speak of results except in the most tentative sense, but the immediate effects are very striking indeed, and I am of opinion that with greater experience even greater benefits will be obtained.

The results here reported are not so favourable as those reported from Germany. This is to be accounted for—at least in part—by the fact that in Germany patients are subjected to the treatment at a much earlier stage of the disease than in this country, and, owing to the longer time for which the method has been in use there, the operators are more experienced in the technique.

In the 16 cases of *disease of the breast*, whose histories I give below, the results are: In three the treatment failed entirely. In three there was great improvement (two have since died). In nine the evidences of the disease have disappeared—that is, in 56 per cent. all sign of the disease is gone at present; these were all severe cases. In two only there had not been a previous operation; the rest were recurrences, and all were inoperable. Of the 16 three should perhaps not have been treated; they were apparently hopeless from the beginning. Excluding these, the evidences of disease disappeared in 69 per cent.

Of the three patients suffering from malignant disease of the *bladder*, one should perhaps not have been treated, as she was too ill. The other two have greatly improved but are not yet well, both having suffered from a haemorrhage some months after the treatment was stopped. Both have had further treatment recently and appear to be well at present.

Of the five *uterine cervix* cases three should not have been undertaken on account of the extensiveness of the disease. (One of these was treated for the relief of pain only.) Of the two remaining one is apparently well, and the other very greatly improved. She is still under treatment.

Of the five *rectal* cases the disease was so extensive that complete recovery could not be expected, but three have very greatly improved.

Keeping in mind what I have already said regarding the shortness of the time covered by these notes, and the small numbers, and avoiding the use of the word "cured"—to use which under the circumstances would be unwise—I think a fair impression of the effects of the treatment in the cases reported may be got by tabulating them thus:

1. In 30 per cent. of all cases all evidences of the disease have disappeared.
2. If one excludes the cases that were apparently hopeless from the beginning the figure is raised to 41 per cent.
3. In 52 per cent. the benefits secured were very great in the way of relief from pain or discomfort, and of the patient being enabled to return to a more or less ordinary mode of life.
4. Excluding from the breast cases those that were hopelessly ill, 69 per cent. have shown complete disappearance of all evidences of the disease.

The author then gave detailed summaries of fifty cases, including breast tumours, malignant disease of the bladder, cervix, and rectum, and of the tonsils and larynx. He concluded as follows:

It will be seen that a number of cases were treated which appeared to be hopeless from the beginning, but these were undertaken, not with any hope of cure, but simply to relieve pain and the more distressing symptoms.

Finally, it cannot be too strongly insisted upon that it is impossible to attain any degree of success by this method unless one is prepared to spend much time and labour on details. The technique is difficult and requires constant attention. In the English translation of Völtz's valuable tables, edited by Dr. Reginald Morton, this point is emphasized, as the following extract shows:

> "Probably the greatest danger to the future of the method lies in its being taken up by those who are unable or unwilling to give the time and skill necessary for its proper performance. The best results will be obtained only by those who devote themselves to this work to the exclusion of everything else."

II.—J. H. DOUGLAS WEBSTER, M.D.EDIN., CH.B., M.R.C.P.EDIN.,

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As has been shown by *x*-ray spectrum analysis, from the physical point of view our discussion is concerned with the use of a radiation of a wave-length over ten thousand times shorter than violet light, violet light being four thousand of the Ångström units of a ten-millionth of a millimetre (10^{-3} cm.). The waves we employ are 0.2 to 0.06 A. U., so that one-half to one million of them could be contained in the diameter of a hair. Their half-value in water is 1.6 to 3 or more centimetres. They are obtained by different types and models of electrical plant, all capable of producing for hours on end voltages varying from 150,000 to 250,000 volts, and of *x*-ray tubes capable of a continuous output of from 1.8 to 5 milliampères at this pressure, the skin erythema dose at about 9 inches distance being given in from 40 to 15 minutes. With these *x*-ray tubes and a filter of 0.5 mm. of zinc or copper or other equivalent an emergent beam results, which by passing through successive layers of body density is not further altered in quality—that is to say, it is a beam qualitatively homogeneous. By the prolonged labours of the physicists Dessauer, Voltz, and their co-workers, we

now have accessible tables of quantitative intensity at different water depths, and with these tables, and employing or modifying the technique of radiologists who have used them for several years, we are now attacking the problem for discussion. This quantitative basis is one of the two advantages of the newer methods, the other being that with the higher voltages one can obtain 30 or more per cent. at 10 cm. depth, as compared with the 5 or 10 per cent. possible up to recent years; and thus for the first time we are enabled to direct sufficient radiation into deeply lying malignant structures. Factors such as scattered radiation have lately been analysed at length, and it is perhaps safe to say that at present deep x-radiation is on a more scientific basis as regards dosage, depth intensities, etc., than deep radium work is. The latter gives few approximately parallel rays, the loss by the square of the distance is a great factor in its use, and measurement of its depth intensity is very difficult. As Gudzent says, in radium work errors of 100 or more per cent. are easily made in the estimation of tissue doses. The quantities necessary are so large, also, as to be at present practically unobtainable. Gudzent estimates that for mammary, thoracic, and abdominal tumours at least 1 gram of radium element is required for satisfactory treatment, and the possession of this would only allow one case a day to be treated.

From the point of view of biological or experimental pathology all cells are affected by short-wave radiation, but in their sensitiveness they show a very wide sphere of variation. From bone and cartilage and muscle cells to lymphatic glands, bone marrow, spleen, and the chromaffin system is a twentyfold or more range in sensitiveness. Similarly in pathological tissues from osteo-chondrosarcoma and lipoma to lymphosarcoma there is an enormous difference in response. Tribondeau and others have pointed out factors which influence radio-sensitiveness—for example, nearness to embryonic type, the reproductive power, etc. The actual changes taking place in the cell are usually most seen in the nuclear chromatin, but also in the protoplasm, and in their essence no doubt they are physical, through secondary beta radiation and characteristic radiation from the iron and other materials in the body, and chemical through changes in the cell ferments and lipoids. Interest centres round the various so-called "doses" to cause definite changes in tissues such as the skin and intestines, to cause regression of tuberculous lesions, sarcoma, carcinoma, and the like, and to stimulate tissues to increased activity or growth. A large literature has accumulated dealing with these "doses" from both the clinical and the experimental points of view. The factors concerned are many and complicated. Of the "cancer dose" there is this to be said, that it is based on the frequently observed facts of cellular changes as a result of radiation; a cell at or near mitotic division is killed at once, while resting cells are destroyed after a latent period following a sufficient radiation. Professor Daels, at the recent London Congress, showed beautiful lantern slides illustrating these changes. But these observations carry several necessary presuppositions as to the condition of the tissues in which the tumour is embedded and the resistance of the whole organism, and if these are not helpful it appears that no amount of radiation will be "lethal" to the cancer cells. Krönig early noted the absence of response to radiation in cachectic patients, and Gustav Klein has found in these an absence of the usual "battle zone" bordering the malignant growth, where the presence of numerous lymphocytes and other cells constitutes a tissue reaction that seems necessary to recovery. How possibly to stimulate this local and general reaction in cachectic patients before radiation treatment opens up problems which the future may solve. Opitz says, in fact, that direct radiation alone appears unable to kill cancer cells. Kok, working with him, has exposed tumour cells from mice to ten times the "cancer dose," and the implantation material was only slightly changed in staining reactions, remaining unaltered as regards vitality. Even in the necrotic connective tissue in hyper-radiated tumour masses living and developing cancer cells can occasionally be found. From the biological point of view, therefore, the radiation response of tumours depends on four factors: (1) on the radiation absorbed; (2) on the sensitiveness of the tumour cells themselves; (3) on the neighbouring or interpenetrating connective tissue and other cells; and (4) on the whole organism. Hence the complexity of the problems of radiation and its effects, and of natural and induced immunity to cancer growth, and of refractory cases. Many are working on immunity lines, and though it is still too early to hope for much in the way of result from these lines as applied to man, it may be said that the very interesting work of Kellock, Chambers, and Russ at the Middlesex Hospital is showing in a number of cases very satisfactory results up to the present.

The complexity of the problems is not lessened when we look at the matter from the morbid anatomy point of view; for to the histologist it is almost as unilluminating to talk of "deep-seated cancers" as a group as to talk to an ethnologist of "Asiatics": the types of cancer differ much more from one another than, say, the Sikhs and the Malays! Ewing says: "It may safely be said that there are more distinct clinical and pathological entities within the groups of neoplasms than exist outside of them." "No one," he adds, "would think of confusing lobar pneumonia with pneumonic plague, though both are examples of acute exudative pneumonitis, but it is quite the rule to identify for statistical studies equally different forms of mammary cancer."

For advance to be made, therefore, far greater definition of terms than is usual should be employed in description of cases; thus, for example, each group, such as rodent ulcers or mammary tumours, should as far as possible be subdivided according to its histological type. Adler has attempted to classify tumours as to radio-sensitiveness and differing histological types, but his conclusions have been much criticized, Krönig and Friedrich, for example, saying that, if cachectic patients be ruled out, they have never found a carcinoma which was wholly refractory. Kehrer's method of radiating, and after a few days excising a fragment to ascertain microscopically the radio-sensitiveness, suggests itself as a useful advance in method, although of limited applicability. Pathologists are naturally sceptical when terms like "cancer dose" are used without qualification; "cancer dose" may be used as applying to superficial malignancy, certain gynaecological primary growths, and to mammary secondary deposits, which groups are, with few exceptions, highly favourable subjects for radiation; but to apply the term "lethal dose" to other conditions, such as gastro-intestinal carcinoma or primary breast tumours as a whole, is an unwarranted reasoning from the particular to the general. Hence the term "cancer dose" should be abolished, or only used with qualification. From the pathological side also we can learn much about the mode of spread of malignant lesions beyond their apparent limits. Stiles and Handley especially have shown this with regard to breast tumours, and how very widespread many apparently localized growths are. A case I saw a few weeks ago in the *post-mortem* room illustrated this. It was a mediastinal growth, probably an endothelioma, which had widely invaded the lungs and upper abdominal viscera. The case had only been in hospital a few days, and the day before the necropsy had been marked down for radiation treatment of the mediastinal growth. What possible chance could radiation have had with such a widespread affection? Similarly I saw a rectal carcinoma lately in which a large and, I believe, unsuspected abscess was opened in the growth, between the upper rectum and bladder. That radiotherapy is so frequently unavailing in bad cases is often due to such clinically latent causes.

This leads us on to the clinical aspect of the matter. Patients are usually referred to us after other lines of treatment have been tried ineffectually, or if for special reasons other lines are contraindicated, and naturally our percentages of success must remain low so long as this continues. And to decide whether to accede to the urgent requests of patients and relatives to try what radiation can do as a last resource, or to refuse to accept responsibility for cases in which there is not quite a reasonable probability of good resulting, is often a matter of the greatest difficulty: two equally eminent surgeons have recently expressed to me diametrically opposite opinions as to what I should do, one saying, "Only treat such cases as you are certain to cure"; the other saying, "If *you* can't do any good no one can, so why not give her a chance?" My opinion is that as there is at present practically no known alternative likely to do good in some of the bad inoperable cases which come to us, many of them should be accepted, but only on the clear understanding on the patient's or relatives' part that arrest of the progress of the disease is the most that should be hoped for, and "cure" is only the remotest possibility. The public has unfortunately been led to believe that the 80 per cent. or so of cervical cancer cures at Erlangen applies to all other cancers—a very unfortunate and much to be regretted misapprehension. The two classes which ought to be refused are, first, cachectic

patients, as Krönig pointed out; and secondly, as Seitz and Wintz point out, those in whom the disease is too widespread—as, for example, when there are malignant ovarian growths with deposits in the pelvis and throughout the abdomen, and this especially if there is also ascites. In these cases to give a full carcinoma dose throughout both pelvis and abdomen would be impossible without causing severe general damage. Treatment of a part—for example, the pelvic deposits—may perhaps be undertaken in the hope of producing an immunity to the whole condition; but, so far, I have seen no case with ascites treated in this way in which any good resulted. As to cachexia, cachexia from the malignant condition should not be confused with the ill appearance which results from a septic mouth or other removable cause. A patient should have definite blood changes and a cachexia which does not respond to general measures before one refuses him the chance that radiation may do good, all other measures having failed. The clinical aspect is a wide one, including the question of radiation before or after operation (radiation *before* operation being largely done now in America), the general treatment advisable before and after the radiation, also the interrelations between us and most of the other branches of medicine and surgery. At present our position with regard to malignant disease is most sure when, remembering the immense variety of pathological growths, we endeavour to establish the use of radiotherapy as a valuable adjunct or alternative to surgery in various types and sites of growth; this, so far, has been done most successfully in the gynaecological sphere and in superficial malignancies, such as rodent ulcer. The future will show how far we can control leukaemias, mediastinal growths, and those in the gastro-intestinal and other systems.

Next as to technique. As regards instrumental technique, the first essential is to know one's own apparatus and what it can do, and this with standard Coolidge, or long Coolidge, or gas tube, or Lilienfeld tube. The secondary voltage must be constant, and to ensure this either the town voltage should be measured to see if it varies or not, and be corrected if it is variable (some have done this by passing the main current through a large resistance so that it may be stabilized), or else the interrupter speed should be noted, for when the main voltage goes down the motor slows and the penetration rises as Schempp has pointed out, and if this happens the scale on the switchboard showing the hardness is a much less reliable guide than the alternative spark-gap, as may easily be proved by anyone who experiments with these factors. As in some towns the primary voltage varies as much as fifty volts up or down, this is obviously a factor which requires attention. The newer Erlangen apparatus with a motor counter on the switch-table avoids this source of error.

As to clinical technique, first I should mention the preliminary ionization with copper selenate, which at Erlangen has been so heartily recommended, especially in septic cases. I cannot dispute the clinical findings as to its benefit, but the theory on which it is based, that copper particles penetrate along with the positive current to a considerable depth (sometimes given as up to 12 cm.), I take leave very much to doubt. Dr. Turrell's experiments and reasoning appear to dispose of that claim, in my opinion; he has shown that the blood and tissue fluids rapidly disperse any inflowing ions. But that the galvanic current in itself may have a powerful effect in making the malignant tissue more radio-sensitive no one can deny, and Voltz recently has discussed this effect and shown marked cellular changes in the ovaries of animals resulting merely from the passage of a galvanic current. This question undoubtedly requires much further working out, as also the other aids or alternatives to radiation treatment, such as diathermy.

Next as to the use of radiation from a great distance—up to a metre. In my opinion this should be abandoned on the score of time and unnecessary expense in staff and apparatus, and another method of improving the depth dose be substituted—namely, giving the surface an artificial depth by interposing several centimetres of wax, paraffin, water, or the like. Dessauer in recent articles has referred to this method, which I started on my own account some months ago. He quotes Chaoul of Munich and von Viesner of Vienna as having started the method, but von Viesner's article I cannot trace, and all the literature I can find of Chaoul's on the subject refers to quite another method—namely, collecting the rays that would pass beyond the sides of the body, in laterally placed paraffin blocks, thus reflecting some of the more divergent rays back on to the body, and increasing the intensity, especially at the sides of the area irradiated. This is quite a different method from the one I can recommend as the result of some months' experience, by means of which many of the distance doses recommended in the original Erlangen method can be reduced to half or less of the time necessary with the same results in the depth intensities. I was glad to hear from Dr. Casman of Antwerp, at the recent Radiological Congress, that he uses this method in breast and other cases, and is very well satisfied with the result.

As to the use of small fields, it is very difficult to orient them so as neither to have too much overlapping nor to miss out areas altogether. To avoid these technical errors, and to calculate the depth dosage as accurately as possible, I suggest that every case treated should have sectional drawings made to scale, with the ports of entry mapped in, and doses at each successive centimetre written in, and this in at least two diameters of the body or area irradiated. Holfelder has devised little gelatine shapes giving the depth doses for different fields and percentage depth doses, and these should be useful for quick calculation, as overlapping they obliterate marks on the paper below corresponding to different intensities.

The method of scaled sectional drawings in some form or other must be recommended as the only accurate one; also in radium work this should apply. Professor Lazarus-Barlow has told me that in his recent visit to America he found that this is the method adopted in each case in the radium work at most important clinical centres. Perfect accuracy is of course unobtainable; the tissues, from their varying blood and mineral content, cannot have a scattered radiation, or absorption with secondary characteristic and beta radiation, exactly as that in water. Nor can one easily calculate the depth doses when air-containing organs, like the lungs, bowels, larynx, etc., are concerned; also bones, having an absorption like aluminium, complicate the calculations of pelvic doses and those in the lungs, spine, or head. The biological factors in this way alone elude physical powers of measurement, apart from other limitations of the physical point of view. In the measurement of depth intensities, working on Voltz's or Dessauer's tables, and using a superficial layer of wax, a slide rule will be found most convenient in calculating the proportional doses to those in the tables, and in many cases to give several full skin doses converging will be found to give too much of a deep dose, and this is especially the case where thin patients are being treated. It has been indeed usually in very thin patients that bowel and other damage has been observed, and this may have been a result of a wrong routine use of the typical Erlangen technique, which applies only to stout Bavarian patients! The only way to avoid overdoses is by careful measurement in each case.

Professor Wintz and Dr. Lauger have a wonderful system of radiological technique which they have evolved practically for all parts and suitable conditions of the body, and incidentally this technique (until Dr. Lauger publishes his long-expected book) can only be learnt by a visit to Erlangen or by instruction from someone who has been there. I am, however, strongly against Lauger's ingenious method of localizing fields—the small fields, for example, on the cervix or pylorus, or the large fields as on the chest—by screening to centre or delimit the area irradiated. When this is done with the tube running at high voltage the observer is exposed to the great amount of scattered radiation in the close proximity of the tube. Professor Russ has very kindly examined this electroscopically, and in his opinion he considers it a very dangerous method for radiologists to use. Personally I have never done it without substituting a soft tube placed with its focus at the same position in the tube box as the high-voltage tube's focal point. This exchange only occupies a few minutes, and can be recommended to all who employ the original Erlangen methods, otherwise a localizer, like Campion's localizer, can easily be constructed where accurate centring has to be carried out. With the large fields in the Warnekros-Dessauer methods, their plan of substituting for the tube a pointer which gives the area irradiated is a most valuable assistance to accurate technique without running the risk of exposure to radiation. The exposure to radiation in tube-testing or reading the small ionto-quantimeter can also be lessened in various ways—for example, by moving the Kienböck strips on to the surface of the wax while fixed in the end of a long rod, or reading the electroscope scale from a distance by mirror reflection. A small point in technique is to cover the metal filter above and

below with celluloid, as Warnekros does; this can be heartily recommended: above it prevents the tube sparking to the metal, and below it a ts as a filter for the soft rays from the copper or zinc.

I see no reason why the Erlangen wave-length should be used in all cases; in particular I am doubtful of its value in breast prophylactic work, as the damage to the blood in the lungs and heart may counterbalance the likelihood of good resulting to a possible pleural invasion. Personally at present I use a standard Coolidge run at 11½ to 12 inches spark-gap, giving a depth dose of about 12 per cent. at 10 cm. deep (5 mm. filter) for prophylactic breast cases; or use the Erlangen wave-length on to a large primary growth, and the Coolidge on to the outlying areas.

The Erlangen scheme of a six or eight weeks' interval between doses should not be taken too literally. Surely much must depend on the type and speed of development of the growth as well as on the general condition of the patient. Between the one absolutely maximum cancer dose ideal of Krönig and Warnekros, and the old method of multiple smaller doses, repeated at short intervals, which Kingery in a recent note says he has been trying to establish experimentally as the best method, those of the Erlangen school occupy a middle position: they give submaximal doses and repeat them (it must be remembered that the Erlangen "skin unit dose" is smaller than the maximal skin dose of Warnekros); it is certain that much work yet remains to be done before we can decide which method is the best, or in which cases which should be preferred. Experiments like those of Lazarus-Barlow on the rat, on columnar and squamous cells, suggest that squamous-celled types of growth would respond better to small doses frequently repeated, and columnar to maximum doses. The subject is being experimented with; radium emanation "seeds," for example, provide a ready means of trying long-continued chiefly beta radiation of small intensity, the results of which must have a bearing on *x*-ray work, and may show that the method Löwenthal and others have employed of giving *x* radiation an hour or so daily for eight or more days through a filter of a quarter of a millimetre of lead may in certain cases be the best method of *x*-ray treatment. (Christen has estimated the half value for radiation after 0.25 mm. Pb as 10 cm. in water.)

The whole subject is thus seen to be one in which as yet sure conclusions are hard to find. Certain is it that the application of deep radiation treatment is not one which can be undertaken by untrained medical men, or by nurses or laymen without the probability of grave damage being done to patients. A communication I had a few days ago from a no doubt very worthy gentleman in one of the colonies who styles himself "Consulting Radiologist" to a hospital, though he is an electrical engineer, asking for the fullest details of the instruments and technique necessary for deep therapy, and for the results which are being attained, seems to me rather ominous. Before a German medico-legal congress last year I heard Professor Wintz in an address very strongly emphasize this danger, that the apparatus may come into the hands of those who are not properly qualified to use it. However, there are dangers in the use of every potent remedy as in the use of most modern inventions, and it is easier to point to possible abuses than to suggest a remedy.

The main fact is that we are now witnessing a series of notable advances in *x* ray instrumentation, and in methods of quantitative measurement of depth radiation, and these must in a short time result in a greatly increased knowledge of the subject. As to results, I am quite satisfied that some of the beneficial effects I have already seen could not have been obtained with any other method of treatment, and if the already published results receive confirmation as time goes on we shall undoubtedly have achieved a very important stage forward in the conquest of malignant disease.

III.—F. HERNAMAN-JOHNSON, M.D. ABERD.,

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I PROPOSE to confine my remarks to the statement of certain fundamental principles—or, at least, what I believe to be such. Some of these, while they were more or less accepted a few years ago, appear to be in need of reassertion.

A cancer cannot be clinically considered apart from the tissues amongst which it grows, or from the patient as a whole. This means that the effect of any given dose of *x* rays upon a cancerous tumour is composed of (1) the direct effect upon the malignant cells; (2) the reaction of the normal surrounding tissues; (3) the general constitutional response.

Now, the effect upon the tumour varies not only with its histological structure and with its position in the body, but also with the particular moment at which it is attacked. In thinking of tumours we should try to substitute in our minds a dynamic for a static conception. You have all seen by the aid of the cinematograph a plant growing from seed to flower in a few moments. Imagine this process applied to histologically similar tumours, and suppose it to display differences in mitotic activity, as well as in general growth. We should then see that no two were alike—and even then this unlikeness would not be fully made manifest, for those subtle divergences covered by the word "metabolic" cannot be made visible, even with the microscope.

I come next to the surroundings of a cancerous growth. That they play an important part in its disappearance under radiation cannot be doubted. A rodent ulcer—which is really an ulcerated tumour—is a truly malignant condition, although it does not tend to form metastasis. So long as it invades only the soft parts, it may usually be made to disappear by almost any method which stimulates the tissues round about it. Some years ago I tried to see how minute doses of *x* rays would affect rodent ulcers, and found that, as long as any action at all could be observed, it was a favourable one. But once let the rodent invade cartilage or bone and nothing save excision or diathermy is of avail. Yet the tumour has not changed, but only its habitat.

Finally, there is the patient to consider. It has long been observed that an anaemic patient will not respond well to *x* rays; and the rapid spread of metastatic growths after a serious attack of influenza is a well-known phenomenon. The slowness of most forms of cancer in old age has long been remarked on. On the other hand, the part played by worry in lowering resistance to malignant disease cannot be disputed.

If it be granted that the effect of an *x*-ray exposure is indeed determined by factors so numerous and so variable, it becomes difficult—for some of us, impossible—to accept the doctrine of the single lethal dose. I question if, in point of fact, this doctrine is still held by those who only a year ago advocated it so strenuously in the medical press, and not in that press alone. One hears of precautionary doses after six weeks, and of yet further "precautions" at later dates. But if repetitions every six weeks, why not every six days? Once give up the idea of the "knock-out blow," and the precise size and spacing of divided doses offers wide and legitimate scope for individual preferences.

It used to be accepted as axiomatic that cancer cells—apart from certain very resistant types—were depressed by *x* rays more than their surrounding healthy neighbours, and that in some cases a dosage detrimental to malignant cells might actually stimulate normal ones. If this is true—and for my own part I do not doubt it—it follows that a cumulative effect may be obtained by repeated dosage.

The doctrine of the "small stimulating doses"—that is, stimulating to cancer cells—has, in my opinion, done an immensity of harm. It has frightened men in small hospitals possessing only 12-inch coil outfits from treating breast cases, in the belief that they would do harm. Now, there is no radiologist of experience who does not know that we were often able to keep breast cases in comfort for years, long before the high-voltage outfits, or even Coolidge tubes, were ever heard of. Most of us have seen pain disappear and palpable growths melt away under what would now be called primitive methods. On the other hand, I cannot recall any instance in which such treatment appeared to make patients worse, even when it did no apparent good.

For the past year I have had in my private practice apparatus for the excitation of a new model Coolidge tube in oil at a potential of 230,000 volts; and I have applied it to many cases of inoperable or recurrent breast cancer. During the same period I have treated an approximately equal number of similar cases at the French Hospital—in the latter case being limited to a voltage of about 160,000.

I cannot honestly say that the extra seventy kilovolts appears to improve results. The twenty cases of breast carcinoma which I have had under observation for purposes of this test are all still alive and doing well after periods varying from a year's to two months' treatment; and I have patients treated under the old methods still going about their affairs five years after the original recurrence.

I hasten to say that I have not tried my high voltage apparatus on any carcinoma mammae case by the method of

the single massive dose. It is generally agreed that the procedure seriously affects the blood of the patient and lowers the resistance for some weeks to metastatic invasion. On the other hand the graded dosage system causes the patient to improve in every respect almost from the start, and without any intermediate period of depression.

The recurrent or inoperable breast case properly treated by graded dosage does not ultimately die from visible or palpable local tumour, but from metastatic invasion of lungs, liver, spine, or ovaries. Can massive doses applied to the original growth prevent this termination? I do not think it will be claimed that they can. On the other hand they may hasten it. But the graded dosage actually raises general body resistance to cancer, and therefore, for a time at least, prevents its generalization.

The last thing I want to suggest is that the *x*-ray treatment of breast cases should be undertaken by amateurs, or that research should not be vigorously prosecuted by the newer methods. But when a man has been getting good results for years with an ordinary outfit in a hospital which is unable to afford a high-voltage apparatus, he should not be frightened into giving up because of the doctrine of the stimulating dose. There never was a more unsubstantial bogy raised in medicine, yet it has in all probability deprived many unfortunate people of the mitigation of their sufferings offered by *x*-ray treatment as it has been carried out in this country for the past dozen years.

When I come to speak of uterine cancer I am on ground less firm. In my hands the older methods have often given considerable relief, but I have generally regarded such patients—always, of course, either inoperable or recurrent—as having not more than a few months of active life before them. There would appear to be hope that by the newer methods this expectation of life will be increased.

The early, still operable, case of carcinoma of the cervix is the one most suited for Erlangen methods, and is the type on which their reputation is really based. That this form of cancer may be made to disappear by massive doses, and that the patient may be given a further lease of life, is beyond question. This may also be accomplished by surgery—whose record is not, however, at all brilliant in this respect. The ultimate results of intensive *x*-ray therapy may be far from good and yet be superior to those of surgery. It is a matter of statistics. If a man has an operable carcinoma of the bowel my advice to him would be, "Have it cut out." If he has a sarcoma almost anywhere I should say, "Do not let the surgeon near it, unless, perhaps, to put in a radium tube." But if a woman came to me with early carcinoma of the cervix and asked my advice as to whether she should have an operation or treatment on the lines recommended by Professor Wintz I could not, at the present moment, give any decided opinion.

Finally, I wish to say that if I am not as impressed as some are with the results of Erlangen treatment it is not because I doubt that many of these results are excellent, and, in some cases unique, but because I am familiar with the extraordinary benefits, amounting not seldom to clinical cures, which methods long in use in this country have to their credit. I welcome the high-voltage outfit as a great advance in instrumentation, and the work now being done at Erlangen in the way of preparing the patient and sensitizing the tumour by electrical methods previous to its exposure to *x* rays seems to me to promise much. It proceeds along the threefold line of attack which was referred to at the beginning of my remarks. In the case of a protean malady like cancer combined treatment in the widest sense can alone hope to succeed.

DISCUSSION.

Dr. W. Mitchell (Bradford) said that he shared to a large extent Dr. Hernaman-Johnson's scepticism with regard to the stimulating dose. He had administered about 9,000 treatments a year with the older type of apparatus, and had not seen any stimulation produced, but rather the reverse. Sometimes he had observed a rapid metastasis follow surgical treatment. He had known cancers of the breast to lie quiescent for many years, and then, a very few weeks after operation, rapid metastasis occurred—whether due to mechanical injury or to a depressing effect on the body tissues he could not say. If radiologists were accused of stimulating cancer by their methods, then surely surgeons might be accused of doing the same kind of thing. As for Erlangen methods, an apparatus for deep treatment had been installed at his institution, and he had treated about one hundred cases, post-operative, recurrent, and non-operative. In passing he would recommend that before a case was undertaken a skiagraphic examination of the lungs should be made, and if the lungs were affected the case should be left alone. The speaker then gave particulars of some of his cases. Those which were handed to him were mostly surgical derelicts—cases which were absolutely hopeless from the beginning; it was clearly impossible properly to estimate the success of Erlangen methods until surgeons handed over their cases much sooner. It was useless to try to treat cases in which the pelvic viscera were largely involved or the vagina stopped up with a large tumour. He had had recurrent cases in the early stages when there had been nodules of the size of walnuts in the vagina, and in which good results had been obtained. He had also had four or five cases of carcinoma of the vaginal walls, one patient being a woman of 60, who was now quite well. In one case of carcinoma of the stomach, where the patient had died, the *post-mortem* examination had revealed extensive disease, not alone of the stomach, but of the duodenum, the liver, and the pancreas, with carcinomatous invasion of the peritoneum, so that there was not much chance in that case. He was satisfied that the method had a useful future, but it required a very large amount of time if the work was to be done thoroughly.

Dr. Woodburn Morison (Manchester) agreed with Dr. Hernaman-Johnson in his remarks about stimulating doses. He had never seen any cancer stimulated by the ordinary dosage such as the radiologist had been using for years past—a full pastille dose through a filter. He had been interested in the treatment of rodent ulcer by radium; at the present time, in Manchester, the tendency was to use unscreened radium in these cases. He believed that the direction of development for radiation treatment in the future would be in the selection of the wave-length for different tumours and for different parts of the body.

Dr. Gibson Graham (Glasgow) said that his experience was that *x* rays in too small doses would stimulate growth on the extending part of an ulcer.

Dr. A. R. Hallam (Sheffield) confirmed Dr. Graham's view, as the result of many years' experience of rodent ulcers. He had seen people who had had a rodent ulcer for years, which made practically no progress, and then, after one or two small *x* ray exposures, it disappeared for a short time, only to show later a rapid increase of growth.

Dr. Hernaman-Johnson said that although it might be argued theoretically that radiological treatment could stimulate cancer growth, yet in clinical practice the treatment was not found to have that effect.

DISCUSSION ON THE VALUE OF GAS INFLATION IN X-RAY DIAGNOSIS.

OPENING PAPER.

BY

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Director, X Ray and Electrical Service, the French Hospital, London.

[With Special Plate.]

Historical.

The idea of obtaining contrast by the injection of air is, of course, as old as radiography itself. The first man who looked at a normal chest and saw the heart standing out clearly against the almost transparent lungs must surely have been struck by the beauty and clearness of the picture; and when he proceeded to screen the abdomen could scarcely fail to wish that nature had there provided equal facilities for the elucidation of disease.

No very long time elapsed before, as a matter of chance, radiographs were obtained in which either the lower border of the liver, or the spleen, or both, were outlined with considerable clearness by collections of gas in suitable parts of the alimentary tract. This observation was followed by deliberate attempts to throw light upon abdominal problems by the artificial inflation of the stomach, colon, and bladder. In a work entitled *The Röntgen Rays in Medicine and Surgery*,

written by Williams of Boston, and published no less than twenty-one years ago, are to be found descriptions of such procedures, and also of the bismuth meal and the bismuth enema. The "normal stomach" as described in *x*-ray text-books of the present day was figured by Williams in 1899, and to him rather than to later German workers should go the credit of originating the opaque-meal idea. In fact, there are very few modern developments, whether of instrumentation or of diagnostic technique, that are not foreshadowed in this book; but I regret to say that I have been unable to find in it the germ of the idea of the deliberate inflation of cavities other than those of the hollow viscera.

The injection of gas into the pleural cavity for therapeutic purposes and the control of the procedure by fluoroscopy were well established early in the first decade of this century; but the idea of inflating the peritoneum for diagnostic purposes would really appear to have originated in Germany within the past ten years. Weber, in 1913, appears to have been the first to do so with the deliberate intention of improving radiographic contrast; and Goetze published the first extensive report on the subject, together with some plates and diagrams. From Germany the method spread to America, and so far as I am aware the first published cases in England were done at St. Bartholomew's Hospital less than two years ago.

In addition to the distension of the hollow viscera, gas inflation for diagnostic purposes is now employed in the peritoneum, in the perirenal space, in the joints, and occasionally in the ventricles of the brain. All of these procedures are germane to the present discussion, but I have not personally sufficient experience of the method as applied to the joints or to the brain to say anything useful; and upon the inflation of hollow viscera I intend to touch only briefly.

Inflation of Hollow Viscera combined with Pneumoperitoneum.

Inflation of the stomach with some effervescing powder is a well-known proceeding, to which the objection is often raised that, the amount of distension not being under control, there may be some risk of rupturing an ulcer, should such be present. Recently, in conjunction with Dr. Ernest Young, I have made some experiments upon inflating the stomach and duodenum through a fine duodenal tube, which Dr. Young has kindly passed for me. So far as the duodenum is concerned, the gas appears to distribute itself too quickly into the small intestine to permit of useful outlining. It may be possible to devise some pneumatic form of blockage; but, meanwhile, the method furnishes a safe way of inflating the stomach under direct fluoroscopic control. Incidentally, it has been shown that the metallic head of the tube may be in the duodenum a very considerable time before an alkaline reaction is obtained from the fluid syphoned up.

The value of stomach inflation would appear to me to lie in this: that, when combined with peritoneal inflation, it may enable us to recognize comparatively small changes in thickness in the anterior wall of the stomach. Those who have studied lateral radiographs taken after peritoneal inflation will realize that extremely small differences in density can thus be demonstrated.

Uses of Peritoneal Inflation.

Coming now to the uses of peritoneal inflation, one has to ask oneself, What lesions can be demonstrated by this procedure which cannot be diagnosed by other means? A study of Fig. 1 (see Special Plate), which is a composite radiograph of the whole peritoneal cavity in profile, will help us to answer this question in part. Starting from the diaphragm, you see the liver clearly in profile; and irregularity of size or shape would be at once apparent. It is true that we see the viscus in one plane only, but we may, if we wish, take other plates with the patient rotated through various angles, and we can also get the lower border of the organ outlined in the postero-anterior view. A liver which will pass these tests is presumably free from deforming lesions, though we cannot say absolutely that it is in no way diseased. The air space between the intestine and the abdominal wall is here free from abnormalities with one exception. That is a thin shadow band which crosses the space some two inches below the umbilicus. This was diagnosed as an adhesion between the intestines and the abdominal wall.

The patient had had a pan hysterectomy done ten years previously, and since then had suffered a great deal from abdominal pain. Below and to the left of the umbilicus was to be felt a "lump," which was tender to touch, and which the patient said was growing larger. The "lump" was examined clinically by a well-known surgeon, who confessed himself unable to give a definite opinion as to its nature. With his approval, a peritoneal inflation was carried out, with the result I show you. This enabled one to say that the swelling in the left abdomen was not caused by the presence of a tumour. An operation was performed at which I attended. Adhesions were present to an unusual extent, so much so that the surgeon occupied nearly two hours in dissection. The patient made an uninterrupted recovery, and it may interest the Section to know that application of hard rays to the abdomen were given during convalescence with a view to preventing the re-formation of adhesions. Up to date (four months) the patient remains free from pain, and her "lump" has not returned. No doubt it was caused by a more or less permanent collection of gas, the result of adhesions.

By way of comparison, I show you a slide (Fig. 2) which represents a perfectly normal lower abdomen seen in profile. You will note the entire absence of any shadows across the air space.

The next slide (Fig. 3) I am able to show you through the courtesy of Dr. Finzi. It represents an abdominal tumour seen in profile. An obvious criticism is that in all probability the diagnosis could in this case have been made by other means. Perhaps this is so, but the size and relationships of the tumour as shown in this and other views could not in any other way have been ascertained with the same exactitude. Also, it is necessary to learn the alphabet of a new subject, and a radiograph such as this, in which the appearances are perfectly definite, is of great value to the student. For it must be obvious to anyone who considers the matter that a tumour of the same nature, but only a quarter or even one-eighth as large, would have been just as easily demonstrated. Or, to put it another way, if this patient had been examined by pneumoperitoneum when a tumour was only suspected clinically, proof of its existence would have been furnished.

Another field of usefulness for peritoneal inflation is in the diagnosis of gynaecological conditions. The method will enable a diagnosis to be made while the case is still clinically doubtful. In this country we are as yet only feeling our way as regards these inflation methods, but Dr. Carelli, at his demonstration before the Royal Society of Medicine last autumn,[1] showed us several plates in which the diagnosis of lesions in the ovaries, Fallopian tubes, or uterus was actually made by him at a time when it was impossible to arrive at any certainty by other methods. In one particular case a two months' pregnancy was demonstrated by reason of the characteristic type of enlargement of the uterus; this is surely a great triumph of radiological technique.

To sum up, comparatively small deviations from the normal in the size, shape, or relations of the viscera within the peritoneal cavity can be demonstrated by the inflation method. Adhesions are made visible, and solid tumours at an early stage of their growth can be clearly seen. There is also some hope that improved technique may enable one to detect cancerous infiltrations of the walls of the alimentary tract.

Risks.

It can scarcely be denied that the procedure of peritoneal inflation represents a startling advance in diagnostic technique, with which the introduction of the opaque-meal method is alone comparable in individual importance. Yet there is, unfortunately, a pronounced difference in the two cases. The opaque meal and enema are free from risk, or nearly so. Peritoneal inflation is not free from risk. Dr. Carelli informed us that he had done over 700 cases, with only one (non-fatal) mishap. But others have not been so fortunate. James T. Case, in a recent review of the subject, has collected records of four deaths. Of these, one was due to the introduction of oxygen into the spleen; one to peritonitis; and in the other two the patients became cyanotic, and collapsed a few seconds after the introduction of the needle, and before any appreciable amount of gas had entered the peritoneum. In neither instance was necropsy permitted.

Case offers no definite opinion as to the cause of death in these patients. Choyce[2] states that in a certain small percentage of people the diaphragm is perforate in places, so that there is communication between the abdominal and thoracic cavities. Under such circumstances, pneumothorax would result with possible embarrassment of the heart. If such a condition could be demonstrated fluoroscopically one might be called upon to introduce a trocar into the pleural cavity and aspirate the gas. But while this is a possible

[1] BRITISH MEDICAL JOURNAL, December 17th, 1921, p. 1057.
[2] Private communication to author.

explanation of the fatalities which Case records, it does not seem to me probable, as the cyanosis occurred almost immediately. Personally I should be inclined to class these with the recorded instances of death following simple paracentesis of the pleural cavity. The nearest we can get to an explanation is to say that the slight trauma to the sensitive pleura or peritoneum is sufficient to produce reflexly cardiac disturbances, which may be so severe as to prove fatal.

The important point to bear in mind is that there is no known way of avoiding such accidents.* They are fortunately extremely rare, but must nevertheless be reckoned with.

Importance of Careful Technique.

Apart from the above, safety may be secured by careful technique. The use of a fine needle is most desirable. I prefer to make my puncture through the belly of one of the recti muscles, about two inches below the level of the umbilicus. One can soon learn to feel when the needle passes through the posterior sheath. The open end of the needle should then be watched to see if any blood comes out. If so the needle should be reinserted, otherwise one may inject gas into a vein. Gas should then be introduced slowly from a suitable apparatus (Fig. A). If the needle is still in the muscle, pain will be produced at once.

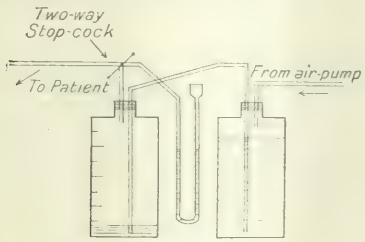


FIG. A.—Diagram of inflation apparatus.

If, however, the point has pierced the abdominal wall it must be in either (1) the peritoneal cavity, (2) some solid organ which is enlarged or mal-placed, (3) the substance of an abnormal growth, or (4) the lumen of the bowel. Of these the last-mentioned contingency can happen—apart from gross carelessness—only if the intestinal wall is glued to the abdominal parietes by adhesions at the site of the puncture. In one of my early cases, as I did not recognize by the screen what was happening, I interpreted the folds of the bowel as adhesion shadows. The patient passed most of the gas per rectum within a few moments, and was none the worse. Subsequent operation showed the intestine to be, as it were, plastered on to the anterior wall of the abdomen, and it would probably have been impossible to obtain a proper pneumoperitoneum. Puncture of the bowel wall under such circumstances is harmless as regards risk of infection of the peritoneum, as the puncture, even if it remained patent, which it does not, is innocent of any communication with the body cavity.

Puncture of an hypertrophied spleen, or of a large tumour, is not likely to happen if the inflation has been preceded, as it always should be, by careful clinical investigation and radiographic examination along ordinary lines.

Having made sure that the gas is really passing into the peritoneal space, one may proceed to inject slowly and continuously, checking the process from time to time by screening. The amount to be introduced varies according to several factors, but, generally speaking, about three litres is sufficient in an adult of average size. When there has been previous ascites as much as ten litres has been tolerated without discomfort. On the other hand, if there is pain or distress, no attempt should be made to reach any special academic limit. If pain is complained of between the shoulders, Carelli's recommendation to tilt the patient upwards from the feet will be found useful.

There are many other details of technique which should be mentioned, but time does not permit of their consideration.

Two further dangers other than those previously mentioned must be briefly touched upon. The first is the risk of causing peritonitis. This can be minimized only by the most careful attention to asepsis. The second is the possibility of causing damage by the mechanical effects of intraperitoneal distension. It is quite obvious that protective adhesions may be broken down, and that in some instances virulent septic organisms, previously walled in, might be let loose to play havoc in the peritoneum at large.

The immediate after-care of the patient is of great importance. If CO_2 be used there is no need to deflate, as all feelings of distension will have passed off in from one to two hours. It is, however, in my opinion, essential that the patient should remain in the horizontal position for several hours, preferably for a complete day. This means that the examination should be carried out upon a wooden stretcher which fits the x-ray couch top, and which enables the patient to be carried back to bed without disturbance. If such cases are examined in private consulting rooms they should be sent at once to a nursing home in an ambulance. They are, in a sense, surgical risks, and must be treated with due respect.

I have no sympathy with the cry that only a professional surgeon should do the inflation. If the radiologist cannot do it, he has no business to have a medical qualification. But I do not think that the radiologist alone should ever decide that the procedure is necessary. Another medical man should always be associated with him, and they should make quite sure (1) that a satisfactory diagnosis cannot be made without pneumoperitoneum, and (2), in cases where an operation would appear to be a necessity in any event, that the inflation is likely to furnish the surgeon with advance information of sufficient value to justify the slight but undoubted risk involved in the procedure.

If the radiologist honestly fulfils these conditions precedent and keeps his patient under observation for at least forty-eight hours in such surroundings that a laparotomy can, if necessary, be performed at short notice, he can face risks with as clear a conscience as that of the neurologist or pathologist who carries out spinal puncture after being duly convinced of its necessity.

Perirenal Inflation.

I propose to devote the remaining few minutes to some remarks on the method of perirenal inflation introduced by Dr. Carelli of Buenos Aires. You will perhaps remember that Dr. Carelli gave the first demonstration in this country in my department at the French Hospital in London in November of last year. A detailed account of his procedure, as it appeared to me, was published, together with reproductions of some of the radiographs obtained, in the BRITISH MEDICAL JOURNAL for January 21st, 1922. I cannot here repeat the substance of this paper, but will confine myself to summarizing the results of my personal experience with perirenal inflation since that time.

To begin with, it should be clearly understood that the technique is not easy. I have myself gone into the colon by mischance, and on the Continent I understand that the pleural cavity has been entered on more than one occasion. Such accidents are the results of inexperience. Dr. Carelli recommends that the needle should be directed vertically downwards so as to touch the tip of the second lumbar transverse process, then turned somewhat upwards and outwards so as to slide past the end of the bone. It is difficult to gauge the correct angle, and I now prefer to start half a centimetre beyond the tip of the process, and to direct the needle point slightly inwards so as to touch it. The object of this is to secure a landmark, especially as to depth. Having obtained my bearings, I then cause the needle to resume the vertical position and push it in another centimetre. A very usual mistake is to insert the needle too deeply before making test injections. (For rough sketch of relations see Fig. B.)

One should now watch to see that no blood wells out of the socket of the needle. An ordinary record serum syringe previously filled with gas is then fitted into the needle socket. The joint must be airtight. Quick pressure is made on the piston, and one of three things happens: (1) An elastic resistance may be developed. This means blockage of the

* Since the above address was delivered I have been concerned very much with this question of possible peritoneal shock, and have adopted the following modifications of technique: (1) Following the teachings of Crile, I now use a local anæsthetic, not primarily for the purpose of making the procedure less painful for the patient, but so that the parietal peritoneum may be desensitized before the needle passes through it. To secure this, encaine is injected slowly as the needle is introduced millimetre by millimetre. The extra time involved is seven or eight minutes. The same needle is used throughout, as its socket fits the standard record syringe. (2) While previously I had contented myself with warming the gas in a rubber bag before charging the apparatus, I now pass it through a coil of metal tubing which fits into an ordinary thermos flask containing boiling water. The gas really is warmed to body heat by this method, and there are no complications in the way of electric-heating filaments. By this twofold precaution—anæsthetization before puncture and the introduction of gas at approximately blood heat—one hopes to reduce the risk of peritoneal shock to a point when it need not be seriously considered.

needle, and a fine obturator, definitely longer than the needle, must be passed down it. This generally suffices, but sometimes it is necessary to inject a few drops of sterile saline solution. (2) The gas goes in easily, but produces a sharp pain. This means muscular distension, and is an indication for pushing the needle in a little more deeply. (3) The gas goes in easily, and no pain is produced. This is as near an indication as we can get that the perirenal space is reached.

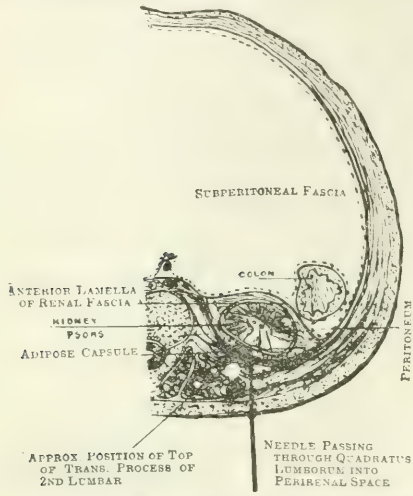


FIG. B.—Trans-verse sec ion of body through kidney region, showing needle in position for perirenal inflation (modified from Gray).

We now connect to the main apparatus, and introduce about 50 c.cm. of gas. Then, using the two-way stopcock, test the manometer readings. The column should show increased pressure at inspiration; if by any chance one is in the pleural cavity pressure is diminished when the patient draws in his breath. In my experience manometer readings are not obtained until a certain amount of gas has been injected, although I understood Carelli to say that often the fluid column moved as soon as the needle entered the perirenal space.

It is necessary to inject at least 500 c.cm. of gas—a little more will enhance the contrast obtained. There should be practically no sensation at first, but subsequently a feeling described variously as "pressure," "distension," or "dull aching" is complained of. This is not of sufficient intensity seriously to inconvenience the patient. After about half the proposed quantity has been injected, the process should be checked by screening. It must be remembered that a considerable length of needle is sticking out, which must not be knocked in the dark. A simple device like a miniature table, which straddles the patient, its legs resting on the couch on either side, is used to avoid accidents (Fig. C). This is put in place before the lights are turned off and the screen is rested on it. One can then examine freely, and it is generally possible to decide whether the gas is correctly outlining the kidney. If so, the remaining amount is injected, the needle is removed, and plates are made in the ordinary way. These should be taken both from below upwards and from above downwards, the reason being that the views are by no means identical, and that points missed in the one position may show in the other. I show you now (Fig. 4) a case which Mr. Mortimer Woolf kindly asked me to examine for him. Here, besides the large obvious calculus, a cluster of small stones is visible. In this plate only three separate small shadows are seen; but in the next (Fig. 5) four small shadows are seen. Obviously there are cases in which exact knowledge as to the number of small stones present in clusters may be of great surgical importance.

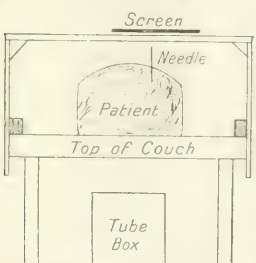


FIG. C.—Side-on view of couch with [illegible]

There is just one other point of technique which I have found useful, and which I will briefly describe. In fat people, and in cases with lateral curvature, it is necessary to know in advance the exact position of the second lumbar. This is best ascertained by fixing on to the patient's back a half-plate-sized film in a tight-fitting black envelope. It can be stuck on by pieces of strapping, and its outline marked in ink on the skin. An exposure is then made, the film is developed, fixed, and dried in spirit. A needle is stuck through the image of the transverse process, so that the point just protrudes, and the film is replaced on the patient so as to coincide with the original marks. The skin is then pricked slightly with the needle and the film removed. If now iodine is rubbed on the skin over the needle prick, the latter shows as a permanent dark speck, which forms a valuable landmark. Apart from this special technique, no case should be examined by perirenal inflation which has not previously been radiographically examined in the ordinary way.

The advantage of being able to show the complete kidney outline, together with that of the suprarenal capsule, need not be laboured (Fig. 6). It will often in itself clear up a doubtful diagnosis; and when combined, as Carelli suggests, with gas inflation of the ureters and pelvis, must leave little to be desired in the way of x-ray demonstration. The after-effects of perirenal inflation, provided CO_2 be used, are, in my experience, slight, and no harm appears to result from letting patients walk about soon afterwards, although one does not permit this if one can help it.

DISCUSSION.

Mr. J. MAGNUS REDDING (Guy's Hospital) said that several factors had to be taken into account in assessing the value of any method of diagnosis: (1) the safety and ease of the procedure; (2) the scope of usefulness of the method; (3) the degree of accuracy in diagnosis; and (4) the value of the method compared with other methods of investigation. It was established beyond doubt that the presence of oxygen in the peritoneal cavity in large quantities was unaccompanied by any grave ill effects. The apparatus used in his own procedure of inflation consisted of two parts which, with the object of maintaining a strictly aseptic technique, were kept quite separate until the time for inflation had arrived: (1) A cylinder of oxygen with a long rubber tube, a considerable length of which was coiled into a large glass jar filled with very hot water. (2) A filter—a glass tube with a bottle neck at each end, tightly packed with cotton-wool; a short length of rubber tubing, one end of which was subsequently fitted on to the filter, the other end being provided with a hollow metal spigot; and a spinal anaesthesia needle, into the base of which the spigot fitted: these three pieces of apparatus were sterilized by dry heat. The skin of the abdomen was painted with iodine over a fairly wide area around the umbilicus, and sterilized towels were arranged around the site selected for puncture. Unless there were contraindications, puncture was made through the rectus, about one inch below the umbilicus and one inch to one or other side of the midline. The track proposed for the puncture was infiltrated with a local anaesthetic, and after a short period had been allowed for this to become effective the spinal needle was thrust slowly straight downwards. It was important to feel the very considerable resistance which was imposed by the sheaths of the rectus. The sheaths of the rectus were pierced by slow, steady pressure, and immediately after the posterior sheath had been punctured a very slight resistance was felt, accompanied possibly by a transient sensation of pain. Oxygen was then slowly turned on. He made no attempt whatever to measure the quantity of gas introduced, but he continued inflation until the patient complained of slight discomfort, upon which he withdrew the needle. He adopted this procedure because he thought the more gas the better, and the quantity was necessarily limited by the patient's tolerance. After the needle was withdrawn the puncture was sealed with gauze and collodion, and the patient turned

on to the abdomen. He had not found it necessary to wait before proceeding with radioscopic examination. Preliminary radioscopy was employed to make sure that the structures which it was desired to investigate were well enveloped in gas. The prone position was advisable as a preliminary, and this was afterwards modified to allow the best possible envelope of gas to surround the different structures. Radiograms were always taken, and ultimate diagnosis rested chiefly on these. The positions generally used were:—Liver and spleen: shoulder somewhat raised; prone. Kidneys: lateral antero-posterior views. Pelvic organs: prone; pelvis raised; also lateral antero-posterior views with pelvis raised. Double-screen films with short exposures were advisable, and the breath should be held during exposure. He attempted the withdrawal of gas only when the patient was complaining of some discomfort, for in his experience it was impossible to withdraw anything like all the gas through the needle within a reasonable space of time. The patient was invariably sent back to bed, with instructions that he might sit up when he felt inclined. The gas was usually absorbed within forty-eight hours or rather more, and appeared to be absorbed more quickly by children. He was convinced that when oxygen was used for injection patients should not be dealt with as out-patients. The effect on the patient was often painful and sometimes distressing. Pain was very much greater on movement, and especially on elevation of the shoulder, owing to traction on hepatic and other ligaments. Movements should therefore be restricted to the minimum. The pain and discomfort only lasted an hour or so if the patient remained recumbent, and there were as a rule no other ill effects. Unavoidable mishaps included puncture of structures adherent to parietal peritoneum where needle was inserted. No modification of apparatus could possibly eliminate the risk of entering the gut in these cases of adhesion. The actual danger appeared to be slight, but the results were exceedingly uncomfortable for the patient, and might be alarming. Altogether, to sum up with regard to safety and ease of procedure, there must be preparation and aseptic technique as for abdominal section; the actual inflation was exceedingly easy; the procedure was often very unpleasant for the patient, and not free from rather remote risks of very considerable pain and distress. Any undesirable effects appeared to be usually quite transient. Several deaths had, however, been reported.

With regard to the scope and limitations of the procedure, the speaker said that children usually bore it better than adults. Debility and cachexia, unless extreme, did not form a contraindication, but all inflammation of the peritoneum which showed any sort of activity, whether recent or not, should be approached with caution, and recent lesions of the peritoneum, whether primarily acute or subacute, were an absolute contraindication, owing to the possibility of separating recent adhesions or of generalizing a local infection. All conditions associated with alteration in size, shape, or contour of the liver, spleen, kidneys, uterus, and ovaries were suitable. The method was useful for abdominal tumours, other than those of the alimentary tract, the latter being demonstrated better by the opaque meal and enema. A certain number of gall stones which could not be shown on ordinary examination were demonstrable by pneumoperitoneum, but he had not met with much success in this direction. With regard to urinary calculi, the percentage of cases in which these could not be shown by ordinary examination with proper technique was exceedingly small. The degree of accuracy in diagnosis attainable by this method varied with the type of lesion. He had had most success in deciding as to the presence or absence of adhesions and the relations of tumours to the solid viscera. The nature of the tumours had eluded him. There was every reason, however, to think that with wider experience it should be possible to make a much larger percentage of absolutely definite diagnoses.

Finally, he spoke of the value of this method as compared with others. For pneumoperitoneum radiography to attain a high place in the regard of the profession, it must be insisted that only carefully selected cases be submitted to this procedure, and that the process of selection should involve thorough clinical examination, with any special examination which might be indicated. He deprecated inflation as a routine method for every subject with symptoms which might (or might not) have their origin in the abdomen. In carefully selected cases the method would very frequently furnish information which could not be obtained by any means short of exploratory laparotomy.

Dr. WOODBURN MORISON (Manchester) agreed that the operation of gas inflation was a definite surgical process; if that were generally accepted, then it was a surgeon's work. A medical man with surgical qualifications, of course, could practise as he chose, but in Manchester it was not desired that the surgeons should invade the sphere of the radiologists. In that city they had done about one hundred such operations; he had never been able to show gall stones by the method unless they had been previously demonstrated with the ordinary plate, and he agreed with Dr. Hernaman-Johnson that if the stones were of sufficient density to give a good picture they could be shown by the ordinary plate examination.

The PRESIDENT said that this was one of the newer methods in *x*-ray practice, and the Section was under an obligation to Dr. Hernaman-Johnson and Dr. Redding for their valuable contributions. They were pioneers in a new method, which, like every new method, was open to exaggeration and abuse. What he himself wished to know was why the presence of air made a part peculiarly transparent to the rays.

Dr. HERNAMAN-JOHNSON, in reply, said that the operation itself, if skilfully done, hurt the patient no more than the anaesthetizing of the track of the needle would do. In his opinion CO_2 was much more desirable than oxygen, but with CO_2, as the distension disappeared in about three-quarters of an hour, it was necessary to be fairly speedy in making the exposure; that was the only disadvantage of this gas as compared with oxygen. To relieve the discomfort after operation he had found one-sixth of a grain of morphine very useful. It was advisable to keep the patient supine for some time. Puncturing of the spleen should not take place if care were exercised. He agreed that the method often failed in the diagnosis of gall-bladder calculus. With regard to a point as to technique raised by Dr. Morison, those who had been general practitioners could not realize, and probably never would realize, why they should not use needles in the same way as they had been accustomed to use them in general practice. Possibly a new generation of radiologists, who had been brought up, after graduation, to *x*-ray work alone, might find a difficulty. Too narrow a specialism was to be deprecated. Surgeons quite rightly made use of *x* rays and electricity when they considered it advantageous to their practices, and a similar liberty should be given to other experts. One thing at least was certain: had Dr. Morison's views met with general acceptance in the past there would be no discussion on peritoneal inflation to-day, as the method had been initiated by radiologists, just as diathermic surgery owed its beginnings to electro-therapeutists. With regard to the usefulness of injected gas in showing up organs, it acted chiefly by pushing the parts away from each other, but there might also be some refractive effect as yet not fully understood.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE DIMPLE ON THE CONDYLE OF THE FEMUR.

THERE is a little dimple or depression, situated just above the popliteal groove on the outer condyles of the great majority of femora. This dimple is entirely ignored by most text-books of anatomy, and in the few instances in which it is alluded to it is said to be caused by the pressure of a sesamoid bone which is sometimes present in the outer head of the gastrocnemius.

A short time ago, while acting as demonstrator in the Anatomy Department of Glasgow University, I investigated this matter, with the help of Dr. D. M. Blair, the senior demonstrator. We examined between us a dozen lower limbs; we found that no sesamoid bone was present in seven out of the twelve specimens; but in spite of this fact the suprapopliteal depression was well marked in each case. In the remaining five specimens a sesamoid bone or cartilage was found; but in no case did it correspond in position to the depression, being always at least half an inch below and lateral to it.

Some other explanation will therefore have to be found for the existence of this peculiar dimple. So far as we could see, it had absolutely no *raison d'être*—nothing originated from it, nothing occupied it.

London Hospital. W. KERR CONNELL, M.B., Ch.B.Glasg.

UNSUSPECTED PREGNANCY.

I THINK I ought to record an experience I had about twenty years ago, because of its medico-legal significance.

I was summoned at the last minute to attend a confinement. After the birth of the child, a healthy male, the mother made the following statement: She had been married over eight years, and had been regular each month. Her last period finished two or three days before this unexpected birth. Her figure had not changed in the least; she wore the same stays and dresses throughout with no adjustments or alterations. A short time before delivery she had a little stomach ache, which she ascribed to having eaten a supper. The child was born as the result of one long pain only, and the process was a matter of a few minutes only. The medical attendance merely consisted in division of cord and application of a binder. The husband had no suspicion of his wife being pregnant, and was quite excited and flustered at the unexpected birth.

I also questioned a married woman who had had several children, and who occupied part of the same house. She had not noticed any sign of pregnancy in her friend, neither in figure, dress, nor anything else.

The whole set of circumstances seems almost unbelievable, but I closely questioned all parties concerned at considerable length, and as there was no conceivable reason for speaking anything but the truth I unhesitatingly accepted the statements as facts. I still believe these things to be true in every particular.

London, S.W. JOHN FLETCHER.

A DIPHTHERIA CARRIER.

MISS E. R., aged 28, of robust appearance, had been found to be a carrier of virulent diphtheria bacilli in November, 1921, when an outbreak occurred in a school where she was matron. An autogenous vaccine prepared at Manchester University and also a stock vaccine were administered without effect, as follows:

Three doses of autogenous vaccine, each containing 10 million bacilli, were injected—one each on January 20th, January 27th, and February 3rd; three doses of the stock vaccine were also injected—one of 25 million on February 28th, one of 50 million on March 6th, and one of 25 million on March 17th. Swabs taken on various dates subsequent to the commencement of the injections showed, on culture, the following results:

February 2	...	swab +		March 4	...	...	swab +
,, 8	...	,, −		,, 16	...	...	,, +
,, 18	...	,, +		,, 22	...	...	,, −
,, 25	...	,, −		,, 28	...	...	,, +

After the dose of 50 million stock vaccine (undetoxicated) there was considerable reaction, and the patient complained of very distressing pain in the region of the heart with a feeling of oppression, but there was no tachycardia, dilatation, or valvular disease. These symptoms had not been present before the use of the vaccine; in fact, the patient had felt perfectly fit. She refused further injections after March 17th.

On March 14th I removed the right tonsil, which was somewhat hypertrophied; the left tonsil was only visible on retraction of the anterior pillar of the fauces. As diphtheria bacilli were still present on March 28th I sent her to Dr. E. H. R. Harries, who reported numerous diphtheria bacilli on the left tonsil and a few from the nose, and recommended dissection out of the left tonsil; this was done by Mr. A. L. Yates on April 21st, and he removed some adenoid tissue at the same time. Swabs taken subsequently showed the following results:

May 10	...	...	swab +	May 24	...	...	swab −
,, 17	...	...	,, −	,, 30	...	...	,, −

On May 10th a slough was still present in the nasopharynx; after this had separated the swabs were negative. Local treatment after removal of the tonsils consisted of swabbing over the tonsil beds and nasopharynx daily with 10 per cent. argyrol, except on mornings before swabs were taken.

I think this case only emphasizes the uselessness and even harmfulness of vaccines for these cases, and the necessity for thorough removal of any unhealthy tissue, without which the diphtheria bacilli cannot be dislodged.

Wolverhampton. C. L. STACKMAN, M.B., Ch.B., D.P.H.

Reviews.

CANCER OF THE BREAST.

MR. HANDLEY published the first edition of his book on *Cancer of the Breast* in 1906, and it says much for the thoroughness and care with which his original investigation was conducted that in this, the second, edition,[1] published sixteen years later, there has been need for practically no alteration of any consequence in that section which deals with his pathological work.

The arrangement of the contents of the volume is based on a scientific principle which ought to be more frequently followed. The book begins with a detailed statement of the evidence on which Mr. Handley relies to establish his theory of the way in which carcinoma of the breast is disseminated; later chapters treat of the process of repair in carcinoma, the normal anatomy of the breast, the treatment, operative, by *x* rays, and by radium, and of recurrence. Paget's disease and the dissemination of melanotic sarcoma are discussed in two interesting and illuminating chapters.

The two sections of the book which will probably first attract attention are, curiously enough, neither of them strictly concerned with the main thesis of the volume. Chapter X deals with the anatomy of the breast and its lymphatic glands; here we confess to some feeling of disappointment: in a volume of such excellence and importance place might have been found for a more detailed account of what must essentially form the groundwork of successful pathological investigation. In contrast to this, the chapter dealing with the radiological treatment of carcinoma is one of the best presentations of the subject which we have read. It puts the highly important question in an exceedingly fair light, and we would commend its perusal to all who have anything to do with the radiological treatment of carcinoma. We have only one criticism to make: it would, we think, have been well to have recounted in greater detail the work of Murphy and Rous and their collaborators; Mr. Handley dismisses their investigations very briefly and does not even mention their names; but their results are, we believe, generally considered to be of great significance.

The first chapter deals with the inadequacy of the embolic theory of the dissemination of carcinoma; Mr. Handley is strongly in favour of the view that breast cancer is disseminated by the lymphatic vessels. While he does not deny the possibility of cancer cells entering the blood stream, he believes (and his belief is mainly based on the work of M. B. Schmidt) that the blood exerts so strong a destructive action upon the cancer cells that haemic embolic metastasis is an extremely rare occurrence. Recent experimental work tends to call in question some of Schmidt's results, and we suggest that the papers Czerny published in 1913–14 are of interest in this connexion. With great originality a mass of evidence is presented in favour of the view that the disease is disseminated by way of the lymphatics along the deep cervical fascia. The author draws a clear distinction between spread by infiltration and spread by permeation; the latter is the advance guard of the disease, and by ingenious argument, if not by demonstration, Mr. Handley shows that it is along the smaller lymphatic vessels that the cancer cells primarily extend.

There are not many who will express disagreement with his views, but to a critical mind the demonstration is not so convincing as Mr. Handley would have us believe. Naked-eye evidence, as shown by the skin nodules, is untrustworthy; such evidence can only be obtained in the advanced stages of the disease, and the nodules, therefore, are no criterion of an early process. Microscopical evidence will be convincing when the process, as Mr. Handley describes it, can be demonstrated in a complete series of serial sections. The labour would be enormous, and the observer to undertake it has yet to appear. The examination of a single strip, of even of two radial strips, is not sufficient evidence of what may be occurring in other planes and serials. The author describes his conception of the disease and its spread as being that of a biconvex lens, by which description we may infer that he believes that the dissemination of the disease, while not necessarily circular, is yet radially uniform from a common centre. It is difficult to reconcile this exact conception with

[1] *Cancer of the Breast and its Treatment.* By W. Sampson Handley, M.S., M.D.Lond., F.R.C.S.Eng. Second edition. London: Published for the Middlesex Hospital Press by John Murray. 1922. (Med. 8vo, pp 411; 82 figures. 30s. net.)

what happens in cases of epigastric abdominal involvement. Is it not more natural to assume that there has been a lymphatic dissemination of the disease along one definite line?

There is difficulty also in agreeing with Mr. Handley in his dismissal of the blood route of infection. In those cases which show secondary deposits in the dura further evidence seems to be required to carry conviction that such deposits are explained by a lymphatic dissemination along the deep fascia extending as far as the scalp, and yet giving rise to no other superficial manifestation.

A very interesting and encouraging portion of the book is that which deals with the natural tendency to cure in carcinoma. It is encouraging because we are too apt to be pessimistic where malignant disease is concerned; here again, however, we cannot help wishing that Mr. Handley could show us more convincing evidence of the radial fibrotic cure which he so dramatically describes.

In the section which deals with the principles of the operation for breast cancer we are glad to call attention to the importance Mr. Handley attaches to the too often neglected rule that the primary growth shall always be the central point of the mass of tissue which is cut out in order to remove cancer. Too often the rule is broken in order to ensure a more adaptable scar. We do not find that Mr. Handley has expressed an opinion on the question whether the axillary dissection should precede the removal of the breast and its associated parts. There are many who believe that to introduce the operation by an axillary dissection is a great material advantage. We hope we shall not be accused of levity if we allude to one point which must interest all who play golf—and in these days who does not? In January, 1912, Mr. Handley carried out the radical operation for breast cancer on a lady who, within six months of the operation, defeated her husband, a scratch player, though she was in receipt of only three strokes! Golfing stories, like fishing stories, are always refreshing, and this is one of the best we have heard.

But, apart from these criticisms, golfing and otherwise, we have nothing but admiration for this most excellent volume. The research has been conducted in a most scientific spirit, there is evidence throughout of admirable care and attention to detail, and if on occasion the reader has the feeling that the cloth has been cut to suit the tailor, one must remember that it is a fault to which every original investigator is liable. In future editions we hope that Mr. Handley will give us the benefit of his great experience by recounting further problems of breast pathology in relation to other tumours.

THE PATHOLOGY OF LETHARGIC ENCEPHALITIS.

PROFESSOR TAROZZI'S monograph on non-suppurative encephalitis and so-called lethargic encephalitis[2] is based on observations made on cases during the epidemic at Modena between December, 1919, and January, 1920. The book is mainly devoted to the anatomical, histological, and bacteriological study of the disease, together with an account of the author's experiments on animals. The anatomical and histological observations are divided into three groups. The first comprises those cases which showed symptoms of epidemic encephalitis during life, the diagnosis being confirmed by *post-mortem* examination; the second group consists of cases which came to autopsy with the diagnosis of influenza or acute bronchopneumonia with or without symptoms of cerebral involvement; and the third group consists of miscellaneous diseases. All the eight cases of the first group with one exception showed diffuse lesions of the bronchopulmonary system referable to influenza, and the parenchymatous organs showed degenerative changes due to toxic infection. The lesions in the central nervous system both on naked-eye and microscopical examination presented the appearances characteristic of epidemic encephalitis. Bacteriological examination of the cerebro-spinal fluid was always negative. In six of the twelve cases belonging to the second group a study of the central nervous system showed lesions similar to those found in a more marked degree in encephalitis. In the third group, which comprised eleven examples of various diseases such as tuberculosis, pemphigus, purpura, nephritis, and carcinoma of the pancreas, histological lesions resembling those of encephalitis were found apart from any clinical signs of nervous involvement. The experimental work performed by the author consisted of inoculation of rabbits with pure cultures of diplostreptococci obtained from bronchopneumonic areas in cases of encephalitis. The inoculations were made beneath the dura mater, into the cerebral substance, into the carotid, jugular vein, and peritoneum; the lesions produced were similar to those met with in lethargic encephalitis.

Professor Tarozzi maintains that the anatomical and histological changes of so-called lethargic encephalitis do not differ in any respect from those found in non-suppurative encephalitis, and especially from the encephalitis which may accompany influenza. *Post-mortem* examination of cases of encephalitis always shows the changes in the respiratory tract usually found in influenzal bronchopneumonia. Moreover, in the central nervous system of persons who have died of influenza lesions are found in a marked degree with relatively greater frequency in those who have presented clinical symptoms of encephalitis during life. The histological changes in the central nervous system in lethargic encephalitis are presumably to be attributed to the local action of circulating toxins produced by the diplostreptococci which are responsible for the inflammation in the respiratory tract. There is thus, the author concludes, a close causal relationship between influenza and encephalitis. The hypothesis that influenza merely predisposes to infection of lethargic encephalitis is dismissed as inadequate.

THE POPULATION PROBLEM.

DISCUSSION of the population problem generally excites as violent animosities as debates on psycho-analysis, no doubt because both topics are more or less concerned with a taboo. The fury aroused by Parson Malthus lives in Cobbett's pages, while the more genial satire of Peacock can never lack admirers. Lord Morley tells how Mr. Gladstone withdrew from co-operation with the promoters of a memorial to John Stuart Mill because of a doubt whether Mill had not advocated obnoxious checks to population. Eminent statisticians, even correspondents of the BRITISH MEDICAL JOURNAL, have been a trifle fierce on the theme. Mr. CARR-SAUNDERS[3] possesses the distinction of having devoted a volume of more than 500 pages to this exciting subject without a single lapse from academic decorum and without giving the most sensitive reader cause for anger. He has diligently perused a large number of books and memoirs (his bibliography includes about 1,000 titles) and has attempted to sum up the whole case in the manner of a judge. He has achieved a fair measure of success, although the field he essays to cover is so wide that specialists will no doubt find errors. Actuaries, for instance, will object that neither Macdonell's deductions from the *Corpus Inscriptionum Latinarum* nor the rates of mortality in Price's Northampton Table give any information about that terribly mishandled function, the "Expectation of Life," either in ancient Rome or eighteenth-century England, because the method of calculation was unsound. But not even a diligent Oxonian can be equally well informed on all points. The general reader is likely to be awestruck by the range of Mr. Carr-Saunders's erudition. The harshest criticism such a reader is likely to make is to recall some sentences of Bagehot: "There is as much variety of pluck in writing across a sheet as in riding across a country. Cautious men have many adverbs—'usually,' 'nearly,' 'almost'; safe men begin, 'it may be advanced.'" Mr. Carr-Saunders is cautious and safe, although he has courage enough to dissent from opinions very influentially supported. Perhaps we can best give an idea of the qualities of the book by quoting the concluding passage.

"On the other hand, those who think that germinal change in mental characters will affect the evolution of society and mould the course of history are upon the whole mistaken. The course of history is in the main dependent upon changes in tradition which are for the most part independent of germinal change. Just as the outstanding happenings in the last century—the turning of thought and conduct in Germany, for example, along certain lines, which ended in so great a catastrophe—were due to changes in tradition and not to changes in the germinal constitution, so whether the problems now pressing upon European society are to be solved, or whether some greater catastrophe, reaching a climax in a long course of years or bursting suddenly upon us, is to be the outcome, will depend upon changes in tradition and not upon germinal change. The reason for this lies in the fact that the vast accumulation of tradition overlays the outward expression of mental character, determines the direction of intellectual activity and moulds the expression of the instinctive faculties. But as far as tradition is equalized, so far do innate mental

[2] *Sulla encefalite non-suppurativa e la cosidetta encefalite letargica.* By Professor Giulio Tarozzi. Modena: Società Tipografica Soliani. 1921. (Med. 4to, pp. 99; 6 figures.)

[3] *The Population Problem: A Study in Human Evolution.* By A. M. Carr-Saunders. Oxford: Clarendon Press. 1922. (Med. 8vo, pp. 516; 21s. net.)

differences manifest themselves as between man and man, and since tradition is more or less equalized, if not within races, at least within classes in the same race, to that degree is mental endowment of pre-eminent importance to the individual."

At first this seems rather bold, a challenge to those who believe Nature more important than Nurture. But when one rereads it, perpends the final sentence, and remarks that Mr. Carr-Saunders defines tradition (on p. 409) as the "product of conceptual thought," one comes to doubt whether it really is so very bold after all. The character of the product must, we should suppose, depend upon what "conceives" it, therefore ultimately tradition *does* depend upon "germinal change." Perhaps the very bad tradition of Germany *was* a consequence of the conditions of selection a generation ago, which Mr. Carr-Saunders allows (on p. 464) to have played some part—his cautious words are, "may have played a minor part."

In fact, Mr. Carr-Saunders's caveat against the eugenists is a very mild one indeed. Perhaps all it really amounts to is this. When, as in Rome, a small number of highly intelligent and cultivated persons was surrounded by a vast population of entirely uncultivated and quasi-barbarous persons, the mutual destruction of the intelligent minority led to chaos; there was no sufficient tradition—using the word in a slightly different sense from that of Mr. Carr-Saunders—to keep the machine working. In a modern State this could not happen. If every educated Englishman were shot to-morrow the means of knowledge are so widely disseminated that, within a few generations at most, there would be a recovery to the original position.

Upon the narrower issues, the question of checks to population and the determination of the optimum population, Mr. Carr-Saunders is again a cautious but not inspiring guide. It may be a bold thing to say of any book on the population question, but we will predict that this work will not excite violent controversy.

X-RAY DOSAGE.

The Principles of Physics and Biology of Radiation Therapy[1] is an English translation of Krönig and Friedrich's book made by Dr. Henry Schmitz, Professor of Gynaecology at the Loyola University School of Medicine, Chicago. The original German edition was published in 1918, but the translation has been brought up to date by the addition of accounts of various investigations made by Friedrich and his assistants since that date; this, the translator states, has been done in order to demonstrate the important bearing of the original work upon the progress and development of radiation therapy.

Some idea of the comprehensive character of this publication can be gathered from the material which constitutes the two main portions. Part I, dealing with the physical principles of radiation therapy, is largely concerned with the question of dosimeters, and an instrument is described which appears to conform to all the demands of radiotherapy; there is a unit of dose and a method to gauge the scale of the dosimeter based upon this unit. The experiments made in order to perfect the iontoquantimeter are described in detail, together with errors of construction which have to be guarded against. An extraordinary number of experiments are detailed in this part of the book, ranging from those concerning the reliability or otherwise of Kienböck strips, the Sabouraud pastille, and the Fürstenau intensimeter, to those carried out in order to make a comparison between the depth dose calculated from the surface dose and the depth dose measured in the water phantom, and also experiments carried out with x rays filtered through 1 mm. of copper at different depths and with different sized fields. The number of tables of these various results is somewhat bewildering to a reader who is not an expert physicist.

The second part is occupied with the biological principles of radiation therapy, and is in effect an attempt, with the aid of the measuring methods described in the first part, to define the laws which govern the action of x rays and of radio-active substances on biological objects. Realizing that laws could not be framed without much preliminary investigation on the lower forms of animal and vegetable organisms, a large number of experiments were first of all made on frog larvae, and these are the subject of the opening chapters of this section.

Having convinced themselves that definite laws for the biological action of the various types of x ray could be founded on these experiments, the authors in the following chapter deal with their investigations made on human tissues; the three tissues chosen are the skin, carcinomata, and the ovary. Detailed accounts of experimental work on these three tissues, chiefly of the action of x rays through filters of 3 mm. aluminium or 1 mm. copper, occupy succeeding pages, and comparisons are made with the biological action of the gamma rays of both radium and mesothorium. All this part of the work is of the greatest interest and importance to the radiotherapeutist, and its arrangement is such that it is easily followed and understood. In each experiment the aim is first of all stated, then a short account of the details of the actual experiment is given, together with, in some cases, the control observations; finally the results and their bearing on the subject are summarized. This part concludes with an account of the methods of arriving at the sensibility quotient for the ovary and for carcinoma, and notes on the dependence of the intensity of the biological action on the same dose.

With regard to the main conclusions which are the outcome of all this work, it is definitely laid down that the average erythema dose can be, and is, determined; but that at the same time undersensibility as well as oversensibility can be proved to exist: the former, pronounced undersensibility, is frequently observed in very old, decrepit, and markedly cachectic individuals, even up to the amount of 100 per cent. The conclusion as to the ovary is that if the dose recommended to produce amenorrhoea is administered the age of the patient is practically of no importance—the successful result must follow on the dose. In carcinoma in some cases a tumour would completely disappear to the senses of sight and touch, whilst in other cases the tumour was refractory in spite of the same x-ray dose. The reasons for the great individual differences in this respect are unknown.

It is impossible to do more than give a general impression of the scope and the value of the experimental work detailed with so much care and exactness. The value of the book to the radiologist and especially to the therapeutist is obvious; it is well got up, printed in excellent type with large margin, and the illustrations, chiefly diagrammatic, are very good.

NOTES ON BOOKS.

THE *Handbook of Tuberculosis Schemes for Great Britain and Ireland*, edited by the National Association for the Prevention of Tuberculosis,[5] which has now reached its third edition, is a mine of useful information. Collected within its pages are facts and statistics which could only be obtained by the individual after an altogether unreasonable period of reference hunting. Classified in an admirable manner, and reproduced in the minimum of space consistent with clarity, are lists of all the tuberculosis schemes for the British Isles, together with the area, population, industrial occupation, and death rates from all causes—and from tuberculosis in particular—of each district concerned. In ten charts are given the death rates from tuberculosis—pulmonary and other forms—for 1920 in Great Britain, the age and sex distribution for the last sixty years, and the fall in the death rate for the same period. The information in regard to Ireland is somewhat meagre, but the figures alone are sufficient to indicate the backward state of that country in relation to tuberculosis administration. A tabulated plan of schemes laid out for counties and county boroughs, and a complete list of residential institutions—both official and voluntary—for the treatment of tuberculosis, giving the number of available beds and the class of case to which admission is restricted, conclude the book. We have no hesitation in recommending it to all who are interested in the progress of the campaign against tuberculosis in this country. As a handbook for the information which it is intended to supply it will prove invaluable.

DR. FERDINAND HUEPPE, of the German University of Prague, has edited a second edition of his book on physical training.[6] This is concerned largely with training for sport, and the author goes into the subject fully from both the physiological and practical sides. The book is illustrated by a number of reproductions of photographs of Greek statues and modern athletes, and discusses the various types such persons may present.

[1] *The Principles of Physics and Biology of Radiation Therapy.* By Drs. B. Krönig and W. Friedrich. Appendix and the English translation by Dr. Henry Schmitz. London: William Heinemann (Medical Books), Ltd. 1922. (Demy 4to, pp. 271; 31 plates, 86 figures. 42s. net.)

[5] *Handbook of Tuberculosis Schemes for Great Britain and Ireland.* National Association for the Prevention of Tuberculosis. Third edition. London: Adlard and Son and West Newman, Ltd. 1921. (Med. 8vo, pp. v+275; 10 charts. 10s. net.)

[6] *Hygiene der Körperübungen.* By Dr. Ferdinand Hueppe. Leipzig: S. Hirzel. (Demy 8vo, pp. 282. The price at which German books are supplied in this country should be ascertained from an importing bookseller.)

British Medical Journal.

SATURDAY, SEPTEMBER 16TH, 1922.

SOME PROPRIETARY VITAMIN PREPARATIONS.

The literature about accessory food factors grows apace, and not only are newspaper readers becoming familiar with the idea of vitamins, but the attention of manufacturers of foods and drugs has been attracted, and some of them have sought to turn the idea to commercial purposes in a manner which must be pronounced to be at least premature. To preserve foods so that the vitamins they contain when fresh are not destroyed is difficult; to obtain vitamins in concentrated form must therefore be still more difficult. The enterprise of manufacturers is being displayed on both sides of the Atlantic, and the *Journal of the American Medical Association* recently contained two articles giving the results of independent scientific experiments made to measure the vitamin content of certain proprietary articles advertised as containing vitamins. Not all the articles studied are known on this side of the Atlantic, but the principle involved is of general interest, and we therefore propose to give a short account of certain results obtained by investigations carried out in the departments of pediatrics and pathology of the University of Illinois College of Medicine, Chicago, and in the department of chemical hygiene and public health of Johns Hopkins University.

Vitamin C, it will be remembered, is antiscorbutic, and vitamin B is generally spoken of as the antineuritic or antiberi-beri vitamin. Drs. Julius H. Hess, J. J. Moore, and J. K. Calvin,[1] at Chicago, measured the amount of vitamin C and vitamin B contained in certain preparations advertised in America; the preparations examined included "Metagen" (Parke Davis), "Mastin's vitamon tablets," and "Yeast Vitamine-Harris"; in the last preparation only the vitamin B content was measured. They concluded that "Metagen as obtained on the open market contains no demonstrable amount of antiscorbutic substances, as shown by experiments on the guinea-pigs. The effect of the ageing of this product after leaving the manufacturing laboratory may be of importance." They found that Metagen contained vitamin B, but that it was less efficacious than fresh yeast in preventing and curing polyneuritis in pigeons. "Yeast Vitamine-Harris" contained nearly as much vitamin B as did fresh yeast, while "Vitamon" contained only a small amount of vitamin B. Neither of the last two preparations contained appreciable quantities of vitamin C. Their final conclusion was: "It appears from the foregoing experiments that the process of manufacture and subsequent ageing of the concentrated vitamin products have not caused as much deterioration of the antineuritic as of the antiscorbutic properties. All the products studied were very low in antiscorbutic properties, and while all of them contained water-soluble B, they had a much lower potency than fresh yeast, with the possible exception of the Yeast Vitamine-Harris preparation."

[1] Experimental Studies with Proprietary Vitamin Products. J. H. Hess, J. J. Moore, and J. K. Calvin. *Journ. of Amer. Med. Assoc.*, vol. lxxviii. p. 1441 (May 13th, 1922).

McCollum and Simmonds[2] examined six products—Mastin's yeast vitamon tablets, "Yeast Vitamine-Harris," "Double Strength" yeast and iron concentrate, Irving's Phos-pho vitamine, Alpha vitamine tablets, and "Super-vitamin" tablets. They tested these products for the presence of vitamin B, which is the most stable of the three vitamins, and therefore the one most likely to survive the processes of manufacture. From the dose recommended by the manufacturers for an adult they calculated the proportional dose required by a rat, and then tested these products by giving twenty times the calculated dose to young rats kept on a vitamin B free diet. The presence or absence of vitamin B in the preparations was indicated by the presence or absence of growth in the rats. Five of the products tested were found to contain, at the most, only traces of vitamin B, whilst the sixth preparation, "Yeast Vitamine-Harris," contained a moderate quantity of vitamin B.

These results confirm the expectations of all who have worked with vitamins. These bodies are very unstable, and hitherto it has been found practically impossible to concentrate them in the laboratory. Vitamin C is rapidly destroyed by any chemical treatment. All attempts to concentrate vitamin A have hitherto failed, and it is extremely difficult to concentrate vitamin B, although this is the most stable of all the three vitamins. Hence it would be very surprising if any manufacturer had succeeded in producing concentrated vitamins in a stable form on a commercial scale. The experiments quoted show, in fact, that some of the preparations tested are practically free from vitamins, and that the others contain less vitamin than ordinary yeast. McCollum, in his article, points out that a well-planned diet will afford an abundance of vitamins, and that there is no evidence that an excess of vitamins can produce any beneficial therapeutic effect; hence, even if the production of concentrated vitamins in a stable form were found to be a possible commercial undertaking, there is at present no evidence to show that such preparations would be of any definite therapeutic value. But, as McCollum says, "There prevails in the minds of most people, however, a childlike confidence that these substances [vitamins] must have a medicinal value." After pointing out that some manufacturers are offering for sale "extracts which purport to supply vitamins in concentrated form," he continues: "The extensive advertising of such nostrums, and the reports of druggists as to the extent of the demand for these products, leave no room for doubt that there is a great demand for them, and at fancy prices."

McCollum is fully alive to the fact that a human being can only thrive when fed on a diet containing a sufficient supply of vitamins, and observes that the concentration of populations in towns has resulted in our diet consisting essentially of highly milled cereal products, muscle meats, potatoes, and sugar. Such diets are insufficient to maintain animals in health and are proving a failure in the case of children. Such diets should be supplemented by vitamin-rich foods, of which the most important are milk and milk products, green vegetables, and fruit—substances which McCollum designates as "protective" foods. He advises that a diet should include salads twice a day, a liberal helping of cooked green vegetables once a day, and the equivalent of a quart of milk as milk or milk products.

If these statements are to be accepted as representing the approximate quantities of protective foods required to maintain full health, and we are not disposed to quarrel with them, it is obvious that the great majority of our urban populations are living on a diet deficient in vitamins. This deficiency is to be remedied by dietary reform.

[2] The Potency of Commercial Vitamin Preparations. E. V. McCollum and N. Simmonds. Ibid., vol. lxxviii, p. 1953 (June 24th, 1922).

THE EPIDEMICS OF EASTERN EUROPE.

WE have received a copy of a new pamphlet, *Epidemiological Intelligence*, No. 3, published by the Health Section of the League of Nations, relating to the epidemic situation in Russia and Eastern Europe. This is a continuation of previous pamphlets on the subject, and it supplements the shorter bulletins which are now furnished to the public health departments of different countries about every ten days. It contains an analysis of the reports of the several national delegations to the European Health Conference at Warsaw which was held in March of this year, and a summary of the present state of health defence in the European sanitary zone. Contact between the Health Section of the League and its Epidemic Commission on the one hand and the Russian health authorities on the other was established in September, 1921, and has since been maintained and extended. The "People's Health Commissariat" of Soviet Russia places at the disposal of the Health Section facilities for collecting epidemiological intelligence, and all kinds of Russian publications are supplied regularly to Geneva.

From the information contained in this document and associated bulletins it is only too obvious that the epidemic situation in Russia and the border States continues to be very grave. Typhus and relapsing fever are stated to have been responsible for at least two million cases officially reported during the first five months of the year. The seasonal fall in typhus incidence at the end of last winter was not very pronounced in Russia as a whole. The number of cases is said to remain actually at the winter level in the Ukraine. The case mortality from this disease is estimated to be considerably higher than the average of the last three years. New centres of cholera are also being discovered in Russia and the Ukraine, seventy provinces now being involved to greater or less degree. The disease has spread mainly along railway lines, and to a large extent has been carried by railway employees and also by refugees. It has not so far assumed the proportions of last year's extensive outbreak; the most remarkable epidemiological feature is perhaps the continuous character of its progress. It seems that preventive vaccination has been carried out on a large scale in certain parts of Russia. Cholera has not spread extensively beyond the frontiers of the Soviet territories, but there have been several cases at the Polish quarantine station at Rovno, and one or two are reported farther west traceable to direct contact from this station.

The Health Committee of the League of Nations, at its recent August sitting in Geneva, received this report and the report of the special Epidemic Commission of the League which has been working in the frontier areas for the last two years. The Committee decided to direct the immediate attention of the Council (now in session) to the following considerations in order that all practicable action may be taken without delay: (*a*) "The Committee has no reason to modify the estimate of the gravity of the situation in Eastern Europe in regard to the spread of typhus, relapsing fever, cholera, and other epidemic diseases which it expressed in May last." (*b*) "The way in which international measures can be applied so as to combat these diseases successfully is well known. The benefit of such measures is incontestable. The experience of the Health Organization and of its Epidemic Commission is available. In short, the field for successful international effort is limited only by the question of the money and material which can be secured." (*c*) "As a practical matter, it is essential to have a programme for immediate action limited as strictly as possible to the most urgent necessities. In the opinion of the Committee, the work of the Epidemic Commission during the winter 1922–23 should primarily be concentrated within a zone which includes the States bordering Soviet Russia and the Ukraine on the west, together with a defined portion of Soviet Russia and the Ukraine itself. Within this area the advantages to be derived from international effort are greatest and the need most urgent, and this work should be carried out by enabling the Epidemic Commission to continue and develop its work on the lines which it has so successfully followed during the last two years. Attention is also needed to the prevention of the spread of cholera from Black Sea ports." (*d*) "The invaluable work of the Epidemic Commission has been carried out by means of a total sum of about £200,000, now practically exhausted. New funds must be found at once to carry out the limited programme outlined above. The Health Committee begs the Council to use all its efforts to obtain fresh funds for the purpose at the earliest possible date."

The British Government, we understand, has already promised a contribution of £100,000 (or less amounts in proportion) for the continuance of this work, subject to the condition that £100,000 is forthcoming from the other nations contributing. The great importance to all Western European nations of the maintenance and enlargement of the sanitary zone on the borders of Russia, whilst that country and the Ukraine remain so huge a source of infection, and especially whilst repatriation is still incomplete, will be obvious to all who read this latest pamphlet. The work done by the Epidemic Commission has evidently been of the greatest value. It represents a co-ordination of effort which no other organization could at present attempt to supply, and we wish the Health Committee and the League every success in their attempts to stir the nations to work, not only of the highest humanitarian value, but vitally important in their own defence.

Space does not permit us to do more than draw attention to many interesting epidemiological features in this pamphlet, such as the peculiar alternation between the epidemics of scarlet fever and typhus fever in Rumania, and the strange variations in virulence as shown by case mortality rates in several of the diseases. We note that it contains also a useful summary of influenza mortality in European cities. This might with advantage be published separately from the epidemic diseases of Eastern Europe; it would be particularly appropriate as a contribution to the *Bulletin* of the Office International d'Hygiène Publique, which is already a mine of information on the occurrence and type of influenza throughout the recent pandemic.

THE SENSE OF SMELL.

THE possession of a sense of smell is one of our natural gifts, but the possession of any knowledge concerning that sense belongs to few. Owing to the inherent and obvious difficulties of the matter investigations have been relatively scanty. Yet the literature of neglected subjects such as this is, none the less, not barren. Various attempts have been made to classify odours and to explain the mechanism by which they reach our consciousness. Of classifications of smells the simplest, and that which will most appeal to the average man, is that of Haller, who in 1763 made them into three classes — agreeable smells, intermediate smells, and disagreeable smells. So might Falstaff himself have described smells, and by this rule our public authorities work to this day—to our great profit.

In more recent years valuable contributions have been made by Zwaardemaker,[1] whose work created considerable

[1] *Physiol. des Geruchs*, H. Zwaardemaker, Leipzig, 1895; and *Geruch und Geschmack*, Handb. der physiol. Methodik, Leipzig, 1911, vol. iii.

Obtainable at French Constable and Company, 10, Orange Street, W.C.2.

discussion, and whose olfactometer, described in our columns many years ago, opened up wider fields for research. In a thesis recently presented to the University of Brussels, A. Heyninx,[1] in a handsome and well-documented quarto, attacks the problem anew. Zwaardemaker had done a service in reducing the somewhat vague sense of smell to something measurable and capable of clinical application. He had classified odorivectors, and had shown, moreover, that in the same class of odoriferous bodies identical or similar intramolecular groupings are found. But the chemical formulae may vary greatly, and yet a similar smell result—for example, hydrocyanic acid and nitrobenzol have the same odour of bitter almonds.

Heyninx attempts to put the olfactory sense upon a rigid physical basis. In the first place, he laments that we can only speak of smells by periphrasis—by comparing a given smell with that emitted by some well-known object. Before the discovery of the monochromatic elements of the solar spectrum it was by such roundabout means that colours were designated. Indeed, Heyninx wishes to set up a spectrum, as it were, for smell with a classification dependent on variations in the wave-length. By ingenious and closely reasoned argument, betraying considerable knowledge of physical chemistry, Heyninx arrives at the conclusion that the activating mechanism of odours is by the vibration of wave-lengths, the same as those of the ultra-violet part of the solar spectrum. He is attracted by Castelli's theory of resonance in vision—the resonance of the retinal pigment granules in response to waves of light. He uses this theory to explain the pigmentation of the olfactory mucous membrane, and finds that the size of the pigment granules corresponds roughly with the wave-length which odorous bodies emit. An important argument in this connexion is contained in a paper by Ogle[2] on anosmia; he states that albinos, who have no olfactory pigment, have no sense of smell. Heyninx describes his experiments on the excitor mechanism of olfaction; they show that it is not a radio-active energy, nor a chemical, nor a colloidal, nor a spectral absorption, but a moleculo-vibratory energy which activates our affective paths.

Dr. Heyninx's contentions are deserving of attention, and his large and extremely well produced book will be found a mine of information with a rich bibliography.

THE GOVERNMENT LABORATORY.

An important though little known department is that of the Government chemist, otherwise known as the Government laboratory. The present establishment consists of the Government chemist and his deputy, with five superintendent chemists, nine chemists class I, twenty-three chemists class II, and thirty-six temporary assistant chemists. A brief sketch of the manifold activities of his department is given by Sir Robert Robertson, K.B.E., D.Sc., F.R.S., in his report for the year ending March 31st, 1922.[3] The chemical work of some fourteen Government departments is now done wholly or in part in the laboratory at Clement's Inn Passage. The other laboratory at the London Custom House deals especially with customs samples; but to avoid delay in examination "chemical stations" have been established at the more important seaports, where samples are tested by customs and excise officers who have been trained at the Government laboratory for this purpose. There is also a laboratory at Deptford for the inspection of War Office food stores and supplies. In all, more than 300,000 samples are examined every year. Much extra work has arisen in connexion with the Safeguarding of Industries Act, the Dangerous Drugs Act, and the Dye Stuffs (Import Regulation) Act. The work undertaken for the Ministry of Agriculture and Fisheries includes the analysis of a great many samples of dairy produce and margarine. Under this heading we note that the amount of fat in various samples of condensed milk ranged from 7.15 to 10.6 per cent., with a corresponding variation in the proportion of non-fatty solids, indicating that one tin might contain half as much again of milk products as another of the same size; minimum limits for condensed milk have, however, not yet been adopted in this country. The work of investigating the degree of pollution of river water and effluents is increasing, and much has been learnt regarding the proportion of toxic constituents in tar extracts and washings. On behalf of the Crown Agents samples of medicines and drugs taken from supplies for various colonies are examined to see whether they conform to specification. A considerable amount of work is done in determining the gravity of beer for the assessment of duty, and many samples of beer are examined for suspected dilution. Of 481 samples of beer and brewing materials investigated for the presence of arsenic, 24 were found to contain arsenic in excess of the limits laid down by the Royal Commission on Arsenical Poisoning. Of 86 samples of matches examined, none contained any evidence of the presence of white phosphorus. For quite other reasons a watchful eye is kept also upon liqueur chocolates and other confectionery suspected of containing alcohol; "many, however, contained only highly flavoured cream interiors, the presence of spirit being due to association with the flavouring essence used." Claims for rebate on alcohol used in making medicinal preparations are referred to the Government chemist by the Commissioners of Customs and Excise; also applications for duty-free alcohol for use in manufactures, teaching, and research. Analyses of the intake and output of illicit stills numbered only 29; this must be in sharp contrast with the corresponding work imposed upon the corresponding department in the United States. We note, too, that none of the "non-alcoholic" wines analysed showed more than 2 per cent. of proof spirit. Medicated wines to the number of 33 were examined, but the result is not recorded, and 33 samples of partially fermented grape juice were classed for duty as wines. This department is called upon also to decide whether a wine of doubtful effervescence is to be rated as still or sparkling. The Post Office employs it to safeguard the purity of the materials used in making stamps, and the Board of Trade to keep watch over the lime juice and lemon juice for crews of ships at sea. An immense amount of tea is examined on its arrival in order to ensure that only that which is fit for human food shall pass into the country. Rejected tea is allowed duty free for use in the manufacture of the alkaloid caffeine; in such cases the tea must first be denatured (usually with lime and asafoetida) under the supervision of customs and excise officers. The impression given by this report is that the Government laboratory is almost as useful a friend to public health as it is to the public purse.

THE BRITISH RED CROSS SOCIETY.

In a preface to the Second Report of the Joint Council of the Order of St. John of Jerusalem in England and the British Red Cross Society, the chairman, the Hon. Sir Arthur Stanley, states that in pursuance of its policy "to bring home to the minds of men, women, and children throughout the United Kingdom the vital importance of the prevention of disease" the Council has instituted health lectures to women in rural areas; a syllabus of seven lectures was prepared, dealing with such subjects as general physiology, the digestive system, the skin, hygiene of the home and the village, personal health of the family—child, school boy and girl, and father and mother. The scheme was carried out in nine counties, and has been so much appreciated that requests have been received for its extension to over twenty others during the ensuing winter. Certain medical dépôts have been established to supply sick-room requisites on loan to poor people unable to buy them.

[1] *Essai d'olfactique physiologique.* By A. Heyninx. Thèse présentée à la Faculté de Médecine de l'Université libre de Bruxelles. Brussels: F. Lamiar. 1919. (9 × 12½, pp. 289; 21 figs.)

[2] Ogle, BRITISH MEDICAL JOURNAL, 18.0.1, p. 166.

[3] Obtainable from H.M. Stationery Office, Imperial House, Kingsway, W.C.2. 1s. 7½d. post free.

The Joint Council's Emergency Help Committee has done much work during the year under review (ending March 31st, 1922). It was established in December, 1920, to administer an initial grant of £100 000 by the Joint War Finance Committee for relief of sick and disabled ex-service men in distress. The scheme in its working illustrates admirably the great advantages of cordial co-operation between Governmental and voluntary agencies. Gaps exist in the administration of the Ministry of Pensions scheme, and these can within limits be filled from the emergency fund. It has been administered by county directors, who report monthly to headquarters, and notes on the experience so gained are in turn reported and circulated for general guidance. Inquiries showed a unanimous opinion in favour of its continuance in all parts of the country for six months at least; at the end of that time (September 30th) the position will be reviewed. Relief of widows and dependants is, within limits, included in the scheme, and for that object there is co-operation with the Soldiers', Sailors', and Airmen's Families Association and the United Services Fund. Of the work of the Home Service Ambulance Committee we recently gave a full account. It now has 309 ambulances, and the number of patients carried in the year was 53,743. Voluntary workers have rendered valuable service in the skilled removal of patients. Ambulances have been stationed at the Pensions Ministry's hospitals at Shepherd's Bush and Roehampton for transport to and from omnibus and tramway termini, and have carried jointly over 118,000 cases. Charges are made to patients able to pay, and in this way much of the cost has been defrayed. In those districts in which there is a deficit it is made good by voluntary subscriptions. Hospital services by the Council have included, at the request of the Government's Disposal and Liquidation Committee, the classification, display, and sale of surplus medical stores. The civil hospitals made purchases to the value of about £50,000. A report dealing with the work of the provincial hospitals in 1921 is to be published shortly. In April, 1921, an emergency call at twenty-four hours' notice was received by the V.A.D. Department from the Admiralty to post 300 nursing members to the three principal naval hospitals to take the place of naval ratings called away in connexion with a labour strike; the nurses remained on duty for ninety days. The amount spent under the V.A.D. scholarship scheme was over £43 000; the balance remaining is over £9,000. The students still in training number 144. The report deals also with the Stores and the Trained Nurses Departments. The Finance Committee's report shows that bad as the times are such splendid organizations as compose the Joint Council can still make successful appeal to the benevolence of Britain, and indeed in some degree to that of the four quarters of the globe.

PUBLIC HEALTH IN THE MALAY STATES.

THE population of the Federated Malay States at the census of 1921 was 1,293,292, as compared with 1,099,781 in 1911 and 678,595 in 1901. There were 5,466 females to every 10,000 males, as compared with 4,302 in 1911, the male population increasing by 18.1 per cent. and the female by 53.4 per cent. The number of births recorded was 36,294, and of deaths 33,077, the rates being 27.81 and 29.18 per mille respectively. The death rate of the four principal towns (Kuala Lumpur, Ipoh, Taiping, and Seremban) is far too high. Infantile mortality and overcrowding are the main causes. The deaths of children under 1 year numbered 6,646, giving an infantile mortality rate of 183 per mille. An Infant Welfare Advisory Board, under the chairmanship of the chief secretary, Mr. W. G. Maxwell, C.M.G., hopes to effect some good. Malaria was as usual the chief cause of sickness and death. The number of deaths recorded from this cause was 17,168—a considerable decrease from the 20,595 deaths in 1920, but still nearly half the total for all diseases. The death rate was 13.16 per mille, as compared with 15.24 in 1920. Malaria, however, is a factor in many deaths attributed to other diseases. The Malaria Advisory Board meets every month, and almost every district has a Mosquito Destruction Board. Any estate can obtain an anopheline survey free of cost, together with a report and the health officer's recommendations; but antimalarial measures on estates, to be effectual, must be carried out under the direct supervision of the estate medical officer. The District Mosquito Destruction Boards carry out destruction work in the town areas, villages, and kampongs. The central Malaria Advisory Board advises generally, and controls and co ordinates the work of the district executive boards. Antimalarial work on estates is the duty of the owners of the estates. It is essential that there should be a policy of combined action by contiguous estates in respect of antimalarial measures, and the Malaria Advisory Board is endeavouring to achieve this. Where antimalarial works are carried out under expert supervision upon an estate, and some State land or small holdings ought also to be treated, the Government makes a fair contribution. The antimalarial works at Kuala Lumpur cover 6,600 acres, and were maintained at a cost of 22.126 dols.; the cost of new works was 105,000 dols. The Port Swettenham antimalarial area of 3,100 acres was maintained at a cost of 4,623 dols. At Seremban a drained area of 1,500 acres was maintained at a cost of 8,283 dols. Surveys at Taiping, Kuala Lumpur, Gemas, and Raub were carried out over an area of 2,600 acres. During the year there were in the various hospitals and asylums 166,785 indoor patients, as compared with 120,879 in the preceding year. Outdoor patients numbered 275,783 in 1920. The increase in the number of out-patients and the decrease in the number of in-patients are largely due to the establishment of dispensaries in crowded quarters of towns. The value of novarsenobenzol in venereal diseases is recognized by the coolie class, and they are insistent upon treatment by injection. The same drug is used with great success in the treatment of yaws; 8,547 injections were given in Perak, 578 in Selangor, 21,179 in Negri Sembilan, and 903 in Pahang. In Perak 75 cases of small-pox were reported; by energetic action the outbreak was stopped. At the Institute of Medical Research special investigations are in progress into the occurrence of cases of malaria resistant to quinine, and into the value of "cinchona febrifuge" as compared with quinine. The special inquiry, commenced in 1920, into the pathology and treatment of dysentery was continued in 1921. Further investigations were made into melioidosis (pseudo-cholera) and reactions for syphilis. A study of the distribution of anophelines and the seasonal prevalence of species has suggested that the distribution of species may depend on the nature of the food material available in the breeding places—that is, on the algae and other microscopic organisms, and that these in their turn possibly depend on differences in the chemical constituents of the water. The annual reports of the Institute of Medical Research may be obtained free of charge upon application to the Superintendent, Printing Department, Kuala Lumpur.

THE "CREATION" OF "SIBSON'S NOTCH."

IF it be true that a prophet is not without honour save in his own country, there is the consolation that he may possibly get undeserved credit in a strange land. This appears to have occurred in connexion with Francis Sibson (1814–1876), physician to St. Mary's Hospital, who wrote much on diseases of the pericardium, especially in Russell Reynolds's *System of Medicine*, but is scarcely remembered by the present generation, except perhaps for the copious reproductions of his observations in the article on "Diseases of the pericardium" by the late Dr. F. T. Roberts in Allbutt's *System*. In a recent paper entitled "La question de l'encoche de Sibson," Dr. Germain Blechmann[1] gives an interesting account of the "creation" of the supposed sign "Sibson's notch," which is defined in Dorland's American *Illustrated Medical Dictionary* as "an inward bend of the left upper limit of precordial dulness in acute pericardial effusion." Though not known in this country it appears to be a familiar term in French literature, having in a textbook on

[1] Blechmann, G.: *Rev. de méd.*, 1922, xxxix, 5-18.

cardiological diagnosis published last year even undergone an evolution into "encoche de Gibson"! The responsibility for the creation of Sibson's notch has been traced by Blechmann to the famous Potain, who in 1887 gave an account of the bun-like dullness characterized by Sibson's notch at the base of the heart in pericardial effusion. The explanation appears to be a mistranslation of Sibson's statement that "the pericardium in fact yields sideways under the pressure of fluid, and *encroaches* so far on the left lung as to push it backwards, almost out of sight." Indeed, as Dr. Blechmann points out, Sibson's notch is a fiction for two good and sufficient reasons: in the first place because he never described it, and secondly because it does not occur. The tradition of Sibson's notch shows that even in these days authority may exert undue weight, and that percussion, though a century old, still presents difficulties.

THE CAMPAIGN AGAINST VENEREAL DISEASE IN BELGIUM.

A REPORT has recently been issued of the Conference on the Venereal Diseases held in December last in Paris, under the auspices of the League of Red Cross Societies. Most of the important Western and Eastern European countries were represented, and the two volumes in which this Report is published, together with the report of the Northern European Red Cross Conference for Combating Venereal Diseases held in Copenhagen in May, 1921, constitute a fairly comprehensive survey of recent activities directed against the venereal diseases throughout Europe. A perusal of the speeches of the various delegates leaves the impression that in several countries the campaign, as a definitely organized movement, has hardly begun; and as was to be expected, the efficiency of the various organizations appears to be proportional to the cultural level the different European countries have reached. But whether the delegates spoke of actual achievements or pious hopes, all expressed the belief that recent advances in our knowledge of syphilis were so considerable, and the prospects of controlling it and stamping it out now so promising, as to justify a completely new start, with all the forces of a civilized community converging on this one subject. The paper read by Professor Bayet and Professor Malvoz, delegates for Belgium, may be taken as a fair sample of this modern movement. They pointed out that the arsenical group of drugs is capable of reducing the period of greatest infectivity of syphilis from months to weeks, and argued that if this period could be reduced by three-quarters or four-fifths, an equivalent reduction might be made in the number of infectious persons. The programme of the Conseil supérieur d'hygiène de Belgique, adopted in August, 1920, may be said to pivot on this argument, and therapeutic sterilization of infected persons is regarded as the most effective prophylaxis possible. In translating this principle into practice, the Belgian authorities provide arsenical antisyphilitic drugs free of charge on request, whether the applicant be poor or not. Another step of far-reaching importance is the inclusion of every practitioner in the campaign; in the past the treatment of syphilis was chiefly in the hands of specialists, and was conducted at hospitals. Now, dispensaries are being opened, the objects of which are to provide the general practitioner with all the aid he needs. He may send his patients to be treated there, or he may use the dispensary only for consultation and diagnosis, keeping treatment in his own hands. Although fulfilling the functions of a diagnostic, therapeutic, and registration centre, these dispensaries are run on the principle that administrative formalities of a deterrent character should interfere with their popularity as little as possible. Other items in the campaign are a scheme of educational propaganda, the constitution of a medical advisory board, and the development of an organization for the care of the victims of syphilis. Only brief reference was made to gonorrhœa in this programme, but doubtless much of the machinery provided for the campaign against syphilis could be adapted to the control of gonorrhœa. Both the Belgian delegates spoke of syphilis as a disease on which modern science has a stranglehold, and maintained that it is gradually losing its character as a highly infectious disease with cutaneous and mucous manifestations, being rendered comparatively uninfectious by the arsenical drugs. In this connexion they stated that a diminution in the ratio of primary and secondary syphilis to tertiary syphilis could be noted.

GRADUATE INSTRUCTION IN LONDON.

THE further series of post-graduate lectures arranged by the Fellowship of Medicine and Post-Graduate Medical Association for next session will begin on Wednesday, October 11th, when the opening lecture will be given by Sir James Galloway on "The symptoms and treatment of certain unexplained granulomatous diseases." Dr. Eric Pritchard and Dr. C. E. Lakin will give lectures during October, and the complete programme up to December 13th will be published shortly. As already announced, a special course in tropical diseases will be given at the London School of Tropical Medicine from October 2nd; it will consist of twelve meetings, distributed over four weeks, on Mondays, Wednesdays, and Fridays, from 2 to 4 p.m. The syllabus will be available shortly. Owing to the nature of such a course, the class must consist of not fewer than four members, and it is therefore necessary that those desiring to join should notify their intention of doing so as soon as possible to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE Harveian Oration will be delivered before the Royal College of Physicians of London by Dr. Arnold Chaplin, on Wednesday, October 18th, at 4 p.m., at the College, Pall Mall East. The Bradshaw Lecture will be delivered by Sir Maurice Craig, on "Mental symptoms in physical disease," on Thursday, November 2nd, at 5 p.m. The FitzPatrick Lectures will be delivered by Dr. R. O. Moon, on "Philosophy and the post-Hippocratic school of medicine," at 5 p.m. on Tuesday and Thursday, November 7th and 9th.

DR. GEORGE HASWELL WILSON, lecturer in bacteriology at the University of Glasgow, has been appointed to the Chair of Pathology in the University of Birmingham, rendered vacant by the election of Professor J. Shaw Dunn to the corresponding post in the University of Manchester.

THE John Elliott Memorial Pathological and Bacteriological Laboratory at the Chester Royal Infirmary will be opened to-day (Saturday, September 16th), at 4 p.m., by Sir Humphry Rolleston, K.C.B., M.D., President of the Royal College of Physicians of London. The laboratory has been fitted and equipped by public subscription in memory of the late Dr. John Elliott, Honorary Physician to the Infirmary from 1895 to 1921.

THE late Dr. W. H. R. Rivers, F.R.S., left estate of the gross value of £2,655. He bequeathed to St. John's College, Cambridge, of which he was a Fellow, the portrait of himself by Shields; to the college library such of his books as the authorities may choose; to the university the balance of his books; and to his friend, Professor G. Elliot Smith, M.D., F.R.S., all his manuscripts, with £500 for defraying the cost of their preparation and publication.

THE National Council for the Promotion of Race-renewal, which established the National Birthrate Commission, is organizing an International Congress for the Reaffirmation of the World's Moral Ideal to be held in London, October 15th to 22nd. The Congress will be opened at Caxton Hall, under the Presidency of the Bishop of Southwark, on Tuesday morning, October 15th. The afternoon session, presided over by Dr. Mary Scharlieb, will discuss marriage and parenthood and the relation of the sexes, the speakers including Dr. H. Crichton Miller, Mr. C. J. Bond, F.R.C.S., and Dr. J. W. Ballantyne. On Wednesday morning the subject for consideration will be the economic, social, and racial aspects of morality and the rise and fall of population, migration, etc., the speakers including Sir Arthur Newsholme, K.C.B., M.D., Dr. C. W. Saleeby, and Professor William Caldwell, D.Sc., of McGill University. All communications about the Congress should be addressed to the General Secretary, Sir James Marchant, K.B.E., LL.D., 60, Gower Street, London, W.C.1.

THE BRITISH ASSOCIATION MEETING AT HULL.

THE ninetieth annual meeting of the British Association for the Advancement of Science closed at Hull on Wednesday, September 13th. We published last week an abstract of Sir Charles Sherrington's presidential address and a brief note of some of the earlier proceedings in the Sections. On the afternoon of the opening day, September 6th, the General Committee passed a resolution inviting the Council to make an effort, in association with the British Medical Association and kindred bodies, to obtain from the railway companies a renewal of the concessions in regard to fares which were in force before the war. It is greatly to be hoped that joint action in this direction may be successful. In connexion with the Annual Meeting of the British Medical Association held at Glasgow this summer, application was made to the Railway Clearing House for a return to the former practice of issuing tickets at reduced rates to medical practitioners attending the meeting, but the Clearing House did not see its way to accede.

On September 8th a formal invitation to hold the 1924 meeting of the British Association in Toronto was conveyed by delegates from the University of Toronto, who announced that a grant of 50,000 dollars would be made towards the expenses of British men of science visiting Canada, and asked that the meeting should be held in the second week of September. The invitation was accepted unanimously and with enthusiasm.

THE WORK OF THE SECTIONS.

We have only space to mention here a few of the multifarious papers and discussions, mainly those in the Sections devoted to the biological sciences. An account of Professor Cathcart's presidential address in the Section of Physiology is given below. Dr. J. C. Irvine, Principal of the University of St. Andrews, in the earlier part of his presidential address in the Chemical Section, referred to the organization of chemical research, and noted with approval the increasing recognition of chemists during recent years, both by the State and by the public. Professor H. H. Dixon's address in the Section of Botany was entitled, "The transport of organic substances in plants"—a subject which, in his view, had been somewhat neglected by plant physiologists. Joint discussions were held by this Section and the Section of Chemistry on photosynthesis, and with the Section of Zoology on the present position of Darwinism.

A joint discussion by the Sections of Educational Science and Psychology on psycho-analysis in relation to the school took place on September 8th, with Sir Richard Gregory, editor of *Nature*, in the chair. The debate was opened by Dr. C. W. Kimmins, Chief Inspector of the Education Department of the London County Council. In the course of his remarks Dr. Kimmins maintained that the child who failed to respond to the normal methods of instruction was essentially a case for the psychologist, and he urged the establishment of a psychological clinic in every school district. Both Dr. H. Crichton Miller and Dr. R. G. Gordon, who followed, called attention to current misconceptions in regard to the method and purpose of psychological analysis. On the previous day Sir Richard Gregory had given his presidential address in the Section of Educational Science on "Educational and school science."

A joint discussion on vitamins by the Sections of Physiology and Agriculture took place on September 8th, with Lord Bledisloe in the chair. The opener, Professor J. C. Drummond, gave a general account of our present knowledge of accessory food substances. He reminded his hearers that vitamins are all produced by green plants, for the ultimate source of the copious vitamins in cod-liver oil is a special kind of marine diatoms. Remarking that cod-liver oil, weight for weight, is 250 times richer in vitamins than butter, he suggested that farmers might see what could be done by adding small quantities of cod-liver oil to the dietary of backward animals. Captain John Golding, in giving an estimation of the practical agricultural importance of vitamin A in the feeding of pigs, warned farmers against the purchase of concentrated foods alleged to contain vitamins, and insisted that fresh green food or cod liver oil must be the means of giving vitamins. Dr. Albert M. Seidell, of Washington, gave an account of further studies on the isolation of the antiscorbutic vitamin. A stable, semi-solid extract of highly active vitamin obtained from fresh brewers' yeast, had, he said, been used for fractionation experiments, with silver nitrate and ammoniacal silver nitrate as precipitating agents. The distribution of the active vitamin in the several fractions was studied by means of feeding experiments on pigeons, and the activity and general character of the several precipitates determined.

The independent proceedings of the Section of Physiology included two interesting popular lectures—one on September 8th by Mr. Joseph Barcroft on the recent expedition to the Andes for the study of the physiology of high altitudes (several references to this expedition have appeared in these columns), and another on September 12th by Professor W. D. Halliburton entitled "Our bones and teeth." The papers by Professor W. Storm van Leeuwen of Leyden dealt with two more or less related topics. In his first paper, entitled "Experimental studies on hypersensitiveness," he showed that the action of drugs on isolated organs could be augmented by substances having no stimulating action of themselves. He concluded that hypersensitiveness to drugs was due to (*a*) lack of fixing power of blood for the drug; (*b*) augmentor action in allergic reactions. This he suggested might explain why the symptoms of hypersensitiveness to different drugs showed little differentiation. His second paper dealt with the cause and treatment of bronchial asthma, hay fever, and allied conditions. In these conditions he perceived an allergic disposition with certain definite characteristics: (*a*) the occurrence of skin reactions with several proteins, hypersensitiveness to one protein being exceptional; (*b*) "crise colloïdoclasique"; (c) the presence in blood extracts of a poison stimulating smooth musculature; (*d*) hypersensitiveness to tuberculin. In regard to treatment Professor van Leeuwen considers that specific treatment is often impossible. His procedure is to give tuberculin in low doses; to regulate the diet; and in addition to give specific treatment, either by peptone therapy according to Dr. Auld's method or by vaccines. His results show 52 per cent. of cures and 38 per cent. of cases improved. On September 11th Dr. F. W. Edridge-Green read two papers—one on colour-vision theories in relation to colour blindness, and the other on the necessity for a standard of white; in the latter he argued that any record for physiological purposes ought to contain a reference to the source of white light, which should be used for purposes of comparison, and could be reproduced by another observer. On September 12th Dr. P. M. Tolmie discussed the cytology of the blood and the source, development, and function of some of the corpuscles: and Dr. J. H. Burn read a paper on the physiology of sweating, in which he suggested that the activity of the sweat glands, when stimulated by pilocarpine, depends on the local capillary tone, this tone being independent of the arterial tone in the limb and its maintenance depending, amongst other things, on the integrity of the sensory nerves.

In presiding over the Section of Psychology Dr. C. S. Myers filled the vacancy caused by the lamented death of Dr. W. H. R. Rivers, and his presidential address dealt with the influence of Dr. Rivers's work on the development of the study of psychology in Great Britain. The concluding sessions of this Section included papers on the acquisition of skill in reference to training in industry, by Professor T. H. Pear; on auto-suggestion and the will by Dr. William Brown: papers by Dr. F. C. Shrubsall and Dr. G. A. Auden on mental deficiency; a paper by Dr. R. G. Gordon on difficult and delinquent children; and a joint debate with the Section of Anthropology on mental characters and race. Two other Sections (Economic Science and Statistics and Agriculture) combined on September 12th to discuss the possibility of increasing the food supply of the nation. The early proceedings in the Section of Zoology related almost exclusively to marine biology and fishery research.

During the meeting two conferences of delegates of corresponding and other societies were held under the presidency of Mr. W. Whitaker, to discuss methods by which the advantages of co-operation by scientific societies with the British Association and among themselves may be extended and improved.

ADDRESS ON HUMAN EFFICIENCY.

Professor E. P. Cathcart, M.D., F.R.S., gave his presidential address in the Section of Physiology on Friday, September 8th. His subject was "The efficiency of man and the factors which influence it."

He said that the term "efficiency" had become a mere catchword, and practically it had come to mean, to the average man in the street, the mythical improvement which

was to be anticipated from some change in workshop or office organization—a bigger and better result at a smaller cost. The word had a very definite meaning in engineering science, and this meaning had been transferred from the inanimate machine to the living organism. In the case of the engine the problem was relatively simple, as the number of interfering factors was not great; but the solution of the problem in the case of the organism was beset with many difficulties, as the interfering factors were numerous and varied.

Factors Influencing Efficiency.

The design of the organism which had to stand the strain was not at fault. It was an organism which, in the language of the engineer, was abundantly supplied with factors of safety, and had an over-all high factor of safety. The body was not designed merely to perform the minimum amount of work or to stand the minimum strain; there was always a reserve. We had a circulatory system which was beautifully balanced to meet a strain, a system of vessels whose calibre could be increased or diminished so that the blood might be mobilized at the tissues of the organs which required it, and a heart which had the capacity, provided it was normal and healthy, of responding to work, whose rate might be trebled in a few seconds when oxygen had to be obtained and carbon dioxide got rid of. Not only could the amount of blood which was passed through the lungs during hard work be increased some five times, but the amount of oxygen taken in might rise ten times. At rest less than a third of the oxygen present in the blood was required, and even in the very hardest work the arterial blood was not depleted of its oxygen; it probably still contained more than a fourth. The actual effectors, the muscles, did not of themselves seem to have a very high factor of safety. The structures—bone and cartilage—to which they were attached, and which limited their action, and the amount of strain to which they could be exposed or subjected, had a very high factor of safety.

The efficiency of a man did not merely depend on the amount of work which could be performed by his muscles; the circulatory, respiratory, and nervous systems were of equal importance, and all were intimately related. The muscles had to receive an abundant supply of blood, not merely to bring nutriment, but to remove waste; there had to be an efficient exchange of gases in the lungs, the rate of the respiratory and cardiac movements had to be adapted to the work in hand through the co-ordinating agency of the central nervous system. Not only so, but if the man was to work with the minimum of waste energy there had to be proper co-ordination between the various groups of muscles. Turning to the consideration of the factors which influenced the efficiency, both in the mechanical and industrial sense, it was found that the main controlling factor was undoubtedly the condition known as fatigue. "Fatigue" was a word just as frequently used as "efficiency," and yet it was almost impossible to give an accurate definition of the term. Generally speaking it was to be regarded as the antithesis of efficiency.

Rate, Rhythm, and Rest.

The factors which played predominant parts in the attainment of maximum efficiency were the rate of the performance of work, the amount of rest taken or offered by the subject, the rhythm with which the work was performed, and the work habits developed by the worker. These were all intimately related, and usually merged into one another. Of those four factors probably most attention had been devoted to the rate of speed at which work was carried out, and the glorification of that much misused half-truth, "Time is money," was responsible for much false physiology. Benedict and he had found, working with a carefully calibrated bicycle ergometer, that there was a very close connexion between the speed at which work was done and mechanical efficiency. There was a very definite falling off with increased speed. They found, further, that if the amount of effective muscular work was kept constant the efficiency fell with an increase of speed.

The load had obviously a direct connexion with the speed at which the work was done, but it had also a relation to efficiency. Benedict and he found, for instance, that both the gross and net efficiencies, within the limits of their experiments, increased with the load. The probable explanation of that result was that, when light work was carried out, maintenance of physiological requirements which had to be covered formed a large proportion of the total energy output, a balance which was steadily altered as the amount of external effective work done increased. On the other hand, when the loads became excessive there was a definite falling off both in gross and net efficiencies.

Very closely allied with the rate of working was the rhythm with which the work was performed. Although they were not identical phenomena, they were so closely related that the habit of work might be considered along with rhythm. Once a rhythm, or the proper co-ordination in the play of a set of muscles in the performance of some definite act, was mastered, not only was the energy expenditure reduced by the exclusion of numerous extraneous muscular activities, but the case of performing the specified act was enhanced. Willingly or unwillingly those who had to do much repetitive work—whether it were playing golf, a musical instrument, or working a machine—soon appreciated the fact, when they thought about it at all, that their best and easiest results were obtained under certain very definite conditions. To take a single example, the work of forward progression, or walking, was performed most easily when a person adopted his own gait; it was not a mere question of rate.

The rhythm of work was simply a general example of the formation of a conditioned reflex. The rhythm adopted, although it might suit the worker, was not of necessity a series of muscle movements which led to the least expenditure of energy. Most probably the rhythm selected was only in small part due to the worker's physical configuration; in greater part it was evolved in imitation of some more experienced or older worker. The average workman was not so much concerned with the diminution of the physiological cost in the performance of a given act as in the reduction of constant effort.

On measuring efficiency in terms of output, a definite rhythm of output was found during the course of the working day and of the working week. The fact that it took an appreciable time each day to work up the full power was shown distinctly in the daily output curve, which rose and then dropped sharply at the end of the work period; this type of curve was not peculiar to any one industry. The rise was almost certainly due to the "limbering up," and it was probable that the fall towards the end was largely due to voluntary slowing. The total weekly output curve, with the low Monday effect and the sharp fall on Saturday, resembled in general shape the daily output curve. Such curves seemed to demonstrate the absence of progressive fatigue from overwork, which would have been deduced had there been a sharp rise at the commencement of the week followed by a steady fall.

The third of the potent factors in the control of fatigue was rest. If work was done, rest was ultimately imperative. Rest not merely relaxed the muscle, allowing a more thorough and complete removal of the waste products and a more abundant supply of oxygen, but it removed the strain of attention. Rest was best obtained not by simple quiescence, but by change of posture or slow movement of another type. Little attention had been paid to the duration of the rest period in relation to the work done. As a general rule it might be said that in the majority of occupations, although the hours of labour were continuous, the actual spells of hard manual work were discontinuous, either due to the fact that certain operations were intermittent in their severity, that supplies of material were not constant, or that if those more or less natural conditions did not operate rests at irregular intervals were deliberately taken by the operative.

Relation of Food to Efficiency.

There were many other factors directly concerned with the efficient action of the organism, some directly influencing the internal economy of the body, others acting more indirectly on the organism from the environment. One was the state of the nutrition. An insufficient intake of food, or the consumption of poor or inadequate food, was one of the chief sources of general inefficiency. Our resistance to the effects of hard and continual work, just as to the effects of an infection, was largely controlled by our reserves. The capacity of the body to store reserve food material which would meet the daily demands for energy, and leave a surplus, was another of the vital factors of safety, capable of withstanding complete deprivation of food for comparatively long periods, but with a corresponding depression in its capacity to perform external work. Complete starvation was a state which was rare and did not affect the question. Chronic undernutrition was only too common—a condition which lowered efficiency, not merely in the actual performance of muscular work, but by inducing an increased susceptibility to disease. Evidence, much debated it was true, indicated that it was not only the quantity but the quality of the food consumed which played a part in the fitness of the individual to perform hard muscular work. All modern work seemed to point to the conclusion that if the calorie value of the food supplied was adequate the actual demand for protein was very small. It was very difficult, however, to believe that the far-reaching common belief in the efficacy of a high meat intake, despite the scientific evidence to the contrary, was without some foundation.

The Psychological Factor.

Another factor which played an enormous part in the general efficiency was the response of the organism to the multiple psychic imponderabilia which composed such a

large part of the average environment. We had to deal with an organism which was not only under physical control, but which was very responsive to psychic influences—an organism which not only became in the course of the day physically "tired" but which unconsciously was influenced to an enormous extent by its environment, by its "atmosphere." In this connexion monotony of work had to be considered, yet, although there might be a close relationship between monotony and fatigue, they were not identical. The temperament of the operative played an enormous part in the determining of whether or not any particular operation was a monotonous one.

Many other factors played a definite and important part in the maintenance of efficiency, such as lighting, heating, ventilation, the mode of life led by the worker outside his definite hours of labour, his housing, etc. In other words, the real "over-all" industrial efficiency of the worker could not be causally related to any single factor. The quest of efficiency was one of the most intricate problems, in its infinite ramifications throughout the physiological and sociological structure, which had ever called for solution. It called for the closest co-operation between the scientific investigator, the employer, and the employee, and was no more capable of being settled on a communistic than on a capitalistic basis. It could only be satisfactorily attacked when mutual distrust of motives, capacities, and methods was stilled.

Nova et Vetera.

STYLE.

IN speaking of Sydenham a short time ago (August 19th, p. 320) we ventured to say that his Latin was very unattractive, and we are tempted to return to the subject by the hope that we may stimulate better scholars to discuss the ingredients of a good modern Latin style. Generally speaking, Macaulay's advice, "Soak your mind with Cicero," has been given by the professional scholars. Marc-Antoine Muret has been called the prince of modern latinists; Wyttenbach said, "If I have attained any little skill in writing, I owe most of it to reading Muret's works; his wonderful smoothness charmed me as a boy, helped me with examples, and led me back to Cicero."[1]

Sydenham, or his translator, went back to Cicero, but, as Dr. Payne showed, hardly found there what he wanted. For instance, in what was perhaps his first draft, Sydenham, having said that diseases differ from year to year, has this plain sentence: "Both which doe evince that they are of quite different genius and nature."[2] The Latin version runs: "Ex quibus constat morbos hosce utut quadantenus specie et symptomatis alienae admodum esse indolis et distere ut aera lupinis." The last phrase, as Dr. Payne said, is just the sort of tag with which a phrase-maker might swell out a plain sentence. Perhaps one may quote Erasmus: "Si revivisceret ipse Cicero, rideret hoc Ciceronianorum genus." We should very much like to know whether a good scholar would rate Sydenham high or low as a stylist.

Some medical latinists who had a great reputation have used a much simpler style. Of such was Josse van Lomm, often called the "elegant Lommius," whose style was praised by Haeser. Lomm is much easier to read than Sydenham; here is a fair specimen of his manner: "Neque enim parvi referre arbitror, quae cujusque morbi vis, aut acumen, aut duratio, aut eventus sit, observare; aeque profecto, ut in aliquem aliquis verti morbus possit, quibus aetatibus magis accidere, quibus temporibus anni, quibus coeli tempestatibus, quibus locis."[3] Easy, straightforward, not too stately, but with a touch of verbal pomp; certainly not Ciceronian in the sense that Sydenham's published writings are Ciceronian.

Perhaps it was Lomm's style which kept him abreast of Sydenham as a popular author for so many years. Lomm had been physician to Philip II of Spain, and was dead before Sydenham was born, but between 1700 and 1750 Lomm's *Medical Observations* were reprinted eight times; the great Englishman's works only had four more editions than his in the same time. Probably our ancestors, for all their statelinesss, liked things made clear, and Lomm made them very clear.

Very likely some people who, at the cost of many tears and some blood (*teste* Gibbon), were just able to read plain Latin wanted to know what *synochus* meant; how a continued fever differed from a putrid continued fever; what a "slow fever" really was; and how to unravel the tangled skein of quotidians, tertians, semitertians, quartans, and so on.

Such readers must have been delighted with the elegant Lommius; having read him once they would know all about it. They would know that a *febris continens* was merely due to heated blood, that a *febris continens putrida* was due to putrefaction of blood and nothing else, while a *febris continua putrida* was bred of a systematic humoral corruption and different from a *febris lenta*, a more localized humoral putrefaction. Better still, the terrible complexities of the intermittents—a college "viva" on Galen *de Febrium Differentiis* must have been an awful ordeal—are reduced to their lowest arithmetical terms.

Lomm deserved and received the gratitude due to anyone who writes quite plainly, says what he has to say, without quoting needless Latin if he writes English, and without dropping into poetry if he is writing Latin. His style, of course, could not save him for all time, because, like another forgotten writer (Lord Jeffrey, described by Matthew Arnold), he "had no gift for truth." The prognostic significance of the Hippocratic facies is described neither more clearly nor less clearly than the prognostic significance of dreams. No doubt is hinted as to whether dreaming of a fire is a really sound indication that the yellow bile is amiss or as to whether a topographical diagnosis can be founded on a dream of sun, moon, or stars. Sooner or later someone was bound to discover that the prognostics from dreams were not derived from the elegant Lomm's observations upon King Philip, but lifted from the fourth book *de Victu* in the Hippocratic collection (Galen has most of them in his little tract, but he shied at the sun, moon, and stars). That discovery made, a reader would begin to doubt even about the synochus and the intermittents, and that would be the end of the elegant Lomm and his kind. Sydenham certainly said some very queer things about the use of nasty-smelling drugs in hysteria and had a weakness for puppies as hot-water bottles, but he had nothing to do with dreams. Perhaps we ought not to laugh either at Lomm or at the fourth book *de Victu*, because some learned American may yet prove them to be allegorical foreshadowings of a doctrine which we do *not* mean to discuss.

We suppose Lomm will never be reprinted again, but a selection of the writings of physicians eminent for their latinity would really be worth making. It would begin, we suppose, with the greatest of all the stylists who, using his mother tongue, said this: "A saturis se deceptum esse, Hippocrates memoriae prodidit; more scilicet magnorum virorum, et fiduciam magnarum rerum habentium. Nam levia ingenia, quia nihil habent, nihil sibi detrahunt; magno ingenio, multaque nihilominus habituro, convenit etiam simplex veri erroris confessio; praecipueque in eo ministerio, quod utilitatis causa posteris traditur; ne qui decipiantur eadem ratione, qua quis ante deceptus est."

To soak one's mind with Celsus might be better advice than to imitate Cicero.

MINISTRY OF HEALTH: ANNUAL REPORT.

SECOND NOTICE.

IN the JOURNAL of July 29th (p. 184) we gave a brief account of the parts of this report relating to tuberculosis, venereal diseases, maternity and child welfare, welfare of the blind, and the work of the Welsh Board of Health. Two further matters of medical interest and importance remain to be noticed—Housing and National Health Insurance.

Housing is dealt with at some length in the report. The problem, it is stated, entered on a new phase in the year 1921–22. Difficulties due to shortage of capital, labour, and materials, and to the inauguration of a comprehensive policy, had tended to diminish, but on the other hand the cost of building had become so high as to render imperative the limitation of the amount to be undertaken at the expense of the Exchequer, and it was hoped that such limitation would help towards deflation of prices, so as to pave the way for the resumption of private enterprise. It is claimed that the policy has been successful, as proved by reductions of tenders from £944 and £855 to £450 and £378, with anticipation of further decreases. But the urgency of improvements in slum areas was such that an annual contribution not exceeding £200,000 was determined on in aid of this part of the work of local authorities. The houses completed under various schemes at March 21st,

[1] See preface to M. Antonii Mureti, *Scripta Selecta*. Leipzig (Teubner), 1827.

[2] *The Latin Sydenham*. By J. F. Payne. London, 1903, p. 219.

[3] Josse Lommius, *Observ. Med.*; Alting. Amsterdam, 1758, i. 281.

1922, were 130,335, and of these completions fully 100,000 belonged to the year under review. There still remained 75,484 to be erected under the final scheme by local authorities and public utility societies, and of these 52,417 had already been commenced. Besides this, preliminary certificates had been issued in respect of 12,295 to be erected by private builders. Recent reductions of price, however, did not greatly diminish obligations already undertaken, and the subsidies paid during the year amounted to £4,533,229. As to rents, agreement had been reached with about 1,100 local authorities, and the range, exclusive of rates, was from 4s. 6d. weekly for a four-roomed house in a rural area to £1 1s. weekly for a six-roomed house in a popular residential locality in the metropolitan area. The loans raised by local authorities under the State-aided schemes amounted to £152,000,000 at the end of March, 1922.

Under the Public Health Acts and the Housing Act of 1890 reports by medical officers of health in 1,503 districts show over a million inspections and remedy of defects in 180,699 houses. Under the Act of 1919 notices were served in respect of over 30,000 houses, of which nearly 20,000 were rendered fit by their owners, 801 by local authorities, and 425 were to be closed. Under the Public Health Acts notices were served for more than a quarter of a million houses, and defects were remedied in over 220,000, including nearly 2,000 done by local authorities instead of by the owners. Town-planning schemes were occupying the attention of 167 local authorities at the end of the year, and the total area embraced was 744,222 acres.

National Health Insurance.

Up to October, 1921, Insurance Committees had forty to eighty members; now they have twenty to forty. Questions relating to the scope of medical benefit ("such treatment as" can "be properly undertaken by a general practitioner of ordinary professional competence and skill") were in thirty-one cases reported to the department. Of twenty-two, where the local Medical and Insurance Committees were agreed, seventeen were decided to be outside the definition and five within it. Of the other nine cases, six came before referees; four of them were declared to be within and two not within the definition. In three cases sent to referees by the Ministry itself, one was found within the definition and two were not. Medical benefit in England cost about £8,250,000, of which about £6,885,000 was paid to the doctors and the remainder nearly wholly spent on drugs and appliances. The insured population is about 12,500,000. Besides the above expenditure about £250,000 was distributed to rural practitioners for mileage. Drugs and appliances cost about £1,250,000. The payment made to chemists, apart from the price of ingredients, was about 5½d. a prescription, but was reduced to 4½d. as from May 1st, 1922. It is pointed out that "no insurance practitioner can be penalized in any way as a result of his prescribing particular drugs or appliances" unless it is found, after inquiry by the Panel Committee, consisting entirely of the doctor's fellow practitioners, that "the cost is in excess of what may reasonably be necessary for the adequate treatment" of the patient. Also it is pointed out that "this duty has been entrusted to the practitioners themselves at the request of their own representatives, who have undertaken that the work should be fairly performed."

During the year, on account of unsatisfactory standard of service, Exchequer grant to the total amount of £1,118 was withheld from seventy doctors and six chemists. In four cases of doctors £50 was withheld, and in two cases £40. "In four of these cases the doctor was found to have been guilty of serious neglect of patients. In one case the doctor permitted his wife to attend patients, though she held no medical qualifications, and in another the doctor persistently charged the patient fees for services which he was under contract to render free of charge." From one chemist £50 was withheld in respect that he "repeatedly supplied smaller quantities of drugs and appliances than those ordered by the doctor."

Fourteen inquiries were held as to removal of practitioners or pharmacists from the medical list on the ground that their continuance would be prejudicial to the medical service. Eleven related to doctors, three to pharmacists. Three of the doctors had been convicted of criminal offences; two of these were removed from the list, and in the other a decision was deferred for twelve months, regard being had to the doctor's conduct in the meantime. In two cases the complaint was neglect of patients. One of the practitioners died and the other was allowed to resign on condition that he would not resume insurance practice without the Minister's consent. In three cases the representations were withdrawn, and one case was dealt with by the General Medical Council. In the three remaining cases the grounds alleged were insufficient to justify an inquiry. Two pharmacists were removed from the list and the third had £50 deducted, besides having to pay the costs of the inquiry.

Against decisions of Insurance Committees there were sixteen appeals, eleven by doctors and five by insured persons or societies. Of the eleven, six were dismissed, four allowed, and one withdrawn. Of the other appeals, one decision was varied, one was dismissed, and in two no sufficient grounds of appeal were shown. In ten cases the doctor appealed against a decision of the Insurance Committee to withhold part of his remuneration on the ground of excessive or extravagant prescribing. Two of the appeals were dismissed (the Insurance Committee in one case agreeing to reduce the penalty), one appeal was allowed, one withdrawn, and in the rest the amount of surcharge was reduced.

New certification rules took effect from January 1st and certain amendments were made in the scheme. The new forms of record have been found generally acceptable to practitioners. The Committee on National Expenditure recommended that to relieve the Exchequer of payments beyond its statutory two ninths there should be an increase in weekly contributions, but the approved societies preferred to pay the requisite amounts out of their surpluses and balances. This was agreed to up to the end of 1923. The Women's Equalization Fund was abolished and the necessary financial assistance to societies will be provided by increasing the reserve values in respect of married women, the period of redemption being extended by between one and two years.

Schemes of additional benefits, made available by the societies' surpluses shown in the valuation reports, came into operation on July 4th, 1921. The benefits selected by the societies are of two sorts—cash, or forms of remedial treatment. Societies with a membership of 3,896,258 decided on cash benefit only; others, with a membership of 4,392,461, decided in favour of a combination of cash and other benefits; and societies with a membership of 4,112,298 decided to devote their whole available surplus to other than cash benefits. In the first of the three groups the cash increase ranges normally from 1s. to 5s. a week of sickness benefit; 6d. to 2s. 6d. a week of disablement benefit; and 2s. to 10s. of maternity benefit. Thus the total weekly sickness benefit may vary from 16s. to 20s. for men and from 13s. to 17s. for women; disablement benefit from 8s. to 10s. weekly; and maternity benefit from 42s. to 50s.

THE FATAL CASES OF FOOD POISONING AT LOCH MAREE.

[FROM A CORRESPONDENT.]

THE outbreak of food poisoning at Loch Maree has been referred to recently in the BRITISH MEDICAL JOURNAL on several occasions, and the last may not have been heard of outbreaks of botulism in this country. The sheriff's inquiry was held on September 5th, 6th, and 7th at Dingwall, under the Fatal Accidents Inquiry Act; in this he had the assistance of a jury of seven, four of whom were women. The jury attributed the cause of death of eight persons (which included all those who were attacked) to poisoning by eating sandwiches that contained canned wild-duck paste infected by *Bacillus botulinus*, an anaerobic organism. The jury found that there had been no negligence on the part of anyone concerned, including both the manufacturers of the paste, who were a London firm of high standing, and the hotel proprietor, and that it was not possible to specify what precautions should be taken in future in order to avoid the occurrence of a similar accident. A rider was added to the effect that every vessel containing preserved meat, fish, fruit, or vegetables intended for human consumption should bear a distinctive mark by which, if necessary, details of manufacture might be traced.

Thus the inquiry ended very much in the way which might have been anticipated, no blame being attributed to anyone. But the epidemiologist in the result emerges, unfortunately, little wiser. The main point of interest, epidemiologically, arising from the investigation is that Great Britain is no longer immune from outbreaks of botulism. It may be suggested, judging from foreign experiences, where the articles of food incriminated ranged from sausage and ham

on the one hand to canned beans and olives on the other, that the next outbreak in this country is not more likely to be associated with potted food paste than with many other foodstuffs. This attitude, unfortunately, is necessitated by our lack of knowledge as to how these outbreaks arise. It is known from laboratory tests that much more than a lethal dose of *B. botulinus* or its toxins may be administered to an experimental animal, and if a suitable dose of botulinus antitoxin be administered simultaneously or thereabouts illness is not produced. We do not know, however, whether this antitoxin would be of value in saving life if it were administered to a human case as soon as a diagnosis of botulism were made.

A very striking feature in the diagnosis of botulism is recognition of the phenomenon of double vision some hours before any other subjective symptoms are noticeable. The patient at this stage apparently may be in normal health, apart from the presence of diplopia. An American citizen visiting this country was present some three years ago at a banquet in the State of Ohio which was followed by an outbreak of fatal botulism due to bottled olives from California. He states that in one instance diplopia suddenly manifested itself when the victim was driving a motor car; another could not understand why two persons walking in the street were, as he thought, performing simultaneously identical antics; and another was puzzled by his inability to remove from a plate one of the two peaches seen by him. Up to this point these persons appeared otherwise to be in good health. Similar instances of diplopia were reported from Loch Maree; one of the victims, for instance, was struck by the fact that a companion was smoking two pipes, and indeed there appears to be no difference whatever between the clinical accounts of botulism in the United States and the Loch Maree experience.

Treatment is most unsatisfactory. The main hope would appear to lie in the use of the specific antitoxin. It is available as a result of work done in the Wellcome Research Laboratories[8] in connexion with the prevention and cure of "grass sickness" or "grass disease" in horses, which is ascribed to botulism. It was announced at the inquiry that arrangements were being made for a supply of this antitoxin to be obtained, in case of necessity, by application to the Ministry of Health, and that the serum would be placed at a number of suitable provincial points; Plymouth, Cardiff, Birmingham, Manchester, and Newcastle-upon-Tyne were mentioned, and the Scottish Board of Health was to take similar steps for Scotland. Other centres, such as Norwich and Chester, might perhaps be included also. In view of the urgent need for commencing intravenous injection of this serum, amounting eventually to about 50 c.cm., as soon as the diagnosis is established, in order to overtake if possible the effects of the toxin, the prospects of a sufferer at, say, Carlisle or Newcastle would be much prejudiced if recourse had to be made to London, as he would be fortunate in the circumstance if he received his first injection within twelve hours of the need for its administration being realized. In view of the Loch Maree outbreak the subject of "grass sickness" or "grass disease" in horses deserves close attention. This "grass disease" has been known in the north (and more recently in the south) of England and in Scotland now for some years; a specially appointed Science Committee of the Highland and Agricultural Society of Scotland was appointed to investigate it in 1918. The symptoms are identical with "forage poisoning" in horses and cattle in the United States of America, and the disease has been found to be due to an organism reported to be indistinguishable from *B. botulinus*. This organism was recovered early in 1919 by Dr. Tocher of Aberdeen from the intestines and spleen in several cases of "grass sickness" in horses. At the Loch Maree inquiry little was said as to the possibility that this outbreak of poisoning in man was associated with this particular disease in horses. If, however, there is an association between attacks of botulism in man and "grass sickness" in horses—and, as is known, this disease in horses is widely disseminated in Great Britain—it would be hazardous to prophesy what is likely to happen in the future.

Some positive evidence is available which is reassuring. *B. botulinus* can live only under anaerobic conditions, and it and its toxins are killed at a temperature much below that reached by the ordinary method of canning. The spores are, however, more resistant, for they are not killed until a temperature considerably above boiling point is reached

[8] The Veterinary Journal, April, 1922. By J. B. Buxton, F.R.C.V.S., D.V.H.

and maintained; but this temperature is attained during the process of sterilization under pressure in retorts as usually practised in food-canning factories. Why one individual vessel containing food paste contained this deadly bacillus is as yet unexplained. Obviously, the bulk of the paste as prepared and mixed on a large scale in the factory could not have been infected, as all this stock has in the ordinary process of trade been put into circulation: most of it must have been consumed, and no adverse results have been reported. No doubt the consumption of canned goods in this country will fall off for a time; but it is comforting to remember that in spite of the many million containers of preserved foodstuffs, including food pastes, supplied to the armies during the recent war, whether issued to troops as rations or sold in enormous quantities in canteens, no outbreak of botulism was reported in connexion with their consumption, either at home or abroad.

Scotland.

Report of the Medical Officer of Health for Glasgow for 1921.

The annual health report of the Second City of the Empire is a foolscap volume of 175 pages and deals with many matters of public interest. Population, housing, and occupations have already been referred to in the JOURNAL in articles on the census (August 26th, p. 399) and on the Registrar-General's Annual Report for 1920 (July 29th, p. 178). In 1921 a new minimum death rate of 14.5 on the estimated population of Glasgow has been achieved, and also a new minimum infant mortality rate of 105 per 1,000 births. These figures have to be judged in relation, not to certain lower rates elsewhere, but to the housing and other conditions of life in Glasgow itself.

As regards housing, Dr. Chalmers calls attention to its moral aspects, a subject which, under the title of *Life in One Room*, called forth one of the most eloquent and pathetic contributions ever made to the literature of public health, the author being the late Dr. J. B. Russell, the predecessor of Dr. Chalmers in his important office. Under the heading "Sex overcrowding in small houses," Dr. Chalmers gives some appalling examples.

"In a one-apartment house, a father of 52 occupied the same bed with a mentally defective daughter of 24, who had an illegitimate child of 10. In another, with space for five adults, a father and daughter shared the same bed. In another, with space for two and a half, a mother occupied the same bed with two sons of 19 and 20 years respectively. Several illustrations of this were disclosed, as were also illustrations of fathers and daughters. In several illustrations the mothers occupied the same beds with grown-up sons and daughters."

In two-roomed houses, in one instance a son of 19 and a daughter of 21 occupied the same bed, and in another a son of 19 and a daughter of 25, who was pregnant. These are revolting facts, but it is right that the public should be made aware of them. As regards available housing accommodation, which a reader naturally thinks of in connexion with such revelations, there appears to be a curious discrepancy between the data furnished by the City Assessor of Glasgow and the Census Report. According to the former, whilst there were in 1911 24,206 empty houses, there were only 143 in 1921. But, as pointed out in a footnote by Dr. Chalmers, the new Census Report gives the "unoccupied" houses in Glasgow as 11,539. The difference is much too great to be accidental. The assessor's word "empty" cannot mean the same thing as the Registrar General's word "unoccupied," and the reader may speculate that the unoccupied houses were those temporarily closed owing to households being on holiday in June when the census was taken, this agreeing with Dr. Chalmers's contention that the population was unavoidably understated. The report, however, contains a table in which the two words "empty" and "unoccupied" seem to be regarded as interchangeable, and which shows that the unoccupied or empty houses, now only 143, had been in 1913 no less than 18,710.

Maternity and Child Welfare.

With the co-operation of an advisory committee, classes on cookery and dressmaking have been begun, and social evenings arranged for.

Infant consultations are conducted at thirteen centres, and the total attendances in 1921 were 61,621, as against 44,237 in 1920. Of infants under 1 year the attendances were primary 7,811, and subsequent 40,434; of children over 1 year, 3,187 primary, and 10,189

subsequent. At the ante-natal dispensary at the Royal Maternity Hospital there were 6,034 attendances, against 3,151 in 1920. In the ante-natal wards the average number under treatment was 28, the number of admissions 703, and the total days 10,318—all considerable increases over previous years. At another institution, the Govan Nurses' Home, there were 771 attendances. Infant visitation is carried on extensively where birth notifications do not show that a doctor was in attendance. Full information was obtained regarding 22,216 births; 18,768 infants were reported well nourished at birth, 1,518 fairly nourished, 801 badly nourished, and 816 stillborn. The Infant Health Visitors' Association keeps under observation children reported to it as requiring longer observation than can be given officially. There are from 300 to 400 visitors, and the period covered is generally the first year of life. In 1919 the number of infants so dealt with was 2,179. The Corporation administers seven day nurseries, and the total attendances during 1921 were over 32,000. Two country homes received 182 children.

Supply of Milk and Meals.

Much detailed statistical and financial information is given on this subject, in which the Corporation co-operated with the education authority, these being separate public bodies in Scotland. The times were exceptional in respect both of high prices and of poverty. It has to be borne in mind that in Scotland the Poor Law authorities can, in theory, give relief only to persons who are not only in poverty but also unfit to work. In practice, however, that rule had to be relaxed, but, even so, a heavy burden fell on the public health and education authorities. The risks of overlapping and also of lacunae in any such tripartite system of rate and State aided relief are obvious, and bring to mind the recommendation of the Minority Report of the Royal Commission on the Poor Law, supported as it was by their medical investigator for England and Wales, that public health and Poor Law should be administered by one and the same local body. In such work the definition of "necessitous" as a basis for relief must always be difficult, stringency and laxity each having dangers of its own, the effects of the latter being illustrated in the present revolt against "Poplarism" in London. Glasgow Corporation has its "right" and "left" parties, and no doubt the usual clash of opinions took place, but such matters are not within the scope of the medical officer's report. In December, 1920, the local authority and the Scottish Board of Health approved of a scheme which came into operation in January, 1921.

The growth in the demand for milk for expectant and nursing mothers is indicated by the fact that between February 5th and December 23rd, 1921, the number of mothers obtaining milk under the Glasgow scheme, apart from the Poor Law, increased from 192 to 5,151, of children under 5 years from 58 to 13,234, of pints of milk from 826 to 18,385 a day, whilst the daily cost grew from £18 to £275. As to meals, distress reached its climax on the occurrence of the coal strike in April, and at the beginning of May a scheme of dinners was begun for mothers and children, which by the end of the year had provided 952,608 meals, of which 409,601 were for mothers, 309,971 for children of 3 to 5 years, and 233,633 for infants from 9 months to 3 years.

Details are given of the economic conditions relating to family, employment, and income, which were considered in the granting of assistance; in an appendix there are tables of income and occupation which may furnish material for students of sociology.

Ophthalmia Neonatorum.

In 1921, 926 cases were notified as against 787 in the previous year, but this is explained partly by increase of births and partly by the influence of a circular issued by the Scottish Board of Health in July regarding precautions to be observed, especially the application to the eyes of newborn children of a 1 per cent. solution of silver nitrate. This has resulted in more care being taken, and more slight inflammations being notified.

By doctors 97 cases were notified, by institutions 60, by institution nurses 198, and by midwives, etc., 568. The periods at which symptoms appeared were: under twelve hours, 102; twelve hours to four days, 423; four to eight days, 257; and over eight days, 134. The results of treatment are tabulated in detail; 745 were entirely cured, and no case of total blindness occurred. Mothers were offered treatment for the venereal disease which caused the ophthalmia in their offspring, but few continued under it until cured. Of 30,072 births during the year, 15,212 were attended by midwives, and of these 12,000 occurred in the practice of midwives with fifty confinements or more in the year. The number of midwives in practice was 364. They notified 418 cases of ophthalmia neonatorum and 112 of puerperal fever. In Glasgow in 1921 there were 10.8 cases of puerperal fever per 1,000 births, as against 9 in 1920 and 7 in 1919. The increase, Dr. Chalmers remarks, may be partly due to notification of short-lived rise of temperature.

Principal Zymotic Diseases.

If the term be applied throughout in the same sense these diseases have had a lower total mortality in 1921 than in any previous year, the rate being only 1.116 per 1,000 living, as against 3.600 in the decade 1881–90, 3.282 in the next decade, 2.660 in 1901–5, 2.450 in 1906–10. In the past six years the rate has exceeded 2 per 1,000 only in 1917.

Small-pox, of which there were 477 notifications in 1920, had only 19 (or 20?) in 1921. Diphtheria has a curious case mortality rate in respect that in 1920 and 1921 the fatality rates of cases treated at home (15.5 and 13.8 per cent.) were just about the double of the hospital case rates (7.6 and 6.6); whilst in 1919 the position was just the opposite, the home fatality rate being 4.4 per cent. against 9.1 in hospital. But only 5 to 10 per cent. of all cases were treated at home, and as the annual totals averaged about 1,800 the 5 to 10 per cent. afforded no great basis for fatality rate conclusions.

Concerning erysipelas and perhaps also puerperal fever, Dr. Chalmers seems to suspect that relaxation of restrictions on sale of liquor has tended to increase the numbers, as compared with war years. Malaria and dysentery were treated at three dispensaries, and the total attendances were 7,154. Dr. Chalmers reprints from the *Glasgow Medical Journal* a report by Drs. Macgregor and Frew on the treatment of amoebic dysentery by alcresta and emetine. Diarrhoea and enteritis caused an excessive number of deaths among children, no doubt owing to drought and heat, so it is all the more satisfactory that, as already noted, the year's infant mortality rate was the lowest on record. Phthisis had a death rate of 1.007 per 1,000, also its lowest on record. In 1881–90 the rate was 2.680, in the next decade 2.015, in the next 1.533. In each of the last three years the rate has been under 1.1. In the years 1914–20 inclusive, Edinburgh, Aberdeen, Dundee, and Birmingham had lower rates, whilst Liverpool and Manchester had higher. The Glasgow notifications also were low in 1921.

Omissions to notify before death occurred in 3.6 per cent. of the cases. The number of cases treated in institutions has just about doubled since 1914, the total that year having been 1,690, and in 1921 3,287. At dispensaries primary attendances were 2,542, and subsequent attendances 57,825. Home visits by nurses numbered 40,161, being a large diminution on the two previous years. A fund of about £400 a year has been established to provide warm clothing for poor patients going to sanatoriums, and has met a real want. Intimations of non-pulmonary tuberculosis show some diminution since notification became compulsory on July 1st, 1914. Admissions of such cases to institutions have increased from 17 in 1915 to 1,019 in 1921.

Venereal Diseases.

Much detail is given of accommodation and provision for treatment of these diseases. Dr. Chalmers believes that opinion is gradually crystallizing round the need for some modified form of notification—perhaps, to begin with, the notification of cases where third parties suffer, as in congenital syphilis and ophthalmia neonatorum. As to medical education on the subject of venereal disease, Dr. Chalmers thinks it should be improved, the successful treatment of gonorrhoea demanding skill and knowledge of instrumentation obtainable only by devoting to it considerable time. Syphilis treatment is more easily learned. It is unfortunate, he says, that more practitioners do not avail themselves of the facilities for post-graduate teaching of the subject in Glasgow, and that only 12 out of about 500 practitioners in Glasgow have during the year taken advantage of the free supplies of salvarsan available.

Port Sanitary Administration.

Glasgow is the port authority, not only for its own area, but for parts of the Clyde lower down. A detailed report is given of work done under the regulations of the Scottish Board of Health, and as to disembarking quays, boarding by Customs officers, work under the Aliens Order, and boarding and removal of the sick.

Vessels arriving from foreign ports numbered 1,242, of which 421 had come from ports infected within the meaning of the Cholera Order. The total crews in the course of the year were 66,968, and passengers 12,891. During the voyages 128 cases of infectious disease occurred, of which 47 were dealt with at other ports and 81 on arrival, 46 being removed to hospital and 35 sent home. Six died during the voyage. Alien passengers numbered 3,490, of whom 505 were transmigrant. For discovery of nuisances 2,108 inspections of vessels were made, and 1,195 nuisances found. Of foodstuffs from abroad 715,075 tons were imported, and 1,635 tons were found unfit and disposed of to the satisfaction of the medical officer of health. The total packages of foreign meat imported were much fewer than in 1919 and 1920. A leaflet under the Rats and Mice (Destruction) Act, 1919, was given to all masters on arrival at the port. About 2,700 rats were destroyed.

Bacteriology.

Dr. R. M. Buchanan reports on the work done in the Public Health Laboratory regarding diphtheria, enteric fever, tuberculosis, Vincent's angina, malaria, dysentery, ophthalmia neonatorum, milk supply, and rats examined for plague. In

a considerable number of less severe cases of ophthalmia neonatorum the gonococcus was not found, but staphylococci, streptococci, pneumococci, Koch-Weeks bacillus, and the Morax-Axenfeld bacillus. Since notification of ophthalmia neonatorum was made compulsory 7,873 examinations have been made at the laboratory, with positive results in 41 per cent., and the notification has been of much value for ensuring early diagnosis and treatment of one of the most preventable of infectious diseases.

Operations under the Food and Drugs Acts and Dairies Orders, and for smoke abatement, are reported. The divisional sanitary inspectors report the general sanitary operations in their own areas.

Incorporated Sanitary Association of Scotland.

The forty-eighth annual meeting of the Incorporated Sanitary Association of Scotland was held at Rothesay on September 6th, 7th, and 8th. The popular lecture was given by Professor J. Graham Kerr, of the Zoological Department of Glasgow University, and had as its subject "Zoology and sanitary science." Amongst other topics he considered the production of light in animal bodies. In the human subject there was no lighting system, but in many other organisms there was, and in some of these as much as 96 per cent. of energy was given off as light; Nature had solved the problem of the production of "cold" light. Civilization had extorted a large price from the human race in connexion with microbes; the human body was accustomed to certain microbes, and was little hurt by them, but civilization led man to tropical countries where he met other microbes and suffered heavily from them, as was seen in connexion with malaria; he also took some of his diseases with him to which the natives of the tropics were not immune, and they in their turn had to suffer. The lecturer paid a tribute to the good work being done in the Marine Biological Station at Millport; a visit to this station was paid by members of the Congress on Saturday, the 9th. On September 7th Mr. Thomas Bishop, Deputy Chief Sanitary Inspector (Edinburgh), gave the presidential address, and dealt with "Certain urgent sanitary problems," including the fighting of tuberculosis by improved housing and the elimination of the tuberculous cow. Lieut.-Colonel T. Dunlop Young, Chief Meat Inspector (London), dealt with the "Handling, storage, and transit of food," and urged that all food animals should be examined as far as possible *ante mortem*, and that all should be examined *post mortem*. In the discussion Dr. Walter F. Brown (Ayr) emphasized the need for financial encouragement of research work, and used the Loch Maree food-poisoning tragedy as an argument. On September 8th the main subject discussed at the Congress was the treatment of the venereal diseases. Dr. T. F. Dewar (Edinburgh) of the Scottish Board of Health, Dr. H. C. Donald (Paisley), Dr. David Lees (Edinburgh), and Dr. W. G. Clark (Glasgow) all spoke of the difficulties in the way of carrying out effective treatment up to full cure of the diseases, and a resolution proposed by Dr. McGregor Robertson was carried, and was to the following effect:

> That the Council of the Association be recommended to represent to the Scottish Board of Health, by deputation or otherwise, the need of an advance in the administrative control of venereal diseases by some form of notification and of research in connexion with the diseases, and that the Council should associate itself with any other body seeking the same end.

Scottish Asylums' Pathological Scheme: Dementia Praecox.

The twenty-sixth annual report of the Board of the Scottish Asylums' Pathological Scheme, signed by the Chairman (Dr. James H. Skeen) and the Honorary Secretary and Treasurer (Dr. Robert B. Campbell), deals with the work done in 1921. In addition to the routine work of examining and reporting on asylum cases and of preparing vaccines, Dr. Ford Robertson has continued his researches into the causation and treatment of dementia praecox and has emphasized the importance of investigating the early cases. He also lays great stress upon the fact that cases of early dementia praecox suffer from extremely severe chronic bacterial infections of known neurotoxic character, involving chiefly the intestinal tract. Although the part which these infections play in causation requires definition there is evidence that their suppression benefits the patient. Dr. Robertson is careful to point out that eradication of a chronic infection does not necessarily follow its detection; further, he considers that the infection in this malady is only one of several factors in its pathogenesis, such as those which are purely psychological, the effects of disorders of internal secretions, and the autointoxication dependent upon intestinal stasis. He regards the endocrine disturbances and the autointoxication as mainly due to intestinal neurotoxic infections; he looks hopefully to the suppression of these infections in an early stage of the disease by therapeutic immunization; and he can point to two successful cases in which these conditions were present and such treatment was given. The finances of the scheme have given rise to anxiety during the year; but through the aid of a grant from the National Research Council (in place of that from the Treasury withdrawn) the work has gone on.

Health of Paisley.

In his report for the years 1920 and 1921 Dr. G. V. T. McMichael, medical officer of health for Paisley, states that there were during 1920 2,505 births, giving a birth rate of 28.4, the highest recorded for many years; in 1921 there were 2,230 births, a rate of 26.3. In 1920 there were 1,124 deaths, or a rate of 12.8, which was the lowest ever recorded; during 1921 there were 1,127 deaths, a rate of 13.3, which was the lowest rate recorded with the exception of that of 1920. The infantile mortality rate for 1920 was 86 per 1,000 births, the lowest on record with the exception of the year 1918; in 1921 the rate was 94 per 1,000 births, which compares favourably with that of the other large towns in Scotland. Dr. McMichael points out that deaths due to respiratory diseases, as usual, contributed largely to the infantile mortality rate, and expresses the opinion that so long as the present deplorable housing conditions exist, so long will the death rate of children from respiratory diseases continue at its present high level. With reference to the small-pox hospital, Dr. McMichael suggests that it is quite absurd to have numerous small hospitals dotted about the country and specially reserved for small-pox; one central hospital, capable of rapid expansion if necessary, would be quite adequate for any county area or even for a combination of counties.

England and Wales.

The Census Reports.

In a printed circular issued from Somerset House the Registrar-General gives an account of the form and contents of the 1921 Census Reports for England and Wales. These reports will be issued in "County Parts," each comprising, for a particular administrative county with its associated county boroughs, the whole of the census statistics which can suitably be presented in that form. When this series is completed certain "Subject Volumes" will be issued setting out for the country as a whole the statistics relating to those heads of subject-matter which are unsuitable for presentation in the County Parts. The question of rearranging the contents of the complete County Part series and republishing them in separate Subject Volumes for the whole country will be considered later in the light of any public demand for the presentation of the figures in that form. In any case, however, a summary volume will be published. The Registrar-General is empowered by the Census Act, 1920, to prepare and supply statistics not presented in the published reports at the request and cost of any local authority or person. Such requests for the special extraction or compilation of census material should be addressed to the Registrar-General, Somerset House, London, W.C.2, who will advise and give an estimate of the cost. In order to reduce expense early application should be made. The circular contains also an outline of the contents of the County Part series and of the Subject Volume series, showing under various headings the subject-matter of each table and the district for which it will be published.

Royal Earlswood Institution.

The report of the Royal Earlswood Institution for Mental Defectives (Redhill, Surrey) states that the number of patients at the end of the year was 439; 47 cases were admitted during the year, 10 of whom were classed as idiot, 35 imbecile, and 2 feeble minded; 7 were mongolian, 5 epileptic, and 1 each cretin, hydrocephalic, and paralysed. In regard to the causes assigned for the mental deficiency in these cases, 12 were due to heredity, 7 had a history of phthisis, 7 had a history of injury during birth, 6 of shock or indisposition of the mother, 4 had congenital or acquired

deafness, 2 had convulsions during infancy, 2 had acquired or congenital syphilis, 1 was the offspring of first cousins, and 16 had no cause assigned. Little stress can evidently be laid on the supposed cause of the condition. The medical superintendent states that one patient who suffered from *petit mal* previous to admission, and was taking thyroid extract, had no attacks after admission when the thyroid treatment was stopped. Twenty cases were discharged during the year—14 of them improved and 6 not improved; among those discharged improved were some who could quite well assist in their own maintenance while living amongst relatives or friends. During the year 19 cases died; the death rate to the total number under treatment for the year was 3.9 per cent.; 4 of the deaths were due to epilepsy, an abnormally high percentage for this disease, and 2 were due to tuberculosis, which was an exceptionally low number; influenza was the cause of 2 deaths, and the indirect cause of 2 others.

Correspondence.

CLAYDEN *v.* WOOD-HILL.

SIR,—The letter on page 403 of your issue of August 26th deals with several points of great professional importance which the case in question brought out, but there are others which for a long time I have felt should be brought to the notice of your readers, and perhaps the closing of the fund serves as a good occasion for addressing you.

If I read rightly the official account of the proceedings, which owing to your kindness I was privileged to have at my disposal, I think I am right in concluding that the verdict against the defendant may be attributable to two things, of which one was that the court found that the fracture in question was not treated in the correct position. Now, it may be thought that I labour the point, but as such a view is so often put forward in other trials, and as so much of the textbook teaching tends to propagate the same line of thought, I would like to urge in the strongest possible way that there is no one universal routine position in which any given fracture must be put up, and that while it may be a fairly average truism of practical use for students and for teaching purposes that certain positions are as a rule necessarily desirable for the treatment of particular fractures, such a view is not fortified by so large an amount of truth as to be of value in a court of law. In the case at issue it was apparently laid down and admitted by the various experts that the limb should have been put up in abduction. If this is admitted (personally I doubt if the experts for the defence ought to have admitted this, though, as far as I read the evidence, it showed that the limb was put up in abduction) it is obvious that there are various degrees of abduction, and I should most strongly maintain that in any series of any particular fracture the degrees of abduction necessary to secure alignment, which is the sole object of abduction, vary considerably, and no one can form any opinion as to the degree of abduction desirable except the person who is treating the fracture. This is my point: That there is no one position in which all fractures of any one type must be treated; that each must be dealt with on its merits, and put in such a position as to secure alignment, of which the person who is treating it alone can be the judge. Incidentally it is quite an open question whether fractures of the upper third of the femur should be treated in abduction, as those who followed the papers by Major Lee of Fulham Military Hospital during the war will recall.

The second point which this case tends to emphasize, though no more than the majority of cases in which medical evidence is called for the plaintiff *and* for the defendant, is the hopelessness of the present method of employing medical experts on both sides of a case. Surely it is time that this practice, which scarcely advances medical prestige or makes for equity, should be discontinued, and it should be left to the court to demand and secure expert evidence if required. Having been compelled on several occasions myself to take part in similar farces for material gain I shall escape, I trust, any suspicion of casting mud at individual colleagues. It is the principle to which I object.—I am, etc.,

London, W., Sept. 6th. C. H. FAGGE.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—In the correspondence on this subject some of the contributors write as if there was only one form of mental deficiency, whereas, as everyone knows, there are several varieties of it and it has several causes. Thus some cases are due to injury to the brain at birth, others to absence of the thyroid gland, others to an arrested development of the brain, and so on. Sterilization is not going to prevent all forms of mental defect, and it is much to be doubted whether its adoption or the institution of State certificates of marriage would really do much to lessen the number of defectives born.

When I was doing out-patient work at the Hospital for Sick Children I took the trouble to inquire, so far as I could, into the family histories of a large number of defective children, and I was unable to satisfy myself that in the main their heredity differed in any way from that of normal children. It would seem that mental defect is a sport or unfavourable variation which may arise in perfectly normal families, just as physical defects do, and that each generation of average parents will produce its own crop of it just as it does of deformities such as hare-lip or club-foot. If this be so the diminution in the number of defectives which would result from the measures proposed would be so small as hardly to be worth while.—I am, etc.,

London, W., Sept. 10th. ROBERT HUTCHISON.

SIR,—Sir G. Archdall Reid, in his letter published on August 26th, succinctly epitomizes some of the leading facts of heredity. The majority of people have very little knowledge of the traits and characteristics of their ancestors; many have only a vague remembrance of their grandparents. It only shows how difficult it is to formulate any definite facts on heredity. When we remember that each of us has four grandparents, sixteen great-grandparents, and so on, it goes to prove how intimate is the relationship between the human family. By this hypothesis it is possible to demonstrate that one's own ancestors exceeded the whole population by going back some generations.

There are certain facts in heredity that appear fairly constant, and one of these is the transmission of various forms of eye defects through apparently healthy females to the male offspring. Dr. W. M. Ash, in the BRITISH MEDICAL JOURNAL of April 8th, gives an account of an interesting family history through three generations of hereditary microphthalmia. Dr. Moriet, as recorded in No. 264, EPITOME of the JOURNAL, March 18th, mentions the case of a family afflicted with hereditary retrobulbar neuritis ending in blindness who reside in a sparsely populated district in Western Australia. At the present moment there are seventeen unmarried girls in this particular family. From one union twelve entirely distinct families have become affected.

In each of the foregoing family histories the females are perfectly healthy and free of any defect, yet practically all the males are more or less blind. Naturally, Dr. Moriet feels some alarm as to the result of any of these seventeen girls marrying and having children, especially in such a sparsely populated country as Western Australia. Again at Bandera, a town in Texas, U.S.A., many of the inhabitants are possessed of twelve fingers and twelve toes. It has been stated that a member of the nobility has a defect in one of his fingers (as well as some of his relatives). The vault of one of his ancestors was opened, and a similar defect was found in the hand of the skeleton, who had been buried a few hundred years ago. Whether these defects were transmitted through the female is not quite clear. They are evidently problems in variation, belonging to the spontaneous form.

With regard to the defective eye families, a point of interest is, How did these defects originally arise? There must be cases of microphthalmia and hereditary retrobulbar neuritis distributed, not only over this country and Australia, but throughout the world. Had they all a common ancestral origin—a sport of nature?

Germ cells, whether they be those of mammals, fishes, reptiles, or even plants, are very much alike so far as we are able to observe; yet profound changes take place in their development. According to Major Leonard Darwin these changes and developments are attributable to what he describes as the mnemic theory of cellular growth, and no doubt if it were possible to solve this problem it would produce the most profound changes in this world as we know it, and life and existence would be different.

In dealing with such families with such defects of the eye sterilization may possibly act in keeping them under control. Unfortunately there does not appear to be an absolutely certain way of producing sterilization. Women who have had Caesarean section performed have also had a sterilizing operation done at the same time, and have been given medical certificates guaranteeing them from ever becoming pregnant again. In a few months' time they have turned up again

well advanced in pregnancy. Evidently we have still something to learn on this subject, although a surgeon has recently claimed success by tying the Fallopian tubes themselves in knots.—I am, etc.,

Plymouth, Sept. 2nd. J. S. PEARSE.

SIR,—There are five and a half millions of school children in England, of which 1 per cent. is the expectancy of mental defectives, so that the 12,000 for which Dr. Gibbons says we are taxed is but a small part of the 55,000 that exist of persons at school age—say of 5 to 14 years. The school medical service no doubt affords a *locus* of preventive action for the benefit of humanity in the long run, but practically considered the prevention of mental defect by any action whatever would be very intricate and difficult owing to the unending connexions and ramifications of the hereditary lines, and the impossibility of following out the hereditary connexions. To lessen the numerical occurrence of mental defect may be a possibility which a persistent effort extending through a couple of generations would greatly enhance, but to remove the element of recurrence is probably as impossible as to deprive the sea of herrings by fishing. A sufficiently long period of neglect would result in the return to the old state. It would not suffice to limit the effort to England; it would have to be worldwide.—I am, etc.,

Cheltenham, Sept. 9th. J. H. GARRETT.

THE ETIOLOGY OF GOITRE.

SIR,—In the BRITISH MEDICAL JOURNAL of February 4th, 1922, is an article by McCarrison on fats in relation to goitre. On it I would offer some suggestions which might possibly throw some light on the subject and modify the reading of the results of the experiments. McCarrison in his work on goitre has not stressed the important part played by calcium.

Goitre and calcium have such an obvious relationship that no treatise on goitre can be complete unless this point is given its adequate place in the roll of thyroid enlargements. I have dealt with this point in an article in the *New York Medical Journal* (April 5th, 1922), but will make use of such points as have bearing on these experiments. It has long been recognized that the viscosity of the thyroid secretion varies immensely, and this largely depends on its iodine content. In the limestone districts of Switzerland and Derbyshire large goitres containing thick colloid are usual. Analysis has shown this colloid to be poor in iodine. Such goitres vanish under the use of iodine or thyroid extract rich in iodine. The vesicles in a case of Graves's disease or thyrotoxic goitre are usually found empty or their colloid thin. The iodine content of such colloid has been shown to be rich in iodine, and the giving of iodine in these cases aggravates the condition. Colloids in the majority of cases owe their rigidity to the presence of calcium, which is balanced by iodine. Excess of iodine liquefies a gel, the addition of more calcium causes it to regain its rigidity. Professor Kendell of the Mayo Clinic states that there is no calcium in the thyroid colloid, but as has been said large goitres in the limestone districts of Switzerland and Derbyshire with thick colloid vanish under the use of iodine. With this balancing of calcium and iodine in colloids it can readily be understood that with an excessive calcium intake and an actual or relative deficiency of iodine the body colloids would tend to an increased rigidity, even if the kidneys were excreting calcium normally. The calcium picking up the available iodine would prevent it combining with the colloids, as is well illustrated by the reduced rigidity of body colloids in myxoedema when thyroxin or thyroid extract rich in iodine is given. These and many other factors lead one to the conclusion that calcium and iodine are intimately connected in the thyroid metabolism, and that each plays its part in the production of goitre.

The next question to consider is the absorption of calcium. In milk we have a marked illustration of the relationship between fats and calcium, also an example of the enormous amount of calcium relatively necessary to the human body. I have been struck repeatedly when one case of goitre appears in a family all of whom are subjected to the same conditions, including tonsillar infections, that the individual affected took no milk. It must be quite obvious that the calcium soaps formed from milk cause no trouble, yet when butter is given trouble arises. The solubility of different soaps varies, some [illegible] producing a more soluble soap than others. Owing to the unsaturated condition of its fats the soap formed with cod-liver oil exceeds all others in its properties of solubility. At times protracted diarrhœa is set up by insoluble soaps irritating the bowels. It is claimed by some authorities that cod-liver oil contains bile; if so, the presence of lecithin and cholesterin would materially help in breaking down the soaps formed from these fats.

Pigeons as well as tadpoles normally take very little fat and their powers of dealing with it will not be of a very high order. As we know from experience that human beings at times are unable to break down calcium soaps, it can readily be conceived that pigeons and tadpoles would likewise fail if that mechanism was taxed beyond its power. Soaps formed from the fatty acids of butter and oleic acid will be broken down with far greater difficulty than those formed from cod-liver oil. The solubility of soaps is due to the bile action, depending chiefly on the presence of lecithin and cholesterin. Starling says: "If the reaction be alkaline the alkali will combine with the fatty acids to form soaps. Analysis of the content of the gut after a fatty meal shows that the greater proportion of the fats are present as a mixture of fatty acids and soaps, the amount of these substances compared with the unchanged fats increasing as we descend the gut." We must deduce from this that fat taken above normal requirements will form soaps with the fatty acids combining with all the calcium and other alkalis present; this may well lead to calcium starvation. To explain the action of the iodine in benefiting goitres in the presence of fats, I may suggest that the iodine combines with the calcium to form calcium iodide; the calcium having such a close affinity for iodine would combine with that in preference to combining with the fatty acids, and so make some calcium available to the system. This, to some extent, is borne out by the type of goitre produced, as in no case was there a tendency to a retention of colloid, as is seen in the Swiss and Derbyshire goitres, but a type of goitre was produced of the thyrotoxic kind verging on that found in Graves's disease in which there is either an excess of iodine or a deficiency of calcium, practically resulting in the same thing. In support of the view of the power possessed by cod-liver oil in carrying calcium into the system, I will refer to the work of Drs. Park and Howard,[1] who confined their attentions to the influence of cod-liver oil in rickets; their results were more definite than those of Phemister and his colleagues. The changes discoverable by radiographic means began four to five weeks after the commencement of treatment. The first evidence of repair was a line due to the deposition of calcium, which appeared between the extremity of the shaft and the centre of ossification in the epiphysis. The line became thicker and gradually spread so that the cartilage in the transitional zone became transformed into bone and infiltrated with lime. The calcium was so deposited that the end of the shaft assumed the appearance of a cup or crater embracing the nucleus of ossification. With a view to assisting the absorption of calcium I have recommended the use of bile salts.[2] At the same time I was evolving a method for testing small quantities of calcium in the blood, which was read before the Royal Society of Melbourne.[3]

The results of my experiments and the work of others led me to the conclusion that it was hopeless to look for any deficiency of calcium in the blood, as a certain proportion of calcium is necessary for the life of the individual; anything above is rapidly excreted, and anything below means death; to maintain this amount constant the supplies in the tissues and bones are called upon. This can be seen in animals put on a calcium-free diet, the epiphyseal junctions showing very marked increase of vascularity, suggesting a robbing of calcium from the bones. The same thing obtains when large doses of thyroid extract are given to rabbits: this strengthens the contention that in all cases of overactivity of the thyroid there is increased calcium output, very obvious in tuberculosis, and accounting for the liability to haemorrhage in these thyrotoxic cases. This can always be corrected by the administration of calcium salts. The haemorrhagic tendency exists in spite of the fact that no appreciable diminution of the calcium content of the blood is found. Those who have to remove infected tonsils in these cases are well aware of its value. This opens up the question whether although calcium may be present in sufficient quantities it may not be in the right combination or colloidal form.

As to the part possibly played by the onion, it is to be noted that the essential oils of garlic and onions have a very powerful bactericidal action, and so may have a very decided effect in eliminating the cause of thyroid enlargement.

[1] *Medical Journal of Australia*, December 17th, 1921, p. 575.
[2] Ibid., November 7th, 1914.
[3] Ibid., November 17th, 1917.

Early in 1915 I began to see the relation between focal infections and goitre, and in March began to treat the condition by their removal, about the same time as Rupert Farrant was coming to the same conclusions at the other side of the world. Since then I have never seen any goitre without focal infection, and by removal and other treatment I have been able to deal satisfactorily with all my cases, only failing in those in which I was not able to remove the infection. Whilst fully recognizing the importance of bowel infection in endemic goitre, I would like to say that I have never seen a case in Australia. Since McCarrison's work was published many medical men have been trying to cure goitres with intestinal antiseptics where there was an obvious infection of the tonsils. In nearly all acute infections, and most others, there are signs of an overactive thyroid, irrespective of any enlargement, as shown by the signs of increased nervousness, tachycardia, and tremor. In all such cases there is a tendency to thinning of the colloid; these symptoms will predominate in districts poor in calcium or rich in iodine. In districts rich in calcium or poor in iodine infections will tend to produce a colloid which is too rigid to pass into the circulation, and will therefore accumulate in the vesicles; if any symptoms are associated they will be those of deficient thyroid activity. One must view the normal colloid as being of such rigidity as to pass into the circulation when a call is sent. If it is too rigid it will not pass but accumulate; if too thin it will pass continuously into the system. With these views in mind I cannot help coming to the conclusion that the part played by the fat in the production of goitre is only a link in the chain of calcium absorption or starvation.—I am, etc.,

SYDNEY PERN, M.R.C.S., L.R.C.P.Lond.

Melbourne, Victoria, July 21th.

BONE GRAFTING AND THE CIRCULAR MOTOR SAW.

SIR,—In his article on the treatment of spinal caries by bone grafting (BRITISH MEDICAL JOURNAL, July 15th, p. 73) Sir Henry Gray discusses the question of how the graft should be cut, and I fear that, however satisfactory he has found his method, a rather erroneous impression is given regarding the use of the circular motor saw. In my opinion the Albee outfit is a great acquisition to a surgeon's set of tools. The long experience of Albee and the large number of cases successfully treated by him cannot be lightly set aside. His *x*-ray proofs are as fine as may be seen anywhere.

These results have been obtained by operation where the circular motor saw has been used. Therefore, the destruction of the osteoblasts in the graft, so cut, does not occur. This certainly has been my own experience, and I maintain that the frictional heat generated by the rapid circular saw is not so great as might be imagined. It has been shown that a saw working at 250 revolutions a minute generates only 4 degrees less heat than one at 6,000. Then, again, it must always be remembered that it is only fair to the instrument that a sharp blade should be used. The use of a cold saline solution drip is indicated in cases where thick adult cortex is cut, and all splattering of saline, blood, etc., may be prevented by the "guard" attachment to the "shell" of the motor.

It is many years now since I employed an exactly similar method to that described by Sir Henry Gray—namely, the drilling of holes along the line of section of the graft from the shaft of bone, in order to prevent splintering by the osteotome, which usually occurs if such drill holes are not made, and which may occur even when they are made.

There is no instrument that can cut such a perfect graft as the circular motor saw. Again, there is no comparison between the old and new methods when speed is taken into consideration. In bone-grafting operations, particularly those required for spinal caries, speed is an important factor. A very large number of such cases occur in quite young children, who bear prolonged general anaesthesia badly. There are few of us who do not know how expert Sir Henry Gray is in the use of local anaesthesia: but I am sure that the bulk of such operations in very young subjects are performed by the majority of less expert surgeons under a general anaesthetic. There, speed is an important factor.

There is another large area in the field of bone surgery where the question of bone grafting is very important—namely, the treatment of delayed union of fractures of the long bones. It is a matter of common experience to find now and again a case in which bone repair at the seat of fracture is either long delayed or is non-existent.

Such cases may be due to the interposition of muscle, etc., between the broken ends, but there are others where no recognizable displaced tissue has been interposed, and it is assumed that the delay is due to a disturbance of the normal metabolism. This is frequently admitted, in part at least, by the administration of thyroid extract to the patient in the hope of stimulating in one or more directions the metabolic changes necessary for bone repair.

These are just the cases where, if Sir Henry Gray's contention is correct that considerable damage is inflicted upon the osteoblasts of the graft by the frictional heat of the motor saw, one would expect a large percentage of failures. I do not possess the experience of a Gray nor an Albee in bone surgery, but I have treated such cases by the inlay bone graft, cases in which I had great difficulty to account for the delayed union. I have found that the Albee graft does very well indeed, especially if it is steadied laterally by thin bony wedges placed along the sides of the graft bed, coupled with the use of retaining strands of kangaroo tendon to prevent movement of the graft towards or from the medullary cavity of the bone under repair. It is to be remembered that we are cutting, not the thin delicate tibial shaft of the young child, but the dense cortex of the adult bone where the frictional heat of the saw should be almost at a maximum. Yet they do well—the grafts neither disappear nor become sequestra.—I am, etc.,

GEORGE ROBERTSON, F.R.C.S.Edin.,
Honorary Surgeon, Dunfermline and West of Fife Hospital.

August 31st.

MUSCLE NECROSIS.

SIR,—I read with interest the case of muscle necrosis due to intramuscular injection of quinine reported in a recent issue of the JOURNAL. I saw several cases while attached to No. 1 General Hospital, Wynberg, and was so impressed with the serious results of these cases that I ceased to give injections beneath the fascia, and for eighteen months treated my cases by subcutaneous injections with excellent results; in about six cases slight necrosis occurred at the site of injection, which soon healed.

Briefly, the advantages obtained by quinine given this way rather than orally are:

(1) It can be given when, owing to vomiting, quinine cannot be given by the mouth. (2) The quinine is present in the blood while the malaria parasite is free in that fluid. (3) It relieves quickly muscular pains present in some cases of malaria. (4) In anaemic and debilitated subjects apparently large doses of quinine taken by mouth are not absorbed. (5) It acts quickly and certainly (a big advantage in cachectic patients): six to eight injections of from 5 to 10 grains, and the patient is convalescent.

At the request of Colonel v. Zyl I read a paper before the Cape Town Branch of the British Medical Association, in which temperature charts of over 100 cases treated by injections were handed round; the paper was published in the *South African Medical Record*, July, 1918.

My object in writing this letter is to warn men new to treatment of malaria of the danger of intramuscular injections, and to assure them that the subcutaneous method is just as efficacious without the risk of muscle necrosis, which I am sure is not due to faulty technique but to the action of quinine in some patients who appear very susceptible to the drug.—I am, etc.,

H. KNIGHTS RAYSON, M.D.Brux.,
M.R.C.S., L.R.C.P., late Captain S.A.M.C.

Bayville, U.S. Africa, Aug. 20th.

NEW REGULATIONS FOR TRAINING FOR THE D.P.H.

SIR,—A typographical error has crept into the otherwise very accurate report of the Public Health Section at the Glasgow Annual Meeting and of the arrangements made for the teaching of public health in this city and port (BRITISH MEDICAL JOURNAL, August 26th, p. 364).

Section 1 of the syllabus reads: "Interviews with the *Ministry of Health* as often as possible"; obviously this should read: "Interviews with the *Medical Officer of Health* as often as possible."—I am, etc.,

E. W. HOPE.
Medical Officer of Health.

Liverpool, Sept. 7th.

SIGHT-TESTING OPTICIANS.

SIR,—The letter from Mr. Parkinson Higham (September 9th, p. 489) advocating the giving of a charter to opticians in order that they may be bound down to a strict code of etiquette is a very dangerous one. The same argument was used with regard to midwives, and the result is that midwives are now in an established position, registered by the State, and have taken away from medical men the majority of midwifery cases. Before they were recognized the public knew that they were taking a certain risk in going to midwives: now they look upon them as able to do their work as well as a medical man. You may give a man a diploma and register him, but you cannot bind him down to carry out any rules and regulations.

The supply of spectacles by opticians is a scandal, and in many cases a swindle. It is a purely business transaction, and the more advertisements appear in the papers that assert the wonderful knowledge of eyesight possessed by these opticians, and the more extravagant their claims, the greater their takings and the greater the harm they do.

The trade of the optician must be very lucrative indeed. The charges they often make for spectacles would cover a medical man's fee as well as the cost price of the spectacles at a wholesale house. It is astonishing to see the enormous number of people who wear spectacles nowadays. And yet those who know something about eye diseases all acknowledge that it is dangerous to prescribe spectacles without knowing something about diseases of the eye. Retinoscopy is also essential in most cases. But I am afraid that it is the fault of the medical profession that opticians have attained the position they have already. There are many medical men in general practice who would do refractions for a fee of half a guinea, but the public do not know of them. The result is that the work is done by ophthalmic surgeons only, whose fee is prohibitive to many people. Consequently the public go to opticians. A medical man in general practice cannot advertise that he does refraction work, and the public do not know of his existence. There also seems to be a disinclination on the part of many practitioners to send their patients to another for refraction work. I wonder whether a medical man who set himself up to do refraction work at a fee such as mentioned above would get the support of his professional colleagues, and how would it be possible for him to let the public know that he does this work? What would be a suitable title for him to adopt? How would it be for him to put on his plate "Ophthalmic Surgeon," "Refraction work only," or something of this kind? If he puts "Eye testing" or "Spectacles prescribed" he runs a risk of being mistaken for an optician. Can you suggest a title, Mr. Editor?—I am, etc.,

Hastings, Sept. 11th. ARTHUR E. LARKING, M.D.

*** We can see strong objections to any kind of legend or other device which could be interpreted as a means of attracting the attention of the public.

Obituary.

SIR CHARLES RYALL, C.B.E., F.R.C.S.,

Senior Surgeon to the Cancer Hospital, London, and to the Bolingbroke Hospital.

THE announcement of Sir Charles Ryall's sudden death on September 5th while on holiday at Dornoch was an overwhelming shock to his many friends, especially to those who only a few weeks previously had seen him in London vigorous, alert, and cheerful as he always was. The very morning of his death he wrote to his secretary in London saying that he had never felt better, and arranging that a party of friends be asked to shoot with him in Hertfordshire next week. An anginal attack while at the luncheon table—and within a few moments all was over.

Born in 1869, Charles Ryall traced his descent from one of Cromwell's officers who settled in Ireland at the termination of the Irish wars, and was the son of E. C. Ryall, who served through the Crimea and the Indian Mutiny in the A.M.D. After obtaining his medical education at Dublin University Ryall spent a year or two in post graduate work in Paris and London, and was then appointed house-surgeon to the Cancer Hospital. While holding this post he became F.R.C.S., and so impressed were the authorities of the hospital by his sagacity, energy, and ability that he had the unusual experience of being elected to the honorary staff while still a house surgeon. This was the starting point of Ryall's successful career. He became surgeon to the Cancer Hospital at a time critical in its fortunes, and it is impossible to overestimate the far-reaching influence he exercised. Aseptic surgery had just made its appearance, and his tact, skill, and sound judgement played an all-important part in placing the work of the hospital in the position it occupies to-day.

The Cancer Hospital was always foremost in his thoughts; he was devoted to its interests, and his far-seeing and statesmanlike views were of untold value to his colleagues and to the house committee. But there were many other spheres of activity that claimed Ryall's attention. The Lock, the Gordon, and the Bolingbroke Hospitals all received many years of ungrudging service. From the two former he retired some time ago, but at the time of his death he was senior surgeon to both the Bolingbroke and the Cancer. These were the clinical centres where Ryall built up a reputation for clinical acumen, technical dexterity, and sound judgement which earned for him the respect and esteem of his fellow surgeons and, in fact, of the whole of his professional brethren.

The commanding position that Ryall had come to occupy was shown in unmistakable manner by the overwhelming voting which returned him at the top of the poll on his election to the Council of the Royal College of Surgeons. This was a notable—indeed, an unprecedented—achievement for a man who was not on the staff of a teaching hospital, and who could not, therefore, command the solid support ensured by such a position. Ryall naturally came to be regarded as the representative and champion of the special and non-teaching hospitals, and fully did he justify the confidence that had been placed in him.

Very soon after the outbreak of war, like so many others who found themselves over the age acceptable to our military authorities, Ryall was at work for the Belgians; but, following upon the German advance, he had to return to London, and at once became engaged in every kind of war activity. Overburdened with surgical work at his own hospitals owing to the absence of the younger men, he yet made time to carry out much useful work at King George V Hospital, the Countess of Carnarvon's Hospital, and many of the smaller officers' hospitals that sprang into being all over London. A little later in the war he was able to render services of the greatest importance to the nation, for, with the institution of compulsory military service, the need for just such men as Ryall was at once manifest. As a member of the Special Medical Appeal Board, the Advisory Medical Board for National Service, and many other similar bodies, he was exactly in his element. His great tact, unerring judgement, and wise discretion rendered him absolutely invaluable, and had he lived it is certain that he would have been called upon to carry out still more important duties in this sort of capacity.

Wide interests and a far too busy life left little time for writing, and Ryall's contributions to surgical literature were few, but what he did write stood the test of time. Almost his earliest observation was the danger of cell implantation during the course of cancer operations, and it has had an important influence in the surgery of malignant disease. Member of the International Surgical Society and Organizing Secretary for next year's congress, President of the Subsection of Proctology of the Royal Society of Medicine, member of the Committee on the Physical Education of Girls, Past-Master of his Masonic Lodge (No. 2000), and chairman of one of the subcommittees of the Council of the College of Surgeons—it is impossible to realize how Ryall got through it all. He never spared himself—an emergency operation, a tiresome committee, a medical meeting, a lecture by a friend or colleague, he was always there and always the same—cheery, optimistic, friendly.

No picture of Ryall would be complete without some reference to his life outside his professional work. He was a great sportsman, and whether it was shooting, fishing, golf, or mountaineering he showed the same eager spirit and the same boy-like aptitude for enjoyment that was such a lovable trait in his character and so endeared him to his friends. Ryall had a genius for friendship. There is no one who had more friends and no one who deserved more. Simple, modest, unassuming, he inspired loyalty and affection in all who came in contact with him. Those of us who were privileged to know him intimately had a regard for him not easily put in words—to each and every one of us he was wise counsellor, genial companion, and closest friend, and we loved him. "To be a prop of strength to a human soul in a moment of weakness is to know the glory of life." C. R.

We are indebted to Sir JAMES GALLOWAY for the following appreciation: The intelligence of the sudden death of Sir Charles Ryall must have come as a shock to his many friends and colleagues. We were on vacation as he was, and the bad news struck us on casually glancing over the columns of the daily paper. Charles Ryall's generous and sympathetic nature made him a welcome friend in a wide circle, and those who had the advantage of knowing him valued his good judgement and broad sympathies as well as his bright and friendly temperament. His qualities of sound reasoning and kindly judgement were well known to his professional brethren, and were specially well observed and indeed developed during the years of the war, when he acted as Medical Assessor to the appeal tribunals in close association with the Local Government Board and the Ministry of National Service. Ryall was the right man in the right place to fulfil the duties required at that difficult and critical time. The cases of those seeking exemption from or mitigation of military service were numerous, difficult, and frequently vexatious; but however vexatious and however ingenious were the difficulties raised Ryall would judiciously and sympathetically deal with the multifarious objections and also with the many true difficulties. There can be no doubt in the minds of those who worked in closest association with Ryall at that time that the work during 1917 and 1918 tried him severely, both mentally and physically. His premature departure affects many, but in a very special way those whose friendship with Charles Ryall became a very intimate and living thing during the difficult days of the war.

DR. ARCHIBALD LEITCH writes: The outstanding quality that endears a man to his fellows, that lights up the eyes with pleasure at his coming and keeps green memories when he passes, is goodness of heart, and if ever a man had a heart of gold it was Charles Ryall. He radiated kindness: he was for ever doing kind and thoughtful deeds. Many a one he helped who was down and out. Many a young man struggling upwards, who perhaps knew nothing of his influence unostentatiously and even surreptitiously exerted, had him to thank largely for success. However successful a man may be there come times when he needs a friend to give him confidence and to stand by his side in crises, and Charles Ryall was always ready. He thought and said the best of other people: no tinge of acerbity, envy, or malice coloured his criticism; he had no enemies, and all his acquaintances were his friends. We, his colleagues, loved him. With his wide sympathy and understanding he made our interests and difficulties his very own. His wonderfully sound judgement, operative dexterity, and quick wit and resource in emergencies made him a surgeon's surgeon, so that when illness affected us or our families he was the one to whom we first turned for advice and comfort. The well-merited honours that came to him were to us personal pleasures. He sacrificed himself during the war doing the work of a dozen men; it broke his health and left him a tired man, but his tireless soul permitted him no rest from the calls of duty. His life was happy and good. Beyond doubt there was written under the records of his stewardship "good and faithful servant" when this last sudden poignant call took our trusty and lovable friend away.

A largely attended funeral service was held on September 9th at Christ Church, Marylebone, and in the presence of sorrowing relatives, friends, and colleagues the interment took place at Kensal Green. A devoted wife is left to mourn his loss, and deep sympathy is felt for her in her sorrow.

J. A. MANSELL MOULLIN, M.B., M.R.C.P.,

Consulting Physician, Hospital for Women, Soho Square.

DR. JAMES ALFRED MANSELL MOULLIN, who died on August 14th, was educated at Oxford University, Dublin, and St. Thomas's Hospital. He graduated B.A.Oxon. in 1872, M.A. in 1875, and M.B. in 1877. In the following year he obtained the membership of the Royal College of Physicians of London. He was associated with the Soho Hospital for Women for some forty years, and took a very considerable part in the reorganization of its work. At the time of his death he held the post of consulting physician to that institution. He was also in succession assistant physician, physician, and consulting physician for diseases of women at the West London Hospital. He was a former president and treasurer of the British Gynaecological Society before it became amalgamated with the Royal Society of Medicine.

A colleague writes: Mansell Moullin's interests were almost exclusively confined to gynaecology, and he cared little for midwifery. As a surgeon he was fearless and dexterous and very much enjoyed his operative work. He was the author of many contributions to gynaecological literature. In public he had a shy and retiring manner and was from this cause perhaps little known by the majority of his colleagues. To those with whom he was thrown professionally he was always courteous and considerate. One of his recreations was shooting, to which he looked forward each year with great keenness and about which he was ever more than willing to talk.

WE regret to record the death, after a prolonged illness, of DR. ROBERT WYNNE STANLEY WALKER, of St. Heliers, Jersey, which took place at the residence of his father, Glenn Hall, Leicester, at the age of 39. Dr. Walker was educated at Cambridge University and University College, London. He graduated M.A., M.B., B.Ch. in 1908, and proceeded M.D. in 1910, being awarded the Raymond Horton-Smith prize for his M.D. thesis on congenital heart disease. After holding resident posts in University College Hospital, the Hospital for Women, Soho, and the Great Northern Hospital, he went into practice in Jersey, where he was appointed honorary surgeon to the Jersey Dispensary and Infirmary. He was honorary secretary and treasurer of the Jersey Division of the British Medical Association. During the war Dr. Walker joined the R.A.M.C. and went out to Salonica, and on war service he contracted tuberculosis. The strain of medical practice during the influenza epidemic a few years ago aggravated his tuberculous trouble, and of recent years he had spent the winters in Switzerland and the summers between his home in Jersey and Glenn. Dr. Walker made several contributions to medical literature. His many friends will regret the untimely end to what had promised to be a brilliant career.

JOHN ANDREW TURNER, M.D.Edin., D.P.H.Camb., late health officer of Bombay, died recently in London. He was educated at Edinburgh, and after qualifying turned his attention to sanitary work. His first appointment in this line was H.O. of a district of Leicestershire and Rutland, and subsequently he became M.O.H. for Hertfordshire. From this appointment he proceeded to Bombay in the year 1901. Plague broke out in that city in the latter part of 1896, so that on his arrival the H.O. was called upon to face the problem of starting remedial measures, very little having been done in the four years previous. At that time the epidemiology of the disease was very ill understood, so that it was no light task that the H.O. had to face. The problem of ridding huge oriental cities of this disease is still awaiting solution. At the same time Bombay owes much to Dr. Turner for many improvements in sanitation and housing. He paid particular attention to tuberculosis and venereal disease in the later part of his career, and went in for a vigorous campaign of propaganda against both of these diseases, leagues of lay workers and local practitioners being formed to assist. He was awarded the C.I.E. shortly before his retirement. On settling in London he obtained a temporary post under the Ministry of Health, but he vacated this some months before his death.

WE regret to record the death from drowning, while on holiday in Anglesey, of Dr. ARTHUR HOWARD of Macclesfield. While bathing with a large party in a rough sea at Rhydwen he and several others got into difficulties, but although his companions were rescued Dr. Howard was carried out of sight by the waves, and his body was not recovered until some hours later. He received his medical education at Owens College, Manchester, and graduated M.B., Ch.B.Vict. in 1903. He had held resident appointments at the Kent and Canterbury Hospital and Northampton General Hospital, and was formerly resident superintendent of the Borough Hospital, Birkenhead.

THE death took place on September 1st, at Llandudno, of Dr. DAVID LLEWELLYN DAVIES, of Neath, in his 77th year. He had been visiting North Wales and fell and fractured a leg at the Swallow Falls, whence he was conveyed to a nursing home in Llandudno. Dr. Davies was educated at the University of Glasgow, and graduated M.B., C.M. in 1874. He was medical officer to the Neath Union Workhouse, a justice of the peace, and held many other public appointments in the district, where he carried on a large practice and was deservedly popular.

THE death took place recently at Paisley Royal Infirmary of Dr. ALEXANDER MACLEAN, who was for fourteen years a member of the medical staff of the Glasgow Public Health Department. Dr. Maclean was educated at Glasgow University, where he graduated M.B., Ch.B. in 1902; he took the D.P.H. of the Royal Colleges of Physicians and Surgeons of Edinburgh in 1903. He was formerly senior assistant medical officer at the Western District Hospital, Glasgow, and on appointment to the Public Health Department he became assistant bacteriologist. He devoted special attention to the relation of housing conditions to disease, and for a number of years held a special post as junior medical officer for housing purposes; in 1920 he was transferred to the northern division of the city as a clinical medical officer.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE next examinations for medical and surgical degrees will be held at the beginning of October. Parts I and II of the First M.B. Examination will begin on October 3rd, and Part III on October 5th. Part II (pharmacology and general pathology) of the Second M.B. Examination will begin on October 2nd.

SOCIETY OF APOTHECARIES OF LONDON.

THE Diploma of the Society has been granted to the following candidates entitling them to practise medicine, surgery, and midwifery: E. E. Briant, A. Gugenheimer, F. D. Howitt, and W. J. Verheyden.

The Services.

DEATHS IN THE SERVICES.

Surgeon Rear Admiral George Trevor Collingwood, C.B., R.N. (retired), died at King Edward's Convalescent Home, Osborne, Isle of Wight, on September 2nd. He was born in 1853, educated at the London Hospital, and, after taking the M.R.C.S. and L.R.C.P. Lond. in 1886, entered the navy as surgeon in the following year. He attained the rank of surgeon rear admiral on July 4th, 1920, and retired in 1921. As surgeon of the *Widgeon* he served in the Naval Brigade landed at Bathurst, on the Gambia river, in February, 1894, for the punishment of Fodi Silah, a slave-raiding chief; in September, 1894, in the expedition against the chief Nanni, on the Benin river, and was present at the capture of Brohemi, the chief's stronghold, in September, 1894; and in the expedition against King Koko, of Nimby, on the Brass river, in February, 1895, was mentioned in dispatches, and received the Africa General Service medal, with three clasps. From 1909 to 1912 he was P.M.O. at the Royal Naval College, Osborne. In the recent great war he served in the Dardanelles, on H.M.S. *Inflexible*, and afterwards in charge of the naval hospital ship *Soudan*; and after the war was appointed head of the naval hospital at Malta. He received the Sir Gilbert Blane gold medal in 1909, the M.V.O. in 1910, on the occasion of King George's visit to Osborne, and the C.B. in 1919.

Inspector-General Henry MacDonnell, C.B., R.N. (retired), died at Southsea on September 2nd, aged 83. He was born in 1839, the son of William MacDonnell, Esq., of Dublin, educated in that city, and, after taking the L.R.C.S.I. in 1860 and the L.K.Q.C.P. in 1861, entered the navy as assistant surgeon in 1861. He attained the rank of inspector-general in 1897 and retired in 1899. He was in charge of Malta Naval Hospital from 1893 to 1896, Chatham Hospital 1896–97, and Haslar Hospital 1893–99. As fleet surgeon of H.M.S. *Invincible* he served at the bombardment of Alexandria on July 11th, 1882, and during the Egyptian war, receiving the medal with a clasp and the Khedive's bronze star. He was granted the C.B. at Queen Victoria's diamond jubilee in 1897, also the jubilee medal. In 1886 he married Frances Alice, daughter of the late Sir William R. Holmes, Consular Service, of Kilrea, Ireland.

Colonel Edward Horace Lynden Lynden-Bell, C.B., A.M.S. (retired), died in the Officers' Hospital, Millbank, on September 1st, aged 65. He was born on December 18th, 1858, the son of Major-General T. Lynden-Bell, of Brook Hill, co. Wexford, and educated at Edinburgh University, where he graduated as M.B. and C.M. in 1882. Entering the R.A.M.C. as surgeon on August 4th, 1883, he attained the rank of lieutenant-colonel after twenty years and colonel on September 19th, 1912, retiring on December 26th, 1917. From 1912 to 1914, and again in 1917, he held the post of D.D.M.S. London district. He served in the Burma campaign in 1885–89, receiving the Indian frontier medal with two clasps; and in the war of 1914–18, when he was mentioned in dispatches in the *London Gazette* of October 19th, 1914. He received the C.B. in 1915, and was appointed a Knight of Grace of the Order of St. John of Jerusalem in 1916.

Lieut.-Colonel Lewis Haywood, R.A.M.C. (retired), died at the [illegible] on August 31st, after a long illness. He was born on August [illegible], and entered the army as surgeon on February 4th, 1885. He [illegible] was then Lewis Haywood Leicester, but he subsequently dropped the surname. He attained the rank of lieutenant-colonel after twenty years' service, and retired on October 22nd, 1902. After his retirement he was employed at Scarborough in 1903–04, Aldershot 1905–07, and Lincoln in 1908–09; in 1909 he was appointed staff officer to the A.M.S., South Midland Division, R.A.M.C.(T.F.), and subsequently D.A.D.M.S. of that division. He served in the South African war in 1899–1901, and took part in the relief of Ladysmith, including action at Colenso, operations on Tugela Heights, action at Pieter's Hill, and operations in the Transvaal, including the action at Zilicatis Neck, was mentioned in dispatches in the *London Gazette* of February 8th, 1901, and received the Queen's medal with four clasps.

Medical News.

A POST-GRADUATE course will be held in medicine, surgery, and pathology at Addenbrooke's Hospital, Cambridge, from Monday, September 25th, to Saturday, September 30th. There will be a morning session from 11 a.m. to 1 p.m., and an afternoon session from 2 to 5 p.m. each day. The times have been so arranged as to enable as many as possible of those wishing to attend to carry on their practices at the same time. There will be no fees for the course. A dinner will be held on Tuesday, September 26th, at 7 p.m. A programme and further particulars can be obtained from the secretary to the staff, Addenbrooke's Hospital, Cambridge.

THE opening ceremony of the winter session at King's College Hospital Medical School, Denmark Hill, will be held at 2.45 p.m. on Tuesday, October 3rd. The introductory address will be given by Sir Herbert Jackson, K.B.E., F.R.S., with Viscount Hambleden in the chair. The annual dinner of past and present students will be held at 7 for 7.30 on the same day at the Café Royal, Regent Street, W., with Dr. Percy Lewis in the chair.

THE third annual lecture conference for welfare supervisors organized by the Industrial Welfare Society will be held at Balliol College, Oxford, from September 15th to 20th. This year the conference is open to both men and women, special arrangements having been made for the women delegates at Lady Margaret Hall. The Session will be opened by Mr. J. W. Pratt, M.P., Parliamentary Under-Secretary for Scotland. The programme will deal with such subjects as "Welfare under the Whitley principle," "The employment department: its functions and personnel," "Health, first aid, safety." Mr. Frank Hodges, Secretary of the Miners' Federation, will give an address on "Health and welfare in the mining industry," and Dr. H. M. Vernon, of the Industrial Fatigue Research Board, will speak on "Record keeping and statistics." Inquiries regarding the conference should be addressed to the Industrial Welfare Society, 51, Palace Street, Westminster, S.W.1.

SIX months' Courses of Lectures and Practical Instruction in Part I (Physics and Electro-Technics) and in Part II (Radiology and Electrology) for the Diploma in Medical Radiology and Electrology of the University of Cambridge will be given in London, beginning October 3rd, 1922, and in Cambridge and London, beginning January 9th, 1923, for examination at the end of the courses. For further particulars application should be made to Dr. Stanley Melville, 12, Stratford Place, London, W., or to Dr. F. Shillington Scales, Medical Schools, Cambridge.

A COURSE of lectures on maternity and child welfare and school hygiene will be delivered at the Royal Institute of Public Health, Russell Square, London, during October, November, and December. Medical practitioners, medical students, health visitors, and others engaged in any form of public health service are invited to attend. The opening lecture on Wednesday, October 18th, at 4 p.m., will be given by Professor Louise McIlroy on the influence of ante-natal care upon infant mortality. Particulars may be obtained from the honorary secretaries at 37, Russell Square, W.C.1.

DURING the last twelve months 32,414 rats were destroyed in the docks and warehouses of the Port of London Authority, compared with 39,112 in the previous year.

DR. HUBERT WORK, Postmaster-General of the United States, and formerly President of the American Medical Association, was the guest of honour at a dinner given in Washington by the Panama Chargé d'Affaires, Señor Lefevre, in recognition of the co-operation of a committee of the American Medical Association appointed to act with the board of directors of the Gorgas Memorial.

AN interallied congress on cancer will be held at Strasbourg in the spring of 1923, when the following topics will be discussed: (1) Experimental production of cancer; (2) spontaneous and provoked reactions of the organism against cancer; (3) treatment of cancer of the breast by irradiation.

THE Russian Pirogoff Surgical Society of Petrograd has announced that the fifteenth Russian Surgical Congress will take place from September 24th to October 1st. The organization committee consists of the council of the society, of which Professor Grekow is president, associated with a number of other members of the society. The chief subjects for discussion will be: (1) the anatomy and pathology of the vascular system; (2) chronic ulcer of the stomach; (3) surgical complications of exanthematic and recurrent fever; (4) treatment of surgical tuberculosis.

AT the third annual convention of the Canadian Radiological Society, held recently at Winnipeg, Dr. Lewis J. Carter of Brandon, Manitoba, was elected president.

IT is announced by the United States Treasury that Dr. J. W. Scherechewsky, assistant surgeon-general, U.S. Public Health Service, has been commissioned to conduct an investigation into the cause of cancer; the headquarters of this investigation will be established in Boston.

IT is reported from Manila, according to the *Journal of the American Medical Association*, that numbers of "chiropractors" have recently arrived in the Philippine Islands from the United States. They have bought full-page advertisements in the local newspapers, claiming to cure almost every ailment, and they are attempting to get a bill submitted to the Legislature regulating the practice of "chiropractic" and to establish a chiropractic examining board for the Philippines.

THE leading educational institutions in eastern China are co operating in a project to found a medical school in Shanghai. This proposal was abandoned last year by the China Board, but is now being revived with considerable assurance of success. The suggestion is to combine Chinese and American funds and build a union medical school, using St. John's medical department as a nucleus of the new school. The Women's Union Missionary Board has decided upon Shanghai as the best place to found a women's medical college, and is entering whole-heartedly into the present union scheme.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

SHELTER LIFE FOR CHILDREN.

DR. WM. J. AITKEN QUINE (Chimley) writes: In reply to the inquiry from "Alpha" (p. 493) I may say that in my opinion shelter life for a 4 year old child in Derbyshire is perfectly feasible, provided that the feet are kept warm by a large, well-protected, hot-water bottle at night in cold weather. The climate is damp, more especially on the western slopes of the Pennines, but *not* foggy to any marked degree. On the other hand fog, when formed, is often very slowly dissipated from enclosed valleys such as that in which Buxton lies. The county health authorities provide a useful form of shelter for suitable tuberculosis cases, and evidence of the way in which open air life is adopted is to be found in the great reluctance of even small children to give them up and sleep indoors again.

EPIDEMIC STOMATITIS.

"CLOVBANK" asks for references to recent recorded cases of epidemic stomatitis in children. There have (he says) been three cases in one family in my practice, the chief features of which have been small ulcers of gums and lips, foul tongue, mild febrile reaction, and anorexia.

CERTIFYING FACTORY SURGEONS.

"J. E." asks what remuneration a certifying factory surgeon usually receives, and to whom an application should be made when a vacancy occurs. We have referred the question to a correspondent with special knowledge, and his reply is as follows:

Examination of Young Persons.—The Factory Act (Sec. 124) enables the employer and the surgeon to arrange the amount of fee or annual charge, and this is extensively done. In the absence of an agreement the remuneration must be by fixed scale, which allows, at present, 2s. 6d. per visit or, if more than two are examined, 1s. per head; mileage at the rate of 6d. per complete half mile after the first is to be added. For examination at the surgeons' rooms the fixed fee is 1s. per person.

Examinations under Regulations.—The scale is as above, and although nothing is said about mutual arrangements there is no reason why an employer cannot pay as much as he cares to.

Investigation of Accidental and other Poisonings and of Certain Industrial Diseases.—The fees, which are paid by the Home Office, are at the original rate fixed in 1844—namely, 3s., to cover a visit to the works, a visit to the patient and the report, with mileage as above.

Certificates under the Workmen's Compensation Act.—For examination and certificate 5s., with an extra 1s. for each mile or part travelled when the patient is visited. If an examination of the case has already been made under the Factory Act the fee is 1s. only, which, of course, means that the surgeon draws less for a double duty than for certifying under the Compensation Act alone. The fee is to be paid by the workman, but the employer frequently takes up this obligation.

When a vacancy occurs application should be made to the Chief Inspector of Factories, Home Office, Whitehall, London, S.W.1.

INCOME TAX.

"O. K. M." served with the Defence Force in 1921, as a result of which his civil income was reduced by £132, £42 through payment of fees to a locumtenent *plus* £90 lost through inability to attend pensions boards. What can he claim for this loss?

*** The payment of £42 can be charged as a professional expense, but as regards the loss through reduction of earnings no claim can be made; it is, of course, only the reduced amount of the earnings which count as receipts. Tax is legally due on the amount of the Defence Force pay.

"R. M. S." has this year been refused a deduction for the cost of purchasing medical textbooks and of subscribing to medical societies.

*** As we have often said before, we consider that expenses incurred in maintaining, as distinct from improving, a medical library are allowable as necessarily incurred in the performance of the duties of the office. We fail to see any distinction in principle between the expense incurred in maintaining, for example, a set of instruments in proper condition, with the cost of keeping up to a proper level the stock of professional knowledge.

"W. B." is in general practice and holds an appointment as administrator of a hospital. He has been refused a deduction for the expense of travelling between his professional premises and the hospital.

*** Some years ago the Board of Inland Revenue agreed that a hospital appointment need not be separately dealt with—that is, that a single assessment be made under Schedule D on the full earnings of the practice *plus* the appointment. We have not heard that this arrangement has been terminated, and assuming that it continues, "W. B." should apparently be assessed in one sum for all his earnings, in which case the expense is allowable as the case quoted refers only to an assessment under Schedule E.

"O. Y." asks: Has an inspector of taxes any right to demand the inspection of a bank pass book?

*** No. We must, however, add that if an assessment is made against which the taxpayer appeals, the Commissioners by whom the appeal is to be heard can require production of such evidence as they think fit, and confirm the assessment if this is not forthcoming.

LETTERS, NOTES, ETC.

GASTRO-JEJUNOSTOMY FOR PERFORATED GASTRIC AND DUODENAL ULCERS.

SIR JOHN O'CONOR, K.B.E., M.D. (Senior Medical Officer, British Hospital, Buenos Aires) writes: May I beg to mention that personal (including some bitter) experience convinced me some years ago that, on this side of the Atlantic, the operation for closure of the perforation does not cure the ulcer, and compelled me to adopt the following plan of treatment: Close the perforation, keep the patient in bed for one month, on milk; then perform gastro-jejunostomy, repeat the rest in bed on milk diet (with or without an egg nog once or twice daily) for another thirty days, and follow by careful "gradual" feeding for one year. It is my profound belief that if, in cases of ulcer treated

by gastro-jejunostomy, one were to adhere to one month's rest of stomach and body and follow this by intelligent feeding for one year, we should hear nowadays much more about the virtues of gastro-enterostomy and a great deal less about the necessity for gastrectomy, which, by the way, produces another sore, which has to be dealt with by the natural factors of repair, and which I find sometimes passes into a condition of chronic ulceration, ending up also in cancer. The fact must not be ignored that the human cells have got to do the healing; given the general feeble power of cellular restitution which obviously must exist in everyone who has a chronic ulcer of the stomach, is there any reason to assume that the chances (omitting shock following operation) of cure are enhanced by the substitution of a huge acute wound for a smaller chronic one, which at one time originated in a small acute lesion? I do not wish it to be inferred that, in some instances—particularly ulcers attended with a mass of chronic induration which in all probability is beyond the power of natural resolution, I advocate gastro-jejunostomy in preference to gastrectomy; I maintain that in cases where the latter is essential the former should be added so as to ensure an after-treatment which will correspond to the natural law of repair.

SPA TREATMENT FOR PHLEBITIS.

DR. CHARLES BOYCE (London, S.W.) writes with reference to the treatment of phlebitis and other venous ailments to draw attention to the benefit that may be derived from the thermal waters of Bagnoles de l'Orne, in Normandy, where a spa establishment was founded in 1718. The waters contain carbonic acid, silica, and salts of iron, calcium, magnesium, potassium, sodium and lithium, and are radio-active. They have gained considerable renown on the Continent in the treatment not only of venous diseases, but of gynecological conditions, rheumatism, diseases of nutrition, and skin diseases. During the great war a large number of officers and men were successfully treated there for varix, ulcers, and the after-effects of phlebitis. Dr. Boyce has had personal experience of the efficacy of the waters in the treatment of phlebitis. He recently completed a cure for recurrent attacks of phlebitis in the leg; as a result he has abandoned the use of stocking or bandage and the discoloration and pain have disappeared, although the leg still swells considerably after walking. Bagnoles is best reached via Paris (Gare des Invalides), from which it is five hours' journey; there are through carriages during the season (mid-May to end of September).

FETID EXPECTORATION.

FROM time to time correspondents write to call the attention of the profession to the value of garlic in bronchitis, especially when accompanied by fetid expectoration. Recently we have had a note from Dr. Vallabhdas N. Mehta, L.M. and S. (Viramgam, Bombay Presidency), who states that in a case in which there was a slight elevation of temperature and the expectoration was horribly fetid, he gave injections of garlic oil daily for twelve days. A great improvement ensued, and the fever completely disappeared. The patient was advised to include garlic in his diet for the future. The dose used is not stated.

ALUMINIUM COOKING VESSELS.

IN reply to a correspondent, we stated on August 19th, p. 332, that aluminium is the best metal next to gold or platinum for culinary utensils, and was better than silver. The reference to gold and platinum seems to have caused some amusement, but in answering a chemical inquiry it seemed better to give the exact facts. Dr. Gower Gardner (Oxford) now asks about the action of alkalis on aluminium, as he has heard that an alkali such as washing soda quickly "corrodes" aluminium. He also states that an objection to aluminium is its liability to turn black when used for boiling milk.

*** It is true that aluminium suffers corrosion in the presence of alkalis, and the effect on cabbages and green vegetables cooked in aluminium vessels may therefore have some theoretical interest since it is usual to add sodium carbonate or bicarbonate to the water in which they are boiled. The rate of action on the metal depends on the alkalinity of the liquid; with caustic alkalis it is rapid; with carbonates much less rapid, and with diminishing concentration of the alkali it is further retarded; at the dilution in which alkaline taste ceases to be apparent there is no perceptible effect. Under ordinary conditions small traces of aluminium will pass into solution in the form of aluminium hydroxide and this will be taken with the food *pari passu* with the soda, in quantity approximating to, at most, a few hundredths of the amount of soda. In other words, the total effect would be equivalent to increasing by about double, the proportion of aluminium hydroxide already existing from natural sources in the water in which the vegetables are cooked. The statement that aluminium vessels are liable to turn black when used for boiling milk would appear to be founded on exceptional experience. No other report of this effect has been heard of in the course of our inquiries. The following is, however, a possible explanation: if any film of a spongy nature, such as oxidized metal or milk protein from a previous boiling, is left on the inner surface of the vessel, a new addition of milk being absorbed by the film would be subjected to superheating; the air contained within the film would produce a black stain.

HERPES WITH FACIAL PARALYSIS.

DR. J. F. GORDON (Maghull, Liverpool) submits brief notes of the following case as a possible basis for discussion: About a week ago (he writes) I was sent for to see a patient, a male aged 72, suffering from herpes of the suboccipital and facial regions. The case was a typical one, eruption very pronounced and profuse, the neural pain intense. I prescribed the treatment usually adopted in such cases: locally powder, covered with gamgee, an anodyne and sedative mixture to combat the pain and insomnia. I saw my patient again on Sunday last. His wife, with whom I had a conversation while he was being sent for (as he had gone out for a walk), informed me that he had two nights' good sleep and was now practically free from pain. She said that in every respect he was right, save that the intensity of the pain during its severity must have twisted his face crooked! On his arrival I at once saw he had typical facial paralysis. I have had many cases of herpes in a long professional experience (several over the areas involved in the present case), but never one with facial paralysis coincident with the eruption. Regarding as one does the neuritis (which almost invariably accompanies a case of shingles), as also the eruption (which is coincident with or follows soon after the neural pain), as usual conditions which are looked for, and admitting that a neuritis may be followed by paralysis over the area affected, is the coincident occurrence of the eruption and facial paralysis not somewhat unusual?

THE PERUVIAN ANDES.

SEÑOR OSCAR VICTOR SALOMÓN, Consul-General for Peru, writes to us objecting to a sentence in the brief report (JOURNAL, June 17th, 1922, p. 966), of a lecture delivered by Mr. Joseph Barcroft, F.R.S., at the Royal Institution, on the physiological effects at high altitudes observed during the recent expedition to Peru. Speaking of some customs of the inhabitants of the Andes, Mr. Barcroft is reported to have said:

> "When a native was very ill, for instance, the date of his funeral was fixed without reference to his convenience, and an official saw to it that he was ready to keep the appointment!"

Señor Salomón expresses surprise at the repetition of this piece of hearsay by an eminent man of science, and suggests that the story might have been verified by consulting the authorities of the Peruvian Government on the spot. After a tribute to the exhilarating climate of the Sierra slopes, our correspondent concludes:

> "I am in a position, in all matters relating to the Cordilleras of Peru, to speak from the vantage point of six years of travel through their entire length and breadth, and not, as in Professor Barcroft's case, from a mere two weeks' sojourn among vast mountain chains which, together with their denizens, demand long acquaintance before the traveller can speak with the infallible voice of fact."

Señor Salomón acknowledges that his letter is based on an extract from our report published elsewhere. The sentence, as printed by us, ended with a note of exclamation, suggesting that the lecturer did not mean his anecdote to be taken too seriously.

A BY-PRODUCT OF THE JAMAICA HOOKWORM CAMPAIGN.

AN official gazette is one of the less likely places to find humour, and the following letter, printed in the report of the Jamaica Hookworm Commission in the *Jamaica Gazette* for June 22nd, 1922, deserves wider publicity:

> "Dear Doctor, I James Tucker who being one of your patient I dear say I congratulate you for your attendance and your good service for I am able to say that I take your treatment four time and since I Began to take the treatment I feel Strong and Healthy. Your annal Service had make me Pleasant and Good. Before your treatment all Different Bad feelings Darkness of eyes Headach gueadiness and Several Felling which is not good. But thank God for the Medical Service which the Government give us and I never neglect by taking it. And it dun a good for me. Please doctor Respected Sir, when taking the treatment it comes very simple to me but now I feel quite Amusing to myself and am able to eat and drink very Haughty now all bad feeling is scatter away. Dear Doctor I am your Sincare Patient."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30, 31, and 32.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *112*.

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Observations
ON
OSTEO-ARTHRITIS OF THE HIP.

BY
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HONORARY CONSULTING PHYSICIAN TO THE GENERAL HOSPITAL, BRISTOL.

OSTEO-ARTHRITIS of the hip, though common, is so often overlooked or mistaken for sciatica or subacute rheumatism that it seems worth while considering its symptoms in detail, especially since its progress and successful treatment largely depend on its early recognition. I ask attention first to a tabular classification of joint diseases, so that I may make quite clear what type of disorder it really is. The confusion of names in chronic joint diseases is so great that even a tentative classification may be of use.

GROUP A.
- Traumatic arthritis.
- Haemophilic arthritis.
- Tabetic and syringo-myelic arthritis.
- True gout.
- Heberden's nodes.
- Acromegalic joints.
- Pulmonary osteo-arthritis.
- Spondylitis, Type A.
- Osteo-arthritis multiplex.
- Osteo-arthritis of the hip.

GROUP B1.
- Purulent arthritis—for example, streptococcal or pneumococcal joints.
- Arthritis due to typhoid and other fevers, to dysentery, diphtheria, etc.
- Syphilitic arthritis.
- Tuberculous arthritis.

GROUP B2.
- Rheumatoid arthritis and other chronic infectious forms.
- Gonococcal arthritis.
- Spondylitis, Type B.

GROUP B3.
- True rheumatism, acute and subacute, and fibrositis.

In the diseases in Group A we find some features common to all; for example, little or no affection of the fibrous or synovial structures beyond effusion, but great changes in the cartilage and bone, for both of them may show irregular destruction and abnormal overgrowths—that is, not adapted to the functions of the joints. The cause of most of these diseases is disputed, and as a rule there is no fibrous or bony ankylosis.

In Groups B1, B2, and B3 we find septic causes generally acknowledged. The chief incidence is on the fibrous and synovial tissues. In some the condition goes on to suppuration and its results, or the formation of specialized formations. In others it never does, but (in B2) to atrophy of all structures with fibrous overgrowth and ankylosis. In the third (B3) subdivision there are no permanent joint changes, but the tendency to fibrous affections outside the joints interferes for some time with perfect movement. Flat-foot and stiff joints may last for months, but the distinction due to the absence of permanent changes seems to me an absolute one. Again, in all of these diseases pyrexia and other so-called constitutional results of the septicaemia are prominent, but in none do we find hypertrophy or outgrowths of bone.

I must not discuss the endless names which have been lavished upon the affections in B2, such as rheumatic gout, arthritis deformans, etc., but would emphasize their septic, non-suppurative character. Spondylitis has been shown to be of different types, some belonging to Group A and others to B. I have seen specimens in the bones of the cave bear of the Mendips, and Elliot Smith found whole cemeteries of prehistoric men so affected that the wonder is how they could bury each other, and the population in the same sites is ravaged by the disease to-day. It is, perhaps, the most ancient disease known. It is so common in draught horses now that many of them can never lie down, and a broken back in them is often merely a fracture of the common lumbar ankylosis or ossified ligaments. I cannot learn that these animals ever suffer from hip-joint disease, though osteo-arthritis of the distal bones is common enough.

Cases of osteo-arthritis of the human hip form a clinical and perhaps a pathological group with a distinct character, but this is true only if we exclude hip affections due to Charcot's disease, real gout, and the various infectious diseases of Group B2 with their constitutional symptoms such as fever. In this last type other joints are nearly always involved, though occasionally we find a gonococcal hip alone in its suffering; even true rheumatism may leave some hip trouble for a time, but this finally clears up, and is not usually difficult to diagnose if the history is considered carefully.

Adams in 1857, in his treatise on *Rheumatic Gout or Chronic Rheumatic Arthritis*, divided osteo-arthritis into polyarticular and monarticular. Jones Llewellyn thinks it is always oligo-articular, asymmetrical, and usually confined to large joints. Adams gave to the hip-joint type the name of "morbus coxae senilis" as early as 1837, but afterwards found so many cases of it at 30 or 40 years of age that he tried to blot out the name. I have recently seen some twenty cases in patients varying from 29 to 70 years of age, and have been struck with the way in which they get labelled sciatica: with the little pain usually complained of, which is so unlike the classical accounts of morbus coxae senilis, where the pain is described as persistent and violent; and above all with the perfect good health of most of them. They may complain that they cannot lace their boots or put on their stockings, and that they have stiffness or limited movement in one or both hips with a feeling of fatigue or pain in the morning and after prolonged exertion. The disability may increase until little or no movement takes place in the joint, and if both hips are thus affected they can hardly separate their feet or move one foot in front of the other. Their helplessness and imprisonment becomes very serious and depressing and the outlook most gloomy.

Sometimes the limb presents an exact picture of an impacted fracture of the neck of the femur with rotation outwards and apparent or real shortening. This was the case with Matthews the comedian, who was thrown from his gig and lamed. Ten years later he died and his bones were shown at a medical meeting by Adams, who demonstrated that the supposed fracture was merely this disease.

Compared with these monarticular cases, the instances of rheumatoid arthritis, where the hip is only one of the joints affected, are far more numerous, and the prognosis of the hip seems to be actually better. For the tendency in rheumatoid arthritis is to pass after years of suffering into a state of quietude with deformed and ankylosed joints. Now the hip being less disorganized than the small joints will sometimes recover surprisingly when the septic fire has burnt out.

I must confess that some authors think that osteo-arthritis of the hip may follow similar changes in other joints, or that an extension to other joints may follow it. Jones Llewellyn goes farther, and quotes Preiser as saying that fourteen cases of this hip affection have been found in children in Germany. However, I have never seen it in children, and I doubt whether it ever extends to other joints.

Symptoms.

I will now consider the symptoms commonly encountered.

1. There is *stiffness at the joint.* The patient sits down with difficulty and cannot as a rule cross the affected limb over the other or lace his boots easily. There is a sense of fatigue which, with the stiffness, passes off under gentle exercise, but the patients are healthy and well nourished.

2. *Pain* is absent at first, and when it begins it is deep-seated in the groin and behind the trochanter, and it may become severe. Referred pains along the neighbouring nerves are common and important. More frequently they run down to the knee and along the outer side of the thigh. Meralgia paraesthetica of the external cutaneous may appear. J. Llewellyn remarks, "Simultaneous pains in the anterior crural, obturator, and sciatic are very indicative of this disease," and "lumbar pain from strain of the ligaments is often secondary but not prior to the hip trouble, which is the reverse of what is found in sciatica."

3. *Tenderness* of the capsule in the groin and at the back of the limb is common.

4. *Pseudo-locking* may happen at times. Here a sudden pain with a feeling of something in the joint may come on, followed by lameness for some hours. This has been variously attributed to synovial nipping or to subchondral foci of inflammation.

5. *Attitude.*—The patient by choice stands on the sound limb, and rests the toe of the affected limb on the ground with bent knee and eversion of the leg—external rotation. The pelvis is drawn up and the lumbar column is curved, with

* A paper read before the Bath and Bristol Branch of the British Medical Association.

convexity towards the diseased side. The patient walks with a limp, moving the foot forward with difficulty.

6. *Tonic Flexion at the Hip.*—When the patient lies supine on a table there is lordosis and an arched knee. If the knee is pressed down the lordosis is increased. This is an important test.

7. *Passive movements are limited*, even at an early stage. Thus extension, flexion, internal rotation, and abduction are hindered or impossible.

8. There is *shortening*, though less than it seems, and in later stages this may increase from absorption of the neck of the femur.

9. *Wasting* of the gluteal muscles, which does not occur in sciatica, and also of the thigh, may be present.

10. In later stages loud *grating* in the joint is heard and felt, and *exostoses* and *obliteration of the outline* of the joint are seen in skiagrams.

It is important to remember that the stiffness of gait and limitation of movements may be present long before any evidence of bony change is shown in skiagrams or otherwise. We may call these two stages the functional and the organic ones.

Pathology.

In fully developed cases the cartilage becomes roughened and softened, fibrillated and thinned, especially at the centre, while at the periphery it is thickened. Nodules of overgrowth appear and become calcified. Where the cartilage has nearly disappeared a layer of ivory-like bone takes its place, and this is often grooved by friction. This process is quite unlike that seen in chronic infectious arthritis, where "ulceration," perforation, and fibrous ingrowths appear.

Below the cartilage atrophy and absorption of bone takes place. The trabeculae are changed into fibrous tissue, and even the marrow, but new bony outgrowths are formed in places. Thus simultaneous absorption and production of bone goes on. As R. Stockman says, the process does not resemble any known inflammatory condition. He adds that it is hard to say whether the changes commence first in the cartilage or in the bone. Absorption of the neck of the femur may follow, and either rarefaction or condensation of the shaft. At a late stage the synovial membrane degenerates, but it is doubtful whether there is at first any hypertrophy.

The Causal History.

Jones Llewellyn points out that the disease often follows a strain or blow on the great trochanter, and still more often supervenes on a state of flat-foot, genu valgum, or an inequality of length in the two limbs. Any of these causes, he says, may prevent the joint surfaces from corresponding, the capsules and ligaments are strained, the synovial fringes hypertrophy and multiply. The synovial arteries show thickened walls and often an obliterated lumen. Mr. T. S. P. Strangeways, of the Research Hospital, Cambridge, in a private letter, tells me that this form of osteo-arthritis is more commonly seen in better-class patients. He would prefer the name of "arterio-sclerotic joints," and considers that the condition is associated with overuse, that a large proportion of his cases have been athletes, and are men who have ridden on horseback a great deal. The changes he finds on microscopic examination are fibrosis of the capsule and distinct thickening of the vessel walls. He considers that these changes may bring about changes in the nutritive value of the synovial fluid, which, he holds, in normal circumstances, is a source of nourishment for articular cartilage (see BRITISH MEDICAL JOURNAL, May 15th, 1920). In his opinion it is the alteration in the nutritive value of the fluid which leads to degeneration, fibrillation, and loss of elasticity of articular cartilage, followed by disintegration and exposure of the bone covered by the affected area. Thus the weight of the body is thrown directly on the bone of the articulation. This causes a thickening and condensation of the exposed area, and if the movements of the joint are maintained, polishing and eburnation follows.

This connexion with arterio-sclerosis is supported by some few observations. I believe that in some forms of uterine disease a local arterio-sclerotic change is not uncommon. If such a cause is operative we might expect to find osteo-arthritis frequently in the subjects of generalized arterio-sclerosis, but fully developed cases are not very common, though minute patches of degeneration in joints without clinical symptoms are frequently seen in skiagrams and at operations, the meaning of which is not clear.

There is no evidence of a neural origin of the disease such as is present in a Charcot's joint, and very little in favour of an endocrine source, though osteo-arthritic changes occur in acromegaly, and the closely allied knee disease seen in some menopause patients is often accompanied with myxoedematous changes. Garrod, too, has noted a brawny infiltration of the hands in some instances of multiple osteo-arthritis, of which I have seen cases. There is at first sight little to be said in favour of an infectious origin, but this theory has recently found much support in the researches of P. W. Nathan[1] and others. They claim to have shown that all the extraordinary changes in rheumatoid arthritis are due to the lodgement of streptococci and other organisms in the neighbourhood of joints where the circulation is least active. By the injection of haemolytic streptococci, pneumococci, and staphylococci into animals they assert that they have reproduced most of the joint changes found in man in rheumatoid arthritis (and, they add, in osteo-arthritis), both acute and chronic, inflammatory or degenerative, cases with general constitutional symptoms, or merely transient ones, followed afterwards by progressive joint disease, or by gradual recovery, or by recurring joint attacks. In these cases where the general symptoms are quite transient, the morbid process may be localized at a joint, if there is a focus of infection left near it, quiescent for a time perhaps but capable of fresh action long after the general health is perfect and the original wound or carious tooth has been sterilized. Thus in hip-joint disease they would postulate a transient general infection, an equally short infection of many joints, and a focus of infection left near one hip, which henceforward shows progressive changes, at first inflammatory and then degenerative.

We have, then, to compare two different views—the purely mechanical one of Strangeways from the cutting off of nutrition leading to the degeneration of cartilage and bones, and the irritation of bone by friction, on the one hand; with the infective theory, on the other, of continued inflammation and softening, followed by degeneration, all due to a local focus of septic organisms.

Certainly the large amount of bone destruction and softening spreading to a long distance is in favour of the latter view of a bacterial poison; but we ought, if this is true, to find frequently near the affected joints collections or foci of organisms like the nests of typhoid bacilli in the periostitis of typhoid, but this we do not do. Moreover, even in the earliest stages the morbid processes in osteo-arthritis and in rheumatoid or chronic infectious arthritis are so utterly different that it is difficult to accept a common cause. In the one there is an insanity or malignancy of growth, in the other an inflammatory poisoning and atrophy, followed by low form of fibrous repair. Both sides agree that organisms are not found in the joints, or indeed in the joints of true rheumatism. After all, interesting as the question is, the practical importance is perhaps small. Here is a joint which, whether or no there was once a primary bacillary infection, has none now, but owing to a strain or overwork has broken down and started on a degenerative course. Out of the many joints once exposed to a supposed infection, this one only has lost the power of resistance, or suffers from deficient nutrition. Could we on either theory prevent this, or can we check the process?

Treatment.

In the first place, we can endeavour to remedy any obesity, flat-foot, or original shortening of the limb which causes a strain. We can limit the amount of exercise or exertion, and when this is done in an early case the hip symptoms often clear up surprisingly. But this is not all. There is an increasing volume of opinion that if only cases can be diagnosed early enough, and at once given complete rest—for instance, by a long splint with a pair of crutches and a patten on the sound foot, complete cures may be obtained. Absolute immobilization of the joint is to be aimed at, though difficult to obtain even with confinement to bed. In fact, the patients may be treated, like those having tuberculous joints, with absolute rest from the beginning, before the joint becomes deformed and new outgrowths have developed. Hence the great importance of recognizing these cases at first and of avoiding any error, or mistaking them for instances of gout or sciatica.

[1] *Journ. Med. Research*, May, 1917, vol. xxxvi, p. 2.

We are apt to forget that there is not the tendency to ankylosis which exists in rheumatoid arthritis and makes immobilization so dangerous in that condition.

If we meet with cases already at an advanced stage or who refuse immobilization we can, besides correcting any deformity, apply a spica bandage or a leathern moulded splint, and then allow gentle exercise with the toes turned inwards. Radiant heat followed by massage is most helpful at all stages, and in advanced cases passive exercises may be added. Very great relief from pain is given by ionization with salicylates and iodides, hot sandbags, and inunction of salicylic acid ʒss, menthol gr. x, lanoline ʒiv, with paraff. mollis to an ounce, and some increase of mobility may follow. For drugs we should persevere with arsenic or thymus gland with or without the syrup of iodide of iron. Cheilotomy has been advocated by Sampson Handley, Wheeler, and others. It consists in disarticulating the head of the femur, cutting away the outgrowths, and adapting the head of the bone to the socket. Very good results have been obtained and a freely movable joint formed in young patients where bone changes are not active.

In other cases the joint has been excised and the head mortised to the pelvis with great advantage as to freedom from pain but with complete fixation of the joint.

RECURRENCE OF SYMPTOMS AFTER REMOVAL OF GALL STONES FROM THE GALL BLADDER.

BY

R. P. ROWLANDS, M.S., F.R.C.S.,

SURGEON TO GUY'S HOSPITAL.

It is commonly asserted that the results of cholecystostomy are very satisfactory, that symptoms rarely occur after it, and that secondary operations seldom become necessary. My experience, however, is that although this operation is a valuable one, often saving life and giving great relief, symptoms do return after it in a good many cases, and that the demand for secondary operations is far from uncommon. Many patients whose symptoms recur are so very disappointed that they lose faith in operations and prefer to suffer much rather than undergo a further one. During the last six months I have been asked to operate on four patients whose recurrent symptoms had become so intolerable that they abandoned their natural prejudices. I give below brief notes of three of these cases.

Like the appendix, the gall bladder is a vestigial organ which many animals are luckily born without and numerous human beings have lost without detriment. It is admitted to be by far the chief, if not the only, factory of gall stones, whose power for evil is very great. The infection which is the main cause of cholecystitis and the formation of gall stones is known to settle in the wall of the gall bladder and, in many cases, to be incurable by mere drainage. Chronic irritation of the gall bladder sometimes leads to cancer, which is not uncommonly discovered at an early stage on examining the organ after its removal. The hope of cure in these early cases of cancer is very good; one of my patients thus treated over ten years ago is well now.

It is very difficult to find and to be quite certain of removing every gall stone from the gall bladder, and more especially from the tortuous and indurated cystic duct, where a small stone is easily overlooked. Removal of the gall bladder and its duct is the only certain way of getting rid of all stones in these circumstances. This is well shown in Case I. Even if all the stones are removed by cholecystostomy, with or without incision of the cystic duct, stricture of the duct may ensue, causing a mucocele or empyema of the gall bladder or mucous fistula. Sometimes a biliary fistula or chronic jaundice follows kinking of the common bile duct due to the contraction of the inflamed gall bladder. If the latter contains pus or other infective matter it is much cleaner and often easier to remove it and its duct without opening them, thus avoiding the risk of infection of the wound, with delay of healing and weakness of the abdominal wall with ventral hernia. The persistence or recurrence of cholecystitis is not uncommon after cholecystostomy, with or without the formation of fresh stones. This point is illustrated in Case II. Although there were no stones the symptoms had closely simulated those of cholelithiasis. Secondary infection of the bile ducts and pancreas may ensue in these circumstances, causing jaundice or acute or chronic pancreatitis. It has been a common but mistaken belief that draining is always safer than excising a diseased gall bladder, but experience proves that, with a proper selection of cases and a good surgeon, the reverse is true. Thus the mortality of 2,493 cases of cholecystectomy performed at the Mayo Clinic between 1907 and 1916 was 1.3 per cent., and that of 2,854 cholecystostomies was 1.5 per cent.

It is clear that, for disease limited to the gall bladder and its duct, cholecystectomy is more radical than cholecystostomy. It is, however, not invariably the easier and safer operation. Much depends, as I have said, on the wise selection of suitable cases and upon the skill and experience of the surgeon. In acute cases, when the patient is very ill, old, or feeble, when the gall bladder is very inflamed, distended, and adherent, when inflammatory oedema makes it difficult to identify the bile ducts, the surgeon—especially if he is not very experienced in this branch of surgery—will be wise to choose cholecystostomy as the safer operation in the circumstances. It will probably save life, and, if care be taken to remove all stones, the ultimate result may be satisfactory. If serious symptoms recur a secondary cholecystectomy can be performed, in a quiet period, under more favourable conditions.

It must not be forgotten, however, that these secondary operations may be very difficult owing to the disturbance and confusion by adhesions of the normal anatomy of the complicated biliary apparatus. It is very clear that the surgery of the bile apparatus, like that of the stomach and duodenum, is not to be lightly undertaken by the amateur or the novice. The interests of the patient, as well as the good name and honour of surgery, demand special skill and experience from the surgeon who undertakes this work, for it is impossible to tell what difficult and unexpected problems may present themselves and have to be promptly solved when the abdomen is opened. These operations, sometimes so easy, may, on the other hand, be among the most difficult and hazardous in surgery. When medical men realize these facts we may hope to see fewer bad results and secondary clearing-up operations, such as cholecystectomy and choledochotomy, for the removal of stones left in the common bile duct, and the repair of fistulae or strictures following injuries of the bile ducts. To avoid the last named, constant vigilance and an accurate knowledge of the anatomy of the bile ducts are required. It is necessary to identify the common bile duct quite clearly before proceeding to remove the gall bladder.

There is more room for doubt about the indications for cholecystectomy when the disease (especially cholelithiasis) has extended into the main bile ducts. It is evident that the gall bladder should not be removed unless it is certain that the common bile duct is patent and likely to remain so. It is also clear that it is too risky to be undertaken when the patient is very ill, old, or feeble, and especially in the presence of jaundice which has lasted long enough to diminish the coagulability of the blood—as shown by a previous estimation of the clotting period—thus adding the possibility of uncontrollable bleeding to the dangers of the operation. No one, again, would suggest the removal of the gall bladder when infective cholangitis exists, for in this grave condition the only justifiable operation is the removal of stones and the drainage of the common bile duct, and even this should, if possible, be deferred to a quiescent period, when the risk is much less. Under favourable conditions, however, when the bile ducts are patent, it is very advantageous to the patient to have the diseased gall bladder removed, and thus to be saved from the probable recurrence of symptoms, with or without a subsequent radical operation.

CASE I.

A. C., aged 53, a powerful, stout man, had had cholecystostomy performed for acute cholecystitis in August, 1921, through a long vertical incision made below the ninth right rib cartilage. The operation was said to have been a difficult one, but it was thought that all the stones had been removed. Recovery was slow, but ultimately the man returned to work. He was readmitted into hospital before Christmas for return of symptoms, but these abated, and he was sent out without further operation. A few days later he was laid up with fever (? influenza, probably cholecystitis). Another attack came on soon after, with violent pain in the right hypochondrium and slight jaundice. The gall bladder could not be felt, but there was general rigidity and dullness in the right hypochondrium. An immediate operation was advised, but the patient would not undergo it until he was promised that every endeavour would be made to make it final and radical.

Operation (January 16th, 1922).—Kocher incision. Very dense adhesions were found between the liver (lower edge) and the

parietes, and much blood-stained bile below and above the right lobe of the liver. The adhesions were separated with great difficulty. The gall bladder was empty and had perforated on its lower surface. Although the foramen of Winslow was defined it was impossible to palpate the common bile duct to decide if there were any stones in it, owing to the great inflammatory oedema of the subperitoneal tissues and of the head of the pancreas. A small stone was felt in the cystic duct, and this was extracted with difficulty after opening the duct. No more could be felt. The common bile duct was opened and a large olive-headed probe was passed into the duodenum and up into both right and left bile ducts without difficulty and without encountering any stone.

Although the patient was very ill it was felt that he would not remain well unless the gall bladder was removed. This was done with difficulty, owing to adhesions and inflammatory changes about the ducts which made it difficult to define them. When the gall bladder had been removed another small stone was found in the cystic duct. This was a great surprise. The common bile duct was drained and the patient made a good and rapid recovery. He has remained quite well since.

CASE II.

Mrs. H., aged 49. There was a history of repeated attacks of hepatic colic, without jaundice, since 1917. Cholecystostomy was performed elsewhere in November, 1919, and seventy-two stones removed. The patient remained well until February, 1922, when attacks of very severe pain recurred at frequent intervals, each attack lasting from half an hour to three hours. There was no jaundice.

Operation (March 15th, 1922).—Cholecystectomy performed. There were no gall stones, but a greatly enlarged, folded, inflamed, and adherent gall bladder containing mucus and bile. A chronically inflamed appendix was also removed. The patient made a good recovery.

CASE III.

Mrs. K., aged 64, had had cholecystostomy performed elsewhere in 1914. In 1916 the attacks of biliary colic recurred, and during the next six years she had six severe and many minor attacks. They were attended by nausea, vomiting, and flatulent distension.

Operation (May 25th, 1922).—Cholecystectomy performed. The gall bladder was found to be full of stones, and several were also removed from the common bile duct. The patient did very well.

A CASE OF HAEMOCHROMATOSIS.

BY

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I VENTURE to publish this short account of a case of haemochromatosis for three reasons: (1) It was possible to obtain a fairly accurate clinical history of the patient's previous illnesses and of the onset of the fatal disease. (2) The clinical data observed during the last stages were interesting. (3) It seems to me that the case opens up new ground in connexion with this somewhat rare disease.

G. H., a man aged 42, was brought up on a farm, and was one of a large and healthy family. As a child he had a severe attack of scarlet fever, followed by acute haemorrhagic nephritis, which completely cleared up. At the age of 25 he was athletic, well developed, and active physically and mentally. He was appointed works manager in a large engineering firm at the age of 27. His complexion was always sallow (olive), and this colour was universally distributed over the whole skin. On one occasion, fifteen years ago, whilst bathing, this discoloration of the skin was markedly noticeable and was joked about. Five years ago, at a large daylight meeting in a neighbouring town, his doctor, who was acting as door-keeper, on looking up at the gallery noticed his patient's face stand out as a greenish-yellow blotch amongst all the others. His health remained fairly good, except for occasional attacks of dyspepsia, which were characterized by sleepiness and heaviness in the morning, but as far as I can gather were not accompanied by abdominal pain or vomiting. On one occasion calomel was prescribed and acted with extraordinary vigour.

In 1916 an abscess developed on the dorsum of the right foot. This was followed by other abscesses in various parts of the body, and finally by a prostatic abscess, which burst into the rectum. *Bacillus coli* was found to be the causative organism, and he was treated by vaccines, which did not, however, prevent other abscesses developing. The discoloration of the skin varied in depth according to his general health, becoming much lighter after a month's holiday. It may be mentioned that he always took "Fellows' syrup" as a tonic when he felt run down, but I have no data as to the effects of this substance upon the pigmentation of the skin.

In December, 1921, he first consulted me because he felt tired after exercise, and had insomnia, and cramps in the legs. Examination showed nothing abnormal, except that the liver extended 1 inches below the costal margin, the edge being hard and well defined. The spleen was not palpable. It was easy to [illegible] as the muscles were normal all round. The [illegible] 7 per cent. sugar, but no albumin, acetone, or aceto-acetic acid. He was gradually dieted down to meat, eggs, green vegetables, butter, and 4 oz. of bread daily; but the urine still contained about 7 per cent. sugar, and the quantity was 5 pints daily. He then went to an institution for treatment, where he stayed about three months. The report on admission was as follows: "Height 5 ft. 11½ in. Weight 11 st. 2 lb. Pale, thin, and tired-looking. Pulse 68. Systolic blood pressure 114 mm. Hg. Blood 90 per cent. Hb; red cells 4,450,000 and white cells 3,200 per c.mm.; blood sugar, 0.34 per cent. Faeces normal. Urine (twenty-four hours) 2,856 c.cm.; specific gravity 1035, acid, sugar 157 grams, traces of acetone and aceto-acetic acid, Albumin, a faint trace." The fat was restricted and followed by a two days' fast in bed: a little protein was then allowed for three days, followed by another fast for two days. After the second fast the urine was sugar-free. Food was then allowed, starting with proteins only. Glycosuria returned with 80 grams protein, 3 grams carbohydrate, and 3 grams of fat. The diet was gradually increased, the fat and carbohydrates being kept low and a fast day instituted once a week. On this régime the sugar in the urine fell to a trace on the fast day, rising to 100 grams by the end of the week. The blood sugar fell to 0.19 per cent. during the fasting; subsequently it varied between 0.24 and 0.40 per cent. There was no appearance of acetone or aceto-acetic acid. On leaving the institution his weight was 9 st. 10½ lb., a loss of 19½ lb. His thirst had almost gone, and he felt stronger. When he returned home his teeth, antra, and sinuses were examined, but no septic foci were discovered.

In April, 1922, the liver was markedly enlarged, to the level of the umbilicus, hard, with signs of lobulation in the epigastric area. The spleen was easily palpable. From this time until his death in June, 1922, the urine was repeatedly examined for acetone and aceto-acetic acid, but the result was always negative, despite the fact that for the last two or three weeks he was in a semi-comatose condition. During this time darkish pigmentation appeared, chiefly round the elbows and on the hands. The following diet and urine chart may be of interest:

	Carbohydrate.	Protein.	Fat.	Urine.
	Grams.	Grams.	Grams.	
April 6th	30	193	42	6½ pints; 2.8% sugar.
April 18th	42	201	54	7½ ,, 5% ,,
May 12th	14	186	19	7 ,, 6% ,,

He was now allowed 40 grams of white bread daily, and later this was increased to 60 grams, together with 5 oz. of milk. After the semi-comatose condition was established he practically lived upon skimmed milk and soda-water. He became gradually weaker, and died from exhaustion on June 8th. He was quite conscious just before his death.

A complete *post-mortem* examination was out of the question, but a portion of skin from the back of the hand was examined and showed a well-marked reaction for iron. The dark pigmentation was most marked over the backs of the hands, the elbows, and shins, and on the genital organs.

I desire to thank Dr. J. Orton of Coventry and Dr. A. P. Thomson of Birmingham for their valuable help in writing this short record of the case.

I would draw attention to several points in this case which strike me as being particularly interesting.

1. Did the attack of nephritis in childhood, which cleared up, have anything to do with the subsequent disease? Could it have left the kidney uninjured except for difficulty in excreting iron?

2. The fact that the patient's colour altered considerably at different periods appears to show that if this disease is due to loss of renal excretion of iron, then the loss is not total.

3. Although in a semi-comatose condition with a glycosuria of 7 per cent., there was no sign of aceto-acetic acid or acetone in the urine. I think we may presume that the pancreas was almost totally destroyed; if so, then there must be some other unknown cause for the presence of acetone in the urine of ordinary diabetics.

4. Cases of haemochromatosis are probably more common than we think, and could be diagnosed at an early stage after the peculiar colouring of the skin has become noticeable. I have no doubt that careful dieting would enable them to live for longer periods, and useful lives might be prolonged.

THE late Mr. A. D. Serena, of York Terrace, Regent's Park, who left net personalty of £374,214, bequeathed £10,000 free of duty to the London Hospital. After paying certain legacies the remainder of the estate is to be divided among some forty-four charities, including the following hospitals: London, Charing Cross, King's College, Guy's, Middlesex, University College, Royal Free, St. Bartholomew's, St. George's, St. Thomas's, St. Mary's, Royal Northern, Royal Hospital for Incurables, Poplar Hospital for Accidents, Hospital for Consumption and Diseases of the Chest, Fulham Road, Cancer, Chelsea Hospital for Women, Queen Charlotte's Lying-in, Hospital for Sick Children, Great Ormond Street, Lock Hospital, Harrow Road, and the Italian.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

Professor G. M. ROBERTSON, M.D., F.R.C.P.Edin., President.

PRESIDENT'S INTRODUCTORY REMARKS.

THE PRESIDENT, in opening the proceedings, deplored the separation of neurology and psychology, which was disastrous for both, and welcomed the combination of the Sections at the present meeting. Psychotherapy came to the fore during the war, the public taking a great interest in it, and the medical profession should express itself clearly on the subject. Psychotherapy was the oldest form of treatment—the methods of cure in the Bible were psychotherapy pure and simple; the successful medical man was the successful psychotherapeutist, though he might not know it.

DISCUSSION ON PSYCHOTHERAPY.

OPENING PAPERS.

I.—PSYCHOTHERAPEUTICS AND PSYCHOPATHOLOGY.

BY
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DURING the war and in the years that have passed since its close, much interest, both popular and scientific, has been shown in the principles and practice of psychotherapeutics. Newspaper accounts of lightning cures of "shell-shock" soldiers, effected by means of suggestion or persuasion, excited the popular imagination; reports of the beneficent results of "abreaction" and the reassociation of lapsed memories gave rise to a considerable amount of discussion in medical and psychological circles; and the widespread acceptance of "repression" as the cause of mental dissociation gave rise to the erroneous belief that psycho-analysis was extensively used in the treatment of the war neuroses. The general public—and, indeed, a not inconsiderable number of the medical profession—became hopelessly confused; for the most responsible newspapers in the chief city of the empire promulgated day by day the wildest nonsense regarding the doctrines and the practice of psychotherapeutics.

It is hardly our business here to correct the false impressions thus produced on uninstructed minds, but a meeting of this Section affords a good opportunity of discussing among ourselves the principles and methods of psychotherapeutics and of trying to come to some agreement as to what is and what is not sound theory and good practice.

In the history of medicine the development of rational therapeutics has taken place alongside of, and in closest dependence on, the growth in our knowledge of pathology: and a psychotherapy that is not based upon psychopathology can be little more than pure empiricism. Although the empirical use of psychotherapeutical measures has been practised from the earliest days up to our own time, there are good grounds for thinking that treatment through the mind has at last emerged, or is emerging, from this phase and is now assuming its rightful place as a branch of rational therapeutics. But perhaps this can fully come to pass only when psychopathology is also accepted as a necessary part or aspect of general pathology.

Yet in so far as pathology is a study of the proximate causes of disease, the notion of a psychopathology—which in this connexion implies mental causation of disease—must be a shibboleth to many psychiatrists and neurologists. For they have been trained to believe that all disease, whether of body or of mind, must have origin in morbid structure or function of the bodily organism; and even those who profess belief in a strict parallelism of neural and mental states—a parallelism which entails absolute concomitance of neural and mental events—seem often to hold, as a sort of overbelief, that neural change precedes the mental change, be it by ever so little, in both normal and psychopathic states.

Those who explicitly or implicitly hold this view would save themselves much inconvenience in their approach to the problems of psychotherapeutics and psychopathology if they would realize that insistence on the invariable priority of bodily change in bodily or mental disorders is an unwarrantable intrusion of metaphysics into the realm of science; and if they are not able, for methodological purposes, to adhere, in thought and language, to a consistent parallelism, they would perhaps do well to use the language of everyday life in their references to the relations of body and mind.

The common sense of mankind has always held that there is a real and close relation between the mind and the body, and it accepts, without question, the causal nature of that relation. It maintains that states of mind are caused by states of body, and that states of body are caused by states of mind. Common sense holds that mind and body interact, one with the other, and in all our conduct this belief is tacitly assumed.

By using the language of everyday life and common sense we are able to consider all departures from health, whether of body or of mind, from the point of view of psychical causation; and we may thus extend, if need be, the sphere of psychopathology beyond that to which it is ordinarily confined—namely, the psychoneuroses and the psychoses. We may, for example, consider seriously the part played by the mind in the causation of many bodily disorders which are not ordinarily regarded as having any other than a purely physical origin. Some justification for so doing is afforded by a consideration of the results obtained in the treatment of these conditions by the various psychotherapeutic measures which are now included under the term "suggestion." The extent to which psychotherapy is of value in dealing with functional and even organic bodily disorders is perhaps not fully appreciated, except by those who have made extensive use of suggestion in general practice.

It is commonly assumed that, if any mental or bodily disorder can be relieved by influences acting through the mind, the mind must have played a part in the production of such disorder. But if we believe in the possibility of a true interaction between mind and body such an assumption is unnecessary, and we may suppose that, just as bodily disorders lead to mental states, such as depression, so mental states, such as joy, lead to bodily well-being.

The facts in support of the assumption that what is relieved through the mind must have had its origin in the mind are mainly derived from our knowledge of conversion hysteria, and of the efficacy of suggestion in relieving the physical symptoms of this malady. But generalization from the results obtained in these cases, and assertion that these results are identical with those obtained in cases in which the existence of conversion hysteria has not been suspected, may be wholly unwarranted; and by too ready acceptance of such a generalization we may miss something that is of real importance regarding the relation of mind and body in health and disease.

If it be true that relief of a bodily symptom by psychotherapeutic measures is proof of the psychogenetic origin of such symptoms, or of the presence of conversion hysteria, our experience of the use of hypnotic suggestion, in cases of all sorts met with in general practice, would compel us to come to some strange conclusion regarding the prevalence of conversion hysteria. If every symptom that can be relieved by suggestion is evidence of the presence of hysteria, then it must be believed that 80 to 90 per cent. of our patients in general practice are suffering from hysteria.

Let us take an example: there is perhaps no more common instance of faulty bodily functioning than habitual constipation: and the *cure* of this condition, by material remedies alone, is perhaps impossible. On the other hand, almost every case of habitual constipation in which hypnosis can be induced may be cured by suggestion without the use of any material remedies whatsoever. Or, take another example; an apparently healthy young woman gets badly scalded by the upsetting of a kettle of boiling water. The wound is appropriately dressed and, during

hypnosis, absence of pain and rapid healing are suggested. There follows a sequence of events frequently recorded in experimental work on hypnotic suggestion: no pain is experienced, no inflammatory area develops, and the injured part heals with unusual rapidity.

In dealing thus with a burn the injured part is kept at rest and it is protected from morbid agencies from without by appropriate dressings. But the securing of such rest and protection is perhaps the sole biological function of pain and the reason for its arising in the course of mental evolution; and when this necessary condition of healing can be secured in other ways while pain is eliminated by suggestion, we get a better result than we do when the same precautions are taken but pain is experienced. It would seem as if the processes involved in the production of the pain which in a state of nature is necessary to ensure protection and rest of the injured part were in themselves inimical to the healing process.

Here, then, we have two examples of the part played by mental influences in effecting bodily changes which can hardly be claimed as instances of conversion hysteria. I refer to them because at the present time there is a tendency to forget the work of the hypnotists in the treatment of functional bodily disorders, and to judge the value of suggestion as a therapeutical agent by the transitory effects of its use in the psychoneuroses. Indeed, for many, the psychoneuroses seem to constitute the only domain in which psychotherapeutic endeavour is justifiable or effective; and if the field of psychotherapeutics is thus restricted there is some danger lest the forms of psychotherapy most useful in dealing with the psychoneuroses may be regarded as the only valid psychotherapeutic measures, while those that are of little or no value in the psychoneuroses may be declared useless in all conditions whatsoever.

There are two circumstances which are especially conducive to these errors at the present time. It must be remembered (1) that many of those who are now practising psychotherapeutics had little or no knowledge of this branch of treatment prior to the war, and (2) that practically all the war cases they were called upon to treat were cases of neurosis, psychoneurosis, or psychosis. And in the years that have passed since the end of the war these workers have probably had little opportunity of testing the value of psychotherapeutic measures in any conditions other than these. Their views on theory and on practice are thus apt to be unduly biased by their war experience; and because of the mere numbers with which they had to deal they are prone to generalize too freely in respect of the use of psychotherapeutic measures in civil practice.

Much of the treatment by suggestion in recent years has not, however, been "hypnotic suggestion"; that is to say, no formal attempt to induce hypnosis is made before curative suggestions are given to the patient. A state of rest and relaxation is considered sufficient for this purpose, and it is commonly held that the results so obtained are not inferior in any way to those recorded by the exponents of hypnotic suggestion. Moreover, many men who practise psychotherapeutics have never been able to reconcile themselves to the formal use of suggestion, even apart from the employment of hypnotism. They have felt that it savoured too much of the quack or the miracle worker, and they have been doubtful of the value of any method which brings about faith or belief without an appeal being made to the patient's reason or intelligence. Consequently we find that therapeutic systems in which chief stress is laid upon persuasion and re-education of the neurotic patient have been widely adopted; and since it was found that when such appeal to the reason is made results are obtained which are as good or better than those recorded by the hypnotists, it was thought that the appeal to the reason is the essential feature of this method, and that the patient's recovery is due to his rational acceptance of the explanation given by the physician.

But we know that the explanation given to the patient need not be the true one; what is necessary is that the patient should believe it to be the true one. Failure or success depends on the extent to which the physician is able to instil faith into the patient's mind, just as is the case in all forms of suggestion. Indeed there can be no doubt that treatment by persuasion is treatment by suggestion, and that even the benefits derived from re-educative efforts are largely due to the same subtle influences.

In order to give to the patient any reasonable explanation of [illegible] greater degree of investigation into the nature and origin of the illness than is necessary for treatment by suggestion has to be undertaken; and this fuller inquiry may in itself have a certain curative influence, both by the increased confidence or faith in the physician, engendered by the meticulous care with which he examines his patient, and also by the opportunities offered to the patient of giving vent to emotion in his recapitulation of the events that have led up to his illness.

But the most important clues to the origin and nature of the illness are not within the patient's power of conscious recollection, and, just in so far as they cannot be recalled, the physician's knowledge of the malady is incomplete and his explanations inadequate. In the treatment of the war neuroses it was soon found that suggestion or persuasion was often a very unsatisfactory mode of treatment and, in the common psychoneurotic disorders in which amnesia was the most prominent accompaniment of the physical disability or mental disturbance that incapacitated the soldier for duty, it was generally found necessary to adopt some other means of restoring him to health. The importance of reassociation of the dissociated memories was quickly perceived, and hypnosis as a means of discovering them, and suggestion as a means of restoring them to consciousness, were very widely used.

Some workers revived Breuer's method of abreaction and they believed that the freeing of repressed emotions thus secured played an important part in the restoration of lost memories to consciousness and in the consequent recovery of the "shell-shock" soldier. On the other hand, some workers got equally good results by bringing about reassociation of the dissociated memories without any display of abreaction. Thus it would seem that the essential feature of treatment by abreaction is the overcoming of the amnesia which is so prominent a symptom in traumatic psychoneurosis.

In thus directing therapeutic efforts towards the annulment of the mental dissociation which reveals itself in amnesia, an approach is made towards a rational treatment of the psychoneuroses. For we have here that correlation between pathology and therapeutics which is the distinctive mark of scientific as opposed to merely empirical modes of treatment. In using suggestion in the form of mere denial of the symptoms or prognostication of their speedy disappearance, our procedure, although it may be effective, has no rational foundation; or if it appears to have some rational basis, this is due to a false or superficial conception of the psychopathological processes at work in the production of psychoneurotic symptoms. It is true that if we believed with Babinski that all hysterical symptoms are due to "bad" suggestion it might seem reasonable to counteract its consequences by giving "good" suggestion (or, as he would call it, persuasion); but very little knowledge of the psychopathological mechanisms concerned in the production of hysteria is sufficient to convince us of the superficiality of Babinski's views. On the other hand, the conception of mental dissociation which we owe to Janet is of outstanding importance in psychopathology, and its validity is now almost universally accepted. Indeed, it may be said that dissociation is the most fundamental conception in psychopathology, and that the restoration of lost memories is the ultimate goal of all psychotherapeutics.

There would appear to be no conditions in which the occurrence of dissociation might be more readily accounted for than in the neuroses of war. For the strain and stress of life in the trenches, or the shocks and calamities of battle, would indeed seem sufficient to disintegrate the most stable of minds. Janet has taught that dissociation is due to lack of mental synthesis consequent upon a lowering of nervous tension; and if the shocks or stresses of civil life are sometimes sufficient to cause a lowering of nervous tension and a consequent retraction of the field of consciousness, how much more readily would the conditions of modern warfare tend to bring about such a result! And yet we know that almost all those who dealt with the war neuroses on psychological lines accepted the Freudian doctrine of mental conflict and repression as being the immediate cause of dissociation, and that they laid little stress upon the factors described by Janet.

The failure of suggestion, persuasion, and abreaction in the more severe war cases which were treated in the home hospitals constrained medical officers to examine more closely the nature of the dissociation present in those patients and the factors concerned in its production. For the incidence of dissociation—the mental material on which it bears—varies greatly in different psychopathic states. In the war neuroses to which the method

of abreaction was most commonly applied dissociation was, as a rule, a dissociation *en masse* of a more or less definite section of conscious experience. All the experiences of a day or a week or a month or a year became disrupted from the conscious personality, so that the memories related to them could not be recalled; but in many psychopathic disorders the dissociation is of a more discrete character and the elements on which it bears are bound together by associations more subtle than those that depend upon mere contiguity in time.

When there is dissociation *en masse*, of recent origin, hypnosis is always very easily induced and the lost memories may arise spontaneously or be readily recalled in the hypnotic state. By suggestion or other technical devices they may be carried over into the waking state and become reassociated with those of the normal personal life. But when manifest amnesia is not a prominent symptom in the psychoneuroses, no such dissociation *en masse* is to be found. It is not, however, to be supposed that dissociation and amnesia are not present; the dissociation is there, but it is of a more complex nature; its origin is more remote and is more deeply rooted in the past. In these cases the induction of hypnosis may be more difficult; and, when hypnosis can be induced, it is found to afford little insight into the nature of the amnesia, and to give little assistance in relieving the psychoneurotic disabilities which are present.

In the treatment of many war cases of this kind some sort of analysis of the mind of the patient was seen to be necessary, and, since there was already in existence an extensive literature in which the use of mental analysis of some kind or another was described, it was to be expected that war workers would take advantage of their opportunities of testing the various methods and theories put forward by different schools. This, to a very large extent, they did, and we have had records of mental analyses, some of which were nothing more than a detailed anamnesis: some in which the conscious recollections were supplemented by memories revived during hypnosis; some in which the word-association test was used to set the investigator on the track of some buried complex; some in which the methods of psycho-analysis were more or less consistently employed; and some in which these methods were transcended and the data obtained by their use reinterpreted in the light of mythology and religion.

Behind all this activity in the domain of mental analysis, and overshadowing it, stood that body of doctrine associated with the name of Sigmund Freud. The great majority of the war workers in psychotherapeutics could not get away from it and they could not accept it. The truth of some of the tenets of the Freudian school was borne in upon all competent investigators, including even some of the neurologists. The psychogenetic origin of the war neuroses was by many reluctantly conceded; the principle of mental dissociation was widely accepted; the psycho-analytical doctrine of neurosis as a "flight into sickness" with a view to satisfactions that could only thus be obtained was readily adopted—perhaps because of its seeming agreement with the popular notion that all neurosis is malingering, rather than as a well-attested scientific hypothesis. But what seemed to me the most striking feature of the psychotherapeutic practice of war workers was the extraordinary unanimity shown regarding Freud's theory of repression, combined with a rejection of almost the whole body of doctrine erected on this foundation by Freud himself. The seemingly clear demonstration afforded by a superficial analysis that the traumatic neuroses of war could be adequately accounted for in terms of mental conflict and repression in which instincts other than those called sexual by the psycho-analysts were alone concerned led many able men to the logically untenable conclusion that the *libido* theory of the neuroses was thereby proved false. A strange eagerness was shown in bringing forward this conclusion. It looked as if those who upheld it thought there was some special virtue in dissociating themselves from a sexual etiology of the neuroses. We had the strange spectacle of men of science apparently being influenced by the notion that one explanation of any natural phenomenon may be more respectable, or ethically more worthy, than another—a strange spectacle, but one not unique in the history of science. We may call to mind the reception given to Darwin's theory of the origin of species: the contemporary records of the discussions initiated by the epoch-making hypothesis of natural selection bear a strong resemblance to those of our own time regarding Freudian doctrine. Psycho-analysis throws an illuminating light upon the mental processes at work in uncritical rejection of what ultimately may prove to be scientific truth. In science, more truly than in life, we see the force of the poet's contention that "they were dangerous guides, the feelings"; and of each of us it may have to be said that, at some time or another, he himself "was not exempt."

Yet if we can overcome our resistances to the *libido* theory of the neuroses, if we can bring ourselves to examine dispassionately the evidence on which the theory has been built up, we cannot fail to see and be astonished at the light that it throws upon the psychology of abnormal mental states and the order and coherence that it brings into a department of pathology hitherto characterized by obscurity and confusion. For, quite apart from all consideration of psycho-analysis as a therapeutic method, its painstaking examination of the neurotic mind has brought us at last a genuine psychopathology in which the morbid structure of the psychoneuroses is laid bare and the processes by which their development takes place are revealed. It must be remembered, however, that all the most definite and best established formulations of psycho-analysis have been obtained from the study of the transference neuroses—conversion hysteria, anxiety hysteria, and compulsion neurosis—and that the application of the *libido* theory to the psychoses and to the traumatic neuroses has only recently received adequate consideration. Such progress as has already been made has been rendered possible by the recognition of the part played by *narcissistic libido* in the production of these states.

There are various grounds for the opposition which so many people feel towards the doctrines of psycho-analysis, and some of these grounds may be made more clear and their validity may be more justly appraised if we draw a distinction between psycho-analysis as a method of investigation in psychopathology and psycho-analysis as a therapeutic measure. For it may reasonably be maintained that the aims of pathology and the aims of therapeutics are different, and that our criteria of values may change according to the ends we have in view.

If we can bring ourselves to study the structure of a mind that has gone astray in its development, without any feelings of responsibility towards a fellow creature in distress who has sought our aid, we can, without compunction, adopt the purely scientific attitude which the pathologist brings to his work in the *post-mortem* room or the physiologist to his experiments on an anaesthetized animal. But the psycho-analyst as a therapeutist, unless he is quite sure of himself and of the validity of his methods, is rather in the position of a surgeon about to perform a major operation for the first time. He can hardly refrain from thoughts of the possible outcome of his work; he cannot avoid feeling that the life or well-being of his patient is in his hands; he cannot help being oppressed by his responsibility towards one who has trusted him and turned to him for help. And just as considerations of these kinds may stay the hand of the surgeon from operative procedure which is too risky, so the psychotherapeutist may regard as a violation of the patient's mind those investigations which as psychopathologist he might ardently wish to make.

Here we have what appears to me to be the chief difference between the standpoint of the man of science as mere investigator and the same man as therapeutist, and the difference in these standpoints may account to some extent for the different considerations which may affect his attitudes or beliefs, in respect to psycho-analysis, according as he approaches the subject in the one rôle or in the other.

If we take, for example, that feature of the Freudian psychology which more than any other has aroused opposition—namely, the supreme importance ascribed to psycho-sexual tendencies in the life and growth of the mind—there would seem to be no reason why a psychopathologist, in the seclusion of his study, should not readily recognize a truth for which all his biological training must have in some degree prepared him. But if it is a question of his making use of the truth so realized and of applying it in the treatment of the neuroses, there are many powerful forces at work in his mind which may not only prevent him from doing so, but may even compel him to repudiate the truth which, for a moment, he had clearly discerned.

But although there would appear to be no reason why a psychopathologist, as such, should have any feeling of repugnance towards the *libido* theory of the neuroses, yet we know, as a matter of fact, that all men have resistances against bringing

into the light of day that side of human nature which morality and religion have decided shall be taboo; and not until we have overcome these resistances are we able to take up an objective attitude towards the doctrines of psycho-analysis. It seems to me, however, that it is easier to overcome resistances to psycho-analysis as a body of doctrine than to its use as a method of therapeutics. The truth of this is perhaps exemplified in the attitude taken up by Jung and his followers towards psycho-analysis; for they seem to accept the truth of its psychopathological findings while they deny that it is a justifiable or efficacious therapeutic measure.

There is one curious ground of objection to psycho-analysis which has not infrequently been put forward—namely, its insistence on a "thorough-going determinism." And here again, I think, it may be useful to consider this objection from the side of the psychopathologist on the one hand and from that of the psychotherapeutist on the other. The psychopathologist is a man of science, and *qua* psychopathologist he has no temptation to be anything else; but the psychotherapeutist may feel it incumbent on him to play the part of a moral or spiritual director to his patient. To the man of science determinism is a necessary postulate of all his investigations: the reformer and the priest cannot abandon belief in human freedom without stultifying all their precepts.

The psychopathologist can therefore have no possible ground of objection to psycho-analysis because of its determinism: on the contrary, it is the strictly determinist standpoint of the psycho-analyst which alone makes it possible for his findings to be regarded as suitable material for scientific study. It may be pointed out, however, to the analyst who feels the need to retain his belief in freedom, that he also may accept the determinist standpoint in his examination of a patient's past mental history, however much he may believe in the indetermination of its future. For even if we admit the reality of the freedom of choice which our moral nature demands, "we can confidently lay it down that no event will ever occur which will not seem intelligibly connected with its antecedents *after it has happened*."[1]

The psycho-analyst's insistence on the determinism of psychic events is primarily an insistence on the plea that the methods of science are applicable to the study of the human mind. But there is no need whatever to raise the metaphysical problem of the freedom of the will in regard to psycho-analysis as a branch of science. Freedom is a postulate of ethics: determinism is a postulate of science; and no good can come of trying to introduce ethical or moral considerations into the purely scientific investigation of the mind—a tendency at present all too common in relation to psycho-analysis.

Many men have been heard to express strong convictions regarding what they believe to be the errors of psycho-analytical theory and the failure of psycho-analytical practice; but as Freud himself says:

"No one has a right to convictions on these matters who has not worked at the subject for many years, as I have, and has not himself experienced the same new and astonishing discoveries." "If owing to ignorance of the subject you are not in a position to adjudicate, then you should neither believe nor reject."[2]

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II.—THE MAKING OF A NEUROTIC.

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WE shall discuss this subject of "The making of a neurotic" in three phases:

1. The formation of the morbid complex.
2. The conflict of complexes.
3. The emergence of the symptom.

The Formation of the Morbid Complex.

The psychoneurotic symptom, like every form of animal behaviour, normal and abnormal, is ultimately the result of two factors, the hereditary and the environmental, and of these the determining factor is the environmental. Modern methods of investigation go to show that we do not *inherit* psychoneurotic symptoms, but that these can always be traced back to environmental influences during the lifetime of the individual. Before the early years of life could be investigated by hypnotic and analytic methods it was quite natural to assume that all neuroses which had existed from earliest childhood were due to hereditary or congenital causes. If a patient said that he had had his symptom "all his life," or "as long as he could remember," it was considered sufficient to assume that he was born with it. But many things happen in the first three or four years of life which a patient does not remember, but which have an important influence on his life and conduct. Now that those early years of life have been explored and laid bare by hypnotic and analytic methods it has been found that many conditions—neurotic headaches, bad temper, cynicism, alcoholism, homosexuality—formerly assumed to be congenital, are really due to abnormal environmental conditions of early childhood. It is true that many characteristics, normal or morbid, may be *transmitted* from father to son, but where such transmission takes place it is found to be not by way of inheritance, but by means of suggestion, sympathy, and imitation. The same law seems to operate in the psychoneuroses as in a disease like tuberculosis—one may inherit a predisposition, one cannot inherit the disease. Let us take an illustration.

A man has a tremor of the hand, which dates back "as far as he can remember"; indeed, his father had it before him, and the condition was put down to some inherited condition of the nervous system. On reductive analysis it was found to have originated when as a child of 3 years he was badly injured in the foot and was held down by his father while the doctor probed his wound. The trembling of his father's hand transferred itself to the son's and was associated with this painful emotional experience. This condition, like many another which was presumably inherited, was found to be due to a complex formed during the life of the individual, and was consequently cured.

As we should never diagnose hysteria until we have excluded organic disease, so we should never assume hereditary or congenital causes until we have excluded the environmental origin.

The psychoneuroses are thus to be clearly distinguished from "mental deficiency," which is commonly congenital or hereditary, and in any case is the direct result of a physiological deficiency of nervous structure. The psychoneuroses are psychogenic, and originate in abnormal psychological experiences during the life of the individual. It is true that in practice one meets with many neurotics who are also mentally deficient, inasmuch as they have inherited some physiological abnormality whether cortical or endocrine. (Indeed it is reasonable to assume, though I am unaware as to whether it is the fact, that such defectives are more liable to suffer from the psychoneuroses than others.) But this is not necessarily the case, for there are undoubtedly many patients suffering from the psychoneuroses who have not the slightest trace of mental deficiency, nor any trace of the stigmata of degeneration, but whose psychology is nevertheless distorted and gives rise to morbid symptoms.

Nevertheless, in the psychoneuroses hereditary factors do play an important part. Although we do not inherit a neurosis, we may inherit what is commonly called a "*nervous temperament*," or a "highly strung disposition," which is probably dependent upon a physiological condition of the synapses, of the endocrines, or perhaps of both. But a highly strung temperament is not a disease; everything depends on what we make of it. Thus in one family in which both parts are of a nervous temperament you may find one son an artist, one a poet—who commits suicide—one an alcoholic, and one a great preacher. The highly strung person is more sensitive than others to the pains and responsibilities of life, but he is also more sensitive to its joys and beauties. Besides this physiological factor of the nervous temperament we have the psychological factor—namely, *the instincts*, and it is these which play such an important part in the formation of complexes and therefore of the psychoneuroses. McDougall has emphasized that every child is born endowed with a number of instincts, each of which is charged with emotional tone—fear, anger, sex, maternal, submission, self-assertion, curiosity, self-display, and others. Shand has shown that when emotional tendencies are brought into touch with environmental conditions they tend to become attached to the objects which arouse them. These two factors combine to form mental experiences which

are retained in the mind as *psychological constellations*. Each constellation therefore consists of a nucleus from the environment—whether a person, event, or idea—round which are grouped or constellated the instinctive emotions. For instance, the sentiment of patriotism is formed by the attachment of all our instinctive emotions of admiration, tenderness, fear, pugnacity, submission, and assertion to our country.

There are three forms of psychological constellations: sentiments, dispositions, and complexes, the last of which give rise to the psychoneuroses.

The *sentiments* are those constellations which are consciously acceptable to us, and with which we consciously identify ourselves, like patriotism, the mother sentiment, the religious sentiment, and the sentiment for others, or altruism. The most dominant of all our sentiments are what we call our aims or ideals, since they are capable of moving our will to endeavour.

Psychological dispositions are those constellations which are so accepted by us that their activities become spontaneous and automatic. We are said to be "disposed" to this idea or that, or to this or that person, when our instinctive emotions are attracted towards them; so we develop a kindly disposition, a stoical, cruel, cynical, or egotistic disposition. Together the various dispositions in us combine to form what we term our "disposition." Psychological dispositions are the main constituents of character and the source of most of the normal habits of everyday life.

Dispositions differ from the sentiments in that they are unconsciously accepted, their activities are spontaneous, so that to act in response to them is "second nature" to us. An Englishman does not need to *think* whether he choose to save himself or his child in a wreck—the decision is spontaneous; he has a disposition of honour. These psychological dispositions are to be distinguished from *physiological* dispositions, such as give rise to habits like swallowing, and from *psychophysical* dispositions like the instincts, for they are formed of instincts attached to ideas or objects.

Our psychological dispositions, together with the sentiments—that is to say, all those constellations which are *acceptable* to the individual—are together combined and organized to form the "*organized self*." When we normally speak of our "self" we mean all those sentiments and dispositions of which we approve and with which we identify ourselves. The function or activity of the "organized self" is the *will*.

The *complexes*, like the sentiments and dispositions, are formed by the attachment of the instinctive emotions to objects or experiences presented by the environment. But because of their repugnant or painful nature they are rejected by the self as unacceptable. The thought of the war may be the nucleus of a sentiment to a man who was heavily decorated, a complex to a man courtmartialled for cowardice. Again, what at one age may be a mother sentiment may be a mother complex at a later age. Complexes are commonly named according to the dominant emotion contained in them, like a "fear complex," "sex complex," "inferiority complex," or at other times by the name of the nucleus round which the emotions are grouped—a "mother complex," or "war complex," or "religious complex."

Complexes may be consciously recognized. Acts of cowardice, humiliation, or a sex trauma may be remembered only too well in spite of our endeavour to forget all about them. But many complexes are unrecognized. As we may dissociate ourselves from friends who have insulted us, or refuse to associate or identify ourselves with those who have disgraced our family, so we may "cut" and refuse to recognize or identify ourselves with complexes which are repugnant; they then become dissociated, split off, forgotten, until we become quite unaware of their existence. This process of dissociation being an active one, the term "repression" is found to be the more appropriate to describe it.

Sometimes all that is recognized of a complex is the nucleus or some accidental element in it. This is the case where there is a functional paralysis or a fixed idea which emanates from an emotional complex, but in which only the idea or physical symptom emerges while the emotion associated with it remains repressed. At other times it is the emotional element which is recognized, while the nucleus remains unrecognized. This is so in "anxiety" states, in which there is a fear, but the object of the fear is unrecognized. When the complexes are recognized and are consciously inhibited from expression in conduct we call it *restraint;* when the process of inhibition is unconscious we call it *repression*. It is important to recognize this distinction.

The dispositions and complexes are the sources of all our psychological "habits" normal and abnormal, the dispositions giving rise to what we term "good habits," like that of cleanliness, and the complexes "bad habits," like tippling or the neuroses. Complexes may thus be recognized or unrecognized, consciously restrained or unconsciously repressed. The former, the recognized complex, may affect our character and happiness; the latter, the repressed complexes, are alone capable of producing a psychoneurosis. The activity or function of the organized self we call the will; the manifestation and activity of the complexes we call impulses.

There is thus formed an antagonism in the mind between the will and impulses, between the "self" and the complexes, for their aims and ends are antagonistic to one another. As long as this antagonism remains, there is unhappiness and there may be neurosis. But complexes may be antagonistic not only to the organized self as a whole but to one another, for the ends of each complex are different from and often opposed to one another. Thus the fantasy of being a hero conflicts with a fear complex; self-display or exhibitionism with a localized adult form of sexuality.

Thus there are two forms of conflict—that between the self on the one side and the complexes on the other, and a conflict "in the unconscious" between repressed complexes. We shall later observe that a psychoneurotic symptom does not arise from one repressed complex, but from a conflict between repressed complexes. We shall also have reason to observe that the symptom serves the purpose of satisfying both sides of the conflict by giving expression to both complexes, and not merely to one complex.

Of all complexes none are more important than those which are concerned with the self—the fantasies of oneself which develop in early life. It has long been maintained by psychophysicians that the psychoneuroses originate in the first five years of life by trauma, suggestions, imitation, the atmosphere in which we are brought up, or other influences. I am inclined from personal experience to limit the time still further, and to say that all neuroses develop in the third or fourth year of life. For it is in the third or fourth year that every child develops self-consciousness—that is to say, gets its first impression of itself; and this impression, false or true, fantastic or real, is destined to remain with him and affect his whole life and character thereafter. The fantasies a child develops about itself from suggestions of its environment are of infinitely greater importance than any traumatic "shock." If a child is excessively admired it develops a fantasy of self-display, such as this fantasy from an artist: "There is nothing on God's earth perfect but me." A child pampered and spoilt, having everyone—mother, nurse, aunt—at its disposal to do its bidding, develops a fantasy of self-importance and omnipotence; another, neglected, kicked, and bullied, develops a fantasy of inferiority and self-depreciation; another has the fantasy of moral snobbishness, and in later life becomes a censor of others; one a fantasy of infallibility, and in after-life "can't do wrong," but blames others for its faults; another of omniscience, and becomes dogmatic; another is "perfect," and therefore intolerant of criticism.

It is true, indeed it is in the nature of the case, that such fantasies are unrecognized and are formed into repressed complexes. Our conscious conception of ourselves is often the opposite of our unconscious fantasy.

I once asked a distinguished artist if he had a fantasy of self-importance. "Not at all," he said; "I think much less of myself *than I really am*." The business man of 50 who comes with a breakdown, with the sense of failure and lack of confidence, is commonly a man with an extravagant power psychology, although he may consciously conceive himself as the world's greatest failure. Our conscious conception of ourselves is often the opposite of our unconscious fantasy of ourselves. A golfer remarked, "I have played golf for forty years and have never been on my game yet." He had an unconscious fantasy of what "his game" was.

Of all complexes those which are formed as fantasies round the idea of ourselves are the most potent. Indeed, I am inclined to think that they are the only ones that matter. In other words, it may be said that egoism lies at the base of every neurosis as long as we use the term

"egoism" to include not only self-love, self-esteem, self-importance, self-display, and self-righteousness, but also self-depreciation and fantasies of inferiority.

It is not difficult to see how such fantasies produce a nervous breakdown. If a man sets out to conquer the world and conquers only one hemisphere he feels a perfect dud. He is a failure in that he has failed to reach the impossible.

Yet such a fantasy as that I have just mentioned cannot itself produce a nervous breakdown.

The Conflict of Complexes.

Every psychoneurosis is the result of a conflict between *two* repressed complexes. I have often heard a patient's psychology described thus: "He has a sex complex," or "He has an inferiority complex." It cannot be too strongly emphasized that for the formation of a neurosis two complexes are necessary.

Exhibitionism is the repressed instinct of self-display. If this tendency is exaggerated by circumstances it affects the character but does not cause neurosis; if it is exaggeratedly developed and then rudely repressed, as by a severe punishment, there are formed two complexes, which conflicting form a neurosis. It is true that the man who sets out to conquer the universe breaks down, but why did he want to conquer the universe? This excessive and exaggerated fantasy was developed as an overcompensation for a feeling of inferiority. He was coddled because he was physically weak and developed a feeling of inferiority from which he was ever trying to escape.

If every neurosis is caused by the conflict of two repressed and antagonistic complexes it is of the utmost importance to discover *both* complexes. In the last case mentioned we need to analyse out not only the circumstances which gave rise to the fantasy of superiority but also that of inferiority. A psychoneurosis is never due merely to a repressed sexual desire, a repressed fear, or feeling of inferiority: it is due to a conflict between each of these complexes and another complex, such as a moral snobbishness, an extravagant sense of duty, or a fantasy of self-importance. Shyness, for instance, is never merely the expression of a sense of inferiority; shyness is the result of a conflict between the sense of inferiority and of superiority. We are never shy unless we are conceited; it is because we are not taken for what we think we imagine we are worth that we feel so shy and inferior.

It is for this reason that it is so frequently the youngest child who develops a neurosis. It is often said that the only child develops neuroses more than others. That is not my experience. I have very few only children to treat. The reason seems clear: the only child is usually brought up in a consistent atmosphere, frequently that of considering itself to be God, and develops fantasies of omnipotence, omniscience, and moral perfection. Such a child is excessively conceited in after-life, but does not often have nervous disorders. On the other hand, a child consistently brought up to regard itself as inferior grows up quite prepared to take a back seat in life. In neither is there an endopsychic conflict. But the youngest child develops two conceptions of himself—for instance, if a child is made to believe itself a prince by its fond parents and a worm by its jealous brothers. Or at one time of life, say for the first three years, it is given its own way and develops the fantasy of omnipotence, and at the next phase, perhaps owing to the death of an overdevoted mother, is excessively suppressed by a godmother or nurse—under such conditions a conflict ensues between the two fantasies, both of which have now become repressed complexes. The individual does not know if it is a god or a worm, and when the moment of decision arrives—on the battlefield, in marriage, or on the Stock Exchange—the patient tries to be both and breaks down.

Each complex is formed as a result of factors of which the environmental is the more important, but the neurosis itself results from an endopsychic conflict between repressed complexes. We can never account adequately for the nervous breakdown, nor can we treat it adequately until we recognize and analyse out both elements in the conflict.

We frankly approach this subject from the psychological point of view. The attitude of the psychologist differs radically from that of the biologist. The biologist looks at life from the point of view of adaptation to environment. The psychologist interprets everything from the point of view of mental processes and is interested in the events of the objective world only in so far as they give rise to mental processes. The psychologist and the biologist are not in any way antagonistic, but they look at life from different angles. This difference of attitude is of the greatest importance, not only in the conception of the psychoneuroses, but particularly in their treatment.

It used to be thought that a nervous "breakdown" could be caused by an objective experience, like a "shock," a fright, a sexual trauma, a disappointment, a failure. Man's main function in life, it was said, was to adapt himself to his environment, and a nervous breakdown was said to be due to man's failure to adapt himself to his environment. The soldier, it seemed quite obvious, breaks down because he cannot adjust himself to the strain and stress of war, and the girl to the shock of the sex trauma, the business man to his failure in business. This is all perfectly true from the biologist's point of view, but not from the point of view of the psychologist, and it is an inadequate conception from the point of view of treatment. If a soldier's breakdown were merely due to his failure to adapt himself to his environment he could easily overcome the difficulty by running away to safety. Why does he not do so? Because there is something within him preventing his doing so; he fears being a coward more than he fears the shell fire. In other words, a man's nervous breakdown is not due to the failure to adapt himself to his environment, but his failure to adapt himself to himself. The real conflict, a conflict more important than that between himself and his environment, is that between his courage on the one hand and his fear and desire for self-preservation on the other. It is quite true that the shell fire is the exciting cause, but it is effective only in relation to what it excites—namely, fear—and gives rise to a mental conflict. He has failed to accommodate himself to those latent forces of fear which his courage and sense of duty refuse to recognize. Running away is no solution to such a problem, whereas it would be if it were merely a matter of adaptation to environment. He therefore has to resort to a nervous breakdown to deliver him from the conflict.

The "shocks" which produce the psychoneuroses are always shocks we give ourselves. Stated in terms of psychotherapy, the psychoneurotic symptom is always the result of an endopsychic conflict.

This psychological approach to the neuroses is of the utmost importance in treatment; our problem is not primarily to fit a man to face his environment, but by discovering both elements in the conflict to fit him to face himself. For a man is impotent to face the onslaughts of the objective world until he has restored peace in the borders of his own soul; only when he has resolved these conflicts in his soul is he fitted to face his environment. He is then capable of facing the most terrible experiences, as has been proved by the many thousands of men who have braved the Arctic snows and stood the storm of shell fire with steadfast courage. Such adverse circumstances alone may break a man's physical strength, but cannot produce a nervous breakdown. With peace of mind a man appears to be able to stand anything; without it he cannot stand the strain and responsibility of writing a letter. As long as we approach the matter from the purely biological point of view we shall continue to treat the neurotic patient by changing his environment—sending him for a sea voyage, and so on. But he flies from his sickness in vain, since he carries his fever with him. The psychologist deals with the situation more adequately by dealing with the mental conflict which makes it impossible for the patient to face his environment.

The Emergence of the Symptom.

When there is a mental conflict between two repressed complexes, the tension is relieved by the formation of a symptom which satisfies both. The purpose of every psychoneurotic symptom is to satisfy not one but both complexes. It is true that the "shell shock" man satisfies his fear complex by getting paralysed, for this gets him out of the trenches as effectively as running away; but by it he also satisfies his exaggerated sense of duty which says, "a soldier never feels fear." It is not the man who admits fear, but the man who refuses to admit it who breaks down. The hysteric's pain in the back satisfies not only her craving for sympathy, but gratifies her fantasy of courage which represses it, and by which she receives the greater praise.

A man's observationism was traced to repressed sexual curiosity on his first night in the school dormitory. But by

what was it repressed? Not by a normal sense of decency, but by a moral snobbishness derived from identification of himself with the prince of prigs, Little Lord Fauntleroy. Both these elements had to be analysed and not merely the "shock" he felt.

This fact is sometimes expressed in the statement that "all neuroses are repressed desires." But we must recognize that they meet the desires of both conflicting complexes. It seems impossible that such a symptom as the fear of madness should be in any way "desired." Yet, to take one case, when this idea of madness was analysed down even such a symptom was found to satisfy two complexes. It was found to originate in an incident of 5 years of age when the patient was rushing about her bedroom naked in a frenzy of exhibitionism, and trod on a needle and screamed; her nurse came in and said, "You must be mad to rush about naked." The unconscious inference was: "If that is madness, then madness for me!" The exhibitionism was thus repressed, but persisted in an unrecognized desire to be mad, so that she might give it expression with impunity. By being mad she could satisfy her exhibitionist tendencies and rush about naked. No wonder the idea of madness unconsciously attracted her. But the symptom not only satisfied her exhibitionism, it did so in a way that was gratifying to her moral sense, for, being mad, she was exonerated from all blame and excused for her behaviour. In consciousness this repressed desire manifested itself as a phobia. Such is the nature of all phobias: they are fears of unrecognized desires in ourselves.

The Choice of Symptom.

It is of course notorious that the symptoms of the neurotic are infinite in variety, but there is a certain reason in the apparent arbitrariness of choice.

(*a*) *Biological reaction* may determine the suggestion. The repressed craving for sympathy finds its most natural expression in pain or sickness which, above all things, invites the pity of others, or at least in self-pity.

Vomiting is associated with the instinct of repulsion and disgust. The arousal and the repression of this instinct for other causes than the taking of nauseous food produces the same physical reaction. Thus a man with chronic vomiting, unable to take even milk, found this means of giving expression to something he had done which he found revolting, and which was therefore repressed. The recollection, admission, and acceptance of the facts cured him.

(*b*) One cannot but be struck by the enormous number of neurotics whose symptoms started with some definite *organic disease*. This was brought forcibly to my mind during the war, when numbers of post-influenzal cases were sent in to the neurasthenic hospitals suffering from the "after-effects" of influenza, such as headaches, backache, fatigue, palpitation. With the exception of the heart symptom (tachycardia), I found that in almost all cases their symptoms were of a neurotic type curable by psychotherapy. It was usually found that they were cases in which the patient had undergone mental strain and conflict during the attack of influenza. For instance, one was put in what he called the "death ward" to die; several experienced air raids during their illness. When these were analysed out and the mental conflict made conscious, the symptoms of headache, backache, etc., disappeared.

Since then I have been very suspicious of the so-called "after-effects" of many medical and surgical conditions, and my suspicions have often been confirmed by successful treatment.

(*c*) The symptom often seems to be *accidental*, as in the case of the youth with the shaky hand. The accidental symptom is thrown into consciousness while the emotional complex is otherwise kept repressed. It is always found that there is some association between the complex and the symptom.

But whatever the symptom, it must always be one which produces a result desired by the repressed complex. This is more clearly seen in the occupational neuroses. It would be no use for a telephone girl to develop blindness as a means of escaping from a life she unconsciously loathes, but it is of great use for her to become deaf or for the cashier to get blindness or writers' cramp.

We may summarize the conclusions of this paper thus: Every psychoneurotic symptom is the result of endopsychic conflict between repressed complexes formed from environmental and hereditary factors during the lifetime of the individual.

III.—MENTAL STRESSES OF ADJUSTMENT IN WOMEN.

BY

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THE fact that mental disturbances of psychogenic origin are more frequent among women than men is always a matter of considerable interest. On the supposition that the statistics represent correctly the relative incidence of psychogenic insanity in the two sexes respectively, the inquiry suggests itself, What are the stresses peculiar to women? Without attempting an exhaustive answer, I would suggest one or two adjustments that are peculiarly difficult for women and that recur as sources of psychic disharmony with notable frequency in a great number of neurotic patients. The recognition of these particular stresses and of their significance as factors in psychic disturbances in women was gradually forced upon me on dealing with a series of adult patients, and also after observation of some girl children of varying ages. A great deal of younger material was studied in a non-professional capacity, and impressed one profoundly with the overwhelming importance of parental, familial, and pedagogic "setting" for the prophylaxis of psychopathological conditions—one had almost said, habits.

The earliest apparent difference affecting the two sexes which seems to me indicated both in psycho-analytic practice and in everyday life is the difference in the maternal attitude towards son and daughter. Parents do not even in 1922 value girl children as highly as boys, and this is largely due to the maternal attitude. Where families contain children of both sexes the girls almost invariably are aware of at least a relative disparagement that may cause any degree of feeling, from one of passive acquiescence, or of affectionate amusement, towards parents and brothers, to one of the bitterest resentment and jealousy. Western education, especially for girls, being built upon a strictly asexual convention, children do not understand the significance of the different estimation in which they are held until they have been profoundly affected and the girls usually embittered or discouraged by it. When some kind of an appreciation of sex values does dawn upon them they transfer childish jealousy and inferiority reactions to masculinity in general, while at the same time they secretly cherish a fairy prince or other fantasy that later usually—though not always—allows them to make the apparently impossible adjustment to actual marriage without too much difficulty. From these reactions, and from the much more repressive type of their upbringing, there results in girls an inferiority complex that may or may not be conscious or masked by a compensatory aggressiveness. In the writer's experience, mothers who profess themselves ardent "feminists" are equally guilty with ordinary women of this heterosexual preference for their boys. The situation is thus perpetuated from mother to children and forced by her upon the family, owing to her predominant position therein. Both sexes of course are affected by this maternal preference, but the daughters relatively much more profoundly, by reason of their longer and closer association with their mother.

In spite of this often unintentionally inculcated sense of inferiority, the exigencies of modern life demand, however, that girls shall be economically independent in competition with their contemporary males, and here there occurs a second difference between the sexes often provocative of stress to the girl. At the same time that they are expected to prepare for a career of some kind girls are also expected to acquire various domestic skills that demand at least some time and effort never demanded of the boy. This maintains or intensifies the earlier inferiority feeling by increasing the difficulties of competitive endeavour, or aggravates pre-existing resentment by affording it a seemingly rational basis. It is at this stage that resentment against the handicap of sex may be voiced as rebellion against the menstrual periods, the wearing of long hair, etc.

Throughout her education her femininity is actually a burden to the average girl, a drawback that must somehow be overcome and yet is to be exploited by other people whenever expediency demands. The strictly girlish virtues are always regarded as those of service and submission, of repression, not expression, of self; these have to be sufficiently developed, as well as an aggressiveness adequate to ensure successful economic competition with the male. Pride in girlhood and womanhood in itself as distinct from mere

frivolous coquetry or from pride in successful boyishness is the rarest feature in the upbringing of girls; it commands no economic return, and has therefore no practical value. Few girls to-day in any class but would be boys if they had the option; and whether this is based on an ultimate sex jealousy (Freud) or not, or is a reaction to the increasing economic pressure on women, it is a factor of real import for those concerned with the problems of psychic adjustments in women.

It is, moreover, just when she is reacting consciously and unconsciously to the full tide of her adolescence that the girl is also called upon to absorb herself in interests whose aim—the maintenance of herself in celibacy—is biologically her own defeat. For the average woman—and she alone concerns us—marriage and a career are self-contradictory propositions; she has therefore to contemplate life from two utterly different angles at once, and must learn to combine in practice the necessary elements of two careers without allowing either to interfere too seriously with the other. And the irony of circumstances has it that in her occupational work, with very few exceptions, the standard demanded of the woman is the man's standard. To achieve this standard, not to speak of outstripping it, the woman must always expend more effort than the man, for, as well as any other difficulty, she must always overcome at least the inertia of the interest she has suppressed. This division of interest with its inevitable associates, psychic conflict and weakening of motive, and its consequence, the need of increase of effort to reach the same standard of achievement, pursues the woman throughout her occupational career. Nor is the problem solved by those women who adopt one of the more definitely feminine careers such as domestic work, nursing, or teaching, which are more directly outlets, not so much substitutes, for their biological drives.

Under modern conditions these activities exploit, but rarely satisfy, the average woman. They offer, in exchange for her directly biologically motivated effort, a comparatively exiguous sum of money, and the bargain is considered to be adequate. Unfortunately, in these occupations the woman is of value and successful just in proportion as she identifies herself affectively with her work. Insecurity of tenure; the necessarily inadequate return for the quality of service rendered; the perpetual exasperation of repeatedly forming impermanent ties on the pattern of permanent ones; the defeat of always starting afresh from the same point and never completing an experience; of always being a means for others to attain a complexness of life for ever denied themselves—all these and other similar considerations render even the more strictly feminine careers, sooner or later, as provocative of inner disharmony for women as are the more masculine.

The price of economic success, celibacy, is sometimes frankly recognized and refused, many women taking up simpler, less remunerative work because they consider it as sufficing till they can achieve their real aim, marriage; but if after all marriage is not achieved, these women are doubly victims of their biological-economic conflict, being doomed to celibacy in spite of themselves, and to a permanent economic inferiority as well.

Of course, for many women any conscious or manifest conflict of their divided interests is deferred for a varying time till the emotional tension of adolescent fantasy, which has been transferred to occupational interests, gradually evaporates and the realization of the menopause becomes defined. The psychic effect of this third stress may become appreciable at any time from the age of 30 onwards, and is not a physiologically determined condition. It is now that the quality of the individual adjustment or sublimation is put to the test. If either is sufficient the menopause will be no obstacle—in the absence of other complicating factors—to continued mental stability. If, however, there has only been a derived or an enforced enthusiasm for occupational interests, borrowing its vitality on a temporary basis only, until brighter dreams should be realized, then with the fading of these comes the inevitable clash with reality. The menopause is the death of biological woman's main interest and pleasure; she has to see it approach, to meet it, in some sense, as an execution at an approximately definite date, and she has to survive it. This she can achieve in one of at least five ways: (*a*) Having made a suitable adjustment to reality earlier in life, she will quietly carry on; (*b*) she will adjust to reality before or at the menopause with more or less marked difficulty and completeness, finally making the corresponding renunciations and substitutions; (*c*) a certain minimum adjustment to reality will be maintained *pari passu* with a fantasy life, both kept in watertight compartments; (*d*) or fantasy may be reinforced to the extent of the denial of reality and become definitely psychotic; (*e*) or, as Freud suggests, there may be a regression to a pregenital—that is, anal-erotic—stage of the *libido*, producing the characteristic changes in the personality.

Except in the first instance, the psychic conflict attending climacteric adjustment is never negligible, and is usually more or less severe and prolonged. It is also an adjustment that most men escape, and constitutes a third stress peculiar to women. This stress, as I have indicated, is often felt considerably before the actual physiological onset of the climacteric, but the association is too direct to suggest any other classification. For many the idea of the menopause has something of the foretaste of death, of a prevision of personal dissolution, and demands an adjustment profoundly painful to the ego feeling, even for some married women, while for celibates it has the additional poignancy of depriving them for ever of an unopened chapter of life of which they feel themselves to have been cheated. Here, too, there is apparent again the sense of sex injustice against women, because sex experience without social or other consequences is always conceivably possible for celibate men, but not for women.

Again, modern cultural needs and standards also range themselves with her economic necessity against the fulfilment of woman's biological ends, increasing and complicating her conflicts both in celibate and in married life. Her own cultural needs as well as economic pressure help to forbid or defer marriage or to lower the birth rate. With the expansion of their cultural interests, women are becoming increasingly unwilling to be submerged for ten to fifteen years in the crushing drudgery of rearing a large family; yet instinctive needs cannot be entirely suppressed, so that many women are doomed to be at war with themselves to some extent, however they are situated. For the married as for the celibate it is a constant conflict, variously stressed, of economic pressure and cultural needs as against biological ends. And here again the heavier stress at least falls upon the woman, in so much as her more urgent reproductive instinct is also thwarted.

Women therefore are divided between their biological needs and economic necessity and also between the former and their cultural requirements. They are burdened as well with a sex inferiority implanted in them in the home, and thoroughly bitten in by the mordant of an education that tacitly implies women must be as nearly men as possible to be of any economic value, and few women in the twentieth century dare not have an economic value. Many women equal masculine achievement, but at a price that the majority of their sex can never pay. Racially these exceptional women are not significant, they are too infertile to affect the numbers of the average woman, who is the really important person—the mother who bequeaths both her biological drive and therefore also her problems of adjustment to the succeeding generation.

Modern social conditions are compelling women more and more to model themselves on men, which, except in rare cases, inevitably causes intrapsychic conflict and division of interest. This conflict is increased and complicated by the growing cultural needs and ideals of both sexes. The idea of masculine superiority is maintained largely by women by their preference for their sons, and is further strengthened by the standard of occupational and cultural achievement being as yet always the masculine one. It is impossible to despise what is one's avowed goal. The present prevalent ideal of life for both sexes and in all classes is in fact modelled on that of the active untrammelled male who is free to go his way, in full—but infertile—satisfaction, without giving hostages to fortune as he goes. So much so is this the case that there are already indications of an increasing intrasex conflict as between married and celibate in both sexes respectively. It is needless to restate the corresponding intrapsychic conflicts this evokes in the woman or to point out how directly it is related to the general social unrest and discontent.

Women are suffering from a growing deviation of interest from biological objectives forced upon them by the conditions of twentieth-century life. This seems to affect them more than it does men, probably because women's biological objectives are more intrinsically of the web and woof of their lives—that is, are reproductive and mutural, not merely sexual, and constitute life itself, not merely incidents in that life. Successful sublimation of biological interests, therefore, is a much more difficult and far rarer thing in women than in men, largely because of the difference in type between male and female sexuality. This is probably the real reason why men still lead the world in science, art, literature, etc.;

women being always handicapped in the struggle for supreme success by their lack of singleness of purpose as compared with men, and this handicap is perhaps the guarantee for racial survival.

There can be no simple and universal solution of these women's problems, but their prevalence and complexity call for attention. Industrialism cannot just be wiped out; biological needs cannot be allowed to run riot; restraint, discipline, effort, must be encouraged in both sexes—civilization is based on these. Neither sex can have every advantage, but although the lesser adaptability of women seems inevitable, and even apparently biologically desirable, the recognition of the causes of this fact is absolutely essential in psychiatry and pedagogy, and ought to be known to the woman herself and should not be misunderstood as an inferiority. It seems to me that the only alternative solutions of the woman's question so called are either the abandonment of the present economic system or an adequate grasp of the question at issue by all concerned, with a view to a more rational training of the young in their ideas of sex values. It is not a matter of the relative superiority of either sex, but of self-knowledge and mutual respect for both.

The particular stresses discussed are of course merely indications of how women of to-day are affected by the increasing conflict between sex and society on which civilization is precariously poised. But, such as they are, the type and the constant recurrence of these stresses afford food for thought if it is remembered that civilization after civilization has waxed to some such height of female emancipation as we enjoy to-day and then collapsed. No one, of course, and certainly no woman, would venture to say the decline was always *propter* rather than *post hoc*, but the chronological relationship remains and is significant. Any social system or standard of civilization that bears too hardly on the biological needs of either or both sexes is of course doomed. Indications such as I have sketched would suggest that women at least are in some ways overtaxed by our social system to-day and that once more it may be a question of civilization versus race. Although, however, so much of the solution of these difficulties must be sociological, their significance for the individual is of the highest interest to the psychiatrist, who, being cognizant at first hand of their prevalence and importance as morbid agents, must therefore play a large part in their elucidation and control.

IV.—THE PSYCHIC AND ENDOCRINE FACTORS IN FUNCTIONAL DISORDERS.

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I MUST begin with a word of explanation about the phrase "functional disorders." I use it, not in a strictly scientific sense, but as the most convenient label for a group of conditions in which no structural alteration, appreciable by our present methods of investigation, has any etiological significance. The advance of science has already transferred a number of morbid conditions from the functional to the organic group. Only a few years ago, for instance, paralysis agitans was regarded as functional. To-day, it is generally attributed to a definite and localized degeneration.

I note that in another Section the subject of binocular vision is to be discussed. I might have given that phrase as an alternative title for my own paper. It is my object to stimulate you to "use your lazy eye"; whether the prism is needed on the right or the left is a matter for each one to settle for himself; but I venture to say of the profession in general that when we contemplate these functional conditions very few of us are without bias—be it towards the somatic or the psychic. And if we have a "lazy eye" we cannot have binocular vision; and where there is not binocular vision there cannot be a stereoscopic image. In the underworld of psycho-analysis the "complex" and the "complex-stimulator" are familiar phrases. There are some physicians to whom a psychic theory of a neurosis acts as a vigorous complex-stimulator, and there are physicians who have been analysed *a outrance*, who yet seem to have an unresolved complex about the influence of the organism on thought and behaviour. One would almost think, to hear the defensive fervour of some of these partisan scientists, that they have some personal stake in proving an exclusively organic or, it may be, an exclusively psychic etiology for a given clinical state.

Let us try, then, to approach the subject with that freedom from prejudice which is always preached by psycho-analysts and sometimes practised by scientists. But if we are to rid our minds of prejudice we must do what we can to free them of ignorance, and that means that we should study as we can the side we happen to know least about. Now this is not an easy task. On the psychic side the literature is vast. Psychotherapy seems to abolish literary inhibition on those of us who practise it. And the endocrinologists appear to be following this evil example. The reports of Vienna are well-nigh matched by the records of endocrine therapy claimed by New York; and plain doctors like ourselves find it hard to keep their sense of proportion. One would wish that our country could stand in this matter for that dispassionate spirit of compromise which is, at the same time, the scientific spirit of correlation.

But the scientific spirit finds itself confronted with serious difficulties on either hand. The psychic factor, despite the bold claims of the Freudians, eludes scientific treatment beyond a certain point. Nor is this due entirely to our present ignorance, for it will always elude such treatment. Life, ladies and gentlemen, is primarily an art; and the sooner the scientific psychologist recognizes his limitations the less likely will he be to expose himself to criticism. Freud may be, and I believe is, fundamentally correct; Jung may illumine us still further; but the last word will always come from a Robert Louis Stevenson.

And on the endocrine side, what do we find? Certain very exact data about the production of rickets in guinea-pigs, a good deal of well-attested information on the mental results of thyroid feeding in cretins, and beyond that a mass of probabilities and possibilities. We cannot complain of this. It is largely inherent in the nature of the subject, for up till now the methods of exact science have been not a little baffled in the search after endocrine truth. The *x* rays have enabled us to gauge with some show of objective accuracy the size of the pituitary; the estimate of the basal metabolic rate bears a striking correlation to thyroid activity; and the results of surgical interference with gonads or thyroid can be noted. But even this last method is shorn of its exactitude when we consider that the removal of a portion of thyroid may or may not implicate some of the parathyroid bodies, and, seeing that we are not even positive as to the number of these bodies, the validity of our conclusions is still further compromised.

From all this it must be evident that we are groping in a sphere where facts are peculiarly elusive, where opinions are necessarily conflicting, where speculation is justifiable and empiricism imperative. And even in our empiricism we are hampered, for the simple reason that we are in the hands of the commercial drug houses. I took the trouble not long ago to inquire of several well-known firms whether their respective preparations of thyroid contained or did not contain the parathyroid constituent. The replies were depressing. A firm whose accuracy I have reason to trust explained that owing to the variation in the position of the parathyroid there was always liable to be a slight amount present in thyroid preparations. They had only succeeded in isolating parathyroid in very small quantities and at great expense.

Another firm confessed to the same uncertainty, and expressed scepticism as to the possibility of detecting and separating the parathyroid from the thyroid. A well-known American firm reported that they had only found one man in the United States who was able to locate the parathyroid and extract it for use. The accumulation of detailed evidence in this direction made one inclined to discount as mere commercial rhetoric the unqualified statements of other firms that their thyroid or parathyroid tablets were prepared in each case from the gland, the whole gland, and nothing but the gland.

Thus our clinical empiricism is hampered by potential fallacy at the very outset, for it is obvious that when our clinical results from the use of a certain hormone contradict those obtained by others there may be a possible explanation in the relative value of the preparations used.

These considerations, and others that I have not mentioned, make it specially difficult to formulate definite and demonstrable views on this subject. But apart from the strictly scientific study of these problems, there is a mass of facts supported by universal human experience that we cannot afford to ignore. First of all, there is the correlation between physiognomy and mentality—a correlation which provides the cartoonist with a language of his own. Let us suppose that in a play a somewhat invertebrate curate and an American "captain of industry" appear; what would we say

if the first were broad-shouldered, square-jawed, with black hair and deep-set eyes, while the latter appeared slender, fair, chinless, and frog-eyed? We would protest at the incongruity; and in our protest we would implicitly admit that the adrenal type of humanity is rarely submissive or effeminate, and the thymocentric is never endowed with initiative, determination, and perseverance.

But long before there were captains of industry or pale young curates mankind had practised on a large scale an experiment in the influence of the gonads on the mentality of the horse. Admittedly the operation of castration alters the behaviour-reactions of the horse very greatly. The psychology of the stallion is a totally different thing from that of the gelding. Man castrates the horse to promote his docility in the presence of such stimuli as steam rollers, field artillery, and fillies. He knows that the withdrawal of the gonad hormone constitutes a condition that transforms the reflex of behaviour. Man has known all this for centuries about the horse: it is only dawning on him to-day that the analogy holds in his own case.

We see two boys, sons of the same parents, brought up in the same environment. The one is tough, daring, high-spirited, and early develops a proclivity for the society of the opposite sex. The other is flabby, lethargic, pusillanimous, and morbidly shy in the presence of women. We ponder on the contrast, and it never occurs to us that a clue might be found in that attack of mumps that the second boy had, when he was 12, with a few days' orchitis that was soon forgotten. In other words, the unknown virus of parotitis infectiva, with its specific selection of gonad tissue, is the counterpart of the veterinary surgeon's knife. But when we have described these two types, and correlated them with an important endocrine contrast, we have not said the last word. There are certain moral qualities that may yet transcend the trend of behaviour: the first, full of animal courage, may be a moral coward and make shipwreck of his life; the second may be a moral hero, and overcome his numerous limitations and make good in the completest sense of the word. In short, the endocrine balance in man may condition, but it does not determine behaviour.

Take another example. McCarrison, in his great book on the thyroid, has shown that in the causation of exophthalmic goitre three factors play a part—the nutritional, the toxic, and the psychic. How many cases of exophthalmic goitre to-day are being treated from these different standpoints? I venture to think, very few. One falls into the hands of the organic scientist, who treats the patient by organic methods, and for the rest bids her to cease from worrying. Another falls into the hands of the psycho-analyst—the kind that wears blinkers—and he proceeds *secundum artem* to lay bare a mother-fixation, while he ignores the physical factors entirely. Nevertheless, it must be obvious to all open-minded observers that both lines of treatment are called for, not necessarily concurrently, but each in its place.

An example such as this throws light on an old shibboleth—"What mind can cause, mind can cure." At one time I firmly believed in that generalization; now I make my reservations. I believe that the emotional shock which so frequently precipitates the attack of exophthalmic goitre constitutes only one condition of the onset, the other being of a physical character. That shock sets in motion a chain of physiological disturbance which cannot be redressed merely by the adjustment of emotional disequilibrium, though it may well be true that the physiological disturbance can never be completely set right until the emotional factor has been successfully dealt with. We should therefore make a point, in dealing with all functional conditions, of assessing to the best of our ability three factors:

1. *Inherited endocrine pattern.* This involves some investigation of the patient's family history, not only from the psychic point of view, but also from the physical. "My father was a musician. He was a very tall striking person." This would suggest the pituitary heredity from both mental and physical evidence. "My mother was dark and thin, and was a martyr to asthma" would similarly suggest an adrenal overemphasis on the maternal side. The more we know the more numerous are the sources from which we can draw information of a potentially fruitful order.

2. *Personal endocrine history.* In general we want to know how the endocrino system has reacted to the physiological crises of puberty, marriage, pregnancy, etc., and also how it may have been influenced by pathological factors. For instance, a late puberty may confirm the impression that we are dealing with a thymocentric type; the beneficial effects of pregnancy may suggest a hyperthyroidic woman; and so on. But much more important as a rule is the history of disease; the chronic colds and sore throats with several attacks of tonsillitis that culminated in a belated enucleation of tonsils and removal of adenoids; then the laryngologist's comforting assurance, "Now the patient will feel better than he has ever felt." How often does a laryngologist in such circumstances stop to think of the once efficient thyroid now morphologically altered beyond repair, that will never again do a full day's work? Or the case of chronic constipation with its disastrous adrenal implications—how often does the cure of the symptom leave behind an irremediable hypoadrenia and a vagotonia that will influence mind and body alike till death?

3. *The patient's emotional development.* This—the psychic—side of the picture is to me neither more nor less important than the somatic. We can only reach a just estimate of the etiological factors if we inquire into both sides of the picture with some minuteness. Prejudice—native and acquired—generally prompts a disproportionate interest in the one side and a corresponding lack or absence of interest in the other. This is the real secret of our failure in handling functional cases. One man will hardly deign to count a pulse, while another fails to elicit the story of an unrequited love. For my own part I think there is little to choose in probable etiologic importance between a dental abscess and a stepmother. They both have a way of assuming pathogenic importance unobserved. The one eludes the dentist's observation, the other the patient's.

I have tried to show that the interdependence of endocrine and psychic factors in general confronts us at every turn. Let us now see whether any specific correlation between individual glands and mental characteristics can be traced. And here we pass still farther from the objective to the speculative.

Let us begin with the thyroid. Leonard Williams, more than anyone else, I think, has emphasized the feminine function of this gland. As it is the great gland of anabolism, so it must be of greater significance to the female on whom katabolic demands are so unequal and at times so excessive. But I think there is a broader view possible. I would submit that the thyroid is the gland of creation. Its importance from the procreative point of view is commensurate with the respective shares of the male and female in reproduction. But in the wider sense of creation, as artistic creation, the thyroid still seems the dominant factor. Surely we will all admit that the creative artist who becomes subthyroidic ceases to create? Some years ago, in a paper on a kindred subject, I asked if anyone had ever heard of a myxoedematous artist. The only reply came from Dr. Tredgold, who cited the case of a cretin who had lived in Zürich in the eighteenth century, and was an artist of some repute. Once more I ask for cases of subthyroidic creators—be it of works of art or of children. True, the subthyroidic woman is not necessarily sterile, but I notice among my gynaecological friends a tendency to prescribe thyroid extract as a routine treatment for sterility. Again, I would have you observe the mutual exclusiveness of child-bearing and artistic creation. Had I time I could cite several cases that in my opinion go a long way to show that the woman of artistic ability ceases to create works of art, largely or altogether, as soon as she is taken up with the maternal function—and this not for any superficial reason of time and opportunity, but because her storehouse of creative energy is unable to cope with both kinds of creation. The psychotherapeutist is frequently called upon to cope with the artist whose capacity for expression has deserted him or her. In such cases I believe we should always study very carefully the state of the thyroid function, in addition to the emotional factors. These latter appear to me frequently to be secondary to the failure of self-expression, rather than primary and causative.

If we now turn to the pituitary, we are at once confronted by the enigma of its own paradox. The mutually inhibiting actions of thyroid and parathyroid, or adrenal cortex and adrenal medulla, are relatively simple problems as compared with those of the anterior and post pituitaries. Berman makes the ingenious suggestion (only he does not enunciate it merely as a suggestion) that the postpituitary is responsible for differentiation of sexual types. Postpituitary failure, therefore, makes for hermaphroditism. In either sex specific sexual characteristics are less differentiated. Of the anterior pituitary it is more or less established that failure in the male is an essential condition, if not the sole cause, of Frohlich's syndrome. Now the psychic mould of a case

of Fröhlich's syndrome is full of interest, and, if I may judge from my slight experience, fairly constant. We have a large fat man, morbidly juvenile in appearance, with undersized genitalia, and little or no sexual desire. He has a strong sense of inferiority from his "deprivation complex," with the compensatory self-assertion that goes with that inferiority. On the other hand, the man with a well-developed anterior pituitary tends to be tall, spare, and normal in sexual characteristics. But the psychic correlative of well-developed masculinity is power, and some element of power in character make-up is undoubtedly attributable to the pituitary factor. There is another psychic factor that we have good grounds for associating with this gland, and that is imagination.

Now the adrenals are also sources of power, in that they control the sympathetic system, and thereby dominate the fight and flight reactions. But the power quality of the adrenal-centred type is of the objective order and depends on immediate stimulation. I therefore venture to suggest that the power coefficient of any given individual is made up of the combined pituitary and adrenal hormones and varies in type according to which of these two hormones predominates. Thus the pituitary-centred provides the type with the power fantasy, while the adrenal-centred provides that with the power energy. Our Napoleons, Bottomleys, and Northcliffes are presumably pituitary-centred, while the classical type of British naval officer can confidently be classed as adrenal-centred.

I have now suggested a speculative and rough classification of these three hormones—thyroid for creation, pituitary for subjective power, and adrenal for objective power. I have not done so with any particular desire to convince you of my views. My intention has rather been to show you how some such hypothesis can be usefully associated with our psychological conceptions.

It has long seemed to me that the Freudian theory suffers from an ambiguity at the outset in its presentation of the human dynamic. The *libido* is referred to as if it were homogeneous. This is only so far as I understand the Freudian theory of to-day. One criticizes with diffidence, as the stock reply of Freudians to their critics is to point out that the critic's comprehension is limited or his information out of date. It seems to me that Adler's contribution on power psychology needs re-emphasis. I would submit that the personal dynamic of any human being consists of three main urges: (*a*) the creative urge, (*b*) the ideal-power urge, (*c*) the real-power urge—the three corresponding to the three hormones previously referred to.

Now from these three main urges we can build the scaffolding at any rate of a sex psychology. Motherhood is not likely to act as a strong incentive to the non-creative woman. The marital state cannot be expected to attract a woman with a strong power fantasy, in that the condition of self-surrender is implicit. Nor can it attract the man who is predominantly artistic or creative, and exceptionally ill equipped on the power side; for the man with a submissive psychology makes a useless husband outside musical comedy.

Regarded from this point of view the problem of homosexuality becomes to some extent simplified. We are told by the Freudians that the average adult is only a man or a woman to the extent of 75 per cent.: the rest is called a homosexual component. Supposing this observation to be correct, could we not restate it thus: The complete man is power-inspired, with a very small residue of creative impulse; the average man has a weaker power urge and a somewhat stronger creative impulse. The complete woman is all creative with none of the power factor that obstructs submission. Perhaps it is fortunate for society that these extreme types are not more common.

Now, if we take a family in which the emotional background is such as to favour the production of a homosexual son—the mother fixation, the father fear, and so on—we are justified in surmising that the sons with the strongest power psychology will win through to a normal adult orientation, while the one with the largest creative component will succumb to the warping emotional forces, and end up as the homosexual. *Per contra*, the daughter with the strongest power psychology will fail to make her adjustment to the potential mate, simply because the conception of surrender has become impossible to her, in the atmosphere created by a bullying father. We see, therefore, that the endocrine pattern of the child has a good deal to say to the developmental reactions of the adolescent and the ultimate sex orientation of the adult.

As an illustration I quote the following case:

A girl of 14½, who was alleged to be unmanageable both at home and at school, untruthful, and given to petty acts of theft. On the psychological side we had a complete rebel and exhibitionist psychology, with a power urge that seemed incapable of sublimation. Her father was a cunning tyrant and a cowardly bully. He had divorced her mother. She hated her father personally, and her school teachers *ex officio*. She derived the greatest pleasure of her life from outwitting them. She was slack and careless in games as in everything else, though she had mental ability above the average. She would secretly pawn an article of clothing, and then, for want of a better way of spending the proceeds, would take a taxi from school to her home. She was an inveterate sensation-monger, and preferred to be the centre of a dramatic school upheaval than to be ignored as a mediocrity. She was alleged to be devoted to pets, but when she had pets she was found to be secretly cruel to them, and on occasions would even kill them off, and then affect regret. Thus the outline of the psychological picture was fairly complete.

Now let us turn to the physical side. She was very powerfully built, and had precocious sexual development. She was not unshapely in the sense that the subthyroidic is unshapely. She had a slow pulse. She was troubled with enuresis diurna, which was of course put down to "naughtiness," "mere carelessness," etc. I believe this patient belonged to a type that provides many young delinquent girls. The thyroid function was manifestly subnormal. I imagine that the pituitary was overactive. Thus we had a notable absence of the maternal urge of the normal adolescent girl, depending on her deficient creative impulse. Hence the instinct to protect helpless creatures, which is normally the basis of a girl's interest in pets, gave way to a sadistic tendency. The pituitary overaction caused her to live in a fantasy world of power, a world in which she performed wild tomboy feats of the most extravagant description. It caused her to plot and contrive schemes whereby she would make her elders dance to the tune she piped. Finally, it may reasonably be supposed that some connexion existed between the pituitary condition and the enuresis. At the same time it must be remembered that on the adrenal side she was obviously defective. All the objective energy of the really fighting rebel was notably absent. Her endurance was from every point of view below par, and she was only saved by her pituitary from a vagotonic state of inertia.

Now the picture I have tried to fill in is one of essential and perhaps lifelong conflict. It is the picture of an adolescent whose endocrine equipment does not lead to mating or parenthood. No girl with a subjective power urge of such dimensions can contemplate the rôle of the wife with contentment, nor can one so devoid of creative potentiality feel any attraction in the possibility of motherhood. Hence repressions of the most devastating kind begin to occur at an early age; for repression is the natural method of reconciling elements that are irreconcilable in consciousness. Our instinctive equipment is based upon our endocrine pattern. When it can be reconciled with our destiny things tend to go well with us. If it is irreconcilable with our destiny, complexes inevitably result. And our biological destiny, whatever may be our ultimate fate, is parenthood. To say that many women are perfectly happy as spinsters, and that many men prefer to be celibates, is in general an admission of an endocrine failure which unfits them for parenthood. But whether or not the adjustment to celibacy be satisfactory only the analyst can tell; and for my part the more experience I have of analysis the more convinced I am that—welcome or unwelcome—our biological destiny haunts us from childhood to the climacteric.

The same correlation between endocrine make-up and psychological conflict is illustrated in a much commoner group of cases—the anxiety states. The war has made us all painfully familiar with these cases, but even in times of actual peace such as we had before 1914, and of nominal peace such as we have had since the armistice, they are very frequent. On the psychological side they consist in conflict which has resulted in complexes with a strong fear affect. I imagine that all fear can be traced back to one of two sources: either it is the fear of extinction, including all the religious fears of eternal punishment, or it is a mating fear—in the male the haunting fear of impotence (which is infinitely commoner than most of us believe), and in the female the fear of male aggression in the sexual act. From these two springs arise the protean phobias of the anxiety states, and in no department of functional disorder has analytical treatment more completely justified itself.

But what in general is the somatic side of the condition? Does it not correspond unmistakably with the condition known as sympatheticotonia—thin, tense, high complexion, overactive sweat function, irritable or irregular peristalsis, rapid pulse, and so on? In other words, we learn to correlate a fear complex with hyperadrenia, or a repressed fear with a constantly stimulated fight or flight mechanism. If this much be granted, it is obvious that the individual's endocrine

pattern must to a great extent condition the effects of a fear repression. The individual with a balanced adrenal function will be less likely than one of the opposite type to develop the typical anxiety neurosis. On the other hand, his repressed fear is more likely to manifest itself in hysterical defences. But once again I must emphasize the fact that the endocrine pattern only conditions and does not determine the ultimate reaction. We shall fall into serious error if we imagine that the endocrine factor is the final determinant of behaviour.

As a last illustration of the interdependence of the endocrine and emotional factors, I would mention dementia praecox; let us take the paranoid type in particular. On the psychic side we have a history, it may be, of a bright boy who has done well at school and begun to flag, perhaps, at about seventeen. (The cases in which an element of mental defect can be established need not be considered for the moment.) Then, as the adolescent faces manhood, he begins to regress, and the picture which Jung has given us is slowly elaborated. It is a picture of generalized retreat from the challenge of life; a regression from maturity to the cradle; an ever-increasing tendency to rationalize his failures into the inevitable outcome of circumstance and environment. And in every case, without exception, we can trace how life was presented as too exacting and too menacing, while the nirvana state of protection in a maternal environment became correspondingly too seductive.

And now turn to the other side of the picture. Mott has established a striking correlation between dementia praecox and aspermatogenesis. I do not suggest that this is the outcome of the emotional regression, but I do submit that it is reasonable to regard it as the conditioning factor. To argue the claims of the one theory against the other is to me utterly unscientific. If a motor car stops on a hill, it is useless to argue as to whether the hill is too steep or the engine too weak. The plain fact is that the engine is too weak for that particular hill. We know—at least analysts know—that in practically every case of dementia praecox life's challenge has been made steeper than it need be. It is not surprising, then, that the cases of failure are those with an inadequate biological dynamic. And in the male it is this inadequate dynamic, based upon a low endocrine efficiency, that produces that train of psychological retreats that we call dementia praecox. Once more we see the emotional conflict conditioned by the incompatibility between the individual's instinctive equipment and his destiny. To every case of dementia praecox his destiny has appeared unattainable, and the thought of that destiny—mainly biological, but social as well—has haunted him from reality into a state of ineffective fantasy.

In conclusion, allow me to say once again that this paper is frankly speculative and makes no claim to scientifically demonstrable accuracy. I make no apology for this, as I have already indicated the difficulties which at present stand in the way of a strictly scientific handling either of the psychic or of the endocrine side of the material with which we are dealing.

The immediate hope of progress in this field seems to me to depend on the advance of individual clinical observation of the apparent correlations between psychic and endocrine factors and the criticism and comparison of the hypothetical conclusions that can be drawn. In this work we may expect to be denied the consolation of obtaining scientifically demonstrable results; but we may at least aim at securing the first condition of accurate observation and true theory—namely, that freedom from bias which alone gives binocular vision.

V.—PSYCHOTHERAPY WITH SPECIAL REFERENCE TO AUTO-SUGGESTION.

BY

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London.

PSYCHOTHERAPY, if it is to gain general recognition and wide adoption, must be based on a sound psychology. The differences of technique which are advocated by the pioneers in the various systems which are in vogue seem to suggest to some that there is no true science of the mind. While therefore we do well to practise those methods which commend themselves to us, and which have proved useful in our hands, and to advocate the same, yet we must seek to establish a common basis of psychology which must be the foundation of every system.

The late Dr. Rivers, in a lecture on "Mind and Medicine," has claimed that determinism in the psychical sphere is as important as in the physical sphere, and, without surrendering our belief in the agency of free will, we shall all do well to follow this advice as a working hypothesis.

There are three great principles which seem to me to be common to all systems of psychotherapy however much they may vary in their application. They are as follows:

1. A recognition of the meaning and paramount influence of the unconscious mind in the human economy, using the term from the widest standpoint.

2. The adoption of certain methods through which the "unconscious" can be influenced.

3. The final application of these methods by the individual concerned.

These great principles govern the methods of auto-suggestion associated with the name of M. Coué, and I propose to indicate how these are carried out.

The Unconscious Mind.

1. The unconscious mind finds its counterpart in the system of Coué in the "imagination." It is obvious that this cannot be regarded as a complete definition of the term "the unconscious," but for practical purposes the expression is of great value in presenting to our patients the idea of "the unconscious" which it is important that they should realize. Imagination is used more in the sense of imaging than imagining, as this word commonly signifies, and it represents the view that every action, mental or physical, of the human personality is preceded by the image or picture of what is about to happen. The imagination of the artist or poet is an instance of this, which is in accordance with our common phraseology.

This imaging is something which is charged with force and consequently with emotion, so that it becomes irresistible. I have referred to this in a previous paper as "the vital force within us which never sleeps night or day, which is not only the source of our wide-awake thoughts, or of our nightly dreams, but which is the supreme controller of all our bodily functions." Interpreted in detail, this means that it is the same mind control which directs the action of the circulatory and digestive systems, which is responsible for what are usually spoken of as our voluntary movements, and, on the other hand, directs the processes of repair when any part of the human organism is deranged. It is the same mind-control which is responsible for our thoughts and emotions, and this is the conception which we have of this use of the word "imagination."

This, as we have said, represents in some measure at least the idea of the "unconscious," and it is essential that we should understand that this great process is going on apart from consciousness and that we are only aware of the results of this imagination.

Another fundamental principle of this system of mind control is that, in its relation to our bodily functions at least, it is designed for the perfect adaptation of every part, and that it is only when this is deranged that irregularities occur. With this idea before us it is our great aim to secure that the imagination may carry out its great task unhindered either by past or present adverse influences.

Suggestion.

2. We now pass to consider one of the methods by which the "imagination" can be influenced whether for good or ill, and that is by suggestion, and particularly by that variety which we speak of as auto-suggestion. M. Coué illustrates this process by the common hypothesis that we have in effect two selves—a conscious self and an unconscious self. Of the latter we have already spoken, and it would almost appear as if there was no room left for any conscious direction. This is very far from being the case, and M. Coué describes his system as self-mastery by auto-suggestion.

The truth is that we have not only the power but the responsibility of controlling our personality. If, however, this is to be done the conscious must act through the unconscious by the process of auto-suggestion. This, however, must be practised with good judgement, for, as I often say to my patients, "Your imagination will not be bullied by me or even by you." This explains many of our past failures. We have tried to change our own habits and those of others by a *tour de force*, and the very violence of our efforts has produced the contrary effect. This phenomenon has been spoken of by Coué and Baudouin as the law of reversed effort,

and although this description has been criticized it has been of practical usefulness to many.

Auto-Suggestion.

3. If it is admitted that each individual must apply the psychological remedy to his own case, however much he may be helped by another to make his adjustment, this process becomes essentially one of auto-suggestion. In the system of Coué the greatest stress is laid upon this factor, and though there must be the element of suggestion in every case, yet each individual is shown that the power to obtain relief rests with him and him alone. I often say to my patients, "You are the master of your own ship."

Dr. Monier-Williams has established a small free clinic for testing Coué's system of collective auto-suggestion in which I am assisting him. In this clinic and in my ophthalmological practice, and also in the treatment of malarial and dysenteric pensioners, I am testing this technique of auto-suggestion, concerning which it is hoped later on to publish some of our results.

DISCUSSION.

Dr. R. G. GORDON (Bath) said there had not been much advance in psychotherapeutics during the last two years. Psychology and biology were not antagonistic, and all psychoneurosis was not due to sexual influences. The unit of any process corresponded to a reflex arc set in motion by a stimulus which might be a mental or biochemical change, and it was on these lines that psychopathology should be built up. Psychotherapeutists must work on a wide basis of physiology as a whole if progress was to be made.

Dr. MURRAY LYON (Edinburgh) said that hypnotism had been largely abandoned and suggestion was the main means of all treatment in one form or another: there was nothing new in what Coué said. Syphilitic neurotics were all potential tabetics or general paretics, but by suitable treatment the development of these diseases should be prevented. Insomnia, lightning pains, and ataxia of tabes had been controlled by suggestion.

Dr. CONNELL (Edinburgh) agreed with Dr. Hadfield that every symptom was due to endopsychic conflict—sexual instinct was almost invariably involved as one factor. The environmental factor was of great importance.

Dr. WILLIAM CALWELL (Belfast) objected to the age of 3 years as being that of the awakening of consciousness; this was a gradual process, a process of evolution, a gradual unfolding, not an isolated fact. He urged that pre-natal forces and those acting during the first two years must not be lost sight of. There was too much insulation by the psyche; psychology was the physiology of the higher centres, but the examination was held from a different aspect. Heredity was a much stronger force than Dr. Hadfield said; physical characters were inherited, and so were mannerisms and moral and immoral tendencies. Dr. Crichton Miller's endocrine organ influence could be amplified; the tone of muscles had an effect on the mental attitude. Perhaps the stimulation of a cold bath and a rough towelling of the skin had more than a reflex action; perhaps it stimulated an internal secretion from those organs.

Dr. HELEN BOYLE (Brighton) thought Dr. Suttie had been unduly pessimistic about the outlook for women. Temperament played a very important part—"Give the child a start with no feeling of inferiority to her brothers, praise her for what she is good at, and she will do whatever she has to attempt well." Girls must know their limitation, whether submissive or aggressive; there was plenty of room in the world for all sorts.

Resolution by the Section.

The PRESIDENT (Professor George M. Robertson) moved the following motion, which was carried unanimously:

"The members of the Section of Neurology and Psychological Medicine of the British Medical Association are of opinion that instruction in psychology and psychopathology (medical psychology) should form part of the curriculum of all medical students, and further, that this opinion should be brought to the notice of the General Medical Council and all the teaching bodies in the United Kingdom and Ireland."

SECTION OF RADIOLOGY AND ELECTROLOGY.

LEONARD A. ROWDEN, M.B., C.M., President.

DISCUSSION ON THE THERAPEUTIC VALUE OF STATIC ELECTRICITY AND HIGH-FREQUENCY CURRENTS.

OPENING PAPERS.

I.—STATIC CURRENTS.

BY

F. HOWARD HUMPHRIS, M.D.Brux., F.R.C.P.Edin., D.M.R. and E.Cantab.,

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THERAPEUTIC history is full of the stories of various agents which come heralded with much noise and advertisement, and have a sensational rocket-like rise; then suddenly their light goes out and they are forgotten. This cannot be said of static electricity. It has been described as Nature's safest and most rational remedy.

Discovered about 1672 by Otto von Guericke, it cannot for many years be traced; but in 1750 Jallabert, Professor in Experimental Philosophy in Geneva, published a book in twelve chapters, *Experimenta electrica usibus medicis applicata*, in which the successful treatment of diseases of the muscular and nervous systems by means of static electricity is described. Thus it was used as a therapeutic agent prior to 1750, and it has withstood the test of time since then.

The therapeutic advantages and the wide range of utility of static currents are now generally admitted by all those who have thoroughly examined their merits. This change is of comparatively modern date, having been brought about within the last twenty or twenty-five years, and is due chiefly to the work of the late Professor William James Morton and Dr. Snow in New York.

In order to have a clear conception of the therapeutic value of static electricity it is necessary to describe the different forms or modalities which are obtainable from the static machine. The word "modality" is disliked by several authorities; but I plead for its inclusion as being the one least open to objection.

Although one frequently has to do so owing to greater familiarity with the term, it is an anachronism to speak of static *currents*, for when a static charge becomes a current it is no longer static. Nearly twenty years ago I published in the *Lancet* a chart of static modalities, and though then, and since then, several objections have been taken to the word, no better has been suggested.

There may be said to be six chief modalities obtainable for therapeutic purposes. Where the more suitable apparatus is not available, *x* ray tubes may be excited, and D'Arsonval, Tesla, and Oudin currents may be derived from the static machine; but these are not included in this paper to-day.

The six forms which are here briefly outlined are:

1. The static bath, also known as static charge, static insulation, or general electrification.
2. The static wave current.
3. The static induced current.
4. The brush discharge.
5. The static spark.
6. The high-potential vacuum.

1. The Static Bath.

Here the patient comfortably reclines on a chair, placed upon an insulated platform connected to the negative side of the machine, and is untouched by any electrode and untroubled by any necessity for the removal of clothing, unless he or she is conscious of any metallic braid, hairpins, etc. Relaxed and comfortable, the operator or friends well away from the platform, the machine is started, and the patient should experience little except a feeling as of a gentle breeze passing all round him; but there is nothing alarming even to the most nervous patient. His sensations are quite pleasant. Such is its administration—the simplest and most soothing of all forms of static electricity. It is not as efficient as some others, nor are its therapeutic effects so marked, and the indications for it do not cover a very wide range; but where a constitutional sedative is required to the otherwise healthy but generally tired-out individual, or to a nervous or highly

strung patient, its effects are excellent, the patient often falling into a gentle sleep during its administration and awakening much refreshed and soothed.

As to the manner in which the current produces its effects it is difficult to speak. Experiments have been made which give negative results as to any demonstrable physiological action; but to anyone who has used this current properly it is evident that in some definite way the effects are produced, and with some diffidence I suggest the following hypothesis.

It is known that any uninterrupted static current has a tendency to flow over and remain on the surface of the charged body. When one considers that this current of very high voltage, but of minute milliamperage, is flowing continuously over the delicate nerve endings in the skin of the whole body, the thought presents itself that it may gently stimulate them and produce a sedative effect in the internal economy. It is not to be assumed that there is no penetrating effect of the static current in this particular method of applying it; but the hypothesis is put forward to attempt to explain how the clinical results might follow did we only get the surface charge.

2. *The Static Wave Current.*

This current is probably the most valuable in the science and art of electrotherapy, for there is no agent as successful in removing local infiltration or overcoming muscular spasm as is this form of static electricity. It was introduced to the profession in 1900 by the late Professor Morton of New York, and called by him the wave current, because in the completion of its circuit Hertzian waves emanating from the patient's person are produced.

In this form of treatment an electrode is placed on or over the part to be treated, the spark-gap of the machine gradually opened to the limit of the toleration of the patient—that is to say, as long as the contractions beneath the electrode are painless, these contractions being in direct proportion to the length of the spark-gap, and in inverse proportion to the area of the electrode. One point to be especially noted, which is essential in the administration of this current—for on it not only depends the comfort of the patient but the success of the treatment—and that is the rate at which the sparks cross the spark-gap. If they flow too rapidly a useless and almost unbearable tetanic contraction of the muscles is induced, while if too slowly the contractions are not sufficiently numerous to produce their therapeutic effect, and they are usually irregular and provocative of discomfort. The appropriate rate will vary within certain limits according to the area of the electrode and the sensitiveness of the part under treatment. As a general rule about 120 to 200 sparks to the minute will be found most effectual, and they should be as regular as possible. The average time for the application of the current is twenty minutes. In some cases during the last five minutes, instead of keeping the spark-gap at its maximum, the rods may be gradually opened and closed so as to produce a surging effect, thus contracting and relaxing the tissues beneath.

Turning now to the indications of the wave current. When properly applied, there is a local vibratory effect, and muscular contraction takes place. Local congestion is relieved, secretion is increased, and local pain is modified, either wholly or in part. It is indicated in almost every case of non-infective inflammation, either acute or chronic. The presence of pus, however, distinctly contraindicates its use. Inflammation is accompanied by congestion, or stasis, and it is this stasis which is relieved by the successive contractions produced by the current. It is therefore readily to be understood how wide a range of influence is possessed by this method of treatment.

The wave current is of great use in many diseases—for example, in myalgias such as lumbago, in synovitis, and in neuritis, such as sciatica.

3. *The Static Induced Current.*

The difference between this and the static wave current is that, whereas in the latter one electrode is attached to the patient and the positive side of the machine, the negative being earthed, therefore producing a constitutional as well as a local effect, in the static induced current two electrodes are attached to the patient, and the therapeutic effect of the current is localized between them.

The advantages of the static induced current are: first, we can get with an inferior or weak machine muscular contractions which we could not get when using wave current from the same machine: and secondly, these contractions are obtainable without any general effect on the patient.

The local effects of this current are similar to those of the wave current, though results are, as a rule, better with the latter, which is to be preferred in the majority of cases. The static induced like the wave current is chiefly valuable for its power of contracting muscle tissue, striped and unstriped, and it is able to exercise this power even in deep-seated organs. Hence good results of this current will be seen in cases of atony of the stomach, dilatation of the stomach, and ptosis with inactivity of various parts of the alimentary canal. It is in the treatment of obstinate constipation that it will be found most useful, and in certain cases where pain is present, and perhaps where large electrodes are indicated, the current may be used; but in general, while it should not be forgotten, it will be comparatively seldom employed, especially when the static machine is a powerful one and all is working well.

4. *The Brush Discharge.*

Cavallo, in 1786, described this current as "the electrode fluid coming from a wooden point," and this description holds good to-day. If, while the patient is receiving a static charge on the insulated platform, an earthed wooden or specially made electrode be brought near him, a violet discharge will be seen passing between the electrode and that part of the patient to which it is directed. It should be held about ten inches away. At this distance the patient will feel little or nothing, and may describe the sensation as that of a cool wind. If this distance be decreased the sensation is changed to one of a stream of hot sand being directed on to the part. The violet colour is due to the fact that the discharge, in its passage through the air, renders luminous the atmospheric particles, while it is attended with the formation of ozone and nitrous oxide. The antiseptic effect of these gases is of considerable therapeutic value in the treatment of septic wounds, abscesses, or ulcers, especially when it is remembered that the current has the further effect of the stimulation of the blood supply, thus relieving local stasis, diminishing induration, and aiding in the restoration of a normal circulation. These latter effects are more important from a therapeutic point of view than are the antiseptic properties of this current, just mentioned.

In cases of neurasthenia associated with low blood pressure the application of the static brush discharge up and down the spine is usually attended with much success. In its administration especial attention should be paid to that part of the back over the region of the adrenals. The stimulation of the afferent nerves provokes an increase in the activity of the suprarenal glands, which activity tends to raise the blood pressure. Therefore this form of treatment is indicated in many ill-defined pathological states associated with low arterial tension. It acts as a general stimulant when the patient has been brought low by overwork, worry, mental strain, or bodily pain, either alone or accompanied by insomnia. For insomnia itself, with or without headache (always presuming the blood pressure be low), the brush discharge applied by means of whisk broom to the top of the head gives most satisfactory results.

This current may also be used in cases of conjunctivitis, where it is applied for a few minutes by means of a camel-hair brush. In cases of non-purulent inflammation, such as acute gout, when the pain is so bad that the patient cannot bear the part to be touched, the static brush gently played over the area will soothe it in a wonderful way.

5. *The Static Spark.*

Even older than the history of the brush discharge is that of static sparks. It is the oldest form of static electricity on record and dates from 1734, when the Abbé Nollet first used the static spark as a therapeutic agent.

There are several varieties of spark derived from the static machine, but only one is here mentioned—the static indirect spark. It is really a current, and may be compared to a spark being discharged from a Leyden jar, the patient representing the jar. The whole of the static charge of the patient is suddenly focused to one point by the grounded ball electrode being brought near him and then discharged disruptively with the sudden appearance of light and sound. A powerful contraction of muscle and tissue at this time takes place which exercises a decompressor effect upon swollen and engorged tissues. The violent contraction drives out fluid from the tissues, hence the alleviation of pain by reducing the pressure of which it was the cause. The instantaneous soothing effect induced by fairly long sparks—10 to 15 inches—well directed along the course of the sciatic nerve, is in some

cases marvellous, and there is nothing so peculiarly adapted to remove deep-seated congestion as this method. Furthermore, not only is the pain relieved, but the muscular spasm which so often accompanies this—and other—pain is relaxed. Another use for the static spark in neuritis as sciatica is its diagnostic value. A patient will come complaining of pain along the entire distribution of the nerve. A series of short sparks, however, will show the exact position of the lesion, for whereas these sparks are for the most part only unpleasant, when they are directed to that part of the nerve where the lesion exists the patient will immediately complain of a sharp pain, so that when this procedure has been followed treatment need only be directed to that particular part where pain was elicited.

Its capacity for causing strong muscular contraction makes it useful in preserving the tone of a muscle whose power of motion is temporarily absent or limited, or, in fact, in temporary paralysis its effect is excellent. After a short period of sparking a general as well as a local diaphoresis will be noted showing a constitutional effect, in addition to that obtained in the region to which the sparks were directed. In deep-seated trouble in large joints, sparks applied in the spaces between the bony processes, as on either side of and below the patella, will often effect relief when other measures fail.

The chief therapeutic value of the static indirect spark lies in its power to produce powerful contractions in the tissues, and the consequent squeezing out of fluid contained therein.

6. *The High-Potential Glass Vacuum Tube Current.*

The vacuum tube is made in shape adapted to the rôle which it is destined to fulfil. It is attached to the negative side of the machine and applied directly to the part affected. The patient feels nothing, or perhaps a slight sensation of heat. Ozone is evolved on the surface of the electrode, and as the current flows a very fine and rapid vibratory massage is effected on the part to which it is applied. Hence it is useful in restoring healthy secretion to skin and mucous membrane where this is deficient. In acne and furunculosis its effect in early stages is wellnigh specific. After the skin has been rubbed for about ten minutes with a glass vacuum electrode in action it has a distinct "ozonic" odour. Rectal ulcer and simple fissure are usually benefited. In some forms of haemorrhoids its action is excellent. Acute capillary piles, especially if there be haemorrhage, are relieved, with the disappearance of anal spasm, very often in one or two treatments. *Post-partum* piles with prolapse are favourable cases for this treatment. In pruritus the application of this current is often very effectual, relieving the itching from the first. It has an excellent effect upon the vocal cords, being applied with the surface electrode to the outside of the throat for about twenty minutes. Public speakers and singers find great relief when their voices have been overstrained, or if they have been using the voice when the cords were congested. The voice becomes clearer after treatment.

In gynaecology it has been extensively used with striking success in some cases and equally indifferent results in others. Much of this discrepancy may be explained by, and put down to, either errors of diagnosis or improper use. For instance, an early vaginal catarrh is quite easy to cure with this current; but where the discharge is proceeding from a diseased endometrium it is naturally of little avail. In some cases of sterility, without any apparent reason, this current has so altered the nutrition of the parts as to bring about the desired result, or, at any rate, pregnancy has followed the treatment after years of sterility. In amenorrhoea with no obvious pathology the same shaped electrode as used for sterility may be used, and the electrical stimulation of the neuro-vascular processes in the pelvis very frequently results in the restoration of the menstrual flow. In leucorrhoea, although this is a symptom of disease rather than a disease itself, especially where there is passive hyperaemia, this current is most useful, the discharge immediately losing any unpleasant odour it may have had and becoming less purulent. This current has a beneficial effect upon the whole of the female genital apparatus, relieving congestion and promoting a more healthy condition generally.

Static currents are replaceable by no other form of electricity, and, with a competent knowledge of their uses, therapeutic effects can be obtained from them which appear marvellous to anyone using them for the first time.

To get these effects consistently, however, two factors are essential: (1) a proficient knowledge of static electricity, its characteristic effects, and of the nature of the disease to be treated; (2) a static machine of efficient power.

Some of the advantages of static electricity are that the applications are for the most part not unpleasant, that they are perfectly safe, and that the beneficial results obtained are apparent from the beginning of the treatment.

II.—HIGH FREQUENCY CURRENTS.

BY

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My thanks are due to the honorary officers for their suggestion that I should contribute to the proceedings of the Section a paper dealing with high frequency currents in their relation to medical practice. I accept the invitation the more readily as for more than twenty years I have been personally engaged in the study and use of this therapeutic agent, and I am convinced that it has a large field of useful service.

In recent years, it appears to me, there has been some want of attention to this department of Electro-Therapeutics. The capacities of *x* rays, of radium, and allied agencies have made a strong appeal, and no one will question the dramatic interest and valuable results which have followed studies pursued in these departments. High frequency currents can scarcely boast an equally striking series of achievements. Nevertheless, they merit attention as a means by which various forms of suffering and disability may be relieved. I venture therefore to urge that their values should not be allowed wholly to be pushed into the background by their more attractive and impressive competitors.

It has been proposed that the good effects credited to high frequency currents are due purely to suggestion. I hope here to establish the negative of this proposition; but even allowing that some element of suggestion may enter into the successful use of these currents in functional nervous disease, the practical outcome is not the less valuable. And nowadays, with the therapeutic benefits of psychological influences ringing in the ears of us all, we may hardly remove from our available resources an agency which contributes to a practical end merely because in greater or less measure it includes an element of "suggestion."

The immediate aim of the medical practitioner is to gain relief for his patient, and if this is attained he may be content, without too critical an analysis of the exact nature and mode of action of the agencies employed. Yet in saying this I am not in the least allowing that high frequency currents owe their success to a mere impression made upon the mind and emotions. On the contrary, I propose to submit evidence to show that under the influence of these currents definite physiological actions are produced in the tissues and functions of the body, and that some of these actions are capable of actual demonstration and of precise measurement; also that certain forms of organic disease are favourably influenced by the application to them of high frequency currents. This evidence I will arrange under three headings, namely:

1. The effects of high frequency currents on the surface temperature of the body.
2. Their action on tissue metabolism, as indicated by qualitative changes in the composition of the urine.
3. Their therapeutic efficacy in diseased conditions in which the element of suggestion either does not exist at all or is reduced to a minimum.

1. Several years ago I collected a series of observations made with a view to determine the physiological actions of high frequency currents, and among these were measurements of the surface temperatures taken before, during, and after the application of the currents. I shall not inflict on you either the details of these observations or the precautions taken to exclude the chance of error. It is sufficient to say that the investigation was carefully conducted, and I ask you now to consider one or two charts showing considerable modification of the surface temperatures following the application of high frequency currents.

In Chart I (1)* where the thermometer was placed on the extensor surface of the right wrist, and only 250 ma. were passed for fifteen minutes, there is a rise in the surface temperature from

* Dr. Somerville showed a number of lantern slides illustrating his paper.

82·6° to 84° F., followed, after cutting off the current, by a fall in fifteen minutes to the original temperature.

In Chart III (2) where 500 ma. were employed and the thermometers were placed on the extensor and flexor surfaces of the forearm, there is seen to be a rise during the fifteen minutes of exposure of 7·4° F. in the case of the extensor surface and 10·6° F. of the flexor surface—that is, from 81·4° to 92° F. In both cases during the fifteen minutes immediately following the cessation of the current there is a fall of temperature of 4° to 5° F.

In Chart XIV the thermometers were placed over the right brachial artery and right forearm, 600 ma. being employed, and the electrode held in the right hand only. There is a rise of temperature on the forearm from 85·6° to 103° F.—that is, 17·4° during the twelve minutes' exposure. The patient, a medical friend of my own, was unable to bear the treatment longer, as the whole upper limb swelled and the bandages fixing the thermometers were uncomfortable. During the eighteen minutes immediately succeeding the cessation of the current there was a fall of 8° F. Details of all the investigations were published in *Medical Electrology and Radiology* in May, 1906.

The last chart I will show you, by way of contrast, demonstrates the effects of high frequency currents on the internal temperature of the body. Here again a rise occurs, but to a much less amount than in the surface records—namely, about a degree and a half. The temperature was taken in the mouth as the patient lay on the couch, before, during, and immediately after high frequency treatment.

Now these are hard facts and they cannot be explained away. Presumably they result from modification of the vasomotor control, but whatever the explanation, "suggestion" can play no part in it. Some considerable physiological action is produced and it is produced solely by the influence of high frequency currents.

2. Changes in tissue metabolism are most confidently measured by qualitative alterations in the urine, and it was this consideration that led me to determine what influence (if any) the high frequency current exercised in this direction. Again I omit details, but have a long series of analyses which show that under treatment with high frequency currents there is produced a more normal ratio between the excretion of urea and uric acid.

Let me show you three analyses:

CASE I.

Dr. A. Before treatment, April 4th, 1905, passed 35 ounces in twenty-four hours. Specific gravity 1025; deposit, "cayenne pepper" of uric acid; very faint trace of albumin; no sugar. Urea 2·7 per cent.=11·8 grains per ounce, or 418 grains in twenty-four hours. Uric acid 0·026 per cent.=0·113 grain per ounce, or 3·95 grains in the twenty-four hours. Ratio of uric acid to urea, 1 : 103 (normal ratio, 1 : 33).

Twelve days after treatment was commenced the quantity passed in twenty-four hours was 36 ounces. Specific gravity 1022; no albumin, sugar, or deposit. Urea 2·7 per cent.=11·8 grains per ounce, or 424 grains in twenty-four hours. Uric acid 0·075 per cent.=0·323 grain per ounce, or 11·8 grains in twenty-four hours. Ratio of uric acid to urea, 1 : 36.

The patient was an elderly medical friend. Previous to treatment there was a marked disturbance of the normal ratio between the excretion of urea and uric acid—namely, 1 : 103. Twelve days after high frequency treatment had been commenced the ratio closely approximated to the normal—namely, 1 : 36.

CASE II.

Mr. M. Before treatment, October 30th, 1906, passed 60 ounces in twenty-four hours. Colour, clear amber; reaction, moderately acid; specific gravity 1018·5; scanty mucoid deposit; no albumin or sugar; creatinin moderate. There were no bile pigments, pus, blood, urobilin, or haematoporphyrin; while the spectroscope revealed nothing abnormal. Urea 1·9 per cent.=8·3 grains per ounce, or 498 grains in twenty-four hours. Uric acid 0·0375 per cent.=0·164 grain per ounce, or 9·84 grains in twenty-four hours. Phosphoric acid 0·19 per cent.=0·83 grain per ounce, or 49·8 grains in twenty-four hours. Ratio of uric acid to urea, 1 : 50. Nitrogen 240 grains. Acidity in terms of oxalic acid, 0·68 per cent., or a total of 21·4 grains. By means of the microscope only a few very minute octahedral crystals of calcium oxalate were detected.

[illegible] before treatment, on November 12th, 1906, the quantity passed in twenty-four hours was 40 ounces. Colour, opaque, turbid, light [illegible] reaction, highly acid; specific [illegible] urate deposit. [illegible] evidence of abnormal constituents as before. [illegible] 10·3 grains per ounce, or 412 grains [illegible] 0·485 grain per ounce=18·3 [illegible] Phosphoric acid 0·28 per cent.=1·22 grains per ounce, or 48 grains in twenty-four hours. Ratio of uric acid to urea, 1 : 23. Nitrogen 230 grains. Acidity in terms of oxalic acid, 0·214 per cent., or a total of 43·4 grains. Microscopic examination showed a copious deposit of amorphous urates.

The patient was an active country gentleman. Before treatment the amount of uric acid excreted was subnormal—namely, 9·84 grains in twenty-four hours, and the ratio between the excretion of uric acid and urea was disturbed—namely, 1 : 50. After eleven visits the amount of urea excreted was less, while that of uric acid was increased and the ratio approximated to normal.

CASE III.

Mr. T. G. Before treatment, June 4th, 1907: quantity—an evening and morning mixed sample. Reaction, markedly acid; specific gravity 1023·5; no albumin or sugar. Urea 2·35 per cent.=10·9 grains per ounce. Uric acid 0·045 per cent.=0·196 grain per ounce. Ratio, 1 : 55. Acidity high, at rate of 0·25 gram oxalic acid per 100 c.cm. urine; this is nearly double the normal.

After seven applications of high frequency currents, June 12th: quantity—an evening and morning mixed sample. Reaction, acid; specific gravity 1017; no albumin or sugar. Urea 1·65 per cent.=7·2 grains per ounce. Uric acid 0·058 per cent.=0·25 grain per ounce. Ratio, 1 : 28. Acidity still high, though less than before—0·226 gram oxalic acid per 100 c.cm.

It is sometimes suggested that the improvement in the urinary excretion is due to nursing, rest, and careful feeding, but I have purposely selected the analyses of urines of three busy gentlemen, who were engaged in their daily work and who merely attended for treatment. Here once again we are outside the range of suggestion; at the same time we have an explanation of the sense of well-being which patients treated by high frequency currents almost invariably experience.

3. As regards the scope of high frequency currents in the treatment of functional conditions, painful or otherwise, the range is an extensive one. In a meeting such as this it would be out of place to enter into detail or to give particulars of individual cases, but I may remark in general that I have dealt successfully with numerous neuralgias of the larger and smaller sciatic nerves, the branches of the circumflex and musculo-spiral, the posterior scapular, the posterior and smaller occipital, and the trigeminal nerves. Rheumatic pains yield to treatment, and insomnia is overcome. Nervous headaches, and with them alopecia, are lessened; haemorrhoids, fissure in ano, and pruritus ani are relieved if not cured; skin affections such as eczema and acne, and even psoriasis, are benefited. Choreic movements subside, chilblains disappear. Asthma is often controlled, strumous glands decrease, and ulcers are healed. Incontinence of urine in both old and young is overcome. The pain succeeding fracture is subdued.

My purpose in this paper has been simply (1) to show that high frequency currents do actually occasion measurable changes in the physiological balance of the human body, and (2) to indicate that, apart from so-called functional disease, these currents afford therapeutic help in certain conditions where there is without question definite organic disease.

DISCUSSION.

The PRESIDENT asked whether low blood tension was not a contraindication to static treatment; also whether the openers of the discussion had had any experience in the treatment of *x*-ray burns as treated by the effleuve. It would also be interesting to know what Dr. Humphris meant by his expression an "efficient static machine." The speaker was one of those who in the early days took up high frequency and similar work, but he had been, unfortunately, overwhelmed by radiology. He was sure, however, that there was a great deal of value in these methods in properly selected cases.

Dr. HOWARD HUMPHRIS, in reply, spoke of the criticism which had been made on other occasions that the effects of these currents were due to suggestion. He had demonstrated by means of a potato and also a piece of meat—neither of which could respond to suggestion—that there was no doubt as to the actual introduction of heat into the tissues. Not only in high frequency but in ordinary galvanic applications it might be that the great majority of the effects were due to heat. An efficient static machine he would define as a static machine capable of being revolved at a rate which would produce a spark half the diameter of the plate. The spark between the gaps should be equivalent to, or little short of, the plate radius. As for the treatment of *x*-ray burns by the

effluve, in theory it might appear that this was an efficient treatment, but the cases of *x* ray burns with which he had had to do were treated by other means, preferably carbon-dioxide snow. Although electricity was old *x*-ray burns were new, and he thought that static electricity should only be used where the indications for its use were quite clearly defined and well established. In reply to a further question, he said that for high blood pressure there was nothing like the auto-condensation couch. Of course, it was very important to know before commencing treatment whether the pressure might not be compensatory.

X RAYS IN DISEASES OF THE SKIN.

BY

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THE time has arrived when the value of *x* rays in the treatment of skin diseases should be more generally known by the practitioner than it is at present. It is in many cases not only a definite cure, but by far the best means for obtaining that cure; and occasionally it is the only treatment when all other methods have failed.

The textbooks on dermatology are stinted in their praise of *x*-ray treatment, and in no condition do they recommend it as the first thing to try, but prefer to enumerate all the ointments and lotions in the Pharmacopoeia, irrespective of the discomfort caused to the patient or the ruin of his underclothing. Take, for example, psoriasis: the usual ointments only temporarily cure the complaint, but permanently ruin the clothing; now *x* rays will remove the eruption more quickly than the ointments, and the saving of the clothes will pay the *x* ray fee. Textbooks on radiotherapy are vague and unconvincing when dealing with skin disease, and yet I cannot imagine any treatment of recent years more satisfactory in its present results, and more promising for future research.

Skin diseases are a side-line in most of our big teaching hospitals, and the student is expected to diagnose any case after about a dozen lectures and a similar amount of clinical experience. He cannot be blamed, seeing how much general knowledge he has to cram into so short a time. The fault is that there are so few men who specialize in this important branch of medicine, in comparison with the large number of sufferers; and hence the verdict "incurable" which has to be pronounced so often in cases of lupus, rodent ulcer, and many other skin diseases, where an early diagnosis would have meant an early cure. The inability to diagnose and treat applies to many of the less serious diseases, which are the unnecessary cause of pain, discomfort, and loss of work.

In this paper I do not venture to tell you how to diagnose skin diseases, but prefer to remain one of the angels who "fear to tread," as this is distinctly the realm of the dermatologist: but as medical men we ought to know the difference between an acute and chronic inflammatory condition; and assuming that we are able to discriminate between these two stages of skin disease, I propose to tabulate the various conditions which should indicate the prompt application of *x* rays. If the diagnosis of a dermatologist can be obtained, and collaboration with him is possible, by all means get it: but even then there are two things which must be insisted upon, and these are, first, that the dose must be prescribed by yourself, and secondly, no other metallic treatment must be given externally while the *x*-ray treatment is being given.

The first condition is obvious, and the second is because of the ill effects of metallic ointments or lotions covering or impregnating the skin. They may act as a wall or barrier to the rays, or their metallic secondary radiations may greatly intensify the action of the primary rays.

The secondary or more correctly characteristic radiations which are given off from metallic particles after being impinged upon by a beam of *x* rays, are practically unknown, except to the radiotherapeutist and the physicist. These rays are very soft, intense, and easily absorbed by the skin, and often account for patches of lupus breaking down, not because of the amount of primary rays they have received, but because of the prolonged metallic ointment treatment they have previously had, and the secondary radiations thus set up. *X* rays of course are blamed or their use discredited.

I believe these characteristic secondary rays are the clue to future successful research in the treatment of skin disease, chiefly because of the homogeneous nature of these rays. We know that a beam of ultra-violet rays when passed through a spectroscope is analysed into a series of rays of different wave-lengths: and these, if directed on to a film of bacteria, will produce lines similar to those produced upon a photographic film. These lines are due to the bacteria being killed, inhibited, or stimulated according to the wave-length of the particular ray which strikes them. Thus, rays of different wave-lengths have widely different therapeutic effects, and this applies to *x* rays; some with certain wave-lengths are wanted and others are not. Obviously, then, the thing to find out is the characteristic homogeneous ray, if any, which acts most beneficially upon each disease. This can only be done by getting the metal whose characteristic ray you want into the affected skin by injection, ionization, or by any other means, and filter out all the primary rays from your treatment tube, except those which will excite that particular metal. The trouble, I find, is getting the metal into the skin, but I have no doubt that others will be more ingenious than myself and therefore get better results. We do know that a small patch of lupus which has previously had zinc ointment well rubbed into it before *x*-ray treatment does better and heals more quickly than one treated without the ointment; this must be because of the secondary radiations.

How do *x* rays affect the diseased skin? We do not know this, any more than how ordinary sunlight affects the skin. We know only that it is by the absorption of these rays, and the conversion of their energy into some other form of energy of a lesser wave-length—namely, a degradation of wave-length. This effect, if suitable quantities are absorbed, results in a healthier condition, which enables the skin to fight invading micro-organisms and toxins, and to dispose of excessive degenerative tissues. Occasionally larger doses are given, with the object of directly killing neoplastic tissue, which from experience we find will be destroyed before the surrounding normal tissues are. The normal ones will then throw around a barrier of fibrous tissue, which finally takes the place of the neoplasm. This fibrous tissue formation after prolonged radiation is of great value in combating many forms of malignancy, but must be regarded as bad treatment, or I might better describe it as overtreatment, in the less serious conditions of chronic inflammation, where stimulation and absorption only are required.

Time is too short to discuss the technique of *x*-ray treatment, except briefly to say that a medium soft tube is the best, a gas tube of about 4 inches spark-gap, or a Coolidge tube with about 6 inches spark-gap—that is, if they are excited by a coil installation, which I think is the preferable means. The distance of the part treated from the tube should be kept as uniform as possible in order that the operator can estimate the exact dose he is giving in each case. If the treatment is likely to be a long one, as is often the case in old-standing diseases such as scrofulodermia, lupus, and eczema, remember that there is a saturation stage to a particular radiation—a stage at which the skin has absorbed all the rays it can healthily deal with, and any more of the same type are either useless or act as irritants. In order to overcome this, I alter the thickness of the filter every few weeks, and in this way am able to carry on longer and maintain the improvement which would otherwise have ceased. It is a simple point, but very effective. Starting with no filter, I add 0.5 mm. of aluminium after every four doses up to 2 mm., and work back to *nil* again.

Conditions contraindicating *x*-ray treatment may be divided into the following:

General, such as grave blood diseases, and disease of the blood vessel walls, and
Local, which includes acute inflammatory diseases of the skin and haemorrhagic skin troubles.

The symptoms and appearances of diseased skin which indicate the prompt application of *x* rays may be put under six headings:

1. Indurations and thickenings;
2. Itching;
3. Chronic infiltrations;
4. Lichenification;
5. Conditions requiring depilation; and
6. New growth.

These conditions, one of which is only a symptom—namely, itching—are easily detected, but as you know, they are present in a very large number of skin diseases, and present a

wonderful opportunity for the radiotherapeutist, because the results are cures in the vast majority of cases, also the treatment is pleasing from the patients' point of view, because it is neither painful, troublesome, nor destructive to their clothing. To get the best results courage is required, tempered with caution, which is only got by experience.

1. *Indurations.*—These are best seen in acne indurata, and about twelve to sixteen doses will flatten down a face to a decent smooth soft skin, which before was a mass of lumpy thick-walled abscesses. Some of the abscesses may have to be incised and emptied. All forms of acne do well under *x* rays.

Thickenings, such as are seen in keloidal formations, respond well to the same treatment, but sometimes require perseverance, even up to twelve months, and complete flattening will result. In these cases always rest after the slightest sign of reaction, and always keep altering your filtration. The thickenings associated with scrofulodermia do excellently, in addition to the treatment being the best possible one for the infected tuberculous glands or other tuberculous focus associated with this disease.

2. *Itching.*—This symptom responds more quickly to *x* rays than to any other remedy if the itching is not of parasitic origin. It should always be tried first. You can in almost every case of this kind, when it is not associated with a skin eruption, promise complete relief, or considerable abatement, after four weekly three-quarter pastille doses, but a further three to four pastille doses should be given after all itching has disappeared. Pruritus ani and pruritus vulvae are frequently complained of, and will respond quickly, even though the condition has been of many years' duration. The itching which is so often associated with skin diseases is usually relieved after a few doses, and, the scratching having ceased, the chronic inflammation soon subsides.

3. *Chronic Infiltrations.*—These are frequently observed in cases of eczema, especially the localized types, and a few radiations will soon stimulate a healthy reaction. Take, for example, those obstinate cases of eczema nuchae. Here we have violent itching as well as infiltration, and frequently, when every other remedy has failed, the rays will act like a charm and a quick cure result. Care, of course, must be taken not to cause baldness where the disease has invaded the hair at the back of the head.

4. *Lichenification.*—This is a condition which often follows upon a patch of eczema, and is characterized by some thickening, dryness, and often slight roughness, and sometimes trifling scaliness, with accentuation of the lines of the skin, and with, in most instances, closely crowded or coalescing, slight, flat, dull-reddish papules, usually caused by friction, scratching, and possibly to some extent to local medication. X rays quickly clear this condition.

5. *Conditions requiring depilation*, such as ringworm and sycosis, have so extensively proved the value of *x* rays as the best agent to adopt that further recommendation from me is unnecessary.

6. *New Growths.*—In cases of epithelioma, *x* rays should never take the place of excision where this is possible; it is always advisable to follow excision by a few doses of the rays.

In the case of rodent ulcer, excision is unnecessary because a permanent cure can be effected by a simple erasion followed by suitable *x*-ray treatment, a flat pale scar being the only trace of the previous ulceration. The method I adopt at the Manchester Skin Hospital is erasion of the rodent tissue, followed by full pastille doses, on three or four consecutive days—three for the smaller ulcers, and four for the larger ones. The area treated overlaps the rodent tissue by about one-eighth of an inch all round. The distance of the ulcer from the anticathode is seven inches, and the pastille is placed half-way. The results are excellent, and cures are obtained in practically every case, unless periosteum or cartilage has become involved, or the cases have been subjected to previous intermittent *x*-ray exposures over a long period. In these latter cases the fibrosis produced by the rays seems to take all the "kick" out of the tissues which appears necessary for the healing of rodent ulcers.

I do not doubt the good results obtained by radium, but an overdose of radium has much more serious consequences to the surrounding tissues of an ulcer than *x* rays have: and this, I consider, indicates the latter agent as being the more advisable one.

The further progress of an incurable rodent ulcer can be delayed for years by *x* ray treatment but this has not been my experience with radium.

DISCUSSION.

Dr. WOODBURN MORISON (Manchester) said that in treating pruritus ani a method was followed at Manchester which had been introduced by Pirie of Montreal. The patient was treated from below upwards while seated on the couch. A pad of cotton-wool was placed in position so as to give an oblong area where it was desired to treat, and the patient sat with the buttocks separated by the pad, a coin was used to indicate the focus for the rays, and the rays were directed from the tube below.

DIFFERENTIATION OF ACTIVE FROM QUIESCENT TUBERCULOSIS OF THE LUNG.

BY

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THE utility of the *x* rays in the diagnosis of pulmonary tuberculosis has been abundantly proved.

Unfortunately for patients, the profession as a whole has not yet come to recognize its importance and to avail itself of the help that can be obtained thereby. Apart from the inconvenience of sending patients to the radiologist, two reasons may be adduced for this, namely:

1. The difficulty of interpreting *x* ray plates of the lungs. To many general practitioners a radiogram of a fracture is like a letter in their mother tongue. The sharp clean-cut edges of the break are usually easily seen and interpreted. A radiogram of the chest, on the other hand, is like a letter in an unknown foreign language. The lines and shadows, normal and abnormal, mean nothing to them. The heart even with difficulty is recognized. The ribs alone indicate the area under observation.

The remedy, of course, is to drill the medical student in the interpretation of radiograms during his curriculum.

2. The inability of the *x* rays definitely to diagnose tuberculous disease in its earliest stages, and therefore their failure at that particular period when they could be of the very greatest value. Early tuberculous lesions are not gross—there is no infiltration, no fibrosis, no caseation. Congestion, cell proliferation, and cell destruction alone are found. These the *x* rays with ease penetrate, and no shadow is caused on the *x*-ray plate. The signs of early tuberculosis are not those of consolidation or increased density, but those of irritation and toxaemia—lessened functional activity of the lung and of the diaphragm, impaired mobility of the chest wall, increased muscular tone, vasomotor instability, lethargia, etc. Clinical facts undoubtedly indicate the presence of tuberculous lesions of the lungs prior to radiography.

The decision, therefore, as to the presence or absence of early tuberculosis is not a matter for the radiological laboratory to decide, but for the clinician with all the facts relative to the history of the case, the physical examination of the patient, and the chemical, cytological, and bacteriological investigation of the sputum before him, along with whatever negative or positive evidence has been derived from *x* rays.

In the diagnosis of active from quiescent tuberculosis of the lungs by *x* rays one must call to mind the stages traversed in the production of the disease and in the process of repair. There are, one might say, three stages in the production of the disease and three stages in the process of arrest.

The stages in the production of tuberculosis are:

1. The implantation of the organism and the development of a tubercle.

2. Local necrosis and the formation of a caseous nodule.

3. The rupture of the encapsulating membrane of the nodule and the production of an ulcerating cavity.

In all cases when active disease is present there are three associated conditions—congestion, alveolitis, and a local lymphocytosis. These are responsible for many of the signs on physical examination.

The three steps in the process of repair of tuberculosis of the lungs are:

1. Delimitation and localization—the congestion, alveolitis, and lymphocytosis disappear.

2. Fibrosis and calcification—the production of epithelioid cells and fibroid tissue secure ascendancy over the necrotic processes. As a result the affected area is walled up and shut off, and the caseous matter undergoes dehydration and calcification.

3. Contraction of the affected area and subsequent alteration of the general orientation of the thorax.

In all cases where lung tissue has been destroyed and healing has taken place we have compensatory hypertrophy and emphysema. This is specially marked adjacent to the affected area.

Seven conditions caused by tuberculosis may cause shadows in a radiogram of the lungs: (1) congestion of the blood and lymphatic vessels; (2) alveolitis in the neighbourhood of the affected area; (3) local lymphocytosis; (4) the infiltrated proliferated epithelioid cells; (5) fibroid tissue production; (6) caseation; (7) calcification.

The degree of density produced by these depends on their extent and their distance from the plate, and, generally speaking, is in the order in which I have given them. Which are indicative of activity? How do the shadows produced by active lesions differ from the shadows in quiescent disease? Can one definitely state by examining a radiogram that there is active disease present?

The first three or four conditions that I mentioned are alone indicative of activity—congestion, alveolitis, lymphocytosis, and epithelioid cell production. These produce, if anything, faint cotton-wool ball-like shadows, shadows resembling the cirrhose clouding that one sees in the sky on a summer day. The shadows caused by fibrosis, infiltration, caseation, and calcification are dense and dark.

In cases of acute or subacute phthisis, and in cases of chronic disease with a recent exacerbation, it is possible to state definitely that active disease is present. The wool-like shadows of alveolitis, congestion, and lymphocytosis are pathognomonic. In chronic fibro-caseous tuberculosis, where the shadow is dark and there is little woolliness or mottling, it is impossible in most instances to tell from a single radiogram whether or not the disease is active or quiescent. Then one's decision will be based on two things: (1) clinical facts of the cases: (2) serial radiograms.

Patients suffering from active tuberculosis always give symptomatic evidence, and usually have definite signs present. On inspection we get spasm of muscles, flushing, immobility of the chest wall, excessive sweating, particularly axillary, coldness of the hands, and dry skin and hair. On auscultation we may get granular, cog-wheel, or weakened respiratory murmur and subcrepitant or mucous rales. Auscultation may be negative. One should not trust to it. Lethargia, a low blood pressure, an adverse influence of exercise on the temperature and the pulse, are all indicative of activity. If there be no signs and no symptoms, no matter what the radiogram shows, there is no active disease in the lungs. Presumably, of course, a trained eye, ear, and hand decide the presence or absence of those signs and symptoms. Serial radiograms are very useful and very suggestive. Patients suffering from chronic tuberculosis of the lungs should be radiographed periodically, just as patients suffering from cardiac disorders have pulse and heart tracings made and filed for reference and comparison.

It is very interesting to trace radiologically the development of tuberculosis as it is advancing.

1. There is diffuse haziness of the affected area, and enlarged trunks radiating from the hilum. This haziness is best made out by radioscopy, using a low milliamperage and a small diaphragm. It may not come out at all on a radiogram.
2. The trunks become more accentuated, and budding—rounded or oval in form—appears on certain branches, particularly the upper branches. These buds are better seen by radiography than by radioscopy.
3. The buds become more numerous, becoming larger and more dense in the centre.
4. The buds coalesce and become cloud-like, particularly marked towards the hilum.
5. The shadows become more dense; diffuse mottling is usually seen peripherally.
6. The whole lung may become dark except for rounded clear areas significant of cavity formation.

A ring shadow may appear in the lung without previous consolidation. We have three such cases at Bridge of Weir Sanatorium at present. Infiltration, rapid disintegration, with little or no collateral inflammation and effort at encapsulation may account for this. The period required for the disease to develop from the hazy to the cottonwool-ball stage, and from the cottonwool-ball stage to that of opacity, varies greatly from a few weeks to a few years, depending on the resistance of the individual.

In a case of retrogressive disease one finds:

1. Disappearance of the mottling and haziness generally. There may persist a fair amount of haziness, due to thickened pleurae.
2. Development of greater density. The edges of the areas are sharply cut. This is largely due to the emphysema.
3. Retraction of the dull areas. They become smaller and ultimately less opaque.
4. Widening of the interspaces and freer movement of the ribs and diaphragm.

In a radiogram of moderately advanced active tuberculosis of the lungs one can usually make out at one part evidence of progressive disease, and at another evidence of retrogressive and quiescent disease.

By a series of radiograms of an individual one can tell definitely how the disease is progressing—favourably or adversely. In a case of doubt it is good practice to take radiograms from the anterior and posterior aspects at least. Personally I frequently also take one especially of the apices and two of the lungs, each lung separately. This should be repeated in a month or six weeks. Comparison of these radiograms enables one to decide whether immunity is being established and quiescence obtained.

To sum up:

1. Radiography does not show the presence of the earliest stage of active tuberculous disease of the lungs. Radioscopy may reveal it by a diminished translucency and by certain changes, particularly lessened mobility of the chest wall and a stammering diaphragm.

2. Acute and progressive tuberculosis shows itself by the presence of budding and cirrhose clouding, and by accentuated trunks radiating from the hilum. These are caused by hypervascularization chiefly.

3. In chronic fibro caseous tuberculosis a single radiogram frequently fails to determine the question of quiescence or activity. Serial radiograms at intervals of four to six weeks indicate progression, adverse or favourable, and quiescence.

4. Radiography should be used simply to amplify. It can never supersede clinical methods in the diagnosis of tuberculosis of the lungs, and in determining its activity or quiescence.

POINTS IN THE DIFFERENTIAL DIAGNOSIS OF SIMPLE AND MALIGNANT BONE DISEASE.

BY

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[*Abstract.*]

DR. SABERTON'S paper was accompanied by a number of lantern views showing the *x*-ray appearances in the cases to which he drew attention. He spoke first of the comparatively rare disease known as osteitis fibrosa or fibrous osteitis. Very little was known of the pathological changes in this disease, and nothing as to its cause. In some cases trauma appeared to be an etiological factor. The disease seemed to be due to some constitutional peculiarity of the bone or osteoblasts, and a gradual conversion of the compact bone into fibrous tissue took place. The bone most frequently involved seemed to be the tibia. The salient clinical features of the condition were as follows:

Frequently only one bone was affected; there was liability to sudden fracture from slight injury; the shaft of the affected bone was bowed, and this was associated in some cases with expansion and egg-shell crackling; the patient usually complained of pain and aching in the affected limb.

The author then showed radiographs illustrating the early and late stages of the disease. In one case the patient—apparently a healthy male—gave a history of a feeling of weakness in the left leg, with swelling of the limb following fatigue. One day, while watching a cricket match, he stepped backwards, heard a crack, and fell with a broken leg. It was reported that in some cases following a fracture the bone recovered its normal condition. The author personally had not seen a case in which a return to normal occurred, but the fractures united firmly again, and apparent arrest of the disease took place. One patient, a female, was very crippled, and gave a long history of gradual bowing of the left tibia. Recently an egg-shell crackling had appeared over the tubercle of the tibia and inner side of the upper part of the shaft. This area was tender on pressure. The radiograph showed the obliteration of the medullary cavity, the curious changes in the compact bone, and the great variation in density when the disease was advanced. There was a fracture through the upper part of the shaft, and the radiographic appearances in this area suggested possible malignant degeneration. The limb was amputated.

It was important not to confuse osteitis fibrosa with certain other diseases which might simulate it, and in arriving at a diagnosis the clinical history had always to be considered in conjunction with the *x*-ray findings. The chief diseases to be considered in arriving at a diagnosis were:

1. Osteomalacia. This disease occurred most frequently in females, and was associated with pregnancy and lactation. Clinically a large number of bones were involved.

2. Osteitis deformans (Paget's disease). Usually many bones were affected. This was a disease of the middle-aged and elderly. Spontaneous fracture was not common. Some cases had been reported of a mono-osteitic type—that is, single-bone involvement. It occurred to him that this type might be really osteitis fibrosa, and not osteitis deformans.

3. A septic arthritis might present bony changes on radiographic examination simulating osteitis fibrosa. One patient suffered from a septic arthritis of the right knee-joint, which was thought to have been caused by a blister on the little toe. The absorption of the articular cartilages showed the case to be one primarily of arthritis, with secondary changes in the adjoining bones.

4. Chronic osteitis and syphilis. These diseases were usually characterized by marked periosteal overgrowth and increase of the cortex at the expense of the medulla.

In connexion with the last of these categories the author showed lantern views of an interesting case in which a possible sarcoma of the lower end of the femur had been suspected, but the radiographic appearances did not support that view. The conclusion he had arrived at was that the condition was either due to congenital specific disease or to some disease of the pituitary.

5. Osteomyelitis. This disease was associated with periostitis and the formation of bone abscesses and sequestra. Occasionally cases were met with which did not present all the classical features and in which a diagnosis was difficult to arrive at.

6. Malignant diseases of bone: (*a*) periosteal sarcoma; (*b*) carcinoma of the head of the humerus.

The author showed illustrations of both these cases. A typical example of periosteal sarcoma was in an apparently healthy child, 12 or 13 years of age, who was brought for *x*-ray examination of a swollen knee-joint. The leg, unfortunately, was not amputated, and the child had a most painful and distressing end. At the time of death, six months afterwards, the growth was almost as big as the rest of the body. Carcinoma of bone generally followed a primary lesion elsewhere. A patient who had had her breast previously removed for malignant disease, and was suffering from neuralgic pains radiating down the arm, was examined by *x* rays. The radiogram of the shoulder-joint showed evidence of a destructive process involving the head, great tuberosity, and upper part of the shaft of the humerus. Numerous scattered deposits were also present in the right lung.

7. Cystic disease of bone. The cystic condition of bone might be a very slow form of chondrosarcoma or myeloid sarcoma.

There were many other interesting bone conditions, some of them presenting difficulties in diagnosis, but it was not possible to deal further with this large subject in a short paper. He added that spontaneous fracture, or fracture from slight injury, might occur in other diseases of the bone, such as sarcoma, secondary carcinoma, osteomalacia, bone cysts, fragilitas ossium, and in cases of simple atrophy, either senile or the result of disease. Not long ago a case was sent to him for examination for the fracture of the radius and ulna caused by the patient merely resting one hand on the mantelpiece while stooping to light a piece of paper in the fire. The bones, so far as he knew, never united again. No definite pathological change could be seen in the radiogram to account for the fracture or its non-union.

DISCUSSION.

The PRESIDENT said that while it was generally quite easy to distinguish by radiological means diseased from normal bone, it was not always so easy to say whether a particular disease was simple or malignant. That was the first question the radiologist had to answer. One would have liked to have heard more of Dr. Sabarton's views with regard to the fundamental differences in the structure of bone which led to the diagnosis on the one hand of a simple disease and on the other of a malignant.

LEAD-GLASS SHIELD FOR COOLIDGE TUBE, AND THE BUCKY-POTTER DIAPHRAGM.

BY

H. E. GAMLEN, M.B., B.S.DURH., D.P.H.

[Abstract.]

DR. GAMLEN, who accompanied his paper by an exhibition of the protective devices in question, expressed the view that *x*-ray protection was carried too far, and that many of the troubles attributed to radiation were due to the high-tension discharges and impure and overheated air of the *x* ray room. The expensive protective apparatus with which the market had been flooded were in many cases unnecessary, hindered the work, and by their very appearance had a disturbing effect on patients. The glass protection shields as generally supplied were badly moulded, the pieces were of unequal thickness, and protected only the sides and bottom of the tube, leaving the top and ends bare.

He himself worked several hours daily with the Coolidge tube, generally at the fullest possible voltage, and he found it necessary to protect the anode and cathode ends by means of lead-glass sleeves and the top of the open shield by a thick-lined lead-cloth cover. To keep the tube cool a rubber tube in the lid was connected to a powerful fan motor. This method, however, proved cumbersome, and he approached the glass manufacturers of Great Britain and Belgium with a view to the manufacture of a heavy leaded protection shield, sufficiently large to enclose entirely the 7-inch Coolidge tube. None of the makers would undertake this, their excuse being its weight and cost. Finally, he sent his specifications to America, where a shield was made such as he now produced before the Section. He claimed that the shield was a great improvement on any on the market; it was not heavy, and could be moved freely in every direction. An air blast kept the tube cool, the current of air working from the cool cathode end over the *x*-ray bulb and out at the hot cathode end, where it had free exit. This arrangement had been worked by him for hundreds of hours, and no tube had ever sparked through it. The lead equivalent of the glass was one-sixteenth of an inch (1½ mm) of lead, and was in excess of what was generally supplied in this country and in America. He had tested this with his iontoquantimeter and found it correct.

When this shield was installed the operator might walk freely about the room during the time the tube was in action. He had placed Kienböck strips at a distance of six feet from the tube, and the radiation after three hours only acted upon them to the extent of No. 2 on the Kienböck scale; he calculated the erythema dose of the rays from a Coolidge tube working at 9 inch gap and passing through a filter thickness of 1½ mm. at from 24 to 30 Kienböck, so that it would take at least forty-five hours at this distance to cause a dermatitis.

So far, in deep therapy, it had been impossible to protect fully by means of a glass shield; the best protection was afforded by standing behind a lead shield 1/4 inch thick. He had intended to have a similar lead-glass shield made for the protection of a 16-inch Coolidge tube as used in deep therapy, but abandoned the idea on finding that his 16-inch Coolidge tube would not stand the necessary high voltage from the coil outfit.

The Bucky-Potter Diaphragm.

The speaker then went on to describe the Bucky-Potter diaphragm, the function of which, he said, was to absorb the scattered rays which were generated within the tissues of the body, and which differed only slightly from the primary radiation. In the past the only effective way to limit their action was by the use of compressors and diaphragms. The Bucky-Potter diaphragm was on a different principle; it did not restrict the intensity of the ray volume, but it prevented the secondary rays already formed from reaching the film or plate, thereby resulting in better contrast and definition.

The diaphragm or grid consisted of a mechanism moving during the whole exposure between the body of the patient and the photographic plate. The grid itself was made up of strips of lead alternating with strips of wood compressed together. The grid was so shaped that every part radiographed came under its action, the metal being spaced to allow the greater part of the primary rays to pass, while obstructing the secondary radiation. The normal distance between plate and tube was twenty-four inches. The moving mechanism was by means of strong springs, and the speed of movement was governed by the size of the aperture of an oil pump, which was set in action by the pulling of a cord.

The time of exposure was from two to three times the normal. Double intensifying screens and double-coated films were necessary for its rapid working.

DISCUSSION.

Dr. ROBERT KNOX (London) said that it was reckoned that 3 mm. of lead was required to give anything like adequate protection and with the penetrating rays which seemed likely to be used in the future it was probable that greater protection even than this would have to be put in. In the future radiologists would have to work to maximum protection by shutting in the radiation as much as possible and getting rid of the more elaborate devices which Dr. Gamlen had referred to. In France he believed that oil was largely used as a medium of protection. It was important to remember that damage might be produced by radiations which did not cause the slightest trace of dermatitis. The dermatitis was the manifestation of an underlying effect, the first onset of which was to be avoided if possible. One should not wait for the dermatitis before arranging one's precautions. A good many of the cases in which there had been blood changes following *x*-ray exposure had developed without any dermatitis whatever.

Dr. WOODBURN MORISON (Manchester) said that of course there could not be absolute protection. The diaphragm had to be opened if the tube was to be used at all. Even with an absolutely protected tube box, save for the rays coming from the diaphragm, the moment the diaphragm was opened there would be *x* rays in every part of the room. He thought that the abdomen was the part of the body which the *x*-ray worker should take most pains in protecting. A great deal of the damage done by the radiation was done by that radiation which came out via the diaphragm and struck the abdomen of the operator. The protective arrangements in the *x* ray department of the Manchester Royal Infirmary were at one time deplorable, and a colleague of his found himself suffering from chronic diarrhoea. An arrangement was made whereby quite good protection was secured, but his colleague, on returning to work after an interval, had a recurrence of the trouble whenever he started screening. But as soon as he began to wear a loaded apron both back and front the trouble disappeared.

Dr. GAMLEN pointed out that the shield he had shown to the Section was intended only for use during *x*-ray treatment.

THE X-RAY TREATMENT OF TINEA TONSURANS.

BY

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IN no department of *x* ray therapy have *x* rays won a more decided triumph than in the treatment of tinea tonsurans. After an experience of over twelve years I can speak with some confidence of the results, and, although many workers have handled far more cases, yet I have treated many hundreds and have been in a position to keep in touch with a considerable number of my cases for years.

I propose to give the results of my individual experience in the hope that they may be of more interest than a mere review of the experiences of others. I began in the days when the naked tube was used, and passed on to specula and pastilles, and to the Adamson method, which is still the method I employ, with a slight modification, to which I will refer in a moment. In a paper like this it is not necessary to say more of the method than that by means of it the whole scalp is irradiated from five centres. Instead of the tripod arrangement I have used for several years past a single central leg or pointer made of wood. This allows me to regulate better the angle of my tube and get it more quickly into position, but it has the disadvantage of leaving a small tuft of hair unepilated unless one gives an additional dose through a fine glass speculum. There is now on the market a single pointer made of a material which does not possess this disadvantage. I use a hard tube, with equivalent spark-gap of 7 to 8 inches. A soft tube is of no use, and failures in the direction of underexposure are most often due to this cause.

I get satisfactory epilation with an exposure of eight minutes. The hair begins to loosen in fourteen days, and in from eight to fourteen days further the scalp is completely bald, smooth, and shining. This is what occurs in a typically successful case, but occasionally, in a small number of cases, and within a week to a fortnight of the exposure, an eruption of pustules, small subcutaneous abscesses, and subcutaneous indurations has occurred. The hairs, however, loosened in the usual time, and regrew well after the inflammation and suppuration were removed by treatment. There is another condition of a similar nature which I illustrate by quoting from a case of my own:

A girl, aged 9 years, had the whole scalp affected. The usual ointments were vigorously applied for a month. She was treated on December 9th and 10th, 1919, and on December 24th hairs were noted loosening all over the scalp, and there was some erythema. On December 31st the affected areas were covered with scales or crusts which could be pulled off with the hairs, leaving a moist red surface underneath. This demanded some treatment, and ultimately did quite well.

Again, I have had cases in which dry scales formed in the affected areas, or some of them, and were very persistent, but ultimately these cases were satisfactory. These complications are, I think, to be attributed to the irritant applications to which the scalp has been exposed before *x* ray treatment has been undertaken. The *x* rays are, no doubt, contributory owing to their devitalizing effect on the scalp tissues, allowing the invasion of pyogenic or other micro-organisms. The scales or scurfiness which I have noted may be due to the effect of the rays on the sebaceous glands of the scalp, paralysing their function, and thus bringing about the dry scaly condition, which, as I have said, may be very persistent.

Evidently two of the conditions to which I have referred can be obviated if the *x* ray operator could get into action *ab initio*. In some cases I have had, in which there was no previous treatment, the results were all that could be desired. Some medical men in Glasgow have been so satisfied with results which they have seen that they have their ringworm cases treated at once by *x* rays, but I fear this is not to be expected generally, and therefore the *x*-ray operator should see that time is given for the effect of irritant applications to subside and cleanse and soothe the scalp for a week or so before applying the rays.

I have had cases in which small patches of permanent alopecia resulted from exposure to *x* rays in the treatment of tinea of the scalp. These occurred some years ago, when I had not gained the experience which comes through practice. One was a patch, the size of a shilling, on the right parietal region; otherwise the hair growth was excellent, but this patch has remained for years, as I have verified personally. Another was a case which I had to irradiate again because the first exposure was insufficient. A permanent bald spot, the size of a five-shilling piece, was left on the frontal region; otherwise regrowth of hair was excellent. This case I have seen many times, years after the treatment.

These instances denote the danger which is to be avoided. As an operator gains experience the possibility of such an occurrence is reduced to vanishing point. Nurses or unqualified people should never be allowed to treat ringworm of the scalp with *x* rays. The worst case of permanent alopecia I have seen occurred in a case treated by a nurse.

Some years ago a distinguished radiologist and electrotherapeutist warned the medical public of the dangers of the action of *x* rays on the delicate nerve cells in the brains of children treated for ringworm. I have been able to keep in touch with many of my cases for years after treatment, and I have treated young children under 2 years; I have never seen any sign of impaired mental function attributable to the *x*-ray treatment, nor have I seen a report of such a case.

DISCUSSION.

Dr. W. MITCHELL (Bradford) said that he had been very much interested in hearing of Dr. Graham's experience, which largely coincided with his own. He had not had a single failure to cure, nor a disaster of any permanent kind, although in his early days he used to go about the streets of Bradford dodging bald-headed people. He elaborated a very simple plan for security. Like Dr. Graham, he believed in working with a very hard tube. He used a tube with a light anode. He believed also in allowing a fair margin for error. Therefore he worked with a low milliamperage and used a thin filter, placing the pastille under the filter, and getting four-fifths of the "B" dose; he also used a Kienböck adapter. He found pustular eruption quite common, and his own view was that there was some stimulating action on the staphylococci. He found no bad after-effects, except in a very small percentage of cases. He was quite certain that the *x*-ray treatment of tinea was the most satisfactory and certain method available.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

BILATERAL COLOBOMATA OF THE MACULA.

A MAN, aged 30, complained that his vision had been defective for years; he stated that he was unable to read, and that if he fixed his eyes in the direction of an object he could not see it, but that he could, indistinctly, see things to one side of him, also that he could get about at night fairly well, and even during the day did not stumble over objects in spite of his defective vision. His family history was negative.

His vision with both right and left eyes was for hand movements only. Retinoscopy showed both eyes to be myopic, but no improvement was obtained with glasses. His visual fields showed large central scotomata in both eyes; the peripheral fields could not be reliably taken owing to the loss of central fixation, but he appeared to see large white objects in the periphery of both fields. The cornea, iris, lens, and vitreous were normal in both eyes. The fundus of both eyes showed a pearly-white depressed area, at the centre of which would have been the macula. The defect was nearly circular, and measured about two discs in diameter. The edges were steep and sharply defined; the base was about 3 D. lower than the surrounding fundus; traversing the base were some large straight vessels, probably the long ciliary vessels passing forwards. Retinal vessels could be traced up to the margin of the defect and were then lost; the conclusion reached was that the retina was absent over the defect in the choroid. There was no pigment either round the margin of the defect or on the base. Except for the fact that both optic discs showed a temporal crescent, no other abnormality could be seen in the fundus.

The case is of interest on account of its rarity and its resemblance at first sight to central choroidal atrophy. Colobomata of the choroid frequently show pigmentation of their margins and sometimes of their bases, but the complete absence of pigment in this case is very much against a simple atrophy of the choroid, whilst the definitely punched-out appearance of the defects and their marked symmetry point to colobomata of the choroid.

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VESICULAR MOLE AND PLACENTA PRAEVIA.

On June 10th I was called to attend Mrs. H., a primipara aged 22, for flooding. I found the uterus about one inch above the umbilicus and the os closed. She told me she had been losing on and off for the past two months and had had a severe haemorrhage the night before. Amenorrhoea had been present since the end of December. At the time of examination there was no loss. I told her to stay in bed, and subsequently made a provisional diagnosis of placenta praevia.

Nothing further occurred till June 22nd, when I found the os opened sufficiently to admit the tip of the finger. On June 24th the os was further opened, and I found the placenta presenting and detached all round as far as my finger could reach. My partner, Dr. Pittard, saw her with me, and we decided to terminate the pregnancy.

The same evening, however, we were urgently sent for as there was another flooding. I found the placenta presenting and the os about the size of a five-shilling piece, and easily dilatable. I perforated anteriorly to evacuate the liquor amnii, but none came. Then she had two smart haemorrhages, after pains, the second amounting to nearly a pint.

I decided to administer an anaesthetic and bring down a leg, but was surprised to find that there was no child there. On withdrawing my hand a mass of vesicles followed, and the uterus was then easily emptied by pressure from outside. Finally I explored the uterus and removed a few small portions remaining. I gave her 1 c.cm. pituitrin extract and there was no further bleeding. The vesicular mole removed filled an ordinary bed chamber. On the second day the temperature was raised, but it fell on the third day, and she made an excellent recovery.

Vomiting was a marked feature, beginning six weeks before and increasing in severity as time went on up to delivery. The labia minora were oedematous, but I did not test the urine before delivery.

The interest of the case lies in the fact that vesicular degeneration had taken place with a placenta praevia, which prevented vesicles from being evacuated.

W. H. LOWMAN, M.B., F.R.C.S.

Reviews.

DISEASES OF THE CEREBELLUM AND OF THE STEM OF THE BRAIN.

THE recent interesting lecture upon the neo-cerebellum by Professor Winkler and the important Croonian lectures by Dr. Gordon Holmes on the clinical symptoms of cerebellar disease and their interpretation being still fresh in the minds of neurologists and many other readers, the very lucid and comprehensive work upon diseases of the cerebellum and the stem of the brain[1] by Professor CLAUDE and Dr. LÉVY-VALENSI, which represents the latest views of the French school of neurologists, is especially welcome.

After devoting a few chapters to general considerations, the authors give a clear and comprehensive account of the macroscopic and microscopic anatomy of the cerebellum and adjacent structures, illustrated by admirable schematic diagrams and pictures. We could have wished that an account of the comparative anatomy of the cerebellum had been included and reference made to the important work of Edinger, Bolk, and others on the cerebellum of animals in relation to their mode of life.

An admirable account is next given of the physiology of the cerebellum; it is based upon experimental researches, but full references to the literature are provided. On page 50 the authors ask whether it is necessary to admit that the cerebellum plays a special part in equilibration, co-ordination, dimension of movement, and muscular tonus, as pathological conditions causing clinical manifestations appear to suggest. Although clinical manifestations speak in favour of this view, the actual tendencies are towards unification of the cerebellar functions to a simple regulative action upon muscular tonus. The disturbances of equilibrium, for example, can be explained, according to the nature of the case, by the coincidence of labyrinthine lesions (tumour), by the rupture of cerebello-labyrinthine connexions, or more simply by disturbance of the tonic cerebellar functions upon the trunk and the lower limbs (vermis). This simplification of the functions of the cerebellum is especially defended in France by André Thomas.

The authors express the opinion that cerebral connexions exist for clonic discontinuous action of muscles, and cerebellar connexions for tonic and continuous actions. This was indeed the teaching of Hughlings Jackson.

In the chapter on cerebellar semeiology the authors point out that one of the difficulties, and the greatest, in its study arises from the anatomical and physiological associations of the cerebellum with the labyrinth. The recent researches of physiologists and clinicians have established certain laws which enable a differential and topographical diagnosis to be made, and in connexion therewith the beautiful researches of Babinski, of André Thomas in France, and of Gordon Holmes and Grainger Stewart in this country, and of Barany and Rothman are fully described, together with the numerous practical tests introduced by them. The value of this chapter is great, owing to its lucid descriptions of the tests and the admirable photographs and figures that illustrate them.

Chapter IV deals with anomalies, such as absence and malformation, partial agenesis, and heterotopia. In Chapter V various forms of cerebellar atrophies are discussed. The authors refer to an interesting case described by M. Claude and Mlle Loyez of crossed atrophy of the cerebellum occasioned by traumatic lesion of the internal capsule, showing probably that the atrophy resulted from the suppression of the motor stimulus. Mention is also made of an interesting case of olivo-ponto-cerebellar atrophy. This rare affection was described by Déjerine and André Thomas; subsequently a case was described by one of the authors, Professor Claude, of absolutely pure cerebellar syndrome. In connexion with this we may refer to the lecture by Professor Winkler (BRITISH MEDICAL JOURNAL, May 13th, 1922, p. 769) dealing with a case of a similar nature, which, he considered, supported the theory of a neo-cerebellum. The counterpart of the olivo-ponto-cerebellar atrophy, in which the middle cerebellar system is so markedly affected, has been described by Lejonne and L'Hermitte. This was a case of olivo-rubro-cerebellar atrophy in which the superior cerebellar system was affected, the middle being intact.

[1] *Maladies du Cervelet et de l'Isthme de l'Encéphale.* Par Professeur Henri Claude et Dr. Lévy-Valensi: *Nouveau Traité de Médecine et de Thérapeutique*, XXXII. Paris: J. B. Baillière et Fils. 1922. (Roy. 8vo, pp. 439; 101 figures. Paper covers, frs. 35; boards, frs. 42.50.)

The chapter on tumours of the cerebellum is very interesting; in it reference is made to the remarkable work of Gordon Holmes and Grainger Stewart. The authors agree with these English neurologists that the modifications of the fundus are slow in development, and may even be absent in cases of extracerebellar tumours. They are of the opinion that the ataxy due to frontal tumours described by Bruns is due to *action à distance* and the effects of hypertension on the eighth nerve.

Attention is drawn to the considerable literature of cerebellar lesions due to cranial injury, lesions which were rarely met with before the great war. Here again the work of Gordon Holmes is mentioned together with that of André Thomas, Marie, and Chatelin. It may be remarked that Holmes, from observations upon nearly a hundred cases of local cerebellar lesions, concludes that when the vermis is affected a disorder of bilateral acting muscles occurs, and homolateral disorders of the limbs when the lateral lobes are affected. Otherwise, his investigations do not lend support to a belief in cerebellar localization.

The effects on the cerebellum of infectious diseases and endogenous and exogenous intoxication are next considered; it is interesting to note that when the authors are discussing exogenous intoxications they attribute the reeling gait of the drunken man to the action of the alcohol on the cerebellum.

There is a useful chapter on the cerebellum in mental disease, where reference is made to the anatomical investigations of Klippel and L'Hermitte, in the explanation of katatonia. Friedreich's disease and the differential diagnosis between it and Charcot-Marie's disease are fully considered. The authors next discuss the nature and diagnosis of diseases of the cerebral peduncles, pons, and the bulb.

Throughout the work full references are given at the foot of the page to the literature, and over a hundred photographs and illustrations serve to help the reader, although the descriptions of symptoms and the discussions of diagnosis are in themselves admirable for their completeness and lucidity of exposition.

This standard work is strongly recommended to all neurologists and others interested in the diseases of the nervous system.

F. W. MOTT.

DISEASES OF CHILDREN.

DR. LAWSON DICK'S book on *Rickets*[2] appears at a time when the etiology of the disease is under active experimental investigation and is the subject of vigorous discussion. He definitely takes a side in the controversy, maintaining that it is caused by unwholesome environment in early infancy, lack of fresh air, sunshine, and exercise, and denying that the factor of inadequate or defective diet plays any part in its origin. In building up his argument he is less concerned with what may be called clinical evidence—that is to say, individual cases of rickets in children and young animals—than with statistical data of the disease, its geographical distribution, and its history and duration. The rarity of the disease in Asia, China, and Africa and its prevalence in Europe and North America are emphasized; evidence is advanced to establish that it is uncommon in places where such conditions as prolonged lactation, the early use of farinaceous food, and a high incidence of acute alimentary disorders prevail and might be expected to favour its occurrence. There is an interesting and scholarly account of the history of the disease. The first and the classical description was given by Glisson in 1650, and the date and origin of rickets in England are assigned by him to the south-western counties at a period twenty or thirty years earlier. Dr. Dick argues that it probably first appeared in England under the late Tudor sovereigns, that it existed in the Netherlands and Northern France before this, and that the disease has not existed in Europe for more than four hundred years; these opinions are based partly on the absence of any descriptions in earlier medical treatises, mediaeval or classical, but chiefly on the absence of signs of rickets in the bones and teeth of skeletons before this period. The appearance and prevalence of the disease in Europe coincided with the transition from the agricultural and pastoral to the industrial era. At this period, without any important change in the diet of infants, there was a change from the environment of open air and freedom to that of confinement in unwholesome conditions. Dr. Dick relates that under the Stuarts even the infants of the rich were brought up in small, unventilated bed closets, and advances contemporary evidence of the prevalence of rickets at this period. Rickets to-day is less prevalent than it has been, but it still constitutes in the opinion of the author the most important single adverse factor in the national physique and health.

The book is thus a vigorous advocacy of the view that rickets is caused by bad hygiene, and not by bad food; and the author must be praised for his collection and able presentation of much evidence of a general and very interesting kind. There is perhaps a tendency to press the argument too strongly. "The great majority of the mothers breast-feed their infants, and the great majority of these children develop rickets" (p. 9). "Yet rickets is rampant in the colliery districts, in spite of the fact that malt and cod-liver oil are freely administered to these ailing children" (p. 75). Assertions such as these cannot be accepted without full evidence.

It should be added that adequate clinical descriptions of the disease are included, and that there is a particularly valuable account of the hypoplastic changes in the permanent teeth produced by rickets. The book as a whole gives a wide and interesting survey of the subject, and is written by one who has had clinical experience of the disease and possesses a thorough acquaintance with the literature.

The Management of the Sick Infant[3] is the somewhat vague title of a volume of over six hundred pages by Dr. Langley Porter and Dr. W. E. Carter. In their preface the authors state that they have written the book to supply the lack of "a textbook in the English language which deals exclusively with the peculiarities of disease as it occurs in infants," and especially to deal with treatment. The period of infancy is taken to cover the first two years, but the authors have included in their survey diseases which, though uncommon at this early period, do sometimes occur.

The plan of the book is curious; it consists of three distinct parts. The first deals with common and important symptoms of disease in infants, such as vomiting, diarrhoea, constipation, haemorrhage, cough, and convulsions; under each heading a catalogue of the various diseases that may cause the symptom is given, and the appropriate treatment for each is then indicated. There are certain advantages in this way of approach when symptoms, such as severe diarrhoea or a series of fits, demand in themselves special treatment; but it is apt to bring together a number of disorders which have little or no pathological relation to one another. This section also includes a chapter on nutrition, dealing with the common errors of feeding in infants and with their treatment. The second section follows the more usual classification of diseases according to the systems affected, with a regular description of pathology, symptoms, and treatment. Under the nervous system a clear and helpful account of the various types of mentally defective children will be found. There is also a chapter on infectious diseases. The third part deals with special methods of treatment and of diagnosis used in infants. It is the most concise and useful section of the book. The collection of blood intravenously from different sites; the injection of fluids and drugs by the hypodermic, intramuscular, and intravenous routes; puncture of the spinal canal, the thorax, and the abdomen; gastric lavage; the use of baths and packs; the different skin tests—these and other procedures requiring special adaptation for infants are carefully described; the directions are given in tabulated form and in many instances our understanding is greatly assisted by clear photographs. Food recipes and a formulary for drugs are provided. The book as a whole contains a great deal of accurate information, but its arrangement and presentation are faulty. The important subject of rickets is partly dealt with in the chapter on nutrition, and there are scattered references to it throughout the book; but in the index the only reference is to three prescriptions in the formulary. There is also the lack of a connected account of the normal physiology and growth of the healthy infant. The book is not well planned; and the impression of confusion and incompleteness which some of its chapters leave with the reader arises largely from this faulty planning. For this reason it cannot be recommended as a textbook for the student, but the practitioner will find in it many useful hints for treatment.

[2] *Rickets: A Study of Economic Conditions and their Effects on the Health of the Nation.* By J. Lawson Dick, M.D.Edin., F.R.C.S.Eng. London: William Heinemann, Ltd. 1922. (Demy 8vo, pp. xiii + 383; 7 plates and other illustrations. 25s. net.)

[3] *Management of the Sick Infant.* By Langley Porter, B.S., M.D., M.R.C.S.Eng., L.R.C.P.Lond., and William E. Carter, M.D. London: Henry Kimpton. 1922. Roy. 8vo, pp. 651; 54 illustrations. 42s. net.)

After an interval of four years the eighth edition has appeared of *The Diseases of Infancy and Childhood*,[4] prepared by DR. EMMETT HOLT, with the co-operation of DR. HOWLAND, of Johns Hopkins University, Baltimore. This steady appearance of new editions is the best testimony to the value of the book, which needs little further notice and commendation. It is one of the very best books on the subject in the English language, and the new issue, though showing evidence of careful revision and containing some additions, closely resembles its predecessor in general plan and text. A short account is given of encephalitis lethargica; of vitamins, in which the connexion of rickets with vitamin fat-soluble A is provisionally regarded as not proven; and of food idiosyncrasies in young infants, where the authors also take up a cautious attitude with regard to the association of infantile eczema with sensitization to food. The earlier sections of the book, dealing with infant physiology and growth, the principles of hygiene and nursery management, and the essential facts as to human and other mammalian milks, are admirable—complete in detail, and yet practical and easily followed. Indeed, on this part of his subject Dr. Holt speaks with altogether special authority, derived from his long combined experience of the ward and the laboratory. The rest of the book, in its account of the pathology, the symptoms, and the treatment of disease, is equally good, and is written first-hand from experience and from life. The clinical pictures of children suffering from disease are unusually clear and graphic. The illustrations are numerous and good; though they have been reduced in number, thirty new ones have been introduced. The volume is a little smaller than its predecessors; but with its eleven hundred pages it remains a large book, though one which gives a fairly complete survey of a subject which is wide, complicated, and important. Care has been given to the index, which is detailed and accurate.

THE TUBERCULOSIS CLINIC.

The Tuberculosis Clinic,[5] edited by Dr. NOEL D. BARDSWELL, is a manual composed of short monographs by several writers, dealing chiefly with the diagnosis and classification of the disease and with the organization of the dispensary in town and country. It is presumably written with the object of equipping the inexperienced tuberculosis officer with the information necessary for the adequate performance of his work. As is so frequent in books owning to a diversity of authorship, there is a lack of a unifying purpose in the ideas contributed by the various writers, which points to the absence of that close co-operation requisite for the execution of all tasks in which team work is engaged. Particularly is this noticeable in such questions as those dealing with pathological diagnosis and with treatment. Is the examination of sputum, pus, and urine to be undertaken by a pathologist or by the clinician? It is clear that the different authors tend to disagree on this point, and even the writer who is responsible for the chapter on pathological diagnosis does not seem to be very certain himself about the answer. If it be written for the pathologist we would condemn it as altogether too elementary; if, on the other hand, it be intended for the guidance of the tuberculosis officer himself there is a notable deficiency in the directions given as to the recommendation of methods, the interpretation of results, and the whole question of cytology. Unfortunately a compromise is proffered in the shape of an enumeration of the various technical procedures which may be employed by the immunologist without any definite indication as to the meaning of the results obtained. Again, with regard to treatment, opinions are obviously at variance. The writer of one section lays stress on the importance of continuing treatment at the dispensary itself, while the writer of another section would regard his duty as consisting in the supervision of the patient's treatment, leaving the actual details to be worked out by the practitioner in charge.

The chapter on clinical diagnosis is likely to prove very helpful—that part of it, at least, which deals with pulmonary tuberculosis. It is a matter of regret that the author has considered it necessary to add a description of the other forms of tuberculosis; having quite insufficient space to deal with the multiple manifestations of this disease in glands, bones, joints, abdomen, larynx, eyes, and genito-urinary system, he has contrived to cram them all into the compass of five and a half pages—an allowance barely enough to give more than a list of the various possible lesions.

The various difficulties attending the organization of the dispensary in rural districts are well brought out, and several valuable suggestions put forward as to the ways of combating them. The most attractive part of the book is the chapter on the urban clinic, contributed by Dr. R. C. Wingfield. Singularly lucid and delightfully concise, it is obviously written by a man who is speaking from considerable experience and who has no doubt in his own mind as to the general purpose of the tuberculosis clinic and the best means of carrying it into execution. Great emphasis is laid on the distinction between the medical and the social aspects of the clinic and on the importance of close co-operation between the two sides. On this point he is very explicit. For instance, he says:

> "No doctor in this world can cure or even improve the health of a consumptive workman with an invalid wife and several small children, nor can any social worker; but the two in conjunction can and have done so in many cases."

Finally two useful chapters on classification and on the keeping of reports are added. Though lacking in unity of vision the book should prove of value in virtue of the recommendations it contains from workers who are speaking from personal experience of the problems of the tuberculosis clinic.

AN ATLAS OF SYPHILIS.

The Atlas of Syphilis,[6] by Professor L. v. ZUMBUSCH of Munich, an English edition of which has recently been published, is altogether a work of considerable artistic merit. It is really a collection of colour photographs taken direct from patients suffering from syphilitic lesions. As the work is intended primarily for students and practitioners the aim of the editor has been to reproduce the more typical and the commoner lesions of syphilis rather than rarities. The bulk of the plates, however, are of skin lesions, as these lend themselves best to such a method of reproduction. Syphilitic affections of mucous membranes—as, for example, ulceration of the palate or of the pharynx—are not within the scope of colour photographs and are missing from the Atlas, although the editor has succeeded in reproducing such conditions as gumma of the tongue and papules on the labial mucous membrane. Examples of the morbid anatomy of syphilis have also been included, and the coloured photograph of syphilitic aortitis is a particularly successful reproduction. There are also some illustrations of *Spirochaeta pallida* seen under dark-ground illumination, and by methods of staining. These plates, however, have been reproduced from water-colour paintings and not from colour photographs.

Although the limitations of coloured plates as a means of teaching must be recognized, it must be admitted that the *Atlas of Syphilis* reproduces the appearance of cutaneous syphilis better than any atlas we have previously seen. The workmanship of the plates is excellent, and the special process which Dr. Traube has employed in the colour photography has given good results.

The letterpress, for the translation of which Dr. J. Snowman is responsible, is limited to a very brief description of the coloured plates. It is intended that the work should be used in conjunction with a textbook, and so used it should be of great value to anyone wishing to familiarize himself with the commoner external syphilitic lesions.

NOTES ON BOOKS.

MR. ARMITAGE'S little book on *Diet and Race*[7] contains three essays setting out evidence of an association between the diet and the anthropological characters of the races of mankind. The first gives some interesting particulars of the diets of many primitive tribes which lead the author to conclude that low stature and chronic undernutrition are causally related. The second and longest essay sustains the thesis that the intensity of pigmentation is largely determined by the racial habit in the matter of consuming salt: races taking much salt are, other things equal, fairer-skinned than races consuming

[4] *The Diseases of Infancy and Childhood, for the use of Students and Practitioners of Medicine.* By Emmett Holt, M.D., LL.D., and John Howland, A.M., M.D. Eighth edition, fully revised. New York and London: D. Appleton and Co. 1922. (Med. 8vo, pp. xix + 1127; 172 figures. 7 plates. 6s. net.)

[5] *The Tuberculosis Clinic.* By Several Writers. Edited by Noel D. Bardswell, M.V.O., M.D., F.R.C.P. London: John Bale, Sons, and Danielsson, Ltd. 1922. (Demy 8vo, pp. v + 111. 6s. net.)

[6] *Atlas of Syphilis.* By Professor L. v. Zumbusch. London: J. Bale, Sons, and Danielsson, Ltd. 1922. (8½×12; 31 plates. 70s. net.)

[7] *Diet and Race. Anthropological Essays.* By F. P. Armitage, M.A. London and New York: Longmans, Green, and Co. 1922. (Demy 8vo, pp. 141; 7 figures. 7s. 6d. net.)

little. The third paper deals with the mechanics of the jaw and the possible effect of diet upon the conformation of the skull. The medical reader will be of opinion that Mr. Armitage's knowledge of physiology is insufficient for the task in hand; thus, although it is quite true that we do not know very much about the chemistry of pigmentation, we know a good deal more than is to be found in Sheridan Lea's textbook. But Mr. Armitage's modest hope that "the perusal of these pages will stimulate someone to exploit completely the field I have ventured to look into" should disarm the technical critic. The literature of pigmentation is of course very technical, but Mr. Armitage might have consulted the monograph upon *Albinism* by Professor Karl Pearson, Dr. Usher, and the late Mr. Edward Nettleship, which contains much information relevant to his inquiry.

The man in the street, although his way is lighted by the flame arc, and hastened by electrical propulsion, understands less about electricity than about any other of the principal applied sciences. This is due to the fact that most of the developments in electricity during the last eighty years have been mathematical in character. The purpose of Mr. S. G. STARLING in his *Electricity*[1] is to make the subject intelligible to the general reader without resort to mathematics, and in this he has succeeded. He contrives, in a work of modest dimensions, and in a style which never loses the interest of the theme in a mass of technicalities, to trace the development of the science from the first experiments of wondering men who rubbed a piece of amber with wool, to describe the electro-magnet and some of its applications, and to lead up from Faraday's discovery of the possibility of producing current by mechanical means to the uses of that current in the production of motive power and illumination. Then he goes on to the telegraph, the telephone, and "wireless," and after this to electrolytic processes and x rays and radio-activity. With diligent study and continual reference to the glossary of electrical terms which is appended, the reader should acquire sufficient understanding of the theory of the apparatus of which he daily makes use to be able to act helpfully in an emergency due to some electrical accident or failure. Medical electricity does not come within the author's province.

A new edition of *The Financial Times Income Tax Guide*[2] has lately been issued. This summary of the Income Tax Regulations and guide for taxpayers seeking a return of overpaid tax or desiring to make sure that their assessments are not incorrectly charged is clearly printed and well arranged. Undoubtedly good value is given for the price demanded. We rather doubt the advisability of endeavouring to compress into such small compass information on the excess profits duty and the corporation profits tax; the space so occupied might have been utilized for setting out more detailed instructions as to the expenses properly chargeable in computing profits and similar matters. The provisions in the Finance Act of 1922 have not been overlooked, but the author has fallen into the error of not rewriting all portions of the booklet affected; for instance, on page 19 we are told that Schedule D covers the salaries of persons employed by private traders, which is incorrect and inconsistent with the statement on page 20 that employees' assessments are transferred to Schedule E by the 1922 Finance Act.

[1] *Electricity: Science in the Service of Man.* By S. G. Starling, A.R.C.Sc., B.Sc., F.Inst.P. London: Longmans, Green, and Co. 1922. (Demy 8vo, pp. 253; 127 figures. 10s. 6d. net.)
[2] London: *The Financial Times*. 1922. (1s. net; post free 1s. 1½d.)

Nova et Vetera.

"BORN WITH A CAUL."

MAN is a credulous animal. Witchcraft is nearly, if not quite, obsolete in England, but many people will not light three cigarettes with one match, and the Harrow Council has soothed the apprehensions of its citizens by substituting "12A" for "13" on the Harrovian street doors. One of the most remarkable and ancient superstitions is that connected with the child's caul. It seems strange that anyone should think that a human being's future fortune could be affected by the manner in which the amnion and the foetus parted company, that the child who passed in the usual way through a rent in the membrane should be less lucky than the one who carried away part of it over his head. Yet it would be rash to conclude that this belief, which is at least 1,600 years old, is even now quite dead, for as late as 1903 a caul was offered for sale in the advertisement columns of the *Globe*, and in 1895 two cauls were advertised in the *Bazaar*, one for £5 and the other for £1. These are bargain prices as compared with those asked by the advertisers in the *Times* of May 6th, 1814, who offered five cauls for sale: two of twin children for 35 guineas, and others for slightly lower prices—one, indeed, "very complete," being priced as low as £10.

The superstition that it is lucky to be born with or to possess a caul has been general throughout Europe. The French have a saying of a fortunate person, "Il est né coiffé." In Germany, according to Grimm, children born with a "Helm" see ghosts, spectres, and witches—a privilege of doubtful value. Similar beliefs have prevailed in Holland and Iceland. Cauls appear to have been valued by Roman lawyers in the fourth century. The possession of one of these was believed to make its owner fortunate and successful in his pleadings. At that time nothing seems to have been said of its value as a prophylactic against drowning, for which it has been most valued in this country. The belief that cauls were lucky was very prevalent in the early days of the Church, and St. Chrysostom denounced it. In *The Golden Bough* Sir James Frazer states that among some Asiatic islanders

"a child born with a caul is expected to enjoy in later years the gift of second sight—that is, that he will be able to see things which are hidden from common eyes such as devils and evil spirits."

In the island of Timor a fertilizing virtue is ascribed to a caul:

"It is dried and carefully kept in a box. When rice-stalks turn black and the ears refuse to set, a man will take the box containing the caul and run several times round the rice-field in order that the wind may waft the genial influence of the caul over the rice."

It is worthy of note that among many primitive peoples very great importance is attached to the disposal of the placenta and umbilical cord. Sir James Frazer says that in some cases the placenta is carefully preserved under the house, and is believed to be a twin being of the child and the procreator of its children. It is the seat of the external soul.

The word "caul" means simply "a close-fitting cap," and as late as the beginning of the last century it was still used for a skull cap.[1] That the caul sometimes more resembles a hood than a cap is shown by the story quoted by Burton in his *Anatomy of Melancholy*, from one Guianerius,

"of a silly jealous fellow, that seeing his child newborn included in a caul thought sure that a Franciscan that used to come to his house was the father of it, it was so like the friar's cowl, and thereupon threatened the friar to kill him."

In the north of England a caul is known as a "silly how" or "hood." "Silly" (German *selig*) means primarily "blessed" or "fortunate," and only secondarily "feeble-minded." In those parts not only is the original owner thought to be lucky, but this luck can be transferred to anyone who owns or preferably carries the caul. At the same time there is or was till recently a prevalent belief that there is a sympathetic relation between the original caul-bearer and the membrane, when they are separated. Several writers in *Notes and Queries* have testified to this. By some it is believed that if the caul becomes moist its absent owner is in trouble; by others, on the contrary, if it shrivels up its owner is wasting away.

A writer in *Notes and Queries* of October 12th, 1889, quotes from the *Leeds Mercury* an instructive account of what may well be the birth of a legend about a caul. At the time of the birth of a certain child the precious membrane was laid aside by the nurse for safe-keeping upon a Bible, where it remained unnoticed until it was dry. It was then found to have the words "British and Foreign Bible Society" impressed upon it. There was tremendous excitement among the gossips, and despite the obvious but prosaic explanation given by the doctor in attendance, the neighbours persisted in regarding this as a miraculous occurrence and declared that the child was born to be a missionary.

In *David Copperfield* Dickens wrote:

"I was born with a caul, which was advertised for sale in a newspaper at the low price of 15 guineas. . . . There was only one offer for it—£2 in cash and the balance in sherry."

Apparently Dickens meant to intimate that even in seafaring Yarmouth cauls were already discredited. A dramatized version of *David Copperfield* was produced at the Strand Theatre in 1850 under the not very attractive title, *Born with a Caul.*

The will of Sir John Offley, knight, of Madely Manor, Staffordshire, which was proved in 1563, bequeathed the caul with which he was born and which is described as contained in "one jewell done all in gold enamelled" as an heirloom.

[1] See the description and portrait of General Mack, reprinted from the Memoirs of Major-General Le Marchant in the *Journal of the Royal United Service Institution*, vol. lxvi, No. 462, May, 1521.

British Medical Journal.

SATURDAY, SEPTEMBER 23RD, 1922.

A CANADIAN MEDICAL CURRICULUM.

As was fully set forth in the Educational Number of the JOURNAL (published on September 2nd), the General Medical Council's resolutions and revised recommendations regarding the curriculum of study for entry into the medical profession take effect from the beginning of 1923. The same subject, from the point of view of the granting of its own degrees, has been occupying the consideration of the University of Toronto, the broad result being that, beginning with the session 1919–20, a six years' course is now required for every graduate. The current *Calendar* of the university affords material for comparison of the principles followed in this country with those which have actuated the Toronto authorities.

The difference in minimum duration of study—five years here and six in Toronto—is nominal and negligible, the subjects of chemistry, physics, and biology being part of the medical course at Toronto, whereas here the first and second of these must in future be passed before matriculation, and the third may be passed immediately after it. A point of importance, however, is that the minimum age of entry is on the completion of the seventeenth year both here and in Toronto, so that the earliest possible date of registration is a year later at Toronto. The graduate of that university must have completed the twenty-third year of his age, instead of the twenty-second, as with us; he must, in short, be a little more mature in outlook and experience of life before he can enter upon the practice of medicine through the Toronto portal. That is a significant first sign of the general conception there of the qualifications which should be possessed by a member of the profession. When we come to note the contents of the curriculum, the conception is developed. At the end of his first year the student must pass an examination in "science and civilization and English expression." The Toronto view, in general, is well expressed in the *Calendar*, where the student "is advised to devote a certain proportion of his optional hours to the study of such subjects of general knowledge as will assist in providing him with that breadth of outlook and catholicity of interests which will enable him to enter with intelligence into the life and interests of the communities with which he may find himself associated, and to speak and write in a clear, simple and convincing manner." Again, as a preparation for general practice "the student should remember that his profession will be at least as much a branch of social service as of technical scientific practice, and that upon a number of occasions in his career he will likely be called upon for advice and guidance in matters in which not only his medical skill and knowledge will be involved, but also social, ethical and economic factors, a right understanding of which will often enable his services to be much more effective"; and he is therefore to acquire some knowledge "of the leading principles of ethics and economics, including sociology." Reference to "optional hours" in the first of these quotations calls attention to a prominent feature of the Toronto curriculum. In every one of the six years there are optional subjects to be selected under the guidance of a professor appointed to act as students' adviser. The choice will depend largely on the particular field of work to which the student is likely to devote himself, looking to his qualities and inclinations; but no attempt is made by means of optional classes in the later years of the curriculum to train students as specialists.

The Toronto University plan is very interesting and very attractive. It aims at making its medical graduates not merely doctors but men of culture. When Europe was slowly and blunderingly emerging from mediaeval darkness it was very long before the practice of medicine received any appreciable benefit from the newer knowledge, yet even then some learned men endeavoured as physicians (in distinction from apothecaries) to apply scientific principles to the treatment of disease. Their learning was much more general than medical, yet they obtained some guidance by relying on observed facts of nature. In modern times, and never so much as in the present day, scientific medical research and the applications of accumulating knowledge to the prevention and treatment of disease have become so absorbing and so extensive that five or six years can be far more than fully spent without going beyond the narrowest limits of purely medical study. At the same time, it is most desirable that the modern doctor should be more than a mere doctor—that he should have a wide outlook, and know something of the humanities, in the old sense of the term. Of course, he learns much after he does enter on practice—all his life he ought to be learning. That aspect of the matter cannot be too strongly pressed. If he wishes to do justice to his work and to himself he must always be a student. The conception of a medical career must never again be that the obtaining of a qualification enables a man to settle down to earn a living on the basis of the knowledge he has acquired once and for all at college. But the present question is, What foundation of general culture should be laid by means of definite instruction? Ought it to be confined to the pre-curriculum stage, or be extended into the period of medical study? In this country the former is the method followed; in Toronto University evidently it is the latter. The system there is to some degree facilitated by the method of options, and for the rest we take the view to be that some non-medical subjects are more important to the doctor than some items in the strictly medical courses. Whether there is any difference in the matriculation standards between Toronto University and the universities in this country we do not know, but any such difference would be a relevant consideration in comparing the two schemes. It is, however, a question of the balance of advantage. The more a doctor knows about all medical subjects the better it is in whatever line he may specialize. Yet the more also he knows of science and culture outside of medicine the better it is. But a quart cannot be put into a pint pot, and life is too short and too uncertain to justify the devoting of more than a limited time to professional training. It would be interesting to know whether the Toronto curriculum was devised by the medical faculty alone or by the whole senate of the university. If the latter, then naturally the importance of the humanities would be prominent throughout the entire discussion of the scheme. On the other hand, it is just conceivable that a body like our General Medical Council, wholly medical in membership, and acquainted not only with medicine, surgery, and midwifery, but with the importance of all the special subjects taught at the schools, might tend to deal with the problem rather in a strictly professional than in a university frame of mind.

Going more into the details of the Toronto curriculum, it may be noted that the *Calendar* of the university points out that no prescribed course of study of practicable length can fit the student for all the special careers the profession of medicine offers: he is urged early in his course to make up his mind whether he intends to go into general practice, to specialize in medicine or surgery,

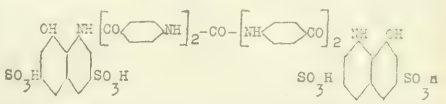
or to make his career in laboratory investigation and teaching, public health, or psychiatry. The six years' curriculum provides that the student may supplement his ordinary medical work by a somewhat more intensive training than is needed by all students, so as to prepare him for some particular type of medical career. A number of courses of optional study are provided. Among the subjects open to the first-year student, English history, scientific French, or scientific German is especially recommended. At the beginning of his second year it is considered a decided advantage to the student who aims at laboratory investigation, hygiene, or psychiatry in his career to make his choice, and upon it the optional subjects for the second and subsequent years largely turn. The student who is preparing himself for a specialist career in medicine or surgery is recommended to equip himself as thoroughly as possible in the introductory medical sciences, and it is suggested that in his second and third years the bulk of his optional studies should be chosen from subjects of this kind; he is, however, also required to select during both years one course in a subject such as history, economics, philosophy, or psychology. In like manner those aiming at careers in public health and laboratory investigation are advised to be guided by the requirements of the subject in which they desire to work, but they are reminded that in all paths of laboratory research the importance of mathematics is rapidly growing. Students attaining a certain standard in the courses of the first three years are allowed to continue taking optional subjects during their fourth, fifth, and sixth years, while others are required during their fourth year to take "review courses" in certain of the fundamental medical sciences, and, in the fifth and sixth years, in certain subjects of the preceding years. Assignment to these groups is made by a special committee of the Faculty of Medicine, which also decides upon the courses to be reviewed and allots the students to each. A student earning a good report during his fourth or his fifth year may be promoted from the "review group" to the "optional group"; but, as already noted, emphasis is laid on the principle that no attempt is to be made in the optional classes of the later years to train students as specialists. Thus, such subjects as laryngology, ophthalmology, and radiology may not be chosen at that stage, since it is thought unsound to train men to be specialists in these fields until they have thoroughly rounded off their medical or surgical education and served a year as a resident in hospital—an opinion with which there will be general agreement. On the other hand, students who have definitely decided that their future career lies in one of the specialties may, during the time set apart for optional study, take courses in the pre-medical or fundamental sciences upon which these specialties depend—for example, in those parts of physics and physiology that deal with optics, acoustics, or radiology.

The Toronto scheme is just what might be expected from a young and vigorous country with a fresh and open outlook. Its developments and results cannot but be watched with appreciative sympathy by all who have at heart the broad interests of the advancement of medical and general learning.

"BAYER 205."

A CURIOUS illustration of the German desire, not unnatural in itself, to regain the tropical colonies lost by the folly of the rulers of the German Empire, is afforded by a discussion which took place at a meeting of the German Association of Tropical Medicine at Hamburg. We have not seen a full report of the meeting, but the *Times* correspondent in Hamburg reports that one of the speakers said that "Bayer 205 is the key to tropical Africa, and consequently the key to all the colonies. The German Government must, therefore, be required to safeguard this discovery for Germany. Its value is such that any privilege of a share in it granted to other nations must be made conditional upon the restoration to Germany of her colonial empire." Some account of the drug manufactured by the Bayerische Farbwerke and provisionally named "205" was given in our issue of May 20th (p. 807), when we quoted Dr. H. H. Dale's opinion that it was a remarkable curative agent in trypanosome infections. A general account of the probable chemical relationship of "205" is given by Dr. King in the sixth Annual Report of the Society of Chemical Industry (1921).

In 1904 Ehrlich and Shiga discovered the trypanocidal action of trypan red, a compound formed by combining one molecule of tetrazotized benzidine-mono-sulphonic acid with two molecules of sodium naphthylamine disulphonate. In 1906 Mesnil and Nicolle[1] investigated a series of dyes containing amino-naphthalene-sulphonic acid and found that the most active trypanocidal agent was a dye prepared by the Bayer firm. Little notice was taken of this work, and the discovery of salvarsan diverted attention from the trypanocidal dyes to the organic arsenic compounds. The Bayer firm, however, continued to investigate the trypanocidal dyes and discovered that compounds of this type which were not dyes might still be active trypanocidal agents. They took out a large number of patents, and the type of compound to which the firm has paid special attention is represented by the following formula:



A number of substances of this type have been found to be very active trypanocides, and probably Bayer 205 is a derivative of this type. Bayer 205 is a white powder, freely soluble in water, forming a colourless solution, which can be sterilized. Animal experiments[2] have shown that it is an extraordinarily powerful trypanocidal agent, and that a single dose of it will produce immunity to trypanosomes for several weeks or even months. Mayer and Zeiss, for instance, found it cured infection with five different kinds of trypanosomes, that the ratio between the minimal lethal and minimal curative doses was as high as 167 to 1, and that a single dose of 3 mg. rendered a mouse immune to trypanosomes for three months. Recurrences were found to be extremely rare when infected mice were given a single curative dose of the drug.

The various workers have reported curative effects on trypanosomal infections in mice, rats, guinea-pigs, rabbits, dogs, and horses. In England Wenyon[3] found that the drug was an extraordinarily effective trypanocidal agent. A brilliant success has been reported in a case of sleeping sickness.[4,5] The case was of a year's standing, and had been treated unsuccessfully with arsenic, antimony, and emetine. Four doses of "205," making a total of 3.5 grams, were given. A few hours after the first dose the fever disappeared, and a complete cure appears to have been produced, for four months later there were no signs of recurrence of the disease.

The drug therefore appears to be a trypanocidal remedy of the first importance, and the fact that a

[1] *Ann. Institt. Pasteur*, 417 and 518, xx, 1906.
[2] Haendel and Joetten, *Bull. Institt. Pasteur*, 131, 19, 1921; Mayer and Zeiss, Ibid., 133, 19, 1921; Walther and Pfeiler, Ibid., 380, 19, 1921; Miessner and Berge, Ibid., 380, 19, 1921; Mayer, Ibid., 248, 20, 1922; Schuckmann, Ibid., 247, 20, 1922.
[3] Wenyon, BRITISH MEDICAL JOURNAL, 1921, ii, 746.
[4] Mühlens and Menk, *Muench. med. Woch.*, 1488, 46, 1921.
[5] Yorke, *Ann. Trop. Med. and Paras.*, 479, 15, 1921.

single dose confers prolonged immunity to trypanosomes suggests that it will be of the greatest value as a prophylactic. A commission of German doctors is now in Rhodesia testing the drug, and our knowledge as to its action in man will soon be much more extensive. The discovery of "205" promises to mark a great advance in tropical medicine, but it is a remarkable fact that England should be dependent on Germany for this advance in tropical medicine, for at present Germany has not a single colony, while England has the largest tropical empire in the world. It is not a position of which we have any reason to be proud, but its cause is simple. Germany appreciates the value of pharmacological research and we do not.

THE INTERNATIONAL CONTROL OF DANGEROUS DRUGS.

AMONG those who seek to reduce the supply of drugs of addiction, such as opium, morphine, and cocaine, to something approaching the amount required for legitimate purposes, the news of the destruction by fire of the great Darmstadt chemical works of Merck, last Friday, will be read with equanimity. While the League of Nations has so far found it difficult to determine with precision the amounts of these drugs required by different countries for medical and scientific purposes, it appears to be satisfied, as is the man in the street, that the supply is grossly in excess of legitimate demand, and that enormous quantities pass into illicit hands and are put to vile purposes. In the BRITISH MEDICAL JOURNAL of August 19th we drew attention to the alarming increase of this sinister traffic in Paris and other parts of France and to the inadequacy of the fines imposed on the agents detected in carrying on this lucrative trade. Our own Home Office is similarly alive to the fact that the penalties imposed under the Dangerous Drugs Act of 1920 are insufficiently deterrent, and it is stated that an amending bill has been drafted which will authorize twelve months' imprisonment with hard labour for a first offence.

In these columns for the last decade we have uniformly urged the need for international control, not only of the distribution, but of the production of these perilous habit-forming drugs. So long as the actual growth of the *Papaver somniferum* and the *Erythroxolon coca* is unlimited and unsupervised the market will be liable to be flooded with their alkaloids and preparations and the excess of supply over legitimate demand will find its way into unlawful hands and be prostituted to vicious uses. In the memorandum compiled by the Advisory Commission of the League of Nations, based on the replies to the questionnaire which they issued to the various Powers, the information vouchsafed as to the manufacture, import, and export of the drugs in question is very imperfect. In regard to cocaine the only countries in which the manufacture of that alkaloid is acknowledged are Japan and Switzerland. Germany and the United States had furnished no statistics. Great Britain is stated to import largely from Peru and to export chiefly to France and the Netherlands. Switzerland manufactured 732 kg. of cocaine in 1921 and received considerable imports from Germany and France. Japan manufactured 4,100 kg. of cocaine in 1920, and in the same year imported 3,500 kg., chiefly from the United States, but also from Switzerland, France, and Great Britain. "Enormous quantities of drugs," it is stated, "largely of European and American origin, have been reaching China from Japan during the last few years." A recent reply in the Commons stated that 643,985 oz. of morphine were manufactured in 1920 in England and some 322,484 oz. of morphine and heroin were exported in addition to exports by post.

All this serves to show that there is urgent need for the universal application of the International Opium Convention of 1912. That instrument was admittedly less stringent than was desired, largely to meet the objections raised by Germany, but its effective enforcement would do much towards restricting the drug traffic to legitimate channels. It is satisfactory to learn from Geneva that Switzerland is at last about to ratify the Convention, and a resolution has been adopted having for its object the refusal of producing countries to license exports of these drugs to countries which are not themselves enforcing the restrictions contemplated in the Convention.

THE LEGIBILITY OF PRINTED MATTER.

THE ever-increasing use of printed matter under all conditions of natural and artificial illumination makes the legibility of the print a matter of high importance. The comfort of the reader is involved, possibly even the integrity of the sight of school children and students, and there is the further consideration that illegible print may be misread. Mr. L. A. Legros has prepared a paper on this subject for the information of the Committee on Type Faces.[1] The committee is concerned primarily with government publications, but the information is of value at large. Mr. Legros's note extends to fifteen folio pages, and the type used is of the most beautiful and perfect kind; yet despite its fine fount of type the document is not comfortable to read. The printer has transgressed the first two rules of legibility: that the line should be of comfortable length, and that one line should be sufficiently separated from the succeeding. The lines of print are $6\frac{5}{8}$ inches wide, instead of the usual comfortable $4\frac{1}{2}$ inches of the textbook, and the descending tails of the letters of the upper line are only removed from the ascending limbs of the lower line by a fraction of a millimetre. The consequence is that the page appears as a general grey mass, and the task of following the lines in reading is so difficult as to make the appreciation of the meaning of the printed statements uncertain and perplexing. Strangely enough the two cardinal features of good print—reasonable length of line and the judicious use of "leads" between the lines—are each dealt with by the author in his paper, and an example to show the good effect of leading is given. Having noted this blemish we may say that the matter of the paper is an exceptionally careful statement of the characters of the several founts of type in common use, and their effect on legibility. In his analysis the author employs as many categories as require paragraphs from *a* to *w*; but not one of them is redundant. There are some fifty different varieties of founts, without considering "fancy faces" or scripts, and the author's endeavour has been to discover the defects of the chief of these. Certain letters hinder legibility. The small "i" is one of these; in certain combinations it goes to form words in which the dot causes confusion—for example, "toil" may be mistaken for "toll"; other words are clearer for the dot of the "i"—for example, "imminent." In former days a change for the better was the suppression of the long f shaped "s" ordinarily used at the beginning and in the middle of words. This change was made experimentally in Bell's edition of *Shakspere*, 1787. Mr. Legros notes that the short "s" was rapidly adopted both in this country and on the Continent, but that the Oxford University Press did not make the change till 1824, and we might add that Dr. John Brown's *Horae Subsecivae* published in 1858 was printed throughout in the old way. Not only did the change increase legibility, but it reduced the number of types in the printer's case. The relative thickness of vertical and horizontal stroke is of importance. If the vertical stroke be much exaggerated, as is found in some French printing, legibility is impaired; again, overfineness of the horizontal line induces rapid wear of the type and loss of legibility.

[1] *A Note on the Legibility of Printed Matter prepared for the Information of the Committee on Type Faces.* By Lucien Alphonse Legros, O.B.E., Mem.Inst.C.E. London: H.M. Stationery Office. 1922. 1s. 6d. net.

Similarity between pairs of characters leads to confusion. The use of the serif (the fine cross stroke at the top and bottom of a letter—a relic of the old penman's work) is carefully discussed. Plain characters without serifs are often used for display purposes, and for that reason some have been led to suppose that this gives greater legibility. The sans-serif letter strikes the eye, but is unpleasing in page form, and there is actually a certain loss of legibility when the serif is absent; thus the dotted "i" with the serif is more readily distinguishable from the "l" than when there are no serifs on either. Dissimilarity of form is more important in figures: "3" and "5," "5" and "6" are very readily confused, as the users of a telephone directory know only too well. Much care has been expended in the past in deciding what is the best form of type, and the author agrees that the "modern" style is the best, and he confirms the observations of Babbage, who in the preface to his *Tables of Logarithms* of 1827 states that "the clearness of facility of reading does not depend on the size of the type alone, but on the proportion of the type to the interval between the lines," and "figures of the same, or nearly the same, height are preferable to those in which some of the digits rise above and others fall below the line, because they interfere with the space between the lines." The author gives two settings of a table from Bradshaw, one in modern, the other in old style figures, and the modern with its even row of figures is distinctly the more legible. The quality of the paper used and its colour and light-reflecting capacity are discussed; the colour of the ink and certain points in illumination are noted. Mr. Legros's pamphlet is of much interest, and will be of particular value to those engaged in editing and publishing; but to the general reader the report of the British Association Committee dealing with the print of school books will be the more useful.

AUTOGENOUS VACCINES.

In an article based on much practical experience Parisot and Simonin[1] of Nancy review the present position of autogenous vaccines, and specially consider the reasons why this form of treatment, though logically the correct one, has not been crowned with the success that might have been anticipated. Thus it is mainly in chronic staphylococcic infections that good results have been obtained, and even these are not constant, and are often less satisfactory than those given in response to stock vaccines; then, again, most striking cures have followed the almost haphazard employment of vaccines, sometimes even composed of micro-organisms other than those responsible for the disease. It has therefore been thought that it is unnecessary to take the time and trouble involved in the preparation of an autogenous vaccine when almost any vaccine will give equally good results. The reasons for this erroneous opinion are fully considered; as P. Delbet, Beauvy, and Girode pointed out in 1914 in connexion with the vaccine treatment of local surgical lesions, two very different effects may follow the injection of a vaccine: there is an immediate non-specific reaction, due to colloidoclasic or protein shock, which accounts for the remarkable successes of vaccines in some acute infections; and secondly, a delayed reaction due to the specific action of the microbes contained in the vaccine. It is therefore important to distinguish between bacterial protein shock and vaccine treatment, and to refer correctly to each of these factors the good and bad effects that may occur after the injection of a vaccine. The mistakes and considerable difficulties in the technique of the preparation and administration of autogenous vaccines have been responsible for much of the failure of autogenous vaccines. Parisot and Simonin, therefore, after describing the details of making an autogenous vaccine, indicate the fallacies that may arise, such as failure to cultivate the responsible micro-organism from the use of an unsuitable medium, the difficulty of choice, and the changing character of the microbes in mixed infections, and draw attention to the importance of avoiding too high a temperature in sterilizing the cultures, and to the deterioration of vaccines on keeping. The administration of the vaccine demands meticulous care and a close watch over the reactions of the patient, so as to give the proper doses at the appropriate intervals and to suspend further treatment when contraindications appear. If vaccines are given without this care serious and even grave accidents may occur; among these is protein shock, which, though it may be beneficial, is not part of, or necessarily favourable in, vaccine therapy. It is therefore advisable that the vaccine should consist of carefully washed micro-organisms, thus excluding the complex products of the culture medium. An excessive reaction, especially at the site of the injection, where considerable increase in the inflammation and swelling occurs, is often due to a transient state of diminished resistance, corresponding to Sir Almroth Wright's negative phase; in these circumstances another injection of vaccine, if given prematurely, may induce severe symptoms, and, although the vaccine is perfectly sterile, give rise to a fixation abscess at the site of injection. On the other hand, a certain amount of increased activity and exudation in the infected focus, not only at the outset of treatment, but also after several injections have been well borne, is a favourable sign. Thus in chronic gleet and pulmonary suppuration the first evidence of improvement may be ushered in by increased secretion of mucus, and in cutaneous staphylococcic infections there may, after a number of doses of an autogenous vaccine, be a sudden outburst of small pustules around the original focus, which rapidly disappear and are followed by improvement. Sometimes the fourth or fifth dose of the vaccine is followed by phlegmonous infiltration without fever around the site of the injection; this is Arthus's phenomenon due to local anaphylaxis. The authors are definitely of opinion that except in those that run a rapid course all infections, acute or chronic, local or generalized, can be benefited by autogenous vaccine treatment.

[1] Parisot, J., et Simonin, P.: *Rev. de méd.*, Paris, 1922, xxxix, 392-423.

MEDICAL EDUCATION IN THE UNITED STATES: TWENTY-ONE YEARS' PROGRESS.

The Educational Number of the *Journal of the American Medical Association* (published on August 19th) contains the usual statistics of medical education in the United States; also a leading article concisely reviewing the progress made during the twenty-one years that have passed since our contemporary first published these tables. It was in 1901 that the American Medical Association opened its campaign for the bettering of medical education in the United States. Many of the 159 medical colleges whose names appeared in the first list were known to be joint-stock corporations, conducted largely for the profit of their owners. At that time (the *Journal* says) "no one, in fact, knew just how serious conditions in the medical schools actually were. Sectarian medicine was at its zenith, with 22 homœopathic and 10 eclectic colleges." In order to centralize the efforts towards reform a permanent committee of the Association—the Council on Medical Education—was set up in 1904, and one of its earliest acts was to take over the business of collecting and tabulating statistics relating to medical education. When the Council made its first tour of inspection in 1906 the United States had more medical schools than all the rest of the world put together, and, with a few notable exceptions, the standard of general and professional education in American medical schools was much lower than that in Europe. The task of discouraging the worse kind of school and stimulating the better went on steadily from year to year. Side by side with this a policy of amalgamation was urged upon locally competing institutions. By 1917 great progress had been made; the total number of schools had fallen to 95, and—more important still—the number of higher grade schools had grown from 4 to 86. There are now 81 medical schools in the United States, of which 74 require of their students before admission "two or more years of college work." During the period under review the total number of medical students has diminished by something like 40 per cent., while the proportion of students in well-equipped medical colleges

has grown from 3.9 per cent. of the whole to 96.1 per cent. Moreover, of last year's total of 2,529 medical graduates, 1,455 had also obtained degrees in arts or science. This remarkable progress in bringing medical education throughout the United States into line with the standards laid down in other leading countries must be looked upon as one of the most important achievements of the American Medical Association.

NATURAL SCIENCE AND THE CAMERA.

THE Royal Photographic Society of Great Britain is holding its sixty-seventh annual exhibition at the galleries of the society, 35, Russell Square, W.C., from September 18th to October 28th. During the period of the exhibition lantern lectures will be given every Tuesday and Friday at 8 p.m. The photographs are grouped under various sections. In the natural history section there are many interesting pictures of birds and animals photographed in their natural haunts. Thus Mr. M. Maxwell snapped an African wild bull elephant at the distance of eight yards, probably the closest range at which this has ever been done. He also exhibits a photograph of giraffes at full gallop, travelling about thirty miles an hour. Other pictures show birds feeding their young or nesting, a meadow pipit feeding a young cuckoo, a jackdaw with an insect flying to the food at the bird's feet, and many plants, moths, and butterflies. The medal in this section is awarded to Mr. Ralph Chislett for a photograph of variations in the plumage of the Arctic skua. The section of pictorial photography contains numerous artistic productions, many of which approach in their effect the art of painting, and suggest that photography stands to this art very much in the same position as the mechanical piano-player stands to music. Some good portraits are shown, among them being those of the Archbishop of York and of the American divine who is said to address each week (in paragraphs of italic type) a congregation of thirteen million syndicated newspaper readers. The scientific section contains work of more interest to the medical man, although the purely medical productions are not very numerous. Some thirty or forty radiographs are shown, and in this department Mr. A. O. Forder wins the medal with a picture of a sarcoma of the femur. A lateral view of a head shows a piece of shell in the sphenoidal sinus; and this radiograph, together with a further series, displays the merits of the Bucky-Potter diaphragm. Amongst the radiographic negatives shown by Mr. N. E. Luboshez is one of a fish that had swallowed a whelk; both the thick and thin portions of the fish are well shown, and the details of the whelk's shell are very clear. Dr. G. H. Rodman shows several series of photomicrographs of animal and plant hairs, of the under surface of the leaf of the goosefoot, and of a horizontal section of the human scalp. The astronomical and aerial prints, many of them contributed by the Royal Observatory, the Dominion Astrophysical Observatory, and the Mount Wilson Observatory, are interesting. This section also contains examples of technical applications of photography; for instance, a Russian internal passport, which had been fraudulently used by no less than four persons; photographs from aeroplanes; pictures of bullets perforating plaster-of-Paris partitions or soap bubbles. Two cabinets of colour transparencies containing a number of slides illustrating the application of the autochrome process to stereoscopic work are very attractive. The exhibition is open daily, except on Sunday, from 11 a.m. to 9 p.m. Admission is free.

THE ADVANCEMENT OF SCIENCE, 1922.

WITH customary promptness the addresses delivered at the ninetieth annual meeting of the British Association at Hull, which closed on September 13th, have been issued in book form with an orange-coloured paper cover, under the general heading, *The Advancement of Science, 1922*.[1] When the first meeting of the Association took place at York in 1831 printing and publishing methods were more leisurely, we believe. The volume opens with the full text of Sir Charles Sherrington's inaugural presidential address to the Association on "Some aspects of animal mechanism," of which an abstract appeared in our issue of September 9th (p. 485). This is followed by the text of the addresses given by the presidents of the thirteen Sections, arranged in the alphabetical order laid down in the programme of the meeting. The names of the Sections and their presidents and the titles of the addresses are as follows:—*A.* Mathematics and Physics: Professor G. H. Hardy, "The theory of numbers." *B.* Chemistry: Principal J. C. Irvine, Part I, "The organization of research"; Part II, "Some research problems in the carbohydrates." *C.* Geology: Professor P. F. Kendall, "The physiology of the coal swamps." *D.* Zoology: Dr. E. J. Allen, "The progression of life in the sea." *E.* Geography: Dr. Marion Newbigin, "Human geography: first principles and some applications." *F.* Economic Science and Statistics: Professor F. Y. Edgeworth, "Equal pay to men and women for equal work." *G.* Engineering: Professor T. Hudson Beare, "Railway problems of Australia." *H.* Anthropology: Mr. H. J. E. Peake, "The study of man." *I.* Physiology: Professor E. P. Cathcart, "The efficiency of man and the factors which influence it" (an abstract appeared in our last issue at p. 524). *J.* Psychology: Dr. C. S. Myers, "The influence of the late W. H. R. Rivers (President-elect of this Section) on the development of psychology in Great Britain." *K.* Botany: Professor H. H. Dixon, "Transport of organic substances in plants." *L.* Educational Science: Sir Richard Gregory, "Educational and school science." *M.* Agriculture: Lord Bledisloe, "The proper position of the landowner in relation to the agricultural industry." The general reader, taking modest sips in this symposium of science, would perhaps feel more at his ease if the pages of the volume were numbered consecutively.

[1] London: John Murray, pp. 252. 6s. net.

INDUSTRIAL STATISTICS AND HEALTH.

THE members of the third annual Industrial Welfare Conference, held at Balliol College, Oxford, were addressed, on September 18th, by Dr. H. M. Vernon, who has carried out many investigations for the Industrial Fatigue Board. His subject was the importance of keeping records and statistics. He pointed out that a system of efficient records and statistics was an integral part in the new ideas of industrial management which were to-day steadily gaining ground. The elimination of waste in industrial establishments was bound to prove eventually of benefit to all concerned, and those responsible for the welfare side of large firms had opportunities for collecting valuable statistical information which no other persons attached to a factory possessed. Those particulars were, however, often wasted because welfare supervisors failed to recognize the importance of keeping the requisite records. In regard to the question of labour turnover there was good reason to believe that this amounted to as much as 100 per cent. in a year. This meant a huge loss to the employers, who had the expense of training new workers, and also to the employees, who earned low wages while they were on a new job. A good knowledge of the degree of ill health in the workers and its variations could be obtained by keeping "lost time" records, especially if the time lost from sickness was separated from that due to other unavoidable causes. Accidents and injuries formed one of the chief causes of lost time; hence an accurate record of all accidents treated should be kept and should be examined statistically. The records might show that some accidents were especially frequent among workers on some particular type of machine or process, or they might show a rise brought on by fatigue during overtime work. Again, it was well known that inexperienced workers were peculiarly liable to accidents unless special precautions were taken. The effects of an accident prevention campaign should always be tested statistically. It was important also to determine whether any given workshop conditions favoured the maximum degree of health and efficiency in the workers. Dr. Vernon held that the proper person to do this was the supervisor, by keeping exact records of the temperature of the workshops and of the degree of ventilation.

NAVAL MEDICAL WAR MEMORIALS.

THE memorial tablet designed for the Royal Naval Hospital at Plymouth, commemorating the names of those naval medical officers and members of the nursing staff who lost their lives in the war, will be unveiled on Wednesday, October 4th, at 3 p.m. As already announced in these columns, a tablet was unveiled at the Royal Naval Hospital, Haslar, on August 17th, and a similar tablet will be erected at the Royal Naval Hospital at Chatham at a later date, which will be notified. The Medical Director-General, R.N., requests us to state that the relatives and friends of the fallen and all others who may be interested are invited to attend the unveiling ceremony at the Royal Naval Hospital, Plymouth, or at Chatham, whichever may be more convenient for them.

THE Royal National Orthopaedic Hospital (Great Portland Street) has established a country branch hospital at Brockley Hill, Stanmore, in the premises formerly known as the Mary Wardell Convalescent Home and used during the war as an auxiliary military hospital. The object of the new country branch is to give the benefits of open-air treatment and heliotherapy to patients suffering from deformities, by far the greater number of these being children. In most cases the whole of the treatment, including operation, is carried out there. On September 21st the Earl of Denbigh, Chairman of the Royal National Orthopaedic Hospital, received a party of visitors at the country branch, and gave them an opportunity of inspecting the house and grounds and the methods of treatment.

THE report for 1921–22 of the Insurance Acts Committee is printed in full in the SUPPLEMENT this week. It will be presented formally to the annual conference of representatives of Local Medical and Panel Committees to be held in the Central Hall, Westminster, at 10 a.m. on Friday, October 20th.

THE JOHN ELLIOTT MEMORIAL LABORATORY.

OPENING CEREMONY AT CHESTER ROYAL INFIRMARY.

THE John Elliott Memorial Pathological and Bacteriological Laboratory at the Chester Royal Infirmary has been equipped by public subscription in memory of the late John Elliott, M.D., F.R.C.P., who was honorary physician to that institution from 1895 to 1921 and one of the leading consultants in the county.

The laboratory was opened on the afternoon of September 16th by Sir Humphry Rolleston, K.C.B., M.D., D.C.L., LL.D., President of the Royal College of Physicians of London and Emeritus Physician to St. George's Hospital. On arrival at the Infirmary Sir Humphry Rolleston was met by the chairman of the board (Mr. E. M. Sneyd Kynnersley) and members of the honorary medical staff, and was conducted to the laboratory. Among the subscribers to the memorial present were the Bishop of Chester (the Right Rev. Luke Paget, D.D.), Dr. Willoughby Gardner of Shrewsbury, and Mr. G. P. Newbolt of Liverpool. Tea was served in an adjoining ward before the opening ceremony.

Sir Humphry Rolleston's Address.

The title of Sir Humphry Rolleston's address was "The clinical laboratory in the modern hospital." He began by remarking on the appropriateness of perpetuating the memory of a physician such as John Elliott by the addition of a pathological and bacteriological laboratory to the institution, on behalf of which he did yeoman service for twenty-six years. This modern laboratory corresponded well with the operating theatre recently erected as a tribute to the late James Taylor, for forty years a mainstay and ornament of the surgical staff of the infirmary. Originally opened in 1756, and much extended within the last few years, the Chester Royal Infirmary had a proud record of work and workers in the past.

But the modern developments of medicine entailed fresh methods, so that for the efficiency of a present-day hospital a well equipped and staffed laboratory was, like a radiological department, as integral a part as the dispensary and theatre. It was no doubt true that when any new phase or fashion appeared a danger arose of rushing to extremes. Before the era of bacteriology and clinical laboratories the medical man had to depend entirely on his own powers of observation, which were therefore cultivated to a high pitch of excellence, and clinical instinct—the subconscious judgement born of years of thoughtful experience—was a great asset to the medical practitioners of all time, of the present no less than of the past. The inestimable value of the laboratory, with its rapid decision of clinically doubtful diagnoses, was now established beyond question; but it must be admitted that some who had grown up with it might be tempted to rely solely on its verdict, and so to save themselves the trouble of investigating the patient. In this way fallacies and mistakes might arise, for the old adage that the patient and not the disease must be treated should not be forgotten. Against the danger of neglecting investigation of symptoms Sir James Mackenzie had uttered many wise warnings, and was setting an example in his Institute for Clinical Research at St. Andrews. The clinical laboratory, while an essential part of a complete hospital, must be closely co-ordinated with the wards, for only by their intimate association could the best results be obtained.

The laboratory met a large and ever-growing demand from the wards and out-patient rooms, and should therefore be competent to deal with all branches of pathology. How extensively this subject had grown, and into how many special branches pathology had become differentiated, was shown by the staffing of the laboratories at the larger medical schools; in fact one man could not satisfactorily cover the ground of morbid anatomy and histology, bacteriology, serology, biochemistry, clinical and experimental pathology, any more than a clinician could be thoroughly efficient in all the specialties of medicine. In hospitals without a medical school the conditions were rather different and the demands less; yet they were so considerable that they should be met by the appointment of an adequately salaried full-time director, with co-workers (one of whom should be a biochemist) and trained laboratory attendants. The other workers, except perhaps the biochemist, would be part-timers, and might be junior members of the hospital staff, for the experience thus gained would greatly increase their professional efficiency, and their presence would ensure continuous active correlation and sympathy between the wards and the laboratory.

Sir Humphry Rolleston then summarized the value of such a laboratory as this. The clinical laboratory was an advantage to the community by providing means for early detection of the nature of infections, and so preventing the spread of disease. It was of value to the individual patient by aiding diagnosis and checking the administration of modern methods of treatment. From the point of view of the medical profession such laboratories formed a centre of medical work and activity. Without this assistance a medical man in his fight against disease was like a pugilist with one arm tied behind his back. The laboratory and hospital gave him opportunities for utilizing the methods he learnt as a student and for acquiring knowledge of the progress of medicine. Deprived of this the medical man must deteriorate in value and his patients suffer accordingly. Complete co-ordination of the medical profession for the prevention of disease required a close association of the laboratories of towns and districts with the local hospitals. In every direction internal medicine depended on laboratory assistance. The surgeon, too, depended on the laboratory for aid in diagnosis and prognosis, for guidance in dealing with the problem when to operate and when to hold his hand, and for many points in the treatment of his cases. The laboratory formed a centre of research to which the profession looked for additions to medical knowledge. The expenses of the laboratory should be regarded as an insurance against epidemic outbreaks of disease both outside and inside the hospital, and so as an eventual economy.

In conclusion, Sir Humphry Rolleston gave a brief sketch of Dr. Elliott's career, remarking that the tribute paid to his memory that day was one that John Elliott would have appreciated most highly. He recalled that Elliott and he entered as students at St. Bartholomew's Hospital on the same day.

"Not only was he exceptionally able, but he had the faculty—not always found with such intellectual gifts—of doing everything to which he turned his hand with the might that ensured success. The field of his activities was wide both in the strictly professional subjects and in science; a first-class general physician, he had a well-equipped laboratory of his own for the elucidation of his cases, thus realizing the ideal of present-day medicine in the investigation of morbid function; he was much interested in radiology, played an active part in the treatment of venereal disease, and, as recently as 1921, formulated precautions necessary

in the administration of salvarsan. His work for the Infirmary went far beyond the discharge of a physician's duties, for he was the driving force in the initiation and execution of the important additions and improvements of ten years ago."

The vote of thanks to Sir Humphry Rolleston was proposed by Dr. J. G. Taylor, senior physician, and seconded by Mr. W. H. Dobie, consulting surgeon to the Infirmary. After the address the laboratory and the rest of the Infirmary were open for inspection. The newly appointed honorary pathologist and assistant physician to the institution is Dr. W. H. Grace, recently of Guy's Hospital.

THE HEALTH OF LONDON IN 1921.

THE annual report on public health to the London County Council,[1] by Dr. W. H. Hamer, has recently been issued, and keeps up to the high standard which this long series of reports has attained. In contrast with 1916, "in which, in a literal and perhaps in a metaphorical sense also, more water than ever before known flowed under London Bridge," 1921 was a year of excessive drought, and June was actually the driest month ever known in the London area. In other respects last year was exceptional—for example, while unemployment had risen to 10 per cent. by the end of March, the coal strike then began, and by the end of June unemployment reached 23 per cent., an unprecedented figure.

Vital Statistics.

The population of the County of London at the census of June, 1921, was 4,483,249, or 38,436 less than at the census of 1911. The census showed that the decentralization of the population, which began some twenty or thirty years ago, still continues, and in the principal areas in which buildings have been replaced by commercial premises—the City of London, Holborn, Finsbury, Stepney, Westminster, and St. Marylebone—there was a decrease in population of over 87,000 between 1911 and 1921, about the same number as in the previous decennium. The approximate marriage rate was 19.5 per 1,000 of population, which was only slightly above the average of the last seventy years. There were 99,839 births, equal to a rate of 22.1 per 1,000 of population, which showed a substantial decline upon that of the preceding year, and was below the level to which it had fallen just before the war. The greatest decrease in the births as compared with the previous year occurred in the poorer populations, varying from 22 per cent. in Bethnal Green to 12 per cent. in Stoke Newington. The deaths numbered 56,259, the mortality per 1,000 living being 12.5, as compared with 12.6 in 1920; this is the lowest death rate recorded in London. With regard to the death rate, it may be observed that although the population has remained practically stationary during the past twenty years so far as the actual number is concerned, its constitution has undergone considerable change. London attracts young adults of both sexes, and owing to the changing constitution of its population the death rate does not measure the risk of life in London. About 70 per cent. of the population of London in 1911 were born in the country—that is to say, about one and a half millions were immigrants. The infant mortality was 81 per 1,000 births, as compared with 76 and 85 in 1920 and 1919 respectively. With the striking exception of diarrhœa, there was a decline in the mortality from most of the principal causes of infant deaths. Only two cases of small-pox occurred in London during 1921, neither of which proved fatal.

Scarlet Fever, Diphtheria, and Measles.

The deaths from scarlet fever and diphtheria were more numerous in 1921 than in previous years owing to the exceptionally high prevalence of these diseases. There were 32,738 cases of scarlet fever in London during the year, as compared with 22,705 in the preceding year, and the deaths numbered 292. The number of cases occurring during the first quarter of the year was very much in excess of the average for the quarter. The number of cases of diphtheria notified was 16,319, as compared with 13,780 in 1920; the deaths during the year were 1,150, the corresponding figure for 1920 being 1,023. The number of cases of diphtheria in London last year exceeded that in any other year since 1890, when notification of the disease became compulsory. The deaths from measles numbered 244, as compared with 1,016 in 1920. The mortality was 0.05 per 1,000 living, the lowest rate recorded in London.

[1] No. 2168. P. S. King and Son, Ltd., or through any bookseller. 2s. 6d.

Diarrhœa and Enteritis.

There were 2,152 deaths among children under 2 years of age from diarrhœa and enteritis, giving a mortality per 1,000 births of 21.55; this rate is in excess of that for the four preceding years, but a trifle below the average for the ten years 1911–20. In view of the high average temperature of the summer the mortality from infantile diarrhœa was, in fact, remarkably low.

On investigating the figures for the thirty-eight years up to 1914 the calculated deaths are (Dr. Hamer states) in very close agreement with the numbers recorded; this agreement is indeed remarkable when regard is had to changes in classification which occurred in the course of the period, more especially late in the nineties. In 1914 and subsequent years there is a remarkable difference between the actual and estimated mortality, and as this takes in the whole of the war period the probability that the conditions brought about by the war have been responsible for the reduced mortality at once suggests itself. There is, however, some indication that the change which appears at first sight to have occurred abruptly in 1914 is really foreshadowed some years earlier. Up to 1905 the actual deaths are sometimes below and sometimes above the number calculated from the temperature; but after 1905, with the exception of 1913, the calculated deaths always exceed the actual number, and the excess in 1921 (a wet summer) was actually greater than in 1914. Again, the excess in 1914 can scarcely be attributed to war conditions in any large measure, even taking into account the fact that most of the deaths occurred in September; in the earlier months of the war there was no scarcity of food, and therefore no great change of diet affecting infants, although the immediate increase in the price of sugar may not have been without its effect upon the feeding of children of the poorest classes. The period 1916–19 is that in which the effects of the war would be expected to be most apparent, and although the divergence of the calculated from the actual mortality in this period is very conspicuous, it is just as apparent in the two succeeding years. There is no doubt that the separation allowances made during the war, combined with the rationing of food, improved the quality and also even the quantity of food supply of the very poor—of the class, that is, in which the mortality from infantile diarrhœas is greatest. In addition there have been special administrative measures, directed to the care of expectant and nursing mothers, as well as of their infants; these were inaugurated before the war, and were further developed in spite of war conditions. Over and above these direct influences upon child welfare, there is the effect of the introduction of national insurance in bringing the practitioner into closer relations with the homes of the poor.

It is suggested that a possible explanation of the decrease in summer diarrhœa mortality in recent years is the replacement of horse traction by machine traction, and the resulting decrease in the amount of horse manure.

Enteric Fever.

During 1921, 329 cases of enteric fever were notified in London, as compared with 387 in 1920; the deaths numbered 60, as against 48 in 1920. Of the total cases notified 193 were admitted to hospitals of the Metropolitan Asylums Board, and of these it was found that 82, or 42.5 per cent., were not typhoid fever. Of the 60 deaths occurring in London 14 were inmates of county asylums outside the county boundary, and as the cases occurring in these institutions are not notifiable in London the deaths comparable with the notifications become reduced to 46. In the 50 cases in respect of which confirmatory bacteriological results were obtained, the presence of *B. typhosus* was shown in 7 cases, 25 were described as "paratyphoid," while 6 were described more specifically as paratyphoid A and 12 as paratyphoid B. Of the 172 cases in which a possible source of infection was mentioned, the disease was described in 30 to shellfish, in 20 to fish, in 10 to watercress, and in 23 to other food; infection was attributed in 31 cases to contact with other cases. Dr. Hamer states that the practical issue with regard to typhoid fever which presses for decision at the present time is whether the control over the spread of this disease is to be maintained and further strengthened by working on the epidemiological lines (first laid down by Dr. Bulstrode in his classical oyster report of 1896) or on rival bacteriological lines, in compliance with which the stress is laid on the supposed risk from healthy carriers and the need of combating this by vaccination. It has been suggested that the mischief responsible for typhoid fever in London, during at any rate the last twenty-five years, could be traced to remote estuaries and distant foreshores, and that full control of the disease is to be secured by cutting off polluted supplies of fish and shellfish, and not by attempting to segregate healthy carriers of bacilli or advocating the general practice of antityphoid vaccination.

Influenza.

During the severe epidemic of influenza which occurred practically throughout Europe towards the end of 1921 London was attacked towards the latter half of December, about a month later than the beginning of the epidemic in the Midlands; in fact, so far as can be judged from the mortality returns, influenza became epidemic in Yorkshire earlier in 1921 than in any of the principal cities on the Continent. During the course of the epidemic about 2,200 deaths in London were attributed to influenza, and taking into account deaths from complications it is estimated that not less than 5,000 deaths were caused in the London area by the epidemic. The contrast is remarkable between the age incidence of mortality in the epidemic of 1919 and in that of 1921; in the earlier epidemic the maximum mortality occurred at the ages between 25 and 35, but in the epidemic of 1921–22 the age of highest mortality was between 65 and 75, as in the epidemics of the nineties. According to the records of school attendance the number of children attacked in the last epidemic was greater than in the winter epidemic of 1919.

Encephalitis Lethargica.

During 1921 there were 243 cases of encephalitis lethargica notified, of which 87 were notified during January and 50 in February. The disease had already begun to increase in prevalence in December, 1920, and reached its climax in January, 1921. Of the 243 cases notified 45 proved not to be genuine cases, and in 9 others the diagnosis was considered to be doubtful; two further cases were recorded, but were not notified officially. Of the 191 actual cases 60 (or 31 per cent.) proved fatal.

Tuberculosis.

The death rate from pulmonary tuberculosis during the year was 1.07 per 1,000 living; the deaths numbered 4,813, as compared with 4,675 in 1920. The number of primary cases of tuberculosis notified was 12,214, as against 13,163 in 1920; of these 10,015 were pulmonary and 2,199 were other forms of tuberculosis. At ages 10 to 15 the female pulmonary cases exceeded the male by 51, or 31 per cent., but the contrast between the sexes at this age in the mortality is even greater than in the cases, the excess being 150 per cent. during the year. The National Insurance Act, 1920, provided for the discontinuance of sanatorium benefit, and by the combined operation of this Act and the Public Health (Tuberculosis) Act, 1921, the responsibility for the institutional treatment of tuberculous insured persons was transferred, as from May 1st, 1921, from the Insurance Committees to the local authorities responsible for the institutional treatment of the remainder of the population. Becoming thus responsible for the residential treatment of tuberculous persons in the metropolis the London County Council has taken steps to ensure that the best possible use is made of all existing accommodation. The number of cases requiring residential treatment has also been reduced to a minimum. It has been the policy of the Council to take advantage of all suitable accommodation already provided by hospital and sanatorium authorities, including the Metropolitan Asylums Board, and to take advantage also of additional suitable accommodation which such authorities provide by arrangement with the Council. The improved method of selecting cases for residential treatment depends upon the provision of observation beds which have been reserved at the Brompton and Victoria Park chest hospitals. The dispensary system described in last year's report has been further developed.

Venereal Diseases.

It was decided in March, 1921, to continue the scheme in force since the beginning of 1917 for the diagnosis and treatment of venereal diseases, in accordance with which the Council joined with neighbouring county councils and county boroughs to utilize the facilities afforded by certain London hospitals for diagnosis and treatment and to provide laboratory facilities for aid in diagnosis and treatment. Arrangements were made for free treatment and diagnosis at twenty-eight hospitals and for the reception of patients for treatment at nine hostels; special provision was made for the treatment of pregnant women and very young children. During 1921 19,216 London patients attended at the hospitals for the first time, a decrease of over 4,000 from the previous year. At the end of the year there were 332 medical practitioners on the approved list (considerably more than in the previous year), and they sent 15,385 pathological specimens for examination during 1921.

THE WELFARE OF THE BLIND.

We have received three prints of recent issue which give an excellent survey of the various activities now in being for the care of the blind, particularly in relation to State responsibility.

THE REPORT OF THE ADVISORY COMMITTEE.

The Advisory Committee on the Welfare of the Blind, a committee of the Ministry of Health, has issued its third annual report, for the year 1921–22.[1] The Committee exists "to advise the Ministry on matters relating to the care and supervision of the blind, including any question that may be specially referred to them by the Minister." Since the issue of the last report the Blind Persons Act of 1920 has come into force. Section 1 of that Act provides for the grant of pensions to blind persons between the ages of 50 and 70 at the same rates and conditions as old age pensions, and it is reported that up to the end of March of this year 9,197 persons in England and Wales between those ages were in receipt of pensions. It is held that this provision has done much to alleviate the distress previously common among the blind of the unemployable class.

Section 2 of the Act imposes the duty on county and county borough councils to promote the welfare of blind persons ordinarily resident in their area, and for this purpose to provide and maintain or contribute towards the provision and maintenance of workshops, hostels, homes, and other places for the reception of blind persons, or to do any other thing approved by the Minister for promoting the welfare of the blind. It is reported that the majority of the local authorities have submitted schemes as required by this section, and that with a few exceptions it is anticipated that all schemes will be in operation during the present year. The Committee is emphatically of opinion that the best interests of the blind themselves will be served by the continuance and fostering of the voluntary side of the work, and it notes with pleasure that this is the declared policy of the Ministry. It also unanimously approves the principle that where outdoor Poor Law relief is given to the blind it should be administered under suitable arrangements through the local institution for the blind, and it recommends this principle for general adoption. Section 3 of the Act regulated the appeal by voluntary societies for subscriptions, in much the same fashion that war charities were regulated.

The Committee has been asked whether it is desirable that local authorities should themselves establish and conduct workshops for the blind as municipal undertakings. It prefers fostering the voluntary side of this work, and views the municipalization of the trading activities of the blind with a certain amount of anxiety.

> "In our opinion all workshops for the blind should, as far as possible, be conducted on a proper economic basis, and it seems to us that municipalization may destroy this basis, with unfortunate effects on the morale and efficiency of the workers."

In connexion with the education of blind children, considerable alarm was felt on the issue of a circular letter by the Board of Education in January, 1922, intimating that the grants for this purpose could not exceed those of the preceding year. It is now stated that the Board has intimated to the local authorities that it will not now have to place any restriction on the full use of the accommodation already recognized. The blind workers are at an economic disadvantage, and much care has been given to the measures that should be undertaken to augment earnings without reducing the stimulus to work which earning gives. The Committee has arrived at a sliding scheme whereby the wages of workshop employees should be augmented on a sliding scale, providing for a maximum grant of 15s. a week on earnings up to 10s. a week, at standard rates of pay, decreasing by 3d. in the shilling to a minimum of 5s. a week augmentation where the wages are 50s. a week or more. The Minister has recommended this scale to the consideration of the local authorities.

Attention has been given to home workers, and an interesting departure on the part of the Birmingham Institution is reported. A travelling motor shop for the sale of goods made by the home workers visits the various markets within the area, with the result that more work has been found for these workers. Comment is made on the conditions of the grant that may have been received by the home workers, and the view is expressed that there may result some hardship unless

[1] *Third Annual Report of the Advisory Committee on the Welfare of the Blind to the Ministry of Health.* 1921–22. H.M. Stationery Office. 6d. net.

these be varied. Steps are being taken to improve the service rendered by the home teachers of the blind. This service is regarded as one of the utmost importance in ministering to the general social well-being of the bulk of the blind population. The scheme for the certification of these teachers has gone so far that the Committee now recommends that it would be desirable to require all home teachers appointed, on such future date as may be determined, to undergo the examination and obtain the certificate.

The number of blind persons now on the register kept by the Committee has increased from 30,785 in 1920 to 34,894 in 1921. The increase is held to be accounted for by two conditions: first, the more complete records obtained, and secondly, the finding of old blind persons owing to granting of pensions. It is not thought that the actual number of the blind has increased. The number of mentally defective amongst the blind adds to the difficulty of suitable provision. It is estimated that 40 per 1,000 are mentally defective, as compared with 8 per 1,000 amongst the ordinary seeing population. It had been hoped that the local authorities under the Mental Deficiency Act, 1913, would have been able to utilize their powers by combining to make some special provision for these persons, but the restrictions placed upon them in administering the Act by the Board of Control have rendered such assistance impossible up to the present. The Committee is making investigations into the matter, and proposes to report further. It is reported that there is need for the provision of a special home for chronically infirm blind, and that there is room for a voluntary agency to undertake this work.

The report concludes with a series of tables giving the location of the blind, the work carried on by them, the number of unemployed, unemployable, and mentally defective. The chairman of the Committee is the Right Hon. G. H. Roberts, a Labour M.P., and the personnel number 18, all of whom are representatives of county, municipal, and Poor Law associations and of voluntary agencies for the blind.

The Labour Party's Pamphlet.

In contrast with this report of work done, which is of a very hopeful character, there may be read a pamphlet issued by the Labour party, entitled *The Blind Persons Act, 1920*.[2] It is a blunt and wholesale accusation against the Government and its Ministries of deliberately shirking the responsibilities placed upon them by the Act for the welfare of the blind. The reason for this attitude on the part of the Labour party is not far to seek. The pamphlet begins by setting out a lengthy resolution passed at the Cardiff Trades Union Congress, the last clause of which reads:

"Notwithstanding anything which may be done to ameliorate the bad conditions of life and labour for the blind by Acts and clauses, which are mere palliatives, this Congress is resolved upon the principle of direct and complete State and municipal responsibility, and the elimination of the necessity for voluntary charity for the blind."

Thus we find there is a clear issue between the parties who report on the blind. The committee of independent persons who are at the same time actively engaged in the welfare of the blind believe in voluntary effort; the Labour party repudiate voluntary effort and desire that "the State" should take over the whole work directly.

The pamphlet has its uses: it contains a useful summary of work recently done for the blind and the ideas put forward by various agencies and associations, although the statements are a little spoiled by political propaganda sandwiched between. The point of the pamphlet is to be found in two paragraphs:

"It is already clear that in many cases there is grave dissatisfaction with the way in which the Act is being worked. It is said that local authorities are proving very lax in their duties under the Act, that the Ministry of Health is anything but eager to help, and that the benefits which have accrued to blind persons so far under the Act are very small."

"Although the Act was passed as a result of the failure and inadequacy of voluntary institutions the Ministry is attempting to force local authorities to work the Act entirely through such agencies. Capital expenditure has been prohibited, and in areas where there is no voluntary institutions the effect is practically to force such organizations into existence."

Some of the statements of the pamphlet are inaccurate.

"The school accommodation for blind children remains hopelessly inadequate, and the voluntary agencies are quite incapable of providing a remedy."

[2] *The Blind Persons Act, 1920.* Field-book by the National Joint Council of the Trades Union Congress and of the Labour party. Eccleston Square, London. (Undated.) 3d.

The inference is that all schools for blind children are voluntary agencies, which is not true; and that such voluntary schools as exist are incapable, which is equally untrue. It would be well if the sponsors of the paper visited some of these schools; there are a dozen in London within a bus ride of Eccleston Square. Again, it is stated that the "economy" circular of January of 1922 is still in force, but that, we are informed, is not so. There are some appendices, one of statistics taken from last year's report of the Advisory Committee, and a copy of the Birmingham Scheme in operation under the Act of 1920. Presumably this scheme is cited as a model, yet we find that it provides for the full use of the local voluntary institution, and other voluntary institutions set up by the National Institute for the Blind, in the assistance of blind persons, both children and adults. Truly the citation of this scheme is better than the damnatory clauses of the pamphlet.

The National Institute for the Blind.

By way of affording some criterion of the value of voluntary work we may give a short summary of the work of the National Institute for the Blind, which has just issued its report for the year ending March, 1922.[3] This Institute was described in the JOURNAL in 1914, the date of the opening of the new premises in Great Portland Street, London, as "the University of the Blind," and it well merits the name, for there is scarcely a feature of the life of the blind which it does not touch. It is now not only the largest institution of its kind in the United Kingdom, but throughout the world. During the past year it collected and administered funds to the amount of £324,000—no small revenue. The account of the manner in which this sum was dealt with is given in a crisp, terse document of 39 pages, including the several statements of account. The Institute is rapidly becoming the foster parent of many other societies for the blind; it collects money and distributes it to the smaller societies, and in so doing it helps to co-ordinate activities and prevent overlapping of effort. In this manner some hundred thousand pounds were distributed last year.

The Institute has founded and maintains Sunshine House for blind babies, particularly for those whose homes are unsatisfactory. The present home is in Herts, and it hopes to establish one for the north of England shortly. It maintains two first-class colleges for the blind, that at Worcester for boys and that at Chorley Wood for girls. The value of these colleges cannot be overestimated, for they provide a public school education of the best type—a most necessary provision for the blind, for if the blind are to be teachers of the blind the prospective teachers must receive an education of such breadth as will lift them out of the narrow groove in which the blind are apt to move. It is the chief printing and publishing agency of books for the blind, both in braille and Moon's types. Books are a boon to the sighted; they are a positive necessity to the blind, for through them alone can they enter into the chief avenues of thought and inspiration, which are the treasures of our civilization. The books are sold on such terms that there is a heavy annual loss, which has to be made up by benefactions to the extent of £7,000 per annum. The works printed include all manner of educational and scientific works, and those necessary for university students, of which there are not a few. There is also a large output of music sheets in braille.

The Institute issues no less than ten newspapers and periodicals. It has a massage school from which 152 students have qualified, a special library for these students of 493 volumes in charge of a blind medical man, and through the after-care department it assists its workers to obtain suitable posts. It has a staff of thirty-nine home teachers for the blind whose work is chiefly the teaching of those recently blinded. In addition to all this it maintains four guest houses, homes, or hostels for the blind. That is no small record for a voluntary institution. And those who have had experience of the manner in which this Institute takes up the case of a blind person referred to it for help in training or in obtaining suitable work can testify to the alertness of its officers and to the lack of red tape which marks their procedure.

On the testimony of the report of this voluntary institution we think that the Labour party is wrong in belittling voluntary effort, and that the Advisory Committee is right in recommending the Ministry of Health to use such voluntary effort in preference to municipal machinery.

[3] *The Annual Report of the National Institute for the Blind.* 1921–22 Great Portland Street, London, W.1.

England and Wales.

CARDIFF OUT-PATIENT CLINIC IN PSYCHIATRY.

In his last annual report on the work of the City of Cardiff Mental Hospital* the medical superintendent, Dr. Edwin Goodall, makes interesting reference to the out-patient clinic in psychiatry, which was started by him in May, 1920, with the joint approval of his committee and the authorities of the King Edward VII Hospital, Cardiff. This clinic is held every Tuesday afternoon in the out-patient department of the general hospital. Its purpose is to give advice and treatment (*a*) in early and recent cases of the psychoses and psychoneuroses; and (*b*) to patients who have been under treatment in the Mental Hospital, both during their period of discharge on probation, and subsequently if they feel in need. Dr. Goodall states very cogently his reasons for securing that the psychiatric clinic should be part of the out-patient department of the general hospital, and not merely an out-patient department of the mental hospital. He regards the setting up of this clinic as a step of the first importance in the treatment of mental and allied disorders, and two years' experience strengthens him in his insistence on the urgent need for an indoor psychiatric clinic to work in conjunction with it. The out-patient department, he declares, will not be fully successful until suitable indoor accommodation is available. Meanwhile, in co-operation with the medical staff of the King Edward VII Hospital, certain cases of a suitable kind have been received into that institution under the physicians, thereby securing for the patients that investigation from the standpoint of general medicine which is what they need. Dr. Goodall acknowledges his gratitude to the physicians for letting him collaborate with them in this matter. To illustrate the kind of cases dealt with at the clinic he classifies the first hundred patients into groups, and from this he infers that "in Cardiff medical ideals in regard to the treatment of early mental and allied disorders have been attained as nearly as they can be, failing the indoor clinic in psychiatry, which is bound to come sooner or later."

MANCHESTER ROYAL INFIRMARY.

A bazaar is to be held on the first three days of November for the purpose of raising the first £10,000 of a £100,000 fund which is required to build a new nurses' home for the Manchester Royal Infirmary. The great expansion of the work of the Infirmary since the new buildings were opened some thirteen years ago has made a new nurses' home necessary. When the new Infirmary was built accommodation was provided for 189 nurses, but with the increased staff many nurses have now to be lodged outside, an arrangement which has obvious inconveniences. Nurses on night duty have now a 73-hour week and on day duty a 63-hour week. It is agreed that these hours of duty are much too long, and the Board of Management is anxious to reduce them. A uniform week of 56 hours for both day and night duty is aimed at, but for this reduction at least 65 more nurses are required. It is to accommodate those 65 nurses and to bring under one roof the other nurses who are at present compelled to live outside the Infirmary that the new home must be built. Gifts of money and goods for the bazaar may be sent to Miss M. E. Sparshott, matron, Royal Infirmary, Manchester.

Scotland.

PROFESSORIAL APPOINTMENTS FOR GLASGOW GRADUATES.

As we briefly announced last week, Dr. G. Haswell Wilson has been appointed professor of pathology in the University of Birmingham in succession to Professor J. Shaw Dunn, who has been elected to the corresponding post in the University of Manchester. Both Dr. Wilson and Professor Shaw Dunn are graduates of the University of Glasgow, the former having graduated M.B., Ch.B. (with commendation) in 1906, and the latter M.B., Ch.B. (honours) in 1905 and M.D. (honours) in 1912. Dr. Wilson, after holding a Carnegie Research Scholarship and Fellowship, was appointed assistant to the professor of pathology and assistant pathologist to the Western Infirmary, Glasgow, in 1911, and three years later became lecturer on pathological histology in the University; in 1918 he was appointed lecturer in bacteriology, and in the following year pathologist to the Royal Hospital for Sick Children.

MEDICAL LUNCH CLUB, GLASGOW.

This club resumed its activity for the season on September 7th, when Dr. John Henderson presided over a good attendance of members. After lunch various items of business were discussed. The place, day, and hour of meeting were adhered to as formerly, being considered most suitable, and it was decided to resume the weekly meetings for the season on October 5th, when office-bearers would be appointed for the year. The report of last year's working was favourably received, and it was unanimously agreed that the club fulfilled a useful function amongst the profession in Glasgow, but that its usefulness could be much greater were its membership increased. To this end it was emphasized that, although the club was instituted under the auspices of the Glasgow Eastern Branch of the British Medical Association, its membership was open to all practitioners in Glasgow and neighbourhood.

ANDERSON COLLEGE OF MEDICINE.

At the last quarterly meeting of the governors of the Anderson College of Medicine, Glasgow, it was announced that Professor J. Arthur Thomson of Aberdeen would give the introductory address at the opening of the winter session. The resignations were received with great regret of Dr. John Macintyre from the lectureship on diseases of the throat and nose and of Dr. W. D. Macfarlane from the professorship of midwifery and gynaecology. Dr. Macintyre has held his appointment for thirty-one years, and is also Dean of the Medical Faculty of the college; Dr. Macfarlane has been professor of midwifery for the past eleven years. The report on the work of the summer session showed that the number of students attending was 357.

India.

WOMEN'S MEDICAL SERVICE.

THE annual report† for 1921 of the National Association for Supplying Medical Aid by Women in India shows that the work of the Association and its affiliated institutions is continuing to make excellent progress. On January 1st, 1921, there were thirty-three medical officers on the cadre of the Women's Medical Service for India. It is stated that the work done in most of the hospitals under the control of the Service has been excellent, and in nearly all of them the numbers treated have increased. The financial position is difficult on the whole; but in some cases improvement has taken place owing to the increased popularity of the hospital leading to a larger number of subscriptions and the realization of larger sums from hospital stoppages. According to an appendix in the present report there are now no fewer than 135 women's hospitals in India, large and small (including mission hospitals), staffed entirely by women. The Lady Hardinge Medical College continues to prosper, and there are eighty-five students in residence. The course of study at the College lasts for seven years—two in science and five in medicine; as the College was opened less than six years ago no medical graduates have yet passed out, but in May, 1923, nine students will appear at Lahore for a final M.B., B.S. examination, and thereafter the College should turn out annually an increasing number of highly qualified medical women. The ordinary income of the Countess of Dufferin's Fund, upon which the provision and training of medical women and the upkeep of women's hospitals in India largely depend, amounted to Rs. 47,177, and the ordinary expenditure of the council of the Fund during the year was Rs. 36,124. A subsidy of Rs. 4,24,455 was received from the Government of India to meet the cost of the Medical Women's Service for India. The year closed with a balance in hand of Rs. 2,65,748. The Countess of Reading, who has taken a great interest in the organization of the medical relief of women since her arrival in India, has issued a public appeal for a "Women of India Fund," which it is hoped will remain permanently open and will be used from time to time to assist departments most needing help.

* City of Cardiff Mental Hospital. Fourteenth Annual Report, for the year 1921. Cardiff: S. Glossop and Sons, Ltd.

† Annual Report of the National Association for Supplying Medical Aid by Women in India for the Year 1921. Calcutta: Superintendent Government Printing, India. 1922. 1 rupee 8 annas.

In the first instance it will be used to complete the buildings of the Lady Hardinge Hospital, Delhi, and then to open a women's hospital in Simla; later it is hoped to further the organization of an Indian nurses' association.

NEW MEDICAL COLLEGES FOR BENGAL.

Sir Surendra Nath Banerjee, Minister of Public Health, presided at Calcutta over the inaugural meeting of the National Medical College and King's Hospital, a private medical institution founded in Calcutta, which will be affiliated to the State medical faculty. The Minister said that there was a paucity of qualified medical practitioners in India, and the Provincial Government would rejoice if more medical schools were established. Two more medical schools were, he said, in fact likely to be started shortly—one in connexion with the Sambunath Pandit Hospital, and the other at Howrah. The Burdwan Schools were already started, and others were in course of preparation at Mymensingh, Chittagong, and Berhampore.

CONVICTION UNDER BOMBAY MEDICAL ACT.

At Bombay, in June last, a man named J. F. C. Wood was charged, under the Bombay Medical Act, with assuming certain medical degrees to which he was not entitled. A full report appears in the *Pioneer Mail* for July 7th, 1922. The accused applied to the registrar of the Bombay Medical Council for permission to register as a medical practitioner; the reply to an inquiry addressed to the General Medical Council was unfavourable. The accused stated that his diplomas were deposited with his mother before leaving on field service for Mesopotamia, and he had since lost trace of his mother's whereabouts. He did not know why his name did not appear on the *Register*. He undertook not to practise medicine or surgery until he had satisfied the Bombay Medical Council. The magistrate found the accused guilty, and fined him 201 rupees.

PRESENTATION TO DR. N. H. CHOKSY.

Dr. N. H. Choksy, late of the Bombay municipal health department, was recently presented with an address in a silver casket by the Bombay Medical Union and other medical friends. The address referred to Dr. Choksy's eminent public services, extending over thirty-four years, and especially to his devotion to duty during many serious epidemics. Dr. Choksy has also been honoured by the King by being made a Companion of the Order of the Indian Empire.

Correspondence.

BONE GRAFTING IN TUBERCULOUS SPINAL CARIES.

SIR,—I would not like that through Mr. Roth's letter (August 12th, p. 284) on the subject of bone grafting in spinal caries a misunderstanding should arise concerning my methods for the reduction of deformity.

We do not try to obtain the straightening of the deformity caused by the cicatrized vertebral bodies, but we reach its apparent reduction by its soft and progressive driving back by means of compensatory lordoses above and below the formerly diseased region. What still subsists of the deformity is concealed by the muscles which are remarkably developed by heliotherapy. Because these compensatory lordoses are necessary it is very much more easy to get a reduction of deformity in the dorsal region than in the cervical and lower lumbar regions. This explains why I could once write to Mr. Roth:

"The gibbosity, when situated in the dorsal and also dorso-lumbar region, has, as a rule, been corrected, and always given us the best results."

With regard to the question of immobilization, it is our practice to keep the patient strapped down flat upon his back during the active stages of the disease, and not to allow the change to the ventral position (which is so potent in the correction of deformity) until clinical and radiographic examination show the disease to have entered on a quiescent stage.

In his statement that relapse is less common after operative than after conservative measures, I think Sir Henry Gray must have the plaster jacket in mind, more than other methods of conservative surgery. The muscles, whose function it is to support the spinal column in an extended position, are so atrophic after a long course of plaster-jacket treatment that far too much weight is thrown on the anterior part of the vertebral bodies, with the result that the disease is likely to be reawakened. The splendid "muscular corset" developed by patients treated by heliotherapy makes them often look like athletes, achieves quite as satisfactory a result as an Albee graft, and does so in what is, to my mind, a much more natural way.

My own experience is that treatment directed towards the rehabilitation of the general health is a much more effective way of guarding against relapse than any form of local treatment. I am becoming more and more convinced that tuberculosis is to be looked on merely as a local manifestation of a general disease, and it would really be a pity if by Albee's operation this fact were to become forgotten.—I am, etc.,

Leysin, Sept. 16th. A. ROLLIER.

OPHTHALMIC EXAMINATIONS IN GENERAL MEDICINE.

SIR,—Dr. Hawthorne's paper in the JOURNAL of September 16th (p. 495) on "The significance of retinal haemorrhages" calls attention to the necessity and usefulness of ophthalmic examination in the practice of medicine, and yet, sad to say, how few men use the ophthalmoscope in their daily practice.

With the electric ophthalmoscope there is little difficulty in quickly obtaining the required manipulation of the instrument. It is one of the drawbacks of the extreme prevalence of specialties in every branch of our profession that many men are gradually but surely giving up the use of special modes of examinations, which are not difficult to learn, and are allowing them to be placed in the hands of a few special men. It is well known that a large number of so-called eye cases occurring in practice are primarily medical cases, and really should be diagnosed and treated by physicians.—I am, etc.,

Folkestone, Sept. 18th. W. J. TYSON, M.D., F.R.C.P.

AN UNSUSPECTED PREGNANCY.

SIR,—After reading Dr. Fletcher's communication on unsuspected pregnancy in the JOURNAL of September 16th (p. 516), and in view of its medico-legal significance, I send you the following record of an experience I had in a similar case.

Early one morning a few years ago I was called to a lady visitor who had been taken ill suddenly at an hotel. I found she had just been delivered of a full-time healthy child, no one else being present in the room, and no one knowing she was in labour. The baby was born into the *pot de chambre* and fortunately survived the ordeal. The umbilical cord had been torn across, no ligature had been applied, and there had been no unusual amount of haemorrhage, either maternal or umbilical. I expressed the placenta, gave the usual attendance, and the subsequent history was uneventful. She was a married woman and this was her first pregnancy. She had no idea that she was pregnant, and said that her menses had been perfectly regular, the last occasion being one month previous to her confinement. Her mother, with whom she had lived several months during her pregnancy, corroborated this statement. She was employed by a firm of wholesale costume manufacturers as a mannequin, and the afternoon before this event took place had been displaying evening dresses and costumes on her figure with their representative. This man, who was married and the father of a family, had detected nothing unusual about his assistant. In the early part of the night she had complained to him of abdominal pains, and he had given her some whisky. He was very much surprised to hear next morning what had happened. A few weeks later the husband wrote to me and I furnished him with a full report of the case. Since then I have heard nothing more of the patient.—I am, etc.,

Manchester, Sept. 17th. ALFRED WILLIAMS, M.D.

PSYCHO-ANALYSIS.

SIR,—We are fortunate with men like Dr. McBride having leisure and ability to draw our attention to the antitheses of writers on dreams and other nervous phenomena, and probably his modesty makes him apply the word "desultory" to his study of such subjects.

Many years ago, when making extracts from Continental writers on dreams and other nervous states, one of my assistants suggested that some of the patients seemed acquainted with "leg-pulling," and during and since the war patients have been known to elaborate hypothetical dreams

in anticipation of an impending interview with psycho-analysts. There seems no reason why the old soldier should not be played on psychic as well as other ailments.

In your article on shell shock at page 392 of the JOURNAL you quote an eminent authority as stating: "The war created nothing in the way of psychoses." During the war, however, many doctors joined the forces, and were brought up against soldiers with nervous troubles, and having had no special training or experience in such conditions deemed what they observed as new, not only to themselves but to others.

Dr. Adamson in his letter (p. 402) defines the chief duty of a psycho-analyst, and it seems dangerously near to using leading questions, which often enables one to obtain the replies wished for. Psycho-analysis resembles in no small degree the detailed and painstaking history of any given case, and we would be equally justified in using such terms as cardio-analysis or pelvic analysis, according to the position of the symptoms or ailment.

In the *Journal of Mental Science* for July there are two such cases well reported, and Dr. Good is worthy of all praise in restoring two cases of supposed neurasthenia to their proper place of traumatic nervous diseases, but psycho analysis does not seem the prime factor in the diagnosis.

The words "conscious" and "unconscious" have supplied food for metaphysical discussion for centuries; hence the variety of terms concerning them. The conscious may be readily recognized, but not so the unconscious. A muscle not active is said to be at rest and ready to act again if required; it is not said to be palsied. So should we hesitate to apply "unconscious" to any part of the brain for the moment inactive. Rather should we say it was at rest, and in fact use the word "unconscious" as seldom as possible, preferring to qualify the word "conscious."

Sir W. Hamilton, following Horace after a lapse of nearly two thousand years, revived two words easily understood in common use in other sciences, and applied them to conscious states—namely, "latent" and "potential"—the former meaning a conscious which was and may be again, the latter an actual or potential state and which now is.

The greater part of our knowledge lies in the domain of latent consciousness, ready for use when required.

May I remind Dr. Ladell that at Edinburgh University during the summer sessions over fifty years ago a very complete course of lectures on medical psychology was delivered, combined with clinical instruction twice a week at Morningside Asylum?—I am, etc.,

Harrogate, Sept. 5th. T. JOHNSTONE, M.D.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—It is impossible to answer Surgeon Commander Bastian (September 9th, p. 490) fully in a letter. He raises issues on which hang questions not only of science, but of practical policy, many of them connected with mind, of greater importance than even the prevention of idiocy.

What is the nature of man? What in him is innate, what acquired, and what inherited? What can be effected by mere training, and what only by selective breeding? What lines should training, and, if absolutely necessary, selective breeding, follow? All these problems, linked with every detail of human life, are discussed on platforms and in pulpits and print every day, but with futility; for, since crucial tests are rarely applied, and never frankly accepted, there is no agreement as to basic principles. It is about these basic principles that Surgeon Commander Bastian inquires. I am very sure that doctors are the only considerable body of men who are fitted by knowledge and training to apply the right tests and trace the inevitable consequences, and equally sure that before long they will do so; but hitherto, though eager as individuals they have as a body fought shy of problems that seem remote and complex. Actually the necessary facts are in the hands of all doctors, and for people who think in terms not of mere words, but of reality, the problems themselves are simple. In what follows I shall give the appearance of controversy, for I deal with debated matters and must indict a whole "science." But of controversy, based on preconceptions and mere words, we have had enough outside the ranks of medicine. A little cool discussion, founded by doctors on verifiable evidence, conducted in precise language and with an open-minded readiness to accept crucial tests, should soon put a new aspect on affairs. May I, therefore, beg each reader to judge from facts within his own knowledge?

As stated in my letter (August 26th, p. 401), the individual springs from a germ cell in which are none of the features (characters) that he develops subsequently, but only predispositions to develop them in response to fitting nurture. It follows that he inherits only predispositions, and that every character he develops is a product of nature *and* nurture. Because men and trees have different natures they require different nurtures and develop differently. Speaking generally, the individual develops characters only when they are needed. Some characters (for example, head and heart) are always needed, and therefore Nature has arranged that the necessary nurture shall always be experienced. Other characters (for example, scars which repair injury and blacksmith's muscles which follow heavy labour) are only exceptionally needed, but, provided the individual's nature permits, they arise just as surely as the head and heart when the proper nurture is experienced.

We know that the differences between two separate individuals are natural *or* nurtural. Thus a man may be darker than his parent by nature or through sunburn. Here the thinking is clear and the language precise. Technically, natural (innate, germinal) differences are termed "variations," while nurtural (acquired, somatic) differences are called "modifications." We know what we mean when we say that variations are inheritable—that is, that differences in predispositions tend to be transmitted to offspring, so that given similar nurture they develop similar differences. But can any man explain precisely what he means when he says that modifications are (or are not) inheritable? If he tries he will find that he is playing with words, and confusing inheritance with reproduction, or even with non-inheritance. But in this connexion modifications belong to the same category as characters about which Surgeon Commander Bastian inquires.

First, let us note that variations and modifications are not characters, though they are revealed in characters. We can always contemplate a character in a single individual, but we cannot perceive a variation or a modification unless we compare separate individuals. Thus, if a normal man's son has a sixth digit, then that digit is a character which indicates that the son has varied from his parent. If the grandson reproduces the digit it remains a character, but no longer indicates a variation from the parent. Clearly, then, variations and modifications are not characters, but relations of difference between individuals—parent and child, grandparent and grandchild, negro and white, and so on. Nevertheless they are constantly confused with characters, and just here has been the starting point of an enormous amount of loose thinking and writing.

As we see, differences between individuals (variations and modifications) are innate *or* acquired, natural *or* nurtural, germinal *or* somatic in origin. But in what sense is any character more innate *or* acquired than any other?

If we compare two men we can say with clear meaning and in precise language that they differ innately as regards heads, and by acquirement as regards scars. But if we compare a man's characters and say, for instance, that the head is innate and the scar acquired, what in the world *can* we mean? Head and scar are both products of ancient evolution, both depend on germinal predispositions and fitting nurture (and on nothing more and nothing less), and both are situated in the soma.

Obviously, therefore, characters, unlike differences between individuals, are both natural *and* nurtural, innate *and* acquired, germinal *and* somatic. I hope I have managed to make myself clear, for here—in the fact that differences between individuals are innate *or* acquired, whereas the characters in which those differences occur are themselves innate *and* acquired—we have, I think, the key to the whole problem. Missing the key, we have before us nothing but a continuance of that immense mass of loose thinking and unending controversy which has disgraced this subject for more than a century: holding it, the door opens and the road before us is plain. Missing it, we shall deal only with words; holding it, we shall be in contact with the realities of nature. There are sure to be readers who think I am exaggerating. Well, let them try to conceive of a character as innate *or* acquired.

Contemplate the consequences of loose language and thought.

Consider such a sentence as the following, the like of which may be found in almost every page of biological literature. "John's head is innate, but his scar is acquired, and therefore his child inherits the former, but not the latter." In the case of the head, since only predispositions are transmitted, we can mean only that the child, inheriting John's predisposition, reproduces, in response to similar nurture, a similar character. The child is, then, like his parent both by nature and nurture. If we give our words the same meanings, we should say that a child inherits a scar when he reproduces it in the same way as the parent produced it. Again, he is like the parent both by nature and by nurture. But biologists, who are nearly all zoologists and botanists, would not regard this as inheritance. They would regard the scar as inherited only if the child reproduced it in a way in which the parent did not, and could not, have produced it.

He would then, notwithstanding a superficial resemblance, be profoundly unlike the parent both by nature and by nurture. But unlikeness is not inheritance. It is variation—that is, non-inheritance. So that here, in a single sentence, "innate" and "acquired" are used to indicate distinctions where there are no differences, and "inherit" is given two directly contrary meanings. Is not this a mere playing with words? Conceive the confusion of thought and language! As Francis Bacon said: "Men believe that their reason rules over words, but it is also the case that words react, and in their turn use their influence on the intellect." Here the transference of three words from differences between individuals to the characters in which the differences are revealed has resulted in a century of stasis in what should be the queen of sciences. Not even the old schoolmen produced anything so merely verbal.

Characters result from the action of nurture on predisposition. Nature has evolved these actions and reactions to fit species to their environments, and therefore normal characters, normally developed (for example, a scar when it repairs injury), are always useful. For millions of years living beings develop characters normally, but at long last a biologist observes a character which he calls "acquired," and wonders whether it is "inheritable." Thereafter he, his fellows, and their successors debate the matter for a century. Such is the power of words. What they mean, if they mean anything, is that when the "acquired" character is observed the whole scheme of nature tends, astoundingly, to be upset, and that this useful feature tends henceforward to appear a useless thing in response to a new form of nurture. Of what use, for example, would scars be to the unwounded descendants of a wounded man, or big muscles and horny hands to the sedentary descendants of a blacksmith?

Which are the characters which biologists distinguish as innate, and which those they call acquired? Such is the power of tradition—that is, words—that they have followed without question the man in the street, who, in thoughtlessness, has always called everything which develops in response to glaringly obvious nurture "acquired," and everything else "natural." The distinction is good enough for his purposes, but it is not for science. Thus, though human muscles develop from birth forwards solely in response to use, yet only exceptional muscular developments such as the blacksmith's are described as acquired by biologists.

It is sometimes maintained that "innate" and "acquired" are technical terms; but, as may be seen plainly in literature, biologists have genuinely supposed that some characters are products of nature without nurture, and others of nurture without nature. Hence their terms "germinal" and "somatic." The matter has been discussed at length (*Nature*, November, 1920; May, 1922), and, though many biologists declare that they know exactly what their terms mean, all attempts to explain or define have failed. Some have said that "innate" implies normal and "acquired" exceptional. But why not use precise language? Besides, many exceptional characters (for example, birthmarks) are regarded as innate, and many normal traits (for example, knowledge of the English language in England) are considered acquired. Others, again, say that an acquired character is one which develops in response to the nurture of use, and that all others are innate. But many characters (for example, scars) which are termed "acquired" do not develop in response to use, and most characters which do so develop (for example, ordinary muscles) are termed "innate."

With the conspicuous exception of Darwin, who, in all that remains valid of his work, reasoned from the basis that *variations* are innate and transmissible, most biologists—for instance, Lamarck and Weismann—have founded their speculations on the idea that characters are innate *or* acquired, transmissible *or* non-transmissible. This is the basis of modern biology. Taking that much for granted, and assuming also that nature and nurture are warring forces, they have tried to ascertain, for example, what is innate and what acquired in the individual, and whether nature or nurture is the stronger—which is like trying to discover whether the engine or the steam is the more potent in moving the train. The significant thing in all this for medical men is that our own science, physiology, is in direct opposition. Physiologists assume that nature and nurture are collaborating forces; suppose, therefore, that all characters are equally innate, acquired, and transmissible; and, taking predisposition for granted in every case, seek merely to ascertain what nurtures cause what characters to develop. We know clearly what physiologists mean; but can any biologist explain in precise terms what *he* means? Physiologists have a large body of interpretation, the truth of which is universally admitted, but there is hardly an item on which biologists are agreed. Physiologists proceed on the assumption that normal characters have each had, functions, and already in the case of man, the best known living being, have ascertained the nature of almost every feature, but biologists are still disputing as to whether these features are adaptational or not. In brief, physiologists have followed Bacon's advice and founded their science on reality, whereas biologists, like the schoolmen whom Bacon is supposed to have destroyed, have based their disputations on misused words. Hence the unending controversies.

The amusing thing is that biologists have always assumed an air of patronage towards medical men, who are supposed to be too ignorant or untrained to grasp the subtleties and complexities of heredity. Even decisive medical facts have been consistently ignored. I suppose some doctors have been hypnotized; but it is all crazily absurd. There is not a big problem about which biologists have disputed which could not be settled immediately if undisputed medical evidence were used crucially and with ordinary common sense. The simple physiological truth, "Variations are the sole cause of non-inheritance; apart from variations, like begets like when parent and offspring develop under like conditions of nurture," covers almost the whole field. There remains nothing besides but the causation of "spontaneous" variations and the function of sex (with which is bound up the problem of alternate inheritance and reproduction). Both these problems are physiological. Of course, however, when the basic truths are established, there remains an enormous field for application—as, for instance, in the prevention of idiocy and the training of normal children.

I venture now to raise a question which seems to me important. Medical science has grown so enormously that we are all ignorant of much which we should know. Even six years of strenuous labour leave the student inadequately trained. Knowledge is worthless unless it be useful practically or intellectually. Is it right to compel learners to spend valuable time over the traditional zoological and botanical studies? The information acquired is of no practical utility to the physician or surgeon, and is, as a rule, forgotten as soon as the prescribed examinations are passed. For the same reason it is useless intellectually. Moreover, consider the dismal mess that lifelong students of natural history have made of their own thinking. Is it not high time that medicine cut her leading-strings and established her own biology and study of heredity on what has never yet been done—a physiological basis?—I am, etc.,

Southsea, Sept. 17th. G. ARCHDALL REID.

Obituary.

JAMES DONELAN, M.B., M.Ch.(R.U.I.),

Surgeon, Throat and Nose Department, Italian Hospital, London.

MR. JAMES DONELAN, well known among London laryngologists, died on August 25th at the age of 65. He received his medical education at Trinity College, Dublin, and the École de Médecine, Paris, and graduated M.B. and M.Ch. (with honours) at the Royal University of Ireland in 1886. After holding several resident appointments in Dublin he became a clinical assistant at the Throat Hospital, Golden Square, London, where he was associated with Sir Morell Mackenzie. He acted as private assistant to Mackenzie for nearly five years, and helped him with the (unpublished) revised edition of his work on diseases of the nose and throat; he was in charge of Mackenzie's practice while the latter was in Germany in attendance on the Emperor Frederick. Mr. Donelan was appointed surgeon to the throat and nose department of the Italian Hospital, Queen Square, in 1895, and held that appointment until his death. He was made a Chevalier of the Crown of Italy in 1909, and promoted Officer in 1918. During the war he was responsible for the organization of the "short service" system by which over 300 British and colonial surgeons gave voluntary service to the French wounded from 1914 to 1916, and he acted as surgeon in charge of the Ambulance Hospital, Crépy-en-Valois, during the first battle of the Aisne. He had been honorary secretary and a member of the council of the Laryngological Society of London, and in 1918–19 he made a most popular president of the Section of Laryngology of the Royal Society of Medicine, of which he was a Fellow; his presidential address on "Morell Mackenzie, the father of British laryngology," was published in the *Journal of Laryngology and Otology* in June, 1919.

James Donelan will perhaps chiefly be remembered as a genial link between the early days of laryngology in England and its status as a surgical specialty to-day. His private charities were many, and the poor—notably those of his own church—were always a particular care to him. In his younger days he had been an oarsman of some note, having won several cups, and latterly he was a great lover of music, books, old silver, and furniture. His death may have well been hastened by his strenuous work in Paris during the

recent International Congress of Oto-Laryngology; he was a member of the committee of organization, and spoke each day in English, French, and Italian, interpreting the speeches of other members of the Congress. He is survived by his widow and daughter, and a son who qualified lately as a medical man from St. Bartholomew's Hospital.

THE death took place, on September 4th, of Dr. JOSEPH CARROLL of Whelley, Wigan, in his 63rd year. He was educated at Glasgow University and Anderson College, and graduated M.B., C.M.Glasg. in 1882; he took the D.P.H. at Cambridge in 1891. He was for a time lecturer in hygiene and public health at Anderson College, and later went into practice at Ilkeston, Derbyshire, where he held the appointments of surgeon to the Ilkeston Cottage Hospital and medical officer of health. During the war he held a commission as Captain in the R.A.M.C.(T.), and served with 2/3 Welsh Field Ambulance in various theatres of operation. He was medical officer for the Wigan Union, and held the post of medical officer for the Wigan district under the Ministry of Pensions.

The Services.

DEATHS IN THE SERVICES.

Lieut.-Colonel Walter Croker Thomas Poole, R.A.M.C.(ret.), died at Caxton, Cambridge, on September 9th, after a long illness, aged 69. He was born on November 12th, 1853, and was educated at Trinity College, Dublin, where he graduated as A.B. and M.B. in 1878, also taking the L.R.C.S.I. in the same year, and subsequently the F.R.C.S.I. in 1890. Entering the army as surgeon on February 5th, 1881, he became lieutenant-colonel after twenty years' service, and retired on February 14th, 1903. He served in the South African war in 1900–02, and took part in the relief of Ladysmith, including the actions at Spion Kop, Vaal Krantz, and Pieter's Hill, and the operations in the Tugela Heights; in the operations in the Transvaal from March to June, 1900, including the action at Laing's Nek; and in the Transvaal from November, 1900, to May, 1902; receiving the Queen's medal with five clasps, and the King's medal with two clasps.

Medical News.

THE winter session 1922-23 at Charing Cross Hospital Medical School will be opened by the annual prize distribution, which will take place in the Out-patients' Hall of the hospital on Tuesday, October 3rd, at 3.30 p.m. Viscount Burnham will distribute the prizes. The annual dinner of past and present students will be held at the Imperial Restaurant (Oddenino's), Regent Street (entrance in Glasshouse Street), on the evening of the same day, at 7 for 7.30 p.m., with Lord Burnham in the chair. Tickets, 12s. 6d. each, can be obtained from the honorary secretary to the dinner, Mr. Frank Noakes, Charing Cross Hospital, London, W.C.2.

AN autumn special course, arranged by the North-East London Post-graduate College, will be held from October 16th to October 28th inclusive, at the Prince of Wales's General Hospital, Tottenham, N.15. As on former occasions it will include, in the mornings from 10.30 a.m. to 12.45 p.m., practical demonstrations of clinical methods applicable in medical practice, the exhibition of illustrative cases, etc., and in the afternoons, from 2 to 5.30 p.m., demonstrations of groups of selected cases, cliniques in the various general and special departments of the hospital, and clinical lectures. On Saturdays demonstrations will be given in adjacent special hospitals. Luncheon will be obtainable in the neighbourhood of the hospital, and tea will be provided each afternoon. A syllabus of the course with any further information desired may be obtained from the Dean.

THE League of Nations Committee for the study of international questions concerning intellectual co-operation held a session at Geneva last month under the chairmanship of Professor Henri Bergson. It was decided that arrangements should be made to hold an international congress of the universities of all countries. The subcommittee charged with the arrangement of this congress was instructed to prepare a report on the following topics: The exchange of professors and of students; the equivalent values of university courses and degrees; the institution of international scholarships, of international vacation courses, and of a central office for information on university matters.

IT is announced that Dr. Wilbur C. Smith will combine the appointments of "athletic director" and professor of anatomy at Tulane University, U.S.A.

FRIDAY, October 6th, has been set apart for an organized effort in London under the patronage of the Prince of Wales, on behalf of the Joint Council of the Order of St. John and the British Red Cross Society and the Combined Hospitals of London.

THE annual general meeting of the Medical Sickness Annuity and Life Assurance Society will be held at the offices of the society, 300, High Holborn, W.C., on Monday, October 2nd, at 4 p.m.

THE winter session of the Harveian Society will open with a clinical meeting, to be held at Paddington Green Children's Hospital, on Thursday, October 5th, at 4.30 p.m., when many interesting cases will be shown.

AT the opening of the new session at the Westminster Hospital School of Medicine on Monday, October 2nd, at 3 p.m., Mr. G. T. Mullally, assistant surgeon to the hospital, will give the introductory address, "The art of medicine."

MEDICAL practitioners are sometimes asked where instruction in infant care may be obtained by lay workers. Elementary courses in this subject are given at Carnegie House, 117, Piccadilly, W.1, under the auspices of the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, and the National Society of Day Nurseries. The next courses of lectures for crèche nurses and probationers, on the one hand, and for infant welfare workers, teachers, mothers, etc., on the other, will begin early in October. Applications should be addressed to the Honorary Secretary, Miss Halford, at the above address.

THE University of London Press announces for early publication a study of the human mind, from the metaphysical and neurological aspects, entitled *Elements in Thought and Emotion*, by Mr. George G. Campion, who has had assistance from Mr. Santayana and Professor G. Elliot Smith.

A COURSE of twelve lectures on the management and feeding of infants and young children will be given to qualified practitioners by Dr. Eric Pritchard, at the St. Marylebone General Dispensary, on Thursdays and Mondays from October 5th to November 13th, at 6 p.m. Arrangements have been made for those taking part in the course to attend the infant consultations at the Infants' Hospital, Westminster, and to visit the Nursery Training School at Golders Green. The fee is two guineas; information and tickets may be obtained from the Secretary, 77, Welbeck Street, W.1.

THE Rhode Motor Company of Tyseley, Birmingham, is advertising a new Rhode "all weather" coupé at £325. The chassis is the standard 9.5 h.p., with the Rhode four-cylinder water-cooled overhead valve engine.

DR. JOKICHI TAKAMINE, well known for his work on diastatic ferments and the active principles of the suprarenal glands, died recently in New York; he was born in Tokyo in 1854.

THE medical officer of health of Toronto recently stated in a health bulletin that there were more deaths in Toronto in 1921 from venereal diseases than from either cancer or tuberculosis. There are six venereal disease clinics in Toronto, and during 1921 33,322 cases were given treatment.

THE Mexican Medical Association recently celebrated the third anniversary of its foundation, when, in addition to other celebrations, a speech was delivered by Dr. Brieso Vasconcelos, editor of the *Gaceta Médica de México*.

A MEMORIAL to Dr. A. Charpy, professor of anatomy in the University of Toulouse, has been erected by the Faculty of Medicine of the University.

ACCORDING to a recent census there are at present 22,990 medical practitioners in France, of whom 5,415 are in Paris and 17,575 in the departments and colonies. There are thus four times as many doctors in proportion to the population in Paris as in the departments.

DEATHS from acute alcoholism in New York have increased this year 27 per cent. over last year and 89 per cent. over 1920, according to the records of Dr. Charles Norris, chief medical examiner. These figures include only those persons who died without medical attention, and Dr. Norris considers that many others attended by private medical practitioners have died from the same cause.

WE have received a copy of a pamphlet, *Torquay Marine Spa*, issued mainly to set forth the facilities for treatment provided by the Corporation Medical, Electrical, and Turkish Baths, which were reconstructed in 1914, and have been kept up to date. A great variety of baths can be obtained, and with regard to the selection of those suitable to any particular case, medical men practising in or near Torquay are prepared to advise. The pamphlet also contains a general account of Torquay and its climate. Copies can, we understand, be obtained from the General Manager of the Baths.

THE death is reported of Dr. J. K. A. Wertheim Salomonson, professor of neurology and radiology at the University of Amsterdam, on September 16th, at the age of 58.

THE first woman medical student in Turkey has recently been registered at the Constantinople faculty of medicine.

THE available life tables in the United States for the year 1920 show that there has been an increase of 2.75 years in the life span in the last twenty years (1901 to 1920). The expectation of life at birth in the United States is said now to be 54.3 years, while in 1910 it was 51.5, and in 1901 49.2. In the last two decades there has been added five years to the expectation of life, and the span of life has been lengthened by a fifth in one generation.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 15, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

SCHLATTER'S DISEASE.

"W. G." writes: I have under my care what I believe to be a case of Schlatter's disease—epiphysitis of the knee-joint. I have tried to find references to its pathology, etc., but so far without result. Can you give me any assistance?

*** "Schlatter's disease" is the name given to avulsion of the tubercle of the tibia. The following references will be found to supply all the most recent information on the subject: *Beitr. z. klin. Chir.*, 1920, cxx, p. 319 (this is the best and gives fullest bibliography); *J. Orth. Surgery*, 1921, iii, p. 550; *Norsk Mag. for Laegevidenskaben*, 1921, xxxii, p. 320; *Chirurg. degli Organi di Movim.*, 1921, v, p. 353; *Annal. Surg.*, 1921, lxxiii, p. 77; *Lancet*, 1921, i, p. 482.

MCINTYRE'S, BUSK'S, AND WINCHESTER'S SPLINTS.

"IGNOTUS" would like to know if some correspondent of the JOURNAL could kindly inform him where any published reports of the splints devised by Professor Busk and Mr. Winchester can be found. They were mostly modifications of McIntyre's leg-splint and Desault's and Liston's long splint. The works of McIntyre and Desault are to be found in medical libraries in London, but Busk when he practised surgery wrote very little, though after taking up anthropology he wrote much that is of permanent scientific value. Mr. G. W. H. B. Winchester died in 1901, leaving no well-known writings.

ASTHMA.

DR. THOMAS MARTIN (Peebles) writes: I have a patient, an adult, who has suffered from severe asthma for two years since the removal of nasal polypi, previous to which she had no attacks. All the usual remedies have been used unavailingly. Vaccine treatment in an institution was unsuccessful; she was also put through the usual skin tests, and a régime instituted accordingly. Adrenaline gives great relief during paroxysms, but they recur nightly. Any suggestions would be welcomed.

INCOME TAX.

Motor Car Transactions.

"J. W. M.," "J. M. L.," and "H. W. F."—The principle underlying the question of motor car renewals is this—that the expense of replacing a car with one of similar grade, power, accommodation, etc., is a legitimate expense, but to the extent to which the expenditure provides an improvement in car equipment the expense is not legitimate. A corollary, which was officially recognized by official evidence given before the Royal Commission on Income Tax, is that if the above condition is complied with the expense is allowable even though it involves a greater outlay than the original car.

"H. W. F.," £260 — £110 = £290, assuming the car to be similar.
"J. M. L." £195 — £75 = £120, on the same assumption.
"J. W. M." £560 — £180 = £380.

LETTERS, NOTES, ETC.

EPIDEMIC STOMATITIS.

DR. W. A. TRUMPER (Ivybridge) writes that the cases referred to by "Cloybank" (p. 537) reminds him of two children at a millhouse in the Kennet valley over twenty years ago who had similar signs and symptoms. "An inquiry as to the drains caused the parents to pour some carbolic acid down those channels. The following day their tea tasted of carbolic, and the diagnosis was a polluted well. Possibly 'Cloybank's' cases may have a similar cause."

THE GENERAL PRACTITIONER AND REFRACTIONS.

DR. CHARLES J. HILL AITKEN (Kilnhurst, nr. Rotherham) writes with reference to Dr. Larking's letter (p. 534): If a medical man is competent to do refractions let him have the necessary plant for the work visible in his surgery and the natural curiosity of his patients will soon let it be "known" that he is prepared to examine for and prescribe spectacles. After a few successful cases a "suitable title" on his plate will be quite unnecessary.

THE CARE OF THE TEETH.

DR. A. D. JILLA, L.M.S.Bombay (Manchester), in the course of a letter on this subject, writes: From personal experience and daily contact in practice I find that men and women are not inclined to devote even one-tenth of the time to their mouth and feet that they give to their face, hands, and hair. It is important to use the toothbrush the first thing in the morning, but perhaps the toothbrush itself may be the stumbling-block. It is not easy to design a toothbrush that would conveniently make its way between the teeth and the cheek up to the very last molar. Some toothbrushes are too hard. They make the gums bleed and are prejudicial to the safety of the enamel of the teeth if roughly used. Some are too soft, or get so by use. Moreover, the cost of the toothbrush is, in an average family of working and middle classes, an ever-recurring item. In countries the teeth of whose inhabitants are a source of envy to Western nations it is hardly the toothbrush that is responsible for the elegant condition of the teeth; it is mainly the general desire and instinct—scrupulous as well as religious—of oral hygiene. In India the Hindus of certain districts use slender twigs of the babul tree every morning with which to brush their teeth. They chew it first and make the ends brushlike. A fresh one is used every day by each individual of the family and thrown away afterwards. But the rest of the people use their index fingers with a little tooth-powder—ordinary ashes or fine charcoal-powder. Custom, as well as religious injunction, forbids every Indian to taste any food or drink in the morning without this necessary mouth toilet and the morning prayers subsequent to the toilet and ablution. In my opinion the teeth of Western people stand poor chances of real improvement and trim condition as long as they stick to the idea of the tooth brush. Nature has supplied us with a very pliant elastic tooth brush in the shape of the first or index finger. It can not only work its way to the farthermost molar tooth, but it also feels its way, using less force when any of the gums happen to be in an inflamed condition, or any of the teeth loose or painful. The finger can be used horizontally or vertically, as some dentists recommend for the toothbrush, and the nail is also handy to reach the clefts and interspaces between the teeth.

Education on oral hygiene to school children is indeed a good recommendation, but unless the parents co-operate, and the teachers inform them regularly immediately they notice anything wrong about the condition of the urchins' teeth, I am afraid no satisfactory result could be obtained. But perhaps the guilt should be laid at the door of the teachers and the parents themselves in the first instance. These should therefore be initially approached by suitable propaganda, and, above all, let them begin with the index finger themselves in the start.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 124.

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NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Professor EWEN J. MACLEAN, F.R.S.E., M.D., F.R.C.P., President.

DISCUSSION ON STILLBIRTHS AND NEO-NATAL DEATHS.

PRESIDENT'S INTRODUCTORY REMARKS.

IN opening the discussion, the PRESIDENT said that the national importance of the subject only needed to be mentioned to be accorded. Fertility was the index of the present and the earnest of the future prosperity and strength of a nation. Presumably it was for this reason that the law of the land claimed to punish with maximum penalties certain kinds of interference with pregnancy and negligent clinical practice. He thought that presumably even the contraceptionists would approve of their objective, though it seemed anomalous from the national point of view that their propaganda, whether by peer or peasant, in church congress or at the street corner, should be allowed to proceed unhampered. So far as the population of the country was concerned the requirement might arise in the not distant future for the law to develop an ante-conceptional in addition to a post-conceptional application. He thought they might proceed, however, without apprehension of the law to the consideration of their subject. The officers of the Section had been very fortunate to secure the services of the distinguished workers whose names appeared on the programme.

I.—ANTE-NATAL, INTRA-NATAL, AND NEO-NATAL DEATH:

CAUSES, PATHOLOGY, AND PREVENTION, WITH SPECIAL REFERENCE TO ANTE-NATAL DEATH.

BY

J. W. BALLANTYNE, M.D., F.R.C.P.E.,

Physician in Charge of the Ante natal Department of the Edinburgh Royal Maternity Hospital; Lecturer on Midwifery and Gynaecology (to Women Students) in the University of Edinburgh; etc.

The Discussion of 1888.

IT is a coincidence that thirty-four years ago (in 1888), when the British Medical Association last met in Glasgow, the Section of Obstetric Medicine was occupied with the subject of Intrauterine Death.[1] The discussion was opened by Professor (afterwards Sir Alexander) Simpson of Edinburgh; and those who took part in it were Dr. Barnes of London, Dr. (afterwards Sir John W.) Byers of Belfast, Dr. Fordyce Barker of New York, Dr. Parvin and Dr. H. P. C. Wilson, both from the United States, Dr. Aust Lawrence, Dr. Arthur W. Edis and Dr. Amand Routh of London, and the President of the Section (Dr. More Madden). All these men with one exception have passed from us, but the problem they were then striving to solve is now committed to us: *quasi cursores vitae lampada tradunt*, and their torch is in our hands to keep alight and to pass on to those who follow us. The present speaker was not present at the meeting referred to; but he was Assistant at the time to Professor Simpson, and it is perhaps significant that it was in that year that he began his researches into foetal diseases and monstrosities.

In one sense the discussion of 1888 had a more restricted range; it did not touch intra-natal death or neo-natal death, and so when Professor Simpson came to the subject of prevention he found himself limited to the consideration of mercury for syphilis, iron for maternal anaemia, diet for albuminuria, curettage for placental disease, potassium chlorate for recurrent foetal death or premature labour, and induction of premature delivery when in previous pregnancies the unborn infant tended to perish in the last weeks. Other speakers suggested the use of the tincture of *Viburnum prunifolium* in cases of recurring abortion from "irritable uterus," the correction of uterine displacements, the use of a spare diet and active exercise in instances of perversion of maternal nutrition, and the treatment of constipation. The giving of antisyphilitic medicines to the father was emphasized by Simpson; Edis was far-sighted enough to foresee the need for attention to numerous details in the pregnant woman and the giving to her the same care that a breeder bestowed upon his brood mares; and Routh referred to the detection and treatment of cases in which there was a slight degree of albuminuria. It is a noticeable fact that although Professor Simpson described fully and, making allowance for the lack of numerous observations, very thoroughly the pathology of intrauterine death, none of those who took part in the discussion followed him into this difficult and obscure field of research and speculation. He divided the causes of intra-uterine death into (1) foetal, (2) maternal, and (3) placental; and he subdivided the placental into (*a*) neoplastic degenerations, (*b*) nutritional changes, including inflammations and degenerations, and (*c*) apoplectic changes.

The promoter of the discussion and those who took part in it were all men in the front rank of the profession in Britain and America. It may be concluded, therefore, that the occasion elicited the best and the most advanced thought on the subject of intrauterine death then in being. Further, there were recognizable in embryo, so to say, many of the advances in pathology and treatment which have since become so important. Yet it is not difficult to see the limitations of the subject as they then existed. There was no suggestion that it might be well that there be a co-ordinated and systematic investigation of the matter by observers working along similar lines in different centres; the idea of supervising all pregnant women in the interest of the few who were in danger of giving birth to dead infants was absent; treatment, although it was termed preventive, was recognized as beginning after the woman had been delivered of a stillbirth, and it was applied to later pregnancies; and, speaking generally, the individuality of the foetus in respect of its pathology was hardly realized. Further, in respect of syphilis, the typical cause, so to say, of intrauterine death, some fifteen years had still to elapse before the discovery of its causal spirochaete, and still longer before the coming of the Wassermann test and salvarsan and its wonder-working substitutes. As has already been noted, there was no reference at all made to death arising in the process of labour (intra-uterine death) or in the early days of life from causes arising in the uterus, but becoming effective only after birth (neo-natal death). Finally, in 1888 there was not even the suggestion of notification, far less of registration, of stillbirths and abortions; consequently their frequency was pure conjecture.

Ante-natal and Post-natal Death.

Before reference is made to details there is one general consideration which calls for attention if the subject of discussion is to be intelligently approached; it deals with the fundamental difference which exists between death in an organism which is fully alive, such as a child or an adult, and death in an organism, such as a foetus, which is less evidently so. It is extraordinarily difficult to express this difference clearly, and yet it is extraordinarily important that it be done. One of the chief hindrances to clear definition is lack of exact and appropriate terminology. The phenomena of ante-natal and post-natal life are in certain respects different, and yet the same words are used or are attempted to be used to describe and define them. For instance, a new-born infant breathes, and so, too, does an unborn infant; but it requires only an instant's thought to convince the thinker that ante-natal breathing is a very different physiological process from post-natal breathing.

After birth respiration is a gaseous interchange between the atmospheric air and the blood as they circulate in the lungs; in the foetal state respiration is a gaseous interchange between two liquids, the maternal and the foetal blood, as they circulate in the placenta. The one is pulmonary, the other is placental; the one takes place via the nose, the other via the umbilicus; the former is practically the only function of the lungs, the latter is one of several functions performed by the placenta. The chief difference, however, is that post-natal respiration is aero-sanguine and that ante-natal respiration is sanguineo-sanguine. Of course the oxygen that the foetal blood receives from the maternal has come in the first instance from the atmosphere through the mother's lungs; but this does not really alter the contrast between the two circulations. In both cases the same term, respiration, is employed, and unconsciously in our thinking we transfer our

knowledge of post-natal pulmonary respiration to ante-natal placental respiration, thus darkening thought when clarity is essential. It will not quite meet the difficulty if "respiration" be reserved for the post-natal and pulmonary function, whilst "aerosis" is the term applied to the equivalent ante-natal and placental function; for aerosis unfortunately suggests the presence of air, the very suggestion that is to be avoided. One is not even justified in speaking of them as equivalent functions at all. The importance of these distinctions is manifest the moment that one begins to discuss the causes of ante-natal death, and as soon as one asks, How does a foetus die of suffocation? To many the picture of intrauterine suffocation from, say, a knot on the cord or a large haemorrhage into the placenta is that of an adult with the murderer's hands on his windpipe or with fumes of gas in the room; it is not necessarily the same, and in all probability is vastly different.

What has been said of the contrast between ante-natal and post-natal respiration may also be said, although the contrast is not so dramatic, of ante-natal digestion, excretion, hepatic action, and the corresponding fully developed functions after birth. It is necessary to alter the quality of one's concepts when thinking of these physiological processes as they occur before and after birth. Yet the same terms are applied indiscriminately. Confusion of thought results and fallacies easily creep in. It is as when a man accustomed to read modern English in roman type takes up an Early Middle English work printed in black letter; all the words are unfamiliar to his vision and some of them are unknown by his mind. In thinking of ante-natal phenomena, whether they be of life or of death, one has to be constantly watchful, intent, and prepared as it were to translate from one language into another. To do so with accuracy may, in the present state of our knowledge of ante-natal matters, be barely possible; but such a book as Dr. Feldman's *Ante-natal and Post-natal Child Physiology* will be of great service in preparing the way for exactness.

Special watchfulness in dealing with the problem of foetal death from suffocation—for example, in intra-natal asphyxia—is required. This is no matter of mere academic interest; it deserves close attention. One is sometimes apt to think of life as beginning at birth with the child's first breath: this, of course, is biologically quite erroneous. If a *terminus a quo* for individual existence is insisted upon, it must be found in the moment when the head of the sperm fuses with the nucleus of the ovum, and the zygote steps, so to say, upon the stage. A more common mistake is made when one regards the life after birth as a continuation with identical characters of the life which has gone before, and when one uses such a phrase as to resuscitate, reanimate, or restore the asphyxiated infant. As soon as the infant uses his lungs after birth he is alive in a new way; he was animate in the uterus, he is animate now, but the form or quality of his animation is different; he breathed then through his placenta, he breathes now through his lungs, and his other functions have similarly, although less obviously, undergone a change. For this passage from one form of vitality to another the writer proposed some years ago the word "transanimation," and he offers it again as worthy of adoption; it is not perfect, but it will serve to mark that there is a difference between the two forms of life. Under this new nomenclature one transanimates an asphyxiated newborn infant; one does not reanimate, restore, or resuscitate him. He is encouraged to pass over from one form of animated existence to another which is different in quality.

An appreciation of this fundamental difference between the life before and that after birth would have prevented some awkward misunderstandings in the use of such terms as stillbirth, apparent death, etc. In England, and recently in Scotland also, a stillbirth is simply a deadborn infant; but that was not always its meaning even in England. It is one of the few flaws in the magnificent *New English Dictionary* that it gives no other meaning than "deadborn" for "stillborn"; the very first illustrative quotation reads, "restoring children to life which were stillborn." Dr. James Blundell was professor of obstetric medicine at Guy's Hospital; in his work published in 1840 he had many passages showing that he did not regard "stillbirth" as synonymous with "deadbirth." On page 112, for instance, this sentence occurs: "The accoucheur will sometimes find that children are *stillborn*, as it is called—that is, although they are not dead, they do not cry, or manifest other indications of life." Blundell refers frequently to the resuscitation of stillborn children, and one regrets that the widespread usage of his time has been departed from. The word "stillborn" very accurately describes the state of the foetus who has not begun his post-natal life and yet who has not passed through death's portals; he is born, but *lies still*; nevertheless, he may be capable of transanimation. It is perhaps too much to hope that the word "stillbirth" should have its former meaning restored to it, for its identity with "deadbirth" has been stereotyped by the Central Midwives Board of both countries; but such a restoration of meaning would aid in simplifying the understanding of many phenomena of life about the time of birth. In the present discussion it is employed in its official sense of "deadbirth."

Causes of Stillbirths and Neo-natal Deaths.

From the standpoint of causation it is useful to look at early deaths under the three headings of ante-natal, intra-natal, and neo-natal; for each of the three groups thus established has a character peculiarly its own.

The group of causes acting in the ante-natal period of life is the most difficult of comprehension and statement. In chronological order it consists of a germinal, an embryonic, and a foetal time; and in each of these times death to the new organism may happen. Little is known of germinal deaths. A French writer (Vernet) long ago expressed himself somewhat epigrammatically thus: "*L'œuf fécondé jouit de la vie, sujet par conséquent aux maladies, à la mort*," or, as we might render it, "The zygote gloriously exults in life, and so meets maladies and death itself in strife." In the very springs of life there is the possibility of death; but of the etiology of such death there is much ignorance. One expects that the great cause must be something transmitted to the zygote by one or other of the contracting parties, the ovum and the sperm. Some toxic condition of the parents, the impact of some racial poison such as alcohol or lead, may deprive the ovum of the power of going far as an independent organism or may weaken the sperm's embryogenetic effect. Professor Arthur Robinson, in his Sir John Struthers lecture (December, 1920),[2] has investigated this form of pre-natal death and has found that it may occur (in animals at any rate) in the stage of the ovum or of the zygote either when the latter is a morula or a blastula (attached or unattached to the decidua). He thinks that these deaths are not due to inflammation or to microbic attacks but simply to an incapability to live and develop properly under conditions which are quite favourable to immediately adjacent zygotes; he calls it unavoidable pre-natal mortality, and estimates it at 40 per cent. in the human subject. In addition, other zygotes die from alcohol, lead, *x* rays, and the like, constituting the avoidable pre-natal death rate. The usual clinical expression of all such deaths will be sterility. "Pre-natal death" is not a quite suitable name, for it is too wide; "germinal" or "zygotic" would, perhaps, be better.

With regard to deaths in the embryonic period of ante-natal life—that is, after the zygote has become attached to the decidual membranes and has differentiated into embryo and embryonic appendages, the clinical expression will be abortion. It must not be forgotten, however, that abortion due to some purely passing maternal cause will also result in death of the embryo or young foetus, for the expulsion of the non-viable organism puts it in an environment which is fatal to it. No clear distinction can be drawn between deaths in the germinal and deaths in the embryonic periods of ante-natal life; thus in the well-known hydatidiform mole embryonic death may possibly occur in the blastula stage, and the further pathological changes take place later in the embryonic appendages. Among recent work on embryonic deaths and deformities, that of the late Franklin P. Mall[3] stands out pre-eminently; the magnificent volume published by the Carnegie Institution of Washington, entitled *Studies on Abortuses*, by Mall and A. W. Meyer, is a notable addition to the literature of this difficult and yet immensely important subject. It is permissible to guess (one can hardly do more) that the causes of death in the germinal period continue to act in the embryonic, and that others come into play, such as all sorts of morbid changes in the decidual and embryonic membranes; it is certain that such deaths constitute a large part of ante-natal mortality. The subject, however, has great dimensions, and, as it is rather with foetal death after viability that this discussion is concerned, no further consideration can be given to it.

The result of foetal death after the arrival of the term of viability is, according to recent but incorrect terminology,

a stillbirth, and in the great majority of cases it is accompanied by the *post-mortem* change known as maceration. If the death have occurred only a day or two before labour and birth the macerative process may be so slight as to be unrecognizable by the naked eye, but such cases are not numerous. The causes of foetal death accompanied by maceration are difficult to group; the following is a useful if not a complete or an exact classification: (1) Syphilis transmitted from the mother. (2) All other kinds of infection or disease transmitted from the mother, and showing itself in similar form in the foetus, such as small-pox, measles, scarlet fever, malaria, pneumonia, tuberculosis (very rarely), cerebro-spinal meningitis, and typhoid fever. (3) Morbid states of the foetus dissimilar from the diseases in the mother which cause them, such as the foetal changes in maternal heart disease, in eclampsia and the pre-eclamptic state, in hepatic disease, in hyperemesis, etc. (4) Morbid states of the foetus the result of poisoning of the mother with lead, mercury, alcohol, nicotine, etc., including the drugs taken with criminal intent to produce abortion or premature labour. (5) Placental morbid changes of all sorts, but particularly of an haemorrhagic kind. There must necessarily be some overlapping between this and the other groups of causes, but it must be retained as a useful means of roughly separating the causes into maternal, foetal, and placental—an old but not an exact division. The placenta is, of course, the most important organ of ante-natal life, and therefore it is, when diseased, dominant in foetal death; possibly it gives the *coup de grâce*, so to say, in all foetal deaths, whatever be the initiating cause. (6) Morbid states of the foetal annexa other than the placenta, such as adhesions of the amnion, excess of the liquor amnii, etc. (7) Foetal traumatism, including knots and twisting of the umbilical cord, separation of the placenta, etc. (8) The so-called idiopathic diseases and malformations of the foetus, including general dropsy, ichthyosis, endocarditis, cystic kidneys, and all the grave monstrosities. (9) Morbid states of the foetus of an ancestral nature, such as haemophilia, in which the mother is unaffected but has transmitted something pathological to the offspring. This is a small and dwindling group, as is also (10) the group of causes acting directly from the father through the spermatozoon.

Holland[4] has adopted another system of classification for these ante-natal stillbirths, dividing the causes into primary, such as maternal albuminuria, and consequent factors, such as the associated placental state, the direct action of the maternal poisons, etc. There are advantages in this plan but also disadvantages, and it is indeed doubtful whether our present knowledge warrants a final choice of method of grouping.

It is not to be hastily concluded that all the causes enumerated above are always or even often lethal. It must not be forgotten that the interior of the uterus is perhaps the best place in which to have a disease or a malformation. Under normal circumstances the uterine cavity is free from pathogenic microbes, and even when these infest the maternal blood the placenta may protect the foetus against them; in all conditions the foetal environment is conducive to rapid and complete recovery. Further, the life of the unborn infant is not so easily endangered as that of the child after birth; so long as the placenta is healthy the foetus may live on although its tissues are grossly diseased or its organs malformed or even absent. In ante-natal circumstances life is compatible with conditions which are immediately lethal in the post-natal environment.

When one passes to the consideration of the causes of *intra-natal* death the last-named conclusion assumes great importance. The conditions which permitted ante-natal life to continue (although of course on a low plane of vitality) become immediately lethal as soon as the birth of the child begins and are obviously fatal as soon as it has ended. For example, a foetus with general foetal dropsy[5] may live in the non-exigent intrauterine environment, so long as the placenta remain active; but when it begins to pass through the maternal canals it may through its soft bulk be squeezed out of existence or killed by being tapped by the accoucheur or after birth it may find itself unable through the presence of fluid in its body cavities to commence pulmonary respiration. Marked monstrosities have the same effect: fused twins, for instance, may flourish *in utero*, but their passage through the pelvis may quickly prove fatal to them. To this peculiar kind of delayed lethal action I gave, long ago, the name of "potential mortality" when it proves fatal and of "potential morbidity" when it simply gives rise to symptoms. It may be compared to the state of the man with advanced heart disease who rises from his bed and runs to catch a train, or of him who with a large aortic aneurysm allows someone to make him so angry that he "sees red."

In the first group, therefore, of the causes of intra-natal foetal death may be placed all the conditions (diseases and malformations) which have allowed the unborn child to survive, but which prove fatal to him during birth or immediately thereafter. In addition to those already named must be inserted pre-maturity and post-maturity. The second group will contain all the complications of labour, but especially those causing foetal asphyxia, such as separation of the placenta, placenta praevia, and prolapsed cord; those producing traumatism, such as the contracted pelvis and the large infant; and those leading to delay in birth, such as transverse and breech presentations, face cases, occipito-posterior positions, and the like. Into a third group will fall the intra-natal stillbirths, due directly to the methods of delivery: the cause may be, for instance, craniotomy, decapitation, or evisceration, soon to be abolished altogether one hopes; or it may be forceps extraction applied in unsuitable cases with the force of a craniotomy, or with an antero posterior or oblique grip of the head; or it may be version done under unfavourable circumstances; or it may be the induction of a too premature labour. A fourth group of intra-natal causes are the infections: when labour is prolonged, especially after the rupture of the membranes, microbes may gain access to the foetus and set up disease, such as pneumonia from the pneumococcus and ophthalmia from the gonococcus; in most cases these intra-natal infections do not prove immediately fatal or even dangerous, but in some instances, as F. J. Browne[6] has shown, they do, and they must be added to the list of occasions of intra-natal death. In this group of causes it will be difficult to avoid overlapping, and death may follow not from one but from several etiological factors, primary and consequent; obviously the syphilitic foetus will be less able to withstand traumatism in the act of birth than an otherwise healthy one, and will die from the disease with, say, a visceral haemorrhage added on.

Some early *neo-natal* deaths are very closely connected with stillbirths. Morbid causes not potent enough to kill the foetus *in utero* or in the act of birth may be able to do so in the hours or days which follow the beginning of post-natal life. There are now, of course, new sources of danger. The foetus is now an infant and falls under the influence of causes of death from which he was shielded *in utero*. In order to prevent ambiguity in nomenclature it will be well to adopt Eardley Holland's definition[7] of the end of foetal life as coinciding with the commencement of pulmonary respiration; until it has breathed the foetus will remain a foetus, and post-natal life will not begin till then. The name "foetal death," therefore, will still be applicable if the intrauterine type of life present at birth is not transformed into the post-natal type—if, in other words, transanimation be unsuccessful. The awkwardness in nomenclature is unavoidable, for the vital statistician will be using one method of counting the beginning of life and the pathologist and obstetrician another; possibly a consultation between the two groups of persons who are interested in early neo-natal deaths would be productive of clarification of thought and regularization of practice and procedure.

The causes of early neo-natal deaths will include all these already in action in ante-natal and in intra-natal life; to these will fall to be added those which become effective after birth, comprising, of course, all the results of microbic infection made possible by the emergence of the foetus into the environment of post-natal life. At one time the writer thought of these new environmental causes as coming suddenly into play; but, as has been seen, this requires revision in the light of what has been discovered of the possibilities of intra-natal infection. To sum up, early neo-natal deaths may be due to (1) all the ante-natally developed conditions which without being absolutely incompatible with post-natal life yet render its continuance too difficult for it; (2) all the conditions contingent to birth which are due to traumatism or to infection then and which, while permitting the beginning of post-natal life, prevent its continuance; and (3) all the new dangerous or actually lethal conditions to which post-natal life is liable either from the stress of the new and less protecting environment or from the ignorance and folly of the persons into whose hands the new life is committed. With such a concentration and intensity of morbid causes in so new an environment there need be no surprise that the death rate of the first month is the highest recorded in the whole course of post-natal existence.

Pathology of Stillbirths and Neo-natal Deaths.

It is necessary at the very outset to state and to repeat the statement that there is no more difficult department of investigation than that of the pathology of ante-natal, intra-natal, and early post-natal death, and especially of ante-natal death. Omitting the further problems of germinal and embryonic death as outside the scope of the present communication, one is nevertheless faced by an immense field of unsolved problems. Admitting a multiplicity of little understood morbid causes, the investigator is met with the additional difficulty of the comprehension of their mode of action, a mode which must on account of peculiarities of environment and type of life be quite special and be further obscured by being carried on in the concealment of the uterine interior. It will require all the concentration of the workers under the conjoint scheme of investigation which has been set agoing so happily and wisely by the Medical Research Council to clear up not all, but simply some, of the problems of the pathology of ante-natal and early post-natal death, and this must be succeeded by specialized work along new lines to wrest the remaining secrets from "Nature's close reserve."

How, for instance, does an organism possessed of only ante-natal life die? What is the mechanism of the death of a foetus whose respiration is a tissue one and not a pulmonary? To what extent must one alter and adapt one's ordinary thinking when one is dealing with an organism in which integrity of tissue counts for little so long as the placenta remains active and healthy? How must one reconstruct one's notions of a death which is followed by *post-mortem* changes unaccompanied by putrefaction—death's usual livery, so to say? Even in respect of intra-natal and neo-natal death there must be special variations in mode of incidence and extension of pathological change. Adult or post-natal life stands upon a tripod of respiration, circulation, and innervation; but upon what does a foetal or an intra-natal life stand? Extraordinarily advanced morbid changes up to nearly complete destruction may be present in the foetal organs and yet ante-natal life continue; the foetal heart may cease in the act of birth and the newborn infant may lie without breathing for half an hour or longer, and yet in both cases post-natal life may be established and continue for seventy years. What is the pathology of, say, the oligopnoeic twilight-sleep baby?

Obviously there is a great and wide field for research here. Where must one begin? The answer is, in the first place, with the study of maceration. This peculiar non-putrefactive *post-mortem* change underlies the whole of the pathology of ante-natal death; it is the common basis of the morbid anatomy of the ante-natal stillbirth. Before one can rightly understand the pathology of the dead foetus one must have a clear mental picture both of the naked-eye and histological appearances of the macerative changes. One must construct, so to say, the common factor of maceration before one can differentiate the special changes due to individual diseases in the foetus and its placenta. The custom of saying that because the foetus was macerated there was no use in examining it microscopically or bacteriologically must be abandoned. There will be difficulty in recognizing what is merely macerative from what is distinctively the result of disease, but the difficulty is capable of being overcome. In this direction Dr. G. L. Strachan (one of the research pathologists working under the Medical Research Council) has quite recently shown what may be accomplished; the exploration of the common histological picture of tissue lysis in the ante-natal environment is proceeding, and before long it will be possible unerringly to pick out the superadded and specific changes.

The dissociation of the composite photograph, so to say, of the pathology of the dead and diseased foetus will soon be a task easy of accomplishment. With this preliminary difficulty overcome further progress will be rapid, and the histological separation of simple maceration from, say, the changes peculiar to ante-natal syphilis will be a matter of routine. Of course, bacteriology will play a large part in all such work. Then, and only then, will it be possible to form as accurate an opinion upon the cause and mechanism of ante-natal death as one does now of post-natal dissolution at the necropsy of a child or an adult. A great deal more will have been accomplished: new light will be thrown upon the pathology and morbid anatomy of the child and adult, for it will be possible from the study of the foetus in which the processes are often uncomplicated by microbic invasion to reach the basal phenomena of tissue death. Another preliminary investigation not yet completed is the discovery of the laws regulating the transmission of microbes, toxins, toxic agents, and food substances through the placenta, to or from the foetus. Another line of investigation will be the exploration of the effect upon pathological changes in the foetus of the arrival of germs and toxins of disease and of toxic agents of all kinds by way of the umbilicus. It is difficult always to recollect that the avenue of entrance into the foetal economy is by the navel; but undoubtedly the fact is of great significance in regard to the distribution of lesions, the location of morbid processes, and the relative degree of injury done to various organs. For instance, when the typhoid organism arrives in the foetus via the umbilicus the lesions produced differ in their character, vary in their areas of maximum intensity, and attack with violence viscera hardly affected at all in child or adult, leaving others alone. Much here awaits the earnest worker. There are many other things to be done: but the writer is not offering an ordnance survey map on a generous scale of the territory of ante-natal disease and death—he is merely blazing a trail through a part of the country. As he said twenty years ago, the hinterland of ante-natal pathology is of immense extent, and it has been penetrated only by a few resolute explorers in a few directions.

Prevention of Stillbirths and Neo-natal Deaths.

The great purpose underlying all the investigation which has been outlined is the introduction of life-saving. It is true that the entrance into an undiscovered or little known country, whether that country be geographical, scientific, pathological, or histological, has the allurement of an adventure, and is a call to which the spirit of the searcher after novelty responds with alacrity; but if that were the sole incentive the advance would to me at least, and to many like-minded with myself, lack much of its true inspiration—namely, the reduction of fatalities in young life, the bringing into the world of stronger infants, and the relief of maternal suffering and disappointment. If David Livingstone had disappeared into Central Africa taking his life in his hands merely to bring back news of peoples, animals, mountains, rivers, strange, novel, or curious, his journey would indeed have been a wonderful achievement and well worthy of record in the annals of mankind. But it was to carry life that he put himself in jeopardy; it was to take remedies and cure of disease to the millions who had them not: it was to proclaim liberty to captives and death to slavery, and to open to the inward sight visions of a life with a marvellous content, with great and generous spaces, and with undreamed-of possibilities; and so he has passed into the front rank of the world's benefactors, and being dead he yet speaketh.

So, too, it is with the subject of to-day's discussion. We study stillbirths that we may prevent them; we attack death with scalpel, microscope, and culture medium; and we try to circumvent the ending of life before birth by ante-natal supervision and care. Death differs from disease in being amenable to prevention alone. So prevention of stillbirths is the one means of treatment. There will doubtless come a time when we shall be able to diagnose that a foetus is ill and in danger of death; in the meantime ante-natal diagnosis is chiefly guesswork, with the possible partial exception of syphilis, in which a positive Wassermann in the mother at least suggests a positive in the unborn infant; diagnosis, therefore, follows death, and consequently treatment must be preventive. Every expectant mother must be given preventive treatment in view of the possible death of her child *in utero*; all must be supervised to prevent the percentage incidence of stillbirths, which is indeed as yet unenumerated, but is surely known to be not small.

The general principles of the prevention of stillbirths can be clearly stated. In the first place it is necessary to watch for and treat every morbid condition of the mother which may be detected during the course of her pregnancy. If this be done with success the incidence either of these diseases in an identical form, or of their effects in a different form, upon the foetus will be prevented. There is not scope to give details, but one is thinking, of course, of syphilis, of albuminuria, and all the toxaemias, of the exanthemata, and of maternal heart, lung, and liver disease. It is not claimed that this treatment of the mother in her pregnancy will be sufficient. Prevention must begin before she is pregnant—it must go back to her childhood, and it must be directed towards her parents and even ancestors; but these are means for the future, and whilst they are important enough it is essential that the immediately possible thing be attempt first. Watchful, adequate supervision and treatment (w

needed) must therefore be given to all expectant mothers. This involves not merely the setting up of ante-natal clinics and the co-operation of all doctors who have in private practice the charge of obstetric cases, but also the provision of beds in hospitals and homes for ill expectant mothers. It means the hospitalization of the sick and pregnant in the population. This is being accomplished in a measure, but it must be general; it will mean great expense, but it has to be faced. To speak in military terminology, its chief objective will be the abolition of ante-natal death—in other words, the macerated foetus.

In the second place, it is necessary to watch for and correct every anomaly in the relation of the foetus to the mother, in the obstetric sense, before the oncoming of labour. This is for the purpose of preventing intra-natal death, and constitutes the second great purpose of the ante-natal clinic in hospitals and of ante-natal supervision in private practice. Again, it is impossible to name all the means available, but reference may be made to external version of podalic lies done in every case, but especially in the primipara; to rectification by the hands or by the useful expedient of pads in occipito-posterior positions in vertex presentations; to early recognition of contracted pelvis or of undue foetal size, and the consequent unhurried choice of the best method of delivery; and to early hospital observation of haemorrhage in the first or in the later months of pregnancy, with the elimination of the hopeless cases of placenta praevia brought into hospital after the occurrence of massive and devastating bleedings (rightly called "floodings"). There is obviously a great life-saving or stillbirth-prevention sphere in obstetric *provision*. What hospital physician does not know and dread the case of pelvic contraction sent into his wards after forceps has been applied several times unsuccessfully outside? Who does not dread the persistent occipito-posterior late in the second stage of labour? What hopeful thing can be said of the woman bled white from the external haemorrhage of a neglected placenta praevia or from the concealed haemorrhage of a premature separation of the placenta when one sees her then for the first time? Every one of these emergencies is robbed of half its terrors if there has been ante-natal, adequate, alert supervision. And again, one is only skimming the surface of illustrative cases.

In the third place, to prevent intra-natal stillbirths a complete *revision* of all existing methods of delivery must be undertaken in the interest of the foetus. One must look afresh at everything. Every complication of labour (and there are not few) must as regards its management be critically reconsidered with the view of saving, if possible, both mother and infant. Here is the new law: In any case of difficult or dangerous labour, except when there is evidence that the foetus is already dead, that method of delivery should be chosen which without sensibly increasing the risk to the mother holds out a fair chance of life for the child. It might be more emphatically and uncompromisingly stated, but it will serve meanwhile. There is the case of placenta praevia: if the child be alive with a heart rate which does not suggest impending death, one ought to consider whether it is justifiable to employ the pelvic end of the infant as a plug to check the maternal bleeding at great risk to the infant and whether one ought not rather to do Caesarean section while the mother is in a condition to have it done with a comparatively small degree of danger. In every instance craniotomy on the living infant calls for the closest scrutiny. The new mental attitude to it should be: How has this obstetric disaster come about, and what ought to have been done to prevent it? What was the right thing to have done in, say, the persistent mento-posterior, the impacted occipito-posterior, the contracted pelvis, the large and possibly post-mature foetus, the locked twins, the prolapsed cord, and so on? Each case of craniotomy should be suspect.

It must be remembered that these three general principles in the prevention of stillbirths (ante-natal and intra-natal) must be applied in association in order to get the best results. They constitute what Eardley Holland's brilliant and felicitous phrase designates the strategy and the tactics of obstetric prevention; ante-natal supervision is the strategy and intelligent, far-sighted, intra-natal treatment is the tactics which together bring victory. The perfect victory is a live and undamaged mother and a living infant who is likely to continue living. Some years ago I counselled the would-be writers of works on obstetrics to put in a special chapter on ante-natal supervision; my advice now is, Let the principles of ante-natal supervision and intra-natal tactics on behalf of both mother and child so penetrate the whole book that there shall be no need for a special chapter.

As an instance of the supreme importance of co-operation between the ante-natal and intra-natal methods of prevention the case of syphilis in the woman with a contracted pelvis may be mentioned. If the woman have not had one or two courses of novarsenobenzol injections her foetus will arrive in labour with blood vessels so fragile that an ordinary forceps delivery or merely a long labour will cause a stillbirth; on the other hand the foetus may by ante-natal maternal treatment have been rendered practically normal, but forceps wrongly applied in labour may finish its chances.

In the fourth place there is a general principle which applies to early neo-natal deaths and their prevention. Some of these are extraordinarily nearly allied to stillbirths; some of them are the result of the very same causes which, acting more potently, produce stillbirth. There are, for instance, the intracerebral haemorrhages. Much more is now known about these accidents in labour or results of disease in pregnancy. The bleeding at birth may be insufficient to produce death; it may, however, cause asphyxia. It is only reasonable that the obstetrician have in mind what the infant has passed through and choose his treatment in accordance, so far as can be done, therewith; it is doubtful whether Schultze's pendulum swings are ever safe, but assuredly they are not good for a baby with blood oozing into the lateral ventricles of the brain. In other words, routine must be got rid of in the management of infants born into the world after difficult labours or abnormal ante-natal lives; the attempt must be made to differentiate the causes of their delicacy or disorder, and the appropriate treatment be given to each. The same intelligent consideration should follow the new-born child into and even past his neo-natal life. In other words the babies which may have been injured in birth or weakened before it should be "followed up." They should be put in a class by themselves; perchance they should be put in a ward by themselves; and all prematurely and post-maturely born infants should be regarded as their kith and kin.

Results.

If all the principles which have been set forth above are framed on right lines, and since ante-natal work has now been established for some time in certain places, there ought to be demonstrable the results which have been claimed in advance. The proportion of stillbirths to live births ought to have fallen. This result has been obtained. It is true that the evidence has come so far in trickles rather than in full flood, but it has come. I have already published results from the prematurity ward of the Edinburgh Royal Maternity Hospital which were highly encouraging; but I am now able to show contrasts between supervised and unsupervised cases by means of the wide sweep which the ante-natal clinics have reached within the past few years, and by the fact that statistics of stillbirths (founded, however, only upon notification) can now be had. I shall deal solely with the results in Edinburgh, simply noting in passing that in other places the good effect of ante-natal supervision has been as clearly proved. In fact, it has come to be a general statement that when ante-natal supervision on anything like an adequate scale is adopted the stillbirth rate falls by 50 per cent.

The stillbirth rate for the whole of extended Edinburgh in the year 1921 was 47·8 per 1,000, there being 9,028 births and 432 stillbirths (notification returns). About 30 per cent. of all the births occurred in connexion with the Royal Maternity Hospital—namely, 1,510 in the indoor department and 1,260 in the outdoor department and at the Leith Branch. There were 104 stillbirths in the intern department and 52 in the extern. The stillbirth rates, therefore, work out at 56·3 for the whole hospital, at 68·8 for the intern cases, and at 41·2 for the extern. During the year 816 expectant mothers attended the ante-natal clinics, including 138 suffering from venereal disease. There were also a number of venereal cases which came into the venereal disease department for delivery with no previous care at all, some of them having been transferred from the main part of the hospital where their infected condition was discovered during delivery. Among the 171 venereal disease births there were 27 stillbirths, or 157.8 per 1,000. The details of the 27 stillbirths yield noteworthy results: 1 was due to a craniotomy, rendered necessary by an error in judgement as to the relation of the foetal head to the pelvis—the mother had a positive Wassermann reaction; 15 were macerated, none of the mothers having had ante-natal treatment, 10 of them with positive and 5 with negative Wassermann; 11 were not macerated

—3 mothers with positive and 8 with negative Wassermann; of the 8 negatives, 1 mother had albuminuria, 1 marked anaemia; the remaining 6 stillbirths were due to the complications of labour—5 of the mothers had no ante-natal treatment.

If, therefore, the 171 venereal disease births be divided up into those which received ante-natal treatment (138) and those which did not (33), and the stillbirths be allocated amongst them, there are found to be 7 in the former (ante-natally supervised) group and 20 in the latter (not ante-natally supervised) group, giving stillbirth rates of 50.7 per 1,000 and 606 per 1,000 respectively. This is a very striking result. The maximum stillbirth rate is reached among the venereal disease cases which had received neither ante-natal obstetric supervision nor ante-natal antivenereal treatment (606); thereafter followed in order the rate for the intern cases (68.8), for the whole hospital (56.3), for the ante-natally supervised and treated venereal disease cases (50.7), for the whole city of extended Edinburgh (47.8), and for the extern cases of the hospital (41.2). If now, and finally, one looks at the stillbirths among the supervised patients at the ante-natal clinics who afterwards were delivered in connexion with the hospital and who were free from venereal diseases, one discovers an extraordinarily low rate. There were 4 stillbirths in 678 so supervised and non-infected cases, or a rate of 5.9 per 1,000.

Stillbirth Rates for Edinburgh in 1921.

For the whole (extended) city, 432 stillbirths in 9,028 births	47.8	per 1,000.
For the whole practice of the Royal Maternity Hospital, 156 stillbirths in 2,770 births ...	56.3	,,
For the Intern Department (104)	68.8	,,
For the Extern Department (52)	41.2	,,
For the Venereal Disease Department ...	157.8	,,
Receiving ante-natal supervision and treatment (7 in 138)	50.7	,,
Receiving neither ante-natal supervision nor treatment (20 in 33)	606.0	,,
For the whole practice of the hospital... ...	56.3	,,
For the 678 ante-natally supervised pregnancies (excluding the venereal disease cases)	5.9	,,
For the 816 ante-natally supervised pregnancies (including the venereal disease cases)	13.5	,,

Thus the extremes are discovered: 606 per 1,000 among the expectant mothers suffering from the venereal diseases and with neither supervision nor antisyphilitic treatment in their pregnancies, and 5.9 per 1,000 among the women free from venereal disease and supervised and, if necessary, treated in their time of expectancy.

The third rate which is worthy of attention and scrutiny is 50.7 per 1,000 for the women suffering from venereal disease who received antisyphilitic treatment and were ante natally supervised; this rate was actually less than that of the whole hospital, and was only 3 points above the average for the whole of the city. There is no need to add words to these figures. One sees where the danger lies, and one sees where the hope of improvement comes. One other rate should be referred to: when all the ante-natally supervised cases are considered together—that is to say, when the venereal disease cases who got ante-natal supervision and treatment are included—the stillbirth rate was 13.5. The two outstanding facts, therefore, are the evil influence of the venereal diseases, and especially of syphilis, in raising the number of stillbirths, and the good effect of ante-natal supervision and treatment even in the venereal diseases in lowering that rate.

It is necessary to remember, however, that these figures must not be regarded as quite free from fallacies. In the first place they have not been passed through the hands of a professed statistician, and they are therefore subject to correction; but whilst this scrutiny may modify them individually it will not alter the general direction in which they point. There is, for instance, some overlapping, some of the cases supervised in 1920 coming into the results of 1921, and some of those supervised in 1921 passing into the results of the present year (1922). Further, some of the cases seen at the ante-natal department were not confined in connexion with the hospital, for they had been sent from private practitioners or other institutions and returned to them for delivery; a few stillbirths may have occurred amongst them that were not reported, although the number must have been quite small. To counterbalance this, however, there is the fact that practically all the venereal cases were dealt with in the hospital, which is the head centre in Edinburgh for pregnancy cases affected with syphilis and gonorrhoea. A second qualification which one must remember is that the ante-natally supervised and treated patients included what one may call the better class of hospital cases; they comprise the women who came to arrange about their confinements beforehand, and thus showed their interest in their own health and that of their unborn infants. They were, so to say, good material, likely to yield good results. On the other hand, they also included the pregnant cases suffering from the venereal diseases which had been detected at the Venereal Disease Department in the Royal Infirmary and sent on, material which must be counted as decidedly overweighted with morbid possibilities. On the whole, therefore, there seems no reason to doubt the general accuracy of the results which, stated briefly, are: (1) the great loss of life in the form of stillbirths and the large proportion of these due to the venereal maladies; (2) the great gain accruing from ante-natal supervision and (when necessary) treatment even in the worst group of cases, the venereals; and (3) the preventable nature of a vast number of stillbirths.

The general conclusion of the whole matter seems to be that whilst much remains to be done in the study of the causes and pathology and pathogenesis of stillbirths it is possible to go forward at once in the prevention of them by ante-natal supervision and treatment with bright hopes of substantially reducing their number. Therefore every expectant mother and her unborn infant in the country ought to be able to receive efficient and adequate ante-natal care either from her own doctor or through the maternity hospitals and homes of her native land. I put this in the form of a resolution to the Section.

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II.—INTRA-NATAL DEATHS.

BY

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[*Abstract.*]

EXAMINATION of a large number of stillborn foetuses shows that a larger number have died from complications of labour than from maternal or foetal diseases. These foetuses are healthy and therefore worth saving. Classification of the causes of intra-natal death is a very difficult matter; for instance, in a case of placenta praevia the immediate cause of foetal death may be a cerebral haemorrhage due to manipulation made in attempting to control the maternal haemorrhage. A practical classification, therefore, is needed under the various primary causes—namely, maternal states, placental states, and foetal states. Evidence is to be found at *post-mortem* examination that the complications of labour account for 51 per cent. of foetal deaths. This *post-mortem* evidence consists as a rule in the presence of cerebral or visceral haemorrhages. In half the cases it is found that the tentorium cerebelli has been torn. This condition has been found in 88 per cent. of dead foetuses after normal breech delivery. The present teaching is to hurry the delivery of the after-coming head for fear of pressure on the cord. In the light of the evidence now brought forward this teaching must be revised, as actually the foetus is killed by compression of the head, brought on principally by forcible efforts being made to complete the extraction of the child. The head, therefore, should be allowed time, even so long as ten minutes if absolutely necessary.

[Dr. Eardley Holland illustrated his remarks by a lantern demonstration showing tears of the tentorium, and indicating the actual lines of stress in the falx and tentorium during extreme moulding of the head, which demonstrated the exact site where such tears must occur.]

III.—FOETAL DEATH DUE TO TOXAEMIA.

BY

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[*Abstract.*]

I APOLOGIZE for taking up the time of the meeting by speaking on a subject upon which I know so little. After some considerable investigation of the toxaemias of pregnancy my knowledge of this problematical condition seems to grow less, because the work has opened out such a vista of much that is unknown and perhaps also much of which is unknowable, as nature yields her mysteries very grudgingly to the seeker after knowledge.

The cause of foetal death in toxaemia is unknown, although we have gained considerable information as to the manner of death, which in most cases is due to asphyxia. We find total absorption of the foetus in early pregnancy with or without extrusion of the whole ovum. In later stages of foetal development we find anaemia, devitalized and oedematous tissues, arrested development of foetus and placenta, with the arrest of vital functions.

Pathological changes in the foetal organs are found which sometimes show the character of those in the maternal organism in cases of death from toxaemia such as eclampsia. Changes such as maceration merely show *post mortem* degeneration of the foetus. The examination of the placenta and membranes contributes much to our knowledge of retroplacental and intraplacental haemorrhages, red and white infarctions, and necrosis, together with other degenerative processes such as the formation of vesicular mole or villous cystomata. These researches point to diseased conditions which have caused foetal death, but they are the investigations of results, not causes. The only method which will bring us nearer a solution of the problem of toxaemia is that whereby the maternal metabolism is investigated—namely, by skilled examination by clinical and laboratory methods of biochemical research. We must have some definite scheme or line of research to go upon, otherwise the problem will never be nearer a solution.

We know that the trophoblastic elements pour into the maternal blood stream substances, which have been called "ferments," "hormones," "toxins," and which we might as well call "*x*," or "the unknown quantity." These substances are normally neutralized by antibodies in the maternal blood before elimination takes place by the excretory organs. Toxaemia may occur when there is an excessive supply of toxins, when they are unduly concentrated, or when the excretory organs are defective. A combination of all these conditions may occur. As a result the foetus suffers ill health. The foetus may just survive because it is comparatively quiescent in its water bath in the uterus, but when labour occurs and an excessive supply of toxins is poured forth it collapses and dies. It may in some cases have sufficient vitality to survive normal exit at birth, but gives in when undue stress or strain is put upon it such as occurs in operative interference with labour and delivery. It may survive all adverse conditions only to succumb at varying intervals after birth. It is born alive, but may be looked upon as "a bad life" from our knowledge of its previous ill health as read through that of its mother's symptoms. The investigation of foetal welfare and foetal mortality is one of the most important branches of preventive medicine, and is the solution of a considerable amount of the prevention of infant mortality.

I would rather have the responsibility of foetal life than that of the infant, as I know I could obtain better results provided I had the requisite knowledge of conditions. It is for a greater knowledge that I plead in this paper. I do not for a moment say the welfare of the mother should ever be sacrificed for that of the foetus, but I do urge the necessity of looking upon the foetus as an individual requiring due consideration, and that reckless interference with its life should be carefully considered or abandoned in cases of toxaemia such as persistent vomiting. The life of the foetus in the eyes of the profession should be just as grave a responsibility as that of the child after birth. This is no new teaching, but is that of the Church itself.

The study of ante natal work has taught us on two points. First, that already a great deal has been accomplished in the prevention of intra-natal death—as, for instance, in cases of accidental haemorrhage, eclampsia, not to mention other conditions outside the present discussion, such as contracted pelvis. The best results have occurred in this direction. Ante-natal care prevents foetal death by diminishing interference at the time of birth, and therefore ensures a healthier and more vitally resistant child. As to the second point, ante-natal care is diminishing intrauterine death of the foetus by reducing the number of abortions and premature expulsions of the foetus.

The results of this division are perhaps not quite so evident as those of the first, but in time they will prove themselves convincing. They are the most difficult problems with which we have to deal. Recurrent abortions other than those due to syphilis, habitual death of the foetus, and vesicular mole are classified as due to toxaemia; but how much nearer does that bring us to their solution? Examination of the placenta shows the results of a virulent poison which has been circulating in the maternal and foetal serum.

The main predisposing cause of toxaemia is in the intestine, and evidence of this is to be found in sepsis of the teeth, constipation, haemorrhoids, and renal deficiency, the recognition of which is of vital importance in the treatment of the condition. The patient keeps a fair balance of health until pregnancy occurs, when the whole metabolism is put out of gear. Other predisposing causes are general diseases, which have a devitalizing effect upon the foetus, and it must be remembered that the endocrinous organs play an important if unknown part in the aberrations of all metabolic functions.

True toxaemia of pregnancy is virulent in character, as shown in cases of eclampsia and *ante-partum* haemorrhage, and death of the foetus frequently occurs. Investigation of the causes of foetal death is useless unless the placenta is also examined.

It is found to be a difficult problem to make a diagnosis between toxaemia of pregnancy and previous renal insufficiency. A careful chemical analysis of the blood and urine must be carried out, and I now think it is essential to make an examination of the faeces as well. The mere presence of albumin in the urine is of little help in a diagnosis, although it is frequently associated with toxaemia and death of the foetus. The diagnosis of previous renal insufficiency is made out by the history both before pregnancy and after labour. Toxaemia as a rule clears up after the expulsion of the foetus.

Examination of the urine gives the amount of excretion alone; it must therefore be made in conjunction with the blood, which shows the degree of retention. The faeces show the presence of bacteria, a very important point in itself. It must be remembered that in some of the worst cases of eclampsia the urine gives no danger signals, and many cases of toxaemia, cardiac disease, chorea, etc., produce healthy children. As for the chemical tests for urine in toxaemia, there the confusion begins. Globulin is said to be an evidence of toxaemia (Mackenzie Wallis); albumin is associated with foetal death and sometimes disappears when the foetus dies *in utero*; albumin is found in *ante-partum* haemorrhage (42 per cent., Gordon Ley); urea is diminished in amount in destructive renal conditions (normal, 2.2 per cent.); it is diminished in eclampsia and persistent vomiting of pregnancy. The estimation of urea is best carried out by the urea concentration test. Diastase, according to Mackenzie Wallis, is high in toxaemia and low in renal disorders, but in my experience this has not proved a very stable occurrence. Opinions differ and oscillate at intervals as to the value of the ammonia excretion. The presence of diacetic acid is looked upon as a danger signal. It is possible that much information will be gained from the presence of indican, indol, and other derivatives.

In the blood examination, if the urea is high (normal, 0.02 to 0.05 per cent.) it is a sign of a serious condition, and if the foetus is viable the question of induction of labour may have to be considered. Toxaemia resulting in placental separation from necrosis or haemorrhage frequently causes asphyxia and therefore death of the foetus *in utero*.[1]

A differential diagnosis of toxaemia and renal disease may be of value in the prognosis of a case. On general lines toxaemia occurs more frequently in primiparae: there is oedema of the lower limbs; serum globulin is present in the urine, and the diastase is high (unchanged in blood); acidosis more frequently occurs. In renal disease symptoms occur more frequently in multiparae; there is oedema of the face

[1] For a scheme of investigation and general treatment see my paper in the BRITISH MEDICAL JOURNAL, March 4th, 1922, and communication on July 22nd, 1922.

and arms; serum albumin is present; diastase is low but high in the blood; albuminuric retinitis occurs sometimes, rarely found in toxaemia.

One may, however, go on for a considerable time discussing the various tests in use for the diagnosis of toxaemia and yet bring the subject very little nearer a practical solution. Something must be done to prevent enormous waste of foetal life, and it is of little use working under such isolated conditions as we are all doing at present. I would suggest the formation of a central committee under the control of the Ministry of Health and the Medical Research Council to discuss and carry out a scheme of investigation upon foetal welfare and mortality.

This committee should be composed of representatives of the British obstetrical societies, medical officers of health who are responsible for the work of midwives, specialists in diseases of infants, together with physiologists and pathologists—the latter including biochemists and bacteriologists. By such a committee a plan could be laid down for an organized investigation or research, and facilities could be given for work and financial aid. The notification of abortion is almost compulsory if we are going to acquire any information as to the enormous waste of foetal life.

The outcome of such research upon ante-natal conditions would not only result in a greater attention to foetal welfare, but would give results which would most clearly show the value of such preventive work in reducing the number of foetal deaths.

IV.—NEO-NATAL DEATH.

BY

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OUT of a series of 400 cases of stillbirth and neo-natal death which I have fully examined and classified there have been 153 cases of neo-natal death. The causes of death in these cases may be classified as follows:

A. *Traumatic:* Intra-natal—cerebral haemorrhage, suprarenal haemorrhage, other injuries, craniotomy; Post-natal—overlaying, injury during artificial respiration, other injuries.

B. *Infective:* Ante-natal—syphilis; Intra-natal—pneumonia, other intra-natal infections; Post-natal—pneumonia, other infections.

C. *Toxaemic:* Necrosis of liver.

D. *Developmental* (congenital abnormalities).

E. *Prematurity (per se).*

F. *Other conditions not peculiar to the newly born*—for example, volvulus, strangulated hernia, gastro-enteritis, intussusception, etc.

G. *Undetermined.*

I have time only to discuss very briefly some of the more important of the various causes classified in this table.

A. TRAUMATIC.

1. *Cerebral Haemorrhage.*

Of this I have met, amongst neo-natal deaths, with 53 cases. In 36 of these the haemorrhage was intraventricular—that is, into one or other or both lateral ventricles, or into the third or fourth ventricle. A study of all the cases of cerebral haemorrhage, including stillbirths, showed that amongst full-time infants with vertex presentation haemorrhage was practically confined to cases of difficult forceps delivery; indeed, I have only met with one case of cerebral haemorrhage in a full-time infant in which delivery was a natural vertex. In that case the child was post-mature, and labour, though natural, was prolonged and difficult. Further, if we take 3 per cent. as the normal frequency of breech delivery it is found that the latter is ten times as likely to give rise to cerebral haemorrhage as is delivery by the vertex.

One of the most striking points was the frequency of haemorrhage amongst premature infants, even when delivery had been easy and natural. During the last six months in the Edinburgh Royal Maternity Hospital one birth in every 13 was premature. Assuming this to be the normal frequency of premature labours in hospital practice, it is found that cerebral haemorrhage is ten times as likely to occur in premature labours as in labours at full time. This is a remarkable result when we consider the frequent difficulty of labours at term and the ease with which it takes place when the child is premature. The explanation is doubtless to be found in the great delicacy of the vessels in the premature foetus and the mobility of the bones of the cranial vault. The liability to cerebral haemorrhage in premature infants was found to be greatest at seven to seven and a half months, less at eight months, while at eight and a half months the liability appeared to be no greater than at full time. I use the word "months" here advisedly because in a general way it is probably as accurate as if we attempted to estimate the duration of pregnancy in weeks or days from the usual data.

Intraventricular haemorrhage is, in my experience, practically never met with except in premature infants. It was about ten times as likely to occur in breech as in vertex deliveries. The duration of life in these cases varied from half an hour to sixteen days, and it is not uncommon for an infant to live for forty-eight hours with both lateral ventricles distended with blood clot. The case which lived for sixteen days was a seven and a half months infant in which a large clot distended the left lateral ventricle. It is unusual for the infant in these cases of intraventricular haemorrhage to show any signs which might localize the site of the haemorrhage. It is usually blue, cries weakly, feeds badly, and, if it lives sufficiently long, gradually wastes away.

Operability.—It was remarkable that in none of my cases of cerebral haemorrhage, except in one seven and a half months' infant which lived three days, could operation have been undertaken with any hope of permanent success. In all the others failure must have resulted, partly because although in some cases part of the clot could have been removed it was associated with haemorrhage in other inaccessible parts of the brain, such as in the ventricles, over the corpus callosum, or over the base, or with haemorrhage in other organs like the suprarenal or lung, which in itself would probably have proved fatal. Besides, so many of these infants, the victims of cerebral haemorrhage, become infected with pneumonia, which almost always terminates fatally in a day or two.

The chief points to be kept in mind in the prevention of cerebral haemorrhage are, then, as follows: (1) Avoidance of breech delivery by carrying out cephalic version, whenever possible, before the onset of labour and preferably at about eight to eight and a half months. (2) Avoidance of difficult forceps deliveries. This is only possible by the adequate ante-natal supervision of every case. (3) By limiting the induction of premature labour to cases which have reached the thirty-fifth week of pregnancy; by avoiding the use of forceps in the premature child, preserving the membranes unruptured as long as possible, and manual dilatation of the cervix and vagina in front of the advancing head. The same object may be achieved by the use of hydrostatic dilators.

2. *Suprarenal Haemorrhage.*

Altogether I have met with 27 cases of suprarenal haemorrhage, but in only 6 of these was the child born alive. In severe cases of suprarenal haemorrhage the child is usually dead or stillborn, sometimes in a condition of white asphyxia, and fails to respond to restorative measures. The medulla of one or both capsules in such cases is found to be distended with blood clot. Only very occasionally has the haemorrhage burst into the peritoneal cavity, and the cause of death is not the amount of blood lost but the shock caused by the involvement of the sympathetic nervous structures of the medulla. When the infant survives birth it usually only does so for a few hours, but I have met with one case which lived for four days. There was a massive haemorrhage in the cortex and medulla of the right suprarenal, associated with haemorrhage into the cortex and pyramids of both kidneys, practically destroying the parenchyma in the haemorrhagic areas. The child was born at full time by the breech, internal podalic version having been performed on account of lateral placenta praevia.

Suprarenal haemorrhage is almost entirely found in cases of difficult forceps and of breech delivery; it was found to be twenty-two times as likely to be associated with breech delivery as with delivery by the vertex. As regards maturity, it was found to be about three times as likely to occur in premature labours as in labours at term.

3. *Other Injuries.*

Amongst these are comprised such conditions as subcapsular haemorrhages in the liver, some of which may burst into the peritoneal cavity, massive haemorrhages in the lungs, and haemorrhage in the kidneys. A few cases of craniotomy in which the infant breathed after birth must be included in a classification of the causes of neo natal death, but the distinction from craniotomy as a cause of *intra-natal death* is merely of academic interest and has no practical importance.

* Working under the Medical Research Council.

B. INFECTION AS A CAUSE OF POST-NATAL DEATH.

We now come to the next large group of causes of post-natal death—namely, the infective causes, which may be conveniently divided into ante-natal, intra natal, and post-natal, according to the time when the infection occurs.

Syphilis.

Under ante-natal causes the most important is syphilis. Altogether I have examined 35 cases in which the cause of neo-natal death was put down as syphilis. With the exception of one infant which lived for six weeks, all died within two weeks after birth, and in a few cases the infant only gasped once or twice. What are the points that will assist us in making a diagnosis of syphilis in these cases?

1. *A History or Clinical Evidence of Syphilis in the Mother.*—Such a history is in reality rather infrequently found. Thus, out of 17 macerated syphilitic foetuses in whom the maternal history could be fully obtained, in 13 cases there was no maternal history or clinical evidence of syphilis. It is, however, significant that all those who gave evidence of syphilis were, with one exception, primiparae, whilst all the others were multiparae, and were with two exceptions, judging from the obstetrical history, cases of old-standing infection. I think it is likely that in such cases the past evidences of secondary syphilis had been overlooked by the mother on account of the lapse of years.

2. *A Bad Obstetrical History in the Mother.*—In a multipara there is generally, unless where the infection has been a recent one, a history of stillbirth, abortions, or neo-natal death. I have noticed that the sequence of events is frequently rather different from the textbook picture, which is that the first pregnancies after infection end in abortions or in the birth of macerated foetuses, while in later pregnancies the child may be born prematurely with lesions of syphilis and soon die. Still later it may remain apparently healthy for years. More frequently in my experience there is a succession of macerated foetuses, or a macerated foetus may be succeeded by a child which lives for a few weeks, months, or years, only to be followed again by a macerated foetus or an abortion. Such an apparently indiscriminate mixture might be explained by a fresh infection, but I have never found anything in the clinical history to suggest that, and the matter is one more added to the many difficult problems of latent syphilis.

3. *A Positive Wassermann Reaction in the Mother.*—A positive Wassermann reaction is very often absent in old cases of maternal syphilis. On the other hand, one not infrequently finds a strongly positive blood Wassermann in the mother, where the child shows no evidence of syphilis either naked-eye or microscopic. The test is therefore at best merely an aid to diagnosis.

4. *Presence of Syphilitic Changes in the Placenta.*—The weight ratio of the normal placenta varies from 4 to 13. In my syphilitic cases I have found that the placenta was definitely enlarged in 50 per cent., so that its weight ratio exceeded 4. Even when there is not this definite increase of weight ratio the syphilitic placenta may often be recognized by its pallor and by its unusual thickness. Greater assistance is usually obtained, however, by the microscopical examination, which shows the villi to be enlarged and non-vascular, with a consequent diminution of the intervillous space. The enlargement of the individual villi explains the enlargement of the placenta as a whole. When we consider that the weight ratio of the normal placenta varies from 4 to 13 we see why it may be said that the syphilitic placenta is always enlarged—that is, it is enlarged for that particular placenta, which, had it been normal, would have had a low weight ratio. While it is true that microscopical examination of the placenta is of the greatest assistance, yet border-line cases are not infrequently met with in which a dogmatic pronouncement is impossible.

5. *Signs in the Child itself.*—The child is usually premature and badly nourished, and it may show clinical evidence of syphilis in the form of skin eruptions.

(*a*) *Presence of Spirochaetes in the Foetal Organs.*—This is the only absolute sign of syphilis. While in the macerated syphilitic foetus I have found them present in 70 per cent. of cases, in the fresh syphilitic I have only found them present in 4 out of 32 cases, or 12.5 per cent. One of those syphilitics in which I failed to find spirochaetes was the twin of a macerated foetus, in whose organs they were especially numerous.

(*b*) *Enlargement of the Liver.*—It seems to be an almost universal belief that liver enlargement is constantly present in syphilis of the newly born. I am quite sure that this is by no means so. Thus of 100 full-time fresh normal foetuses in which syphilis was carefully excluded the mean ratio of the liver was 21.1, but amongst these was a liver with a weight ratio of 13.3, one of 14, one of 14.4, etc. Of 14 full-time fresh syphilitic foetuses I found the mean ratio to be 19.9, amongst which there were only 2 with a weight ratio heavier than 13.3, which was the heaviest weight ratio amongst the full-time healthy foetuses. The weight ratios of these 2 were respectively 12 and 13. Amongst 14 eight to eight and a half months syphilitic foetuses only one had a weight ratio (12.5) heavier than the heaviest normal (14).

Amongst seven to seven and a half months' infants a heavier weight ratio was actually found in the case of one which was normal (12 5) than in any of the syphilitics at this period, the heaviest weight ratio amongst which was 13. It is true that the mean ratio of a large series of syphilitic livers is heavier than that of a large series of healthy livers, but in dealing with an individual case averages do not help. What does help is to know whether that particular liver is abnormally large, and it is only abnormally large if it is heavier than the heaviest normal. Of 35 syphilitic infants born alive I have only met with an abnormally heavy liver in 5, or 14 per cent. It is interesting to note that Holland* has arrived at a somewhat similar conclusion; he says, "Enlargement of the liver is worthless as a diagnostic sign of syphilis if taken by itself, for it is so often found in definitely non-syphilitic foetuses."

(*c*) *Enlargement of the Spleen.*—This I have found a more helpful and reliable test. Thus, out of the 35 fresh syphilitics it was found that in 12, or 35 per cent., the weight ratio of the spleen was increased so as to be greater than that of any normal spleen that I have met with.

The heaviest weight ratio in a series of 100 full-time healthy spleens was 177, while of 42 cases at eight to eight and a half months it was 155. The latter was the heaviest weight ratio I have ever found in a healthy spleen. Therefore a weight ratio definitely higher than this should be looked upon as an abnormal enlargement, and as strong evidence in favour of syphilis. The edges of the syphilitic spleen are usually rounded; on section the Malpighian bodies are poorly marked, and microscopically the enlargement is found to be almost entirely due to a hyperplasia, with, as a rule, no definite increase in the reticulum or plasma cells.

(*d*) *Chondro-epiphysitis.*—While in the macerated foetus chondro-epiphysitis was present in the majority of cases of syphilis, in the fresh syphilitic I have found its presence comparatively infrequent. Thus, out of my last 11 cases I found it absent in 6, indefinite in 3, and definitely present in 2. Increased experience has served to confirm me in my conviction that if absence of chondro-epiphysitis be relied upon as evidence of the absence of syphilis, then a large proportion of syphilitics will be overlooked.

This concludes the evidence of syphilis usually found by naked-eye examination. I have only once or twice met with pneumonia alba sufficiently well marked to cause changes visible to the naked eye. The thyroid and pancreas may be firmer and paler than normal if they are the seat of interstitial change, but the alteration in appearance and consistency is never definite enough to be of assistance in diagnosis.

It is thus apparent that one may review the maternal history, examine the placenta, and carry out a careful *post-mortem* examination and still be left in doubt as to the presence of syphilis. In such cases the greatest assistance is obtained from histological examination of the organs, especially of the thyroid, thymus, lungs, liver, and pancreas, in some or all of which changes of the greatest importance may be found, and which are briefly as follows:

Thyroid.—Increase of the interacinar connective tissue, which presses upon and destroys the acini more or less completely. There is absence of colloid and proliferation of the cells lining the acini into the lumen.

Thymus.—If the child is marasmic the thymus is atrophied and weighs as little as 2 or 3 grams instead of the usual 8 or 10 grams. The cortex of the lobule has disappeared and only the medulla remains; lymphocytes are exceedingly few, and this accounts for absence of the thymus juice on squeezing the cut surface. There is marked increase of the connective tissue in the lobules and the interlobular septa are much thickened. In addition there is a peculiar change in the corpuscles of Hassall, which are enlarged; and their contents

* Report on the Causation of Foetal Death. Ministry of Health Reports, 1922, p. 33.

are altered so that the concentric body is replaced by a mass of granular débris with a few polymorphonuclear leucocytes.

Lungs.—There is increase of interstitial tissue in the alveolar walls caused by proliferation of the fine connective tissue forming the basement membrane of the endothelial lining of the alveolar and of the interalveolar capillaries. As a result the alveolar walls are thickened, the alveolar spaces are proportionately diminished, and the capillaries are compressed and partially obliterated. The endothelial cells lining the alveoli are shed into the lumen, which they loosely fill, appearing as large flattened phagocytal cells containing pigment. There is at the same time thickening of the adventitial coat of the blood vessels and of the fibrous coat of the bronchi. A rarer change is the transformation of the endothelial cells lining the alveoli into low columnar cells which line the alveoli in regular formation, so that at first sight the alveoli resemble the acini of a secreting gland like the pancreas. There is at the same time a thickening of the basement membrane of the alveoli, and the thickened tissue is arranged in concentric layers. In early foetal life the alveoli are normally lined by a cubical epithelium, which becomes flattened out after air enters the lungs, but I have never met with such a high columnar epithelium in normal cases. In one case microscopic gummata were present in the lungs, containing lymphocytes, plasma cells, and endothelial cells.

Liver.—Microscopically the following changes are met with: (*a*) *Periportal cirrhosis*—the commonest change. In one case it was combined with necrosis of the central zone of the lobule. The periportal tract contains young connective tissue cells and a few plasma cells. (*b*) *Intercellular cirrhosis.* The liver cells are divided up into small groups by a very fine connective tissue which arises from the basement membrane lining the sinusoids. (*c*) *Haemopoietic liver.* The blood-forming function of the liver normally present during intrauterine life is continued and exaggerated so that the sinusoids contain large numbers of embryonic blood cells. A similar condition is found in general oedema of the foetus, and in both is probably the response of the liver to the call for new blood cells in order to compensate for the abnormal destruction caused by the action of the syphilitic or other toxin. (*d*) *Miliary gummata:* this is, in my experience, the rarest form of liver syphilis. The gummata are visible to the naked eye as minute greyish spots dotted thickly all over the cut surface. Microscopically they are seen to consist of collections of fixed connective tissue cells and endothelial cells, scattered apparently indiscriminately throughout the liver tissue. In later stages the centres of the gummata may be occupied by a caseous-looking material due to waxy change in the fused connective tissue cells of the gumma. These gummata may be the only change present, or they may be combined with periportal or fine cirrhosis. I have not found spirochaetes in the gummata, but in the more normal liver tissue immediately surrounding them.

Pancreas.—This organ is one of those most frequently affected, and shows fibrosis with compression and destruction of acini.

Pituitary.—This may show interstitial change in both the anterior and posterior lobes. In one infant in which the lesion was very marked there were at birth some signs of hypopituitarism, chiefly shown in stumpy growth and some increase in adiposity. Though it was only a twenty-eight weeks' foetus its skin was the colour of a foetus at term, while its length was only 33 cm. (13 inches). The pars anterior was much fibrosed with compression of the gland elements; amongst the new fibrous tissue there were cellular elements, probably remains of cells of the pituitary which had become included. The cells were almost all chromophile and basophile, only a few cosinophiles being present. The absence of chromophobe cells may be explained by a compensatory hyperactivity of the secretory tissue which has escaped destruction. In the pars nervosa there appeared to be an increase of neuroglia, but this was somewhat indefinite.

It will be observed that the histological changes in the organs are, generally speaking, of the nature of an increase of the normal interstitial tissue. The condition is therefore an exaggeration of a normal condition, and therein lies the chief difficulty in the diagnosis of syphilis from the histological appearances. The amount of interstitial tissue normally present in an organ varies within fairly wide limits, and there is no constant standard against which the amount of interstitial tissue present in any given case can be measured. When the interstitial change is pronounced there is little difficulty, but there are border-line cases which will puzzle even an expert, and in which it is impossible to say that the changes are definite enough to be characteristic of syphilis. In such cases I think the proper course is to refuse to give a definite diagnosis of syphilis.

Pneumonia.

Pneumonia is in my experience the commonest cause of post natal death, and was present in 48 cases, or 31 per cent. It is of the catarrhal type and runs a rapid course, usually ending fatally in two or three days, during which time the infant presents few or no symptoms which might draw attention to the condition. In a former paper on this subject I stated my conviction that in some cases the disease must have been present and even well advanced before birth. I had examined a child which lived for only eight hours after birth and found pleural effusion and both lungs solid with pneumonia in the stage of grey hepatization. The infant had been cyanosed and breathed badly from birth. The membranes had been ruptured for a long time before delivery, the cause of the delayed labour being primary uterine inertia. In another case in which the membranes were ruptured three days before birth the child died on the third day after birth, and at *post-mortem* examination evidence was found of pneumonia, double empyema, and septic endocarditis. Breathing from birth had been wheezy and rapid.

Since then I have been able to place the matter beyond doubt and to prove that at birth an infant may be suffering from advanced pneumonia, as I have found catarrhal pneumonia in five infants which were deadborn, four of them by craniotomy, and in another which, also born by craniotomy, lived for a few minutes after birth. All were cases of prolonged labour, with early rupture of membranes.

In the case of that infant which, delivered by craniotomy, lived for a few minutes after birth the mother had been in labour for ten hours and the membranes ruptured for thirty-six hours before admission to hospital. Delivery was effected by craniotomy after unsuccessful application of forceps, fifty-six hours after rupture of the membranes. The lungs in this case showed catarrhal pneumonia in a fairly advanced stage. The alveoli were filled with polymorphonuclear leucocytes, endothelial cells, and granular débris, and the disease was already passing over into the stage of grey hepatization. The infecting organism is most usually *Bacillus coli*, which probably makes its way from the vagina into the ruptured amniotic sac and thence by aspiration or continuous surface growth to the mouth, nose, and lungs of the foetus. Cultures from the throat of an apparently healthy infant taken immediately after birth, and in which the membranes had been ruptured sixty hours before delivery, yielded a growth of *B. coli* and a diphtheroid organism.

I should like to refer very briefly to a type of pneumonia that would seem to be peculiar to the newly born infant and of which I have met with eight cases. This might appropriately be called "acute haemorrhagic pneumonia of infants" and its course is somewhat as follows:

> The child, generally a few days old, may appear perfectly healthy, and an hour later may be found dead by its mother's side or in its cot. The body is pallid and there may be a little blood-staining about the mouth or nostrils. Death has occurred with tragic suddenness, and there may be suspicion of foul play or overlaying. What has happened is this: an infection of the child's lungs has occurred followed by acute congestion, and the delicate capillaries of the lung, being unable to bear the sudden strain, give way, with the result that the alveoli and bronchi are flooded with haemorrhage and the child suddenly dies, drowned in its own blood. At *post-mortem* examination the lungs are found solid with effused blood, and microscopically the blood is found to fill the alveoli and bronchi so that the section looks almost homogeneous. The etiological factor in such cases is usually organismal, but there is some evidence to support the theory that it may occasionally be of the nature of an anaphylaxis.

Other Causes of Death.

Most of the other causes require little or no explanation. In one case the cause of death appeared to be liver necrosis following upon maternal eclampsia. Prematurity in itself accounts for a large number of neo-natal deaths. In such cases there is no lesion found to account for death which has occurred because of the undeveloped condition of its respiratory, thermogenetic, and digestive mechanism, rendering it unable to adapt itself to its new environment. In such cases the investigator must look farther back than the cause of death and seek the cause of the prematurity.

Prevention of Neo-natal Death.

From these investigations into stillbirth and neo-natal death one or two practical points have emerged with especial clearness:

1. The compulsory or voluntary notification of the pregnancy of every expectant mother, leading to its adequate supervision, should enormously reduce the present appalling infantile death rate from birth injuries and preventable infections.

2. The liability on the part of the newly born infant to infections of all kinds renders it advisable to take every precaution to guard it against such infections by the establishment of infant wards with special nurses for the care of the infants alone. Infants can scarcely be expected to escape infection if they are allowed to occupy cots in wards, possibly by the bedside of an infected mother, and to be handled by the mother's nurse.

3. The need is urgent for a fuller and more practical training of students in the art of obstetrics, and in this training a practical acquaintance with the methods of preventive midwifery should take a prominent place.

V.—SYPHILIS AS A CAUSE OF ANTE-NATAL DEATH.

BY

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THE following contribution to the study of the etiology of ante-natal and neo-natal death deals with the question of syphilis, and is an attempt to estimate the value of the Wassermann reaction in the newborn, the incidence of congenital syphilis, and the part played by the disease in the causation of ante natal death. It is based upon the examination of the Wassermann reaction of over 3,500 specimens of maternal, placental, and infantile blood, and upon an analysis of the clinical records of 1,000 cases. All the material, which was entirely unselected, was obtained at the Glasgow Royal Maternity and Women's Hospital, and the Wassermann reactions were carried out by the writer in the research department of the hospital, Harrison's technique being employed.

Incidence of Syphilis in Mothers.

Without entering into a detailed discussion as to the significance of the Wassermann reaction in the adult, the generally accepted view as to its value is taken—that a positive reaction obtained in a patient known to be free from such tropical diseases as malaria, and such acute infections as scarlet fever, indicates the presence of active or latent syphilis, while in the great majority of cases a negative reaction excludes the presence of syphilis.

Realizing the extent to which the incidence of syphilis varies in different classes of the community, no attempt is made in the present investigation to estimate the prevalence of syphilis in the population generally, or to compare the incidence of the disease in the various social classes of the city. The writer's aim has been rather to demonstrate the extent to which one important section of the community is infected with syphilis, and to study the effects of the disease as a factor in the production of ante-natal death.

In a series of nearly 1,900 unselected cases a positive Wassermann reaction was found in a little over 9 per cent. of mothers, so that—accepting the view that figures based on the results of the Wassermann reaction tend rather to underestimate than to overestimate the actual incidence of the disease—it may be concluded that approximately 10 per cent. of women of the "hospital class" in Glasgow are, or have been, syphilitic. It may be noted in passing that the incidence rate of syphilis, as shown by the Wassermann reaction, was found to be under 9 per cent. in the married women, and over 11 per cent. in the unmarried women, in the series of cases examined.

Incidence of Syphilis in Infants.

Opinion at the present time is somewhat divided as to the value of the Wassermann reaction in the blood of infants and, more particularly, in the foetal blood as obtained from the placenta. Many workers appear to accept the presence of a positive reaction in the newborn as evidence of the presence of congenital syphilis. That the occurrence of a positive reaction at birth has such a significance was challenged by Fildes in 1915, and the chief conclusions which he then drew from a study of this point were—first, that a positive reaction in the infant at birth does not necessarily imply the presence of syphilis in the infant, but may simply be due to the passage of reacting substances from the mother's blood, and, secondly, that the Wassermann reaction in the blood of the newborn does not show any close agreement with that of the mother's blood.

In the present study the placental blood of 1,350 infants was examined, and the Wassermann reaction was found to be positive in just over 4½ per cent. In over 400 cases the blood of both the mother and the child was examined and it was found that the reaction was the same in both in nearly 95 per cent. of cases. These figures show a close agreement between the Wassermann reaction in the mother and in the child at birth, and the main differences which occurred were due to a tendency for a comparatively small number of the children of positive mothers to give a doubtful or negative reaction. On this point the results of the present investigation differ from those of Fildes.

There still remains for consideration the question of the interpretation of the results of the Wassermann test in the blood of the newborn. Is the occurrence of a positive reaction to be regarded as due simply to a transference of the mother's reacting substances to the foetal circulation, or is one justified in concluding that the presence of a positive or a negative Wassermann reaction in the blood of an infant at birth is a safe guide in determining whether the child is or is not syphilitic? With the object of settling this point a number of children with their mothers were re-examined at periods varying from three weeks to twenty months after birth. The result of this re-examination of infants agrees in the main with the conclusion drawn by Fildes, though certain points of difference are to be noted. The series consisted of 181 children and their mothers, and the following results were obtained:

1. In the series of cases examined all the children which at birth gave a negative Wassermann reaction continued to do so from ten to twenty months afterwards.

2. Of the children which at birth gave a positive reaction the great majority gave a clearly negative reaction when re-examined from three weeks to twenty months afterwards.

3. There was a small group of cases in which the mother's reaction was positive or doubtfully positive at the time of delivery, but subsequently became negative or doubtfully negative. In these cases the child was born with a negative or doubtful reaction, and when re-examined during the first year of life it was found to be negative.

The close agreement between the Wassermann reaction in the mother and in the child at birth, the persistence of a negative reaction in the cases where one was originally present, and the disappearance of a positive reaction in the majority of infants in whose blood such a reaction was obtained at birth, all point to the conclusion that the Wassermann reaction in the newborn is of little value in proving the presence of congenital syphilis. The appearances suggest that in most cases a positive reaction in the infant's blood at birth is due, as Fildes maintains, to the transference to the foetal blood of reacting substances derived from the mother.

From the above facts, as well as from the clinical examination of the infants included in the present series, it would appear that the incidence of congenital syphilis has been greatly exaggerated by most recent writers, and that the estimated incidence of under 1 per cent. given by many authorities, such as Still, Fruhinsholz, Cassell, and, more recently, by Fildes, is nearer the truth.

At the same time the question of latent syphilis has to be considered, and further observation is required to exclude the possibility of lues tarda developing.

The Effects of Syphilis on the Incidence of Abortion, Premature Birth, and Stillbirth.

The idea that a history of repeated stillbirths and abortions is a diagnostic sign of syphilitic infection of the mother has been handed down by tradition for so long that it has almost been accepted as an axiom. Of recent years, however, there has been a tendency to doubt whether syphilis is really such an important factor in the causation of abortion and stillbirth as formerly was supposed. For this reason an attempt has been made to estimate in the present study the part which syphilitic infection in the mother plays in the production of abortion, premature birth, and stillbirth.

* Working on behalf of the Medical Research Council.

In figures based on admissions to a maternity hospital, where the proportion of cases of delayed and complicated labour is enormously greater than the proportion of abnormal labours in the population generally, the incidence of stillbirth must be much too high, and in estimating the actual incidence of abortion from the records of such cases a similar difficulty arises. Making allowance for certain modifying factors, it will be admitted that statistics drawn from hospital admissions without selection of cases, while of little use as an indication of the actual incidence of abortion and stillbirth, are of value in estimating the relative incidence of abortion or stillbirth in syphilitic and non-syphilitic women of the "hospital class."

The results of the present study with regard to syphilis in the mother as a factor in the etiology of abortion, premature birth, and stillbirth are as follows:

1. *Abortion* (that is, pregnancy ending before the seventh lunar month).—There were 12.8 per cent. of abortions in a series of 1,000 pregnancies. In the group of cases in which the mother's Wassermann reaction was positive the incidence of abortion was 6.17 per cent., and in the group of cases in which the mother's Wassermann reaction was negative the incidence of abortion was 13.17 per cent. While there is thus, apparently, an incidence of abortion in the positive group equal to about half the incidence in the negative group, one cannot lay great stress on the point, for the number of positive cases in which abortion occurred forms too small a series for numerical comparison. The conclusion seems justified, however, that there was no greater incidence of abortion in the positive group than in the negative group.

2. *Stillbirth.*—In the 737 cases in the series in which a viable foetus was delivered the percentage of stillbirths was 16.46. The incidence of stillbirth in the positive group was 18.07 per cent., while in the negative group it was 15.15 per cent. From these figures it is seen that stillbirth occurred in the series with slightly greater frequency amongst syphilitic than amongst non-syphilitic women; and this, it is to be noted, was in a collection of cases containing an unusually high proportion of abnormal labours.

3. *Abortion and Stillbirth.*—Considering these two conditions as one group, it is seen that in the present series of cases abortion and stillbirth occurred with almost equal frequency in syphilitic and in non-syphilitic women. The greater incidence of abortion in the negative group as compared with the positive group has already been noted, but for the reasons given one cannot draw any more definite conclusion on this point than that abortion was not more frequent amongst syphilitic than amongst non-syphilitic women in the series.

The greater incidence of stillbirth in the positive group as compared with the negative group is remarkable, particularly when it is remembered how many of the cases showed obstetrical complications. Even without making allowance for this, and still more so if such allowance be made, it is clear that in the present series of cases stillbirth was distinctly more common in syphilitic than in non-syphilitic women.

4. *Premature Birth.*—The incidence of premature birth amongst the viable infants of mothers with a negative Wassermann reaction was 19.88 per cent., while the incidence of premature birth amongst the viable infants of mothers with a positive Wassermann reaction was as high as 32.54 per cent. These figures, based on the 737 cases of the series in which a viable infant was born, illustrate in a remarkable way the importance of syphilis as a cause of premature birth. The point is, however, emphasized by the fact that, of the 133 premature children born to mothers with a negative Wassermann reaction, 34.61 per cent. were stillborn, while of the 27 premature children born to mothers with a positive Wassermann reaction 68.75 per cent. were stillborn.

5. *Relation between Abortion, Premature Birth, and the Presence of Syphilis in the Mother.*—By taking the three conditions together—abortion, premature birth, and stillbirth—one is able to realize what I take to be the true significance of their relation to syphilis in the mother. It has been pointed out above, with reference to the present series of cases, that if abortion and stillbirth are grouped together the incidence of the combined group shows little difference in syphilitic as compared with non-syphilitic mothers (22.58 per cent. and 24.94 per cent. respectively). The incidence of stillbirth, taken by itself, has been shown to be somewhat greater in the syphilitic than in the non-syphilitic group in this series (18.07 per cent. and 15.15 per cent. respectively).

It is the analysis of the figures with regard to premature birth, however, which reveals the most important effect of syphilis in the production of ante-natal and neo-natal death. As has been noted above, 19.88 per cent. of the viable infants born to non-syphilitic mothers were premature, while of the viable infants of syphilitic mothers 32.54 per cent. were born prematurely. Of these premature infants 34.51 per cent. were stillborn in the non-syphilitic group and 68.75 per cent. were stillborn in the syphilitic group. It is, then, as a cause of premature birth and stillbirth that syphilis is of greatest importance in the later months of pregnancy.

Summary and Conclusions.

From a study based upon the Wassermann reaction of over 3,500 specimens of blood and upon the clinical records of 1,000 pregnant women it is concluded:

1. That between 9 and 10 per cent. of women of the "hospital class" in Glasgow show evidence of syphilitic infection.

2. That the results of the Wassermann reaction in the blood of the newborn are of little value in proving the presence of congenital syphilis.

3. That the incidence rate of congenital syphilis has been greatly exaggerated by most recent writers.

4. That syphilis in the mother cannot be shown to be a factor of predominating importance in the etiology of the interruptions of pregnancy in the earlier months.

5. That syphilis is one of the most important causes of stillbirth and of interruption of pregnancy in its later months, leading to premature birth, and, more particularly, to premature birth with death of the foetus.

VI.—PLACENTAL CHANGES IN RELATION TO FOETAL DEATH.

BY

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In the course of examination of any large number of stillborn foetuses in order to ascertain the cause of death the condition of the placenta will in many cases be found of the utmost importance; indeed in a large proportion of cases but for a thorough examination of this organ the cause of death could not be discovered. In his recent monograph on the subject of foetal death Eardley Holland states: "No *post-mortem* examination of a foetus can be regarded as complete unless accompanied by the examination of the placenta and cord," and any worker in this line of research will surely agree with this dictum.

In cases of stillbirth associated with such conditions as, for instance, dystocia, placental changes of note are mostly absent; it is mainly in cases of syphilis, eclampsia, albuminuria, or death from unknown cause that placental changes will be found.

Such changes may usefully be classified under the following two headings:

1. *The Syphilitic Placenta.*

This is in some cases quite normal in appearance; this was the case in 3 out of 8 of our series. These 3 placentae were of normal size both absolutely and relatively to the foetus; the appearance and consistency were as seen in healthy specimens, and but for other clinical factors present there was nothing to indicate the presence of syphilis in the naked-eye appearance of the placentae. The other 5 syphilitic placentae were, however, large, soft, pale, and flabby, but no infarctions or haemorrhages were present. In these 5 cases an increase in thickness up to two inches was also present. It is to be emphasized that the three organs showing no naked-eye changes accompanied full-time foetuses, while in the other 5 cases the foetuses were premature—mostly about the thirtieth week.

Microscopically, in a well-marked case, the individual villi will be seen to be larger than normal and more closely packed, so that the field is thickly occupied by them; the stroma of the villi is thick and vessels are either absent or small and inconspicuous. Positive endarteritis was not often found and the appearance presented by the villi may be ascribed to a perivascular fibrosis which, in time, obliterates the vessels by pressure. While, in such specimens as appear normal to the naked eye, these microscopical changes are not well marked and, indeed, may at first sight appear to be absent, yet, if sections be taken from several different areas some degree (it may be slight) of these changes will be observed.

It would appear, then, that in cases where this overgrowth of the villi occurs early—presumably in the more severely infected cases—the degree of vascular obliteration will be such as to interfere with foetal nutrition and bring about premature death *in utero*, while in cases where this does not occur until later—in the less severely infected cases—the foetus may go on to full time and be stillborn or be born alive and die soon after birth when the placental interchange is cut off and the syphilitic poison confined to the body of the foetus.

2. *Placental Infarctions.*

Time will not permit a full discussion of this subject and the conclusions arrived at will require to be shortly stated.

In the series of stillbirths examined 46 placentae showed varying degrees of red or white infarctions; of these signs of old or recent, slight or severe utero-placental haemorrhage were present in 21 cases, or 45.5 per cent., while there was associated albuminuria in 26 cases (56.5 per cent.). The changes, both macroscopic and microscopic, in infarction formation have been worked out by several observers, notably by Eden, Whitridge Williams, and Young, and two main views are held as to their formation.

(*a*) Eden and Williams hold that the process consists of an ischaemia of a certain area of the placenta, consequent on endarteritis of the branches of the umbilical vessels, with their subsequent obliteration. This is followed by coagulation necrosis at the syncytial edge, which is accompanied by fibrin deposition, which fixes the involved villi together. The infarct finally consists of a number of more or less degenerate villi welded together by a mass of fibrin. This process forms one of the changes preparatory to the separation of the placenta. Infarction formation, according to this view, then, is a normal process, and constitutes a sign of senility in a short-lived organ. But it is not explained why such changes occur only in patches; also the factors which focus the process on any particular part or parts of a placenta have, so far as is known, not been investigated. Such a process as described undoubtedly does occur, but the resulting infarcts are small and white from the outset, and, so far as could be judged, have been excluded from our present consideration.

(*b*) Young's view is that as the result of utero-placental haemorrhage an acute vascular injury is inflicted on that portion of the placenta related to the haemorrhage. This produces passive congestion, accompanied by dilatation of the vessels in that part, and this may be so extreme that rupture of the capillaries may occur, causing an intraplacental bleeding, which may again be localized, or to a greater or less degree infiltrating.

Such a coagulum later on shows an encircling white capsule or line of demarcation which increases in thickness until only a small central clot or later only a brown stain is left in this whitish, laminated area; and finally that also disappears, the haemorrhage now having become entirely replaced by a whitish, hard area which is, in effect, a fibrinous scar at the site of the original haemorrhage.

Such infarcts are white only in the later stages, are larger than those previously described, and are often accompanied by signs of retroplacental clot; further, while those in the previous class do not appear before the twenty-eighth week of gestation, the variety now under consideration may be found well developed much earlier. Stillbirth is brought about in these cases by the ablation of an area of the placenta sufficiently extensive to interfere with foetal nourishment. If we accept Young's views regarding the absorption of toxic products from such devitalized areas into the maternal circulation to set up albuminuria or eclampsia, it is equally feasible that a similar absorption will occur into the foetal circulation and produce toxic death there.

From these considerations it may be inferred that, should the uterus empty its contents immediately after the occurrence of such utero-placental haemorrhage, the foetus will not be macerated and the placental changes will not, as yet, have had time to develop, so that this organ, in such cases, may appear to the naked eye practically normal although microscopical examination will reveal the presence of vascular [illegible]ation; while, if the uterine contents are retained for a [illegible]aceration of the foetus will have occurred and [illegible]al infarctions will have developed before expulsion. [illegible]ience has confirmed these expectations, and in this [illegible]f case a macerated foetus is usually accompanied by an [illegible]sively infarcted placenta.

Relative insufficiency of the placenta requires little more than mention; it is a rare condition, having been met with by us only once in 150 cases examined. In this case the foetus was expelled at thirty-two weeks without obvious cause, being normal in appearance and structure, but the placenta was very small, weighing only 6 oz. (169 grams). Its microscopic structure was normal. The condition is brought about by an overatrophy of the chorionic villi, so that at a certain time sufficient nourishment cannot be absorbed to supply the foetus, which then dies and is expelled.

From these observations it will be gathered that placental lesions constitute an important variety of the conditions causative of or associated with stillbirth; at the risk of too great reiteration it has to be repeated that examination of the placenta of every case is very necessary in all stillbirth investigations.

DISCUSSION.

Dr. T. W. EDEN (London) said that he felt completely overwhelmed by the mass of facts which had been presented to them by the various speakers, and he would need time to digest them; but one thing was quite certain, and that was that their midwifery practice wanted improving. That meant improved teaching, and this was more a question of organization rather than anything else. Improvement was called for (1) in the conduct of labour itself and (2) in the supervision of the pregnant woman. They had heard a good deal lately of the similarity of labour to a surgical operation. If that meant that the strictest possible asepsis should be preserved that was correct, but it was a dangerous fallacy to look upon labour as an opportunity for the exhibition of manual dexterity and skill. With regard to ante-natal clinics, he could not imagine anyone more unfitted for their management than the medical officers of health. As a rule they were the least qualified for this work; unless supervision was not only conscientious but well informed, such clinics were useless.

Dr. LAPTHORN SMITH (London) expressed his pleasure at hearing the papers read that morning. As regards toxaemia his experience of 2,500 confinements was as follows: (*a*) Toxaemias up to the seventh month were entirely preventable if seen early. (*b*) If not seen till after the seventh month prompt treatment of the mother was necessary, and if convulsions came on removal of the foetus as quickly as possible by the means least injurious to the mother, generally by Caesarean section. (*c*) The accepted teaching should be changed that version was a good procedure for delivery in difficult labour. He thought that version was very dangerous for the child—this was well known. He agreed with previous speakers that the danger did not come from pressure on the cord so often as it did from rupture of veins and membranes by the force of traction on the aftercoming head. (*d*) The foetus was liable to all the diseases to which the mother was liable. (*e*) If every practitioner were to teach his prospective cases of confinement that they must be under supervision during the whole of their pregnancy, if he made it his business to cure constipation and other causes of absorption of toxins from the digestive tract, and if he taught the women to drink more water and eat less meat there would be very few cases of uraemic convulsions which cause so many pre-natal deaths and quite a few post-natal deaths. (*f*) Craniotomy should disappear from practical obstetrics.

Dr. RUSSELL ANDREWS (London) agreed that ante-natal beds in hospital were absolutely essential, but he thought they would be extremely difficult to get. When obtained they must be kept for this purpose strictly. The suggestion that a Commission should be appointed was extremely important. Referring to the matter of breech delivery, he thought it was essential to obtain full dilatation of the cervix before attempting delivery. Stillbirth was much more likely where the head was delayed high up by a not fully dilated cervix than in cases where delay was caused by the perineum.

Dr. ANDERSON (Glasgow) put forward the view of the general practitioner. He would take to heart the advice given about delivery of the aftercoming head. He was greatly interested in the question of the toxaemias, as it would appear that a very large number of cases had occurred of recent months in Glasgow, possibly connected with the epidemic of influenza. He wished for advice from the leaders of the profession as patients continued to show the greatest possible

reluctance to any form of *ante-partum* examination. When it was urged by the doctor they were very apt to accuse him of going out of his way to gain fees. On account of this prejudice it was a very difficult matter for the general practitioner to carry out these recommendations.

Professor MUNRO KERR (Glasgow) agreed with previous speakers that deaths during parturition represented from 55 to 60 per cent. of all foetal deaths. Referring to the delivery of the after-coming head in cases of breech presentation he said that the trouble could be absolutely avoided by version in the later weeks of pregnancy, cranial presentation being thus secured. He thought the application of forceps to the after-coming head was extremely valuable (1) because traction was made directly on the head, (2) a better flexion of the head could be secured, and (3) extraction could be made much more slowly owing to the admittance of air which took place when the instruments were applied.

Professor R. C. JOHNSTONE (Belfast) thought that Schulze's method of artificial respiration was responsible for many foetal deaths.

Dr. STEWART (Glasgow), speaking as a worker in an ante-natal clinic, asked for a much closer co-operation between the leaders of the profession and their humbler colleagues. She was of opinion that it was extremely difficult to get patients to come for examination, but they lured them to the ante-natal clinics by sociological methods. She thought that for a generation or two women would not go to their doctors until they were actually ill. Their great difficulty in the ante-natal clinics was to get proper support; she feared that in some towns, at any rate, these clinics were not appreciated.

The PRESIDENT, continuing the discussion, said that it was generally conceded that the general practitioner was the person most responsible for unnecessary interference in labour—but was the consultant entirely without blame? Consultants were usually called in to do something to finish matters; they were expected to do something, and were not so much treating the case as helping the whole household to get it over—everyone was anxious for labour to be completed. Consultants must realize that they had to bear their share of the responsibility. The only remedy was to make the public appreciate that interference was, more often than not, for the good of neither mother nor child. In regard to version in breech cases he thought a reservation must be made, as at times delivery by the breech was best for both mother and child. In regard to the relation of the medical officers of health to the ante-natal clinics, in centres other than teaching centres, he was of opinion that they were the proper persons to administer them; they had the organization. He would be sorry for any strictures on medical officers of health to go out as the considered opinion of that meeting. Everything tending to encourage the advancement of our knowledge of ante-natal work should be encouraged.

Dr. BALLANTYNE, in closing the discussion, referred to the great pleasure it gave him to be in an atmosphere where the subject was sympathetically received. It was no longer to be regarded as a fad, a wild dream of futurity. As regards the position of the medical officer of health, he described how he had been consulted at every stage in working out the scheme in Edinburgh, and he thought that it was essential for them to keep in touch with the medical officers of health as a connecting link. He remarked that version in breech cases was not always easily performed even under anaesthesia, and suggested that sometimes the employment of pads and a tight binder might prove useful.

Resolution by the Section.

At the conclusion of the discussion on ante-natal and neo-natal deaths the following resolution was passed:

"The Section of Obstetrics and Gynaecology (1922) of the British Medical Association is of opinion that every expectant mother and her unborn infant should receive efficient and adequate ante-natal supervision and (if needed) treatment, either from doctors in practice or in maternity hospitals and homes; and, with this end in view, recommends the Council to set up a provisional committee, consisting of representatives of the obstetrical societies and of the health authorities of Great Britain and Ireland, to confer as to the formation of a scheme for securing foetal welfare and preventing foetal mortality."

TREATMENT OF INFANTILE PARALYSIS IN CHILDREN.*

BY

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THE President of the Section for the Study of Disease in Children, Sir Robert Jones, recently delivered to it an address on the treatment of paralysis in children, and it occurred to me that a practical demonstration of the methods by which the principles he described are carried out in the Wingfield Hospital, Oxford, and its surrounding clinics would be a useful addendum to his remarks.

I think that the subject is one of great clinical interest, but there is one side of it to which I would like to draw special attention—that is, the political economy of the treatment of these paralytic cases. The Education Act of 1918 has added greatly to the responsibilities of local authorities with regard to crippled children, and at the same time special attention is being devoted to these cases by surgeons in many parts of the country. The education authorities are helping to finance the treatment of these cases, and it is probable that they will look closely into the expenses to which they are thus committed, in relation to the results which are finally obtained.

We have to prove the economy and efficiency of our treatment. While it is vital that the principles of treatment shall be carried into effect, we should aim at using simple appliances, for simplicity means economy, both in first cost and in maintenance. My fear is that, in some places, the authorities, after a period of tentative generosity, may become dismayed at the cost of providing, repairing, and renewing apparatus, and disappointed with the results of their expenditure, and so limit their financial help and organized co-operation in this work.

FIRST STAGE.

Probably far more good can be done by treatment during the early hours and days of the attack than at any subsequent period. While quarantine is certainly advisable, and serum may prove helpful, the indications for orthopaedic treatment during the first few hours and days after the onset are urgent. We have to deal with acute anterior poliomyelitis—the anterior horn cells are inflamed and poisoned. They need absolute rest. The shocks they receive from any reflex or central stimulation must definitely prejudice their chances of passing through the acute stage without destruction or permanent damage. This is the plainest pathological truth. Its practical application, then, is that we must keep the patient at rest in comfort and warmth. There must be no restlessness of mind or body, and no exposure of the skin to sensory stimulation. At the same time we have to consider the additional factor of the prevention of deformity and the posturization of muscles.

To carry out these principles in practice, we wrap the child completely and comfortably in cotton-wool or gamgee tissue and place him on a Thomas's double spinal frame with headpiece, on a soft saddle, with the feet at right angles on footpieces, and the pelvis true. If the arms are affected they are held abducted with the elbows flexed. The child quickly settles into comfort and tranquillity. Rest of the spinal ganglia is achieved. In this form of protection, warmth, and splintage the patient can be looked after without any disturbance, for he is lifted as a whole on the frame for nursing purposes.

The child is kept thus immobilized for at least six weeks, and much longer in serious cases. After all tenderness is gone light massage without movement is begun. In some cases we put the legs below the knee in plaster over very thick wool padding, so as to keep the feet at right angles without allowing them to become flattened and abducted. The position of the anterior superior spines is verified frequently to make sure that the pelvis remains true; for a tilted pelvis is an insidious evil, and one which tends to initiate or exaggerate serious later deformities such as scoliosis.

SECOND STAGE.

The first stage passes almost imperceptibly into the second stage, and we find that the principles of treatment to be adopted in the second stage must be applied carefully and

* Read before the Section for the Study of Disease in Children, Royal Society of Medicine, July 1st, 1922.

tentatively. Sir Robert Jones stated in his address "that every case represents a separate anatomical problem." This is profoundly true, and one may well add that the treatment of a serious case requires careful reconsideration from week to week.

The principles we work on are:

1. Posturization of the trunk and limbs.
2. Correction of deformities, if any have developed.
3. Resumption of function of the ganglion cell and affected part, induced by (*a*) skin stimulation by light massage, (*b*) re education and commencement of active movements, and (*c*) locomotion without overstrain.

We apply these principles in practice carefully and in the order in which I have stated them.

1. *Posturization.*

The chosen posture depends upon: (*a*) The distribution of the paralysis, and (*b*) the need for safeguarding "key" muscles. In connexion with the former we protect the weak or paralysed muscles from being overstrained by their stronger opponents.

[Children illustrating the application of this principle by plaster, celluloid, and double side-irons with fixed sockets, were shown.]

We have learned to be specially careful to favour and protect certain "key" muscles. We recognize that certain muscles have dominant value in the function of both upper and lower limbs. In the upper limb these are the deltoid and the median thenar intrinsics; in the lower limb the glutei and the quadriceps.

In the upper limb, unfortunately, the deltoid and the median thenar intrinsics are the muscles most commonly paralysed and most easily overstretched. In the upper limb, then, abduction of the arm and abduction and opposition of the thumb are specially cared for, the former by an abduction splint or plaster [cases were shown in arm abduction splint], the latter usually with a small plaster "cock up" holding the first metacarpal in relation to the rest of the hand as if it were holding a glass.

In the lower limb, on the other hand, the glutei are less frequently permanently paralysed, although the maximus is often overstretched. Until the strength of this muscle is assured, or its recovery despaired of, our aim is to prevent flexion of the hip by a plaster or celluloid splint. The quadriceps is commonly paralysed, and frequently overstretched. In the common sitting position both gluteus maximus and quadriceps are overstretched. We protect the quadriceps by a walking calliper splint.

[Ten children were shown walking in callipers for one or both legs. Three of these were old cases which had been given up as incurably bedridden.]

If there is paralysis or weakness of dorsiflexion or plantiflexion of the ankle we keep the feet at right angles by fixed callipers, or double side-irons, or in plaster or celluloid. In the latter case a large boot is worn over the splint and the round calliper ends are fitted into its heel. [Examples were shown.]

During the whole of the second stage, which may last for years, we never use any hinged apparatus. The simple abduction arm splint costing 15s.,* the walking calliper at £1 5s., and the double side-irons at £1, with plaster, and an occasional celluloid, satisfy the needs of the limbs.

For children with weak trunk muscles, without any actual deformity, we find it useful to supply a light spinal support. Indeed, some of our cases with very extensive paralysis, whose condition was thought hopeless, walk about with two callipers and a light spinal support. They manage to get about on their legs, and, what is extremely important, to go to school. Meanwhile the principles of posturization are being realized. Considerable muscle recovery has occurred in some of these cases. Sometimes we attach straps from the spinal support to the back of the calliper to limit the flexion of the hip where the gluteus maximus is weak, or to prevent internal or external rotation of the whole lower limb.

2. *Correction of Deformity.*

This is carried on in the second stage after all tenderness is over. Unfortunately many cases only reach our hospital or clinics well on in the second stage, and after deformities have developed. The correction is usually done gradually by repeated plasters. The only operation that is at all commonly performed is Soutter's operation for severe flexion deformity of the hip.

Scoliosis.—Extreme difficulty is often raised by late cases with severe scoliosis. Lovett is emphatic in his warning as to the care that is to be taken in preventing scoliosis by the recognition of unilateral paralysis or paresis of the abdominal muscles. Other trunk muscles, of course, have their share in the causation of paralytic scoliosis. While with care much of this deformity can be prevented, once severe paralytic scoliosis has developed I do not think it is right to attempt full correction. It is so easy to do much more harm than good by corrective plaster or apparatus. One must never forget that the life of these semi-paralysed children depends on their "vital capacity," and that any corrective or retentive pressure may limit the comparatively feeble movements of respiration they possess. In applying apparatus, therefore, we are very careful to leave the respiratory movements unhampered as far as we possibly can. We endeavour to erect the trunk true on the pelvis, and we find the Mark Jansen method, by his first stage plaster-bed, and his second stage light support, helpful in many of these cases.

[A child was shown lying on her Mark Jansen plaster-bed, then up in the (adapted) second stage light support. She had had a very severe scoliosis in association with extensive paralysis. Treatment by these methods had proved most successful.]

3. *Resumption of Function.*

The time comes when the ganglion cell must be induced to start work again. Usually the return of voluntary movement is automatic and needs no special help, but where no contraction is seen to occur in a muscle which has been kept in a relaxed position for some months we begin to stimulate the ganglion cell. This we do gradually and tentatively, both through reflex paths by gentle skin stimulation and through the central nervous mechanism by re-education.

When locomotion is to be recommenced the greatest care and watchfulness are necessary. It is probably true to say that there is a universal natural law that any living tissue responds to the stimulus of strain by growing stronger, but to the excessive stimulation of overstrain by wasting and weakening. Every tissue must have its own threshold between strain and overstrain. For muscles and ligaments this law is constantly at work, and when we have to deal with a partially paralysed muscle we are careful to prevent overstrain.

Lovett[1] makes it clear that partial paralysis of a lower limb sometimes passes into complete paralysis during the late second stage, due to overstrain in locomotion. He describes this condition chiefly with regard to the gastrocnemius. We have found the same tendency commonly at work in connexion with the quadriceps, though we have been able to prevent actual paralysis supervening, except in one case which was temporarily lost sight of. It is our practice, as I have already described, to keep the feet at right angles and the quadriceps protected by a calliper until Mackenzie's final test is fully satisfied. But even after this we find that the calliper has to be left off tentatively, and frequently have to put the patient back into the calliper for several months owing to a progressive return of the quadriceps weakness.

Third Stage.

The second stage passes into the third stage when posturization followed by attempted resumption of function has distinguished the muscles that are recoverable and those that are permanently paralysed.

In the third stage our principles are further to develop the patient's capabilities, whether by stabilization of joint, transplantation of tendons, etc., or suitable appliances; but we postpone operations such as arthrodesis, until after the age of 8 or 10, and keep the patients with flail knees walking in callipers until after their school life is finished.

[Cases were shown illustrating arthrodesis and tendo Achillis reinforcement.]

After-care Centres.

In the very scattered agricultural district which the counties of Oxfordshire, Berkshire, and Buckinghamshire constitute the problem of the prolonged supervision of these cases is very different from that in a town and much more difficult. It is impossible to expect the children to come up regularly long distances to the hospital. We have got over that difficulty by instituting local orthopaedic clinics in various market towns through the area. It is necessary to carry the out-patient department of the hospital to the patient's own district.

[Two new cases were shown to demonstrate the typical complex deformities, the methods of examination, and an outline of the programme of treatment.]

* All our splints and appliances are made in the hospital workshops.

As you will have seen, we try to work on simple and economical lines. The apparatus is comparatively cheap, straightforward, does not require difficult measurements or repeated fittings, and lasts for a long time, as there are no fragile or complicated joints. The appliances enable the children to walk, and at the same time carry out the twin principles of posturization and avoidance of overstrain.

I feel that methods such as these go far towards realizing our dual aims of economy and efficacy, but doubtless there are many ways in which our methods could be improved, and I hope that the subject will be widely discussed, because I feel that its importance is great and that full knowledge of the most practical methods should be widely disseminated.

REFERENCE.

[1] *After-Care of Poliomyelitis in New York State.* New York State Department of Health.

ACUTE INTESTINAL OBSTRUCTION.

BY

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THIS essay has been written with the intention of inviting surgeons to take stock of present methods of dealing with the most grave acute problem in general surgery, and if any of the suggestions herein contained should prove of value in helping to diminish the incidence of acute obstruction of the bowels or in enhancing the chances of surgical relief the time and thought devoted to its composition will be more than recompensed.

Adopting the motto, "Avoid the abstract and stick to the practical," I commence by putting the question: What is to be done in case of acute obstruction when a portion of the gut is found gangrenous? Before responding, one has to bear in mind that, from the moment the circulation of the bowel becomes impeded, splanchnic shock and systemic poisoning begin, and both intensify in compound ratio to the hours which pass until the obstruction is relieved. General symptoms often prove delusive guides as to the existence of this lethal combination, which seems temporarily to possess an insidious potentiality only requiring some slight surgical stimulation to unveil its effect with appalling rapidity. Whenever gangrene of intestine is met with, not only is it proof positive that the case has, for one cause or another, been sadly neglected, but there exist initial factors, poison and shock, which seriously handicap any attempt at human succour. While primary knowledge of these unpropitious facts may tend in a way to alleviate the sense of dire responsibility which everyone feels when he finds himself confronted with this tragic affection, yet it in no way deflects from the duty to spurn finesse and, even at the risk of the "dead stymie," ileus complete, to give every patient not absolutely moribund a surgical chance. Conscientious work accomplished in the shortest time[1] is the one thing most likely to snatch a victory, the masterstroke being elimination of the morbid trio—eventration, undue manipulation, and prolonged anaesthesia.

With this preface I will endeavour to give a reply to the above question: Concentrate attention on the extent of the gangrene, carefully scrutinize the condition of the mesenteric zone, confine the attack to what is essential, and, as every moment counts, "force the game."

I do not hesitate to state that, next to having details of likely operations in clear mental perspective, there is nothing more conducive to operative celerity than, while the patient is being prepared (always including gastric lavage), personally to superintend the selection of instruments and drains, the threading of an adequate assortment of needles, the provision of an ample (counted) supply of sponges, towels, and some rubber tissue. A few sterilized kidney basins must not be omitted, and the apparatus must be ready for any washing or injection which may be required, the operating table warmed up, and last, and indeed not least, the help of two smart assistants must be secured.

There is also a contingency which may seriously interfere with expeditious surgery in acute intestinal obstruction. Assuming previous examination fails to give an indication, a very perplexing question arises at the start—where to make the incision so as to get directly at the seat of mischief. I cannot conceive anything more demoralizing to a surgeon than, when entering the abdomen on a forlorn mission, to find his energy and time sapped, at the outset, in struggling to restrain inflated intestine from bursting out through the parietal wound. If the site of lesion is not evident—and, as frequently happens, the distension is so great and the serous coat of bowels so friable that it is impossible to pass the gut methodically through the fingers in search for the constriction without causing numerous peritoneal lacerations—his position is truly pathetic, between the Scylla of traumatism *plus* exposure and the Charybdis of retreating without having reached the objective.

These remarks are not penned on hearsay but on dire personal experience, which incited me to publish a note in the BRITISH MEDICAL JOURNAL, November 23rd, 1918 (p. 573), on the necessity of instituting careful inquiry in every case of intestinal obstruction as to a previous attack of appendicitis, or to an abdominal operation in which the appendix might have been removed for convenience; and I urged that regardless of the time which may have elapsed (detailed revision of the patient failing to point a path) a three-inch incision should be made in the right semilunar line low enough to expose the ileo-caecal region and right pelvis where the distal ileum will usually be found implicated in adhesions. While my experience may be exceptional, it suggests the personal conclusion that, excluding the era of iodine skin disinfection and those which can be located before operation, in the majority of cases the obstruction of the small intestine will be encountered adjacent to the right pelvic brim, and that the stereotyped central incision in such instances courts disaster, as in the search for the lesion the distended semi-paralysed intestines are subjected to needless exposure and manipulation.

It is not pertinent to the context to analyse the psychology which inspires postponement of operation[2] in acute appendicitis until what is academically styled "the cold stage" supervenes further than to interpolate that patients so treated who escape immediate translation to the glacial state remain endowed with a nest of adhesions[3] which renders them likely candidates for premature mortification by the peristaltic contortions of their own small gut. And I must add that I am unable to comprehend the mentation which complacently admits of "We'll wait until to-morrow to decide" in a case of suspected acute intestinal obstruction.

Acute Obstruction of Small Intestine.

In a number of instances in which stoppage is suddenly caused by a band or kink only a narrow ring or small knuckle of bowel is found gangrenous, and in quite a proportion of these necrosis does not extend to the fixed portion of the gut, much less to the mesentery; the fact of the circulation in the heart of the intestine remaining intact induces a hope that there might be prompt restoration of peristalsis in the tube if inclusion or excision of the moribund area could be effected without entailing subsequent obstruction by diaphragm or angulation. Acting on this hypothesis, I venture to submit a classification from the operative angle, and I trust the suggestion will be viewed merely as a humble attempt to find some means of reducing the terrible mortality—40 per cent.—which attends surgical intervention as expressed in mediate or immediate enterectomy.

A.

In cases in which one finds that a complete circle of the bowel is beyond redemption I recommend that lateral anastomosis and excision of the gangrenous gut be carried out in the following order of detail:

1. The affected zone of intestine is drawn out through the external wound, extruding a sufficiency, above and below, so as to facilitate the performance of lateral anastomosis at a convenient distance from the lesion.

2. The protruded bowel is fixed *in situ* by sponges, which are meticulously packed into the wound so as to preclude any possible regurgitation into the peritoneal cavity during subsequent manœuvres.

3. Coils of proximal and distal healthy bowel are approximated and held in apposition by an assistant while four Triollet catgut Lembert sutures, half an inch apart, baste the apposed loops together; each stay is tied when inserted and its free ends caught in a pressure forceps.

4. An opening, by sharp scalpel, two inches in length, is then made, close to and parallel with the line of stays, into the distal gut—as no clamps are employed a kidney basin is made to catch whatever escapes—and then a pressure forceps is applied about the centre of the free edge of the incision to act subsequently as a tractor. With a large kidney basin in position a corresponding incision is at once made into the proximal bowel, free vent is afforded for escape of contents the more the better omen), and the centre of the free edge of this wound is similarly seized with a forceps.

5. Two assistants then make gentle opposing traction on adjoining stays, while a continuous through-and-through Triollet catgut suture (tautly secured to each stay in transit) seals the posterior segment; the ends of the "central" stays are then cut short. The forceps previously attached to the free edges of wounds are now grasped by an assistant so as to indicate a strategic site for the insertion of two anterior "central" stays; the continuous catgut through-and-through suture is then carried on (as it approaches each stay the latter is tied and continuous suture knotted to it) until closure of the anterior segment is completed; the ends of stays are then snipped away and the whole field is washed with warm peroxide lotion, dried with bibules, and the anastomosed part is enveloped in a dry towel.

6. The gangrenous portion is then taken in hand; a catgut ligature is applied at least two inches respectively above and below the proximal and distal suspect limits, the intervening necrosed intestine is excised, and any bleeding point in the mesentery is immediately dealt with. A purse-string catgut Lembert suture is next inserted around the base of each intestinal stump; with a few snips of a scissors each stump is then freed from its mesentery just enough to render it easy for an assistant to invert it, with a dissecting forceps, into its corresponding lumen as the purse-string is being tied.

7. A jug of warm peroxide lotion (1 in 35) is again requisitioned; a general wash and brush up follows; everything is thoroughly dried, and the bowel returned. Four or five through-and-through strong silk sutures close the parietal wound, leaving room at one angle for passage of two thick silkworm-gut wisps, which are so placed as not to adhere to any line of intestinal suture.

B.

In some cases an incomplete narrow ring of gangrene results from constriction by a band, which in width more or less corresponds to that of the band itself; if this does not exceed 1 cm. and the mesenteric zone is healthy, the affected coil is drawn out through the wound and secured in place as before mentioned. Four equidistant long catgut Lembert stay sutures are then passed—skipping over the dead zone—through living proximal and distal gut; these sutures are not for the moment tied—their ends are respectively caught in forceps, and the assistants with blunt hooks retract the loops of these stays well out of the way, while a kidney basin is placed in position and a transverse incision made through the whole extent of the gangrenous area (*N.B.*—This incision is only made in cases where, after removal of the "external" obstruction, there is no consequent visible inflation of the distal bowel); thus free escape for contents is provided. When the flow ceases the hooks are removed from loops, the forceps grasped, and upper and lower intestine approximated. The stays are then tied and a forceps applied to each pair of free ends with which the assistants make opposing traction, while a continuous catgut Lembert suture, braced to each stay as it passes, completes the matter; the ends of stays being clipped away, the toilet, etc., is effected as in A.

C.

The most difficult case for decision is the one in which a band, kink, or twist has caused more extensive necrosis, the fixed portion of gut remaining suspect, and the mesentery apparently uninvolved. The problem then arises, can infolding or excision of gangrenous section be accomplished without leaving an obstructive diaphragm or angulation? In order to clear the perspective I wish here to mention that I cannot as yet recommend the adoption of either if the belt of gangrene exceeds a width of one inch; anything above that commands the major procedure A, but within this limit the complications mentioned can be obviated.

Three long catgut Lembert stays are inserted, as above, into the proximal and distal bowel, one along the free border and one on each side midway between this anterior stay and the mesenteric attachment. Blunt hooks are then made to pick up the loops and retain them clear of the field while a free crucial incision is made through the moribund segment. When the intestinal discharge has ceased, the loops of stays being still held aside, the four gangrenous flaps (made by crucial incision) are liberally excised with scissors. The stays are then drawn taut so as to facilitate inspection of the amount of angulation produced by approximation of the proximal and distal gut. Two similar lateral stays are next inserted close to the mesenteric line, embracing as much or as little of the peritoneal coat, above and below, as may be judged necessary to correct any likely kinking by the anterior sutures. The five stays are then tied and a continuous catgut Lembert suture applied as in B.

The part stays[1] take in the above procedures possibly warrants a little amplification. From beginning to end they make for rapidity and good workmanship, in that they point the line for the continuous suture, help to secure its tension, and in themselves form a strong second line of defence. They are infinitely preferable to clamps, as they do not cause any devitalization of tissue, which, by the way, in acute intestinal obstruction is already sorely attenuated by distension and toxic infiltration. They possess a sound surgical attribute—namely, they admit of the operator seeing a bleeding vessel and tying it. They serve as excellent pliable tractors by which the operator can dominate at will the slippy-sloppy ground on which he has got to work, and consequently are the best insurance against an attack of "the tail wagging the dog" at a moment when one carries a heavy time handicap in a race for life in the most fatal of acute surgical affections.

Acute Colic Obstruction.

In this catastrophe, if the problem as to the seat of lesion is not solved before operation, it may be taken for granted that what was mentioned as a contingent complication in acute intestinal obstruction is a certain one in advanced colic obstruction, and, owing to the enormous distension associated with the latter, surgical intervention as often as not ends in a tragedy. After a certain amount of prolonged pressure and manipulation necessary to retain intestinal balloons inside the abdomen, a rather sudden and unexpected relaxation of tension occurs, which is apt to lure one on to proceed instead of beating a rapid retreat, but which in reality is the culminating exposition of intestinal paralysis induced by the superaddition of traumatic to pre-existing splanchnic shock. The curtain then drops as the anaesthetist whispers the epilogue—myocardial liquidation has begun.

Under such circumstances it is natural that one should seek for some mode of escape before the advent of the fatal loss of spring, and I cannot see anything promising on the horizon except, in all cases in which thorough examination and careful study of the history fail to give a clue to the whereabouts of the obstruction, to make a right semilunar incision, explore gently for a few minutes, and if there is no result proceed at once with the preliminary step of closing the wound by inserting four or five long through-and-through strong silk sutures, and without knotting catch the ends of each in a pressure forceps. Then coax the left hand, supinated and extended, between the parietal peritoneum and the bowels over to the right iliac fossa, where two fingers flexed forward point the site for an incision large enough to allow the external inferior sacculation of the caecum to be drawn outside and maintained there momentarily by forceps. The semilunar wound is then rapidly closed, and a dressing applied, covered by rubber tissue and a towel, and immobilized by fixation forceps.

Attention is then turned to suturing the exposed caecal sac to the margin of the iliac wound in such a manner as to preclude any subsequent backward percolation. The patient is then gently rolled over on his right side to the edge of the table, a basin is placed in position, and a stab made into the gut sufficiently large to give free vent to its contents. I have had gratifying results with this method, and whenever feasible I like to employ the external inferior sacculation for drainage; as its site is strategic, it seems anatomically adapted for the purpose, it occasionally closes spontaneously after the obstruction disappears, and it can be closed by operation without encroaching unduly on the lumen of the caecum.

The early insertion of the through-and-through silk closure sutures may require some explanation. These sutures, in place, help to prevent a rush from within, as the wound can be promptly occluded by traction on the forceps and thus diminish pernicious handling of bowels. They afford good support for any temporary packing, and their presence tends to obviate separation of layers of parietal wall during operation. Owing to internal pressure their introduction may be an arduous business, which, to save valuable time, had better be effected before the fatigue stage supervenes; and the fact of their being in affords a comfortable homeward-bound feeling, which on occasion is not to be despised. If long threads of silk are used the loops can be readily hooked away from the field so as not to cause any operative inconvenience.

It may have been observed that I advocate an incision in the right semilunar line for both acute colic and acute "intestinal" (unplaced) obstruction, the reason for doing so being that 70 per cent. of acute abdominal lesions are credited to appendicitis. If to this be added the incidence of pyloric, duodenal, and biliary affections, the ratio of involvement of the right as compared with the left abdomen must certainly stand not less than 6 to 1; and knowing that the most frequent cause of obstruction is the legacy peritoneal agglutination following infective processes and operations for their relief, the deduction is, to say the least, logical

that, given no direct guide, the chances are greatly in favour of finding the lesion in the right abdomen. And as to the systematic search for obstruction by passing the gut through one's fingers, my experience dictates that this can be (when serous coat permits) as effectively done through a right semilunar as through any other incision. As to making a separate suitable opening in the right iliac fossa for caecal drainage, I am all in favour of it, for it appreciably diminishes the risk of subsequent virulent infection and its consequences in the large primary wound.

Peritoneal Seclusion of Stumps.

In 1903 I received my first object-lesson as to the danger of leaving raw endothelial stumps in the peritoneal cavity, in the case of a young lady on whom I performed double oöphorectomy for cystic disease, and as the appendix was very much in evidence I thought it expedient to remove it. This was done by a method in vogue at that period—namely, ligation and touching the stump with a disinfectant. As there were no adhesions, the whole operation was simplicity itself. Ten days later she suddenly developed acute intestinal obstruction: the wound, under anaesthesia, was opened up, and to my intense disgust I found the stump of the appendix glued to that of the right ovary with a coil of congested ileum clutched in the adhesion. An uneventful convalescence ensued. Since then appendical stumps have, when possible, been buried in the caecal wall or covered with an omental plaster.

The most recent reminder occurred in a married lady on whom I performed right oöphorectomy in October, 1920. As customary, the appendix, for "insurance" reasons, was also removed, and the stump interred. On June 3rd, 1921, she was suddenly seized with violent abdominal pain and vomiting, which her doctor attributed to "acute gastritis"; various enemas and purgatives were ineffectually administered during the following four days. She was brought into hospital on the morning of the fifth day: the abdomen was distended and porraceous vomiting incessant. There were no general symptoms beyond a distressed facial expression. A test enema was at once given, but without result, and as soon as the stomach was delivered of a basinful of dark green foul liquid she was transferred to the operating table. As parietal vaginal and rectal examinations gave no indication, I made the usual right semilunar incision. Immediately some coils of distended congested ileum bobbed up in the wound, which were returned by bibale pressure; the left hand was then introduced into the right pelvis, where it found a loop of ileum bound down, after the manner of a Christmas cracker, by a tense band about 1 cm. in breadth and 10 cm. in length, passing from below the caecum to the base of the right broad ligament. The left index finger was gently insinuated beneath the band and the strictured gut, and the former elevated (without rupture) for inspection. Then we found the silk ligature, which had been placed nine months previously on the meso-appendix, snugly encircling the band about half an inch from its upper point of fixation, affording a direct and positive proof that the band had originated in and included the stump of the meso-appendix. A small caecal scar indicated the tomb of the appendix; the right ovarian stump was free and had contracted to the size of a pea. The band was excised and the gut drawn up into the wound; a belt of gangrene, corresponding to the width of the band, involved the greater part of the free zone of bowel. Stays were inserted, and as peristalsis had visibly resumed its function the necrotic segment was infolded (without incision) by stays and a continuous Lembert catgut suture. Prompt recovery followed.

Some months previous to this, while pondering over the matter of how to reduce contact to a minimum when dealing with the stump of an infected appendix, I stumbled into a very simple method of secluding the stump of the appendix and that of the meso appendix by one ligature in one peritoneal pocket, and, in passing, I may add that my colleague (Dr. Fehilly) and I have employed it in many cases and find it as useful as it is practicable.

1. The meso-appendix is ligated and the appendix isolated in the usual manner; the ends of the ligature are not cut away.

2. A curved intestinal needle is then attached to one end of this ligature and a three-insertion (two lateral and one anterior) purse-string suture is passed, at a distance of about one-third of an inch, around the base of the appendix; the anterior point of suture is purposely inserted beneath the anterior longitudinal band.

3. The needle is then removed and the ends as well as the loops of the purse string suture are left loose and kept out of the way, while the appendix is decapitated at the level of the caecum, separately ligatured, and cut away.

4. The ends of the "ligature suture" are then sought for, and as they are tied together the assistant with a dissecting forceps pushing the appendical stump backwards) both stumps instantly and definitely disappear from view; only two things touch the raw surface of the stump of appendix—the knife and the dissecting forceps.

The above is the first instance in which I found the stump of the meso appendix *in flagrante delicto*, but I have often suspected its complicity in pelvic adhesion jungles; however, knowing the tendency that peritoneum has to adhere to any raw surface, I think I may safely advocate burial of this stump, particularly as both it and its mate (of the appendix) can be readily interred together with the same bit of string.

Peritonization of Stump after Salpingo-oöphorectomy.

After periodic attempts at rotating the ovarian or salpingo-ovarian stump downwards and suturing it face backwards on the anterior shelf of its broad ligament I have definitely abandoned the procedure, as I found it almost impossible to avoid, even with blunt instruments, the occasional formation of a troublesome intraligamentous haematoma; and, moreover, the manipulation necessary for such adjustment endangered the security of the pedicle ligature. Instead, I have adopted a much more simple and more readily applicable method, which can be always resorted to without "asking for trouble": a web about one or two inches square is excised from the omentum and plastered over the surface of the stump, and a piece of fine silk (or the ends of the ligature) is made to secure it, in bonnet fashion, around the neck of the same. In infected cases I always employ catgut instead of silk for ligation of the pedicle and for fixation of this omental "patch."

I beg leave to make a digression in stating that, irrespective of the result of any previous examination, and regardless of the "authority" who made it, whenever the abdomen of a female is opened for removal of the vermiform appendix, the opportunity should never be lost of making an internal digital examination of her uterus and ovaries, and I guarantee anyone who follows this advice that he will be astonished at the frequency with which he will strike a coincidental lesion in these organs. For this reason it is imperative to adopt a right vertical incision when performing appendicectomy in womankind.

In conclusion, I must crave indulgence for occupying so much space with practical details, yet, acting on "the faith that is in me," it is the close study of minutiae and their application in workmanlike order which makes for operative efficiency.[5]

REFERENCES.

[1] Operating to the Clock, BRITISH MEDICAL JOURNAL, January 31st, 1914. [2] Appendicitis, *Lancet*, February 3rd, 1900. [3] Immediate Operation in Appendicitis, *Lancet*, September 5th, 1914. [4] Gastro-enterostomy, *Lancet*, October 26th, 1912. [5] Operating to the Clock, BRITISH MEDICAL JOURNAL, December 21st, 1918.

Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

CHOLECYSTOGASTROSTOMY.

On July 4th, 1922, I was asked by Dr. Dykes to see a lady, aged 60, who was suffering from deep jaundice and severe abdominal pain. In December, 1921, I had removed ninety-five stones from her gall bladder. She remained well until a month ago.

On opening her abdomen I found that her symptoms were due to stricture of the common bile duct; no stones were found. It has been my practice in these cases to make an anastomosis between the gall bladder and the duodenum, or, if more convenient, between the gall bladder and the transverse colon. In the present case there were so many adhesions that neither of these situations was favourable. Bearing in mind the recommendation brought forward by Mr. C. A. Moore in the BRITISH MEDICAL JOURNAL of November 19th, 1921 (p. 826), I made an anastomosis between the gall bladder and the stomach on its anterior wall about an inch inside the pylorus. The result has been entirely satisfactory. The jaundice has disappeared and the pain has not recurred.

I feel it is right to add my testimony to the value of this operation because there must be many cases which would be benefited by it.

J. LIONEL STRETTON,
Consulting Surgeon, Kidderminster Infirmary and Children's Hospital.

HYDROA AESTIVALE IN IDENTICAL TWINS.

IF we required to prove to demonstration that a rather rare affection of the skin—known to be excited by the sun's rays—was nevertheless mainly due to congenital vulnerability of the skin, we could not wish for surer proof than to meet with the affection in identical twins, living under identical conditions, displaying identical lesions (symmetrically distributed) at the same time of year.

I have recently met with such a remarkable coincidence, and as I am not aware of any such occurrence having been published I wish to record the chief facts. The patients were twin girls, aged 11, remarkably alike in every way. They have had two outbreaks this year, each outbreak of hydroa occurring, of course, with the change of weather from dull and cool to bright and hot. They each had simultaneous and similar outbreaks last year and the year before.

Their faces are deeply freckled. There are a few vesicles on their faces and on the backs of their hands. Scars of former lesions can be found on their faces, but are more numerous and conspicuous on the backs of the hands. The lesions heal up and do not tend to recur as the girls become accustomed to summer heat and sunshine. The other children of the family do not suffer in this way, and there is no family history of the complaint. The freckles on the faces are so numerous and some of them so large and so black as to amount to serious disfigurement. At first glance the freckles reminded me of xeroderma pigmentosum, but a further inspection easily excluded such a serious diagnosis. Unna described the affection as "hydroa puerorum," doubtless because it occurred chiefly in boys in Germany. Girls now, in England at least, live more outdoor lives, and in my experience are quite as liable as boys.

As to prognosis and treatment: I could promise the cessation of outbreaks in three or four years' time and great improvement at once by treatment. Gloves were to be worn and wide-brimmed hats, and the seaside holidays taken where the aspect was east or north instead of south, as was their habit. With a southern aspect a double dose of sunlight is experienced—direct sun rays and those reflected from the sea surface.

As in the case of all bullous and vesicular eruptions care should be taken that antiseptics are applied sufficiently often to prevent infection and its resulting (preventable) scarring. At night the skin can be gently mopped with solution of carbolic acid, say 1 in 60. Then a cold cream containing boric acid for the night only. During the day a calamine lotion can be painted on. It incidentally excludes some amount of light, hides freckles, and is not itself unsightly.

London. ALFRED EDDOWES, M.D., M.R.C.P.

THE FOETAL HEART.

IT has been stated that crepitation of the foetal head bones constitutes practically the only positive diagnostic sign hitherto reported of intrauterine death. The hearing of the foetal heart, on the other hand, is a very reliable sign of life, but one about which apparently even the wisest may be misled. Some years ago, on this evidence of life, two able gynaecologists roused in a hitherto childless and fibroid patient indescribable feelings of joy. I was present at the Caesarean hysterectomy next day, and shall never forget the chagrin of the surgeon as he removed a long dead and macerated foetus.

With the above as my apology, I beg to mention an expedient which has seldom if ever failed me. The chestpiece of an ordinary binaural stethoscope, as it hangs from the ears, is allowed to rest on the desired portions of the abdomen untouched by the fingers, any tendency of the chestpiece to slip being corrected by the position of the patient, complete contact being of course necessary. In this way, the otherwise unavoidable and misleading vibrations set up by the muscular tension of the hand being absent, one can say with certainty whether one hears the foetal heart or not. Doubtless to many this method is no novelty, but as a student I was left to find it out.

Reading. DONALD E. MORLEY.

SURGEON LIEUT.-COLONEL DONALD ELCUM, I.M.S. (ret.), who died on August 8th, left £17,580 net personalty. Subject to certain legacies he leaves the residue of his estate in trust for his brother and sister, and on the death of the survivor of them to Guy's Hospital for beds to be called the Charles Frederick Elcum Beds, in memory of his father, formerly a student there.

Reviews.

CARDIOLOGY.

THIS monograph by Dr. LOUIS GROSS, entitled *The Blood Supply to the Heart*,[1] is a valuable contribution to the literature of the subject. It contains a full and detailed description of the arterial and venous blood supply to the normal heart, with special reference to the common variations; and an account of the blood supply to the two nodes (S.A. and A.V.) and to the bundle and its branches. The author is of opinion that a distinct and specific blood supply exists for both sino-auricular and auriculo-ventricular nodes, the main bundle, the first portion of the left limb, and a large part of the right limb of the neuro-muscular system. This opinion is based on a study of one hundred hearts. A valuable chapter deals with the blood supply to the valves of the heart in its relation to the incidence of inflammation of the valves, and a most interesting description of the changes in the coronary arteries accompanying the advance of years. As the heart grows older the coronaries become more tortuous, and there is an ever-increasing left-sided vascular preponderance. Coincidently there is an increase in the number of the rami telae adiposae. Dr. Gross looks on this as a most important functional and compensating unit. Relative poverty in the blood supply to the right heart is characteristic of senility and one of the dangers of advancing years. In fact, as Dr. Gross says, "a man is as old as his right coronary artery." The method used for making the anatomical investigations is described in the first chapter. Dr. Gross employed an injection of barium sulphate suspended in gelatin; from the hearts thus injected roentgenograms were obtained; they were then dehydrated in alcohol, cleared in oil of wintergreen, and finally dissected and sectioned. Coloured gelatins were also used for injection, so that the ramifications of one coronary artery could be distinguished from those of the other. A full and detailed description of the processes is given. The illustrations are exceptionally good, but their value would have been increased had some method been employed by which the various subdivisions of the coronaries and other points of interest could have been indicated. The whole subject is presented in clear and readable style, and the book is probably the best of its kind yet published.

THE heart exists for the purpose of maintaining an efficient circulation. It is essentially an apparatus designed to circulate its contents, and Dr. Sainsbury in his book, *The Heart as a Power Chamber*,[2] views the phenomena of the circulation from the essential dynamic standpoint and advances certain views for which he asks the consideration of his readers. He describes the aorta as a transformer interposed between the heart and the capillaries, and he discusses the mode of functioning of the aortic valve, maintaining that the structure is such as to bring about and maintain a central flow during systole, the valve never being fully opened. He claims that this is of material importance in preserving the integrity of the aorta. His detailed and reasoned criticism of the interpretations of records from the jugular vein is vitiated by the fact that he does not recognize that these tracings are records not of *pressure* but of *volume*. On page 202 the author describes an extension of fibrillation below the auriculo-ventricular sulcus into the substance of the ventricle, and regards this change as "a much more serious condition" It is evident, however, that he does not appreciate the lethal nature of fibrillation when it involves the ventricle. After carefully reading this book the question presents itself: What is the aim of the author? His answer, found on page 239, will perhaps help in appraising the work. Dr. Sainsbury says that his real objective will have been attained if "the anatomist and pathologist may be led, in the presence of the statics of death, to endeavour to reconstruct the dynamics of life; and the physician be led in like manner, in the presence of the disturbed dynamics of disease, to recall the teachings of physics and chemistry and physiology, and to endeavour to enlist them on behalf of the healing art." To quote again from the same chapter in which reference has

[1] *The Blood Supply to the Heart in its Anatomical and Clinical Aspects.* By Louis Gross, M.D., C.M. New York: Paul B. Hoeber. (Sup. roy. 8vo, pp. xvi + 171; 34 figures. 5 dollars net.)

[2] *The Heart as a Power Chamber: A Contribution to Cardio dynamics.* By H. Sainsbury, M.D., F.R.C.P. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. (Demy 8vo, pp. xii + 248; 25 figures. 12s. 6d. net.)

been made to "the therapeutic appeal," the following occurs: "What then are the means at our disposal to answer the appeal? They belong to the order of the medicamenta which in their wide range constitute the materia medica as embodied in the pharmacopoeias of the world." These quotations will give an idea of the author's style, which while having a charm of its own is rather too florid and ornate for dealing with a subject requiring lucid and clear presentation.

MORBID ANATOMY.

CONTRIBUTIONS to morbid anatomy are not nowadays so common as to be passed by without a few words of special comment. And in his new book Professor OBERNDORFER[3] has achieved something out of the ordinary. He has published a series of photographs, reproduced very well by a copper process, representing the gross *post-mortem* appearances of various abdominal conditions. The plates are a selection from his large collection, and embrace carcinomatous and tuberculous peritonitis, intestinal obstruction, duodenal ileus, hour-glass stomach, gastroptosis, caecum mobile, megacolon and coloptosis, mesenteric infarct, and pregnancy. Several specimens of the above and of other conditions are exceedingly good, and have been used, with the aid of a projection apparatus, by the author for his lectures. Teachers in this country would find them admirably suited for this purpose.

Good though the pictures are the chief interest of the book lies in the author's comment on the anatomy of these conditions. He proves himself to be very well read in clinical medicine, and particularly so in clinical surgery. His remarks on the mobile caecum show him to be well abreast of the times. And in this connexion he makes a remark, not perhaps original, but which surgical anatomists will do well to take to heart. He points out that the position of the appendix varies greatly with variations in the mobility of the caecum. The usual textbook dissertations on the position and relationships of the appendix do not give this factor its due. Further, all who operate upon diseased appendices realize that the ease of removal of that organ greatly depends on the fixity of the caecum from which it springs. Professor Oberndorfer has found Holzknecht's steer-horn stomach to be rare (save in infants), thus endorsing the modern radiologists' views. He believes from his *post-mortem* observations that acute dilatation of the stomach is due to duodenal ileus—compression by the mesenteric vessels. He has found in cases of hernia that the mesentery of the piece of bowel involved is always lengthened and frequently scarred, the scars often running as fibrous bands some considerable distance, even to the root of the mesentery. These scars he puts down to slight tears in the serosa, and cicatrization of the consequent exudate. As for the local lengthening of the mesentery he states that in old-standing cases observation will always lead to the identification of the piece usually habitant in the sac.

Professor Oberndorfer's book will well repay study on the part of those who are interested in abnormal anatomy. The *post-mortem* room offers unrivalled opportunity for the investigation of such problems as have been touched on in this review, and it is interesting to see that somebody is taking advantage of them.

THE FOUNDATIONS OF PSYCHOLOGY.

DR. JARED SPARKS MOORE intends his volume on the *Foundations of Psychology*[4] to serve as a textbook in advanced courses in general psychology and for the general reader interested in the nature and methods of mental science. The work contains matter not found in the ordinary textbook or manual, and thus fills a gap in psychological literature. Psychology presents serious difficulties to the student at the present time because there is no general agreement as to its scope, aims, or subject-matter. Naturally the author is not able to harmonize the disagreements which exist or to devise a formula which would content the various antagonists. No one could do this, and the author has his own views to develop; but he does succeed in making clear the principles and assumptions which underlie the opposing schools of thought, and his volume will undoubtedly serve to remove some of the difficulties which confront the student, who will at least learn from it what the structuralist, functionalist, introspectionist, behaviourist, and the rest are endeavouring to accomplish in their respective spheres.

The volume is divided into three books or sections. The first is devoted to an exhaustive discussion of the definition of psychology. The view ultimately developed is that psychology should be defined as "the science of mind." By this definition the author designedly narrows the scope of psychology to the study of mental states, and gives a central and unique place to introspection as *the* psychological method. He gives full credit to behaviourism, and recognizes that it has a positive significance for psychology, but would prefer to include it in the biological sciences under the heading of "praxiology." It is improbable that the majority of psychologists would care to limit the scope of their investigations to the extent suggested, and in practice, in this country as well as elsewhere, psychology is assuming an increasingly behaviourist tendency, with emphasis on the "situation-response" relation, in which introspection plays a very small part. The middle position taken by McDougall is perhaps the most desirable in the present state of knowledge, though it is interesting to observe that the famous English psychologist has recently taken what appears to be a more conservative attitude (Pro'egomena to Psychology, *Psychological Review*, January, 1922).

Book II is concerned with the "The field of psychology"; the subject is discussed under the following headings: psychology and metaphysics; the problem of science; the problem of metaphysics and its relation to science; psychology as science and as metaphysics; psychology and real life; psychology and the material sciences; the differentiation of mental from material facts; conditions of psychological description. Book III deals with the postulates of psychology, and the hypothesis of the subconscious, to which the author expresses adherence, is considered at length. Freud's hypothesis of the "unconscious" is only discussed from the theoretical point of view and the treatment of this subject is purely on academic lines.

GENERAL SURGERY.

DR. HAUBOLD, Clinical Professor of Surgery in New York University, has written a treatise entitled the *Principles and Practice of Surgery*[5]; it contains 2500 pages, and is issued in two volumes in a manner which on the whole does credit to the publishers, though the illustrations might be better. Those which have been reproduced from other publications are good, but the majority of the original illustrations are poor; many of the line drawings convey little information, and here and there the draughtsmanship is faulty.

Volume I is more especially concerned with the problems of general surgery, though it contains instruction for amputations and the ligation of blood vessels. The author is sometimes not altogether happy in his choice of words and terms. "Thyroidism" is quoted as an example of "the circulation of a faulty secretion"; "uraemia" is defined as "an accumulation of excretions"—these are surely inadequate descriptions of the conditions they purport to explain. Many pages, indeed, are marred by one or more unfortunate errors of expression. The actual surgical matter the book contains is also open to criticism. Many of the views the author puts forward are out of harmony with modern surgical teaching. The first chapter deals with wounds, and in it this remarkable passage appears:

> "The leukocytes (phagocytes) perform an important office, as they absorb the destroyed cells by the production of ferments which are capable of dissolving albumen, and also produce a protective substance chemically destructive to pathogenic bacteria, which, despite the most rigid precautions, prophylactic or antiseptic, are present in wounds."

The pathology of this statement is erroneous, the method of its expression is not good, and the sweeping generalization at the end is open to serious question. It is said that the constitutional symptoms of wounds are "shock and acute anaemia." The experienced clinician is well aware of what Professor Haubold has in his mind when he makes this statement, but to the student beginning the study of surgery the impression conveyed may well be erroneous. In discussing the treatment of wounds it is said that "the use of

[3] *Pathologisch-anatomische Situs-bilder der Bauchhöhle.* By Professor Siegfried Oberndorfer. Munich: J. F. Lehmann. (Med. 8vo, pp. 133; 92 plates, 92 figures. 27s.)

[4] *The Foundations of Psychology.* By Jared Sparks Moore, Ph.D., Associate Professor of Philosophy in Western Reserve University. Princeton: Princeton University Press; London: H. Milford, Oxford University Press. (Med. 8vo, pp. xvi + 252. 12s. 6d. net.)

[5] *Principles and Practice of Surgery.* By Herman A. Haubold, M.D. Two volumes. New York and London: D. Appleton and Company. (Roy. 8vo. Vol. I, pp. 1316, 631 figures; Vol. II, pp. 1170, 413 figures. £4 4s. the two volumes.)

chemical haemostatics such as alum, vinegar, cold water, zinc chloride, etc., increases the danger of infection, because they liberate infectious organisms from the contiguous tissues and spread them into the wound area." We are unaware of any proof of this statement; the stronger haemostatics may devitalize the wound tissues and so render them more liable to infection, but it is difficult to understand how a solution can liberate infectious organisms from contiguous tissues. In a chapter dealing with the technique of cleansing the surfaces of the body it is advised that, after scrubbing with soap and water, the hands and forearms should be coated with chloride of lime made into a paste with water; while the lime is still on the skin sodium carbonate is to be applied, thus liberating chlorin, an active bactericidal agent. The application, the author says, produces a sensation of warmth, and directs that when this has ceased the paste is to be washed off with a 1 per cent. solution of corrosive sublimate. Later on he says that complete removal of the mixture is accomplished by rinsing the hands and forearms in a solution of sodium carbonate 2 per cent. before the corrosive solution is applied; the hands and forearms are then immersed in alcohol, which is rinsed off with sterile water. One wonders whether the author puts this method into daily use; if so, he must be possessed of infinite patience.

Volume II also is open to serious criticism. The section dealing with deformities and orthopaedics is a fair presentation of the subject, but there is little original matter of interest, and there are some serious inaccuracies. The chapter on spondylitis is difficult to accept as a statement of the author's knowledge and experience. We disagree altogether with the account given of the pathology; some idea of the standard of the chapter can be gained from the advice that when an abscess forms it should be "drained with the view of obviating gravitation of the products of inflammation to a distant point and secondary invasion *en route*."

As we have indicated, the blemishes in these volumes are, in our opinion, too numerous to warrant its acceptance as an exposition of the present state of American surgery from which surgeons all over the world are learning so much.

MENTALLY DEFICIENT CHILDREN.

THE fifth edition of *Mentally Deficient Children*,[6] by Drs. G. E. SHUTTLEWORTH and W. A. POTTS, appears at an opportune time, since public interest is greatly directed to all things connected with mental deficiency and disorder. Since the issue of the last edition the provision for the care of the defective class has been considerably extended in England by the Act of 1913, and the activities of public authorities have been increased in the United States as well as in this country. All these developments receive attention in the new edition. The descriptions of mental tests have been brought up to date, and the many advances made during recent years in the procedure for dealing with juvenile criminality are explained.

Psychotherapeutic methods in the management of emotional cases, in psychic epilepsy, and in the development of cleanly habits among defectives, are discussed, though the authors, we gather, do not consider the results obtained very conclusive; yet some improvement has been noted in respect of the last-named matter.

Lists of institutions under the Mental Deficiency Act in this country, and of similar establishments in the Dominions and in the United States, are given. Some of the American institutions, in several instances, are large: one of them can receive as many as 2,200 inmates. There are appendices containing very complete bibliographical lists and other matters of interest. The work as a whole must be commended to all interested in these subjects for the general information and the trustworthy guidance in treatment it affords. The present edition merits all the praise that has been awarded to its predecessors.

THE SNAKES OF CEYLON.

COLONEL FRANK WALL'S elaborate description of the *Snakes of Ceylon*[7] is issued by the Colombo Museum, and copies may be obtained by application to Mr. Joseph Pearson, the director of that institution. The work is dedicated by Colonel Wall to his father, Mr. George Wall, who spent a laborious and useful life in the interests—social, industrial, scientific, municipal, administrative, and political—of the colony of Ceylon. The book is prefaced by a portrait and memoir of that very distinguished man, and may be accepted as a memorial to his father by a devoted and dutiful son. The work is an exhaustive record of all that is known regarding the serpents of Ceylon down to the present time, and indications are given of the need and direction of further research.

The author, who had previously written a treatise on the poisonous terrestrial snakes of our British Indian dominion (including Ceylon), has, in addition to his own observations in India and Ceylon, made use of all the information previous writers (Fayrer, Richards, A. J. Wall, Drummond Hay, and others) have contributed to this subject. The book contains full details regarding sixty-three species of terrestrial snakes found in Ceylon, and of twenty-two pelagic snakes frequenting its coasts. Each species is described systematically and exhaustively under the headings of the native name (when known), history, general characters, coloration, identification, habits and haunts, foes, parasites, food, breeding and growth, scales and teeth (illustrated), and distribution. While the information given under these categories is strictly scientific, entertaining matter of more general interest is supplied regarding the common and important serpents—for example, the python, cobra, krait, and Russell's viper (daboia).

Of more purely medical interest is the information presented at length regarding the venom of the Thanatophidia—its source, its nature, physical and chemical; its poisonous effects, local and general, and the measures necessary for dealing with them. The volume is well printed and indexed, and constitutes a valuable summary of all the knowledge which has been amassed in India and Ceylon respecting a most interesting department of natural history.

PHOTOGRAPHY IN COLOURS.

THE fourth edition of LINDSAY JOHNSON'S book on *Photography in Colours*[8] has been brought thoroughly up to date and is most comprehensive. In its general construction it is well thought out. After an opening chapter on the nature of light and colour there are chapters upon the evolution of colour photography, the sensation of colour, and so on; following this the different methods are explained—the single-plate colour processes and the three-plate and two-plate methods; colour printing is thoroughly explained, and there is a chapter on kinematography and another on colour photomicrography. An appendix, which shows evidence of careful compilation, gives many useful details about development, the after-treatment of the plates, and other photographic details; it includes also tables of exposures for various subjects.

In the author's hands, and judging from his lucid descriptions, colour photography either by the single or the three plate colour process appears to be quite simple, and the various photographic processes no more difficult to the ordinary amateur than those followed in the successful manipulation of the ordinary dry plate in ordinary photography. A very interesting chapter is that in which a comparison is made between the eye and a camera, and the retina and a colour plate. The author has written this in such simple language, and his descriptive material is so graphic, that he has made a somewhat difficult subject easy to be understood. The old saying that there is nothing new under the sun is illustrated by a note in the preface in which it is suggested that the Lumière autochrome process was in fact no new discovery, inasmuch as there is a remarkable similarity between the coloured globules in the retina of the tortoise and common fowl and the coloured starch grain of the autochrome plate. Therefore man has merely made a rediscovery of what the tortoise knew more than one million years ago. There are many useful illustrations, which are chosen chiefly from the point of view of value in making the written matter more easy to follow and understand. As a textbook upon a fascinating photographic process it achieves complete success. Nothing seems to have been omitted which is of any essential importance, and any amateur who desires information and help either as a beginner or as an advanced worker will find everything he requires.

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[6] *Mentally Deficient Children, their Treatment and Training.* By G. E. Shuttleworth, B.A., M.D., and W. A. Potts, M.A., M.D. Fifth edition, considerably enlarged. London: H. K. Lewis and Co., Ltd.; Philadelphia: P. Blakiston's Son and Co. (Cr. 8vo, pp. xviii + 320); 8 figures, 21 plates. 1s. 6d. net.)

[7] *Ophidia Taprobanica, or the Snakes of Ceylon.* By F. Wall, C.M.G., I.M.S. Colombo: H. R. Cottle, Government Printer, Ceylon; or the Director, Colombo Museum. (Demy 8vo, pp. xxii + 581; 1 map, 98 figures.)

[8] *Photography in Colours.* By George Lindsay Johnson, M.A., H.D., F.R.C.S. London: George Routledge and Sons, Ltd. (Demy 8vo, pp. xiv + 318; 14 plates, 51 figures. 7s. 6d. net.)

NOTES ON BOOKS.

THE fifth volume of the *Reports of the Episcopal Hospital*,[9] Philadelphia, is the first published since 1916. It is edited by Dr. ASTLEY PASTON COOPER ASHHURST, that versatile surgeon who makes the chief contributions to the volume. In the main the papers will be found to be reprinted from the *Annals of Surgery*, in which they first appeared either as independent articles or as contributions read before the Philadelphia Academy of Surgery. The volume contains a very varied assortment of papers on a variety of subjects, mostly surgical, but also medical, obstetrical, and dental. Amongst the contents are two long and instructive papers by Ashhurst—one on empyema, commenting on the frequency of interlobar empyema and urging the need for exploratory thoracotomy in doubtful cases, the other on birth injuries of the shoulder. All in all the *Reports* are a testimony to the very lively activity of the staff of a hospital of 500 beds, representing a praiseworthy amount of creative work.

The Homeland Association, which exists for the encouragement of touring in Great Britain, has issued a series of pocket books, including a guide to the Pilgrims' Way from Winchester to Canterbury, and three volumes of footpath rambles within easy reach of London. It has now added to its list a handbook on *Homeland Prehistoric Antiquities*,[10] written by Mr. W. G. CLARKE, formerly honorary secretary of the Prehistoric Society of East Anglia. It is well arranged, simply expressed, and contains numerous helpful illustrations; altogether it is excellently adapted to serve as an introduction to the study of a very fascinating subject for which this country, if we may accept the conclusions of the school to which the author belongs, affords almost inexhaustible opportunities. Flint implements and the way they were made are well described, the changes slowly produced in flints by weathering are explained, and the signs by which those worked by man can be recognized are detailed. There are chapters on dwellings, burial places and forts, on pottery, on bronze and early iron implements, and on the tracing of prehistoric trackways, the last a fascinating recreation to which Dr. Hubbard and his brother gave a great impetus in their book on dew ponds. Though Mr. Clarke writes simply and briefly he is not superficial; he provides a glossary, a list of type stations, a bibliography, and an index; the only fault we have to find with him is that he does not always give sufficient particulars of where the places he mentions are and how they may be reached.

A SPECIAL number has been issued (August, 1922) of the monthly journal, *Archives Médicales Belges*, published in Brussels, to celebrate the seventy-fifth anniversary of its foundation. The *Archives* was founded in 1847 by Dr. J. F. Vleminckx, who was the organizer of the medical service in the Belgian army of the revolution in 1830, and was the founder and first president of the Belgian Academy of Medicine. The special number contains an illustrated article on Vleminckx by Professor F. De Block, and articles on the technique of the operation for fracture of the patella by Professor Willems and on the standardization of the methods of analysing drinking water in the Belgian army by Captain Sillevaerts. The remaining contents of the journal include international news from the United States, Switzerland, and France, abstracts from Belgian and foreign medical journals, and medical news.

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[9] *Medical and Surgical Reports of the Episcopal Hospital*. Vol. v. Philadelphia: Wm. J. Dornan. 1920. (Med. 8vo, pp. 505; 162 figures, 5 plates.)

[10] *Our Homeland Prehistoric Antiquities and How to Study Them*. By W. G. Clarke. F.G.S. (Homeland Pocket Books, No. 13.) London: Homeland Association, Ltd. (Pp. 140. 4s. 6d. net.)

MEDICAL AND SURGICAL APPLIANCES.

Hooked Anaesthetic Drop-bottle Collar.

DR. F. J. STRACHAN (Troon) writes: I have been using for the past two years a simple steel collar bearing two hooks to clip on to the neck of any anaesthetic drop-bottle. I have found it particularly useful when working single-handed in midwifery practice—when once about 50 per cent. of the chloroform was spilled on the bed. Now with this simple attachment the wastage is *nil*, as the upright position of bottle is always assured by the catches taking a slender yet sure purchase on a pillow, the bedclothes, bed hangings, etc., or on the patient's or one's own clothing. Even surrounded with the anaesthetist's armamentarium of the operating theatre the hooked clip is always very useful. Should the clip be too large for a narrow-necked dropper a few turns of adhesive plaster round neck will ensure a rigid fit. I have been made for me by Messrs. Baird Brothers, 97, Bath Street, Glasgow.



BOTULINUS ANTITOXIN.

IN connexion with the recent cases of botulism at Loch Maree a leaflet (Circular 342) has been issued by the Ministry of Health to sanitary authorities in England and Wales stating that the Minister considers it advisable that a supply of botulinus antitoxin should be made available for medical officers of health and medical men in case of need at several centres, in order that it may be available for immediate use in the contingency of further outbreaks of this disease occurring.

"The Minister has no reason to anticipate further outbreaks, but the gravity and mortality of the disease may, on occasion, be such that he considers that all possible arrangements should be made to provide expeditiously a supply of antitoxin if and when demanded, which could be obtained more promptly than would be the case if the only available supply were obtainable from London. He is advised that immediate use of this antitoxin is of paramount importance and the lapse of a few hours between the appearance of symptoms and the use of the antitoxin may make all the difference between its successful or unsuccessful application. Further, on the occurrence of an outbreak of botulism all persons who have consumed the suspected food should be offered a protective dose of the antitoxin (10 c.cm. intramuscularly), even though they may not present symptoms of the disease."

Arrangements have accordingly been made for a suitable supply of antitoxin to be kept by medical officers of health at Portsmouth, Plymouth, Bristol, Cardiff, Aberystwyth, Birmingham, Oxford, Manchester, Liverpool, Carlisle, Newcastle-on-Tyne, Hull, Leeds, Nottingham, Cambridge, and Norwich, as well as at the Ministry of Health, Whitehall, London, S.W.1.

"In the event, therefore, of any outbreak of botulism [the Circular proceeds] the medical practitioner will be in a position to obtain with the least possible delay such antitoxin as he desires. This antitoxin has been prepared with great care, but there has not yet been any extended opportunity in England for its use, and therefore there has been but little experience of its therapeutic value. There appear to be good grounds, however, for hoping that it may prove beneficial in sudden cases of poisoning by *Bacillus botulinus*, the organism recently isolated in connexion with the outbreak of disease at Loch Maree in Ross-shire. It will be understood that, whilst the Ministry of Health are thus endeavouring to make this antitoxin more readily available, the responsibility for its actual use must rest solely with the medical advisers of the patient, in any and every particular instance, and the authority will no doubt consider it desirable to inform all medical practitioners in their area of these arrangements."

Enclosed with the Circular is a copy of the instructions for employing the botulinus antitoxic serum prepared by the Wellcome Physiological Laboratories at Beckenham. These are as follows:

BOTULINUS ANTITOXIC SERUM.

Instructions for Use.

Immediate Administration.—The only remedy at present known for botulism is botulinus antitoxin given by injection, and even this is unlikely to save life if the disease has progressed to a late stage. It is therefore of the greatest importance *to give the antitoxin at the earliest possible moment*—that is, as soon as the earliest symptoms of blurred or double vision, giddiness, ptosis, difficulty in speech or swallowing, etc., suggest the diagnosis of botulism.

Method.—The effectiveness of treatment by antitoxin for botulism is so greatly increased by intravenous injection that this method of administration should always be employed if possible (otherwise the intramuscular method should be used). The risk of serious symptoms arising in persons highly sensitive to horse serum must be recognized, and when, in the judgement of the medical practitioner, such risk is likely to be great, he should administer a preliminary injection of a small quantity of the antitoxin (0.5 c.cm. = 8 minims) *subcutaneously*. If this produces clear evidence that the patient is sensitive (that is, if a reaction appears in half an hour), then the antitoxin must be given with particular caution, the first intravenous injection, consisting of 0.5 c.cm. of antitoxin, being diluted with 50 c.cm. of saline, and subsequent injections being diluted less and less till the full dose has been administered.

Dose.—Only large doses will save acute cases. The intravenous dose should be from 20 to 50 c.cm. of the antitoxin, previously warmed to body temperature, and injected very slowly. This amount may be repeated daily if necessary.

Note.—All other persons who have consumed the suspected food, but have not yet presented symptoms, should be given a prophylactic dose of antitoxin (that is, 10 c.cm.) intramuscularly, to be followed by larger doses intravenously should symptoms appear.

MESSRS. J. AND A. CHURCHILL announce for early publication a *Synopsis of Surgical Diagnosis*, by Mr. W. H. C. Romanis, F.R.C.S.; the fifth edition, with 48 plates, of *Pathology, General and Special*, by Professor R. Tanner Hewlett, M.D.; and the third edition of Professor Greenish's *Microscopical Examination of Foods and Drugs*.

British Medical Journal.

SATURDAY, SEPTEMBER 30TH, 1922.

THE PREVENTION OF STILLBIRTHS AND NEO-NATAL DEATHS.

THE discussion at the Glasgow meeting of the British Medical Association on stillbirths and neo-natal deaths (reported in full this week) followed closely along the lines which had been sketched in the JOURNAL,[1] and it reached the importance which had been anticipated there. Although causation and pathology were constantly in evidence during the proceedings, it is no exaggeration to say that the most impressive note was struck in connexion with prevention. Over and over again the large gathering which had come together in the Section of Obstetrics and Gynaecology responded to the suggestion of life-saving on an extensive scale which was more than hinted at by the various speakers. So far as the trend of the discussion was concerned, an equally appropriate title for it would have been "Foetal Life Preservation," and in the end these words or something equivalent found their way into the resolution which was adopted by the Section and sent on to the Council of the Association.

The introductory remarks by the President (Professor Ewen J. Maclean of Cardiff) emphasized the national importance of fertility and the saving of young lives. Dr. J. W. Ballantyne of Edinburgh opened the debate with a communication in which he sketched (but necessarily in brief) the present position of knowledge in respect of the causes, pathology, and prevention of ante-natal, intra-natal, and neo-natal death. It was a coincidence that when the British Medical Association last met in Glasgow, thirty-four years ago, the Obstetric Section had dealt with intrauterine death: the subject was introduced then by the late Sir Alexander Simpson, and leading British and American obstetricians joined in the discussion. The contrast between then and now was striking, especially in the absence (in 1888) of the idea of supervising all pregnant women in the interest of the few who were in danger of having stillbirths; preventive medicine has made great advances since then.

In his survey of the whole subject Dr. Ballantyne touched upon many matters of interest and upon some of controversy. He put in a cogent plea for the adoption of the word "transanimation" for the passage of foetal into post-natal life; his argument for abandonment of the present-day significance of stillbirth (as equivalent to dead-birth), although well founded, is not so likely to be acted upon in view of the stereotyping of the new usage by the Central Midwives Boards of England and Scotland. When he came to speak of the causation and pathology of stillbirth he was able to point cheerfully and with high appreciation to the results of the co-ordinated research work recently carried out under the Medical Research Council in various centres in Great Britain; and several of the research pathologists who followed him in the discussion showed how good and productive that work had been. He placed before the Section a few of the many remaining problems in ante-natal pathology when he asked: What was the mechanism of ante-natal as compared with post-natal death (for example, in asphyxia)? How were the changes associated with *post-mortem* maceration to be distinguished from those due to the causes of the death and subsequent maceration? What was the rôle of the placenta? and How were all the phenomena affected by the fact that the uterine interior was normally a germ-free cavity? There was much work for the research pathologist waiting to be done, and only a few tasks had been referred to. Dr. Ballantyne said that he was not offering an ordnance survey map on a generous scale of the territory of ante-natal disease and death—he was merely blazing a trail through a part of the country. It was when he came to speak of the results of ante-natal clinical supervision and treatment in the prevention of ante-natal, intra-natal, and neo-natal death that a note almost of triumph began to be heard in the address; and there was more than a touch of the dramatic when he stated that expectant mothers in Edinburgh who were free of the venereal diseases and had been adequately supervised in their pregnancy had a stillbirth rate of 6 per 1,000, whilst those who suffered from the venereal diseases and who had received no ante-natal supervision or treatment had one of 606 per 1,000. In a remark "aside" he noted the coincidence that the worst rate (606) should suggest the means (salvarsan) for its own reduction.

Dr. Eardley Holland dealt with the subject of intra-natal death, a matter for which his recent valuable work (mentioned not long ago in this JOURNAL[2]) specially fitted him. It was a pity that the impish behaviour of the lantern took away some of the effectiveness of the demonstration which he gave of the results of head pressure in the production of tears of the tentorium cerebelli and cerebral haemorrhage during the act of birth; but Dr. Holland established clearly the frequency of this cause of intra-natal death in the specimens which he had examined. There was the note of hope in his communication also, for head pressure can be prevented, and in what he called the "tactics" of stillbirths prevention—namely, the thoughtful management of each labour, with the interests of both child and mother in view—there is the opportunity of much foetal life-saving. Professor Louise McIlroy treated very ably the subject of "Foetal death due to toxaemia," and she also made a strong appeal for the wide adoption of ante-natal care as a means of lessening the frequency of stillbirths. Her part in this year's discussion pointed another contrast with the debate on intrauterine death in 1888; on that occasion no medical woman spoke.

Dr. F. J. Browne spoke with authority upon a subject which he had made specially his own—"Neo-natal death." The meeting was quick to recognize that behind the lantern demonstration which he gave lay a vast amount of research work; and the publication of his contribution in full in our present issue will be welcomed by many. He laid special stress upon the fact which he had discovered, that the absence of naked-eye changes alone was quite insufficient to exclude neo-natal syphilis; recourse must always be had to microscopical examination. What he had to say about the intra-natal development of pneumonia neonatorum in labours in which early rupture of the membranes had occurred was arresting, and suggested the possibility of yet other microbic infections arising during the course of delivery. Still more startling was the statement that a pneumonia thus acquired might prove fatal to the infant before its transit through the birth canals was completed and so be a cause of stillbirth as well as of neo-natal death. Dr. J. N. Cruickshank also compressed a great deal of research into his paper on "Syphilis as a cause of ante-natal death"; he was dealing with a vast quantity of material, both clinical and pathological, made available in connexion with the work of the magnificent Royal Glasgow Maternity Hospital. Dr. Gilbert I. Strachan of Cardiff was dealing with a peculiarly difficult subject

[1] BRITISH MEDICAL JOURNAL, July 1st, 1922, p. 19.

[2] BRITISH MEDICAL JOURNAL, July 1st, 1922, p. 15.
[3] Ibid., March 25th, 1922, p. 469.

—placental changes in relation to foetal death—but his contribution, like the others, excited and thoroughly deserved lively interest.

Many noteworthy remarks were made by the speakers (eight in number) who took part in the discussion which followed the reading of these papers, although there was perhaps a tendency to branch off upon the fate of the "aftercoming head" and leave out other important questions. There could, however, be no division of opinion as to the practical value of the morning's discussion. The dominant note, sounded again and again by various speakers, was this: stillbirths are largely preventable, and the chief method of their prevention is ante-natal supervision and care. The note of prevention was still sounding on the following day, when eclampsia engaged the Section's attention.

ARTIFICIAL PNEUMOTHORAX.

THE Tuberculosis Committee of the Medical Research Council has issued a Report[1] by Dr. L. S. T. Burrell and Dr. A. Salusbury MacNalty on the treatment of pulmonary disease by inducing a pneumothorax. The authors have brought together the chief scientific and practical considerations that are now available in profusion for "making judgement of the remedial value of 'artificial pneumothorax'—that method of treating disease of a lung by giving it controllable periods of rest from respiratory movement."[2] Radical though this treatment is, it is not new. Dr. Allen K. Krause has recently pointed out that it is more than 2,000 years old, and in Section 59 of the second book *On Affections*, reproduced in Littré's bilingual text of Hippocrates, the following passage occurs: "If this affection results from a wound, or, as sometimes happens, from an incision for empyema, one should attach a pipe to a bladder, fill the bladder with air, and send the air into the interior of the chest." Dr. Krause concludes that this therapeutic method was actively practised by the Hippocratic school, and it is not likely that the passage just quoted could have been the reflection of speculative considerations only.

The treatment was revived in 1821 by Dr. James Carson of Liverpool. Some sixty years later Professor Forlanini of Pavia laid the modern foundations of this treatment, which has since steadily gained ground and is now counted among the greatest advances made in the treatment of severe pulmonary disease. The amount of work in this field during the past twenty years is prodigious, and the publications concerned therewith have become so numerous that the Medical Research Council has done well to issue at the present time a survey, both comprehensive and critical. As pointed out in the introduction to the Report, "it is of the first importance that results of physiological experiment and of professional experience should be gathered as fully as possible, not only with a view to giving a proper basis of support for this operative procedure, but no less with a view to aiding the accuracy by which the most suitable cases for the treatment can be recognized and selected."

The Report consists of two parts. In the first, Dr. Burrell discusses practically every aspect of the subject, from its history to the after-effects of treatment, and gives a summary of his first 150 cases. Patients with rapidly progressive disease and with a low power of resistance benefit little; on the other hand, for patients whose power of resistance is high, sanatorium or other medical treatment is alone sufficient to arrest the disease. It is in the intermediate class, presenting the disease in a subacute form, that treatment by the production of artificial pneumothorax may do good, provided the healthier lung is not too extensively involved. The risks of artificial pneumothorax are so small, and the chances of the disease spreading are so great, that in Dr. Burrell's opinion all patients in this stage of the disease should at least be given the opportunity of pneumothorax treatment. In his opinion it is, indeed, the only method of treatment which gives any real chance of permanent benefit. Puncture is preferred to the open method advocated some years ago by Brauer. The various steps of the operation are described in detail; such complications as pleural effusion, air embolism, and pleural reflex are discussed, and the best methods of avoiding them pointed out. The comparative importance of air embolism and pleural reflex is not yet clearly defined, though, thanks to Brauer and his assistant Wever, the mechanism of gas embolism is now better understood. They have shown that it is not necessary to introduce air from without and through a hollow needle to cause air embolism; it may follow the wounding of a blood vessel, air from the lungs being sucked in through the opening. The belief that pleural reflex may be the cause of death following puncture of the chest has been disputed, but Dr. Burrell refers to two cases of his own in which the fatal issue may have been due to this cause; in one death was immediate. He classifies his first 150 cases into three groups. In the first an efficient pneumothorax was produced; in the second only a partial pneumothorax was obtained, treatment being continued for less than two months: and in the third pneumothorax was impossible owing to adhesion of the pleural surfaces. Among the 107 cases in the first group there were as many as 40 in which the disease was arrested and 22 in which improvement was effected. The results in the other two groups were not so good, and the difference in the results obtained in the first and third groups may be taken as the measure of the value of the treatment.

The second part of the Report consists of answers by sixteen British physicians to a set of questions addressed to them. These answers are published in full and are then analysed by the authors. It appears that since 1910 these sixteen physicians have dealt with between 14,000 and 15,000 cases treated by the production of artificial pneumothorax. The first and most striking fact is the unanimity of the replies—". . . a favourable answer is returned by all with no uncertain voice." But some difference of opinion prevails as to the class of case most suitable for this treatment. On the one hand, Mr. H. Morriston Davies considers that no case is too early, and that an early case does not necessarily mean that the patient has a good resistance and will, therefore, respond satisfactorily to ordinary hygienic methods. Dr. Esther Carling, Dr. Lillingston, and others, on the other hand, would reserve this treatment for more advanced cases, and the general consensus of opinion seems to be that institutional treatment should, as a rule, be given a fair trial before collapse treatment is adopted. As the authors say, "however doubtful the operator feels of employing the method for an early case of tuberculosis, as soon as he perceives the disease is not yielding to ordinary methods of treatment an artificial pneumothorax should be induced as soon as possible."

The success of treatment by artificial pneumothorax has had remote as well as immediate effects. In addition to restoring many patients to comparative health, it has paved the way for other measures, such as thoracoplasty, which, without the lead given by pneumothorax treatment, would not have been so widely used. At the

[1] Report on Artificial Pneumothorax. By L. S. T. Burrell, M.A., M.D., M.R.C.P., and A. Salusbury MacNalty, M.A., M.D. Medical Research Council. Special Report Series No. 67. H.M. Stationery Office. 1922.

[2] A useful summary is made of the more important points in the Report by Dr. Clive Riviere, Dr. Lawrence Dauson, Dr. S. Vere Pearmain, Dr. de Carle Woodcock, Dr. Esther Carling, Dr. Murray Gordon, Dr. A. C. Inman, Dr. Stanley Melville, and

meeting in April, 1922, of the Deutsche Gesellschaft für Chirurgie[3] Brunner of Munich stated that Professor Sauerbruch had performed 500 thoracoplastic operations for pulmonary disease. His results and those of Professor Bull in Norway and Professor Saugman in Denmark are remarkably similar, and show that in about 30 to 40 per cent. of otherwise hopeless cases in the third stage of the disease the patient ceases to have sputum and becomes fit for work. In another respect treatment by the production of pneumothorax has influenced our conceptions of pulmonary tuberculosis. It has shown that the first essential to the arrest of active tuberculous disease in the lungs is immobilization, and that the more complete the rest given to a tuberculous lung the more rapid is the healing process. This principle is as old as it is sound, but a few years ago it was being challenged by the doctrine of auto-inoculation and of the focal reaction, which was a reversal of the adage, "Let sleeping dogs lie." Pneumothorax treatment has shown that immobilization, so successfully practised in surgical tuberculosis for many decades, is applicable also to pulmonary tuberculosis.

THE TREATMENT OF LEPROSY.

THE increasing use of the improved method of treating leprosy by intravenous and intramuscular injections of soluble products of chaulmoogra and other oils is already producing results undreamt of only a few years ago, as testified to by reports now arriving from affected countries in various parts of the world. Thus in India the treatment was commenced in the largest leper asylum in that country at Purulia early in 1921, under Dr. Muir's direction, and he has recently sent home the figures of the mortality among the 700 lepers there. These show a reduction of the death rate in the first six months to 66 per cent., in the second six months to 29.6 per cent., and the first six months of this year to only 21 per cent. of the average rates for the three years before the treatment was begun in the same months of the year—a remarkable result in a chronic disease in such a short time as eighteen months, even after allowing for some improvement in health due to simultaneous treatment for hookworms. Nor is this an isolated result, for recent reports received by the Mission to Lepers show a similar reduction of the annual death rate in the Fusan leper asylum from 25 per cent. to 5 per cent., the mortality in both this and the Purulia asylum having thus fallen to one-fifth of the former rate, while these and other similar institutions are now discharging a number of lepers apparently cured. What this means may be gathered from a recent report of Dr. Henry Fowler, Secretary for Eastern Asia of the Mission to Lepers, recording what he has actually seen of the effect of the treatment in Korea. He found there not less than 100 to 150 lepers who had lost nearly every trace of leprosy, and those previously crippled were now strong and able to engage in various occupations, including making bricks and tiles, and various manual labour, such as carpentering by the men, while the women were doing household work. He thinks that within ten years, with properly organized treatment, 75 per cent. will recover. The main difficulty is the cost of providing the drugs for the continuous treatment for many months of the large numbers of lepers who are now flocking to the asylums where the treatment has been successfully carried out. At Kwangju, for example, thousands of lepers are anxious for admission, and great efforts are being made to cope with this urgent problem. On the other hand, the success of the treatment in enabling previously helpless lepers to undertake regular labour once more is being taken advantage of wherever land belonging to the asylums is available for cultivation as at Purulia. This should make them more largely self-supporting, so that with the proper organization of leper colonies, as is now being done in Bengal, the very success of the treatment should help to set free funds formerly spent on the maintenance of the helpless patients for the treatment of larger numbers. Another most encouraging feature is the number of comparatively early cases, in Hawaii and elsewhere, now coming forward voluntarily who formerly hid themselves as long as possible; this will go very far towards solving the hitherto immensely difficult problem of enforcing compulsory segregation among backward races, while the fact that so many of the treated cases become bacteriologically negative lessens materially the infectivity of the disease. Whether the new treatment ultimately proves to be a complete and permanent cure or not, it is already abundantly clear that it has opened up renewed hopes regarding the worldwide problem of the control of leprosy, and the great experiment of the treatment of 5,000 lepers at the Culion settlement of the Philippines, recently inaugurated by Dr. Heiser, will be watched with much interest as a conclusive test on a large scale of the recent advances. The immensity of the problem, however, can hardly be overrated in view of the extensive tracts of Asia, Africa, and South America affected by leprosy. To deal with these, very special efforts will be necessary, including the arousing of public opinion to the necessity for liberal financial support, so that the outcast lepers may receive the advantages available for them.

[3] *Deutsche medizinische Wochenschrift*, July 14th.

THE SMYRNA FIRE AND THE SMYRNA HOSPITALS.

THERE seems to be no official information so far as to whether the British hospital at Smyrna is among the institutions that have gone down in the great fire. Probably this is not the case, as it was close to the Aidin railway station at the northern end of the town, and this is known to have escaped; moreover, the hospital lies in considerable grounds, surrounded by a high wall. It consists of three independent blocks—main, administrative, and isolation—all built of stone and each of two stories. But though probably not burnt it is only too likely that its contents have been stolen, for it lies on the edge of a "Maltese quarter" which is one of evil repute. Since the war, during which it was occupied by the Turkish authorities, it had not been fully reopened as an ordinary hospital, but one of the blocks was being used as a maternity home for members of the British colony, and it is said that at the time of the evacuation three recently confined women were inmates. The institution, but not the building, is of very old date. It was founded in the seventeenth century by the old Levant Company of British Merchants, which also provided it with maintenance funds by imposing a "hospital duty" on all ships consigned to the company. When the company dissolved in 1825 it stipulated for the continued maintenance of the hospital on the same lines, and this has always been done. It is thus perhaps the oldest example of a rate-supported hospital. The present buildings were erected just a quarter of a century ago, but, curiously, maps of Smyrna published last week by some of the newspapers show the British hospital still in its original position close to the British Consulate. After the rebuilding it continued to receive free all seamen from British ships, but also did a good deal of surgical work for paying patients of all nations. Part of the "French Hospital" (an institution of much the same kind) is known to have escaped, but the Dutch, Austrian, and Greek hospitals were all in the area definitely known to have been destroyed. The Austrian and Greek hospitals were both large, the latter having a number of insane wards attached. There was also more than one Turkish hospital, and a small institution of a missionary order known as the Scottish Hospital for Jews, but we do not know if the latter had restarted work since the war. It is common to speak of the Turks as if they were still mentally a mediaeval nation. This, however, can scarcely be the case if the information given us some twenty-two years ago by an English medical man, then lately returned from a long visit to Smyrna, was well founded. During his stay an outbreak of plague occurred which the local authorities, all Turks, had dealt with very promptly and with a success which was all the more remarkable as at that time plague was far less well understood in Europe than it is to-day. Among the measures they employed was the

establishment of a bacteriological laboratory. All the workers therein were Turks, and the head of the laboratory, also a Turk, was described by our informant as one of the ablest young bacteriologists he had ever met, although he had received his education at the Turkish Medical School in Constantinople and had never been out of that city until sent to Smyrna.

THE MEDICAL SCHOOL OF MANCHESTER.

On Wednesday, October 4th, the University of Manchester celebrates the jubilee of the absorption of the Royal School of Medicine, a privately owned institution, with Owens College, which in 1880 became the first college of the new northern university under the name of Victoria University, and was later joined by Liverpool and Leeds. It was not until 1883 that the university was empowered to grant medical degrees, and now 90 per cent. of the students take the Manchester degrees. The Manchester medical school cannot be said to have begun with any well marked event, but from the foundation in 1752 of the Infirmary (of which Dr. E. M. Brockbank in his memoir of *The Honorary Medical Staff of the Manchester Infirmary (1752–1830)* has given many interesting details) private instruction was given to medical students, especially by Charles White, one of the greatest ornaments of the Manchester school, as was shown in the published tributes paid to him by the late Dr. C. J. Cullingworth and by Dr. J. G. Adami. In 1787 his son, Thomas White, also gave a course on the theory and practice of medicine, in the museum in his father's house. Peter Mark Roget, the author of the ever-useful *Thesaurus of English Words and Phrases*, lectured in 1806, probably in the same museum; and John Atkinson Ransome's lectures on the principles and practice of surgery at a later date (1824) appear to have been the first provincial ones recognized by the College of Surgeons of England. These lectures were given in Thomas Turner's school of medicine, which, like Joseph Jordan's school of anatomy and some others, came into being early in the last century, and were succeeded by the Royal School of Medicine. After Owens College was founded in 1851 it was felt to be incomplete without a medical school, but it was only in 1872, after long negotiations, that the Royal School was absorbed. The University of Manchester is marking this jubilee anniversary by a reception to inspect the medical school and the recent extensions of the laboratories, and has issued an interesting fly-leaf, from which some of the historical details mentioned above have been taken. On the same afternoon the Manchester Medical Society is holding an open meeting in the physiological theatre of the medical school, when Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians, will give an address.

CREMATION IN ENGLAND.

The modern practice of cremation as a substitute for earth burial owes much to the efforts of medical men. The revival of this hygienic method of disposal of the dead was urged in the middle of last century by many eminent European physicians and chemists, and in consequence a congress was held in 1874 at Milan. In this country the pioneer in the public advocacy of cremation was Sir Henry Thompson, F.R.C.S., but for many years prior to 1874 (as duly recorded in the *Encyclopaedia Britannica*) Dr. Lord, Medical Officer of Health for Hampstead, had urged the practical necessity for the introduction of the system. In the beginning of that year steps were taken to found the Cremation Society of England. Among the leaders of the movement were Sir Henry Thompson, Sir T. Spencer Wells, and Mr. Ernest Hart, Editor of the BRITISH MEDICAL JOURNAL, the first-named being elected president and chairman of council on April 29th. In 1880 Sir Spencer Wells brought the matter before the Annual Meeting of the British Medical Association in Cambridge, and a petition to the Home Secretary for permission to adopt cremation was largely signed. This had at first no effect, and departmental obstruction continued; but in 1884 a judge, Sir James Fitzjames Stephen, declared cremation to be a legal procedure, provided no nuisance were caused thereby to others. In the following year the first cremation at Woking took place, and since then there have been upwards of 25,400 cremations in Great Britain. In 1893 the Home Secretary appointed a Select Committee of the House of Commons, presided over by Lord Ilkeston (then Sir Walter Foster, M.D., and a leading member of the British Medical Association), to inquire into the efficacy of the existing law as to the disposal of the dead. The present practice is governed by the Cremation Act of 1902 and the regulations made thereunder by the Home Secretary. In its last annual report[1] the Council of the Cremation Society of England records a gratifying increase in membership. An application for registration under the Companies Acts, sanctioned last year, has been submitted to the Board of Trade, which has approved the necessary Memorandum and Articles of Association. The Society continues to receive prominent medical support; among its Vice-Presidents are Sir Anderson Critchett, Sir Frederick Treves, and Sir John Tweedy (honorary treasurer), and the Council includes Sir Malcolm Morris and Dr. H. T. Herring. Nevertheless, progress is still very slow. At the present time less than 2,000 bodies are cremated annually in these islands; all the rest (some six or seven hundred thousand) are buried in the earth, and "every year the silent population of Greater London is increased by another hundred thousand."

THE HONG-KONG CHAIR OF MEDICINE.

In our advertisement columns there appears this week a brief statement of the conditions attached to the newly created Chair of Medicine at Hong-Kong University, and prospective candidates may welcome some further information that has been supplied to us unofficially with regard to this appointment. The University of Hong-Kong was established in 1912 upon the initiative of the Governor of the Colony, Sir Frederick Lugard, and in 1921 received further endowment from the Colonial Government which has placed it on a secure financial basis. The university is for the education of Chinese students in European knowledge; its faculties are those of medicine, engineering, and arts. Wealthy Chinese have given generously towards its buildings and establishment, and British commercial firms in China have also made large contributions. The university has absorbed the old medical school that owed its origin in 1887 to the energy of Sir Patrick Manson, who laid the foundations of his great reputation in tropical medicine by work in Formosa and Hong-Kong. The Prince of Wales, during his recent tour in the East, was made an honorary LL.D. of the university, and on that occasion (April 7th, 1922) it was announced that the Rockefeller Foundation in America had resolved to give half a million Hong-Kong dollars (approximately £60,000) to the university for the creation of a modern school of medicine with professors in medicine and surgery who should devote their powers to teaching and research. A further donation of a quarter of a million dollars is in prospect for a chair of obstetrics when the school is ripe for this extension. Training for research into disease is plainly one of the aims which must be fostered by this Hong-Kong school of medicine. The great opportunities of the school were finely expressed by Sir Patrick Manson in his inaugural address as dean of the old college in 1887: "I can conceive of no grander position or opportunity for any man to have than that we offer here. At his back the whole of European science; before him 300,000,000 to whom to give it. Such a position must fire the ambition of anyone." The chair of physiology has been held for some time by Professor H. G. Earle, of Cambridge University, and that of pathology by Professor C. Y. Wang, M.R.C.P., who was educated at Edinburgh University and held a Carnegie Research Fellowship. The Rockefeller gift has enabled anatomy to be separated from surgery; the latter chair will

[1] *Transactions of the Cremation Society of England.* No. xxxiii. 1922. London: 52, New Cavendish Street. 1s., post free.

be continued by Professor Kenelm H. Digby, of Guy's Hospital, and anatomy will be taught by Professor J. Shellshear, D.S.O., of Sydney, Australia. In the appointment to the chair of medicine preference will be given to candidates not older than 35, and ability for teaching and research will be expected. A senior resident assistant and a resident house-officer are attached to the post. The election has been entrusted to a Committee at the Board of Education, Whitehall, which includes two of the recently appointed whole-time professors of medicine in the University of London. The salary is £300 a year, rising to £1,000, payable while the professor is in the colony at the rate of 2s. to the dollar (and in addition the university pays part of the insurance premium to the Universities Superannuation Fund). The salary may be supplemented by fees for consultations in the colony, but the expectation is that the professor will devote himself chiefly to the work of the school. There is no income tax in Hong-Kong, and local rates and taxes are almost negligible.

LIFE TABLES.

THE current issue of the *Journal of the Royal Statistical Society* contains the report of a discussion on the "Value of life tables in statistical Research," opened by Dr. Major Greenwood, and continued by several eminent medical statisticians and actuaries.[1] Medical officers of health who have regarded with envy those of their colleagues who could and did construct life tables will perhaps draw some comfort from the discussion, because most of the speakers were at no pains to disguise their opinions that nothing more could be learned from a life table, so far as the sanitarian was concerned, than from the death rates at ages. In the view of Mr. A. Henry, the Deputy Government Actuary, the great objection to the construction of life tables was that it allowed people to talk of "that quaintly designated thing, the expectation of life." It was, he said, a horrible term. It had no practical meaning, and it had caused more trouble in the minds of laymen, he thought, than almost any other actuarial function. He took it that the real reason for such measures as the life-table death rate and a standardized death rate was that people were not content to do the simple work of comparing the rates of mortality age by age. They wanted something in the nature of a composite picture of the whole table. They had variations in rates of mortality from the infantile to the oldest ages. They had variations in mortality which might go in opposite directions and react one against the other; and he suggested that Dr. Greenwood was perfectly right in saying that the only true comparison was a comparison either age by age, or, which he thought personally was more preferable, over short periods of the table, using the probability of living five to ten years, which might eliminate accidental errors. To a question of the opener, "What available information could be deduced from mortality data expressed in life-table form which was not afforded by the central death rates themselves?" Mr. Palin Elderton answered, "None." He was quite clear about that. His difficulty, he said, had always been this: he could not see why people could not be content with examining rates of mortality and comparing those rates between two tables and leaving it there. Dr. W. H. Hamer made a contribution to the debate which, even if its relevance to the subject be doubtful, is worthy of transference to our columns on its intrinsic merits. The evolution of the relationship of the statistician to the public health official was, he thought, very well illustrated in La Fontaine's fable of the miller, his son, and the ass: "The miller, of course, is the statistician, the son is the laboratory worker applying statistical methods, and the ass, as before, is the Medical Officer of Health. In the Victorian age, which, be it remembered, was an idealistic age, the miller and his son were so careful of the ass that they bore its weight upon a pole, which they carried on their shoulders; then certain critics said it must be set on its feet; then, again, in order to silence further criticism, and yet more criticism, first the son, and after that the miller, mounted upon the ass's back; then there was more trouble, for a fourth set of critics considered that the ass's life should be spared, and the miller and his son accordingly dismounted. The miller seemed more or less to acquiesce in this last arrangement. At all events, he was convinced that there had been too many changes, and he seemed to think that he, his son, and the ass had better settle down to business and get on with their journey. The moral of all this seems to be that each man must do his best, and no one, as La Fontaine says, can escape being criticized, whatever he does! 'Les gens en parleront, n'en doutez nullement.'"

[1] *Journ. Roy. Stat. Soc.*, lxxxv, 1922, 537.

PSORIATIC ARTHROPATHY.

OUR new contemporary, *Acta Radiologica*, representing the activities of medical radiology in Denmark, Finland, Norway, and Sweden, and containing articles in English, French, and German, is admirably got up and illustrated. In the first number there is an interesting record of a case of psoriatic arthropathy with excellent skiagrams of the hands and feet, which are specially welcome, as the only others that the author, Dr. S. Ström of Stockholm,[1] can refer to are those in a paper on the various forms of ankylosis by Ledoux-Lebard. The predominating change is bony destruction, often extending beyond the joints so as to leave small fragments only of some of the phalanges, while the other phalanges show atrophy. The hypertrophic changes described by French observers were insignificant. The skiagraphic appearances are said to resemble those in Raynaud's syndrome, sclerodermia, syringomyelia, and nerve leprosy, and therefore support the view that psoriasis has a nervous origin. Dr. Ström does not find any evidence in favour of Brock's hypothesis, based on improvement after the administration of stimulating doses of x rays to the thymus, that disordered internal secretion is responsible for psoriasis. Though very rare, the arthritic lesions in patients with psoriasis have attracted a considerable amount of interest, largely from their bearing on the nervous hypothesis of this common skin eruption. They are usually multiple, chronic, without any liability to cardiac complications, uninfluenced by salicylates, prone to attack the hands and wrists and to cause ankylosis, and have generally been regarded as belonging to the group of nervous arthropathies, a view now supported by Ström's radiograms.

[1] S. Ström, *Acta Radiologica*, Stockholm, 1922, i, 21-25.

THE VISCERAL CONTENT OF ARSENIC.

THERE is a general impression that arsenic when introduced into the body specially picks out certain organs—the liver and the spleen—and in 1919 Sicard explained the jaundice after treatment with salvarsan as toxic and dependent on a special affinity of arsenic for the liver. This belief, current long before Ehrlich's terminology came into vogue, may perhaps be regarded as an intelligent anticipation of his organotropy or special affinity of a drug for some one organ or tissue. Milian,[2] in a recent review of the available data on the quantitative distribution of arsenic in the viscera, combats the conception of any such selective localization; there is, he observes, a normal content of arsenic in the viscera which does not correspond with that found when arsenic is artificially introduced into the body. He argues that the visceral content of arsenic varies with the route by which it gains entrance to the body. Thus when the drug is taken by the mouth the maximum amount is found in the liver; but after intravenous injection of the arsenobenzol compounds the lungs and spleen show the highest arsenic content; an observation by Jeanselme makes it probable, he thinks, that the same holds true in the case of intramuscular injections of the arsenobenzol compounds.

[2] *Rev. de méd.*, 1922, xxxix, 385-391.

COD-LIVER OIL AND VITAMIN A.

RECENT INVESTIGATIONS.

A SERIES of papers has appeared this year which gives a large amount of interesting information concerning the source of the vitamin present in the cod's liver and the effect of processes of extraction upon this vitamin.

Experiments upon land animals have shown that these cannot synthesize vitamin A, and obtain their necessary supplies of vitamin from chlorophyll-containing plants, either directly, by eating green vegetable matter, or indirectly, by eating the milk or flesh of other animals. The investigations described below show that a similar process occurs in the sea and that the whole of the vitamin A required to support life in the sea apparently is synthesized by plants containing photocatalytic pigments. A peculiarity of the vitamin A exchange in the sea is that the main source of vitamins for deep-sea animals are the unicellular algae, and the vitamin is transferred through a series of animals of ascending size before it reaches large fish, such as the cod.

Jameson, Drummond, and Coward[1] showed that a marine diatom (*Nitzschia closterium*) grown in a sterile culture fluid synthesized large quantities of vitamin A. The research was interrupted by the sudden and untimely death of Dr. Jameson, but Drummond, Zilva, and Coward[2] traced the vitamin exchange farther, and showed that the plankton fauna, which lived on the diatoms, contained large amounts of vitamin A. This plankton, which consists largely of copepods and larval molluscs, is the source of the vitamin A which is found in large quantities in the livers of all fishes. The plankton forms the chief diet of a large number of marine animals, varying in size from minute fishes to whales; the cod, however, lives chiefly on small fishes; in the case of the cod, therefore, vitamin A is formed in diatoms and passes through two intermediate carriers—namely, the plankton and small fishes—before it reaches the cod.

A remarkable and very important point about the marine vitamin exchange is that the concentrations of vitamin A attained are much higher than occur on land. The following table shows the source of vitamin A and the approximate weight of substance in grams required to produce growth in rats weighing 100 grams:

Source.	Approximate Weight. Gram.
Marine sources:	
Diatom (*Nitzschia closterium*) (dry weight) ...	0.04
Plankton (dry weight)	0.1
Small fish (capelin, *Mallotus villosus*)	0.1
Cod-liver oil	0.003-0.01
Cod's roe (male)	0.025
Land sources:	
Green vegetables (cabbage) (dry weight) ...	0.1
Butter	0.1-0.2
Ox liver	0.25

The Manufacture of Cod-liver Oil.

Cod-liver oil was originally produced by the simple method of putting the livers into a tub, leaving them to putrefy, and skimming off the oil. This method produced an oil of rich golden brown colour, with a strong and objectionable taste and smell. Möller, in 1853, introduced the method of extraction by steam, and practically all the oil is now produced by this method. The oil thus produced is nearly colourless and has no smell, and only a slight taste.

There is a widespread belief that the modern oil is a less efficacious therapeutic agent than the old brown oil, and when the therapeutic action of cod-liver oil began to be associated with its high vitamin content it was suggested that possibly the modern methods of manufacture tended to destroy the vitamin. This question has been investigated by Drummond and Zilva,[3,4] who found that there was no evidence that the "steaming" method of production of cod-liver oil destroyed the vitamin A in the oil. Investigation in Norway showed that the cods' livers were removed from the freshly killed fish and were placed at once in vats, and the oil separated by low pressure steam (direct or indirect). The first fractions of the oil obtained, which are the only ones used for medicinal purposes, are nearly colourless, and the chief further refinement to which they are subjected is freezing to remove stearine. The latter fractions of the oil recovered by the "steaming" process are coloured, and a small amount of brown oil is still obtained by the "rotting" process. The authors conclude, however—

> "After personal investigation of many factories, and careful interrogation of many sources of information, we came to the conclusion that very small and quite negligible quantities of crude 'brown' oils are refined to produce medicinal oils. Several processes for this refining have at one time or another been put forward in patents, but as far as we are aware none has proved of any commercial value on a large scale."

Experiments also were made to compare the vitamin content of the crude brown oils, of the colourless oils, and of oils prepared in the laboratory; in the last case every precaution was taken to prevent any destruction of the vitamin. From these experiments the authors conclude:

> "From our exhaustive investigations of the effect of the modern processes of the preparation of cod-liver oil on its vitamin value we have formed the opinion that the 'steaming' methods yield oils of as high, if not actually higher, potency than were yielded by the old and almost extinct 'rotting' process.
>
> "Further, the modern methods of refining, if we exclude, as we justly may, the almost negligible amount of bleaching of dark oils which occurs, scarcely affect the vitamin value at all.
>
> "In the light of these observations it is obvious either that the popular belief that the 'dark' oils are more valuable as medicinal products than the modern 'white' oils is erroneous or that such beliefs arose at a time when some actual difference existed."

Sixteenfold variations may occur in the vitamin content of different samples of cod-liver oil, although even the least active samples of cod-liver oil contain more vitamin than does butter. Drummond and Zilva believe that these variations are a reflection of changes in the diet or in the physiological state of the fish at different seasons. The authors further note that the livers of other fish yield an oil as rich in vitamin A as cod-liver oil, and that therefore there is no obvious reason why the livers of other fish than the cod should not be used for medicinal purposes. They further question the utility of removing the stearine from cod-liver oil, as this substance is rich in vitamin A.

Tests for Vitamins.

The investigation of vitamins is, of course, greatly hampered by the fact that the only tests available for demonstrating their presence or absence are biological tests, which are difficult, expensive, and extremely tedious. A chemical test for vitamins would be of the greatest possible value, and it is interesting to note that Drummond and Watson have discovered indications of the possibility of such a test for the vitamin A present in cod-liver oil. Cod-liver oil dissolved in chloroform or carbon bisulphide and shaken with a drop of sulphuric acid gives a violet-red coloration, and this is one of the old pharmacopoeial tests (U.S.P.) for cod-liver oil.

Drummond and Watson[5] examined a series of fish oils and found that their vitamin content varied about tenfold, and that the intensity of the colour reaction also varied greatly, and they showed that the variations in the vitamin content and in the intensity of the colour reaction were roughly parallel. They also showed that the passage of air through cod-liver oil at 100° C. slowly destroyed the vitamin A present, that the colour reaction was abolished by the same process, and that the vitamin and the chromogenic substance disappeared at the same rate. They conclude that—

> "The few properties of the (chromogenic) substance which are known, as well as the available data regarding its distribution in natural products, show certain resemblances to the unidentified dietary product known as vitamin A; and, without assuming the identity of the two factors, it is suggested that the association may be of some significance."

There is no doubt that the work reviewed in this article greatly increases our knowledge of the vitamin A in cod-liver oil. The definite evidence as to the origin of the vitamin and the way in which the vitamin is passed through different classes of the marine fauna until it finally reaches the cod reveals an aspect of deep-sea metabolism which is of great interest. The evidence as to the influence of manufacturing processes upon the vitamin in cod-liver oil is most important, and also rather unexpected. Finally, the suggestion that it may be possible to find a chemical quantitative test for vitamin A is of the greatest importance, for such a test would facilitate enormously the investigation of vitamins.

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[1] H. L. Jameson, J. C. Drummond, and K. H. Coward: Synthesis of Vitamin A by a Marine Diatom. *Biochemical Journal*, 482, xvi, 1922.

[2] J. C. Drummond, S. S. Zilva, and K. H. Coward: Origin of Vitamin A in Fish Oils and Fish-liver Oils. *Biochemical Journal*, 518, xvi, 1922.

[3] S. S. Zilva and J. C. Drummond: Fish-liver Oils and other Highly Potent Sources of Vitamin A. *Lancet*, 1922, i, 1245.

[4] J. C. Drummond and S. S. Zilva: The Preparation of Cod-liver Oil and the Effect of the Processes on the Vitamin Value of the Oils. *Journal of the Society of Chemical Industry*, 280, xli, 1922.

[5] J. C. Drummond and A. F. Watson: The Sulphuric Acid Reaction for Liver Oils. *Analyst*, August, 1922.

THE MANSON MEMORIAL MEDAL.

Presentation to Lady Manson.

The presentation to Lady Manson of the first medal struck in memory of the late Sir Patrick Manson took place at the London School of Tropical Medicine on September 26th.

Major-General Sir William B. Leishman, F.R.S., addressing a small company, which included several of Sir Patrick's most distinguished associates, gave a brief history of the Manson Memorial Fund, the proceeds of which, in part, have gone to the issue of the medal. He said that it was the feeling of many of those connected with the School that a worthy portrait of Sir Patrick Manson should be secured for its walls. Nothing in the nature of public appeal was made, but in response to letters to Manson's old friends and fellow-workers subscriptions came in from all parts of the world, and the letters accompanying the subscriptions were remarkable alike for the eminence of some of the writers and for the personal tributes which they contained. As a result of this private and narrow appeal about £300 was collected in a very short time, an amount considerably greater than was necessary to secure the portrait in question and to have mezzotint reproductions of it made for presentation to all the subscribers. The committee of the fund, of which the speaker was chairman, decided that the balance should be devoted to the striking of a medal, to be known as the Manson Memorial Medal, and to be presented triennially to any workers who gained special distinction in tropical medicine. It was a graceful thought on the part of the governing body of the School that the first medal should be presented to Lady Manson. This presentation was not meant as a mere empty compliment. The governing body felt that the first medal would properly be given to a lady who had personally done a great deal to further the cause of tropical medicine. In more than one way could a wife help her husband in his work. Some wives were able to assist in the direct way, as, for instance, by association in laboratory research; but there was an indirect way at least as important and helpful as the other. As a man most fortunately married himself, he (Sir W. Leishman) knew in how many directions a man's work could be helped by his wife, merely by the creation of a sympathetic atmosphere, perhaps by a little word of flattery when others outside were engaged in criticism, and especially by encouragement in times of difficulty or failure such as came to every research worker. In these respects the stimulus given to a man by his wife was very real indeed, and in all of them Lady Manson had shown her devoted skill, so that her contribution to the science which made her husband famous was nothing small.



Sir William Leishman then handed the medal to Lady Manson with the warmest congratulations and good wishes of the School.

Dr. P. H. Manson-Bahr said that Lady Manson had asked him, her son-in-law, to reply on her behalf. She wished to thank Sir William Leishman and the School from the bottom of her heart. This was one of the greatest compliments which could have been paid her. The medal would be among her most treasured possessions and an heirloom in her family. She was especially gratified, because this medal was also commemorative of the London School of Tropical Medicine, which Sir Patrick Manson, their revered master, did so much to create, and the welfare of which was uppermost in his mind to the very last day of his life.

The medal presented to Lady Manson is in bronze, and (as our reproduction indicates) it bears on its obverse a very fine portrait in relief, doing justice to the rugged face. On the reverse are the words "London School of Tropical Medicine." The medal, which is to be presented to distinguished workers in this subject, will bear on the reverse a device embodying "Tropical Medicine and Hygiene," in recognition of the fact that the recipients will be selected by the Council of the Royal Society of Tropical Medicine and Hygiene. The medal is the work of Mr. J. R. Pinches, of Albert Embankment, London, who was fortunate enough to obtain a special sitting for his purpose only a few days before Sir Patrick Manson's death. The medal, therefore, which was greatly admired, is a more sympathetic interpretation of the man than is usual with medallic designs which are reconstructed from photographs. A large oak-framed plaque in bronze, bearing the same design, is placed in the library of the School. It was from this large model that the photograph we reproduce was obtained.

Nova et Vetera.

HONORARY GRADUATION IN THE OLDEN TIME.

The seventh centenary of the foundation of the University of Padua was celebrated last May with becoming pomp and ceremony. Ambassadors of science from the ends of the earth graced the high festival, and these in turn were honoured by the laureation of some of the most distinguished among them. Such ceremonial degrees are, however, no novelty to us of the present day, and to most their bestowal at Padua would not give rise to a second thought. In the minds of those who fetch their precepts from the Cynic tub there may indeed have risen a doubt as to how far time would set the seal of its ultimate approval upon Padua's choice. From the past we may at least glean some suggestions towards an answer. Three chance samples from the Cinquecento may not afford a broad enough basis for a generalization, but, in any event, the details are not without an interest of their own.

In the beginning of October, 1515, Pavia welcomed a band of strangers from across the Alps. No peaceful pilgrimage this, but a roystering array of French knights, their swords still reeking with Italian blood. Some days before, Francis I had won the sanguinary battle of Marignano against the Milanese, and therefore did Pavia mightily rejoice. Every citizen vied with his neighbour in doing honour to their liberators, and the university was anxious to play its part. It so happened that among the suite of the Duke of Lorraine was his surgeon, Symphorien Champier by name, a graduate of Montpellier, who, after a distinguished career as a practitioner and town councillor at Lyons, had donned a coat of mail and emulated the feats of his wife's cousin, Bayard. So valiantly had he acquitted himself in this capacity that the golden spurs of knighthood were granted him by the duke on the field of battle at the very moment that Francis I received from Bayard a similar honour. But, though his patent was but a fortnight old, Champier had seen forty-four summers, and the harvest of his intellectual activity was already represented by seventeen printed volumes—a veritable encyclopaedia in black letter. To him, therefore, the university resolved to give an honorary degree, and to his indefatigable pen we are indebted for a record of the proceedings.

"Patres optimi," began the dean, Rusticus of Placentia, "rejoice, yea, rejoice again and again, and be glad, ye, whose names are written abroad through the world! Rejoice and be glad in the first place, that after the fears and agitations of these many years had forged a chain of death about us there has come amongst us the most invincible and most Christian Francis, King of the French and our own Duke. He shall wipe away every tear from our eyes, nor shall there

be any more grief or lamentation or sorrow. The sun of alien oppression shall no longer burn us up, and all things shall be made new. Rejoice in the second place, and be glad, because Symphorien Champier is about to enter our ranks, a man, among the learned most learned, among the most learned most excellent, and among the most excellent most eminent. Noble in family and fatherland, he is still more noble in his valour, and most noble of all in his learning."

We need not follow the orator through the rest of his speech, which is pitched in the same key. The final invitation to the graduand runs thus: "Come, then, O effulgent gem! Advance, O priceless pearl, whose wife is a pearl of beauty!" (Her name was Margarita.) "Come, father and brother, and deign to accept the highest honour we can bestow, although its acceptance is a greater privilege to us than to you. We pray that your days may be happy and that you may always remember the learned men of this college, who for their part will never forget you."

The next ceremonial we will relate occurred in the same hall a few days later, and again Champier gives us the details, *quorum pars magna fuit*. Among the French nobles at Pavia was the brother of Monseigneur de Lorraine—namely, the Duke of Guise, first of that line, and destined to be the grandfather of Mary, Queen of Scots. He had in his train a barber-surgeon, a Picard called Hyppolite Daultreppe, who eagerly desired academic distinction. Accordingly he besought Champier to persuade the Faculty to grant him the degree of Doctor of Surgery. Champier's new friends at once acceded to his request and no less than twenty-two appeared to lend dignity to the proceedings. At the outset, however, a very serious difficulty arose when it was learned that Daultreppe had no Latin, and that even "Frensch of Parys was to him unknowe." The Professor of Medicine voiced the universal indignation. "We are astounded, Messire Champier," cried he, "that you have asked us to assemble here, as we have done in such large number, to grant a degree to a man who is destitute of knowledge and has not even a smattering of Latin. We can only assume that you wanted to trick us or make us look foolish." But Champier was equal to the occasion. "Brother and colleague," he replied, "tell me this: if Galen and Avicenna were alive to-day, and came to you and asked for a degree, would you grant it them?" The answer was, "Certainly! such men could not be refused." "Note this, then," continued Champier, "that neither knew Latin, though both were most distinguished physicians. A particular language is, therefore, not an essential to knowledge, since this can be acquired through the medium of other tongues, even through Arabic which we regard as barbaric." He then went on to argue that the real test in this case was the surgical attainments of Daultreppe, and these they could ascertain at once by using him as interpreter. The disconcerted assembly at length accepted the offer and the interrogation began. Champier translated the questions to Daultreppe, and then rendered his answers into Latin. All difficulties were surmounted with such consummate ease by the candidate that the doctors were astonished into silence. It is clear that they were not without suspicion that most if not all the learning displayed in the answers came from the stores of the interpreter. This, however, was too delicate a matter for them to probe, and so the Picard got his degree.

Like Daultreppe, the third subject for consideration was a Frenchman, who as a barber-surgeon had accompanied an army into Italy. He too had given distinguished service to a Guise—Francis, the second duke—snatching him from the death which was later to reach him by an assassin's hand. In his case Pavia would not have been so sore distraught, for though he lacked Latin he knew Italian fairly well. Him in 1554 the French King desired to honour with a degree. It would appear from the subsequent open enmity of the medical faculty against the man that with them the King's wish was of no avail. Fortunately the College of St. Cosmas was complaisant, but here again the difficulty in regard to Latin arose. At length by special vote the rule was for once suspended, and the candidate passed through the successive grades of Bachelor, Licentiate, and Master of Surgery at intervals of only two months.

Now what is the verdict of posterity on these three men? Of Champier's final reckoning of fifty volumes the rare copies that still exist

> "at peace remain,
> Amid their kindred cobwebs in Duck Lane."

Daultreppe swims into our ken with that scene at Pavia, but of him no more. Of the last it is only necessary to mention that his name was Ambroise Paré.

But we must not judge the past too harshly or expect too much from the present. Like other human institutions, universities are liable to err in their choice as in their rejections. But corporations have no souls. This is fortunate for universities, since all of them have much to regret.

G. M. C.

England and Wales.

Opening of the New Session in London.

Next week will see the opening of the new winter session at the London medical schools. At St. Bartholomew's Hospital Medical College the occasion will be marked by the holding of the annual old students' dinner at the Hotel Victoria on the evening of October 2nd. At Charing Cross Hospital Medical School the prizes will be distributed on October 3rd at 3.30 p.m. by Viscount Burnham, and the annual dinner will be held that evening at Oddenino's Imperial Restaurant, Regent Street. Sir Clifford Allbutt will give the inaugural address at St. George's Hospital Medical School on October 2nd at 3 p.m. At Guy's Hospital Medical School there will be no formal ceremony on October 2nd, but the new anatomy and biology buildings will probably be completed during this session, and will be opened next summer. At King's College Hospital Medical School the introductory address will be given by Sir Herbert Jackson on the afternoon of October 3rd, and the annual dinner of past and present students will take place that evening at the Café Royal, Regent Street. The introductory address at the Middlesex Hospital Medical School will be given at 3 p.m. on October 3rd by Professor Sidney Russ, the prizes will be distributed by H.R.H. Princess Alice, Countess of Athlone, and the annual dinner will be held that evening at the Trocadero Restaurant. At Westminster Hospital School of Medicine Mr. G. T. Mullally will give the introductory address on October 2nd at 3 p.m., and the annual dinner will be held in the evening at the Wharncliffe Rooms. The annual dinner of past and present students of St. Mary's Hospital Medical School will take place at the Connaught Rooms on October 2nd at 7.30 p.m. The session at St. Thomas's Hospital Medical School begins on October 3rd, and the old students' dinner will take place at Princes' Restaurant on November 10th, with Sir Charles Sherrington, President of the Royal Society, in the chair. Viscount Burnham will give the introductory address at the London (Royal Free Hospital) School of Medicine for Women on October 2nd at 3 p.m.

Milk Prosecutions.

We have received the following statement from the Public Information Branch of the Ministry of Health:

Health Ministry and Milk Prosecutions.

"Efforts are being made in a number of quarters to misrepresent Circular 325, issued two months ago by the Ministry of Health, advising local authorities to forbear in certain clearly defined circumstances from the prosecution of milk vendors. The Circular is rarely quoted as a whole, and in view of the fact that sentences torn from their context have been used to suggest falsely that the Ministry is tolerant of laxity in the production of milk it becomes desirable to restate what the Circular does and does not advise.

"It is based upon an actual case of unsuccessful prosecution by a local authority of a milk vendor who was charged with selling milk deficient in fat. In the Court it was shown that the vendor had held a good record for a number of years, and that repeated tests of his milk during that time had given uniformly satisfactory results; also, that 'special circumstances existed to account for the milk being deficient in fat on the occasion of the test on which the prosecution was based.' It was stated that the local authority had made no attempt before prosecuting to ascertain why on this isolated occasion the milk had failed to pass the test, and that the vendor had not volunteered the necessary information. But when the facts were revealed in Court the local authority at once withdrew the prosecution.

"The advice given in the Circular is expressly limited to cases in which the circumstances are similar to those described. It states that 'the Minister is of opinion that it is extremely undesirable that a prosecution should be based upon the results of an isolated test *when other tests of the particular milk supply have proved satisfactory*'; and it suggests that '*in such cases* prosecution should be instituted only where a series of tests have shown repeated default.' It is therefore incorrect to represent that the Circular has any general application. The only cases in which it deprecates the institution of a prosecution 'based upon the results of an isolated test' are those in which a milk vendor has held

a consistently good record for a number of years during which his milk has been constantly tested with uniformly satisfactory results."

Readers who turn to the article in our issue of August 5th (p. 232) on milk prosecutions, and to the paragraph with the same title on August 19th (p. 325) referring to the action taken by the Society of Medical Officers of Health, will be in a position to judge the value of the defence now put forward by the Ministry of Health.

RED CROSS ACTIVITIES IN LONDON.

The annual report of the County of London Branch of the British Red Cross Society shows that, although the activities of the Society are less obvious in times of peace than in war, they are being directed into channels of considerable value to the community. The Red Cross clinics which have been organized in London have attained a high degree of success; the work of the clinics has assumed dimensions far greater than was anticipated, and the gratitude of the men who have been treated at them is a testimony to their value. At the end of last year ten clinics were open in the County of London, and five of them had tropical disease branches; in 1921 there were 142,831 treatments given in excess of those of the previous year, and the total treatments since the clinics opened amount now to considerably over half a million. Besides work at the clinics and Red Cross institutions, at all of which members of the Society are giving voluntary assistance, members have worked in various capacities in several civil hospitals and other institutions for the sick and disabled. As an example, the Camberwell Division during 1921 did very useful work in connexion with King's College Hospital; a scheme was initiated after the war by which members of the detachments helped the hospital by visiting homes of in-patients prior to their return, and explaining what arrangements were necessary for them, by visiting discharged in-patients and casualty patients after treatment in the hospital, doing clerical work at the hospital, making and mending garments, etc. The Division has also recently entered upon another sphere of usefulness in connexion with the Hostel for Crippled Working Girls, Denmark Hill; many of the girls in this institution have to pay regular visits to various hospitals for treatment, and they are escorted to them by members of the Division. At Greenwich and Woolwich Red Cross members work at local welfare centres, and assist district nurses; several members of the Marylebone Division are still working in hospitals in the evenings and week-ends, and similar voluntary work is carried out by members of other divisions in London. The Westminster School Treatment Centre may be given as another instance of the work of the society. This is the first of its kind opened in London; it is organized under the auspices of the Westminster Division for the treatment of minor ailments among children attending elementary schools; there has been an average weekly attendance of 147 children, the new cases averaging 14 a week. The medical supply dépôt established by the Camberwell Division has been found to be so useful that other dépôts were established in various parts of London for the benefit of poor persons, with the aid of grants by the executive committee of the Branch. From these examples it will be gathered that Red Cross work in London is still very much alive, and there are many members who give a very large measure of their time and services to keeping the work going.

Scotland.

THE VITAL STATISTICS OF SCOTLAND FOR 1920.

THE Scottish Registrar-General's Report for 1920 has been mentioned in the JOURNAL of July 29th (p. 176), and again on August 26th (p. 399). We now give a fuller account of its contents. The population of Scotland in the middle of 1920 is estimated at 4,864,396, the estimate being safely based on the census of 1921.

Births.

The births numbered 136,546, the maximum since registration began; they were 30,278 in excess of the previous year, and 22,592 more than the mean of the previous ten years. The rate was 28.07 per 1,000, or 4.17 above the average of the previous ten years and higher than any year since 1908. The rise began in September, 1919, and reached its maximum of 32.2 in March, 1920, then gradually subsided to 25 in September. Illegitimate births to the number of 10,204 were registered, a larger number than in any year since 1887; the rate was 7.47 per 100 births, very slightly above the mean of the preceding ten years.

Marriage and Divorce.

The marriages registered were 46,843, also a record, being 2,783 more than in 1919, 11,511 more than the mean of the previous five years, and 12,781 more than the mean of the ten preceding years. Also they are 13,167 more than the maximum in any year previous to the war. The rate, 9·63 per 1,000 of population, was likewise a record, being 1·86 more than 1873, the pre-war record holder.

In the number of divorces there has been an astonishing increase. The total in the year was 776, or one to 60 marriages. Fifty years ago (in 1870) the ratio was one in 1,403. The minimum was in 1864, when there were only two divorces, and 1865 and 1866 had only four each. The figures have never fallen below 100 since 1890, in 1918 they reached 485, in 1919 829, and in 1920, as already stated, 776. These last two years between them have had more divorces than the thirty-seven years 1855 to 1891 inclusive.

Deaths.

Deaths registered numbered 63,179, or 5,645 less than the mean of the previous ten years, and yielded a rate of 14.02, the lowest yet recorded for Scotland, the previous lowest having been 14.45 in 1917.

The infantile mortality rate was 92 per 1,000 registered births, also a minimum for Scotland, and 15.9 less than the mean of the ten preceding years, the previous minimum having been 97.1 in 1916. In the last five years an infantile mortality rate of less than 100 has been recorded three times. Previous to 1916 it was constantly over 100, and only exceptionally under 110. At the other extreme of life the ages of nine reputed centenarians were verified, and in the course of eleven years 59 such verifications have been made. Among causes of death small-pox and cancer were unusually prevalent, the former being registered in 152 cases, or more than in any year since 1904. Deaths from cancer have had a new maximum in 1920, the number being 5,765 and the rate 119 per 100,000 population; fifty years ago it was 43. On the other side of the account we find that the phthisis rate fifty years ago was 283 and is now only 85. In fact, phthisis and all forms of tuberculous disease, likewise whooping-cough, reached their lowest recorded death rate in Scotland in 1920, whilst the measles rate was lower only in three previous years—namely, in 1879, 1886, and 1894. Similarly the diphtheria death rate of 1920 was less than in any previous years excepting 1903, 1905, and 1917. The death rates from all tuberculous diseases were less than a third of what they were fifty years ago.

Vaccination.

As to vaccination, of the children born in 1919 and reaching the statutory vaccination age only 58 per cent. were reported successfully vaccinated. That is somewhat better than in the previous year, but prior to 1907 (the year of the last relaxation of the law of vaccination in Scotland) the rate was constantly over 90, and often over 95 per cent.

Additional Details.

The above figures are taken mainly from a condensed general account with which the Registrar-General conveniently begins his Report. He then proceeds to fuller detail from which some further notes may be made.

Births.—The ratio of male to female children was 104.3 to 100. In the counties including burghs the birth rate varied from 32.3 in Linlithgow and 31.9 in Lanark to 16.8 in Argyll and 17.3 in Bute. In the group of "larger burghs" (with 30,000 inhabitants or more) the birth rate was 30.18 per 1,000, in the smaller burghs (under 30,000) 27.37, and in the county districts 25.52. The highest rate in the larger burghs was in Hamilton, 34.1, and the lowest in Perth, 24.1. In the smaller burghs the rates varied much more—from 43.3 in Rothes to 9·8 in Melrose, but of course in small populations there is more room for chance variation owing to paucity of data. In county districts the highest rate was 34.4 in the Middle Ward of Lanarkshire, and the lowest 10.3 in the Cowal District of Argyllshire. Calculated on the number of women of child-bearing age, the birth rate per 1,000 of such women was 116.6, or 25.4 more than in 1919, 32·8 more than in 1918, and 33.2 more than in 1917. In the larger burghs the rate ranged from 165 in Coatbridge to 88 in Edinburgh.

Illegitimacy has diminished with passing years. During the period 1862–87 the numbers annually were always over 10,000, then up till 1919 they were always under 10,000, and the minimum (7,295) was reached in 1917. The illegitimate rate as a percentage of the total birth rate differed remarkably as between one area and another. The county districts are higher (8.64) than the

larger burghs (6.99) and the smaller burghs (6.94). In certain counties—Moray, Banff, Aberdeen, and Caithness in the north and Wigtown and Kirkcudbright in the south—the illegitimacy rates are exceptionally high, whilst in Dumbarton, Renfrew, Orkney, Fife, and Linlithgow they are very low. Whether the figures represent a corresponding difference in morality is another question. Of the total children born in Scotland 2.67 per cent. were twins (3,644 children) and 0.03 per cent. (45 children) were triplets. A table of monthly birth rates is given for the years 1914–20, showing the influence of the war. The rate, which, as it happened, had been rather high in the winter of 1914–15, began to fall below the pre-war average from about the middle of 1915, and continued so right on until October, 1919. It rose to a maximum in the winter 1919–20, then declined again, though not quite falling so low as the pre-war average, up to the end of 1920.

Marriages.—In the counties in 1920, including burghs, the rates varied from 12 per 1,000 of population in Midlothian to 4.1 in Argyllshire. A table is given to show the monthly marriage rates as influenced by the war, from August, 1914, till the end of 1920. Up to the end of 1917 the rates were very irregular, 22 months being above the pre-war average, and, interspersed with them, 19 months below it. In May and November, 1915, and May, 1916, the rates were exceptionally high. In the three years 1918–19–20, all but five of the 36 months are above the average, the highest rates being in May, 1919, and May, 1920, when the pre-war average was exceeded by 89 per cent. and 111 per cent. By December, 1920, the excess had diminished to 7 per cent.

Deaths.—Here we will only call attention to the Registrar-General's method of recording his facts. Three kinds of death rate are stated throughout the Report: (1) crude, (2) corrected, and (3) corrected and adjusted. The crude rate represents the number of deaths actually occurring in an area, the corrected rate is based on the deaths belonging to the area whether they occur within or beyond its bounds, and the adjusted rate compensates for differences between the age and sex distribution of the area compared with that of Scotland as a whole. From a table of the rates in the larger burghs two illustrations of the method may be given. In Clydebank the crude rate was 8.5, the corrected rate was 11.6, and the adjusted rate 13.4. Clydebank has very little institutional accommodation; its accidents and many other cases go to Glasgow, and when such deaths are debited to Clydebank its 8.5 becomes 11.6. Then the age composition of its population is favourable, the proportion at healthy periods of life being high. When that is taken account of, and the standard applied is the age constitution of the whole of Scotland, the adjusted death rate emerges at 13.4. On the contrary the city of Perth receives into its institutions from the surrounding country many cases which die within its bounds but do not belong to it. When these are allocated to their own areas the crude death rate, which was 16.6, is reduced to a corrected rate of 14.4, whilst a further trifling reduction owing to age constitution gives an adjusted death rate of 14.1, or only 0.7 above Clydebank's, whereas its crude death rate of 16.6 was exactly the double of Clydebank's 8.3.

In concluding this notice we would only point out that the minimum death rates and infant mortality rates which Scotland has experienced in 1920 are still very definitely higher than those of England. What the causes are cannot be discussed here and now, but attention may be called to the facts as to housing stated in our notice of the Census of the Four Great Towns of Scotland in our issue of August 26th (p. 399).

EDINBURGH ROYAL MATERNITY HOSPITAL.

At the monthly meeting of directors of the Edinburgh Royal Maternity Hospital, held on September 19th, Dr. T. G. Nasmyth, chairman of the board, cordially welcomed Dr. B. P. Watson, the newly appointed professor of midwifery and gynaecology, who, under the arrangement between the university and the hospital, is *ex officio* a director of the latter. Professor Watson was further placed in charge of the hospital for the quarter beginning October 1st, with Dr. Oliphant Nicholson as assistant physician. Dr. J. W. A. Hunter was appointed senior house-surgeon and Dr. J. A. Douglas junior house-surgeon for the same period; the resident medical officers in the ante-natal department (under Dr. Ballantyne) were Dr. Rosemary O. Morris as senior and Dr. Ruth Ritchie as junior. The statistics of the hospital for the month of August were: Deliveries—intern, 168, extern, 80; at Leith branch, 31; total, 279. Attendances at ante natal clinics—new cases, 115; revisits, 205. Attendances at venereal disease clinics—new cases, 15; revisits, 114.

Jamaica.

THE CENSUS OF 1921.

As it was not under a labour strike, Jamaica was able to have its 1921 census in April. Its population was found to be 858,118, an increase of 26,735 since 1911. But of the total increase no less than 22,201 was in the female population, and only 4,534 in the males. The males numbered 401,973, and the females 456,145, or 113.4 per 100 males. The total inter-censal increase was 3.2 per cent. As the rate of increase between 1911 and 1921 had been assumed to be a continuation of the rate which belonged to the period 1891–1911, when the growth had been much more rapid, the calculation for April, 1921, was 46,313 in excess of the census facts—an example of the danger of that method of estimation. Evidently the excess of overseas departures above arrivals had been very incompletely reported to the authorities during the last decade. The population on shipboard at the census was 1,266, nearly half at Kingston. The British army population was 1,063 officers and men. The town of Kingston had 62,707 inhabitants, as against 57,379 in 1911. The next largest centre, Halfway Tree and vicinity, had a population of 25,337. The average number of persons per inhabited dwelling was 4.4. One-roomed houses increased to 80,654 from 75,670, but the criteria of housing are roofs—shingle, metal, concrete, or thatch—and the presence or absence of floors of concrete or wood. The best class has increased 20.5 per cent., the second class has decreased 1.8 per cent., and the lowest has decreased 22.3 per cent. Of the total population 17.2 per cent. consisted of married persons in 1921, as against 18.8 per cent. in 1911.

The population is divided into white, coloured, black, East Indian, and Chinese. There was a slight diminution in the number of the whites, from 15,605 to 14,476 in the ten years; their percentages to the total population were 1.88 and 1.69 respectively. Blacks, East Indian, and Chinese increased. A table of occupations shows that nearly one-half (48.3 per cent.) are classified as "indefinite and non-productive," but it is explained that these include children under 5, and many up to 14 years. Agriculture is the main occupation, and is followed by 33.3 per cent. of the population; the industrial class forms 8.6 per cent., domestic 6.1, commercial 2.4, and professional 1.3. Among the agriculturists bananas occupy the most workers; sugar comes next. Planters have increased from 112,542 to 129,312. Of persons from 5 years upwards 52.1 per cent. could read and write, 8.7 could read only, and 39.2 were unable to read. Of the total population 2,403 were born in the United Kingdom, and 2,264 were of British parentage.

The Registrar-General of Jamaica, Mr. David Balfour, is to be congratulated on having succeeded in obtaining so much interesting information for his census report.

Correspondence.

EXPERT WITNESSES: SURGICAL AND MEDICAL.

SIR,—May I be allowed to offer my support to Mr. C. H. Fagge's letter on Clayden *v.* Wood-Hill (September 16th, p. 531), bringing to the notice of your readers the vital importance to those who practise medicine of moving in the direction indicated in his "second point," where he speaks of "the hopelessness of the present method of employing medical experts on both sides of a case" and the disadvantage of calling medical evidence "for the plaintiff *and* for the defendant"? The defendant is usually the doctor who is the first to attend the plaintiff, and he has more intimate knowledge of all the circumstances and conditions of the patient than the medical experts who give their opinion for the plaintiff sometimes in support of an allegation of negligence in treatment. The plaintiff is entitled to be treated with due knowledge and, if there be negligence, he is likewise entitled to receive scientific and unprejudiced support from medical experts to establish his claim for damages. But the question that one so very frequently hears, and one that has for some time past aroused widespread feeling, is, Has not the time arrived when steps should be taken to put the trial of such cases upon a more scientific basis than that existing at the present time?

The British Medical Association, when it considered that injustice had been done, has always supported members of the profession whether members of the Association or no; it has fought for the principle of equity. It is to be remembered that cases of alleged negligence are not confined to the practice of surgery, and experts in the various branches of practice may be called upon to give evidence.

It may be of interest to those, like Mr. C. H. Fagge, who are invited to give expert evidence in cases of alleged negligence, to record my own experience when asked to give such evidence as a surgeon. For a time I flatly refused to see or have any

correspondence with a potential plaintiff, but on reconsideration I came to the conclusion for reasons I need not here state that it was not fair to a plaintiff who believed that I had special knowledge of the particular surgical conditions of the case. I therefore performed a *volte-face* and gave to the plaintiff the usual welcome I gave to ordinary patients; I took full notes of the case, and when my examination was finished I said: "I will send a copy of the notes I have taken to your doctor, and will ask him to come and discuss your case with me, so that I shall have full inside knowledge before deciding whether I can support your claim." I think I must have lost caste as a medical expert after adopting this plan, but I consider it to be the correct one, and believe that it might with advantage be imitated until the time arrives when Mr. C. H. Fagge's opinion shall fructify and it is generally recognized that "the present method of employing medical experts on both sides of a case . . . should be discontinued."

If the British Medical Association would take the initiative in organizing a committee, say, of its own body, with representatives from bodies granting qualifications to practise medicine, may I suggest that the body which appoints nautical assessors should be consulted with regard to the practice now existing in the Admiralty Court?

If the present persecution continues in respect to the results of the treatment of injuries to bones, the time will soon come when it will be wise for general practitioners to send all such cases to hospitals.—I am, etc.,

September 19th. JOHN LYNN-THOMAS.

OPHTHALMIC EXAMINATIONS IN GENERAL MEDICINE.

SIR,—I will ask your permission to say a word in support of Dr. Tyson's commendation (p. 578) of the routine use, in clinical examinations, of the electric ophthalmoscope. To those to whom this form of ophthalmoscope has been of continuous service for a number of years it may at first sight seem superfluous at this time of day to speak of its values. Yet there is plain evidence of the existence of considerable areas of professional practice where these values are either unknown or ignored. One of the most impressive testimonies in this direction may be found in the recent issue of a volume on "ophthalmology," addressed to that much-exhorted person the general practitioner. The author warns his readers that "all detailed ophthalmoscopic examination is practically impossible for the general practitioner," on account, *inter alia*, of hindrances to the inspection of the fundus "in the shape of various reflections from the mirrors, cornea, etc." But of the electric ophthalmoscope and of the ease and simplicity this instrument has lent to ophthalmoscopic examination our counsellor and guide has no information to offer. Against his counsel of despair I will select two relatively ancient quotations, the first from a review printed in your own columns:

"There is nothing inherently difficult in the use of the ophthalmoscope . . . and with a little practice any man of ordinary ability can acquire sufficient proficiency to diagnose gross changes in the fundus—such conditions, for example, as optic neuritis, optic atrophy, albuminuric retinitis, disseminated choroiditis, and massive haemorrhages."—BRITISH MEDICAL JOURNAL, July 4th, 1914.

And in relation to the electric ophthalmoscope:

"On a recent occasion when the All-India Sanitary Conference met in Madras a number of its members, who had not touched an ophthalmoscope for many years, were shown the fundus with an electric ophthalmoscope as simply and easily as they could have been shown a picture hanging on a wall through a hole in a partition. Not only so, but it is our practice to demonstrate the fundus with this instrument to lay visitors to the hospital."—Colonel R. H. Elliot, F.R.C.S., in *The Ophthalmoscope*, March, 1913.

This in 1913, and yet in 1922 one of our pastors and masters, ignoring the ophthalmoscope in its modern form, tells us from his pedestal that for the great majority of the profession ophthalmoscopic examination is "practically impossible." Evidently, therefore, Dr. Tyson's advocacy is by no means redundant or out of date. If I may add a personal word I would say, for numerous professional colleagues as well as for myself, that the "reflections from the mirrors and cornea" have not proved a hindrance to the easy and successful use of the electric ophthalmoscope, and even the "reflection" due to "etc.," has not asserted itself as an insuperable barrier.—I am, etc.,

London, W., Sept. 23rd. C. O. HAWTHORNE.

STERILIZATION OF MENTAL DEFECTIVES.

The Medical Importance of Clearly Defined Biological Terms.

SIR,—I have read with much interest the correspondence on mental defect and sterilization, which began with Sir Archdall Reid's letter in the JOURNAL of August 26th. Some of the letters following his serve to illustrate the immense importance of Sir Archdall's clear, although condensed, exposition of his views concerning the great lack of precision in the terms used by nearly all writers on heredity.

The discussion concerning biological terminology, and on heredity in particular, which was published in *Nature* from time to time from November, 1920, to May, 1922, and is referred to by Sir Archdall in his letter to you, contains a full exposition of his contentions; and a study of it could not fail to be of high value to practitioners of medicine, most of whom have hitherto been mainly dependent on biological teaching for an understanding of the whole subject of heredity, with which they are necessarily and greatly concerned. In this discussion the importance of the distinction between "inheritance" and "reproduction" is brought out vividly, as well as the real meanings and applicability of the words "inherit," "innate," "acquire," "germinal," "somatic," and the like. All these are key-words. Without a clear understanding of their implications all controversy about heredity is futile. So also is all discussion of the question of sterilization of the feeble-minded.—I am, etc.,

London, W., Sept. 21st. BRYAN DONKIN.

P.S.—This letter was written before seeing Sir Archdall Reid's letter in the JOURNAL of September 23rd.

EDINBURGH MILK SUPPLY.

SIR,—My attention has been directed to your issue of August 19th containing some extracts from the report of the Board of Health for Scotland during the year 1921.

The reference is chiefly to the quality of the milk in Scotland, and the figures given raise a presumption strongly adverse to the Edinburgh supply. Indeed, so large is the divergence as to lead me to suggest that the writer of the article referred to might have at once recognized that some fallacy underlay them, and have made such inquiry as was necessary to remove this before drawing the conclusions contained in the summary.

The actual fact is the figures cited are based on different sets of circumstances. Those applicable to Scottish cities generally represent adulterated samples in regard to which proceedings could be taken under the Food and Drugs Acts, while the higher figures applicable to Edinburgh represent the result of several analyses of each sample before any legal proceedings are instituted.

Thus each unit in the figure stated as being applicable to Edinburgh represents three and sometimes four samples of the *same supply of milk* purchased or procured at different places in order to ensure that the person guilty of the illegal act will be proceeded against and that the interests of the innocent vendor will be safeguarded. The writer of the article has been comparing things that differ, and thus forming entirely erroneous conclusions.—I am, etc.,

A. MAXWELL WILLIAMSON, M.D.,
Medical Officer of Health.

Public Health Department, Edinburgh, Sept. 19th.

*** The matter is one between Dr. Maxwell Williamson and the Scottish Board of Health. We cannot agree that, having compared the text with the relevant table, it was our duty to make further investigation. The passage relating to milk samples in the official report, on which our own comments were based, is as follows:

"In the Burghs of Edinburgh, Dundee, Glasgow, and Aberdeen, the proportions of adulterated samples were 39.6, 8.8, 7.3, and 5.8 per cent. respectively. In the 12 other Burghs, with a population over 30,000, the proportion was 8.3 per cent., and in the remainder of the country 8.6 per cent."

From beginning to end of the report there is no hint of any "different sets of circumstances." We are pleased, however, to give Dr. Williamson the opportunity of making much-needed explanation.

PROMOTION IN THE R.A.M.C.

SIR,—A few weeks ago, having recently returned from abroad, I consulted the *Monthly Army List* for the whereabouts of some A.M.S. and R.A.M.C. friends, and what I noted led me first to study the *Quarterly List* and "Hart," and, secondly, to question certain men whose names I had not

found in the list. The net results of this study I venture to submit for your consideration. They are as follows:

1. Majors R.A.M.C. average greater length of service than majors in other corps of an allied kind, besides being older in years.
2. Some fourteen or fifteen A.M.S. colonels are being retained in the service beyond the time limit for this grade.
3. From the Medical Department list as a whole have disappeared the names of a considerable number of men, from among whom it seemed certain that several major-generals and probably a D.G. would sooner or later be chosen.

To put these facts in another way: (*a*) During the war a large number of senior officers were either brought back or retained beyond their time, and thus blocked promotion to substantive rank of the men below them. Now, four years later, and without any equivalent reason, a like condition still obtains. (*b*) This accounts for the exceptional oldness in the service of majors R.A.M.C., and explains the close approach to retirement age of sundry men above them. (*c*) Blockage of promotion means more than disappointment to individuals; it also spells possible grave loss to the service by some of those individuals (who may be officers of a specially desirable type) being led to resign. Some men of this order, including one or two whom I should class as brilliant, have in fact already left.

But this is not the only undesirable circumstance. Promotion above the rank of major and above the rank of lieutenant-colonel and colonel depends on "selection." Every officer can tell to a second the date on which his "batch" is due for promotion if there be no blockage and if no one is "passed over" or removed by death; but I have never yet known one who could predict how the selection factor would work out. In fact, no one in the service knows in what direction or directions he must shine if he hopes to obtain the votes of the selection board which will eventually decide his fate. The general impression seems to be that the essential thing is to have served under one or more members of the board and to have got on with them; in short, that promotion goes largely by favour. Without accepting this view I yet express a doubt as to whether even the board itself could state offhand to what touchstone or touchstones it applies the records of the officers concerned. Are they wide general experience? or success in administrative or executive positions in peace times, or the same on active service? or exceptional knowledge of some clinical, laboratory, or other special branch of work? or knowledge of languages? or a capacity for getting on with one's fellows?

It appears to me that in all public services in which promotion is by selection—and of these there are several—the points on which promotion depends ought to be thoroughly well known to every officer from the beginning of his career.

Finally, so far as the R.A.M.C. is concerned, I suggest that although it is a very popular service at the present time, and one of which most of us are proud, it will not so remain if the condition of matters herein described continues for any considerable further period. The existing blockage should be cleared away forthwith, and the R.A.M.C. should set an example to all other public medical services by making known what are the points that count officially when selection is in question.—I am, etc.,

September 17th. G. N. STEPHEN.

THE DETERMINATION OF SEX.

SIR,—Interest in the determining factor or factors in the production of sex naturally never wanes, and from time to time a new idea is mooted or an old one resuscitated. Some suggestions, such as that ova proceeding from a right ovary alone produce males, have been definitely disproved by observation, and others—for example, that the provision of an abundant supply of a particular form of nourishment to the mother will determine the sex of the embryo—are prima facie unlikely.

We may expect that in the production of sex it is inherently probable that the male will play as vitally important a part as the female, and both of the above suggestions are manifestly defective in allowing no part to the male.

Moreover, it is also to be anticipated that some natural law or laws will underlie the determination of sex, and further that such law or laws will act towards the equalization of the number of the two sexes.

For a long time past it has seemed to me that one simple suggestion, which I have not hitherto seen noted, fulfils the before-mentioned conditions, and it might be shortly stated as follows: That in the reproductive process each sex tends to reproduce its opposite, the resultant of the strife between the two being the manifestation as to which had gained the upper hand. Thus if a male child results then the ovum has proved the stronger, and vice versa.

If my surmise is correct, and such a law does exist, then our interest would be more advantageously concentrated on finding out and investigating the factors which make for strength and for the gaining of the mastery. These factors are doubtless numerous, and possibly complicated, but my own observation leads me to believe that they will include not only such points as physical build and condition or acquired or inherited powers or weaknesses, but also such questions as relative age of the parents.—I am, etc.,

Manchester, Sept. 22nd. R. W. MARSDEN, M.D.

ALOPECIA AREATA AND STRABISMUS.

SIR,—Dr. Goodwin Tomkinson has given us in your issue of September 16th, 1922, a most interesting family group of cases in which alopecia areata is linked with strabismus, the latter condition having been investigated by Dr. Hislop Manson.

To some of us who have followed Dr. Inman in his association of strabismus with a personal or family history of left-handedness or stammering, the record is of great importance. Dr. Inman has not selected at random certain eccentricities of childhood for special inquiry, but he has grouped a class of defects which he believes to be of psychological import.

It is clear from Dr. Tomkinson's cases that there were other psychical symptoms among them, the mother having suffered from "bilious" headaches, possibly migraine, as well as anaesthesiae; five children also are stated to have been "nervous" and one a somnambulist. These indications are most suggestive. Obviously there is a line of research opening up which may yield valuable results if the various branches of the profession will contribute from various sources their experience as to analogous cases.

There is little doubt that if the cause is, as we suppose, psychological it should be dealt with by psychological methods; a great opportunity opens for practitioners who employ psychotherapy to find a solution of the problem.—I am, etc.,

London, E.C., Sept. 20th. CHARLES F. HARFORD.

PSYCHO-ANALYSIS.

SIR,—The letter of Dr. Johnstone (p. 578) illustrates very well my point as to the necessity of educating the medical profession in the principles underlying modern psychotherapy.

Apparently he sees no difference between psychology as taught fifty years ago and the teachings of to-day, and it would take far more space than you could allow me to endeavour to bring his conceptions up to date. One cannot argue with a person who understands by the unconscious "the part of the brain for the moment inactive" as one would not be speaking the same language. The unconscious is dynamic, not static.

With regard to the possibility of the patient bringing hypothetical dreams to the analyst, this would not matter in the least as the patient's inventions would be the outcome of his mental processes exactly as are genuine dreams. As a matter of fact we sometimes ask our patients to invent dreams when they can produce no other material. I think Dr. Johnstone will agree that the inventions of a poet or a novelist must bear a direct relation to the author's psychological make-up, and the same is true of everyone.—I am, etc.,

R. MACDONALD LADELL.

Wylde Green, Birmingham, Sept. 23rd.

BACTERIAL FILTRATION.

SIR,—It has occurred to me that your readers might be interested to hear of a cheap and rapid method of filtering fluids containing bacteria in suspension.

Take an ordinary filter funnel, fold two thicknesses of stout good filter paper and almost fill up with clean sand (washed several times in a pan). Pour in water to make the sand settle down firmly and until the filtrate is colourless. (The colour is due to sand in suspension, fine enough to pass through the filter paper.) Scoop a cone in the firm sand, pour in the fluid cautiously so that

the fluid comes into contact only with sand and nowhere comes into first contact with the filter paper. Reject the first few filtrations.

Soluble protein should be tested for in urine one can read print through; but in bacilluria bacteria often remain in suspension even after centrifuging. The above method gets over this difficulty and does away with the necessity of candling.—I am, etc.,

TEMPLE GREY.

United University Club, Sept. 18th.

OPEN-AIR TREATMENT OF MEASLES: AN EXPERIMENT.

SIR,—Dr. Gee wrote in *Medical Lectures and Clinical Aphorisms*:

"Any mysterious change of type or epidemic constitution seems to be resolved so far as concerns measles into the condition of the air breathed by the patients."

During a recent epidemic of measles the cases that did worst were children shut off from light and air and heavily clothed.

The one case that did best was a delicate little girl that lay or sat up in bed lightly covered and under a big window, opened some eighteen inches from the top and with a badly fitting lower sash, so that light and air poured over her. One night when her fever and rash were at their height she kicked the bedclothes off and lay naked for some time till found so by her mother. There was no ill result. The rash did not go in. There were no pulmonary complications. Three days after the rash first appeared her tongue was clean, her appetite good, and she was playing with her toys. This quick return to health, as well as an easy time while rash and fever were on her, was in marked contrast to cases treated in what one would call a "well-ventilated" room; it was marvellous as compared with cases treated by warmth and stuffiness.

The above "experiment" was carried out by the mother. From what I read in my books, none of recent date, I would have hesitated to expose a case of measles so freely to currents of air and floods of daylight.

This case occurred at a time when the epidemic was at its height. In view of some articles recently in the BRITISH MEDICAL JOURNAL I should add the mother was giving cold water when I was called in.

The patient's younger sister took measles shortly after, and in a hot kitchen looked ill and coughed incessantly. At my suggestion she was given the same environment as the elder child had enjoyed, and with happy result. A cough mixture with paregoric, which was indicated, lay practically untouched, as the mother said the cough had almost ceased after the patient was transferred to the airy room.

—I am, etc.,

CHARLES J. HILL AITKEN, M.D.

Kilnhurst, nr. Rotherham, Aug. 31st.

SENIOR SURGEON COMMANDERS AND THE ADMIRALTY.

SIR,—The case of the senior surgeon commanders of the Naval Medical Service has been very ably represented by the British Medical Association, and your leading article of July 8th (p. 52) has placed all the salient points before members of the profession.

The Admiralty, by its curt refusal to remedy the grievances, and by its unjust treatment of those medical officers whose long and good service might, at any rate, have been thought worthy of some consideration, has shown that nothing less than pressure by the profession is necessary in order that these grievances may be removed and that regulations under which medical men elect to join the navy may not be treated as "scraps of paper." The only way in which pressure can be exercised is by medical men refusing to enter the service, and it will be the only way that will be understood by their lordships or the powers that be, whether bureaucrats, autocrats, or our own complacent people in their armchairs at the Admiralty, and until such pressure is exercised things will go on in exactly the same way.

But, surely, Sir, having placed the matter so ably before the profession, it is somewhat inconsistent for the JOURNAL to continue to insert Admiralty advertisements for medical officers for short service. If the conditions of the service were what they ought to be it would not be necessary to resort to this method of obtaining medical officers, and if the Admiralty can obtain men in this way it will not care about any warning from the British Medical Association.

I hope, therefore, that the BRITISH MEDICAL JOURNAL will not insert any further advertisements until the Admiralty has seen fit to mend its ways, to compensate those medical officers so unfairly retired before their time, and to give some guarantee that regulations shall not be treated as "scraps of paper."

The following is an extract from the Regulations for the entry of candidates for commissions in the Medical Department of the Royal Navy:

"Fleet Surgeon, Staff Surgeon, and Surgeon:
"Will be compulsorily retired as follows: At the age of 55, or at any age, if he has not served for five years."

This is taken from the Regulations, dated June, 1890, under which those surgeon commanders who have been recently retired under the new order joined.—I am, etc.,

EXPERTO CREDE.

Obituary.

SIR JAMES AFFLECK, LL.D., M.D., F.R.C.P., F.R.C.S.EDIN.,

Consulting Physician, Royal Infirmary, Edinburgh.

By the death of Sir James Ormiston Affleck, Edinburgh has lost one of her most skilled, highly honoured, and well-beloved consulting physicians. For some months his friends had observed signs of failing health, but more recently Sir James was able to be about and was to have attended a consultation in the country on September 25th. His death in the end was sudden. He passed away in his sleep in the early hours of the morning of Sunday, September 24th. He exhibited in a high degree all the best features which went to construct the character of the physician of the later Victorian period—quiet dignity, courtly manners, knowledge founded upon close observation of clinical symptoms and upon a faculty of intuition, real sympathy, and unhurried advance to a treatment carefully thought out and all-embracing in its scope. At the same time no one knew modern advances in medicine better than Sir James Affleck, and no one could apply them more safely and satisfactorily and always with a touch of restraint, which was not without power. He could more than hold his own with the best of the Georgians, but his nature was not one in which "holding his own" had any personal significance, for no one was more unassuming and more ready to pay attention to every expression of opinion from another physician. He was essentially the physician's physician and the profession's favourite, and in his time he cheered countless sick beds amongst his brethren. When a well-known doctor in Edinburgh and neighbourhood was ill one had scarcely to ask whether Affleck had been to see him; it was taken for granted, so sought after and so helpful were his ministrations. In medical circles, in particular, his passing will be deeply felt.

James Ormiston Affleck was born in 1840 in the Stockbridge district of Edinburgh, not far from 38, Heriot Row, his home for many years and the place of his death. He studied at the university in his native city, and graduated there as M.B. and C.M. in 1867 and as M.D. two years later. In 1869, also, he assisted Sir Douglas Maclagan, Professor of Medical Jurisprudence and Public Health, in his teaching. In the years following he began to lecture on the practice of medicine in Surgeons' Hall, and was elected assistant physician to the Royal Infirmary (in charge of the fever wards). He was elected a Fellow of the Royal College of Physicians in 1875, and at the time of his death his name was third in order of seniority on the Roll. He had already (in 1869) become a Fellow of the Royal College of Surgeons of Edinburgh.

In 1885 he became a full physician and a lecturer on clinical medicine in the Royal Infirmary, and during his term of office there he attracted many of the more thoughtful and earnest type of student to his wards and teaching; and so impressed were they with what he had to give them that they began after graduation to return more and more to him for advice. In this way he built up the large and important consulting practice which continued with him to the very end. He was also in touch with the University, acting from time to time as examiner in medicine and clinical medicine. On his retirement from the acting staff of the infirmary he was appointed one of the consulting physicians, and began to act for a time as physician to the City Hospital for Infectious Diseases. He was also physician to the Royal Edinburgh

Hospital for Incurables, and at the time of his death was on the committee of management. Sir James Affleck was a member of the Medical Board for the Royal Edinburgh Asylum for the Insane, and for some years he acted as consulting physician to the Royal Maternity Hospital.

To all these public institutions he gave freely of his time, skill, and energy. Thus, he had a great deal many years ago to do with the founding of the Longmore Hospital (for Incurables); but he probably did most of all for the Royal Infirmary, being on the board of management, playing a part (always an unassuming one) in the various extensions and improvements, securing a balneological department, watching over the welfare and housing of the nurses, and striving ever for efficiency and economy. His connexion with the Royal College of Physicians of Edinburgh was also long and helpful. He was for many years an examiner for the licence and the membership, and an active member of the Library Committee: he was for a long time on the Council of the College, and had he been less retiring than he was he would almost certainly have occupied the presidential chair. His self-effacement, however, was not always such as to enable him to escape the recognition which was so ready to come to him. In 1908 the University of Edinburgh conferred upon him the honorary degree of LL.D., and three years later he received from His Majesty King George the honour of knighthood, to the great satisfaction of his many friends. He occupied the presidential chair of the Edinburgh Medico-Chirurgical Society from 1905 to 1907. He was a member of the Edinburgh Branch of the British Medical Association, was vice-president of the Section of Medicine at the Annual Meeting of the Association in 1896, when it met in Carlisle, and was president of the Section of Pharmacology and Therapeutics in 1898, when the Association held its Annual Meeting in Edinburgh. It was, again, perhaps his modesty which prevented him writing the textbook of clinical medicine which he could so well have done, but he preferred to teach by word of mouth, and therein he excelled. Sometimes, however, he took his pen in hand, as when he wrote many articles on medical subjects in the *Encyclopaedia Britannica* (ninth edition), when he gave contributions to the Medico-Chirurgical Society, and when he delivered his valedictory address as president of that society. He had always something to say that was worth listening to on these occasions, and his address on "Nature's object-lessons in disease" was novel, brilliant, short, and thought-provoking. His paper on "Lobar pneumonia" read in 1907 was the work of a master hand, and was specially powerful in respect of prognosis and treatment, as might indeed have been anticipated.

When one came into close contact with Sir James Affleck (writes a colleague), whether as student, as patient, as colleague, or as a practitioner in search for further light upon a difficult illness, it was his sympathy, his unfailing and unerring insight and understanding, and his resourcefulness which impressed one most, all of them combined with a shy reserve which was almost shrinking until the interest of the case or the strong feelings of the man brought his mind out into the open. He was not fond of what are called social occasions, but at home quietly no one could be more entertaining, for his mind was stocked with the best books and the best in books, and from such stores he gave freely to them who showed an encouraging interest. His counsel on all public matters, although he would not have admitted it, had extraordinary weight; and over and over again one traced beneficent decisions back to Sir James as their source. What he said "went." He was strongly although quietly religious, and one could not be long in his company without discovering this almost unconsciously.

He had a special interest in medical missionaries, and for many years acted as consultant physician in connexion with the Foreign Missions Committee of the United Free Church, although, again, few knew of this. He was likewise a great giver, disposing with wonderful freedom not only money but also time (often a more difficult gift) to almost everyone who asked. It has been said of him that he was almost an expert in helping lame dogs over stiles, but it remains to be pointed out that in so doing he seems to have cured also their lameness, for many of those whom he aided turned out great successes. No one who loved him could have wished for him a happier ending than that which he had when he passed away in charge of the age of 82.

Sir James Affleck was never married. Until her death a good many years ago his sister stayed with him. He is survived by an elder brother, a retired minister of the United Free Church, formerly of Auchtermuchty. The funeral at the Dean Cemetery, Edinburgh, took place on Thursday, September 28th.

THE sudden death is reported of Dr. GEORGE HENRY SMITH of Knutsford on September 25th. He graduated M.B., C.M.Aberd. in 1875, and was medical officer of the Knutsford Workhouse and District of the Bucklow Union. He had a seizure while attending a patient. Dr. Smith, who was a member of the Mid-Cheshire Division of the British Medical Association, accompanied Sir H. M. Stanley's expedition to the interior of Africa in search of Livingstone.

THE death is announced of Professor J. J. MACKENZIE, head of the Department of Pathology in the University of Toronto, at the age of 57. Professor Mackenzie was educated at the University of Toronto and graduated B.A. in 1886 and M.B. in 1889. After taking post-graduate courses at Berlin and Leipzig he returned to Canada, and for some years was bacteriologist to the Ontario Department of Health. He was appointed professor of pathology and bacteriology in the University of Toronto in 1900. During the war he served with No. 4 General Hospital (University of Toronto), and while at work in Salonica the symptoms apparently began of the obscure illness which was to prove fatal. It is supposed that he suffered from streptococcal septicaemia, possibly due to pyorrhoea. In the autumn of 1921 his condition became more serious and endocarditis developed. Professor Mackenzie was very popular with colleagues and students and was much beloved by those who knew him intimately.

THE death took place on September 2nd of Dr. ALEXANDER RIGHTER CRAIG, who had been secretary of the American Medical Association since 1911. Dr. Craig was born in 1863, and graduated B.A. in 1890 and M.A. in 1893 at Franklin and Marshall College, Pennsylvania, and M.D. at the University of Pennsylvania in 1893; in 1920 he received the honorary degree of D.Sc. from Franklin and Marshall College. Dr. Craig practised medicine in Philadelphia, and took a considerable part in the work of the American Medical Association, having been a member and chairman of many important committees. In 1911 he was elected secretary of the association, and from that time he devoted his life to its interests.

DR. ALAN KIDD, Superintendent of the Colombo General Hospital, died there on August 27th. He had recently been suffering from neurasthenia, and was on the point of going home on sick leave. He was educated at Queen's College, Belfast, where he held a medical scholarship, and graduated as M.B., B.Ch., and B.A.O. with honours in the Royal University of Ireland in 1909 and as M.D. of Belfast University in 1912. Entering the Colonial Medical Service, he was appointed to the island of St. Lucia in the West Indies, where he held the posts of resident surgeon of the Victoria Hospital, medical superintendent of the Lunatic Asylum, and bacteriologist, and after the war was appointed to Ceylon.

The Services.

DEATHS IN THE SERVICES.

Brigade Surgeon Lieut.-Colonel William Price, Madras Medical Service (retired), died at Coonoor, in the Nilgiri hills, of heart failure, on August 26th, aged 76. He was born at Limerick on December 18th, 1845, and educated at Queen's College, Belfast, graduating as M.D. and C.M. in the Queen's University, Ireland, in 1865. Entering the I.M.S. as assistant surgeon on April 1st, 1869, he attained the rank of brigade surgeon lieutenant-colonel on March 1st, 1893, and retired on April 7th, 1896. Before his retirement he held the post of Principal of the Madras Medical College, and Professor of Medicine therein.

Major William Joseph Tobin, R.A.M.C., was killed by a fall from his horse at Enniskillen on September 20th, aged 41. He was born on November 23rd, 1880, and, after taking the L.R.C.P.I. and L.R.C.S.I. in 1905, entered the R.A.M.C. as lieutenant on February 4th, 1908, attaining the rank of major after twelve years' service. He served in the war of 1914-18, was mentioned in dispatches in the *London Gazette* of August 15th, 1917, and held the acting rank of lieutenant-colonel for two years—from November, 1916, to December, 1918.

Medical News.

DR. B. H. SPILSBURY, whose lectureship in morbid anatomy and histology at St. Bartholomew's Hospital has recently been altered to a full-time appointment, and who in consequence is relinquishing the pathological work done by him on behalf of London coroners, has been appointed Honorary Pathologist to the Home Office in order that his services may still be available for criminal cases of special difficulty.

THE first of the new series of post-graduate lectures for the autumn session will be given in the West Lecture Hall, Royal Society of Medicine, 1, Wimpole Street, W.1, on Wednesday, October 11th, at 5 o'clock, by Sir James Galloway, on "The symptoms and treatment of certain unexplained granulomatous diseases." Further lectures have been arranged as follows: Dr. Eric Pritchard, "The feeding of infants from birth to the end of the second year"; Dr. Lakin, "Indigestion"; Mr. Zachary Cope, "Some important but ignored symptoms in acute abdominal disease"; Dr. S. A. Kinnier Wilson, "The old motor system and the new"; Mr. J. D. Mortimer, "The medico-legal position of the anaesthetist." Copies of the detailed programme can be obtained from the Secretary to the Fellowship at the above address.

IT is announced that the opening of the new biological department of McGill University, Montreal, next month will be attended by Sir Charles Sherrington, G.B.E., M.D., President of the Royal Society.

THE programme of lectures and discussions arranged by the Child-Study Society, London, has been issued. The meetings are held on Thursdays at 6 p.m., at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1. The session begins on October 5th with a lecture by Dr. C. W. Kimmins on "Visual humour." The three following meetings—October 19th and 26th and November 16th—will be devoted to the discussion of mental tests and the measurement of intelligence in children. On November 30th Dr. A. F. Tredgold will lecture on "Some problems relating to mental deficiency."

THE Scottish Board of Health has issued a report on the administration of the Sale of Food and Drugs Acts for the year 1922. This contains an abstract of the reports of public analysts for the previous year, and it is intended that a separate document of this kind should be published each year. The price of the report is 3s., and it is stated that unless there is a sufficient sale the publication in future years will not be permitted owing to the need for economy.

THE post-graduate lectures which have been given at the Manchester Royal Infirmary during the past few years will be continued this year, commencing on October 3rd. Besides the weekly lectures on general subjects given by the members of the honorary staff, a special course of six lectures on nervous disease will be given by Dr. Reynolds. This course will take place on Fridays, beginning October 6th.

As already announced, a national conference on the milk supply will be held in the Council Chamber of the Guildhall on Monday, Tuesday, and Wednesday, October 16th, 17th, and 18th. All who are interested in the milk question and who desire to attend this conference should write for the necessary application form to Miss H. M. Willans, Honorary Secretary, 3, Bedford Square, London, W.C.1, as admission is only by ticket obtainable on or before Thursday, October 12th; no tickets will be issued during the conference itself either at the Guildhall or at 3, Bedford Square. Accommodation is limited and early application is desirable; this applies both to members of the conference and non-members, to whom tickets will be issued in order of application, though members' tickets will be given out first.

THE next meeting of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Tuesday, October 10th, 1922, at 4 p.m., when Colonel L. W. Harrison, D.S.O., M.B., will open a discussion on "The relation of alcoholism to venereal disease." Each member and associate is at liberty to introduce visitors.

THE annual conference of the Guild of Health opens to-day (September 30th) at Girton College, Cambridge. The papers set down for discussion include one on "Auto-suggestion—its benefits and dangers," by Dr. William Brown, Wilde Reader in Mental Philosophy in the University of Oxford.

A FIFTH course of lectures for the diploma of Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, S.E.5. Part I of the course will commence on Tuesday, October 10th, at 2.30 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give the first of eight lectures on the anatomy of the nervous system; the other seven lectures will be delivered on succeeding Tuesdays at the same hour. Dr. F. Golla will deliver eight lectures on the physiology of the nervous system on Fridays at 2.30 p.m., commencing on October 13th. Eight lectures on psychology will be delivered by Dr. Henry Devine on Thursdays at 2.30 p.m., commencing on October 12th. Practical instruction and demonstrations will be given at each lecture. Part II of the course will follow in January, 1923.

DR. H. CRICHTON MILLER will give a course of ten lectures on elementary psychotherapy at the Tavistock Clinic for Functional Nervous Cases, 51, Tavistock Square, W.C.1, on Mondays, at 5.15 p.m., beginning on October 16th. Dr. J. A. M. Alcock will also give a course of six lectures on symbolism on Wednesdays, at 5.30 p.m., commencing on October 18th. The fee for the former course is £2 2s. for medical practitioners and £1 1s. for medical students, and for the latter course £1 1s. Tickets can be obtained in advance from the Honorary Secretary at the clinic.

THE annual service in connexion with the Guild of St. Luke will take place at St. Paul's Cathedral on Wednesday, October 18th, at 7 p.m., when the Rev. Lord Victor Seymour will preach. The offerings, after defraying the cost of the service, will be devoted to the Cathedral Repair Fund. Tickets may be obtained from the Guild Secretary, the Rev. H. Kirkland-Whittaker, M.D., Chaplain's House, Banstead Downs, Sutton, on sending stamped addressed square envelope.

THE Minister of Health has issued an Order (No. 1026 of 1922) rescinding the Health Visitors (London) Order, 1909, under which the Local Government Board made regulations for the qualification, appointment, duties, salary, and tenure of office of health visitors in London.

AT the Congress of Nursing and Social Medicine held at Bruges on August 7th an International Midwives Association was formed with the following members of council: Professor Frans Daels of Ghent, Dr. Putto of The Hague, Miss Emily Ford of London, and Mrs. van der Else of Haarlem.

AT a meeting of medical women held recently in Toronto preliminary steps were taken to form a Canadian Medical Women's Association. Dr. Sproule-Mason was appointed acting president and Dr. Isabel Ayre of Toronto was appointed acting secretary. Dr. Jennie Smillie attended the recent International Conference of Medical Women at Geneva (reported in the SUPPLEMENT of September 16th, p. 111) as a delegate from this Canadian association.

THE Medical Golf Cup Tournament at Llandrindod Wells was brought to a successful conclusion on Thursday, September 21st. The weather was delightful throughout the competition. Dr. Hunot (Pennard) and Dr. Baird (St. Leonards) were the finalists, the former winning on the last green. The cup (value 50 guineas) was presented by Lieut.-General Sir Herbert Watts, K.C.B., K.C.M.G. The competitors were entertained to dinner at the Hotel Metropole by the local committee on Thursday evening.

THE annual conference of the Chartered Society of Massage and Medical Gymnastics will be held in London on October 5th, 6th, and 7th. Lectures will be given at the Steinway Hall, Lower Seymour Street, Portman Square, by Sir W. Arbuthnot Lane, Mr. R. C. Elmslie, Sir Maurice Craig, and others. A demonstration will be given in the physico-therapeutic department of St. Thomas's Hospital, and a demonstration of gymnastic class work for curative purposes at the Chelsea College of Physical Education. The secretary of the society is Miss E. M. Templeton, 157, Great Portland Street, London, W.1.

THE inaugural meeting of the Guy's Hospital Pupils' Physical Society will be held on October 12th at 5 p.m., when Sir Charters Symonds will give an address on "Some Guy's surgeons and their writings," with portraits and other illustrations. Sir William Hale-White will be in the chair. We note with interest that a joint clinical and pathological meeting with the Physical Society of St. Thomas's Hospital is to be held on November 30th.

DURING 1921 596 cases of small-pox occurred in Switzerland, with 8 deaths. Of the patients 23 were vaccinated, 16 had been revaccinated, 359 were unvaccinated, and in 198 no information could be obtained. Of the 8 fatal cases 7 were unvaccinated and 1 revaccinated.

THE St. Louis Emergency Relief Committee for German and Austrian universities has made a donation of 30,000 marks to the University of Halle.

THE will of the late Sir Edward Malins, M.D., Emeritus Professor of Midwifery in the University of Birmingham, who died in July last, has been proved; he left net personalty of £30,458.

THE annual dinner for past students of the London Hospital will be held on Thursday, October 12th, at 7.30 p.m., at the Trocadero Restaurant, with Sir Arthur Keith, M.D., F.R.S., in the chair. The honorary secretaries for the dinner are Messrs. H. S. Souttar and E. C. Lindsay, from whom tickets can be obtained.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

QUERIES AND ANSWERS.

ASTHMA.

SIR JAMES DUNDAS-GRANT, replying to an inquiry regarding the development of asthma after the removal of nasal polypi (JOURNAL, September 23rd, 1922, p. 582), refers to a paper on nasal diseases in relation to asthma which he published in the *Practitioner* of June, 1913. He stated there that the incomplete removal of polypi had been known to wake up a quiescent asthma, and, indeed, that asthma was found sometimes to be relieved by removal of a small polypus, and quite unaffected by the clearance of large ones. The explanation was probably that a small polypus might, by intermittent contact, "tickle" the sensitive areas of the mucous membrane in the way that a large polypus in continuous and equable contact might fail to do. A small remnant of polypus might, therefore, act in the former way until it was completely removed.

INCOME TAX.

"X. G. S." writes: The assessor has added the rental value of my sanatorium to the amount assessed by him under Schedule D, although it is assessed under Schedule A; is this correct?

*** "X. G. S." does not say for what purpose the addition is made; presumably, in calculating the amount of profits to be assessed under Schedule D, the amount of the Schedule A assessment was deducted as the rent equivalent, and, consequently, if the *total* profits have to be ascertained, the two assessments must for that purpose be added together.

"P. and Q." were in partnership on the basis of equal shares, though "Q." accounted for two-thirds of the receipts; "Q.'s" share has been sold, and "P." is now separately assessed on the basis of half the profits of the former combined practice.

*** "P." is undoubtedly liable in respect of the past profits of the practice as now constituted, and he has a right of appeal to the Local—or, if preferred, to the Special—Commissioners, who would no doubt hear an accountant on his behalf if he wished. If the professional expenses borne by "P. and Q." were in the same ratio as their cash receipts then it is clear that "P.'s" practice is only one-half as profitable as that formerly carried on by "Q." On any other hypothesis the facts must be gone into in detail somewhat as follows. If "P.'s" gross earnings were £*x*, and £1,000 and his expenses £*w* and "Q.'s" expenses were £*w*, then "P.'s" assessment should bear the same ratio to "R.'s" assessment as £1,000 − £*x* bears to £2,000 − £*y*. At the same time "P." will, of course, understand that he can appeal only in respect of his own assessment, and that he may have to confine himself to showing what is the average profit of the "P." practice, without direct reference to "R.'s" assessment, which, strictly, is not in issue. This he can do by taking the average profit as measured by the excess of the fees paid on account of his practice over his expenses.

THE PORTUGUESE RIVIERA.

DR. ST. GEORGE B. DEBELL GRAY, M.O. in charge of British Hospital, Oporto, writes: In answer to "M.D.'s" question (Medical Diary, p. 552) about the Portuguese Riviera for winter visitors, I think Lisbon perhaps would suit it most satisfactorily. Most Estoril people speak English and is a winter resort. Cintra is excellent also, but on account of the liability to mists. The cost of living in Portugal at present, on account of the exchange, is absurdly cheap; but no doubt English visitors would cause prices to rise if they came out in any numbers. The Portuguese are great bargainers, and always ask much more than they are prepared to accept. Hotels vary very much in accommodation, cleanliness, and culinary arrangements. At Mont Estoril they are supposed to be quite good. English visitors will have to shut their eyes to much, especially in the more rural parts of the country. Sanitation frequently leaves much to be desired. I believe a good many English visitors go to Mont Estoril during the winter, so that his patient need not feel isolated. In addition, it is within easy reach of Lisbon, which is a fine modern city. Last month my wife and I put up at a first-class hotel in Lisbon for the inclusive charge of 10s. per day each; this I remark just to give some idea of prices.

Portugal is a very beautiful country with many historic associations, especially for the British. The Portuguese are an extremely courteous race and expect to be treated with politeness, especially in their own country. They are most considerate to strangers, but resent being looked upon as foreigners by British and other visitors to Portugal, as is too often the case. My relations with them have always been the pleasantest, and I have received nothing but courtesy and kindness from them in all my dealings. Many speak English, more speak French. For further details I would refer to the following works by Dalgado: *The Climate of Portugal*, Lisbon, 1914; *The Climate of Lisbon, Mont Estoril, and Cintra*, London, 1934; *Notes on the Climate of Mont Estoril and the Riviera of Portugal*, Lisbon, 1908. They will probably be in several public libraries, and almost certainly in the library of the British Museum. I shall be very glad to give any further information.

LETTERS, NOTES, ETC.

HERPES WITH FACIAL PARALYSIS.

DR. J. OWEN WILLIAMS (Glandyfi, Cardiganshire) writes: As bearing upon what Dr. J. F. Gordon writes (September 16th, p. 538), I may say I have during this last month had two cases of herpes in youths over the regions which he names (but perhaps not so extensive facially), and each has completely recovered. They were both on the left side. It is possible that the age of his patient—72 years—may have made him more liable to the facial paralysis.

A VACUUM FLASK FOR WARMING GAS IN PERITONEAL INFLATION.

DR. F. HERNAMAN-JOHNSON (London, W.) writes: I regret that in describing a method of warming CO_2 for pneumoperitoneum (footnote to report of Glasgow discussion, BRITISH MEDICAL JOURNAL, September 16th) I omitted to say that I got the idea of the thermos flask from seeing Dr. C. T. W. Hirsch use one in his anaesthetic work.

URINE TESTS.

DR. G. WASHINGTON ISAAC (London, W.C.) writes: Some inconvenience arises when using Fehling's solution (two bottles) owing to the fact that the stoppers of the bottles become fixed by the crystals that form around them; these crystals, by hygroscopic or capillary action, draw the fluid up and it runs down the outside of the bottle and makes a mess. The application of soft or hard paraffin to the washed and dried stoppers prevents them for a time from becoming fixed, but interferes with a smooth flow of the fluid over the edge of the lip, so that it is impossible to measure a small quantity accurately. For albumin I chiefly use acetic acid, brine, and heat, and here again I am troubled by the crystals of sodium chloride which form all around the stopper of the drop bottle and interfere with the free passage of the solution, and if one greases the stopper the solution will not drop. Perhaps a chemist will be good enough to say whether these inconveniences could be removed by the addition of glycerin without upsetting the accuracy of the tests.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *128*.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

Professor G. M. Robertson, M.D., F.R.C.P.Edin., President.

DISCUSSION ON THE TREATMENT OF NEURO-SYPHILIS.

INTRODUCTORY PAPER

BY

Sir JAMES PURVES-STEWART, K.C.M.G., C.B.,
Senior Physician to the Westminster Hospital.

Preliminary Considerations.

Before attacking the main subject of our discussion—namely, the treatment of neuro-syphilis, it is convenient to clear the ground by a few preliminary conceptions.

First, what do we mean by neuro-syphilis? Neuro-syphilis does not mean the mere presence of nervous or mental symptoms in a syphilitic patient. It comprises only such nervous or mental symptoms as are actually due to the syphilitic organism or its toxin—a totally different affair. Let me make this clear by a few simple examples. A syphilitic patient may show signs of gross organic disease of the spinal cord or brain or meninges, or he may develop mental symptoms of various sorts. These nervous or mental symptoms are sometimes of syphilitic origin—for example, gummatous disease of the brain or spinal cord, tabes dorsalis, paralytic dementia, etc. But he may also have nervous or mental symptoms quite independently of his syphilitic infection. Diseases such as hemiplegia, epilepsy, manic-depressive insanity, and dementia praecox can occur in syphilitic and in non-syphilitic patients alike.

It has long been recognized that the nervous system and its meninges may be invaded by syphilitic lesions at quite a short interval, even within a few weeks, after the original syphilitic infection. Generations ago our medical forefathers were familiar with the headaches of so-called secondary syphilis. This clinical fact they chronicled without explaining it. We now know that such headaches are the sign of a syphilitic meningitis. The old classification of syphilitic phenomena into primary, secondary, tertiary, and post-tertiary stages has had to be modified. For example, it is now recognized that gummata, which we were once taught to regard as typically "tertiary" lesions, can occur within a few weeks after infection, during the so-called "secondary" stage. Moreover, certain degenerative diseases, like tabes and paralytic dementia, which were formerly not considered as syphilitic at all, are now universally admitted as due to the disease.

In untreated cases of syphilis, even in the absence of clinical nervous or mental phenomena, Plaut, Dreyfus,[6] and others have shown that pathological changes occur in the cerebro-spinal fluid in from 80 to 85 per cent. of all "secondary" cases, coincident with the appearance of a positive Wassermann reaction in the blood. And even in cases which have been energetically treated, from 20 to 25 per cent. have pathological changes in the cerebro-spinal fluid, indicating the presence of a syphilitic meningeal reaction. Fortunately in most cases this is a transient affair, and is not necessarily followed by permanent neuro-syphilis. The high percentage of early meningeal reactions in syphilis has led some observers to the conclusion that of late years, especially since the introduction of modern methods of treatment, neuro-syphilis is becoming more frequent. I am strongly inclined, however, to agree with Fordyce and Rosen[9] that this increase is apparent rather than real. It can be readily explained by the more accurate knowledge which we now possess of the disease, together with our more systematic examination of patients by modern methods, including especially the examination of the cerebro-spinal fluid. Syphilitic lesions in the central nervous system also occur during later stages of the disease. These are probably due to spread from infective spirochaetal foci in lymph glands, blood vessels, peripheral nerves, and so on, reaching the central organ or its meninges along perivascular, perineural, and periradicular lymphatics.

Discarding, then, the old classification of syphilitic lesions, according to the time of onset of the infection, into primary, secondary, tertiary, and post-tertiary (or meta-syphilitic), we prefer to adopt the pathological classification into meningo-vascular syphilis on the one hand and parenchymatous neuro-syphilis on the other, or combinations of these two.

Under meningo-vascular neuro-syphilis we include gummatous inflammations of vessel walls and of cerebral meninges, gummatous tumours, also syphilitic arteritis and peri-arteritis of the brain and meninges, together with the occasional development of secondary vascular occlusions. These morbid conditions may occur either singly, successively, or simultaneously, and at any phase of the disease.

By parenchymatous neuro-syphilis we mean a toxic, neuronic degeneration or decay, generally late in onset, exemplified in such maladies as tabes dorsalis, paralytic dementia, primary atrophy of the optic or auditory nerves, various other degenerative diseases of the spinal cord and other parts of the central nervous system.

Neuro-relapses.

The so-called neuro-relapses or "neuro-recidive" are curious outbursts of neuro-syphilis, partly meningo-vascular, partly parenchymatous. These are precipitated by certain forms of treatment, especially after insufficient treatment by arsenobenzol compounds. Drugs of this sort appear to produce their beneficial effects by dissolving the spirochaetes. But whilst so doing, and giving rise to a local inflammatory reaction in the immediate neighbourhood, a general effect may also be produced throughout the body owing to a sudden flooding of the circulation with the endotoxins of the slain spirochaetes. Such endotoxins may attack the brain or meninges, producing a neuro-relapse.

The mildest clinical variety of neuro-relapse consists in headache, vertigo, and tinnitus, often with insomnia, all of which symptoms are probably due to a basal meningitic reaction. A second variety comprises local cranial nerve lesions, especially of the optic and auditory nerves. Or still more severe symptoms may occur, including mental confusion, epileptic fits, dementia, and even coma.

Such neuro-relapses (all of them accompanied by well-marked changes in the cerebro-spinal fluid) occur about six weeks after the last dose of a salvarsan course. They demand renewed and energetic antisyphilitic treatment.

Diagnosis of Neuro-syphilis.

What are our diagnostic criteria for the establishment of a diagnosis of neuro-syphilis? They may be clinical and neurological on the one hand (impairment of light reaction in the pupil being perhaps the commonest physical sign), or they may be serological on the other, shown by examination of the blood and cerebro-spinal fluid. These latter comprise a positive Wassermann reaction in the blood and cerebro-spinal fluid, also pleocytosis of the cerebro-spinal fluid, with positive globulin and gold reactions. Better still, we may have a combination of clinical and serological signs. In order to exclude neuro-syphilis, not only must the clinical signs but also the cerebro-spinal fluid be proved negative.

It is important to remember that a normal condition of the cerebro-spinal fluid, by itself, does not necessarily exclude neuro-syphilis. As with any other physical sign, a negative observation is of less diagnostic value negatively than a positive result is positively, in establishing a diagnosis. Thus, for example, we may meet with normal cerebro-spinal fluid in many cases of syphilitic vascular disease of the brain, also in non-progressive cases of tabes and in other spinal cord degenerations of undoubted syphilitic origin. On the other hand, a patient who is clinically healthy and free from all symptoms of nervous or mental disease may show well-marked syphilitic changes in his cerebro-spinal fluid. Such changes may coexist with either a positive or a negative Wassermann reaction in the blood. The presence of syphilitic changes in the cerebro-spinal fluid does not always have the same significance, for whilst in most cases they indicate active syphilitic lesions of the nervous system, in other cases they may merely indicate the normal reaction of the meninges to a threatened invasion. All this shows how careful we must

be in our diagnosis before embarking upon any scheme of treatment.

Although this discussion is specially directed to neuro-syphilis and its treatment, we must never lose sight of the fact that neuro syphilis is only part of the greater subject of syphilitic infection of the body as a whole.

Preventive Treatment.

The prevention of syphilis and other venereal diseases is now the object of a great crusade by energetic rival societies. This is not the moment to open the question as to the relative merits of preventive measures locally applied before undergoing the risk of venereal infection (as advocated by one organization) *versus* early treatment, also locally applied, shortly after the risk has actually been incurred (as advised by the other society). Partisans of both parties may be present here, and it is not for us to enter on a discussion, however interesting, which would lead us too far from our own particular goal.

As to the special prevention of neuro-syphilis in patients who have already acquired a syphilitic infection, we must frankly recognize that, once a blood infection has occurred, there is no means by which we can fence off any particular system or organ of the body or prevent the infection from reaching all parts of the circulation, including that of the central nervous system. Our first and urgent duty, from the preventive standpoint, is to treat assiduously the general syphilitic blood infection until the patient becomes free from all clinical and serological signs. If such treatment proves successful, the nervous system will share in the general disinfection of the whole body.

Neurotropic Organisms or Syphilotropic Nervous Tissues?

It is interesting to inquire what are the factors which determine why some syphilitic patients develop neuro-syphilis, whilst others, apparently infected with equal severity and treated with equal assiduity, escape neuro-syphilis. And are any of these factors preventable?

The problem may be attacked from two different sides. Some observers argue the existence of a special strain of spirochaete which is "neurotropic"—that is, having a special affinity for the nervous tissues. In support of this view the occasional occurrence of conjugal neuro-syphilis is advanced. There is also Plaut's well-known example of seven glass-blowers all of whom were infected from the same source with chancre of the lip; ten years later, out of five who came under observation, four had developed either tabes or paralytic dementia. Yet, notwithstanding experimental work on animals by Levaditi and Marie and others, the evidence of a special neurotropic strain of spirochaete is at present unconvincing.

Another possibility is that we have to do with a variable individual reaction of the nervous issues in different individuals, so that in some individuals, once they have acquired the general infection, the nervous system is specially vulnerable or "syphilotropic." Whether this supposed vulnerability is inborn or acquired is again a separate problem. Many years ago Edinger propounded his exhaustion theory, according to which it is those nerve tracts that have been specially overworked which are supposed to be picked out by the syphilitic toxin and to degenerate. In support of his thesis he pointed out the relative frequency of tabes among syphilitic individuals who specially overexerted their limbs, and the frequency of paralytic dementia amongst brain workers. Edinger therefore advised every syphilitic patient carefully to avoid physical overexertion or fatigue, so as to escape tabes, and similarly to avoid mental overstrain, so as to avoid paralytic dementia. This counsel of perfection is difficult to carry out, for who can judge exactly how much in the way of physical or mental effort constitutes overexertion?

Varieties of Syphilitic Lesions in the Central Nervous System.

We have to recognize two distinct classes of lesions.

Firstly, we have meningo-vascular lesions, including gummata and syphilitic endarteritis. Gummata arise in non-nervous tissues and compress or invade the brain or spinal cord. Diffuse gummatous infiltrations may also occur in the meninges or around the blood vessels of the brain or cord. Syphilitic endarteritis frequently culminates in thrombosis of the affected artery, producing an area of infarction or softening in the brain or cord, followed by corresponding sclerosis.

Secondly, there is the group of parenchymatous nervous diseases, characterized by primary degeneration of various special nerve cells and nerve tracts. These diseases are neither the direct effects of gummatous deposits nor of arterial disease (although lesions of this sort frequently coexist), but they result from the direct action of the syphilitic toxin upon the nervous structures. Primary degenerative lesions of this sort may be followed by sclerotic overgrowth of the neuroglia in the affected tracts, independent of any meningeal or vascular lesion. This primary degenerative group includes such diseases as paralytic dementia, tabes, certain forms of primary optic atrophy, Erb's syphilitic paraplegia, and certain other forms of organic nervous disease occurring in the children of syphilitic parents.

These two varieties of syphilitic lesions differ widely in their respective prospects of response to treatment. Gummata, whether compressing or invading the nervous structures, can be brought to a standstill by medicinal remedies, and if the nervous structures have only been compressed and not actually destroyed recovery may be complete. If, however, a gumma leaves behind it a fibrous cicatrix, or if actual degeneration of nerve tracts has occurred within the central nervous system, a certain amount of permanent damage inevitably remains, even after the original syphilitic process has subsided. In the case of syphilitic arterial diseases, the lesion in the arterial wall may yield to treatment; but here also, if thrombosis has already occurred, producing an actual area of infarction, the damage to the structures within the territory of the diseased vessel is necessarily permanent. The prognosis, therefore, of syphilitic softenings is relatively bad. Secondly, with regard to the primarily degenerative diseases, such as tabes and paralytic dementia, these have hitherto tended to pursue an irregularly progressive course, generally uninfluenced, or at the most only slightly alleviated, by the most assiduous antisyphilitic treatment. Sometimes, however, these diseases, after attaining a certain degree of intensity, appear to come to a spontaneous standstill. Such arrest may last for years, although there is always a danger that the disease may subsequently light up again to renewed activity. We have also to bear in mind that in the case of degenerated nerve cells and nerve fibres it is only those which are outside the central nervous system, and which possess a neurilemma, that are capable of regeneration. Within the central nervous system itself, once degeneration of the nerve elements has occurred, it is vain to look for their regeneration. Therefore in parenchymatous neuro-syphilis the most we can hope for is to arrest the degeneration at the stage which it has already reached and to prevent the syphilitic toxin from attacking fresh neuronic systems.

In other words, meningo-vascular syphilis is far more amenable to treatment than parenchymatous neuro-syphilis, and the prognosis in any individual case depends not only on our actual methods of treatment but upon the relative proportions in which these two varieties of lesions are intermingled.

I have ventured to direct your attention to the foregoing points in the neuro-pathology of cerebro-spinal syphilis because it is essential in the treatment of the various types of the disease to have a clear idea of what exactly we are attacking and of how much improvement is anatomically possible, supposing the syphilitic infection be successfully removed. Let us now turn to the problem of practical therapeutics.

TREATMENT OF NEURO-SYPHILIS.

The modern treatment of neuro-syphilis does not imply that we should discard any of the older remedies which for so many years have been proved of value. The classical method of attacking syphilis is by means of mercury, supplemented in certain cases by the use of iodides. Excellent results have been obtained in the past, chiefly in the gummatous and meningo-vascular types of the disease, as every neurologist can testify. In recent years the introduction of the arsenobenzol group of drugs, of which the most notable examples are salvarsan and neo-salvarsan, has added powerful weapons to our therapeutic armoury. Most physicians agree that salvarsan produces its best results when combined with mercurial treatment.

Besides deciding in each particular case which drug or combination of drugs he will employ, the physician has also

to consider the channel of administration, whether by the mouth, by inunction or fumigation into the skin, or by injections—hypodermic, intramuscular, intravenous, or intrathecal. In making his decision the physician is influenced by various factors, such as the acuteness or chronicity of the symptoms, the amount of personal supervision that is attainable, the desirability from the patient's point of view of rendering the treatment as little conspicuous as possible (this is often a special drawback to mercurial inunction), and upon the perseverance or otherwise with which the patient, if left to himself, is likely to carry out a long course of treatment.

The present-day treatment, by a combination of salvarsan and mercury, as employed in ordinary syphilis, is applicable to neuro-syphilis as well, bearing in mind certain precautions. Thus, for example, in neuro-syphilis most of us consider it risky to give salvarsan in the full intravenous dose of 0.6 gram. It is safer to give repeated doses of not more than 0.3 gram. In this way not only do we diminish the chances of acute arsenical symptoms, but the series of smaller doses is less likely to be followed by the alarming group of intracranial syphilitic symptoms constituting the neuro-relapses to which we have already referred. Further, patients with renal or well-marked cardio-vascular disease are, as a rule, unsuitable for salvarsan medication. The very rapidity with which the drug acts in removing gummatous deposits may be a source of danger—for example, in the neighbourhood of diseased vessel walls.

Results of Treatment in Gummatous and Meningo-vascular Syphilis.

Gummatous lesions are those which respond best to ordinary antisyphilitic treatment. Time does not permit of detailing clinical examples, such as can be readily found in the experience of most of us. In a former paper I have already recorded a number of illustrative cases.

With regard to syphilitic arterial lesions within the nervous system, we are all in agreement that the amount of recovery depends on whether the syphilitic endarteritis is attacked in time, so that the lumen of the artery is restored before thrombosis has actually occurred, in which case complete recovery may be obtained. If, on the other hand, thrombosis has already occurred in the diseased vessel, leaving an infarct with destruction of nerve tissues, in this case no treatment can restore the necrosed area.

As regards the gummatous and meningo-vascular types of neuro-syphilis and their prospects of successful treatment by the ordinary antisyphilitic remedies, there seems little room for differences of opinion. The results will vary according to the stage at which such treatment is carried out.

Treatment of Parenchymatous Neuro-syphilis.

When we come to the parenchymatous group of neuro-syphilis the problem is altogether different. This group of maladies comprises primary degenerations varying in type according as the syphilitic toxin exercises its selective action upon one or other neuronic system. Thus in one case we have the exogenous fibres of the posterior columns picked out, producing tabes dorsalis; in another the lateral columns are mainly selected, as in Erb's syphilitic paraplegia; in a third we have primary optic atrophy; whilst in a fourth the cortical nerve cells with their intercommunicating tangential fibres are picked out, as in paralytic dementia. We also meet with mixed cases—as, for example, where tabes dorsalis is combined with optic atrophy, or where tabes is associated with paralytic dementia, constituting the well-known tabo-paralysis.

This class of diseases is singularly resistant to treatment, and for several reasons. First, as we have already seen, regeneration of destroyed nerve elements within the central nervous system (as contrasted with the peripheral nerves) does not occur. The most we can hope for, in the central nervous system, is to arrest the degeneration at the stage which it has already reached and to make the most of those nerve cells and fibres which survive. Another important reason for the resistance to treatment shown by parenchymatous neuro-syphilis is the peculiar situation of the syphilitic parasites with reference to the blood stream. The spirochaetes are situated in the nerve elements themselves. Now, the circulation within the central nervous system differs from that in other parts of the body, inasmuch as the capillary walls are not in contact with the nerve elements but are separated from them by perivascular lymph spaces. Moreover, each nerve cell has its pericellular lymph space. These lymph spaces are irrigated by the cerebro-spinal fluid, which in its turn is reabsorbed into the blood through the arachnoidal villi. Thus medicinal substances destined for the central nervous system have to gain access to the cerebro-spinal fluid before they can reach the nerve cells or the spirochaetes within them.

The cerebro-spinal fluid is secreted by the glandular cells covering the choroid plexuses within the cerebral ventricles. These secreting cells have a selective action, permitting comparatively few substances to pass from the blood stream into the cerebro-spinal fluid. Amongst them is alcohol, which, if administered by the mouth in sufficient quantities, can be detected in the cerebro-spinal fluid; or, again, urotropin taken by the mouth can be shown to yield formic aldehyde in the fluid. To other substances the choroidal ependyma is impervious, notably to mercurial and arsenical salts, which at the present time are our most important spirochaeticidal drugs. Thus, no matter how assiduously the general circulation be drenched with mercury or salvarsan, the choroid plexuses do not transmit these drugs into the cerebro-spinal fluid nor allow them to reach the nerve elements. And so, whilst gummata may be removed from the meninges and interstitial tissues by remedies circulating in the blood stream, and although syphilitic endarteritis may clear up, those nerve cells and nerve fibres which are being destroyed directly by the syphilitic organism and its toxin, entrenched behind the pericellular and perivascular lymph spaces, continue to decay.

Whatever be the true explanation, it is commonly agreed that the results of treatment of parenchymatous syphilis, whether by oral, intramuscular, or intravenous routes, have been disappointing. Accordingly, neurologists have been casting around for other and more efficient methods of treatment.

Pyrexial Treatment of Neuro-syphilis and especially of Paralytic Dementia.

It has long been a matter of clinical experience that general paralytics are often benefited as regards their symptoms if they happen to become infected by an intercurrent acute fever such as erysipelas or enteric fever. To inoculate a patient with a serious specific fever of this sort, however, is neither practicable nor judicious. Other means have accordingly been suggested to induce a harmless pyrexia accompanied by leucocytosis and other blood changes, as a consequence of which it is hoped to modify and even to destroy the syphilitic organism and its toxin.

For this purpose von Wagner[25] some years ago began to treat cases of paralytic dementia by repeated hypodermic injections of Koch's tuberculin, commencing with doses of 0.5 to 1 mg., waiting a couple of days, and increasing the dose to 5 or 7 mg., then gradually raising it to 10, 20, or even 30 mg. A sufficient quantity was given to induce a temperature of 102° F. Friedländer and others have recorded a number of cases thus treated and have claimed encouraging results. In several of Friedländer's cases not only did the mental systems improve, but the pupillary reflexes are said to have returned and the knee-jerks, previously absent, reappeared. Personally I have not tried this treatment, for the reason that tuberculin is a two-edged weapon with a risk of lighting up latent tuberculous lesions elsewhere.

Another method is to give the patient an intravenous inoculation of blood obtained from another individual suffering from malaria. Thus v. Jauregg, by injecting subcutaneously 1 c.cm. of malarial blood withdrawn during the febrile phase of the disease, claims to have secured long remissions in 3 out of 9 patients with paralytic dementia.

A third and probably a safer method of inducing artificial pyrexia is by means of large intramuscular injections of sodium nucleinate, as specially studied by Donath.

Some years ago (in 1913 and 1914) I made a number of observations on this method of treatment, but with only moderately encouraging results.[26] Remissions in the mental symptoms were obtained, together with a diminution in the lymphocytosis of the cerebro-spinal fluid lasting for three to fifteen months, but in none of my six cases was there a permanent cure. Nor has Donath recorded any instance of permanent return to normal.

More recently Fischer and Wiechowski[8] have employed an albuminoid substance named "phlogetan." This is injected either subcutaneously or intramuscularly. They state that its action is more intense than that of nuclein, that it produces a fall of blood pressure and increase of pulse rate, but without fever. In paralytic dementia they claim similar but more active results with this remedy than with nuclein

In tabes treated by phlogetan combined with neo-salvarsan they record improvement, with subsidence of crises and of sphincter troubles.

Treatment by Quéry's Monkey Serum.

Quéry regards the syphilitic organism as polymorphic and the spirochaetal form as only one particular phase in its life-history. He prepares bouillon cultures from syphilitic sores and, after filtration through porcelain, injects the microbe-free syphilitic toxins into monkeys. From these in turn, four or five days later, when the Wassermann reaction in the blood has attained its height, he secures the blood serum. This monkey serum, after sterilization, is injected hypodermically into the human syphilitic patient daily in doses of 2 c.cm. for twenty-five successive days, being careful to see that an interval of at least a month has elapsed since any mercurial treatment has been employed. He also uses this same serum intravenously and, in cases of neuro-syphilis, intrathecally.

I have only had personal experience of Quéry's serum in a couple of cases; both of them gave negative results.

The first was a man of 45, with well-marked clinical signs of tabes, whose blood gave a positive Wassermann reaction and whose cerebro-spinal fluid contained 59 lymphocytes per cubic millimetre and also gave a strongly positive Wassermann reaction. After five intrathecal injections of monkey serum the physical signs were unchanged, the lymphocytosis of the cerebro-spinal fluid had risen to 77 cells per cubic millimetre, and the Wassermann reaction was strongly positive as before. In view of these findings and of the costliness of the serum, I did not feel justified in persevering with the treatment.

The second case was one of paralytic dementia in a man of 35, who had slight mental confusion, mild depression, Argyll Robertson pupils, no facial or lingual tremors, and absence of the knee-jerk and ankle-jerk on the left side only—an early case, apparently suitable for the treatment, and so considered by M. Quéry's colleague who supplied me with the serum. The patient's cerebro-spinal fluid contained 180 lymphocytes per cubic millimetre and gave a strongly positive (+++) Wassermann reaction. He was given 2 c.cm. of Quéry's serum subcutaneously twice daily. On the day before treatment was commenced the lymphocytosis had fallen to 76 cells per cubic millimetre. The treatment was then assiduously carried out daily for several weeks. A week later the cerebro-spinal fluid was re-examined; its cell content had fallen to 58.7 per cubic millimetre, whilst the Wassermann reaction was still strongly positive as before. The dementia, however, rapidly deepened, the temperature remaining subnormal, and the patient died four weeks after the commencement of treatment. The serum did not appear to exercise any appreciable benefit. On the contrary, one had the impression that the course of the disease was rather hastened. No autopsy could be obtained, the patient being of Israelitic race.

It would, however, be unfair to condemn this or any other method of treatment after so short a trial. Perhaps others here present may have had wider opportunities of using this very costly remedy (price about a guinea a dose); if so, their experience will be of value to us all.

Spinal Drainage.

Dercum[4] is of opinion that whatever good results have been attained by intraspinal therapy (which we shall presently discuss) are mainly due to the withdrawal of diseased cerebro-spinal fluid. He has accordingly introduced treatment by simple drainage of cerebro-spinal fluid, sometimes by itself, sometimes combined with intravenous salvarsan and mercurial inunctions. The patient is placed in the recumbent posture, lumbar puncture is done, and the cerebro-spinal fluid is allowed to escape all day long until some 70 or 80 c.cm. have come away. This procedure is with the object of washing out the syphilitic toxin from the cerebro-spinal subarachnoid spaces and cisternae. It does not profess to attack the spirochaetes in the brain tissue. Hoefer,[11] on somewhat similar lines, performs spinal drainage at the moment of intravenous salvarsan administration, in the hope that whilst the salvarsan is in the circulation as such, and before it has become decomposed into simpler arsenical salts, it may thus be induced to penetrate the nerve substance of the brain and spinal cord.

Personally as yet I have had no experience of this method of treatment, but suggestions from such a master as Dercum must always claim our respectful consideration. I therefore mention it in passing, in the hope that others here present may perhaps have had personal experience which they can pass on to us.

Intraspinal Treatment.

Many modern neurologists have adopted the plan of introducing remedies directly into the cerebro-spinal fluid. The credit of directing attention to this important principle belongs first to Browning and Mackenzie of Glasgow (*Journal of Mental Science*, July, 1909), who proposed the treatment of general paralysis by intraspinal injection of an autogenous salvarsanized serum. Later, and independently, Marinesco[15] of Bucharest in 1911, and our distinguished president of to-day, Professor George Robertson,[20] in 1913, actually carried out the treatment.

Subsequently Swift and Ellis[21] of the Rockefeller Institute in New York, following Marinesco, applied the same method in cases of tabes dorsalis. Later, Ravaut[16] of Paris introduced the plan of administering neo-salvarsan in minute doses directly into the cerebro-spinal fluid. Other modifications have since been tried—for example, the method of Byrnes,[7] who adds mercury perchloride *in vitro* to the patient's serum; or that of Ogilvie,[17] who similarly adds salvarsan; or again, that of Lafora[13] of Madrid, who adds both mercury and neo-salvarsan in suitable doses. The technique of these various intrathecal methods is more or less the same. A lumbar puncture is done in the ordinary way and the therapeutic substance is introduced through the needle, after withdrawing a certain quantity of cerebro-spinal fluid to make room for the remedy and also for purposes of control. In the intervals between the intraspinal injections the patient is assiduously treated with mercury and salvarsan.

Time does not permit of a detailed description of individual cases thus treated. Herewith I subjoin statistical tables of the results obtained in the cerebro-spinal fluid in a series of my own cases of tabes, paralytic dementia, and cerebro-spinal syphilis. These were personally observed and treated by intrathecal administration, either of the patient's own serum, salvarsanized by an antecedent intravenous injection, or of horse serum mercurialized *in vitro*.

My experience of intrathecal administration of salvarsan or neo-salvarsan directly into the spinal fluid, even in the minute doses advocated by Ravaut, is that it possesses no advantages over the other intrathecal methods. On the contrary, I have on two occasions seen it followed by a disastrous complication in the form of acute transverse lesion of the spinal cord—a result which I have never observed in cases treated by ordinary salvarsanized or mercurialized serum.

Mercurialized serum is sometimes specially useful in cases that are intolerant of arsenic, as in a patient of mine in whom salvarsan, even in the smallest dose, induced an intense exfoliative dermatitis.

Considerable difference of opinion has arisen amongst neurologists with regard to the usefulness of intraspinal therapy in neuro-syphilis. Thus, for example, Kaliski and Strauss[12] of New York condemn intraspinal therapy in paralytic dementia—a conclusion with which my own results are in agreement. But they also regard the intraspinal treatment of tabes by salvarsanized serum as of doubtful value. This is contrary to my own experience. In support of their conclusion they contend that the amount of arsenic present in salvarsanized serum is infinitesimal in amount and of no spirochaeticidal value. It seems to me, however, that they do not take into consideration the probability that it is not merely the arsenic *per se* but the antibodies which it calls forth in the blood that are the therapeutically active agents in the injected serum. Kaliski and Strauss also dispute the relative impermeability of the choroid filter to mercury and salvarsan, and believe that remedies reach the cerebro-spinal fluid equally well whether administered intravenously or intrathecally. Roberts[19] of Liverpool, however, has found no trace of arsenic in the cerebro-spinal fluid after intensive intravenous salvarsan treatment, whereas he has shown the presence of arsenic in 19 cases out of 29 one week after intrathecal injection.

Personally I have observed such encouraging results from intraspinal therapy in tabes and cerebro-spinal syphilis that I do not feel justified in discarding this method. In this conclusion I am supported by several other observers both in this country and in America. Schaller and Mehrtens,[21] comparing a series of 14 cases of tabes, 11 cases of cerebro-spinal syphilis, and 1 case of paralytic dementia treated by intravenous and intramuscular therapy alone, with another series of 42 tabetics, 21 cases of cerebro-spinal syphilis, and 12 cases of paralytic dementia treated intraspinally by salvarsanized serum, are of opinion that intraspinal treatment is definitely superior to intravenous and intramuscular methods, especially in its effectiveness in clearing up the cerebro-spinal fluid: 48 per cent. of their cases became clear through the use of intraspinal methods as compared with 19 per cent. with the old intravenous method.

TABLE I.—*Intraspinal Serum Treatment of Tabes.*

Case No.	Sex and Age.	Before Treatment. Blood W.R.	Before Treatment. Blood Cells.	Before Treatment. C.-S. Fluid. W.R.	No. of Injections.	After Treatment. Blood W.R.	After Treatment. Blood Cells.	After Treatment. C.-S. Fluid. W.R.	Remarks.
1	M. 41	+	26.7	++	7	+	16.7	+	
2	M. 64	+++	487.0	+++	4	++–	35.4	+––	Died of Addison's disease (confirmed histologically).
3	M. 53	–––	137.0	+++	10	–––	10.4	–––	Seen 7 years later; no ataxia; knee and ankle jerks still absent.
4	M. 44	+++	322.6	+++	6	–––	24.1	–––	
5	M. 32	+––	33.0	+++	6	–––	2.4	+++	Examined 7 years later: no fresh symptoms.
6	M. 52	–––	10.1	+++	6	–––	10.7	+++	
7	M. 52	–––	44.0	+	6	–––	4.0	–––	
8	M. 45	+++	17.9	+++	5	–––	4.0	+++	
						–––	23 8	+++	Recurrence of lightning pains with pleocytosis of C.S.F.
9	M. 42	+++	72.5	+++	6	–––	17.1	+––	
10	M. 53	+––	251.0	+++	5	+––	6.0	+++	
11	F. 54	–––	21.4	+++	2	–––	44.0	–––	Treatment not persevered with.
12	F. 55	+	243.4	+++	7	+	37.6	+++	Clinically improved.
13	M. 41	–––	53.4	–––	5	–––	12.0	–––	
14	M. 44	–––	62.7	+++	4	–––	6.0	+	
							3 3	+	No fresh symptoms after 5 years.
15	M. 55	–––	25.7	+––	2	–––	25.4	–––	Died of cardiac ailure 2½ weeks after second treatment.
16	M. 42	+++	15.5	+++	5	–––	4.6	–––	
17	F. 52	+++	93.6	+++	2	–––	32.4	+––	Treatment not persevered with.
18	M. 35	–––	120.0	+++	4	–––	5.0	++–	
							6.4	–––	No fresh signs 5 years later, but still had lightning pains.
19	F. 44	–––	50.7	++–	4	–––	18.7	+––	
20	F. 34	–––	313.0	+++	3	–––	3.1	–––	
21	M. 34	–––	205.9	+++	5		7.3	–––	Mercurialized horse serum.
22	M. 45	+	108.0	+++	4		13.3	+++	Mercurialized horse serum.
23	M. 44	+	18.7	+	3	–––	3.8	+––	
24	M. 52	+	54.7	+++	3	+	18.0	+++	Pains disappeared. Ataxia improved.
25	M. 38	+++	13.1	+++	2	++–	8.6	++–	Treatment not persevered with.
26	M. 45	+––	103.3	+++	5	+––	6.4	+––	
27	F. 55	–––	26.7	+++	3	+––	12.0	+++	Treatment suspended owing to cardiac feebleness.
28	F. 35	+	62.0	+++	2	+	32.0	+++	Treatment not persevered with.
29	M. 32	+	213.0	+++	8	+––	6.7	+––	
30	M. 50	–––	27.0	+++	3	–––	61.0	–––	Ankle-jerks previously absent, reappeared.
31	M. 36	+++	27.5	+++	5	+––	13.4	+––	
32	M. 51	+––	149.4	+++	5	±––	5.4	+––	
33	F. 55	+	162.7	+++	5	+	6.6	+++	
34	M. 45	+	6.4	+++	3	+	8.0	+++	Retention of urine and temperature 102° after injection.
	§	+	8.0	+++	2	+	4.0	+++	Bladder symptoms ceased. No fresh symptoms.
35	M. 29	±––	13.3	+++	3	–––	27.4	+_	Treatment not completed.
36	M. 68	+++	29.4	+++	5	+++	28.6	+++	
37	M. 37	–––	81.3	+++	3	–––	5.5	–––	
38	M. 39	+	12.0	+++	6	–––	7.3	+++	
39	M. 41	+	18.7	+++	5	+	17.3	+++	Improved.
40	F. 51	+±–	36.1	+––	5	–––	7.9	–––	A year later developed gumma of clavicle.
41	M. 57	–––	50.9	+++	4	–––	3.6	+++	(Case 42: Intolerant of salvarsan exfoliative dermatitis). Treated by mercurialized horse serum.
42	M. 37	+––	103.1	+++	7		28.9	+––	
43	M. 56	+++	48.6	+++	6	++–	16.9	++–	
44	M. 43	+++	141.3	+++	5	–––	10.6	++–	

* = Re-examined § = Second treatment.

TABLE II.—*Intraspinal Serum Treatment of Tabo-Paralysis.*

Case No.	Sex and Age.	Before Treatment. Blood W.R.	Before Treatment. Blood Cells.	Before Treatment. C.-S. Fluid. W.R.	No. of Injections.	After Treatment. Blood W.R.	After Treatment. Blood Cells.	After Treatment. C.-S. Fluid. W.R.	Remarks.
1	M. 41	+++	69.4	+++	3	+++	13.4	+++	Progressive mental deterioration.
2	M. 40	–––	48.1	+++	6	–––	23.2	+++	Progressive mental deterioration.
3	M. 40	+––	44.0	+++	6	–––	4.6	+––	Mental symptoms appeared 9 months later.
4	M. 40	+	17.4	+++	3	+	5.3	+++	Progressive mental deterioration.
5	M. 54	–––	123.0	+++	4	–––	6.9	++–	Mental symptoms 9 months afterwards.
6	M. 36	+	46.7	+++	6	–––	16.0	+++	*In statu quo.*

TABLE III.—*Intraspinal Serum Treatment of Paralytic Dementia.*

Case No.	Sex and Age.	Before Treatment. Blood W.R.	Before Treatment. Blood Cells.	Before Treatment. C.-S. Fluid. W.R.	No. of Injections.	After Treatment. Blood W.R.	After Treatment. Blood Cells.	After Treatment. C.-S. Fluid. W.R.	Remarks.
1	M. 42	+––	122.0	+++	6	–––	2 3.4	–––	Definite clinical improvement.
2	M. 41	+++	94.8	+++	7	–––	22.0	+	Mental symptoms disappeared; returned to business.
3	M. 42	+++	419.0	+++	6	+––	14.1	++–	Returned to work as schoolmaster.
4	M. 39	–––	271.0	++–	6	–––	1.4	–––	Mental symptoms cleared up; served in army.
5	M. 31	+++	51.0	+++	6	++–	8.9	+++	Cessation of fits; mental improvement.
		++–	9.8	+++	5	+––	15.6	+++	Transient mental improvement.
		+––	28.6	++–	5	–––	6.2	+––	Fits recurred; died 5 years after first series.
6	M. 40		52.0	+++	5*		21.3	+++	
7	M. 45	+	10.7	+++	6	+	5.0	+++	Remission in mental symptoms.

* Mercurialized horse serum.

My own cases corroborate the conclusions come to by Schaller and Mehrtens, that the most promising cases for intraspinal therapy are those of meningo-vascular neuro-syphilis, that of the parenchymatous group tabetic cases are relatively the most favourable, whereas paralytic dementia and optic tabes are generally unfavourable. Cases of tabo-paralysis, in my experience, do badly, in contrast with pure tabetics.

Cases of the intraspinal serum treatment of tabes, tabo-paralysis, and paralytic dementia are recorded in Tables I, II, and III.

The following cases are illustrative of *intraspinal treatment by neo-salvarsan directly into the lumbar fluid.*

Case 1.—L. S. L., male, aged 44, suffering from tabes, was seen by me in February, 1914. On examination his blood gave a completely negative (– – –) reaction; the cerebro-spinal fluid showed 85.2 cells per cubic millimetre and a weakly positive (+ – –) Wassermann reaction. He received six injections of neo-salvarsan. After treatment the Wassermann reaction, both for blood and cerebro-spinal fluid, remained as before, the cell content of the cerebro-spinal fluid being 12 per cubic millimetre. After marked improvement the patient had a sudden relapse, and then gradual improvement again.

Cases of General Paralysis of the Insane.

Case 2.—R. M. S., male, aged 39. Before treatment his cerebro-spinal fluid contained 39.2 cells per cubic millimetre and the Wassermann test was strongly positive. After treatment (five injections) the cell content of the cerebro-spinal fluid was 4 and the Wassermann reaction still strongly positive. There was no change in his clinical condition.

Case 3 (Case 2 of Table III).—H. N., male, aged 42, was treated by me in March, 1914. Before treatment his blood gave a negative (– – –) Wassermann reaction, but his cerebro-spinal fluid was strongly positive (+ + +); the fluid contained 89.7 cells per cubic millimetre. After treatment (four injections) the blood remained negative, and the cerebro-spinal fluid was only weakly positive (+), the cell content being 6.9 per cubic millimetre. A week after the fourth injection of neo-salvarsan (9 mg.) he developed signs of transverse spinal cord lesion at the level of the fourth lumbar segment.

Case 4.—M. E. B., male, aged 43; seen in March, 1914. Before treatment his cerebro-spinal fluid contained 235.8 cells per cubic millimetre and the Wassermann test was strongly positive (+ + +). After treatment the Wassermann reaction was still strongly

TABLE IV.—*Intraspinal Serum Treatment of Cerebro-spinal Syphilis.*

No.	Initials.	Date.	Age	Before Treatment. Blood. W.R.	Before Treatment. Cerebro-spinal Fluid. Cells.	Before Treatment. Cerebro-spinal Fluid. W.R.	No. of Injections	After Treatment. Blood W.R.	After Treatment. Cerebro-spinal Fluid. Cells.	After Treatment. Cerebro-spinal Fluid. W.R.	Clinical Phenomena.	Results.
1	E. H.	Aug., 1911	57	+++	26.6	+++	6	− − −	42.7	+ +	Irregular pupils; spastic paresis	No advance in symptoms.
2	H. L.	Sept., 1911	26		103.0		3		13.0		Transient left hemiplegia	Died of pulmonary tuberculosis 7 months later.
3	A. E. B.	Oct., 1911	32		88.6	+++	8		9.4	+ + +	Epileptiform fits	Fits ceased; returned to military duty.
4	F. B.	Jan., 1915	52		88.0	+	7	− − −	78.7	+	Pain and paraesthesia in legs; Kernig positive; plantars flexor	Paraesthesia, etc., disappeared. Kernig negative.
5	P. C.	March, 1915	39	− − −	240.0	− − −	4	− − −	4.0	− − −	Right monoplegia of arm; slight aphasia	Right grasp still weak; aphasia disappeared.
6	H. H.	May, 1919	40	+	4.0	+++	5	−	12.6	− − −	Paralysis of upper limbs with increased deep reflexes in legs and extensor reflexes	Partial recovery.
7	S. S.	Aug., 1919	49	+	37.3	+++	5	+	9.4	− − −	Diplopia; paraesthesia of right face	Symptoms cleared up.
8	H. K.	Sept., 1919	48	− − −	87.0	+++	4	−	6.0	− − −	Anaesthesia of S4 and S5 areas with bladder delay	*In statu quo.*
9	P. J. L.	Oct., 1919	55	+	17.3	+++	4	−	9.4	− − −	Postero-lateral sclerosis	*In statu quo.*
10	Mrs. M. A. C.	Nov., 1919	47	+	85.0	+++	4	−	11.0	− − −	Irregular pupils; spasticity of legs with ataxia	No advance in symptoms.
11	G. H. B.	March, 1920	48	− − −	123.6	+++	7	− − −	12.3		Epileptiform fits	Fits much diminished.
12	W. G. E.	March, 1920	61	− − −	130.3	+++	6	− − −	12.6	+ − −	Spastic paraplegia	Improved.
13	R. C.	April, 1920	45	+	126.0	+++	6	−	5.3	− − −	Limb pains; enuresis; left extensor reflex	Pains disappeared; bladder improved.
		Re-examined Feb., 1921		−	17.4	+	6	−	16.0	− − −	Enuresis	Bladder cleared up; free from symptoms in Feb. 1922.
14	J. L.	May, 1921	47	+	18.7	+++	4	−	16.0	+ − −	Left hypoglossal palsy; postero-lateral sclerosis	*In statu quo.*
15	W. J.	Aug., 1921	64	+ − −	33.4	+++	3	+	10.0	− − −	Argyll Robertson pupils; postero-lateral sclerosis	Legs improved.

positive, the cell content being 8 per cubic millimetre. Four days after the last injection the patient developed flaccid paraplegia, with absent deep jerks and flexor responses. He died three months later.

Case 5.—W. D. H., male, aged 26; seen in March, 1914. Before treatment the cell content of his cerebro-spinal fluid was 114.8 per cubic millimetre; the Wassermann test was strongly positive (+++). He received two intraspinal injections of neo-salvarsan. On examination after treatment his cerebro-spinal fluid was still strongly positive to the Wassermann test, the cell content being 47.7 per cubic millimetre. A week after the second injection he developed haemorrhagic cystitis, and died suddenly twelve days later. *Post-mortem* examination showed the kidneys and liver to be healthy; no signs of arsenical poisoning were discovered; there was old thickening of the frontal meninges.

Case 6.—B. L., male, aged 33, came for treatment in March, 1914. On examination his cerebro-spinal fluid showed a cell content of 35 per cubic millimetre, and gave a weakly positive (+) Wassermann reaction. He was given three intraspinal injections of neo-salvarsan, following which his cerebro-spinal fluid contained 40 cells per cubic millimetre, and the Wassermann reaction remained as before. He died of acute meningitis.

Intracranial Methods.

The lumbar region, although the easiest, is not the only route through which remedies may be introduced directly into the cerebro spinal fluid. Substances introduced by the lumbar route have a long distance to traverse before reaching the cranial cavity, and even then only a part of the injected fluid reaches the brain. It is therefore not surprising that intraspinal treatment is less efficient in cerebral than in spinal syphilis. Accordingly Neisser and Pollack suggested a method of cranial puncture by drilling through an area of frozen scalp, perforating the subjacent cranium, and injecting the remedy beneath the dura directly on to the surface of the brain. This has been carried out by Marinesco and Minea,[21] by Sicard and Reilly,[22] and others, but as a routine method it does not appeal to the ordinary clinician. Another plan is to enter the basal subarachnoid cistern through the orbit, penetrating the sphenoidal fissure with a hollow needle, as proposed by Beriel[23] of Lyons. This, however, is awkward, and includes a risk of wounding the cavernous sinus.

A more straightforward surgical procedure is to do a frank trephining operation close to the middle line of the vertex and then inject the remedy directly into one or other lateral ventricle by perforating the corpus callosum—the so-called *Balken stich* of Anton and Bramann. This has been carried out in Germany by Foerster[24] and in this country by myself and by my colleague Harry Campbell, in conjunction with Sir Charles Ballance. I have not been favourably impressed with the results thus obtained. The following personal example may be quoted:

A man of 44 came under my observation in 1919 with typical signs of early general paralysis. He was excited and delusional, but without dysarthria. There was a strongly positive (+++) Wassermann reaction in the blood and cerebro-spinal fluid, also a lymphocytosis of the fluid amounting to 104 cells per cubic millimetre. After trephining, four intraventricular injections of salvarsanized serum were given by Sir Charles Ballance at intervals of one to two weeks. The Wassermann reaction in the blood and cerebro-spinal fluid remained unaltered, but the cell content receded to 20, 16, and then to 12 per cubic millimetre. The mental symptoms, however, continued to progress steadily, and the patient died six months later.

Intracisternal Treatment.

All the foregoing methods of reaching the intracranial subarachnoid space, with the exception of the orbital puncture of Beriel, necessitate more or less damage to the brain structures. Moreover, there is a definite risk attached to repeated cranial operations. For this reason it seems to me that the method of intracisternal puncture through the occipito-atlantoid ligament, as described by Wegeforth, Ayer, and Essick,[26] offers many advantages. Cisternal puncture, once the necessary technique has been mastered, is carried out as readily as lumbar puncture. The fluid thus introduced into the cisterna magna is carried forwards, in the current of the cerebro-spinal fluid, throughout the subarachnoid cisterns. It permeates the membranes from base to vertex, reaching every part of the cortex. Curiously enough, one finds that the amount of discomfort to the patient is less than after lumbar puncture.

The clinical results in cerebro-spinal syphilis in some cases have been striking. The following is an illustrative example of cerebral syphilis successfully treated:

The patient was a man of 43 who had typical sensory Jacksonian fits, affecting the right upper limb and right side of the tongue, together with transient dysarthria. Apart from absence of the left abdominal reflex and a somewhat indefinite plantar response in the right foot, no abnormal clinical signs were made out, whether in the cranial nerves, sensory, motor, or reflex functions. The cerebro-spinal fluid, however, contained 142.2 lymphocytes per cubic millimetre and gave a strongly positive (+++) Wassermann reaction. The Wassermann reaction in the blood was moderately positive (++−). He was given five intracisternal injections of salvarsanized serum. The fits ceased immediately after the first injection. At the end of the series the cells had fallen to 9.7 per cubic millimetre and the Wassermann reaction was completely negative (− − −). The blood reaction was now feebly positive (+ − −). Four months later the cerebro-spinal fluid was re-examined and contained 6.3 cells per cubic millimetre with a negative (− − −) Wassermann reaction. When seen twelve months after the original examination he was free from clinical abnormality, the abdominal and plantar reflexes were normal and

TABLE V.—*Intracisternal Serum Treatment of Neuro-Syphilis and General Paralysis of the Insane.*

No.	Initials.	Date.	Age.	Before Treatment. Blood. W. R.	Before Treatment. Cerebro-spinal Fluid. Cells.	Before Treatment. Cerebro-spinal Fluid. W. R.	No. of Injections.	After Treatment. Blood. W. R.	After Treatment. Cerebro-spinal Fluid. Cells.	After Treatment. Cerebro-spinal Fluid. W. R.	Clinical Phenomena.	Results.
1	W. L. W.	Nov., 1920	43	+±−	142.2	+++	5	−−−	6.3	−−−	Jacksonian fits	Symptoms entirely disappeared; remained well 1½ years later.
2	H. L.	Oct., 1920	30	+	44.0	+++	4	+	2.6	+++	Early general paralysis of the insane; facial tremors	Tremors less.
3	C. R.	June, 1921	53	−	13.3	+++	3	−	9.3	+++	Right hemiplegia, vertigo, fits	*In statu quo.*
4	W. B. W.	July, 1921	40	+++	74.7	+++	4	+±−	5.6	+++	Emotional attacks; early G.P.I.	Mental condition improved.
		Re-examined June, 1922			25.6	+++					Slight mental deterioration	Resuming treatment.
5	H. B.	May, 1922	42	+	183.4	+++	4	+	9.0	+++	Unilateral Argyll Robertson pupil; weakness of right hand; extensor plantar reflexes	Rapid improvement in hand weakness.
6	F. M. B.	June, 1922	65	+++	153.9	+++	3	++−	21.9	+++	Emotional attacks. No physical signs, apart from blood and cerebro-spinal fluid	Rapid improvement clinically.

equal, and he had had no return of his Jacksonian fits. The following is a record of the conditions in his blood and cerebro-spinal fluid:

Date.	Blood Wassermann.	Treatment, Intravenous N.A.B.	Cerebro-spinal Fluid. Cells.	Cerebro-spinal Fluid. Wassermann.	Treatment, Intracisternal salvarsanized serum.
Nov. 3 ...			142.19	+++	
Nov. 15-16 ...	+±−	0.45	81.4	++−	35 c.cm.
Nov. 29-30 ...	+±−	,,	68.4	+−−	,,
Dec. 13-14 ...	+±−	,,	62.5	−−−	,,
Dec. 27-28 ...	+±−	,,	27.08	−−−	,,
Jan. 10-11 ...	+−−	,,	9.7	−−−	,,
May 2 ...			6.3	−−−	
Nov. 17 ...	−−−				

With regard to early paralytic dementia, I have not yet treated a sufficient number of cases by the intracisternal method to justify definite conclusions. So far, the results have been better than by any other method I have tried. In selected cases I have usually obtained a rapid remission both in the mental symptoms and in the condition of the cerebro-spinal fluid. How long such remissions will last remains to be seen. It seems to me, however, that early cases of general paralysis should at least be given a trial with this method. The cases which are most likely to benefit are patients in the earliest recognizable stage of the disease, long before they have reached the stage of certifiable insanity, whose symptoms, both mental and physical, are as yet slight, although the cerebro-spinal fluid already shows well-marked syphilitic changes.

In this connexion I may be allowed to quote the experience of Ebaugh,[7] who employed serum salvarsanized *in vitro* and administered by the intracisternal route in a series of 28 (apparently unselected) asylum cases of what he terms the "average" type, but which we would classify as moderately advanced. In 12 of Ebaugh's cases the cerebro-spinal fluid lost its pleocytosis and its globulin reaction, but the clinical results, as might be expected in patients with advanced parenchymatous cortical changes, were disappointing, except in one instance, apparently the only patient whose malady was of short duration, in whom marked clinical improvement occurred.

Experience goes to show the importance of choosing for treatment cases of general paralysis at the earliest recognizable stage, before the onset of profound degenerative changes. Early diagnosis is an essential preliminary for hopeful treatment. No method of treatment can be expected to replace destroyed nerve elements in the central nervous organ.

CONCLUSIONS.

1. Every case of neuro-syphilis, diagnostically established by combined clinical and serological tests, demands assiduous treatment of the general syphilitic infection by every means at our disposal. Antisyphilitic remedies, including mercury, iodides, arsenobenzol, etc., are to be administered by the most efficient route, whether by the mouth, by inunction or fumigation, by intramuscular injection, or by intravenous injection into the blood stream. In no case should our remedies be directed exclusively to the nervous system.

2. In gummatous and meningo-vascular neuro-syphilis the foregoing antisyphilitic treatment is usually all that is necessary.

3. Some cases of parenchymatous syphilis respond, but the majority are resistant, to general antisyphilitic treatment, even when carefully and thoroughly carried out. Such cases are those which should be selected for supplementary subarachnoid treatment, whether intrathecal or intracisternal.

4. Intraspinal treatment by salvarsanized serum prepared from the patient's own blood, or by human or horse serum mercurialized *in vitro*, is specially suitable for cases of tabes and of cerebro-spinal syphilis, provided the cerebro-spinal fluid shows evidences of active meningeal reaction. It is also suitable for meningo-vascular spinal syphilis when resistant to ordinary treatment.

5. The direct intraspinal administration of arsenobenzol into the cerebro-spinal fluid is liable to produce acute softening of the spinal cord and should be discarded.

6. Cases of general paralysis, of optic tabes, of tabo-paralysis, and of tabes with negative reactions in the cerebro-spinal fluid, are not likely to benefit by intraspinal treatment.

7. Cases of meningo-vascular cerebral syphilis benefit much by intracisternal administration of salvarsanized serum.

8. General paralysis, if recognized in the early stage, is definitely benefited by intracisternal treatment. This method is superior in efficacy to intraventricular operations and entails much less risk to the patient.

9. Pyrexial treatment of early general paralysis—for example, by tuberculin, nuclein, etc.—may induce temporary remissions in the disease. So also can simple drainage of the cerebro-spinal fluid, combined with general antisyphilitic treatment.

10. Advanced cases of general paralysis, with extensive destruction of cortical nerve elements, are hopeless for curative treatment by any method whatever.

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SOME OBSERVATIONS ON THE TREATMENT OF NEURO-SYPHILIS.

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THE time is undoubtedly ripe for a pause and look round in the field of neuro syphilis and its treatment. Immense as is the activity in this department of neurological therapeutics the question forcing itself on our attention is, "Are we getting anywhere?" Have the sixteen or seventeen years since the discovery of the spirochaete of syphilis, the twelve or fifteen since the introduction of "606" and "914," seen corresponding advances in treatment as compared with the years that preceded these epoch-marking events? I have had the curiosity to refresh my memory with a glance at the routine treatment at the National Hospital in the days of my residence there, from 1904 to 1908, and apart from the fact that some members of the staff as then constituted bravely stuck to mercurial treatment in so-called parasyphilis or metasyphilis the methods adopted were therapeutically vague and general, no doubt inevitably so. In comparison, the technique in vogue to-day has at least a pretence to vastly greater specificity, but candour compels us to admit there is still far too much of the "hit or miss" element in our treatment. I may say at once, to define my own position, that I believe we are on right lines in our efforts to reach the nervous system with therapeutic momentum, via the blood or via the cerebro-spinal fluid, or both, but precision, certainty, and completeness of result are still lacking.

In our search for the causes of this imperfect state of affairs several points suggest themselves for consideration. One undoubtedly is our ignorance of the exact stages of development and intrasomatic existence of the spirochaete of syphilis. The clinician is frequently confronted with cases in which an extremely long "resting stage"—whatever it be, histologically speaking—for the *Spirochaeta pallida* must be assumed.

Thus a female patient, the subject of classical tabes dorsalis, developed symptoms at the age of 50. She had been married when 25 years old, and her husband, her equal in age, admitted syphilis at the early age of 16. Examination by the usual tests showed his nervous system to be entirely normal. Apparently, therefore, since the wife was *virgo intacta* at the time of marriage, the germ of syphilis had lived in the husband's tissues for nine years, had been communicated to the wife, presumably via the testicular fluid, and had developed into neuro-syphilis in her spinal cord no less than thirty-four years after the original male infection.

A case like this gives one furiously to think. If Wassermann tests were applied at intervals, notwithstanding the apparent health of the subjects concerned, in every case where syphilis has been contracted, however long before, I can scarcely doubt that its progress on the way to neuro-syphilis would be detected to the gain of the patient. In a regrettable majority of instances the tests are resorted to only when clinical symptoms make their appearance, which is often already too late.

A second unsatisfactory element in the treatment of neuro-syphilis resides in our inability to distinguish between symptoms due to the local presence of the spirochaete, those assignable to toxins generated by it, and those that are the outcome of structural changes developing in its train. Nowadays we do not believe—most of us, I suppose, at any rate—that either general paralysis, tabes, or tabetic optic atrophy progresses inevitably to an unfavourable issue once the degenerative process is initiated. On the contrary, there is every reason to urge that the continuance of the morbid process in these conditions is essentially due to the continuance of the activity of *Spirochaeta pallida*. No one of them has for its histological basis a primary parenchymatous degeneration of neural tissue alone, and I for one strongly object to the distinction rather in vogue at present between parenchymatous neuro-syphilis and meningo-vascular neuro-syphilis. It is notorious that in general paralysis both meningo-vascular and ependymal changes are as obvious as those of the nerve parenchyma; tabetic optic atrophy is no primary systemic neuronal disease, but is consecutive to exudative processes along the course of the nerve, derived from the pial sheath and showing themselves mainly in its intracranial and foraminal sections; and if Richter's recent work on the histogenesis of tabes is duly confirmed that disease is caused by the effects on the dorsal roots of their local section of the spirochaetes, in the subarachnoid recesses on the posterior nerve-roots of Nageotte. Theoretically, were the cause removed the pathological processes involved in the so-called parenchymatous varieties of neuro-syphilis should come to an end. Every neurologist must have had experience of two interesting groups of cases, one in which tabes, followed over a long period of years, more or less "cures itself," and another in which certain objective signs of neuro-syphilis are found in individuals who are perfectly healthy and have no complaint of a subjective kind.

As an illustration of the first of these groups I take the case of a patient with tabes, whose disease began in 1883. He attended the National Hospital in 1889, and was then extremely ill with obvious tabetic symptoms, including gross ataxia. After some years of treatment he disappeared. He turned up again in 1919, having had no treatment whatever for about twenty years, and was in every way vastly improved on his former state. On examination little else was found beyond fixed pupils and absent deep reflexes, and Wassermann tests were negative in blood and spinal fluid. The suggestion is that the tabetic process has "run itself out," presumably because the activity of the virus has died down.

To illustrate the second group I select the case of a patient who consulted me for a moderate occupation neurosis (right arm). In routine examination I found a double Argyll Robertson pupil and absent knee and Achillis jerks. Inquiry elicited the fact of the acquisition of syphilis some fifteen years previously. Tests in blood and spinal fluid proved completely negative in every respect. I can only regard the objective signs as "cicatrices" of a neuro-syphilis that, as far as the virus is concerned, is "dead."

From cases such as these the deduction is legitimate that progression of symptoms in so-called metasyphilis depends in reality on continuance of the activity of the *Spirochaeta pallida*. If, however rarely, such self-cures are attainable, we cannot allow ourselves to be beaten by neuro-syphilis. We should be able to produce similar results by our treatment from without. We may not be able to modify structural changes following the ravages of the syphilitic organism—after all, a man may go through life with absent deep reflexes or fixed pupils and be no whit the worse for it—but at least we can concentrate on what appear to be the signs of active toxicity on its part or of its actual presence in the central nervous system. In this connexion I shall cite later the case of a general paralytic in which there was good clinical evidence to suggest that some of the cardinal signs of that condition—for instance, the megalomania—are in fact the expression not of structural degeneration in the cortex but of toxic action, and the case of a tabetic where, similarly, symptoms usually regarded as structural have vanished under treatment. As is known, cases of return of knee-jerk in that disease, and of disappearance of the Argyll Robertson phenomenon, have been recorded. The truth probably is that in cases of neuro-syphilis structural deterioration does not set in as early as has been supposed, and that speedy and intensive treatment should never be hesitated over merely because there is, apparently, evidence of actual neuronal disintegration.

A third source of trouble in neuro-syphilitic treatment is commonly attributed to inaccessibility of the spirochaete in the tissue spaces of the central nervous system. I am bound to say I have never been impressed by the histological arguments adduced in support of the contention. If the spirochaete can travel in the tissues so can drugs, if in appropriate medium. Neural elements live because they are supplied with suitable pabulum via the ordinary tissue paths, and these are surely open to the conveyance of antibodies as well as of organismal products. My view of the "incurability" of general paralysis is largely that in that disease the spirochaete has started before the pistol and breasts the tape without its arsenical competitor ever having a chance of getting level with it.

Leaving these preliminary considerations, what I propose to do is to give the Section an outline of therapeutic failures and successes by the various methods I have prosecuted during the last ten years, illustrating by selected cases, and indicating the conclusions that may fairly be drawn therefrom. I shall select only the older cases which I have been able to follow up. While from time to time I have had recourse to a number of somewhat different techniques, for the sake of brevity I may state at once that the best results have been obtained with (1) mercury and salvarsan (or its substitutes) intravenously; (2) mercury, salvarsan, and salvarsanized serum intraspinously; (3) mercury and mercurialized serum, also by the intraspinous route. My experience of cisternal technique has been too recent for results to be justifiably quoted in this communication; in passing I may say that in view of the known circulation of the cerebro-spinal fluid there cannot be any material difference in effect between introduction of medicaments at one end of the cord and the same procedure at the other.

Cases of General Paralysis.

Of many cases treated during the last ten years, the following one is the solitary example of apparent success, and, as will be seen immediately, the sequel is doubtless open to adverse criticism.

The patient, a male aged 32, came under observation in June, 1915. He then presented the typical symptoms of general paralysis, more particularly those on the psychical side; he exhibited megalomania to a striking degree and "never felt better in his life"; shortly afterwards he was certified and admitted to a private asylum. Lumbar puncture revealed 265 cells per cubic millimetre, with strongly positive Wassermann and Nonne-Apelt reactions. Treatment by salvarsanized serum intrathecally was forthwith commenced and continued regularly for approximately a year at fortnightly intervals. A course of mercurialized serum was substituted for it after about six or eight months. Altogether the patient received some twenty-five intrathecal injections. By the summer of 1916 he had so far recovered as to be allowed to leave the asylum, to which he never returned. The last lumbar puncture fluid examination showed only an occasional mononuclear cell; both chemical reactions were much weakened, but neither was wholly negative.

In the autumn of the same year he returned to business and made much money on the Stock Exchange. After a most successful year's work he was taken ill with chest trouble and died, according to his parents' statement, of phthisis in the autumn of 1917. To explain this it must be pointed out that the patient undoubtedly was tuberculous; he had wintered at Davos before the general paralytic symptoms developed, was known to have had a tuberculous larynx, and tubercle bacilli had been found in his sputum on several occasions.

Critical consideration of this case of general paralysis will allow the contention that the improvement was much more than merely one of the "remissions" occasionally seen in that disease, while the fact of the succession of the return to nervous health by a year's normal work in business must be admitted almost to justify the word "cure." On the other hand, when I last saw the patient, some six months before his death, he was still under the idea that the asylum sojourn was unnecessary and had in reality done him harm. Again, the concurrent tuberculosis is a very unusual feature and complicates the case to some degree; quite conceivably the tuberculous infection may have exercised a mitigating effect on the other.

The degree of success attained in this instance, gratifying as it was, is therefore somewhat qualified. It was attributed, naturally enough, to the fact that treatment was begun almost as soon as the symptoms were recognized. By way of contrast, however, I select a case also treated intensively from the outset.

The patient, a male aged 30, had had two fits, apparently typical epileptiform attacks, very shortly before coming under observation in March, 1917. As he was occupied in important work during the war these attacks—the very first symptoms—had led to his being sent for expert opinion without delay. On examination he presented slight but unmistakable signs of early general paralysis. A strongly positive Wassermann reaction in both blood and fluid, and 65 cells per cubic millimetre in the latter, with a strongly positive globulin test, completed the diagnosis.

Treatment by intrathecal mercurialized serum was commenced without delay; later it was replaced by salvarsanized serum. Altogether the patient received some twenty-eight treatments by the spinal route. He improved materially at first, but only up to a certain point. The fluid findings were very favourably modified, but the Wassermann reaction never became quite negative. An attack of gastric influenza at Christmas, 1917, pulled him back considerably, and recurrence of the epilepsy, from which he had been completely free, ensued. Treatment nevertheless was continued, but in the autumn of 1918 his friends had to send him to a private asylum, where he died about two years after I first saw him.

Here, then, is a characteristic case of general paralysis treated with assiduity from the commencement and with the patient's full co-operation, but the sequel is that of only too many instances of the affection.

I think I may say with fairness that all the cases of general paralysis I have treated, provided they are tackled at a comparatively early stage, have shown signs of unmistakable improvement at first, and up to a certain point, but thereafter perseverance in treatment has failed to effect any further change. The hopefulness of the procedure at the beginning is always belied later, with the exception of the result in the case first quoted. In spite of these disheartening features, the fact of apparent favourable modification cannot be ignored, and should provide an incentive for further therapeutic research.

Cases of Tabes Dorsalis.

From my experience of a large number of cases of this variety of neuro-syphilis, at all stages, my considered opinion is that persistent intravenous and intraspinous treatment has justified its adoption as a routine method. Among various impressive cases the following may be chosen for illustration:

A woman, aged 50, had the characteristic subjective symptoms of tabes for about twelve months before coming under care in May, 1916, when, on examination, the classical picture of the disease was found—in particular, marked ataxia, rectal incontinence, severe shooting pains, absent deep reflexes, fixed pupils, loss of deep pressure-pain in the legs, and so on. In the blood the Wassermann test was negative; in the fluid a strongly positive globulin reaction, a weakly positive Wassermann, and 39 cells per cubic millimetre indicated the nature of the affection conclusively.

Treatment with mercurialized serum intrathecally was forthwith inaugurated, and this was replaced later by salvarsanized serum. In all, some sixteen injections were thus administered in the course of about eighteen months. The result was eminently satisfactory. Clinically, the pains vanished, the rectal incontinence ceased and never returned, and the ataxia was reduced to a negligible element in the case. At the end of the treatment the cells were less than 5 per cubic millimetre, the Nonne-Apelt test was negative, and the Wassermann test was on the margin of negativity. The patient was seen and re-examined some two and a half years later, and the improvement was fully maintained, though, naturally enough perhaps, the pupils remained fixed and the deep reflexes were still absent. A still later report (July, 1922) informs me that the patient enjoys good health and full bodily activity, and is "better than she has been for years."

Special attention may be directed to the fact that in this case symptoms commonly held to be of structural origin—namely, the rectal incontinence—disappeared as the result of treatment and did not recur. Another example of the favourable modification of symptoms of this class—namely, bladder crises and incontinence—is the following:

A male patient, aged 39, came under care in June, 1916. He had contracted syphilis twelve years previously, and on examination exhibited evidence of tabes dorsalis in the form of typical shooting pains, loss of bladder control, loss of sexual desire and power, ataxia and anaesthesia in the limbs, Rombergism, double Argyll Robertson pupil, and absence of all deep reflexes. The Wassermann reaction was strongly positive, both in serum and fluid. In the course of some two years the patient was given ten injections of mercurialized serum intraspinously, and twelve of novarsenobenzol intravenously. Again, in 1920-21 intravenous and intrathecal treatment was repeated. As a result, the patient has been able to resume his occupation in the marine profession, and at present (June, 1922) has proceeded in the course of his duties on a voyage to the West Indies.

The bladder incontinence and crises have been overcome; the pains are entirely negligible; the ataxia is scarcely noticeable; and sexual desire and power have greatly improved. On the other hand, a fall some six months ago has resulted in what appears to be an incipient Charcot arthropathy of the right tarsus. The pupils and deep reflexes remain as before.

As a contrast to these and similar cases that might be cited we may, for a corrective to too optimistic a purview, glance at the following tabetic history:

A male patient, aged about 45, who had contracted syphilis twenty years before, was found on examination in March, 1918, to show all the usual symptoms and signs of advancing tabes dorsalis. He was thin and pale, and looked ill, yet apparently his attention had been drawn to himself only for about six months, largely through the development of defective bladder control. In the spinal fluid the cells were only 16 per cubic millimetre, the globulin reaction was "faint," the Wassermann test was "very slightly positive." Looking on the case as eminently one for intensive treatment, and persuaded by the comparative mildness of the various tests and reactions that the outcome would be favourable, I initiated treatment, on this occasion with galylized serum intraspinously. During thirteen months some eight injections were administered; later, treatment was continued with intravenous arsenic only, and later still intrathecal medication was again resumed. The clinical improvement of the first nine months was not maintained, and while the cells were reduced to a normal level the globulin and Wassermann tests never became less than "slight," though I expected them certainly to become negative. In the course of the next year the patient's condition gradually became worse, in spite of his own medical attendant's perseverance with intravenous arsenic, and some two years after his coming under observation he died.

I must own to disappointment in this latter case, nor is that tempered by exact knowledge of the reasons for the failure. On the face of it, it appeared more suitable for treatment than many others which have been handled with better result. I can only suppose the methods were not pushed sufficiently; through unavoidable circumstances the injections were given somewhat irregularly, and not in the total amount of some of the others here quoted. Nevertheless in this instance an apparently favourable case did not respond to treatment in any material degree.

My experience in cases of tabetic optic atrophy has been uniformly disappointing, here let it be said. Its treatment is an unsolved problem, for we should get better results than we do.

Cases of Cerebro-spinal Syphilis.

There appears to be a consensus of opinion as to the suitability for and responsiveness to treatment of cases of neuro-syphilis, cerebral or spinal, not belonging to the categories of tabes and general paralysis. The meningo-vascular form, however, has always been more responsive to mercury and iodides than the others, so that the question for the moment is, Has our control over its manifestations been enlarged or strengthened by the adoption of the newer methods with intravenous or intraspinal arsenic? On the whole, and in spite of numerous satisfactory results which might be used in illustration, I cannot say that I am entirely convinced it has. In oppcsition to what seems, at least to me, to be the usual contention in recent years, I believe that the addition of the arsenical preparations to our antisyphilitic armamentarium has, as far as neuro-syphilis is concerned, proved as great a help in tabes as in cerebro-spinal syphilis, if not indeed greater. In other words, the coupling of arsenic with the well-tried mercury and iodide methods has influenced tabes more than it has the other, in which the latter technique has never really lost caste, so to speak. Be this as it may, just as with the other varieties I am able to quote satisfactory and unsatisfactory instances alike.

It is scarcely necessary to furnish examples of successful treatment of ordinary syphilitic hemiplegia, paraplegia, etc., and of somewhat rarer manifestations, such as syphilitic sciatica, syphilitic amyotrophy, and so on. Routine treatment in all such types of case with the time-honoured mercury and iodides seldom fails to effect material improvement, and the addition of intravenous arsenic is no doubt advisable, but intrathecal medication also has its place in selected instances.

The most striking example of the value of the newer treatment that occurs to me is furnished by a case of meningitis syphilitica acutissima. The patient, a male aged 24, had contracted syphilis in 1918, and some three months later developed sudden symptoms of meningitis, so acute and extreme in degree as at once to lead to a clinical diagnosis of cerebro-spinal meningitis (meningococcal); this was apparently confirmed by lumbar puncture, though no meningococci were found, the cell exudate being predominantly polymorphonuclear, with a moderate amount of mononuclears, chiefly medium and small. A week later it became clear that cerebro-spinal fever could be excluded, and that the case was one of generalized syphilitic meningitis of the acutest variety. A strongly positive Wassermann reaction was obtained in both blood and cerebro-spinal fluid. Mercurial inunction and six intrathecal injections of mercurialized serum effected a marvellous change, and from being at death's door the patient made an uninterrupted recovery. In three months the spinal fluid was completely normal in all respects. Three years later the blood and fluid were again entirely normal.

I do not hesitate to affirm that this case of acute syphilitic meningitis owed recovery to the immediate instillation of antisyphilitic remedies into the subarachnoid space and that no other technique would have served so well. Where there is histological evidence of meningeal irritation by the syphilitic virus in cases of cerebro-spinal syphilis intrathecal medication should be added without fail to mercurial and iodide methods.

On the other hand, some cases of the meningo-vascular kind fail to respond, in spite of every effort.

Thus a male patient, aged 47, who had contracted syphilis at some unknown date previously, came under notice early in 1916 because of a left external rectus paresis, with diplopia. The Wassermann reaction was very strongly positive in the blood. On neurological examination no other objective signs were present. Year after year patient treatment with mercury, iodide, and intravenous arsenic was prosecuted. Altogether some thirty five or forty intravenous injections of galyl, kharsivan, and novarsenobenzol were administered. Yet no clinical improvement was obtained; on the contrary, the ocular condition spread, cardio-vascular degeneration ensued, and the Wassermann reaction in the serum remained disappointingly positive. Rather less than one year ago the patient died from the cardiac condition.

General Conclusions.

In the treatment of all varieties of neuro-syphilis distinction must be drawn between toxic and structural or degenerative symptoms—that is, as far as such distinction is in the present state of knowledge practicable. As yet we have no certain means of detecting spirochaetal activity except by serum and spinal fluid tests, so that their positivity or otherwise remains the criterion (scientifically a little debatable if useful practically) by which to judge whether treatment should be further prosecuted or not. At the same time, one can never afford to ignore clinical evidence. Like many other investigators, I have found improvement in cell and globulin tests to precede change in the Wassermann test, and I have not a little evidence which goes to prove that noteworthy clinical amelioration may be accomplished notwithstanding a persistently positive Wassermann reaction. It thus becomes a practical question whether the latter is an unfailing index to the actual pathological condition. On the whole, I make it a working rule at present always to aim at complete reaction-negativity, but in not a few instances where marked improvement has been brought about—for example, in cases of tabes—intrathecal or intravenous treatment has been broken off before such aim has been reached, and not, I have found, with any particular disadvantage. Nevertheless it is abundantly obvious that treatment has to be persevered with over long periods, or repeated at more or less regular intervals in courses, if any enduring result is to be achieved.

Within the last few years I have experimented on a fairly wide scale, in cases of so-called parenchymatous neuro-syphilis, with arsenic by the intravenous route only, examining the spinal fluid at intervals to ascertain whether any improvement therein can be thus attained. In several cases such improvement has been procured, yet on the whole the clinical results have been better with intrathecal treatment than without it. I am bound to say further that with mercurialized serum my results have been superior to those obtained by salvarsanized serum. The disadvantage of the former is the pain to which its injection frequently gives rise, apart from the scientific objection that its constitution is not the ideal one for the purpose. The profession still awaits the introduction of a soluble form of mercury which can be administered via the spinal route with a minimum of disturbance and a maximum of efficaciousness. In my opinion such a preparation will prove superior to any form of arsenic.

In judging of the value of any particular form of treatment the clinician must never forget to discriminate between transient and permanent symptoms, as already hinted. A patient with spastic paraplegia from syphilitic meningo-myelitis may under treatment have his serum and fluid tests changed from positive to negative and still be handicapped by his spasticity. Lateral sclerosis once established will persist, as far as we know at present—a cicatrix of dead tissue in the spinal cord. It is obviously unfair to decry special treatment though the results of the disease remain; as well might we refuse to consider removal of a spinal tumour a success because its pressure has caused a degeneration which no surgeon can alter. The moral, of course, is abundantly plain: the earlier and more intensive the treatment in any form of neuro-syphilis the more hopeful is the prognosis.

This question of structural changes calls for more consideration than I am able to give it within the limits of this paper. I may in conclusion, however, be allowed to say that the treatment of gummata in the nervous system is something quite special. In brain or cord a gumma is to all intents and purposes a foreign body, a tumour. Antisyphilitic remedies affect its structure so little as to be valueless. Where localizing symptoms have pointed to a circumscribed gumma, say meningo-cortical, I have always counselled its removal by surgical means, and some of the most striking cases I have had of success in cerebral tumours have been in those whose tumour has proved to be a gumma. In the spinal cord, similarly, if one could only be sure clinically that the symptoms of transverse lesion were referable to a gumma and not merely to a meningo-myelitic infiltration or softening, I should unhesitatingly advise operation.

THE TREATMENT OF NEURO-SYPHILIS, WITH SPECIAL REFERENCE TO THE CHANGES IN THE CEREBRO-SPINAL FLUID.

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In the course of an investigation into the etiology and treatment of disseminated sclerosis on behalf of the Medical Research Council it was decided to investigate by way of control a wide series of cases of various nervous diseases with special reference to neuro-syphilis. The work has been done in collaboration with Dr. Ernest M. Dunlop and Dr. Wilfrid Scott, the pathological portion of the investigation being carried out in the pathological laboratories of the University and Western Infirmary of Glasgow.

Cases of neuro-syphilis which may be grouped as follows have been subjected to investigation and antispecific treatment: tabes dorsalis, tabo-paresis, general paralysis of the

insane, Erb's syphilitic spinal sclerosis, motor neurone disease, and meningo-vascular syphilis. It must, however, be observed that such a classification is based on purely anatomical and clinical considerations, and that modern research tends to emphasize that all possess the same basis—namely, a pathological condition of the nervous tissue or its coverings due to the presence of the *Spirochaeta pallida*. The point of attack presumably is determined by other factors.

It is of interest that in 12 out of a total of 17 cases of syphilitic spinal sclerosis, the diagnosis depending upon clinical indications of involvement of the motor tracts associated with a positive Wassermann reaction in either the blood or cerebro-spinal fluid or both, the cell count was within normal limits—that is, these cases did not show the pleocytosis which is so constant in neuro-syphilis. In this respect the cerebro-spinal fluid picture approximates more closely to that found in disseminated sclerosis, a disease which syphilitic spinal sclerosis may so closely simulate that the differential diagnosis in some cases depends solely upon the Wassermann reaction unless the coexistence of the two diseases be conceded.

With regard to treatment, as we are dealing with an active spirochaetosis, there is the strongest possible indication for the administration of antisyphilitic drugs. It is therefore logical to consider the following questions: (1) Do the therapeutic substances administered reach the infective focus? (2) Is the administration of such drugs attended by risk or ill result? (3) Does serological improvement follow? (4) Is clinical improvement obtained?

As regards the first question, although the results of various observers have been contradictory, there is a certain amount of evidence that arsenic does reach the infective focus, though whether in a sufficient degree of concentration is not altogether clear. Hall, Callender, and Holmblad[1] state that arsphenamin given intravenously in 0.6 gram doses may be detected in 25 to 35 per cent. of the cases. More recently Mehrtens and MacArthur[2] have demonstrated that when spinal drainage by means of lumbar puncture follows the intravenous administration of arsphenamin there is no increase of arsenic penetration, though they report a high rise in positive results when meningeal irritation by means of an intraspinal injection of the patient's own serum has previously been carried out. Corbus, O'Conor, Lincoln, and Gardner[3] claim that the amount of arsenic entering the cerebro-spinal fluid is increased by the previous intravenous administration of hypertonic saline solution, and after this procedure they found arsenic in the cerebro-spinal fluid in 93 per cent. of cases, the amount varying from a trace to 0.01 mg. per cubic centimetre. It has also been shown by Osborne[4] and other workers that iodine can be detected in the cerebro-spinal fluid following on the administration of iodides, and there is evidence to show that the amount so found is greater when the salt has been given intravenously than is the case after oral administration. These facts are of prime importance, as they prove that the chief therapeutic agents do penetrate into the cerebro-spinal fluid, a fact which has frequently been denied.

Along with Dr. Browning and Miss Gulbransen an attempt was made to demonstrate the presence of therapeutically active arsenic in the cerebro-spinal fluid by the following means: The patient received 0.6 gram novarsenobenzol intravenously, the cerebro-spinal fluid was drawn off twenty-four hours later, a mixture of the fluid with blood containing active *Trypanosoma brucei* was incubated for from ten to twenty minutes and then injected into mice. No definite retardation of the resulting infection could be determined even when the animal received subsequently a further injection of the fluid when the trypanosomes appeared in the blood. Of course, this negative result cannot be interpreted as excluding the possibility that in the patient arsenic reaches the central nervous system in a form and amount adequate to produce chemiotherapeutic effect.

In the second place, as regards possible risk or ill result, in the course of this investigation upwards of 2,000 injections of novarsenobenzol have been administered to about 200 cases. No fatal case has been recorded: in two instances mild jaundice developed after the salvarsan administration, but it has to be noted that two similar cases of jaundice occurred in two patients suffering from neuro-syphilis before any salvarsan treatment had been given. In two cases slight arsenical dermatitis occurred; these cleared up immediately following the administration of intramine. The so-called Herxheimer-Jarisch phenomenon has never been observed in this series. In the past its importance appears to have been exaggerated, and it seems probable that a previous course of mercury and iodide will prevent its onset. Numerous cases showing slight optic atrophy have been subjected to intensive treatment and no ill effect noted on subsequent examinations. Optic atrophy is still regarded by some as a contraindication to the administration of salvarsan. This is apparently due to the fact that the administration of atoxyl, which represents a stage in the synthesis of drugs of the salvarsan group, led to a number of cases of permanent blindness. As Browning[5] has recently stated, the chemical side of the relationship between the two substances is of about the same degree of closeness as that of alcohol to sugar. In no case treated in this series has ill effect been recorded, and in no case has any result been obtained to justify the opinion that the treatment of neuro-syphilis is in any way more dangerous than that of primary syphilis.

As regards the question of serological improvement, the results obtained in the treatment of fully established cases of neuro-syphilis show a constant and progressive fall in the cell count until this reaches normal limits, almost constant modification of the colloidal gold reaction in the direction of a negative result, and, in occasional cases, a change in the Wassermann reaction from positive to negative. As examples of this the following observations are tabulated below:

Case 70.—J. G., aged 31, contracted syphilis in 1906. Treated with mercury for six months. Condition on May 17th, 1920: Pupils unequal and did not react, complete left third nerve paralysis, paralysis of right external rectus. K.J. ++, no ankle clonus, plantar reflexes flexor.

Date.	Blood: Wassermann Reaction.	Cerebro-spinal Fluid.			
		W.R.	Cells.	Protein.	Colloidal Gold.
May 17, 1920	Suspicious	Positive	42	Excessive	1133210000
Sept. 29, 1920	Positive	Positive	7	Normal	1111100000
Oct. 30, 1920	—	Positive	2	Normal	1111000000
Dec. 5, 1920	Suspicious	Negative	3	Normal	1111000000

Case 22.—J. McI. Tabes dorsalis. Argyll Robertson pupils, optic atrophy, absent knee-jerks. Rombergism and ataxia.

Date.	Blood: Wassermann Reaction.	Cerebro-spinal Fluid.			
		W.R.	Cells.	Protein.	Colloidal Gold.
Mar. 19, 1920	Weak positive	Positive	44	Excessive	5555131000
May 25, 1920	Negative	—	—	—	—
July 20, 1920	Negative	Positive	70	Excessive	1244400000
Oct. 29, 1920	—	Positive	11	Normal	233333 1000
Jan. 28, 1921	Negative	Positive	8	Normal	23321000000
Dec. 14, 1921	Negative	Unsatisfactory	—	—	—
April 26, 1922	Negative	Negative	0	Normal	22110000000

Case 72.—S. M. Neuro-syphilis. Admitted May 20th, 1920, complaining of loss of power in both legs and incontinence of bladder and bowels of eight months' duration. Pupils reacted sluggishly to light. Exophthalmos, slight nystagmus, fundi apparently normal. Slight intention tremor, abdominal reflexes absent, both legs spastic with loss of power. Tendon reflexes of legs ++. Ankle clonus, plantar reflexes extensor.

Date.	Blood: Wassermann Reaction.	Cerebro-spinal Fluid.			
		W.R.	Cells.	Protein.	Colloidal Gold.
May 20, 1920	Positive	Positive	100	Normal	2244211000
Oct. 2, 1920	Positive	Negative	30	Normal	012 2100000
Nov. 20, 1920	Weak positive	Negative	3	Normal	32221100000
Feb. 5, 1921	Weak positive	Negative	4	Normal	01110000000

As regards the clinical improvement obtained in the treatment of established cases of neuro-syphilis it must be borne in mind that nervous tissue has minimal power of regeneration and consequently, once definite damage has been done, return to normal function is impossible, though, even in such cases, treatment may arrest the further progress of the

disease at the stage at which it is first encountered. In the cases treated in this series improvement as regards gait, bladder control, lightning pains, and general health has repeatedly been observed, though the lapse of time is not yet sufficient to warrant the conclusion that the disease has been arrested. The whole hope of the successful treatment of tabes and other forms of neuro-syphilis lies in early diagnosis. If the disease can be recognized in the stage of symptoms rather than that of signs a return to normal function may be hoped for, a symptom being regarded as a manifestation of disordered function having no underlying structural change of an irreversible kind. During the progress of this investigation special attention has been devoted to cases presenting symptoms suggestive of early involvement of the nervous system in syphilis. The following case is an example of this :

W. C., aged 24, reported to Dr. Brownlow Riddell at the Glasgow Eye Infirmary on November 22nd, 1921, complaining of double vision which had originated the previous day. Dr. Riddell reported that the diplopia was apparently due to paresis of the right superior rectus muscle. On the 24th there was definite involvement of the right external rectus with crossed diplopia, and no longer double vision in the upper part of the field. On November 30th the eye symptoms had completely cleared up, and a thorough clinical examination of his nervous system revealed no abnormality whatever.

The serological findings in this case were: Wassermann reaction of blood, positive; cerebro-spinal fluid: Wassermann reaction, negative; cells, 3 per cubic millimetre; protein content not increased; colloidal gold reaction, 44443311000.

It is desired to emphasize that in this case transient diplopia was at the time the only clinical evidence of nervous disease, but that as the result of serological investigation a definite diagnosis was established at a stage when cure by treatment might be hoped for.

The symptomatology of onset of these diseases is frequently disregarded or cautiously interpreted, but the correlation of such symptomatology with definitely altered serological reactions may enable the early diagnosis of diseases of the nervous system to be placed on a much more definite etiological basis, and therefore open the way for vigorous specific treatment at a stage at which complete recovery of function is possible.

Technique of Treatment.

The routine adopted in the series of cases here referred to has been a preliminary course of mercury and iodide for an average of two weeks, followed by a series of from twenty to forty injections of 0.45 to 0.6 gram novarsenobenzol given at seven-day intervals. After every fourth injection two weeks' rest was given. Prior to each injection there was no elaborate preparation with starvation, the only departure from the ordinary routine being a saline aperient and slight curtailment of breakfast on the morning of the injection. In addition, mercurial inunction according to the Aachen methods was carried out and intramuscular injections of intramine in 5 c.cm. doses were given at monthly intervals. Perhaps to the latter fact the freedom from ill result may be in part attributed, and in some cases the intramine appeared to intensify the serological improvement obtained. Recently the effect of more frequent administration of smaller doses of novarsenobenzol has been tried in view of statements regarding the rapid excretion of arsenic from the cerebro-spinal fluid, but no statement can be made regarding the special effects of this procedure.

No intrathecal therapy has been attempted, and silver salvarsan has not been employed.

Tabes and other forms of neuro-syphilis have been recognized as clinical entities for generations and we have inherited a wealth of information from the older writers in days when modern serology and bacteriology were unknown and the causal organism unsuspected. All such writers emphasize the necessity of a well-ordered life, the abstinence from stress and strain, and above all the protection from injury in the treatment of these cases. Spontaneous arrest, presumably due to the fact that the syphilitic infection has "burned itself out," may and often does occur, and it is not improbable that the chief factor in its production is the ordering of life along the smoothest possible channels. Under such conditions *vis medicatrix naturae*, on which all healing ultimately depends, may result in arrest, but with our later knowledge of the infecting organism and of the specificity of the salvarsan molecule for the *Spirochaeta pallida* the application of these modern methods may, and in many cases does, supply the help that is needed in the struggle of the tissues with the infecting organism and so shift the balance in the patient's favour.

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THE WASSERMANN REACTION IN THE DIAGNOSIS AND CONTROL OF TREATMENT OF NEURO-SYPHILIS.*

BY

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THERE has been an opportunity recently in this department of testing the Wassermann reaction of the bloods and cerebro-spinal fluids of a considerable number of cases of neuro-syphilis and other nervous diseases, and the results of these tests are summarized in the present communication.

In addition to the examinations that have been carried out in conjunction with Dr. Douglas K. Adams two further series of tests, made during the same period, are included in this summary. The first of these represents the bloods from probable or suspected cases of tabes dorsalis and general paralysis of the insane and all cerebro-spinal fluids which have been submitted from the wards or out-patient department for Wassermann test. The second series consists of examinations of the cerebro-spinal fluid of 94 cases of clinical syphilis attending the Venereal Diseases Centre, who had already received energetic antisyphilitic treatment and the Wassermann reaction of whose blood was no longer positive.

In all cases the method of testing the Wassermann reaction has been as detailed by Browning and Watson,[1] and the criterion of positivity adopted that of Browning and Kennaway,[2] who emphasize the distinction between a diagnostic and a therapeutic positive in the interpretation of results.

For purposes of classification the cases may be divided into:

A. Tabes dorsalis, or suspected tabes.

B. General paralysis of the insane, or suspected general paralysis of the insane.

C. Miscellaneous, presenting a variety of clinical pictures.

In this last group are included the cases with clinical manifestations of disseminated sclerosis in whom a positive Wassermann reaction was obtained in the blood, cerebro-spinal fluid, or both, and which are referred to by Dr. Adams as syphilitic spinal sclerosis.

(A) *Wassermann Reaction in Tabes Dorsalis (107 Cases).*

Specimen.	No. of Cases.	Wassermann Reaction.			Negative Results.
		Positive.	Suspicious.	Negative.	
Blood	99	66	3	30*	30%
C.S.F. ...	70	48	1	21	30%
Blood and C.S.F.	62	35 (in both) 8 (blood only) 8 (C.S.F. only)	1† (C.S.F. only)	10 (in both)	16%

* Two of these cases developed a positive reaction during the course of treatment.

† One of the two cases whose blood Wassermann reaction became positive during treatment.

In the series in which both blood and cerebro-spinal fluid were examined a positive reaction was obtained in one or both in 51 of the 62 cases (that is, in 82 per cent.), while in only 10 of the cases was it negative in both (16 per cent.). It will be noted also that at the original test in one of the cases the cerebro-spinal fluid gave a suspicious reaction and the blood a negative. During treatment, however, this blood was examined twice again, when the results were (*a*) suspicious and (*b*) weak positive. Of interest, too, is the fact that, but for the examination of the cerebro-spinal fluid, a positive reaction would have been missed in 8 of these patients, a point to which attention has already been drawn by numerous observers.

* From the Pathological Department of the University and Western Infirmary of Glasgow. This work was done with the support of the Medical Research Council.

(B) *Wassermann Reaction in General Paralysis (22 Cases).*

Specimen.	No. of Cases.	Wassermann Reaction.		Negative Results.
		Positive.	Negative.	
Blood	19	12	7	37%
C.S.F.	12	10	2	17%
Blood and C.S.F.	9	7 (in both)	2 (in both)	22%

From the clinical data furnished with these cases it would appear that in several instances the Wassermann reaction was tested, not to confirm a diagnosis of general paralysis of the insane, but rather in order to rule it out of count.

(C) *Wassermann Reaction of Cerebro-spinal Fluid in Miscellaneous Cases (330).*

In this series the great majority of the cases presented signs or symptoms of nervous disturbance, but, by way of control, a number were included whose disabilities fell under such headings as: uraemia, pernicious anaemia, diabetes, gastritis, aneurysm, myxoedema, valvular disease of the heart, trench-feet, intermittent hydrarthrosis, rheumatism, carcinoma of stomach, arterio-sclerosis, enlarged prostate, spondylitis deformans.

Among the nervous cases the following conditions were represented: disseminated sclerosis, amyotrophic lateral sclerosis, epilepsy, paraplegia (spastic and ataxic), coma or lethargy, tumour (brain), optic atrophy, diplopia, myelitis, various pareses, hemiplegia, Raynaud's disease, insomnia with choreic movements, Parkinson's disease, delusional insanity, mental deficiency, meningitis, exophthalmic goitre.

The Wassermann reaction was positive in 46 of the 330 cerebro spinal fluids tested, and, excluding 6 whose clinical summaries have not been traced, the disabilities of these patients were as follows:

	No. of Cases.
Spinal sclerosis	23
Menino-vascular syphilis	4
Hemiplegia (*a*)...	2
Cerebro-spinal syphilis	1
Argyll Robertson pupil and headache (*b*) ...	1
Argyll Robertson pupil and nephritis (*b*) ...	1
Epilepsy	1
Lethargy (*c*)	1
Exophthalmic goitre	1
Anasarca (*d*)	1
Meningitis or meningismus (*e*)...	2
Functional (?)	2

(*a*) Wassermann reaction of the bloods also positive.

(*b*) In these two cases further indications of disorder of the nervous system are lacking in the available clinical summaries. In each case the Wassermann reaction of the blood was positive.

(*c*) Patient, a boy, aged 16, whose intelligence was low and who, for a year, had been lethargic during the daytime.

(*d*) Patient, an engine-driver, aged 52; no abnormality found clinically in the urine or in the fundi oculorum. Temperature normal. Leucocytes 22,500 per cubic millimetre. Wassermann reaction of blood negative.

(*e*) In these two cases further tests were not obtainable. In each the Wassermann reaction of the cerebro-spinal fluid was weakly positive.

In 24 of the above cases the Wassermann reaction of the blood was tested also and in 7 of these it was negative. (In the tabes series similar differences in the reactions have been already noted.)

Wassermann Reaction in Cerebro-spinal Fluid of 94 Cases of Treated Syphilis.

In the examination of the Wassermann reaction of the cerebro-spinal fluids of 94 cases of treated syphilis from the Venereal Diseases Centre whose blood Wassermann reaction was no longer positive, the following results were obtained: Wassermann reaction of cerebro spinal fluid: positive 6, negative 88. Of the six positive cases only one had recognized signs or symptoms of nervous disability (hemiplegia), and in these cases antisyphilitic treatment had been commenced as follows:

In the primary stage	2
While on service (? primary)	1
In the tertiary stage (hemiplegic referred to above)	1
On account of positive Wassermann reaction in blood	1
On account of miscarriages (Wassermann reaction in blood originally positive)	1

Of the 88 negative cases 6 presented evidence of nervous disturbance. In three of these, however, this amounted only to headache; in one to headache and failing vision; in one to dizziness; while in the last there were definite signs of bulbar involvement. Treatment had been commenced in these cases as follows:

Primary stage	17
Secondary stage	31
Tertiary stage	19
Nervous	1
On account of a positive Wassermann reaction in blood	7
While on service (? primary)	5
Cases in which the clinical summaries at the beginning of treatment were not available ...	8

The majority, if not actually all, of the cases who received treatment on account of a positive Wassermann reaction in the blood had had their bloods examined as a result of syphilis in their consorts or their children.

Therapeutic Effect on Wassermann Reaction in Neuro-syphilis.

The Wassermann reaction of the cerebro-spinal fluid has been followed during the course of treatment in 26 cases of neuro-syphilis, and in 5 of these a modification of the reaction has been noted. In two of these, cases of tabes, the reaction in the cerebro-spinal fluid, originally repeatedly positive, became negative after seven months' treatment in one instance and after twenty-four months in the other. The remaining three cases were diagnosed syphilitic spinal sclerosis, and in two of these the Wassermann reaction of the cerebro-spinal fluid changed from positive to negative after four and four and a half months' treatment respectively. In the last case, also positive originally, a suspicious reaction only was obtained at the end of four months' treatment.

In the case of the blood the Wassermann reaction has been studied in a series of 23 cases of neuro-syphilis undergoing treatment, and, in addition to the two "provoked" reactions referred to previously, a modification has been noted in six of these. In one, a case of syphilitic spinal sclerosis, the reaction changed from positive to negative after four months' treatment. The remaining five cases were suffering from tabes, and in four of these the reaction altered from positive to negative after from two and a half to eleven months' treatment. In the last it changed from positive to suspicious after eleven months.

In the other 21 cerebro-spinal fluids and 16 bloods no modification occurred in the course of observations lasting over periods of from four to nineteen months.

"Provoked" Type of Wassermann Reaction.

In two instances referred to above, both clinically cases of tabes, the Wassermann reaction of the blood, originally negative, became positive after the commencement of treatment. In one of these the change occurred within a week of the first intravenous dose of novarsenobillon, while in the second a definitely positive reaction was not noted until five months later. The first corresponds to the so-called "provoked" positive reaction, of which one similar case has come to the notice of the author in a series of 36 treated syphilitics attending the Venereal Diseases Centre. The second is of the type described by Strickler, Munson, and Sidlick,[3] who indicated that out of 24 dermatological cases examined by them whose blood Wassermann reaction was negative and who were almost certainly non-syphilitic, a large number, 66 per cent., developed a positive reaction at some period during the course of an experimental intravenous arsenical treatment, arsphenamin being the compound employed. In view of the importance of this observation, could it be confirmed, it was arranged to carry out regular examinations of the Wassermann reaction of the blood in a series of patients, free from serological evidence of syphilitic infection, who were having weekly doses of novarsenobillon, 0.6 gram, intravenously. Ten such cases were investigated, and the number of examinations in each ranged from four to seven:

7 weekly tests	3 cases.
6 ,, ,, ...	2 ,,
5 ,, ,, ...	3 ,,
4 ,, ,, ...	2 ,,

In every case a sample of blood for a Wassermann test was withdrawn immediately before the administration of the dose of novarsenobillon, and the first specimen of blood was taken before any intravenous arsenical treatment had been given.

In only one of the ten cases—one already noted—was any marked change in the Wassermann reaction obtained. In this case—clinically tabes—the reaction became positive after the first injection, and it remained so during the following two and a half months, when regular Wassermann tests of his blood were being carried out. In one other case, clinically suggestive of tabes, a doubtful negative reaction occurred during the eighth and ninth weeks after treatment commenced. The results before and after this period were uniformly negative.

In addition, one of those in the laboratory here, whose serum has been used frequently as the negative control for the Wassermann tests, had three injections of novarsenobillon (0.3, 0.45, 0.45 gram) administered intravenously, at weekly intervals, during August last. The Wassermann reaction of his blood immediately before the first dose, and at weekly intervals for four weeks thereafter, was tested, and on all of these occasions it was uniformly negative.

In view of these findings it would appear that there is no evidence of the intravenous administration of novarsenobillon being associated in any way with the development of a positive Wassermann reaction in the blood, in the absence of definite syphilitic infection.

Conclusions.

1. Serological cure, not only in the blood, but also in the cerebro-spinal fluid, can be effected in a sufficiently promising number of cases to warrant energetic use and further improvement of the methods at present utilized in the treatment of neuro-syphilis.

2. It is very desirable, as has been emphasized by numerous workers, that in the routine treatment of syphilis and in the clinical investigation of nervous disease the cerebro-spinal fluid should be examined in every case and its Wassermann reaction tested.

3. There is no evidence of a positive Wassermann reaction being provoked in a non-syphilitic patient as a result of the intravenous administration of novarsenobillon.

To Professor C. H. Browning for the favour of his opinion in the interpretation of many of the Wassermann results, and for much helpful advice, to Dr. Douglas K. Adams for his co-operation throughout the investigation, and to Drs. W. R. Snodgrass and J. McGregor Robertson of the Venereal Diseases Centre for their willing assistance in providing clinical material and in furnishing data concerning their cases, it is a pleasure for the author to have the opportunity of recording his indebtedness.

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DISCUSSION.

Dr. Aldren Turner (London) said that he would give a summary of the results of treatment of neuro-syphilis by modern methods from a number of cases treated at the National Hospital, Queen Square, London, which had been submitted to analysis by Dr. Macbride and himself. About two hundred cases of different forms of neuro-syphilis had been so treated and the results could be grouped as follows: The first group of about 10 per cent. of all cases, including tabes dorsalis, usually of long standing, in which the clinical picture of the disease was characterized by subjective and objective sensory symptoms, loss of the deep reflexes, ataxia, optic atrophy, etc., but in which the Wassermann reaction of the blood and cerebro-spinal fluid was negative and the cell count was within normal limits. These appeared to be cases in which the activity of the morbid process had abated either spontaneously or in consequence of previous treatment. There was difficulty in determining whether these were cases of arrested tabes, as it was not uncommon to find the occasional recurrence of symptoms, such as pains, crises, or bladder trouble, which were amenable to a further course of treatment. It was not always possible to obtain trustworthy evidence of previous treatment, but the course of the malady and the serological tests favoured the belief that the activity of the disease at all events had subsided.

The second group contained about 75 per cent. of all cases, including general paralysis, tabo-paralysis, and tabes dorsalis, in all of which the symptoms and signs were characteristic, the Wassermann reaction was strongly positive in both serum and fluid, and the lymphocyte count was high. The cases of general paralysis and of tabo-paralysis in this category were of recent origin and gave a history of progressive development. In the tabetics the duration of the disease was about five years. With the exception of some temporary relief of the subjective sensory symptoms and a reduction in the lymphocyte count, no material improvement resulted from treatment. A few cases appeared to progress in spite of it. The positive quality of the Wassermann reaction in blood and fluid remained unaltered. This formed by far the largest group of paretics and tabetics seen in hospital practice, and their analysis showed that there was much scope for further improvement in means and methods of treatment in a large percentage of such cases.

The third group comprised about 12 per cent. of the cases, including tabes dorsalis of short duration (from two or three months to two or three years) occurring in relatively young persons with typical subjective and objective symptoms, positive Wassermann reactions in serum and fluid, and a high cell count. As a direct and immediate consequence of treatment, the Wassermann reaction became negative or weakly positive, the cell count fell below 10, the subjective sensory symptoms—pains, paraesthesia, etc.—abated, and the general health improved. From the therapeutic standpoint that was an important group, as there was every reason to believe that it might be possible to arrest the progress of some cases of tabes in the early stages by appropriate treatment under certain conditions. As far as could be ascertained at present those conditions are: the commencement of treatment within, if possible, a few months of the onset of the symptoms, persistent treatment over a sufficiently long period, and a repetition of treatment at intervals with periodic serological tests. It was not improbable in those cases that the morbid process primarily attacked the spinal meninges rather than the nervous parenchyma and that by early and vigorous treatment secondary degeneration in the posterior column might be averted.

In the fourth or meningo-vascular group, which included the so-called syphilitic myelitis, meningo-myelitis, and spastic paraplegia, the Wassermann reaction varied considerably, and early treatment might be beneficial. It was, however, important to bear in mind when studying neuro-syphilis and the influence of treatment upon it that the effects of damage already done to the nervous parenchyma remained permanently.

Dr. Henry J. Macbride (London) said: My contribution to this discussion will consist of observations (1) on changes in Lange's colloidal gold reaction as a result of treatment, and (2) on methods of treatment. The Lange reaction, as we all know, holds a prominent place in the routine examination of the cerebro-spinal fluid, and is a very valuable confirmatory test for syphilis of the nervous system. Lange claimed for his reaction close parallelism with the clinical course of syphilitic disease of the central nervous system, and this claim Vogel and others have supported. Let us consider how far it is justifiable. Before making an analysis of cases we must decide what is a negative and what is a positive reaction. It is agreed by practically every observer that it is quite impossible to obtain for every test colloidal gold solutions presenting the same precipitating power. To add to this difficulty in technique many other pathological conditions may give a curve. Disseminated sclerosis may give even a paretic curve, and from our figures at the National Hospital 9 out of 81 cases gave this type of curve. It is also possible to obtain low curves in fluids from normal people. It is evident, then, that the curve must be marked before it can be considered positive. At the National Hospital a positive curve is one in which there is a discoloration to the extent of "3" in at least two tubes.

Of 100 tabetics whose cerebro-spinal fluid was examined on admission the Lange reaction presented the following results: 35 poor or negative curve; 30 minimal curve; 21 good curve in zone II; 14 paretic curve. Here were 100 cases sufficiently well established to enable the clinical diagnosis to be made and, in fact, for the most part sent into hospital because their symptoms were progressive, yet in 65 Lange's reaction was either negative or indefinite. It can hardly be said, then, that it corresponds with the patient's clinical condition. Furthermore, if the patient's condition improves, no corresponding improvement in the Lange reaction is possible.

I have analysed another series of 35 cases of tabes, tabo-paresis, general paralysis of the insane, and cerebral syphilis, in which the Lange reaction was observed before and after treatment, and the following are the results. The cases fall

into three groups: (1) those which show a diminution or flattening of the curve; (2) those which show no change in the curve; and (3) those in which the curve became more pronounced.

Group 1.—The cases which showed a diminution of the curve were 14 in number, and of these 13 showed corresponding clinical improvement. Five began with paretic curves which became reduced to low luetic curves. Of these, one was a general paralysis of the insane, treated with intrathecal mercurialized serum on whose cerebro spinal fluid five observations were made. The curve became smaller at each successive examination, although the Wassermann reaction remained strongly positive throughout. Another was a case of tabes treated with mercurialized serum and whose cerebrospinal fluid was examined eight times. In the second, third, and fourth examinations the curve in zone I was practically negligible; but in the fifth and seventh examinations the curve again became paretic, to disappear once more in the eighth examination. There were no clinical regressions to correspond with the reappearance of the paretic curve. In this case again the Wassermann reaction remained strongly positive throughout. There was one case among the 14 of Group 1, in which the intensity of the reaction diminished and in which no clinical change could be seen.

Group 2.—The cases which showed no change in the curve numbered 15. Six had paretic, or, in other words, maximal curves, which did not alter, and the condition of the patient remained the same or got worse. These were 5 cases of general paralysis of the insane and 1 of tabo-paresis. Nine had negligible curves which showed no alteration after treatment. Clinically these patients showed some improvement. In 3 of these 9 cases the Wassermann reaction was negative in the cerebro-spinal fluid but positive in the blood.

Group 3.—The cases in which the curve became greater after treatment numbered 6. Five of these improved clinically, while one remained clinically unchanged.

Altogether in the three groups 16 cases out of the 35 showed no change in the Lange curve corresponding to the clinical symptoms, and in 6 of these the curve actually increased while there was clinically improvement. From these two series I feel justified in concluding, therefore, that there is no consistent parallelism between the changes in the Lange curve and those in clinical symptoms. The Wassermann reaction, though less sensitive than the Lange, is a more reliable guide to the clinical progress of the disease. At the same time a positive Lange reaction is a valuable confirmatory test, but a negative or indefinite curve has not the same significance. I cannot say how far a positive curve is an indication for further treatment.

Methods of Treatment.

When a patient is admitted to the National Hospital his cerebro-spinal fluid and blood are taken for examination. He then starts on a course of iodide, mercury, and generally intravenous novarsenobenzol. Iodide is started in 10-grain doses and worked up slowly to 25 or 30 grains thrice daily. The mercury is given by inunction, 1 drachm of unguentum hydrarg. daily. With regard to the novarsenobenzol, we begin with very small doses, usually 0.15 gram, and increase through strengths of 0.3 and 0.45 to 0.6 gram, which is the maximum we now give. For occasional cases we give intrathecal injections either of mercurialized serum or of patient's own serum, prepared after two or three doses of novarsenobenzol. With this we combine re-education, massage, rest, and such symptomatic treatment as special cases may require. During the last year over 1,000 injections of novarsenobenzol were given, without precautions in reference to meals and without any accompanying dose of glucose. In no case was there any jaundice. Dermatitis occurred in three cases all at the same time, and was believed to be due to a faulty lot of novarsenobenzol. Sickness was a very rare occurrence. I have said that we generally give novarsenobenzol, but there is one very important exception to this—if there is any sign of optic atrophy. Four cases have come before my notice in which arsenical preparations increased an early optic atrophy. In one of these, a juvenile tabes, the eyesight was fairly good beforehand, but in all probability early optic atrophy was present. Before the patient came under our charge he was treated with an intravenous injection of some arsenical preparation, and the first dose caused complete blindness. It is the opinion of those well qualified to judge that cases of early optic atrophy should be treated very carefully. Arsenic should be avoided if possible and the treatment confined to mercury and iodides.

Dr. A. Stanley Barnes (Birmingham) remarked that the results of the salvarsan treatment were a little better, but not much better, than those obtained in the old days with mercury alone; in 10 per cent. of all cases the disease tended to die out whether treated or not. The aim should be to find some drug which would percolate more easily. He suggested protein shock in addition to mercury and arsenic injections, in the hope of aiding the percolation of these drugs into the cerebro-spinal fluid.

Sir Frederick Mott doubted if there was much evidence that the arsenical treatment was much better than mercury inunction, and therefore prophylactic treatment—the prevention of the entrance of the organism—was of the greatest importance. In 66 per cent. of fatal cases of general paralysis of the insane organisms could be found in the substance of the brain and in the perivascular spaces; they were found especially easily in four cases treated by intrathecal injection. Mercurial treatment was extremely valuable and inunction the best way of giving it. He referred to the simple and effective Sicard method which gave small doses on alternate days of novarsenobenzol hypodermically or intramuscularly in glucose.

Professor C. H. Browning (Glasgow) considered that no satisfactory experimental evidence had yet been offered of the existence of a neurotropic variety of spirochaete. The problem of therapy in nervous disease was very difficult; all cases attending a venereal clinic should be examined as to their nervous system to determine at what stage neuro-syphilis arises.

Dr. David Lees (Edinburgh) spoke from an experience of 3,000 to 4,000 cases of early syphilis in which he had tried all methods of treatment previously mentioned except that by intracranial injection. He was not satisfied that any better results were obtained by spinal drainage than by the Sicard method, but in eight of nine cases of tabes in which Quéry's monkey serum was used intramuscularly very definite improvement followed.

The President (Professor G. M. Robertson, Edinburgh) outlined the development of our knowledge of general paralysis of the insane, and moved the following resolution: "The members of the Section of Neurology and Psychological Medicine of the British Medical Association send their congratulations to the Dean of the Faculty of Medicine of Paris on the occasion of the centenary of the presentation of the thesis by Bayle entitled *Recherches sur les maladies mentales*, in which for the first time the view was expressed that the symptoms of paralysis complicating insanity were those of a distinct disease now known as general paralysis of the insane. The discovery and differentiation of the symptoms of this disease are justly regarded as one of the greatest advances ever made in neurological and psychological medicine and the whole credit of this is due to the observations of Parisian physicians, especially of Esquirol, Roger-Callard, and Calmeil. The members of the Section further desire to express their sense of the great debt they owe to French neurologists and psychiatrists for this and for much other work in their special branch of medicine." The resolution was seconded by Sir Frederick Mott and carried with acclamation.

ON THE ELEMENT OF CONTRAST IN THE PSYCHIC MECHANISM.

BY

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Psychologists are agreed that the whole mental structure of evolved man rests upon the laws of association of ideas. It has been shown that the great bulk of associations common to all men are capable of being included within two main categories—namely, those founded upon resemblance and those upon contiguity in time and in space.

Some authors have written of these two categories as intrinsic and extrinsic, and others again as internal and external. Various subtypes of associative bonds have been recognized, and amongst these there are some that are individual rather than general—for example, associations between a word and a letter (clang associations), between a letter and the name of a colour, between a number and a colour, etc. No doubt the prevailing type in any particular individual is due in great part to training, education, and

habit—for example, the reasoner as against the descriptive writer; but it also depends upon innate factors—that is to say, factors intrinsic in the developmental potentialities of the neural mechanism. A congenitally blind man cannot associate yellow colour with the word "orange"; the artist and musician perceive shades of colour and qualities of tone and harmony that lie without the perception of others. In this way we have come to recognize differences in the mental make-up of separate individuals, these differences depending upon the prevalence of particular types of associative links in the ideative mechanism. It has been pointed out, for example, that the majority of men are auditory rather than visual, but a considerable number show a prevalence of visual images and associations, whilst others again are decidedly tactomotor.

Amongst the special varieties of associative bonds that can be distinguished there is, however, one which is common to all men, and at the same time so powerful in many that it deserves to be considered in a category by itself. I refer to associations due to contrast.

From the dawn of consciousness in the human infant, from the moment there begins to arise a distinction between the external and the internal, between that which is self and that which is not self, there begins a struggle which is characterized by a contention of elements for and against existence and expansion. In this contention contrasting elements are ever in evidence, and, as experience augments, the opportunities of contrast become ever more subtle and complex. "Man," wrote Dumas, "is a strange animal wholly made up of contrasts." That statement may not carry conviction on the face of it, but a little consideration of the subject will soon convince one that it is in great measure true.

It is noteworthy that, centuries ago, philosophers and psychologists recognized the fact that contrast played an important part in the ideative processes. "When we seek," said Aristotle, "after an idea which is not immediately before us, we reach it through the mediation of another idea, either by resemblance or contrast or contiguity." Yet I have found on consulting a number of modern textbooks of psychology that comparatively little attention is devoted to contrast as an element of any particular importance in the psychic mechanism. Some authors omit this subject entirely, whilst others make only a passing reference to it.

Professor Baldwin,[1] in treating of the laws of association of ideas, admits that at first sight one might be warranted in citing contrast as a distinct principle of association. "If the sight of a dwarf brings up a giant, if sour makes one think of sweet, there can be no doubt," he says, "in such cases of contrast of the reality of the association; but," he asks, "are there not other reasons than that of contrast to which it may be referred?" He answers: "There are such reasons, it seems, in all cases, and we are led to reduce these associations to resemblance and ultimately to contiguity. In most cases of contrast," he argues, "there is a standard of reference to which both the presentation and the revived image are referred; this standard constitutes a point common to both ideas, a point of resemblance. For example, the short man suggests the tall, since both are, at once, thought of in comparison with an average man. The one is short only as he is shorter than usual, and the other is tall only as he is taller than usual. Thus in the very conception of the contrasted images a common element enters. This common element . . . secures the association by contiguity."

The view thus expressed by Baldwin would appear to have been endorsed by many other writers, but, however logical it may appear to be, it does not really invalidate the position of those who would regard contrast as in itself a distinct and fundamental principle of association. It merely brings into prominence the fact that we can distinguish degrees of contrast and, further, that contrasting ideas are brought into contiguity in consciousness by the very reason of their contrasting character. After all, contiguity itself can only be conceived in relation with the conception of separation or remoteness.

The general law would appear to be that the first and last components of a series are more closely associated than the intermediates; in other words, that associations are more prone to be formed between maximal than between minimal contrasts. In the field of the sensations, for example, black is more closely associated with white than with the intermediate shades of grey. Heavy is associated with light, smooth with rough, and so on. In the field of the emotions we have pleasure associated with pain, friendship with enmity, love with hate, whilst in the higher field of the sentiments we have the moral associated with the immoral, cowardice with courage, etc.

It would seem to be the case that it is where thought embraces factors that are attributive—that is to say, qualitative, quantitative, or distinctly affective—that the element of contrast is particularly apt to come into play. Where the more or less purely cognitive factors in thought predominate in consciousness, there is less likelihood of contrasting elements becoming prominent. "Sweet" finds ready association with "sour," "long" with "short," "good" with "evil"; but "horse" is not unlikely to be associated with "stable" or "cart" or "race," "desk" with "office" or "papers," "pen" with "ink," and so on. In the latter examples the affective element is weak and contrast unlikely. So, too, in many ideative processes, such as are involved in the pursuit of scientific problems and reasoning to a logical conclusion, the ideative process may be sustained with a predominance of cognitive factors and a relative absence of contrasting elements. Even under such conditions, however, condition involving processes of cold calculation or abstract reasoning difficulties may arise. The happy solution of the problem or the attainment of the end in view may, after long and sustained thought, appear no nearer; unforeseen obstacles may arise, steps may have to be retraced, failure may threaten and, with that, discouragement may supervene, bringing in its train numerous contrasting ideas. Apart from that, however, the fact remains that a great part of the everyday mental activity of the generality of men, that part concerned in the things that matter, in the struggle for existence, in the attaining of success, the getting of comfort, in short, in the expansion and development of the individual and social ego, is characterized by strong affective tones of consciousness, which permit the play of contrasting ideas for and against.

Here I would like to dwell for a moment on the part played by the affective or emotional element in thought as an important associative link in the ideative processes, for I am inclined to think that it deserves more attention than has been accorded to it by the majority of writers. I will not attempt to enter into any discussion as to the nature and genesis of emotion—that lies entirely without the immediate scope of this paper. I will simply remind you of the biological law that every stimulus which acts upon a living organism is harmful or beneficial, integrative or disintegrative in its effect upon the organism.

(It may be argued that some stimuli are indifferent in their effects, and in this connexion allusion may be made to modes of natural energy which are constantly impinging upon our bodies, which yet awaken no sensation whatsoever—for example, emanations of radium and the ethereal vibrations of the ultra-violet rays which do not reveal themselves to our unaided senses. Were we to pursue this argument we should have to discuss the distinction between mere reception of energy and sensation and all that is involved in the old problem, "Where does sensation begin?" The study of all that is comprised within the term "kinaesthesis" goes to prove that the biological law referred to is fundamental and permits of no exception; that, indeed, every stimulus which penetrates the organism has an integrative or disintegrative effect, no matter whether it does or does not awaken sensation. One might refer in passing to the varying response of the muscles of the iris to different intensities of light, unaccompanied by sensation yet certainly protective and integrative in its effect.)

Leaving aside the disputed question of indifferent stimuli, one can certainly say that whenever a stimulus penetrates the organism and arouses sensation that sensation has qualities or attributes which can be spoken of as beneficial or harmful, integrative or disintegrative. Similarly all our percepts, which at bottom are complexes of sensations, have their sensational accompaniments which give rise to tones or modes of consciousness to which we ascribe the so-called emotional attribute of pleasure or of pain. When we rise from perception to ideation analysis convinces us that every idea bears with it a mnemonic residuum of the particular sensational and emotional attributes that belong to its perceptive content. This emotional concomitant which attaches to every idea frequently serves as a powerful bond of association in the ideative processes. In illustration one might cite the case of a man to whom an unexpected fortune has come. We say he is overflowing with happiness. His consciousness is occupied with ideas which have as their affective components the emotional element of joy. It is not likely that painful ideas will spontaneously arrest his attention. He

cannot be at once gay and sad. The prevailing bonds of ideative association in this case lie more in the affective than in the cognitive elements. No doubt the usual associative links of similarity and contiguity are each in evidence, but the first importance attaches to the affective elements. The condition is well exemplified in the expansive maniac whose incoherent flight of ideas often lacks any consistent associative bond other than the emotional.

Professor James[3] is found amongst those who emphasize the important part played by the emotional bond in the associative processes. He speaks of it as "emotional congruity" and places it along with habit, recency, and vividness, as affording an explanation why one rather than another of many possible associations should follow a particular stimulus. In this connexion Professor James speaks more particularly of normal mental action, but it is a fact that the influence of emotional congruity upon the mental mechanism is even more striking in cases of mental disorder.

Emotional congruity is but another term for emotional similarity or harmony, and thus it may be brought within the category of the associative bonds founded upon resemblance. At the same time it is worthy of notice that the factor of contrast may come into play here also. It is widely recognized that the same images and objects do not constantly bring into consciousness the same associates. As James has well said, "The records of Arctic or African travels, perused in one mood, awaken no thoughts but those of horror at the malignity of nature; read at another time they suggest only enthusiastic reflections on the indomitable power and pluck of man." Speaking from his own experience he declares that "few novels so overflow with joyous animal spirits as *The Three Guardsmen* of Dumas. Yet it may awaken in the mind of a reader depressed with sea-sickness, a most woful consciousness of the cruelty and carnage of which heroes like Athos, Porthos, and Aramis make themselves guilty."

Similar experiences are doubtless common to all of us, but the contrasted states of consciousness which arise as a result of the same images probably find their explanation in an altered kinaesthetic tone of consciousness. The pleasures of yesterday lie as a pall upon us to-day. At first thoughts one might conclude from such instances that the same ideas have not always the same emotional concomitants inherent in them, but that would be a very wrong conclusion. If at one period of our lives the exploits of the Three Musketeers excite within us enjoyable emotional states and at a subsequent period awaken opposite feelings of repugnance and horror, the emotional contrast finds its true explanation in the fact that on the second perusal a new order of ideas has arisen, these ideas bringing along with them their own peculiar emotional tone. In the example just quoted the repugnance experienced on the second perusal is the natural consequence of ideas of bold bad men who delight in bloodshed and deeds of evil daring. These ideas differ from those that were present in consciousness on the previous occasion.

Expressed in another form, it can truly be said that the same images and objects are not always succeeded in consciousness by the same associates, but that is a very different thing from saying that the same ideas have not always the same emotional concomitants. Again, our ideas of particular objects may alter from time to time as our perceptions of these same objects and their relations become more perfect and complete, so that along with cognitive development there will be emotional variation, always, however, in strict relation with the cognitive variation.

I wish to lay particular emphasis upon the latter point, because not a few authors who have discussed psychological problems in recent times from a psycho-analytical point of view have proffered as explanations of certain morbid states the splitting off of the affective element from a certain order of ideas to which it properly belongs and its transference and attachment to another order of ideas, often of a contrasting nature. Such an explanation (like some other propositions, advanced by certain psycho analysts) may be plausible, but it does not withstand criticism, nor does it accord with well-established biological principles founded upon the study of the evolution of psychic phenomena.

To my mind the cognitive and affective elements which together compose any particular idea are as inseparable as the heat and the light which we find associated in the glow of an incandescent lamp, which together, and only together, give the incandescence. It is true that the heat and the light may vary with variations in the quantity of energy which is expended, and, again, that the same amount of energy can be made to give variations in heat and light if the disposition of the apparatus is altered and new elements are interposed in the circuit. Similarly, the intensity of the affective and cognitive elements of an idea may vary in consciousness from time to time according to the intensity of the stimulus that has re-evoked it, and according as new elements intervene in the nervous mechanism involved.

What is true of one idea is equally true of trains of thought. The intervention of new elements coincides with perceptive and ideative developments, and with the kinaesthetic variations which underlie and afford the explanation of our variable moods and temperaments. All emotional states are blended with the kinaesthetic waves which arrive at the central nervous system from every organ and tissue, though these do not in normal conditions awaken consciousness.

Contrast provides us with a useful biological distinction between lower and higher forms of consciousness. Professor Bianchi[5] of Naples, in treating of the phenomenon of consciousness, alludes to the difficulty which all psychologists and philosophers have experienced in attempting to define the point in the scale of living organisms where consciousness can be said to be first manifested. He provides, however, a very useful and suggestive contribution to this discussion in his distinction between what he calls lower consciousness and higher consciousness. Higher consciousness, according to Bianchi, is an attribute of all evolved human beings, and it may possibly be ascribed to the higher mammals, which, to the external observer, seem to give evidence of reasoning capacity. The dawn of higher consciousness would coincide with the appearance of contrast between actual images and those furnished by memory of past experience.

"If I prevent my dog," says Bianchi, "from making off with a piece of meat and then go away with forbidding and threatening air, leaving it beside the dog, he refrains from touching it. Such behaviour represents an impulsion resulting from the internal struggle between hunger, desire, the impulse to eat the piece of meat, and the prohibition received. It is conscious behaviour. If desire and hunger gain the upper hand and the dog seizes and eats the piece of meat and then, very repentant and fearful, hides himself or runs a long way off, only to return home after a time full of compunction and humiliation, imagining that he will have to confront his master's displeasure, this is consciousness made up of memories, associations, imagination, and sentiment." It is conscious rather than instinctive behaviour, inasmuch as it involves the recall of past percepts and the contrasting of these in consciousness with the percepts of the moment. We can recognize in such behaviour a play of memory, and a choice from amongst contrasting images—factors which form the basis of discrimination, reasoning, and judgement. It is considerations such as these that induce Bianchi to advance the hypothesis that "whilst consciousness has its nucleus in sensations and organic movements, and doubtless may be fashioned in different manner in different beings, yet evolved consciousness emanates from the *rencontre* of the actual perception or representation with other confirmatory or contrasting percepts furnished by the memory of previous states of consciousness conserved in the unconscious."

The more closely conduct approaches to behaviour which is an immediate outcome of percepts or representations of the moment, the more it presents the character of immediate reaction to a particular stimulus, the more invariable and uniform the memory involved, or, expressed in other terms the more it is the resultant of the flow of nervous energy along habitual and unvarying nervous pathways, the more does it sink to the level of the instinctive. Intelligent behaviour on higher levels results from the intervention of more numerous representations furnished by a memory which is multiform and variable, varying as it does with length and breadth of experience, a memory which permits the play of ideas for and against, with the ultimate ascendancy of some over others, manifested in conduct which represents a more perfect adaptation to circumstances. Here one can conceive the underlying mechanism to involve a flow of energy along more numerous and complex nervous pathways, some convergent in one direction, others divergent or convergent towards an opposite direction, the issue being dependent upon the ultimate surcharge of one rather than another of the different sets of neuron routes involved. In brief, there is herein brought into play all that extensive mechanism which we conceive to underlie all that is included within the terms memory, reflection, discrimination, choice, judgement, reasoning, inhibition, and will.

It is clear that the greater the store of utilizable mental

capital, or, in other words, the more extensive the memory and the more facile the process of recall, the greater will be the opportunity for contrasting elements to come into play, the greater will be the range of adaptability of the individual to his environment, and the greater the probability of success.

There are exceptions to every rule. Instances will occur to your memory of men who have on occasions achieved success without much reflection, where others with greater powers of discrimination, of contrasting the pros and cons have failed. The rash speculator who makes a successful plunge into the stock market will afford a ready example. We commonly declare his success to be due more to good luck than good judgement, and it is not from such examples that we seek to deduce laws that may usefully regulate the conduct of men in general. If, as not infrequently happens, a great store of knowledge does not coincide with highly intelligent conduct, that is probably to be ascribed to a relative paucity of contrasting ideas or a lack of facility in recalling contrasting ideas from the mnemonic capital, always taking into account the influence of habit.

I have already made passing reference to the differences that can be distinguished in different individuals in the formation and expression of ideas according as there is a predominance of auditory, visual, and tactomotor elements in their mental make up. Differences may likewise be founded upon the relative absence or frequency of contrasting elements. Such differences will depend partly upon qualities intrinsic in the nervous substance, but they are partly to be explained by the law of habit, which here, as in most aspects of the mental mechanism, is of great importance. This fact finds tacit recognition in the upbringing of the infant and the education of the child.

It is probably the case that the dawning consciousness of the infant rests upon vague and confused contrasts between inner and outer relations, between the self and the non-self, between sensations of comfort and discomfort. The child is taught to recognize and distinguish between different objects by having pointed out to it that the one possesses features or qualities which are absent in another and vice versa. Thus occasions permitting contrast are constantly arising. From an early age the child is ever being impressed by parents or instructors to "do" this and "don't do" that, that this is "good" and that is "bad." These injunctions, drawn as they are from the maturer experience of elders, are often beyond the child's philosophy. That they are often in contrast with its natural tendencies is evidenced by the mode in which it receives them, its wonder, and its "whys" and "why nots." Just here lies the great distinction that separates the human being from brute creation.

In his discourse upon reasoning, Professor James has declared that the "characters whose presence impress brutes are very few, being only those which are directly connected with their most instinctive interests. . . . A thing may remind a brute of its similars but not of things to which it is but slightly similar; if the most prosaic of human beings could be transported into his dog's soul, he would be appalled at the utter absence of fancy which there reigns. Thoughts would not be found to call up their similars but only their habitual successors. Sunsets would not suggest heroes' deaths, but supper time. That is why man is the only metaphysical animal. To wonder why the universe should be as it is presupposes the notion of its being different, and a brute who never reduces the actual to fluidity by breaking up its literal sequences in his imagination can never form such a notion. He takes the world simply for granted and never wonders at it at all."

Again, it may be pointed out that a great part of education in early years is based upon the principle of impressing definite ideas upon the child and of encouraging certain habits of thought and conduct rather than others. Such forcible impressions necessarily imply repressions towards thought and action in other directions, although the contrast involved may not be brought prominently before the child's consciousness. Taken as a whole, the pedagogic method or system is logical and good, and is perhaps the only method available as a short cut to the acquisition of the knowledge laboriously acquired by preceding generations. There is a point here, however, which should have great significance to the compilers of scholastic schemes. The forcible application of methods and systems designed for the mass, but not necessarily appropriate to the individual, contains a certain element of danger.

After the child has suffered repressions and inhibitions in the domestic circle, under parental or other authority, he proceeds to the elementary school, where he is submitted to a process of training which is based largely upon the idea of encouraging certain habits of thought and conduct and discouraging others. It very often happens that by the time he has reached the age of 11 or 12 he has lost a great deal of the curiosity and inquisitiveness that characterized his earlier years. He has learned to appreciate the fact that things are not always what they seem to his untutored mind, and at the same time has acquired the habit of accepting from his parents and instructors the explanations which they proffer of the many problems that may come before him, without much discussion. If the father or mother or teacher says so then it is right. He has acquired habits of credulity and obedience, but this unfortunately is at the expense of criticism and discrimination. Contrasting notions, upon which discrimination is largely based, are not encouraged.

All this is no doubt mainly to the good, considering it is true that the system of education that is involved has been compiled, generally speaking, from experience gained by older and wiser individuals. It represents a method of imparting knowledge that is most promising of useful results, but it makes no allowance for individual variations in natural tendencies. Generally speaking, early home and school training does not encourage the habit of criticizing, which largely depends upon ability to bring contrasting notions together in consciousness. Notions, doctrines, and explanations laid down with [authority by parents, teachers, or elders are apt to be accepted without much questioning by children. Habits of thought thus early impressed are not readily broken. (Many of us have doubtless had experience of this in the religious teaching which was imposed upon us in our earlier years, about the accuracy or tenability of which we may have come to have some doubts only after the lapse of many years.) Comparatively few are by nature, or rather should I say, by habit and education, intensely critical and penetrating, and many of us experience a kind of shock when beliefs we have cherished are assailed and shown to be untenable.

Apart from matters of faith, our beliefs in matters of fact are greatly influenced by early training, and misoneism of later years no doubt finds its explanation in the difficulty that is experienced in overcoming the resistances which contrasting ideas imply. "Get hold of the children," say those who are interested in the implantation and spread of new principles or doctrines; but whilst we recognize the good that is in the system, we must not shut our eyes to the evil. Socialistic, asocial, and revolutionary doctrines preached constantly with the voice of authority by parents or teachers or elders are certain in a large number of instances to be accepted without much criticism because they have the stamp of authority upon them. Whether they will afterwards be rejected or modified will depend to a large extent upon subsequent environment and experience—that is to say, upon the opportunities occurring in the life of the individual for the play of counter-influences and the formation of contrasting notions.

What I have hitherto said has had reference more particularly to the part played by the element of contrast in the normal mental mechanism, but a little reflection will show that the subject is worthy of further study in relation to many morbid mental phenomena. Speaking generally, one might say that many mental disturbances are associated with deficiency in number or potency of contrasting ideative elements, whilst others show a morbid preponderance of contrasting notions over those other ideas which have been the means of their recall into consciousness.

The contrasting capacity is very limited or absent in idiots, imbeciles, and mental defectives, whose mental life revolves in narrow spheres, characterized by simplicity as well as paucity of ideas. Their defective judgement and discrimination may be explained as largely dependent upon their inability to compare and to contrast. At the other end of the scale dements find themselves very much in the same position either because of their loss of mental capital or their inability to recall from their mnemonic store the requisite confirmatory and contrasting elements which form the basis of sound judgement.

Again, the impulsivity which is so prominent a feature of the epileptic psychosis, as well as of mental deficiency and certain forms of mental enfeeblement, may be interpreted as affording evidence of the lack of contrasting notions. If an idea, having presented itself in consciousness, is immediately translated into action in the rash and precipitate manner so

characteristic of the epileptic, that would signify not only great accessibility and permeability of the motor paths, but also a failure to call forth contrasting ideas with their inhibitory accompaniments. There is here a sort of short-circuiting as compared with what we conceive to occur in processes involving contrast, choice, and volition.

So, too, in many dreams the rapidity and amazing ease with which we fancy notions to be realized under conditions which to our waking consciousness seem incongruous and illogical, may be conceived to be due to a similar short-circuiting, or, in other words, to the non-intervention of all the normal associative mechanism with its representation of confirmatory and contrasting notions and tendencies, which is the feature of the fully conscious state.

Whether we do or do not accept the prevalent notions of the subconscious and the unconscious as set forth by the exponents of the modern psycho-analytic doctrines, we are compelled by the facts of experience to admit different intensities of consciousness even in the waking state. There are times when the thinking process is intensely active, when representations are clear and recall their various confirmatory and contrasting associates with readiness and facility, when ideation is sustained and logical conclusions are arrived at. At other times (associated, it may be, with fatigue or toxaemia) we experience great difficulty in pursuing trains of thought, memory is unfaithful, and even with effort we cannot think clearly, notwithstanding the fact that we are quite awake and conscious.

Again, practically all human beings are more or less given to abstraction. Abstraction, when it takes place with full consciousness, pursuing preconceived ends, furnishes us with examples of inventive imagination. In states of less intense consciousness it gives us reverie and day-dreaming. When we allow our thoughts to wander, as we say, the new formations that arise from unwonted ideative associations are often absurd and illogical. When we regain our normal state of consciousness we recognize them to be fantastical and out of harmony with reality, which furnishes a number of contrasting images. These new formations do not fit in with our preformed notions. They do not become attached to the latter with strong associative bonds and so are readily forgotten, at least in normal man. Yet it should ever be borne in mind that they represent actual psychic new-formations which under appropriate circumstances may be recalled or re-enacted. The requisite conditions may be found in states of low intensity of consciousness—as, for example, in subsequent periods of reverie or in dreams or in conditions of delirium, when something akin to short-circuiting in the psychic mechanism again becomes the rule.

Many automatisms furnish us with examples of mental action which is characterized by absence of psychic contrast. An extreme example is afforded by the somnambulist, who unhesitatingly pursues his course in dangerous positions, quite oblivious of the risk he runs; the feats he unconsciously performs would be beyond his achievement in the waking state, when the situation in which he would find himself would evoke contrasting ideas of risk and danger, along with their inhibiting concomitants. Something akin to this takes place in normal men who perform certain actions which they would not dream of performing with a fuller knowledge of the circumstances involved. The condition has been summed up in such sayings as "Where ignorance is bliss 'tis folly to be wise," and "Fools rush in where angels fear to tread."

The so-called functional psychoses, hysteria and psychasthenia, including the obsessions and phobias, offer us a most extensive field for the study of the mechanism of psychic contrasts and the influence of these upon conduct and adaptation. Hysterical subjects are notoriously unstable, and they present the strangest contrasts and paradoxes in thought and action. These are frequently nothing more than the external manifestations of contrasting ideative processes, ranging from simple to the most complex. A simple example is afforded by the tendency of the hysterical subject to act contrary to a given injunction. One meets with this condition episodically in people who are not commonly regarded as hysterical. The notion of refraining from coughing or yawning may bring with it the contrary desire to cough or yawn, which often proves irresistible. In this respect hysterical people present features of infantilism reminding us of the common tendency in infancy to act contrary to a given injunction.

Hysterical and neurasthenical subjects who display great devotion to a particular cause are often driven thereto by contrary notions and emotions. Intense egoism and vanity are sometimes translated into acts of altruism and charity. Some who have long dedicated themselves to religious duties and practices subsequently become mastered by erotic and lascivious notions utterly in contrast with their vows. The truth would seem to be that the antithetic notions and tendencies have never been entirely wanting, though they have not occupied consciousness to the same extent, and that after years of inhibitions and repressions on one hand and exaltations on the other there ensues a period of nervous exhaustion (to which various factors may contribute) which disturbs the inhibitory balance in favour of those elements the activity of which has hitherto been kept in check, so that the latter are now allowed free course. The eroticism and immorality displayed at the climacteric period by some individuals, men and women, who have not hitherto been regarded as hysterical, whose conduct, however, at this time makes strange contrast with their previous behaviour, is doubtless to be explained on similar lines.

In many phobias and impulsions we have examples of the coercive power which contrasting notions may exert. The thought of doing some action or the desire to avoid some deed which is out of harmony with the proper personality brings into consciousness a number of notions correlated with the action in question. The sufferer is in most instances painfully conscious of the irrational character of the contention which ensues between the ideas alternating in his consciousness, but despite his efforts his conduct is dominated by the irrational contrasting notions and emotions.

The neurasthenic who trembles at the notion of suicide may one day be impelled to an act of self-destruction. Apart from actual neurasthenia, recognized as such, we sometimes hear of sudden suicide in the case of individuals who have not previously given evidence of disturbed mental balance and where inquiry fails to reveal any assignable motive for the act. It may be suggested in such cases that the idea surprises consciousness in a weak moment when the regulative powers are low. The antithetic notion which should normally come into consciousness, supported by a train of associated ideas, the excito-motor resultant of which tends to action in an opposite direction, fails to be evoked. It remains inactive or feebly active in the unconscious and the morbid idea of suicide finds its motor path unobstructed. There is no contest for or against. There is no inhibition. The end is inevitable. The thought is translated into the deed. Possibly the same reasoning is applicable to linguistic tics—in the form of coprolalia exhibited by many insane persons, who, when they had control of their faculties, were never known to utter obscene language.

Many delusions of the insane may find their only explanation in the coercive domination of ideas which are brought into consciousness by the mechanism of contrast. I cite the case of a woman brought to the asylum because of delusions of grandeur which led her to lay claim to the possession of a valuable estate in England, bequeathed to her, she imagined, by a noble lord. Inquiry showed that she was indeed in very humble circumstances, but a very devoted mother to two young children. Deserted suddenly by her husband and confronted with poverty, which destroyed her plans and paralysed her actions for her children's future welfare, the contrasting notion of wealth and of the benefits it confers took possession of her consciousness and became the nucleus of an organized system of delusions.

It is not my purpose here to discuss the various other elements concerned in the genesis of delusions. It is sufficient at the moment to say that investigation will show that in very many instances, more particularly in the case of primary delusions—that is, those which are not immediately dependent upon hallucinatory disturbances—the delusional ideas have been brought prominently into consciousness, in the first instance, by the mechanism of psychic contrast.

There is one other point to which I wish in conclusion to make brief allusion. Contrast, as we have seen, is a fundamental and important element in the psychic mechanism, inseparable from the acquisition of knowledge of the outer world; but knowledge of the outer world implies the reception of energy from the external universe. The contrasts which are revealed to us in the intimate natures of objects and relations become facts of consciousness, but it is true that all psychic products resulting from the transformation within the nervous system of the various forms of cosmic energy tend ultimately to find expression in movement, in the form of speech and action. In this transformation and extrinsication of energy we recognize all that is included in the terms "behaviour" and "adaptation."

Within the limits of normal psychic functioning we are frequently conscious of the play of contrasting notions and emotions with correlative intuitions or impulsions to movement on the one hand and inhibitions and repressions on the other.

Whether it be in the form of deliberation and reasoning to a conclusion without immediate action of a gross kind, or the weighing of the pros and cons with determination to immediate action, the conflict between the opposing tendencies, intense though it may be, does not greatly disturb the personality, provided there is a definite issue and harmonious adaptation. Where, on the contrary, there is vacillation and indetermination consequent upon the monopolization of consciousness by contending notions and emotions, conflict becomes distinctly morbid, because on the one hand it restricts psychic action within unduly narrow limits, preventing the utilization of a great part of the mental capital, and on the other hand it interferes with the reception and assimilation of stimuli from without which are the constant accompaniments of normal relations with the environment.

It is clear that the psychology of conflict which has occupied such a prominent place in recent literature cannot be adequately and rationally discussed without a full appreciation of the part played by contrast in the normal psychic mechanism, more particularly in relation to all the processes involved in ideation and emotion, attention, discrimination, judgement, choice, volition, and inhibition.

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EPILEPSY AND GUNSHOT WOUNDS OF THE HEAD.

[*Abstract.*]

DR. W. ALDREN TURNER (London) said that out of 18,000 cases of gunshot wounds of the head under the Ministry of Pensions 800, or less than 5 per cent., have developed epilepsy. It is met with in two classes of case: (1) following slight trauma without obvious injury to the skull or brain; (2) true traumatic epilepsy, following injury to the skull or brain, and associated usually with paralytic symptoms. In the first class it is often difficult to say how far the fit may be attributable to the head injury, but it is an important point on account of the number of ex-service men who have received a minor gunshot wound of the head and who state they have in consequence become epileptic.

In true traumatic epilepsy the disability is characterized by seizures having the characters of ordinary epilepsy which may follow injury of any part of the brain except the cerebellum, independent of the extent or severity of the lesion. The time of onset of fits after injury varies from six months to two or three years. Jacksonian epilepsy is rare in comparison with the incidence of ordinary traumatic epilepsy.

Traumatic epilepsy following wounds of the brain is attributable in part to the injury, but in greater part to the constitutional disposition of the patient; local conditions at the seat of injury only in part explain the phenomena. The very small percentage of cases of gunshot wound of the head which develop epilepsy is remarkable, especially when it is known that "anchoring" of the brain to the scalp and the extensive destruction of the skull associated with paralytic symptoms are, in the majority of cases, not associated with epilepsy.

THE Medical Officer of Health for Cairo City in his recently issued report for 1920 states that during that year 40,054 vaccinations were carried out by the medical officers of the inspectorate and districts. Of these 30,623 were primary vaccinations, principally of native children. The corresponding figures were 27,292 in 1919, and 25,613 in 1918. The number of cases of small-pox notified during 1920 was 157, as compared with 1,455 in the previous year.

THE second international congress of military medicine and pharmacy will be held in Rome next spring, beginning on May 28th. The first congress was held in Brussels in July, 1921. The chief subjects for discussion at Rome will be the general principles of the evacuation of the sick and wounded, the co-operation of civil and military authorities in the prevention of disease, chemical laboratories in the field, and the treatment of penetrating wounds of the chest. The subscription is fr 25. Further particulars can be obtained from the Direction of the *Comptoir de Material Militaire* at the Palazzo del Ministero della Guerra, Rome.

THE SURGICAL TREATMENT OF GASTRO-JEJUNAL AND JEJUNAL ULCERATION.

BY

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I HAVE elected to bring before your notice to-night a record of surgical failures, believing that one way to progress lies in the study and analysis of our unsuccessful cases.

While the surgical treatment of gastric and duodenal ulcer is for the most part highly successful there remains a percentage of patients who are not cured or even relieved by surgical measures, and of that residuum probably the most unsatisfactory are the subjects of secondary ulceration, either gastro-jejunal or jejunal. I say they are the most unsatisfactory because not only are they not cured, but very often they are in a worse condition than they were before operation. This complication has occurred most frequently after the operation of gastro-enterostomy, and it has been stated that it does not follow operations of partial gastrectomy. This, however, is not true, and cases are now beginning to be reported after these operations. The reason for this false impression is that until recently the operation of partial gastrectomy has largely been confined to cases of carcinoma, which practically never develop secondary ulcers, the necessary factor of hyperchlorhydria being absent. Now that partial gastrectomy has become established as a surgical treatment for gastric ulcer I have no doubt that an increasing number of cases will occur.

No variety of operative procedure on patients suffering from gastric or duodenal ulcer is immune from this complication, whether it be gastro-enterostomy, partial gastrectomy, excision of the ulcer, or pyloroplasty. From the published records, however, it would seem to be specially prone to follow operations for duodenal ulcer, operations en-Y, and with entero-anastomosis. The reason for this is the high degree of hyperchlorhydria which is usually found in duodenal ulcer, and, in the case of the special types of operation, the fact that the unneutralized gastric contents come into contact with jejunal mucosa.

It is believed by some that secondary ulcer is more likely to follow anterior than posterior gastro-enterostomy. It is very difficult to form a reliable opinion on this point, but what is evident from a study of the recorded cases is that true jejunal ulceration is relatively more frequent after anterior gastro-enterostomy, probably because the farther we descend the intestine the less tolerant it is to the action of the gastric juice.

The actual cause of the secondary ulceration is as obscure as the cause of the original ulcer for which the operative treatment was undertaken. That it is due in some way to the action of the gastric juice is evident from the situation of the ulceration—for example, on the anastomotic opening, on the jejunum opposite the stoma, on the efferent loop just beyond the anastomosis. That it is associated with hyperacidity is also beyond doubt, and probably this acidity is a factor in the production of the ulceration. We are still, however, in the dark as to the causation of the hyperacidity.

Errors in technique have been held to be largely responsible, especially the use of a Murphy's button or an unabsorbable continuous suture. In a series of cases I collected and published in the *British Journal of Surgery* (vol. vi) there were 14 cases out of 145 where Murphy's button had been used and 13 where an unabsorbable suture played an important part in the production of the ulceration. Nevertheless cases have occurred where catgut only has been employed.

The use of clamps and other technical methods have been blamed, but there is no definite proof that such methods are especially prone to be followed by ulceration. We are confronted with the fact that secondary ulceration may follow any technique and may even occur in the absence of hyperchlorhydria, though this is not common. We are driven to the conclusion, therefore, that the cause of the original ulceration is still at work in these cases, and has not been removed by the operation, and this is borne out by the great liability to recurrence in these patients, many of whom have been operated on repeatedly.

When we know the cause of gastric and duodenal ulceration we shall also know the cause of gastro-jejunal and jejunal ulceration.

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* A paper read before the Liverpool and Manchester Medical Societies.

My object now is to analyse the small series of cases that have been under my care, with special reference to the surgical treatment that has been employed, and, if possible, to come to some conclusion as to the methods which are most likely to be successful. Most of these patients have been under observation for some considerable time—a condition which is essential if we are to form a true estimate as to the results of treatment. Many of the cases reported on as cured have been followed for only a few months after operation, a period which is much too short. My experience is that relapse is very common and may come on a year or more after operation.

I have had under my care seven cases of secondary ulcer, five of whom were originally operated on by me and two by other surgeons. Multiple operations have been done in most cases, and the results have been disappointing. I propose to give only a bare outline of the cases, and not to bore you with clinical details. The first three of these have been reported previously.

Case I.

Male, aged 32. On May 6th, 1916, he had an anterior gastro-enterostomy for stenosis of the duodenum due to ulceration. Two rows of silk suture were used. In October, 1916, he had a sudden acute pain in the abdomen, and after this he had more or less continuous pain until December, 1916, when I reopened him. He had an ulcer of the efferent loop just beyond the anastomosis and adherent to the anterior abdominal wall. The ulcer was excised, and a silk suture, which was found lying in it, was removed. On October 3rd, 1917, he was living in Leeds, and had a sudden perforation, for which he was operated on in the Leeds Infirmary, the ulcer being sutured. Pain persisted after this operation, so that I operated on him again on November 29th, 1917. The ulcer was still present in the same place, and was still adherent to the anterior abdominal wall. The gastro-enterostomy was cut off, the opening in the stomach closed, and the affected loop of jejunum was resected and joined up by lateral anastomosis. A posterior no-loop gastro-enterostomy was then made, catgut alone being used. The patient remained well until the early part of 1919, when he began to have more indigestion. This persisted for some time, and did not really disappear until I fitted him with an abdominal support, as he had a fair degree of ptosis. Since then he states that he has felt a different man, and is now in good health.

Case II.

Male, aged 40. He was operated on by another surgeon for duodenal ulcer in December, 1915, the operation being posterior gastro-enterostomy with two rows of linen thread. Pain recurred in a few months' time, and he was reopened by the same surgeon in September, 1916, who performed an entero-anastomosis. Much induration was noted at the gastro-enterostomy stoma, and a length of linen thread was attached to it. This was removed when the entero-anastomosis was made. The symptoms rapidly recurred, and in December, 1917, I was asked to take him over, as his surgeon had to be absent on military service. On December 22nd, 1917, I operated on him, and cut off the anastomosis, which was the site of ulceration, and closed the openings in the stomach and the jejunum by a plastic operation. I excised the old duodenal ulcer, which was healed, by an elliptical incision, closing this transversely. The pylorus being patent, nothing further was required or done. Since that time the patient has been completely free from symptoms, and is now in perfect health.

Case III.

Male, aged 43. Perforated duodenal ulcer in January, 1912. Suture of the perforation and posterior gastro-jejunostomy with silk sutures. Indigestion reappeared in two years' time. Second operation, April 25th, 1918. Much induration and contraction of the stoma and transverse mesocolon were found. The gastro-enterostomy opening was excised, the opening in the stomach was closed, and the cut ends of the jejunum were joined by end-to-end union. Radiographic examination later showed fair permeability of the pylorus, so nothing more was done. The patient remained in good health until about six months ago. Since then symptoms of stenosis have gradually developed, for which I propose to operate.

Case IV.

Male, aged 49. Operation in August, 1918, for bleeding duodenal ulcer of three years' standing; posterior gastro-enterostomy and infolding of the ulcer; catgut alone was used for the sutures. Pain recurred six weeks after the operation. He was operated upon again on January 17th, 1920. An ulcer was found on the mesenteric border of the jejunum opposite the stoma. The anastomosis itself was free from ulceration. The anastomosis and jejunal loop were resected, the gastric opening was closed, and the jejunum joined by end-to-end union. A Kocher's gastro-duodenostomy was made because of the stenosis of duodenum. After a period of freedom lasting several months the symptoms recurred, and he was again reopened on December 31st, 1920. The gastro-duodenostomy opening was found to be almost obliterated, and a posterior gastro-enterostomy was again made. The patient is now free from ulceration, but has some reflux vomiting owing to adhesions round the efferent loop—no doubt the result of repeated operative interference.

Case V.

Male, aged 35. Operation, February 17th, 1917. Posterior gastro-enterostomy for duodenal ulcer. Relief for about six months, and then he had recurrence of pain and vomiting. A second operation was done in June, 1920. Gastro-jejunal ulceration, with stenosis of stoma, was found, and the pylorus and duodenum were also stenosed. Pyloroplasty was done, resection of the stoma being left for a future sitting. This gave so much relief that nothing more has been done. For six months he was completely free from pain, but since then he has had occasional slight attacks of indigestion lasting about three days. His weight at the time of the second operation was 10 st.; now it is 12 st. 3 lb.

Case VI.

Male, aged 40. Operation for perforated duodenal ulcer, October, 1919. Suture and posterior gastro-enterostomy (catgut only). Recurrence of pain three months later. Radiographically circular spasm of stomach was seen starting at stoma. Second operation, February, 1920. A small ulcer was found on the upper angle of the stoma. It was necessary to open the stomach to confirm this. The ulcer was excised locally, the resulting opening being closed with catgut sutures. The patient was readmitted to hospital on December 8th, 1920, suffering from severe haemorrhage. He was too ill for operation, and one pint of blood was transfused. He had a second less severe haemorrhage on December 12th, and then began to improve. On January 21st, 1921, he was operated on, and a thickened and stenosed stoma was found; the site of active ulceration. An attempt at pyloroplasty failed to produce a satisfactory opening, and therefore a partial gastrectomy was done, the anastomosis being included in the portion removed. The technique employed was a posterior Polya en-Y as advocated by Moynihan.

The patient complained of pain again in September, 1921, and still has pain and, he says, vomiting. He has been admitted to hospital and dieted carefully, and never vomits while he is in, and also he gains in weight. Radiographic examination reveals nothing, the stump of the stomach emptying freely.

Case VII.

Male, aged 47. Gastro-enterostomy in 1914 by another surgeon for pyloric stenosis. Relief for three years and then recurrence of pain. Latterly he has lost weight, but does not vomit unless he makes himself sick to relieve the pain. The radiographic report is as follows: "Stomach atonic and four inches low; moderately slow emptying through stoma." Second operation, December 6th, 1921. Active duodenal ulcer adherent to head of pancreas is still present. Stoma is much thickened and stenosed. The mesocolon is thickened and contracted. Partial gastrectomy by posterior Polya method was done.

When we analyse the methods employed in this small series we find that three have been left with the food taking the normal channel through the pylorus—namely, cases 2, 3, and 5. In two of these three cases no operation on the pylorus was necessary to enable the food to pass. In one a plastic operation was required. In two the gastro-enterostomy was cut off and in one it was left untouched—namely, case 5. The striking feature in this case was the rapid subsidence of symptoms when the plastic operation enabled the gastric contents to pass normally, and so relieved the stoma of the necessity of acting. The relief experienced was comparable to that afforded by the operation of gastro-enterostomy in duodenal ulcer with partial stenosis.

The results are: Cure in one case, where there was no pyloric stenosis originally, and where the original ulcer was excised at the time of the last operation. Relief for three years in a case where the pylorus was deformed, and then gradual onset of stenosis of the pylorus. Complete relief for six months and then partial recurrence of symptoms in the case where a plastic operation on the pylorus was necessary.

Two cases are left with a posterior no-loop gastro-enterostomy. In one (Case 1) there was a recurrence of symptoms about fifteen months after the last operation, but he is now well and eating ordinary food. I think the recurrent symptoms were possibly due to ulceration, though he has derived great benefit from wearing a ptosis support. The other patient (Case 4) is cured as regards ulceration, but has some reflux vomiting, which is controlled by gastric lavage.

Two patients have had partial gastrectomy (Nos. 6 and 7). No. 7 is too recent for any reliable opinion to be formed. No. 6 has pain, but how far one can rely on his statements is a little doubtful as he is a pensioner, and while he is under observation in hospital he does not complain much. It is somewhat significant, however, that he has a total acidity of 127 and free HCl of 60.

The operative methods at our disposal are:

1. *Local Excision of the Ulcer.*—This was employed on two occasions in the present series, and it was successful in neither.

2. *Cutting off the Gastro-enterostomy*, and the formation of a fresh anastomosis.—This was employed in Cases 1 and 4, two fresh anastomoses being necessary in Case 4, the gastro-duodenostomy done at the second operation being closed by ulceration. The ultimate result is moderately successful in both.

3. *Partial Gastrectomy.*—Employed on two occasions in the present series. Probable recurrence in one patient. The other operated on too recently for report. The drawback to this operation is that one is almost driven to an operation en-Y.

4. *Cutting off the Gastro-enterostomy, and Restoration of the Natural Channel.*—Where there is no pyloric stenosis, as in Case 2, this is the most satisfactory operation of all. Even where a plastic operation is necessary the ultimate outlook is fairly good. It is essential that the original ulcer, if still present, should be excised, and if this had been done in Case 3 I think that we should have avoided the stenosis which has gradually come on. The reason I did not do this was that the original ulcer was a perforating one, and the adhesions round the pylorus and duodenum were very dense.

Conclusions.

The conclusions one has arrived at are:

1. That operations for gastric and duodenal ulcers are to be regarded only as incidents in the treatment, and that diet, etc., and medical treatment should be persisted in after the operation for a long period.

2. That in addition to care in the technique it is preferable to use an absorbable suture material.

3. That any possible primary cause for the ulceration, such as an inflamed appendix or gall bladder, should be sought for, and if found removed.

4. That it is a mistake to occlude or otherwise deform the pylorus. This is unnecessary for the cure of the ulcer and deprives us of our best line of retreat should secondary ulcers form.

5. That when secondary ulcers have formed it is best to cut off the gastro-enterostomy and restore the natural channel if necessary by a plastic operation. The original ulcer, if still present, should be excised at the same time.

6. Where this is impossible and a fresh anastomosis is necessary operations of the Y type should be avoided.

7. Care is required after the operation for a long time.

8. That when one is operating for a perforated ulcer it is better to avoid gastro-enterostomy if possible, as so many of these cases recover completely without any recurrence of symptoms after suture of the perforation.

I have only touched on the subject of simple uncomplicated secondary ulcer to-night. The consideration of the various complications and their treatment would be much too wide a subject for the time at my disposal, and I have had none of these difficult cases under my care.

PROSTATECTOMY IN A CASE OF DIABETES INSIPIDUS.

BY

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AND

F. S. KIDD, F.R.C.S.ENG.

THE performance of prostatectomy in a case of diabetes insipidus does not appear to have been previously noted, and the presence of giant bladder, without evidence of renal or vesicle failure, is of interest.

Clinical History.

The patient, a grocer, aged 55, has had diabetes insipidus for at least twenty years. Probably he has had the condition longer, for twenty-five years ago he noticed that he was passing an unusually large amount of urine and that he was more thirsty. There is nothing in his past history to indicate the cause of the disease. He has led a very regular life, and his only excess has been bicycling. From the age of 18 to 35 he was accustomed to ride very long distances, often doing one hundred miles in a day, and riding all the test hills.

During the last twenty-five years the amount of urine passed has varied between 9 and 15 pints, the average amount in the twenty-four hours being 11 to 12 pints. He has suffered no discomfort beyond the inconvenience of having to micturate frequently and the excessive thirst. At one time he used to drink beer and whisky, but he found he required such a large amount of fluid that he soon gave up alcohol, and for many years has taken only plain water. In cold weather he drinks it warm, as he finds that this quenches his thirst more readily.

His general health is good, and he leads an energetic life. His weight has not varied for many years. He usually has a furred tongue, and is inclined to constipation. His blood pressure is normal (130 mm. Hg), but his pulse is always rapid (90 to 100). He has had various spells of treatment, but no drug has had any effect in reducing the amount of urine. After a course of ergot he developed boils. Restriction of fluid merely increases the thirst, so for many years he has taken a glass of water, day and night, whenever he felt the desire; and, as his work is in his own shop, he has been able to carry on in spite of the frequent calls to pass water. He drinks over two gallons a day. The urine has for many years been pale and watery, acid in reaction, and with a specific gravity of 1002 to 1005. Occasionally there has been a faint trace of albumin, but never any sugar.

During the winter 1920–21 he first noticed pain in the suprapubic region, and at the end of the penis, on passing water, with increasing frequency and some hesitation. As the weather got warmer this trouble diminished, but he still had occasional pain in the penis, and felt that he was not emptying his bladder completely. Throughout the summer he was practically free from pain, but in the late autumn of 1921 the difficulty of emptying the bladder returned, with resulting increased frequency and pain. By the end of the winter the trouble had so much increased that he was not getting sufficient sleep, and was becoming quite worn out. The urine had for some time contained staphylococci and coliform bacilli, but as neither drugs nor vaccines improved the condition removal of the prostate was decided on.

Surgical Report.

Mr. Kidd's report is as follows:

"The patient was referred to me by Dr. Alexander on March 1st, 1922. He stated that for the last three months he had had great pain in the bladder region, a constant desire to pass water, which took a long time to come, and then only came in driblets. He was in pain all the time; he had to get up at least eight times during the night; in fact, his condition was becoming unbearable.

"Abdominal examination showed that he had a giant bladder well up to the umbilicus. Rectal examination revealed considerable enlargement of the prostate gland of an adenomatous type. The urethroscope showed no stricture present. The Wassermann reaction was negative. X-ray examination showed no stone present, but a picture taken of the skull revealed hollowing and excavation of the pituitary fossa, suggesting that there was a cystic enlargement of the pituitary gland. . . . Ten to 12 pints of urine were passed in the twenty-four hours, which was very pale, specific gravity 1001, and contained no pus, albumin, nor sugar.

"I looked upon the giant bladder as the result of the diabetes insipidus, and not as a sign of advanced vesical and renal failure, as there were no clinical signs whatever of renal failure. Abandoning my usual custom in the case of giant bladder, I therefore resolved to pass a catheter for the purpose of renal function tests. Indigo injected into a muscle of the leg came through the kidneys in eight minutes, and in less than half an hour it had stained the urine a deep blue colour. This shows the value of time tests of renal function. The dilute urine made no difference whatever to the indigo test. The blood urea was 10.7 mg. per 100 c.cm. of blood, a very low quantity (the normal being 15 to 40 mg. to 100 c.cm. of blood). The exact significance of this I do not know, but the observation appears to be of interest.

"Urea concentration test = 1st hour—730 c.cm. of urine came through the catheter, specific gravity 1003, urea 0.4 per cent., total urea 2.92 grams; 2nd hour—770 c.cm. urine, specific gravity 1003, urea 0.4 per cent., total urea 2.98 grams.

"Cystoscopy showed a very definite but quite small middle lobe and two small lateral lobes projecting upwards into the bladder, with marked trabeculation of the bladder.

"Operation was performed in one stage on March 10th, 1922. The prostate was enucleated. It consisted of two small lateral lobes and a small valvular middle lobe.

"After the operation the patient made 11 to 13 pints of urine a day, and it had to be collected in two large slop pails. He was passing all his urine naturally on the seventeenth day and went home soundly healed on the twenty-seventh day, passing 11 pints of urine freely with a good stream and without pain."

Five months after the operation the patient's condition is altogether satisfactory; his general health is very good, and he is free from all pain. He passes his urine with a good stream, though he states that towards the end of micturition he feels as if he had to use his abdominal muscles to help. He has, for him, good nights, only having to get up two or three times. In the day he can hold his water two and a half to three hours: he still passes 10 to 12 pints of clear watery urine in the twenty-four hours.

PARALYSIS OF THE FACIAL NERVE WITH HERPES ZOSTER.

BY

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The facial nerve becomes paralysed more frequently than any other single nerve in the body, and yet the cause of this paralysis is in most cases unknown. In a certain small percentage it is due to inflammation of the wall of its canal in the bone, following on disease in the middle ear, or to trauma, operative or otherwise. Rarely it is caused by a central lesion, or is part of a polyneuritis, being then often bilateral. Again, it may accompany or follow a herpes of the face or neck, and is then generally supposed to be due to the inflammation of zona affecting the geniculate ganglion. But in the majority of cases no definite cause can be found; and, in default of a better explanation of the onset of this paralysis, exposure to cold is blamed. In view of the frequency with which this factor occurs in everyday life, it must always be considered unsatisfactory except as a merely contributory cause. From the nature of the case, material for pathological examination can be obtained but rarely. Inquiry must be made chiefly by clinical means.

It is the object of this article to show that herpes zoster affecting the geniculate ganglion is a much more frequent cause of facial paralysis than is commonly supposed, and that many if not all the cases where exposure to cold is blamed are due in reality to that micro-organism, at present unknown, which, attacking the posterior root ganglia of the spinal nerves, and the homologous ganglia of the cranial nerves, produces the interesting train of symptoms called herpes zoster.

Doucet (*Thèse de Paris*, 1926) collected 26 cases of herpes associated with facial paralysis. Analysis of these cases shows that the eruption appeared in the following situations: face, 27 per cent., neck 19 per cent., auricle 4 per cent., tongue and palate 19 per cent., face and neck 27 per cent., face, neck, and mouth 4 per cent.

Hearing was affected in 4 cases out of the 26—twice when the eruption was on the face only, once when on face and neck, once when on neck alone. Taste was diminished in 2 cases—associated once with herpes of the face and neck, once with herpes of face only. In 3 cases paralysis of one side of palate was noticed—once each with herpes of face, neck, and mouth. Three cases of herpes of the auricle are included, but in none of them was hearing affected.

No single one of these cases collected by Doucet showed all the symptoms which may be present in a case of the complete "syndrome of the geniculate ganglion." These are—as described by Ramsay Hunt in the following year—herpes auricularis with facial palsy and affection of the auditory nerve.

It is evident from the consideration of these cases, and indeed from everyday clinical experience, that the symptoms which have been mentioned—herpes zoster of face, neck, ear, or mouth, paralysis of facial nerve, auditory nerve affection, diminution of taste—may occur grouped together in almost every possible combination. Facial paralysis may be associated with one or all of these other symptoms; no one of them is essential, neither herpes of ear, herpes of face or neck, nor affection of the eighth nerve.

If facial paralysis associated with herpes zoster is due to the inflammation of zona affecting the geniculate ganglion, those fibres whose affection causes the appearance upon the ear of the characteristic herpetic vesicles present in the complete syndrome of the geniculate ganglion often, indeed usually, escape. Thus in only 3 of the 26 cases collected by Doucet was the auricle affected. Is this is so when the Gasserian ganglion is attacked together with one or other of its homologous ganglia, the Gasserian or posterior root ganglia of the second and third cervical nerves, why should it not be so when it occurs as an isolated lesion—that is, why should not facial paralysis be the sole symptom of an inflammation of the geniculate ganglion caused by the same virus which produces typical herpes zoster elsewhere?

Such an explanation fits in with the course and symptoms of a case of "idiopathic" facial paralysis. As in herpes zoster, there is often preliminary malaise; in children sometimes fever. Commonly, too, there is prodromal pain. In herpes zoster an enlargement and tenderness of the lymphatic glands draining the area of skin on which the eruption later appears, but preceding that eruption, are almost invariable. I have not found such enlargement reported as occurring in facial paralysis, but it was present in a recent case of mine. The history of this case is as follows:

The patient, a male aged 21, previously healthy, on October 24th began to have pains behind the right ear and down the neck posteriorly on right side. He did not feel well; his throat was sore. On October 29th he felt a little tender lump in front of ear. October 30th: He woke up to find that his face was one-sided. When examined the same day he said he felt out of sorts; his ear felt "dull" and his tongue rough; he felt giddy. There was complete right facial palsy of the lower neurone type. One tender lymphatic gland in front of tragus of ear and one beneath lobule. No other glands palpable. Skin normal; auditory meatus and membrana tympani normal. Fauces slightly reddened, but no vesicles seen. No deafness to whisper or to acoumeter, but a low-toned tuning-fork was heard longer on affected side than on right. Taste normal; no nystagmus or Rombergism.

During the next few days his general condition returned to normal, and auditory and sensory symptoms disappeared. Facial paralysis persisted, showing only slight improvement after two months. The affections of taste and hearing in this case were so slight that a less observant patient might not have remarked on them.

It seems probable that in many cases of apparently uncomplicated facial paralysis there will on inquiry be found some slight symptoms pointing to an affection of the geniculate ganglion, and leading one to suppose that the paralysis is a neuritis due not to exposure to cold but rather to inflammation in the geniculate ganglion, the facial fibres suffering severely, while those which carry the sensation of taste—the pars intermedia—and those of the adjacent eighth nerve have almost, if not completely, escaped.

DYSTOCIA DUE TO GIGANTIC FEMALE FOETUS.

BY

E. L. MOSS, C.M.G., M.C.,

MAJOR, R.A.M.C.

A woman, aged 22, was admitted to the Louise Margaret Hospital, Aldershot, on March 22nd, 1922, with oedema of the legs and face, and albuminuria. Her periods had been regular up to the last one, which began on July 25th and ended July 30th, 1921. Quickening was felt about the first week in December. She had had one normal confinement two years before, when a healthy female child weighing 10 lb. was born. The mother and father are both six feet in height.

On admission the patient had marked oedema of face, lower abdomen, vulva, and legs. The abdominal enlargement was much greater than usual, and suggested multiple pregnancy and hydramnios. On palpation the uterus was so tense that the only foetal part distinguishable was the vertex, and even this was difficult to define. Only one foetal heart was heard, on the right side, between the umbilicus and anterior superior spine. The fundus reached to the ensiform cartilage. A tentative diagnosis of hydramnios and multiple pregnancy was made.

The pelvic measurements were as follows: Intercristal 12 in., interspinous 10¾ in., external conjugate 8½ in., inter-tuber ischii 4½ in. By vaginal examination the promontory could not be reached. The blood pressure was 160 mm. of mercury on admission, but after three days it fell to 130 mm.

The urine contained a heavy cloud of albumin, but no pus cells or renal casts; ammonia nitrogen 0·25 gram, urea nitrogen 0·7 gram, a slight trace of acetone and diacetic acid. On culture it yielded a coliform organism.

The urinary condition and oedema cleared up satisfactorily under treatment with vapour baths, saline aperients, and a course of potassium citrate, followed by urotropine and acid sodium phosphate (given separately), combined with light diet.

The patient was kept under observation in hospital, and on April 26th, at 8.15 p.m., the membranes ruptured. Pains began at 9 p.m. The vertex was felt presenting in the R.O.A. position. Pains continued regularly, but not very strong, and at 3 a.m. on April 27th the os was fully dilated. After one and a half hours in the second stage, as there was no advance of the head, which was engaged in the brim, and as the foetal heart sounds were still heard, axis traction forceps were applied under anaesthesia, and the head brought to the outlet after considerable difficulty. The delivery of the head through the outlet between the pains was very difficult owing to its large size. A loop of cord feebly pulsating could be felt above the head.

Obstruction to the further birth of the child occurred at this stage owing to the shoulders being wedged across the brim of the pelvis in the right oblique diameter. Attempts at digital traction with the finger in the posterior axilla failed. A blunt hook was therefore used, with the result that the shoulders were brought sufficiently low down for the arms to be disengaged and delivered alternately. The child was stillborn. The perineum was ruptured, but the tear did not extend through the sphincter ani. The

placenta followed forty minutes later and appeared perfectly healthy, but weighed 4 lb.

The puerperium was uneventful. The patient was sitting up and well on the twelfth day.

Particulars of the Child.

Weight (verified by separate weighing machines, and observers)	14 lb. 2 oz.
Length—vertex to heel	35 inches.
Length of spine	15½ ,,
Bis-acromial	8½ ,,
Length of arm	13 ,,
Length of foot	5½ ,,
Circumference of thigh	10 ,,
Circumference of forearm	7 ,,
Bi-trochanteric	6 ,,
Head circumference	19 ,,
Bi-mastoid	4½ ,,
Bi-malar	4½ ,,
Suboccipito-bregmatic	5½ ,,
Suboccipito-frontal	6½ ,,

The *post-mortem* examination was confined to examination of the brain. The bones of the vertex were harder and exhibited a greater degree of ossification than usual. The anterior fontanelle was smaller than usual. On opening the skull the dura was firmly adherent to the calvarium, and the brain was so soft and diffluent that it could not be removed intact; it was put into formalin solution, but after twenty-fours had fallen to pieces. A portion of the pituitary was saved and examined, but merely exhibited undue vascularity of the pars anterior.

The foetus is preserved in the Museum of the Royal Army Medical College, Millbank, London.

Induction of labour or Caesarean section would have been considered had it been possible to diagnose a foetus of such large size. Pelvimetry had shown that the maternal passages were abnormally large. The difficulty was that the uterus was so tense with excessive liquor amnii and the large foetus that its contents could not be palpated clearly. It was not reasonable to anticipate trouble with a pelvis of this size, especially as we had in mind the probability of hydramnios and twins, and knew that a 10 lb. baby had been born without trouble previously.

Cleidotomy was not performed because at the stage when it suggested itself as a means of overcoming the difficulty with the shoulders it was still hoped to get a living child.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF CONGENITAL PYLORIC STENOSIS.

THE occurrence of congenital pyloric stenosis in female children is, I believe, of sufficient rarity to be worthy of note.

A colleague called me into consultation upon a marasmic female infant aged 3 weeks. It was a second child, the first being a healthy boy, and labour had been normal. The mother appeared perfectly healthy and was feeding the child herself.

The child commenced to vomit its feeds when about 10 days old; at first this was so slight that it was considered to be a mere regurgitation caused by slight digestive disturbance, as frequently happens. During the next four days the vomiting increased and the child began to waste rapidly. Various dietetic changes were tried, but without success. In the third week the vomiting became really projectile in type, even the smallest feeds of albumin water being returned. These were the conditions when I was called in; in addition there were scattered râles over the bases of both lungs.

A feed was given to the infant in our presence, and within a minute well-marked slow peristaltic waves could be seen passing across the abdomen from left to right in the region of the stomach. This peristalsis was apparently painless. Shortly afterwards the vomiting began and was projectile in type. A thickening could be felt in the region of the pylorus. The stools up to this time had been normal, showing no signs of failure of digestion, but the apparent constipation now present was another point in the diagnosis.

Given these symptoms—namely, projectile vomiting, visible peristalsis in the gastric region, palpable thickening in the region of the pylorus, apparent constipation, and marked wasting—a diagnosis of congenital pyloric stenosis was made. I am indebted to Dr. Frederic Still for the following notes giving details of the treatment:

"The operation was performed by Mr. Tyrrell Gray, after repeated subcutaneous saline infusions had produced a slight rally. I was watching for the moment when it might be just possible to operate, for the child was in an almost desperate condition when I first saw it about eighteen hours before operation. It was cold, extremely feeble and somewhat blue, but there were large rales all over the bases of both lungs.

"We took advantage of the temporary rally, and Mr. Gray did the Fredet-Ramstedt operation that is, a simple longitudinal incision through the muscular layers of the pylorus without cutting through the mucosa. The child stood the operation well, and with further subcutaneous infusions rapidly gained strength, and has since kept down its breast-milk feeds well."

The infant has progressed satisfactorily, and has gained 1 lb. 2 oz. since the operation three weeks ago. This gain is perhaps less than might be expected, but is to be attributed chiefly to the deficiency of breast milk after the temporary weaning.

According to statistics, the condition is rare in female children, 80 per cent. of cases occurring in boys (Garrod, Batley, and Thursfield, *Diseases of Children*), and more commonly in first children.

Kidderminster. V. N. FENTON, M.B., B.Ch.Camb.

AUTOGENOUS VACCINE IN PUERPERAL FEVER.

I WISH to bring before country practitioners the efficacy and great assistance of autogenous vaccines in the case of puerperal fever. Lately I had a case as follows:

The birth was by means of forceps delivery with small tear in the perineum. This was stitched. Four days later, after having been given castor oil, the patient's temperature rose and the lochia ceased. Immediately intrauterine douching (twice daily) was commenced and salol and hexamine were administered every four hours. This treatment went on for five days with little or no success. The pulse ran up to 120–130. The temperature was 105° in the morning and 101° in the evening on an average. On the sixth day 20 c.cm. of a well-known make of stock polyvalent anti-streptococcus serum was given, with no result. On the next day 10 c.cm., similarly with no result. The heart condition now began to show slight indications of commencing endocarditis.

I examined a loopful of the discharge from the cervix and identified coliform organisms and streptococci. I then sent a loopful of this discharge for the preparation of an autogenous vaccine.

As the action of the heart was becoming weak, heart stimulants were now used, chiefly digitalis, with caution, for fear of embolism, but even in moderately large doses the result was disappointing. Antipyretics were of little use, although small doses of aconite helped a little.

Four days after the dispatch of the specimens (with all due credit to the Royal College of Physicians' laboratory, Edinburgh) I received the autogenous vaccine, each cubic centimetre of which contained 50 million coliform organisms and 50 million streptococci. I gave 1 10 c.cm. immediately, and progressively doubled this dosage every twenty-four hours, till the patient was receiving approximately 1 c.cm. every twenty four hours. The results were marvellous. The temperature fell as if by magic, and on the sixth day after the commencement of treatment by the autogenous vaccine the endocarditis had cleared up and the temperature was normal. Recovery was now well established. The vaccine was still continued for some days (1 c.cm. every twenty-four hours).

I wish to draw attention to the fact of the absolute failure of the stock serum in this case; in fact, after administration serum manifestations caused the patient's condition to become worse.

Cowdenbeath. JOHN VEITCH, M.B., Ch.B.

ELECTRICAL TREATMENT IN TUBERCULOUS DISEASE.

IN the BRITISH MEDICAL JOURNAL of June 4th, 1921 (p. 812), I described experiments I had performed for the destruction of bacilli by electricity. Since that date I have treated an obstinate case of tuberculous colitis by galvanism with an excellent result.

The patient, aged 26, was sent to me by his doctor, who suggested that as I had destroyed staphylococci and *B. coli* by an electrical current it might be possible to kill the tubercle bacillus in the same way.

Nearly two years before I saw the patient he had mild diarrhœa and passed blood and mucus. He had previously had an empyema which had been operated upon and the wound healed. The diarrhœa was continuous and did not respond to drugs. Wasting was marked and the temperature high. An autogenous vaccine had been prepared and a course given with no apparent improvement in the symptoms. Later (nine months before I first saw him) appendicoscopy was performed and daily the colon was washed out with saline, silver nitrate, and sometimes Dakin's solution, other antisepti-

drugs being administered by mouth in turn. Still no marked improvement was shown.

I first saw the patient in September, 1921, when he was passing a large quantity of blood and mucus. He was pale and thin. For half an hour three times a week I passed a galvanic current through the abdomen, making him lie on one large pad and placing the other on the anterior abdominal wall.

In April, 1922, he was passing one stool a day and no blood and very little mucus. The weight had increased by several pounds, and the patient himself admitted he was feeling better than he had ever done in his life. At the end of May treatment ceased, and he returned to his laboratory work.

I saw him again last month and he said he was perfectly well, was above his normal weight, and was passing normal stools with no blood or mucus.

Brighton. P. C. Collingwood Fenwick.

Reviews.

OPIUM AND COCAINE IN INDIA AND BURMA.

In a small book entitled *Drug Smuggling and Taking in India and Burma*[1] Mr. Roy K. Anderson, superintendent of the Burma Excise Department, tells the ugly story of the abuse of opium, morphine, and cocaine with reasonable fairness, though the writer to some extent disarms criticism by stating at the outset that he is not an authority on the subjects dealt with. He has, at any rate, had very intimate acquaintance with the smuggler and his tricks through his knowledge of customs and excise and the elaborate system of preventive men, as well as paid informers whom he has been compelled reluctantly to employ.

He relates the history of the introduction of opium into India, presumably by the Arab conquerors in the eleventh century; their faith forbade alcohol, but they found solace, it is suggested, in opium and Indian hemp, much as the aborigines of Peru indulged in the leaves of the coca plant. Mr. Anderson is prepared to justify "the moderate use of opium," without venturing on a definition of that much abused word "moderate," and seems inclined to condone the chewing of coca leaves. Nevertheless, he is emphatic in his condemnation of the "awful results of this damnable traffic in drugs"; he asserts that morphine is abused by hundreds of thousands, and speaks of the results of the indulgence in cocaine as "truly deplorable." He appears to regard the smoking of opium as less injurious than eating opium, thus differing from the official view propounded in the recently published *Truth about Indian Opium*, which sought to justify the ingestion of the drug by natives while condemning smoking as "essentially a social vice."

Mr. Anderson will probably find many to agree with him in the view that the gin palace is more antisocial in the distress it occasions than is the opium den, but the interesting illustrations which he supplies are sufficient to confirm his statements as to the disastrous effects on the physical, mental, and moral condition of the victims of opium or coca. Indian hemp, he holds, does not get a similar hold upon its addicts, and the habit is given up with less difficulty. Mr. Anderson confirms the allegations which have been made as to the extent of smuggling of morphine derived from Great Britain, the Continent of Europe, and Japan, carried on by ships' crews; as much as 500 oz. have been seized in one haul, and for every ounce seized he believes a pound goes in undetected. The author entirely approves of the Dangerous Drugs Act passed here in 1920 and calls for international co-operation in controlling this hateful traffic. No more humanitarian labour could at the present time engage the activities of the League of Nations.

PSYCHOLOGY AND PSYCHOPATHOLOGY.

Many of the more popular and elementary books on the "new psychology" give the impression that their writers are somewhat hazy in their views themselves, and this is perhaps the reason they are apt to mystify rather than illuminate their readers. It is therefore a pleasure to read *The Psychology of Medicine*,[2] by Dr. T. W. Mitchell, who has not only made a close study of the development of medical psychology during the last twenty years, but has the gift of presenting his subject-matter in a particularly clear, orderly, and balanced manner. After an introductory chapter in which the aims and scope of the book are indicated, the phenomena and theories of dissociation, repression, the unconscious, psychoanalysis, dreams, the neuroses, and psychotherapeutics are described. In a chapter on the prevention of neurotic illness a general account is given of the environmental factors which exert an unfavourable influence upon the emotional development in childhood, but the author points out that the more we know of the complexity of the conditions on which the occurrence of a neurosis depends the less sanguine are we of being able to prevent its development by avoiding any one of them. The book may be recommended to the student of psychological medicine who is desirous of obtaining an adequate preliminary knowledge of the various schools of psychotherapy. The title of the volume is perhaps somewhat misleading, as it suggests a much wider theme than the author proposes to consider.

In the treatment of nervous cases Dr. William Brown believes it possible to have a sound system of psychotherapy which combines mental analysis with suggestion and auto-suggestion. He has developed this view in a small volume entitled *Suggestion and Mental Analysis*[3]; it is written on popular lines, and deals more particularly with the theory and practice of suggestion as taught by M. Coué, whose recent demonstrations in this country attracted a good deal of notice. Dr. Brown expresses his appreciation of what he describes as M. Coué's clear and penetrating insight into the facts of suggestion, but he points out quite truly that medical men have employed for many years the methods of treatment which M. Coué advocates, and that they have been in a position to apply them with more understanding because of their knowledge of the facts of mental and physical disease. Having given some account of suggestion, mental analysis, the psychoneuroses, and hypnosis, Dr. Brown suggests that in the causation of functional nervous conditions two general factors are at work—mental conflict and bad auto-suggestion. He holds that as the result of mental conflict the mind is weakened; there is a weakening of mental synthesis, with the result that the individual shows a tendency to be readily overwhelmed by emotion and readily carried away by certain ideas if supported by certain feelings. It is the existence of these two factors which, in the author's experience, necessitates a combined method of treatment. The mental conflict is resolved by mental analysis, and the bad habits of mind resulting from bad auto-suggestion are treated by counter-suggestions communicated to the patient while in a state of somnolence. Dr. Brown maintains that when the patient has been treated along these lines for a few hours he is brought into a position to carry out the practice of auto-suggestion. Dr. Brown does not write from the strictly scientific point of view; he quite frankly insists on a religious attitude as part of the necessary equipment of the psychopathologist, and introduces the phraseology of mysticism into his suggestive therapy. These views are rather perplexing; we should have thought it particularly desirable for the psychopathologist to maintain an impersonal and objective outlook, and to avoid any tendency to approach his clinical material through the medium of his personal attitudes and desires, as otherwise he will find himself involved in functions which are outside the sphere of the doctor and will inhibit his usefulness in the investigation of disease and its causes. We do not doubt the value of the form of therapy which Dr. Brown advocates, though some of his theoretical views would seem open to question; suggestion is a biological process which exerts a considerable influence on mental development, and it is quite to be understood that, when applied with the precision which previous mental exploration makes possible, it may have considerable therapeutic value.

DIABETES.

The publishers of the interesting collection of books dealing with the diseases of middle age may be congratulated on the practical value of directing attention to the special danger of the fifth decade of life. One particular danger besets most men and some women at this age—namely, the tendency to eat too much and to exercise too little. It is the age when we begin to pay for success in our business or profession by

[1] *Drug Smuggling and Taking in India and Burma.* By Roy K. Anderson, F.R.A., Superintendent, Burma Excise Department. Calcutta and Simla: Thacker, Spink, and Co. (Copies may be obtained from W. Thacker and Co., 2, Creed Lane, London, E.C.4.) 1922. (Cr. 8vo, pp. iv+104; illustrated. 7s. net.)

[2] *The Psychology of Medicine.* By T. W. Mitchell, M.D. London: Methuen and Co. 1921. (Cr. 8vo, pp. vi + 187. 6s. net.)

[3] *Suggestion and Mental Analysis: an Outline of the Theory and Practice of Mind Cure.* By W. Brown, M.A., M.D.Oxon., D.Sc. London: University of London Press, Ltd. 1922. (Cr. 8vo, pp. 165. 3s. 6d. net.)

being able to indulge in the pleasures of the table and by driving in a motor car instead of walking. At a time when we need nourishment the least we can often afford it best—or rather our bank balance can afford it, whereas our metabolic exchange may crash. Dr. Leclercq points this out clearly in his book on diabetes.[4] Since 1911, he reminds us, he has been insisting that glycosuria is the result of a disturbance of protein metabolism rather than of carbohydrate excess. Without going so far as to say that he overestimates the importance of the protein origin of the blood sugar in diabetes, we think Dr. Leclercq is not supported by facts when he rejects carbohydrate excess as a factor in the production of diabetes. Colonel McCay's observations in India cannot be ignored quite so completely. The review that Dr. Leclercq gives of the physiology of the liver and its functions is admirable, and so is his summary of the whole experimental data bearing on sugar production and elimination. But when he comes to expounding his own theory that diabetes is a defensive mechanism whereby many toxic products of erratic protein metabolism are transformed into sugar for the purpose of harmless excretion we feel he is largely and boldly speculative. The conjunction of protein disturbance with that of carbohydrate metabolism has rightly been insisted on by Marcel Labbé, and it is fully realized how seriously this conjunction aggravates an error of mere carbohydrate metabolism. There are, however, grounds for not accepting the author's suggestion that diabetes can be averted in the early stages by restricting protein foods, especially meat, and increasing the carbohydrate intake. He makes an arresting suggestion for the treatment of diabetic coma and uraemia; it is that since subcutaneous injection of phloridzin causes a glycosuria with hypoglycaemia, this drug might rid the blood of the toxic substances responsible for diabetic coma and uraemia. Unfortunately, Dr. Leclercq has not sufficiently tested his theory by practical trial. In fact, whilst the whole book is full of stimulating ideas, some of these ideas would have been better employed as the basis of careful experimental research. John Hunter's greatest contribution to the art and science of medicine was his advice to Jenner, "Don't think, try."

In his general preface to the library of medical knowledge he is editing Dr. Apert wins our whole-hearted approval when he explains that the series of short monographs on special subjects is written in the vernacular—that is to say, in everyday French, technical words being used as little as possible and then only after what they mean has been explained. Medicine, the editor continues, is no longer the secret art of former times; his aim is to free medical writing from the cabbalistic formulas inherited from our forefathers that may have matched the "long robe" and the gold-headed cane well enough, but now serve only to make obscure the subjects treated. In the volume before us[5] Dr. Rathery has condensed into small compass present-day views about diabetes. The sum of our real knowledge might have been still more briefly expressed. Even in this little book room is found for a good deal of highly speculative theory. We find the statement that "arthritisme" provides many examples of disturbed nutrition. Dr. Rathery confesses that no one can define "arthritisme," but he agrees that it represents an indispensable idea. Indispensable ideas are great stumbling blocks to scientific progress. Dr. Rathery succumbs to the ruling passion for classification, and offers us a choice of three fundamental varieties of diabetes—a simple, a consumptive, and a mixed form. "Diabète consomptif" strikes us as a term devoid of all value or justification; the editor has failed here in his aim at simplifying and clarifying the language of medicine. On the whole the book is not one that we can recommend to English readers.

THE MAYO CLINIC.

The thirteenth volume of *The Collected Papers of the Mayo Clinic*[6] (Rochester, Minnesota) contains 108 articles contributed by seventy-six of its indefatigable workers, headed by the famous brothers, W. J. and C. H. Mayo. The contents, already published elsewhere, though sometimes in rather inaccessible periodicals, impress the reader with an admiration for the activity of this great graduate medical centre.

The articles are arranged under nine headings dealing with the alimentary, urogenital, endocrine, blood, cutaneous, and nervous systems, the head, trunk, and extremities, technique, and general subjects. The first contains the largest number (23) of articles, and among them attention may be called to Dr. R. A. Carman's "Errors in the Roentgenologic diagnosis of duodenal ulcers," Professor E. C. Rosenow's "Focal infection and elective localization of bacteria in appendicitis, ulcer of the stomach and pancreatitis," and to Dr. H. R. Hartman's account of hydrochloric acid in gastric carcinoma, showing that achlorhydria, which is so generally regarded as an essential diagnostic sign, was present in rather less than 50 per cent., and a normal or hyperacid value in more than 25 per cent., of 631 cases. In the course of an address dealing with carcinoma developing on gastric ulcer, which at one time seemed to occur with rather startling frequency at the Mayo clinic, Dr. C. H. Mayo says that it is now advisable to drop the percentage basis, and in speaking of carcinoma generally, predicts that from the recent developments of serum, endocrine, *x*-ray, and radium treatment, surgery will become an adjunct to these methods instead of the major treatment. In the section on urogenital diseases Drs. Bumpus and Meisser continue their experimental study of foci of infection in pyelonephritis, and show that infection of the kidney may often be due to focal infections in the teeth, tonsils, and elsewhere harbouring streptococci which have a selective affinity for the urinary tract, and that the colon bacillus, so commonly found and regarded as responsible, is of secondary importance.

There are two reports by Dr. Bumpus and by Dr. V. C. Hunt on submucous ulcer of the bladder, and there are papers dealing with functional tests of the kidney. Professor Reginald Fitz deals with the much neglected subject of the prevention of some cases of chronic nephritis—namely, by the removal of septic foci in the teeth and tonsils. Dr. W. M. Boothby writes on the basal metabolic rate in hyperthyroidism. Dr. L. B. Wilson on the pathological classification and diagnosis of malignant tumours of the thyroid, and Dr. William Mayo on splenectomy in splenic anaemia and Banti's disease. Professor E. C. Rosenow and Dr. Winifred Ashby's report on focal infection and elective localization in the etiology of myositis is based on the examination of 28 cases in six years, and the injection of pus or streptococci from the tonsils or teeth into rabbits: in 24 cases the streptococcus was found to have an elective affinity for the muscles. Among the general articles there is an especially interesting address by Dr. William Mayo, "In the time of Henry Jacob Bigelow," delivered, on his receipt of the Bigelow medal, to the Boston Surgical Society. In conclusion, this veritable storehouse of information on the recent advances in medicine has been admirably edited by Mrs. M. H. Mellish.

DISEASES OF THE DIGESTIVE SYSTEM.

The twenty lectures contained in the fifth series of Professor Maurice Loeper's *Leçons de pathologie digestive*[7] were delivered partly in the course of general pathology in the Medical Faculty of Paris and partly at the Tenon Hospital, and deal both with the pathogeny and with the clinical and therapeutic aspects of disease of the alimentary tract. The subject-matter is interesting for its variety as well as for the views expressed. The mechanism of the nervous manifestations of intra-abdominal disease receives much attention, and illustrations of structural change in the vagus in ulcer and in malignant disease of the lesser curvature of the stomach are given, cancerous infiltration of the nerve explaining cardiospasm in such cases of gastric carcinoma. In another lecture, on painful crises in the course of malignant disease of the oesophagus, in one form of which angina pectoris is imitated, infiltration of the vagus and phrenic nerves is described. Similarly, in the discussion of coelialgia, neuritis in dysentery and cancerous invasion of the nerves in the mesentery is figured. Coelialgia is divided into the primary forms, as in tabes, syphilis, and syringomyelia, and the forms secondary to various causes, visceral and toxic, such as lead; an interesting example of the latter condition is described in an oxaluric patient with crystals of oxalic acid in the semilunar ganglion. The importance of the estimation of pepsin in the gastric juice, the significance of

[4] *Le Diabète et son traitement.* Second edition, corrected and enlarged. By Dr. Arthur Leclercq. [etc.] [illegible] Paris: Baillière et Cie. 1922. (Demy 8vo, pp. 192. Fr. 7.50.)

[5] *Le Diabète consomptif.* By Dr. F. Rathery. Bibliothèque des Connaissances Médicales. Paris: Ernest Flammarion. 1922. (Cr. 8vo, pp. 94. Fr. 7.50.)

[6] [illegible] of the Mayo Clinic, Rochester, Minnesota. Edited by [illegible]. Vol. XIII. Philadelphia and London: W. B. Saunders Co. (Med. 8vo, pp. xiii + 1348. 307 figures. 42s. net.)

[7] *Leçons de pathologie digestive* (cinquième série). Par Professeur M. Loeper. Paris: Masson et Cie. 1922. (Demy 8vo, pp. xii + 343; 55 figures. Fr. 15.)

pepsin in the urine, and the proper method of administering pepsin by the mouth form the text for three other lectures. The cachexia of gastric carcinoma is correlated with an excess in the blood serum of toxic albuminous bodies produced by a proteolytic ferment resembling erepsine, which is secreted by the growth; as a defensive measure antiproteolytic bodies are manufactured in the serum, and as this process is favoured by the administration of trypsine this means of treatment is advocated. Evidence is brought forward to show that the grave anaemia of gastric cancer is due to the haemolytic effects of albuminous and lipoid bodies in excess in the serum, and to counteract this the administration of cholesterol or more simply of yolk of egg is recommended. Other chapters are devoted to plastic linitis (carcinomatous) of the pelvic colon, the gastric symptoms of gall stones, phlegmonous gastritis (with the details of a case due to gassing), and the dietetic treatment of gastric disorders; but enough has been said to show the stimulating character of Professor Loeper's work.

NOTES ON BOOKS.

PHARMACISTS and dispensers must have a ready memory for a great number of facts such as the nature of the active constituents in galenical compositions, their proportions in compounded articles, and the magnitudes of medicinal doses. These must for the most part be acquired by simple effort of memory. Were this not the case there would have been little excuse for the production of GWYNETH PENNETHORNE'S *Guide to Assistant's Examination in Materia Medica and Pharmacy*,[8] for the contents of the volume consist chiefly of those memoranda in their briefest form; the work can hardly be said to teach the subjects of its title on an educational plan. Something may perhaps be said for beginning a subject with the facts to be memorized and taking up a more rational scheme of study afterwards. Thus applied this book may be useful since its contents are substantially free from inaccuracy. It has, moreover, a budding element of merit above that of such books as are intended to do no more than circumvent the tests expected from the examiner; a number of hints given on methods of dispensing are well conceived. A moderate addition of explanatory matter would have greatly enhanced the value of the book. For example, the article on milk sugar contains the sentence, "It is used as a diluent of powerful drugs," but nothing is said to indicate the properties which render milk sugar the most suitable of materials for that purpose, although one or two short sentences would have sufficed. Obviously a more complete treatise will be required by those who are to escape the dangers of possessing only a little knowledge, but an edition of this work interleaved with blank pages for the notes of the user might be found serviceable by a considerable number of students of materia medica and pharmacy.

Dream Fairies[9] is the title of a collection of enjoyable verses written for children by Dr. T. WILSON PARRY, and illustrated in black and white by Mr. Gerald Aylmer. The little volume is redolent of the English countryside, and should prove a delight to the innumerable children who love birds, butterflies, brooks, frogs, flowers, and fairies. Mr. Aylmer's apt sketches really illustrate the text, and he shows an excellent sense of design in his pen-and-ink drawings. Personally, we liked his pictures of little girls (as on p. 4) better than his fairies, but we confess that a child who was shown the drawings greatly preferred the fairies to the children.

Under the title *Massage and Exercises Combined*,[10] a Mr. ALBRECHT JENSEN of New York has published an illustrated account of a course he has devised of mild gymnastic exercises, combined with self-massage and breathing exercises. The book is addressed rather to the general public than to the medical profession, and contains a number of superfluous adornments such as a display of high-sounding adjectives on the title-page and a portrait of the author on art paper as a frontispiece. The exercises themselves, however, are not without merit, being simple and requiring no undue straining nor any gymnastic apparatus.

ERRATUM.—The price of Dr. L. Emmett Holt's *Diseases of Infancy and Childhood*, published by Messrs. D. Appleton and Co., is 35s., not 6s., as by a clerical error was stated in our issue of September 23rd at page 506.

[8] *Guide to Assistant's Examination in Materia Medica and Pharmacy, Apothecaries' Hall.* By Gwyneth Pennethorne. With a Preface by P. A. Ellis Richards, F.I.C., F.C.S. London: Baillière, Tindall, and Cox. 1922. (Fcap. 8vo, pp. xi + 166. 6s. net.)

[9] *Dream Fairies.* By T. Wilson Parry. London: Simpkin, Marshall, Hamilton, Kent, and Co. 1922. (Demy 4to, pp. 34; illustrated. 2s. 6d. net.)

[10] *Massage and Exercises Combined.* By A. Jensen. New York: A. Jensen, Box 73, G.P.O., New York City. 1920. (Sup. roy. 8vo, pp. 93; 85 illustrations. 2.50 dols.)

THE ORGANIZATION AND FINANCE OF VOLUNTARY HOSPITALS.

SIR NAPIER BURNETT'S REPORT.

SIR NAPIER BURNETT, Director of Hospital Services for the Joint Council of the Order of St. John and the British Red Cross Society, has just published his third annual report[1] on the voluntary hospitals in Great Britain, excluding London. This report contains the result of his examination of the statistics of the voluntary hospitals for the year 1921. It deals not only with the financial status of the hospitals, but also with the quality of their work and their relative efficiency. As the hospitals in the London area are under the supervision of the King Edward VII Hospital Fund they are not included.

The object of these annual reports is thus twofold—namely, to present to the public detailed information regarding the financial position of the voluntary hospital system, and to assist hospital governors and administrators with information whereby they may ascertain how their hospital position compares with the group averages of other comparable institutions. As regards the financial side of the problem, it is interesting and encouraging to note that in the year under review the majority of the provincial voluntary hospitals were able to pay their way for the first time since the war. As prices were high at the beginning of 1921 and unemployment was rife during the latter part of the year, the hospitals may now look forward with rather more confidence to the future, and it is expected that the figures for 1922 will show an even better position.

Classification of Hospitals.

The classification adopted in the present as in previous reviews is according to size or the number of available beds; the hospitals are further grouped into general and special, and the latter are subdivided according to the age and sex of patients and to the nature of the ailments treated—for example, eye or ear and throat hospitals. Sir Napier Burnett considers, however, that such classification is unsatisfactory and that a new method of grading hospitals is required. Thus, two hospitals with the same number of beds show in their annual reports that one has cost 50 per cent. more than the other, and the impression produced when they both appeal to the public for support may be that the one hospital is extravagant and inefficiently administered in comparison with the other. The true position may be, on the other hand, that the hospital showing the higher cost is really the more economical, in that it is supplying a much fuller service to the public than its neighbour. One, for instance, may be provided with a full range of special departments, including bacteriological and pathological laboratories for the investigation of the causation of disease, while the other hospital merely acts as an infirmary for sick folk and has few facilities for the study of disease. Such hospitals are not at all comparable from the point of view of service rendered to the community, and yet as they are graded at present, according to size, the public have not the knowledge of how to discriminate.

Sir Napier Burnett considers that hospitals may be graded according to the quality of the work that they do and the facilities they provide for carrying out such work. The group of hospitals known as teaching hospitals, in that they are associated with medical schools, should, in his opinion, be graded as a group apart from all other hospitals. Excluding the teaching hospitals, he suggests that other hospitals could be graded into classes A, B, and C, according to their general standard of equipment and laboratory facilities, etc. On such a basis the subscribing public would have the knowledge to enable them to appreciate why the class A hospital is necessarily more expensive than one in class C.

It may be remembered that a few years ago the American College of Surgeons decided to carry out a survey of the hospitals in the United States and Canada with 100 or more beds. Of these there were 697, and the object of the survey was to ascertain how many of the hospitals conformed to the minimum standard of efficiency laid down by the College—namely, the keeping of proper clinical records by the

[1] *Third Annual Report on the Voluntary Hospitals in Great Britain (excluding London) for the Year 1921.* By Sir Napier Burnett, K.B.E., M.D., F.R.C.S., F.R.C.P., with an introductory note by the Hon. Sir Arthur Stanley, G.B.E., C.B., M.V.O. Published by the Joint Council of the Order of St. John and the British Red Cross Society, 19, Berkeley Street, London, W.1. Price 3s. 2d.

hospitals, an organized staff of surgeons, and adequate laboratory facilities. In 1918–19 only 89 of the 697 hospitals attained this minimum standard; in the next year 198 attained the standard; in the year afterwards 407 met it, or agreed to meet it; and in 1921, when the report was published, it was hoped that the number would be nearly 550. It was evident, therefore, that the adoption of a minimum standard gave a considerable impetus to the improvement of the medical service within the hospitals, although the American College had no authority to impose any standard on any hospital, except the authority of the ideal. There is no doubt that the average standard of the provincial hospitals in England is at present high, but there is no reason why it should not be higher still. If, therefore, the Joint Council takes up the improvement of the scientific and professional standard of the provincial hospitals as part of its work it will confer considerable benefit upon the community.

Hospital Income and Expenditure.

Taking Great Britain as a whole, excluding London, details of patients were received from 642 voluntary hospitals—that is to say, from 88 per cent. of the total hospitals—with 39,973 available beds. It was found that 2,545,055 individual patients were treated during 1921 at a total cost to the hospitals of £5,275,176. Towards this expenditure the hospitals received £4,854,661, leaving a deficit on the year's working of £420,515. One-third of the total ordinary income of the hospitals was derived from workmen's contributions and patients' payments. While in 1920 44 per cent. of the provincial hospitals were able to show a financial surplus on the year's work, in 1921, despite the financial depression and the extent of unemployment, the number of hospitals with a balance on the year's working increased to 51 per cent. As was the case in 1920, only one group of hospitals—the small or cottage hospital group—showed an excess of income over expenditure, but it was also the only group that showed an increase of expenditure over that for 1920. It is probable, however, that these small hospitals receive the benefit of the reduction in the price of hospital commodities some time later than the larger hospitals, who are able to buy in greater quantities—an argument in favour of collective buying. Taking in review the figures for the past three years, there is gratifying evidence of the progress that is being made by the hospitals to improve their financial position. An increase of ordinary income was shown in the three different groups of hospitals—that is, in hospitals of varying bed capacity. The small or cottage hospital group fell back in income last year by £2 per available bed as compared with the previous year. Taking the hospitals as a whole, the figures show the deficit per available bed has fallen from £15 in 1919 to £10 in 1921. The total amount of the accumulated debts to the banks of the provincial hospitals in England and Wales amounts to £681,368, while the invested funds of the hospitals, including both realizable and non-realizable or trust funds, amount to £5,913,943.

Hospital Provision for Patients of Moderate Means.

In Sir Napier Burnett's view the hospital provision for patients of moderate means is probably the most urgent problem calling for solution in the hospital world. The hospital of to-day is a much more expensive institution than its predecessor of twenty years ago, in a large measure because of the many advances that have been made in scientific medicine and surgery during those years. To keep abreast of these developments elaborate and expensive apparatus is required, and new departments have to be established to meet the demands of specialists. The benefits of these scientific advances are now available for the poor in the public hospitals and for the rich in private hospitals, but those with moderate means, who are debarred from the private institution because of the cost and yet are above the income limit for admission into the public hospital, suffer a real hardship in being unable to participate in the benefits of modern hospital scientific resources. Sir Napier Burnett believes that the full solution of this problem will not be reached until the medical profession come to realize that the payment of a hospital medical staff is really centred in the question of the provision of hospital beds for this class of person to take the matter into consideration and to act in conjunction with the hospital governors and trustees who are seeking solution of the problem.

Central Fund for Provincial Hospitals.

At the annual meeting of the British Hospitals' Association in Liverpool last May a resolution was passed approving of the formation of a central fund for provincial hospitals on the lines of the King Edward VII Hospital Fund for London, and asking the council of the Hospitals' Association to take the matter into active consideration. In London there are 112 hospitals which come under the supervision of the King Edward VII Hospital Fund and receive grants and guidance from that body. There are 641 voluntary hospitals in England and Wales and 90 in Scotland, a total of 731, but there is no similar fund in existence for assisting the hospitals in the provinces. Sir Napier Burnett says that, having visited the great majority of the hospitals in the provinces, he has been impressed with the eagerness with which information regarding other hospitals is sought for with the object of benefiting from the experience of others. The hospitals have practically no relations with neighbouring hospitals, and this spirit of isolation reveals itself in the annual reports, which show an almost complete absence of uniformity in keeping accounts or of recording other statistics. The establishment of a clearing house of hospital administration would be one of the main functions of a central fund, and the essential need of such a fund for provincial hospitals is to enable some influence to be brought to bear upon the hospitals, through grants of money, in order to secure a higher standard of administration and a greater degree of uniformity in their statistical returns, and in order to eliminate duplication and overlapping of effort. The Central Fund could have its own technical staff, who would make periodical examinations of each hospital, both as to management and financial arrangements, and on these inspectors' reports the Central Fund would be in a position to allocate grants on a satisfactory basis.

THE MEDICAL DEFENCE UNION.

The annual statutory general meeting of the Medical Defence Union, Ltd., was held at Birmingham, in the offices of the Birmingham Panel Committee, on September 28th. The President, Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., was in the chair, and upwards of forty other members were present.

In moving the adoption of the report of the Council for the year 1921–22 the President congratulated the members on the satisfactory progress made by the Union during the last three years. The membership was now over 10,000, and the Union could justly claim to be the largest and premier organization of the kind in the country. The number of new members elected in 1921 was 661, but in the current year 979 new members had already been elected—a far greater number than had been elected in any previous year since the Union had been founded. This, he said, was an indication of the extent to which the Union was recognized by the profession as a protection in its hazardous calling, and he paid a warm tribute to the tactful and efficient conduct of the cases dealt with by the general secretary and the solicitor. It was particularly appropriate that the annual meeting should be held in Birmingham, in which city the registered offices of the Union had been located for some six years in its earlier days. In view of the close association of the Union with Birmingham in the past it was, however, to be regretted that the present membership in Birmingham compared unfavourably with that in several other large teaching centres, and he hoped those present would make it their business to rectify the matter without delay. The medical practitioner should not only consider his own selfish interests. He should be prepared to support his brother practitioners and to uphold the prestige of the great profession to which he belongs. No one engaged in medical practice could afford to plough his own furrow or to dispense with the protection afforded by a medical defence organization. The letters received almost daily were testimony to the assistance members obtained in their difficulties from the experienced and efficient action taken by the Union on their behalf. Moreover, as a member of the Union, a practitioner not only protected himself against unjust actions, but was helping to protect others.

The annual report of the council and the financial statement for the year 1921 were adopted unanimously.

The usual statutory resolution was passed and a hearty vote of thanks to the president and council for their services during the past year concluded the proceedings.

British Medical Journal.

SATURDAY, OCTOBER 7TH, 1922.

LETHARGIC ENCEPHALITIS.

Few epidemic diseases in modern times can have aroused more general interest or provoked so much discussion and research as lethargic or epidemic encephalitis. The student of the literature of this disease may well be dismayed at its immense mass and will welcome the appearance of the report issued by the Ministry of Health, an analysis of which appears at page 654. Some such sifting of the accumulated pile of clinical and pathological material was badly needed, and in taking stock of the results of work extending over nearly four years we may be glad to find how much solid achievement can be recorded. In the first place, it is now generally conceded that the disease is a definite clinical and pathological entity. The pathology rests on a sure foundation of established fact, and although the actual histological changes found in the central nervous system may closely resemble those in other conditions, and notably in acute poliomyelitis, yet there are differences sufficiently distinctive to enable the experienced pathologist to make a definite diagnosis in any given case.

The large amount of experimental work performed in this country, in America, and on the Continent, has been successful in establishing that the cause of the disease is a filtrable virus closely analogous to that of acute poliomyelitis. One of the most recent and hopeful achievements of experimental work has been the artificial production of an immunity to the disease in rabbits by vaccination with the living virus. Clinical observations have been equally fruitful in results. Indeed, the number of "types" or varieties of the disease reported has proved confusing. But despite the almost bewildering number of shapes under which the disease may appear there are yet some characteristic clinical pictures. Of these the first and most important is that which Netter originally described as the "triad" of symptoms, consisting of somnolence, fever, and ocular palsies. Next in importance we would place the form in which the clinical picture of paralysis agitans is produced—the so-called Parkinsonian type. In this form the disease constitutes a very striking and characteristic clinical picture which is even now not sufficiently recognized. Nor is it realized how commonly this Parkinsonian state is progressive and terminates in death within a space to be measured by twelve or fifteen months. Another type, sufficiently striking to deserve a name to itself, is the myoclonic form; it may vary from occasional involuntary muscular contractions, enough just to disturb the patient or arouse the interest of the medical practitioner, to a condition where the patient lies in a classical "typhoid state," to which violent and irregular muscular contractions, especially of the abdominal musculature, lend a profound and, to the experienced eye, a disquieting significance.

To the mental changes induced by the disease too little attention has been paid. Even when the patient seems to have made a good recovery it will usually be found that some degree of mental disability remains. On this point especially we are in urgent need of further information. This uncertainty, and the not infrequent cases in which relapses or recrudescences seem to take place, combine to make prognosis a matter of exceptional difficulty. He will probably be wise who takes pains to emphasize the gravity of the disease save in the most mild cases. Diagnosis also abounds in pitfalls. Except in certain cases—like that of the Parkinsonian type, where the picture is characteristic—it is generally safer to proceed to a diagnosis by way of exclusion than by any other method. The conditions most likely to be confused with it are, according to the report of the Ministry of Health, tuberculous meningitis, cerebral tumour, and cerebral haemorrhage. To this list it would be wise to add syphilis of the nervous system. Obviously, therefore, the aid of the pathologist should be sought in the examination of the cerebro-spinal fluid. For although he may not be able to find any absolutely typical changes, especially in late cases, yet a negative report will often be of great value by excluding tuberculous or syphilitic conditions.

We have already touched on the need for care in giving a prognosis. This caution is especially necessary when it is remembered that as yet we have no specific remedy, though we may hope that the experimental workers will perhaps be able to provide us with a truly specific method of treatment. In certain cases of the Parkinsonian type it seems that the administration of hyoscine in full doses has been productive of good, albeit of temporary, results. The treatment by means of fixation abscess, so much advocated in France, has not been much followed here. Nor has the treatment by urotropine or hexamine been much more satisfactory. In fact, we have yet to find a drug which can exert an effect on such inflammations of the central nervous system as encephalitis lethargica or acute poliomyelitis. It is, perhaps, not out of place to remind our readers that lethargic encephalitis is now notifiable. The value of such notification is apparent when we have an opportunity of studying such a report as that shortly to be published by the Ministry of Health. For without notification this report would have been impossible. Co-operation between all branches of the profession is always desirable, and never so much as in the investigation of a new disease. Such co-operation has been achieved in the case of encephalitis lethargica with the most happy results.

VINDICATION OF THE VICTORIANS.

Some of our younger Georgian writers who have been enjoying the pastime of making the Great Victorians run the gauntlet of their criticism have caused Professor Karl Pearson to empty the vials of his wrath upon their heads. The Director of the Biometric and Galton Laboratories is angry with the rising generation, first, because it attempts to defame Charles Darwin, the greatest of the Victorians, and secondly, because it fails to appreciate the greatness and goodness of Darwin's cousin — Francis Galton. In a centenary appreciation[1] (Galton was born in 1822) Pearson justifies his attitude in hot and vigorous phrases. "The present generation," writes Professor Pearson, "are apt to speak of the Victorian or mid-Victorian age with contempt. . . . They fix their attention on Tennyson's *Idylls*, on a suite of furniture sold in the sixties in Tottenham Court Road, or on a product of the old Art Union, and scornfully mutter 'mid-Victorian!' . . . They forget the revolution in thought which the scientists of the so-called Victorian era—Darwin, Lyell, Maxwell, and Kelvin, to confine our attention solely to British names—brought about. . . . Darwin spent ten years collecting data before he allowed his imagination to play upon them, and then he revolutionized the whole attitude of men towards the biological sciences. In a certain sense it matters little whether the factors suggested by Darwin

[1] *Questions of the Day and of the Fray.* No. xi. *Francis Galton, 1822–1922.* A Centenary Appreciation by Karl Pearson, F.R.S. (20 pp. 3s. net.)

as the causes of Evolution have or have not the full weight he placed on them. What does matter is that his ideas revolutionized the methods of research and teaching in anatomy, anthropology, botany, embryology, physiology and zoology. . . . After Darwin the universe can never be the same to the educated mind as it was before Darwin."

There are few readers of this JOURNAL, whether they be Victorians, Georgians, or, as most of us are, a mixture of the two, who will dissent from the verdict which Professor Pearson has passed on the nature of the revolution which was effected by Darwin. Medical men are too familiar with the facts on which Darwin's theory is based to be perturbed by special pleadings in the popular press. Indeed medical men will the more readily understand the present position of Darwinism because they know how Listerism stands. The superficial observer, when he sees that the modern surgeon no longer douches wounds with strong antiseptics or uses the spray, might conclude that Listerism is dead; but the surgeon himself knows that his modern means of dealing with wounds are based on Lister's teaching. It is so with Darwinism; natural selection, the effects of use and disuse, and the influence of environment may not be the potent forces Darwin supposed them to be—but the truth of evolution stands as firmly as when he left it.

Beyond doubt, Professor Pearson is right in placing Darwin's cousin—Sir Francis Galton—among the great Victorians. The two cousins had points in common, and points which make them interesting studies in contrast. Both laid the fruits of their labours in all humility before their contemporaries; neither sought to unload his wares on the public either by threat or cajolery; anyone who desired their wares might help himself and welcome. Darwin was content merely to formulate his pangenetic theory of heredity; Galton put it to the test of experiment and became a Weismannist before Weismannism was born. Darwin ceased his inquiries when he had proved that mankind was the product of evolution; at the point where Darwin left off Galton began. If evolution can raise mankind from apedom and from the jungle to his present estate, how much farther may it not raise him? This was the question which formulated itself in Galton's mind after the publication of the *Origin of Species* in 1859. He spent the remainder of his life in seeking to discover how evolution can be harnessed in the service of humanity—to pull man himself some rungs up the evolutionary ladder. He discovered the principles of eugenics, and offered his discovery to England as a gift. He was convinced that the nation who adopted this child of his would outstrip all its rivals. Even in the nature of his bequest we realize the difference in the minds of Darwin and Galton. Darwin, having published the evidence, left his theory to its fate; he was a pure scientist, believing in the survival of the fittest. Galton, on the other hand, was an "applied scientist," and believed that even the fittest needed protection. Hence he not only left his child "eugenics" to the nation, but also provided a nursery or laboratory for its maintenance, and the fittest tutor in all England to bring this child to the age of maturity—Professor Karl Pearson.

It cannot be said that the British people, not even that part of it which has been trained in medicine, has shown any undue alacrity in taking the Galtonian bequest to heart. Even Professor Pearson, as one gathers from the opening paragraph of his newly issued pamphlet, is not altogether satisfied with the reception that the present generation is extending to things "eugenical." "The year," he writes, "which forms the centenary of Francis Galton's birth demands more recognition of the part he played in the spread of human knowledge and its application to the future of the human race than appears thus far likely to be forthcoming." For he (Professor Pearson) realizes that the time is hardly suited to impressing on the majority of men a conviction of the futility of most of their aims, of the depth of their ignorance of what makes for progress, and the unsatisfying nature of their present pleasures. No one can say that Professor Pearson seeks for adherents by first intoxicating them with self-satisfaction.

A man who has great talents, who is master of precise methods and a wide knowledge, one, too, who is in deadly earnest, is never the man whom this JOURNAL will treat lightly. We are therefore glad to note in the concluding paragraphs of his pamphlet that Professor Pearson is able to strike the following happier and more hopeful note: "In 1911 Galton died and by his will founded the laboratory which bears his name, a laboratory for the study of national eugenics, for what makes for better breeding in man. It may not be of serious weight, but at least it indicates the tendency of human social evolution when it is reported that during the brief life of that laboratory there has been an increasing number of intelligent inquiries (either directly or, what is more significant, through their medical men) from those about to marry as to the advisability of their proposed marriages, or from those already married as to the morality of their having or not having children." We wish the Galton Laboratory all success, for those who know best the tricks of the little god Cupid will most fully realize the forces which militate against the rationalized matings of human beings, and the obstacles which the Galtonian school has to overcome.

POST-GRADUATE COURSES.

Two recent experiments in arranging post-graduate courses appear to have been so successful as to be worthy of description. A week's course given at Addenbrooke's Hospital, Cambridge, from September 25th to September 30th, was designed to interest general practitioners in the area from which that hospital draws its patients. About 180 notices were sent out, and 60 favourable replies were received. Between 20 and 30 practitioners attended each lecture or demonstration. The difference was accounted for by the fact that those who attended continued to conduct their practices throughout the week, and often lived at a considerable distance from Cambridge, so that each practitioner was only able to attend a few of the lectures. The lectures did not as a rule begin before 11.30 a.m., and the work was finished by 4.30 p.m. The syllabus was drawn up on the basis of a "refresher" course, with illustrations of modern methods of diagnosis and treatment. There were demonstrations by the physicians of some nervous diseases, of diseases of the blood, of cardio-renal cases, and of cases of cardiac irregularities. The surgeons, in addition to operating, gave demonstrations on hip-joint disease and on some surgical aspects of gastric disease. There were demonstrations also of eye, throat and nose, and uterine cases; of the treatment of syphilis and gonorrhœa, and of the simpler methods of the clinical laboratory. Presumably to relieve the monotony of a purely "refresher" course, a short space of time was devoted to bilharziasis in man and to the tubercle bacillus in domestic animals. A week-end course at St. Mary's Hospital, London, also designed for general practitioners, began at 10 a.m. on Saturday, September 30th, and ended at 3.30 p.m. on Monday, October 2nd. On Sunday the work was limited to the morning. Most of the lecturers were restricted to three-quarters of an hour, and arrangements were made for a break in the work, both morning and afternoon, in order that those attending might have opportunity for conversation. Though the announcement of the course had only been sent to a limited number of practitioners, principally old St. Mary's men, the attendance at several of the lectures reached the astonishing total of between fifty and sixty. Some of the practitioners had come from considerable distances in the country, and had thought it worth while to arrange at short notice to spend a week-end in London. The course was

something more than a "refresher" course, and included such subjects as the modern methods of investigating asthma, the clinical application of biochemistry, and the use and abuse of organotherapy. The success of these two courses shows that there exists a demand amongst general practitioners for post-graduate teaching, provided the subjects appeal to them and the arrangements are convenient. The factors in success were probably the time of year, the shortness of the courses, careful selection of the subjects and of the teachers, attention to the comfort of those who attended, and the fact that both courses were free. In all these matters it is clear that the teachers had thought out their plans most carefully, and Dr. Aldren Wright, the secretary at Cambridge, and Dr. C. M. Wilson, the Dean at St. Mary's Hospital, are to be congratulated on the success of their efforts. At the same time it must be said that neither of these successful experiments meets fully the requirements of post-graduate education in England. If this country is to take its proper position in post-graduate teaching it is necessary that facilities should also be provided for practitioners wishing to undertake practical training, particularly in special departments and subjects; that there should be opportunities for training in research; and that in both respects provision should be made for the post-graduate from the Dominions and abroad. Rightly, no doubt, the course at Cambridge was confined to Addenbrooke's Hospital, but there exist in Cambridge teachers and laboratories with every equipment for advanced post-graduate teaching, and it might be possible to arrange suitable courses for suitable students. In London and elsewhere fuller use of special hospitals might be made, and opportunities for research already considerable, could be enlarged. The development of facilities for post-graduate students from abroad is still in its infancy, and needs propaganda, organization, and the provision of social amenities. At the present stage it is probably wise that, where possible, post-graduate courses should be given free of charge, as was the case at Cambridge and St. Mary's Hospital. That a certain demand exists cannot be doubted, and that a much greater demand could be created is probable. It is not too soon to begin thinking out a definite plan for the future. It is possible that on some occasions in the past courses have been arranged which were both too lengthy and too costly. The financial aspect of the matter will require very careful investigation, and must be considered under the separate headings of administrative expenses and the payment of teachers. This discrimination was made by the Fellowship of Medicine when it approached the Ministry of Health last July with the suggestion that the Ministry should give assistance in meeting the costs of administration. The Minister was insistent on the need for the production of a more comprehensive scheme. In this we believe he was right, and it is to be hoped that the Fellowship will take the earliest opportunity to prepare such a scheme. In doing this it may obtain some measure of assistance from the study of the reasons for the success of such ventures as those here described.

"THE GOLD-HEADED CANE."

THE well-known *Gold-Headed Cane*, containing a store of interesting medical gossip, mainly of the eighteenth century, appeared anonymously in 1827, and was followed the next year by a second edition expanded by 88 new pages of biography. The author was William Macmichael (1784–1839), Registrar of the Royal College of Physicians of London (1824–29), and author of the *Lives of British Physicians* (1830); he was also a protégé of the Court physician and President of the College, Sir Henry Halford, disrespectfully described as the "eel-backed baronet" by James Wardrop, M.D., Surgeon to George IV, the witty but sharp-tongued author of "The Intercepted Letters" in the *Lancet* (1834). It is perhaps not a mere coincidence that Sir Henry Halford's biographer and admirer, the late Dr. William Munk, brought out the third and last edition of the *Gold-Headed Cane* in 1884, with the further addition of 76 pages devoted to Sir Henry Halford, Dr. J. A. Paris, and Thomas Mayo, the Presidents of the College from 1820 to 1862, and to shorter notices of Sir W. Browne, Pelham Warren, Sir Thomas Millington, Thomas Wharton, John Conolly and others. The original work purported to be the memoirs of a gold-headed cane carried successively by the famous physicians Radcliffe, Mead, Askew, William and David Pitcairn, and Matthew Baillie, of whom pleasant accounts were given. The actual cane was presented by Matthew Baillie's widow to the College just before the present building in Pall Mall East was opened on June 25th, 1825, with due ceremony, an eloquent Latin Oration by Sir Henry Halford, and a banquet attended by five Royal Dukes. As those interested in medical history have become more numerous the *Gold-Headed Cane* has become more difficult to pick up in second-hand book shops; and, as American physicians have shown their appreciation of the work, it was not unnatural that in 1915 a reprint of the second edition was published by Paul B. Hoeber of New York, with an introduction by Sir William Osler and a preface by Dr. Francis Packard of Philadelphia, the present editor of *The Annals of Medical History*. The second, rather than the fuller third, edition was chosen for reprinting because it had been revised, added to, and published by Macmichael, whereas the third edition, although containing most interesting additions, was "not Macmichael's and therefore not the Cane's." This may be perfectly correct, but probably many readers would be willing to sacrifice this rectitude for the further biographical details contained in Munk's edition. The 1915 reprint has now been exactly reproduced,[1] except that the name of the Oxford University Press, London, appears on the title-page in the place of "New York: Paul B. Hoeber, 1915," and that there is a note to the effect that it was printed in the United States of America in December, 1919, from plates made after printing the first edition. It is excellently got up, and will be extremely welcome to those who have not been fortunate enough to secure copies of the earlier editions.

THE ROCKEFELLER INTERNATIONAL HEALTH BOARD.

THE eighth annual report of the International Health Board of the Rockefeller Foundation has been issued. During 1921 the policy was maintained of furthering scientific research in order to extend its benefits to the public health without regard to political frontiers. Among the larger duties undertaken by the Board is the co-ordination of measures for the control of yellow fever. This disease, which has worked such havoc among the tropical and semi-tropical regions of North and South America, is a problem too difficult to be solved by any nation acting alone. Despite the most rigid quarantine rules the infection overran national boundaries, desolated populations, and paralysed industry and trade. It was found, for instance, that while Guatemala suppressed an epidemic which had spread to sixteen communities on the Pacific coast in 1918, the infection was reintroduced in the following year. Now, by international co-operation, unified control is being administered over the entire region. In each country active measures are carried out by a Yellow Fever Commission created by special decree under the national department of health, and unity of effort is secured by giving the International Health Board representation on each of these Commissions. During 1921 operations for the control of yellow fever were continued in Peru, Yucatan, Central America, and Brazil. The fight against malaria also was kept going and steadily extended, particularly in the southern states of the United States. To meet the growing demand for doctors and sanitary engineers with special training in this field the International Health Board has undertaken to maintain a considerable reserve corps through a period of apprenticeship; on completion of their training they are taken into federal, state, or

[1] *The Gold-Headed Cane.* By William Macmichael, M.D. With an introduction by Sir William Osler, B.A., M.D., F.R.S., and a preface by Francis R. Packard, M.D. London: Humphrey Milford, Oxford University Press. 1922. (Post 8vo, pp. xxiv + 261; 12 figures. 16s. net.)

county service. The commission which the Board sent to France in 1917 to aid in organizing a national crusade against tuberculosis is approaching the end of its task. The general policy is to use the funds and officers of the Rockefeller Foundation to start a campaign, and after this has been set going and its purpose is thoroughly understood by the local authority, to leave its continuance to that authority. When the work in France began the French Government and people were staggering under the burdens of an exhaustive war, and had to bear the added weight of a heavy tuberculosis rate which was thought to be on the increase. A great multiplicity of agencies, French and American, official and non-official, pooled their interests and projected a co-operative scheme on a national scale. Tuberculosis dispensaries were established, medical practitioners received special training, a national campaign of popular education was conducted, and the provision of hospital beds and sanatoriums was stimulated. The activities begun in 1917 are now regarded as rooted in French soil. The Commission has therefore been dissolved, and responsibility is being rapidly transferred to French authorities. Another widespread campaign promoted by the Board is that against ankylostomiasis. This was chosen for special consideration, not primarily because of its importance as a disabling disease, but rather because it furnishes so good an object lesson in methods of control. During the year the Board contributed towards demonstrations in hookworm control in 43 states and countries throughout the world. It completed surveys in Brazil, New Guinea, the Solomon Islands, Tasmania, and Queensland; and began surveys in New South Wales, Western Australia, and the Northern Territory of Australia. Reinfection surveys, to determine the results of previous work, and to stimulate further efforts, have been undertaken in the southern United States, Jamaica, and Brazil. Lastly, the Board intends to go on with its plan of contributing largely from time to time towards the development of a limited number of schools of hygiene at strategic points throughout the world.

FOOD POISONING DUE TO TRIFLE.

During the last two or three months some varied types of food-poisoning outbreaks have been encountered. The Loch Maree outbreak of botulism, the first of its kind recorded in these islands, has been referred to in these columns, and there have lately been outbreaks of food poisoning due to Canadian cheese, ascribed to bacterial toxin the nature of which was undiscovered. A few weeks ago an outbreak of food poisoning of another uncommon type occurred. The cause of it, *B. enteritidis* Gaertner, is not the member of the Gaertner group commonly encountered in this country in outbreaks of food poisoning, *B. suipestifer* (*B. aertrycke*), of the "Mutton" type, usually being found. Parenthetically it should be noted that the word "Mutton" is a surname, and the type is not necessarily associated with consumption of mutton, which very rarely gives rise to food poisoning. Early in September a wedding reception was held at Wallasey, attended by some 80 persons. Fully half of those present were attacked, mostly about twenty-four hours later, with severe and persistent colicky pains, severe vomiting, and diarrhœa. It was at first erroneously supposed that foodstuffs had become contaminated with arsenic, as the hall had recently been redecorated internally with green paint. A useful clue to the food incriminated was furnished by the fact that some trifle was given to the caretaker of the hall in which the reception was held, who shared it with several outside persons, who also were attacked with similar symptoms. This hypothesis as to cause was confirmed by investigation of the articles of food consumed by many of the wedding guests, which indicated that trifle was the foodstuff implicated. Of four dishes of trifle prepared for the banquet by a Liverpool catering firm of high standing one remained untouched; from it Professor J. M. Beattie, of Liverpool University, recovered *B. enteritidis* Gaertner; its activity was confirmed by agglutination tests against standard serums and the bloods of several of the patients; in addition, the same organism was isolated from the faeces of some of the patients. The blood of those who prepared the trifles was investigated, with negative result. Up to the present the way in which the trifles became infected remains undiscovered. It is curious that outbreaks of food poisoning, caused by a Gaertner organism, due to consumption of such articles as cream cakes or trifle, though practically unrecognized in this country, are quite common on the Continent, in France especially. The common factors in such Continental outbreaks, which are usually on a fairly large scale, almost always include some festivity at which articles of food of the nature of cream cakes, trifles, etc., containing whipped cream and white of egg, were consumed. In the Wallasey outbreak the trifle is stated to have contained no egg, custard powder having been used. Whether or not egg albumen was present, such an article as trifle would be a suitable culture medium if contaminated by the specific bacillus. These Continental outbreaks have on numerous occasions in recent years been proved to be due to organisms of the Gaertner group. "Carriers" have, in some outbreaks, been incriminated; in the Cholet (France) outbreak, in 1913, 36 persons were attacked at a wedding banquet, 10 with fatal result. The subsequent researches of Professor Chantemesse showed that the female cook who prepared the "creme royale" for this banquet had already been implicated in four previous food-poisoning outbreaks since 1902. In one instance more than half, and in another 70 out of 100, of the wedding guests were attacked; in another instance 25 persons were affected; and at another wedding banquet a number of guests suffered from a similar kind of illness. After the Cholet outbreak this cook was found to be a Gaertner "carrier." There are, however, outbreaks of this kind where no evidence of a "carrier" can be obtained, and in them, where eggs have been used, it is possible that specific infection may have been derived from the egg itself. It is known that Gaertner organisms may cause disease in birds. Sparrows and canaries may suffer from enteritis due to a Gaertner organism. In 1892 *B. psittacosis*, which is probably identical with *B. suipestifer* (*B. aertrycke*), caused in Paris an outbreak in parrots which spread to man, 42 persons being affected, of whom 14 died. Attention may be drawn also to an article by Lignières and Zábala,[1] who had observed in Argentina many outbreaks in fowls of a disease to which they gave the name "salmonellose aviaire," as its cause is a bacillus of the Gaertner group (the salmonellae). As outbreaks of this kind are associated with consumption of cream cakes and trifles, usually containing white of egg, it is not unreasonable to suppose, in the absence in any outbreak of evidence of a Gaertner "carrier" or other source of infection, that the Gaertner organism may at times be present in an infected egg, by means of which a foodstuff furnishing a suitable culture medium may become infected.

INDUSTRIAL HYGIENE.

It was announced recently in our columns (May 13th, p. 776) that the Industrial Hygiene Section of the International Labour Office of the League of Nations intended to publish bibliographical notes on industrial hygiene in the *International Labour Review*. The first of these bibliographies was issued with the May number of the *Review*. If they are continued on the same scale they should prove of great utility to everyone interested in industrial hygiene and allied subjects. Many of the papers and articles recorded were published in foreign periodicals which the average reader is not likely to consult unless his attention is specially called to them. To some of them, unfortunately, he would find it very difficult to obtain access in this country, but the fact that references are given to periodicals not at present subscribed for by British libraries will no doubt stimulate some of them to subscribe in the future. The literature is tabulated under several main headings, such as "Hygiene and Health in Trades and Occupations," "Hygiene and Health of the Worker," and "Industrial

[1] *Recueil de Médecine Vétérinaire*, 1905, vol. lxxxii, p. 453.

Physiology and Pathology," and each of these is split into smaller sections. Altogether 173 notices are tabulated in the May and June numbers of the *Review*, the largest number relating to the third of the headings mentioned. More interesting to the general reader than a mere bibliography is the series of articles and reviews on problems of industrial hygiene, which are published every month in the *Review*. In the June number, for instance, there is a lengthy summary of the Second Annual Report of the Industrial Fatigue Research Board, and other reviews. Special attention is paid to the subject of vocational guidance, and we learn that institutes dealing with this problem have been started in Spain, Switzerland, Germany, and other countries, with Government assistance. In Czecho-Slovakia the Central Bureau has organized a number of propaganda conferences, and collected data from workers and manufacturers relating to various occupations; many personal visits also were paid by the Council of Management to the workshops. A vocational guidance office has been set up, where the adviser talks over the chosen occupation with the child and his parents, and extracts information about the child's tastes and character. After a free medical examination and psychological test at the Labour Academy, the adviser is in a position to approve the child's choice or to suggest an alternative. In our own country the state of public opinion has not advanced so rapidly as it might, and vocational guidance has not yet received the official support it deserves. Fortunately, an unofficial undertaking, the National Institute of Industrial Psychology, has been founded by the co operation of a number of employers and psychologists interested in the subject, and the work already done by the institute, as described in its *Journal*, is full of encouragement for the future. A summary of the work and aims of the institute is given in the *Review*.

THE SPA PHYSICIAN IN FRANCE.

PROBABLY many members of the profession who suffer from bronchitis or other conditions aggravated by the English winter climate have thought it would be agreeable to practise in a watering place in the south of France, for many of these are admirably situated in regions of lake and mountain or on the shores of the Mediterranean. The difficulty, however, of obtaining authorization to practise in France is virtually insurmountable; it is necessary to hold a French university diploma conferring the right to practise, and it is to be noted that not all degrees granted by universities in France confer this right. A correspondent who had not to encounter this difficulty, since in his youth, by a stroke of luck, he had taken a degree at the time when protection was not so strict, had only to register his diploma at the prefecture of the department in which he wished to practise; nevertheless, it was not quite plain sailing even for him. Like others, he intended to choose a place frequented by English and Americans, feeling justified in assuming that an Englishman or Englishwoman would prefer an English medical adviser if one were available. With Americans, he says, the attraction of an English-speaking doctor does not seem to be very strong, for if they do not find one of their own nationality they often seem to prefer to consult a French doctor. Our correspondent goes on to relate some of his early troubles. "The place I selected after carefully pondering over the matter was," he says, "renowned for its hot springs and the very elaborate methods of applying these waters for the relief of human suffering. I had letters of introduction to sundry of my future colleagues, but as soon as I announced my intention of settling down among them, though still polite and even cordial, they persistently evaded my questions as to the uses of the waters and the methods of treatment in vogue. Of course I diligently read up all that had been published and advertised about the place, and a time came when I began to see as through a glass darkly. Then, too, I made the acquaintance of the dean of the local faculty—that is to say, the oldest among them, and also the most large hearted, for he happened to be a man who ought to have been a professor in a teaching centre; in other words, he derived pleasure from imparting knowledge. In pleasing contrast to his colleagues, he displayed the greatest readiness to initiate me into the mysteries of the balneological art, so that theoretically, at any rate, I soon acquired a sound foundation. But, as every practitioner of experience is aware, there are special qualities that make for success in practice quite independent of mere technical knowledge, and this is particularly the case in spa practice, where patients are not imbued with the confidence that comes of years of acquaintanceship. The patient knows nothing of you except that you have been recommended to him by his doctor in Paris or London, and he preserves an open mind. You have to find out how much attention the individual patient requires or desires—for the two are not synonymous; some patients can assimilate a lot of professional advice, others are less tolerant, and would dispense with it altogether if they only knew how. If written instructions for the baths are given, some patients pass them on to their friends, irrespective of their condition, or themselves use them in the following year, without reflecting that the condition of their health may have changed. There are a thousand and one little, but not insignificant, details to master in connexion with the Etablissement des Bains; for instance, to secure punctuality of the porters and the proper execution of one's prescription by the *doucheurs* are not always easy matters, inasmuch as they have ideas of their own on the subject. It is necessary also to see that the patient is provided with the proper garments and takes an adequate rest after the baths, and so on. Such knowledge can only be gained in actual practice. Once it has been acquired it is seen to be simple enough. There are not fifty ways of taking a bath or a douche, and massage cannot be modified *ad infinitum*."

HEALTH OF EUROPEAN OFFICIALS IN WEST AFRICA.

IN the annual report[1] for 1921 on the vital statistics of non-native officials in West Africa, issued recently by the Crown Agents for the Colonies, it is stated that not only has there been a considerable improvement in the death and invaliding rates as compared with those for 1920, but that the former is almost the same and the latter less than the similar rates for the last complete pre-war year, 1913. The death rate reached the third lowest figure on record, being surpassed only by the years 1913 and 1916, while the invaliding rate was the second lowest on record, the year 1917 alone being lower. The reversion to normal conditions in West Africa was generally complete in the year under review, and comparison may once more fairly be made with the records of the pre-war years. The death rate has fallen from 16·3 per 1,000 in 1920 to 12 per 1,000 in 1921, a decrease of 4·3 per 1,000. This improvement is due to a great extent to the excellent figures for Nigeria, where the death rate is only 8·4 per 1,000, as against a rate of 20 per 1,000 for the Gold Coast. Thirty-seven deaths took place during the year; the chief causes of death were blackwater fever (7 cases), malaria, pneumonia, and heart disease. The invaliding rate is 16·6 per 1,000; this rate has shown practically a continuous improvement ever since the statistics were first compiled, and is now only a quarter of that recorded seventeen years ago. The number of non-native officials in the service on January 1st, 1921, was 2,875, 48 being in Gambia, 228 in Sierra Leone, 852 in the Gold Coast, and 1,747 in Nigeria.

CARNEGIE AWARD TO A MEDICAL MAN.

THE Carnegie Hero Fund trustees have awarded a medallion and an annuity of £130 to Dr. John Spence of Edinburgh, in recognition of his valuable and heroic work in radiology. Dr. Spence was among the first in Scotland to take up research in *x* rays and medical electricity, and as a result of radiological experiments he sustained serious damage to both hands, necessitating amputation of the right forearm. Dr. Spence is still carrying on his work as radiologist at Leith Hospital and Craigleith Hospital, Edinburgh.

[1] *West Africa Vital Statistics of Non-native Officials. Returns for 1921.* London: Crown Agents for the Colonies, 4, Millbank. Price 6d.

ENCEPHALITIS LETHARGICA.

Ministry of Health Report.

The Ministry of Health is shortly issuing as one of its Reports on Public Health and Medical Subjects a report on encephalitis lethargica, a copy of which we have been privileged to see. Amongst the enormous mass of literature on the subject this report should be destined to take a high place. It is a work wherein the neurologist, the general practitioner, and the medical officer of health may all find a profitable study.

Sir George Newman in his introduction explains the scope of the inquiry and summarizes the most important conclusions reached. We may be allowed to concur entirely with his statement that "it is probable that this report will prove of greatest value as a storehouse of statistical information, and in the large number of pages devoted to the appendices is safely garnered a wealth of facts and figures such as I do not think have been collected in any other similar report."

Dr. Allan Parsons is responsible for the greater part of the report itself, and he has dealt in a lucid and comprehensive manner with the immense mass of material at his disposal. After a brief introduction to the disease as it first appeared in this country he describes the method of inquiry which was pursued, and we are able to deduce the amount of painstaking study involved. The epidemiology and etiology are next considered, many statistical charts and tables being incorporated, which add very much to the value of the text. The possible relationships of influenza and poliomyelitis to encephalitis lethargica are fully discussed, as well as the interesting condition of "epidemic hiccough," of which some particularly valuable clinical and epidemiological details are given. The important practical questions of infection and contagion are well considered, as well as the problem of the possible carrier. The general opinion regarding the low infectivity of the disease as a whole emerges confirmed from the statistical inquiries on this aspect of the disease. One interesting and probably little known event which is noticed is the transmission of the disease from the mother to the newly born child.

The description of the clinical varieties of the disease is excellent and abounds in descriptive details. An anatomical classification of types is adopted, following the previous work of MacNalty, though the author gratefully mentions the work of Walshe in the classification of the purely nervous symptoms into positive and negative symptoms. Each of the various symptoms is considered in detail, both in what is called the "prodromal period" and in the "declared disease," albeit such an arbitrary division into distinct stages is hardly to be maintained. Tables of the frequency of the different symptoms are given, and altogether this section of the report is full of very valuable information. We think that the importance and frequency of the so-called Parkinsonian syndrome have been scarcely emphasized enough, while the reported frequency of facial, and especially double facial, paralysis leads to the doubt whether this symptom has not been erroneously interpreted as such, it being in reality often but an expression of the rigidity of the facial muscles in these Parkinsonian cases.

The course, complications, and mortality next receive consideration. Most observers will agree with the remark that "the case mortality rate of 48.3 per cent. as derived from the notification figures for 1919 and 1920 must certainly not be taken as a true estimate of the proportion of deaths that occur among people attacked by encephalitis lethargica." For there is no doubt that at this period many slight cases escaped recognition.

We are glad to see that the highly important question of the sequelae is considered and that some details in this respect are given in a very large number of cases in one of the appendices. In the matter of diagnosis it is shown that the conditions in which confusion is most likely to arise are tuberculous meningitis, cerebral tumours, and cerebral haemorrhage; to these it would be well to add syphilitic disease of the nervous system. The importance of the examination of the cerebro-spinal fluid is insisted upon, and this method of examination receives further consideration in a later section. The author wisely advises caution in prognosis, and we are here entirely in agreement with him, especially in regard to the eventually complete recovery or otherwise. The only branch of the symptomatology to which we would wish that more attention had been devoted is the mental changes which not infrequently occur, and in respect of which much more information is needed.

Dr. MacNalty contributes the section on the pathological anatomy and the experimental work on the transmission of the disease to animals. The morbid anatomy as studied by many different observers is carefully summarized. According to Mackintosh the lesion is definitely inflammatory, and the changes consist of a cellular infiltration of the perivascular lymphatic sheaths and of certain areas of grey matter. Changes in the meninges are slight. In the brain the changes are most conspicuous in the pons and in the basal nuclei. Compared with acute poliomyelitis the amount of neuronophagia is small. The occurrence of the "minute bodies" described by Da Fano and Ingleby is mentioned and their significance discussed.

On the bacteriological side opinion is now unanimous in favour of the view that the virus is a filtrable one. The work of previous observers is described, and this is followed by a full description of the interesting experimental work of Mackintosh arising from the outbreak of encephalitis at Derby in 1919. This observer was the first to be successful in transmitting the disease to animals. A useful table of the points of distinction on pathological grounds between encephalitis lethargica and acute poliomyelitis is given. The conclusion is reached that on pathological grounds the separate identity of encephalitis lethargica is amply proven. A summary of the more recent experimental work of Levaditi, Harvier, and Nicolau is given. These authors have emphasized the presence of healthy carriers of the disease, and have further found that the virus of herpes zoster is of the same nature as that of encephalitis.

The changes in the cerebro-spinal fluid are the subject of a separate report by Dr. Perdrau. This chapter will interest the clinician as well as the pathologist, for the former is often dependent on the report of the findings in the cerebro-spinal fluid to confirm or rebut his clinical diagnosis. Dr. Perdrau concludes that during the acute stages of the disease the following are the chief points to be noticed in the examination of the fluid: (1) a pleocytosis which varies in direct ratio with the severity of the disease; (2) a small increase in the total protein content, the latter not keeping pace with the former (dissociation cyto-albuminique); (3) the cells present are lymphocytes. In the subacute or chronic stage the fluid is practically normal.

Another useful table of comparison is here given, contrasting the changes in the cerebro-spinal fluid in tuberculous meningitis and encephalitis lethargica. A report of further recent experimental work follows, out of which one of the most important results which emerges is the production of an artificial immunity in rabbits by vaccination with the living virus.

We have here attempted only to summarize very briefly the highly interesting contents of this valuable report, but some further comment is made elsewhere in a leading article (p. 649). In conclusion, a special word of praise must be given to the appendices, where may be found a wealth of statistical detail, which will repay careful study. We hardly remember to have seen anywhere a bibliography so complete or one better presented. The index maintains the high standard of the rest of the work. We hope that this short account of a very lengthy report will stimulate readers to investigate it more thoroughly for themselves. The medical profession in this country is under a debt of gratitude to the Ministry of Health for the production of a report which is indeed a worthy monument to the labours of all concerned.

THE MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

The annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society was held at the offices of the company, 300, High Holborn, on October 2nd, when Dr. F. J. Allan was in the chair.

Chairman's Address.

Dr. Allan said that the report sent out last year was for a period of thirteen months, while that before the meeting was for twelve months, so that there might be a little difficulty in comparing the figures. In both the sickness and the life assurance branches business had been well maintained. The report of the Registrar-General showed that the year 1921 was characterized by a remarkably low death rate,

and that was reflected in the claims for sickness, which were considerably below expectation. There had been rather a large number of accidents from motors, some of them due to starting. In the life insurance section a sound business was steadily being built up. It was necessarily slow work, as it took time for the profession to know that the company was open to transact life assurances up to any amount at particularly low premiums. A number of their members had taken out additional policies with the company, but many medical men were precluded from taking out further life assurances as they were already insured up to their limit. He, however, looked forward to increased business from those who were not insured, and from the younger members of the profession. A branch of insurance which seemed to him to appeal to medical men was the partnership insurance; at the death of a partner the surviving practitioner might be called upon to pay for the share of a practice, and it would be a distinct asset to have an insurance to meet such a claim. One of the advantages the Society offered was that while the premiums were practically equal to the non-profit rates of other companies they were able to recommend the distribution of a bonus. The Society's rates were, he understood, regarded in the insurance world as a notable achievement. They were able to quote low rates because the company was run on mutual principles with no shareholders, no commissions to agents, and strict economy in management. The number of annuitants showed a slight increase; the amount paid to them during the year was £5,000. Those members who in the past paid small premiums to ensure an income on attaining the age of 65 had made a good investment. As an example he quoted one member who had died recently at the age of 87; he had paid in less than £300 and had received a pension of £50 a year for twenty-two years. The management expenses showed an increase, but when discussing the conversion of the Society into a limited company he had explained that the expenses would be greater, especially in the first few years when the company was establishing itself on its new basis, inasmuch as it had to pay directors' fees, etc.; in addition it had been handicapped by increased prices. The directors were, however, satisfied that the expenditure incurred was not excessive. The management expenses on the Sickness and Accident Fund amounted to 15.8 per cent. of the premium income; on the Life Insurance Fund, which included annuities, it was only 8.1 per cent. A standing Finance Committee had been appointed, which had made a close examination of the accounts for a number of years. He looked with confidence to increased prosperity in the Society's work. He moved that the directors' report and the audited balance sheet be received. The motion was carried.

Valuation Report.

The election of three directors and the appointment of auditors for the ensuing year having been duly carried, the CHAIRMAN presented the valuation report prepared by the actuary, Mr. S. G. Warner, F.I.A. The surplus in the life department was not large, as Mr. Warner had valued the net premiums only on what were really non-profit rates. It was therefore, he considered, satisfactory to be in a position to recommend a bonus on the various classes of policies. In the sickness department a substantial surplus of £39,641 was shown, and the directors agreed with the actuary that a proportion of that sum should be returned to the insured. They thought the fairest way would be to give a rebate or reduction of the premiums falling due after the date of that meeting, such rebate being in proportion to the number of years of insurance. Any member who preferred to do so could allow the sum due to him to remain in the hands of the Society to be paid to the member on the termination of the period for which he was insured against sickness and accident. Some disappointment had been felt by members who attained the age of 65 after January 1st, 1919, because on the advice of the actuary no bonus was paid to them on their retirement. Dr. Allan then expressed the hope that, if it was found permissible to issue a bonus at the present valuation, it would be made retrospective. The directors therefore recommended that to those members who attained the age of 65 since January 1st, 1919, and whose insurances had consequently terminated, a cash bonus be paid equal to the full annual premium payable for such insurance during the year prior to its termination. They also recommended that from the surplus in the Sickness Fund £2,000 should be placed to the Staff Pension Fund. The chairman concluded his address by moving that the actuary's report and the recommendations of the directors be received. This was duly carried.

Mr. P. S. CAMPKIN, speaking as a former member of the Committee of Management prior to the Society being converted into a company, said that the members and the directors ought to be congratulated on the excellent position of the company. He considered that the amount of remuneration paid to the directors was insufficient, and moved that it be increased to three guineas a meeting to each director present, and four guineas for the chairman. The motion, having been duly seconded, was adopted. On the motion of Dr. VINRACE, seconded by Sir WILLIAM WILLCOX, a vote of condolence was directed to be sent to Mrs. Brindley-James on the death of her husband. Dr. KNOWSLEY SIBLEY moved a vote of thanks to the chairman for the enormous amount of work he did for the Society, and this was carried unanimously.

OPENING OF THE WINTER SESSION.

MEDICAL EDUCATION, PAST AND PRESENT.

SIR CLIFFORD ALLBUTT'S INAUGURAL ADDRESS AT ST. GEORGE'S.

THE inaugural address at St. George's Hospital Medical School was delivered on October 2nd by Sir Clifford Allbutt.

Sir Clifford Allbutt spoke first of his joy on returning to his old school. He was determined to come, even if this service, as a cynic remarked, took the repulsive form of a duty. He detected in himself one note of age—a disposition to recall the past, if not to dwell upon it. He remembered his own early appearance in the school, a well-intentioned but crude and rudimentary youth. In those days life was far too easy, and competition not keen. In medicine university men were few, and if fairly efficient a consulting practice fell to them without any great exertions in research or specialized study. The men who came to St.George's from Oxford and Cambridge were not supposed to compete with ordinary students for resident posts, nor even for prizes, but clinical clerkships were not grudged them. He served as clinical clerk under two physicians, one of whom, Fuller, he described as gentle fertilizing rain, and the other, Bence Jones, as sheet lightning. From Fuller he learnt much in an empirical fashion. He remembered how, after a thorough examination of the patient, Fuller would draw out a handsome gold pen, dip it cautiously in the ink, and write in a fine hand an imposing prescription for a mixture, as well as directions for a universal pill, for dieting, and for alcohol. Every patient at St. George's at that time had alcohol—some had brandy, others who were convalescent had ale, but there was nothing so vulgar as whisky. Fuller was not a genius, but a kindly, competent, and diligent man. Bence Jones was a fascinating and brilliant personality. He was invariably unpunctual, and the speaker recalled him now, coming up the stairs two or three at a time, with the morning guineas, it was said, scattering out of his pockets as he flew. He would ask which were the worst patients, snatch the poor notes of his clerk, make a rapid diagnosis, and as rapidly scratch in some prescription. Extravagant and whimsical as was this man, it was a sharp and inspiring discipline to be associated with him. Of the surgeons at that time Sir Clifford Allbutt could say nothing. He hardly ever entered the surgical ward. This curious division between medicine and surgery was a cramping convention handed down from the Middle Ages and a blight upon the profession for centuries until now. Sir Robert Jones had urged lately the need for a closer integration of medicine and surgery, and Sir Clifford believed that the old division must cease.

At the time to which his memories went back medicine was being reinforced and transformed by the vast developments of natural science. But before every revolution, beneficent as it might be, there must be some destruction of old concepts, the ground must be cleared of antiquated systems and forms, and they had to resign themselves to some permanent or at any rate long-persisting loss. The wistful retrospect of those who, nevertheless, were hoping for and working at the new order was not mere sentiment; and it might well be hoped that, as time went on, changes would not be so cataclysmic as in the past, so that they could better be foreseen and provided for. The conservors must be more sagacious, the reformers more patient. In therapeutics, for example, pharmacologists had done much to clear out of the way antiquated methods and remedies, and purify those which remained. Many combinations of remedies established on theories accepted for generations had slipped out of sight, and, it might be, were altogether forgotten. The harvest was multiplied a thousandfold, yet in the ingathering not a little was lost.

Professional Training.

The speaker then turned to the subject of the education of the student and repeated some of the remarks he had made in his article in the Educational Number of the British Medical Journal.* In professional education he laid stress upon the need for the interpenetration, interweaving, and mutual reinforcement of the sciences on which the art of medicine was founded. As Roger Bacon said nine centuries ago, all the sciences were bound up together and helped each other. The details of the various ancillary sciences they could not be expected to master, still less to remember, but of the main principles they must not be ignorant. They must ever bear in mind that a common cause might run through many groups of various phenomena. It might be that in course of time physiological problems would be capable of explanation and expression in terms of physics and chemistry. They must learn to regard diseases no longer as entities but as phases of biology. They must not think of their education in these sciences as a series of stages, each to be left behind as another was pursued, but rather as the ascent of a mountain, each part of the ascent contributing to the widening view. The teachers at that school would endeavour to lead the students farther along the lines of research. Could any subject seem on first acquaintance less profitable, yet how mighty had been the achievements! Even the Panama Canal depended upon the curiosity of Manson and Ross with regard to the guts of the mosquito. He counselled those who were studying medicine to undertake their reading alongside their practice, to study the clinical manuals as far as possible by the bedside, to select the appropriate chapters as chance patients came before them, and compare the clinical notes with the classic descriptions, always remembering, as Bateson said, to "cherish your exceptions." It was often said that in modern medicine instrumental diagnosis was supplanting the direct aid of the senses. While in some respects the eyes and the finger-tips might lose their cunning, he believed that on the whole the instruments stimulated and reinforced an acute observation. In practice, especially in general practice, they had often to go beyond their evidence. The practitioner, having gained a half intuitive insight and foresight, worked on what were called moral certainties, or, to express it differently, on commonsense. Without commonsense in practice they would lose their way again and again. Yet in science commonsense was a treacherous ally, and often in the long run failed them because it allowed to creep in an accumulation of small errors.

Psycho-analysis.

This led him to make some remarks on psychology, which would be better known as the physiology of the mind. The reiteration of the word "psychology" was getting wearisome. People spoke of the psychology of the crowd when they meant simply its temper. It almost seemed as though some writers on the subject really supposed that disorders of the mind were represented by no physical deviations within the substance of the brain. Popular psycho analysis was false science; it had no units, no means of measurement, no controls, no precise definitions, no separation of objective and subjective evidence. He was doubtful altogether of its virtue. Even pickpockets now were appealing to their judges to regard their cases from the psychological point of view. The method of science was to work on lower categories, and not to explain anything in terms of higher categories before the lower were explored. Psycho-analysis had been known for centuries in the Church as confession and casuistry, and the Roman Church had been well aware of its dangers. Yet, all this experience notwithstanding, it was now proposed that any teacher should be allowed to probe into the minds of adolescents and children, too often with dirty tools. It was false to argue that the soul need not be tainted with foul suggestion. To talk about such things as should not be known or named was to create familiarities which bred temptations. Suggestion did not consist in occasional jabs at the mind, but the mind was open incessantly to suggestion as the lungs to air. Was it unfair to say that the interpretations given by psycho-analysts to the dreams of our modern Jacobs and Daniels were incredible nonsense, worse than unsubstantial or extravagant? What was formulated as the subconscious could not contain more than the record of past—and, so far, inferior—experience. It was not possible to get out of a pint pot more than was put in.

* The Transition of the Medical Student, September 2nd, 1922, p. 407.

The Rewards of the Doctor.

In conclusion, Sir Clifford Allbutt said that every profession had its hardships and its rewards, its rough places and its smooth, its joys and its drudgeries. But in medicine the trials and the blessings came close together. In all honest work there was ultimate good, but in medicine the harvest was gathered on the field almost at the sowing. The task of relieving suffering and restoring health afforded deep satisfactions, even if the patient was not always grateful; and such gratitude usually came eventually, though it might take other forms of expression than the obvious. Those engaged in medicine, in their contact with their patients, did well to cultivate a hopeful outlook. A successful physician once told him that he never left a house without giving a favourable prognosis. It was a counsel which had a colour of world wisdom; but he was right in this, that no one could foresee what benediction words of hope might bestow.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

The new session at the London School of Medicine for Women was opened on the afternoon of October 2nd, when a large company of old and new students met under the chairmanship of the Dean, Miss Louisa Aldrich-Blake, M.D., M.S., who extended a welcome to the fifty entrants and gave an account of the past year's work.

The introductory address was delivered by Viscount Burnham, who spoke of the progress made in the medical education of women during the forty-eight years since the school first opened, and during the forty-five years since its students began to study clinical medicine at the Royal Free Hospital. He reminded his hearers that they inherited the rights and privileges won for them by the efforts of the small band of great women who did pioneer work half a century ago. The inspired courage of women like Elizabeth Blackwell, Sophia Jex-Blake, and Elizabeth Garrett Anderson must never be forgotten. He recalled, in particular, the wonderful achievement of Dr. Garrett Anderson, whose son was to-day their honorary treasurer. The preventive movement in public health was in its infancy during the early days of her struggle for the recognition of women in the medical profession. In the great work of public hygiene women who were fully qualified ought to be employed more and more as their obvious appropriateness to many of its special subjects became clearer and more widely understood. He did not suggest that the branches of medical service should be separated into watertight compartments, but he felt that in the direction of the public health service women had an invitation and an inducement which was perhaps not so clear in all branches. Again, the more the scientific side of the medical profession was extended and developed the more favourable were the opportunities for women's work. This opened up a vista of employment and usefulness outside the ordinary range of medical practice, which, so far as his inquiries had gone, was for the present somewhat limited in the case of women to certain localities. He believed that so far the practice of women doctors had been almost entirely among women. In the future rearrangement of hospital work and the redistribution of organized help to the sick poor it seemed to him that women doctors would find a new occupation specially suited to their special gifts and faculties. In conclusion, Lord Burnham remarked that the new students were entering their profession at a critical time in its history. Efficiency, like co-ordination, had been ridiculed by the scoffer, but for all that they had to be efficient. The world would not accept them as efficient merely because they were women; neither men nor women would be accepted in future on their own valuation. Above all other qualities medical students needed the genius for taking pains and the ideal of human service. To them nothing should be common or unclean except slipshod methods, inaccurate observation, and dishonest pretence of understanding what they did not understand.

Dr. Mary Scharlieb, as President of the School, proposed a vote of thanks to Lord Burnham for his address. Thinking very seriously of the school the other day, she said, it had come to her more clearly than ever before that they were perhaps not pulling quite their own weight in the medical boat. Looking back over the last thirty-five years, it seemed to her that they had done very well as school students; but academic distinctions, though very nice, were after all but the shining pebbles and pretty shells. Of real importance

was what they were going to be after graduation. Was it not time, she asked, that one of their alumni wrote some epoch-making book or made some important discovery in the field of research? More important than all, ought they not to be foremost in the endeavour to lessen infantile mortality?

ST. BARTHOLOMEW'S HOSPITAL.

The annual Old Students' Dinner of St. Bartholomew's Hospital was held on October 2nd in the Edward VII Rooms, Hotel Victoria, with Sir Charles O'Brien Harding, J.P., M.R.C.S., of Eastbourne, in the chair. There was a large attendance. After the loyal toast had been honoured, the chairman, in proposing prosperity to St. Bartholomew's Hospital, observed that wherever one looked Bart.'s men were still leading the field; thus the presidents of the two Royal Colleges, the Regius Professor of Medicine at Oxford, and the Vice-Chancellor of the University of London were old students of St. Bartholomew's. The toast was responded to by Lord Stanmore, the new Treasurer, who spoke of the arrangements for the celebration next year of the octocentenary of the hospital and the efforts made to overcome financial difficulties. Sir William Lawrence, Bt., the Senior Almoner, in submitting the toast of "The Medical College," declared that medical education was the paramount function of the hospital. Mr. H. J. Waring, Vice-President of the College and Vice-Chancellor of the University of London, responded, and gave a brief outline of the year's doings. The number of students was now 750—probably the largest on record—and this had emphasized the need for an obstetrical teaching unit and for the new department of physiology. The question of admitting women students had been considered, but it was found impossible to make room for them. Remarking that the improvement of the hospital buildings had now gone as far as it could, Mr. Waring professed himself, like Sir William Lawrence, an antisentimentalist when it came to a question of preserving old stones or meeting new needs. The health of the visitors was proposed by Sir Thomas Horder, who classified them into "intimate strangers" and academic guests, and so managed to pay several amusing compliments. The Rev. E. C. Pearce, D.D., Vice-Chancellor of the University of Cambridge, and Sir William Thorburn, K.B.E., Emeritus Professor of Clinical Surgery in the University of Manchester, responded. Dr. Pearce said he had had a friendly feeling for St. Bartholomew's ever since as a Christ's Hospital boy (when the two institutions were next-door neighbours) he studied elementary chemistry under Russell, and now as Vice-Chancellor he was pleased to hear how many Bart.'s students still came from Cambridge. Sir William Thorburn expressed his admiration for the hold of St. Bartholomew's upon medical thought in this country and for its great services to the profession. The Chairman's health was proposed by Sir Anthony Bowlby, President of the Royal College of Surgeons, who said that the good name of Bart.'s depended on a well-guided and well-served hospital, on a finely equipped medical school, and on the zeal of its workers; but above all on the *esprit de corps* of its old students throughout the world. Their chairman that evening, Sir Charles Harding, was a representative general practitioner in whose hands the reputation of the hospital was safe.

CHARING CROSS HOSPITAL.

The presentation of the prizes at Charing Cross Hospital Medical School took place on the afternoon of October 3rd. In submitting his annual report for the academic year 1921–22 the Dean, Dr. W. J. Fenton, said that the position attained by the school during the war with regard to the number of students entering and the general progress which it showed had been fully maintained, and there was evidence of solid advance. The tendency to an increase in women medical students as compared with men noted in his last report had become less observable. During the last three or four years the entry of medical students had risen to a very high level, and, though it was early to draw conclusions, it seemed probable that a return to a more normal entry, both of men and women, was beginning to show itself. The question had been asked whether the school would continue to admit women students to its curriculum. The answer was that it would continue to do so. The principle of co-education was deliberately adopted some years ago after full discussion, and nothing had occurred in the interval to occasion regret that that course was taken or to require its modification. A glance at the prize list revealed the fact that the greater number of class prizes had been taken by women students. This should not be regarded as evidence of superiority or otherwise of one sex as compared with the other, but merely one of those periodical fluctuations which adjusted themselves to an average over a series of years. After referring to staff changes during the year Dr. Fenton thanked the teaching staff of the hospital and school for the work they had done and their untiring efforts on behalf of the students. He also thanked the Principal and the Professors of King's College, University of London, for their care and attention on behalf of Charing Cross students. The pass lists were an eloquent testimony to their good work. The association of the school with King's College in the earlier subjects of the medical curriculum had been most cordial, and after eleven years of concentration on the College for preliminary work he had to record nothing but success.

Viscount Burnham, having presented the prizes, congratulated the renowned school of Charing Cross Hospital on the successful report presented by the Dean and expressed his best wishes to the successful students. He considered them very fortunate to have an opportunity of studying in such a place and under such a staff. He recalled the great interest which his family had always taken in the welfare of Charing Cross Hospital. On the motion of Sir Herbert Waterhouse, seconded by Mr. Peter Daniel, a hearty vote of thanks was accorded to Lord Burnham.

The annual dinner of past and present students was held in the evening at the Imperial Restaurant, with Viscount Burnham in the chair. The toast of "The Hospital and Medical School" was given by Sir Herbert Waterhouse, who referred to the loss the school and hospital had sustained by the retirement of Mr. Stephen Fenwick. He mentioned that Mr. George Verity, chairman of the hospital, had become chairman of the medical school, and that the freehold of the school buildings had been purchased. The toast of "The Students, Past and Present," was given by Dr. W. C. Bosanquet and acknowledged by Dr. Scott for the old students and Mr. Clifford-Smith for the present students. The toast of "The Guests," given by Dr. David Forsyth in a humorous speech, was acknowledged by the Principal of King's College and Dr. Ingleby Oddie, coroner for Westminster. Mr. George Verity, in proposing a vote of thanks to the chairman, said that he hoped the project for a maternity ward would shortly be realized. Viscount Burnham, in his reply, spoke of the interest which through contiguity Fleet Street took in Charing Cross Hospital.

ST. MARY'S HOSPITAL.

The annual dinner of St. Mary's Hospital Medical School took place on October 2nd, when Sir Leonard Rogers, M.D., F.R.S., presided over a company of 140 past and present students. The chairman gave some reminiscences of his student days at the hospital; on one occasion he was a member of a raiding party, which in the dead of night obliterated the sign of an undertaker who advertised cheap funerals under the hospital windows. The speaker referred regretfully to the deaths of Professor Waller, Dr. Mitchell Bird (who had left about £10,000 to the hospital), and the librarian, Mr. Nanfan. Happy was the country which had no history, also the institution which did its work so quietly and effectively that there was very little to be said about it. Mr. A. R. Prideaux, Chairman of the Hospital Board, mentioned that recently a man who had been brought into the hospital badly injured in a street accident, so that his leg had to be amputated, was so grateful for what was done for him that on his discharge he organized a boxing tournament, which brought in £2,000 for the hospital; moreover, he promised to make it an annual event. Dr. C. M. Wilson, the dean of the school, gave an account of the school's income, which came, he said, from two sources—student fees and State contributions. To justify the continuance of the latter it was necessary to provide something distinctive at St. Mary's, which was not furnished by other schools. Therefore the clinical field had been widened by affiliation with Paddington Infirmary and Paddington Green Children's Hospital, and arrangements were contemplated with a lying-in hospital which would give the students access to a large number of midwifery beds. For those already qualified a number of scholarships and posts were instituted, so that a man who was keen upon pursuing his studies could "hang on." The post-graduate courses were very important, not merely to the graduates. By means of the criticisms and suggestions of graduates the school learned whether it was giving to students the actual equipment which they would need in practice. The entry to the school this

year was seventy-one; it had not diminished. Sir John Broadbent proposed the health of the chairman and told the story of his researches upon kala-azar, cholera, dysentery, and amœbic liver abscess. Sir Leonard Rogers, in reply, said that his choice of a profession was determined for him at a very early age. In his native Cornwall the seventh son of a seventh son was regarded as born to be a doctor; he was the seventh son of a sixth son, and that was regarded as near enough for the purpose. The only merit he could claim was that he refused all other work in order to stick to research, breaking with the tradition in India that a pathology post should be used as a stepping stone to lucrative clinical practice.

KING'S COLLEGE HOSPITAL.

The ninety-third winter session of King's College Hospital Medical School opened on October 3rd, when the ceremony at Denmark Hill was presided over by Viscount Hambleden, chairman of the board of management. In his introductory speech the chairman remarked on the great success of the past year, not only in work, but also in play. The enforced closing of some of the hospital wards, owing to shortage of funds, brought various disadvantages, including a considerable loss of clinical material for teaching purposes. A certain number of beds had, however, been opened for the treatment of patients who could contribute the whole cost of their maintenance, and he was glad to know that in the great majority of cases it had been possible to use these beds for teaching purposes. Although 160 beds had been closed, the number of in-patients had not gone down in proportion, because the number of days during which beds were occupied had been reduced. The dean of the medical school, Dr. H. Willoughby Lyle, in his annual report said that there were now 278 undergraduate students, of whom 98 were women.

The introductory address was given by Sir Herbert Jackson, K.B.E., F.R.S., Emeritus Professor of Chemistry in the University of London, who discussed in particular the place of science in education, and insisted on the importance of breadth in the early training of those who intended to follow the medical profession. The time, he thought, had come to consider seriously whether the specialization which had been getting more and more evident even in early education, and was now so pronounced in scientific teaching at the universities, was likely to produce the best result or to be the method by which a student of science at the present day could reap the best results from the work of his predecessors. It seemed necessary to encourage a much wider outlook by the student of science. Recent experience was in favour of decreasing the mass of detail to be accumulated by the student and increasing his opportunities for gaining a wide and sound foundation of knowledge. It was really not a contradiction in terms to say that the broader the earlier education in science as a whole the more complete specialization in any one branch could be made. Moreover, the inclusion of the subjects grouped together under the term "humanities" was vital in the education of one who, like a medical man, entered into intimate relations with his fellow creatures. The outlook on science changed so rapidly, and the applications came one after the other so quickly, that it seemed that a medical man needed a sounder and earlier study of general principles throughout the sciences.

MIDDLESEX HOSPITAL.

The opening of the eighty-eighth winter session of the Middlesex Hospital Medical School took place on October 3rd at Wigmore Hall. In the absence of Princess Alice the prizes were presented by the Earl of Athlone, chairman of the governing body of the hospital. The dean, Mr. A. E. Webb-Johnson, in his report for the past academic year, recorded several munificent gifts to the hospital and school, notably that by Sir William Veno, who had presented £10,000 for cancer research in the form of £1,000 a year for ten years. It had been decided to use this additional income for the development of research in biochemistry with a view to the solution of some of the chemical difficulties of the cancer problem. The financial support received during the past year had encouraged the authorities to make substantial additions to the accommodation in the medical school in order to enlarge the facilities for research.

The introductory address was delivered by Professor Sidney Russ, D.Sc., physicist to the hospital, who devoted a large part of his discourse to the life-work of two English pioneers in scientific research—William Gilbert and Thomas Young. He reminded his audience that, besides their epoch-making discoveries in physics, both men were successful in the profession of medicine, Gilbert being President of the College of Physicians and Young a Fellow of the College and a physician to St. George's Hospital. Professor Russ feared that there was a disposition nowadays to think of modern discoveries as outstripping in importance those that had preceded them. Pioneers like Gilbert and Young had not only to search out the secrets of nature but to combat the opposition of the pseudo-science of their day; for that reason their work would always be highly appraised.

The annual dinner of the Medical School was held at the Trocadero Restaurant, with Mr. W. Sampson Handley in the chair. There was a very large company, including many old students. The chairman, in proposing prosperity to the hospital and school, spoke of the excellent progress made in various directions, and declared that the prospect had never been brighter. The toast was replied to by Mr. S. G. Asher, chairman of the school council, who insisted that the hospital and school were one; medical education, research work, and the training of nurses were as much the functions of a hospital like the Middlesex as the actual treatment of the sick. Mr. A. E. Webb-Johnson, who also responded, remarked on the large number of entries this year, and the high proportion of students from Cambridge.

WESTMINSTER HOSPITAL.

The winter session of the Westminster Hospital School of Medicine opened on October 2nd, when Mr. G. T. Mullally, assistant surgeon to the hospital, gave an address on "The art of medicine." The ceremony, which took place in the board room, was presided over by Mr. Walter G. Spencer, senior surgeon, who in the course of a brief sketch of the history of the hospital remarked that it was founded in the days when no such thing as a medical school existed in England. A report of the year's work and successes was presented by the dean, Dr. A. S. Woodwark. In his address Mr. Mullally insisted that however scientific medicine might become in the future its practice would always remain an art. Contact with the individual patient was the most important element in clinical studies. The student would soon learn that there was no certainty in medicine—that the practitioner was guided chiefly by the accumulated observations of his predecessors. In medicine there was no final court of appeal; each of them must solve his problems as best he could. It was the human, or perhaps, better still, the living, element which provided at once the difficulty and the charm of medicine. The art of medicine was the choice of the remedies and methods best suited to the individual patient. The patient in feeling that his illness was different from other illnesses was right; thorough realization of that fact was the first principle in the successful practice of medicine. The patients in that hospital kept their names and were not known by numbers; thus they kept their individuality and were the gainers thereby. One of the great dangers in the setting up of a national medical service was that the independent doctor might become an official and the individual patient merely a statistical unit: the art of medicine could not be practised upon units.

The annual dinner of the past and present students of Westminster Hospital was held at the Wharncliffe Rooms, Great Central Hotel, on Monday, October 2nd. Ninety-one were present, the guests including Sir Edward Pearson, the chairman of the hospital, Mr. C. M. Power, secretary of the hospital, the Rev. Dr. Hillard, highmaster of St. Paul's School, and Mr. Arnold Powell, headmaster of Epsom College. The toast, "The Hospital and Medical School," was given by the chairman, Mr. Arthur Evans, and responded to by the dean of the medical school, Dr. A. S. Woodwark, who described the steady progress in the number of students (the present entry being the highest for fifteen years) and the large number of academical successes. Mr. Walter Spencer proposed "Past and Present Students," in response to which Mr. Rock Carling and Mr. Wilson spoke. Sir James Purves-Stewart gave the toast, "The Visitors," coupled with the names of the highmaster of St. Paul's and the headmaster of Epsom College, both of whom in their replies referred to the long and honourable association of their respective schools with Westminster Hospital. "The Chairman" was given by Sir H. Bryan Donkin, the senior consulting physician.

Scotland.

Diphtheria Prevention in Aberdeen.

Professor Matthew Hay, medical officer of health for Aberdeen, has submitted a report to the public health committee of Aberdeen Town Council, strongly urging the use of toxin-antitoxin for the prevention of diphtheria. Professor Hay pointed out that during the last few years an extensive trial had been made, more especially in New York, of the method by which small doses of a special diphtheria toxin-antitoxin were used, which, though not producing the full immunizing effect at once, conferred complete protection for many years, and in all probability for a period equal at least in duration to the whole period of childhood. He stated that at the City Hospital, Aberdeen, he had already been using this new method for almost two years for the protection of the staff, with entirely satisfactory results. In New York many thousands of school children had been treated by it without the occurrence of any cases of diphtheria in a child in whom immunization had been properly carried out. Professor Hay suggested that the health department should be authorized, in connexion more especially with mother and child welfare work, and at the City Hospital, to offer gratuitously the toxin-antitoxin treatment against diphtheria on the understanding that it would not be carried out in any case without informing the regular medical attendant of the family and obtaining his acquiescence. No compulsion would in any case be attempted, but an endeavour would be made in the instruction given to mothers at welfare centres and elsewhere to persuade them of the advantages of the treatment.

The Census of Scotland, 1921.

County of Ayr.

Continuing the publication of the county census reports in alphabetical order, and following those of Aberdeenshire and Argyllshire noticed in our issue of September 9th (p. 437), the reports on the counties of Ayr[1] and Banff[1] have now been issued. Omitting from calculation the four great towns of Scotland, Ayrshire stands next in population to Lanarkshire. At the census day it had 299,273 inhabitants. But the delay of the census from April to June has appreciably affected the figures for Ayrshire, just as it has those of Argyllshire. The towns on its long coastline from north to south—Largs, Ardrossan, Saltcoats, Irvine, Troon, Prestwick, Ayr, and Girvan—are favourite summer health resorts, the sand dunes along the shore providing many miles of almost contiguous golf courses, some of whose names are of world-wide familiarity to golfers. One incidental result of the change of census date is that Ayr, the county town on the coast, is now shown with a slightly larger population than the inland town of Kilmarnock, which has always hitherto stood first. The Ayr burgh population is shown as 35,763, as against Kilmarnock's 35,747, a difference of 16. The county has shown a steady decennial increase in inhabitants ever since the first census of 1801, when the population was 84,207, so that now it is fully three and a half times as large. Sixteen burghs have 56 per cent. of the population, the non-burghal areas having 44 per cent. The area of the county is 724,251 acres, giving an average of 41 persons per 100 acres. In the burghal portion the average is 1,420, and in the non-burghal 19. Of the burghs, Saltcoats had (in June) 2,905 persons per 100 acres, Kilmarnock 2,799, Galston 2,606, and Largs 2,124. The lowest averages were in some of the parishes of the Carrick, or southern, non-industrial district of the county.

Sex and Age.—The ratio of females to males was 109.3 to 100, as against 106.1 to 100 in 1911, the relatively high increase of females being probably associated with influx of summer visitors. The increase in population is almost entirely over 15 years of age. The average age of males is 27.9, and of females 29.3, as against 26.4 and 27.7 in 1911. Of children under 15, 89.3 per cent. had both parents alive, 6.6 had mother alive but father dead, 2.9 had father alive but mother dead, and 0.6 per cent. had both parents dead. Of males aged 15 and over 41.8 per cent. were single, 53 per cent. married, and 5.2 per cent. widowed. The corresponding figures for females are 41.6, 47.8, and 10.6 per cent.

Housing.—The number of persons per 100 windowed rooms was 156, as against 159 in 1911, but this is doubtless owing to summer visitors, as the ratio had steadily improved from 1861 onwards. In that year it was 208; in 1871, 190; in 1881, 178; in 1891, 166; and in 1901, 157. The total burghal ratio is 156, the same as for the county; but Galston has 190, Kilwinning 185, Kilmarnock 175, and Irvine 173. Of the total population, 9.3 per cent. lived in one-roomed houses, 41.5 per cent. in two-roomed, 18.6 per cent. in three-roomed, 9.4 per cent. in four-roomed, 5.4 per cent. in five-roomed, and 4.4 per cent. in six-roomed.

Occupations.—Of the population 12 years old and upwards, 58.9 per cent. had remunerative occupations. The principal, stated as a percentage of the total persons in occupation, were: Mines and quarries, 12.6 per cent.; metals, 11.6 per cent.; commerce (clerks excluded), 9.5 per cent.; agriculture, 9.4 per cent.; personal service, 8.9 per cent.; textiles, 7.7 per cent.; transport and communication, 7.2 per cent. Professional occupations (excluding clerks) were 3.7 per cent.

County of Banff.

The population of this county on the Moray Firth was 57,298, a decrease of 6.7 per cent. since 1911. The county reached its decennial maximum of 64,190 in 1891, having grown steadily from 37,216 in 1801. Of the total population 53.2 per cent. is burghal and 46.8 non-burghal. There are eleven burghs, of which the largest is Buckie with 8,690 inhabitants, and the smallest Dufftown with 1,454. All the burghs have lost population since 1911, and so also have both of the two county districts and every one of 22 parishes. The county area is 403,053 acres, and the average number of persons per 100 acres is 14. The burghal average is 814 and the non-burghal 7. The most sparsely populated parishes are Cabrach and Kirkmichael, each with one person per 100 acres.

Sex and Age.—The proportion of females to males is 109.3 to 100, against 106.4 to 100 in 1911. The average age of males is 28.9 years, and of females 31, against 27.5 and 29.4 in 1911. Of 18,705 children under 15, 85.2 per cent. had both parents alive, 11.6 per cent. had lost one parent, and 2 per cent. had lost both. Of the male population aged 15 and upwards 42.5 per cent. were single, 51.5 married, and 6 widowed or divorced. The corresponding figures for females were 40.5, 47.2, and 12.3 per cent., the number divorced being 7.

Housing.—The average number of persons per house was 4.6. The average number of persons per 100 windowed rooms was 108, as against 165 in 1861, 154 in 1871, 138 in 1881, 128 in 1891, 119 in 1901, and 114 in 1911, showing a steady and satisfactory decrease in room density. The percentage of population living in one-roomed houses was 1.8, in two-roomed 14.7, in three-roomed 22.9, in four-roomed 18.7, in five-roomed 14.9, and in six-roomed 8.9. Only 258 persons in the county can speak Gaelic.

Occupations.—Of the population 12 years and upwards 54.3 per cent. were in remunerative occupations, the principal, stated as a percentage of the total persons in occupations, being—agriculture 26.6, fishermen 13.8, personal service 13, commerce (excluding clerks) 7.4, transport and communication 6.8. Professional occupations (excluding clerks) were 4 per cent.

County of Berwick.

Among the most recent sections of the Census of Scotland, 1921, is that dealing with the border county of Berwick.[2] It had a population of 28,246 on census day, being a decrease of 1,397, or 4.7 per cent., since 1911. The population steadily increased from 1801 to 1861, when it reached 36,613, but since then has steadily decreased, being now 22.9 per cent. less than the maximum. Of the total population only 22.7 is burghal, and the four burghs are little more than villages, the largest being the fishing town of Eyemouth with 2,477 inhabitants, and the smallest Lauder with 759. Duns, with a population of 1,868, is the capital of the county, the town of Berwick-on-Tweed being uniquely regarded, since the union of England and Scotland, as neither in the one country nor the other, though municipally it is English, with a mayor and aldermen instead of a provost and bailies. The area of the county is 292,535 acres, giving an average of 10 persons per 100 acres. The proportion of females to males is 110.1 to 100, against 108.9 to 100 in 1911. The average age of males is 32.4 years, and of females 34 years, as against 30.3 and 32.1 in 1911, showing an average increase of two years. Of males 15 years and over, 40.8 per cent. were single, 51.9 per cent. married, and 7.3 per cent. widowed or divorced. The corresponding figures for females were 43.5, 46.0, and 10.5 per cent.

The average number of persons per house was 4, against 4.2 in 1911. The ratio of persons per 100 windowed rooms was 101. In 1861 it was 165; in 1871, 147; in 1881, 133; in 1891, 118; in 1901, 113; in 1911, 103; and now 101. Of the total population, 3.3 per cent. lived in one-roomed houses, 29.3 in two-roomed, 22 in three-roomed, 16.8 in four-roomed, 7.1 in five-roomed, and 4.9 per cent. in six-roomed. Of the population of 12 years and upwards, 92.1 per cent. of males and 29.5 per cent. of females were in remunerative occupations, the principal, stated as a percentage of total occupations, being—agriculture 39.5 per cent., personal service 11.3, commerce (clerks excluded) 6.5, transport and communication 6, and fishermen 4.4 per cent.

[1] Vol. i, Parts 7 and 8, of Census of Scotland, 1921. H.M. Stationery Office, 23, Forth Street, Edinburgh. 10s. 2½d. and 6s. 2d. respectively, post free.

[2] Vol. i, Part 9, of Census of Scotland, 1921. H.M. Stationery Office, Edinburgh. 4s. 6d. net.

The Caledonian Medical Society.

The Caledonian Medical Society held its annual dinner this year in London. It took place on September 29th at the Hotel Cecil, and the President, Dr. John Matheson of Islington, was in the chair. Sir James Cantlie gave the toast of "Caledonia" in a doric not wholly intelligible to some of the guests, and incidentally alleged that the language of Chaucer was still spoken in Teviotdale. He asserted that the Scots and the Swiss were the only peoples to suffer from nostalgia, and maintained that the cure of that complaint was effected by joining together in societies, of which the Caledonian Medical Society was an example. The Society had the widest circle of any medical body in the kingdom, and therein it was significant of the Scot, whose name came from *scuite*, a wanderer. The Rev. Alexander Macrae proposed the toast of the Society, and was forthwith elected an honorary member. He told how it fell to the lot of the parson to fortify the doctor's advice, and occasionally to sympathize with the patient against it. The President, in responding, said that the medical profession everywhere was a vast freemasonry, to which the Caledonian Medical Society contributed its share. Its numbers were small, but its geographical distribution was as wide as the world, and thus it was a microcosm of the Scottish nation. The health of the guests was entrusted to Sir John Collie, who told some Scottish stories. Sir Donald Maclean, M.P., in acknowledging the compliment, said that in recent years the medical profession had made greater strides in its development and outlook than any other learned profession, and the well-being of civilized communities and the uplifting of communities not civilized depended in a major degree on the devotion and scientific mind of the doctor. On that account it was increasingly necessary that the government of all countries should see that the medical profession was thoroughly well equipped for its fight against disease. When he had been asked recently to name the most useful classes in the community he replied, "Doctors, policemen, and ministers, and in that order." He did not know that adequate record had been made of the services of the medical profession in the war. There the medical men shirked nothing, and through all the horrors and excitements carried the calmness of the scientist and the sympathy of the Samaritan. He trusted that circumstances would not arise to make such a call upon the profession necessary again. Sir Dawson Williams, who also responded, said that in his calling he always found it a great satisfaction to deal with a Scotsman because the Scotsman was commonly something of a philosopher, and, despite all that was said to the contrary, had usually a keen sense of humour. The gathering broke up after honouring the President, on the motion of Dr. G. C. Anderson, who said that Dr. Matheson's forty years in London had not obscured one of the natural characteristics of the Scotsman. Dr. Matheson replied by saying how much the society was indebted to Dr. Anderson and Dr. Campbell McClure for the success of the occasion.

Anderson College of Medicine.

The vacancies on the teaching staff of the Anderson College of Medicine, Glasgow, to which we made reference in our issue of September 23rd, have now been filled. Dr. James H. Martin has been appointed to the chair of midwifery and diseases of women, and Dr. George B. Brand to the lectureship on diseases of the throat and nose. At their meeting the Governors resolved to invite the late Dean of the Medical Faculty, Dr. John Macintyre, to join the board on his resignation after thirty-one years' service on the teaching staff of the College.

England and Wales.

An Orthopaedic Sports Meeting.

A sports meeting of more than ordinary interest was held at Grangethorpe Hospital, Manchester, on September 15th, when limbless men demonstrated how it was possible to overcome the handicap of a missing limb and to participate in sports. The meeting was organized by Dr. F. A. Hort, medical superintendent of the hospital, and among the entrants were a number of men who are members of the North of England Limbless Sporting Club, which was organized by Dr. Hort when he was in Sunderland. The Sports meeting was opened by Lord Haig, who paid a tribute to what the medical profession had done during the war and since in alleviating the sufferings of wounded and disabled men, and expressed the hope that such gatherings as that would encourage the men to make the fullest use of the artificial limbs. The sports were not arranged primarily as an exhibition, but in the belief that they would furnish data for carrying the present methods of using artificial limbs to an even further point of success. The handicapping committee included not only well-known Manchester sportsmen, but the professor of anatomy and the professor of physiology at Manchester University, orthopaedic surgeons, and others.

Medical Arrangements at a Garden Factory.

The firm of Cadbury Brothers is well known as one of the pioneers of the industrial garden city, for their chocolate factory was moved from the heart of Birmingham to a country district outside so long ago as 1879, and the town of Bournville, carefully planned, has grown up around it. The health of the industrial worker received perhaps closer general attention in the later years of the war than ever before, and the measures adopted by this firm to maintain the health of their workpeople are of interest. Encouragement is given to athletics of every kind, and facilities for physical culture and recreation are provided. There is a medical staff of two full-time medical practitioners, one a lady, and four qualified nurses are attached to the surgery, three of them qualified masseuses. Before engagement every applicant's medical history is studied, a thorough medical examination is made, and the medical examiner may suggest the type of work most suitable. Special measures may also be recommended, such as a course in the remedial gymnasium with periodical re-examinations. All cases of sudden illness at work are seen by a medical officer, and if continued medical attention is necessary the patient may be attended either by his private doctor or by the works doctor, and also by the works nurse. In addition to advice, treatment, and medicine, the works doctor may authorize the free supply from the dispensary of extra nourishment. All accidents are immediately reported and prompt attention given, in trifling cases by members of the works ambulance, and in more serious cases by the works doctors. The works doctors are co-opted members of the Accidents Committee of the Works Council, which investigates all accidents, apportions blame, if any; takes steps to prevent a recurrence: and decides whether compensation shall be paid. Particulars of the symptoms of tuberculosis are circulated in the works, and employees who suspect its presence are encouraged to visit the works doctors, emphasis being laid on the necessity for early treatment. The firm maintains two convalescent homes, which are used not only for those recovering from illness but also to give a change of air and a rest to those threatened with breakdown. Three whole-time dentists are employed, together with two mechanics and four attendants, and as part of the preliminary medical examination all applicants for work are examined by one of the dentists, and a record is kept of the oral condition of those under the age of 16. It is a condition of employment that all who enter the works under 18 years of age shall have such dental treatment as is considered necessary by the works dentists.

Correspondence.

THE LEGIBILITY OF PRINTED MATTER.

Sir,—Your annotation on the above subject in the Journal of September 23rd (p. 570) prompts me to draw your attention to a far more serious matter than the legibility of printed words, and that is that of printed figures. Whereas the association of ideas enables us to guess fairly accurately the probable sequence of words, with figures the case is vastly different. Errors in reading figures, whether of money or statistics, may lead to disaster. It is therefore very important in the interests of both old and young that there should be no possibility of mistaking one figure for another.

The ends of figures having open loops, such as 2, 3, and 5, should not be curled up; such turning makes these figures somewhat like an 8. In 4 the oblique stroke should be thicker, as, in indifferent light, it might be mistaken for a 1. So figures with tails—6, 7, and 9—should have these strokes prolonged above or below the line respectively; a 6 or 9 with its ends curled in is easily mistaken for an 8.

I see in the text of our Journal many of the figures conform to my suggestions.

Would it not be possible for a committee to be called together composed of typefounders and printers with the view to authorizing a standardization of figures?—I am, etc.,

Chichester, Sept. 28th. HEYWOOD SMITH.

INHERITANCE AND MENTAL DEFECT.

SIR,—We must, I think, concede Sir Archdall Reid's contention that nothing but predispositions to produce characters in response to fitting nurture can be inherited. In that case, obviously, all characters, as distinguished from likenesses and differences between individuals, are equally innate, acquired, and inherited.

But if the Mendelians are right and there is alternate inheritance (not merely alternate reproduction), his axiom, that "variations are the sole cause of non-inheritance; apart from variations, like begets like when parent and offspring develop under like conditions of nurture," does not nearly cover the whole field of study.

According to Mendelian doctrine, which is supported by an immense amount of experimental work, inheritance, in any given particular, tends to be from one ancestor only. In that case there remains an enormous field for research—a field larger than that covered by his axiom.

In his letter (August 26th) he stated that blending is universal, but he gives little evidence in support of an opinion which is opposed to much considered belief.—I am, etc.,

Chesham Bois, Bucks, Sept. 28th. W. BASTIAN, Surgeon Commander R.N.

EXPERT WITNESSES: SURGICAL AND MEDICAL.

SIR,—In common with every qualified practitioner, I welcome the very restrained and common sense letters of Mr. C. H. Fagge and Sir John Lynn-Thomas. I hope the British Medical Association will take up a strong attitude on this question. The *fons et origo* is here ultimately between the actively increasing knowledge of medicine and surgery, and very, very ancient methods of law which should be obsolete, and do not spell justice. The present occasion is "fractures"; perhaps even more of an anachronism exists in the medical and legal aspect of mental disease.

It is time that legally qualified practitioners were absolved from a lot of useless anxiety. Law should mean justice, and the period between aviation and the Ark should be definitely determined.—I am, etc.,

Sevenoaks, Oct. 1st. GERALD SICHEL.

A CASE OF SUPPOSED SUPERFOETATION.

SIR,—The following case seems to be of some interest:

The patient was a primipara whose last menstruation had commenced on May 9th. I saw her on January 10th and found a transverse lie, which was easily dealt with by external version. Labour started at 11.30 p.m. on February 11th and a baby weighing 11½ lb. was delivered with the help of forceps at 6 p.m. on the 12th. The placenta and membranes came away quite complete. No abnormality of cervix or uterus was observed. On February 13th and 14th she was quite well.

On February 15th the nurse informed me that pressure on the fundus caused something to bulge into the vagina. I found that she was quite correct, and with a pair of dressing forceps I removed from the vagina a complete bag of membranes containing a small foetus, which seemed to be quite fresh and showed no sign of any decomposition, mummification, or dehydration. I sent the specimen to Dr. J. D. Barris of St. Bartholomew's Hospital, who has kindly informed me that he considers the age of the foetus to be about 16 weeks. He is keeping it for the hospital museum.

Is this to be regarded as a case of twin pregnancy with one blighted ovum or as a genuine case of superfoetation? Against the former is the fact that the ovum seemed to be quite normal; against the latter that the patient does not appear to have menstruated during the nine months preceding the accouchement.—I am, etc.,

Alexandria, Egypt. E. N. RUSSELL, M.D., B.Ch.Cantab.

UNSUSPECTED PREGNANCY.

SIR,—Dr. Fletcher and Dr. Williams have each contributed one case of this condition, and one case is all that a practitioner is likely to see, however long his experience.

Rightly to appreciate the cases to which these gentlemen refer, I, and I think *we*, require a little more information, because certain circumstances are necessary to bring about such a result.

A full-time undiagnosed pregnancy presupposes (*a*) a regular cervical menstruation, and (*b*) a large woman or (*c*) a small child (this word to include all the contents of the uterus).

I also, in thirty years' slavery as an accoucheur, only met one case of "unsuspected" pregnancy. She was a very large woman, and quite as stupid as her husband, who applied turpentine stupes in an idle attempt to stop the pains. In this case there was no reason to question the *bona fides* of the mother, because she had been married sixteen years, it was her first child, she was living with her husband (this latter statement should be underlined), and she was obviously delighted with the result of her labour; but given a woman of average size, with uterine contents of average bulk, I have no hesitation in asserting that she cannot go to full time without suspecting her condition.

Perhaps your correspondents will be good enough to inform me as to the points I have raised, and thus add to the value of their communications.—I am, etc.,

London, W., Oct. 2nd. GRAHAM GRANT.

EMETINE INJECTIONS.

SIR,—It does not appear to be generally recognized that the precautions which are usually adopted to safeguard against local reaction where an injection of strychnine is given hypodermically are inadequate where emetine hydrochloride is administered by repeated injection. I have found that, even when doses of from 1 2 to 1½ grains are given on alternate days for a complete month (as is generally necessary to produce a permanent cure for schistosomiasis with this drug) the commonly experienced local pain from emetine injections can be avoided (1) by using only reliable preparations of emetine; (2) by giving the injection intramuscularly instead of subcutaneously; (3) by dissolving the tablet in a boiling solution of 1 per cent. carbolic acid immediately before injecting the dose; (4) by having a good supply of reliable needles. To avoid unnecessary trouble, it has been my practice to boil my hypodermic syringe and needle in this solution within its metal case, usually over a spirit lamp; the tablet quickly dissolves when 1 c.cm. of this hot solution is drawn up into the syringe, and some rectified spirit may be used, both to render the site of the injection slightly anaesthetic and antiseptic and to cleanse the syringe and needle before they are returned dry to the case. The addition of this weak solution of carbolic acid does not alter the character of the drug and is certainly very gratifying to the patient, whose condition may be too much impaired by the presence of the numerous parasites of amoebic dysentery or bilharzia disease to stand the risks of local sepsis.—I am, etc.,

Durban, Aug. 31st. F. G. CAWSTON, M.D.Cantab.

THE RADICAL PREVENTION OF VENEREAL DISEASE.

SIR,—It is the looker-on who sees most of the game. In the present controversy both sides are right—and wrong. The umpire's decision, as usual, will please neither side.

Obviously, prevention by disinfection is sound in principle. If every potential sinner is taught in advance to disinfect properly and promptly enough, and does so, venereal disease will cease. That is quite clear. Obviously, too, prevention by moral suasion is sound. If every potential sinner is taught in advance such a dread of venereal disease that he (or she) abstains from illicit union, syphilis and gonorrhoea will vanish. That is equally unquestionable.

Both methods are sound—in theory. Both methods are failures—in practice. Neither method is radical enough. Each fails for the same reason—because human nature is what it is.

Disinfection falls short in practice because men are not saints. It demands a certain degree of unselfishness from the average sinner—or at least some selfish prudence. And the average sinner falls short of the requirements. He forgets, or he "imbibes," or he "won't be bothered." Even in the army such failures are numerous. Will the failures be less in civil life?

Moral propaganda based on fear of consequences fails in practice because men are human. The motive appealed to is mostly a selfish one; and you will not make a man unselfish from a selfish motive! To abstain from doing what you think it is right to do, from selfish fear, is cowardly. It is not working upon a man's higher instincts. Such an appeal is pitched too low to be effective.

Once again, disinfection fails because it is not radical enough: it is too superficial in its action; it must penetrate deeper than the epithelial surface. It must reach the cells of the cerebral cortex; the centres controlling genital impulses stand in need of purification as much as the more external genital organs.

In the same way, moral suasion by means of fear fails because it is not sufficiently thorough. To ensure success it must be applied in the thoroughgoing fashion of the Zulus. In the days before Britain tampered with them the Zulus were a more moral people than we. The penalty of illicit intercourse was death, and it was enforced. Illicit unions were not numerous in Zululand. Unless applied in this thoroughgoing style the moral propaganda based on fear of consequences will fail. It did with the Jews. Moses commanded that the adulterer and adulteress be both stoned. But we find, some centuries later, that though a certain Jewish adulteress was brought up for condemnation her male fellow sinner seems to have gone free, and none of her male accusers could claim the right to throw stones at her. The Jews were more one-sided than the Zulus in the enforcement of their law. Such lax, one sided application of the moral method is foredoomed to failure.

With both the sexual sinner and the moralist the real trouble is an arrest of development. The sexual sinner suffers from arrested development of the sex instinct. In his case an animal lust for the female has not developed into a human, humane love for woman. His sex instinct is still subhumane; it has not evolved beyond the selfish, antisocial stage to its normal "sublimation" in humane, social instincts. The moralist, whose propaganda depends on fear—whether of punishment or of other consequences—suffers from arrested development of his morality. He is still—morally—in the "Mosaic dispensation." His propaganda is pre-Christian in principle. He makes the selfish sinner more selfish still by cultivating selfish fears. His moral methods are, to that extent, Mosaic.

Thus we arrive at this paradox: the method of external disinfection fails in practice because it asks too much of human nature; it requires men never to be careless, or lazy, or drunk. The "Mosaic" moralist's method fails in practice because he asks too little of human nature; he asks a man to cease from *one* selfish habit for fear of consequences, instead of asking him to cease from *all* selfish habits for love of his neighbour.

The onlooker finds the results, on both sides, poor and disappointing. So much energy, so much argument, so much controversy, and so very little progress! An almost pathetic letter on this subject appeared in the British Medical Journal some months ago, expressing a sense of the ineffectiveness of all methods hitherto adopted. Its writer lamented the slowness of results from the moral propaganda of Moses and St. Paul; more rapid remedies were called for in his view: personally he recommended "rubber sheaths of good material" as the best preventive. His medical qualifications were above the average: his sense of humour hardly equalled them.

Let us do justice to St. Paul: he lamented the failure of Moses more deeply than any of us. He claimed that his own psychological principles produced far more hopeful results. His mode of preventing illicit unions was totally different. The "circumcision" he advocated was a far more radical operation than that of his Jewish predecessors. It is the most radical, as well as the most rational, way of preventing venereal disease. Moses commanded the removal of the foreskin. St. Paul superseded this by a "circumcision of the heart"—the excision of all selfish impulses. Cure selfishness and you prevent syphilis. For after all, sexual sins are but one of the many symptoms arising from that chronic infection—selfish-mindedness. Private passions must be dominated by a passionate public-mindedness. Sexual sin must be remedied by the normal sublimation of the sexual instinct. St. Paul's argument runs somewhat on the following lines:

> Abnormal actions proceed from abnormal thoughts. Disinfect the thoughts and the actions will look after themselves. Sexual sin, like money grubbing, is merely a manifestation of a selfish mind. (It is interesting to note in this connexion that St. Paul classes the fornicator and the money-grubber together; both are outsiders, self-excluded from "the Kingdom" by their selfish-mindedness.) Further, habit can be overcome by counter-habit. Selfishness *can* be conquered—inhibited—by a constant habit of unselfish thinking. Moses had treated separate symptoms superficially. St. Paul dealt radically with the disease itself. He proved that it is more effectual to attack *all* sins than one sin. Obviously, if you can teach men a habit of thinking unselfishly in regard to everything, selfishness will vanish in all its various forms, whether sexual or otherwise. He who loves his neighbour will not make a prostitute of her. A universally applied habit of unselfish thinking—practised every day in every way—will get stronger and stronger, and inevitably dominate all the "weedy" habits, or wild oats, of weaker growth. Man of all creatures has an unparalleled capacity for acquiring new habits. Hereditary vices, or weaknesses of disposition, will stand no chance against an acquired aptitude of unselfish thinking, a public-mindedness which operates every minute of every day, increasing in power by constant exercise. The [illegible] is no foreign importation: it is native to the soil of the human mind. It is present in every individual, as is evident if a stimulus be applied of sufficient strength. It *has* been cultivated so as to control and subdue all the vicious weeds of the mind—wild oats included. It has been done successfully in thousands of cases, in every century of the Christian era, by ordinary people. They were most of them pupils of St. Paul, or his colleagues, or of later teachers who had grasped something of his method and principles. For, in his post-graduate days, St. Paul had discovered an "emotional stimulus to morality" that proved surprisingly successful. It is the most radical preventive of venereal disease yet discovered. But the details of its application lie outside the province of a medical journal. As psychologists, however, we know that any moral propaganda without an adequate emotional stimulus is fundamentally feeble and ineffectual.

Are these principles obsolete? Are they too slow of result to be considered by practical modern scientists? Must they give place to calomel cream, or "rubber sheaths of good material"? Possibly a compromise, or combination of methods, may prove the wisest course. In order to estimate their comparative value let us apply the historical test:

1. External disinfection: tried for several years, with special zeal in some parts of Germany. Result, disappointing. By-product—lowered moral standard.

2. Rubber sheaths: tried for some ninety years, especially in France. Result, disappointing. By-product—slow national suicide.

3. Mosaic moral suasion: tried for some nine hundred years or more, especially in Palestine. Result, inadequate. By-product—pharisaism.

4. Pauline psychological method—"circumcision of the heart": tried for nearly nineteen centuries in most European countries. Result, disappointing and inadequate to modern idealists; still, under all the circumstances, rather a surprising success. By-product—the difference in morals between the first and twentieth centuries A.D.

We must leave it to the historians to measure that difference. In our pessimistic moments we are apt to underestimate it. Of these four competing methods, which would a wise reformer seek to reinforce? Which method will prove, in the long run, the most effectual? Which will promote "the greatest good of the greatest number"?

Two reflections present themselves to the moral idealist here. More haste may mean less speed. The method that appears most rapid may prove a deceptive short cut, bringing us to a destination neither anticipated nor desired. If, by a propaganda of external disinfection, we enable men to escape syphilis, at the cost of depraving their sexual instinct and weakening their self-control, have we done more harm than good to the individual? Is society in the end benefited by the net result? Perhaps after all St. Paul's slower radical method may prove the most rapid as well as the most rational.

Meantime we must compromise to some extent. External disinfection has its due place. So long as there are unfortunate individuals among us in whose upbringing St. Paul's radical operation was omitted or inadequately done: so long as there are those whose sexual instinct has had its development arrested at a subhumane level: so long as there are social failures who make prostitutes of other men's sisters—external disinfection should be practised by all such. It is their duty to society, and we must hope that they will have retained enough of a conscience to do it. It is the least these weaker brethren can do if they have any decency left. Even though they should succeed in washing the last spirochaete or gonococcus off their external genitals, the internal centres are not greatly benefited; the mind remains as selfish, as sensual, as semi-civilized as ever: their thoughts are filthy still.

Let the moralist, however, beware in his turn lest he sin from too much zeal and fall into a censorious pharisaism. Who are we to cast stones? Are any of us without sin when judged by the post-Mosaic standard? That standard is a severe one, and its searching relentlessness may well disarm criticism of our weaker brethren. For the post-Mosaic standard of sexual morality has been put in these words: "Whosoever looketh on a woman to lust after her hath committed adultery with her already in his heart." Judged by that standard, how many of us are entitled to cast a stone at any other sinner? Even a "moral idealist" must hold his hand and make his apology to his fellows if his criticism of himself and them has at all savoured of pharisaism. With that apology, therefore, these reflections on a vital question are submitted for consideration.—I am, etc.,

Sheffield, Sept. 22nd. Herbert Caiger.

THE THYROID GLAND AND DISEASED TONSILS.

Sir,—Dr. H. Crichton Miller's most interesting paper on the psychic and endocrine factors in functional disorders, published in the Journal of September 23rd, 1922, contains a paragraph on page 552 which I venture to think needs elucidation.

Speaking of "the chronic colds and sore throats . . . which culminate in a belated enucleation of tonsils," he asks, "How

often does a laryngologist in such circumstances stop to think of the once efficient thyroid now morphologically altered beyond repair?"

Are we to assume that the enucleation is followed by injury to the thyroid as a direct result of the operative interference?—I am, etc.,

September 23th. M.A., M.D.

Obituary.

W. S. HALSTED, M.D.HAR., F.R.C.S.ENG. and EDIN.,
Professor of Surgery, Johns Hopkins University, Baltimore.

THE death is announced of Dr. William Stewart Halsted, professor of surgery at Johns Hopkins University, Baltimore, since 1889. He was born in 1852, and graduated in New York in 1877. He was an honorary Fellow of the Royal Colleges of Surgeons of England and of Edinburgh; he received the honorary degree of LL.D. from Yale in 1904 and from Edinburgh in 1905, and the honorary degree of D.Sc. from Columbia University in 1904. He was one of the pioneers of modern surgery in America, and his name will always be remembered in connexion with the Johns Hopkins Hospital, the foundations of whose reputation were laid by Osler, Welch, Kelly, and Halsted. In 1907 a portrait group of those four friends, painted by Mr. J. S. Sargent, R.A., was presented to the hospital.

Besides many other contributions to surgery there are four subjects upon which Dr. Halsted made important observations. The modern operation for cancer of the breast was instituted by Mitchell Banks of Liverpool. His first paper was published in 1877, a second in 1882, and a third in 1887; amongst other things he advocated a circular incision, undercutting the skin, the removal of the pectoral fascia and lower part of the pectoralis, as well as the axillary glands, whether enlarged or not. In this he was opposed by some of the most prominent London surgeons. In his Lettsomian lectures to the Medical Society (BRITISH MEDICAL JOURNAL, 1900, i, 557) he stated that of 213 cases treated by the method he advised some 67 were alive three to twenty years later, and that among the last sixty operations there had been no deaths. Heidenhain (*Langenbeck's Archiv*, 1889) and Stiles (*Edinburgh Medical Journal*, 1892) gave a more exact description of the lymphatic system connected with the breast, which has served as a guide in connexion with the question of what should of necessity be removed. Halsted commenced his contributions to the subject in 1889 by proposing that the pectoralis major should be completely removed in every case, and that the supraclavicular glands should be excised after division of the clavicle. Later on, however, Halsted himself gave up the division of the clavicle, and excision of supraclavicular is an exceptional and generally unsuccessful addition to the operation; surgeons now remove the pectoralis major except the clavicular portion. In Deaver's work (Deaver, McFarland, and Herman, *The Breast: Its Anomalies, its Diseases and their Treatment*, 1918) is included a table of cases operated on by Halsted. There were 204 operations; 13 patients were lost sight of; of the 191 reported on 39 (20 per cent.) were alive and well five years after the excision, 10 had died within the five years without recurrence, and 10 had died of metastases over five years after the excision.

Halsted was a pioneer in the use of rubber gloves when operating. Cotton gloves had previously been recommended, by Mikulicz-Radecki of Breslau in particular, and in spite of drawbacks had been widely adopted by surgeons when, in 1890, Halsted advised rubber gloves, the making of which he superintended so that a workmanlike article was produced and was generally adopted. The introduction of antiseptic surgery by Lister rendered the radical treatment of hernia practicable. Attention was particularly concentrated upon the removal of the sac. A method of doing this was described by Sir W. Macewen of Glasgow (*Annals of Surgery*, 1886, iv, 87). In 1887 the late Mr. Arthur Barker (BRITISH MEDICAL JOURNAL, 1887, ii, December 3rd) described the method now commonly used of ligaturing the neck, and after cutting away the sac fixing the stump within the internal ring. In 1834 Bassini, believing that recurrence of hernia after operation was due to yielding of the transversalis fascia, had suggested that this might be obviated by suturing the internal oblique and transversalis muscles behind the spermatic cord; he described 100 cases in 1888 (Ital. Chir. Cong., Napoli, 1888). Halsted in 1890 (BRITISH MEDICAL JOURNAL, 1890, i, 495) went farther and sutured the aponeurosis of the external oblique as well under the cord, after excising the pampiniform plexus. The cord was thus rendered subcutaneous and liable to become tender. Atrophy of the testis also was apt to follow, and O'Conor in 1898 said this happened in 20 per cent. There proved to be a special tendency also to hydrocele after Bassini's operation, as well as after Halsted's modification, and surgeons generally reserve the procedure for direct hernia.

In 1920 Halsted published in the *Johns Hopkins Hospital Reports*, vol. xxi, a treatise on "Ligations of the first part of the left subclavian artery"; the main point of the paper was that the operation demands the highest anatomical knowledge and surgical skill on the part of the surgeon, owing to the multiplicity of important structures behind the origin of the left sterno-mastoid muscle. Halsted's first operation was performed in 1892, and was accompanied by excision of the subclavian aneurysm; the operation had been performed unsuccessfully four times before; Halsted's patient was cured. His second operation (also successful) was performed in 1918. The first case to be successful in this country was operated upon by Charles Stonham in 1893, and the man was shown to the Clinical Section of the Royal Society of Medicine in 1921, twenty-two years after the operation.

We are indebted to Sir BERKELEY MOYNIHAN, Bt., for the following tribute to Dr. Halsted:

The death of Dr. W. S. Halsted removes one of the greatest of American surgeons. Trained as an anatomist, he took to surgery, its science and its art, with great and eager enthusiasm at the time of the inauguration of Johns Hopkins Hospital. Osler, Welch, Howard Kelly, and Halsted were the heads of the departments when the work of that hospital began; the services of each of them have been of the highest order, and it is probably true to say that their association together in those early days has been the means of developing there the authentic spirit of scientific medicine, as truly and as speedily as in any other hospital in the world. Halsted appeared to be the most reticent of the four. His struggles, in his younger days, against ill health won the respectful admiration of all his friends, of those more especially who knew how grim and arduous the conflict was. Soon after his appointment to Baltimore he began to surround himself with pupils, whom he trained by the example of his own surrender and devotion to the infinite toil of surgical work, both on the side of research and on that of its clinical practice.

It may justly be claimed for him that he introduced many of the technical methods now embodied in the everyday work of surgeons throughout the world; that he established principles for the proper conduct of operations hitherto performed in a haphazard or perfunctory manner; and that he trained and influenced men who are now teaching the whole world, and carrying out in many schools the ideals with which he first inspired them. Crile, a superb master of the craft of surgery, and a great disturber of intellectual traffic, has said that he owes more to Halsted than to any man. Harvey Cushing, unsurpassed in exquisite perfection of technical work and unequalled in breadth and depth of surgical knowledge of the nervous system, and Finney, one of the wisest of men, of wide experience and profound sagacity, both own Halsted as their master. Bloodgood, at least as learned in pathology as any surgeon of the day, was taught and guided by Halsted, and Young, among the most skilful and deft of urologists, learnt his first principles under the same inspiring teacher. If a man's greatest gift to surgery is the number of the pupils trained by him in the highest ideals of research and of practice, then for Halsted there may justly be claimed a place among the most eminent surgeons of the time.

His name will long be associated with the surgery of hernia, of cancer of the breast, of the thyroid and parathyroid glands, and of the vascular system. On all of these subjects he wrote with an authority derived in part from the most patient research, both experimental and clinical, and in part from an operative experience that, in his own hands and in those of his assistants, became stupendous. As an operator he was exceedingly patient and careful. It was he who first used rubber gloves and who then set the fashion for all the world. His method of dissection, of frequent light, swift, sparing movements with the sharpest of knives, instead of the free, heavy-handed deep cutting, of no haemorrhage or the minimum of haemorrhage instead of the severance of many vessels, each bleeding freely until clipped, has become a part of the ritual of the great surgical artists of the day. His method required time, but it was results and not the

time taken to win them that he counted. It was said in jest that if you wanted to watch Halsted perform a radical operation for cancer of the breast, you must hurry away from breakfast to see him and take your lunch with you. But he lost few cases, and the proportion of "cures" from his very extensive and minutely accurate operation was taken as the standard of the best that surgery could do.

He has joined the immortals. For it is certain that so long as the craft of surgery is practised some of the principles which he was the first to formulate, and some of the technical methods which he was the first to devise and to make perfect, will be a part of the creed and of the daily ritual of every man.

THE LATE SIR JAMES AFFLECK.

DR. WM. MURRAY CAIRNS, C.B.E. (Liverpool), sends the following tribute as a supplement to the obituary notice published in our columns last week (p. 617):

To his old students, scattered over the whole world, the news of the death of Sir James Affleck will bring a deep sense of loss, for to an innumerable host of our profession he was a veritable father in medicine; nay more, to multitudes of his fellow men—colleagues, students, patients, friends—he was in very truth the beloved physician. Efficiency, sympathy, modesty were outstanding characteristics. His professional ability was evident in all the departments—and they were many—of his work. But it was as a teacher, and especially as a clinical teacher, that he shone. He had a quiet but eminently effective way of combining his personality with his teaching, and of so impressing these upon his students that they could never forget the one or the other. For example, thirty years ago, in his incomparable clinics, he used to say to us students, "When you become practitioners, examine the heart of every patient who consults you, whatever the patient is complaining of: do this always: never omit it." And last week, when I was north, I paid a visit to Edinburgh, partly to see again my old teacher. During our chat I took opportunity to say to him that, literally, in my consulting-room, now "thirty years on," I think of him every day, and, remembering these words of his, I do as he enjoined upon us. Many of us now teachers ourselves gratefully remember how he would take us to a bedside and would point out the significance of a posture, of a movement, of an expression of the face, of the patient. And not only in these, but in other ways innumerable, I shall ever hold myself a debtor to this shy, quiet, unassuming man who, with all his shyness and reserve, was a moulder of men, and who, by his quiet, forceful personality, made an indelible imprint on the life and work of a great company of those who, like myself, are proud to say "I was once his student."

The funeral took place at the Dean Cemetery, Edinburgh, on September 28th. In addition to near relatives, the pall-bearers included Sir Harold Stiles, representing the University of Edinburgh, Dr. James Stewart Fowler, representing the Royal College of Physicians of Edinburgh, Sir Joseph Fayrer, representing the Edinburgh Royal Infirmary, and Sir Henry Cook, chairman of the board of directors of the Longmore Hospital for Incurables. Among those who attended the funeral were Sir David Wallace, president, Dr. George Mackay, vice-president, and Mr. Alexander Miles, secretary and treasurer, representing the Royal College of Surgeons of Edinburgh; Dr. Byrom Bramwell, representing the Royal Hospital for Sick Children; Dr. Harry Rainy, vice-president, also representing Sir Robert Philip, president, of the Royal College of Physicians of Edinburgh; Dr. Dawson Turner, Dr. Alexander James, Dr. W. T. Ritchie, Dr. Arthur Sinclair, Dr. Allan Gray, Dr. William Stewart, Dr. James Ritchie.

We regret to announce the sudden death of Dr. JOHN SCOTT TEW at his residence, Brook House, Tonbridge, Kent, on September 27th. He received his medical education at University College, London, and the University of Durham, and obtained the diplomas of L.S.A. in 1880 and M.R.C.S.Eng. in 1881. After taking the D.P.H.Camb. in 1887 he graduated M.B., B.S.Durham in 1889, proceeding to the M.D. degree in 1891. Dr. Tew was also a barrister-at-law of the Inner Temple. He had held the posts of assistant demonstrator of anatomy in the University of Durham College of Medicine, and medical officer of health for the Eastord Urban District, before he went to live at Tonbridge on his appointment as medical officer of health for the West Kent Combined District, and medical officer to the Tonbridge Wells, Tonbridge, and Southboro' Joint Hospital Board. Since 1909 he had held a commission as sanitary officer with the rank of major in the R.A.M.C., Territorial Force. Dr. Tew was a member of the Tunbridge Wells Division of the British Medical Association; a Fellow of the Society of Medical Officers of Health, and a former president of the home counties branch; and he had been president of the Nottingham Medico-Chirurgical Society. His kindly tact and genial good nature won him the regard of the many medical practitioners with whom his work brought him in touch, and his death will be mourned by a wide circle of friends and colleagues.

Universities and Colleges.

UNIVERSITY OF OXFORD.

Radcliffe Prize, 1923.—This prize, of the value of £50, will be awarded by the Master and Fellows of University College upon the report of the Examiners (provided a sufficiently deserving memoir be submitted for adjudication) for a memoir, or papers, embodying research in any branch of medical science comprised under the following heads: Human Anatomy, Physiology, Pharmacology, Pathology, Medicine, Surgery, Obstetrics, Gynaecology, Forensic Medicine, Hygiene. The prize is open to all graduates of the University who have proceeded, or are proceeding, to a medical degree in the University. Candidates, at the date of application, shall not be Radcliffe Fellows; but the provision that candidates shall not have exceeded twelve years from the date of passing the last examination for the degree of B.A. is upon this occasion so far suspended as to enable any graduate who was eligible during the years of the war (1915, 1917, 1919), to be eligible for the next ensuing award (1923). Candidates are required to send in their memoirs to the Assistant Registrar on or before Friday, December 1st, 1922. No memoir for which any University Prize has been already awarded can be admitted to competition, nor may the prize be awarded more than once to the same candidate. Tuesday, March 20th, 1923, is the intended date of the award.

UNIVERSITY OF CAMBRIDGE.

THE Vice Chancellor has appointed Sir Hugh K. Anderson, M.D., F.R.S., Master of Gonville and Caius, together with Dr. T. C. Fitzpatrick, President of Queens', and Dr. Peter Giles, Master of Emmanuel, to be deputy Vice-Chancellors.

The following staff appointments have been made in the Natural Science Schools:—*Anatomy:* Dr. A. B. Appleton, senior demonstrator; Mr. D. G. Reid and Mr. A. Hopkinson, M.B., junior demonstrators; Mr. V. C. Pennell, M.B., additional demonstrator. *Physiology:* Dr. F. Roberts, junior demonstrator; Mr. T. R. Parsons, additional demonstrator. *Comparative Anatomy:* Mr. F. A. Potts, demonstrator. *Botany:* Mr. J. Walton, junior demonstrator.

UNIVERSITY OF LONDON.

LONDON HOSPITAL MEDICAL COLLEGE.

THE Price entrance scholarship in anatomy and physiology offered by the London Hospital Medical College, and open to students of the Universities of Oxford and Cambridge, has been awarded to Mr. J. Gray, of Fitzwilliam Hall, University of Cambridge.

UNIVERSITY OF DURHAM.

AT a convocation held on September 23rd the following medical degrees were conferred:

M.D.—J. M. Gower.

M.B., B.S.—H. Morley, S. Bell, G. A. Mason.

The Services.

HONOURS.

THE following appointments to the Order of the British Empire, published in the *London Gazette* of June 7th, 1918, have, on the recommendation of the Secretary of State for War, been transferred to the Military Division of the Order: Officers: Lieut.-Colonel James Muir Crawford, I.M.S., Major (temporary Lieut.-Colonel) Henry Ross, I.M.S.

FOREIGN DECORATIONS.

The following are among the decorations awarded by the Allied Powers indicated for distinguished services rendered during the war 1914-19:

President of United States of America.—Distinguished Service Medal: Major-General Sir William G. Macpherson, K.C.M.G., C.B., late A.M.S.

King of the Belgians.—Ordre de Leopold (Officier): Colonel Arthur M. Connell, T.D. (Territorial Force, retired).

President of the French Republic.—Médaille d'Honneur avec glaives, en Vermeil: Temporary Lieutenant Henry G. Arnott, R.A.M.C.

King of Italy.—Order of the Crown of Italy (Officer): Lieut.-Colonel (temporary Colonel) James C. Robertson, O.M.G., C.I.E., C.B.E., I.M.S., Lieut.-Colonel Alfred E. Weld, R.A.M.C. (Reserve of Officers).

King of Rumania.—Order of the Crown of Rumania (Commander): Brevet Lieut.-Colonel Eugene Ryan, C.M.G., D.S.O., R.A.M.C.; (Chevalier): 1st Class Subassistant Surgeon Dilbag Rai, I.M.D.

King of the Serbs, Croats, and Slovenes.—Order of St. Sava (3rd Class): Brevet Lieut.-Colonel John A. Anderson, R.A.M.C.

DEATHS IN THE SERVICES.

Colonel William Young, Bengal Medical Service, died at Northbank, Perth, on September 20th, aged 51. He was the younger son of the late Captain James Murray Young, of Hillhead, Glasgow, and was educated at Glasgow University, where he graduated M.B. and C.M. in 1892; he became F.R.C.S.Edin. in 1957. He entered the I.M.S. as surgeon lieutenant on January 30th, 1893, became lieutenant-colonel after twenty years' service, and attained the rank of colonel on March 28th, 1921. Most of his service was spent in civil employ in the United Provinces of Agra and Oudh (formerly the North-West Provinces), where he held for many years the important post of civil surgeon of Cawnpore. On promotion to the administrative grade last year he was appointed inspector-general of civil hospitals in the Central Provinces.

Medical News.

The first meeting of the 150th session of the Medical Society of London will take place on Monday, October 16th, at 8.30 p.m., when the incoming president, Lord Dawson of Penn, G.C.V.O., will deliver his presidential address on "Certain developments in medicine," which will be followed by a discussion.

The Museum demonstrations at the Royal College of Surgeons of England will be resumed on Friday next, October 13th, when Sir Arthur Keith, F.R.S., will exhibit specimens illustrating the effects of castration in man, at 5 p.m. On the following Monday, October 16th, at the same hour, Professor Shattock, F.R.S., will demonstrate specimens illustrating the anatomical results of inflammation. Other demonstrations will be given on each Friday and Monday during October.

Alderman J. T. T. Ramsay has been elected mayor-designate of Blackburn. Dr. Ramsay is the first medical man to attain to mayoral rank in Blackburn, an honour which he has gained by a long and distinguished career devoted to the public service. He is a Scotsman, and received his medical education at the Edinburgh medical school, where he took the diplomas of L.R.C.P. and L.R.C.S.Edin. in 1891. He has been in general practice at Blackburn for the past thirty years.

The annual dinner of the Society of Medical Officers of Health will be held at the Hotel Cecil, Strand, W.C., on Friday, October 20th, at 7.30 p.m. Amongst those who have accepted invitations are the Minister of Health (Sir Alfred Mond), Sir Arthur Robinson, Sir George Newman, Sir Humphry Rolleston, P.R.C.P., and Sir Anthony Bowlby, P.R.C.S. Ladies are invited, and members or candidates nominated for election, are asked to give early notice to the Executive Secretary, 1, Upper Montague Street, Russell Square, W.C.1, of their intention to be present, with the names of their guests. A payment of 12s. 6d. for each ticket should be made with applications sent before October 14th; after that date the cost of tickets will be 15s. each.

A meeting of the Metropolitan and Home Counties Subgroup of the Maternity and Child Welfare Group of the Society of Medical Officers of Health will be held at 1, Upper Montague Street, Russell Square, W.C.1. on Tuesday, October 10th, at 5.15 p.m., when a paper will be read by Mr. G. E. Waugh (senior surgeon to Great Ormond Street Children's Hospital) on "The prevention and treatment of nasal and aural infections in infancy." Tea at 5 p.m. Members are invited to bring friends.

The eleventh annual general meeting and conference of the British Commercial Gas Association will be held in the Museum and Art Gallery, Bristol, on October 16th, 17th, and 18th, under the presidency of Sir George E. Davies. Members of the conference will be welcomed at a reception on the evening of October 16th, when Sir Henry Gauvain, M.D., will deliver a lecture upon "Light and life."

The new post-graduate course at the National Hospital for the Paralysed and Epileptic, Queen Square, W.C.1. will commence on October 9th and continue until December 6th. The course will consist of lectures on the pathology of the nervous system, out-patient clinics, lectures and demonstrations on neurological ophthalmology, and clinical lectures and demonstrations.

University College, London, announces a large number of lectures; among others, a public lecture on "The beginnings of science," which Professor G. Elliot Smith, F.R.S., will give next Monday at 5 p.m.

The Life of Lord Moulton, by his son, the Hon. H. Fletcher Moulton, which will be published shortly by Messrs. Nisbet, should prove of special interest to medical readers. Medicine owes much to him as an exponent of its development, and for his memorable defence of the rights of research, while as chairman of the Medical Research Committee he did invaluable work.

Dr. Robert Knox will give a lecture on *x* rays and radium in the lecture theatre of the Medical School, King's College Hospital, Denmark Hill, to-day (Saturday), October 7th, at 4 p.m.

The annual dinner of the London School of Tropical Medicine will be held at the Trocadero Restaurant on Wednesday, November 1st, at 7.30 p.m., with Dr. Hugh S. Stannus in the chair.

The annual dinner of the Reunion Association in connexion with the Prince of Wales's General Hospital and North-East London Post-Graduate College will be held at Pagani's Restaurant, Great Portland Street, W., on Thursday, November 9th, at 8 o'clock, with Dr. F. G. Crookshank in the chair. The price of tickets will be 12s. 6d. each (exclusive of wines). Prospective members of this association are asked to communicate with the Honorary Treasurer, Mr. S. O. Rashbrook, 1, Priory Terrace, Kew, Surrey.

The opening post-graduate lecture of the winter session will be given by Sir James Galloway, K.B.E., C.B., in the West Lecture Hall, Royal Society of Medicine (by kind permission), 1, Wimpole Street, W.1, on Wednesday, October 11th, at 5 p.m. The subject of the lecture will be "Hodgkin's disease and similar unexplained maladies" (with lantern illustrations), and the chair will be taken by Sir George Makins, G.C.M.G., C.B. The lecture is open to members of the profession.

The Royal Sanitary Institute will hold a sessional meeting at the City Hall, Cardiff, on October 13th and 14th, when Dr. J. S. Peebles, M.O.H. Bridgend Urban District Council, will open a discussion on health education of children. A discussion on open-air schools will be opened by Mr. E. E. Morgan, borough architect, Swansea. The chair will be taken by Dr. Louis Parkes, chairman of the council of the Institute, at 4.30 p.m.

"Health Week," which was instituted by the Royal Sanitary Institute in 1912, will be held this year from October 8th to 14th. Its object is to focus public attention on questions concerning public health, to arouse a sense of personal responsibility in it, and to create general interest in this work. The promoters of the movement hope that medical officers of health will make some special effort during the week to arouse public opinion in favour of a high health standard in each locality, and it is also suggested that school teachers might give simple health talks to school children.

The autumn session of the West London Hospital Post-graduate College will open on Monday, October 9th, and will extend to Saturday, December 16th. There will be a lecture or demonstration at 4.30 p.m. every day except Saturdays; demonstrations will be given daily in the medical and surgical out-patient rooms and the special departments at 2 p.m.; and several courses of special lectures and demonstrations have been arranged. Full particulars may be had from the dean of the college, Dr. Arthur Saunders, at the West London Hospital, Hammersmith, W.6.

The Herefordshire Medical Society has just acquired new quarters at 20, East Street, Hereford, which are open to any member of the profession who may be visiting the neighbourhood, as well as to subscribing members residing in the county. It is a very old society, and its members would be very grateful if any authors or others would contribute any modern books to augment the library. Communications may be addressed to Dr. J. Oswald Lane, Honorary Librarian.

The late Mr. Daniel Clark of Cheltenham, who died on June 30th leaving net personalty of £43,786, has bequeathed £5,000 each to the Leeds General Infirmary and the Cheltenham General Hospital and £2,000 to the Bath Hospital, Harrogate. After paying other bequests the residue of the property, which will probably exceed £30,000, is to be divided between the following hospitals: St. Bartholomew's, Guy's, London, St. Thomas's, St. George's, King's College, University College, Charing Cross, St. Mary's, and Middlesex.

A gold medal and other gifts were presented to Professor Barduzzi at Siena recently, on his resignation from the chair of skin diseases and syphilis; the occasion was also the fiftieth anniversary of his professorial career. A history of his career was published and presented to him by the medical students.

Messrs. Baillière, Tindall, and Cox announce for immediate publication a biography of Lawson Tait by Dr. W. J. Stewart McKay; a *Textbook of Industrial Hygiene*, by Dr. E. W. Hope, M.O.H. Liverpool; a fourth edition of Dr. Tredgold's *Mental Deficiency*; and the eleventh edition of Sir William Whitla's *Pharmacy, Materia Medica, and Therapeutics*. They also announce books by Drs. Pearson and Mouchet on the *Hygiene of Native Compounds in Tropical Africa* and by Harold Burrows, F.R.C.S., on *Mistakes and Accidents of Surgery*.

DR. ROBERT TIDBURY, on the occasion of his retiring from the office of assistant medical officer of the Borough Mental Hospital, Ipswich, has been presented with an inscribed silver cup by the staff and a smoker's cabinet by the patients.

THE endowment received by Harvard University last year from the Rockefeller Foundation to establish a new School of Public Health has enabled the existing facilities for training and research in industrial medicine to be broadened and extended. The chief need of students is for brief courses, or groups of courses, of study and research leading to higher degrees. Students who enter for courses leading to a degree or for brief periods of special work must register in the School of Public Health, after satisfying the Committee of Admission of their fitness to pursue an approved course looking towards a definite objective. While the desirability of admitting students to short and highly specialized courses of study and practice is recognized, such opportunities are reserved for those whose academic or field training is recent and promises success in the programme outlined. To such special students no degree is given—merely a statement of the work done and the grades attained. The degrees offered in the School of Public Health are: Bachelor of Public Health; Master of Public Health; Doctor of Philosophy (in Hygiene); Doctor of Medical Sciences; Doctor of Public Health. Two years' study are ordinarily required of a medical practitioner aiming at the Doctorate in Public Health; during the first year he pursues courses bearing upon industrial hygiene; the second year is devoted to work in his special field, and to the composition of a thesis. Several fellowships of 1,200 dollars a year are open to those qualified to undertake work in any of the medical sciences bearing upon public health, in vital statistics, or in practical hygiene. Further information may be obtained from the secretary of the Harvard School of Public Health, Boston, Massachusetts, U.S.A.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Mediocera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

QUERIES AND ANSWERS.

CORNS AND WARTS.

"C."—So-called corns on the soles of the feet often prove to be concealed warts and require surgical measures. The advice of a dermatologist could be sought, or, if the "corns" are associated with Morton's disease, it may be well to consult an authority on orthopaedic surgery.

MAJOR F. R. BORDEN, Medical Corps, U.S.A., writes from Camp Stanley, Texas, in reply to an inquiry published in our issue of August 5th (p. 240), that a simple and efficient remedy for warts of the scalp will be found in the daily application, for four or five days, of solution of formaldehyde, U.S.P., which appears to be identical with the solution of the *British Pharmacopœia*.

INOCULATION FOR THE TROPICS.

"S. C." asks what inoculation, in addition to revaccination, should be given to a patient who is going out to a remote rubber plantation in the Straits Settlements.

*** The patient ought to be inoculated with the triple typhoid vaccine—typhoid, paratyphoid A, and paratyphoid B. Two inoculations are required, and the material can be obtained from Burroughs, Wellcome and Co. Full directions are issued with the vaccine.

INCOME TAX.

"W." does part-time work for a county authority and is allowed a sum for travelling expenses by the authority.

*** If he makes a general income tax return in one sum, including his county receipts, and deducting all his professional expenses, the amount allowed him should be included as a professional receipt; if, however, he returns the salary separately and deducts nothing, either in that return or in the return of his profits, on account of the travelling expenses which he incurs in connexion with his appointment, then the county allowance can properly be omitted from his receipts.

ASTHMA.

DR. ALEX. M. BREMNER (Wood Green, N.) writes in reply to Dr. Thomas Martin (September 23rd, p. 582): "I would suggest that he try calcii acetyl sal., gr. x, three or four times a day. I have used it for the last ten months with benefit in asthmatic cases, in some cases with very marked success. In children I use calcii lactate with benefit. As calcium salts are used to prevent anaphylaxis in using vaccines and antitoxins it seemed to me that they would be useful in asthmatic cases, as they are in urticaria. I have tried parathyroid tablets but got no results from them of any value."

CHAULMOOGRA OIL IN TUBERCULOSIS.

MAJOR V. T. CARRUTHERS, F.R.C.S. (Derby), writes: Can any of your readers refer me to any account of the use of chaulmoogra oil or its derivatives in tuberculosis? The similarity of the bacilli of leprosy and tuberculosis would lead one to expect good results from treating tuberculosis with the remedy so useful in leprosy; and the experiment has doubtless been frequently tried.

LETTERS, NOTES, ETC.

PREVENTION OF BOTULISM.

DR. GEORGE WILLETT (Keynsham, Somerset) writes: I would like to ask whether it would not be possible to introduce into the sealed tin of preserved food a small quantity of some material such as oxygen, or some oxygen-producing substance, with the idea of preventing the growth of the anaerobic *Bacillus botulinus*. It seems to me that this could be quite easily accomplished and foods so treated thus rendered harmless.

RASH FOLLOWING HYPOPHOSPHATES.

"J. A. MACM." writes: Recently I saw a patient with slight swelling of the thyroid gland on the left side, apparently an adenomatous condition. I prescribed compound syrup of the hypophosphates (5ss); after the first dose an urticarial rash, accompanied by intense itching, appeared; as she had been eating raspberries, I thought the rash was due to these and not to the medicine. However, I stopped it. The rash was followed by profuse desquamation. On August 7th she took another dose and again a similar urticarial rash with the itching appeared. I should be glad to know if hypophosphates are liable to do this. I have never seen a similar result before in twenty-five years' experience.

A SANITARY SEAT COVER.

A USEFUL and cleanly device, worthy of the attention of public health authorities and others, is the "White Star" sanitary seat cover, which is manufactured by Messrs. Vickers-Massey, Ltd., Sentinel House, Southampton Row, London, W.C. It consists of a wooden case with a hinged flap, containing sheets of thin paper which are drawn forward, as required, to cover the seat of a water-closet.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 139.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Professor Ewen J. Maclean, F.R.S.E., M.D., F.R.C.P., President.

DISCUSSION ON ANAESTHETICS AND ANALGESICS IN LABOUR.

OPENING PAPERS.

I.—W. OSBORNE GREENWOOD, M.D., B.S., F.R.S.Edin., Harrogate.

It is only within the last few years that we have come to realize that labour, in 95 per cent. of cases, is not the normal physiological process of which our immediate forebears so glibly talked, but is one of the desperate fears and grey spots in the modern woman's life. It is only a humane platitude to say the sufferings in labour have as much claim upon our skill and sympathies as those of any disease. If, therefore, by our obstetric art we can "life's leaden metal into gold transmute," no further apology is needed. It may be objected that this is largely a sentimental view, but when we have come to the conclusion of the whole matter we shall see there are very decided and practical advantages on the physical and physiological sides. For upon our estimate and appreciation of the influence of pain and fear in parturition will depend our attitude towards the need for anaesthetics and analgesics in labour. In spite of Hilton's classic, *Rest and Pain*, little progress was made until recent years in our estimate of the real part pain plays in the pathology of our chief organs, even to the point of the *exitus lethalis*. But the work of Crile and a host of others has taught us how profound the effects of pain and fear may be upon such master tissues as brain, liver, and suprarenals, not to mention secondary effects on other organs. And we may attempt to dismiss them as we will, the fear and pain of labour are daily having their baneful effects on vital organs, and a studied indifference is not a specific against what may prove eventually to be permanent lesions in cerebral or suprarenal cortical cells. But the very choice of to-day's subject may be taken to show that we are convened to discuss seriously the real merits of some means of alleviating travail provided they are safe.

Without further preamble it may be said that the practical methods which hold the field at present are ether, chloroform, nitrous oxide, and scopolamine-morphine. Not that these represent the final word in the immediate future, but other methods already tried tentatively have not attained the certainty or the practicability of the above. I wish to state at the outset that it is my intention to regard the question of anaesthetics and analgesics largely from the viewpoint of shock, and this will explain what I say later. If chloroform or ether or nitrous oxide be administered at the end of a labour solely for the purpose of carrying out some operative procedure, such as extraction with forceps or a cephalic perforation, we cannot in any sense regard the anaesthetic as an essential part of the treatment—it is, so to speak, an accidental accessory. Such a use as this has its time-honoured place in labour. But it may be taken this discussion has a far larger end in view. Shock and exhaustion are in no degree whatever prevented by this accidental use, and we are here to determine as far as we can how the dangers of shock may best be averted by making anaesthesia or analgesia, or some modification of them, an essential part of the conduct of labour.

The recent work on shock and exhaustion has radically altered our conception of the part these two play. But though the limits of this paper forbid me examining these thoroughly it may be stated as well proven that the injury to cerebral, suprarenal, and hepatic cells is not only serious but often irreparable and fatal. Acidosis, oedema, rupture of the membrane, and disintegration of the nucleus form the chain of changes in cells of the most vital organs. And while one would not be so foolish as to say this complete chain is common in labour, yet who can tell how many of the ill-defined ailments in a woman's middle life, for which no gross lesions can be discovered to account, are due to the destruction of a limited number of cells consequent upon labour? I think this is more probable than has so far been conceded. And when we reflect that the causes of shock are trauma and pain, emotion, especially fear, exertion, insomnia, haemorrhage, the infections and injection of acids, and that all these save the last two are operative, sometimes markedly so, in labour, it is evident we need a more systematic shielding during parturition if we are to give the pregnant woman not only the benefit of our knowledge and skill but an assurance that these are hers for the asking. The fear of labour harboured by women has been scoffed at and scouted, but after insisting for many years on its reality and importance it is gratifying to find such confirmation in Crile as this:

"Emotion causes a more rapid exhaustion than is caused by exertion, or by trauma, except extensive mangling of tissue, or by any toxic stimulus except the perforation of viscera" (p. 60).

And again:

"Fear caused profound changes in the cells of the brain, the liver, and the adrenals" (p. 63).

It must now be clear enough that, especially in the longer and severer labours, there is need for some protection of these vital tissues, and we are prepared for a comparison of the claims of the most suitable methods of attaining this. Of the general anaesthetics nitrous oxide is the best in the sense that it comes nearest to the ideal of a shockless operation. After prolonged administration the serious changes in the cells above enumerated are scarcely to be found, sometimes not at all; but against anything approaching its universal use are the grave disabilities of an almost prohibitively cumbrous apparatus, the cost, and a virtually continuous administration, maybe for many hours. I doubt whether any maternity hospital could bear the financial drain of using it for all cases, and certainly the vast army of the middle class could not. And while the actual cost of chloroform or ether is not prohibitive the other objections are very serious. If given *à la reine* a very skilled anaesthetist would usually be needed many hours, to requite whose services would naturally be very costly. The labour would be very greatly retarded, while *post-partum* haemorrhage is certainly more common and severe. Most serious of all, so far from preventing or even reducing shock, chloroform and ether are actually prone to initiate and continue those cell changes of acidosis, oedema, and even disintegration, which we are seeking to avert. Again quoting Crile:

"Prolonged inhalation anaesthesia caused acute blood acidosis and the usual histological changes in brain, liver and suprarenals" (p. 73).

And also:

"The human mechanism in shock or exhaustion is not restored by physical injury, nor by strychnine, alcohol, anaesthetics, camphor oil, anxiety, painful examinations, rough handling, but by rest and sleep" (p. 185).

While, therefore, on the one hand, chloroform and ether, given at the end of a labour for some operative interference, do not supply the protection from shock which we seek, on the other hand, given *à la reine* for many hours, they actually intensify the ills. In addition to which, this latter method is infinitely more exacting to the attendant than the remaining method we are to consider. In fine, a prolonged general anaesthesia is now known to fulfil none of the demands of a "shockless operation." The ideal technique of this is not applicable to labour, since cocaine and its congeners are useless and the spinal method is little better. Crile's work abounds in quotations representing his own experiments and those of many others showing the remarkable results of the shockless operation methods, but very few must suffice.

"No amount of burning, cutting or crushing caused any notable change in the circulation or respiration provided the central nervous system had been previously disconnected from the injured area by the blocking of the nerve supply with a local anaesthetic" (p. 25). "Nerve trunks may be physiologically blocked by a local anaesthetic so that neither afferent nor efferent impulses of any kind can pass, hence no injury of an area thus protected can cause even the slightest degree of shock" (p. 34). "Of great significance is the fact that the brain

cells showed no change when the trauma was limited to the territories disconnected from the brain by severing the spinal cord or by local anaesthetization" (p. 41).

Now although scopolamine-morphine (or scop-omnopon) cannot be regarded as a local anaesthetic in the sense that cocaine is, my thesis is, it is sufficiently so in a far larger sense—namely, by cutting off the cerebral cortical cells from the remainder of the body—as to be the ideal method for use in labour, exactly as cocaine is for the performance, say, of a radical cure of hernia. We must remember that the traumatic area in labour is a very wide one, including not only a vastly enlarged uterus and its appendages, but pressure effects on bladder, large intestine, and perineum—the nerve supplies of which are from very diverse sources.

Crile has pointed out that insomnia produces shock, and the results on brain and other tissue cells are the same as trauma, only more gradual. Sleep is the great preventive of and restorer from shock, and Crile says:

"There is a vast clinical experience as well as supporting histological evidence that morphine as a substitute for sleep accomplishes for the brain cells much of what is accomplished by sleep" (p. 50).

And again:

"The cells of the brain, liver and adrenals are more restored by opium than by any other agency excepting sleep. Nitrous oxide to some extent effects a like restoration but is not as potent as opium" (p. 54).

We are now on the threshold of my contentions respecting the use of omnopon-scopolamine in labour in preference to any of the other methods outlined. For although the obliteration of the great bulk of the labour is the thing which appeals most to the patient and which was so boomed in the lay press, to the scientific obstetrician it is far more valuable to realize it is a shockless surgical operation. Not only so, an absolutely correct technique, so far from carrying any menace to the infant, confers the same advantages on it as are enjoyed by the mother. And this effect on the mother is not surprising when we reflect that the great bulk of the time occupied by the labour is spent in apparently normal sleep. The consideration of outstanding importance is brain-rest, and if we secure this while the essential labour organs—that is, uterus and abdominal muscles—perform their functions perfectly, we have not only secured an ideal labour but have also attained a shockless operation. The general anaesthetics fall short of this high standard.

In the light of the recent work on shock the suggestions I put forward five years ago as to the way in which scopolamine-morphine probably acts have become invested with a new interest. As is well known a local anaesthetic cuts off the area under manipulation from the rest of the nervous system. Especially does it prevent the cerebral cortical cells and the receptive white matter receiving painful afferent impressions. My thesis then was, and is now, that omnopon-scopolamine causes the retraction of the dendrites of the cells, and it is therefore at these synapses where the block occurs, and hence there can be no diffusion of stimuli. This, I admit, may equally well occur at a subcortical centre, but probably not in the cord. We know that this shrinking of dendrites, and therefore imperfection of synapsis, is common in old age, and it is then that memory for recent events may be very imperfect or even absent, while the memory of past events is usually quite accurate. The interesting feature is that the amnesia of this semi-narcosis is an exact temporary induction of the forgetfulness of old age. Anent this, Crile's observation (p. 177) is peculiarly interesting:

"The synapse may be regarded as a highly adapted switch which now closes the circuit, now opens it; now diminishes the current, now accelerates it. This living switch or key may be the site of the activation of tetanus or strychnine convulsions. It may possibly determine sleep or the action of certain anaesthetics."

From this it would seem clear that in strychnine and tetanus poisoning there is no excitation of cerebral cells, but the synapses are closed and there is a continuous electrical discharge. This appears to be countenanced by the fact that complete consciousness is retained to the end. Sherrington's work also very strongly bears out this view. This theory accords perfectly with the fact that powerful stimuli applied during the sleep of the labour are afterwards remembered, for they jump the increased gap between the retracted dendrites just as an electric current of higher potential will spark across a wider gap than will one of lower potential.

The limitations of time compel me to pass now to a brief survey of the correct technique to be observed in successfully inducing this semi-narcosis, the effects on the mother and those on the infant. As usual, every case is regarded as a major surgical operation and the ordinary aseptic precautions rigidly observed. And first, we must decide how early the treatment may be begun. In primiparae it is very important to be sure the labour has really set in and the os has made some progress in dilatation. A fairly safe average guide is to begin when the os is the size of a shilling. In any case regularity of the uterine contractions must be established. In multiparae, however, the first injection may be given as soon as several good contractions have demonstrated the onset of the labour. From the moment of this decision the judgement of the attendant must be continually on the alert if he is anxious to obtain the best results. Thus it may be stated that for the majority of patients the first dose should be omnopon 1 3 grain (or morphine 1/5 grain) with scopolamine 1 150 grain. But even here not enough attention has been paid to the variation of the initial dose according to the type of patient. A small, worn-out, phlegmatic woman would not need quite as much as this, while a large, athletic, vivacious type may easily need half a grain of omnopon and scopolamine 1 120 grain. Having received the first injection the patient is bidden to lie down, be calm, and go to sleep with the confident assurance that the labour will proceed well. This, of course, presupposes that a previous examination has shown it to be reasonably anticipated, that any malpresentation has been rectified or can be during the progress of labour, and that any disparity in the size of pelvis and foetal head has been met by a suitably timed premature induction, etc. In from an hour to an hour and a half the patient should be sleeping comfortably between the uterine contractions, which will rouse her at each onset. Judged by the amount of sleep the patient has had, and to some extent by the flushing of the face, the second dose may vary between 1 150 and 1 450 grain of scopolamine alone, usually not so small as the latter. About half an hour after the second injection the testing for amnesia is begun. The majority of patients have not responded enough until this time and the testing is therefore an act of supererogation. This testing is the only certain way of determining success or failure in spite of repeated asseverations to the contrary, and the borderline between the two is so narrow that its importance cannot be overrated. Success means that the patient has reached the stage of forgetfulness—no more, no less. And it must be regarded equally as failure if the patient does not reach the amnesic condition or if she is needlessly beyond it. To aim at analgesia is not only unnecessary but oversteps the safety line. In every ideal case there is probably some analgesia, for which it would be better to reserve the term "hypalgesia." To adopt this would emphasize the fact that any marked analgesia is unsafe. From this point onwards there may be the greatest diversity in the dosage, and the amounts of scopolamine are determined entirely by the amnesic state of the patient. So too are the intervals at which a repetition of scopolamine is necessary. It may be added that towards the end of the labour it is well to avoid if possible the administration of any dose too near the moment of expulsion of the infant.

The method of applying the test for amnesia which I use is as follows. Some object with which the patient is familiar is chosen: a convenient one being something from the infant's basket—a sponge, a comb—but any other, such as a key, or a penny, will do. The patient is gently roused, shown the object, and asked what it is. She will usually reply promptly, "A sponge." She is then allowed to fall asleep at once. About half an hour later she is again roused and asked, "What did I show you a little while ago?" If she promptly replies, "A sponge," she is not yet amnesic; if she appears to make an effort to remember and finally does so, she is on the verge of amnesia; but if fully amnesic she will say she does not know or will give some perfectly irrelevant reply, or perhaps do so by a counter-question. We have now attained the object in view, and as the testing proceeds during the progress of the labour a repetition of the scopolamine is needed if the patient appears to be on the verge of remembering the object shown, or if she does just recollect it, but not unless. These following doses will vary in amount as in the case of the second one.

During the progress of the labour it is most important to protect the patient from sensory impressions of all kinds, especially powerful stimuli such as loud noises, bright lights, etc. Unless

the patient happens to be near a noisy thoroughfare there is no need to use more than ordinary precautions to secure quietude. If there be any uncertainty on this point an oiled tampon of wool in each meatus will be enough. If the patient be suddenly roused from sleep or be allowed to recover her memory the incident and a few pains will probably be remembered. Gauss felicitously called this a memory island, and if a number of such occur the patient may reconstruct the whole of the labour from them and may aver she has never been asleep. Above all, nurses must be forbidden to help patients to bear down or handle them roughly. Patients will usually pass urine if told to do so, but if not they must be catheterized at suitable intervals.

Some obstetricians have expressed the opinion that they do not object to giving a patient one dose of scopolamine-morphine, but will not give a second even of scopolamine alone. This has nothing whatever in common with amnesic narcosis, is (to use a homely simile) neither fish, flesh, nor fowl, and will not be further discussed.

For a busy practitioner, however, who has not time to give the attention the above outline demands, there is a modified method, which, while not giving nearly the satisfactory results obtained by the above, may yet achieve about 60 per cent. of successes. The initial dose is given as before, and is followed by, say, 1/450 grain of scopolamine every hour. Not a few cases will recollect most, if not all, the labour, and occasionally one will even be overdosed, but on the whole a good deal of satisfaction can be got out of it.

Something must now be said about the more general effects on the patient, before dealing with those on the infant. The first is the onset of drowsiness, which often asserts itself quite early, usually well within an hour of the first injection. This merges insensibly into definite sleep and is accompanied by flushing—as a rule most marked on the face, but by no means always confined to it. By this time there is generally a pronounced slowing of the pulse, which invariably, provided the technique is correct, at least maintains its volume and character. This is due entirely to the shielding from shock and allaying the nervousness (that is, emotion) of the patient. It is my usual experience that a patient beginning labour with a pulse rate of 100 or over will finish the labour with it in the region of 70. At this time also the pupils are beginning to dilate and remain dilated to the end. This suggests a warning that we must be sure the patient really visualizes the object we show her when testing for amnesia. The uterine contractions continue, but as there is a diminishing demonstration on the part of the patient it has been assumed the contractions also diminish in intensity. I wish to say emphatically this is not so, as can be proved by abdominal palpation. In this connexion it may be added the labour is not prolonged. Those who assert the contrary do so either because they think theoretical considerations demand it or they have used a faulty technique. My experience, extending to over 700 cases, amply proves my contention. Nor is the expulsion of the placenta in any way interfered with, and certainly the incidence of *post-partum* haemorrhage is not increased. But as the patient usually sleeps from one to four hours after the labour she must be watched carefully, because if haemorrhage should occur she will not direct attention to the fact. The most striking after-effect on the mother is a remarkable well-being after the labour. Even the most contentious critic concedes this—indeed is compelled to do so.

It may be as well to say collectively that the main things to avoid are analgesia, restlessness, and a rapid pulse—a syndrome which is a certain indication of overdosing both patient and infant.

Should any operative interference, such as a forceps extraction, be necessary, it is better to give a little of some general anaesthetic, not because it is impossible to do this under omnopon-scopolamine alone, but because we obtain complete passivity of the patient—a very necessary consideration in any delicate manipulation. The quantity of a general anaesthetic needed to secure this end in most cases is surprisingly small.

After all, it is round the question of the interest of the infant that discussion has chiefly centred. Some observers have stated that the risk to the foetus is gravely increased, but as a rule alongside this statement there has been no exact description of the technique used. From what I have already said it may readily be inferred that the margin between amnesia and analgesia is very narrow, and with the least inattention or lack of skill it may easily be overstepped. This is only another way of emphasizing the importance of the memory test. It has repeatedly been said that scopolamine-morphine causes asphyxia, and this with such an air of finality that one would almost conclude it is the only cause of asphyxia. Now the causes of asphyxia are very varied, and if scopolamine-morphine be used, to say that all the cases of asphyxia are due to the drugs is scarcely fair. This is not the place to analyse the figures given by Browne of Edinburgh in a very important and interesting investigation into the causes of death in 200 consecutive cases of stillbirth. The point of interest now is that in these 200 cases no cause of death could be found in two, and it was therefore attributed to scopolamine-morphine. In these two cases the mother had a second dose of morphine, a practice which is now discontinued in Edinburgh and a point on which I have already laid stress.

What occurs unequivocally in a number of cases is a condition of oligopnoea, a condition for which the opium derivative is at least largely responsible. As the operator improves in his judgement and is able to reduce the amount of morphine in suitable cases the incidence of oligopnoea diminishes. It is of course due to absorption of the drug through the placental circulation, and the condition is as follows: immediately on expulsion the infant utters a sharp cry and moves its limbs in the characteristic way, but these become abortive and the child lapses into sleep, the breathing at the same time becoming somewhat shallower and slower. It appears exactly as though the infant were tired, resented any interference, and wanted a little rest before taking on the serious responsibilities of life. If left to itself the child reverts to normal breathing within a short time, and, provided the condition is not accompanied by any cause of a definite asphyxia, no active interference is needed, nor, indeed, wise. So far from being harmful, I am convinced that oligopnoea does no more than shield the infant from the shock of a rough and prolonged passage through a non-resisting bony canal that is usually too small for it. We are apt to forget that an infant's voyage into life is often more stormy than is pleasant, and I am sure this treatment at least reduces the unpleasantness. Contrasted with a prolonged administration of a general anaesthetic the result must be considered at least favourable, for it is admitted the latter may distinctly jeopardize the infant.

In a short paper there are other interesting points which could not be introduced, but many of them have been discussed elsewhere, and I can only add in conclusion that those who have used scopolamine-morphine seriously—such as Buist, Sir Halliday Croom, Freeland and Solomons, Haultain and Swift, Hedley, Hendry, Webb-Johnson, Johnstone, and Nicholson—have a great measure of enthusiasm for it. They avoid any risks contingent upon overdosing by the adoption of a correct technique, and reap the advantages that are offered by no other anaesthetics or analgesics in labour.

II.—THE "STANDARDIZED-DOSAGE" METHOD OF USING SCOPOLAMINE-MORPHINE DURING LABOUR.

BY

N. Hirschman, M.D.Edin.

The following observations on 140 cases—63 primiparae and 77 multiparae—of morphine and scopolamine treatment were carried out in the Royal Maternity and Simpson Memorial Hospital, Edinburgh, in 1917. I have to thank my chief, Dr. J. W. Ballantyne, for kindly giving me the scope and allowing me to make use of the material in his term of office. I also have to thank him, as well as Dr. O. Nicholson, for their interest and encouragement while these observations were made.

I shall not dwell on the various criticisms offered against "twilight sleep" by the Berlin school, nor the various methods followed by other men. Most medical men are aware of the nature of this treatment in obstetrics. On the other hand, I know of doctors even now who have, whether in cases of primiparae or multiparae, given one injection of morphine and scopolamine "at any odd time during labour," say they have used "twilight sleep" in these cases, and, when unsuccessful or the babies badly oligopnoeic, become prejudiced and condemn the drug. It is a duty of every medical man practising midwifery to have a good idea of this treatment, if not actually to use it. If this drug is to be

used at all, however, a chance must be given to the busy practitioner who says "he has no time to waste over a confinement," and who, if he did, would only neglect the rest of his practice. The method adopted ought to be simple, and, if carried out by most of us, will have a beneficial effect on the falling birth rate. Just as we are beginning to realize that ante-natal treatment of pregnant women is important, so ought we to make more use of this drug, and by telling the woman who is to be confined that she will have "twilight sleep," thus, in many cases, ease her mind of a dread.

Premature delivery may even occur not only as the result of physical, but also of mental disturbance. The confinement under "twilight sleep," instead of becoming to the morbid woman a possible pathological condition, becomes really a physiological one in the true sense of the word.

In the method I have adopted—the "standardized dosage," as Dr. Greenwood calls it—I have tried to regulate the dosage so that it should dispense with the difficult "individualization" technique of Gauss, and allow a nurse of ordinary intelligence to carry out the doctor's instructions. Except in one case, where I had given a patient who had a very rigid os two doses of chloral—20 grains every twenty minutes—there was no necessity for the nurse to be actually alarmed and to call me.

Dosage.

During my observations I have used the following drugs and doses:

1. Multipara: Initial dose, 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 450 grain scopolamine.
2. Primipara: Initial dose, 1 4 grain morphine and 1 150 grain scopolamine, with an hourly injection of 1 450 grain scopolamine.
3. Primipara: Initial dose, 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 450 grain scopolamine.
4. Primipara: Initial dose, 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 400 grain scopolamine.
5. Multipara: Initial dose, 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 400 grain scopolamine.
6. Multipara: Initial dose, 1 12 grain heroin and 1 150 grain scopolamine, with an hourly injection of 1 450 grain scopolamine.
7. Primipara: Initial dose, 1 4 grain morphine and 1 100 grain scopolamine and 1 150 grain atropine, with an hourly injection of 1,400 grain scopolamine.

I have not repeated the initial injection except in one case where labour had stopped. In this paper I shall point out two main things—namely, that there is a definite "danger period," or "period of oligopnoea," approximately from two to three and a half hours after the initial injection of morphine, and that the combination of atropine, if it does not totally prevent this period, at any rate tends to give us fewer oligopnoeic babies.

Success depends upon the patient's lack of conception of pain after the confinement is over, with no unfavourable result to the child due to the administration of "twilight sleep."

It is advisable that I state here what I mean by the various terms "amnesia," etc., in order to show how I come by my results. After the effects of the drugs have disappeared the patient is questioned as to how much or what she remembers. One might say that this is simply an inversion of Gauss's "memory test" with certain limitations. I place my results in Class I, II, or III accordingly.

Class I: *Total Amnesia.*—The patient says she remembers nothing, and has consequently no conception of having had pain during labour.

Class II: *Partial Amnesia.*—The patient has perception of pain or recollection of pain during the labour.

Class III: *No Amnesia.*—The patient recalls all events in full detail and recollects having had—

(*a*) No pain—complete analgesia or hypalgesia, as Greenwood calls it.
(*b*) Mitigated pain—partial analgesia.
(*c*) Usual pain—no analgesia.

Of course a primipara could not very well refer to pain as "usual." She is therefore asked whether the pain was unbearable or not.

One cannot always tell the ultimate result from the notice the patient takes of the prick of the needle or from her behaviour. There might have been or there may be an "absence of memory" to need. I have seen patients speak and act quite rationally while under the drug and yet remember nothing when questioned after the labour. On the other hand, I have seen cases where apparently no "islets of memory" were caused, and where the patient was drowsy, talking nonsense very often, resulting, if not in a failure, at any rate not in a complete success. Of course, a patient might even tell a deliberate lie. I mention this because I had one case—a primipara—in private practice to whom I had given seven injections. This might, on the other hand, be due to the fact that the patient was never really under the influence of the morphine and that numerous "islets of memory" were formed.

Results.

First Series (Multiparae, 11 Cases).

The cases in this series had an initial dose of 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 150 grain scopolamine. Average number of injections 4.18. Three of the cases were in Class I, 5 in Class II, and 3 in Class III. Five cases had no pain, and the pain was mitigated in 6. Three of the cases had no chloroform at the end of the second stage; 2 cases had only one injection. Both these facts tend to make the percentage too low. There were no restless patients. Four babies were oligopnoeic, but recovered. The first was born spontaneously 2 hours 40 minutes, the second 2 hours 5 minutes, and the third 3 hours 55 minutes after the initial injection; the fourth was a "forceps case" for contracted pelvis. Subtracting this last, the oligopnoeic babies = 27.2 per cent. All the babies were born alive.

Second Series (Primiparae, 13 Cases).

These cases were treated initially with 1 4 grain morphine and 1 150 grain scopolamine, followed by an hourly injection of 1 450 grain scopolamine. Average number of injections 6.5. Eight of the cases were in Class I and 5 in Class II. There was no pain in 9 of the cases, and in the 4 remaining cases it was mitigated. Two cases had no chloroform. One patient was very restless. Five babies were oligopnoeic, but recovered. One was born spontaneously 2¾ hours after the initial dose, and took 15 minutes to cry. Of the four remaining, three were stiff "forceps cases" and the other was a dry labour. There were six "forceps cases." All the babies were born alive. In this series three babies, besides the one mentioned above, were born in the "danger period"; all were lively. I shall refer to this later. One patient had twenty-six hourly injections; she delivered herself spontaneously, the baby being quite lively.

Third Series (Primiparae, 6 Cases).

These patients received an initial dose of 2 3 grain omnopon and 1 150 grain scopolamine, followed by an hourly injection of 1 450 grain scopolamine. Average number of injections 6.8. Five of the cases were in Class I and the other in Class II. In five of the cases there was no pain, and pain was mitigated in the other. One patient had only one injection. There were no restless patients, and none of the babies were oligopnoeic. Of six babies, five were alive and one was a craniotomy. There were three "forceps cases," one for contracted pelvis.

Fourth Series (Primiparae, 30 Cases).

The patients in this series were treated initially with 2 3 grain omnopon and 1 150 grain scopolamine, followed by 1 400 grain scopolamine every hour. Average number of injections 7.2. Twenty-five of the cases were in Class I, 3 in Class II, and 2 in Class III. No pain was experienced in 26 cases, mitigated pain in 2 cases, and "usual pain" in 2 cases. Six cases had no chloroform; 3 cases had only one injection. These facts lower my percentage of successes. Two patients were very restless. Four cases had chloral for rigid os, one having three successive doses, each 20 grains, every twenty minutes. One case had a total of 36 injections, but the treatment was discontinued twice in three days on account of labour stopping on each occasion. There were eleven oligopnoeic babies: one baby was born spontaneously 1 hour 35 minutes after the initial injection and was very oligopnoeic; a second was born spontaneously 3 hours 20 minutes after the initial injection, also oligopnoeic, as well as another 4 hours after. Of the remaining eight, there were six "forceps cases"—three stiff ones—and two breeches. Excluding the three stiff "forceps cases" for large babies, and the breeches, in which there was delay in the after-coming head, we get five oligopnoeic babies. As soon as no chloroform is given or injections are begun late we get a smaller percentage of successes and a higher percentage of oligopnoeic babies. Of thirty babies, twenty-eight were born alive, the other two being unavoidable craniotomies. There were eight "forceps cases," of which two were for large babies—one an impacted shoulder.

Fifth Series (Multiparae, 62 Cases).

These patients were given an initial dose of 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 400 grain scopolamine. Average number of injections 5.09. Forty-two cases were in Class I, 5 in Class II, and 15 in Class III. There was no pain in 47 cases, mitigated pain in 10 cases, and "usual pain" in 5 cases. Five cases had no chloroform, 15 cases had only one injection; 2 cases were very restless; 4 cases had chloral. Seven babies were born in the "danger period"—2 to 3½ hours after the first injection: all of these were born spontaneously; all were badly oligopnoeic, but recovered. There were eleven other babies oligopnoeic. Of these, seven were "forceps cases" for contractions or large babies, and one a difficult breech. Excluding those, we get ten oligopnoeic babies. In 62 cases there were 63 babies (one case of twins). One, an anencephalic, died in twenty minutes. There were three dead babies, of which one was macerated, the second was due to a severe accidental haemorrhage

from a fall, and in the last the mother, after a fall, had not felt life for three days before admission; this was a "forceps case." There were altogether thirteen "forceps cases," of which seven are mentioned above, two prolapsed cords requiring interference, and also in the case of the large child which was dead-born. Thus we get three "forceps cases" apparently due to scopolamine-morphine. (The small hospital percentage here was no doubt due to the fact that I was administering pituitrin in a bigger percentage of cases.)

Sixth Series (Multiparae, 4 Cases).

These four patients received an initial dose of 1/12 grain heroin and 1/150 grain scopolamine, followed by an hourly injection of 1/450 grain scopolamine. Average number of injections 5.2. Three of the cases were in Class II and the other in Class III. In one case there was no pain felt, and in the other three the pain was mitigated. All the patients had chloroform. There were no restless patients. One baby was born 2 hours 25 minutes after the initial injection, but was quite lively. This, in my opinion, shows that the morphine in the initial dose was too small to cause any oligopnoea in spite of the baby being born in the "danger period." For the same reason the total successes are small. There were no dead babies and no "forceps cases."

Seventh Series (Primiparae, 14 Cases).

The patients in this series were treated initially with 1/4 grain morphine, 1/100 grain scopolamine, and 1/150 grain atropine, followed by an hourly injection of 1/400 grain scopolamine. Average number of injections 6.4. Thirteen of the cases were in Class I, the remaining case being in Class II. No pain was felt by thirteen of the patients, and only mitigated pain by the fourteenth. One patient had no chloroform; one was very restless. Four babies were born in the "danger period," but all were lively; this, I am sure, was due to the fact that 1/150 grain atropine was added to the initial dose. (A larger dose of scopolamine was used.) The other cases had only 1/150 grain scopolamine. Thirteen babies were born alive and one dead, the latter being born spontaneously; it had blood in its mouth and nose, was very badly nourished, and the coils of the cord were thin and few. There were two "forceps cases."

Apart from the different doses used, if we take "twilight sleep" as having been used in 140 cases of multiparae and primiparae we find that there were 141 babies born, of which 7 were dead—5 unavoidable craniotomies, 1 macerated foetus, 1 due to severe accidental haemorrhage (Series V), 1 in which the mother felt no life for three days (Series V), and 1 where the baby was badly nourished (Series VII). This gives us 134 live babies, of which one, an anencephalic, died after twenty minutes. If the last three are considered as being due to the treatment, we get 2.1 per cent. of dead babies. If the last one only is considered, then we get 0.74 per cent. dead babies. The high percentage of "forceps cases" is unavoidable where the institution is one for teaching purposes. Besides that, when the second stage has lasted about two to three and a half hours the patient is as a rule delivered with forceps. Another point to be considered is that when the patient is admitted to a public hospital and is in labour, she is given a bath first before being brought to the labour ward. Injections are therefore given very late, the pains being usually severe.

Results Compared in Different Series.

In comparing the results in the different series, I to VII, it is easily seen that a higher percentage of successes is found in the cases of primiparae. It is certainly due to the fact that labour is more prolonged, thus necessitating a larger number of injections and so conducing to a better amnesic and analgesic effect. For the same reason we find that, in a percentage of multiparae, only one or two injections are given with not such a good effect apart from any idiosyncrasy to the drug. As regards the primiparae, the percentage of successes is raised and that of failures lessened. Those primiparae treated with 2/3 grain omnopon and 1/150 grain scopolamine show a much better result than those treated with morphine and scopolamine. The omnopon also seems to have a less toxic effect, not only on the patient but also on the foetus. The scopolamine has a quicker effect, and, when the babies are born, they are a good deal less blue. Heroin 1/12 grain is certainly too small a dose for an initial injection. Although the percentage of complete successes is small, the partial successes are fairly good. In Series VII, the addition of atropine 1/150 grain has had a remarkable effect. The result here contradicts Dr. Innes and others, who used atropine in their cases. Any toxic action the morphine has in the mother or child seems to be counteracted by this drug. The fact that the babies born in the "danger period" were not oligopnoeic is not, in my opinion, due to mere coincidence. The forceps cases were also less (compare, for example, with Series II); the restless patients gave as little trouble as the others, if not less than usual. There were no absolute failures.

Complications.

Restlessness may occur not only after giving two or three injections of scopolamine but also after twenty, thirty, or more. It is not always due to an idiosyncrasy of the patient to the drug, but very often to faulty technique or carelessness on the part of the attendant in ministering to the patient's needs. In every case I have found that there is thirst to a greater or less degree. Even when the patient does not ask for a drink, small sips of water or milk, especially if she is restless, ought to be given. Apart from actually giving fluid, the face, lips, and gums of the patient should be constantly moistened by the attendant. Especially when the head is on the perineum, the patient is very apt to put her hands down to the vulva during a pain. If sepsis is to be avoided, this particularly should be prevented. The nurse should be very careful not to allow the bladder to become distended, for obvious reasons, and should persuade and encourage the patient to pass water at regular intervals, depending on the quantity of fluid taken and the length of the labour. If necessary a catheter should be passed. The patient will not always ask for what she wants.

Effects on the Mother.

The nurse ought not to hold a conversation with the patient in any way except in so far as is essential. Some patients talk quite rationally, are not much flushed, the Babinski sign and pupil reflexes may be absent, muscular co-ordination may be good, and yet they may turn out to be very good cases of "twilight sleep," and vice versa. The value of suggestion on restless patients is very notable. I have seen very restless cases, where I have suggested that "they are tired and want to sleep," become absolutely calm. I have never had occasion to discontinue treatment in these cases, nor have I observed any active or muttering delirium. It is probably faulty technique. In a few cases, as mentioned previously, where the os has been very rigid, I have given chloral in 20-grain doses every twenty minutes up to three doses if necessary, before starting on the morphine-scopolamine. The dose is certainly heroic, but the doctor ought not to leave the case during the time. It has one advantage—namely, that the patient does not realize when she is getting the initial dose of morphine-scopolamine, this fact tending later to make the case more successful. The patient ought in all cases to have chloroform at the end of the second stage, in order that she should not retain any idea of the labour from an "islet of memory" being formed, due to the more intense pain.

A remarkable after-effect on the mother is the absence of shock and exhaustion, either subjectively or objectively, occurring not only in short labours but also in lengthy complicated ones. This necessarily tends to make the convalescence quicker and more pleasant, inasmuch as nervous energy is conserved. In most cases of multiparae, if morphine 1/4 grain or omnopon 2/3 grain is to be given it should, even at the risk of labour stopping again, be administered at the very beginning, judging only from the state of the os, and not from the actual severity of the pain. It is well known that some multiparae will often not have acute pain until the os is fully dilated or even the head on the perineum. If there is any reason to anticipate a fairly rapid course of labour, and a risk of the child being born in the "danger period," a smaller dose of morphine or omnopon than usual should be given, with more frequent injections of scopolamine or a larger initial dose of scopolamine. The dose of morphine is the governing factor, and unless this be given before the pains become acute no complete success need as a rule be expected.

One great disadvantage I must mention, apart from any method adopted. With the average general practitioner who treats patients with "twilight sleep," and who has not had a very great experience of this drug, vaginal examinations, particularly in multiparae, are necessarily increased. This is a fact even with his more experienced colleagues. If puerperal infection, caused as a rule by sepsis from without inwards, is to be avoided, and the percentage of deaths lessened, then it is the duty of everyone using this treatment to be particularly careful, and not give occasion for further criticism on the part of those who already condemn the drug.

Effects on the Child.

I do not think it is necessary to listen to the foetal heart any more than in cases not treated by morphine-scopolamine. Any cause for anxiety that there is—apart from the child being born in the "danger period" (this not being a real

danger)—depends on other complications. The baby, no matter what success or failure the case has been, is always more or less blue. There is never really that pink colour seen. Scopolamine babies invariably seem to have more viscid mucus in their throats than those born otherwise. I make it a rule in every case where the child is not lively to ligate the cord immediately and use a mucus extractor. Of twenty-three babies born spontaneously up to two hours after the initial injection only two were oligopnoeic. Judging by what the nursing staff told me in the hospital, the scopolamine babies seem more quiet and contented than any others. Whether this is merely the imagination of enthusiasm or not I am not prepared to say. It is, at any rate, a known fact that the drugs are excreted by the child in a few hours, so one cannot say that the babies are still stupid from the effects of the drug.

Conclusions.

On looking through my results of morphine-scopolamine treatment on 140 cases carried out in the Royal Maternity and Simpson Memorial Hospital, I have come to the following conclusions: It is the morphine which causes the analgesic effect in the mother primarily, and allows the scopolamine to take effect. A second dose of morphine is not necessary, but where for any particular reason the doctor thinks it is required he should make quite certain, first of all, that the child is not likely to be born in the "danger period"—namely, from two to three and a half hours after the last injection of morphine. If it is born in that interval it will be very oligopnoeic. A smaller dose of morphine—for example, heroin 1/12 grain—although likely to cause little amnesic or analgesic effect in the mother, will not cause this oligopnoea. The reason I use the word "danger" is in order to keep the doctor on the *qui vive* and make him realize this period before commencing treatment. The baby born in this period may not be in any apparent danger, but will likely cause some anxiety before it breathes properly and cries.

The "danger period" can be avoided by combining a dose of atropine—for example, 1/150 grain—with the initial injection of morphine-scopolamine. From the similarity of its action to scopolamine and its effect on the brain, I think the amnesia becomes more pronounced, at the same time preventing the toxic action of the morphine. If, knowing that the atropine is an antidote to morphine, we allow the latter to act first for half an hour and then inject the atropine, we might get a still better result. Although I have used different doses—"standardized dosage" method—in treating the primiparae and multiparae in the 140 cases, I have seen that the initial dose of morphine 1/4 grain, scopolamine 1/100 grain, and atropine 1/150 grain, followed by scopolamine 1/400 grain hourly (mentioned in Series VII), is the best from every point of view. The babies in a set of 14 primiparae were all lively; the "forceps cases," apparently due to the treatment, in comparison with those known to be from a definite cause like contracted pelvis, were less so. (Instead of morphine 1/4 grain, I think 1/2 or 2/3 grain omnopon would be better.)

The initial dose of scopolamine ought always to be 1/100 grain, apart from any idiosyncrasy of the patient to the drug, although, as I said before, the initial dose of morphine is the governing factor in multiparae. The initial dose of morphine should be from heroin 1/12 grain to omnopon 2/3 grain, depending on how long labour is expected to last. It is certainly advisable, although not essential, to have a nurse in attendance who has seen the effects and nursed cases of "twilight sleep." She must be in constant attendance upon the patient, not leaving her alone for a moment.

The morphine-scopolamine treatment is particularly indicated in primiparae and in cases where a lengthy, severe labour might be expected. If pituitrin is to be given at all during the labour, it is certainly less torture to the patient to be under morphine-scopolamine narcosis or semi-narcosis than otherwise. A little chloroform before giving the first injection certainly helps to make the patient drowsy, but this is inadvisable, as many people, particularly primiparae, cannot bear the smell of this drug. The "standardized dosage" method is to save the doctor trouble and allow him to go about his other duties. For the same reason whiffs of chloroform for restlessness are out of the question. Chloroform should, however, be administered at the very end of the second stage, not only for obstetrical reasons, but also because it prevents "ideas of memory," or impressions, on the brain.

I am sure, no matter which method is followed, that in most cases of "twilight sleep" there is not that complete alertness and desperation present when the patient has to bear down. This would no doubt tend to make "forceps cases" more frequent. Pituitrin, however, overcomes this disadvantage as a rule. The advantages in using the treatment outweigh the disadvantages by far. With ordinary reasonable care there certainly need not be any untoward effects on the mother, and very little, if any, on the child.

Post-partum haemorrhage and manual extraction of the placenta do not occur more frequently than usual. There are some who say that this treatment is liable to cause some defect or ill effect later in the child. I can only say that I have had an opportunity in private practice of observing the babies born under the treatment, and they were all apparently healthy and bright. Looking at morphine-scopolamine treatment from an ante-natal point of view, I think it is an unquestionable fact that the thought of having this treatment is bound to react favourably on the mental and physical condition of the mother, and therefore on the child. If we have to consider the ante-natal care of a pregnant woman, we must try and cure not only her physical symptoms, but also, in those who dread and fear the impending labour, as mentioned previously, their mental symptoms as well.

III.—ON THE MAINTENANCE OF "OBSTETRIC ANAESTHESIA" BY MEANS OF INFUNDIBULIN AND CHLOROFORM.

BY

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It is not now too much to say that sufficient anaesthesia to dull the pains of labour to the point of complete amnesia can be maintained without the use of morphine or hyoscine or other alkaloid, and without their attendant tedious protraction of labour. After considerable experience I may say that to the busy general practitioner the disadvantages of the alkaloid method are: (1) that it undoubtedly does lengthen labour by making the pains less frequent and weaker, and by making the patient so drowsy that she cannot help herself by her own efforts of expulsion, thus rendering forceps operations more frequent; (2) that unless the first dose is given at the right time the uterine reflex will not be denied, and it is often impossible to obtain an amnesia.

The method to be described makes labour pains stronger and more frequent, does not deprive the woman of her expulsive powers, and can be begun at any time during the course of labour.

It is universally admitted that chloroform, unaided, defeats its own ends in midwifery by sacrificing the efficiency of the pains. But if the uterine reflex is kept active by repeated small doses of infundibulin, while a *light* chloroform anaesthesia is maintained, our aim of a virtually painless unimpeded childbirth is realized.

The peculiarly favourable behaviour of the parturient woman to chloroform has never been satisfactorily accounted for. If a Junker inhaler be used a fineness in regulating the degree of anaesthesia can be obtained which is not possible by the open method—namely, a state in which the corneal reflex is not abolished but dulled, where the woman still "bears down" to her pains and yet remembers very little of them, in spite of their accentuated and augmented recurrence. But I had never succeeded in maintaining this condition until about three years ago, when I began to realize that the pituitarized uterus could maintain itself against the numbing effect of chloroform.

The technique I have used is as follows:

Having diagnosed an anterior presentation and ascertained that dilatation is fairly full, and that there is no undue disproportion between the child's head and the maternal parts, 1·2 c.cm. of infundibulin is injected intramuscularly, and, when the augmentation of the pains is seen to begin, chloroform is given through a Junker inhaler attached to a mask, which was secured earlier to the woman's face, she lying in the usual position on her side, pulling on a strap. The chloroform is continued as long as the pain lasts, and then stopped, and given again at the onset of the next pain.

The infundibulin stimulates the activity of the uterus so markedly that this amounts very soon to maintaining the light anaesthesia described above. As the effect of the infundibulin wears off the chloroform begins to be the predominant factor, and the vigour of the pains abates. This usually happens by the end of half an hour or so. Now one renews the infundibulin, and continues as much chloroform as is

thought necessary. A little practice will soon enable one to judge of the depth of anaesthesia needed to produce amnesia. This *modus operandi* can be kept up indefinitely, the effect of the pains being watched, while the accoucheur sits at the foot of the patient, pumping his chloroform through a long tube to the facepiece at the patient's head. Single-handed chloroform by the open method can easily become a haphazard procedure.

I have often given 2 c.cm. of infundibulin in two hours, and several times 3 c.cm. in three hours, but have never exceeded this dose, and only once given more than 0.5 c.cm. in a dose, which Dr. Blair Bell, in a very kind letter to me, agrees is non-toxic. His opinion is, however, that a dose of 3 c.cm. should not be exceeded until after twelve hours have elapsed. My impression is that an unusual increase in the pulse rate is observed in a few cases towards the end and after labour, but there are no definite toxic effects of multiple dosage up to the above limit to either mother or child, if ordinary care is used.

Another question arises as to whether, infrequently, infundibulin is a factor in the causation of *post-partum* haemorrhage. I can imagine that when the infundibulin is unduly active, and placental separation is violent and rapid, more venous sinuses would be open at one time, and the clotting of the blood less complete than when separation is more deliberate, and thus haemorrhage be more abundant.

And again, does prolonged chloroform anaesthesia interfere with the clotting power of the blood? Undoubtedly it does, but it must be remembered that, in this procedure, the chloroform anaesthesia is only very light, and the amount used insignificant—never more than 1½ to 2 oz. in two or three hours, and since I have used a Junker inhaler, as suggested to me by my friend Dr. Carroll, I have found the amount used has been much less. In any case an injection of haemoplastin early in what promises to be a prolonged case should ensure safety. In only one instance have I had some *post-partum* haemorrhage in thirty-three labours conducted in this way, and this was in spite of the uterus being firmly contracted, and in spite of the absence of laceration from overaction, as ascertained subsequently. The indications for forceps remain as in unaided cases, but the incidence of forceps operations has steadily decreased since I have adopted this practice. I have only had to use forceps twice, both for primiparae—once in 1920 and once in 1921—both for delay of the head for over half an hour, in spite of regularly recurring pains. It has seemed to me that the chloroform helps to undo the spasmodic involuntary tightening of the maternal parts which occurs in nervous women during severe pains. This and the increased uterine action account for the rarity of forceps operations.

In occipito-posterior presentations delivery is obtained without the aid of forceps by rotating the head and, at the same time, turning the body by the shoulder into the anterior position under full chloroform. The head is held by the hand that has turned it until the pains, abolished by the chloroform, have been re-established. This is attained in a few minutes by the nurse giving a previously prepared dose of 1 c.cm. The effects of the chloroform will prevent any uterine overaction, and the brisk uterine contraction will fix the foetus in the anterior position. I have notes of four such cases, and these are the only occasions on which one has given a full cubic centimetre. All four have been delivered without forceps.

When the head is stretching the perineum and not receding, the force of the pains can be checked by increasing the amount of chloroform used, and extensive rupture often avoided. Lind Smith[1] agrees that chloroform modifies the effect of infundibulin, and recommends repetition of the dose. I have notes of 32 cases, taken over three years for my own guidance, long before I thought of publication. Most have had three 1·2 c.cm. injections, some two, and one only one. Others, where I was earlier on the scene, or where longer labour has ensued, have had five or six injections, and labour has lasted three hours. One of my patients, an intelligent woman, who has had three scopolamine-morphine labours, said she much preferred the infundibulin-chloroform method. She had three injections, labour lasted one and a half hours, and she voluntarily told me that loss of memory had been more quickly obtained and was more complete with the latter. The only danger lies in overdosage of chloroform; this is minimized by using the Junker inhaler. I make it a rule always to avoid heavy stertorous breathing.

I can confidently recommend this procedure as being superior to the alkaloid method in general practice. I have seen no bad results to either mother or child.

A few illustrative cases may be acceptable.

CASE I.

Mrs. S., aged 36; 2-para. Infundibulin 2.5 c.cm. injected in one and three-quarter hours; 1 oz. of chloroform used through a Junker inhaler. The amount used here was rather large, but one knew the uterine pains were poor and infrequent during a very tedious day eight years ago at the first labour, which ended with a hard forceps operation, so that the infundibulin was repeated when the pains seemed to flag rather more freely than is usually necessary. No increase of bleeding; no remembrance of the second injection or afterwards.

CASE II.

Mrs. F., aged 28; primipara. The first injection was given when the os was the size of a crown piece, very soft, and distending well with a good bag of membranes. The membranes did not rupture until after the third injection; 3 c.cm. of infundibulin were used in three hours. Complete amnesia was obtained, although for two hours the patient pulled on the strap and bore down to her pains. Two ounces of chloroform—open method—were used.

CASE III.

Mrs. H., aged 39; 2-para. First dose just before the cervix was fully dilated; repeated at half-hourly intervals; 1½ oz. of chloroform used in two hours—open method. No remembrance after second injection. No bleeding. Pulse quick after labour, but settled down after the one necessary perineal suture had been put in. This patient was sent home from India with amoebic dysentery, and was a wreck at seven months, but her general condition was quite good at the time of labour; a quick pulse after a two hours' labour and some undue pallor is explained apart from the anaesthesia. Scopolamine-morphine was absolutely without effect when used for her first baby five years before.

CASE IV.

Mrs. E., 2-para. Delivered in two hours; 6 drachms of chloroform by Junker inhaler; 2 c.cm. infundibulin. The pulse was always too quick—about 100 very early in labour between the pains, and later 108. She had had twenty-four hours of ineffective pains before dilatation was on the way, was anaemic and not in good condition. The mother told me afterwards she had not been well throughout the pregnancy. I should not have begun the treatment without weighing up the probabilities. She can remember three injections and some of the pains. This was the same with scopolamine-morphine, which had to be abandoned at the first confinement owing to uterine inertia and quick pulse, and completed with infundibulin and chloroform. She vomited all night after confinement, kept a small pulse, and had much after-pain. Although the uterus contracted firmly *post-partum* haemorrhage was too excessive, but the placenta seemed huge. It weighed after draining the blood from it 1 lb. 10 oz., and measured 9 inches by 8 inches. It can be argued that this *post-partum* haemorrhage would have occurred in any case, and was due to large placenta and poor general condition.

This is the only set-back I have had, and made me vow never to give this anaesthesia in labour without carefully considering the case before beginning, and never to promise unreservedly to use it beforehand. She had a slow pulse two days after, and never looked back. Examination at the end of a month showed a perfectly regularly closed os, and no other abnormality. She was a case, fortunately rare I believe, where the stage of light anaesthesia is not sufficient to abolish the memory of the pains. Her unsatisfactory condition forbade deeper anaesthesia.

CASE V.

Mrs. H., 2-para. Infundibulin 2 c.cm. used in two hours, and only 3 drachms of chloroform with Junker inhaler. Patient says she can remember some of the pains. Too little chloroform was used here.

CASE VI.

Mrs. S., 2-para (midwife's case). Three hours' delay in pelvis. Occipito-posterior presentation diagnosed; head rotated and held; 1 c.cm. of infundibulin used. Firm uterine action five minutes later. Spontaneous delivery.

I have noticed several times, where the uterus has contracted very violently, the tail of the membranes is held, being caught in the enfolded uterus. The tail, stretching with the weight of the still attached placenta, eventually may break, and quite a large piece of membrane can be left behind if, after the placenta is delivered, any tension on the membranes is allowed when they are felt to be held. The safe thing to do is to secure the tense cord of membranes with a Spencer Wells forceps, cut the placenta and distal main part of the membranes away, so avoiding tension, and allow the tag to come away when the uterine contraction slackens.

Conclusions.

1. The woman in labour, being peculiarly amenable to the action of chloroform, can be rendered amnesic by maintaining a light partial anaesthesia, which is harmless to mother and child, if the uterus be kept active by means of repeated small doses of infundibulin.

2. Usually 0.5 c.cm. of infundibulin, every half-hour or so, is enough, the chloroform being administered with the onset of and during the pains.

3. A Junker inhaler is a valuable help in avoiding the use of too much chloroform and regulating the dose. The amount used will vary, 3 drachms in the hour being the least with which I have obtained a satisfactory amnesia.

REFERENCE.

[1] Lapthorn Smith: British Medical Journal, December 18th, 1920.

DISCUSSION.

The President said that personally he fully admitted that all the results claimed could be substantiated, but he thought that the matter was essentially one for discussion by general practitioners; it might even in time become a subject for consideration by midwives, though he certainly would not advocate that at present. Still, considering the many commitments of a man in busy practice, might not the carrying out of the treatment often be left to the nurse?

Dr. Lapthorn Smith had observed that in one town the most successful practitioner was one who gave his confinement cases morphine. He thought the suffering in the early stages of labour was generally due to fear. He advocated sodium bromide and opium particularly for primiparae when the pains commenced in the middle of the night. Another excellent prescription was acetanilide in 5-grain doses, given in a cup of hot coffee for three doses at least. He had tried the scopolamine morphine method but had given it up, owing to a great increase in the number of cases causing anxiety after its use. He suggested the substitution of eau-de-Cologne for the alcohol in the ordinary A.C.E. mixture; it made a very pleasant anaesthetic. For the past thirty years in every case to which he had been called in time he had administered an anaesthetic. He entered a protest against the use of the term "twilight sleep," as it had become commercialized.

Dr. Chalmers thought that Dr. Martin did not bring his forces into play until the period of greatest anxiety was passed. He was in favour of omnopon and scopolamine, but agreed that if morphine were given within six hours of the birth of the child trouble with the child might be anticipated.

Dr. Russell Andrews gave a warning about pituitary extract. He said that standardization of this preparation was at present in a state of utter chaos: strengths varied to an enormous degree. If the weakest brand was called 1, then the strongest had been found to be 80, yet the dosage was given as the same in both preparations.

Dr. Ruxton spoke as a general practitioner and a physician to a lying-in hospital. He had found very little demand for scopolamine-morphine treatment even among the highly educated. His view was that in private practice the complete scopolamine-morphine technique was not practicable. Those who asked for it should go into an establishment where the whole thing was thoroughly understood. He advocated the old-fashioned treatment—an injection of morphine in slow cases was the best. He was convinced that the great principle "wait and see" was indicated in all cases. He asked for guidance whether it was safe to use scopolamine-morphine in diabetic patients.

Dr. Blair, speaking as a general practitioner of thirty years' standing, said that he had had 120 cases of "twilight sleep." He had now abandoned it, as he had found that it was impossible to carry out the method properly in a scattered area. His practice lay in an area of 300 square miles. In addition, there were, he thought, certain dangers in the practice; for instance, he had had two cases of very bad puerperal mania. He had now gone back to the old treatment—a dose of opium if seen in the early stages, to be repeated if necessary. He had abandoned "twilight sleep" as there were no advantages in employing it. He had had a great deal of trouble with his babies, and he could see no compensations in the use of this method by busy general practitioners.

Dr. Lamond Lackie said that he had used morphine-scopolamine narcosis in hundreds of cases, and he was a strong believer in the treatment. Dr. Ruxton had said that the great thing in obstetrics was to "wait and see." With that Dr. Lackie entirely agreed, and the greatest advantage of "twilight sleep" was that it allowed one to wait and give nature a chance with the minimum of suffering to the patient. His record showed that in 50 per cent. of cases the treatment was an unqualified success, in 30 per cent. it was only a partial success, and in 20 per cent. it was a failure. There were never any ill effects to the mother. Occasionally one met with a case in which almost a maniacal condition was produced, but this was temporary and passed off with the cessation of the treatment. The effect on the baby was, no doubt, sometimes disturbing and even alarming, but there were only two cases in the records of the Royal Maternity Hospital, in which the death of the infant was attributed by Dr. Browne, the pathologist, to morphine-scopolamine narcosis. The effect on the doctor was that it often gave him a good night's rest when otherwise he would have been in constant attendance upon the patient. A good nurse was easily trained to carry out the treatment and to give the injections intelligently.

Dr. Prell said that it was not his successful cases that made a doctor's reputation, but the way he could cover up his failures. He pleaded for a higher degree of co-operation between the doctors and the midwives. He thought that many doctors might be deterred from testing the omnopon-scopolamine method as the other doctors in his district would not try it.

Dr. Miller said that he had no experience of the "twilight sleep" method. In the Highlands they practised other forms of treatment during labour, with the result that nature was mostly trusted to, and nature was highly successful.

Dr. Thomas absolutely agreed with the previous speaker. He asked, if there were such a thing as natural labour, why was there all this talk about interference?

Mr. Hendry described how the term "twilight sleep" came to be adopted by the public press. Referring to dosage, he quoted Gauss as saying that if he were shown the standard woman he would say what the standard dose should be. Individuals differed markedly. He did not think that the best results could be obtained by giving table doses; doses must be varied to suit each individual. In regard to mania, some 4 to 10 per cent. of his cases had shown varying degrees of restlessness, but he thought that with careful dosage this could be avoided. The effects on the child were probably produced by some derivative of morphine. Frequently the child was born in a state of apnoea, but in his experience they always came round without the need for any active interference.

Dr. Eden said that he had listened with the greatest delight to the remarks contributed by the general practitioners. They were packed with common sense, whereas often the remarks of the specialists were not. They could not all expect to obtain the splendid results of Dr. Greenwood. He did not think that Dr. Martin's method came into conflict with the scopolamine-morphine method; rather it was a method for shortening the second stage, and he questioned the wisdom of doing this. He could not say that he was greatly in favour of "twilight sleep." Special hospital "stunts" could not be applied in general practice.

Dr. Greenwood, in reply, said that he would not trust any nurse to carry out the treatment. The doctor should visit the patient at least once an hour. The bad results all came from pushing the drugs beyond their obstetric dosage. Analgesia was not required, only amnesia. He could not emphasize too strongly that they must carefully watch each patient. He thought it was the duty of the profession to shield the patient in labour by every means possible. Pain, fear, shock, exhaustion must be diminished as much as possible. Labour should be tackled in the same spirit as the surgeon tackled his difficulties. It was not a question of supply and demand by the patient. He had no experience of giving scopolamine-morphine in diabetes, but on theoretical grounds there was no contraindication, and he would not hesitate to employ it if a case presented itself. As regards extreme restlessness and mania these cases were certainly a sign of faulty technique. Restlessness, analgesia, rapid pulse were danger signals. He thought the giving of opium was a distinct menace to the child, and in many cases of eclampsia the child died from the effects of the morphine and not the toxaemia. He could not agree that "twilight sleep" prolonged labour—if it did, it was a sign that the technique was at fault. His experience was that in many cases labour was actually shortened, as the patient would permit the full contraction of her voluntary muscles, and thus assist the involuntary muscles to expel the child.

THE TREATMENT OF ECLAMPSIA.

BY

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ECLAMPSIA has long been recognized as one of the most formidable of the risks of child-bearing. It is, however, of comparatively rare occurrence. Its frequency in hospital practice is about 1 in 125 labours, but this figure is, of course, higher than its average frequency, because a great proportion of the cases which occur are sent into hospital. The reports of the Registrars-General for Great Britain and Ireland for the ten years 1911–20 show that the average number of deaths per annum returned for puerperal convulsions was 630, the annual total varying from 733 to 551. From statistics which will be presently quoted it may be taken that the average mortality of the disease in Great Britain and Ireland is 22.5 per cent. Accordingly, the total number of cases occurring annually is about 2,800. Of this number something like 1 in every 4 or 5 dies. About 70 per cent. of eclampsia patients are primigravidae, and it follows that this disease takes toll in this country of the lives of about 450 young mothers bearing their first child every year. No better reason for discussing the treatment of this disease at this meeting could be advanced than is supplied by these figures.

A brief retrospect of the methods of treatment which have been in vogue at different times will perhaps be useful, in order to explain to some extent the confusion which still exists. Previous to the discovery of albumin in the urine in eclampsia in 1843, the credit of which is due to a London obstetrician named Lever, the treatment was solely empirical. The detection of albumin in the urine appeared to the men of that time to stamp the condition as primarily a disease of the kidneys. This view was held, in one form or another, until the toxaemic theory arose, by which the renal lesions were relegated to a secondary place, although their clinical importance was not thereby much diminished.

From 1843 up to 1870 treatment, generally speaking, consisted in: (*a*) venesection, repeatedly in some cases, unless contraindicated by marked anaemia; (*b*) morphine or opium in cases where venesection was contraindicated; (*c*) ice-cap, cold packs, or cold baths, wet cupping the loins, etc.; (*d*) no obstetric interference. There are no statistical results from this period.

From 1870 to 1890 treatment was still entirely expectant, narcosis and diaphoresis being mostly relied upon. Pilocarpine played a large part, and venesection was largely abandoned, as Schröder pointed out that the blood pressure rose again very rapidly afterwards, and the only lasting effect was to deprive the patient of blood. At this time the case mortality in Germany was about 33 per cent.; there are no statistics from this period available for this country.

In the late eighties the toxaemic theory began to be discussed. Bouffe de Saint-Blaise observed *post mortem* hepatic lesions, and spoke of a hepatic toxaemia as being the cause of the disease. Dührssen, no doubt influenced by these considerations, conceived the idea that immediate termination of pregnancy was the proper way to attack a pregnancy toxaemia, and in 1891 he advocated Caesarean section in all cases, to be performed immediately after the occurrence of the first fit. A few years later he introduced his special method of vaginal Caesarean section. Medical treatment he relegated to a position of unimportance. This treatment caught the fancy of the profession, and had a great vogue not only in Germany but also in the United States of America, for as early as 1911 Petersen was able to collect 530 cases treated by this method in America since Dührssen introduced it twenty years previously; under early surgical intervention upon these lines the mortality in Germany fell from 33 to 18 and 19 per cent.

Other workers, however, continued to practise expectant methods, and wonderfully good results were reported from Russia by Stroganoff as early as 1901. In 1911 he was able to report 600 cases treated by his method in Russia, with a mortality of only 8 per cent. Zweifel about the same time reported a series of 84 cases treated by a modified Stroganoff method with a mortality of only 5.9 per cent. Stroganoff's method was purely expectant, the following being the main points:

1. Isolation of the patient in a darkened, quiet room.
2. Careful attention to the respiratory process: (*a*) cleaning the mouth, throat, and nose after fits, and keeping the patient lying on her side; (*b*) fresh air and, if marked cyanosis, oxygen.
3. Morphine subcutaneously, and chloral per rectum in alternate doses and at stated intervals until fits are controlled, as follows:

0 (zero)	...	...	...	Morphine gr. ¼
1 hour	...	...	...	Chloral gr. 30
3 hours	...	...	...	Morphine gr. ¼
7 hours	...	...	...	Chloral gr. 30
13 hours	...	...	...	Chloral gr. 22
21 hours	...	...	...	Chloral gr. 22

4. Twenty-five ounces of milk a day, and the same amount of saline per rectum or by the mouth; no other food.
5. Termination of labour when the second stage is advanced.

During the last twenty years the treatment of eclampsia in this country has been, generally speaking, at the mercy of these two antagonistic views—the view represented by Dührssen that active obstetric interference should be practised, and practised early, and the view upheld by Stroganoff that obstetric interference should be avoided until the second stage of labour is advanced, and that the toxaemic condition should be treated by the simple medical measures just described. Individual clinical observers have emphasized the importance of certain special therapeutic measures, such as saline transfusion, administration of thyroid gland, or of depressants of the circulation, such as veratrone. It is not surprising to find that the prevalence of such divergent views upon the principles which should underlie treatment has produced confusion in the minds not only of practitioners and resident medical officers, but also in the minds of many of the obstetric teachers themselves. The hospital treatment of eclampsia, generally speaking, is to-day in a condition of muddled disorder which is not to our credit. An exception must be made in the case of Dublin, where a uniform plan of treatment has been practised for some ten years, with results of the most encouraging character; but to this matter I shall have to refer again later on.

How serious were the results of this lack of precision in our views as to the principles upon which the treatment of eclampsia should be based was not perhaps generally realized until this summer, when a series of reports on this subject were presented to the British Congress of Obstetrics and Gynaecology at Liverpool. These reports will shortly be published in full in the *Journal of Obstetrics and Gynaecology of the British Empire*. I can only say here that the records of over 2,000 consecutive cases of eclampsia treated in hospital, occurring in the ten years 1912–21, were carefully investigated; 1,800 of them were from England, Scotland, and Wales; 200 from Ireland. The English, Scottish, and Welsh cases together showed a mortality of 24 per cent.; in other words, about 1 in every 4 cases admitted to hospital died. That this mortality rate is capable of great reduction is shown by the cases from Ireland, which showed a mortality of only 10.29 per cent. It is true that the number of cases from Ireland is very small, amounting to only 10 per cent. of the total, but we need not allow this to influence our judgement upon them unduly.

This rather lengthy introduction is intended to emphasize the practical importance of the subject and to point out some of the difficulties. One further preliminary remark I feel bound to make, and that is that we cannot wait any longer for the pathologists. Eclampsia is a disease the causation of which is still unsettled, in the sense that it has not been demonstrated to the general satisfaction. The toxaemic theory has been very widely, but not universally, accepted, and it must be admitted that it is a hypothesis which is not entirely free from difficulties. I conceive that the time is opportune for an effort to be made to introduce something approaching uniformity into the treatment of this disease, and in order to explore the situation I propose now to submit a short series of propositions to you which cover the main points upon which, in my opinion, treatment should be based.

I. *It is easier to prevent eclampsia than to cure it. Prophylaxis is therefore all-important.*

The reports to which I have just referred show that in over 80 per cent. of cases of eclampsia premonitory symptoms are present, the commonest of which are albuminuria and oedema. In addition to these there will generally be found headache, disturbances of sight, and epigastric pain, sometimes accompanied by vomiting; more rarely there may be muscular twitchings or attacks of petit mal. Careful

supervision of the patient during pregnancy by her private doctor or at the ante-natal clinic would undoubtedly afford an opportunity for a large proportion of cases of threatened eclampsia to be treated by preventive measures before the onset of fits. It is not certain that all patients with premonitory symptoms will necessarily develop fits, but what I desire to point out is that treatment at this stage may snatch women from the very threshold of this formidable disease.

I cannot give you any figures upon this point, but it is the universal experience that women treated in the premonitory stage very rarely develop fits, and, even if they do so, the disease assumes a mild form. It is reasonable to suppose, therefore, that prophylactic treatment would appreciably reduce both the frequency and the severity of the disease.

I am not unaware of the difficulty not infrequently met with of persuading pregnant women to come up at regular intervals to see their doctor, but the public is becoming gradually enlightened as to the importance of medical supervision during pregnancy, and this difficulty is now much less formidable than it used to be, especially in the case of women bearing their first child. It goes without saying that it is also necessary that doctors and midwives should have a clear idea of the nature of the premonitory symptoms, otherwise even when they occur their grave significance may be overlooked.

Prophylactic treatment essentially is: Bed; fluid diet only, and that mostly water; saline purgatives; diuretics. Progress must be closely watched, the salient points to observe being amount of urine, amount of albumin, the oedema, and, lastly, blood pressure. If progress is not satisfactory, or if relapses occur after temporary improvement, labour should be at once induced without regard to the period of pregnancy or the possibility of survival of the child. Further, I personally do not think it is right to allow a woman who has once been on the verge of eclampsia to carry through to term, and therefore all cases which have developed the symptom complex just described should be induced, although it is preferable, if possible, to defer the induction until the symptoms have disappeared under treatment.

II. *A case of eclampsia is not a case for domiciliary treatment; prompt removal to hospital is the first indication after a fit has occurred.*

It should, I think, be recognized that a case of eclampsia calls for hospital resources as urgently as the most serious surgical operation. The general requirements of the case are:

1. A darkened quiet room.
2. Continuous supervision by at least two trained nurses.
3. Careful attention to the condition of the respiratory passages, as the throat and nasopharynx are apt to become blocked during the convulsive seizures.
4. A well-regulated supply of fresh air, with oxygen in reserve if required.
5. The continuous assistance of a clinical laboratory, and expert medical superintendence always available.

It is clear, I think, that, generally speaking, such requirements can only be met in hospital.

The case of eclampsia which occurs in a remote country district is indeed a tragedy; it can only be met by the provision of proper facilities for transport by ambulance as part of the public health organization of every county.

III. *Cases of eclampsia vary greatly in severity, and a simple classification of cases as mild or severe would greatly facilitate treatment.*

An approximate estimate of the gravity of any case can be readily made in a short time by observation of the following points:

1. The amount of albumin in the urine (catheter).
2. The number and frequency of the fits.
3. The mental condition of the patient.

The reports to which I have previously referred showed that by observation of these points cases can be grouped as "mild" or "severe." The case is a *severe* one if the urine solidifies on boiling, if the total number of fits exceeds ten, and if there is continuous coma of any degree. The case is a *mild* one if the amount of albumin is moderate, if the fits are few and infrequent, and if the patient's mind is clear between the fits. The reports further showed that two fifths of the cases investigated were severe, and that the mortality of the severe cases was five times as great as those which were regarded as mild, the percentages being 6.5 and 32.4 respectively. This marked difference in the mortality of the two groups is of course a demonstration of the accuracy of the method of classification.

It will be clear that mortality figures from any given centre may be greatly influenced in either direction by an undue proportion of severe cases or of mild cases. The suggestion has been frequently made that the remarkably good results reported by Stroganoff from Russia may be explained by the fact that the disease in that country may assume a milder type than in Great Britain. It is almost impossible to compare results from different centres unless the cases are classified on some plan or other. Further, the value of any particular methods of treatment can be estimated much more accurately if their effects are viewed in the light of the degree of severity of the cases treated. It therefore appears clear that our records should in future always include classification of cases upon some such plan as I have outlined.

IV. *All cases of eclampsia are best treated by the minimum of obstetric interference.*

This should be limited to induction if labour does not come on spontaneously, and termination of the second stage by low forceps when the head has descended to the perineum.

Referring again to the reports previously mentioned we find that cases delivered (*a*) naturally, (*b*) by induction, or (*c*) by low forceps showed a much lower mortality than those delivered by rapid methods such as Caesarean section or accouchement forcé. The greater number of cases of accouchement forcé in the reports were cases in which manual dilatation of the cervix had been carried out in order to expedite delivery; in very few cases was instrumental dilatation practised.

In making this comparison it must not be overlooked that the cases in which a major obstetric operation was deemed necessary may have been of a more severe degree than the others, and would therefore be likely to show a high mortality on that account. This fallacy can be to a great extent eliminated if the cases are first divided into the two groups "mild" and "severe" on the basis which I have just described. I want, therefore, to ask your attention to the following simple figures taken from the reports.

Four hundred and twenty-five cases were analysed and classified into the two groups mentioned above.

Of the *mild* cases 209 were delivered either (*a*) naturally, (*b*) by induction without subsequent assistance, or (*c*) by low forceps or version; these cases showed a mortality of 5.2 per cent. Further, 51 mild cases were delivered by Caesarean section, with a mortality of 9.8 per cent.; 40 mild cases were delivered by accouchement forcé, with a mortality of 25 per cent.

Of the *severe* cases 114 were delivered either (*a*) naturally, (*b*) by induction without subsequent interference, or (*c*) by low forceps or version; these cases showed a mortality of 26.3 per cent. Further, 37 severe cases were delivered by Caesarean section, with a mortality of 43.2 per cent.; 10 severe cases were delivered by accouchement forcé, with a mortality of 60 per cent.

I do not think that any words of mine can convey more than these simple figures. Cases treated by the "expectant" obstetric methods showed much the best results. Delivery by rapid dilatation of the cervix is clearly an unjustifiable procedure, and must in future be totally excluded. Cases delivered by Caesarean section, whether mild cases or severe cases, show a mortality nearly double the mortality of those of the same class delivered naturally or by simple obstetric measures.

V. *Simple medical treatment carefully regulated and constantly watched gives the best results.*

In respect of medical treatment our leaders are Stroganoff and Hastings Tweedy. The treatment of Stroganoff I have already outlined, and have remarked upon the remarkable success achieved by it both in his own hands and in the hands of others. Hastings Tweedy's conception is on similar lines, but differs in that he deprives the patient absolutely of all food except water and that he takes great pains to clear the stomach and colon of their contents and to keep them empty. I must not stop to discuss the theoretical consideration upon which Tweedy's treatment of the alimentary canal is based,

or I shall exceed the limits of time allowed me. The forthcoming number of the *Journal of Obstetrics and Gynaecology* will give it fully.

The methods of treatment which will always be associated with these two honoured names have the great virtue of simplicity of conception and of detail, which allows of its being set going without delay in any simply equipped hospital or institution. In my opinion, the crying need of the moment is for the simplification of the medical treatment of this disease and its organization upon a definite plan which can be easily followed.

The London committee which reported to the British congress on 547 cases treated in various London hospitals were greatly struck by the indiscriminate manner in which varied, and sometimes mutually antagonistic, methods of treatment had been often carried out in a single case. Many patients, they say in their report, "were subjected to a multiplicity of drugs, and to a succession of drastic procedures, such as might be expected to reduce a parturient woman in good health almost to the point of death." A certain number of cases were subjected in succession to treatment by purgation, venesection, intravenous saline, morphine, hot packs, and veratrone, besides being delivered by Caesarean section or accouchement forcé; in these cases it appears that excessive treatment may have been largely responsible for any fatal results which occurred.

The Dublin method is based upon the following points:

1. Constant supervision of the patient by a doctor or an experienced nurse, in a quiet darkened room.
2. Complete deprivation of all food except water; to a comatose patient nothing whatever, even water, should be given by the mouth.
3. Stomach lavage to empty that viscus and clear it.
4. Colon lavage for the same purpose, repeated as required to keep the colon empty. Great importance is attached by Dublin to this point; very thorough lavage is practised, several gallons of fluid being run in and out through a long tube, the procedure sometimes occupying as much as an hour and a half.
5. Purgation by salines administered both by stomach and colon.
6. No obstetric procedure whatever until labour is near the end of the second stage.
7. Administration of morphine in total doses of 1/2 grain to 1½ grains.

The present master of the Rotunda, Dr. Gibbon Fitzgibbon, has slightly varied this treatment by the omission of the morphine. Treatment on these lines is now generally carried out in Ireland, and the excellent results achieved I have already referred to.

In my opinion the general adoption of the principles of treatment advocated by Stroganoff and Hastings Tweedy would result in an immediate reduction of the mortality of this disease and the consequent saving of many valuable lives. I am not, however, prepared to say that the Dublin method is the last word that can be spoken on the subject. It is without doubt the only treatment required for cases which can be classified as mild. Further clinical inquiry is, however, needed, and will, I believe, be undertaken without delay at the instance of the British Congress of Obstetrics and Gynaecology, to determine whether, taking the Dublin method as the basis of treatment, better results could not be obtained in severe cases by associating with it other procedures. For example, cases not in labour may do better if immediate induction of labour were combined with Dublin treatment; cases associated with high blood pressure may do better if veratrone were combined with the Dublin treatment; cases with numerous fits may do better if some narcotic—not necessarily morphine—were combined with the Dublin treatment.

I have put these propositions in a form which will, I hope, make discussion easy, for I very much want to know how far they will prove acceptable to this Section. Complete unanimity we can never get, and in my opinion we do not want it, for it spells stagnation; but the hopeful feature of the moment is that there now appears to be a prospect of order replacing chaos. Obstetric teachers are working together on this subject and are proceeding upon co-ordinated lines. If a simple logical scheme of treatment could be put forward and backed by something like the united opinion of British and Irish obstetric teachers it would, I am sure, be welcomed by the profession and would be of the greatest public service.

DISCUSSION.

The President said that consultants were constantly being asked what was being done in the treatment of eclampsia. No subject had impressed him as one in charge of hospital beds with such a sense of responsibility as this one. He hoped that much good might result from the combined investigation which was to be carried out.

Dr. Campbell (Belfast) said that, in regard to prophylaxis, no one denied its advantages, but the difficulty was to get women to come for examination. Women must be educated into doing this. The great success of the Dublin treatment justified its continuance. A very close modification could be carried out in a private house. He felt in doubt about those cases whose severity was so great that he was tempted to rupture the membranes—this addition would probably not be approved by Dr. Tweedy—but he thought that the decreased volume of the uterus might give the patient a better chance.

Dr. Douglas (Cupar) agreed with the great importance of prophylaxis. More than thirty-five years had elapsed since his first and only fatal case. From that time he had treated strictly every case of albuminuria, and he had only seen two cases of eclampsia in his practice since. These cases had impressed him with the immense importance of testing the urine in every case and where albumin was present starting treatment at once.

Professor Louise McIlroy (London) wished to raise three points: (1) the enormous number of cases, (2) the ineffectiveness of treatment, (3) that prevention was the only treatment. That the intestine was to blame could be seen from the success of the Dublin treatment. Epigastric pain might be regarded as a constant sign; this was not due to the stomach but to the liver, probably the result of a *B. coli* infection. Ante-natal beds and out-patient department should be compulsory in every hospital. She considered the treatment of diseased teeth of great importance. She had had no case of eclampsia among those who had received ante-natal treatment. She was very keen on injections into the bowel of sodium bicarbonate by means of a douche can fitted with rectal nozzle, the fluid being delivered very slowly. She considered that induction of labour was a very dangerous thing, as an enormous quantity of toxic substances was going to be poured into the blood stream. She condemned drug treatment whole-heartedly.

Dr. Lapthorn Smith (London) thought that every case of eclampsia could be saved by prevention. He had not seen a fatal case for thirty years. Women would not come to their doctor unless the doctors made them come. If the urine were carefully examined and treatment commenced without delay there should be no difficulty in bringing a patient through without convulsions. He considered that sodium bicarbonate was the most valuable drug without the slightest doubt. Piles and vomiting might be ascribed to the same common cause—intestinal intoxication. He recommended the cutting off of all nitrogenous food and he emphasized very strongly the importance of making pregnant women drink plain water in sufficient quantity. When convulsions had come on he considered morphine was then the most valuable drug. Morphine did not suppress the renal function, as used to be taught—it aided it. He would like to see the use of chloral prohibited. He was against the induction of labour as it might give rise to considerable shock; on the contrary, he would advocate Caesarean section.

Dr. Laurie (Greenock) said that undoubtedly cases with considerable albuminuria responded well to treatment, but many women refused to come into hospital. He had had five cases with complete coma, suppression of urine, almost constant convulsions, total blindness, and anasarca. He had done Caesarean section and all had recovered. Operation in such cases appeared to be the only thing left to do. He said that he was a great believer in butter milk and large saline enemata for patients with albuminuria.

Dr. Russell Andrews (London) quoted the wise old physician who said, "Let your patients die if they must, but don't kill them." He was delighted with Dr. Eden's advocacy of simple methods. These cases had been overtreated. He was certain that morphine had killed many patients. Injections of saline had been overdone to an absurd degree—at *post-mortem* examination all the serous cavities had been

found full of fluid. Croton oil had been found in the bronchi. The combined investigation held out very great hope for the future. A proper classification of cases would avoid the application of *all* treatments to one case.

Dr. Ballantyne (Edinburgh) made three points: (1) eclampsia was intractable but preventable; (2) as regards the child the outlook in eclampsia was bad; (3) preventive treatment was amazingly successful, but it was of necessity very difficult to state results.

Professor Munro Kerr (Glasgow) stated that he had been informed that treatment in France was on the same lines as advocated by Dr. Eden. He could not agree that prognosis should be based on the quantity of albumin; the most toxic cases often had only very slight albuminuria. He still considered that in certain cases Caesarean section was the only resource, but the difficulty was to select these cases. He thought there was too much operating at present.

Mr. Farquhar Murray (Newcastle) strongly endorsed all that had been said in regard to prophylaxis, especially in connexion with the teeth and the intestine. Proper care of the bowels would reduce these cases to less alarming proportions. He did not give the patients at his clinic a list of warning signs, but instructed them to report at once if they felt a little out of sorts: he regarded this as good an indication as the urine for pointing the need for careful supervision.

Dr. Lewis asked what precautions might be taken to give advice on this subject to midwives. The only cases he had seen during the last four or five years were cases attended by midwives. He did not think they tested the urine nor appreciated fully the importance of the routine examination. They should be taught to do so.

Dr. Eden, in closing the discussion, agreed that midwives needed better instruction and should work in closer co-operation with the doctor. *Post partum* fits should be treated by the Dublin method just the same as the *ante-partum* cases. As regards intestinal intoxication he found on looking through the figures that in the two war years, when the food shortage was most acutely felt, the ratio of eclampsias fell considerably. Had the food shortage anything to do with this? In regard to Caesarean section he felt that the easiest way was not always the safest way. But his mind was quite open on the subject, and when Professor Munro Kerr had told him in what cases to do Caesarean section he would do it. He had purposely omitted references to the effect of eclampsia on the child, for the sake of brevity.

THE TREATMENT OF GYNAECOLOGICAL CONDITIONS BY X RAYS AND RADIUM.

BY

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In introducing the subject for discussion it is well to state at the outset that so far as effects are concerned either *x* rays or radium may be useful, and that in certain cases the use of the two agents in combination is an advantage.

In dealing with the general question of radiation treatment it will simplify the matter if we assume that the potency of the radiation employed is the important point, and that it makes very little difference whether the radiation is produced by an *x*-ray apparatus or a quantity of radium. It is essential to ensure that the area treated gets a dose of sufficient intensity to produce the changes necessary for the cure or relief of the condition. The technique of the application is therefore an important step in the treatment. The estimation of the dose is another most important step, and that necessitates expert knowledge of apparatus, physics, and the biological reaction of the tissues.

The dose is determined by physical means; the measurement of the radiation from an *x*-ray tube or from a quantity of radium is now a fairly precise procedure, and one upon which absolute reliance may be placed. Elaborate instruments are used for the purpose, both in the laboratory and in the treatment rooms. Thus it is possible to calibrate the *x*-ray tubes and the radium applicator and determine what dose is given from each in a given time.

Later methods indicate that if the radiations could be described in relation to its wave length it would simplify dosage very considerably. For instance, in the electromagnetic spectrum about sixteen octaves are occupied by the *x* rays and the gamma rays of radium. Of these so far only three or four octaves have been used. The voltages required to produce the available wave lengths vary enormously. The *x*-ray value used for the intensive treatment of uterine conditions runs in the region of 200,000 to 250,000 volts, while the most penetrating gamma ray from radium approximates to 1,000,000 or more. So for practical purposes if *x* rays and radium rays are available, a range of wave lengths from 200,000 to 1,000,000 volts is available for the treatment of the conditions met with in gynaecological practice.

In deep therapy it is necessary to know exactly what percentage of a beam of rays will reach a certain depth, and what percentage of the arriving beam will be absorbed by the tissues. The determination of this factor is a purely physical problem, and the experimental results are readily obtained. Precise instruments again help us in the examination.

The third step is to determine what takes place when the radiation reaches the tissues, and what the effects upon the metabolism of the cells may be after absorption. It is known that secondary rays are produced by the primary ray acting upon the tissues, and the scattering of the rays is an added factor to which great importance must be given. These have a marked effect upon cellular structures, and the degrees of susceptibility of varying cells have been worked out as a result of experience in treatment. So on the one hand we have the wave length of the radiation as a physical factor capable of precise measurement, and on the other the varying susceptibility of the cellular structure of the tissues. Future measurements of effect may be worked out on these two main lines, and it may be possible to select the wave lengths which will have the maximum effect upon a particular type of cell of which the main part of a tumour consists.

In the treatment of fibromyoma, for example, the action of the rays appears to be exerted primarily on the ovary and its blood supply, suppression of function leading to atrophy of the structure and cessation of the menstrual haemorrhage. The latter is the most troublesome symptom arising from fibromyoma, and the improvement of the patient's health may in fact be attributed to its cessation. The atrophy of the ovaries is, however, accompanied in a number of cases by a diminution in the size of the tumour. It is reasonable to assume that an action is exercised upon the tumour itself. It is therefore advisable, when treating the ovarian areas, also to include the tumour. The tube is arranged in treating each area so that the beam of rays may be focused upon a given spot. If each ovary gets the maximum effect from each of these ports of entry on the side on which it lies, the tumour also receives a very large proportion of the radiations passing through it, and changes occur in its structure.

Whatever the action may be and upon whatever structure the rays act most, there is no doubt whatever that in the treatment of those conditions many marked beneficial results can be obtained by carefully applied courses of radiations.

Biological Reaction.

The biological response to radiations has been worked out in several centres, notably in Germany, by Seitz and Wintz, and by Kronig and Freidrich. It is obtained by multiplying the physical dose by the sensitive coefficient of the tissue affected. It depends upon the sensitiveness of the absorbing medium, and according to a number of observers it varies with different histological structures. Muscle reacts differently from skin, carcinoma cells differently from ovarian cells, and these again differently from the cells of a sarcoma. In 1916 the writer published details of observations on the response of enlarged glands to definite doses of radiation. The results then given conform in the main with the observations of workers in Germany.

To obtain a uniform method of dosage Seitz and Wintz introduced the term "unit skin dose," together with a biological system of measurement. This unit skin dose is obtained under definite physical conditions, and they state that the normal skin can be used quite well as a biological

test object. By unit skin dose (U.S.D.) Seitz and Wintz mean that amount of radiation which after eight days will cause a slight erythema, and after four weeks a slight tanning of the skin. On the basis of this definition, which they have placed at the arbitrary figure of 100, they have determined other doses, constituting their biological system of measurement. The figures quoted are from their work, and in all of them the unit skin dose forms the basis. The following figures are given to illustrate the points:

(1) Unit skin dose	100 %
(2) Castrat on dose	35 % of U.S.D.
(3) Sarcoma dose	60-70 % of U.S.D.
(4) Carcinoma dose	90-110 % of U.S.D.
(5) Intestinal dose	135 % of U.S.D.
(6) Muscle dose	180 % of U.S.D.
(7) Tuberculosis dose	50 % of U.S.D.

It is assumed in these figures that, if the uniform skin dose is taken as 100, 35 per cent. of such a dose reaching the ovaries will in time induce amenorrhoea of a permanent character; 60 to 70 per cent. reaching a tumour will lead to changes in it, if it is chiefly composed of sarcomatous elements; 90 to 110 per cent. will induce similar changes in a carcinoma; 135 per cent. is the dose which will injure the bowel; 180 per cent. the muscles; and 50 per cent. of the erythema dose will react favourably upon tuberculous conditions.

It would be well not to place too implicit faith in the accuracy of these observations. The response will be by no means invariable, because there are other factors, of which no notice is taken, which will permanently change the character of the response—for example, a carcinoma will react at one period of its life history while at a later it may refuse to respond at all, and so on.

As indicated, it may be well to resort to radium instead of *x* rays when the type of tumour requiring treatment is one which indicates a value in wave lengths well beyond the limit of the *x* radiations at our command. It is for this reason that the combined use of the two agents is advocated in a number of cases of deep-seated carcinoma. Radium can be applied to the interior of hollow organs, and the dose administered with a precision that is almost impossible under present *x*-ray conditions.

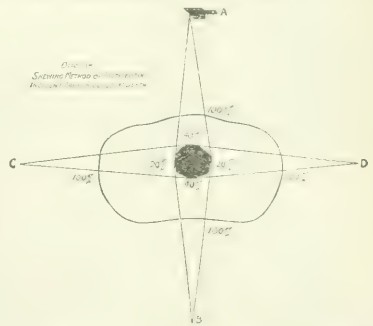
It is most important that due consideration should be given to the technique to be adopted for the treatment of one or other of the graver forms of pelvic disease. It is clear that if we could select a particular wave length for use, the apparatus which in the case of *x* rays supplies the high tension current should be so graded that any voltage within reasonable limits could be obtained. In the treatment of fibromyoma and carcinoma of the uterus the technique has been clearly worked out in the German and other schools, and is now being generally adopted in this country. *X*-ray tubes capable of long runs at high voltages are now procurable, and it is even possible to administer what is known as the sterilization or the cancer dose at one sitting. It may be pointed out that this is not invariably so, for it is frequently necessary to repeat the dose after an interval of several weeks. Whatever the accuracy of the statement may be it indicates an advance, and an attempt to standardize technique.

The important point is that when the correct dose has been given for the condition requiring treatment changes are set in action which in a percentage of cases yield effects which are curative. The old and better known techniques do not aim at such a rapid effect; these have in a number of cases given quite satisfactory results, and are still in the main adhered to. It is probable, however, that in the future the tendency will be to increase the initial dose and depend more upon it for the attainment of results. It is also probable that a modification of the newer technique may be advisable. These remarks apply mainly to the *x*-ray technique. Radium is being used more frequently than in the past, and it is more than likely that a great improvement in the technical use of radium will lead to an improvement in the results.

The radium technique is very simple. It consists of the use of radium salts in small tubes; filtration is employed according to the effect it is desired to obtain. Metal filters of silver, lead, brass, or platinum are used. Radium is most conveniently used for the deep-seated lesions, when the tubes can be introduced into the interior of an organ, or when the tumour is within reach, when radium tubes may be inserted into the substance of the growth.

The treatment of a case of carcinoma of the uterus calls for expert knowledge, and a careful operation under an anaesthetic is often required for its execution. Care must be taken to protect the surrounding tissues from damage by overexposure. The use of radium is advocated for all uterine carcinomata after the method described. The best results are obtained by the combined treatment. When radium is used the field of action is somewhat localized, the intensity diminishing in inverse ratio to the square of the distance of the object from the source of the radiation. After 3 cm. of tissue the effect is very small. *X* rays may be administered from several aspects of the periphery, centring the beam upon the tumour. In this way extensions of the malignant disease by way of the lymphatics may be prevented. It is therefore logical to assume that in the combined attack we are doing the best possible for the patient.

The *x* rays can be applied through large areas and from several entrances; in this way a large dose may be concentrated on a lesion in a deep region of the body. An example of malignant disease of a pelvic organ may be taken to explain how the dose is administered. If the growth is situated in the mid region between the anterior and posterior walls of the pelvis it can be approached from four aspects, thus:



Four skin areas receive 100 per cent. of the dose. At the seat of the tumours A and B deliver each 40 per cent. = 80 per cent.; C and D each deliver 20 per cent. = 40 per cent.; 80 + 40 = 120 per cent.

Using a beam of radiation of which 40 per cent. will reach and be absorbed by the tumour, then from the anterior and the posterior aspects 80 per cent. of the U.S.D. will be given; that is not enough, so from each of the lateral aspects a dose is given of which 20 per cent. will be absorbed by the tumour. We now have 40 + 40 + 20 + 20 = 120 per cent. of the U.S.D.—that is, just 20 per cent. over the estimate of 100 per cent. as the lethal dose.

The *x* rays cover a large area and so enable us to treat not only the tumour but its whole area of lymphatic drainage. Experience has taught that in all cases of cancer it is essential that the lymphatic field should be treated to as heavy doses as the primary tumour receives. In this way it is hoped that metastasis will be prevented. Should cancer cells exist in a region some distance from the primary growth they must be removed either by operation or by radiation treatment, if a recrudescence of the disease at a later date is to be prevented. The aim of operative and radiation treatment has been to prevent such an occurrence; in consequence of this operative measures have become more extensive in the area operated upon; similarly, the tendency is to increase the field of irradiation and also the intensity of the radiation.

It is probable that in the operative results improvements in the statistics may be attributed in part to the better appreciation of the extensive field of invasion and its complete removal. Radiation results have also improved since the larger dosage and wider fields of irradiation have been employed. Statistics whose object is to prove the value of the radiation methods are therefore very difficult, and it may be that a long time must elapse before any definite conclusion can be drawn from them. A comparison of statistics giving operative and radiation figures is also very fallacious, because of the difficulties associated with the facts submitted. Attempts are made to compare statistics on operative and radiation cases chiefly for the purpose of proving that the latter give as

good results as, if not better than, the operative; impartial critics are inclined to favour the operative, and if this be so it is perhaps only reasonable to proceed a little further and consider the other points of comparison between the methods.

The newer methods, and particularly that known as the "Erlangen" method, involve a considerable strain upon the patient; briefly, the whole treatment occupies in the first instance seven or eight hours of continuous radiation. In the Erlangen technique the radiation treatment is preceded by a prolonged ionization of the local tumour. This constitutes the first treatment; it is followed at an interval of about six weeks by another long dose, and at a still later period by the third series of irradiations. In all a period of three months will elapse before the treatment is completed. It is possible that with improvements in apparatus and increased output the time required for the dosage will be materially shortened; when it is possible to reduce the time of irradiation to about two hours the strain upon the patient will be lessened.

When compared with the operative method it is not nearly so rapid in the attainment of the result—that is, the removal of the tumour. The drain on the system is not so sudden, but it may be more severe, and any depreciation in the blood constituents may be a serious factor in the progress of the cure.

The next question is whether it is more complete in its results. Is it possible to remove not only the primary growth but all possible extensions of it? In other words, can the *x*-ray method compare with the surgical so far as complete removal is concerned? The answer must be in the negative. Statistics of Wertheim's operation are available; the percentage of persons cured after, say, three years varies greatly with the operation and the stage at which the disease was operated upon. The Roentgen Wertheim, as it has been called, has not been in use long enough for reliable figures to be forthcoming, but the figures which have been published on *x*-ray treatment in carcinoma of the cervix on the older lines do not encourage us to support the claims in favour of *x* rays against those of surgery.

Our own experience has been such that in all cases which are suitable for surgery we strongly recommend it. It is well, however, to insist upon prophylactic *x*-ray or radium treatment, because it is felt that combined treatment is best for the patient. When the condition is considered to be inoperable there is no choice. Radiations should be employed in all cases; then it becomes a question of the best technique to employ. Radium and *x* rays in combination are placed next to surgery in the treatment of all malignant diseases of the pelvic organs. Radium is used internally whenever possible, and *x* rays from the periphery inwards to a central point, which is somewhere near the centre of the tumour. Tubes containing radium or its emanations with suitable filters are introduced into the canal, and other tubes or needles are pushed into the tumour mass. Radium used in this way has a very limited but concentrated action. Care should be taken to place the tubes within 3 cm. of each other, and the whole of the tumour should be pierced by these needles, the aim being to get a maximum and uniform irradiation of the whole of the tumour mass. Careful packing around the tubes is required to prevent the adjoining structures from receiving damage.

The lymphatic field, whose centre is the tumour mass, must now be very thoroughly irradiated from the periphery of the body towards the centre whose area includes the tumour. As many as six ports of entry from the anterior aspect are used. Similarly several areas from the posterior aspect may be used. The aim here is to thoroughly saturate the tumour with radiations and to induce changes which will destroy any cancer cells, or at least render them inert. Very large doses may be required to do this thoroughly; it demands very careful technique.

In carcinoma of the body of the uterus operation is the first choice; in carcinoma arising in the cervix the claims of radium must be seriously considered. The use of *x* rays in this connexion is not certain enough to warrant the consideration of *x* rays in preference to radium. With a sufficient quantity of radium the dose could be shortened to endurable limits. The *x* rays are used from the periphery. This, in our opinion, is the best routine to follow, and offers in suitable cases a prospect almost as good as does the complete operation.

Pre-operative treatment by *x* rays is not advocated in cases which are going to be operated upon (unless for some other reason the operation is delayed), because if *x* rays are to be useful the dosage must be a maximum one, and the area covered must include all possible lines of extension from the primary lesion. The administration of the cancer dose involves a large surface of irradiation, and serious constitutional symptoms may arise; these if severe and supervening upon operation might jeopardize life, and at a later stage the effect on the blood might so weaken the patient's power of resistance that convalescence from the operation would be retarded.

The advances in technique have changed the view regarding pre-operative treatment; it is indicated that the choice must be made as early as possible between the operative and the radiation treatment.

It would be well in considering the relative values of *x* rays and radium to understand clearly that no antagonism exists; the one can be and frequently is supplementary to the other, the controlling factor being the ease with which one or the other can be used. It may be admitted that if an equal dose from either is administered the effect upon the tissues will be the same. The difficulty with radium is to get a sufficiently large quantity to ensure an equal distribution of the rays over a large tumour. A large number of tubes may be required to thoroughly irradiate a tumour mass; and it may be necessary in such cases to perform an extensive operation in order to get the tubes in position. It might be possible in such cases to saturate the tissues thoroughly by the use of *x* rays, and with the shorter wave lengths coming into use it will be possible to do this, even when a tumour is situated in the interior of the body.

Another factor of some importance is the response of the tissues to the radiation. Some may only require a large quantity of relatively long wave lengths, while in others the shortest wave length of the gamma rays of radium may be more suitable.

The critical test of the value of radiations in practice will be the results obtained in the treatment of malignant disease. All forms of malignancy will come under consideration, and differences of opinion will find expression according to the type of disease, the stage at which it is treated, and the technique employed. So far the evidence is in favour of a combined attack by the surgeon and the radiologist in malignant disease; the advantage of collaboration is well recognized. In non-malignant disease of the pelvic organs the same observation holds with even more force.

The final word on the value of the treatment of uterine fibroids by *x* rays will rest largely with the gynaecologist, but the radiologist who pays attention to the clinical aspect of the case and remains in touch with the patient will also attain a proficiency in the estimation of particular values. The medical man in direct charge of the patient is, however, frequently as competent to judge as either the radiologist or the gynaecologist, and he is indeed the best judge of the after-results of all treatment because of his more intimate association with the patient.

All cases of fibroid enlargement of the uterus or of malignant disease where radiation treatment is proposed should be examined by a gynaecologist, who will report on the condition and express an opinion of the suitability of the case for this treatment. In this way a judicious selection of cases will be ensured, and the value of the method be estimated. The converse also holds good: no case should be treated by radiations by anyone who is not an expert radiologist. The time is fast approaching when gynaecologists will adopt *x*-ray treatment as a valuable adjunct, and it is imperative that they should take steps to become thoroughly familiar with the intricate subject of radiotherapy. Personally I have treated all cases in close touch with a gynaecologist, and it has also been my practice to send back to the gynaecologist all cases on completion of treatment for a final opinion; and also, for further advice, all cases which have failed to respond.

An illustration of the value of such collaboration is the case of a patient who was sent for *x*-ray treatment of menorrhagia which was supposed to be due to the presence of a fibroid. My request for an expert gynaecologist's opinion was refused by the patient, so I reluctantly undertook to give her a number of exposures. The result was not satisfactory, and, as I suspected from her symptoms that I was dealing with a mucous

polypus, I insisted upon the expert opinion. The patient was examined, the opinion confirmed, and surgical treatment relieved the condition.

On another occasion, symptoms having arisen which called for an examination of the blood, the opinion of the clinical pathologist led to the services of a physician being called in.

A lady of middle age had suffered from exophthalmic goitre, and as a result of treatment at a health resort had improved, but had not quite recovered. Later she experienced severe floodings and consulted a gynaecologist, who treated her for some time; the haemorrhage, however, became more severe, and she was sent for *x*-ray treatment. The case was a complicated one to deal with, but under the circumstances I felt justified in treating her. The response to treatment was good at first, but in the middle period between the doses she began to show alarming symptoms. Before giving her a heavy dose which was expected to effect a cure of the haemorrhage I asked for a full blood count. The white cells were very low in number, so I determined to suspend *x*-ray treatment for a time and handed her over to a physician. A course of tonics combined with rest proved very successful—the blood count showed a marked improvement. The haemorrhage ceased for several months, and the general health improved greatly. When last communicated with the patient was in perfect health.

The lesson taught by this case is very important. In serious cases it is always well to control treatment by blood counts at regular intervals. Serious accidents will thus be avoided, and the radiologist will have a valuable guide for modification of technique. A drop in the total number of white cells is always an indication that treatment must be suspended or very cautiously continued. It will also be a guide for the actual dosage. Had I persisted in the case quoted and given the very large dose I had intended I have no doubt that I should soon have reduced the white cells to the danger point and would undoubtedly have seriously injured the patient. The need for complete and frequent blood examinations is much more imperative since the very intensive dosage has been adopted.

Contraindications to Treatment by X Rays (or Radium).

There are certain conditions which if coexistent are direct contraindications to radiation treatment—in fibromyoma, for example.

1. It is obvious that if a large portion of the fibroid has become converted into calcareous matter, and if the tumour is of large size, *x* rays can have no beneficial effect. In doubtful cases a radiographic examination will reveal the extent of the degenerative change.

2. Most forms of degeneration should be excluded before *x* rays are administered, though, if not very extensive, the treatment may be tried.

3. Malignant disease of the uterus calls for very careful consideration. Operative measures should be discussed. If it is impossible to remove the tumour, then there is no objection to a combined attack on the disease by *x* rays and radium. Very careful application of radium tubes is necessary, and for this a general anaesthetic is indicated.

4. Infective conditions of the uterus complicating fibroids.

5. Suppurative salpingitis or pelvic peritonitis.

6. Inflammatory conditions of other organs in the vicinity—namely, appendicitis, cystitis, etc.—should be dealt with before attempting to treat the fibroid.

7. Submucous pedunculated fibroids.

Advantages and Disadvantages of X-ray Treatment.

The advantages are:

1. The treatment is quite painless, and any ill effects are quite temporary.

2. The patient can live her ordinary life, merely arranging for one or two days of rest after each treatment.

3. No elaborate preparations are required.

4. The resulting menopause is not usually attended by such severe nervous disturbances as those following operation.

5. In patients whose general health is much impaired the recovery is very rapid when the haemorrhage has been arrested; moreover, the shock so often inseparable from hysterectomy is entirely obviated.

The disadvantages are:

1. It takes a considerable time to effect a result; treatments may have to be given at intervals for several months. The use of the more penetrating radiation and the larger dose indicate that the time taken to produce the effect will be greatly shortened. If the correct dose is given the changes may be induced by one application.

2. The treatment is not invariably successful.

3. The tumour, though as a rule much reduced in size, does not entirely disappear.

4. Treatment may cause unfavourable changes in the blood.

Dangers of X-ray Treatment.

Indiscriminate treatment by *x* rays is very dangerous. The skin may be seriously damaged and severe burns induced. In one case—that of a patient who was treated for a supposed malignant growth of the pancreas for over a year—there was when I saw her a large, fairly deep *x*-ray ulcer, and around it a large area of inflammatory reaction. I watched the ulcer for over a year and only used palliative applications. In about eighteen months it healed. An accident such as this is avoidable and should never occur in cases where the technique is intelligently carried on.

The dangers incidental to the action of the radiation on the deeply situated organs and tissues have been referred to in the consideration of the biological factor. The blood may be prejudicially affected by the larger dose now in use. It must be carefully watched during the periods between the doses, and any severe fall in the number of the white cells is an indication for the suspension of treatment.

Overdosage to the deeper structures may at a later date give rise to serious disturbance of function. It must not be forgotten that there are such occurrences as late manifestations of *x*-ray effects; these may take on a variety of forms, and may show after an interval of many months or even years.

DISCUSSION.

The President wished to thank Dr. Knox for a very sane exposition of the subject. Too often methods of treatment were spoken of in superlative terms, and failures were relegated to a small footnote. He thought that the profession should be on its guard in accepting so-called evidence of cure in cases of malignant disease; such cases should be subjected to the most rigid tests. Quite extraordinary results had occurred in cases of what was apparently malignant disease completely clearing up after simple curettage. Similarly, in fibroids some cases made remarkable steps towards recovery by themselves, so that it was necessary for any form of treatment to be subjected to searching tests before definite claims were put forward for it.

Dr. Katharine Chapman (Glasgow) asked for a more full account of the contraindications to radiation treatment. For instance, it was said that submucous fibroids were generally regarded as unsuitable for this treatment. Again, it was said that *x* rays caused abdominal adhesions, but she had never yet found satisfactory evidence that they were not present before treatment was applied. She even thought that *x* rays might be applied for the treatment of adhesions, and cited a case in support of this view. She could not explain why patients improved so markedly when they were being sterilized. She had had cases of young girls suffering from pain, sickness, and haemorrhage who had shown marked improvement after the application of *x* rays.

Mr. Cecil Rowntree (London) said that he would feel somewhat diffident in addressing such an audience as a general surgeon but for the fact that at the Cancer Hospital many cases of carcinoma of the cervix were admitted, most of them inoperable. Carcinoma of the cervix could give a very useful test of the efficacy of *x*-ray and radium treatment, as the local growth usually killed the patient before there was time for the formation of metastases. For a long time he had been disappointed with the treatment, but his results had improved greatly during the past year as he had changed his method. He now always gave an anaesthetic and buried the radium in the substance of the tumour. With this method the local condition very greatly improved. He had often employed far larger doses than Dr. Knox had recommended, as the cases appeared to be so hopeless. In answer to questions, Mr. Rowntree said that he had not met with any case of vesico-vaginal fistula caused by burying radium, but he had had one case of fatal haemorrhage occurring on the

day after the patient left the hospital, and he now advised ligation of the internal iliac arteries as a precaution against such accidents in the future.

Professor Munro Kerr (Glasgow) wished to express his high appreciation of the manner in which Dr. Knox had presented his subject. Gynaecological surgeons owed a deep debt of gratitude to radiologists for the most valuable assistance they had given them in dealing with many affections which previously could not be so simply or so satisfactorily treated. As regards chronic metritis and fibrosis uteri in women approaching the menopause there was no doubt that *x* rays was a most valuable treatment. In a large number of cases so treated the results had been excellent. Some cases of extensive pelvic inflammation which were unsuitable for operation had been most satisfactorily treated in the electrical department of the Glasgow Royal Infirmary. He had had a few cases under his care of extensive tuberculous inflammation of the pelvis where on opening the abdomen operation was not considered advisable as adhesions of bowel were too extensive, and the danger of injuring the bowel almost certain—a very serious complication in such cases, which had proved very satisfactory when submitted to *x*-ray treatment. When they came to fibromyomata there was the danger that *x* rays might be employed too freely, and as a matter of fact as far as pigmentation could prove this was the case. He thought that they had not yet fully exploited surgery; hysterectomy was too common; myomectomy had not yet attained its proper position. He felt that greater consideration should be given to this operation. The uterine cavity might be opened and an organ which appeared hopelessly diseased might even be restored to full function when hysterectomy appeared to be the only apparent treatment. Myomectomy should certainly receive more consideration than was being given to it at present. With regard to *x* rays, radium, etc., for carcinoma of the cervix Professor Munro Kerr had no fixed convictions. He employed radium prior to operation when it was procurable, and he believed that this treatment was of great value preparatory to hysterectomy, and it seemed to him that Erlangen treatment afterwards, say for three weeks, should be of great advantage, but so far he had employed this in only one case.

Dr. Arthur Burrows (Manchester) was very pleased to hear that Mr. Rowntree was getting better results from burying radium. In regard to the certain diagnosis of malignancy, he said that in Manchester sections were taken from all patients as a matter of routine. A certain number of chronic inflammations gave every indication of malignancy and diagnosis was sometimes exceedingly difficult. He did not wish to say much about carcinoma of the cervix. He thought that at present they were stationary, and progress would not be made until the radiologist began to treat operable cases. This he supposed must be a gradual process, but surgeons should draw the line of operability tighter, and those surgeons who did draw the line were the most pleased with the results of radiation treatment. The Erlangen results were nearly all obtained by the treatment of operable cases. The hopelessness of treating some cases by any means must be admitted. With a sufficient quantity of radium the outside of the pelvis could be bombarded as well as the inside. He considered that a combination of the two types of radiation was difficult and complicated, as the two types of rays had their lethal doses in different parts of the scale; hence present methods were markedly empirical. In regard to fibroids, *x*-ray treatment was not sufficiently certain to displace surgical methods, which were, on the whole, very satisfactory. He agreed with Dr. Knox that the effects of radium were often so good that it was difficult to conceive that removal of the ovaries could have done the same. He thought that the treatment of fibroids by radiation should be reserved for special cases: (1) when the general health would not permit of surgical interference; (2) for the relief of symptoms preparatory to operation; (3) where for business reasons it was not possible for the patient to spare the time to undergo operation and the subsequent period of convalescence. Dr. Burrows then went on to discuss some of the less talked about subjects. He had obtained one good result himself in a case of chorion epithelioma. In regard to epithelioma of the vulva, he advised operation in early cases. His reasons were that treatment by external tubes and plates with the quantities of radium available was useless, while the best methods, namely, the use of unscreened emanation tubes or thinly screened tubes (that is, beta radiation) caused an excessive reaction accompanied by considerable sepsis; hence the patient had to remain in hospital to receive proper nursing attention. In these cases he now applied diathermy first over the surface of the growth and then applied tubes—this procedure seemed to diminish pain. In some hopeless cases results were brilliant, but for operable cases operation was certainly far less painful. In the treatment of menorrhagia those cases which had already arrived at the menopause presented no difficulties, but in the bleeding of puberty and in young women the matter was much more difficult, owing to the alleged action of the rays on the ovaries: he was always reluctant to treat the latter type of case. He advised first curettage; hysterectomy was admittedly an abject confession of failure. If curettage failed to check the bleeding then exposure to a half-dose system, say 50 mg. in twenty-four hours, might prove successful, but it might fail. He did not think that the effect could all be ovarian as a number of cases had been quoted of patients who had borne children subsequent to the treatment. He had treated a few cases of bad dysmenorrhoea in a similar manner successfully.

Dr. Farquhar Murray (Newcastle) thought Dr. Knox's paper was scrupulously fair. He laid emphasis on the importance of full co-operation between the radiologist, the gynaecologist, and the pathologist. His experience of radium in cancer of the cervix had been most encouraging. Inoperable cases showed local improvement, and microscopic examination made in cases subsequently treated by the radical operation showed marked fibrosis of the cervix with degeneration and fibrosis of the cancer cells. This suggested the advisability of a routine pre- and post-operative radiation of the lymphatic field. He quoted two cases of complications following soon after radium treatment; one had a temporary hydronephrosis and the other intractable sciatica. He did not favour the *x*-ray treatment of fibroids. The great drawback to radiation treatment generally was that it was so very expensive.

Professor Louise McIlroy (London) asked whether Dr. Knox had any experience of *x*-ray treatment for menopause symptoms. As to fibroids, she was certain that they were the signs of a toxaemia; not infrequently the symptoms were not cured when the fibroids had been removed. She thought that in cancer post-operative radiation was the ideal rather than pre-operative radiation. Radiologists had not been given a fair chance as they had only been allowed to treat inoperable cases.

Dr. H. E. Gamlen (Newcastle) said that during the last fifteen years he had had a large experience in the treatment by *x* rays of diseases of the female generative organs, and by these methods he had attained successes which generally proved to be only temporary. Two years ago he had begun the treatment of some of these ailments by means of radium, using two tubes containing 100 mg. The method adopted was generally the laying of these tubes over the seat of the disease, duly filtered and protected, and some startling results ensued, and though afterwards he had found that some of these results were only temporary, yet in some cases he had been able to make operable malignant disease of the uterus which had previously been declared inoperable. Several successful operations had been performed as a result. Stimulated by the successes obtained by Dr. Arthur Burrows of Manchester, he obtained a further supply of radium amounting to 200 mg. of radium bromide made into seven needles. By means of these the growth and surrounding tissues were freely treated, and at the same time the protected tubes of radium were inserted into the uterus, with encouraging results. On reviewing the results obtained he decided to go a step farther, and in addition to treating uterine cases with large doses of radium he had given the whole areas affected deep therapy by the Erlangen method. He had found that he was able somewhat to reduce the dosage with less risk of giving the intervening healthy organs an excessive dose of deep therapy as he now finished the deep therapy within forty-eight hours, during which time the radium was in position in the uterus and surrounding areas. He was very hopeful that in some of these cases a knock-out blow would be given to the disease in question. In the later cases he had always ascertained the exact depth of the disease from the various fixed-skin areas for treatment by inserting a dense object in the growth and taking stereoscopic radiographs and measuring its depths. Up to the present all the cases under his treatment had been hopelessly inoperable, but the present results had been encouraging; many of the patients after treatment

had undergone operation in an attempt to eradicate the disease. Owing to the encouraging results they had obtained in chronic malignant disease of these organs, and the experience gained in the use of radium and deep therapy, he considered that the time had come when the surgeons should give them an opportunity of testing this treatment upon earlier cases, as he believed that if thoroughly carried out this treatment would finally give better results than surgery alone. To obtain the best results it was necessary that the work should be done in conjunction with the gynaecologist.

Dr. Knox, in the course of his reply, said that he thoroughly agreed with the remarks of the President as to the absolute necessity of a high standard of efficiency in the diagnosis of malignant disease. He himself always tried to get a corroborative report in every case. He also relied on the nature of the response obtained by the radiations. He had at present under treatment a case which confirmed this: a patient with enlarged cervical glands with a definite diagnosis of malignancy gave such a remarkable response to treatment that he had questioned the diagnosis. He had obtained the slides upon which the pathologist had reported, and these, when submitted to several pathologists, were regarded by them as non-malignant and probably inflammatory. Yet on two other occasions this patient had returned within the last year, and on each occasion the response to several doses had been remarkable. In regard to practically all cases of fibroids and malignant disease 99 per cent. of the cases which he had treated had been sent to him by gynaecologists. He always acted in collaboration with his colleagues, and he generally left the question for and against treatment by radiation to be decided by them. He felt certain that team work was essential in all work of this kind; included in the team should be a skilled pathologist. By such means they might gain reliable information in regard to values. Then as to the treatment of fibroids: Submucous fibroids might do well; he could see no reason why they should not, providing they were not protruding through the cervical canal and pedunculated. He had had no experience in the treatment of pelvic adhesions. It might be that if a very large tumour were rapidly reduced in size adhesions might form if there was overdosage and peritonitis resulted therefrom. Speaking generally, radiations caused absorption of fibrous tissue in superficial lesions, so he could see no reason why it should not act as well in adhesions complicating fibroids. The good effects obtained during sterilization he had found constant in his cases; they were very noticeable. Dr. Knox said that he had only treated very few cases of haemorrhage in young girls. He thought the treatment would have to be done very carefully, shielding the ovaries and applying the dosage skilfully. He had seen fistulae occur after radium treatment, but he did not think that they were necessarily the direct result of the treatment. He thought that tying the internal iliacs was sometimes done with good results. In tuberculous disease of the abdomen he had not had much experience, but he had seen some encouraging results from *x* ray treatment, particularly in cases showing enlarged glands. He agreed with Dr. Burrows's observations. He was with the surgeon in the matter of fibroids. He was constantly placing surgery in the first place. In cancer operation was the first choice whenever possible, to be followed by intensive and extensive radiation either by *x* rays or by radium. He did not advocate pre-operative radiation as a very wide area would have to be involved, and that might expose the patient to further risk of spread. He was in agreement with Dr. Burrows about the treatment of epithelioma of the vulva. Certainly one of the greatest drawbacks to treatment by radiation was the great expense involved. He had had no experience of the treatment of ovarian carcinoma by radiation. He had not yet had time to make any observations on the intensive treatment of menopause symptoms.

Dr. C. D. Lochrane (Derby) asked Dr. Knox regarding his experience of the efficiency of radium emanation as compared with radium in treatment. He said that the larger cities in the country were generally fortunate in the possession of more or less large quantities of radium salts, but the same could not, unfortunately, be said of the smaller provincial hospitals. There had been a tendency in some quarters recently to discredit the efficiency of even the most carefully prepared emanation, but if the emanation were equally to be trusted the scope for the applicability of radium treatment in gynaecological and other cases throughout the country would be greatly extended. With regard to the prolonged and repeated application of *x* rays to the ovarian regions in the effort to control uterine haemorrhage the danger had not been emphasized of producing more or less serious damage to the blood cells. That this was a real danger had been recently demonstrated, and made one hesitate to recommend prolonged ovarian raying in cases apparently suitable for hysterectomy or myomectomy. He also asked what was Dr. Knox's experience of the effects of *x* rays on leucoplakia of the vulva. He had had no beneficial results in two recent cases of his own.

In answering the questions of the last speaker Dr. Knox said that equally good results could be obtained from the use of emanations as from radium. He entirely agreed that in massive exposures the effect on the blood must be very carefully watched. Toxaemia might be produced if a very large dose were given. He agreed that the treatment of leucoplakia by radiation was very unsatisfactory.

THE TREATMENT OF SALPINGO-OOPHORITIS.

BY

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Infections of the Fallopian tubes have been classified as *ascending* and *descending*. Those of the ascending group are the most important and include inflammations started by agents, such as the gonococcus, the streptococci, and the staphylococci, which reach the tube by way of the vagina and uterus. The descending infections are due to organisms which are supposed to invade the tube from the bowel, the peritoneum, or the blood. They include the bacillus of tubercle and *Bacillus coli*. When you come face to face with a case of salpingo-oöphoritis, acute or chronic, it is impossible at present to make a clinical distinction between these two groups. Hence treatment must, as a rule, be considered in its broad general relation to inflammation, be the infective agent what it may.

There is such a sharp line of demarcation between acute and chronic inflammation of the tube and ovary that the treatment of the two varieties requires to be dealt with under separate headings.

I. Acute Salpingo oöphoritis.

Whatever the cause of this condition may be, it is still treated by the majority of gynaecologists on the expectant plan. Rest in bed until the temperature has been normal and the patient has been free from pain for a considerable time, laxatives, counter-irritation, and copious vaginal hot douching with saline solution or some weak antiseptic agent are the principal measures usually relied on. Morphine may be required to relieve pain. When there is purulent urethritis, or inflammation of Bartholin's glands, or other condition which makes it probable that the gonococcus is the exciting cause, washing out the vagina with argyrol (20 per cent.), or protargol (10 per cent.), or other weak silver preparation is a reasonable and probably a beneficial thing to do. In a course of expectant treatment there are two things which must be avoided—namely, repeated vaginal examinations and attempts to apply local treatment to the cervical canal and uterine cavity. Both are useless and both are an infringement of the important principle of rest for the inflamed parts. Any handling of the pelvic organs is likely to cause a spread of the infection.

It will be apparent that this hitherto popular policy is simply one of "wait and see." The best that can be said for it is that it gains time and gives nature a chance. The modern abdominal surgeon has good reason to regard nature as a very uncertain lady, and it may be safely affirmed that such a programme will no longer satisfy the requirements of such a progressive art as present-day gynaecology is. An acute salpingo-oöphoritis is very much akin to an acute appendicitis. Just as leakage from a burst vermiform appendix is the chief source of danger to the patient, so also is leakage from an inflamed Fallopian tube the main thing to be feared. An acutely inflamed appendix is now removed as soon as it is recognized or even suspected to exist. Why should not an acutely inflamed tube be treated in the same way? It is true that in tubal cases the inflammation is only part of an extensive affection which involves the uterus as well as the tube, but the tube is the important structure. The patient's life is in danger from it, and not from the inflamed uterus. It is also true that a woman regards her

vermiform appendix as a useless and uninteresting organ which she is quite willing to get rid of when it gives her trouble, while she will part with her Fallopian tube with reluctance, even when it is a source of inconvenience. This is a matter of sentiment. An acutely inflamed tube is likely to be permanently useless, and is as likely to be a lasting source of trouble and risk as an acutely inflamed appendix. There does not seem to be any substantial reason why an inflamed tube should be treated on expectant lines and an inflamed appendix removed as soon as possible.

The expectant treatment of acute tubal inflammation has survived because we are influenced by a habit of thought which has outlived its time. What is good in the appendix case would appear to be equally good in the tubal case. However sound this view may be in theory, it must be admitted that operations on acutely inflamed tubes have in the past not been very successful. Why is this? I think it is simply a question of time. Until recently operations were only performed on those cases which were rapidly going from bad to worse under expectant treatment. They were done too late, when the condition was already hopeless. I remember when operations on cases of acute appendix inflammation were so dangerous as to be questionable. This was simply because they were done too late. A fuller knowledge led to earlier operation, with most gratifying results.

Tubal cases have not been operated on as soon as they were diagnosed. Time has been lost in carrying out expectant treatment, and the case has only been operated on when the prospects of success were doubtful. If the public and the profession recognized the fact that an inflamed tube should be removed at the earliest possible moment, I see no reason to doubt that operations in acute tubal inflammations would be as successful as they are in acute appendix inflammations.

If we admit the advisability of early operation in acute salpingo-oöphoritis, it is necessary to consider the kind of operation best suited to the condition. An incision in the posterior vaginal fornix and the insertion of gauze drains into the pouch of Douglas has been advocated. It is claimed that in cases so treated the tubes never suppurate. No organ is removed. The gauze drains are depended upon to turn the scale in favour of recovery. The adherents of this method admit that it is much more suitable for gonorrhoeal than for septic cases. How are we to say for certain that an acute case is purely gonorrhoeal in origin? We cannot do it. Moreover, the operation does not remove the tube, which is the chief source of present and future danger to the patient. It is simply a kind of extension of the expectant line of treatment.

The more rational plan is to open the abdomen in front, inspect the affected organs, and remove everything that is considered to be a source of danger to life. As a rule, the inflamed tube or tubes will be the only structures needing excision. The ovarian inflammation, being secondary to the tubal condition, will subside, and the ovaries need not be removed, in part or wholly, unless there is good ground for interfering with them. In women under 40 every effort should be made to leave as much ovarian tissue as possible. It will save time if we defer any mention of drainage in these cases until later on.

It may be fairly objected that the woman will be barren after the removal of both her tubes for acute inflammation. What is the alternative? Without early operation she will probably be barren, and will ultimately have to get her tubes removed after years of suffering, and when dense adhesions have formed and made the operation more difficult. When one tube only is so inflamed as to require removal there is good reason to hope that the operation will give the other tube a chance of remaining capable of functioning. The woman will run less risk of being barren after a unilateral operation than she would have run had there been no operation. Upon the whole the weight of the argument would appear to me to be in favour of removal of the inflamed tube at the earliest possible moment.

It must be always borne in mind that delay in a tubal case is as unwise from the operative standpoint as delay in an appendix case. The earlier the operation is done the more likely is it to be successful. I would here like to be allowed to go beyond the limits of the present discussion so far as to say that in appendicectomy in women the incision should always be made in or near the middle line so that inspection of the ovaries and tubes may be possible. The lateral incision does not give proper access to the pelvic organs. Many cases diagnosed as appendical turn out to be tubal or ovarian. Therefore I think the median incision should, in most cases of appendicectomy in women, be chosen in preference to the lateral incision.

II. Chronic Salpingo-oöphoritis.

In the present state of professional practice in acute cases the vast majority of patients drift over into the category of chronic salpingo-oöphoritis and go through a prolonged period of ill health, many in the end being compelled to seek relief from operation. Rest, douching, vaginal tampons of ichthyol or other medicament, treatment at health resorts, and many other devices have been employed to relieve the sufferers. A certain degree of success is attained by such remedial measures. In the majority of chronic cases there can be no objection to a trial of these palliative methods. Each practitioner will uphold the efficacy of his favourite line of treatment and will relate the histories of cases which support his views, but a calm consideration of the situation will show that changes for the better are produced by lapse of time rather than by the efforts of the doctor. While the patient is kept in good heart by harmless medical attention, nature gets a chance of repairing the damage as far as she can.

Chronic salpingo-oöphoritis produces two classes of patient: (1) in one the symptoms of disease become absent or trivial, and the woman seeks advice on account of her barren condition; (2) in the other class the patient suffers from more or less pronounced general ill health, and complains much of pain and discomfort of pelvic origin. Recurrent attacks of acute inflammation are not uncommon.

1. *In the case of women whose main trouble is sterility* expectant treatment finds its chief place. The use of mercury by vaginal inunction or otherwise has been credited with cures. Nowadays the Wassermann reaction will enable us to decide whether antisyphilitic treatment is worth a trial. Dilatation of the cervix and curetting of the uterus is often done, and is occasionally followed by conception. It may be argued that curetting makes the uterus more healthy, and thus gives the tubes a better chance of recovery from the effects of an ascending infection. Is it not more likely that, when conception follows this operation in a case of chronic salpingo-oöphoritis, the success is due to the bursting of a hydrosalpinx, which leaves a patent tube in place of one which has been long sealed up?

Massage of the uterus and tubes has been advocated. This method has never met with much favour among British gynaecologists. We have not sufficiently recognized its merits in properly selected cases of sterility following an attack of salpingo-oöphoritis. It tends to break down adhesions, and it probably sometimes tears away adhesions of the fimbriated end of the tube, thus allowing the fluid of a hydrosalpinx to escape and restoring the function of the tube so that the ovum is enabled to reach the uterus. Notwithstanding its obvious drawbacks and dangers I think pelvic massage should get a fair trial in suitable cases of sterility due to chronic salpingo-oöphoritis. Done by a nurse pelvic massage is not of much value. It is a method of treatment which should receive the attention of lady practitioners of gynaecology. In their hands it would be free from many of the objections which might be raised against it. There is no doubt that in some cases of sterility due to an old salpingo-oöphoritis pregnancy has followed a carefully carried out course of pelvic massage.

In spite of the use of expectant measures, including curetting and pelvic massage, a large proportion of these cases remain barren, and we have to resort to abdominal operation. Excision of more or less of the ampullary portion of the tube will be required, and a new mouth must be made for the tube by stitching the cut edges with fine catgut. Tweedy's method of pushing fine stiff catgut along the tube into the uterus and leaving it to act as a sort of temporary bougie or drain is possibly of some advantage. The question as to whether the ovary should be left entire or whether a portion of it should be excised must be left to the judgement of the surgeon. As the operation is being done on account of sterility, needless to say, the ovaries should be damaged as little as possible. It is essential that the ovary should, if necessary, be fixed near the new mouth made for the tube.

2. We come now to the consideration of those *chronic cases which lead lives of pelvic pain and misery*, with or without recurrent acute inflammatory attacks. For them palliative or expectant methods are comparatively useless. Operation is the one thing needful, provided that there is no evidence of syphilitic infection, or, if there is such evidence, that

antisyphilitic treatment has failed. The operation should always be abdominal. In saying this I do not exclude the palliative value of opening an acute abscess which is pointing in the vagina or elsewhere. This is merely a temporary expedient. The extent of the abdominal operation must be determined by two circumstances—the age of the patient and the gravity of the condition.

In regard to the consideration of age it is better, in a woman over 40, completely to remove both the tube and ovary and take no chances of her having pain or discomfort from an ovary or a portion of an ovary left behind. In younger women the most conservative operation possible should be performed, and the patient left with some hope of pregnancy however remote. This means the leaving of as much of the uterine end of the tube as possible, the formation of a new mouth for the tube when practicable, and doing the least possible damage to the ovary. In the younger women it is better to risk the future occurrence of some ovarian pain than to render the patient hopelessly barren. In a few bad chronic cases the diseased condition may be so extensive as to make removal of the uterus, as well as of the tubes and ovaries, necessary, irrespective of the age of the patient.

Drainage.—To drain or not to drain after pelvic operations for salpingo-oöphoritis is still the question. Many of us feel safer in all acute and many chronic cases when we have packed the pelvis with gauze partly ensheathed in thin rubber. We may perhaps be regarded as the die-hards of the old gang, but many of the younger American surgeons still use gauze drainage. There is much to be said for the method, so strongly supported by Rauken Lyle, of filling the abdomen with saline solution and completely closing the parietal wound. I confess that I am trying hard to persuade myself to discard drainage. There are certain conditions in which I still think drainage is absolutely necessary. When an abscess has been discharging into the bladder or into the rectum, or when the rectum has been torn in the course of a struggle with adhesions, the gauze drain finds a legitimate place.

I shall conclude with the remark that a preliminary colostomy should be done about a fortnight before the pelvic operation is undertaken in all cases in which an abscess is known to have been discharging into the rectum. The colostomy opening should not be closed until three months have elapsed.

Vaccines.—The use of vaccines is of secondary importance. It is an ancillary measure which has its proper place as part of the post-operative treatment.

DISCUSSION.

The President thanked Dr. Campbell for his valuable paper. He noticed that Dr. Campbell had deliberately stated his case in a provocative manner. He himself could not regard the acutely inflamed tube in quite the same light as the acutely inflamed appendix. The chances of efficient recovery in the tube were better. In regard to tuberculous salpingitis, most of them up to the time of operation were unsuspected. It had been found that nearly 10 per cent. of removed tubes turned out on careful examination to be tuberculous. On the question of drainage his own feeling was that drainage should be reduced to an absolute minimum.

Dr. Nigel Stark (Glasgow) did not think that any analogy could be drawn between the appendix and the Fallopian tube; the conditions were quite different. An acute tube did not become gangrenous and cause such sudden serious danger as might occur at any moment in an acutely inflamed appendix. Again, a distinction must be drawn between salpingitis and pyosalpinx. Even an acute pyosalpinx might die down and leave healthy tubes, and at any rate he did not think that acute pyosalpinx was very common nowadays. An important point to be considered was that of prophylaxis. Gonorrhoea ought to become less common by better education of the public and by venereal clinics. Tuberculous salpingitis was excessively common in Glasgow; nearly every woman seemed to show some evidence of abdominal tubercle. The condition was caused by the ingestion of tuberculous milk in early life, and it was exceedingly damaging to the female generative organs. Sterility was in a great many cases due to chronic tuberculous infection of the tubes and ovaries, and education of the public in regard to this danger was urgently called for.

Dr. Farquhar Murray (Newcastle), referring to the use of saline in cases of pelvic inflammation, quoted the excellent results obtained after closure of the abdomen without drainage. In his opinion saline had an important influence in cases of oozing after pelvic operations, the mechanical pressure of the saline serving to check the oozing.

Dr. S. J. Cameron (Glasgow) thought that Dr. Campbell had made his analogy between the appendix and the tube in order to provoke discussion. His own view was that if one were sure that he had a pyosalpinx to deal with it was best to leave it alone unless general peritonitis threatened. Dr. Cameron said he made it a rule to drain the abdominal cavity in all cases where the peritoneum had been soiled by pus during the removal of acutely inflamed tubes. He had never regretted the introduction of a gauze drain. Despite the recommendation of some American gynaecologists that the ovaries should always be removed in cases of chronic salpingo-oöphoritis, he believed that an endeavour should be made to preserve healthy ovarian tissue. In chronic cases the uterus as well as the tubes should be excised. Panhysterectomy should be employed, as otherwise a persistent discharge would issue from the diseased cervix.

Professor Louise McIlroy (London) strongly objected to the statement that the loss of a tube was purely a matter of sentiment. It was a mutilating operation, and mutilating operations were to be avoided whenever possible. The importance of the internal secretion of the ovary and its influence on metabolism must always be borne in mind when the question of complete removal of both ovaries was considered. She thought that it was very difficult to diagnose gonococcal salpingitis with certainty; a bilateral infection was generally gonococcal. A unilateral infection was easy to deal with. She strongly agreed that the median incision in women was the ideal one when dealing with all conditions in the lower abdomen. She was in favour of drainage by the vagina, even in appendix cases; she had completely given up abdominal drainage, and was sure that she had saved many lives by vaginal drainage. In regard to sterility she urged that the husband should always be examined to determine whether or not he was responsible for the sterility. She thought that in the chronic inflammatory conditions radiant heat was much better than douching. Pelvic massage was very useful but difficult to apply without an experienced operator. She asked whether Dr. Campbell had had any experience of inflating the tube with air to break down adhesions.

Professor Munro Kerr (Glasgow) expressed the view that salpingitis should be divided into: (1) acute primary salpingitis; (2) chronic salpingitis, with (*a*) an acute phase and (*b*) a quiescent phase. Acute primary salpingitis, he thought, comparatively rarely called for immediate operation, but, when it was necessary, simple removal of the tube or tubes would not be sufficient unless the uterus was also removed, as it also was infected. He preferred to pack off the pelvis with gauze and drain through the vagina. In regard to the treatment of the acute phase of a chronic salpingitis, he thought it certainly was a debatable point as to the best time to operate. He personally thought it was better to wait until the acute phase had passed; if necessary, simply draining by the vagina. Later on in the quiescent phase, if both tubes were in a hopeless condition, then he considered that they should be removed, together with the uterus and cervix. Free drainage was thus secured. Nothing was to be gained by leaving behind a diseased uterus.

Professor R. J. Johnstone (Belfast) said that he knew Dr. Campbell, and he did not think that he should be taken too seriously. He was somewhat surprised himself at the comparison being made between the appendix and tube. In regard to the removal of pus tubes, he thought there was a form of tube where it was advisable to leave the uterus behind; he referred to those cases where the uterine stump was healthy. On the subject of the vexed question of drainage, his experience had been varied. He had started originally as an advocate of no drainage. This succeeded for a time, and then he had a disaster; after that he practised vaginal drainage for a time, until another disaster caused him to adopt drainage by both abdomen and vagina. He had since given up vaginal drainage entirely. His practice was always to drain by the abdomen all cases where there was

much oozing. Blood clot could so readily become infected. He preferred drainage by tube to gauze; the latter was so painful when removed.

Dr. Campbell, in reply, maintained that, from the surgeon's point of view, a pelvic inflammation was the same whatever its source might be. He always left behind as much ovarian tissue as was possible. He had not tried inflating the tubes with air. He was not at all convinced that his analogy between the tube and the appendix was wrong; both might burst and leak, thus endangering the patient's life. The treatment of the acute chronic case differed from that of the primary acute case, as the adhesions one knew must be present in the chronic case encouraged one to wait.

VAGINAL INVOLVEMENT IN CANCER OF THE CERVIX.

[*Abstract.*]

Dr. Archibald Leitch (London) called attention to the liability of cancer of the cervix uteri to extend down the vaginal wall. *Post-mortem* examination of several hundreds of cases showed that in 97.5 per cent. the vagina was more or less extensively involved; in fact it was the commonest of all the findings at autopsy. Involvement of the parametrium, of the interiliac lymph glands, and the occurrence of hydronephrosis were indeed less common. His argument was that these naked-eye appearances found *post mortem* were an indication of the microscopic spread that would be taking place during life. But in addition to such evidence, he had frequently found lymphatic involvement in operation specimens where a vaginal cuff had been removed, and he held that Wertheim, in advocating the removal of a portion of the vagina in order to enclose the septic cervix, had thus unconsciously done a greater service to radical treatment. Such vaginal removal, however, was not sufficiently thorough. Dr. Leitch in pursuing these investigations had on some occasions encountered irregular proliferations of the vaginal mucosa penetrating the underlying tissues, early epitheliomata in fact, which were quite distinct from lymphatic spread, and he suggested that these were due to the same cause, possibly an endogenous irritant, which had produced the original malignant tumour of the cervix. They were later in manifesting themselves, probably because the vaginal epithelium was more resistant to the causal agent.

THE ETIOLOGY AND TREATMENT OF NON-PYOGENIC NEPHRITIS (BRIGHT'S DISEASE).

BY

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There is, with the possible exceptions of the cancer problem and the cause of certain acute infections such as measles, no more obscure region of pathology than that of non-pyogenic nephritis, or Bright's disease. It is with the hope of stimulating further observations, more extensive and more completely controlled, that I describe the following small series of cases.

The first cases that came my way to observe and treat were just before the war and during my war service in Malta (cases already referred to elsewhere), but from the war cases one could not draw very definite conclusions, since when convalescent these patients were shifted home and lost sight of; all of them improved very considerably under therapeutic immunization.

Before describing cases it may be well to consider briefly the present state of opinion on the subject of nephritis. It is recognized, of course, that acute nephritis is associated with acute infections undoubtedly caused by microbes, and it seems to be accepted that the cause of the nephritis is the same as that of the original lesions—for example, tonsillitis. It is recognized, too, that the chronic disease may follow the acute, and one presumes that it is recognized that the same microbial cause may persist, and that in this class of case the chronic nephritis is due to microbes. In the largest class of cases, however, no microbial cause appears to be recognized, and to treat it is purely dietetic and directed to the treatment of symptoms.

H. Maclean in his recent excellent monograph on the diagnosis and treatment of renal disease assumes the position, if I do not misinterpret him, that protein and casts may be present in the urine but renal disease is not present so long as (*a*) there is no retention of urea, uric acid, creatinin, and the purin bases, (*b*) there is no retention of chlorides with consequent œdema, or (*c*) both. This doctrine appears to me very dangerous from every point of view, for if we adopt it it will tend to prevent our using specific methods of diagnosis and treatment in a large group of cases until the disease is advanced. He himself quotes the fact that experimentally three-quarters of the total kidney tissue may be removed before any accumulation of urea occurs in the blood. Surely this must hold good for destruction brought about by disease, and it is not until approximately a similar amount of essential kidney tissue is interfered with that symptoms of non-protein nitrogen retention (azotaemic type) or of dropsy (hydraemic type) occur.

It appears to be logical, then, to take up the attitude that no kidney can be considered undamaged which is letting through blood proteins, especially if casts are present as well, for such kidneys, if the lesion does not progress, may remain physiologically functional during a normal lifetime. Of course, the original lesion may retrogress owing to the removal of the cause and the recovery of the damaged tubules, the destruction of the cause preventing the damage of further tubules, so that sufficient functional tissue is left to prevent the appearance of symptoms. On the other hand, the primary illness with acute symptoms may entirely clear up and if the cause is only partly overcome and persists in a less virulent form a slow sclerosis may develop gradually, cutting off the blood supply of the tubules and lead to the strangulation of the whole tubular system.

This sclerosis, as is generally recognized, may follow on an acute attack or begin in an insidious manner and slowly progress. What, then, is the cause of albuminuria without symptoms and albuminuria with symptoms? One may rule out such minor causes as acute or chronic poisoning by inorganic or organic poisons such as lead or turpentine, and one must admit in the trench nephritis occurring in France the urine on culture was constantly sterile, but in the cases coming from Gallipoli that I saw, acute or subacute, and in the ordinary cases in civil practice there is no difficulty in isolating micro-organisms from the urine and identifying them, for reasons to be stated below, as the cause of the disease.

The functions of the kidneys are usually stated to be:

1. Excretion of water.
2. Removal from the body of certain waste products of nitrogenous metabolism.
3. Removal of acid products from the body.
4. Maintenance of the optimum concentration of salts in the fluids and tissues.
5. Excretion of toxic materials artificially introduced.

This list leaves out one of the most important functions of the kidney—namely, the excretion of micro-organisms, or, in strictly localized infections, such as diphtheria, the excretion of their toxins.

The resistance of the kidney to virulent micro-organisms is very remarkable; in only a minority of cases of acute septicaemias from whose blood the kidneys abstract and excrete the causative organism do the kidneys become acutely inflamed and damaged. It is not yet generally recognized that many infections thought to be strictly localized are in reality focal manifestations of a subacute or chronic septicaemia. In my experience in cases of boils, carbuncles, and such-like infections the staphylococci can always be recovered from the urine. So, too, in the few cases of scarlet fever I have had to treat streptococci were recovered from it. In a proportion of cases of "rheumatic conditions" staphylococci or streptococci, or both, or *B. coli*, are found in the urine; sometimes other microbes, such as diphtheroids—in all these without, as a rule, any signs or symptoms of nephritis. It is not surprising, then, that in some patients whose kidneys are excreting microbes the kidneys should fall a victim to the microbe and become diseased. The lowering of the resistance of the kidney cells may be brought about by any of the general causes of lowering of general or focal resistance—grief, chilling of the surface, alcohol, or the excretion of abnormal waste products from a distant focus of microbial action—for example, of the intestinal tract, of the bones, and so on.

In all the cases treated by me I have isolated a microbe from the urine; in the majority of cases staphylococci, in a few streptococci as well. I shall be asked at once how I know

these microbes are the cause of the disease. Do they fulfil Koch's postulates? Did they produce the disease in animals? Were they isolated from the animals? Of course not. In how many cases of human disease certainly associated with a given cause can Koch's postulates be fulfilled? In 10 per cent.? If this is so it must be the extreme limit.

If Koch's postulates are not fulfilled what criteria of infectivity are we to accept? The finding of specific antibodies—adapters (a generic name for amboceptor, immune body, substance sensibilisatrice, coferment), agglutinins, and so forth? Perhaps so, but always in the animal body will these antibodies be found for such common microbes as staphylococci, streptococci, diphtheroids, and the tubercle bacillus. Fluctuations of the opsonic index may help, but in my experience the following criteria are by far the most reliable—namely, the production of (1) focal reactions, (2) general reactions, (3) cure or improvement, with an antigen made from a microbe or microbes isolated from the patient himself, or alternatively the production of local, general, and focal reactions with an antigen used for diagnostic purposes, such as tuberculin.

Let me take this case first as it is most familiar to most people. It may be said that the tubercle bacillus fulfils Koch's postulates, but it is at least arguable whether the human lung disease is reproducible in animals, for lung tuberculosis is practically never an unmixed infection, while animal tuberculosis nearly always is. Local reactions are of little or no use either for the diagnosis of tuberculosis or any other disease, since the presence of antibodies in the circulation enables an intradermal reaction to occur. Any antigen given under the skin may produce a redness or swelling.

General reactions are more important. My experience is that in the case of tuberculosis, if the tuberculin is given in the prescribed doses, a general reaction is at least 90 per cent. diagnostic, for when a lesion is present it is accompanied by a focal reaction. Indeed the site of the lesion may be made manifest by this focal reaction such as the occurrence of crepitations in an area of a lung where they were previously absent, the increase or decrease of the physical signs or symptoms in a kidney or joint or bone, the increase of discharge from a mucous membrane or sinus, the decrease or increase of albumin in the urine. The late Professor White in a case of discharging wounds or sinuses used to work out the curves of focal reaction by periodical counting of the microbes in the discharge. In nephritis, as I shall show below, the curves of reaction can be precisely worked out by the daily estimation of the protein in the urine. When the lesion is closed to the surface the reaction is very definitely shown by a sudden increase or decrease of symptoms and physical signs—in a knee-joint, for instance, or in the central nervous system in epidemic meningitis or encephalitis. The sensitiveness to small doses of the infecting antigen is very remarkable. For instance, in tuberculosis I have quite often produced a slight but definite general reaction after a dose of 0.00000001 mg. H.T.S., while in a patient without active lesion 0.1 mg. has no effect. In mucous colitis focal reactions after 1 million (about 0.0003 mg.) *B. coli* antigen are quite common. One might multiply instances indefinitely; on the other hand one could give one hundred times the dose of a non-specific microbial antigen subcutaneously without reaction. Finally, if having given a course of microbial antigen to a patient the lesion retrogresses or completely heals up, it is in my experience 99 per cent. at least probable that the antigen or antigens used are specific.

I have argued many times before the question of the use of non-specific antigens. I shall only ask again, If they are so successful as some would have us believe, why were they such a tragic failure in wound infections in the late war?

Now, if the criteria I have laid down are correct, the identity of the infecting micro-organisms is completely proved, for in the majority of cases to be described there were general and focal reactions and marked retrogression or cure in almost every case. I have only lost one patient so far, and he was so far advanced that no hope of recovery could be entertained; I have not therefore described his case.

Albuminuria without Obvious Oedema.

Case I.

A patient of Dr. Cooke, a man aged 28, seen first in 1914. Had been rejected three times for life insurance on account of albuminuria. The amount was 1 gram per litre. Staphylococcus isolated. The doses given were 10, 25, 50, 75, 100, 150, 200 million. The albumin disappeared after the 100 million dose. The patient then disappeared for three months, but was still free from albumin when he turned up again, and has remained free since.

Case II.

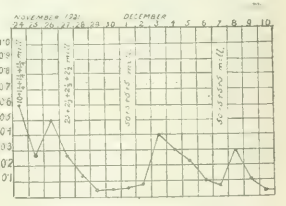
D. B., aged 17. Seen in 1919. Laboratory assistant. Had been cured of tuberculous glands in neck with tuberculin (H.T.S.). Was pale and easily tired. He found distinct cloud of albumin in his urine on several occasions. Cultures of special specimen gave culture of *Staphylococcus albus*. He was given doses of 10, 25, 50, 75, 100, 150, 200, 300, 400 million. The albumin rapidly disappeared, and has remained absent since (September, 1922).

Case III.

Medical student, aged 26. Seen first February 25th, 1920. For three years or more noticed frequency of micturition during the day, especially during cold weather. Examination of mixed twenty-four hours' collection gave 0.75 gram per 1,000 albumin. *S. albus* isolated. Doses 10, 25, 50, 75, 100, 150, 200, 400, 600, 800, 1,000, 1,500, 2,000, 3,000, 4,000 million given at suitable intervals according to reactions. After the 200 million dose the albumin which had reduced to a trace increased to 0.5 gram per litre and then gradually disappeared, three weeks' interval being left. He remains now (1922) completely free from albumin.

Case IV.

Boy, aged 6. Seen first on November 10th, 1921. Sent to me by Dr. Strangman for chronic bronchitis, asthma, and constipation. The boy looked pasty, and on examination of a sample of a twenty-four hours' collection it was found to contain about 0.6 gram per litre of albumin. From his sputum were isolated *S. albus*, *M. catarrhalis*, and streptococci. *S. albus* was isolated from his urine and *B. coli* from his faeces. A mixed antigen was made. I omitted the *S. albus* from his urine as I was anxious to see whether the *S. albus* from his sputum would produce focal reactions in his kidneys and thus confirm my opinion as to its probable mode of entrance into his circulation. These focal reactions occurred early in his treatment, and very prettily demonstrated the occurrence of focal reactions in the kidneys.



Case iv. Focal reactions.

The series of doses was—

S. albus.		M. catarrhalis.		Streptococci.		B. coli.
10	+	1½	+	1½	+	1½
25	+	2½	+	2½	+	2½
50	+	5	+	5	+	5
50	+	5	+	5	+	5
75	+	7½	+	7½	+	7½
100	+	10	+	10	+	10
and so on to						
2,000	+	200	+	200	+	200

Some of the doses had to be repeated owing to focal reactions in his lungs. After the second dose of 175 + 17½ + 17½ + 17½ albumin completely disappeared. His treatment was concluded on February 2nd, 1922, and he has remained well since.

These cases will suffice to illustrate the functional albuminuria type of case. I have not so far met a case in which I did not isolate a microbe from the urine and cure it by immunization. But my experience is still small.

Cases with Obvious Oedema.

Case I.

Constable X, aged 30. Admitted to Dr. Steevens's Hospital under Dr. Kirkpatrick, October, 1916, with general oedema and a heavy cloud of albumin. When I saw him he had lost the oedema under ordinary treatment, but still had 1 to 2 grams per litre of albumin. I isolated *S. albus* from his urine. Doses of 10, 25, 50, 75, 100, and 200 million were given at suitable intervals. At the end of three weeks albumin had completely disappeared from his urine, and he was sent home apparently cured at the end of four weeks.

Case II.

J. B., aged 14. Came under my care in February, 1918, with generalized oedema, severe headache, and amblyopia. She was passing 50 oz. of urine containing 1 gram per litre of albumin, and giving a profuse growth of *S. albus*. Temperature normal. After the first dose, 25 million of antigen, there was a general and focal reaction, her temperature going to 99.4° for two nights, her oedema and headache increasing and her urine to 3½ pints, containing still 1 gram per litre. The doses were increased at suitable intervals to 4,000 million, when the urine contained a bare trace of albumin and the patient had no symptoms. On re-examination five months after a catheter specimen still contained a trace of albumin and staphylococci were again isolated, so she was given a second course of antigen beginning with a dose of 100 million and increased to 20,000 million. Her urine had then been free of albumin and microbes for some time, and remains so still (September, 1922).

Case III.

J. C., aged 18, admitted to Dr. Steevens's Hospital in an unconscious state, under Dr. Kirkpatrick, November 29th, 1919, having had a fit on a railway station platform on his way home.

He gave a history of three weeks' illness. He had general oedema, evening temperature 101° F., pulse 124. He was bled, given an enema and hot pack, with only water to drink. He recovered consciousness under this treatment. I saw him a fortnight after. He was then generally oedematous, passing 20 oz. of urine, which contained a large quantity of albumin and a few pus cells. *S. albus* and streptococci were isolated. He was given 25 million staphylococcus antigen + 2½ streptococcus antigen on December 18th, 1919, and the doses were increased to 1,000 + 100. The series was 25 + 2½, 50 + 5, 75 + 7½, 100 + 10, 150 + 15, 200 + 20, 300 + 30, 400 + 40, 800 + 75, 1,000 + 100. He had distinct focal and general reactions after the first few doses. After the first his temperature went to 101.8° F., and his urine increased from 20 to 40 oz. in twenty-four hours. He was discharged apparently cured on February 11th, 1920.

Case iv.

J. K., aged 39, labourer, was admitted into Dr. Steevens's Hospital on December 23rd, 1919, with severe headache and general oedema. He was passing 15 oz. of urine loaded with albumin. He gave a history of several similar attacks. When I saw him at the end of January, 1920, he was still oedematous and had severe headaches. His urine contained 4 grams per litre of albumin, and he was passing about 70 oz. in the twenty-four hours. *S. albus* was isolated from his urine and 5 million antigen was given on February 2nd, 1920. The series of doses was 5, 10, 15, 20, 30, 40, 50, 60, 75, 100, 150, 200, 300, 400, 600, 800, 1,000, 1,250, 1,500, 1,750, 2,000. He steadily improved, losing his headache and oedema, and was discharged May 9th, 1920, his urine containing 0.75 to 1 gram per litre. He returned to work June 20th, 1920, and has remained in full work ever since. His urine now (September, 1922) contains 0.5 gram per litre, so that the improvement in his kindeys has continued.

Case v.

P. C., aged 14, admitted Dr. Steevens's Hospital under Dr. Kirkpatrick with general oedema. Temperature 101° F., pulse 104. Urine contained blood. *S. albus* and streptococci were isolated from his urine, and on March 2nd he was given 10 million staphylococcus antigen + 1½ million streptococcus antigen; the series of doses was: 10 + 1½, 25 + 2½, 50 + 5, 75 + 7½, 100 + 10, 150 + 15, 200 + 20, 400 + 40, 600 + 50, 800 + 75, 1,000 + 100, 1,500 + 150, 2,000 + 200. The focal reactions in this case were very pronounced after the third dose; for instance, the albumin, which was 1.5 grams before the dose, increased to 4 grams on the next day, and then fell to 1 gram on the fifth day after. The boy left hospital on June 7th, 1920, with a bare trace of albumin. He has remained well since and is now (September, 1922) quite free from albumin.

Case vi.

Girl aged 17, under the care of Dr. Pepper, gave a history of chronic nephritis with acute exacerbations for many years. When she came under treatment she was suffering from violent headache, general oedema, and her urine contained 2 grams per litre albumin. Staphylococci and streptococci were isolated from her urine. She was given 5 million staphylococcus + 1 million streptococcus antigen, which was steadily increased until a dose of 4,000 + 500 million was attained. The patient had then greatly improved. Her headaches had greatly diminished and her oedema had disappeared. The albumin had reduced to 0.75 gram per litre. She is now (September, 1922) in good health; no oedema of her legs, her only symptoms being occasional slight headaches. Her urine still contains 0.7 gram per litre albumin.

Case vii.

V. F., a boy aged 5, admitted to Dr. Steevens's Hospital under Dr. Winter, October 19th, 1921, with general oedema and headache, passing 10 oz. urine containing over 12 grams per litre of albumin. The albumin fluctuated in an extraordinary way, being sometimes as low as 0.5 gram and as high as the ↑ mark on the Esbach tube. When I saw him in December, 1921, his oedema and general condition had greatly improved, but he had still an enormous quantity of albumin. Staphylococci and streptococci were isolated. He was given 5 + 1, and had a very distinct increase of oedema after this and several other doses. As the albumin did not show any improvement after the 50 + 10 dose I reinvestigated the bacteriology of his urine, and found as well as the other microbes a coliform bacillus. The addition of an antigen of this did not, however, make any difference, and he left hospital May 31st, 1922, in very good general condition, but still passing as much albumin as ever. Evidently his kidneys were irretrievably damaged. The initial dose was 5 million staphylococcus + 1 million streptococcus antigen, and the series was: 5 + 1, 7½ + 1½, 10 + 2, 15 + 3, 20 + 4, 30 + 6, 40 + 8, 50 + 10, 60 + 10 + 2½ (coliform antigen), 75 + 15 + 5, 100 + 12½ + 7½, 150 + 20 + 10, 200 + 25 + 12½, 300 + 30 + 15, 400 + 40 + 20, 500 + 50 + 30. This boy now (September, 1922) is playing about like a normal child with no sign of illness, but has still 3 grams per litre of albumin. His after-history will be interesting.

I could add other cases, but I hope these will sufficiently illustrate the possibilities of the treatment. Even if complete cure is not possible one can often, as in Cases iv and vi, restore them to good health and full working capacity. If the cases are taken in time, complete cure ought to be possible in the large majority of them. I am as ever deeply indebted to my colleagues at Dr. Steevens's Hospital for placing their cases at my disposal.

RESTORATION OF THE SUNKEN NOSE.

BY

HAROLD BURROWS, C.B.E., F.R.C.S.,

ASSISTANT SURGEON, ROYAL PORTSMOUTH HOSPITAL.

The practice of making good a defect of the contour of the nose by inserting a graft of cartilage beneath the skin is one the soundness of which is sufficiently well established. Nevertheless, I suppose that most surgeons have sometimes had cause to lament that the practical result has fallen short of the ideal. This being so, any little idea that may help toward the achievement of better results will be acceptable. I would like, therefore, to describe the operation which I have employed, in order to introduce a mechanical detail which has been of considerable assistance.



Fig. 1.—Cast of nose before operation. (In addition to the sunken bridge there is considerable deformity of the anterior nares, from old ulceration.)



Fig. 2.—Cast of same nose after operation.

Preliminary Measures.—The first step is to obtain a plaster cast of the patient's nose and neighbouring features. Having acquired this, the nasal defect which is shown in the cast is filled with plasticine, which is moulded with care so as to produce on the plaster model the shape of nose which it is hoped to reproduce on the patient. This plasticine model of the nasal defect is then removed from the plaster cast and well powdered with boric acid. This dries the plasticine, which, when dry, is less likely to become altered in shape under subsequent handling. With a small metal calliper the length of the plasticine model is measured.



Fig. 3.—Plasticine models. The two small pieces represent grafts used to stiffen the alae nasi, which were sunk and lacking in cartilaginous support.

Operation.—With the patient under general anaesthesia the right fourth rib cartilage is removed. The separated fragment is replaced in its bed and the skin wound temporarily closed with towel clips. This having been done, a transverse incision is made across the nose at the level where the bridge of a pair of spectacles would naturally rest. Through this incision the skin of the nose is separated from the underlying structures over the whole area of the nasal defect. The towel clips are now taken from the chest wound and the cartilage is removed for modelling. First of all it is cut to the correct length as shown exactly by the calliper. Then, with the plasticine model held in front of him by a nurse who can manipulate it as required, the surgeon carves the piece of cartilage in the likeness of the clay model, and having completed this fashioning the graft is slipped into its bed in the nose, the skin incision being closed by two or three horsehair sutures. The chest wound is then sewn up and a dressing applied. But no dressing other than a dusting with boric powder is used for the nose.



Fig. 4.—Metal calliper for measuring the grafts.

After-Course.—The horsehair stitches are removed on the fifth day. The cartilage graft having been properly modelled lies comfortably in its bed without any tendency to slip out of place.

Comments on the Operation.

1. By raising the bridge of the nose an epicanthus can be eliminated.

2. Scarring of the skin of the nose from previous trauma or disease interferes considerably with the cosmetic result of the operation just described.

3. In many cases the defect is too deep to be filled by a single cartilage graft—as, for example, in those instances in which a patient can see one eyeball with the other eye. Here the operation is duplicated. The right fourth cartilage is used for the first operation, and at the second operation, which is done only after an interval of one year or longer, the left fourth rib cartilage is used to complete the filling of the defect.

4. Cartilage, especially when wet with normal saline, is a slippery substance to hold, and unless he is well on guard against such an accident the surgeon may find the graft slip out of his fingers and come to rest upon some unintended and infected landing place.

5. In one instance the cartilage graft shifted after the operation had been completed.

This was in a case of a very large defect, and during the first operation it occurred to me that I might be able to remedy to some extent the forward prospect of the nostrils by making the cartilage graft somewhat longer than the plasticine model, so that when inserted it would thrust downward the lower end of the nose. There was such a deep ledge for the graft to rest against at the upper end of the defect that I thought dislocation was impossible. However, the graft did gradually become displaced, the upper end slipping forward and upward.

Had this displacement taken place laterally, or had the case been one where a single graft only was needed, the accident would have been most unfortunate. As it is, however, probably no irregularity will be noticeable when the second stage has been completed. In any case, I do not now think it was sound practice to attempt an elongation of the nose by inserting a graft large enough to cause considerable pressure and counter-pressure.

INJURY TO THE BOWEL WITH RECURRENT HAEMORRHAGE.

BY

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SURGICAL SPECIALIST, WAR PENSIONS HOSPITAL, SUNDERLAND.

The following case is recorded as one of interest on account of the long history and intermittent character of the symptoms, of which haemorrhage was a prominent feature. It has been suggested that the recurrent haemorrhage was due to the formation of an aneurysm in a vessel at the site of injury in the bowel, which appears to be the most probable explanation of the case.

Pensioner J. B., aged 33, was admitted to hospital on January 13th, 1922. In 1917, while serving in the trenches during shelling, he was struck in the abdomen by a sandbag blown in from the parapet. He was seized with abdominal pain, shortly followed by the passage of dark-coloured blood from the rectum in considerable quantity. He was admitted to hospital, and after a couple of weeks, the pains having subsided and no further haemorrhage occurring, was transferred to England. While in hospital there he had two more severe haemorrhages from the bowel accompanied with pain, and the question of operation was considered. This was eventually negatived, and he was discharged some time later. Since then haemorrhage, similar in character but slight in amount, generally followed the taking of solid or more particularly of indigestible food. The haemorrhage was always accompanied with pain. He voluntarily restricted himself to a diet mainly of slops, and from being a professional footballer had refrained from exercise.

On examination tenderness was present in the left side of the abdomen, to which area the pain was referred. Nothing else was detected. Rectal examination was negative. In the course of preparation for a laparotomy which was decided on the administration of an enema was followed by a good deal of pain and the passage of a quantity of dark-coloured blood.

The abdomen was opened to the left of the middle line and the gut was systematically examined. Two small areas of scarring, without deformity, were present in the lower part of the ileum. In the lower part of the jejunum a circular area of bluish discoloration of the size of a farthing and resembling a haematoma was present on the antimesenteric surface of the gut; extending from this, to the root of the mesentery, was a cord-like deposit of lymph. On palpating the gut a definite area of thickening corresponding to the discoloration was felt. The remainder of the bowel appeared normal, as did the other viscera. The portion of gut containing the lesion was resected and the continuity of the bowel restored by anastomosis. He made an uneventful recovery and was discharged from hospital on February 23rd, 1922. He has since returned to ordinary diet, and there has been no recurrence of the pain or haemorrhage; he expresses himself as being quite well.

The specimen removed, on section, presented the appearance of a haematoma, dark clotted blood occupying the space between the mucous membrane and outer wall of the bowel. The muscular coats were torn, blood being extravasated throughout, and in direct contact with the mucous membrane, which appeared intact.

My thanks are due to Surgeon Captain Bishop, R.N., C.M.G., administrator of this hospital, for permission to record the case.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CROSS-WIRE AXIS FINDER IN ASTIGMATISM.

The following description of a very simple piece of apparatus may be of interest to those who are engaged in refraction work, for it saves a great deal of time, tends to efficiency, and is so small that it can be carried in the ophthalmoscope case. It consists of a ring, the exact size of the trial lens mount, across the middle of which stretch two fine wires at right angles to one another.

In retinoscopy, if a band of light is seen, or if one appears in the course of correction, this cross is placed in the front cell of the trial frame in such a position that one of the wires is exactly parallel to the edge of the band. This wire is in the axis of astigmatism, and where its extremity appears to meet the scale will give the reading required. The wire is very easily seen as a fine black line against the illumination of the fundus.

There are now four ways of checking the finding:

1. Move your own head slightly sideways, so that the wire is up and down the middle of the band. If now the black line appears parallel to the edges, and does not approach them at an angle either at the top or at the bottom, the axis is indicated correctly.

2. Move your light along the second wire, and if the band keeps at right angles to this and follows the same direction, not sneaking off above or below, the axis is correct.

3. Overcorrect considerably, and the band will appear turned into the other meridian, and should then have the second wire exactly up and down its length.

4. Put a cylinder into the frame, with its axis over the meridian of the wire. If the wire is right there will not appear to be any rotation of the band now; if the wire is wrong the band will appear to be rotated through quite a perceptible amount, this rotation depending partly on the amount of error and partly on the strength of the cylinder used. This is a delicate check, as the error is magnified, so that, say, five degrees of error will send the band round through ten or fifteen.

My instrument was made by removing the brass rim from a trial-box lens and forming the cross of the fine wire used by florists, but it is difficult to get the wires exactly at right angles and to have the crossing point exactly in the centre. I have used it for the last twelve months, doing difficult refractions at an average rate of sixty a week, and find that in nine cases out of ten it gives the cycloplegic correction straight away. The failure in the tenth case is due to fatigue in the observer and is not instrumental in origin. Messrs. Dixey, 3, New Bond Street, will make the apparatus for anyone who requires it.

Southampton. JOSHUA KEYMS, M.D.

THE THIRD STAGE OF LABOUR.

Is anyone prepared to give an authoritative statement why in some cases pressure on the fundus uteri readily delivers the detached placenta and in other cases pressure sufficient to hurt the patient has no effect? The other day I attended a multipara and the second stage made me think I would have an easy time with the after-birth. In twenty minutes, with the easy confidence engendered by the second stage, I pressed on the fundus and there was no satisfactory opening of the vulva that indicates a speedy end. Having ample time I decided to be patient, but after several unsuccessful attempts, including traction on the cord (*Clinical Obstetrics*, Jardine), I found ninety minutes had passed since the child was born, so I proceeded to remove the placenta manually. As I expected, I found it lying in the upper strait of the vagina. It seemed to me that synchronously with my hooking

my finger round the edge of the placenta gentle pressure on the fundus delivered placenta and membranes. There was no tacking back of the latter.

Meditating on this case—and I know my experience is not unique—I thought that the easy cases might be those in which the after-birth comes through the os sideways, and the difficult cases those in which the after-birth comes through the cervix in such a fashion that it lies covering the fornices and the os. The placenta and cord bear the relation, in these circumstances, to the soft parts that the leather sucker of the little boy bears to the stone on which he has tramped it. Atmospheric pressure is in force. In the above case I did not pull on the placenta, I simply hooked my finger round the edge.

To have to introduce one's hand into the vagina for the placenta is distressing, but this distress would be mitigated if those in authority had stated that such procedure was justifiable because necessary and unavoidable.

Kilnhurst. Charles J. Hill Aitken, M.D.

VENESECTION IN ECLAMPSIA.

I recently attended a woman, aged about 30, in her second pregnancy. Apart from having defective teeth she had a sound constitution. Her first pregnancy was normal. Albumin was found in the urine about the sixth month of the second pregnancy. In spite of treatment she began to suffer from severe headaches, swelling of the legs, and puffiness of the eyelids. On my advice at about the commencement of the ninth month she consented to rest entirely in bed; four days later, during the night, she lost her sight, and several hours later eclampsia set in and labour commenced.

The bowels were emptied by enemata. Labour progressed slowly but normally. On the following afternoon the convulsions became more frequent and violent. At about 3 p.m. I performed venesection (median basilic), removing about 30 ounces; she had two convulsions during the operation, and chloroform was administered. Afterwards no more convulsions occurred, but the patient remained unconscious; labour progressed normally, and at 11 p.m. I found the membranous sac intact protruding from the vagina; the infant was dead. After waiting half an hour I extracted the placenta with difficulty, owing to the fact that the uterus was firmly contracted. There was very little haemorrhage.

She was unconscious for some time afterwards. The blindness lasted all the following day and night; when sight returned it was for some time disordered, but ultimately the recovery was perfect.

I have since assisted at another case of eclampsia where the toxicity was not so intense; the labour progressed quite normally in spite of the eclampsia, and the child was living.

In my experience of eclampsia there is no necessity to interfere with the progress of labour, and certainly not before the third stage; but venesection should be performed, and I think at an early stage; the amount of venous blood to be removed will depend on the degree of toxicity. A record of the average blood pressure in pregnancy and of eclamptics would be interesting, and may be of use in regulating the amount of venous blood to be removed.

I have previously recorded an example of the beneficial effects of venesection when eclampsia persisted after the birth of the child; and when by cutting the umbilical cord after it had been ligatured and allowing it to bleed freely, artificial respiration being used also, the infant's life was preserved.

Bradford. Edgar W. Sharp, M.B.

Reports of Societies.

THE WAR SECTION OF THE ROYAL SOCIETY OF MEDICINE.

The first sessional meeting of the War Section of the Royal Society of Medicine was held on October 9th at the Royal Army Medical College, Millbank. The purpose of the meeting, which was attended by more than a hundred members and visitors, was to hear the presidential address of Lieutenant-General Sir John Goodwin, Director-General of the Army Medical Service, but it was announced by Major-General Sir A. P. Blenkinsop, who took the chair, that Sir John Goodwin was prevented from fulfilling the engagement by reason of his official work in connexion with the Near East crisis.

Sir A. P. Blenkinsop welcomed the members to Millbank, and went on to review briefly the work of the Section and its future possibilities. There had been a slight increase in membership during the war, but the present membership—a little above 200—was a very small proportion of the members of the medical services. In one of the Commands every officer had lately been asked to join the Section, and had received literature on the subject of its work, but the response had been very discouraging. It would be a thousand pities if the Section were to close down. The various military medical services had much to learn from each other, and there was a good deal to be gained by closer co-operation and a freer interchange of ideas, especially on questions of administration, organization, and medical tactics and strategy. The War Section was the only means, so far as he knew, whereby such co-operation could be brought about. Its designation was perhaps inadequate, and the Council would be glad to receive suggestions for some better name. It was advisable also to establish local branches, if possible, at the larger military and naval stations at home and abroad; and if this scheme were approved by the members of the Section it would be submitted to the Council of the Royal Society of Medicine for its consideration. *The Medical History of the War*, now in course of publication, would be a textbook in the medical services for a long time to come, and the members of the Section would join with him in congratulating the editors; but there was no space in that history for a record of individual experiences or the threshing out of controversial matters, and it was here that the work of the Section might well furnish a useful supplement to the official history.

Exhibits at the Royal Army Medical College.

At the close of the address the members of the Section, by invitation of the authorities of the College, visited the laboratories and museums, where special exhibits had been prepared for their benefit. In the hygiene laboratories there was an exhibit of rations, illustrating the present-day peace ration, the energy value of which was given as 2,497 calories, and another which showed the evolution of the emergency ("iron") ration. This at first consisted of chocolate, with an energy value of 553 calories; in 1913 it was elaborated so that it had an energy value of 2,663 calories, and the present-day "iron" ration, dating from 1918, had 2,800 calories. Some special ration constituents were exhibited, including marmite, germinated pulses (possessing marked antiscorbutic properties), lemon juice (which has now displaced lime juice as an antiscorbutic item in army supplies), and acid drops (which are included in the "iron" ration of the Royal Air Force). The army biscuit of the present day was the subject of another exhibit, wherein it was shown to possess for its weight of one ounce an energy value of 104.25 calories.

Some recent developments in water purification were also shown. Bleaching powder used for water purification and other purposes used to arrive in the tropical countries with the chlorine so greatly diminished, owing to the heat and moisture of the atmosphere, as to make it useless for sterilization purposes. Ordinary bleaching powder, after six months' storage in Egypt, was found to contain less than 1 per cent. of available chlorine. Research has been carried out in the College, and it has been proved that by mixing 20 parts of quicklime and 80 parts of bleaching powder ("chloride of lime") a product results which will withstand tropical climates without deterioration. A specimen of this stabilized bleaching powder had contained 25.2 per cent. of available chlorine when sent out to West Africa, where it was stored under ordinary conditions for a year, and at the end of that time it was found to contain 24.4 per cent.—a loss which is negligible for practical purposes. Tins of the stabilized powder which had been kept in Mesopotamia (Iraq) for twelve months were exhibited, and it appeared that the results here were similar to those in the West African samples.

Among other exhibits were certain recording instruments for motion study and for the measurement of energy expenditure by indirect calorimetry; and in the pathological museum there was a specially arranged exhibit of microscopical specimens illustrating malaria, typhoid, and paratyphoid fevers, plague, its cause and method of infection, trypanosomiasis, and the life cycle of bilharzia. Another series of specimens illustrated the effects on the respiratory passages of phosgene and mustard gas poisoning.

Reviews.

MEDICINE IN THE WAR.

[First Notice.]

Good progress has recently been made with the publication of the *Medical History of the War*, which is to form part of the *History of the Great War Based on Official Documents*. Nine volumes are promised. The whole series is being prepared under the general editorship of Major-General Sir W. G. Macpherson, K.C.M.G., M.B. The first volume of the series, containing the general history of the Medical Services, was published at the close of last year and was reviewed in our columns of December 17th, 1921 (p. 1047). The first of two volumes dealing with Diseases of the War,[1] with which we now propose to deal, was issued a short time ago, and the first of two volumes on the Surgery of the War reached us recently.

Considering the difficulties which must attend the preparation of the medical history of any campaign Sir William Macpherson and his collaborators are to be congratulated on the appearance of the first volume on the Diseases of the War within four years of the close of hostilities. Other volumes in preparation will deal with the Hygiene of the War, with Pathology and Medical Research, and with Medical Statistics and Epidemiology. Readers of the volume now under notice will do well to bear this in mind, so that they may not look for comment here on the influence of medical considerations on the general strategy of the war. Nevertheless, the form in which the articles are presented is not a bare description of various diseases after the manner of a textbook or journal. It would be impossible for any writer who was an active participant in the campaign to ignore the effects of disease on the troops as effective fighting units. Had such a plan been followed the articles would have merely constituted a sort of bird's-eye view of the state of scientific knowledge at the end of the war and would have proved of quite ephemeral interest. Such a view would have been of little or no value to future generations, and would give small help to those responsible for the conduct of future campaigns. But some such picture of the state of our knowledge was bound to be presented, and the authors of the articles have succeeded in accomplishing this part of their task without undue prolixity or elaboration. Since it is unlikely that in future campaigns even the known causes of disease can be avoided entirely or prevention secured, the measures adopted in the great war for the treatment of disease and for minimizing the resulting invalidism were well worthy of record.

There are, of course, chapters in the history of our medical services which will never be officially chronicled. The failures and difficulties will not be discovered impartially set forth in these volumes. Only the splendid indiscretion of some private memoir is likely ever to lift the curtain from some of the most important episodes in the medical history of the war. After all, posterity will not be particularly interested to know who was responsible for the inadequate ration in Mesopotamia that produced the beri-beri there. It will be enough to know what the ration was that abolished beri beri. Who selected the malaria-infested terrain of Macedonia for a "side-show" doesn't matter much from the scientific point of view so long as the lessons of the error are borne in mind. The general impression left after reading this volume is that it is the minor and avoidable ailments that cause the greatest wastage in an army. Science has robbed many of the principal scourges of their dangers in spite of popular belief to the contrary. The most notable example is that of enteric fever, where inoculation has been proved capable of rendering whole armies immune, even when infection was present everywhere. In the South African war the admission rate for enteric fever was 235 per 1,000 and the death rate 36 per 1,000 of the average strength in the British army; in France in 1918 the comparable figures were an incidence rate of 0.12 per 1,000 and a death rate of 0.007 per 1,000. In Egypt, where the disease reached its greatest incidence for any theatre, the figures in 1916 were 17.35 and 0.32 respectively. Certain diseases left our troops almost untouched, notably typhus, of which we had only 993 cases in all theatres, and famine dropsy, the only British cases being prisoners in enemy hands.

The outstanding lesson of the war is to be drawn from some figures collected by Colonel Soltau in France in 1917, figures which were corroborated again and again by all observers. The total admissions for sickness in one army during a year numbered 105,267; of these 26,879 were due to what were commonly called "skins and scabies"—that is to say, 25 per cent. of the sick wastage was due to some form of pyodermia very largely preventable by careful inspection and personal cleanliness of the men. The corresponding figures for seven weeks observed in 1918 in another army by the reviewer varied between 18 and 24 per cent. in each week. In addition to the group "skins and scabies," there was a group consisting of pyrexia of uncertain origin, trench fever, myalgia, and rheumatism, which was undoubtedly composed in the main of cases of trench fever, and therefore louse-borne; that accounted for another 26,000 admissions, so that of all the casualties from sickness nearly 50 per cent. were attributable to dirt and vermin.

The editor-in-chief concludes that four great lessons may be learnt from the war:

1. The importance of uncleanliness must be recognized, and an army to be efficient must be kept clean.

2. The value of original research in the field must be realized; an efficient army must carry its medical research units with it.

3. The general staff ("G") must take wastage by sickness into account as much as wastage by wounds. An efficient army must have medical plans no less than military before embarking on a campaign.

4. Hospital treatment in the field must not be rough and ready; the clinical medicine and surgery of war time is susceptible of a high and exquisite perfection, and affords scope for the finest scientific work. In other words, an efficient army depends on its hospitals for reinforcements.

We wonder whether at the Staff College the value of guns and "delousers" is even now reckoned as being about equal. That shrewd old Scots law lord, Kames, remarked that "one cause of the aversion the English had to the Danes was their cleanliness; they combed their hair and put on a clean shirt once a week." We should not forget that the Englishman is extraordinarily conservative; let us hope, as Tennyson said, that "we are each all Dane."

THE HISTORY OF BRAIN SURGERY.

Sir Charles Ballance has published as a book his Thomas Vicary lecture, *A Glimpse into the History of the Surgery of the Brain*.[2] This lecture has already appeared in condensed form in our columns, but no doubt many readers will take the opportunity now afforded them of reading this brief history in its extended form. Sir Charles Ballance writes with his accustomed erudition and with becoming enthusiasm for the masters of bygone times. Beginning with the dawn of surgery in prehistoric times, we come through Mesopotamia and Egypt to surgery in Greece, and from there by easy stages down to our own country and our own times. Brain surgery appears always to have excited interest, but, like the surgery of other regions, its history is rather the history of the application of certain general principles to a special region. These may have been, and indeed were, often merely fashions or modes in surgery; some have rested on sure foundations and have stood the test of time. This part of the text is illustrated by several diagrams of tools used in ancient times, amongst them a brace, bit, and burr of the sixteenth century, very similar to the Doyen instruments in common use to-day.

It is not by advances in the design and manufacture of instruments that surgery has reached its present state, although from time to time an instrument is designed (such as the Albee saw) that gives greater possibilities, that makes operating easier. For this reason it is not until recent times, when precise knowledge of pathological processes began to be understood and the doctrine of localization of function was appreciated, that brain surgery in its modern sense can be said to have made a beginning. It is true that surgical writings dating back almost to the dark mists of time refer almost without exception to injuries of the head, and also often to infections of the skull and brain.

[1] *The Medical History of the War Based on Official Documents: Diseases of the War.* Vol. i. Edited by Sir W. G. Macpherson, K.C.M.G., with the assistance of Sir W. P. Herringham, K.C.M.G., Colonel T. R. Elliott, C.B.E., D.S.O., F.R.S., and Lieut.-Colonel Andrew Balfour, C.B., C.M.G. London: H.M. Stationery Office, or through any bookseller. 1922. (Medium 8vo, pp. viii + 550; 6 coloured plates and other illustrations. £1 1s. net; post free £1 2s.)

[2] *A Glimpse into the History of the Surgery of the Brain.* The Thomas Vicary Lecture, delivered before the Royal College of Surgeons of England, December 8th, 1921. By Sir Charles Ballance, K.C.M.G., C.B., M.V.O., M.S.Lond., F.R.C.S. London: Macmillan and Co., Ltd. 1922. (Demy 8vo, pp. 110; 30 figures. 10s. 6d. net.)

But interesting as these processes are, and far though we may be even to-day from a victory over them, we have reached more knowledge of these and of their treatment than we have, say, of tumours and of hydrocephalus. As one turns over the pages of this book we read of discoveries, their often inexplicable neglect, and of rediscoveries; amplifications and amendments follow one another over the years in the manner with which all students of medical history are so familiar. There passes also before one's eye the great pageant of names—men famous in their day, famous for all time in the pages of history.

The passages on the great discoverers of the past forty years will be read with the greatest interest. And we could wish that Sir Charles Ballance had expended more space upon them. We can only hope that he will do so in the future. He speaks nobly and loyally of the men of his own day—"And where is it possible to discover in all the world or in all time another group of names of Alpine altitude in neurology such as our country can produce in Jackson, Schafer, Ferrier, Gowers, Sherrington, and Horsley?" At this point some of the younger men amongst us may be heard to sigh for a Lytton Strachey to tell us more about them. But, great though the names of the last two generations undoubtedly are, there is still so much to learn and still so much to do that new names may prove themselves worthy to be written with those of the great past.

X-RAY DIAGNOSIS IN MEDICINE.

The second edition of the treatise on the use of x rays in clinical diagnosis[3] by Professor Assmann of Leipzig has followed quickly on the first, which was reviewed in our columns on January 28th (p. 148). As he is in a position critically to survey the whole field and to write with considerable authority upon the interesting problems of diagnosis by x-ray examination when used in combination with other well-established methods, we propose now to give a somewhat fuller account of his views.

The book is very big and expensive, but as it is a reasoned piece of clinical work in the composition of which the x-ray examination has been employed to the full it deserves study.

The opening chapters are devoted to a consideration of the normal and morbid conditions of the heart. The technique is very well described, and the text is illustrated by diagrams and skiagrams which leave nothing to be desired in lucidity. The combination of anatomical drawings and tracings reprinted from the fluorescent screen image adds greatly to the value of the interpretation of the normal and morbid appearance. Moritz and Groedel's work receives full appreciation, as does also the brilliant work of our French contemporaries Vaquez and Bordet. The chapter concludes with a reference to the blood vessels. A good example of arterio-sclerosis of the vessels of the leg shows how useful the x ray examination may be.

An excellent section on the mediastinum and the lungs follows; then in order are reviewed the conditions met with in disease. Full consideration is given to the differential diagnosis of these conditions, and the x-ray appearances are described and illustrated by diagrams and excellent skiagrams. The various inflammatory lesions of the pleura are discussed and tumours of the lungs and chest are fully dealt with. An excellent chapter is devoted to the diaphragm. Special mention may be made of the records of tuberculous conditions; a number of good radiograms are given to illustrate the typical appearances. Tumours of the thorax are discussed at some length. A study of the part of the book dealing with the pathological conditions encountered in the region of the oesophagus will reveal the complexity of the subject and the practical difficulties encountered in diagnosis; the consideration of this important structure is always of importance, and the worker in radiology cannot fail to appreciate the value of an intimate acquaintance with the possible lesions and their significance when seen in the x-ray picture. Pouches of the oesophagus are well illustrated and the differential diagnostic points clearly set out.

The normal stomach and intestines are next discussed, and a full description of the x-ray appearances in disease follows. The important lesions of the stomach and duodenum are exhaustively discussed, and what the author has to say on the diagnosis of gastric ulcer, hour-glass contraction of the stomach, and new growths of that organ, provides profitable reading. The illustrations of a number of conditions commonly met with are good, and their value has been increased by the inclusion of a diagram placed opposite the skiagram; this plan brings out clearly the salient feature which leads to the diagnosis. This section contains a short article on the pancreas, its lesions, and their bearing upon gastro-intestinal diagnosis generally. The method of producing pneumoperitoneum is described and its value in diagnosis dealt with. The examination of the gall bladder is described and the diagnosis of gall stones briefly discussed. The urinary system receives scant attention, and the nervous system is also dismissed very briefly, although the diagnosis of intracranial lesions is dealt with and the sella turcica and pathological condition in it are well dealt with.

The book on the whole is good; much careful work has been given to its compilation, and an enormous amount of clinical material has been sifted in order to obtain the required diagnostic data. The author has brought to his aid a ripe experience in the study of internal diseases; this is obvious throughout the work, and amply proves that if the best is to be expected from x-ray examination a radiologist must have a full clinical experience. The illustrations have been carefully selected, are of high quality, and have been on the whole well produced. The book can be confidently recommended to all who are interested in the subject. Readers will, however, look in vain for any reference to British work. No doubt in following editions this fault will be remedied.

[3] *Die klinische Rontgen-Diagnostik mit X-ray Innerer Erkrankungen.* By Professor Dr. H. Assmann, Director of the Second Medical Clinic in Leipzig. Second edition. Vienna and Berlin: Urban & Schwarzenberg. 1922. (Demy 8vo, pp. 772, 211 figures, 20 plates. Gold. 2.)

MERCHANT SEAMEN.

In writing a book on the health and welfare of *Merchant Seamen*[4] Fleet Surgeon W. E. Home, R.N., has been moved by a desire to place before the public the many hardships the men of the mercantile marine suffer and the many grievances under which they labour. The author, who has a considerable personal knowledge of the subject, displays great sympathy with the men; there is no doubt that in the smaller ships the state of things, even to-day, is often very bad and in most compares unfavourably with conditions existing in the Royal Navy. Though the views expressed in the book may be rather too sweeping, for the larger lines have very competent medical advisers and able medical officers, yet the fact remains that, of 10,000 ships on the British Register, less than 600 are required to carry a surgeon. In a paper on the health of seamen on board ship, communicated to the Section of State Medicine of the Royal Society of Medicine by Dr. Arnold Chaplin, medical inspector of the P. and O. Company, he observed that questions of hygiene were mostly subordinated by owners to other factors; and his insistence upon the desirability of subjecting all plans of new ships to a competent medical officer before construction was supported by Dr. Willoughby, medical officer of health for the Port of London. Dr. Chaplin also directed attention to the frequent absence of hospital accommodation and isolation wards. All these points are also insisted upon by Dr. Home. The position of the crews' living quarters is an open question, but those even now provided in small ships are frequently abominable, and the ventilation inadequate. The very outspoken description of the conditions seen in some temporary cruisers during the war by Admiral Boyle Somerville, R.N., strongly supports Dr. Home's views. Many bills designed to improve the health conditions for seamen afloat have been introduced, but if anything effective is to be done the matter should, we think, be taken up by the Ministry of Health; in this connexion the constructive suggestions made by Sir Robert Hill, K.C.B., K.C.M.G., medical director-general of the navy, will be found of great value. The deplorable methods of recruiting seamen and of treating them when afloat which prevailed in the last century are giving way to more enlightened views, and it is being better recognized that even on financial grounds alone it pays to keep the men healthy, to provide them with amusements, rational treatment on board, and sailors' homes when on shore. Dr. Home's book is to be welcomed as a valuable contribution to the attainment of these objects. Much, however, remains to be done to arouse public opinion, and we welcome this book, which not only describes abuses but also suggests remedies. Statistics are at present very unreliable, and little comparison can be made with those of the Royal Navy, which starts with first-class lives.

[4] *Merchant Seamen, their Diseases and their Welfare Needs.* By W. E. Home, O.B.E., M.D., D.P.H., M.R.C.P.E., Fleet Surgeon Royal Navy. London: John Murray. 1922. (Cr. 8vo, pp. ix + 111. 5s. net.)

RURAL CHILD WELFARE IN AMERICA.

The National Child Welfare Committee of the United States has been conducting an inquiry into rural child welfare, and the results are embodied in a volume[5] by eight contributors, published under the direction of Edward N. Clopper, Ph.D. The purpose, as stated in a prefatory note by the Secretary to the Committee, is twofold: to present a graphic picture of rural life in America so as to lead the public to realize the needs of country children; to trace the causes of defective conditions described and to suggest a preventive and remedial policy. The purpose is well fulfilled, and the several chapters fit into each other so as to present as complete a picture of child rural life in America as could be contained within the limits of the book.

The area selected for inquiry was Western Virginia. Many factors enter into the problem. The education of parents is often very defective. A coal mine operator told Dr. Clopper that he had hired 144 native-born white men living near his property and only 11 of them could sign the pay roll. That, however, was doubtless exceptional, as Mr. C. E. Gibbons, whose subject is the Rural Home, found that only about 20 per cent. could neither read nor write. The number of children engaged in agriculture nearly doubled between 1880 and 1890, and further increased by about a half in the next decade. The assumption that a country child living at home is ideally situated is held to be erroneous. It is well urged that a clear distinction is to be drawn between child labour and "children's work." A system of clubs has been instituted for promoting the latter, by development of head, hand, heart, and health, a four-leaved clover being the emblem of what is known as a Four H Club. Indifference to education, especially to school attendance, is manifested, not only by parents and children, but by the whole community. At the same time the standards for teaching are low, there is a shortage of teachers, and their scale of pay has been insufficient, though improvement is being made. Owing to sparsity of population there are a great number of small schools with only from ten to twenty pupils on the roll, and the school sessions are sometimes too short. Reform of these defects is pressed for in the chapter on the subject. Recreation is advocated in an eloquent chapter and the following statements are quoted from Wood:

"Children love play as all young beings love life, because life is play. The child's life is one of physical, mental, and moral development. Development means self-expression, self-expression means activity, and activity means play. Children do not play deliberately from ulterior motives; with them it is play for play's sake; play is life, they live to play; they are children because they play."

But the value of play is commonly not appreciated either by parents or farmers, and in a family poorly off a child's earnings count for much. But—and this will be unexpected by most readers—it is held that the common belief in the healthiness of farm work is hardly justified by facts. Muscular strength may be acquired, but there is little of the vigour of heart, lungs, or digestion, produced by exercise, and the boys and girls are apt to be round-shouldered and flat-chested. This, however, may be due to want of adequate play. An important chapter deals with dependency, neglect, and delinquency. It is indicated that much improvement is required in the organization of relief work where poverty and parental neglect are in question. Touching stories are told of the plight of tramp children from "broken homes" and of the failure of guardians to realize their responsibilities. Rural folk, however, show a warm hospitality towards homeless children, and kinsfolk are the first to receive them when separated from their parents. The causes and actualities of delinquency are discussed, and the relative action by the authorities concerned. The chapters devoted to taxation and to the State and the child are informative and suggestive. One item of what in this country we would call grandmotherly legislation may be quoted.

"It is a crime to sell or give to any child under 21 years of age any cigarettes or cigarette paper, or to sell, give, or furnish tobacco in any form to a child under 16 years of age, or for any child under 21 years of age to make or have cigarettes or cigarette paper; and it is made a part of the duty of all peace officers to enforce this law against the use of cigarettes."

Prohibition in the States is clearly not confined to the use of alcohol, and the great democracy has no hesitation in interfering with individual liberty where the interference is regarded as for the public good.

[5] *Rural Child Welfare.* Issued under the direction of E. N. Clopper, Ph.D. New York: The Macmillan Co. 1922. (Cr. 8vo, pp. 155; illustrated. 14s. net.)

The whole book is packed with material alike interesting and valuable to all who are concerned with the broad principles of child welfare as they apply to rural areas; and the committee responsible for the volume is to be congratulated on the outcome of its labours.

NOTES ON BOOKS.

A revised edition (the ninth) has appeared of the popular little *Aids to Forensic Medicine*,[6] originally written by Dr. William Murrell, physician to the Westminster Hospital, and since his death edited by Dr. W. G. Aitchison Robertson, lecturer on forensic medicine in the Extra-Mural School of Medicine, Edinburgh. In its new form the work will no doubt prove as useful to students preparing for examination as it has in the past. Among the added matter is a paragraph briefly summarizing the medical requirements imposed by the regulations under the Dangerous Drugs Act, 1920. There is also a note on the Proprietary Medicines Bill, which was introduced by the Government two years ago, and is (in Dr. Robertson's optimistic view) "likely soon to become law." The paragraph on professional privilege in courts of law (p. 8) is as concise as it is unemotional.

A pamphlet of forty pages, entitled *Four Sanatorium Lectures*, has been prepared by Dr. H. O. Blanford for the use of patients who are undergoing a course of sanatorium treatment at Midhurst, and the author hopes it may be welcomed by a wider public. The rationale of the routine is explained, the system of graduated exercise described, and advice with regard to the ordering of home life after leaving is proffered. The aim throughout is to enlist the intelligent co-operation of the patient, and to induce him to view his trial with equanimity and hope. We would offer but one word of criticism. The dictum is very forcibly laid down that in pulmonary tuberculosis "the only vehicle of infection is sputum, which contains the tubercle bacillus." Now, however advisable it may be to stress the infectivity of the sputum, it is useless to do so without at the same time laying emphasis on the dangerous nature of the cough spray which accompanies the expectoration of that sputum. If there is one thing which bacteriology has shown clearly during the past few years it is the importance of spray infection in the spread of respiratory diseases; and to allow a patient to cough and sneeze promiscuously without a handkerchief in front of his mouth—as actually occurs at some of the best sanatoriums—is to give him a poor education in his duties to the public with whom he is subsequently to come in contact. If a further edition of this useful booklet should be called for the author might well correct the unduly large number of spelling mistakes and misprints which somewhat mar his first effort.

It is now nearly twenty years since the late Rakhaldas Ghosh published the first edition of his *Treatise on Materia Medica and Therapeutics*.[7] In designing this wonderfully compendious little book the author, we believe, had sympathetic encouragement from the late Sir Pardey Lukis. Its appreciation by students and practitioners is proved by the recent issue of a ninth edition. The contents have been revised throughout by the present editors, Lieut.-Colonel B. H. Deare and Dr. B. N. Ghosh, and various minor changes in arrangement have been made; but the size of the volume has only been increased by three pages since the eighth edition appeared two years ago. This work remains one of the most useful and practical of the smaller reference books on the properties, actions, and uses of medicinal preparations.

Professor Sollmann of Cleveland has issued a second edition of his *Manual of Pharmacology*.[8] Since the first edition, which was reviewed in our columns on December 29th, 1917, much work has been done, but, as the author admits in his preface, there has not yet been time thoroughly to digest all the material. He has, however, found it possible to make many additions and corrections. The sections on irritant gases have been expanded by the introduction of references to their use in the war. A useful feature of the book is a bibliography occupying 79 pages; it has been enlarged in this edition by the addition of over 1,200 titles.

[6] *Aids to Forensic Medicine and Toxicology.* By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E. Ninth edition. London: Baillière, Tindall, and Cox. 1922. (Fcap. 8vo, pp. xii + 155. 3s. 6d. net.)

[7] *A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology, and Administration of Drugs.* By the late Rakhaldas Ghosh. Ninth edition by Lieut.-Colonel B. H. Deare, C.I.E., I.M.S., and Birendra Nath Ghosh, F.R.F.P.S. Calcutta: Hilton and Co. London: Simplin, Marshall, and Co., Ltd. 1922. (Cr. 8vo; pp. 712. 10s. 6d.)

[8] *A Manual of Pharmacology and its Applications to Therapeutics and Toxicology.* By Torald Sollmann, M.D. Second edition. Entirely reset. Philadelphia and London: W. B. Saunders Company. 1922. (Roy. 8vo, pp. 1066; 29 figures. 32s. 6d. net.)

Miss MARY B. EYRE, who is President of the Colorado Board of Nurse Examiners, has written a volume, *Psychology and Mental Hygiene for Nurses*,[9] which should be useful to the increasing number of nurses engaged in public health and welfare work. Such work takes the nurse into the homes of the people, and the author feels that an understanding of the principles of psychology and its applications to daily problems will greatly extend her sphere of influence. The book provides an elementary but systematic account of general psychology, the psychology of childhood, the subconscious mind and the forces which determine human behaviour, and the principles of mental hygiene in relation to nursing. Each chapter includes a useful summary of its contents, and the subject-matter is presented throughout with commendable clearness.

The *Durham University Calendar*[10] for the year 1922-23 has just been issued; the general arrangement follows the plan adopted in previous years. Full information is given regarding the University of Durham College of Medicine at Newcastle-on-Tyne, and the rules for students attending the Royal Victoria Infirmary are set out.

[9] *Psychology and Mental Hygiene for Nurses.* By Mary B. Eyre, R.N. New York: The Macmillan Company. 1922. (Cr. 8vo, pp. 208; 9 figures. 7s. net.)

[10] Newcastle-on-Tyne: Andrew Reid and Co., Ltd. 1922. (Cr. 8vo, pp. 756. 3s. 6d. net; by post 4s. 3d.)

Nova et Vetera.

"THE ENGLISH SPAW" AND "THE COLDE SPRING OF KINGHORNE CRAIG."

UP to the close of the sixteenth century the term "Spa" was given solely to the little town to the south-east of Liège in the Ardennes, where people went to drink the waters of the Pouhon, La Sauvenière, and the other springs. In the next century, however, the word "spa" began to be used in a generalized sense of a medicinal or mineral spring anywhere; and Dr. Timothy Bright (1551–1615) did something to extend its employment in this way by naming the Tuewhit Well at Harrogate, in the Forest of Knaresborough, "the English Spa." The well had been discovered about 1571 by a Mr. William Slingsby, who had travelled abroad and knew the taste of the fountains at Spa; he did "drink the water every yeare after all his life time," and was of opinion that "it was much better, and did excel the tart fountaines beyond the seas." With such a treasure in our own Yorkshire, said Dr. Bright, why go to the "German Spaw"?

Others were of the same opinion; and so, in 1626, Dr. Edmund Deane of York wrote his little book[1] called *Spadacrene Anglica, or The English Spaw Fountaine*, a short review of which was published in the JOURNAL of August 12th (p. 272). In the preface, "to the physitians of Yorke," Deane wrote: "Though it was my fortune first of all to set a new edge on this businesse; yet my journeyes to this Fountaine have not been made without your good companies and association, nor the several tryals had there, and at home performed without your worthy helpes and assistance; nor this little Treatise begun without your instigations and incitements."

Of one of these "journeyes" with Deane to the Well, Michael Stanhope gave a partly humorous account in his *Newes out of Yorkshire*, published in the same year (1626) as the *Spadacrene Anglica*. There were three "physitians"; Stanhope was enthusiastic: "first of all I dranke of it and finding it to have a perfect Spa relish (I confesse) I could not contain but in a tone louder than ordinary I bad them welcome to the Spa." The "physitians," on experiment bent, mixed in a glass the powder of galls with the water to see if it would "turne to a Claret die"; "wherein they were not deceived, for presently (to their both wonder and joy) the water changed colour and seemed to blush in behalf of the Country, who had amongst them so great a jewell and made no reckoning of it."

Deane's book is the first work on the waters of Harrogate. It passed through four editions, all of them now very rare, and the profession is indebted to Dr. James Rutherford for reprinting in this present year the first of them, that of 1626, and to Dr. Alexander Butler for supplying biographical notes. The reprint is welcome also because it corrects some errors which have crept into the story of early days at Harrogate when that place was a mere hamlet in the Royal Forest of Knaresborough. Among these was the statement that the discoverer of the well was Sir William Slingsby. It was really his uncle, Mr. William Slingsby, born in 1526 or thereby, to whom this honour must be given. Deane's book was published in 1626, so was Stanhope's *Newes*, whilst Slingsby's birth was in 1526; so here are two tercentenaries and one quatercentenary rapidly approaching, and Dr. Rutherford's reprint prepares the way for their fit celebration some four years hence at "The English Spaw."

The Tuit or Tuewhit well at Harrogate was so called, Stanhope thought, "for no other cause but that those birdes (being our greene Plover) do usually haunt the place." The water was chalybeate, like that at the German Spa; and Deane enumerated a long list of maladies in which it worked wonders. It was, for instance, of much profit "in the inveterat venereous Gonorrhoea"; it cured sterility and the tendency to miscarry, but curiously enough it was not to be used by expectant mothers; it was efficacious in worms, killing and expelling them, and letting and hindering the breeding and "new encrease of any moe;" it was "very availeable" against the stone in the kidneys; and it helped the black and yellow jaundice, and "the evill which is accompanied with strango feare and excessive sadnesse without any evident occasion, or necessary cause, called *Melancholia Hypochondriaca*." The waters, however, were not to be taken without the advice of the physician, for this reason: "Medicines are not said to be *Deorum manus*, that is the hands of the Gods . . . or *Deorum dona*, that is the gifts of the Gods . . . till they be fitly applyed and seasonably administered by the counsell and advice of the learned and skilfull Physitian." For instance, there were those who thought it dangerous to take purgatives and the water of the well in the Dogge-dayes; the same opinion was held about blood-letting. Deane wrote that there was here an old and inveterate error, "which in all probabilitie hath cost moe Englishmens lives, then would furnish a royall army, in neglecting those two great helpes or remedies, to wit, Purging and Blood-letting in hot seasons of the yeare, which in all likelihood might have saved many of their lives; while expecting more temperate weather, they have beene summoned in the meane time, or *interim*, by the messenger of pale death to appeare in an other world." Wherefore, concludes Deane, away henceforth with the scrupulous conceit and too nice fear of the Dog-dayes.

Deane's *Spadacrene Anglica*, therefore, was an early work on mineral waters in Great Britain; but there was an earlier, for in 1618 Patrik Anderson, "Doctor of Physick," published in Edinburgh *The Colde Spring of Kinghorne Craig* (in Fife), *his admirable and new tryed properties, so far foorth as yet are found true by Experience*. Of this rare pamphlet there is a copy in the library of the Royal College of Physicians in Edinburgh. It was dedicated to "the Right Noble and Illustrious Lord, Johne Erle of Mar, . . . Lord High Thesaurer of Scotland, Knight of the most noble ordor of the Garter, and one of his Maiesties most honorable Privie Counsell, of both Kingdomes"; and the author generously wished to the noble Lord and his most noble Ladie "a great portion of Methusalems yeeres for this lyfe, and, after it, eternall life."

There is much that is of interest in the pamphlet (something may be extracted from it again), and a rough illustration shows "the craig" itself, which is thus carefully described and located: "hard by the shore syde of Kinghorne, within a bow-draught or more to the heaven of Prettie-cur where the Botes arrive, direct west the Sands, is a great round steip Rock." Anderson, like Deane, enumerates many things for which this "fair spring (albeit but laitlie knowne)" was useful; and he addresses his readers—"Goe then with boldnesse, and drinck of this wholsome and Physicall water, and say not to yourselfs, the Physitions envyeth it, speaketh against it, they approve it not, and it hindereth their gaine; onlie but carie with you these few directions following, and so faire yee well." Some of the directions are like those for the Spadacrene Anglica, but there was at least one special injunction, the swallowing of eight or nine of the author's *grana angelica*, "hid in a rere (that is, half-cooked) or potched egg." Both the Fifeshire and the Yorkshire spas were famous in the early part of the seventeenth century; but a very different fate has befallen the cold well at Kinghorn when contrasted with that of the Tuewhit Spring at Harrogate. Groome's *Ordnance Gazetteer of Scotland* (1901) has this sentence, "the medicinal well has now for many years fallen into neglect."

J. W. B.

[1] *Spadacrene Anglica, or The English Spa Fountain.* By Edmund Deane, M.D.Oxon. The First Work on the Waters of Harrogate. Reprinted, with an Introduction by James Rutherford, L.R.C.P.Ed., and Biographical Notes by Alex. Butler, M.D. Edinburgh: John Wright and Sons, Ltd. 1922. (Cr. 8vo, pp. 44.)

British Medical Journal.

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RADIATIONS IN GYNAECOLOGY.

The paper in which Dr. Robert Knox introduced the discussion on the treatment of gynaecological conditions by *x* rays and radium in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association in Glasgow is published this week (p. 678). It was an able and quite impartial address, and led to a brief but very interesting discussion.

Putting aside the smaller things, the main points in the discussion related to malignant disease and fibroids: should radiation treatment be used for these conditions in preference to surgical? The opener laid down the principle, with some degree of emphasis, that "in all cases which are suitable for surgery, surgery should be recommended." The general consensus of opinion with respect to fibroid disease also was evidently in favour of operation, reserving *x*-ray treatment for cases in which for one reason or another operative treatment was inadvisable. With this opinion we will not quarrel, but at the same time it should be remembered that it is not universally accepted, and that men like Béclère of Paris, whose experience is very large, publish long lists of cases treated safely and successfully with *x* rays.

The real subject under discussion, however, was the question of radiation treatment in malignant disease of the cervix and uterus, and the prominence which has of late been given to this subject by the claims of the Erlangen school. At once a difficulty arises, for in this country, at any rate, the cases so far allocated to both radium and *x*-ray treatment, singly or combined, have been those which have reached the stage in which they have been pronounced to be inoperable. In Bavaria, on the other hand, many cases in the operable stage—which of course is an earlier stage of the disease—have been selected for *x*-ray treatment. It follows that statistics and results are not comparable. The question arises whether, with the increasing evidence of beneficial results in inoperable conditions, we are not reaching the stage when the position as between the knife and radiations should be impartially considered at a much earlier stage of the disease. Can there be any doubt that in many respects the knife as a cure for cancer—uterine or otherwise—is a ghastly failure? Those in charge of *x*-ray departments of large hospitals for the last fifteen or twenty years have had an experience in which the failure of operations has been brought home to them in no uncertain manner. Breast carcinoma, which on the face of it, from early diagnosis, visibility, ease of access, and so on, should lend itself to operation, and should furnish results more favourable than more deeply seated malignant disease, is not pleasant to contemplate from the point of view of the radiologist as he sees the late after-results sent to his department as "a last hope." This being the case, what can be said for the operative treatment of the more deeply seated, more inaccessible, and probably less early diagnosed growth?

There can be no doubt that the work of Wintz and Seitz has given a great stimulus to *x*-ray therapy, and it is possible that in the future it may lead to still further developments. The whole technique has been placed on much firmer ground than hitherto, and this is especially the case as regards dosage; but much more than this has been claimed, and a definite lethal *x*-ray dose for various conditions, and especially for the cancer cell, has been stated. That this position cannot be maintained is now becoming obvious, for if there is a definite lethal dose for the cancer cell then the cure of cancer, or at any rate of the primary cancer manifestation, should be a mathematical certainty. This is far from being the case, unfortunately, and it is recognized on all hands that many other factors—for instance, the character of the cancer itself, to say nothing of its host—have a considerable bearing upon the assertion. It has also been laid down as an axiom that there is such a dose as a stimulating dose for the cancer cell. Actual proof of this from a clinical, and not a laboratory, point of view has not been established; every radiologist has seen secondary cancer nodules disappear rapidly and entirely after receiving what Wintz and Seitz state to be stimulating doses. The problem is not quite so simple as all this.

Dr. Knox asserts positively that the statistics which have been published on *x*-ray treatment in carcinoma of the cervix do not encourage us to support the claims in favour of *x* rays as against those of surgery. This, unfortunately, appears to be a principle from which we cannot depart, at any rate at present, and it means that radiation treatment must still be restricted to the inoperable condition. An important fact which should not be overlooked is that, notwithstanding the original claims of success in the *x*-ray treatment of cancer of the cervix, Wintz has considerably modified his technique, inasmuch as he now resorts to a long preliminary ionization of the growth before proceeding to administer the lethal *x*-ray dose. Further, many other workers consider that the primary growth should be treated by the introduction of radium needles, again as an adjunct to the large measured *x*-ray dose; Dr. Knox himself is strongly in favour of the plan. These facts go to show that we are still far from having perfected that ideal method of *x*-ray treatment which was heralded with much beating of drums and blowing of trumpets so short a time ago. It should also be remembered that, after all, *x*-ray treatment and surgery aim at the same thing—namely, the removal of the primary growth and the treatment of the adjacent lymphatics and glands likely to be affected. Neither, in any way, attempts, or can attempt, to deal with the still greater problem—namely, the prevention of distant metastases. What if it should turn out that in the large majority of cases, by the time the primary manifestation has become evident, the disease has already become a generalized condition, and that only some resistance, with which we are at present unacquainted, prevents the metastatic growths from appearing almost at once; that once infected, at any time, on this resistance breaking down generally or locally, general or local recurrence may occur, and this at any period of time after an operation, be it by the knife or by radiation? To put a fixed time, even five years, and say that if patients survive that time after the removal of a primary growth without recurrence they are cured is not logical. Perhaps we may more rightly say that a case once recognized is never cured, and that the potentialities of a recurrence, locally or in the metastatic form, are always present. Then if the patient dies of something else before recurrence takes place he has been cured; if, on the other hand, he lives long enough, recurrence would seem to be almost inevitable. The cure of cancer and malignant growths generally can only follow, if it does follow, on a complete knowledge of the cause and life history of the disease, and this cure will not mean merely dealing with a primary growth and its immediate surroundings.

The cost of *x*-ray treatment was alluded to by some of the speakers, and the opinion was expressed that the great drawback to radiation treatment generally was that it was so expensive. The obvious reply to this criticism would be to compare its cost with that of surgery. The cost of effective radiation treatment ought

not to be, and is not, as great as that of a major surgical operation, which by no means comes to an end with the fee of the operating surgeon. *X*-ray treatment does not mean a lengthy stay in an expensive nursing home, the fees of nurses for many weeks, and so on. If a case is operable, expense does not stand in the way of operation. If a case is pronounced inoperable and radiation treatment can hold out reasonable hopes of a prolongation of life under conditions which make it worth while to the patient, then the fees usually paid can hardly be said to be excessive. Skilled radiologists, competent to carry out the modern treatment of cancer by *x* rays, are at the present time few, very few, in number. It takes anything up to six or eight hours to treat a case of cancer of the cervix, and practically the private practitioner has to give the one case his personal attention for this length of time. Would a surgeon be content with the fee he now gets for a similar length of service? Moreover, the radiologist has to use apparatus which costs about £1,000, and apart from this his running expenses are at least as great as those of a surgeon. No, the cost is not excessive, and if the time comes (and it may possibly come very soon) when radiation is found to be preferable to surgery for the treatment of many primary growths, the patient will stand to gain pecuniarily rather than lose, if everything is taken into consideration. A far more important point than expense is choice of operator. A very large number of the profession, and the public generally, seem to consider the possession of apparatus the sole qualification for successful and safe *x*-ray work. It is in this direction that a word of warning has become essential. It is not too much to say that the choice of a radiologist to carry out treatment in these life and death cases should be made with at least as much care as when an operating surgeon has to be chosen.

THE WASTAGE OF CHILD LIFE.

The September issue of the *Glasgow Medical Journal* contains a valuable study of mortality rates in Glasgow families by Miss Jean Agnew, working under a grant from the Medical Research Council. The article has an introduction by Dr. Leonard Findlay. The material used is from two sources: one, the histories of 1,768 poor families as medically recorded at the Royal Hospital for Sick Children (the fine institution visited by many members of the British Medical Association during the recent Annual Meeting in Glasgow); the other, the figures relating to 455 well-to-do families, taken from the private case records of a consulting paediatrist. In the poor families the total number of pregnancies was 9,763, which, including stillbirths and twin-births, yielded 9,954 "possible" lives, the average family therefore consisting of 5.6 possible lives. The corresponding figures for the well-to-do families were 1,440 possible lives, or an average of 3.2 per family.[1] These are the data on which the calculations and the classification of types of wastage are based.

As charted, it appears that in respect of miscarriages and stillbirths the well-to-do families are no better off than the poor families. In fact, if these data are to be relied on, the wastage is slightly higher in the former. If practical equality in this respect were established on a sufficient basis of fact it would tend to show that at the beginning of life the poorly-off mother is just as safe a child-bearer as the mother in comfortable circumstances. Also the difference in favour of the well-to-do class shows only very slightly in the first month of life, so that the baby of poor parents seems as healthy as the baby of parents who are better off. But before the end of the first year the difference is very apparent, and becomes much more obvious later on when all deaths are compared. Also the disadvantage of the poorer families is greatly magnified when pregnancy succeeds pregnancy, as shown by the increase in the infantile death rate. This does not take place in the larger families of the prosperous, who are able to give as much care and attention to children born later in wedlock as to the earlier births. There is, however, a curious reservation here, arising from one chart relating to the richer families, which seems to indicate that "the best chance of survival lies with the result of the third pregnancy." The reader may ask himself, What can be the explanation if this be really so? Can it be that skill in mothercraft has by that time improved, so that risks to which the first and second babies may have been unwittingly exposed are avoided in the case of the third? But if so, why should not the fourth be still better guarded? Is it possible that, the average well-to-do family being 3.2, the fourth and later pregnancies, where they occur, are somehow under less favourable conditions, say, as to the age and health of the mother? The average age at marriage in the middle class is certainly higher than among the poor, and the optimum time for child-bearing may have been reached in the third pregnancy. That, however, is highly speculative.

Miss Agnew attributes the bad record of the poorer families to increased overcrowding, lessened outlay on food per head (at least until the older children become wage-earners), lessened maternal care, lessened cleanliness, and the like. Some of the charts show the results in the poorer families up to twenty pregnancies, and a comparison of New York data with those of Glasgow brings out a remarkable similarity. The last paragraph of her report is as follows: "From among much that is suggestive, one fact that is definite emerges. In the large poor families—no figures are available for well-to-do families of similar size—probably from the fifth, and certainly from the seventh pregnancy, the wastage is so great as to indicate that—be the cause what it may—the additional members of the family are bought at a cost in human life and suffering which cannot be regarded as equitable, whether viewed from an economic or from a humanitarian standpoint."

[1] In Table I the two categories seem to have been accidentally transposed, as appears at the head of the weight columns.

SHORTAGE OR OVERCROWDING?

It was with some surprise that we read last week the following passage in a leading article in a London daily newspaper on the reopening of the medical schools: "We are glad to learn that the profession is attracting young men and women in greater numbers than of late, but something has yet to be done before the schools can muster as many students as before the war. That the nation needs more is sufficiently obvious. The natural increase of population alone would call for more practitioners. . . . That the war and the sequel of the war should have diminished the numbers of recruits was inevitable." This is not accurate; in fact, it is almost the opposite of the truth, as may be recognized by anyone who has studied the figures given in our Educational Number of September 2nd. The fact is, of course, that there was a great increase in the numbers of medical students during the war and a much greater increase after the armistice. In 1919 the new students who registered in Great Britain and Ireland numbered 1,100 more than the "record" entry of 1891. In 1920 the entrants were still greatly in excess of any pre-war year, and it was only in 1921 that the number of new students began to approach the normal. During the thirteen years before the war the annual entry of first-year medical students in the United Kingdom averaged 1,400; in 1921 the number was 1,808. In consequence of the great numerical increase in the student body during and after the war many of the schools throughout the country

became overcrowded, and some were obliged to turn away applicants. It is a mistake, therefore, to say that "something has yet to be done before the schools can muster as many students as before the war." On the contrary, the recent fall in the entries has been a great relief to the overstrained teaching institutions. Nor is it by any means obvious that "the natural increase of population calls for more practitioners"; the general tendency through the past forty-five years has been towards an increase in the ratio of doctors to population. While the population of Great Britain and Ireland has increased by about 50 per cent. during that time, the number of registered practitioners has been doubled. In view of all these facts, it is plainly undesirable to suggest to the public that there is a shortage of recruits for the medical profession. Indeed, the number of new students has been so excessive in recent years that, had the torrent not been stemmed last year, there was a certainty that within a short time the profession would be seriously overcrowded. The return to a more normal entry has therefore been welcomed, not only by the overburdened schools, but by those who, like ourselves, felt apprehensive lest there should not be work enough to go round when the present generation of students become qualified.

PUBLIC HEALTH IN PALESTINE.

Were the English given to self-praise rather than to criticism they might dwell with no little satisfaction on the excellent results of those public health measures against infectious disease which depend mainly upon British organization and executive in the Near East. By the courtesy of the Director we have before us a copy of the first annual report (1921) of the Department of Health under the Government of Palestine. It is a very modest document, not in print, but in multigraph; the achievements recorded in it, however, are well worthy of notice. It gives a concise account of the building up from the beginning of a medical and of a health service in a country ravaged by war and decimated by disease. Under the Ottoman code a skeleton of a medical service existed in theory, which, had it been adopted in practice, might have sufficed for the primary needs of the country. In voluntary organizations, however, the country was comparatively rich, and the report fully recognizes the admirable work done by them in the early days of the new Government. The Syria and Palestine Relief Society, the American Zionist Medical Unit, and the American Red Cross, in their respective spheres, organized hospitals, clinics, and relief. In 1919 and 1920 the old-established charities such as the Church Missionary Society, the Scottish Mission, the Hospitals of the Order of St. John, the American Zionist Unit, and the French Religious Hospitals were reopened, and are now in full working order in spite of the ransacking of their equipment and in several instances the ruin of their buildings during the earlier years of the war. To a large extent they relieved the Government of its responsibility by providing accommodation for the country's sick in general, as distinct from Government employees and patients with infectious diseases. The Government hospitals number eleven and contain three hundred and seventy-two beds; the voluntary hospitals, which number twenty-three, provide nearly a thousand beds. There are five smaller voluntary special hospitals and thirty-one dispensaries. The proportion of hospital beds thus appears to be 1 to 536 of population, a very creditable figure. The general directorate or central organization of the Department of Health is divided into five sections. The first deals with public health and epidemics. It includes a sanitary engineering subsection which deals with antimalarial projects and co-ordinates the sanitary projects with public works. In a land where water supplies are unsatisfactory and insufficient, where town drainage is practically non-existent, and where antimalarial drainage of swamp areas is perhaps the first sanitary need, the importance of this section need not be emphasized. The second section of the directorate deals with medical and hospital organization, an important subsection dealing with ophthalmic hospitals, ophthalmic treatment of school children, and special surgery. The third section controls bacteriological, analytical, and entomological laboratories. There is a central bacteriological laboratory at Haifa and four Government clinical laboratories in Jerusalem and other towns. The fourth section directs the quarantine service, including relief, lunacy, and railway sanitation. The work of the quarantine service has become each year more exacting. The fifth section deals with medical stores. The local health administration is under principal medical officers of health, who are responsible for medical, health, and quarantine services within their district. Under them are district medical officers and hospital and quarantine medical officers, under whom again are sanitary, antimalarial, and quarantine subinspectors, disinfecting and nursing staff. Development has been hindered by the smallness of the credits available, but the nucleus of each essential service now exists and can be expanded as financial conditions allow. The administration has thought ahead and has adopted a programme which will in any case take several years to realize. The most important projects include the extension of the antimalarial campaign to include the reclamation of marshes, public water supplies in the larger towns and villages, main drainage in the more important towns where water supply is established, additional accommodation for the treatment of trachoma and for the development of scavenging services. Great importance is attached to the training of midwives, there being at present only 51 trained midwives in Palestine. Malaria has decimated the population for centuries, and whilst the measures taken in populous areas to destroy and prevent the breeding of mosquitos in the innumerable rock cisterns, the treatment of infected persons, and educational work dealing with the nature and prevention of the disease are of great value, they cannot attain full success while the marshes continue to be great anopheles reserves. Successful Government schemes have been carried through in the Beisan and Jenin marshes, and private enterprise has been encouraged wherever possible, as in the Wadi Gazaze, at Musherifa, and in the Kinnereth marshes. To give some idea of the amount of work done apart from the draining of swamps we may mention that during 1921 sixty-six thousand possible breeding places—wells, cisterns, and cesspits—were recorded and registered; sixteen thousand of these were made mosquito-proof by closure or covering, and eleven hundred by fitting pumps; oiling was carried out on nearly two-thirds of a million occasions in those places which could not be rendered mosquito-proof, seventy-six tons of paraffin and crude oil being used. Householders neglecting to carry out precautions after warning were prosecuted in 702 instances. Trachoma is the second great plague of Palestine; it is estimated that 74 per cent. of school children are infected. The amount of work and organization necessary to combat this disease and its sequelae is gigantic. Most creditable to the sanitary and quarantine administration is the lowness of the general incidence of infectious disease, especially considering the geographical situation of Palestine. No case of cholera, only 4 cases of plague, one small outbreak of smallpox with only one fatal case, 63 cases of typhus fever with six deaths, 368 cases of typhoid fever with a case mortality of 9 per cent., and 91 cases of paratyphoid with a case mortality of 3 per cent., make a remarkably low record. Rabies is very prevalent amongst the dogs and hyenas; and 455 patients received antirabic treatment in the Pasteur Institute of Jerusalem during the year. British preventive medicine may well be proud of her latest offspring.

THE TRAINING OF THE PHARMACIST.

On October 4th the School of Pharmacy of the Pharmaceutical Society of Great Britain entered upon its eighty-first session. The ceremony took place in the Society's examination hall in Bloomsbury Square. In his opening speech the President (Mr. E. T. Neathercoat) remarked that pharmaceutical training was in a state of transition at the present

moment, and the Council was giving this matter their closest attention; and the Dean (Professor Greenish), in his report on the year's work, welcomed the prospect that in the very near future the time given to the student's training would be materially extended. The twofold function of modern pharmacy—research and education—has been emphasized by the award this year of the Hanbury medal to Professor Emile Perrot, who has made important investigations into the stabilization of vegetable drugs, and holds the office of Vice-Dean of the Faculty of Pharmacy in the University of Paris and professor of materia medica. The President, in presenting the medal and welcoming Professor Perrot, mentioned that he was the fourth distinguished Frenchman to receive this award. The inaugural sessional address was delivered by Mr. H. J. Waring, F.R.C.S., Vice-Chancellor of the University of London, and here again education was kept in the foreground. His subject was the advantages (and the drawbacks) of a university training for a technical vocation such as pharmacy. His method of approach was to sketch the main outlines of a university course in the basic subjects of a vocational curriculum. For the technical vocations of pharmaceutical chemistry and pharmacy he thought it would be an advantage if all students underwent a scientific training comparable with that which was now regarded as necessary for industrial chemistry, engineering, and medicine; and he urged the need for some instruction in the principles of biology, so that the pharmacist should understand thoroughly the practical part of his science. Another advantage of a university course was that it enabled the student or practitioner to carry out with intelligence original investigations in his own subject and so promote the advancement of his vocation. But Mr. Waring recognized that all students were not alike; some who could readily learn all the mechanical parts of their profession had not the intellect to grasp the theoretical parts, and it was far better that they should not attempt a university or college education. He had long held the view that pharmacy was worthy of a higher position among the technical vocations, and for this reason he welcomed the news that the standard of the entrance examination for the School of Pharmacy was likely to be raised. A higher level of preliminary general education was needed if all the advantages of a scientific training were to be gained. It had been suggested that a closer connexion with the University of London by the Pharmaceutical Society would have a beneficial effect on pharmaceutical chemistry and pharmacy. In general principle this appeared correct, and if the Pharmaceutical Society brought forward a concrete scheme in which they asked that either pharmaceutical chemistry should be made the chief subject for a science degree or that a new degree, such as Bachelor of Pharmacy, should be instituted, the University would explore the whole question and try to meet the Society in every way, provided that whatever was done was for the progress of science, the good of the nation, and the improvement of the vocation.

PRINCESS MARY INFANTS' WARD AT LEEDS.

The General Infirmary at Leeds contains within its walls, as everyone who is conversant with its working knows, a fully equipped children's hospital. The tendency of the great Leeds charities has been towards centralization and not to the multiplication of small institutions. The management is fully alive to the desirability of segregating those of tender years and of securing facilities for the early removal to suitable extensions of the hospital in the country of patients who have been subjected to operations or have suffered from medical complaints as soon as this is deemed wise. The rearrangement of beds throughout the hospital, which was commented upon in this column some months ago, has secured this segregation by the allotment of three large wards (Nos. 6, 8, and 10) for children. Each has accommodation for thirty-three patients, and it is expected that this accommodation will be increased by the provision of a certain number of cots in an open-air ward on part of the north terrace. On the surgical side of the house the patients are dealt with by the ordinary surgical staff; on the medical side, some two years ago, special arrangements were made. It was arranged that one member of the staff, Dr. Vining, who at that time was junior assistant physician, should in his infirmary work confine his attention to the subject of the diseases of children. He had his out-patient clinics, and to him was allotted all the cots which were, or in future might be, devoted to the care of infants under the age of 3 years who were suffering from nutritional diseases. This class of patient was specially considered, as it was felt that a great work was awaiting development in connexion with infant welfare. Already Dr. Vining's work has borne fruit—directly by the increased attention that this class of patient receives, and indirectly by the improvement of the teaching of students. Dr. Vining's work is not confined to children of this age, for he has out-patient clinics for children up to 10 years of age, and to him are allotted a proportion of the cots for children up to that age. The institution of this special department for children is regarded as a step in the right direction and as one that will prove to be free from some of the disadvantages of special hospitals. It is in connexion with this development of the work of the Infirmary that the opening of the Princess Mary Ward for Infants has been so very cordially welcomed. At the suggestion of the Lord Mayor, the Princess was graciously pleased to allow the wedding present which Leeds desired to present to her to take the form of this ward to be added to the Infirmary. Large donations were not solicited, and it is especially pleasing to learn from the speech of the Lord Mayor, when he was requesting the Princess to declare the ward open, that some 40,000 of the school children of Leeds had added their mite to the £6,000 which had been contributed. The ceremony of opening the ward was performed by the Princess, who, along with Viscount Lascelles and the Countess of Harewood, visited the Infirmary on October 2nd; the weather was fine, and the reception accorded to Her Royal Highness was most cordial. Admission to the Infirmary was granted to as many as it was possible to accommodate along the course which was followed by the Princess, who, after some presentations had been made, was conducted to the new ward by Mr. T. L. Taylor. Here the Lord Mayor read an address, and asked the Princess to open the ward with the key which was presented to her by Mr. Sydney Kitson, the architect of the new ward. Having done so and declared the ward open, Princess Mary made a full inspection of the ward and of its annexes under the guidance of Mr. T. L. Taylor, who had, in a few well-chosen words, thanked the Princess for her gracious gift. Old students will be interested to know that the new ward occupies the space between the staircases of No. 6 and No. 8 wards, largely above the clinical lecture theatre. Access to it is from the north terrace and also in connexion with the landing of No. 8 ward. It is self-contained, and has lavatories and kitchen of its own. There is accommodation for some twelve or fourteen cots for infants. Dr. Vining will be in sole charge of this ward, and its provision will enable him to develop this part of his work on good lines.

[1] Sir Clifford Allbutt, "The Training of the Medical Student," British Medical Journal, September 2nd, 1922 ("University v. Technical School," p. 468).

THE QUEEN ALEXANDRA SANATORIUM FUND AT DAVOS.

We have had several inquiries in recent years about the fate of the Queen Alexandra Sanatorium in Davos. This institution was founded chiefly as a result of the labours of the late Lord Balfour of Burleigh, to secure the advantages of sanatorium treatment in an alpine climate for persons of small means of the English-speaking nationalities suffering from curable tuberculosis but unable to afford the ordinary expenses of such treatment. A daily average of 40.7 patients were in residence during 1914, and at the general meeting held in July of that year the eminently satisfactory eleventh annual report was presented. It was decided to complete the last few unfinished items of the building, and orders were given to that effect.

A few days later the blow fell; the male servants were called up for military service, and all except three of the female staff left in a panic. Most of the patients returned home as soon as travel was possible, and the remainder were transferred on the approach of winter to a hotel in Davos. In April, 1915, the work of the sanatorium ceased entirely. The building thus remained empty until 1922, an offer of its use for convalescent or sick soldiers being declined by the War Office. During these years the overhead charges continued to run, and when the time came for reopening there was no balance available for the large initial outlay, and an appeal for this purpose proved fruitless. Last summer the building was sold to the cantons of Thurgau and St. Gallen for a popular sanatorium and the proceeds were invested to serve the original object of the Fund. Legal advice at this stage made it clear that the income must continue to be applied towards the treatment of patients in an alpine climate—that is to say, in Switzerland and not in Great Britain. Sale of the building itself was not held to constitute failure of the original object. Of the possible alternatives the Council decided on a system of money grants conditional upon treatment being taken at some approved place. The gross income available for such grants is expected ultimately to reach £1,800 a year. The establishment approved for the purpose is, for the present, the Hôtel Frei, Davos Platz, where the charge made to nominees of the Fund for board and lodging will be fr. 12.50 a day. This charge includes a separate room, central heating, and electric light. Rooms will be assigned by the local committee. The visitor's tax of 55 centimes a day will bring the hotel charges up to fr. 13.05 a day, or fr. 91.35 —equivalent to about £4—a week. Assistance from the Fund will be given in the following form: (*a*) a grant of fr. 38 a week towards the hotel bill (paid direct to the hôtelier), (*b*) free medical attendance by a visiting physician, (*c*) free nursing by a resident nurse, (*d*) payment for medicines and bacteriological examinations ordered by the physician. The net cost of maintenance and treatment to an assisted patient (excluding personal laundry) is estimated not to exceed £2 10s. a week. Assistance is limited to the winter months and to a period of six months in all. The cost of the journey is borne by the patient; a second-class single ticket from London to Davos Platz costs about £5 15s. Those aided by the Fund will be expected to stay throughout the winter season. The medical report on which assistance is granted is filled in by the applicant's usual medical attendant, for submission to one of the examining physicians to the Fund. Dr. Arnold F. Bill and Dr. Florian Buol are the visiting physicians in Davos. Application forms and further information will be sent by the Secretary, Queen Alexandra Sanatorium Fund, Davos Platz, Switzerland. Copies of the forms only can also be had from the Honorary Secretary to the Council, Mr. D. Vesey, 3, Camp View, Wimbledon Common, London, S.W.19.

NAVAL MEDICAL SERVICE MEMORIAL.

A short time ago (August 26th, 1922, p. 396) we published an account of the unveiling of a memorial tablet at Haslar Hospital to the members of the naval, medical, and nursing services who fell in the great war. A similar memorial tablet, dedicated to the memory of the medical officers, sisters, V.A.D.'s, sick-berth staff, and sick-bay reserves of the Royal Navy who fell in the great war, has now been erected at the Royal Naval Hospital, Plymouth. It was unveiled on October 4th by Surgeon Rear-Admiral Sir Daniel McNabb, principal officer of the hospital. In his dedicatory speech he dwelt especially upon the spirit of comradeship that ran through all ranks of the navy, knitting them together in a bond of devotion to duty and to their country. The medical staff, he said, in action lacked the excitement of the fighting man; their duty was especially to keep themselves as cool and unconcerned as though at a surgical demonstration, and to exercise the same delicate skill that they would display in the operating theatre of a hospital at home. The type of man who could do this was of no ordinary kind, and it reflected the highest credit on the medical service of the navy that its duties under such trying circumstances should have been so brilliantly and efficiently discharged. Among those present at the ceremony were Surgeon Vice-Admiral Sir Arthur May, Surgeon Rear-Admiral Sir William Pryn, representatives of all ships and establishments, and of the British Red Cross Society and the St. John Ambulance Association.

EXHIBITS AT THE ROYAL COLLEGE OF SURGEONS.

The excellent practice of displaying specimens recently added to the museum of the Royal College of Surgeons of England in one of the rooms is being continued this year. The specimens are now on view in Room 1, and will so remain until November 10th. Some eighteen months ago a number of subscribers presented to the College the collection of anatomical specimens of the anatomy and lesions of the nose formed by the late Professor Onodi. Nearly one hundred of these have already been redissected and remounted and are included in the collection now shown. Amongst the other exhibits at Lincoln's Inn Fields are a series of specimens demonstrating the circulation in the shark which have been made by Mr. R. H. Burne, the physiological curator to the museum, as well as a number of pathological specimens of interest, presented by different surgeons and physicians.

THE MEDICAL SOCIETY OF LONDON.

The one hundred and fiftieth session of the Medical Society of London opens on Monday evening next, October 16th. The annual general meeting will be held at 8 o'clock, and the President (Mr. James Berry) will vacate the chair in favour of his successor, Lord Dawson of Penn, G.C.V.O. The presidential address will then be given by Lord Dawson on "Certain developments in medicine," to be followed by a discussion. An interesting programme has been drawn up for the first half of the ensuing session. On October 30th a clinical meeting will be held for the exhibition of cases and radiograms illustrating tumours of the abdomen (other than those of the female appendages). On November 13th there will be a debate on "pernicious anaemia," and on November 27th a discussion on blood transfusion in civil practice. On December 11th Sir William Willcox will introduce a discussion of the clinical, pathological, and radiological aspects of infections of the teeth and gums. These meetings will be held at 8.30 p.m. at 11, Chandos Street, Cavendish Square. The Lettsomian lectures will be given in February and March, 1923, by Mr. W. Ernest Miles on carcinoma of the rectum, and Dr. J. Walter Carr will deliver the annual oration in May.

THE PRINCE OF MONACO'S BEQUESTS.

The late Prince of Monaco bequeathed the sum of 1,000,000 francs to the Académie de Médecine, the income to be used for a prize every second year. He bequeathed the same sum for a similar purpose to the Académie des Sciences, the nature of the subject to be selected in each case by the Academy in relation to the needs of the moment. He bequeathed to the Institute of Human Palaeontology, founded by him in Paris, all his books, drawings, and specimens relating to the subject, and directed that a scheme should be drawn up for research work and investigation to establish scientifically the history of man and his origins. He also left 700,000 francs to Dr. Jules Richard for the completion of scientific and literary work in connexion with the great Oceanographic Institute at Monaco, which has a branch in Paris, and other moneys, together with his books and collections, to the same Institute. To the French Academy of Agriculture he left his farm at Ste-Suzanne, to be maintained as a place for agricultural experiments, and as evidence of what science and determination can obtain from unpromising soil.

The first social evening of the new session of the Royal Society of Medicine will be held on Wednesday, November 8th. The new President, Sir William Hale-White, and

Lady Hale-White will receive the guests at 8.30 p.m., and at 9 p.m. Sir John Bland-Sutton will give an address entitled "Spolia Memoralia; Shrunk Human Heads, Labrets, and Ear-plugs." Music and light refreshments will be provided.

THE BACTERIOLOGY OF TINNED MEAT AND FISH.

THE Food Investigation Board of the Department of Scientific and Industrial Research has issued this week a timely report by Dr. W. G. Savage, Mr. R. F. Hunwicke, and Mr. R. B. Calder, on the bacteriology of canned meat and fish.[1] It consists of five parts. The introductory section deals with methods of examination and record, cultural tests and bacterial classification, and gives a summary of the foods examined; Section II describes the organisms isolated and discusses their significance; Section III records a special investigation into the relationship between oxygen requirements and decomposition changes in tinned foods; Section IV discusses generally the results obtained from these researches; and the concluding section reviews briefly the work of other investigators. The pamphlet ends with a useful list of references to the literature of the subject.

Aim and Method of the Inquiry.

In approaching this investigation the following considerations and lines of inquiry appeared to the authors to be of primary though not of equal value:

"(*a*) To study how far canned foods contain living bacteria or their toxic products, which are capable, under favourable conditions, of setting up food poisoning or food infections. This applies not only to canned foods which are rejected by the tests employed by inspectors, but also to food passed and consumed as being sound.

"(*b*) To ascertain to what extent canned foods passed for consumption are free from bacteria, and, if not sterile, the importance and significance of the bacteria found.

"(*c*) To study the bacteria associated with and concerned in the spoilage of canned foods with a view to diminishing wastage from such causes."

The total amount of canned foodstuffs lost through spoilage is enormous, though it is now relatively small in proportion to the quantity canned. To diminish this wastage to the lowest possible figure can only be achieved if the bacteria which cause spoilage are known, their modes of introduction ascertained, the conditions necessary for their growth elucidated, and the efficiency of the sterilization processes studied in the light of the actual bacteria found both before and after sterilization. While an exact study of the bacteria present is essential, other considerations come in, and the authors made it their aim to investigate the subject as a whole in all its bearings. This led them to make a number of subsidiary researches—for example, into the chemical properties of the organisms isolated under the conditions occurring in canned foods, and into the relative suitability of the different foods as culture media.

The present report is confined to meat and fish, which present very similar problems; fruit, vegetables, and milk will be dealt with in later reports. For the purpose of this investigation 344 samples of tinned meat and tinned fish (including crustacea) of different kinds and from various sources were examined. Some were ordinary samples passed by the inspectors or purchased in shops, but most of them had been rejected for one reason or another. Nearly all the meat tins contained corned beef, and no samples of made-up meat products were included. Each sample was very thoroughly examined, and the findings were compared with the physical characteristics of the unopened tin, with the characters of the contents after opening, with direct microscopic examination of the food, and with the chemical findings. Besides this many sound tins were experimentally inoculated with pure cultures of the bacilli isolated. Full details are given of the methods of examination and recording adopted, and the precautions taken to avoid outside contamination. In every case the cultural characters of the organisms were studied in pure culture. Certain characters were recorded as of special importance—namely, powers of resistance, conditions as regards oxygen requirements, optimum temperature for growth, and ability to decompose proteins. Here it may be noted that the indol test was found of no value in distinguishing between types of bacteria which can decompose tinned foods and those which cannot.

The Organisms Isolated.

The micro-organisms isolated were classified into six groups: (1) moulds and yeasts; (2) obligate anaerobic bacilli; (3) sporing aerobic bacilli (excluding thermophils); (4) thermophilic bacteria; (5) non-sporing aerobic bacilli; (6) micrococci.

(1) Yeasts, though plentiful in tinned milk and fruit, are scarcely ever found in tinned fish or meat. The presence of moulds is evidence of air access; there is nothing to show that it can cause either "blowing" of tins or extensive decomposition of the meat, but it makes the food unsaleable.

(2) Anaerobic bacilli were looked for in every sample, for the important part these were likely to play was recognized. They were found in 27 samples—9 meat tins and 18 fish tins. Seven strains corresponded with *B. sporogenes* and 12 with *B. rauschbrand* type. The former type of organism was found capable in pure culture of producing putrefactive decomposition in canned meat with obtrusive "blowing" of the tin; the latter caused gas development and, if given time, it led to pronounced decomposition. It appears that obligate anaerobes, if they get a chance to grow, always produce profound changes in the food.

(3) Assuming that sound canned foods are not of necessity sterile, it is important to distinguish between the types of organism which may be looked upon as actual or potential causes of decomposition and those which are harmless concomitant bacilli. From this point of view the ordinary sporing aerobic bacilli are of much consequence because of their wide distribution in canned foods, their great resistance to heat, and the ability of most of them to break down proteins. Special attention was therefore paid to this group as a cause of unsoundness in tinned food. Since there is at present no satisfactory classification, the authors made no attempt to give names to most of the strains, but classed them into alphabetical subgroups. In regard to the significance of this group, the two main questions were whether its members possessed any pathological or harmful significance, and whether they could decompose meat or fish either under ordinary conditions or in specially favourable circumstances. Most of them were found to be widespread saprophytic bacteria devoid of any pathogenic properties. Studying the relation between decomposition and sporing aerobic bacilli, the authors found that their presence, as such, even if proteolytic, cannot be accepted as evidence of unsoundness. Nevertheless, it is conceivable that in special circumstances they may have been the cause of the unsound condition of the tins with which they were associated. For instance, the presence of small leaks, by permitting access of air, might possibly supply the oxygen necessary for their growth and enable them to multiply and decompose the food.

The factor of access of air assumed greater importance as the inquiry went on; but from time to time the authors came across strains of aerobes which grew well under anaerobic conditions, and careful investigations were made.

"It is evident from these experiments that sporing aerobes are very widely present in canned meat and marine products even when the tins are sound and the contents perfectly good. Although most of them are capable of readily decomposing proteins under favourable conditions of growth and temperature, they do not do so in hermetically sealed tins, because the supply of oxygen is inadequate. Some of them—possibly a majority—possess the ability to multiply under strict anaerobic conditions, but at the best growth is slight and far less than would occur if oxygen were available. Grown under these conditions they do not cause decomposition, either because of the inadequate growth, or because a supply of oxygen is necessary for the manufacture of proteolytic enzymes. Such a conception at once emphasizes the importance of leaks in the tins. Given a hole in the tin which will admit sufficient air, our experimental results show unmistakably that these strains will not remain dormant but will multiply, produce proteolytic enzymes, and decompose the contents. In most of our experiments the air access holes were about 4 mm. in diameter, but . . . the same result may be obtained with pin-hole leaks."

(4) Thermophilic bacteria are widely distributed in canned foods, even when the contents are perfectly good in every way. Their wide distribution in sound products and their negative properties (inability to produce gas or decompose proteins) indicate that they are not a cause of spoilage of this kind of canned food, either in natural conditions or as a potential cause when small leaks allow the entry of enough air to enable them to multiply.

[1] The Bacteriology of Canned Meat and Fish. By William G. Savage, R. F. Hunwicke, D.Sc., M.D., and R. B. Calder, B.Sc. Special Report No. 11. Food Investigation Board. H.M. Stationery Office. 1922. (Pp. 72. 2s. 6d. net.)

(5) For the purpose of this inquiry the important features of the non-sporing aerobic bacilli are the possession of proteolytic properties and the ability to ferment carbohydrates with the production of gas. In all 78 organisms were isolated and classified amongst the divisions of this group. Those which both liquefy blood serum and ferment carbohydrates with gas production are an important cause of decomposition in canned meat or fish. Those which ferment carbohydrates with gas formation may "blow" the tins but do not lead to much decomposition. Those which are neither proteolytic nor fermentative have no significance as causes of unsoundness.

(6) Micrococci of different kinds were present in some 23 per cent. of the samples. Most of them were morphologically diplococci; but staphylococci, streptococci, and here and there a sarcina, were also isolated. The authors are confident that micrococci play no part in causing unsoundness, and the reasons for this opinion are stated at length. These strains cannot by themselves in the ordinary way cause decomposition in canned meat or fish; nor were any facts observed suggesting that they may act symbiotically and so assist more active strains. In the absence of any leak they can sometimes survive the sterilization processes.

Throughout this investigation no bacteria of the food-poisoning types were detected, and there was nothing to suggest that the organisms associated with the unsound conditions present were pathogenic to man.

Soundness and Sterility.

A full account is given of a special inquiry into the relation between oxygen requirements and decomposition, leading to the opinion that minute leaks act not so much as sources of infection, but as sources of oxygen which light up and set into activity the dormant germs which are there already.

In their general discussion of the results the authors deal first with the comparative insterility of sound samples. Of 76 shop samples, whose contents were perfectly sound, 47 were not sterile, but this was almost wholly due to sporing aerobic bacilli, thermophilic bacilli, and micrococci. These, it seems, are to be looked upon as the survivors of bacteria originally present; they are not invaders through leaks in the tins. Such surviving bacilli do not in any way injure the foods they inhabit because they cannot multiply and decompose under the existing conditions.

"The importance of our findings is not that they indicate any danger to health but that (*a*) they show that sterility is not in itself a reliable test of soundness and that samples cannot be justifiably condemned merely because they are not sterile; (*b*) they emphasize the fact that unsoundness in tins is not solely or even usually due to outside contamination but that tins may become decomposed and unmarketable not because outside bacteria gain access but because the conditions within the tin have become changed (for example, by access of sterile air) in such a way as to enable bacteria already present to multiply and decompose the food."

The chief practical conclusion to be drawn from this report is that the conditions under which tinned meat and fish go bad are far more complex than is generally supposed.

"The prevailing view is that canned food tins become unsound according as to whether they do or do not contain bacilli of the decomposing type. Indeed, the ordinary view is still simpler. It is supposed that if the processes of preparation are satisfactory the food contained in the tins is sterile and remains sound, but that if the sterilization is inadequate or leaks subsequently develop bacteria are left alive or gain access, and the food becomes unsound. The type of bacterium present is hardly considered. These simple conceptions cannot be maintained. We have to regard canned meat and fish products as at the best only partly sterilized, and for the most part as containing viable bacilli, many of which are of a decomposing type. The food is sound rather on account of its being free of oxygen than because it is sterile."

Whether the food becomes unsound depends upon many factors, of which the following all play a part: (*a*) the extent and type of the bacterial contamination; (*b*) the efficiency of the "processing" (sterilization by heat); (*c*) the access of air to the tins; and (*d*) the temperature environment of the samples.

The Moral for the Manufacturer.

The moral therefore is that the manufacturer who wishes to ensure the absence, or at least a minimum, of spoilage in tinned meat and fish must be encouraged to do five things: he should obtain his food products as fresh as practicable; he should tin them as speedily as possible under conditions of great cleanliness; he should treat his products so as to ensure the presence of a vacuum; he should employ the right "processing" temperatures; and lastly, by the use of good quality tinplate and efficient tin-closing methods he should avoid causes of leakage, and so maintain the vacuum.

England and Wales.

Jubilee of Manchester School of Medicine.

The jubilee of the Manchester School of Medicine was celebrated on October 4th, when the Dean of the Medical Faculty, Professor R. B. Wild, received a large number of guests, who were shown over the medical school and the recent extensions of its laboratories. Sir Humphry Rolleston, President of the Royal College of Physicians of London, delivered a lecture on the subject of "Recent physiology of the liver in its application to practice." Sir William Milligan, who presided, paid an eloquent tribute to the work which Sir Humphry Rolleston had contributed to the science and art of medicine. Professor G. R. Murray, who also spoke, said that it was not generally remembered that Sir Humphry Rolleston, while at Cambridge, had represented the university on the football field.

The medical school at Manchester was founded by Thomas Turner in 1824, in connexion with the Manchester Royal Infirmary. Previous to this London had enjoyed a monopoly of medical education in England, and Turner's medical school in Manchester was the first to be recognized outside London. William IV conferred the prefix of "Royal" upon it. The Manchester Royal School of Medicine was amalgamated with Owens College in 1872, and Turner died in the following year, having been able to deliver the opening address of the amalgamated college nearly fifty years after his foundation of the medical school. In 1880 Owens College became the first college of the new Victoria University for the north of England, and three years later the new university became empowered to confer its own medical degrees. Enlargements in 1883 and 1894 brought the medical school to its present size, and a further great advance was made when the Royal Infirmary was rebuilt on its present site in 1908. A rearrangement of the interior of the medical school last year has almost doubled the laboratory accommodation for teaching and research.

University College Hospital Dinner.

The First Administrations of Ether.

The annual dinner of past and present students of University College Hospital was held at the Hotel Cecil on October 6th, with Sir Dawson Williams in the chair. The company numbered 110, and included Sir Rickman Godlee, Sir John Rose Bradford, Sir Frederick Mott, Mr. Raymond Johnson, Sir J. H. Parsons, and Major-General Sir A. P. Blenkinsop.

After the King's health had been honoured, the Chairman proposed prosperity to University College Hospital and Medical School, and recalled that it was the first hospital in this country to be built as a teaching hospital. Speaking of the history of the buildings in Gower Street, he said that the spirit of the old dingy hospital of former days overmastered the inferior accommodation, and admirable work was done then under most unfavourable conditions. The chairman had before him on the dinner table a chairman's bell presented to University College Hospital by Dr. F. W. Cock. It is one of two bells both cast from the same ingot as the two new bells recently hung in Westminster Abbey. Each was suspended from an iron support made from the railings of the old operating theatre in University College Hospital. The other bell Dr. Cock presented to the Massachusetts General Hospital. Both bells were engraved with the names of the "General Hospital, Massachusetts," and "University College Hospital," with the dates, and both bore also the monkish Latin rhyme of the eighteenth century often found on church bells, "Nolae pulsatio amoris ratio," which may be freely translated, "When I do sound let joy abound." The chief bell foundry in early times, it should be explained, was at Nola in Campagna, so that the name of the place became synonymous with bell. The gifts were intended to commemorate the fact that ether was first administered as a general anaesthetic in the Massachusetts General Hospital on October 16th, 1846, and was first so administered in Europe at University College Hospital on December 21st of the same year. The operation at Boston was for a vascular tumour of the neck and was performed by Dr. Warren. The operation at University College Hospital was for amputation above the knee and was performed by Mr. Liston. The chairman read a letter which Dr. Cock had received from the board of trustees of the Massachusetts General Hospital expressing their high appreciation of all the bell presented to them represents and means. "They value it," the letter continued, "most highly not only for these reasons but also as a generous expression of that friendly

feeling which exists and should always exist between the two countries. When this bell is rung here and when its mate is rung at the Annual Students' Dinner of University College, may the sound remind all the hearers of the ties of blood and friendship which we trust will grow ever stronger with the passing years." On the suggestion of the chairman on October 6th it was resolved to send a message of greeting by those present to their colleagues of the Massachusetts hospital. The toast was responded to by Dr. George Blacker, Dean of the Medical School, who said that the entry of new students this year was very good and included a considerable proportion of Oxford and Cambridge men. Progress was being made in the erection of the new buildings rendered possible by the Rockefeller benefaction, and in association with this gift a lectureship in biochemistry had been instituted, with Mr. C. R. Harington as the first lecturer. In reviewing the events of the past year, Dr. Blacker noted the knighthood conferred on three old students—Sir George Abram, Sir J. Herbert Parsons, and Sir A. P. Blenkinsop; the election of Dr. Charles Bolton to the Julius Mickle Fellowship in the University of London; and the award of the British Medical Association's Gold Medal of Merit to Colonel Arthur Martin-Leake, V.C. with Bar.

Dr. Herbert Spencer proposed the health of "Our Chairman, our Alumnus, the Editor of our Journal." He said that Sir Dawson Williams studied at University College under three great teachers—Sharpey, Bastian, and Jenner—and had proved in his own person (as one of them had said) that honesty, kindness, and decision were the three great attributes of success in the medical profession. While doing hospital work as a physician he carried out some remarkable researches; then for twenty-five years he had devoted his learning, wisdom, and tact to making the BRITISH MEDICAL JOURNAL the greatest medical journal in the English language. Under his direction it had improved in every way; but, alas, its price also had gone up! Dr. Spencer spoke of the delight felt by all the chairman's friends at the knighthood bestowed on him in recognition of his great contributions to medical science, and at the honorary degrees in science, letters, and law he had received from three British universities. The duties of the Editor of the BRITISH MEDICAL JOURNAL were multifarious, arduous, and exacting, but from his room high up in the building at the corner of Agar Street with its wonderful prospect over London, the Editor took a wide view of medicine and of life.

POST-GRADUATE COURSE AT SHEFFIELD.

The new series of post-graduate lectures and demonstrations for 1922 arranged by the Faculty of Medicine of the University of Sheffield began last week. The lectures and demonstrations are given on Tuesday and Friday afternoons at the Royal Infirmary, the Royal Hospital, the Jessop Hospital, and the University. The course ends on December 15th. On Tuesday, October 17th, at 3 p.m., Professor Mellanby will lecture at the University on shock, and on Friday, October 20th, at the Royal Infirmary, Dr. Barnes will give, at 3 p.m., a demonstration of stomach cases, and at 4 p.m. Mr. Finch will speak on the surgical treatment of indigestion.

A MEDICAL SHERIFF OF LINCOLN.

The Lincoln City Council has unanimously decided that Dr. Godfrey Lowe should be appointed sheriff of Lincoln for the ensuing municipal year. The sheriff-elect is a native of the city, and a son of the late Dr. G. M. Lowe. He was educated at St. Bartholomew's Hospital, and qualified in 1894. He did valuable public work as a city councillor from 1911 to 1916, and he has had a long connexion with the Imperial Forces. He joined the 1st Volunteer Battalion the Lincolnshire Regiment as a private in 1888, and was granted a commission in 1900; he retired with the rank of captain in 1910. In 1912 he joined the R.A.M.C.(T.F.) on the staff of the 4th Northern General Hospital. Mobilized on the outbreak of war, he served with his hospital until August, 1919, for the last six months as registrar with the rank of major. Dr. Godfrey Lowe has long been a prominent member of the British Medical Association. In addition to the work he carried out during the war at the War Hospital, in his own practice, and helping other men, he acted as secretary of the Lincoln Local Medical War Committee. He was also secretary of the Lincoln Division of the British Medical Association from 1915 to 1921, and he has been secretary of the Lincoln City Panel Committee since 1916.

Scotland.

THE LISTER WARD.

IN the course of a private visit to Glasgow which Field-Marshal Earl Haig made on October 4th the Glasgow Royal Infirmary was visited. Lord Haig was shown over the Lister Ward by Professor Robert Kennedy, and expressed his keen pleasure at having the opportunity of seeing this historic memorial of the great surgeon. He expressed the hope that the ward would not be removed, but retained as a museum for the housing of the Lister relics and other exhibits associated with the evolution of surgery.

THE AFFLECK BEQUESTS.

The late Sir James Affleck, M.D., of Edinburgh, who died on September 24th, in addition to a number of private bequests left to the Royal Infirmary, Edinburgh, £5,000 free of legacy duty, desiring, if the managers approved, that a bed should be named "The Affleck Bed" in one of the wards where he served. In addition he left £1,000 for the purchase of radium for the use of the Infirmary, and £2,000 for the benefit of the nursing department. He left to the Longmore Hospital for Incurables £5,000, and to the University of Edinburgh £1,000, half for the University library, and half for a prize or medal to be awarded annually to the best student in the class of medical jurisprudence, to be named "The Maclagan Prize"; £500 was left to the Royal Hospital for Sick Children, and to each of three different funds of the United Free Church; four Edinburgh charities were left £100 each.

GLASGOW MEDICAL LUNCH CLUB.

At the meeting of the Glasgow Medical Lunch Club, held on October 5th, with Dr. F. W. Martin in the chair, Mr. Henry Baynton, the well-known Shakespearean actor, was present as a guest, and after lunch shortly addressed the members. In the course of his remarks Mr. Baynton expressed the thanks of his profession to the medical profession for the many kindnesses shown to them by doctors in many towns throughout the country. The chairman intimated that the time had now come to put the club on a more permanent basis, and to this end he proposed that office-bearers and a representative committee be appointed. The following officers were elected: President, Dr. W. L. Reid; Vice-President, Dr. John Henderson; Secretary and Treasurer, Dr. David McKail. To act with these in the management of the club a committee of nine members was chosen, representative of the various districts of the city.

Ireland.

BELFAST APPOINTMENTS.

AT the last meeting, on October 5th, of the Board of Management of the Royal Victoria Hospital, Belfast, Dr. J. A. Smyth, resident pathologist, was appointed to the new post of resident biochemist to the hospital, and Dr. J. T. Lewis, who has been in succession house-physician and house-surgeon to the hospital, was appointed resident pathologist. The medical staff had before the war urged the necessity of a biochemist or metabolist to the hospital, and the Board of Management had approved of the scheme, but its realization had to be postponed. The biochemist will be resident, and will devote all his time to the work; he will work under Dr. T. Houston, physician in charge of the department of haematology and vaccine therapy, but will have separate rooms in his laboratories. The professor of physiology and the lecturer on biochemistry at the university have promised their aid in this new departure.

TUBERCULOSIS IN BELFAST.

Dr. A. Trimble, the chief tuberculosis officer of Belfast, has just issued the annual report of his department, which has now assumed large proportions and embraces the Tuberculosis Institute, the municipal sanatorium at Whiteabbey, and the municipal Hospital for Tuberculous Children at Graymount. It is gratifying to note that the number of examinations has fallen from 3,420 in the year ending March, 1918, to 1,705 in 1921, and the number of tuberculous cases from 2,604 to 1,014.

A large number of non-tuberculous cases have also been examined, consisting chiefly of suspects. The decrease has occurred in both the pulmonary and non-pulmonary forms of tuberculosis. The total number of patients treated during the year was 6,571, and the total deaths from all forms of tuberculosis in the city was 855, giving a ratio of 1 to 7.6 of those coming under the scheme. As regards the influence of occupation, there are the usual large numbers of servants, doffers, spinners, stitchers, and also many labourers and housewives. Of the patients 418, or 41 per cent., were found to be living with other tuberculous patients, but the number sleeping in the same room has steadily decreased each succeeding year. Dr. Trimble again emphasizes the necessity for increased cleanliness to limit infection. The usual distribution of the disease is observed: the crowded, poorer districts are most heavily affected; the residential, "garden-city" districts are least affected. The tuberculosis nurses paid 49,270 visits, and Dr. Trimble insists on the great value of their work, both for prevention and treatment. In an interesting and important section dealing with pregnancy and tuberculosis is a table giving a brief analysis of the result of pregnancy in 1,120 tuberculous women: 8.3 per cent. miscarried; 89 per cent. were delivered of a living child at full term; 2.7 per cent. were delivered of deadborn children at full term; among the 8.3 per cent. other causes may have been at work. Dr. Trimble arrives at the conclusion that tuberculosis is not a very active cause of premature birth. In another table he gives the result of pregnancy on the clinical course of tuberculosis in 992 cases: 28.6 per cent. were improved; 49.7 remained unchanged; 16.2 were worse; and 5.5 per cent. died within one year of delivery. These figures are new and important, and show that the question of prognosis must be reconsidered. The x-ray, dental, and bacteriological departments all show increasing figures, as is to be expected with their ever-growing importance. An interesting account is given of the open-air school and of the municipal hospital for the osseous forms of tuberculosis. The school started in March, 1921, with 20 pupils; on March 31st, 1922, the attendance roll was 105. A large open garage at Graymount has been converted into an open-air day school; it can be protected from wind and rain coming from any direction; on the original concrete floor there has been laid down a circulating hot-water system, over which is laid a sectional wooden floor, so that even on the coldest and wettest days the children's feet are kept warm; Dr. Trimble testifies to the great physical improvement of the children at the school. In the hospital there are only 47 beds, but over 200 are required, and a seaside convalescent branch is also very necessary. The last pages of the report are devoted to charts and sections showing the steady fall in incidence and in mortality of tuberculosis in the last forty years.

Correspondence.

SERUM BY THE MOUTH.

SIR,—In the JOURNAL of July 1st (p. 23) Dr. Allison gives his experience of the use of serums and vaccines by the mouth. He began to use serums orally in 1892. In *New Serum Therapy* (Baillière, Tindall, and Cox, 1906) I mentioned several who had reported the use of antidiphtheria serum orally for diphtheria and hypodermically for sepsis as well. Dr. Allison evidently was early amongst all such explorers, and it was from where they were and where Dr. Allison admits he still is that my work began.

In *New Serum Therapy* the action of serums by the mouth was defined as being neither antitoxic nor antibacterial so far as its specific action on the organism was concerned. The other elements in the serum were described as elements controlling tissue tone and probably of glandular origin. A sharp line of division was made between normal serums and those which were the product of acquired immunity. In *Hormone Therapy by Sera, Vaccines, and Drugs* these other elements were recognized as hormones, and that they were the basis not only of tissue metabolism but also of tissue immunity. Their action was not obtainable by hypodermic injection of the serum any more than the specific effects of the antitoxic and antibacterial elements were obtainable by oral exhibition. It was also stated that to obtain the full immunity possessed by the animal supplying the serum it had to be given both orally and hypodermically—orally for the hormone action on the tissues, and hypodermically for its specific action on the toxin or organism.

In both publications the hormone action on the tissues was recognized as non-specific and extended to any antigen to which the tissues were toxophil. Dr. Allison's experiment with cooked thyroids is extremely interesting, and confirms my contention that the active principles of the endocrine glands are not affected by being administered orally in their natural medium any more than when they are the crude product of the laboratory.

May I correct the slip pointed out by the reviewer?—"Antidiphtheria serum *from a culture* grown on *a solution* of normal serum." In such a subject it is difficult to confine oneself to a reasonable space, but in the work published theory and practice are fully detailed.—I am, etc.,

Melbourne, Aug. 23rd. D. MONTGOMERIE PATON.

CHAULMOOGRA OIL IN TUBERCULOSIS.

SIR,—Major Carruthers will find the information he asks for in his letter in your issue of October 7th (p. 656) in the following papers by me on trials made during the last three years in tuberculosis of the soluble preparations of chaulmoogra and other oils, which I have used successfully in leprosy: (1) Sodium morrhuate in the treatment of tuberculosis, BRITISH MEDICAL JOURNAL, February 8th, 1919; (2) The successful treatment of leprosy by injections of soluble preparations of the fatty acids of chaulmoogra and other oils, and its bearing on the tuberculosis problem, *Practitioner*, August, 1921, p. 77; and (3) The application to tuberculosis of the successful treatment of leprosy by soluble preparations of chaulmoogra, cod-liver, and other oils, *British Journal of Tuberculosis*, 1922.

I shall be glad to give any further information desired by those willing to test the treatment under the carefully controlled conditions which are essential to our present state of knowledge, as it is possible to do harm in pulmonary tuberculosis, at any rate, with these powerful preparations, although trials now being carried out in several institutions in careful hands are not without some signs of promise.—I am, etc.,

LEONARD ROGERS.

London School of Tropical Medicine, Oct. 9th.

CARDIOLOGY.

SIR,—I shall esteem it a great favour if you will allow me to comment upon your review of my book in the JOURNAL of September 30th (p. 601), for I am extremely anxious there should be no misunderstanding as to the views I have put forward upon the important point raised by your reviewer. These are his words:

> "His detailed and reasoned criticism of the interpretations of records from the jugular vein is vitiated by the fact that he does not recognize that these tracings are records not of *pressure* but of *volume*."

I am somewhat at a loss to know what precisely is meant by this statement, that the jugular tracings are *volume* records, but as we are dealing with dynamics (fluids in motion) I presume that he means changes in the volume of the blood in the jugular vein obtaining during the cardiac cycle. If I am right I would ask in turn, What is it that determines these changes in volume, if not changes in pressure?

The determining cause of the systemic circulation as a whole is the pressure developed within the left ventricle during its systole. This pressure is transformed into the head of pressure within the aortic sac, upon which depends the circulation through the arteries, capillaries, and veins. During this course the pressure is continuously falling in exact proportion to the resistances overcome by the moving blood. As we near the terminal venous trunks the force of the ventricular systole is nearly spent, and accordingly we find very low pressure readings in the veins at the root of the neck, even to *minus* quantities. At this point the evenness of flow previously maintained in the veins is broken. It now shows haltings and accelerations, attended by congestions and depletions, the vessel wall rising and falling as the one or other condition occurs. The filling up of the vein is by afflux from behind, and it points to an impediment in front; the subsidence of the vein indicates withdrawal of the impediment.

What is it that holds up the venous inflow and then releases it? What but changes of pressure within the auriculo-ventricular chambers?—for the *vis a tergo* driving the venous blood will only yield to a *vis a fronte* on the heart side.

At times the filling of the jugular vein is not merely due to afflux *from behind*; there may be actual reflux from the heart into the veins at two points in the cardiac cycle—namely, (1) the auricular systole, (2) the ventricular systole (especially when the tricuspid valve is incompetent). Intravenous pressure will, of course, rise and fall with each venous distension and subsidence.

There remains yet another cause productive of movements in the internal jugular vein, this time independently of any alteration of volume of blood in the vein. Such is the impact upon the vein of any force from without, and this is illustrated by the carotid artery where it abuts upon the vein, the artery transmitting to the vein its share of the percussion wave projected by the left ventricle at each systole.—I am, etc.,

London, W., Oct. 6th. HARRINGTON SAINSBURY.

PSYCHO-ANALYSIS.

SIR,—If I mistake not, the correspondence upon this subject which has been proceeding in your columns arose primarily in connexion with the attitude which should be assumed towards it by the family doctor. The latter will find a very useful guide in the admirable, scholarly, and scientific address delivered last week (see October 7th, p. 655) by one of our most respected, cultured, and revered physicians—Sir Clifford Allbutt. Some time ago you were good enough to print a letter from me calling attention to the psycho-analysts' views as to dreams. It elicited one or two rather unimportant comments which did not seem to give further information in the desired direction. It was, for instance, suggested that "desultory reading" was not sufficient to warrant comprehension or criticism. Without being intentionally egotistical, I may mention that since retiring from practice I have had more leisure to peruse such works as interest me on the various branches of medicine than falls to the lot of the average general practitioner. Without being accused of conceit, I may, perhaps, be permitted to lay claim to average intelligence. It would thus be fair to assume that what is unintelligible to me will also be unintelligible to him. If this be so, it is only reasonable that he should be suspicious of a method which cannot be demonstrated and which does not seem to rest upon a basis of biology.

Psycho-analysts seem to rely largely upon unproved metaphysical assumptions, and it may be that for this reason their propositions have been too readily accepted at their own valuation. Thus it is possible that the more credulous medical men tend to assume that reasoning which rests upon a branch of knowledge with which they are not conversant is sound, while on the other hand scientific psychologists may be misled by believing that the views of psycho-analysts have the support of physiologists and neurologists. Perhaps some of these may be induced to state their opinions now that Sir Clifford Allbutt has brought the subject before us in such a definite manner.

In any case it is difficult to see how psycho-analysts can refrain from putting forward a reasoned defence of their position without giving that position entirely away. I do not know whether they have ever published any statistics to prove that those who regularly attend confessional are less liable to those neuroses which they attribute to repression. Should they have done so or be able to do so it might go some way towards supporting their position.—I am, etc.,

Harrogate, Oct. 8th. P. MCBRIDE.

UNSUSPECTED PREGNANCY.

SIR,—In view of Dr. Graham Grant's sweeping assertion that no "woman of average size with uterine contents of average bulk" can go to full time without suspecting her condition I beg to record the following case.

On October 25th last year I was called to see a patient on account of a "swelling in the stomach," which was suspected to be a tumour. I found the patient to be a primipara, aged 33, of normal stature, but rather on the small side. She had been married two years, and was living a happy normal married life with her husband. I found her on examination to be nine months pregnant, and when I informed her of her condition she received the news with incredulity, and it was not until two days later when she was delivered of a healthy 7 lb. child that she would accept my diagnosis as correct.

It is interesting to see how the signs of pregnancy were satisfactorily accounted for without arousing suspicions as to her condition in the mind of the patient or her husband. This is even more remarkable when one takes into consideration the fact that she is a woman of normal mentality, who left school on reaching standard five, which I am led to believe indicates an average degree of intelligence.

1. The cessation of menstruation was easily explained to her own satisfaction, as she had always been irregular, due she believed to anæmia.

2. The vomiting of pregnancy was slight, and was similarly easily accounted for as she was of a "bilious nature," and subject to vomiting and feelings of nausea on the least provocation.

3. Fœtal movement was felt, but passed unrecognized, the symptoms being attributed to "wind" for the treatment of which she resorted to aperients. When these failed to stop the "rumblings" the husband cleverly dealt with the situation by administering brandy, which the patient assured me never failed to give immediate temporary relief.

4. A great improvement in appetite was held responsible for the increase in girth and general dimensions, until a few days before labour, when a tumour was suspected. I am indebted to this last most alarming suspicion for my professional attendance on what has proved to be a most interesting case. The husband noticed the increasing proportions of the abdomen and breasts, but never gave pregnancy a thought. However, to explain it he went one step further in the misdiagnosis, and attributed the increase of appetite of his wife to the invigorating air of the district, to which they had recently come to live.

The patient had no reason to hide her pregnancy; in fact, both she and her husband were delighted at the discovery, though somewhat nonplussed by the difficulty of providing baby necessities and a nurse at so short a notice.

Strange as all this may read, I would remind the "doubting Thomases" that sometimes, and especially in this particular case, facts are more strange than fiction.—I am, etc.,

R. W. HODGSON-JONES, M.R.C.S., L.R.C.P.

Caterham-on-Hill, Surrey, Oct. 8th.

SIR,—The case I reported (September 23rd, p. 578) happened in the last years of the war. The patient's husband was in France, and she lived with her mother, who washed her linen for her, and by so doing was able to note the regularity of her daughter's periods. The patient was a fine, well-modelled woman of average height, such as one might infer of anyone engaged in her employment. The baby and placenta were of average size. There was no reason to question the *bona fides* of the patient, her mother, or the representative of the firm for whom she was working. If the patient was lying to me and had been conscious of her condition it is all the more surprising that she should engage herself as a mannequin.

In view of the facts of the case as observed by or reported to me it would be more judicious if Dr. Graham Grant did hesitate before asserting that a woman cannot go to full time without suspecting her condition.—I am, etc.,

Manchester, Oct. 9th. ALFRED WILLIAMS, M.D.

SIR,—Will you kindly allow me a little space to answer Dr. Graham Grant (p. 651), especially as the question of unsuspected pregnancy came up in a recent *cause célèbre*.

The answer to (*a*) has been fully given; (*b*) the woman was slim. The answer to (*c*) was given also.

The woman was living with her husband, who summoned me.—I am, etc.,

London, S.W., Oct. 6th J. FLETCHER.

THE THYROID GLAND AND DISEASED TONSILS.

SIR,—In reply to the letter of "M.A., M.D." (October 7th, p. 662), I regret the ambiguity to which he has drawn attention. What I meant to say was that the removal of a focus of septic absorption such as diseased tonsils must be thought of in relation to possible structural damage already inflicted upon the endocrine system, and, as such, irremediable. I did not intend to suggest that the removal of tonsils *qua* tonsils had any known relation to endocrine function.—I am, etc.,

London, W.1, Oct. 7th. H. CRICHTON MILLER.

Obituary.

ARMAND BERNARD, B.A., M.B.DUBL., L.R.C.S.EDIN.,

Consulting Surgeon, the Lock Department, Royal Infirmary, Liverpool.

THE death of Dr. Armand Bernard has come as a surprise to many of his friends in Liverpool. At the end of the war Dr. Bernard retired from active practice in the specialty with which he had so long been identified. He however continued in his work as a member of the Birmingham War Pensions Committee. Towards the end of last year his health began to fail, and after a lingering illness he passed away at Millom in Cumberland, on October 4th, at the house of his son-in-law, Dr. John Pratt, D.S.C.

Dr. Bernard studied medicine at the University of Dublin, and graduated B.A., M.B. in 1870. In the following year he

took the L.R.C.S. and L.M.Edin., and shortly afterwards settled in Liverpool, where he devoted special attention to venereal diseases among the sailors of the port. His assiduity earned for him the appointment of honorary surgeon to the Lock Hospital under the Royal Infirmary. From that time he became well known as a specialist in venereal diseases, and published many papers in the *Liverpool Medico-Chirurgical Journal*, of which "Mediate syphilitic infection in glassblowers" (1884) was one of the most interesting. Many of his old students will recall to mind the clinics he used to hold regularly, and the pains he took in imparting knowledge and in demonstrating cases. Dr. Bernard was naturally a quiet man, and rather shrank from any form of publicity; essentially a clinician, his opinion was frequently sought in cases of difficult diagnosis before the era of serological tests. To his intimate friends he was a genial man, and had the charm of keeping them.

The funeral, which took place on October 8th in Liverpool, was attended by many old friends and neighbours. Dr. Bernard was a widower, and leaves a son, Captain Cyril A. Bernard, M.C., R.A.M.C., and three married daughters.

We regret to record the death of Dr. T. D. Luke of Clevedon, Somerset, which took place on September 25th after an acute and brief illness. Thomas Davey Luke was born in 1873 at Scorrier in Cornwall, and went from Truro School to Queen's College, Belfast, graduating M.B. of the Royal University of Ireland in 1894 and M.D. in 1908. He obtained the Fellowship of the Royal College of Surgeons of Edinburgh in 1902. While a student at Belfast he won a scholarship in medicine at Queen's College, and the Malcolm and Coulter exhibitions at the Royal Victoria Hospital. For several years he enjoyed an extensive practice in anaesthetics in Edinburgh, and was lecturer in that subject at the University of Edinburgh and the first anaesthetist to the Edinburgh Royal Infirmary. But his health, which was never of the best, compelled him to relinquish these posts, and he became medical superintendent of the Peebles Hydro, for which previous experience at Matlock and Grange-over-Sands had fitted him. Dr. Luke wrote two small works on practical anaesthetics, which each passed through several editions, and he was known also for his writings on hydrotherapy and kindred subjects. During the war he served as surgeon lieutenant-commander in the R.N.V.R. Two years ago (writes a colleague) pursuit of health again led him to the sunnier south, and he took up practice in Clevedon, where he won immediate and general respect by his genial and kindly disposition, his readiness to promote the welfare of the town, and his untiring work of self-sacrifice. He had an extensive knowledge of therapeutics, and had contributed to some of the leading works on treatment, his latest book on physiotherapy being published this year. Dr. Luke leaves a widow and three young children, to whom deep sympathy is extended in their tragic loss.

Universities and Colleges.

UNIVERSITY OF GLASGOW.

The following candidates have been approved at the examination indicated:

Final M.B., Ch.B.—A. W. Aird, Margaret Alexander, R. G. M. Alexander, Isabel P. Allan, A. Anderson, A. Andoe son, W. C. Andrew, Margaret R. Balloch, A. L. Bernstein, Catherine Alexandra, Samuella Blair, Mary MacQ. Bonnyman, Catherine Boyd, Mary Dickeson, A. Boyd, F. A. Brown, R. O. Bruce, Barbara A. Cameron, Janet F. Campbell, Margaret T. Campbell, Margaret G. Carrick, Norah T. Cassidy, Gladys M. Chapell, H. Collingbourne, Margaret E. Colville, Elizabeth S. Cook, J. Cock, J. S. Cook, R. Crawford, Gerhardus C. Cruijswagen, J. S. Currie, Isabella C. Darling, Agnes C. J. Davidson, Margaret Davidson, T. W. David on, J. Dawson, Isabel e A. Deans, Agnes F. Dickson, L. lian M. Dickson, J. S. Donaldson, A. F. Dunn, Amy M. Fleming, Elizabeth H. Forrest, A. Fyfe, A. Gardiner, R. C. Garry, A. V. Garscadden, Emmie C. Gibb, T. Gibson, Jean M. Gilchrist, Margaret B. Graham, J. Grant, R. A. Grant, W. N. Gray, H. G. Halliday, J. W. Hamilton, R. C. Hamilton, Catherine Harrower, A. T. Hastie, Mary N. Hendry, W. D. Hood, T. W. Howie, G. J. Hutchison, Elizabeth G. Jamieson, Jessie M. C. Jamieson, Mary K. Jeffrey, T. J. ones, F. C. Laing, I. E. S. Lee, A. Leitch, J. Lindsay, G. W. Lochhead, Isabella Lmusden, W. W. Luncie, H. M'Cluskey, Joan A. P. MacColl, J. W. M'Conville, Mary P. MacCunn, A. A. Macdonald, Chrissiebella Macdonald, T. J. M'Kail, K. W. Mackenzie, Marion A. M'Kenzie G. Mackerracher, M. M'Lean, N. A. MacLean, S. M'Mahon, R. C. MacMurray, A. M'Nulty, Marion L. M'Quaker, Mary M'Quaker, Doris M'Walter, Agnes L. Mair, D. C. Marshall, D. V. Marshall, H. R. Melville, Elizabeth W. Miller, J. H. Miller, A. Mitchell, W. T. Mitchell, W. Morrison, D. R. MacP. Morrison, Ellen D. Morton, W. Muir, G. J. Muller, J. P. Neilson, Sarah H. Nelson, Elizabeth K. Nicholson, J. Nicholson, T. Nicol, J. L. Orr, J. A. R. Oswald, M. G. Pegare, Louise B. Pollock, T. C. Porter, Mary E. Proudlove, T. D. Pyle, J. H. Ramage, J. S. Ramage, Elizabeth C. Rodger, Bessie S. Ross, Mrs. Sarah Ross, J. Russell, Bertha E. A. Sharpe, W. Simpson, Christina R. I. Sloan, A. Snaddon, J. Sommerville, J. F. M. Stenhouse, Effie S. Stephen, Mary MacP. Stevenson, Jeanie M. Strathie, T. Tannahill, H. G. B. Teggart, R. W. Todd, Margaret S. Watt, Jemima Waugh, Janet A. O. Weir, A. F. Whyte, Catherine B. Wilson, J. H. Wilson, J. W. Wilson, J. H. Wright, Grace M. Young, J. A. K. Young.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

The following have been admitted to the Fellowship (after examination): J. A. G. Burton, J. Reid.

Medical News.

A new winter course of scientific demonstrations arranged by the North of England Branch of the British Medical Association will begin on Thursday, October 19th, at 2.30 p.m., at the Durham County Hospital, when Mr. Hamilton Drummond will deal with treatment of diseases of the colon, Dr. E. Farquhar Murray with border-line gynaecology, and Dr. F. J. Nattrass with meningitis. Tea will be served at 4 o'clock, after which an hour will be devoted to the demonstration of cases by the honorary staff of the Durham County Hospital. The second meeting takes place at the Royal Victoria Infirmary, Newcastle-upon-Tyne, on November 16th.

The opening lecture of the winter session of the Central London Throat, Nose and Ear Hospital, Gray's Inn Road, will be given by Mr. Chichele Nourse, F.R.C.S.E., at 4 p.m., on Thursday, October 26th. The subject is "Foundations of otology: the work of Flourens."

Mr. Philip Franklin will deliver a post-graduate lecture for the Fellowship of Medicine, at 1, Wimpole Street, W., on Tuesday next at 5 p.m., when he will deal with the clinical aspects of tonsils and adenoids. On Wednesday, October 25th, Dr. Eric Pritchard will speak at 8.30 p.m. on the feeding of infants from birth to the end of the second year, and on Tuesday, October 31st, Dr. C. E. Lakin will give a lecture at 5 p.m. on indigestion. Other lectures have been arranged for delivery during November and December.

A course of nine lectures on maternity, child welfare, and school hygiene will be delivered at the Royal Institute of Public Health, 37, Russell Square, W.C., on Wednesdays, at 4 p.m., commencing on October 18th, when Professor Louise McIlroy will speak on the influence of ante-natal care upon infant mortality. No tickets of admission are required.

Dr. R. W. Wilson, having completed forty years in the Poor Law service, has recently resigned. He was appointed medical superintendent of the Croydon Union Infirmary when that institution was opened in 1885. As a mark of appreciation of his thirty-seven years' service in that capacity and also as medical officer of the union home and children's homes, the Croydon Board of Guardians presented him with a handsome silver rose-bowl and leather album containing an illuminated address and the signatures of the contributors. The staff of the Croydon Union presented him with a magnificent chiming clock inscribed with a record of his services. Dr. Wilson was also the recipient of a china tea-service and oak tea-tray from the patients of the infirmary, a breakfast-cruet from the "grannies" of the infirm ward of the union home, and a stamp-album from the children in the homes.

The first meeting of the forty-first session of the West London Medico-Chirurgical Society was held at the West London Hospital on October 6th. Sir Lenthal Cheatle, the retiring president, inducted his successor, Dr. A. G. Wells, who then presented him with the Keetley medal in memory of his year of office. The new President then delivered the opening sessional address, taking as his subject the changes which he as a general practitioner had noticed during the last forty-two years.

At a meeting of the University of London Labour Party held at the Essex Hall, Strand, on October 6th, Mr. H. G. Wells was adopted as the prospective candidate of the party at the next general election.

The Medical Prayer Union will hold a conversazione for the reorganization of the Union, at the rooms of the Medical Society of London, 11, Chandos Street, W.1, on Thursday, October 26th, 1922, at 8 p.m., when an address will be given by Dr. Burnett Rae, on "The religious implications of psycho-therapy." Intimation of intention to attend would be appreciated by the Honorary Secretary, *pro tem.*, Dr. Tom Jays, Livingstone College, E.10.

The Wellcome Physiological Research Laboratories, formerly at Herne Hill, have been removed to Langley Court, Beckenham, Kent.

The first dinner meeting of the Hunterian Society will be held at Simpson's Restaurant, Chcapside, on October 16th, at 7.30 p.m. The dinner will be followed by the presidential address on "The breakdowns of middle life," by Dr. Fortescue Fox; and a paper by Dr. Ernest Young on the treatment of dyspepsia in necessitous patients.

At the September matriculation examination of the University of London there were 67 successful candidates in the first division and 503 in the second division, while 39 gained the supplementary certificate in Latin, three in mathematics, and one in heat, light, and sound.

Founders' day will be celebrated at the National Hospital for the Paralysed and Epileptic, Queen Square, W.C., on Wednesday, November 1st, from 3 to 6 p.m. Each visitor is asked to regard this also as a "pound day" and to bring a pound of goods or money for the hospital.

The National Health Society, of 53, Berners Street, W.1, has arranged for a comprehensive six months' course of training for fully trained nurses and others with certain previous qualifications, who wish to obtain appointments as health visitors and infant welfare workers. The Board of Education has drawn up a definite curriculum for such students, the full course for untrained and younger women being of two years' duration. The fee for a six months' course is 12 guineas, and the new session commenced at the end of September, but students can join later; full particulars can be obtained from the secretary of the Society.

The Italian Society of Urology will hold a congress at Florence on October 24th, when the principal subject for discussion will be the remote results of prostatectomy, introduced by Professors Gardini and Lasio.

The Swedish Society of Physicians has decided to bestow the Anders Reizius medal on Sir Charles Sherrington, G.B.E., M.D., President of the Royal Society, and Waynflete Professor of Physiology in the University of Oxford, for his researches in physiology of the nervous system.

The nineteenth Italian Congress of Surgery will be held at Florence from October 21st to 25th, when the following subjects will be discussed: (1) duodenal ulcer, introduced by Professor Alessandri; (2) arterial and arterio-venous aneurysms, introduced by Professors De Gaetano and Zabelloni.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

Correspondents who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Authors desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The postal address of the British Medical Association and British Medical Journal is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the British Medical Journal, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

Income Tax.

"G. E." is buying a practice and the premium is payable partly cash down, partly by instalments.

**** (1) No allowance can be claimed for that portion of the total capital sum represented by the instalments, neither can tax be deducted therefrom. (2) Interest paid to the bank on an overdraft obtained for the purchase of the practice can be treated as a professional expense.

"J. O'L. M." is assessed for 1921–22 on the amount of his salary as assistant for that year.

**** He was serving in the Canadian forces for 1919. Under an arrangement or concession made by the Board of Inland Revenue army service may be reckoned as "employment" for the purpose of taking an average for the assessment of the earnings of subsequent employment, consequently "J. O'L. M." is chargeable for 1921–22 on his average earnings for the three previous years, or for as long as his army service and civilian employment lasted if a less period.

"C. G." is an assistant who receives a fixed salary, and whose rent has been paid for him by his employer to the landlord.

**** Assuming that "C. G." has the full rights obtainable by payment of the rent he is the statutory occupier, and the amount of rent paid by his employer is assessable on "C. G.," and, of course, properly regarded as an expense of the practice in the same way as the salary.

Asthma.

Dr. Alexander Francis (London) writes: I think that Dr. Martin (September 23rd, p. 582) would find that a cachet containing caffein valerian. gr. 2, theobrom. sodiosalicyl. gr. 5, would help his case of polypus asthma and prevent the necessity of so much adrenaline. One of these cachets can be taken every three or four hours if necessary. Asthma, when associated with nasal polypi, is very difficult to deal with, and the removal of the polypi usually increases the difficulty. The more complete and perfect the operation from a nasal point of view, the more intractable and desperate is the asthma likely to become. It is not sufficiently well known that asthmatic subjects with a low blood pressure, who have, or have had, nasal polypi must not be given aspirin, antipyrin, or oxyquinothein. These remedies in such cases are not only useless, but positively dangerous.

LETTERS, NOTES, ETC.

Urine Tests.

Dr. W. Adams Clark (Penge) writes, in reply to Dr. Washington Isaac's query (September 30th) under this heading: I suggest the use of Benedict's test instead of Fehling's as the best test for routine examination of the urine for sugar. No difficulty occurs with the stopper of the one bottle required. The solution can be obtained ready for use. It keeps well, and is inexpensive. Benedict's test for sugar is made up as follows: Sodium citrate 173 grams, dry sodium carbonate 90 grams, are dissolved in hot water and filtered. In this solution 100 c.cm. of a copper sulphate solution containing 18 grams of the salt are added, with constant stirring, and the whole blue-coloured solution is made up to 1 litre with distilled water. To carry out the test about 1 inch of the solution is placed in an ordinary-sized test tube, and 8 drops —not more—of the urine added. The mixture is then thoroughly boiled, and the appearance of a spontaneous precipitate which may be green, yellow, or red according to the amount of sugar present in the urine, indicates a positive reaction for sugar. If no sugar is present the solution remains blue, or shows only a faint greenish blue haze. The reagent is not affected by the reducing substances in the urine other than sugar, and the reaction being only slightly alkaline, there is less danger of destroying small amounts of sugar which may be present. The test can be applied in artificial light, since it is the bulk of the precipitate and not so much the colour which gives positive indications of sugar.

Prevention of Venereal Disease.

"G." writes: The letter by Mr. Herbert Caiger on "The radical prevention of venereal disease" in the issue of October 7th (p. 661) certainly raises very vital questions. Has the writer considered to what his remedy—"a universally applied habit of unselfish thinking, practised every day in every way"—(not only in sex matters) would lead? Could he who loves his neighbour allow him to work for him at wages incompatible with a decent life? Could shareholders continue to draw interest until the original capital had been refunded many times over, interest which has to be produced by the workers before the rate of wages which the industry can afford to pay is calculated? Can his principle be carried out without changing the whole structure of society?

Correction.

Dr. Douglas K. Adams calls attention to a clerical error in his paper on neuro-syphilis, published last week. In the description of a case of transient diplopia (p. 632, col. 1, line 22) the words "right external rectus" should read "right internal rectus."

Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *143*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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The Harveian Oration
ON
MEDICINE IN THE CENTURY BEFORE HARVEY.

BY
ARNOLD CHAPLIN,
HARVEIAN LIBRARIAN OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Mr. President, Fellows, Ladies and Gentlemen,—In obeying the command of your predecessor to deliver the Harveian Oration I desire, Sir, to record my deep sense of the great honour bestowed upon me, and of the diffidence I experience in approaching a task that has occupied the abilities of so many distinguished men in the past. Already two hundred and two Orators have complied with the conditions formulated in Harvey's bequest. The subject has been presented from many aspects, and I should be guilty of an act of presumption were I to suppose that any part of the field had escaped the minute investigation of so many acute intellects.

Harvey, when founding this oration, indicated with great precision its aims and its extent, but the provisions elaborated with such care by the founder have been interpreted by successive orators in various ways. Sometimes the orator has obeyed the injunctions of Harvey more or less literally, while at other times a brief reference to the commands of the founder has sufficed to link them to the subject of the oration. But Harvey desired this oration to be, above all, the medium of an annual exhortation to this College for the express purpose of keeping alive in the minds of the Fellows certain important principles for the guidance of their conduct in private and professional life—principles as worthy of acceptance to-day as they were in the seventeenth century. For this reason I am constrained to call attention to the commands contained in Harvey's bequest, for they form the essence of the creed of all honourable physicians whether ancient or modern.

These commands of Harvey may be considered for a moment with reference to the manner in which they have been modified to meet the needs of modern times. The founder ordained that this oration should be delivered in Latin, but that tongue has not been heard on this occasion since 1834. The Latin language has ceased to be the usual method of communication between the learned, and by common consent that injunction has been allowed to fall into abeyance. The second injunction imposes upon the orator the duty of mentioning by name all the benefactors of the College, of recounting the work they have accomplished, and of exhorting others to emulate them. But here again the lapse of years has swelled the roll of those who have benefited the College to such an extent that the time at the disposal of the orator would hardly permit him to comply with the command. A judicious selection of names, therefore, is all that the orator can attempt in obedience to this act of piety demanded by the founder. The two remaining injunctions, requiring us "to search and study out the secrets of Nature by experiment, and also for the honour of the profession to continue in mutual love and affection," present no difficulty to the orator of the twentieth century, for they comprise the whole duty of the physician in every age in which his life is passed. But when Harvey in 1656 attached to his bequest these two fundamental commands the peculiar condition of political and scientific thought rendered them specially imperative. The experimental method in science was then in its infancy, and many physicians still clung obstinately to the teaching sanctioned through centuries by authority, itself based on insecure foundations. Political and religious feeling ran high in the seventeenth century, and the admonition "to continue in mutual love and affection" became the solemn duty of every man who had the welfare of the College near to his heart. Although no direct evidence exists in support of the contention, it is impossible to believe that some echo of the fierce political and religious passions then raging in England was not heard within the walls of the College. For the College contained in its body men ready to die for the king, and men just as ready to send that king to a shameful death; men to whom the surplice was an abomination, and men who sighed for the days of universal orthodoxy, before King Henry VIII had raised his destroying hand. All honour, then, to this College for the restraint it was able to exercise, so that, while Puritan and Royalist were engaged in a deadly struggle, the Fellows, holding the same divergent opinions, were able to meet and conduct their business with such decorum that history has been unable to record any overt act of enmity. The amount of control needed may be imagined when men like John Bathurst and Laurence Wright, both in Cromwell's service and high in his favour, took their seats at the Comitia side by side with Harvey and Sir Charles Scarburgh, who were no less zealous in the service of their king. May such moderation be an example for all time!

This College, since its foundation in 1518, may be regarded as representative of medical thought in this country, for, with few exceptions, those who have contributed to the advance of the science and art of medicine have been members of its body. But of all those who have conferred honour and distinction upon the College by reason of their additions to our stock of scientific knowledge William Harvey occupies alone the place of honour. His great work, in which he gave for the first time the true explanation of the manner in which the blood circulated, was published to the world in 1628—110 years after the foundation of the College. The appearance of that work marked the beginning of the epoch of modern physiology, and the close of the long period during which the authority of Galen had held undisputed sway. After the publication of the *De Motu Cordis* the scales fell from the eyes, and men broke for ever with the old and inept tradition that had for centuries hindered the advance in scientific thought concerning biology. But however far-reaching the influence of Harvey's great work may have been, it must not be forgotten that it was but one of the epoch-making movements taking place at the same time in other branches of science. For the early years of the seventeenth century witnessed the gathering of the first-fruits from that vast change produced largely by the revival of learning—a change which ended mediaevalism and freed the human mind from the fetters of blind adherence to authority.

In my attempt to comply with the conditions laid down in the bequest of Harvey I propose to direct your attention to a consideration of the history of medicine and science during the first hundred years of the existence of this College, or up to the date of the appearance of Harvey's work. In carrying out that project it will be my duty to indicate briefly the chief causes responsible for the decay of learning during the Middle Ages and the revival of letters in the fifteenth century; for the rebirth of the study of medicine and science I hold to be a part of that wonderful change. I shall then pass to a review of the state of medical and scientific knowledge during the sixteenth century, or up to the appearance of Harvey's work in 1628. Finally, I shall offer some considerations concerning the change wrought in medical and scientific thought during the seventeenth century by the advent of Harvey. In adopting this method I shall be able to select from the roll of the College types of mental activity in illustration of the various phases through which medical thought passed during the period under review.

The Age of Authority.

Until the dawn of the sixteenth century, coeval with the foundation of this College in 1518, it might be asserted that the study of medicine had made little advance in Europe since the Greek period, which closed with the age of Galen. For more than a thousand years, therefore, the world was content with a medical system constructed in ancient times. But it was not medicine and science alone that failed to register any advance, for the study of all branches of learning was involved in the same black night of stagnation and obscurity, and as age succeeded age Europe receded farther and farther into the abyss of ignorance and intellectual sloth. The chief cause for this lamentable state of learning in Europe was political, and really began on the day when Constantine the Great, in 323, spear in hand, followed the invisible heavenly guide in marking out the limits of the city of Constantinople, the future capital of the East. Although the great founder fondly hoped to rule both East and West while established on the fair promontory at the entrance of the Bosphorus, it soon became evident that the two empires must separate and accomplish their destinies in their own appointed ways. By the time that the great Theodosius was carried to his grave in 395 the division of the empires, begun

in 364, was complete, and the Greek influence was confined to territories along the shores of the Bosphorus, the Propontis, and the Eastern Mediterranean, with stately Constantinople as its diadem. As time proceeded, Greek thought, learning, and language became more and more circumscribed within the ever-narrowing limits of the Eastern empire, and the little progress their influence made was entirely in the direction of the east and south. Meanwhile the Western empire in Europe steadily discarded the Greek influence until scarcely any vestige of it remained. To all but a few the Greek tongue in Europe was unknown. Barbarians occupied the throne of the Caesars, and a crude system of theology prescribed the limits of knowledge, beyond which the minds of men were forbidden to venture. From time to time half-hearted attempts were made to revive Greek thought in the West, but the result was transient, and the dark cloud of ignorance and indifference settled down once more.

Yet it must not be supposed that all learning was dead. The classics were still read in the West, but the knowledge they contained was closely guarded by the religious houses, and was the appanage of their inmates alone. The Church soon became aware that its power, both spiritual and temporal, required support that could be obtained only by an appeal to the intellect. In response to this demand, in the eleventh century was laid the first foundation of that system of learning known by the name of "Scholasticism" which has amazed and, perhaps, appalled the intellectual world ever since. In support of the tenets of the Church the aid of metaphysics borrowed from Aristotle was invoked, and a system was reared having for its basis certain principles founded upon the authority of antiquity which it was sacrilege to impugn. For centuries intellectual Europe was engaged in the barren task of commenting upon these principles. They could not be submitted to destructive criticism, for to doubt or to inquire entailed pains and penalties in this world and in the world to come.

The Revival of Learning.

But although Western Europe was unacquainted with the Greek tongue at this time, it was nevertheless possessed of a knowledge of the writings of the Greeks by means of translations into Latin through the medium of Arabian and Syrian translations from the original Greek texts. Through the same tortuous channels the medical writings of the Greeks were brought to mediaeval Europe, were appropriated by the "schoolmen," and were subjected to the empty and narrow methods of the commentators. Meanwhile the Eastern empire was slowly dwindling, and its limits were gradually becoming confined to a small area with Constantinople as its centre. But, as Philelphus has said, in that peerless city the Court and the Church still spoke the language of Aristophanes and Euripides, and the libraries were still stored with the priceless manuscripts of the learning of ancient Greece. Although the Greek tongue was lost to Europe, and although the Eastern empire was becoming every year a more and more circumscribed civilization, two events were about to take place which may be regarded as first steps towards the restoration of the Greek spirit in the West. I refer to the Crusades, and the occupation of Constantinople by the Franks for a period of nearly sixty years. From the fervent pages of Anna Comnena we are made acquainted with the astonishment of the first Crusaders when, with predatory eye, they beheld for the first time the Greek capital in all its luxury and glory. We know also how frightful was the spoliation to which that fair city was subjected by the Franks when, in the name of the Master which both contending parties served, they marched through blood to its capture. It is, however, impossible to suppose that the visits of the Crusaders and the occupation of the city by the Franks did not contribute to the diffusion of the Greek spirit in the West.

The final act which unlocked the treasures of Constantinople and gave to Europe a full knowledge of Greek learning came in 1453, when on that fateful 29th of May Mahomet the conqueror burst through the gate of St. Romanus over the corpse of the valiant Constantine, and the Greek Empire ceased to exist after a thousand years of mingled glory and shame. Christendom has rightly deplored the last act of that tragedy when the Crescent supplanted the Cross at Constantinople. But the historian records with satisfaction that out of the evil thus perpetrated untold good came to Europe. With the final overthrow of the Eastern empire the treasures of Greek learning were released, and became quickly disseminated throughout Europe. The Greek scholars fled and took up their abode in Italy. Ships coming from the Golden Horn carried the priceless manuscripts which the Turk, caring nothing for the learning of the infidel, had spurned. Italy received with kindness the scholar-refugee and his literature. The vanguard of those who were destined to restore the Greek spirit to Europe had already settled in that country, and soon the Italian universities were busily engaged in imbuing themselves with the new influence. Thither flocked students from every part of Europe, and among them one revered by this College, Thomas Linacre, our great founder. Scholasticism was swallowed up in the advancing tide of Humanism; learning revived, and with it medicine and science began to be studied again in a manner calculated to produce solid and lasting results.

Now if acquaintance with the condition of medical knowledge previous to the revival of learning be desired no better book can be consulted than the *History of Physick* written at the beginning of the eighteenth century by that admirable and learned Fellow of this College, Dr. John Freind. This work was composed in 1723, while Freind was lodged in the Tower under political suspicion, and does the greatest credit to his scholarship and vast knowledge of the medical writings of the ancients. In point of style the work is excellent, and although the first book to appear in this country dealing with the history of medicine, successive historians have been able to add little to our stock of knowledge of the subject. Freind's lively wit and the mastery of an easy style enabled him to present the history of medicine in a garb most acceptable to the reader. In a delightful vein of sarcastic pleasantry, worthy of his friend Swift in his happiest mood, he deals with the pretensions of many so-called medical authorities during the Middle Ages. From a study, then, of the pages of this Father of the History of Medicine in this country a clear view of the state of medical knowledge in the Middle Ages may be obtained, and Freind is fully worthy of being commemorated this day as a benefactor of the College, as a man of letters, and as a physician.

The condition of medical and scientific knowledge in the Middle Ages, as described by Freind, may be summed up in a few words. With the intellectual stagnation existing at that period in every branch of thought, progress could not be expected. Whatever mental energy was expended had for its aim the foundation of immutable principles that time and the ingenuity of the intellect could never alter. The learned might explain, but they might not criticize. Whatever had received the sanction of authority became a fixed belief, and steps were taken to protect it from doubt and destructive criticism. In fact, the ultimate end of all intellectual effort during the period of the Middle Ages was teleological, and so long as that spirit remained dominant no real advance in any branch of learning could be possible. All the knowledge that the Middle Ages possessed concerning medicine and science came from the Greeks, and even this was presented in an incomplete and inexact form. Through translation and repeated copying numberless errors had found their way into the classics, and it became a matter of no little difficulty to correct and purge them. How manifold were these errors will be understood when it is remembered that Hermolaus Barbarus restored no less than two thousand corrupt passages in the thirty-six books of Pliny. The Middle Ages, previous to the revival of learning, represented, therefore, a stationary period in which, as Whewell has justly observed, learned men could be produced, but not discoverers.

But with the revival of learning in the fifteenth century came a far-reaching change in the attitude of students towards the study of medicine and science. Hitherto they had been content to accept what had been sanctioned by authority. They were not competent to determine whether the texts they read were exact translations from the original or merely corrupt compilations by ignorant scribes. The recovery of the Greek tongue transferred medicine from men of this class to physicians deeply versed in classical knowledge, who combined the study of humanism with that of medicine and science. Their examination of the Greek texts enabled them to detect the violence that the translators had committed in their corrupt translations. These humanist or scholar-physicians loomed large in the first half of the sixteenth century, and it has been the desire of some to treat their work with scant respect. But let us remember that

without their aid it would have been impossible to revert to the original Greek texts, that they threw off the yoke of the Arabian translations and enabled students to go with safety to the Greek fountain-head of medical knowledge.

Many of the scholar-physicians had acquired their knowledge of Greek in Italy, where the study of that language had reached a high degree of perfection. But of all those who made a pilgrimage to the shrines of the new learning in Italy the great figure of Thomas Linacre, the founder of this College, and the best example of the scholar-physician, possesses for us an absorbing interest. It will not be necessary for me to recount the main facts of his career, and indeed to do so in this College, his ancestral home, would be an act of impertinence. But I may with propriety comment upon certain features of his life and activities in order to assess the enormous debt this country owes to his learning, and to his efforts to improve the condition of medicine. Already proficient in the Greek language, through the influence of his friend and master, Selling, he travelled to Italy for the purpose of placing himself under the best teachers of the classics. Arrived there, he sat at the feet of Politian, to whom he owed his exquisite taste in Latin composition, and of Chalcondylas, who refined his knowledge of Greek. But while engaged in the pursuits of classical knowledge his thoughts became directed to the study of medicine, and after a residence of a few months at Padua he graduated in medicine at that university. Linacre had spent two years only in Italy, and some have pointed to this short preparation as evidence that the exercises for the degree were merely perfunctory. But in those days a knowledge of medicine as taught by the ancient writers was all that was demanded for the degree of doctor, and Linacre, we may be sure, while studying Greek and Latin, had become fully conversant with the medical texts, so that he could perform with ease the exercises required.

The writings of Galen appear to have attracted him most, for in after-years he confined his attention to that author, and devoted his unrivalled scholarship to the purpose of providing correct and elegant Latin translations of his more important works. The success of these translations was great, and largely owing to their popularity the authority of Galen became paramount during the early part of the sixteenth century. Indeed, so sacred was the teaching of Galen during part of the century that John Geynes, a Fellow of this College, was fined and threatened with expulsion for daring to impugn his authority. These translations of Linacre showed a distinct advance when compared with similar writings during the Middle Ages. They were not commentatorial, but merely good and exact translations from the original Greek, and enabled students of medicine, probably for the first time, to read Galen untrammelled by the useless and prolix commentaries of inexact and mediocre translators. After a perusal of these correct translations came the inevitable scientific sequence of doubt and inquiry.

But to Linacre belongs a glory far in excess of any he obtained as a scholarly translator. Even the solid basis on which his fame rests as the first to revive letters in this country must yield to the position he occupies in our hearts as the great founder of this College—the first institution devoted to the conservation and advance of medicine in this realm. He had visited Italy, then the only place where the influence of the revival of learning was felt. In the various universities where he had pursued his studies, and where he had consorted with men of learning, he was impressed with the manner in which facilities were afforded for the prosecution of the quest for knowledge in all its branches. Padua, then nearing the zenith of its influence, must have had a profound effect upon his mind. No doubt he compared these busy centres of learning with Oxford and Cambridge, still slumbering in the heavy and uninspiring atmosphere of sterile scholasticism. In Italy he felt intellectual life vibrating, and saw men striving to climb the heights unfolded by the revival of learning. In England he remembered only the droning of the commentators, the unprofitable exercises, and the thunders of the nominalists and realists. While preparing for his degree in medicine at Padua he had seen the attention paid to that subject. The care bestowed upon the study of medicine by the universities and the State in Italy sank deep in his mind, and when in after-years he resolved to improve the condition of physic in his own country it was after the Italian model that he shaped his College of Physicians. England had her universities devoted to learning, and now, through the inspiration of Thomas Linacre, she was to have her College of Physicians specially designed to guard the interests of physicians and to promote the study of medicine.

The Scholar-Physicians.

To Linacre, the scholar-physician, then, we owe it, and to him alone, that England soon after the revival of learning possessed a College endowed with adequate powers to guide and direct medical progress. The influence of that corporation upon the medical destinies in this country has been great. Throughout the course of centuries the College has retained the characteristics, indelibly impressed by the founder, of high purpose and catholicity of aim. For these reasons we of this College honour this day Thomas Linacre as the founder of our College of Physicians.

But the influence of Linacre bore fruit in other directions. With his friends Grocyn and William Latimer he was responsible for the introduction of the revival of letters in this country. Without that revival the scientific achievements of the seventeenth century could scarcely have been accomplished. Finally, towards the end of his life he designed a scheme for the promotion of the study of medicine in the sister universities, and although the practical application of that scheme fell far short of the intention of the founder, the credit for the idea belongs to Linacre. Indeed, it would appear that in these latter days the desire of Linacre to improve the facilities for the study of medicine in the universities is at last meeting with its reward. At Oxford the funds of the Linacre lectureships are now devoted to the teaching of physiology, while at Cambridge you, Sir, as the occupant of Linacre's chair, have been worthily entrusted with the pious duty of promoting the aims so earnestly desired by the founder.

Less than half a century had elapsed since the death of Linacre before the destinies of the College were placed in the able hands of another scholar-physician, John Caius, a worthy successor of the founder. But for his energy and perseverance it is probable that the influence of the College as a factor in medical progress would have been confined within narrow limits. Caius, like Linacre, was a scholar. He had trodden the same path in his quest for learning in Italy. Taking the founder as his model, he spent his life in promoting the cause of learning and medicine. His benefactions were conspicuous, and whether he was designing the regulations of the College which bears his name, or ruling over this institution as its President, his aim was ever the advancement of knowledge. Although a true type of the scholar-physician, he was the first in this country to write a treatise on clinical medicine, and his short work on the sweating sickness is the precursor of the work of Sydenham and Heberden. Natural history also claimed his attention, and with Edward Wotton, a Fellow of this College, he shares the honour of being one of the first to write on that subject in this country. Of the thoroughness of his work for the promotion of the interests of this College we have abundant evidence in the first volume of the *Annals*, written in his own hand. To the most minute detail he ordered everything, from the compilation of the first book of Statutes to the provision of the silver candlesticks still in use, and his pious act in rescuing from neglect the tomb of the founder. In common with Linacre, Caius was strongly attracted to the writings of Galen, and spent much of his time when in Italy in making a careful examination of the manuscripts of that author. But his scholarship, although profound, was not cast in such a rigid mould as that of Linacre, and there is evidence that his mind was undergoing the emancipation inevitable with the ever-widening scope of learning taking place in his day. When in Italy he lodged with Vesalius, and from this association it is probable that he acquired his taste or anatomy. In after-years, when he refounded Gonville Hall, the study of anatomy received full recognition in the regulations of the College. He also lectured on anatomy before the Barber-Surgeons, and may thus be regarded as the founder of the study of anatomy in this country. For this, and his unselfish devotion to the interests of the College, we record our thanks this day.

Caius may be regarded as the last conspicuous example of the scholar-physicians, and it will not be out of place to attempt an estimate of the work they accomplished in the cause of medical progress. These men were deeply versed in all the learning of the age in which they lived, and their knowledge of medicine came to them in the ordinary course

of their studies. They were scholars first, and sometimes their interest in medicine was inconsiderable. This attitude will, however, occasion no surprise when it is remembered that the knowledge of medicine in those days was stationary, and did not, therefore, oblige the student to keep himself informed concerning its progress. So long as he knew the ancient medical authors, and the commentaries thereon, his knowledge could never be out of date. But when the revival of learning began to influence Europe the stationary period of medical and scientific knowledge soon showed signs of passing away, and it became no longer possible for the scholar to keep up with the advances that were being made. For the revival of learning had let loose upon the world experimental science, and scholarship alone was incompetent to deal with the problems that arose. For these reasons, therefore, soon after the middle of the sixteenth century, science, including medicine, became divorced from scholarship, and a new race of men arose who dared defy written authority, and who inquired only of Nature for the revelation of her secrets. In this way was prepared the road for the great scientific advances which took place in the seventeenth century, one of which was the appearance of Harvey's great work.

The scholar-physicians, then, of whom Linacre and Caius were such shining examples, in spite of their limitations, occupied no inglorious position in the history of medical and scientific advance. They effectually bridged the period between the end of the influence of the Middle Ages and the beginning of sound scientific methods. Their knowledge, it is true, was sought in the study, but their scholarship was invaluable to the medical age in which they flourished. They restored the pure texts of the medical classics, and thus enabled those engaged in the study of medicine and science to begin anew their investigations. The scholar-physicians were also deeply imbued with the higher aims of humanism. From this spirit sprang their desire to benefit mankind, which took definite shape in the foundation in this country of institutions designed to promote the study of medicine and science. In the early years of this College the Roll contained the names of many whose attainments in scholarship far outweighed their ability as physicians. Besides Linacre and Caius may be mentioned John Clement, Edward Wotton, and Richard Bartlot. These men created that spirit of wide culture in the College which remains to the present day. To the scholar-physicians, therefore, we render thanks, and especially must we hold in remembrance the work of Linacre and Caius in the foundation of this College and of Caius College at Cambridge.

Progress in the Sciences.

Attention must now be devoted to the history of the progress made in the sciences, after the ground had been prepared by the revival of learning. Soon after the beginning of the sixteenth century a reconsideration was undertaken of the data on which the sciences were based, and produced a change in the conceptions hitherto regarded as fixed. The first movement in the direction of progress came from the domain of astronomy, when Copernicus, discarding the Greek system, adopted the heliocentric theory. But his epoch-making work did not see light until 1543, although completed many years before, and its full fruition was postponed until Kepler formulated the laws governing the eclipses towards the end of the century. Botany also began to advance. This subject had remained in a stationary condition, and had been satisfied by the compilation of herbals in which the teaching of the ancients was alone regarded. The first to break away from ancient tradition was Leonicenus, who impugned the authority of Pliny; and he was followed by Fuchs, Gesner, and Caesalpinus, all of whom drew their facts from a study of nature rather than from books previously compiled.

Towards the end of the sixteenth century the science of physics was recast and placed upon a sound basis. Stevinus had established the principles of the inclined plane, William Gilbert, a distinguished president of this College, had disclosed the properties of the magnet, and Kepler had supplied the deficiencies of Copernicus, thus supplanting for ever the ancient astronomical system of Ptolemy. The laws of moving bodies were soon to be formulated by Galileo, and physics freed from its errors was in a position to lend its aid to the other sciences. With this progress taking place in physical science Aristotle became suspect, for certain of his ideas regarding physics failed to stand the test of modern criticism. His metaphysics had been used for centuries in support of the doctrines of the Church, and his works concerning the biological sciences had long been the textbooks of the schools. But when the physics of Aristotle had been called into question, chiefly by Galileo, it was unfairly concluded that other parts of his writings were open to criticism. Without justification, therefore, those works shared the fate of the physics, and for the greater part of the seventeenth century his authority suffered an eclipse which did not pass away until the eighteenth century.

Progress can be seen in whatever science is surveyed in the sixteenth century, for the age had arrived when men began to doubt. When this state of healthy scepticism took possession of the mind, inquiry, which must inevitably lead to the increase of knowledge, was the only logical course that could be pursued.

While these changes were taking place in scientific knowledge, a wider and more profound change was shaping itself in the realm of thought. For, towards the end of the century, Bacon was striving to exorcise from the minds of men the four idols, and was building up that system founded on inductive methods which he was persuaded would guide the intellect to just conclusions. The great philosopher, spurning the useless methods which produced no increase of knowledge, fashioned his system with the single aim of gathering the fruit of intellectual effort for the benefit of mankind. Although we can point to no signal achievement as the result of that system, yet it marks the definite severance from the ancient, and the beginning of modern thought.

The Objective Study of Anatomy.

But of all the sciences which showed a tendency to advance in the sixteenth century, that of anatomy claims our attention in an especial manner, for through the advance of that science lay the road to Harvey's great discovery. Anatomy, like the other sciences, had remained dormant until 1543, when a book appeared which exercised the most profound influence upon the subject. I refer, of course, to the *De Humani Corporis Fabrica* of Vesalius, a book from the appearance of which we may date the modern science of anatomy. Vesalius had been brought up to regard the teaching of Galen as beyond the sphere of criticism. But he dissected bodies himself. He used his eyes and found that what he saw was plainly at variance with the account given by Galen and sanctioned by immemorial authority. His mind was torn by conflicting emotions. In his day it required no little courage to impugn so sacred an authority, but eventually he was able to emancipate himself from the old dogmas. He described the human frame as he knew it from his dissections, and when that had been accomplished the days of the authority of Galen were numbered.

The Beginnings of Physiology.

After the publication of this system of anatomy by Vesalius the anatomists became uneasy in their minds regarding the teaching of the great Galen, but so firmly fixed was his authority that they hardly dared to do more than utter a half-articulate murmur of dissent. For the majority Galen had furnished for all time the true explanation of the manner in which the blood circulated and performed its supreme function of maintaining life, and they shrank from giving up that explanation sanctioned by time and authority. But their eyes told them only too plainly that much of that explanation was mere supposition and lacking in scientific proof.

What was this theory of the circulation of the blood, and its consequent rôle in the nutrition of the body, as advanced by Galen? At the risk of repetition it must be stated in order to appreciate the great induction of Harvey. Galen's explanation, which I summarize from an admirable description recently given by Dr. Charles Singer, was as follows: The food taken into the body became converted into chyle in the intestines, and was carried by the portal vein to the liver, where it was changed into blood, becoming there endowed with the essence of all living things, called "natural spirits." The blood thus manufactured and endowed by the liver was then carried by the hepatic vein and the vena cava to the right side of the heart. Here it was purged of its impurities, which found egress by means of the pulmonary artery and lungs to the external air. Then the venous blood thus purified ebbed to and fro in the veins and carried on the functions of nutrition. But a small portion of this venous

blood filtered through the septum of the heart by means of invisible pores into the left ventricle, where it came into contact with the external air which had reached that chamber by way of the trachea, the lungs, and the pulmonary veins. By this contact with the air and the innate heat of the heart the blood became endowed with a higher form of spirit, termed the "vital spirit," and became arterial blood, which, ebbing and flowing in the arteries in the same way as the venous or crude blood, carried on its higher functions of nutrition. But the arterial blood which flowed to the brain became endowed there with the highest form of essence, known as the "animal spirits," and was distributed to the body by means of the nerves, which were held to be hollow canals.

The main supports, therefore, of the hypothesis of Galen were the liver as the source of the veins and the blood; the communication between the right and left sides of the heart through minute and invisible pores in the septum; the presence of three vitalizing essences; and the absence of any circular movement of the blood propelled by the heart. This system, partly based on anatomy and partly on hypothesis, was accepted by the world for more than a thousand years. It postponed and fettered any advance in physiology, and on biological sciences generally imposed restrictions similar in effect to the theory of phlogiston on chemistry.

After Vesalius had broken the ground, anatomists who had sat at his feet carried forward his work until by degrees most of the supports of the Galenic hypothesis were weakened. Servetus, Columbus, Caesalpinus, and Fabricius contributed to the work of destroying the Galenic theory of circulation, but although they gave indications of the coming light they all lacked the power to draw the all-supreme conclusion. The complete demonstration of the manner in which the blood circulated and nourished the tissues required the work of a genius, and that genius was William Harvey.

In one short work, in size little more than a tract, he proved by a direct appeal to the phenomena of nature that the teaching of Galen concerning the circulation was wrong. He laid the sure foundation upon which almost the whole of our modern conceptions regarding physiology are based. In the history of scientific thought he takes his place beside Copernicus, Galileo, Newton, Lavoisier, and Darwin. By the intuition of genius he was able to sweep away false ideas and systems grown sacred by lapse of time and in their place to implant sound views acquired on the journey from scepticism to inquiry. Then the book in which Harvey expounded his theory is a model of close and accurate reasoning. Step by step each position is made secure before a new proposition is demonstrated. The whole is then welded together and the inference drawn. Harvey once remarked with a sneer that Lord Bacon wrote philosophy like a Lord Chancellor, and yet the *De Motu Cordis* is perhaps the most perfect example of the inductive method as enunciated by Lord Bacon's vast intellect. Indeed, it is hard to believe that Harvey, who knew Bacon well, was not influenced to some extent by that capacious mind.

Harvey, then, established the primacy of the heart as a muscular organ propelling the blood in the action of circulation, and explained how the blood found its way from the right to the left side of the heart. When these important facts were made secure the whole of the physiological doctrine of Galen fell to the ground, and the science of physiology was left free to pursue its logical course. It would be wrong, however, to assume that these revolutionary views found instant acceptance, for it could not be expected that a system that had endured for centuries would cease to exist without a struggle. For a time efforts were made to seek a compromise between the old and the new physiology. Even Harvey could not altogether emancipate himself from the glamour of the great name of Galen, and throughout his work, which was directed to the subversion of the ancient authority, he always treats him with respect. But eventually Harvey's doctrine became supreme, and by the time that he was carried to his grave in 1657 all but an insignificant minority accepted his views without reservation.

It has sometimes been assumed that the advent of Harvey's book at once displaced the whole of the system of Galen, including his medical teaching. This conception of the effect of Harvey's work is far from the truth, for, as a matter of fact, it had but slight influence upon the practice of medicine during the seventeenth century. The reason for this will not be far to seek when it is remembered that modern physiology began with Harvey, and had to make considerable advances before it could be of real assistance to medicine. A long and distinguished line of physiologists, ending with Haller towards the middle of the eighteenth century, had to accomplish their work before physiology was able to come to the aid of practical medicine. The science of chemistry, also, was uncreated, and it was not until the end of the eighteenth century that it was in a position to lend its powerful aid in the study of medicine.

The impetus given to the investigation of the problems of physiological science by the appearance of Harvey's work was truly marvellous. Before his day scarcely any attempt had been made to approach the subject from a rational point of view. But after the advent of the *De Motu Cordis* the progress of physiology was triumphant and steady. When we think of the successful labours of Aselli, the discoverer of the lacteals; of Borelli, who brought to the subject the new physics established by Galileo; of Malpighi, the father of our knowledge of the glands and the tissues; of Glisson, who first enunciated the doctrine of "irritability"; of the work of Willis and Lower, we can only be amazed at the advance made in a short time largely through the inspiration of the work of William Harvey.

This College justly acclaimed Harvey as its brightest ornament and conferred upon him its most signal honours. His work supplied the incentive to several Fellows who, adopting his methods, contributed in no small degree to the enlargement of the boundaries of scientific knowledge. Among those who followed Harvey's precepts in the period immediately succeeding the appearance of his book I record the names of Francis Glisson, Thomas Wharton, Thomas Willis, Richard Lower, William Croone, Nehemiah Grew, Edward Tyson, and Clopton Havers, all of whom are worthy of mention on this day for the work they accomplished for science. But the teaching of Harvey left the majority cold, and did not exert any considerable influence upon their methods of investigating disease. Throughout the seventeenth century physicians were content to inquire regarding morbid phenomena in their studies, rather than at the bedside, until they were aroused from their speculations by the work of a man who stands pre-eminent in the annals of the College: I refer to Thomas Sydenham.

Sydenham.

Among the successors of Harvey the name of Sydenham finds a distinguished place. But, great as he was, by no exercise of the imagination can he be regarded as being influenced by Harvey's epoch-making work. Nor can he be properly admitted to the circle of men who fashioned the distinctive type of seventeenth-century thought. He stood alone in his glory. Knowledge gained from books he despised. The first-fruits of science garnered so marvellously in the beginning of the century were neglected by him, and even the new teaching of anatomy and physiology found him unresponsive. Indeed, except for a great admiration for the work of Bacon, we can hardly point to a single fact warranting us to link him with the spirit of the age in which he lived. He clung tenaciously to the humoral pathology and was uninfluenced by all the vast changes taking place around him. He was not a scholar; he had a contempt for science, and yet, in spite of these defects, he has left upon medicine in the seventeenth century an impression that will last as long as mankind requires medical aid.

Sydenham was essentially an innovator. He lived in the seventeenth century, but was not of it, and while others were painfully exploring the road of scientific advancement he, with the Father of Medicine as his only guide, fashioned his own path and for all time laid the foundation of clinical medicine. He was eminently fitted for the task of introducing new methods with the stern and vigorous Puritan blood in his veins; a real rebel; a fearless iconoclast. He was the first of a long line of distinguished physicians who raised the art of clinical medicine to its highest pitch. This country has always been renowned for its great clinicians, and the position to which they have attained has been due almost entirely to the influence of the teaching of Sydenham. If it should be asked what effect that teaching had upon the art of medicine, the answer would be given correctly by pointing to the work of Heberden, Bright, Addison, and Watson. His method was scientifically sound, and while others were attempting to make signs and symptoms conform to theory and authority Sydenham went straight to the

bedside to gather facts and make observations. In this he was true to the inductive method: a collector of facts from which to induce general principles.

Puritanism in the seventeenth century produced its Cromwell, the embodiment of relentless energy and resistless brain force; its Milton, who showed to what heights of grandeur and majesty our own dear language can attain; and its Bunyan, who, all unlettered as he was, in the simplest and sweetest vernacular penned the finest allegory the world will ever read. To these great productions of Puritanism may we not with justice add the name of Thomas Sydenham, the great Puritan physician, who founded for all time and for all countries the art of clinical medicine.

Conclusion.

Neither time nor the scope of this oration permits us to pursue further the immediate and remote effects of Harvey's work. Enough, I trust, has been said to show the comparative dearth of scientific endeavour before the date of his work, and the stimulus scientific research received on account of its appearance. In common with all other results of genius, attempts have been made to claim for others the honour of priority in promulgating the central ideas contained in Harvey's book; but they avail nothing. Copernicus was not the originator of the heliocentric theory, and Darwin gave to William Charles Wells the credit of having enunciated first the theory of evolution. But their glory is not diminished by these admissions, for ideas without irresistible proof are often the common property of the human intellect.

I do not propose to detain you with a consideration of the work of Harvey concerning generation, for that subject was dealt with last year in a most able and exhaustive manner by Dr. Herbert Spencer, who brought to his oration the accumulated study and experience of an expert. But there remains Harvey's character as a man, and that is a subject upon which it is good for us to dwell. He lived in an age when men, on account of the state of political and religious feeling, were unusually prone to make enemies, but all that has come down to us regarding his character does infinite credit to the rectitude of his conduct in all the relations of private life. He seemed to be uninfluenced by the strife going on around him, and although attached to the Royalist cause by service and interest he was able to survey the shipwreck of that cause with fortitude and equanimity. His lofty mental stature rendered it impossible for him to stoop to vulgar polemical disputes, and whenever he was obliged to enter the lists in vindication of his scientific views it was always with dignity and forbearance. The real character of Harvey is admirably portrayed by Sir George Ent in his well-known account of his visit to him in his old age, when he found him forgetting the lacerations of the mind in the pure joy of searching and studying out the secrets of nature by experiment. Kings might lose their heads, and old orders might be subverted for a season, but Harvey's gaze was fixed upon the beacon of eternal truth. His devotion to this College was an outstanding feature of his life. As its most distinguished Fellow he had conferred upon it the highest honour, and in a practical manner he exhibited his deep regard by his benefactions. His solicitude for the welfare of this noble library found expression in the erection of a building, a gift of books, and a bequest of money. A few years after his death the whole of the library, with the exception of 140 volumes, was destroyed in the Great Fire, but that disaster proved to be our richest gain, for it produced the great bequest of the Marquess of Dorchester to which we owe the rarity and value of our library. No doubt the liberality of the marquess was in part actuated by the injunction of Harvey to emulate those who had benefited the College, and in our day the bequest of Dr. Lloyd Roberts, second only to that of Lord Dorchester, was surely due to the same spirit. This library, raised up and maintained by the spirit of Harvey, is the noblest monument we possess of that wide intellectual culture with which this College has always been prominently identified.

Harvey, then, in his life and work is the shining example to this College, and the injunctions he has laid upon us in his bequest in 1656 may be followed safely by all who desire its welfare. In these modern days, when we stand at the threshold of momentous changes, we may still look for guidance and inspiration from those injunctions, for they aptly express our duty as physicians, as men, and as Fellows of this ancient and honourable College.

An Address

ON

THE PAST, PRESENT, AND FUTURE OF MIDWIFERY.*

BY

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My first words in addressing you as Professor of Midwifery and Diseases of Women in the University of Edinburgh must be to express my appreciation of the great honour which has been conferred upon me by my election to the chair. That honour is the greater by reason of the fame of so many of its former occupants, among whom were the leaders of their day in this particular branch of medicine. In the past Edinburgh has always been in the very van of obstetrical and gynaecological advance. To maintain that position among the medical schools of the old and new worlds is no easy thing. My feeling of pride is, therefore, tempered by a very deep appreciation of the responsibility of my position, and by a realization of the nature of the task which lies before me.

I take up that task with a determination not to spare myself in its accomplishment and with a hope that if I fail it may at least be possible to say of me that I tried. To help me I have the inspiration and training which I received from my former chiefs in Edinburgh, the late Sir Alexander Simpson and Dr. A. H. Free and Barbour, to whom I owe so much. I have also the experience gained during the past ten years as professor of obstetrics and gynaecology in the University of Toronto. When I was called there, ten years ago, it was to take from Edinburgh to Canada the methods of teaching and training which had made the Edinburgh school famous throughout the world. While in Canada I never forgot that and the responsibility to my Alma Mater which it involved. And now, in returning to Edinburgh, I feel that I have that same responsibility to the University of Toronto and to Canada in bringing here all the best that I have learned in that large and progressive medical school and in that great and growing dominion.

In these days of rapid advance in all the medical sciences we are sometimes apt to forget what our predecessors did and how much we owe to them for our present-day position. It does good, therefore, every now and then, to look back a little and inform ourselves of their work, and of the difficulties they had to overcome. When we do so we are invariably surprised at the extent of their knowledge and their great foresight.

In this respect there is no more fascinating study than that of the history of the chair of midwifery in this university. I shall only touch upon a few of the more interesting facts, culled largely from the very full account compiled by the late Sir Alexander Simpson, as the result of exhaustive research into old records and manuscripts, and delivered as an inaugural address to his class in the year of the tercentenary of the university.

From these researches there appears to be no doubt that to Edinburgh belongs the distinction of having the first chair of midwifery. It was instituted on February 9th, 1726. At that time no medical school in Britain or on the Continent had such a professorship. Strasbourg instituted a professorship of midwifery in 1728, but apparently no appointment was made till some years later, while a century elapsed before Paris followed. The Edinburgh appointment was made by the town council, the patrons of the university. Their minute, as quoted by Simpson, is, in part, as follows:

"The Council having considered the petition of Mr. Joseph Gibson, chirurgeon of Edinburgh, with a declaration under the hands of four doctors of medicine, setting forth the usefulness and necessity of instituting a profession of midwifery, as also an extract of an act of the Incorporation of Chirurgeons, showing their approbation of the qualifications and capacity of Joseph Gibson, one of their number, for teaching the said art and science; they are fully convinced that it would be of great use and advantage to institute this profession, and being well satisfied with the ability and capacity of the said Joseph Gibson to discharge that office, they were of the opinion that the Council should nominate and appoint him to be Professor of Midwifery in this City and privileges, with power to him to profess and teach the said art, in as large an extent as it is taught in any city or place where this profession is already instituted; and that he should be vested with

* An inaugural address to the students of the Faculty of Medicine, University of Edinburgh.

the same privileges and immunities that are known to appertain to a Professor of Midwifery in any other well regulated city or place; but that it should be expressly provided that he should have no fee or salary from this city out of its patrimony or revenue, on account of his said profession. . . ."

The minute goes on to relate the dangers to which women were exposed as the result of the practice of untrained midwives and lays down regulations for licensing them. Apparently the chief duty of the new professor was to teach midwives, in whose hands practically all obstetric practice was. His title was "City professor" or "Town's professor," and he was not admitted as a member of the Medical Faculty of the university. His successor, Robert Smith, was appointed in 1739, and his commission constituted him a member of the Senatus Academicus, although he was not admitted as a member of the Medical Faculty.

Smith was succeeded in 1756 by Dr. Thomas Young, who must have done a great deal for the teaching and training of midwives, for his successor, Professor Hamilton, stated that as a result of his work there was "scarcely a parish of Scotland the midwife of which has not been regularly taught." Dr. Young was the first to give regular courses of instruction to medical students, and he was the first to have a ward set apart for their clinical instruction. Again quoting from Simpson:

"A ward in the attic story of the hospital" (the Royal Infirmary) "by permission of the managers, but at Dr. Young's expense, was fitted up for four lying-in women, or as many more as Dr. Young could accommodate, each exceeding the number of four paying sixpence per day to the house."

The work of these early professors must indeed have been a labour of love. The town council made it perfectly clear that they would receive no salary, and the Royal Infirmary granted Dr. Young the privilege of fitting up his ward at his own expense.

The chief facts of local and general interest in the career of Young's successor, Dr. Alexander Hamilton, are his admission to the Royal College of Physicians, which up to that time had not recognized those practising midwifery, and his establishment of the first maternity or lying-in hospital in 1791, under the patronage of the town council.

In 1800 he was succeeded by his son, Dr. James Hamilton, a man of great ability and a keen controversialist. His lectures became "so popular that there were few students who did not attend them" (Christison). In 1815 he applied to the Medical Faculty to have his lectures made compulsory.

"The Faculty declined his request, being guided by its three senior members, who had long been on no friendly footing with the applicant. Therefore, in 1824, he applied to the council to exercise their authority by passing an Act compelling the Senatus to add his class to the curriculum for graduation. By this procedure he played into the hands of the town council, whose object was to find a ground for raising an action of declarator of right to govern the university as of old" (Christison).

This action of Hamilton's was keenly resented by the Senatus Academicus, but in 1825, along with other changes in the medical curriculum, it added midwifery as a compulsory subject. The regulation was, however, not enforced till 1830.

Hamilton died in 1839, and was succeeded in 1840 by a young man of 29 years. The contest for the chair was keen, only a single vote dividing the successful candidate from his nearest rival. The man elected was James Young Simpson. Nothing that I can say can add anything new to the many appreciations which have been written of that man of genius. His name will live for ever as the discoverer of anaesthetic properties of chloroform and as the first to apply general anaesthesia for the relief of the pains of labour.

But Simpson did a great deal more than that for midwifery and for gynaecology. He was among the first to recognize the nature of child-bed fever, and two years before Lister gave to the world the principles of antiseptic surgery he wrote a paper pointing out the identity in the clinical course and autopsy findings of surgical and puerperal fever, and ascribed both to contagion carried by the hands or person of the operator. He was a keen clinical observer, and always found time to put his observations on record. He invented and perfected many obstetrical instruments, and by his use of the uterine sound and the sponge tent gave a great impetus to gynaecology. Academies and societies in every part of the civilized world bestowed on him their honorary titles, and he brought great renown to Edinburgh.

Throughout the thirty years he occupied the chair he was an enthusiastic and inspiring teacher; under him the status of midwifery in the curriculum was firmly established, and students of this university went forth with a better training than could be obtained in any other medical school. That at once made itself apparent in medical practice in Scotland, for midwifery since then has occupied a more important place in general practice in this than in any other country. This is one of the results of all the hard-fought fights of our predecessors, and one which we must strive never to lose; there is a very real danger of its being lost, as we shall see later.

In 1870, on the death of Sir James Young Simpson, his nephew Alexander Russell Simpson was elected to the chair, which he occupied till 1905, when, after thirty-five years' service, he resigned, because, as he said in his valedictory address, "there is always risk that the ageing incumbent of a chair may become an incubus upon it. I could not bear to dree that weird." In his early years he had studied extensively on the Continent, and was always a good linguist. He travelled much, and knew personally all the best of the workers in his subject in Europe. In this way, and through his extensive writing, he kept the Edinburgh school of midwifery in the forefront. He was a skilled operator, and in the early days of abdominal gynaecological surgery did much pioneer work. His lectures were always up to date, as he was constantly adding to them from his personal experience and from his wide reading. His delivery was not impressive, but the material was of solid worth, and notes faithfully taken proved better and fuller than any textbook of the day. My own notes of these lectures are among my most valued possessions. He did much for the clinical teaching of midwifery, and inaugurated definite clinical instruction in gynaecology.

As a chief in the hospital he was exacting, but when the morning's work was over and his resident accompanied him to the gate of the infirmary he became the kindly adviser and friend, betraying that keen sense of humour which under other circumstances did not show itself. He received the honour of knighthood in 1906, a fitting recognition of his work for humanity. His untimely death in 1916 was mourned not only throughout Scotland but in distant lands where his Christian charity and sympathy had won for him a place in the hearts of many peoples.

On Simpson's resignation it was deemed advisable to divide the duties of the chair, and Sir J. Halliday Croom was appointed professor of midwifery and Dr. A. H. Freeland Barbour lecturer in gynaecology. This division was in conformity with what had been done in many other medical schools, especially on the continent of North America. It had been felt that gynaecology had made such rapid strides that it required the undivided energy of one man to teach it in the medical school and practise it in the hospital. In many places this separation resulted in a complete divorce of gynaecology from obstetrics, and the former came largely within the domain of the general surgeon. As a result, there were gynaecologists who had had no extensive experience of obstetrics and obstetricians who had never practised gynaecology. Much that was common to both was lost sight of. The gynaecologist was apt to exaggerate the surgical side of his subject, to lose sight of the etiological factor in many conditions, and he had necessarily no control of what we shall speak of later as preventive gynaecology. On the other hand, the obstetrician who was not also a gynaecologist was deprived of opportunities of perfecting himself in operative technique, and to-day surgical intervention is more and more resorted to in obstetrics as being in many instances the safest and most conservative line to adopt in the interests of mother and child. These considerations, among others, have caused the pendulum to swing back, and now opinion, if not unanimous, is overwhelmingly in favour of the linking up of the two subjects again. So in 1912 I was called to the University of Toronto to reunite the chairs of obstetrics and gynaecology, which had long been separated, and now in 1922 I return to Edinburgh to teach and practise both subjects.

In Edinburgh, although the chair has been divided during the past seventeen years, there has been no divorce between the two subjects such as had taken place in many other schools. Sir J. Halliday Croom is equally distinguished as obstetrician and gynaecologist; Dr. Barbour has done lasting work in obstetrics; and there was the closest co-operation between them in the teaching and training of the students.

It is difficult in their presence to say all that I should like to in appreciation of their services to the university and the Edinburgh school. Sir Halliday Croom, long before he was called to the chair, had made a wide reputation by his

writings. As a teacher in the extra-mural school he gained such popularity that for a generation medical students in Edinburgh did not consider their education complete unless they had attended his summer course. His enthusiasm for his subject was unbounded, and he presented it to his pupils in such a clear and dramatic way that they could not fail to be interested and impressed. This summer our university conferred upon him the honorary degree of Doctor of Laws in recognition of his worth. We all join in wishing him long years in which to enjoy his retirement.

Dr. Barbour's name has an abiding place in obstetrical literature by reason of his work on the anatomy of labour, a work accomplished while he was still a young man. Along with the late Dr. D. Berry Hart he published a textbook of gynaecology which was translated into many languages, went through many editions, and remains a classic. His contributions to periodical literature have been many, and all are distinguished by originality. The men he has trained occupy distinguished positions in the medical schools at home and on the other side of the Atlantic, and only those of us who have had the privilege of working under him know how much we owe directly to him.

The history of the chair of midwifery in Edinburgh is practically an epitome of the whole history of obstetrics during the past two hundred years. We see first of all the effort to train midwives in the appointment of the first professor in 1726; the gradual extension of that teaching and training to medical students by the provision of voluntary classes for them, and the setting apart of wards for their clinical instruction by Professor Young; the recognition of the status of the obstetrician by the election of Professor Alexander Hamilton as a Fellow of the Royal College of Physicians; the admission of Professor James Hamilton to the Medical Faculty of the university, and the institution of compulsory training and examination of students proceeding to a medical degree; the introduction of anaesthesia in midwifery practice by Sir James Simpson; the recognition by him of the nature of puerperal fever, the combating of which was begun by his successor, A. R. Simpson, as the result of the discoveries of Lister; the invention of obstetrical instruments and the perfecting of operative technique by Sir James Simpson and his successors. And all along obstetrics and gynaecology have benefited by discoveries and developments in other departments of medical science—in anatomy, in physiology, in pathology and bacteriology, and in physics. Thanks to the discoveries of Simpson and Lister, technique has been so perfected as to render the performance of even the most severe obstetrical operations almost devoid of risk to life, and the whole field of operative gynaecology has developed.

Yet there remains a high puerperal mortality, both maternal and foetal. Puerperal fever alone takes a toll of from one to three mothers per thousand births. While the mortality from this disease has been enormously reduced in our hospitals, a corresponding reduction has not been achieved in private practice. The conclusion must be that antiseptic and aseptic principles are not followed with the same careful attention in the patient's home as in the hospital. There can scarcely be any doubt that if the principles of antiseptic and aseptic surgery were applied as rigidly in private as in hospital obstetric practice the mortality from puerperal sepsis would practically disappear. A great responsibility attaches to us as teachers, and to you as students and future practitioners, in this matter.

There is still also a huge maternal mortality from haemorrhages, from the toxaemias of pregnancy, and from complications arising during labour. The numbers of stillbirths—in Edinburgh in 1921 the number was as high as 47.8 per 1,000 births—and of prematurely terminated pregnancies mean a great loss of human life. Women in large numbers still suffer from disabilities, causing great suffering and loss of efficiency, as the result of injuries received in the process of childbirth, and neglected at that time.

With all that has been left us by our predecessors we cannot but think that we ought to be doing better. And, given the proper facilities, there is no question but that we *can* do better.

It has long been recognized that most of the complications arising in pregnancy, in labour, and after labour are preventable. If they are detected early they can be easily cured. In the case of most of them it is only when they have progressed, unrecognized and untreated, that they are dangerous. The progress which midwifery has made in the last twenty years, and is destined to make in the next twenty, is along the lines of preventive medicine. Preventive medicine as applied to obstetrics means ante-natal care during pregnancy, a minimum of interference during labour, the most rigid attention to asepsis, and the earliest possible carrying out of surgical interference when it is required.

Ante natal care implies a thorough general examination of the patient as early in pregnancy as possible, and a special examination to make sure that she has the physical configuration necessary for a normal labour. It implies a careful watch on the patient at regular intervals throughout the pregnancy, and the immediate institution of appropriate treatment whenever the least departure from normal is detected.

Unfortunately it is difficult to get women to realize the importance of this careful watching, with the result that the doctor is often only called in when it is too late. The public has to be educated, and it is only through you that that education can be carried on, and you yourselves must first be taught.

We in Edinburgh must not lag behind in this work, for here in our medical school we have the man who foresaw all this present-day development many years ago. I refer to Dr. J. W. Ballantyne. Thirty years ago he was already greatly interested in and an authority on pathological conditions of the foetus. In 1901 he published a paper entitled "A plea for a pre-maternity hospital," and probably largely as a result of that paper a pre-maternity bed, known as the "Hamilton Bed," was endowed in the Royal Maternity Hospital. This was probably the first specific provision for ante-natal care of patients in any hospital. In 1915 Dr. Ballantyne established and has since conducted the ante-natal clinic attached to the hospital.

It is now universally recognized that a pre-maternity or ante natal department is a most essential—I should say the most essential—part of a maternity hospital. In addition to the outdoor clinic there must be an adequate number of beds for women suffering from the various complications of pregnancy. A hospital which provides only for the women actually in labour, or already delivered, is falling far short of the best that it can do. In the obstetrical department of the Toronto General Hospital, of which I had charge, patients at all stages of pregnancy were admitted whenever their condition required it. Our ante-natal clinic was established there in 1913, and I have always felt that that was the most satisfactory part of my work.

The results of it were shown in the absolute prevention of eclampsia in the patients attending it, the early detection of pelvic deformities and their appropriate treatment, the early treatment, and in most cases cure, of the toxic vomiting of pregnancy, and in other ways too numerous to mention here. What we did in hospital we did also in private practice. We found no difficulty in getting our patients to come to see us early in pregnancy and at frequent intervals throughout. There is nothing that so lightens the burden of obstetric practice as this knowing of the patient beforehand, and there is nothing that is so comforting and reassuring to the patient, as she approaches her time of trial, as the assurance already given her that everything is proceeding perfectly normally.

The problem which faces us is to convince women generally of the necessity for ante natal care. This, as I have said before, can only be done by the efforts and example of the whole body of medical practitioners. An isolated ante-natal clinic here and there will benefit the community which it serves, and public opinion will be educated to a certain extent, but it will not be until the consulting room of every practitioner is an ante natal clinic for his district that the maximum of benefit will be obtained.

Along with ante natal care must go post-natal care; in addition to ante-natal clinics we must have post-natal clinics. As the ante-natal clinic is the great means of prevention of obstetrical complications so the post natal clinic is the means of prevention of many gynaecological conditions. Post-natal care is preventive gynaecology. No patient should leave a maternity hospital, or be discharged by us as a private patient, until we are satisfied that she has suffered no physical disability as the result of her labour. We can give no such guarantee at the end of ten days or two weeks—the usual duration of her stay in hospital. The ideal we must aim at—and we must always be aiming at ideals—is to get every patient to return for examination four weeks after childbirth. That examination should be made at the patient's home, in the doctor's consulting room, in the post-natal clinic of the maternity hospital, or in the child welfare centre, to every

one of which I should like to see an obstetrician attached for the purpose.

Here again it is a matter of educating the public. That it is worth while attempting is shown by the numbers of women who fill our gynaecological wards suffering from distressing conditions resulting from obstetrical injuries. Had they been recognized at the time they could easily have been rectified. Neglected as so many of them are, they necessitate severe and often hazardous operations.

These phases in the development of obstetrics come at a time when in this country a great part of midwifery practice is in danger of passing out of the hands of the medical profession into the hands of certified midwives, and it looks as if the great fight which our predecessors made to give to the women of Scotland the benefit of skilled attention from properly trained doctors were to be in vain. It must be remembered that England was much behind Scotland in this regard, and it almost looks as if we, as the result of legislation common to both countries passed in the last few years, were making a retrograde step. I grant that the training these midwives receive and the work which they do is good, but very often that training is received at the expense of that of the medical student, and the work of the midwives, especially in this all-important branch of ante-natal care, is limited by their having no general medical education.

If we in Britain are to keep abreast of what our cousins overseas are doing we must be prepared to give a much more thorough and intensive training in midwifery to our medical students. Such training cannot be given by making the attendance on a certain number of cases at the patient's home the chief feature. Clinical medicine and clinical surgery could never be taught in that way, and clinical obstetrics certainly cannot. Clinical medicine and clinical surgery cannot be taught by a few isolated clinics given at intervals throughout the session; neither can clinical obstetrics. What is necessary is intensive training. A certain part of the medical course must be set apart for clinical obstetrics and gynaecology, so that the student may concentrate upon them —live, as it were, in the atmosphere of them. During that time he ought to see all the work of the maternity hospital, the ante-natal clinic, the technique in the labour room, the care of the newly born child, the after-care of the mother, and the post-natal clinic.

I have already had experience of this system of intensive clinical training, which I inaugurated in Toronto eight years ago, and I can speak for its efficiency. The objection that the intensive system leads to too rapid presentation of the subject for its thorough assimilation is got over by a continuation of regular clinical lectures to the whole class, say once a week, throughout the last year of the medical course. That also was a feature of our teaching in Toronto.

With such a system it is possible to make the maximum use of all the clinical material available, which under other conditions is largely wasted so far as teaching is concerned. I hope that it may be possible, with the co-operation of my colleagues in my own and in the other clinical subjects, to inaugurate some such system here in the near future. It is simply a matter of arranging the time-table, for I know that they are in accord with me as regards the principle and had arrived at the same conclusions some time ago. The clinical material is here in Edinburgh if we can only use it, and I hope the time may not be far distant when it will be unnecessary for any of you to seek your clinical instruction in midwifery elsewhere.

The Royal Maternity Hospital and the university now work in the closest co-operation for the treatment of the patient and the training of the student. One of the urgent needs at the present time is the enlarging of that hospital and the adapting of it to modern requirements. Our hospital ought to be a place where the future practitioners of midwifery can see obstetrical work conducted in a manner as near the ideal as human effort can make it. It ought to be fitted up to provide all the things which I have mentioned —the ante-natal clinic, ante-natal beds, and with operating and labour rooms, where perfect aseptic midwifery can be carried out.

There is no more urgent need at the present time than funds for the carrying out of this extension and enlargement of the Royal Maternity Hospital of Edinburgh. Until we get it we cannot do all that we ought to for the training of our future practitioners. We cannot be anything but embarrassed when we have to show to our colleagues from distant lands, who visit this city and university so famous in the history of midwifery, a hospital which, though erected to the memory of Sir James Young Simpson, is many years behind the times.

I can conceive of no more fitting memorial to the fallen, none which would do more to compensate for the enormous loss of Scottish life in the late war, than the erection and equipment of a modern maternity hospital in Edinburgh.

Some Observations

ON

THE BACTERIOLOGY AND VACCINE TREATMENT OF CHRONIC BRONCHITIS:

BASED ON 300 CASES, WITH SPECIAL REFERENCE TO ASSOCIATED NASAL INFECTIONS.

BY

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THE description "chronic bronchitis" does not convey quite accurately the condition which forms the subject of this paper, for the cases with which it deals fall into three groups which differ both in their severity and in their response to treatment.

1. Those who suffer from frequently recurring attacks of bronchitis but have an interval of several weeks' freedom between each attack.
2. Those who suffer from bronchitis throughout the cold months and are liable to acute exacerbations, but are comparatively free from cough or expectoration during the warmer months.
3. Those who are never free from bronchitis, but are worse during the winter, and are liable to acute exacerbations at any time.

All are liable at some stage to develop asthma as a complication of the bronchitis.

Nearly all such patients find our climate a great handicap, and they would benefit by residence in a warmer and drier land, but very few can afford such a change even during the winter months. It is no secret that ordinary medicinal treatment is disappointing, both to such patients and to their doctors; as time goes on the bronchitis gets worse, and eventually changes in the bronchial tubes, lungs, and heart render the patients incurable invalids.

In the hope of bringing relief to such sufferers I wish to point out a way in which treatment by autogenous vaccines can be made more successful than it has been hitherto. It has generally been taken for granted that in such cases the autogenous vaccine must be prepared from the sputum, and sometimes this can be done with great success. But the practitioner knows little of the technical difficulties which the bacteriologist encounters in attempting to secure pure cultures of the causal organisms in a particular case. It may be easy enough to *see* the germs but impossible to grow what is seen. The particular sample of sputum may not contain the germs responsible for the catarrh, or may contain one variety only out of several which are responsible. In the most favourable circumstances it is rarely possible to obtain primary cultures in sufficient purity and quantity to make a vaccine, yet most of us feel that there is a virtue in primary cultures that is lacking in the succeeding generations of subcultures.

Then there are the difficulties we make for ourselves. The bacteriologist may not see the patient for whom he is working, he may not even hear the result of the treatment by the vaccines which he has prepared, and so has little opportunity of learning that some of the catarrhal germs are of fundamental importance and others of no account. Better to refuse to make a vaccine than to prepare one from germs which have no pathogenicity.

The impression still seems to obtain that a pot of sputum sent through the post, perhaps twenty-four hours old by the time it reaches the bacteriologist, is suitable material from which to prepare a vaccine. Such a sample is quite suitable to examine for tubercle bacilli, but certainly not for making cultures from which to prepare a vaccine. Such a sample is dangerous because it is fallacious—some of its germs have increased in numbers, other varieties have died. From such a specimen one may prepare an excellent vaccine, but it is largely a matter of chance.

When we also consider the possibilities of error in bacteriological technique, in deciding which germs to include in the

vaccine and which to omit, in adjusting the strength of the vaccine to the age, weight, and condition of the patient, we ought not to be surprised that a considerable proportion of cases so treated fail to make a successful response. Yet I become more and more convinced that if the vaccine is made of the right stuff no case of catarrhal bronchitis will fail to get some relief from it.

Whenever there is sputum to be had it should be carefully examined, but first it must be carefully collected. The patient should be instructed to wash his mouth and throat thoroughly with warm water on waking in the morning, and when next he coughs to expectorate into a short, wide, sterilized glass tube, which is then securely corked. If this first phlegm is partly greenish or yellow there is no need for the patient to collect any more; but if it is simply clear mucus he should try again, for a little purulent material is of great value. This sample of sputum should be sent at once to the laboratory by a messenger who will carry it next to his body or in his trousers pocket, and so keep it warm. Never more than three or four hours should elapse between the coughing of the phlegm and the preparation of cultures; this is so important that it is well worth while hiring a car to save time if a considerable distance separates the patient from the bacteriologist. Such a sample should be examined microscopically; particles should be chosen and cultured on blood-agar, and if the bacteriologist, guided by the microscopic appearance of the sputum and by the clinical symptoms, grows germs which seem adequate to account for the bronchitis, he can hopefully continue his preparation of a vaccine. If, on the other hand, he is not satisfied he should try again with another specimen of sputum. Every sputum is worth examining for tubercle bacilli, for occasionally they are found when least suspected.

Opinions may differ as to the relative importance of the germs found in the sputum in chronic bronchitis, and I will speak only from my own experience. In 130 cases I found germs in the sputum which seemed to me of sufficient importance to be incorporated in a vaccine, though not in all those cases was I content to rely on the sputum alone. The germs so used and the number of cases in which the various organisms were found were as follows:

Pneumococcus	53=40.0	per cent.
M. catarrhalis	42=32.5	,,
B. influenzae	58=44.0	,,
Friedländer's bacillus	10= 8.0	,,
Streptococcus mucosus	8= 6.0	,,
Other streptococci	28=21.0	,,
Staphylococcus aureus	1= 0.8	,,

It will be seen from the numbers that in about half the cases the infection was a mixed one. The list gives a fair idea of the sort of infections encountered in these cases.

Streptococci (apart from *S. mucosus*) are nearly always present in sputum, and are usually of no account; but they are sometimes of real importance, especially when oral or tonsillar sepsis has been a factor in establishing the bronchitis.

The striking successes occur mainly with pneumococcus, influenza bacillus, Friedländer's bacillus, and *S. mucosus*. The *M. catarrhalis* appears in several forms, of which the commonest seem to play an unimportant part in the causation of bronchitis, but the type which grows in soft colonies and is haemophilic is always worth using in a vaccine. I am quite sure that the bacteriologist who does not grow pneumococci and influenza bacilli in a good proportion of his cases of bronchitis is guilty of some technical fault and will not get really good results from his vaccines.

The diphtheroid bacilli (*B. septus*, etc.) are frequently present, but I have never been convinced that they are of importance, and therefore do not use them as vaccines. There are several types of Gram positive diplococci or diplostreptococci which are as common in the sputum as in the saliva, and might be mistaken for pneumococci under the microscope, but in culture they can deceive only the inexperienced. I know nothing about filter passers and ultramicroscopic germs, and can only hope that if the day comes when they are proved to be the real cause of respiratory infections it will also be proved that they find their way into our vaccines along with the germs we now consider important.

There is no need to say more about the preparation of autogenous vaccines from sputum. Its success depends largely on obtaining a fresh warm sample, free from contaminations with mouth organisms and food. In favourable circumstances it may still be necessary to test several specimens from the same patient before one gets satisfactory cultures. There are occasions, however, on which it is impossible to obtain a suitable specimen of sputum—for example, in:

1. Small children who cannot be taught to expectorate.
2. Adults who have just recovered from "another bad attack" and wish to avoid further attacks, but have no sputum.
3. Patients who have all the signs and symptoms of bronchitis except that they cough up no sputum or only a little clear mucus devoid of useful bacteria.
4. Patients who as the result of bronchitis are left with a most irritating dry cough.
5. Patients who have developed asthma as a direct sequel to repeated attacks of bronchitis.

It was in trying to deal with a case of severe chronic bronchitis in a little girl that I discovered a test which has since proved of the greatest help in nearly all subsequent cases. Finding it impossible to obtain any sputum, I took cultures from her nasal passages, and obtained such a pure and profuse growth of pneumococcus that I was able to prepare a vaccine from the primary cultures. Her doctor carried out the inoculations and reported rapid and complete recovery.

After that I tested the nasal passages in every case, and soon discovered that there is a definite connexion between the infection of the nasal passages and the liability to bronchitis. From an experience of 300 cases of bronchitis dealt with during the past eight years I can state that:

1. In many cases the nose and sputum show exactly the same infection, but the nasal cultures, being purer and more profuse, are usually more suitable for the preparation of vaccines.
2. In other cases the nose and sputum show different infections, yet both are important—for example, the nose shows pneumococcus, the sputum influenza bacillus.
3. In other cases the nose shows a useful infection, while the sputum shows none.
4. During free intervals the patient frequently carries in his nasal passages the infection which causes his bronchitis.
5. In most cases in which there is no sputum a convincing culture can be obtained from the nasal passages.
6. Vaccine treatment becomes much more successful when cultures from the nasal passages are used, combined, when necessary, with those from the sputum.
7. There is bacteriological and clinical evidence that bronchitis is not a primary disease but an extension or result of a nasal infection. As a rule such patients do not complain of nasal catarrh, though it is not unusual to see muco-pus coming from the back of the nose into the pharynx.

The following are some of the nasal findings from cases of bronchitis. To those who believe that normal healthy nasal passages abound in pathogenic germs these findings will make no appeal. In my own experience profuse cultures of the chief catarrhal germs are rarely obtainable from healthy persons, and I beg that clinical bacteriologists will give the nasal test a fair trial before condemning it.

The nose was tested in 276 cases of bronchitis and was negative in 20. The 256 positive cases showed:

Pneumococcus	in 118
M. catarrhalis	,, 82
B. influenzae	,, 49
Friedländer's bacillus	,, 38
S. mucosus	,, 20
Streptococcus	,, 29
Staphylococcus aureus	,, 15
Staphylococcus albus	,, 7

In no fewer than 173 cases the vaccine was made from the nose alone, either because the sputum was negative or because there was none to be had. The bacteria found and so used were:

Pneumococcus	in 73
M. catarrhalis	,, 60
B. influenzae	,, 30
Friedländer's bacillus	,, 22
S. mucosus	,, 14
Streptococcus	,, 18
Staphylococcus aureus	,, 11
Staphylococcus albus	,, 7

Note the similarity between this list and that of the germs found in the sputum of 130 cases.

On the whole these vaccines were so successful that I am forced to the conclusion that the cause of bronchitis, and also of some types of asthma, is to be traced to an infected state of some part of the nasal passages.

The method which I use for testing the nasal passages is very simple:

1. Plates of blood-agar are prepared and warmed in the incubator.
2. The patient sits with head upright facing the light.
3. A tiny sterile swab of cotton-wool mounted on thin wire is gently introduced into one nasal passage, passed horizontally

backwards until it reaches the posterior wall of the nasopharynx, and withdrawn after being left there for a few seconds. The other side is swabbed in the same way.

4. Without the slightest delay each swab is carefully rubbed on a warm blood-agar plate, which is placed in the incubator.

Let it be made perfectly clear that this test can only be performed with the patient near the incubator; if it is not done in this way it ceases to be the test on which this paper is based.

It happens sometimes that the patient is not well enough to come to the laboratory, and in that case the incubator and media must go to the patient. For this purpose Messrs. Chas. Hearson and Co., Ltd., of Regent Street, London, have made me a little warm box just large enough to hold a few Petri dishes. Its water-jacket can be filled with warm water at the patient's house and will remain at about body temperature for several hours, long enough to get the cultures safely to the laboratory.

Bacteria such as pneumococci and influenza bacilli will usually live for some hours in warm sputum, but they are likely to die on a tiny swab even if it is kept warm; hence the advisability of making cultures immediately. Such cultures often show such a profuse growth of pneumococcus, influenza bacillus, Friedländer's bacillus, or *S. mucosus* that a vaccine can be made immediately; but if in small numbers any of the above germs are worth subculturing and using.

Diphtheroid bacilli are very common in the nose; rightly or wrongly, I have never attached any importance to them nor used them in a vaccine. I have also ignored small growths of *M. catarrhalis*, streptococci, and staphylococci, but profuse pure growths are of some importance and should be used.

It is instructive to compare the result of cultural examination of the sputum with that of the nasal passages in 128 cases in which both examinations were made.

Table showing Percentage of Various Organisms found on Cultural Examination of Sputum and the Nasal Passages of 128 Cases.

	In the Sputum.	In the Nose.
Pneumococcus	30.0	47.0
M. catarrhalis	27.3	23.5
B. influenzae	34.0	20.0
Friedländer's bacillus	7.0	15 0
S. mucosus	4.7	6 25
Streptococcus	17.0	10.0
Staphylococcus aureus	1.0	4.0

Surely these findings show an extraordinary similarity between the bacteriological state of the bronchi and the nose; one is forced to one of three conclusions—either that these catarrhal germs have nothing to do with bronchitis (in which case we must explain the good effects of vaccines by assuming the presence therein of something more than the known catarrhal germs), or that the nasal passages are infected from the bronchial tubes, or the bronchial tubes from the nasal passages.

I do not hesitate to believe that the last explanation is the correct one, seeing that it is an everyday occurrence for a cold in the head to spread to the chest, that nasal cultures are purer and more profuse than those from the sputum, and that the nasal infection persists during the intervals of freedom from any signs of bronchial infection.

All the patients upon whose cases this paper is founded have been sent to me by their doctors, who have given the inoculations and reported their effect.

I have not made vaccines for patients when I found the bronchitis to be associated with advanced renal and cardiac disease, tuberculosis, or mediastinal tumours. Examples of bronchiectasis are not included in this paper.

The aim of the treatment is to cure those who suffer from frequent attacks but are free during the intervals, to relieve cough and asthma and reduce expectoration in those cases in which a cure is obviously impossible, and to improve the general health and reduce the liability to and severity of acute exacerbations in all.

The vaccines are sterilized by heat, their strength estimated chiefly by the amount of culture used and checked by a count of a stained film. Fifteen doses are prepared and given at intervals of a week, starting with a small dose but increasing steadily as long as the patient gets no unpleasant reaction. Such a course appears to confer a definite immunity lasting a year or more in the case of those who continue to be carriers, and for an indefinite period in the case of those who cease to be infected.

A vaccine does not succeed because it rids the patient of his germs, but because it renders him unassailable for a certain period; during this time his symptoms may clear up completely though he may continue to harbour his germs in undiminished numbers.

Conclusions.

Recurrent and chronic bronchitis can be cured or relieved by treatment with autogenous vaccines.

When sputum is available it should be sent immediately by messenger to the bacteriologist, and not allowed to get cold.

From such a sample it may be possible to make a good vaccine.

Patients suffering from bronchitis usually have an infection of the nasal passages, which is largely responsible for the bronchitis.

Cultures made from these nasal passages according to the method described in this paper show the same sort of germs as are found in the sputum and make better vaccines.

Nasal cultures should be made in every case of bronchitis in which a vaccine is required, and cultures should be made from the sputum also when it is obtainable; in this way one gets a true picture of the underlying bacterial infections and can prepare a more efficient vaccine than if sputum alone is used.

When no sputum is obtainable a successful vaccine may be made from the nasal cultures alone.

Vaccines do not effect a permanent cure, except in those who cease to carry their nasal infection. But in carriers they confer a useful period of immunity.

It is probable that in many instances a rhinologist could throw light on the real nature of these associated nasal infections and suggest some useful local treatment. In the majority of cases the persons so infected are not conscious of any nasal catarrh, though a post-nasal discharge is often obvious to the physician.

The 300 cases upon which this paper is built were just ordinary private patients sent by their doctor to consult me, there was no preconceived plan or idea in the investigations, which extend over eight years, and any merit these observations possess is due entirely to the painstaking work of my two bacteriological assistants.

SURGERY ON THE HIGH SEAS.

BY

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AND

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The following is a short account of an operation performed on board ship.

The patient, a pantryman of the ship's crew, an old and seedy-looking man of 70, reported sick with retention of urine. At the age of 25 he had contracted gonorrhoea, and showed a healed chancre on the glans penis. For nine months previously he had been troubled with frequent and difficult micturition. There had never been any pain or haematuria, but for the last three months there had been constant dribbling.

He was pale, anaemic, and very wasted. His vessels were very thick and atheromatous, the liver was small, the superficial abdominal veins dilated, and the tongue was furred and dry; he complained of headache. There was no tenderness over the kidneys, but the bladder reached up to his umbilicus. The urine was pale, specific gravity 1004, acid; it contained no blood, but showed a slight haze of albumin, and had a somewhat fishy odour, suggestive of *B. coli* infection of the urinary tract. For three days previously he had vomited at night. On rectal examination the prostate was found to be irregular and definitely enlarged, more so on the right side. It was hard but not fixed.

For ten days his condition was relieved by the passage of a silver prostatic catheter. There was always difficulty in passing the instrument through the membranous and prostatic portions of the urethra. It would stick and then suddenly plunge into the bladder with a corkscrew-like action, but no sense of grating was ever detected. Finally one morning it was impossible to pass the catheter, and suprapubic cystotomy was performed.

The operating theatre was a double-bunked sick bay right over the propeller. It was a rough windy day. The stern rolled and pitched vertically up and down, and to this was added a lateral vibratory movement when the propeller came up into surface water. An electric hand torch proved very useful, as the light was cut off by the fixed bunks overhead. The patient being considered too bad for a general anaesthetic, stovaine-billon was successfully injected intrathecally. No rubber tubing being available, a 1½ in. bore hose-piping, sterilized and stitched into the bladder, proved an efficient if not too liberal means of drainage. An improvised Hamilton Irving receiver was made out of an inverted soap dish.

All the holes were plugged with cork except one in which a thin rubber tube was inserted to siphon off the urine.

The patient stood the operation well, but died two days later, within sight of land.

A modified *post-mortem* examination was performed. The aorta showed very marked atheroma, the lumen being almost obliterated. The liver was small and adherent to the anterior abdominal wall. The left kidney was small and tough, most of its substance being flattened by a large hydronephrotic sac. The right kidney was larger, with a lesser degree of hydronephrosis than the left. The bladder wall was thick and trabeculated. The prostate consisted of a mass of small stones embedded in tough fibrous tissue with practically no gland substance present.

As a sequel to the *post-mortem* examination, which of necessity was performed without gloves, the operator pricked himself in sewing up the wound. No local reaction asserted itself, but within twenty-four hours he experienced "shivery muscular pains," which were followed by a rise of temperature to 103°, and profuse sweating, on three successive evenings, and then the passage of pus in the urine. The latter showed *Bacillus coli* on bacteriological examination.

NINETIETH ANNUAL MEETING

OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MICROBIOLOGY (INCLUDING BACTERIOLOGY).

ROBERT MACNEIL BUCHANAN, M.B., F.R.F.P.S., President.

DISCUSSION ON SOME SIMILARITIES AND DISSIMILARITIES BETWEEN PLANT AND ANIMAL DISEASES,

WITH SPECIAL REFERENCE TO IMMUNITY AND VIRUS DISEASES.

OPENING PAPER

BY

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IN common with the study of the human diseases due to foreign organisms, the study of the parasitic diseases of plants has made very great strides during the last few decades. The question, then, naturally arises as to how far the discoveries made in one of these fields are of service in the other—that is, as to how far comparative pathology of animals and plants is a help in future work. On the animal side the greatest advances have been in two fields—those of the exact determination and characterization of the causal organism, and of the physiological study of the basis of immunity. From the last has arisen the vaccine and serum therapy which are the most striking triumphs of modern animal bacteriology. On the vegetable side also very great advances have been made in the study of the etiology of disease, and a very large number of parasitic fungi and bacteria have been described. In the field of disease resistance, however, the advance on the vegetable side no longer runs parallel with that of the animal. Our knowledge of the physiological basis of the resistance to disease of plants is still very rudimentary, and our methods of disease control have been directed mainly to the prevention of the entry of the foreign organism into the host plant, rather than to the destruction by a reaction of the plant body of the organism after invasion.

One of the difficulties that face the plant pathologist in any attempt at broad generalizations concerning parasitic diseases is the very great range in the degree of closeness of association between host and parasite. In the case of most bacterial diseases of man the parasite is definitely internal and produces a marked physiological reaction. In the case of fungal diseases of plants, however, we find very various degrees of closeness of association between parasite and host. We have the simplest cases where the fungus lives solely on the surface of the leaves, sending down no sucking organs into the host tissues and absorbing no nourishment directly from the host. The injury done is purely mechanical by blocking the stomata and intercepting the light which the leaf requires for its proper activity. Again, we have parasites which live mainly on the surface of the host, yet send down minute absorbing organs into the tissues below. Then there are parasites which confine themselves to the intercellular spaces of the plant, living between and outside the cells and obtaining their nourishment by the diffusion of nutritive substances from the host cells with which they are in contact. A closer degree of association is also to be found in which the main body of the parasite, as in the case just described, lies inside the plant body, in the intercellular spaces outside the cells, but special absorbing organs are present which penetrate the host cells and absorb nourishment from them. Finally, we have parasites like those of wart disease of potato, and finger-and-toe disease of cabbages, which live entirely within the host cells. The degree of structural association of host and plant parasite is thus seen to exhibit a wide range of complexity. The angle from which the plant pathologist can obtain the most illuminating view of the problems which confront him is, however, not the structural but the physiological. The plant pathologist, like the animal pathologist, is mainly concerned with the effect of the parasite on the function of the host—that is, with the interrelation of the physiological processes of the host and the parasite. Disease is abnormal physiology, and its further analysis lies in an adequate knowledge of the physiological processes of the foreign organism and of the plant on which it is parasitic. Just as we find various degrees of closeness of anatomical association, so we find various degrees of physiological relationship.

The different physiological classes exhibiting these various degrees of association are numerous and merge insensibly into one another. At one extreme we have the well-known parasite *Botrytis cinerea* (producing a rot of grapes and numerous other plants), where the relations of host and parasite are comparatively simple and well understood. *B. cinerea* is a very common fungus and is able to live as a saprophyte on dead material as well as parasitically. A tissue attacked by the organism is rapidly killed and reduced to the condition of a soft mush. A closer examination shows that the death of the host cells occurs at some distance in front of the advancing threads (hyphae) of the fungus. This action at a distance is brought about by the diffusion from the fungal threads of a powerful enzyme which dissolves the interstitial substance between the cells and brings about their separation and death. This enzyme can be extracted from an active culture of the parasite when grown on artificial media, and its injection into the host plant will bring about all the phenomena of disintegration and death associated with the attack of the living fungus. There is one marked difference, however: the spores of the fungus, when placed under proper conditions on the *outside* of the leaf of an appropriate plant, can enter and bring about the disintegration of the tissue. An extract containing the enzyme has, however, no action when placed on the surface of the leaf or stem; it is necessary to inject it into the intercellular spaces before it can exert any destructive action. The difference is due to the protecting layer of cuticle which covers the surface of the aerial parts of the plant. Upon this cuticle the enzyme has no action and it cannot diffuse through it, so that it is only when this layer is passed that the fungus can exert any lethal action.

The cuticular barrier is found to play a very important part in many cases of disease resistance. The germ tubes of a parasitic fungus which infects the cuticle clothed stem or leaf must either force the cuticular barrier directly or turn the barrier by entering the plant through the stomata. We find, then, that the question of penetration through uninjured surfaces plays a larger part in the plant diseases than in animal diseases, where entry through the various body opening is comparatively easy. Whether the fungus chooses the easy course through the stomata or the more difficult passage through the epidermal cells is generally characteristic of the fungus, or at least of a particular stage in its life history.* It has been pointed out above that the enzymes of *B. cinerea* have no action on cuticle, so that the passage of the fungus through the cuticularized epidermis of the host

* Why so many fungi should find their way through the cuticle when entry by the easy part of the stomata is open to them is still an evolutionary puzzle.

would seem somewhat surprising. It has been shown, however, of recent years, that the tip of the germ tube, which is developed from the spore of this fungus, becomes closely adherent to the surface of the host plant, and from this germ tube a narrow infection tube is put out which bores its way by mechanical pressure through the cuticular layers of the wall of the epidermal cell. Once these layers have been pierced the enzymes which diffuse from the advancing infection tube can dissolve the cell wall and kill the cells, and infection is complete. The same method of penetration has been observed in a number of fungi. It is obvious that if the cuticle is thick and resistant the mechanical pressure—exerted by what are doubtless the osmotic forces of the germ tube acting against the forces of adhesion holding the tube to the host surface—may be insufficient to penetrate the cuticle, and the host is then endowed with disease resistance to this particular fungus. In a case of this kind, where the physiological relation between the host and the fungus is of the simplest, there appears to be no host reaction with which the parasite is concerned. If the fungus can enter and the cell wall is of a chemical nature to be acted upon by the enzymes of the fungus, then infection occurs and the tissues are killed.

Standing, in comparison with *Botrytis*, at the other extreme of physiological interdependence, we find—to take two examples—such parasites as the "rust" fungi, which do so much damage to cereals, and the organism causing wart disease of potato. In the rust fungi we find the question of entry into the host plant is not of so much importance, for the fungus to a large extent enters through the stomata, the cells being pierced by the threads of the fungus after they have gained the intercellular spaces; the cell walls here perforated are not protected by a cuticle. It is after the cells of the host are penetrated by the absorbing organs (haustoria) of the parasite and infection is established that the most striking difference between the rust fungus and *Botrytis* is established. In attack by the rust fungus not only is there no killing in advance of penetration nor even any apparent injury to the cells actually entered by the fungus, but the cells are stimulated, at least at first, to active growth and development at the same time as the fungus is nourished and multiplies in the tissues. We have thus established an association of host and parasite by which, at least for a time, both of them profit—an association to which the term "symbiosis" is applied. One of the difficulties in analysing the nature of plant parasitism results from the way in which parasitism merges into symbiosis in the case of many of the more highly specialized fungi. In the rust fungus the symbiotic relation is not a permanent one, but passes over into definite parasitism, for the leaf cells which have been entered by the fungus and stimulated to active division are ultimately killed.

In resistance to attack by rust fungi, in which entry is by the stomata, protection by the cuticle can, of course, play no part; in fact, it has been shown that the germ tubes of the rust fungus can enter the tissues of almost any plant, but they can only successfully infect their proper host. The question of the rust resistance of different cereals and their varieties is of great economic importance, and fortunately we have some knowledge of the nature of this rust resistance. It has been shown that if the spores of rust fungi are sown on the leaves of cereals which they do not normally parasitize, the germ tubes developed from the spores enter the stomata as usual and the infection hyphae come in contact with the leaf cells. Instead, however, of contact being followed by penetrations and the normal production of absorbing organs, a very marked reaction is produced in the host cells. They rapidly die without being penetrated, and the fungal hyphae die also and so infection is stayed. Immunity to disease in these cases depends not on any active resistance to attack but on a marked *hypersensitiveness* of the host cells, so that they are killed by mere contact with the parasite, and no symbiosis is established. There has been some suggestion that we have here a play of toxin and antitoxin, but there is no evidence of this; we find no attack followed by recovery, but both the invader and the attacked cells succumb in the contest. In the present state of our knowledge of cell dynamics we cannot analyse the phenomena further. All that we can say is that in this class of plant disease we have in the one case a *harmony* between the physiological processes of the parasite and the cells of its normal host—a harmony leading to the symbiotic relationship which is the necessary preliminary to the parasitic relationship—while in the other case there is a *disharmony* between the physiological processes of the would-be parasite and its host, leading both to the death of the parasite and of the localized groups of host cells, and thus to escape from disease. The case of resistance to rust attack just described is an interesting example of immunity due to definite localized physiological reaction of the host, but it is widely different from the physiological reactions by means of which immunity is acquired in animals.

Another type of physiological reaction to infection on which immunity to many plant diseases seems to depend is the well-known wound reaction leading to the development of cork. The different varieties of flax, for example, show very varying degrees of resistance to infection by *Fusarium lini*. The difference appears to depend on the fact that the parasite enters the tissues without difficulty, but in the case of the susceptible host plants there is little or no wound reaction, so that the fungus can make almost uninterrupted progress through the tissues; with the variety showing resistance the entry of the parasite is followed by a marked reaction, leading to the production of cork, which surrounds the invader with a barrier of dead and impermeable cells so that it is either completely starved out or else its progress is markedly checked.

The case of *Botrytis*, where the parasite can be left out by anatomical peculiarities (such as a thick cuticle), gives us an example of what may be termed passive immunity in plants, while the two cases mentioned, where resistance depends on some physiological reaction of the plant, may be termed active immunity, though the terms have a different significance from that in which they are used by animal pathologists. All cases of active immunity cannot be explained on the basis of *hypersensitiveness* or on a definite wound reaction. Other physiological conditions play a large part, but exactly what those conditions are it is at present impossible to say. Higher osmotic pressure of the sap, and hyperacidity or tannin contents of the cell, have been claimed by various workers as the basis of the distinction between resistant and susceptible forms, but such theories are built on very insecure foundations. The differences, as indicated above, would seem to depend on more recondite physiological differences of cell metabolism, which cannot at present be analysed.

It will be seen that the immunity with which the plant pathologist is concerned is of the nature of natural immunity, the physiological basis of which in animals is still very obscure. The acquired immunity resulting from one attack of a disease—the immunity which is so characteristic of many diseases of man, and is the basis of modern serum therapy—is quite unknown in relation to definite plant diseases. This is perhaps the most striking difference between plant and animal pathology. The difference between the animal and the vegetable kingdom is to be correlated with the absence of any general reaction to disease of the plant body as a whole. The plant body is only very slightly integrated, and the various plant organs have a great degree of independence, as is shown by the fact that a new plant can often be "struck" from a shoot, a root, or even a leaf. In agreement with this we find such reactions to infection that occur are markedly localized; each group of attacked cells fights a lone battle in which it is largely independent of the rest of the plant body. It is impossible to say that in such a contest between host and parasite there is no production of toxins and antitoxins, or similar substances, but there is no clear evidence of such production, and even in the case of animals the production of antitoxins and other substances associated with acquired immunity seems to be confined to warm-blooded animals. Even if such substances are produced by plants, the chances of isolating them would seem very meagre, for the infection in the plant generally progresses somewhat slowly, at any given moment only a small group of cells being attacked; and, furthermore, there is no reservoir corresponding to the blood stream of animals from which they could be extracted and studied. This being so, it is certainly unlikely that serum therapy can be applied to combating the diseases of plants. Even if such serums could be prepared, there would be the difficulty of distributing such substances, probably colloidal in nature, throughout the plant in the absence of a circulatory system. Even if such distribution were accomplished, there would be the further difficulty of the continued embryonic condition of the plant. The plant is continually producing new organs, so that any serum therapy to be effective would have not only to endow the plant body with acquired immunity, *but with an immunity which would be transmitted to the newly developing organs*. The experience of animal pathologists concerning the inheritance of acquired immunity is certainly unfavourable to any such expectation.

An interesting point of contact between plant and animal pathology is in the so-called "virus" diseases. Plant pathologists have of late years become familiar with a number of very definite diseases of a highly infectious nature, in which, however, all attempts to isolate a definite organism have proved of no avail. The first of these diseases to be closely investigated was the mosaic disease of tobacco, a serious disease of that crop in which the characteristic symptom is the development of light green or yellow patches on the leaf; these patches, being interspersed with patches retaining the normal colour of the leaf, give a mosaic appearance to the leaf. The disease is exceedingly infectious; a drop of the sap of a diseased leaf placed on the injured surface of a healthy leaf will cause infection. The sap can be diluted many hundred times and still be effective, and the "virus" is found to pass a Chamberland filter.

The older workers unfamiliar with the idea of ultramicroscopic parasites put forward various theories in an attempt to explain infection in the presumed absence of living organisms. The cell sap was supposed by one worker to contain a *contagium vivum fluidum*—that is, some kind of "living fluid." Other workers fell back on the view that the disease in question was an *enzyme disease*, due to an enzyme which was transferred from plant to plant and had the power of increasing when so transferred to an appropriate plant. It has been shown, however, that although the virus passes a Chamberland filter it can be held back by a porcelain filter of suitable porosity, and by a layer of powdered talc, both of which allow the passage of the enzyme with which the virus is associated. There is thus evidence that the virus is particulate in nature; and as, furthermore, it is found to be destroyed by heat and by antiseptics, the hypothesis which explains the facts with the greatest economy of assumption is that of an ultramicroscopic organism. During the last few years quite a large number of virus diseases have come to light. The mosaic disease of potato and the leaf-roll of potato, which are serious diseases in this and other countries, are both of this class. Mosaic diseases are also found on other plants—as cucumber, tomato, sugar beet, sugar cane, maize, clover, etc.; they appear to be increasing in seriousness at the present time.

A very interesting discovery has been made since 1920 by investigators working in Holland and in the United States. It has been shown both in the case of mosaic and leaf-roll of the potato, in common with similar virus diseases of animals, that these two diseases are insect-borne. By an investigation lasting over several years, including careful feeding experiments and the use of insect-proof cages, it was conclusively shown by two Dutch workers that both leaf-roll and mosaic were carried by aphides (green fly), and at present as far as is known the diseases are transmitted in no other way. The incidence of the disease is thus closely related to the time of development of the aphides and the degree to which the plants are infested.

These virus diseases also show an interesting analogy with animal diseases. Leaf-roll, for instance, can be transmitted by grafting, and when some members of the same family as the potato are infected by grafting they show no symptoms of disease, but if they are grafted on healthy potato stocks they cause these to become infected. The same phenomena can be observed with mosaic disease. The plants in question are thus able to transmit the disease without themselves showing symptoms of it; they are thus of the nature of carriers.

In this brief survey many interesting aspects of plant disease have had to be neglected, such as the phenomena associated with infection of the seedlings of orchids, but enough has been said to indicate that though the parasitic diseases of animals and plants have many points in common, yet the dissimilarities are on the whole more marked than the resemblances.

DISCUSSION.

Mr. J. Ramsbottom (British Museum, Natural History) said: I wish to lay stress on certain aspects of immunity as met with in the problem of symbiosis. The term "symbiosis" is much abused in biology; in these remarks it is used simply to denote the constant association of two organisms. The relation between the two is doubtless always one more or less of antagonism, and probably the state is a sign that neither opponent gains the complete mastery. It cannot be too clearly emphasized that the relation between the two organisms in each particular case is a separate problem. One of the best known examples of symbiosis in plants is the association of fungus filaments with the roots of the majority of flowering plants forming what is termed a fungus root or mycorrhiza. Two types may be distinguished—the one in which the fungal threads form a sheath round the tip of the root (ectotrophic), the other where the fungus enters the cells of the root (endotrophic); the former is best known in forest trees, the latter in Orchidaceae and Ericaceae. Despite its etymology, the term "mycorrhiza" is used also when stem or thallus is "infected"; it is, moreover, very frequently used simply to denote the fungus partner.

Every orchid so far investigated (with the doubtful exception of *Wullschlaegeia aphylla*) has shown fungal hyphae in its roots. The distribution of these in any given root is always quite definite in a radial direction; sometimes the whole of the cortex is infected, sometimes only one or two layers of cells. The difficulty of germinating orchid seeds is one of the best known facts of horticulture. Bernard (1902) found that the solution of the problem lies in the mycorrhizal fungus. Seeds sown on a culture of the fungus extracted from the parent plant germinate freely, whereas in the absence of the fungus no germination occurs. (A similar necessity of the mycorrhizal fungus for germination has been shown to be present in *Calluna vulgaris* by M. C. Rayner.) The seeds are very small and typically are without any trace of the differentiated embryo practically universal in flowering plants. The only difference seen in the cells is that those at the end by which the seed was attached in the pod (suspensor) are usually larger than those at the other end. The fungus enters through the suspensor end and so into the larger cells. Here it rolls itself into a ball in one cell before passing on to the next. Almost immediately after infection has occurred the smaller cells at the distal end of the seed begin to undergo division and the growing point of the stem is laid down. Usually after the production of a couple of young leaves the beginning of root formation can be made out; the young root absorbs its way through the now swollen seed and enters the soil. The fungus remains restricted to the lower part of the developing seedling and never enters the meristematic tissue. Further, the root on entering the soil is free from fungus; infection takes place from the soil, usually when the young root is about a quarter of an inch long. By the time this happens the fungus in the seed has usually lost its mycelial character and become clumped. This is definitely associated with nuclear activity, the nucleus during the process becoming much increased in size and putting out pseudopodia which attack the hyphae. Simi ar clumping is seen in many of the cells of the root. [A series of enlarged photomicrographs showing infected seeds and seedlings was exhibited.] In the orchids studied by the late J. Charlesworth and myself no definite "digesting" cells were seen such as have been recorded by several investigators. Magnus (1900) stated that the infected cells of *Neottia* can be divided into three layers—an inner and an outer layer of "host" cells in which the fungus remains alive and is thus able to hibernate, and a middle layer of "digesting" cells in which the fungus is absorbed. In numerous cultivated forms any infected cell appears able to take on the digestive functions. Again, Bernard recorded a layer of cells in the developing seeds of *Phalaenopsis* just behind the meristematic region, which are specialized for absorption, and are recognizable by their multilobed nuclei. Such specialized cells have not been found in our investigations, where so far I am inclined to the opinion that any infected cell of the seed or of the root is a potential digestive cell. In any case we have a very clearly marked distribution of the fungus. In the seed the cells of the suspensor end alone are entered, and in the root certain cortical layers. All meristematic regions are free from infection, as also are the conducting strands and perennating organs such as bulbs. The fungus is kept away from all parts of the orchid in which presumably its presence would be inconvenient. The fungus present in orchids in all known cases (with the exception of *Gastrodia*) is always a member of the same genus which Bernard regarded as *Rhizoctonia* and for which Burgeff proposed the generic name *Orchicomyces*. Many different "species" occur which can be arranged in four or five main groups. The same species always occurs in the same orchid, though it is not usually restricted to it. There is disagreement between these two workers as to attenuation in culture. Bernard found that the fungi generally became inactive and after two years were incapable of bringing about germination, the power of an attenuated form being increased by passing it through seedlings; Burgeff (1909) found that his cultures retained their

activity unimpaired for slightly over two years. Cultures regularly renewed at Haywards Heath have retained some activity for nine years, though it is not known what their original power was. It is, however, certain that attenuated forms do occur, as is clearly apparent when the method is put upon a commercial basis.

Bernard concluded that mycorrhizal infection was a benign disease. He followed Gallaud in regarding the phenomenon of digestion in an infected cell as phagocytosis; the principle is the same, but the immobility of the phagocyte cell entails certain differences in the mode of action. The peculiar manner of growth of the mycelium in the cells is apparently related to immunity, and Bernard considered it to correspond to agglutination. It should be pointed out, however, that the balling is also frequently seen in cultures. An interesting point is that when once a hypha has entered a seed no further infection is possible; the seed is vaccinated.

Bernard also showed that the tubers of orchids contained an antibody, which is diffusible, killed by heat at 55° C., and specific. Such is a bare outline of symbiosis as it occurs in orchids. The flowering plant restricts the fungus in its distribution by the properties of its cells, either forbidding entry by chemical means, imposing a special mode of growth on the mycelium, or by causing degeneration. Such symbiosis was regarded by Bernard as representing immunity realized by phagocytosis.

Dr. William B. Brierley (Rothamsted Experiment Station) said: As particular aspects of our problem will be discussed by speakers who follow me I shall confine myself to a specific and yet fundamental question which appears to me to stand in need of re-examination. For the first few minutes I shall state platitudes, but this is necessary, for it is a direct corollary of these platitudes that I wish to bring before you. Any condition of plant disease is the *status quo* in a physiological complex; it is a physiological equilibration in which a static condition is not attained; it is a process and not an entity. The component parts of this process are the host and the parasite. Each of these is itself a physiological complex, being the outcome of a certain specific group of germinal qualities (*genotype*) developing under the moulding influences of environmental factors such as temperature, light, humidity, food, and so forth. Diagrammatically this may be shown as follows:



From such trite considerations as this has developed the concept of disease as being the invasion of a defensive host by an active parasite, a see-saw balance in which there is an inverse relationship between the health and vigour of the host and the incidence and virulence of the disease. It is unnecessary to quote definite formulations of this concept, for it is quite generally accepted, but one may perhaps indicate Adami's *Principles of Pathology*, Kolmer's *Infection Immunity and Specific Therapy*, Zinsser's *Infection and Immunity*, and perhaps more particularly Hurry's *Vicious Circles in Disease*. In phytopathology the growing of vigorous plants as a prophylactic against disease is axiomatic.

The question I would ask you is whether this concept is a true picture of reality. Are vigorous plants more resistant to disease than weakly plants, and is there a constant inverse relationship between vigour of host and incidence of disease? One may weaken plants in many ways: by a deficiency in their nitrogen nutrition and supply of mineral nutrients; by interference with their carbon metabolism, their water and temperature relations; by exposure to toxic agents; by wounding; or, on the other hand, one may experiment with plant tissues of different ages and states of maturity. Much experimental work has been carried out along these lines, and this perhaps more particularly with the rust fungi. It has been almost the invariable experience among these students —and one may instance Sheldon, Ward, and Stakman—that the inverse relationship of host vigour to disease incidence does not hold. A careful study of the evidence shows that conditions that are unfavourable to the development of the host are also unfavourable to the development of the fungus and that inoculation experiments on weakly plants usually fail, whereas those on strong and vigorously growing plants of the same variety usually succeed. The evidence, in fact, often shows a direct relationship and not an inverse relationship. It might be suggested that this is due to the special physiological conditions obtaining in the almost symbiotic relationship of rust fungus to host and that the rust diseases are a special case. That this is not so is clearly shown when the evidence in other types of disease is examined. It is most frequently found that strongly growing individuals of varieties of potato susceptible to wart disease show a higher percentage of warted tubers and a greater development of wart on the tubers than do weakly individuals of the same variety growing in the same field. Late blight of potatoes, in my experience, attacks vigorously growing plants more easily and produces greater destruction than it does in sickly plants, and L. R. Jones pointed out many years ago that heavy manuring or growth in highly fertile soil lowers the resistance of potato plants to blight and "rot." The same general direct relationship between host vigour and disease incidence and virulence has been pointed out by Marchal in the case of lettuce blight caused by *Bremia lactucae*, by McCue in the case of tomato plants suffering from leaf blight, by Peltier in the case of citrus canker, by Fromme and Murray in angular leaf spot of tobacco, by Thomas in the *Septoria* leaf spot of celery, by Levine in crown gall of beet, and by many other workers for still other diseases. I do not, however, want to leave behind my initial platitudes and go to the opposite extreme, formulating the generalization that the more sturdy and vigorous the plant the more liable is it to disease. That is an equally false concept. The standpoint that I wish to adopt is that every kind of disease must be taken on its own merits, and that at present it is quite unsafe to draw any generalizations at all. One of the most striking illustrations of this that I have seen is in the manured plots on Barnfield at the Rothamsted Experiment Station.

The conception of the diseased state as it formulates itself to me is not that of one organism struggling for its life *against* another, but as the co-ordination of the activities of two organisms, and ultimately—a far ultimate I grant—of one series of physico-chemical forces integrating with another series. It is not A B *versus* X Y, but A B *plus* X Y.

Within the limits imposed by the genotype, each complex (host and parasite) is modifiable by alteration in the environmental factors. As I see the evidence, this is not a question of biological adaptability but of the presence or absence of certain definitive and specific factors in the physico-chemical complexes—for example, an alteration in P_H value of soil or medium, of water relations, temperature, etc., the presence or absence of some particular chemical compound or element, and so forth. I venture to think that perhaps our greatest line of advance in the solution of problems of immunity, resistance, and susceptibility to disease is to attempt to restate many of our biological concepts in terms of physics and chemistry, and to make a physical, chemical, and biochemical analysis of our conditions.

May I say a few words concerning the general issues raised by Professor Blackman? In my opinion the gulf between the animal and plant kingdoms is so profound, and this particularly in the case of the higher forms whose diseases we, as pathologists, study, that to attempt to make anything more than the most vague and general comparisons is to falsify and to confuse every issue. In its morphology and anatomy, its rigid cellular structure, and in its physiological processes the plant is utterly remote from the animals and man. In the plant there is nothing corresponding with the venous and arterial systems, with the lymphatic system, with the alimentary system, and with the muscular, skeletal, and nervous systems. It is in just these characteristic features that the principal pathological responses of higher animals are seen. To my way of thinking it is not in forced comparisons of total disease complexes or in details of pathological histology and so forth that any value can accrue from the collaboration of animal and plant pathologists. Rather is it in the comparative investigation of the structure, life history, genetics, and physiological qualities of pathogenic organisms and their individual relationships to particular host complexes under standardized conditions that advances will be made; and it is in the comparative study of cell chemistry, the study of those physical, chemical, and biochemical problems which are the bedrock of disease.

Professor S. H. Gaiger (Glasgow) said: One cannot but be struck by the remarkable resemblances which at first sight there seem to be between plant and animal diseases. These resemblances, however, on closer study, become less and less apparent. So long as one confines oneself to the examination of the mere anatomical relationship

of parasite to host there are resemblances enough. When one studies the reactions of the host against the parasite the differences become marked. These differences are largely due to the absence in plants of systems actually comparable to the systems of animals. Between human and animal diseases resemblances are everywhere apparent. That is so well known nowadays that there is no need to emphasize the important bearing which each has upon the other. But between the plant economy and the animal economy there is a wide structural and physiological gulf which widens with closer examination, and so it must be with their diseases. There can be, for instance, no such thing in plants as the acquirement of immunity through an alimentary canal, and of this immunity becoming a systemic immunity through the possession of a circulatory system. The study of the virus diseases of plants is especially interesting. One bears in mind that the first known virus disease was a disease of plants. Now we find another important discovery that there is a virus disease of plants which is solely insect-transmitted. The fact that insects can play an important rôle in transmitting viruses is especially interesting to the veterinarian because it might possibly explain how mysterious outbreaks of foot-and-mouth disease arise in this country. It may be yet found that virus diseases of animals may be insect-transmitted in addition to other means of transmission.

Dr. J. C. G. LEDINGHAM (Lister Institute, London) said: Professor Blackman has confined himself to infections by the so-called higher fungi. The physiological interactions of host and fungus in plant life should therefore strictly be compared with those observed in fungal infections in animals. With this proviso I believe that the respective manifestations show a closer parallel than Professor Blackman might perhaps allow. Man and animals generally show an extraordinarily high degree of normal resistance to attack by fungi. The few representative fungal infections of man and animals are essentially dermal and characterized as a rule by great chronicity. They have little invasive power, but progress locally with accompanying solution of tissue very much as if a vascular circulation was not present. Some of these fungi also, especially those associated with various tropical mycoses, seem to attack the local tissues only after they have been weakened by certain gross physical agencies as, for example, chronic maceration. I should think that the study of the minute mechanism of these interactions which is possible in the plant may throw a considerable amount of light on similar interactions in man and animals. As we go down in the animal scale truly fungal infections of grave character appear to become more prominent, though it must be admitted our knowledge of the comparative pathology of the lower vertebrates and the invertebrate world is as yet rudimentary. It is possible, however, that looked-for transitions are most likely to be found in this zone. Professor Blackman has not alluded to the economically very important group of bacterial diseases of plants. So far as one may judge from the mere reading of descriptions of bacterial diseases in plants, they would seem to offer an extraordinarily close parallel. Though there is no true circulation, the attacking bacteria appear to exercise a considerable amount of invasive power by means of the fibro-vascular canals of the plant. Also there is a good deal of evidence that insects can act as inoculators of such bacterial diseases. As to the so-called virus diseases, we have, of course, a very close parallel in the Ricketts ia group of organisms, which are intimately associated with insect transmitters, and it will be most interesting to follow up the study from the morphological side of these plant viruses in the aphides which transmit these diseases to plants. The factors determining normal immunity to disease in animals are as yet but little understood, and I agree with Professor Blackman that there is here much common ground for research.

Lieut.-Colonel F. P. MACKIE, I.M.S., said: The relationship between the protozoal diseases of plants and animals is also of much interest. To take the example of the flagellate *Leptomonas davidi* of certain euphorbiaceous plants; this flagellate is similar to, and almost indistinguishable morphologically from, the herpetomonas infection of insects and the allied parasite *Leishmania donovani* of kala-azar. These parasites are found side by side in India, and to those like myself constantly confronted with the problem of kala-azar it would be very interesting if the simpler problem in this plant could throw any light on this disastrous disease in man. The flagellate infection of the plant appears to produce disease and death in the plants affected, and is believed to be transmitted from the diseased to the healthy by the agency of parasitic insects. I sometimes feel a sense almost of despair in attempting to unravel the infinite complexities of disease in man, and think that it might be better to transfer the whole process of investigation to the simpler problems of the parasitization of the lower forms of plant life.

Dr. J. S. DUNKERLY (Glasgow) said: The parasitic flagellate leptomonads are parasites of the laticiferous system in the Euphorbiaceae, etc., and this system extends through the plant and furnishes an analogy to the animal circulatory system. According to Professor Blackman, in the rust-resistant races of wheat the host cells are killed by the parasitic hyphae, which in their turn are killed or weakened by some reaction of the host cells. This is a local reaction comparable with those produced in diseases of animals. The cells of the susceptible plants, on the other hand, are said to enter into symbiotic relations with the parasitic hyphae which attach themselves to the host nucleus. There is a somewhat similar connexion between the nucleus of a coccidian parasite, Caryotropha, and the nucleus of the cell of its host, a polychaete worm. The symbiosis of plant cells in fungal disease may be due to a relationship between the host plant and the fungal cell similar to that which exists between algal and fungal cells in lichens. This would not occur so readily between animal and plant cells, which would be more in the relations merely of host and parasite.

DISCUSSION ON MUTATION OF SPECIES.

OPENING PAPER

BY

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MUCH of the controversy waged around the subject of mutation has birth in the question of what kind of change should be regarded as a mutation; and perhaps it may not be out of place to spend a short time considering this.

"HIGHER ORGANISMS."

The recognizable characters (*phenotype*) of organisms are the outcome of interaction between germinal or hereditary potentialities (*genotype*) and external conditions. So far as there is direct evidence it appears that the hereditary potentialities are indissolubly linked with the chromosomes of the nucleus. Each potentiality may be attributed specifically to one or more particular unit factors or genes. The latter appear to be distinct and autocatalytic physical or chemical entities, perhaps ultramicroscopic particles, having definite locations in particular chromosomes. This is no hypothetical Weismannian system of "ids" and "idants" but a thing susceptible of definite proof.[26]

For our purposes phenotypic changes occurring in organisms may be grouped into two categories—*temporary* changes and *permanent* changes.

Temporary phenotypic changes are due to alterations or differences in environmental conditions and the genotype remains unaltered. In consequence these changes (*modifications*) only continue so long as the causal stimuli are operative, and disappear when the organism or its progeny are returned to the original environment. There should be no question that such changes are not to be regarded as mutations; and modifications are therefore without the scope of our discussion.

The second category comprises those phenotypic changes which are permanent—that is, character changes in organisms which persist throughout subsequent generations even when these develop under conditions in which the original stock retains the primitive phenotype. Such changes are the outcome of an alteration in genotype—that is, a change in the chromosomes of the nucleus. This category of hereditary differences may be subdivided into two groups: alterations may result from *inter-chromosome* changes or from *intra-chromosome* changes.

Inter-chromosome changes are those in which chromosomes, parts of chromosomes, or even single genes, may be distributed or recombined in various ways—much as one might shuffle and reshuffle a pack of cards. These changes fall readily into two groups: *normal* distribution and *abnormal* distribution.

Inter-chromosome distribution of normal type is the result of hybridization processes with or without the so-called "crossing over" of chromosomes and of segregation in the offspring. Now it is generally agreed that no permanent phenotypic change which is brought about in this manner may be regarded as a mutation. The latter is the result of a change in genotypic nature which occurs independently of hybridization and segregation or of "crossing over."

Inter-chromosome distribution of abnormal type is of very varied etiology. It may result from irregularities in the assortment or distribution of nuclei or chromosomes during the reduction or other divisions, from halving, doubling, tripling, and so forth, of the usual number of chromosomes, from the "non-disjunction" of particular chromosomes in the reduction division,[5] from elimination of nuclei, chromosomes, or chromatin substance during segmentation, from chromosome abnormalities, or from the actual destruction of chromosomes by specific external factors such as *x* rays,[25] and so forth. There would seem to be evidence that changes in the relative positions of genes within the single chromosome may occur, and these although strictly *intra-chromosome* changes would need to be classed in the present category. There are some students[22] who would see in these aberrant chromosome distributions merely the finer ramifications of the normal segregation processes, but the phenomena are more usually accepted as events *sui generis*. There is no evidence in such processes of the formation *ab initio et ab intra* of new genes. Changes of this nature may occur in the individuals of what is apparently a pure line; and hereditary phenotypic changes which appear to be causally dependent upon such aberrant inter-chromosome distribution are accepted by perhaps the majority of geneticists as mutations. It is, however, vital for proof of the occurrence of such mutation that all possibility of the parental organisms having hybrid qualities be excluded; and it is being increasingly found that claims which have been made in the past, such as that of de Vries for the evening primose (*Oenothera lamarckiana*), fail when critically examined from this standpoint in the light of recent knowledge.

The second subgroup of hereditary differences comprises those genotypic alterations resulting from intra-chromosome changes. If we again use the analogy of a pack of cards, the likeness is not to rearrangement by shuffling but to an actual transformation of a card of one suit into something different. The change is of chemical or physical nature within the gene itself, analogous perhaps to the changes occurring in the atoms of the radium element. Certain prominent geneticists have urged that the term "mutation" should be confined to such an alteration in the fundamental nature of a genetic factor. To obtain convincing proof of such a chemical or physical change *in situ* is, however, an extremely difficult thing. Certainty of specific purity in the original experimental organism is obviously a *conditio sine qua non*, just as certainty of chemical purity is a *conditio sine qua non* in order to prove the existence of mutability of the elements. There are, however, data from researches on Drosophila which, in the present state of our knowledge, are best interpreted as indicating the existence of mutation by changes in the fundamental nature of genes.[27]

The point I have tried to make in the impressionistic and wholly inadequate outline I have sketched of changes in higher organisms (using this term for the whole gamut of living things from mosses and fruit flies to flowering plants and man) is that mutation is no naïve and simple concept. In modern genetical study there are obviously at least two concepts of mutation based on quite different premisses and only having in common a basis of apparently hereditary genotypic change. One concept confuses the issue by not differentiating between abnormal distribution of genes and changes in the fundamental nature of genes; whilst the other differentiates clearly but restricts the concept to a very narrow and, at present, an almost theoretical issue. The former use of the term "mutation" is much as though a chemist were to class together the refining of silver from a lead ore containing silver and an actual transformation of the element lead into the element silver.

To obtain satisfactory proof of the occurrence of mutation, using the term in either sense, it is obviously necessary, first, to be minutely acquainted with the genetical constitutions of the parent and the "mutant" organisms, and this can, in our present state of knowledge, only be elucidated by cross-breeding experiments; secondly, to have knowledge of the chromosome structure of the nucleus; and thirdly, to make free use of Occam's razor.

I have, perhaps, lingered overmuch on this first portion of my subject; but if this discussion is to have any value, and if progress is to be made toward the solving of our problems, it is essential that we get our ideas and criteria very clearly in focus. Let me now examine the question of mutation in micro-organisms from the point of view I have suggested.

The three groups of micro-organisms that concern us here are the protozoa, the fungi, and the bacteria.

Protozoa.

It was early shown that if one experimented with a number of wild forms, subjecting them to selective influences, hereditarily different strains could be bred out; and for some time this kind of work was accepted as demonstrating the efficacy of selection in producing "mutant" strains. It was, however, gradually realized that the phenomena were not quite so simple as they seemed, and that the results obtained, far from demonstrating the production *ab initio* of new strains, only showed that selective treatment could isolate different strains pre-existing in an original mixed population.

Johannsen's *pure-line* hypothesis was then adopted, and more accurate and controlled work carried out, the experiments being based on cultures derived from single individuals of known genealogy. In practically every reliable case entirely negative results were obtained.

However, within the last five years or so, investigations by Jennings,[16] Bauta,[3] Jollos,[20] Hegner,[13] and others, have shown that very rarely permanent hereditary changes do arise in what are apparently pure-line stocks. Are these changes to be regarded as mutations? The answer depends, as we have indicated, upon the etiology of such changes, but, unfortunately, of their genetic causation we are yet singularly ignorant. Many of the subject organisms show the form of sexuality known as conjugation, but no student of the protozoa has yet thrown light on the genetic constitutions of individuals by cross-breeding; and of the genetic details of their chromosome structure we are still ignorant. The only basis for the assumption of initial purity lies in the facts that the experiments are carried out on the progeny of single organisms; that self-fertilization over a number of generations in the original stock gives mathematical presumption of a relatively high percentage of homozygous individuals, of which one has been chosen as the progenitor; that in the experiments reproduction is uniparental; and that in parallel cultures the "mutation" does not occur. Anything more critical than this is at present beyond our reach; but this is not a sufficiently critical basis on which to claim proof of the occurrence of mutation, for the crucial test of genetic analysis by interbreeding is absent.

Furthermore, our ignorance of the relative genetic significance of the micro- and macro-nuclei in protozoa (an amicronucleate Oxytricha has been found[7]), of the nuclear rearrangements in the normal processes of conjugation, and even more of endomixis, is profound. Recently it has been shown that certain of the genotype changes in Arcella are merely the result of a simple increase or decrease in number of nuclei,[14 23] whilst Erdmann's work[10] indicates that genotype changes in Paramecium may be due to the formation of new strains by normal recombinations of hereditary units in the process of endomixis. These changes would therefore have no greater genetic value than those occurring during normal segregation processes, and all that has been done in the experiments is to separate out hereditarily diverse strains from a mixed population. It follows that a single individual culture is not necessarily a pure line, an understanding that cuts away the very foundations of previous genetical work on the protozoa. It would thus seem that in the protozoa we cannot yet differentiate between genotype changes due to normal chromosome distribution, which are not mutations; changes due to aberrant chromosome distribution, which are only to be regarded as mutation if this term possesses a vague and indiscriminatory significance; and mutations in the more exact sense, resulting from a change in the fundamental nature of one or more specific hereditary units. Even in saying this we are perhaps going too far, for it implies that the hereditary mechanism in the protozoa is in behaviour and genetic structure comparable with that in higher organisms. It may be so, but there is yet no definite evidence that the protozoal mechanism is susceptible of exact factorial analysis as, for example, is that of Drosophila.

What I wish to point out is that mutation (in either sense) may occur in the protozoa, but there is yet not one iota of evidence which compels us to believe that it does. Further, that to equate the concept of mutation as it is commonly

applied in protozoology with the several concepts of mutation accepted in the genetical study of higher organisms is to falsify and to confuse the issues.

Fungi.

Mutations in fungal species have been described by Schiemann,[29] Waterman,[32] Blakeslee,[4] Thom,[31] Burger,[9] Schouten,[30] Haecincke,[12] and many other investigators. The procedure by which the new forms have been obtained has been to subject, usually but not always, a single-spore culture or its progeny to various physical or chemical conditions, to observe that rarely some entirely fortuitous change occurs in sporadic portions of the growth, to isolate the new form of organism, and to prove that in occasional instances it breeds true to type. This derivative form apparently differing hereditarily from the parent stock is thereafter referred to as a "mutant."

In no case have cross-breeding experiments between the "mutant" and the parent form been carried out, nor is this possible as yet with many of the organisms concerned; and in no case has a cytological study been made of the "mutants." In brief, we are in every case totally ignorant of the genetic constitutions and chromosome relations of the original and derived forms; and there is no certainty of specific purity in any single one of the initial organisms. We can therefore have no knowledge of whether the new form has arisen by normal processes of nuclear rearrangement, by aberrant chromosome distribution, or by changes in the fundamental nature of specific genes. It would seem, therefore, somewhat premature to use the term "mutation" in mycological studies when all that there is evidence for are apparently hereditary changes of unknown genetic causation.

A few words further may be said concerning the possible etiology of so-called "mutants" in fungi. One of the great lines of progress in mycology during the last two decades has been the demonstration of sexuality *in esse* or *in posse* in an ever-increasing number of fungi; and he would indeed be a rash mycologist who would assert that sexuality is completely absent from any single species. We have therefore to take into consideration the probability of heterozygosis in many forms and the possibility of it in all; which implies that a single-spore fungal culture has neither greater nor less genetic value than a single-seed or a single-tuber culture derived from some probably or possibly cross-bred higher plant of unknown genetic constitution. No geneticist would accept the latter as a sound basis for any kind of experimental work unless by long and careful breeding-analysis he could unravel its genetic constitution and obtain progeny homozygous for the particular character he wished to investigate. Such factorial analysis is as yet quite impossible in the fungi.

Furthermore, in perhaps a majority of fungi we are not dealing with organisms having simple uninucleated cells; but, as in the Phycomycetes, with individuals each of which consists of a single cell containing innumerable nuclei; or, as in very many Ascomycetes and Fungi Imperfecti, with multicellular individuals each cell of which may contain a very variable number of nuclei; of two adjacent cells in a hypha, one may contain five nuclei and the other seventeen or any other number. The possibilities of normal rearrangement of hereditary units or complete nuclei in such a condition are immense and practically unexplored. The studies of Burgeff[8] and Orban[26] on sexuality in Phycomycetes have, for example, shown the probability, not of a heterozygous condition, but, what is even more startling, of a *heterocaryotic* condition; and the normal genetic ramifications of the permutations and combinations of hereditary units in such a state leave one's mind almost bemused.

Again, practically all fungi that have been carefully observed show vegetative anastomoses of hyphae. Matsumoto[24] has just recorded for *Rhizoctonia solani* a phenomenon that I have frequently observed in *Botrytis cinerea*, and which I have no reason to doubt is present in many other fungi—namely, fusions between the hyphae of different strains. The possibilities of genetic contamination in this process are such as to render certainty of specific purity in any initial subject organism quite out of the question.

Practically all fungal species which have been intensively studied reveal themselves to be a congeries of strains differing from each other in a greater or less degree. Most such strains are admitted by all investigators to be constant, but occasionally a strain is studied which gives rise to forms differing from itself but similar to strains occurring wild in nature, and these "new" strains are sometimes found to be constant. Now, I would suggest that this phenomenon is not one of mutation, but that the "mutating" parent organism is genetically impure, being either heterozygous or heterocaryotic, and that its component genetic forms, or different nuclear or chromosome combinations, may occasionally be segregated out by perfectly normal processes of fungal cell-division and reproduction. Occasionally such segregants arise in conditions which favour their reproduction, and, if we chance to observe them, we call them "mutants." If segregation is complete the new form is homocaryotic or homozygous, and naturally, if isolated, remains constant. If segregation is incomplete, the new form may "revert" to the parental type, or at some later date may again show segregation.

Furthermore, it will be evident that in any fungus which gives rise to multinucleate spores—and a vast number of fungi do this—or even in "heterozygous" fungi with uninucleate spores, a single-spore culture may, after very little growth, have given rise to a mixed population, and that when this culture is exposed to selective influences it is entirely reasonable that certain strains in this population should be favoured to the exclusion of others. If segregation has been complete and selection is sufficiently stringent a single "new" strain, perhaps quite different from the parental culture, will be produced; and, if pure, will remain constant even when returned to the original conditions, for there will be no segregation and no subordinate strain to be reselected. If segregation has been incomplete or selection insufficiently stringent, then, on the return of the culture to the original conditions, the original parental form may again become dominant. Let me give only one illustration. Of certain strains of *Rhizoctonia solani* Matsumoto[24] writes: "Fusion is also observed . . . between P1 and P4." "In no case may the strain P4 be so changed as to resemble the form P1, either by changing the culture media or host plants, while P1 may be easily transformed into P4." Now it this be mutation or evolutionary change, we have to assume as its basis some very strange hereditary mechanisms. But is it not surely more simple to assume that in the hyphal fusions, nuclei (the cells of Rhizoctonia contain many nuclei) from the homocaryotic line P4 have passed into the cells of P1, and that subsequent growth of the latter has produced genetically impure mycelia? The strain P4 is genetically pure and therefore constant. The strain P1 is genetically impure, and under certain conditions nuclear segregation may occur, and reproductive moieties containing only nuclei of P4 are cut off. These, being favoured by the conditions, rapidly become the dominant strain to the exclusion in the culture of the original strain P1. The moment one has grasped the fact that a single-spore fungal strain may be heterocaryotic, and one has realized that the formation of septa by the ingrowing of a diaphragm unrelated to nuclear division or to the number or condition of the nuclei in a multinucleate fungal cell may, if conditions are favourable, give rise to nuclear segregation, one has the key to "variation" and "mutation" in the fungi, and all the phenomena fall into line.

It must be understood that I do not deny the possibility of mutation, even in the narrow sense, in the fungi (to deny the possibility of anything is unscientific); but it is my considered opinion that no single case has yet been described which satisfies the criteria essential to the proof of mutation; nor, until we know vastly more about the genetic constitution and possibilities of individual fungi, can we hope to satisfy such criteria. Personally I find it much more in keeping with the data of mycology as they present themselves to me to interpret all described cases in the manner I have indicated. This applies even to the instance I have myself put on record.[7]

Bacteria.

There is a vast amount of bacteriological literature bearing on our subject and references to the more recent investigations may be found in the files of *Bacteriological Abstracts*. The older literature has been collected together and discussed in the works of Adami,[1] Gurney-Dixon,[11] Löhnis,[23] and others.

Before entering into any detail, attention may be drawn to certain general issues which are usually overlooked. It has been noted that the genetical concept of mutation is based on the premiss of certain types of change in one portion or another of the hereditary mechanism, and that to ascertain whether any apparently hereditary change is a mutation or not we must be able at least to analyse the genetic values of the parent and the "mutant," and confirm this factorial analysis, if possible, by cytological data. Unless we can do

this we are very much in the position of a chemist trying to prove mutation of the elements without being able to analyse chemically his initial or his end materials.

Now, quite briefly, we do not know the genetic constitution of a single micrococcus, nor, in the present state of our technique and knowledge, can we ascertain it; and we have no knowledge whatever of the structure or type of hereditary mechanism in bacteria. That bacterial strains may remain constant for years under the most varied conditions, and passing through a myriad generations, implies an extremely delicate and constant hereditary mechanism, quite comparable in its behaviouristic fixity and nicety to that in higher organisms. Of this mechanism we know nothing, and still discuss whether or not bacteria contain nuclei at all. Until, however, we can evaluate the genetic constitution of bacteria, and until we can learn something of the hereditary mechanism involved, to use the term "mutation" in bacteriological studies, and to equate the concepts in genetical studies of higher organisms with those of bacteriology, is mere obscurantism. The only changes of which there is evidence in bacteria are modifications and apparently hereditary changes of unknown genetic causation.

A further point to be noted is that whereas in genetical studies of higher organisms it is essential that the experimental subject be the *individual* of known genealogy, in bacterial studies the experimental subject has been the *culture* containing myriads of individuals whose genealogical relationships are entirely unknown, save that the total culture may be derived from one or more ancestral cultures, or in the rarest cases from a single individual progenitor. The unit in bacterial researches corresponds not with the *individual* of the geneticist, but with the *formation* of the ecologist, and genealogical relationships in bacteriology are from ecological formation to ecological formation, and not from individual to individual. Yet, in bacteria, as in all higher forms, hereditary changes do not concern ecological units, but have immediate causation and expression within the individual *qua* individual.

Again, a fact of immense importance is that not only do we know extremely little concerning the structure of single bacteria, but that we know even less of the developmental and reproductory phases in the life cycle of individual bacteria. Löhnis[21] and Hort[15] have been the foremost among the few students who have tried to remedy this defect; and although there is much in the recent volume of Löhnis with which one may not agree, it is undoubtedly the most courageous and the most valuable contribution to this aspect of the subject yet published, and a work demanding the closest attention from all bacteriologists. That bacteria may develop through cyclical phases of far greater complexity than the simple life history still taught in textbooks and naively believed by many workers, surely stands in no further need of substantiation. In fact, until we know vastly more about the physiological and morphological phases of development and the reproductory processes in the life cycle of *individual* bacteria it is altogether premature to speak of hereditary changes in bacterial type. In the face of this ignorance the assumption that "it seems quite justifiable to consider bacteria as asexual throughout their life history"[2] which underlies all researches on bacterial variability is a perfectly gratuitous one. All that can be said is that sexuality has not yet been demonstrated, and considering the difficulties attendant upon such work, and the fact that practically no attention has been given to its demonstration, this is not surprising. A comparative view of the results of bacterial research points straight to the occurrence of some form of genetic impurity in bacterial individuals. If it be not so then the bacteria are a class unique unto themselves.

It will be evident, I think, from what I have said that we are ignorant of nearly all the facts and criteria which are essential to any critical study of bacterial genetics. The literature on bacterial variability is chaotic and full of incompatible and contradictory statements and descriptions of phenomena; but from a broad view the principal issues relating to our problem which seem to emerge may, perhaps, be outlined as follows:

(*a*) There are a great number of bacterial strains which differ from each other to a greater or lesser degree and often live commensally.

(*b*) Certain strains may remain constant under either unvarying or changing conditions, whereas certain cultures of other strains may show no variation, whilst parallel cultures of these strains may show variation to a greater or lesser degree.

(*c*) The change may apparently take place gradually or suddenly; it may be an apparently permanent change, or it may be that selection appears to be effective in either or both *plus* or *minus* directions; it may be a fortuitous change, or it may apparently be a specific and teleological response to one or more particular operative stimuli.

(*d*) No experimental research has been carried out by the following of single individuals of known origin through many generations (Hort has come the nearest to this), and only in the rarest cases is any experimental culture to be referred back to a single individual progenitor (and I very fully agree with Hort's adverse criticisms of the isolation methods in vogue!).

When viewing broadly the chaos of bacterial literature relative to variation I do not think anyone knowing the literature of "genetics" and evolutionary thought prior to about the beginning of the twentieth century can fail to be impressed with their essential similitudes. Identical phenomena are described, similar points of view are adopted, and the same interpretations appear. Genetical students of higher forms relinquished these ideas between the years 1900 and 1910. About the latter date protozoologists began to reach out to a more exact *pure-line* formulation of their problems. Mycologists are just beginning to see the light, but with rare exceptions bacteriologists are still in the darkness of a pre-Mendelian and a pre-Johannsen period.[18,19]

If one considers the more theoretical aspects of the published data on bacterial variability there would appear to be only two feasible interpretations:

(*a*) It may be assumed that the bacteria possess an hereditary mechanism sufficiently delicate to distinguish, for example, between different blood serums or temperatures only separated by one degree, and yet sufficiently static to do this without appreciable variance for innumerable generations; a mechanism which, according to the results of reliable students, must be almost uncannily intelligent, overcoming the specificity of enzymes, to adapt itself to new conditions in a manner quite unequalled by higher organisms, and yet a mechanism which, according to reliable students, must be of the most labile order, in certain cases being apparently at the mercy of almost any chance condition and changeable at will with the greatest ease. As I have indicated, the bacteria would then be a unique class of organisms and any deductions drawn from their behaviour would be quite inapplicable to any other organisms.

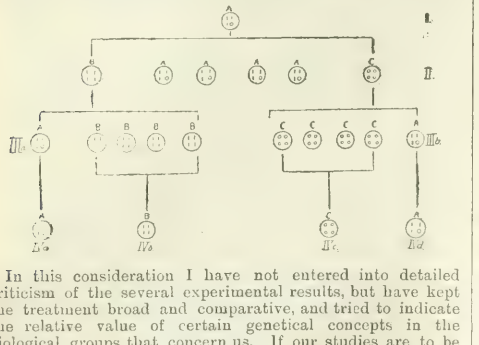
(*b*) On the other hand, we may assume that bacteria possess an hereditary mechanism comparable in all behaviouristic respects (we know nothing about structural aspects) with that of other organisms, and the occurrence, perhaps only at rare intervals, in the bacterial life cycle of some form of cell fusion giving rise to genetic impurity.

Both hypotheses would fit the known data on the behaviour of bacteria. Now without entering into any detail, but bearing in mind our ignorance of the genetical constitutions, hereditary mechanisms, and life cycles of the bacteria, and the fact that the data have been derived from researches in which the unit basis has been the ecological formation and not the individual organism, the second of the above alternatives would seem, to my way of thinking, overwhelmingly the more reasonable. Granting the assumption of the occurrence in bacteria of genetic impurity with some mechanism of segregation, all the data concerning variability and apparent mutation in this group fall astonishingly well into line with modern genetical conceptions. Genetically impure single bacteria might occasionally or frequently give rise to mixed populations, just as genetically impure fungus spores might do, or just as single plants of, for example, *Oenothera lamarckiana* would do, were all their seed and that of their offspring sown for a myriad cross-breeding generations. As has been described for the fungi, selective influences might then change the whole physiological or morphological facies of a bacterium in culture merely by the favouring or isolation of its constituent strains. According to the degree of segregation and the stringency of selection the change would be temporary and susceptible to reverse selection, or permanent.

Perhaps one may be forgiven for showing the manner of this change diagrammatically and reduced to its simplest proportions; but it must be realized that in actuality such changes are probably of an extremely complex order.[6]

A genetically impure bacterium, A, would, in the vast majority of its progeny, merely reproduce its own condition, A,

but occasionally it might segregate out its constituents in pure form, B and C. These latter would be present in such infinitesimal proportion as to be totally inappreciable in the culture. If, however, the conditions were so changed as to favour the development of the submerged forms, these might gradually become the dominant forms, as in III*a* and III*b*. If the selection were sufficiently stringent over a large enough number of generations the submerged form A might die out, leaving pure cultures of either B or C, IV*b* and IV*c*, according to which of these types had been favoured. An apparently new form would now have been developed, which, as it is genetically pure, will remain constant. If, however, the original impure type A has not been completely eliminated it may again gradually become dominant on the reversal of the selective processes. The longer a genetically impure strain is subjected to the action of selective conditions the purer genetically it will become, and the longer it will take to "revert" when returned to the original conditions. This phenomenon, so simple on a basis of genetic impurity in the *individual* bacterium, has been a most fruitful source of controversy and speculation in the past,[1] [11] and is now being found of "extreme interest" by protozoologists.[17] [20]



In this consideration I have not entered into detailed criticism of the several experimental results, but have kept the treatment broad and comparative, and tried to indicate the relative value of certain genetical concepts in the biological groups that concern us. If our studies are to be of value it is imperative that we have our foundations firm and straight in the solid knowledge of structure and life history of individuals before we investigate variations in superstructure and make positive claims regarding mutation. We must have our criteria precise and cleanly cut.

SUMMARY.

A mutation is not any old change in an organism. In the strict sense it is a change in the fundamental nature of one or more hereditary units; in the wider sense it is a change in genotype due to abnormal distribution of hereditary units. A change originating in normal distribution of hereditary units in crossing, or as a result of redistribution due to the appearance of any form of genetic impurity in the parent individual, is not a mutation.

The proof required to establish biological mutation is no less precise than that required to establish chemical mutation; and like the latter is dependent upon analysis of the original and the derived products.

The concept of mutation held at present by most microbiologists cannot be equated with that held by genetical students of higher forms. It is a more nebulous and inclusive concept, for their subjects have not yet been found susceptible to factorial analysis by cross-breeding, and detailed cytological information regarding the genetic structure and behaviour of the hereditary mechanisms is not available.

In the protozoa and fungi there is the possibility of the origin of apparently new and distinct strains in the normal cytological processes, and it is suggested that apparent mutations may be due to the selective isolation of such strains.

In the bacteria it is suggested that a similar hypothesis is the most feasible on which to interpret present data; and that it will explain the facts of "variation" and "mutation," bringing them into line with genetical concepts.

The possibility of mutation in micro-organisms is not denied; but it is considered that no adequate proof of such mutation has yet been adduced, or can be in the present state of our technique and knowledge. We are trying to write before we have learned our alphabet!

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DISCUSSION.

Professor DAVID ELLIS (Royal Technical College, Glasgow) said: It is well known to bacteriologists that the adaptability of bacteria to changed conditions, whether internally or externally excited, is far greater than that possessed by organisms higher up in the scale of evolution. We could, therefore, on *a priori* grounds expect in the bacteria that capacity for change which has sometimes brought systematists to the verge of despair. Instances of rapid changes in form and function on the part of bacteria are numerous and appear in every aspect of bacterial life. On very slight provocation bacteria change in shape and size, their virulence and their growth in various media are subject to change, as also is their reaction to various stains and their power of fermenting sugars. It is necessary to remember that our test-tube cultures are very artifical, and that it is possible to produce relatively as much change in three months as would take place only after a hundred years or more in the breeding of some of the higher animals or plants. The most potent of such external changes is, in my experience, the influence of the mass of excreted matters which the bacteria liberate into the surrounding medium. For instance, when test-tube cultures of the Coccaceae were subcultured at frequent intervals most marked changes were observed. The cells lost their cohesiveness and became reduced from large masses of cells to tetracocci, tricocci, diplococci, and even unicocci. I found this procedure to take place in all of 19 different species of Sarcina that were investigated. The change was followed by a gradual development of motility. The final result showed organisms that were so different from the first cultures that they would certainly not, if considered casually, be placed in the same species or even the same genus. All had been brought about by the simple process of removing the cells at the earliest opportunity from their own excretions by frequent subculturing. Every coccus is, therefore, potentially capable

of movement and of existing apart from its fellows as a single cell.

Those functions in the higher plants for which the nucleus is responsible are carried out in the non-nucleate plants and animals by the general body of the cytoplasm. We may therefore assume that the germinal or hereditary characters are located in the lower non-nucleate organisms in ultra-microscopic particles in the cytoplasm. Such particles may be regarded as physical or chemical entities capable of auto-catalysis, and as such are to be regarded as possessing a value equal to the potentialities that are lodged in the chromosomes of the higher organisms.

Under certain circumstances *Crenothrix polyspora*, one of the iron bacteria, departs from its normal activities, and lashes itself into a frenzy of reproductive activity. From single threads thousands of minute specks ooze out in zoogloeae. These specks do not cease to multiply after leaving the thread. Under ordinary circumstances *Crenothrix polyspora* is a placid organism, and pursues its path in life in a very leisurely fashion. If, however, a particular set of conditions arises it departs suddenly from its habits, and on occasions causes a large sheet of water within a short time to assume a very dirty appearance. The transformation has been effected from a comparatively large thread-like organism to one which is composed of coccus-like specks of living matter which, so far as one can judge, never return to the thread condition.

A somewhat dramatic change may take place in the life history of *Cladothrix dichotoma*, another of the iron bacteria, which lives in water in the form of long threads, each containing a single row of short rods, and which can be cultivated artificially without much trouble. Its method of reproduction is very simple, and consists solely of cell division of exactly the same nature as takes place when the bacillus divides vegetatively. The new rods that are thus formed escape usually from the top, sometimes laterally. It was stated by Zopf many years ago that sometimes spirilla issued laterally from the Cladothrix thread. His statement was received with incredulity by the majority of bacteriologists, but on reading over his papers I found Zopf's statements to bear such an impress of the truth that I resolved to repeat the experiment. I may state that for eighteen months I made almost weekly subcultures under open conditions of Cladothrix, and at last, after eighteen months, my patience was rewarded, and I observed the complete change that took place in Cladothrix, which followed the course described by Zopf. It was that spirilla issued forth from the threads instead of straight rods. These spirilla had polar cilia and were composed each of a few rods, but some were composed of one rod which assumed a spiral form and was propelled by polar cilia. Unfortunately, it was not possible to follow the further development of these spiral rods.

Among the iron bacteria are two very common forms in this country, which are named *Leptothrix ochracea* and *Gallionella ferruginea* respectively; there is a third in the same habitat which I found and named *Spirophyllum ferrugineum*. In my further investigations of these three organisms I found that, except for their outward shape, there was absolutely nothing to distinguish between them. They also practically always occur in association, usually two out of the three, rarely three together. I hold that these are all pleiomorphic phases of one and the same organism.

He must be a courageous investigator who sets out to prove mutation for bacteria in such a way as to satisfy the criteria imposed by the geneticists of the higher forms. He is debarred from making deductions from cytological considerations owing to the extreme minuteness of the forms and their rudimentary structure. He cannot undertake factorial analysis by cross-breeding, for no fusion of cells has been observed. It really comes to this, that proof of mutation is obtainable only in the case of cells of plants with a certain measure of differentiation and with sexual reproduction. And yet one feels that the phenomenon of mutation happens in bacterial life just as much as, or probably more so than, in higher organisms.

Dr. F. W. Twort said: I do not agree with some of the rules laid down by Dr. Brierley. It seems to me that there can be no such thing as genetic purity in biology, certainly nothing comparable to the chemical purity of an element. I also look upon differentiation of morphology as a very crude method of attempting to demonstrate mutation changes.

Dr. J. S. Dunkerly (Glasgow) said: While agreeing cordially with Dr. Brierley's remarks on the need for strict genetic criteria for distinguishing true mutations, it is possible that we find in protozoa one of the characteristics required by Dr. Brierley's tests—namely, a fundamental change in the nature of the chromosomes. In Arcella and other protozoa the chromidia, as distinct from the nucleus, can form secondary nuclei, which carry on the life cycle. Chromidia can even undergo "chromidiogamy," a method of syngamy in which the nuclei take no part whatever. This may produce a fundamental change in the chromosomes, inasmuch as they are formed anew from chromidia, not from the previously existing chromosomes of the nucleus.

Dr. J. C. G. Ledingham (Lister Institute, London) said the opener claimed that no adequate proof of mutation of bacteria had yet been adduced, nor could be adduced, in the present state of our technique and knowledge. If we accepted Dr. Brierley's definition of a mutation as a change in the gene of a homozygous individual, he was simply stating a truism, as the genetic constitution of bacteria could not be analysed on lines employed, for example, with plants and animals. He had described the literature of bacterial variation as chaotic, and doubtless it was so to one looking at the subject entirely from the genetic point of view; but Dr. Brierley should be aware that an extremely small proportion only of the vast mass of literature on this subject was the result of work directly instituted with a view to inquiry into possible genetic mechanisms. The great mass of the work on that subject had been carried out almost solely with the object of explaining peculiar behaviour and peculiar phenomena in bacterial growth and metabolism, and the contributions of bacteriologists to this field had undoubtedly enriched our science. The few contributions to the purely genetic side (if such existed in bacteria) by Hort, Löhnis, Bergstrand, Mellon, and others were regarded by most bacteriologists as still very much *sub judice*. In any case the evidence of the existence of cycles in bacterial life was as yet too small and flimsy to carry much weight on the general question. The terms "mutation" and "mutant" had doubtless often been used rather loosely by bacteriologists; but, as a rule, they had been taken to connote truly hereditary changes, temporary adaptation to environment being excluded. If mutation was used in the sense of an "hereditary change of unknown genetic constitution" as de Vries used it, it did not seem inappropriate in bacteriology, and until we could talk about genetic constitution in bacteria it seemed justifiable to employ the word "mutant" in this sense. In dealing with a group of organisms such as bacteria, which had not proved susceptible of analysis into organs or genetic elements, it seemed wiser to deal with the phenomena only and to steer clear of genetic hypotheses derived from analogy. Whether these phenomena were due to change in the germ substance of the organism or to suppression of parts of it as had often been suggested, or whether they were due simply to selection of individual constituents of the race, might not be established in all cases, but nevertheless these phenomena were of immense importance, though the exact name for them might be disputed. In his opinion, the single-cell procedure in bacterial work had not advanced matters very much and had taught us little more than the single colony. Finally, if all hereditary changes leading to evolution of species were held, as Dr. Brierley suggested, to be due to primary impurity of strain, the attempt to demonstrate the genetic mechanism of the change was, from the practical point of view, not worth making.

Dr. Brierley, in reply, said: The evidence that has been brought forward by Dr. Ellis regarding pleomorphy and cyclical changes in bacteria is of great interest and all goes to show our almost complete lack of knowledge of the basic facts of bacterial genetics. Much more work of this kind must be carried out before we shall be in a position to understand hereditary changes in bacterial type or to evaluate them in the concepts of the genetics of higher forms. I am, however, entirely opposed to Dr. Ellis when he would make genetical criteria more inexact in order that our vague and partial knowledge of the genetics of micro-organisms may be interpreted. Surely it is not our criteria that must be rendered nebulous and inexact but our knowledge of micro-organisms that must be made less nebulous and more exact. The standpoint of Dr. Ellis in this particular matter seems to me a negation of all scientific methodology.

Dr. Twort comments upon the fact that I insist upon a state of genetic purity as a *conditio sine qua non* in investigations having as their end the elucidation or artificial production of mutation, and asks me, "What is genetic purity?" This is no easy question to answer where micro-organisms are concerned. In higher organisms we can obtain a state of genetic purity or homozygousness by certain definite breeding techniques, a long story into which I cannot enter here. In micro-organisms the application of such techniques is not yet possible, nor have we any method of genetically analysing our organisms or of uncovering recessive factors. We have, therefore, no means of ascertaining whether or not micro-organisms are genetically pure, which is one of the reasons why I find it premature to use the concept of mutation. Dr. Twort also states that morphology is far too coarse a criterion for bacterial mutations, which are of a more subtle character. I fully accept this, but cannot quite see its bearing on our discussion, for physiological powers are the expression of germinal qualities under particular conditions just as are morphological structures.

Dr. Dunkerly has indicated very clearly some of the complexities to be met with when the hereditary processes of such a form as Arcella are considered. The point that I have tried to make is that these and similar complexities are always overlooked. It is just the presence of such little understood hereditary mechanisms that makes it premature to equate genetical concepts as between higher organisms and micro-organisms. So far as I understand Dr. Ledingham's criticism, it is that evolution can only have come about if mutation has occurred, that we accept the reality of the evolutionary process, and therefore must accept the phenomenon of mutation as a fact. Granted the premisses, this conclusion would be true; but must we accept the premisses? I think not, for there are surely many other modes of evolution than that of mutation. It is a very valuable thing to hear from Sir William Leishman that this evidence, on which much doubt has been cast, may be accepted. It is fundamental work and must go far to revolutionize our concepts in bacteriology.

AN OUTBREAK OF FOOD POISONING BY MILK, CAUSED BY B. AERTRYCKE.

BY

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Owing to the remarkable circumstance that British records contain only ten instances of epidemic food poisoning due to the distribution of cow's milk, and that in only three of these has the causative micro-organism been completely identified, it has been considered of importance to administrative authorities and of interest to bacteriologists to bring forward the facts contained in this communication. I am not concerned with these ten outbreaks except from the bacteriologist's point of view. Notice of one of them was brought before the Royal Academy of Medicine, Ireland, by Dr. O'Kelly in March, 1922.[1] It was due to the *B. enteritidis* Gaertner. The other nine are collated by Dr. W. G. Savage in his recent publication, *Food Poisoning and Food Infections* (1920).[2] Although in that list of nine the organism is given as completely fixed in three cases and as being *B. enteritidis* Gaertner, I have to note that in one of these three (the Chorley outbreak of 1914) the report of Professor Delépine, which is given in the county medical officer's report,[3] describes the causative organism repeatedly as a "bacillus of the *enteritidis* type." Notwithstanding that in the last few words of his report Delépine makes the statement that "the *Bacillus enteritidis* isolated from the ear of the cow was capable," etc, this report does not fix the organism bacteriologically as other than a member of the Gaertner group. I take the number on the list, therefore, as reduced to two. While, then, the specific organism has been fixed on three occasions as *B. enteritidis* Gaertner, the outbreak now under review brings to notice an organism which to our knowledge has not hitherto figured as the cause of an epidemic due to the consumption of cow's milk—namely, *B. aertrycke*.

The Paisley Outbreak.

The details of this outbreak admit of quite a short description. On May 8th (a Sunday), 9th, and 10th, 1921, there occurred in Paisley a considerable number of cases of sudden illness characterized by headache, abdominal pain, vomiting, and diarrhœa, with temperatures, generally low, reaching in some cases to 101° to 102° F. They were investigated by the medical officer of health of the town, Dr. G. V. T. McMichael, and to his courtesy I am indebted for permission to make use of the epidemiological facts which were ascertained. Fifty-two people, whose ages ranged from 14 months to 83 years, were struck down by the outbreak, and these involved eighteen families. A thorough investigation of the various food supplies of the patients was immediately undertaken, and it soon became apparent that the only source of food supply common to them all was a particular dairy which retailed cow's milk. The affected area was very circumscribed and therefore easily handled. In addition to this exclusive fact of common supply the suspicion that fell upon the dairy was heavily supported by certain other facts that emerged. Among these were the following facts:

1. Three patients, a husband, wife, and child, whose ordinary milk supply was from a different source, were supplied by this dairy on Sunday, May 8th; two of them sickened within twenty-four hours and the third within sixty hours. These three people were lodgers in a house occupied by two tenants who did not deal with this dairy and who escaped illness.
2. Four of a certain family (which figures in the bacteriological investigations) receiving this milk were affected, while the fifth member of the family, a child of 5 years, who did not receive milk from this dairy, escaped. This family were ordinarily supplied from another source, but on May 7th and 8th were supplied by this dairy. Three members sickened on May 9th, and one on the 10th.
3. Of a certain family of ten (which also figures in the bacteriological investigations) eight suffered, one escaped, and one was breast-fed. This family received the same milk supply as the family of five just mentioned, while it was ascertained to a nicety that their other food supplies differed *in toto*.
4. There was still another family which was not served by their usual dealer on May 8th but by the dairy in question, and two of its members sickened the following day.
5. The age of some patients was as low as 14 months.

In addition, it has to be stated that five cases of illness where a different milk supply was used came under notice. Three of these were individual members of three households where the other members made no complaint, and two of them were brothers of a girl under treatment at the time for influenza. They are therefore not serious exceptions and do not invalidate the conclusion of the medical officer of health as to the defaulting milk, and they do not exceed in number the apparent exemptions encountered in the majority of such investigations.

In view of all the facts the opinion of the medical officer of health which incriminates the milk supply is conclusive. The mortality in the epidemic was *nil*. All the patients were convalescent in a week.

Source of the Contamination.

It has to be said at once, to the disappointment of administrative officers—a disappointment to which, unfortunately, they are not unused—that the source was not determined. The dairy in question had its supply from two farms, one of which was unexceptionable in every respect, while the other was just the reverse. This second farm had been well known to the medical officer of health of the Barrhead district as quite unsatisfactory from a hygienic point of view, and Dr. McMichael's inspection confirmed this opinion. At the same time this inspection, which was carried out in concert with the Paisley veterinary inspector, did not reveal any signs of disease or illness among any of the animals, and the farm people themselves professed to be well, and refused to submit themselves to examination by a bacteriologist. It was said to be a fact that part of the consignments reaching Paisley on these days (May 7th to 9th) was reserved for ice-cream dealers in Barrhead and delivered thereto, but that no case of similar illness occurred there. Though grave dissatisfaction attached to the conditions obtaining at this farm, its milk supply was not stopped, and no further case occurred after May 11th.

Bacteriology of the Outbreak.

General Remarks.—It was a rather awkward circumstance that the bacteriologist called upon resided in a different town. He would otherwise have been in contact with the materials sooner than he was—an all-important matter. As it was, the writer received two samples of milk on May 24th, fifteen days after the commencement of the outbreak, probably for the purpose of clearing the farm rather than for detecting the source of contamination. They revealed nothing. With such an elusive organism as *B. aertrycke* one could have no reasonable hope of finding it in these materials after such an

interval. The examination of the patients, however, was satisfactory, and established the cause of the trouble. Materials from four cases were submitted and three of these gave positive results. The incubation period was unknown in the majority of the cases, since their daily milk supply was uninterrupted close up to the time of illness. But there were cases supplied by this dairy only on this week-end. In one such family the latent period was twenty-four hours in two cases and seventy-two hours in one case. In another such family supplied only on May 8th, two members sickened on the 9th at 5.30 p.m. (hours of milk delivery not fixed). In a third family the utmost limit of the latent period in three cases is forty-eight hours, and may in fact be about twenty-four, though in one case it may possibly extend to seventy-two hours. The majority of the known cases show a latent period of twenty-four to forty-eight hours. It is no doubt determined by the amount of contamination ingested.

Character of the Stools.—One specimen submitted on the fourth day of illness, from which *B. aertrycke* (Mutton type) was isolated, contained much mucus with traces of blood. It was not of a faecal character. A specimen from a second patient, giving a positive result and submitted on the seventeenth day of illness, was fluid and faecal in character, with no mucus. The importance of the character of the stools is great from the point of view of medical officers of health. For on their initial impressions as to whether or not the stools at the beginning of an outbreak are due to dysentery there may hang the very possibility of getting hold of samples of the actual food materials that were consumed.

Experimental Results.—The materials giving positive results were the faeces of two patients and the blood serum of a third; a fourth specimen was submitted on the seventeenth day and was negative. The agglutination reaction of this serum was diagnostic for the Gaertner group of bacilli. It reacted equally with a stock *B. aertrycke* and with the bacillus isolated from the faeces of one of the patients which was subsequently fixed as *B. aertrycke*. It failed to agglutinate *B. enteritidis* Gaertner, and reacted with *B. paratyphosus* B. Schottmüller, only at low dilution, 1 in 25. This was on the eighth day of illness, and during convalescence. The organisms from the two patients satisfied all the morphological and biochemical tests for bacilli of the true Gaertner group. They were highly pathogenic for guinea-pigs, and one of them, *B.* "*Smith*," after twelve months' culture on agar, is still able to kill a 600-gram guinea-pig in six days after intraperitoneal injection of 0.1 c.cm. of a twenty-four hours' broth culture. The *post-mortem* appearance in this last test comprised emaciation, congestion of subcutaneous and intestinal veins, a patch of haemorrhage in the wall of the large bowel, and a spleen enlarged to thrice the normal. The bacillus was recovered from the spleen and heart blood. Since these bacilli were agglutinated in high dilution of a specific serum of *B. paratyphosus* B, and were negative to a *B. enteritidis* Gaertner serum, they were subjected for final differentiation to the absorption test.

The results of the tests show: (1) That one of the organisms, *B.* "*Smith*," is identical with the Mutton type of *B. aertrycke*. (2) That the other organism, *B.* "*Todd*," is *B. aertrycke*, but is of a different type from *B.* "*Smith*," and while not identical with *B. aertrycke* ("N") has a close resemblance to it. It differs from the latter (*a*) in its uniform agglutinability, (*b*) in the fact that even after the heaviest absorptions, graduated up to eighteen slants to 1 c.cm. of diluted serum, it is impossible by means of it to absorb the secondary agglutinins for *B.* "*Smith*" and *B. aertrycke* (Mutton) from the *aertrycke* "N" serum. Only half the latter was taken out, although the primary agglutinins have gone.

A word of explanation is necessary as to what is meant by *B. aertrycke* "N." Towards the end of 1920 I received from the Lister Institute, on request, the two *aertrycke* types, Mutton and Newport. These were the cultures that were set in action in these experiments. When the experiments were well under way, the abnormal behaviour of this "Newport" culture became obvious, for in its agglutinability it differed widely from the Newport bacillus which figured in the work of others. In this communication it is therefore named "N." "N" is undoubtedly a member of the *B. paratyphosus* B food-poisoning group, but no time has yet been available for working out its exact relationship with *B. aertrycke* (Newport) No. 129, National Collection of Type Cultures.

For the purposes of this investigation the "N" bacillus has served well enough, since the primary requirement was a comparison with two known organisms. At the same time, the more normal behaviour of *B. aertrycke* (Newport) No. 129 suggests the possibility that *B.* "*Todd*" may be identical with it. At the time when the "N" bacillus was received by me the publication of the list of the National Collection of Type Cultures was not yet in existence. Whether or not the "N" bacillus is a new type or a modification of No. 129—I have not yet had the opportunity of determining this—it is interesting and unusual to find two distinct types of *B. aertrycke* figuring in the same epidemic.

Summary.

1. In May, 1921, an outbreak of food poisoning in Paisley struck down 52 persons of ages ranging from 14 months to 83 years, and has been shown to be due to the consumption of cow's milk. The actual source of the contamination was not discovered.

2. Regarding the administrative investigation of such outbreaks, although one of these has been known to occur in which the stools were of a non-dysenteric character, grounds have been adduced for the opinion that it is not wise to neglect the possibility of food poisoning in the presence of stools of a typically dysenteric character.

3. In this outbreak two distinct types of *B. aertrycke* were found, (1) the Mutton type, and (2) one closely approximating to the Newport type and probably identical with it. The control Newport type "N," of the absorption tests, was, as explained, doubtful.

4. Our records do not contain an instance of a similar outbreak due to cow's milk containing *B. aertrycke*.

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THE TOXINS OF B. DYSENTERIAE SHIGA.

BY

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A review of the extensive literature dealing with the toxic properties of the *B. dysenteriae* Shiga reveals the fact that various views are held as to the method in which the organism elaborates its toxins and produces its pathological effects. Earlier workers, including Todd, Doerr, Conradi, and Dopter, seem to favour the view that the soluble toxin of this bacillus is of the nature of an exotoxin. Recent research on the subject by Olitsky and Kligler indicates that two distinct toxins are elaborated by the organism—namely, an exotoxin and an endotoxin, which differ in their pathological action.

This endotoxin is said to be produced when the *B. dysenteriae* Shiga undergoes autolysis or dissolution of the bacterial cell. The exotoxin is said by these workers to be entirely a neurotoxin affecting the central nervous system, whilst the endotoxin is concerned in the production of dysenteric colitis.

Experimental Work.

In order to find out if the observations of Olitsky and Kligler would be confirmed on using the available laboratory strains of *B. dysenteriae* Shiga a well-known toxic strain was selected for the following experiments. The strain chosen was *B. dysenteriae* Shiga, Dean I, and for the sake of uniformity this strain was employed throughout the subsequent experimental work.

Experiments with Exotoxins.—Filtrates from alkaline broth cultures were prepared in the usual way, and 1 c.cm. and 2 c.cm. were injected both intravenously and subcutaneously into rabbits. These animals died within four days, showing symptoms of paralysis but no diarrhoea.

Experiments with Products of Autolysis.—Twenty-four hours' growth from Roux bottles was washed off with saline and the suspensions incubated for two days prior to filtration. The filtrate was heated to 80° C. for one hour. The series of animals inoculated with this filtrate also died, with one exception, within four days. No marked diarrhoea was observed prior to death, but the *post-mortem* examinations revealed extensive intestinal congestion, affecting principally the caecum and ascending colon. The rabbit which survived was subsequently inoculated with filtrate, which had only been subjected to 70° C. of heat for ten minutes. This animal died within twenty-four hours, showing well-marked diarrhoea, also paralytic symptoms. In order to arrive at an accurate means of estimating the minimal lethal dose of the killed strain of Shiga bacilli used

in subsequent experiments it was considered advisable to adopt weight in fractions of a milligram as a basis comparison. The opacity standards and counting chamber standards are liable to a large margin of error when minute amounts have to be considered.

The method adopted can be briefly stated as follows: A thick bacterial emulsion was prepared from Roux bottle cultivations. This emulsion was made with sterile water and subsequently dried by being exposed *in vacuo* on Petri capsule lids in a desiccator. The dry mass was then finely powdered in an agate mortar, any remaining moisture being driven off by exposure in a dry oven to 50° C. This powder was then stored in sealed glass tubes for further use.

The M.L.D. for a rabbit of approximately 1,000 grams weight was next determined. It was found that 0.01 of a milligram, equivalent to about twenty million bacilli, was just sufficient to kill a rabbit weighing 1,000 grams in three days. This quantity was accordingly counted as the M.L.D., though it was found later that rabbits vary very considerably in their resistance and that occasionally they could survive a slightly larger dose.

It was never found, however, that even a large rabbit could resist more than 0.05 of a milligram of dried Shiga bacilli injected intravenously unless it had been immunized by previous inoculation. Similarly the M.L.D. in the case of subcutaneous inoculation was found to be 1 milligram. In these experiments it was found that the rabbits died with paralytic symptoms, and practically no diarrhoea, and no *post-mortem* lesions of the intestines could be demonstrated beyond a slight congestion. Intestinal lesions did occur in cases of delayed death following partial immunization.

The extreme toxicity of *B. dysenteriae* Shiga has been an important factor in the causes of failure in using this organism in prophylactic inoculation for the prevention of epidemic bacillary dysentery. Very little success has attended any of the measures employed. The failure to produce immunity may be in part due to the fact that bacillary dysentery is not as a rule associated with a general blood infection, as is the case in the enteric group of diseases, but the chief difficulty seems to be in the impossibility of inoculating sufficiently large doses of vaccine owing to the severity of the reactions pr duced. If any method can be devised which will diminish the toxic properties of the bacillus without affecting its antigenic value, a certain advance will have been made in vaccine prophylaxis.

In 1916 Dean and Adamson found that eusol reduced the toxicity of Shiga bacilli; and more recently the results of Thomson in the detoxication of various organisms by treatment with alkali, etc., suggest a similar procedure with regard to *B. dysenteriae* Shiga. Very little work seems to have been carried out along these lines in the case of dysentery bacilli, although they form one of the most important groups for which a non-toxic antigen is required.

In association with Major Coppinger, R.A.M.C., I have found that it is possible to reduce the toxicity of Shiga bacilli by chemical means without seriously reducing their antigenic properties. The method employed does not involve the complete breaking down and solution of the bacilli as in Thomson's detoxicated vaccines.

The method employed is briefly as follows: To a thick emulsion of Shiga bacilli an equal bulk of liquor ammoniae fortis (*B.P.*) was added. The mixture was allowed to stand in the incubator at 37° C. overnight, and neutralization was then effected by means of 20 per cent. sulphuric acid, which, combining with the ammonia, formed ammonium sulphate. No precipitation occurred until the neutral was reached, when a heavy precipitate immediately formed, which rapidly subsided to the bottom of the flask, leaving a clear supernatant fluid. On separating and washing the precipitate it was found to be composed of bacilli which were somewhat swollen and altered in shape, but still quite discrete and distinct. Inoculation into rabbits showed that these altered bacilli were relatively non-toxic, but retained their antigenic properties.

A series of experiments was now commenced with a view to testing the antigenic power of the altered bacilli and determining the most suitable doses for immunizing purposes. The immunizing effects were estimated by injecting toxic Shiga bacilli into rabbits previously inoculated with the new antigen, and judging from the results the degree of protection which had been conferred. In the absence of symptoms the condition of the rabbits was judged by the weight, an accurate daily chart of which was kept in every case. A series of ten rabbits was inoculated, five subcutaneously and five intravenously, with ammonia-treated bacilli. All the rabbits inoculated subcutaneously survived and suffered from no obvious reactions, either local or general, though in each case a distinct drop in weight occurred for a few days after the lethal test dose, which was subsequently injected intravenously. Three of the series injected intravenously died after the first inoculation, which was apparently too large. But the two which had received 0.1 mg. survived, and afterwards received larger doses without showing any ill effects. Moreover, the protection conferred was greater than in the case of the subcutaneously injected rabbits, as was judged by the fact that the injection of the lethal test dose produced no loss in weight. An attempt was now made to test the antitoxic effect of serum obtained from the seven rabbits surviving from the above experiments. Serum obtained from each of the rabbits was pooled and 1 c.cm. of the pooled serum injected into each of three normal rabbits along with 0.8, 0.4, and 0.1 mg. of unaltered Shiga bacilli respectively. The first two rabbits died, but the animal which had received 0.1 mg. (10 M.L.D.) survived, showing that the serum had acquired some degree of antitoxic power.

Human experiments on any large scale have not yet been carried out, but one of us received injections of 0.03, 0.075, 0.15, and 0.3 mg. of treated Shiga bacilli (approximately equal to 60, 150, 300, and 600 million) without any reaction beyond a slight local tenderness and induration, which, in the case of the largest dose, persisted some days.

Summary.

1. The observations of Olitsky and Kligler have been in the main confirmed, although it has been found almost impossible to produce "endotoxin" without at the same time having present a considerable quantity of the neurotoxin or "exotoxin."

2. Although two definite toxins for animals may be produced by Shiga bacilli, there is considerable evidence that the neurotoxin or "exotoxin" has a secondary action on the intestine through the initial inhibition of peristalsis prior to the passing of mucus or desquamated epithelial débris. The animal usually dies before the effect on the intestine becomes characteristic.

3. The oral administration of living Shiga bacilli to rabbits does not produce dysentery or any demonstrable serological reaction.

4. The toxicity of the bacterial substance of dried Shiga bacilli is not lessened by the treatment with acetone or the subjection to 100° C. for twenty minutes.

5. The various means of producing a detoxicated antigen from the bacterial substance appear to depend on the principle of macerating the bacillus with a strong alkali, then to neutralize the solution, and to utilize the resultant precipitate of less toxic bacterial substance.

6. The detoxication is only relative, but it affords a means of producing a vaccine which is useful in commencing the active immunization of animals. The intradermal reaction with this vaccine is not severe and large subcutaneous doses can be given without local reaction.

In conclusion, I beg to acknowledge my indebtedness to Sir William Leishman and to the professor of pathology at the Royal Army Medical College for assistance and encouragement in carrying out this experimental work.

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THE DEVELOPMENT OF LOA LOA IN CHRYSOPS.

BY
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[*Abstract.*]

THE adult *Loa loa* lives in the connective tissues of man. The disease known as Calabar swelling is held to be due to the presence of this worm. In the course of its wanderings it occasionally crosses the eye, where it can be seen making its way under the conjunctivae. The female is longer than the male (about 2½ inches long), and is viviparous. The young make their way into the blood stream and are to be found there in greatest numbers during the daytime, hence their name *Microfilaria diurna*. These embryos cannot develop further unless they find their way into another host. That host has been proved to be one of the Tabanid family of blood-sucking

flies, Chrysops. The geographical distribution of *Loa loa* and of Calabar swelling is limited to West Africa, and in certain areas of Nigeria the incidence is high. The investigations now to be shortly described were carried out in Nigeria during 1921.

Large numbers of Chrysops were allowed to feed on human cases in whose blood the embryos were present. Each fly was allowed to gorge itself on the patient. It was found that a rapid and uniform development of the embryos took place in all the flies (over 300) which were examined. The complete metamorphosis occupies a period of ten to twelve days. As ten days is the usual length of the cycle, it will be convenient to describe the changes from the first to the tenth day. Within an hour or two of passing into the stomach of the fly along with the ingested blood the embryos show active movements, which eventually enable them to cast their sheath. After a short period of comparative quiescence they penetrate the stomach wall of the insect and make their way to its muscular and connective tissues.

By the end of the first day most of the embryos are to be found near the tip of the abdomen, but they also occur in the thorax and in the head. The worm is now somewhat shorter than the original embryo, but thicker in its posterior third and with a finely drawn out curved tail. During the second day considerable thickening occurs and also an increase in length. Two vacuoles appear, one anteriorly and the other posteriorly. During the third day the worms grow still longer and thicker, and an alimentary tract develops. The alimentary canal is a slightly sinuous tube continued from the simple mouth at the anterior extremity backwards to the posterior vacuoles, where it ends in an anus. During the fourth and fifth days there is a greater increase in length than on the previous days and a lesser increase in breadth. On the sixth day the worm again casts its outer covering, and emerges with a trilobed tail, whilst the vacuolated areas have disappeared. On the seventh day a wide range of movement appears to be possible, and individuals may be found in the legs and in the roots of the wings of the insect. Up till the tenth day rapid lengthening occurs, with little or no increase in breadth. By the end of this period the worms are to be found congregated mostly in the head, at the root of the proboscis, and down into the labium. When next the Chrysops proceed to suck blood the young filariae swarm down through the labium and labella of the fly and pass on to the skin. Within a very few seconds they make their way through the pores into the tissues, where they proceed to develop into the adult form.

A full account of the foregoing investigations, along with references, will be found in the *Transactions* of the Royal Society of Tropical Medicine and Hygiene, 1922.

THE INTIMATE STRUCTURE OF THE BACTERIAL CELL.

BY

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In spite of the extreme minuteness of the bacterial cell it is still possible to obtain a fair amount of information regarding its intimate structure. It must be confessed that this information cannot all be derived from a single species, and that the final picture is built up from material supplied from several sources. In order to get the best results the highest powers of the microscope must be directed on properly stained material by the light of a white cloud in the middle of the day during the summer season. The staining of the cell is very simple, but it must be carried out very carefully, and it must be borne in mind that the end in view is not necessarily the staining of the cell but rather the differentiation of its parts. The various constituents do not take up stains at equal rates, so that it is possible to obtain a differentiation of parts, which, however, persists only for a short time. With the continued penetration of the dye all parts become more or less uniformly stained and the differentiation is lost. The best results are obtained by the use of iodine solution, this fluid being allowed to penetrate slowly from the sides of the cover-slip. It is helpful to bear in mind that the bacteria are either generally regarded as primitive or degenerate members of the plants classed under fungi, and that we may thus expect that the general structure of the intimate parts of the bacterial cell will resemble that of the cells of this group.

It is generally agreed that the lower bacteria consist of three distinct groups: the Bacteriaceae, including the rod forms; Coccaceae, including the spherical forms; and Spirillaceae, including the spiral forms. It may be stated at the outset that the Bacteriaceae and Coccaceae form a natural group with very close affinities among its members, but that the group Spirillaceae is evidently widely divergent in its affinities. This fact is borne out in a most marked manner by the study of the intimate structure of the cells. Lastly, we have to take into account the intimate structure of the cells which make up the various thread bacteria.

The structure of the bacillus, the most typical of the Bacteriaceae, will be considered first. Its plant nature, and in particular its affinity to the fungi, is exhibited at every point. The cell is delimited on the outside by a sharply defined membrane which is shown very clearly by staining with any one of the usual dyes. It can be separated from the body of the cell by plasmolysis. It is elastic, as it is easily stretched and as easily returns to its former shape when the cause of the stretching has been removed. This, of course, is an obvious necessity in the membrane of a motile rod. It offers very little resistance to the escape of solid enclosed bodies to the outside. This can be observed when the application of a stain causes a greater swelling of the body of the cell than of the membrane. Bodies immersed in the former are sometimes pressed against the membrane and make their way out. Further consideration of the membrane will be postponed until we have dealt with the other cell structures. The body of the cell is made up of cytoplasm, which, however, is not homogeneous. By careful staining it is possible to make out a vacuolar network, such as is discernible in the cells of higher plants. In the vacuoles are doubtless located the same class of substances which are found in the vacuoles of higher plants—namely, raw materials, reserve materials, and other metabolic products, the formation of which is inevitably associated with plant or animal metabolism. In the cytoplasm of the bacillus the finer granules, plastids, etc., which have been observed in higher plants have not been discovered. We do, however, find solid particles of these reserve materials that are accumulated in quantity in the cell. These are *volutin*, the nitrogenous reserve material; *glycogen*, the carbohydrate form; and *oil globules*. These are the three main reserve materials in bacterial cells and are sometimes massed in fairly large quantities.

The question of the presence or not of a specific nuclear body is still a somewhat vexed one. It is certain that we are not likely to be able to settle the question by identifying the intimate structure of the nucleus in the bacillus with that of the nucleus of higher plants. It is, of course, not certain that if present the nucleus of the bacillus would conform to the highly complex nucleus which characterizes the cells of the higher plants. So far as can be judged from the information obtained by direct observation of the cell, all that can be stated is that in the cells one or more round bodies have been discovered which are different from the other bodies known to be present, and which take up the same stains as do the nuclei of higher plants. They are also present in the same relative proportion as are the nuclei of fungal cells. It comes to this, that the acceptance of the nucleus in bacterial cells is largely a matter of temperament. The strongest ground for acceptance appears to me to lie in the fact, which I now propose to discuss, that there appears to be a nucleus in control of the process which culminates in the formation of an endospore. As is well known, bacteria reproduce asexually by the formation of spores inside the cell. This process is common among the Bacteriaceae, so far as is known, is confined to one species among the Coccaceae, and is unknown among the Spirillaceae. In all cases spore formation is heralded by the appearance in the cytoplasm of a round or oval area which equals in volume the space occupied by the completed spore. This clear space is easily discernible by careful staining, with the end of intensifying the opacity of the cytoplasm, which in consequence makes the clear area more visible. The next stage in the development of the spore is a gradual absorption by something inside the clear space of material from the surrounding cytoplasm, with the result that the next stage in the development shows that what in the first stage was a clear space is now more opaque than the surrounding cytoplasm; and further, that the latter stains far less deeply than was the case in the first stage. It is clear, therefore, that the spore area once formed is capable of absorbing material unto itself, just as a solution of sugar contained in a permeable bag and

surrounded by water is capable of absorbing the latter substance until a certain pressure equilibrium has been reached. When the spore area is first formed it doubtless contains osmotically active substances which cause the absorption of certain ingredients which are necessary for the production of a spore. It is also obvious that the absorption is effected under the regulating influence of living matter, inasmuch as the completed spore contains living matter, and at no stage in the development of the spore is provision made for the introduction of protoplasm. Such being the case, the protoplasm must be present in the clear area when this is differentiated from the surrounding cytoplasm. The investigation into the spore development in the bacillus has shown that there is in the centre of the spore area a round substance, and this round substance has six or seven points on its periphery which suggest the remains of radiating strands from the round substance to the periphery of the spore area. The complete strands have not yet been observed, which is not surprising in view of the extreme minuteness of the organs under investigation. I may state that the same features have been observed in the only species among the Coccaceae which forms spores—namely, *Sarcina urinae*.

If we accept what the facts just mentioned suggest, then the spore area is a cell, the round object in its middle is a nucleus, and the points which beset the round object are the remains of cytoplasmic threads. In the third stage the effects of the osmotic activity are visible, inasmuch as the young spore—as we may now term the spore area and its contents—becomes deeply stained, whilst the rest of the cell is only extremely faintly coloured on the application of the appropriate dye. The spore has absorbed practically the whole of the contents of the cell. In a still further stage the spore is seen to be lying in an empty shell. By this time it has become surrounded by a well-defined membrane, and further, the membrane itself is made up of two layers, an inner thin one and an outer thicker one, which is often sculptured, in some species in a manner which can be used for the identification of the species. It is to the presence of the spore membrane that the resistant nature of the spore is due. The shell in which the spore is enclosed is the membrane of the cell in which the spore was formed, and if any doubt remained as to the presence of a specific membrane in the cell a glance at a spore lying in a bacterium from which everything had been abstracted except the membrane would settle the point. It is very curious to observe one of these spore-containing cells in a state of motility when it is practically empty of everything except the spore. There must, of course, in such cases be a fragment of cytoplasm still remaining in the cell, and it is to such a fragment that the flagella, the undulations of which have caused the motion are attached. In course of time the cell membrane disappears and the spore is free. During germination the outer membrane of the spore is cast, whilst the inner membrane becomes the new membrane of the new bacterial cell that is formed as a result of the germination.

We may, I think, adduce the fact that a small round object is found in the middle of the spore area, together with the fact that this spore area becomes a body which is endowed with life, in support of the contention that the bacterial cell possesses a nucleus. The various facts that have been brought forward to prove the presence of a nucleus lend mutual support to one another, but it must be confessed that all doubts cannot be regarded as abolished.

A subject worthy of attention is the mode in which large quantities of volutin, oil globules, and glycogen are formed in the cell; and, further, the relatively enormous quantities of sulphur globules that are present in the sulphur bacteria when these organisms are in their prime. So far as the first three reserve materials are concerned, their formation appears to be by direct secretion from the protoplasm. There appear to be no special plastids concerned in the process such as are found in the leaves of plants when starch grains are formed. The presence of special plastids is not necessary even in all cases where starch is formed, so that we need not be surprised that direct secretion from the protoplasm should be the rule in the formation of bacterial reserve matter. In any case, no plastids of any kind have been discovered in bacterial cells. We have seen that the spore is formed by the absorption of matter into a previously prepared area, and it is possible that this method may be the rule in the formation of reserve matter, although it is not probable. The case, however, is different when we come to consider the formation of reserve matters among some of the higher bacteria. The formation of sulphur in the sulphur bacteria follows the absorption of sulphuretted hydrogen, which is oxidized under the influence of living matter into sulphur. This sulphur is stored, but is gradually used up and converted into sulphates. The formation of sulphur is a far less complicated process than that of volutin or glycogen, and its collection appears to be of the nature of secretion into a prepared area, only that the osmotically active substances are not controlled by living matter, as seems probably the case in the formation of the spore. There is invariably found a clear area surrounding each sulphur globule in the cell separating it from the surrounding cytoplasm. When a sulphur globule has been used up by the cell a gap is formed which is larger than the sulphur globule which first occupied it. It is possible, of course, to give another explanation to this fact, such as, for example, that the sulphur globule had contracted after its formation; but it seems to me that the most reasonable explanation is that a space is cleared in the cytoplasm which contains osmotically active substances, and that these have a selective action on the sulphur formed during the first stage in the metabolism of the absorbed sulphur compounds.

In our consideration of the bacillus we must not forget that outside the sharply defined membrane there is a covering, normally very thin, of mucilaginous matter doubtless formed by the degeneration of the outer portion of the membrane. This layer is very difficult to stain, but its existence is made evident when two cells are observed in the toils of division. The two newly separated daughter cells do not appear to be able to effect complete separation for some time after they have come apart and the cause is to be traced to a filament of mucilage which binds them. There seems little reason to doubt that the intervention of unfavourable conditions increases the amount of this substance which is formed and so increases the power of cohesion of the cells. The results which were outlined above as following the frequent subculture of bacterial species were evidently due in the first place to the absence of this mucilaginous substance in any appreciable quantity; and this in its turn caused the absence of cohesion of the cells, which was such a marked feature in the cultures after this treatment. It seems to me that the varying results, which so often accrue when different analysts estimate the disinfecting value of certain commercial fluids, is due to the varying amounts of mucilage outside their membranes which the cells of different cultures of the same species possess.

The intimate structure of the coccus tallies so closely with that of the bacillus that no doubt exists as to the close genetic connexion of the Bacteriaceae and Coccaceae. The differences are only such as are inseparable from the cylindrical form of the one and the round form of the other. The methods of cell division and of spore formation are identical in every respect. The tendency to form groups, either regular or irregular, is not natural to the Coccaceae, and, as I have explained elsewhere, can be eliminated altogether by cultivating under conditions which prevent the formation of this mucilage in any quantity. The demonstration of the vacuolar nature of the cytoplasm has not yet been accomplished. In the formation of the spore the presence of the spore area has been noted, and it has been ascertained that the same stages in the formation of the spore are followed. It is evident that the massing of the cocci into clumps destroys motility, but when this massing together is prevented, as explained, movement follows.

We come next to the third group, of which the genus Spirillum is the most typical member—namely, the Spirillaceae. The intimate structure of the spirillum is on a plan which is totally different from that found in the other two groups. There is an outer limiting membrane, but it is doubtful whether it differs in kind from the inner part of the cell. When cell division takes place the membrane plays no part whatever and the cell behaves as though it were devoid of a membrane altogether. Division takes place by a complete separation of the cell into two completely rounded off portions connected by a thick bridge of mucilaginous matter shaped like a concave lens. The size and form of the cell remain unaltered during the process and the formation of the two daughter cells seems to take place very rapidly. The remainder of the process is merely a gradual separation of the two newly formed cells. These gradually move apart under the influence of the flagella. The lenticular bridge of mucilage under the influence of the tension between the two new cells becomes more and more attenuated until very often the space between the still connected cells is greater than the length of the cells themselves. By staining with fuchsin all stages in this separation can be followed.

Ultimately the connecting cord is broken and the two cells become completely separate. It is evident that the division of the cell is accomplished by simple partition which takes place very rapidly, and there is a complete absence of that elaboration which marks the cell division of the Bacteriaceae and Coccaceae. It has not hitherto been found possible to demonstrate any differentiation in the groundwork of the cell, although it has been stated that a nucleus comparable to the body called by the same name in the bacillus can be distinguished from the reserve products (volutin and oil drops) which are found in the spirillum. The scheme of the structure that prevails in the Spirillaceae is thus markedly different from that which prevails in the other members at present included under Bacteria. The Bacteriaceae and Coccaceae are typical plant groups, but it is not improbable that in the future claims may be advanced by the zoologists for the inclusion of the Spirillaceae in their domain.

Finally, we come to the thread bacteria, which are distinguished from the lower bacteria which we have discussed above, in some forms by the cohesion of the cells to form a community, in other forms by the greater length and size of the cells. The cells of the thread bacteria show no division of labour. The cause of the cohesion of cells in those thread bacteria which consist of cell communities is to be traced to the further development of the mucilaginous covering which we saw was not absent from the lower bacteria. This covering hardens in such organisms, and thus prevents the escape of the dividing cells. We have, therefore, a filament of cells, each cell possessing its own membrane, and the whole row of cells surrounded by an envelope of hardened mucilage. I have established the identity of this substance with the mucilage which surrounds the bacillus by finding its presence between the cells of *Cladothrix dichotoma* as well as on their sides. The individual cells of such organisms as Cladothrix and Crenothrix do not differ in any essential detail from those of the bacillus. So far as the information which we at present possess gives us any clue to affinities it may be said that the iron bacteria as a class are more closely related to the Bacteriaceae, but that the sulphur bacteria adhere more closely to the Spirillaceae, and therefore, to my mind, are as much to be regarded as representatives of the animal as of the plant kingdom.

I have not had any opportunities of examining the internal structure of other genera of the higher bacteria, and unfortunately the amount of knowledge of these forms is very meagre. It is to be hoped that this state of matters will be remedied in the future.

SECTION OF TUBERCULOSIS.

Sir Robert Philip, M.D., LL.D., F.R.C.P.Edin., President.

PRESIDENT'S INTRODUCTORY REMARKS.

This is the first occasion when at a meeting of the British Medical Association a Section has been devoted to tuberculosis. The time at the disposal of the Section is short. I do not propose therefore to occupy more than a very few minutes by way of introduction. The institution of the Section is a fact of much significance and merits emphasis. When the Association met last in Glasgow in 1888 such a Section was undreamt of. Recall how things stood then. The tubercle bacillus had been determined six years before, but little practical heed had been given to the discovery. The first tuberculosis dispensary had just been established and the sanatorium was beginning to be spoken of.

How remarkably the situation has changed since then! The bacillus has been the object of countless researches and forms the centre of a vast literature. The tuberculosis dispensary is an accepted institution throughout the world. It has been reproduced by thousands. Sanatoriums and their congeners, hospitals, tuberculosis schools, and working colonies have sprung up everywhere. In Great Britain the necessity of linking the various institutions has been officially recognized. Tuberculosis schemes, which include the several institutions variously grouped, and a tuberculosis service with duly accredited officers, have been established by statute. Tuberculosis now occupies a place in the group of infectious diseases, and notification of the disease in all its varying forms is compulsory.

During 1921 in England and Wales the number of notifications of tuberculosis amounted to 71,702, and in Scotland 12,524.

On June 1st, 1922, tuberculosis schemes in England and Wales included 381 tuberculosis officers, 441 tuberculosis dispensaries, 84 visiting stations, and 20,395 beds in sanatoriums, hospitals, etc., with 2,664 additional beds in preparation. At the same date in Scotland tuberculosis schemes included 80 tuberculosis officers, 29 tuberculosis dispensaries, and 3,558 beds in sanatoriums, hospitals, etc. In addition to this official provision there are many beds available and much collateral effort on the part of voluntary agencies.

The medical student of to-day receives special training in the subject. At the University of Edinburgh attendance on a course of thirty meetings forms a compulsory part of the medical curriculum. Societies for the study and prevention of tuberculosis have been established in most countries, and an international union embracing representatives of over forty nations is in active being.

A single word as to the main facts concerning mortality from the disease during the period under review. The drop in the death rate in the interval since the Association met last in Glasgow is remarkable and reassuring. During the period from 1881 to 1890 the average number of deaths from all tuberculosis in England was 66,526—that is, 242 per 100,000. In 1919 the number of deaths was 46,310—that is, 126 per 100,000. In Scotland the corresponding figures are: for the period 1881–90, 10,645 deaths—that is, 276 per 100,000; and for 1919, 6,326 deaths—that is, 129 per 100,000. Or stated otherwise, if we take 100 as representing the average death rate from all forms of tuberculosis in each country for the period 1881–90, the mortality for 1919 in the case of England works out at 52 and in the case of Scotland at 47. These striking records are still more remarkable in view of the more accurate and exacting methods of diagnosis which have followed the advance of knowledge regarding the etiology and nature of the disease.

The study of tuberculosis, which in 1888 was considered by many as practically exhausted, flat, dull, and unprofitable, is now alive and progressive. The recognition of the subject at the Annual Meeting of this great Association is therefore abundantly justified.

DISCUSSION ON THE CLINICAL DIFFERENTIATION OF PULMONARY TUBERCULOSIS FROM OTHER RESPIRATORY AFFECTIONS.

OPENING PAPER

BY

E. RIST, M.D.Paris.

Not very many years ago the diagnosis of lung tuberculosis from other respiratory diseases seemed a rather trite and certainly little inspiring subject for discussion. That it should have been chosen as one of the topics of the day at this meeting is in itself sufficient proof that some important changes have taken place in our theoretical and practical knowledge of tuberculosis. Even before the world war premonitory signs of those changes were not lacking, although they were perhaps evident only for the naturally limited circle of medical men who specialized in the scientific study of consumption. But it is certainly due to the experiences of the war that the recognition of an urgent need for remodelling our diagnostic methods has been forced upon the profession as a whole, and, I may add, all over the civilized world.

Not only when the hugest and best-equipped armies which history has ever seen entered the field, but even from the moment they were formed, gathered into camps and barracks, and trained, the problem of tuberculosis had perforce to be considered in a new light by the medical officers responsible for the selection of men, for the physical efficiency of recruits, and, last but not least, for the future liabilities of the respective Governments under the Acts providing for pension and insurance in favour of soldiers disabled by disease. Consumption is a chronic malady. Unfortunately it cannot be cured by any of those radical, immediate, clear-cut methods which make it an urgent duty to diagnose early and exactly and to treat deliberately and promptly some of the diseases which modern medicine can to a certain extent boast her ability to conquer: diphtheria, malaria, syphilis, appendicitis, for example. Although we were theoretically prompted by our teachers to look for early signs and not to delay treatment, in everyday

practice the "wait and see" policy was almost universally applied to lung tuberculosis. Individual cases were for protracted periods regarded as merely suspicious. Treatment, which so often entails a total change in the material and moral life of the patient, with considerable sacrifices and expenditure, was advised late—in many instances too late. We all know that, by another school of physicians, it was—and still is—often imposed uselessly on people who do not need it, on the ground that it is better to prevent a possible outbreak of tuberculosis than to try to arrest it when fully developed.

The necessities of war have put before us the duty of rapid, well-founded, uncompromising decision in matters of tuberculosis diagnosis. No belligerent State could afford to keep thousands of men under expectant observation in order to decide whether, after several weeks or months, they would be rejected from or admitted into the ranks. No belligerent State could afford to admit into the army men who not only would be unfit to serve but would spread contagion among their comrades. Nor could they afford to deprive themselves of the services of any man who was really fit to be a soldier, and to reject him on the ground of some spurious suspicions which events would prove unfounded. For obvious reasons considerations of the same kind had to be borne in mind in the case of men who fell ill when serving. If really tuberculous, it was in the interest of the army as well as of the State that a correct diagnosis should be made as soon as possible, in order that they should be discharged and treated without delay. If not tuberculous, the same joint interests imposed upon the medical officers the duty of making an accurate and early diagnosis, in order that mild, transient, and curable non-tuberculous respiratory disease should not have as its consequence discharge and pension, and that more serious non-tuberculous disease should be, whenever amenable to cure, treated judiciously.

I am sure nobody will feel shocked or surprised if I say that, as a rule, medical officers were not well prepared, in the early days of the war, to meet these new duties. It soon became evident that mistaken diagnoses in the matter of long tuberculosis were all too numerous. The mistakes were not always in the same direction. Of course—and this had been generally foreseen—many cases of consumption were overlooked. But the fact that a considerable number of cases labelled at first "tuberculosis" and disposed of as such were ultimately proved not to be tuberculous at all was certainly quite unexpected, even to the majority of tuberculosis experts.

That the proportion of errors in the routine diagnosis of lung tuberculosis is apt to be very large, some figures, which I intend to give later, will illustrate. At the present time my purpose is only to remind you how the experiences of the war convinced the majority of us that there was something wrong in our everyday methods of discriminating tuberculosis from other diseases and more especially from other respiratory diseases.

New Points of View concerning Pulmonary Tuberculosis.

As a matter of fact, new and important knowledge had been slowly gained in various fields of pathology and clinical investigation, but we had failed in adjusting our diagnostic procedures to this knowledge. What I mean can be conveniently summarized under four heads.

1. *The Skin Reaction.*

The skin reaction to tuberculin has proved that tuberculous infection, at least among civilized communities, is almost universal. We are now aware that the first infection is generally accomplished during the first fifteen or eighteen years of life, but that it is followed by tuberculous disease in only a small number of exposed individuals. That a mild first infection confers an immunity which protects the majority of adults against further infection and disease is a well-ascertained and generally admitted fact. It seems most probable that the mildness of a primary infection is not due to a hypothetical attenuated virulence but to the small number of germs, heavy infections determining severe, generalized, and, as a rule, lethal forms of tuberculosis in children as well as in adults hitherto non-exposed—as, for instance, natives of non-civilized countries. A positive skin reaction, therefore, cannot be considered as a diagnostic sign of tuberculous disease, but only as an index of tuberculous infection. In other words, we must discriminate between infection, which is almost universal in the civilized adult, and disease. The earliest beginnings of disease are not, as was supposed, coincident with those of infection. The once prevalent idea that early diagnosis—and, as its consequence, early treatment—should endeavour to discover and to ascertain the initial steps of infection has proved a fallacy. We are now able, thanks to the skin reaction, to recognize tuberculous infection almost at its beginning. But, contrary to the expectation of fifteen years ago, we are led to admit that the infected individuals which the von Pirquet test discovers are more protected against subsequent tuberculous disease than the non-infected. The whole problem of early detection of lung tuberculosis must consequently be considered from an entirely different point of view.

2. *The X Rays as an Aid to Diagnosis.*

X-ray examination of the chest has—slowly, indeed, but persistently and successfully—gained its legitimate place among our methods of physical diagnosis. The instruments and the technique have been improved to a considerable degree. An increasing number of physicians have taken up the study of fluoroscopy and radiography. Of course some of us are still reluctant, and ask for *x*-ray information only as a last resource in exceptional cases. A century ago auscultation was also regarded as a last resource by many who, apparently, were not mindful that

> "There are more things in heaven and earth, Horatio,
> Than are dreamt of in your philosophy."

To appreciate the real value of a new method of physical diagnosis, there is only one way, and that is to use it regularly and persistently together with the classical methods, in ordinary and simple not less than in rare and complicated cases. Not only the so-called *x*-ray expert, but the clinician as well should master the technique of fluoroscopy and train himself in the reading of plates, constantly controlling the information so obtained by the ordinary physical examination and by *post-mortem* findings. Fortunately this is being done more and more; there are already physicians who think that a chest has not been completely examined if it has not been *x*-rayed, and who act accordingly. I may be perhaps allowed to confess that, for my part, I have adhered to that principle these last fifteen years, and that all the patients whom I have examined, either in hospital or dispensary work or in private practice, have been *x*-rayed by myself.

No wonder if the prolonged use of the fluoroscope and the plate has gradually modified our views concerning the practical value of other methods of physical examination. One has to admit that percussion and auscultation have their limitations and pitfalls; one cannot deny that the *x*-rays are able to inform us rightly in many cases when the older methods leave us doubtful or mislead us. Even when the rays only confirm what auscultation and percussion reveal, they help us by adding weight to our argument. But when the results of *x*-ray information and of classical physical examination are contradictory, which is often the case, we ought not simply to disregard the first, but to reconsider the second, in the light of that contradiction. This practice has led to a great deal of new knowledge. I may mention the discovery by the fluoroscope of deep-seated lesions which the ear is unable to detect, the now well-established fact that cavitation is generally much earlier and much more frequent than was supposed, or that consolidation in tuberculosis is, as a rule, more extended than one would think, if one were guided only by the stethoscope. On the other hand, there are cases when rales and other adventitious sounds suggesting an extended parenchymatous lesion do not coincide with any abnormal *x*-ray finding, and where consequently we have to ask ourselves whether the acoustic phenomena are not merely symptomatic of bronchial catarrh, without any alteration of the lung tissue. To interpret rightly the sequence of events in the evolution of lung tuberculosis we must therefore take into account the treasure of valuable information with which the *x*-ray exploration of sound and diseased chests has enriched our knowledge. At the same time we must take advantage of the powerful aid which the rays have brought us in the diagnosis of non-tuberculous chest disease.

3. *Examination of Sputum.*

There has been lately a general tendency to attach much more importance than one did before to the demonstration of tubercle bacilli in the sputum of consumptives. Our methods of detection have been improved. Homogenization of the sputum, inoculation of the guinea-pig, are now widely used. Laboratories are at the disposal of the greater part of the profession. A complete examination of a supposed tuberculous patient implies repeated and conscientious sputum examination. The result of this close association between the bacteriological laboratory and the bedside or dispensary practice has been to show us that bacilli appear in the sputum much earlier than was admitted before, and consequently to throw some doubt on a diagnosis of tuberculosis which has not been corroborated by the demonstration of the causal micro-organism in the morbid secretion. Not many years ago, when physical examination elicited the signs of a lung lesion, and when some of the symptoms of consumption, such as fever, haemorrhage, coughing, and wasting were present, one thought oneself perfectly justified in considering the diagnosis of tuberculosis certain, even if no bacilli could be demonstrated; as a matter of fact, one did not always take the trouble of looking for them. We are less inclined to do so now. An open lung lesion where no bacilli can be found we regard as a problem which cannot always be easily solved. It obliges us to discuss the possibility of a disease other than tuberculosis. I shall even go farther: it makes that possibility very plausible.

4. *Infections of the Upper Respiratory Passages.*

The nose and throat specialist has become an appreciated guest at the medical symposium. He has improved his instruments, his technique, and his knowledge. The diseases of the upper respiratory passages have asserted their frequency and their importance. The nasal cavities belong to the breathing apparatus as well as the lungs. Their infections, catarrhs, and mechanical obstructions influence the bronchial tree, and even the alveolar tissue, quite as naturally as the maladies of the urethra and prostate influence the bladder and kidneys. There is no real frontier between the province of the nose and throat specialist and the empire of the lung expert. The more one studies bronchial and lung pathology the more one gets convinced of the interdependence of all the parts of the respiratory tract. The realization of this apparently so self-evident but unfortunately so long overlooked truth has contributed to no small extent to changing our points of view regarding the diagnosis of lung tuberculosis.

The Modern Conception of Tuberculosis Diagnosis.

I think the views which have just been summarized are more or less shared by an increasing number of those physicians who have specialized in the study and diagnosis of lung tuberculosis. I say more or less, because, according to their personal tendencies, they would naturally lay more stress on one or two of my four points rather than on all of them. In order to ascertain to what extent the conception—which I would venture to call the modern conception of tuberculosis diagnosis—differs from the traditional, one has only to study the statistical figures which have been published recently by those well-equipped clearing stations or hospitals where, in many countries, service or ex-service men are now submitted to observation before discharge, admission on the pension list, or treatment. I shall quote a few instances.

In 1916 I was conducting, in the capacity of an army consultant, a tuberculosis clearing station at Compiègne. Out of 192 men sent in with a diagnosis of lung tuberculosis from various army units, ambulances, or hospitals, and kept under observation, this diagnosis was found to be justified in 53 cases only (or 27·5 per cent.). I may mention that this figure includes arrested and healed as well as active tuberculosis; 139 cases (or 72·5 per cent.) were undoubtedly non-tuberculous.

During the summer and autumn of 1918 I acted in the same capacity at the Laënnec Hospital, for the troops stationed in Paris. Of 382 men examined, 37 only (10·8 per cent.) had lung tuberculosis; 22 (6·4 per cent.) were not definitely diagnosed because the time during which they were kept under observation was too short; 283 (82·7 per cent.) were certainly not tuberculous. During the winter 1919-20, 119 men who had been proposed by medical officers for pension on the ground of lung tuberculosis were referred to me and taken into my hospital wards: 47 per cent. were tuberculous, 53 per cent. were not.

My friend Professor Sergent acted, during the greater part of the war, as the chief physician of a tuberculosis clearing hospital for French soldiers. Out of 1,719 men, he found 542 (31 per cent.) who were not tuberculous. Among the 69 per cent. tuberculous men, more than one-half had healed lesions which did not justify a discharge from service.

Dr. Dickinson, tuberculosis officer of Newcastle-upon-Tyne, very kindly supplied me with the following information concerning the ex-service men who applied in Newcastle for sanatorium benefit between the years 1913 and 1919. Out of 287, 167 had bacilli in their sputum, and 120 had none. Of those 120 men, 91 (or 75·8 per cent.) were ultimately proved to be non-tuberculous. Among the 167 who had bacilli 53 died; among the 120 whose sputum was free from bacilli 4 only died; the causes of death in these 4 cases were respectively bronchiectasis, influenza, sarcoma of the lung, disseminated tuberculosis.

In the report of the Public Health Committee of the London County Council for 1921 we read the result of observation of 158 ex-service and insured London cases sent, for diagnostic purposes, to the Brompton and City of London Chest Hospitals during the year 1920. Of 158 cases, 124 (or 78·4 per cent.) were reported as not suffering from tuberculosis. Of the 34 cases diagnosed as tuberculous 10 were considered to be "arrested" cases not requiring treatment; only 24 (or 15 per cent.) of the 158 cases being recommended for treatment.

I have limited my quotations to Great Britain and France. But I could have given you figures quite similar from Swiss, Italian, or American sources. The discrepancies which they illustrate are universal. Of course, it would be absurd to imagine that they are peculiar to the limited group of service and ex-service men. The diagnostic criteria which are commonly applied to those men before they are referred to special diagnostic centres are quite as widely used in ordinary civilian practice, and they lead to a similar proportion of mistakes. At the out-patient consultation for lung disease which I conduct at the Laënnec Hospital alongside with my in-patient department, I find that 62 per cent. of the cases referred to me by tuberculosis dispensaries or private practitioners as consumptive suffer from diseases which have nothing to do with tuberculosis. A large number of them have nevertheless been treated, sometimes for many years, as if they were tuberculous; they have been the occasion of considerable—and perfectly useless—expenditure of money at their own or at public expense; they have been submitted to all the hardships, restrictions, moral and material sacrifices which attend the life of a tuberculous patient; and finally they have not even received the proper treatment which the real disease they suffered from required.

Diseases Mistaken for Pulmonary Tuberculosis.

The question we have now to ask ourselves is: Which are the commonest diseases which are so often mistaken for lung tuberculosis? They fall under three heads.

In the first place, we find ailments which are not caused by morbid conditions of the respiratory system, but have some symptoms in common with those of such conditions, or determine secondary lesions of the lung or pleura. I may briefly mention the diseases of the cardio-vascular apparatus: dyspnoea, coughing, thoracic pain, haemoptysis belong to their symptomatology. They are not infrequently complicated with bronchitis, pleural effusions, passive congestion, oedema of the lungs, or lung embolism; these, of course, are manifested by physical signs which are apt to mislead one when the symptomatology of the causal disease remains obscure as is sometimes the case. Let me remind you, for instance, of the blood-spitting which so often occurs in mitral stenosis, or of the lung embolism concurrent with prolonged fever which is one of the features of malignant endocarditis. Diseases which are associated with wasting, loss of appetite, and progressive weakness, such as cancer of the digestive apparatus, conditions which determine loss of weight, unstability of the body temperature, tachycardia, like Graves's disease, should also be taken into account. But, vast and interesting though this category undoubtedly is, it does not fall within the scope of the present discussion.

We are properly concerned, on the contrary, with the second group—namely, non-tuberculous diseases of the intra-thoracic respiratory apparatus, whose signs and symptoms are for the greater part identical with those of the manifold forms of lung tuberculosis. Some are exceptionally met with:

Syphilis of the lung, for instance, has absolutely no signs of its own, and therefore it is almost regularly regarded as tuberculosis, until the repeatedly negative examination of the sputum for bacilli opens the door for suspicion into the mind of the physician. In many published cases the surprisingly rapid cure of the lung ailment under the influence of specific treatment given for some cutaneous tertiary lesions was the key to the recognition of its real nature.

Echinococcus of the lung also belongs to the rarer diseases, at least in this country. It is much less frequent in France, and in the Argentine Republic or in Australia it is one of the commonest chronic maladies of the chest. Haemoptysis may be the only symptom during the initial period. If the cyst is located in the vicinity of the pleura, it causes a pleural effusion which simulates tuberculous pleurisy. If it has emptied into a bronchus, the signs are those of a lung cavity, and attributed for this reason to tuberculosis, unless one has been fortunate enough to observe the pathognomonic membranes when they were expectorated. The absence of tubercle bacilli in the sputum together with the characteristic ball-like appearance of the cyst on the fluoroscope or the plate, and the specific complement fixation are the only means to come to a correct diagnosis.

Cancer of the lung or bronchi is not so exceptional. The diagnosis is always a difficult one. In a recent paper dealing with the 29 cases of bronchial or pulmonary malignant growth which came during the last twenty years to autopsy at the University Hospital of Geneva, Cramer, Saloz, and Mlle Cottin showed that the clinical diagnosis had been the right one in only 20 per cent. In five instances the mistake was due to an unjustified admission of tuberculosis, based on physical signs of consolidation or cavity, dyspnoea, coughing, wasting and haemoptysis. Almost all the cases of lung cancer which I have observed had been previously regarded as cases of consumption. One must not rely upon the finding of neoplastic cells in the sputum, nor upon their demonstration in the pleural effusions which frequently complicate the new growth. They are seldom to be found under the microscope, and sometimes quite impossible to differentiate from modified endothelial cells. Only careful *x*-ray examination and the absence of bacilli in the sputum can lead to an accurate diagnosis, if there are no definite arguments such as those which are sometimes to be found in the microscopical examination of a subcutaneous metastatic nodule. Even the demonstration of tubercle bacilli in the sputum is not always to be interpreted against cancer, as one knows cases where a malignant growth has originated on the walls of a tuberculous lung cavity.

Bronchiectasis is a morbid condition more commonly observed than either syphilis, echinococcus, or cancer of the lung. If it were always manifested by the symptoms described in our textbooks, especially by the characteristic and abundant morning discharge of offensive purulent secretion, it would undoubtedly be diagnosed correctly in the majority of cases. But one must remember that, for many years, a bronchiectasis may determine a secretion which is not only non-offensive, but intermittent, periods of apparent inactivity alternating with periods of abundant secretion coinciding with irregular fever. Sudden and profuse haemorrhage as well as light and prolonged expectoration of blood are also a by no means unusual feature of the disease. The physical signs are those of focal consolidation with a central cavitation. The classical axiom that apical cavities are tuberculous, whereas cavities located at the base speak in favour of bronchiectasis, is one of those traditional golden rules which are just approximate enough to be dangerously misleading. As a matter of fact, apical bronchiectases are not more exceptional than basal tuberculous cavities, as pathologists well know. I have recently compiled all the cases of bronchiectasis which came under my observation at the Laennec Hospital since June, 1919. Out of a total of 22, 14 had been mistaken for consumption and treated as such. Some of them had spent years under sanatorium cure. If more stress had been laid on the permanent absence of tubercle bacilli in the sputum, and if the past history of the patients had been more carefully investigated, I think this proportion of errors could have been very materially reduced. To ascertain, in the anamnesis of a patient who expectorates non-bacillary purulent sputum, that his trouble has begun after he has had a typical pneumonia, or, in childhood, a bronchopneumonia complicating diphtheria, measles, or whooping-cough, is, in my opinion, more important than to verify if his expectoration has the macroscopic aspect so complacently described by our classics. A history of foreign body aspirated into a bronchus should also be searched for.

Purulent non-tuberculous pleurisy, whether located in an interlobar fissure or encysted in some other part of the pleural cavity, is also one of the diseases which may for a long time escape recognition because they are mistaken for tuberculosis. An empyema gives focal signs and general symptoms such as fever and wasting; when ruptured into a bronchus, it determines purulent expectoration. I am sorry to say that these manifestations are deemed quite satisfactory arguments by many a medical man, to label the case "consumption" without any further investigation.

One could easily lengthen the list of pulmonary and pleural conditions which in daily practice one has the opportunity to discriminate from pulmonary tuberculosis. But, at the risk of being blamed for some omission, I hasten to draw your attention to the third class of ailments which are apt to bias our diagnosis—namely, the *morbid conditions of the upper respiratory passages*. Experience has shown that they are to be considered as a very frequent, if not as the most frequent occasion of error. The common cold—or, to give it its pompous scientific names, acute coryza or acute rhinitis—is a mild infection of the nasal cavities which, as everybody knows, easily spreads to the pharynx, the larynx, the trachea, and the larger bronchi, determining coughing and expectoration. It is a strange fact that one generally overlooks the very plausible probability that chronic infectious conditions of the upper air passages should do the same. Now the labours of our friend, the nose and throat specialist, have taught us that there is quite a variety of those chronic conditions, and that they are exceedingly common: antrum suppurations, for instance, or purulent discharge from the ethmoidal, frontal, or sphenoidal cavities. Adenoids are special to childhood, but they often persist in the adult, as well as hypertrophy of the pharyngeal, lingual, or palatine tonsil. Atrophy of the turbinates is not always associated with its signal symptom ozaena, but it is always determined by a chronic infection whatever the causal micro-organism may be. More frequent still are those minor abnormalities which are not infectious by nature but which give occasion to benign infectious catarrhs, such as hypertrophied turbinates or deflected septa.

Curiously enough, up to recent times, whenever the possibility of an influence exerted by nasal abnormalities on the deeper respiratory organs was thought of, one always considered this influence as a merely mechanical one. It was generally admitted that nasal obstruction is able to disturb the functional activity of the lung, and, by so doing, to create a predisposition for tuberculosis, or to produce, as in Kroenig's theory, an apical collapse simulating early tuberculosis. Outside of nasal obstruction one could imagine no such influence. The infectious element was entirely ignored. To explain this indifferent attitude of the profession, one must perhaps take into account the indifference with which the patients themselves regard the conditions I have just alluded to, even when they have been subject for years to chronic catarrhal or purulent rhino-pharyngeal discharge. They very often get so accustomed to this ailment that they do not even mention it to the physician whom they consult, complaining only of coughing. And yet their habitual coughing may be nothing else but one of the symptoms of a simple chronic bronchitis due to their chronic nasal catarrh, exactly in the same way as acute simple bronchitis originates from an acute common cold.

Even the nose and throat specialists are often blind to the fact.

"O fortunatos nimium, sua si bona norint!"

as Virgil said of the labourers in the fields. When one has had one's attention drawn to this connection between infections of the upper respiratory organs and chronic coughs with

occasional signs of disseminated or localized bronchitis, it is quite surprising how often the curetting of an antrum, the withdrawal of an hypertrophied turbinate bone, the removal of adenoids or of hypertrophied tonsils puts an end to a long story of apical catarrh or of suspicious bronchitis or of incipient tuberculosis. Over 50 per cent. of the cases which I reported as non-tuberculous after observation in the diagnostic clearing stations I conducted during and after the war belonged to that class of patients. Since I first published my views on this subject in 1916 they have been confirmed by many physicians, among whom I would like to mention especially Professor Sergent in France and Dr. Gerald Webb in the United States.

Reasons for Mistakes in Diagnosis.

There are many reasons to account for the large proportion of mistakes which are committed in the discrimination of lung tuberculosis from other respiratory disease. It is not my intention to mention them all. But I may be allowed to deal briefly with one or two. In the first place, the importance of an early diagnosis of tuberculosis has been urged upon us by our teachers, by public health authorities, and even by public opinion, with such force and persistency, that however beneficial and well meant this urging has been and still is, it has to some extent biased our clinical judgement concerning individual cases. Even that admirable institution, the dispensary, is in many places organized as if the patient who enters it for the first time could not be suffering from any other disease than tuberculosis. The printed forms where the histories, the symptoms, and the results of physical examination are to be consigned, direct unconsciously our thoughts towards one hypothesis only—namely, tuberculosis. And it seems as if the medical officer had only to decide whether the case is one of simple exposure, or of incipient, confirmed, moderately active, progressive, arrested, or healed tuberculosis. If the physician is not a very experienced clinician, using all the diagnostic means at his disposal in a well-equipped institution, if he has not a strong character and an active, investigating mind, he will naturally be inclined to follow the line of least resistance which is so carefully and methodically drawn before him.

In the second place, I should like to say that, in my opinion, too great importance is generally given to symptoms *versus* signs as a positive basis for a diagnosis of tuberculosis. Symptoms have their due place in the mental process which leads to a diagnosis. I am in no way inclined to minimize their value, which is great. They are the indispensable starting point of our journey. But one is too apt to forget that the journey is quite as indispensable. As a matter of fact there is not a single symptom, not even a single association of symptoms, which tuberculosis has not in common with other diseases. Loss of appetite, weight, or strength, shortness of breath, coughing, expectoration, fever—all belong to an extraordinarily large group of morbid conditions. Even the so-called pathognomonic subfebrile temperatures after exertion are commonly observed in all sorts of chronic or subacute, more or less latent infection (chronic appendicitis, for instance, or an inflamed Fallopian tube, or a suppurating antrum). Nor is it always absent in conditions which are not infectious at all, as in Graves's disease. Haemoptysis is very generally considered as an almost infallible positive sign of tuberculosis, and yet we know that it occurs in every focal non-tuberculous disease of the lung: syphilis, cancer, bronchiectasis, gangrene and abscess of the lung, and echinococcus have this characteristic sign in common with tuberculosis. We also know its diagnostic value in mitral stenosis and in malignant endocarditis, not to speak of the sometimes very profuse haemorrhages which signalize papillomatous or epitheliomatous new growths of the larynx or varicose veins in the trachea or the pharynx.

The first step after analysing the symptoms is to look for positive signs of a localized lung lesion. And here begins properly the task of the physician. Percussion, auscultation, and the other methods of physical examination must be applied without any bias. I mean that the physician should not, at this step, ask himself the question: Has this patient tuberculosis? But simply: Is there, either in the lung or elsewhere, a localized lesion which may account for the symptoms observed? I need not emphasize again the value of an *x*-ray examination of the chest, to show whether such a lesion can be demonstrated or not. If it cannot be demonstrated in the lung, then let us look for it in some other part of the body. And here, after due consideration of the cardio-vascular and other systems, comes in the careful examination of the upper air passages by an expert. It will often, I dare say, prove fruitful of a correct diagnosis.

On the contrary, if the signs of a localized lesion—or of several localized lesions—are found in the lung, if the gross anatomic characteristics of this lesion have been ascertained by an *x*-ray investigation, we may proceed to diagnose the specific nature of the lesion, by using the tests which are at our disposal for that purpose. As regards tuberculosis, there is only one positive test—namely, the finding of tubercle bacilli in the sputum. It must be used with a persevering tenacity. One negative result means nothing. I would not like to give a limit to the number of examinations which are necessary. But I think ten negative results mean a lot, if the search for bacilli has been prolonged, if the sputum has been homogenized, and if animal inoculation has not been neglected. May I add that *one positive result* may mean very little? There are stupid, but not always quite unavoidable, causes of error, which every trained laboratory worker knows, and there may be also intentional deceit from the part of the patient, if he is eager to get an undeserved pension or compensation.

It would be absurd to contend that the diagnosis of tuberculosis is justified only when bacilli have been demonstrated in the sputum. But the more one studies this question of the discrimination of tuberculosis from other disease, and the more one has opportunities to follow up patients for long periods of time, the more one sees how very frequent indeed are the cases, even the quite early cases, of real tuberculosis where bacilli are found in the sputum, when they are carefully looked for. I do not mean to say that a patient with positive signs of a localized lung lesion and no demonstrable bacilli is certainly not tuberculous. I say that our duty in the absence of bacilli, is to endeavour earnestly to ascertain whether some disease other than tuberculosis may not account for the symptoms and signs observed. Only if we do not succeed in our investigation are we entitled to admit the diagnosis of tuberculosis, so to say, by exclusion and as the most practical working hypothesis.

DISCUSSION.

Dr. Marcus Paterson (Colindale Hospital, Hendon) said: I have two criticisms to make on Professor Rist's paper, otherwise I am in agreement with his remarks. In the first place, he told us how to establish the existence of tuberculosis but did not suggest any method of determining whether the disease in a non-febrile patient is active or not. He states that "new and important knowledge has slowly been gained on this point, but we have failed in adapting our diagnostic procedure to this knowledge." He does not appear to realize that we have now the auto-inoculation test, which, especially if pressed to the point of reaction in a case with positive sputum, is of great value. Certain symptoms which give good warning are shown by a patient when the reaction is approaching—namely, in the following order: insomnia, anorexia, slight malaise, and marked deviations in temperature. The more certain one is that the case is not tuberculous, the more the test can be pressed. Then, again, there is the complement fixation test to prove infection. To some extent this test also indicates activity.

I agree with him, from my experience at Colindale, that a mild first infection confers immunity. I do not know if any facts bearing on this have yet been published, but I have, at the request of Sir James Kingston Fowler, been keeping records of signs of previous tuberculous disease—for example, scars of operation on glands, etc.—in patients suffering from advanced tuberculosis admitted to Colindale Hospital, and under 5 per cent. bear such evidence.

The generally accepted statement that persons dying of tuberculosis have evidence of old lesions in the abdominal glands has been tested in some two hundred necropsies, and is found to be quite untrue. Tuberculous glands are present in only a very few cases. I do not deny that they may be present in patients dying of other affections, but they are very uncommon in persons who have died of pulmonary tuberculosis.

I should like to quote some figures to indicate the necessity of repeated examination of sputum when the first examination is negative. These results refer to sputum passed by a medical officer as such, and not simply saliva sent by the patient. Excluding cases which had abundant bacilli on

the first two examinations, and also cases which are negative up to ten examinations or more, and taking only those sputa from patients with very extensive signs we find, after careful search, that two out of three examinations are negative. In this advanced type of case it was also found that specimens which had not been passed in the first place by the medical officer as actually sputum gave a very large percentage of negative results. Professor Rist says that one positive sputum means very little—I would say it means nothing. To illustrate my meaning I might, if time permitted, quote in full six cases who died and in whom there was no macroscopic evidence *post mortem* of any pulmonary tuberculosis whatever. In all of these cases a positive sputum had been returned. I would suggest, therefore, that there must be many similar mistakes, as it must be a rare thing for a man not suffering from pulmonary tuberculosis to die in a tuberculosis institution. For the six cases mentioned there are, therefore, probably many hundreds who have thus been labelled tuberculosis and who do not die of it at all. The greatest care should be taken in sending specimens to a laboratory not to mix names. It is obvious, therefore, that a positive sputum should always be confirmed before a man is labelled tuberculosis. All the above six cases had been through several institutions and treated at great cost. It often happens that a man once labelled tuberculosis is never allowed to have any other illness. In one of these cases the radiologist reported that there was definite and active tuberculosis in the lung.

Professor S. Lyle Cummins (Cardiff) said: It is a great pleasure to hear from the lips of such an authority as Dr. Rist this frank admission of the difficulties that exist in what is often thought a relatively simple diagnostic problem. To me it is a source of particular interest and satisfaction because it has been urged by several critics of the new Diploma of Tuberculosis which we have started in Wales that it is quite unnecessary to attempt to produce specialists in connexion with a disease which is so well comprehended by the average doctor. Those who agree with Dr. Rist will readily admit that without very special training and experience, and without access to the aids to diagnosis afforded by good radiology and good laboratory facilities, even the very capable and careful medical man may easily become involved in serious error. The remedy lies in closer study of modern methods and in the taking of special courses of instruction in tuberculosis; and it was with the idea of encouraging those likely to have to deal with tuberculosis to take such courses that the tuberculous diseases diploma was initiated. There is one readily accessible clinical aid to diagnosis of which Dr. Rist has made no mention, but I think it of sufficient importance to deserve special consideration; I refer to the application of Dreyer's physical standards to routine examination of cases suspected of pulmonary tuberculosis. The use of the spirometer is not as general as it should be, and its use, combined with the recording of trunk length, chest measurement, and weight, with the aid of Dreyer's tables, need only be tried to be appreciated. As an index of the progress of cases it is, too, of great value. Evidence for the applicability of these standards to tuberculosis of the lungs will be found in the paper by Dreyer and Burrell, and a more recent communication by Cameron. My own experience with these standards, though the cases do not yet amount to a sufficient number to justify publication, is most favourable.

Perhaps because of the limitations of his title to the clinical differentiation of the disease, Dr. Rist has omitted all mention of serological reactions as aids to diagnosis. The great difficulty about these tests lies in the fact, to which Dr. Rist has so effectively called attention, that we have to bear in mind the practical difference between infection and disease. The aim of the physician is to diagnose disease, not merely to detect infection; and serological tests share with the tuberculin tests the disadvantage that they are liable to be too delicate for this purpose, giving a positive response in a good many cases of infection that may never reach the stage of actual disease. Still recent reports on the complement deviation test give reason to hope for great help in the diagnosis of active tuberculosis by its means. It is the fashion of the moment to regard the opsonic index of Wright as of no account, chiefly, I think, because the test is too difficult for the busy practitioner and too uncertain in its results to appeal to the laboratory worker. Its uncertainty depends upon the numerous factors that underlie it. These factors are very little understood, but they are worth studying. For a disease in which the amount of infection is of such paramount importance the fact that the opsonic index gives a quantitative expression of one of the responses to infection gives it a claim to consideration. Where the test has been carefully applied it has given interesting results, notably in the hands of Dr. Marcus Paterson. I have been engaged for the past two years in re examining the factors underlying this test, and I have to admit that they are very obscure. I am convinced, however, that the test, in the form originally devised by Wright, is of very definite value, and I would urge those workers in well-equipped sanatoriums with clinical laboratories at their disposal to reconsider it if only to the extent of accumulating records by which its value in differential diagnosis may be finally judged.

Dr. Ian Struthers Stewart (Nordrach-on-Dee, Banchory) said: I have listened with much interest and appreciation to Dr. Rist's paper and am in entire agreement with him that it is essential for the physician dealing with the treatment of tuberculous patients to have a thorough knowledge of the use of *x* rays for the purposes of diagnosis. It would appear to me that at present there is a tendency to place too much reliance on the negative or print and to neglect the radioscopic examination. It may also be that we are apt to read too much into the lights and shadows of the radiogram, as after all we are only dealing with varying intensities of light, and many things cause shadows in the lung tissue other than tuberculosis. Then, again, I do not consider it possible in the majority of cases to differentiate by *x* rays alone between active and quiescent tuberculous disease. That disease of the upper air passages has a profound effect on disease of the lungs I consider to be amply proved. This is frequently to be observed in cases of pulmonary tubercle who develop a simple nasal catarrh, accompanied by an increased intensity of the physical signs in the lungs. That haemoptysis is not always symptomatic of tuberculosis of the lungs is shown by the frequency with which this symptom is met following trauma of the chest wall. In many such cases no symptoms or signs of tuberculosis could be found, and the subsequent history has proved the accuracy of the diagnosis. These cases are of special interest to the pensions medical officers. The question of diagnosis between active and quiescent disease often necessitates the continued observation of the patient for a week or more, and resolves itself largely into the question of whether toxaemia is present or not, irrespective of the intensity or extent of the physical signs. Sarcoma or endothelioma of the lung may simulate pulmonary tuberculosis both as regards the character and the distribution of the physical signs. The presence of a bilateral pleural effusion should raise the suspicion of malignant disease in the thorax.

Dr. James Crocket (Lecturer on Tuberculosis, University of Glasgow) said: I appreciate Dr. Rist's paper, but feel that there is another side to the picture. Undoubtedly many cases are diagnosed as tuberculous that do not suffer from that disease. Many more are diagnosed and treated for other conditions who actually suffer from pulmonary tuberculosis. Out of 1,100 cases that had been under treatment at Bridge of Weir Sanatorium during the past three or four years 168 had been discharged as "not improved." The majority of these cases are by this time dead. Investigating the history of those patients I find that only 31 had been known to be suffering from pulmonary tuberculosis previous to admission. The remaining 137 cases had been under treatment for from one to fifteen years for other conditions, particularly bronchitis, influenza, anaemia, laryngitis, rheumatism, and neurasthenia. That they had suffered from phthisis during this period there is little doubt. To miss tuberculosis when it is present is, in my opinion, a much more serious thing for the patient than to diagnose tuberculosis and treat the patient for that when it is not there. Sputum examination is not to be depended upon in diagnosis. Out of 2,204 cases tubercle bacilli were only found on the first examination in 60.9 per cent. Patients at present in residence whose sputum has been examined give interesting figures. One examined fifty-seven times, only showed tubercle bacilli on five occasions; another, forty-three times, on four occasions; another, twenty-seven times, on two occasions. One patient previously in the sanatorium, with numerous tubercle bacilli in the sputum, was readmitted recently on account of an exacerbation of the disease. Her sputum has been examined since readmission fifteen times with a negative result. The von Pirquet test has been found far from satisfactory, and in

my experience is not a very sensitive test. Out of 700 undoubtedly tuberculous cases positive results were only got in 80 per cent. of the cases. The complement fixation test has been used, but with rather disappointing results. Dealing with several hundred cases I got 90.5 per cent. positive; 9.5 per cent. undoubtedly tuberculous cases gave negative results. As controls the bloods of 67 epileptic patients were examined, and of that number 12 per cent. were positive. I do not object to 9 per cent. of the tuberculous cases giving a negative reaction, but do not like 12 per cent. of the control cases, undoubtedly not having clinical or obvious tuberculosis, giving a positive reaction.

Dr. A. Fergus Hewat (Edinburgh) said: Personally I have found Professor Rist's paper most useful in giving clear lines to this vital question of differential diagnosis. My interest in this question of differential diagnosis as it affects soldiers and pensioners began while in charge of fifty beds for tuberculous cases in the army, and has been continued among pensioners sent to the special hospital arranged by the Ministry of Pensions, on the advice of Sir Robert Philip, for such cases. The problem we have to face amongst such patients is not the old well-discussed question of early diagnosis, but rather the correct valuation of symptoms, signs, and other phenomena which have gone on for months—in many cases years. As one writer puts it: "It is the grouping of the elements rather than the mere presence or absence of elements."

It may be of some interest to members of this Section if I give a few figures from Kingscroft Ministry of Pensions Hospital for 1921. In that year 144 cases were admitted. Practically all of them suffered from pulmonary symptoms which caused them to be referred to this hospital. In 66 of these cases a definite statement was made on their admission form that pulmonary tuberculosis was suspected. This tentative diagnosis had been formed after repeated medical examinations. In 42 of these cases I felt justified in confirming the tentative finding; in 10 of these confirmation was made certain by the presence of tubercle bacilli in the sputum. The remaining 32 included cases classified as chronic pulmonary tuberculosis with bronchitis and emphysema, a case of glands in the neck, and a tuberculous hip. Most of the cases were very chronic in type, and the associated chronic bronchitis and emphysema was the obvious crippling disability and the label under which the patient was in receipt of pension. Fifteen other cases in which the tentative diagnosis of tubercle had not been specifically stated—although probably suspected—I felt justified in classing as chronic pulmonary tuberculosis; in two of these the sputum was positive. The others were of the old-standing type, with chronic bronchitis and emphysema, several of which had been admitted with a diagnosis of asthma. In dealing with these cases I find that one of our most valuable elements in framing a diagnosis is absent. I refer to the history of the illness, on which most of us look for a third of our evidence. I have yet to find the pensioner who is willing to give a clear statement as to symptoms of illness before he joined the army! I am glad to hear Professor Rist insisting on the frequent examination of the sputum. One would have expected to find this elementary point had long ago been clearly grasped, but in my experience this is not so. I have had cases in the army and among pensioners where the value of arduous search has been amply proved. In one case tubercle bacilli were found on the thirtieth consecutive examination, in another on the twenty-eighth, in another on the eighteenth, in another on the fourteenth, and so on. Tubercle bacilli at times come in showers, and these are liable to be missed. Laureston-Brown's remark on this subject is worthy of citation: "Failure to find and interpret aright physical signs may be excused, but failure to ask for and examine sputum cannot be condoned." It is unfortunately difficult in this country to make free use of guinea-pig inoculation in diagnosis. The next question I found of interest in dealing with this group of cases is the reasons why cases are suspected of being tuberculous. They divide themselves roughly into three main groups as regards these pensioners, as follows: *Group 1*, Cases showing well-marked local pulmonary symptoms, with bronchial physical signs in excess of pleural or lung tissue signs. *Group 2*, Cases showing well-marked chest physical signs of a local nature, the symptoms (local or general) being not unduly prominent. *Group 3*, Haemorrhage cases—that is, patients who state that they have expectorated blood.

In the first group one finds "gassed" cases, or, more strictly, pensioners who state that they have been gassed and show symptoms and signs of chronic bronchitis and emphysema in varying degree. At times such cases are rather a puzzle, for various reasons. In the first place, the history is of practically no value, and one has found little help from medical literature in relation to the late effects of gas poisoning. Secondly, we know that warfare gas caused the lighting up of some cases of tuberculosis, but, as French and American authorities have pointed out, not nearly so frequently as one might at first suppose. Thirdly, *x* rays have demonstrated a peribronchial fibrosis with hilus enlargement in many "gassed" cases, and the plate or report is frequently returned with the label "peribronchial tuberculosis." Fourthly, as a consequence of gassing, cough is induced, giving rise to further development of chronic bronchitis and emphysema, a lesion commonly associated with a fundamental tuberculous process. A short paper by John B. Hawes of Boston points out how gassing induces irritative and escharotic effects on the respiratory tract, and the healing process is found to induce scar tissue, contraction, and mechanical defects. This naturally leads to a proliferative fibrosis which destroys the natural protective properties of the bronchi and leads to secondary infection, in which he says tuberculosis plays a minor part. In these cases shortness of breath and nervous phenomena are prominent features. Many such cases are classified as D.A.H. The prolonged duration of symptoms in the absence of toxic phenomena go far to establishing a non-tuberculous diagnosis in these cases. The patient, not his lungs, requires treatment.

In the second group one finds two subdivisions. (*a*) Gunshot wounds of the chest, where there has been resulting deformity and fibrosis. It is common knowledge that there have been fewer cases of active tuberculosis following wounds of the chest than one might have supposed. I have only had three cases in which tubercle bacilli were isolated from the sputum. Most of the gunshot wound cases have lacked the element of systemic intoxication, and only showed mild local symptoms despite well-defined chronic physical signs of a localized type. (*b*) This subdivision includes the old bogy of failure to appreciate the normal exaggeration of physical signs at the right apical region. That this is still a trap for the unwary we have on the excellent authority of Sir James Kingston Fowler, who says in his recent book on pulmonary tuberculosis: "We desire to mention that we have been in the habit of revealing to students the fact that a modest competency may be realized by correcting the errors of those who find the right apex seriously diseased when it is quite normal."

In the third group I find a few cases giving a history of haemoptysis which at times is misleading. Some patients in this group are distorters of the truth, and others interpret a mere streaking of sputum with blood as a frank haemorrhage. Careful cross-questioning as to the type and duration of the haemorrhage, also its relation to severity of coughing, usually elicits sufficient information to estimate this symptom at its true valuation.

The differential diagnosis of pulmonary disease is essentially the field for the skilled physician who can sift all the evidence available from physical examination, *x* ray findings, bacteriologists' findings, etc. Apart from tubercle bacilli in the sputum, there is no certain sign of pulmonary tuberculosis, and it is only by the correct valuation of all points that reasonable accuracy can be obtained. We should be able to diagnose our cases, and not merely say such a one is not tuberculous.

Dr. James Lawson (Tor-na-Dee) said: From the point of view of a doctor dealing entirely with patients who are already in a sanatorium the question of the differential diagnosis of pulmonary tuberculosis becomes somewhat limited, but there must always be, I venture to think, in every sanatorium a number of cases in which, although there is evidence to lead to the suspicion of tuberculosis, a definite diagnosis has not been made. In an endeavour to reduce the number of such "uncertain" cases I wish to direct your attention for a moment to a condition first described by Castellani in 1905, and which has not received adequate recognition and investigation in this country. I refer to the condition known as broncho-pulmonary spirochaetosis. Cases have been described in Switzerland, France, and Italy, but so far as I have been able to trace them only four cases have been published as occurring in this country, and of these two were without possible connexion with the tropics. To these

I might add a case at present under our own observation at Tor-na-Dee Sanatorium—a lady, who has never been out of this country.

As described by Castellani, there appear to be two types of disease—an acute and a chronic form; both are liable to be mistaken for pulmonary tuberculosis, but it is especially to the chronic form that I would direct your attention, as all the cases so far described in this country fall into this category. Males appear to be more frequently affected than females, and the age incidence tends to be over 30. There may be a history of a febrile attack at the commencement of the illness, but for the most part cases are afebrile. If fever is present, Castellani considers it more usual that it should be of the inverse type. Cough with expectoration is present and haemoptysis has occurred in every case as yet described—this may vary from mere staining of the sputum to a frank haemoptysis. The physical signs in the lungs may be negative, or more usually those of bronchitis, but consolidation may also be present. The general condition of the patient is rarely affected to any extent. The sputum cannot be shown to contain tubercle bacilli, but always swarms with spirochaetes whose morphological characteristics, as Castellani pointed out, vary widely even in the same case. The clinical picture is one which could easily be accepted for pulmonary tuberculosis, but the cases tend to diverge from the ordinary case of pulmonary tuberculosis in the following ways: (1) Absence of tubercle bacilli in the sputum. In the case which we have under observation no tubercle bacilli have been found, although each twenty-four hours' sputum for the past two months has been subjected to the concentration method of examination. (2) Enormous numbers of spirochaetes are always present in the sputum. (3) There is an almost entire absence of systemic disturbance. *X*-ray photographs do not show the usual shadows found at apices and further reveal no positive evidences. (4) In the case we have under observation the sputum presents certain peculiarities. It is thin and watery, containing greyish-green mucoid material, which has been likened to gooseberry juice. But the most characteristic feature is a peculiarly nauseating, penetrating, acrid odour, which becomes greatly intensified when the sputum has been allowed to stand for some time. The odour is quite distinctive. I know of nothing which it resembles.

The question which naturally arises at once in this connexion is whether this condition of broncho-pulmonary spirochaetosis is a pathological entity or whether it is merely a superadded spirochaetal infection to a tuberculous lesion. The absence of the tubercle bacillus does not negative the diagnosis of tuberculosis, and the presence of the spirochaete in tuberculous sputum is well known, but in these cases its probable origin is in oral lesions. Most of the cases of broncho-pulmonary spirochaetosis show oral lesions, but in the case under our care, even after efficient dental treatment and treatment of the gums, the sputum, collected with all possible precautions, showed no diminution in the number of spirochaetes. So far as I know, only one *post-mortem* examination has been reported with the idea of distinguishing any pathological change in the lung as the result of a spirochaetal infection, but as the patient also suffered from pulmonary tuberculosis, syphilis, and malaria no conclusion can, I think, be drawn from the findings. I feel that there can be no doubt that broncho-pulmonary spirochaetosis is clamouring for recognition as a separate disease, although further investigation is necessary to settle the question definitely. I hesitate to suggest what proportion of undiagnosed or wrongly diagnosed cases should be included under the label "spirochaetosis," and, although not large, I think they would be appreciable. As prognostic, therapeutic, and administrative considerations rest on the recognition of the condition, I consider that it should be given a more conspicuous place in the differential diagnosis of pulmonary tuberculosis.

Dr. C. Muthu (Mendip Hills Sanatorium) said: The differential diagnosis of pulmonary tuberculosis presents many difficulties even to expert observers, because it has a wide relation to many diseased conditions, its symptoms and signs closely resemble those of many other respiratory affections, and because its physical evidence varies in different individuals, there being no recognized standard of physical signs common to all cases of pulmonary tuberculosis. While it is true, as Professor Rist has pointed out, that many cases are wrongly diagnosed as pulmonary tuberculosis, it is also much more true that a positive diagnosis is more often missed than wrongly made. I quite agree with Dr. Pottinger, of America, when he said that we are missing tuberculosis ten times more often than we are diagnosing other diseases as tuberculosis. One reason is that a large number of phthisical cases do not go farther than the incipient stage and get well of their fever, cough, sputum, etc., after a change and rest in the country, leaving behind a certain amount of impaired resonance and harsh breathing. In the diagnosis of pulmonary tuberculosis we come to deal with three sets of evidence—the presence of tubercle bacilli, physical signs, and symptoms. When tubercle bacilli are present in the sputum the diagnosis is positive in many cases. But we have this curious fact that in some cases tubercle bacilli may be found in the sputum and yet the patient may not be tuberculous. This may be due to the difficulty of differentiating between tubercle bacilli and the acid-fast rods getting into the sputum from milk, butter, the soil, manure, saliva, and even from water. On the other hand negative sputum does not indicate the absence of tuberculosis. In many cases with well-recognized signs and symptoms of phthisis tubercle bacilli cannot be demonstrated even after careful and repeated examination. Further, as tubercle bacilli make their appearance only after the lung breaks down their evidence does not help in the diagnosis of early cases or in those cases which remain in the incipient stage for months and even years. So more important than the presence of tubercle bacilli is the evidence of physical signs, especially auscultation. A wavy, jerky, and harsh breathing, crackling or crepitant râles heard at the end of inspiration, especially following a cough and confined to the apex or apices, ought to make the diagnosis certain. The more we depend upon laboratory evidence the more auscultation is apt to be neglected and the more it fails to help in the diagnosis. Only life can interpret life. The living ear of the physician can detect and interpret correctly the various shades of breath sounds when the dead physical helps are unable to give a decided diagnosis.

Sometimes even physical signs may fail. I have seen cases, especially in India, where nothing but a high temperature and rapid pulse and sometimes enlarged glands mark the course of pulmonary tuberculosis for many weeks with vague or no physical signs. These cases may take an acute galloping form or end fatally from general toxaemia. I call attention to this Indian type as it is apt to be mistaken for malarial and other fevers. Also in some chronic and afebrile cases physical signs may be very obscure. So more important than physical signs are the evidence of symptoms, such as a slight but persistent rise in temperature, rapid pulse, mild but constant cough, loss of weight, languor and tired feeling, anaemia, dyspnoea on exertion, anorexia, symptoms of dyspepsia, slight haemoptysis, etc. If these characteristic symptoms, when present, are carefully studied and valued with due regard to perspective, they can be relied on to yield a fairly accurate diagnosis of early tuberculosis even if tubercle bacilli are not found in the sputum. It is possible that almost all these symptoms, as Professor Rist and others have shown, may be shared by many respiratory diseases such as acute bronchitis, bronchiectasis, subacute lobar pneumonia, acute colds and influenza, apical catarrh, etc. Most non-tuberculous cases occur in the middle or lower lobe of the lung, and constitutional symptoms, such as temperature, quick pulse, loss of weight and strength, are not so severe or progressive as in tuberculosis. But differential diagnosis becomes very difficult in apical and localized bronchitis and bronchiectasis, in unresolved pneumonia where acute symptoms continue more or less indefinitely, in influenzal pneumonia, and other pulmonary coccal infections. Many a case of so-called influenza is but an acute attack of latent tuberculosis; and bronchopneumonia and lobar pneumonia may be the beginning of acute pulmonary tuberculosis. In one of my sanatorium cases pneumococci were present in the sputum for several months and were gradually replaced by tubercle bacilli. These cases, presenting almost all the signs and symptoms of phthisis, may be the forerunners if not identical with pulmonary tuberculosis. Especially, apical catarrh and collapse induration of the apex in strumous children brought up in poor surroundings and insufficient food, cases which Bard and Fishberg call "abortive tuberculosis," cases of hyperthyroidism with lung complication, in all of which well-marked signs and symptoms (such as fever, rapid pulse, dullness of apex, impaired movement, dry and moist râles, cough and expectoration, and even slight haemoptysis) very closely simulate those of early phthisis, should to my mind be classified as incipient or benign form of tuberculosis. In fact, I plead that our ideas

and interpretation of pulmonary tuberculosis should be widened and not be confined only to cases which present a positive evidence of tubercle bacilli, and that all cases where differential diagnosis is difficult and impossible, requiring time and observation, should be sent to sanatoriums which should be observation centres and for early treatment. In this way we give the patient the benefit of the doubt and ensure speedy recovery, and thus save time, trouble, and expense both to his family and to the State. I cannot help suspecting that at least some of the so-called non-tuberculous cases—of course excluding all other possible causes—are obscure and ill-defined forms of tuberculosis or cases that stop at the incipient stage and get well after a few weeks' treatment. The family physician is faced with this dilemma: if he sends early cases for treatment before tubercle bacilli appear in the sputum he may be told that it is a non-tuberculous case; and if he waits for the appearance of the bacilli he risks the patient's life and makes the chances of his recovery uncertain. But the fact already mentioned, that more cases of phthisis are overlooked than mistaken, should help to sink the scale for early diagnosis and treatment, even though tubercle bacilli cannot be demonstrated in the sputum.

Dr. A. Hope Gosse (London) confined his remarks to the evidence on which Dr. A. Lisle Punch and he claimed that, with a method (described by his colleague) of doing the complement fixation test, they had an almost infallible guide as to the presence or not of active tuberculosis. The blood of the patients with tubercle bacilli in their sputa were positive in 98 per cent. of cases. Control tests, with serums from cases without clinical evidence of active tuberculosis, were negative in 98 per cent. Fifty Brompton Hospital patients, suspected of the disease until the test was done and found to be negative, were still free from any development attributed to tuberculosis in 49 of the cases some ten to twenty months later. Likewise in a series of 50 consecutive suspicious cases, in which tubercle bacilli had never been found when they gave a positive test, of those able to attend between a year and two years afterwards 45 per cent. had tubercle bacilli in their sputa. With the assistance of this test a confident diagnosis of pulmonary tuberculosis had been made in one of these cases two years before tubercle bacilli had been found in the sputum. Their experience showed that the test was almost always positive by the time the symptoms due to the infection had developed. The blood still gave a positive test for perhaps about a year after the disease was arrested. It had been authoritatively stated that early diagnosis was the most important factor in the prognosis of the disease, and it was therefore with a full sense of their responsibility that they announced that in the test, performed by the method referred to, there was now an almost infallible guide as to the presence or absence of active tuberculosis.

Dr. Sinclair Gillies (Lecturer on Clinical Medicine, University of Sydney) thought that the tendency of the meeting was to rely too much on physical signs and tests. What, he asked, was the distinction between "infection" and "disease"? Was it not evidence of toxaemia, and did not diagnosis depend on correlating physical signs and tests with such evidence rather than on placing reliance on any one test or sign?

Dr. Edward Prest (Ayrshire Sanatorium) said that they must remember that medical superintendents of sanatoriums spent their time considering for what length of time patients were kept from any kind of effective treatment. Diagnosis was largely a question of symptoms. X rays would not tell whether the disease was tuberculosis, and whether it was active or not. To wait for a positive sputum might be to wait too long. In times of war it was often difficult to rely altogether on a patient's own statements regarding the state of his health. The condition must be diagnosed from symptoms, and in a suspected case other diseases must be excluded, and appropriate treatment then applied. If patients had no symptoms, it would not be necessary to give treatment, but if symptoms were present they should be treated at once. Physicians who were called upon to diagnose and report on suspected cases of tuberculosis should always endeavour to give some explanation of what "negative" patients were suffering from.

Dr. A. S. M. Macgregor (Glasgow) referred to the *x*-ray demonstration which had been arranged by Dr. Henderson and himself in connexion with the discussion on diagnosis. In this demonstration a set of one hundred films illustrative of different lesions in the lung were shown. From the point of view of difficulties, both in clinical and radiological diagnosis, a special inquiry had been going on in Glasgow in connexion with the large group of cases of fibrotic lesions in the lung, and the demonstration showed instances of peribronchial fibrosis following pneumonia and other acute or subacute lesions of the lung, and also silicosis and other affections.

[A series of films was also shown illustrating the difficulty of determining what is to be regarded as a normal *x*-ray photograph.]

THE SHARE OF THE SUN IN THE PREVENTION AND TREATMENT OF TUBERCULOSIS.

BY

A. ROLLIER, M.D.,

Leysin, Switzerland.

I wish in the first place to express my thanks to your President, Sir Robert Philip, for the honour he has done me in asking me to come to your meeting in Glasgow. I have come here as the representative of a belief to which I have devoted my whole life, and which is that the sun is the source of life not only for the healthy but also for the sick, and that it should be expected to become an important weapon in the therapeutical arsenal against tuberculosis.

I am particularly happy to give this demonstration under the patronage of such a well-known authority as that of Sir Robert Philip, who was one of the first to organize the preventive measures against tuberculosis in this country. It is a great pleasure for me to know that in your country the value of light and sun has been officially recognized, so that a committee on the action of sunlight has been appointed lately for a scientific study of this question including such eminent men as Sir William Bayliss and Professor Leonard Hill. Let me remind you that this committee has been appointed owing to Dr. Saleeby's very courageous and disinterested campaign for a better hygiene of the towns, the suppression of smoke, and the triumph of light. I am also well aware that sun and light not only are studied in your country, but that heliotherapy has been applied for many years and with well-known success by men like Sir Henry Gauvain in the admirable institution at Alton, by Dr. Pugh at Carshalton, and perhaps by many others who may be here and whom I do not know.

The awakening interest in heliotherapy throughout all medical circles in the world is not only due to the general recognition of the value of a method based upon a more accurate apprehension of the nature of tuberculosis, but perhaps more certainly on account of its special value, the fight against tuberculosis being primarily a social question. The terrible havoc wrought recently in almost every country by tuberculosis has aroused a more widespread interest in this burning question. All that tends to the elimination of this scourge is of supreme importance. Internal and external tuberculosis are not only local ailments requiring local treatment, they must be regarded as being the seat of a general infection. In dealing with such a general infection, showing local symptoms and appearing in local seats of disease, a therapy giving a general effect must be employed in order to restore the normal constitutional condition of the individual, together with a local treatment which, to be rational, must never and in no way interfere with the necessary rebuilding of the whole system. It was to this end that, in 1903, we opened the first clinic for air-cure combined with systematic heliotherapy at a high altitude, in Leysin, a village of the Swiss Alps (4,500 feet above sea-level).

Open-air life, so eminently reconstructive, associated with complete sun baths, such as we have advocated it since the beginning of our work—that is to say, the direct action of the sun over the entire surface of the teguments—constitutes the most energetic of excitants and tonics. At the same time heliotherapy realizes the rational local treatment, adding to its reconstructive action on the body the analgesic, bactericidal, sclerogenous, and reductive effect of the solar radiations. Sun cure may be carried out wherever the sun shines—on sea-level, by the seaside, on the mountain. If we have chosen the high mountain in which to erect our clinics it is because the alpine air and sun bath may be there taken during each month of the year, thus permitting uninterrupted cure, maintaining the body at its maximum vitality and power of defence.

Action of Solar Rays.

How does the sun act upon the organism? That is one of the most captivating questions, a clear statement of which could be but imperfectly outlined even in a long lecture. Our limited time only allows us to take a very rapid survey of this part of our subject. We should first remember the double action of light on the organism—its direct and indirect action. The direct action has been doubted for long, because the bactericidal violet and ultra-violet rays have only a superficial action. Wiesner's work has, however, proved that the infra-red rays, especially those nearer the red, are also bactericidal, and by their long wave-length can penetrate the organism and thus might have an action on deep-seated lesions. But if the direct action of the sun is still matter for discussion, the capital part it plays indirectly has been proved by numerous experiences which we can only sum up very briefly. Everyone knows that the violet and ultra-violet rays, detained at a depth of one millimetre in the skin, are absorbed by the superficial sanguine surface formed by the net of the capillaries now dilated by the sun. To these rays must be attributed the phenomena of erythema and pigmentation.

Pigment is not only a protective agent against too violent an irritation by ultra-violet rays, but it also regularizes the thermic share of the sun. The profound biological value of pigment is everywhere better recognized. It is very likely that pigment receives, supplies, and increases the activity of the elements essential to the metabolism of the hormones. You know that Bloch has demonstrated that a substance, chemically very much like adrenaline, submitted to the action of oxidized ferments of the epiderm produces the formation of normal epidermic pigments, light strongly accentuating this formation. On the other hand, the skin's ferments seem to depend upon the quantity of vitamin contained in the food, as has been recently proved by the experiment made in Vienna on rickety and insufficiently fed children. Let us also remember that recent German and American publications have demonstrated that the action of radiations produce a very strong retention—which can reach as far as 400 per cent.—of the phosphates and lime in the organism. Let us remember, finally, that Naegeli has proved the action of sun on the haematopoietic system to be followed by an increase in haemoglobin, that Behring has ascertained the more active respiration of the red globules submitted to the sun, and that Schläpfer has given the proof of the photo-activity of a photograph plate, by means of previously insolated blood. Lastly, we might mention the recent experiences of Sonne in Copenhagen, who has proved that under the action of radiations the temperature of the blood, at a depth of more than one-third of an inch in the skin, augments to about 5° C.

From these experiences must be drawn the conclusions that the light absorbed by blood changes it into a receptacle of radiant energy. Transferred into the whole organism this energy hastens the intracellular processes of oxidation and reduction, thus modifying the whole metabolism. Consequently in this way the defence of the organism exposed to the beneficent action of the sun is progressively increased, making it better fit for the fight against tuberculous infection.

The Skin.

Among the general effects of the sun on the body we would first mention its action on the skin. My reason is that we attribute in our results a capital importance to the remaking of this essential organ through the working of the sun. The skin is not only the natural clothing of the body, wonderfully fitted to protect it against the penetration of pathogenic organisms. Provided as it is with a compact web of capillary vessels, it forms a real expansion of the vascular system. These vessels, by their contraction and dilatation, constitute a kind of "peripheric heart"—an admirable regulator of the circulation of the blood. The skin is also an expansion of the nervous system; this close-woven net of sensory and sensitive nerves may be compared to a keyboard, on which all exterior impressions provoke resonances in the whole organism. The skin is not only an organ of protection, circulation, innervation, but also one of respiration and nutrition, since it gives off the carbonic acid and water vapour and absorbs oxygen. Finally, the skin constitutes also an essential organ of elimination; for this reason it has been called the "vicar of the kidney"—perhaps even more important than his superior, for one can easily live having one kidney left, whereas it suffices that one-third of the cutaneous surface should be destroyed through burns to cause death.

These important physiological functions can only be accomplished if the skin is placed in its natural surroundings, and its natural surroundings are the permanent contact with air and light, just as water is the natural element for the scale of a fish. Weakened and atrophied for many generations through the wearing of unhygienic clothing, the skin, under the action of air and sun, recovers its many and vital functions, and becomes the ideal clothing foreseen by Nature. Gradual formation of pigmentation on the teguments gives to the body a progressive resistance against cold and heat, opposes infection of sores and wounds and shares in their cicatrization. Pigmented teguments are refractory to numerous cutaneous affections, such as furuncles, acne, etc., which often are merely doors through which more serious diseases may force an entrance.

The sun bath, enlarging the capillaries, determines an afflux of blood towards the skin; this ameliorated and regulated circulation of the blood helps to make the musculature remarkably firmer, better than the best massage would make it; thus the body finds again its natural harmony. The tonic power of the sun manifests itself also on the thoracic and abdominal organs; under its influence haemoglobin increases, internal secretions accentuate, digestive functions become regular, weight increases, strength is renewed. The sun not only acts on the physical side, it has a most efficient effect on the mind and the character of the patients. This is of great importance when one remembers how much this influence reacts on the physical, especially with patients who have to remain a long time confined to bed.

Posology.

How must sun treatment be dosed? This is the aim of posology, which is one of the most important chapters in sun treatment; time does not permit of my dwelling on it as it deserves and as I should like to do. On knowledge or lack of knowledge of posology depends the result that we may expect from sun cure, and let us bear in mind that no physiotherapeutic method demands such strict individualization as heliotherapy.

A very current mistake consists in thinking that the sun bath is all the more efficacious if prolonged or taken when the sun is at its hottest; this is an inconsistency against which Nature herself seems to warn us.

We have laid down very precise rules for the practice of sun cure in order to prevent miscalculations and accidents. The principal rule is this: one must begin by only exposing the lower less sensitive parts of the body to the sun's rays. This will serve to show in what measure the patient bears the sun bath, and his further progress in insolation will be based on such observations. This method of derivation avoids congestion of the head and of the thoracic viscera. One must not take air and sun baths during meridian hours, especially in places at sea-level, where the ambient atmosphere enfeebles, produces congestion, annihilating the good effects of the solar rays. During the warm months of the year it should therefore be taken in the early hours of the morning.

Air and sun baths should always be taken gradually, the duration of insolation increasing by a few minutes each day, first exposing the feet, then the legs, then the thighs, the abdomen, the thorax, keeping the head covered with a simple linen hat. After a certain period of cautious advance, varying according to the case, the season of the year, the heat of the sun, the body becomes pigmented and can then bear several hours of sun each day. As a general rule, the sun bath, to be beneficial, should create a sensation of profound well-being, and each patient, whilst taking it and afterwards, should find himself invigorated.

Technique.

Before speaking of our technique, I think I ought to give you some idea of the installations in which we practise heliotherapy. I have neither the time necessary, nor the desire, to describe our thirty-four institutions in detail, but I would like you to see the first house we opened. It was then the only little boarding-house in our village; it is now one of our free clinics, opened in 1903. We fitted it up for the sun cure, by the addition of large balconies and of a roof solarium which probably was the first one to be built in Europe since the time of the Romans. Our contention is proved that heliotherapy can be successfully applied otherwise than in ruinously expensive palaces, for it is in this simple chalet that we obtained most of the cures to be subsequently shown and described.

It is indispensable to say a few words as to what has been the teaching of experience in regard to the application of the

sun cure. We will take the different localizations in their turn, beginning with Pott's disease and the most important articulations.

The Bed.

As the bed plays a very essential part in the treatment of such localizations, and is, so to speak, one of our principal tools, I take the liberty of insisting on some of its particularities. Its indispensable features are the following: It must be high, so that the balcony rails beside it may not obstruct the sun or the view, and to facilitate the nurse's work. It is fitted with large, smooth, easily running wheels, and can be rolled on to the balcony, to concerts, and even to the garden.

Special very hard mattresses are used. These never lose their shape, give the patient's body a maximum of support, do not induce perspiration, and prevent bed-sores. The spring mattress is composed of widely spaced strips of metal, thus ensuring perfect aeration of the mattress. Very emaciated patients are padded in with cushions.

Pott's Disease.

From the beginning we have discarded plaster appliances in cases of Pott's disease, finding that they bring about atrophy not only of the skin and muscles but of the skeleton itself. These cumbersome plaster devices have been replaced by simple arrangements of webbing straps which give sufficient immobilization while permitting the free access of air and sun to the injured places. Patients, especially children, are immobilized by a simple apparatus consisting of linen stays or braces, attached by means of linen straps to the head and foot of the bed itself. These can be opened and closed at will and cannot in any way interfere with the sun and air cure. Straps are also fastened down over the knees to keep them in position.

As soon as an *x*-ray examination shows the beginning of calcification of the vertebral block, the patient is placed in the ventral position, the thorax supported on a triangular cushion on which the patients can lean their elbows. To this physiological position *par excellence* we attribute a very great importance. This same treatment, as regards position, was advocated about a hundred years ago by two English doctors, Banting and Bamfield, and had been long abandoned when we again gave it the consideration it deserves. This position augments the lordosis and thus tends to correct the pathological curvature. It permits the insolation of the whole dorsal region and so very considerably develops and strengthens the muscles and ligaments.

Once cured, our cases of Pott's disease are all provided with what we call the "muscular corset," which is the best support of the spine for the future. In certain cases, in order to help to the correction of kyphosis by straightening of the shoulders, we use braces which are fastened to the foot of the bed.

[Dr. Rollier then showed a number of photographs of patients.]

1. A patient suffering from Pott's disease, with bad general condition, a very extended and prominent kyphosis, cured and straightened in quite a satisfactory manner by the proceeding just explained, after two years' treatment.

2. A young child suffering from extremely painful Pott's disease with marked curvature, cured after eighteen months' treatment. The remarkable carriage of the child, his well-developed muscles, and the happy expression of his face were evident.

3. Another case of Pott's disease with very prominent kyphosis and marked atrophy of the thorax, both caused by plaster apparatus applied during many years. The patient was absolutely transformed after two years' sun cure, having recovered his muscles, and looking like an athlete.

4A. A case of Pott's disease complicated by mixed infection, with a sinus in the region of upper third of thigh, also with prominent curvature. The patient's muscles had been atrophied by wearing plaster apparatus for many years. He was also cured and partially straightened after twenty months' sun treatment.

4B. A picture showing the same patient in the dorsal position, lying on cushions, one of them replaced by a wooden block. The patient was first accustomed progressively to the wood by cushions filled with millet, then with sand. The advantage of the wooden block is that it offers a very uniform resistance and cannot hurt the skin, as such a block is always very smooth and dry, thus never producing scabs. It is generally very well tolerated by the patients, many of them preferring it to any other cushion.

4C. The same patient in ventral position, busy typewriting. To all of the patients is advised the work cure, which is applied systematically in most of our clinics.

5. Another case of Pott's disease, practising insolation while doing basketwork which had been taught him in the free clinic where he is treated. This work allows him to pay part of his board and gives him a happy feeling of independence.

6. A balcony where this work cure is applied. On the foreground was a case of Pott's disease practising insolation on his back while doing basketwork.

This prompts me to say a few words on the work cure, which was first introduced into England by Dr. Paterson at Frimley Sanatorium, in the case of patients suffering from pulmonary tuberculosis, and which we organized first in our institutions for surgical tuberculosis. I wish to insist on this most valuable factor in the victorious conflict against mental depression, and which we consider to be a most precious adjuvant to heliotherapy. We always advise its practice for all our patients.

I personally consider the part played by work cure so important at the same time from a therapeutical, physical, and mental standpoint that I wish to show how we practise it in several of our institutions, by a film. It will give you an idea of how we had realized the work cure in one of our military clinics during the war.

[Dr. Rollier then showed a cinematographic film illustrating the work cure.]

Hip Disease.

For hip disease we use practically the same appliances as for Pott's disease. Plaster apparatus has been discarded here also, and has been replaced by continual extension by means of a sort of double bracelet made of linen or leather, fastening round the knee and ankle, which can be taken off at will. It always allows the insolation of the hip, and even of the whole leg. We also use a small sandal in order to avoid the tendency to equinism.

[Dr. Rollier again showed photographs illustrating cases.]

7A. A case which had been cured by this method, a very advanced case of hip disease, bad position, considerable shortening, partial luxation, external rotation, who arrived in this condition in a plaster apparatus.

7B. The same patient after eighteen months, quite cured by continual extension and sun cure. There was very satisfactory correction of the shortening, the muscles were developed, there was restoration of the whole organism, and with quite a satisfactory partial return of the articular function.

8A. A very severe case of hip disease, who arrived in a miserable condition, complicated with numerous sinuses of mixed infection. With all cases of this kind a good drainage of the sinuses is first assured, so as to avoid retention of pus, intoxication, and fever. Only when the drainage has been obtained is insolation practised in the region of the sinuses.

8B. The same patient after two years, cured, all the sinuses dried, restoration of the whole general health, and partial but quite satisfactory return of function.

I wish to add that with cases of hip disease with bad attitude the so called bracelets which I have mentioned are not always sufficient for extension, and that a more complete appliance is needed. We then apply extension by means of bands of sparadrap. To make the extension more easy the leg is placed on a splint provided with wheels and placed on a small cart, the rolling of which is extremely soft, and which allows an energetic extension to be got with little weight.

9. A very serious case of hip disease with partial luxation of the head of the femur, very important shortening, bad position in flexion, severe secondary infection. The system of extension was demonstrated: the cushion which elevated the pelvis was to be noted, thus literally presenting that part to the sun's rays. It helped to avoid the bad attitudes and to correct them.

Tuberculosis of Knee.

In cases of tuberculosis of the knee we also have left plaster appliances. When the knee is painful it is placed in a widely opened splint, with continual extension. The injured limb is always placed on an inclined plane, which makes regression of capsule and periarticular infiltrations much more easy. The plane is more or less inclined according to the gravity of the case.

10A. A case treated after this method. He arrived in Leysin after resection of a tuberculous knee in a desperate condition. He had numerous wounds, not only in the region of the knee, but on the whole thigh. These wounds were consecutive to abscesses which had been incised and infected. There was bad position of the leg, ankylosed in internal rotation, very bad general health. The patient was feverish, cachectic, and suffered acute pain.

10B. The same patient after two years. The knee was cured, in ankylosis, of course, owing to the resection. There was cicatrization of all the wounds and the general condition was splendid. The young man was actually, and had been for ten years, at the head of a rural settlement, and always in perfect health.

11A. A young girl with tuberculosis of the knee; focus in the external condyle, beginning of periarticular infiltration, muscular atrophy, bad general state.

11B. The same patient after one year and a half; the knee was perfectly cured, outlines quite normal, and complete articular function, while the general health was absolutely restored.

12A. A case of very advanced tuberculosis; this patient was condemned to amputation. There was arthritis of the knee, very advanced, with subluxation, complicated with mixed infection, and a very bad general condition.

12B. The same patient, his knee quite cured, luxation nearly corrected, and his general condition splendidly restored. His expression confirmed this happy result.

I must be excused for repeatedly insisting on the restoration of the physical and the moral conditions, which are, as you are well aware, capital points in the question of tuberculosis.

Tuberculosis of Feet.

In the cases of tuberculosis of the feet we also use immobilization on the inclined plane in little splints which are widely hollowed out, or a mobile sandal allowing the progressive straightening when equinism, as often is the case, accompanies tibio-tarsal arthritis.

13A. A patient suffering from recurrent tuberculosis of the feet who had been operated on several times; she also suffered from tuberculosis of both elbows, with a miserable state of health. Her face wears an expression of pain and discouragement.

13B. The same patient again after two years, absolutely cured of every manifestation of tuberculosis. The beauty and harmony of her body was to be noted.

14. A case of tuberculosis of the foot who had been condemned to amputation—absolutely cured after fifteen months' heliotherapy.

Peritonitis.

Heliotherapy gives the most favourable results in cases of peritonitis, but this is, of all the localizations, that which requires the most careful supervision, especially as it is often accompanied by pulmonary and pleural complications. It is quite natural that the peritoneum, which presents a great surface vascularization, should become very easily congested, and this is where our method, in French described as the "derivative method," proves itself of singular utility. It provides for a slow and progressive insolation which draws the blood down to the extremities, thus obviating the possibility of such congestion as might follow sudden local exposure to the sun.

15A. A severe case, a young girl suffering from extremely advanced peritonitis, ascites, and pleural exudate as well, very bad general condition, considerable atrophy of skin and muscles.

15B. The same girl, completely cured after one year. On comparing the condition of the muscles it was astonishing to note the sculptural reconstitution of this body, which was reached by sun cure only, without the addition of massage.

Ileo-caecal Tuberculosis.

Heliotherapy gives quite as favourable results in cases of fibro-caseous and fibro-adhesive peritonitis, as well as in all forms of ileo-caecal tuberculosis. The advantage this treatment has over operative measures is that such complications as formation of faecal fistulae, which are rather frequent after resection, can be avoided.

16. A young patient who had been operated on several times for ileo-caecal and peritoneal tuberculosis; these interventions had been followed by the formation of five faecal fistulae, which were seen on the picture. These were all closed, while at the same time every manifestation of ileo-caecal and peritoneal tuberculosis disappeared, after eight months of heliotherapy.

Adenitis.

Heliotherapy is also the treatment of choice for cervical adenitis, which is always cured without leaving any scars, according to three different processes: "melting," generally followed by aspiration; spontaneous resorption; or sclerosis. The two first modes are the most frequent. Only exceptionally do we have recourse, in certain cases of adenitis with sclerosis, to the association of *x*-ray therapy to heliotherapy. The exclusive use of heliotherapy has the great advantage of never giving rise to such accidents as radiodermatitis.

17. A young patient with adenitis who was quite cured by melting and aspiration after six months' heliotherapy.

18. A young girl suffering from open adenitis with formation of very extended wounds with granulations, and who was quite cured, with scarcely visible scars, after eight months' sun cure.

19. A particularly interesting case of secondary adenitis consecutive to a primary infection of the conjunctiva. This happened after the patient, who was a young doctor, had had his conjunctiva infected while carrying out an autopsy. Everyone is aware that extreme reserve must be practised in the prognosis of such cases of primary tubercular disease of the conjunctiva. This young colleague had tried all the usual treatments; cauterization had been attempted, then excision of the peripheral conjunctiva—all without success. Complete cure was obtained, with that of the secondary gummata, after seven months of heliotherapy. Since that time the patient was at the front during the whole duration of the war, and was at present very actively employed in France, having always kept in excellent health.

Lupus.

Heliotherapy gives the most satisfactory results in all forms of lupus.

20. A severe case. The lupus extended not only to the external parts of the skin, but to all the mucous membrane of the nose and palate. All these manifestations disappeared under the effect of sun cure alone, applied during one year to the membrane and skin. It is very seldom that it is necessary to supplement heliotherapy by phototherapy or *x*-ray treatment.

The best orthopaedic and preservative surgery may be practised by means of heliotherapy; it safeguards the entirety of articular function to the utmost degree possible, and in so doing makes the nation a gift of citizens who are neither deformed nor incomplete, but of sound bodily capacity.

Furthermore, the treatment involved is not within the reach of wealthy patients only. Indeed, it may be argued that as a cure it is socially economical, since it is cheaper for a community to assure the complete fitness of one of its members, even though this may entail a year's, or perhaps even a two years', stay in bed (this time to be passed in the open air and sun), than that the inevitable mutilation attendant on an operation should lessen his value for ever.

Maintenance of Cure.

Clinical results obtained by sun cure are only of value if lasting. The best way for these who have suffered from surgical tuberculosis to maintain their cure is that they should henceforth live, as nearly as possibly, in conditions similar to those which determined the recovery. To avoid a relapse an ex-patient must neither take up an unhealthy occupation nor re-enter an unsanitary lodging, but rather choose a trade or profession that promises reasonably hygienic conditions of life.

To this end we have recommended and set on foot a market-gardening colony and an agricultural colony for our convalescent patients. The results, from the double standpoint of capacity for work and resistance of the constitution, have been decidedly favourable. Efforts should be made to extend these settlements, for it is of first importance to solve the great problem of the maintenance of the cure.

End-results.

It has often been said that the cures effected by heliotherapy are not lasting. We are now establishing records with a view to the publication of the statistics of early cures. This work is a very difficult one, most of our former patients having been foreigners, who are not easy to trace after the war, which has brought so many changes in all the countries. We had, however, the good fortune to receive news and photographs from our first cases—those that have been published previously—and we can now show a number of these patients, some ten, twelve, fourteen, and even more years after establishment of cure. This is all the more striking, judged as a result, because all these first patients were poor folk, or at least ill provided with this world's goods.

21A. A boy who had seventeen foci of tuberculosis, osteitis, periosteitis, adenitis. One lesion in the temporal region had been curetted. Secondary infection—sinuses, affection of tracheo-bronchial glands, and infiltration of right apex.

21B. Complete cure six months later.

21C. Thirteen and a half years after establishment of cure: wheelwright and agricultural labourer; did more than a year's military service without a day's illness.

22A. Extended tuberculosis of face and elbow. Seventeen sinuses. Numerous operations, one of them being a partial resection of the elbow. Secondary infection—ankylosis of elbow. Very bad general condition, high temperature, albuminuria.

22B. Complete cure after one year. Cicatrization of all the sinuses and complete return of articular function.

22C. The same boy; ten years later he was working in an office in Germany, having kept well in spite of the privations of the war.

23A. Tuberculosis of right elbow with formation of many wounds and sinuses. Secondary infection following several surgical interventions—very painful swollen ankylosis; very bad general health, high temperature.

23B. The same girl ten months later. Cure and cicatrization of all the sinuses.

23C. The same, showing return of articular function.

23D. The same, twelve years later—a strong cook, having kept in perfect health all this time.

24A. Tenosynovitis and tuberculous arthritis of wrist, recurring after operation. Secondary infection—sinuses, renal tuberculosis, nephrectomy, tuberculous peritonitis, tuberculosis of right apex,

small lupus on right cheek. General condition poor. Habitus phthisicus.

24B. The same patient one year later.

24C. The same patient, thirteen years after establishment of cure, in excellent health and very active as a nurse.

25A. A case of Pott's disease with large curvature; general muscular atrophy, advanced tuberculosis of right lung, with repeated haemoptyses. Very bad general condition. Habitus phthisicus.

25B. The same man after one and a half years.

25C. The same man at the head of an important grocery store twelve years later.

Pulmonary Tuberculosis.

It has often been said, and is still believed by many, that heliotherapy is dangerous and of no help in pulmonary tuberculosis. We are of a different opinion, and our experiences tend to prove our position. It is true that most of the cases which we have treated accompanied surgical lesions. By careful examination of the lungs of our surgical cases we discover that about 30 per cent. of them have pulmonary foci as well. We have, however, also had in our care a whole pavilion of Swiss soldiers with pulmonary tuberculosis only and have never met with an accident of congestion, and no soldier who has been treated by sun baths has ever presented manifestations of haemoptyses any more, even if subject to them previously.

So we are convinced that the sun is not an agent of congestion, but rather a derivative, and might be compared to a cupping glass, the action of which we can regularize. It must, however, be well understood that the sun treatment, in such cases, must be applied exactly according to our derivative method—that is to say, by always beginning by the exposure of the extremities, and proceeding by prudent and slow progression. The sun should be dispensed, so to speak, drop by drop, when nearing the region of the thorax. It is also essential, as we have always said, that the heat of the midday hours should be avoided for the treatment, and one should have recourse to the earliest morning sun, while the air is not yet overheated.

Needless to say, no patient with a high temperature or in a state of intoxication should be exposed to the sun.

26A. Tuberculosis of right knee, very painful arthritis with synovitis. Very great swelling, fixation in bad attitude, subluxation of tibia.

26B. The same, showing the return of articular function.

27A. Very bad tuberculosis of the foot, leg, and thigh; had been operated on five times. Thirteen sinuses, mixed infection, ankylosis of foot and knee. Very bad general condition, cachexia, albuminuria, high temperature.

27B. The same patient after one and a half years, absolutely cured, with complete restoration of the organism.

27C. The same ten years later, one of our best nurses.

28. Very extended and painful tuberculosis of the left foot, mixed infection, large fetid wound, abundant suppuration, bad general condition. Spontaneous elimination of necrosed scaphoid took place. This spontaneous elimination of sequestra is extremely frequent, and we only practise surgical intervention when the sequestrum is enclosed in a cavity from which it cannot make its way out. In all other cases we leave it to the care and foresight of conservative Nature, who knows much better than the surgeon what must be expelled and what kept. This patient was cured after ten months' heliotherapy. The wound completely cicatrized after the elimination of the sequestrum. Twelve years later the patient had remained perfectly healthy, and could engage in all kinds of sport.

29A. A case of Pott's disease; very pronounced kyphosis, paraplegia, atrophy of muscles.

29B. The same patient eighteen months later; cure of paraplegia, complete refection of general health and of muscles. After her cure this girl went back to Russia, where after a few years she went through the whole miserable experience of the Revolution. She had to escape to Siberia with her parents, living during three months in an abandoned railway carriage. At last she reached Shanghai, where she became overtired by working to earn her own and her family's living, and in the meantime studying hard, her heart's desire being to qualify as a doctor. Having saved a little money she left Shanghai alone and went to London, where she began her studies. But all her difficulties had told too much on her strength, and soon it was discovered that she was suffering from renal tuberculosis. She was operated on in London, then came back to Leysin, where her nephrectomy wound is actually on a good way towards cicatrization. It was very interesting to see that after twelve years, and in spite of all her hardships, her back had kept admirably well all this time.

30A. A child, who arrived with thirty-four tuberculous foci—osteitis, periosteitis, adenitis, multiple sinuses, tuberculosis of both feet, right hand, peritonitis, and advanced tuberculosis of left lung. General condition very poor, advanced cachexia, high temperature, and albuminuria.

30B. The same one year later; all tuberculous foci cured.

30C. The same three years later, on his skis.

30D. The same ten years later; cure completely maintained, in spite of the patient having lived throughout the war in a German orphanage, where he underwent considerable privation.

X-ray Evidence.

If these photographic documents bear testimony to the success of heliotherapy, the demonstrations given by the *x* rays which are taken regularly of each patient, and the number of which now attains the total of 13,000, are much more convincing, and show with admirable clearness the process of cure of the most deep-seated lesions in the skeleton, a process which in many cases goes as far as to reconstruct it *ad integram*. I should be very happy to show some of these skiagrams, but unfortunately time does not permit.

May I remind those interested in this question that this most important matter of the radiographic control of the results obtained by heliotherapy will be the subject under discussion in one of the most important chapters of our post-graduate course on heliotherapy at Leysin?

Preventive Heliotherapy.

If sun treatment can cure so many manifestations of tuberculosis, and maintain this cure, it can all the more prevent its outbreak. Experience confirms this. The sun bath, associated with open-air life and rational exercises, is the most active and surest prophylactic means, and for this reason acquires a social value surpassing its therapeutical value.

According to present views it is granted that tuberculous infection occurs, as a general rule, during childhood; reaching the age of puberty nearly all children (95 per cent.) have paid a debt to tuberculosis. Adenopathic and mesenteric ganglia are as outposts, where Koch's bacilli are kept in check. Since the germ of that disease is caught during childhood it is during that same time it must be fought and overcome; Koch's bacilli are incapable of harming so long as the bodily organism is fit to withstand. There is no surer way to attain this state of resistance than by air and sun. That is why, from the first, we have pleaded for its application in nurseries, orphanages, holiday schools, for in the schools, where constant discipline is the rule—discipline so often absent from family education—these principles of hygiene can be applied to children with most profit.

We have put into application this prophylactic means with delicate children and those predisposed to tuberculosis in our "school in the sun" established at Cergnat in 1910. Instead of educating children in rooms more or less without air and light, lessons are given them in open air and sun: this continual open-air life soon completely transforms the children; weak, ailing little beings, a prey to illness, become vigorous, bronzed children, with good musculature, fit to withstand fatigue and inclemency of weather, strongly protected against tuberculous invasion.

[A short cinematographic film was shown illustrating the "school in the sun."]

We know that hygiene is well applied in the schools of this country and the important part it plays in your open-air schools particularly. Our only suggestion would be that a larger place should be given to the sun, so as to place the children's bodies as much as possible in contact with the solar rays, at least during the gymnastic exercises.

This method could, without expense, be widely applied in all the schools. The beautiful parks and public squares, the glory of this country, would also be a splendid field, even if they were only used one or two hours a day for physical exercise in the sun.

Conclusion.

"Where the sun enters the doctor does not go" is an old popular saying, yet it contains quite a programme. Sun is indeed the incomparable remedy that foreseeing Nature has placed within the reach of everyone. It behoves us to make the most of it. The human body, being everlastingly threatened at all ages by many causes of impoverishment, must constantly be armed against them. Let it demand of the air and sun, these fundamental elements of hygiene, the resisting forces it is in need of.

These elements should have a larger place given them, in daily life and in the city. Not only modern towns should be built on such hygienic principles, but also the home. Housing has played an immense part in the genesis of child and adult tuberculosis: the community bears the responsibility of the waste of human lives through insanitary houses. Those principles should be propagated in all classes of society, that all may fully be persuaded that they are indispensable conditions of health and life.

SOME ASPECTS OF THE TREATMENT OF SURGICAL TUBERCULOSIS.

BY

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During the last few years Glasgow, like the other large cities, has been giving more and more attention to the treatment of surgical tubercle. But it has only been since the war ended, when the hospitals which had been given over to the wounded were evacuated and returned to the use for which they were originally intended, that it has been possible to carry out the treatment on anything approaching the necessary scale. For over a year now we have had about 300 beds available for the treatment of surgical cases, and it will be my endeavour to give some indication of our difficulties and our experience of the various methods of treatment which have been recommended in recent years.

Perhaps the most striking results that have been published on the treatment of surgical tubercle are those of Dr. Rollier of Leysin, but his results are obtained where very special climatic conditions exist, and the same may be said, although perhaps to a less extent, of the results obtained by many others. In the course of the next few years this city will have a hospital as favourably situated as is possible within the borders of Scotland, but in the meantime we have to rest content with a hospital which is just beyond the city boundary, where our sunshine reaches us through an atmosphere not by any means free from smoke and dust. It will perhaps be of value therefore if I give some account of our experience of treatment under these less favourable circumstances, for it is likely that some considerable time will elapse before every tuberculous patient in this country can be treated under the most favourable conditions.

I should like to say something of the type of case which we have been admitting to hospital. As I have already explained, it is only recently that suitable accommodation has been provided, and so a large proportion of our cases come to us in a very advanced stage of the disease. They have been resting at home, attending the out-patient department of one of the large infirmaries, and being admitted from time to time to these institutions for scraping of sinuses, excision of joints, or other operative interference. A great many of our cases, therefore, have on admission sinuses which have been discharging for some time, and which have got badly infected. A number of others have abscesses on the point of bursting, and their health is often so undermined that it is almost impossible for us to save them from breaking down.

It was only a year ago that our hospital was opened and that we began systematically to treat cases of surgical tubercle. For a year before this we had a certain number of cases accommodated in a temporary hospital, without facilities for getting the patient into the open air. During this period I tried a group of about forty cases on trypsin without finding any evidence of improvement in any of the cases—that is to say, there was no more improvement in the cases having the injection than in the other cases enjoying the same hygienic conditions; as the treatment was by no means painless I gave it up entirely.

For a year now practically all our patients have been submitted to sun treatment, based on that described by Dr. Rollier in *La Cure du Soleil*. Our patients are gradually accustomed to the sunbath, the exposure being given according to a table, which is exactly the same as that of Rollier, except that fifteen minutes is substituted for his period of five minutes. That is to say, the first exposure is one of fifteen minutes to the feet only, and then on the second day the legs are exposed for fifteen minutes while the feet are exposed for half an hour. On the third day the thighs are exposed for fifteen minutes, the legs for half an hour, and the feet for three-quarters of an hour, and so on until the whole body is exposed. Then we gradually increase the length of the exposure of the whole body until the patients are having a sunbath of six hours a day. There are, of course, many interruptions of the treatment, for we have long spells when we have no sun at all, and in the spring and autumn it is only possible to give short exposures on account of the low temperature. In all cases with sinuses the wound is exposed under a thin piece of gauze.

As regards the results of this insolation, as we have observed it, there is no doubt that the improvement in most of the cases is marked, but we do not obtain the phenomenal results that Dr. Rollier gets. The general health of the child improves, but it takes a long time before one sees much change in the local lesion. We do not see the extrusion of sequestra and the shelling out of diseased glands which he has described. It is easy to understand why this should be, for most of the ultra-violet rays are absorbed or reflected in their passage through our humid smoke and dust laden atmosphere. We have not the increase in the red corpuscles which is observed in people living in high altitudes, and we miss the intensifying effect of the reflecting snow and ice. I find myself in agreement with Lucas, who has been working in California, and Strauss, working in the lowlands of Europe, and believe that in such a climate as ours insolation is of great value as supplementing surgical measures, but that the solar treatment alone is too slow and doubtful to be depended upon. Even Hyde and Lo Grasso, who have reported very favourably of the sun treatment in the lowlands of America, only claim to get movement in joints in which the disease is in an early stage, while Rollier has obtained movement in joints in which there was already fibrous ankylosis.

As regards pigmentation of the skin, most of the patients seem to pigment well, but a number do not. I am not convinced, however, that they make slower recoveries than those who do pigment. It may be that once they have recovered there is less likelihood of a recurrence of the disease in the patient who browns well. This is a point on which I am not yet in a position to speak.

I should like now to refer briefly to our experience of the treatment of patients with cold abscesses. I have already mentioned the fact that many of our patients come to us with abscesses in an advanced stage of development, so that in a number of cases we have found it difficult to prevent sinus formation, and this is especially so during the winter months, when we have a minimum of sun and the weather is cold and damp. For some time we tried the effect of simple aspiration repeated with varying frequency, according to the rate at which the cavity refilled. In some cases this was enough, but in many others aspiration had to be carried on for a very long time before the cavity was obliterated, and in a number the abscess finally broke down. In one case of a large psoas abscess I aspirated the patient thirty-five times, and then the tuberculous infection travelled along one of the needle tracks, and the abscess discharged. In spite of every care infection ultimately took place and I lost the patient.

In a few of the cases of psoas abscess which were not responding to simple aspiration, I tried open operation with a very careful surgical technique—in fact the same technique as is recommended by Lane for the plating of fractures. The abscess cavity was exposed by a long incision, its whole lining carefully cleared away, the walls swabbed with ether, and the wound completely sutured up again. The results were only good in about a third of the cases. The wound began by healing well, but tuberculous infection of the scar took place, and when this broke down it usually resulted in a sinus leading down to the bony focus.

The use of modifying fluids has given us the best results in the treatment of abscesses, and of these fluids the one we have found most useful is the solution of iodoform in ether and oil with creosote and guaiacol, as recommended by Calot. Occasionally, when the fluid is very thick, we use his preparation of naphthol-camphor, but otherwise his No. 1 fluid is the one we almost invariably use. We have noticed that abscesses which were being treated by simple aspiration over a long time without definite improvement cleared up after a few injections of the iodoform-creosote mixture. One case with a very large double psoas abscess extending into both thighs, who had been aspirated nineteen times, and had frequently as much as 750 c.cm. of fluid drawn off, completely healed after six injections, and this has been our experience with many other cases, although the results were less striking than in this one.

Considering only cases which are in hospital at present, we have 28 which have completed a course of aspiration and injection, and in 20 of these the abscess is completely obliterated, while in 7 others considerable improvement has taken place, fluid in one being reduced from 200 c.cm. to 10 c.cm., and in another from 1,200 c.cm. to 8 c.cm. The cure of these 7 will almost certainly be completed by another course. In one case there has been no response to the treatment. Another 8 cases are undergoing their first course, and are apparently doing well.

The treatment of sinuses is one of the most difficult problems we have to deal with; in the course of a few years I hope we shall seldom see a sinus. At present a large proportion of our cases have sinuses on admission. For the

grossly infected cases one can do little but try to provide free drainage, and depend on sun and air to increase the patient's resistance, but in the afebrile cases we have obtained good results from the use of Calôt's paste. Of 41 cases which are in hospital at present under treatment by this method 21 have healed after one course, 16 are improved, and in 4 the course is still incomplete. Some of the results are quite striking. Two cases of hip disease with sinuses of two years' duration healed after a single course, while another patient with a cavity in the head of the tibia, which had been treated with trypsin and had twice been opened up, scraped, and disinfected with apparently no improvement, healed after six injections of paste. Almost all these sinuses are infected with pyogenic organisms, and those in which the streptococcus is present seem to be the most resistant to treatment.

There is one other method of treatment which we are trying, but about which it is too soon to make any report. During the last two months Dr. Henderson (radiologist to the hospital) has started a series of cases on deep therapy. In tuberculous glands he has already obtained very good results, masses shrivelling to half their dimensions after a single exposure, but we are not yet certain what effect the treatment is going to have on tubercle of bone.

Among the cases that were sent to us for treatment were a number who were clearly syphilitic, while there were many cases in which the diagnosis seemed somewhat doubtful. This led us to carry out Wassermann tests in a series of nearly 300 cases of surgical tuberculosis, and we got a positive result in approximately 5 per cent. We found that we had to be extremely careful in the antisyphilitic treatment of patients who had a positive reaction and yet had a definitely tuberculous lesion. The injection of arsenical preparations had to be given in very small and carefully graduated doses; in fact in some cases it was impossible to give any injection at all, as the tuberculous lesion was liable to be rendered more active, old sinuses to break down, and new abscess formation to take place.

I have not referred at all to the orthopaedic treatment, which must be carried on at the same time as the general. Indeed, a very important part of the treatment of abscesses and sinuses is the immobilization that is obtained by suitable extension or plaster apparatus. I have been much impressed with the fact that even such improved hygienic conditions as we are able to offer, and the limited sunshine we have at our disposal, so increases the patient's resistance that, without lighting up fresh tuberculous mischief, we are able to correct by careful manipulation deformities which we had failed to correct by extension.

In conclusion, I should say that, while the treatment of surgical tubercle must anywhere be essentially conservative, in hospitals in which one has not the most favourable climatic conditions, operative interference combined with general treatment will give the most speedy, although perhaps slightly less perfect, results.

I have to express my indebtedness to Dr. Watson, superintendent of Robroyston Hospital, for his helpful advice, and for facilitating my work in every way, and to the house-surgeons for the excellent way in which they have carried out the treatment and kept the records.

SECTION OF PHYSIOLOGY.

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DISCUSSION ON BASAL METABOLISM.

OPENING PAPER

BY

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BEFORE that very interesting and pertinent question, What is the significance of variations in the basal metabolism? can be answered much work requires yet to be done. The observation, which has been well established from data collected from all parts of the world, that there is a striking uniformity in the energy requirements of classes of people—for instance, farmers doing the same amounts of muscle work—suggests the possibility that a similar uniformity will be found in the basal metabolism—that is, the metabolism during complete muscular rest in the post-absorptive condition. The work of Du Bois and many others all points in the direction of uniformity. If this uniformity be well established then the answer to the question will certainly be simplified, but no light will have been thrown on the nature of basal metabolism. In my contribution to the question I shall try to deal with some of the physiological phenomena associated with the consumption of oxygen and leave to others the clinical aspects of the question.

I think it may now be stated without fear of contradiction that the trend of modern work is to break down the old-time barriers which were believed to exist between the metabolism of the different proximate principles. The "active" substance of the cells is the complex material protoplasm, a substance which incorporates within its structure protein, carbohydrate, and "lipoid" material. Further, the work of Dakin and others has shown that the intermediate products of the breakdown of carbohydrates can be utilized in the synthesis of protein. It is now also beyond question that proteins in their turn can give rise to carbohydrates, and probably also to fat, as carbohydrates can undoubtedly form fat. Again, evidence—at present more indirect it is true—is slowly accumulating which shows that fats in their turn can give rise to carbohydrate, and therefore may take part eventually in protein synthesis.

It would seem, then, that in the metabolism of the animal, with this apparently free interchangeability between the various proximate principles, we have a state of immense resiliency, and that very wide fluctuations in the nature of the diet may be possible without casting an undue strain on the organism. Such is the deduction, and all the prolonged experiments on starvation would go to prove that such is the case when the organism has its own choice of material to call upon. But if, instead of throwing the tissues, so to speak, on their own resources—drawing for their energy and their wear and tear quota on the stores of the body—drastic changes are made in the type of food material supplied, the resulting changes are quite different. The organism is flooded with potential food material of one type, and in the attempt to utilize or get rid of it profound changes in metabolism result.

When we confine our attention exclusively to the variations which occur in the composition of the urine we are definitely limiting our field of vision, we are confining our attention to a single facet—namely, protein. The urine is practically confined (disregarding for the time the inorganic constituents) to the disposal under normal conditions of the waste products of protein metabolism, and it is only when the tissues are flooded with abnormal products, as in acidosis, that other material is excreted. It is undoubtedly true that profound changes in the composition of the urine can take place. Whatever else happens the course of the metabolism of protein can apparently be drastically interfered with.

The other two channels of excretion through which we gain evidence of changes in metabolism are heat loss and the respiratory exchange—that is, intake of oxygen and output of carbon dioxide. In many respects the information which is to be obtained from the study of the respiratory exchange throws a much more brilliant light on the intracellular changes than does either the study of the heat output or the end-products of protein metabolism in the urine. In the latter we are dealing only with the waste products of intracellular activity, whereas in the former—the respiratory exchange—we have to consider not only the waste carbon dioxide but the intake of oxygen which is absolutely essential for the running of the organism. Unfortunately the difficulty we encounter here is the manner of the distribution of the absorbed oxygen between the combustion of the various proximate principles—in other words, the interpretation of the respiratory quotient. The relation between the intake of oxygen and the output of carbon dioxide is a mere ratio. Unfortunately there seems to be a tendency amongst some workers to lose sight of the fact that the respiratory quotient is a quotient and nothing more. The respiratory quotient (R.Q.) does not represent a single change: it is a quotient of probably many components, the result of innumerable activities, the summation of many and varied metabolisms, although of course it is equally true that at times and under special conditions it may be so drastically altered that it may be said to represent a metabolism predominantly carbohydrate or predominantly fat. But even in these cases, with the R.Q. at the so-called 100 per cent. carbohydrate or fat level, it is not to be inferred that all other metabolic activities are in abeyance: we may not assume that, although ostensibly there is 100 per cent. combustion of fat, no other combustion is taking place. It is a self-evident fact that all tissues are living, that the active metabolic

"furnaces" are the muscle cells, that so long as a tissue is living it requires an intake of oxygen; carbohydrate, far less fat, cannot be expected to burn, so to speak, on a cold hearth.

The problem, too, is not one of the possible combustion of the elaborate molecules of carbohydrate or of fat but of intermediate products of these, probably of relatively simple and, in the end, very similar products. The intake of oxygen for the so-called combustion of fat is not only required for the actual combustion process but for participation in a series of preparatory oxidative changes, in which the oxygen-poor fat is converted into a series of oxygen-richer molecules, which can, when the demand arises, be readily utilized by the active metabolic cells.

The laws of Berthelot and of Hess, although they undoubtedly express general truths which may or may not be universally applicable, just like the ordinary everyday use of symbols in the expression of chemical equations, tend, when used without due thought, to confuse the issue. Thus the chemical equations commonly employed to express the complete combustion of carbohydrates and fat--

$$C_6H_{12}O_6 + 6O_2 = 6CO_2 + 6H_2O. \quad R.Q. = 1.00;$$
and $$C_{55}H_{104}O_6 + 78O_2 = 55CO_2 + 52H_2O. \quad R.Q. = 0.707$$

—probably do express, more or less correctly, the amounts of oxygen required for the complete combustion of these substances and the amounts of carbon dioxide which result from this combustion; but we neither obtain any clue to the actual chain of events which take place nor to the possible variables in these changes. It is well recognized that we can get respiratory quotients much below 0.7 and above unity. Thus in the possible conversion of carbohydrate to fat there may be an output of "atypical" carbon dioxide expressed by a chemical equation, on paper at least, as follows:

$$4C_6H_{12}O_6 = C_{16}H_{32}O_2 + HCOOH + 6CO_2 + 6H_2O,$$
or $$13C_6H_{12}O_6 = C_{55}H_{104}O_6 + 23CO_2 + 24H_2O,$$

which has nothing to do with any combustion, but with a mere intramolecular arrangement. Or, on the other hand, we may consider the excessive intake of oxygen requisite for the conversion of fat to carbohydrate, presuming that the deductions of Pembrey, Krogh, and others are sound, with a correspondingly low output of carbon dioxide—

$$2C_{55}H_{104}O_6 + 6O_2 = 16C_6H_{12}O_6 + 14CO_2 + 8H_2O. \quad R.Q. = 0.23.$$

When the possible fates of protein are considered the chemical formulae for their expression are wellnigh endless, and, as these various mutations are for the most part even more hypothetical and obscure than the foregoing, they may be neglected.

Too often the assumption, implicit perhaps, is made when metabolism is under consideration that we are dealing only with a series of katabolic phenomena, whereas metabolism is a blend of anabolic and katabolic processes, with the balance weighted, in the healthy, well-fed organism, slightly in favour of anabolism. The stimulation of the metabolism by various agencies is constantly referred to, but what does the statement really mean or imply? What is basal or standard metabolism, and what relation does it bear to the average daily metabolism?

The term "basal metabolism" has been objected to by Krogh, who has suggested the introduction of the term "standard metabolism" on the ground that "the basal metabolism of an organ is not a constant quantity but can be modified experimentally by varying the external conditions (for instance, the temperature) and may probably vary also from internal causes." Krogh by his term "standard" means to imply simply "that all variations in metabolism brought about by functional activity have to be referred to this quantity as a standard." He finds, speaking generally, that true basal metabolism is about 75 per cent. of the standard—that is, it represents the standard metabolism as ordinarily determined less the aggregate influence of functional activities like cardiac or renal activity, respiratory movements, etc., in the resting body.

True basal activity, then, would represent the sum total of the various changes which are taking place in the cells, simply for the purposes of maintenance, the ordinary wear and tear, and the repair of the same. When food is given or functional activity increases, does a mere stimulation of the basal metabolism, with a corresponding alteration of its character depending on the nature of the stimulus, take place, or is there a new type of metabolism superimposed on the basal? To take a rough simile—are we dealing with an arrangement analogous to a gas fire supplied with a gas of constant composition and at a uniform pressure (which may from time to time but very gradually vary)? Let this lighted gas fire represent the basal metabolism: Is the metabolism of functional activity to be represented by, let us say, a spray of a combustible fluid sprayed directly on to the flame or by the combustible material being slowly introduced into the main gas supply? In the one case there would be a sudden burst of flame and heat without any material alteration of the original fire, a metabolism superimposed on the basal; or, in the second, we would have the actual character of the basal flame altered materially, according to the nature of the combustible substance introduced, and for a relatively long period; in other words, the basal and added metabolisms would be integral parts of the total metabolism. To my mind this is probably the most fundamental problem in the whole field of metabolism.

Benedict has made the general statement, with which I whole-heartedly agree, that basal metabolism is a function of the active protoplasmic mass of the organism. Few workers will, I think, be found to dissent from this sweeping statement. But what does it actually mean? what activities are comprised within this doctrine? It is undoubtedly true that the basal metabolism remains very constant over very long periods. Thus A. Loewy's figures, which extend over a period of fifteen years, are extraordinarily constant for oxygen intake in cubic centimetres—1888, 236; 1895, 228; 1901, 231; 1902, 238; 1903, 228. Both Magnus Levy and Johansson found a similar regularity over shorter periods, as did also Benedict and Cathcart. On the other hand, it has been shown just as definitely that by special treatment, such as a compulsory lowering of the food intake or of drastic alterations in the composition of the food, the basal metabolism may be markedly altered.

We may take it that the true basal metabolism is approximately a constant, and that in all probability it corresponds to the minimum chemical activity which is commensurate with the maintenance of life. The heat developed may be regarded as a necessary product, but, as Lambling puts it, not the physiological aim. For, be it noted, the external temperature at which the minimum is reached is not that of the organism itself, but is the temperature at which there is, to all intents and purposes, a balance between the heat loss and the minimal production of heat. When such a balance is obtained, as in the experiments carried out by Lefèvre, it was found that the standard metabolism was reduced by about one-third.

We have now to consider a question which is of immense importance to the clinician in the interpretation of the results obtained by the determination of the basal metabolism. Is there any variation of any kind in the so-called basal metabolism, and what is the effect of the different proximate principles on the metabolism?

Although the observations of Loewy already cited show that the basal metabolism remains approximately constant over many years, these observations were not intended to be more than approximations. It is obvious that in the consideration of variation one should inquire whether there is, in the first place, any diurnal variation in the metabolism in any way comparable to the diurnal variations which occur in temperature, pulse rate, and, as Leathes and others have shown, in protein metabolism. Johansson, Landergren, Sonden, and Tigerstedt, many years ago showed well that, irrespective of whether the subject is fasting or fed, a definite reduction in the metabolic rate takes place during sleep. One of the most complete proofs of this observation are the long series of experiments which Benedict carried out daily on a fasting man over a period of thirty-one days. He found that the average increase of waking metabolism over sleep was just over 13 per cent. (varying from 27 to 4.5 per cent.). He further noted that the subject had a much greater intake of oxygen in the late afternoon than in the morning.

Figure 1 shows a most curious and interesting relation between the diurnal variation in the basal metabolism, the heat output as determined by rectal thermometer, and the protein metabolism as determined by the output of uric acid. It is an interesting speculation as to whether the variation in the basal metabolism is determined by the diurnal variation in the metabolism of the cell constituents, or whether the variation in the output of nitrogen is conditioned by variation of the causal factors underlying and determining the basal metabolism, or, finally, whether they are simply parallel

changes with little or no causal relationship. Although it might be argued that the fall in the oxygen consumption during sleep is due to the reduction in the gross muscle activity, the fall in the output of nitrogen is almost certainly not due to this reduction in activity, as it has repeatedly been shown that the output of total nitrogen is rarely increased, provided the supply of appropriate food is adequate, even after the most strenuous work. Leathes also showed that the output of total nitrogen was highest at night.

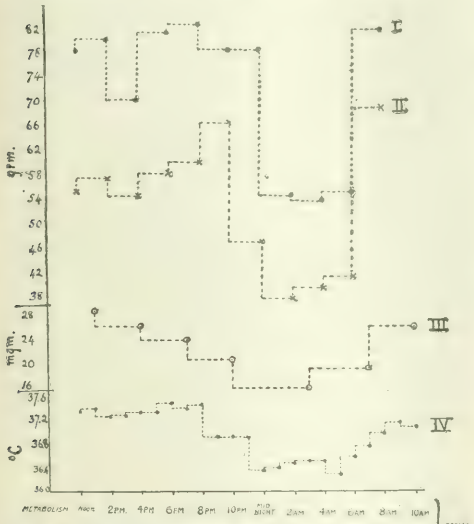


Fig. 1.—I and II, Carbon dioxide output (I with food, II without food) in grams per two hours (Johansson, Landergren, Sonden, and Tigerstedt). III, Output of uric acid in milligrams per hour (Leathes). IV, Body temperature in degrees centigrade (Benedict and Snell).

Curiously enough, Benedict found a figure almost identical with the sleep-waking difference figure—namely, *circa* 13 per cent.—for the percentage variation of thirty-five "normal" men who had been repeatedly examined (in all over two thousand times) over periods varying from $4\frac{5}{12}$ years to only 5 days—namely, 13.9 per cent. The average variation in the three longest periods was $4\frac{5}{12}$ years, 14.9 per cent.; $2\frac{5}{12}$ years, 25.9 per cent.; $2\frac{5}{12}$ years, 12.1 per cent.; and in the three shortest periods—5 days, 15.3 per cent.; 6 days, 8.1 per cent.; and 12 days, 4.9 per cent. The subject whom Benedict and I studied practically daily for four consecutive months had a variation of over 20 per cent.

Further, the series of observations of Palmer, Means, and Gamble, which incidentally point to the influence of the time of the year or a seasonal variation, are of considerable interest. These workers found that with a subject whose body weight remained practically constant summer and winter (variation of 0.2 kg.), the heat output per kilo was 21.4 calories in the winter and 19.2 calories in the summer. The determinations were made under practically identical temperature conditions.

It is, of course, well known, and disputed so far as I am aware by no one, that the average woman has a lower metabolic rate than the average man, and that children have a higher metabolism than adults. Moreover, Benedict has shown that athletes have a higher metabolism than non-athletes of comparable age and weight.

The other question as to whether variations result in the basal metabolism from variations in the nature of the food consumed is also of primary importance. It is to-day a commonplace to say that the information to be gained from the examination of a chance sample of urine is negligible, and it is also true to say that the information to be gained, even from the examination of a sample taken from a twenty-four hours' specimen, is of little value unless the nature of the diet taken by the subject is known. In my opinion this is equally applicable to the determination of the basal metabolism. It is perfectly true that basal metabolism is always determined in the post-absorptive state—that is, twelve to fifteen hours after food; but it is equally true that the condition of the body, the state of nutrition of the cells, is solely dependent on the food ingested, and it is very questionable if the cell contents will have reached a state of constant composition within the time given, irrespective of the previous nature of the diet.

It has been shown that the body has no great capacity for the storage of protein, and it has been stated by Rubner that protein deposited in the form of new tissue exerts no specific dynamic action. Still, the fact remains that protein ingested, as superimposition experiments have clearly shown, is not disposed of at once, that the output following the ingestion may be high for several days after, the duration of the excretion being dependent on the nature of the protein consumed. It is also true, as the following figures from Cathcart and Orr's paper clearly show, taking the Du Bois figure of 39.7 calories per square metre as an average figure, that the basal metabolism, strictly determined, is higher on the day following the ingestion of protein than on the days following the ingestion of either carbohydrate or fat.

	O2 Intake.	Cals. per sq. metre
Mean of all experiments on subject M. ...	242 ...	39.8
Ordinary mixed diet	252 ...	40.9
Carbohydrate diet	210 ...	35.6
Fat diet	212 ...	35.1
Protein diet	274 ...	44.8

Again, it is, of course, a well-documented "fact" that protein acts on ingestion as a direct stimulant of metabolism, and that, as the brilliant work of Lusk has so clearly demonstrated, most if not all of this effect can be referred to certain amino-acids. As regards the effect of the previous ingestion of carbohydrate or fat, both of which can be stored in the organism, in my opinion the answer is equally plain.

Benedict and Cathcart record in their experiments with M. A. M., whose average oxygen intake was 240 c.cm. a minute, that on the high, but not absolutely pure, carbohydrate diet the average intake was 234 c.cm., and on the carbohydrate-poor diet it was 250 c.cm. The experiments of Krogh and Lindhard are also of interest in this connexion; an analysis of all their data shows fairly conclusively that quite a marked difference exists between the oxygen intake on a carbohydrate-rich and a carbohydrate-poor diet. In three groups out of five the oxygen intake per minute on the carbohydrate-rich diet is very definitely below that on the carbohydrate-poor diet, and on the other two the intake on both diets was practically identical. The average of all the groups (including figures where the subject is stated to be on a fat diet, but where the R.Q. definitely shows that the glycogen reserve is being freely drawn upon, a reputed fat diet day with an R.Q. above unity) is 245 c.cm. oxygen a minute on the carbohydrate-rich and 257 c.cm. on the carbohydrate-poor days. Krogh and Lindhard, as the result of their work, conclude that the standard metabolism is not independent of the preceding diet. They found that when the diets are protein-poor the metabolism is lowest at intermediate quotients, and that it increases about 5 per cent. when the quotient falls to about 0.71 and about 3 per cent. when it rises to about unity. They also hold that their work shows that in this non-protein metabolism, both during rest and during work, the proportion of fat to carbohydrate katabolized is a function of the available supplies of these substances.

It is obvious, then, that the state of nutrition as regards the stores of food material in the tissues at the time of examination, even if the subject is in the post-absorptive state, plays a part in determining the level of the standard or basal metabolism, and that the nature of the previous diet is a factor which cannot be neglected in the final assessment. Is the converse true—namely, that when all the readily available stores are depleted and the organism is running at a low level the basal metabolism is depressed? This, again, is a problem of profound interest to the clinician, as so many of his patients are in a poor state, undernourished, or poorly developed physically. Benedict's figures, to quote a single series, show definitely that as the result of undernutrition the basal metabolism is undoubtedly below the so-called normal level—namely, the Du Bois standard. It follows that mere attention to the level of the metabolism, neglecting the physical state of the subject, may lead to very erroneous conclusions.

Still another factor which comes into operation and cannot be disregarded is the nature of the work done by the subject prior to the examination—not merely immediately prior, but on the previous day. Has he been active or at rest? What has been the duration of the rest period, and what has been the nature of the "rest" before the actual examination is made? What kind of night has the patient had? Have hypnotics been used? There is no doubt in my opinion about the prolonged after-effect of work. It is true that, if the pulse be taken as the guide of quiescence, very often it rapidly, or fairly rapidly, returns to its normal figure; but this is no true index of the effect of muscle work on the various metabolic activities. Just as it has been shown in certain experiments on protein metabolism that a slight rise in the output of nitrogen may take place several days after the spell of work has been carried out, so there may be a resultant increased, though gradually diminishing, consumption of oxygen extending over many hours after the cessation of work, when all the more generally recognized post-work symptoms have completely disappeared.

The real difficulty which confronts the modern worker in his interpretation of the value to be attached to basal metabolism data is that we have no very clear indication as to the causal relationships between cell activity, oxygen consumption, and heat output. In conclusion, then, I wish to put before you certain considerations, largely it is true of a hypothetical nature but based on experimental data. In that muscle forms the most important and most uniform bulk of active metabolic tissue it will be perhaps useful to see if any possible explanation can be given, using this tissue as type material.

Grützner in 1887 had adumbrated the idea that there might be two different parts of muscle involved in contraction, an idea which was put forward much more definitely by Bottazzi in 1901 as the results of his experimental work with veratrine. He suggested that there were two active substances in muscle, (*a*) the doubly refracting material, and (*b*) the sarcoplasm; the first of these, being very irritable, is responsible for active movements, whereas the second, much less irritable, accounts for tonus. A few years later Mosso, on the ground of Perroncito's observation that apparently muscle was innervated by two types of nerve fibre, suggested that muscle might respond differently, depending on the source of the stimulus. This work on the possible double innervation of muscle has been investigated by many different workers, but so far without leading to any general agreement. One of these workers, de Boer, came to the conclusion that tonus is associated with the sarcoplasm, is carried on metabolically at the cost of a slow utilization of protein, and is under the control of the sympathetic system; whereas the rapid movement is the result of stimuli passing down the motor nerve, leading to rapid combustion of carbohydrate in the anisotropic substance.

Other work which throws some light on the complicated problem is that in which curare has been utilized. Many years ago Zuntz and Pflüger both stated that the administration of curare brought about a marked diminution in metabolism. This conclusion was controverted by Frank and Gebhard, and later by Frank and Voit, who found that provided the dose of curare was not too great there was but little diminution in metabolism—a statement confirmed by the excellent work of Tangl. Mansfeld and Lukács, in the light of the possible double innervation and the fact that curare in moderate doses only affects the motor nerve endings, re-examined this question. They determined the gaseous metabolism of an animal given a dose of curare which just sufficed to abolish the capacity of muscle to respond to indirect stimulation before and after complete section of all nerve supply to the muscles of the hind limbs. They found that although this procedure brought about a denervation of only about one-third of the total musculature of the animal a marked reduction both in the intake of oxygen and the output of carbon dioxide took place; no such reduction occurred when the sympathetic supply alone was destroyed. In a later paper Mansfeld found that with massive doses of curare the sympathetic nerves can be put out of action. Incidentally he suggested that the so-called mechanical tonus is identical with chemical tonus. Still later Ernst, working under the direction of Mansfeld, published the results of an investigation into the nature of the source of energy for tonus and rapid contraction. He found that the glycogen content of muscle rapidly diminished as the result of stimulating the sciatic nerve, but that if a dose of curare were given (just sufficient to throw the motor nerve out of action) stimulation no longer caused the disappearance of glycogen; indeed, in some cases, the stimulated side actually contained more glycogen than the "normal" side. The inference to be drawn is that the chemical expression of rapid contraction and of tonus is different.

It would seem that there is a good deal of evidence, both direct and indirect, in support of the view that the activity of muscle is not a single simple phenomenon, but that we have to deal with at least two types of activity, one of which seems to be associated with the sarcoplasm, and to which the term "tonus"—plastic either in the sense of Sherrington or of Langelaan—is applied, and the other, which is associated with the sarcostyles, the activity of which is evidenced by the ordinary rapid contractile response. I do not for a minute pretend to decide between the conflicting views, but there is at least presumptive evidence in favour of the view that the first is under the control of the sympathetic, whereas the other is under control of the ordinary efferent motor nerve from the anterior horn. Again, the suggestion has been put forward that the tonic type is mainly associated somehow with the metabolism of protein, whereas the other is mainly associated with the metabolism of carbohydrate. The work of Pekelharing is certainly in favour of the view that the output of creatinine is in some way related to "tonus," and again the experiments of Cathcart and Leathes on the effect of involuntary work, in the form of shivering, on the distribution of nitrogen in the urine, tend to show that the metabolism of uric acid is of a peculiar order. It is very interesting that both of these substances, creatinine and uric acid, were found by Folin, according to his well-known work on the composition of the urine, to belong to the limited class of substances to which he gave the name of tissue or endogenous or constant metabolic products. Quite rightly, I think, he held the view that the demand or need for protein by the organism is small, and he clearly demonstrated that the more the total nitrogenous metabolism is reduced the more prominent do these constant metabolic products become.

Is it too presumptuous to suggest that these various endogenous products, not merely creatinine, actually represent the effects of the metabolism of the sarcoplasm—in other words, they are the metabolic products associated with "tonus"? In support of this hypothesis may be submitted the very interesting observations of Leathes, which were later confirmed by Wolf and Osterberg, on the diurnal variation in the output of creatinine and uric acid already referred to. It was found that the uric acid and also creatinine output was lowest during the hours of sleep—that is, of the most complete muscle rest—at the period when, to use Sherrington's interpretation of tonus, the postural contraction would be least in evidence. It is, of course, a fact of common knowledge that "tonus" is at its lowest during deep sleep (Lombard's work on the knee-jerk, for instance), just as it is reduced in positions of complete rest during the waking period. I should like to go even farther and suggest that the true basal metabolism is a phenomenon separable from metabolism in general, and that it is based for the most part on the sarcoplasm or "tonus" metabolism. It is generally admitted to be the lowest limit of metabolism compatible with normal tissue activity, and that it is certainly a function of the mass of the active metabolic tissue, of which muscle is the predominant material.

It is found that, just as is the case with uric acid and creatinine, there is a marked diminution in the gaseous metabolism during the hours of reduced tonicity—that is, during sleep (see Fig. 1). This is well established by the experiments of Johansson, Landergren, Sonden, and Tigerstedt, and of Benedict. If it be demanded that the heat output shall fall into line with these observations, then the continuous records of Benedict and Snell show this to be the case (see Fig. 1). The general result, which could readily be added to, is well summed up in Fig. 1, which I have constructed from the above observations. It is realized full well that such a hypothesis is in no way an explanation of one of the most interesting problems of physiology, but it is put forward in the hope that it is a contribution towards a narrowing of the issue. If it serves to emphasize the danger of drawing too far-reaching conclusions from basal metabolism data, from all types of cases and all kinds of patients varying physically and psychically, it will have served a useful purpose.

DISCUSSION.

Dr. J. B. Orr (Aberdeen) referred to some of the difficulties in the accurate determination of true basal metabolism, particularly to the influence of the psychic condition of the subject and the state of the endocrine glands. The theoretical lowest level of metabolism was unattainable under experimental conditions. In endeavouring to measure very low levels of metabolism we were really dealing with a pathological condition, because intake of nourishment and reactions to other stimuli, either chemical or nervous, were normal functions of the cell. He disliked the conception of normal metabolism as true basal metabolism with an addition superimposed. True basal metabolism was an abstraction. What we really studied was different levels of metabolism with varying degrees of intensity of many functional activities. In studying the influence of any factor on the rate of metabolism it was of course necessary to have a fixed base line, but that was merely an arbitrary condition where, as far as possible, the different factors that influenced metabolism were controlled, preferably at a low level, and specified.

Professor J. C. Meakins (Edinburgh) said that his own observations had been chiefly made in pathological conditions. The value of determinations of basal metabolism depended on the care with which they were made. If proper precautions were not exercised a valuable method for the study of disease might fall into disrepute. He described the conditions of observations in his wards and emphasized the importance of mental apprehension as a disturbing factor. It was sometimes necessary to accustom the patient to the procedure by dummy experiments.

Professor Meakins showed slides demonstrating abnormal levels of basal metabolism in thyroid disease and the changes due to treatment and operative interference. The effect of injections of adrenaline on basal metabolism, respiratory quotient, and blood-sugar content was also pointed out.]

Dr. G. B. Fleming (Glasgow) discussed the influence of growth on the basal metabolism. He explained that the energy expended in growth must be included in determinations of basal metabolism in children. This probably accounted, to a large extent, for the high basal metabolism found in growing children. He showed that as the rate of growth decreases the basal metabolic rate also decreases.

Dr. Leonard Hill (London) said that basal metabolism as determined by the respiratory exchange was liable to be raised by the inevitable obstruction to breathing due to the apparatus used. It could also be affected in the same way by voluntary hyperpnoea. Figures for the basal metabolism of subjects under many normal conditions were given. He then went on to discuss the influence on basal metabolism of rate of heat loss, quoting experiments where this factor was measured by the kata-thermometer. In the tropics basal metabolism might be one-third lower than in temperate climates on account of this. The rise in basal metabolism due to more rapid heat loss constituted an important part of the benefit resulting from open-air treatment. The effect was believed to be attributable to the open air and not to sunlight.

Dr. C. M. Wilson (London) referred to the question of the depth of pulmonary ventilation as affecting basal metabolism and of standards for patients in a state of real emaciation. In several patients suffering from menorrhagia with a high initial basal metabolic rate the exposure of the thyroid to *x* rays had produced a markedly beneficial effect.

Professor Cathcart, in reply to the points raised, said that the technique of determinations of basal metabolism required experience.* The rate of pulmonary ventilation might exercise an enormous effect. Sleep lowered the figures obtained as much as 15 per cent. At present we did not know what basal metabolism really was, but it was certainly the result of the interaction of a large number of factors. Personally he considered the question of muscle tonus as one of the most important of these.

* The portable basal metabolism apparatus used is the latest type of Dr. F. G. Benedict as modified by Roth and Collins. It can be obtained in this country from Warren Collins, Boston, through Messrs. Thomson, Skinner, and Hamilton, Glasgow.

THE DIAZO-REACTION, WITH SPECIAL REFERENCE TO URINE IN MEASLES.

(Preliminary Note.)

BY

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The cause of the diazo-reaction in urine has been attributed to a variety of substances. Clemens (quoted by von Noorden[1]) claims to have isolated the sodium salt of the substance responsible for the reaction. This substance contained 4.5 to 5.4 per cent. nitrogen. Others assume it to be due to chromoxy-proteic acids or to ill-defined members of this group of substances (Neubauer-Huppert[2]). Weiss[3] is emphatic that urochromogen is the substance responsible for a positive diazo-test. Engeland[4] isolated from 40 litres of normal human urine a small amount of histidine. He thus suggests that iminazole derivatives primarily cause the diazo-reaction in urines. Hermanns and Sachs[5] consider that in urines from tuberculous patients an oxidation product of tyrosine is responsible for the diazo-reaction. In the urine of a patient with acute liver atrophy these observers found oxyindolacetic acid.

The methods of carrying out the diazo-reaction in urine have been very varied. Suffice it to note here that, to avoid deaminization of colour giving amino-acids by the free nitrous acid of the diazo-reagent, the latter should be made alkaline before the addition of the urine to be tested. For reasons stated by Koessler and Hanke[6] sodium carbonate is for this purpose preferable to sodium hydroxide or to ammonium hydroxide.

So far as the author is aware, the diazo-reaction in urine has not previously been studied from a quantitative aspect. To find out the relative importance of the substances in measles urine giving a colour with the diazo-reagent a quantitative procedure has been attempted.

Five hundred c.cm. of a mixed sample of measles urine were quantitatively fractionated by lead acetate, lead acetate and baryta, and by mercuric acetate. A portion of the last fraction was further precipitated with silver nitrate, followed by silver nitrate and baryta. The colour value developed by the Koessler and Hanke[6] diazo-reagent was measured in the various fractions. The colour standard employed by these workers for histidine was here used as a standard. An orange light filter placed over the eyepiece of the Duboscq colorimeter was consistently used throughout the measurements in order to obtain a match with the yellow colour developed in certain fractions. The total colour value of the original 500 c.cm. of urine was found to be 86,500 mm.

The lead acetate fraction had a total colour value of 770 mm., the lead acetate baryta fraction a total colour value of 4,400 mm., the mercuric acetate fraction a total colour value of 87,500 mm., and the final filtrate a total colour value of 10,000 mm. The sum-total colour values of the various fractions is greater than the original for the reason that there are certain substances in the original urine which inhibit colour production. The portion of the mercury fraction taken for the silver baryta separation had an original total colour value of 12,600 mm. In the silver baryta fraction there were recovered 12,500 mm., or almost 100 per cent. The silver fraction and the final filtrate gave no colour.

From 1 litre of urine the silver baryta fraction was obtained as above. Creatinine was separated by precipitation with picric acid, the filtrate retreated with silver baryta, and the latter fraction finally precipitated with mercuric chloride. From this well-washed precipitate there was obtained about 0.1 gram of pure histidine monohydrochloride. (The amount actually present per litre was estimated at 0.31 gram.) It had the following properties: melting-point, 253° to 254°; melting-point, with decomposition, of the picrolonate, 231° to 233°. The microscopic appearance of both these salts agreed with authentic descriptions and with the same salts of histidine obtained from a different origin. There was found 16.9 per cent. (calculated 17 per cent.) Cl. The molecular colour value was 114.5 million mm. (Hunter).[7] It was positive to Knoop's test.

The substance mainly responsible for the colour not accounted for by histidine was not isolated, but partly purified and relatively concentrated solutions gave reactions indicating a phenolic constitution.

Conclusions.

1. In the urine from patients suffering from measles, histidine is responsible for about 85 per cent. of the colour developed by the diazo-reagent.

2. In measles the output of histidine in the urine is increased.

The writer is indebted to Dr. Elliot, of Ruchill Hospital, Glasgow, for the material, and to Professor E. P. Cathcart for much help throughout the work.

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SECTION OF DERMATOLOGY.

H. LESLIE ROBERTS, M.D., C.M., President.

DISCUSSION ON THE ETIOLOGY OF SEBORRHOEA AND SEBORRHOEIC DERMATITIS.

OPENING PAPERS.

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THE subject of seborrhoea was discussed in this Section of the British Medical Association in 1901 at Cheltenham when Colcott Fox introduced the discussion and Sabouraud and others took part in it. For some years prior to that much had been published, especially on the bacteriological side of the question, notably by Unna and Sabouraud. Some of that work has been confirmed since, and is generally accepted now, but many of the points raised then are still undecided, and unfortunately the whole subject is still in rather a confused condition.

So many different conditions are included under the terms "seborrhoea" and "seborrhoeic dermatitis" that it is necessary, in discussing their etiology, to divide them up into their clinical varieties. They fall into two groups—namely, (1) the true oily seborrhoea, using the word in its true meaning, and (2) the so-called seborrhoea capitis and seborrhoea corporis or seborrhoeic dermatitis. Both these groups have certain things in common, and it is impossible in discussing etiology generally to keep each clinical variety separate. As to the clinical lesions, I think most of us will be in agreement, but it is quite another matter when it comes to their interpretation.

Strictly speaking the term "seborrhoea" should only be applied to the oily condition of the skin due to increased secretion of sebum. Seborrhagia, steatorrhoea, flux sebacea (Rayer), and seborrhoea oleosa (Hebra) are the older names for the condition. It affects chiefly the scalp, face, central area of the body, back and front, and the flexures, and is generally accepted now as due to increased secretion of the sebaceous glands. A close inspection of the skin will reveal the large and patulous orifices of the sebaceous glands and the oily condition of the skin and scalp hairs. But as it is often associated with increased sweating as well, it is difficult to dissociate the two conditions. Unna prefers the term "hyperidrosis oleosa," as he believes that the greater part of the oil is derived from the sweat glands. No great support has been given to this theory as it does not agree with the clinical facts. Probably there is right on both sides, the increased sebaceous gland activity being accompanied by some hyperidrosis.

This oily condition of the skin is the basic factor in all forms of seborrhoeic eruption Is it an increase of a physiological process or is it due to an inflammatory infection of the oil-producing glands? The work of Sabouraud, Unna, and others has established the fact that a bacillus is always present in the sebaceous material in such cases, but, although Sabouraud claimed that the organism caused the condition, the tendency to-day seems to be to disagree with that view. All the evidence points to the condition being an amicrobic functional disturbance in the first instance. Before birth the sebaceous glands are very active, as is shown by the vernix caseosa, and at birth the infant frequently shows fatty plugs in the sebaceous gland orifices of the face, especially the nose. To this cause also the greasy adherent scales on the scalp of young infants—crusta lactea—are probably due. No one would suggest that these conditions at birth are of microbic origin. From birth on till puberty oily seborrhoea is not much in evidence, but with the development of the sexual glands the sebaceous glands become fully developed and the hair grows on the face, etc. It is difficult to estimate what is the normal oiliness of the skin, and there is no standard by which we can go. In some individuals the skin is probably naturally very much oilier than in others. It may be an hereditary characteristic. It is well known that the dark races have much oilier skins than the white. You may get ichthyotics with dry skin and deficient skin-gland secretions; why not other skins with increased glandular development? On the other hand, there may be other acquired factors which stimulate the skin glands.

Foods.—That diet is important no one will deny. Certain foods in excess, such as too much fat, starch, or sugar, have been blamed for making the skin oily. If a great deal of fat is deposited under the skin it is readily accessible to the skin glands. Montgomery states that all starches and sugars have, in process of digestion, to be turned into glucose, and if starch and sugar are taken in excess they are not all absorbed as glucose through the portal system and a great deal is thrown, through the lymphatic and thoracic ducts, into the circulation, without passing through the liver. This sugar, which is not so elaborately digested as that which passes through the liver, he considers, is irritating to the skin glands and causes their increased activity. He also states that many persons with seborrhoeic eczema have enlarged livers, probably from fatty infiltration or excess of stored glycogen. This might cause obstruction to the passage of glucose through the liver, and again the sugar is thrown direct into the circulation without going through the liver. Excess of sugar in the diet may also lead to increased fermentation in the bowel by its constipating effect, and the products of fermentation may lead to sebaceous gland irritation. Sterling pointed out that the milk fats, either as milk, cream, butter, or cheese, are more likely to lead to a deposit of fat in the skin than meat fats. The milk fats are oil emulsions, whereas in meat fats the fat cell has a membrane which has to be digested before the fat is absorbed, and therefore all milk fats are more quickly and easily absorbed than meat fats. Also the fatty secretion of the sebaceous glands in man and the higher animals consists almost entirely of cholesterol esters. These are very little liable to fermentation, and bacteria do not grow well in them. By taking a large quantity of milk fats the sebaceous gland secretes fats which are peculiarly liable to bacterial infection, hence excess of milk fats leads to infections of all kinds in the sebaceous glands. Alcohol, by dilating the skin vessels, may indirectly lead to stimulation of the sebaceous glands.

Apart from foods, there are some conditions which tend to increase the activity of the oil glands.

Heat.—Working in heated atmospheres and strenuous exercise increase the circulation in the skin, and in addition to causing sweating also increase the secretion of oil.

Clothing, etc.—The wearing of heavy clothing, especially flannel, is a well-known contributory cause of seborrhoeic eruptions. Want of cleanliness, irritation of dirt and dust, have also been blamed.

Anaemia.—It is well known that in anaemia the skin is often oily. The anaemia may lead to lowered oxidizing powers of the tissues due to want of sufficient oxygen and therefore to a tendency to the deposit of fat in the tissues.

Toxaemias.—The circulation of toxic substances in the skin may also excite the activity of the oil glands. This is especially the case in intestinal toxaemias and constipation. Acute infections such as the exanthemata and influenza are often followed by seborrhoeic eruptions, or existing lesions are aggravated.

Endocrine Glands.—The possibility of the endocrine glands having an influence on the skin oil secretion must not be lost sight of. Hyperthyroidism makes the skin softer and oilier than normal, but the excessive thyroid secretion may only be the result of some toxaemia which is really the primary cause of the condition.

Diathesis.—Lastly, it has been suggested that seborrhoeic conditions are due to an underlying disposition or diathesis of the patient. Darier describes the seborrhoeic diathesis as "la kérose." He considers it as an anomaly of the skin and not a disease in itself; not a trouble of nutrition of the skin, but a modification of the circulation of the glands and

the keratinization of the epidermis. He believes that individuals with this constitution have a hypertrophy of the sebaceous glands which lasts during their active sexual life. This condition makes their skin liable to the various infections known as seborrhoeids, and later ends with atrophic changes in the skin glands and hairs such as seborrhoeic alopecia.

Barber and Semon in 1918 again drew attention to this theory and support Darier's view that the tendency to seborrhoea occurs in a special type of individual, who is particularly liable to infections and inflammations of a seborrhoeic nature. They think that it may exist in infancy or may appear *de novo* in adults. They suggest that such individuals are suffering from a relative acidosis, and that, owing to insufficient intake of the mono- and di-sodium phosphates and carbonates in the diet, the normal alkaline acid equilibrium is upset. They point out the resemblance of this condition to what Czerny describes as the exudative diathesis in children, where their skins and mucous membranes are specially liable to bacterial infection, so that they suffer from adenoids, enlarged tonsils, glands, and skin infections. Barber and Semon suggest for this dyscrasia the term "status seborrhoeicus."

If this state is in some cases an acquired one due to faulty diet or digestion this theory is not so very far removed from the toxic and food theories. It has a great deal to recommend it, as it fits in with the clinical experience that all the conditions under discussion have something in common in the appearance of the skin and eruptions, and that appearance we are accustomed to describe as seborrhoeic.

Now that we have considered seborrhoeic conditions from the general standpoint, let us take each condition separately, and see wherein they differ in their special etiology.

The True Oily Seborrhoea.

This has already been considered, and the possibility of its being due either to an infection of the sebaceous gland with Sabouraud's bacillus, or to some general condition, either dietetic, toxic, or error of metabolism. But before leaving the subject mention must be made of associated conditions. The association of acne vulgaris with seborrhoea is well known, but as the cause of acne is hardly relevant to the subject under discussion I do not propose to deal with it further. The question as to whether oily seborrhoea leads to alopecia will be considered later under the next heading.

Seborrhoea Capitis.

Next let us consider seborrhoea capitis, and by that is meant the scaly condition of the scalp usually termed dandruff. Under this heading two conditions are usually included: (1) the dry scaly condition called by Sabouraud pityriasis simplex, and (2) the oily scaly condition which Sabouraud calls pityriasis steatodes. This latter condition may later become more inflamed, and lead to the so-called seborrhoeic eczema of the scalp. You are all acquainted with Sabouraud's views that pityriasis simplex is due to the spore of Malassez, and pityriasis steatodes to the spore of Malassez and the *Staphylococcus epidermidis albus*, and seborrhoeic dermatitis to these two organisms together with the seborrhoea bacillus; and with Unna's view that seborrhoeic dermatitis is due to the morococcus (*Staph. epidermidis albus*), so that it is not necessary to elaborate them further. I must say, however, that I have never been able to see any very clear line of distinction between the condition called seborrhoea sicca (pityriasis simplex of Sabouraud) and the more greasy form of the condition where the scales are oily and where there is occasional crust formation. It has always seemed to me that the one is probably only a further stage of the other. They have both this in common, that there is desquamation from the surface of the scalp, and the lesions are obviously inflammatory in nature, and all the evidence, both clinical and microscopic, points to an organismal infection of the skin and glands. Sabouraud ascribed pityriasis simplex to the spores of Malassez, and pityriasis steatodes to the spores and *Staph. albus*, but I do not see why one should go out of one's way to complicate matters when the same cause might operate in both cases. If one assumes that the infecting agent or agents in pityriasis simplex are simply growing in the superficial horny layers of the scalp it would lead to a branny desquamation such as one sees from the growth of the *Microsporon furfur* in pityriasis versicolor. If the condition goes deeper into the epithelium and pilosebaceous follicles of the scalp, then pityriasis steatodes would be produced; and if the infection goes deeper still in the epithelium and corium, then you get more marked inflammation with the production of seborrhoeic dermatitis. In favour of this view is the well known fact that pityriasis simplex is usually very amenable to treatment, as one would expect in such a superficial infection, whereas the other conditions are much more resistant, probably because, being deeper, it is more difficult to get the therapeutic agent into contact with the infecting agent. The one form often leads on to the other, and usually in the same sequence—first the simple scaliness, then oily scaliness with or without crusting. As Sabouraud's bacillus, the spores of Malassez, and the *Staph. epidermidis albus* are present in all three conditions, and as these organisms have all been found on apparently healthy skin, I do not see that one is able, in the present state of our knowledge, to decide what part each plays in producing the infection.

Before leaving this subject mention must be made of a condition which is generally allowed to be the result of seborrhoea capitis—namely, seborrhoeic alopecia or the common form of baldness. Sabouraud ascribed this to the oily form of seborrhoea, and held that it was due to the prolonged action of the seborrhoea bacillus and its toxins on the hair papillae, but I think it is a general experience that alopecia more often follows the scaly form of seborrhoea capitis, and that, if the hair remains oily, it may turn grey early but usually does not tend to disappear. Darier would include it under his condition of kerosis, and puts it down to an atrophy through fatigue subsequent to the excessive stimulation of the hair and sebaceous glands in the earlier stages of the disease.

The wearing of hard hats, too much brain work, want of exercise, and various other conditions have been suggested as at least predisposing causes to the condition; but, so far as I can find out, no one has suggested what I think is the obvious predisposing cause—namely, wearing the hair short. Alopecia is rare in females and appallingly common in men. The only difference between the way in which men and women treat their hair is that the one wears it short and the other long. The hair was meant to be long, and I take it that the normal stimulus to the growth of the hair is the long hair hanging down the back and blowing in the wind. There is a gentle pull on the hair bulb by the weight of the hair which reflexly through the nervous system keeps the hair in tone and stimulates the circulation in the bulb. If one keeps the hair short, one removes the stimulus to the healthy growth of the hair, and the seborrhoea of the scalp attacks the hair bulb and soon destroys it. Women may have seborrhoea capitis for years, and it practically never leads to the degree of alopecia seen in men. It is a well-recognized fact that all organs which are not used as they were meant to be become weak and liable to the attack of infecting agents. Men also go much more frequently to the hairdresser than do women, and I think it is there that they are probably infected with seborrhoea. The revolving brushes which some hairdressers use are probably particularly to blame, as considerable force is applied and the organisms removed from a previous customer's scalp are vigorously rubbed into that of the next one. This repeated reinfection with a fresh virus from another individual would account for the recurrence of seborrhoea capitis in men in spite of treatment. Most men are probably infected in boyhood, and at first the inflammation of the scalp leads to hyperaemia and stimulation of the growth of the hair. This is the stage at which most youths are at 17 or 18 on leaving school, and the same youth at 24 years or so is beginning to get bald. The only men who have, as a rule, good heads of hair are some of the professional musicians, and that is not because they are musicians but because they wear their hair long.

Seborrhoea Corporis and Seborrhoeic Dermatitis.

This includes the lesions which start as papular, papulovesicular, and vesicular, and end as scaly and crusted areas of a yellowish-red colour, usually spreading peripherally, sometimes clearing up in the centre, and typically seen on the sternal and interscapular regions. There are also the similar inflamed lesions which may occur on the scalp and spread down behind the ears on to the neck, in the axilla, groins, etc. There is no difficulty in assuming the parasitic origin of the more superficial forms of seborrhoea corporis where there are circinate lesions spreading slowly outwards. Here again the same three organisms as occur in seborrhoea capitis may be found, and here again I do not see how one is to decide which organism or combination of organisms is the cause.

The ease with which these cases are cured by local applications, the slight degree of itching present, and the gradual slow spread without marked variation from day to day which one sees in other forms of dermatitis are all in favour of a simple infection. The older theories about flannel, sweating, etc., are probably correct, but these causes are only contributory or predisposing.

But when larger areas are affected, such as the whole scalp, behind ears, axillae, groins, and round the umbilicus, the condition does not look quite so like a parasitic one. In these cases the affected areas are often vesicular, moist and oozing, and crusted, but that is not necessarily against a parasitic cause, as one sees vesicular lesions which ooze in the eczematoid ringworm of the hands and feet, where the lesions are undoubtedly due to a fungus. On the other hand, in the light of recent discoveries in eczema one must take into consideration the possibility of these cases of seborrhoeic dermatitis being a sensitization phenomenon. This applies more particularly to the cases where the eruption, although starting on the typical seborrhoeic areas, spreads more or less acutely and becomes more or less generalized. The eruption flares up and dies down again repeatedly, and is often intensely itchy as in other forms of dermatitis. These cases are also not so amenable to local treatment as the simple circinate ones. Are they cases of sensitization to some protein by internal absorption on which the seborrhoeic virus is implanted on the top, or are they due to the cells of the skin or sebaceous glands becoming sensitized to the protein of the seborrhoeic virus from the outside? This question arises particularly in the infantile dermatitis. Some dermatologists consider these as falling under seborrhoeic dermatitis. The affection of the scalp and face, the spread down behind the ears, the implication of the flexures, and the colour of the eruption in many cases, strongly suggest a seborrhoeic element in them. You will admit that a good deal of evidence has been brought forward to show that such cases in infants are due to sensitization to food proteins. If that be so, then the probability is that the lesions are secondarily infected with the seborrhoeic virus. Then by scratching there is no reason why the child should not sensitize himself to the protein of the virus and so produce a double internal and external sensitization eruption. The same remarks apply equally well to extensive dermatitis in adults, especially in the cases affecting chiefly the flexures with either a scaly seborrhoea of the scalp or an acute dermatitis there. Many of these adult cases get well after some weeks when put to bed and treated with weak sulphur preparations locally and without any alteration in the diet. The local treatment would kill off the virus, and in three or four weeks the dermatitis gradually subsides and does not tend to recur for months or years. Whereas in the ordinary so-called eczemas due to internal sensitization from foods or bacteria the cases tend to relapse repeatedly and local treatment often has very little effect in preventing recurrences. The fact that these cases usually take several weeks or months to recover is in favour of some sensitization being present as against a simple infection. A simple infection would probably get right in two or three weeks. You all remember the stubborn cases of seborrhoeic dermatitis met with during the war. I refer especially to the cases where there was a moist dermatitis of the scalp, ears, eyebrows, and often the beard region, which resisted all local treatment and tended to relapse in spite of treatment. These cases looked like ordinary cases of seborrhoeic dermatitis. Were these cases sensitizations to the seborrhoeic virus or some other organism? Autogenous vaccines were sometimes helpful in these cases, and it is possible that in addition to the seborrhoeic infection these patients were sensitized to the staphylococcus or other organisms in the skin.

As having a bearing in this respect the work of Strickler, Kolmer, and Schamberg is noteworthy. These observers did complement fixation tests with the serums of patients suffering from acne vulgaris, rosacea, and seborrhoeic dermatitis, using the acne bacillus (Unna-Sabouraud type), *B. coli*, and staphylococcus. Of the ten cases of seborrhoeic dermatitis which were examined, 30 per cent. reacted positively with the antigen of *B. acne* and 25 per cent. with the staphylococcal antigen. With the antigen of *B. coli* from acne patients, fixation occurred in 40 per cent. of the serums and in 11 per cent. with the antigen of *B. coli* from normal persons. Several of the cases were mild types of the disease, and that might account for the negative reactions with acne bacillus antigen. These results are interesting from two points of view. First they show the presence of antibodies to skin organisms in the serums of patients with seborrhoeic dermatitis, and support the view that a sensitization to these bacteria has taken place; and secondly, the percentage of cases which gave a positive reaction to *B. coli*, pointing to the possibility of intestinal absorption playing a part in the sensitization of the patient.

The question of a local sensitization of the skin to the seborrhoeic infection is another possibility. It is well known that seborrhoeic eruptions repeatedly recur in the same areas of skin each time. It is possible that these areas of the skin have become sensitive to the seborrhoeic virus, and, therefore, the eruption always recurs in these places.

There is also the type of case of seborrhoeic dermatitis of the head and face in adults where, quite suddenly, for no apparent reason, the whole face becomes affected with an acute erythematous and oedematous dermatitis with swelling of the eyelids, so much so as to suggest erysipelas. Is that an acute streptococcal infection with an organism allied to the erysipelas streptococcus on the top of the ordinary seborrhoeic dermatitis, or is it a sensitization phenomenon? The suddenness with which it comes on and the general appearance of the face suggest a dermatitis venenata. It is possible that the patient is sensitized to the seborrhoeic virus, and by scratching the thin skin of the face rubs in the virus, living or dead, and so produces a local dermatitis venenata.

Pityriasis rubra seborrhoeica must also be mentioned. Are these cases of pityriasis rubra with the seborrhoeic virus implanted on the top of it, or are they general sensitizations to the seborrhoeic virus? The cases of general exfoliative dermatitis which occur from time to time during or soon after the administration of drugs like arsphenamin must be considered as due to sensitization of the skin to these drugs, and similarly cases of seborrhoeic dermatitis going on to pityriasis rubra seborrhoeica may be due to the patient becoming sensitized to the seborrhoeic virus. The eruption spreads much too quickly and too generally to be an extension of the seborrhoeic condition.

The whole question of sensitization is still rather obscure, and further light is required in regard to the subject before any definite statement can be made, but I am convinced that in some at least of the seborrhoeic eruptions sensitization will be found to play a part in their pathogenesis.

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THE SEBORRHOEIC STATE.

[*Abstract.*]

IF by seborrhoea we merely mean an apparently excessive secretion of sebum it is extremely difficult, as Dr. Crauston Low has said, to determine the line between the normal and abnormal. The secretion is greater in the black races than in white, and on the whole among Europeans in people of the south than in those of the north. These differences probably partly depend on different climatic conditions, but there is no doubt that excessive greasiness, like excessive dryness, of the skin may be a familial and racial characteristic. One certainly meets with seborrhoeic families, and the Jews as a

race have oily skins; moreover, dark-complexioned persons as a rule have larger and more actively secreting sebaceous glands than blondes.

On the other hand, there is a pathological seborrhoea, and it is when this exists that the various types of eruption to which the epithet "seborrhoeic" is attached are apt to make their appearance. I am convinced that in this condition we are not merely dealing with increased secretion of sebum and sweat, but also with an alteration of their composition, and that it is this as yet not accurately determined change of composition, rather than the increase in the amount secreted, that renders the skin liable to active invasion with micro-organisms which the normal skin is able to resist. In favour of this view is the fact that, although in cases of seborrhoeic dermatitis there is usually obvious hypersecretion of the sebaceous glands, this is not always so. Indeed, one may meet with typical seborrhoeic dermatitis in ichthyotic persons.

There is, in fact, a seborrhoeic state, as Semon and myself insisted from our study of cases met with among the troops, and I may here say that, although further research carried out with Dr. Ryffel and others has caused me to modify my views somewhat, they remain substantially the same as when Semon and I published our paper five years ago. I can, perhaps, best give a vivid picture of this seborrhoeic state by describing the clinical appearances of an acute case; such cases, so common during the war, are still sometimes met with in civilian practice.

The face, scalp, ears, and neck are flushed, giving the patient a congested or plethoric appearance; the sebaceous glands are visibly hyperactive, as also are the sweat glands, so that even in cold weather droplets of sweat may be seen on the forehead, nose, and upper lip. If one tests one of these droplets with litmus paper it will usually be found to be strongly acid, much more so than the visible sweat obtained in normal people, and the high acidity cannot, I think, be due altogether to admixture with sebum. The vermilion borders of the lips are covered with a kind of yellowish scum, and examination of the nose, throat, and nasopharynx will show congestion of the mucous membrane, catarrh, and reddening and hypertrophy of the lymphoid follicles on the posterior pharyngeal wall. The urine is almost invariably highly acid, even if dilute, but occasionally the apparent anomaly occurs that is met with in some cases of diabetes—namely, that the urine may be only slightly acid, neutral, or even faintly alkaline when first examined, but on administering alkalis one finds that for a while it becomes more acid.

In this state the resistance of the skin and mucous membranes to bacterial invasion is diminished; in other words, there is apt to result what may be termed a catarrhal inflammation both of the skin and of the mucous membranes of the nose, nasopharynx, eyelids, conjunctiva, penis, and vulva. The micro-organisms concerned are chiefly the pyogenic cocci, particularly the *Staphylococcus albus* and *aureus;* of less importance are the acne bacillus and the so-called "bottle bacillus," which affect the skin alone. These various organisms produce eruptions whose clinical features differ according to the anatomical position in the skin of the inflammatory changes, the particular organism concerned, its virulence, the resistance of the patient, and the severity and duration of the predisposing seborrhoeic state.

The problem is a difficult one, but I think that, clinically at any rate, we must draw a distinction between seborrhoeic dermatitis, whether occurring in the follicular petaloid form (flannel rash) or as a scaly dermatitis (eczématide), and what I term true seborrhoeic eczema.

My view at present is that we must recognize three distinct conditions: (1) seborrhoeic dermatitis due to infection of the skin with a *Staphylococcus albus* or *aureus;* (2) primary acute seborrhoeic eczema due perhaps to irritation of the skin produced by some acid substance taken up by the epidermal cells; (3) infective eczematoid dermatitis due to sensitization of the skin to pyogenic organisms having occurred, and probably, not always although usually, associated with the seborrhoeic state. This may supervene in either 1 or 2.

The Urine in the Acute Seborrhoeic State.

It is in cases of the acute seborrhoeic state with acute or recurring attacks of seborrhoeic eczema or dermatitis that I have carried out most of my investigations with Drs. Ryffel, Joffe, Grace, and Payne. As I pointed out in the original paper written with Dr. Semon, these cases show increased alkaline tolerance often to an extraordinary degree—that is to say, large doses of alkali may have to be given before the urine becomes alkaline. This fact has been observed in a large number of cases met with since the war, not only among out-patients, in whom, of course, one cannot be absolutely certain that the dose of alkali prescribed has actually been taken, but also among patients in hospital in whom the amount taken is accurately known, and whose urine can be examined daily.

Dr. Ryffel has kindly investigated the urine of several of my cases with a view to determining the ammonia ratio and what may be termed the acid ratio. The former is, of course, the ratio of nitrogen excreted as ammonia to the total nitrogen, and is very high in diabetes; the latter is the acidity of the urine expressed in the same terms as the ammonia ratio. A survey of his figures shows that in these cases both the ammonia ratio and the acid ratio tend to be higher than normal, sometimes very markedly so, and the sum total of the two ratios is almost invariably high.

The question naturally arises whether the alkali in these cases is absorbed. In order to test this point Dr. Payne kindly investigated the faeces of one of my patients who was taking very large doses of alkali, and he found that their mineral content was not above normal figures, showing that absorption had taken place. We may therefore consider it established that in probably the majority of cases of the seborrhoeic state in its severe or acute form there is diminished alkali reserve, often to a very striking degree.

The Blood Sugar in the Seborrhoeic State.

Dr. W. H. Grace, working in my department at Guy's Hospital, carried out some investigations on the sugar content of the blood four or more hours after a meal in certain skin diseases, using the Folin-Wu method of determination, and comparing the results obtained with numerous controls. He found that in cases of acute seborrhoeic eczema or dermatitis, uncomplicated by septic infection in the form of boils, pustules, or abscesses, the sugar content of the blood was not as a rule much above normal, the average figure being 0.116 per cent. In chronic cases, however, in which secondary pyogenic infection had occurred the figure was much higher, averaging about 0.2 per cent., and in some cases reaching 0.28 per cent. It was found that the improvement in the condition of these patients proceeded *pari passu* with the fall in the blood-sugar content.

The Etiology of the Seborrhoeic State.

The chief underlying cause is, in my opinion, faulty digestion and metabolism of carbohydrate, and to a less extent, perhaps, of fat, whereby an excess of organic acid by-products is produced. These are apparently secreted through the sebaceous and sweat glands, causing not only excessive secretion, but also, of course, an alteration in the composition of the sebum and sweat. It is probable, too, that these acid products are taken up by the cells, not only of the glands, but also of the whole epidermis and mucous membranes, and are combined with or dissolved in the fatty substances in which these cells are so rich. At any rate, as Darier suggests in his description of "la kérose," there is presumably an alteration in the chemical composition of the epidermal cells which produces a modification of the process of keratinization, and diminishes their resistance to bacterial infection, probably by affording the bacteria a more suitable medium for active growth.

Once the bacteria—staphylococci and the acne bacillus—become established another factor comes into play—namely, bacterial sensitization or susceptibility, which is not confined merely to the skin, but affects the system as a whole.

The origin and nature of the acids responsible for the diminished alkali reserve and the high ammonia ratio in the seborrhoeic state probably result from the improper digestion and incomplete oxidation of carbohydrate and perhaps fat. The evil effect of an excess of sweets, cakes, pastries, etc., in patients with acne or seborrhoeic eczema and dermatitis is well known clinically, and in my opinion the chief factor in the production of the seborrhoeic state is the taking of an excess of soft carbohydrate foods and their imperfect digestion and oxidation. The diet of a large proportion of our population of both lower and upper classes is hopelessly unphysiological, especially in large towns. The tendency is to take an undue proportion of soft, concentrated carbohydrate food, which cannot be masticated and which is far in excess of the needs of a person living a sedentary life, very often in overheated, imperfectly oxygenated surroundings. On the other hand, fresh green vegetables and fruit, which supply a maximum of alkaline salts and a minimum of nutriment, are taken sparingly or not at all by many people. Some, too, not only take an excess of carbohydrate but devour large quantities of meat as well. I am in the habit now of asking

many of my patients to write down everything they eat during a period of three or four days, and their resulting diet sheets are often amazing.

Treatment.

I will conclude by considering the treatment of the seborrhoeic state, the principles of which are based on the etiological factors I have suggested. In its acute form, which may be associated with primary seborrhoeic eczema, the administration of large doses of alkali without any local treatment is specific. When sufficient alkali has been given the flushed appearance and the hypersecretion of the sebaceous and sweat glands disappear, and the eczema, if present, dries up. Moreover, the patients confess to a feeling of well-being, their appetite returns, and the sensation of heat and itching in the skin is lost. In the chronic form of the seborrhoeic state, in which bacterial infection has become established, producing clinical seborrhoeic dermatitis, acne, sycosis, etc., the problem is not so simple, for bacterial sensitivity has become a superadded factor, and is often the more important. Treatment then consists in regulating the diet as one would in a mild case of diabetes, in insisting on regular out-of-door exercise, in ensuring a sufficient intake of alkaline salts by giving plenty of fresh green vegetables and fruit, and, if necessary, by administering sodium bicarbonate before meals; in removing any septic condition of the mouth and throat, or a focus such as a chronically inflamed appendix; in prescribing full doses of hydrochloric acid after meals if there is hypochlorhydria or achlorhydria, as there is in most cases of rosacea, and in giving an autogenous vaccine prepared from the infecting organisms. Local treatment in these cases is, of course, of great importance, and its rationale is to render the skin dry by means of sulphur, salicylic acid, resorcin, the mercurials, and the *x* rays. But unless the diet, the digestion, and the mode of life of the patient are regulated, relapse is almost certain to occur when the local treatment is discontinued. With regard to vaccine treatment, I am aware that many observers of greater experience than my own are unconvinced of its value. It is probable that chemotherapy by preparations such as collosol manganese and stannoxyl may eventually take its place, but till then I shall remain one of its strongest advocates. It must, however, be controlled by serological tests, it must be given intelligently, and it must be combined with rational treatment of the underlying pathological state which has led to the lack of resistance to the infecting bacteria. I believe that the unfavourable opinion that has been formed by many dermatologists of the value of vaccine therapy in infective conditions of the skin is due partly to the use of stock vaccines, which I have now entirely abandoned; partly to the fact that the specificity of the organisms isolated is not determined by serological tests; that the dosage is injudiciously planned—for it is easy to make a condition worse with vaccines—and that the injections are not persevered with long enough; and partly that the underlying factors, which have lowered the patient's resistance to infection, are neglected. In some chronic cases of infective eczematoid dermatitis and of generalized seborrhoeic dermatitis, which are often accompanied by boils and hydradenitis, I have found all treatment unavailing until an autogenous staphylococcal vaccine was given, whereupon steady improvement began and continued until a cure was obtained. In some of these stock vaccine had been given without effect. In spite of all arguments to the contrary, my clinical experience has convinced me of the specificity of vaccine therapy, and, until we can find infallible methods of chemotherapy against the various types of infecting organisms, I believe that specific vaccination will continue to be the method of choice rather than non-specific protein therapy.

DISCUSSION.

Dr. R. W. MACKENNA (Liverpool) expressed the pleasure the Section had derived from listening to the two opening papers. He agreed with the remarks made by the President in introducing the discussion that the results of the frontal attack upon the question of seborrhoea and the seborrhoeides had been somewhat unproductive of definite results; but he believed that the flanking attack made by Dr. Barber and his colleagues on the question, along the lines of biochemistry, was likely to be much more fruitful. He paid a compliment to the work done by Dr. Barber during recent years—work which was likely to leave a permanent mark on dermatology. With regard to seborrhoea, he was of opinion that the hyperactivity of the sebaceous glands, which was a necessary antecedent to all the skin lesions classed as seborrhoeic dermatitis and the seborrhoeides, depended on some stimulation by the secretions of the endocrine glands. But the oversecretion alone was not everything. There was some other factor, and that factor was probably a micro-organism of some sort. When he read Dr. Barber's and Dr. Semon's original paper on the seborrhoeic state he was of opinion that they had made an illogical and unwarranted deduction from the facts before them; for it was unsound reasoning to conclude that over-elimination of acid in the urine told us anything about the alkali reserve in the body. Overacidity of the urine might mean simply overproduction of acid, and equally rapid elimination in order to keep the alkali reserve normal. Dr. Barber's paper that day, however, embodying the results of his later researches, proved that his (Dr. Barber's) original deduction was correct—namely, that in seborrhoeic conditions there was a definite lowering of the alkali reserve, and, coincidently, an increased alkali tolerance. He did not agree with Dr. Cranston Low's theory as to the retention of their hair by women. It depended, he believed, on endocrinous secretions. As Sabouraud long ago pointed out, eunuchs never go bald. With regard to protein sensitization in the skin he agreed with Drs. Low and Barber that the possibility of its place as a factor in the production of seborrhoeic dermatitis should not be forgotten; but he thought one should go warily in using protein sensitization as an explanation of all dermatological conditions of obscure cause.

Dr. KENNETH WILLS (Bristol) said that emphasis should be laid upon the infective nature of pityriasis capitis. He had found from clinical observation that eczema seborrhoicum ran in families, and that it was directly conveyed from parent or nurse to children. It was caught on the parts of the skin exposed, and might spread from those inoculation points. The primary lesion was a plugging of the follicles, followed by circumfollicular erythema with itching. Subsequently rubbing and scratching led to "eczematization." The same observations might be made in adults, where the cocci were conveyed from a scurfy scalp by scratching. Thus an insect bite or other simple itching lesion might become infected with eczema seborrhoicum.

Dr. DOUGLAS HEATH (Birmingham) said that he also had noted that large doses of alkalis improved acute seborrhoeic conditions, and he had also found that sulphur lotion was much improved by being made up in alkaline solution. Olive oil, although a popular remedy, he considered was very deleterious to seborrhoea. He had obtained good results in the treatment of acne from the use of a mixed vaccine.

Dr. A. M. H. GRAY (London) asked the meeting to define what was meant by seborrhoea, seborrhoeic dermatitis, and seborrhoeic eczema. He considered seborrhoea to be a mere excessive secretion of the sebaceous glands; he excluded from it conditions where there was any inflammation whatever. Seborrhoeic dermatitis he called those cases where there was some inflammation, the most typical of which were the cases of circinate and figurate dermatitis in the centre of the chest and back, also pityriasiform conditions of the scalp. In both of these bacteria, but of doubtful nature, were concerned. He refused to associate premature alopecia with the barber's shop and local infection; in the present state of our ignorance of the endocrine glands he preferred to stress the hereditary factor in these cases.

Dr. NORMAN WALKER (Edinburgh) believed, on the contrary, that the local cause was responsible for the loss of hair. He believed in frequent washing of the scalp as a preventive of baldness, and in the treatment of the scalp as the key of all the treatment of seborrhoeic conditions, and above all of rosacea. He also emphasized the importance of treating oily seborrhoea of the scalp when treating acne vulgaris. He referred to the importance of dermatoses, especially scabies, in war.

Dr. O'DONOVAN (London) referred to the frequency of hyperglycaemia in connexion with inveterate sycosis, but found that the exhibition of alkalis was of no therapeutic value. He had got the best results in bad sycosis from painting with the liquid acid mercury nitrate, which was painful but effective.

Dr. F. ANDERSON MURRAY (Glasgow) said that the question of treatment of seborrhoea and seborrhoeic dermatitis was especially interesting; he thought that insufficient attention

had been paid to the preventive treatment of seborrhoea. He thought that the scalp was frequently infected in childhood, and should be treated accordingly. Later in life the condition frequently was a question of occupation. Diet was also of considerable importance: patients prone to the condition should be sparing in the use of starch and sugar.

Dr. W. H. Brown (Glasgow) referred to two cases in which gastric analysis showed great hyperacidity. Dr. Lancashire (Manchester) also emphasized the importance of the preventive treatment against seborrhoea during childhood. He said that in local treatment he got the best results from sulphur in the form of ointments. He had been disappointed with colloidal sulphur.

Dr. J. Goodwin Tomkinson (Glasgow), in view of the conflicting theories as to the causation of seborrhoea, hesitated to dogmatize. He was, however, strongly inclined to accord a very important part to the microbacillus of Sabouraud. It was known that in some instances it might be present in the skin without causing any apparent modification in secretion, but its constant presence in teeming numbers in the cocoon was, to say the least, suggestive. This raised the question of contributing factors—factors which elicited or determined the pathogenic faculties of the microbacillus. On the one hand, these might be internal, on the other local, due possibly to the symbiosis of two or more members of the cutaneous flora. Among the internal causes one connected with the maximal manifestations of seborrhoea was puberty, which was associated with great glandular activity. Again, there were other adventitious internal conditions known to aggravate the eruption of seborrhoeides. It was well known that overwork sometimes determined an outbreak of seborrhoeic dermatitis. He had had a striking instance of this in his own practice about two years since. A medical student, long the subject of seborrhoeic dermatitis in the presternal region, had had the misfortune to fail in his final examination and had been unduly depressed thereby. He had also been unduly addicted to sweetmeats. When seen by the speaker he was confined to bed and feverish, and his skin was in a condition of generalized exfoliative dermatitis.

The President (Dr. Leslie Roberts, Liverpool) said that the conclusion arrived at as to the nature of seborrhoea depended on the point of view taken by the investigator. Clinical investigation carried them but a little way. There were two main lines of promising research: (1) that of the comparative microscopical anatomy of the vertebrata; (2) the biochemical method. The comparative anatomical method brought to light a remarkable correlation between the pilogenetic and sebaceous functions of the follicles. In the fulfilment of both these functions cells were cast off bodily. The follicle was, in fact, a primitive moulting organ, in the exercise of which function the clinical manifestations were strikingly different—namely, alopecia or baldness, or the arrested development of hair, as in the lanugo hairs, coupled with an increased output of fat-laden epithelial cells. Alopecia areata was the most complete example of the seborrhoeic or moulting process. In birds and reptiles in which the keratin-laden cells amounted to an exoskeleton, the sebaceous glands were either entirely absent or were gathered together into a single gland mass situated at the root of the tail of most birds, or were remarkable for the paucity of their numbers. The same correlation was observed in the human skin in the palms and soles, where some approach to a horny exoskeleton was found. If the true fat glands of the skin were looked upon as organs for the secretion of fatty acids, then the true fat glands of the mammalian skin were the sweat glands which found their highest development in the mammalian milk glands. The biochemical line of research would probably carry them farther into the heart of the subject than the anatomical. Dr. Barber and his collaborators had done useful work on those lines. They had ascertained experimentally certain facts which confirmed the opinion of Darier and others that the moulting process of keratin and fat cells was associated, and indeed was the outward manifestation of a chemical condition of the tissue fluids which seemed to consist, in part at least, in a lowering of the basal salts. Dr. Barber and Dr. Semon had demonstrated an increased alkaline tolerance in severe cases of seborrhoeic dermatitis. The interpretation of the biochemical data was, however, extremely difficult, and before this observation could be definitely established as a general truth it was necessary to ascertain whether lowering of tissue alkalinity and increased acidity of the urine was not a natural accompaniment of all cutaneous and visceral inflammations. It had been shown to accompany erysipelas and pneumonia, and the question arose as to whether the hypo-alkalinity of the tissue fluids was not due to the withdrawal of basic salts from the blood, and in reality had no connexion with the seborrhoeic process itself. This must be left for future investigation to decide.

The question of blood sugar was one of great practical importance in relation to inflammation of both the skin and the viscera. That its presence in the inflamed tissues was inimical to recovery was well established, but it was necessary to differentiate between the saccharides. Taking glucose as a typical monosaccharide, it had been shown by Folin and Berglund that the ingestion of 200 grams of pure glucose did not raise the level of the blood sugar above the renal threshold of glucose secretion. There was reason for believing, as Folin and Berglund had pointed out, that the absorption and excretion of foreign unsuitable carbohydrate material present in grain, vegetables, and fruit was of daily occurrence; and to this must be added the decomposition products due to cooking, canning, and baking of the food. There was, so far as we knew, no mechanism in the digestive tract for preventing the absorption of these soluble but incompletely digested carbohydrates. These authors further suggested that foreign carbohydrates played an important part in the etiology of many obscure skin and joint troubles. But we were going farther than the evidence warranted if we assumed that they were essentially connected with the seborrhoeic or moulting process. Turning to the clinical side of the seborrhoeic dermatoses, he was bound to admit that the group was vague and ill defined. All inflammatory reactions which were frankly connected with the moulting process could be rightly called seborrhoeic. These included the dry, discoid or circinate, infiltrated, hyperaemic patches met with on the front of the chest and on the back. The eczematization of the scalp coexisting with the loss of hair and increased output of sebaceous material must also be included in the group, and this form in many cases showed a tendency to spread downwards behind the ears, and to appear in the bends of the elbows and groins. In the war forms of severe "seborrhoeic dermatitis" described by Dr. Barber it was probable that an emotional factor played a considerable part in determining the form and distribution of the disease.

Dr. Cranston Low, in his reply, again emphasized the necessity for a revision of the nomenclature, and said that there would always be confusion until the term "seborrhoea" was only used in its true sense. He referred again to the cutting of the hair as the cause of common baldness. In races such as the Cingalese, where the men all wore their hair long, baldness was practically unknown. Dr. Low also sounded a note of warning with regard to the inferences to be drawn from the biochemical changes in the blood and urine in seborrhoeic conditions, and suggested that these changes might be the result and not the cause of the skin condition.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MELANOTIC SARCOMA OF CHOROID AND OVARY.

Melanotic sarcoma appears to be accepted as the most virulent form of malignant tumour on account of the early date at which it forms secondary deposits in other parts of the body. For this reason, and because the literature on the subject is meagre in quantity and lacking in details, I venture to describe a case which shows some interesting features.

Mrs. M. is now 38 years of age and, with the exception of minor ailments incidental to an overstrung nervous temperament, and severe eclampsia previous to the birth of her second baby seven or eight years ago, has enjoyed fairly good health. She has worn an artificial right eye for many years, her explanation being that the sight failed in her right eye in August, 1906, and following a course of medical treatment (during which sixty bottles of medicine were consumed) the eye was removed on April 24th, 1907, for a "small tumour"—she being then 23 years of age.

In September, 1921, she consulted me about a small lump she had noticed under the skin of the right upper arm near the anterior border of the deltoid muscle. The skin being thin and fair the tumour showed almost black beneath. I excised a dead black lobulated growth the size of a horse bean. On microscopical

examination it proved to be a typical spindle-celled melanotic sarcoma, melanin permeating the cells as well as being intracellular. In view of the fact that her eye had been removed fourteen years previously I obtained from Mr. Collier Green, who performed the operation, the information that there was a small tumour of the choroid close to the ciliary region, which on examination was pronounced to be a pigmented spindle-celled sarcoma. I thereupon made a complete examination of the patient and found another subcutaneous tumour in the middle of the back near the fifth or sixth dorsal spine, and *per vaginam* a tumour the size of an orange—whether uterine or ovarian I could not determine. Mr. H. T. Hicks, gynaecological surgeon, was called in consultation, and advised early removal of the tumour. This was carried out on October 3rd. The subcutaneous growth in the back was first excised and was found to be similar in all respects to the one I removed from the arm. The pelvic tumour was ovarian (left), the size of a large orange, glistening black and lobulated, solid with the exception of a small cyst containing dirty black fluid. The section was dead black. The right ovary was apparently healthy, but it was deemed advisable to remove it.

The pelvic glands did not appear to be involved and other organs were apparently normal. On microscopical examination both growths proved to be spindle-celled melanotic sarcomata.

Recovery was complicated by cerebral symptoms suggesting thrombosis; the patient lay in a restless and semi-unconscious state for two or three days. This slowly passed off, and in a few weeks' time she had more than regained her usual health; in fact, all her friends tell her she has never looked so well. She has put on weight and has a nice rosy colour in her cheeks. No sign of recurrence could be found at a complete examination on March 29th last; this I am going to repeat again shortly.

The interesting features are, first, the long time which has elapsed between the first onset of the disease (the primary growth of the choroid) and the appearance of secondary growths in the skin and ovary—namely, fourteen years; this is all the more striking as failure of sight was noticed eight months prior to the enucleation of the eye. Secondly, the absence of lymphatic gland involvement. Thirdly, the absence of any further trouble nine months after operation.

H. G. W. Dawson, M.B., Ch.B.

Derby.

LUPUS ERYTHEMATOSUS TREATED BY DIATHERMY.

From time to time cases of lupus erythematosus treated by diathermy are recorded, but in all cases fulguration appears to be the method adopted. As a different method was employed in the following case with a satisfactory result, the notes may prove of interest.

Mrs. S., aged 35, was sent to me by Dr. W. B. Mackay, C.M.G., of Berwick, on February 25th, 1921, who asked me to try the effect of diathermy. About five years previously she had noticed a small red itchy spot on her nose during the winter. It disappeared during the warm weather, but reappeared the following winter, and since then had gradually become larger. Dr. Mackay was then away serving in the army, but she received treatment without relief, and was seen by a well-known dermatologist in another town, who diagnosed lupus erythematosus, and prescribed for the condition, which, however, proved obstinate.

When I saw her first the lower two-thirds of the nose were affected. Gauze dipped in saline was placed over the nose, and a soft metal pad moulded over it. The current was then turned on, and gradually increased to as much as she could bear, the idea being to get a vigorous reaction, but to stop short of burning. She was told to say when the heat became severe, but in spite of this and of frequent inspections a small burn appeared. The current used was 500 to 600 milliampères. Owing to various causes she was unable to return till May 5th, when there was a considerable improvement in the condition. The burn, which had been superficial, had healed with very little scarring. On this occasion the current was kept at about 300 milliampères, and switched off whenever she complained of the heat. Improvement again occurred. After a third application the nose was normal in appearance, and the patient, who previously was very unhappy about her disfigurement and had avoided mixing with others, was much brighter and was going about much more.

About the end of November a very small red itchy point reappeared. This was again treated three times, and from the middle of January was not visible, but two further applications were made, one in February and one in March. Two months later she again came to see me as she felt a little irritation, and though nothing was visible a precautionary application was given. I saw her again on July 30th, when the nose appeared in every way normal and the scar scarcely visible. I hear that she is free from any return at present.

Each application took from twenty-five to thirty minutes, and the nose was inspected frequently lest any burning occurred. After each treatment the nose was very red and swollen for a few days.

I have not seen any mention of this method being used before, but think that applications at shorter intervals than it was possible to give in this case would be better.

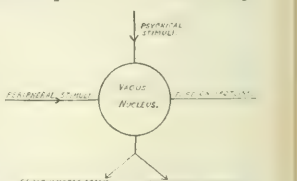
W. J. Harrison, M.B., M.R.C.S.,
Surgeon, Ear, Nose and Throat Hospital, Newcastle-on-Tyne.

Reports of Societies.

THE PROBLEMS OF ASTHMA.

The Section of Therapeutics and Pharmacology of the Royal Society of Medicine held its first meeting of the session on October 10th.

Dr. W. Langdon Brown, in his presidential address on the problems of asthma, said that in pursuance of his conception of the functions of the Section he had chosen as his subject one which had both clinical and experimental aspects. The problems of asthma were for years most baffling, but recent work had cleared the ground and defined the issues. Those problems had now revealed themselves as involving subjects of most topical interest—psychotherapy, sensitiveness to foreign proteins, vagotonia, and endocrine balance. The treatment of asthma summarized in itself, as it were, the chief trends of modern therapy. But there had been a tendency on the part of enthusiastic workers in some one of those fields to neglect due consideration of the other aspects: successful treatment implied recognition of them all. It was always a dangerous thing to try to express a disease in a formula. Nevertheless, he attempted to do so for asthma not long ago. Hurst had recently improved upon that formula, and he accepted his emendation gladly. Hurst had defined asthma as due to an unstable or irritable condition of the bronchomotor portion of the vagus nucleus, which caused it to react unduly to psychical or peripheral stimuli, or to foreign proteins in the circulating blood. He (the President) thought that this could still be modified with advantage by including the obvious vasomotor turgescence which accompanied the bronchomotor spasm, as it was always present and was sometimes the most striking feature of an attack, just as it was in the closely allied condition of hay fever. Moreover, it was carried out by the same vagal mechanism. Thus modified, the formula could be expressed diagrammatically by the accompanying figure.



He would first consider the stimuli acting on the centre and then some features of its response.

Psychical Stimuli.—That asthma often occurred in neuropathic families and that asthmatics were unduly suggestible were well-known facts. The paroxysm excited by an artificial flower figured in every textbook. But it was extraordinary to witness the almost instantaneous relief that might follow a hypodermic injection of distilled water into a patient who was anticipating one of adrenaline, when that was known to be efficacious. It made him wonder how much of the success of single minim doses of adrenaline was due to suggestion and how much to the drug. At any rate, it explained why the asthma curer who had profound belief in the efficacy of his treatment found increasing justification for that belief; for his confidence aroused responsive confidence in his patient. But what was not so clearly recognized was that the effective stimulus often arose from a psychic conflict. Such a conflict might express itself at the psychic level of the nervous system as an obsession or a phobia, and at the sensorimotor level as a paralysis, a tic, a contracture, or an anaesthesia; while if it sank deeper to the visceral level it might express itself as glycosuria, exophthalmic goitre, or asthma. Naturally, other influences would help to decide in which of those ways the psychic trauma revealed itself. Thus one sufferer from a psychic conflict who had to face a hostile environment might escape through an hysterical paralysis, but another who had to face the internal disorder produced by sensitiveness to foreign proteins was more likely to develop asthma.

Peripheral Stimuli.—Dr. Langdon Brown said he had little to add to the common stock on this subject. The influence of eyestrain, hay fever, and other nasal troubles, sinus infection, gastric and intestinal disturbances, and of uterine disorders was well recognized. But he would like to call special attention to enlarged bronchial glands, especially in children, and to suggest that that might explain the liability of healed tuberculosis to excite asthma in susceptible subjects. Interesting observations by Baccarini showed that peripheral irritation of the pleura, such as paracentesis, might excite an attack of asthma. In the epileptic

a fit could be similarly produced, which led Baccarini to compare bronchial spasm to a localized epilepsy. Other points of resemblance between epilepsy and asthma would readily occur to one.

Foreign Proteins.—Of recent years great attention had been paid to this factor. Morley Roberts had made the profound remark that immunity was assimilation. There was one flesh of birds and another of beasts. From the welter of amino-acids which resulted from the disintegration of food proteins each animal had to build up its own characteristic and specific tissues. Specificity was chemical as well as morphological. To some foreign proteins a man was naturally immune—that is, he could assimilate them automatically; to others he acquired an immunity—that is, he learnt to assimilate them. But to some foreign proteins immunity was neither congenital nor acquired. The tissues continued to resent the intrusion of such proteins: they would not assimilate them. Such proteins excited anaphylaxis in varying degrees. Richet had defined anaphylaxis as the last stand of the race against adulteration of its protoplasm. In extreme degrees anaphylactic shock was fatal because assimilation would mean too profound an alteration of bodily structure. In less degrees anaphylaxis declared itself in violent attempts to get rid of the foreign invader. As Drury had expressed it, the toxic idiopathics were conservative and self-repairing mechanisms under parasympathetic control.

The Influence of the Parasympathetic.—The great function of the parasympathetic might be defined as promoting the assimilation of suitable and the rejection of unsuitable material. Thus it started the secretory and muscular processes of digestion, while it emptied the rectum and bladder, and could reject food by vomiting. The excitation of bronchial catarrh and cough was in like manner a way of ridding the body of unsuitable material, and it is interesting to recall here that drugs which were expectorant in small doses were emetic in larger ones. The similarity of the parasympathetic action on the alimentary and respiratory tracts was not surprising when one remembered that the latter developed as an outgrowth from the former. The vagal factor in normal respiration might indeed be defined as a mechanism for ensuring the alternate taking in of assimilable oxygen and the rejection of unnecessary CO_2. Confronted with an irrespirable gas, the vagus checked the entrance of this to the lungs by laryngeal spasm. But he did not think it possible to explain in that way bronchomotor spasm, which, while tending to interfere with elimination, did not prevent the entrance of unsuitable material. That, he thought, was an example of the exaggerated response so typical of pathological states. The undue irritability of the vagus centre set up such a strong efferent impulse that it was not confined to the vasomotor channels, but overflowed along the bronchomotor fibres. Without accepting the whole of Eppinger and Hess's theories, one might agree that the asthmatic was a vagotonic, and was liable to other manifestations of vagotonia. He recently had a curious instance of this in a man who suffered from both asthma and gastric ulcer, and who had found out for himself that he could relieve the pain of his ulcer by smoking a stramonium cigarette. And he (Dr. Langdon Brown) would agree with the description which had been given of a form of mucous colitis as "asthma of the colon."

The Sympathetic and Endocrine Balance.—But vagotonia might be relative as well as absolute. In other words, it might well be that an overacting vagus was due to diminished action of the antagonizing sympathetic. One of the ways in which the sympathetic carried out its defensive function was by activating those endocrine glands which flooded the blood with sugar, thus increasing metabolism and exciting a febrile response. Lest this excess of sugar should be wasted by overflowing into the urine the threshold of the kidney was raised in fever. But the febrile reponse was not the only way in which immunity was acquired. One of the greatest gaps in present knowledge was our almost total ignorance of the part played by the endocrine glands in immunity. Beyond the fact that thyroid extract might increase the yield of amboceptors, following the injection of an antigen, hardly anything was known on this point. Yet he felt that further research would show that just as anaphylaxis was associated with vagotonia the opposite condition of sympathicotonia was related to immunity through the endocrine system. Not infrequently hypo-adrenalinism followed or accompanied anaphylaxis, and certainly adrenaline had a valuable action in anaphylactic shock. It had a similar effect in some cases of urticaria. Hurst considered that the toxic idiopathies, including asthma, produced their effect, at any rate in part, by depressing adrenal activity, and he believed that the influence of fatigue in inducing the asthmatic paroxysm was capable of a similar explanation. Morley Roberts suggested that so might the apprehensiveness so common in asthmatics be a factor. The overactivity of the broncho-constrictor fibres of the vagus was kept in check by the broncho-dilator action of the sympathetic, which the secretion of adrenaline would stimulate. Hence the effect of an injection of adrenaline, or of sudden fright in checking an attack of asthma. Asphyxia had a similar action and produced the same effect, and was thus, no doubt, a factor in bringing the attack to an end without a fatal issue. Stewart and Rogoff, it was true, denied this emergency action of adrenaline; but Cannon's recent experiments had disposed of much of their purely destructive criticism. The liability of asthma to come on during sleep, when the parasympathetic gained the upper hand, further pointed to the influence of disturbed balance between the two great branches of the visceral nervous system. The reinforcement of the adrenaline effect by pituitrin might be held to point in the same direction. The glands which co-operated with the sympathetic appeared generally to help in checking the asthmatic paroxysm. The stimulating effect of the gonads in the sympathetic-endocrine group might account for the influence of uterine disease in exciting asthma. It must be admitted, however, that it was difficult on this hypothesis to explain why asthma was liable to appear at puberty and to be aggravated by pregnancy, when the thyroid and pituitary were stimulated, unless it was that some asthmatics had a gonadal deficiency which declared itself in that way. Certainly gonadal deficiency might be associated with thymic asthma, which was comprehensible, since the thymus was an infantile organ, apparently antagonistic to the gonads. In general terms, it would appear that when the endocrine balance swayed in the direction of the vagus, asthma was likely to occur in susceptible subjects; when the balance was redressed in favour of the sympathetic, attacks might be cut short or prevented.

Asthma, Anaphylaxis, and the Skin.—The skin undoubtedly has excretory functions. He recently had a severe and ultimately fatal case of uraemia, which first manifested itself by a pronounced toxic erythema. Urea was greatly increased both in the blood and cerebro-spinal fluid, while in the latter other amines were demonstrated to the extent of 0.24 per cent. The rashes of the exanthemata had often been compared with that produced by serum in anaphylactic subjects. This idea of an excretory mechauism found expression in the popular notion that it was good to "get the rash out." The toxin which could not be assimilated—that is, to which the body was not immune—must be got rid of somehow, and at any rate removed from the vital structures. Here it was interesting to note the occasional alternation of attacks of eczema and asthma. The following family tree which came under his own notice was a striking example of this alternation in different members of the family.



The condition of laryngismus stridulus was recognized as the infantile equivalent of asthma. It was further of interest to recall that both in skin diseases and in asthma eosinophilia was a usual feature of the blood picture. As an attack of asthma went on and expectoration became more abundant the eosinophiles passed into the sputa. He should regard the skin reaction of an asthmatic to foreign proteins as an attempt to wash out the offending non-assimilable material from the skin. He was proceeding to look for the occurrence of eosinophilia in the urticarial wheals produced by this test when Dr. Mackenzie Wallis informed him that he had already observed it. He thought that that all accorded with the observations of Kanthack and Hardy, thirty years ago, on the part played by eosinophilia in bacterial infections and intestinal digestion, which had passed into undeserved oblivion.

A Rational Basis for Treatment.

Such considerations as these helped to provide a rational explanation for some methods of treatment which had been empirically used in the past. He hoped also that they might help to co-ordinate the views of those working at different aspects of the problem, and to emphasize the necessity for all-round assault on every case of asthma from those various aspects. For some, asthma was merely a psychological problem; but that was to close one's eyes to the toxic factor. For others, the toxic element was the primary thing, the nervous factor being merely the failure of the nervous system to co-operate successfully in getting rid of the toxin. That view had been well expressed by Morley Roberts thus:

"Why is there a spasm? What *is* the spasm but violent overacting surface tension pulling every cell in the small bronchi and alveolar spaces into its least form, as it tries to squeeze out irritants—tries to defaecate, so to speak. The sympathetic and

parasympathetic rush in to aid. There is a tendency to overrate nervous action. Cells live their lives, have their disasters, even without nervous interference except in stress, as they did in the beginning."

But that view was not capable of explaining the influence of suggestion in actually producing a paroxysm in the absence of the exciting toxin. The suggestibility of the patient should be utilized to help him confidently to expect a cure. The effect of climate might often be due to suggestion. An asthmatic went to a place and had an attack; therefore, each time he went there he expected to have one, and had it. The converse was also true. To point that out in the former instance might help him to avoid repetition. But search must also be made for deeper-seated psychological troubles. Naturally, sources of peripheral irritation must be eliminated; that included avoidance of late suppers and cold bedrooms. The skin reactions, in his experience, were very helpful in determining the foreign proteins to which the patient was sensitive. Not only in asthma should that be tried; it was worth trying in any vagotonic with toxaemic symptoms.

He recently had under his care a patient who was emaciated and profoundly depressed, but whose chief objective trouble was a painful swelling of the tongue and lips. Dr. Mackenzie Wallis tested his skin reactions and found him highly sensitive to cereals. In addition to other simple measures, cereals were removed from the diet, and he was allowed many things which had formerly been prohibited in the belief that he had gout. The effect was dramatic; in one month he put on 16 lb. in weight. Only a day ago he received a letter from his medical man, in the course of which he said, "I think his almost daily progress has been one of the most marked and interesting cases I have had under my observation for a long time. Socially he is entirely altered . . . bright and entertaining, and his old-fashioned courtesy has returned. In fact, he is so far a complete revolution and revelation."

An experience like that made one think seriously of the toxic factors which must often be overlooked in cases diagnosed as neurasthenia or "functional." Where the offending protein could not thus be eliminated, one should consider what methods of desensitization were feasible. He would like to add that in his experience it was most important to exclude the syphilitic toxin as the offending protein. The universal belief in the efficacy of the belladonna group in asthma found its justification in the paralysing action of such drugs on the parasympathetic endings, just as the fillip given to the sympathetic by adrenaline or cocaine helped to redress the balance in another way. According to some the influence of iodide was mainly to activate the thyroid; if that was so the benefit of th s drug in asthma was comprehensible, since the thyroid secretion lowered the threshold to sympathetic stimulation. But so far there was no explanation of the way in which arsenic acted in this disease, though certainly it often seemed to help. The importance of doing everything one could to restore an impaired endocrine balance was, he thought, undoubted. In conclusion, an all-round attack on the problems of asthma seemed to him to afford the best chance of relief, especially if carried out before structural changes such as emphysema had occurred. After that a vicious circle was set up which it was hard to break.

Discussion.

Dr. FRANK COKE thought that medical men were in great danger, in dealing with asthmatic cases, if they looked upon any of them as being certainly cases which were psychic and possibly neurasthenic, and so forth. A gentleman came to him from one of the nerve specialists, and it was rather a question whether he was not going to have general paralysis; he was very peculiar in a great many ways. On his skin being tested he was found to be sensitive to nothing else but potatoes. The removal of them from the diet had an effect exactly like that in the case mentioned by the President; the patient was now perfectly normal and contented in every way. The question of locality and so forth was important. A small boy who had asthma at home was sent to him. He went to stay with five different aunts and uncles; with three of them he had asthma badly, and with two of them he was perfectly free. At places which were particularly healthy he had asthma very badly. On the boy being tested he was found to be sensitive to dog hair. Another case was that of a lady who was perfectly free from asthma for six months until she went to the seaside. On the first night she developed asthma. It was found that the quilt over her bed was covered with dog hair; that was obviously the cause of her asthma; it was taken away and the asthma went immediately. The influence of the proteins was astonishing. A negro who gave only a + 1 reaction to hen feather is became free from asthma, but had it again as soon as he moved his lodgings and slept on a feather pillow. As to the balance between the sympathetic and the vagus, that subject was too deep to be touched upon on the present occasion: but he thought every case should be tested with the proteins.

Dr. H. CRICHTON MILLER wished to underline one point dealt with by the President. In dealing with asthma one was dealing on the endocrine side so notably with adrenal instability, and on the emotional side one was dealing equally notably with fear complexes. It was more especially the fear complexes that on the emotional side contributed to the asthmatic condition. The connexion between those two sides seemed to him too important to be forgotten. The adrenal being a gland that was naturally associated with the whole fear mechanism all through the animal kingdom, the asthmatic paroxysm was attributable in some degree to an inability to cope with fear. That was putting the matter very widely indeed. How far any sensitization, any failure to immunize the organism against poison, might or might not render the individual less capable of dealing with fear, was a point which had to be cleared up in each individual case by such tests as those described by the previous speaker; but even then the medical man would still have in his hands an individual whose capacity for dealing with all the fear emotions was inadequate. That was one reason why mucous colitis and asthma were associated in the same kind of people. In both there was the same series of emotional failures, and also, he thought, the same series of endocrine failures.

The PRESIDENT, in answer to a question, said that the British habit of sitting in front of a fire during the evening and getting thoroughly baked and then going up to a cold bedroom ought to be avoided by an asthmatic. The great changes of temperature so common in houses without some kind of central heating were harmful.

Dr. C. O. HAWTHORNE expressed his appreciation of the very thoughtful suggestions contained in the address. It was obvious that within recent years medical men had been passing into a new phase in connexion with asthma. Numerous questions, both pathological and clinical in their nature, had been raised. The hopeful feature about the suggestions which had been offered in the address seemed to him to be that they were proceeding now to deal with causes of symptoms which before were regarded as diseases and treated in an empirical fashion; in other words, a case of asthma had become, not an opportunity for a label and for a more or less traditional prescription, but an opportunity for a specific investigation of the individual patient, with a view to determining the causation in the patient and to treatment based upon causation.

Dr. A. LAPTHORN SMITH said that he was especially interested in the relation of eclampsia to asthma. He was quite sure that both eclampsia and asthma were due to poison in the blood. He asked whether people who were heavy meat eaters and who did not take much oxygen to burn the meat up were more liable to asthma than were vegetarians or fruit eaters. It had been his experience that they were. He had found remarkable benefit, not from putting more poisons like belladonna and stramonium in, but from eliminating the poison which was present. The best drug he had met so far was potassium bicarbonate. He had rarely found that a patient did not get better if he persisted for several weeks in taking two or three drachms a day of potassium bicarbonate, with perhaps a little lemonade. He would like the members of the Section to try the alkaline treatment of the spasm of asthma, as he had tried very largely the alkaline treatment of the spasm of eclampsia.

The PRESIDENT in a brief reply expressed his thanks for the very kind reception given to his address. With regard to Dr. Coke's remarks about locality, he had been rather impressed by the case of a medical man (an asthmatic) who told him that, having had an attack of asthma in a particular place, and having occasion to sleep there a second time, he felt sure he was going to have an attack, but said to himself, "This is merely a question of your getting the idea that you must have an attack if you come to this place. There is no real basis for it, and you will not have an attack." And he did not. He had been to the place repeatedly since and had not had an attack. With regard to Dr. Lapthorn Smith's point about meat, he imagined that patients who were affected in the way described would be found by Dr. Coke's tests at any rate to be unduly sensitive to some form of meat protein.

ARTIFICIAL PNEUMOTHORAX.

A MEETING of the Cardiff Medical Society was held on October 10th, the chair being taken by Mr. W. MARTIN. Dr. PARRY MORGAN read a paper on "Artificial pneumothorax in the treatment of pulmonary tuberculosis." He pointed out the unanimity with which those who expressed their views on treatment in the report of the Medical Research Council's Committee praised this treatment, but noted that

there was not the same unanimity regarding what were suitable cases. Some advocated it only as a last resort—an extraordinary attitude towards an admittedly successful method of treatment. He gave reasons for the limited application of the method, and thought that the treatment should be commenced earlier than was usually the case. Complete collapse was not then necessary, for the gas in a partial collapse gave differential rest to the affected inelastic part of the lung, while the normal portions continued to expand freely as before. He compared artificial partial pneumothorax with the spontaneous collapse due to fluid or leakage from the lung and pointed out that, although the collapse was temporary in these cases, it was often followed by good results. He argued that temporary artificial collapse might be expected to be followed by good results, and quoted recent publications to show that this was the case. These also showed that the objection to producing an early artificial collapse, that it was nearly always followed by adhesions, did not hold in the case of partial collapse, as adhesions did not as a rule follow, nor did fluid appear, provided the intrapleural pressure was always kept negative. The treatment, therefore, was applicable to both sides at one and the same time.

Dr. Parry Morgan also described the two manometer apparatus for performing the operation, and insisted that its alleged complication was more apparent than real. There were only two differences between it and the single manometer apparatus, such as that of Drs. Lillingston and Vere Pearson: (1) Instead of a clip to shut off the gas there was a contrivance by means of which the gas could be cut off very gradually; when this was done, the pressure in the manometer gradually fell from that in the reservoir to that in the pleural cavity, instead of being either the one or the other. (2) A second manometer was introduced, which merely registered the reservoir pressure, whether the gas flowed or not. He showed that the physical conditions obtaining in the chest could be reproduced by using a rubber-stoppered bottle with the bottom cut out, filled with water, and inverted into a bowl of water. By means of this device he was able to demonstrate all the details of the operation, and to show clearly the advantages of the apparatus. From his demonstrations it appeared that no calculations were necessary.

Reviews.

MEDICINE IN THE WAR.

[Second Notice.]

Last week (p. 691) we dealt with certain general considerations arising out of the first of two volumes on Diseases of the War, forming part of the *Medical History of the War*.[1] There remain to be dealt with the chapters dealing with the several diseases. There is a list of contributors at the beginning of the volume, but as many of the articles are joint compositions with the shares unapportioned it is sometimes impossible to ascertain which of the writers is responsible for particular statements.

The chapter on the enteric group of fevers contains interesting comparative records of other wars, which if they do nothing else indicate the supreme value of anti-typhoid inoculation. This point is further emphasized by the prevalence of paratyphoid A and B when the inoculation was against *B. typhosus* only and the corresponding decline when the triple inoculation was employed. In the discussion of the etiology very little new information is given; by no means can the presence of infection be avoided, but individuals can be rendered immune. Although this sums up the whole experience of the war, Wright, whose discovery made this immunity possible, is not mentioned either in the text or bibliography. The symptomatology and treatment is well summarized; there is little that is new, and there appear to have been no distinctive features in any of the theatres. Paratyphoid has received more particular study than ever before owing to the opportunities afforded by its occurrence apart from typhoid during the early part of the war. It is stated, correctly enough, that to distinguish the paratyphoids from one another is impossible, and from typhoid, as a rule, difficult. The importance of recognizing the cases of paratyphoid that do not resemble typhoid and the difficulty of doing so are not made so clear.

The dysenteries are admirably dealt with, and this chapter contains much that is new and most necessary to be widely known, particularly as to the sequelae that cause invalidism. The measures found imperative for the after treatment of convalescents are well and adequately described. Stress is rightly laid on the need for evacuating all cases of diarrhoea to field ambulances at once, as well as on the precautions to be taken with "suspected" dysentery. The dangers of waiting for bacteriological confirmation of the diagnosis are not exaggerated.

The story of cholera is well told. If the figures given are exhaustive it would seem that 4,436 cases of cholera occurred in the Mesopotamian Force, as against 3,117 of the enteric group. The case mortality was appalling; it amounted to over 40 per cent. The protection afforded by inoculation with cholera vaccine is unfortunately short-lasting, and inoculated persons who contract cholera show nearly as high a mortality as the uninoculated. The control of the epidemic must have been due quite as much to sanitary precautions as to inoculation. A high proportion of cases thought to be severe diarrhoea only were found to harbour cholera vibrios. Presumably, although this is not stated, the early segregation of cases of diarrhoea was insisted upon, and with somewhat the same degree of success as attended this measure when applied to dysentery. Typhus, as we remarked in our first notice, caused little wastage in the British army.

The research conducted into the etiology and transmission of cerebro-spinal fever is perhaps the most successful and extended medical investigation of the war. For this the navy especially deserves our thanks and congratulation. The conditions were perhaps simpler, seeing that the bulk of cases occurred in England, where access to the best laboratories in the country was available. Still the fact remains that our knowledge of this disease was advanced during and by the war more than that of any other disease. To Glover belongs the credit of making one of those great observations that are magnificently simple: "The space between beds determines the 'carrier' rate; it is carriers, not cases, that spread the disease. Dépôts with beds too close together will have epidemics of cerebro-spinal fever; if the beds are far enough apart the disease will cease to occur." We learnt, moreover, during the war the immense curative value of antimeningococcal serum administered intraspinally and *persistently*.

Influenza yields a chapter that is a record of a visitation of the angel of death which, had it come upon the world in peace time, would have overwhelmed us all with consternation. As an incident in the world war it merely added to its horrors. Here again the record is of research patiently and hopefully carried out under stupendous difficulties, to end only in disappointment. At the end we seemed to have added only one fact to our knowledge of the etiology—namely, that the disease was caused by a filter-passing virus. No curative remedy was discovered, no preventive measures proved successful. The pandemic appeared to cease by killing the most susceptible individuals and by immunizing the more resistant after they had survived one or more attacks. Scarcely anyone escaped entirely. The bare recital of the numbers affected fails utterly to give a picture of the state of our hospitals in France during the height of the epidemic. It may be as well that there was no Defoe amongst us to hand down to posterity the dreadfulness of those scenes of mud, darkness, and misery.

The chapters in which malaria is described are patterns of military medical history. The account given of the geography of the disease, the natural history of the mosquito, and the effects of malaria in the several theatres of war constitute a veritable masterpiece whether regarded from the standpoint of medicine, military annals, or literature. The clinical account of the disease has surely never been surpassed for accuracy or graphic detail; the discussion on treatment in both the acute and chronic stages will stand for many years as the authoritative guide. On page 285 is a short account of the handling of the malaria-infected battalions sent to France as reinforcements. Never were men more sorely needed in the front line, never perhaps did a military commander exhibit greater restraint than on this occasion when medical advice was allowed to prevail. Whole battalions were sent sick rather than individuals, with the result that in two months the ague-stricken men took their place in the hardest fighting

[1] *The Medical History of the War Based on Official Documents: Diseases of the War.* Vol. i. Edited by Sir W. G. Macpherson, K.C.M.G., with the assistance of Sir W. P. Herringham, K.C.M.G., Colonel T. R. Elliott, C.B.E., D.S.O., F.R.S., and Lieut.-Colonel Andrew Balfour, C.B., C.M.G. London: H.M. Stationery Office, or through any bookseller. 1922. (Medium 8vo, pp. viii + 550; 6 coloured plates and other illustrations. £1 1s. net; post free £1 2s.)

with less than average wastage from sickness of all kinds. Here is a lesson not to be overlooked by combatant officers, to whom indeed the credit of having made the experiment possible is chiefly due. Trypanosomiasis and the relapsing fevers did not loom large in their influence on military operations, but our world-wide empire may some day find the facts recorded of great importance.

Phlebotomus or sand-fly fever proved especially troublesome in the Near East and in Mesopotamia. The treatment was preventive, and required ruthless efficiency in fly destruction.

In a short article a very good account is given of trench fever. This was a most mysterious disease. Evidently it was spread by lice, but how is a question still unanswered. American opinion believes that it can be transferred from man to man by the simple bite of the louse; British observers think that the entrance of the faeces of the infected insect into a bite, scratch, or abrasion is essential. This difference of opinion detracts in no way from the credit attaching to the happy observation of McNee, Renshaw, and Brunt that the virus was blood-borne. The invalidism caused by trench fever was probably higher than that caused by any other disease of the war. It is singular that although relapses appear to be frequent and the symptoms are protracted the disease was not introduced into England either during or after the war. Yet the infected men and the lice certainly arrived in this country. We are not convinced that the explanation offered for this phenomenon is correct. There seemed to be districts even in France where trench fever did not flourish, despite the lice. Spirochaetal jaundice was an interesting disease seen occasionally; it attracted attention because of the dramatic course run by fatal cases and because of the comparative novelty of spirochaetal infections in general. As a war disease it counted for little. In the East epidemic and catarrhal forms of jaundice were fairly common; more than one organism was probably responsible.

Of all the diseases prevalent during the war none, perhaps, were subjected to more thorough scientific investigation than the group known as the food deficiency diseases. Before the war we knew of their existence; it had also been discovered that foodstuffs contained certain accessory nutritional factors or vitamins. During the war the necessities of whole nations trying to live on the scantiest food supplies stimulated even governments to study food problems scientifically. Disease among the troops and famine among the civilians provided only too much experimental material for observation.

Thus it came about that our knowledge of four diseases—scurvy, beri-beri, famine dropsy, and pellagra—was advanced during the war beyond all expectation. Lind's book on scurvy was published in 1754; the next book in English was written by Hess in 1919, and practically the whole of the new work it contained had been done during the war. It was not until the war that Miss Henderson Smith discovered that lime juice was relatively useless. Ration lime juice failed to cure scurvy in Mesopotamia. The facts will bear retelling at length. "Lime juice" was introduced as a ration for the British navy in 1804, but down to 1875 lemon juice was in fact issued under this name. Since 1875 the "lime juice" supplied has been true lime juice from the West Indies, and would therefore be much inferior in antiscorbutic value to lemon juice. On this point control experiments were made in Northern Russia in 1919 by Captain A. J. Stevenson, who found that the addition of four ounces of lemon juice freshly prepared from fresh lemons gave markedly beneficial results. The Report of the Royal Society War (Food) Committee is clear and definite: "West Indian lime juice, as ordinarily prepared, is useless for the prevention of scurvy. Fresh limes have an antiscorbutic action, but their efficiency is only one-fourth that of lemons. . . . Nares's expedition of 1875, notorious for the serious outbreaks of scurvy encountered, was the first to be provisioned with 'lime juice' prepared from West Indian limes" If as seems to be the case, judging from an answer to a question in Parliament, the navy is now using West Indian lime juice again, scurvy will reappear should the remainder of the ration at any time fail in adequate antiscorbutic vitamin, unless, of course, lime juice is supplied merely as a pleasant summer drink and some special antiscorbutic ration is being issued. The great outbreak of scurvy among Indian troops in Mesopotamia produced a state of affairs that can only be likened to what happened during the Walcheren expedition. The temperate tone of the article is surprising considering the circumstances. The writer is to be commended for concentrating attention on the admirable way in which remedies were found rather than on the causes which gave rise to the disease. The discovery of the antiscorbutic properties of germinated lentils and peas together with that of the value of "marmite" as a preventive of beri-beri were two remarkable achievements. In these two preparations a portable ration has been obtained which should safeguard our troops in any future campaigns. Any doubt, too, that beri-beri is a food-deficiency disease has now been dispelled by the researches and experiences of the war.

Famine dropsy was a disease of civilian populations and prisoners of war rather than of armies. Nevertheless it was so purely a war effect that it is properly included in this history. The most interesting part of this chapter is the bringing to light of the excellent but long-forgotten work of Dr. Cornish in the Madras famine of 1877–78. Seeing that the reward of his services at the time was the removal of his name by the Calcutta Government from the list of honourable recommendations, the tardy justice done to his memory is welcome. Pellagra is a disease the precise etiology of which presents a problem as yet unsolved. Wilson's observations, however, on the biological value of protein are of the utmost importance to the scientific study of dietetics. His conclusion cannot be gainsaid: "Lack of sufficient biological value of protein stands in etiological relation to pellagra, certainly as an exciting factor and possibly as the determining factor." The report of the Committee of Enquiry regarding the prevalence of pellagra among Turkish prisoners of war will stand for years to come as a record of one of the best and most scientific inquiries ever accomplished by a nation at war.

The frequent occurrence of nephritis among the troops in France and Flanders gave rise to the impression that there might be some peculiar form of nephritis to which troops in a war area, and especially those serving in the trenches, were liable. The survey of the malady and of the investigations into its nature make it probable that it is not a distinct and separate form of nephritis. The unusual frequency of dyspnoea, dropsy, and uraemia in soldiers is perhaps to be explained on the ground that the exertions demanded of soldiers go to the utmost limit their strength permits. The prognosis from the point of view of ultimate invalidism and pension claims is a matter of vital importance; it is to be regretted that so little information has been collected on this aspect of nephritis attributable to war service.

Cardiovascular disorders formed a large group of medical casualties and since the war have presented pension problems of special difficulty. It seems possible that the importance of minor degrees of organic valvular disease was underestimated whilst the war was in progress. This chapter alludes to the number of men seen by pensions boards whose subsequent malady has assumed the form of progressive infective endocarditis. On this point the writer might have spoken with greater emphasis and certainty. The evidence is weighty and still accumulating. Medical opinion should be expressed far more firmly on this matter, as it is one of the principal points on which the recommendations of medical boards are sometimes not followed by the Ministry of Pensions. The discussion of functional disorders of the heart is one of the best that has been written on a most troublesome problem. The short description of treatment and prognosis contains in a readable epitome a great deal of information gathered by many painstaking observers and patient commandants of convalescent camps. In conclusion, it may be said that if the other volumes of the *Medical History of the War* are as good as this one medicine as a whole will have gained much advantage from its publication.

COMPARATIVE ANATOMY.

A Laboratory Manual for Comparative Vertebrate Anatomy,[2] by Professor Hyman of Chicago, constitutes a successful effort to provide a practical book for the study of zoology arranged on the comparative plan. In the preface the author indicates the advantages of the comparative over the type plan, and the manual fully justifies the claim that by the former method a student acquires an understanding of vertebrate and human structure which he is unable to attain by the latter. The book may be highly recommended to medical students, since it gives such a clear conception of the "history of the human body," and is not overburdened with details which obscure fundamental principles.

[2] *A Laboratory Manual for Comparative Vertebrate Anatomy*. By L. H. Hyman. Chicago: The University of Chicago Press. 1922. (Double roy. 16mo, pp. xv + 380; 69 figs. 2.50 dollars.)

The manual is essentially a guide to practical work, but a necessary amount of explanatory matter is included, and an important feature is the insertion throughout of references to standard textbooks which may be consulted most profitably for the acquisition of further and more detailed knowledge upon particular points. A study of the book makes it manifest at once that the author is not only possessed of wide knowledge, but is also a teacher who has found the best method of presenting his subject. The descriptions of the structure of the various animals are given in a clear and simple style, and care has been taken to define as accurately as possible the meaning of all technical terms. The animals described have been selected with great discretion, and with the chief object of presenting as directly as possible the story of the evolution of the various systems. A helpful feature is the insertion at the end of each chapter of a good summary, which briefly correlates the most important facts before the reader passes on to new ground. For a first edition the manual is remarkably free from mistakes, although on page 311 there is a very obvious one, since we are informed that the abducens nerve "penetrates the *eyeball* at the point of origin of the external rectus muscle."

The manual is not so liberally illustrated as most of its kind; there are only sixty-nine illustrations, but these are simple, clear, and sufficient, since the instructions for dissection are so arranged that any student ought to be able to display and examine all the features referred to in the text and make his own diagrams direct from his dissections. The book concludes with a good index and two appendices, the first dealing with the pronunciation and derivation of technical words, and the second with methods of preparation of materials.

TESTICULAR GRAFTS.

We have received from Dr. Serge Voronoff, director of the laboratory of experimental surgery of the Collège de France, Paris, a copy of his illustrated monograph,[3] in French, on the subject of testicular gratts, and also an English translation of a paper on the subject, which he had intended to read to the thirty-first French Congress of Surgery in Paris this month; some objection, however, was, we understand, taken, and the paper was, in fact, not read. Dr. Voronoff afterwards gave a lecture which seems to have attracted a good deal of attention in the general press; it may, therefore, be convenient that we should give an early account of Dr. Voronoff's claims.

Dr. Voronoff reported the results of 120 testicular grafts performed on animals to the twenty-eighth French Congress of Medicine in October, 1919, and since then he has applied to man the method which he had practised on animals. The first experiments were made by gratting the testicle of a lamb upon a female sheep; the apparent result was that the growth of bone of the limbs of the progeny of the sheep was modified, the legs being shortened. In other experiments testicles were grafted into young female goats from a male; the ovaries had previously been removed; the goats remained small, their limbs were shorter, and their horns were thicker than those of normal goats. Numerous testicular grafts were made upon castrated animals and he-goats in order to ascertain if transposed testicles could play their ordinary part in animals deprived of their own testicles, and replace them in their functions as endocrine glands. In one case, which Dr. Voronoff gives in detail, the grafted testicles apparently performed their functions as endocrine glands, dominating the secondary sexual characters of the male animal, his sexual instinct, and his virile capacity. Other similar grafts made upon castrated he goats and rams gave analogous results in every case in which the graft did not slough or was not too quickly absorbed. Testicular grafts were also made upon two senile rams aged about 10 years, with the result that two months later a change in their bearing was observed, and their broken-down air and dull look gave place, it is stated, to a vivacity of movement and a bellicose disposition. Their vigour increased considerably from month to month, and, isolated in separate pens with female sheep, one became the father of a lamb and the other of two. In one of these rams the grafted testicular fragments were removed at the end of fourteen months, when the condition of the animal declined once more and its vivacity disappeared; a new graft was then made, and—while not so rapidly as on the first occasion—some mon ths later there remained no trace of its senile condition. Several photographs of these animals are given. This experiment, which was repeated several times upon other old animals, apparently showed that the graft could be renewed and successive rejuvenations obtained.

Dr. Voronoff gives particulars of a number of cases of testicular grafts from cynocephalus monkeys which were made upon men between June, 1920, and February, 1921.

In the first two cases the patients had suffered from tuberculosis of the testicles, which had consequently been removed; the grafts provoked latent suppuration and proved unsuccessful, although in the second case the man's beard had commenced to grow again.

The third case was that of a man aged 59, who had had gonorrhoea as a youth, and complained of loss of memory, decreased capacity for intellectual work, and physical depression. Testicular grafting resulted in much improvement in his general health, and he is stated now to experience a physical well-being long unknown to him. He has recovered his memory and his mental vigour has been renewed.

The fourth case was that of a celebrated man of letters, aged 61, who, before the graft, was of a senile type, with wrinkled face and dull eyes; his mental activity had become slow and his memory had failed. Two years after a testicular graft had been performed he recovered a virility he had lost for ten years, was well set up, and gave an impression of youth and vigour; he took long walks and could again work for long hours without fatigue.

In the fifth case the subject was an American, aged 33, who was neurasthenic, melancholic, and dyspeptic. A year after the testicular grafting he enjoyed perfect health and virility, and although Dr. Voronoff suggested to him that a romantic love affair which had ensued might have played a more important part than the graft the patient repudiated the suggestion.

The sixth case was that of a South American of 66, who suffered from senility and depression, aggravated by gastric ulcer; after a testicular graft had been performed he experienced physical well-being and a new sexual vigour.

An Englishman of 74, whom Dr. Voronoff had arranged to exhibit to the Congress, was the seventh patient. Two years before the graft this patient seemed to be an old man, inert, obese, haggard, walking painfully with the aid of a stick. Eight months after the graft was performed he appeared before Dr. Voronoff with half his *embonpoint* gone, his aspect jovial, and his movements active. His condition was stated to-day to be still that of a man who had recovered twenty to twenty-five years of his lost youth. Several photographs of this patient, in vigorous attitudes, are given in the monograph.

Dr. Voronoff does not admit the possibility of grafting the testicles of animals other than monkeys upon man, and human grafts are apparently impossible to procure. From February, 1921, to March, 1922, he was unable to obtain any large monkeys, and no further grafts were made until March, 1922; the results of these later cases were too recent to afford proof of benefit.

Dr. Voronoff thinks that he has established the efficacy of testicular grafting in senile conditions due to the insufficiency of the internal testicular secretion, and not due to affections causing deterioration of essential organs of the body. He does not attribute senility only to the diminution or disappearance of the internal secretion of the genital glands, but he thinks that human force and energy are bound up with the activity of the sexual glands. It is logical, therefore, in Dr. Voronoff's view, to suppose that by supplying the testicular hormone to the body at the moment when its own glands no longer elaborate it the body is really rejuvenated. Whether the testicular graft would be of utility under other conditions, as an organic stimulant of the enfeebled functions of other endocrine glands or of tissues upon which the testicular hormone had a more direct action, are, he states, questions to be decided by further experiment. Placed under the skin or under the muscles, the grafts, even under the most favourable conditions, only survive in part: the centre necroses; the cortex usually survives but is reabsorbed in a few months. Placed, however, in such a position as the peritoneal cavity or the tunica vaginalis, where exudation can be made rapidly, the graft may survive for several years. A graft of the entire testicle may be made, but it must be of small volume and young; for the most part the grafting of fragments is preferable. Dr. Voronoff advises that the testicle should be divided into two, four, six, or eight portions according to its size, the tunica albuginea scarified lightly, and the fragments attached by a catgut stitch above and below in such a way that the glandular face is in contact with the tunica; the fragments should not touch each other, but should be everywhere in direct contact with the tissues of their new host. Dr. Voronoff now supports the view of Professor Retterer, who affirms that the epithelial cells are the agents of the cellular secretion, both internal and external, and that the seminal cell is at once exocrine and endocrine. When in testicular grafts these cells are deprived of the excretory canal they cease to elaborate the spermatozoa, and act only in the endocrine sense; to the interstitial cells a nutritive function is attributed.

[3] *Greffes Testiculaires.* By Dr. S. Voronoff. Paris: G. Doin. 1922. (Roy. 8vo, pp. 85; 19 illustrations.)

CONTROL OF CONCEPTION.

Lady Barrett has written an essay of less than fifty pages on *Conception Control*,[4] in response to requests for some statement regarding the individual and national aspects of this widespread practice. She writes as a medical practitioner and a specialist in gynaecology; but her object is not so much to give medical advice as to place before the lay reader her considered opinion upon the social and hygienic issues underlying the problem. Her view is that medical advice on this matter is best given to the individual by his or her medical adviser, and must depend on the circumstances; whether control of conception shall be practised when husband and wife are healthy is, she holds, an ethical question for the individual pair, and not a medical question to be decided for the public at large. She is concerned at the careless advocacy of an indiscriminate use of contraceptives, believing that if this goes on various harmful effects will soon show themselves: "In the whole discussion of this subject it is important to keep in mind that the physical is only one aspect of the sex relation."

So far as we understand her, Lady Barrett takes a broad view of present-day difficulties. For ordinary couples she seems to favour some measure of voluntary self-control, not merely for its spiritual and aesthetic advantages but as a practical means of limiting the size of a family, while living a natural married life. The method she finds least harmful for controlling conception is "the avoidance of those parts of the monthly cycle in which conception most commonly takes place" (p. 35), but she does not add that the efficacy of confining intercourse to one week in the month has been challenged. She detects serious fallacies in the arguments of those who advocate the widespread teaching of mechanical and chemical methods of preventing conception. In particular she deprecates the current doctrine that child-bearing may safely be postponed by young married women, and that children will come in abundance to all unless actively prevented—"Advice which may be quite necessary in cases of ill health or special conditions may be fundamentally wrong to give broadcast to all." It is her experience that, as a result of the ideas conveyed to the minds of young people by books and speeches, many of them though anxious to have children "start married life with sordid and unnatural preparations for a natural act" in accordance with the vogue of the moment. Her own belief is that, apart from those who for physical reasons or because of hereditary taint should not bear children, married love ought to express itself at once in the usual way without the use of artificial contraceptives. Notwithstanding the efforts now being made in "birth control clinics" for working-class women, she is convinced that this propaganda will have a disastrous effect on the differential birth rate of the community, "for the birth rate amongst the least intelligent, least efficient, and the mentally deficient, will be unaffected . . . the diminishing fertility of the more capable classes is a national per l."

Lady Barrett's position seems quite clear: wherever child-bearing is fraught with danger conception must be prevented, by means chosen to suit each special case; but public instruction in the use of contraceptive devices is generally misapplied and is therefore detrimental both to health and morals. She does not agree with the "spacing" of families by the regular use of artificial checks; if the family is to be limited to three or four it is better for everyone concerned that the children should all be in the nursery together, and later all at school. Her objection on medical and aesthetic grounds to most of the usual contraceptives is stated very plainly in Chapter III; though here and elsewhere throughout the book her language is commendably restrained, and all personalities are eschewed.

What solution does Lady Barrett suggest for the large problem presented by the falling birth rate among the educated and prosperous, and the excessive childbearing among the poorer and less efficient classes? She accepts the view that fertility, broadly speaking, varies inversely as the nervous energy or general vitality; and her remedy is to raise the standard of living among work ng-class mothers and to advise a simpler life for the more richly endowed.

We have tried to give an uncoloured account of the purpose and manner of this able and thought-provoking tract, which should be read by all medical men and women.

[4] *Conception Control and its Effects on the Individual and the Nation.* By Lady Barrett, C.B.E., M.D., M.Sc., B.Sc., Consulting Obstetric and Gynaecological Surgeon to the Royal Free Ho pital, President of the Federation of Medical Women, With a foreword by the Archbishop of Canterbury. London: John Murray. 1922. (Cr. 8vo, pp. 48. 2s. net.)

THE DISCOVERY OF THE CIRCULATION.

The first volume of the series of Classics of Scientific Method, which is designed for the instruction of those without any previous knowledge of the subject, is on *The Discovery of the Circulation of the Blood*,[5] and has wisely been entrusted to Dr. Charles Singer. The description of the circulation is therefore rightly elementary, but most medical men will find that they can learn a good deal from the clear historical survey of the records and workers by whom the full discovery of the circulation was achieved; the biographical details add to the interest of the well-told story. After a sketch of the knowledge of the vascular system in antiquity, in which reference is made to Hippocrates, Aristotle, and more fully to the views of Galen, Dr. Singer passes on to the period of the Renascence and to Leonardo da Vinci (1452–1518), who, he holds, was the first to question the authority of Galen and to give a more correct description of the anatomy of the heart; he intended to publish a textbook of anatomy and physiology, but did not live to do so, and accordingly the epoch-making appearance of the first great book on anatomy and physiology since Galen's time was the *Fabrica* of Vesalius in 1543, in which the statements of Aristotle and Galen were tested by the author's own observations; doubt was thus cast on the received belief that the blood passed from the right to the left ventricle through the inter-ventricular septum of the heart. A little later Michael Servetus, a contemporary of Vesalius and the martyr victim of Calvin, made known the circulation through the lungs in a book which was burnt with its author at the stake in 1553. Of Vesalius's successors, Fabricius of Aquapendente was professor for fifty-four years at Padua, and thus was the instructor of William Harvey, who in his Lumleian lectures at the Royal College of Physicians of London set forth his great discovery in 1616, and gave it a wider public by publishing the *De Motu Cordis* in seventy-two small pages at Frankfort in 1628. The discovery of the capillaries and red blood corpuscles is illustrated by reproductions of plates from Malpighi and Anthony van Leeuwenhoek's works. This is a book full of information presented in a pleasant style, with good illustrations, and at a remarkably cheap price.

MERCHANT SEAMEN.

In a review published under this title last week (p. 692) reference was made to a paper on the preservation of the health of seamen on board ship, read by Dr. Arnold Chaplin to the Section of State Medicine of the Royal Society of Medicine. In the endeavour to be brief a phrase was used which did not adequately express Dr. Chaplin's opinion, and may have conveyed the impression that in his view all ship-owners were negligent and careless concerning hygiene. This is far from the case; otherwise the big lines would not have appointed competent medical advisers and able medical officers. We may perhaps best put the matter right by quoting the paragraph from Dr. Chaplin's paper:

> "A ship, as we understand it to-day, is the result of innumerable compromises, and this fact can hardly be insisted upon too strongly. The passenger would prefer the ship to be all luxury and comfort, the sailor easy to handle, and the owner economical to work. So also where health is concerned; the hygienic enthusiast would build his ship much as he would a sanatorium or a hospital, and he might regard the owner as unreasonable if he pointed out that his ship was designed, not to carry sick people, but passengers and cargo. In every department of a ship, whether it be the engine room, the crew quarters, the cargo space, the passenger quarters, or the medical arrangements, the final result has been obtained by means of compromise. This means that no department on board ship can approach the ideal without encroaching upon some other department. I would therefore beg of you to dismiss from your minds the idea that the principles of hygiene on board a ship can be satisfied in the same way as on shore, where space has few limitations. I would also ask you to remember that the main object of a ship is to carry on our commerce, and that nothing should be done to interfere with that object so long as the reasonable laws of health are obeyed."

Dr. Arnold Chaplin's paper, "Certain measures for preserving the health of seamen on board ship," was published in full in the *Proceedings of the Royal Society of Medicine*, 1921, vol. xiv (Section of Epidemiology and State Medicine), pp. 23–37.

[5] *The Discovery of the Circulation of the Blood.* By Charles Singer, M.D., D.Litt., F.R.C.P. Classics of Scientific Method, edited by E. R. Thomas, M.A., M.Sc. London: G. Bell and Sons, Ltd. 1922. (Cr. 8vo, pp. x + 80; 8 plates. Price 1s. 6d.)

British Medical Journal.

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THE WHOLE ART OF MIDWIFERY.

THE sketch of the development of the Edinburgh school of obstetrics and gynaecology with which Professor Watson began his inaugural lecture, published at page 712, is full not only of historical interest but of instruction useful to us to-day.

To Edinburgh belongs the honour of being the first teaching centre to have a professor of midwifery; nearly two centuries have elapsed since the town council appointed Joseph Gibson, a surgeon, "to be professor of midwifery in this city." His duty was to teach women midwives, and he and his successors discharged it so well that by the beginning of the nineteenth century it could be said that there was "scarcely a parish of Scotland the midwife of which has not been regularly taught." Though the town council of Edinburgh was the patron of the university, the relations of the one to the other were not always smooth. The council was proud of the university, but occasions for strife arose, and the university did not at once recognize the new chair. A century was indeed to pass before it made midwifery a compulsory subject in the medical curriculum. Ten years later, in 1840, the university was fortunate enough to secure for the chair of midwifery a man of genius, and James Young Simpson's strong personality, originality of mind, and inspiring teaching firmly established obstetrics and gynaecology as an essential part of the medical curriculum. He and his successor, Alexander Russell Simpson —and between them they cover sixty-five years of the Edinburgh school—were both obstetricians and gynaecologists, and this brings us to the kernel of Professor Watson's address. The two subjects, especially when we regard prevention of disease, are one, and that their recent divorce at many schools in America and Europe was a retrograde step is the opinion in Edinburgh and Toronto, two of the wisest and most progressive medical faculties among English-speaking peoples. It is a curious example of the swinging of the pendulum and of the solidarity of the profession in Great Britain and the great Dominion that when in 1912 Toronto was looking for a professor to unite the two chairs it found the man it wanted in Edinburgh, where until a few years earlier the two had been one, and that when Edinburgh determined to abandon the experiment of division it had begun seventeen years ago it brought back its old alumnus to occupy the single chair it had restored. In Edinburgh the evils of division were hidden because Sir Halliday Croom, appointed to the restricted chair of obstetrics, was not less eminent in gynaecology, and Dr. Freeland Barbour, appointed lecturer in gynaecology, had won his spurs in obstetrics.

When we examine the reasons Professor Watson gives for his very decided opinion against separation we find the chief to be bound up with the pioneering work of another ornament of the Edinburgh school, Dr. J. W. Ballantyne. For a long time he got very little encouragement, but he was given courage to persevere by the consciousness that he was building on a sound basis of pathological observation. It is a little over thirty years since he published his *Introduction to the Diseases of Infancy*, a book many laid down with the observation that the author had never got to his subject, for much of it was about the anatomy of the newborn infant, a little of it about pathology, and very little about clinical appearances. This criticism was mistaken, as experience, reflection, and the persistent and persuasive advocacy of the author have proved; so true is this that, like some other pioneers, Ballantyne is at risk of his early work being forgotten owing to his very success in making his doctrine the common possession not only of the profession but of the public.

We may leave this part of the field, where the battle has been won, for another, where, though the final result is not in doubt, it has not yet been attained. Preventive midwifery is not quite a new subject, but its rational study on scientific lines is. Professor Watson gives a definition of preventive midwifery: it is ante-natal care during pregnancy, a minimum of interference during labour, the most rigid attention to asepsis, and the earliest possible carrying out of surgical intervention when it is required after the puerperium. Here again Ballantyne was a pioneer, and even those who have followed the subject most closely will be surprised by the reminder that it is over twenty years since he made his first plea for a pre-maternity hospital.[1] Professor Watson, who speaks from nearly ten years' experience in the obstetrical department of the Toronto General Hospital, says that a pre-maternity or ante-natal department is the most essential part of a maternity hospital.

Professor Watson only accepts the midwife with reluctance: her training, he says, interferes with that of the medical student, and her want of general medical education limits her usefulness in the all-important work of ante-natal care. The second objection is well grounded and might perhaps be extended to post-natal care also. The promoters of the Midwives Act were mainly influenced by the fact that, in England at least, attendance in a large proportion of cases was given by women who, while they called themselves midwives, had not learnt the essential importance of cleanliness, had not been taught to recognize conditions arising during labour which made skilled medical assistance necessary, and were unable to appreciate when surgical aid was afterwards needed. The Midwives Act has not done all its promoters hoped; there are still many untrained women and some men acting as midwives, and some of the untrained women certified when the Act came into force are still in practice. But on the whole it has done good, and any scheme for the improvement of the actual practice of midwifery must take the certified midwife into account, though no effort should be spared to increase her sense of responsibility, and in this we would include full realization of her own limitations.

This is not to say that the medical profession is to lose control of midwifery. If the ideal put before us is to be realized, and when it has been realized, there will be much highly responsible work for the general practitioner to do. The first task is to convince women of the value of consulting their doctor at an early stage and at intervals afterwards to make sure that all is right. They already do so to a considerable extent, and there will probably be no great difficulty in inducing them to make it an established custom. Professor Watson says he has found none. There may be a little more difficulty in persuading them to come again a month after delivery. The troublous time is over and they have new interests; but the request is so rational that it will appeal to the reasoning faculty in women, and, as we all know, they can be very rational on occasion. All this implies the establishment and maintenance of a high standard in the

[1] It was published in our columns on April 6th, 1901 (p. 813).

teaching of obstetrics and gynaecology to medical students, a subject on which Professor Watson touched rather lightly at the end of his thoughtful and stimulating address.

Thus we come back to what we have ventured to call its kernel—the essential unity of obstetrics and gynaecology, and the imperative need to teach them as one subject. Thus also we justify the title of this article, for the whole art of midwifery does not consist in procuring the safe delivery of a living child, but in ensuring also that the mother shall not experience any preventable injury or later suffer from any remediable damage due to her having passed through the physiological process of childbirth.

MEDICINE AND THE RENASCENCE.

The annual commemoration of its benefactors on St. Luke's Day, October 18th, is an occasion for the Royal College of Physicians of London to unbend. Harvey, when he founded the annual oration which bears his name, clearly stated his aims. His main objects were that the Fellows should be reminded of their chief duties as physicians—to be diligent "to search and study out the secrets of Nature by way of experiment: and also for the honour of the profession to continue in mutual love and affection." Harvey was not only the first of physiologists, but for the best years of his life actively engaged in practice—he was physician to St. Bartholomew's Hospital as well as to the King. He was therefore well qualified to admonish physicians, and his injunctions were so well and widely conceived that they succinctly express the aims of the British Medical Association, which seeks to apply them to the whole profession. The appeal of the orator extends far beyond the audience he actually addresses; Harvey desired the oration to be public, and the occasion affords the College an opportunity of inviting men of light and leading in other callings to hear the oration, and to share in the less formal celebration at the banquet which Harvey directed should afterwards be held.

Over two hundred Harveian Orations have been delivered, and if the injunctions of the founder had been less widely drawn, or if they had not been interpreted rather in the spirit than the letter by succeeding orators, the profession might have been treated to as many examples of formalism. But though every orator has felt it becoming to bring what he has had to say into some relation with Harvey, he was so many-sided a man, so endowed with intellectual courage and independence, so possessed with divine curiosity to search and study out the secrets of Nature, and so well versed in the learning of his time, that to find a new point of view from which to regard his work or illustrate it has not been a task as difficult as might have been anticipated.

The chief aim of the orator this year was, as may be seen from the full text of his oration published at page 707, to draw a picture of the kind of intellectual world into which Harvey was born. Just recently there has been a great pother among the log-rollers who write columns of "literary gossip" about the discovery of some of their number that Shakespeare was the child of his age, influenced by the currents of thought then prevailing and by the events of the day. For biologists the question is, not to affirm the influence of environment, but to determine where to trace its limits. Dr. Arnold Chaplin is too much of a man of science to consider it worth while to discuss this aspect of his subject, and too good a humanist not to assign great importance to the revival of learning in Western Europe which had begun about a century before Harvey's birth. The orator thus became involved in an attempt to explain the renascence. For him it dates fairly definitely from 1453, when the Ottoman captured Constantinople. He does not, however, altogether forget that the West had earlier been in contact with the Greek Empire. There had been the Crusades; no doubt the motives of the men who were swept off their feet by that remarkable movement were mixed—in part they were religious and a reaction against Mohammedan propaganda and conquest, in part they were due to a love of adventure, but in part also to a new spirit of inquiry and curiosity. The same age saw the birth of scholasticism, founded on the study of the masters of Greek metaphysics, of whom Aristotle, the chief, enjoyed a kind of mystical authority, so that the conclusions even of his commentators could not safely be questioned. The more settled conditions of government which Western Europe owed to the administrative genius of the Normans not only made the Crusades possible, but favoured the growth of learning within the cloister, and also, though to a very limited extent, outside it. There was already a certain stirring of men's minds in Western Europe; Dr. Chaplin probably comes very near the secret when he tells how the Church became aware that its power needed support to be obtained only from an appeal to the intellect. As evidences of this we may note in passing that the University of Bologna came into existence in the middle of the eleventh century and had acquired a European reputation as a school of jurisprudence before its end, and that the medical school of Salerno dates from the middle of the twelfth century. Western Europe had indeed been prepared to benefit by the opportunity given to it when Greek scholars fled from conquered Constantinople to find a refuge in Italy, and when the Ottoman readily sold original Greek manuscripts to the princes and merchants of that country. Hitherto the West had seen the ideas of the men of the great age in Greece through the dark glass of Latin translations or paraphrases of Arabian versions, and the same was true of the later Galen, whose writings, in spite of his own and his commentators' errors, had attained an authority as of holy writ.

Dr. Chaplin has done good service by tracing out what followed. The first stage was to establish the authentic Greek texts, to understand them truly, and to learn the lessons they had to teach. This was the task of the humanists, the task in medicine of the scholar-physician, of whom Linacre was one of the earliest—the earliest in England—and Caius one of the greatest. What was to be learnt from the great Greeks, however, was method rather than fact. Men began to perceive that it was unsafe to rely on written authority, and necessary to search and study out the secrets of Nature by direct observation and experiment. There was a change of spirit, and the first-fruits of the new spirit was the foundation of scientific anatomy by Vesalius; his teaching attracted inquiring minds from all over Europe, as Dr. Herbert Spencer more fully showed in the Harveian Oration of last year. Vesalius's great book was published in 1543, and three-quarters of a century later Harvey laid the sure foundation of the scientific study of function by his work on the heart. His little book swept away an enormous superstructure piled up on a basis of inaccurate observation and buttressed by fanciful conjecture. The impetus Harvey gave to physiological inquiry was, as the orator truly said, marvellous, and it is not yet exhausted. Rather it seems to gather strength; the growth of physiology and the immense influence it is exerting on the practice of medicine would have been a source of the deepest satisfaction to those great humanist scholar-physicians of whom Dr. Chaplin draws so pleasing a picture.

A CASUALTY DEPARTMENT FORTY-FIVE YEARS AGO.

The Poet Laureate celebrates his 78th birthday on Monday next, and it is forty years since he retired from medical practice and gave up the posts of assistant physician at Great Ormond Street and physician to the Great Northern Hospital. His strictly medical writings have been few; the only one we can trace—if we except his recent helpful disquisition on the language of anatomy to which we referred at length on August 12th (p. 276)—is a note contributed many years ago on a case of severe rheumatic fever treated with splints. But in 1878 Dr. Robert Bridges wrote a remarkable paper entitled "An account of the casualty department,"[1] describing the medical work of the old surgery at St. Bartholomew's, where he acted as "filtrator" of out-patients from 9 o'clock till past noon, spending (as he found) on an average a minute and a quarter over each case. Some 158,000 patients were relieved at St. Bartholomew's Hospital in the year 1877. Pondering over this vast number he asked himself several questions, such as, "Where in the world do all these patients come from? What is the matter with them? Have they anything the matter with them? What becomes of them afterwards? Do they ever go there again? How is it possible to attend to them when they do go? How are they counted, sorted, recognized, prescribed for, dispensed for? What quantity and what sort of medicine do they consume? What does it all cost? Who pays for it, and what is the use of it?" The main question, however, to which he applied himself, was: "How can they be attended to?" and his answer gives a vivid picture of the machinery of the old casualty department and its work forty-five years ago. Those who performed the feat each morning of clearing the hall of medical casualty patients consisted of Dr. Bridges and two other casualty physicians, and the junior assistant physician, who each attended four mornings a week. Among the problems of a casualty physician was "to weigh the inconvenience of overcrowding the hospital dispensary against the lesser, or at least less visible, inconvenience of treating a number of different complaints with the same medicine; but what stands most in his way is no doubt his want of time. . . . And yet filter he must, and filter quickly too, and be prepared to hear his quick filtrate shamefully ill spoken of in the wards and in the out-patient rooms. . . . He will decide at once that what he has to do is the best that can be done for every individual case under the circumstances, and he will make the best of a bad business, and take it patiently." Feeling thus the responsibility and difficulty of the task, Dr. Bridges made a system of hieroglyphic notes for checking off each case as he dismissed it; these records formed the statistical basis of his paper. At that time he saw 7,735 patients in three months, or some 30,000 patients in the year, and of these more than two-thirds were new cases. In the three months nearly 2,000 of his patients took quassia and iron, affectionately known as "Queen Anne" mixture —"a medicine which I selected to give as frequently as possible in consideration of its strong taste, cheapness, and innocuous properties." Allowing for the exiguous sum paid to the casualty physician, it appeared that the total cost of his "Queen Anne" patients was well under twopence a head. Dr. Bridges found that in the year he took book-notes of only 70 cases, and reflected on how much rich material for study was daily thrown away. The congested casualty department in his time supplied less than a quarter of the cases in the wards, and he came to the conclusion that the serious cases bore no relation to the trifling ones, and that the former would come in just as great numbers were the latter discouraged. While agreeing that the mistakes were very rare and the treatment fairly satisfactory, he maintained that the system was intolerable and must be reformed. How far reform has gone in forty-five years might be a congenial subject for inquiry by one of our younger medical poets. Great changes were made for the better when the new casualty and out-patient department of St. Bartholomew's was opened in 1907.

[1] *St. Bartholomew's Hospital Reports*, vol. xiv, 1878, p. 167.

BRISTOL MEDICAL SCHOOL.

When Bristol University College was founded in 1877 some of the lecturers in the Medical School—among whom Dr. Shingleton Smith may be specially mentioned—were anxious to see it incorporated completely with the College. This was not found feasible, but the School was affiliated with the College, and after a few years medical students in the preliminary subjects, up to and including anatomy and physiology, received their instruction in University College. This plan was continued when the University was founded in 1909, but complete incorporation was still desired, and this has now being accomplished. The clinical portion of the students' curriculum, which heretofore has been a proprietary affair of the honorary staffs of the Royal Infirmary and General Hospital, has been given over to the University, and the students' fees will be paid in to the University exchequer. The only private right the staffs retain is the privilege of introducing pupils to their hospital practice. This right is derived from a stipulation made between the original founders of the Bristol Royal Infirmary and the first surgeons elected to that institution, whereby the surgeons undertook to give gratuitous service on condition that they were allowed to introduce their apprentices to the wards of the Infirmary. The Bristol Medical School was the foster-mother of University College, and out of the College grew the University; the new arrangement by which the Medical School becomes an integral part of the University cannot fail to strengthen both. The surrender of the management of clinical teaching and the disposition of clinical fees is a big step, one effect of which will be to influence the Government grants to the University. Hitherto the Treasury has not taken into reckoning "clinical studies" in medicine as part of the functions of the University. In a recent communication to the University the University Grants Committee stated that it disapproved of "proprietary" medical schools and would make no grants in aid of them. The staffs of the Infirmary and Hospital became convinced that a change was desirable, and by a unanimous decision clinical teaching and clinical fees have been made over to the University of Bristol as from August, 1922. The University in return has arranged a scale of payments to clinical teachers which, although small, will have the advantage of not fluctuating with the number of students, and moreover is designed to remunerate teachers on the basis of work done—a plan which the old system did not ensure. The new arrangement has led to the appointment of three directors of clinical studies, whose chief duties will be to co-ordinate the teaching at the two institutions, and to organize on a coherent and continuous basis the clinical instruction of medical students. The directors appointed are Professor Edgeworth in medicine, Professor Hey Groves in surgery, and Professor Swayne in obstetrics and gynaecology. These newly appointed directors start with the goodwill of all their colleagues, and the scheme appears to have won the approbation of the students.

SACRAMENTAL HEALING AND THE PSYCHOLOGY OF CONVERSION.

At the Church Congress which was held in Sheffield last week questions of lively medical interest did not figure so largely as at the last congress, when Lord Dawson spoke on birth control; but the subjects of sacramental healing and of the psychology of conversion came in for some discussion. Dr. Chandler, lately Bishop of Bloemfontein, summed up the Church system of therapeutics as consisting of the sacraments or sacramental rites of confession, unction or the laying on of hands, and communion, and in that order. He said that doctors engaged in mental therapeutics had made the significant criticism of sacramental methods of healing, not that such healing was illusory, but that it was superficial, dealing only with outward symptoms, and not penetrating to deep, underlying moral causes. In many, though not all, cases of functional nervous disorder there was an underlying moral cause, a repressed complex resulting from some moral struggle, and he believed that this cause ought to be dealt with, before the

physical symptoms were touched at all, by a skilled confessor. The priest in confession ought to be able to supply, with equal effectiveness and under more rigorous safeguards, the services which the psycho-analyst aimed at rendering. It was claimed for psycho-analytical treatment that it differed from spiritual direction in securing a more complete and radical cure, so that no repetition of the treatment was needed. He believed that this view could hardly be maintained. It might hold good in certain sudden and violent emotional shocks where the struggle between instinct and ethical code had driven the instinctive reaction immediately underground and produced a neurosis; in such cases, of which war shock was a typical instance, the reassociation or breaking into consciousness of the repressed complex might be all that was required to re-establish the normal. But in the more usual cases there was necessity for repeated treatment, either in the way of precaution or cure, and this was best done by the sacrament of confession. Afterwards the physical symptoms might well be treated more directly by the further sacramental rite of unction or of the laying on of hands. The reconsecration of the body to the Divine will which was thus effected came as a natural and proper sequel to the absolution previously received. Finally the whole nature of the man, spiritually and bodily, was strengthened and built up by the sacrament of communion, which aimed at preserving body and soul unto everlasting life. Bishop Chandler claimed that in this way the sacraments, uniting body and soul together had their part to play in the cure of functional disorders although their primary aim was the spiritual good of the sufferer. The psychology of conversion was the subject of another discussion opened by Dean Inge, who criticized the view that conversion was always or even usually a sudden event rather more vigorously than some sections of his audience relished. Dr. William Brown, Wilde Reader in Mental Philosophy at Oxford, who followed, argued that conversion was not primarily psychological; it was religious, which meant that it belonged to a realm beyond the reach of psychology. He held that psychology could not explain the distinctive religious experience, and had to do only with the pathological. It could explain deviations, errors, and evil, but it could not explain normal appreciations, truth, or goodness. He believed that it was better for conversion, or the turning away from the naturalistic to the religious, to come gradually, but there were certain temperaments in which the gradual process was impossible. In these cases conversion was frequently preceded by melancholia, which was an outward and visible sign of maladjustment and of unsolved conflicts in the subconscious. The fact that the mystical experience came suddenly did not mean that it was a pathological experience, although in the cases of sudden conversions the danger of pathological characters linking themselves on to the normal process was greater. He was in profound disagreement with the psycho-analytical theory which explained religious experience as a regression to an infantile attitude of mind. There were those who said that when a person became converted he regressed to his childhood, and early tendencies, memories, and fantasies assumed for him an objective reality, although they were only a re-edition of his early experience. In Dr. Brown's view this was far too shallow a theory, and, as with so many other aspects of psycho-analytical doctrine, it was put forward without having been tested by people thoroughly trained in psychology and in philosophy.

THE ABORTIVE TREATMENT OF SYPHILIS AND SALVARSAN RESEARCH IN GERMANY.

Professor Kolle,[1] on whom the mantle of Ehrlich has fallen, has been engaged for a considerable time in studying the effects of salvarsan on experimental syphilis in rabbits. The two questions he set out to answer were: (1) Is it possible, and if so in what percentage, to sterilize with salvarsan rabbits infected with syphilis? (2) To how late a stage after infection is sterilization feasible? Kolle agrees with Finger, Landsteiner, Uhlenhuth, and others, that once a rabbit has been infected with the Truffi strain of the *Spirochaeta pallida* it is immune for the rest of its life. This immunity to reinfection from without in the form of a typical primary chancre is conditional on its not having been given any antisyphilitic treatment, and on ninety days or more having elapsed since the first infection. Among the many hundred rabbits he has inoculated he has not seen a single exception to this rule, although in a few cases he has observed atypical infiltrations or ulcers, containing spirochaetes, at the site of a second inoculation. Within the first sixty days of the first infection he has been able to induce reinfection in 50 to 60 per cent., and he has achieved this result in a few instances between the sixtieth and ninetieth days. Within 3, 15, 20, 25, 30, 45, 60, 90, and 120 days of the first infection rabbits were given three large doses of salvarsan preparation, and attempts were made 110 to 120 days after the first infection to induce a typical chancre by reinfection. Various salvarsan preparations were used, and neo-silver salvarsan figures most prominently in Professor Kolle's tables. Changes were also rung with mercury in combination with salvarsan, and the development of a typical chancre after reinfection was accepted as evidence of effective sterilization of the tissues after the first infection. It was found that when this sterilization was attempted within the first forty-five days of infection complete recovery occurred in a considerable percentage, whereas after the forty-fifth day this was the exception. In no single instance in which salvarsan was administered after the ninetieth day did a typical chancre develop when an attempt was made to reinfect. There is thus weighty experimental evidence in support of the clinical finding that the success of salvarsan medication depends largely on the interval between infection and treatment being short, but it is, of course, doubtful whether the forty-five day limit in the case of the rabbit can be accepted as the "sterilization limit" for man. Another interesting observation made by Professor Kolle was that the combination of mercury with salvarsan did not add to the number of his successes, and he claims that this is in accord with clinical experience. The dosage of salvarsan recommended by Professor Kolle for man is 0.45 gram of neo-silver salvarsan, 0.3 gram of silver salvarsan, or 0.5 to 0.6 gram of neo-salvarsan, these doses being approximately two-thirds of what he calls the *dosis tolerata*. He also recommends the injection of a precautionary dose of 0.05 gram of salvarsan twenty-four hours before the main injection is given, and the addition of a 40 per cent. solution of sugar (glucose) to the salvarsan. It will be seen that Professor Kolle has reverted to his predecessor's scheme for a *sterilisatio magna*, although he does not use this term in his paper, and he recommends not one but three to four large injections. He doubts whether the percentage of biological cures can be appreciably increased by a greater number of injections. Investigations are proceeding in his laboratory in connexion with the therapeutic possibilities of prolonged and intermittent treatment of fully established syphilis with salvarsan alone or in combination with mercury, but they are not sufficiently advanced to allow any conclusions to be drawn from them. With regard to the early abortive treatment of syphilis with large doses of neo-silver salvarsan, however, he is very optimistic.

[1] *Deut. med. Woch.*, September 29th, 1922.

AN INTERNATIONAL CONFERENCE ON TAR CANCER.

An international conference of those engaged in the experimental study of cancer opens at Amsterdam on October 23rd. and will continue until October 25th. It has been arranged by the Netherlands Cancer Research Society, and Professor Rotgans, Emeritus Professor of Surgery in the University of Amsterdam, will preside. Papers will be contributed by Professor Fibiger and Dr. Bang of Copenhagen, Drs. Archibald Leitch and J. A. Murray of London, Dr. Deelman of Amsterdam, Dr. Bierich of Hamburg, Dr. Teutschlander of Heidelberg, Dr. Lipschütz of Vienna, Professor Bloch of Zurich, and Drs. Peyre, Roussy, and Leroux of Paris. Most

of the papers will deal with the various phenomena observed in the production of cancer by tar. Dr. Murray will contribute a paper on the criteria of malignancy in experimental cancer, and Dr. Archibald Leitch will read three communications on the effect of cessation of the irritant on the development of tumours, and on the experimental production of paraffin cancer and arsenic cancer. At the end of the conference Professor Fibiger will deliver an address on recent investigations in cancer.

A GOOD OPENING.

Those who have to look through the annual reports of public institutions are not always rewarded for their pains. But now and then a chronicle of dull but useful events is enlivened by a note of criticism, or pages of statistics are prefaced by a few words indicating an outlook wider than the institution grounds. The effect upon the committee must depend largely on how the thing is done. An introductory note to the last annual report by the Medical Superintendent of the Kent County Mental Hospital at Barming Heath has, we suspect, been appreciated. "During the year [he writes] mental disease and its treatment have been much in the public mind. Psycho-analysis nowadays is freely discussed in popular magazines; the man in the street, not a little bewildered by the jargon of the psycho-analyst, ponders on the properties of the subconscious mind, and tries to recall the detail of his dreams. Monsieur Coué, the philosopher from Nancy, draws crowded audiences to his lectures on auto-suggestion, and the daily papers record the remarkable cures that occur at his séances. There is indeed nothing new under the sun! The interpreters of dreams were ever held in esteem by the ancients. Buddha, Mahomet, the Shrine at Lourdes, the King's Touch, are but a few of the agencies that have effected cures by auto-suggestion. It is not generally recognized that the emotions are more powerful than the intellect, and that the imagination is stronger than the will." Next follow a word or two about *The Experiences of an Asylum Doctor*, and the advantage of ventilating a matter which in the past has been too much "wropt in mystery"; a hint on the need of better opportunities for training the medical and nursing staffs of the great mental hospitals; and a suggestion that greater facilities should be given for treating mental disorder in its earlier stages. Having thus whetted his readers' interest, Dr. Wolseley-Lewis proceeds to the record of a year's work, mindful perhaps of Bacon's advice to negotiators: "A man may not look to sow and reap at once; but must prepare business, and so ripen it by degrees."

THE VITAL STATISTICS OF ONTARIO.

According to the last annual report on the vital statistics for the province of Ontario, Canada, the estimated population in 1920 was 2,895,370. The distribution of the population was as follows: the cities contained 54 per cent., the towns with a population of over 5,000 5.8 per cent., and the rural municipalities, villages, and small towns 40.2 per cent. The birth rate for the whole province was 25, and the death rate 13.9 per 1,000 of the population. The chief cause of death during the year was influenza, which accounted for the deaths of 113.1 persons per 100,000 of the population. This was due to an epidemic during the autumn and early winter of 1919–20, which was, however, not so widespread and virulent as the previous epidemic of 1918, when the extraordinary death rate of 262.2 per 100,000 of the population resulted. After influenza the most important causes of death (omitting pneumonia, which was doubtless influenced by the influenza epidemic) were organic heart disease, cancer, and tuberculosis. The deaths from tuberculosis numbered 2,280, a rate of 78.7 per 100,000 of the population. The cities had a rate of 74.7, the towns of over 5,000 population 85.7, and the rural municipalities 81 per 100,000 of the population. The campaign against tuberculosis has received assistance from municipal activities and from voluntary societies, while useful educational work has been done by the Canadian Association for the Prevention of Tuberculosis. It is suggested in the report that tuberculosis is one of the diseases in the prevention of which the Dominion Government should afford greater assistance to the provinces. The entire cost of tuberculosis work in Canada, with the exception of 10,000 dollars voted to the Canadian Association, is borne by the provincial governments. In regard to cancer, the number of deaths for the year was 2,464, giving a rate of 85 per 100,000 of the population, as compared with 16 in 1881. As elsewhere, the apparent increase in cancer mortality may be accounted for to some extent by improvement in diagnosis and more satisfactory death records.

MENTALLY DEFECTIVE CHILDREN.

The Birmingham School Board appointed a Special Schools After-care Committee as early as 1901; the Committee still exists, but for the after-care of the mentally defective only. The annual report for 1920 deals with the work of this Committee. During the past year 2,655 cases have been under care. Of these, 707 are doing remunerative work, 76 were dismissed as incapable, 625 are living at home and doing no paid work, 163 improved so much that they could be transferred to ordinary schools, 25 went to schools for physical defectives (mostly to schools for the deaf), and 271 now live in institutions for the defective. No less than 480 (25 per cent.) have been lost sight of, and most of them before the age of leaving school. The percentage of those in employment has fallen from 45 per cent. in 1920 to 32 per cent. during the past year. This is the lowest percentage of employed cases since 1912, but it is considered good under the abnormal conditions of trade, which affects these young persons first. The report shows a small increase in the marriage rate; there have been five new instances of the birth of illegitimate children, and several girls are said to be leading irregular lives. The proposed limitation of provision for these mental defectives after school years under the economy circular of August, 1921, led to the production of conclusive proof that it was far more economical to the nation as a whole to maintain certain types of mental defectives in suitable institutions than to be dealing with them periodically in prisons, workhouses, or maternity homes. The circular which proposed the reduction of accommodation was eventually withdrawn. Cases are cited which show the great advantage of the segregation of the dangerous mental defective. The Committee has under consideration the provision of a workshop where employment could be found for a certain number of those who easily fall out of work and yet are able to do something.

INTERNATIONAL ASSOCIATION OF MEDICAL WOMEN.

A meeting of the London Association of the Medical Women's Federation was held on October 10th with the president, Dr. Louisa Martindale, in the chair. Lady Barrett, M.D., gave a report of the international meeting of medical women which was held in Geneva last month, at which eighty medical women were present, representing eighteen countries. (A report appeared in the Supplement of September 16th, p. 111.) Lady Barrett stated that the idea of an international association of medical women had originated simultaneously here and in America. The Medical Women's Federation here had hoped to inaugurate an international association which should be composed of national associations, while in America an international association had already been started in 1919, composed of individual members from many countries of the world. At the request of the Americans the Medical Women's Federation of Great Britain drew up a draft constitution, which was to be presented to the Geneva Conference of 1922. The delegates from the Federation to this Constitution Committee were: Dr. Jane Walker (chairman of the committee at Geneva), Dr. Catherine Chisholm, Dr. Christine Murrell (joint secretary to the committee and vice-president of the American International Association, 1919), Dr. Dickinson Berry (joint secretary to the committee), Lady Barrett (president of the British Federation). Lady Barrett said that there was considerable difference of opinion at the conference as to the basis of membership, but

that finally a compromise was reached. It was decided that membership should be on the basis of national associations of medical women, in some cases sections of medical women, and in a few instances individual medical women should be eligible.

Sir W. Leslie Mackenzie, M.D., LL.D., has been appointed for five years as the Crown representative for Scotland on the General Medical Council in succession to Dr. J. C. McVail, whose term of office expires on October 28th.

Sir Alfred Keogh, G.C.B., G.C.V.O., M.D., has been awarded the gold medal of the Institution of Mining and Metallurgy "on the occasion of his retirement from the rectorship of the Imperial College of Science and Technology, in recognition of his great services in the advancement of technological education, and as a mark of admiration and respect."

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

Taxation.

The "Agreed" Recommendations.

Those motoring organizations that have been in consultation with a view to the production of what may be called an agreed, or unified, recommendation in regard to the re-casting of the taxation scheme in respect of the ownership of motor vehicles in this country have sent their report to the Ministry of Transport. It is a document with which the members of the medical profession are very intimately concerned. The recommendations are on behalf of the Society of Motor Manufacturers and Traders, the Scottish Motor Trade Association, the Motor Agents' Association, the Motor Trade Association, the Association of British Motor Manufacturers, the Institute of British Carriage Manufacturers, and the British Cycle and Motor Cycle Manufacturers' and Traders' Union, as well as of the Royal Automobile Club, the Royal Scottish Automobile Club, the Automobile Association and Motor Union, and the Auto-cycle Union, which four bodies, it is asserted on the cover of the memorandum, represent "all classes of motor vehicle owners in Great Britain." For a point of some accuracy it will be observed, however, that the Commercial Motor Vehicle Users' Association is not represented. That is an organization the members of which own some tens of millions of pounds' worth of road stock. The utility motor vehicle users of this country will have nothing whatever to do with the recommendations of the report. It is suggested that the registration book has failed to serve any useful purpose, and that it should be abolished, thereby saving a proportion of present administration costs; with this, doubtless, all will agree. It is further suggested that annual car licences should be issued to expire on any date; this, again, is a reform greatly needed. Another recommendation is that, with the proposed reduction of the registration tax, there would be little incentive to take up quarterly or monthly licences, and that this would result in further administrative economies. Other recommendations are:

(*a*) A flat rate duty per gallon to be imposed on all imported motor spirit to provide the bulk of the required revenue, the remainder to be derived from a reduced tax on the vehicle.
(*b*) All imported liquid hydrocarbons to be taxed at the port of entry on "motor spirit content" (the term is defined in Part 4).
(*c*) Motor spirit for motor boat, aviation, or any purposes other than for motor vehicles, to be supplied duty free on a permit system, such spirit, if desired by the authorities, to be coloured suitably.
(*d*) No duty to be imposed upon motor spirit obtained from raw materials produced in Great Britain.
(*e*) No rebates of duty to be granted to any user of motor spirit.
(*f*) Vehicles, other than those with internal combustion engines, to be taxed on the present method.

It is noted that any proposal submitted must be such as to secure a revenue equivalent to that produced in 1921–22, exclusive of the receipts in respect of licences for horse-drawn vehicles, drivers' licences, and penalties. Nothing is said as to the cost, nor are specific details furnished concerning what is called a simple permit system whereby fuel for motor boats, aviation, and such-like purposes, is proposed to be duty free. Nor is the very practical question, always asked on behalf of the Excise authorities, answered; yet it was understood that practical politics was to be the sole purpose of these negotiations. Frankly, I am extremely disappointed that there is no specific constructive paragraph showing how the Excise authorities are to solve their problem in respect of motor spirits distilled from crude oils imported into this country. Benzol, and such-like motor spirit produced in this country, is to be duty free. But under this head I fail to discover any solution of the problem of the lucky *versus* the unlucky motor vehicle owner. For example, according to this system, the man who secures home-produced motor fuel, which would be duty free, would benefit; but those who resided in neighbourhoods where such supplies were not available would be among the unlucky ones who were paying for the roads which "the other fellow" would be enjoying practically free of cost to himself. When it comes down to practical details, there are only two schemes, submitted on page 11 of the memorandum, and both concern approximate revenue. According to scheme A, the motor spirit duty would be at the rate of 5d. a gallon, and the registration duty 2s. 6d. per horse-power.

Horse-power Rating would remain Unaltered.

We know that the Treasury rating of horse-power would continue as at present, because the Society of Motor Manufacturers and Traders has discussed that matter, and has decided that no useful purpose could be served at this juncture by altering the basis of the Treasury rating, no matter how unsatisfactory it may be, since we should only leave the ills we have to fly to others that we know not of. Under scheme B in the report, the motor spirit duty would be 4d. a gallon, and there would be 75 per cent. reduction on the horse-power tax, which would be approximately 5s. per horse-power. Under both these schemes the man who secured benzol, or other home-produced fuel, would escape respectively 5d. and 4d. a gallon duty. Whereas when last a fuel tax was in vogue medical men were exempt, it is specifically laid down in these recommendations that there shall be no rebates nor exemptions other than those already specified under the reference permits. Inasmuch, too, as the ratio of horse-power tax that would be paid by medical men owning various classes of vehicles would be just the same as that which, it is alleged, is generally complained of at present, it would follow that the owner of a Ford car, for example, by comparison with the owner of, let us say, one of the new small 8-h.p. (Treasury rating), 4-cylinder, overhead valve, small cars, would be at the same disadvantage as he labours under at present, because Treasury rating would be the basis of both rates of duty. Further, the economy of the modern British or French built vehicles under the head of fuel, by comparison with the Ford, would also continue to give the advantage to the product that represented the latest higher standard of engineering efficiency. Moreover, it is frankly admitted on behalf of the recommendations that a large number, including small-car owners, would pay considerably less under the net heading of taxation than they do at present; and that, inasmuch as the gross amount of revenue to be reaped by the Treasury must be the same, those who used their cars considerably more than, say, 3,000 miles a year would have to make up the difference. Being interpreted, that means that the members of the medical profession in general would contribute more than any other section of motor users towards relief proposed to be accorded. The scheme represents, incidentally, a return from a single tax, as at present, to a dual tax. Take it for all in all, though it is called an agreed scheme, it must not be understood for a moment that it represents the views of all the members, or even necessarily a majority of the members, of the organizations that jointly put it forward. Not more than one member in three of the A.A. has troubled to back it by referendum. Certainly it will meet with much opposition.

Fuel, Tyre, and Car Costs.

A great change has come over the spirit of motoring during the autumn. Fuel costs have come down from 5½d. a gallon, not owing to any immediate possibility of selling more petrol during the winter months at a lower cost, but chiefly because long-term contracts in respect of shipping and such-like costs contracted for at the height of the post-war boom have now lapsed; therefore matters are getting back towards normal. An even more important factor is the great increase in the market for the residuary products of

the distillation of crude oil. This growth of the fuel oil market, largely for the service of the world's shipping industry, is something which motorists have long had cause to desire; hitherto they have had to pay more for their petrol because the manufacturers were loaded with residuary products which had to be sold at a loss, at no profit, or at an inadequate profit. Therefore, the more the markets for the residuary products of crude oil distillation can be developed the lower will be the proportion of the total cost of engaging in enterprise of this sort, which has to be borne by the users of the more volatile products, motor spirit in particular.

Tyres Cheaper than before the War.

Simultaneously with this material cheapening of petrol, which really represents a reduction of the fuel bill by one-sixth, there have been notable reductions in tyre costs. The result is that treads to-day of post-war construction are marked by the best makers at about the same figure as obtained in 1914, with this notable difference, that for these corresponding sums—there is not 3s. 6d. per average size of tread difference—the post-war production is designed on such lines and made by such infinitely superior manufacturing methods—including, notably, the curing of rubber—that the tyre mileage obtainable to-day is at least two and a half times as great as was possible in 1914, and in most cases three times. The actual result depends very much less on luck than formerly. But, of course, it still depends largely on the manner in which the individual drives, alike as regards changing gear and the application of brakes, as well as in respect of his care in not running his tyres on to the points of tramlines, and so forth. Assuming he drives with judgement, however, the medical man should have at least two and a half times the tyre mileage with corded type covers that he had before the war with the fabric types then available. The vast progress that has been made in the curing of rubber since 1914 will be appreciated by anyone who will follow my example and visit the laboratories instituted for rubber research. The system of construction is better and the product much more durable. The inner tubes, now sold by most of the leading makers at approximately half the price at which they were marketed in 1914, are better tubes. Therefore, under the heading of tyre costs the medical man's motoring bill is reduced from now onwards to a figure lower than any he has previously experienced. An illustration may be taken from the Dunlop Company's list, citing the popular size tyre, 815 by 105. When the inferior canvas cord groove type only was available in 1914 the cost was £5, whereas to-day the Dunlop clipper cord type, which is a better article, costs £4 15s. This year's price for this size Dunlop cord type of the same size has been £7 2s. 9d., whereas to-day it is £5 3s. 9d. only.

Insurance and Capital Outlay.

In regard to motor cars, while the Paris show has been held, nevertheless it is a fact that we shall not realize fully what motor car marketing enterprise amounts to in the gross for next year until the opening at Olympia, Kensington, and the White City, Shepherd's Bush, London, on November 3rd, of the International Passenger Car Show, of which I propose to give some account in the JOURNAL of November 4th. A large proportion of the chassis, and of even complete cars, staged in the Grand Palais in Paris this month were the identical vehicles which were shown there last year. By contrast, there will scarcely be an exception to the rule that this autumn's products alone will be staged at the London exhibition. Further, the reductions in the cost of labour and of raw materials, and progress alike in design and in manufacturing methods and equipment, have rendered possible great reductions in the cost of cars. Apart from the cost of garaging, the other chief items of cost in respect of motoring are insurance and taxation. Taxation is referred to above. Apparently the insurance rates are not likely to fall as have fuel, tyre, and car costs, but, inasmuch as cars are to be marketed at very much lower prices, capacity for capacity, it follows that the actual sums of money on which insurance will have to be paid will be reduced automatically and appreciably in respect of those who acquire cars from now onwards. But insurance rates must continue to rule high as long as average driving results inevitably in the high proportion of claims current; and there is as much car stealing as has been experienced since the war. If we can reduce these adverse factors we shall find notable reductions in the cost of insurance.

England and Wales.

NATIONAL MILK CONFERENCE.

A NATIONAL Milk Conference was held at the Guildhall, London, on October 16th, 17th, and 18th. It was called by the National Clean Milk Society, supported by certain other bodies, including the British Medical Association (which was represented by Dr. T. W. H. Garstang), the Royal Institute of Public Health, the Royal Sanitary Institute, and the Federation of Medical and Allied Societies, as well as a number of agricultural organizations. On the first day of the Conference the matters under discussion were in the main of agricultural interest, such as the breed of cattle in relation to quantity, chemical composition, and cost of milk production, and the feeding of dairy cattle in relation to this last factor. On the subsequent days discussions took place on bovine tuberculosis, the chemical composition of milk, pasteurization, and food values. The Conference was attended by some two hundred representatives, including several visitors from the dominions and foreign countries, three or four of whom came as representatives of their Governments.

Lord Astor, in an opening speech, declared that neither the milk industry itself nor the Ministry of Agriculture had in the past realized the importance of milk as a beverage. Uncontaminated milk was as important, in view of the health of children, as an uncontaminated water supply. Every year the milk trade lost thousands of pounds owing to premature souring, which was the result of uncleanly methods. Sir A. Griffith-Boscawen, Minister of Agriculture, who took the chair at the first session, said that the nations which consumed most milk per head of population were the most virile, and the consumption of more milk per head would be a great advantage to this country. A later speaker gave figures to show that in New York twice as much milk was consumed per head as in London. Among the papers read on the first day one was by Sir Stewart Stockman, chief veterinary officer and director of veterinary research at the Ministry of Agriculture and Fisheries, who dealt with epizootic bovine abortion and its effect upon milk supply. This contagious disease of cattle, due to a non-motile bacillus, has been specially studied at the Ministry's veterinary laboratory with a view to elaborating a method of protective inoculation, for which good results are claimed. In an area where the disease was prevalent, out of 493 test animals vaccinated 32 (or 6.5 per cent.) afterwards aborted, while of 265 animals not immunized, and left as controls, 101 (or 38 per cent.) aborted. In reply to a question, the speaker said that there was no evidence whatever to support the view that if milk which happened to contain the abortion bacillus was drunk by pregnant women it might lead to human abortion; tests had been made with the blood of pregnant women, and no sign of any agglutination reaction had been discovered.

The remaining subject at the first session was the production of clean milk, in particular the education and equipment of the dairyman. Dr. R. Stenhouse Williams, Research Professor in Dairy Bacteriology, University College, Reading, in opening the discussion, described the clean milk campaign, which had made considerable progress in some parts of England. More "Grade A" milk from tuberculin-tested cows was sold in Reading than in any other town in the country. There were five centres in Reading in which this milk could be secured, at one penny a quart above the ordinary price. Another town well advanced in the movement for clean milk was Leicester, where the authorities had announced that no contracts for milk for hospitals or schools would be accepted unless the milk was "Grade A," for which an extra threepence a gallon would be paid. The speaker feared the effect of Government regulation upon the clean milk movement. It seemed likely that, following on recent legislation, "Grade A" licences would be granted simply on veterinary inspection of the cattle, so that the "Grade A" farmer who resorted to the tuberculin test would get no official credit for the work he had done. Mr. Wilfred Buckley, C.B.E., who was presiding over the Conference at the time, said that no official statement had been issued by the Government as to the nature of the forthcoming regulations, and he understood that the Ministry of Health had under consideration the requirement of the bacteriological count as well as the veterinary inspection. Some sharp divergence of opinion was manifested by various medical officers of health who took part in the subsequent discussion as to the extent to which contamination of milk occurred in the home. Dr. Nash denied emphatically that the

home was responsible for any considerable part of the contamination.

A report of the later sessions, over which Sir Alfred Mond, Viscount Elveden, Sir Walter Fletcher, and Sir George Newman presided, will appear in our next issue.

Newcastle-upon-Tyne and Northern Counties Medical Society.

The first meeting of the session was held in the Royal Victoria Infirmary on October 5th. Professor Stuart McDonald, Vice-President, was in the chair, and about a hundred members were present. The first part of the meeting was a demonstration of cases and pathological specimens. Cases were shown by Drs. W. E. Hume, Horsley Drummond, George Hall, Messrs. H. Brunton Angus, S. S. Whillis, R. J. Willan, and Hamilton Drummond. The pathological specimens were arranged by Mr. W. E. M. Wardill, curator of the museum of the Durham University College of Medicine. Later in the evening a most interesting paper was read by Mr. F. C. Pybus on "Some surgical aspects of dyspepsia." The paper will appear in full in the *Newcastle and Northern Counties Medical Journal*. During the meeting the sad news was received of the death of the President of the Society, Dr. Lachlan G. Fraser, and a vote of sympathy with the widow and family was passed. The Society meets monthly during the winter session, and in addition to the ordinary meetings two clinical and pathological meetings have been arranged for the convenience of country members at 4.30 p.m. on October 25th and January 24th. The annual address is to be delivered on December 7th by Sir Humphry Rolleston, President of the Royal College of Physicians of London, on "Reflections on high arterial blood pressure." The annual dinner will be held the same evening, when Sir Humphry Rolleston will be the guest of the Society. On February 1st an address on "Diagnosis in surgery" will be given by Mr. D. P. D. Wilkie of Edinburgh.

London Hospital Dinner.

The London Hospital Old Students' dinner was held at the Trocadero Restaurant on October 12th. The chair was taken by Sir Arthur Keith, F.R.S., and he was supported, amongst others, by Lord Knutsford (Chairman of the Hospital), Sir Hugh Rigby, Sir John Lynn-Thomas, Sir William Lister, Sir James Dundas-Grant, Mr. T. H. Openshaw, Mr. James Sherren, and Dr. Robert Hutchison. The principal guest was Surgeon Vice-Admiral Sir Robert Hill, K.C.B., K.C.M.G., Medical Director-General of the Navy. The gathering was large and enthusiastic, each generation of old students being well represented, while the hospital staff turned out in force. If one factor more than another could be held responsible for the success of the evening, that should be the method adopted in arranging the tables. So far as possible each table was given up to one generation of old students, so that it was practically certain that any man attending the dinner, even if he had lost touch with his old school for years, must find himself seated among old friends. To the honorary secretaries, Messrs. Souttar and Lindsay, more than an ordinary tribute of praise is owing for the art displayed in so skilfully arranging such a numerous gathering. As should be on an occasion such as this, the evening was devoted more to the renewing of old friendships—the harking back to the good old days—rather than to listening to a number of set speeches. After the toasts of "The King" and "Queen Alexandra, Patron of the Hospital" had been duly honoured, Sir Arthur Keith proposed "The London Hospital." In a humorous manner he explained the circumstances which brought about his appointment many years ago to be senior demonstrator of anatomy at the princely salary of £100 a year. In happy vein he developed his theme to show that not only was the research worker starved by the totally inadequate reward offered for his labours but the aspirant to the hospital staff was similarly handicapped in his early years. He had to shoulder an utterly unfair burden in being forced to devote so much of his time to the gratuitous service of his hospital. Not only had the staff themselves to carry a share of the burden of sickness in London, they had at the same time to satisfy the by no means modest claims of the West End landlord. He appealed to the wealthy citizens of London to give generously and freely towards the endowment of medical education that the perpetual war against disease might be waged successfully by the combined efforts of clinical and laboratory research workers. The toast was supported by Lord Knutsford and by Mr. Openshaw, who said that no man had so closely followed in the footsteps of John Hunter as had Sir Arthur Keith. The health of the chairman was briefly proposed by Dr. Robert Hutchison.

King's College Hospital War Memorial.

On October 11th Viscount Hambleden, chairman of the hospital, declared open a war memorial pavilion on the athletic ground of King's College Hospital Medical School. The tablet he unveiled bears the inscription, "Dedicated to the memory of the Students of this School who fell in the Great War—1914-1918." The history of the war memorial was recounted by Mr. L. V. Cargill, senior ophthalmic surgeon. Lord Hambleden in the course of his address said that of all the wonderful organizations created during the war none were more remarkable than the medical services of the two great fighting forces. The services of the medical men who joined the armed forces could never have been rendered had it not been for the work of the voluntary hospitals and their medical schools in former years. "We appreciate to the full," he said, "the work of the Regular officers of the R.A.M.C. and the powers of organization which they showed. They called upon, and not in vain, the services of men who had been trained for ordinary civilian work, who turned their knowledge and capacity to the service of their country in the war. We can surely be proud as King's College men of the part which old students, our honorary staff, and our nurses played, and especially are we proud of those who made the greatest sacrifice of all and gave their lives to the cause of their country and their fellow-men." A vote of thanks to Lord Hambleden was proposed by the Dean, Dr. H. Willoughby Lyle, and seconded by Dr. H. A. Lucas.

Midwives and Chloroform.

A special meeting of the Central Midwives Board for England and Wales was held on October 11th, Sir Francis Champneys presiding. Three cases adjourned for reports and eight fresh cases were dealt with; six midwives were removed from the roll. At the ordinary monthly meeting, which was held on October 12th, a letter was read from the clerk of the Middlesex County Council reporting that the County Council was not in a position to find a prima facie case under Section 8 (2) of the Midwives Act, 1902, against a midwife who had administered a "whiff of chloroform," and again asking for the Board's views as to the desirability of a midwife administering chloroform. It was agreed to reply as follows:

"That the Board will express its opinion as to whether or not the use of a drug by a midwife is justified when it has a concrete case before it, and is aware of all the circumstances attending the administration or the use of such drug. The Board sees no reason why the midwife should not be reported in order that the Board may consider the question on a concrete case."

Certain lecturers and teachers were approved, and the meeting terminated.

Scotland.

Presentation to Dr. J. R. Currie.

Dr. J. R. Currie, of the Scottish Board of Health, was entertained to dinner in the hall of the Royal College of Physicians, Edinburgh, by a number of medical colleagues on the occasion of his impending departure to take up the duties of professor of preventive medicine in Queen's University, Kingston, Ontario. Dr. John Playfair presided, and the company included Sir James Hodsdon, Sir Leslie Mackenzie, Sir Robert Philip, Dr. Norman Walker, Dr. A. K. Chalmers, Dr. J. R. Drever. Sir Robert Philip proposed the health of the guest, and Dr. Currie, in reply, said that the work of a medical officer had changed greatly in the ten years since he was medical officer for the counties of Fife and Kinross. At that time the medical officer dealt with the purity of streams and water supplies, removed cases of infectious disease to hospital and dealt vigorously with infection, and was very wise on the subject of drains. Nowadays tuberculosis alone had broadened into a special subject by itself; they had added the hygiene of the young child to the hygiene of the school child, and included the hygiene of the infant and the child unborn. Preventive medicine should go on and take a grasp of the social questions of the hour and of the future, and it was now said that all medical teaching should have a preventive bias. Dr. Norman Walker, in

presenting Dr. Currie, on behalf of his Scottish friends, with a silver bowl and a silver tea service, commented upon the success of the work which Dr. Currie performed in connexion with the Scottish Emergency Committee on medical service during the war.

Links between Natural History and Medicine.

The inaugural address to the students of the Anderson College of Medicine, Glasgow, was delivered on October 10th by Professor J. Arthur Thomson of Aberdeen, who took for his subject "Some links between natural history and medicine." In olden days, he said, every medical practitioner was a bit of a naturalist, using plant simples and animal simples. The leech, his pocket companion for centuries, became synonymous with doctor. When from the animal prescriptions were subtracted those that seemed quite superstitious, there remained some which were reasonable and a few which suggested glimpses of modern discovery. Thus decoctions of ants, rich in formic acid, and diets of snails, the poor man's oysters, might well have useful results, and the use of snake's bile as a counteractive to the venom had been confirmed by modern research. There was no finer instance of the help that zoology could give to medicine than the contribution made by Dr. R. T. Leiper, a Glasgow graduate, to the life history of bilharzia. One of the characteristic features in the history of twentieth century zoology and medicine had been the rise of protozoology into a science almost as important as bacteriology. Along with protozoology had developed medical entomology, for most of the formidable protozoa were carried and disseminated by insects. Greatly to the credit of zoology and medicine, working hand in hand, had been the elucidation of the part played by the mosquito in spreading malaria and of the tsetse fly in spreading sleeping sickness. It might be that a correlation of the facts of artificial parthenogenesis, the phenomena of regenerating lost parts, and the formation of gall growths, would throw some gleam of light on the dark problem of cancer. Again, there was great suggestiveness in the modern studies of senescence in animals and the various ways in which this was counteracted by processes of rejuvenescence. Zoology had been a trusty ally of medicine in the past, and the actual alliance was now firmer than ever.

Health and Housing in Dundee.

The Dundee census report was dealt with in our issue of August 26th (p. 400). The principal statistics for 1921, as given in his annual report by the medical officer of health, Dr. W. L. Burgess, include the following: The corrected death rate was 15.8, the infantile death rate 114 per 1,000 births, the birth rate 26.5. The death rate from pulmonary tuberculosis was 1, from all forms of tuberculosis 1.35, and from the principal epidemic diseases 1.09. The infant mortality was the lowest on record, as was also the tuberculosis death rate. There was very little epidemic disease; smallpox was entirely absent, and of enteric fever there were only seven cases. Dr. Burgess complains that notification of puerperal fever is not efficiently carried out by medical practitioners, partly, he observes, because the disease is not clearly defined. There were 193 notifications of ophthalmia neonatorum, being 1 in 23 births, against 1 in 19 births in the previous year; complete recovery took place in every case. Notification of tuberculosis is stated also to be very defective; of the 474 recorded cases, no less than 203 were detected by the tuberculosis officers, only 164 were notified by doctors, and 54 were brought to notice by the death returns. Dr. Burgess is doubtful whether any treatment should be carried out at the tuberculosis dispensary, and inclines to the view that its functions should be diagnosis, examination of contacts, supervision and education of patients, and the making of arrangements for institutional treatment, the work being supplemented in the homes of the patients. Child welfare work in Dundee suffered very seriously from the industrial depression, but considerable good was done in granting relief. Dr. Burgess holds, however, that, notwithstanding co-operation between the authorities interested, there was undoubtedly overlapping in this. Housing is discussed in relation to the society conditions of Dundee. A tremendous number of women are employed in industry, and have only an hour's interval to prepare and consume a meal, too often of tea and tinned food. Many of them are married and have to arrange for the care of their children, whom they may have to take to day nurseries. Also they dislike travelling any great distance to and from their homes in the dark of winter, while tram fares would add considerably to their outlays. In these circumstances their houses must be near their work, only a small rent can be paid, and small "tenement houses," as the term is used in Scotland, seem to Dr. Burgess to be properly permissible to meet the situation. Housing schemes have done much for the "middle" working class, but not for the "lower" working class areas, and it is stated that not a single family living in the slum areas has benefited by the new housing schemes.

Ireland.

At the annual election of officers of the Pharmaceutical Society of Ireland, held on Tuesday, October 10th, Dr. A. J. Barnes of Dublin was re-elected President for the ensuing year.

Royal Academy of Medicine in Ireland.

During the session 1921–22 the Academy consisted of 177 Fellows, 8 Members, and 20 Student Associates, numbers which are almost identical with those of the previous year. The accounts for the session have been audited, and the balance sheet shows the financial state of the Academy at the close of the session. The income during the year amounted to £441 2s. 5d., and the expenditure to £365 7s. 4d., thus leaving a balance to be carried forward to the next session of £75 15s. 1d. Professor Oskar Frankl again visited Dublin during the year, and he accepted the invitation of the Council to lecture before the Academy. Two lectures were given on April 25th and 27th, in the theatre of the Royal College of Surgeons, and both were well attended. During Professor Frankl's visit the Council heard of the hardships to which medical men in Vienna were subjected in consequence of the financial position there. So bad had things become that it was feared that owing to lack of funds the Medical Society of Vienna would have to close its library during the coming winter. The Council decided to open a subscription among the Fellows and Members of the Royal Academy of Medicine in Ireland; a sum of £45 10s. 6d. was collected and was sent as a donation to the library from the Academy. For this gift the sincere thanks of the Society have been sent by its President, Professor Eiselsberg, its Treasurer, and Professor Frankl.

A permanent contract has been entered into with Messrs. Cahill for the publication of the Academy's journal, and at a special meeting held on April 12th, 1922, the title of the journal was changed to *The Irish Journal of Medical Science*. Unfortunately, owing to the destruction of the premises of Messrs. Cahill by fire, the regular publication of the monthly numbers of the journal has been somewhat interfered with, but it is hoped that this difficulty will shortly be overcome. An important step has been taken by the establishment of an Obstetrical Research Committee in connexion with the Section of Obstetrics and Gynaecology. It is proposed that this Committee should prepare statistics and make collective investigations. Dr. Louis Cassidy, Master of the Coombe Hospital, Dublin, has been appointed secretary of the Committee, and the Council has voted a sum of 5 guineas towards the expenses.

The Council records with sincere sorrow the death during the session of two valued Fellows of the Academy, Sir Joseph Redmond and Professor Edward Taylor. Dr. Joseph Michael Redmond was one of the original Fellows of the Academy, and in 1907 and 1908, when President of the Royal College of Physicians of Ireland, he was President of the Section of Medicine. Several communications by him have appeared in the *Transactions*. Professor Edward Henry Taylor, who had been President of the Royal College of Surgeons in Ireland for just two years at the time of his death, was for many years an active member of the Section of Surgery, of which he was President when he died.

The Council is glad to be able to record a continued progress of the Academy. During the session twenty-five sectional meetings were held, at which the attendances were: Fellows 494, Members 30, Student Associates 164, and visitors 199.

Royal Victoria Hospital, Belfast.

The inaugural address was delivered at the opening of the winter session by the Marquess of Londonderry, the Minister for Education for Northern Ireland, in the Edward VII Memorial Hall of the hospital on October 12th. The Chairman of the medical staff, Professor Sinclair, F.R.C.S.Eng.,

said that Lord Londonderry had no need of any introduction to an audience in their province; he was indefatigable in visiting schools of all kinds, and in making himself directly acquainted in a practical manner with all forms of education. Perhaps there were one or two facts that he might mention to him, and he did so with a pride that was shared by all the members of the medical staff. Their medical students in all now numbered nearly 700, and this constituted them in respect of numbers the fourth largest school in the kingdom. Of the medical staff of the hospital, eight held professorships or lectureships in the university. Their board of management, under the chairmanship of Professor Lindsay, was enlightened, and was most liberal in meeting all their demands that tended to promote the welfare of the patients and the advancement of medical education. He assured Lord Londonderry of their gratitude and appreciation of his kindness in coming to open the session when there were so many calls on his time and energy. Lord Londonderry, who was received with the greatest heartiness by the students, expressed his pleasure in coming and thanked them for their welcome. He knew how much Lord and Lady Pirrie had done for their hospital and the value this hospital was to Ireland. He was especially interested in the clinical teaching, as it was part of the university work. It was his desire to widen the present avenues to the university and to open up more; the drawback in the past was the lack of opportunities for everyone to equip themselves intellectually for the battle of life. His primary care was for the young: his audience were of an age to know their responsibilities; those for whom he worked in primary and secondary schools were not of an age to do so; and he hoped that in time to come, as their education system became more and more perfect, he might be allowed to address on some future occasion another audience in that chamber even better equipped for their advanced studies that now occupied them. He urged them and all students to fit themselves for and to interest themselves in all that was passing around; it was a duty to themselves and to their province and to their Empire. Dr. McKisack proposed and Mr. Mitchell seconded a most hearty vote of thanks to Lord Londonderry for his enlightened and stimulating address, and this was conveyed by the chairman.

Vital Statistics of Northern Ireland.

The first quarterly return of marriages, births, and deaths issued by the Government of Northern Ireland has been published.[1] The population of Northern Ireland in the middle of 1922 was estimated to be 1,284,000, inclusive of military. The number of marriages registered during the fourth quarter of 1921 was 1,855, representing an annual rate of 5.8 per 1,000 of population. During the quarter ending March 31st, 1922, 7,639 births were registered in Northern Ireland, equal to an annual birth rate of 23.8 per 1,000 of the estimated population; in England and Wales the corresponding birth rate during the quarter was 22.2. The deaths registered during the first quarter of the present year numbered 6,422, representing an annual death rate of 20 per 1,000; the corresponding mortality in England and Wales was 17.7. In the county boroughs and urban districts, which contained nearly one half of the total population, the equivalent annual death rate for the quarter under review was 28.8 per 1,000, and the birth rate for the remainder of Northern Ireland was 20.7. The death rate in the county boroughs and urban districts was 22.1 per 1,000, and the corresponding rate for the remainder of Northern Ireland was 19.2. The urban mortality from the principal epidemic diseases recorded during the quarter was equivalent to a rate of 1 per 1,000, the death rate from these diseases for the remainder of Northern Ireland being 0.6.

[1] Issued: Published by His Majesty's Stationery Office. Price 1s. net.

Mauritius.

The Case for Sanitary Reform.

Nearly two years ago the Secretary of State for the Colonies commissioned Dr. Andrew Balfour, C.B., C.M.G., to visit the island of Mauritius for the purpose of investigating its sanitary condition. The Report[2] has now been issued, and discloses the extent and urgency of the reforms which should be instituted. The island has an area of fully 700 square miles and a population of 376,000, of whom about 10,000 are whites, mostly French. The working classes, who are in great proportion descendants of liberated slaves, are stated to be highly intelligent. The population, however, is very heterogeneous. The density of population is over 500 per square mile, and the death rate is from 32 to 35 per 1,000, but in 1919 an influenza epidemic raised it to close on 65 per 1,000. In 1920 the rates in different districts ranged from 23 to over 40 per 1,000. Dr. Balfour devotes the earlier part of his report to communicable diseases. Dr. J. F. Kendrick had made, on behalf of the Rockefeller Foundation, and not very long before Dr. Balfour's visit, a survey of the island in relation to ankylostomiasis, and estimated that about 226,000 persons—three-fifths of the population—were infected. For prevention of infection of influenza amongst contacts value was attached to a measure advocated by Dr. J. A. Taylor of the Uganda Medical Service. It consisted in the application every three hours on the tongue of contacts of two or three drops of a mixture of equal parts of ordinary tincture of iodine (*B.P.*) and native honey. The accommodation for leprosy Dr. Balfour condemns unsparingly. The single asylum, he says, is "a disgrace to the colony." Against malaria much good work has been done in giving effect to the recommendations of Sir Ronald Ross, who had visited the colony a number of years previously. Malaria, however, still ranks first as a destroyer of life in Mauritius. Tuberculosis comes next, being spread by faulty housing, poor food, unsuitable clothing, poverty, alcoholism, and predisposed to by ankylostomiasis. As regards alcoholism, a commission, appointed by Sir Hesketh Bell in 1919, reported on the paramount importance of combating the increasing peril. Conflicting interests, however, are powerful. The State derives large revenue from the liquor traffic; the distillers sell their rum to the trade; the traders retail it to the public; and the sugar planters supply the distillers with the molasses. The retailers are mostly Chinamen. The commission did not recommend immediate prohibition, but rigorous control, and the manufacture of a light drink, such as Kaffir beer. Dr. Balfour hopes also that what is known as the Durban scheme will be adopted, its main feature being the vesting in the Town Council of a monopoly for the entire control of the manufacture and sale of the native beer, all profits going to a special "Native Administration Fund" for the general well-being.

Under the heading "Medical facilities" there is consideration of hospitals, dispensaries, infirmaries, orphanages, crèches, maternity and child welfare, and medical inspection of schools. "Sanitary matters" are next reported on—the medical and inspectorial staff, water supply, collection and disposal of excreta and general refuse, solid and liquid, slaughterhouses, meat markets, bakehouses, milk supply, washing and disinfection, offensive trades, housing and town planning, schools, prisons, quarantine, and so forth. In short, nothing relevant appears to have been overlooked by Dr. Balfour, and he amply demonstrates that in practically every direction there are many defects. He makes a series of recommendations for reorganization of the medical and health department of the colony. An important step already taken is the appointment of a competent consulting sanitary engineer, who had reached the island before Dr. Balfour left. The scheme has obviously been thought out with care and knowledge, and though the total salaries suggested amount to fully £30,000 instead of £10,000 as at present, it is urged that they relate really to emergency conditions. In addition qualified sanitary inspectors are required, district mosquito brigades, improved equipment and increase of the staff of the bacteriological laboratory. In short, the question is fundamentally financial. Present-day knowledge of disease prevention is capable of being effectively applied to the numerous difficulties that have to be overcome. The existing conditions are appalling, and are forcibly described and photographically depicted by Dr. Balfour. A general improvement and development fund of ten million rupees had already been voted by the Council of Government, and an important part of the Commissioner's duty was to advise as to the spending of it. The task would have been easier if the sum had been larger, but the fund as invested yields Rs.750,000 a year. Of the measures needed for sanitary improvement thirteen are bracketed as equal in importance: they include general antimalarial measures, sanitation of Port Louis, various improvements in sewerage and scavenging, abolition of certain slum areas, improvements in milk supply and water supply, bacteriological laboratory establishment and

[2] Reports on Medical and Sanitary Matters in Mauritius, 1921. Waterlow and Sons Limited, London Wall, 1922. (Fcap., pp. 467, with numerous illustrations.)

extension, and microscopes for hospitals and dispensaries. In respect of soil sanitation, there is to be co-operation between the Mauritian Government and the Rockefeller Foundation. About the fundamental economy of the whole proposal there can be no doubt. Dr. Balfour writes regarding Mauritius: "It is a marvellously fertile island, and the climate for the greater part of the year is delightful; but it has drifted into a state which is inimical both to efficiency and industry, and has, with good reason, gained a reputation which repels those who might otherwise visit it, either for purposes of commerce or pleasure." The report shows how that bad reputation may be mended, and it is for the authorities to give serious heed to the advice which they have received from their Commissioner.

Correspondence.

THE DIFFERENTIAL DIAGNOSIS OF SMALL-POX AND CHICKEN-POX.

SIR,—At the season favourable for the spread of small-pox, of which 21 recent cases in and near London have yielded 7 deaths (several at first were taken for chicken-pox), it may be of service to utter a reminder and to mention that the diagnostic criteria which have proved in practice to be the most reliable in differentiating some 500 cases of chicken-pox, mostly adults, from among about 11,000 cases of small-pox and similar diseases in London during the last twenty years are four in number—namely:

1. The presence or absence of marked general prostration in the early stages.
2. The relative density of the eruption on irritated surfaces.
3. The relative depth of the lesions in the skin.
4. The progressive maturation of the lesions.

As any acute febrile attack, however mild, may in reality be small-pox, every such illness calls for an examination of the skin and buccal mucosa for haemorrhages, papules, pocks, or other blemish, in order to prevent the escape of a case which, however trivial in itself, may yet occasion many fatalities.—I am, etc.,

London, W., Oct. 16th. W. McC. WANKLYN.

PSYCHO-ANALYSIS.

SIR,—As Silas Wegg "dropped into poetry" only on being pressed, so unwillingly I feel I must "drop into print," for if Dr. McBride's letter in your issue of October 14th does not receive some reply the silence might be construed as consent, which is by no means the case.

Your correspondent desires that psycho-analysts should give a "reasoned defence" of their position, and presumably this should take the form of a letter to you.

The thing is impossible. As well ask a disciple of Darwin to defend his position in a letter.

The word "psycho-analysis" connotes three distinct subjects—namely, (*a*) a method of mental examination, (*b*) a theory, and (*c*) a method of treatment. Which of these is to be defended? Let us concentrate for a moment on (*b*)—the theory. The theory of Freud deals with normal mind, abnormal mind, dreams, wit, folklore, ethnology, myths, aesthetics, the science of religion, etc. Once again I ask, Is the relationship of the theory to all these to be defended? Or, if in one instance only, which one?

A reasonable exposition on any one of these matters is impossible in a letter, but in book form there is no lack of detailed description. It would be an easy task to give a list of books on psycho-analysis. I would recommend, however, to anyone interested in Freud's theories to begin with Hart's *Psychology of Insanity*. The student should then read *The Interpretation of Dreams* by Freud. Afterwards he has many books to choose from, but he must not omit to read Freud's *Introductory Lectures on Psycho-analysis*, just published. If, having completed these studies, he disagrees with their teaching, let him give his reasoned argument.

As things are at present, what one often meets with is ignorant prejudice. Some time ago a man whose identity was at the moment unknown to me, as mine was to him, said to me that he was going to make a speech on psycho-analysis. I asked him if he knew anything about the subject, and he was obliged to confess ignorance. I do not know if the speech was delivered, but, if so, doubtless it was received with prolonged and great applause; this state of affairs is not rare. Assertion takes the place of argument, and if this is all that is required I can also assert. I have no hesitation in saying that the theory of psycho-analysis throws a flood of light upon numerous cases of mental disturbance, not only in the severe types commonly called insanity, but in the so-called border-line states, numerous examples of which I see at my out-patient department at King's College Hospital. I would further assert that a large and increasing number of my colleagues agree with what I say.

Now, if any anti-Freudian who has seriously studied the matter will give us a book containing the results of his considered judgement, I can guarantee it will be received with sympathy and read with care, nay, even with avidity. Personally I do not like the Freudian theories. They are hurtful to my self-esteem and they offend my aesthetic sense, and if anyone can prove that they are wrong these emotional disturbances will cease in me. But the question is not what one likes, but what is true.

I hope Dr. McBride does not think I include him in the company of those who have not studied the matter. He knows best. I would, however, say to him and to Sir Clifford Allbutt, to whom he refers, a modification of the words of Gamaliel:

"For if this counsel or this work be not of the truth it will come to naught, but if it be the truth ye cannot overthrow it, lest haply ye be found even to fight against the truth."

—I am, etc.,

R. H. STEEN, M.D., F.R.C.P.

City of London Mental Hospital,
Oct. 16th.

SIR,—It is not without provocation that I write, for I have been reading the report of the proceedings at Glasgow, particularly in regard to the discussions of "psychotherapy." Where I got facts derived from experience I was content, but all too frequently I had the impression of being plunged into that style of high-sounding jargon devoid of any scientific thought that reminded me of the doctors of Molière.

I propose, however, to deal with these papers not by criticizing them point by point, but by taking the subject at other bearings so as to show the invalidity of the foundation on which this entire superstructure rests.

Psycho-analysts have brought themselves to a point at which they depend on Freud as the old schoolmen acknowledged the authority of Aristotle precisely in those parts of his philosophy where the great Stagirite was weakest. Galileo disposed of that worship by his experiment of dropping his two pellets from the leaning tower of Pisa, and by putting mechanics on a sane basis he prepared the scientific basis of our modern world. I have proposed to render a similar service to psychology.

Suppose that we were able to formulate what, by an analogy from chemistry, we might term the elements of thought, and that, having given such elements, we could show that by the syntheses of these all forms of psychic movement, the simplest and the most complex, could be exhibited, would we not have the master key to all psychology? It leaps to the eyes that it would be so. But that is precisely the problem which I set before myself and wrestled with for twenty years, until, at length, I was able to formulate these elements, or, as I have called them, the "fundamental processes of the mind."*

Space does not permit me to enter into detail as to these fundamental processes, but one of them is association. That is not, of course, the only fundamental process, for, otherwise, no mechanism of mental activity could be demonstrated, whereas the manner of functioning of these processes corresponds to the working of the brain, which may be taken as the living diagrammatic form of the whole complex of the movements.

Now I wonder how many, even of ardent Freudians, have gone to the original authority to examine their master by such a test as here indicated. Those who do will not find a Galileo; they will meet with the method and manner of the schoolmen.

Freud takes association as the master key, and with this assumption, so absurdly inadequate in view of the searching analysis and the rigorous proof demanded by science, he builds up his system. I say nothing at present as to his great sex idea, his exposition of memory and of dreams, except to remark that I will later bring to demonstration that

* The exposition of these fundamental processes forms the backbone of *Psychology: A New System*, in which, by methods of rigour such as, I venture to say, had never before been introduced into these studies, I showed that these fundamental processes were both necessary and sufficient to cover the whole field of thought. This book has been sold out, but another and better exposition, *Principles of Psychology*, will appear in January.

his reasoning in these questions is unscientific and that certain of his conclusions are ridiculous. I wish to concentrate on that point of his meagre offering of analysis, for, to put an analogy, if a man explained the steam engine by saying that nothing had to be considered but latent heat, he would not only have talked nonsense about the steam engine, but he would have given a false notion of latent heat.

Freud has given us a false theory of mental process, and on his bright particular star of association he has talked moonshine.—I am, etc.,

London, N.W., Oct. 16th. ARTHUR LYNCH.

SIR,—I wish to comment on one of the numerous misconceptions to which Sir Clifford Allbutt has subscribed in his latest attack on psycho-analysis (in an address which Dr. McBride finds "admirable, scholarly, and scientific"). He identifies the practice of psycho-analysis with that of the confessional (as does also Dr. McBride in his letter), and states that it has been known for centuries in the (Catholic) Church.

Now the most elementary acquaintance with psycho-analysis will inform one that it is concerned with processes of which the subject is entirely unaware, with what is called the unconscious mind, so that, as priests obviously deal only with conscious processes, they are concerned with a completely different sphere. This fact alone, apart from other fundamental differences, would serve to distinguish the practice of psycho-analysis from that of the confessional; in fact I know of no feature common to the two beyond the professional secrecy enjoined in both.—I am, etc.,

DOUGLAS BRYAN,
Honorary Secretary of the
London, W., Oct. 16th. British Psycho-Analytical Society.

ANIMAL EXPERIMENTS.

SIR,—I was not a little amused by your editorial note on "Animal Experiments in 1921" in your issue for August 26th, 1922.

The law under which these experiments were done I presume is the law advocated by the antivivisectionists, such as Mr. Coleridge and Dr. Hadwen. The reason for my amusement is the statement that "the law demands that the operation shall be performed *antiseptically so that the healing of wounds shall, as far as possible, take place without pain.*" (Italics my own.)

Now Messrs. Coleridge, Hadwen, and their friends deny the germ theory *in toto* and also deny the value of antiseptics. They ridicule all such precautions.

What a tribute their law pays to the value of antiseptics as a means of preventing pain and facilitating healing! I admire their unconscious advocacy of antisepsis and wonder what has become of their consistency.—I am, etc.,

W. W. KEEN,
Emeritus Professor of Surgery, Jefferson
Medical College, Philadelphia.
1520, Spruce Street, Philadelphia, Sept. 25th.

THE TREATMENT OF ECLAMPSIA.

SIR,—I was sorry I was unable to be present at and to take part in the discussion at Glasgow on the above as I wished, for I must confess it would have pleased me to learn that all is not well with the toxaemia hypothesis of eclampsia. In March of this year in your columns I read that "the toxaemic origin of eclampsia is now accepted." In your issue of to-day we learn that this hypothesis "is not entirely free from difficulties." This, I think, is very satisfactory, because, as I have endeavoured to show, the toxaemic hypothesis is untenable.

Pathologists have already spent such an enormous amount of time in the vain search for a specific toxin explaining eclampsia that it is difficult to believe they are on the right track, and not surprising to find it urged that those who have to treat eclampsia can wait no longer for them. There are, however, already several indications before us which indicate the nature and the cause of eclampsia—that it is simply a uraemia produced by the condition of pregnancy. First, I would put the treatment which experience so far has shown to yield the best results; this treatment, plainly, is the treatment for uraemia. Next, I would remind you of the incidence of eclampsia; this is so peculiar that it shows that the disease cannot be due to any peculiarity in the contents of the uterus. And in itself, it indicates very strongly that the pre-eclamptic state and eclampsia are due to a faulty metabolism induced by pressure rises in the abdomen. This is supported by the discovery that conditions which diminish the pressure in the abdomen are of very great assistance in dealing with the disease. The Dublin school urges placing the eclamptic patient in the lateral position, otherwise, they say, she will drown in her own secretions. The importance of the accumulation of mucus in the bronchi and smaller channels is obvious; but it is doubtful whether all this comes from the nose and mouth. By placing the patient in the lateral position the pressure in the abdomen is much reduced; not only does this afford the best possible condition for the re-establishment of blood flow through the capillaries of affected viscera, but inquiry may possibly show that it so alters the pulmonary circulation as to check or limit pulmonary congestion and oedema. The puncturing of the membranes, allowing escape of liquor amnii, in order to decrease the volume of the uterus was mentioned by Dr. Campbell, and by earlier writers—for example, McClintock—was noticed as a measure which sometimes stops the fits. Such a diminution in uterine volume can only have one effect, and that is to reduce the intra-abdominal pressure. Conversely, we see how it is that in concealed accidental haemorrhage (in which the uterus becomes very large and tense) eclampsia rapidly ensues, and that the ordinary treatment of tightly binding the abdomen is about as bad as it possibly can be. It cannot stop the bleeding; it simply makes the circulatory conditions under which the liver and kidneys labour worse—if the pressure caused by the distending uterus has not clamped their capillaries the treatment does so.

The emptying of the uterus is a very vexed question. The treatment advised is not to interfere unless absolutely necessary; but all the world knows that the termination of the pregnancy is the best possible thing, if it can be done safely and without making the patient worse. It seems to me that it is the participation of the patient in the labour which explains the anomaly. If a patient acutely ill with the pre-eclamptic process has induction of labour practised or accouchement forcé, the straining which necessarily follows and all her movements facilitate the morbid process, and hence we get bad results. That induction should give better results than accouchement forcé is intelligible; in the former the reaction develops slowly; the latter is a much more rapid affair. In this respect the effects of labour must be remembered; in the pre-eclamptic state the activities of (natural) labour are largely responsible for the institution of fits. Such an objection to Caesarean section cannot, of course, apply, because the patient is anaesthetized. But here there are two distinct states to consider. There is the state of the patient who is desperately ill, who already has had many fits, and whose liver and kidneys are very probably already the seat of extensive necrosis; any treatment under such conditions cannot possibly hope to save the patient. But there are cases in which the patient is not so ill, who has had less fits, and whose liver and kidneys presumably are not so diseased, are not perhaps at the moment necrosed, being simply rendered inactive, and who with the relief of pressure may possibly recover. We cannot compare the results of Caesarean section in these two types of case; nor should we condemn the operation because of bad results in the first class of case.

Many successes after Caesarean section for eclampsia have been recorded, and it is plain from the comments reported in your issue that several writers regard the operation favourably for eclampsia. The point is, the operation should not be withheld as a last resource; as a measure for eclampsia it should be employed, it seems to me, not just to deliver the woman but to prevent any possible straining at a period of the morbid process when any increase of pressure within the abdomen may just be the turning point from a possible recovery to an absolutely certain death. If a woman has had one or two fits and becomes conscious between them, as patients often do, she is bound to strain during delivery by ordinary channels unless deeply under an anaesthetic.—I am, etc.,

London, W., Oct. 14th R. H. PARAMORE, F.R.C.S.Eng.

UNSUSPECTED PREGNANCY.

SIR,—If the confidence of your correspondent in his *ipse dixit* as to the impossibility of a pregnant woman of average size, etc., not suspecting her condition remains unshaken, I wonder if it will survive the shock of reading the following true tale.

When driving past a farmhouse some years ago I was hailed by the farmer's son, who told me that his aunt, who

had come to keep house while his mother was away on holiday, had been taken ill. I found the aunt, a woman 46 years of age, of "average size," sitting in the kitchen and complaining of abdominal pain. As the pain seemed suggestive of labour pains, I asked her if she was pregnant. She said, No, and seemed surprised at the question. I advised her to go to bed. On examination I found the head low down, and about an hour later a full-time male child of "average size" was born, followed shortly by another child, mummified, and apparently of about 7 months' development.

The shy fiancée of the farmer's son, the only other woman about, was my "nurse," and her plight, as affected by the surprising event, obsessed as she was by the delicacy of her own position, was a curious blend of the comic and the pathetic. The mother was a married woman, and had had one child previously, a girl 18 years of age at that time. Husband and wife were delighted at the birth of a son, and had had no idea of the existence of pregnancy, twin or other. "Wind" and "change of life" had been their diagnosis, and they had been supported in this by their medical adviser, whose name I do not think for a moment was Dr. Graham Grant. *Verb. sap.*—I am, etc.,

Llausantffraid, Mont., Oct. 14th. W. H. Lewis.

THE RADICAL PREVENTION OF VENEREAL DISEASE.

Sir,—I thought the published reports of the National Council and the Ministry of Health reached limits of insipid irrationality and smug futility; but Mr. Herbert Caiger's letter (British Medical Journal, October 7th, pp. 661–2) soars to even dizzier limits. His solution of the venereal problem is to "circumcise the heart" and inhibit the sexual instinct.

But Mr. Caiger must not be permitted to discredit the fact that disinfectants do disinfect. He can easily prove of course that soldiers issued with little bottles of lotion without instruction got gonorrhœa even though they drank the lotion; that other soldiers who used their calomel ointment as shaving cream got chancres on their genital organs notwithstanding; and that soldiers who threw away their outfits deliberately nevertheless acquired self-inflicted venereal disease (to avoid the firing line); and even that soldiers to whom no outfits were issued were not protected by the disinfectants they did not get; but what Mr. Caiger cannot disprove is:

1. That without an issue of disinfectants the New Zealand Division had in 1917 an average of 1,000 venereal disease soldier patients.

2. That when in 1918 the issue of disinfectants was made fairly efficient (it was never complete) the New Zealand Division had less than 500 venereal disease soldiers on the average (a saving of about 4,000 or 5,000 soldiers for the year 1918 alone).

3. That when in 1919, through religious and political interference, the issue of disinfectants and the prophylactic lectures were stopped, the New Zealand Division again had to maintain over 1,000 venereal disease soldier patients.

As to his question, "Will the failures be less in civil life?" Of course they will. In civil life venereal disease is never a benefit, and always a loss of time and money. For the civilian the choice often is: Keep clean and keep your job. For the soldier: Keep clean—and be shot!—I am, etc.,

London, W., Oct. 12th. Ettie A. Rout.

CARDIOLOGY.

We have received from our reviewer the following note on Dr. Harrington Sainsbury's letter published in the Journal last week, p. 703:

"It is not denied that changes in pressure within the right auricle and contiguous veins are associated with, and cause, variations in volume. It does not follow, however, that tracings which record changes in volume are necessarily correct graphs of pressure. The blood pressure in the carotid artery (the artery covered by the receiver) is many times greater than that in the jugular, yet the movement of the recording lever, wave '*c*,' produced by the arterial pulse, may be insignificant in comparison with that caused by the jugular pulse. In discussing the wave '*c*' Dr. Sainsbury stresses the point that 'the force which generates it is by far the most powerful of the forces operating at the root of the neck and appearing as pulsations. Its waves therefore *should be* the most pronounced of the three.' They should, if the polygraph recorded the forces which produced pulsations or the degree of pressure in the vessels covered by the receiver; but it does not."

Obituary.

EDWARD COLLETT HORT, B.Sc.Paris, F.R.C.P.Edin.

With the premature death of Dr. E. C. Hort on the morning of October 15th at Cannes, after a long and trying illness, a man of exceptional ability and charming personality has passed beyond the veil. He was remarkable for originality, not without a touch of genius, for his independence, and for the amount of work that he accomplished within a comparatively short period.

Edward Collett Hort was born in 1868, the third son of the Rev. F. J. A. Hort (1828–92), Hulsean Professor of Divinity in the University of Cambridge, who was described as the "greatest English theologian of the nineteenth century." His elder brother, Sir Arthur Hort, sixth baronet, was until lately an assistant master at Harrow; a younger brother is a member of the profession. Educated at Sherborne and at Emmanuel (his father's) College, Cambridge, Edward Hort finished his medical education at Guy's Hospital, obtaining a medical qualification (L.S.A.) in 1896 and marrying in the same year. The next ten years or so were spent in various parts of the world, some in America, where he had many adventures, but eventually he settled down to ordinary medical work in the south of France. About 1907 he came back to England and bought a practice at Torquay; his outlook on life now appears to have undergone a change, for he became a keen laboratory worker. Hort, indeed, was one of those who develop late in life, being nearly 40 when he started on the work which he henceforth pursued with ceaseless, almost feverish, energy in spite of the handicaps of bad health and the necessity of supporting his family by general practice. While at Torquay observation of a patient with a haemorrhagic form of disease attracted his attention to the use of horse serum and led to the appearance of his first published papers—namely, on its use in gastric and duodenal haemorrhage (1907, 1908), based on the hypothesis that the ulceration was the outcome of autolysis due to proteolytic bodies in the blood, and that this process could be counteracted by the administration of horse serum. After about a year he migrated to Harley Street, and at once became busily engaged in a high-class practice. For a time he was assistant physician to the Italian Hospital, but his mind was now actively evolving problems in connexion with bacteriology and serology, and every spare moment was devoted to research work, which was carried out first in Sir Lenthal Cheatle's private laboratory at King's College and then at the Lister Institute. A grateful patient supplied an endowment, and this Constance Trotter Fund enabled him to enlist the help of skilled collaborators. A constant stream of papers now began to appear—for example, in the *Journal of Hygiene* (several in collaboration with Dr. W. J. Penfold), the *Quarterly Journal of Medicine* (1911), the *Proceedings of the Royal Society* (1910, 1912), the *Journal of Vaccine Therapy*, the *Proceedings of the Royal Society of Medicine*, the *Journal of the Royal Army Medical Corps*, the *Lancet*, and our columns—on various aspects of bacteriology, such as micro-organisms and their relation to fever, experimental fever, salvarsan fever, vaccines and fever, autotoxaemia and infection, and the antitryptic index.

Early in 1914 he investigated the bacteriology of typhus fever with Dr. W. W. Ingram and described a filter-passing organism, infective to monkeys, which was pleomorphic, presenting a cocco-bacillary form as a harmless phase. This was the first of a series of papers which came out during the war, advocating the recognition of pleomorphism or a complex life cycle for bacteria. Among these were four on cerebro-spinal fever, embodying the results of work done while honorary physician and director of the bacteriological staff of the Addington Park War Hospital (1914–18) in collaboration with Drs. C. E. Lakin and T. H. C. Benians and later with Captain A. H. Caulfeild, C.A.M.C. He contended that the meningococcus is not the cause of the disease but merely a late non-infective phase in the life history of an organism allied to the Ascomycetes and infective only in its earlier phases; this conclusion involved him in a controversy with Mr. J. Ramsbottom, mycologist to the British Museum, and his advocacy of the complex life cycle of the bacteria did not gain any acceptance, and indeed very little notice, from other bacteriologists except for a generous plea for recognition from Professor J. G. Adami (*British Medical Journal*, 1916, ii, 525). Whether or not Hort's revolutionary conception may eventually prove to be correct, there is no doubt of the enormous care that he devoted to avoid the

obvious fallacies of contamination, and that his enthusiasm and ingenuity command admiration. His paper, entitled "The meningococcus of Weichselbaum," appeared in the *British Medical Journal*, 1917, ii, 377, and was illustrated with drawings to show his conception of the development of "giant meningococcus."

While at the Addington Park War Hospital he contracted dysentery and was extremely ill; from this he slowly recovered and, after serving as temporary lieutenant-colonel in charge of a convalescent hospital on the Riviera, turned his energies into another direction, the invention of suitable foods for the starving Russians, as an interlude to the bacteriological work which it was his ambition to see overwhelmingly proved and accepted. But this was not to be; last year symptoms of visceral tuberculosis became urgent and the disease slowly gained on him.

With his most active and energetic nature it was not surprising that Hort had other interests besides bacteriology and that he was a skilled musician and a keen fisherman. His special charm of manner and lovable disposition brought him friends wherever he went. He leaves a devoted wife and two daughters, the elder of whom had assisted him in his work.

We are indebted to Dr. J. G. Adami, F.R.S., Vice-Chancellor of the University of Liverpool, for the following appreciation of Hort and his work in bacteriology:

It is as easy to criticize and damn with faint praise men of the type of my old friend E. C. Hort as it is difficult to give a just appreciation of their sterling virtues. For in truth he was a genius, and geniuses are difficult to live with, not easy to guide, and have a way of "kicking over the traces" that is disconcerting to ordinary mortals. Particularly is this so when they have Irish blood in their veins. What is more, he was an example of the man who develops late and in an unacademic manner. I knew him as an undergraduate at Cambridge in the late eighties or early nineties—frank, cheery, and irresponsible. The contrast between him and his most studious father, the scholarly colleague of Professor Westcott, was most striking. The last accusation one would have made was that he was either given to hard work or scholarly. And the air of boyish irresponsibility clung to him throughout life. Nor so far as I can learn was his career as a medical student in any way distinguished. If I am not mistaken, the death of his father rendered it necessary that he should qualify without delay. Leaving Cambridge he entered at Guy's and obtained the L.S.A. in 1896. I lost touch with him for some years until from 1908 onwards there came pouring out a series of papers upon serology and immunization that showed the presence among us of a man of pronounced originality, an observer of pheuomena passed over by most of us. Who, for example, but Hort would have investigated the pyrogenic effects of (presumably) pure distilled water? All of us who had been interested in the bacteriology of cerebrospinal fever had observed irregular forms of the meningococcus: we, however, had focussed our attention upon the detection of the normal forms: Hort by preference concerned himself upon the abnormal and interested himself in them as throwing light upon the life-cycle of the organism.

What had happened? Merely this, that engaged in ordinary practice he had become interested in immunology—so interested that notwithstanding the very partial training he had received in bacteriological technique he determined to test the phenomena for himself. Gifted with a natural love for experiment, and with a manual dexterity much above the ordinary, he established a laboratory in his own house, and with little help from outside, in the shape of routine training in recognized laboratories, he worked at problem after problem. Doubtless he learned much from the well-trained co-workers when in the latter years he attached them to himself. But working incessantly and with intense enthusiasm he elaborated a technique that was remarkable. I shall not easily forget the revelation of methods, as precise as they were original, that he gave in 1918 when a committee appointed by Sir Alfred Keogh, and consisting of Sir William Leishman, Colonel Harvey, and myself, visited his laboratory in order that he might demonstrate to us his work upon the pleomorphism of the typhoid bacillus which he had reported to the War Office. We might differ from him as to the interpretation to be given to his facts, but the facts were there before our eyes—the growth and multiplication of the typhoid bacilli at a certain stage and under certain conditions by processes other than those of simple binary division.

In short, as one who was not a product of the schools, he saw bacteriological phenomena from an independent angle, and as a consequence he obtained novel results of the first importance. It is quite natural that men of his type are misunderstood, that the ordinary bacteriologist brought up to employ the routine methods should mistrust the findings of one who has no credentials of work performed under accepted leaders in well known laboratories. It is true also that as a self-taught man his training was imperfect; with deep knowledge of some parts of his subject he was poorly grounded in collateral branches of science. His knowledge of protistology, for example, was incomplete. Nor as an independent worker did he possess that body of colleagues in different branches of science to whom to turn for advice and assistance in the explanation of his facts. It is the results obtained, and not necessarily his interpretation of them, that in my opinion must be accepted and must revolutionize our views as to the life-history and properties of the bacteria. I am convinced that future years will establish Hort as one of the masters in bacteriology.

Dr. Pratul Kumar Ghosh, of Treeton, near Sheffield, who died on October 1st at the age of 41 years, was the son of a well-known Hindu medical practitioner of Calcutta and Dacca. Educated at Dacca College and the Universities of Calcutta and Edinburgh, at the beginning of the war Dr. Ghosh joined the Indian Ambulance Corps, and served for nine months at the York Place General Hospital, Brighton. Returning to Edinburgh he graduated M.B., Ch.B. in 1915, and, after acting as an assistant, in 1919 he acquired a practice at Treeton and Woodhouse, near Sheffield. Here Dr. Ghosh soon endeared himself to his patients by his devotion to their interests and at the same time gained the goodwill of all his fellow practitioners in the neighbourhood by his loyalty to professional ideals. His death from pneumonia on the eve of a well-earned holiday was the result of several years of overwork in a heavy industrial practice. Dr. Ghosh was a member of the Rotherham Division of the British Medical Association, and was also a popular member of the Renishaw Park Golf Club. He was surgeon to the Rothervale collieries and acted as one of the medical referees for the Yorkshire Coal Owners Indemnity Company and several life assurance companies. His remains were cremated at Sheffield on October 3rd. He leaves a widow and one child, with whom all classes in the district deeply sympathize.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on October 13th it was resolved to confer upon Professor H. R. Dean, D.M.Oxon., newly appointed to the chair of pathology, the complete degree of M.A. *honoris causâ*. Professor Dean has since been elected to a professorial fellowship at Trinity Hall.

The following medical degrees were conferred:

M.D.—F. G. Lescher.
M.B.—H. L. Wildey.
M.B., B.Ch.—C. S. Atkin, A. E. Roche.

The following have been approved in Part II (Pharmacology and General Pathology) of the Second M.B. Examination, October, 1922:

B. E. Abrens, E. L. Auguste, G. W. Bamber, C. M. Barker, W. A. Barnes, C. O. Beane, I. C. P. Beauchamp, S. A. Belshaw, W. A. Bourne, C. W. Brook, G. H. Brown, C. B. Buckley, R. C. L'E. Burges, R. W. Butler, A. Carnegie Brown, A. N. Carruthers, W. E. Chieseman, J. E. Church, W. R. F. Collis, C. K. Colwill, W. F. Cooper, W. S. C. Copeman, R. W. Cuninghame, R. Cunningham, T. S. Dewey, M. S. Dopharst, J. Dockray, C. E. Donaldson, R. W. B. Ellis, T. I. Evans, T. F. Everett, E. O. Fox, J. H. Gibbens, H. K. Goadby, F. Goldby, E. P. Gough, B. Graves, R. A. P. Gray, E. J. Greenwood, H. F. Griffiths, J. L. Groom, C. J. Grosch, K. H. A. Gross, W. S. Grove, R. F. Guymer, H. J. Heathcote, A. C. de B. Helme, J. D. Hindley-Smith, J. C. Hoag, A. T. Howell, J. Irving, D. McI. Johnson, W. E. Joseph, J. J. Keevil, L. A. Kelly, M. E. Lampard, W. E. B. Lloyd, T. F. McNair Scott, J. P. Marsden, F. Martyn, R. D. Milford, J. G. Milner, V. S. Mitcheson, E. D. Moir, E. G. Morris, J. D. R. Murray, H. P. Nelson, C. E. Newman, H. W. Nicholson, G. F. Oakden, C. L. Owen, L. J. Panting, R. W. L. Pearson, H. C. Pierce, C. G. E. Plumstead, J. D. Procter, P. E. Pym, J. H. Randall, A. M. Rhyddereh, J. S. W. Roberton, R. P. Ross, G. L. F. Rowell, T. W. E. Rowden, H. W. Sadlier, K. G. Salmon, H. B. Savage, S. W. Savage, H. Scudamore, E. M. Shackel, R. E. Smith, W. Smith, W. E. Snell, H. B. Stallard, G. M. Tanner, B. C. Tate, G. K. Taylor, F. J. E. Topham, E. A. Trim, C. I. Tuckett, J. G. E. Vachell, J. L. Warner, C. E. Watts, D. B. Wilson, H. G. Wimbush, R. M. Windeyer, L. B. Winter, J. T. Woodhead, E. C. Wynne-Edwards.

The plan for the December examinations for medical and surgical degrees has now been published. The first M.B. examination and Part I of the second M.B. examination will begin on December 11th, Part I of the third M.B. on December 12th, and Part II of the third

M.B. on December 13th. The M.Ch. examination will begin on December 12th.

The Gedge prize for original observations in physiology has been awarded to F. J. W. Roughton.

VICTORIA UNIVERSITY OF MANCHESTER.

Dr. K. C. Middlemiss has been appointed Lecturer in Infectious Diseases.

Professor R. B. Wild has been appointed as representative of the University upon the General Medical Council, and Professor W. W. C. Topley as the representative upon the Council of the Lister Institute of Preventive Medicine.

UNIVERSITY OF SHEFFIELD.

Dr. Robert Platt has been appointed Demonstrator in Pathology and Bacteriology.

UNIVERSITY OF WALES.

The following candidate has satisfied the examiners in Medicine, Surgery (with distinction), and Obstetrics and Gynaecology: Eroica Rowe Lewis.

UNIVERSITY OF GLASGOW.

The following degrees were conferred on October 16th:

M.D.—*A. Scott, †W. M'Kendrick, D. Cameron.
CH.M.—S. Mort.
D.Sc.—W. E. Elliot.
M.B., CH.B.—*R. C. Garry, ‡Catherine Parrower, ‡R. Crawford, ‡J. Grant, ‡A. T. Hastie, ‡Catharine Boyd, ‡T. W. Davidson, R. C. Hamilton, Mary P. MacCunn, †W. D. Hood, †A. Anderson, J. W. Hamilton, T. Nicol, ‡J. H. Ramage, ‡T. W. Bowie, ‡J. Cook, A. W. Aird, Margaret Alexander, R. G. M. Alexander, Isabel P. Allen, A. Anderson, W. C. Andrew, Margaret R. Balloch, A. L. Bernstein, Catherine†A. S. Blair, Mary MacQ. Bonnyman, Mary D. A. Boyd, F. A. Brown, R. O. Bruce, Barbara A. Cameron, Janet R. Campbell, Margaret E. Campbell, Margaret G. Carrick, Nora T. Cassidy, Gladys M. Chapell, H. Collingbourne, Margaret E. Colville, Elizabeth S. Cook, J. S. Cook, G. C. Cruijwagen, J. S. Currie, Isabella C. Darling, Agnes C. J. Davidson, Margaret Davidson, J. Dawson, Isabelle A. Deans, Agnes F. Dickson, Lilian M. Dickson, J. S. Donaldson, A. F. Dunn, Amy M. Fleming, Elizabeth H. Forrest, A. Fyfe, A. Gardiner, A. V. Garscadden, Emmie C. Gibb, T. Gibson, Jean M. Gilchrist, Margaret B. Graham, R. A. Grant, W. N. Gray, H. G. Halliday, Mary N. Hendry, G. J. Hutchison, Elizabeth G. Jamieson, Jessie M'L. C. Jamieson, Mary K. Jeffrey, T. J. Jones, F. C. Laing, J. E. S. Lee, A. Leitch, J. Lindsay, G. W. Lochhead, Isabella Lumsden, W. W. Lundie, H. M'Cusky Joan A. MacColl, J. W. M'Conville, A. A. Macdonald, Chrissiebelle Macdonald, T. J. M'Kail, K. W. MacKenzie, Marion A. M'Kenzie, G. MacKerracher, M. M'Lean, N. A. MacLean, S. M'Mahon, R. C. MacMurray, A. M'Nulty, Marion L. M'Quaker, Mary M'Quaker, Doris M'Walter, Agnes L. Mair, D. C. Marshall, D. V. Marshall, H. R. Melville, Elizabeth W. Miller, J. H. Miller, A. Mitchell, W. T. Mitchell, D. R. MacP. Morrison, Ellen D. Morton, W. Muir, J. P. Neilson, Sarah H. Nelson, Elizabeth K. Nicholson, J. Nicholson, J. L. Orr, J. A. R. Oswald, M. G. Pezaro, Louise B. Pollok, T. C. Porter, Mary E. Proudlove, T. D. Pye, J. S. Ramage, Elizabeth C. Rodger, Bessie S. Ross, Mrs. Sarah Ross, J. Russell, Bertha E. A. Sharpe, W. Simpson, Christina R. I. Sloan, A. Snaddon, J. Sommerville, J. F. M. Stenhouse, Effie S. Stephen, Mary MacP. Stevenson, Jessie M. Strathie, T. Tannahill, H. G. B. Teggart, R. W. Todd, Margaret S. Wall, Jemima Wauch, Janet A. G. Weir, A. F. Whyte, Catherine B. Wilson, J. H. Wilson, J. W. Wilson, J. H. Wright, Grace M. Young, J. A. K. Young.

Mr. R. C. Garry has gained the Brunton Memorial Prize of £10 awarded to the most distinguished graduate in medicine for the year.
*With honours. †With high commendation. ‡With commendation.

CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examination indicated:

Final Examination.—*Medicine:* Beatrice M. Niven, C. J. B. Fox, Hilda Pate, J. B. Rodrigo, Katharine M. Cellan-Jones, E. Brazao, J. M. Crombie. *Surgery:* C. J. B. Fox, W. Paris, J. B. Rodrigo, D. Maximos, J. M. Crombie. *Midwifery:* Beatrice M. Niven, El Saeed el Gohary Sheir, Don V. Wapola, Behari Lal Chopra, O. H. D. Oliver, E. Brazao. *Medical Jurisprudence:* R. F. Pagnam, W. J. Rankine, Annie H. Sutherland, W. D. Howat, L. L. Armstrong, A. H. Stephenson, D. Jack, G. A. P. McConey, J. Courtney, W. E. Hayden, C. J. Coventry, W. N. Stirling, E. Levine, J. Donnelly, J. Kirkness.

The following candidates having passed the Final Examination have been admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P. and S.G.:

J. E. Overstead, A. V. Bergh, A. A. Dewar, S. I. T. Wills, Marjory J. A. Ogilvie, J. A. McE. S. Evers, P. Schneiderman, Lilian M. Williams, P. B. Fernando, W. O. Rodrigo, L. I. Myerson, S. J. Rom, J. M. McInnes, C. J. Cellan-Jones, W. L. Murray, Isabel F. King, T. T. Hoskins, F. H. A. Stegmann, S. Ponniah, P. J. B. Dyce.

The following candidates, having passed the requisite examinations, have been admitted Diplomates in Public Health:

D. J. A. Kerr, Jane W. Macdonald, Gertrude D. MacLaren, A. Climie, Jean MacL. Mackintosh, Mary Steven, Agnes H. M. Young, R. C. L. Batchelor, Annie M. Alexander, J. A. Fraser, A. Joe, J. H. Clarke, D. R. Cramb, R. J. O. Taylor, Mary L. Wilson, Christian M. Fleming, J. McCulloch, Eileen R. Freeman, Marion C. Taylor, J. McGarrity.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A quarterly Council was held on October 12th, when Sir Anthony Bowlby, President, was in the chair.

The late Sir Charles Ryall.—A vote of condolence was passed to the relatives of the late Sir Charles Ryall. The President reported that the vacancy on the Council so occasioned would be filled up at the meeting of Fellows in July, 1923.

Annual Report.—This report, to be presented to the Fellows and Members at the annual meeting on Thursday, November 16th, at 3 p.m., was approved and adopted.

Jenks Scholar.—Mr. Douglas Stanley-Jones was nominated as the thirteenth Jenks Scholar.

The Services.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the following officers of the R.A.M.C., T.A., under the terms of the Royal Warrant, October 15th, 1920: Lieut.-Colonels: O. L. Appleton (ret.), G. N. Biggs (ret.), F. Hawthorn, D.S.O., J. W. Keay, A. Ogston. Majors: J. Allan, W. Duncan, O.B.E., A. H. Falkner, D.S.O., W. H. Fisher, O.B.E., R. B. Purves, A. B. Sloan (ret.), Captain E. M. Douglas-Morris.

Medical News.

Sir Frederick Mott has accepted an invitation to become honorary director of the Mental Research Department newly established by a Research Board, appointed jointly by the Birmingham Corporation Asylums Committee and the Council of the University. It is the intention to appoint him also lecturer in neuropathology and psychotherapy in the University. The authorities of other mental hospitals in the Midlands have been invited to send representatives to the Board.

Dr. John M. T. Finney has been appointed temporary surgeon-in-chief of the Johns Hopkins Hospital and professor of surgery in the medical school, in place of the late Dr. W. S. Halsted. A meeting of the Faculty is being held this month, when a committee will be appointed to make a permanent selection.

A meeting of the Medical Section of the British Psychological Society will be held at the Royal Society of Medicine on Wednesday, October 25th, at 8.30 p.m., when Dr. E. W. Scripture will read two papers, entitled "Some medical novelties in Vienna" and "Nature and treatment of epilepsy."

Dr. Thomas Watts, an ex-president of the Ashton-under-Lyne Division of the British Medical Association, has been adopted by the Conservative party of the Withington Division of Manchester as prospective candidate at the next Parliamentary election.

The Association of Alumni of the University of Bristol (London Branch) has arranged an inaugural dinner to be held at La Renommée Restaurant, 52, Dean Street, Shaftesbury Avenue, London, on Monday, November 6th, at 7.30 p.m. Lord Haldane is the president of this branch, and it is hoped that many members of the university, both past and present, will attend.

A memorial service for Dr. M. Mitchell Bird, late medical superintendent of St. Mary's Hospital (Paddington) for over thirty years, will be held in the chapel of the hospital on Tuesday, October 24th, at 2.30 p.m.

On the suggestion of Dr. Arthur Hughes, county medical officer for Carmarthenshire, Dr. G. Arbour Stephens, of Swansea, has been appointed consultant for the investigation of the cause and incidence of heart disease among children. Dr. Stephens is already honorary cardiologist to the Welsh National Memorial Association.

A meeting of the Harveian Society of London will be held at the Town Hall, Harrow Road, Paddington Green, on Thursday, October 26th, at 8.30 p.m., when a discussion will take place on "The notification of infectious diseases," to be opened by Dr. Reginald Dudfield, followed by Dr. Charles Buttar, Dr. Menzies, Dr. Hamer, and Dr. Carnwath.

The eighth Annual Report of the Board of Control, for 1921, has been issued this week. (H.M. Stationery Office. 7s. 6d. net.) The prefatory note describes the year as having been one of great administrative difficulty. Financial stringency compelled local authorities to check expenditure in every possible direction, and in lunacy no capital expenditure was authorized except in affairs of urgency. As a result many matters important for the treatment of the patients and the conditions under which they live had to be postponed. At the close of the year the number of notified insane persons under care in England and Wales was 123,714, an increase of 3,370 on that recorded at the beginning. The main factor in the increase was again the very low number of deaths in institutions for the insane. We hope to refer in more detail to the report in a later issue.

Dr. F. L. Thomas, honorary medical officer and ophthalmic surgeon to the North Devon Infirmary, has been elected mayor of Barnstaple.

FOUR lectures in physic will be delivered at Gresham College, Basinghall Street, E.C.2, on "The brain and mind: moral responsibility, criminal responsibility," by Sir Robert Armstrong-Jones, C.B.E., M.D., on Tuesday, Wednesday, Thursday, and Friday, October 24th, 25th, 26th, and 27th, at 6 p.m. Admission to the lectures is free.

A MEETING of the Society of Superintendents of Tuberculosis Institutions will be held at 122, Harley Street, W.1, on Friday, October 27th, at 4 p.m., when papers will be read by Sir Robert Jones on tuberculous disease of the knee, ankle and tarsus, and by Dr. Gordon Pugh on the treatment of tuberculous disease of the spine and hip-joint. There will also be a discussion on the curriculum for the training of nurses in tuberculosis.

THE formal opening of Langham Tower as the Sunderland Training College for Women Teachers took place on October 6th, in the presence of a large company, when Alderman Dr. R. Gordon Bell, chairman of the Sunderland Higher Education Subcommittee, declared the new premises open. On behalf of the staff and students, the Principal of the College presented to Dr. Gordon Bell the academic robes of his doctorate in medicine of Glasgow University. The Principal asked him to accept the gift as a memento of the occasion, and of their gratitude for the work he had done for higher education and in particular for the Training College.

THE number of undergraduates in residence at Oxford this term and the number of freshmen are both slightly lower than this time last year. The number of freshmen this year is 1,043, as compared with 1,073 in Michaelmas term 1921, and the total number of undergraduates is 3,687, compared with 3,928 last year. The number of new women students shows an increase from 225 last year to 263 this year; the total also is larger—722 as compared with 628.

THE second Winter School for Health Visitors organized by the Women Sanitary Inspectors' and Health Visitors' Association will be held in London from December 28th to January 11th. Lectures on various aspects of public health work will be given. Particulars may be obtained from the Secretary, Miss C. Macdonald, 5, York Buildings, Adelphi, W.C.2, on receipt of a stamped addressed envelope.

WE deeply regret to announce, as we go to press, the death, on October 18th, of Sir JAMES GALLOWAY, K.B.E., C.B., Senior Physician to Charing Cross Hospital. An obituary notice will appear in our next issue.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"G. H. S." has been refused an allowance for the cost of replacing a car on the ground that his replacements have been unnecessarily frequent.

*** This ground seems quite insufficient. "G. H. S." is in general practice, and is therefore assessed under Schedule D. He is entitled under the rules of that Schedule to deduct expenses incurred professionally whether necessary or not: that point applies only to assessments under Schedule E in respect of the remuneration of employment—for example, of a salary. Apart from this the objection taken is unfair, seeing that the more frequent the replacement the less, other things remaining the same, each individual replacement will cost. We suggest that the local inspector be asked to quote his legal authority for the refusal.

"H. S. B." has been refused deductions on account of expenses incurred in connexion with (1) Medical Defence Union, (2) a medical institute, (3) British Medical Association, (4) post-graduate course, (5) legal arrangements for partnership.

*** (1), (2), and (3) are allowable, or at least in the ratio in which the total subscriptions of each body for the year were actually expended on current work. (4) Not allowable—represents capital outlay. (5) Not allowable—it is an expense incurred in acquiring the partnership share and is therefore of a capital nature.

"NOVICE" has recently purchased a half-share of a practice.

*** 1. The assessment must be made on the amount of the earnings of the practice as a whole, and in dividing the duty payable between the partners no regard should be had to the fact that the cash receipts are not equally divided because portions relate to periods prior to the partnership. The cash receipts are taken as forming the basis for the calculation of the assessment for the current year, and it is on the earnings of that year that tax is being paid.

2. "Novice" can deduct tax at the standard rate from the payments of interest—for example, instead of paying £10 gross he should pay £10 less tax at 5s. in the £—that is, £7 10s.

3. On the facts stated no other deduction appears to be due.

"A. M. F." is being assessed to income tax in respect of untaxed interest received in the previous year, though the war loan stock has been so dealt with as to yield taxed instead of untaxed interest.

*** If "A. M. F." has now *no* income in the form of untaxed income he would not seem to be assessable. If he has received untaxed interest—even to a small amount—in this financial year he would be assessable on the amount of interest received in the previous year. Our correspondent will probably find that he did not pay tax for the first year he received the interest as it was not assessable until the second year.

SWEATING IN PULMONARY TUBERCULOSIS.

"IRISHMAN" asks for advice in the treatment of very profuse sweating in a case of pulmonary tuberculosis; the patient is 32; the area of lung involved is quite moderate, as also are the evening temperature and the amount of sputum; the hygienic conditions are superb, and two nurses are in attendance; the routine remedies are futile, and there is a definite history of hyperidrosis in the family; the only treatment for the tuberculosis followed is that of "nascent iodine."

LETTERS, NOTES, ETC.

TRICHINIASIS.

DRS. D. A. RICE and H. O. WILLIAMS (Milford Haven) write: In your issue of April 29th, 1922 (p. 680), you were good enough to allow us to describe certain symptoms occurring in a group of cases under our care. Judging by the correspondence we received our note was not without interest to many of your readers, and we shall be glad if you will allow us to state that the symptoms were those of trichiniasis, and not, as suggested, of an abdominal form of influenza. A full report of the outbreak appeared in last week's *Lancet*.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36, 37, and 38.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 147.

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An Address

ON

CERTAIN DEVELOPMENTS IN MEDICINE.

Delivered at the Opening Session of the Medical Society of London on October 16th,

BY

LORD DAWSON OF PENN, G.C.V.O., C.B., M.D.,

PRESIDENT,

PHYSICIAN TO THE LONDON HOSPITAL; PHYSICIAN IN ORDINARY TO H.M. THE KING; SENATOR OF THE UNIVERSITY OF LONDON.

We are opening to-night a session of no ordinary importance, in that during its course this society will celebrate its 150th anniversary. And may I here interpolate a personal paragraph and say how honoured I feel to be your President during this year, how deeply I value the confidence which your selection of me denotes, and how it will be a "labour of love" to try and serve you well? I shall be encouraged by the example of my distinguished predecessor in the chair—a surgeon in whom the thinker is not lost in the excellence of the technician, and whose wide culture and sympathetic personality give him a large circle of friends.

This society was born at a time of change; an old order in civilization was passing, the forces were gathering which were soon to culminate in the War of Independence—that mighty instrument of liberty which not only brought about the birth of a nation but gave to Britain by its influence a peaceable progression towards the freedom which was to mature in the ensuing century.

The life of this society has corresponded with a period of almost unexampled expansion. Thus in 1782 London had a population of 650,845 and contained 774 doctors, and the College of Physicians consisted of 43 Fellows and 74 Licentiates.[*] There were no medical schools then, and beyond the training of apprentices facilities for medical instruction consisted of detached efforts by enthusiastic teachers, and such lectures were as often given in private houses as in hospitals. The doctors' residences were extending beyond the City to the then West End, and were exemplified by such addresses as Essex Street, Strand (it was there Dr. Fordyce of St. Thomas's Hospital lectured), Craven Street, Leicester Street, Haymarket. There was no concentration of doctors as in the Harley Street area, and in that respect perhaps our forefathers were wiser than we are.

But this society, being full of youthful vigour, finds more interest in prospect than retrospect, and I have ventured to think that certain tendencies or developments in the art of medicine to-day might be worthy of your consideration; and if I restrict myself to a few of these I hope you will put it down to regard for the exigencies of time and your patience rather than to narrowness of the speaker's outlook.

Developments in the art of medicine are due to—

1. The extension of clinical knowledge.

2. The increasing number and range of the sciences on which the art of medicine is based. To mention these sciences here would be needless—their name will soon be legion. As examples I may refer on the physical side to biochemistry, and on the mental side to psychology. Both of these are making strong claims on our attention—the former in quietude and the latter amidst the noise of the market-place. In passing I may say that this extending range of medicine makes so big a claim on its devotees as to tend to draw them from contact with the humanities and produce the danger of exclusiveness.

3. Changes in the environment and life of the people. New knowledge brings benefits, but at the same time difficulties of its own. Through modern agencies like the newspapers, and the cinema, and now broadcasting, man's mind is being supplied with a restless stream of impressions which must work into and alter the texture of his mind, especially in youth. We cannot add to the speed and stress of life, as this age is increasingly doing, without modifying man's behaviour in health and illness. People are kept at high tension, and sometimes as much by their pleasures as by their work, and relaxation becomes a stranger to them, and with the oncoming of wireless telephony and aviation our last hope of peace is going. You are on your way to a consultation, say at Northwood or Walton Heath, having left suitable messages at home, and behold, you are rung up in your car on your wireless telephone to say that a patient is arriving from Aberdeen by aeroplane and has to be back at business by the following morning! No escape. These developments disturb life. It is a curious omission that no operation has yet taken place in an aeroplane! The career of the appendix would be incomplete without it, and a cinema operator would have by chance to be one of the passengers.

It results that mind plays a larger part in the causation of disease than in the past; that not only are neuroses more common, but in bodily illness mental symptoms are more often blended with the physical in the clinical picture. What I may style clinical values have changed. Even in organic disease there is commonly a superstructure of neurosis, which is apt to obscure the view. There are, in short, the symptoms more directly produced by the morbid process and the symptoms produced by the patient, and the latter may at times be the more prominent.

As a matter of experience, physicians would, I think, agree that clinical pictures have become more complex, their features more difficult to distinguish and estimate than formerly. And doctors often tell me that in their practices textbook pictures of disease are less and less common. Take that interesting condition, high blood pressure. In its early stage—the curable one—it is often a mental, not a bodily defect. Note the sensitiveness, anxiousness, conscientiousness—all defects of qualities, leading to tenseness of expression and then prematurely to set lines of feature; note also the increased tonicity of the muscles with a growing inability to relax them—an inability which will later extend to the hours of sleep.

In our rapid, complex social life exhaustion is not only the direct cause of much disability but its effects colour and complicate the clinical pictures of many diseases. In its manifestations, derangements of body and mind are found in close apposition and interaction. For instance, a tired professional man complains of pains in the heart or dyspepsia. Like many tired people he is hypersensitive and therefore has become over-responsive to the workings of his own vital processes as well as to the jars of the world outside. He then becomes introspective, then possessed of anxiety, and interprets his symptoms in terms of his fears; then follow preoccupation, failure of attention, ineffectiveness in work, loss of confidence, depression, self-depreciation—and so step by step into the zone of danger.

This blending of the physical and mental is illustrated again by certain gastro-intestinal troubles. The patient is usually a spare subject, with keenness and sensibility but without proportionate strength; goes through life "all out," has a shallow frame, a low blood pressure, easily chilled extremities, and an over-responsive abdomen, which reacts to every blast of vain doctrine. What are you to call a complex like this? You must label it by one of its features. Thank heaven for "colitis," but pity the poor statistician. The suprarenal may here be the link, perhaps the "transformer," between mental and physical. The grades and variants are manifold. Such features and factors enter more and more into the causes and manifestations of the illnesses of a modern community.

It follows, therefore (and this is my first plea), that they should not be pushed aside under the general label of "neurotic," nor should they be the exclusive concern of specialists. Rather should they be studied and taught upon in our hospital clinics, and, as they exist, symptoms of mind side by side with symptoms of body.

These problems, which the practitioner has to tackle, demand in a special degree the insight and discrimination which come from a bedside training and sympathetic contact with the sick, for the latter have sometimes difficulty in defining their symptoms and have to be understood rather than unduly questioned. Or again, symptoms which may be irrelevant to the immediate physical diagnosis (shall I say the affixing of the label?) may yet be of great moment in that they loom large in the mind of the patient; perhaps have roots in doubts and fears running far back into the patient's life, and need to be perceived, understood, and explained, and thereby dispersed, so that the patient's mind can be given content and confidence, and so reinforce the vital powers which bring about healing. It is this which Goodhart—always perceptive and illuminating—had in mind when, speaking of the "Common Neuroses," he said: "There are many conditions in which the cure must come mainly from within, our function in chief being to call out this dormant power."

[*] *Medicine in England during the Reign of George III*, by Arnold Chaplin.

The power to penetrate the patient's mind, to help that mind to unfold and to perceive where the burden presses most heavily—all that is part of diagnosis. The resulting confidence and inspiration in the patient's mind is part of treatment.

It is interesting to reflect how in this as in other respects the arts of Medicine and Education are approximating. The personality of the school child is perceived and understood, and thus encouraged to unfold, and it is led to discipline itself rather than have discipline thrust upon it. In its wider conception treatment is educational, and in the formation of health the territories of Medicine and Education overlap.

Mind training more and more needs to be a prominent aim of both Medicine and Education in order that people may be equipped to deal with the feverishness of their environment. We now have physical culture and training established as a valuable asset of curative and preventive medicine. We now need to give a corresponding place to psychical training. There are in existence the beginnings of such treatment; they are detached efforts, such as relaxation exercises and other measures dependent on the application of rhythm, training in mental detachment, etc. But they need developing and methodizing, and I suggest it is the profession which should do this—not irresponsible though worthy people outside.

These purposes of medical treatment are not new—they have always belonged to the English school of thought; they have been rather eclipsed these later days by progress in the objective methods afforded by radiography, chemistry, surgery, etc. It is curious they should recede into the background at the very time when the conditions of life make their need the greater, and my plea is that Medicine, if it is to fulfil its work, must take mind phenomena more closely into its study and keeping. At the present time they are occupying the public mind too much and the professional mind too little.

Psycho-analysis.

The newer psychology is accepted with seriousness and almost fervour by widening circles of the laity and a group of medical specialists, but at present is regarded with doubt, if not with aversion, by the bulk of the medical profession. At the discussion on psychotherapy at the joint Section of Neurology and Psychological Medicine at the recent meeting of the British Medical Association at Glasgow, physicians attached to hospitals took no part. And is this attitude of mind to be wondered at? What has happened in the past? What is happening now? No sooner does a truth crystallize from honest thinking than it is obscured by encrustations of credulity, assertion, mysticism, and even fraud. Honest exponents drift with fatal facility into exaggerated claims and pretensions, and a superstructure of falsity soon overshadows the foundations of truth, and prejudice rather than conviction is the result.

The way in which all sorts and conditions of people without scientific training or medical knowledge not only discuss but seek to apply analytical psychology would be ludicrous if not so dangerous. And yet psycho-pathology is a serious science with a real and useful application to medicine, and is giving order and direction to methods which were empirical and haphazard. If given a wider recognition and consideration within the fold of medicine, where it would be subjected to restraints and controls, it would "speak forth the words of truth and soberness" and enrich the theory and practice of medicine.

Over psycho-analysis there is much misapprehension. The term comprises (1) the theory of the working of the unconscious mind; (2) the practice whereby the unconscious mind can be explored. Strictly the term should be limited to the particular theory and practice set forth by Freud and his immediate disciples. Many exponents, though accepting the basis of Freud's teaching, have departed from some of his tenets and methods and they seek to distinguish their work by the term "Analytical Psychology." They none the less are saddled by their critics with full responsibility for Freud's teaching, including his view that morbid and repressed complexes are associated with primitive sex impulses.

Though discussion of psycho-analysis is obviously beyond our purpose to-night it is worth briefly considering the ways and means of its presentation and handling, for I venture to think that therein is to be found the explanation of the heavy weather it is encountering.

And here a sharp distinction must be made between its theory and its practice. A theory or hypothesis put forward by a brilliant thinker and supported by a wealth of investigation cannot fail to enrich knowledge and be for the benefit of mankind, and this irrespective of its truth or falsity, provided it is expounded by those who are fitted to do so—which means, in the case of psycho-analysis, trained workers drawn from the ranks of psychologists, medical men, educationists, and surely it is widely accepted that the theory of the unconscious mind is a great work likely to exercise influence both on medicine and education. But if—as has happened here—all sorts and conditions of people delve into the subject confusion of thought and disturbance of mind must result.

But when it comes to the practice of psycho-analysis a much more serious position arises. Here we are dealing with a highly specialized method of diagnosis and treatment, which cannot be said to be without effect, either for good or evil or both, on the patient. It must often be an exploratory operation on the mind, and if you do not accomplish good you are not sure the result is negative. You cannot feel the same assurance as you do, in the case of an exploratory operation on the body, that at least no damage is done. The mind does not always heal by first intention. May not baneful influences thereby gain entry? Admitting that psycho-analytic treatment has its sphere of usefulness, under conditions of such complexity it is the habit in our profession for the treatment to be undertaken only by workers with specialized training, which ensures skill, restraint, and good judgement (this has been emphasized in a recent paper by Dr. Crichton Miller). Can it be said that these conditions are fulfilled in the practice of psycho-analysis? I fear not, and therein lies legitimate cause for criticism and alarm.

Too many of its practitioners are fanatics, who see neither limitations nor disadvantages and have no eyes for anything outside their narrow cult. This is unfair to competent and serious workers, who thereby get misrepresented, as has recently been illustrated by the joint conference of psychologists and educationists at the recent meeting of the British Association at Hull. I will briefly suggest reasons why psycho-analytic treatment calls for special caution. Its duration is both long and uncertain, extending, it may be, into months and even years. This is a great strain on the mind of the patient, who lives with a quickening sense of his own abnormality, and if the treatment does not suit him the danger of doing him damage is intensified. The operator (analyst) cannot control with precision the range of his operation: beyond the happenings he wishes to induce, others may result which are unsought and detrimental. Psycho-analysis induces and aggravates introspection, and is apt to produce morbid ideas. The laying bare of the unconscious mind—both the process and the result—injures some sensitive subjects and does harm by debasing them in their own estimation.

The dominant position asserted for primitive sex impulses in the causation of repressions aggravates the difficulties of psycho-analytic treatment. All medical men know how difficult is the handling of sex neuroses and aberrations, and how quickly by introspection "sex" will monopolize attention, distort judgement, and pervert conduct. The difficulties on the educational side, where youth is concerned, are even greater. The analyst who holds the Freudian view that the primitive trends of the mind are mostly sexual in origin cannot but be influenced by that bias in the treatment of patients, who likewise will feel its reflected influence.

Lastly, there is a factor in psycho-analytic treatment which presents difficulties of its own. I refer to "transference," which means that emotions and fantasies awakened in the patient by the analysis are detached from their original associations and reincarnated in the analyst, who thus becomes a partner in the life of the patient; or, to quote, "earlier experiences are revived, not as past ones, but in the form of a current relation to the person of the physician."

Is not such a relation of physician to patient putting too big a strain on human nature, and might not positions of danger be provoked? It may be that in practice these difficulties are less apparent, but frank discussion is needed if doubt and misgiving are to be allayed.

Once more the conclusion is the recognition by the profession of the increasing importance of the study of mind in health and illness. Within the fold that study will regain the perspective and restraint which in its present position of isolation it has lost.

Hostels of Health.

Another development in medicine is the growing interest in the beginnings of disease. Within the profession this

interest has received inspiration and direction from Sir James Mackenzie. The conception, birth, and vigour of the Institute for Clinical Research at St. Andrews constitute the climax of one of the remarkable careers in the annals of present-day medicine. This work is beneficent, not only for the direct results it is achieving, but for its influence in bringing back men's minds to the fundamental importance of studying the patient—a study which had become somewhat overshadowed by the advances in laboratory methods.

From another aspect biochemistry will, I venture to think, more and more throw light on the changes premonitory of disease. By the co-ordination of the two methods of inquiry the surest progress will be achieved.

Corresponding to this trend of thought within the profession there is a notable change in the attitude of the public, in whose mind health has become a positive conception, and is no longer regarded as the same thing as freedom from disease. Strength and perfection of frame are coming to be regarded as both a duty and pride of achievement, and people will pay more attention to digression from this high standard. To be too fat or purple and breathless in the prime of life will be the object of censure, just as now it is considered bad form to have a neglected mouth. As a result—if I may indulge in prophecy—methods of treatment will alter. For these early departures from health will not hostels of health replace hospitals to cure disease?

While continuing his employment the man who is lapsing from anatomical or physiological rectitude will reside in a hostel for a brief space, and under a suitable régime of rest, exercise, diet, training, and other treatment will be restored to the joy of fitness. At present this growing sense of the value of health is too exclusively concerned with the physical aspect. The importance of mind health, however, will in time gain recognition unless its significance is obscured by wild advocacy. And that recognition will be followed by a greatly needed change in the opinions and demands concerning popular recreations and amusements.

Organization of Medical Institutions.

In conclusion I will consider, briefly, developments which affect our medical organization.

Growth of medical knowledge and the increasing number of sciences associated with it are steadily making diagnosis and treatment rest on collective rather than individual efforts. Collective effort, to be efficient and economical, needs to be aggregated into organizations. It follows that institutions especially equipped as hospitals and clinics, with their laboratories and accessories, will be necessary throughout the country for all classes if the best that medicine can give is to be at the service of the nation.

If we approach the question from an economic point of view the conclusion is the same. Complexity in diagnosis and treatment means increased cost, and as the cost increases the number of people who can defray that cost grows fewer. The result ensues that from this point of view the more medicine improves the less well are people served. The remedy is clearly massed production, which means institutional organization.

The conditions of family and social life point to the same conclusion. At the present time a large and increasing proportion of the population is not getting the best opportunities in illness. Those who frequent existing hospitals are the rich and the poor, but that large mass of people of moderate means (and with existing taxation the word "moderate" carries increasing emphasis) does not.

This is a reproach. It is unfair to the individual and is to the disadvantage of the community. The public very properly looks to us to say what the remedy should be. Its provision requires the co-operation of the public, but it is for us to indicate its nature and guide its application. Hence the importance of agreement amongst ourselves.

Since the growth of such institutions must be gradual it is the more important that the early ones should be on the right lines, so as to set up a good standard for achievement. I will briefly put forward for discussion some of the conditions which in my judgement should be fulfilled.

I. They should be run on economic but not commercial lines. A fixed percentage (say 6 per cent.) should be paid on the capital and the rest of the profit should go to improving the equipment and usefulness of the institution.

II. The laity should co-operate in the administration. The technical direction should be under a committee of medical men. It would be better for the bulk of the capital not to belong to members of the medical profession. There should be grades of comfort and luxury to suit varying pockets, but, needless to say, only one standard for all essentials, and that the best.

III. There should be provision for a proportion of patients who cannot defray the cost of their treatment. The cost to all others would be at and above a basic economic charge. Professional fees could be included in, or be independent of, the charges for the use of the institution, but broadly the principle that fees are an arrangement to be made between doctor and patient should be maintained.

IV. Patients attending such institutions would retain their own doctors. The idea must never grow up that these institutions are homes for specialists only. There is an advantage in a consultant having an allotment of beds and his own equipment. That gives him his private workshop and yet he rubs shoulders with colleagues. One-man institutions are a mistake from any point of view.

Should such institutions be built as annexes to existing town hospitals? Speaking generally, and in my opinion, emphatically not. Hospitals are situated where the benevolence and conditions of former days put them. No one would put them in their present positions if building them now. An institution such as I have tried to adumbrate should be near enough to the edge of the city to secure adequate space and air.

Such an idea has been realized in part in a few localities—for example, St. Chad's, Birmingham—but not in its entirety.

Institutions on these lines would solve the problem from the point of view of efficient medical treatment, and also for the people better placed from the point of view of cost. But they would not solve it for the people of small means—say those earning £500 to £600 a year. Such as these cannot even under the conditions above described defray the cost of a serious illness out of income or savings. And yet they must be provided for.

The only way I see is through some system of insurance. A State system of insurance for this purpose is neither desirable nor feasible. I should like to see the big insurance companies take the matter up, and cannot but think they would, if assured that the business would meet a public need and receive strong support. I know there are difficulties, such as the question of adequate control without ruinous charges for supervision, but they should not be insurmountable.

I put forward these suggestions for discussion with the strong conviction that it is for the profession to hammer out the best lines of development and give the public responsible advice.

The discussion to-night might perhaps be usefully resumed at a later date.

THE LIGHT SENSE, WITH SPECIAL REFERENCE TO NAVIGATION.

BY

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The last fifty or sixty years have seen much discussion and not a little controversy in this and other countries as to the condition of the eyesight of those entrusted with navigation. Even as far back as 1882, when I was in the laboratory of Donders at Utrecht, certain aspects of the same subject were being investigated, for the colour sense of the railway servants was being examined under his direction. It is not my intention to review in any detail the history of the movement, but rather to point out our present position.

As a preliminary I would like definitely to enumerate those functions of vision which seem to me to be necessary for navigational purposes. These are at least four: (1) good visual acuteness; (2) sufficient form sense, or, as I prefer to call it, field vision; (3) approximately normal colour perception; (4) good light sense.

I felt inclined when drawing out the rough outline of this communication also to include binocular vision. A navigator is none the worse of having binocular fixation, but it is by no means necessary, for I have frequently known officers and seamen of the mercantile marine who had each only one useful eye.

It may seem strange to those who have not followed the controversy as to colour testing, but yet it is true, that persons with defective colour perception have been known to navigate

for many years without on any occasion mistaking the colour of lights. The vast majority of colour-blind persons, however, are dangerous, and it is so difficult to define the limits of safety that I do not object to all persons who are definitely colour-blind being rejected by the Board of Trade.

In passing it may be said that there are several factors which enable a colour-blind person to distinguish between the mast-head and port and starboard lights. To begin with, they invariably differ from each other in what may be called essential luminosity—in other words, their kinetic values, if I may be allowed the expression, are different. Much also seems to depend on the form of colour-blindness. Twice during the controversy on colour testing I found myself in acute disagreement with Sir William Abney. In his well-known book on colour-blindness he gave, in the form of spectra, what he believed to be the colour sensations of colour-blind persons. I think the same diagrams also appeared in the report issued by the committee appointed by the Royal Society. Now inspection of these diagrams showed that he represented the warm and the cold ends of the spectrum as occurring in the different forms of colour-blindness as all but invariably distinctly differing in tint. Were that true, then there could scarcely have been such a thing as dangerous colour-blindness. Nor could I agree with the distinct preference which he gave to Holmgren's wools as a test when he gave evidence before the departmental committee of the Board of Trade. He objected to a lantern test on the ground that the colours exhibited by the lanterns were not pure colours; it never seemed to occur to him that the colours of the wools were equally mixed colours. At any rate, I have never found on spectroscopic examination any wool to give a pure colour. Although I do not altogether like Dr. Edridge-Green's recently published book, I do like his lantern; it seems to me to be a thoroughly reliable test, and the Board of Trade has been well advised in adopting it. This, however, is an echo of a past controversy, and is only mentioned because it illustrates that a good light sense may play a part, although only a subordinate part, in the recognition of lights at sea.

In the next place, I will once more enunciate the difference which I drew a considerable number of years ago between visual acuteness on the one hand and the form sense—or, as I now call it, field vision—on the other; for, so far as I can see, the form sense, or field vision, very largely depends on the light sense. To my mind visual acuteness, strictly so called, is the power of reading ordinary small type, and is purely a macular function. It is best illustrated in the following manner. If a person looks at any page of printed matter and fixes a word at the centre of the page he or she will find that, so long as the attention is directed to the word specially selected, the other words on the page, with perhaps the exception of one or two in the immediate neighbourhood, are quite indistinct. That part of the field of vision which is specially adapted for macular vision I have elsewhere called the "field of visual acuteness." It subtends an angle of only a few degrees at the first nodal point of the eye; its shape differs slightly in different individuals, but, roughly speaking, it is more or less circular. So far as I am aware, it has never been thoroughly investigated.

I reserve the phrase "field vision" for a different set of visual impressions. If a person looks at a particular word in the manner already suggested, and studies his own sensations while doing so, he will find that he is quite well aware of other objects in his neighbourhood. Thus he may be aware that there are other people in the room, although he will be quite unable to recognize them. He also may be aware that there is a clock on the wall and see its general shape, although he will be unable to read the time unless he turns the field of vision on the object. All that part of the field of vision which lies outside the field of visual acuteness I call the "field of form sense." It certainly subserves, if I may so say, at least the following functions—namely, the recognition of shape, of colour, and of differences of luminous intensity; that is, it has light sense. As I shall indicate presently, it is this last that is of special importance for certain purposes of navigation.

A single instance will show what is meant by its function of shape. When the person looks at the selected word, if there be other people in the room he will at once be able to tell that the heads are more or less round, and will be able to distinguish the shape of the shoulders and other parts of the body. He will also have a fairly good idea of the form of the different articles of furniture in the room. It is unnecessary to say anything about the colour perception functions of the periphery of the field, for they are well enough known to every ophthalmic student who has worked at colour perimetry.

Before saying anything about the perception of differences of luminosity in the field external to the macular area there is one line of thought that I wish to introduce at this point. It is perhaps best introduced by the general statement that in most forms of manual work, and in most acts of daily life, the workman uses what, for want of a better name, I have called his form sense or field vision, and not his visual acuteness; so also, in walking along a thoroughfare, it is the field vision that enables one to avoid collision with other passers-by; it is only a small minority of them that we see sufficiently distinctly to make recognition possible. Another very striking example will further indicate my meaning. In the process of coal-mining the visual acuteness is scarcely used at all; it is chiefly the light sense, for that is what is required to distinguish genuine coal from what is technically called dirt. No doubt, if the miner be of a scientific turn of mind and wishes to examine the fossils contained in the coal measures, he will require to use his visual acuteness, but otherwise he carries on his operations by the field vision, and particularly by that part of it which is called the light sense. Two colliers whom I examined recently on account of miners' nystagmus were found each to have an enormous amount of myopia—roughly, about 18 or 20 diopters—and yet, till the nystagmus supervened, they experienced no difficulty in their work so far as vision was concerned.

At the Toronto meeting of the British Medical Association (1906) I instanced a case of another collier who had about 12 diopters of myopia, and who never suspected that there was anything wrong till he tried to get into the service of a railway company. Now in the first two cases there was no visual acuteness possible, in the proper and restricted sense of the term, at a greater distance than three or four inches from the eyes, and in the last case the extreme distance of visual acuteness was not at a greater distance than four or five inches from the eyes.

The above statement, speaking in general terms, is quite true, although I am well aware that it would have to undergo slight modifications were we to proceed to the discussion of the mental interpretation of blurred images—a very intricate subject to which I would most respectfully call the attention of the psychologists. Manual work has little to do with visual acuteness, as I have shown elsewhere; it practically depends on the field vision and on the sense of projection. Failure to realize this important fact may even lead to a miscarriage of justice. For example, in one case which I was assessing with the Sheriff, a surgeon who had seen the patient on behalf of his union reported, "Visual acuteness of the eye is 6/9 Snellen," and not long afterwards another surgeon reported, "The vision of the eye is 6/18." The learned Sheriff, who was arbiter in the case, immediately and very naturally came to the conclusion that if the visual acuteness was at one period only one-half of what it had been a few weeks before the patient was in a bad way. It was pointed out that the certificates were wrong in form, and that the medical examiners could not tell what the vision really was, but could only record what the patient had thought fit to admit in their presence. I further managed to get the Sheriff to realize the important fact that for the work in which this man was engaged visual acuteness was scarcely required at all, but only field vision. The examination of the visual acuteness is a matter of practically no importance in such cases.

Perhaps I may here be allowed to state my strong preference for Landolt's broken-ring types to any others. No doubt Snellen was the first to standardize visual acuteness, and at present his types are those which are all but universally employed. Thus visual efficiency is expressed in terms of Snellen's types for the navy and army and for the examinations demanded by the Board of Trade. There is, I think, no doubt that Landolt's tests are much more satisfactory than those of Snellen, although Snellen had the great merit of being the first to standardize visual acuteness in terms of the five-minute angle. Landolt's types are equally useful for literates and illiterates. Moreover, I think something is gained by their being circular in form; by their use we can get much greater uniformity than by ordinary letters of the alphabet, which are more or less irregular in shape. Probably the best proof of the defects of test types composed of ordinary letters is the fact that the letters of the same size in a particular line are frequently not all easily read. The only change I would make in Landolt's types is

to have a good number of each of the sizes of the broken circles printed on the card, the break in the successive members of the same line being put at different angles; either that or to make each of the broken circles to rotate so that the angle at which the break occurs may be varied. I beg respectfully to suggest that the Board of Trade be urged to adopt the principle of Landolt's types and to scrap those in ordinary letters because of the irregularity in each line of the latter.

The investigation of the light sense is a matter which I fear is too much neglected. I think its proper examination would often be most helpful to physicians and to neurologists. Probably it is the first function of the optic nerve to become affected in impending diseases of that structure. I am also of opinion that its examination would frequently reveal such diseases as sclerosis and locomotor ataxy in the early stages; but, so far as I am aware at the moment, it is almost entirely neglected in clinical work in medical wards. In a previous part of this communication I have distinguished between what I call macular vision and field vision, and I think it might be of great utility if apparatus were devised to enable the light sense of both macular vision and field vision to be thoroughly investigated separately. At present there seems to be little hope of any such thing being done in the United Kingdom. I am not aware of there being anywhere a thoroughly equipped laboratory for the ophthalmic investigation of disease.

The examination of the light sense should be considered under two headings: first, the examination of the minimum light sense; secondly, the examination of the light difference sense; for both of these functions are important as regards the eyesight of seamen. Recently, considerable light has been thrown on this subject by Mr. Percival of Newcastle-on-Tyne and he has invented apparatus which is probably the best for testing these important functions. Many years ago I devoted some attention to the testing of the light sense. For the testing of the minimum light sense I used what was to all intents and purposes a Foerster's light sense box, and for testing the light difference sense I used a spot of light seen double through a rhomb of Iceland spar. The double spot was examined by means of a Nicol's prism which was arranged to rotate about its long axis, the amount of rotation being indicated in ordinary degrees on a scale. The difficulty of course was to determine the zero with such an apparatus—in other words, the place at which both spots appeared equally bright. This was done by adjusting the apparatus so that they seemed to have the same luminosity: the Nicol's prism was then turned in one direction till the spots appeared to differ very slightly in luminosity, and the point at which that occurred was carefully noted on the scale; the prism was then turned in the opposite direction till again a difference was observed, and the spot at which this occurred was also noted; the point on the scale midway between these two positions was taken to be the zero.

I have no hesitation, however, in saying that Mr. Percival's test is a very admirable one. It is much more easily arranged than the somewhat complicated one I have described, and I think ought to be used by the Board of Trade in the testing of seamen's eyesight. The value of such an examination is perhaps best illustrated by the following incident which occurred in my own experience. Once coming in from the Western Ocean, making for the Clyde, several officers of a steamboat were busy trying on a misty day to see one of the islands lying off the west coast of Ireland. Some of them were quite certain that they had seen it, others altogether failed to see it; that I think was probably due to the light difference sense of the officers who failed to see it being defective. On dark nights in narrow waters where the shore lighting is defective the light difference sense is of the first importance. A person with defective light difference sense on such a night is likely to have great difficulty in determining where the water ends and the land begins. So also it is to be observed that such impediments to safe navigation as icebergs and waterlogged derelicts do not carry lights; a man with a defective light sense will not see these dangers as easily as a man with good light sense. I cannot but regard the matter as being one of extreme importance.

Visual acuteness in the strict sense of the term is of importance in navigation. Thus an officer will not be able to read charts or tide tables or the various instruments used in navigation unless he has good macular vision, nor will the ordinary steersman be able to read a compass card unless he also has good macular vision. It is therefore of great importance in these respects. The picking up of objects at a distance, such as other vessels or buoys or a land fall, is not necessarily a function of macular vision at all, but is chiefly a function of field vision, and very especially of the light difference sense. The images of most objects seen at sea are not, of course, primarily formed on the macula but on some peripheral point of the retina—in other words, the appeal first comes to the field vision and not to the macular. No doubt in a very large proportion of cases, when a new object appears on the horizon line, and by the field vision the officer becomes aware that it is there, he instinctively looks directly at it to see what it is and thus brings the object into the macular field. If, however, the light difference sense be defective there is a very much increased chance that the new object will not be seen at all, and danger may ensue therefrom. Long years ago I advocated strongly that the light sense of all men entrusted with the duties of an officer of the watch should be carefully tested, but up till now, so far as I am aware, no steps have been taken to bring about this desirable change. At that time the apparatus available was not very suitable, but the circles introduced by Mr. Percival seem to me to leave nothing to be desired.

One other question remains to be mentioned, although I am sorry to say that I am not in a position to give any answer—it is as to the effect of errors of refraction on what I now call field vision. I have already pointed out that very high degrees of myopia do not hinder a man from working, and that satisfactorily, at coal-mining. Navigation, except for the reading of charts and other documents and the necessary instruments of navigation, does not involve, or hardly at all, macular vision, but does involve field vision. The question then arises, Can a man with a moderate degree of myopia safely navigate? I am not prepared to give a dogmatic answer to this important question. At the same time if the myopia be high I think it would form an insuperable barrier to his being put in charge of a vessel. Personally I have provided myself with convex glasses of 3 diopters when at sea, and certainly the artificial myopia induced thereby would have rendered me quite incapable of performing navigational duties. Still it must be remembered that that is an artificial myopia, and that I had not been in the habit of subconsciously interpreting blurred images. On the other hand, I have known a master mariner who commanded a ship for some years, and who had a myopia of about 2 diopters in each eye, a condition which presumably had been with him for most of his life. It is just within the range of the possible that a man who has had for most of his life a fair amount of myopia, and who has been interpreting the consequent blurred images, may be quite fit for navigational duties. The work of a man on the look-out is not a function of macular vision, it is a function of field vision, and although I have no data to go upon, except the case of the master mariner just mentioned, I think it is quite possible that even with a fair amount of myopia the field vision is sufficiently good to render a man safe when on the look-out.

The two points which I desire to emphasize in this paper are: first, that for navigation the light sense should be tested as carefully as the colour sense; and secondly, that most manual work does not depend on macular vision at all, but on what I have called field vision, and that therefore it is idle to attempt to evaluate manual efficiency in terms of visual acuteness as above defined.

THE MECHANISM OF HEARING.

BY

SIR W. M. BAYLISS, F.R.S.

Although from time to time objections have been made to the theory put forward by Helmholtz that the basilar membrane of the cochlea acts as a series of resonators and that by its means analysis of compound sounds is performed in the peripheral receptor organ, it has to be admitted that rival theories present at least as many difficulties. Theories in which this membrane acts as a whole, like a telephone diaphragm, or by "pressure patterns," are inconsistent with the differentiation of structure along the membrane and with the newer knowledge of the conducting properties of nerve fibres. For these reasons the views put forward by Rutherford, Waller, Wrightson, and Ewald cannot be accepted.

In a recent paper Mr. George Wilkinson, F.R.C.S., of Sheffield, also points out that those of Meyer and of Ter

Kuilc, if applied to a series of impulses, really amount to sympathetic resonance. In the paper referred to[1] Mr. Wilkinson describes the construction and properties of a model made with careful adherence to the proportions and nature of the cochlear mechanism. It is by far the most important recent contribution to the knowledge of the problem. Very little attention had previously been given to the experimental investigation of the physics of resonant vibrators immersed in liquid. Professor McKendrick had shown that a series of metallic reeds immersed in water was capable of sympathetic resonance, but the system was apparently thought too far removed from the actual structure of the basilar membrane to throw very much light on the behaviour of the latter. Mr. Wilkinson's model is a great advance. It was shown to the Physiological Society in December, 1921, and to the British Association in September, 1922. Details of the mode of construction, in which various difficulties were successfully overcome, must be read in the paper. The mechanician of Professor Leathes's laboratory, Mr. C. E. Stewart, is to be congratulated on the result. It consists essentially of a series of strips of very fine phosphor-bronze stretched across a gap in a brass plate and soldered to this at both ends. The gap is wider at one end than at the other, in order to give a graduated series of different lengths. The strips were first soldered at one end, then stretched by a series of weights, and while under tension soldered at the other end. The whole was then coated with gelatin to form a continuous membrane, leaving a gap at one end (the "helicotrema"). This structure was made to form the division between two closed chambers of water (the "scalae") into which the two "windows," closed with india-rubber, opened. On one of these a little wooden rod ("stapes") was cemented. The top of the upper chamber was formed by a glass plate. Finely powdered blue enamel was distributed over the membrane to indicate the region of vibration when tuning-forks of various period were applied to the "stapes." The lengths and tensions of the strips, as also the dimensions of the chambers, were carefully calculated, but the vibration rates turned out to be higher than those expected. This is, of course, partly due to difficulties in construction and probably also to the omission of some unknown factors which complicate the formula.

It will be remembered that the rate of vibration of a string depends on three factors. It is directly proportional to the square root of the tension, inversely proportional to the length and to the square root of the mass. As regards the first of these factors, it was early recognized that the difference in length between the fibres at the two ends of the basilar membrane was insufficient to account for the range of pitch perceived, but it was sometimes overlooked that, as Dr. A. A. Gray has shown, there is also a difference in tension, such that the shorter fibres in the membrane are more tightly stretched and the range hereby increased. The mass of the vibrating element was mentioned incidentally by Helmholtz in referring to the membrane being weighted by the liquid in which it lies. But the real importance of this factor was first pointed out by Mr. Wilkinson. He shows that each element of the membrane is to be considered as consisting, not only of the fibre itself and the cells covering it, but also of two columns of water reaching from each element to each window, one on each side. This mass of water vibrates with the fibre, greatly increasing its mass and lowering its rate of vibration. Since the shorter columns are nearer the windows and the shorter fibres of the membrane are at this end of the cochlea, the range of response is further increased, and the reason why the basilar membrane is narrower at the base than at the apex of the cochlea is clear. It is further clear why the membrane must be a continuous one, because, if the fibres had gaps between them, no regular loading of the fibres would be possible.

Passing to the behaviour of this model, it was found that when the "stapes" was touched lightly with a vibrating tuning-fork of 32 D.V. the membrane responded only at one extreme end. Sixty-four D.V. gave a fairly local response about one-third of the way along. To 200 D.V. there was a response at about the middle, below the calculated position, with a partial response at the position for 100 D.V. To 400 D.V. the reaction was close to the calculated point, with a well marked partial vibration at the 200 D.V. position and a less marked one at that for 100 D.V.

[1] Analysis of Sound by Resonance, *Journ. of Laryngol. and Otol.*, September, 1922. Also a brief account in Proc. Physiol. Soc. in *Journ. of Physiol.*, vol. lvi, p. ii (February, 1922).

The model is probably capable of further improvement, but it appears that many important investigations might be made in its present form. The degree of damping and the extent of spread of resonance may be mentioned. It may be pointed out that some degree of resonance of adjoining elements is not contradictory to the theory of Helmholtz. The amplitude of vibration of these is probably too small to stimulate the nerve endings. Gray has shown that a similar cutting out of the smaller stimuli occurs in the localization of a point of pressure in the skin.

One fact of interest may be referred to in conclusion. The model responds also to a tuning-fork held in contact with the brass case, just as does the cochlea to conduction through the bone. This indicates that the impulses given by the movements of the stapes are of the same nature as those of sound waves directly transmitted to the water, as would be expected from theoretical considerations.

LUMINAL IN MIGRAINE.

BY

WILFRED HARRIS, M.D., F.R.C.P.,

PHYSICIAN FOR NERVOUS DISEASES, ST. MARY'S HOSPITAL, AND TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE, LONDON.

Paroxysmal recurrent headaches of hemicranial type are so common, and hitherto have been so difficult to diminish either in severity or frequency, that the apparent success of a new remedy which I have been using in this distressing complaint for the past year is, I think, sufficient justification for putting my results before the profession in order that others may test its value, I hope with similar good effect.

The close relationship of true migraine to epilepsy, as one of the paroxysmal neuroses, resembling epilepsy in being preceded often by an aura and succeeded by violent headache, suggested originally the treatment of migraine by prolonged administration of bromides in various forms and combinations. In my hands bromide has practically proved a failure in the treatment of migraine, though in a few cases aspirin, and in others cachets of pyramidon (gr. vij) with cannabin tannate (gr. iij), have notably cut short the duration of the headache if taken immediately after the attack is recognized. Migraine subjects almost invariably visit the oculist before the neurologist, and glasses are often ordered, though very rarely is true migraine improved thereby. Dieting of various kinds, reasonable and unreasonable, is also usually tried, the attacks being spoken of as liverishness, dyspepsia, or bilious headaches. A diet of milk and nuts alone has occasionally been said to cure a tendency to frequently recurring headaches.

Some headaches, doubtless, are of intestinal toxic origin, such as a chronic appendicitis; others, as we know, may be due to errors of refraction, nasal obstruction, pyorrhoea, etc., and may yield to the appropriate treatment. Such headaches must, however, be differentiated from migraine, which in its more characteristic type is notably hereditary, frequently unilateral (hemicrania), and often preceded for twenty to thirty minutes by a visual aura known as a scintillating scotoma, with temporary marked diminution of visual acuity. Nausea and vomiting usually follow the headache, sometimes occurring early, often delayed for hours, when the vomiting appears to relieve the headache.

Migraine may alternate with epilepsy in the same patient or in different members of a family, and I have known the same visual aura of scintillating scotoma herald both the epileptic and migraine attacks to which a boy of 13 was subject, whose mother was also a sufferer from migraine. The striking success of luminal in a considerable number of epileptics, who might justly be labelled "bromide failures," is now beginning to be common knowledge, through the writings of Golla and others, though at the same time a few cases, especially in children or young adults, seem to do definitely worse on luminal than on bromide, having more frequent attacks and greater mental torpor. In my experience I have found that it is the epilepsies in children, associated with some organic cerebral lesion, such as an infantile hemiplegia or congenital mental defect, without any family history of epilepsy, that are especially likely not to be benefited by luminal.

In analogy, therefore, with the successful treatment of some of the "bromide failure" epileptics with luminal, it occurred to me to try the effect of this drug in obstinate and frequently recurring migrainous attacks. I may say at

once that so far—and I have been using it thus for about a year—I may call its success most gratifying, both the frequency and the severity of the attacks being enormously reduced.

The action of luminal is sedative and hypnotic, and it is chemically a derivative of veronal or of its sodium salt medinal, which is much more soluble. Luminal differs structurally from veronal in that an ethyl group C_2H_5 is replaced by a phenyl group C_6H_5. Its action is much stronger than that of veronal or medinal, 1½ grains of luminal being perhaps equivalent to 7½ grains of medinal in hypnotic effect.

Luminal is put up in 1½ grain tablets, or it may be used as a powder in cachet or given in solution. Two examples of its use in migraine may be given as illustrating its effects, though they could be multiplied.

CASE I.

Mrs. X., aged 56, since girlhood always subject to headaches, especially severe at the menstrual periods. Never neurasthenic, but rather placid. Headaches very severe during last twelve years, and especially frequent during the last three years, latterly every ten or fourteen days. The attacks are preceded by an aura of visual defect, and followed by nausea and vomiting and complete prostration. Each attack lasts two or three days. Any excitement, fatigue, journey, or theatre or other entertainment is apt to bring on an attack. The attacks on the right side are always more severe than those on the left. The menopause became completed about eighteen months ago, but this made no difference to the frequency or severity of the attacks. Intense mental anxiety in December, 1914, appeared to aggravate the headaches and produced sleeplessness, which persisted. All forms of medicinal treatment, massage, and electricity are said to have been tried, without much avail, massage to the back of the neck alone giving some temporary measure of relief. Luminal in 1½-grain doses, three times a day, was then started, but after a few days the dose was diminished to 3/4 grain three times a day on account of extreme drowsiness and inco-ordination of movement. The half-dose suited well; she slept very well, and when she reported seven weeks later there had been no attack at all for the past five weeks, and she felt altogether greatly improved and able to take interest in affairs as she had not been able to do for years.

CASE II.

R. P., a man aged 30, has suffered from migraine for the past three years, gradually increasing in frequency, lately every week or ten days, while recently he had four attacks in three days. The attacks are preceded by partial blindness lasting about an hour, which is followed by violent headache for two or three hours. On May 23rd last I gave him 1 grain of luminal, with a little bromide, belladonna, and arsenic three times daily, and up to the present date of writing (August 15th) he has had only one attack, on June 17th, while away on holiday and while he had been without his medicine for ten days. This morning he writes that he has just had an attack of partial blindness, with a feeling of dazed "far-awayness," lasting for thirty-five minutes, but with no headache following, and he is exceedingly grateful for the improvement in his condition.

The dose of luminal should as a rule be not more than 3/4 grain three times daily at first, and if the result is good the dose need not be increased, but after a fortnight may be reduced to twice daily, and later to once daily, at bedtime. Occasionally larger doses, as 1½ grains three times a day, may be required to produce a good effect, but if this dose is made a routine at the commencement of treatment toxic symptoms will often be met with, such as excessive drowsiness, inco-ordination of the limbs, and a sensation of unreality in relation to surroundings.

After continual administration of the drug for a week or more, various cutaneous rashes may be seen, such as erythema, urticaria, and a macular pink blotchy eruption, perhaps followed by dry branny desquamation. These rashes are unlikely to occur if an initial dose of 1/2 or 3/4 grain three times a day is not exceeded.

If migraine or other headaches are associated with sleeplessness luminal is especially indicated, and 3/4 grain three times a day will usually give refreshing sleep every night, such as the patients have not known perhaps for many months. This coincident relief of the insomnia and of the distressing headaches is a most striking evidence of the value of this treatment. How long to continue it must be settled by further experience.

At present, after two weeks' administration of 3/4 grain of luminal thrice a day I reduce the dose to twice daily (morning and evening) for another fortnight, and then to a nightly or even occasional dose of 1/2 or 3/4 grain for three months or even more. Many sufferers from migraine will, I expect, require to take it occasionally, once or twice a week, indefinitely.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF ANATOMY.

Professor ALEXANDER MACPHAIL, M.B., C.M., F.R.F.P.S., President.

PRESIDENT'S INTRODUCTORY REMARKS.

THE PRESIDENT, in his opening address, extended a hearty welcome in the name of Professor Bryce and the Officers of the Section to the members assembled from all parts of the country. He congratulated the Council of the Association on having included an Anatomy Section at this meeting: it was good for the scientific side of the work of the Association and it was good for the science of Anatomy. Anatomy must ever remain the very corner stone of medical education and research; yet in these days of a crowded curriculum and growing specialism in science there was danger of the clinician and the anatomist losing touch with one another. He had seen it stated that in our day any attempt at research in human anatomy was comparable to the process of "flogging a dead horse." This might be refuted in many ways, but by none more appropriately on this occasion than by reference to the remarkable presidential address delivered the other evening by Sir William Macewen; in each advance in the treatment of disease recorded in that address nothing was more striking than the extent to which exact and elaborate anatomical research—on the growth of bone, on the potentialities of the pleural cavity, on the intricacies of the membranes and circulation of the brain—gave the keynote of success to the brilliant series of remedial operations devised by their distinguished President.

He wished, before proceeding to the main subject of his address, to express grateful memories of his teachers of bygone days in the anatomy department of the university where now they met. His revered professor—and "Chief" for several years—John Cleland, was a giant in intellect as in stature; his lectures, though often far above the heads of all but his most brilliant students, were never "dry"; through all there gleamed golden veins of philosophy and poetry and high ideals of work and service; even the most junior student felt from the first that in his classes he had come under the influence of a great and a good man; his creed of industry and discipline was so exacting that incurring his correction was like breasting a mountain burn in flood; but his anger as quickly subsided, and the exceeding kindliness which followed more than compensated for the spate of terror. The wonderful record of his research and exposition—accomplished at a period when mechanical aids were few and imperfect compared with modern resources—cannot be adequately dealt with here: but a saying of the late Professor D. J. Cunningham might be recalled, with which he ended a review of Cleland's Textbook, that the high quality and the great diversity of Cleland's work might well elicit, in the breast of any anatomist, feelings both of admiration and of despair.

He wished to congratulate Professor Bryce very heartily on the happy thought which led him to group together in his museum the anatomical preparations of William Hunter, Allen Thomson, and John Cleland. No Anatomy School in the world could claim a richer heritage. He suggested that it would be a graceful act to direct the Secretaries of the Section to send a cordial greeting of its esteem, with the affectionate remembrance of those members who had been his students, to Emeritus Professor Cleland, who had adorned for so many years the Chair of Anatomy in the University whose hospitality they were now enjoying.

He desired also to voice the gratitude and affection with which all their old students in this University regarded Yule Mackay and Bruce Young, the most distinguished among Cleland's assistants, and in conjunction with whom he issued the notable volume of *Memoirs and Memoranda in Anatomy*. The hope that a second volume would appear—rich in the same high level of observation and research—was, unfortunately, never fulfilled; the recognition of his great administrative ability by colleagues in University College,

Dundee, and of his practical grasp of educational ideals and problems by the General Medical Council, had robbed science of the continuance of the valuable researches achieved by Principal Mackay, particularly in the development of the arterial system; and Bruce Young, whose early work on the anatomy of joints shook the science of Arthrology to its foundations, was all too soon diverted by ill health from a career full of brilliant promise for the progress of the Science of Anatomy.

DISCUSSION ON THE ADMINISTRATION OF THE ANATOMY ACT.

OPENING PAPER

BY

PROFESSOR ALEXANDER MACPHAIL, M.B., C.M., F.R.F.P.S.

IN introducing a discussion on this subject, so vital to medical education, the President described how the first steps towards new legislation were taken at a joint meeting of the Anatomical Society with the Anatomy Section of the Association at the Annual Meeting in London in 1910, when the late Professor A. M. Paterson was President and he himself was Secretary. As the result of a discussion on the vexed question of the difficulty of securing an adequate supply of anatomical material in all parts of the country, a special meeting, to which all licensed teachers were summoned, was held in the Royal College of Surgeons, London, in the following December; an "Anatomical Supply Committee" was appointed, to gather full information anent the problem, and to recommend, if possible, some efficient remedy.

The Anatomical Supply Committee.

The late Professor Alexander Macalister was elected chairman of this committee, which was representative of teachers of anatomy and operative surgery in all parts of the (then) United Kingdom and in His Majesty's Services; it included Professors Arthur Thomson (Oxford), R. W. Reid (Aberdeen), Arthur Robinson (Edinburgh), the late A. M. Paterson (Liverpool), Johnson Symington (Belfast), A. F. Dixon (Dublin), F. G. Parsons (London), Mr. W. McAdam Eccles (London), Colonel E. M. Pilcher (R.A.M.C.), and himself as honorary secretary. The committee held many meetings, and conducted widespread investigations into the conditions of anatomical supply both in this and in other countries, and early in 1912 issued a report summarizing these, and recommending that His Majesty's Government be approached by a deputation to explain the difficulties commonly experienced in the working of the Anatomy Acts of 1832 and 1871 and to suggest suitable amendments or the introduction of a new Act. A second meeting of licensed teachers, to which this report was submitted, empowered the committee to organize as influential a deputation as possible, on the lines suggested.

1912. Deputation at the House of Commons.

In December, 1912, the Right Hon. Reginald McKenna, M.P., Home Secretary, received at the House of Commons this deputation, which he described as "literally and truly unparalleled and unprecedented." It included representatives from every university and medical licensing corporation in the United Kingdom; in most cases their Vice-chancellors attended to represent the former, and their Presidents the latter; it was introduced by the Right Hon. Dr. Christopher Addison, then recently elected a Member of Parliament. The pressing needs of the anatomy schools, and the disastrous effects that would befall medical education and practice unless efficient teaching in anatomy were maintained, were explained in speeches by the late Principal Sir William Turner, the late Professor Alexander Macalister, Sir Rickman Godlee, the late Sir Alfred Pearce Gould, Sir Thomas Barlow, Colonel Skinner, Principal Sir Donald MacAlister, and Principal Sir George Adam Smith. In reply, the Home Secretary declared himself deeply impressed by these speeches, and he carefully discussed the points raised; he favoured a further attempt to improve the administration of the existing Act rather than run the risks of introducing a new one, but he undertook to face the latter course if nothing resulted from the efforts that would be made to improve the conditions.

1913. Conference at the Home Office.

At Mr. McKenna's request a subcommittee of the licensed teachers met representatives of several Government departments in conference at the Home Office early in 1913. While the Scottish Office and the Scottish teachers were represented at this conference the Irish Office, though expressing the desire to be informed of its views, did not send a representative. At this conference several suggestions for improving supply were discussed; there was general agreement that the institution of a "notification fee" was desirable, to be paid to the executive officers who were responsible for the careful and exhaustive inquiries which led to the certainty of an unclaimed body being available, but any practical outcome was delayed owing to the principal official concerned being engrossed by new legislation in another sphere, and no improvement had taken place when the following year witnessed the outbreak of war.

Though sadly disappointed by this delay, the committee could not then press this matter on a Government suddenly burdened by such tremendous problems and responsibilities. Moreover, the mobilization or voluntary enlistment of many students in the early days of the war and, later, the practical conscription, under the Derby scheme, of all medical students who were fit for military service, lessened the difficulties of the schools. It became necessary, indeed, to close some of the sources of supply and also, owing to the surplus which had accumulated, to introduce an Order extending by twelve months the period during which a subject might be retained before burial.

1918. The Post-war Crisis.

The end of the war, however, led to a crisis in the difficulty of supply. The return of large numbers of students who had happily been spared to resume their studies, and, concurrently, a large increase in the number of new students, led to the crowding of dissecting rooms by men and women for many of whom no subjects could be provided for practical instruction in anatomy, while the teaching of operative surgery on the cadaver had to be entirely suspended. Late in the year 1918, thus faced with difficulties even greater than when they commenced their labours, the committee again approached the Home Office and were referred from there to Sir George Newman, one of the medical representatives of the Government at the Conference in 1913, who favoured steps being taken to transfer the administration of the Act to the Board of Education on the ground that this Ministry had become closely concerned in the problems of medical teaching through the allocation of grants, which would largely fail of their purpose if an adequate supply of material for anatomical teaching and research were not maintained in the universities and medical schools.

Meantime, while steps in this direction were in progress, suggestions had reached the committee from various quarters that as this problem closely affected, through the provision of properly trained medical men and women, the health and well-being of the country, it should be undertaken by the new Ministry of Health then in process of establishment, and early in 1919 the committee decided to recommend that course. A memorandum was prepared by the committee, embodying all their previous efforts to find a remedy for the deficiency in anatomical supplies, and this was forwarded to the Prime Minister and other members of the Government with the twofold recommendation that the administration of the Anatomy Act should be among the powers and duties to be transferred to the Ministry of Health and to the Scottish Board of Health, and that the Act should be amended in such a way that it would adequately effect the purpose for which it was originally framed. In the first of these recommendations the committee was assured of the cordial support of Dr. Addison, the first Minister of Health, who was personally acquainted with the difficulties of the situation through his former experience as a professor of anatomy.

1919. Transference of the Administration of the Anatomy Act from the Home Office.

In September, 1919, an Order in Council was prepared, advising the transference recommended by the committee. Owing to the somewhat cumbrous procedure required by both Houses of Parliament the Order did not take effect until May 17th, 1920, on which date it received the approval of the King in Council, but the subcommittee of licensed teachers, who had lately lamented the loss of their chairman, Professor Alexander Macalister, and had appointed Professor Arthur

Thomson in his stead, had meanwhile been invited to meet the Minister of Health in conference, in November, 1919, to discuss immediate steps that might be taken to remove the difficulties of the medical schools of England and Wales. The problem as it affected the medical schools of Scotland was the subject of discussion, about the same time, between the Scottish Office and the Scottish Board of Health, when it was decided, he understood, that in Scotland the administration of the Act should remain, as heretofore, in the hands of the Scottish Office.

Administration of the Act by the Ministry of Health.

The Minister of Health explained to this conference that the transference of the administration of the Act by Order in Council gave the Minister of Health no powers to alter in any way the regulations of its various clauses, and he proposed, in the first instance, to inaugurate a systematic approach to the legal custodians of unclaimed bodies; for he was assured, by inquiries he had made, that if all such as were available were placed at the service of medical education the requirements of the schools could be adequately met.

It was therefore decided to make an effort to realize the the purpose of the existing Act by inviting himself (the President) to accept office as a medical officer of the Ministry, in the hope that his close acquaintance with all the preceding negotiations would enable him effectively to explain to the authorities concerned the difficulties of the administration of the Act, and, by his long experience in the practice of anatomy, to impress on them their opportunity of advancing the cause of medical education. That office the President accepted in July, 1920, as soon as he could be released from his duties at St. Bartholomew's Hospital Medical School; and after consultation with Dr. Addison and his chief medical officer, Sir George Newman, he proceeded at once to organize a new campaign on lines approved by them.

> Thus, for the first time in the history of the administration of the Anatomy Act in England and Wales, a Government department undertook the responsibility not merely of supervising the anatomy schools, but also of helping them to secure an adequate supply of the material which they require.

The gravity of the situation at that time might be judged by the following figures: the University of Cambridge had 3 adult subjects available for the tuition of a class of 280 students: Liverpool had 2 for 253; Cardiff 2 for 220; Bristol 2 for 118; Manchester 6 for 250. While the London medical schools suffered from an equally marked deficiency, the other provincial universities were more adequately supplied; the new campaign was therefore directed in the first instance to improving the conditions in London and the foregoing provincial areas—conditions which had led inevitably to a return to primitive methods of instruction; oral demonstrations had to be substituted for dissections, which had to be eked out sometimes by using the bodies of stillborn children, or even of monkeys as in the days of Galen. In this course of action much help was derived from the previous labours of the London Anatomical Committee (chairman, Sir Arthur Keith; secretary, Professor F. G. Parsons), of the Provincial Committee (chairman, Professor Arthur Thomson, Oxford; secretary, Professor J. S. B. Stopford, Manchester), and of Mr. W. O'Sullivan, who, on the staff of the Home Office, had for many years carried on the work of the Anatomy Office prior to his transference, with that Office, to the Ministry of Health.

The policy adopted by the Ministry closely followed that pursued by the licensed teachers over the long period since the introduction of the Anatomy Act, by appealing to the legal custodians of unclaimed bodies for the use of these for anatomical examination.

> This policy was based on careful consideration of the view that the systematic use of such bodies for medical education was the method least likely to give offence to the sentiments of living persons.

[The President then explained in full detail the methods adopted in the administration of the Act.]

1920-1922. The Effect.

The results recorded amply justified the policy of the Ministry, and the conviction of the first Minister of Health that all the requirements of the medical schools could be met, for the present, without recourse to new legislation. The number of institutions, asylums, etc., which had thus been added to the former sources of supply amounted to a total of 127, and from these many subjects had been distributed to the schools. Translating the records into terms of the usual allocation of "parts," in the classes of anatomy and operative surgery it might be said that more than 12,000 students had thus enjoyed for one term at least the opportunity they would otherwise have lost of thorough tuition and experience in the fundamental science of their profession. In terms of the benefit to be derived in the long run by the people of this country, the improvement was incalculable.

The Future.

With regard to the future, it was well to realize that there were difficulties ahead. That anatomical subjects would be required by the medical schools as long as disease prevailed was as fundamental a fact as that knowledge of the alphabet was the first step in any scheme of education, elementary or advanced. There could be no doubt, however, that all the beneficent measures now directed towards improving the conditions of life were resulting in a gradual diminution in the number of *unclaimed* dead. This question brought him to a very important aspect of the administration of the Act.

Clause VII of the Anatomy Act expressly provides for the carrying out of the wishes of persons who "direct" that their bodies shall be used for anatomical examination after death. In past years many such, rich and poor alike, had advanced the cause of medical education by so doing. He had commonly heard the statement, even from those most bitterly opposed to the idea of permitting the dissection of other persons, that they felt no objection whatever to their own bodies being used in that way. In this sentiment lay the crux of the whole question of the voluntary bequest of bodies for the benefit of medical science, and due regard was paid to it in the safeguards qualifying Clause VII, which gave any surviving relative the right to annul the bequest by requiring the body to be interred without such examination. Anomalous as this might appear at first, when contrasted with the binding nature of any bequest of personal property, it was surely realized, on second thoughts, as a right and proper protection of such sentiments of living people, regarding the disposal of the dead, as might be a much deeper matter to them than interest in merely material affairs. The suggestion had frequently been made that an adequate supply of subjects would be assured were such bequests made legally binding on executors through an amendment of the Act. Not long since Lord Rowallan, in a letter to the *Times*, expressed his surprise on learning that he could not legally bequeath his body for the relief of human suffering by the advancement of medical knowledge, and his opinion "that no obstacle should be put in the way of those who feel that being serviceable is everywhere honourable to a man while he lives and to his body when he has left it."

No suggestion yet made, however, could overcome the present state of public sentiment and the difficulty that, while a deceased person had passed beyond any concern in the matter, there might be living persons whose feelings it was not right to disregard by insisting on the manner of the disposal of his or her remains. At the root of these feelings might lie, no doubt, the aftermath of the sinister days when the horrors of "body-snatching" and the exaggerated horrors of the dissecting room which gathered round them were a present fear to every household in the land. There still persisted, too, that view of the sanctity of the corpse which made the idea of its dissection appear irreverent: the life of the great Vesalius, the father of human anatomy, was sacrificed to that feeling close on four hundred years ago, and it had not entirely disappeared even in our own day.

While it was probably true that any member of our own profession—though most familiar of all, therefore, with the meaning and purpose of anatomy—could think with equanimity of his own body being dissected, should it be required for the advancement of medical science, it was probably equally true that in the present stage of our outlook on these matters he could not think exactly in the same way with regard to the bodies of his nearest relatives. How much more likely must we expect this to be true in the case of laymen in general, until such time as the sting of death and the victory of the grave should have lost their potent influence on the human mind.

But surely signs were not wanting of a steady advance towards a day when the *material* aspect of death would be seen in proper focus, and in these there appeared to him to lie the assurance that the teaching of anatomy, if its requirements were adequately presented, would never lack the public support it needed. The ever-increasing number of persons directing that their bodies should be cremated surely denoted

the gradual progress of enlightened views as to the *facts* of death; and it should not be difficult to persuade such persons, and their relatives, of the advantages to medical science and their fellow men which would result from a prior anatomical examination. The grim horrors of war, too, had done much in our time to hasten the "dying of death"; it mattered little, surely, compared with the revered memories of the fallen, whether his flesh were torn by wounds or dissipated by a shell, whether his mortal remains lay in the Abbey or in a distant field in Flanders. Might not those signs of an altering outlook on the fact of death be interpreted as the gradual growth of a common-sense view which would gradually remove the mass of distressful mystery which has for so long surrounded it? And might not one result be that, when the need arose, all the bodies required for medical study would be freely supplied by voluntary dedication? He felt convinced that in the vanguard of such dedication would be found the men and women of the medical profession.

DISCUSSION.

Professor T. H. Bryce (Glasgow) said he had been most interested to hear the account of what Professor Macphail had accomplished for the medical schools south of the Tweed. It was comforting to learn of the success that had attended his work for the Ministry of Health. In Glasgow there was an ideal arrangement, established since a long time, by which the matter was supervised, under the Inspector of Anatomy, by a committee consisting of the senior magistrates with representatives of the Poor Law authorities and of the Public Health Department in consultation with the teachers. In spite of this, and of a special clause in the Public Health Act, serious shortage of subjects was experienced notwithstanding the goodwill of the authorities. Many causes probably combined to this effect. The amelioration of the social conditions of the people tended to reduce the supply, and the only thing to do was to add to the number of the sources. This was being actively carried out by the Inspector of Anatomy, with improving results. The preponderance in hospitals and asylums of *post-mortem* examinations on unclaimed bodies—except in exceptional circumstances—should be forbidden. In times of serious shortage when it was impossible to provide adequately both for anatomical and for operative surgery classes he thought it would be universally agreed that the students of anatomy should have the first claim, as nothing could make up for the loss of the experience gained in the practical anatomy class. This was not so much because the mere facts could not be acquired otherwise, but because in no other way than by personal dissection could the student acquire a permanent and working knowledge of the structure of the body.

Professor J. T. Wilson (Cambridge) said that, speaking as a teacher of anatomy in England, he desired to express his grateful appreciation of the efforts made by the President of the Section in his capacity as a Medical Officer of the Ministry of Health. As a result of his work the provision of subjects for the teaching of anatomy in the Cambridge school had been placed on a satisfactory basis. He was grateful to the Ministry for placing an expert in control of these matters. He strongly supported the President's view of the undesirability of claiming for anatomical purposes the bodies of the inmates of Poor Law institutions on the ground of pauperism. It was, he held, of the utmost importance for the future of the practice of anatomy to remove from it any stigma of pauperism. In older days the stigma of criminality was attached to the practice of dissection, when practically the only subjects available were the bodies of executed criminals. This has long ceased to be the case, but the stigma of pauperism still remained to a great extent, inasmuch as it was, and must always be, the case that the majority of unclaimed bodies were those of the impecunious. Yet we must hope that social evolution would progressively diminish the actual amount of pauperism, whilst the requirement of bodies for dissection would always remain a stringent necessity for scientific education. In his view the hope for an adequate provision for the future must lie in the removal of all stigmata and in the growing recognition by an enlightened public opinion of the truth that it was not only possible, but a worthy aim, to be of service to the community after death by authorizing during life the disposal of one's body in furtherance of the interests of medical science.

Professor J. C. Brash (Birmingham) desired to add his testimony to the remarks of the Senior Vice-President as to the valuable work which had been accomplished by the President of the Section. In Birmingham the supply of subjects had been slowly but steadily going down until Professor Macphail had visited that area, and now it is steadily increasing, owing, of course, to his having made available a supply of unclaimed bodies which would otherwise have been lost. He felt very grateful for the President's careful exposition of the difficult question of compulsory as compared with voluntary action in this matter.

On the invitation of the President, Professor Thomas Walmsley (Belfast), who had visited the Section to listen to the discussion, spoke of the conditions of anatomical supply in the north of Ireland, where a new inspector had been appointed now that they were separated from the south. In the consequent reorganization, while things were still largely in a state of flux, they had proceeded along lines modelled for the most part on those followed by the President in England and Wales.

The President, having replied to questions raised by the other speakers, then closed the discussion, and called upon Professor J. T. Wilson, F.R.S., the Senior Vice-President, to occupy the chair during the hearing of the subsequent papers. He had already expressed to their distinguished Senior Vice-President his own sense of the anomaly of presiding over any gathering of which he (Professor Wilson) was a member, and he knew that the Section would welcome to the chair a man of his wide experience and scientific attainments.

THE RELATION OF THE URETERS TO THE VAGINA*:

With a Note on the Asymmetrical Position of the Uterus.

By JAMES C. BRASH, M.C., M.A., B.Sc., M.B., Ch.B.,
Professor of Anatomy, University of Birmingham.

The relation of the ureters to the vagina is recognized to be one of the most important points in the topographical anatomy of the female pelvis. The accounts of this relation in most textbooks, however, are found to be in very general terms. Most agree in stating that, after passing obliquely downwards, forwards, and inwards, usually in close relation to the lateral fornix, a portion of the ureter lies in front of the vagina. Variations in the length of this prevaginal portion of the ureter are recorded, and there seems to be some opinion that the relation of the ureter to the vagina is more intimate on the left side. But a clear statement of the distinction between its two parts, between the vagina and the bladder and in the wall of the bladder itself, is lacking, and it does not appear that the very frequent distinct asymmetry of the relation on the two sides has been specifically noticed.

The general assumption appears to be that, as the cervix and the trigone of the bladder are relatively fixed, there is no asymmetry in this region, and that the only factor to be considered with reference to this relation is the state of the bladder. Distension of the bladder undoubtedly produces slight differences in the position of the two ureters relatively to each other, and, as they separate, the amount of each in relation to the anterior wall of the vagina necessarily diminishes. But we can leave this factor practically out of account; the amount of spreading of the trigone is very little compared with the rest of the wall of the bladder. Given a bladder and vagina symmetrically related to each other, no amount of distension of the bladder will carry the ureters beyond the anterior wall of the vagina. One of the ureters, however, is frequently found not to reach the side of the vagina, and the cause of this is a permanent displacement of the uterus and upper part of the vagina relative to the middle line of the trigone. It is generally conceded that the uterus lies asymmetrically in the pelvis, in the majority of cases with the fundus inclined to the right, the cervix correspondingly to the left, and the body rotated so that the right Fallopian tube is nearer the anterior abdominal wall than the left.

*My attention was originally directed to this question in 1914 by a request from Professor J. B. Hellier, Leeds University, to make some special dissections to illustrate his article on "Fistulæ in the female genital tract" in Eden and Lockyer's *New System of Gynæcology*. The results then obtained were referred to by him in that article. Having recently made some further preparations, the opportunity has been taken to bring together all the results in view of the surgical importance of the point demonstrated. I am indebted to Professor Hellier for permission to include the former findings.

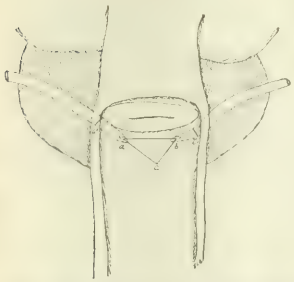


Fig. 1.—Multipara, aged 59. Half natural size. a–b = 19 mm.; a–c = 14 mm.; b–c = 15 mm.; a–a' = 12 mm.; b–b' = 8 mm.

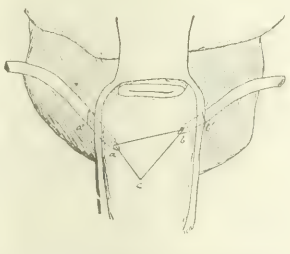


Fig. 2.—? Para, aged 39. Half natural size. a–b = 27 mm.; a–c = 18 mm.; b–c = 24 mm.; a–a' = 12 mm.; b–b' = 10 mm.

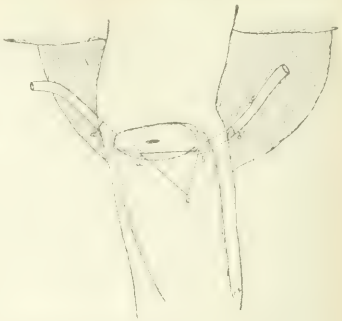


Fig. 3.—Multipara, aged 37. Half natural size. a–b = 20.5 mm.; a–c = 23.5 mm.; b–c = 16.5 mm.; a–a' = 15 mm.; b–b' = 14 mm.



Fig. 4.—? Para, aged 57. Half natural size. a–b = 31 mm.; a–c = 35 mm.; b–c = 33 mm.; a–a' = 14 mm.; b–b' = 23 mm.



Fig. 5.—? Para, aged 43. Half natural size. a–b = 21 mm.; a–c = 20 mm.; b–c = 20 mm.; a–a' = 12 mm.; b–b' = 1 mm.



Fig. 6.—5-para, aged 52. Half natural size. a–b = 19 mm.; a–c = 24 mm.; b–c = 22 mm.; a–a' = 8 mm.; b–b' = 7 mm.

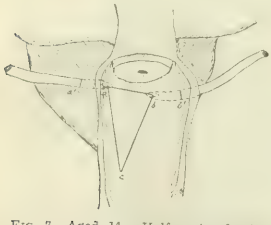


Fig. 7.—Aged 14. Half natural size. a–b = 15 mm.; a–c = 30 mm.; b–c = 30 mm.; a–a' = 9 mm.; b–b' = 10 mm.

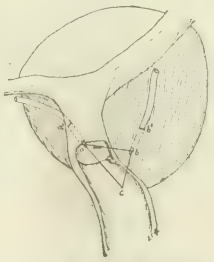


Fig. 8.—Aged 11. Half natural size. a–b = 17 mm.; a–c = 20 mm.; b–c = 13.5 mm.; a–a' = 7 mm.; b–b' = 10 mm.



Fig. 9.—Foetus, full-time. The arrows show the direction of pressure as described in the text. Half natural size. a–b = 3 mm.; a–c = 15 mm.; b–c = 15 mm.



Fig. 10.—Foetus, seventh month. Half natural size. a–b = 5 mm.; a–c = 10 mm.; b–c = 10.5 mm.

No elaborate description is required. A study of the accompanying illustrations will demonstrate the point it is desired to establish. The method of investigation has been to remove the pelvic contents entire, fix in formalin, and open the vagina from behind and the bladder from the front. The position of the trigone in relation to the vagina was then marked by passing pins from the bladder to the vagina at the three points—one through the floor of the bladder immediately above the internal urethral orifice, and one through the middle of each of the oblique ureteral openings. The position of the trigone is thus mapped out and the lengths of the portions of the ureters in relation to the vagina seen at a glance. A dissection of the ureters to the points where they entered the bladder wall completed the preparations. The series of outlines given are taken from these preparations, and represent the vagina opened from behind, with the position of the trigone marked in relation to its anterior wall. In each case a is the left ureteral opening, b is the right ureteral opening, c is the urethral orifice, and a' b' the points at which the ureters enter the bladder wall. The drawings are to scale, and the measurements in each specimen are given with the figure.

When there is an approximately symmetrical arrangement (Figs. 1 and 2) there are, as a rule, on both sides two distinct parts of the prevaginal portion of the ureter, a part lying in the connective tissue between the vagina and the bladder and a part in the wall of the bladder. Testut states that these parts vary from 15 to 18 mm. and from 10 to 15 mm. respectively. So far as the present dissections go, the actual length of the part of the ureter in the bladder wall varies from 7 to 23 mm., and of the [illegible] be in front of the [illegible]

tissue between the bladder and the vagina varied from 0 to 36 mm.

Figs. 3 to 6 show increasing amounts of relative displacement of the trigone to the right, which is the condition usually found. In Fig. 6 the intimate relation of the left ureter to the lateral fornix and the long prevaginal portion on that side are in striking contrast to the condition on the right, where the ureter is not in close relation to the vagina at all.

It should be noted that the differences in shape and position, which are such a marked feature of the age changes in the bladder as a whole, are accompanied by corresponding differences in the shape of the trigone and its position relative to the uterus and vagina. Figs. 7 to 10 illustrate these points, and it will be noticed that the trigone not only changes from an isosceles shape characteristic of the foetus to the approximately equilateral shape which is characteristic of the adult, but that its position as a whole moves down from the region of the cervix to the upper part of the vagina. This relative descent proceeds to a variable extent, as may be seen from the figures, and as may be indicated by the statement that the vertical distance from the os uteri externum to the interureteral line varies in the adult specimens examined from 6 to 23 mm., with an average of 12 mm.

There is no doubt that the asymmetry is established in the later months of foetal life while the bladder and uterus are still abdominal organs, and that it is due to pressure from the colon as it becomes distended by meconium from the seventh to the ninth month. I am inclined to think, judging from the relation of these parts in a number of foetuses of different ages, that it is a question of balance between pressure on the fundus of the uterus and on the bladder by the loop of colon (which becomes the iliac colon) situated in the left iliac fossa and the loop (which becomes the pelvic colon) situated in the right iliac fossa. The latter is well known to vary in length, and in the foetus, moreover, it passes into the true pelvis to become continuous with the rectum from the right side. By exerting pressure on the cervix from the right it thus accentuates the asymmetry of the uterus. The specimen from which Fig. 9 was taken furnishes an excellent illustration of these factors. There are three well-marked pressure facets on the uterus, a large left and small right on the fundus, and a large right on the cervix, corresponding to the parts of the colon mentioned. There is marked asymmetry of the uterus, the cervix being pushed to the left and the fundus to the right, and the bladder is also displaced to the right.

The subsequent greater relative descent of the bladder into the true pelvis will naturally accentuate that asymmetrical relation of the trigone to the uterus and vagina which is already present, and when the bladder reassumes a median position as it expands into the anterior hollow of the true pelvis it is easy to see that it will tend to rotate the uterus on its long axis. The same process therefore accounts not only for the "normally" asymmetrical position of the trigone of the bladder and of the ends of the ureters in relation to the anterior vaginal wall, but also explains the "normal" position of the uterus with reference to the middle line of the body.

Lastly, it may be noted that variations in the lie of the lower part of the colon, distended with meconium, in the foetus will account for the observed variations in the final position of the uterus and of the trigone of the bladder and the ureters in relation to the vagina.

Summary.

1. The relation of the last portion of the ureter to the vagina is variable. There is usually a portion of the ureter in front of the vagina, lying for a short distance in the connective tissue between vagina and bladder and then in the wall of the bladder itself.

2. With the vagina and bladder symmetrically related to each other this portion of the ureter is equal on the two sides; but deviation from the symmetrical position is the rule. The result is an increase of this portion of the ureter on one side and a corresponding decrease on the other. There is frequently no ureter in front of the vagina on one side and therefore a much longer portion than usual on the other side.

3. In the majority of specimens examined it is the left ureter that has the greater relation to the vagina, and it is occasionally found crossing the middle line of the vagina.

4. As a rule, therefore, the left ureter is in a position of greater danger than the right, both in operative work and [illegible] at the point of view of the formation of a uretero-vaginal [illegible] It must not be forgotten, however, that [illegible] may be reversed.

5. The "normal" asymmetrical position of the uterus in the pelvis is explained by the fact that an asymmetrical position of bladder and uterus is early established while these organs are still in their abdominal situation, by the subsequent greater relative descent of the bladder and its reassumption of a median position in the true pelvis which accentuates the asymmetrical position of the uterus and rotates it around its long axis.

DISCUSSION.

Major S. English, speaking from the point of view of the surgeon, said that he wished to congratulate Professor Brash on his paper. Professor Brash had cleared up what had been a matter of considerable difficulty in the performance of operations. The speaker would now be far less afraid of injuring the ureter.

Professor Wilson expressed his appreciation of Professor Brash's investigation. It was important to ascertain the range of variation of various structures in the body and much work remained to be done on these lines. He questioned whether pressure was the cause of the asymmetry of the uterus as well as of the downward movement of the trigone. Asymmetry of the trigone was present very early. The genital ducts were also uncertain in position. The change in form and proportion of the trigone might be due to interstitial growth.

Professor Brash, in reply, said that there were two lines of variation—lateral and vertical. Both the bladder and uterus descended into the pelvis, but the bladder might descend relatively lower. Lateral pressure caused the uterus, cervix, and vagina to assume an asymmetrical position. Then when the bladder descended the asymmetry was accentuated. The change in form in the trigone was due to interstitial growth. He was glad to know that his work had a practical application to surgery.

THE ANATOMY OF THE BONE MARROW:

With Special Reference to the Distribution of the Red Marrow.

BY

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The subject of this communication is not original in conception, but is designed to supplement and, in some cases, modify the accounts previously published. The standard textbooks of anatomy make only indefinite statements on the subject of the anatomy of the marrow; this is probably due to the lack of opportunity in the dissecting room for the observation of the changes associated with advancing age. The textbooks of haematology, in which one might well expect to find the required information, are filled with cytological details and theoretical considerations as to the genealogy of the blood cells, but the essential facts of the ordinary macroscopic anatomy of the bone marrow are not described; brief statements of more than doubtful accuracy are found which appear to have been copied from book to book. The absence of information on the normal anatomy of the bone marrow is the justification for the present paper.

The red bone marrow is the principal haematopoietic tissue in the adult and is not only a simple material serving to render the bones solid without unduly increasing their weight. It is the factory in which all the formed elements of the blood are produced with, perhaps, the exception of the lymphocytes. Disorders of the red bone marrow are associated with irregularities in the production of anti-substances, and it would appear that the red marrow is the principal arsenal of the defensive forces of the body.

Since the demonstration of the haematopoietic function of the adult bone marrow by Bizzozero[1] and Neumann[2] there have been a number of descriptions of the changes in the distribution of the red marrow throughout life. The first paper of value dealing with this subject was that of Neumann, in which he pointed out that the older idea that the epiphyses contained red marrow while the diaphyses contained fatty tissue was incorrect. He found that the small bones of the hands and feet contained fatty marrow in the adult, as did also the tibia, fibula, radius, and ulna, whereas the humerus and femur contained a small area of red marrow at the upper epiphysis. His material was insufficient to enable him to describe the distribution in childhood. His conclusion was

that the fatty metamorphosis commenced in the most distal parts of the limb bones and spread towards the trunk; this appeared to him to be in agreement with the observation of Ranvier[4] that the caudal vertebrae of tailed animals contained fat.

Hedinger[5] published results similar to these based on examination of over five hundred cases, but, like Neumann, he only considered the distribution in the adult, and his description dealt only with the marrow of the femur.

It would appear as if this older work had been forgotten or ignored, as many quite recent authors make very different statements without giving any reasons for their deviation from these classical accounts. W. K. Hunter[6] stated that in the adult the red marrow was limited to the ends of the long bones, the ribs, and the skull, thus leaving the reader to infer that both ends of each long bone contained red marrow. Gruner[7] made a similar statement regarding the long bones.

The haematopoietic function of the red marrow is, apparently, not yet realized by all authors. Ord[8] asked, "Why should marrow be only for the nourishment of a bone?" He would thus appear to believe that the modern conception of the functions of the marrow has not advanced in any particular since the time of Galen, who regarded the marrow as the nutritive tissue of the bones. Ord, however, made other statements of more importance to the present subject; thus in the same letter from which the above question is quoted he states that "most of the marrow in the human body is in the femur, and next to the femur the humerus, and following them the long bones in this order: tibia, fibula, radius, ulna. One femur contains probably a sixth of the marrow in the whole body." He does not state at what age the femur contains this amount of marrow, nor does he state how the relative amounts are estimated. It will be obvious from these few references to the literature that the red bone marrow is the only organ in the human body of which the normal size at different ages is still unknown. In this paper I will try to present the facts as determined by ordinary observation in the *post-mortem* room, but I can make no contribution to our knowledge of its weight, either relative or absolute.

The present investigation deals with material from 91 subjects between the ages of 3 days and 83 years.

Technique.

The selection of material for the study of the normal distribution of the red bone marrow requires great care; only material from cases of sudden death in previously healthy persons can be employed. When one recalls the haematopoietic function of this tissue, it is obvious that any condition requiring an increased number of cells, either red or white, in the circulation will lead to changes in the red marrow which may be sufficiently intense to be obvious on macroscopic examination.

The best method of examining the long bones is by making a longitudinal cut with a narrow-bladed hack saw, which obviates the blurring of the appearances which is inevitable if an ordinary flat saw is used. The corresponding bone of the opposite side should be examined by a series of transverse sections at various levels. The examination by transverse section is necessary to demonstrate the fact that the red marrow is more extensive at the periphery of the medullary cavity than in the axis.

It is well to realize that red tissue in the medullary cavity is not necessarily true cellular red marrow. Microscopic examination is essential for the determination of the limits of the true cellular marrow; congestion of the blood vessels in an area of fat closely simulates the appearance of true marrow. Microscopic examination also enables an estimate of the relative cellularity of the tissue to be made, as minute amounts of fat are not macroscopically appreciable.

The arrangement of the bony trabeculae can be investigated in specimens which have been washed under the tap until the marrow tissue is completely removed. This process takes two or three days. The ribs can be examined by longitudinal section, and some additional information can be obtained by expressing the marrow with strong forceps. The vertebrae can be inspected by removing the anterior part of their bodies.

The technique as described above is applicable to examinations in the *post-mortem* room, but obviously a much more extensive investigation is possible in the dissecting room where aesthetic considerations need play no part in the selection of a method.

The Long Bones.

It is impossible to describe each case in this series in detail, and only a summary of the findings will be given. If the material is selected with the precautions suggested above it will be found that the amount of individual variation is very slight.

At birth and during the first three or four years of life the cut section of the marrow is pink in colour, but the expressed tissue is a rich red colour. The pinkness of the section is due to the presence of closely set bony trabeculae which divide up the tissue into small masses. As the age of 7 is approached the marrow is a less bright pink and the cut surface is more greasy. The expressed tissue is now also a less definite red, and glistening droplets of fat are distinctly visible. The bony trabeculae in the shaft are less well developed and are farther apart.

The changes in the diaphyses and in the epiphyses are best considered separately from this age onwards.

Diaphyses.

Up to the age of 7 there is increasing greyness of the marrow although it is still pink in colour, but no macroscopic areas of fat are present. Between the ages of 12 and 14 a patch of fat becomes visible about the middle of the shaft, and within the next twelvemonth there are a number of smaller patches in the part of the shaft below this first patch. The changes in the tibia and fibula are similar in character to those in the femur but occur more rapidly; similarly the changes in the radius and ulna advance more rapidly than those in the humerus.

The patch of fat in the middle of the shaft grows both distally and proximally in each bone, but the growth in the former direction is more rapid in all the bones. By the time that the fatty metamorphosis has reached both ends of the tibia and fibula it has also reached the lower end of the femur, but not its upper end; there is a similar distribution in the upper extremity. Thus at this stage the distal bones contain only fatty tissue in their diaphyses, while the proximal bones have still a patch of red marrow at the upper end of the shaft. This is the adult condition of the shafts of the long bones.

Throughout these changes there is progressive diminution in the number of bony trabeculae and also decrease in their rigidity. Incomplete bony trabeculae are always present in the fatty tissue, but are almost completely absent from the patch of red marrow at the upper ends. This absence of trabeculae appears to be associated with the functional activity of the marrow at these places.

The importance of examination of transverse sections of the shaft consists in the fact that the red marrow extends farther down at the periphery of the medullary cavity than it does in the axis. If a transverse section of the fatty patch, which appears at puberty, be examined in this way it will be seen that the periphery is red.

Epiphyses.

The changes in the epiphyses are of a similar nature to those in the diaphyses, but occur as a separate process of fatty metamorphosis, and are not associated with absorption of the bony trabeculae. At the age of 7 the lower epiphyses of the distal bones show macroscopically detectable fat, and by the time of puberty there is much fat in both epiphyses of the distal bones of both upper and lower extremities and an appreciable amount in the lower epiphyses of the proximal bones and a little in their upper epiphyses. The fatty change in the epiphyses is complete by the age of 19 or 20 in all the bones, although a few small patches of red marrow may be visible throughout life.

In extremely advanced age no red marrow may be detectable in the epiphyses, and even the diaphyseal patch may be almost completely metamorphosed. It is rare to find any difference between the limb bones of the two sides, but it would appear that the humerus of the adult contains a larger quantity of cellular marrow than does the femur.

It must be understood that the transition from red to fatty marrow is diffuse in all the bones and is not sharply demarcated. The apparently complete fatty change in all the bones is shown, by microscopic examination, to be less extensive than would appear macroscopically, as there are always islets of blood-forming cells left.

Tarsus and Carpus.

The number of these bones which have been examined is too small to justify a definite account of the changes, but the

one observation which may be recorded is that the fatty metamorphosis is complete before the whole of the marrow of the diaphyses of the tibia, fibula, radius, and ulna is fatty.

The Ribs.

The ribs are the great storehouses of cellular marrow in the adult, but changes are detectable with advancing age; the marrow adjacent to the cartilages usually becomes fatty about the age of 25 for a distance of about an inch. The only indication of fat in the remainder of the bone is in the greyer colour and in the presence of glistening globules in the expressed tissue. On longitudinal section of the ribs a darker patch is usually visible at the angle. Incidentally it may be mentioned that it would appear that this is the place in which cellular marrow persists longest in conditions of pathological aplasia of the marrow.[9]

Vertebrae.

The marrow of the vertebrae is red throughout life, and is traversed by very firm, close, bony trabeculae. In only one case was fat seen in the vertebrae with the naked eye, and this was in a woman aged 83; in this case no fat was seen above the third lumbar vertebra, and there was distinctly more fat in the uppermost segment of the sacrum and the fifth lumbar vertebra than in the third lumbar; it will be recalled that this would be homologous with the condition observed by Ranvier in tailed animals.

Sternum.

The sternum contains a good deal of red marrow and the trabeculae are well developed. Fat is not usually detectable except as glistening droplets in the expressed tissue.

Os Innominatum.

This bone is very similar to the vertebrae, inasmuch as it has very firm bony trabeculae and fat is very rarely seen, the red marrow persisting throughout life.

Ectopic Formation of Marrow.

Bone marrow of typical cellular structure is occasionally noted in other parts of the body than the medullary cavities of the bones; in some cases this occurs in pathological conditions such as leukaemia where there is demand for undue numbers of blood cells, but it has been seen in the normal adult. Bone marrow has been noted in the pelvis of the kidney. This has been seen in a normal adult male, but is more frequent in leukaemia[10] and pseudoleukaemic anaemia.[11] The appearance of this tissue is not unlike that of blood clot, and its nature can only be determined with certainty by microscopic examination.

Lymphatics.

The lymphatic supply of the marrow has never been demonstrated, and since the publication of Roger and Josué,[12] who definitely denied its existence, no author has suggested the presence of such channels on experimental grounds, although there have been suggestions of their presence from the clinical side. In the present research the technique was similar to that employed by Dewey and Noyes,[13] who verified the existence of lymphatics in teeth. The material used for injection was Prussian blue ground up with ether and turpentine.

Injection direct into the marrow tissue through the injection cannula described by the above authors resulted in the filling of the blood channels. If the blood channels were first injected with a carmine-gelatin mass, it was not possible to cause the Prussian-blue suspension to pass along the marrow, even when great force was employed.

If the lymphatics of the periosteum are injected the injection material does not pass into the marrow tissue, but is stopped at the endosteum after passing through the compact bone. Even if force is employed it is not possible to send the injection material into the marrow tissue; the only result of the employment of force is to cause extravasation into the endosteum. The writer has pointed out elsewhere[14] that the earliest metastases of carcinoma in the marrow of the long bones are always situated at the upper end of the diaphyses of the proximal bones—that is, in the red marrow. Later metastases in the bones also occur in the red marrow which has spread along the medullary cavity, owing to the irritation of the metastases or the state of cachexia. At one time it was commonly believed that these bone metastases were transferred by retrograde permeation of the lymphatics of the tendons of attachment of the great muscles, but at present Handley is one of the few authorities who take up this position. Injection experiments performed by the above technique are in absolute opposition to this theory.

Blood Vessels.

Injection of the blood vessels of a freshly killed experimental animal presents no difficulty if the channels are first washed out with saline, and then a warm carmine-gelatin mass is used. Bones obtained from the *post-mortem* room require to be warmed to body temperature before they can be used, and, in addition, it is necessary to wash out the vessels with a fibrin solvent such as sodium sulphate solution.

The injection is best made from the main artery of the limb. The injection mass is found in the nutrient artery which branches frequently in the medullary cavity. It breaks up into a leash of vessels at the lower edge of the red marrow at the upper ends of the diaphyses of the limb bones. This sudden widening of the stream-bed may account for the localization of metastases in this position, as their intravascular situation has been demonstrated by the writer.[14] The small vascular channels of the red marrow are doubtless very variable, as their endothelium almost certainly functions as a haematopoietic tissue when necessary, and, when it does so, there must be a change in the distribution of the small channels.

In the infant where the whole marrow is cellular, and also in the rabbit, the tissue is penetrated by similar small vascular channels. The rabbit differs in some particulars of unessential character, such as the possession of a central artery partially surrounded by a venous sinus in the axis of the tissue.

An injection of the blood vessels of the marrow of the normal human adult femur shows well-defined vessels in the fatty tissue, but the cellular tissue is all a definite carmine red; this applies only to the macroscopic appearances. Microscopically the carmine-gelatin mass is seen to be confined to the closely packed blood channels of the red marrow, and is not extravasated into the surrounding tissue. In the fatty tissue the vessels can be dissected out as well-defined red cords.

Application to the Routine Teaching of Anatomy in the Dissecting Room.

These observations are of only limited applicability to the routine teaching of anatomy in the dissecting room because the subjects are almost invariably very old and have died of chronic wasting diseases. The amount of red marrow in the majority of subjects in the dissecting room is very small, but the ordinary methods of preserving bodies are quite satisfactory for its demonstration. The marrow of the ribs and vertebrae is well seen.

The Size of the Marrow at Various Ages.

This subject has been investigated by Wetzel[15] with a complicated technique of uncertain value. His results, which have not as yet been repeated by the writer, are as follows: at birth the marrow is about 11 times as large as the spleen, and by the age of 19 is 12.9 times as large as at birth. The relation of marrow and spleen is said to be unchanged during this time. This last statement is presumably incorrect, as the spleen is not 12.9 times as large at the age of 19 as it is at birth.

Conclusion.

In brief, the picture of the marrow changes throughout life, as observed macroscopically, is as follows: from infancy to advanced age there is progressive diminution in the relative amount of cellular marrow in the limb bones and progressive increase in the amount of fat.

Examination of a series of adult marrows would lead one to imagine that there had been centripetal spread of the fat, thus leading to the filling of the more distal parts of the long bones with fat. This was the conclusion arrived at by Neumann.[3] Examination of the limb bones of a subject between the ages of 16 and 18 might lead to the belief that the red marrow was mainly confined to the ends of the long bones. The adult condition of the distribution of the marrow is reached about the 25th year, but some of the bones reach their final distribution at an earlier age.

The arrangement of the blood vessels in the red marrow is the essential factor in haematopoiesis, the two main types of cells—namely, red and white—being produced in relation to different parts of the vascular system of the marrow. The changes in the marrow of other animals are not well known,

but Ackerknecht[16] has shown that the changes in the distribution of the red marrow in the horse are very similar to those described above as being normal in man.

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DISCUSSION.

Dr. BATTERSBY (Glasgow) asked Dr. Piney if he could say what determined the progress of the fatty change. Why did it begin at puberty?

Dr. GRAHAM (Glasgow) emphasized the importance of Dr. Piney's work. Medical students had as a rule no clear conception of the anatomy and functions of the bone marrow until they came to study pathology. He now cut up bones as a routine in the dissecting room. Many of these were, however, found to be abnormal, and it was difficult to learn the normal condition from them.

Professor WILSON said that Dr. Piney's extensive series of observations would be appreciated by anatomists. They usually had not the opportunity of examining the stages of development of bone marrow. He would like to know whether Dr. Piney had studied the microscopical changes. Probably the alterations in structure at different periods depended on vascular change. As regarded teaching, the material in the dissecting room was not good as a rule. He suggested that bones of animals should be used.

Dr. PINEY, in reply, could give no reason why the spread of the fat in bone marrow should take place mainly distally, but the same phenomenon was seen in the tails of animals. He did not think gravity had anything to do with it because the change began just below the middle of the bone. It had some relation to the nutrient artery. The changes which took place in the vessels at the same time were very complicated, but their cause was unknown. He had not dealt with the microscopical details owing to lack of time. The first appearance of perivascular fat was associated with thickening of the vessel wall. Probably it occurred as a result of decreased vascular supply.

RADIOLOGY IN THE TEACHING OF ANATOMY.

BY

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FOR many years anatomists have used radiographs in the form of plates, prints, or lantern slides to illustrate their lectures and demonstrations. In Manchester we have gone a step farther, and Professor J. S. B. Stopford has equipped one of the rooms in the anatomy school for *x*-ray work. He has attached me to his teaching staff as radiologist, and I am proud to hold that post.

I shall now briefly outline what we did last winter, showing you some of the lantern slides and prints used in the demonstrations, and I hope to convince you that the radiologist may be of use in the teaching of anatomy under the firm but kindly guidance of its professors, and thus may repay in some small measure the debt he owes to the anatomist.

I would lay stress first of all on the fact that attendance at the *x*-ray demonstrations is not compulsory. Nevertheless, they are well attended by students, who probably regard them as a relaxation from their more strenuous studies. These demonstrations are so arranged that they are related to the general scheme of teaching; therefore the students come with some knowledge of the subject, forming a critical audience.

It may be that I sometimes create doubt in their minds: for instance, when screening a chest they see in the right anterior oblique position a clear, well-defined space lying between the heart and the vertebral column—the posterior mediastinal space. The difficulty of the student is to reconcile what he has seen on the fluorescent screen with what he sees in the dissecting room, but these little problems are interesting and teach him to think out things for himself and approach the anatomy of the living, which he cannot do from dissections of the cadaver alone.

The first demonstration naturally deals with the discovery of *x* rays by Röntgen in 1895, the invention of the focus tube by Sir Herbert Jackson of King's College, which made the application of *x* rays in medicine a practical problem, and a few words are added about the two great pioneers of radiology in England, Sir James Mackenzie Davidson and Mr. Thurstan Holland. In the early days technique had to be acquired by the experience of many failures; nowadays it is taken for granted—apparatus has been so improved and standardized that anyone of average intelligence can learn to take good radiographs in a few weeks' time. It is the interpretation of them which is difficult, and for which a knowledge of anatomy is so essential.

We proceed to show how *x* rays penetrate objects in direct proportion to their density, passing through air with practically no resistance, but more or less completely stopped by lead according to its thickness. The different densities of human tissues are considered and also the action of *x* rays on the fluorescent screen and photographic plates. The student is now in a position to understand that he is not studying a photograph in the ordinary sense of the term, but a series of superimposed shadows which require interpretation.

We then go on to the *x*-ray study of a long bone and explain how the series of superimposed shadows is produced. We note that the periosteum does not give any shadow, but how in periostitis the deposition of calcium salts soon takes place and a shadow is seen. The cortex is seen giving a dense shadow and the cancellous bone a less dense one. The medullary canal merging at the ends into the cancellous heads is explained and also the cartilage space. The importance of knowing the structure of bones and the blood supply of the bones is illustrated by radiographs showing how osteomyelitis and how a secondary carcinoma affect a bone, and the moral of the tale is plain: you cannot interpret a radiograph correctly without a knowledge of anatomy.

In subsequent demonstrations we discuss the growth of bone and study the normal, but the abnormal is also shown, for it emphasizes the necessity of a knowledge of the normal, and the student at the very beginning of his anatomical studies learns that the knowledge he is laboriously acquiring will be of use to him and is really necessary in his after career.

In the dissecting room last winter a student said to me: "But it is only if you are going to be a surgeon that you require anatomy—apart from examinations, of course!" I think this idea can be dispelled by the teacher of anatomy if he uses illustrations of the abnormal in his teaching. Let me give you an illustration: After studying the normal position and movements of the diaphragm on the fluorescent screen, if you show a student an abnormal diaphragm he becomes interested and finds that there is a delightful anatomical problem to be worked out.

In one of the photographs which we show is seen a necrosis of the parietal bone, and the story of how the whole bone was torn out with the scalp by a revolving belt and later on replaced by the doctor in the hope that it would be all right illustrates strikingly the blood supply of that bone.

After the bones and joints we demonstrate the chest. The students screen each other and learn the normal *x* ray appearances of the lungs and heart. The alimentary tract is full of interest. They take bismuth meals and observe the passage of food through the oesophagus, the shape, size, tone, and position of the living stomach, the passage of food through the small intestine, and the appearance of the colon. The urinary tract is also dealt with, and slides and prints of pneumoperitoneum work form interesting illustrations. The research student also finds that radiography is of use to him

in many ways—for example, in investigating the blood supply of different organs.

We have only made a beginning in Manchester. There is still much to do and infinite scope for development—for example, in stereoscopic radiography. In conclusion, I would urge that radiology is of use in the teaching of anatomy, inasmuch as it gives the student some idea of the structure of the living body which he can compare with his work in the dissecting room. He becomes aware that his anatomical knowledge will be of use to him in his everyday work as an intelligent practitioner of medicine. Radiology makes anatomy of the living possible, and its use in the teaching of anatomy brings the anatomist and the radiologist into a communion which is, I think, mutually helpful, and from which, at any rate, I have derived great pleasure and benefit.

Dr. Woodburn Morison's paper was accompanied by the exhibition of a number of lantern slides and prints, illustrating what was being done in Manchester.]

DISCUSSION.

Professor Macphail congratulated Dr. Morison on his correlation of *x* ray work with anatomy. It was a great help to students to show them how structures worked.

Professor Wilson envied a department which had its own *x*-ray apparatus. He was in the habit of using *x*-ray plates, and had found stereographic plates particularly useful. It was not likely at the present time that many anatomical departments could have their own *x* rays, but they might arrange to share the apparatus of another department.

THE STRUCTURE OF THE VERTEBRATE HEAD.

BY

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The problem of the morphological structure of the vertebrate head does not seem to have received scientific attention until Goethe, prompted by the appearances presented by a sagitally divided sheep's skull, suggested the idea of modified vertebral structure for that of the vertebrate head. The cranial axis appeared to him to be composed of several modified vertebrae which all possessed more or less modified arches passing over the brain and under the gut-tube. This suggestion (1790) was never published by Goethe himself, but thirty years later, a contemporary, Oken, published an account of the subject corresponding very closely with that of Goethe.[1]

Without going into details of history, it may be stated shortly that the morphology of the vertebrate head has alternated between extreme views of segmentation (Froriep, van Wijhe, Fürbringer, and others) and extreme views of non-segmentation (Hubrecht[2] and others). Here it is intended to show that the structure of the vertebrate head is based upon the first metameric segment of the body, with which is combined an unsegmented structure which is called the face.

Owing to the limitation of space, it will not be possible to give more than a brief description of the structure of the vertebrate head. Much of the evidence has to be omitted, but if the morphological principles to be stated immediately are followed their application to the problem will not be unduly difficult.

The principle followed in this discussion is that structures arising in the same morphological position, at the same period of evolution or of development, and in the same manner, are homologous structures, and they form a morphological unit. Structures which differ in respect of their origin may be anatomically and physiologically identical, but they are never homologous. This principle eliminates errors due to anatomical relations and appearances, which are variable, but as the origin of the same kind of structures is always constant, we can infer homologies between the structures which will be constant for all forms in which they occur, irrespective of the anatomical variations which homologous structures may present.

When a structure is formed it acquires relations of two distinct kinds. The first or primary relation is that which a structure bears to the structure which gave rise to it or which was responsible for its formation. This relationship is constant and may be called the morphological relationship. It is obvious that there is only one primary or morphological relationship for any structure, namely, that of offspring to parent. The second kind of relation is that which a structure bears to any or every other structure. Such relations are secondary (anatomical), and they are variable to an endless degree.

As the result of applying this principle of identity of origin and of relationship to the skeleton of the head, it is found that this skeleton consists of four morphologically distinct skeletons which are not separable anatomically. In other words, there are four skeletons which arise in different morphological situations, at different times, both in evolution and in development, and in different ways. In order of appearance they are:

1. The sclerotome skeleton.
2. The axial skeleton.
3. The splanchnic skeleton.
4. The facial skeleton.

The *sclerotome skeleton** is the first tissue skeleton to appear in evolution, and it is first formed at the time when the somatic or body-wall mesoderm became segmented for the purpose of acting upon the segmented hydrostatic or water skeleton contained in the coelomic sacs in the Annelida. The mesoderm thus segmented is said to be metamerically segmented (Fig. 1). At this stage we might give two definitions concerning segments.

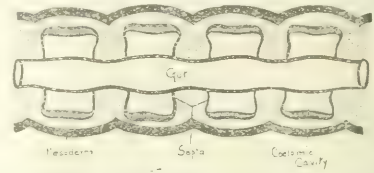


Fig. 1.—Diagram of the hydrostatic skeleton, showing also the segmented condition of the somatic mesoderm and its attachment to the periphery of the coelomic septa which later become the sclerotomes.

A mesodermic segment consists of that portion of mesoderm that is related to one coelomic cavity, and which is repeated in every metameric segment of the body.

A metameric segment consists of all the structures of epiblastic, mesoblastic, and hypoblastic origin related to one coelomic cavity, and its segmented and segmental structures are repeated serially in every unmodified metameric segment of the body. (The term "segmented" is applied to the *condition* of the paraxial mesoderm or to the hydrostatic skeleton, while the term "segmental" indicates the *arrangement* of non-segmental structures relative to a mesodermic or a metameric segment.)

When the hydrostatic skeleton disappears from the coelomic cavities during evolution the septa separating the coelomic compartments remain and continue to give attachment to the segmented body-wall muscles. In fishes these septa become the sclerotomes which give attachment to the myotomes, and they also become modified by the deposit in them of rigid matter forming incomplete arches or arcualia (Gadow). An examination of Fig. 1 will show that each muscle segment is attached before and behind to a fibrous septum. When arcualia appear, they too are twice

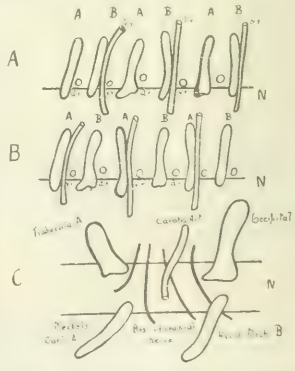


Fig. 2.—A, Arrangement of nerves and blood vessels relative to the arcualia in Petromyzon in the hinder trunk region. B, Same as above, but from the anterior trunk region (Graham Kerr, after Schauinsland). C, Arrangement of the vessels and nerves to the arcualia in the head region of vertebrates generally. *a*, Anterior, and *b*, posterior arcualia. *d.r.* and *v.r.*, Dorsal and ventral nerve roots. *b.v.*, Blood vessel. *N*, Notochord.

* For a more complete account of this skeleton the reader is referred to the *Journal of Anatomy*, vol. lv, parts 2 and 3, January and April, 1921, pp. 119-137.

as numerous as the muscle segments—Cyclostomata and Dipnoi (Fig. 2, A); but as evolution progresses all the "anterior" arches disappear from behind forward (Fig. 3, B), leaving the posterior arches, which become the neural and costal or visceral arches of vertebrates generally. This skeleton is the only one that is primarily segmented in accordance with the metameric segmentation of the mesoderm.

The sclerotome skeleton is best recognized in most vertebrates by the cartilaginous or osseous arches it develops. There are two sets of these arches: those passing dorsally over the neural tube are neural arches from their anatomical relations to that structure, and those passing ventrally in the body wall are the costal or visceral arches from their anatomical relations. The morphological relations of these arches are to myotomes only.

The head segment, being the first segment in the body, is very primitive and presents the primitive arrangement of anterior and posterior sclerotome arches (Fig. 2, C). The neural arches are the trabeculae in front and the occipital arch behind. The anatomical relation of the occipital arch to the neural tube leaves no doubt as to the title of "neural arch," but the trabeculae appear to be different. They are, however, just the same, the relation being to the anterior end of the neural tube—the infundibulum, which turns ventrally to meet the pharynx in this region, thus altering the inclination of the trabeculae to the cranial axis.

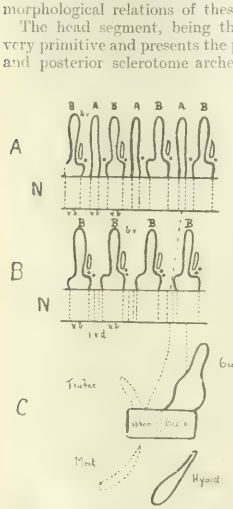


FIG. 3.—This shows the changes from the condition of double arches and vertebræ to that of single arches and invertebral discs. C, The corresponding changes in vertebral axis of the head.

The visceral arches are Meckel's cartilages in front and the sclerotome part of the hyoid arch behind. The morphological origin of these arches is the same as that of the neural arches, which are formed in the sclerotogenous tissue in the neighbourhood of the optic region and in the occipital region respectively (Bardeen[3]). The time of their appearance is when neural and visceral arches are being formed, and the manner of their origin is from before backwards, so that the trabeculae and Meckel's cartilages appear first, the occipital and hyoid arches next, then the remaining arches in the same order. This does not apply so definitely to osseous origin, especially of ribs, as their extreme specialization confers upon them priority of appearance which upsets the primitive sequence.

It will be seen, then, that these arches form the anterior and posterior supports for a single myotome (Fig. 2, C), but as development proceeds in the osseous vertebrates the anterior arches—the trabeculae and Meckel's cartilages—disappear (Fig. 3, C), their place being taken by another skeleton. The sclerotome skeleton of the head segment is now like that of all other segments, having a single neural arch (occipital) and a single visceral arch (hyoid).

The *axial skeleton* is the next skeleton to appear in evolution and in development, and it first appears as the notochord, which is an unsegmented rod of cells of hypoblastic origin. It extends throughout the length of the segmented portion of the animal's body, giving support to the many segments. The notochord presents certain characters which render it unfit to act as an axial skeleton in its unmodified condition, and to overcome these drawbacks the perinotochordal mesodermic sheath forms rings of rigid matter which, by encroaching upon the notochordal tissue, convert the notochord into a segmented axial skeleton.

This segmentation has at first no relation to the metameric segmentation of the sclerotome skeleton, there being as many as four rings per segment as in the Holocephali. It is only later that the perinotochordal segmentation comes to correspond with that of the sclerotome skeleton, resulting in the formation of ring-like vertebral centra with which the sclerotome arches combine. Referring again to the primitive sclerotome arches, it will be seen that there is a stage where there are two vertebral bodies with their arches to every myotome (Fig. 3, A) (J. Graham Kerr[4]), and just as the anterior arches disappear so do the anterior bodies, which probably are represented by the peripheral parts of the intervertebral discs (Fig. 3, B).

In the head the axial skeleton forms the parachordal part of the basis cranii, which consists of the basi-sphenoid and the basi-occipital, the former being the "anterior body," which fuses with the posterior (occipital) instead of disappearing as in other regions (Fig. 3, C). The parachordal tissues show signs of incomplete segmentation in many animals during development, but this takes place before vertebral centra are formed, probably representing a condition similar to that mentioned for the holocephalous fishes, so that such segmentation cannot be homologous with true vertebral segmentation.

The next skeleton to appear during evolution is the *splanchnic skeleton*, and it appears when chordate animals evolve special respiratory organs. The endoderm is the essential tissue of these organs, and it is responsible for the evolution of this skeleton and constitutes its morphological relation. The representatives of this skeleton are the gill-bars in fishes, and the laryngeal, tracheal, and bronchial cartilages in pulmoniferous animals. In all cases this entire skeleton is fixed on to the sclerotome part of the hyoid arch, and in man forms the greater cornua of that bone by means of the hyo-thyroid cartilage (Bardeen[3]). In this way the hyoid bone is formed by the combination of two morphologically different skeletons.

The last of the skeletons to appear is the *facial skeleton*. It is evolved in connexion with the organs of special sense in the form of the capsules of these organs, which combine with the axial and sclerotome skeletons to form the chondrocranium of anatomy. Later, a supplement appears in the form of membrane bone which supports the whole face. It combines with the occipital arch, replaces the trabeculae and Meckel's cartilages except for the malleus, applies itself to the basi-sphenoid as the pre-sphenoid and also to its own sense organ capsules. The existence of this skeleton has been determined by the ectoderm in the form of sense organ, brain, teeth, and general skin covering, and as none of these structures is segmented, neither is the skeleton which supports them.

These few remarks will suffice to show the existence and the difference of the four skeletons in the head, and the importance of this difference may be well demonstrated by referring to the morphological constitution of the anatomical series of arches represented by the mandible, the hyoid arch, and the thyroid and subsequent arches. These are supposed to be an homologous series of branchial arches, but the conditions of their origin upset this supposition. The mandible belongs to the facial skeleton which was determined by the ectoderm, the hyoid arch (sclerotome part) was determined by metamerically segmented mesoderm, and the thyroid and subsequent arches were determined by the endoderm. These arches, since they differ in their origin, cannot be homologous structures.

The Muscles of the Head Segment.

The Myotome.

The segmented mesoderm or myotome of the head segment has a history unlike that of any other myotome in the body, and its behaviour is unusual in that it gives rise to no muscles except in cyclostome fishes (Agar[5]), but after forming its sclerotome skeleton it disappears. We can only find the explanation of this by investigating the history of mesoderm. Briefly, it is as follows: When mesoderm first made its appearance its somatic part had to segment itself in order to make use of the segmented hydrostatic skeleton. The purpose of this was primarily to effect locomotion. Locomotion was, and is, accomplished in such animals by moving whole segments of the body relatively to each other. This function of moving whole segments becomes so specialized that even in the development of higher animals myotomes only give rise to muscles which pass between the limits of single segments—for example, interspinales, intertransversales, intercostales, etc. (Lewis[6]).

In the case of the head segment the myotome is formed long before any modification can take place in this segment, and as all cephalic modifications are features of the Craniata they are acquired long after myotomes. We have seen that the segmental limits or sclerotomes of this segment become fixed

to the basis cranii (the mandibular and hyoid joints being formed secondarily), so that the function of the myotome—namely, that of moving the sclerotomes of this segment—no longer exists. There is therefore nothing for this specialized myotomic rudiment to do now but to adapt itself to the new conditions and functions of this segment or to disappear.

The high degree of specialization possessed by a myotome narrows the limits of its adaptability, and the extent of the adaptability of the cephalic myotome is seen in cyclostome fishes where it forms some head muscles (Agar[5]), but in all other forms the myotome fails even to do this, and after forming its sclerotome skeleton it disappears. In the Elasmobranchs it is a disappearing mass of condensed mesoderm known as the "fourth" myotome of van Wijhe. In Lepidosiren, Agar describes a single condensed inass of myotomic mesoderm which gradually resolves into loose unsegmented mesoderm

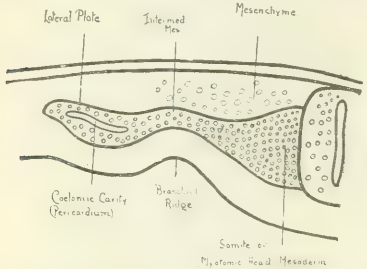


Fig. 4.—Diagram of section of head mesoderm of Lepidosiren embryo (after Agar), showing the dense myotomic mesoderm which extends from behind the auditory region forwards to the optic region. It is in the process of breaking up into loose mesenchyme.

(Fig. 4). It extends from behind the auditory region forwards to the optic region, thus corresponding with the sclerotogenous tissue described by Bardeen for man, in whom also there is only continuous mesoderm prior to the formation of pre-muscle masses (Lewis[6]).

The Somatopleure.

The failure of the cephalic myotome to muscularize the highly modified head segment with all its new organs is compensated for by the less specialized unsegmented mesoderm of this region—mesoderm without any history of ancient specialization. This mesoderm gives rises to *all* the muscles of the head. The particular source of this mesoderm in the lower animals—Elasmobranchs for instance—is the dorsal wall of the pericardial cavity which is called the splanchnocoele. Mesodermic stalked buds arise from this and form the special muscles required by the various organs.

The first bud quickly becomes separated from the splanchnocoele, and from it arise the four muscles of the eye innervated by the oculomotor nerve. The second gives rise to the superior oblique muscle, while its stalk forms the masticatory muscles. The third bud forms the external rectus, and its stalk gives rise to the facial musculature. Another bud behind these forms branchial muscles, and alongside the notochord a varying number of so-called occipital myotomes are formed, but these largely disappear. As there are no vertebral bodies present at this time, the only structures to which these "myotomes" are apparently related are notochordal rings, and as these fuse to form the basis cranii, so the "myotomes" disappear. Agar describes the last two of this series as helping to form the hypoglossal and coraco-hyoid muscles after fusion.[5]

In mammals the details are very different, as the pre-muscle masses arise *in situ*, but the same occipital "myotomes" are seen and are described as disappearing. They have not been traced to the origin of any particular muscles (Lewis[6]), although their disappearance by fusion is probably the adaptation of these masses necessary for the formation of special muscles. If this is correct, the occipital masses will form the glossal, infrahyoid, sterno-mastoid, and trapezial musculature, also possibly sharing in the formation of the pharynx, as Agar states to be the case in Protopterus. These occipital masses have been called "myotomes," but an examination of their origin how t ar they cannot be homologous with true myotomes.

The general conclusion is that there are no muscles in the head formed from myotomes. This is in agreement both with evolutionary history and also with embryological investigation (Lewis[6]).

The Splanchnopleure of the Head Segment.

The Segmental Blood Vessels.

The splanchnopleure of the head segment is quite as evident as the somatopleure. It forms the musculature of the heart and the anterior of the great vessels, and the musculature of the fore-gut, which includes that of the pharynx and larynx.

The heart has long been regarded morphologically as a cephalic viscus, so that it is not necessary to say more about it here. What is of more importance at present is the aorta which gives off the segmental arteries to the various segments. The caudal displacement of the heart in evolution and in development has led to the formation of a ventral aorta which communicates with the dorsal aorta by a series of aortic arches which pass in relation to gill-pouches. These arches are repeated in branchiomeric order, and they are of great physiological importance: they have no metameric segmental significance, as somatic segmental arteries are present in addition to branchial arterial arches. With the change to pulmonary breathing, these arches are made use of to effect the changes in arterial redistribution. Some arches disappear and others persist, and it so happens that since all aortic blood is equally oxygenated, the internal carotid artery is part of the dorsal aorta, while the external carotid is now part of the ventral aorta and is joined to the internal by the persistent third arch. This is the embryological means to the morphological end, which is constant in that the common carotid artery is constituted the segmental artery of the head segment.

A segmental artery is an artery arising from that portion of a non-segmental arterial trunk which traverses the metameric segment. It is distributed to the structures within that segment and, in addition, supplies branches to structures beyond the segmental limits, forming anastomoses. The segmental artery is repeated serially in every unmodified segment of the body. The segmental artery to the head segment is the common carotid. It arises from the non-segmental aorta and passes to the head segment, presenting the same three sets of branches that are found in every segmental artery. We may call these—(1) the somatic carotid artery, (2) the splanchnic carotid artery, and (3) the spinal carotid artery.

The somatic carotid artery is represented in man by the external carotid and its branches, with the exception of the superior thyroid, ascending pharyngeal and other splanchnic branches. These branches are differentiated and specialized in keeping with the size and number of the parts of the somatic part of the head segment. The branches anastomose with each other and with somatic branches of vessels posterior to the carotid—subclavian and intercostal.

The splanchnic or visceral carotid artery is represented by the superior thyroid and ascending pharyngeal branches in man. These supply gut structures belonging to the head segment, and these arteries anastomose with splanchnic branches of other aortic vessels.

The spinal carotid artery is represented by the internal carotid artery itself. This is a branch of the common carotid artery which gives off no branches until it reaches the interior of the cranium, where it supplies the brain and its extensions, optic and olfactory. It passes into the skull through the intervertebral foramen (Fig. 2, C), breaking up there into branches like the medullary branch of any spinal artery. It effects anastomoses in the same way with the vessels of the opposite side and with those behind, forming the circle of Willis. The internal carotid is larger than any other spinal artery because it has a much larger amount of tissue to supply, and it is only in man that it is so very large in comparison with the combined somatic and splanchnic branches. The spinal artery of the next segment is the terminal part of the vertebral artery, which is formed indirectly by the hypoglossus artery of early development. Spinal arteries are most constant in size and arrangement, and for this reason the internal carotid artery is a very reliable morphological and anatomical indicator of its segment.

The vein of the head segment is represented by the jugular system, of which the tributaries correspond closely with those of the artery, and it presents the same morphological relations.

The Gut Derivatives.

When speaking of the conditions of metameric segmentation and of its definition, it was pointed out that the condition arose as the result of the segmented condition of the hydrostatic skeleton, and that it only affected the somatic mesoderm forming the myotomes and their sclerotome skeleton. Neither the ectoderm, nor the endoderm, nor the mesoderm immediately related to either ever become segmented themselves, but, by being related to the segments of mesoderm more or less closely, the vessels and nerves supplying these unsegmented tissues are arranged more or less segmentally. This arrangement, in its more primitive condition, has led to the idea that gut and skin have some close relation to segmentation. There is, however, little morphological relationship between segmented and unsegmented structures. They are only anatomically related by nerves and blood vessels. This being the case unsegmented tissues do not necessarily observe segmental limitations, and the gut is an excellent example of such a condition.

The gut related to the head segment by the vagus nerve varies in different animals, but in man it includes all the parts of the fore-gut—that is, pharynx, respiratory system, and digestive tract with its appendages down to the second part of the duodenum. When this extent of gut is related to the developing vagus nerve, the relation with the head segment is quite evident. The stomach later acquires its sympathetic nerve supply during its descent into the abdomen (Lewis[7]).

The behaviour of the coeliac axis artery during development also indicates the complete want of segmental form in the gut. This vessel arises opposite the seventh cervical segmental artery and descends to below the twelfth dorsal segment along with the stomach (Evans[8]). No segmental artery, so long as it is a segmental artery, can move about in this way.

In some malformations of the acardiac type there is, corresponding with the absence of the heart, absence of the entire head segment, the thoracic viscera, and of the gut down to the middle of the duodenum—that is, the whole fore-gut.[9]

It is apparent, then, that the whole fore-gut is related to the head segment. It has, like all the other embryological layers in the head region, become very extensive and enormously specialized, and it no longer observes the morphological limitations of its associated segment.

The Ectoderm Related to the Head Segment.

As the parts related to the head segment have become so extensive and specialized, it is to be expected that the ectoderm will present a similar condition. So far is this the case that the ectoderm forms three categories of structures—namely, the central nervous system, the organs of special sense, and the general skin covering of the head and face. This includes the lining of the oral, nasal, and conjunctival cavities, and the exterior of the gill mucous membrane in gill-breathing animals. There is an intimate morphological relationship between these three groups of structures, but as it has no immediate bearing upon the present considerations we shall pass straight on to the nerve of the head segment.

The definition of a segmental nerve is as follows: A segmental nerve is a nerve which contains fibres for innervating all the epiblastic, mesoblastic, and hypoblastic structures related to one coelomic cavity, and it is serially repeated in every metameric segment in the body. In vertebrates segmental nerves usually observe the segmental limits and leave the neural axis by passing between adjacent neural arches which alone form the intervertebral foramina. As many of the cranial nerves have been looked upon as segmental nerves themselves we shall examine the various neural foramina and see how far they agree with the morphological neural or intervertebral foramen.

In the human skull the olfactory nerve does not leave the cranial cavity at all, but the optic nerve does so through a foramen in the orbital-sphenoid. As both of these nerves are extensions of the neural tube they are not homologous with the other nerves. The oculomotor, trochlear, abducent, and ophthalmic divisions of the trigeminal nerve all pass through the superior orbital fissure of the sphenoid, which is facial skeleton. The next two foramina are also in the sphenoid and transmit the maxillary and mandibular divisions of the trigeminal nerve. The chorda tympani passes through the petro-tympanic fissure, which is an interval between the sphenoid and the otic capsule, which are both parts of the facial skeleton. The facial and auditory nerves both enter the petrous bone, which is part of the facial skeleton. The glosso-pharyngeal, vagus, and spinal accessory leave by the jugular foramen, which is bounded by the petrous bone of the facial skeleton in front and by the exoccipital of the sclerotome skeleton behind, while the hypoglossal nerve passes through the exoccipital in its own canal.

It will be seen that none of these foramina is a true intervertebral foramen, as none is bounded before and behind by a sclerotome arch. The only segmental neural foramen is the morphological gap between the site of the trabeculae (pituitary fossa) (Fig. 2, C) and the occipital arch. This gap is now filled up by part of the facial skeleton, which is perforated for the passage of nerves and blood vessels. This is in complete agreement with the development of these foramina, which differs considerably from that of intervertebral foramina.

If it be remembered that the somatic muscles of the head are all formed from unsegmented somatopleure, and that there is now no myotome, it will be realized that all the somatic motor nerves are of the same kind, and that they are all homologous with the spino-occipital nerves of Fürbringer, which is the name given to a variable group of motor nerves occurring anatomically between the vagus and the first spinal nerve. Morphologically, this group of somatopleural nerves of the head region is represented by the oculomotor, trochlear, motor part of the trigeminal, abducent, and facial nerves. These are all motor nerves to the muscles related to the facial skeleton. The corresponding nerves of the metameric part of the head segment include the hypoglossal, spinal part of the spinal accessory, and those cervical branches to the infrahyoid muscles, trapezius, and sternomastoid. Here is another instance of the disregard for segmental limitations.

The sensory somatic nerves are the trigeminal and auditory to the facial ectoderm. The auditory nerve is originally a differentiated and specialized branch of the fifth nerve (Owen[10]). In the metameric part of the head segment somatic sensory ganglia are developed on the roots of the spinal accessory and the hypoglossal, but these disappear, and are probably related to the ectoderm of the gill-pouches which are obliterated by the closure of the cervical sinus.

Of the splanchnic nerves there are none in the facial part of the nerve, as there is no gut in the face. But in the head segment there are three specialized branches of the visceral nerve—the glossopharyngeal, vagus, and the cerebral part of the accessory nerve.

Such is the constitution of the nerve of the head segment, and, so far as the nerve can be called segmental, it is only by looking upon these various nerves as the differentiated and specialized branches of a single mixed nerve that we can account for the endless variety in the details of their distribution and relations that is seen among vertebrates.

This brief statement of the "single segment" point of view of vertebrate head morphology is all that can be given here, but sufficient has been said to show what extreme specialization may be reached by a primitive structure subject to evolution. A simple, almost unmodified, metameric segment is the morphological basis of the vertebrate head, and the mesodermic segment has given place to structures more suitable and efficient for the changed conditions. Little remains now of the primitive segment. The one structure pointing to the segmented condition is the internal carotid artery, which, through all the evolution of segmented chordate animals, has maintained its segmental independence as the spinal artery of the head segment.

[Since the completion of this paper the presence and behaviour of the cephalic myotome have been worked out in the chick. The results confirm the above theory. The reconstructions and sections showing the cephalic myotome were exhibited in the Section of Anatomy at the Annual Meeting. Corresponding investigations in the head mesoderm of the mammal are now being contemplated.]

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SOME OBSERVATIONS ON THE SHAPE OF THE PALATE IN CHILDREN.

BY

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The following remarks are based on a study of over a thousand dental impressions, or rather "bites," obtained from the mouths of Glasgow board school children of ages ranging from 4 to 14 years. The method by which these "bites" were obtained and the manner in which they were measured were as follows:

A layer of plasticine (approximately 2 mm. thick) was spread evenly on oblong cards, about 1 mm. thick, and of suitable size and shape. The school children were asked to bite on these cards, thus leaving impressions of their teeth. The age and sex of the child were in each case noted on the back of its card. Each bite so obtained was placed beneath thin square-millimetre paper, previously rendered completely transparent by moistening with cedar-wood oil. In this way it was found possible to make accurate tracings of the various "bites," so that they could be easily and correctly measured.

These measurements are not yet completed—indeed, it will be months before they can be finished—so that I need not refer to them in detail. Such figures as I may allude to in connexion with the growth of the palate, the variations in its shape, and the times of eruption of the permanent teeth, have been culled from a much smaller series of "bites"—a sort of "trial series" which I worked out some months ago.

The reasons for collecting a series of "bites" were: (*a*) To learn something about the chief variations in shape of the palate; also the relative incidence of these shapes at different ages and in the two sexes. In this connexion the objections may be made that a "bite" gives no true indication of the actual shape of the palate, and also that it tells us nothing about the height of the palate. The latter objection is unanswerable, but the former is open to debate. (*b*) To see what variations in shape (if any) may be caused by certain diseases—for example, adenoids. (*c*) To gain information, if possible, about the growth of the palate. (*d*) To obtain statistics as to the periods of eruption of certain of the permanent teeth. (*e*) To learn definitely whether or not the size of the palate bears any relation to the general size and development of the individual. These five points may now be dealt with serially.

(*a*) Nine definite and distinct types of palate were found to exist, and the following table shows their relative incidence:

(1) Oval*	57.18 per cent.
(2) Wide oval	11.59 ,,
(3) Pointed	7.81 ,,
(4) Narrow oval	6.55 ,,
(5) Square oval	4.79 ,,
(6) Square	4.29 ,,
(7) Asymmetrical...	4.01 ,,
(8) Bell—Type B	2.27 ,,
(9) Bell—Type A	1.51 ,,

*By far the commonest type, in both sexes and at all ages.

It may be observed that "narrow ovals" are much commoner in girls than in boys, and that "squares" are commoner in boys than in girls. The remaining shapes occur with approximately equal frequency in the two sexes.

(*b*) With the kind assistance of Dr. Syme, I was able to obtain a small series of 45 "bites" from the mouths of patients at the Western Infirmary suffering from pronounced adenoids. Judging by the statements made in most surgical textbooks, one would have expected to find a preponderance of small, narrow, pointed impressions. It was therefore decidedly surprising to discover, in this series of "bites," a striking absence of such characteristics. In fact, little or no deviation from the normal could be seen. The majority of the "bites" showed the ordinary "oval" features.

(*c*) I cannot say much about the growth of the palate until my statistics are completed; but one rather suggestive feature is shown (from observations on the original small series of "bites")—namely, a slight fall in the intercanine measurement between the 11th and 14th years. This seems to indicate an actual absorption of bone in this situation.

(*d*) When speaking of "eruption" in connexion with these tooth impressions I mean, of course, an eruption of sufficient degree to register a mark on the plasticine: the actual eruption must precede this. Permanent incisors and canines do not leave sufficiently characteristic impressions to enable them to be distinguished from the corresponding temporary teeth, but all the other teeth leave markings which are quite unmistakable. The results of studying my original series of "bites" from this point of view show that, while eruption occurs earlier in the male, it is more rapidly completed in the female.

(*e*) Early in the course of investigations it became quite clearly apparent that the size of the plate bears absolutely no relation to the general size and development of the individual child.

In conclusion, it may be stated that my chief purpose in publishing these results in their incomplete and unfinished form has been to bring forward the method adopted. It seems to me to be the only practicable method of studying the palate in children, for any elaborate system—such as the taking of plaster-of-Paris casts—is quite out of the question, and would lead to a hue and outcry on the part of the children's parents.

A MESENTERIC CYST OF JEJUNAL ORIGIN COMPLICATED BY RETROJEJUNAL POSITION OF THE TRANSVERSE COLON.

BY

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The specimen described in the following paper is of interest on account of the clear connexion to be traced between fatal pathological conditions of the alimentary tract of a newborn child and their developmental origin. It consists of the viscera, with their peritoneal attachments, of a child who died seven days after birth.

The mother, a primipara, had manifested symptoms of threatened eclampsia during pregnancy, but was delivered at full time. The presentation was of the breech variety, and difficulty was experienced in extracting the after-coming head. On examination the child exhibited great abdominal distension, particularly of the upper part of the abdomen; there was also facial paralysis and talipes of the right foot. The child took its food fairly well and its bowels were kept going with enemata. It appeared to be in constant pain. It did not thrive, and died at the end of seven days.

Post-mortem examination revealed a considerable quantity of free fluid in the peritoneal cavity; two large cyst-like growths were found in the mesentery, and the transverse colon was observed to be absent from its usual position and to be behind the small intestine and the attachment of the mesentery. On account of these features the abdominal contents were removed in order to be submitted for further examination. The patient was under the care of Dr. R. N. Gibson, who transmitted the specimen to the Anatomy Department, University of Sydney; and his resident medical officer, Dr. Sinclair, of the Crown Street Women's Hospital, Sydney, performed the *post-mortem* examination and supplied the above notes. When the alimentary tract was examined the duodenum was found to be somewhat dilated (1.5 cm. in diameter). The distended tube had its usual U-shaped bend, but its terminal limb was in contact with the greater curvature of the stomach and first part of the duodenum, to which it was bound by fine adhesions (Fig. 1). The jejunum for 10 cm. beyond the duodeno-jejunal flexure was still further distended (2.5 cm. in diameter); beyond this point it commenced a circular course from right to left, along the edge of two well-marked cystic swellings which were lying along its mesenteric border and between the two layers of mesentery (Fig. 1). The jejunum was stretched transversely upon these swellings so that its lumen was slit-like in cross-section. The swellings on external examination appeared to be two separate oval cysts lying side by side, but on opening their walls they were found to be two loculi of a single cyst, communicating with one another at the intestinal border of the mesentery by an opening 1 cm. in diameter (Fig. 1, B).

The wall of the cyst is on the average 3 mm. in thickness and contains what is apparently a considerable sheet of muscle tissue. The fluid within the cyst was dark brown in colour, apparently revealing the occurrence of haemorrhage some time previously. Each loculus is of considerable size, that on the right measuring 55 by 43 mm. and that on the left 68 by 41 mm. Each loculus is somewhat larger than the specimens mentioned by Keith.[1] One of these (No. 1952 A, St. Bartholomew's Hospital Pathological Museum) measured 45 by 25 mm., and the second specimen (No. 2523, Royal College of Surgeons, England, Museum) was 25 mm. in diameter. These represent two of the three cases of cysts in connexion with the small intestine, which he discussed in a

review of the 156 cases of diverticula of the alimentary canal which are to be found in museum collections in London. Professor Keith is of the opinion that these cysts owe their origin to diverticula of the small intestine which have become closed off by constriction of the neck adjacent to the point of communication with the bowel. Moynihan, in a recent lecture, supported a similar view.

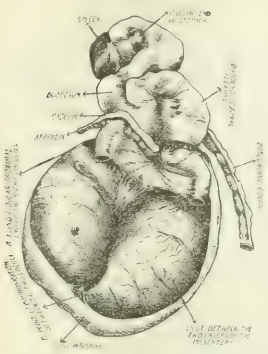


Fig. 1.—The specimen viewed from the front. The jejunum and ileum are represented as having been partially removed to display the cyst. The transverse colon is hidden behind the first part of the jejunum.

The present specimen is of interest in connexion with the etiology of the mesenteric cyst because its wall contains all the elements found in the wall of the intestine; and yet, as a careful dissection showed, no communication existed at the time of examination with the intestine. The original structure from which the cyst has been formed is exhibited with clearness at the most proximal part of the swelling (Fig. 1, A). Here the cyst is prolonged into a blind tubular extremity 13 mm. in diameter, which lies parallel to the adjacent jejunum. The lumen of this tube is comparatively small (4 mm. in diameter), and its wall is predominantly muscular. A portion of this blind extremity of the swelling was submitted for examination to Professor D. A. Welsh, Pathology Department, University of Sydney, whose report is included here.

"The lumen of the hollow tube contains a mass of leucocytes, mixed with fibrin and recently extravasated red blood cells. The leucocytes form the main portion of this mass, and the majority appear to be neutrophiles with polymorphous nuclei, indicating some persistent irritation.

"The lumen of the tube is lined by a thick layer of a highly vascular granulation tissue. Next the lumen the granulation tissue cells are greatly swollen, tend to lose their nuclear structure and their individuality, becoming fused to form a continuous cytoplasmic mass, which is relatively non-vascular.

"Beyond this zone the granulation tissue is more cellular with numerous small cells, well-staining nuclei, and abundant small blood vessels with well-defined endothelium and blood content. In the deeper zone fairly numerous isolated cells of the granulation tissue appear to be undergoing necrosis. One or two of them fuse together, stain deeply with haematoxylin instead of with eosin, and ultimately become unrecognizable as cells, resembling rather spicules of some foreign matter embedded in the tissue. These necrosing cells may be in process of calcification, and may represent the starting point of larger calcareous masses which are to be found in the wall of the cystic portion of the tumour.

"There is no trace of an epithelial lining to the lumen, but that fact does not necessarily mean that epithelium has never been present there. It may have disappeared under pressure or under the long-continued inflammatory process.

"The muscular coat represents roughly three-fifths of the total thickness of the tube, about one-fifth being the granulation tissue of the inner coat and about one-fifth the thickened subserous coat.

"The transverse section of the tube cuts many of the muscle bundles in transverse and oblique section, especially in the inner two-thirds of the muscular coat, indicating that the bundles there tend to run longitudinally along the wall of the tube. But the outer third of the muscular coat is definitely and uniformly disposed in a circular manner around the tube.

"All these muscular bundles are irregularly, but on the whole widely, separated by a great inflammatory increase of the intermuscular connective tissue. In places this increase is highly cellular; in other places it has undergone a great expansion to a less vascular and highly myxomatous tissue.

"External to the muscular coat the outer fifth of the wall of the tube is made up of a relatively enormous thickening of the subserosa. This thickening has a loose fibro-cellular structure with numerous and relatively large thick-walled blood vessels, and a few nerve fibres.

"There is no evidence of any new growth in the sense of neoplasia. The tumour appears to consist of a greatly inflamed structure, suggesting a portion of altered bowel wall, possibly a diverticulum that has now been cut off from the bowel from which it originally started."

There appears to be no reasonable doubt that the cyst in this specimen originated as an enteric diverticulum. Lewis and Thyng[2] have shown that intestinal diverticula occur regularly in embryos of the pig, rabbit, and man, and that their presence has been noted in the cat and sheep. The diverticula are more numerous in the older embryos studied, and occur especially in the distal part of the small intestine. The human material studied by these authors showed—

"That solid knob-like diverticula of the intestine may occur before the formation of the dorsal pancreas, but that older embryos from 7.5 to 10 mm. may be without them. An embryo of 13.6 mm. showed one prominent duodenal pocket, with indications of 12 others along the small intestine. At 23 mm. 35 pockets were counted, and in an older embryo there were 48. In these, and in an embryo of 32 mm., no diverticula were found along the large intestine and vermiform appendix" (p. 513).

They believe that these diverticula degenerate, sometimes becoming detached to form cysts. In a 20 mm. pig embryo, which showed twelve intestinal diverticula, they found a thinwalled epithelial cyst with a few rounded outpocketings just outside the muscularis of the duodenum a short distance from the pancreas, together with a solid cylindrical outgrowth of the intestine which extended to the muscularis. This they interpret as the original stalk of the cyst, which has been carried along and its direction altered by subsequent growth of the intestine. Undoubtedly the present case is a clear example of such a cystic degeneration of a detached diverticulum of the small intestine. According to the current classification[3] the diverticulum falls into the congenital class, being characterized by the possession, in the first place at all events, of all three coats of the small intestine. Acquired diverticula have been defined as consisting of mucosa and serosa only (false diverticula), but they may exhibit all three coats (true diverticula).[4]

The second important abnormality of the alimentary tract exhibited by the specimen is the position occupied by the transverse colon, which was detected at the *post-mortem* examination. The ascending colon is short, and the right colic flexure bends round the jejunum to lie behind the root of the mesentery and that part of the jejunum proximal to the commencement of the cyst. The ascending and transverse colon are both provided with a mesocolon, which is attached along its fixed edge to the posterior wall of the adjacent jejunum and the root of the mesentery. The mesocolon and mesentery are continuous at the ileo-caecal junction. The transverse colon passes into the left colic flexure and descending colon, but these parts have been denuded of peritoneum in the process of removal.

The question which must be decided is whether the two abnormal conditions of the alimentary canal are causally related to one another. The retrojejunal position of the transverse colon may be explained by supposing that the rotation of the intestine was from right to left as usual, but that the transverse colon in the process became folded behind the mesentery and the upper part of the jejunum, which is attached by it to the posterior abdominal wall (Fig. 2). How

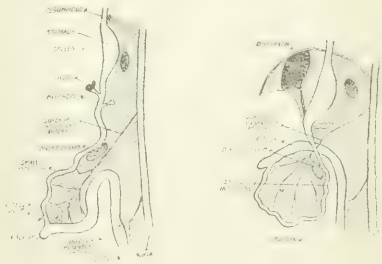


Fig. 2.—A diagram representing the effect of malrotation of the intestine to explain the retrojejunal position of the transverse colon.

could such an abnormal rotation occur, and has it been brought about by the presence of a diverticulum of the intestine which had undergone cystic dilatation at the time rotation occurred? Frazer and Robbins have recently reviewed the problem of the development of the intestine and the manner in which the final relationships of its various parts are assumed.[5] They believe that it is impossible for the umbilical coils to return *en masse*, and that the alteration in position is accomplished by a movement of each limb of the intestinal loop in turn, the proximal limb first and the distal limb next.[6] This is due to the shortness of the umbilical colon compared with the peritoneal attachment of

the small intestine, their belief being that the colic angle beyond the distal limb is held in position by a "retention band" which blends with the mesenchyme surrounding the superior mesenteric artery; this tissue grows less rapidly than the caudal end of the body.

The immediate result of the return of the colon after the proximal intestinal limb is that it lies in front of the coils of small intestine, with the caecum wedged in from behind between these coils and the liver, the caecum being the last to return. That is to say, at about the tenth week of development the return of the umbilical coils and the rotation of the gut occur as parts of one process. Now, if we suppose that in the specimen being described the distal limb returned first and then the proximal limb afterwards, the result found at birth would be produced. For, in this case, the last portion to return (the small intestine) would lie in front of the transverse colon, which would have already taken up its position. Such a reversion of the order of return leading to malrotation could conceivably occur if the proximal limb were anchored in position, and I suggest that such an anchorage may have been produced by the presence of a cystic diverticulum of the small intestine. In this case we must suppose that the pathological development of the enteric diverticulum must have occurred before the tenth week, so that the return of the distal limb was more easily accomplished than the proximal. After its return to the abdomen the cyst enlarged sufficiently to interfere with the normal peristalsis of the neighbouring bowel, so leading to partial obstruction with consequent malnutrition of the child and ultimately to death.

In conclusion it is a pleasure to express my thanks to Dr. R. N. Gibson and Dr. Sinclair, who furnished the specimen, and to Professor D. A. Welsh, who provided the pathological report, which has been included with the foregoing description, and on which some of the conclusions have been based.

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[1] BRITISH MEDICAL JOURNAL, 1910, vol. i, p. 376. [2] *American Journal of Anatomy*, vol. vii, 1907–8, p. 505. [3] Telling and Gruner: *British Journal of Surgery*, vol. iv, 1916–17, p. 468. [4] Op. cit., pp. 469–470. [5] *Journ. Anat.*, vol. l, 1915–16, p. 75. [6] Op. cit., p. 93.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TWO CASES OF ACUTE LYMPHATIC LEUKAEMIA.

THE following account of two cases of acute lymphatic leukaemia in infants seems of sufficient interest to warrant publication.

CASE I.

The first case was that of a female aged 3 years, who had been healthy until three weeks before admission, when her parents noticed that she was paler than usual. She was admitted on December 30th, 1921, and died the same night with symptoms of cardiac failure.

Post-mortem Examination.—Cadaver pale. Purpuric spots on legs and chest. No superficial glandular enlargement. Purpuric spots on pericardium and pleurae. Heart pale and flabby. Thymus normal. No enlargement of mediastinal glands. Mesenteric glands markedly enlarged. Spleen slightly enlarged. Liver and kidneys large and pale. Bone marrow of femur pink in colour.

Blood Film.—A film was taken on admission and showed lymphocytes 89 per cent., myelocytes 5 per cent., polymorphonuclears 3 per cent., transitionals 1 per cent., large mononuclears 2 per cent. The small lymphocytes predominated—76 per cent. to 24 per cent. of the large variety. Anisocytosis was marked and normoblasts and megaloblasts frequent.

Histology.—Sections showed the usual lymphatic infiltration in all the organs. The bone marrow of the femur appears devoid of fat and consisted chiefly of lymphocytes and red corpuscles.

CASE II.

The second case was that of a male aged 2½ years. A month before admission the cervical lymph glands were noticed to be enlarged. The child was admitted on August 1st, 1922, with acute angina, and died the same night.

Post-mortem Examination.—All the lymphatic tissues were enlarged. Superficial glands of neck, axillae, and groins, tonsils, thymus, mediastinal and mesenteric glands very much enlarged. Peyer's patches prominent. Liver and kidneys enlarged and pale. Spleen very little enlarged. Purpuric spots on pericardium.

Blood Film.—This showed lymphocytes 99 per cent., of which the small variety numbered 82 per cent. and the large 17 per cent.

Sections.—All the organs showed lymphocytic infiltration.

The points of interest are: (1) the ages—3 and 2½ years; (2) the fact that one patient was a female; (3) in one case the lymphatic tissue enlargement was confined entirely to the abdominal glands, while in the other all the lymph glands in the body were involved.

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CASE OF SPLENO-MEDULLARY LEUKAEMIA.

THE following case is of interest on account of the acute onset and of the marked improvement in the general condition which followed treatment by *x* rays, the removal of a source of sepsis, the use of an autogenous vaccine, and the exhibition of arsenic internally.

A married woman, aged 33, was admitted to the Leicester Royal Infirmary on March 23rd, 1922. She gave a history of ill health for a period of six weeks, complaining of weakness, giddiness, headache, and vomiting, with severe pain in the left hypochondrium. She had been losing flesh for three weeks.

On admission she was thin and pale, with a dry, furred tongue, bad pyorrhoea, and a spleen enlarged to two inches below the umbilicus and one inch beyond the mid-line (Fig. 1, *a*). There was no liver or glandular enlargement and no tenderness of the long bones. The optic discs were normal. Her pulse was small and rapid, and she was very ill indeed. On March 23rd a blood count showed: red cells, 3,333,000; leucocytes, 53,125; haemoglobin, 40 per cent. Smears were crowded with myelocytes and normoblasts. A small faintly Gram-positive diplococcus was obtained from a blood culture, but unfortunately it was found impossible to subculture the organism. The pathologist remarked that the blood picture was typical of spleno-medullary leukaemia. At that time the temperature ranged between 99° and 103° (Fig. 2, *a*), with an evening rise, and the pulse was 120 to 140.

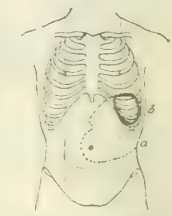


FIG. 1.—Size of spleen—(*a*) on admission, (*b*) on discharge.

The first *x*-ray exposure was given on April 6th. It consisted of one pastille dose to the spleen and long bones. This was repeated twice a week. During the first week the temperature fell to normal in the morning and never rose above 100° in the evening

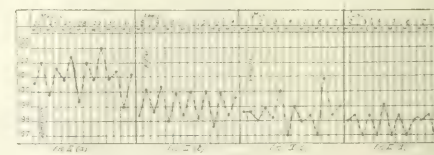


FIG. 2.—Portions of temperature chart showing character of the variations under treatment.

(Fig. 2, *b*). On April 19th her lower incisors, canines, and upper and lower molars and premolars were removed under nitrous oxide. Cultures from tooth fangs contained streptococci, diphtheroid bacilli, and *Micrococcus catarrhalis*, and an autogenous vaccine was prepared. On April 29th the first dose of vaccine was given; this was repeated every fifth day until eight injections had been given. The temperature became more irregular, but rarely rose above 99° (Fig. 2, *c*). A slight reaction occasionally followed the injection of the vaccine. On May 5th the blood count was: red cells 3,300,000; leucocytes 23,000; haemoglobin 50 per cent. Myelocytes and one normoblast were found.

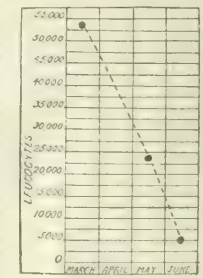


FIG. 3.

From June 2nd the temperature rarely rose above normal (Fig. 2, *d*) and the pulse was slower though somewhat irregular. During the whole of the time she was in hospital she was taking arsenic by the mouth. From the beginning of the *x*-ray treatment the spleen steadily diminished in size, and when she left the hospital it could not be felt below the costal margin. The patient was quite well, had no pain nor discomfort, and the blood count on June 21st was: red cells, 3,066,000; leucocytes, 5,625; haemoglobin 50 per cent. Myelocytes were still present but they were extremely few. No other abnormal cells were found.

I wish to thank Dr. Crosby, physician to the Leicester Royal Infirmary, under whose care the case was, for permission to publish these notes.

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Reports of Societies.

MEDICAL SOCIETY OF LONDON.

The annual general meeting of the Medical Society of London, which inaugurated the 150th session, was held on October 16th. Mr. James Berry vacated the chair in favour of Lord Dawson of Penn, whom he invested with the presidential badge. In a review of the year's work Mr. Berry mentioned that the Fellowship of the Society now included 625 names, and that the average attendance at the meetings during the past session was forty-seven. A very hearty vote of thanks was accorded to Mr. Berry, and another to Dr. Mitchell Bruce, who is retiring after a long tenure of the treasurership. The balance sheet of the Society reveals a flourishing condition, with a balance of assets over liabilities of £6,640, without including the uncertain value of the library and furniture, which is moderately estimated at £5,000.

Lord Dawson then delivered his presidential address on "Certain developments in medicine," which is printed at page 781. The address was excellently received, but Lord Dawson's departure from precedent in calling for discussion after an address from the chair met with very little response.

Sir Humphry Rolleston proposed a vote of thanks to the President for an admirable and fascinating address of the kind which required to be pondered over before it could be adequately discussed. One interesting point which Lord Dawson had raised was the possibility of the gradual change of diseases in their type. Within the lifetime of any one medical man it was difficult to estimate accurately how much change of type in disease there might be. To what extent the wear and tear of London or of American life had altered the character and relative incidence of diseases it was very difficult to decide. The matter was confused also by the fact that the nomenclature of diseases altered as well as, possibly, their characteristics. But from George Cheyne's *The English Malady* (1733) he gathered that neurasthenia, although not then called by that name, was an almost universal disease in the early part of the eighteenth century, and he could not help wondering whether the great importance now attached to nervous diseases was due, not to the new prevalence of those diseases, but to the fact that medical men were better educated and nervous diseases more easily detected. With regard to the psycho-analysts, of whom Lord Dawson had spoken, he thought that Freud's general conception, apart from the special development of it in connexion with sexual matters of which so much had been heard, was one for which they ought to be grateful. It was possible that the principle which Freud had put forward had been directed by some of his followers and also by himself along too special lines. The sexual element, after all, must not be allowed to monopolize the field. The psychoneuroses of the war, for instance, had no sexual element; they had to do with an instinct equally strong—that of self-preservation. Lord Dawson had paid a handsome tribute to Sir James Mackenzie for his work on the early symptoms of disease. In that tribute they would all concur. Sometimes it might be a little difficult to follow what was being done at St. Andrews, but in justice to the institute the fact must be borne in mind that it had undertaken an enormous task, and that years possibly would have to elapse before any particular result was obtained. Another question which Lord Dawson had raised was the need of medical institutions for people of moderate means. With this principle, again, they would all be in agreement, though it was a difficult problem as to how exactly such institutions should be run. He was aware that many different methods had been proposed, but he felt that if he discussed their respective merits he might find himself in the position of the Irishman who, after listening to a rather fervid protest to the effect that one man was as good as another, replied, "Faith, and a good deal better too!"

Sir John Broadbent, in seconding the vote of thanks to Lord Dawson, said that they were grateful to him because, in spite of all temptations to be a politician, he had remained a medical man.

Dr. Lennox Wainwright, commenting upon Lord Dawson's reference to modern hurry and stress, said that this had an important bearing upon the treatment of the mind. Gladstone used to say that change of occupation was rest, but he doubted whether that principle held good to-day in view of the complication and haste of modern life. Another point was the desirability that the physician should judge how the patient would bear or interpret the knowledge he might impart to him with regard to his condition. Some patients, for example, had the most curious notions with regard to the dangers to be apprehended from micro-organisms. He knew a lady who shrouded each doorknob she turned with a handkerchief, believing that it was a mass of microbes. Patients were easily led astray by a physician's warning or counsel, so that they took a graver view than their case justified. The psychology of the patient must be studied.

The vote of thanks was accorded by acclamation, and Lord Dawson acknowledged the compliment.

MYOMECTOMY FOR UTERINE FIBROIDS.

A meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine was held on October 5th, with Dr. T. W. Eden, President, in the chair, when Dr. Arthur E. Giles read a paper on the subject of indications and results of myomectomy for uterine fibroids.

Dr. Giles said that in recent discussions on the treatment of uterine fibroids the alternatives of hysterectomy on the one hand and *x*-ray and radium treatment on the other had generally been dealt with as though they exhausted the possibilities of treatment. Myomectomy had been almost entirely overlooked. He held the view that in the majority of cases of fibroids requiring surgical treatment hysterectomy was the more suitable and also the more satisfactory operation, and that the scope of myomectomy was restricted to the minority of cases. Hysterectomy needed no justification; it was generally accepted as a sound procedure, surgically and clinically. But myomectomy had to justify itself by its results, and to state reasons why it should be preferred; it had also to acknowledge its limitations and to define the conditions of its suitability. The outstanding claims for myomectomy were, first, that the uterus was preserved for the important function of child-bearing; the second that the patient was spared thereby the mental distress of feeling that an essential part of her womanhood had gone.

In regard to the immediate results, Dr. Giles's figures from the end of 1910 to date were as follows: hysterectomy, 684 cases, 5 deaths—mortality 0.73 per cent.; myomectomy, 107 cases, 1 death—mortality 0.93 per cent. There was, therefore, very little difference in the mortality of the two operations; certainly not enough to make that a deciding factor in the choice of operation. In his work on the after-results of abdominal operation, published in 1910, he was able to give particulars of 40 cases traced out of 51 operated upon; of the later 116 cases he had particulars of 53. He did not attempt to trace the histories of patients who were over 45 years of age at the time of operation. Of 88 cases examined in the earlier and in 79 of the present series the uterus was free from fibroids, and in 9 cases further tumours were found. The inference from this was that the liability to return to fibroids might be represented as 10 per cent. Excluding cases in which the menopause preceded or synchronized with the operation, particulars about the character of menstruation after the operation were obtained in 83 cases; in 67 of these, or 80.7 per cent., the menstrual loss was normal or moderate; the remaining 16 patients suffered from excessive loss. To help in gauging the value of the results it might be stated that in 31 out of 51 cases in the present series at least six years had elapsed between the time of operation and the report on the case. In both series there were fifty women under 45 years of age who had a chance of becoming pregnant, including three who were single at the time of operation and married afterwards. Of these 14, or 28 per cent., became pregnant.

Comparing the advantages of myomectomy with its disadvantages, it might be said that the advantages were represented by the occurrence of pregnancy in 28 per cent. of the women who had the chance of pregnancy and by the satisfaction which patients derived from the consciousness that after the operation they remained "like other women." The disadvantages were the possibility of the return of fibroids, which was a 10 per cent. chance, and the possibility of further menstrual trouble, which was a 20 per cent. chance. The risk of a second operation being necessary was not as great as 10 per cent.; hysterectomy had been required in only five cases out of the total 167—that was, in just 3 per cent. The younger the patient the greater should be the effort to save the uterus, and his opinion was that, broadly, myomectomy was the operation of choice in women up to the age of 40. In single women the indication was not so great as it was in

married women, especially after the age of 30. When a tumour was solitary and pedunculated and not associated with excessive bleeding a myomectomy might properly be done, whatever the age of the patient and the chances of pregnancy might be. Even an interstitial tumour unassociated with haemorrhage might be enucleated. After the age of 40 to 45 he considered that hysterectomy should be the rule, especially when there were multiple fibroids and when there were excessive haemorrhages. Whatever the position or number of the tumours, if myomectomy was going to leave a battered and useless organ hysterectomy should be done. Cervix fibroids almost invariably called for hysterectomy, though he had occasionally done a myomectomy even in these cases. The mere number of the tumours did not matter so long as a good and serviceable uterus was left. When a patient suffered from excessive haemorrhage and was seriously drained thereby, hysterectomy should be the rule.

Fibroids associated with pregnancy did not necessarily call for surgical treatment. When they were causing no symptoms and did not seem likely to interfere with labour it was best to leave them alone, always provided that the patient could be kept under observation so that operation could be undertaken if urgent symptoms arose. Myomectomy during pregnancy was indicated in three groups of conditions: first, when the tumour or tumours appeared to be increasing rapidly in size; second, when the patient was suffering from pain, pressure symptoms, or indications of septic or degenerative changes in the tumours; third, when the position of the fibroids made it probable that labour would be obstructed, in which case myomectomy was done for the purpose of avoiding the necessity for Caesarean section and of allowing the confinement to take place naturally. In all he had had thirteen cases of myomectomy during pregnancy. The period of gestation ranged from a few days to six months. The results of the last two cases he had been unable to trace; in the remaining eleven the pregnancy was not interfered with, and all of them went to full term, except one whose labour came on at 7½ months, but the child was alive and survived. Myomectomy during pregnancy was evidently a most satisfactory operation.

Scope and Technique of Myomectomy.

Mr. Victor Bonney read a paper on the scope and technique of myomectomy. He said that myomectomy in principle fulfilled a higher surgical ideal than hysterectomy. He recorded a series of 100 consecutive myomectomies to show that within wide limits neither the number nor position of the tumours in the uterus, nor the presence of degeneration, nor the accompaniment of menorrhagia or pregnancy, was a bar to successful performance of the operation. The largest number of fibroids that he had removed from the uterus in a single case was thirty, but he did not regard this as the limit of possibility. Anterior tumours were more favourably placed for enucleation than posterior tumours, because they could all be got out through an anterior incision, but many posterior tumours could also be removed by the same route. Malignancy and sepsis of course barred the operation, whilst naevoid degeneration made the operation more formidable; but with these exceptions degeneration of the tumour, or tumours, had no bearing. In regard to the technique of the operation, Alexander of Liverpool laid down the right principle twenty-four years ago—namely, an anterior incision in the uterus, and if possible all the tumours removed through that one incision. The speaker then proceeded to show by diagrams the manner in which the enucleation cavities could be closed by suture. When fibroids were complicated by pregnancy and an operation was required, myomectomy should be combined with Caesarean section if the child was viable. If the child was not viable the ideal procedure was to remove the tumours and leave the pregnancy *in situ*; where many tumours were present, however, this was impossible, and the pregnancy should be removed through the same incision as the fibroids. He had two deaths in his series of 100 cases; all the other patients had done well, and none of them had returned to him with new fibroids or return of the bleeding. Five patients had become pregnant subsequent to the operation; of these, one had a miscarriage, another had two abortions, fibroids removed, and two had one labour each, fibroids removed—they delivered themselves naturally. Four of these was delivered by Caesarean section, but the condition of the uterus at this second operation showed it to have been unnecessary. He hoped that in the future it will be common knowledge that fibroids do not, as a rule, necessitate hysterectomy, and that if the possessors of these tumours will only submit themselves to early surgical treatment their wombs need never be removed.

The President cordially agreed with the ideals expressed by Mr. Bonney. He had always thought and always taught that the removal of the uterus was surgically a very crude procedure to adopt in order to deal with a benign growth. The surgically ideal procedure must be to remove the neoplasm and conserve the organ in which it grew. His own practice had been to adopt myomectomy much more freely than Mr. Bonney seemed to think was the case with most gynaecologists, and he welcomed the efforts which were being made by the authors to call attention to its advantages.

Professor Briggs had long ago recognized the increasing sphere of enucleation in the progressively earlier treatment of uterine fibroids; he appreciated the illustrative modern reports in the papers just read. Allusion had been made to Dr. Alexander's work in Liverpool prior to 1898. At that time Professor Briggs by many laboratory tests of enucleation had convinced himself that the older fibroid growths, degenerated and adherent to their capsules, were physically unsuitable for enucleation. In his opinion enucleation was at its best when the scalpel could be thrust directly into the substance of the thyroid, cutting it into halves or less, reducing its bulk and providing for the insertion of an appropriately strong sharp hook for its extraction with the minimum surgical interference with its capsular connexions. Fantastic uterine tunnelling was unnecessary. It had to be borne in mind that after the most thorough uterine palpation a fibroid growth might remain.

Dr. Herbert Spencer thought the authors of the papers on enucleation of myoma had performed a useful service in calling attention to the value of the operation, which he supposed every gynaecologist practised and preferred, in suitable cases, to hysterectomy. He was surprised, however, to find no reference in either paper to the most valuable form of enucleation—namely, through the cervical canal. The papers well illustrated the pitfalls of statistics, Dr. Giles (after careful inquiry in a proportion of his cases) giving the percentage of recurrence as 10, Mr. Bonney (without any adequate inquiry) giving it as 0. No doubt the percentage was somewhat greater than that found by Dr. Giles, and it constituted a serious objection to the operation, especially when carried out by the abdominal route and with the added risk of ventrofixation. Mr. Bonney's method of enucleation was ingenious but complicated, and in Dr. Spencer's opinion unnecessary. One danger, the possible infected condition of the tumour, had not been alluded to. He had seen in a virgin a case of fibroids containing abscesses infected with streptococci successfully treated by total hysterectomy. The case, had enucleation been performed, would almost certainly have terminated fatally, as happened in a case in which a conservative Caesarean section was done for an obstructing fibroid infected with the bacillus of gas gangrene. Although infection of fibroids which did not give rise to symptoms was rare, he thought it was important, particularly in cases complicating pregnancy, that a bacteriological examination of the tumour should be made before or at the time of the myomectomy.

The first meeting of the Royal Medico-Chirurgical Society of Glasgow for the session 1922-23 was held on October 6th. The President, Dr. A. Maitland Ramsay, delivered his inaugural address on "The clinical significance of failing sight." The address covered a wide field, and was illustrated by clinical references. Dr. Ramsay pleaded for a closer co-operation between the ophthalmic surgeon and the family doctor, and showed that "failing sight" was a symptom observed in many disease conditions occurring in family practice.

A meeting of the Cambridge University Medical Society was held at Cambridge on October 18th, when, before an audience of nearly 500, Dr. G. Drummond Robinson, obstetric surgeon to the Westminster Hospital, delivered a lecture on "Normal labour," illustrated by a cinematograph film and lantern slides. The film shown was in two parts, one of a vertex case, the other of a breech case, each subdivided into a diagrammatic part showing the processes of labour as if seen in section, and a part showing the process in an actual case.

Reviews.

THE CURE OF LEPROSY.

In his *Handbook on Leprosy*[1] Dr. Ernest Muir, one of those who have had the privilege of applying to Sir Leonard Rogers's researches the acid test of practice, gives clear account of the method of administration of the new and potent remedies provided for the practitioner's use. They are chiefly the fatty acids and ethyl esters derived from hydnocarpus and chaulmoogra oils. Chaulmoogra oil has of course long been known as a popular remedy for leprosy, but when taken internally its benefits were found to be very limited because it always sooner or later seriously upset the stomach. Sir Leonard Rogers, setting himself the task of isolating the active principle of the crude oil, has provided us with the fatty acids and their ethyl esters, which, injected intramuscularly or even intravenously, are free from the objections to which the parent oil is open and form a most potent remedy against the disease. Even in advanced cases excellent results can usually be obtained. It is not too much to say that we are now upon the threshold of one of the greatest triumphs of modern medicine—the control of leprosy. Dysentery, cholera, leprosy, the three dragons of the tropics, have now been robbed of half their terrors by the genius of a single man of science. How shall the legendary achievement of our patron St. George compare with a record such as this? In his modest little volume Dr. Muir tells the story of the commencing subjugation of leprosy in clear and simple terms, such as they who run may read. All those who are in any way concerned with the leprosy problem, whether on the clinical or the administrative side, should buy it, for they will learn much from it. All those who are interested in the achievements of modern medicine should read it, for it marks one of the moments when it is possible to be proud of human effort.

This little book has made its appearance at an opportune moment. The curse of leprosy is as old as history, but it is only during the last very few years that the victims of this terrible scourge have had any prospect before them other than incarceration in a leper asylum to eke out an existence embittered by increasing physical disabilities. To these children of calamity Sir Leonard Rogers has brought new hope. From all over the leper-stricken areas of the world comes report after report of lepers discharged from their asylums or colonies as cured. Their doctors, standing amazed, hardly believing the evidence of their senses, publish statistics of "lesions disappeared," "apparently cured," for the achievement seems too good to be true. On the other hand, lepers in the early stages of the disease, contrary to their whilom habit of concealing their trouble in order to avoid as long as possible confinement to the leper colony, are coming forward in increasing numbers to seek the new salvation.

TUBERCULOSIS.

The second edition of Dr. Pottenger's large work on *Clinical Tuberculosis*[2] is almost a reproduction of the first, which was published in 1917. It consists of two volumes, of which the second contains three more illustrations than appeared in the first edition and twelve more pages, owing to the inclusion of a chapter on influenza and tuberculosis. The first volume deals with the pathological anatomy, pathological physiology, diagnosis, and prognosis of tuberculosis. The author holds that the disease is primarily one of the lymphatic system, the organs being slightly and the regional glands markedly infected; in secondary lesions the reverse is the case. Great stress is laid on the importance of universal testing of children with tuberculin, but it is admitted that a positive reaction should not cause undue anxiety if the child remain healthy. Treatment by tuberculin is strongly advised for children suffering from partially quiescent lesions. All will not concur in these views, and by a good many authorities d'Espine's sign is not considered so valuable an aid in diagnosis as the author believes it to be. Palpation of the tissues on each side of the dorsal spine for evidence of resistance is highly praised for the detection of enlarged mediastinal glands. The classification of the early symptoms due to toxaemia, reflex causes, and to the tuberculous process *per se* is a valuable contribution to the subject; active tuberculosis, it is maintained, may exist without toxaemic symptoms. The chapters on the nervous system in tuberculosis and on traumatic tuberculosis will well repay perusal. Perhaps too much stress is laid on the presence of haemoptysis as diagnostic of tuberculosis, and bronchiectasis, in which it is common, finds no mention. The value of tuberculin in diagnosis and prognosis is emphasized, frank and prompt reactions being looked on as positive evidence of active tuberculosis. Objection is wisely made to the advice often given to patients who have lately suffered from tuberculosis to take up some country occupation to which they are not accustomed and for which they are perhaps totally unfitted. A long chapter by Dr. Joseph Pottenger on laboratory methods is included in the first volume. The second volume deals with the complications and treatment of the disease. The authors have found tuberculin of great service in tuberculous laryngitis. Special importance is attached to pleurisy, whether dry or moist, as a cause of tuberculosis; pneumothorax was not found so fatal as is usually supposed. Immediate removal of a tuberculous kidney is not recommended: it is stated that conservative measures should first be tried, and that tuberculin has its uses. A favourable climate, though beneficial, is not essential for the treatment of tuberculosis. Food, rest, and exercise, open air, hydrotherapy, heliotherapy, home treatment, sanatorium treatment, and the numerous factors in the proper conduct of the disease receive thorough consideration, the sanatorium being considered the ideal place for treatment. A warning is given against the all too prevalent custom of removing the tonsils from children on the slightest pretext, heedless of their action as protective agents. A history of many cases with an instructive discussion on each of them and a chapter on influenza and tuberculosis complete the volume. As the various chapters may be almost looked upon as monographs in themselves they can be read individually without reference to the rest of the work: this plan necessitates some repetitions, but owing to the excellence of the contents is excusable. The two volumes contain the results of Dr. Pottenger's labours for many years, chiefly as director of the sanatorium of Monrovia, California. The publishers are to be congratulated on the way in which they have carried out their part of the undertaking.

Dr. David C. Muthu's book on *Pulmonary Tuberculosis: Its Etiology and Treatment*[3] is founded, as the author tells us on the title-page, on twenty-two years' observation and work in open-air sanatoriums. The book is divided into three parts, dealing respectively with etiology, treatment, and the social and economic factors of tuberculosis. The author is no believer in the germ theory. Such sentences as the following arrest attention: "The presence of tubercle bacillus is not a decisive factor in the development of tuberculous processes" (p. 13). "Tuberculosis . . . is a deficiency disease" (p. 13). "It is a blood dyscrasia" (p. 13). "Glands may be normal and healthy, and yet may contain tubercle bacilli" (p. 32). We do not think most authorities will subscribe to this statement: "A tuberculous gland may not contain any bacilli whatever" (p. 66). "Cases of phthisis can occur without the presence of tubercle bacilli" (p. 69). "The social, economic, and industrial factors more largely influence the incidence and mortality of tuberculosis than any tuberculous infection" (p. 83). "If we do not know how tubercle bacilli get into the body, it is perhaps because in the majority of cases they do not enter from the outside at all, but are formed within the body" (p. 168). "When tubercle bacilli appear on the scene, they do so as the effect of a cause, as the product of vicious environment; or if they have entered as a saprophyte . . . their pathogenicity is the result of deranged nutrition" (p. 172). It would seem, therefore, that the author does not consider the tubercle bacillus is the cause of tuberculosis; neither does he believe in contact infection, or that the prevalence of tuberculosis in children may be due to cow's milk. The first part of the book concludes with a chapter of twenty-seven pages on the early diagnosis, symptoms, and prognosis, which might have been omitted. Naturally, the author's views on the etiology of the disease prevent him from having any belief in the efficacy of tuberculin and vaccines, which he has found wanting. Sanatorium

[1] *Handbook on Leprosy.* By Ernest Muir, M.D., F.R.C.S.Ed. Cuttack: R. J. Grundy. 1921. (Demy 8vo, pp. 118; 52 figures, 4 plans, 2 plates. Rs. 7.)

[2] *Clinical Tuberculosis.* By F. M. Pottenger, A.M., M.D., LL.D. With a chapter on Laboratory Methods by J. E. Pottenger, A.B., M.D. In two volumes. Second edition. London: H. Kimpton. 1922. Med. 8vo. Vol. I: pp. 707, 105 figures, 6 plates; Vol. II: pp. 725, 65 figures, 4 plates. £3 15s. net the two volumes.)

[3] *Pulmonary Tuberculosis: Its Etiology and Treatment.* By D. C. Muthu, M.D., M.R.C.S., L.R.C.P. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. 331; 28 figures. 12s. 6d. net.)

treatment is thoroughly considered in the second part. As a result of his experience the author finds that 80 per cent. in the first stage, 40 to 45 per cent. in the second, and 8 per cent. in the third get well. Such a recommendation as two or three days' excursion in the charge of a doctor at the sanatorium may be suitable for a private institution, but is hardly practicable in a public one. Continuous inhalation is highly praised, but its physiological, chemical, and psychic effects are considered far to outweigh any benefit obtained from its germicidal action. The mask designed by the author is illustrated and prescriptions for the three inhalants he employs are given. The third part contains a chapter on the prevention of tuberculosis; the most important factors in prevention as well as in treatment are considered to be social and economic, and with this opinion most will be able to agree. The volume concludes with a consideration of tuberculosis in relation to marriage and parenthood. The book is interesting, and, though containing repetitions, gives much food for thought.

A GERMAN TEXTBOOK OF PSYCHIATRY.

Dr. Ph. Jolly has written a short guide to psychiatry,[4] intended for the use of students and practitioners. The aim is essentially practical, and theoretical discussions have as far as possible been avoided. The first edition was published in 1913, and the present volume contains some additional matter, notably a description of the Binet-Simon intelligence scale and a brief account of the psychoses associated with or caused by service, military or otherwise. The first part is devoted to general psychiatry, and in successive sections an account is given of symptomatology, diagnosis, pathological anatomy, prognosis, and treatment. In the second part Dr. Jolly gives an outline of the various forms of mental disorder. He approaches his subject in a conventional manner, and confines himself strictly to the descriptive method. Indeed, it is interesting to observe how little German psychiatry, as exemplified in this volume, appears to have been influenced by the interpretative and individual method of Bleuler, Freud, and Jung, while in other countries, and more especially in America, its effects are so apparent. Though the book contains the main facts which the student must know, it is as a whole singularly uninspiring, and no effort is made to interest the reader by means of diagrams or illustrations, or by reference to actual cases. It is of course difficult to include case histories in a small manual, but there is no necessity to make psychiatry quite so uninteresting as the author here succeeds in doing. As the book is only designed to contain the usual subject-matter of the small textbook, it does not include any new work of special interest to the English psychiatrist.

THE SCIENCE OF CHEMISTRY.

In Mellor's *Inorganic and Theoretical Chemistry*[5] is undertaken the exposition of the whole of the science which relates to the composition of matter and the transformations of its constitution and structure. The whole work is to be completed in six or seven volumes of about 1000 pages each, and of these two have appeared; the first is introductory to the system under which the study is pursued, and in it is considered the chemistry proper of hydrogen and oxygen only; the second volume deals with the halogens and the alkali metals. The other elements are to follow mainly in the order of the periodic table; newer work on the constitution of the atom is to appear in the third volume.

The method and purpose displayed in the elaboration of this treatise are an attraction and give it distinction. We find narrated in it the history of the acquisition of knowledge in the science; the epoch-making discoveries are properly emphasized, and the way in which ideas were evolved and conceptions of theory developed is shown with amplitude of detail. Colour is given to these descriptions by the apposite quotations prefixed to almost every paragraph in the first volume. Of these, two may be cited; the first near the beginning (p. 5), from Aristotle: "The mind is like a blank tablet upon which experience writes that which is perceived by the senses." The second towards the end (p. 569), from Humphry Davy: "I thank God that I was not made a dexterous manipulator, for the most important of my discoveries have been suggested to me by failures." But it is not to be supposed that the work is intended only for those who take their science in an easy chair; quite the contrary, for every section of the subject is treated with scholarly completeness, and wherever mathematical relationships are important—as in chemistry they grow to be ever more and more—they are fully elaborated.

The highest merit of such a work is that the subject-matter of each section is so set out that each is not only lucid in itself but made to shed light on kindred questions. To achieve this are needed, first, the gift of being a true chemist; secondly, a power of clear expression, for there is no wealth of technical nomenclature in chemistry to compensate the tendency of the English language to slip into ambiguity; and thirdly, the faculty of opportune repetition in altered phraseology which saves the student both fatigue and misapprehension. In these respects the work is particularly excellent; the older foundations of the science are so described as to give them their highest educational value and the newer developments are made to fit into the context of description so as to afford a coherent account of the subject. The author is to be congratulated on having performed a difficult task with great credit. Connexion and coherence of ideas are ensured by showing the changes of view which have attended the growth of discovery and the genesis and development of well-established theories. Dates of events are quoted as frequently as the names of experimenters which appear in almost every narrative of experiment. The fault of giving disproportionately large space to the theory and but a meagre account of the facts of experience, which has become common in modern books, is avoided. In this volume we find a wealth of the basic facts of chemistry including many of less ordinary interest which it can be seen are destined sooner or later to acquire supreme interest, and all are given in such connected relation as to build a firm framework.

Volume II, being more occupied with the plainer descriptions of properties of substances and of their reactions, affords less scope for the individuality of the author than Volume I. It will suffice to say of it that the information is comprehensive in respect both of basic facts and their theoretical aspects.

The work contains a sufficient number of figures illustrating apparatus, crystals, including space-lattice systems, curves, and diagrams. References to authoritative memoirs and original papers are systematically given at the end of every section. The indexes are good but might with advantage have been more extensive.

Misprints and errors are rare. In Volume I, at page 104, $\frac{1}{12.8 \times 10^{20}}$ is inadvertently rendered as 12.8×10^{-20}, but for so large a volume of matter the number of such instances of oversight are remarkably few. In the same volume (p. 922) is the sentence, "A current of gas is placed [*sic*] along the annular space between the two tubes"; but none will carp at the choice of the word "placed" for "led" when the work is so well written as to render such a sentence conspicuous.

To the student whose vocation or enthusiasm is to lead him beyond the mere threshold of the science of chemistry this work will prove invaluable, and it is likely to produce disciples who without it might have never been attracted to chemistry. It will be an almost indispensable companion to the teacher of chemistry.

DISEASES OF THE EAR.

The success which attended the first edition of Dr. Kerrison's *Diseases of the Ear*[6] has led to the appearance of a second within the space of eight years. The general plan of the first edition, wherein the author sought to describe and discuss fully matters of importance which received scanty attention in the older books, is retained in the new edition, and, in truth, the additions are not of any great moment. There is a short chapter on Bárány's theory of cerebellar control and another on war deafness. The latter seems to be a very short summary of the book *Otites et Surdités de la Guerre* by Bourgeois and Sourdille, which was so helpful to aural surgeons during the war. The alterations in Dr. Kerrison's new edition being slight and chiefly in the form of additional chapters, it follows that, as before, the perspective is good and the book as a whole well proportioned. Especially

[4] *Kurzes Lehrbuch der Psychiatrie für Studierende und Ärzte.* Von Dr. Ph. Jolly, Privatdozent für Psychiatrie und Neurologie an der Universität Berlin. Second revised edition. Bonn: A. Marcus and E. Webers. 1922. (Demy 8vo, pp. 317. M. 47; bound M. 54.)

[5] *Comprehensive Treatise on Inorganic and Theoretical Chemistry.* By J. W. Mellor, D.Sc. London and New York: Longmans, Green and Co. 1922. (Roy. 8vo. Vol. I, pp. xx + 1067; 12 figures. Vol. II, pp. vi + 961, 83 figures. 45s. net each volume.)

[6] *Diseases of the Ear.* By Philip D. Kerrison, M.D. Second edition, revised and enlarged. Philadelphia and London: J. B. Lippincott Company. (Med. 8vo, pp. xxi + 596; 335 figures, 5 plates. 35s. net.)

to be commended are the sections on operations and on intracranial disease. The details of myringotomy might have been given with more precision, but the mastoid operations and their extensions are well described, though the reader is left a little uncertain as to what the author regards as the most satisfactory after-treatment of the simple mastoid operation. Ossiculectomy is described, but the reader is given to understand that the author has never performed it, and does not recommend it. The chapter on facio hypoglossal anastomosis, however, is half-hearted and unconvincing. In an American work a certain tolerance as regards language must be granted from the British point of view, and with this reservation it may be said that the writing is good, though at times it is apt to become colloquial. It is, however, fairly free from Americanisms, though such a word as "blennostatic" gives pause for a moment.

We feel, however, that the present edition might have been brought more thoroughly up to date, especially had the writer given more attention to his British colleagues. For instance, in oto-sclerosis, although the views of Gray are quoted, they are not his most recent views. Again, the author still speaks of the sclerotic mastoid and makes no mention of the researches of Cheatle, now classical, although he does mention that in some temporal bones the sclerosis does not appear to be associated with tympanic disease. The work of Fraser on suppuration in the labyrinth and the work of Scott and Jenkins on meningitis also go unmentioned. Perhaps unkindest still is the illustration of Ballance's flap in the plate devoted to plastic operations on the meatus. The flap is represented as cut upside down. This is worse than mere neglect. It seems, therefore, that the author has confined himself too closely to American and German literature, and that had he expended as much care on the second as he did on the first edition he could have done still better. Though we have felt bound to call attention to certain faults we cannot give higher praise than to say that we know of no better book on the subject.

THE ENCYCLOPAEDIA MEDICA.

In a foreword to the eighth volume of the second edition of the *Encyclopaedia Medica*,[7] the indefatigible editor, Dr. J. W. Ballantyne, explains the reasons, such as the war, the high cost of production, and the sudden death early in 1920 of Mr. C. E. Green, the originator of the scheme of this huge undertaking, which have delayed the appearance of this revised edition; he is now able to say that the remaining four volumes should appear at intervals of six months or thereabouts.

The volume before us extends from "labyrinth" to "mammary gland," and in addition to a large number of shorter articles contains thirty-four principal articles dealing with the diseases of the larynx, liver, lungs, lymphatic system, the mammary gland, and malaria. There are new articles on diseases of the lacrymal apparatus by Mr. H. M. Traquair, on lethargic encephalitis by Professor J. M. Beattie, on lumbago by Dr. Alexander Goodall, on lunacy by Sir John Macpherson, on tuberculosis of the larynx by Dr. A. F. Hewart (who has also assisted Sir Robert Philip in the revision of the articles on pulmonary tuberculosis and pneumonoconiosis), and on the surgery of the lungs and thorax by Mr. Frank E. Jardine. Some alteration in the authorship of the articles has naturally been necessitated by the passage of time; thus Dr. Norman Walker has handed over his article on lupus erythematosus for revision to Dr. R. Cranston Low; the article on malaria has been revised by Dr. J. G. Fowler, that on leprosy has been largely rewritten by Lieut.-Colonel D. G. Marshall, and Professor G. H. Wilson (now of Birmingham) has assumed responsibility for the account of leucocytosis originally contributed by his teacher, Professor R. Muir. In the much-enlarged article on tropical, parasitic, and other diseases of the liver Sir James Cantlie has had the able assistance of Dr. Aldo Castellani, and Mr. D. M. Greig has helped Sir Harold Stiles in the freely illustrated account of diseases of the mammary gland. The description of lethargic encephalitis has been condensed into rather less than four pages, and the protean character of the clinical manifestations has hardly received sufficient notice. In the revision of his important article on leucocythaemia Professor G. Lovell Gulland speaks of the more rapid and certain action of radium as compared with that of *x* rays, and ascribes it to the superior penetrating effect of radium and not to any essential difference in action, so that the greater penetrating power now obtainable with *x* rays will probably be equally effective. In the treatment of lymphadenoma he has recently tried injections of colloidal copper with good effect, which may be due to the well-marked febrile reaction, which is possibly of the nature of protein shock.

This instalment fully maintains the reputation that the *Encyclopaedia Medica* has won, and the editor may be heartily congratulated on the continued success of his efforts.

[7] *Encyclopaedia Medica*. Second edition. Vol. viii, Labyrinth to Mammary gland. Under the general editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Edinburgh and London: W. Green and Son. 1922. (Roy. 8vo, pp. x + 704; 9 plates, 75 figures. Price 30s.)

NOTES ON BOOKS.

In a handy volume, *Vaccins et sérums*[8] (the first of the Bibliothèque des connaissances médicales, which he is also editing), Dr. Apert, physician to L'Hôpital des enfants malades, Paris, gives a clear summary of our present knowledge of the subject, together with some account of the changes that take place in the body after injection of vaccines and serums. This is prefaced by an account giving the history of Jennerian vaccination, of Pasteur's work, and of antidiphtheritic serum. Other antitoxic serums, those for tetanus, botulism, and cobra venom, are then described, and separate chapters are devoted to the serum and vaccine treatment of the various infections. The account of the treatment of bacillary dysentery contains a long extract from an article published last year by d'Hérelle on bacteriophages. The work of Flexner on antimeningococcic serum is mentioned, but the well-known researches of the Rockefeller Institute on the strains of the pneumococcus and the serum for cases of pneumococcus type I infection are not referred to, though a multivalent serum prepared against types I, II, and III by Truche of the Pasteur Institute is noticed. In reference to Coley's fluid Roger's view that the active agent is *Bacillus prodigiosus* and not the streptococcus finds a place. The serum treatment of gangrene and haemophilia occupies a chapter, and there is a good description of serum disease. Lastly, the anti-anaphylactic method of treatment is summarized, with an account of Danysz's administration of vaccines, obtained from faecal bacteria, for various chronic diseases, such as eczema, dyspepsia, and intestinal disorders.

There certainly have been—and perhaps there are now—medical poets of the first water. But, with the exception of Professor Henry Tonks, we cannot call to mind any medical painter whose work can be thought of as comparable in its own way with the exquisite poetry of Keats or the polished verse of Goldsmith and Bridges. Pictorial art, unlike poesy, seems seldom to have drawn any man away from medicine. We are moved to this reflection by finding among the miscellaneous volumes sent to us for review a copy of Mr. Henderson's pleasant book on *Romney*.[9] Many of our readers would probably enjoy it, but it has little or nothing to do with doctors or doctoring. George Romney painted one or two medical portraits for instance, that of Joseph Allen, M.D., in the Dulwich College collection, painted in 1778), and one of his early pictures showed the arrival of Dr. Slop on a memorable occasion in the history of Tristram Shandy. He had painted Sterne's portrait at York, and as Mr. Henderson says: "Probably Romney knew by sight Dr. Barton (a deformed person with a very large head) who was said locally to have been the original of Dr. Slop. The people of York were accustomed to the appearance of this accoucheur riding mud-spattered astride his tiny pony." Beyond these slender threads we can trace no direct relation between our profession and this delightful English artist whose work is perhaps in greater esteem to-day than at any previous time. It would be out of place, therefore, with so many medical works clamouring for attention, to dwell further upon a small volume whose claim is upon the physician's *horae subsecivae*.

In his volume, *A History of the Association Psychology*,[10] Professor Howard C. Warren gives a comprehensive account of the associationist movement and endeavours to trace back recent developments of psychology to their source in the writings of this school. The book is the product of careful historical research and constitutes a valuable addition to the literature of psychology. An exhaustive bibliography is appended, giving references to the ancient and mediaeval writers, to the British and Continental contributors to the associationist doctrine, and to the more recent investigations of association problems.

[8] *Vaccins et sérums*. Par Dr. Apert. Bibliothèque des connaissances médicales. Paris: Ernest Flammarion. 1922. (Cr. 8vo, pp. viii + 282. Fr. 7.50 net.)

[9] *Romney*. By B. L. K. Henderson, D.Litt. British Artists Series, edited by S. C. Kaines Smith, M.A. London: Philip Allan and Co. 1922. (Fcap. 8vo, pp. xii + 159; 8 illustrations. 5s. net.)

[10] *A History of the Association Psychology*. By Howard C. Warren, Stuart Professor of Psychology at the University of Princeton. London: Constable and Company, Ltd. 1921. (Pp. 328. 16s. net.)

Nova et Vetera.

THÉOPHRASTUS RENAUDOT, M.D.,

ORIGINATOR OF NEWSPAPERS.

Of few human institutions can it be said that they had their beginning at any definite date. When we get back to the man who seems to have a good claim to be considered the founder we find that he was preceded by others who had the same idea but not the wit or opportunity to work it out. Subject to this qualification, it may fairly be said of Théophrastus Renaudot, Doctor of Medicine of the ancient University of Montpellier, that he was the founder of the newspaper, if by that term we understand a paper published at regular intervals and giving the news of the day. Broadsheets had been issued during the later part of the sixteenth century in Italy and Spain, and also in the Netherlands, but they appeared only when material had accumulated to fill them, and interruptions of communications, owing to stormy seas and miry roads, were frequent. In fact, regular publication could not be attempted until the postal service had reached a stage of development which made it possible to receive the news and distribute the paper at fixed dates.

Some have seen an anticipation of Renaudot's newspaper enterprise in the *Mercure François*, started in 1605, itself modelled on the *Mercurius Gallo-Belgicus*, first published in Cologne in 1594; but these were both of the nature of annuals —forerunners of the *Annual Register* founded by Edmund Burke in 1759 and still continued.

Of the facts of Renaudot's life very few are beyond dispute; during his life he indulged in endless quarrels and controversies, and his many and very bitter enemies found any stick good enough to beat such a cur as they held him to be. He was born at Loudun in Poitou in 1584, though some say 1586; he died in Paris on October 25th, 1653, and was buried at St. Germain l'Auxerrois before the parish altar, the coffin being followed by thirty priests and a large concourse of people. So much is admitted, and it is not disputed that he opened an office in Paris, where inquirers could obtain the address of any citizen and persons in search of employment could register their names; nor that he obtained permission to publish a gazette; nor that he set up a *maison de prêt* or pawnshop. The many "innocentes inventions" of his later life make it easy to believe that he was a clever and precocious boy, who left his native town to study surgery in Paris at a very early age. He did not go through the regular mill there, but in 1606, when 22 (or 20) years of age, went to Montpellier, where the Faculty gave him the degree of M.D. after three months' residence. This was the root of many of the troubles of his later life. What befell Renaudot during the next six years is disputed. According to his own account, he spent several years in travel, studying medicine at various centres, then settled as a physician at Loudun and quickly gained a great reputation throughout Poitou and the neighbouring provinces. His enemies alleged that from Montpellier he went straight back to Loudun, and failing in practice had to become a teacher in a school to keep body and soul together.

However this may be, there seems no doubt that he went to Paris in 1612 to practise as a physician, but again, according to his enemies, had to become a school teacher, eking out a living by taking boarders. He, however, asserted that he was at once appointed a physician to the King with a salary of 800 livres a year. His enemies did not dispute the appointment, but alleged that it was a mere title, easily obtained, and not carrying any salary. Even so, it must have served to regularize his position to some extent, and it is remarkable that a young provincial—he was at most only 28—should have received the title, if it were no more. The explanation given is that he was befriended by Richelieu, then the all-powerful minister, ever ready to attach to himself men of talent and energy, more particularly if they came from his own province of Poitou. This theory seems the more probable in view of the concessions or privileges he received subsequently. He encountered much opposition and appears after a short time to have gone back to Loudun. But he returned to Paris, and in 1630 finally got leave to open his registry office (Bureau d'Adresse) and to start his *Gazette*, the first number of which appeared on May 30th, 1631. In planning and conducting it he is said to have been greatly helped by Théodore Godefroy, the famous genealogist, P. Hozier, whose occupation led to his having a very large number of correspondents in France and other countries. Richelieu communicated official documents, and it is even asserted that Louis XIII was an occasional contributor. Two numbers were published weekly, the one entitled *Gazette*, the other *Nouvelles Ordinaires*. In addition, supplements were issued from time to time containing individual narratives and official documents. At the end of the year the various documents were gathered into a volume, and issued with a preface under the general title *Recueil des Gazettes*. A writer in the *Literary Supplement* last year stated that Renaudot had three correspondents in England—one in London, another at Chester for Ireland, and a third at Berwick for Scotland. They wrote weekly letters, and special attention was given to British affairs both in the *Gazette* and the annual *Recueils*. Advertisements were not inserted in the *Gazette*, but were printed in a separate sheet, *Feuilles du Bureau d'Adresse*; this no doubt meant a considerable economy in printer's charges.

In his plan for a registry Renaudot was anticipated in England, where Sir Arthur Gorges and Sir Walter Cope obtained letters patent for a Publique Register for General Commerce in 1611, but as they had neglected to obtain the right to charge fees the scheme was abandoned. It was not until some forty years later that it was revived, and an office of General Accomodation by Addresse was opened in Mr. Fisher's house in King Street, Covent Garden. Henry Robinson, a city merchant and writer on economics, also set up an Office of Addresses and Encounters in Threadneedle Street. In his newspaper enterprises Renaudot had several imitators in England; the *London Gazette*—at first called the *Oxford Gazette*, for the Government had removed there to avoid the plague—appeared first in 1665. At about the same time his advertisement sheet was imitated in London by the issue of a weekly sheet of advertisements called the *City Mercurie*.

It may also be claimed for Renaudot that he was a pioneer of the meetings for scientific discussion which have now come to play so important a part in the progress of knowledge. He invited persons of a scientific or curious turn of mind to assemble at his registry office to discuss subjects announced beforehand in his advertisement sheet, and published reports of what took place. Richelieu founded the French Academy in 1635 and it is possible did not regard this "invention" as innocent.

In spite of all the other irons he had in the fire, Renaudot continued to practise medicine himself, and imported doctors from the University of Montpellier and other provincial universities to assist him and to help in the distribution of certain secret remedies, apparently all of them containing antimony. He established a kind of free clinic for the poor, and announced that the King had given him a site on which he proposed to erect a building for this purpose. According to law only graduates of the University of Paris could practise in that city. In 1566 the prescription of antimony as a drug had been condemned by the highest legal authority in Paris, the Parlement, and the majority of physicians in Paris, led by Guy Patin, still strongly objected to its use. Eventually the Faculty raised an action against Renaudot on various grounds. It has generally been assumed that the opposition of the Faculty to Renaudot and his associates was due to pure prejudice, but it must be admitted that the Faculty had good grounds to object to some of Renaudot's proceedings, and in particular to his combination of medicine and pawnbroking; even as a pawnbroker his hands were not clean. The court by which the case was first heard found against Renaudot and his provincial friends on December 9th, 1643, and forbade them to practise or to hold meetings. Renaudot appealed to the higher court (the Parlement), which not only rejected his appeal (on March 1st, 1644) but suppressed his pawnshop, on the ground that it was injurious to the public interest, and directed all the objects pledged to be returned to the owners; he was allowed to continue his registry office and *Gazette*. In spite of the judgement against him Renaudot continued to practise and to sell his remedies, and lived long enough to see the condemnation of the use of antimony withdrawn. Towards the end of his life he was made historiographer to the King and died at the Louvre in, as has been said, 1653. In one way and another Renaudot must have made a good deal of money, but seems to have kept little of it. Guy Patin alleged that he died in poverty, but others assert that he left a modest fortune.

Of Renaudot's three sons two took to medicine; both had difficulties with the Faculty and had to go to law to obtain admission. Both, however, were admitted during their father's lifetime, though they had to disavow his conduct and

to promise to have nothing to do with the registry office; no formal objection, however, was made to the r continuing the *Gazette*, which went on until 1692. The younger of the two, Eusebius, became physician to the Dauphin and Dauphine, and had among his fourteen children a son, also Eusebius, a distinguished theologian and Orientalist, and a member of the French Academy.

THE HEALTH OF THE SCHOOL CHILD.

The annual report of the chief medical officer of the Board of Education[1] for 1921 has taken a new form, for this year it is compressed into a hundred pages "on the ground of economy," and the familiar blue cover is missing. The most noteworthy part of the report is a general survey of school medical work and of its meaning.

School medical inspection was established by Act of Parliament in 1907 for two principal reasons: First, it was found that many school children failed to reap advantage of a compulsory system of free national education on account of physical disability, and that the only way to detect its extent and secure prevention or remedy was a system of universal medical inspection. Secondly, as time passed it became evident that a close and vital relation existed between the physical condition of the child and the health and capacity of the whole population. Thus the State was compelled for the sake of the national well-being to deal with the physical condition of the school child. John Colet in the sixteenth century and John Locke in the seventeenth insisted that the physical fitness of the child lay at the founda ion of its education, and this was demonstrated in the nineteenth century by Ware, Priestley Smith, Dukes, Warner, and others in this country, and by many workers abroad. At present there is in being a national system of medical inspection and supervision of the school child. The system is not complete or adequate because the obligation of medical supervision has only existed during the last four difficult years; it is not yet being worked perfectly and therefore is no yielding its fullest results; but it is available and it is universal. Medical treatment is but partial in its scope and prevention, and inadequate in degree; and we are still, in many educational areas, lacking such elementary auxiliaries and equipment as sanitary schools, satisfactory playgrounds and open spaces, manual and craft workrooms, school baths, open-air classrooms, and the apparatus and space for adequate physical training.

Scope of School Medical Service.

The fundamental objects of the school medical service are the inspection and supervision, not only of children known or suspected to be weakly or diseased, but of all children attending school. The child is inspected and, if found defective, is referred for treatment, is "followed up," and is subsequently reinspected. In practice this means an annual medical examina ion of 2½ million children. The total number of medical practitioners engaged (whole or part-time), including specialists for consultation, is now approximately 2 000; besides, there are some 3,000 school nurses partly or wholly occupied in school work. The adequacy of the treatment, the problem of the irresponsible or indifferent parent, and the manner of the provision of treatment are in turn considered in the report. At the present time two facts are evident: first, that the majority of the parents of children in elementary schools who need medical treatment cannot pay a remunerative fee; second, that the person to provide the treatment should whenever practicable be the general or special medical practitioner. Private practitioners cannot, however, afford to work for nothing or for an unremunerative fee, and are often not in a positio to deal adequately and in detail, day by day, with the common defects of school children, such as defective vision, carious teeth, adenoids, ringworm, and minor ailments. The remedy is generally held to be the school clinic, with a restriction that it should treat only the kinds of malady which cannot as a rule be dealt with in private practice.

The very success of the clinic, the report states, may prove its hurt; 291 out of 316 authorities have established clinics. It is urged that the authorities should p riodically examine their institutions to learn whether their work deals exclusively with the conditions of disease prescribed, and not with maladies outside the schedule; whether there are adequate charges to parents who can pay; whether the accommodation is sufficient, and the medical and nursing staffs are competent.

Co-ordination of Public Health with Education Authorities.

The national aspect which this school work assumes has necessitated the linking-up of the work with the general public health service of the country, hence the co-ordination of the work with the Ministry of Health, provided in the Act of 1919—a feature which is real, notwithstanding that it is inevitable that school children must be considered, inspected, and treated as school denizens, and not at large. So that it comes about that of the 316 school medical officers who are the chief medical officers of the education authority in the different areas, 283 are also the medical officers of health of the sanitary authorities in the same areas thus joining in one medical officer the two services, as they are joined at the Board of Education and the Ministry of Health.

From the initiation of this medical work in the schools a substantial and increasing part in medical treatment has been taken by general and special medical practitioners. For obvious reasons these cannot, as a rule, devote the necessary time to the day by day routine duties of inspection in the schools. But the medical treatment which may be necessitated is performed in large measure by them in hospitals, clinics, or other centres, as well as in private practice in the homes of the children. In this way a very large amount of new medical work has fallen to their lot as a result of the school medical service.

Direct medical treatment of the physical and mental defects of school children is not the only, or indeed the appropriate, method of dealing with some of the disabilities of school age. There must be an educational provision. This is found in the system of special schools for the blind, deaf and dumb, feeble-minded, epileptics, tuberculous, cripples, and in the provision of open-air schools for the feeble of health. These provisions are costly but not wholly unremunerative, for it is found that 50 per cent. of the blind, 80 per cent. of the deaf, 75 per cent. of the cripples, and some 40 per cent. of the mentally defective can be equipped for independent wage-earning. This is no small achievement.

The cost of the school medical service as regards inspection and treatment for the year amounts to £1,300,000; the special schools cost an almost equal sum; these, with the provision for physical training, evening play centres, nursery schools, and the provision of meals bring the total to £2,982,000. The average cost of the strictly medical service is about five shillings for each school child in attendance at the elementary schools.

Special note is made of the desirability for the teaching of hygiene in schools. An illuminating statement is made of the manner in which this teaching may be made of the highest value to the child:

> "There is no subject in the school curriculum which has a more romantic story behind it than the triumphs of the progress of hygiene in recent years, and the story has the advantage of being always new and expanding; it can be told in the simplest language, and it is woven into the geography and history of the world."

The School Child and Industry.

In the succeeding sections of the report summaries are given of the work done in the educational areas, with special references to the findings of the school medical officers of some of the areas. In the final section of the report reference is made to the necessity for correlation of the duties of the school medical officer and of the certifying factory surgeon. In the Leicester area some of the medical officers do the double duty, to the greater effectiveness of their work. Dr. Joseph of Warrington, after a special investigation into the matter, concludes that one thing is abundantly manifest, that after all the care and expense bestowed both on the child's education and his physical welfare during school life there is an enormous waste of valuable effort and material through the slipshod manner in which a large proportion of our future citizens are allowed to drift into any form of occupation; and it seems to him very probable that if more attention were paid to this matter there would be in later years less industrial unrest among adults.

Unsuitable employment on the one hand, and the ill health and insufficient physique of an adolescent in relation to his employment on the other, are two fruitful causes of unrest and instability of youth in industry. It is a problem for the solution of which medicine must join hands with common sense, and education with social understanding of industry.

[1] *The Health of the School Child.* Annual Report of the Chief Medical Officer of the Board of Education for the Year 1921. London: H.M. Stationery Office. 1922. (Pp. 103. 1s. 6d. net.)

British Medical Journal.

SATURDAY, OCTOBER 28TH, 1922.

THE PANEL CONFERENCE.

THE time of the Annual Conference of representatives of Local Medical and Panel Committees, held in London last week, was chiefly occupied in considering the position that is likely to arise when the present contracts between the Ministry of Health and insurance practitioners terminate at the end of next year. The scope of such deliberations is of necessity very wide, and much ground has to be covered before the issues can be narrowed down to practical dimensions. A full report of the Conference is given in the SUPPLEMENT this week. The motions put forward by the Insurance Acts Committee and the amendments thereto served as a basis for discussions which were in effect consultations between the representatives of the Local Medical and Panel Committees and the Insurance Acts Committee on matters of policy likely to be raised in the event of pressure being brought to bear on the medical profession to accept undesirable terms of service in the future.

After agreeing to the system of collective bargaining in dealing with the Government, the alternative policies that might be adopted in case of refusal to serve were critically examined in the light of local information from the various Panel Committee areas. The opinions expressed naturally brought into prominence not only the wide differences of conditions obtaining in various types of practice, but also as great divergencies of conditions in different areas of the same type, such as colliery and industrial districts, and emphasized the complexity of the problem of finding a scheme capable of universal application. The outcome of this debate was an instruction to the Insurance Acts Committee to prepare a revised scheme, which will in due course be circulated to all insurance practitioners, discussed by all Local Medical and Panel Committees, and finally brought before another conference of Local Medical and Panel Committee representatives.

Three other matters of importance seem to call for brief reference here. The question of friendly society control of insurance practitioners did not come before the Conference directly, but it was manifest that opinion on this point was, if possible, stronger than ever. At the same time the desire of the profession to meet these bodies and any other persons interested, with a view to improving the medical service, was clearly demonstrated by the adoption of a motion authorizing the Insurance Acts Committee to promote such a conference. In the second place the Conference generally showed concern for a closer working agreement between the different organized groups of the profession, and more particularly in regard to recent negotiations between the Insurance Acts Committee and the Medical Practitioners' Union. Some disappointment was expressed at failure to report definite progress under this head, but the subject was left on the understanding that consideration of it was proceeding; a definite announcement was promised at as early a date as possible. In order to allow the Insurance Acts Committee a free hand [illegible] given to the increase in the [illegible] the subcommittee charged [illegible]. Thirdly, the report to [illegible] Trust Fund was [illegible], but it [illegible] fund. It the fund is to be an index of the quickening of the mind of the profession to its possible needs in the future, the next six months ought to show a very different rate of augmentation.

On the whole the Conference accomplished a satisfactory amount of preliminary spade work in digging the necessary foundations of an organized plan of campaign against possible future contingencies. There was a noticeable reluctance on the part of some members of the Conference to underestimate the difficulties in their constituencies. However disappointing this may seem at the moment, it is a healthy sign. If the Conference is to fulfil its purpose it must reflect accurately the opinions of the main body of insurance practitioners. The picture must not flatter, but be a plain, "speaking" likeness. Some whose personal enthusiasm and ideals lead them in the excitement of debate to give too rosy a view of their local organization no more help the Conference than those who, having only, as it seems to them, unsatisfactory conditions to report, are tempted to keep silent. Representatives of Local Medical and Panel Committees have now to educate their constituents to face the grave difficulties in front of them; they must measure and develop the spirit of sacrifice, without which no real success is possible: the main body of their constituents must learn that the best central organization can be paralysed by apathy and inactivity at the periphery.

THE ANNUAL REPORT OF THE BOARD OF CONTROL.

No longer can the problem of mental disorder in general and the welfare of the certified insane in particular be regarded as the exclusive concern of those who are actually engaged in the care of the mentally unsound and the management of asylums: the problem is one of great social importance, and it thus becomes the concern of the community as a whole. This fact is now being more generally recognized, and for this reason the Report of the Board of Control, which is responsible for the supervision of 123,714 notified insane and 13,810 mentally defective patients, tends to receive more attention from the general public at the present time than was formerly the case. It is well that it should be so, because the Report contains a number of interesting facts and comments, and it shows the magnitude of the work for which the Board is responsible and the difficulties with which it is confronted in endeavouring to carry it out satisfactorily.

The prefatory note describes the year 1921 as having been one of great administrative difficulty. The unfavourable financial conditions prevailing throughout the country rendered it necessary to adopt a policy of the strictest economy, with the result that many matters important for the treatment of asylum patients and the conditions under which they live had to be postponed. It is, perhaps, not the asylums, however, which have suffered the most from the existing financial conditions. Rather is it the development of work under the Mental Deficiency Act which has been most retarded owing to the need for economy. Fortunately, as the Report shows, the Geddes Committee recognized the work of the Board of Control in relation to mental deficiency as essential to the physical and moral health of the nation, and refrained from suggesting any reduction in the vote. Certain concessions have been made for 1922–23 which it is hoped will enable local authorities to deal with new "urgent" cases which may arise, but the whole position in regard to mental defectives is most unsatisfactory, and the problem they create cannot be effectively dealt with under present financial conditions. In areas where ascertainment has been

thoroughly carried out it is found that the number of cases requiring institutional care is far in excess of the number for whom an Exchequer grant is made. Where branch associations of the Central Association for Mental Welfare have been established valuable work is being done in spite of adverse financial conditions, and we are glad to observe that the Report includes a well-deserved tribute to the work of this organization. By providing for the supervision of cases for whom institutional care is not available or not desirable, by organizing occupation centres, and supplementing the activities of the statutory committees, the Association has carried out work of incalculable value to the community.

On January 1st, 1922, the number of notified insane in England and Wales showed an increase of 3,370 on that recorded on January 1st, 1921. The main factor in the increase during 1921 was the very low number of deaths in asylums. The death rate calculated on the daily average number resident was 8.37 per cent., or 0.27 lower than in the preceding year, which was the lowest previously recorded. The causes of death are divided into primary and secondary or contributory. The number of deaths from tuberculosis amounted to 1,497. The rate per 1,000 reckoned on the total incidence was 15.6, as compared with 13.6 for primary cases only, the number being increased by the addition of "secondary" cases from 1,304 to 1,497. Dysentery, from which 183 deaths were returned as the "primary" cause, was actually present in 237 cases, these therefore representing the total incidence of death from these causes. A careful analysis of the returns furnished of the occurrence of dysentery and diarrhoea in the county and borough asylums is included in the Report, and an interesting record of researches now in progress at a number of asylums indicates that every attempt is being made to lessen the incidence of dysentery in these institutions.

The resumption of full medical records, which had largely been suspended during the war, has now allowed of a return to the pre-war practice; and the tables dealing with the "Causes of Insanity" for the year 1920 have been duly prepared and filed at the office of the Board for reference. A summary of causes and associated factors in insanity stated that insane heredity was found in 15.4 per cent. of males and 22.4 per cent. of females, both less than that discovered in the years 1909-13. A psychopathic family history is, however, probably present in a much greater proportion of insane cases than these figures indicate. The sources of error are manifold. In some cases no history is ascertainable, and in others it is concealed by the relatives; moreover, some medical officers take more trouble to obtain an accurate history than do others. In spite of the fact that, as far as these tables are concerned, prolonged mental stress appears to be the most frequent causal factor in the production of insanity, we fear that the hereditary factor has a far greater influence than the figures indicate. It is of sociological interest to observe the decline in the share taken by alcoholism and inebriety in the etiology of insanity, which in 1920 yielded a rate amongst females only one-half that in 1909–13, and in males not much above one-half. The value of some of the statistics is diminished on account of the method of classification adopted in asylums. The Board recognizes that a more modern nomenclature of the forms of insanity is necessary, and it is much to be desired that one more in harmony with present-day psychiatry will before long be adopted.

Adverse comments are made in the Report on the tendency of some Poor Law institutions to retain cases of acute insanity for whose care and attention mental hospitals have been especially provided. It is pointed out that the wards of a Poor Law institution are not well adapted for acute mental cases, and that it was never intended that such cases should remain in them for more than a short period of observation. The Board considers that even if the law remains unchanged the principle which obtains in certain districts of sending all cases of mental disorder to the mental hospital through the Poor Law institution is to be deprecated, and goes on to observe that, although it is possible in some cases to avoid the so-called stigma of certification, direct admission to the mental hospital is the wisest course. Many of the patients now detained in Poor Law institutions, where expert treatment is impossible, are essentially those for whom it is necessary to amend the existing lunacy laws, so that they may be able to obtain the most appropriate and up-to-date treatment for a period without certification.

The Report includes some important recommendations in regard to the question of voluntary boarders in registered hospitals and licensed houses. As a result of certain complaints which have been made it is suggested that a printed notice setting out the main facts should be handed to the boarder on his arrival, in order that he should be under no misconception as to his position, and should be fully aware of his right to leave on giving notice. Another important recommendation is made in regard to the certification of the voluntary boarder—namely, that he should never be placed under certificates while in residence, unless such a course be absolutely necessary for the safety of the patient or for the protection of the public. We are in entire agreement with these suggestions, and feel that if, as is most desirable, the voluntary system should be extended to the borough and county mental hospitals similar procedures should be carried out. It is only by adopting an attitude of complete frankness towards the patient who voluntarily places himself under treatment that the mental hospitals of the future will succeed in gaining the complete confidence of the public.

THE "VICTORY": 1805–1922.

Admiral of the Fleet Sir F. C. Doveton Sturdee is making an appeal on behalf of the Society for Nautical Research for funds to save the *Victory*, and to restore her, so far as money will permit, to her condition at Trafalgar. The Admiralty has moved the *Victory* into a dock consecrated to her sole use and has supported her sound timbers by an iron cradle, but has no funds to do more. But more is necessary if she is to be maintained as a reminder of the great days of the British Navy. She was laid down in 1759, and before Trafalgar had seen much service, for she was the flagship of Sir John Jervis when, with 15 ships against 27, he won the great victory of St. Vincent. She was the flagship of Lord Hood when he occupied Toulon and conquered Corsica; of Lord Howe when he relieved Gibraltar after three years of siege, and also of Keppel and Kempenfelt. Her surgeon at Trafalgar was Beatty, afterwards Sir William Beatty, who had joined on December 14th, 1804. He had as assistant surgeons Smith and Westemberg, and after the battle was joined by Surgeon Britton, of H.M.S. *Pickle*. Beatty's carefully compiled journal states that on the *Victory* prior to the battle there were five deaths and two hospital cases. Of the deaths one was from fever, three from consumption, and one from injury to the spine. The two patients in hospital were both suffering from consumption. At the battle there were 102 casualties, with five deaths, besides that of Lord Nelson. Five of the worst cases were left at Gibraltar, and five had not recovered from their wounds when the vessel was put out of commission at Chatham. All the others recovered on board. The five deaths were Midshipman Alexander Palmer, shot through the thigh, who died of tetanus on October 28th; Henry Cranswell, seaman, who sustained multiple contused wounds and simple fracture of the tibia and fibula, and died on October 26th from gangrene; Joseph Gordon, seaman, who underwent amputation of the thigh, and died after a sudden spasm on October 27th; William Brown, seaman, wounded by grapeshot through the lower part of the left

thorax, who died on October 23rd of internal haemorrhage; and Richard Jewell, seaman, who underwent amputation of the thigh through the great trochanter on October 23rd and died shortly after. Beatty, in his *Authentic Narrative of the Death of Lord Nelson*, relates how on the morning of October 21st Lord Nelson fastened on his coat besides the Orders of St. Ferdinand, the Crescent, and St. Joachim, the Star of the Order of the Bath over his heart. The *Victory* had been laid alongside the *Redoubtable*, so that it was almost possible to leap from one to the other, and upon the mizzen-top of the *Redoubtable* were posted two seamen with muskets. Lord Nelson was standing on the quarter-deck talking to his captain, Sir Charles Hardy—his secretary, Mr. Scot, had already been shot beside him, and some of his blood soiled Lord Nelson's coat. The distance from the mizzen-top of the *Redoubtable* was not more than fifteen yards: one of the French seamen fired and hit Lord Nelson. The ball entered just below the left epaulette, fracturing the acromion, and, descending obliquely into the thorax, fractured the second and third ribs; it passed through the left side of the lung, dividing an artery; it entered the left side of the spine, between the sixth and seventh dorsal vertebrae, fractured the left transverse process of the sixth, and the right transverse process of the seventh vertebrae, wounded the spinal cord, and, passing through the muscles of the back, lodged about two inches below the inferior angle of the right scapula, where it was found with a portion of gold lace, a piece of the epaulette. Lord Nelson recognized that he had been shot through the spine, and that he had lost sensation and movement below the level of the injury. He suffered greatly from thirst and difficulty in breathing, owing to haemorrhage into the pleura, which he bore with exemplary fortitude until he died, two and three-quarter hours after being wounded. As there were no embalming materials on board, his body was placed in a cask filled with brandy, which was changed twice on the voyage home. On arrival the viscera were removed, when all the organs were found free from disease and deterioration. Owing to inherited gout he had not taken meat or wine for two years. At the same time Beatty examined the injury and removed the ball. Beatty, when he wrote his book (1807), styled himself Physician to the Fleet. In 1817 he became M.D. of St. Andrews, and was admitted to the order of Licentiates as it then existed of the Royal College of Physicians of London. In 1818 he was elected F.R.S. In 1822 he became resident physician to Greenwich Hospital; he was knighted by King William IV in 1831. He retired in 1840; he died unmarried in 1842, and was buried in Kensal Green Cemetery, but the spot cannot be identified. We are indebted for most of the facts here stated to a paper by Dr. S. D. Clippingdale, published in the *Journal of the Royal Naval Medical Service* in 1915.

THE HARVEIAN COMMEMORATION.

In accordance with custom and in compliance with Harvey's instructions in the indenture by which he founded the Harveian Festival, a dinner was held within the Royal College of Physicians of London on the evening of St. Luke's Day, when the Oration, published last week, was delivered. The guests were the Bishop of Worcester, Assistant Chaplain-General to the Army during the war (1916–19); Sir Aston Webb, K.C.V.O., President of the Royal Academy; Sir Anthony Bowlby, K.C.B., President of the Royal College of Surgeons of England; Sir Robert Hill, K.C.B., Medical Director-General R.N.; Mr. H. J. Waring, F.R.C.S., Vice-Chancellor of the University of London; Sir Stanley Leathes, K.C.B., First Civil Service Commissioner; Mr. T. J. C. Tomlin, K.C., senior standing counsel to the Crown; Sir John Tweedy, Bart., Walter Pye, F.R.C.S., the Master of St. John's College, Cambridge (Dr. R. F. Scott), and the Master of Gonville and Caius College, Cambridge (Sir Hugh Kerr Anderson, M.D.). The President, in proposing the toast of "The Guests," recalled that St. John's was the College of Linacre, the founder of the College of Physicians, and Caius the college of Harvey. The health of the Harveian Orator was proposed in eloquent terms by the senior censor, Dr. Raymond Crawfurd, and briefly acknowledged by Dr. Chaplin.

THE MOTOR SHOW.

The International Passenger Car Show, commonly called the Motor Show, will open on Friday next, after a private view on the previous day. We propose to publish in our issue of next week (November 4th) an article by Mr. Massac Buist describing the show, at which, as he told us last week, this autumn's products alone will, with a few exceptions, be exhibited. This show is the principal event in the motor world, when manufacturers submit their newest types of cars and accessories to the judgement of the critic and for the instruction of the public. Owing to the great demand for space the show is to be divided, part of the exhibits being displayed at Olympia, Kensington, and part at the White City, Shepherd's Bush. The one ticket admits to both portions, and arrangements have been made to convey visitors from the one to the other. During the last few weeks and this week our advertisement columns have contained a number of notices by leading manufacturers, the perusal of which will have assisted readers to appreciate some of the new developments; they will be more fully described in the article to be published next week. The show will close on Saturday, November 11th.

PROFESSOR JOHN CLELAND, M.D., LL.D., F.R.S.

Former students of Professor John Cleland in the University of Glasgow will be interested to read a letter received by Professor James Battersby, one of the honorary secretaries of the Section of Anatomy at the Annual Meeting of the British Medical Association in Glasgow. The proceedings of this Section are reported in the Journal this week. At the opening of the meeting, on the suggestion of the President Professor Alexander Macphail, a message was sent to Professsor Cleland (now in his 88th year) expressing the esteem, high regard, and affection in which this veteran anatomist is held. His acknowledgement runs: "Please convey my most grateful thanks and hearty good wishes to the Anatomy Section of the British Medical Association. I can assure them that their kind messages are deeply appreciated by me. To those who are old students of my own I would add my most affectionate remembrances and appreciation of their regard."

THE COMMERCIAL DISINFECTION OF WOOL AND HAIR.

The Advisory Committee on Anthrax, set up by the International Labour Organization, will meet in London on December 5th, under the chairmanship of Sir William Middlebrook, M.P. The Governments of Belgium, France, Germany, India, Italy, Japan, South Africa, Spain, and Sweden will be represented. The International Labour Organization, though maintained out of the funds of the League, was established not by the covenant but by the special section of the peace treaties; Germany, for example, has been a member of the Organization from the first. The United States has not joined, and will not be officially represented at the meeting in London, but it is sending the chief of its Biochemic Division of the Bureau of Animal Industry to act in an unofficial capacity. The original proposal of the International Labour Organization was for disinfection of wool at the ports, under the supervision of an international commission. It was objected, however, that certain processes of disinfection were of doubtful efficacy and might have injurious effects on the quality of the wool, and that anthrax spores were frequently carried in hides and skins, which, strangely enough, had not been included in the scope of the proposals. The committee which is to meet in London is to examine the whole question and make proposals. An illustrated account of the fine

station for the disinfection of wool and hair erected on a site adjoining the wool warehouses of the Mersey Docks and Harbour Board of Liverpool was published in this JOURNAL of December 3rd, 1921 (p. 952).

THE GENERAL PRACTITIONER'S SHARE IN MEDICAL RESEARCH.

THE latest convert to Sir James Mackenzie's teaching that the greatest need of medicine to day is to seek out the beginnings of disease is Lord Riddell, who has given a very understanding account of the doctrine in *John o' London's Weekly* (October 21st). The matter, he says, may be put "in a nutshell. The ordinary method of investigation is to begin with the disease and work back to find the cause. Sir James says that the proper method is to watch for the cause and work up to the disease. Thus, instead of travelling from B (the disease) to A (the cause), you must reverse the order and travel from A (the cause) to B (the disease). This sounds practical common sense." But is not this to ask of medicine more than is asked of even the exacter sciences? Whether it be the chemist observing an unexpected precipitate, or an astronomer measuring the variability of a star, the new phenomenon must be accurately recorded and verified before its explanation is sought, the observation of the effect must precede the search for its cause, the existence of a problem must come before its solution can be considered. These are commonplaces to which we have no doubt Sir James Mackenzie would subscribe, but their application to medicine presents special difficulties. It might be a very good thing if everyone went periodically to his doctor to be vetted, but, as things are, few go until they feel ill, and, as experience proves, if the disease be chronic, only too often when the mischief is done. But this is not always the case, and the reply of the St. Andrews school will be something to this effect: "Granted all that, there are still a good many instances in which people seek advice for some slight and, as they hope, transient feeling of indisposition, or because, without any definite symptoms they can recognize, they feel below par: that may give a chance to investigate disease before the occurrence of any structural change in any organ. Or again, an acute febrile attack, such as may be caused by catarrh of the upper respiratory passages, of no great importance in itself, may give the doctor his opportunity." If this be so, then the application of what we may call the St. Andrews doctrine falls to the general practitioner, who alone can follow in Sir James Mackenzie's footsteps. He is in the best position to observe the beginnings of disease, and he alone can follow up patients and observe the outcome of complaints. The task as we have briefly stated it is very wide, and there is the risk of a diffusion of energy, the besetting difficulty of the general practitioner who desires to work in the scientific spirit. All difficulties, however, may be overcome if the public learns to take sufficient interest, and it is significant that a journalist so experienced as Lord Riddell should, by publishing the article to which we are referring, show that he believes the public can be interested.

VIRUS DISEASES IN PLANTS AND ANIMALS.

AT a meeting of the Association of Economic Biologists on October 13th at South Kensington a discussion took place on virus diseases in plants and in animals and man. Dr. E. J. Butler, of the Imperial Bureau of Mycology, who spoke on the subject in relation to plants, said that the first demonstration that disease could be caused by a filtrable virus was given by Iwanowski in 1892. This related to the mosaic disease of tobacco, a disease now known in nearly a hundred species of plants. Other diseases, such as peach-yellows, were probably caused by similar agents, though the filtered juice was not infective. The chief method of transmission of virus diseases in plants was by insects, and infection might be hereditary in the insect transmitter. Mere contact would not cause infection. The causal agents were believed to be living organisms, and large amoebiform corpuscles or smaller granules had been found by several recent investigators in infected cells. The subject of virus diseases in animals and man was dealt with by Dr. J. A. Arkwright, of the Lister Institute (now, happily, recovered from typhus), who said that the chief points of interest common to plant and animal virus diseases concerned the nature and properties of the virus; the means of transmission—that is to say, the "carriers" and insect vectors; the measures of prevention, such as breeding or selection, and isolation or destruction; and perhaps also the concentration of the virus in certain special tissue cells. About fifty animal virus diseases had been described. They might be placed, roughly, in four categories. There were those in which the virus was visible, not filtrable, and not cultivated; those in which it was probably visible, filtrable, and cultivated; those in which it was possibly in some cases visible in the tissues, filtrable, and not cultivated; and, finally, those in which it was filtrable and very resistant. An example of the first of these categories was Rickettsia; of the second pleuro-pneumonia of cattle and poliomyelitis; in the third foot-and-mouth disease and vacciuia; and in the fourth fowl-pox and infectious pneumonia of horses. In their general properties most of the viruses did not differ much from bacteria, though some showed great resistance to drying, glycerin, and heat. The smallest clearly visible and largest filtrable particle were of the same order of size—about 0.2 micron—and the differentiation of colloidal particles of this order by means of the microscope was often extremely difficult and required attention rather to the arrangement and range of size and shape than to the appearance of the individual particles. Dr. Arkwright regarded it as theoretically possible on certain analogies that an enzyme might be the cause of infectious disease.

"KAFFIR COW-POX."

THE *Times* of October 17th published the following brief news note: "Kaffir cow-pox has reappeared in some of the northern towns of Jamaica. It has assumed a more serious aspect than the outbreak of last year, several deaths having been recorded." No doubt this refers to mild or modified small-pox, such as has occurred in many parts of the world in recent years, but it would require local knowledge to explain how the term "Kaffir" reached Jamaica in that connexion. In a letter which we published on August 12th (p. 283) Dr. R. U. Moffat stated that the name "Kaffir pox" was brought into use for small-pox in Kimberley forty years ago because the place then depended for food and fuel on bullock-wagon transport, and was threatened with starvation owing to the alarm of small-pox stopping the traffic. As we have urged, and as the Ministry of Health has advocated in a leaflet on mild small-pox—commented on by us on August 19th (p. 316)—where an outbreak is regarded as variolous it ought to be called small-pox qualified by an adjective such as mild or modified. Terms like alastrim, amaas, Kaffir, and so forth only lead to confusion. It may be pointed out that the statement in the *Times* note about Kaffir cow-pox being more severe in type in Jamaica than in the previous year rather agrees with an observation made by Dr. Monckton Copeman in his report on such an outbreak in England, published by the Ministry of Health in its volume for 1919–20. In the course of his early visits Dr. Copeman had expressed the opinion that "as the disease gradually became more acclimatized" it would tend to "approach more nearly to the type of small-pox as ordinarily met with in this country." That is what happened; in the later cases the severity of the symptoms was markedly greater. No such development, however, is recorded in many outbreaks, but in our last issue (p. 775) Dr. Wanklyn gave a warning as to the high fatality rate of the disease in and around London, notwithstanding that the outbreak included cases so mild as to be mistaken for chicken-pox. To-day we publish (p. 819) Dr. Hamer's report

to the London County Council on groups of cases in the outbreak. He points out the striking contrast between the 700 cases with one death in the Midlands and the North during the present year, and the five deaths in 19 cases in and around London between July 26th and October 15th. He emphasizes also Dr. Wanklyn's warning as to the need for prompt recognition at the earliest possible stage of the disease. The warning should be heeded. We have had comparatively little small-pox, and hardly any of it severe, for years past, but it may come at any time like a thief in the night, and may readily spread in a population now so largely unprotected against its assault.

FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE.

At the fourth congress of the Far Eastern Association of Tropical Medicine which was held at Weltevreden, Java, in August, 1921, a proposal was made on behalf of the Governments of the Straits Settlements and Federated Malay States by their delegate, Dr. A. E. Horn, that the next meeting of the Association should be held in Malaya in 1923, was adopted and Dr. A. E. Horn was chosen president; Drs. A. L. Hoops and R. Dowden were elected vice-presidents for the Straits Settlements and Federated Malay States respectively; and Dr. Scharff honorary secretary for Malaya. It has been decided to hold the meeting at Singapore from September 3rd to 17th, 1923. The first week of this period will be devoted to scientific discussions, and the following week to excursions to points of medical and sanitary interest throughout Malaya. The Governments of the Straits Settlements and Federated Malay States recognize the important work done by the Association and are contributing a considerable sum towards the expenses. The object is to promote the science and art of tropical medicine in the Far East. For this purpose the Association endeavours to unite into one compact organization the medical profession of the Far East, for the growth and diffusion of medical knowledge; to promote friendly international intercourse among physicians: to elevate the standard of medical education; to enlighten and direct public opinion in regard to the problems of hygiene; to form habits which may conduce to the prevention of disease among the native population; and to present to the world the results of such scientific observations. The membership of the Association is open to the members of all duly constituted, regularly organized medical societies within the field of the organization, and all medical officials in the civil, military, naval, or other organized services of Governments within their territories. Those who wish to submit papers are asked to communicate as soon as possible with the honorary secretary.

"THE NEW MEAL POKE."

It is nearly twenty years since a volume called the *Meal Poke* was published to help a students' bazaar in Dundee. The *New Meal Poke* has now been issued with a similar object; in this instance it is to help a bazaar to be held, in the words of the Chancellor, Earl Haig, to obtain money "to provide more suitable opportunities for our Dundee students to obtain proper health-giving relaxation from the classroom and study. The rapid growth in the number of students at the College makes the matter an urgent one." The new volume has been prepared for the Students' Representative Council by a small committee, and we observe that the address to the friendly reader on behalf of the Dundee Committee of the Students' Representative Council is signed by Dr. R. C. Buist and Mr. E. O'Brien. The name "meal poke" is, if we may say so without presumption, something of a misnomer, for a poke of meal consists only of one sort of thing—meal—whereas this poke contains many sorts of things, from a poem by Mr. Hardy to an essay by Mr. E. V. Lucas, from a reminiscence by Sir J. M. Barrie to a song by Dr. David Rorie, about which we can venture no opinion until we have heard him sing it. Many of the other contributions to the text attain a high order of merit; there are several translations, one from the Provençal of Count William of Poitiers, by Professor A. Blyth Webster, which gives some idea to those unacquainted with that dialect of what was accomplished in it. The contributions, indeed, are evidence of how well the Muses are cherished at Dundee and St. Andrews, and the illustrations also reach a high order of merit; Dr. R. C. Buist has written a sonnet for the frontispiece—"Lifelinks," by Alec Grieve. The volume has been produced in excellent style by Messrs. George E. Findlay, Victoria Printing Works, 6, Victoria Road, Dundee, and the net price is half a crown. The postage would seem to be 4½d. There is also an edition de luxe, limited to 200 copies, but the price of it is not stated.

THE NEW MINISTRY.

The resignation of Mr. Lloyd George's Government having been due to the action of the Conservative party the new Ministry, which took office on October 24th, is purely Conservative, but of the 17 principal members 9 were in the last Ministry. The immediate duty of Mr. Bonar Law's Cabinet will be to get the new Parliament together in time to pass the Irish Bill, and as the relative strength with which the several parties will return from the country can less than ever be forecast, there is a certain unreality in discussing either its programme or its members. With regard to the first, Mr. Bonar Law has said that he will be guided by the belief that "what the country needs is tranquillity, freedom from adventures and commitments, both at home and abroad." Sir Arthur Griffith-Boscawen, who was Minister of Agriculture in the last administration, becomes Minister of Health in succession to Sir Alfred Mond, who replaced Dr. Addison early last year. Sir Alfred Mond has done good work at the Ministry of Health, and in particular showed sound judgement in meeting the demands for economy, and courage in resisting proposals to hamper important health services. In taking leave of the Ministry Sir Alfred Mond circulated the following note for the information of all officers of the Ministry: "On leaving the Ministry of Health I desire to express my high appreciation of the work of the staff. The questions with which they have to deal touch the lives of the people at more points than the work of any other Department of State, and are of the greatest social importance. There is no warmer praise than to say of them, as I do, that their efficiency and sense of duty is on a level with the high ideals underlying the work of the Ministry. I wish you to convey to them my gratitude for their loyalty to me in work which was very near my heart, and my hope that my successors will be as ably supported in carrying it on under happier financial auspices than I enjoyed."

The Schorstein memorial lecture at the London Hospital Medical College will be delivered by Dr. Percy Kidd in the anatomical theatre of the College on Wednesday, November 8th, at 4 p.m. The subject selected for the lecture is "Forty years in the history of tuberculosis."

The Huxley lecture on evolutionary tendencies in man's body will be given in the large lecture theatre of the Charing Cross Hospital Medical School by Sir Arthur Keith, M.D., F.R.S., on Wednesday, November 8th, at 3 p.m. The chair will be taken by Dr. William Hunter, C.B. Admission is free, without ticket.

The annual medical service of the Guild of St. Luke was held in St. Paul's Cathedral on the evening of St. Luke's Day, Wednesday, October 18th. Prayers were intoned by the Rev. W. J. Foxwell, and the musical portion of the service was rendered by the organist and choir of St. Mary Abbott's, Kensington. A new tune, composed by the Rev. H. Kirkland-Whittaker, M.D., secretary of the Guild, was used for the hymn, "Thou to whom the sick and dying." Dr. St. Aubyn-Farrer and the Rev. Dr. Kirkland-Whittaker read the first and second lessons respectively. After the sermon by the Rev. Lord Victor Seymour there was a procession.

WINTERING ABROAD.

THE FRENCH RIVIERA.

To winter abroad on the ground of health is not an entirely modern practice. To do so seems to have been by no means a rare prescription nearly or quite a century ago, among places then in vogue being Montpellier, not far from the western end of the Riviera, and Florence, close to the eastern end.

Their accommodation for strangers was considered satisfactory, and their climates more favourable to chest cases than those of English cities and villages. Also as the times went—travellers in those days were bolder and less exacting than now—they were considered to be easily reached.

Later on they lost their reputation in this connexion, but whether from recognition of their essential lack of climatic virtue, or owing to the opening up of the Riviera, it is difficult to say. In any case soon after the middle of last century the stretch of coast from Toulon to Genoa began to be identified in medical minds with "Wintering Abroad," and now for many years past the names of the principal towns on the "Côte d'Azur" have been nearly as familiar to frequenters of English railway stations as those of Blackpool and Brighton.

In Roman and mediaeval days nearly all the existing Riviera health resorts were places of some importance, but when their present rôle commenced they were, with the exception of Toulon and Nice, little more than a string of fishing villages. Their development from this into their present condition was slow, and in some instances due to more or less fortuitous circumstances. Hyères, for instance—about the first place to become well known—owed its rise no doubt to its relative accessibility, it being close to Toulon, which was itself for some little time popular in this connexion, and always a naval station of importance. Nice, again, which came into the picture even earlier in the development of the Riviera as a whole, had the advantage of being already a cheerful garrison town. The name of the principal part of its sea front—the Promenade des Anglais—would in many places be merely a compliment, but in Nice it marks the quarter in which the English colony first established itself.

In other cases the energizing factor was some accidental circumstance, such as that a particular view or site in its neighbourhood charmed some "personage," who thereon purchased ground, built himself a villa, and became a kind of collecting centre. This term "villa," it should be noted, is now occasionally used on the Riviera as it is in a suburb of London, but for the most part it preserves its original significat on and indicates a large house surrounded by more or less extensive ornamental grounds.

Finally, there are towns that owe their rise to some medical man having deliberately picked them out as ideal places of residence for invalids, and his having "written them up" accordingly. The most notable instance of this is Mentone, which has recognized the fact by erecting a monument Henry Bennett.

The Lie of the Land.

The term "Riviera" (meaning "bank" or "shore") was formerly the correct geographical description of the northern coast of the Mediterranean from Nice to Spezia. Nowadays it is a popular phrase rather than an official term, and is often made to cover the whole coast between Spain and the peninsular portion of Italy. People less loose in their diction, and more practical in their ideas, speak of the Western Riviera, meaning all places between Cannes and Toulon (both included), but nothing nearer the Spanish coast; the Central Riviera, meaning the coast from Nice to Mentone; and the Eastern Riviera, meaning all places from the Italian frontier to a little beyond Genoa.*

It is a coast with very numerous bays, but, since none of these is deep and the general run of the coast is from east to west, there is no great difference in the latitude of any of the towns and villages thereon. They are also alike in the fact that if the Mediterranean Sea could be emptied out it would be seen that they all lay on a ledge about one-third of the way up the side of an enormously deep valley; likewise that this ledge, though always at much the same height above the bottom of the valley, varied a good deal in its breadth, and also in its level, in relation to the side of the valley above it. Similarly, if the Mediterranean, instead of being emptied out, were one day deepened by a few hundred feet, it would be found that, though the present bays still existed, they had been broken up at frequent intervals by creeks running right into the side of the valley.

Stress is laid on these facts because they account for the difference of the climate of the Riviera as a whole from that of any other southern health resort, and they are also of material importance when a preliminary choice has to be made between one place and another within its borders, either for treatment or residential purposes. Indeed, anyone who bears them in mind in relation to any town specially commended to him can, with the help of a large-scale map, decide for himself how far it is likely to meet his desires.

Cheating the Calendar.

The desires of those who imitate the swallows no doubt vary, but the primary aim is usually to cut winter out of the calendar. It is a common belief that this can be done by merely going south; or, in other words, that wintry conditions are simply a question of latitude. This is a mistake. Winter is more or less unpleasantly perceptible far below the limits of Southern Europe; indeed, as far south as beyond the Atlas Mountains in Northern Africa. In this hemisphere only within a few degrees of the equator is winter practically non-existent.

No doubt the Riviera owes something to its latitude, and a considerable something to factors such as its southern exposure, its proximity to the Mediterranean Sea, and the clarity of its atmosphere. But if this were all its climate would not materially differ from that of a host of places much farther south, or even from that of a considerable number in the United Kingdom itself; also the Riviera would have an only minor advantage over the two places mentioned at the beginning of this article, which lie almost precisely in the same latitude as Nice and Mentone.

What spells all the difference are the circumstances that have already been emphasized as points to remember—namely, that the Riviera lies practically on a ledge of ground on the side of a deep valley. As the length of the valley runs east and west its side above the ledge protects the latter more or less completely from the north. The narrower the ledge at the site of any given town or habitation, the lower its relative position to the bulwark above it, and the less the bulwark is cleft, the more hopeful is the prospect of him or her who aims at cutting out the winter.

The side of the valley at its Central Riviera and Eastern Riviera portion is formed by the Alps. To many people the latter term means nothing but Switzerland, but the Alps really run so much farther south, and without any very considerable diminution of their height, that in many places they form the very edge of the Mediterranean Sea.

The side of the valley at its other end—that is, on the Western Riviera—is formed mainly by what are known as the Esterel and Maure Mountains. Their geological connexions are not well defined; possibly they are an outcrop of the Cevennes or even of the great central Massif of France. They are lower than the Alps, and extend over a relatively very narrow band of country; consequently they are somewhat less effectual as bulwarks.

The width of the ledge varies constantly from end to end. Throughout it is of such limits that there is a front and a back to all towns and villages, part of the houses lying nearly at sea-level, and others either on foothills or on mountain spurs. In some areas it is so narrow that the mountains nearly push the habitations into the sea.

The clefts that have been mentioned always let through a certain amount of northerly air, as they form subsidiary valleys at right angles to the sea. In a minor degree they account for the climatic differences between town and town, and fully for the fact that on any given day one quarter of a town may be materially colder than another. This is why wise people on the Riviera always go about armed with a wrap of some kind. A further reason for the same precaution is that owing to the heat of the sun promenaders may feel cold if they have to go home along a street shaded by high houses on both sides.

But the most important effect of the topography of the Riviera still remains to be mentioned. Despite the fact that it lies on the edge of the sea, the climate of the Riviera is to

* Amongst other descriptions of the Riviera are Riviera levante and Riviera ponente; also the "French Riviera" and the "Italian Riviera." The two former terms are now quite out of date, but at one time were official. They mean respectively the Riviera from Nice to Genoa (Riviera ponente) and the Riviera from Genoa to Spezia (levante). The other two terms explain themselves—the French Riviera covering everything from Toulon to Mentone, and the Italian Riviera all Riviera resorts under Italian jurisdiction.

be regarded as stimulative rather than as sedative. Its air, in short, is usually not sea air but dry mountain air.

So many authorities have discussed the meteorology of the Riviera that it is impossible to say who first pointed out this fact, but it is perhaps Samways of Mentone who has done most towards clearing it up.* To summarize his observations briefly, it may be said that the Riviera receives most of its air much as does a room from an overhead ventilator. The mountains above the ledge deflect all wind from Northern Europe into the upper atmosphere; thence if it has been moving only slowly it drops to sea-level again as wind, at a varying distance from the point of deflection—that is to say, from the top of the bulwark. This is why the sea is often rough when there is no wind at all on shore, and also one reason why the atmospheric conditions at the front and in the high-lying areas of any given town are commonly appreciably different. But of course air does not reach the Riviera solely from the north. Easterly and westerly winds blow with fair frequency, and the extent to which they are felt varies in each place according to the degree to which the place is protected by spurs of mountain running seawards. The wind from the east is not a cold wind, but any marked wind on the Riviera is resented and the westerly wind, locally known as the "mistral," certainly has something of the irritating character of an east wind in the United Kingdom, though in other ways it is its converse.

The effect of all the various factors to which reference has been made could be reduced to figures, but it is better to refrain. To many people meteorological returns are Chinese, and even to those who deem themselves competent translators they are apt to be misleading unless unusually complete and studied with great care. It is so easy to forget that in respect of their reflection on human comfort and on human well-being the facts represented by meteorological data are much less important than are the interrelations of those facts. Even if unconsciously anyone who has ever spent any time on a snowclad mountain must have become aware of this. Consequently everything that it is proposed to say on the subject of the Riviera climate other than has already been stated will be found in the paragraph headed "The Season."

One point may, however, conveniently be mentioned here. The meteorological data of the Riviera might easily be taken to spell dust, but in the writer's experience dust is not one of the troubles of the Riviera so far as its visitors are concerned. Wherever motor traffic is heavy there is bound to be more or less dust, so that the Riviera cannot be entirely free from it. But only on main roads is motor traffic ever heavy, and in the neighbourhood of towns on the Riviera which have recovered from the war road surfaces are kept well tarred and in the towns themselves free road watering is practised. Likewise main roads are frequented only by people in carriages of one sort or another, and as a general rule the hotels and other buildings used by visitors are isolated from roads of all kinds by gardens.

Choosing a Locality.

Practically every dweller on the Riviera, whether his stay be short or long, becomes either a keen advocate or a depreciator of the place of his stay. Likewise the number of possible places of residence is very large. There are at least twenty-five recognized resorts if all three Rivieras be taken together, in addition to many others which do not seek fame, though often they equally well deserve it.

For this reason, as also from a desire to be perfectly neutral, it is intended to leave the task of differentiating between places to those individually interested in the question. Still, certain general observations are legitimate and will be helpful. The most completely developed towns, as also the largest, are Cannes, Nice, Monte Carlo, Mentone, and San Remo.

Cannes, though less well protected than some other places, has always been specially favoured by persons of everywhere recognized rank. It is becoming more democratic, but is still less of a town than a collection of scattered villas. Nice is the metropolis of the Riviera, and a place which in its very long history has never fallen from the position of a town of importance. It is specially favoured by the French and the Americans, and though by no means always warm is never so cold as to check the gaieties always in progress therein. Monte Carlo, which commonly reminds one of a stage setting, collects people of every class and of all means, and a considerable number of them do not frequent the place simply for gambling purposes. Mentone consists of two parts, of which one—Mentone-Garavan—is very quiet and somewhat isolated. The other half, which is quite as well protected as any part of the Riviera other than Mentone-Garavan, is very much up to date and in "the season" very gay.

In regard to degrees of protection the towns on the Western Riviera are rather less favoured than those on the other two Rivieras, more especially when the mistral is blowing. The spot where the protection is in all respects most complete is Garavan.

From the point of view of country walks, picnics, and hill climbing, those places lying at spots where the ledge which has been mentioned is narrow certainly have an advantage over others.

It has already been stated that the rise of some of the Riviera health resorts was due to fortuitous circumstances. It is a fact to be borne in mind when the choice of a place for a long residence is in question. A great many new places have come into existence in the last twenty years, and the success of some of them, as also of some of their elders, the writer has never been able to understand. If merely a short visit be in question the choice of a locality may safely depend on the view of any friend who claims to know the Riviera and whose opinion on most subjects is to be regarded as well balanced, since there is no part of the Riviera that has not strong attractions. But if a long stay be anticipated, or the visitor wishes to fix up a more or less permanent home, he should look into matters carefully himself. As already suggested, he can get a great deal of useful information merely by study of a large scale map, if he remembers the points of importance—namely, the narrowness of the ledge, the height of the valley side above it, the number of clefts or subsidiary valleys, the precise exposure of the town in respect of the south, and the extent to which its bay (practically every resort is at the head of a large or small bay) is protected on the east and west by outlying spurs of the general bulwark. He can make his choice still better by camping at some hotel for a short time and running along the Riviera either in a car or even in a train. In this way he is likely not only to fix on a place which will realize his expectations, but may even prove a pioneer, since he may discover a spot which, although lying in a not specially well protected area happens to be itself very well protected owing to the conformation of the hills in its immediate proximity. Many more or less isolated villas owe their existence to some such circumstance. The same consideration also applies equally to different spots in one and the same town.

Dwelling Places.

People native to the Riviera commonly describe all others as "les étrangers," even when the nationality of the latter is French. Sometimes they distinguish them by speaking of "les résidents" when they mean villa dwellers and their like, or by applying the term "les hivernants" to those who live in hotels and pensions. The difference between the two classes, however, is rather elusive, since some villa dwellers occupy their Riviera homes throughout the year and others only for a few winter weeks. Correspondingly, many hotel sojourners, or true hivernants, return to the same rooms in the same hotels year after year and remain from beginning to end of the season.

The number of hotels is legion; they are, indeed, at the present time considerably in excess of usual requirements on the Western and Central Rivieras, thanks to the fact that the Germans, who formerly bulked very largely on these, have disappeared, and that Russian visitors, though for different reasons, are now comparatively rare.

The general system at all the hotels is much the same. Most have small or large gardens attached, and all have lifts, central heating, electric lighting, and bathrooms. Commonly, too, running water, hot and cold, is supplied in the bedrooms, and there are either special bridge rooms or some equivalent arrangement. Few are keen on letting bedrooms only; they prefer to arrange terms "en pension"—that is, terms which cover sleeping accommodation and the three ordinary meals of the day. These are a breakfast of coffee, tea, or chocolate, with rolls and butter, served in the bedroom, an elaborate meal, ready soon after midday, and a five- or six-course dinner about half-past seven in the evening.

In a way, therefore, it may be said that the Riviera hotels are less hotels than elaborate boarding houses. But it should be added that in respect of general accommodation and of feeding arrangements they are in most cases superior to good seaside hotels in this country and always on a par with them. The same is true of their sanitary arrangements, and, at all

*British Medical Journal, 1904, ii, p. 1127.

events at all places in the Central and Western Rivieras, the drinking water may be written down as safe. Besides ordinary first-class hotels there are, at several of the larger resorts, hotels which call themselves "de luxe"; they are an exact equivalent to such hotels as the Ritz or the Savoy in London. As for places calling themselves "pensions," the difference between them and the small hotels is not very marked. Usually, however, they do not keep night porters or care to receive visitors of irregular habits, or for less than a stay of a week or a fortnight, and the meals at all of them are of a less luxurious type than at the hotels, and are served at a fixed hour. Everywhere it is the custom to make up and supply gratis portable luncheons for those who wish to go out for the day.

It is difficult to make any precise statement regarding hotel charges, the chief reason being that the value of the franc is constantly varying. Also the number of francs asked for any given room is subject to alteration each year according to food and labour prices. Just before the beginning of each season the hotel proprietors arrange this question between themselves according to the class of the hotel concerned. Invariably, however, rooms facing the south are priced higher than those with other aspects. It is true that southerly rooms receive more sun than others, but the views from the windows are by no means always better.

The exact position of an hotel should always be ascertained before agreeing to stop in it for any length of time. Those practically on the edge of the sea have advantages, but are not desirable if accessible only from an entrance in a much-shaded street. Other things being equal, it is well to choose an hotel close to the centre of the town, but those at a distance from it often have the advantage of possessing such large and beautiful gardens that their guests if not strong are content to spend most of their time therein.

Likewise if the visitor's stay commences early in the season there should be a clear understanding as to what the charges will be at the height thereof. Last year there was a great outcry about the exorbitant prices demanded by Riviera hotel-keepers. The writer was never able to see that this was really justified; the prices were and always will be higher than pre-war prices, but English visitors, from whom almost exclusively the complaints came, forgot how little they were paying—thanks to the exchange—as compared with French visitors. Nor did they compare the prices they were paying on the Riviera with what they would have had to pay for like accommodation at health resorts and other towns in England. This year, we are told, the hotel tariffs on the Riviera have been considerably reduced.

If it be necessary to come down to exact figures and make a forecast as to the cost of a stay on the Riviera in the coming season it may be said that board and lodging at a good place will probably be obtainable for between twelve and twenty shillings a day.

A statement of the basis of this estimate may be useful. As the value of the franc shows no tendency to rise and food prices have not materially altered, last year's events are a fairly good guide. In that season the writer found rooms for several friends. Of these "A," a lady accustomed to life in a London "Working Ladies'" club, paid 18 francs a day en pension in a "commercial" hotel. She came for a fortnight but remained six weeks. "B," a lady from an English village, paid 30 francs in a poorly situated but otherwise good hotel; "C," a widow of means, paid at first 40 and then 50 en pension in a first-class hotel on the sea-front and in the centre of the town. "D," a well-to-do family man, paid 40 francs right through the season for each of his party in a first-class hotel with magnificent grounds at some distance from the centre. "E," a wealthy bachelor, paid in a "luxe" hotel 90 francs en pension for a long stay, but had a room fitted as a bed-sitting room, a private bath-room, and the services of a good valet.

As for dwelling places other than hotels and pensions it is well to appreciate the terms commonly used in speaking of them; an "appartement" means a flat, whether it be large or small; a "pavilion" means a very small house which has probably at one time or another been the lodge of a large estate. A "chalet," a comparatively recent term, commonly indicates a moderate-sized house away from the centre of the town but standing in very limited grounds. A "villa" usually indicates a very large house of many rooms standing in a large garden. As, however, in the case of large houses in London, many villas are now being cut up into flats and part of their grounds used for building purposes. There are also dwellings to which none of these terms are applied, but which are simply called by some fancy term, such as "The Nest" or "The Outlook." Their exact character should always be ascertained as some of them tend to be jerry-built.

All these various habitations can at times be taken unfurnished and on long leases; not infrequently too they can be purchased outright. In the lat er case the purchase price sometimes represents a very low rental value. As a rule, however, they are let furnished and only for the season. In this case they must, according to local laws in most towns, be really completely furnished and be thoroughly habitable, such things as linen and table cutlery being provided. Naturally prices vary greatly, but an average price for an "appartement" of, say, two sitting rooms, three bedrooms, a kitchen, hall, and lavatory, would be between 4,000 and 5,000 francs for the season. If a bathroom be provided it usually means an additional 400 or 500 francs. A "pavilion" may sometimes be got for less than 2,000 francs, while the rentals of "chalets" and "villas" may be taken to run from 6,000 francs upwards.

The season from a house-renting point of view means in most places from October 15th to May 15th—that is to say, for a period of seven months. But proprietors are usually willing to extend the lease from its initial term for any additional number of weeks desired for a very moderate figure. It may also be said in favour of proprietors—in France a much-hated class—that on the Riviera they are not sufficiently sophisticated for heavy claims for damaged furniture, etc., to be common, as in England. Also, too, the ceremonies connected with habitation renting are relatively both simple and inexpensive. The agent makes out the necessary agreement, and commonly it is a very brief document, since generally French law is not elaborate and all agreements are interpreted according to local custom.

Even more than in the case of hotels is it desirable for the prospective renter to ascertain the exact position of the residence. It is true that more or less distant houses often have the advantage of exceptionally beautiful surroundings or of being specially well protected from weather conditions; but it is also true that the greater the distance from the centre of the town the greater the possible difficulty of house-keeping. Small "baker" and other like shops are usually to be found in the neighbourhood of any considerable collection of villas, but the larger tradesmen have not yet resumed their former practice of sending round for orders. It should also be ascertained whether any habitation that seems otherwise desirable has either an air space, if not a definite cellarage, or a cemented foundation. If neither, it may prove cold, despite the usual dryness of the soil. The furnishing of dwellings, though always complete, is not always very smart or of such a comfortable kind in the matter of chairs as those to be found in English private houses. All visitors, whether residents or hivernants, pay nowadays a local tax, which is devoted by law to improvement of the amenities of the place. The sum varies, but is never enough to make any difference in the general expenses of a winter outing. Except for this English people who take houses merely for the season escape all "direct" French taxation.

"The Season."

The term "Season" from the house agent's point of view has already been defined, but it may be useful to add that he always expects—and commonly not in vain—to have disposed of at least two-thirds of the habitations on his books at least six months before "next season" will commence.

"The Season" in other connexions is somewhat less definite. At most places there are hotels that are ready for visitors all the year round, but the majority do not open until October is well under way and begin to close at the end of April. At some, indeed, the season is much shorter, not beginning until about Christmas time. These usually are "de luxe" hotels, catering solely for pleasure seekers of large means. There are also a few first-class hotels which habitually prolong their seasons well into June.

The reason for these differences is rather obscure: one factor, however, is that "les hivernants" are capricious in their habits; masses of them sometimes suddenly leave in order to get home for Easter, "the holidays," or for a big social or political event. Another is that many Riviera hotel keepers have season hotels elsewhere, and if for some reason their Riviera hotel be not very full they prefer to close down early and "repose" themselves and their staffs before starting a summer season elsewhere.

A third meaning of "Season" relates to public festivities, such as balls, battles of flowers, races, and the like. These commonly start some time in December, and end with April. Croquet clubs close relatively early, lest feet and the sun destroy their lawns, but tennis, bridge, informal dancing, and boat sailing survive much longer.

Finally, the term "Season" should also be defined from the point of view of calendar and climate. Taking all the four calendar seasons together, the general character of the climate is indicated by the flora of the locality. It is subtropical throughout; in other words, apart from flowers of every kind, the palm, the agave, the pomegranate, the prickly pear, the banana, the orange tree, and the bamboo all flourish; lizards and the tree fog are common, and in some places the growing of lemons is a staple industry. Such flora is in this country regarded as of a hothouse kind.

The Riviera climate is not, however, of the conservatory kind, since the air, being mainly of mountain origin, is distinctly on the dry side instead of humid. Nor should the term "subtropical" lead anybody to suppose that all the calendar seasons of the temperate zone in which England lies are not well represented. At times, though frost is rare, it is quite cold out of the sun and as soon as the sun has set; and occasionally, though this is by way of being a great event, there is snow on the southern side of the Riviera's bulwark. There is also, luckily for the country, usually plenty of rain, but also, luckily for the "hivernant," rainy days are few. When it rains it rains hard and has done with it. A related dissimilitude is that the air is always clear—that is, there is no mist and no fog—and clouds are few. Those who have to remain in England may, however, console themselves to this extent: when the English newspapers are talking of bad weather the Riviera press is very likely doing likewise. The "hivernant" expects nothing but brilliant skies and thoroughly genial air, and if during any given period of twenty-four hours neither condition exists his indignation is great. Usually, however, the home-stayer's envy is thoroughly justified, an ordinary Riviera October, November, and December being like a fine autumn or fair spring in England; January, February, and March like a good English summer; April, May, and June like a hot English summer. Of July, August, and September the writer cannot speak from personal experience, but he understands that the two earlier of these months are usually too hot to be enjoyed by most English people.

People who go to the Riviera either for definite health reasons or merely to avoid fog, mist, chronic rain, absence of sun, and possibly sleet and snow, should start if possible before the end of the autumn, and should not move away until more or less summer-like conditions in England seem well established. If free agents, it is folly for them to return home just in time for an Easter blizzard or a belated winter.

Summer Mountain Resorts.

There is indeed no positive reason why they should leave the Riviera at all. A good many "residents" do, in fact, remain all the year round or merely spend a few weeks during July and August at one or other of the small summer resorts in the mountains close at hand. Of these there are already a good many, and others are being annually opened up thanks to the introduction of motor transport. In altitude they vary between, say, 1,200 and 5,000 feet.*

The opening up of the "Route des Alpes" by the P.L.M. Railway Company has also rendered pleasantly accessible, to those wishing to leave the Riviera during the hottest period in summer, the many delightful little villages situated high up in the mountainous hinterland; further, an excellent means of travelling to such famous historical towns and watering places as Briançon, Uriage, Grenoble, Chambéry, Aix-les-Bains (also well known as a winter sports centre), Annecy, St. Gervais, Chamonix-Mont Blanc (France's premier winter sports centre), Thonon, and Evian. The trip can be made in the well-appointed P.L.M. motor cars, which, starting from Nice, wind through the French Alps to Evian-les-Bains, overlooking the Lake of Geneva. The "route" has been skilfully planned so that the most beautiful and impressive scenery which the French Alps boast may be seen by the travellers. The trip is divided into six easy stages, each of one day's duration, which may be taken independently; opportunity is thus afforded to those wishing to spend a few days or a season at any of the well-known towns and watering places already mentioned linked up by the "route," or at any of the picturesque little mountain villages which are touched. The highest mountain roads are used, some of the "cols" traversed being over 5,000 feet high.

There are also "hivernants" who do the same, or vary proceedings by a visit to some hydropathic town such as Uriage-les-Bains, or the more expensive but hardly more fashionable Aix-les-Bains, both in Savoy. It is also a fact that several Riviera resorts have a summer as well as a winter clientèle, the former coming down for the sea bathing, though they include few English. On the whole, therefore, it seems safe to conclude that though it is the fashion to go away, life on the Riviera must be livable even in the hottest weeks of the year.

Social Conditions.

In the last ten years social conditions have changed considerably on the Riviera. Formerly certain towns were visited almost exclusively by invalids, while others were regarded mainly as pleasure resorts. Nowadays, though there are many invalids and convalescents to be found everywhere, all places alike make a point of organizing amusements of one kind and another. Naturally, however, these are better developed in the older settlements than in the new that keep springing up year by year. Such enterprises take the form of tennis clubs, croquet lawns, golf links, bridge clubs, book clubs, thés dansants, balls, char-à-banc motoring, and occasional horse races, motor boat and sailing boat competitions, aviation meetings, battles of flowers, and the like. Everywhere there are churches of various denominations, and, since most people go in for picnicking and walking, the hill and mountain paths are well maintained and provided with sign-posts. Also in all the larger towns there are casinos providing theatrical and operatic performances, ball rooms and bands, and opportunities for losing money at "la boule" and other gambling games. A certain number of people go in for sea fishing, and for those who stay late in the season there are ample sea-bathing facilities. Also at all times of the year amateur and professional artists are everywhere to be seen.

In matters of dress there are people who continually change their costumes during the day, and others who are never seen except in the weirdest and apparently never altered apparel. At the hotels and casinos in the evening dinner jackets, and the equivalent feminine costumes, are invariably worn.

The Riviera is, in short, just like the west end of any metropolis, but spread over 200 kilometres of country instead of over a few square miles—a locality where everyone, for the most part, pays his money and makes his own choice of the why, when, and how. There are people who live such retired lives that they are never seen anywhere but perhaps in a church, and others who go in for every form of amusement and become rapidly known by sight even to quite temporary "hivernants."

Touch is maintained with the outside world by means of telegrams posted up at frequent intervals during the day at newspaper offices and outside banks, and by the London and other newspapers which arrive the day after their publication. But there are few or no reference libraries, and this is a great handicap to those whose preferred occupations are mainly intellectual. They can, however, if they please, occupy themselves in topographical study, in which direction, as also in those of ethnography and folk-lore, there are great temptations all along the Riviera.

Finally, to revert for a moment to the matter of dress, two quite common mistakes should be avoided. The one is thinking that a visitor who wishes to take part in everything that is going on will be comfortable if he arrives with nothing but a golfing outfit; the other is thinking that the Riviera is at all times so warm that the lightest summer clothing will suffice. Those who wear more or less warm underclothing at home should not abandon it, and a light wrap and a warm coat are always desirable, even if eventually the latter be only used while travelling.

Riviera society is remarkably mixed, and is less divided up by questions of means, occupation, and origin than is "society" elsewhere. A fair number of people keep motor cars, but their possession, though sometimes envied, does not, as in some places, confer any social status, and is not on the whole especially desirable. There are plenty of other means of getting about, and in the "Season," at any rate, the Riviera is not an ideal place for motoring, despite the care with which the roads are maintained.

* Among the [illegible] are St. Martin Vesubie, alt. 3,203 ft.; Valberg, alt. 4,600; Valdestore, alt. 2,600; Berthemont-les-Villars-Colmar, alt. 3,800; Peira Cava, alt. 4,100; Mount, alt. 2,200; Bouil, alt. 4,000;

Socially the only other outstanding point is that there is very little "visiting." Hivernants tend to fall into groups according to the amusements chiefly attracting them, and residents commonly do the same and frequently have home occupations, or are keen on gardening and the like; so beyond, perhaps a few formal tea parties at their own homes, they trust to luck for meeting their social acquaintances elsewhere. Nevertheless there is much real friendliness among habitual Riviera dwellers, whether hivernants or residents, and it does not lack exhibition when the need arises. In such a community it is inevitable that there should always be plenty of material for gossip and an infinity of stories about people on the Riviera, both alive and dead, are always current. But it can also be said that, even though such stories be known to be true, the tendency of the Riviera is so take everyone exactly as they themselves find him or her, so in the long run neither gossip nor stories do anyone any harm.

Expenses.

Many English people buy all the francs they think they are likely to require before leaving the United Kingdom. Such people add somewhat to their immediate cares and are just as likely to lose as gain by the transaction. Banks are very numerous on the Riviera and most of them are willing to cash at sight English cheques from almost anybody.

The normal value of a franc is slightly under tenpence, but for the last three years this value has never been more than fivepence and often not much more than fourpence. The value varies both in London and abroad, not only every day but several times a day. The price one may have to pay for any given number of francs may be much lower next week than on any given "to-day"; on the other hand it may be much higher, so the wisest course is merely to buy such a number of francs as suffice for the needs of the moment. As for the future the only thing that can be said with assurance is that the value of a franc is unlikely to rise in the coming season above its average value since the armistice. Consequently life on the Riviera during the coming season will be relatively inexpensive for English people and dear for their French comrades, as also for those who "bought forward" a long time ago.

The price of an ordinary first-class ticket to the Riviera is at the present moment £8 10s., and £13 8s. return. The price varies each month, the companies fixing it according to the rate of exchange prevailing through the preceding month. It is not, however, essential to travel first-class; trains having second-class carriages reach the Riviera as fast as those limited to first-class passengers. The journey from London to, say, Mentone (the farthest point of importance on the French Riviera) can be comfortably accomplished in just under thirty hours. There are also second-class carriages which the traveller need not quit between Calais and the final destination. To the particular train in question a restaurant is attached between Calais and Paris, and at Paris and at various stations afterwards luncheon baskets are brought to the through carriages. To all other Riviera-bound trains restaurant cars are attached practically throughout the whole journey, and it is said that in the coming season they will be so attached to the "through" train from Calais. Sleeping accommodation on the trains can be obtained by those who require it, provided they are travelling first-class. The principal difference, it may be noted, between a "couchette" carriage and a "wagon-lit" is that the latter is provided with toilet accommodation and ordinary bedclothing and that the former is not.

There are also the luxurious lits-salon compartments; the lits-salon "ordinaires," a compartment containing three couches side by side, and the lits-salon "avec draps," a compartment containing two couches with sheets; both of these compartments are provided with toilet accommodation and are well ventilated.

It is perfectly easy to reach the Riviera comfortably without knowing a word of any language except one's own, and when there a knowledge of French or Italian is of no particular advantage unless one starts housekeeping.

Most of the servants obtainable—and any house agent can commonly provide them—are Italians. A few will do nothing but some special form of work, but most are competent cooks and ready to take on any work that may be required. Their wages run from 100 to 200 francs a month, and if treated on patriarchal lines they commonly prove loyal and honest servitors; still they should be carefully observed before the latter conclusion is drawn in respect of them. They usually know more or less French, sometimes a little English, and in any case a means of mutual comprehension is usually rapidly established between servant and mistress.

The prices of food, electricity, gas, and coal are considerably above English prices. But such difference is at present fully outweighed by the abnormal cheapness of the franc. A servant, by the by, should not necessarily be written down as dishonest because when sent marketing she returns her expenditure at slightly more than the sum at which the mistress herself might possibly have obtained the same goods.

Sources of Information.

The intention of this article has been to give a general idea of what life on the Riviera is like. Those who have a stay there definitely in view can obtain detailed information from (1) the Paris-Lyons-Mediterranean Railway Company, 179, Piccadilly, London, W.1; or (2) the Office Français de Tourisme, 56, Haymarket, London, S.W.1. In nearly all French towns which desire to attract strangers there is a society which lays itself out to supply information; their titles vary, but a letter addressed to the Secretary of the Syndicat d'Initiatif will reach the desired destination. In most cases, however, the information obtained from one of the first two sources indicated will suffice, especially in the matter of getting the names of hotels, house agents, and the like. In regard to engaging rooms the traveller must of course communicate direct with the hotel keeper.

By way of concluding the whole matter it may be noted that the essential differences between Riviera resorts and those either on the shores bordering other parts of the Mediterranean or on islands in it are the greater accessibility of the Riviera resorts and the mountain character of their atmosphere. A similarly brief comparison between the Riviera and mountain resorts in Switzerland is more difficult. The main points are: (1) that a visitor cannot count on typical Swiss winter conditions unless he goes to a place at least 4,000 feet up, nor can he expect them to last more than about ten weeks; (2) that outdoor attractions are small unless the individual is sufficiently young to take an active part in winter sports; (3) when young persons are in question there is so much temptation towards exercise—skating, ski-ing, or tobogganing by day, and dancing and parlour gymkhanas at night—that they are very liable to overdo things. On the Riviera there is plenty of opening for exercise and nearly everybody does as a matter of fact take a good deal of exercise in the daytime, but after sundown the general tendency is to rest, except, perhaps, for an occasional visit to a casino or to some dancing place.

SMALL-POX IN LONDON.

The following report from the county medical officer on recent outbreaks of small-pox in and around London was presented to the London County Council at its meeting on October 24th:

"During the period July 26th to October 13th, 1922, 19 cases of small-pox occurred in and around London, including one case which was not discovered until the patient had completely recovered, and was therefore not included in the list of notified cases. This series of cases may be classified into two main groups with the addition of one isolated case, as follows:

"(*a*) This outbreak originated in Stepney in the person of a youth, aged 16, who developed a rash, which was diagnosed as chicken-pox, on July 4th, 1922. After remaining in bed for four days he assisted his mother in a shop on the premises, serving refreshments and tobacco. He infected six persons with small-pox, four of whom lived in Stepney, including one who developed his illness in Southend-on-Sea, and two in West Ham; one of the latter worked in the infected area whilst the other traversed the neighbourhood daily on her way to work. Four additional cases occurred among the contacts of the six patients infected by the original case, and with these the outbreak terminated, the last case having occurred on August 12th. Of the eleven cases comprising this outbreak, two died, and two others developed a severe type of illness; the remainder suffered from more or less mild attacks. Two of the patients had never been vaccinated and of those one died; in seven cases, whose ages ranged from 16 to 38 years, there was no record of vaccination since infancy, and one of these also proved fatal; the remaining two had been vaccinated since infancy and their illness was of a mild character.

"(*b*) This group of cases appears to have originated in Dartford, where three persons were removed to hospital from the same address on September 25th, suffering from small-pox.

"Two of these patients had nearly recovered from a mild attack and were only discovered when a doctor was consulted in regard to the third patient, a woman aged 49 years, who died a few days later in hospital. A married sister living in London and her child,

a girl aged 12 years, visited this woman at Dartford on September 23rd, after the rash had appeared. They returned to London the following day, and were vaccinated on September 27th, but too late to ward off the disease. They fell ill about October 3rd, and were removed to hospital from an address in Fulham on October 5th. The child's attack is modified by vaccination, but the mother has since died. Two further cases, one in Dartford and one in Bexley, have since occurred among the contacts.

"(c) An isolated fatal case of small pox in Bethnal Green was notified, and removed to hospital on September 12th. The source of infection was not traced.

"It will be noted that unrecognized cases were responsible for both groups of cases (*a*) and (*b*), thus emphasizing the need for prompt recognition of the disease in the earliest possible stage. In this connexion it is appropriate to mention that the Council places at the disposal of medical officers of health and medical practitioners in London the services of its expert small-pox consultant, who is available at all times to give assistance in diagnosis.

"The fatality rate of small-pox in London during these outbreaks, in which 5 out of the 19 patients died, presents a striking contrast to that in the rest of the country, where over 700 cases have occurred, mainly in the Midlands and the North, during the present year, of which only one has proved fatal, according to the information at present available. This marked variation in the degree of mortality may be ascribed to divergent types of small-pox, the north country type having remained up to the present consistently mild.

"The danger of an epidemic of virulent small-pox in this country is accentuated by the unvaccinated condition of a large proportion of the population, especially young persons. Since the passing of the Vaccination Act, 1898, which provided for exemption from compulsory vaccination of an infant on the production of a certificate of 'conscientious' objection by the parent, the number of infants vaccinated throughout England and Wales has declined from 66.4 per cent. of births in 1899 to 39.5 per cent. in 1920. In pre-vaccination days the incidence of fatality of small-pox fell chiefly upon young children, and the accumulation within recent years of large numbers of young persons, deprived of the protection afforded by vaccination in infancy, may be fraught with grave consequences in the event of small-pox becoming prevalent."

England and Wales.

Society of Medical Officers of Health.

The annual dinner of the Society of Medical Officers of Health—now in its fifty-seventh year—was held at the Hotel Cecil on October 20th, with the president, Dr. T. Eustace Hill, in the chair. Owing to the present political crisis, the Minister of Health, Sir Alfred Mond, was unable to attend, and the principal toast—Prosperity to the Society—was proposed instead by the Dean of St. Paul's. In a brief speech Dean Inge remarked that medical men must sometimes feel that they were keeping alive persons whom Nature, with perhaps greater wisdom, might prefer to kill. There were diseases, such as haemophilia, which when once established in a family could not be bred out of it; the only way to eliminate such diseases was to discourage the propagation of stocks in which the defect existed. Preventive medicine, for whose triumphs he had great admiration, ought to lead on to eugenics. Those who knew most about these matters were aware that it would be long before knowledge was accurate enough to justify much legislation; but he hoped most medical men would agree that in the far future the science of eugenics must form an extremely important part of preventive medicine. The President, in his reply, mentioned some of the outstanding achievements of the public health service on behalf of the individual and the community. He said that the membership of the Society of Medical Officers of Health was increasing, and was now 1,700; the Society embraced all branches of the service and included seven specialist groups. Dr. Eustace Hill added a word of gratitude to the British Medical Association (represented at the dinner by Dr. Wallace Henry, Dr. Bolam, and Dr. Garstang) for its valued co-operation in obtaining security of tenure and improving the status and remuneration of the health service. The toast of the guests was proposed by the past president, Dr. W. J. Howarth, and responded to by Sir Herbert Nield, K.C., M.P., Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians of London, and Dr. R. A. Bolam, Chairman of Council of the British Medical Association. The health of the President was proposed by Dr. Sidney Barwise.

National Milk Conference.

The National Milk Conference continued its sessions on October 17th and 18th at the London Guildhall. An account of the first day's proceedings appeared in our last issue (p. 771). Sir Alfred Mond, who was chairman on the second day, said that the aim of the legislation he had recently carried through was to induce the consumer to insist upon getting a better quality of milk. The new orders now under consideration had been purposely framed with a good deal of latitude, and he looked forward to ensuring, in addition to a very high standard grade, which must necessarily be expensive, a grade of milk free from manurial contamination and from tuberculous infection, which could be produced by any dairy farmer without great expense.

Bovine Tuberculosis and its Relation to Man.

Dr. A. Stanley Griffith, a member of the Bacteriology Department of the Medical Research Council, speaking on the frequency of bovine infection in the human subject, presented the following figures relating to surgical tuberculosis:

	Total number of positive cases.	Percentage of bovine infections.
Cervical gland	154	46.5
Bone and joint... ...	476	18.3
Lupus	126	5.8
Scrofulodermia ...	52	38.4
Genito-urinary ...	17	17.6

The percentage of bovine infection was highest in all these categories among children under 5 years of age, but adults were not exempt; 25 per cent. of the cervical-gland cases occurring in persons over 16 years of age were traceable to the bovine source. In pulmonary tuberculosis the human strain was the cause of infection almost to the exclusion of the bovine; this he attributed to the fact that, with few exceptions, the infection was of respiratory origin. He believed the bovine bacillus to be as virulent for man as the human; if its ravages seemed less evident, this was because its channel of entrance was restricted to the alimentary tract. Dr. Nathan Raw, M.P., maintained that a larger amount of tuberculous disease might be attributed to milk than Dr. Griffith had suggested. During the last twenty years, out of some ten thousand hospital patients suffering from tuberculosis who had come within his experience, he estimated that 2,100 were infected from milk. He had never found the human and the bovine bacilli both present in the human body. Dr. Stanley Griffith replied that in his series there were five cases in which bacilli both of the human and the bovine type were found. It would be dangerous to vaccinate cows with human bacilli to protect them from bovine tuberculosis; in some experimental cases he had found human tubercle bacilli living in the mammary sinuses for months, and passing out into the milk without causing any disease in the cow.

Variations in Chemical Composition of Milk.

Mr. Charles Crowther, Ph.D., said that while the yearly average composition did not vary at all widely in different years or localities, there was an appreciable seasonal variation from (in tested cases) 3.52 per cent. fat in June to 3.96 in November, and from 8.78 per cent. non-fatty solids in August to 9 per cent. in January. The fat content of the morning milk was often much below that of the evening. Causes of variation were the individuality of the cow, advance of lactation (quality improving as lactation advanced), increasing age (producing a very gradual decline in quality), the intervals between milking (the longer the interval the poorer the fat), incompleteness in milking, and the influence of food—a factor commonly exaggerated—on milk secretion. Dr. A. K. Chalmers said that in Scotland a departmental committee was now recommending 3 per cent. fat as the legal standard, but from Dr. Crowther's figures it appeared that in a group of ten cows tested every day for a fortnight the morning milk only once reached 3 per cent. fat, though the evening milk was generally in excess of 4 per cent.

Handling and Pasteurization of Milk.

The most animated discussion of the conference was on pasteurization. It was opened by Professor Georges Dreyer

of Oxford, who said that though comparatively low temperatures of 60° C. (140° F.) or rather more for twenty or thirty minutes would avail to kill the bacteria in milk, it was better to have a temperature of 130° to 135° C. (266° to 276° F.) for 50 or 60 seconds. The only effect on the vitamins was likely to be on the antiscorbutic vitamin, but boiling for a short time seemed to be less harmful to this vitamin than exposure to a lower temperature for a longer time, while reheating was fatal to it. Professor Dreyer added that pasteurization would not make sanitary precautions on the farm less necessary. He considered that dried milk offered the best solution of the problem of milk distribution in cities. Dr. Charles E. North, of New York, said that at the infant-milk stations in New York, which now numbered 69, about 25,000 babies were fed, in all cases on pasteurized milk, from one source of supply, under a single supervision, the results being checked by doctors and nurses. Since the adoption of pasteurization in New York City the death rate of infants had been reduced from 165 per 1,000 to 70 per 1,000. Dr. Eric Pritchard said that the decrease in this country in infant mortality during the last twenty years corresponded to the increasing use of sterilization methods, though he would not describe that as the only factor. The application of heat was the simplest method of sterilization, and the food value of milk suffered in no degree from being heated. Mr. Nathan Straus, former president of the New York Department of Health, described the flash point system of commercial pasteurization as inefficient, since by this process the milk flowing through the chamber continuously was not all subjected to the pasteurizing temperature. To make the milk innocuous it must be retained for twenty-five minutes at 145° to 160° F. Dr. Stenhouse Williams pleaded for more evidence before the value of pasteurized milk was taken for granted—evidence alike as to the extent of epidemic or other disease which was caused by raw milk and as to the possible effect of pasteurized milk in setting up nutritional disorders. Dr. John Robertson (Medical Officer of Health, Birmingham), in a paper on the distribution of milk, said that the distribution of milk in large cities cost as much as milk production on the farm. Moreover, transit involved contamination, which impaired the keeping quality, so that people were deterred from purchasing this important article of food. The ordinary farmer with his existing farm buildings could produce clean milk of good quality if he took some obvious and inexpensive precautions. Two essentials were a steam sterilizer and an adequate supply of cold water. While advocating pasteurization, he criticized the flash-point method, which impaired the antiscorbutic vitamin.

Food Value of Milk and its Care in the Home.

Sir George Newman, who presided over the final session, argued that impaired physique resulted more often from lack of milk than from unsatisfactory milk. The proper care of milk in the home was a matter for education, and instruction ought to be given in this respect to girls in the elementary schools. Dr. Robert Hutchison, in opening the discussion, said that milk was the only animal food which contained representatives of all the nutritive constituents. The casein was a protein of quite special value for repairing waste and building up tissue. Lactose was exceptional among sugars because it was not too sweet and was incapable of fermentation. The mineral salts, calcium and phosphorus, were also of great value. Milk, moreover, was a food with a very high degree of absorbability. From the economic point of view it compared favourably with other animal foods, as a source both of energy and of building material. It had, however, the disadvantage of bulk, and the nutritive constituents were not in the ideal ratio, except for infants. His experience in private practice was that the supply of milk had oftener to be cut down than to be increased. He found the milk of Jersey cows specially likely to produce bilious trouble on account of its richness. He strongly favoured pasteurization. All the milk at the Great Ormond Street Hospital was pasteurized in the hospital's own plant. In the case of out-patients the mothers were recommended, in the absence of pasteurization, to scald the milk in a double-jacketed saucepan. There need be no fear that pasteurization, by robbing the milk of its proper content, would lead to scurvy. He had never seen a case of infantile scurvy develop as a result of the use either of pasteurized or of dried milk. Dr. Leonard Hill said that overexposure of the milk diminished its vitamins; the mere repeated pouring of milk from one can to another could have this effect. He would prefer to have milk cheap and dirty rather than to have it pure and dear, but he did not believe that it was necessary to have milk dirty in order to have it cheap. Sir Malcolm Morris also advocated pasteurization, and a speaker from Leicester attributed the decline in infant mortality in that town to the use of dried milk at the infants' milk dépôts. In reply to a question, Dr. Hutchison said that intolerance for pasteurized milk on the part of a child must be very exceptional; he had never come across a case in his own experience.

The final discussion, on the education of the public and of the dairy industry, was opened by Sir Daniel Hall, chief scientific adviser of the Ministry of Agriculture.

Liverpool Medical Institution.

The inaugural meeting of the eighty-fourth session of the Liverpool Medical Institution took place on October 19th, when a large number of members and associates were present to hear the address of the new President, Dr. J. Hill Abram, who spoke on the subject of the medical curriculum. Dr. Abram said that he was attracted to this theme as recently there had appeared no less than three reports on medical education which he had studied closely. These were the Carnegie report, Sir George Newman's report, and Dr. Herringham's report. Dr. Abram said that apparently each lecturer considered that his particular subject required more attention by the medical student than was at present given to it, with the result that if all the teachers were to be satisfied the medical curriculum would have to be lengthened considerably. The number of examinations and their nature were also criticized, and as the student in one university could take one subject at a time, it was pointed out that he might have no less than fourteen ordeals to go through before qualification. He considered that there was at present still a want of correlation between the scientific and clinical subjects, and emphasized the important feature that the practice of medicine, though based on science, was an art. The efficient treatment of the patient was much more valuable in practice than the application of a scientific instrument or the exhibition of a drug. He urged the importance of developing the clinical side of medicine and of making the scientific subjects subsidiary to the main object in view. He suggested that a course of lectures might be instituted with advantage in order to show the true correlation between applied science and the practice of medicine. He held the view that it was of vital importance to free the student during his last three years for the unhampered study of medicine, surgery, and obstetrics. He considered that examinations in the subjects studied during these years should be held only at the end of the fifth year, and that in the first of these years there should be no examinations as at present. He thought that the burden of examinations needed lightening, and hoped that in the new changes in the curriculum which were about to be made this point would not be lost sight of. Dr. John E. Gemmell, the past president, proposed, and Dr. R. W. MacKenna seconded, a hearty vote of thanks to the President, which was unanimously carried. Afterwards the President entertained the members to supper, and this was followed by a concert. The endowment fund is now nearly £5,000, and the number of members associated is 435, the largest hitherto recorded in the annals of the institution.

Dinner to Emeritus Professor Henry Briggs.

A large number of friends, former pupils and colleagues, assembled on October 21st at a complimentary dinner to Professor Henry Briggs, who has recently retired from the chair of obstetrics in the University of Liverpool. Major Mark P. Rathbone, president of the Liverpool Maternity Hospital and Ladies' Charity, was in the chair, and proposed the health of Dr. Briggs in terms full of appreciation of the signal services he had rendered to the Maternity Hospital during the long period he had been attached to it. The value of such an institution, he said, had been enhanced by the untiring activity of Dr. Briggs, and he felt it to be a great honour to preside on that memorable occasion. Dr. J. G. Adami, Vice-Chancellor of the University, eulogized the work of Dr. Briggs as professor of obstetrics. He had so developed, or rather created, his department that he ventured to state that it was second to none in the United Kingdom. The obstetric museum, replete with models for teaching and training the student and containing specimens, normal and abnormal, of the various phases of

labour and its complications, was the result of the enthusiasm and personal sacrifices of Dr. Briggs. Indeed, as long as the museum lasted it would be a fitting memorial to his work. Other speakers included Dr. J. Hill Abram, Dr. J. Hayward Willett, Mr. Rushton Parker, and Miss Frances Ivens, all of whom emphasized the enthusiasm and energy which Dr. Briggs brought to bear on everything he undertook. Professor Briggs, in replying to the toast of his health and the appreciation of his work, gave his reminiscences from the time when he became demonstrator of anatomy at the Liverpool Royal Infirmary School of Medicine up to the present. In developing the obstetric department and in using the Maternity Hospital for instructing students and originating an outdoor department for parturient women, he had had many obstacles to surmount and many awkward corners to turn before success crowned his efforts. As with most innovators success was not always easy and he admitted he often felt like Job. He thanked his friends for the honour they had paid him, assuring them that what he had done for the obstetric department of the University was in itself a work of love and one on which he had concentrated all his energies.

Annual Medical Service at Liverpool.

The annual medical service took place on October 23rd at St. Luke's Church, Liverpool, when the Right Reverend Bishop Ryle, Dean of Westminster, preached to a large congregation, among whom were the Lord Mayor, the Vice-Chancellor of the University, and the President of the Liverpool Medical Institution. Many medical men were present, some in academic robes, as had been suggested by the Committee. The service was choral and the vicar, the Rev. A. J. M. Macdonald, read the prayers. The Dean took as his text 1 John, 4–7, and emphasized the brotherhood of man. He said that as in science, philanthropy, literature, and art no frontiers were known, so as a result of the great war the principle of the brotherhood of man was being forced on the attention of the reluctant world. He claimed the medical profession to be a constant witness and a glorious interpreter of the fundamental principle of the brotherhood of man. The Bishop of Liverpool read as the lesson the parable of the good Samaritan, and pronounced the blessing. The offertory was taken on behalf of the Royal Medical Benevolent Fund, and amounted to £65 15s. 10d. The honorary treasurer, Dr. J. Ernest Nevins, 32, Prince's Avenue, Liverpool, will be grateful if those who were unable to be present would send their donations before the fund is closed.

A Lancashire Institution for Mental Defectives.

From the annual report lately presented by Dr. F. A. Gill, medical superintendent of "Calderstones," a certified institution for mental defectives at Whalley, near Blackburn, Lancashire, we learn that the Lancashire Asylums Board in 1920 allocated the buildings at Whalley, originally erected as an additional county lunatic asylum, for the reception of patients certified under the Mental Deficiency Act, 1913. The buildings were occupied during the war as a military hospital. A working party from Brockhall, a subsidiary establishment, commenced to clear the wards in August, 1921, and there has been a steady influx of defective patients since. During 1921, 391 males and 284 females, making a total of 675, had been admitted; of these 5 had died, 1 had been discharged, and 9 granted licences. There had also been several interchanges between patients at the principal establishment and the subsidiary one at Brockhall. The whole institution has been licensed by the Board of Control for 2,100 defective patients, 1,050 of either sex, and of all grades. The bodily health on reception is described as poor, but 5 deaths only occurred during the year, and influenza was the only epidemic. Dr. Gill is to be congratulated on the progress made in the organization of this large institution, a somewhat complex task considering the varying grades and ages of the patients dealt with. An effort is made to find work of some kind for everyone capable of doing it; 332 males and 268 females are at present employed in work on the land, in the workshops, and in laundry and domestic occupation, while 69 males and 138 females are said to be unemployable. The laundry work is heavier than that of an asylum for the ordinary insane. Dr. Gill does not seem to anticipate much benefit from the school education of mentally deficient children (62 attend the schools), but it may be urged that an appropriate school training by judicious instructors has a value in promoting proficiency of hand and eye as well as of arousing intelligence which is useful in the training necessary to learn a handicraft.

Scotland.

Edinburgh in the Sixties.

The inaugural address of the new session of the Royal Medical Society, Edinburgh, was delivered on October 20th, in the rooms of the Society, by Dr. Byrom Bramwell. He spoke on the subject of the Edinburgh medical school and its professors in his student days of 1865–69. He said that when he commenced the study of medicine the Edinburgh medical school was a comparatively small one, the average annual number of medical students at the University during his time being 469, while the average during the past four years was 1,825. The students in those days suffered great disadvantages as compared with the students of to-day as regards both work and play. During the three years when he was captain of the cricket eleven, although they had a fair team, they were very much handicapped because they had no ground to practise on. He did not believe that there was any medical school in the world which had such a remarkable body of men attached to it as the Edinburgh medical school when he became a student. Among them were Sir Robert Christison, professor of forensic medicine for eleven years and of materia medica for thirty five; James Syme, the greatest operating surgeon of the century; Hughes Bennett, professor of physiology, who was the first to teach the systematic use of the microscope in this country, the first to use cod-liver oil, and gave the knock-out blow to bleeding, which before his time was practised for anything and everything; Lyon Playfair, professor of chemistry, who became a member of parliament and postmaster-general under Mr. Gladstone, and was afterwards made a peer. There were many other men of note, such as Goodsir and Laycock, but the greatest of them all was James Young Simpson, professor of midwifery, who began life as a baker's boy, qualified at 19, and became professor of midwifery at 29; he had the biggest practice that any Edinburgh man ever had, and his funeral was attended by 30,000 people. The men of those days were great personalities, men of very strong will and pugnacious spirit. Dr. Byrom Bramwell trusted that the work of those men would be a stimulus to the members of the society to do what in them lay to maintain and if possible to increase the credit and renown of their great university, their celebrated medical school, and their venerable society.

Post-Graduate Study in Glasgow.

The desire having been expressed for more ample facilities for post-graduate clinical studies during the winter months in Glasgow, the board of the Glasgow Post-Graduate Medical Association has decided to conduct a number of special courses, in addition to the usual weekly demonstrations which have been given in former years. Post-graduate teaching in Glasgow from November to May is, therefore, now available in three forms: (*a*) weekly demonstrations, (*b*) special courses, and (*c*) clinical assistantships. The series of demonstrations will be given on Wednesday evenings and has been arranged much as in former years; the range of subjects is wide, including medicine, surgery, obstetrics, diseases of children, dermatology, ophthalmology, and other special subjects. This series is intended especially to appeal to practitioners who wish to keep in touch with recent advances in a general way, and to compare the methods of diagnosis and treatment employed in different institutions. A feature this year will be the demonstration and discussion of cases sent in by graduates attending the course. The fee for the course is three guineas. A number of special courses have been arranged to meet the needs of those who desire more intensive and systematized post-graduate study, and in these the number of graduates will be limited. These special courses include eight meetings on medical ophthalmology; a course on the study of the welfare of the mother and newborn infant, including lectures and clinical and pathological demonstrations (two courses of nine meetings each have been arranged, one before and one after Christmas); a course on nervous diseases, with special reference to syphilis, conducted at the Western Infirmary; a series of clinical demonstrations on surgical diseases of children, at the Royal Hospital for Sick Children; and a course on clinical psychiatry at Hawkhead Mental Hospital. The fee for each of the special courses (except that on surgical diseases of children for which no fee is specified) is two guineas. In a certain number of the institutions taking part in the work of the Post-Graduate Medical Association clinical assistantships are available; they

are limited in number and are designed to make provision for graduates who desire opportunities for the detailed study of a special subject; a graduate who desires to obtain a clinical assistantship must enrol for a period of three months, and must be prepared to devote to the work either the whole or part of the day, according to the terms of the particular clinical assistantship which he holds. The syllabus of the courses, containing full particulars, may be had from the Secretary, Glasgow Post-Graduate Medical Association, The University, Glasgow.

Glasgow Medical Lunch Club.

An interesting meeting of this club was held on October 19th, when the chair was taken by the president, Dr. W. L. Reid, and after lunch Dr. G. C. Cossar shortly addressed the members on his work amongst boys in the poorer quarters of the city. He explained the methods in use for the training of these boys for some definite employment. Particularly he spoke of his boys' training farm within easy reach of Glasgow, and of his farm in Canada to which boys could be drafted. He gave several illustrations of the success attending these efforts in enabling the lads to make good in this country or abroad. Dr. Cossar was followed by Mr. A. Burchard Ashton, Boy Scout Commissioner of Emigration, who spoke more particularly of the very complete organization now in operation all over the world under the Boy Scout movement, whereby following a period of preparation boys could be drafted to the colonies or elsewhere. The thanks of the members were conveyed to the speakers by Dr. McKail.

Edinburgh Hospital for Women and Children.

A house-to-house collection is being made in Edinburgh in support of the Edinburgh Hospital and Dispensary for Women and Children and the Hospice in High Street; it is hoped to commence early next spring the erection of the proposed Dr. Elsie Inglis Memorial Hospice in connexion with this hospital. The authorities of the hospital have acquired a site at Spring Gardens, Abbeyhill, and expect that within the next two years the institution will be in full working order. Before progress can be made with the scheme, however, further funds will be required, and the question of endowment must also be considered. It is intended that the new hospice would especially benefit those women who need hospital care during confinement, and who are able to make some contributory payment. The beginnings of the Edinburgh Hospital for Women were made by Dr. Sophia Jex-Blake, who formed a committee and started a hospital of five beds in Grove Street, Edinburgh. From this small institution the hospital at Bruntsfield developed, the new wing of which was opened in 1911 by Queen Mary. The hospital now has 56 beds, including 11 cots for children, and is the first of its kind in Scotland staffed and administered by women. With the work of this hospital the name of Dr. Elsie Inglis will always be associated.

Ireland.

The Water Supply of Cork.

The Resident Medical Officer of the Cork Mental Hospital stated in his last report that the inmates numbered 1,760 (808 males and 952 females). Owing to the reappearance of enteric fever, which has been endemic in this institution for many years, four samples of water from different parts of the house—namely, the kitchen of the infirmary, the general kitchen, the nurses' dining hall, and the superintendent's residence—were sent to University College for bacteriological examination. Professor A. E. Moore reported that inasmuch as the *Bacillus coli* was present in 10 c.cm. of water in all the samples submitted, the water supply must be regarded as unfit for drinking unless previously boiled. In these circumstances it is thought probable that the cases are attributable to the contaminated water supply. It is hoped that in time it may be possible to prevent or, at least, diminish in number the cases that appear sporadically by the segregation of "typhoid carriers" into special wards, but this would not be of much avail until the quality of the polluted water supply is improved. A member of the Hospital Committee stated that the Corporation had demanded the appointment of a Commission to inquire into the whole system of the city's water supply and also to consider the sewerage question. The report of the resident medical officer showed that the Corporation's demand was a proper one, and that it was the duty of the Government to appoint the Commission as soon as possible. Though the institution was next door to the waterworks, yet its supply was unfit for human consumption. That is a menace to the health of not only the 2,000 patients in the asylum, but to the 80,000 people of Cork. The Committee directed that the report should be sent to the Waterworks Committee and the Public Health Committee of the Corporation.

Vital Statistics of the Irish Free State.

The Registrar-General in his report for the quarter ended March 31st, 1922, states that there were registered during the quarter in the Irish Free State, comprising 649 registrars' districts, 14,890 births; 7,791 were boys and 7,099 girls, the total being equivalent to an annual rate of 18.8 per 1,000 of the estimated population. This rate is 2.7 below the average for the first quarter of the preceding ten years, and 0.5 below that for the first quarter in 1921. The deaths registered during the quarter, numbering 13,719, of which 6,875 were of males and 6,844 of females, are equivalent to an annual rate of 17.4 per 1,000 of the population, being 1.9 under the average for the first quarter of the preceding decennium, but 1.3 above that for the first quarter of the year 1921. Amongst the causes of deaths the following are mentioned: enteric fever, 24; typhus 3, small pox 0, measles 116, scarlet fever 22, whooping-cough 66, diphtheria 118, dysentery 2, and diarrhoeal diseases 114. Of the 13,719 deaths registered during the quarter 1,166, or 8.5 per cent., were those of infants under 1 year of age, and 6,206, or 45.2 per cent., were of persons aged 65 years and upwards. The number of deaths of infants was equivalent to 78 per 1,000 births registered, as compared with 69 for the fourth quarter of 1921, 79 for the third, and 57 for the second quarter.

Correspondence.

THE DIFFERENTIAL DIAGNOSIS OF SMALL-POX AND CHICKEN-POX.

Sir,—The chief points generally relied on to distinguish varicella from variola and varioloid are the following:

(*a*) The distribution of the eruption, which is found most abundantly on the trunk, and more thinly on the face and hands.
(*b*) The absence of the eruption from the palms, soles, and palate, especially in young children.
(*c*) The absence, or short duration, and unimportant character of the pre-eruptive stage.
(*d*) The absence of umbilication of the vesicles in the earlier stages of the eruption.
(*e*) The absence of a pre-eruptive rash.

All these distinguishing characteristics, however, may fail, and leave one in perplexity; for in many cases, especially in those in which the eruption is scanty, the distribution on the face and extremities is much the same as that on the trunk. Also sore throat, which is nearly always present in variola, even in the mildest cases, may appear in varicella, accompanied by an outbreak of papules. As to umbilication, in a considerable number of cases of undoubted variola, it is not found at any stage of the eruption; while a slight amount of umbilication may be seen in varicella, when the pock attains a moderate size. Again, in varicella a pre-eruptive stage may occur, which is quite undistinguishable from that of variola.

Other important points which may enable one to decide the diagnosis in favour of varicella are the absence of lumbar pain, the presence of one or more elliptical or oval vesicles, the continued fever after the appearance of the eruption, and the fact that the vesicles collapse on being punctured in one spot only, thus showing that they are unilocular.

There are two signs, however, which are perhaps more reliable than any of these mentioned, and it is to be regretted that more attention has not been drawn to them. They are:

(*a*) The early vesiculation and crusting of the papules, which may occur in so short a period as thirty-six hours.
(*b*) The contemporaneous presence of papules, vesicles, and crusts on various parts of the body.

This early crusting, invariably seen in varicella and never observed in variola, and the contemporaneous presence of papules, vesicles, and crusts, only found in varicella, ought to have assigned to them the chief place in the list of differential diagnostic signs.—I am, etc.,

Driffield, E. Yorks, Oct. 22nd. A. T. Brand, M.D.

THE HEALTHINESS OF BRITISH HONDURAS.

SIR,—In your issue of July 15th, under "Medical Notes in Parliament," the following statement occurs:

"Dr. Fremantle in his speech instanced the case of British Honduras as illustrating the evil results of the neglect of good advice. Seventeen years ago the late Sir Rubert Boyce had, as a result of a visit to British Honduras, described the extraordinary insanitary conditions existing and the prevalence of the stegomyia mosquito, involving the danger of outbreaks of yellow fever. Nothing was done, but outbreaks of yellow fever occurred, the most recent only last year."

It is to be regretted that such an authoritative statement should be incorrect. From the date of Sir Rubert Boyce's visit in 1905 no outbreak of yellow fever occurred in British Honduras until 1921

In 1905 the outbreak occurred in Belize, a town of over 10,000 inhabitants, through which passes all the overseas trade of the colony. It was confined to about twenty cases and was stamped out in six weeks. This was characterized by Dr. J. N. Thomas of New Orleans, one of the leading men of the United States Public Health Service, as one of the finest pieces of work he had seen.

Last year the outbreak took place at a large secondary college about one mile from Belize. Seventeen cases occurred there, but the epidemic was stamped out in sixteen days. Although the epidemic reached the town only three cases occurred there. Surely one might arrive at one of two deductions, either that the "extraordinary insanitary conditions" do not exist, or that the public health service is "extraordinarily" effective.

As a matter of fact, British Honduras is extraordinarily free from infectious diseases. Notwithstanding the fact that plague, yellow fever, small-pox, alastrim, typhus, typhoid, and diphtheria have all been found amongst our nearest and most intimate neighbours, we have managed to keep them all at arm's length with the single exception referred to.

British Honduras is a much-maligned colony, but undeservedly so as regards its health conditions. I have lived here for over twenty-five years, and have only on two brief occasions been off duty on account of ill health, and there are not a few foreigners who can relate the same history.—I am, etc.,

Belize, Sept. 26th. JAMES CRAN, M.D.,
Acting Principal Medical Officer.

CARDIOLOGY.

SIR,—I feel that your reviewer's comment upon my letter, under the above heading, calls for some response from me; it should make our respective positions clearer. He is in agreement with me that the volume changes in the internal jugular are determined by pressure changes, and I am in agreement with him that the instrument which records the venous waves does not measure the actual attendant pressure values within the vein; but then I did not claim that it did. To do this it would be necessary to occlude the vessel entirely, as in the use of the sphygmograph the artery is occluded.

I think, further, that we shall be in agreement that, *ceteris paribus*, the magnitudes of the venous waves should be directly proportional to the forces (pressures) which develop them. Unfortunately we cannot secure this equality of conditions: and thus whilst, from this point of view, we can more readily compare together the "*a*" and "*v*" waves, because they are both determined by pressures operating *within* the cavities of the heart and are accompanied by volume changes *within* the vein, as already described, we cannot so compare the "*c*" wave with either the one or the other. The reason for this is that the "*c*" wave is generated from *without* by the impact of the carotid pulse upon the internal jugular, whereby its contents are thrown into oscillation. No question arises here of volume changes due to afflux (the venous flow being held up) or to actual reflux from the heart. The genesis of this wave being so dissimilar it is extremely difficult to see how it and the "*a*" and "*v*" waves can be standardized, so to speak.

The issues involved in the problem of the interpretation of the venous pulsations are, I think, much more complex than has been generally accepted, and for this reason I have elsewhere ventured to suggest that the whole subject, including the nomenclature of the waves, should be reconsidered.—I am, etc.,

London, Oct. 23rd. HAIGINGTON SAINSBURY.

PSYCHO-ANALYSIS.

SIR,—Having been during all my professional life much interested in all neurological and psychological questions, I have dipped frequently, like Dr. McBride, into the literature of this subject, and must confess that to me it has an unsatisfying character.

I do not specially refer to the nauseating aspect which would give sex such a prominent part and indeed probably the most prominent part in the thoughts and conduct of most of us, but I refer at present more especially to what Sir Clifford Allbutt mentioned in his recent lecture. Some of the writers and practisers of psycho-analytical methods use too seldom the ordinary language of the physical, anatomical, and physiological sciences, and use much more freely indefinite and abstract language of metaphysics, with the result that it is difficult to get a clear concrete idea of what exactly they mean.

It seems to me that there are facts that if not altogether forgotten by some of them are not sufficiently emphasized. I refer to such facts as that the brain is the organ of mind, that the mind only shows itself by the action of the brain, that the brain is an organ having a physical and anatomical construction capable in health of physiological activities, and when diseased of activities depending on the pathological modifications of its physical and anatomical construction and usual physiological activities.

We have such terms as repression, idea complexes, censors, instincts, wishes, conscious, subconscious, etc., introduced without it being sufficiently borne in mind that the processes or activities of the brain on which these depend have a physical basis. It has always appeared to me that unless one has an idea of the physical, anatomical, and physiological basis underlying these terms much of the discussions of the subject, I will not say is jargon, but words—words!

I do not in the least wish to detract from the good work which can be accomplished by psycho-analysis in the way of treatment because I know how successful it has been in many cases and especially since the war, what a scope there is for such work, and in spite of their methods how great the number of poor souls there are still waiting for an even more successful method of cure than psycho-analysis has proved to be.

Perhaps some of the successful cures have been too readily attributed to the fact that after much probing into the subconscious the practitioner has managed to fish up something which he considers was the initial cause of the disorder which he set out to treat. One must, however, recognize that there is hardly any form of treatment which is so capable of "suggesting" to a patient that he is likely to be benefited by it as psycho-analysis. The long sederunts at intervals, the questionings, the probings, and at last the discoveries by the practitioner of what the patient himself even had forgotten, are all calculated to produce an atmosphere of "suggestion" that he will be benefited. And he benefits accordingly. Whilst many of the cures may thus be brought about by suggestion, I do not by any means imply that all are, and if the psycho-analysts would emphasize more the physical, anatomical, and physiological basis subserving their methods they would, I think, not only place their practice on a more certain scientific basis but establish more securely some of the truths underlying their methods.

It is not possible, of course, with our present knowledge to understand many mental phenomena which in the gradual advance of science may probably fully be accounted for by the physical and anatomical construction and the physiological and pathological activities, past and present, of the human brain. Probably it is not possible fully to account for such processes at present as repression, coming into consciousness, complexes, etc., from the physical side, but I believe a working hypothesis could be developed on the lines of what has been done by investigators on the disorders of speech, memory, etc. These, of course, are of a simpler and more localized kind than many of the neuroses, neuropsychoses, and psychoses with which the psycho-analysts have been concerned.

In the paper by Dr. Crichton Miller, read at the Glasgow meeting, I was glad to see psychology considered in one direction on the lines of what I mean when he showed some of the effects the internal secretions of the endocrine glands or their absence may have in activating or biochemically acting on special organs or on specialized cells of the body and brain. Such localized or special action on picked out cells, or groups of cells, may profoundly alter the nature and

conduct of an individual. Although we may not know the why and wherefore of the action of these glands, the terms used to describe the process are fairly understood, because they are those of physics, chemistry, anatomy, and physiology.—I am, etc.,

Leith, Oct. 22nd. WILLIAM ELDER, M.D., F.R.C.P.E.

SIR,—It is a matter for regret to find from Dr. McBride's letter in your issue of October 14th (p. 704) that he did not obtain the information he expected from the replies to his previous letter on August 12th.

Really, the subject to be thoroughly understood requires discussion and the test of practice, which is best undertaken at one of the teaching clinics. If Dr. McBride has the leisure to follow this course he will find the subject of psycho-analysis and the psychological basis on which it rests cleared of the difficulties which now present themselves. He will also learn that this method of treatment is not claimed to be a perfect therapeutic weapon, and that, in its present form, it has its limitations. Even so a greater measure of success has attended its use than can be claimed for any other method of treatment.

Dr. McBride refers to Sir Clifford Allbutt's address at St. George's, which he hopes will call for a defensive reply. I hope it will. It has been stated that the time required and the expense militate against the practice of psycho-analysis. I think Dr. McBride will agree there are many diseases in the domain of medicine in which the treatment is both protracted and expensive. Just now there is a wave of criticism adverse to psycho-analysis and its foundation which will do good by ventilating certain aspects of these subjects.

The majority will agree with Sir Clifford Allbutt that the mental investigation of children by their teachers may be most harmful, and the admission of crime as a pathological condition would tend to defeat the ends of justice. Rather let the teacher be trained to detect abnormalities in the child so that suitable skilled treatment may be undertaken sufficiently early—which, in itself, would eliminate pathological crime to a large extent—and leave the criminals in the hands of his judges, who always exercise their prerogative in favour of the accused where circumstances allow.

Sir Clifford's reference to the mind as a pint pot brings forth the obvious reply that we are not concerned with the quantity of the psychic content but with its quality—it may be a dangerous mixture liable to explode.—I am, etc.,

Ministry of Pensions Hospital, Hednesford, Staffs, Oct. 18th. JAMES W. W. ADAMSON, M.D.

SIR,—When psycho-analysts discuss the subject with sceptics there always seems to be a certain vagueness, and also a more or less implied suggestion of want of understanding on the part of their opponents. This tendency seems to be present in Dr. Steen's letter, although, as one would expect, it is veiled by exquisite courtesy.

However, he has chosen certain works as guides, so in order to keep this letter within reasonable dimensions let us consider the views of Freud upon dreams. This is all the more fitting as that author himself has written (*Interpretation of Dreams*, p. 483): "At any rate, the interpretation of dreams is the *via regia* to a knowledge of the unconscious." Now, as the unconscious seems thus to be the foundation upon which psycho-analysis is built, it is fair to assume that if this foundation be shaky the whole structure is in danger of falling. It is unnecessary to remind Dr. Steen that Freud's views as to "dreams, wit, folklore, ethnology, myths, aesthetics, the science of religion," and, he might have added, symbols, rest upon the theory of an unconscious mind which acts as a storehouse for—shall we say?—suppressed knowledge.

This being so, the first question an intelligent student of the work will ask is, "How am I to reconcile this theory with known physiology?" Probably he visualizes ordinary thought as a change in certain brain cells due to some stimulus—visual, auditory, or sensory. He assumes the action of nerves and nerve cells, followed by rest and recuperation, but how is he to explain to himself the unconscious mind in the Freudian sense? As the difficulty can thus be stated in comparatively few words, perhaps Dr. Steen will either be able to remove it in like manner or by mentioning some work in which it is clearly explained. I have read Jung's recent book on the unconscious, but have again only found assumption where I had hoped for reasoning.

Another question arises. Apparently this storehouse of unconscious thought has within it a hidden knowledge of symbology which the interpreter freely utilizes in explaining dreams. How does he know that what he elicits from the patient, and assumes to come from the unconscious, is not suggested to him in some way, and why does he assume that it has had anything to do with his dreams?

It would take up too much of your valuable space to consider Freud's views seriatim, but I may be permitted to state that so far as I can gather the following points are insisted upon by that author:

1. The dream is not what it seems to be.
2. One person may represent another or several persons.
3. Something which appears quite unimportant is really the most important thing.
4. A thing may stand for its opposite.
5. We have to be guided by the symbols to which reference has been made.

It may be mentioned that these symbols are generally supposed to be sexual—most long objects represent the male organ, most short ones the female genitalia, and rhythmic motions, such as climbing and riding, coitus.

I may conclude by a quotation:

"We have already asserted elsewhere that dreams which are conspicuously innocent invariably embody coarse erotic wishes, and we might confirm this by means of numerous fresh samples" (p. 241, Freud, op. cit.).

From what we have thus gleaned from the work which Dr. Steen specially recommends for study to the budding psycho-analyst it would not be unjust to infer that a dream may be made to mean almost anything. Fortunately, most readers of this discussion will have had many dreams, and so this aspect at least may be left to the decision of those who incline to attune their beliefs to the dictates of common-sense.

I feel that I have already occupied too much space and shall content myself by congratulating Mr. Arthur Lynch on his very pertinent criticism, which, coming from an author of his well-known attainments, proves that psycho-analysis does not always appeal to intelligent minds. With regard to Mr. Bryan's strictures: the onus of proof that there is any difference between psycho-analysis and the confessional rests with him and those who share his views. Why should disciples of Freud refuse priests access to that very dubious thing which they call "the unconscious mind"?—I am, etc.,

Harrogate, Oct. 22nd. P. MCBRIDE.

BACTERIOLOGY AND THE VACCINE TREATMENT OF CHRONIC BRONCHITIS.

SIR,—Dr. Leonard Mackey in his helpful article on the "Bacteriology and vaccine treatment of chronic bronchitis" in your issue of October 21st (p. 715) has suggested that rhinologists "could throw light on the real nature of the associated nasal infections, and suggest some useful local treatment."

Dr. E. Rist, as reported in the same issue, draws attention to the connexion between chronic infection of the upper air passages and chronic cough and symptoms simulating incipient tuberculosis. I would go further and submit that, quite apart from infected air sinuses, enlarged turbinates, adenoids, etc., chronic naso-pharyngeal catarrh sets up, in certain people, a condition that lowers their vitality and makes them more susceptible to succumb to tuberculous and other infections. Among such sufferers can be included many medical practitioners, especially those in industrial districts. Various nasal operations, autogenous vaccines, nasal douches and sprays may be tried in vain, and the condition persist, bringing in its train troubles such as rheumatoid arthritis and the like.

Much work, I know, has been done in connexion with the naso-pharyngeal flora, but it seems that very little progress has been made in the local treatment of this condition. What would be much appreciated is a communication on the subject by some eminent rhinologist, giving the various forms of treatment and the degree of success that can be looked for in each.—I am, etc.,

Edinburgh, Oct. 23rd. W. GOLDIE.

UNSUSPECTED PREGNANCY.

SIR,—Would Dr. Graham Grant consider the following case one of unsuspected pregnancy?

On February 23rd, 1921, I was called by telegram to a woman five miles away; it was the usual "come at once" message, and I went. I was somewhat disgusted, therefore, to find on arrival that the patient—a woman—was sitting by the kitchen fire looking far from ill. I inquired the reason for the telegram, and was

informed by her that she had a "cold." When she stood up I saw at once that she was about full term in pregnancy. Her symptoms of a "cold" were pains in the back and abdomen; and when I remarked that I thought it was probably the commencement of labour she was most indignant and said, "That's what my husband says, and it's nothing of the sort." Her husband and her aunt had both incurred grave displeasure by making the correct diagnosis some time previously, but the patient had refused to allow any such possibility, and would get quite angry at the idea. There was no question as to the genuineness of her belief that she could not be pregnant, for she had made no arrangements—no baby clothes, and had no other bedroom nor bedclothes prepared.

I examined her and found labour well started, and I told her that it was a fortunate thing that everybody who had a "cold" had not her symptoms. Six hours later the child—rather on the large size—was born. Just when the head was crowning her aunt came up to say that the nurse was wanted elsewhere. I told the nurse that she could not possibly go till the case was over, whereupon the patient half raised herself in the bed and looked over her shoulder and remarked, "Can I be of any assistance?"

This patient was living with her husband, had been married about a year, and could not by any chance be said to be dull-witted. She is a tall woman, and her menses had ceased in the ordinary way. I said to her that I could not understand how she did not know that she was going to have a baby, that she must have known that a young married woman would naturally expect such a possibility, especially when her abdomen began to get large. To this she replied, "Well, I was brought up by a step-mother, and I don't think that she took quite such an interest in me that my own mother would have done."

I am afraid that Dr. Graham Grant will think I am pulling his leg, but this is not an American tall story—just the literal truth of what actually happened. The unfortunate woman was unmercifully chaffed by her neighbours, for of course the story became "broadcasted," as such happenings do in the country.

The interesting thing will be to see how "the child imposes on the man"; this child cannot be affected by any of the usual fears and introspections which occur in the average expectant mother.—I am, etc.,

Newick, Oct. 20th. J. CHARSLEY MACKWOOD.

SIR,—May I contribute an experience of a few years ago?

In response to a telephone message announcing an unexpected birth I reached the patient about 7 a.m. and found that she had delivered herself half an hour previously, not only of a full-term living child, but of the placenta. Absolutely nothing had been done for mother or child before I arrived. The one and only pain had occurred a few minutes before the birth, when, wakened by it, she roused her sister to prepare some hot milk to relieve what she called cramps in the inside. When the sister returned with the milk the child was born and I was sent for. She assured me that she had never suspected pregnancy. Neither had her sister, who had shared her bed for months previously, nor any of the other members of the household. The menses had been regular, and there were no precordial or abdominal developments noticeable. This is the truth, but, alas! not the whole truth. My patient was unmarried—a much-appreciated servant in a respectable family, and the startling surprise of that morning filled them with disappointment and mortification.

When I mentioned this case to some of my colleagues they listened courteously, suffered me patiently, but pitied my credulity. The girl's mistress was Christian enough not only not to cast a stone at her sister-woman but to take her back to service in the course of a few weeks.

The question is, Should we discredit a tale of unsuspected pregnancy except in those cases where the woman prudently shrinks from the burden of maternity unless she has the moral support that is afforded by the wedding ring?—I am, etc.,

Belfast, Oct. 14th. WILLIAM L. STOREY.

SIR,—I remember telling a patient of mine a story of my dog, considered by me a remarkable animal, and the lady replied: "Oh, that is nothing! Our dog, being too big to get into a mouse hole, fetches the trap and, having seen that the cheese is all right, places it carefully just where the mouse must see it and sits himself down to wait." I said, "Thank you very much for the lesson. Good-day."

I feel I have to repeat this contrite observation to Dr. Lowis in view of his "true tale" of the twins (it will be triplets next week, I expect; then Heaven help me!), because I do not desire to get myself further disliked by advancing suggestions which might give offence. It is abundantly clear that I have failed to profit by my experience of nearly 3,000 cases, and I must therefore admit that the words "*Verb. sap.*" do not apply to me. If the Editor of this JOURNAL wishes them to apply to him he will be well advised to close this correspondence before we have to deal with a quadripara. —I am, etc.,

London, W., Oct. 20th. GRAHAM GRANT.

*** We are disposed to accept Dr. Graham Grant's advice, but not for the reason he gives.

DANGEROUS DRUGS ACT, 1920.

SIR,—It is well known that in the past the sending of missionaries to unexplored regions has been encouraged, and large sums of money contributed for the purpose by men whose object was not the improvement of the heathen, but the acquisition from them of ill-gotten wealth. Similarly traders of an unscrupulous character are continually making "cat's-paws" of well-intentioned people to enable them to oust competitors and increase their own profits from trade of a pernicious kind. Some years ago there was vigorous agitation in favour of measures to put a stop to objectionable traffic in opium. I am quite convinced that this was largely fostered in the interests of an unscrupulous section of the persons engaged in that objectionable traffic, or interested in it. Now we have good people supporting legislation to suppress improper traffic in the so-called "dangerous drugs" (cocaine, etc.). I have little doubt that the same sort of influences are working secretly behind them, and behind the newspapers which have given so much of their space to the subject. The result, if I am any judge, is an increase in the misuse of cocaine, through the unprecedented advertisement given to the drug, and very large profits to traders of the worst types; and, at the same time, loss and inconvenience to honest and reputable traders and doctors. In conclusion, let me ask whence the General Medical Council derives its authority to give, or withhold, its "concurrence" with orders such as those recently issued by the Home Office?—I am, etc.,

Oakhurst, Lingfield, Oct. 20th. HUGH WOODS, M.D.

DERMATITIS AMONGST CEMENT WORKERS.

SIR,—Recently I was called to see a man who was suffering from a generalized dry scaly eczema. The scales were abnormally large, some measuring 1 cm. square, and easily detachable. When removed a red, glistening, but dry surface was left. The disease started on the outer aspect of the right leg, just above the malleolus, and, when I first saw him, extended all over both legs and thighs. The upper limbs were both affected from the shoulders to the wrist, and painful fissures were present in the flexures of both upper and lower limbs. The back and chest were almost entirely covered, the head and neck comparatively free. Desquamation occurred rapidly, and when a hand was passed across the back a shower of scales fell off like chaff into the bed. The finger-nails were uneven and fissured. The condition yielded to treatment by liquor carbonis detergens and liquor plumbi fortis followed by olive oil inunction.

The patient was a foreman rough-caster and attributed his condition to working with cement, informing me that another workman—whom, however, I did not see—had the same complaint in a minor degree.

I have failed to find in any of the works and reports I have consulted any reference to cement as a cause of occupational dermatitis, and should be interested to hear if this has been described.—I am, etc.,

Glasgow, Oct. 16th. S. NORMAN DYKES, M.B., Ch.B.

THE RADICAL PREVENTION OF VENEREAL DISEASE.

SIR,—Please permit me to explain to your correspondent, who blames my letter in your issue of October 7th for its insipidity, just how that came about.

Time was when I could be guilty of a spicy, stinging letter. The same might be said of Mr. Lloyd George. It applies with equal truth to my friend Mr. Bottomley. But I have been more fortunate than they. You, Sir, have taught me wisdom. Some six months ago I sent you a spicy, stinging letter on the same subject—the prevention of venereal disease. You courteously advised "postponement" of its publication. Time, aided by Gilbert and Sullivan, completed the lesson for me. I bow—humbly and gratefully—to your superior wisdom. Who should know better than the Editor of the BRITISH MEDICAL JOURNAL that spicy, stinging

sentences do not greatly advance the public good? Hence the comparative tameness of my later letter which you did publish.

Let us hope that Mr. Lloyd George—and Mr. Bottomley—will in time be equally fortunate. But of course allowances will have to be made for them. They have not the advantage—as I have had—of the kindly guidance of an experienced medical editor, free, gratis, and for nothing! Pressure of work doubtless must excuse Mr. Lloyd George if through neglect of his duty to Gilbert and Sullivan he has as yet not learnt that it is "*calm* deliberation" that "disentangles every knot." A stinging style creates a stormy atmosphere which makes calm deliberation impossible, whether in medical journals or elsewhere.

This, however, is digressing. My letter was never intended, as your correspondent hints, to discredit the fact, the beautiful fact, that disinfectants do disinfect. Are we for that reason to shut our eyes to the fact, the ugly fact, that calomel cream can never cleanse the dirty mind of a single sensual sinner? Your correspondent's other assertions must be left to others who are better able to deal with them.

Your correspondent "G.'s" criticism (October 14th, p. 706) is suggestive and very much to the point. He inquires whether I realize all that "a universally applied habit of unselfish thinking, practised every day in every way" would lead to. He sees that it would involve the reconstruction of society. Most certainly neither I nor anyone else realizes all that it would lead to. For example, how many see that it would also lead to as great a renaissance of science, art, and literature as the world has ever witnessed? For in these things the best and finest work is never inspired by a selfish motive. To what do we owe our knowledge of the fact that disinfectants do disinfect? Is it not the outcome of many an hour of patient, unselfish thinking done for our benefit by Lister and Pasteur?—I am, etc.,

Sheffield, Oct. 23rd. HERBERT CAIGER.

SIR,—During and just after the war I lectured on venereal disease to about 500,000 of our troops, including a fair number of colonial and overseas soldiers, both as units and in cadet training schools. Whenever I spoke to them I always appealed to their patriotism and put it up to them how much better they would be employed pumping lead into the Hun rather than lying in hospital and having "606" pumped into them. Practically on every occasion these words were greeted with acclamation and enthusiasm. I wish to protest most strongly against the imputation conveyed in Miss Ettie Rout's letter in your last issue (p. 777) that numbers of men deliberately allowed themselves to be infected with this disease to escape the firing line. I am not denying that among all the millions of men under arms there may have been an infinitesimal number who took this course in an attempt to save their skins; but from my experience, based on an enormous number of talks outside lectures with soldiers from all parts of the empire, I am absolutely certain that this particular cause of infection was practically negligible. I write this letter because I am very jealous of the fair fame of our soldiers.—I am, etc.,

London, Oct. 23rd. E. B. TURNER.

ANIMAL EXPERIMENTS.

SIR,—You have published a letter from Dr. W. W. Keen, of Philadelphia, U.S.A., which directly challenges the "consistency" of our President, Dr. Hadwen, who is in America. I trust that you will not allow this challenge, obviously based on error, to remain uncorrected. Dr. Keen asserts that Dr. Hadwen "advocates" the law under which experiments on animals are performed in this country. That is false. He also states that Dr. Hadwen gives "unconscious advocacy" to the use of antiseptics by his supposed approval of the law. Dr. Hadwen does not advocate antiseptics, consciously or unconsciously. Like most advanced surgeons, he believes in *asepsis*, of which Lawson Tait, Granville Bantock, and Sir William Savory were pioneers, practising it in defiance of *antisepsis*, then fashionable.

Errors similar to Dr. Keen's are bound to be made by anybody who hastily concludes that "Mr. Coleridge and Dr. Hadwen" advocate the same things. Mr. Coleridge—who is the director of a society one-third the size of that to which Dr. Hadwen devotes purely voluntary service—"directs" his society by a policy totally opposed to ours. I take the opportunity of Dr. Hadwen's absence to state their relative positions, which ought to be known within the medical profession, although much misunderstood without.—I am, etc.,

B. E. KIDD,
Secretary, British Union for Abolition of Vivisection.

London, S.W., Oct. 23rd.

POST-GRADUATE COURSES.

SIR,—I was glad to read your article on post-graduate courses (October 7th, p. 650). Any scheme which adds to the facilities for obtaining such instruction will, I am convinced, be of very great interest to a great number of us. But there are many of us who, having gone into practice in the near provinces, view with horror our gradual separation from the scientific, our gradual deterioration, fancied or real, into the "cold on the liver," "sick headache" type of diagnostician. Yet it is difficult for many of us to prevent this.

We are hard up, we have to work to keep our local tradesmen prosperous. We come home too tired or too slack to read. We cannot afford to spend a week or a fortnight away from our work. In other words, it is very difficult for us provincials to avail ourselves of the existing facilities, and we have none here. Our local hospitals are closed corporations, and do not teach. For the life of me I cannot see why. We have clinical meetings from time to time and enjoy them, but they do not follow the lines of a post-graduate course, and some of us, tied up in the afternoon, cannot attend even these.

I am certain something ought to be done for us, and my suggestions are as follows:

1. That every local general hospital be made a centre for post-graduate courses. Lectures and demonstrations to be given once a week in the evenings, the most suitable time being 5 to 6. Or
2. That post graduate classes be held once a fortnight in London on some special subject, necessarily in the evening, say from 6 to 7, or, if this is not feasible, in the afternoons.
3. That these courses be free, or as nearly free as possible.

The advantages to be accrued are obvious; I should be glad to hear the opinions of other "provincials."—I am, etc.,

"AMBITIOUS."

October 14th.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE following candidates have satisfied the examiners in both parts of the Examination indicated:

D.P.H.—Marjorie Back, Muriel J. Brown, J. G. Campbell, J. Davidson, R. A. Forsyth, A. W. Gaye, Beryl Grieve, †J. G. F. Hosken, E. S. Macphee, D. R. Mehta, D. E. Morley, Edith M. Neilson, Sybil M. Nuttall, G. P. N. Richardson, T. E. Roberts, H. A. Ross, †G. M. Sanderson, H. E. Seiler, W. A. Werden, J. Young.

* Distinguished in the principles of Hygiene.
† Distinguished in the application of Sanitary Science.

Diploma in Hygiene.

The first examination for the Diploma in Hygiene, recently established by the University for foreign medical graduates, was held this month. The following candidate satisfied the examiners in both parts of the examination (with distinction in the principles of hygiene): Chung Hsin Han.

UNIVERSITY OF LONDON.

A COURSE of eight lectures on the "Histology of the nervous system" will be given by Dr. C. Da Fano at King's College (Strand) on Wednesdays, October 25th, November 1st, 8th, 15th, 22nd, and 29th, December 6th and 13th, at 4.30 p.m. Attendance at this course is recognized in connexion with the B.Sc. (Honours) degree in Physiology. Admission is free without ticket.

SCHOOL OF HYGIENE.

At a meeting of the Senate held on Wednesday, October 18th, the Vice-Chancellor (Mr. H. J. Waring, M.S., F.R.C.S.) being in the chair, a communication was received from the Minister of Health forwarding draft heads of agreement with reference to the School of Hygiene which is to be established as a school of the University under the donation of two million dollars made for the purpose by the Rockefeller Foundation. The agreement provides for the erection of suitable buildings on a site in Bloomsbury and the constitution of a board of management and a court of governors for the control and administration of the school. Resolutions were adopted expressing the concurrence of the University in the proposed scheme and the very great satisfaction with which the Senate learnt of the munificent contribution of the Rockefeller Foundation and of the intentions of H.M. Government with regard to the maintenance of the school.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An extraordinary Comitia of the Royal College of Physicians of London was held on Thursday, October 19th, at 5 p.m., the President, Sir Humphry Rolleston, being in the chair.

The modification of By-law CLXXVIII., passed for the first time at the last Comitia, was now passed for the second time. In consequence of this the by-law now reads as follows:

"No Fellow of the College shall be engaged in trade, or dispense medicines, or make any engagement with a pharmacist or any other person for the supply of medicines, or practise medicine or surgery in partnership, by deed or otherwise; or be a party to the transfer of patients or of the goodwill of a practice to or from himself for a pecuniary consideration."

The former text of this by-law was:

"No Fellow *or Member* of the College shall be engaged in trade or dispense medicines, or make any engagement with a *chemist* for the supply of medicines, or practise medicine or surgery in partnership, by deed or otherwise; or be a party to the transfer of patients or of the goodwill of a practice to or from himself for a pecuniary consideration."

(Words omitted or altered are printed in italics.)

The following resolution was passed for the first time:

"That By-law CXIV, which relates to candidates for the Membership, be repealed."

This by-law reads as follows:

"No candidate shall be admitted to examination who is engaged in trade; or who dispenses medicine, or makes any engagement with a chemist for the supply of medicines; or who practises medicine or surgery in partnership, so long as that partnership continues."

The following resolution was passed:

"That subject to the provisions of By-law CXC it is undesirable that any Fellow or Member of the College shall have any financial interest whether direct or indirect in any company or institution having for its object the treatment of disease for profit, other than the receipt by him from such company or institution of (1) a fixed salary, or (2) fees, for such services as he may render to such company or institution in his capacity of medical practitioner.

This is intended to replace the resolution passed by the College on October 25th, 1888—namely:

"That it is undesirable that any Fellow or Member of the College should be officially connected with any company having for its object the treatment of disease for profit."

The President then dissolved the Comitia.

UNIVERSITY OF EDINBURGH.

At the graduation ceremony on October 21st the following medical degrees and diplomas were conferred:

M.B., Ch.B.—J. W. Anderson, F. Booth.
D.P.H.—Jean Murray.

UNIVERSITY OF ABERDEEN.

The Alexander Anderson Scholarship in Medicine, tenable for two years, has been awarded to Robert Cruikshank, M.B., Ch.B.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Calendar for 1922–23.

The *Calendar*[1] of the Royal College of Surgeons of England for the current year has lately been published, and contains the usual information arranged upon the customary plan. The report of proceedings of Council shows that 52 diplomas of Fellowship (including 3 to women) were issued during 1921–22, and 334 diplomas of Membership (including 91 to women). The diploma of Fellowship by examination (with ophthalmology) was granted for the first time. The licence in Dental Surgery was issued to 194 persons (including 4 women), and the following are the numbers of diplomas granted jointly with the Royal College of Physicians: Public Health, 69; Tropical Medicine and Hygiene, 53; Ophthalmic Medicine and Surgery, 25; Psychological Medicine, 24. Mr. Charles Lovell, of Lincoln, and Mr. William Coates, of Manchester (each a member of twenty years' standing), were admitted to the Fellowship without examination. The subject of the Jacksonian Prize Essay for the year 1923 is "The pathology and treatment of malignant disease of the testicle."

Reference is made in the report to the fact that the annual meeting of Fellows and Members summoned last year did not take place as the required quorum was not obtained. A report is presented on the irregular meeting held on that occasion after the President's withdrawal, and attention is called to Section XVII of the By-laws under which those holding an unauthorized meeting render themselves liable to suspension from privileges or removal from being a Fellow or Member.

The financial report states that the income of the College, exclusive of that from trust funds, amounted to £39,815, or £1,852 more than the previous year, and that the total expenditure in respect of revenue was £35,251, or £1,594 higher than in the previous year. The balance of the revenue account amounted to £6,565. The valuation of investments at June 24th last showed a considerable improvement. The Conservator's report has already been noticed, but we may recall that under the agreed terms of trust the Council of the College becomes responsible for the housing display, completion, upkeep, and cataloguing of the Army Medical War Collection, spoken of in previous reports under the title of "War Office Collection." The collection thus added forms an intrinsic part of the College museum, but the contents are at the disposal, for teaching purposes, of professors at the Royal Army Medical College, Millbank. When complete, it is estimated that the Army Medical War Collection will comprise 2,000 wet specimens and 1,500 dry specimens, besides drawings, radiograms, photographs, models, and casts. Before the end of the present year it is hoped to furnish the new quarters with cases stands, and begin the installation of the collection in the new accommodation under construction. During the present year Lieut.-Colonel R. H. Elliott has made an addition of great value to the Museum by his collection of eyes showing the lesions which may result from the operation employed by native practitioners in the treatment of cataract. The report on the library states that the *Lives of Fellows* compiled or written by the librarian, Mr. Victor G. Plarr, amount now to 2,450; they are being fully indexed. The period covered is from 1843 to the present time.

[1] London: Taylor and Francis. 1922. Price 1s.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At the meeting of the Royal College of Surgeons of Edinburgh, held on October 18th, Sir David Wallace, C.M.G., was re-elected President for the ensuing year; Dr. George Mackay, Vice-President; and Mr. Alexander Miles, Secretary and Treasurer.

The following 19 successful candidates out of 62 entered, having passed the requisite examinations, have been admitted Fellows:

P. M. Brodie, W. A. Brown, D. Buchanan, J. T. Carson, J. S. M. Connell, J. Dunell, E. L. Ferguson, H. L. H. Greer, C. R. R. Huxtable, Marjorie M. Jefferson, I. B. Jose, L. C. E. Linton, G. A. Petrie, E. O. Pullon, B. S. Simpson, H. V. Tilak, V. N. Whitamore, J. L. Will, Ethel C. Will.

Dr. Kanthapeth Rajah, having passed the requisite examination, has been admitted a Licentiate of the Royal College of Surgeons of Edinburgh.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

At the Annual Stated Meeting of the President and Fellows, held on St. Luke's Day, October 18th, the following Members of the College were elected Fellows: Leonard Abrahamson, M.D.Univ. Dubl.; Joseph Warwick Big ger, M.D.Univ.Dubl.; Charles Dickson, M.B., R.U.I., M.D.Queen's Univ.Belfast.

The following officers for the coming year were elected:—President: Michael Francis Cox, Hon. M.D., R.U.I. Censors: Sir William J. Thompson, M.D.Univ.Dubl.; William Joseph Dargan, M.D., R.U.I.; John Speares, M.D.Univ.Dubl.; Richard Edward Tottenham, M.D.Univ.Dubl. Representatives of the College on the Committee of Management under the Conjoint Examination Scheme: Dr. Walter Smith, Sir John Moore, Dr. F. P. C. Kirkpatrick. Representative on the General Medical Council: Sir John Moore, M.D. Treasurer: Henry T. Bewley, M.D. Registrar: T. Percy C. Kirkpatrick, M.D. Librarian: Mr. R. G. J. Phelps. The President appointed Sir William J. Thompson to act as Vice-President of the College.

Additional examiners to take the place of an absent censor or examiner, examiners for the licence in midwifery, supplemental examiners under the conjoint scheme with the Royal College of Surgeons in Ireland, examiners for the Conjoint Diploma in Public Health, examiners for the membership, and the various collegiate committees were appointed. So also were the following examiners for the Conjoint Preliminary Examination:—In Languages: E. H. Alton, Fellow of Trinity College, Dublin. In Mathematics: Reginald A. P. Rogers, Fellow of Trinity College, Dublin. In Irish: Edward J. Gwynn, Fellow of Trinity College, Dublin.

The annual report of the library committee, recommending the publication of correspondence between Archbishop and Sir Patrick Dun, first president of the King and Queen's College of Physicians in Ireland, A.D. 1692, was adopted.

The Denver city council (Colorado, U.S.A.) has set aside 20,000 dollars as a contribution from the city to the University of Colorado Medical School and Hospital, the establishment of which was made possible by donations from the Rockefeller and Carnegie Foundations.

A sanitary conference of the South American Republics will be held in Montevideo in January, 1923. Among the subjects to be discussed will be the medical curriculum, and the best means of furthering scientific interchange in South America.

By the will of Dr. W. S. Halsted (of whom an obituary notice appeared in our issue of October 7th, p. 663), the residue of his estate, valued approximately at 100,000 dollars, is left to the Johns Hopkins University, subject to the payment annually to his widow of 5 per cent. of the value of the legacy. The bequest is to be devoted to research in medicine, preferably in surgery, and is not to be used for buildings. The university is given the right to sell at its discretion any portion of the residue and to reinvest the proceeds.

Obituary.

SIR JAMES GALLOWAY, K.B.E., C.B., M.A., M.D., F.R.C.P., F.R.C.S.,

Consulting Physician to Charing Cross Hospital.

The death after a short illness, due to the complications of renal calculus, of Sir James Galloway during his full tide of activity removes from the scene of medical life in London a figure prominent in many directions.

Coming of an Aberdonian stock, he was born at Calcutta in October, 1862, and on account of the age limit had resigned his post as senior physician to Charing Cross Hospital as recently as October 13th last. He received his early education at the Chanonry School, Aberdeen, and then proceeded to the university, where he took the degrees of M.A. (1883), M.B., C.M. (1886), and M.D. with highest honours (1892). His university gave him the honorary degree of LL.D. in 1919; he had taken the F.R.C.S.Eng. in 1889, and about this time had started work at the London Hospital, where he came under the influence of the late Sir Stephen Mackenzie, by whom he was imbued with the importance of dermatology as an aspect of general medicine—a subject on which subsequently he often wrote. For a time he was demonstrator of materia medica in the medical school of the London Hospital, but he was much more interested in pathology, and was soon appointed pathologist and assistant physician to the Great Northern Hospital. His industry, especially in the microscopic investigation of malignant disease, was early recognized by his appointment to give the Morton lecture on cancer at the Royal College of Surgeons in 1893; the lecturer in 1892 was the late Sir German Sims Woodhead, who preceded him into the valley of the shadow a little more than nine months ago. Galloway's Morton lecture on the "Parasitism of protozoa in carcinoma" reviewed the position of the subject, much debated at that time by Ruffer, Plimmer, and J. Jackson Clarke at the old Pathological Society of London, but with the wise caution that always characterized his judgement he left their causal relation an open question. That his outlook in pathology was wide is shown by a well-illustrated paper on syringomyelia read before the Pathological Society in 1891, and by another in 1894 on the bacteriological diagnosis of membranous inflammation of the throat based on eighty personal observations. In this year his long connexion with Charing Cross Hospital began by his appointment as physician to the skin department, where he worked until 1914, having in the interval passed up the rungs of the ladder as assistant physician (1901), full physician (1906), and senior physician (1913); in the medical school he filled various offices, the last being lecturer on medicine (1908–22). As examiner in medicine at the Conjoint Board, at the University of London, and for the Medical Service of the Royal Navy as a member of the Advisory Board for Army Medical Services his eminence as a general physician was justly recognized. Further evidence of the position he had achieved is shown by his appointment early in 1916 to be consulting physician with the forces in France; he served first in that capacity with the First and Second Armies (C.B. 1917), but a little later, when it became the practice to appoint a consulting physician to each army, he was attached to the Second, with which he continued to serve until his recall to London to take a share in the work of the Ministry of National Service. His special knowledge of skin diseases led to his election to be President of the Section of Dermatology of the Royal Society of Medicine in 1917, of the Section of Dermatology at the Birmingham Meeting of the British Medical Association in 1911. It was shown also by the honorary membership of the French and Netherland Dermatological Societies and by the articles that he contributed to works such as Quain's *Dictionary of Medicine* and Allbutt's *System of Medicine*. The wide scope of his interests included medical history, as evidenced by his scholarly articles, "The Story of St. Roncevall" (1907) and "Eleanor of Castile, Queen of England, and the monuments erected in her memory" (1908), published in the *Charing Cross Hospital Gazette*, and by his active participation in the work of the History of Medicine Section of the Royal Society of Medicine.



Photograph by] SIR JAMES GALLOWAY. *[Lafayette Ltd.*

Galloway's judicious mind, broad outlook, and tact made him an admirable member of committee, and his services were therefore much in request; after the South African war he served on the important advisory committee for the Army Medical Services appointed by Mr. St. John Brodrick (now Lord Midleton) and after his return from France during the European war he was made Chief Commissioner for Medical Services, Ministry of National Service (K.B.E., 1918). At the Royal College of Physicians, of which he became a Fellow in 1897, he was Councillor (1916–18), Censor (1920–22), and in addition a member of the Board of Management of the Conjoint Examining Board in England; he thus had much to do with the new arrangements for the curriculum of medical studies.

Sir James Galloway became a member of the British Medical Association in 1891 and served it in many capacities. The first office he held was that of honorary secretary of the Section of Dermatology at the Annual Meeting in Montreal in 1897, and, as already said, he was president of that Section at the Annual Meeting in Birmingham in 1911. He was a member of the Council of the Metropolitan Counties Branch for many years, and was chairman of the War Emergency Committee established by that Branch in 1915. He became a member of the Central Council of the Association in 1914 and served in that capacity until 1918. He was a member at various dates of the Finance Committee, the Journal Committee, and the Hospitals Committee; he was also co-opted a member of the special committee of Chairmen of Standing Committees out of which the Central Medical War Committee evolved, as stated more at length below. One of the greatest services Sir James Galloway rendered to the Association was to take the chair at the Conferences of Representatives of the Medical Staffs of Voluntary Hospitals held under the auspices of the British Medical Association in London in 1920, 1921, and 1922. In the chairmanship of these conferences he exhibited a skill and power of suasion which contributed in no small measure to the success that attended them. The first conference was called at a time when members of voluntary hospital staffs were profoundly stirred by the grave financial position of the hospitals; it was summoned at such short notice on the action of the Government in appointing the Cave Committee, that its constituent members had little opportunity for a preliminary survey of the position and its probable effect upon the future, or of familiarizing themselves with the varied conditions of service in different parts of the

country. Yet under these difficult circumstances the conference was handled with a skill that made it as effective and businesslike as a Representative Meeting, where most of the representatives are practised in public business and all are familiar with an agenda prepared and discussed months in advance. That one day's work in December, 1920, gave the Association a sure basis for the evidence which it gave to the Cave Committee, much of which was accepted by that Committee and has since become the practice of the authorities. In later conferences new conditions brought new difficulties, which were met with equal success. Opinion on points of policy became more sharply defined, and therewith arose the probability of such acute controversy as might destroy the effectiveness of any conference. But with each new occasion the good humour, gentle playfulness, and imperturbability of the chairman brought out in response all that was best in the assembly to most practical purpose.

At the first conference, held on December 31st, 1920, resolutions were passed that the voluntary method of hospital administration should be maintained, that the hospitals should not be rate-aided, and that any Government grant should come through an intermediary channel, that every patient who was not a necessitous person should make a contribution towards the cost of his maintenance, and that a percentage of patients' payments should pass into a fund to be allocated at the desire of the honorary staff. At the second conference, on November 16th, 1921, a resolution was passed in favour of the extension of the services of the hospitals to private paying patients, and it was again resolved that a percentage of payments made by patients to hospital maintenance should be passed into the staff fund. At the third conference, on March 22nd, 1922, a resolution was passed to the effect that the essence of the voluntary system was the independent and voluntary management of a hospital and was not necessarily related to the conditions of service of the medical staffs; the formation of staff funds from a percentage of patients' payments was again approved; and a resolution was passed that the tenure of office of members of the honorary staffs of voluntary hospitals should, where necessary, be modified to allow more and younger practitioners to obtain responsible hospital experience. It will be remembered that the whole matter arising from the resolutions passed at this series of conferences was placed before the Representative Meeting at Glasgow last July, where important decisions were arrived at. During the course of the staff conferences Sir James Galloway took occasion to point out the great benefit afforded to the representatives of the medical staffs of voluntary hospitals by the opportunity of meeting together at such conferences, which were the only chances of consulting on important principles of hospital administration, and the value of the organization of the Association in calling the conferences and making their recommendations effective.

How great is the indebtedness of the profession to Sir James (then Dr.) Galloway in the inception and successful organization of the Central Medical War Committee is known probably to few. From him came the proposal at the Council meeting of the British Medical Association in January, 1915, that a committee of the Association should deal with matters arising from the withdrawal of medical men from civil practice to serve with the military forces. In April of the same year Dr. Galloway became chairman of the War Emergency Committee of the Metropolitan Counties Branch Council, the forerunner in work and ideas of the Central Medical War Committee. Through him the Council of the Association was led to vote money for the purpose of carrying on the work; and when in July, 1915, the War Emergency Committee for England and Wales was appointed Dr. Galloway became a representative of the Council on that body. In this capacity his services were of the greatest value owing to the insight that he had obtained into War Office methods, and the friendships he had formed while serving on the Advisory Committee for Army Medical Services, appointed after the South African war. When early in 1916 Dr. Galloway went to France as consultant with the forces his assistance was temporarily lost to the Central Medical War Committee. Towards the end of 1917 he was brought back to become Chief Commissioner of Medical Services in the Ministry of National Service, which assumed charge on November 18th, 1917. In this capacity Sir James Galloway continued in sympathetic co-operation the organization of the Central Medical War Committee, referred to it all the Ministry had to decide, and frequently attended its meetings himself. Thus it was to the quiet perseverance, unfailing tact, and calm judgement of Sir James Galloway that the Central Medical War Committee largely owed its origin. In the more difficult periods of the Committee's career, Sir James's intimate acquaintance with the Medical Department of the War Office and its chiefs helped to maintain friendly relations; and in the last year of the war, as Chief Commissioner of Medical Services, he held the balance between the efforts of the Central Medical War Committee to maintain sufficient medical attendance on the civil population and the demands of the War Office for additional medical officers.

Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians of London, writes:

Association for many years and in various circumstances, such as committees, examinations, and more recently at the College of Physicians, where his services as a member of the committee of management were of great value, only strengthened the early impression that Galloway was in every respect a most desirable colleague. He could always be depended on to do his share, and often more, of the work—cheerfully, calmly, thoroughly, and with a punctuality sometimes almost startlingly exact and always without obvious hurry. A clear-headed and wisely cautious adviser, he was most kindly in his judgements and slow to express disapproval of others. A good proof of the general esteem in which he was held can be found in the amount of devoted help he so freely gave as "a doctors' doctor." With a genial and unselfish disposition he had the highest ideals of life, and these were so quietly followed that they seemed, as indeed they had become, a natural characteristic of the man. His premature death leaves a gap which it will indeed be hard to fill.

To a former colleague on the Medical Staff of the Ministry of National Service we are indebted for the following tribute:

Of the senior officials of the Ministry of National Service none was regarded with more admiration and personal affection by his colleagues and subordinates than Sir James Galloway, the Chief Commissioner of Medical Services. As the head of perhaps the most pivotal department of a Ministry whose main function was to restore public confidence in the fairness of official dealing with the problems of recruiting—medical and other—he was pre-eminently the right man in the right place, for he commanded alike the confidence of the general public and his own profession. In addition to a wide knowledge and experience of general medicine he brought to his work in the Ministry an intimate acquaintance of the medical aspects of recruiting, while his previous active service in South Africa and in France had given him a first-hand knowledge of army medical organization and requirements. He was thus exceptionally fitted to hold the balance between the ever-conflicting interests of the medical needs of the civilian population and the demands made by the Navy, Army, and Air Force for medical officers. As regards recruiting, the disappearance of the unsatisfactory R.A.M.C. "categories" and the establishment of the M.N.S. "grades," based solely upon the physical condition of the recruit, was a far-reaching improvement. Galloway put an immense amount of thought into the Instructions to Medical Boards regarding the points which were to determine grading, and the resulting document will remain as a monument to him and to the experts whom he consulted. The sectional system of examination by which each recruit was examined by two or three examiners was another improvement introduced by him, and one which went far to establish confidence in the public mind. The extent to which Galloway's personal qualities affected the work of his department to its farthest ramifications is known only to those closely associated with him in it, but it may be safely said that it is in no small measure due to him that there was brought into being a practical and scientific method of medical examination of recruits, superior to anything previously known, which remains ready for immediate application should a similar emergency unhappily arise. In all the turmoil of conflicting currents of social and professional prejudices and political strivings Sir James Galloway maintained an unruffled serenity. He had two great qualities of leadership—the power of detachment, which enabled him to keep a broad outlook over his work as a whole while at the same time he was fully acquainted with details, and the capacity to devolve his work to his staff. He made it a rule to keep his own desk free from papers, and the quiet tidiness of

his room was an index to the mind of its occupant, who, however much pressed by affairs, could always make time to bring his clear and sound judgement to bear upon the problems which were perplexing his officers. In the brief leisure of these strenuous months, at meal times and in travelling, Sir James was the most charming and genial companion, enriching his conversation from the stores of his historical and antiquarian knowledge. He won and held, as such a man could not fail to do, the loyalty and devotion of his staff, all of whom will feel a sense of personal loss in his death.

A largely attended memorial service was held in the Church of St. Martin-in-the-Fields, Trafalgar Square, on Saturday, October 21st. The Rev. H. R. L. Sheppard, assisted by the Rev. A. W. Oxford, M.D., and the Rev. M. Griffiths, officiated. The service included the hymns "O God, our help in ages past," and "Abide with me," and Psalms cxxi and xxiii. After reading the lesson Dr. Oxford gave a short and deeply impressive eulogium, more especially of Sir James Galloway's work for the patients at Charing Cross Hospital. Among those present, besides Lady Galloway and members of the family, were Sir Humphry Rolleston, President of the Royal College of Physicians, Sir William Thorburn, representing the Council and Court of Examiners of the Royal College of Surgeons, Sir Frederick Mott, Sir James Dundas-Grant, Sir Charles Ballance, Sir Herbert Waterhouse, Dr. William Hunter, Sir James Cantlie, Dr. Arnold Chaplin, Dr. J. A. Ormerod, Dr. Raymond Crawfurd, and Sir James Porter, together with the vice-chairman of Charing Cross Hospital, and many members of the resident staff, nurses and students. The British Medical Association was represented by Dr. N. G. Horner, Assistant-Editor, British Medical Journal, and Dr. A. D. Macpherson, Assistant Medical Secretary.

Lieut.-Colonel Patrick Murphy, Bombay Medical Service (retired), was killed in the sack of Smyrna by the Turks on September 13th, aged 78. He was educated at Queen's College, Cork, and graduated M.D. and M.Ch. at the Queen's University, Ireland, in 1868. He entered the I.M.S. as assistant surgeon on October 1st, 1869, became surgeon lieutenant-colonel after twenty years' service, and retired on January 17th, 1895. He served in the Egyptian war of 1882, when he was present at the battle of Tel-el-Kebir, and received the medal with a clasp and the Khedive's bronze star.

The Services.

INDIAN MEDICAL SERVICE.

The New Director-General.

The term of office of the present Director-General of the Indian Medical Service, Major-General Sir William Edwards, K.C.I.E., expires in January next. As his successor has been appointed Colonel Robert Charles Macwatt, C.I.E., the senior colonel on the establishment. Colonel Macwatt was born on January 22nd, 1865, the son of Dr. Robert Charles Macwatt, of Dunse, Berwickshire, so will be 58 when he takes up his new post. He was educated at Edinburgh University, where he graduated M.B. and C.M. in 1886 and B.Sc. in 1897, subsequently taking the F.R.C.S.Eng. in 1911. He entered the I.M.S. as surgeon on October 1st, 1887, became major after twelve and lieutenant-colonel after twenty years' service, and attained the rank of colonel on January 8th, 1918, when he was appointed Inspector-General of Civil Hospitals in the Punjab, the post which he still holds. Almost all his service has been spent in the political department in Rajputana, under the Indian Foreign Office, where he has held the posts of Agency Surgeon successively in Haraoti and Tonk, Kotah, and Jhallawar. In June, 1907, he became Residency Surgeon of the Western Rajputana States, and in November, 1913, of the Eastern Rajputana States; while in September, 1914, he was appointed Chief Medical Officer in Rajputana and Civil Surgeon of Ajmir. He served on the north-west frontier of India in the Hazara campaign of 1888, receiving the frontier medal with a clasp; in the Lushai campaign of 1889 on the north-east frontier (clasp); and again on the north-west frontier in the Hazara and second Miranzai campaigns of 1891, getting a clasp for each. He received the Kaisar-i-Hind medal of the first class on January 1st, 1908, and the C.I.E. on January 1st, 1916, and on March 22nd, 1921, was appointed Honorary Surgeon to the King.

MEMORIAL TO LIEUT.-COLONEL E. M. WILSON.

The memorial to the late Lieut.-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., R.A.M.C., will be unveiled on Friday, November 3rd. A short service will be held by the Right Reverend Bishop J. Taylor Smith, C.B., C.V.O., D.D., Chaplain General to the Forces, in the chapel of The Queen Alexandra Military Hospital, Millbank, at 4 p.m. Lieut.-General Sir John Goodwin, K.C.B., C.M.G., D.S.O., K.H.S., Director-General, Army Medical Services, will perform the unveiling ceremony. All ranks of the Royal Army Medical Corps are invited to attend. Dress: Service dress with swords; mourning bands will not be worn.

The third annual dinner of the medical officers of No. 14 Stationary Hospital will be held on Friday, December 8th, at the Trocadero Restaurant, Piccadilly, at 7.15 for 7.45 p.m. Colonel C. R. Evans, D.S.O., will be in the chair. The price of the dinner will be 15s., exclusive of wines. Evening dress or dinner jacket, miniature medals optional. The honorary secretaries are Major H. M. Perry and Dr. H. L. Tidy, 39, Devonshire Place, W.

Medical News.

The Board of Trade has appointed Sir Thomas Robinson, M.P., to be chairman of the Dyestuffs Advisory Licensing Committee set up in January, 1921. It has also appointed Mr. R. Waddington, M.P., and Professor G. T. Morgan, F.R.S., to be members of the Committee.

The annual meeting of Fellows and Members of the Royal College of Surgeons of England will be held at the College, Lincoln's Inn Fields, W.C., on Thursday, November 16th, at 3 p.m.

The annual series of post-graduate lectures and demonstrations at the Royal Salford and Ancoats Hospital, Manchester, commenced on October 19th. The meetings take place on Thursday in each week, at 4.30 p.m., alternately at the two hospitals, the next—on November 2nd—being at Ancoats Hospital, when Dr. Arnold Renshaw will lecture on diabetes.

Lady Constance Melville, who died in August last, has by her will bequeathed £4,000 to Dr. H. A. des Voeux, of Buckingham Gate, "in grateful thanks for his untiring help to a very troublesome patient."

The next session of the Dental Board of the United Kingdom will commence at 2 p.m. on Tuesday, November 14th, when the chairman, the Right Hon. Francis Dyke Acland, M.P., will take the chair and give an address. The Board will continue to sit from day to day until the termination of its business.

The old students' dinner of St. Thomas's Hospital will be held on Friday, November 10th, at the Princes' Restaurant, Piccadilly, at 7 for 7.30 p.m. The chair will be taken by Sir Charles Sherrington, G.B.E., M.D., President of the Royal Society.

A short course of seven lecture-demonstrations on gastro-intestinal affections in children will be given at the Children's Clinic, Western General Dispensary, Cosway Street, near Edgware Road station, on Mondays and Thursdays at 4.45 p.m., from November 2nd to 23rd inclusive. The first lecture, with experimental illustrations, will be given by Professor Sir William Bayliss, followed by six practical demonstrations by Dr. Bernard Myers. The fee for the course is one guinea, tickets for which and copies of the complete syllabus can be obtained from the secretary to the Fellowship of Medicine at 1, Wimpole Street, W.1.

The British Orthopaedic Association met in London on October 20th, when a number of papers were read. The members dined together that evening at the Langham Hotel. The President, Sir Robert Jones, who was in the chair, after declaring that there were to be no speeches, called on one member of the company after another to speak. One of his victims was M. Calvé and another Dr. Murk Jansen, who promised the association a very cordial welcome from his fellow countrymen when it visits Leyden next spring. On Saturday morning a visit was paid to the Royal College of Surgeons, when Sir Arthur Keith and Mr. Lawford Knaggs gave a demonstration chiefly concerned with deformities and lesions of the bones.

The late Dr. Henry Edward Langford of Kidderminster, who left estate valued at £16,451, has by his will directed that after some family legacies the residue of his estate on the death of his widow is to go to the Lifeboat Institution to the extent of £5,000, and the remainder, which it is expected will amount to about £7,000, to the Chancellor of the Exchequer towards the expenses of the late war.

It was announced recently that the Allied Chemical and Dye Corporation of New York has instituted in perpetuity an award of 25,000 dollars annually, to be presented to the chemist in the United States who has contributed most to the benefit of science and the world; the gift is not to be limited to any particular field of chemistry.

THE British Medical Association Council dinner on Wednesday last (the first of its kind) was well attended and in every way successful. The President of the Council, Dr. R. A. Bolam, was in the chair, and the toast of the commonhealth was given by Sir William Macewen, President of the Association. It was acknowledged by Sir Arthur Robinson, Chief Secretary of the Ministry of Health, and Sir Anthony Bowlby, President of the Royal College of Surgeons of England. The health of the ex-President, who was the guest of the evening, was given by Dr. Wallace Henry, Chairman of Representative Meetings, and suitably acknowledged by Dr. David Drummond. The toast of the guests was given by the Chairman and responded to by Mr. E. Shortt, K.C., M.P., and Sir Henry Craik, M.P.; the health of the Chairman was proposed by Sir Jenner Verrall and briefly acknowledged. We propose to publish a more detailed report in our next issue.

DR. HENRY HANSON, who was formerly health officer at Panama, and at one time bacteriologist to the State of Florida, U.S.A., has just completed a successful campaign against yellow fever in Peru, and is now advising as to the reorganization of the public health services of that country with the view of eradicating bubonic plague.

FOR a quarter of a century the Anglican Sisterhood known as the Community of St. Peter has, among its charitable activities, kept up a home for aged and infirm women needing nursing and care, called St Peter's Harbour. The home is self-supporting, but is found to be too small to accommodate the many applicants for admission. A public appeal is, therefore, being made—the first for sixty years—for funds to purchase a larger suitable house. Contributions should be sent to the Sister in Charge, St. Peter's Harbour, 10, Greville Place, N.W.6.

A SESSIONAL meeting of the Royal Sanitary Institute will be held at the Town Hall, Wallasey, on Friday and Saturday, November 3rd and 4th. Dr. F. T. H. Wood, M.O.H. Bootle, will open a discussion on "The expenditure of public money on health: why it is worth while." The chair will be taken by Professor H. R. Kenwood, C.M.G., at 7.45 p.m.

MR. MARMADUKE SHEILD, consulting surgeon to St. George's Hospital and, early in his career, house-surgeon to Addenbrooke's Hospital, Cambridge, left the residue of his estate, after paying certain specific legacies and subject to the life interest of his sister, to the medical school of the University of Cambridge, to found a Marmaduke Sheild Scholarship in Human Anatomy, and the balance for the general purposes of the medical school. The value of the net personalty was £91,452. Mr. Sheild graduated M.B., B.Ch.Camb. in 1883.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Mediscera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Tractilus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS

INCOME TAX.

"X. Y." bought a dental vacancy practice in December last.

He is chargeable [illegible] as from the date when he began to be entitled to the receipts, and the executors of the late proprietor [illegible] up to that date. The assessment for 1922-23 [illegible] on the average amount of the profits of the three years 1920, 1921, and 1921; but "X. Y." has the right of having [illegible] adjusted at the end of the year on his application [illegible] the profits have fallen off since or by reason of his succession to the practice. It should be borne in mind, however, that for that purpose he will have to bring in his full and not merely his cash profits, the latter being an insufficient index of the true income from the practice in his early years.

"T. B." replaced his old Ford car by a new Overland, receiving as much for the former as it had cost him.

*** In evidence given by the official witnesses before the Royal Commission on the Income Tax it was stated that where an improvement was effected in connexion with a replacement the proper basis of allowance was the net cost that would have been incurred by the purchase of a similar machine. Consequently in this case "T. B." is entitled to the excess of the price of a Ford as at the date the Overland was purchased (£295) over the amount allowed to him (£155)—that is, £140 net.

IS DESQUAMATION AFTER SCARLET FEVER INFECTIVE?

A CORRESPONDENT asks us to answer the question, Is the desquamation of scarlet fever infectious; or, putting it another way, is the peeling child a danger to the unprotected?

*** We are not prepared to give a definite answer to the question, whichever way it be put, and so far as we can ascertain no definite opinion has been expressed by the Ministry of Health, or previously by the Local Government Board. Everybody is agreed that discharges from the nose, throat, or ears may be infective, as also any discharge from a cutaneous lesion, as, for instance, cracked ears; probably the general opinion of public health officers is that desquamation may be disregarded as unimportant from the aspect of infectivity. Some authorities, among whom we may mention Dr. Robert Milne, while holding this view, consider that special precautions should be taken by way of applications to the skin.

LETTERS, NOTES, ETC.

PREVENTION OF VENEREAL DISEASE.

"SENEX" writes: May I ask your readers to consider the position set up by "G.", whose letter you print on page 766? Does he consider that it is the duty of the employer to inquire how much it costs his servant to live? Is the employer to fix the standard of living for his servant? Does he suppose that shareholders receive dividends as shares in profits or as sinking funds? Does he not know that wages must be a first charge on the gross profits—a charge often so heavy that the balance is carried to the wrong side of the profit and loss account? If he thinks that reasons of self-love is inadequate to produce a decent society, will he turn to Bishop Butler's *Analogy*, the greatest work produced by a churchman in a sceptical age; or perhaps the work of Bentham (*Principles of Morals and Legislation*) some fifty years later may serve his turn. Does he himself propose to take from his practice only enough to pay expenses and secure an old-age pension and hand over the rest to some visionary society for assisting those who cannot or will not help themselves?

SAMPLES AND RETURNS.

"W." writes: The emphasis laid by the Section of Obstetrics at the Glasgow meeting on the necessity of examining the urine reminds me of the old Scottish doctor's advice to his youthful successor:

Old Doctor: And mind this—aye ask your patients to send you a sample of their urine.

Young Doctor: Oh! How could I do that in a case of broken leg, for example?

Old Doctor: Doesn't matter! Broken leg or broken head, make them send their urine. *It's the only chance you'll have of getting your bottles back!*

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 767.

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INSULIN AND DIABETES.

A GENERAL STATEMENT OF THE PHYSIOLOGICAL AND THERAPEUTIC EFFECTS OF INSULIN.

BY

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PROFESSOR OF PHYSIOLOGY, TORONTO UNIVERSITY.

Early Investigations.

Lépine[1] was the first to suggest that the condition of diabetes which von Mering and Minkowski[2] had discovered to follow pancreatectomy might be due to the withdrawal of an internal secretion necessary in the normal animal for the complete metabolism of sugar. The subsequent discoveries that extracts of certain ductless glands, such as the adrenals, have marked pharmacological actions, and that administration of extracts of others, such as the thyroid, can relieve the symptoms which are associated with atrophy of that gland, gave indirect support for the view that the pancreas must also yield an internal secretion. This view was also greatly strengthened by the results of experiments in which it could be clearly demonstrated that a subcutaneous graft of pancreatic tissue is capable of preventing diabetes when the remainder of the pancreas is removed. Many attempts were made to obtain direct proof of the presence of this hormone; thus diabetic animals were given extracts of pancreas prepared in various ways, or blood from the pancreatic veins of normal animals was injected into them, but with no definite benefit. The extracts prepared by Starling and Knowlton,[3] by Murlin and Kramer,[4] by Kleiner,[5] and by E. L. Scott[6]—to mention only a few of the investigators—did not yield results that were considered by these authors to be sufficiently positive to justify an immediate further development of their investigations with a view to using the extracts in the treatment of diabetes in man. The hope that, in spite of these more or less unsatisfactory results, a method would some day be discovered for the preparation of a paucreatic extract capable of alleviating the symptoms of diabetes was sustained by the publication from time to time of researches the results of which could be interpreted only by assuming the presence of a pancreatic hormone. Among the most striking of these investigations may be mentioned those of Clarke,[7] who discovered that the isolated mammalian heart—kept alive by perfusing its blood vessels with Locke's solution containing glucose—removes sugar from the perfusion fluid much more rapidly when the fluid used had first of all been perfused through the blood vessels of the pancreas than from fresh Locke's solution. In the light of these researches the majority of investigators concluded that a pancreatic hormone must exist, but that it was impossible to detect its presence in pancreatic extracts because of its destruction by the trypsin and other proteolytic enzymes also present in them.

Starting-point of the Recent Advance.

The problem therefore was to circumvent these enzymes, and to Dr. F. G. Banting is due the credit of suggesting that this might be accomplished by taking advantage of the well-known fact that the cells which secrete the digestive enzymes become completely degenerated in some weeks after ligation of the pancreatic ducts, whereas those of the isles of Langerhans, which apparently secrete the antidiabetic hormone, remain more or less intact. He undertook to see whether extracts of the degenerated gland might yield more certain results, and facilities and assistance were afforded him in my department to put this suggestion to the test of experiment. In collaboration with C. H. Best, Banting observed the effects produced by injection of the extracts on the percentage of sugar in the blood, as well as on the total sugar excretion in the 24-hour urine of dogs, rendered diabetic by extirpation of the pancreas.[8] From practically the very start of the observations a definite lowering of both of these values was observed to occur. The observations were frequently repeated with all necessary controls, and it was further noted that the exhibition of the extract also greatly improved the subjective condition of the animal and markedly prolonged its life. An untreated depancreatized dog seldom lives beyond three weeks—or four at the outside—whereas with the extracts one such animal lived in excellent condition for ten weeks, when it was killed by chloroform. No trace of pancreas could be seen by the naked eye *post mortem*, though a very small nodule of zymogenous cells was found in the walls of the duodenum in a careful microscopical examination.

First Therapeutic Application.

Having shown by these experiments that the pancreas does contain an antidiabetic hormone the next step was to find a method by which an extract containing it could be made from undegenerated gland. Knowing that proteolytic enzymes are almost, if not entirely, absent in the foetal pancreas (Ibrahim), Banting and Best[9] prepared extracts from this source, and, finding them also to contain the antidiabetic hormone, then proceeded to try whether an active extract could be prepared from the pancreas of the full-grown ox, by using alcohol as the extracting medium so as to circumvent the destructive action of trypsin, as had previously been suggested by E. L. Scott. Satisfactory results were obtained, and it was considered that the time had now arrived to warrant the administration of the extract to a diabetic patient. This was done in the case of a boy of 14 years suffering from the usual severe type that is so common at this age. The percentage of blood sugar was reduced by about 25 per cent. This may be considered to mark the close of the first and fundamental step in the discovery of insulin, the name which, following Sir E. A. Schafer's suggestion, has been given to the internal secretion of the pancreas.

Preparation of Insulin.

The presence of a hormone capable of alleviating the symptoms of diabetes both in laboratory animals and in man having been definitely established, it remained to devise suitable methods for the preparation in quantity of an extract containing it and to investigate thoroughly the extent and nature of its physiological and therapeutic actions.

Since the extract used by Banting and Best in the clinical observation referred to was found to cause a certain degree of local irritation, it was necessary, before further clinical trials could be undertaken, to prepare it in purer form. This was successfully accomplished by Dr. J. B. Collip by a method of fractional precipitation with alcohol, the principle of which is described elsewhere,[11] and which in all essential details is the one now used for the preparation of insulin in larger quantity. At this stage of the work it also became necessary to find some simple, readily available laboratory method for testing the potency of the preparations of insulin. Without some method of physiological assay it would have been extremely difficult to develop a satisfactory method of preparation on a large scale, because the potency of each precipitate and filtrate in the process of fractional precipitation of the crude extracts had to be tested before the next step in the preparation was taken.

Pharmacological Assay.

Moreover, a method of pharmacological dosage had to be devised to serve as a guide for the clinical dosage These requirements were met by the discovery that insulin lowers the percentage of blood sugar in normal rabbits.[12] The rate of development, as well as the degree of this hypoglycaemia, depends somewhat on the method of injection (whether subcutaneous or intravenous), on the state of nutrition of the animal, and, of course, on the body weight; but we have found it satisfactory to consider as one unit the amount of insulin which, on subcutaneous injection, can lower the percentage of blood sugar to 0.045 within four hours in a rabbit weighing about 2 kg. from which food has been withheld for sixteen to twenty-four hours. The final solutions of insulin prepared in the University for clinical use are usually concentrated, so that 1 c.cm. contains one unit. The reason why 0.045 was chosen as the percentage to which the sugar should become lowered is that at this level, almost without fail, the animal develops highly characteristic symptoms consisting of violent convulsive seizures with intervals of coma. These symptoms finally terminate in death, but if the animal be injected subcutaneously with dextrose (gram per kilogram) it immediately recovers and usually remains without further symptoms; occasionally a relapse may occur, which, however, can again readily be antidoted by dextrose. No other sugar has the same effect, although a temporary alleviation of the symptoms has sometimes been observed after injections of galactose and laevulose.

Associated Effects of Insulin.

These discoveries, to which Dr. Collip contributed much, opened the way to more extended physiological and clinical investigations. E. C. Noble, J. Hepburn, and J. K. Latchford joined in the physiological investigations, and by excellent team work it was possible in a comparatively short time to

demonstrate many other effects of insulin, a few of which may be briefly alluded to here because of their importance in showing the fundamental nature of its action.

The first step was to extend the investigations of Banting and Best on depancreatized dogs so as to include observations of the respiratory quotient, and the urinary excretion of acetone bodies.[11] The former of these is a ratio expressing the relationships of the amount of CO_2 excreted and of O_2 retained by the animal, and it is a reliable qualitative index of the type of metabolism, being of the value of about 1 when carbohydrates are the chief foodstuff undergoing metabolism, 0.7 for fats, and 0.8 for proteins. When diabetes is of the severest type, as in dogs after the removal of the pancreas, the quotient often falls below 0.7, and it is not raised to any significant degree when carbohydrate foods are given. This was found to be the case in the depancreatized dogs used in these investigations, but when insulin was given along with the sugar the quotient immediately rose decidedly, indicating that the power to metabolize carbohydrate had been restored.

Effect on Excretion of Acetone Bodies.

The excretion of acetone bodies in a diabetic dog is not relatively so large as in severe cases of diabetes in man, and it is somewhat irregular. When insulin was given, however, the acetone bodies entirely disappeared from the urine and remained absent so long as the administration was maintained.

Effect on Fat Metabolism.

Very significant results were obtained by comparison of the percentage amounts of glycogen and of fat in the liver and heart in untreated and insulin-treated diabetic animals.[11] When no insulin was given the glycogen content of the liver was found to be very low—not more than 1 per cent.—whereas that in the heart was decidedly above the normal; after insulin (and sugar) the percentage of glycogen in the liver rose to the exceptionally high value of over 12 per cent., and there was a decided fall in the percentage in the heart. The fat content of the liver fell from about 12 per cent. in untreated animals to below 5 in those treated for two days with insulin, and there was also a decided diminution in the fat content of the blood. These observations indicate that insulin, possibly because of its influence primarily on carbohydrate metabolism, also affects that of fat.

Influence on Carbohydrate Metabolism.

In the long series of chemical processes which enter into the metabolism of the carbohydrates there are only two products which are sufficiently stable to permit of quantitative determination: these are the sugar of the blood and the glycogen of the liver. In diabetes the former increases and the latter decreases, and insulin restores them to, or beyond, their normal levels. Taking this along with the fact that oxidation of the glucose molecule, as revealed by the respiratory quotient, fails to occur in diabetes, but does occur, as in a normal animal, when insulin is given, it is evident that this hormone must be an essential factor in the regulation of carbohydrate metabolism. Not only, however, does insulin remove the symptoms of diabetes due to absence of insulin from the body, but it also prevents the development of the hyperglycaemia, and presumably of the glycosuria, which can be induced by other experimental means.[13] The best known of these are puncture of the floor of the fourth ventricle of the medulla, subcutaneous injections of epinephrin, and the various forms of asphyxia, including ether anaesthesia. In rabbits previously fed abundantly with carbohydrate rich foods so as to ensure a high percentage of glycogen in the liver, none of these experimental procedures was found to cause more than a slight increase in the blood sugar in animals previously injected with insulin. The only one of them which could cause any decided degree of hyperglycaemia after insulin was that due to excessive doses of epinephrin, and it is possible that a method for the precise dosage of insulin based on its power to antidote known quantities of epinephrin may be evolved. That insulin almost entirely prevents the development of hyperglycaemia in ether anaesthesia has an evident practical application in surgical practice.

Effect on Cardiac Nutrition.

As to the mechanism of the action of insulin we are as yet in the dark. One other fact of great importance may, however, be mentioned—namely, that it increases the rate of sugar consumption by the isolated mammalian heart.[14] These observations were made on the hearts of rabbits. Immediately after killing the animal the heart was excised and perfused through the aorta with Locke's solution containing about 0.2 per cent. of glucose. From time to time samples of this fluid were removed for determination of the percentage of reducing power. When no insulin was added to the perfusion fluid the average rate of disappearance of sugar was 0.8 mg. per gram of heart per hour; when insulin was added to the fluid the average was over 3 mg. It was not possible to determine whether the more rapid disappearance of sugar under insulin was due to its increased combustion or to its being deposited as glycogen in the heart. This it will be possible to determine only by observing the respiratory quotient in a heart-lung preparation, such as has been used by Starling and his collaborators.

Mode of Action of Insulin.

This observation on the heart would seem to narrow down the locus of action of insulin to the muscular tissue, and we therefore hoped to find that we could demonstrate that addition of insulin would accelerate the rate of disappearance of glucose from incubated (Buchner) extracts of muscle. So far, however, the results have been entirely negative, although with Dr. G. S. Eadie's assistance we have repeated them in various modifications of the experimental conditions. Neither does insulin have an influence on the rate of disappearance of glucose from drawn blood (glycolysis), nor on the rate at which glycogen is broken down in incubated pieces of liver. The object of doing these experiments is not only that some light might be thrown on the mechanism of action of insulin, but also that some *in vitro* method might be discovered for measurement of the potency of insulin.

Insulin in Diabetes Mellitus.

The effects of insulin in removing the cardinal symptoms of diabetes in depancreatized dogs, as well as those observed on normal rabbits, have been found also to follow its administration in the disease, diabetes mellitus, in man. Every detail of the therapeutic effects of this hormone was definitely forecasted by animal experimentation—the effect on the blood sugar and on the urinary sugar, the diminution of acetone bodies (to which the incidence of fatal coma is related), the prolongation of life, the raising of the power to metabolize sugar—and it was not until this had been established beyond doubt in the laboratory that insulin was given in the wards. Without the experimental demonstration of its effects no physician would have been justified in attempting the therapeutic investigation of insulin. Had he attempted to do so unguided by the results of observations on rabbits, it is almost certain that sooner or later an overdose would have been given, causing convulsions (not unlike those of diabetic coma itself) for which there would have been no indication as to what remedy should be used. The experiments on rabbits, however, showed clearly that these alarming symptoms are immediately antidoted by injection of glucose, and it is of interest that in one or two patients in whom there have been premonitory indications of their possible occurrence exhibition of glucose has immediately and permanently removed them.

A preliminary paper on the principal clinical effects was published in March by Banting, Best, Collip, Campbell, and Fletcher,[15] and since that date a sufficient number of cases of all degrees of the disease have now been observed—partly in the clinic of Dr. Banting at the Christie Street Hospital of the Soldiers' Civil Re-establishment in Toronto, partly in the clinic of Professor Duncan Graham in the Toronto General Hospital, and partly in certain diabetic clinics in the United States—to justify the statement that when insulin is administered subcutaneously in adequate dosage it is capable, within a remarkably short time, of removing the cardinal symptoms of the disease for a period of several hours. To suppress the symptoms permanently, however, the injections must be repeated, the practice at present being twice daily. So long as the administration is maintained the patient is able to assimilate much more carbohydrate than previously, and he gains weight and with it both physical and mental vigour, so that the despondency and apathy that are so prominent in these cases disappear. Whether the diabetic condition is in any degree cured by the rest which is given to the damaged pancreatic function by insulin cannot as yet be stated. It is perhaps in the adolescent forms of the disease that these results have been most marked, but there

can be no doubt that when insulin comes to be more available its exhibition along with intelligent control of diet will have the same beneficial results in all the serious forms of the disease. In cases of threatened coma its value is undoubted, and this is also the case when it is used as a precautionary measure against post-operative risk in surgical practice.

Until the clinical effects have been more thoroughly investigated it would be out of place here to discuss in further detail the therapeutic value of insulin.

Preparation on the Large Scale.

It remains to explain the steps that have been taken by the University of Toronto to safeguard the production, standardization and distribution of insulin. Realizing that the publication of the method of its preparation might be followed by an uncontrolled commercial exploitation of insulin, with the consequence of its improper use in general practice, the chief originators of the method generously offered to apply for patents covering its production, and to hand these over to the University provided this body would assume the function of licensing approved manufacturers to produce and sell it at a reasonable cost. Patents have therefore been applied for in Canada, the United States, Great Britain, and other countries, and the University has appointed a committee, composed partly of those who have participated in the investigations and partly of members of the Board of Governors, to advise it with regard to the conditions under which licences should be granted.

As a first step this committee recommended that licences should not be freely granted until every possible detail of the manufacture on a large scale of a preparation of known and constant potency had been thoroughly worked out. This step was taken because of the unexpected difficulties which were encountered when large scale production was attempted in the Connaught Antitoxin Laboratories of the University. It was found that whereas non-irritating preparations of insulin of constant potency could readily be obtained by Collip's procedure in the laboratory, the yields were for some time extremely unsatisfactory when a large scale production was attempted.

Protection from Commercial Exploitation.

After these difficulties had been overcome it was decided still further to expand the production by collaborating with some firm engaged in the manufacture of extracts from slaughterhouse materials. This was done under a special agreement by which the University undertook not to issue licences to other firms until the lapse of a period during which the large scale method could be carried out so as to yield the maximal output of preparation of standard and uniform potency both when assayed by the rabbit test and when tested therapeutically on diabetic patients. For the clinical assays this firm agreed to distribute a sufficient number of free samples of their preparation to various physicians specializing in the treatment of diabetes in properly controlled clinics. This collaboration between the committee of the University and a firm in the United States is proceeding at the present time, and the physicians receiving insulin are reporting their experiences as to its potency and value. Whenever it is certain that a thoroughly reliable large scale method for a product of constant potency has been worked out the special agreement between the University and the collaborating firm will terminate, and the University will issue licences to other approved firms.

Realizing that it could not exercise proper supervision over the production of insulin in more countries than Canada and the United States, the University has offered to the Medical Research Council the assignment of the patents applied for in Great Britain for the purpose of safeguarding the production and standardization of insulin in that country.

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Remarks
ON THE
SURGERY OF THE PITUITARY GLAND.*

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[*With Special Plate.*]

EVEN in adult life the two portions of the pituitary gland remain distinct, and each appears to have a very different function. Their somewhat complicated development will therefore have to be briefly considered before discussing the manifestations of disease of the gland.

DEVELOPMENT.

In the adult the pituitary gland forms a small oval structure, which is somewhat flattened from above downwards, and fills the pituitary fossa of the sphenoid bone. Its longest diameter, which usually lies transversely, is about half an inch. On section it can be seen to be distinctly formed of two parts, an anterior and a posterior. The anterior portion, often described as the epithelial or glandular part, is in man considerably the larger, and forms about two-thirds of the total gland. It is immediately in front of, and in part envelops, the posterior lobe, which may be regarded as being embedded in its posterior surface. Blair Bell has shown that this position is largely dependent upon the shape of the fossa, for in animals with a deep fossa, such as the cat, the pars nervosa lies posteriorly; while in dogs, which have a shallow fossa, it is placed superior to the glandular part. The glandular portion is developed from the stomadeum at a very early age from a recess, known as Rathke's pouch, which grows upwards from the junction of the pharyngeal membrane with the roof of the primitive stomadeum, and which, according to Bell, may be visible even in a foetus of 2.5 mm. Such a method of development is remarkably constant within the vertebrate series, and may be found in some form even as far back as the Cyclostomata. The pouch so formed passes upwards in front of the notochord and between the trabeculae cranii to the base of the brain. The neck of the sac becomes constricted, but the upper portion dilates to form what is known as the pituitary sac. Later, as the sphenoid develops, the stalk becomes constricted and disappears, so that the pituitary sac is entirely shut off from the stomadeum. The position of this stalk is usually regarded as lying between the pre-sphenoid and post-sphenoid, but Cope has shown that it traverses the anterior part of the post-sphenoid. Although the stalk by these means is as a rule entirely destroyed, Duffy has shown that certain squamous-celled tumours which arise in or about the pituitary probably originate in the remnants of this stalk, which may persist in the post-sphenoid or beneath the capsule of the anterior lobe. Erdheim has reported a case of acromegaly in which a tumour formed of cells resembling those of the anterior lobe was imprisoned in the posterior part of the sphenoid. The pituitary sac thus cut off from the primitive pharynx undergoes very considerable proliferation. It becomes more or less triradiate in outline, and later gives off a large number of diverticula, so that it comes to have a glandular appearance.

The fully developed anterior lobe comes therefore to be composed of well-defined epithelial cells supported by a framework of fine connective tissue and showing large blood vessels and sinuses. Not uncommonly the cells are arranged in the form of small vesicles containing a granular-like material somewhat resembling colloid. The work of Bell and Cushing, among others, shows that there is a very great variation in the appearance of this portion of the gland in different physiological and pathological states. It can always be determined, however, that there are two main types of cells: one of these stains well and is spoken of as the chromophil cell, which may be either basophil or acidophil; the other stains poorly, and is spoken of as the neutrophil or chromophobe cell.

The anterior lobe appears to become larger and more active in certain conditions—such as during pregnancy, after

* An abstract of this paper was presented to the Section of Surgery at the Annual Meeting of the British Medical Association at Glasgow.

thyroidectomy, and after castration. It is also always larger in adult parous females than in men or nulliparae.

The posterior part, or pars nervosa, has an entirely different origin. Shortly after the appearance of Rathke's pouch a depression is seen in the floor of the forebrain. As development proceeds this pouch dilates while its stalk becomes constricted. The dilated portion comes into close relationship with the posterior surface of the anterior lobe and is in part enveloped by it. As it grows its wall becomes thickened, and as a rule the cavity entirely disappears, but occasionally a small part may remain as a minute vesicle which is still lined by ciliated columnar epithelium. The stalk, unlike that of the anterior lobe, does not disappear but persists as the infundibulum or stalk of the pituitary gland. This is attached above to the anterior part of the tuber cinereum, which is a thin layer of grey matter alone separating the pituitary fossa from the cavity of the third ventricle. Indeed, a small pouch of the third ventricle is continued downwards into the upper part of the infundibulum. In adult life this portion of the gland is seen to consist of cells and fibres which are apparently neuroglial in character. Occasionally large cells, apparently from the pars intermedia, may be seen in the substance of the pars nervosa, and generally there can be distinguished a peculiar brown pigment.

It has been shown that as the anterior lobe develops the original pituitary sac throws out buds which by irregular growth form the glandular-like anterior lobe of the pituitary. The posterior wall of the sac remains, however, simple and comes to lie in close relationship with the infundibulum of the posterior lobe, while the pituitary sac itself persists as a narrow cleft which appears to separate the anterior from the posterior lobe. This thin posterior wall of the sac remains epithelial in character and is usually spoken of as juxtaneural epithelium. This portion forms in the adult the pars intermedia. It is developmentally a portion of the anterior lobe, and it and the anterior lobe are generally spoken of together as the hypophysis. Like the rest of the gland, it varies very considerably in its size and extent in different animals. In man the epithelium is very scanty, and only forms a thin layer over the pars nervosa, where it adjoins the narrow cleft. The cells are faintly granular and either neutrophil or slightly basophil. A colloid-like secretion is sometimes found in this part and also in the cleft. Whereas the anterior lobe has a very fair blood supply from the internal carotid arteries, the pars intermedia appears to contain no blood vessels or lymphatics.

Anatomy.

The anatomical relations of the gland are of extreme importance surgically, and it is owing to the inaccessibility of the fossa and to the importance of the surrounding structures that surgical measures have been so limited in the past.

The gland itself lies in a deep hollowed-out fossa in the sphenoid bone, and therefore lies in the centre of the base of the cranium and almost equidistant from the root of the nose and the posterior margin of the foramen magnum. The shape of the fossa varies considerably. Cope has shown that the antero-posterior measurement is from 7 to 14 mm., the transverse from 9 to 15 mm., and the depth from 3 to 10 mm. Immediately beneath it the basisphenoid is hollowed out by the presence of the sphenoidal sinus, but both the size of the pituitary fossa and the size of the sphenoidal sinus are subject to very considerable variation. Gibson, who took careful tracings of 107 skulls, found that the sphenoidal sinus was completely absent in 3 per cent., very small in 9 per cent., and was separated from the sella turcica by a thick anterior wall in 9 per cent. What is perhaps of more importance surgically is that he was able to show that the sinus did not project below the sella turcica in 22 per cent. of the cases. The sphenoidal sinus not infrequently shows an intersphenoidal septum which is variable in its position, and may be so much to one side that if taken for a guide in an intranasal operation it may lead to one of the cavernous sinuses being opened in mistake for the pituitary fossa. The floor of the sphenoidal sinus is formed laterally by the cornua sphenoidalia and medially by the ethmoidal spine, to which is attached the vomer bone. It will thus be seen that any approach to the pituitary fossa by the intranasal route, which is the operation of choice, is not only associated with considerable difficulties owing to the variations in the anatomical conditions, but, the opening being small, it is impossible to remove completely any of the larger tumours in this region.

The bony floor of the fossa is slightly concave and is limited laterally by a slight ridge of bone which separates it from the carotid groove. Posteriorly the cavity is overhung by the dorsum sellae, which separates it from the pons Varolii and the basilar artery. The upper portion of this ridge projects on either side and overhangs the pituitary fossa to form the two posterior clinoid processes. Anteriorly the fossa is limited by a transverse ridge of bone, the olivary eminence or tuberculum sellae, which is often continued outwards laterally into two small spurs of bone—the middle clinoid processes. These middle clinoid processes limit posteriorly the groove for the carotid artery where it turns upwards from the cavernous sinus. Sometimes the middle clinoid processes may be sufficiently long to join with the anterior clinoid process and thus convert the carotid groove into a canal. In front of the olivary eminence is the optic groove, which terminates on either side in the optic chiasma. The pituitary fossa thus formed is lined by a layer of dura mater and is covered in above by a fold of the same structure, which is the diaphragma sellae. This is complete except for a small opening in the centre through which passes the infundibulum.

The pituitary, therefore, lies in a closed box, which anteriorly, posteriorly, and inferiorly is formed of bone, and above and on both sides is formed of dura mater. Each lateral wall is separated to enclose the cavernous sinus containing the carotid artery, the third, fourth, sixth, and branches of the fifth nerves. Just external to the third division of the fifth nerve is the middle meningeal artery. These lateral relationships of the pituitary are of considerable importance and make an approach to the gland by the temporal route a difficult and dangerous procedure. To obtain adequate access by this route it would be necessary to lift up the temporal lobe and with it the optic tract, and to open the diaphragma sellae above and internal to the cavernous sinus. Separating the structures of the interpeduncular space from the base of the skull and the pituitary fossa is a large subarachnoid space, the cisterna basalis, through which passes the infundibulum. Anteriorly the fossa is in part shut in by the anterior clinoid processes and the olivary eminence, and it is said that sometimes they may project so far over the pituitary fossa as to make approach by the anterior or frontal route difficult. In practice, however, this is found not to be the case, for by lifting up the frontal lobe it is always possible to reach to the bottom of the pituitary fossa.

Running transversely across the front of the gland in the optic chiasma and at a somewhat higher level is the anterior communicating artery. Antero-laterally are the carotid arteries turning forwards and the optic tracts. Although the optic chiasma lies close to the bone it will nearly always be found that a tumour of the pituitary elevates the chiasma from the bone, and presents in the triangular space between the two optic nerves. Thus it often happens that at operation, although a tumour the size of a walnut is readily removed and the floor of the pituitary fossa freely exposed, yet the optic chiasma has been pushed so far upwards and backwards that it is not seen in the operating field.

The arterial relationships to the gland are of considerable importance. Posterior to the dorsum sellae runs the basilar artery, which divides superiorly to form the two posterior cerebral arteries. Running forwards from these arteries close to their origin and encircling the infundibulum are the two posterior communicating arteries, which join the internal carotid arteries almost immediately after they have appeared above the middle clinoid process. They thus lie upon the diaphragma sellae and the superior surface of the pituitary gland. The two internal carotids pass upwards and give off the anterior cerebral arteries, which are united by the anterior communicating artery. It will thus be seen that the posterior communicating arteries run beneath the optic tracts, whereas the internal carotid and the anterior cerebral arteries run external and superior to the optic nerves. Hence a pituitary tumour, pushing upwards the optic chiasma, will compress the optic nerves between itself and the anterior ring formed by the circle of Willis. We therefore have an explanation as to why it is that sometimes a pituitary tumour will give only a bitemporal hemianopsia and sometimes will lead to complete optic atrophy and blindness.

Functions.

That the internal secretions of the pituitary gland have a very important bearing upon the general metabolism has been known for a considerable period, but accurate knowledge has

been almost wholly developed since Marie's observations in 1888 upon the changes in the gland that were found associated with acromegaly. This knowledge is in part based upon observations of the effects of administered extracts of pituitary, partly upon experimental operations upon animals, and partly upon observations of the changes found in certain physiological and pathological states. At one time it appeared as though the whole of the patient's appearance and character might depend upon slight changes in this small gland. More recent work makes it evident, however, that there is a very real interrelationship between this and other glands in the body, for under certain circumstances the whole of the gland may be removed and only beneficial effects will result.

A study of the internal secretion of this gland is associated with peculiar difficulties, for not only do the anterior and posterior parts appear to have entirely different functions, but the effects will differ according to whether the changes occurred before or after puberty. There is still, therefore, some uncertainty as to what are the parts played by the individual portions of the gland, for both experimentally and clinically it is difficult to obtain a lesion which is limited to one or other lobe. There even seems to be a certain amount of doubt as to what is the effect of complete extirpation of the gland. The evidence produced by Cushing would seem to show that complete destruction of the gland is incompatible with life, but Sir Victor Horsley brought forward a considerable amount of evidence to show that an animal could survive this operation. My own experience is very definite. I have two cases in which the gland has been completely extirpated; the pituitary fossa at operation was left absolutely bare and lined with smooth dura. Both these cases have survived and have made very good progress. It would appear, therefore, quite certain that the function of the gland can be almost wholly undertaken by other glands in the body.

The Anterior Lobe.

Since Pierre Marie first pointed out that cases of acromegaly were always associated with changes in the pituitary gland a large amount of evidence has accumulated to make it perfectly definite that this portion controls the metabolism and growth of the skeleton, including the bones, cartilage, and connective tissues. If there is an increase in the internal secretion before growth is completed the patient will develop into a giant. There will be a very great overgrowth of the bony skeleton, which, however, is rarely if ever symmetrical, and the patients will generally show not only structural weakness but many of the irregular outgrowths which are found in all cases of acromegaly. Should the oversecretion be delayed until adult life then there will be an irregular overgrowth of the bony and connective tissue, giving rise to that curious syndrome known as acromegaly. In addition to these clearly defined effects upon the skeletal tissues it is probable that an overgrowth of the gland is associated with changes in the sexual glands, for most cases of acromegaly are clearly asexual. It is possible also that the anterior lobe may to a certain extent control the deposit of fat.

Pars Intermedia.

It is very difficult, if not impossible, to distinguish the functions of this portion from those of the posterior lobe, but Evans holds the view that the pars intermedia produces a colloid-like material which affects the blood pressure and the urinary secretion. It may lower or raise the blood pressure and may increase or decrease the secretion of urine. It is held by many observers that all the effects which are described as due to changes in the posterior lobe are really due to changes in the pars intermedia, for it is difficult to see what secretion, if any, could be formed from the posterior lobe, which is apparently made up of neuroglia alone.

The Posterior Lobe.

It is a curious fact that whereas the functions of the anterior lobe are shown clinically to be so distinct, those of the posterior lobe are less well defined, yet extracts are much more easily prepared from the posterior, probably with the pars intermedia, and have a very definite effect. So far no demonstrable changes have been seen to follow the administration of extracts of the anterior lobe, although Goetsch has claimed that the administration of such extracts leads in young animals to an increase in the rate of growth and early sexual development. The effects of extracts of the posterior lobe are many, and may be grouped as follows:

1. *A Pressor Effect.*—Howell in 1898 first showed clearly that it was the posterior lobe extracts alone which gave pressor effects. This has since been confirmed by many observers, who show that this pressor effect is due to a slowing and increase in force of the heart's action. Second and subsequent injections given soon after the first have little or no effect until the first has all been destroyed or excreted by the organism. The effect is maintained for a much longer period than that obtained by suprarenal extract.

2. *A Depressor Effect.*—It has been noted by many observers that an injection of this portion of the gland may lead not to a rise but to a fall in the blood pressure. Schafer and Vincent noticed that this fall followed second and subsequent doses if they were given soon after the first. Others have noticed that such a depressor effect followed shortly after the pressor effect had died away. Blair Bell, on the other hand, has shown that there is a preliminary fall before the blood pressure rises. It is this uncertainty as to the relationships between the pressor and depressor effects that has made the use of this drug in the treatment of surgical shock not entirely free from danger.

3. *A Diuretic Effect.*—Magnus and Schafer first showed that injections of posterior lobe extract had a diuretic effect. With this they observed that the arteries of the kidney were dilated, whereas the arteries of the rest of the body were constricted. The diuretic effect was not, however, simply a vascular phenomenon, for later Schafer and Herring showed that it was present even when general vaso-constriction was absent. Herring also showed that this effect was produced entirely by the pars nervosa and not by the whole posterior lobe. It is not, therefore, as has sometimes been thought, due to pressure upon the fourth ventricle.

4. *A Galactagogue Effect.*—The use of extract of the posterior lobe has come into considerable favour for its value in increasing the flow of milk in lactating women. Blair Bell points out that the effect is so rapid that it would seem improbable that it is due to the active principle being excreted by the gland and so stimulating the cells. It is an interesting point, however, that the increased flow is only of short duration and that the daily flow does not seem to be increased in amount. The increased flow shows a slight increase in the amount of fat, but is otherwise normal. The later excretion, however, shows a slight diminution in the amount of fat, so that the total excretion, like the total quantity, is not increased. Blair Bell holds the view that the increase in the rate of expulsion is simply due to the effect upon the muscle fibres, so that there is in reality an increased excretion rather than an increased flow.

5. *A Stimulative Effect upon Unstriped Muscle.*—One of the most valuable effects of pituitary extract is its power of causing rapid and powerful contraction of unstriped muscle. Bell has shown clearly that although the extract has no effect upon the resting uterine muscle it causes powerful contraction of the uterus in menstruating and pregnant animals. It has thus been largely used in gynaecological work. Similar powerful effects have been found in the case of the intestinal muscles, and the drug is now very largely used in many forms of ileus. A similar effect is seen upon the muscular wall of the bladder.

6. *Effects upon Carbohydrate Tolerance.*—Many diseases of the pituitary gland are associated with a very distinct and definite change in the patient's tolerance to carbohydrate, so that not infrequently there has been noticed the presence of glycosuria. There is some doubt as to which portion of the gland is responsible for this effect. It may be said to have been definitely established that with lesions such as acromegaly there is a diminution in the tolerance to carbohydrates. One of my own patients, who was a clear case of this disease, had a marked glycosuria. Lesions of the posterior lobe, on the other hand, show as a rule an increased tolerance, but it is not possible to say definitely whether the effect is due to over- or under-secretion. It might be possible that in acromegaly the glycosuria is due to overaction of the anterior lobe or due to underaction of the posterior lobe owing to the pressure of the enlarged anterior part.

Pathology.

In some of the cases in which the clinical symptoms clearly indicate that there is a diminution in the secretion of

the pituitary a skiagram may show that this fossa is smaller than normal. Few, if any, of these cases have had the pituitary examined, but the smallness of the fossa and the absence of local pressure symptoms would indicate that the symptoms are due to a simple atrophy of the gland. In the majority, however, the pituitary fossa is much enlarged, and this is true whether the symptoms are those of increase or decrease. If the symptoms are those of increased secretion there is an overgrowth of the pituitary gland which has a positive function, but where the symptoms point to a diminution of the secretion there may be a tumour such as a fibroma or sarcoma of the pituitary itself, or a neoplasm of the surrounding tissue which has caused local pressure symptoms and widening of the pituitary fossa, but having no internal secretion leads to a destruction of the pituitary with a diminution of its secretion. A similar condition may be found with cysts, and in my own experience the majority of the cases of hypopituitarism are found associated with a cystic change.

Much attention has been given to the nature of the pathological lesions found with an increased secretion. Cope has analysed 64 cases which were published by Cushing, Hirsch, and von Eiselsberg. Of these 64, 45 were adenomata and 7 were cysts. Others have been certified as endotheliomas, mixed tumours, epithelial cancer, sarcomas, etc. It is probable, however, that the majority of these latter were really adenomata. Such tumours are very richly cellular and give a microscopic appearance which is very suggestive of a carcinomatous change. They are, however, quite localized, are not associated with secondaries, and would seem not to recur after complete removal. Frazier has also laid stress upon the great variation in the published reports of the pathology, and in many which are reported as malignant there has been no evidence of recurrence or of secondary deposits after a number of years. Sekiguchi has carried out an interesting investigation in cases that had died of mammary cancer. In two such cases he found that there were secondary deposits in the posterior lobe, and in both cases the patient had polyuria, which he regards as being due to compression of the pars intermedia by pressure of the secondary deposits in the pars posterior. It may be said, then, that the majority of cases that show an increased secretion are due to the presence of functioning adenomata. When there is clinical evidence of a diminished secretion the lesion is most commonly a cyst or a parapituitary tumour, but may occasionally be due to a simple atrophy. The diagnosis of the latter type is simple, for there will be no local pressure symptoms and a skiagram will show a diminution rather than an increase in size of the pituitary fossa.

Clinical Manifestations.

There are certain diseases in which it is well established that there is a lesion of the pituitary gland, but there are others in which the evidence is much less certain. Cope, for instance, has shown that there is a close relationship between the pituitary and the thyroid, and that a diminution in the thyroid gland may be associated with an overgrowth in the pituitary. He has found that the fossa may be enlarged in cases of cretinism and is often considerably enlarged with achondroplasia. In the well-established cases the pituitary lesion will give rise to symptoms which may be placed in three groups. There are, first, those which are dependent upon some alteration in the secretion, which is either diminished or increased, and according to whether this variation in the secretion occurs in early or adult life so will different symptoms arise. Secondly, there are symptoms due to local pressure of the enlarged pituitary on the surrounding tissue. Lastly, there are a group of symptoms which are due to a general increase of the intracranial pressure.

Disturbances of Internal Secretion.

There are still many points of doubt as to which portion of the gland is actually at fault with individual disease, and not uncommonly curious combinations of symptoms may be found. It is possible, for instance, that an adenoma of the anterior lobe will give rise to an increased secretion in this portion, but at the same time the tumour might cause a pressure atrophy of the posterior lobe and so give rise to symptoms of hypopituitarism. Such a combination of Fröhlich's disease and acromegaly has been reported by Frazier and another by von Eiselsberg. It is therefore not yet possible to say with certainty what symptoms correspond with different lesions of the gland, but it is probable that the following classification is a correct one:

Classification of Symptoms.

Anterior Lobe:—

(*a*) Increase of function: (1) In young patients = gigantism. (2) In adults = acromegaly.

(*b*) Decrease of function: (1) In young = ateliosis (Lorain's disease), possibly achondroplasia. (2) In adults doubtful; possibly fragilitas ossium.

Posterior Lobe:—

(*a*) Increase of function: Doubtful; possibly some forms of precocious development and some cases of congenitally high blood pressure.

(*b*) Decrease of function: (1) In young = dystrophia adiposo genitalis (Fröhlich's disease). (2) In adults = adiposis dolorosa.

Gigantism.

The relationships of gigantism to lesions of the pituitary gland have been well appreciated since Sternberg showed that 20 per cent. of acromegalics were giants and 40 per cent. of giants developed acromegaly. Cushing has reported several cases of giants with lesions of the pituitary gland, and it has been realized that a similar change existed in many of the well-known giants. It is also interesting to note that very few of these so-called giants are normally developed. Most of them show an unusual size of the hands and feet, and many of them, although so big, show many of the irregular changes in growth which are associated with acromegaly. For instance, they often have very long arms and legs, irregular overgrowth of the facial bones, and marked kyphosis. Brissaud was the first to point out that acromegaly was probably gigantism of adult life, or that gigantism could be regarded as acromegaly occurring during the period of growth. He also showed that examples of acromegaly and gigantism might be found in the same family.

Acromegaly.

This condition has been so frequently described, and so many cases have been reported since Pierre Marie's first complete description in 1886, that it will suffice to give a very brief account of the clinical condition.

In nearly all cases there is a definite change in the pituitary gland which takes the part of an adenomatous overgrowth. Even in the few cases that have been reported where acromegaly has occurred without any visible change in the gland, it is probable that a microscopic examination would show a definite overgrowth, as in cases reported by von Eiselsberg. As a general rule the disease commences after the age of 30, and males and females appear to be almost equally affected. There is a remarkable similarity in the appearance of all such patients. The face as a whole shows general hypertrophy, especially in the vertical direction. The forehead appears low and narrow, the orbital margins are much enlarged and thickened, and a skiagram will show an increase in size of the frontal sinuses. The temporal areas appear to be depressed. The nose is widened and enlarged, the upper jaw shows slight overgrowth, and there is marked hypertrophy of the lower jaw. With this enlargement of the inferior maxillary there is a separation of the teeth, so that in time they come to form an arch greater than that of the upper teeth. The jaw itself projects and is enlarged from above downwards. The tongue is hypertrophied and the ears are somewhat thickened and enlarged. The lips are thickened and often appear to be negroid in type. A skiagram will reveal some thickening of the tables of the skull and considerable overgrowth of the orbital margins and jaws. The pituitary fossa is enlarged and the clinoid processes may be eroded. The spine shows a definite kyphosis and some of the patients may have a distinct increase in height. In three of my patients, although adults, the height had increased from one to three inches since the onset of the disease. The thorax is enlarged, widened, and deepened. There is a wide subcostal angle. The pelvis is enlarged in all directions and the bones are generally thickened. Perhaps the most characteristic change is that in the hands and feet. They are generally increased in size, especially in the lateral direction. The patients will often have noticed that since the onset of the disease they have had to take much larger boots and gloves. The thickening consists of all the tissues. At first the soft tissues are enlarged so that the fingers are more or less cylindrical, the hands wider, and the heels thicker. The toes, like the fingers, are cylindrical, and the foot is much wider at the base of the toes. At this stage a skiagram will show no

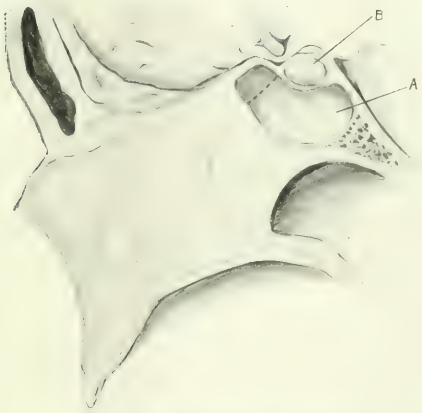


FIG. 1.—The inferior relationships of the pituitary fossa. A, Sphenoidal sinus. B, Pituitary gland.

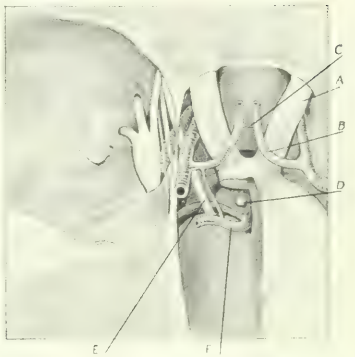


FIG. 3.—The superior and lateral relationships of the pituitary gland. A, Optic nerve. B, Anterior cerebral artery. C, Anterior communicating artery. D, Pituitary gland. E, Third nerve. F, Posterior cerebral artery.

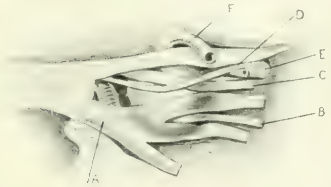


FIG. 2.—The lateral relationships of the pituitary gland. A, Fifth nerve and Gasserian ganglion. B, Sixth nerve. C, Third nerve. D, Fourth nerve. E, Optic nerve. F, Middle cerebral artery.

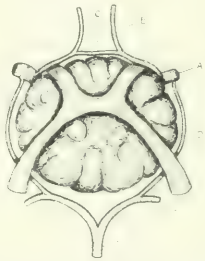


FIG. 4.—Relationships of the circle of Willis to a pituitary tumour. A, Middle cerebral artery. B, Anterior cerebral artery. C, Anterior communicating artery. D, Posterior communicating artery. E, Posterior cerebral artery. F, Basilar artery.



FIG. 5.—Case v. Acromegaly before operation.



FIG. 6.—Case v. Acromegaly five months after operation.



FIG. 7.—Case VI. Acquired Lorain, aged 19. Before onset of symptoms.



FIG. 8.—Case VI. Acquired Lorain, aged 23. Day before operation.



FIG. 9.—Case VI. Acquired Lorain. Three months after operation.

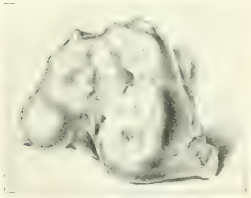


FIG. 10.—Case VI. Acquired Lorain. Pituitary tumour removed by frontal route.



FIG. 11.—Fröhlich's disease.

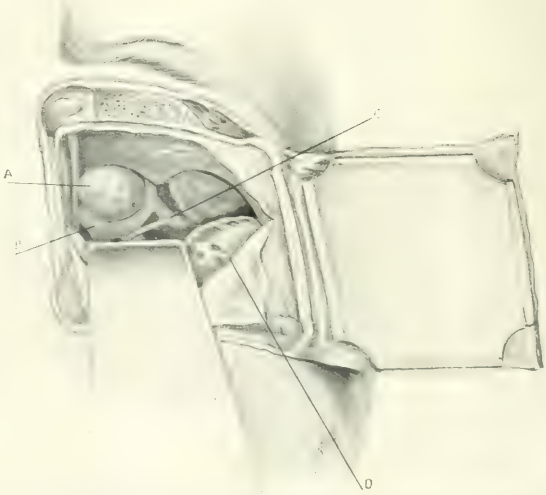


FIG. 12.—Exposure of pituitary tumour by frontal route. A, Tumour of pituitary gland. B, Optic chiasma. C, Middle cerebral artery. D, Frontal lobe of cerebrum.

evidence of any bony change, but later there is a subperiosteal overgrowth, especially of the proximal phalanges. In advanced cases there may be a hypertrophy of the muscles of the arms and legs, which later is replaced by an atrophy, and the *x* rays will show a deposit of new bone beneath the periosteum of the long bones. Sexual changes are definite. In women the breasts atrophy and amenorrhoea is an early symptom. The external genitalia are hypertrophied and there is a decrease in sexual desire. The heart is often hypertrophied. The thyroid may be small and the larynx hypertrophied, so that in women the voice becomes deeper and stronger and resembles that of a man. The skin may show profuse sweating and pigmentation, and the hair becomes coarse and wiry. The intelligence is as a rule good, but later, when there is evidence of general pressure, the mental functions may be impaired. The patients will often complain of severe, but ill-defined, pain in the limbs, back, and joints. Local or general pressure symptoms may be present in addition, and it is not uncommon, as in one of my cases, for glycosuria to be present and to require treatment before an operation is undertaken.

Ateliosis, or Lorain's Disease.

This condition may be regarded as the exact reverse of gigantism. The condition generally occurs quite early in life, and thus the patient remains small and stunted, and never arrives at full development. In some interesting cases the condition starts late in life, and then, as in one of my cases, the patient may become smaller and of poorer physique after he has developed along normal lines. This lack of growth is even, so that the proportions of the different parts of the skeleton remain more or less normal, and hence the condition is easily distinguishable from achondroplasia. Several observers, however, have noticed changes in the pituitary in association with achondroplasia. With the lack of growth there is a failure to develop the secondary sexual characteristics, so that the patients appear to be younger than they really are, and at the age of 35 or 40 may seem to be only 14 years of age. The bones are small and relatively fragile, and the muscular attachments are poorly developed. The junction at the epiphysis is greatly delayed, but the formation of the bones is regular, and there is no enlargement of the epiphyseal ends, as may be seen with achondroplasia. The skull is small with thin bones, and a skiagram may show very definite changes in the pituitary fossa, which varies with the nature of the lesion. If, as is not uncommon, there is a simple cyst, the fossa may be much dilated and the clinoid processes may be absorbed. The lower jaw is badly developed and there is a poor eruption of the teeth. The muscles are ill developed and are feminine in character. The skin is also soft, delicate, and white. The body and face remain hairless, and the voice is thin, high, and piping, so that the patient, if a male, retains many of the female characteristics. The intelligence is generally below normal. The appetite is poor, and there may be alterations in the secretion of urine, there being generally polyuria. Glycosuria is not present and as a rule the sugar tolerance seems to be increased. Later, local pressure symptoms, and especially those upon the optic chiasma and nerves, will become evident. Headache and other signs of general pressure will appear as late manifestations.

If the symptoms appear soon after puberty, as in the sixth case of my series, these changes of general atrophy will appear after the patient has reached a normal height, and after operation they will gradually disappear. This progress throws a certain amount of doubt upon the belief that the symptoms are due to a simple hyposecretion of the anterior lobe, for in my own case there was an enormous improvement after the whole of the pituitary had been removed, and the patient is now rapidly passing again into a normal condition, and this in spite of the fact that he has taken no pituitary extract by mouth. Cases of atrophy occurring in late adult life have not been recorded, but the changes that are found in cases of fragilitas ossium would suggest that they might be due to a hyposecretion of the posterior lobe, and it will be of interest to note in the future whether such changes are recorded.

Posterior Lobe Increase.

There is some doubt as to the actual changes which occur with an increase of function of the posterior lobe. One would imagine that this would give rise to a greatly increased blood pressure, polyuria, and a generally active metabolism. Thus theoretically it would seem possible that some of the cases of chronic nephritis in early life would be due to such changes. On the other hand, certain cases have been reported of children who have rapidly developed, and at the age of 8 or 9 have shown an abnormal development both physically and sexually. Poynton reports a case, for instance, of a boy aged 8 who had a well-marked moustache, beard, and whiskers. He regarded the case as being due to a pituitary lesion and not to a suprarenal growth. Similar cases of precocious development, both psychically and physically, have been reported in association with pineal tumours. Such cases have been reported by Howell, Ogle, Frankl-Hochwart, Heubner, Gutzeit, Marburg, Oestreich and Slawyk. Marburg believes, however, that in the case of a pineal tumour they are due to hyposecretion, while with a lesion of the pituitary there is a hypersecretion of the posterior lobe.

Dystrophia Adiposo Genitalis (Fröhlich's Disease).

It is of interest to note that many of the cases of this condition have shown the presence of a cyst in the pituitary gland. My own cases are of special interest from this point of view, for the patient who showed Lorain's disease had a large semi-calcareous cyst, which in the *x*-ray photograph was well forward and showed destruction of the anterior clinoid processes; whereas the girl who had typical Fröhlich's symptoms had also a calcareous tumour, which was shown by the skiagram to be far back and had led to a destruction of the posterior clinoid processes. The changes in the body are remarkably characteristic. There is an enormous overgrowth of the subcutaneous fat, the deposit of which is more or less general, but has a tendency to be placed so as to exaggerate the female outline of figure. Thus, in a male, there is a relatively greater thickening of the buttocks and thighs and a subcutaneous deposit in the breasts. With this increase of fat there is a low blood pressure and a good or increased tolerance to carbohydrates. Sometimes there are other changes, which are possibly due to an associated diminution of the anterior lobe secretion, so that they may be small in size with late union of the epiphyses, softness of the skin, and no growth of hair. There is always a diminution in the sexual development. The genitalia remain small and the voice is high-pitched and squeaky and the thyroid small. It is probable that what Fearnsides has described as the "pudding-face type" is a mild degree of the same disease. There may be a slight general increase in the subcutaneous fat—the face is fat and rounded with red prominent cheeks, and the voice is high and piping. The thyroid is small and amenorrhoea is generally present. As in the Fröhlich's type there are frequently alterations in the visual fields which may, if left, progress to complete blindness.

Adiposis Dolorosa.

There is an increasing amount of evidence that a large number of the cases which have been described as adiposis dolorosa are in reality examples of hypopituitarism which have developed after adult life; they therefore bear the same relationship to Fröhlich's disease as acromegaly does to gigantism. Cushing quotes several cases in which lesions of the pituitary have been found under such circumstances, and Dercum himself has included certain mental changes as one of his four cardinal symptoms of the disease.

The disease is generally seen after middle age, and is more common in women. It is characterized by a rapid increase in weight, which is due to large irregular and frequently painful deposits of fat. The deposits may be diffuse in outline or may be more or less localized, so that they form large irregular lipomata. The deposition of the fat is very characteristic. It is almost wholly localized to the trunk and pelvis, while the face, neck, and extremities are as a rule free. The hands are not enlarged and the fingers are usually tapering. Sometimes the portions of the body above the waist will remain entirely free while the buttocks and thighs are enormously enlarged. In other cases there is also a big deposit in the back and shoulders, and sometimes even in the posterior aspects of the arms. There is frequently with this an increase in the sugar tolerance, and not uncommonly some local evidence of pressure, as shown by changes in vision. Occasionally there are well-marked evidences of general pressure, as shown by headache and drowsiness, and very frequently there is amenorrhoea.

Local Pressure Symptoms.

The most frequent change which occurs with the local pressure of the growth is an affection of vision. The pituitary gland, with so close a relationship to the optic tracts, chiasma, and nerves, is liable as it enlarges to press upon these

will give rise to more marked mental changes, but any subacute and persistent alteration will be definitely reflected in the mental outlook of the individual. Every organ, and indeed every structure of the body, must be represented in the field of consciousness, but the stimuli arising from them only arouse consciousness of their existence when they are raised above a normal intensity. On the other hand, it is possible to obtain a relative hyperaesthesia by the lowering of sensitivity in the surrounding tissues. Pain—one of the most common changes in sensation—has been regarded from the philosophic standpoint as something of value to the organism and as tending to favour its survival. But pain is not always related, either by its cause or by its persistency, with some definite abnormality of which it is a more or less precise indication of constant value. Pain tends to persist long after the original cause has ceased to operate, and the longer it exists the more difficult it is to relieve. Pain evokes the same physical changes that are aroused by emotion, and the energy that must be dissipated by the mobilizing of these forces must sooner or later lead to exhaustion, which in some persons is more noticeable on the physical side, and in others in changes in the mental attitude.

Apart from severe pain there is no symptom so capable of initiating bad mental habits as discomfort. Tics are all good examples of this, but some of them lead to permanent ill health unless understood and suitably relieved; aerophagy is an instance. During the last decade, and more especially owing to the work of Dejerine, emotion has come to be regarded as one of the most important factors in the mental and physical health of an individual. It may arise from an external or an internal cause. By its suddenness or by its intensity emotion may completely overthrow the equilibrium of the subject who experiences it. This condition may on rare occasions be lasting, though it is more common to have a gradual return to normal self, but this regaining of conscious judgement is by no means even, and is often interrupted by a series of relapses. Even a lesser emotion if it lasts may set up a very definite "preoccupation" which in turn may lead to some mental change.

Every person has his own way of reacting to emotional excitation, and in some instances an external emotional stimulus, such as the shock of hearing bad news, only develops its full potency after being reinforced by internal emotion. A common form in which this type is to be observed in relation to physical disease is when a patient has been told some disquieting news regarding his health or when he may have inferred from some gesture or expression of his medical adviser that his condition is serious. Whether the emotion is severe or slight, if it occasions loss of intellectual control it tends to the establishing of a neurasthenic state, which in turn leads to a lessening of the power of adaptation in the person so affected. In some cases the neurasthenic condition may be complex, but in others it may be limited to the disorder of function of some organ of the body. To this type belong those individuals who develop fears regarding their heart, their lungs, or indeed any organ of the body, and this condition may persist long after the original emotional cause has disappeared and the patient has regained full intellectual control. The ill person is very suggestible, especially towards a morbid outlook, and any remark made by a physician may be so exaggerated and distorted as to lead to a preoccupation of an important kind.

Again, the number of persons who break down either immediately after an operation or some weeks later is larger than some may suppose, and many of these can be traced back to the emotional shock that the individual received when he was told that an operation was necessary. Emotional shock leads to preoccupation, and preoccupation leads to sleeplessness with its resultant nervous and mental fatigue. Highly hypersensitive persons should not be told of the need of an operation long before this is to be performed, and after any discussion of this nature has taken place the sleep of the patient should be carefully watched and sedatives administered if necessary. Also with this class of case violent purging a few hours before the operation should be avoided if possible, as this increases the danger of a nervous collapse with mental confusion after the operation. Crile and Lower conclude that surgical shock is a state of exhaustion which leads to changes in the brain cells, the liver, and the adrenals. They recognize that there is no distinction between emotional shock and shock produced by other means; the clinical phenomena are practically the same; they state that the cellular changes are apparently identical, and that the condition is brought about by an intracellular acidosis.

Many women, especially those in ill health or from some cause in a fatigued state—whether this is from the disturbed sleep so common in the later months of pregnancy or from some stress—are in a highly unstable state by the time that labour begins. The emotion which is always more or less present at this stage may pass the normal limits either from dread of the ordeal which confronts the patient or from the actual suffering at the time the baby is born. Such women should be protected by taking care that the hours of suffering and the intensity of it are limited, and yet too often these precautions are ignored, largely on the false argument that the process is a purely physiological one. An emotional disturbance of this kind may lead to years of ill health even if the patient escapes a severe mental breakdown. Emotion that has once been aroused may not settle down, and it nearly always leaves the person more susceptible to other emotional shocks.

Both physicians and surgeons know how devastating is fear, and how some patients who face an operation or an illness under this influence die without any apparent reason. To remove such fear, if it is possible—and it often is possible—is as urgent as it would be to control persistent vomiting, and yet in practice it is common to see the panic being accepted by the medical attendant in a fatalistic way and evoking nothing more than a regret that his patient is so foolishly nervous. The fearful person can usually be reassured, but he who would undertake to do this will best succeed if he has some knowledge of mind and its working. Some medical men, under the idea that they are bracing up their patient, do infinite harm by their remarks, especially if these include words of reproof. It is true that one fear may for the moment replace another fear, but I need hardly say that this is highly unscientific and is no more a remedy than is a lavish expenditure of sympathy. Fear and anxiety bring about a condition of mono-ideation in which the patient is unable to turn his attention away from the morbid thought which seems to fill his whole mind. If the preoccupation continues, it will begin to interfere with sleep, and Crile found that sleep was the only certain means of restoring the exhausted cells in the brain or liver and adrenals.

As a profession we have become unduly apprehensive of giving hypnotics. Experience has taught me how dangerous is this outlook, for insufficient sleep, especially under certain conditions, is infinitely more damaging than any drug; and as for the danger of inducing a habit by giving a hypnotic, if we omit the morphine and opium group, which should not be given, the risk is infinitesimally small. The physician who puts off prescribing a hypnotic as long as possible is the man who may bring about the habit he so much dreads, for he has by his methods permitted the patient to become obsessed by fear that he will not sleep, and when at last a drug is given and sleep is obtained the patient is terrified by the experience he has passed through of ever again having a sleepless night. Insomnia that is quickly relieved leaves no such memories, neither does it make the patient rely upon any artificial aid.

My experience strongly favours the view that a psychoneurosis may develop into a psychosis; but for the moment the point is that any mental symptoms arising in association with physical disease should receive the consideration that their presence merits. As in other matters of life the position is divided into two portions: the facts, or, as it is in medicine, the definite symptoms, and the inference or deductions that we make regarding those facts or symptoms. Now the body in health occasions few if any conscious sensations, and in consequence when they do arise the patient is apt to place his own interpretation upon them, and unfortunately the explanation is too often wrong. Altered sensation may be so severe as to occasion a patient to construct a definite delusion regarding it, but it is more common for him to have some fear as a result. This in turn may set up an emotive state, and this psychic reinforcement, when it occurs, greatly enhances the importance and the severity of the condition. Head has pointed out the varied moods that may arise in conjunction with pain of the reflected visceral type and the superficial tenderness which accompanies it. He states that "although reflected visceral pain seems to be the one universal concomitant of these mental changes in cases of visceral disease amongst sane persons, other factors predispose to their appearance"; but in the cases upon which he based his investigations he rigidly excluded all those in which there was an heredity of insanity or epilepsy. In addition to altered moods Head found that under certain conditions some persons suffering from visceral disease

are liable to develop hallucinations of sight, of hearing, and of smell. He further found in those persons who had visual hallucinations that superficial tenderness of the visceral reflected type was present over the forehead in every one of the cases, whereas in those who exhibited auditory hallucinations the tenderness was present in the vertical and parietal regions. The importance of the condition is not so much the sensory disturbance as the emotion that such a phenomenon may set up in the patient. It does not require a great imagination to appreciate what a disturbing effect these sudden hallucinations may have upon a highly sensitive person, and it is no cause for surprise that the inference that many of them draw is that their mind may be going. As they are sane persons their fear may be quickly allayed when the true nature of the disturbance is explained to them; but the tragedy of the situation is that, owing to the neglect of a systematic investigation of the mental aspect of a case by the general physician, the latter is often not conversant with the phenomena we are describing, and either he is unable to reassure his patient or, what is worse, he conveys to him the doubts that he has in his own mind. Many of these hallucinations are hypnagogic and occur when the patient is in a half-asleep and half-awake state. On the auditory side the sensory disturbances may take the form of tapping, knocking, bells, musical notes, name called, and even at times a few words. It is advisable in these cases to give one small dose of bromide daily to lessen the nervous reflex irritability, and if there is any tendency to sleeplessness this should be promptly relieved by sedatives.

Head states that when visual hallucinations arise in visceral disease the object appears white, black, or grey, never coloured or even tinted. He found that almost every patient felt frightened with the first hallucination of vision, as is usual with the auditory, but that if they were frequently repeated self-control returned. This again must largely depend upon the reassurance that should be given by the medical attendant.

Visual hallucinations may be and are a prominent symptom often of diagnostic value in states of toxaemia; the hallucinations may be only a part of a general altered mental state, for, if the poison is active, the patient usually soon becomes very confused, and may even be delirious. Nevertheless it is important to differentiate these cases from other types of mental disorder, as the mental changes may be very evanescent and pass away quickly when the intoxication is relieved. In such cases the natural resistance may be lowered and the tendency of the patient may be to react by mental changes. It is very necessary to recognize the syndrome of symptoms which arise in these toxaemic conditions—as, for example, their presence may be the first indication of pus.

Mental disorder is not haphazard in character, and the better we understand the grouping of its symptoms the more accurate we shall become in the diagnosis and prognosis of any given case. We are only upon the threshold of understanding the effect of any foreign protein taken into the body, but both clinically and experimentally it is recognized that striking effects may follow quite insignificant doses. It must be borne in mind that the effect may be more physical than mental, or vice versa, and consequently there must be every gradation between the two, and though the bodily symptoms may be the more common it is none the less important to seek for and to note any functional nervous change. Any poison is capable of producing mental disorder provided the person who takes it, by his special idiosyncrasy, reacts to it. The danger of regarding physical and mental disease in separate categories according to which group of symptoms is the more in evidence must be avoided.

Too little heed is given to gesture, expression, and posture. There are well-recognized diseases in which characteristic changes in any one or more of these are noted, and they may constitute important links in the syndrome of symptoms which go to establish the diagnosis of such diseases, but, generally speaking, little or no remark is made about them. Yet gesture language will convey as much as, if not more than, words, for these may be misleading, while gesture seldom is, for the latter is complex and it is the outward and visible sign of inward sensation and emotion. Maudsley, in his book on *Pathology of Mind*, says: "What is mind-reading but muscle-reading through movements so fine as to be discernible only to a practised sensibility?" Physicians of long experience acquire it, but it is a matter of too much importance to be left for time to teach and the observation of the student should be trained to appreciate it. He learns that physical pain, especially of the visceral type, is shown by the lower part of the face, but the tremor set up by strong and intermittent nerve currents transmitted to the various muscles may be of almost equal importance. The man who can observe can inquire, but he who sees but does not perceive is left in ignorance unless the information is disclosed to him by the patient. Further, even if noted, evidence of emotion, such as tremor and the like, is commonly explained away without any real investigation being made as to whether it should be regarded as a matter of consequence. Persistent disorder of conduct usually leads to further inquiry unless it is decided that it is purely hysterical, but owing to the loose way in which this term is frequently used abnormal behaviour may be wrongly regarded. The conduct may become undisciplined, and with this there may be a general restlessness; this is common in some forms of heart disease, and even more so in exophthalmic goitre. These may be the first symptoms to attract attention, and in any case they should never be looked upon as unimportant. Conduct may be disordered either by overactivity or by underactivity; great muscular response may take place with slight stimuli, or the inertness may be such that even with powerful stimulation the response is small, while between these two extremes stand infinite variations. A change of conduct which originates in the course of some disease may persist after the latter has passed away unless steps are taken to remedy it, for such a change may become a pure habit. If, on the other hand, the attention of the patient is drawn to the symptom and it is treated as part of the illness, it not uncommonly disappears as recovery takes place.

Disorders of the endocrine system are examples of the close relationship of mind and body. The disturbance may begin either from the psychical or from the physical side. The stimulation of the sympathetic nervous system and of its coadjutors, the adrenals and the thyroid, results in a mobilizing and rapid expenditure of reserves, and for the time a heightening of all the vital processes. It is a katabolic action, and yet, owing to the quickening of metabolism, it is at first associated with a feeling of well-being which may be so strong as to produce a mildly exalted state. But, should this continue, exhaustion, with all its usual mental and physical concomitants, must sooner or later result. Apart from emotion the feeling tones associated with disease are important to note and understand, otherwise the effective changes in the patient may be seriously misleading. One of the most remarkable and yet most common instances is the buoyancy of spirits to be observed in certain patients on the days immediately following an operation. Although this brightness may to a small extent be due to the relief of mind that the ordeal which has been weighing heavily on the patient is now successfully past, another cause, if certain authorities are correct, would seem to lie in the stimulation of the sympathetic nervous system and the endocrine glands, one of whose functions, it is said, is to protect the organism in time of stress. Too often one sees this cheerfulness misinterpreted, and the physician or surgeon who looks for a rapid result welcomes this attitude as an indication of returning health, and all too frequently it encourages him to abandon the rules of carefulness and to permit his patient to do things which hasten the onset and increase the severity of the exhaustion which must follow. If a patient is depressed or unduly elated, an endeavour should be made to discover the cause; I do not refer to states of melancholia and mania, which are usually spoken of as insane conditions. There are many variations in affective tone; some may be temperamental and some rhythmic, but others may be due to metabolism changes. I have long remarked upon the sense of well-being which is so commonly associated with a fall in the body weight; it is probably one of the most deceptive mental attitudes in life. During the war many of the civilian population who lost considerable body weight owing to the restriction of food commented on how much better they were for it; some, no doubt, were better because their reserves were abundant, but others learnt to their sorrow that this betterness was ephemeral and that a period of ill health awaited them.

The mental reaction of every person to disease is individual; it is always the same for that person, and is not haphazard, but follows rules and progresses in an orderly way. The more elemental the mind the easier the problem becomes, and for this reason to study the mental reactions of children to disease is the most helpful method of approach, for in later life the experiences that an adult has passed through add their colouring to the fundamentals. The tendency, or indeed

I might say the universal custom, has been to regard man as he appears; we have a face-value standard of mental and physical health, but we never rely upon the latter in the same way as we are prepared to accept the former. If the bodily health together with the functions of such organs as we consider to be important are satisfactory, the patient is regarded as an A man, notwithstanding that the mental outlook may be scarred with former illness. There is no better example of the danger of specializing than the study of mental and physical medicine. Theories become practice, and man has been viewed from these two standpoints, which at some periods have been so divorced as to have little or nothing to do with each other. The physiologist and the biochemist have been slowly linking these divorced subjects together, and it is the duty now of all clinicians to widen their vision and not only to make use of the beginnings that have already been made, but to add to their knowledge by a systematic investigation of mind states in all physical disease. We shall find that mental symptoms have their value, and that, whilst some are primarily hurtful, others may be largely, if not entirely, protective to the organism, and may form part of its armament in its struggle to survive. But, as with all functional disturbance, they may remain long after their purpose has ceased to exist. Habit is the state towards which everything is working, and it is one of the duties of the physician to see that baneful influences do not persist if it is possible to correct them. The physical hygiene of the future must include a knowledge of mental hygiene, just as mental hygiene must take note of the welfare of the body. From this several advantages will accrue: mental processes will be better understood and mental changes will become matter of commonplace; fears of insanity will be replaced by an enlightened understanding, and the incidence of the graver forms of mental disorder will be lessened.

THE TREATMENT OF RODENT ULCER BY CHROMIC ACID SOLUTION.

BY

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WICK, CAITHNESS.

The medical man who practises in a district remote from large hospital centres is often faced with difficulties in the way of treatment not experienced by his more favourably placed colleagues. When, for example, the case is one requiring special treatment, as with *x* rays or radium, and the nearest hospital equipped with the necessary outfit is several hundred miles away, the problem becomes very real. To the working man the expense of the journey and the time lost from work mean a great deal, and, unless his life is at stake, he must simply do without the treatment and go on using such palliative measures as can be obtained locally.

Rodent ulcer is a disease of local malignancy which can be successfully treated by excision, by escharotics, or by radium. The two former involve the destruction of the healthy along with the diseased tissues, while the latter is not always available. Many patients object to operation, and in some cases the site of the ulcer renders operation difficult, if not impossible, without leaving a disfiguring scar. Excision of a rodent ulcer from the lower eyelid, for instance, may be followed by an ectropion more unsightly if less serious than the original ulcer.

The treatment of rodent ulcer by the application of chromic acid solution, 10 per cent. in distilled water, was suggested to me in 1910 by Sir George T. Beatson, senior consulting surgeon to the Royal Cancer Hospital, Glasgow. I began practice in Wick a few months later, and during the following four years treated 19 cases successfully. I intended publishing my results then, but five years of war intervened. Since 1919 I have treated 6 other cases, and am satisfied that the results justify this article. In only one case was the diagnosis confirmed histologically, but the history and appearance of the others made the diagnosis clinically certain. With two exceptions, all the cases were comparatively early—that is to say, ulceration had taken place, but the soft tissues only were invaded. In one the alae nasi and part of the septum were destroyed and the nasal bones exposed; after four months' treatment the raw surfaces were covered by healthy granulating tissue, except a small portion of the floor of the nose. Unfortunately this patient died of pneumonia before treatment could be completed. In the other case the ulcer was small and situated on the right ala nasi, penetrating to the cartilage, which formed its base. This case proved most intractable, and eleven months' treatment was required to effect a cure, but during that time the patient did not lose a single day off work, and now, twelve months later, a slightly dimpled scar is all that remains.

As all the cases were treated in the same manner I will describe one more before proceeding to the details of the treatment.

The patient, a man aged 70, consulted me in November, 1919, about an ulcer of six years' duration affecting the lower eyelid towards the inner canthus. In shape it was roughly elliptical and its upper border within a quarter of an inch of the margin of the lid. Removal of the crust which covered the floor of the ulcer was followed by purulent discharge. He had no pain, but a haunting fear that sooner or later his eye would become affected. After four and a half months' treatment the ulcer was healed. It had filled up and there was only a slight depression to indicate where it had been. The scar was supple, and hardly distinguishable from the surrounding skin. There was no contraction, and consequently no ectropion.

Treatment is carried out as follows: When the crust, if any, has been removed and the floor of the ulcer cleansed with plain sterile water, chromic acid solution is applied to it and to the surrounding skin by means of a fine camel-hair brush. This is repeated daily until the patient complains of pain coming on about an hour after treatment and usually lasting an hour. Each succeeding day the pain is of longer duration and signs of irritation appear. The surrounding skin becomes red and oedematous, and at this stage, varying from the fifth to the tenth day, the treatment should be discontinued and a bland ointment substituted till the pain and inflammation subside. Plain vaseline or equal parts of boric and zinc ointments may be used. It is immaterial what emollient is chosen so long as the active treatment is interrupted at intervals regulated by the degree of pain and irritation present. During the first few weeks the ulcer may actually increase in size and depth, and it is well to warn the patient of this before beginning treatment; otherwise he is apt to conclude that he is getting worse instead of better. In my earlier cases I found that repeated application of the chromic acid solution was not infrequently followed by the formation of a dense firmly adherent crust exceedingly painful to remove. To obviate this I now apply to the floor of the ulcer a pledget of cotton-wool which absorbs the exudate and is easily changed next day. When the extreme limit of malignant invasion of the surrounding skin has been reached further changes in the appearance of the ulcer take place. Its raised border becomes flattened and covered with healthy-looking epithelium which gradually advances along the floor of the ulcer towards the centre. The chromic acid applications are now attended by less pain, and eventually the ulcer appears to be completely healed. Should this occur during the use of the ointment chromic acid should again be applied for a few days, and if the disease has been eradicated no effect whatever will be produced. Should, however, the apparently healthy epithelium thinly cover tissue in which malignant elements are still present it will break down, and a continuation of the treatment will be necessary. Chromic acid diluted to 10 per cent. strength, while inimical to rodent ulcer cells, does not affect those of healthy tissue however tender.

On two occasions I have tried its effect on epithelioma of the lip. In one case the patient refused operation, and within a fortnight of the commencement of treatment the ulcer had doubled in size and, at the urgent request of the patient, was dealt with surgically. The other case was one of incipient epithelioma at the junction of the upper and lower lips with extensive leucoplakia of both lips. The chromic acid solution was employed with a view to getting rid of this before operation. It was eminently successful so far as the leucoplakia was concerned, but here again the epithelioma tous ulcer was stimulated to rapid growth and was shortly afterwards effectively removed by Mr. Henry Wade of Edinburgh.

I would like at this point to mention an instance not of rodent ulcer, but with the same tendency to local malignancy, successfully treated on similar lines.

The patient, a woman over 70 years of age, suffered from a papillomatous growth of the left cheek of several years' duration. She had been operated on six times, with a recurrence on each occasion at the end of three to seven months. On her refusal to submit to further surgical treatment she was sent in 1909 for radium treatment under the care of Dr. Dawson Turner of Edinburgh. She was treated for 43.3 milligram hours, and left hospital apparently cured, but five months later there was a recurrence at three separate parts of the scar. I saw her a year later and after

three months' treatment with chromic acid the growth again disappeared. Nine years later she died, but there had been no recurrence.

This case illustrates the importance of a form of treatment easily accessible. Had the patient resided near the centre where radium treatment was carried out, instead of three hundred miles away, the recurrence could have been dealt with at once. As it was, she could not afford a second journey. It may be argued that in widely scattered districts, where the patient lives ten or twenty miles from his doctor, this treatment is almost as inaccessible as radium. I had one such case.

A man, aged 60, came to me complaining of an ulcer which he had noticed three years previously and which he had endeavoured to cure by many and varied ointments of the proprietary type—and his ulcer slowly increased in size. It was situated at the angle formed by the lobe of the right ear with the skin extending from it towards the angle of the jaw and measured about three-quarters of an inch in diameter. As he informed me that it was quite impossible for him to attend daily for treatment I gave him a prescription and wrote down in detail the procedure to be followed, asking him to report weekly for observation and further guidance. I did not see him again for two months, and by that time the ulcer had almost healed. Eighteen months later he dropped in casually to tell me that his ulcer had completely healed a month after I had last seen him and had not again broken down.

The duration of the treatment where the soft tissues only are affected averages three and a half months. Where bone and cartilage are invaded the patients should be strongly urged to go where more effective treatment can be obtained. At the present day no patient suffering from rodent ulcer should be allowed to reach that stage.

Of the various local remedies that have been used successfully in the treatment of rodent ulcer, and whose action, like that of 10 per cent. chromic acid solution, is selective, salicylic acid, pyrogallol, and arsenious acid may be mentioned. Of these, arsenious acid, according to Dr. Norman Walker[2] of Edinburgh, has given most satisfactory results. In his *Introduction to Dermatology* he discusses very fully the treatment of rodent ulcer, and, in describing the use of drugs whose action is caustic and selective, he rightly emphasizes the necessity for care in the choice of the drug as well as in its application. Of the effect of the arsenious acid preparation favoured by him he says: "In twenty-four hours the part has swollen up and the pain experienced is very severe, so severe that it is often necessary to give the patient morphine." Farther on he says, "In many cases one course of this treatment is successful." I admit that, in comparison, the course of treatment by 10 per cent. chromic acid solution is long and even tedious, but it is less drastic in its action, the onset of pain is more gradual and need never be permitted to become unbearable. Its advantages discount both the length of time taken to effect a cure and the slight pain and discomfort experienced during its exhibition. The remedy is cheap, and it is easy to use. The destruction of tissue following its use is limited to diseased elements. The patient is spared the expense of a long railway journey and is able to continue at work throughout the treatment. The resulting scar, wherever situated, is soft and pliable, and there is no contraction with consequent disfigurement. And finally, should recurrence take place, the patient has the satisfaction of knowing that a simple and effective remedy is immediately available.

References.

[1] Dawson Turner, *Radium*, 1910, p. 53. [2] Norman Walker, *An Introduction to Dermatology*, seventh edition, p. 324.

PROPHYLACTIC RECTIFICATION AND VERSION AT THE ANTE-NATAL CLINIC.

BY

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Down to the close of 1921 the correction of malpositions (right occipito-posterior) and malpresentations (pelvic and transverse presentations) in the ante-natal department of the Edinburgh Royal Maternity Hospital had attained only a partial success. There were numerous cases, especially of malpositions (chiefly right occipito-posterior) in which neither one-handed nor two-handed palpation applied by the abdomen or the vagina or by both routes sufficed to bring the back of the foetus round to the anterior aspect of the mother. Postural plans were also experimented with—for instance, a modified Trendelenburg position was used in some cases in the hope that the presenting part would slip out of the pelvic brim and become movable above it; but success was only occasional. Dr. F. J. Browne and I often talked over the subject, but without devising anything which was wholly satisfactory.

On November 12th, 1921, Dr. R. C. Buist of Dundee published in the British Medical Journal (p. 782) "A note on the early recognition and corrective treatment of occipito-posterior positions," in which he described the method of rectification by means of towel pads. There were some details in the procedure which were not clear to me, so I got into communication with Dr. Buist, who was kind enough to explain and illustrate the method by diagrams. From the beginning of the present year (1922) the method by pads has been employed in the ante-natal department for the correction of occipito-posterior positions of the head. The results for the six months from April 1st to September 30th, 1922, have been most satisfactory. During this period 509 expectant mothers attended the ante-natal clinic as new cases. Amongst these there were 26 instances of right occipito-posterior position of the foetal head, and of these 24 were rectified by pads into anterior positions, whilst 2 remained posterior, notwithstanding the treatment. In most of the cases the rectification was into the right occipito-anterior position, but in some the rotation was continued until the head was found to lie in the left occipito-anterior position. In one case which has occurred since the end of September the original position was diagnosed as left occipito-posterior and pads were applied, the rolled one on the left side and the flat one on the right; on the following day it was found that the presentation was a breech, and external version was then performed, producing a right occipito-anterior position. This was the only occasion on which the application of the pads in posterior vertex positions was followed by the production of a pelvic presentation.

The method adopted was that recommended and described by Dr. Buist as follows:

"A binder is laid under the patient and two towel pads are prepared. The first is rolled to about the thickness of a forearm, the second is folded to a flat pad 6 or 7 inches square. The rolled pad is pinned to the binder in such a position that when the binder is firmly secured the pad will lie close in front of the anterior superior iliac spine behind and parallel to the trunk. The flat pad is pinned so as to lie on the limbs, pressing them backwards. It is sometimes useful to roll the patient to the side opposite the trunk and by hand bring the trunk as far as may be over to that side. The binder is then pulled firmly home."

In the Edinburgh clinic it has rarely been found necessary to take the patient into hospital for the rectification. The malposition is detected at the clinic; the patient is asked to return the next morning and to bring with her a binder, two towels, and safety pins; the pad and binder are then applied and the patient is allowed, after a short rest, to go to her home; she returns the next morning, when it is usually found that the position is anterior. Occasionally the pads have to be reapplied, rectification not having occurred at once. As has been said, the procedure only failed twice. Such failures are to be ascribed to the late date in pregnancy which has been reached, and the low level of the foetal head in the mother's pelvis. Very rarely was the posterior position reassumed after rectification.

It is difficult to find a completely satisfactory explanation for the corrective effect of the pads. Probably the rolled pad simply makes the existing position an uncomfortable one for the foetus; he will be mobilized, and, using the flat square pad to press his limbs against, will move into the position in which he is able to lie at rest, the right or the left anterior. I hardly believe it can be claimed that the rolled pad gets in behind the foetal back in the right occipito-posterior position and pushes it forward. The cases in which the position is found to be the left anterior are probably those in which the pads have produced a marked reaction by the foetus, and the back has thus been carried right across the abdomen. It is unnecessary to emphasize the great advantage this method of dealing with occipito-posterior positions possesses over the difficult and often uncertain plans of rectification applicable in labour; personal experience enables me to say with assurance that it is also much better than any method of manual replacement in pregnancy.

In the series of 509 pregnancy cases in the six months referred to 56 pelvic presentations were detected. In

11 of these cases no attempt at version was made as the pregnancy had only attained the sixth or seventh month, and it was thought that they might safely be left for a little longer. In 14 cephalic version was performed by external manipulation, sometimes by one and on other occasions by two operators. There were 7 cases in which version was found to be so difficult that chloroform had to be administered, with the result that success was obtained in 6. In 3 other cases attempts were abandoned owing to small amount of liquor amnii and close apposition of the uterus to the foetus. In 19 cases spontaneous version occurred. In 2 the patient did not return to the clinic. In this way the 56 cases were accounted for. There were 3 cases of transverse presentation in the 509 patients. Cephalic version was carried out in them all by external manipulation. Towel pads may be used in difficult breech and transverse presentations.

A CASE OF CONVERSION NEUROSIS.

BY

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While doing the duties of staff surgeon in Ambala, India, I was called out early one morning to see a lady, aged 34, said to be acutely ill. On arrival I gathered that she had been having a series of fits which appeared superficially to resemble epileptic seizures.

When first I saw her she was just coming round from a second fit, and had gained a drowsy consciousness. She had incontinence of urine, rigid muscular contractions, and cyanosis. The temperature was 106° F., pulse full in volume. I learned that the day before, at about 11 a.m., she had gone into the bazaar wearing a very flimsy hat, and had come back with a severe headache which persisted throughout the day and night. A "touch of the sun" naturally suggested itself, particularly as that summer was an exceptionally hot one (about 108° F. early April, shade temperature at noon). I had the room darkened and cooled and a cold pack put to her head. The temperature and her general state did not seem to call for any other treatment. I eliminated malaria by film examinations. She had no more fits, and passed out of my care on departing to a hill station for the rest of the summer.

I was called again to see her in the following September. During her stay at the hill station she had had three severe attacks of a similar nature to the first, each more alarming than the one before, with longer periods of unconsciousness. The present was the fourth in five months. I found her on this occasion practically unconscious, the eyes turned upwards, the lips blue, the teeth still set (tongue not bitten as means to stop this had been employed). She had had a succession of four fits during the night, and was clearly feeling the strain. I admitted her immediately into the family hospital of which I had charge and asked the sisters to watch her closely and to note anything peculiar regarding the attacks. She was kept screened and quiet and put on a strong triple bromide mixture. She had three further fits, each one less severe than its predecessor, and under the influence of the bromides quieted down by the following day. The fits certainly appeared practically identical with those seen during an epileptic seizure. There was no family history of epilepsy or fits of any kind. Another blood film examination proved negative to malaria, and showed nothing abnormal in the differential count. Specific disease was excluded. I examined the central nervous system with extreme care. Nothing could be found beyond a slight increase in the knee-jerks.

Closer examination into her domestic life brought out the fact that her fits always corresponded with periods of worry about her two children during the absence of her husband on tour. The fits came on when he came back or just prior to his return—that is, when the tension of solitude was relieved. My patient passed rather a secluded life and saw very few people, although she lived well inside the cantonment.

Treatment.

The case here assumed a new aspect. I talked with her for a long while in private and led her towards the solution of her problem, which she eventually solved to her own satisfaction. She would never live again without a companion while her husband was away. This was the first step. Next came the consideration of drugs. Bromides I put immediately out of court in view of the fact that the case did not call for depression but healthy stimulation. I therefore put her on a series of injections (twelve in all) of the glycerophosphate compound put up in ampoules by Parke, Davis, and Co. During the full course her husband remained at home. The result was excellent. She felt inwardly much fitter—"never better for years," as she described it—and ceased to worry over her domestic problem.

Her husband went on tour shortly afterwards and returned to find her quite well. A companion stayed with her during his absence. Only once while he was away (she had again elected to live alone on three successive occasions) did she have any signs of recurrence. I was called in and found that she had been alone for nearly two weeks at a time when the political situation was causing us all some anxiety out here. She had three slight fits, not to be compared in severity with those seen previous to treatment. Again she settled down quickly and has not had any trouble since. I have now lost sight of her.

In a space of about nine months after the above treatment she had only one slight recurrence under great mental provocation.

This case I think is rather exceptional, (*a*) in virtue of the fact that the weakness caused through exposure to the sun should become by "conversion" the expression of a psychoneurosis and continue as such; (*b*) the vast improvement in the case after a strong tonic, backed up by the patient's own solution of her problem; (*c*) the complete lack of previous or family history pointing to any disorders of this nature.

NINETIETH ANNUAL MEETING

OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF DISEASES OF CHILDREN.

Sir Herbert F. Waterhouse, M.D., F.R.C.S., President.

DISCUSSION ON THE ETIOLOGY OF RICKETS.*

OPENING PAPERS.

I.—LEONARD FINDLAY, M.D., D.Sc.,

Visiting Physician, Royal Hospital for Sick Children, Glasgow.

It is an interesting coincidence that on the return of the British Medical Association to Glasgow after a lapse of thirty-four years rickets should again form the subject of discussion by the Section devoted to the study of diseases of children. One appreciates the appropriateness of the choice, since rickets is a disease specially prevalent under industrial conditions, and probably no city in the kingdom possesses these in a more marked degree than does Glasgow. For this very reason the disease has naturally always interested Glasgow's students of medicine. The name of our distinguished President, as you are all aware, is associated not only with one of the most characteristic manifestations of the disease (Macewen's tibial spine) but also with an operation for the rectification of the rachitic deformities. Two important investigations into its presence or absence in India, and the reasons therefor, have been carried out by Glasgow graduates (Huntly[1] and Hutchison[2]), and it is needless to remind you that within recent years the Glasgow school has earned for itself a certain notoriety on account of the interest which it has evinced in the malady.

Though the two meetings are alike in the choice of subject, the present debate differs from the one of thirty-four years ago in that it is a conjoint one between the physiologists and the pediatrists. This is of course in consequence of the great amount of experimental work which, during the intervening years, has been done to elucidate the pathology of the disease, and the lion's share of this stands to the credit of the physiologist.

Although there is nothing farther from my intention than to belittle animal experimentation, as I appreciate only too well the great benefits which have accrued to medicine in consequence, and indeed much of my own humble energies have been expended in this direction, yet the final battle regarding the etiology of rickets, at least human rickets, must be fought out in the clinical field. It is the admission of this fact, I take it, which is responsible for the onerous and at the same time honourable duty of opening the discussion falling upon me, a clinician.

Clinical Generalizations.

In the life history of human rickets there are several broad facts with which any theory of its origin must be reconciled before it would be justifiable to adopt it as the correct

* Joint Discussion with the Section of Physiology.

explanation of its pathogenesis. In the first place, rickets has a special geographical distribution; this after all may mean nothing more than that it simply follows the distribution of industrialism. It is a disease, too, which is never found in races living under natural conditions, but which may become exceedingly rife among these same people when they adopt the habits of civilized man, as is evidenced in the case of the West African negro in New York and other American cities.

In the second place, the disease presents a marked seasonal incidence. This is a point of considerable importance in evaluating any clinical prophylactic or therapeutic test. This is apparent from Dr. Helen Mackay's[3] study of the effect of cod-liver oil and other fats in the treatment of the disease, and is also well borne out in the clinical investigations which Dr. J. D. Galbraith is at present carrying out in my own department.

In the third place, there is the broad fact that rickets is a disease of the poor, at least so far as Europe and America are concerned. Dr. Hutchison[2] has recently shown that in India, contrary to what prevails here, rickets is a disease of the wealthy. I know, of course, that there are many clinicians who do not consider that even in this country the disease is limited to the poor, and who hold that the children of the well-to-do also frequently suffer. They usually admit, however, that the disease under these conditions is much less severe and more amenable to treatment. In fact, one often hears employed the expression "prerachitic stage," whatever that may be. The whole point of course turns on the matter of diagnosis. Personally I am unable to make a certain diagnosis of rickets in the absence of either definite naked-eye or *x*-ray changes of the bones, and I would only ask if those clinicians who believe that rickets occurs in the better classes frequently meet with the characteristic *x*-ray appearances in these supposed examples of the condition. For any discussion on the cause or cure of a disease to be fruitful it is essential that there be agreement on what constitutes that condition, and though in the present case there may be some difference of opinion regarding the question of absolute immunity of the better classes, there is, I suppose, general agreement regarding the relative immunity enjoyed by that class—a fact which, for the purposes of my argument, is amply sufficient.

Diagnostic Criteria.

The question of diagnosis raises not only the previous point of what we are entitled to take as evidence of the existence of the disease, but also, and which is quite as important, what we are permitted in accepting as evidence of cure of the disease. Our own investigations on these matters have introduced us to certain perplexities. In any extensive clinical survey one not infrequently meets with a child running about and apparently quite active, and yet presenting on *x*-ray examination a very definite and severe degree of deficient calcification at the growing ends of the long bones. In another instance the child previously unable to walk is by some remedial measure apparently enabled to do so, but *x*-ray examination of the bones reveals not the slightest improvement. In still another example, also ostensibly in consequence of some therapeutic measure, the bones show very definite signs of healing, but the child remains as helpless and as disinclined to walk as ever. In the face of such findings what conclusions can be arrived at? If one is justified in ignoring the bone changes as an essential feature of cure, is one equally justified in diagnosing the disease in the absence of these same bone changes? In other words, is rickets a disease which may implicate any part of the body, but which attacks one part in one individual and another part in another? Such an assumption at the present moment, however, would tend rather to make difficulties than to help in the task of elucidation.

Diet as a Cause of Rickets.

The dietetic theory is undoubtedly of all the current theories the most popular, and to it therefore I would desire in the first instance to direct attention. As work on this aspect of the problem has proceeded, the importance of exactitude both regarding quantity and quality has become more and more apparent, and consequently much of the older clinical work must be discarded. Broad generalizations regarding diet, with no definite statements on either the exact nature or amount of food, characterize most of the work of our predecessors, and make it quite valueless as evidence in the present discussion. For the same reason I am willing to exclude our own study of the diets of rachitic and non-rachitic families; in these studies we attempted to form some idea of the amount of the various foodstuffs consumed by the child under consideration from an analysis of the total family diet. Such a method it is readily admitted can never give more than a mere approximation of what the child really obtains. Fortunately, however, within recent years clinicians have seen the necessity for greater precision regarding these matters, and we have at our disposal for consideration several investigations with such exact information. In the infant it should be remembered the question is not really so difficult as at first sight it might appear, owing to the extreme sameness of the diet at this period of life.

The clinical dietetic investigations can be divided into three groups: prophylactic, provocative, and curative. Hess was probably the first to carry out exact clinical experiments with the idea of testing the theory that animal fat or its constituent, fat-soluble A, possessed a prophylactic power. It was well known that the negro child in New York almost invariably suffered from the disease. Hess and Unger[4] therefore added to the diet of a certain number of those children from their earliest infancy crude cod-liver oil, and found that a much smaller proportion than usual developed the disease; in fact by this measure these authors held that they reversed the proportion of those usually attacked and those remaining free. We ourselves have also carried out a similar investigation, and found that of 27 infants receiving oil only 15 per cent. developed rickets, while of 30 controls 60 per cent. presented some evidence of the disease.

The first clinical tests to observe the behaviour of ossification in the infant while on a diet devoid of the fat-soluble A factor were also carried out by Hess.[5] Hess removed the milk fat from the diet of a certain number of infants by feeding them on dried skim-milk, replacing the fat by cotton-seed oil so that the caloric demands were supplied in the usual representative manner. He, however, saw no evidence that these children were abnormally prone to the disease. The vitamists of course have objected to the use of Hess's clinical experiments as bearing on the question of the rôle of fat on the ground that cotton-seed oil is one of the best of the substances poor in fat-soluble A. In 1919 we find cotton-seed oil classified by the Vitamine Committee[6] of the Medical Research Council among those fats not protecting against rickets, yet Mellanby[7] in his recent Oliver-Sharpey lectures states that its antirachitic power is moderate. One has a difficulty in understanding Mellanby's expression of opinion, since in his detailed work on experimental rickets, also published by the Medical Research Council, he records, in all, three experiments with cotton-seed oil, two of which developed rickets, and in the other he describes the bones as practically normal, though I must say the published *x*-ray picture of this special case does not substantiate this opinion. In almost immediate juxtaposition there is an identical picture from an animal of similar age fed on rape-seed oil, and believed by Mellanby to demonstrate rickets. To my mind both are definitely rachitic. Is it that Mellanby has been influenced in his opinion by Hess's clinical results? If so, then for similar reasons much of his dogmatism about fats and their antirachitic powers must be abandoned.

Other clinical tests of a provocative nature are also against the fat-deficiency theory. On the Continent during the war milk was exceedingly scarce, and this was, perhaps, nowhere more evident than in Austria. To make the milk go as far as possible Pirquet of Vienna devised the plan of doubling or even trebling its nutritive value by the addition of carbohydrate, so that the child would only require half or one-third of the usual quantity, and would thus only obtain, as the case might be, half or one-third of the normal amount of fat. In consequence of the good results gained with this type of feeding Pirquet was forced to review his older ideas of nutrition, and formed the opinion that fat was practically unnecessary, the only desiderata in the dietary being the requisite number of calories, and, on the basis that human milk is the ideal food, that 10 per cent. of these be derived from protein. He cited in support of his contention the low fat and rich carbohydrate diet of Eastern and tropical natives, just as Mellanby cites the diet of the Esquimaux as evidence for the necessity of fat. How can we reconcile two such different and apparently satisfactory diets, and the absence of rickets in both instances, with the antirachitic power of animal fat?

When visiting Vienna last spring (1921) I was informed by Pirquet and his assistants that they had not seen any ill effects from such a fat-poor and carbohydrate-rich diet, and quite recently Wimberger,[8] one of Pirquet's assistants,

has recorded the interesting history of male twins. One of these had been fed on a fat-poor diet and the other on a fat-rich diet, yet in both the osseous and general development were identical and quite satisfactory. More extended experience may, however, show that their first impressions were unduly optimistic, and we thus await with interest the report of the delegates of the Lister Institute, who, during the past two years, have been carrying out an extensive comparative study on this very point.

One must not forget in this connexion that feeding children on a fat-poor diet is no novelty. This has for years been a recognized method of dealing with certain cases of malnutrition, cases in which the error seemed to be a difficulty in digesting fat. Examples of this type of malnutrition are not uncommon, and in those which I have observed among the well-to do there has been, to the best of my knowledge, no development of rickets, nor, I might add, any arrest of growth, this having as a matter of fact usually proceeded at a supernormal rate during the treatment. These experiences have rid me of the fear of feeding children on a fat-poor diet; but in order to test this point still further we have been observing, for some time past, infants fed on fat rich and fat-poor diets over prolonged periods, special attention being paid to changes in ossification. So far as we can judge there is no greater predisposition for the one set than the other to develop rickets, but Dr. J. D. Galbraith will, I hope, have an opportunity of supplying the details of this investigation.

Then there is the recent work of Hutchison[9] on rickets in India, which makes it difficult to understand how diet can be a factor of prime importance in its cause. Hutchison found in Nasik in India two social classes almost as sharply differentiated from one another, so far as diet and housing are concerned, as could be obtained under experimental conditions in a laboratory. The one class (the poor labourer and agriculturist) lived an open-air life, and the other (the wealthy Mohammedans and Hindus) inhabited houses the rooms of which were dark and airless, and in which the infant and female populations were more or less continuously confined. The infants of both classes were breast-fed for one or perhaps two years; the general diet of the poor was deficient, in fact almost devoid of fat and especially animal fat, whereas that of the rich contained this substance in moderate amount. It should be specially noted, too, in connexion with the matter of breast feeding, that it was the wealthy classes who consumed most vegetables, milk, and eggs, recognized sources of the antirachitic vitamin. Yet it was in the better classes, those consuming the richer fat diet, that Hutchison found not only early but late rickets prevalent, the poorer classes, though eating an almost fat-free diet, being comparatively immune. It is also interesting to record in this connexion that Hutchison found dental caries to be exceedingly and equally rare in both the rich and poor of Nasik and the surrounding districts of India in spite of the relatively poor fat diet.

So far as therapeutic tests are concerned we have the record of Dr. Mackay's[3] experiences in a London polyclinic. She treated cases of apparently active rickets by the administration of different types of fat. Unless during the summer months Dr. Mackay did not see any evidence of cure in spite of the addition of cod-liver oil and butter to the diet. Even during the summer in one case which was receiving 6 drachms of cod-liver oil daily the condition seemed to progress, so that the improvement which resulted in some of her cases may simply have been in consequence of the well-recognized tendency during the summer months to spontaneous recovery. It is also worthy of note that Cheadle and some of the others who took part in the discussion thirty-four years ago, and who were all whole-hearted believers in the deficient fat theory and in the efficacy of cod-liver oil, said that so far as the treatment of the disease was concerned they had more frequently to stop the cod-liver oil which was being given than to prescribe it. I might also be permitted to refer here to the experimental work of McCollum and others in which healing occurred during starvation of the animals.[10]

If the absence of fat-soluble A really be of importance in the etiology of rickets, why is keratomalacia so seldom seen in conjunction with it? I personally have not observed it in one single case of rickets in Glasgow. Keratomalacia, for many years has been looked upon by clinicians as a condition due to the absence of fat from the diet, and experimentalists have more recently observed this relationship. Mori, who saw a large number of cases in Japan, where the diet is notoriously deficient in fat, states that it is chiefly observed during the summer months (July to October), and that it is invariably found in association with defective fat ingestion or absorption, and in consequence he suggested the name "lipaporia." He describes almost the same miraculous cures of the condition with cod-liver oil as we ourselves are in the habit of seeing in the case of scurvy with orange juice. It is interesting to read how Mori tried the therapeutic value of different fats, finding cod-liver oil the best and olive oil almost without effect. As rickets is practically unknown in Japan, Mori states that there can be no question of this disease playing any part in the cause of keratomalacia. More recently Bloch[10] in Denmark has described an epidemic of keratomalacia in infants through their being inadvertently fed on a diet very poor in animal fat. If one is to admit that both rickets and keratomalacia are due to the deficient ingestion of fat, then I am afraid it is only by adopting the explanation suggested by some, that the different lesions in these two conditions are consequent on the deficiency of fat being associated with different combinations of the other constituents in a badly balanced diet—one of the most fantastic theories in modern pathology.

And finally, the fact that the disease develops on a diet of undiluted milk surely renders difficult of acceptance the suggestion that rickets is a deficiency disease, at least so far as fat and also calcium are concerned, as cow's milk contains on the average as much fat and four times as much calcium as human milk, the ideal infant food. Strictly speaking a deficiency disease is one due to insufficient ingestion, and I suppose the adherents of the deficiency theory accept this definition. Could, however, the disease be explained by deficient absorption—that is, supposing calcium, phosphorus, and fat-soluble A are the really important elements in the etiology that some believe them to be? Though it has been shown that, at least in full-blown rickets, absorption of fat is as good as in health, we know that in the early stages of the disease calcium retention (? absorption) is very deficient, and also that the amount of inorganic phosphorus in the blood is less than normal. The absence of rickets in marasmus and coeliac disease, both chronic conditions in which absorption is probably deficient, may be accounted for by the relatively slow rate of growth in these conditions. A certain rate of growth is essential for the development of rickets. But if the question be one of defective absorption then it must be defective absorption of a very special type, a type induced by a lesion permitting of a very selective action—a lesion that allows the elements necessary for growth to be absorbed, and yet at the same time deprives the economy of those requisite for regulating that same growth. It must also be a lesion that seldom if ever occurs in the well-to-do. To my mind such a hypothesis postulates a specific infection, a possibility which we must certainly entertain.

Environment as a Factor in the Cause of Rickets.

In our investigations in Glasgow, environment and general hygiene have always seemed to be factors of importance. I need not recall my own records of 1915,[11] or those carried out later by Miss Ferguson,[12] and the experimental work carried out in collaboration with Professor Paton. As a result of all these studies we concluded that overcrowding, poor parental care, and absence of open-air exercise were determining factors, the latter of which I personally was inclined to consider the most important.

Hutchison's recent observations in India lend considerable support to the idea that confinement is a factor of prime importance. He showed that the incidence of rickets was definitely related to the purdah system (a system only practised by wealthy Mohammedans and Hindus), which accounted not only for the fact that early rickets attacked both sexes—all infants being naturally treated alike—but also that late rickets only attacked females, who alone were affected by this system of isolation. I have already quoted Dr. Hutchison's experiments while discussing the question of diet; you will remember it was the class which consumed the largest amount of fat, and animal fat, who were affected. It has been argued against the validity of Hutchison's work that ghee, the chief vehicle of the fat in the diet of the Indian, is heated, and in consequence the fat-soluble A factor has been destroyed. If that be admitted then the investigation becomes as clear-cut an experiment on the effect of confinement as anyone could desire.

Modus Operandi of Confinement.

But if confinement is a factor of etiological importance, in what way does it exert its influence? Is it, as I presumed,

from deficient exercise and muscular movement, or is it, as some of the recent work suggests, due to the absence of the sun's rays?[13] Our own therapeutic tests with apparently active rickets rather support the former theory. We treated one series of children suffering from marked rickets with massage and electricity in hospital in town, another series in a hospital in the country, and still another series while they were resident in their own homes, the children being brought thrice weekly for treatment to the out-patient department. The cases that made the most rapid recovery, at least that were soonest able to walk, and in whom the *x*-ray evidences of healing occurred with average rapidity, were those who remained in their own homes and were brought to the out-patient department for treatment. This apparently anomalous result we were inclined to ascribe to the fact that while the children remained at home they got more outings in the open air, and more exercise through the rest of the members of the family taking the child out and teaching it to walk, and because the mother, according to instructions, also massaged the limbs and encouraged the child to walk.

Huntly,[1] in his paper in 1889, suggested that the freedom from rickets of the poor Indian child, in spite of the fat-poor and rich farinaceous diet, was due to the abundance of sunlight in India, and that the probable cause of the prevalence of the disease in Glasgow was therefore its comparative absence. Hutchison, too, in his paper states that he has seen rapid recovery in late rickets result from no other change than putting the patient on a balcony in the open air and sunshine, the diet being prepared at home, and being the same as that which had previously been taken.

In spite of the confirmatory experimental work[11] on the effect of sunlight there are, to my mind, certain difficulties in accepting it as the determining factor. As I have previously mentioned, we obtained better results in our cases by leaving the children in the city and carrying out massage than by sending the cases to our country branch, where undoubtedly there is a greater abundance of sunlight. Is the relative amount of sunshine enjoyed by the rich and the poor in Glasgow a sufficient explanation of its varying incidence in the two classes? If so, then the amount of sunshine absolutely necessary for normal growth must be very trifling considering the amount that is registered in a city like Glasgow during the winter months. The complete absence of rickets in Iceland, where for four months of the year the sun never shines, is also difficult of explanation on such a theory. If such were the explanation would one not also expect to find a far greater difference between the incidence of the disease in different parts of the world? On the Continent, from the system of heating, there is less pollution of the atmosphere, and, as is well known, a much greater amount of sunshine; yet, for example, in Vienna rickets is just as prevalent as it is in Glasgow, though there are double the number of hours of sunshine per annum.

That sunlight has a curative effect I am quite satisfied, but that does not necessarily mean that its absence is the cause of the disease. Sunlight, at least in moderation, exhilarates; and may it not be that its absence induces lethargy and thus leads to deficient exercise? Does sunlight exert its curative influence because a deficiency has been made good, by stimulating metabolism, or is it because of its antimicrobic powers on some infecting agent? We have the analogy of the effect of sunlight in tuberculosis, and also of the *x* rays and radium in tuberculosis and sarcoma. I feel that further work on these lines must be done ere we can definitely accept the conclusion that rickets arises from absence of sunlight qua sunlight. Sunlight usually means open air, better ventilation, and diffusion of infection. Let us rid our minds of the obsession that rickets must necessarily be a deficiency disease, due to the *absence* of something, whatever be the nature of that "something."

I refrain from entering into a discussion of the relationship between human and animal rickets, but I would ask, Are we certain that the disease as induced experimentally in the animal is the same as that arising spontaneously in the child? We should, I think, be very careful before concluding that because such and such follows certain measures in the case of the growing dog or rat the same changes must necessarily occur in the growing child. This same view of course has been expressed by McCollum,[15] one of the most extensive workers in this field. The numerous and conflicting findings in the experimental field have tempted some to suggest that there may be not only different types of rickets, but also that the disease may be dependent on many causes. Such suggestions are to my mind, if not ill advised, at least premature, and have been brought forward more with the idea of satisfying several unsubstantiated hypotheses than because there are definite facts forcing us to such a conclusion.

Conclusions.

Can we, then, in the face of these clinical facts and considerations conclude that diet is a determining factor of importance, let alone the direct cause of the disease? The undoubted prophylactic effect of cod-liver oil certainly suggests that some dietetic constituent present in the oil might be of moment, but the failure to cure the disease even by the administration of large doses of the oil is decidedly against the idea that its action is due to it supplying some ingredient essential for normal growth. At least rickets in this respect is very different in its behaviour from the known deficiency diseases, scurvy and beri-beri.

It would rather appear that somehow or other the etiology of rickets is associated with confinement. Whether this is due to want of fresh air, lack of exercise, or the absence of the sun's rays, or because confinement, overcrowding, and bad hygiene in general favour the development of some virus, it is impossible at present to say. In fact, it would appear that it is only by enlisting the aid of some virus that we can explain not only its geographical and social distribution, but at the same time the age and seasonal incidence of the disease. These are all points, too, with which we are quite well acquainted in the life history of the infections; and, if I might be permitted to conclude with a suggestion, it would be that in both the experimental and clinical fields the idea of rickets being of the nature of an infection should be more seriously entertained and investigations with this idea in view more generally undertaken.

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It is a good thing that those of us who are actively engaged in investigating the factors involved in the development and cure of rickets should leave our work periodically in order to discuss the subject from the broadest standpoint, and to hear the criticism of both clinical and laboratory colleagues. It is more specially important that this should happen at the present time, because many results of research have been published during the past year, and, both from the point of view of the investigator, of the practising medical man, and of the public health worker, it is desirable that the new facts should be appraised, and their relative value decided upon. Fortunately, the medical profession are fully alive to the importance of the problem, largely, no doubt, as the result of the investigation initiated by the Medical Research Council. The controversy that has developed from these researches has probably been useful in attracting attention to, and intensifying the general interest in rickets. Whatever disagreement there may be among investigators as to the etiology of the disease, we all recognize that the complete eradication of rickets would do away with much bone deformity, improve the physique, lower the infant mortality, and, most important of all, improve the teeth of the people of this country beyond recognition.

But while we are agreed as to the magnitude of the problem, our views as to the most important factors in the etiology of the disease are very diverse. If, indeed, we were asked to formulate plans for eradicating rickets from this country, our recommendations would be so different as to suggest chaos. Some would strongly recommend housing schemes as a panacea; some massage and electricity applied to children from birth; some more sunlight and ultra-violet rays; while there are others who think that proper feeding of children would settle the problem.

While we are still suffering from the disability of ignorance, the narrowing down of the field by recent investigations suggests

that our present discussion will be fruitful; for important strides have been made on the hygienic side of the problem since Hansemann formulated his theory of domestication, and the dietetic hypothesis of rickets has also become more definite and concise as the result of recent research.

Much of the recent work on rickets has centred round the particular dietetic hypothesis of rickets which I have put forward,[1] and as I am anxious that my views should be correctly understood and not misinterpreted in this discussion, I wish to state these briefly.

Rickets, according to my view, is a disease accompanying growth, and is due primarily to defective feeding. What is a rickets-producing diet? It is one of unbalanced nature in that it contains too little of those foodstuffs responsible for the proper calcification of bone and too much of those substances responsible for the growth of tissue, these latter substances being either neutral or antagonistic to the deposition of calcium phosphate in the growing bony matrix. Assuming that the diet contains a sufficiency of calcium and phosphorus in a form that can be absorbed from the alimentary canal, the most potent influence for procuring the calcification of bone that I have observed up to the present is something of the nature of a vitamin having a distribution and properties somewhat similar to fat-soluble A.* On the other hand, foodstuffs responsible for growth and the laying on of tissue which are indifferent or antagonistic to calcification include the cereals. Generally speaking, therefore, rickets is a disease which follows the ingestion of diets relatively poor in the antirachitic vitamin and rich in growth-promoting elements, and more particularly in cereals.

The complication which has made this hypothesis of the etiology of rickets difficult to grasp is the new conception that the various essential factors of a diet are so interdependent that many dietetic problems must be considered from the point of view of balance, and that it is no longer possible to speak of "excess" or "deficiency" of substances in an absolute way. For instance, the amount of fat-soluble vitamin which may be sufficient in one diet becomes a relative deficiency when more cereal is eaten, or the calcium in one diet may be adequate but will become inadequate if the fat (butter) be greatly increased. In general, the minimum of any substance essential for perfect health and development is a variable dependent on the other factors of the diet eaten. The new dietetics which insists on the importance of quality as well as quantity must also find a way of expressing the fact that the value of a diet depends upon the relative amounts of its essential constituents and not upon absolute amounts.

It seems necessary to mention this point of view of diet, for much of the criticism against my work has been written as if I had suggested a kind of penny-in-the-slot hypothesis of rickets: abundant fat-soluble A in the diet, no rickets; absence of this vitamin, rickets. It ought to be superfluous for me to say that I have never written of rickets as a disease of this simple etiology. I wish also to take this opportunity of saying, in view of statements made in various places that I have altered my views, that I have not written of rickets as a disease uninfluenced by exercise and general environmental conditions. I have, however, always insisted that diet was the most predominant factor, and that environment was of secondary importance. Good hygienic conditions, in so far as they lead to greater activity and greater exposure of the skin to the ultra-violet rays of the sun, will no doubt prevent a moderate diet from producing the disease. Bad hygienic conditions will have the opposite effect, but, in my experience, a good diet will prevent rickets however bad the environment may be, and a really bad diet will result in rickets under the most perfect surroundings.

I propose now to deal with some of the more salient features of recent work in the light of my experimental results on animals, and, during the past eighteen months, of clinical observations on rachitic children.

The Influence of Dietetic Factors on the Development of Rickets.

(a) *The Interaction of Fat-soluble Vitamin, Calcium, and Phosphorus.*

In my experiments on dogs no difficulty was experienced in producing rickets by diets which contained abundant calcium and phosphorus, but were relatively deficient in fat-soluble A, so long as sufficient food was eaten. On the other hand, Korenchevsky[2] has found that, whereas the absence of fat-soluble vitamin in the diet only produces true rickets in a certain number of young rats, where there is an additional deficiency of calcium rickets develops in 100 per cent. of cases. Similarly McCollum and his associates,[3] also working on rats, found that a deficiency in the diet of an element present in large quantities in cod-liver oil (I shall assume for brevity's sake it is the fat-soluble vitamin) only produces osteoporosis, but, combined with a deficiency of phosphorus or calcium, and especially the former, in the diet, allows definite rickets to develop. The point of agreement in these various researches is that the fat-soluble vitamin in the diet has a potent effect in promoting calcification of bones, and what remains to be decided is the relative importance of calcium or phosphorus deficiency in the etiology of rickets.

The necessity of having a sufficiency of calcium and phosphorus in the diet before an abundance of good bone can be formed is obvious. If either is deficient during the growth of an animal, a condition of osteoporosis must result, but, whether it will be simple or complicated with rickets, will depend on the rest of the diet. Before discussing the matter further it may be well to state that I have already supplied evidence in support of the suggestion that the balance of calcium, phosphorus, and fat-soluble vitamin in the diet is important in ways more obscure and subtle than the simple deficiency of one or more.

I have shown, for instance, that too much butter in a given diet may result in bones defectively calcified, and that the antirachitic effect of butter is best obtained when it is balanced with a sufficiency of calcium. Again, the different action of caseinogen as present in milk, and that of acid-caseinogen as prepared from milk by acid precipitation—a substance deprived of its calcium—seemed to be most easily explained by some alteration in the calcium-phosphorus ratio. I mention these facts in order to show that I have previously considered the question of calcium and phosphorus in relation to the antirachitic vitamin, and suggested that it might be of importance in some special cases. I doubt, however, whether it has the practical importance in human rickets that the recent results obtained by different investigators, working on problems of rickets in rats, have suggested.

One possible cause of the difference in the experimental results of different workers may depend on the type of animal used—for whereas later investigators have worked on rats, my experiments were made on dogs. The differences in reaction to dietetic changes found among various animals are so notorious now that this point requires no emphasis. For instance, the failure of rats to develop scurvy in spite of the absence of the antiscorbutic vitamin from the diet is well recognized. Consequently, if there should happen to be any difference in reaction to diet between rats and dogs, which cannot be explained by differences in technique, then, in so far as the results have to be extended to children, I should unreservedly support the dog experiments, because of the closer similarity between the metabolism of a human being and a dog than between a human being and a rat.

There are, however, technical variations in the experimental methods adopted, which may explain the apparent discrepancies in the results. For instance, the dietetic conditions under which the rat-feeding experiments have been carried out were more strenuous than mine, more particularly in respect to the fat-soluble vitamin eaten. In the rat experiments a point has been made to eliminate this substance from the diet, whereas in my experiments on puppies the amount of separated milk allowed was fairly high, and must have contained some of this vitamin. Since cutting out the fat-soluble vitamin from the diet of rats stops growth after a short time, and since, in my opinion, rickets is a disease of or accompanying growth, it would not be expected that the preliminary slow growth, and the ultimate marasmus associated with this defect in diet, would be accompanied by a great development of rickets. It seems to me that, if the rats' diets contained a relative rather than an absolute deficiency of fat-soluble A, the better growth that would result therefrom might be compatible with more emphatic rachitic changes of bones, and these might possibly develop as in the puppy experiments even when the calcium and phosphorus contents of the diet were not deficient in amount. Not only do the conditions of feeding in the rat experiments call forth

* I shall call it the fat-soluble or antirachitic vitamin throughout this paper.

this criticism, but, as human rickets is the problem to be solved, the diets used are abnormal in ways not commonly met with in the feeding of children. It is unlikely that human diets, except under rare conditions, should be so deprived of fat-soluble vitamin as are the synthetic diets of Sherman and Pappenheimer,[4] and Korenchevsky,[2] in their rickets experiments on rats. If this did happen, much more keratomalacia would be found among children. It has been argued by some that the fat-soluble vitamin cannot be an important element in rickets because, under experimental dietetic conditions which result in keratomalacia owing to the absence of this vitamin from the diet, rickets does not necessarily develop. This criticism seems to me to miss the point of my work, for, whereas keratomalacia appears to result from a simple defect of diet—namely, the absence of the fat-soluble vitamin—rickets is more complicated in that, so far as the bone is concerned, it is the outcome of a race between growth of bone and calcification of that bone. The antirachitic vitamin reacts with calcium and phosphorus on the diet, and thereby controls the actual calcification process, but there are other factors involved in the development of rickets, such as the amount of cereal eaten, and these additional factors make the two diseases of malnutrition under discussion largely independent, although one and the same dietetic factor plays an important part in the etiology of each disease. Keratomalacia is a rare disease because it is only seldom that the diet is practically devoid of fat-soluble vitamin, but, on the other hand, a relative deficiency of this substance in many articles used in the feeding of children is common, and rickets is widespread.

Further, it is unlikely from a consideration of diets which produce rickets in children that the calcium and phosphorus deficiencies are of prime importance. This remark applies more particularly to the question of phosphorus, the importance of which is being so stressed in many recent publications. Although children develop rickets when the calcium content of the diet is adequate, it is true, nevertheless, as I have pointed out elsewhere, that a diet deficient in fat-soluble A is likely to be deficient also in calcium, for these substances are often closely associated in their distribution in natural foodstuffs. For instance, milk, egg yolk, and green vegetables are rich sources of each, whereas flour, rice and maize, pulses, potatoes, sugar, and jam are almost devoid of both. When, however, we consider the phosphorus content of various foodstuffs and their relation to rickets, there is no evidence that phosphorus deficiency is a problem of practical importance, although the observations of Sherman and Pappenheimer[4] and Shipley, Park, McCollum, and Simmonds[3] on this point may be of great scientific interest. It has been said that a combined deficiency of phosphorus and fat-soluble vitamin in the diet produces more typical rickets than that produced by a deficiency of calcium and fat-soluble A. I am unable to pronounce any opinion on this point, but I have little doubt that some specific relation exists between the antirachitic vitamin and phosphorus. In 1918 I failed to obtain any evidence that this vitamin had the direct influence on the formation of calcium carbonate in eggshells that it exerts on the combination of calcium and phosphate in bone. Parenthetically, I wish to allude here to the experiments of Pappenheimer, McCann, and Zucker,[5] made to test the efficacy of the fat-soluble vitamin in preventing rickets and in promoting the deposition of calcium phosphate in bone. They failed to show that the vitamin exerted such influence, but as they first took the precaution to remove most of the phosphorus from the diet their experiments will probably not be accepted as crucial.

I find it impossible to interpret my own experiments in terms of much of the recent American research on rickets in rats, where the standard rickets-producing diet is deficient in both the fat-soluble vitamin and phosphorus.[1] It is true that meat has some antirachitic action, and this may be related to its high phosphorus content, but its effect in any case is small. Again, separated milk powder when given in large quantities, with the cereal element of the diet low, has an antirachitic action. This may be related to its high phosphorus content. As mentioned above, however, there is undoubtedly some fat-soluble vitamin left in separated milk, and its action on calcification becomes apparent when large quantities are ingested. When, however, the rickets-producing effect of the cereals is considered, it is manifest that phosphorus is of secondary consideration, because oatmeal, which has the strongest effect in inducing rickets of all the cereals so far examined, has also the highest phosphorus content, the P_2O_5 in oatmeal, flour, and rice being of the order 1.25 per cent., 0.25 per cent., and 0.2 per cent., respectively.

(*b*) *The Effect of Cereals.*

Whereas the fat-soluble vitamin working in conjunction with calcium and phosphorus ensures the calcification of bone, other elements in the diet have an influence in promoting the laying down of new bony basis without at the same time ensuring its calcification. Whether they actually inhibit calcification or are simply indifferent to this change is not certain, but in either case they have a definite rickets-producing effect as opposed to the calcifying or antirachitic action of the vitamin substances discussed. The worst offenders are the cereal and carbohydrate elements of the diet. This action of food was suggested by Cheadle[6] and has been long discussed by clinicians, but, as far as I know, the fact has never been proved until recently, and there was no experimental evidence in support of it.

I have shown that, when puppies eat diets which are complete except for a deficiency of fat-soluble vitamin, the severity of the rickets produced depends on the amount of cereal eaten if all other conditions are constant. If, for instance, a puppy A eats $2x$ bread as compared with B eating x bread, then, all other conditions being constant, A will develop worse rickets than B. I thought at the time, and I attempted to prove, that the carbohydrate moiety of the cereal was the essential element responsible for the action. These latter experiments were not very successful because of the difficulty in getting young puppies to eat diets deficient in fat-soluble A and rich in pure carbohydrate such as starch, cane-sugar, or glucose. Nevertheless, the results obtained suggested that the carbohydrate in itself played some part in the production of rachitic symptoms. In view of my more recent experiments, however, it is difficult to believe that the rickets-producing effect of cereals is wholly due to their carbohydrate content, and I am at present engaged in finding the new factors involved. The most prominent fact brought out in the cereal experiments is that oatmeal has a greater rickets-producing effect under the conditions of these experiments than equal weights of flour, especially white flour, or rice. Since the amount of carbohydrate in oatmeal, wheaten flour, and rice is respectively of the order 65 per cent., 7.35 per cent., and 77 per cent.—that is to say, there is less carbohydrate in oatmeal than in the other cereals—it is manifest that the greater rickets-producing effect of oatmeal as compared with the other cereals cannot be due to its carbohydrate moiety.

In some way the effect of cereals is no doubt related to their property of producing growth, both in the sense of producing longer and bigger bones and an actual increase in weight. This action of cereal is best illustrated by contrasting its effect on the metabolism with that of fat. Adding more cereal to a diet already adequate causes young animals to increase more rapidly in weight, to develop a deposit of fat which is undoubtedly formed from carbohydrate, and to become more lethargic. Under the same conditions the addition of fat makes no difference to the rate of increase in body weight, for it neither increases the laying down of tissue nor is it deposited subcutaneously as dépôt fat. It is burnt up and increases the metabolism. These opposite effects of cereal and fat on the metabolism of young animals are most striking and have probably not received the attention they deserve.

Cereals, then, increase the laying down of fat and tissues generally, including the bones, and thereby make a greater demand on the calcification processes, so that any tendency to lag behind in this respect is increased by allowing the child or animal to eat a larger quantity of cereal. Increasing the bread, therefore, in a diet slightly rickets-producing only emphasizes the disease and causes the development of larger quantities of cartilage and osteoid tissue in the bones. This explanation, however, is not a complete one, for it does not satisfactorily explain the differences between oatmeal, white flour, and rice. In some series of experiments there was no obvious difference between the rates of growth or in the rates of putting on weight when oatmeal, white flour, and rice were the only variables, yet the rickets produced by oatmeal was much greater than that produced by equal quantities of the other cereals. Undoubtedly some other factor in oatmeal is at work which either prevents endochondral calcification or increases the formation of tissue at this point, thereby producing a relative lag in calcification at the ends of the bones. It does not appear to be the carbo-

hydrate moiety, and as I pointed out in a previous Section the larger amounts of calcium and phosphorus in oatmeal discredit any explanation which centres round deficiency of these substances. Further experiments will have to be carried out before a definite pronouncement can be made on this point.

Factors of Hygiene and their Influence on Rickets.

The two factors of hygiene that influence rickets, evidence of whose action rests on a definite experimental basis, are exercise and sunlight. The evidence that infection is of any importance in this respect seems to me too meagre at present to warrant discussion.

I have dealt elsewhere[1] with the exercise hypothesis and Findlay's claim[13] that it is the most important factor in the etiology of rickets, and will only state here that, in my opinion, the exercise taken by a child at the ordinary period of rickets development consists of small movements; also that this general activity depends almost entirely on its diet and not on its environment. Diet not only, therefore, has its direct action on the tissues of the body—including, from our particular point of view, the bones—but, by controlling the activity, has an indirect effect.

The second factor of hygiene—namely, sunlight—has quite recently come into great prominence as the result of experimental work, and demands closer consideration. The recognition of the antirachitic action of sunlight has been gradual and is the outcome of Huldschinsky's[7] observations of the curative effect on rickets exerted by the ultra-violet rays emitted by the mercury-vapour quartz lamp. Later, he supplemented the ultra-violet ray treatment of rachitic children with sunlight, whereas Riedel[8] treated cases of rickets by sunlight supplemented with ultra-violet rays on sunless days. Hess and Unger[9] then showed that sunlight alone is capable of bringing about curative changes in rickety bones. There is now but little doubt that it is the ultra-violet rays of sunlight which are the effective agents. Many publications have appeared recently on this subject, and the action of sunlight in stimulating calcification processes in bone is generally accepted.

This effect on calcification of bones is of great interest, but of even greater importance is the recognition that sunlight has a much wider influence, especially in the case of animals on defective diets, for in these cases it is capable of stimulating their appetite and increasing the rate of growth and activity. Even cases of latent tetany (Sachs[10]) and definite tetany (Huldschinsky[11]) have been cured by ultra-violet rays. It is evident, therefore, that the ultra-violet rays promote some chemical change in the body which results in profound modification of many activities. Since these rays have very little penetrating power it is probable that their action is on the skin, and that some powerful chemical substance is thereby liberated. Hess[12] has pointed out that the antirachitic effect of the ultra-violet rays is smaller in the case of black rats as compared with white rats. Certainly in the case of puppies with dark hair the effect of sunlight in preventing the development of rickets, when placed on rickets-producing diets, is, in my experience, negligible. It is interesting that sunlight, when it strikes the skin, produces changes in the bones and general condition of rachitic children and animals in some ways comparable to the effect produced by giving cod-liver oil, and it seems possible that the fat-soluble vitamin is the substance liberated into the circulation by the action of the ultra-violet rays on the skin. If this is the case then sunlight and ultra-violet rays ought to have other specific effects, such as (1) the cure of xerophthalmia, when the diets remain devoid of this vitamin, and (2) resumption of growth in young rats when growth has ceased owing to lack of this substance in the diet. Should these results be produced by exposure of the skin to ultra-violet rays, no doubt will remain as to the chemical substance set free into the circulation.

The scientific importance of these facts is obviously great, for they appear to open up a new field in physiology, but, in evaluating their importance in the prophylaxis and curative treatment of rickets in children, we must not be carried away by the interest of the subject. It will be agreed that, if the sunlight has to pass through clothing, its effect on the skin will be greatly diminished, if not destroyed, and even in its passage through window glass its ultra-violet rays are lost. Then, again, it is customary for a mother in this country to prevent sunlight falling directly on the only uncovered part of an infant out of doors—namely, its face. All things considered, the amount of direct sunlight falling on to the skin of a child in its first year of life, a time when it is most susceptible to rickets, must be very little. I am inclined to think that in this country at least the part played by sunlight in preventing rickets is small. If it be answered that rickets is rife in this country for the reason that children are not exposed to sunlight, then, I ask, are the excellent teeth and absence of rickets in the Eskimo in his natural surroundings due to exposure of the skin to the sun during infancy? In tropical countries, where less clothing is worn and more sunshine is obtained, the ultra-violet rays undoubtedly hold a place of greater significance, although even here nature tends to diminish such influence by depositing pigment in the skin.

If it should happen, as seems possible, that the chemical hormone liberated by the sunlight is the antirachitic vitamin about which much of my experimental work on rickets has centred, then it only serves to emphasize the importance of diet in the etiology of this disease. For, although we cannot control sunlight, we can control the diet and we can see that it not only contains an adequate amount of this substance, but that it is so balanced with other factors that full use is made of it in the metabolism of the child.

I suggest that the following statements will cover most of the conditions where diet and sunlight interact:

(1) That when a child is well fed the presence or absence of sunlight makes no difference to its health in so far as rickets is concerned.

(2) That in the case of a child fed on a mediocre, borderline diet, exposure of the skin to sunlight will probably prevent rickets.

(3) That in the case of badly fed children—that is, when diets contain much cereal and a deficiency of fat-soluble vitamin and calcium—sunlight will not prevent rickets, but may ameliorate the symptoms to some extent.

It will be seen that, as in the case of exercise, so in regard to this other condition of hygiene—namely, sunlight—I consider it to be of secondary importance to diet in the etiology of rickets.

Diet and Rachitic Children.

A typical diet that I give to children with severe rickets is as follows:

Milk, 1 to 1½ pints.
Beef dripping, 1 to 2 oz. with bread.
Meat, 1 to 2 oz.—usually raw scraped and mixed with potatoes.
One egg.
Milk pudding.
One orange.

This diet alone will bring about rapid improvement, but the process of healing is hastened by the administration of cod-liver oil, 1 to 4 drachms t.d.s. In a recent publication Findlay[14] states that cod-liver oil produces very little clinical improvement, although definite evidence of healing, as seen by radiograph, can be observed. He further states that the administration of cod-liver oil and phosphorus does not produce healing of bones any more speedily than that produced by massage and electricity, which, he says, takes two or three months before any change in ossification of the bone can be noticed. I have had no experience of massage and electricity as a treatment for rickets, but there is no difficulty in producing great improvement in calcification of bones by the above diet, especially if cod-liver oil be added, during the course of one month. More noticeable, however, is the improvement in the general condition of these children apart from the calcification of bone. The most lethargic and miserable of infants, even in the later old-standing cases when a marasmic and semi-paralytic condition has developed, become bright and active. So active, indeed, do they become, when treated in the above described way, that in many cases their cots have to be netted. Children, in fact, react to diet in the same way as do puppies and the influence of diet on muscular movement is so prominent that I am surprised no observations of this type have been made by the Glasgow workers. However small a kennel, and however unhygienic its surroundings, with no access to sunlight and no special precautions as to cleaning, a properly fed puppy will remain very active and free from rickets. It is equally easy, by improper feeding, to make other puppies listless and lethargic, with but little desire to run about even when placed

in open fields. By improper feeding I do not mean starvation, for these animals are usually fat and look well nourished. It is also a matter of common experience that diets of high cereal content more particularly produce fat, lethargic, and contented children, whose small movements and general activity are subnormal, although the other environmental factors may be good. Nothing is more dramatic than the change in behaviour produced in rickety babies when the diet is altered to the type previously described. Clinical improvement and increased calcification and growth of bone are synchronous, and both are obvious within a few weeks of giving the good diet.

It is true that cases of rickets in children occasionally appear where it is difficult to account for the disease on the basis of the facts as I have described them. Investigation often shows that these cases are associated with some exceptional condition—such, for instance, as premature birth, or twins, or, in some cases, the children may have just recovered from a severe infection. But these cases only indicate that we have still much to learn of the factors which control the growth and calcification of bone. In my experience, all rachitic children react favourably to a good diet such as I have described.

There is one point about this dietetic treatment of rickets that may give trouble—namely, the fat dyspepsia that cod-liver oil may produce in some cases, more especially if the other fat in the diet is kept high. Some children in the early stages of treatment can only tolerate a moderate amount of fat, and are made ill by 2 ounces of beef dripping and 6 or more drachms of cod-liver oil per diem. If this happens, all recovery processes cease, and the sickness and other symptoms may be severe. It is well in these cases to cut down all the fat in the diet, and, starting with smaller quantities, to increase it step by step.

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DISCUSSION.

Dr. Robert Hutchison (London) said: Any contribution I can make to this discussion must be from a purely clinical standpoint, but it is perhaps not altogether superfluous to point out that in trying to determine the nature and cause of rickets clinical observation, if it be sufficiently extensive, may be just as valuable a guide as laboratory experiments. We may also legitimately inquire at the outset whether it is quite certain that one may safely argue from the experimental rickets artificially produced in animals to the disease as seen in the child. This inquiry is all the more pertinent when it is remembered that the experimental results seem to vary with the animal employed, whether dogs, rats, or calves. Leaving aside these preliminary questions, I think it will be generally agreed amongst clinicians that neither of the two rival present-day theories of rickets, the dietetic nor the hygienic, will by itself quite meet all the facts. Clinicians have long recognized that bad hygienic conditions and, in particular, want of sunlight favour the development of the disease. This was clearly pointed out by Cheadle twenty years ago. On the other hand, it is difficult to believe that the hygienic factor is the only one concerned in the production of rickets, seeing that, as every clinician knows, the disease can be cured by altering the diet without any other change in the environment. If this were not so the out-patient treatment of rickets would be almost hopeless. It is for this reason that the great majority of clinicians have hitherto attached chief importance to the dietetic factor, and the kind of diet which is regarded as most apt to give rise to rickets is one which contains little fat and protein and a relative excess of carbohydrates, and chief stress has always been laid on the importance of poverty in animal fat. The question then arises, Is it deficiency of fat as such that causes the disease, or deficiency of a fat-soluble vitamin? This brings us to the vitamin theory, and here again the clinician has difficulty in agreeing whole-heartedly with its advocates. The reason is that rickets may certainly develop on diets which cannot be by any means absolutely lacking in fat-soluble vitamin, even although they may exhibit a relative deficiency of it. The observations of Miss Chick on children in Vienna, and of Dr. Hess on rats, seem also opposed to an acceptance of the extreme vitamin view. It may be argued that the undoubted curative effect of cod-liver oil in the disease is in favour of the vitamin theory, but it was the experience of many clinicians during the war, when cod-liver oil was unobtainable and cotton-seed oil had to be substituted for it in out-patient practice, that the latter seemed to be almost equally efficacious as a curative agent.

It is interesting to note that the supporters both of the vitamin and of the "defective hygiene" theories seem to be gradually shifting from their original point of view. The former tend to speak now of a relative rather than an absolute deficiency of vitamin and to invoke as necessary concomitants an excess of starch in the diet and perhaps a deficiency of calcium and phosphorus. On the other hand Dr. Findlay, as a protagonist of the hygiene school, now tentatively postulates a possible "virus" as the exciting cause of the disease. If by this he means a microbe I think he will not find many clinicians to agree with him. That rickets is an infective disease is an hypothesis which is *a priori* extremely unlikely. Rickets has none of the usual clinical characters of such a disease, but suggests much more a purely metabolic disorder like gout or diabetes. It is quite likely that many factors, dietetic, hygienic, and other, acting singly or in combination, are able to bring about the general disorder of metabolism called rickets just as gout may be caused either by errors of diet or by insufficiency of exercise or by both. What we chiefly need, I would suggest, is a more profound study of the metabolism of the disease on lines such as those which Professor Noël Paton has initiated in his researches on the lipoids.

Professor D. Noël Paton made the following contribution to the discussion.

Milk Fat.—I wish to consider first the practical question, Is there any evidence that milk fat (butter) is a potent anti-rachitic agent? not the academic question of whether possibly it may contain small amounts of some agent of this kind. It is a point of considerable practical importance, because, largely as a result of the memorandum issued by the Vitamin Committee of the Lister Institute and the Medical Research Council, there is a widespread conviction that milk fats are of primary moment in this respect, and much expenditure is being incurred to secure their supply. In the memorandum they speak of the antirachitic as identical with the "fat-soluble A growth factor," and they give certain directions for the prevention of rickets, stating that "milk and butter are the best sources of this antirachitic factor for young and growing children." They also publish a table giving the relative proportion of the antirachitic factor in different foods in which butter and cod-liver oil are placed equal at the head. The conclusions are avowedly based upon the partially published results of E. Mellanby. It is for this reason only that I must examine his evidence. He states, in his *Experimental Rickets* (1921, p. 18), that a diet of from 175 to 250 c.cm. of separated milk and bread produces "rapid and marked rickets in well-growing pups." To argue from this that the development of rickets is due to the deficiency of a fat-soluble A substance in butter is hardly justifiable, since when the dogs reach the size of 4,000 grams and are then getting from 43 to 62 c.cm. per kilo of body weight, the CaO intake is seriously reduced—to 0.07 to 0.1 gram per kilo. The normal retention on a diet adequately rich in CaO is about 0.15 gram per kilo. Thus two factors at least are involved—namely, decrease of milk fat and decrease of CaO. At regards the action of milk fats in preventing the onset of the disease, I can find definite experiments on only three dogs. Two remained free from rickets; one developed the disease (pp. 20, 23, 29; the last given also on p. 48). In the experiments on pages 28 and 37 butter fat was given, in one with linseed oil, in two with meat, which Mellanby states plays some part in preventing the onset of rickets. Yet one of these is noted as "practically normal," one as "nearly normal," which means that they had some signs of rickets, and one as "slight rickets." The contention that whole milk has a curative action seems based upon one experiment (p. 65), in which, after the development of rickets on crushed palm kernel, milk was substituted and improvement occurred (Figs. 15, 16, 17). That this was due to the milk fat is

rendered doubtful by the next series of figures (Figs. 18, 19, 20) showing still more marked curative changes, the palm kernel being continued with no change in the diet—an example of the spontaneous cure which makes the investigation of curative agents so unreliable. On the curative action of butter I can find only one observation on one dog (p. 66). This does not justify a conclusion being drawn. The evidence does not therefore seem to me to warrant the recommendations of the committee, and it is unfortunate that a scientific body should, without more proof, have interfered in practical dietetics.

In our experimental work we have thought it necessary to use large numbers of pups of the same litter, since individual susceptibility makes observations of single pups, as adopted by Mellanby, quite unreliable. In 1918 we showed: (1) That pups (11) on from 100 to 200 c.cm. of whole milk (3 to 6 grams fat) and oatmeal porridge, kept in the laboratory, developed rickets. (2) That pups (5) upon skimmed milk (2.8 grams fat) and oatmeal porridge, when kept in the country, grew up without signs of rickets. In 1921 we recorded experiments (4) confirming our previous conclusions (1) and showing the following results: (3) That pups (8) might be reared in the laboratory free of rickets on separated milk and bread with only 0.5 gram milk fat per kilo of body weight, provided the diet yielded sufficient energy, and provided scrupulous cleanliness was observed. (4) That butter fat has no curative action in rickets (1918 experiments — 4 pups: 1921 experiments — 2 pups). The results of Hess (*Proc. Soc. Exper. Biol. and Med.*, 1920, 21, 266) indicate that butter fat has no antirachitic action, either prophylactic or curative. McCollum, Simmonds, Shipley, and Park have arrived at practically the same conclusion (*Amer. Journ. Hyg.*, 1921, 1, 512). Hutchison's Indian results give no support to the view that milk fat is of special value, and we know that thousands of children grow up without rickets on less than a quarter of a pint of milk a day.

The evidence thus seems to be all against the importance of milk fat as an antirachitic agent. Miss Chick and her fellow workers seem to have given it up for cod-liver oil and sunlight.

Cod-liver Oil.—The old view of the clinicians that cod-liver oil has an influence in delaying the onset and hastening the cure of rickets has been supported both by Mellanby, whose conclusions are, in this case, based upon an adequate number of observations (9 dogs), and by such recent work as that of Hess, McCollum, and their co workers. Their work, however, has gone far to disprove the connexion between the antirachitic agent in cod-liver oil and the fat-soluble A substance.

Other Antirachitic Agents.—Not only has cod-liver oil this prophylactic and curative action, but (1) we now know that sunlight and ultra-violet rays act in the same way; (2) we know that healing of rickets in rats occurs during starvation; (3) we know that spontaneous recovery from rickets without change of diet frequently occurs (Mellanby, Figs. 18, 19, 20); (4) we know that a change in the salt ration of pigs, as demonstrated by Elliot and Orr, leads to a cure; and (5) lastly, the evidence afforded by McCollum and others shows that simple lowering in the phosphorus to calcium ratio in the diet may be associated with rickets-like changes in the bones of rats. This one naturally correlates with the decreases in the inorganic phosphates of the serum first observed in rickets by Howland and Kramer. But is this not merely an indication of an alteration in the metabolism of the much more important organic phosphorus compounds? Some factor other than the absence of a vitamin must be involved.

Calcium.—The influence of the supply of calcium requires more attention, although many investigations have been made since E. Voit's study. The supply of phosphorus is always adequate in any diet. Mellanby states that "plenty of calcium and phosphorus in the diet" tends to prevent rickets in puppies, but I can find no experimental evidence in his report to justify the conclusion (? p. 52). I would ask him where it is to be found, and I would ask him if it is right to place butter among the foodstuffs rich in calcium, stating that it contains 0.37 per cent. CaO, while, at most, only about 0.04 per cent. is present. Egg yolk contains about 0.14 and not 0.4 per cent. Cabbage surely does not contain 0.45 per cent.: Sherman gives 0.063. This is an important matter, for he now states that abundance of calcium and vitamin A are often associated in foods. For observations upon diets poor in calcium and in vitamin A we have used lean meat and bread. Our experiments (4 dogs) show that pups may be reared free of rickets upon such a diet, if an amount of calcium is added to the diet equivalent to that yielded by about 100 grams of milk per kilo—that is, 0.16 gram. On a low CaO intake of 0.035 gram per kilo osteoporosis and possibly rickets developed. This seems to me to indicate that the influence of the salts is prepotent. Pups at least can be reared without milk or cod-liver oil. I cannot understand the evidence upon which Mellanby concludes that meat retards the development of rickets. I find experiments upon 7 dogs on meat recorded and in all the pups developed rickets, that getting most meat becoming the most rickety. He seems to me to draw conclusions in spite of and not on account of his experiments. In these experiments the dogs were getting a totally inadequate supply of calcium.

Bread.—The theory has been advanced by several clinicians that excess of carbohydrates induces rickets. Mellanby supports this view, insisting that excessive bread is provocative of the disease, and he concludes that "probably the most common cause of rickets in children is a combination of relatively deficient antirachitic vitamin and excessive bread"—a very important practical conclusion, if true. On this subject I can find experiments upon only 5 dogs (p. 43) in which the intake of bread was measured. All developed rickets, as well they might, on a diet so poor in calcium. I calculate that he gave his dogs from 26 to 50 grams of bread per kilo per day. We have reared 16 pups free from rickets on separated milk with a much larger intake of bread—from 42 to 64 grams per kilo per day. In his conclusion (p. 75) he includes with "excess of bread" "other cereals." To day he has given some results with oatmeal which raise the question of whether the cooking was adequate. Not a single experiment on these is recorded, although the calcium content of cereals differs greatly. On sugar, the only carbohydrate tested, I can find one experiment on 3 dogs, 2 of which got sugar, 1 of which did not. All developed rickets. On other carbohydrates there are no observations.

I do not think that on such evidence we are justified in concluding that bread, cereals, and sugar have so prejudicial an influence.

Infection.—The familial incidence of rickets and its association, in Glasgow at least, with overcrowding and bad hygienic conditions has suggested the possibility of a microbial origin. This has never been adequately investigated. The older workers and the more recent work of Korenchevsky do not seem to me to throw light upon the question, because infection must be from case to case by the blood through fleas, lice, or bugs, or through the alimentary canal or respiratory tract, possibly by faecal infect on. To test these possibilities we have inoculated pups (3) with the blood from cases of active rickets, and we have added to the food of others (8, with 8 checks) faeces from cases of active rickets. Entirely negative results have been obtained. But this raises the question—Is rickets in dogs the same as human rickets?

What, then, is the present position of our knowledge of the etiology of rickets? There is no evidence that it is *caused* by a lack of milk fat or anything connected with it. There is no evidence that it is caused by an excess of carbohydrates or of bread. There is no positive evidence that it is an infective process. Admitting that sunlight and cod-liver oil are prophylactic and curative, as they also seem to be in tuberculosis, is their absence the cause of the disease? It is true that in all probability by their systematic use many infants might be reared free of rickets who would otherwise develop the disease, but does that mean that their absence is causal? Children in the high Norwegian valleys far from a supply of cod-liver oil, and without sunlight for five months in the year, grow up free of rickets. It seems to me that these agents must act by producing such a change in the metabolism as enables the child to resist or to throw off the condition. Pups reared in subdued light are most lethargic, and I need only refer to the investigations of Leonard Hill on exposure to sunlight and air. Their influence on the general metabolism urgently requires investigation, and wild theories as to the production of fat soluble A in the skin are better withheld till evidence is collected.

What the real *cause* of rickets is we know no more than Glisson did in 1650, or Soranus Ephesius in A.D. 100; and we know practically nothing of the modifications of the metabolism which are the essentials of the disease and which are the cause of the bone changes. Even the interpretation of *x*-ray pictures is not clear. Some appear to consider that the cupping at the end of the long bone is a process of decalcification, while it may simply be an abnormality in intracartilaginous ossification with a

persistence of the periosteal growth. I feel strongly that it is the duty of those of us who are trying to solve these problems not to work in isolation, but to combine and to devise and carry out a definite plan of campaign, and to refrain from theories till we have accumulated facts.

Professor Korenchevsky (Lister Institute, London) said: On comparing these experiments with those of other authors, I am forced to the conclusion that the principal results are in agreement with Mellanby's experiments, and would appear to disagree with the results arrived at by other authors in their experiments with diets deprived of the antirachitic properties present in milk, some fats, and especially cod-liver oil—that is, diets deprived of the so-called vitamin A. Only Mellanby (in his experiments on puppies) and I (in my experiments on rats) managed to obtain rachitic changes of the skeleton. The circumstances under which, in my experiments, osteoporosis alone of the skeleton was obtained explain the apparent contradiction. The quite imperceptible transitions, in my experiments, from the histological picture of osteoporosis to that of rickets, as well as the fact that the skeleton can at the same time show both rickets and osteoporosis, demonstrate as follows: In osteoporosis, or rather, owing to the causes producing osteoporosis, the rachitic changes of the skeleton may remain latent, as an energetic formation of new bone is required for their manifestation. This supposition is further confirmed by the chemical changes of the skeleton, which are, on the whole, the same in all cases. Similarly, in human rickets, according to the opinion of the majority of investigators, there is no essential difference between osteoporotic and hyperplastic rickets, between latent rickets in cachectic children and rachitis florida in more satisfactorily nourished children. All the conditions which have a marked influence on the growth of tissues—that is to say, starvation, exhausting diseases, deprivation of substances stimulating the growth of tissues (vitamin), and so on—will conduce to the appearance of osteoporosis of the bones. The mechanism of development of this skeletal disorder has nothing in common with rickets, as the cause of rickets lies in the disturbance of calcium metabolism, while osteoporosis is caused either by delay in the formation of new bone or in the increased destruction of old. Then why is it that, when the organism is deprived of vitamin A, rickets is so frequently associated with osteoporosis? That unknown principle x, which goes by the name of vitamin A, has two chief properties: that of stimulating the growth of tissues and that of regulating the metabolism of calcium, particularly in the bones. McCollum and his collaborators suggest the existence of different vitamins acting on the two lines above mentioned. Up to the present time a complete separation of these properties of vitamin A has not been possible. In depriving an animal of vitamin A, the bone tissue is deprived of both the influences above mentioned, while the absence of a stimulant for the growth of bone in conjunction with its continued destruction must inevitably result in osteoporosis. In addition to this there is the osteoporosis-producing action of starvation due to the animal's loss of appetite. The increased number of osteoclasts is apparently caused by the destruction of the bone for the purpose of providing the organism with a source of energy during starvation. The possibility of the existence of compensatory mechanisms capable of replacing vitamin A to a certain extent, and their degree of development in different individuals, the varying power of resistance of the organism, its predisposition to disturbances of calcium metabolism, or, on the other hand, to disturbances in the growth of tissues, the presence of conditions which, apart from vitamin A, are capable of producing osteoporosis—all these factors, apparently, decide the question as to the principal character of the changes of the skeleton on a diet deficient in the antirachitic organic factor. The nutrition of the mother during lactation also strongly influences the power of resistance to rickets or the reverse in the offspring.

There is one more question to be touched on—namely, why in some cases a picture typical of rachitis tarda or osteomalacia is observed in the skeleton—that is to say, why, with an abnormal and sometimes very large amount of osteoid, there is an absence or only a slight development of changes in the cartilage typical of rickets (the proliferating cartilage being sometimes even diminished). The conclusions which may be drawn from my experiments are as follows: Rickets was produced in rats, provided the age was not greater than 3 to 6 weeks at the beginning of special feeding. When the special feeding was started at the age of about 2 months a picture characteristic of late rickets or osteomalacia resulted—namely, the changes in proliferating cartilage were not well marked. In rats at the age of 3 months or older, if a rickets-producing diet is administered for about three months the changes occurring in the skeleton are either insignificant or show signs of mild late rickets or osteomalacia. Therefore my experiments corroborate the view that there is no essential distinction between rickets and osteomalacia, the only modifying influence being age.

Summarizing what I have said about the effect on the skeleton of the diet used by me, containing minimal adequate amount of calcium and deficient in the so-called vitamin A, I consider it possible to draw the following conclusions:

1. The action of vitamin A on the skeleton is the result of the combined action of several factors, only some of which are known at present.

2. The primary and highly important function of vitamin A consists in its property of controlling the normal deposition of lime salts in the bone, and therefore normal calcium metabolism.

3. The second, and quite as important, function of vitamin A is its property of controlling growth and apparently the normal nutrition of tissues, the osseochondral in particular.

4. The third property of vitamin A is its power of inducing a normal state of appetite.

5. In my experiments on rats the elimination of the first function of vitamin A from the organism results in the development of rachitic affections of the skeleton; of the second and third in osteoporosis of the skeleton.

6. As a result, therefore, when the diet is deficient in vitamin A these three functions are eliminated simultaneously, and the experimental rickets produced exclusively by this deficiency alone is associated with a more or less severe osteoporosis.

7. The absence or only slight development of osteoporosis in rickets produced by a deficiency of vitamin A in the diet might occur under the following conditions:

(*a*) When the deficiency of vitamin A, while not greatly undermining the general nutrition of the organism, is sufficient to affect calcium metabolism. Apparently, for the production of rickets in this case, it is necessary to increase the effect of such a small deficiency of vitamin A by the action of other factors which likewise disturb the calcium metabolism (for example, calcium or phosphorus starvation). Apparently such a method of the development of rickets is the most probable (but in my opinion not the only) one in the origin of human rickets.

(*b*) When the organism contains well-developed compensatory mechanisms capable of replacing (if only to a certain extent) the second and third functions of vitamin A.

8. The deficiency of diet of the mother in vitamin A results in a marked aggravation of the skeletal disorders of the offspring kept on a diet similarly deficient.

9. The state of nourishment of the mother during pregnancy, and especially during lactation, is one of the most important conditions of the normal development of the skeleton of the offspring.

In the etiology of rickets and osteomalacia, the factors undoubtedly playing a great part in the origin of these diseases are deficiency in the diet of vitamin A (or of an organic factor closely connected with it), calcium, and phosphorus, or a disproportionate balance of the last two. Confinement, in the sense of insufficiency of light, fresh air, and muscular exercise, apparently also plays its part (the majority of the data in agreement with each other being in favour of the importance of light, particularly of ultra-violet rays). Therefore, apparently, rickets can be caused by any one of these etiological factors or by any combination of them. From this point of view there are several forms of rickets, which should be classified from an etiological standpoint.

Dr. Douglas Galbraith (Glasgow) said: With regard to the question of diet in rickets, I should like to give briefly the results of an investigation I have been carrying on for over a year now at the Royal Hospital for Sick Children, Glasgow, under the guidance of Dr. Leonard Findlay. The chief object of this was to test the dietetic theory of etiology, with special reference to the fat consumption. The method adopted was to observe babies for long periods on definitely prescribed diets—fat-rich and fat-poor—and to note the incidence of rickets in the two groups.

The babies, some of whom were only a few weeks old when

they came under observation, were seen frequently, weight charts kept, clinical notes made, and the children radiographed regularly. The mothers all had written instructions of the diet, and were questioned frequently, so that, although the children were not under direct observation as indoor cases as in the experiments described by Miss Chick, one could be fairly sure that the diets prescribed were being actually given. All those cases in which there was the slightest doubt were discarded. For a fat-sufficient diet undiluted cow's milk in sufficient quantities was given up to ten months, and after that a general diet with milk, butter, soup, and gravy. The deficient diets were composed of milk mixtures containing 1 per cent., 1.5 per cent., and 2 per cent. fat. The diagnosis of rickets was never made unless the clinical findings were substantiated by a positive radiographic picture. In many cases the clinical signs were few, although the radiographic evidence was definite. The following table shows the results:

Analysis of Results (63 Children Observed).

Number of Children Observed.	Fat.	Nature of Feeding.	Number Developing Rickets.	Percentage Developing Rickets.	Percentage Developing Moderately Severe or Severe Rickets.
In Winter:					
24	Sufficient	Artificial	21	87	66
17	Deficient	Artificial	12	70	41
18	Sufficient	Breast	13	72	44
4	Deficient	Breast	3	75	25
In Summer:					
8	Sufficient	Artificial	1	12	0
12	Deficient	Artificial	3	25	0

It will be seen that of 63 children observed during the winter months 77 per cent. developed rickets, and the percentage in the fat-sufficient group is slightly higher than in the fat-poor. Furthermore, the degree of rickets is rather more severe in the children on a fat-sufficient diet than in those on a fat-poor diet. This experiment differs principally from those described by Miss Chick in that an ordinary fat-sufficient diet was given, whereas she added cod-liver oil to a similar diet. It is possible that the difference in results is attributable to some constituent of cod-liver oil other than the fat-soluble vitamin. In the summer months the number of cases observed was smaller. The incidence of rickets was low, and the degree was slight in each case.

My conclusions are as follows: (1) Children on a definitely fat-sufficient diet developed rickets during the winter months. (2) The degree of rickets in children on fat-poor diets was no more severe than in those on sufficient diets. (3) Children on fat-poor diets remained free from rickets.

Dr. J. Sim Wallace (late Lecturer on Dental Surgery and Pathology, London Hospital) said: Ideas with regard to the causation of rickets have recently been considerably influenced by the supposition that fat-soluble A played an important rôle in the development of the teeth. That lack of this vitamin cannot now be regarded as the cause of rickets is generally admitted; nevertheless the authors of the theory that absence of fat-soluble A causes dental hypoplasia have not stated clearly that they have now completely abandoned this idea. In a recent communication Mrs. Mellanby admits that there are "certainly" other causes of hypoplasia, but we want to know whether lack of fat-soluble A in the diet can be supposed to cause hypoplasia as frequently as does measles or scarlet fever, or for that matter any other single disease which may affect the life history of the amyloblasts or other epithelial cells.

The experiments and suppositions on which the vitamin theory rested never misled those who were well acquainted with the facts concerning the development of the teeth, but they certainly seemed to impress many outside the dental profession.

It may seem to enhance the importance of vitamins to imbue them with marvellous powers. If it is possible to deplete an object animal *in extremis*, and then with the aid of minute doses of the required vitamin rejuvenate the animal as if by magic, then of course a sensational impression is made. Such results may well be true with regard to beri-beri and other deficiency diseases, but the attempt to claim that totally different diseases are preventable or curable in a similar way seems hardly justifiable. We have been rather regaled with "the importance of the infinitely little" when the wonderful powers of a vitamin are to be shown on a graph or a screen; but when it is pointed out that children in these days are apparently more richly fed with regard to fat-soluble A than in past ages, it is openly proclaimed that an *abundant supply* of this vitamin is necessary, and something containing 250 times the fat-soluble A found in milk or butter is recommended to save our children from rickets, and the teeth from hypoplasia and dental caries. Even then clinicians often fail to note the marvellous effects claimed without a properly balanced diet, sunlight, and general hygienic conditions. Again, it may be possible to deprive puppies of calcium, phosphorus, and substances necessary for their metabolism in a laboratory so completely that the development of the teeth may be interfered with; but is there any evidence that this ever occurs among children so long as they are getting even a bare sufficiency of protein under any existing scheme of dietary, however eccentric it may be? The quantity of protein and the other ordinary constituents of the diet is massive; the quantity of fat-soluble A, if it be a vitamin, is negligible, for, as is generally recognized and as has been explicitly stated by Professor Halliburton, "the quantity of vitamin necessary in the diet is infinitely small."[1]

In recent years dental examinations of multitudes of school children have been made, and one of the generalizations resulting from such examinations is that "the better the school the worse the teeth," which rather confirms the view, long held by dentists, that dental caries is not a deficiency disease; rather is it a luxury disease, depending upon the stagnation of easily fermentable and generally expensive carbohydrates.

But can we even regard the actual experiments which have been made on puppies as serious scientific evidence that lack of fat-soluble A produces dental hypoplasia? It was claimed that the special feeding of puppies had caused not only rickets but also dental hypoplasia. One might have thought that the first thing any competent experimentalist would have made sure of was that the hypoplasia had not been produced by other causes before the experiments with special feeding were commenced. Anyone acquainted with the development of enamel who is presented with a tooth showing a developmental defect is immediately interested in the conditions during, if not antecedent to, the formation of such enamel—that is to say, to conditions existing long before the eruption of the tooth. We have always recognized that rickets delays the eruption of the teeth. The specimens shown in the experiments referred to were from rickety puppies, so that presumably the eruption of the teeth had been retarded some weeks if not for some months. Now the enamel of the crown of a tooth is completely formed long before its eruption even in a non-rachitic subject. Consider the first permanent molar. In the human subject the tips of the cusps commence to calcify at or even before birth, and dentists recognize that hypoplasia of the cusps of these teeth is associated with pathological disturbance at a corresponding age. The rest of the enamel of the crown is then gradually formed, and the crown is complete when the child is 2 years of age. But I want you specially to note that this tooth erupts four years later—that is, at the age of 6. Special feeding or anything else that happens to the child between the age of 2 and 6 has therefore no relation to hypoplasia of the crown of this tooth. Although the formation of the enamel in the first molar of a dog commences just before birth, growth being much more rapid than in the human subject, it is possible that the interval between the formation of the enamel and the completion of the eruption of the first molar in the dog may not amount to more than five or six months, or to seven or eight months when rickets is present. But it appears to have been during the three to six months immediately preceding the completion of eruption of the puppies' teeth that the special feeding which was supposed to produce the hypoplasia took place. In other words, to put it briefly, the hypoplasia existed for a month or two before the rickety feeding experiments were commenced. The only evidence of any attempt to correlate the effects of the feeding and the dental hypoplasia may perhaps be found in a statement by Mrs. Mellanby that "at intervals *x*-ray photographs were taken of the teeth developing in the jaws. This is not an easy matter in puppies and my results are not so successful

[1] British Medical Journal, June 18th, 1921.

as they ought to be." Much stress was laid on so-called "facts," but when we investigate the facts we find that they are simply unjustifiable and misleading inferences.

Here let me refer to something of an amusing nature. In some of the exhibition specimens showing hypoplasia in the teeth of puppies, which was claimed to have resulted from the absence of fat-soluble A in the diet, the lower part of the crowns of the first molar teeth—that is, the part nearest the neck of the teeth—had good enamel, although between this and the tip of the crown the enamel was hypoplastic. Now, if any part of the enamel was formed during the special feeding it must have been the part last formed—that is, the part at the neck of the tooth, because immediately the experiments were finished the jaws were treated with formalin and then preserved. Obviously, therefore, lack of fat-soluble A had cured the hypoplasia, if it did anything at all. We need not follow Professor Mellanby to Skye in his endeavours to associate the state of the teeth with fat-soluble A. His own laboratory shows us clearly all that is required to disprove his contentions.

The possible association of dental hypoplasia, rickets, and dental caries was investigated years ago by reliable observers in the medical and dental professions—not with regard to what happens in dogs, but with regard to children, which is more important, for it is this that we want to know about. Dr. G. A. Carpenter and Mr. Denison Pedley found that in rickety children there is as a rule no deficiency of enamel,[2] and further, the latter authority, as the result of a subsequent examination of 500 boys and girls in the Evelina Hospital for Sick Children found that "there is no evidence to prove that caries is more frequent among rickety children than among those who are suffering from other diseases."[3] Mr. Norman Bennett in a later investigation[4] arrived at similar conclusions. He corroborated the views of previous observers, who attributed dental hypoplasia to certain diseases, such as measles, scarlet fever, whooping-cough, syphilis, dysentery, and digestive derangements not necessarily associated with rickets. Other investigators have made similar investigations and come to similar conclusions. But even though it were shown statistically that dental caries was more prevalent in children afflicted with rickets, this would not show that rickets causes or predisposes to caries. It would only corroborate what most of us believe, that excess of carbohydrate in the diet is an element in the causation of both diseases.

Consider the subject from another point of view. Hypoplasia is a very rare occurrence in the temporary dentition; and this has long been recognized by the dental profession. Recently Dr. A. T. Pitts found as a result of an examination of 5,000 temporary teeth that only about one-half per cent. were affected with hypoplasia. Yet caries is even more rampant in children's first teeth than it is in the teeth of adults, and for this reason I shall limit my concluding remarks to hypoplasia as it affects the temporary teeth. It is admitted that when hypoplasia affects teeth it is as a rule caused by other diseases than rickets; so we may say that although one tooth in 200 temporary teeth is affected with hypoplasia, only one tooth in 1,000 is affected with hypoplasia as a result of rickets. But rickets is now recognized to result from causes other than lack of fat-soluble A in the diet, at least as a very general rule. Let us suppose, however, that in 10 per cent. of cases lack of fat-soluble A causes or helps to cause the rickets, and we arrive at the conclusion that one tooth in 10,000 is affected with hypoplasia as a result of lack of fat-soluble A in the diet. Lastly, we must remember that hypoplastic teeth do not by any means always become carious. Though hypoplasia may and sometimes does predispose to focal carbohydrate stasis and consequently to caries, it does not always do so. Indeed, what strikes dentists most with regard to hypoplastic teeth is their ability to withstand the onset and progress of the disease, and medical men must have noted that the grossly hypoplastic Hutchinson's teeth are almost always free from caries.

So to sum up and keep to round numbers we may say that lack of fat-soluble A in the diet of children may be assumed to account for one carious tooth in 100,000.

It should nevertheless always be remembered that dental caries is a disease found as a matter of fact most abundantly among children who are fed with foods rich in fat-soluble A, and the sooner those who belabour "the importance of the infinitely little" learn to appreciate some sense of proportion the better for the rising generation.

[2] *Lancet*, May 14th, 1892, p. 1077.
[3] *The Hygiene of the Mouth.*
[4] *Trans. Ophthal. Soc.*, 1901.

Major H. S. Hutchison, I.M.S., said: I wish to bring to your notice very briefly certain observations on dental caries in the Nasik and surrounding districts of the Bombay Deccan which I made just before leaving India last year. These observations are, I think, of some interest, not only from the point of view of the geographical distribution of the condition but also with reference to the occurrence of rickets in the Nasik district and to the dietary eaten therein. For the purpose of the present observations the Indians were divided into the same three classes as in my rickets inquiry—namely, (1) Mohammedans, (2) well-to-do Hindus, and (3) poor or lower-caste Hindus. Suffice it to say that the first two classes eat a dietary containing a fair amount of animal fat, about 35 grams on an average, while the third class eats only about 3 grams and at the same time consumes a much larger quantity of carbohydrates.

As a result of this inquiry it was found: (1) The number of teeth present per individual at all ages up to 40 is high, and that the percentage of caries present is very small. (2) There is practically no difference between the various classes as regards the amount of caries. It is evident that the poor diet of Class 3 has had little effect in producing caries. (3) The percentage of individuals without caries is high in all classes and certainly no less amongst the poor. We see then that the fat-poor dietary of the poorer classes has not led to the increase in dental caries which one would expect. I may say that in several cases I have seen the incisor teeth so ground down on their anterior surface that the central canal was visible in nearly its whole length, and that this was not accompanied by any caries. The incidence of dental caries bears no relationship to the occurrence of rickets. In Nasik I found rickets to be a disease of the well-to-do and not of the poor. The slide shows that caries is uncommon in all classes, and yet rickets is six times as common in the well-to-do, while this class eats a much better dietary.

I would like in conclusion to say that I cannot agree with Professor Mellanby in his statement that the general activity of the child depends almost entirely on its diet and not on its environment. If such were the case, judging from the dietary, the poor Indian children should be listless and rachitic, whereas my experience has been that they resemble Professor Paton's country pups in being strong sturdy specimens without a suspicion of rickets. Certainly this explanation of Professor Mellanby cannot explain the rarity of rickets among the poor Indians and its frequency among the much better fed rich, and it is totally insufficient for the cases of late rickets, which in Nasik is practically unknown among the poor. In considering the etiology of rickets the geographical distribution must be taken into account.

Dr. J. B. Orr (Rowett Institute, Aberdeen) said: I desire to deal with the importance of the mineral content of the diet. The characteristic feature of rickets is a disturbance of the mineral metabolism of the body. In the production of experimental rickets, therefore, until it is determined that the mineral matter of the diet is adjusted to the mineral requirements of the animal, it is premature to discuss the importance of any other dietary factor. Obviously the diet must contain all the essential minerals in sufficient amounts. Almost as important as the amount is the proportions in which they are present. The results of metabolic experiments which we have carried out show that the percentage utilization of calcium depends to some extent on the calcium-phosphorus ratio in the diet. It is not merely a question of there being a sufficiency of phosphorus. Ingle showed, years ago, that rickets in horses could be produced by a diet with an overwhelming excess of phosphorus. An excess of potassium interferes with the retention of calcium and a lack of proportion between sodium and potassium has been shown by Zuntz to produce a definite pathological condition. Associated with this lack of balance is the influence of the form and combination in which the minerals are present. Even when dealing with such closely related foods as milks of different species, as has been shown by Uffemann, a growing animal can utilize a higher percentage of the calcium of the milk of its own species than of the milk of a different species. In the investigation of any dietary factor, therefore, unless the experimental ration contains all the essential minerals in the amounts and in the proportions that they are required, and in a form that they can be utilized, the result with regard to any other dietary factor is bound to be confused. In Mellanby's experiment on puppies, rickets developed on various diets consisting of rice, white bread, oatmeal, and from 170 to

250 c.cm. of milk. In these diets the only constituent that contains a substantial amount of calcium is the milk. On Mellanby's ration it is impossible for the puppies to get more than 0.4 to 0.5 gram of calcium a day, whereas Voit has shown that a young dog of 3 to 4 kilos requires 0.5 to 0.7 gram of calcium a day, so that the diet contained an absolute deficiency of calcium. Further, in rice and white bread the small amount of mineral matter consists largely of phosphorus. The ratio of calcium to phosphorus is about 1 to 10, whereas in fresh milk it is roughly about 1 to 1. It is impossible to draw definite conclusions with regard to the influence of any other dietary factors on such rations, which are so deficient both in amount and in balance of mineral matter. Mellanby's experiments were repeated on pigs at the Rowett Institute, Aberdeen. Well-marked rickets developed in from thirty to forty days, but on the same rations with the mineral water adjusted by the addition of inorganic salts to make the amount sufficient, and the proportion of the different minerals resemble those obtaining in sow's milk, pigs from the same litter showed normal growth and perfect health. In other pig experiments it was found that when the mineral matter was properly adjusted no rickets developed on a diet of oatmeal, oats, and bran continued from the period of weaning at nine weeks until the animals were sexually mature. On the other hand on the same diet, without mineral adjustment, rickets developed even if cod-liver oil were given in amounts from 10 to 60 c.cm. a day. Cod-liver oil has certainly some prophylactic value, and its influence is probably due to its effect in increasing the percentage assimilation of calcium or other minerals in a diet in which these are deficient. In these experiments on pigs and other animals we found that the closer the mineral content of the diet approximates to the requirement of the animal the less the influence of cod-liver oil. With regard to the relative importance of fat-soluble A and the proper amount and balance of minerals, there seems no doubt that the latter is the more important dietary factor so far as the production of rickets is concerned. All that has been said with regard to the evil effects of cereals and other carbohydrate-rich food can be explained on the ground of their poverty in minerals and the improper ratio in which these are present, and the curative effect of Mellanby diets, which contain such large quantities of milk and egg, can be ascribed as much to the mineral matter of them as to the hypothetical fat soluble A. The field in which information is most required is that of mineral metabolism. The work in this field is tedious, laborious, and unsensational, but it is likely to be as productive of definite and permanent results as the pursuit of the elusive vitamin.

Dr. Walter Elliot, M.P., said: To-day's discussion shows very clearly how easy it becomes to concentrate on one part of a problem to the exclusion of the whole. When, for instance, Dr. Leonard Findlay concentrates on the probability of a microbic infection as the cause of rickets to the extent of denying altogether the influence of diet, it seems a position which cannot be maintained in view of the fact that rickets can be produced by an experimental diet in the dog (Mellanby), the rat (Korenchevsky), and by Dr. Orr and myself in both pigs and sheep. In any remarks which I have to offer I cannot speak first hand from the point of view of the clinician but only from that of the experimentalist. Nevertheless we must admit that everything we say must in the long run be subject to the verdict of the clinician. The results of experimental work, however, seem to point clearly towards diet as a very important factor in the onset of this condition, and to this extent I find myself in agreement with Dr. Mellanby. The particular food substance or quality governing the onset of rickets is a much more debatable point. It has been pointed out by the previous speaker that not only the quantities of mineral supplied but their ratio must be taken into account. This requires the greatest possible emphasis. Unknown bodies must not be postulated till complete allowance has been made for the known. For instance, minerals are supplied by Mellanby in one series of experiments in a "salt mixture" consisting of common salt only. McCollum, on the other hand, using a salt mixture based upon the ash of cow's milk, gives at least nine elements—sodium, chlorine, magnesium, sulphur, phosphorus, potassium, calcium, iron, and iodine. It seems here that the obsession with the presence or absence of "fat-soluble A" has led Mellanby to a neglect of other necessary requirements of the body. Similarly, great theories have been based upon experimental work on rats. In Korenchevsky's striking work he uses as a basal diet a food with a salt mixture similar to that of McCollum. But this salt mixture follows the ash composition of cow's milk. There is not a single accurate figure upon rat's milk in existence—quantity, fat content, ash, are all alike unknown. Again, the remarks of other speakers upon confinement as a dominant factor ignore the fact that Korenchevsky found this to have no influence on rats. I also have found in work upon sheep that animals ranging freely in the open upon a natural diet could develop the illness. As a matter of fact, it is only during personal experimental work that one realizes how rough and ready is all the research upon mineral metabolism. Mineral substances are usually administered in a mixture corresponding to the ash of cow's milk. It is a pure assumption that they are here found in the state most suitable for assimilation by a young animal of this or another species. More facts on mineral metabolism are urgently required.

Dr. Leonard Findlay, in reply, said that the discussion had been very important from both the academic and the practical points of view. He had limited himself to the clinical field. Changes which occurred in the rat and the dog did not necessarily happen in the child. Ossification of bone could be modified in many ways by experimenting with calcium, phosphorus, fat, etc., but a deficiency of any of these substances did not cause rickets. The fact that there were so many conflicting experiments showed that diet had nothing to do with it. If there were a combination of dietetic causes why did rickets occur only in the poorer classes? We should get away from the idea of lack of something. He disagreed with Dr. Hutchison that rickets could not be an infection. He congratulated Dr. Mellanby on his clinical results. He himself was not so successful. Anybody, however, could cure rickets in summer. He disagreed with Dr. Mellanby on the question of exercise. Babies were in the habit of exercising themselves all day. The cause of rickets was as yet undiscovered. We might be able to disprove Cheadle's statements, but we could not put anything in their place.

DISCUSSION ON THE TREATMENT OF TUBERCULOSIS OF THE CERVICAL GLANDS.

OPENING PAPER

BY

JOHN FRASER, M.C., M.D., F.R.C.S.Edin.

I am glad that those who are responsible for drawing up the programme of the meeting have chosen this subject for discussion. The disease (at least in certain localities) is so frequent that its efficient treatment must be of interest and importance to the practitioner, and yet, in connexion with this all too common condition, though an enormous amount of literature has accumulated around the subject, there is no definite unanimity of opinion regarding the most efficacious methods of treatment. Too often the literature represents the extremes of opinion, and one looks in vain for some moderate view, that being the one which is generally acceptable to the majority. It seems to me that at a meeting of this description—one representing all shades of opinion and varieties of interest—it should surely be possible to formulate a group of common sense rules which will guide the practitioner in his advice to his patient.

There are few subjects which show such a wide divergence of opinion. There are many men with experience in this branch of work, for whose opinion one has the greatest respect, who believe that it is incorrect ever to advise operation in a case of tuberculous cervical adenitis; on the other hand, there are physicians and surgeons of repute who advise operation in every instance, irrespective of the condition of the gland or the type of tuberculous disease with which it is affected. Again, those who advise operative interference differ widely in their ideas regarding the type of operation to be adopted. To some, operation means incision and curetting, to others it infers a complete removal of the cervical glands inclusive of and in the neighbourhood of the affected area, and there are a few who would be content with drainage of a tuberculous abscess when such develops. Someone must be in error, and it should surely be possible to formulate a definite scheme by following which one may be assured that one is doing the best possible for one's patients.

Personally I rather pride myself that I do not hold any extreme view—when I have finished this paper you may not agree with me—but I teach the student (the practitioner of to-morrow) that a moderate view is the correct one, a view which believes that under certain conditions there is a very definite place for conservative treatment, while in other circumstances there should be no hesitation in advising radical operative interference. The essential is to know when to advise the various types of treatment, and, further, to explain the reason for your choice to intelligent parents or patients.

Perhaps I ought to give some guarantee for the opinions which I express; the guarantee is based upon some 2,000 gland cases, for the treatment of which I have been responsible during the past ten years.

I do not intend to trouble you with any detailed account of the disease; my intention is to express my views upon treatment; but, as a rational treatment must essentially be based on factors of etiology and pathology, there are certain points in the clinico-pathological history of the disease which I wish to bring forward. I do so because these several factors seem to me to be the essential items upon which a logical and successful treatment must be based.

I.—*A Distinction between Blood and Lymphatic Modes of Infection.*

This is one of the points upon which my later argument is based, and therefore I desire to be definite. I wish to distinguish clearly between glands which have been infected with tuberculosis via the blood stream and those which have become diseased by a lymphatic spread from a local focus of infection. The question may be asked, How is one to distinguish between these two modes of infection? I know of two methods, one clinical and one pathological.

The clinical test depends upon the distribution of the diseased glands: a scattered, haphazard, and often coincident appearance of multiple diseased glands in areas unconnected by lymphatic vessels suggests a blood infection, while the local development of a tuberculous gland, the disease remaining for a time localized to that gland or its immediate neighbourhood and afterwards spreading to actually adjacent glands, suggests a lymphatic infection, more especially if the affected glands lie in lymphatic connexion with such an obvious area of absorption as the tonsil.

Pathologically there is a test which one is able to demonstrate at operation, but, being dependent on morbid anatomy, it is not of value from the clinical pre-operative standard. I may be permitted, however, to mention the detail. If two tuberculous glands in early stages of the disease are cut in longitudinal section, one being the result of a blood infection, the other due to a lymphatic spread, it is possible to distinguish between them, because in the case of the blood infection the early disease is central, while in the lymphatic spread the disease is distributed as groups of follicles around the periphery close underneath the capsule, in what may be termed the "corridor of the gland."

Of the two possible methods of gland infection—(*a*) by blood stream, (*b*) by lymphatic stream—it is correct to state that where the cervical disease of children is concerned a figure of over 90 per cent. represents the proportion of occurrence of the lymphatic infection. I believe that it is of primary importance to draw this distinction, and my subsequent remarks may be taken as applying to the common variety—the tuberculous gland which is the result of a lymphatic spread from a local area of absorption.

II.—*The Proportional Distribution of the Gland Groups Affected.*

In my experience the distribution of occurrence of the lymphatic variety is somewhat as follows:

Locus of Absorption.	Glands Affected.	Percentage Proportion.
Faucial tonsil	Jugulo-digastric group	80
Naso-pharyngeal adenoids ...	Post-carotid group	12
Carious teeth	Submaxillary group	8

There is a small percentage of cases which has not been included in this grouping—the cases in which the cervical disease is first noticed in the supraclavicular region. The majority of these are examples of a spread from the mediastinal or bronchial glands. The occurrence of the variety is so rare in children, however, that I have not included it.

III.—*The Lymphatic Type of Cervical Glandular Tuberculosis is for a Time a Local Manifestation of a Local Infection.*

In many children the enlarged tuberculous gland is the first macroscopic evidence of the disease. The organisms have gained entrance through tonsils, adenoids, or carious teeth: they have extended by the lymphatics to the nearest group of lymphatic glands; they have become arrested in the lymphatic network of the gland, and it is their presence in the gland over a certain period of time which results in tuberculous adenitis. Now if you consider the position for a moment you will realize the importance of this sequence of events. From a local area of absorption there is a local manifestation of the disease, and for a certain period of time—the exact length of which we cannot at present define—the disease remains a local manifestation, an intraglandular tuberculosis. A parallel to this is not common in pathology. Where tuberculosis is concerned a somewhat similar condition is observed when the pathologist's wart develops, and there is a resulting infection of the epitrochlear and axillary glands, but in every other variety of tuberculosis the sequence is different. Therefore, at the risk of reiteration, I wish to insist upon this point—that in many cases cervical glandular tuberculosis is a local manifestation of a local absorption, and the glandular disease remains for a time the only manifestation of the disease apart from such infection as may exist in the area when the absorption occurred or in the lymphatics which conducted the disease.

IV.—*Cervical Glandular Tuberculosis of the Lymphatic Type is Unassociated in its Early Stages with a Blood Infection.*

There is a point in the teaching repertory of Sir Robert Philip which has always impressed me: it is the insistence he lays on the fact that tuberculosis is a systemic disease, and when he uses the term "systemic" I presume he means that the disease is essentially a general one with local manifestations at selected points. In many cases this is undoubtedly the correct view to take of the disease. Pulmonary tuberculosis in its various forms is invariably associated with a blood infection before it comes under the notice of the physician; bone and joint tuberculosis must of necessity be accompanied by a tuberculous septicaemia, because the foci are the local manifestations of a general infection; tabes mesenterica and tuberculous peritonitis are accompanied by a generalized infection before they become sufficiently definite to attract clinical attention; but in the cervical glandular tuberculosis of children—in the tuberculosis, for example, of the tonsillar or jugulo-digastric group which forms 80 per cent. of the cervical disease—we have an outstanding peculiarity: the disease remains for a certain period unaccompanied by a general infection; there is tuberculosis of the lymphatic gland or glands without the accompaniment of a haemic involvement. The actual period of time which elapses between the original development of the disease in the gland and the involvement of the blood stream is probably considerable.

V.—*Tuberculous Cervical Adenitis is in its Early Stages a Purely Tuberculous Infection.*

I am not sure that we fully appreciate the importance of this fact, but the reality is brought out when we contrast cervical glandular tuberculosis with pulmonary tuberculosis. In the latter a mixed organismal infection is present early in the disease, and probably many of the general symptoms are originated and aggravated by the mixed infection. But in glandular tuberculosis, and especially in cervical glandular tuberculosis, the infection remains purely tuberculous except under two conditions—unwise operative interference, and the periodic attacks of subacute lymphadenitis and periadenitis, to which I shall allude later.

VI.—*The Pathological Changes which a Tuberculous Lymphatic Gland Undergoes.*

From what we have seen of the disease we recognize three pathological types—the caseating, the lymphoid, and the fibrous. The caseating variety is the most common. I do not know in what proportion it occurs, but it must form a very large percentage of the whole. The caseating variety

passes through a distinct sequence of changes. An intraglandular tuberculosis develops. Intracapsular caseation occurs, and during this period the gland becomes subject to attacks of periadenitis, which are interesting in so far as they temporarily alter the clinical picture. The explanation of the periadenitis is probably a superadded pyogenic infection—an infection with which the gland could normally deal, but which, the gland being devitalized, with a proportion of its lymphoid tissue replaced by tuberculous disease, results in congestion, oedema, tenderness, and swelling of the affected gland. Periadenitis is generally the signal for the next stage of the sequence: the caseation appears to be stimulated by the superadded infection—it makes its way through the gland capsule, and the disease is now not only intraglandular, but there is, in addition, a periglandular tuberculous abscess. In a neglected case there are the later stages of subcutaneous abscess in addition to the periglandular and intraglandular foci, and, finally, a sinus or tuberculous ulcer of the overlying skin or mucous membrane.

The lymphatic type is comparatively uncommon; it is apt to be mistaken for Hodgkin's disease. There is little tendency to caseation except in the late stages of the disease, the glands remain discrete, and, unless caseation occurs, there is little tendency to periadenitis. This is a digression, and I shall allude to the point again; but I may say at this stage that, while the lymphoid type of disease is an easy one on which to operate, in so far as the glands separate readily, it is unsatisfactory in so far as recurrence is common unless definite precautions (to which I shall allude later) are taken.

Fibrous tuberculous adenitis is the least common type in children; in this respect it is distinctive from the adult disease, which is so often fibrous in character. The glands are small and hard, with usually some central caseation. From the surgical point of view it is an undesirable variety of the disease on account of the tendency which there is to form adhesions to surrounding parts.

VII.—*The Importance of the Bovine Bacillus as the Causative Factor of Glandular Tuberculosis.*

In Edinburgh two questions are repeatedly put to us:

> How do you explain the large proportion of cervical glandular tuberculosis with which you have to deal in contrast with other centres? and
>
> How do you account for the fact that a large proportion of the cases which you treat appear to be of a more severe and rapidly caseating type than that commonly met with in other centres?

It is rather difficult to give a definite answer to these two questions, but undoubtedly the answer to the first depends to some extent on the large proportion of cases which are due to an infection with the bovine type of bacillus. In 1912 and the succeeding years Mitchell reported a proportion of over 90 per cent. of the cervical glandular tuberculosis of children as being due to a bovine infection, and, though such a high proportion has been questioned, Wang later reported results which to some extent confirmed Mitchell's observations.

Such a high proportion of bovine infection can only mean unusual exposure to a milk infection, and it is possible that in this source we have the answer to the first question. That the question of the relatively high proportional occurrence of tuberculous glands in Edinburgh and district is a proper and pertinent one is clear; in the month of May, 1919, 82 new cases of cervical glandular tuberculosis came under my own observation.

If the second question is a correct one, I confess I find it difficult to know how it should be answered, unless it be that the answer to the first also explains the second—that a bovine glandular infection is more likely to run a subacute course with early caseation than a human infection. On this point, however, I have no reliable information.

VIII.—*Questions of Age and General Condition of the Patient.*

Under this heading there are one or two clinical points which I wish to consider. If children become infected with the disease in the first year of life my experience has been that almost invariably the disease makes rapid progress. There is an early tendency towards caseation and periadenitis, the disease rapidly spreads to a wide distribution, and comparatively early in the sequence there is an infection of the blood stream. With each successive year of life up to the time of puberty there is a gradually increasing resistance to the disease.

The other clinical detail is that certain types of glandular tuberculosis are associated with very distinct signs of a tuberculous toxaemia, while other types show little or no general symptoms. In one case there is a comparatively slight local disease, and yet the child is pale, listless, and anaemic, while in another case with a much more extensive local disease general symptoms are to all intents and purposes absent.

A Summary of the Clinico-Pathological Points which have a Bearing on Treatment.

I have made it clear that I have no intention of attempting a systematic description of the disease; instead I have indicated certain points which in my opinion have to be considered before a reasoned opinion can be given regarding the best method of treatment. I would therefore summarize the points as follows:

1. A distinction must be drawn between lymphatic and haemic modes of infection.
2. A lymphatic glandular tuberculosis is for a time the only manifestation of the disease, apart from infection which may exist at the site of absorption or in the connecting lymphatics.
3. A lymphatic glandular tuberculosis is not at first accompanied by a blood infection.
4. With the exception of operative interference and the complication of periadenitis glandular tuberculosis is a purely tuberculous infection.
5. There are the three pathological types of the disease—the common caseating, the lymphoid, and the fibrous—and each of these has characteristics which influence the question of operative interference.
6. A large proportion of glandular tuberculosis owes its occurrence to a bovine infection.
7. In children of 1 year and under glandular tuberculosis tends to run an acute course with early infection of the blood stream.
8. Certain children suffer greatly from a tuberculous toxaemia, while others, with possibly much more extensive local disease, show few or no general symptoms.

It is upon these facts that our ideas of treatment are based, and I shall endeavour to indicate to you what these views are.

The Lymphatic Type of Cervical Glandular Tuberculosis is a Preventable Disease.

This is a truth which can scarcely be insisted upon too frequently. You will notice that I distinctly state that the provision applies to the lymphatic variety, but even so, what does it mean if the lesson be efficiently learnt? It means possibly the exclusion of 90 per cent. of cervical glandular disease, and very likely a great diminution in the remaining 10 per cent. It is not for me to indicate efficient preventive measures, but I would mention two, and, if these were insisted upon, an improvement would result. They are the sterilization of every drop of milk which the child consumes until it reaches the age of 5 or 6 years, and the exercise of care that the child does not come into contact with a case of open tuberculosis. Insistence on the latter point should surely be a simple enough matter, yet it is extraordinary how blind parents may be to the possibility. Only the other day a child was brought to my notice suffering from extensive glandular tuberculosis. The child was accompanied by its mother and a nurse. The mother, who was apparently a sharp, intelligent woman, was exceedingly exercised about the explanation of the development of the disease. She was fully alive to the importance of milk sterilization, and she assured me that this precaution had been taken. I had meantime noticed that the child's nurse was wearing a small surgical dressing on her neck, and investigation showed that the girl had chronic glandular tuberculosis with a small discharging sinus. The child was subsequently operated on, and the bacteriologist reported that a human bacillus had been isolated from the child's infection. It is scarcely credible that such an obvious and preventable source of infection could have been overlooked, yet I assure you my report of the circumstances is correct, and a similar position, I have no doubt, frequently arises.

Have we Evidence that Glandular Tuberculosis can be completely Cured by Non-operative Remedial Measures?

I can imagine the storm of indignation which even the suggestion of a question of this kind will arouse; but none the less it is a fair and proper question to ask, and it is one upon which we have a right to expect demonstrative evidence on one side or the other. When I use the word "cure" I mean the complete disappearance of the disease from the gland. I do not mean encapsulation of the disease by fibrous tissue and a shrinkage of the hitherto enlarged gland.

You will agree with me that the question is a very vital one, and I do not know that we have any definite evidence to give in confirmation of the positive reply which I feel sure all of us would like to give. I can bring forward one or two facts which would seem to imply that many cases which we hoped were cured have been examples of localization and arrest of the disease, but not of cure in the sense which I have defined. During the later period of the war and the succeeding months there was a marked increase in the number of cases of glandular tuberculosis. I do not for a moment believe that such an increase was the result of greater exposure to infection; I believe that the cases responsible for the augmentation were those in which the disease had become arrested either spontaneously or through remedial means, and the lowering of vitality, combined with the diminished ingestion of animal fats which occurred at the period I have mentioned, led to a weakening of the encapsulating barriers and a recrudescence of the disease.

It is a matter of common knowledge how frequently one of the exanthemata is followed by the appearance of enlarged tuberculous cervical glands. It must very rarely happen that the tuberculous infection is successive to the non-tuberculous — it is rather the lighting up of a latent tuberculous infection. And I have observations of many cases in which conservative measures had been adopted with apparent cure, only to find a fresh and virulent recurrence of the disease after an attack of measles or whooping-cough.

The last point I bring forward, which makes me wonder if sometimes we are not too sanguine about cases of conservative cure, is one which is capable of direct demonstration. Sometimes it becomes necessary to operate upon cases which have had a prolonged course of conservative remedial measures. I have taken special pains to investigate each of these cases which has come under my observation, and in every instance I have succeeded in demonstrating live tubercle bacilli in the interior of the glands. I am fully alive to the antagonism which such a statement as this will arouse. I fully appreciate, also, that "one rose does not make a summer"; but "a straw shows which way the wind blows," and I have a suspicion that it would be well for us to investigate more fully the possibility of a complete conservative cure occurring.

You will appreciate what an important point this is. Am I to say to my patient, "Under favourable conditions it is possible for the disease to be completely eradicated by conservative measures," or am I only at liberty to say, "Under favourable conditions we can succeed in so isolating and circumscribing the disease that it will cease to be an actual menace to you, though you must be careful that at some future period a recrudescence does not occur"? I wish to make it clear that I am talking of the local disease, not of a blood infection; of the organisms which are locked up within a barrier of fibrous tissue, not of those which are circulating in the blood stream. I have no fear of the latter, but from what I have seen I am sometimes doubtful whether a tuberculous gland which has undergone caseation can be considered capable of complete cure by conservative means.

What is the Ideal Treatment of a Tuberculous Cervical Gland?

I suppose we must regretfully confess that we possess no direct and specific antibacterial agent for tuberculosis; our most successful remedies act by such means as focal reactions and stimulations of the body resistance. That being so, if the position of affairs is such as I believe it is in the lymphatic variety of cervical glandular tuberculosis, that from a local area of absorption there is a local and circumscribed glandular demonstration of the disease, in the absence of a specific remedy for that disease undoubtedly the ideal treatment consists in removal of the affected gland group, with a suitable elimination of the area through which the absorption occurred.

The position is that a bacterial poison for which at present we possess no direct remedy gains entrance into the lymphatics, and is for a time arrested in a definite group of lymphatic glands. If we recognize this position we must ask ourselves if we are really justified in adopting a conservative attitude, in saying, "The infection has gained entrance, but I propose to leave it *in situ* and to trust to the general resistance of the body and to certain local congestive means to overcome and to isolate the disease." Whichever method you choose, I think it is but fair in an early case of lymphatic tuberculosis to lay these possibilities before patients or their advisers. To my mind there is safety in the early operative removal, while the second possibility may involve enormous risk.

I know two arguments at least which will be advanced to contradict this line of early operation in the lymphatic type of the disease. It will be said that the glandular disease is so easily disseminated that to guarantee its complete removal is impossible. Those of us who have had an opportunity of operating upon a number of these cases know, however, that the disease is localized in its early stages, and remains so for a certain period of time. Another argument brought forward will be that operation is not justified at such an early stage of the disease, but the early operation in the lymphatic variety of the disease is the very basis of the ideal treatment.

I would express my creed in these words:

> I believe that where children are concerned 90 per cent. of cervical glandular tuberculosis is the result of a lymphatic spread from a local area of absorption.
>
> I believe that for a considerable time the disease remains limited to the gland or group of glands, and infection of the blood stream is a late complication.
>
> In view of the fact that we possess no specific antibacterial agent to overcome the tubercle bacillus, I believe that the wisest course is to remove completely the affected gland or group of glands before the disastrous complication of blood invasion or dissemination occurs.

Now, to these statements I wish to add one qualification, and it is an important one—it is relative to the question of operation. I believe that the whole success of surgical treatment in these cases depends upon the thoroughness with which the operation is performed. I am utterly opposed to the method of incision and scraping of the gland; it does not pretend to eradicate the disease, it increases the risk of dissemination by destroying limiting barriers, and sooner or later it ends in a secondary infection gaining entrance to the wound—in fact, it leads to each of the very complications which one is most anxious to avoid. It is this procedure of incomplete interference which has been responsible for the dissatisfaction with which operation is associated in the minds of many.

This is not the place to enter into a detailed account of the operation, but I would mention two facts in relation to it. Probably 80 per cent. and more of the cases call for removal of the jugulo-digastric group, and, as this group is in close lymphatic connexion with the posterior carotid chain, the operation is not a complete one unless this group too is removed. The removal must be radical and complete.

The second fact is this—out of interest in the subject I have looked over the figures of the operation cases for which I have been responsible. I have performed the operation of removal of the cervical glands on 1,428 occasions; as far as my knowledge goes, in seventeen of these cases minor secondary operation was necessary; the mortality was less than 1 per cent. In fact, it ranks as one of the most satisfactory surgical operations which we are called upon to perform. I can demonstrate, and will willingly do so at any time, hundreds of children who have been completely freed from the burden of tuberculous infection with all the risks it entails by a comparatively simple, early, complete surgical operation.

Such is one aspect of the problem, but there is another side about which we are just as definite. I believe that under certain conditions operative interference is strongly contraindicated, and, as this paper has already reached to a most inordinate length, I shall do no more than tabulate what I consider are the contraindications to operative treatment.

Contraindications to Operation.

1. If there is reason to believe that the glandular infection is a blood-borne one.
2. If the distribution of the glandular disease is haphazard and irregular, such a qualification being strongly suggestive of a blood infection.
3. I do not advise operation in the fibrous type of the disease.
4. It is inadvisable from every point of view to undertake operation in cases which have been previously treated by incision and curetting.
5. As a general rule I do not advise operation in the first year of life.

In addition to these, which I look upon as absolute contraindications, there are three qualifying statements:

(*a*) I never undertake any operative interference during the stage of periadenitis. I advise instead that the gland be fomented with a saturated solution of magnesium sulphate until all signs of the periadenitis have disappeared.

(*b*) In the lymphoid type of glandular tuberculosis I insist that, if operation is to be done, it must be followed by a series of exposures to *x*-ray therapy.

(*c*) If the child is suffering from a tuberculous toxæmia, I advise a short preliminary course of tuberculin prior to operation. I do so because my experience has been that immediate operation without this precaution is liable to be followed by a degree of shock quite out of keeping with the severity of the operation.

But, someone will say, you have omitted to mention the type of case which is the most common of all, the case in which there is a tuberculous abscess present, either intraglandular, periglandular, or subcutaneous. My answer is that, if the case does not otherwise come under any of the contraindication headings which I have mentioned, the presence of the abscess need make no difference. The incision is so planned that it does not pass through the skin immediately overlying the abscess; the abscess cavity can be evacuated without any fear of infection of the wound surface; the underlying glands are removed, and the abscess walls are sterilized with iodoform and bismuth paste. The postoperative results are as satisfactory as in an uncomplicated case.

I have purposely avoided any description of the conservative measures which are employed, but I may say that there are four procedures we favour—general hygienic treatment, the external application of Moro's ointment in its varying strengths, Béraneck's tuberculin internally, and in the lymphoid type of the disease *x*-ray therapy.

DISCUSSION.

The President (Sir Herbert Waterhouse) said that the thanks of the Section were due to Mr. Fraser for his clear and most interesting paper. He agreed with nearly every point that had been brought forward. He emphasized that tuberculosis of cervical glands was a local infection, and that the patient was cured if they were radically removed. He knew of no other cure. Recrudescence of the disease in glands that were considered free from infection was well shown in two of his cases. Some years ago two children with tuberculous glands came to his out-patient department. The mother declined operation. Rather to his surprise the glands subsided and became small and fibroid. Seven or eight years later, when the children were aged 14 and 15, they got measles. The glands became swollen, broke down, and suppurated. Those cases would have been reckoned as cures had he not chanced to see them again. He agreed with Mr. Fraser's three types of cases and also agreed in thinking that the fibroid and lymphatic types were best left alone. In the lymphatic type the operation had to be very extensive. A dissection from jaw to clavicle might be needed, and in a few months the glands would return and seemed to be as large as ever. There was one question he would like to ask Mr. Fraser. He could not understand the prevalence of bovine tuberculosis in Edinburgh. In London the human variety was relatively common. Could Mr. Fraser explain this? Another point he would like to bring forward was the effect of tuberculin treatment. For the last two or three years he had a growing conviction that with a bovine lesion human tuberculin gave the best results and vice versa. Of course it was difficult to demonstrate this, but he felt convinced that it was so. If he were asked, When was the best time to remove tuberculous glands he would reply, When they were freely movable, not when fixed by periadenitis. Operation should be performed early.

He wished to enter a protest against the use of *x* rays in the treatment of tuberculous glands. With enormous glands of the lymphatic type where operation was inadvisable they might do some good by reducing their size, but in the generality of cases he was totally opposed to their use. Of late, owing to *x* rays, excisions in private practice had become increasingly difficult. An enormous amount of fibrosis took place after many exposures and the glands became firmly bound down. He had never seen a cure by *x* rays, but had come across numberless cases where the removal of the glands was rendered a difficult or dangerous operation.

Mr. Grey Turner (Newcastle) said that he was sorry that he was called upon at this early stage of the proceedings because he was unable to differ from the previous speakers and so add variety to the discussion. He could only endorse what they had said. He was at one with Mr. Fraser with regard to the division and grouping of cases. The bad results so often seen after operation twenty years ago were due to the fact that no attempt was made at that time to differentiate between local and general disease. It was essential to recognize the local form and to realize that it might remain local for many years. He had a patient in which the disease had been present for forty years. It subsided for a time and then became active. The results of operation in these cases were very encouraging. With regard to general infection he did not consider that simultaneous enlargement of groups of glands—for instance, in the groin and the axilla—necessarily indicated a blood infection, but the disease was of a different type from cervical tuberculosis. We should not be too much influenced by pathological changes in the treatment of tuberculous glands. It was sometimes necessary to open and deal with an abscess. When there were a great number of glands with an abscess it was his practice to treat the abscess first and then remove the glands.

As regards the age of the patient it was his opinion that the majority of cases became infected very early in life, usually in the first year. The tubercle bacillus was seldom found in the tonsil in older children, but was present in a large proportion of the younger cases. He liked to operate in early life, even in children under 1 year of age. The operation was much easier to carry out, although there was a slightly greater risk.

Infection from milk was the chief cause of cervical tuberculosis. The disease was very prevalent in Newcastle, but had become much rarer in London. Local conditions certainly affected its incidence.

Evidence that tuberculous glands could be cured by means other than operation was very slender. The tubercle bacilli did not die, although the glands might become very much smaller. Their presence could be demonstrated years after the original infection. Could the disease be cured by surgical means? He thought that the after-history of a series of his cases showed that it could. It was true that his series was not a very large one, but it was notoriously difficult to follow up patients for periods of years. He had 83 cases which he had examined from five to eighteen years after operation. Of the 83 traced, 54 were quite well and 15 had one or two slightly enlarged glands, generally on the side opposite to that on which the operation had been done. Of the remainder, some had died of intercurrent disease and a few had contracted some other form of tuberculosis. He advocated operation in as early a stage as possible. There would then be very little scarring. In late cases a poor cosmetic effect was often unavoidable.

Mr. Alexander Mitchell (Aberdeen) congratulated Mr. Fraser on his paper. In Aberdeen there were a large number of cases of cervical gland tuberculosis. He thought the milk was responsible. In London the milk came from large dairies. Smaller places were supplied by small dairies where the cows were not regularly inspected. Mr. Fraser had laid emphasis on sterilization of milk as a preventive of tuberculosis, but some children did not thrive on sterilized milk. A better procedure would be to eliminate tuberculosis from the cows. The Government should have power to deal with tuberculous cattle. At present the tuberculin test to which cattle for export were subject militated against the eradication of the disease. A well-bred animal which reacted to the test and could not be exported was not destroyed but was sold in this country and was used for breeding, thereby disseminating the disease further. A large percentage of cases was associated with diseased tonsils and adenoids. Owing to the systematic removal of unhealthy tonsils which had followed the medical inspection of schools the incidence of tuberculous glands had been diminished considerably. In treating cases he attended first to any focus of infection and put it right if possible. He then exposed the patient to sunlight as far as possible for two or three weeks. If by then the glands had not subsided he operated. As a rule he removed the glands in one stage. All cases could be cured by complete dissection of the diseased glands, but the question was, Could any cases be cured by operation other than dissection? Curetting was a much less serious operation and left a smaller scar; in a few suitable cases he thought it was to be preferred. He did not agree with Mr. Fraser that dissection was inadvisable after curetting had been done. The operation might be more difficult, but where curetting had failed the patient was often not well until dissection had been carried out. The distinction between a blood and lymphatic infection might be true in theory, but in practice it was difficult to draw a hard and fast line between the two groups. In late cases many glands were enlarged, and it might be impossible to say where the disease had started.

Dr. Hugh Thursfield (London) said that he saw comparatively few cases of tuberculosis of cervical glands in London. They generally went to the surgeons. He thought that only when the cervical glands had infected the mediastinum did they hand the patient over. He wished to protest against the dangerous doctrine of bovine tuberculosis. He admitted that the bovine bacillus was responsible for many cases, but some were human. By too much insistence on the bovine source the human cases might be overlooked. There were ample opportunities among the poor for direct infection. He noted a clinical difference between the human and bovine cases. There were some children who had a small slotty type of gland, and in whom the disease pursued a malignant course. He thought that this type was more likely to be caused by the human bacillus. The infection spread to the mediastinum and to other organs. In infants it rapidly became generalized. Generalized tuberculosis associated with meningitis in infants of 2, 3, or 4 years, which had begun with cervical tuberculosis, was generally due to the human bacillus. It was interesting clinically to note that when the original illness was cervical the child had nearly always been in contact with a case of human tuberculosis. He was therefore loath to consider cervical tuberculosis as usually bovine. It was true, however, that London milk was a blend derived from many cows, and that tubercle bacilli were therefore likely to be scattered in many samples.

Mr. A. MacLennan (Glasgow) said that cervical tuberculosis was very prevalent in Glasgow. Early operation was not possible as a rule because there was not room in the Hospital for Sick Children to admit any but the severe cases. Government interference was urgently called for to deal with tuberculous cattle. The way in which milk was treated in all its stages on the way to the consumer was disgraceful. Under present conditions it was impossible to keep it from being anything but a culture medium. He gave an instance in point. When milk was sent by rail it was the carter's business to see that it was in proper condition when it arrived. The speaker had himself seen the carter plunge a grimy hand into each can and stir the milk round in order to ascertain this. The consumer when he received it usually treated it but little better. Cases of cervical tuberculosis generally began as a mixed infection. A case was brought with acute swelling of the neck. This subsided, but not altogether. Then, when resistance became lowered, as by an attack of measles, the glands would swell again. Tonsillitis or rhinitis was often the first trouble. The pyogenic organisms acted as carriers, and paved the way for the tubercle bacillus. It was impossible to make rules of correct procedure in treatment. Each individual case had to be treated on its merits. In the first place, the diagnosis had to be considered. It was not easy to distinguish blood infections from those that were purely lymphatic. Once caseation had occurred the infection would never disappear. He did not approve of *x* ray treatment. Operation should be performed in the majority of cases. The formation of an abscess was no contraindication.

[He then showed a series of lantern slides illustrating various types of cases and the effect of treatment.]

Mr. L. A. Parry (Brighton) said that he thought that the prophylactic treatment of tuberculous cervical glands was very important. If the milk supply could be guaranteed free from tubercle, if the tonsils and adenoids of children could be treated, either by operation or otherwise, and if the teeth of children could have proper attention, then tuberculous cervical glands would almost disappear. He held the view that the majority of cases were of bovine infection and due to tuberculous milk rather than of human origin. Ten per cent. of all milk supplied in London contained living tubercle bacilli. The treatment, apart from general hygienic management, which was very important, in his opinion should be removal of any gland directly it was diagnosed definitely as tuberculous. He believed that all inflamed glands were potentially tuberculous. If a gland remained enlarged a month after any source of infection was removed—for example, large tonsils and adenoids, septic teeth, impetigo, etc.—then that gland was tuberculous and should be at once removed. Operation in the early stage was much simpler and much more certain than in a late stage, in which operation was sometimes very difficult.

Dr. A. A. Warden (Paris) pointed out that all the speakers had treated the subject exclusively from the surgical point of view, whereas he considered that Rollier of Leysin and Sir Henry Gauvain had shown conclusively that tuberculous disease of cervical glands was not a surgical affection and could be treated, in a large proportion of cases, on the general principles of heliotherapy. The problem was a social and economic one, and until tuberculous milk was banished treatment of the condition would be futile.

Mr. H. N. Fletcher (Brighton) said that he thought no part of Mr. Fraser's paper was more valuable than that in which he insisted that, for some time, tuberculous disease of glands in the neck was a primary and local infection which should, whenever possible, be extirpated before it had the chance of spreading elsewhere. The last speaker had opposed operation, but had offered them nothing in its place except suggesting the adoption of the sunlight and open-air methods of Rollier and Gauvain. Heaven knew how much all of them longed for facilities such as theirs, but in most places there was no money to provide them at the present time.

As an old house-surgeon of Sir Harold Stiles, he was brought up in the faith of early and thorough excision of glands and had practised it for some years. Then for a time he had tried tuberculin injections and, if the glands broke down, aspiration, or incision, scraping, and sewing up where possible. The results of this were variable, and he determined to keep careful records of them, and did so for eighteen months. They were rather startling, and though the number was small (only 31 cases) they were worth recording, as we learnt more from comparative failure than from success. One case had the glands removed at an early stage. Of the other 30, every one broke down and suppurated sooner or later. Some came up for the first time with abscesses already formed, either under or superficial to the deep fascia; others broke down while under observation. In all cases aspirated the pus was submitted to culture, and in none were any complicating septic organisms found.

Aspiration.—Seventeen cases were repeatedly aspirated—in 6 there was eventually complete disappearance of all gland substance, and they were regarded as cured; 11 could not be so regarded in that there were some hard gland remains, which in 5 cases gave trouble subsequently.

Incision and Scraping.—Of 9 cases treated in this way, 1 was cured—that is, no remains; 8 had remains, 6 of which erupted later. The remaining 4 cases appeared for the first time with sinuses, 2 of which resulted in natural cure through discharge, and 2 had gland remains

Of 26 cases, therefore, treated by aspiration or by scraping, only 7 were completely cured, and 11 of the incomplete cures caused further trouble within a few months.

This experience had sent him right back with renewed faith in early excision.

Aspiration certainly had its place in our methods of treatment, but it could never be wholly satisfactory. In not a few cases the caseating products were too thick to pass through even the largest needle. In other cases breaking down took place so rapidly that even frequent aspiration could not keep up with it. Again, it was a painful process which small patients dreaded. When it left hard remains it certainly gave a chance of fibrosis and perhaps cure, but there was often further breaking down later.

Until we possessed some more certain method of cure, such as, possibly, a more potent method of giving vaccines, he felt strongly that we should stick to early excision as the treatment of choice, reserving for aspiration and scraping those cases in which abscess formation has already occurred.

It was only fair to define what he meant by "early excision." There was the difficulty of deciding whether swollen glands were tuberculous or not. A sudden onset, rapid swelling, with some tenderness, were generally regarded as indicating a septic rather than a tuberculous origin. This was true of many cases, but it was surprising how many undoubtedly tuberculous glands start in this way also. If after due attention to tonsils and adenoid tissue, bad teeth, or otitis media the glands did not subside in two months, he thought they should be excised. In all cases he advised a six months' course of tuberculin in addition to general hygiene to raise the resistance of the patient.

Miss Herzfeld (Edinburgh), speaking as a disciple of Sir Harold Stiles and Mr. Fraser, said that she had investigated recently a hundred cases operated on by her in the surgical out-patient department of the Edinburgh Royal Hospital for Sick Children. With regard to the family history, 6 per cent. gave a history of tuberculosis; only 2 per

cent. of phthisis. This was in favour of bovine infection. The after history showed that one case had developed abdominal tuberculosis one year after operation; there had been no other complications. There had been one recurrence and two cases had developed glands on the opposite side of the neck. Out of 340 seen in two years 48 per cent. were apparently cured without operation. She did not use tuberculin or *x* rays.

Dr. MACKENZIE (Manchuria) said that there was no bovine tuberculosis in Manchuria because the people did not drink milk. Infants who were not breast-fed generally died. They were given the same diet as their parents. Human tuberculosis was very prevalent. The population lived in huts with mud floors on which they expectorated freely, and nearly every dwelling was infected with tubercle. The cases of cervical tuberculosis that came to her hospital were generally girls in their teens with advanced disease. They came then because they had reached the marriageable age and had begun to trouble about their appearance. Cases in boys were less common, probably because they led a more outdoor life.

Dr. D. SMITH thought that surgeons did not always see the first stage of cervical tuberculosis. This stage might not be tuberculous at all. The glands were primarily enlarged as the result of tonsillitis. He had removed and examined the tonsils in many of these cases and had found a streptococcal and sometimes a mixed infection. The tuberculous infection followed on this. With regard to operative measures, he had found aspiration of single glands, followed by injection of ether or other antiseptic, successful in 45 per cent. of cases where it had been tried. The infection ceased after six to ten injections. He did not believe in *x* ray treatment.

SCOLIOSIS.*

BY

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INTRODUCTION.

THE fascination of scoliosis is certainly not financial; personally I have become involved in the treatment because numerous cases have been sent to me from the educational clinic, and I have found that the disease has presented many problems more or less knotty. As a class I have found the children so afflicted perhaps more attractive than, say, those infected by the tubercle bacillus. In the hospital we have been forced to limit the number of tuberculous inmates as so long a time of residence is required before achieving any results. That this is a very cogent reason for selection is shown by the fact that though I have nearly 100 beds at my disposal there are usually about 200 on the waiting list.

To an audience such as this I need not refer to the history of the disease nor to its incidence, but I shall at once proceed to the consideration of the etiology.

The various ostensible causes may be referred to under the following heads:

1. *Heredity.*—Many instances of scoliosis have been observed in members of one family. This does not refer to cases which are rightly described as congenital, but to those which develop during childhood, and which are unassociated with malformation of the osseous spine. That scoliosis should occur in the consanguineous is only to be expected if the variation from the normal be due to an error in growth.

2. *Osseous Defects.*—An inevitable scoliosis results from certain malformations of the spine. The well-known deformity shown in Fig. 1 illustrates the typical wedge-shaped vertebra. Figs. 2, 3, 4 illustrate similar and more complicated cases of the same type. This class may or may not be associated with cervical rib, fused ribs, elevated or diminutive scapula, spina bifida, etc. These cases approach more nearly to what might be termed a lateral curvature than do the acquired forms. These cases are somewhat rare, and do not account for the very common type of scoliosis. A congenital scoliosis indistinguishable from the prevalent type is occasionally met with. It is of course merely the result of the same cause operating at an earlier age than usual. Such irregularity in growth may similarly result in a congenital lordosis. These uncommon cases lend support to the view that the accidental circumstances of school life have little or nothing to do with the genesis of a scoliosis.

3. *Rickets.*—This city has a somewhat unenviable reputation for want of uniformity in the human frame, hence a bias in favour of rickets being implicated in scoliosis might be expected. However, in my experience rickets and scoliosis are not frequently associated, unless we include all bony irregularities in growth as having such a source. Many of the deformities are considered to be due to the so-called late rickets. If, however, the disease be considered as due to late rickets it does not advance the problem very far, for this condition itself requires elucidation, and there is no consensus of opinion as to what really late rickets is. Ordinary rickets is a disease which affects the very young, while scoliosis develops in late childhood. Rickets does not show such a predilection for the female sex as does scoliosis. When rickets attacks the spine the curvature is usually posterior and is to a large extent reducible. When the spine becomes warped in this disease it is usually late in making its appearance and is often the result, apparently at least, of inequality in the length of the legs. This causes the pelvis to tilt, with a resulting compensatory scoliosis especially noticeable in the lumbar region. At first in rickets the bones are soft, but in scoliosis they are not so.



FIG. 1. FIG. 2. FIG. 3.

FIG. 1.—Tracing of congenital scoliosis, L. W., 3½ years old. First observed seven months previously. Incomplete duplication of first lumbar vertebra.

FIG. 2.—A. H., aged 6 years. Congenital scoliosis. Fourth, fifth, and sixth vertebrae fused and incomplete. Graft of fibula applied along convexity after division of ribs.

FIG. 3.—H. P., aged 4 years. Congenital scoliosis: malformation of upper dorsal vertebrae; elevated diminutive scapula; fusion of ribs, contraction on right side. Nine ribs on right side. Contraction of tissues on right side of neck; levator divided with part of sterno-mastoid. On left side body of second dorsal vertebra scooped out with obliteration of the discs on each side. Fixation apparatus.



FIG. 4. FIG. 5. FIG. 6.

FIG. 4.—M. M., aged 8 years. Congenital scoliosis; spinous processes much deflected; curvature acute; situation unusual for ordinary type. Operation indicated.

FIG. 5.—R. S., aged 7 years, the subject of extensive infantile paralysis.

FIG. 6.—R. S. Fully extended. Rotation of the lumbar vertebrae still persisting. Antero-posterior view.

4. *Tuberculosis.*—When the spine is affected it is seldom that a lateral curvature is produced, and it does not concern us at present.

5. *Fracture, tumours, and osteo-arthritis* may be merely mentioned as causative factors in scoliosis.

6. *Paralysis.*—Syringomyelia, Friedreich's ataxia, hemiplegia, and spastic paraplegia may be the cause of scoliosis, but are sufficiently rare to warrant their exclusion from further consideration.

Infantile paralysis is a fertile source of scoliosis and it furnishes many examples. It must therefore be admitted that a defect located in the muscular system may be the forerunner of a spinal curvature, but such cases differ materially from the ordinary type. The curvature develops late in the course of the paralysis and it remains for a long time more or less reducible by extension. (Figs. 5, 6, 7, 8.)

* A demonstration given at the Annual Meeting in Glasgow of the British Medical Association.

7. *Muscular weakness* is a fertile source of kyphosis, but it seldom is the cause of a scoliosis.

8. *Muscular spasm* used to be considered an important factor in the production of a scoliosis.

Guerin[1] introduced deep section of the prominent muscles and induced even the conservatives of this country to try the plan, but it did not find any lasting favour.

9. The scoliosis complicating a *wry-neck* not due to a congenital malformation is secondary and compensatory (Fig. 9).



FIG. 7.



FIG. 8.

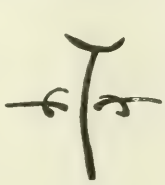


FIG. 9.

FIG. 7.—H. M., aged 6 years, suffering from extensive infantile paralysis.

FIG. 8.—Showing the amount of reduction produced by extension in paralytic case. Antero-posterior view.

FIG. 9.—M. K., aged 15. X-ray tracing illustrating amount of scoliosis present in torticollis.

The cure of the wry-neck causes the disappearance of the curvature of the spine.

10. *Postural.*—A less definite theory implicating the nervous system has been introduced by Bankart in a couple of articles entitled "Postural or so-called static deformities."[2] In the section relating to scoliosis it is stated that "postural scoliosis originates as a functional nervous disorder." I have yet to come across a case which could be described as postural.

11. *Empyema* occasionally is the beginning of a spinal deviation, but it is surprising how the spine even in a delicate fragile child withstands the collapse of one side of the thorax without manifest deflection. In empyema the deflection tends towards the sound side (Fig. 10).

12. Scoliosis results to a slight degree only because of *inequality in the length of the legs.* Where the inequality is due to rickets the spine may partake of the disease, in which case the scoliosis is caused by the rickets. Apart from this such curvature occurs late and advances only sufficiently to

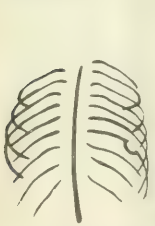


FIG. 10.

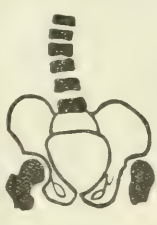


FIG. 11.



FIG. 12.

FIG. 10.—Slight scoliosis following empyema. Note regeneration of ninth rib where resected.

FIG. 11.—J. S., aged 5 years. Scoliosis, primary in dorsal region, and in direction contrary to that supposed to result from short leg (congenital dislocation).

FIG. 12.—McC., aged 5 years. Extreme possible lateral flexion in a normal spine.

be compensatory. I have recently come across a case of congenital dislocation of the hip associated with scoliosis. The short leg did not, however, prevent the curvature being as shown in the figure, opposite to what was to be expected (Fig. 11). If a short leg caused a scoliosis it should have a marked influence in correcting a scoliosis developing in the opposite direction.

13. *Gravity.*—No doubt scoliosis is at least partly due to the upright position of mankind—for example, the production of scoliosis in paralysis. Its influence is, however, corrected during the periods of repose in the recumbent position. On the other hand, the influence of gravity must exert stresses and strains which tend to make the spine absolutely straight In any case the effects of gravity apply to everyone, yet scoliosis is, after all, a comparatively rare lesion. Its more common effect is to produce kyphosis and it takes years to do it. The prolonged assumption of the horizontal position has not resulted in the cure of the deformity.

Notwithstanding the multiplicity of theories scoliosis still remains more or less of a mystery. That rickets may be a cause is undoubted, but this does not explain how rickets works in such a direction; indeed, rickets itself requires explanation. We trace the defect far enough back if we determine that the error is one of growth, and understand its exact mechanism. We may theorize about the effect on growth of the endocrine glands, the vasomotor system, etc., but to understand the mechanics of the trouble is sufficient at present.

The view I wish to bring before you is that practically all cases of scoliosis are due to inequality of growth between the posterior part of the spine and that part composed of the bodies. It consists in an error of balance between the posterior and the anterior columns, not one due to a lateral inequality of growth. This makes a very great difference in the pathology and treatment of the condition. If it is remembered that the essential element in scoliosis is a

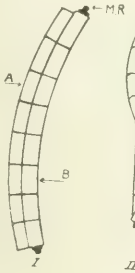


FIG. 13.



FIG. 14.



FIG. 15.

FIG. 13.—Diagram of model to show the production of a scoliosis. Two columns of corks, one having a metal rod (M.R.) threaded through column B. Both columns are encased in a thin rubber tube (not illustrated). If both columns are bent as in figure I, it is obvious that column A must be lengthened. If, however, the rod is made to resume the straight aspect, column A will assume the form shown in figure II. The elongated A can only retain relationship with B by convoluting.

FIG. 14.—Miss B., aged 28. Mid-dorsal scoliosis. Lateral view showing obliteration of normal dorsal kyphosis.

FIG. 15.—Miss B. Lumbar curvature increased; individual vertebrae elongated.

rotation of the vertebrae and not a curvature we may understand how great must be the dynamic force causing the deformity at its onset.

The spine is more or less a rigid structure; it is in no sense, even in delicate girls, what has been described as "willowy"—indeed, the more "willowy" the less likely is it that a scoliosis will develop (Fig. 12). A small amount of movement is allowed in various directions, but the range is strictly limited. In the dorsal region the range is more limited than any other part, yet it is just in this region that the deformity takes place. It must take place because any excess of growth in one section over another cannot here be accommodated, as it can be in the more mobile sections. If the spine were willowy, as in quadrupeds, a little irregularity in growth would not result in obvious deviation. As a support the spine may be divided into two parts, an anterior column composed of the vertebral bodies and discs, while the laminae and spinous processes together form a posterior column. If the anterior column does not keep pace with the posterior it becomes a mechanical necessity for curvature to result. Kyphosis results from inefficient anterior growth, while lordosis results from anterior overgrowth. A very considerable amplitude is allowed in the lumbar region and in the cervical, but little is possible in the dorsal. Such inequality in growth in this part of the spine must find another plan for taking up the inequality. In scoliosis the overgrowing anterior column does this piece of accommodation by assuming a wavy configuration; rotation of the individual vertebrae is an essential concomitant. Reference to Fig. 13 will better explain the mechanism.

1. This view explains how the curvature of the anterior column made by the bodies of the vertebrae takes place before any apparent curvature is noticeable when viewed from

the back, and that it is always greater than any such visible curvature. This, of course, implies a rotation of the bodies—an almost impossible contortion of the parts unless we regard it as of a gradual production by growth.

2. It explains the simultaneous production of the so called secondary curvatures, which are not secondary at all. Such curvatures are usually double, may be treble, or even present as five undulations.

3. It explains the early flattening of the back or local lordosis accompanying the elongation of the anterior column. The obtrusive posterior curvature is more apparent than real; it is largely due to projection of the angles of the ribs. When such lordosis is marked the disproportion in length of the two columns is probably great; hence this feature is regarded as unfavourable. The normal posterior curvature is, of course, obliterated early in development of the malady. Fig. 14 illustrates this sign very well. Fig. 15, on the other hand, shows the excessive lumbar curve and the elongated bodies.

4. The difficulty of reduction by almost any means becomes more easily understood.

5. It gives an explanation of the slow development of scoliosis in the congenital wedge shaped vertebra.

6. It also may be used to support the Abbott plan of correcting the curvature in flexion rather than extension.

7. It further renders comprehensible how, when the normal spine has been artificially deformed by the experimental application of the Abbott jacket, it straightens itself spontaneously if not interfered with.

The signs and symptoms of scoliosis are too well known to refer to, but I might accentuate the importance of the *x*-ray examination. The skiagram prevents us from taking too optimistic a view of our treatment.

The only anatomical alteration which might be referred to is the change in the shape of the bodies and the development of the wedge shape. This occurs late in the course of the disease. One need not look to the intervertebral discs for the key to the mystery of scoliosis, but to the epiphyses of the bodies. The discs are inert, passive indeed; they compress during the day to the extent of 1·2 to 3·4 in. Forming as they do one-fifth of the entire column, this means only a small condensation in each.

The treatment of the malady is the important and the most difficult section of the subject. Adams[3] sums up the matter in the following sentence: "All the resources of medical and mechanical science are required either to cure or arrest the progress of the affliction." I fear that this opinion of Adams is shared by many; it certainly has been mine, and it has induced me to persevere with the forcible methods of correction—the Abbott jacket and operation.

The operation which I have been practising for some years is done in selected cases. It is carried out as follows:

A 4-inch incision is made over the convexity of the curve. It is placed just external to the tips of the transverse processes. The dissection will vary according to the locality, but the muscles are split rather than cut. The posterior nerve branches are conserved as far as possible, as their division is liable to be followed by the development of a hyperaesthetic area just where subsequently sustained pressure is required to be made.

Two, or at most three, ribs are resected from their angles to their articulations with the vertebrae. The pleura is very liable to injury, and the wound retractors should be wrapped in gauze to minimize this risk. The tissues over the vertebral bodies are raised from the lateral fossa, avoiding injury to vessels or nerves. One or two sets of intercostal vessels may require ligature, but in most cases it is possible to avoid ligaturing any vessel. On account of the deflection of the vertebral bodies towards the convexity they are much more accessible than would be expected. The body of the vertebrae forming the centre of the curve is excavated and the same is done to the vertebrae above and below though not to so complete an extent. The intervertebral substance is nibbled or cut away. With the finger in the cavity so made the spine is forcibly flexed towards the convexity in order to reduce the curve, to ascertain what amount of collapse, if any, takes place. Even when the cavity is large it is surprising how little the spine gives way. The wound is closed in layers without drainage.

A plaster-of-Paris jacket is applied with the spine flexed laterally as much as possible. The patient may get out of bed within the week, as it is desired to collapse the cavity in the bodies as soon as possible. With the gap in the anterior column it might be expected that a gibbus would form, but this has not been my experience. The posterior column, composed of the laminae, etc., is so strong that the spine does not collapse before the operative gap in the bodies fills up solidly.

The sutures are removed in three weeks if unabsorbable, and a new jacket applied again in extreme lateral flexion. From subsequent *x*-ray examination it has become plain that the curvature has not been immediately obliterated to the extent expected (for the reason given above), so that the operation resolved itself into an arthrodesis and obliteration of epiphyses. In the cases so operated upon I have been more than satisfied that the risk involved has been compensated for by the improvement. Having obliterated the growth of more than one vertebral epiphysis the distortion will tend to reduce as the posterior part of the spine increases in length. In one case it was not convenient to perform this operation, so a graft was applied to the lateral aspect of the spine with moderate success.

In the after-treatment I have found the felt padding employed in the Abbott treatment very irksome to the patient, besides being prone to displacement and in hospital patients to become the breeding ground for vermin. To obviate this I have inserted rubber bags in the two situations where padding will be required, and these may be inflated to the desired amount. The pressure so exercised has been much less objectionable to the patients.

As a routine I now treat all cases by the Abbott jacket, and in those which are advanced, or which show little tendency for the deformity to stabilize, I operate, but not after the age of 15, as little growth is to be expected subsequently. A jacket, either plaster-of Paris, celluloid, or made by the instrument maker, should be worn for some years. The *x*-ray examination of the spine will provide data on which to proceed as regards further treatment. In some cases a jacket should be permanently applied. A slight reduction of the curvature, visible on the skiagram, means a great step towards cure; it implies a reversal of the forces which originally warped the spine.

I need hardly refer to the prognosis more than to say that the subjects of scoliosis who are neglected, or left uncured or not improved, do not live long. This also is my apology for applying a somewhat severe and risky operation to alleviate the condition.

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[1] Guerin: Cit. from Adams's *Lectures on Curvature of the Spine*. Second edition, 1882. [2] Bankart: Postural or So-called Static Deformities, BRITISH MEDICAL JOURNAL, April 15th, 1921, p. 587. [3] Adams: Loc. cit.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPLENECTOMY, APPENDECTOMY, AND CAESAREAN SECTION IN THE SAME PATIENT.

IN view of the large number of patients who resign themselves to a life of semi-invalidism after a single major abdominal operation, the following case may be of interest.

Mrs. R., married eight years, had the spleen, weighing 12 oz., removed at the age of 31, for acholuric jaundice; at 32 the appendix was removed for acute appendicitis; at 33 she was delivered at term of her first child, a female, weighing just over 6 lb., by Caesarean section for generally contracted pelvis, after twenty-four hours' labour. After the last operation there was some trouble with a stitch abscess or infected haematoma, but both mother and child are doing well, and leaving hospital in rude health.

GERALD SICHEL, F.R.C.S.
GORDON WARD, M.D.

Sevenoaks and Holmesdale Hospital.

ADRENALINE: TOXIC DOSE.

A LADY, who suffered from periodic attacks of asthma, was in the habit of administering hypodermically to herself two or three times a day, on the advice of some consultant, 10 minims of adrenaline solution during an attack.

An attack supervened as she was about to return home from the north of England, on a very troublesome journey. She administered 20 minims, and repeated it every two hours (with very little relief) for six doses. On her arrival home she had administered 120 minims of an undiluted solution of adrenaline (Parke, Davis, and Co.) in ten hours.

I was called to see her, and found her condition alarming. She was intensely pale, collapsed, pulse almost indistinguishable, and she had blurred vision, anuria, and intense thirst. Her condition improved quickly on the administration of amyl nitrite, and when later an administration of morphine and atropine was permissible to alleviate the asthma, after two doses at intervals of four hours she had regained the normal.

I am unable to find any evidence of so much adrenaline being taken in so short a time. I have very little doubt that another dose or two would have proved fatal.

Buxton. FRANK R. SAWDON, M.B.

Reports of Societies.

FORTY-FIVE YEARS OF MEDICAL PROGRESS.

At a meeting of the Medical Section of the Royal Society of Medicine on October 24th Dr. G. Newton Pitt, the President, delivered his address from the chair.

Dr. Newton Pitt chose for his subject the advances in medicine since he became a medical student forty-five years ago. The increased knowledge of disease, with consequent improvement in treatment, had been due, in the first place, to bacteriology; secondly, to the revolution in surgery; thirdly, to the establishment of laboratories, with experts in microscopy and biochemistry; and fourthly, to much more minute attention to physical signs. The discovery of the organisms of enteric, tuberculosis, malaria, diphtheria, and syphilis had in each case been momentous; likewise the discovery of serums and vaccines. The use of diphtheritic antitoxin had reduced the mortality in the larger hospitals from 40 to 7 per cent. The revolution in surgery appeared a wonderful thing to those who remembered the conditions obtaining forty-five years ago, when only the pioneers were using the carbolic spray, and when operating coats were invariably dirty, and gloves, caps, and sterile overalls and dressings unknown. With the coming of aseptic surgery it was possible to deal with abdominal lesions which were not amenable to medical treatment, and at the present time the abdomen possibly was opened too frequently. The majority of cases of gastric and duodenal ulcer would heal under medical treatment, but in about one-third of the cases, owing to perforation, adhesions, fibrosis, or other mechanical conditions interfering with peristalsis, relief could be obtained only by surgical methods. With modern aids to diagnosis the existence of an ulcer could be detected much more easily and certainly than before, so that it might be expected that deaths due to ulceration would have diminished; but Guy's Hospital records showed the total mortality due to gastric and duodenal ulcers to be greater than it was forty years ago; the number of fatal cases of peritonitis also was on the increase. It was clear from a study of the figures that during the period under review there had been a steady increase in the number of cases in which there was some infective process in the alimentary canal. The incidence of appendicitis was very remarkable. The hospital records showed for some years before 1889 an average mortality of about three deaths in two years. For the last fifteen years the average had been twenty a year. Previous to 1889 fewer than twenty cases were admitted to the hospital in a year; by 1899 the number admitted had increased to 100 or more, and now the number was 400 or 500. The inflammation also was much less acute in the early days. In only one out of eleven cases in 1888 was the appendix removed, and yet there were no deaths. It would be almost out of the question to take a series of eleven cases at the present time and have them all recover, with the removal of the appendix in only one instance. Another notable advance was represented by the information now to be obtained from the chemical examination of secretions, excretions, and blood. The staining and counting of the blood cells was so familiar that people did not always remember that it did not come into general use until 1888, while the Wassermann reaction was first used only in 1906, and the estimation of urea and sugar in the blood was of still more recent date. Important help was now afforded through improved instruments for internal observation, especially x-ray apparatus. With the use of x rays and the bismuth meal the alimentary canal could be mapped out from end to end, and it seemed possible now, with the injection of gas, to outline radioscopically the solid viscera. But the introduction of very powerful x-ray apparatus would prove a serious danger to the habitual user unless more stringent precautions were enforced. In all these examinations team work should be encouraged, but it was important that the clinician should have the last word.

Dr. Newton Pitt went on to speak of the change of view which had taken place with regard to some familiar diseases. It was now well understood that tuberculous infection was very frequent among town populations, and that recovery was the rule and not the exception. Forty-five years ago the possibility of recovery from phthisis was hardly credited, and heredity was looked upon as the dominating factor. The most striking example of diminution of virulence in disease was afforded by scarlet fever, the mortality of which had greatly diminished, although the disease came in periodic waves, so that the incidence in 1921 was more than treble what it was in 1920. Formerly the mortality from scarlet fever was as high as 30 per cent.; by 1900 it had fallen to 5 per cent., and now it was less than 1 per cent. In Paris for many years this disease had been looked upon as a very trivial one, and it was tending to be so regarded in England. During the period between 1880 and 1920 the mortality from measles, whooping-cough, and phthisis was reduced by more than half. Improved methods of treatment had reduced to negligible proportions small-pox, anthrax, glanders, hydrophobia, and tetanus. Another very striking fall was the diminution in mortality from liver and gall-bladder disease, a diminution which must be attributed rather to surgery than to medicine. Influenza had been a perennial scourge of recent years, and with this was probably associated in some way the increase in appendicitis. Pneumonia, cancer, hemiplegia, heart disease, and digestive disorders showed no diminution in mortality and no material improvement.

In medical custom one great change to be noted was the reduction in the amount of stimulants used in hospitals. When he first joined the hospital the ordinary diet for the hospital patient included two or more pints of beer or stout, and in all serious illnesses spirits were prescribed. Alcohol was now given only in special cases, and with great moderation. One advantage which the medical man of to-day had over the man of a generation ago was the present largeness and accessibility of medical literature, particularly in the form of abstracts. In what direction was medicine likely to advance? There was no doubt that Sir James Mackenzie was right in insisting that the most urgent need was a fuller knowledge of the habits and slight deviations from health which led to disease later. The mortality from renal, vascular, and most of the nervous diseases, also from pneumonia and bronchitis, had not been appreciably diminished during the last fifty years. There was much to learn as to the infections which ultimately produced arteriosclerosis. Gout, rheumatoid arthritis, and other degenerative lesions might conceivably be prevented in the future; they could not be cured in the present.

Dr. Hector Mackenzie, in proposing a vote of thanks, said that he himself was able to look back upon the same length of time as Dr. Newton Pitt. He could endorse what he had said about the incidence of appendicitis. Years ago at St. Thomas's this was regarded as an extremely rare condition, but after the operative era commenced they began to find how common a thing it was. Nevertheless, he was not so sure that actual perforation of the vermiform appendix had become much more common than it was before. With regard to tuberculosis, he thought that those went a little too far who assumed a universal infection of the race with tubercle. It might be true, but he did not think it had been absolutely proved.

Dr. Bernard Myers, in seconding, said that years ago he worked under the late John Duncan, the first to use spray for the disinfection of the air, and he had often heard him describe the conditions in those early days when the carbolic spray made everybody sneeze and feel unwell. The speaker went on to say that in one district where he had occasion to go to study the death returns for the year the thing that had struck him was the want of diagnosis. Such entries as "convulsions" and "heart disease" were useless from the point of view of statistics. It was possible that in many respects the clinician had become very much more accurate in diagnosis. He was able to confirm his diagnosis nowadays through the help rendered to him by the biochemist and others doing special work, though the final diagnosis must be made by the clinician himself. It was well to preserve a sense of balance with regard to methods of treatment. Many people, for instance, were advised, on account of some septic condition, to have all their teeth removed, and having submitted to this they became very much worse than they were before. With regard to tonsils, he still did not understand why it was that some surgeons were taking out practically all tonsils. There were cases where the tonsils must be removed, but there were also many in which this was not essential. It was necessary to observe carefully and come to a calm judgement on all these clinical matters.

The Eradication of Glanders and Anthrax.

Major-General Sir John Moore, F.R.C.V.S., read a paper on the eradication of glanders and anthrax in men and animals. In no instance, he said, could the progress of veterinary science be so clearly demonstrated as in the

eradication of glanders, thanks to the use of mallein as a diagnostic agent. Last year only three outbreaks of glanders were recorded, and this year only two, whereas in the years from 1900 to 1906 the outbreaks each year numbered more than 1,000. The extinction in human practice depended, of course, upon the extinction of the disease in animals. With regard to anthrax the position was much less satisfactory. Despite present knowledge and measures of control, anthrax continued to prevail, and the situation in respect to its eradication seemed wellnigh hopeless. He gave some interesting examples of how soil infection was the chief factor in the incidence in India, though this was not so prominent a factor at home. An analysis of cases of anthrax amongst animals in Great Britain showed that infection resulted mainly from imported foodstuffs. Here again a reduction of the incidence in human beings was dependent upon the completeness of the control of the disease in animals. He criticized the inadequacy of control in India, and the need for improvements in the civil veterinary department there.

ECONOMICS AND TUBERCULOSIS.

A meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine was held on October 27th, the President, Colonel R. J. Reece, C.B., M.D., in the chair. Dr. R. J. Ewart read a paper on economics and tuberculosis. Dr. Ewart, having referred to the eugenic hypothesis that selection had been a principal factor in the decline of mortality from tuberculosis, suggested that a simpler explanation could be given. He displayed diagrams showing a close parallelism between the changes in real wages and the changes in the rate of mortality from phthisis. No similar correspondence with fluctuations of percentages employed was found, and he suggested that this was because the aid rendered by the Poor Law sufficed to maintain the state of public health during periods of economic depression without interfering with the economic life of the community. Dr. Ewart then remarked that it was common ground that the response of the somatic cell to infection by the tubercle bacillus depended upon the former's state of nutrition; he suggested that the response of the germinal cell needed consideration. He referred to the evidence published by various inquirers tending to show a higher male to female ratio at birth under unfavourable conditions. He thought that similar effects were operative when the offspring of early and late parturients were compared. Passing to the application of the hypothesis to the problem of tuberculosis, Dr. Ewart emphasized the fallacies inherent in the application of statistical methods to the scanty available data, but thought there was prima facie evidence that, due allowance being made for the age at death of the parent, children born in later life broke down earlier than those born to younger parents, and had a more variable mean age at breakdown. The inference was that bad conditions of prenatal environment led to the production of a unit of enhanced susceptibility and that the post-natal continuance of such unfavourable conditions led to destruction. He remarked that the fall in the birth rate was associated with a considerable change in the birth-age distribution and that, on that account, the mean susceptibility of the population was still decreasing. Dr. Ewart thought caution was needed in testing the theory on the basis of current rates of mortality. In his opinion a slight apparent increase of mortality from phthisis should be expected in the next two years, not because of the wave of unemployment but because the rate of the years following the war had been abnormally low, owing to the bad conditions of the war period having hastened the fatal issue in a proportion of cases. Any increase in 1922–24 was to be regarded as a return to the normal rate of decline. Dr. Ewart's general impression was optimistic: the somatic cell had responded to the improvement of food supply, the reproductive cell was beginning to respond, thus the level of immunity would be raised and a further decline of phthisis mortality produced.

In the discussion which followed, Dr. Major Greenwood said that Dr. Ewart's paper consisted of two parts—the first, which dealt with the general correlation between economic prosperity and the prevalence of fatal tuberculosis, displayed in an interesting fashion a relation which he (Dr. Greenwood) supposed everyone appreciated in a more or less vague way. But it certainly did not follow from Dr. Ewart's curves that antituberculosis measures other than improving national nutrition were unimportant. He also failed to follow Dr. Ewart's argument that the machinery of the Poor Law was so efficient that the standard of nutrition did not deteriorate when the percentage of unemployed persons increased. The second part of Dr. Ewart's paper propounded the interesting hypothesis that the powers of resistance to tuberculosis of children born to parents in the latter part of the fertile period were less than those of children born to young parents. Since the decline of fertility of the last generation affected fertility at later ages more than fertility at younger ages, Dr. Ewart's suggestion was, apparently, that we had here another factor likely to continue to diminish the death rate from tuberculosis. The suggestion was interesting, but a partial coefficient of correlation of 0.26 was a shaky foundation upon which to build, particularly when, for technical reasons, the probable error was difficult to interpret. From a statistical point of view, he did not feel able to draw any conclusions and could only regard Dr. Ewart's evidence as suggestive.

Dr. S. Vere Pearson thought that Dr. Ewart's paper reinforced the arguments used by Dr. Baskett in various communications to the British Medical Journal. Dr. Pearson was of opinion that the economic element in etiology was of great importance, and that in recent public health actions it had not always been given the weight it deserved.

Dr. A. K. Chalmers commented on the fact that in Scotland the death rate from tuberculosis began to fall about 1874, after the importation of foreign meat had begun to be considerable, and the decline was associated with increasing use of meat. He thought that it might be more than a coincidence that the great decline in child mortality began in or about 1900, when the first generation to feel the effects of an improving food supply were becoming of reproductive age.

Dr. Coutts said that no one would doubt the immense importance of the nutritional factor in the etiology of tuberculosis, dramatic examples of which were afforded by the war-time experience of Poland and Austria. He shared Dr. Greenwood's scepticism as to the interpretation of the curve of unemployment and as to the sufficiency of the Poor Law to account for the lack of apparent correlation. The complete statistics of 1922 were not available, but the first quarter of that year showed an increase in mortality from tuberculosis over the first quarter of 1921. All would agree with Dr. Pearson's contention that if taxation for public health measures lowered real wages it was bad for the public health, but it was not clear that this had happened. Again, it was not the policy of the central authority that tuberculosis officers should devote the major part of their time to treatment; it was intended that they should regard preventive work as their chief aim. He thought interlocal statistical comparisons more likely to be of value in the measurement of the effect of various measures than massed data, and deprecated the attribution of the total national effect to any one factor.

Dr. Hamer said that two of the speakers had warned members not to speak disrespectfully of the tubercle bacillus; for his part he regarded the bacillus with deep respect, but must call attention to the fact that Dr. Bulstrode had been a true prophet in his forecast of what would happen to the rate of decline of tuberculosis.

Dr. Williamson said it was becoming fashionable to attribute the decline of tuberculosis to everything but antituberculosis measures, but active workers were still convinced that infection played a predominant part. In war time imported labour corps suffered severely, although their economic condition had been improved; in Sweden, although the economic position had presumably improved, the death rate from tuberculosis had not declined.

Dr. J. C. McVail could not suppress a doubt whether the money saved by cutting down health services would really be spent upon food. There were such things as cinemas and football matches. On a certain occasion it was suggested that a supply of spikenard might have been sold for a great sum and the money given to the poor, but still the doubt crept in whether it would have been given to the poor. He thought there must be a certain proportion of waste in every kind of expenditure, and that the educative value of public health efforts in respect of housing, feeding, and general sanitation were in themselves enough justification for what had been done. The greatest sanitarian of Scotland, the late Dr. J. B. Russell, had been a great educator.

Dr. R. J. Ewart, in replying, said that Dr. Baskett had done pioneer work on the relation between economics and disease, and that he himself had followed a similar line, but with rather different data. He agreed that the evidence on

the influence of parental age was no more than suggestive. The sample (200 observations) was small; it was not a random sample of the general population, and the regression was not linear.

THE NOTIFICATION OF INFECTIOUS DISEASES.

At a meeting of the Harveian Society on October 26th, held at Paddington Town Hall, a discussion took place on the notification of infectious diseases. Sir William Willcox, President of the Society, was in the chair.

Dr. Reginald Dudfield (Medical Officer of Health for Paddington) introduced the subject with a short history of notification. It was in response to the urgent demands of medical officers of health that notification of infectious diseases was introduced. The appointment of such officers was a consequence of the report of the Royal Commission on the health of towns (1845), and the first officer was appointed in 1847 by the city of Liverpool. In London the placing of medical officers in charge of various parishes and districts led to the formation of what was now known as the Society of Medical Officers of Health—an organization which played no small part in bringing about notification. The efforts of the British Medical Association in the same direction should also be noted. The most important function of a medical officer of health was the prevention of disease, but the discharge of such a function presupposed a knowledge of the presence of disease in a community. In London it became at once the practice for the Registrar-General to forward every week to the medical officers of health copies of the entries in the registers of deaths made by the district registrars. The analysis of the returns was carried out in different ways. In 1855 Sir Benjamin Ward Richardson began the tabulations which he published in the *Journal of Public Health*, and in 1865 the British Medical Association began the collection and publication of statistics of sickness and mortality. The various attempts to collect and analyse the returns, however, were generally a failure, owing in most cases to loss of interest on the part of the persons charged with supplying the basic facts. Appeals were made to the Government to set up a national system for the registration of disease. It was uncertain at what period the demand for registration of disease was replaced by a demand for the notification of infectious disease, but the latter demand was resisted by the Government until the utility of notification had been demonstrated by local experiment. Such notification was first brought into operation at Huddersfield in 1876, and at Bolton in the following year. At the end of 1881 more than a score of cities and towns, all of them except one (Reading) in the north of England, had introduced notification in their areas, in each instance by a private Act of Parliament. Then came the well-known Notification Act of 1889, whose provisions were at once adopted by nearly a thousand sanitary authorities. In London the earliest proposal to extend notification appeared to be in a circular letter from the Local Government Board in 1894, following cholera outbreaks of the two previous years.

Dr. Dudfield then submitted a list of diseases to be notified in the county of London:

Anthrax	Erysipelas	Polio-encephalitis (acute)
Cerebro-spinal fever	Glanders	Poliomyelitis (acute)
Cholera	Hydrophobia	Relapsing fever
Continued fever	Malaria	Scarlet fever
Diphtheria	Membranous croup	Small-pox
Dysentery	Ophthalmia neonatorum	Trench fever
Encephalitis lethargica	Plague	Tuberculosis (all forms)
Enteric (typhoid)	Pneumonia	Typhus fever
	Puerperal fever	

Measles, first cases only, had to be notified in seven boroughs, and all cases in two; German measles, first cases in four boroughs, and all cases in one (Paddington); whooping-cough, first cases in one borough (Battersea), and all cases in three boroughs; and diarrhœa, zymotic enteritis, in three boroughs among young children only, in two boroughs during the summer months, but with no age limit, and in one borough (Woolwich) all cases throughout the year. In Greater London, including the counties of Essex, Hertfordshire, Kent, Middlesex, and Surrey, the list just given held good, except that anthrax, glanders, and hydrophobia were only notifiable in certain areas, chicken-pox was notifiable in ten areas, measles and whooping-cough (generally first cases only) in a few areas, and epidemic diarrhœa in Beckenham during the summer months.

Speaking from his own practical experience, which covered the period since the Act of 1889, Dr. Dudfield said that he found notification of the diseases laid down originally in that Act to be very complete, with the exception of puerperal fever. Once or twice a year deaths from that disease came to his knowledge without previous notification. All cases of sepsis ought to be notified whether after delivery at term or after miscarriage or abortion. With regard to pneumonias, approximately one-sixth of the deaths in 1921 due to primary lobar pneumonia represented cases which had not been notified. The notification of diseases not in the original Act was improving every year, except in the case of tuberculosis. Compulsory notification of tuberculosis was preceded by voluntary notification in a number of sanitary areas. In 1911 voluntary notification was in use in the areas of 321 authorities, in one of which (Carlisle) it covered all forms of the disease, and not the pulmonary alone, as in the other areas. In many areas it did not prove successful, and compulsory notification was introduced, the first area to adopt it being Sheffield in 1903. The notification of tuberculosis left much to be desired. From 1914 to 1918, 20·5 per cent. of the deaths due to pulmonary tuberculosis were in cases which had not been notified, and of the deaths due to other forms of tuberculosis 51 per cent. had not been notified. That this was not due to war conditions was shown by the figures for a later period, 1919–21, when the percentage of non-notified cases among the deaths was 24·1 and 56·2 in the two categories respectively. The notification of pulmonary tuberculosis was not popular with the public, nor with some members of the medical profession. He was inclined to think it would be advantageous to notify tuberculosis as suspect only in the first instance, with a view to admission to a hospital for observation. The doubt in the public mind with regard to a possible error in labelling would thus be removed.

A Demand for Revision of the List of Notifiable Diseases.

Dr. Charles Buttar said that Dr. Dudfield had treated the subject so seriously that he was nervous about reading the ribald remarks he had prepared. His contention was, however, that notification was a nuisance to doctors and an expense to ratepayers. Notifiable diseases were piled up without any clear consideration of the reasons for making them notifiable; diseases no longer or never worth notifying were kept on the list, and complications were introduced by allowing various bodies to make orders for notification and withdraw and reintroduce them. Originally there were eleven diseases notifiable in the county of London; now there were about thirty. It would be interesting to know how many medical officers could recite the thirty and give the reasons why each was notifiable. Some of them were notifiable in one area and not in another, or at one time and not at another. It was an annoyance to be called upon to notify rubella in Paddington and not in Kensington, whooping-cough in Willesden and not in Paddington, while the in-and-out antics of chicken-pox were exasperating. Nothing but real tangible benefit could justify such anomalies, and the annoyance was not soothed by payment of a fee, whether half a crown a case for whooping-cough, or a shilling a dozen or a gross for measles, as with families and institutions during the war. The original object of the Acts, which was to control the disease with a view to its extirpation, had been modified by subsidiary propositions, such as the benefit of the individual sufferer and the advancement of knowledge. He urged that the utmost care should be exercised in the selection of notifiable diseases; the object of notification in each case should be definable and reasonably attainable, and the decision as to the suitability for notification would be best arrived at after preliminary discussion between health officers and medical practitioners.

Dr. Buttar went on to challenge certain inclusions in Dr. Dudfield's list. Two items in that list—continued fever and membranous croup—he regarded as non-existent as notifiable diseases. The only condition in which he could imagine the existence of membranous croup was in a scalded throat, and if this was so he doubted its infectivity. Erysipelas and relapsing fever, he thought, had ceased to be worth notifying. Was it really necessary to fill in a certificate and for the public to pay half a crown because some old lady had scratched a streptococcus into her skin? As for relapsing fever, it would be interesting to know when and where this was last notified. Puerperal fever was insufficiently defined, and therefore unsatisfactory for notification. Medical officers ought to know exactly what they meant by the term and produce definite evidence that their efforts had led to diminution or control.

He could not imagine any real usefulness in the notification of puerperal fever except in the case of septicaemia. In diphtheria and scarlet fever the possibility of control was somewhat doubtful; at all events, the results of notification had not been startling. He was inclined to the view that nowadays the notification of scarlet fever was of little practical use. Diseases which did seem to be controllable were small-pox, cholera, typhus, and typhoid, and he submitted that the eleven diseases originally notifiable should be cut down to these four, together with diphtheria. With regard to additional diseases, anthrax, glanders, and hydrophobia, at present only notifiable under local orders in a number of districts, might be made permanently notifiable throughout the country as in the case of plague. It was conceivable that a good case might be made out for adding malaria to the list of diseases in which there was reasonable certainty of obtaining control; and encephalitis lethargica and cerebro-spinal fever might be retained, not because health officers were likely to be of the slightest use in controlling them, but because the conditions were comparatively new: they were dangerous, and something would be gained scientifically by submitting them to the opinion of experts. Whooping-cough, measles, and German measles should be removed from the list at once. If the gain to the community was worth the trouble and expense involved in notification, then notification should be extended to the whole country, and not appertain to here one area and there another. Diseases in which notification was not worth while were trench fever, dysentery, and acute primary and acute influenzal pneumonia. There was no reasonable hope of extirpating the pneumonias, however much they were notified. In tuberculosis notification had proved more useless than in other diseases. In the notification of tuberculosis there were many fallacies which reduced its value from the scientific point of view. Notification assisted very little in early diagnosis, and its objects could be met equally well by trusting the doctors. In conclusion, he urged that the Ministry of Health might wisely consult on this matter with the Royal Colleges and the British Medical Association, and the local medical officer of health might usefully seek the opinions of the practitioners in his area.

Dr. W. H. Hamer (Medical Officer of Health, London County Council) agreed with Dr. Buttar as to the lack of any particular value in the notification of measles, German measles, and whooping-cough. But in the case of some other diseases in the list he could not go as far. He would be very reluctant to see the notification of scarlet fever, puerperal fever, and ophthalmia neonatorum disappear. A great deal of value attached to the notification of the latter two, and with regard to scarlet fever he thought that hospital isolation was very useful indeed. When the mortality of scarlet fever to-day was compared with what it was in his own young days an enormous improvement was self-evident. A hundred years ago scarlet fever was a more terrible plague than it was in his own youth. He believed that the isolation of scarlet-fever cases in hospitals had a great deal to do with its present mildness. He would be sorry also to see relapsing fever disappear from the list. It was apt to prevail in association with typhus, and the amount of relapsing fever and typhus which had been in Europe since the war was not realized in this country. A case could be made out also for keeping plague and anthrax in the list of notifiable diseases, and he confessed that he had "a sneaking sort of regard for erysipelas." At the same time there was too much tendency to regard notification as good in itself, whereas it was only of benefit if it led to some practical issue. As to statistical value, the statistics furnished by notification were apt to be misleading. The Metropolitan Asylums Board in its annual report stated that in recent years the margin of error in the notification of typhoid fever had been something like 40 per cent. Notification might under-represent or over-represent the true incidence. In a case of doubt, for example, he was inclined to think that the proper course was to notify. From the statistical point of view, however, notification had the advantage that it enabled a tabulation of the case mortality to be made. It enabled one to test any supposed variation of disease in type, and he reminded the meeting of the remark of Murchison that when people talked about change of type in disease, what they were dealing with was not change of type, but mental revolutions in the minds of practitioners. On the whole he thought that notification ought to be treated with a good deal of respect, though it was not by any means the last word to be said about the diagnosis of disease.

Dr. T. Carnwath (Ministry of Health) said that his chief interest in notification was from the point of view of public health administration, though the statistical aspect was also important. The diseases notifiable in London could be grouped under two main headings: those notifiable under Section 55 of the Public Health (London) Act, and those notifiable under order of the Local Government Board or the Ministry of Health. The list given in Section 55 could be extended, and was in fact extended, to measles, whooping-cough, and other diseases in certain boroughs, but that was a local matter over which the Ministry had very little control. Certain pains and penalties attached to the persons notified under this section, and therefore it was found desirable later, instead of using the section, to make the diseases notifiable by order because then the exact measures to be taken could be prescribed. If tuberculosis had been made notifiable under Section 55 all sorts of pains and penalties would attach to the notified person which might make it impossible for him to follow his profession. When the notification of disease was first introduced it was looked upon as an essential measure in the control of disease. The activities of public health officers resulted in the elimination of such diseases as typhoid and typhus, in which the environmental factor was principally concerned, but in the case of diseases in which the personal factor was concerned less had been done to affect incidence, though in the case of one disease in this group—small-pox—the state of affairs had been altered, chiefly by vaccination. Dr. Hamer appeared to think that measures of notification and hospital isolation had affected the mortality from scarlet fever. That was open to question, however, because from the statistics of some foreign countries where isolation and other customary measures were not adopted to the same extent the same decline in mortality from the disease was noticeable. When the local authority was notified of a case of scarlet fever it was mainly for the purpose of treatment, and once that conception was adopted one got local authorities, as at Willesden, asking whether there were not other diseases which could be treated to better purpose with the accommodation available than scarlet fever, at least in the mild form. One of the main purposes of the statistical department should be to study the trend of disease and the factors which influenced it, and to discover which of these factors was amenable to control. Personally he would like to see not only infectious diseases notified, but occasionally, and for other purposes, other diseases such as chlorosis. It had been hoped that the record cards of insurance practitioners would furnish particulars, but the suggestion had not been received with favour. It was natural on the part of a Government paying hundreds of thousands of pounds on the treatment of disease to inquire what diseases were most responsible for the mass of invalidity. From a cursory inquiry it seemed that about one-seventh of the money was paid out in respect of rheumatism, and the Ministry had started a special inquiry to find out what rheumatism connoted. Until it was known what diseases were chiefly responsible the Ministry would be undecided as to where to step in to help practitioners.

Dr. C. Sanders (Medical Officer of Health, West Ham) said that he had some sympathy with the views put forward by Dr. Buttar. Notification, however, was introduced not for the purpose of keeping a check upon such physicians as Dr. Buttar, but to assist practitioners working among great industrial populations, where there was frequently poverty and carelessness or ignorance of hygiene. In his own district the notification of scarlet fever served a very useful purpose, because from the moment of notification certain administrative measures went forward automatically, and these were of the greatest value in stopping the spread in schools. The gravamen of the charge brought by Dr. Buttar arose out of the difficulties which practitioners encountered when the disease was notifiable on one side of the street and not on the other (the two sides being in different boroughs). Arrangements ought to be made for notification to be universal throughout the country. He could not conceive that the local affairs in one district could be so different from those in a contiguous district as to make notification necessary in the one and not in the other. He would welcome more notification rather than less.

Dr. Hubert C. Phillips said that when notification was compulsory in one borough and not in another the public was very quick to seize upon the anomaly. He advocated an order from the Ministry which would be irrespective of local option.

Sir William Willcox, in closing the discussion, confessed that he would have been "ploughed" had he been required

to name all the diseases notifiable in London according to the list which Dr. Dudfield had brought forward. He did not agree with Dr. Dudfield in pressing for the notification of all suspected cases of tuberculosis. He had seen so many people put down as suffering from tuberculosis when they were not so at all that he felt that the notification of suspected cases would have a detrimental effect psychologically upon many people who would be proved afterwards not to have the disease. He would be rigid in the diagnosis of tuberculosis before notification. Not many months ago he saw a man of strong build and appearance, with no clinical signs of tuberculosis whatever, who had been sent to a sanatorium on the strength of an x-ray picture of his chest, and even the radiological finding was not confirmed by a second observer. A great deal of harm could be done by reckless notification of tuberculosis. The War Office had a rule that no case should be notified as tuberculous unless tubercle bacilli were found. Dr. Buttar's trenchant contribution had been most welcome and illuminating, though he could not agree with all his criticisms. He believed that relapsing fever should be retained on the list. In the war he saw a large number of cases of typhus and relapsing fever in Mesopotamia and Egypt; the two diseases always came in association, one after the other. It was true that many medical men had never seen relapsing fever in this country, but it was well known to their predecessors at the London fever hospitals, and they were aware of its differentiation from typhus and the association of the two diseases. He thought that scarlet fever also should be retained on the list. He had an opportunity of seeing cases of scarlet fever at the fever hospital, and he was impressed by the number of cases which came in from a case which had been missed. Dr. Carnwath had referred to the desirability of notification of some other diseases. Chlorosis, which he had mentioned, was almost unknown in the out patient departments of London hospitals, and another disease almost unknown there was typical gout. There was no doubt that rheumatism—to use a loose term—was very much on the increase; probably it was the commonest disease at the present time. There was no doubt that complaints which he looked upon as streptococcal toxaemias occurred in people who were incapable of resistance owing to bad home conditions. It was noteworthy that both a medical officer of health (Dr. Sanders) and a general practitioner (Dr. Phillips) had said that they would welcome universal notification. It seemed absurd that diseases should be notifiable on one side of the street and not on the other, and he imagined that if it came to a legal issue it would be almost out of the question to secure a conviction against a practitioner for failing to notify, because the practitioner could hardly be expected to say to which of two contiguous areas the patient belonged.

Dr. Dudfield, in a brief reply, said that with regard to tuberculosis his suggestion was only that all cases of tuberculosis should be notified in the first instance as suspect, and the final notification should only be made after the patient had been under hospital observation. Time was an essential factor in the treatment of tuberculosis, and the provision of observation beds was being widely extended. As for Dr. Buttar, it had to be remembered that Dr. Buttar was an exceptional man: notification was not introduced for the purpose of controlling or assisting such as Dr. Buttar. The class of people with whom the speaker had to deal as notified persons was very different from the class of people among whom Dr. Buttar practised.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

The second meeting of the session of the Royal Medico-Chirurgical Society of Glasgow was held on October 20th, when a number of interesting papers were read and cases illustrating them were demonstrated.

Early Opacities in the Senile Lens.

Mr. Inglis Pollock read a paper on the treatment of early opacities in the senile lens, and demonstrated six cases. He referred to a long list of many surgeons who had attempted at different times, and in different countries, to carry this out with the aid of potassium iodide and other alkaline salts.

Nearly all ophthalmic surgeons had seen at times traumatic cataract absorbed in part; and a certain number of cases of the spontaneous absorption of senile cataract were on record, so that it was undoubtedly possible for opacities to disappear in the human lens in comparatively rare cases, but the numerous cases which had been reported, especially during the last twenty years, showed that the alkaline treatment of senile cataract had been used successfully, and that the results were not due to spontaneous absorption nor to clearing of the vitreous or fundus opacities. He further considered that as early treatment was now recommended in general medicine as the proper treatment for every type of disease, therefore the early medical treatment of cataract should be tried in all cases, and if possible the patient should not be told of the existence of the cataract, so as to prevent worry becoming an element in the case.

Asymmetry of the Upper Limbs.

Dr. Matthew White made a short communication on a case of asymmetry of the upper limbs, and showed the patient. On examination after an injury to the right shoulder asymmetry of the arms was noted, the left apparently being the normal one and corresponding to the general development of the body. At the first examination the rest of the body appeared to be symmetrical, but ten months later there was scoliosis with tilting of the head, asymmetry of the face, and on several occasions inequality of the pupils. Sensation appeared to be normal in the affected arm; no difference in power as shown by dynamometric measurements was noticed, although the right hand tired more quickly than the left. The skin of the forearm and hand, as compared with the left side, was coarse and thickened. Cuts and abrasions on the right arm healed slowly and became purulent. The blood pressure and temperature were identical on both sides. Skiagrams of the bones of the hands and arms showed greater density and thickening on the right side. There was nothing of note in the region of the sella turcica.

Treatment of Rectal Prolapse in Children.

Dr. Leonard Findlay and Dr. J. D. Galbraith made a short communication on the treatment of rectal prolapse in children. The method referred to, that of Professor D'Espine of Geneva, consists in the introduction of a small amount of absolute alcohol into the loose areolar tissue surrounding the rectum. The operation is simple in technique, efficient in results, and apparently devoid of all danger. The speakers reported the results in 41 children. In 7 cases prolapse had been in existence for less than one month; in 10 cases it had been present for more than a year. In two cases the operation had to be repeated once, and in one case twice, but in all the other examples only one treatment was necessary to obtain a cure. Cure was obtained in 90 per cent. of cases.

Polydactylism of the Foot.

Mr. G. H. Edington and Dr. W. B. Primrose made a communication on a rare case of polydactylism of the foot. The subject of this communication was a male infant aged 4 months. The abnormality consisted of three supernumerary toes occupying the cleft between the hallux and the normal second toe of the left foot. The supernumerary digits were not at all in the same plane, one being dorsal and two displaced towards the plantar surface of the foot. These last were webbed in half their length and capable of active movements. The dorsal digit was not actually mobile. A skiagram showed three supernumerary metatarsal bones, two of which belonged to the plantar toes, and the third, which was imperfect, to the dorsal toe. A wedge of tissue, including the abnormal structures, was removed from the dorsum and the result showed little difference between the two feet.

Dr. W. B. Primrose said that the wedge of tissue removed by Mr. Edington showed upon dissection that the dorsal rudimentary toe had only two phalanges and a very imperfect metatarsal bone which had no tarsal articulation. It was bound to the lateral side of the adjacent toe in a loose manner by fibrous tissue instead of by ligament. The other toes were much better developed. Their metatarsals had tarsal articulations, but they possessed deformed cartilaginous phalanges. These two toes showed the normal arrangement of flexor and extensor tendons, while the dorsal rudimentary toe only possessed an extensor tendon. There were, in addition, two dorsal interosseous muscles, but one of them had the appearance of being formed by the fusion of two adjacent interosseous muscles. The greater part of the blood supply of these toes was apparently derived from the first dorsal metatarsal artery by two arcuate vessels which cross the two medial metatarsal bones dorsally. This suggested a relationship of all these toes with the hallux, which was of teratological significance. The digital cutaneous nerves were relatively normal.

BRITISH ORTHOPAEDIC ASSOCIATION.

The annual meeting of the British Orthopaedic Association was held in London on October 20th and 21st, under the presidency of Sir Robert Jones. About seventy members and visitors attended the meeting.

On the morning of October 20th, at the Royal Society of Medicine, papers were read on: "Tumours of tendons and tendon sheaths," by Mr. Sr. J. D. Buxton; "Results of tendon transplantation for intrinsic hand paralysis (Ney operation)," by Mr. J. G. Johnstone; "Kohler's disease of the tarsal scaphoid," by Mr. E. S. Brentnall; "Infantile paralysis," by Dr. Levick; "Some complications of supracondylar fractures," by Mr. W. R. Bristow; "Two cases illustrating the longitudinal growth of scar tissue, and a case illustrating the reaction of bone to pressure," by Mr. D. McCrae Aitken; "Types of tubercle bacilli in surgical tuberculosis," by Dr. G. R Girdlestone; "Coxa plana," by Professor Murk Jansen; "An operation for the relief of flexion contractures in the forearm," by Mr. C. Max Page. In the afternoon the Association met at the Royal National Orthopaedic Hospital. Demonstrations were given by Mr. Jackson Clarke, illustrating the use of spinal supports; Mr. Laming Evans, the results of Whitman's operation for talipes calcaneocavus; Mr. R. C. Elmslie, fixation of the tendo Achillis for talipes calcaneus; Mr. Bankart, congenital talipes equinovarus treated by silk fixation after correction of the deformity; Mr. Trethowan, bone grafting for malunited Pott's fracture, bone grafting for non-union of radius and clavicle, bone grafting to reconstruct acetabulum in congenital dislocation of the hip, arthroplasty of hips and knee, tendon transplantation for calcaneus, tendon transplantation (various), flat-feet, congenital club-foot, osteotomy for genu recurvatum, bilateral pes cavus; Mr. Rocyn Jones, the results of an operation for hallux valgus and rigidus, and some tendon transplants. Each of the surgeons afterwards performed an operation of the class which was illustrated by the cases he had previously shown.

On October 21st the Association met at the Royal College of Surgeons, where Sir Arthur Keith gave a short demonstration, including a discussion of the osteology of a eunuch. Mr. Lawford Knaggs showed specimens and discussed the pathology of serous periosteitis, osteitis fibrosa, osteomalacia, and leontiasis ossea. Dr. Thursfield and Mr. Fairbank briefly discussed conditions of generalized bone deformities in children. The specimens illustrating these several conditions were demonstrated in the Museum.

The dinner of the Association, held on Friday, October 20th, was attended by seventy-two members and guests.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

The first meeting of the session of the West Kent Medico-Chirurgical Society was held on October 13th at the Miller Hospital, Greenwich, when Dr. E. W. Farmer occupied the chair, and the annual reports were read and approved and officers for the ensuing session were elected. Dr. W. H. Payne was elected president and took the chair, and a number of clinical cases were then shown.

Mr. C. A. Joll showed a patient, a young woman whom he had operated on for a myeloma which had destroyed the head of the humerus. A free-bone graft taken from the upper two-thirds of the fibula was inserted, which persisted and functioned, as was shown by the *x*-ray plate. He also showed the case of a boy with enlarged glands of the neck, which were tuberculous with a septic element. Dr. H. Pritchard showed a young woman with ascites suffering from mitral disease, which developed eighteen years ago after acute rheumatism. She had been tapped twenty-four times in twenty-one months, the quantity of fluid varying from 14½ to 20 pints. Dr. A. S. Woodwark showed a case of ascites in a man who had been tapped seventeen times since November 15th, 1921. He had albuminuria, aortic regurgitation, and hypertrophy of the heart; 18½ pints was the average quantity of fluid removed. He also showed a boy suffering from Graves's disease, with tachycardia; he had been treated by *x* rays, bromides, and a fat-free diet, along with an ounce of cod-liver oil daily. An *x* ray plate of a gastric ulcer taken by Dr. Buchan was shown. Dr. H. Corsi showed, on behalf of Mr. H. Davies, a case of pseudo-elephantiasis, which did not extend below the ankle; a wedge-shaped mass of tissue had been excised.

Reviews.

SMELL AND TASTE.

Professor G. H. Parker of Harvard University has contributed a valuable monograph on *Smell, Taste, and Allied Senses in the Vertebrates* to a series of monographs upon experimental biology.[1] As the editors point out, the rapid increase of specialization and the adoption in biology of the methods of the exact sciences have rendered it impracticable for one author to cover satisfactorily the whole field; these monographs, of which seven have now appeared, stand as an indication of the great advance which the sciences of experimental biology and general physiology have made in recent years.

Hitherto the sense organs concerned with smell and taste have on the whole received less attention than the others, and yet biologically they are of very great importance. As Professor Parker, whose researches on these subjects are well known, deals with smell and taste, and certain other associated though less familiar senses, from the standpoint of their functional interrelation and genetic connexion, this monograph will prove of interest and value to a very wide circle of readers.

Each chapter is prefaced by a table of its contents, and at the end of each is a very complete bibliography. Another good feature of the book is that Professor Parker has provided a critical review of the evolution of knowledge of various aspects of the subject and a clear statement of the present position, together with suggestions as to the lines upon which future research may most profitably be conducted.

A lucid account is given of what has been ascertained with regard to the common chemical factor in substances which arouse the same taste, but, as the author states, although it seems beyond reasonable doubt that the sour taste is in some way dependent upon hydrogen ions, the problem of how these ions become effective has still to be solved. The peculiar chemical feature whereby the other tastes excite their effect is more illusive and less understood, but an excellent summary of the present position is placed before the reader. The author forcibly expresses the opinion that in gustation three and probably four well-defined senses may be distinguished, since their functional difference is beyond doubt, although structurally they have not yet been separated. To the reviewer structural distinction at the periphery does not appear to be a necessity; further knowledge of the representation of the gustatory sense in the central nervous system is of much more urgent and vital importance.

The consideration of the work which has been undertaken with regard to the physiology of olfaction is extremely thorough and complete, and, as an authoritative opinion is expressed on the value of all the more important investigations, this section must prove most helpful to everyone interested in this special sense. The work of Zwaardemaker with his olfactometer, by which he was able to measure olfactory stimuli, together with the modification of van Dam, and the more recent odiometer of Allison and Klatz are discussed. A full statement of the attempts to classify odours is presented and the difficulties which have been experienced in correlating the chemical formulae of substances which give the same smell are explained. The author admits that recent attempts to connect odour and chemical constitution are fragmentary, yet he inclines to the belief that this line of research promises to provide a solution of the problems as yet unsettled. In the light of this prophecy it is of interest to mention an effort by Heynix to put the olfactory sense on a physical basis; his researches, however, have been published since the completion of the monograph under review. Heynix has made use of Castelli's theory of resonance in vision, and demonstrates a correspondence between the size of the pigment granules in the olfactory mucous membrane and the wave-length which odorous substances emit. Professor Parker's masterly treatment of the subject is likely to attract more workers to this fascinating yet difficult problem. The concluding chapter on the interrelation of the chemical senses may be read with much enjoyment; it is full of information and suggestion, and must provide a stimulus to all readers of this most attractive monograph.

[1] *Smell, Taste, and Allied Senses in the Vertebrates.* By G. H. Parker, Sc.D. Monographs on Experimental Biology. Philadelphia and London: J. B. Lippincott Co. 1922. (Post 8vo, pp. 192; 37 figures. 16s. 6d. net.)

ENDOCRINOLOGY AND METABOLISM.

The five large volumes entitled *Endocrinology and Metabolism*,[2] edited by Dr. Lewellys F. Barker, with Professor R. G. Hoskins and Dr. Herman O. Mosenthal as associate editors in endocrinology and metabolism respectively, contain in their 4,770 pages a series of monographs; the fifth and least bulky of the volumes is entirely devoted to the bibliography and general index of the first four volumes, the first two of which deal with endocrinology and the other two with metabolism. The ninety-eight contributors, with the exception of Professor Swale Vincent, who recently returned to this country, all hail from the United States and Canada, and are fairly equally divided between the two subjects; they include the well-known authorities G. N. Stewart, W. B. Cannon, A. S. Warthin, W. Timme, O. Klotz, D. Marine, F. M. Pottenger, and C. E. de M. Sajous on the ductless glands, and Graham Lusk, D. van Slyke, C. Voegtlin, P. B. Hawk, J. C. Aub, E. Du Bois, A. I. Kendall, E. C. McCollum, G. R. Minot, J. H. Pratt, W. T. Longcope, R. Woodyatt, and F. W. Peabody on metabolism. A wise and critical judgement is thus assured on two subjects about which, as the editor remarks in his prefatory note, "much speculative nonsense has been written of late."

The two volumes on endocrinology begin with a section containing articles on the general aspects of the subject. Dr. Fielding H. Garrison's history of the endocrine doctrine is especially interesting and is illustrated by fourteen portraits of pioneers, beginning with Théophile de Bordeu (1722–76), a physician at the court of Louis XV, who, Max Neuburger contends, anticipated the modern conception of the internal secretions.

In an introductory article Dr. Hoskins criticizes current nomenclature, such as hormones and autocoids, but without any enthusiasm or, indeed, real suggestions for reform, except one to the effect that the names of special substances should not be finally decided until they have been isolated and chemically identified. He does not find any convincing evidence that endocrine factors play a significant part in the onset of senility; and in conclusion utters a caution against the premature construction of hypotheses about the mechanism of the internal secretions.

In his discussion of the hormone factors in growth and development Dr. E. Uhlenhuth expresses the opinion that the thymus is not concerned in the control of growth and development in spite of the rather widespread belief to the contrary; in a subsequent article Dr. Hoskins adopts a similar negative attitude with regard to its possession of a true endocrine function. Professor J. T. Halsey of New Orleans gives a comprehensive review of organotherapy in some seventy pages, leaving the subject of ovarian therapy to Dr. E. Novak. The difficult subject of the relations between the endocrine organs and the autonomic nervous system, or how the vegetative nerves influence the endocrine glands and how the chemical substances produced by these glands influence the visceral nerves, is clearly handled by Dr. F. M. Pottenger, who whole-heartedly accepts the conception of vagotonia and sympatheticotonia; the associate editor, however, has inserted a moderating footnote to the effect that, while the fundamental conception seems valuable, the want of constancy in the manifestations of these two states detracts from its clinical utility.

After these six articles of a general character the thyroid, parathyroid, and pituitary glands are considered in minute detail, several writers contributing their quota to each subject; thus Dr. E. V. Cowdry writes on the anatomy, embryology, and histology of all these glands. Although it is impossible even to mention all the contributors reference should be made to Professor Swale Vincent's article on the physiology of the thyroid, Dr. Campbell Howard's scholarly account of hyperthyroidism, including exophthalmic goitre, for which he has collected twenty additional synonyms, to Dr. Lewellys Barker's clinical syndromes due to disorders of the parathyroid glands, mainly tetany of course, which occupies more than a hundred pages, and to Dr. Harvey G. Beck's account of dystrophia adiposogenitalis.

The second volume contains the remainder of the subject of endocrinology in seventeen sections, of which that on the suprarenals and the chromaffin system, occupying 300 pages, is much the largest. Dr. Cowdry describes the anatomy, embryology, comparative anatomy, and histology of the suprarenals, and also of the other glands of internal secretion considered in the volume. Writing on the significance of the suprarenal glands in relation to the vital processes, Professor G. N. Stewart of Cleveland, who has given much time to the investigation of these problems, critically discusses the control of suprarenal secretion; faulty methods have, he says, been responsible for misleading views which, like the elaborate hypothesis of the reciprocal relations of the endocrine glands, have been accepted too readily. Nothing, he considers, is certainly known of the supposed detoxicating function of the adrenals, or the power of neutralizing toxins produced in metabolism. In a short article on the emergency function of the suprarenal medulla Professor W. B. Cannon of Harvard considers the evidence for and against his view that adrenaline secretion is stimulated by excitement, pain, and dyspnoea, and states that as yet there is no reliable proof that any secretion of adrenaline occurs in peaceful conditions. The relation of the suprarenals to the circulation is then discussed by Dr. R. G. Hoskins, and the general pharmacology and toxicology of these glands by Professor F. A. Hartman, who is also responsible for their general physiology and experimental pathology. In the section on the male and female gonads the interstitial cells are fully discussed and figured; Professor Swale Vincent, who writes on the physiology, physiological chemistry, and experimental pathology of the female gonads, considers unsatisfactory the evidence adduced in favour of the view that the interstitial cells in the testes and in the ovary belong to the same category.

Writing on the correlation of the endocrine organs Dr. R. G. Hoskins says that the assumption that all the endocrine glands are in intimate functional relation to each other has not been demonstrated to be true, and that a diagnosis of pluriglandular syndrome is often merely camouflage for ignorance. It is therefore interesting to read what Professor Walter Timme, who in 1918 described the thymus-suprarenal-pituitary compensatory syndrome, which in another work Lewellys Barker labelled Timme's syndrome, has to say in his article on the polyglandular syndromes. While admitting that the whole subject is at present more or less confused and that the syndromes are of necessity not clearly separated from each other, he gives an account of two groups which he regards as fairly well defined: first, pluriglandular insufficiency, in which the glands affected are chiefly the thyroid, gonads, pituitary, and adrenals, and of which Claude and Gougerot's type is described: and secondly, pluriglandular compensation, with an account of his syndrome with its four stages. He also deals with endocrine disorders associated with muscular dystrophies and expresses the opinion that calcification of the pineal gland is the underlying lesion of progressive muscular dystrophy.

The two volumes on metabolism are prefaced by Professor Graham Lusk's history of the subject from the earliest times; due attention is directed to the dietetic observations of William Stark (1740–70) and to the work of Mayou, who also died early; of Priestley, Black, Lavoisier, and others; the rise of German science, starting with Liebig (1803–73) and continued by Voit, Zuntz, and Rubner, is mentioned: reference is rightly made to recent work in France and America; and finally, "Across the water in that wonderful island called Great Britain are Hopkins, T. B. Wood, Halliburton, Cathcart, Leonard Hill, Hardy, E. H. Starling, and others, through whose unrecognized efforts the food program of their country was saved from disaster during the war."

The first section on dietary constituents and their derivatives begins with Dr. A. I. Ringer's article of seventy pages on the proteins and their derivatives, and this is succeeded by Professor Walter Jones's account of nucleic acids. Professor W. R. Bloor first classifies the fats and allied substances on the basis of their relations to the fatty acids in metabolism under the main heads of the simple, the compound, and the derived lipoids, and then proceeds to deal with the digestion and absorption of fats. In connexion with lipaemia he expresses the opinion that lecithin and cholesterol are stages in metabolism through which fats may or must pass before they can be utilized. The important article on carbohydrates and their metabolism, contributed by Drs. A. I. Ringer and Emil J. Bauman, first passes in review their chemistry, classification, and nomenclature and then goes on to their digestion, the question of carbohydrate tolerance, and other aspects of metabolism. In discussing vitamins Professor Carl Voegtlin concludes that very possibly they act as catalysts in some metabolic reactions, and may also indirectly

[2] *Endocrinology and Metabolism Presented in their Scientific and Practical Clinical Aspects.* By Ninety-eight Contributors; edited by Lewellys F. Barker, M.D., LL.D., (Associate Editors) R. G. Hoskins, Ph.D., M.D. (Endocrinology), and Herman O. Mosenthal, M.D. New York and London: D. Appleton and Co. 1922. [Vol. i. pp. xxii + 982, 1 plate, 190 figs.; vol. ii. pp. xxiv + 995, 280 figs.; vol. iii. pp. xi + 956, 84 figs.; vol. iv. pp. xii + 958, 3 plates, 56 figs.; vol. v. pp. iv + 879. Price £12.]

affect nutrition by stimulating the digestive organs. The article on normal diet is from the pen of Dr. Isidor Greenwald. Professor J. R. Murlin devotes a hundred pages and forty-five figures, many of them representing different forms of calorimeters, to the essential subject of the normal processes of energy metabolism.

In a most interesting account of bacterial metabolism, normal and abnormal, within the body Professor A. I. Kendall insists that diagnostic or morphological bacteriology must give place to dynamic or chemical bacteriology, and sets forth the principles of "bacterio-chemistry." The evolution of bacteria from saprophytic types through parasitic to pathogenic types appears to be attended by a well-marked decrease in the chemical activities of the microbes, and, generally speaking, intense chemical activity seems to be incompatible with pathogenicity. The specificity of action of the vast majority of bacteria pathogenic for man is held to depend upon their utilization of protein for energy: they become potentially lactic acid bacilli when growing in an environment containing carbohydrates or other non-nitrogenous products, instead of forming indol and other toxins from proteins. The effects of sugars upon the intestinal flora is a subject the author has specially investigated; thus has arisen "bromatherapy," or the treatment of certain intestinal infections so as to diminish the formation of toxic bodies from protein cleavage and to render the intestinal contents acid. Among the other articles attention may be directed to Professor H. C. Barbour's detailed account of the influence of certain drugs and poisons on metabolism, to Dr. Bock's articles on the effect of transfusion, and to Dr. T. Ordway and Professor A. Knudson's description of the effects of *x* rays and radioactive substances.

The fourth volume deals with pathological metabolism and is divided into two sections: the first deals with general pathological metabolism, in articles on undernutrition, obesity, acidosis, oedema, anaphylaxis, fever, traumatic shock, and disturbances of growth; the second consists of twenty-seven articles concerning special pathological metabolism, such as in diabetes mellitus, nephritis, gout, alkaptonuria, cystinuria, gastro-intestinal, hepatic, pancreatic, and other diseases. In his clear and authoritative account of acidosis, Dr. D. Van Slyke refers to alkalosis or uncompensated alkali excess in the blood, and accepts the view that it causes tetany; he adds, however, that it does not follow from this that all cases of tetany are due to the same cause; in a later article, when describing its metabolism, Dr. F. H. McCrudden discusses the possibility that alkalosis plays a part in the etiology of progressive muscular dystrophy. Carbohydrate acidosis is naturally that mainly considered in Dr. Van Slyke's article; it is also referred to by Dr. R. T. Woodyatt in his account of the pathological metabolism of diabetes mellitus. Van Slyke also summarizes existing knowledge on acidosis in renal disease, which is probably due to retained phosphoric acid; he admits that it has not yet been shown whether the moderate compensated alkali defect is important in accelerating the progress of the disease, and whether a patient in such a condition is benefited by measures to restore the alkali reserve. He cautiously expresses the opinion that, since the acid base balance is obviously unstable and the compensated acidosis may become uncompensated, treatment on these lines may possibly be desirable; for this purpose an abundant fruit and vegetable diet which produces more alkali than acid is recommended.

Whatever the primary cause of oedema, whether renal in sufficiency, damage of the capillaries, or disturbance of metabolic processes in the tissue cells, the problem of oedema is that of the interchange of fluid, with its dissolved and suspended substances, between the blood and the tissues, and accordingly Professor Franklin C. McLean discusses these at length; in some remarks on the treatment of oedema he describes the administration of thyroid extract in myocardial disease and chronic parenchymatous nephritis: this is recommended by Eppinger and Epstein when they advocate a diet rich in proteins and poor in fats for patients with chronic parenchymatous nephritis. Fat metabolism and the blood lipoids in nephritis are considered in the course of Dr. H. O. Mosenthal's valuable article dealing with metabolism in nephritis. Dr. Joseph H. Pratt of Boston, whose name is well known in connexion with gout, writes fully and impartially on its metabolism and gives useful summaries of the opinions held about the treatment by diet and by atophan. In an elaborate article on the important subject of the pathological metabolism of the blood and the blood-forming organs, Dr. S. Hurwitz first reviews the recent work on blood destruction and regeneration, then discusses the metabolism in blood diseases, and finally considers the influence on metabolism exerted by some measures, such as splenectomy, *x* rays, and radium, employed in the treatment of blood diseases.

It must be gratefully recognized that these volumes contain an immense store of information, contributed by authoritative writers from a country where their investigation has been widely and energetically carried on, and that the editors' labours therefore are most welcome in having thus provided us with a valuable source of reference.

DISEASES OF CHILDREN.

The Diseases of Children, Medical and Surgical, by the late Dr. Henry Ashby and the late Mr. G. A. Wright, was a valuable and popular textbook on the subject which reached its fifth edition in 1905. A sixth edition now appears.[3] The medical chapters have been revised by Dr. Hugh T. Ashby; the revision of the surgical matter which had not been finished by Mr. G. A. Wright at the time of his death has been completed by Mr. Charles Roberts. The character and aim of the book is still well described in a paragraph of the preface of the first edition: "The original feature of this book is that it is written conjointly by a physician and a surgeon; it is hoped that it presents therefore a fairly complete account of disease in children. Though we are well aware that the book is not an exhaustive treatise we think it will be found practical, and it is at least based on experience and is not a mere compilation." The successful career of the book through several editions was the best proof of its useful and practical character, and the present edition will, we think, maintain its reputation. As to the inclusion of medical and surgical diseases in one volume, that still remains an original feature. Almost all the diseases incident to infancy and childhood are dealt with, for, besides surgical and medical conditions, the infectious fevers, affections of the ear, nose, and throat, and of the teeth, are all included. This range of subject-matter is rather that of an encyclopaedia, and it could only be compressed within the limits of a book by a concise and essentially practical treatment of the individual diseases. The new edition is of rather smaller bulk than the old, so that it retains the original character of brief and summary statement, in which the more important conditions are dealt with in a few pages, while rarer diseases are sketched in a short paragraph. That leaves little room for theories of etiology, for accounts of pathology, for references to authorities; but room is found in a praiseworthy way for the citation of a few telling and illustrative clinical records. Yet, while this severe and almost dangerous brevity is the outward mark of the book, its soul is the very large individual experience of the late authors; and its success and reliability rest upon that secure foundation. The claim in the original preface that it is not a compilation is fully justified. It is a book that may be safely commended to the busy practitioner—a brief working manual for the demands of daily practice, where within the covers of one volume he may find short but trustworthy guidance to the diagnosis and treatment of the very numerous and various conditions of disease incident to childhood. The volume is well illustrated, and, though the number of illustrations has been reduced in the new edition, many new ones have been included, and there is a good index. The revisers are to be congratulated on their success in the difficult task of bringing the new volume up to date while preserving the spirit and character of the old. We anticipate that this well-known book will continue its honourable and useful career.

The aim which Dr. L. W. Hill tells us he had before him in preparing his book on *Practical Infant Feeding*[4] was to produce a volume "practical without being superficial, scientific without being tiresome." On the subject of infant feeding the aim is laudable, but not easily to be attained: the subject is full of difficulties. Chemical and physiological data are copious and exact, but not as yet securely linked with the clinical data; pathology is obscure, and the whole ground is

[3] *The Diseases of Children, Medical and Surgical.* By the late Henry Ashby, M.D., F.R.C.P., and the late G. A. Wright, B.A., M.B., F.R.C.S.; revised by Hugh T. Ashby, B.A., M.D., M.R.C.P., and Charles Roberts, M.B., B.S., F.R.C.S. Sixth edition, thoroughly revised and rewritten. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. xxvii+759; 232 figures. £2 2s. net.)

[4] *Practical Infant Feeding.* By L. W. Hill, M.D. Philadelphia and London: W. B. Saunders Company. 1922. (Med. 8vo, pp. 485; 40 figures. 24s. net.)

covered with a tangle of conflicting theories. The author devotes some preliminary chapters to the physiology and bacteriology of digestion in infancy, to the analysis of human milk, and to the rules for breast feeding. He then enters the debatable ground of artificial infant feeding. He begins by giving a short historical sketch of the various theories with their corresponding applications in treatment, dealing in succession with percentage feeding and the exact adjustment of milk mixtures advocated by Biedert, Meigs, and Rotch; with the bacteriological teaching of Escherich; with the views of Czerny on milk fat; and with the latest chemical theories of Finkelstein as to the influence of the sugar and the salts in cow's milk. Dr. Hill is unwilling to discard entirely any of these theories, contradictory though some of them may appear to be; he maintains that in each there is a precious residuum of truth, which modern practice can make use of. This is an attitude of mind favourable to the reception of truth from whatever point of the compass it may come. But it has its dangers; and this book shows signs of them, while the history of the subject abounds in instances. The attitude is facile, and those who take it are apt to be carried about by any wind of doctrine blowing now from America, and next from Central Europe. The author in his practice of artificial feeding favours a milk mixture low in protein and salts, but fairly high in sugar and fat; he obtains the result he desires by the use of gravity cream and skimmed milk. It should be said that the book does not contain any clinical records of healthy or dyspeptic infants to illustrate and prove the theories and doctrines of feeding that are discussed. This lack of clinical illustration detracts not a little from its value.

The chapter on premature infants is written by Dr. W. H. Howell; and there are chapters on diarrhoea, chronic intestinal indigestion, constipation, pyloric stenosis and spasm, rickets, scurvy, and spasmophilia.

A SYNOPSIS OF SURGERY.

THE sixth edition of HEY GROVES's well-known and deservedly popular *Synopsis of Surgery*[5] has just been published. The success which this book has attained is the result of its excellent plan, rendering it exceptionally lucid in its brief descriptions. There is no doubt that the author expended a vast amount of labour on the first edition, and he chose his authorities wisely and well. Indeed, when this book first appeared its teachings were in advance of many of the text-books of the day. The sections on those subjects of which Hey Groves is admittedly a master have been brought up to date. But there are others that need more careful revision, and use might have been made of many of the valuable monographs which have appeared during the past few years, largely in the journal which Hey Groves himself edits. In many instances no more than a sentence would have been needed to mark a definite advance in our knowledge. More stress, for instance, might have been laid on appendicular obstruction in the etiology of acute appendicitis; and the colicky pains widespread across the abdomen which herald the onset of an acute attack are not mentioned.

In spite of some defects, the book remains a good one because its principles are sound. But we trust that more radical revision of some sections may be instituted in future editions, lest the book in time should lose the enviable position which it has held in the past.

MORBID FEARS AND COMPULSIONS.

IN his volume on *Morbid Fears and Compulsions*[6] Dr. H. W. FRINK gives a readable and comprehensive account of the theory of psycho-analysis and its practical applications in the treatment of the psycho-neuroses. He follows closely the teaching of Freud, and expresses himself as having but little sympathy with the post-analytic schools of Adler and Jung. Beyond the fact that Dr. Frink suggests the substitution of the term "sexual" by the broader one "holophilic," the earlier chapters which deal with general principles are written on familiar lines, and thus suggest no special comments. The more recent developments of the libido theory and its applications to the psychoses are not discussed. This may be due to the fact that this book was first published in America in 1918, so that the author was at that time unacquainted with Freud's most recent views. In any case these latest developments are chiefly of interest to the advanced student of psycho-analysis, and do not conflict with the details included in this volume. Later chapters in the book are devoted to an account of cases of compulsion neurosis and of anxiety hysteria. The author explains that these cases fail to illustrate in certain particulars the theories he has discussed in earlier chapters; he points out that a completely analysed case could not have been compressed within the limits of his book, and he proposes to write a supplementary volume which will be devoted to a single case report. The last chapter is concerned with a discussion of the theory and mechanism of the psycho-analytic cure.

The volume has the advantage of an introduction by Dr. J. J. Putnam, in which he discusses what he considers to be the defects and limitations of Freud's doctrines of the human mind, his criticisms being directed more especially to the mechanistic philosophy upon which they are based. The book may be recommended to those who wish to obtain a systematic and more than elementary account of the subject with which it deals.

THE SECOND HALF OF LIFE.

Senescence: The Last Half of Life[7] is the latest fruit of the full life of the well-known psychologist, G. STANLEY HALL, President of Clark University, and its publication follows his retirement from that post. It describes old age and death from many points of view, but its main object is the demonstration that intelligent and well-preserved senectitude has important social and anthropological duties in the modern world, though hitherto these have not been utilized or even recognized; thus, with the passing of sexual activity and of ambition for place and fame there comes, he says, an Indian summer of increased clarity and efficiency in intellectual work and a philosophic calm. Writing in a genial autobiographical strain he expresses his frank conviction that the medical profession knows little of old age, that there are no gerontologists, as there are paediatrists and gynaecologists, that centenarians owe their longevity much more to their own insight than to medical care, and therefore that for the most part the old man must be his own doctor. A chapter, however, is devoted to a useful and judicious abstract of various medical men's views on the changes and treatment of old age. In a critical estimate of Metchnikoff's well-known views he praises the optimism and intentions that stimulated his writings, but regards the value of sour milk as overestimated. The rejuvenating effects obtained by vasectomy by Steinach and by transplantation of the testis by Voronoff are fully described, and the author concludes that the only practical hope of relief from the hardships of senescence and of the postponement of death is that now faintly and tentatively arising and suggesting that some mitigation may be obtained by glandular implantation, or perhaps even by the injection of the secretions of endocrine glands. Dr. Stanley Hall analyses the returns he obtained from a set of questions addressed to a few score of mostly eminent and some very distinguished elders of the United States. To the question, "To what do you ascribe your long life?" the reply most often given was good heredity, and then "the preservative influence of good and temperate habits, reinforced by observation of acquaintances of early life who, by reason of less moderation, have preceded them to the cemetery."

This is an interesting volume, at least to those whose "way of life is fall'n into the sere, the yellow leaf," and has many pleasing personal touches.

THE WORKMEN'S COMPENSATION ACT.

DURING the war two Acts were passed increasing the amount of compensation payable to an injured workman under the Workmen's Compensation Act, 1906, but no other material changes were effected in the original Act. In the second edition of his book on *Medico-Legal Examinations and the Workmen's Compensation Act*,[8] Sir JOHN COLLIE has accordingly reprinted the first edition without change, and added to

[5] *A Synopsis of Surgery.* By Ernest W. Hey Groves, M.S., M.D., B.Sc., F.R.C.S. Sixth edition. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd.; Toronto: The Macmillan Company of Canada, Ltd. 1922. (Cr. 8vo, pp. 621; 25 figures, 13 plates. 17s. 6d. net.)

[6] *Morbid Fears and Compulsions: Their Psychology and Psycho-analytic Treatment.* By H. W. Frink, M.D., Assistant Professor of Neurology in Cornell University Medical College. With an introduction by James J. Putnam, M.D. London: Kegan Paul, Trench, Trübner, and Co., Ltd. (Demy 8vo, pp. xxiii + 344. 21s. net.)

[7] *Senescence: The Last Half of Life.* By G. Stanley Hall, Ph.D., LL.D. London and New York: D. Appleton and Co. 1922. (Pp. xxvii + 518. 21s.)

[8] *Medico-Legal Examinations and the Workmen's Compensation Act, 1906, as Amended by Subsequent Acts.* By Sir John Collie, C.M.G., M.D., J.P., Lieutenant-Colonel R.A.M.C. Second edition. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. 157. 6s. net.)

it some twenty-eight pages in which he has briefly considered the effect of war pensions on compensation, the employer's liability to pay compensation to a man in prison, and some recent decisions which throw light upon the fundamental intentions of the Act of 1906. This method of procedure is not entirely satisfactory, as it necessarily leaves in the new edition various statements which are now out of date or require modification—for example, the statistics given in various places nowhere relate to a year later than 1909. Further, the decisions given in what are known as the "wall" case and the "air raid" case go far, as the author points out, towards finally and clearly defining the intention and scope of the Act, and consequently now render superfluous the considerable space which Sir John Collie devoted to the discussion of these questions in the first edition.

In spite of this defect, however, the book can be cordially recommended to practitioners who are concerned with compensation cases, while medical referees under the Act will find much of interest in the author's suggestions for improving the Act.

The earlier part of the volume contains many examples of clever malingering, and accounts of the skilful methods of detection which the author has made so peculiarly his own. The suggestions for amendment of the Workmen's Compensation Act are all in the direction of increasing the powers of medical referees to decide issues of a purely medical nature, and will receive the assent of the medical profession. Under the law as it stands at present a case may only be referred to a medical referee on the application of both parties. The result naturally is that the side which has doubt about its position refuses to apply, and accordingly very few cases are so referred. The author's proposal that the matter shall be referred to a medical referee on the application to the court by either party is one which will be strongly endorsed by all who have had experience of these cases.

The author also calls attention to the fact that in many cases where medical points are at issue the judge still fails to summon a medical referee to sit with him as an assessor, although most of the cases turn upon medical evidence which is technical and may be conflicting. Sir John Collie's recommendation—that if either party desires to have a medical referee sitting as assessor, the judge should be compelled to grant the application—is entirely sound.

The interesting accounts given of some recent decisions, though more of legal than of medical importance, show that the author keeps himself in touch with events. The book is clearly written and should prove useful to those interested in the subject.

NOTES ON BOOKS.

It is little more than a year ago since we welcomed very warmly the appearance of the Report of the Departmental Committee appointed by the President of the Board of Education to inquire into the position of English in the educational system of England.[9] No one can feel more strongly than we do the importance to the student of medicine of a good general education as a foundation for technical knowledge and for the exercise of a liberal profession. We believe, with the authors of that report, that a command of his own language should form an indispensable element in the training of the citizen, and we hold that this applies with peculiar force to the training of the medical practitioner. English, so much neglected in the past, is the essential basis of a liberal education for all Englishmen, and in a special degree for members of our profession. The present condition of English in schools is admittedly most unsatisfactory, and the reasons for this were stated at length in the Report; one defect in schools where English is taught as a "subject"—is the undue stress laid upon formal grammar. Among recent school books which seem to show a movement in the right direction—that is, towards the inculcation of a living interest in the mother tongue, both as a means of precise communication and as a mode of artistic expression—we may mention *English Literature: The Rudiments of its Art and Craft*,[10] by Mr. E. V. Downs, of which the second edition has lately come to us for notice. We have not space to discuss the plan and scope of this little work, and will only say that it appears to us to possess the great merit of being written by one who loves literature for its own sake and seeks to convey his enthusiasm to the pupil. For this reason certain shortcomings will readily be overlooked by the fastidious student of English. No disparagement is meant when we express the opinion that an intelligent youth will get very much more good than harm from this agreeable introduction to the technique of English composition.

The *Annual Charities Register and Digest* published by the Charity Organization Society gives information, which cannot be found in the same form elsewhere, for those who occupy themselves in charitable work of any kind, more especially in London. The thirty-first edition, for 1922, which has just been issued[11] will be found as useful as its predecessors. It gives a classified list of all the institutions, societies, and bodies, in or available for the metropolis, which can be approached for relief in cases of affliction or distress, whether of body, mind, or estate. The detailed information is prefaced by a short summary of institutional finance during 1920, and here is pointed out the impossibility of drawing a sharp line between London charity and provincial charity. Particular care has again been taken to make the index both accurate and comprehensive.

The Charity Organization Society has issued simultaneously a smaller work entitled *The Prevention and Relief of Distress*,[12] being a handbook of information respecting the statutory and voluntary means available for the relief of distress and the improvement of social conditions. This embodies most of the material formerly contained in Sir Charles Loch's introduction to the *Charities Register and Digest*, entitled, "How to help cases of distress," and it is intended to be used as a reference book in conjunction with the *Register*. The aim is to supply the social worker or student with a working knowledge of the organizations, whether State, municipal, or voluntary, which deal with the relief of distress; to co-ordinate the information which should be familiar to persons administering relief; and to set forth principles and methods which experience has proved to be sound. Like the companion volume it is written principally from the point of view of the London worker, but a good deal of the material has a far wider application.

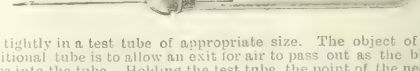
[9] British Medical Journal, September 24th, 1921, p. 495.
[10] *English Literature: The Rudiments of its Art and Craft*. By E. V. Downs, M.A. Second English Master, Bishop Stortford College. Second edition, revised and enlarged. Pp. viii + 140. London: Hodder and Stoughton. 1922. (Cr. 8vo, pp. viii + 140. 2s. 6d. net.)

[11] London: Longmans, Green, and Co., and Charity Organization Society. 1922. (Demy 8vo, pp. xx + 554. 7s. 6d. net.)
[12] London: P. S. King and Son, Ltd., and Charity Organization Society. 1922. (Cr. 8vo, pp. vii + 140. 2s. 6d.)

MEDICAL AND SURGICAL APPLIANCES.

Twin Needle Outfit for Collecting Blood from a Vein.

Dr. A. Cambell (Medical Officer in Charge V.D. Treatment Centre, The Royal Portsmouth Hospital, Portsmouth) writes: Although the ordinary method of collecting blood from a vein by puncturing it with a needle and allowing the blood to flow into a test tube is quite a simple operation, it is sometimes difficult for the inexperienced to do it quickly and cleanly. Without a good deal of practice it is not easy to hold the needle and the test tube with the fingers of the same hand. I have devised a simple outfit which provides a rigid connexion between the needle and the test tube and at the same time ensures the blood being collected in a sterile manner. Soldered parallel to the needle is a tube of similar diameter but shorter in length. Attached to the two is a flat metal plate forming a winged grip. The twin needle is passed through a perforation set eccentrically in a rubber bung, which



fits tightly in a test tube of appropriate size. The object of the additional tube is to allow an exit for air to pass out as the blood flows into the tube. Holding the test tube, the point of the needle is plunged into the vein and the blood allowed to flow until the requisite quantity is obtained. After withdrawal of the needle it is removed from the bung by twisting and pulling on the grip gently, the bung then being pushed firmly home. The pressure of the neck of the test tube closes the perforation and prevents leakage. The length of the test tube is convenient for centrifuging and the outfit is enclosed in a wooden box and can be sent safely through the post. The outfit has been made for me by Messrs. Down Bros.

Soloid Urine Analysis Reagents.

Messrs. Burroughs, Wellcome and Co. have placed on the market a very handy set of six "soloid" urine analytical reagents neatly packed in a cardboard box. The reagents consist of citric acid, Fehling's test, the indigo test for sugar, picric acid, potassium ferrocyanide, and salicyl-sulphonic acid. A circular included in the package gives instructions as to the use of the "soloid" reagents. The outfit is very complete and compact; the only criticism to be offered is that the soloids do not dissolve very rapidly unless previously crushed into powder. In every other respect the collection of reagents satisfies all the claims put forward by the manufacturers.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

THE MOTOR CAR SHOW IN LONDON.

WHEREAS the majority of the passenger cars shown at the recent exhibition in Paris were the identical vehicles that appeared in the same building twelve months ago, in the case of the sixteenth International Passenger-Car Show that opened on Friday, November 3rd, under the patronage of the King, at Olympia, Kensington, and the White City, Shepherd's Bush, London, there is practically not one vehicle, or chassis, staged which appeared last year. Though split into two buildings, as in Paris, the display in London differs from the French inasmuch as the latter contained pedal bicycles, motor bicycles, commercial motors, and marine motors, as well as motor cars and all manner of accessories, whereas the British one is confined solely to passenger cars and accessories for them. The exhibition in London, which will be open until Saturday, November 11th, is, too, of a more international character than the French exhibition, and much more so than any of the American shows, or than the German and other displays on the continent of Europe. All cars of note introduced to the public in Paris are shown in London, and the American industry is represented by nearly all its notable products; none of the few abstainers have new models of note embodying fresh ideas in regard to construction. By way of indicating at once the sheer variety of fresh material for consideration, I may mention that quite new models are introduced by the following firms among others: Argyll, Ariel, Aster, Austin, Angus Sanderson, B.S.A., Bianchi, Bignan, Calthorpe, Case, Clyno, Coventry Premier, Crossley, Crouch, Delage, Delaunay-Belleville, Dairuler, de Dion Bouton, Enfield-Allday, Ensign, Crown Ensign, Excelsior, Fiat, G.N., G.W.K., Gwynne, Humber, Hurtu, Lancia, N.P. (Salmons and Sons), Palladium, Paige-Jewett, Phoenix, Renault, Rover, Ruston-Hornsby, Singer, Straker-Squire, Sunbeam, Swift, Seabrook, Star, Talbot, Trojan, Turner, Unic, Vauxhall, Wolseley.

A NEW CHAPTER IN CHEAPER MOTORING.

Novelties, however, are not to be found solely in regard to new models. No less important a feature of this display is the evidence it affords of a complete change of conditions in regard to prices. A number of models of up-to-date design have been notably reduced in price despite the fact that they are being made better now because another year's experience of the cars in the hands of the public has been gained, and because in many cases they have been improved in regard to the details of design and equipment; such changes, though not sufficiently radical to constitute them wholly new models, are, nevertheless, sufficient to justify their being described as essentially 1923 products. The best way to indicate the scale of reductions is to select some prices for this year's improved products in respect of cars coming within the power and purse ranges likely to concern the average medical man. The facts are set out in tabular form in the next column.

The visitor to the British show who wishes to make himself acquainted with all the material offered within the range likely to be of interest to him will not be able to visit either Olympia or the White City separately and consider that he has seen all that will interest him as would have been possible had he gone to the French show, where the division of the exhibits was strictly logical in that no machine having an engine of 1,100 c.cm. or less was eligible for display in the Grand Palais, and all the small-engined cars were displayed in ancillary buildings. The classification in London is solely by the luck of the ballot, so that the prospective buyer interested in any one size of car will have to go to both buildings in London. The arrangement is extremely inconvenient, but the Society of Motor Manufacturers and Traders had contracted for Olympia, which is in process of enlargement, and it was anticipated by some, though never by myself, that the work would be sufficiently far forward to enable all the vehicles for display to be housed within that building. A couple of months ago, however, it was plain that this was impossible, and it was decided to split the exhibition between the two buildings. The visitor, however, may be assured that next year it will be possible to get all the vehicles in the one building. Meantime, what with the reduction in petrol prices and in tyre and car costs, with consequent saving in the total sums of money for which vehicles have to be insured,

Tax.	Make.	Chassis Price.		Car Price.		
		Former.	Present.	Seats.	Former.	Present.
£		£	£		£	£
16	Wolseley	—	500	4	725	660
16	Sunbeam	750	700	5	950	895
16	Ruston-Hornsby	—	—	5	585	475
16	Arrol-Johnston	—	—	4	650	550
14	Vauxhall	550	520	4	750	595
14	Standard	—	—	4	525	450
14	Rover	495	415	4	650	550
14	Fiat	550	510	4	800	710
14	Calcott		390	4	650	575
13	Sunbeam	575	535	4	725	685
13	De Dion	495	415	4	610	525
13	Austin	—	—	4	550	450
12	Talbot-Darracq	470	420	4	575	525
12	Swift	—	—	4	575	495
12	Bean	320	285	2	385	335
12	Albert	350	320	4	448	375
11	Wolseley	—	305	2	475	380
11	Hillman	—	350	2	630	430
11	Fiat	410	365	4	550	495
11	Calthorpe	—	—	4	450	357
10	Standard	—	—	4	315	295
9	Wolseley	—	—	2	295	255
9	Stoneleigh	—	—	3	225	185
9	Rover	—	—	2	220	180
8	Talbot	—	—	2	350	295

and the improvements incorporated in the various machines, it is plain that there is ample material for inspection on the comparative basis, which is the quickest way of becoming acquainted with what may be styled relative degrees of merit.

NEW MODELS ARE SMALLER TYPES.

As far as I have been able to discover—one cannot make sure until the doors of the exhibition shall have closed, so vast is the quantity of material for review—there is but one exception, the B.S.A., to the rule that every entirely new model introduced this year is smaller in regard to engine size, and cheaper in regard to price, than any previously on the given car builder's list. This is a noticeable tendency, as may be judged from the fact that when the first post-war exhibition was held the first thing to strike the visitor was that makers seemed to have vied with one another in the production of large models, the endeavour being apparently to see who could introduce the most costly chassis. Another point of direct interest to the medical man is that, when one speaks of the list price of a two- or of a four-seater car nowadays it is understood that that sum includes what is styled all-weather equipment—that is, hood scheme embracing side curtains and opaque panels opening and closing with the doors. Humber gives a further lead by standardizing all models with double wind screens and double-acting nickel and rubber wipers. These are of such appreciable service to the medical man that it is important to know that they can be obtained now for a fixed sum, which in practically all cases is less than the cost of the given models without such equipment twelve months ago. The chief causes for the fall in costs are the changed attitude of labour and reduced transport and raw material charges, though there are other factors, such as better manufacturing methods, better distribution and organization, and so forth. There is, however, one rather disconcerting trend against manufacturing progress as demonstrated by America in the policy of "one firm, one model." We had worked in Britain a long way towards that by the time war broke out, and there were indications that our experience of manufacturing during the war had led us to discover the value of that policy as applied to motoring; but events have not fulfilled this hope, and we find a large number of firms

this year introducing multi-model programmes of even more embarrassing variety than any known before the war; and a large number of firms are increasing their already large range of models. For example, for 1923 Austin increases his models from two to three, as he did last year from one to two. Again, Wolseley adds yet another to a programme that now embraces no less than six main chassis types. Of course, all this is because our export markets have been closed and we have had to try to sell more vehicles at home.

The Three New Engine Sizes.

In regard to taxation costs it is at least assured that there will be no change in the basis of arriving at horse-power for the purpose of Treasury rating. The Society of Motor Manufacturers and Traders decided months ago that no matter what happens in regard to the proposed reduction of the proportion of revenue to be raised from horse-power taxation if one of the schemes recommended—namely, that of a petrol tax—should go through, thereby bringing us back to a dual tax, nevertheless the basis of the Treasury rating of engines shall remain what it is to-day. Therefore the question whether to buy, say, a large-engined, cheap American car, or a small-engined, moderate-priced European car, is unaffected because the proportion of the tax payable in respect of the engine rating will remain exactly the same in ratio. Hence incidentally there is no likelihood of a taxation scheme affecting materially the trend of car development as represented by engine design. Whereas at the French show it was discovered that a number of what may be called the small fry in the industry—many not known here fortunately—are staking their all on what we would call the cycle car, there is very little evidence of that in the London show. British manufacturers seem to be intent on the evolution of the small car proper. While for competition purposes our organizations have persisted overlong in dividing small cars into those having engines not exceeding 1,500 c.cm. (91½ cubic inches) and those having engines not exceeding 1,100 c.cm. (67¼ cubic inches), manufacturers standardizing cars of the smaller classes choose to take 1,000 c.cm. (61 cubic inches) as the natural limit for a new class—the 1-litre class, and the 1½-litre class, supplementing the 2-litre or 122 cubic inches class that is also very popular, alike on the Continent and in this country. A number of Continental manufacturers are producing engines of the 2-litre class, and of the 4-cylinder type in particular, which come out in the main at between 10-h.p. and 12-h.p. rating, though some others would involve the payment of a yearly tax of £14 and even £16 under the present scheme.

Overloading.

In regard to the 1,500 c.cm. engined class, it was noted last year that there was a tendency to overload these types, chiefly because, where the engine was really efficient, the chassis were sometimes not made strong and large enough to take the ambitious bodies supplied. In this class to-day, however, there is not so much evidence of overloading. A very interesting further development this year is that not only are there more 6-cylinder engines in the 2,000 c.cm. (122 cubic inches) class, but there are also some very notable 1,500 c.cm. (91½ cubic inches) 6-cylinder engines, as witness, particularly, the 6-cylinder overhead-valve engined Talbot (£12 tax). Another small 6-cylinder in this class is the 12-h.p. Daimler of the double-sleeve valve type. There is also the 6-cylinder side-valve A.C. model. Though these are smaller 6-cylinder engines than we have had hitherto, they do not represent the extreme to which manufacturers have gone. For example, from Alsace there come two versions of the Mathis—one a 6-cylinder overhead-valve engine of 1,188 c.cm. volume, and the other a 6-cylinder side-valve engine type of 1,140 c.cm. volume. But these are rather exceptional propositions than otherwise. On the other hand, that the very small engine is regarded as a commercial proposition by British manufacturers is suggested by the introduction by Sir Herbert Austin of an £8 tax, 693 c.cm., side-valve, 4-cylinder, water-cooled engined small car with single-plate clutch, gearbox embodying three speeds forward, spiral bevel-driven back axle, transverse front spring, quarter-elliptic rear springs, dynamo lighting, mechanical starter operated from the seat, and all-weather body to seat two adults, a child, and luggage, and interchangeable brakes to all four wheels; the whole scales some 6¼ cwt., and is listed at £225. This is an attempt at a new type of utility car. Rover, again, introduces a developed version of the well-established £8 tax, air-cooled, 2-cylinder chassis equipped with a four-seater body to hold two adults and two children, or adjustable to accommodate two adults and an ample proportion of luggage—the whole listed with all-weather equipment complete for £190. In yet another direction we find the Armstrong-Siddeley organization producing, through a subsidiary concern, the Stoneleigh utility three-seater air-cooled car, that did so well in the Royal Scottish Automobile Club's trial; this £9 tax machine is listed this year, complete with clover-leaf three-seater body, adjustable for carrying luggage, for £185, as compared with £225 last year.

New British Car Builders.

There is also evidence in the Show of a quite unexpected tendency—an increase in the ranks of chassis producers at a time when, one would imagine, most folk would be extremely chary of embarking on such an enterprise. Yet some of it is in the nature of an almost logical development, as for instance the enterprise of the Aster Engineering Company, which for twenty-two years has produced power plant of all sizes that have been used in a vast number of cars of different names; this year it introduces a complete vehicle—a 6-cylinder £18 tax 2,618 c.cm. tubular pushrod and rocker operated overhead-valve engined chassis wherein the valve seats are water cooled and aluminium pistons are used; the cylinder head design is a result of the firm's investigations into the problem of turbulence. This power plant has 1.23 mean effective pressure at 3,000 crankshaft turns a minute, and can be run from 170 to 3,200 r.p.m. The £585 chassis has a four-speed gearbox controlled by interlocking selector pins; weighs 16½ cwt., and the brake horse-power of the engine is 55 at 3,000 crankshaft turns a minute. Gwynne's, who manufacture the Albert car, now introduce an £8 tax 950 c.cm. pushrod and rocker operated overhead-valve engined Gwynne car, the 4-cylinder power plant of which is distinctive by reason of the use of aluminium pistons and wick feed lubrication to the valve rockers. This chassis has a three-speed, constant mesh gearbox, mounted on the torque tube, the car being marketed, complete with clover-leaf coachwork, for 198 guineas. Again, the old-established coachbuilders, Salmons and Sons, of Newport Pagnell, now bring forward a chassis styled the N.P. (presumably standing for Newport Pagnell), the coachwork being notably superior to the average standardized. This is a £12 tax 1,795 c.cm. machine with pushrod and tappet operated overhead-valve 4-cylinder engine; full cantilever rear springs and special means of taking up wear in the back axle bearings; the car complete with four-seater body being listed at £525, and as a two-seater at £495.

Chiefly Concerning New Models.

Regarding the Show in its international aspect, some of the outstanding features in quite new models of cars introduced by established makers may be touched on briefly. Thus the 1,693 c.cm., 4-cylinder, overhead-valve engined Bignan is distinctive in having Hallot-Servo brakes operating on the front wheels, and no brakes acting directly on the rear wheels. Proceeding in alphabetical order, Crossley introduces a 2,388 c.cm., 4-cylinder, water-cooled, side-valve engined chassis with three-speed gearbox, selling at the price of £475, complete with body and equipment. The 12-h.p. Delage is a small car with a complete four-wheel braking system; as is the 2,614 c.cm. Delaunay-Belleville with nickel-steel overhead-valve engine. In the latter case the Perrot diagonally controlled front wheel brakes act in synchronism with the transmission brake, the hand-controlled brake acting independently directly on the rear wheels. Crouch introduces a 1,248 c.cm. 4-cylinder car to sell at £295 as a two-seater, the chassis being equipped with a 4-cylinder Anzani engine with aluminium pistons. From Belgium comes the 6-cylinder, 5,343 c.cm., overhead-valve engined Excelsior car, of the type supplied to King Albert, and having Adex diagonally controlled, cable-operated brakes to all four wheels. The increasing use of aluminium pistons is illustrated in the 3,308 c.cm. pushrod operated overhead-valve 4-cylinder engined de Dion Bouton, which has four wheel brakes and cantilever rear springs. Pushrod and rocker operated overhead valves are also used on the 2,485 c.cm. 4-cylinder de Dion Bouton chassis which is available with or without brakes to all four wheels, at option.

For £275 Humber introduces a 985 c.cm., water-cooled, overhead inlet valve, side-by-side exhaust valve, 4-cylinder two-seater, with detachable seat for carrying two children or ample luggage, and with all-weather equipment. The 990 c.cm. 4-cylinder Angus-Sanderson (£275) is a two-seater type with dickey. Both the large Humber chassis, previously standardized, are brought forward this year with engines having the new style of valve system. All three models are standardized, with double wind screen and double-action nickel and rubber wiper. A new Singer model with a 4-cylinder, pushrod operated, overhead valve, 1,096 c.cm. water-cooled engine, and the Coventry Premier, with the

same size and type of engine, are introduced, the former having magneto and the latter dynamo and battery ignition. The Straker-Squire car shown comes within the 1½-litre class, being a 1,460 c.cm., pushrod and rocker lever operated overhead valve 6-cylinder engined chassis, with gearbox having four speeds forward and with semi-elliptic springs fore and aft, the whole selling as a two-seater complete for £425. A sports version of the nominal 14-h.p. Sunbeam car with overhead valve 4-cylinder engine, of 1,954 c.cm. volume, is introduced this year to give greater power; a special carburetter, inlet piping, and pistons are furnished, the vehicle achieving a maximum speed of over 65 miles an hour on the flat, and the chassis being marketed at £585. Swift has produced a quarter elliptic sprung four-seater, with a 4-cylinder, side-valve engine of 1,097 c.cm. volume.

Miscellaneous New Schemes.

In the 1½-litre class, the aforementioned 6-cylinder overhead-valve engined 1,454 c.cm. Talbot chassis is listed at £465, and with 4 5-seater body and all-weather equipment at £575. In addition to fitting the large 28–90-h.p. Vauxhall with an overhead-valve engine, a nominal 23–60-h.p. entirely new chassis is introduced this year; it has 3,969 c.cm. pushrod operated overhead 4-cylinder valve engine, the chassis scaling 23 cwt., having four speeds forward, and being listed at £1,150 complete. Ruston-Hornsby introduces a 2,614 c.cm. 4-cylinder and a 3,308 c.cm. 4-cylinder side-valve engined chassis of conventional design, to sell at £525 and at £575 respectively, with 4 5-seater body in each case. The new 1,469 c.cm. Seabrook sports model has an overhead-valve Meadows engine. The Star Company of Wolverhampton introduces a 2,169 c.cm. side-valve engined 6-cylinder nominal 18 h.p. car with two interchangeable cylinder heads, each covering three cylinders only; a crankshaft equipped with integral balance weights; a single dry-plate clutch; and a gearbox providing four speeds forward. Wolseley supplements its list of models by bringing forward a side-valve engined, nominal 14-h.p., 4-cylinder family car of 2,613 c.cm. engine volume, listed complete with 4 5-seater coachwork, for £525 only. Argyll introduces a 1,496 c.cm. 4-cylinder single-sleeve valve engined chassis, with four-speed gearbox, controlled centrally, to sell as a four-seater touring car at £495.

Among the small disc adhesion driven types of cars, G.W.K. has an interesting development this year in bringing forward a type wherein the driving disc is fashioned of aluminium and has triple section cork insertions, divided by thin aluminium rings, round the periphery: thus it is hoped to prevent warping, or bursting, of the discs, and to deal also with the heat problems involved. From France comes the 12-h.p. 4-cylinder Unic with newly designed front axle, rear cantilever springs each set above a quarter elliptic spring; mechanical tyre pump incorporated with the gearbox; and pedal-operated dustproof front wheel brakes functioning in conjunction with the brake on the propeller shaft, the wearing surfaces being supplied automatically with lubricant each time the brakes are applied.

Front Wheel Brake Developments.

Sunbeam introduces a developed form of the £24 tax. 4,824 c.cm., pushrod operated overhead valve, monobloc, 6-cylinder engine chassis with pedal operated Servo motor bolted on to the gearbox. By this means large diameter brakes are applied to all four wheels on the Perrot diagonal system, the front drums being ribbed like the rear ones for cooling. The front axle is designed specially to take the torque, or twisting strain, of brake application. The one piece stamping has an I-section between the two springs, but takes a circular form from, and including, the spring pads outwards to the stub axle; this design is the result of experience in racing: it is the first standardized car to deal with the exceedingly important problem of braking strains. In like fashion Fiat introduces a 26.9-h.p. 6-cylinder overhead-valve engined model wherein the gearbox is used for the hydraulic application of the brakes on the principle of Servo mechanism, which may be described, broadly, as centrifugal force. But the Fiat design is distinctive because, should the gearbox be starved of oil through neglect or any other cause, it would nevertheless be possible to supply the front wheel brakes merely by using the lever in the ordinary way, when the action would be direct by lever and rod. This firm also discovered, quite independently, through racing, the importance of dealing with the twisting strain on the axle; this year's 2-litre Sunbeam and Fiat Grand Prix racers are both distinctive in having tubular axles for lightness sake, whereas in the standard products the axles are built solid. This very important mechanical development will presently affect all motor users, because as the car is lightened and the efficiency of power plant increased the possible means of braking must be increased, because the lighter the vehicle the less the road adhesion per wheel, therefore the less the brake application possible. Anyone now considering the purchase of a car equipped with front wheel brakes should require a demonstration of the ability of the vehicle to negotiate a turn during application of the front wheel brakes. I write this because there is introduced at least one car with brakes to all four wheels in connexion with which the designer intends that they shall be used only when the car is running straight, and not at a corner or turn. This must be due to the method of control whereby to apply such brakes when making a turn would be to interfere with the steering and so cause skidding. But inasmuch as all car design should be governed by a knowledge of what is instinctive in nature it will be appreciated that any such braking system is impracticable, and can lead only to dangerous situations since, if a driver is provided with a lever the pulling of which he knows applies braking effort, and he finds he has approached a corner too fast and is dashing to disaster, it is certain that he will not let go that lever at the critical moment, but will instead pull it to the utmost, with dangerous consequence to himself, passengers, and other users of the highway.

Small Six-Cylinder Sleeve Valve Engines.

The two outstanding mechanical features of all new car design concern brakes and engine valves. Unquestionably the overhead valve is being increasingly used, though some manufacturers, including notably such few members of the American industry as use overhead valves, do so on principles that do not obtain that higher proportion of efficiency, as represented either by power or economy of fuel, which should be the sole reason for employing this gear; if properly done great saving of heat loss can be effected. But the overhead-valve engine has not by any means ousted the poppet side set type. Nor has it eliminated the sleeve type. In fact the last named has been developed notably this year, as witness the showing in the French long distance road race for the Grand Prix de Tourisme, wherein the cars were run on a fuel allowance, and loaded with the equivalent of four passengers, the running weight of each scaling approximately two tons, yet 65 miles an hour mean speed was achieved by the winner. All the cars in this race were equipped with double-sleeve valve engines having a mean effective pressure of 6.3 to 1, which is unprecedentedly high for standard car practice. These engines turned at a speed we should have thought quite impracticable for this type in the pre-war period. Minerva introduces some interesting smaller double-sleeve valve engined types, and all the novelties from the firm that pioneered the whole proposition, the Daimler Company, are in the direction of making this type more popular. Thus, the Daimler 21-h.p., 30-h.p., and 45-h.p. 6-cylinder models are now supplemented by a 12-h.p. 59 by 94 mm. (= 1,541), 70 c.cm., 6-cylinder double-sleeve valve engined chassis, as well as by a 16-h.p., 65.5 by 104 mm. (= 2,166), 74 c.cm. double-sleeve valve 6-cylinder engined chassis, to be sold at £550 and £625 respectively; it is sold also with four-seater bodies. Further, through its associated concern, the Birmingham Small Arms Company, this firm introduces a 4-cylinder double-sleeve valve, nominal 11-h.p. B.S.A. car, the bore measurement being 65.5 mm. and the piston travel 104 mm., and the chassis details being almost the same as those of the air-cooled B.S.A. model introduced as a two-seater last year.

There is also a 6-cylinder B.S.A. model of the same engine size as the 12-h.p. Daimler, but the chassis type is, of course, utterly different. Thus the Daimler B.S.A. programme of fifty-seven models now includes vehicles costing complete from £230 to £2,000, a matter of interest to members of the medical profession being the introduction of complete 6-cylinder small saloon and coupé Daimler types at popular prices, the smaller Daimler models being akin to the largest ones alike in quality and finish; also, in regard to the design, the only apparent constructional difference is the use of semi-elliptic rear springs. In regard to the B.S.A. cars standardized complete with coachwork, one of the cheapest is an interesting variant of the all-weather side panelling scheme. In this the panels slide longitudinally when it is desired to have access either to the front or to the back seats, or to provide ventilation to the vehicle by that means. The other still more novel item is on the all-weather type of body wherein, nevertheless, there are windows that rise and fall as though they were glass. They are, however, made of particularly hard celluloid, to the gain of clearness. Of course, by this means the weight of the window is practically negligible. Further, it is possible for the window as a whole to bend when it is raised or lowered, as it is necessary to accommodate the curved lines of the coachwork. Voisin, hitherto associated with the largest and most expensive types of car, also introduces an 8–10-h.p. double-sleeve valve engined small car with front wheel brakes. The 6–8-h.p. (travel rating 5-h.p.) Renault has a mixture controller

gear mounted on the steering column. The 4-cylinder water-cooled engine has 58 by 90 mm. bore and stroke; the gearbox three speeds forward; dynamotor electric light equipment is standard, and a transverse rear spring is used.

The Battle of the Valves.

Even Rolls-Royce is among those making smaller cars. This firm introduces a nominal 20-h.p. 6-cylinder machine with three-speed gearbox controlled centrally, and semi-elliptic springs fore and aft. But this type is not shown at Olympia, the firm regarding it as entirely supplementary to the large 6-cylinder side-valve engined type, which is represented at the exhibition by numerous examples. Nevertheless, the smaller machine is interesting as being the first-fruits of the firm's unique experience in aircraft engine construction during the war and bringing the make within the purse range of "Harley Street." Thus, as we have in the latest motor spirits marketed those that are mixtures of benzol with petrol and which are known as "fifty-fifty," so we have a number of the leading manufacturers in the motor world, including Rolls-Royce, Fiat, Vauxhall, and Wolseley, exploiting what may be called a "fifty-fifty" valve policy. For instance, Fiat has a big overhead-valve 6 cylinder engined car this year, but the 4-cylinder types and the 20–30-h.p. 6-cylinder model have side valves. Vauxhall uses side valves for the nominal 14-h.p. type, and overhead-valve engines for the two larger chassis; and Wolseley uses side valves for its 6-cylinder, for its 14-h.p. 4-cylinder, and for its 2-cylinder 7-h.p. chassis; but overhead valves for its 10-h.p. and for its 15-h.p. 4-cylinder chassis. Again, among small car builders G.N. offers a chassis with an engine having side valves only, as distinct from overhead inlet and side exhaust valves, and another chassis having a 4-cylinder engine with overhead inlet and exhaust valves. Humber, as we have noted, has designed an engine with overhead inlet valves and side-by-side exhaust valves. Notable novelties introduced from the Continent chiefly range in the 2,000 c.cm. (122 cubic inches) engine volume, and in the 1,500 c.cm. (91½ cubic inches) cylinder content classes, as witness the Ansaldo 2,000 c.cm. 6-cylinder model; the Ballot 2,000 c.cm. touring model; and the Bugatti 2,000 c.cm. 8-cylinder model of entirely new design with, incidentally, sparking plugs approximately the size of cigarettes only. Nominal 10-h.p. types are introduced from the Continent by Hurtu, Léon Bollée, Lorraine-Dietrich, Salmson, Th. Schneider, and Vermorel. Perhaps the most interesting of all tendencies, however, to medical men is the before-mentioned re-entry of no less renowned a firm than Renault into the quite small car market.

A Radical Departure in Car Design.

Unquestionably no departure so radical, without freakishness, is produced as by Lancia on behalf of Italy in a 13.9-h.p., 4-cylinder, overhead-valve engined car with a frameless chassis. This notable development is achieved by the use of a steel pressing for the frame of the coachwork, which is all pressed in one piece, including the frame, for the radiator as well as the tube for enveloping the propeller shaft. The structure is therefore considered to be sufficiently strong to act as chassis frame as well as coachwork frame. It is a wonderful design, entirely practicable and resulting in a remarkably light vehicle, the channel section of stamping being used. Other notable features in this chassis are the overhead-valve engine on the principle that was introduced some time ago in a 12-cylinder model, and which is notable for the extraordinary brevity of the over-all length. In the case of the present 4-cylinder type the same system is used whereby the cylinders are staggered in a 20 degree V only, resulting in a crankshaft of extraordinary rigidity and shortness, the whole power plant giving the first impression that it must be a 2-cylinder type.

General Tendencies.

No one springing system is predominant; nor is any one ignition system, though it would appear that the coil ignition principle is gradually gaining ground. There are, however, notable developments in connexion with magnetos, particularly the new style B.L.I.C. introduced by Vickers, and concerning which Dr. Turner read a notable paper at the recent meeting of the British Association. This is an extraordinarily light, durable, and simple system of magneto. It is remarkable for the efficiency of the spark at engine speeds lower than those at which it is possible to achieve satisfactory carburation, and, at the other extreme, for efficient sparking at the high revolutions at which the most efficient modern engines work. Some manufacturers introduce steering wheels that are still larger in diameter, but of a smaller section, the claim being that steering is rendered easier. Of course, if steering gear is designed properly, there should be no call for this change, since we have been in the habit of using wheels almost excessively large for the convenience of the driver and of those seated next him. Properly designed cars should not require the driver to sit with arms akimbo. Nor should it be necessary for him to make exaggerated movements, as has to be done too often with the steering wheel to make a car deviate even slightly out of the straight path—as, for example, when encountering other vehicles on the road. Than that, no spectacle is more ordinary. It is merely a demonstration of badly designed steering. Further, the use of a smaller section wheel is not desirable on the grounds of comfort, as any one can appreciate who has to do half a day's or a day's driving at a spell. The size in general use hitherto has been the minimum if cramp from overcontraction of the fingers is to be avoided. Properly designed steering is so light nowadays as not to need the use of a wheel of large diameter. We want wider wind screens, not steering wheels.

A solution of the problem of using lower grade fuel with higher compression ratios, regarding the carbon formation process and eliminating "pinking," is furnished by the introduction of the Hobson "non-pinker" (licensed Ricardo and Dodson Bi-fuel Patents), an apparatus supplementary to the carburetter, but the control of which is coupled up with the carburetter control, so that the "non-pinker" is brought into operation at such openings of the throttle as would produce "pinking" conditions without its use. For this purpose it is used solely with water, so obtaining in current type engines run on low-grade fuel the same effects as are at present obtained only by the use of benzol, or of benzol mixed with petrol. In regard to the future of engine design, this development renders it possible to raise compression ratios from 4.6 : 1 (the present average standardized) to 6 : 1, which means opening a new chapter of possibilities in power plant design and production. But in such higher compression engines, of course, the "non-pinker" would not be used to run on water; instead, it would be run on alcohol, hence you would really have the true bi-fuel form of carburetter.

Examples of Lines of Development.

Auto-Carriers is one of the first firms to introduce a small 6-cylinder car. Its £16 tax side-valve engined 6 cylinder chassis with magneto or dynamo ignition at option, right hand gear and brake controls, worm drive and steel disc wheels, is listed, complete with electric engine starting and car lighting set, for £535, or, as a four-seater "Royal" model, at £700. The £12 tax 4-cylinder A.C., with 4 mm. bigger bore measurement, is listed, as a two-seater, at £475 complete with dickey. A notable price proposition among the new small machines is the £9 tax "Ariel Nine" with single shell family four-seater body and horizontally opposed, twin-cylinder, water-cooled engine, retailed at £235, with all-weather side curtains opening and closing with the door, and disc wheels. This is, therefore, one of the examples in which a notable effort is made to overcome the problem of the dickey seat for small cars, in that in the new Ariel when the hood is raised the occupants of every seat are protected from the elements. The 10 h.p. Enfield-Alldav two-seater is marketed at £445 and the four-seater at £450; the firm, which has made great progress during the last year, has introduced a new 12-h.p. 4-cylinder model with an engine of 1,757.33 c.cm. volume, three bearing crankshafts, and forced feed lubrication, together with a gearbox giving four speeds forward, the control being by the driver's right hand. The rear axle is spiral bevel driven, and the rear springing is a version of the cantilever principle. The 1923 £11 tax Galloway car is rated at 10–20-h.p. by the makers, the engine size being somewhat increased (66.5 mm. bore by 110 mm. piston travel). Spring box clamps are employed in connexion with the suspension system; the tools are housed in a drawer under the running board. The side curtains are accommodated in the rear of the driving seat when not in use; they are quickly detachable and have ample opaque areas, so that when the vehicle is used as a completely closed four-seater type there is good natural illumination for its occupants. The Galloway two-seater car, shown with open body and adjustable driver's seat and dickey, is painted light brown and suitably upholstered, being listed at £295 complete, and the four-seater, with three doors, at £350, in both instances delivered at the works.

New Ideas in Body Schemes.

To meet a demand for a Calcott car of slightly heavier proportions an entirely new 13.9-h.p. 4-cylinder model with an engine volume of 2120.57 c.cm. has been introduced with an enclosed oiling system giving the power plant a neat appearance. The gearbox has four speeds forward, and the gate change is accommodated on the driver's right so that there is no question of interfering with the convenience of the occupants in the front seat. Both foot and hand operated brakes act direct, side by side, on drums attached to the rear

wheels. The final drive is by spiral bevel gear. The particular shade of blue adopted by the firm as standard this year is of a distinctive and attractive hue. This 13.9-h.p. coupé is listed at £425. The 10.5-h.p. 4-cylinder Calcott model is marketed as a two-seater with double dickey, double windscreen and side curtains, together with 12-volt electrical engine starting and car lighting set, for £325. A new design of convertible coachwork and certain chassis refinements are features of the Hillman programme for the coming season. Note should be made of the very clever manner in which the windows have been made particularly wide, including those furnished to the types with collapsible hoods; the easy adjustments for reach provided by simple and rapidly operated mechanism in connexion with the seats, the maximum range being no less than 13 inches; the carrying of the side windows when out of use in a special compartment provided behind the seat, and especially the ingenious method whereby the side screens can be so set when the top is furled that they serve as an excellent means of protecting the rear passengers, in the style of a V-shaped wind screen. By means of a distance piece the side screen can be set slightly open, a point which will be much appreciated in many circumstances of driving. Another novelty is the furnishing of a locker on the front side of the dash to serve for a tool kit. In regard to the engine, the three-bearing crankshaft is now balanced rotationally and statically, as are the flywheel, the clutch, and the clutch shaft. By reason of the improvements in detail the Hillman engine develops more power; the exhaust box has been increased in size, and larger gears with helical teeth are used in connexion with the timing details.

Protecting All Passengers Adequately.

Apart from notable reductions in price, perhaps the outstanding feature of the Rover programme is the introduction of the single shell type four-seater body on one of the 8-h.p. models listed complete for £190, thereby setting an entirely new standard of cost, for the hood completely encloses the occupants of all seats when in service. There have been improvements, likewise, in regard to the 12-h.p. Rover car, the engine of which now has pressure-fed lubrication. The 12-h.p. two-seater has been reduced £100 in price to £525, and the 12-h.p. four-seater a similar amount to £555; the coupé body with fixed top is now listed £100 cheaper at £650, and with drop-head type top £125 cheaper at £675. Again, the 8-h.p. two-seater, including all-weather side curtain opening with the door, is reduced no less than £40 to £180. Moreover, last year's price did not include side curtains. The Standard Company has given notable attention to the question of ample interior light in its new models: two new 13.9-h.p. Standard saloon types are introduced; one has smart square coachwork lines, an exceptionally natural interior lighting scheme, together with unusually long leg room and complete fittings, including adjustable seats in front. In the Standard special saloon a transverse spare wheel carrier is furnished at the rear. The 8 h.p. model, which was introduced last year, is in a somewhat different form, and is shown both as a chassis and as a two-seater with dickey. But stand space does not permit the display of this type as a four-seater, which is to be regretted, for it accommodates four persons without excessive overhang at the rear. These small cars, like the larger Standard models, are fitted with all-weather side panels in connexion with a collapsible hood—a principle pioneered by the firm and now becoming universal. The 8-h.p. car has now an electrical engine starter in place of hand-operated equipment, and magneto ignition instead of the battery system first employed. The reductions in the whole range of this firm's car prices are great. The 4-cylinder Waverley types are rated respectively at 11 and 15 h.p., the standard 11-h.p. two-seater being listed at £325 and the model *de luxe* four-seater at £450; while the 15-h.p. model *de luxe* five-seater costs £595, and the four-seater coupé with three doors £750. The touring types are fitted with all-weather curtains. In the 9.5-h.p. 4-cylinder 1,087 c.cm. £10 tax Rhode we have a four-seater car listed complete at £250, or, with self-starter, £15 extra; or as a coupé at £325, with overhead valve gear, detachable cylinder head, Cox carburetter, Brolt electrical engine starter, and magneto ignition, together with thermo-siphon cooling, a gearbox giving three speeds forward, and spiral bevel final drive. The suspension is by quarter elliptic springs fore and aft. Detachable disc wheels are standard, the vehicle having a road clearance of 8 in., an over-all length of 11 ft., a shellbox of 8 ft. 6 in., and a track of 3 ft. 10½ in.

Accessories.

In regard to exhibits by coachmakers, one notes that Offord and Sons display three types of all-weather, all-purpose cars, each of moderate power, the 12.8-h.p. 4-cylinder Austin all-purpose carriage having a featherweight Offord body to seat five; the scheme is designed specially to meet the requirements of medical practitioners. The wide seat for three persons in front gives ample leg room for a tall driver. The hood is of special design and is supplemented with side curtains that open and close with the doors. There is a spare wheel and side curtain lockers under the seat. There are doors on both sides for the convenience of the driver, the colour scheme being blue-grey picked out in black and upholstered in dark blue-grey antique leather at £565 complete. The 15.9-h.p. 4-cylinder Humber is an all-weather car which also accommodates five persons and has special convenience of entry by reason of an ingenious scheme of staggered doors, and sliding armchairs to the front. Special elbow rests are provided for the rear seats when occupied by two persons only. The 18.2-h.p. 4-cylinder Buick has also a featherweight, all-weather Offord body; but the accommodation in this case is for four, the price being £595 complete.

Reference was made in these columns a fortnight ago to the extraordinary change that has come over tyre construction and costs. Therefore it will suffice here to note that the Dunlop exhibit affords convenient opportunity for examining the entirely different construction now standardized on the cord principle with beaded edges and non-slipping all-rubber treads that is, perhaps, the outstanding feature of current tyre development as applied to standard motor cars. The prices, covers with tubes included, are less than the pre-war cost, though many of these pneumatics will give 18,000 miles service against an average of about 4,000 miles before the war. To obviate the aggravating defect, often manifest in the past, of the walls of an outer cover bursting before the tread shows signs of approaching the end of its useful life, the Beldam Tyre Company shows the special design of rubber treads to prevent this trouble; these have a number of side projections which act as buttresses, with the result that a thick tread can be provided to make contact with the road without the walls flexing along a definite line of the fabric and causing localized stress and wear. Apart from the well-known Duco spring gaiters, Brown Brothers exhibit a range of Duco dipping headlights, actuated by means of Bowden cable and lever control, the fittings being arranged to drop on the prongs of existing brackets. The display of the full range of the latest Zenith carburetter designs is supplemented by a special set of carburetters with adaptation, or inlet pipes, enabling them to be fitted easily to a number of popular motor cars. Among the comprehensive array of articles displayed by Gamage are the latest fashions in motor clothing for the winter months, including the slip-on, roomy, waterproof umbrella coat fitted with rubber neck. One of the useful exhibits on this stand is the simple foot-warmer, which shows certain practical improvements on its prototype marketed before the war.

In conclusion, while I have made every effort to be accurate in the foregoing account of novel features at the show, nevertheless it is necessary to put on record the fact that I have never known, in the course of the whole series, such difficulty in arriving at the facts. There have been choppings and changings of policy up to the last moment. Therefore I should be obliged if any manufacturers concerned would draw attention to any details in this account which do not correspond absolutely with their programmes as decided on finally for the forthcoming season, to the end that the facts concerning the finally approved schemes may be mentioned next week.

An outbreak of 51 cases of poliomyelitis in children, with 5 deaths, and 2 fatal cases in adults, has occurred at Tübingen. The fatal cases all showed signs of Landry's paralysis. Twenty-seven cases of poliomyelitis have recently occurred at Marburg, and all the schools have been closed.

According to the census of 1921 the population of France has fallen since 1911 from 39,604,892 to 37,499,917, while the number of foreigners has increased by 417,763, so that there are about 2½ million French inhabitants less than in 1911. Only eight of the ninety departments have shown an increase of population.

Official statistics show that the mortality has been higher and the birth rate lower in the forty six large towns of Germany during the first half of this year than in the corresponding period of 1921. The mortality from tuberculosis is somewhat higher, while that from infectious diseases in children is lower.

The late Mr. John Graham, farmer, of Methven, Perthshire, who died in June last, leaving personal estate valued for probate at £131,724, has bequeathed, subject to numerous bequests, the residue of his estate, which is expected to amount to about £60,000, to the Perth County and City Royal Infirmary.

British Medical Journal.

SATURDAY, NOVEMBER 4TH, 1922.

INSULIN AND DIABETES.

READERS of Professor J. J. R. Macleod's summary (published at page 833) of the work carried out during the past two years in the Toronto Medical School, on the specific treatment of diabetes mellitus, cannot fail to draw the conclusion that a scientific advance of immense importance has already been accomplished.* Earlier attempts at extraction from the pancreas of a hormone controlling carbohydrate metabolism had produced results too capricious and indefinite to carry conviction; and the attribution to the gland of this endocrine function was based almost entirely on the effects of extirpation and grafting. The more definite assumption, that the islets of Langerhans were responsible for producing the hypothetical hormone, was similarly based on histological examination of the pancreas under various conditions.

The Toronto observations, which were initiated by the brilliant enterprise and fresh enthusiasm of F. G. Banting and C. H. Best, and have now, with the advice and co-operation of Professor Macleod himself, been extended over a wide range by a team of collaborators, have placed beyond all doubt the existence of the pancreatic hormone, its origin from the Langerhans islets, the possibility of extracting and separating it in active and relatively stable condition even from the normal adult mammalian pancreas, and its efficacy in correcting the metabolic defect which causes diabetes mellitus. Only the mere outskirts have yet been surveyed of the rich new physiological territory which now lies open to exploration.

To the practising physician a matter of even greater interest will be the promise of a really great advance in the treatment of human diabetes and the substantial success in this direction which is, indeed, already on record. Whole-hearted enthusiasm for this splendid achievement does not conflict with but rather demands a wise caution against a too hasty assumption that the practical therapeutic problems have been completely solved. Caution of this kind is clearly implicit in Professor Macleod's guarded statement.

The methods of producing active solutions of "insulin," and of gauging their activity, would appear to call for much further investigation before any institution, scientific or commercial, could safely promise regular supplies of a satisfactory and uniform preparation. Any wide extension of the treatment before such regular supplies can be guaranteed would involve real cruelty and possible danger to the sufferers, and impair the credit of the discovery with the public. No definite expectation is yet warranted that a case of diabetes can be cured by insulin, so as to be placed beyond the need for its further use. The indications point rather to the probability that regular administration, continued in most cases throughout life, will be needed to maintain improvement. In this direction the treatment may be compared with that of myxœdema by thyroid gland. There is the additional complication in the case of the insulin treatment that hypodermic injection is as yet the only method of proved efficacy. Experimental and clinical evidence combine to indicate the danger of overdosage, a too rapid or severe fall of the blood sugar having as a result distressing symptoms which may be dangerous or even fatal if unchecked.

Under all these conditions it seems clear that the treatment has not yet reached a stage at which it can be made available to the profession for general application. Under expert supervision, in clinics where diet and dosage can be accurately adjusted and effects controlled by regular, skilled analysis, results of high promise have been obtained in Canada and the United States, and will no doubt be obtained in this country when supplies of insulin are available on a sufficient scale. Only careful study under such conditions, and the improvements which are practically certain to be made in technique and control, can make this new knowledge applicable to the treatment of sufferers from diabetes in general.

It is imperative, moreover, that any such extension of the treatment beyond organized experimental clinics shall be made under conditions giving the strictest scientific control of the preparation supplied to the profession. The authorities of the University of Toronto, realizing this necessity, have taken steps to protect the process of manufacture, and we are glad to note that they have offered to place this means of control, for this country, in the hands of the Medical Research Council. We understand that a deputation sent by the Council to study the position of this treatment on the American continent has now returned to this country. We may venture to express the hope that the Council will find it possible to accept the offer made by the University of Toronto, and will take early measures to ensure the introduction of this most hopeful treatment into this country under such conditions of control as will serve the best interests of medical science and of the public.

* Notes of the preliminary reports made by Professor Macleod, Dr. F. G. Banting, Mr. C. H. Best, and their collaborators, were published in our columns of July 22nd, 1922, p. 140, and September 9th, p. 480.

ÆSCULAPIUS.

SEVERAL recent English publications have combined to draw the attention of medical men of this country to the deity of healing, after whom they and their profession are not infrequently called, and whose insignia appear on a large number of medical emblems.[1] Dr. Farnell, Rector of Exeter College, Oxford, in a learned work, with which medical historians will not always be in full agreement, has recently marshalled most of the inscriptional, artistic, and literary sources for our knowledge of the god in the earlier stages of his development. The position and reputation of the author demand great respect for his conclusions, though we regret that at times he does not himself exhibit a somewhat more tolerant spirit towards the views of certain very eminent scholars. The Æsculapian cult extends over so wide an extent of time and place, its origin is so obscure, its developments so various, the records so broken and partial and often apparently so contradictory, that there is room for much difference of opinion, though certain conclusions are now fairly sure.

Dr. Farnell's most important deductions may be considered under two headings: first, the original identity of the god with an actual man, and secondly, the relation of his cult to the subsequent development of medicine. Much cogent evidence may be adduced for regarding Æsculapius as an historic personage. In the well-known Homeric catalogue of ships he is spoken of as the father of the completely human physicians, Podaleirius and Machaon, and associated with Trikka in Thessaly. There is certainly much in the subsequent

[1] L. R. Farnell, *Greek Hero Cults and Ideas of Immortality*. The Gifford Lectures, delivered in the University of St. Andrews in the year 1920. Oxford: Clarendon Press, 1921. E. T. Withington, "Asclepiadae and Priests of Aesculapius," *Studies in the History and Method of Science* (C. Singer), vol. i. Oxford, Clarendon Press, 1917. M. N. Tod, "Recently Discovered Records of Ancient Cures," *Proc. Roy. Soc. Med.* (Hist. Sect.), vol. xv, p. 22, 1922. Charles Singer, *Greek Biology and Greek Medicine*. Oxford, Clarendon Press, 1922. J. Six, "Asklepios by Bryaxis," *Journal of Hellenic Studies*, vol. xlii, Part I. 1922.

history of his cult which is quite consistent with this. His history and that of his cult is indeed surprisingly like that of the Egyptian physician-god Imhotep, whom we know to have been an historic personage. Dr. Farnell is very convincing on this parallel, and he is evidently disposed to regard Aesculapius as of human origin, though he expresses himself with caution. On this view we may suppose that the original Aesculapius was a real practitioner of medicine who exercised his art in Thessaly somewhere about the year 1000 B.C. It is in considering the relation of the later Aesculapian worship to the development of medical science that much more debatable issues are raised.

The cult of the physician Aesculapius as a god which thus arose in the first instance at Trikka appears to have been associated with the serpent from a very early date. The great historic centre of the cult, Epidaurus in the Argolic peninsula, was secondary to that in Thessaly. It was, however, chiefly from Epidaurus that the worship of Aesculapius seems to have spread throughout the ancient world, and among the most interesting of its later centres were those of Cos, Athens, Pergamon, Alexandria, and Rome. At Epidaurus the extensive ruins were long ago excavated by the now venerable Professor Cavvadias, whose son, at the recent Congress of the History of Medicine in London, gave a review of the relation, or rather the want of relation, of the medical profession to the Aesculapian worship in antiquity. At Cos similar excavations by the Germans described by Dr. Herzog have been less productive. Concerning the migration of the god to Rome, Livy and Ovid give circumstantial accounts of how the sibylline books during the plague of 293 B.C. induced the State to send an embassy to Epidaurus to seek help from Aesculapius. The ship returned, under the god's favour, bearing the sacred serpents, and stopped at an island in the Tiber where the animals chose to land. A temple arose there, and the sanatorium in connexion with it became famous in imperial times. Traces of the temple can still be seen on the island of St. Bartolommeo, part of the rock of which is carved into the form of a ship's poop decorated with a serpent twined around a staff.

The problem concerning the Aesculapian cult that must especially interest our profession is whether and how far, if at all, the worship of the god was associated with the development of scientific medicine. The worship of Aesculapius reached in later times a high degree of spirituality. Locally, and under special conditions, he even ultimately attained the rank of a supreme and perhaps universal god whose cult bore certain obvious parallels to that of Christianity. Speaking generally, however, his worship was on a low plane of folk belief and associated with a great amount of priestly deception, some of which was certainly wilful. We know from several writers that the practices of the Aesculapian priesthood were a subject of derision among the better educated and more level-headed of the ancients. So far as we are able to see, there is no trace either in its higher or lower development of any of the elements out of which science could be built. Furthermore, though many medical men, including Hippocrates himself, are spoken of by ancient writers as "Asclepiads," there is no evidence in the whole of the literature of medical antiquity of the association of a medical man of scientific repute with the worship of the god. Moreover, we do not know what the term "Asclepiad" really implies, for, though we assume it to involve membership of a physicians' guild, we can but guess at the nature and claims of membership of a company of which we know absolutely nothing. It seems more than probable, however, that an Asclepiad was not in any sense a *priest* of Aesculapius. It is true that instances can be adduced of professional physicians, otherwise almost unknown, who were actually priests of Aesculapius, and that some medical men were accustomed to sacrifice to the god. But this is no ground for asserting that medicine grew out of Aesculapian worship.

That there is a field in which science and religion may be and are of use one to the other all medical men will most readily admit. It is yet a patent fact of history—a fact which Dr. Farnell himself sufficiently emphasizes—that, on the whole, the great religions have been inimical to the free prosecution of scientific inquiry. The folly and wilful deception of the worship of Aesculapius, as its record has reached us, can have been no more helpful to scientific research than any other religious system known to us. Where the Greeks, however, differed from many other peoples is that their priesthood was comparatively weak and divided against itself by the number and variety of their cults, and that their opinions were not reinforced by the study of sacred and canonical books. This gave the philosopher and man of science a freedom of thought and expression which he never experienced again until modern times. That freedom largely explains the success and enthusiasm with which science was prosecuted in remote antiquity. The authors of such Hippocratic works as *The Sacred Disease*, the *Airs, Waters, and Places*, or *Epidemics I and III*, all of which were probably composed in the fifth or early fourth century B.C., were as far removed from the practice of the priesthood of Aesculapius at Epidaurus and elsewhere as are the researches of a great modern physiological laboratory from the practice of Lourdes. Certainly the case for the relation of Aesculapian worship to scientific medicine is no stronger than that which could be and has been made out for modern medicine as a product of Christian thought by pointing out that Nicholas Stensen, whose name is associated with the salivary duct, became a bishop and that several distinguished churchmen, including one pope, have held medical degrees.

Professor Cavvadias junior, in his recent address at the International Congress of the History of Medicine, following his father, who is in agreement with Dr. Withington and the majority of modern medical historians, traced the development of the priestly medicine and the physician's medicine of antiquity along quite separate lines which seldom or never meet. That they may have had a common origin in the natural wonder of man, who always seeks somehow to explain the world in which he lives and to better his lot, all will admit. Few medical men, we think, who take the trouble to peruse the Hippocratic collection and then glance at Dr. Farnell's evidence of the nature and history of Aesculapian worship will be likely to believe in any closer link. But whatever their origin and finer relations no one, surely, will doubt that the main course of ancient scientific medicine was manifestly separate from that of the worship of the god of healing. It is the spirit of Hippocrates and Aristotle, and not that of Aesculapius and Chiron the Centaur, that rules the medicine of our time.

THE INSTITUTION OF THE LEEUWENHOEK VEREENIGING.

The members of the Dutch Cancer Institute held a very successful international conference from October 23rd to 25th at Amsterdam. In the laboratories of the Antoni van Leeuwenhoekhuis, under the presidency of Professor J. Rotgans, there gathered together a dozen prominent experimenters from England, France, Germany, Austria, Denmark, and Switzerland to discuss the most recent advances made in the experimental study of cancer, and the Dutch are to be congratulated on bringing to the same table men of such different nationalities. The various communications, dealing with the methods of producing cancers, the latent period in the reaction to an irritant, and the analyses of the early and precancerous

changes, will be published in a special commemorative volume, and some will soon appear in our pages. The impetus which these meetings give to experimental cancer research, the interchange of ideas and criticism, and the cordial relations established between the various workers, mark a milestone in scientific endeavour. Future meetings will be held in neutral countries at such times as seem necessary according as researches accumulate. Owing to the charming hospitality of the Dutch, no less than to the excellent scientific contributions, the first meeting will always be memorable. The various representatives agreed to form a society, without definite rules or constitution, which would act as an exchange for original work. Long discussions ensued about the name of the society, till one of the members, a Scotsman who claimed to be a "foreign Dutchman," suggested the title of "Leeuwenhoek Vereeniging," out of compliment to the memory of the illustrious Dutch scientist. We wish it all success.

THE REGULATIONS OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

The Royal College of Physicians of London has recently made certain alterations in its by-laws and regulations which are of special interest to Members and to candidates for that diploma; one change is of interest to Fellows also. The changes have been duly reported in our columns on October 28th (p. 828) and in this issue (at p. 894); but it seems desirable to attempt to indicate how they will operate. The chief effect of one of the alterations will be to permit a Member to practise in partnership and to buy or sell the goodwill of a practice; he will also be allowed to dispense his own medicines or to make arrangements with a pharmacist to do so. For years past instances have frequently occurred in which a Member has found it desirable to enter into partnership, and it has then always been necessary for him to resign his Membership. Later on he might apply for this to be restored, and it has been the practice of the College to accede to his request unless there was some very good reason to the contrary. In future a Member entering into partnership, dispensing his own medicine, or making arrangements with a pharmacist to do so for him will be able to retain his Membership. These restrictions continue to apply to Fellows. A consequential alteration is that a by-law prohibiting admission to the examination for Membership of a candidate who practised in partnership, or dispensed medicine, or made arrangements with a pharmacist to do so has been repealed. This by-law also forbade a Member of the College to be engaged in trade; the exact significance of this is not apparent. Another change has reference to the association of a Fellow or Member of the College with a company or institution having for its object the treatment of disease for profit. In 1888 the College passed a resolution declaring "that it is undesirable that any Fellow or Member of the College should be officially connected with any company having for its object the treatment of disease for profit." The interpretation of this resolution sometimes gave rise to difficulties; the College has now defined its position by adopting the following resolution: "That, subject to the provisions of By-law CXC, it is undesirable that any Fellow or Member of the College should have any financial interest (whether direct or indirect) in any company or institution having for its object the treatment of disease for profit, other than the receipt by him from such company or institution of (1) a fixed salary, or (2) fees, for such services as he may render to such company or institution in his capacity of medical practitioner." By-law CXC, it may be explained, states the powers of the College with regard to Fellows, Members, or Licentiates who have been guilty of any great crime or public immorality, or acted in any respect in a dishonourable or unprofessional manner, or violated any regulations of the College. If the charge be of sufficient importance, and is established, the College has power to withdraw the diploma of the Fellow or Member or Licentiate for a limited period of time, or altogether, as may be determined. It has also power in minor cases to admonish or reprimand a Fellow or Member or Licentiate, or to inflict a fine not exceeding £10. The College has not arrived, we understand, at the resolution above quoted without long consideration. It was felt on the one hand that it would be most undesirable to interfere with the kind of practice which is now commonly called team work, but on the other that the College could not countenance arrangements under which a medical man had a personal financial interest in the success of an institution of the kind mentioned, since circumstances might arise in which such interests might come into at any rate apparent conflict with his duty as a medical practitioner. Another difficulty the College may experience when interpreting its resolution is with regard to the manner in which such institutions are conducted and advertised. Of this difficulty the British Medical Association has had much experience, in relation particularly to so-called "medical aid institutes." It was found that such institutes were often conducted by their managing committees in such a way as to exploit the medical officers—paying them very insufficient salaries, subjecting them to irritating supervision, and using their names for advertisement. The Association steadily set its face against such exploitation, and after a long and fluctuating fight succeeded in scotching, if it did not completely destroy, the evil. It will be necessary for the College to keep a very close eye on the methods of institutes seeking a richer *clientèle*, in order that any improper tendencies may be nipped in the bud.

ECONOMY AND DISEASE.

We print elsewhere an abstract of a paper by Dr. R. J. Ewart on the economic factor of the decline of tuberculosis and a report of the discussion which followed. The subject is of immediate interest, and those who have discussed it in the lay press might be likened to the duellists in *Mr. Midshipman Easy*. At one apex of the triangle is the socialist doctrinaire who will eradicate disease by the instrumentality of a whole-time State medical service, free meals for all, and houses at an uneconomic rent; at another apex gesticulates the "anti-waste" orator, who asserts that if the "public" is only left alone, and does not have to feed and clothe "bureaucrats," it will grow fat and healthy; at the third apex is the more or less gloomy popular eugenist who favours leaving things to "Nature," but differs from the "anti-waste" exponent in desiring to endow "fit" parenthood. Naturally all those who debated the subject at the Royal Society of Medicine were *within* the triangle and a long way from any apex of it, for it is plain enough that there is no standing room for an intelligent man on a Euclidean point. Probably the medical man who has turned over the pages of Simon's reports and paid attention to the actual manners and customs of working-class patients now and twenty years ago, will think that Dr. McVail went closest to the root of the matter. The connexion between polluted water supplies and typhoid is obvious now to the densest local authority, and the most parsimonious does not contend that to spend money on pure water is wasteful; certainly not all communities using diluted sewage as a beverage sixty years ago did so because they could not afford anything better. The village of Terling was very poor, which might explain what happened there, but plenty of funds were available for, say, Windsor Castle. The authorities of Windsor Castle and of Terling had the common factor of ignorance; the great sanitarians of the mid-Victorian period had to dispel that ignorance; to do so was a heavy task, but the task was achieved. The men must indeed have a touching faith in the natural good sense of our fathers who supposes that if the money which went in the salaries of Simon, Buchanan, Thorne Thorne, and their fellows had remained in the pockets of the taxpayers, the position with respect to water-borne disease in England would be what it is to-day. Yet it might have been quite easy, for a statistician of the late seventies to construct a diagram showing a parallelism between the decline of typhoid and the increase of commercial prosperity in the palmy days of "free trade." Our problems to-day are different in detail but perhaps not in

essence. There are still a few facts respecting health which the man in the street and his local or national representatives do not know; a knowledge of these facts can only be disseminated by a public health service. A wise man will stand within the triangle a long way from the doctrinaire's apex, but not very close to that of the "anti-waste" orator.

THE NATURE OF FILTER-PASSING VIRUSES.

Wide interest has been aroused in that group of organisms known as ultramicroscopic viruses, or filter-passing organisms, by recent studies in connexion with influenza and by the remarkable phenomenon of bacteriolysis described by Twort and d'Herelle.[1] The considerable list of diseases described in the closing pages of every textbook of infectious disease as of "unknown etiology" is rapidly becoming depleted, the names being transferred to the apparently more creditable position under the heading of diseases due to filter-passing organisms. Influenza and the common cold were the last to make the move; powerful reasons for this transfer were brought forward by Dr. Mervyn Gordon at the Microbiology Section of the Annual Meeting of the British Medical Association, and it should be noted that the ranks of the filter-passing group are thus being swelled by recruits from diseases of bacterial origin also. What then is the nature of the filter-passing or ultramicroscopic viruses? Dr. H. M. Woodcock has made a contribution to the discussion of this problem,[2] in which he considers the evidence derived from the morphological appearances of these granules when stained by Giemsa's stain. He observes that everything which stains red with Giemsa does not necessarily consist of chromatin, and states that very similar appearances to those seen in smears said to show the filter-passing virus of influenza may result from the degeneration of the nuclei of epithelial cells and leucocytes; his arguments are illustrated by pictures of disintegrating nuclei. He claims to have shown by careful staining that the ultramicroscopic particles do not contain chromatin, for which reason they cannot be regarded as living organisms; and he looks upon them as products of the digestion of organized material. Although Dr. Woodcock does not consider these various bodies and granules to be the actual virus, he thinks a pathological enzyme may be adsorbed on to the granules so that though these granules are not the actual virus they may indicate its presence. In such a disease as influenza an auto cytolytic action may be set in train, similar to the progressive autolysis observed in the Twort-d'Herelle phenomena, and this auto-cytolytic process may be transmissible through series of animals. It must, however, be said in justice to those who hold that the minute granules are living parasites that their opinion is based on other foundations than those provided by morphological appearances alone. No filter-passing enthusiast would claim that every granule was a living parasite; other origins of these granules are well known, though perhaps insufficient attention has been paid to the derivation to which Dr. Woodcock refers. Therefore, whilst our knowledge of the origin of some of the granules seen in Giemsa-stained films has been made more definite by Dr. Woodcock's work, it cannot be said that he has seriously shaken the contentions of those who look on influenza as being caused by an ultramicroscopic virus.

MEDICAL MEASURES FOR PREVENTING VENEREAL DISEASE.

The committee appointed last April, at the suggestion of Lord Dawson, and with the encouragement and support of the Minister of Health (Sir Alfred Mond), "to consider and report upon the best medical measures for preventing venereal disease in the civil community, having regard to administrative practicability, including cost," is now, we understand, sitting once a week, and has issued a questionnaire to prospective witnesses. It will be remembered that Lord Dawson's proposal was embodied in two questions. The first was, What, in the present state of knowledge, are the most efficient medical measures for preventing venereal disease? and the second, How far is it ethically justifiable to appiy such measures? Lord Dawson suggested that those who had the technical knowledge should get together in conference and try to arrive at conclusions on the medical and administrative aspects of the problem, uninfluenced by any ethical considerations. Until such conclusions, supported by a considerable preponderance of opinion, had been reached it could not, he argued, be reasonably expected that the Ministry of Health should do otherwise than maintain impartiality. When the conclusions were formulated a wider public would decide whether it was ethically justifiable to found a policy upon them. A committee of selection, consisting of eight distinguished members of the medical profession, was appointed, and chose a Committee of Inquiry consisting of fourteen medical men and one medical woman. The names were given in the letter from Lord Dawson published in our issue of April 22nd (p. 655). Afterwards the name of Dr. Morna Rawlins, assistant to the obstetric surgeons in the Department for Venereal Diseases, Guy's Hospital, was added. Lord Trevethin, who had then recently retired from the office of Lord Chief Justice of England, consented to become chairman, and Mr. T. J. Tomlin, K.C., one of the standing counsel to the Royal College of Physicians of London, vice-chairman. The set of questions the committee has issued to the witnesses it proposes to hear are arranged under three headings: the first heading is as to the nature and efficacy of direct medical measures for preventing venereal infection; the second is as to the treatment and instruction of infected persons as an indirect measure for preventing venereal infection; and the third is as to the administrative measures that can and should be taken for preventing infection. Under the last heading the witness is asked to give an opinion on the efficiency and practicability of instituting measures of immediate self-disinfection, where this should be given, the form it should take, and at what age in both sexes it should be given. An expression of opinion is also asked as to the advisability of continuing the present system of free treatment at public clinics, and as to the propriety of instituting compulsory notification of venereal disease.

THE PLACE OF THE WHITE MAN IN THE TROPICS.

The question whether the white man can colonize and live permanently in the tropics has often been raised, and much argument has been adduced on both sides. A suitable climate, of course, means one in which he is able not only to live permanently himself, but to beget offspring who will go on living there and who will in turn raise up healthy and vigorous future generations there. Strictly applied, then, in this manner the answer is, No. A strong argument in support of this is the generally accepted belief that the aboriginal inhabitants of the hotter parts of the earth were black and of the colder parts white. Dr. Hewetson, in a very interesting paper read before the Rhodesia Scientific Association at Salisbury last May, surveyed the situation again from the medical and scientific aspects. Amongst medical points he mentioned that miscarriage is more common in white women in the tropics than amongst the blacks and the general birth rate is lower. He agreed with the statement made above, and indeed put it in much the same way. Suitability for living in the tropics, he said, means "the capacity to live in a country and propagate a stock through several generations, as good at least as that from which we sprang." Mere replenishment is not enough. Wherein exactly, he asked, lies the difficulty of Europeans colonizing the tropics? Is it due to germ diseases alone or is the cause climatic, or are both causes operative? There is no doubt that disease does play a part in limiting the activity and life of the white man in the tropics, but there is in addition all those conditions which may be summed up in the word "climate." Dr. Hewetson discussed many of the

[1] British Medical Journal, August 13th, 1922, p. 289 et seq.
[2] *Journal of the Royal Army Medical Corps*, October, 1922.

details embraced in this term. After referring to the influence of the actinic rays on the blood and on the nerves, he denounced in good set terms the dangerous effects of using galvanized iron for roofs and walls, for by them were produced abnormally high temperatures, which caused general weakness, cardiac distress, and paved the way for definite diseases. In addition to these physical effects there are the psychological, which are of the utmost importance: the neurasthenia, the monotony of always seeing the sun, the constant desire for stimulants "to buck one up," the cocktail before dinner to give one an appetite, and so on indefinitely. All the circumstances combine to produce neurasthenia. Dr. Hewetson suggests remedies to meet some of these evils, which seem well calculated to improve the condition and reduce the troubles. He suggests, for example, an absolutely non-heat-conducting roof of asbestos; this, however, would be expensive, and the ordinary thatched roof which the native (taught, no doubt, by long experience) uses for his huts might serve as well. The main factor still remains—the excessive heat—and it is this the white person cannot contend against in the long run. We grumble at the climate of England, but it is the constant changes of weather with the four seasons that harden one and produce the race best suited to inhabit these parts. That is why there are white people here; the excessive heat and constant sun, on the contrary, is why deeply pigmented people inhabit the tropics. We cannot get past this by any argument, however much we would like to do so, as has happened in the Northern Territories of Australia.

OPHTHALMIC PROGRESS IN EGYPT.

The ninth annual report of the director of ophthalmic work in Egypt, Mr. A. F. MacCallan, shows that there has been further progress in the provision of ophthalmic treatment. The director calls attention to a distinctive feature of the Egyptian ophthalmic hospitals, in that twenty hospitals are grouped under one direction, in which 113,000 new patients were treated, 65,000 operations performed, and over one million out-patient attendances made during last year. He states that this facilitates the systematic trial of various methods of operation and treatment. During last year, of the patients applying for treatment, over 15,000, or 12 per cent. of the total patients, were blind in one or both eyes. Attention is drawn to the distinction between the acute ophthalmias and the chronic disease trachoma. The acute inflammations may, in the absence of treatment, cause blindness in a few days, so severe are they. Chronic trachoma affects some 95 per cent. of the population; it very frequently causes depreciation of vision but less often blindness. Investigations have been made into the causes of optic atrophy. Last year 114 cases were seen, of which the majority were of the post neuritic type; most of these followed acute infectious disease, generally typhus, but for the most part it was impossible to determine the cause of the primary atrophy. Investigations into the incidence of glaucoma show that it is more prevalent in Egypt than in other countries, the incidence amongst all patients being 1.77 per cent. as against 1 per cent. amongst Americans. From this disease there arises a serious tale of blindness owing to the late stage at which patients come for treatment. The following regulations have been laid down for the admission of candidates for posts in the Government service: The candidate must have a vision of 6/12 in each eye, or 6/6 in the better and 6/18 in the worse, the error of refraction not to exceed 6 diopters in each eye. If the glasses are stronger the candidate will be rejected unless his physical condition, apart from visual acuity, is above the average.

THE MOTOR SHOW.

The Motor Show this year, which opened on Friday (the private view was on Thursday), is bigger than ever. Though some firms have not been able to engage enough space to display all the cars they wished to submit to the judgement of buyers, the number exhibited is so large that the visitor who has only a few hours at his disposal may well feel bewildered. The article on the Show published this week (p. 877) contains details in abundance to enable intending buyers to narrow down within reasonable limits the list of cars they would wish to see as most likely to meet their requirements in respect of construction and price. In addition an attempt is made to estimate the general trend of opinion and new enterprise in the trade. It is satisfactory to be able to draw the conclusion that the trend is towards reduction in price and higher efficiency, especially in the small cars, and a greater disposition to cater for the buyer to whom a car is a necessary part of the equipment for carrying on his business or profession. The growth of the demand for motor cars with an efficient and durable chassis, and comfortable all-weather body, at prices that the man of moderate means who has to earn his living can or ought to afford is being realized, even by some firms which have hitherto looked for purchasers among people with fat purses to whom cars are mere matters of convenience or parade. Medical men now have a long list of reliable cars from which to make their choice.

DELEGATION FROM THE UNIVERSITY OF STRASBOURG.

Seven members of the medical faculty of the recently reconstituted French University of Strasbourg have visited the United States, and are now in Great Britain as the guests of the Rockefeller Foundation, the object being to give them an opportunity of studying the organization and teaching methods of American and British universities and medical schools with a view to the coming reorganization of their own university. The delegation will be in this country from October 29th until November 8th. During this time members of the party will study work in their respective subjects at some of the medical schools in London and in the universities of Cambridge, Oxford, and Glasgow; the arrangements are being made by the Medical Research Council on behalf of the Rockefeller Foundation. The party consists of Dr. Georges Weiss, dean of the faculty and professor of biophysics; Dr. Léon Blum, professor of clinical medicine; Dr. Paul Bouin, professor of histology; Dr. Camille Duverger, professor of ophthalmology; Dr. Pierre Masson, professor of pathological anatomy; Dr. Maurice Nicloux, professor of physiological chemistry; and Dr. Lucien Pautrier, professor of dermatology.

SMALL-POX IN LONDON.

Last week we published Dr. Hamer's report, submitted to the London County Council on October 24th, regarding cases of small-pox which had occurred in Stepney, West Ham, and Dartford. Subsequently the disease was discovered in Poplar workhouse, and Dr. H. A. Macewen of the Ministry of Health at a meeting with the Board of Guardians reported that some twenty cases had occurred and been removed for isolation. On October 31st the Poplar medical officer reported five more cases, all in the workhouse. The diagnosis of all the cases as they arise is being reviewed by Dr. Wanklyn, of the London County Council. Many of the cases are of severe type. The workhouse outbreak need not create great alarm. In such an institution every individual, whether inmate or officer, can easily be kept under observation and dealt with as may be advisable. We have no doubt that the guardians are in this matter accepting the advice of Whitehall as to vaccination, isolation, and surveillance of contacts. The five new cases reported on October 31st would belong to the first crop from the original source. The object now must be to prevent a second crop, and that, we trust, will be, in the circumstances of the workhouse, successfully accomplished. The more alarming fact is the appearance of the disease in so many different localities—Stepney, West Ham, Dartford, and Poplar—and also the circumstance that confluent cases are included in the outbreak. To search for contacts in these crowded populations,

with the class which they include, cannot but be a difficult matter, and the outcome will be watched with some anxiety. Meantime the prudent should make certain that they and their children and dependants are secured against the infection by immediate vaccination. Why the public vaccinator did not take care that he himself was protected is the most puzzling thing in the whole outbreak.

HUXLEY LECTURE.

Owing to the indisposition of Sir Arthur Keith, F.R.S., the Huxley lecture which was to have been delivered at Charing Cross Hospital Medical School on Wednesday next, November 8th, has been postponed.

The new *x*-ray department of the Manchester Royal Infirmary will be formally opened on Friday, November 18th, at 2.30 p.m., by Sir Humphry Rolleston, who, with the members of the Electro-Pathological Section of the Royal Society of Medicine and the Röntgen Society, will be visiting Manchester.

THE GENERAL ELECTION.

The position of parties at the approaching General Election is confused. The Conservative Party (C.), also spoken of as Unionist (U.), and the Labour Party (Lab.) have been before the constituencies for a good many years, and their position is fairly well defined. In addition there is the Liberal Party, which seems to be divided into two wings, one led by Mr. Asquith (L.) and the other by Mr. Lloyd George, which is known as the National Liberal Party (N.L.).

The following is a list of medical candidates so far as we are at present able to ascertain. We shall be glad to receive additions and corrections.

*Dr. C. Addison (L.), Shoreditch
Dr. R. Ambrose (Ind. Lab.), Whitechapel
Dr. H. Wansey Bayly (Ind. U.), Sutton, Plymouth
Dr. H. B. Bates (U.), Newton, Lancs.
Dr. Ethel Bentham (Lab.), Islington East
Sir George Berry (U.), University of Edinburgh
Dr. H. B. Brackenbury (L.), Walthamstow East
Dr. W. A. Chapple (L.), Dumfries
Sir John Collie (N.L.), Partick
*Dr. W. E. Elliot (U.), Lanark
*Dr. F. E. Fremantle (U.), St. Albans
Dr. L. Haden Guest (Lab.), Southwark North
Mr. Somerville Hastings, M.S. (Lab.), Epsom
Dr. C. W. Hayward (L.), Kensington North
Dr. Sidney C. Lawrence (C.), Combined English Universities
Dr. H. D. Levick (N.L.), Middlesbrough
Sir William Milligan (L.), Salford West
*Major J. E. Molson (U.), Gainsborough
Dr. R. O. Moon (L.), Wimbledon
Dr. H. B. Morgan (Lab.), Camberwell North-West
*Dr. D. Murray (L.), Western Isles
Sir Sydney Russell-Wells (U.), University of London
Dr. V. H. Rutherford (Lab.), Sunderland
Dr. A. Salter (Lab.), Bermondsey
Dr. R. W. Simpson (L.), Newcastle-upon-Tyne North
Dr. George E. Spero (L.), Leicester West
Dr. E. H. Stancomb (Ind.), Southampton
Dr. D. F. Todd (U.), Chester-le-Street, Durham
Dr. T. Watts (U.), Withington
*Sir William Whitla (U.), Queen's University, Belfast
Dr. J. H. Williams (Lab.), Llanelly
Dr. R. M. Wilson (L.), Saffron Walden

*Represented the constituency in the last Parliament.

Among the new candidates Dr. H. B. Brackenbury (Walthamstow East) and Sir Sydney Russell-Wells (University of London) have been approved by the British Medical Association. Among the old members who are standing again are Sir Henry Craik (Scottish Universities), Sir William Whitla (Queen's University, Belfast), Dr. Walter Elliot (Lanark), and Dr. F. E. Fremantle (St. Albans); all of them have done yeoman service in the House of Commons for the profession, and have frequently given assistance to the British Medical Association in representing the views of the profession to Parliament.

British Medical Association.

COUNCIL DINNER.

The British Medical Association made a departure on October 25th by the inauguration of a Council dinner, which it is intended shall be an annual event. It is designed for recognition of the Past President and any other retiring officer at the end of his term and to bring together, in converse with the Council, Ministers, the heads of learned societies, and others with whom the Association is in touch.

The dinner took place at the Grand Hotel under the chairmanship of Dr. R. A. Bolam, Chairman of the Council, who explained that, owing to the political crisis, several Ministers (who had accepted invitations) and a number of members of Parliament had other more pressing engagements and had sent letters of regret.

The following guests of the Association were present:

Professor David Drummond, C.B.E., D.C.L., retiring President; Right Hon. E. Shortt, K.C., M.P.; Sir Humphry Rolleston, K.C.B. President, Royal College of Physicians of London; Sir Anthony Bowlby, K.C.B., K.C.M.G., President, Royal College of Surgeons of England; Sir William Hale-White, K.B.E., President, and Sir J. Y. W. MacAlister, Secretary, Royal Society of Medicine; Surgeon-General W. B. Slaughter, Master of the Apothecaries' Society; Lady Barrett, C.B.E., President, Medical Women's Federation; Sir Arthur Robinson, K.C.B., First Secretary, Ministry of Health; Sir George Newman, K.C.B., Chief Medical Officer, Ministry of Health; Right Hon. Sir Henry Craik, K.C.B., LL.D., M.P., Sir Philip Magnus, Bt., M.P.; Dr. W. J. Howarth, Past President, Society of Medical Officers of Health; Dr. J. G. Fitzgerald, Chairman of Council, Irish Medical Schools' and Graduates' Association; Dr. C. Hubert Bond, Commissioner, Board of Control; Air Commodore D. Munro, C.I.E., Director, R.A.F.M.S.; Lieut.-Colonel Nathan Raw, C.M.G., M.P.; Sir S. Squire Sprigge, Editor of the *Lancet*; Sir William Gyn-Jones, Secretary, Pharmaceutical Society.

Sir William Macewen, President of the Association, in giving the toast, "The Common Health," said that when he wired acceptance of the duty the telegraph clerk interpreted the words in his handwriting as "The Common Wealth." That man was a philosopher, for wealth was to a large extent a matter of health. Many persons very wealthy, in the ordinary acceptance of the term, were not healthy. Gold often produced decadence. He understood that the permanent secretary to the Ministry of Health would respond to the toast, and he assumed that the responsibilities of this Department embraced everything. Our old world (which was a kind of aeroplane), when it went gyrating through space, picked up dust storms that astronomers said were got from sand, and, although these particles were so finely divided that there was not an instrument sufficiently intricate to detect them, yet the Ministry of Health must have prescience to foretell what would come from them. So also as to those little canisters containing chemical substances labelled "wild duck"; from them they were expected to trace botulism. He did not know where investigation was going to stop. They all ought, however, to look to several matters about which they had common concern. The Association had especially to consider two very prevalent diseases regarding which certain theories had been formulated and put before the public, and a very great deal would be done if they could be got rid of. One was syphilis; the other tuberculosis. As to the first named, if it were not stopped, a crime was committed against posterity. The question was sometimes asked, "Where to draw the line?" He drew no line: the disease must be got rid of by whatever means were necessary. Tuberculosis was not so easily dealt with. But the profession had a great responsibility. If the British Medical Association with its 25,000 members made up its mind as to the means it would carry great weight. He wondered whether the medical profession had not hitherto just relied upon polemical discussions instead of pushing matters to logical conclusions and then pressing them upon the Government and the officials who had to carry them out. Much of this disease, it was said, came from cows through milk, and about 50 per cent. of the tuberculosis in children was bovine. If so, how did it come from the cow? Surely it must be through the milk. Tubercle was incubated in byres as directly as in an incubating chamber. The best temperature in which to keep cows, it was said, was 70° F., and in byres were found the three other conditions in which tubercle easily propagated itself—namely, darkness, dirt, and damp. From such places, in such

conditions, came milk given to children. Surely, if 25,000 medical men acted in concert some action might be taken to end that form of tuberculous disease. And if they got rid of 50 per cent. of the disease that way they ought to be able to get rid of a good deal that came by transmission from one person to another. Sir William Macewen went on to remark that the British were a strange people. They taxed the air they breathed. Formerly they used to tax the light which came into the houses through the windows. Now, in effect, the cubic capacity of houses was taxed. God had given every single soul that came into the world as much air as it could breathe, but it was curtailed in this way. Those who got tubercle from confinement were put into sanatoriums where they could get just the fresh air God had given. Would it not be better to commence the other way and give the children and others as much fresh air as they could breathe? These were points which required consideration, and he thought it a good thing to ventilate them on that occasion. He coupled with the toast the name of Sir Arthur Robinson, First Secretary of the Ministry of Health (paying high tribute to the permanent civil servant whose work continued while Ministers came and went), and he also associated with it the name of Sir Anthony Bowlby, President of the Royal College of Surgeons, who did much good service at the front, and whose methods were a little more direct.

Sir Arthur Robinson hoped he would be in order in offering an expression of sympathy with the company. Instead of the solid substance of a Minister of the Crown they had to be content with the pale and embarrassed shadow of a permanent civil servant cast for a somewhat unwonted task. However, replying to such a toast as the Common Health was one that should inspire even a silent civil servant to something rather above than beyond his ordinary performance. Sir William Macewen had said that it was time that something was done in regard to the milk supply. Well, the Department had put on the statute book a measure which, though not heroic or final, would be valuable. The underlying principle was to make it worth while to supply better milk. Provide a man with inducements to supply good milk and it was common sense to suppose that he would do so. He could say also as to tuberculosis that there was a policy. It had its limitations, but by reason of it the notifications had gone down and were going down, and the death rate had gone down and was going down. Speaking generally, Sir Arthur Robinson said that the Ministry of Health had been in existence only a short time and had done a great deal. Something like 200,000 houses had been or were being built, and nothing like that had been done before through a department. The Ministry had also made a fair start in dealing with the problems of slum areas. Then there was the question of the voluntary hospitals. In a period of unexampled difficulty they had prevailed on the Government to give a sum of half a million sterling to set going machinery which was gradually bringing the voluntary system round, and it had made possible the continuance of the voluntary system in fact and not merely in name. Broadly, the problem of public health seemed to him one of fitting various parts into a whole. It was a problem of mutual tolerance, of mutual forbearance, and of working together for one end. Unless they did this on the basis of giving each element in their policy full weight the policy would be wrong. The Ministry of Health presided over the whole public medical health service. It was in close relations with the whole mass of general practitioners through the insurance services. There they had a body which dealt with private persons and with public health, appreciating the different view-points and getting progress by unity. He appealed for the co-operation of the medical profession as represented by the British Medical Association.

Sir Anthony Bowlby said he represented one of the two English Royal Colleges concerned with the education of medical men. In this connexion the Colleges did two things—they examined and they set the pace (the curriculum) for the different medical schools of the United Kingdom. During the year the two Colleges had spent much time in rearranging the curriculum, the main object being to give more time to the most important subjects—those in the final examination. The task of the present-day student was very difficult. That individual, he rather thought, looked upon the whole performance from the point of view of an obstacle race. The student saw in front of him a long way off—five or six years distant—the winning post. In an obstacle race all sorts of things were put in the way of a competitor to delay him. The student found the biology examination to begin with. Then came the chemistry and physics people, who might put up a better barrier, and sometimes succeeded. After the next obstacle—anatomy—came a greater, physiology. For whereas anatomy was a fairly accurate science, and the femoral artery of to-day was very much where it was a hundred years ago, the physiology of to-day was quite a different thing. Twenty or thirty years ago they thought they knew something about the processes of digestion and the action of the heart and respiration, but it now appeared that they did not. So there was reason to pity the poor candidate. Having surmounted these obstacles he entered upon the last lap. This used to comprise medicine and surgery and obstetrics. Now innumerable special subjects were added, so that one might wonder and think how "still the wonder grew that one small head could carry all he knew." It was indeed a severe task; yet, in spite of the difficulty of seeing the wood for the trees, in spite of the fact that a large number of young men knew a great deal about abstract and special subjects without knowing much about general practice, in the long run the educated medical man of the present day was a strong stand-by and supporter of the public health of this country. Finally the young man became a full-blown medical practitioner, and then he sought the advice of those in practice. One piece of advice he would give to every young medical man, and that was to join the majority—not in the proverbial sense, but to join the majority of the profession, the British Medical Association. They would thus get in touch with their fellows—an important matter in the medical profession—and would have assistance and advice when necessary from older members. If the newly qualified men went into any of the services, there was still another reason why they should join the Association. In recent years the action of the British Medical Association had obtained great benefits for the Army and Navy Medical Services, the Indian Medical Service, and the Colonial. In all these departments the Association had been of very great assistance to medical men, and he hoped as in the past, so in the future, a very large number of qualified men would become members.

Dr. R. Wallace Henry gave "The Retiring President," and said that for many years it had been the custom for the President to enter upon his term of office in a blaze of glory. He had given his presidential address surrounded by civic dignitaries and distinguished men of science, clad in garments of many colours. But he had gone out of office so quietly that it might almost be said he was "unwept, unhonoured, and unsung." This year the Council had decided that such practice should come to an end, and that each year a dinner should be arranged at which one of the principal toasts should be "The Past President," and in paying tribute that night to Professor Drummond they were making a start with one whose name would rank high amongst the eminent men who had held that office. It was many years since he left his native land of Ireland, and at a very early period of his professional career Professor Drummond began to make his mark. He had the opportunity at the Meath Hospital at Dublin of working under that distinguished heart physician, Sir William Stokes, one of whose favourite house-physicians he was, and what he learned and studied there he took into his private practice when he went to the north of England. He wrote many articles dealing in various aspects with his favourite subject (heart disease), one in particular on aneurysms of the thoracic arch. But his studies were not confined to the heart. He turned his attention to nervous diseases, and one of his works was a standard book upon diseases of the brain and the spinal cord. His reputation in Newcastle rapidly grew, and he became physician to the Royal Victoria Hospital. His reputation spread abroad. He had received many distinctions from foreign countries. It was not true in his case that the prophet was without honour in his own country, for he had been made Principal of the College of Medicine at Durham University as well as Professor of Medicine there, and now held the post of Pro-Vice-Chancellor of that University. Last of all, within the past two months, appreciation of his services in Newcastle-on-Tyne had been marked by his being appointed Chairman of the Voluntary Hospitals Committee of that area. So much in brief for his purely professional work. In the British Medical Association he must be one of the oldest members: he had been enrolled forty-four years. As had been the case with a very large number of students at Dublin University and at Queen's College, Belfast, it had been preached to him and his colleagues that almost as soon as they had qualified one of their first duties was to join the British Medical Association. Would that the same thing could be done at all the universities in Great Britain also!

Professor Drummond had been formerly a member of the Council of the Association, had been Secretary of the North of England Branch and at one time President, and it was partly due to his work in connexion with these offices that the Branch held such a distinguished place in the Association for the splendid work it had done. They would drink his health, not merely as a great physician, not merely as Past President of the Association, but also as "David Drummond the man." They all regarded him with affection and esteem.

Professor Drummond said it was a great pleasure to him to meet so many distinguished colleagues; and this was enhanced by the fact that he was the recipient of their hospitality on the occasion of the inauguration of a function which he hoped had come to stay. He went on humorously to depreciate the tribute just paid to him by Dr. Henry as the general compliment of one Irishman to another, and then spoke of the great interest of the period—three years—of his official connexion with the Association as President-elect, President, and Past President. The Annual Meeting formed a very important part of the proceedings, and their meetings at Cambridge, Newcastle-on-Tyne, and Glasgow had been held to be as successful as any they had had for many years. In recalling the gathering at Cambridge he evoked applause by referring to the great personality of the great President of the year (Sir Clifford Allbutt).

The Chairman submitted the toast of "The Visitors," very happily referring to their widely representative character and expressing the hope that from year to year they would have present, amongst others, the Ministers with whom they dealt in other circumstances, perhaps not quite with the cordiality with which the welcome was given that night. He entirely agreed with Sir Arthur Robinson, that these meetings would promote in every way friendship and co-operation, than which nothing was more needful to the country in these years of strain. Coupling the toast with the names of Mr. Shortt and Sir Henry Craik, the Chairman spoke of the sympathy which Mr. Shortt had manifested as Home Secretary for their work, and expressed gratitude to Sir Henry Craik for wise counsel and kindly help in his capacities as an experienced parliamentarian.

Mr. Shortt, replying in light vein, questioned whether he ought to be there, as the invitation had come to him when he was Home Secretary, but he assured the company that he had greatly enjoyed the evening, and also touched on the satisfaction of being relieved from the cares of office. A Home Secretary who tried to do his duty made enemies every day of his life. Everything he did annoyed somebody, and those who were pleased with what was done generally took it as a matter of course.

Sir Henry Craik said that for seventeen years the medical profession had tolerated him as a humble representative in Parliament of twelve thousand of their members. The British Medical Association had conferred upon him the great honour of making him an honorary member of their society, and they had further gratified him by admitting him to their counsels. He had learned much thereby. He recognized that the two great objects for which the Association lived were the maintenance of scientific truth in its highest form and the pursuit of research for the good of mankind. He had found also that, according to the scripture phrase, truth was joined with mercy. The maintenance of the kindliest relations between the great medical services and those whom they served was the principle upon which they lived, thrived, and did their work.

Sir Jenner Verrall submitted the health of the Chairman, speaking in the highest terms of his qualities, and the toast was received with musical honours.

Dr. Bolam, responding, said that this toast was given against his ruling. Service for such an Association was a great privilege, and he was happy in performing it.

The Loomis Sanatorium, New York, has recently celebrated its twenty-fifth anniversary, and has published in commemoration a "birthday book," giving a description of the foundation, the growth, and the progressive enlargement of the institution. A special block has been erected at the expense of the Standard Oil Company for the treatment of its employees. In formally handing this over to the sanatorium, the vice-president of the company suggested that this course might well be followed by the other large commercial houses of the United States, for not only would the treatment of tuberculosis be better carried out, but the cost would be less if borne by private firms than if controlled by the Government.

Scotland.

Parliamentary Representation of Universities.

It is thought improbable that there will be any contest at this general election for the representation of the Scottish Universities in the House of Commons. There are three seats; Sir Henry Craik and Mr. Cowan are standing again, and Sir George Berry, consulting ophthalmic surgeon to the Royal Infirmary, Edinburgh, is offering himself in the place of Sir Watson Cheyne, who decided some time ago not to seek re-election.

Botulinus Antitoxin.

In view of the recent outbreak of botulism at Loch Maree the Scottish Board of Health has under consideration arrangements to render available a supply of botulinus antitoxin in the event of the occurrence of any further cases in Scotland. There is no reason at present to expect further outbreaks, but the gravity and mortality of the disease may be such that it is considered that arrangements should be made to provide a supply of antitoxin which could be obtained more promptly than if the only available supply were held in London or Edinburgh. It is pointed out that the only remedy at present known for botulism is botulinus antitoxin given by injection, but that it is unlikely to save life if the disease has progressed to a late stage. It is therefore of the greatest importance to give the antitoxin at the earliest possible moment—that is to say, as soon as symptoms of blurred or double vision, giddiness, ptosis, difficulty in speech or swallowing, suggest the diagnosis of botulism. The effectiveness of treatment by antitoxin for this disease is so greatly increased by intravenous injection that this method of administration should always be employed, if possible; otherwise the intramuscular method should be used. It may be necessary to administer subcutaneously a preliminary injection of a small quantity of the antitoxin (0.5 c.cm. of antitoxin, or 8 minims) to test the reaction of a patient, in order to avoid the risk of serious symptoms arising in persons highly sensitive to horse serum. If the patient is sensitive the antitoxin must be given with caution, and the dose should be considerably reduced, the first intravenous injection of 0.5 c.cm. of antitoxin being diluted with 50 c.cm. of saline. Only large doses of antitoxin will save acute cases; the ordinary intravenous dose should be from 20 to 50 c.cm. of the antitoxin: it should be previously warmed to body temperature and injected very slowly. This amount may be repeated daily if necessary. On the occurrence of an outbreak of botulism it may be deemed necessary by the medical attendant or the public health authorities that all persons who have consumed the suspicious food should be given a prophylactic dose of antitoxin (10 c.cm. intramuscularly) even though they may not present symptoms of the disease. The Board of Health has accordingly made arrangements for a small stock of the antitoxin to be kept at the following places, as well as at the offices of the Board in Edinburgh: the City Hospital, Aberdeen; King's Cross Infectious Diseases Hospital, Dundee; City Hospital, Edinburgh; Belvidere Hospital, Glasgow; the medical officer of health, County Buildings, Dumfries; Mr. Macdonald, Mayor's Drug Store, 31, High Street, Inverness; and the County Hospital, Motherwell, Lanarkshire.

The Grading of Milk.

The Milk and Dairies (Amendment) Act, 1922, authorized the Scottish Board of Health to make an Order in regard to licences for the sale of graded milk. The Board has now issued, to producers of higher grade milk and others, a memorandum showing the principal conditions under which the statutory Order will be made. Before issuing this the observations of those interested were invited. The Milk and Dairies Act, 1922, contemplates four grades of milk in Scotland—namely: (1) certified milk; (2) grade A (tuberculin tested) milk; (3) grade A milk; (4) pasteurized milk. It is proposed that the administration in regard to all four shall be placed in the hands of local authorities under the Public Health (Scotland) Act, 1897.

Certified Milk is milk obtained from tubercle-free cows and bottled at the farm.

Grade A (Tuberculin Tested) Milk is the same as Certified Milk, except that it is not bottled at the farm.

Grade A Milk is milk obtained from herds which have been examined at least three times a year at the farmer's expense by a veterinary surgeon, but the examination will not include tuberculin tests.

No particular make of pasteurizer is prescribed, but the milk must be retained at a temperature of not less than 145° and not more than 150° F. for at least half an hour, and be immediately cooled to 45° F. This condition applies only to milk sold under the designation "pasteurized." Tuberculin tests for the first two grades will be carried out at the expense of the farmer. A score card inspection will be made by the local authority in connexion with certified milk, and annual fees will be payable in respect of all grades, in order to cover some of the expenses incurred by local authorities. The milk when delivered to the consumer, must not contain more than a specified number of bacteria.

University of Edinburgh General Council.

While no subject of exclusively medical interest engaged the attention of the General Council of the University of Edinburgh at its statutory half-yearly meeting on October 27th, in several matters medicine had an important stake. This was so, for instance, in relation to the draft of regulations for the preliminary examinations which had been drawn up by the Scottish Universities Entrance Board. It was pointed out by the Rev. Professor W. P. Paterson that one language was compulsory among the subjects of examination, but that there was no compulsion that this language be Latin; this would be a blow to Scottish culture. Sir Richard Lodge stated, in reply, that the inclusion of compulsory Latin would be inconsistent with uniform admission to all faculties; but Latin as a subject could be imposed by the University in connexion with particular classes and was not barred. Approval was given of the draft regulations. Principal Sir Alfred Ewing, who presided, supplied the matriculation figures up to the preceding day (October 26th), and compared them with the completed figures for 1921–22; they were as follows:

	1921-22.	1922-23.
Arts	1,574	1,548
Science	974	742
Divinity	75	64
Law	198	172
Medicine	1,838	1,408
Music	10	18
	4,669	3,952

Glasgow and West of Scotland Overseas Medical Club.

The annual dinner of the Glasgow and West of Scotland Overseas Medical Club was held on October 27th in the Grosvenor Restaurant, Glasgow, when the president, Dr. J. Livingstone Loudon, T.D., officiated as chairman of a representative gathering. The president and secretary of the sister club in the east of Scotland, Mr. H. Wade, C.M.G., D.S.O., and Mr. W. T. Gardiner, M.C., were present as guests of the club. As on former occasions, the opportunity for the renewal of old service associations was much enjoyed, and the musical entertainment provided by Drs. T. D. Laird, Wallace Anderson, C. G. Macartney, J. Scouler Buchanan, and W. T. Gardiner was duly appreciated.

Central Midwives Board.

At a special meeting of the Central Midwives Board for Scotland for the hearing of penal cases, with Dr. James Haig Ferguson in the chair, a certified midwife was cited to appear in respect of failure to notify contact with a person suffering from puerperal fever, thereby endangering the lives of her other patients, and for other breaches of the rules. The Board found the charges to be proved, and instructed the secretary to cancel her certificate and to remove her name from the Roll.

Victoria.

Australasian Medical Congress, 1923.

Presidents of Sections in connexion with the first Australasian Medical Congress, organized by the Branches of the British Medical Association in Australia, have now been definitely appointed, as follows:

Medicine.—Dr. W. Marshall Macdonald, Dunedin.
Surgery.—Mr. R. Gordon Craig, Sydney.
Obstetrics and Gynaecology.—Dr. J. A. Cameron, Ipswich.
Pathology and Bacteriology.—Professor J. B. Cleland, Adelaide.
Preventive Medicine and Tropical Hygiene.—Dr. F. S. Hone, Adelaide.
Ophthalmology.—Mr. D. D. Paton, Perth.
Otology, Rhinology, and Laryngology.—Dr. T. S. Kirkland, Sydney.
Neurology and Psychiatry.—Dr. A. W. Campbell, Sydney.
Diseases of Children.—Dr. R. B. Wade, Sydney.
Naval and Military Medicine and Surgery.—Colonel W. W. Giblin, Hobart.
Dermatology.—Dr. R. E. Harrold, Adelaide.
Radiology and Medical Electricity.—Dr. Valentine McDowall, Brisbane.

As a preliminary step to the election of Presidents of Sections the Branches of the British Medical Association in the various States of Australia and New Zealand were invited to forward nominations, and from these the above were finally appointed by the Executive Committee of the Congress.

The meeting will be held in Melbourne in November, 1923, under the presidency of Mr. G. A. Syme, and any members of the British Medical Association resident in Great Britain and Ireland who may find it convenient to attend will be very cordially welcome. The general secretary is Dr. A. L. Kenny, 13, Collins Street, Melbourne.

Post-graduate Work.

Encouraged by the great success of, and the large attendances at, the recent series of post-graduate lectures on the nervous system and its diseases, the Melbourne Permanent Committee for Post-graduate Work has organized a second series on obstetrics, to be held at the Women's Hospital in September and October. This series is being specially conducted in connexion with the examinations for the degree of Doctor of Medicine, University of Melbourne.

The New Anatomy Department of the University of Melbourne.

The new anatomy department, designed to accommodate 600 students, was commenced in January, 1922, and is making fairly rapid progress. The building is in brick, with stone facings, and is Tudor in type. There are two dissecting rooms, each capable of accommodating 300 students, a large and well-lit museum, a theatre to hold 300 students, reading rooms, cloak rooms, and retiring rooms for men and women students. On the entresol floor, between the two dissecting rooms, are the private rooms for the staff, so placed that they command both dissecting rooms. On the upper floor there is a large and well-lit histology laboratory, capable of accommodating 250 students, together with private rooms and research laboratories for the histology staff. There are in addition rooms for operative surgery, neurology, and physical anthropology, and museum preparation rooms, with ample provision for the preservation of subjects and the storage of anatomical material. A special feature of the building is the flat roof over the histology department, from which will be obtained a magnificent view over Melbourne and Port Phillip Bay. There can be no question that the new building will prove of great utility to the University and the medical profession, and will be a decided acquisition to the City of Melbourne. Its utility would have been considerably enhanced had the University council carried out its own resolutions of 1914–15 and erected the building—in accordance with the unanimously expressed wish of the profession—alongside a hospital, instead of within the University grounds. In 1914 the whole medical school could have been re-erected alongside a hospital for about £30,000 more than the present building actually cost (that is, for £100,000) as against the present estimated cost of £70,000 for the anatomy department.

Paris.

[From our Correspondent.]

With October the official medical life begins again. Our faculty has not yet opened its doors to the young students, but they have already been opened to the old students—we practitioners who have flocked to certain congresses in Paris.

French Congress of Surgery.

To take the national congress of surgery first; at this annual meeting the surgeons of the whole of France are brought together in Paris. This year Professor Hartmann was president. Without entering upon a critical review of the proceedings of the congress, I would emphasize one fact that must strike every spectator—the position occupied by the younger generation of surgeons. They have been formed by the war. They were then called upon to play the part of

chefs de service in departments where activity was unprecedented. They have learned to accept responsibility. They have found themselves! It is not surprising therefore that they took a large share in the work of the congress and presented many communications and contributed to the discussions concise, short, and lively remarks in the true surgical manner. We have in this a remarkable evolution; the after-war spirit has smashed the old surgical machine—its traditions, its hierarchy, and its methods. Is it a gain? There are always two sides to a question.

There is only one incident to note. The president refused to allow Dr. Voronoff to read his paper on rejuvenation by glandular grafts. The reason was that the lay press on that very morning had trumpeted forth a hymn of praise to the glory of the method and its inventor. The result is that Dr. Voronoff has had to continue as he began, and it is in the daily papers that we have read about the super-magnificent results of the grafting of the testicles of the chimpanzee into old men. You may guess whether writers of gossip and caricaturists have hesitated to profit from such a subject! May someone perhaps succeed in grafting the brain of a fox—and wisdom—under the human skull?

Congresses of Medicine and of Urology.

The congress of French-speaking physicians followed, under the presidency of Professor Widal. For long he has been a man of mark, owing to his scientific renown, his personal authority, and the charm of his easy speech. The mantle of his master, Dieulafoy, has fallen upon him. No one knows better than he how to guide a discussion, how to keep the main point in view, and how to sum up a question in a few decisive words. The subjects of discussion were the eternal question of ulcers in the neighbourhood of the pylorus and the new problem of deficiency diseases, looked at from the point of view of their treatment. Much has been said, but we are left with the impression that much remains still to be said! At the twenty-second French Congress of Urology, which was held at the same time, there was an interesting discussion on diverticula of the bladder.

Examinations for Resident Hospital Posts.

The competitive examinations are also starting again. As I have already explained (JOURNAL, January 7th, 1922, p. 32), the examination for resident hospital posts was completely changed two years ago, by the introduction of the principle of anonymity in the preliminary written examination. The candidate has to answer in a very limited time numerous questions bearing upon very precise points of anatomy. He is not asked for phrases, but for facts, and this enables the judges, by a simple process of marking, to award points which determine the classification of candidates and the rejection of those found unsuitable. Much was expected from such a simple and just method. There has been a great disillusion. The reason why we now see the most ardent of its promoters disenchanted is that, the test being solely a test of memory, the youngest candidates, fresh from the anatomy classes, have been greatly favoured. On the other hand, the older candidates, who, though they had gained in clinical experience, had lost in memorized scientific knowledge, have too often failed. Now the resident house-physician is called upon to become the right-hand man of his chief, and this requirement cannot be fulfilled by too young a student who nevertheless wins a usurped title. In the long run it is our patients who suffer from it, and so we have the whole question *sur le tapis* again. It is less a question of recognizing what a man *knows* than what he *is*, and anonymity, so far from being the *summum jus*, seems an unwise expedient at the first stage of the competitive examination.

Problems of the Medical Students.

It is further to be said that even the recruiting of students is difficult. Nowadays it is impossible for a medical student to begin his studies unless he has sufficient private means. It is calculated that a student cannot cost his family less than £200 a year—at the present exchange, 12,000 francs. Such a sacrifice cannot be expected from the families of professors or from those belonging to the professions commonly called liberal. The students tend, therefore, to come from business circles, and naturally to have quite a different spirit. So much money invested in studies must show financial returns, and even the belief in a professional vocation will soon have gone. This is a social danger that an increase in the number of scholarships could have avoided; but the general public does not yet understand.

The future of our medical schools must cause much anxiety. Already we are isolated as a nation. The countries with low exchanges can no longer send us students. We, ourselves, can no longer dream of visiting your teaching centres or those of America. To buy an English book seems an act of madness when as it is our students can no longer buy the textbooks they require. The world has already experienced epochs of regression.

Correspondence.

POST-GRADUATE COURSES.

SIR,—In reply to the letter by "Ambitious" (October 28th, p. 827), may I point out that the problem of post-graduate study in the provinces is being rapidly solved along the lines he suggests? Under the scheme initiated by the University of Bristol, courses of study have been or are being held at Hereford, Trowbridge, Swindon, Bournemouth, Barnstaple, and Dorchester. The initial steps have been generally taken by the local Branch or Division of the British Medical Association, which forms a small subcommittee of management. Application having been made, the University sends a circular to all medical men in the immediate vicinity of the proposed centre. This circular gives full details of the proposed course of study, time and place of meeting, etc. The subjects of the demonstrations have generally been selected by the subcommittee from a long list supplied to them by the University. The meetings are usually held in the late afternoon, and always at the local hospital. They are carried on by a lecturer selected by the post-graduate committee of the University, who visits the centre one day a week.

In some towns in the West of England where there are large hospitals which are not, however, teaching schools, the procedure is somewhat different. Either the neighbouring practitioners are invited to join in the medical and surgical rounds on one particular day of the week, or post-graduate lectures and demonstrations are given by the members of the honorary staff, with any such outside help as may be needed. In the SUPPLEMENT of October 28th (p. 163) it was announced that such a course is to be held at Plymouth, beginning on November 8th. Such a plan as the above can be carried out in any district within a few hours' journey of a medical teaching centre, and if any difficulty in obtaining facilities arises application should be made to the Science Committee of the British Medical Association, which has now taken over the duties of the old post-graduate committee.

In conclusion, may I say that such courses cannot be made free, as "Ambitious" suggests. There are expenses of advertising, postage, hire of room, etc., and it is only just that the lecturers coming from a distance should be paid a small fee and their travelling expenses. In the West of England the attendance on such demonstrations has been so good that the subscription can be fixed at about two guineas.—I am, etc.,

J. ODERY SYMES,
Chairman, Medical Post-graduate Committee,
University of Bristol.

Bristol, Oct. 30th.

X RAYS IN HYPERTRICHOSIS OF THE FACE.

SIR,—The selective and permanent destruction by *x* rays of normal hair follicles, without damage to other structures in the skin, is at present a technical and histological impossibility.

The assertion is dogmatic, but will not, I think, be challenged by any of my dermatological colleagues, none of whom, to the best of my belief, have ever advocated this treatment in uncomplicated cases of facial hirsuties. That it is, however, being practised in certain quarters is evidenced by the fact that I was recently consulted by a lady who had been receiving the treatment in London (incidentally, without benefit) for the past eighteen months. The operator in this case presumably knows the risk he is running, and my protest is not so much directed to him as to the general medical practitioner, who may in the future be approached and persuaded by his patients to allow them to submit themselves to radiotherapy for hirsuties, because "their friend Mrs. —— was cured in a pleasant and painless fashion."

The following case, at present under my care, illustrates

with remarkable fidelity to textbook description all the risks that the procedure may entail:

The patient, a nursing sister, in June-July, 1911, received, without medical authority, twelve doses of *x* rays at weekly or ten-day intervals for hirsuties of the face. The operator, who is known to me as a person of great experience and ability in this line of work, assures me that at the time there was no undue reaction or irritation, and both she and my patient are in agreement that the epilation was successful and satisfactory in every way. There has been no regrowth of the hair in the eleven and a half years that have since elapsed, but in June, 1914—*exactly three years after the first session*—"small red spots, resembling the measles that are seen in babies," began to appear on the chin, and these have gradually spread to the cheeks and neck until, as at the present time, the whole chin, the mandibular area, and the anterior and lateral cervical surfaces are covered with these vascular points, while the skin itself is atrophic, dry, and scaly, and exhibits a patchy alteration of the normal pigment distribution, being a papery white in some places and hyperpigmented in others.

Subjectively there is "severe irritation, especially at night," "a pricking sensation like hot needles," and a dry feeling of the whole irradiated areas, "as if the sweat glands had been destroyed"—as in actual fact is the case.

In brief, the patient suffers from an *x*-ray burn which amounts to a severe disfigurement, but this is not the sum-total of her disability. Over the thyroid cartilage, at its most prominent part, there is continuous exfoliation with pronounced cicatricial contraction, "woody" infiltration, and adhesion of the dermis to underlying structures. The condition prevents full extension of the neck, and is so tender that a collar cannot be worn.

In my opinion the dermatitis here present may subsequently undergo malignant changes, and with the object of forestalling such a catastrophe the patient has agreed to undergo an operation for excision and plastic repair of the adherent parts of the skin.

In summarizing the main issues at stake, I would again assert—

1. That *x* rays, while selective up to a point, cannot be relied upon in the present state of their physical application to differentiate their action, in the strictly scientific sense, on normal cell structures.

2. It follows, therefore, that they should not be used with the sole object of combating facial hyperirrichosis. I would go farther, and maintain that their employment in such cases is unjustifiable, and a direct contravention of the accepted adage, "primum non nocere."

3. The latent period in the evolution of *x*-ray stigmata, after the cure of the primary indications for their use, is a complex and indeterminable coefficient, in which the penetration power of the rays employed and the cutaneous idiosyncrasy of the individual patient are factors of prime importance.

It would seem, therefore, that where destructive doses have been employed the operator can never guarantee his patient against the ultimate appearance (at an uncertain date) of one or more of the stigmata illustrated by my unfortunate patient. It is only in cases of malignant disease that destructive as opposed to inhibitory radiotherapy (as for acne, keloid, oily seborrhœa, etc.) is justifiable.—I am, etc.,

London, W., Oct. 27th. HENRY C. SEMON.

TREATMENT OF LEPROSY.

SIR,—Many articles and reviews of books and papers have appeared in medical journals on the treatment of leprosy by injections of soaps of the fatty acids of chaulmoogra oil, or the esters of this oil. This treatment has been lauded as though it will effect a cure for the majority of patients. There have been many "cures" for leprosy, and each has received great praise. Perhaps the present cure has received more attention than any other, yet many of us have not forgotten how nastin and benzolyl chloride were extolled about sixteen years ago. I know a number of medical men who have persevered with the treatment by gynocardates in leprosy, and have not had good results.

This treatment has been tested extensively in Ceylon, but with disappointing results. Dr. Muir's preparation, named "ecco," was tried for many months on a large number of patients in the leper asylum; the medical superintendent and his assistants kept very careful records and charted the distribution of the skin lesions and the changes in the sensations of each patient every month. But after many months the results were so disappointing that no pronouncement could be made as to whether the treatment was of any value or not. I think that three points have received too little attention:

1. That most who become infected with leprosy undergo a natural recovery, and that the earliest stages of the disease are very common in the inhabitants of countries where leprosy is rampant. If a number of the lower classes of such a country as Ceylon are examined it will be found that many of them show such early signs of past leprosy, as: (*a*) patches of anæsthesia; (*b*) wasting of the thenar and hypothenar eminences; (*c*) loss of toes; (*d*) slight thickening of the ulnar nerves. Most of these patients have recovered from the infection, but not from all the results of it.

2. That most of the lepers, who are segregated, are in the later stages of the disease.

3. That the disease in its attack upon a patient waxes and wanes, and that natural cures are far more common than is usually believed.

In some respects leprosy is comparable with tuberculosis, in which disease so many recover from the early stages. The praise that this treatment has received has raised the hopes of thousands of lepers, who I believe are doomed to bitter disappointment.—I am, etc.,

LUCIUS NICHOLLS, M.D.Cantab.,
Director of Bacteriological Institute, Ceylon.

Fulbourn, Cambridge, Oct. 28th.

VACCINE TREATMENT OF CHRONIC BRONCHITIS.

SIR,—I have read Dr. Mackey's paper (October 21st, p. 715) on this subject with interest, as I have been treating cases of the kind in this way since 1909. Initial enthusiasm is apt to be damped down from time to time, but if it has a substantial basis to rest upon it ultimately burns less brightly, perhaps, but with a steadier light. In spite of failures I can in the main confirm Dr. Mackey's estimate of the utility of this treatment. If I were now compelled to treat these patients with stock expectorant mixtures only, I should feel pretty much like a pugilist whose right hand was tied behind his back. I think the real point of interest to-day, in connexion with chronic or recurring catarrhs of the respiratory tract, is not whether vaccine therapy is useful in the majority of cases, but why it fails in a minority. I wish to direct attention to some causes of failure.

During the war I prepared autogenous vaccines for some 30 to 40 cases of chronic bronchitis in soldiers. There was no appreciable improvement in any of them. They had all been "gassed." I should be interested to learn whether others have been more successful. Where one has to deal with advanced emphysema, bronchiectasis, nephritis, or very high blood pressure it is too much to expect results which will satisfy everyone. It is true that some of these cases may be improved and occasionally I have seen a surprisingly good result; but they are difficult and uncertain. For example, I treated a patient in the Manchester Northern Hospital (Dr. Sturrock's case). There was extremely fetid expectoration and a high temperature which had persisted for many weeks. After the first inoculation there was immediate and striking improvement. The child was sent to a convalescent home in a few weeks almost well. On the other hand, I treated a similar case in Ancoats Hospital (Dr. Melland's case), with the result that the patient left the hospital after the first inoculation. The reaction was so severe that the cure seemed to him worse than the disease! This experience emphasized the necessity for minimal initial doses.

But even in uncomplicated cases of chronic catarrh one fails occasionally to do any appreciable good. Dr. Mackey's paper may supply the explanation in some cases, but may I suggest another? It is well known in large pathological laboratories that when a series of rabbits, for example, is inoculated periodically for some weeks with sheep's red blood cells, a very potent antiserum is developed in the great majority of the animals. But its potency is by no means constant, and exceptionally it may be found impossible to obtain a useful antiserum from an individual rabbit whose tissues fail to respond in an average manner. This is a fundamental difficulty in immunization which, I fear, accounts for some of our failures in apparently suitable cases of the kind under consideration.

There is another group of cases to which I wish specially to direct attention. I have treated a number of patients in this way who were said by more or less competent judges to be suffering from laryngeal or pulmonary tuberculosis. I failed, however, to find tubercle bacilli in their sputa. Some of the results were extremely gratifying. In these, I think, the diagnosis was probably incorrect. But I may recall the fact that some tuberculous patients have a history of susceptibility to recurring catarrhs prior to the development of recognizable tuberculosis and one may assume that in many of these patients closed tuberculous lesions existed when only evidence

of catarrh was present. Cure of the catarrh, by relieving them from cough—that is to say, from violent respiratory movements—favours the spontaneous cure of incipient tuberculosis. I suggest that doubtful cases of the kind should be treated in this way before being finally classified as tuberculous. If the treatment fails to do good, at all events the main cause of the failure is here made evident by subsequent developments.

Finally, failure of vaccine treatment may be due to various forms of nasal obstruction or chronic infection of one or more of the accessory sinuses. Appropriate surgical treatment is here an essential preliminary to successful vaccine treatment. I do not suppose that these causes of failure exhaust the list; they are merely those which I myself have encountered in practice.

With regard to Dr. Mackey's modification of the ordinary technique, it appears to me on *a priori* grounds to be sound. I shall certainly try it.—I am, etc.,

Manchester, Oct. 27th. J. STAVELY DICK.

THE RELATION OF ALOPECIA AREATA AND SQUINT.

SIR,—The cases of association of alopecia areata with strabismus recorded by Dr. Goodwin Tomkinson (September 16th, p. 505) and commented upon by Dr. Harford (September 30th, p. 616) tend to confirm the opinion I have formed of the cause of squint, after investigation of nearly 1,000 cases of heterophoria and squint in the past two years.

Last February I was consulted by a woman of 32 who complained of pain at the back of the eyes and swelling of the lids, the symptoms being worse when she was sewing or reading. She had 0.25 D. hypermetropic astigmatism in the right eye, 0.5 D. myopic astigmatism in the left, and had 5° latent divergence. The eyes were prominent, especially since both ovaries had been removed for cystic disease in July, 1921. She had had transient attacks of baldness since the age of 10. She could remember no emotional disturbance at that time. After the ovarian operation the hair came out "in handfuls." The eyebrows and eyelashes have fallen since the age of 25. They grow again, but are grey. Since the operation they have not grown again on the left side. She now has several large areas of baldness. She has a fibrillary twitching of the orbicularis muscles, affecting each side alternately. Afterwards she remembered that she had had a shock when she was 10 years old. Her letter is worth quoting, since it contains several items of psychological significance:

"I was staying in a little village with some friends. There was a man living in a hut on the downs near by who was very strange in his manner. Sometimes he wriggled about as he walked through the streets and along the downs. The villagers said that some years before my visit he had been bitten by a snake, and before he could get proper medical treatment some of the poison had gone over his body, and that caused him to be very strange in his manner. He always said that he felt as if snakes were wriggling over him. I was terrified of this man and always kept out of his way, although he was quite harmless. The people called him "Old Dan." One day a man called to see the friends I was staying with. I liked him very much, and was busy telling him all about my home. A little later in the evening someone whispered to me that he was Old Dan's brother. I was so frightened that I rushed out of the room to my mother, and wanted to go home at once. It was only a joke; the man was not related to him at all, but I was terribly frightened, and it took a long time for them to persuade me to stay there a week or two longer. It all seems very foolish now, but at the time I was terrified. I always had a great horror of anything or anybody that was not quite normal. This is all I can remember of the fright I had when 10 years old."

Dr. Harford has referred to my conclusion that squint is intimately related to left-handedness and stammering, either in the person or the family. The case under consideration exemplifies this. She is left-handed in a noticeable but not uncommon manner. The left hand is used for cutting out material and for cutting bread, but she holds the knife in the right hand when using knife and fork. A spoon is held in the left hand, and she is also left-handed for threading needles, but not for sewing. She would feed chickens with the left hand, but would knock a door or ring a bell with the right. The patient's mother is left-handed. Two brothers are living, one of whom stammered when a small boy. She thus suffers from latent squint and alopecia (and loss of eyebrows and eyelashes), is left-handed, and has a family history of left handedness and stammering. It would be interesting to know if Dr. Tomkinson's cases had a similar family history.

The following history of another family with similar associations was kindly sent to me by a fellow worker:

The father's hair went perfectly white at the age of 21. He was feared or and disliked by all his children. He took to drink after the death of his wife, who died of consumption at the age of about 50. The eldest daughter died of consumption at the age of 20. The second daughter squinted. She was described as of mulish disposition, which she said was in order to be different from her father. The next child, a son, was morbidly shy; he was killed in the war. The youngest daughter was left-handed. She had alopecia areata from 10 to 12 years of age.

Dr. Rivers,[1] tuberculosis officer of the Barnsley district, has drawn attention to the fact that left-handedness and squint are related to the incidence of pulmonary tuberculosis. In the above case it will be noticed that two members of the family died of consumption.

I propose to deal with the significance of these phenomena on another occasion, but I may state that I am firmly convinced of the hysterical nature of concomitant squint, and this is illustrated by a case which answers Dr. Harford's question as to the possibility of curing squint by psychological methods.

A girl of 7 was brought to me at the school clinic by her sister aged 11. The younger child, who had a convergent squint, was cowed and shrinking; the older was more self-possessed, and was able to give a vivid account of the situation at home. The father, a bully, showed his irritation at his child's squint by beating her, which made the squint worse. I took the child upon my knee, petted and comforted her, won her confidence, and in a few minutes the squint of about 25° had disappeared. Nor could it be induced again before we parted, although I conjured up a picture of the unhappy home to which she had to return.

When she attended the clinic a few weeks later I failed to recognize her amongst other children. It seemed to me that she resented this, and the former friendly relations could not be reestablished. She sulked and squinted the whole time. She was offered a penny, but refused to take it. The penny was then put on a table near the door, so that she might take it as she left, if she changed her mind. An hour later I noticed that she had gone and left the penny on the table. This rejection was striking, inasmuch as she was obviously very poor. At the third visit she still squinted. I talked to her as to an adult, expressing my disappointment, and frankly apologized for any shortcomings in my treatment of her, at the same time saying I was quite ignorant as to the nature of my offence. At last she melted, gave a little smile—the only friendly sign since her first visit—blinked her eyes, and the squint had gone. I was delighted, and asked her to accept some pennies as a reward. This gave great offence. She sulked, refused to have anything more to do with me, and though she was again given a chance of taking the pennies unobserved by me, she left the room with a squint and without the pennies. She has not returned to the clinic since that time.

This sort of experience has been repeated on several occasions. I have had recently several children who will squint or recover parallelism on request, and only within the last month I have had a boy of 14 who has been wearing glasses for squint for years, and found them indispensable, and who yet was able to maintain binocular vision without them as soon as his relations with his parents had been readjusted.—I am, etc.,

Southsea, Oct. 20th. W. INMAN.

LUMINAL IN MIGRAINE.

SIR,—The article on luminal in migraine (BRITISH MEDICAL JOURNAL, October 28th, p. 786) by Dr. Wilfred Harris leads me to say that I have had equally good results from the use of this remedy. I first prescribed it in May, 1922, quite empirically on the assumption that as its exhibition had been so successful in epilepsy it might at least do some good in migraine—a paroxysmal neurosis almost as prostrating and disabling as epilepsy itself. I have only so far had occasion to try it on four patients, all men, but the results have certainly exceeded my expectation.

Space prevents my going into the cases in detail, but, with the exception that in only one case was there an aura, the symptoms in each patient were typical of migraine, the hemicrania advancing after a few hours to vomiting and for the time being causing utter prostration. In one patient the attacks occurred roughly every ten days, and in the other three the intervening period varied between three and five weeks.

I saw the first patient in May and the others in June. All were ordered the same dose—namely, half a grain of luminal three times daily—and they have continued taking this amount ever since. The patient, who was accustomed to his bout of migraine every ten days, has only had one attack since—namely, on August 4th—and this was not followed by vomiting, whereas all previous attacks invariably were. The other three patients have up to the present been completely relieved.

In each case errors of refraction had previously been excluded. One of the patients contracted gonorrhoea four years ago, and he had his first attack of migraine two months later. It is only fair to say that while he has been under the influence of luminal he has also been treated for prostatitis, and it is of course theoretically possible—though

[1] *Lancet*, February 12th, 1921.

improbable—that the removal of this toxic focus has contributed towards his relief.—I am, etc.,

London, W., Oct. 30th. REGINALD HEARN, M.D.

PSYCHO-ANALYSIS.

SIR,—Dr. McBride asks two questions in his last letter, and if I do not make some sort of reply I may be accused of running away.

The first asks how the intelligent student is "to reconcile the theory of the unconscious with known physiology." This same wonderful fellow, according to Dr. McBride, visualizes ideas as nerve cells and so on. No one will object to the vision if it does him or anyone else any good, but as he has no facts to support this figment of his imagination he is theorizing in a demoralizing manner. The whole question has been so well discussed by Dr. Hart in his little book that I need not continue further.

The second question assumes for the *n*th time that psycho-analysts suggest ideas to their patients. The only reply required is a direct negative.

After all, it is easy to be destructive and to ask questions. I could put a few to Dr. McBride. I shall not, however, ask him his views as to the nature of dreams. He might reply with a list of literature which would be almost endless. Freud has summarized it in the first chapter of his book, and how futile it all is! Nor shall I ask him the nature of hysteria, for the above reason also. But I would very much like to know the opinions of himself and his friends regarding obsessions and phobias—their origin, theoretical explanation, and treatment.

I shall be pleased to read any books I may be referred to on the subject, with one exception only—that the word "unconscious" is not to be mentioned therein.—I am, etc.,

City of London Mental Hospital, near Dartford, Kent, Oct. 29th. R. H. STEEN.

REGISTRATION OF DENTISTS.

SIR,—I shall be obliged if you will allow me to call attention to the following points:

1. On November 1st notices were issued to dentists registered *on or after July 28th, 1921*, reminding them that a fee of £5 is payable if they desire their names to be retained on the *Dentists Register* for 1923. If there are any of these persons who have not received a notice in course of post they should communicate with this office without delay.

2. All applications for dental registration under Section 3 of the Dentists Act, 1921, must be made within the interim period. The interim period will come to an end on November 30th, and any persons who desire to make application and have not yet done so should write without delay.

3. The *Dentists Register* for 1923 will be published at 10s. 6d., or post free 12s. Copies, however, which are ordered and paid for prior to January 1st, 1923, will be supplied at 7s. 6d., or post free 8s. 6d.—I am, etc.,

Dental Board of the United Kingdom, 44 Hallam Street, London, W.1, Oct. 19th. NORMAN C. KING, Registrar.

Universities and Colleges.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary quarterly Comitia of the Royal College of Physicians of London was held on Thursday, October 26th, at 5 p.m., the chair being taken by the President, Sir Humphry Rolleston.

The following candidates were admitted as Members:

Mahomed Khalil Abdel-Khalik, L.R.C.P., Alexander Gordon Biggam, O.B.E., M.B.Edin., Rowland Hill Coombs, M.D.Durh., L.R.C.P., Stuart Jasper Cowell, M.B.Camb., L.R.C.P., Arthur Henry Dentiwatte, M.B.Lond., L.R.C.P., Wm. Noel Goldschmidt, L.R.C.P., George Norman Lorimer, M.C., M.B.Melb., Henry Fitzgerald Maudsley, M.D.Melb., Hamilton Morton, M.B.Belfast, Percival Brooke Mumford, M.B.Manch., Robert Cecil Priest, M.B.Camb., L.R.C.P., James Macrae Shellie, M.D.Edin., William Stobie, O.B.E., M.D.Edin., Donald Woods Winnicott, L.R.C.P., Lewis Ralph Yealland, M.D.Ontario.

Licences to practise physic were granted to the following 127 candidates who had conformed to the by-laws and regulations and had passed the required examinations:

M. A. Afifi, J. H. André, P. B. Atkinson, Rawah K. N. Attaoullah, J. R. Aveline, R. Ayre, G. Bacha, W. Beaumont, A. O. Bekeem, F. J. Biddle, H. Boger, E. B. Brooke, A. W. Brown, Margaret M. Brownstone, A. G. Bull, Gertrude B. G. Carden, C. O. Carson, N. E. D. Cattle, S. A. R. Chadwick, Grace D. Chambers, E. F. Chapman, J. R. Chaudhuri, J. Cohen, J. Cohn, M. J. Cohen, F. M. Collins, J. L. Cox, Eleanor M. Cronk, A. L. Crookford, H. P. Daly, G. Denton, Enid M. Dixon, J. H. Doggett, Alice E. Dove, Winifred Eminad, A. M. Edwards, C. Fenwick, L. French, Lydia S. Fuller-Maitland, I. W. Gallant, C. P. R. Gibson, W. Girgis, S. Glass, Janet V. Good, J. Griffiths, A. W. Hall, H. A. H. Harris, H. W. Harvey, J. K. Hasler, E. Haworth, Evelyn N. Heather, F. J. Hector, H. S. Hogg, W. G. R. Hore, W. E. Howell, F. Hudson, L. E. A. Hughes, D. M. Hutchinson, M. B. Jay, A. D. W. Jones, S. P. Joshi, C. L. Kark, R. W. C. Kelly, F. I. Labieb, Gladys M. Lambourne, H. D. Dawson, Catherine E. L. Lendrum, E. G. Lewis, E. Liston, J. L. Livingstone, A. E. Lorenzen, F. Louis, G. S. Lund, Mary C. Lynch, Elizabeth K. Mackay, Elizabeth McKerrow, Elizabeth Maitland-Jones, R. Manners, A. W. Marrison, V. M. Matthews, H. C. Meathrel, E. B. Messinier, Mary Michael, A. A. Moncrieff, Herta Moos, J. A. Morton, Lily Moss, K. Olafson, Dorothy Pantin, I. N. O. Price, A. B. Rao, J. W. Rigby, C. V. D. Rose, J. S. Salt, C. Satyaraju, H. S. Savage, Eileen M. Saxton, J. Seelenfreund, I. A. Senanayeke, D. G. Sharp, P. H. Sharp, C. Shepherd, H. L. Shepherd, D. K. Shuttleworth, A. E. Slater, G. M. Soker, Emma M. Store, A. G. Story, B. H. Stribling, H. Sumra, H. J. V. Sutton, C. G. Taylor, Agnes W. O'D. Thomas, M. A. Townshend, Lendal Tweed, W. J. Vickers, A. H. C. Visick, Doreen G. C. Walker, J. A. Walker, S. F. Wickramasinghe, W. G. Wickremesinghe, Helen P. Wilkinson, E. Williams, Caroline I. Wright.

On the recommendation of the Council, Dr. J. H. Drysdale was appointed an Examiner in Medicine.

Communications were received from the Secretary of the Royal College of Surgeons reporting proceedings of the Council of that College on July 27th and October 12th; from the Secretary of the College of Preceptors, thanking the College for the assistance given by its representatives on the joint committee on the Physical Education of Girls (BRITISH MEDICAL JOURNAL, August 19th, pp. 321 and 316); from the Secretary of the Conjoint Board of Scientific Societies, submitting a scheme for the reconstitution of the Board, asking for observations thereon.

On the motion of the Senior Censor, it was resolved to restore the Licence of the College withdrawn from Thomas Stoney Sharpley in April, 1919.

The Registrar moved, for the second time, that By-law No. CXIV, relating to candidates for the membership, be repealed. The by-law reads as follows:

> "No candidate shall be admitted to examination who is engaged in trade, or makes any arrangement with a chemist or any other person for the supply of medicines, or who practises medicine or surgery in partnership, so long as that partnership shall continue."

This was passed for the second time, and the by-law accordingly is now repealed.

On the nomination of the President, Professor E. H. Starling was appointed to deliver the Harveian oration, and Dr. John Hay to deliver the Bradshaw lecture.

At the suggestion of the President it was decided to hold a conversazione in the College in November.

The arrangements in regard to the Lloyd Roberts lectureship and the legacy left for this purpose were approved in accord with counsel's opinion.

Reports were received from the Committee of Management recommending the adoption of new regulations for the Preliminary Examination in General Education, and for the Pre-medical Examination in Chemistry and Physics, together with the revised synopses of chemistry and physics, to come into force on January 1st, 1923. The Committee also recommended the adoption of new regulations of professional study for the diplomas of L.R.C.P. and M.R.C.S., together with the synopses of anatomy and physiology and the syllabus of the course of instruction in general biology.

Dr. R. A. Young was appointed a member of the Committee of Management in the place of the late Sir James Galloway.

After some formal college business had been transacted the President dissolved the Comitia.

UNIVERSITY OF OXFORD.

THE Faculty of Medicine has re-elected Sir Frederick Andrewes, D.M., Pembroke College, F.R.S., to be a member of the Board of Electors to the Professorship of Pathology.

An award of the Francis Gotch Memorial Prize will be made in the present term.

The Wilde Reader in Mental Philosophy announces that Monsieur Emil Coué will lecture for him on the subject of "Suggestion" in the Examination Schools on Saturday, November 25th, at 12 noon.

Radcliffe Prize, 1923.—The conditions for the award of this prize were printed in our issue of October 7th, 1922 (p. 664). Candidates are required to send in their memoirs to the Assistant Registrar of the University, Clarendon Building, Broad Street, Oxford, on or before Friday, December 1st, 1922. The intended date of the award is March 20th, 1923.

Degree Days.—The following are the Degree Days in the present term: Thursday, November 2nd; Saturday, November 18th; Thursday, November 30th; Saturday, December 16th.

UNIVERSITY OF CAMBRIDGE.

THE total entry of new students at Cambridge is reported to be unprecedented; there are this term 1,589, as compared with 1,491 last year. The matriculation figures for the six largest colleges are as follows: Trinity, 212; St. John's, 131; Gonville and Caius, 118; Christ's, 110; Emmanuel, 109; Pembroke, 106. Jesus and Clare have 86 each, Trinity Hall 73, King's 71, and no college has less than 45 new students. Non-collegiate students number 58. Separate figures for medical students have not been issued.

Draft regulations for the admission of women to the titles of degrees, in accordance with last year's decision, have been prepared and presented to the Senate.

The munificent bequest of the late Mr. A. Marmaduke Sheild to the Cambridge Medical School was noted in our last issue at page 832.

At a congregation held on October 27th the following medical degrees were conferred:

M.D.—M. S. Thomson.
M.B., B.Ch.—H. D. Gardner.
B.Ch.—*H. E. Cresswell.

* Admitted by proxy.

VICTORIA UNIVERSITY OF MANCHESTER.

Dr. E. J. Sidebotham, who recently resigned the post of deputy director of the public health laboratory, has been appointed honorary lecturer in public health.

Dr. G. J. Langley has been appointed honorary assistant lecturer in experimental physiology.

The Leech Fellowship has been awarded to C. D. Hough, M.B., Ch.B., and the entrance scholarships in medicine to Florence V. Stephen and N. S. Walls.

UNIVERSITY OF LONDON.

Mr. H. J. Waring, M.S., F.R.C.S., has been elected Dean of the Faculty of Medicine for the period 1922–24.

Lectures on Secretions and Internal Secretions.—A course of eight lectures on "Secretion and Internal Secretion" will be given by Professor Swale Vincent, M.D., D.Sc., Professor of Physiology in the University, at Middlesex Hospital Medical School, Union Street, at 5 p.m., on Mondays and Thursdays, November 6th, 9th, 13th, 16th, 20th, 23rd, 27th, and 30th. Attendance at this course is recognized in connexion with the B.Sc. (Honours) Degree in Physiology. Admission is free without ticket.

UNIVERSITY OF LEEDS.

The University Council has appointed Miss E. M. Hickman, M.B., Ch.B., to be Demonstrator in the Department of Pathology and Bacteriology, and Mr. R. B. Tasker Honorary Demonstrator in Anatomy for dental students.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice has been given on behalf of the Society of Members of the Royal College of Surgeons of England that the following motions will be submitted at the annual meeting of Fellows and Members which, as already announced, will be held at the College, Lincoln's Inn Fields, on Thursday, November 16th, at 3 p.m.:

1. That this thirty-fifth annual meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation on the Council of the College, which (as now constituted) only represents those Members who also hold the Fellowship; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation; further, that as the Royal College of Surgeons is composed of about 18,000 persons, of whom over 16,000 are engaged in general practice, his annual meeting requests the President and Council to nominate at least two Members in general practice to represent the interests of general practitioners on the Council of the College.
2. That this meeting of Fellows and Members requests the President of the College to make a detailed statement here and now as to all the reasons, legal and otherwise, for the Council's refusal to allow representation on the Council of the Members in general practice; and to state whether legal advice has been taken as to any possible means of overcoming any difficulties in the way of carrying out our wishes; and, if so, to declare what that advice was.

The Services.

NAVAL MEDICAL MEMORIALS.

The memorial at the Royal Naval Hospital, Chatham, will be unveiled at 3.30 p.m. on November 11th by Surgeon Vice-Admiral Sir Robert Hill, Medical Director-General R.N., and dedicated by Archdeacon C. W. C. Ingles, D.D., Chaplain of the Fleet.

Owing to changes in the addresses of many temporary medical officers, reserve nursing sisters, and others who subscribed to the fund, it has not been possible to send separate invitations to all. It is hoped that this intimation will be accepted by them, as well as by all friends and relatives of the fallen, as an invitation to attend the ceremony.

ROYAL NAVAL MEDICAL SERVICE.

Fleet Surgeon Joseph H. Whelan, R.N.(ret.), has been awarded the Greenwich Hospital pension of £50 a year in the vacancy created by the death of Fleet Surgeon Peter W. Rolston, R.N.(ret.), on June 13th.

A reunion of the officers of No. 30 General Hospital, B.E.F., is being arranged. It will take place in London on Friday, December 8th, 1922. Those who intend to be present should notify Dr. J. B. McDougall, if they have not already done so in response to the intimations sent out on October 16th.

Dr. Louis Renon, professor of medical pathology in the Paris Faculty of Medicine, and a well-known writer on tuberculosis, has recently died.

Obituary.

ALEXANDER CRUM BROWN, M.D.Edin., D.Sc.Lond., F.R.S., F.R.S.E., F.R.C.P.E., LL.D.Aberd., Glasg., Edin., St.And., Emeritus Professor of Chemistry in the University of Edinburgh

To the recent graduate of Edinburgh University and to the present-day student there Crum Brown has been simply a name—a name with magnificent memories attached, but still little more than a name. It was far otherwise with the graduates and students of the last three decades of the nineteenth century and the first few years of this century: to them he was the kindly and extraordinarily learned professor of chemistry whose versatility was a proverb; he was to many of them their first teacher in the University; in after years they loved to recall the exciting incidents—the explosions and the malodorous emanations—of his class, and in friendly fashion to try to imitate his method (all his own) of lecturing; for a few obstreperous spirits who came into collision with the University authorities his was the voice which pled for leniency and suggested the extenuating circumstance. His retirement from his Chair in 1908 brought an end to those things; he did not indeed cease to play a part in medical affairs—he was, for instance, president of the Edinburgh Medical Missionary Society for five years from 1911 to 1916—but his intimate relations with student life on a large scale ceased. For several years he has been practically confined to his house, where, however, he was always ready to welcome old friends and talk with all his old vivacity of all sorts of matters. He became seriously ill only some three weeks ago, and the end of a notable life was reached on October 28th.

Alexander Crum Brown was born on March 26th, 1838, twenty-eight years later than his step-brother, John Brown, M.D., the author of the immortal *Rab and His Friends* and *Horae Subsecivae*. His father was the Rev. Dr. John Brown, biblical scholar and minister of Broughton Place United Presbyterian Church in Edinburgh; his mother (Dr. Brown's second wife) was the daughter of Alexander Crum of Thorniebank, near Glasgow. He received his education at the Edinburgh Royal High School, at Millhill School, at Edinburgh University (M.A. 1858, M.D. 1861), in London (D.Sc. 1862), and in Germany under Bunsen and Kolbe. In 1863 he began to lecture on chemistry in the Edinburgh Extramural School, and, not having too many students, he was able to give much time to original research in pure and applied chemistry. In 1869 the election of Professor Lyon Playfair as M.P. for Edinburgh and St. Andrews Universities gave the young lecturer his chance, and he was appointed to the vacant Chair of Chemistry in the University. There he worked for nearly forty years, and became famous for many other things besides chemistry. He had already in 1868, along with Dr. (afterwards Sir) Thomas R. Fraser, been awarded the Macdougall Brisbane Medal of the Royal Society of Edinburgh for an investigation on the connexion between the chemical constitution and the physiological action of salts of ammonium (alkaloid) bases. In 1875 he was awarded the Keith Prize for the researches which proved that the semicircular canals of the ear were the origin of the sense of rotation. His M.D. thesis (1861), unfortunately not published till 1878, was on the theory of chemical combinations, and contained much original thought, rather remarkable as the work of a medical student. As summarized by Dr. Leonard Dobbin in *Edinburgh's Place in Scientific Progress* (p. 53, 1921), Professor Crum Brown's original work in chemistry was specially centred in graphic formulae, in the theory of benzene substitution, in the problems of stereo-isomerism, in the electrolytic synthesis of dibasic organic acids, and in the relation of chemical constitution to physiological action (to which reference has been made). He was closely connected with the Royal Society of Edinburgh, and acted as secretary for some years. As has been already shown, Professor Crum Brown did not confine himself to chemistry. To quote the author of *Quasi Cursores* (1885):

"His knowledge of mathematics, of philology, of modern languages, even such as Russian and Chinese, and of church history, is known to his friends, while under the stores of 'general information' there exists an acute 'general' intellectual power that takes kindly, as any Schoolman, to the labyrinthine and the paradoxical; perhaps he believes more than most of us in a region where paradoxes are not only soluble but solved."

This tribute paid to the professor comparatively early in his long life was justified more and more as the years went

by, and stories were current that at dinner parties he discussed matters ranging from Presbyterian paraphrases to Chinese music, and that he once began a series of lectures on the alphabet, but after several meetings had to stop as he had got no farther than A. How massive was his learning and how widely recognized might be inferred from the numerous honorary degrees which he received, and how greatly beloved he was by his students may be guessed from the fact that to them he was and will ever remain, not "Professor Brown" but "Crummie."

He married Miss Jane Bailie, daughter of the Rev. James Porter, Drumlee, co. Down; she died in 1910. One of the best known photographs of Crum Brown is that which shows him (in 1877) as the centre figure in a once famous club called the "Round Table," with Argyll Robertson, Sir Thomas Fraser, Joseph Bell, and many other Edinburgh notabilities grouped around him. He was very truly the centre for many years of much of the best thought in his Alma Mater, and he had a well-deserved reputation for kindness of heart and sheer goodness which rested upon the surest foundations. It was not for nothing that there ran in his veins the blood of Brown of Broughton Place and that older Brown of Haddington, the author of the *Self-interpreting Bible*.

GEORGE RENDLE, M.R.C.S., L.S.A.,

Late Secretary of the Medical School of St. Thomas's Hospital.

THE death of George Rendle in October has removed one who in a kind and unassuming manner exerted an influence on the careers of many generations of St. Thomas's men. He was born in 1843, the son of Dr. William Rendle, the historian of Southwark and incidentally of St. Thomas's Hospital. He was educated at Merchant Taylors School, and later at the medical school of Guy's Hospital, from whence, in 1865, he became a Member of the College of Surgeons and a Licentiate of the Society of Apothecaries.

Four years of private practice in conjunction with his father, however, led him to conclude that he had not found his *métier*, possibly a determination due to his extreme conscientiousness of disposition. He then entered the Civil Service and as a "writer" in the General Register Office he received special commendation. In 1883 he became secretary to the medical school of St. Thomas's Hospital, a post which he held until 1905, and then, as a result of failing health, he relinquished the more responsible duty for the less exacting one of librarian during a further period of eleven years.

Rendle was an actual product of the old "United Hospitals." Entering on his professional life at a time when the two hospitals faced each other in St. Thomas's Street, he witnessed the disappearance of the parent institution and the resurrection at a higher spot on the banks of the Thames of the new St. Thomas's which was destined to absorb his future energies and at which he passed the main portion of his life.

Few men can have entered more devotedly on their duties; he lived for the school, and was its secretary during the years when it was steadily increasing in size, and in point of numbers reached its zenith. He was actively associated with the various structural extensions and improvements necessitated by the unexpected growth of the classes. On him also fell the responsibility of familiarizing a succession of deans with the duties they had undertaken, of maintaining continuity in the policy and administration of the school, and in the evolution of changes called for by the constantly widening scope of the medical curriculum. The intimate knowledge which he acquired of every detail of the regulations governing medical education, and the special requirements of the various universities and licensing bodies rendered him an invaluable colleague, and in consequence it was rare that the dean could fall into error in matters either of advice or action. No less valuable was his association with the younger members of the school; his ripe experience was at the disposal of all who came to him, and he made their interests his own. Loyalty, transparent honesty, and discretion, marked all his actions; punctilious in the fulfilment of every duty and methodical to a degree in the arrangement of his work, he gave of his best freely, while he was kindly and considerate to all. No ungenerous word or careless gossip ever escaped him in his office, the daily meeting place of the staff for so many years, and no one had ever occasion to repent having reposed a confidence in him. His neat carefully dressed figure was for more than thirty years one of the most familiar objects of St. Thomas's, and was greatly missed by his friends when he retired. His own love for the institution, which he served so long and faithfully, cannot be better illustrated than by the sentence which accompanied the announcement of his death in the *Times*, which asked anyone desiring to send flowers to his grave rather to make a contribution to the Samaritan Fund of the hospital.

LACHLAN G. FRASER, M.D.,

North Shields.

WE regret to record the death on October 5th, after a long and painful illness, of Dr. Lachlan George Fraser, who was one of the best known and most highly respected medical men in the north-east of England. Dr. Fraser received his medical education at the College of Medicine, Newcastle-upon-Tyne, and graduated M.B. (honours) and B.S. in 1895, M.D. in 1903, and M.S. in 1904 at Durham University. He joined his uncle, Dr. F. C. Mears, in partnership at Northumberland Square, North Shields, and succeeded to the practice on the death of Dr. Mears two years ago. He held the appointment of honorary surgeon to the Tynemouth Infirmary, an institution to which he devoted a great deal of his time; he had taken an active part in its administrative affairs practically from its foundation. He was the author of many contributions to medical literature, mainly in this JOURNAL, and he was the author of a prize essay on talipes equino-varus in 1903. He took much interest in all kinds of sports and athletics, especially in swimming, and was honorary surgeon to the Tynemouth Amateur Swimming Club.

Dr. Lachlan Fraser had long taken an active interest in the work of the British Medical Association, and filled with distinction every office in the North of England Branch, including that of president. He was secretary of the Tyneside Division of the Association from 1902 to 1913, a period which covers the years of strenuous work during which the National Insurance Bill was under discussion. Dr. Fraser, notwithstanding the calls of a busy practice, did splendid work for the Association during those years and earned the gratitude of his fellow practitioners for his labours. He was elected chairman of the Tyneside Division of the Association in November, 1917, and still held that position at the time of his death. He was for several years a member of the Tynemouth Insurance Committee, and he was elected president of the Northumberland and Durham Medical Society, but never filled the chair, for the first meeting of the session at which he should have presided was on the day of his death. He was one of the very best type of general practitioner, and his loss will be severely felt in an area much wider than his own district. The funeral was most impressive; it was attended by medical men from the whole countryside.

MR. HUGH WHITWELL of Norwich, who died on October 20th at the age of 46, came of an old Yorkshire family. He was educated at Uppingham and Cambridge University, and received his medical training at St. Bartholomew's Hospital. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1901, and subsequently served as house-physician at Bartholomew's Hospital, senior house-surgeon at the Royal Free Hospital, and assistant medical officer to H.M. Prison, Norwich. About eighteen years ago he entered into partnership with Mr. H. S. Robinson and Mr. H. C. Nance in Norwich, and on their retirement he became senior partner, with Dr. B. B. Riviere as his colleague. Some years ago he was appointed to the staff of the Jenny Lind Children's Hospital, to which he was senior surgeon at the time of his death. He served for two and a half years in France during the war, first as medical officer with the Yorkshire Hussars, and afterwards as a surgical specialist at a general hospital. His health gave way under the strain of war service, and he was invalided out of the army in 1918. Before going to France he did valuable work at the Lakenham Military Hospital and as temporary assistant surgeon at the Norfolk and Norwich Hospital. He was a good golfer, and before going to Norwich had played cricket for the Yorkshire Gentlemen. He was also a keen supporter of the Norwich staghounds. He underwent a serious operation on October 16th, and after making substantial progress for two days unforeseen complications arose which caused his death.

DR. THOMAS CARLETON RAILTON, who died at Buxton on October 4th at the age of 78, was educated at the Royal School of Medicine, Manchester, and St. Bartholomew's Hospital. He took the diploma of M.R.C.S.Eng. in 1869, and

proceeded to the F.R.C.S. in 1872; he graduated M.B.Lond. in 1873 and M.D. in 1882, and in the latter year he also graduated B.Sc.Vict.; in 1888 he took the diploma of M.R.C.P.Lond. Dr. Railton was formerly in practice at Manchester, and held appointments on the honorary staff of the Northern Hospital for Women and Children, to which institution he was at the time of his death a consulting physician. He retired from medical practice some years ago and went to live in Buxton. He was the author of many contributions to current medical literature and of several works on diseases of children.

The death took place suddenly on October 19th of Dr. John George Wallace-James, of Tyne House, Haddington, eldest son of the late Dr. Robert Wallace-James, H.E.I.C.S. Dr. Wallace-James received his medical education at the University and Royal College of Surgeons of Edinburgh. He had been in practice for some years at Haddington, and was held in high regard in the district. The funeral, which took place on October 23rd, was attended by the Provost, magistrates, town council, and by other public bodies in Haddington.

Medical News.

At the annual dinner of the London School of Tropical Medicine on Wednesday, Sir Arthur Robinson, of the Ministry of Health, said that a scheme was under consideration whereby the London School of Tropical Medicine would be incorporated with the new Institute of Hygiene, founded with the assistance of the generous gift made by the Rockefeller Fund. The amalgamation, however, must be on such a basis as to secure the continuance of the great work done by the school. Sir Havelock Charles said that if the aspirations of the school were met the adhesion of the staff and students to the new arrangement would be freely given.

Lectures on tropical hygiene in its relation to the public health service will be given at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., at 4 p.m., on November 20th, 21st, 22nd, 23rd, and 24th, by Dr. Andrew Balfour, Lieut.-Colonel W. W. Clemesha, Professor R. T. Leiper, Lieut.-Colonel H. J. Walton, and Dr. H. B. G. Newham. The lectures will be illustrated by lantern slides and films; they are primarily intended for sanitary inspectors.

The annual dinner of past and present men students of Leeds Medical School will be held at the Queen's Hotel on Friday, November 17th, at 7 p.m., when Dr. Watson will be in the chair. This is the thirty-ninth annual dinner, and the continued support of past students is asked for. Tickets, 10s. each, exclusive of wine, may be obtained from the honorary secretaries, Mr. J. Shutt and Mr. G. F. Walker, Medical School, Leeds. Guests may be invited, who need not be members of the medical profession.

The twenty-seventh Congress of the Italian Society of Internal Medicine was held at Florence from October 21st to 24th, when the following subjects were discussed: duodenal ulcer, introduced by Professor Ascoli; jaundice, introduced by Professors Caporali and Zoia.

A congress of French-speaking dermatologists will be held at Strasbourg from July 25th to 27th, 1923, on the occasion of the centenary of Pasteur. Further information may be obtained from Professor Pautrier, 2, quai Saint-Nicolas, Strasbourg.

The Wellcome Museum of Tropical Medicine and Hygiene, Wellcome Bureau of Scientific Research, 26, Endsleigh Gardens, N.W.1 (near Euston Station), gives a graphic presentation of tropical medicine and hygiene, and is open during the week to all medical men from 9.30 a.m. to 5.30 p.m. (Saturdays 9.30 a.m. to noon). On Wednesdays at 2 p.m. visitors will be shown round the museum by the curator.

The *London Gazette* announces that Dr. Hyman Finklestone Sayliss, formerly known as Hyman Finklestone, has by deed poll assumed the surname of Sayliss in addition to that of Finklestone.

The King Edward VII Hospital Fund has made a further distribution of £100,000 out of the proceeds of the Hospitals of London Combined Appeal, making, with £150,000 distributed on August 3rd, a total to date of £250,000. The hospitals are being informed that, in accordance with the original scheme of the appeal, the grants are based, *inter alia*, on the number of occupied beds and out-patient attendances, and on the evidence as to their general efficiency, financial needs, and the efforts made to assist the appeal; but that neither the first payment on account, nor the first and second taken together, will necessarily represent the judgement of the King Edward Fund as to the proportions in which the ultimate total proceeds of the appeal should be allocated.

A dance in aid of the Westminster Hospital Students' Union will be held at Princes' Galleries on Friday, November 24th, at 9 p.m.

The dinner of the past and present students of the Royal Dental Hospital of London will be held at the Trocadero Restaurant on Saturday, November 25th, at 6.30 for 7.0 p.m., when Mr. P. L. Webster will preside.

The annual dinner of the medical staff of the Central London Throat and Ear Hospital was held at the Trocadero Restaurant, London, on October 26th, with Dr. James Atkinson in the chair. After the loyal toasts had been honoured, the chairman proposed the health of "The Guests" in felicitous terms, and Mr. W. J. C. Nourse and Dr. W. H. Kelson replied. The toast of "Our Hospital" was proposed by Sir Sydney Russell-Wells, who made a plea for a better organization of post-graduate education in London by co-operation among the special hospitals. Sir James Dundas-Grant replied, and Mr. Kershaw, secretary to the hospital, contributed some amusing reminiscences. During the course of the evening a presentation of a silver loving cup was made by Dr. A. Wylie, on behalf of the medical staff, to Mr. W. Stuart Low, who recently retired from the active staff of the hospital.

The late Mr. Wilfred Stones, of Wilmslow, Cheshire, who died in July last, leaving net personalty of £55,636, has left the residue of his estate to be divided into ten parts, three for the Manchester Royal Infirmary, two each for St. Mary's Hospital, Manchester, and the Children's Hospital, Manchester, and one part each to the Manchester Eye Hospital and the Northern Counties Hospital for Incurables, Mauldeth, and one part between Christ's Hospital Cancer Pavilion and the Manchester and Salford Hospital for Skin Diseases.

The first meeting of the new session of the Röntgen Society will be held at the Institution of Electrical Engineers, Savoy Hill, Victoria Embankment, W.C., on November 7th, at 8.15 p.m., when the presidential address will be delivered by Sir Humphry Rolleston, K.C.B., on acute constitutional symptoms due to radiations.

The annual dinner of the Cambridge Graduates' Club of St. Bartholomew's Hospital will take place on Friday, November 24th, at 7.30 p.m., at Hotel Victoria (King Edward VII Rooms), with Dr. Herbert Williamson in the chair. The honorary secretaries are Dr. H. N. Burroughes and Mr. Reginald M. Vick.

The *London Gazette* announces that the Lord Chancellor has appointed Lieut.-Colonel Nathan Raw, C.M.G., M.D., to be a Medical Visitor of Lunatics so found by inquisition.

The Metropolitan Borough of Holborn has called a conference on rat repression to be held in the council chamber at the municipal offices, 197, High Holborn, W.C.1, on Monday, November 6th. The chair will be taken at 3 p.m. by the Mayor.

In consequence of the Parliamentary election the meeting of the Dental Board of the United Kingdom has been postponed from November 14th to November 21st.

The fourth edition of *Physiology and Biochemistry in Modern Medicine*, by Professor J. J. R. Macleod of Toronto, is in the press and will shortly be issued by Mr. Henry Kimpton. The same publisher is about to publish the tenth edition of Dr. C. E. Simon's *Manual of Clinical Diagnosis by Means of Laboratory Methods*.

A celebration of the centenary of the birth of Pasteur is to take place in Philadelphia on December 27th, 1922. The provisional programme includes a meeting in the afternoon at the Academy of Medicine and a banquet in the evening, at both of which there will be distinguished speakers.

Professor Lacassagne has bequeathed to the city of Lyons his library, which numbers upwards of 12,000 volumes, and is particularly rich in documents relating to criminal anthropology.

Sir Almroth Wright, M.D., F.R.S., will deliver the occasional lecture before the Royal Society of Medicine on Thursday, November 30th, and has chosen "New principles in therapeutic immunization" as the topic. The chair will be taken by the president, Sir William Hale-White, at 5 p.m.

The *Handbook of Leprosy*, by Dr. Ernest Muir, reviewed last week (p. 805), is published in this country by H. K. Lewis and Co. at the price of 10s. 6d.

The late Dr. Matthew Mitchell Bird, formerly medical superintendent of St. Mary's Hospital, Paddington, has bequeathed the residue of his estate, about £10,000. to St. Mary's Hospital for general purposes.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"G. M." has appealed against his assessment and has been asked by the local inspector to furnish statements based on bookings less bad debts.

*** It is universally agreed that the calculation of a proper allowance for bad debts in the case of a medical practitioner is always speculative and generally unsatisfactory. For this reason it was agreed on behalf of the Board of Inland Revenue some time ago—and also more recently (see our issue of November 19th, 1921)—that unless special circumstances existed objection should not be raised to basing assessments on cash receipts instead of bookings less bad debts. In the long run no difference in the amount of tax paid should occur, but it is dangerous to change from one basis to another. It is agreed that the cash basis is unfair to the revenue in the case of a new practice or a change in proprietorship, but unless there are some special circumstances of that kind "G. M." should press for the acceptance of the normal basis. In any case the "income" on which tax is paid is the earnings in respect of the year of assessment and not for the year when the fees were booked or paid.

"J. McC.," who left the army service and went into general practice as a partner, cannot average his own previous earnings, but must take his liability as determined by his share of the average profits of the practice. The averaging of past army earnings applies only where the civil earnings are received as employee—as in the case of "J. O'L. M.," referred to in our issue of October 14th, 1922.

"F. E. D." bought a 15-h.p. Overland two-seater for £225 in 1916. In 1921 he sold this for £ 00, and bought 11.6 h.p. four-seater Standard for £595. The cost of a two-seater Overland in 1921 would have been £475.

*** The allowance due is £475 – £100 = £375. The inspector of taxes might be reminded that the official witness before the Royal Commission on Income Tax gave evidence to the effect that allowances for cost of replacement would be calculated by reference to the then, and not the original, cost of the plant or machine replaced.

LETTERS, NOTES, ETC.

PSYCHO-ANALYSIS.

DR. V. T. CARRUTHERS (Derby) writes: In asking for an anti-Freudian who has seriously studied the subject and given his views in a book, Dr. Steen (October 21st, p. 775) appears to have overlooked Pierre Janet's *Médications Psychologiques* (1919), vol. ii, chap. 3.

SWEATING IN PULMONARY TUBERCULOSIS.

DR. J. PIRIE (Hanbury, Leamington Spa) writes in answer to "Irishman" (October 21st, p. 780): "If he has not done so it is worth while to try the effect of a glass of milk punch before retiring (a glass of cold milk with three or four teaspoonfuls of good old Cognac). A method recommended by Dr. William Porter is worth remembering—namely, note the time of the beginning of the sweating, wake patient a few minutes before and give him two tablespoonfuls of whisky. It may seem strange to recommend stimulating remedies like milk punch to prevent night sweats, but it must be remembered that in phthisis the tachycardia of the day is generally succeeded by a bradycardia at night. 'Irishman' says the hygienic conditions of his patient are superb, therefore it is not necessary to refer to the importance of hygienic bedding, coverings, and clothes, and the value of real 'open-air' treatment in preventing sweats. As to medicines, has he tried agaricin gr. 1/20 six hours before sweating is expected, or atropin gr. 1/100?"

DERMATITIS AMONGST CEMENT WORKERS.

IN reply to Dr. Dykes's inquiry (October 28th, p. 826), Dr. James Liddell (London, N.) sends the following extract from *Diseases of the Skin*, by Stelwagon: "Among other trades and workmen a variable dermatitis or cutaneous injury may result: an eczematoid eruption in builders, plasterers, and bricklayers from the plaster, lime, and cement."

THE MILK OF JERSEY COWS.

IN opening a discussion on the food value of milk at the National Milk Conference, Dr. Robert Hutchison is reported to have said (BRITISH MEDICAL JOURNAL, October 28th, p. 824) that he had "found the milk of Jersey cows specially likely to produce bilious trouble on account of its richness." The Honorary Organizing Secretary of the South-Eastern Jersey Club writes to inform us that at a dinner of the Club the suggestion that Jersey milk was deleterious to children was very strongly controverted by several speakers, among them Dr. Harry Corner, who said that he had kept a Jersey herd for twenty-five years, and had never had an infant or child who could not take Jersey milk when properly administered, even after other milk and milk substitutes had failed.

MEDICAL AID FOR RUSSIAN REFUGEES.

MR. D. ZINOVIEFF (Special Delegate of the Russian Red Cross for Great Britain) and Dr. B. BELILOVSKY, (Medical Adviser to the Russian Red Cross), write: The Russian Red Cross Society (Old Organization) makes an urgent appeal at the present time to all kind friends and sympathisers for help for the destitute Russian refugees. These unfortunate persons, deprived of their own mother country, are scattered all over the world. The above society is doing its utmost to provide at least the minimum of help necessary, but is greatly handicapped by lack of funds. The majority of the Russian refugees are living in Servia, Bulgaria, and other Balkan States. Though helped to a certain degree by the Governments of these countries, they are in a very distressed condition. One of their chief needs is medical help, for which surgical instruments are very sadly lacking. Thousands are suffering and help is urgently needed. The Russian Red Cross, therefore, plead for assistance by donations in money or in surgical instruments—even old and used ones. Such donations will be most gratefully received at the offices of the society, Chesham House, Chesham Place, London, S.W.1.

MEDICAL GOLFING SOCIETY.

THE autumn meeting of the Medical Golfing Society was held at Littlestone-on-Sea on October 21st, and was a great success. The results were as follows. Singles *v.* Bogey (cup presented by Mr. Ernest Clarke), won by Mr. H. D. Gillies, 3 up; second, Mr. T. P. Kolesar and Dr. E. Gregono, 2 down. Foursomes *v.* Bogey (cups presented by Mr. G. Dawson and Dr. Rolf Creasy), won by Dr. L. W. Bathurst and Mr. E. Laming Evans, 4 down, after a tie with Mr. L. Bromley and Mr. F. D. Sauer, and with Dr. E. Gregono and Dr. L. Welply, at 5 down. Challenge cup for best 18 holes medal round (presented by Mr. E. Canny Ryall), won by Dr. J. Grace, 87 – 9 = 78; second, Sir Milsom Rees, 83 – 4 = 79; third, Mr. E. Laming Evans, 89 – 9 = 80. All competitions were played under handicap.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 38, 39, 35, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 771.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

A British Medical Association Lecture

ON

CARDIAC FAILURE.

Delivered to the North Wales Branch, July 11th, 1922,

BY

JOHN HAY, M.D., F.R.C.P.,

HONORARY PHYSICIAN, ROYAL INFIRMARY, LIVERPOOL.

In the management of patients suffering from acute fevers, from valvular disease, from persistent high blood pressure, and from progressive arterio-cardio-sclerosis, the medical man is always on the alert for the first sign of cardiac failure, for he knows that in such patients the power of the myocardium tends to fail, and must be maintained.

There is apparently an inevitable tendency for every practitioner to drift gradually into a routine line of treatment when dealing with this constantly recurring difficulty; the variable nature of the measures employed indicates a lack of any sure or solid basis for our medication. We are all creatures of habit and amenable to auto-suggestion, with the inevitable result that our critical faculties become dulled in relation to the results obtained by any routine line of treatment. As an example of this I would remind you of what is known to you all—that for many years the recognized treatment of shock was the hypodermic injection of strychnine. This practice was followed, year in, year out, by men who were satisfied that they were obtaining good results; until Crile proved that instead of strychnine being helpful and curative in such a condition it was definitely harmful and noxious. Now its use is abandoned by all competent men.

The present position in relation to cardiac failure is unsatisfactory—first, because there is a disinclination to face the necessity present in each case of determining the exact cause of the failure and adopting the treatment to meet the special need of that patient; and secondly, because there is not a clear conception as to the real value and therapeutic action of the various drugs used.

There can be no doubt that some of these drugs have a wholly fictitious reputation and yet continue to be administered with a simple and blind faith, to the mutual satisfaction of both the doctor and his patients. The doctor is not only cocksure that his treatment is right, but he is equally cocksure that whatever improvement follows is due to his interference. The teachings of tradition and a pure empiricism must yield to a more scientific attitude in the practitioner if advance is to be made.

Persistence in the use of a drug or drugs which are inert, or even really harmful, is hardly credible if one did not recognize the immense difficulty experienced in estimating the result of treatment. Human nature is more than predisposed to associate any satisfactory change in the patient with whatever method of treatment had been used immediately antecedent to that change.

When discussing such a problem as cardiac failure it seems essential to have a clear conception of what is meant by the term. An efficient heart is one which maintains a normal circulation, which supplies the muscles and viscera easily with the blood essential to their healthy functioning, and which possesses a reserve power adequate to meet the varying stresses of daily life.

We know that the demands made on the heart are greater in one man than in another, and that there is a correspondingly wide difference in the actual power of different hearts—hearts which are nevertheless healthy in themselves and adequate for the purpose of that individual. Failure begins when a heart ceases to respond adequately to the normal calls upon its reserve power, when it fails to rise to the occasion.

The Response of the Heart to Effort.

It will be helpful to review the manner in which the normal heart responds to effort, for the more clearly we grasp the essentials of the wonderful mechanism by which it meets the calls made upon it, the more easily shall we understand the significance of the early symptoms of cardiac failure and the principles underlying treatment.

The heart's main function is to furnish an adequate supply of blood to the capillary bed, to maintain the leisurely passage of oxygen-bearing corpuscles through the ultimate ramifications of the circulation. The blood has one primary duty—namely, that of acting as an oxygen carrier—and there is a direct relation between the consumption of oxygen by the tissues and the amount of work done. Physical effort at once increases the need for oxygen, and this peremptory demand of the tissues has to be met by an increased flow of blood. The response of the heart is immediate and adequate, the output of blood per minute is doubled, trebled, or even quadrupled. Instead of 3 to 5 litres a minute the output may reach 12 to 20 litres.

This marvellous response is the result of several factors, of which the chief are an increase in the rate of the heart and a more powerful and efficient systole. The very impulses which stimulate the motor area of the cortex overflow to the vagus centre and lower its tone, and thus the heart's pace quickens even before the muscular effort has begun.

A mere increase in rate would not, however, increase the output of blood per minute unless there was corresponding increase in the return of venous blood to the heart. This is brought about by the augmented respiratory movements and also by the energetic contractions of the muscles themselves, which empty the veins and drive the venous blood on towards the right auricle. This increased supply of blood to the right auricle produces a slight rise in the diastolic pressure which reflexly lowers the vagal tone, with the result that the pace of the heart is still further heightened through the accelerator nerves. Coincidently there is a definite rise in the systemic blood pressure and an increased flow of blood through the coronary arteries, which have dilated in response to the extra demands on the heart.

I have only touched on some of the more obvious changes associated with effort, but there are certain points which might be remembered, more especially in relation to the action of drugs.

An increase in rate is sometimes an indication that a weak heart is finding it difficult to supply an adequate output per minute. It indicates that the heart is attempting to counterbalance a less efficient systole by increased frequency. A more efficient systole increases the output per minute, even with an unchanged rate, provided there is a greater inflow. Dilatation of the coronary arteries, augmented by a rise in blood pressure, enables a better supply of oxygen to circulate through the myocardium.

Moderate effort in a healthy patient is not associated with any discomfort, but when excessive, two symptoms manifest themselves: (1) a tight feeling across the chest, a sensation as if it was impossible to expand the thorax; this may verge into pain; and (2) a sense of shortness of breath. Such symptoms appearing after great effort would be void of significance, but coming on after an amount of exercise which had previously been tolerated without discomfort would certainly point to a limitation of the reserve power—in other words, to early cardiac failure.

The first signs of cardiac failure are subjective; the later indications are objective and point to a serious degree of inadequacy. These earliest signs are of marked significance, for it is then that treatment may prove invaluable; discomfort going on to pain is probably of the greater importance among them, and it is this symptom which is most often misunderstood—partly because the patient's attitude towards it is misleading, and partly because it is difficult to get a clear account of his distress without a searching cross-examination.

Cardiac Pain, indicating Cardiac Failure.

A common complaint is that of "indigestion," more usually after breakfast, and this indigestion is of the nature of a "lump behind the breast-bone," either at the level of the middle or lower third of the sternum. Associated with this there is sometimes flatulence. Attempts are made to bring up wind, and finally, after a sufficiency has been swallowed, a quantity is eructated with subsequent relief. The significant feature of these subjective sensations is that they are aggravated by effort, and that the "indigestion" is eased by rest. Instead of a "lump" there may be nothing more than a tightness of the chest on moderate effort, but frequently worse after a meal or intensified by cold. Such patients yearn for the sunshine and dread the north-easterly winds.

The subjective sensations may, however, be of a different character, such as an aching pain at the angle of the left scapula or pain in the left elbow or wrist or arm. These pains in the arm or shoulder are often said to be due to neuritis or rheumatism, and their cardiac origin is overlooked; but here again further questioning reveals their relationship to effort, and it may be elicited that, if effort is persisted in, pain, definitely precordial or substernal in site, begins to manifest

itself with accompanying dyspnoea. Another symptom the significance of which is important is a sensation of weight in the arm, more often the left, unaccompanied by any definite pain; with this there is an inability to carry parcels. Such a condition is not an uncommon sequel to an attack of frank angina pectoris, but may exist in the absence of any such history. Sensations comparable to the above are almost invariably intensified by increased exertion and yield to rest, and this characteristic should be sought for when in doubt as to the meaning of such aches and pains.

It is of the greatest importance to remember that a diagnosis of "pain, cardiac in origin, and evidence of cardiac failure" must not be dismissed, as often happens, because physical examination of the heart fails to reveal any evidence of organic disease. The pain and discomfort are in themselves the evidence of the cardiac inadequacy, and fully justify such a diagnosis.

Shortness of Breath.

This may be the first indication of a failing heart. It may be the only indication, but is often accompanied by some degree of precordial discomfort or actual pain. It is an early sign in those suffering from mitral stenosis and in patients with auricular fibrillation. Dyspnoea begins to be noticed by the patient when it is induced by a degree of effort which previously caused no distress; the limit of the reserve power is more easily reached.

The later signs of cardiac failure need only be mentioned. They are objective and indicate definite and unmistakable inadequacy. They include venous engorgement, a large distended liver, painful abdominal wall, especially in the right hypochondrium, cyanosis, oedema, ascites, progressive dilatation of the heart, and basal crepitations (hypostatic congestion).

A sign of some considerable significance is true alternation of the pulse. The pulse is regular in time, but alternates in volume and tension. The alternation may be of short duration, or it may be persistent. In rare instances this can be recognized on palpation of the radial artery, but alternation is most easily appreciated during the estimation of the blood pressure; if there are occasional premature beats it is more marked immediately after the occurrence of such a break in the rhythm. With a high blood pressure it may be observed before the subjective signs of cardiac failure have obtruded themselves on the notice of the patient, but usually some degree of cardiac dyspnoea and pain are present on any effort.

In the rapid action of paroxysmal tachycardia and auricular flutter it is a common phenomenon, and if the duration of an attack becomes prolonged it is usual for some degree of alternation to develop. Its appearance is an indication of failure of the myocardium, though it has not the same prognostic significance in patients suffering from tachycardia as in those with high blood pressure or arterio-sclerosis.

If after careful consideration of the subjective symptoms and other data it is recognized that some degree of cardiac failure is present, the question to be answered is, What is the underlying cause? There are various possibilities to be considered:

1. Myocardial inadequacy resulting from the effect of toxins, as in acute rheumatism, diphtheria, pneumonia, and influenza.
2. Myocardial damage, possibly syphilitic. Narrowing of the coronary arteries.
3. A steady persistent rise in blood pressure.
4. In cases of valvular disease, an increase in the degree of mechanical defect.
5. Persistent increase in rate: (*a*) paroxysmal tachycardia; (*b*) rapid irregular action in auricular fibrillation.

In addition there is what may be called circulatory failure—a lack of vasomotor tone—in which the cause of the circulatory failure is vascular rather than cardiac.

Types of Cardiac Failure.

We have, then, certain groups or types of cardiac failure that stand out at once for recognition.

I.

Failure due to toxaemia, in which the myocardium is definitely damaged by toxins, occurs, for instance, in influenza and diphtheria. The only treatment worth considering in such a case is antitoxic, and the preservation of the heart from all strain.

In diphtheria the use of antitoxin is indicated. In pneumonia within the first three days detoxicated vaccines find a place, and if the pneumonic infection belongs to Type I then the intravenous injection of the corresponding serum is advisable; in addition, purgation and methods of keeping the skin active should be employed.

When the myocardium is damaged by an acute toxaemia the greatest care should be taken to save it from all avoidable effort and strain. The details of the nursing are all-important; anything impeding the respiratory movements of the chest and diaphragm should be dealt with at once—such as, for example, intestinal distension, which materially handicaps the heart by interfering with the normal descent of the diaphragm. A sharp pleural pain similarly limits the movements of the chest wall, and care should be taken that a pleural effusion is not overlooked. Drugs given in the hope of compelling the heart to act more efficiently are useless. For such a purpose the hypodermic injection of strychnine is futile and the value of digitalis questionable. Professors Dixon and Harvey in a suggestive paper[1] published in 1908 related some interesting experiments bearing on this point. One portion of their paper deals with the toxic effect of diphtheria, and the experiments reported justified the authors in the opinion that drugs act much less effectively on cells poisoned by toxins.

It is probable that toxins vary in their effect on the cardio-vascular system. Consequently satisfactory treatment will depend on a knowledge of the peculiar action of the toxin in any particular disease. S. Yabe[2] has recently published the results of some experimental work on the action of diphtheria toxin upon the circulation. He found that the toxin produced a lowering of the blood pressure, due neither to cardiac failure nor to direct action on the peripheral vaso-constrictory nerves, but to failure of the central vasomotor mechanism. It is unfortunate that so little experimental work dealing with the action of drugs on the circulation in acute toxic conditions has been done, but what evidence there is lends support to the view that severe toxaemia diminishes very materially the response to drugs.

II.

There are the patients in whom the cardiac inadequacy is the result of progressive degenerative changes in the myocardium or in whom the coronaries are so narrowed that the blood supply to the heart muscles is just sufficient to meet the needs of an easy and placid existence.

In such patients the essential thing in treatment is not drugs but an adaptation of the patient's life to his limitations. It is obvious that drugs can only play a small part here unless there is some hopeful element in the history, such as syphilis. Senility is ill borne by some, for the patient is not alone who said, "I don't like Annie Domini, she is so persistent."

III.

We have also the group of high tension cases in which the heart begins to show signs of failure. I have noticed that these symptoms frequently date from an attack of influenza or other infection which impaired the driving power of the myocardium and materially diminished the cardiac reserve.

Here the regulation of exercise and diet, attention to the bowels, and especially the occasional use of mercury, either as calomel or blue pill, together with the exhibition of haematinics, are of the greatest value. Such measures are of more service than the so-called cardiac tonics, though the caffeine and theobromine group appears to be helpful, and opium in some form may prove invaluable in the later stages. The iodides have established a reputation in the treatment of this type of patient and may be given a fair trial, though it is difficult to explain the manner in which they act: there is certainly no evidence that they lower the blood pressure. Frequently vaso-dilators are useful, especially in warding off attacks of cardiac pain. A tablet of erythrol tetranitrate chewed a few minutes before leaving the house in the morning may enable a patient to reach his office in comfort. It neutralizes the slight rise in pressure caused by the effort and saves the heart, but it is most doubtful whether the persistent use of these vaso-dilators has any real and lasting effect on the blood pressure.

IV.

Chronic valvular disease tends to progress and thus increase the mechanical defect, and there is also in most instances some impairment of the integrity of the myocardium. As in Type III so also here, cardiac failure may be precipitated by some passing febrile attack. There is a limit to the development of hypertrophy, and that limit is the calibre of the coronary arteries. Sooner or later, then, such patients

manifest signs of cardiac failure. A compensatory rapid action is induced by the slightest effort, accompanied by distress.

In the absence of a disorderly rhythm the treatment is primarily by rest, and an attempt to improve the quality of the blood by the administration of iron and arsenic over long periods—say for four to six months at a time.

V.

A most important group, if not *the* most, is that in which fibrillation of the auricle is responsible for the cardiac failure.

Auricular fibrillation is of common occurrence, and is characterized by a specific change in the activity of the auricular muscles. Sir James Mackenzie has recently suggested that this is the result of a loss of control on the part of the sino-auricular node and junctional tissues. The ventricles usually beat with increased rapidity; their action is disorderly, and many of the systoles fail to transmit a pulse to the wrist. This fundamental alteration in the mechanism of the heart adds materially to its difficulties, and sooner or later indications of cardiac failure show themselves. The first is usually an increased liability to shortness of breath.

The power to recognize the presence of fibrillation is of more importance from the point of view of treatment than the power to discriminate between the various forms of valvular disease. Once the existence of fibrillation is established the lines of treatment are clearly defined. It is in this group that drugs are of paramount importance, and the drugs are those of the digitalis group.

I do not propose to discuss the treatment of fibrillation in any detail, since so recently as July 22nd I dealt with the subject in the British Medical Journal, but it is necessary to refer to one or two points in the use of digitalis and its allies.

Intravenous medication is indicated when the cardiac failure is severe and the expectation of life is measured by hours—then strophanthin is the most efficacious remedy, and should be used in doses varying from 0.5 to 1 mg. Otherwise the ordinary tincture of digitalis (*B.P.*) is probably the best preparation. Nativelle's granules of digitalin 1 240 grain are also useful, and there are other standardized tinctures and extracts which have proved satisfactory.

Whatever preparation is used it should be pushed until a specific response is obtained, and the amount then reduced until the optimum dose for that individual patient is determined.

If the diagnosis of fibrillation is established, then by some means or other digitalis and its allies must be administered. Nausea and vomiting do not necessarily indicate that the drug has been given in excess; an irritable stomach must be circumvented either by greatly diluting the digitalis or strophanthus or by the simultaneous administration of a bland and soothing-stomachic mixture. An intravenous injection may prove to be the only satisfactory method.

In auricular fibrillation and auricular flutter the rapid action of the heart can generally be controlled by drugs; the reverse is, however, the case in true paroxysmal tachycardia. The ventricle continues to beat at 200 or more in spite of all treatment, and gradually this great strain on the myocardium induces cardiac failure with progressive dilatation, cyanosis, and other objective signs. Drugs appear to have no influence on this type of tachycardia—neither strophanthin intravenously nor digitalis by the mouth. Opium in some form is the most valuable drug. Pain must be relieved and sleep obtained. In this way the power of the myocardium is best maintained.

VI.

It is perhaps as well to refer briefly to cardio-vascular failure, in which it is not the heart itself that is at fault, but either the terminal branches of the vessels are affected or the vagal tone becomes appreciably raised, producing slowing and a tendency to syncope.

Cardio-vascular failure is found in severe toxaemias such as diphtheria, and also in post-traumatic and post-operative shock (surgical shock). Bayliss has shown that in these patients the mass of the blood in currency is greatly diminished. There is exaemia, "an accumulation and stasis in capillary areas," with a consequent fall in blood pressure. This fall in blood pressure must be met. Bayliss demonstrated that intravenous injections of 6 per cent. gum arabic in normal saline raised the pressure at once and rapidly improved the condition of the patient.

This applies to surgical shock associated with loss of blood. Unfortunately there is not the same favourable response in patients suffering from post-operative shock in which there has been little, if any, bleeding. Adrenaline or pituitrin should be injected, and it is usual to use, in addition, intravenous injections of normal salines and to give saline enemata. Similar lines of treatment should be followed in conditions of severe toxaemia.

A sensation of faintness or actual syncope is due in part to increased vagal tone, and this is best countered by hypodermic or intravenous injections of atropine in full doses. In such patients the pulse rate falls and the volume of the pulse is diminished; in fact, in some instances it may cease to be palpable at the wrist. There is a fall in blood pressure of a degree not to be explained by vagal action alone.

Such faints are not an indication of either heart disease or even of primary cardiac failure; they are reflex, and are probably a combination of undue vagal slowing and a lowering of vasomotor tone.

Drugs.

In *cardiac failure* drugs, etc., may be used:

(1) To influence the nervous system (opium, chloral, bromides);
(2) To improve the quality of the blood by increasing its haemoglobin content;
(3) To neutralize toxins;
(4) To stimulate the myocardium to more vigorous contraction;
(5) To depress the junctional tissues and slow the ventricular rate;
(6) To raise the blood pressure.

Before concluding I propose to discuss in a little more detail some of the drugs more commonly administered as cardiac stimulants or toxins.

Strychnine.—I have already referred to the uselessness of strychnine in cases of shock, but there can be no doubt as to the widespread faith in its action as a direct cardiac stimulant. There is little satisfactory evidence that strychnine given in the doses usually employed has any action at all on the circulation. Drs. Parkinson and Rowlands carried out a careful series of observations of 50 patients, and their considered opinion is as follows:

"We found no evidence that the subcutaneous injection of a full dose of strychnine in cases of heart failure with a regular rhythm produced any change in the blood pressure, rate of pulse, rate of respiration, or general symptoms, within an hour following its administration. In cases of auricular fibrillation strychnine produced no change in the rate or the irregularity of the pulse, rate of respiration, or general symptoms during the same period. We conclude that strychnine has no effect which justifies its employment as a rapid cardiac stimulant in cases of heart failure."[3]

Strychnine may and probably does produce an effect in the respiratory centre, but even this is only slight and uncertain. It may serve as a valuable ingredient in a tonic mixture or a laxative pill, but to rely on it in the advent of cardiac failure is futile. While strychnine has a wide and unwarranted reputation as a cardiac stimulant in Great Britain, it is largely neglected on the Continent. In Germany camphor appears to take its place, and is usually given dissolved in oil and injected into the muscles. There is, however, no convincing evidence that it is of any more value than strychnine, and it is questionable whether the cardiac power is modified by its use.

Alcohol.—Another drug which still has a great vogue as a cardiac stimulant is alcohol, more especially in cases of threatened cardiac failure, in such fevers as pneumonia and typhoid. Here, again, all the evidence is clearly and decisively against its use in such conditions, when given with the object of strengthening or stimulating the heart. It may justifiably be administered in order to induce sleep, and is a valuable ally when used for this purpose,

"but no scientific ground has been discovered for any claim made on behalf of alcohol to practical value as a direct stimulant of the heart in cases of threatened failure of the heart."

This last statement is quoted from the most recent authoritative pronouncement on the action of alcohol. Its action is mildly narcotic and sedative, and induces a comfortable feeling of *bien-être*, "a careless sense of well-being." This may be of value in the management of a cardiac patient, but does not justify its exhibition when a cardiac stimulant is indicated. I do not of course forget the transient stimulation of the heart, accompanied by some acceleration of the beat which immediately follows the swallowing of a mouthful of spirits. This is a response due to its irritant action on the mouth, throat,

and stomach, and occurs before the alcohol has been absorbed—before, therefore, it has begun to exert its specific action. This local action is of value in attacks of faintness and in the severe pain of the anginal type.

Caffeine Group.—In this we find drugs which produce a definite action on the efficiency of the cardiac systole. At the last (Oxford) meeting of the Association of British Physicians, Professor Gunn gave a demonstration of the action of drugs on the perfused heart, and the effect of caffeine was remarkable. The ventricular rate was increased, and with it the completeness of the systole. Of this group caffeine is the most commonly prescribed. Unfortunately its action on the brain sometimes prevents large doses being administered because of the resulting insomnia and palpitation. When used in pneumonia I think it is best to give it only in the morning and afternoon, and withhold it in the evening and through the night on account of its tendency to make the patient restless and sleepless. Caffeine is often prescribed in combination with a scale preparation of iron in cases of hypertension, and appears to be of service when taken for a long period. The theobromine preparations are especially useful in cases of cardiac failure where oedema has developed; their diuretic action is rapidly produced and may be of great value. The most potent is theophyllin acetate or theocin given in doses of 5 grains in a hot drink such as tea, and administered while the patient is taking digitalis. Its action is rapid and may cause diuresis even before the digitalis has had time to act. Experimental work tends to show that in addition to the diuresis the heart itself is stimulated and the coronaries dilated. This in itself would materially strengthen the heart. Unfortunately theocin is often badly tolerated, and in some patients causes nausea, vomiting, and headache. Another drug frequently prescribed is diuretin. It is better tolerated than theocin, and its action appears to be on similar lines. The dose is much larger and is 30 to 60 grains daily. Theobromine has for a long time been recommended to relieve anginal pain, and for some years I have used diuretin for this purpose. My experience certainly supports the view that the liability to anginal pain is diminished by this drug.

Adrenaline has a rapid and remarkable effect on the cardiac output, and simultaneously on the blood pressure, but its action is transitory. Some of its beneficial action on the heart is probably due to the combination of a rise in blood pressure and a ditatation of the coronaries, thereby increasing the blood supply to the heart muscle.

Conclusions.

I am afraid that as a profession we are too credulous as to the value of the majority of the so-called "cardiac tonics." The position of digitalis and its allies is of course unassailable, but their action must be fully understood if we are to obtain the best results; and their administration must not be half-hearted—the drug must be pushed to the full legitimate limit. When cardiac failure is consequent on fibrillation of the auricle, digitalis gives its dramatic results—but the sphere of its usefulness is not entirely confined to this group.

It is open to serious question whether strychnine and alcohol have any direct stimulating effect on the heart, and camphor falls into the same category.

The caffeine group, including theobromine and its compounds, has undoubtedly an influence on the heart and circulation which may be of service under certain conditions, especially when the failure is associated with oedema.

It is just as well to face the fact that we have very few drugs which can be relied upon to act as specific cardiac stimulants, and even those with an assured position only act satisfactorily in the absence of severe toxaemia.

The less we rely on "cardiac tonics" the more attention shall we give to those features in the management of the patient by which the heart can be saved from strain; the more shall we attempt to delay cardiac failure in the acute infections by dealing directly with the toxaemia; and the more shall we make every effort to maintain the quality of the blood at a high level in chronic valvular disease and thus supply the heart with an adequate blood stream.

In treating cardiac failure I would urge that the discussion of the particular cardiac tonic to be administered should come last and not first, and that certain other lines of attack should receive full consideration. It is of primary importance to diminish the number of beats. Physical rest and freedom from excitement and worry will do this. At the same time there are many patients suffering from valvular disease and other forms of cardiac disability whose reserve power can be immensely improved by exercise, and to increase the reserve power is to diminish the liability to cardiac failure.

Hearts, like individuals, soon get "out of order," and the habit of rigidly restricting the amount of effort and exercise for no better reason than the existence of a murmur is to induce with certainty a condition of diminished reserve power. The symptoms of distress in such patients are not the result of the disease, but of the treatment. To make matters worse, many of these unfortunates become introspective and apprehensive about themselves; their outlook on life is altered, and they deny themselves all reasonable exercise for fear of straining their hearts or of inviting a sudden death.

Serious attempts must be made to give these neuropaths more confidence in their powers. For such dancing is an excellent form of exercise, and is being largely employed in America. Most people enjoy it; the periods of actual dancing are short, the exercise is intermittent, and the degree of physical effort is small. It is difficult to overestimate the value of the delight in the dancing itself as a form of mental therapy.

Exercise accompanied by enjoyment is of far more value than specified active or passive movements according to time table, though it is obvious that the latter can be more carefully graded. There are many occasions in the more severe degrees of cardiac failure where treatment of this kind is valuable, but as a general rule exercise should be a joyful performance if the maximum benefit is to be obtained. The inclinations of the patients must be considered, and the opportunities presenting themselves will in any particular case enable a pleasant and appropriate scheme of recreation to be drawn up.

Anything interfering with the freedom of the respiratory movements must be remedied. Especially is this so in cases of pneumonia, when so much depends on a free excursion of the diaphragm; abdominal distension must be dealt with drastically. In non-febrile cases a hydrothorax must be looked for and paracentesis carried out if required.

Then sleep is essential, and I think it is difficult to overestimate the great value of opium in the severer degrees of cardiac distress, and of the hypnotics such as the bromides and chloral and chloralamid in the milder manifestations. We must not forget that the "foster-nurse of Nature is repose."

The vigour of the myocardium can only be maintained when the blood supply through the coronaries is ample and of good quality. Hence the optimum blood pressure must be maintained even if it be relatively high.

The soundest treatment of all for many patients is the prolonged administration of haematinics. There is no better cardiac tonic to those suffering from valvular disease of the heart or chronic renal disease with arterio-sclerosis than a liberal supply of first-class blood to the failing myocardium.

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MEDITERRANEAN OR UNDULANT FEVER.*

BY

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When in 1900 I first went to the Royal Naval Hospital at Haslar attention in the navy was generally focused on the so-called Malta fever. My wards were full of it and remained so for six years. Since then it has always appealed to me, and I have had the opportunity of studying it in its varying forms from both clinical and laboratory standpoints for over twenty years. Happily it is now very rare in the service.

Historically it was first recognized by Marston during the Crimean war, and it was with difficulty differentiated from enteric fever. In 1886 Bruce isolated the infecting organism, which was called *M. melitensis*, as the disease was believed to be limited more or less to the island of Malta. I would here urge that the geographical names, "Malta," "Mediterranean," and "Rock" fever, etc., be dropped and the term "undulant," which describes one of the chief characteristics, be used. This was introduced by Hughes in his valuable monograph, for the disease is so world-wide that the name

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"Malta fever" for it is almost as misleading as the term "Oriental sore" for a condition found in South America.

Undoubtedly one of the most important endemic centres was Malta, for the source of infection was abundant, and the presence of a constant supply of non-immune men was provided by the changing naval and military forces, and the hospitals were hotbeds of the disease. The fever frequently developed there in patients suffering from other diseases, such as typhoid, or even surgical affections. No wonder, therefore, that as a nation we were interested in the discovery of the cause which annually gave rise to such a high amount of invaliding from the station and so many days' sickness among the fighting forces, and in the methods of prevention.

Geographical Distribution.

We now know that the fever is widely spread all around the Mediterranean littoral—in Spain, France, Italy, Greece, the Levant, Egypt, Tripoli, Tunis, Algeria, and most of the islands. During the past few years its introduction to districts far from the sea has been shown in Spain, Portugal, and France. This is a most important etiological factor. Leaving the Mediterranean, endemic centres are found at Suakim, Aden, and India, especially in the Punjab, in China, in the Yang-tse valley, and Craig has reported it from the Philippines. In tropical Africa it is found in the Soudan, by the Blue Nile, in Northern Nigeria, and in Uganda. After the Boer war it became prevalent in South Africa, in the Transvaal and Orange River Colony—that is, when the cattle were few and more goat's milk was used. In America there appears to be a true endemic centre in Texas extending to New Mexico, and cases have been described from Peru; so you see the term "Mediterranean or Malta fever" is greatly misleading.

It was not until after the institution of the Royal Society's Commission, under Sir David Bruce, which had been working for two years and gave its final report in 1906, that the usual source of the infection was traced to the milk of the native goats, which animals appeared to be perfectly healthy at the time, though passing out enormous quantities of the infecting organisms in their milk. From these investigations, which led to the compulsory sterilization of all fresh milk used in the services or the employment of condensed milk, the disease was practically abolished and an enormous saving of money, time, and distress was brought about. No modern scientific preventive work has been more successful or of greater use to humanity. I should like to quote some words of Professor Zammit on this point:

"Before 1905 few of the employees of the Electric Telegraph Company, dockyards, etc., or their families escaped infection, but it is now exceptional for a foreign resident, who takes the necessary precautions, to fall a victim to undulant fever. The bulk of the Maltese population thought that they knew better, and have not heeded the caution repeatedly given by their sanitary officers of the danger of using unboiled milk, with the result that there has been hardly any decrease among them of the number of cases of undulant fever."

About 5 per cent. of the goats are still infected, which is a dangerous number, as a single goat may infect hundreds of persons. The attempt to limit the disease by educating the people has been a failure, so that the only prophylactic measure applicable is the destruction of all infected animals. This statement applies also to most other areas where natives have to be dealt with. Zammit also says that a goat once infected never recovers, the organism being always found in its organs, and an infected goat, apparently healthy, will, after kidding, always pass out infected milk.

The disease is seen to be mostly subtropical in distribution, and wherever it occurs endemically goats in herds are practically always present, and although the Maltese goat, which has been widely exported on account of its good milking value, is the most frequent offender, yet any goats are susceptible of infection, and from them it may spread to other animals—cows, mules, horses, dogs, and man.

Mode of Infection.

A very interesting account of the method of infection is given by Léger.

When the goats from the hills in Corsica are brought down to the towns many of the women who milk them become infected through the hands by the *M. melitensis* in the milk. The women rarely or never drink the milk. This milk is afterwards converted into fresh cheese, so commonly used in these areas, which itself is also a source of human infection, and more particularly so as the vendors often bathe the cheese in fresh milk to improve its appearance. In pasture one infected goat may infect healthy herds when introduced among them, and these may infect the dogs and goatmen. In Spain and France the same thing occurs. Though the ingestion of the milk is the most common source of infection, the products of the milk, such as cheese and ice-creams, are dangerous.

I have mentioned how the organism may be directly inoculated through abrasions of the skin, and Séjournant goes as far as to say that, though in towns the usual source of infection is by drinking the contaminated milk, in the rural districts it is mostly caused by a local infection or inoculation of infected milk or soil. The fact that the organism is passed out of the body by the urine and faeces should make us look upon all cases as potentially infective, which necessitates the disinfection of all excreta, etc., and warning the nurses accordingly.

The specific organism is the *M. melitensis*, which, as described by Bruce, is a minute coccus or coccus-bacillus about 0.3 μ in diameter. It is, in old cultures, very pleomorphic, and is described by American authors as a bacterium, and is closely allied to the organism which causes abortion in cattle, morphologically, serologically, and tinctorially, a definite group being formed called "Brucella." The exact relationship of the two has not yet been definitely ascertained, but the latest experiments show that the *abortus* organism is very common in cattle and is very infective, that specific *melitensis* serum agglutinates it to a high titre, and that the pathological lesions and symptoms produced are very similar to those found in undulant fever, but its infectivity is extraordinarily slight as compared with that of *M. melitensis*, and if it is a variety of the latter it is one of very low virulence. In the group we have various strains of *M. melitensis*, the *M. para-melitensis*, and the *B. abortus*. I have found that the serum of acute cases of undulant fever agglutinates the *melitensis* and *abortus* strains about equally, but the *para-melitensis* to a much lower titre. The occurrence of cow's milk in England containing agglutinin for the *melitensis* organism is thus explained, and the absence of undulant fever caused by this milk in this country. At Greenwich I found quite a large percentage of cow's milk gave positive reactions.

Clinical Features.

Naturally infected the incubation period is about fourteen days, but by laboratory infection it may be as short as six days (as in my own case). Here I would like to emphasize the importance of using the utmost care in the laboratory when working with this organism, and there have been so many accidental inoculations that it may be looked upon as one of the most dangerous to handle. Very often there is a long period before the onset of the disease, cases developing after leaving the endemic area. I have records of many definite cases who remained quite well while in the Mediterranean, but developed the acute disease after arriving in England.

The disease may last from two weeks to two years; the average period of 552 cases was four months. The mortality varies from 2 to 6 per cent., or rather higher in children, but from late experience it would appear that after 40 the prognosis as to life is considerably less good than in young adult age.

Four Types.

Four types may be described.

1. Ambulant—namely, those who have no symptoms but who are passing out the organism in the urine. These cases were first described by Shaw from among dockyard labourers at Malta. They are all potentially active sources of infection.
2. Mild case lasting about fourteen days, often mistaken for paratyphoid, etc., in whom there is no relapse.
3. The ordinary or undulant type of greater or less severity.
4. The malignant type, where early hyperpyrexia and intense toxaemia occur, and a fatal issue is usual. These cases are, fortunately, very rare.

A form with a hectic, intermittent type of temperature was described by Hughes; this is, I believe, only the termination of the ordinary undulant form, but being associated with cough, sweats, and general wasting, it was often called Mediterranean phthisis, but the physical signs, nummular sputum, and tubercle bacilli in the sputum are absent. These cases may last for months, and they appear to be common in South Africa. Strachan remarks how difficult they are to diagnose, especially if the temperature is only taken in the morning, when they are often entirely missed.

General Symptoms.

In an ordinary case, after a period of malaise, with headache, loss of appetite, and disinclination for work, the temperature fairly quickly runs up to 103° or more. The high fever may be continuous, but generally there is a marked fall in the morning. Slight shivers are common but rigors are rarely noticed. The tongue is moist and thickly coated, the fauces often congested; gastric symptoms may be present with vomiting and irregular diarrhoea, the stools being offensive and bilious. Frequently constipation is present from the first. The headache is severe and frontal in character and

there are sleeplessness and mental irritability. Tenderness over the spleen is generally found, and both this and the liver will be slightly enlarged. If the fever continue high a typhoid condition is produced; the tongue becomes dry and cracked, small and pointed; nervous prostration is marked with muttering delirium, or there may be drowsiness passing into stupor; the pulse gets small, rapid, and intermittent, and is markedly dicrotic, and secondary pneumonia or heart failure may carry the patient off. Most commonly there are marked waves of remittent fever of varying length and intensity, separated from one another by periods of temporary absence of symptoms.

As a rule the temperature gradually rises, remitting every morning; after a short time the lassitude and debility increase, the general condition rapidly deteriorates, epistaxis is common, sweats are profuse and occasionally petechiae are found, and insomnia becomes more marked. The primary wave may last from ten days to six weeks, when improvement commences and the temperature falls to normal, or nearly so, but within a few days a re apse occurs. The symptoms of this are very similar to those of the first attack but perhaps less severe; constipation becomes more marked, the spleen and liver are more enlarged and tender, anaemia becomes more pronounced, the sweats are more profuse and distressing, and neuritis tends to appear. Each wave of temperature lasts about a fortnight, and these typically get shorter and less marked at each recurrence, but, after each wave, depression and loss of flesh increase, with the occurrence of neuritis, swollen and painful joints, and, rarely, orchitis. As the patient becomes more and more emaciated and prostrated he is subject to bronchitis, cardiac palpitations, and increased rheumatic-like pains, the hair falls out or turns grey, and the patient ages remarkably. The duration of the attack is about four months, and complete convalescence is slow.

As the disease is due to a general *melitensis* septicaemia, as the organism produces both exotoxins and endotoxins, its effects are very widespread. In some cases there are localized and cold abscesses, or areas of local necrosis are found without true formation of pus—at least, only the *M. melitensis* is found. In other cases which have run a long course the evidence of toxic infection is found in the organs, as shown by hypertrophic fibrosis of the liver and spleen with often a small-celled infiltration, or the kidney may show parenchymatous degenerations with haemorrhagic infiltration. Clinically the evidence of the toxin is shown by the pronounced insomnia, headache, backache, shifting pains in the limbs in the early stages, and later by the repeated attacks of neuralgia. Sometimes there is partial paralysis of groups of muscles which is not permanent, but I had one case which went on to complete paraplegia. The pains often alternate in intensity with the amount of the pyrexia; when the pains are severe the patient may be completely helpless, and intense hyperaesthesia of the feet may increase the discomfort. I have recently had a case which in the third month developed acute herpes, affecting the fourth and fifth lumbar nerve ganglia. The tachycardia, bradycardia, and palpitations are also of toxic origin. Cristina and Maggiore state that in young children the nervous system appears to be particularly affected by the toxin which causes meningitis and encephalitis. Deafness and loss of memory are transient symptoms. Lafont has drawn attention to the influence of the disease on pregnant women. Abortion and premature labour are favoured, particularly during periods of high fever, and he states that the infection can pass through the placenta. This is specially interesting in relation to the close analogy of the organism with *B. abortus* of cattle. The action of the toxin on the mammary gland is important, for the milk is found to be infected with the *M. melitensis*, and after a few days dries up, and a mastitis is often produced.

Para-melitensis Infection.

I have had four cases of *para melitensis* infection—two males and two females.

The first was a lady who contracted the disease at Hyères, on the Riviera. The course of the fever was very prolonged, having very irregular intervals, and was associated with great debility, anaemia, and constipation, also severe neuritis and arthritis. After the disease had lasted many months I found that it was a true *para-melitensis* infection, and the patient was treated with *para-melitensis* vaccine for several months, making a perfect recovery from a state of great misery.

The second case was that of an old gentleman, aged 70, from the south of France. His condition was so severe that I did not recommend vaccine treatment. The patient died, and at the *post-mortem* examination a secondary streptococcic infection was found with infarcts in the spleen.

The third case was in my ward at the Dreadnought Hospital. The fever was contracted at one of the ports in the Adriatic, and he was practically convalescent when admitted, but the blood agglutinated to 1 in 2,000 with *M. para-melitensis* and 1 in 200 with *M. melitensis*.

The fourth, a fatal case, was that of an old lady who contracted the disease at Dax in the south of France. She had suffered from irregular fever for months, was greatly debilitated, and had also endocardial lesions. Vaccine treatment was used, but each injection produced marked local and general reaction, and an intense purpura followed and evidence of nephritis. The vaccine when tested was sterile and when inoculated into guinea-pigs caused no ill effects.

The reaction, therefore, seems to have been due to a definitely lowered resistance to the small amount of antigen introduced. Florentini states that the *melitensis* organism produces a toxin which acts as a haemolysin. In my last case a purpuric rash also occurred with each wave of fever; this is a serious symptom. In guinea-pigs inoculated with the two organisms cross agglutinins are produced, but the curves run more parallel with the *para-melitensis* infections than with the *melitensis*.

Diagnosis.

Clinically this is often most difficult, and a great majority of the cases have been at first treated with quinine. In mild cases a diagnosis of paratyphoid is often made; in others typhoid; in others with rheumatic-like pains and swollen joints, rheumatic fever; chronic cases with much anaemia, a hectic temperature, and cough, as phthisis; and frequently pyogenic infections are mistaken. Laboratory methods alone will clear up the diagnosis.

Haemoculture.—The organism is generally not found in periods of apyrexia or late in the disease, unless in an acute relapse. Splenic puncture is rarely justifiable. The organism is, however, generally present in the articular affections, and Burnet was able to demonstrate the *M. melitensis* from the joints of infected guinea-pigs in ten out of twelve tests. From so-called cold abscesses and chondro-chondral swellings the infecting organism is the *M. melitensis* and not *S. pyogenes*. A considerable quantity of blood should be removed and mixed with nutrient broth, 5 to 100 c.cm., and subcultured daily. Sometimes it may be recovered from the washed clot by Tizzoni's method. Agglutination with due precautions will give trustworthy results, but the emulsions must be made from reliable strains; it is wise to put up with both heated and unheated serum. Several dilutions should be employed—1 in 40, 1 in 100, 1 in 400—so as to eliminate paradoxal reactions, and always a control of normal serum and specific serum should be made at the same time. It must, however, be remembered that in chronic cachectic cases the titre of agglutination may be very low or even absent, though in acute ones it usually runs very high, 1 in 1,000 to 1 in 10,000.

Isolation from the Urine.—This when positive is conclusive, but the organism is only intermittently present in the urine, so as a diagnostic method it is not of much value.

Complement fixation and precipitation tests are also specific.

I have not been convinced of the value, as a diagnostic sign, of the statement that the highest temperature tends to be early in the afternoon rather than from 6 to 10 p.m. The possibility of *para-melitensis* infections must be remembered and the appropriate organism used for the test. The blood picture will often give assistance, for in undulant fever there is a relative decrease in polymorphs and an increase in lymphocytes, so differing from that seen in pyogenic infection.

Prognosis.

The prognosis for life is generally good as the mortality is low—2 to 6 per cent.—but recent research has shown that in young children, in Italy especially, it may be much higher, and after the age of 40 at home it would seem that, probably through lowered resistance, death from secondary infections is far from uncommon. It is never wise to make a prognosis for the duration of the disease, but with a period of ten days free from fever, with a clean tongue and normal pulse, convalescence may be expected. If the fever has lasted two months and profound blood changes have been set up then the disease may drag on for an indefinite time, with irregular attacks of pyrexia, painful neuritis, and general debility.

Treatment.

Every case should be looked upon as potentially infective, and the same care be taken as in a case of typhoid fever, warning the nurses accordingly. General good nursing is essential, and as the disease tends to run such a long course everything must be done to maintain the strength of the patient by giving as much food as he can assimilate. Alcohol should be held in reserve, so as to be of most use when myocardial signs have become marked. In the late cachectic stages stimulants are generally advantageous together with

food. The temperature should be kept, if possible, below the 103° line by cold sponging, or, if hyperpyrexial, by the wet pack, care being taken to give a stimulant if necessary. Sweats should not be shortened. A continued type of temperature shows a high degree of toxaemia or the presence of probable pulmonary complication. Arthritis should be treated with belladonna or opium applications, and the neuritis by mild hypnotics, such as sulphonal, trional, or paraldehyde; a patient should never be allowed to pass sleepless nights. If the pain is very acute morphine must be given, but should be avoided if possible.

Drugs.—These are of very little use. Quinine, camphor, methylblue, collargol, and electrargol have given some satisfactory results lately when administered intravenously. Piazzo's pheno-lipoid N is recommended—1 c.cm. of a 10 per cent. solution in oil given subcutaneously for an average of eight days was able to cure guinea-pigs which had received lethal doses of *M. melitensis*. It is antitoxic and bactericidal. Burney Yeo's mixture was useful. Digitalis, strychnine, and stimulants, as required by symptoms, must be given.

Serums.—Donzello and Trambusti had a nucleo-protein serum, and lately Negre and Sergent have prepared a polyvalent serum which has given good results.

Vaccine Treatment.

The great majority of workers, English and foreign, agree that vaccine treatment is the most essential factor in the treatment of undulant fever, and should be continued until the patient is immunized. With this I agree, with the following reservation: that we should not give vaccine when, in very acute conditions, the patient is already overdosed with autogenous toxins; the ideal is a combination of an antitoxic serum and an autogenous vaccine, as the organism gives rise to so much toxin and remains alive for so long in the tissues. Burnet has shown that, when absent from the blood and urine in infected animals, the *M. melitensis* can always be demonstrated in the marrow of the long bones. Therefore always combine with vaccine treatment the administration of yeast or some other preparation to increase the phagocytic activity of the blood.

THE ANAESTHETIZATION OF PATIENTS FOR THE CLASSICAL CAESAREAN SECTION.*

BY

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Caesarean section has a special interest for anaesthetists and obstetricians from the fact that the welfare and life of two or more individuals are involved.

On the obstetrical indications for the operation I will say nothing on this occasion except that they are being extended too widely by many practitioners.

On the anaesthetic aspect it requires some courage for an obstetrician to speak before an audience of specialists in anaesthetics, and my courage might have failed me had I not been convinced by an experience of thirty-five years of the value and harmlessness to mother and child of small quantities of chloroform given *à la reine* to mitigate the pains of labour, while insisting on the necessity of anaesthetization by an expert anaesthetist whenever an operation is required.

Perhaps I may claim a little indulgence for having broken a lance in behalf of your specialty at the Centenary of Ovariotomy meeting of the American Gynecological Society at New York in 1909, on which occasion, in a discussion on anaesthesia,[1] I expressed my amazement at finding that American patients were anaesthetized by nurses instead of specially qualified medical practitioners. My criticism was well received by my American colleagues; but Dr. Clarence Webster of Chicago (formerly of Edinburgh) was so affected by my accurate description of the position of anaesthetists in London that he informed the meeting that Scotland was the most important part of the United Kingdom, that in 1896 there was only one paid anaesthetist in Edinburgh, and that patients were generally anaesthetized there by medical students.

In this communication it is to be understood that the anaesthetic is to be administered by specially trained qualified medical practitioners.

Of the two chief methods of anaesthetizing a patient the inhalation methods are generally preferable in cases of Caesarean section. Spinal anaesthesia is undoubtedly more dangerous than inhalation anaesthesia and has drawbacks from which the latter is free. Infiltration anaesthesia has advantages, particularly in patients with pulmonary or cardiac affections. I used it successfully twenty-two years ago[2] in Caesarean section repeated for the third time. But I have not employed it since.

Spinal anaesthesia and infiltration anaesthesia are less humane than inhalation methods, which induce complete loss of consciousness; and, although they are useful in certain conditions, they are not advisable as a routine method, which it is the object of this short communication to advocate.

Of the two chief inhalation anaesthetics, chloroform and ether, I suppose no anaesthetist will assert that chloroform is as safe as ether, when administered to the surgical degree for long periods, especially to pregnant women. It has therefore largely been given up in favour of ether administered either by the "open" or "closed" method.

Ether Asphyxia of the Infant.

The great disadvantage of ether is that it leads to asphyxia of the infant, which is not the case with chloroform administered to the minimal surgical degree. In my early days of performing Caesarean section I had ether administered—of course by skilled anaesthetists—but found that the child was often asphyxiated, and that hot and cold baths, stimulants, and assistants were required to start respiration in the infant. The occurrence of asphyxia in the child is still common in the practice of many obstetricians. Dr. Hubert Roberts has pointed out its fairly constant occurrence. For many years I have used the method about to be described and can assert that the Caesarean child has never been asphyxiated by the anaesthetic thus administered.

The Method Employed.

No preliminary hypodermic injection is given. The patient, prepared for operation, is placed in the recumbent posture on the operating table in the theatre and the anaesthetic is administered there. Operator and assistants are prepared and the towels adjusted.

Chloroform is then administered by the anaesthetist, who informs the operator when the patient is ready. The operation is then rapidly performed and the child, usually delivered within thirty or forty seconds from the commencement of the incision, always breathes and cries at once.

Ether is then administered for the rest of the operation, usually by the open method.

If there is any unusual loss of blood a hypodermic injection of pituitrin is given.

The result of this method of administration is that in all cases in which the classical Caesarean section is done before or soon after the onset of labour the child is born free from asphyxia and cries at once.

I think it is the ideal method of administration; but I am anxious to have the opinion of members of the Section upon this point: Does the mother run any appreciable risk in having the operation performed while under chloroform administered by an expert anaesthetist? I think she does not, having particularly in mind the tolerance of parturient women for small doses of chloroform.

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[1] *Trans. Amer. Gyn. Soc.*, 1909, p. 304. [2] *Journ. of Obstet. and Gyn. of the British Empire*, vol. i, 1912, p. 133.

* Read at a meeting of the Section of Anaesthetics, Royal Society of Medicine, November 3rd, 1922. (See also p. 925.)

THE PELVES OF RICKETY CHILDREN AS THE PRECURSORS OF THE RICKETY FLAT PELVES OF WOMEN.

BY

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It would appear that during the last few years a larger number of women have suffered difficulty at childbirth on account of small pelves, and a larger number of Caesarean sections have been done in lying-in hospitals, than before. This difficulty is accounted for almost entirely by the rickety flat pelves so common in women who have had rickets in childhood. Hitherto little has been written about the normal or the rickety abnormal pelves of children. In order to find

out when the rickety flat pelvis starts I have made a large number of measurements of the pelves of normal children and compared them with the measurements of pelves of children with rickets. The pelvis of a child with rickets shows little outward signs of any abnormal measurements. In all nearly 150 pelves of normal healthy children of all ages from 1 to 14 years have been examined and the results tabulated.

With callipers as ordinarily used in midwifery the distances were measured between (1) the anterior superior spines of the iliac crest, (2) the iliac crests, (3) the trochanters, and (4) the external conjugate diameter. These measurements are easily made; they show that the pelvis of a normal child slowly and regularly increases in size.

The pelves of over 150 female children with rickets, at all ages from 1 to 14 years, were measured in the same way. On comparing the normal pelves with the rickety some very marked differences were apparent, the most noticeable being the relative smallness of the external conjugate in rickets. This difference becomes more marked as the children grow older; thus at the age of 5 years the external conjugate in normal children averaged 4.8 inches, and in rickety children of the same age only 4.1 inches. At the age of 13 years the external conjugate was 6 inches in normal children and only 4.9 inches in rickety children—a difference of over an inch.

Table giving the Measurements of Normal and Rickety Pelves of Children aged 1 to 14 years.

Age in Years.	Normal.				Rickety.			
	I.S.	I.C.	E.C.	Tr.	I.S.	I.C.	E.C.	Tr.
1 to 2 ...	5.4	5.6	3.8	6.0	4.8	5.2	3.4	5.9
2 to 3 ...	5.8	6.0	3.8	6.3	5.2	5.5	3.4	6.1
3 to 4 ...	5.8	6.1	4.0	6.9	5.3	5.9	3.5	6.5
4 to 5 ...	6.0	6.5	4.0	7.0	5.8	6.2	3.8	6.6
5 to 6 ...	7.0	7.5	4.8	7.9	6.0	6.5	4.1	7.2
6 to 7 ...	7.0	7.5	4.85	8.0	6.2	6.7	4.1	7.15
7 to 8 ...	7.1	7.8	5.1	8.0	7.0	7.5	4.8	8.2
8 to 9 ...	7.1	7.6	5.4	8.0	6.6	7.0	4.6	7.4
9 to 10 ...	7.25	7.5	5.5	8.25	7.75	8.5	5.0	8.5
10 to 11 ...	7.75	8.25	5.75	8.75	7.8	8.8	5.0	9.3
11 to 12 ...	7.75	8.25	5.75	8.75	7.8	8.5	5.0	8.9
12 to 13 ...	8.0	8.5	6.0	9.0	7.8	8.0	4.9	9.1
13 to 14 ...	8.5	9.0	6.5	9.6	8.2	8.2	5.4	9.5

I.S. = Measurement between the iliac spines. I.C. = Measurement between the iliac crests. E.C. = External conjugate. Tr. = Measurement between the trochanters.

This diminution of the external conjugate is the marked feature of the rickety flat pelves of women and the cause of so much difficulty at childbirth. The pelvis, including the sacrum and iliac bones, like the other bones, are softened in rickets and liable to bend under strain. The chief cause of the diminished external conjugate is that the sacrum is bent and displaced forwards by the body weight. The promontory of the sacrum is carried in this way nearer the symphysis. The smallness of the external conjugate in older children shows this clearly, for it is relatively much smaller than at the earlier ages. As the child grows older and heavier the weight pushes the sacrum downwards and forwards towards the symphysis. This diminution of the external conjugate even in early life proves that it is the rickets of early childhood which is the origin of the typical flat pelves of women.

The other measurements, interspinous and intercristal, are not markedly less in rickets than in the normal. After the age of about 9 years the interspinous measurement becomes slightly larger in rickets than in the normal. This is to be explained by the fact that the body weight presses out the iliac crests, so that the iliac fossae look forwards instead of forwards and inwards.

In the rickety flat pelves of adults the measurement between the spines approximates closely to that between the crests, owing to the pressing outwards of the spines by the body weight. This is not so in children until near puberty, when the body weight increases so much. The measurement between the trochanters is greater in rickety than in normal children, especially after the age of 7 years. This is no doubt due for the most part to coxa vara—a common condition in rickets—but partly to the thickened great trochanter. The average height of the rickety children measured was less than the normal height for age, owing to their lack of development, lordosis, and the curvature of the legs.

The conclusion to be drawn from these measurements is that rickets in early childhood, and continuing during childhood, is the cause of the rickety flat pelves of adult women, and as long as rickets remains prevalent so will there be difficulty and danger with childbirth in a number of women, especially among the populations of large towns.

At present rickets shows little diminution, and the large amount which occurred during the war and since will continue to leave its mark in future years, when these children get married. It is to be hoped that the large amount of work which is being carried out all over the country on the cause and treatment of rickets will diminish its frequency in the future.

I am much indebted to Dr. J. W. Bride for his help and co-operation in this short article.

AN OUTBREAK OF DIPHTHERIA DUE TO INFECTED MILK.

BY

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MILK-BORNE epidemics of infectious diseases are seldom without points of interest, and a small outbreak of diphtheria, which occurred in the borough of Reigate during December, 1921, and January, 1922, was no exception.

Diphtheria had been somewhat unusually prevalent during 1921, sixty-five cases being notified in a population of slightly under 29,000. Only nine of the patients were above the age of 15; most of them were members of working-class families, and, apart from two small groups, where school infection was prominent, the cases occurred at appreciable intervals, with no obvious connexion one with another.

Between January 4th and 17th, 1922, however, I received notifications of fourteen cases of diphtheria, occurring in thirteen different houses, scattered over various parts of the borough (which has an area of 6,000 acres), every house being supplied with milk from one retailer; there was no other factor in common. Eight of the patients were adults, and nine of the houses were large residences, while two of the patients living in cottages were daily maids in large houses supplied by the same retailer. The attacks among the fourteen patients ranged from December 22nd, 1921, to January 14th, 1922. Six of the fourteen patients were males.

Five individuals were attacked on January 4th, three on January 6th, two on January 7th, and one each on December 22nd and January 1st, 8th, and 14th. A further case, a boy of 6, who was attacked on December 25th and notified on December 27th, also had milk from the same retailer.

Inquiries at the houses showed that all the patients consumed the milk as delivered, though in some of the larger residences milk intended for the children was boiled as a matter of routine. None of these children were attacked.

During January four further cases of diphtheria occurred; one of these, consuming milk from the suspected retailer, was infected whilst in London; the remainder were supplied from other sources. Among the cases notified earlier in December and those notified after January 17th there was no reason for attaching suspicion to any milk supply. This particular outbreak may therefore be considered to include fifteen cases in fourteen different dwellings.

I began to suspect that milk was the source of infection about January 9th, and on January 10th I wrote to all the general practitioners suggesting that as opportunity offered they should recommend their patients to boil all milk delivered, and I issued a letter in the local weekly newspaper on January 13th advocating the same precaution. From a purely scientific point of view this may have been regrettable, but the measure was justified by subsequent occurrences.

The implicated retailer sends out about 450 gallons a day, and supplies some 2,100 houses. The milk is derived from thirteen different farms, situated in Surrey, Sussex, and Kent.

Milk from each farm is distributed so far as is practicable to one particular round, and it was possible, therefore, to ascertain the farm from which all but one of the infected houses obtained milk. I fully expected that one farm would be implicated especially; but this was not the case, since no less than five different farms were concerned. If these are indicated by the letters A, B, C, D, and E, A supplied three houses, B one, C three, D three, and E three, whilst the fourteenth house had milk occasionally from A, occasionally from C, and occasionally from D.

Each round had a different roundsman, and infection during delivery appeared, therefore, to be out of the question. Infection at the receiving station seemed a possible solution. On inquiry I found that, as the farm churns arrived, the milk was emptied into a measuring drum, cooled (if this had not been effected at the farm), and passed through a strainer into the roundsmen's churns, the strainers consisting of four thicknesses of muslin over a metal frame. All churns and other utensils were thoroughly sterilized by steam after use. Only two men handled the milk at the dépôt. On January 11th I took swabs from the throats and noses of both, and obtained negative bacteriological results. Neither of them had recently suffered from any kind of illness, they had no families, and there had been no illness in their homes.

It is obvious, however, that if the milk from one of the farms were infected, the muslin strainer would be likely to retain some of the bacilli, which might readily infect milk from other farms when passed through the strainer subsequently, and this appeared to be the most likely solution of the problem, since it is almost inconceivable that five farms should be infected simultaneously.

Farms A, C, and D are situated in Reigate rural district, B in an adjoining rural district, and E in Kent. Inquiries at these farms yielded no information of illness resembling diphtheria among the farm hands or their families. Farms C and D are situated in a parish where there had been an outbreak of diphtheria, comprising fifteen cases in thirteen families between August 29th and December 22nd, 1921, with four further carriers in infected houses. It had been an unusually troublesome outbreak to deal with, owing principally to a concurrent epidemic of influenza, and to the omission to obtain medical advice in several instances. Although I had succeeded in identifying several "missed" cases, as well as a number of healthy carriers, I could not satisfy myself that all important sources of infection had been detected, and was left with the impression that further unrecognized attacks had occurred, probably among adults.

Early in November a schoolboy was removed to hospital whose eldest brother was a cowman at D farm. The cowman and all the other school children were examined bacteriologically, and the cowman and one girl were found to be carriers. Both were removed to hospital on November 6th, and were not discharged until February, 1922. The only other inmate of this house concerned with the farm was the father, who was bailiff. He had nothing to do with the cows, and was not examined. On January 12th I heard that the head cowman had been laid up with rheumatic fever since December 28th, and that the bailiff was doing his work. I swabbed his throat and nose that day, and obtained negative results. Negative results were also obtained at the Lister Institute a fortnight later. No cases had occurred in the neighbourhood of C farm.

So far, therefore, there was no evidence to incriminate D farm, although it appeared to be the most likely source of the Reigate outbreak. The milk from this farm is one of the earliest to arrive at the Reigate dépôt, and therefore is one of the first to pass through the strainer. I arranged that separate strainers should be used for A, C, and D farms on January 12th, and sent these to the Lister Institute for bacteriological examination, intending to await the report before taking any further action. As the public had largely adopted my suggestion of boiling their milk, there was little risk of a spread of infection. The examination was completed on January 25th, both cultural and inoculation investigations being made; diphtheroids were isolated, but no true diphtheria bacilli were found.

The problem, however, was solved on January 22nd, when another cowman, son of the head cowman from D farm, was removed to hospital with diphtheria. His faucial attack began on January 19th, but on admission to hospital he was found to have sores on both arms which had existed for nearly six weeks. Unfortunately energetic treatment was successfully applied before I had an opportunity of making a bacteriological examination, but I was assured that the sores had the appearance typical of diphtheritic infection of the skin. The inquiries made at each of the farms A, C, and D had included the existence or otherwise of such sores, but their presence had been denied in this instance. The farm supplied about seventy gallons a day, milking being carried out by four cowmen. In the course of the next few days I took swabs from the throats and noses of nineteen persons on the farm, including all the remaining cowmen and other farm hands and their families. Seven carriers were found, one being the head cowman, who had been laid up with rheumatic fever, as already mentioned, the remainder being children, three of them in cowmen's families. All were removed to hospital. I had the teats and udders of all the cows, thirty-three in number, examined. On the udder of one was a superficial ulcer, apparently of traumatic origin. A swab from it yielded a negative result. Another cow had a cyst in a dry quarter. All the remaining cows were healthy.

On January 23rd the milk from D farm was withdrawn from the retailer's supply, was pasteurized, and made into butter. Apart from a few gallons consumed by the families employed on the farm all the milk is sent into Reigate. It is curious that none of the children on the farm contracted diphtheria; but possibly some of the carriers were accounted for in this way.

Owing to the impossibility of confirming the nature of the sores on the young cowman's arms bacteriologically it cannot be asserted definitely that he was the actual infecting agent, though this is by far the most likely explanation. The illness which laid up his father was undoubtedly rheumatic fever, which may or may not have been associated with an attack of diphtheria; but in any case he was not engaged in milking at the time the outbreak was at its height. Although carriers were found in the family of another cowman he himself appeared to be free.

This outbreak differed from the usual textbook description in the absence of any marked suddenness in its appearance, and in the occurrence of only one instance of multiple attacks in the same household. It is also somewhat remarkable that so few cases should have occurred among the 8,000 or more consumers of the supply. This, however, may largely be accounted for by the practice of allocating the milk from each farm to a particular round.

The character of the attacks was mild. There were no deaths, but in many instances the infective period was a very long one.

THE ACTION OF CARBON TETRACHLORIDE ON THE LIVER.

BY

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In view of the report by Dr. W. G. Smillie and Dr. S. Pessoa[1] to the effect that carbon tetrachloride in small doses produced a definite fatty degeneration of the liver and kidneys of dogs it was deemed advisable, before using this drug generally in Ceylon as a vermifuge, to ascertain whether or not these lesions were produced in man, using the maximum dose of 5 c.cm. as defined by Hampton and Nicholls.[2] Leach[3] reports from autopsy that no macroscopical change was noted in the liver or kidney following a 12 c.cm. dose; apparently no microscopical examination was made.

With the approval of the superintendent of prisons and the personal consent of the prisoners, two condemned men were treated with 5 c.cm. of carbon tetrachloride and one with 8 c.cm. in two doses of 5 and 3 c.cm. The anthelmintic was given on an empty stomach, followed by tiffin of rice at the hours mentioned, and, as indicated, No. 1 received a post-purge of 1 oz. of saturated magnesium sulphate solution three and a half hours later; No. 2 received the same eight hours after treatment; while No. 3 received none, having vomited the first and declined the second.

Autopsies were performed on dates mentioned, when the entire intestinal tract from the pylorus to, but not including, the rectum was removed after being double ligatured in

order to keep the contents for examination. The liver and left kidney were removed in each case and examined macroscopically and microscopically. The following is a report of the examination and findings:

	Prisoner 1.	Prisoner 2.	Prisoner 3.
Date examined	July 15	July 21	July 31
Heart rate	82	82	72
Heart sounds	Normal	Normal	Normal
Systolic pressure ..	(?)	118	116
Diastolic pressure ..	(?)	82	79
Urinalyses:			
Albumin	Trace	Negative	Negative
Specific gravity	1.016	1.014	1.012
Sugar	Negative	Negative	Negative
Microscopic	Negative	Negative	Negative
Faecal examination:			
Anky. duod.	Positive	Positive	Positive
Ascaris lumb. ..	(?)	Positive	Negative
Trichuris trich. ...	Positive	Positive	Positive
Oxyuris verm. ...	Negative	Positive (heavy)	Positive
Date of 1st treatment	July 16	August 1	August 1
Breakfast	Tea only	Nothing	Nothing
Hour treated ...	9 a.m.	8 a.m.	8 a.m.
Amount CCl4 given	5 c.cm.	5 c.cm.	5 c.cm.
Tiffin	10.30 a.m.	10.30 a.m.	Declined
Condition of patient	11 a.m., dizzy	10 a.m., dizzy	10 a.m., dizzy, nauseated
Heart rate	86	80	88
Purge	12.30 p.m.	4 p.m.	4 p.m.; vomited at once
Worm count in 24-hour collection:			
Anky. duod.	241	33	No movement in 24 hours
Ascaris lumb. ...	Negative	2	
Trichuris trich. ...	Negative	Negative	
Oxyuris verm. ...	1	58	
Post-treatment examination of faeces:			
Anky. duod.	No examination	Negative	Negative
Ascaris	—	Negative	Negative
Trichuris	—	Positive	Positive
Oxyuris	—	Positive	Negative
Date of 2nd treatment	None given	None given	August 14
Breakfast	—	—	Tea only
Amount CCl4 given	—	—	3 c.cm.
Hour treated ...	—	—	8 a.m.
Tiffin	—	—	10.30 a.m.
Condition	—	—	No complaints
Pulse rate	—	—	84
Purge	—	—	None given
Date of autopsy	July 22	August 15	August 19
Examination of bowel contents:			
Anky. duod.	Negative	Negative	Negative
Ascaris	Negative	Negative	Negative
Trichuris	9	12	Negative
Oxyuris	Negative	17	14
Liver:			
Macroscopically ...	No change evident	Slightly friable	Very friable
Microscopically ...	No well-defined change	Granular degeneration of liver cells Leucocytic infiltration	Fatty degeneration of liver cells Diffuse leucocytic infiltration
Kidney:			
Macroscopically ...	No change evident	No change evident	No change evident
Microscopically ...	No change evident	No definite change	Cloudy swelling of proximal tubes

From the above it is quite evident that the anthelmintic, in the quantities mentioned, produced lesions in the liver in two cases, as Smillie anticipated; on this account it seems in advisable to prescribe even a 5 c.cm. dose with purgation, let alone without. It is apparent also that this dose as a maximum borders on the danger line. A safe maximum seems to be 3 c.cm., since it has been given to a number of patients in Ceylon without producing any feeling of discomfort, though so far no autopsy has been performed on any individual so treated to ascertain whether or not the kidney or liver was injured.

From its action as a vermifuge we agree with both Leach's[3] and Hampton and Nicholls's[2] report that it seems to be practically specific for ankylostomes, fairly efficient in the removal of *Ascaris lumbricoides* and *Oxyuris vermicularis*, and of little value in the elimination of *Trichuris trichiura*.

We wish to thank Mr. A. F. G. Walker, Superintendent of Prisons for Ceylon, for his assistance and the interest shown in the experiments, and Dr. S. Chelliah, M.B., C.M., assistant pathologist of the General Hospital, for his confirmation of the pathological findings.

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[1] W. G. Smillie and S. Pesson: Treatment of Hookworm Disease with Carbon Tetrachloride, *International Health Board Bulletin*, July, 1922.
[2] L. Nicholls and G. C. Hampton: Treatment of Hookworm Infection with Carbon Tetrachloride, British Medical Journal, July 1st, 1922.
[3] C. N. Leach: Carbon Tetrachloride as Treatment of Hookworm Disease, *Journ. Amer. Med. Assoc.*, June 10th, 1922.

NINETIETH ANNUAL MEETING
OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICINE.

Professor T. K. Monro, M.D., F.R.F.P.S., President.

PRESIDENT'S INTRODUCTORY REMARKS.

Professor T. K. Monro, in offering to the members of the Section a very hearty welcome to the city and to the classroom in which they met, remarked that in the regulations drawn up by the Council of the Association there was a merciful provision that the President of a Section should not deliver a presidential address. He, therefore, in a few words described the arrangements which had been made for the three days' work of the Section.

DISCUSSION ON EXOPHTHALMIC GOITRE.

OPENING PAPER

BY

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In arranging a discussion on exophthalmic goitre it is important to select certain aspects of this subject for consideration so as to elicit definite information or opinions upon them from those taking part in the discussion. Although much attention has been paid to the pathology, symptoms, and treatment of this malady, too little consideration has been given to its prevention, and it will be useful to consider what is known of its causation so as to discuss what measures can be taken to prevent the onset of the disease or to check its development in the early stages, even if this is possible in only a small number of cases. It will be advisable, in the first place, to allude to the pathology of the condition and, incidentally, to the cause of one puzzling symptom—the exophthalmos. Prevention and a few indications as to treatment will then be considered.

At the Annual Meeting of this Association in 1896 I opened a discussion[1] on the pathology of exophthalmic goitre and briefly reviewed the current views of the day, adducing evidence which led to the conclusion "that in exophthalmic goitre there is an excessive formation and absorption of thyroid secretion which may or may not be normal in character and that the symptoms of the disease are due to the presence of this excess of secretion in the blood, and to its action upon the tissues and especially upon the nerve centres in the medulla." This view of the essential nature of the malady is still generally accepted and the term "hyperthyroidism" is used to denote the various degrees of thyroidal overactivity. In a recent British Medical Association lecture[2] I have indicated a convenient clinical classification of the main types of hyperthyroidism, but on this occasion it is advisable to discuss only exophthalmic goitre and not the minor degrees of hyperthyroidism.

The acceptance of the view that exophthalmic goitre is due to a thyroidal toxaemia has directed attention to the importance of treating the thyroid gland, and experience has shown that when, as the result of either medical or surgical treatment or in consequence of spontaneous atrophy, the secretion is reduced to normal amounts, recovery from the malady takes place. This sequence of events appears to be a strong indication that the thyroid alone of the endocrine glands is primarily at fault in this disease. It has been suggested that one or more of the other endocrine glands may play a primary part in the production of symptoms, but no clear evidence has been brought forward to support this view. The thyroidal hormones certainly play a part in stimulating the activity of other endocrine glands, just as they increase the activity of the sweat glands, but this appears to be entirely a secondary result of a primary hyperthyroidism. The symptoms can almost all be accounted for

by a chronic thyroidal intoxication, and have been reproduced in man by giving large doses of thyroid extract. The actual causation of the exophthalmos, which is such a striking feature in many cases, is, however, still under consideration, and it is to be hoped that further information on this subject may be elicited in this discussion.

It has been held that the proptosis may be due to vascular engorgement, to muscular action, or to excess of orbital fat. As it cannot be reduced by pressure on the eyeball and persists after death, it cannot to any appreciable extent be due to venous engorgement. It has often been stated that the protrusion is due to the action of Müller's muscle, but this has always appeared to me to be a totally inadequate explanation. I have consulted my colleague Professor J. S. B. Stopford as to the anatomy and action of these muscular fibres, and he has kindly given the following information. In 1858 H. Müller described a layer of unstriped muscle bridging over the spheno-maxillary fissure and posterior part of the infraorbital canal. This muscle corresponds to a more extensively developed layer which is found in the periorbital fascia of various mammals. It is attached to the periosteum, and is innervated by the sympathetic nervous system. In his own dissections Professor Stopford has not found it possible to recognize this muscle macroscopically in the human orbit. It is only on microscopical examination of the tissue removed from the region of the spheno maxillary fissure that a few smooth muscle fibres may be found. It is obvious that such a feeble muscle could have no power of producing proptosis against the normal action of the external ocular muscles and of the optic nerve in holding the eyeball in its proper position. In addition to this, Professor Stopford gives three reasons for concluding that it seems impossible for Müller's muscle to be responsible for exophthalmos in the human subject: (1) Müller's muscle is only composed of a few scattered fibres, and it is quite rudimentary and atrophic in man. (2) Even if this muscle had an appreciable power of contraction it is too far from the globe, and chiefly separated from it by compressible fat, to have any power to project the eye forward. (3) If it had any action on the globe it would push it obliquely upward and forward. The same arguments would, I consider, also largely apply to the fibres described by Landström. It is to be hoped that this inadequate explanation will disappear from our textbooks.

In almost all other forms of proptosis there is a definite mechanical cause to be found, and in exophthalmic goitre fat is certainly present in excess in the orbit in many if not in all cases. I have recorded a fatal case in which, in spite of marked general emaciation, half an ounce of fat was dissected out of one orbit. I am unable to explain why fat should accumulate in this position, and as far as I am aware no special examination of this orbital fat has yet been made to determine if it differs in either structure or chemical composition from normal fat. It seems clear that this excess of fat in the orbit is the essential cause of the proptosis in Graves's disease and accounts for its persistence in many cases after the other symptoms have subsided and the patient has practically recovered. The fat when removed during life has been found to be oedematous and slight variations in the degree of proptosis from time to time may be due to variations in this oedematous condition.

In speaking of recovery from Graves's disease it must be remembered that, although there may no longer be any hyperthyroidism, results such as exophthalmos or chronic myocarditis may persist long afterwards, just as chronic renal disease may persist after scarlet fever or chronic endocarditis after acute rheumatism. As this aftermath of exophthalmic goitre often militates against the complete success of any line of medical or surgical treatment in severe or chronic cases, it is important to examine briefly the conditions which favour or excite the development of exophthalmic goitre, as well as the conditions which aggravate mild into serious forms, or induce relapses after periods of improvement. A full discussion of these factors may supply information which will help us to prevent the onset of the disease in some cases and to avoid aggravating it, when already present, in others. In many cases no adequate cause can be ascertained, and we cannot explain why the disease has developed.

For the purpose of this discussion I have reviewed my notes on 300 cases of exophthalmic goitre, 71 of which were men and 229 women, seen in private practice during the eleven years 1911–21. This proportion indicates that women are much more prone to suffer than men. It is of interest to note that in this series the malady occurred about three times as often in women as in men. In another series of 120 cases which I recorded[3] in 1903, the proportion was exactly eleven to one. This difference suggests that the disease now occurs more frequently in men than it did formerly. Be this as it may, it is evident that sex is still one important predisposing factor. In no less than 232 (77 per cent.) no other predisposing or exciting cause was found. It has long been recognized that family predisposition occurs in some cases, as a mother and daughter or two or more sisters may be affected at the same or different periods of life. Dr. Hector Mackenzie[4] found a family history of the disease in 10 per cent of 438 hospital and private cases. This tendency was present in 26, or nearly 9 per cent., of my cases. This predisposition should be borne in mind, and any early signs of hyperthyroidism in a relation of a patient suffering from Graves's disease should be treated promptly as soon as they appear. Either sudden or prolonged nervous strain may be a precursor of the disease in some cases, but not so often as the more striking examples might lead one to expect. A sudden nervous strain, such as is caused by an accident, fright, or emotional shock, had occurred in 38 (13 per cent.) of my cases, while prolonged periods of anxiety or worry owing to either domestic or financial causes were recorded in 17 (6 per cent.) cases. Overwork was given as a cause in 11 (4 per cent.) cases, and nursing, chiefly in war hospitals, in 8 (3 per cent.). It is remarkable that exophthalmic goitre does not often follow physical injuries, as in only 9 (3 per cent.) of my cases had an accident occurred, and 7 had recently undergone an operation. In a separate series of fifteen soldiers suffering from various degrees of hyperthyroidism, who were under my care at the Manchester Royal Infirmary, not one had been wounded. In these 15 cases the symptoms had developed in 4 after the explosion of a shell or mine, in 1 after prolonged exposure to fire in the trenches, in 5 after dysentery, malaria, or tonsillitis, and in the remaining 5 after the stress of general service conditions during the war. I do not remember seeing a single case of exophthalmic goitre following a wound in a military hospital in either England, France, or Italy. It will be interesting to learn the experience of others in this respect.

The strains and accidents of life we cannot prevent, but in those who have been subjected to them we should be on the look out for early signs of hyperthyroidism, special care being exercised in the case of women who have a family history of thyroidal disease or who already have some enlargement of the thyroid gland. The occupation of teaching appears to be a predisposing factor, as 11 (4 per cent.) of my cases were school teachers. Some educational authorities now realize this, and are unwilling to accept a young woman with a goitre as a teacher owing to this liability to develop a toxic adenoma or Graves's disease in later life. If any septic focus is present naturally it must be treated, as it will tend to aggravate the symptoms, but there is little sound evidence to show that septic infection is a cause of the malady, as in my series it was present in only two cases. Of general infections influenza is notable in that it shortly preceded the onset in 18 cases. Exophthalmic goitre is a widely spread disease, and it is difficult to determine the influence of locality on its development. It is remarkable, however, that 19 of my cases came from one part of the valley of the river Goyt, which divides Cheshire from Derbyshire.

One other aspect of this subject I wish to mention, and that is the relationship of simple parenchymatous goitre to exophthalmic goitre. In a certain number of cases of simple goitre symptoms of hyperthyroidism appear and the condition is known as toxic adenoma; in a smaller number definite exophthalmic goitre appears. This occurred in 12 of my cases. The proportion of cases in which this occurs is not known, but it is sufficiently large to encourage us to make more energetic attempts to prevent or treat cases of parenchymatous goitre which are so often regarded as harmless and to be on the look-out for the earliest indication of hyperthyroidism. In a certain number of cases there is both a predisposing and an exciting cause, so that in a patient with family predisposition or a pre-existing goitre the onset of the disease follows a nervous shock or strain. Endemic goitre in some cases is due to a deficiency of iodine in the body, and it has been suggested by Professor Mellanby[5] that the influence of cod-liver oil in preventing abnormal changes taking place in the thyroid gland of animals fed on a certain diet is due, in part at least, to the iodine it contains.

In America it has been found by Kimball[6] that the administration of small doses of iodine, such as 3 grains of sodium

iodide, daily for ten consecutive school days each spring and autumn to girls during the school age has been followed by a striking diminution in the number of cases of goitre in districts where it is usually endemic. This preventive treatment should be adopted in all such regions, and it is not unreasonable to expect that by diminishing the tendency to simple goitre in early life we may also lessen the number of cases of exophthalmic goitre occurring in later life. It must be mentioned in this connexion that treatment with iodine is quite unsuitable for those who already show any signs of hyperthyroidism. In taking these precautions the importance of a pure supply of drinking water must not be forgotten, as it has long been held that contamination of the drinking water plays an important part in the production of goitre.

As much may be done to prevent the development of Graves's disease by the suitable treatment of the earliest stage of hyperthyroidism, it may be pointed out that one of the earliest symptoms of this is a constant feeling of exhaustion or weariness. If a persistent increase in the pulse rate, some loss of weight, and an increase in the basal metabolic rate are also present, with, or even without, some increase in the size of the thyroid gland, they indicate, in the absence of any obvious cause, an early hyperthyroidism even before it is recognizable by the usual clinical signs. Prompt treatment by rest, suitable diet, x rays or radium, and drugs has then its best opportunity, and may prevent further development of the malady into actual Graves's disease.

The same principles may also be applied to those who already suffer from the disease so as to save them as far as possible from preventable aggravation of their symptoms. An attack of influenza so often increases the severity of the symptoms that every possible precaution should be taken to protect patients from this infection. If influenza is contracted rest in bed must be continued until the pulse returns to its previous rate and convalescence is fully established. Neglect of this precaution may result in an aggravation of symptoms lasting for weeks or even months. When pregnancy occurs in a patient suffering from exophthalmic goitre it should be allowed to continue to its natural termination. Should a miscarriage or premature birth take place special care is required as well as a prolonged period of rest afterwards. During a normal pregnancy and during the period of lactation the symptoms are often notably diminished, but there is a marked tendency for them to flare up again just after the birth of the child or later on when it is weaned, so that great care must be exercised at both of these times. Residence at the seaside frequently aggravates the symptoms of Graves's disease, and is therefore to be avoided.

As I have so recently expressed my views on treatment elsewhere[2] they will only be briefly summarized here. As we shall have the advantage of hearing Mr. James Berry's experience of the surgical treatment of Graves's disease my remarks will be chiefly confined to medical treatment. In slight or early cases—and the importance of recognizing these may again be emphasized—medical treatment alone is required. This consists of rest, suitable diet, and radiological combined with medicinal treatment, the details of which must be adapted to the requirements of each individual. In cases of medium severity a similar course of treatment should be carried out for not less than six months. If, however, time is a matter of great consideration to the patient or the thyroid gland is much enlarged surgical treatment may be advised at once. If medical treatment has failed to bring about definite improvement by the end of six or twelve months, operation may be advised.

The chief difficulty arises in those cases in which the symptoms are severe when the patient first comes under observation, and it is desirable to reduce the hyperthyroidism as soon as possible. It is just in these cases that the risks of an operation are considerable, and I should like to know if these are lessened by a preliminary ligation of one or more thyroid arteries. As a rule this preliminary operation, which has been largely practised in America, seems to me to be unnecessary. In any case I am convinced that, if a thyroidectomy is undertaken, at least three-fourths of the goitre should be removed, otherwise improvement is only partial and patients are disappointed to find that, after accepting the risk of an operation, they are by no means free from symptoms.

References.

[1] British Medical Journal, October 3rd, 1896. [2] Ibid., June 10th, 1922. [3] Medical Clinics of North America, vol. iv, No. 1, p. 1. [4] Lancet, November 11th, 1916. [5] British Medical Journal, May 27th, 1922. [6] The Thyroid Gland, G. W. Crile and Associates, p. 175.

Discussion.

Dr. C. M. Wilson (London) said that at a discussion on exophthalmic goitre held at the Royal Society of Medicine in 1921, he had ventured to point out the disquieting similarity between that debate and one held in the same place in 1912. They were concerned not with some difficult and intricate problem of causation, but with the actual results of treatment, and yet a decade had gone by without bringing them any nearer agreement. Those who sought guidance in following a rational procedure in the treatment of exophthalmic goitre were hampered by the vague language in which results were recorded and by the fact that there were too many advocates in these discussions. They might hope that when basal metabolic measurements displaced such terms as mild, moderately severe, and severe types, so that the degree of severity of a case of Graves's disease, before and after treatment, could be expressed in figures and not in language coloured by the natural gratification of surgeon or radiologist in bringing about a cure, it would then be possible to tell exactly what type of case was being recorded and the precise result of the particular treatment instituted.

These discussions were devoted to the management of what was termed a severe, or moderately severe, case of exophthalmic goitre. What happened to such a patient when admitted to hospital? Commonly rest in bed was followed by improvement, and that improvement continued for two or three weeks. For example, if the clinical course was recorded in measurements of the basal metabolism, the figure representing the basal metabolic rate fell during that period from, for example, + 55 to + 30, but at the end of that time no further fall occurred. No matter how long the patient was kept in bed, the figures remained at about the same level. Three alternatives were now open to the physician: (1) he might allow the patient to be discharged from hospital better than on admission but not cured; (2) he might resort to x rays; or (3) he might call in a surgeon. Such discussions as the present one were entirely taken up with the conflicting arguments for each of these three alternatives. With regard to the first course this was a rational line to follow, if they agreed with Sir William Hale-White that exophthalmic goitre was a disease that tended, in the course of a few years, to cure itself, and that meanwhile no great harm would befall the patient or her tissues. For, if that were so, all they stood to lose by adopting conservative measures was a period of invalidism extending, perhaps, over some years; that might be for many economically impossible. But if that view was not in accordance with their clinical experience, if it remained in the field at all simply because its refutation depended on following a sufficient number of cases over several years, which was in practice exceedingly difficult, if in brief their experience was his, that a comparatively large number of patients with this disease suffered grave and permanent damage to their tissues, they would then be reluctant to allow the patient to leave hospital, better it was true, but too likely to shed the benefits conferred by hospital immediately she was submitted to the stress of everyday life. They would feel that some further attempt must be made to bring down the basal metabolic rate to normal.

To that end, since rest and the administration of drugs had done all they could do, they were compelled to call in the assistance of either the surgeon or the radiologist. It was maintained by some that surgery was both unnecessary and unsafe. Unsafe, because the mortality even in the hands of surgeons with special experience in operations on the thyroid gland was in the neighbourhood of 5 per cent.; unnecessary, because the disease tended in time to cure itself. If, however, they agreed with the view he had put forward, that exophthalmic goitre was a grave disease, and that it was the duty of a physician not to rest content till the excessive activity of the gland had been reduced to within normal limits, if they took that view, then they would not be turned aside from its logical consequences, even by a mortality as high as 5 per cent., provided always that there was no safer alternative. Did such an alternative exist? It was true that the effect of x rays was uncertain and often disappointing in the later stages of the disease, and it was also true that neither by basal metabolic measurements nor by clinical means could they say, in advance, which cases would respond to x-ray applications and which would fail to respond. Yet he would ask, Would a physician, knowing the mortality to be 5 per cent., submit, if he had Graves's disease, to an immediate operation, when there was a reasonable possibility

that the same end might be attained by the radiologist without any risk? He thought that in these circumstances he would think discretion the better part of valour, and well knowing that six months might be spent without profit in giving *x* rays a trial, he would, nevertheless, deliberately choose the path of safety.

The matter has been well put by Mr. Walton of the London Hospital, who had said that he never operated in the first six months of the disease. He would like to amplify that advice by saying that if an intelligent patient were in possession of all the pros and cons she would probably decide that while she would not have an operation in the first six months of the disease, she would not allow more than a year to elapse without seeking surgical assistance, if other and safer means of treatment had then failed to bring the basal metabolic rate down to normal. That appeared to him to be the sane and simple conclusion to which they were driven by all the facts. Their judgement would not be swayed by overstatement on the part of either surgeon or radiologist. Some surgeons came to these discussions contending that the desired result in that disease was more certainly and more permanently attained by operation than by any other means. That was a comparative claim. It implied that the surgeon either had personal and prolonged experience of other methods, or, in default, that he had access to published statistics with which he could compare his own results. But, as they knew, no such data existed. Without such an intimate experience of all relative measures, these surgeons' results had only the value of uncontrolled experiments. Others brought patients and photographs of patients to prove that overactivity of the thyroid gland could be controlled by operation, a point no one disputed. The immediate benefits of surgery were not in question; they were concerned rather with the permanency of such results and with the necessity for operative measures. They should not be driven by the zeal of enthusiasts to deny the benefits surgery can confer in this disease when all other means had failed. Perhaps this warning was superfluous in that debate because they had the advantage of Mr. Berry's experience and cautious outlook.

But, he would ask, were they not on the wrong tack altogether in devoting these discussions to the care of severe and moderately severe cases of Graves's disease? Would it not be altogether more profitable if they could ban the mention of such phases of the disease so that they might hear something of early diagnosis and of the causation of exophthalmic goitre? In other diseases their one aim was early diagnosis, so that treatment might be instituted when it would be most effective. But if unusually favourable results were reported in the treatment of exophthalmic goitre they were met with the criticism that the cases described were not Graves's disease at all, because they lacked this or that sign of the complete classical picture, till they were led to question whether this disease had a youth at all. If they were discussing the treatment of pulmonary tuberculosis would they confine their remarks to cases with cavity formation? These discussions were frittered away in desperate attempts to patch up the damaged tissues of patients when the malady had reached a late and intractable phase, whereas they surely should be devoted to the means necessary to prevent that damage.

That brought him to basal metabolic measurements. By means of these they could follow the clinical course of a case as upon a chart, so that they learnt when rest had done all that it could do, when to operate and when not to operate, and to record their results so that they were intelligible to others. These measurements rendered diagnosis practicable at a time when it was uncertain clinically and they encouraged the physician to institute vigorous treatment when it was most fruitful in results, by assuring him that there was an overactivity of the thyroid and by convincing him that at such a stage it could be rapidly reduced to normal limits. They might even claim that these measurements alone made such early treatment possible, for without them there was a probability that the *x* ray applications would be continued till a condition of hypothyroidism was produced. It was quite unsafe to use *x* rays at such a stage of the disease without checking the treatment by measurements of the basal metabolic rate. If that warning were neglected it would not be long before the most sceptical was convinced of the potent influence of *x* rays over the functions of the thyroid gland. He had been impressed by the need for caution by the remarkable effect of such treatment in women suffering from so-called functional menorrhagia without any abnormal pelvic signs to account for the loss. Working with Mr. Bourne, he had found in these patients a raised basal metabolic rate, though the thyroid was often not enlarged. *X*-ray applications to the thyroid were followed by speedy relief of a type of menorrhagia that had generally resisted curettage and other treatment. He thought that the circumstances in which this condition arose threw an interesting light on the difficulty of saying what was Graves's disease and what was not, and on the effect of treatment of hyperthyroidism by *x* rays. Along these lines they might progress to a time when the cases to which they now devoted these debates would be regarded as clinical curiosities.

Mr. James Berry (London), after thanking the committee of the Section for kindly inviting him, an operating surgeon, to take part in the debate, said that the subject was essentially one for collaboration between physicians and surgeons. He drew attention to the excellent series of specimens of exophthalmic goitre that Dr. Scott Williamson and Dr. Innes Pearse had sent to the pathological exhibition, and commented upon the solidity of the gland, the great increase in cellular elements, and the almost complete absence of colloid in all the specimens. In the short time at his disposal he thought it would be best if he limited himself to giving his own personal views on the indications for and against operation, and to the principal dangers of the operation, and the best means of avoiding them, without going into operative details.

In many respects he found himself in agreement with Professor Murray and Dr. Wilson. He did not think that early and mild cases of true exophthalmic goitre required operative treatment, since many such cases recovered spontaneously under medical treatment and rest, with or without the help of *x* rays. *X*-ray treatment should not be carried out too energetically or for too long a period, as it might easily lead to myxoedema or other complications. Advanced cases of many years' duration in which the disease had practically died out, leaving behind it exophthalmos, a fibrosed gland, and a permanently damaged and irregular heart were also unsuitable for operation. Ultra-acute cases with great mental excitement (amounting sometimes to actual mania), very rapid emaciation, and excessive muscular weakness were also not suitable, especially if electrocardiographical examination showed acute myocardial degeneration of the heart muscle. He expressed his indebtedness to Dr. Strickland Goodall, who had for many years been seeing cases of exophthalmic goitre with him. Cases of myocardial degeneration, whether early and acute, or late with much dilatation, were especially dangerous, as the patients were apt to die from sudden heart failure either before, during, or shortly after operation, or indeed without any operation. The existence of such cases would be recognized by all operators who had had much experience of exophthalmic goitre operations.

The course of Graves's disease was rarely steadily progressive. There were usually ups and downs in its course. It was not during an exacerbation, but rather during a remission in the severity of the symptoms, that operation could be undertaken with the best prospect of success. Yet it was just during a period of exacerbation that usually the patient, and sometimes the doctor, was most anxious for operation. It had been well said that an operation for exophthalmic goitre should never be looked upon as an emergency operation. In some fairly acute cases, especially those of rather large goitres, in which removal would be too dangerous, a preliminary ligation of one or both superior thyroid arteries was, in his opinion, of great value. The patient often improved so much after this small operation that a subsequent removal could often be performed with much less risk. He had not himself lost a case after ligation for more than ten years, although he had performed a large number within this period. Ligation of the inferior thyroid artery he now never performed. It was probably very nearly, if not quite, as dangerous as removal of a lobe and was certainly much less efficacious. It was his custom never to operate upon an exophthalmic goitre unless it had been at least several days under his personal observation in a nursing home. In this period fright was largely eliminated, the heart generally quietened down considerably, and the patient gained confidence. All these were valuable adjuncts to the operation. He never operated upon a frightened or unwilling patient. He always warned the patient beforehand to expect that she would probably feel ill and miserable for a day or two afterwards. Consequently they were not unduly anxious when such symptoms did appear. He had no belief in humbugging patients by not telling them what they might

reasonably expect to suffer. Most patients who were really ill with exophthalmic goitre welcomed the operation rather than shrank from it, since it afforded them a prospect of relief. It was always wrong, in his opinion, to tell patients with true exophthalmic goitre that they would be cured immediately or even quickly by the operation. That was what they only too often expected, and they were apt to be disappointed when they found this did not occur. The utmost that could truthfully be stated was that the operation of removal of part of the goitre would almost certainly be followed rapidly (generally within a very few days) by great amelioration of most of the symptoms (except the exophthalmos, and that the prospect of ultimate complete, or nearly complete, recovery was greatly enhanced.

Mr. James Berry admitted that he did not like operating upon exophthalmic goitres. He felt that one could never tell when one might meet with a sudden and unexpected death in these cases. On the other hand, he liked to operate upon suffocating innocent goitres, and the worse the dyspnoea the better he was pleased, because with these cases he knew where he was. He knew that in the vast majority of such cases he could cure them rapidly and permanently by removing the source of the dyspnoea. In the last few hundreds of operations that he had performed for the removal of innocent goitres of all degrees of severity, excluding exophthalmic and malignant cases, but including many cases of what he had called "false" exophthalmic goitre, his mortality had been well under 1 per cent. With operation for the removal of true exophthalmic goitre he could not get his mortality quite down to 4 per cent., having lost 5 patients out of 116. If an operator included in his statistics (which he himself did not) cases of so-called "false" exophthalmic goitre—namely, cases of encapsuled tumours, cysts, or other forms of innocent goitre with some tachycardia and tremor—as was often done, the results could be made to appear much more satisfactory. These latter cases could usually be cured quickly and permanently, and with but little risk. But such cases, whatever their pathological relation might be to true exophthalmic goitre, only served to confuse the issue if they were classified with them in operative mortality statistics.

With regard to the ultimate results of operation for removal of exophthalmic goitre he regretted that he was unable to give these for all his cases up to date, but he referred to a consecutive series of 78 cases that he had communicated to the Royal Society of Medicine last year. They included all the cases operated upon during the years 1913 to 1919 inclusive and had been reported upon in 1920 at periods varying from a few months to seven years after the operations. Of these, two-thirds (53) were found to be practically well, able to do their ordinary work, and to enjoy life, although in many cases some traces of the original disease, especially the exophthalmos and a tendency to palpitation on exertion, still remained. One quarter (18) were "much improved," while 1 was "improved," in 2 there had been no improvement, 1 was worse, and 3 had died of the operation. None of this series had been untraced. With regard to the anaesthetic, he had entirely abandoned the use of chloroform, which he thought should never be employed for exophthalmic goitre operations, nor indeed for any goitre operations. Although local anaesthesia had its advantages for some cases, he usually employed a very light open ether anaesthesia.

Dr. James R. Riddell (Glasgow) said: The reasonableness of treating Graves's disease by *x* rays depends on the assumption that the disease or the symptoms are due to increased secretory activity of the thyroid. I think the facts are established that minute doses of *x* rays stimulate epithelial activity, while larger doses cause inhibition and destruction of epithelium, thickening of blood vessel walls with shrinkage of the vessels and increase of the fibrous elements in the tissues. In looking over the *x*-ray literature one finds reports of cases treated as long ago as 1905; thus the method has had time to be well tested, and the ever-increasing numbers reported prove that it has not been found wanting. It is difficult to speak of cures in such a disease as exophthalmic goitre, and I gather from the reports that complete disappearance of symptoms is claimed only in a small percentage. All are agreed, however, in claiming very great improvement in the patients' condition in about 80 per cent. of cases. While I have not kept exact records I have formed the opinion from my own experience that the above figure is substantially correct. The general opinion is that the symptoms disappear or improve in the following order: First there is an improvement in the pulse rate and condition. Then the sweating, tremors, and headaches become less and the weight increases. The thyroid does not always show much reduction in size, specially if it is hard and not much enlarged to begin with. Lastly the exophthalmos may subside in some cases, but often it does so only to a slight degree. I cannot say that I have myself noted any definite sequence of events.

It has been my custom to advise against *x*-ray treatment in those slight cases occurring in girls about puberty, on the ground that they usually get well without it, and on the general principle that the less one is exposed to *x* rays the better; but Dr. Russell H. Boggs of Pittsburg, in an excellent article in the *American Journal of Roentgenology*, 1919, speaks strongly in favour of *x* raying these cases. Regarding technique there are two methods. One may give minute doses repeated at short intervals two or three times a week, or a full dose may be given once in three or four weeks, using hard rays filtered through several millimetres of aluminium (3 or 4 mm.). The first seems to be analogous to prescribing an ordinary tonic to be taken a few drops every twenty minutes instead of the more usual tablespoonful three times a day. It is not so accurately measurable and I can see no possible gain in it. It should be borne in mind that minute doses are stimulating to glandular activity, and it is possible that some of our failures may be due to this cause. It is to be remembered that atrophic changes go on for some months after *x*-raying has ceased; a myxoedemic condition can be produced. I have known one case in which the patient gradually recovered but had to take thyroid extract for nearly two years; the radiation was given for a skin condition, and the action on the thyroid was accidental. In some quarters it is said that the *x*-ray dose should be pushed and the softer rays used in spite of the fact that so to do will cause damage to the skin. I emphatically oppose this view. I am sure that the maximum benefit can be got without in any way damaging or marking the skin. I think that if benefit is not got after six to a dozen doses *x*-ray treatment should be abandoned.

Professor David Drummond (Newcastle-upon-Tyne) called attention to the frequency with which the condition of hyperlymphism was present in cases of exophthalmic goitre, and showed specimens from a recent *post-mortem* case, the patient having died suddenly after operation. The lingual tonsils were much enlarged and the thymus nearly five times the normal size, and in other directions there was great lymphatic increase. This state, amounting to status lymphaticus, he thought would often prove to be the cause of sudden death after operation, and that an attempt should be made to diagnose it. He also referred to the heart and pointed out that when enlarged this generally took place at an early stage; as the case advanced the heart underwent reduction in weight and became dilated, and was frequently the seat of brown induration. He was accustomed, notwithstanding the contrary opinion, to prescribe potassium iodide, and often with considerable benefit. He raised the question of the relationship between the state of hyperlymphism and Graves's disease, and offered the opinion that the symptoms were due not so much to excessive secretion of normal thyroid juice but to an altered (disordered) state of the secretion.

Mr. Marcus Mamourian (Ashton-under-Lyne) said: I was very struck with the instructive diagram shown by Dr. Wilson and the way he emphasized the critical point—that is to say, the point of maximum improvement under ordinary treatment by rest, etc., and the moment for deciding whether the case should be referred to the radiologist or to the surgeon. All I have to say is that every physician upon whom falls the decision should bear in mind that a course of *x*-ray treatment would increase the difficultics of the surgeon. Mention has been made of the surgical mortality. I do not think it fair that the figures of every novice should be included in statistical tables. Mr. Berry gives us 5 per cent. as his mortality rate. It is a magnificent achievement, and when one compares the evolution of the Wertheim operation, say, with the one for Graves's disease, I think the surgery of the thyroid may be considered as having made greater strides in the direction of safety. Local anaesthesia should be the narcosis of choice. The use of a local anaesthetic necessitates sure and confident technique.

Dr. H. L. Tidy (London) asked when a case of exophthalmic goitre could be considered "cured." Under *x*-ray treatment patients improved markedly in general condition and pulse

rate, and expressed themselves quite well and anxious to return to work, but the exophthalmos persisted and the thyroid was little, it at all, reduced in size.

Lieut.-Colonel R. McCarrison, I.M.S., forwarded from India the following communication, which was read by Dr. H. L. Tidy:

I propose to confine my remarks to a brief reference to the present trend of research regarding the origin of this remarkable disease. Definite knowledge as to its pathogenesis is limited enough, and were it not that the faintest clue may prove to be of importance in the solution of the problem my contribution to this discussion might be summed up in a sentence: We possess as yet but little definite knowledge as to the causation of exophthalmic goitre. I read in an authoritative work published early in the present year that "the most generally accepted theory as to the pathogeny of exophthalmic goitre is that the disease is due to overactivity on the part of the thyroid, that an excess of thyroid secretion is poured into the circulation." It may be that "overactivity" of the thyroid gland occurs in this disease, and that an excess of thyroid secretion is poured into the blood stream, although for my own part I dislike the terms "overactivity" and "hyperactivity," preferring the more non-committal one of "disordered function." But little as we know of the genesis of Graves's disease we have, I think, sufficient reason to doubt the accuracy of the view that it is due to overactivity on the part of the thyroid gland. Its cause lies deeper than this and is extraneous to the gland itself. In addition to the thyroid other endocrine, glandular, and nervous structures are involved by it and in the production of the symptom complex. I know of no satisfactory evidence that an excess of normal thyroid secretion is actually thrown into the blood stream in exophthalmic goitre. Even removal of the major part of the hyperplastic thyroid, and the relief to certain symptoms afforded thereby, which might be supposed to be evidence of such excess, may be capable of explanation on other grounds. It is true that thyroxin, on subcutaneous injection, will give rise to symptoms similar to some of those present in exophthalmic goitre; but so also will tyramine—including widening of the palpebral fissure. An excess of the latter in the circulation might be suspected as a cause of exophthalmic goitre with as much reason as an excess of the former, did we but transfer attention from the thyroid to other organs and tissues of the body equally involved with it in this disease. I am of opinion that so long as we continue to concentrate attention on the thyroid gland alone, either from the point of view of pathology, symptomatology, or treatment, so long will we fail to understand this disease aright. Even if there be an excess of thyroid secretion in the blood stream in exophthalmic goitre this is the result of the disease-producing process, not the cause of it.

Recently Dr. Emil Goetsch has emphasized the importance of recognizing the early symptoms which as a rule precede the development of the well-known cardinal signs and symptoms of exophthalmic goitre as described in textbooks. Of these prodromal symptoms he accounts weakness or asthenia as an even more important feature than nervousness. "The patient is tired most of the time. She feels tired even without exertion, as on getting up in the morning. The slightest effort is often followed by the greatest fatigue; in fact, the asthenia is so great that the patient will not make even an attempt to do anything." Such is his description of this "early" and "characteristic" asthenia of exophthalmic goitre. For my own part I see in it more reason to suspect adrenal than thyroid derangement. We shall presently be able to judge what evidence the most recent research furnishes in justification of this suspicion.

But first let us consider, very briefly, some of the known facts regarding the incidence of exophthalmic goitre. It is, so far as I am aware, almost unknown in animals either domesticated or wild. Cases have been reported in dogs, cows, and horses, but these are rare, and their true nature doubtful. Nevertheless, I sometimes wonder whether a study of the highly bred, ridiculously fed lap-dog might not fail to reveal examples of it. Recently, a condition of exophthalmos, with great thyroid enlargement and hyperplasia and loss of weight, developed in one of six pigeons that I had fed for long periods on small daily doses of tyramine, but while the bird had exophthalmos in association with a large hyperplastic thyroid—and, therefore, exophthalmic goitre—I am not prepared to assert that the disease was identical with that occurring in man, nor that it was due to the tyramine administered. The almost complete absence of this malady from animal pathology is a negative fact of much importance, were its cause but known, especially so as thyroidal disease in general is common in domesticated and caged animals. To me it indicates that animals are free of some influence to which highly civilized man is nowadays subjected. Again, exophthalmic goitre is much commoner in females than in males, although the divergence in sex incidence would appear to be less evident in countries where the stress and strain of life is most marked. It is, too, commoner in young women between the ages of 15 and 35 than at other periods of life, and is thus often associated in its origin with the sexual function, an association which is further emphasized by its not infrequent accompaniment in later life with pelvic neoplasms. Has suppressed, excessive, or perverted sexual function or sexual incompatibility anything to do with its onset? In certain cases I have thought that it has. It is most common in improperly nourished young women of the working classes, among many of whom there is a constant struggle between the provision of a sufficient food supply and the demands of personal adornment. Too often their scant earnings are devoted more to the gratification of the latter than of the former. These facts are, however, too general to be of much use to us in the solutions of the problems presented by this malady. What is urgently required is an epidemiological survey of the disease with special reference to thyroidal family history, dietetic history, age, sex, occupation, normal sexual relations, marriage, child-bearing, constipation, gastro-intestinal disorder, previous illnesses, and the like. It is to me extraordinary that so obvious a field of inquiry should for so long have remained unexplored. There is, too, a distinct connexion between various infections and the origin of this disease; while physical, nervous, and mental stress or shock are often determining factors in its onset.

Its race distribution has not been thoroughly worked out, but recently a fact of singular interest in this connexion has come to my knowledge. It is practically unknown among the indigenous inhabitants of India, while they reside within their own country; it is confined almost entirely to the domiciled community in India—to Europeans, to Anglo-Indians, and to Parsees. But despite its rare occurrence amongst Indians who reside in India, cases of exophthalmic goitre were not infrequently encountered in Indian soldiers returning to India from the Western Front during the late war. This fact, taken in conjunction with the high incidence of the disease in western countries, leads me to believe that Graves's disease is pre-eminently a disease of modern civilization, of western modes of life and nutrition, and of the stress and strain and nervous instability which western civilization so often entails.

Reasoning on these lines one turns at once to derangement of the adrenal-sympathetic system for a possible explanation of its genesis, a point to which the earliest, most common, and characteristic symptom of the malady—asthenia—has already directed our thoughts. With this system must be associated the thyroid gland, since, together with the adrenals, it forms part of the endocrine heat-regulating mechanism of the body. Here we begin to find evidence of a more definite order. We know, of course, that Graves's disease is associated with a high metabolic rate and that removal of the thyroid gland will reduce this rate; but almost the whole of the organ must be sacrificed in order effectively to do so. Now by the removal of the thyroid we remove one link in a chain of which the adrenal-sympathetic forms an equally important part; and it is probable that disturbance of this part of the heat-regulating mechanism of the body might be as much concerned in the increased heat production, which is so constant a feature of Graves's disease, as is the disorder of the thyroid. Dr. David Marine (New York) has quite recently provided experimental evidence that this may indeed be the case. He has found that removing or crippling the suprarenals (by freezing *in situ*) results in a metabolic disturbance, characterized by increased heat production and CO_2 output, definitely related to the completeness of removal of the cortical function. The symptom complex somewhat resembles that of exophthalmic goitre. I have had an opportunity to see this work in progress and to examine the suprarenals that had been subjected to freezing; and I find in it a new hope for the more speedy solution of the problems connected with the genesis of Graves's disease. Other observations also are of interest in this connexion. For example, the condition of artificial exophthalmic goitre that can be induced by the anastomosis of the phrenic nerve with the peripheral portion

of the cut cervical sympathetic in the cat (Cannon) is associated with an increase in size of the adrenals; a result which in the light of Marine's experiments suggests an attempt on the part of the adrenal cortex to control the excessive sympathetic excitation brought about by the anastomosis.

It has long been known that both in the simple thyroid hyperplasia due to an insufficient supply of iodine, and in that less benign hyperplasia so frequently associated with Graves's disease, the thyroid gland contains less than the normal amount of iodine per gram of gland substance. But whereas in the former the iodine content of the gland can be restored to normal and the hyperplasia dispersed by the administration of iodine it cannot in the latter. Indeed, the administration of an amount of iodine in exophthalmic goitre that would be sufficient to restore the hyperplastic thyroid of simple goitre to the colloid or resting state would be attended with disastrous results. In the former case the hyperplastic organ is still able to control the metabolism of iodine, in the latter it is not; it cannot utilize iodine nor store it normally. There is in exophthalmic goitre a failure on the part of the thyroid epithelium (as shown by J. Rogers) to perform efficiently its metabolic duty with respect to iodine. Now both the work of Marine and of Rogers seems to indicate that this failure on the part of the thyroid is due in its turn to failure of adrenal-sympathetic control; a failure which may be the result either of adrenal disorder or of impairment of the functional integrity of the thyroid terminals of the sympathetic nerves or of both together. For Rogers has shown that by feeding animals with adrenal nucleo-proteins the thyroid gains from 50 to 75 per cent. or more in its iodine content within a few weeks, and that the integrity of the thyroid terminals of the sympathetic nerves is essential to the success of adrenal feeding.

If, now, this failure on the part of the adrenal-sympathetic system, this loss of the "check" exercised by the adrenal cortex on the thyroid function—the adrenal cortex being, as it were, the hand that holds the sympathetic reins to the thyroid—if this failure be indeed a fundamental factor in the production of the symptom complex of exophthalmic goitre, we begin to realize how it may be that conditions of modern civilization can give rise to it, and why it is that asthenia is one of its earliest symptoms; for at this point my own work on the effects of "faulty food" on the adrenal glands and on the sympathetic nerve elements touches that of Dr. Marine. The adrenals are peculiarly sensitive to imperfections in the diet, especially to deficient supply of vitamins, pronounced changes in the adrenal cortex resulting therefrom. Then, too, the health and stability of the sympathetic nervous tissues are similarly dependent upon a sufficiency of these essential substances. If now we turn to examine the meagre evidence afforded by the incidence of this disease, we find that it is most common in precisely that class so subject to overwork and to imperfect feeding, the young women of the working classes in whom, too, the sexual organs so frequently suffer from improper food supply. Add to this accumulation of causal conditions the attacks of such infections as influenza or the presence of alimentary "toxaemia," which are known to exert a deleterious action on the endocrine system, and the way is made ready for the onset of a malady that needs but shock or exaggerated stress and strain to precipitate it. Such a conception of the genesis of Graves's disease emphasizes the probable importance of a nutritional factor in its causation, and gives us some idea of what we effect when, by rest and good food, we so often relieve or cure those who suffer from it. By rest we conserve the resources of the endocrine regulators of the heat-regulating mechanism—resources that are so easily exhausted by overwork, worry, mental depression, and fear; and by the provision of a vitamin-rich food we tend to restore the exhausted function of the adrenal cortex, to prevent the further deterioration of the nervous tissues, and to avert that proneness to sexual disturbance which is so commonly associated with Graves's disease. Let me emphasize here that there is no more common cause than faulty food of disturbance in function of the endocrine regulators of metabolism; and this being so we must ever look to it as the most likely although, of course, not the only foundation upon which metabolic diseases are built.

In these remarks I have endeavoured to indicate the trend which modern research is taking in regard to this disease, without, however, suggesting that as yet we have passed with certainty any definite sign-posts. But the road to success appears more clearly defined, and it cannot but be the wish of pathologists, physicians, and surgeons alike that research should indicate a more scientific method of dealing with exophthalmic goitre than the surgical sacrifice of an organ so important in the human economy as the thyroid gland. When the reins of control have fallen from the hands of an exhausted driver his horse may bolt, and we may, indeed, effectively stop it by shooting; but it will be admitted that a more economical procedure is to stop the runaway by other means and to restore the exhausted driver.

The chairman, Dr. C. O. Hawthorne, Vice-President of the Section, in summing up the discussion, said that the Section had been fortunate in hearing the views of authorities who spoke on the basis of a wide personal experience. A somewhat remarkable feature of the discussion was the almost entire absence of reference to medicinal treatment. Professor Drummond had said a vigorous word for potassium iodide, but the bromides and such traditional medicines as belladonna and digitalis had been left severely alone. He doubted whether this omission really represented the mind of the profession, though it was possible there was a rebound from therapeutic claims that had been overstated. Another vacant space might be noted—namely, the non-introduction of any proposition concerning the relation of the sympathetic system to the clinical features of exophthalmic goitre. Professor Murray appeared to have disposed of Müller's muscle as an agent causing exophthalmos, and presumably with this disappeared irritation of the sympathetic, so far at least as protrusion of the eyeball was concerned. But while allowing that exophthalmos was due to the accumulation of fat in the orbit, was it not necessary to recognize that not infrequently there was an appearance of protrusion without the reality, as a result of retraction of the upper eyelid? And here, if Müller's muscle was explained away, there remained only contraction of the levator, and for this an explanation was not on the surface.

The opportunity of surgery has been most effectively and judicially stated by Mr. Berry, and it was a word that could not be challenged. Similarly, treatment by x rays had its undoubted triumphs; while the methods described by Dr. Wilson had the special attraction that they offered a measured or quantitative estimate of the severity or otherwise of the individual case. At the same time it may be claimed that there are not a few cases which can be judged clinically as slight or moderate examples of the disease, and certainly in these, general and medicinal measures, if combined with patience, could expect a considerable measure of success. He would like to have heard more on this point from those engaged in family practice. On behalf of the Section the chairman offered an expression of thanks to the openers of the debate and to others who had taken part in the discussion.

SECTION OF ANAESTHETICS.

W. J. McCardie, M.B., B.Ch., President.

PRESIDENT'S INTRODUCTORY REMARKS.

The President said: I am deeply conscious of the honour of being chosen as President of this Section and of having as Vice-Presidents and Secretaries fellow anaesthetists of the highest reputation. To Dr. Prescot Fairlie, the senior Honorary Secretary, my and your very best thanks are due for the admirable arrangements he has made for this meeting. It is now twenty-five years since I devoted my attention to anaesthesia, and during that period great and rapid advances have been made in the development of our branch of medical science. I understand that the official training of Glasgow medical students in the administration of anaesthetics is still in the hands of surgeons. This seems to me to be an obsolete practice, and certainly is not in the best interests of the students or, more important still, in that of the patients. Advance in anaesthesia has been as rapid as advance in any other scientific subjects, and it is impossible for surgeons, engrossed as they must be in their own work, to follow, practise, or teach modern developments. On the choice of the anaesthetic and on the method of the administration the life of the patient frequently depends. In the progress of anaesthesia my fellow workers in Glasgow and other parts of Scotland have taken a great and honourable share. The position occupied by the anaesthetists of Great Britain now holds a definite and well-recognized importance. This is the

first time that a meeting of this Section has been held in Scotland, and I venture to think that the present one will be the precursor of many other meetings.

DISCUSSION ON BRONCHO-PULMONARY COMPLICATIONS FOLLOWING OPERATIONS UNDER ANAESTHESIA.

OPENING PAPER

BY

DAVID LAMB, M.B., C.M.,

Late Senior Anaesthetist, Victoria Infirmary, Glasgow.

This is the ninetieth Annual Meeting of the British Medical Association, but only the third at which an Anaesthetics Section has been included in the programme of scientific discussions. In 1910 and 1912 discussions on anaesthetics took place at the London and Liverpool meetings respectively, and in October of this year a world congress of anaesthetists will be held under the auspices of the leading societies of anaesthetists of America, at Columbus, Ohio, U.S.A. Anaesthetists, therefore, have reasonable grounds for congratulation on the increasing recognition of the importance of their specialty, both in this country and abroad.

The subject and title of the discussion which I have the honour to introduce were chosen by our President, Dr. W. J. McCardie, and for many reasons I think his choice has been a peculiarly happy one. Out of courtesy to Glasgow it was decided by the committee that a Glasgow anaesthetist should be asked to give the opening paper, and, more out of respect for my advancing years and my lengthy service as anaesthetist to the Victoria Infirmary than on account of any special aptitude for the important task, the honour of doing so has been conferred upon me. I take this opportunity of acknowledging the compliment to Glasgow and to myself.

I have said that the choice of subject is a happy one, and I did so for this reason. The official training of Glasgow students in the administration of anaesthetics differs from that in the great majority of other surgical centres in Scotland and elsewhere in that it still remains in the hands of the surgeons, and special anaesthetists are not yet officially recognized as teachers. One of the results of this arrangement is that, whilst all the expert anaesthetists here use ether freely as well as chloroform, graduates going out into the world from this school know little or nothing of the peace of mind of the anaesthetist engendered by the use of ether. On the contrary, they, or at least those who have come under my observation at the Victoria Infirmary, are, to begin with at least, still under the impression that the administration of ether is frequently, if not usually, followed by bronchitis and pneumonia or cardiac failure, and that whilst occasionally patients die on the table under chloroform, far more die after the operation from the above complications when ether is used. If this discussion makes clear that there is no truth, or only the faintest element of truth, in this teaching, it will not have been held in vain, and the way will be paved for the Glasgow graduate of the future approaching his anaesthetic cases without fear and trembling, and he, as well as his patients, will be spared many alarming moments and a few tragic situations. The number of fatalities occurring annually in this city from chloroform in the hands of comparatively inexperienced anaesthetists would probably surprise, if not startle, the adherents of this old doctrine.

The list of broncho-pulmonary complications which may follow operations under anaesthesia is rather a formidable one, including, as it does, acute or subacute bronchitis, bronchopneumonia (so-called ether pneumonia), lobar pneumonia, pleurisy, empyema, abscess and gangrene of the lung, embolism of the lung with or without infarction, and pulmonary oedema, either congestive or acute. In one case, in which the stump of a tooth had slipped unobserved through the glottis, a condition mistaken for phthisis followed, the diagnosis being cleared up later by radiography. It is for us to estimate approximately the frequency of those complications, to discover the various contributory factors in their causation, and to apportion fairly to each its share of responsibility. Accepted opinion on those points will readily suggest means to be adopted towards their prevention when such is possible. The subject is still further complicated by the fact that nowadays we have not only the inhalation of nitrous oxide, chloroform, and ether to consider, but also that of chloride and bromide of ethyl, local anaesthesia, spinal analgesia, the intratracheal and rectal administration of ether, the intravenous use of ether, hedonal, etc., and the advantage of warm vapours as against that at ordinary temperature.

In a paper limited as this one is by the regulations of the British Medical Association, it is manifestly impossible to discuss every branch of this subject in detail. I would suggest, therefore, as points for discussion the types of broncho-pulmonary complications met with, the frequency of their occurrence and their causation, with which latter is naturally associated the question of prevention.

Bronchitis and Pneumonia.

Occasionally a patient is for a few days after operation "chesty." He has a slight cough, with or without expectoration and without pyrexia, the result of mere irritation of the upper air passages or of very slight bronchial catarrh. Mr. Parry first drew my attention to a condition occasionally following operations, more especially urgent abdominal cases, a condition which at first alarmed him but which later on did not give him much concern—a condition with which most surgeons must be familiar. On the day after operation the temperature rises to about 100° F., and the patient complains of slight roughness, tightness, or oppression about the chest. He has a slight cough, which he is compelled to restrain on account of the pain in the abdominal wound, but he never appears to be very seriously ill. The temperature may rise to between 101° and 103° and usually lasts only three or four days, when with the greater ability to cough, mucopurulent expectoration, sometimes very free, takes place, and the condition rapidly subsides, though it may last for several days longer. The cause of this complication, which occurs occasionally apparently without symptoms other than pyrexia (when it is probably vaguely referred to as "post-operative reaction"), has been investigated at the Presbyterian Hospital, New York, by Whipple,[1] who has carried out a good deal of original research work on the radiographic method of studying post-operative pulmonary complications. Those cases seem to be cases of abortive pneumonia, the radiogram showing a distinct shadow, wedge-shaped to begin with, the base towards the pleural surface, and more frequently in the lower lobes of the right lung. Occasionally the shadow is seen a day or two before the development of any physical sign of lung implication, and usually both shadow and physical signs disappear in one to three days. Bronchial breathing may occasionally be absent if the area of consolidation does not extend all the way from the periphery to the neighbourhood of the larger bronchi near the root of the lung. The biological classification of the pneumococcus by means of immunity reactions has established the fact that pneumococci can be divided into at least four groups. Groups I, II, and III may be called parasitic, inasmuch as they do not occur in the throat except pathologically, while group IV may be looked on as saprophytic and is found in at least 60 per cent. of normal throats. According to Whipple, it is now well recognized that as the result of the work of Neufeld and Haendel, elaborated by the investigators at the Rockefeller Institute, groups I, II, and III are the inciting organisms in the severe typical medical pneumonias, and that group IV is the more usual finding in the majority (70 per cent.) of post-operative cases, and especially the shorter atypical forms of the disease referred to above. In the remainder the exciting organisms included the I, II, and III groups of pneumococcus, the *Bacillus influenzae*, a streptococcus, and the *Bacillus mucosus capsulatus*. In an increasingly large number of the patients developing this type of disease there is found pneumococcus IV, both in the pre-operative and in the post-operative sputum. The germs in the mouth and pharynx get mixed up with the excess of mucus and saliva, and infection of the bronchi results—a view which is in support of that of Hölscher on the origin of those complications. In Whipple's cases lobular pneumonia was from two to three times more frequent than lobar. In addition to this comparatively mild complication all the ordinary forms of pneumonia and bronchopneumonia may be met with, the exciting organisms being those referred to above, though the great majority of the later pneumonias are septic in origin.

Frequency.

Most of the older statistics available are of little real value, as from the extreme divergence of their findings they can hardly be looked upon as reliable. They do not distinguish

between minor and major operations, nor do they differentiate between clean and septic cases. One must remember also that when any pulmonary complications follow ether they are usually at once described as ether pneumonias, but if after chloroform they are ascribed to some other cause. Discussions on this question were held by the Society of Anaesthetists in 1900 and 1903, and the results are recorded in their *Transactions* (vols. iii, iv, and v). Extremely varied opinions were expressed by the leading anaesthetists of London.

Co ner and Crouch[2] gave an interesting report based on close personal observation of 2,400 patients at St. Thomas's Hospital. Ten cases (one fatal) to whom ether had been given developed temperatures with respiratory trouble within twenty-four hours. Practically all occurred after long operations, especially those in which free expectoration was interfered with by bandages or the position of the patient, and they included 4 cases of hernia, 2 breast cases, and one case of varicose veins. In none of the cases was the anaesthetic administered by the staff anaesthetists, this being done by the less experienced house officers.

Smith, of Liverpool,[3] in 221 major operations with warmed ether and chloroform and 220 minor vaginal operations with open ether, gave a morbidity of 7.5 per cent. in major and 2.2 per cent. in minor operations. The great majority were coughs without physical signs, the remainder, 1.1 per cent., being cases of bronchopneumonia.

Alma Vedin,[4] of New York Hospital, gives a review of 7,900 operations. There were 120 post-operative pulmonary complications, or 1.51 per cent. These complications comprised lobar pneumonia, bronchopneumonia, acute bronchitis, pleurisy (acute fibrinous, sero-fibrinous, and suppurative), and embolism of the pulmonary artery. There were 29 deaths in these 120 cases, including 10 deaths from pulmonary embolism, a total mortality of 0.36 per cent. of the 7,900 operations. Lobar pneumonia was by far the most frequent complication; nearly all cases followed abdominal operation, and the incidence was relatively greater after operation in the upper abdomen, though several followed appendicectomy (19 per cent.) and hernial repair (33 per cent.). The anaesthetic used was ether alone or preceded by gas or ethyl chloride, except one case with gas oxygen and one with no anaesthetic.

Whipple[1] reported 97 cases of pulmonary complications in 3,719 carefully observed post-operative cases (2.6 per cent.) in 1915 and 1916. In his opinion general statistics regarding the incidence of this complication in different clinics vary largely with the care given to its detection. He gives a table of reports by nine different observers in which the morbidity detected in coeliotomies varied from 0.5 to 8 per cent.

Causation.

Comparatively early in my experience at the Victoria Infirmary I investigated five cases of lobar pneumonia following operation. I found that at the time of operation four were suffering from "colds in the head," and the fifth had recently recovered from influenza. Two had chloroform only and three C_2E_2 and chloroform. At that time patients on the operating table were covered only by a sterilized sheet, and were brought from and returned to the ward with a "theatre blanket" as practically their only covering. Since then, with the exception of one case (my one fatal case, to which I shall refer later), I think the surgeons will support me when I say that there has been extremely little pulmonary trouble attributable to the anaesthetic, a statement borne out by the records of the *post-mortem* room. The fact that the Victoria Infirmary is ventilated by the Plenum system, and that there are no cold corridors or open windows, is perhaps worthy of note. C_2E_2 was the anaesthetic of choice until 1910, as—brought up as it were on chloroform—Clover's apparatus in the pre-atropine days, with its cyanosis, excessive mucus and saliva, never appealed to me. Afterwards open ether or chloroform were the routine agents, with the various special methods when the use of these was indicated.

By the courtesy of Dr. Anderson, our pathologist at the Victoria Infirmary, I have been able to analyse the reports of 1,031 consecutive *post-mortem* examinations from the surgical wards. I was much impressed by the large number (fully 70 per cent.) of patients who showed evidence of chronic bronchitis and emphysema, pleuritic adhesions sometimes very extensive, or other indications of past or chronic lung mischief. In a large proportion also passive congestion—in three cases definite hypostatic pneumonia—and oedema of the lungs were apparently terminal features of the cases. In this series there were:

7 cases of pneumonia following accidents—no operation.
5 cases (acute bronchitis 3, pneumonia 1, double pleurisy 1) in other surgical conditions without operation.
24 septic pneumonias in cases of osteomyelitis, peritonitis following operations for perforated gastric or duodenal ulcer, gangrenous appendix or gall-bladder cases, cellulitis, prostatectomy with pyelitis, etc.
6 others in cases without evidence of sepsis: 2 pyloroctomies for malignant disease and 1 excision of malignant gastric ulcer, all in patients already weak and emaciated; 2 strangulated hernias in patients aged 64 and 70; 1 colostomy for cancer of the colon in a patient aged 76.

In the 24 septic cases the pneumonias were definitely septic in origin, the infective organisms having attacked the lungs from the infected blood stream. In the last group, when one considers the condition of the patient, the clinical history, and the nature of the case generally, the part played by the anaesthetic must have been infinitesimal, so that, so far as fatalities are concerned, the anaesthetic comes out of the inquiry practically "without a stain on its character." When a surgeon tells you that his patient died of bronchopneumonia ten days after operation and that you should have given chloroform instead of ether do not worry too much. There may have been another explanation. Incidentally I might mention that in this series of *post-mortem* examinations not a single case showed any evidence of delayed chloroform poisoning, although Dr. Anderson was always on the look-out for it.

Although more intimately connected with a later part of this paper I shall just enumerate the other pulmonary complications found in this series. There were 8 empyemas, 15 pyemic abscesses of the lung (7 gangrenous), 16 infarctions, and in addition there were 10 cases of thrombosis (in the iliac, femoral, portal, renal, and pulmonary veins and inferior vena cava). All were associated with grossly septic conditions except two cases of thrombosis and two infarctions, the latter after operations for inguinal hernia and varicose veins, the former after operation for varicose veins and excision of the kidney for malignant disease.

From the experience referred to previously I became strongly of opinion that the most important contributory cause of early post-operative pulmonary trouble was the presence of some more or less recent catarrhal affection, mild or otherwise, of the upper air passages of the patient prior to the operation. In this connexion I would point out also that the presence in the operating theatre for any length of time of any individual suffering from an acute nasal catarrh is, unless he is well masked, a danger to the patient and to all others present. On several occasions I have seen a "cold" run through a whole theatre staff, the affection being traceable to such a cause. The factor next in importance is undue exposure to cold and consequent "chill."

According to the textbooks the usual causes of ordinary bronchitis and pneumonia are chill and exposure, which, by lowering the vitality of the tissues, render them more liable to the attacks of the ubiquitous pneumococcus, etc. All the circumstances of an operation lend themselves to possible chill and exposure *unless constant care and watchfulness are exercised.* There may be unnecessary exposure during the preparation (shaving, bathing, etc.) prior to the operation, the patient actually catching cold after his admission to the hospital or nursing home. An inexperienced nurse may bring him, insufficiently covered, along cold corridors to wait some time in the anaesthetic room. In the theatre, the temperature of which may not always be all that could be desired, he may be exposed for an hour or two on the operating table with the abdominal contents or an extensive wound exposed. Then comes the return to the ward along draughty corridors, or, as I have seen even in this country, along an open veranda, into a room insufficiently heated or with widely opened windows regardless of the weather. The wonder is not that pulmonary complications arise, but that they do not arise more frequently. All this tends to lower the temperature of the patient and aggravates the fall which frequently occurs during a long and severe operation, and thus the patient's vitality and resistance, possibly already reduced by disease, starvation, loss of blood, or shock, are still further impaired.

By far the majority of post-operative pneumonias, more especially those occurring several days after the operation, are associated with sepsis, the infective organism being carried to the lungs free in the blood, or by the lymphatics

from some septic area, or in an embolus from an infected thrombus. Anything tending to cause limitation of the respiratory movements and consequent tendency to congestion of the lungs constitutes another contributory factor, and here the pain of an abdominal wound and tight bandaging round the chest or abdomen are the most common influences at work. The remedy for the latter readily suggests itself, whilst for the former some surgeons favour the local use of quinine and urea hydrochloride either at the beginning or the end of the operation. Congestion of the lungs may also occur as the result of circulatory depression from the toxic effect of the anaesthetic, chloroform being the most dangerous on account of its depressant action on the heart and blood vessels.

Then we have the class of cases described as "aspiration" pneumonia or bronchitis, in which, usually in "obstruction" cases, but also possibly during the recovery from the anaesthetic before the complete return of the reflexes, vomited material or blood is sucked into the lungs. In this class may be included those cases in which there is hypersecretion of mucus and saliva, which become saturated with the anaesthetic and which may act as a vehicle for the conveyance of organisms from the mouth downwards. This, however, thanks to the routine use of atropine, is now rarely troublesome. Cases have been ascribed also to the irritant effect of impurities in the anaesthetic. At a meeting of the Scottish Society of Anaesthetists one member referred to an outbreak of pulmonary complications due to the use of commercial ether, supplied, unknown to the anaesthetist, by the chemist with a view to economy.

What, then, is the part played by the anaesthetic in the causation of the complication under consideration? In this country opinions vary, but it is, I think, generally accepted that nitrous oxide gas is non-irritant and that the vapour of chloroform is much less so than that of ether, whether warmed or at the ordinary temperature. The consensus of opinion seems to be that it is only the prolonged exhibition, more especially of concentrated vapour of ether, which gives rise by direct irritation, or by chilling due to evaporation, to any real danger. This also was the general opinion at the discussion on ether pneumonia by the Society of Anaesthetists in 1900. Shipway,[5] however, expresses the opinion that—

"Ether, when given by modern methods (warmed vapour), is known to be capable of sustaining the blood pressure over long periods, and to have rid itself of its former reputation of setting up irritation of the lungs."

Abroad, also, opinions differ on this point. Flagg,[6] of New York, in a personal communication, says:

"The theory that ether *per se* gives rise to an irritation which leads to post-operative pneumonic complications appears to have been abandoned as untenable. It is a quite genuinely accepted fact in the circles wherein I work that there is no such thing as ether pneumonia, that the post-operative pneumonia which we see is due to exposure before, during, or after operation, the development of an infection already present or of embolic origin. In operations on the nose or throat a certain number of cases probably occur through aspiration, when suction is not employed."

He finds that there are definite seasonal occurrences of pneumonic complications, and refers to a series traced to a single ward notoriously draughty and old-fashioned in its appointments.

Mikulicz[7] (quoted by Rovsing[8]) had, on account of the somewhat frequent occurrence of post-operative pneumonia, deserted ether for chloroform, in the belief that the pneumonia was due to the irritating effect of ether. To his surprise, however, he met then with a still greater percentage of post-operative pneumonia. He changed to local anaesthesia in all cases, and to his still greater surprise found that lung complications increased instead of decreased (27 cases in 114 laparotomies). Naturally this experience overthrew the conception that post-operative pneumonia was "narcosis" pneumonia. The great majority followed abdominal operations. According to Mikulicz also it has been proved experimentally with animals, and he has substantiated the facts by experiments, that whilst ether occasions increased salivation, the air passages—larynx, trachea, and bronchi—are not irritated at all, even when the animals were killed by administering ether through a tracheotomy tube. According to Whipple, on the other hand, "there is no doubt that ether is the anaesthetic most irritating to the mucous membranes of the oropharynx, particularly when there is any acute or chronic inflammation at the time it is administered."

From repeated personal experience I know that if I am just recovering from a nasal or bronchial catarrh any attempt to administer ether to a patient by the open method, involving, as it does, my inhaling some of the vapour, soon sets up very troublesome cough and increased secretion of mucus or muco-pus, which seems to come from below the glottis. When using chloroform or Shipway's apparatus, with which there is less contamination of the atmosphere of the theatre, the same effect is evident, but much less marked. When I am perfectly free of catarrhal symptoms no such effect is produced. I always look upon this as due to the irritant effect of ether vapour acting on the mucous membrane of my upper air passages, which at the time is in a specially susceptible condition.

Recently in a nursing home I anaesthetized a gentleman about 50 years of age, for operation for double inguinal hernia. There was considerable excitement during the induction of anaesthesia, which was effected by means of chloroform followed by open ether, but as there was a somewhat free secretion of mucus and saliva, in spite of the use of atropine, the latter part of the operation was completed under chloroform. Within four or five hours a condition resembling acute oedema of the lungs was present. This continued next day, and the patient died within forty-eight hours with severe dyspnoea and excessive muco-purulent expectoration. On investigation it was found that the patient was probably alcoholic, that a year before he had suffered from a prolonged attack of bronchopneumonia, and that he had just recovered from a "severe cold" a week prior to the operation. There was no albuminuria. Unfortunately there was no *post-mortem* examination, but I cannot absolve the irritant action of the anaesthetic from at least a share in the catastrophe.

It seems to me that the vapour of ether, and of chloroform to a very much less degree, is certainly an irritant to the lining membrane of the upper air passages and bronchi, but extremely rarely sufficiently so—unless unskilfully administered—to set up a purely irritant bronchitis or bronchopneumonia similar to that caused by the poison gases during the late war. But where there is any weakening of the resistance of those tissues, the result it may be of congestion due to chill or lowered vitality, or to the presence of a mild catarrhal condition, or to a combination of those conditions, this comparatively mild irritant action, more especially of ether, may act as the "last straw" and lead to the overwhelming of the natural antibodies by the ever-present pathological organism which the healthy tissues are under ordinary circumstances able to resist.

Whilst, therefore, it may be correct to say that the anaesthetic *per se* rarely if ever sets up a bronchitis or bronchopneumonia, it is wrong to maintain that it is always a perfectly innocent agent in all such cases after operation. One would naturally expect the use of warmed ether by Shipway's or other apparatus to be even less harmful, but when one considers the extreme variations of temperature with which the mucous membranes of the air passages frequently contend in everyday life without harm resulting, one does not feel inclined to press this point unduly. I hope, however, to hear some evidence on this point from some of the members present. The same remark applies to the use of ethanesal.

It is not only the direct effect of inhalation that we have to consider, but also the effect during excretion, the great bulk of which takes place through the lungs. I know of one case in which one pint of saline containing 5 per cent. ether was administered to a youth intravenously, and in which acute oedema of the lungs occurred within a few hours. A case[9] has been described also, in which ether was administered per rectum to a gentleman of 58 with malignant disease of the larynx, which quickly proved fatal with signs of excessive irritation not only of the intestine but also of the bronchial mucous membrane.

In support of the view that the great majority of post-operative pulmonary complications may and do occur quite independently of the anaesthetic, it is found that such cases also occur after operations under local anaesthesia and spinal analgesia. I have not seen this occur, but my experience is comparatively limited. One must remember, however, that those methods are frequently reserved for cases in which pulmonary troubles are present or anticipated. Rood,[10] however, with a personal experience of 8,000 cases, states that he has seen both bronchitis and pneumonia follow the use of local anaesthesia. Acute septic conditions, such as appendicitis and osteomyelitis, were generally present in those cases in which pneumonia followed the use of stovaine. Whipple[1] records also six cases under local anaesthesia with novocain two of them being in cases giving a history of recent recurrent colds.

So far I have dealt with catarrhal and pneumonic conditions, and have still to refer to some of the other post-operative pulmonary complications, the majority of which, in my experience, are associated with sepsis.

Pleurisy, Empyema, and Abscess of the Lung (frequently Gangrenous).

These complications are usually associated with subdiaphragmatic abscesses connected with septic gall bladder or appendix cases, perforated ulcers of the stomach or duodenum, malignant growths in the upper abdomen, or they originate as the result of embolism from other septic areas, whilst cases of acute oedema of the lungs are, according to Buxton,[11] usually associated with some pathological condition of the kidneys. In some of the Victoria Infirmary cases of empyema and abscess of the lung associated with abscesses in the upper abdomen there was a definite perforation of the diaphragm, admitting a thick probe, whilst in others there was no perforation, the septic process having permeated the tissue of the diaphragm throughout its entire thickness. In others, again, the extension had taken place by way of the lymphatics. Abscess of the lung is of occasional occurrence also after tonsillectomy, though rarely after other operations, even when extensive, in the mouth and throat. Brown Kelly,[12] at Newcastle last year, described one such case after tonsillectomy, and referred to a considerable number of others. He quoted two explanations which have been given of this occurrence:

1. Aspiration of blood containing septic matter squeezed out of the tonsiliar crypts during operation. This view is supported by the following facts. Almost all were operated upon under general anaesthesia whilst lying on the back (Gwathmey has collected four cases under local anaesthesia); in the majority signs and symptoms developed within thirty-six hours, the abscess was solitary, and, as a rule, in the lower or middle lobes of the right lung.
2. According to the other view, septic thrombosis of the veins in the tonsillar bed is followed by pulmonary infarction. This explanation accounts for the minority of cases (Gwathmey, 1 per cent.) in which there is no trouble until after the lapse of from four days to two weeks.

Pulmonary Embolism and Infarction.[13]

These complications occur probably much more frequently than is generally supposed, and the great majority are met with in patients over 45 years of age, and usually after abdominal operations. The site of thrombosis has been found to vary, but usually it is in the iliac or femoral veins or in the inferior vena cava. The conditions predisposing to thrombosis are loss of fluid from starvation, purging, haemorrhage, post-anaesthetic vomiting, etc., sluggish circulation due to shock or anaemia, the more or less fixed recumbent position, damage to vessels, or to sepsis. The time of occurrence is most commonly from five to ten or twenty days after operation. In one series in the Mayo clinic 19 took place in the first week and 21 in the second. With regard to frequency, Lockhart-Mummery quoted 47 fatal cases of embolism in 63,573 cases in the Mayo clinic (36 pulmonary, 10 cerebral, and 1 coronary). Victor Bonney recorded 5 cases in 1,791 hysterectomies, and 2 in 1,410 ovarian and tubal operations, whilst there were none in ventrofixation or vaginal cases, and he remarked upon the relative frequency after uterine operations. Spilsbury found 9 deaths from pulmonary embolism in 1,013 consecutive *post-mortem* examinations at St. Bartholomew's Hospital. In Johns Hopkins Hospital there were 31 deaths in 21,000 cases, but as Lockhart-Mummery estimates that probably only 1 in 10 cases is fatal this complication is not a rare one.

Blocking of the pulmonary artery by a large embolus, leading to sudden death before there is time for the formation of an infarction, occurs usually in patients who have had an otherwise normal convalescence. In cases of infarction due to small emboli a low grade of inflammation in connexion with the wound or with phlebitis usually precedes the onset and the convalescence has not been quite satisfactory (Gordon Watson).

Prevention.

If the various factors to which I have referred are admitted to be the exciting or contributory causes of post-operative pulmonary complications, measures for their prevention will readily suggest themselves. I shall merely enumerate those which in my opinion are the most important.

1. An experienced anaesthetist should be employed, as he is more likely to avoid the use of a too concentrated vapour and the administration of ether in cases in which its use, prolonged or otherwise, is contraindicated.
2. Give atropine sulphate an hour before operation in all cases.
3. If there are any symptoms or signs of nasal or bronchial catarrh, postpone the operation if at all possible. If this cannot be done, or if there is only a history of a recent cold or influenza, carry through the operation as quickly and as gently as possible, and take every precaution to prevent chilling before, during, or after the operation. In all such cases use local anaesthesia or spinal analgesia when possible, otherwise give chloroform, or nitrous oxide and oxygen if absolute and continuous relaxation is not essential. Unless specially indicated avoid the use of ether in such cases. Chloroform in the hands of experienced administrators, though not so safe as ether, is not nearly so virulent a poison as it is alleged to be by some American writers.
4. In abdominal and breast cases apply bandages lightly. Raise the head of the bed as early as possible and encourage the patient to clear away any mucus which may be present in his air passages.
5. In all cases have the patient carefully and continuously watched during his transit to bed and afterwards until his reflexes have returned sufficiently to prevent aspiration of vomited material into the trachea.
6. In operations on the upper air passages take every precaution to prevent, both during and immediately after the operation, aspiration into the trachea of any foreign material such as blood, mucus, or pus, and in dental cases let every stump be accounted for. In all such cases the patient on his return to bed should be turned well round on his side until his reflexes have returned, to allow the escape of blood from the mouth by the action of gravity.
7. Unless absolutely necessary, do not, on a cold winter night, rush an acute appendix case out of his warm bed on his way to nursing home or hospital. The staff are tired, and therefore not so efficient, and the theatre and corridors probably cold.
8. When indicated, as in intestinal obstruction and some cases of peritonitis with vomiting, have the stomach washed out, preferably prior to the administration of the anaesthetic, but certainly before the operation is begun, and repeat the process during the operation if necessary.

In closing this paper, gentlemen, I would put forward the suggestion that one or more subjects for discussion next year should be decided upon at this meeting, that a questionnaire be drawn up by our president and secretary at their convenience, and that this should be circulated to anaesthetists at the principal surgical centres of this country. This close, personal, well-directed observation by a moderate number of anaesthetists even for six months would result in the accumulation of a valuable store of reliable, up-to-date information.

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DISCUSSION.

Dr. Dickinson Berry (London) was inclined to believe that "ether bronchitis" was somewhat of a myth. The anaesthetic was always open to blame for such an accident, "*car les absents ont toujours tort.*" In order to prove that the anaesthetic was the primary cause of post-operative chest trouble the possibility of sepsis connected with the wound must be eliminated, as well as the chance of chill or other infection. In her own experience as anaesthetist to two large hospitals she could recall no case of chest trouble directly attributable to the anaesthetic. She produced statistics of 1,411 cases of thyroidectomy operated upon by Mr. Berry in which careful notes had been kept of the post-operative condition. The anaesthetic used had altered with time: from 1888 to 1907 it had been almost exclusively chloroform; from 1908 to 1912 open ether preceded by chloroform had been mainly used; and after 1912 ether alone by the open method had been the sole anaesthetic in 600 cases. Among the 1,411 cases there were also 47 cases of local anaesthesia by novocain. Only 6 cases were found in which there was mention of lung or throat trouble: (1) Slight pneumonia accompanied by local sepsis, the wound being reopened on the fifth day. (2) Bronchitis for a few days after operation in a lady who had been subject to bronchitis before; primary union occurred. In both these cases the anaesthetic was chloroform. (3) A case of bad dyspnoea; bronchitis, present before, considerably aggravated after operation. Local anaesthetic, preceded by chloroform. (4) Slight bronchitis, clearing up in a few days; primary union of wound. Anaesthetic—ether, preceded by chloroform. (5) Mild sepsis, slight bronchopneumonia occurring on the sixth day in a pregnant woman with urgent dyspnoea, whose temperature was 100° before the operation. Anaesthetic—open ether. (6) In this case the ether appeared sedative;

rapid general improvement immediately followed operation in a patient with râles all over the chest at the time of operation. Twenty-one cases of intratracheal ether at the Royal Free Hospital for thyroidectomies for other surgeons were also cited. In these there were five cases where sore throat and cough were noted; one of these led to septic tonsillitis and another had signs in the chest and pyrexia lasting for a week. Doubtless in these cases the cause of the trouble was irritation or sepsis due to the passage of the tube. In conclusion the speaker held that though chest trouble was probably rarely due to the irritation of the anaesthetic vapour, this latter might reasonably be a contributory factor, either by facilitating the sucking in of septic matter, as when there is much secretion of mucus, or by producing diminished resistance in the patient to outside influences. From this point of view chloroform was likely to be more deleterious than ether, being as a rule more depressing, and it was open to question whether severe operations under a local anaesthetic did not at times produce a more depressed condition than if general anaesthesia had been used. Dr. Berry believed that in connexion with after-effects it was very important to maintain as light an anaesthesia as was compatible with operation.

Dr. A. L. Flemming (Bristol) drew attention to, and criticized the use of, strong solutions of cocaine in laryngeal surgery. There was increased risk of aspiration of septic material into the lungs when the laryngeal reflex was abolished by the use of strong solutions of drugs of the cocaine type. He also made a plea for the anaesthetist to be called in and consulted in cases where complications occurred which could be in any way attributed to the anaesthetic. Such complications were frequently aggravated by the injudicious use made of strong expectorants of the type of ammonium carbonate. Their exhibition resulted in the patient being drowned in his own lung secretions instead of relieved. He believed that many complications could be avoided by attention to posture of the patient after operation and during recovery.

Dr. Paton Boyd (Glasgow) remarked on the frequency of pulmonary complications in high abdominal operations, especially those on the gall bladder. He believed that there was a type of "chesty" individual who was especially susceptible to "chesty" conditions, and even chloroform would not help in this type of case. There was also a tendency for complications to occur in runs, and the explanation of this phenomenon was to be sought for in external conditions such as draughty corridors or catarrhal epidemics.

Mr. Herbert J. Paterson (London), speaking as an operating surgeon, declared that any person using chloroform without sufficient reason should be criminally prosecuted. Gas and oxygen should be used for abdominal operations, even at the expense of the surgeon in the matter of discomfort and increased operative difficulty due to increased rigidity, and he personally made much use of this anaesthetic even for severe abdominal cases. He believed that a time would come when only urgent operations would be performed in cities and that this was the ideal to aim at. Hospitals should be erected in the open country and only casualty clearing stations left in the towns. Lung complications could be minimized by proper deep breathing exercises, and these should be undertaken both prior to and following operation.

Dr. H. Featherstone (Birmingham) presented an analysis of 313 consecutive medical and surgical *post-mortem* examinations made at the Birmingham General Hospital, the results throwing some light on the causation of broncho-pulmonary conditions following operations. The hospital in which all cases were operated upon was ventilated by the Plenum system. Of 135 post-operative autopsies 62, or 45 per cent., had definite bronchopneumonia, whilst of 144 non-operative cases, excluding primary medical pneumonias, 42, or 29 per cent., showed this complication. He concluded that pneumonia was a frequent terminal condition, but was much more common in severe post-operative conditions than in similar "medical" cases. Professor Shaw Dunn, by whose kind permission the analysis was undertaken, believed that the majority of surgical cases showed evidence of aspiration pneumonia. In 50 per cent. of the post-operative cases the lower lobes only were affected, whereas of the non-operative cases only 20 per cent. showed affection of the lower lobes alone—that was to say, most severe operations have a specially injurious effect on the lower lobes. The anaesthetics employed in the cases were: open or closed ether in 21 (33 per cent.); mixture (E_2C_1) or chloroform in 33 (50 per cent.); local or spinal in 4 (7 per cent.); N_2O and O_2 in 3 (5 per cent.); intratracheal ether in one. It was noteworthy that in a hospital where ether was given as a routine, in only one-third of those cases of bronchopneumonia was it employed, while chloroform or a mixture was used in half the cases. Each of the post-operative cases in which bronchopneumonia was found at autopsy had sustained at least one of the five sources of severe shock and exhaustion—namely, septicaemia, embolism, upper abdominal operations, severe general peritoneal shock, or aspiration of septic material from nose and throat. Septicaemia was present in 20 cases (32 per cent.); non-infective thrombosis and embolism in 2 (3 per cent.); upper abdominal operation in 28 (45 per cent.); severe general peritoneal shock in 11 (15 per cent.), including appendicitis and general peritonitis in 7, volvulus in 2, radical carcinoma recti operations with some degree of septicaemia in 2; aspiration of putrid mouth and nose contents after operation for malignant growth of the tongue, jaws, or nose in 3 (5 per cent.) (but in this connexion it must be noted that in over fifty consecutive operations of greater or less severity on the nose and mouth, performed with the patient sitting in a chair, intratracheal methods have abrogated aspiration pneumonia, the cough reflex being always allowed to return before removing the catheter). He wished to emphasize his opinion that ether, even though given cold and concentrated, played but little part in the causation of bronchopneumonia. In the ear and throat department of the hospital, 690 consecutive operations were performed, and with few exceptions the anaesthetic was ether, administered by Rood's intensive method; and no case developed any trouble of such severity as to be recorded. In the gynaecological department operations were prolonged, anaesthesia deep, and haemorrhage sometimes severe, but there was rarely any considerable upper abdominal shock, sepsis was uncommon, and owing to the Trendelenburg position aspiration of oral contents was prevented. In 262 operations only 3 cases of bronchopneumonia occurred. One commenced four days after operation in an old and feeble woman, one was well established before operation in a case of severe upper peritoneal shock due to ruptured tubal gestation, a spinal anaesthetic being employed. The third had profuse lung secretion during the recovery stage, which presumably led to lung infection from a long-standing purulent nasal discharge. It was in the surgical abdominal wards that lung sequelae might be expected, and it was there that they were found. Of 62 bronchopneumonia autopsies 28, or nearly 50 per cent., had undergone operations on the upper abdomen. Harmful reflexes from the peritoneum of that region might produce spasm of the bronchioles or might give rise to paralysis of the diaphragm with collapse of the lower lobes of the lungs. That the diaphragm was at fault might be demonstrated by radiography. Further, pain in the wound might prevent coughing to clear the lungs. Such patients were often poorly nourished owing to some wasting disease (for example, gastric ulcer or new growth), sustained severe peritoneal shock, their diaphragms were relaxed, blood loss might be severe, chill from body exposure might occur, and so general resistance to infection was very low. All that was necessary to ensure a bronchopneumonia was a suitable infective organism, especially in certain surroundings and at special seasons. In summer, and in well-warmed private rooms, respiratory complications were rare, even in exhausted and shocked patients, but they were much more common in crowded hospital wards in the seasons of colds. In March of this year 6 cases of bronchopneumonia occurred in the abdominal wards, while only 2 cases were noted during the following three months. In conclusion, he briefly summed up the predisposing factors which he believed he had shown to lead to lung complications.

In the unavoidable absence of Dr. J. Stuart Ross (Edinburgh) his analysis of 484 cases completed during the first year of his war service in the Balkans was read by the local honorary secretary, Dr. Fairlie. Notes of the cases had been carefully kept with a view to elucidating the causation of the sequelae of ether and chloroform.

The series did not include any nitrous oxide cases. All were males, mostly young, many were heavy cigarette smokers, some were in a gravely septic condition, and a large number of them had chronic naso-pharyngeal catarrh. All these factors made for a high post-operative morbidity rate from bronchitis or pneumonia. There were but few cases of abdominal surgery, and in the whole series definite

respiratory sequelae occurred in but 21, giving a morbidity rate of 4.3 per cent., which was curiously near the figure given by Smith in the paper quoted by Dr. Lamb, though Smith stated that the rate was only 2.2 per cent. among non-abdominal cases and 7.5 per cent. among abdominal ones. This therefore meant that the rate was roughly twice as high in his (Dr. Ross's) cases, as most were non-abdominal. In the 21 cases mentioned, 3 were lobar pneumonia, of which 1 was fatal. The last was a man in a gravely septic condition from a gunshot wound of the arm and thigh, and pneumonia developed forty-eight hours after leaving the theatre. The anaesthetic was chloroform and ether from a Shipway machine; the administration was for twenty minutes only, and during administration no warning symptoms of respiratory irritation appeared. If this was a true post-anaesthetic pneumonia and not a septic one, the total mortality rate was therefore 0.2 per cent. in the series. Nearly all the cases received a preliminary dose of morphine and atropine, but in many cases it was administered so near to the operation that time was not sufficient for it to develop its beneficent action. In 125 cases the anaesthetic was chloroform mainly or solely. In 295, ether was used mainly or solely. In 64, a mixture of the two was given intentionally. An open drop method was used in 158 cases, and a Shipway in the remaining 326. Of the 21 cases with respiratory sequelae, 10 had received chloroform, 7 ether, and 4 a mixture.

From these figures it might be argued that chloroform was twice as likely to cause sequelae as ether, but then it must be remembered that in all cases where sequelae were feared chloroform was chosen. The proper conclusion to draw was therefore that chloroform would not necessarily avert sequelae where post-operative trouble was feared.

In the series under discussion the warmed vapour cases bore to the open drop method cases a relation of very nearly 2 to 1. Among the cases where pulmonary complications occurred the relation was 16 to 5, or nearly 3 to 1, so that the protection afforded by warming vapours was not absolute. Note was taken of any bronchial or tracheal mucous râles appearing during administration to a degree more than trifling, and this occurred in 49 cases, in spite of adequate "morphatropinization," and showed the high average irritability of the respiratory mucous membranes of the serving soldier. These 49 cases yielded 4 of the total 21 respiratory sequelae, indicating that mucous râles appearing during anaesthesia indicated about a doubled chance of trouble afterwards, though such troubles developed even when no irritation was shown. In 52 of the cases there was either acute naso-pharyngeal catarrh or definite tracheitis or bronchitis present before operation, and this factor was really pathogenic, for among them no less than 11 developed quite marked trouble afterwards, and quite half of the 21 cases with sequelae had some infection before operation. In the writer's opinion this was cause and effect. Most of the cases showed little more than a slight cold in the head at the time of operation, and it was not the cases with definite bronchitis which gave most trouble later. Such men have already manufactured their antibodies, in all probability. The last etiological factor to consider was that of season, and sequelae were very largely a question of season. From February to the end of April, 5 cases occurred. From May to the end of July only 2 were noticed, one of which was definitely septic in origin. During September, October, and November, 3 cases occurred, and from the middle of December to the end of the following February no less than 11 cases, a state of affairs that was not stemmed even by the total abandonment of ether. The writer did not think that this epidemic was due to supplies of faulty anaesthetic drugs, but to the influence of the season on men debilitated by the hot summer through which they had previously served. He felt strongly that operation should only be undertaken in cases suffering from recent catarrhal infection when the emergency was great, and that all cases should as far as possible be submitted to a proper course of treatment before inhaling any anaesthetic. Colds in the head had formerly been taken much too lightly. Lastly, he thought that the time had now come when anaesthetists should refuse to take all the blame and odium of a post-operative pneumonia.

Dr. K. B. Pinson (Manchester) submitted a statistical survey of cases of which he had kept accurate records from January 1st, 1918, to June 30th, 1922, in order that an equal number of cold and warm months should be included in the period under review, and found two striking facts: (1) how often patients with chest trouble came through the ordeal none the worse, and (2) how often, when complications occurred, they did so within twenty-four hours. His cases numbered 4,180, and serious complications occurred in 56 of these, 24 of pneumonia and 32 of bronchitis or minor complications, giving a total incidence of 1.34 per cent. He was willing to add one-third to these figures to allow for minor complications which had been missed and so to bring up the incidence to 1.8 per cent. In these cases he thought that 10 per cent. could not in any way be considered due to the anaesthetic. The ratio of pneumonia to bronchitis was high, but this was due to the fact that no account was taken of cases in which the cough or tightness of the chest was trifling. The ratio would be altered considerably if these minor cases were taken into account.

Nature of operation: The longer operations showed the highest incidence and also those in which the peritoneal cavity was opened, for whereas 35 per cent. of cases were abdominal, 75 per cent. of chest complications occurred in abdominal cases. Operations with unfavourable prognosis in respect of complications were: umbilical herniae in stout patients, partial gastrectomy, and prostatectomy.

Length of operation: The average length of administration in these 56 cases was forty-seven minutes.

Sex: Male, 32; female, 24.

Age: An unduly high figure was noticeable for the decade 61 to 70 years.

Time of year: 26 occurred in the warm and 30 in the cold weather.

Condition of patient: The results here were interesting, for it appeared that of the 56 cases, 4 occurred in the winter of 1919, when there was much bronchitis and influenzal pneumonia about. 17 were coughing or had bronchitis or a cold or were asthmatic at the time of operation, or had had pneumonia a little time before. In addition, 9 were in poor condition due to alcohol, jaundice, debility, etc. Of the 24 pneumonia cases 10 had definite chest trouble, while 2 of these had had previous pneumonia. Ten of the pneumonia cases died, and of these 9 died from the lung condition; in other words, 9 out of 4,180, or 0.215 per cent. Of these 9 deaths he believed that 4 were due to the anaesthetic mainly. One had had a spinal anaesthetic, and another had only been given gas and oxygen.

He believed that the following conclusions were justifiable: (1) A most important factor in obtaining a good recovery was the judicious choice of the agent and method used. (2) Any method of giving ether which involved rebreathing or caused deep breathing at any stage was to be avoided, since prolonged panting, coupled often with previous morphinization, tends to leave the patient in a torpid state, almost apnoeic, and liable so to infection of the lung. For this reason, after using it for a year in all cases, he had now given up prolonged administration of gas and oxygen except in those cases in which he had reason to expect that no ether would have to be added. The source of ether in all the cases analysed was his "bomb" apparatus.

Dr. H. Pinto-Leite (London) stated that as the result of his experience in hospital practice he had come to the conclusion that sufficient attention was not paid to conditions of oral sepsis prior to operation. The services of the dental surgeon should be requisitioned in ordinary cases prior to operation and not, as was so frequently the case, only after operation. He also mentioned a case from his practice which ended fatally after the administration of rectal oil-ether given in the usually recommended dosage and by the usual method. The patient remained comatose after operation, and eventually died in bed some six hours later. No *post-mortem* examination could be obtained, so that the exact cause of death was not elicited. He was inclined to think that this rapid death was probably due to cardiac failure from shock rather than to a broncho-pulmonary condition. The operation had been undertaken for the excision of a lupoid ulcer of the face. Haemorrhage had been severe but not markedly excessive, and the patient had been in an anaemic and debilitated condition for some considerable time.

Dr. H. P. Fairlie (Glasgow), commenting on the previous speaker's conclusions in the case cited by him, considered that the rapidity of the onset of serious symptoms in this case, and its ultimate fatal conclusion in such a short time, did not rule out oedema of the lungs. He quoted a case of intravenous ether administration to a lad of 15 for hernia, in which 1½ pints of saline solution containing 5 per cent. ether

was administered. Within one hour after the administration had ceased he was called to see the patient, who was gravely ill with all the symptoms of oedema of the lungs—expectoration of frothy mucus in large quantity, laboured breathing, and intense cyanosis. The condition remained so for four to five hours and then began to clear up in response to free bleeding and continuous administration of oxygen.

Dr. W. Barras (Glasgow) submitted the results of 1,081 anaesthesias on male adults who had served in the army. Fallacies due to sex and age were thus omitted. The vast majority were heavy smokers and many were used to liberal supplies of alcohol. In most cases the mouth and teeth showed evidence of gross sepsis and a large number gave a history of treatment for previous lung affections. The patients were anaesthetized in a war-time structure which compared unfavourably with the usual civil hospital. Each was given 1 100 grain atropine and 1 6 grain morphine about thirty minutes prior to operation: induction was by C.E. mixture followed by warm ether vapour from a Shipway's apparatus. Oxygen was frequently given in addition. In the series 386, or 35 per cent., had had previous chest trouble, whereas only 40, or 3.7 per cent., developed any broncho-pulmonary complication after operation. The morbidity rate was 3.7 per cent., as follows: bronchitis 36 cases (3.3 per cent.), pleurisy 2 cases (0.2 per cent.), pneumonia 2 cases (0.2 per cent.). The mortality rate was *nil*. There were no cases of oedema, embolus, infarction, or abscess formation. Dividing the operations into groups, there were 52 head cases, of which 32 were for bone grafting, the rest for removal of foreign bodies, painful scars, etc. One case of pleurisy occurred in this group, the pleurisy occurring in the side from which a rib had been removed to form a graft. The average duration of anaesthesia was forty-five minutes. In the group for nerve sutures and repairs, 172 cases were dealt with, the anaesthetic average being thirty-five minutes. Bronchitis occurred in 4 cases. In the groups for bone grafting, plating, etc., 77 cases showed 5 cases of bronchitis after an average anaesthetic duration of eighty minutes. The abdominal group showed 63 cases with forty-five minutes' average duration of anaesthesia, resulting in 6 cases of bronchitis, 1 of pleurisy, and 1 of pneumonia; the pleurisy case suffered from subdiaphragmatic and liver abscesses. A miscellaneous group of 717 cases with an anaesthetic duration averaging forty minutes yielded 21 cases of bronchitis and 1 case of pleurisy and pneumonia. The latter case followed removal of ribs to facilitate drainage of a chronic empyema. The most striking feature of the statistics was the heavy incidence of complications in the abdominal group out of such a low morbidity rate.

This he attributed to several apparently trivial points—for instance, pain on coughing, dorsal decubitis with tendency to hypostatic congestion as a result, limited diaphragmatic movement resulting from pain and bandaging, with lessened pulmonary ventilation, and lastly, morphine and atropine exhibited freely after operation, reducing cough and favouring accumulation of secretion. He quoted a communication to the British Medical Journal (June 10th, 1922) from Mr. D. P. D. Wilkie of Edinburgh on the frequency of lung complications in persons suffering from inflammatory affections of the gall bladder and ducts, which would probably have been attributed to the anaesthetic, especially if ether had been used, had not a careful examination been made prior to operation. In conclusion, he stated that he believed "aspiration pneumonia" was an extremely rare sequela resulting from sucking gross septic matter into the air passages. His view was supported by his figures when it was remembered that most of his cases presented gross oral sepsis. He doubted whether chemical or mechanical irritation from anaesthetic vapours played much part in the etiology of post-anaesthetic complications. He believed that many factors were at work simultaneously, and that the anaesthetic vapour favoured complications by reducing the opsonic index of the blood, with consequent growth and multiplication of the causal organisms present in 60 per cent. of normal throats.

Dr. W. Stirk Adams (Birmingham), speaking as a member of the house staff of the Birmingham General Hospital, said that his work last winter in the general surgical wards brought him into close contact with the clinical side of the question. His limited experience led him to suspect that many cases of post-operative pneumonia were really cases of lung collapse, as in the course of six months out of 12 severe unexpected post-anaesthetic lung complications, 3 were cases of massive collapse, and in 3 others this condition was strongly suspected but could not be proved. His first case of this nature, a very typical one, was the one of G. W., a healthy man, aged 20, who had a radical cure for right inguinal hernia performed. Thirty-six hours later he woke from sleep distressed and coughing, and from his general condition, and physical signs in the right base, lobar pneumonia was diagnosed, but to the speaker's surprise it was later established that a massive collapse of the lower lobe of the right lung had taken place. In collecting statistics of chest complications he found that the only reliable records were the *post-mortem* reports and the records of pulse respiration and temperature, especially when taken four hourly during the critical period. Both in preventing and treating these cases he would suggest the extended use of atropine after anaesthesia, especially in the recovery stage where there was an excess of bronchial secretion. In this connexion the following case, in which 1 20 grain of atropine sulphate was given in the course of fourteen hours, seems worthy of mention. G. M., a male, aged 17, previously healthy, was operated upon for perforative appendicitis. Within twelve hours of operation he had signs of severe bronchitis, and four hours later was cyanosed with severe dyspnoea, and a respiratory rate of 44 a minute. Atropine, 1 100 grain, and oxygen were administered and temporary relief obtained, but three hours later his records were: temperature 104°, pulse rate 168, respirations 44; his condition seemed hopeless. The atropine was repeated, and again at further intervals, the fifth dose being given thirty hours after operation, after which he steadily improved and made an uneventful recovery. At no period were signs of atropine poisoning present nor were any signs of consolidation found in the lungs then or later. The speaker wished to thank Mr. Seymour Barling for permission to publish the notes of the cases cited.

DIFFERENT EFFECTS PRODUCED BY EXPOSING TISSUES TO VARIOUS CONCENTRATIONS OF ANAESTHETIC VAPOUR.

BY

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My excuse for addressing you is that I feel that, although remarkable improvements have been made in anaesthesia during the past twenty years, we can hardly claim that the ideal drug or method of administration has as yet been discovered. What form such an ideal anaesthetic, if it ever arrives, will take it seems impossible to predict; but whether a gas, an electric current, or a hypodermic injection, it will have to be so innocuous and so simple to administer that the personal factor can be eliminated and the skilled administrator dispensed with. The surgeon, in fact, will act as his own anaesthetist, and instead of pneumonia and bronchitis, pulmonary embolism and infarct will alone exercise his mind. The most likely place in which such an invention might originate is in one of the scientific departments of a university, but there seems to be a danger that such a discovery, if made, might be lost sight of owing to a want of interdepartmental co-operation.

The study of anaesthesia has been shown by Claude Bernard[1] to be within the province of all engaged in work on living organisms, since all such organisms are susceptible to anaesthesia, and the subject may therefore justly claim the attention of the physiologist, chemist, biochemist, zoologist, botanist, and physicist. As a result of the interchange of knowledge, we have seen magnesium sulphate, originally used by biologists for anaesthetizing marine animals, employed by Meltzer for producing spinal analgesia, and subsequently by others in synergic anaesthesia. Chloroform was suggested by a chemist, and, because its value was recognized, adopted at once. Nitrous oxide was suggested by Humphry Davy and neglected for fifty years for want of suitable investigators. This oblivion ought surely to be made impossible. Again, we have Vernet pointing out the close association which exists between certain electric phenomena and anaesthesia, and one wonders whether Le Duc's[2] electric anaesthesia might not be rendered practicable if scientific knowledge were brought to bear on the technique.

As to whether experiments with anaesthetics on lower organisms have any bearing upon our own work or teaching, it may be claimed that there are many factors common to

both cases. For instance, as correct dosage is of paramount importance in our case, so in the case of some of the lower organisms there is only a very narrow margin between the concentrations necessary to produce a reversible arrest of functions on the one hand, and to cause an irreversible arrest, or death, on the other. As an example, the chlamydomonas, a free-swimming vegetable cell, may be taken; 0.1 per cent. solution of chloroform stops movement, and after one minute in contact causes death, whereas 0.8 per cent. ether solution stops movements and recovery of most takes place after five minutes' contact; ether therefore proves more reversible than chloroform. My experiments were interfered with by the swarming of the chlamydomonas coming to an end. This organism was used in Harvey's[5] experiments.

There is with most organisms a wonderful uniformity in the way their functions are in turn stimulated, retarded, arrested, and destroyed by increasing concentrations of ether or chloroform, and my few experiments have suggested a greater reversibility with ether than with chloroform. Stimulation is difficult to explain and to reconcile with theories as to the way in which anaesthetics act. I have failed to elicit a stimulation stage in the anaesthetizing of yeasts and seeds, but one significant direction in which stimulation can be shown to occur is in phagocytosis, as noted by Hamburger.[3] In some opsonic index counts made for me some years ago, before and after ether anaesthesia had been induced, there was increase in the latter case varying from 0.2 to 0.4; this was also the case in an opsonic index count which a pathologist kindly made for me in an etherized patient recently. If small doses of ether can be shown to raise the patient's resistance to such organisms as the tubercle bacillus, we may find some justification for the employment of ether as a curative agent in phthisis as suggested by Dr. Hodgson[4] in 1909.

Clinically we may not uncommonly see "chesty" conditions improve after operation, the credit being attributed, generally with justice, to the surgical procedure, but in what measure our anaesthetic should share in the credit it is difficult to say. The fact that practically every sort of living tissue is susceptible to the action of anaesthetics must make it difficult for scientific investigators to choose the most profitable point at which to attack this mysterious subject. But the more one considers the results of researches in anaesthesia, the more one realizes that our present drugs, if used in high concentration or over prolonged periods of time, produce a toxic effect and tend to depress vitality to such an extent that it is our bounden duty to make an art of employing the minimal dosage which is compatible with the surgery in hand. The dosage we can control, and the surgeon can be relied upon to limit the time of exposure. Complete reversibility is our first care, and the drug, or method, which offers us the widest interval between reversible and irreversible arrest of activity in our patient is the anaesthetic of choice.

It is in working along some such lines as these that I think our lay colleagues may most likely help us in our search for an ideal. Many experiments on lower organisms suggest that chloroform is more toxic than ether. For example, ciliary movement of the buccal membrane of the frog recovers more quickly after ether than after chloroform. In free-swimming protozoa which move by cilia the cessation of movement caused by ether is often temporary, whereas that produced by chloroform is generally permanent and accompanied by dissolution of the organism with rupture of the cell wall. This destructive effect of chloroform and ether upon plasm membrane is seen also in haemolysis of blood and in prevention of osmosis in the dandelion stem, or by loss of colour by beetroot when placed in water after being exposed to ether or chloroform.

I do not propose to tire you with details of experiments and accounts of failures, but I should like to suggest that regular and exhaustive research ought to be undertaken with a view to finding some innocuous and yet efficient drug or method, and that data gathered in experiments on lower organisms may be of great help in such research, which must be undertaken, not by tired anaesthetists in their recreation time, but by energetic scientists in their working hours.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A COMPLICATED CASE OF INTUSSUSCEPTION.

Acute abdominal conditions in young children sometimes present very great difficulties in diagnosis, objective symptoms only being available. The following case illustrates the ease with which serious mistakes may be made.

A male child, aged 9 months, was seen at 3 a.m., help being sought by the parents because the patient seemed "very poorly" and unable to micturate. Examination revealed a large inguinal hernia together with a tight prepuce. The child looked ill and had a quickened pulse; the temperature was not raised and there had been no vomiting. Some blood had been noticed in the stools. The hernia was readily reduced by manipulation, and as a temporary measure the prepuce was stretched. Though it appeared that a sufficient reason had been found to account for the child's condition an uneasy feeling remained that this was not all, and the possibility of an intussusception could not be dismissed. When seen again a few hours later there was no improvement in the general condition; he appeared to be suffering from definite colicky pain and refused his food.

While we were discussing the case he passed a blood-stained stool, which to our minds settled the diagnosis. Immediate operation was decided upon. No tumour could be felt through the abdominal wall or on rectal examination even when the child was under the anaesthetic, nor could any emptiness be detected in the right iliac fossa.

On opening the abdomen a well-marked ileo-caecal intussusception was found and readily reduced. Complete recovery followed.

The question occurred to us whether the hernia had anything to do with the causation of the intussusception by setting up irregular peristalsis, etc.

Noël Herbert, L.R.C.P. and S.I.
F. G. Norbury, F.R.F.P.S.G.

Chester.

TERMINAL HYPERPYREXIA.

The following note of an unusually high temperature, well authenticated, may be of sufficient interest to be recorded in the Journal.

The patient was a man, aged 27, discharged from the army with hysteria and otitis media. There was a history of fairly frequent fits, hysterical in character, since November, 1919; also of otorrhoea intermittently since that date. He was admitted to hospital on August 10th, 1922, in a poor general condition with left otorrhoea. The region behind the left ear was red and tender, and fomentations were ordered; after this the condition subsided somewhat. During his stay in hospital the patient had about half a dozen hysterical fits. A radical mastoid operation was performed on September 27th. Two days later definite signs of cerebral abscess appeared, and despite all efforts death ensued the next day.

The interesting point in the case is the unusually high temperature registered on the last day of life:—6 a.m.: Pulse 68; axillary temperature 101.2° F. 7.30 a.m.: Pulse 100; axillary temperature 101.4° F. 10 a.m.: Pulse uncountable; axillary temperature 108.6° F., the latter temperature being maintained to the end, fifteen minutes later.

There was no doubt about the temperature, different thermometers being employed and the temperature readings taken personally. As these readings were taken in the axilla it is probable that the mouth and rectal temperatures were near 110° F.

A. Massey, M.B., D.P.H.

This high temperature of 108.6° F. in the axilla was confirmed by me at the time with my own thermometer.

Leeds. H. S. Carter, M.D.

In December, 1921, there were 47 lepers in Sardinia, aged from 17 to 72, 24 of whom were males and 23 females. Eight were of the tubercular variety, 26 of the nervous, and 13 of the mixed.

A special course in orthopaedics will be given by Dr. Calot from January 2nd to 22nd, 1923, at his clinic, 69, Quai d'Orsay, Paris. The course will include such instruction in orthopaedics as is indispensable to medical practitioners (on congenital dislocation of the hip, infantile paralysis, scoliosis, etc.), on the treatment of non-pulmonary tuberculosis, and on the practical treatment of fractures. Instruction will be given not only in French but in English and in Spanish. The fee is 150 francs; further information may be obtained from Dr. Colleu, Clinique-Calot, 69, Quai d'Orsay, Paris.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.

A meeting of the Willesden Division of the British Medical Association was held on October 18th, with Dr. Skene in the chair, when a paper was read by Mr. F. D. Saner.

The Chronic Abdomen.

Mr. Saner said that his object was to give a survey of some of the chronic disorders of digestion associated with abdominal pain. Although in the diagnosis and technique of treatment of such cases much progress had been made, there was still a marked divergence of opinion on the possible fundamental pathology, on which treatment must primarily depend, and also on the meaning of investigation results and the operative findings in the abdomen. Roughly, this large group of cases fell into three groups, as estimated by the symptoms, *x*-ray, chemical, and operative findings: Class 1, in which the symptoms were mainly abdominal pain or discomfort, erratic and irregular in type, and in which no gross local lesion was discoverable. Class 2, in which a definite local lesion—for example, a gastric or duodenal ulcer, cholecystitis with or without gall stones, etc.—was present. Class 3, in which the symptoms were largely abdominal—namely, "indigestion" and "constipation"—but in addition marked changes were shown in the nervous and endocrine systems, with general signs of auto-intoxication.

In Class 1 the main symptoms were irregular abdominal pain, more or less associated with or excited by food, gradual in onset, but rarely with any direct causative factor. The symptoms were associated with a low position of the stomach and large bowel, with spasm or delay in sections of the tract, frequently with a mobile ascending colon and bands or kinks at certain points. The relation of those symptoms to the appendix was then considered; although the appendix was frequently diseased, that was only one among further changes in the intestinal tract. In such cases removal of the appendix was a sound procedure, as the foundations were laid for an acute process, but it was a limited measure. A further mechanical cause was discussed in the drag due to the dependent position of the stomach and intestines with special stress at certain fixed points; this drag, accentuated, perhaps, by external causes, produced neuro-muscular changes in the intestinal wall, with consequent hyperexcitability or inertia. A large part was played in the production of this drag by the large bowel as a whole or by a mobile ascending colon with its pull on the abnormal mesentery. The relative value of surgical treatment in these conditions was also discussed.

Class 2 presented a definite gross lesion, probably partly infective or toxic, partly mechanical in origin, and the point was raised as to whether these cases were a further step in the evolution of Class 1 or a collateral manifestation of the same basic pathology. It was characterized by the typical pain, regular with periods of intermission, as contrasted with the pain of Class 1. In attempting to explain the causation of a chronic ulcer, the fact that almost always identical areas were involved pointed to a certain specificity on the part of the infective agent. With the object of defining the source of the infective factor, reference was made (1) to dental sepsis in general, (2) to the appendix, (3) to the end-results of intestinal stasis or altered bacteriology of the tract, and (4) to the action of infarction emboli of bacteria. The main difficulty in accepting these suggestions seemed to be the disproportion of cause and effect. In searching for a common predisposing cause, it was seen that the ulcer-bearing area corresponded to the area of constant mechanical strain. The operative treatment of the gross local lesion was discussed, and stress was laid on the importance of after-treatment.

The cases in Class 3 were grouped into various special departments according to their predominant symptom complexes. The main abdominal symptoms were chiefly "chronic indigestion" and "constipation," while there was a general failure in the endocrine and nervous systems. The whole was regarded as a "deficiency" or "degenerative" disease, and, as a cause, the possibilities were discussed of chronic auto-intoxication from various sources, the heritage of tissues unable to deal with the stress of life in general, and the effects of toxins inherited from the parents.

In the discussion which followed the paper, Dr. Skene, Dr. Anderson Smith, Dr. Traylen, and others took part, and Mr. Saner was afterwards accorded a hearty vote of thanks.

Reports of Societies.

THE PROGRESS OF SURGERY.

At the meeting of the Section of Surgery of the Royal Society of Medicine on November 1st Mr. James Berry, the incoming President, delivered an address on the progress of surgery, which was followed by a discussion.

Mr. Berry said that it had fallen to his lot to witness during his surgical life the most wonderful progress that surgery had ever made in so short a time. As a student he just saw the termination of the pre-antiseptic days. Much of the progress which had been made in surgery was due to the application first of antiseptic and later of aseptic principles to the treatment of operation wounds. In his very early experience he remembered surgeons who wore frock coats at operations, and the more dirty and blood-splashed the coat the prouder its wearer seemed to be. He had seen a hospital surgeon stop in the middle of an operation to scratch his head; he had seen a surgeon put his hand in his pocket, take out his glasses, put them on, and continue the operation; he had seen a surgeon divide a ligature with his teeth when the scissors were not handy. It was not necessary to embark upon any eulogy of modern surgical triumphs, but he thought there was some danger to-day lest the ordinary surgeon be over-impressed by the brilliant results of a few outstanding masters, and imagine that he could do anything that they did. An extensive operation upon the brain, which might be a brilliant success in the hands of a Harvey Cushing, might result in terrible disaster in the hands of a surgeon not specially trained along this line, even though the same method of operation be followed in each case. At one period in his own surgical career he had the good fortune to be surgical registrar for five years at a large hospital, and to make large numbers of *post-mortem* examinations. The young surgeon could have no better training than that which was obtainable in the post of registrar if it involved, as it ought to do, the clinical observation of patients in the wards, the witnessing of all important operations, and the doing of *post-mortem* examinations. The modern practice of entrusting surgical necropsies to a non-practising pathologist was in some respects a retrograde step. Only assiduous attendance at hospitals enabled the young surgeon to acquire experience, especially in those operations which were undertaken when sepsis was already present, as in acute suppurative conditions of the abdomen. It was not so much a mere grounding in technique that was needed as the experience and knowledge of what to do and what not to do. His own opinion was that operations for appendicitis were performed rather too frequently at the present day, but he knew of no rule as to when such an operation should be undertaken, and each case of appendicitis must be dealt with on its merits, according to the judgement of the operator. With peritonitis he thought it was generally useless to attempt thorough cleansing of the peritoneal cavity, and he described cases in support of this view. The peritoneum itself had enormous powers of repair; it should be interfered with as little as possible. He was reminded of what one of his former teachers, the present President of the Royal College of Surgeons, used to say: "Think, before you do an operation, what is likely to be the course of the disease if the case is *not* operated on, and what is likely to be the effect of your operation." Cases were often undertaken without serious consideration of this important point. It was frequently stated that the modern custom of operating freely for acute appendicitis had resulted in great saving of life. If this was so, surely deaths from appendicitis would be far less frequent now than they used to be unless one could assume, as some boldly did, that the disease itself had become more frequent. Of this there was no clear evidence. He had compiled from the Registrar-General's returns the figures for the deaths from appendicitis and perityphlitis in England and Wales for certain periods as follows:

Deaths from Appendicitis and Perityphlitis.

1901–05	8,291
1906–10	10,886
1911–15	12,740
1916–20	12,418

These statistics, however, needed correction by reference to other conditions, among which, especially in the early periods,

appendicitis might have been ranked, and to the totals for all diseases of the digestive system:

Total Deaths (England and Wales).

	Peritonitis (non-puerperal).	Intestinal Obstruction.	Gastric Ulcer.	All Diseases of the Digestive System.
1901–05 ...	5,460	12,759	8,386	145,350
1906–10 ...	3,424	12,980	8,786	138,334
1911–15 ...	2,740	12,632	9,374	139,759
1916–20 ...	2,155	12,977	9,650	123,101

Mere statistics, however, were apt to be misleading. He brought forward all these figures rather as food for reflection than with the intention of drawing any definite conclusions from them.

No doubt the war (Mr. Berry continued) in many directions produced great advances in surgery, but in one respect it brought a disadvantage. Large and dangerous operations were now being undertaken by many practitioners whose chief experience had been of military injuries, inflicted for the most part upon young and healthy men. Such experience did not give the necessary qualification for dealing with, say, tumours of all kinds, diseases of the stomach, colon, prostate, and so on. There was too much inclination to imagine that operative surgery was a very easy matter, and that the young surgeon had only to exercise surgical cleanliness and then could proceed to do with impunity anything that he had seen his seniors do. Later on he was likely to find that in actual practice this was not so easy. Mr. Berry gave instances, some tragic and others amusing, of the mistakes he had seen made by men who strayed into fields of practice which did not belong to them. One useful reflection was that they became wise through seeing the errors of their predecessors. His own favourite definition of a good surgeon was "one who always knows when to put in and when to take out a drainage tube." In conclusion he quoted a description of a surgeon recently written by Sir Frederick Treves, who likened the knowledge which the surgeon must have of the human body to the knowledge which the forester must have of his wood.

Sir John Bland-Sutton said he had been specially interested in what Mr. Berry said about the inexperienced man in general practice undertaking operations which sometimes caused surgeons of experience to quail. Forty years ago there was not a book entirely devoted to the subject of operations in general or to special surgery. To-day such books were plentiful, and commanded a ready sale, but, of course, it was a poor way of learning how to perform radical operations by studying them from a book, no matter how well written or lavishly illustrated. The modern treatment of wounds had changed the qualities expected of a good surgeon. In pre-antiseptic days the qualities of a good surgeon were a thorough knowledge of human anatomy, courage, and manual dexterity. Since the introduction of antiseptic and aseptic methods it was a truism that, although the brilliant surgeon might attain fairly good results, he was often beaten by a slow and sometimes clumsy colleague because the latter was more careful with his asepsis. It had been said that the man who now practised as a surgeon might achieve great success even if he had a shaky hand, but that the man with the shaky mind was hopeless. During the last twenty-five years the number of operations done in hospitals had increased fourfold, and the surgical staffs of hospitals had also largely been increased. The amount of operating done in a hospital was so great that the surgeon found it difficult to do all the operations which came to him in his wards, and if he had a capable house-surgeon he allotted a fair number of the lesser operations to him. There were more house-surgeons training in London than could possibly receive appointments on the staffs of hospitals either in London or the provinces, and many of them would go into general practice, where they naturally wished to do such operations as were within their power. It was well understood that a successful operation upon a popular person might make a great reputation, but, on the other hand, in a small community an unsuccessful operation upon a poor person might ruin a practice. In small towns or groups of towns a team arrangement was coming into being; one member of the team would be a good anaesthetist, another would have surgical proclivities, a third would be well trained in gynaecology, and a fourth in laryngology; and with the help of a well-trained nurse a nursing home would be started in which these men would work together and sometimes make a good living by doing all the surgery without calling in any outsiders. But such practitioners must remember that when they ventured upon an unusual operation, or even an operation which they thought straightforward, they might find themselves faced with difficulties which would try the boldest and most experienced surgeon. Unless a man was going to do a certain amount of minor surgery he might find it rather difficult to make ends meet, but he should keep well in mind the warning that many minor operations ended in major disasters, and that this might happen not only to beginners but to surgeons of experience and men of renown.

Sir W. Arbuthnot Lane said that while occasional surgical failures might not be noticed in London, it was different in smaller places, where they might seriously affect a man's practice. A famous American surgeon once said to him that he was very careful about his mortality, because "if I send one of my patients home in a box to his particular place, that place becomes a dry spot for me." It was possibly a good thing to see an operation badly or imperfectly performed. A good deal more was learnt from such an operation than from one that was perfectly done. Once when some Americans surgeons were over here they visited a hospital, and one of them was seen to be taking notes furiously. His colleagues, who did not think much of the operation, asked him why he was taking such careful notes, and he replied, "I was putting down all the things one should not do." The general practitioner in this country laboured under some disadvantage as compared with his American colleague. An American doctor, after qualification, put his money into travel. He went round and saw the best surgeons in the world—Paris, Vienna, Berlin, and his own Rochester. The other day the speaker was in Germany, talking to some American surgeons, and trying to get them to come to England. "But," they said, "we live for next to nothing here, and we get intensive courses, beginning at seven in the morning and going straight on until five. Will your people get up before seven o'clock in the morning to teach us?" And, of course, when the American doctor went back home there was a description in his local paper of the places he had been to, his appreciation of the men he had seen, and perhaps, also, their appreciation of him! Nevertheless, the speaker fancied that the English surgeon and general practitioner, however difficult his process of evolution, would come out in the end equal to anybody else in the world.

Professor A. W. Sheen said that he had been hoping to hear from Mr. Berry of operations which had been in great vogue and were now out of date. Such operations when they were introduced were always backed up in the periodicals by a series of statistics, how obtained he did not know, and yet afterwards the operation went entirely out of vogue. He passed on to speak of the value of the follow-up system in estimating surgical results—not merely the results from the point of view of the immediate danger of the operation, but from that of any permanent damage or impairment which might result. In saying this he was referring to such quite common operations as those for hernia, hydrocele, haemorrhoids, varicose veins, and so forth. There were often little troubles or disabilities which resulted owing to an imperfect operation or to some damage which was done and need not have been done at the time it was performed. As to the need for training surgeons, he was inclined to think that this was not sufficiently appreciated in London, or in big provincial towns, where the highest surgical skill was always available. But men went out from the schools of this country into all the world, and had to perform operations which there was no one else to do. In India he had seen something of the work of the Indian Medical Service, and he was filled with admiration for the way in which its members tackled, and tackled well, all sorts of jobs. But he still felt that for the men who went out into distant portions of the empire more ought to be done in the way of special training for the great amount of surgical work which called for their attention. He appealed also to writers of textbooks to describe operations as far as possible in such a way that a person reading the description could perform the operation.

Sir D'Arcy Power said that so far as he had had experience of the surgical work of general practitioners he had no fault to find with the way they did it, but he thought they were not always as careful as they should be in making their diagnosis beforehand. Dr. F. W. Collingwood thought that there was not sufficient trouble taken in this country to

furnish opportunities for practical experience in surgery to men who would go out as general practitioners and would of necessity be called upon in emergency to do operations when to call in a surgical specialist was out of the question.

THE ANAESTHETIZATION OF PATIENTS FOR CLASSICAL CAESAREAN SECTION.

AT the meeting of the Section of Anaesthetics, Royal Society of Medicine, held on November 3rd, Dr. HERBERT SPENCER opened a discussion on "The anaesthetization of patients for the classical Caesarean section." His paper is printed in full at page 905.

The President, Dr. A. L. FLEMMING, read letters contributing to the discussion from Dr. Miles Phillips, who stated that for some years he had used ether and had had no trouble from asphyxia of the child, whereas when he used chloroform the trouble was that the child would not cry; and from Dr. Goodman Levy, who referred to the immunity from chloroform syncope of women in labour—an immunity with which, he believed, the peculiar temperament of the pregnant woman had something to do.

Dr. LIONEL SMITH raised the question whether deep anaesthesia throughout labour was really harmful to the child. He had seen hundreds of ordinary labours under deep anaesthesia, and the children, often after prolonged manipulation, had been born alive and able to breathe. It was otherwise very often with the child delivered by Caesarean section, because that child had not gone through the necessary process which fitted it for life in the open. Dr. A. B. KINGSFORD agreed with Dr. Spencer's method; he had done about thirty cases by this method, and they had given him no anxiety—the child seemed to breathe almost immediately. Dr. H. W. FEATHERSTONE supported the open-ether method, regarding this as preferable for the mother, and he had never failed to induce the child to breathe, though he admitted that many of the children suffered to some extent from asphyxia. With regard to the previous administration of drugs, he did not quite see why atropine should have any ill effect, though he agreed that morphine was to be avoided. His practice usually was to induce anaesthesia by means of pure ethyl chloride with the open mask, and then to carry on with ether in the ordinary way. He had carefully noted blood pressures, and had found no very great drop at any stage in the operation. Dr. E. W. GANDY said that experiments on animals, supported by evidence from observations on the human, suggested that the child *in utero* did not stand chloroform so well as ether. Dr. H. J. SHIRLEY agreed with Dr. Spencer's method, and referred to the desirability of adopting inhalation rather than spinal anaesthesia because of the importance of eliminating psychic shock. Dr. A. S. DALY, on the other hand, totally disagreed with Dr. Spencer. In his own resident days the patient upon whom a Caesarean section was done was always given chloroform, and when this was done there was the greatest difficulty in getting the babies to recover and to breathe well. But with open ether there was a great improvement in this respect: there was not the same trouble with the children. He agreed as to the objections to spinal anaesthesia, one of the difficulties of which, in the case of the pregnant woman, was to get the position in which to give the injection. Dr. F. W. LONGHURST said that his experience was that asphyxiation had to be dealt with far more frequently in ordinary deliveries, instrumental or otherwise, than in Caesarean section. Whether there was some medullary injury in these so-called normal deliveries he did not know. In ordinary Caesarean sections he had always induced or half induced anaesthesia with chloroform, and carried on with a mixture of chloroform and ether, probably adding the ether rather later when the mother was well under. He did not recall any trouble with the respiration of the child afterwards.

Dr. J. BLOMFIELD said that Dr. Spencer's experience did not tally with his own as regards the effect on the child. He asked whether Dr. Spencer had noticed anything to suggest that the effect on the child was due to ether in the respiratory passages. Was there any mucus in those passages? In his own experience of Caesarean section a mixture of chloroform and ether was given, and he had seen nothing of asphyxiated infants. Dr. E. G. BOYLE was rather surprised to hear that the children who were delivered by Caesarean section when the mother was given ether were asphyxiated, and he was curious to learn the reason why. He would have thought it safer to have given ether than to have given chloroform. He had an idea that a good many of the deaths in childbirth were due to chloroform. He gave an account of the gas and oxygen method, and of its use in Canada, where he had seen and appreciated it. Dr. W. J. MCCARDIE suggested that the method of ether administration might possibly account for the results which Dr. Spencer had mentioned, and asked whether he had found asphyxia caused more frequently by the open than by the closed method of giving ether. Dr. F. E. SHIPWAY thought it a pity that anything should be laid down as a routine method when conditions so various called for methods adaptable to each particular case. Dr. C. F. HADFIELD'S experience was that the child breathed very much better if ether rather than chloroform were given throughout. In the ordinary confinement ether was given very satisfactorily indeed. Dr. F. W. COLLINGWOOD said that he had found the effects of chloroform on the child to be such that he took to open ether, first giving twenty drops of chloroform to dull the sensibility of the mother, and then continuing with the ether.

Dr. HERBERT SPENCER, in replying to the discussion, said that if more of his obstetric colleagues had been present he would have received a larger volume of support in favour of the method he had advocated, because their experience was that children were frequently asphyxiated under the ordinary administration of ether. With chloroform administered as he administered it the child was never asphyxiated, though he agreed that the governing factor was not chloroform, but chloroform plus x—meaning by x the expert administrator. As to the previous administration of drugs, he was not very fond of atropine, though he did not know that there was any particular objection to its use. Morphine certainly should not be used, as it introduced an element of danger for the child. In reply to Dr. Blomfield, he did not think that there was any mucus in the air passages of the asphyxiated child. The child was simply poisoned by the ether given in too large quantities. He thought it quite possible that the gas and oxygen method was useful, but no one in this country had had much experience of it, and his own preference was for a quieter method, for it was very important that the patient should not strain. Altogether he was not satisfied with the discussion, because he had not been told definitely whether a patient ran any appreciable risk from having chloroform given for six minutes. It ought to be remembered that he was not advocating any prolonged administration of chloroform; some speakers, in comparing the advantages of different methods, had appeared to suppose that his method implied an indefinite chloroforming. This was not the case at all. He did not think that there was any risk, if the chloroform was administered by an expert, but if anaesthetists declared otherwise he would reconsider his position. As it was, he felt that his experience justified him in going on with his method.

Dr. C. W. DUNN of Philadelphia, in reply to a remark in Dr. Spencer's paper with regard to the employment of nurses to give anaesthetics in the United States, said that the reason for this was that at present in America there was a great shortage of doctors. The medical students now entering were only 50 per cent. of the number who entered in 1912, and yet during the last ten years the population had greatly increased. The decrease in the number of men training for medicine was due to the prolonged course—now six years, and possibly soon to be eight—necessary for obtaining a medical degree. In those circumstances it had been necessary to train nurses to give anaesthetics, but they did so under the supervision of medical men.

TREATMENT OF BONE AND JOINT TUBERCULOSIS.

THE second meeting of the Sheffield Medico-Chirurgical Society this session, with the President, Dr. RUPERT HALLAM, in the chair, was held on October 26th at the King Edward VII Hospital, Sheffield, a hospital devoted to the treatment of bone and joint tuberculosis in children. The medical superintendent, Dr. C. LEE PATTISON, demonstrated some of the cases in the hospital, and showed the methods he adopted and the apparatus he used in the treatment of various types of joint and bone tuberculosis; the special plaster room was visited. Dr. Lee Pattison then read a paper on "The local treatment of acute tuberculous disease of the hip-joint and vertebrae." He laid emphasis on the fact that tuberculous joint disease was merely one local manifestation of a general disease, and deprecated the radical measures that had been adopted formerly in the treatment of these

conditions. He was an ardent upholder of the conservative methods as laid down by Ménard, Calvé, and Calot in France and by Sir Henry Gauvain in this country. Complete immobilization and the prevention of muscular spasm were the essentials in treatment, and on these attention should be concentrated. In the hip-joint, in addition to extension in the axis of the limb, Dr. Pattison had found lateral extension in the axis of the femoral neck very useful. When the spasm of the muscles had diminished and the limb was in good position and there was no sign of abscess formation immobilization was maintained best by fixation of the limb in a plaster-of-Paris splint. In the vertebrae, tissue destruction and the effects of muscular spasm in producing a kyphotic deformity might be minimized by fixing the patient in a recumbent position with a pad exactly under the spinous processes of the affected vertebrae. Aids in the carrying out of this treatment were obtained by utilizing some type of "swinging back door" or the "wheelbarrow" splints. Extensions might be fixed to the head or lower limbs if necessary. He thought that Albee's operation was justifiable in adults only where time was absolutely essential, and was definitely contraindicated in children. Abscesses should be treated by aspiration, repeated many times when necessary; the details of the technique of the operation were described and the advantages of the various modifying liquids enumerated.

The President, Mr. J. B. Ferguson Wilson, Mr. E. Finch, Mr. Miles Phillips, and others took part in the discussion which followed. Dr. Lee Pattison was warmly congratulated on the results of the procedures he adopted, as was evidenced by the excellent appearance and wonderful vitality of the patients undergoing treatment.

TREATMENT OF DISSEMINATED SCLEROSIS.

The first ordinary meeting of the new session of the Liverpool Medical Institution was held on October 26th, with the President, Dr. J. Hill Abram, in the chair.

Dr. W. Johnson, in a note on drug therapy in disseminated sclerosis, dwelt on the necessity of treatment in the early stage of the disease, before the nervous system had become riddled with plaques of sclerosis. He reviewed briefly the symptoms which usually occur first, and said that frequently these symptoms were regarded as hysterical. A not uncommon history was that of a slight pyrexial attack followed by vague paresis, paraesthesia, temporary diplopia, or misty vision. Subsequently marked improvement occurred, until a new attack followed with a fresh exacerbation of symptoms. Such a series of remissions in the course of a progressive nervous disorder was almost diagnostic of disseminated sclerosis. Continuing, Dr. Johnson stated that during the past two years ten early cases of the disease had been treated with intravenous injections of novarsenobillon. An initial course of six weekly injections (0.15, 0.3, 0.45, 0.45, 0.6, and 0.6 gram) was given. This was repeated six months later. In between the two courses, and subsequently for a year, liquor arsenicalis was given by the mouth. Such a line of treatment has seemed to stay the progress of the disease, but observation over a longer period is necessary before any conclusions can be drawn. Dr. Johnson added that the first suggestion for this form of treatment came from Dr. Farquhar Buzzard.

Dr. T. R. Glynn remarked that it was satisfactory to learn that there was a prospect of doing something by treatment for that hopeless disease disseminated sclerosis. Unfortunately, it appeared that treatment to be successful must be adopted in the early febrile stage. The recognition of the affection in that stage must be difficult and depended on the ability of the general practitioner rather than on that of the specialist or physician, who generally meet with disseminated sclerosis when more advanced.

Dr. John Owen referred to the importance of and difficulties attending early diagnosis. He read a communication from Dr. Ransome, who was unable to attend the meeting. Dr. Ransome had treated 26 cases of disseminated sclerosis of a standing ranging from two to five years and over. He employed silver salvarsan intravenously—a total of 664 injections. His results were as follows: 4 were much improved, 8 no change, 2 died of intercurrent disease, 1 died of cancer. His course of treatment extended over two year.

Dr. A. Douglas Bigland stated that he had not seen the early cases described by Dr. Johnson. The only early symptoms usually referred to by patients were temporary diplopia, temporary loss of vision, and precipitate micturition. He agreed that early diagnosis was of the utmost importance and emphasized the value of spinal fluid examinations. A metic or parctic curve with Lange's gold-sol test, together with a negative Wassermann reaction, was very suggestive of disseminated sclerosis.

Sacro-iliac Tuberculosis.

Mr. H. C. W. Nuttall read a paper on tuberculosis of the sacro-iliac joint, in which he reviewed the literature of the subject and gave records of nine cases, for eight of which he was indebted to Professor Thelwall Thomas. Mr. Nuttall considered that the treatment advised in most textbooks was often not radical enough, and that Picqué's operation was suitable in many cases. He discussed the anatomy and pathology of the joint, and expressed the view that this supported the necessity for more radical methods. He reviewed the clinical facts and the differential diagnosis of the condition, and described in detail M. Picqué's technique, illustrating this by lantern slides.

Mr. T. P. McMurray stated that in his opinion the operation of Picqué was a great advance on those previously employed and led to a much greater chance of cure. He had operated on six of these cases by a modification of this method, which he thought was a decided improvement in method. This modification consisted in the turning over of a hinged bone flap from the back of the ilium across the gap left after excision of the joint. This led to bony union and increased the stability of the pelvis.

Recent Work in Palaeontology.

Dr. J. C. M. Given, in a paper on recent discoveries in palaeontology, gave an account of some of the recent work that has been done in human palaeontology. He discussed the difficulties felt by some authorities in the reconstructing of Piltdown man, especially the combination of the marked chimpanzee-like inferior maxilla with a human cranium. He then described the Rhodesian skull, and illustrated by lantern slides. He remarked that the geological evidence did not point to extreme antiquity, but its form was very primitive and ape-like, and it presented in a marked degree some of the characters of the Neanderthal race. He then pointed out the supposed evidence of mastoid disease and the fact that this was denied by Elliot Smith to be *ante mortem*. Dr. Given concluded by discussing the Nebraska tooth, with the hypothetical new genus of homo, built on its supposed human origin, and also alluded to its importance, if authentic, as throwing light on the early origin of man in America.

INCIDENTS OF OBSTETRICAL PRACTICE.

A meeting of the North of England Obstetrical and Gynaecological Society was held at Liverpool on October 20th, with the President, Mr. Harold Clifford, in the chair.

Dr. Fletcher Shaw (Manchester) described a case of occlusion of the rectum following the administration of a simple enema.

The patient was a primigravida to whom the midwife administered a simple enema at the beginning of labour. There was some difficulty in inserting the nozzle and considerable pain was experienced as it was pushed in with force, with still greater pain when the enema was injected. Very soon afterwards the perineum became very swollen and red. At the end of twenty-four hours, when a doctor was called in, there was so much swelling that a vaginal examination could not be made, and the parts were so red that erysipelas was diagnosed. The patient was delivered in a side ward of St. Mary's Hospital, and then sent to the fever hospital with this diagnosis. She was later sent home, with the recto-vaginal septum completely sloughed away and a large sinus in the right ischio-rectal fossa. Eventually the rectum closed down to a mere band of fibrous tissue, and the patient is now condemned to a permanent colotomy opening. It seemed probable that the nozzle of the enema syringe was detained by a fold of rectal mucous membrane, and the force used in inserting it further pushed the nozzle through the mucous membrane so that part of the injection was given into the peri-anal tissues. This would account for the early swelling, the further swelling and redness being caused by infection of this area from the rectum.

Dr. Leith Murray (Liverpool) reported a case of unsuspected pregnancy. He said that several cases of unsuspected pregnancy had been recently detailed in the British Medical Journal, and, in view of its medico-legal importance, it seemed advisable to record a case of that nature which had come within his own knowledge.

He was asked to see a young married woman, aged 24, in 1920, by Dr. A. C. Ransome of Birkenhead. Twenty-nine hours previously she had been delivered of a 6½ lb. child, apparently at term. She had been happily married for three years, and during most of that

time had lived abroad, where she developed enteric fever. As a result of this acute illness she lost 3 st. in weight, but during recent months was pleased to find that she was, as she thought, picking up. Her menses had always tended to be scanty and infrequent, and there was complete cessation for some time following the enteric fever. She gave, however, a very precise history of having had a more or less monthly loss throughout the whole of her nine months of pregnancy, of such duration and quantity as to lead her to believe that she was menstruating. She had had no vomiting, had felt no movements, and had no idea whatsoever that she was pregnant. Between the seventh and eighth months she announced to her mother that her abdomen was getting very big. Her mother promptly asked her whether she were pregnant, but on hearing of these "menstrual periods," and of the total absence of any other symptoms, told the daughter there could be nothing of the kind. For a few weeks before her return to Birkenhead she had been with her husband away on holiday, bathing, dancing, and golfing. Neither of them had any objection to parenthood, and, as they were well-to-do, there was no reason why arrangements should not have been made for the baby. She and her husband arrived in Birkenhead on the 27th of a certain month to be present at a celebration given by the husband's parents, and as many other members of the family had also arrived they had to be accommodated in a boarding house. While walking thither late in the evening of the 28th of the month she complained to her husband that she had eaten something at dinner which had disagreed with her, and the following morning, as she still had pains in her abdomen, her husband advised her to stay in bed whilst he proceeded to Liverpool on business. The abdominal pains increased in severity, and at 10.30 a.m. she discovered that delivery was imminent. She was unable to attract attention and delivered herself unaided at 11 a.m. The placenta was delivered normally, but there was considerable bleeding thereafter. My presence was necessitated by rather severe lacerations of the vagina, which were leading to continuous oozing. These were sutured under an anaesthetic and healed well. The child's palate was scored in several places by the mother's nails in her attempts to expedite delivery. It was noticeable that there were very few striae on the abdomen. The patient appeared to be rather big-boned but certainly not fat. Her height was about 5 ft. 6 in. She was a well-educated and intelligent girl, and her distress at the lack of provision for her offspring was very obvious.

Dr. Leith Murray also narrated a case of simulated disease. The main interest in the case lay in the fact that a girl of 20 should have succeeded, by producing diapers artificially stained, in deceiving her mother, her doctor, and a consultant into believing that she was menstruating excessively.

She was brought to him in August, 1919, with the request that he should remove the uterus. Her periods, which began at the age of 15, were reported to be regular until she went to school at 16. Three months of amenorrhoea ensued, followed, the report went, by severe and prolonged periods ever since. For months at a time she was supposed to be only a few days free from loss in each month. She had been curetted in April, 1919, without any improvement, and had been given thyroid extract, hamamelis, calcium lactate, and ergot. On examination she proved to be a slim little girl, rather pale than otherwise, but not excessively so. She was highly neurotic, and rectal examination, which showed a normal pelvis, was only made with extreme difficulty. As she was not bleeding on the day when seen, Dr. Murray asked for a diaper to be sent to him. This was received a fortnight later, and presented an appearance remarkably like menstrual staining. There was, however, no trace of blood detectable by the benzidine test. Two other specimens of blood passed into the chamber were received within a few days, and were sent for analysis. A report was received that both specimens were similar in composition, and undoubtedly consisted of urine to which some colouring matter analogous to cochineal had been artificially added. When challenged by her mother the patient admitted having on one occasion only used cochineal from the kitchen cupboard to colour the diaper. The last Dr. Murray heard of her was that her mother considered she had been very unkindly treated by him and was endeavouring to find someone who would remove the uterus.

A number of specimens were shown by Dr. Briggs, Dr. Burns, Dr. Dougal, Dr. King, and Dr. Leith Murray.

MANCHESTER PATHOLOGICAL SOCIETY.

An ordinary meeting of the Manchester Pathological Society was held in the reading room of the Manchester Medical Society's library on Wednesday, October 18th. The retiring President, Mr. J. Howson Ray, vacated the chair, which was taken by Professor Shaw Dunn.

Dr. Dougal showed a specimen of hydrometra from a case of congenital absence of the vagina. Tuberculous salpingitis was associated with the condition. Dr. Dougal showed, further, a chorion-epithelioma of the uterus, the third that had been recognized in Manchester since 1905.

Dr. Dible showed a case of a single cancroid tumour of the small intestine. The growth, which was of the size of a large pea, occurred in the ileum and was found at necropsy in a patient dying of pernicious anaemia. The tumour was infiltrating and histologically malignant. The source of such growths, which appear to be identical with the cancroid tumour of the appendix, was discussed and the opinion expressed that the growth in this case was derived from intestinal mucosa and was analogous to the basal-celled carcinoma of the skin.

Dr. Dible also showed a case of *x*-ray epitheliomatous warts in a person who had been exposed to the Roentgen rays for twenty years. Well-marked hyperkeratotic nodules were present and also typical epithelioma. Attention was also drawn to the relative benignity of the tumour. Amputation of the affected fingers had been performed two years previously, and no recurrence had been noticed up to the present time.

Mr. Geoffrey Jefferson read a short paper on distortions of the sella turcica in non-pituitary lesions. He showed some photographs of the floor of the third ventricle in posterior fossa tumours which had led to obstruction of the cerebro-spinal fluid pathway. He was also able to show the sella from one such case where the bulging floor of the third ventricle had opened up the diaphragma sellae and compressed the pituitary body. The interpretation of erosions of the dorsum sellae in the reading of *x*-ray plates was discussed, and the findings of Baetjer and Dandy in this connexion in part confirmed. Destruction of the posterior clinoid processes and of the dorsum sellae did not, however, appear to be uniformly found in adult hydrocephalus.

Dr. Riley exhibited a specimen of sarcoma of the kidney removed from a child by Mr. H. H. Rayner. Dr. Riley referred to Mr. John Fraser's work on the renal sarcomata of infancy, and exhibited numerous sections from different parts of the tumour, demonstrating variations in histological pattern.

Mr. John Morley described a cyst which he had fortuitously discovered free in the peritoneal cavity of a middle-aged man operated upon for acute appendicitis. This cyst contained clear fluid enveloped by a tough membrane, and its origin was not very certain. It had no attachments, and the view was put forward that it was a cyst of peritoneal development.

On November 3rd a clinical meeting of the West London Medico-Chirurgical Society was held under the presidency of Dr. A. G. Wells. Medical cases were shown by Drs. Burnford, Burrell, Caplan, Pendred, Ross, and Saunders. Mr. Neil Sinclair and Mr. Simmonds showed surgical cases and Mr. Maingot showed a case for Mr. McAdam Eccles. The cases were exhibited in the new out-patient department of the West London Hospital and discussed in the post-graduate department.

The first meeting of the Hunterian Society of London was held on October 16th at Simpson's Restaurant, Cheapside, E.C. After dinner the President, Dr. Fortescue Fox, gave an address on "The breakdowns of middle life"—a summary of many years' work. Dr. Ernest Young read a paper on "The treatment of dyspepsia in necessitous patients." During the evening the following took part in the discussion: the President, Sir Bruce Porter, Dr. Sanguinetti, Dr. Young, Dr. Ross, Dr. Burnford, Dr. Ash, Dr. Langdon Brown, and Mr. Mortimer Woolf. The next meeting of the Society will be held at the Cutlers' Hall, Warwick Lane, E.C., on November 20th, when Dr. Porter Phillips will open a discussion on "The position of insanity in criminal law."

According to the sixty-sixth report of the West Kent Medico-Chirurgical Society, the 1921–22 session was very successful. The average attendance at meetings was twenty-four, and at the Purvis Oration, which was delivered in December, 1921, by Sir James Purves-Stewart, on "Respiratory disorders of nervous origin," forty members were present. It was decided that medical women, irrespective of their place of residence, should be eligible for membership. The financial position of the Society remains strong, the balance for the year being over £265. Meetings are held in the board room of the Miller Hospital, Greenwich. The president for the ensuing year is Dr. W. H. Payne, and the secretary is Dr. C. J. B. Buchan, 326, Brownhill Road, Catford, S.E.6.

The third general meeting of the Cambridge University Medical Society was held on November 1st, when Dr. Bernard Spilsbury, lecturer on morbid anatomy at St. Bartholomew's Hospital, gave an interesting and instructive lecture entitled "The criminal court and the medical witness." In concluding his lecture Dr. Spilsbury expressed the hope that he had said enough to arouse in the minds of medical students at Cambridge a good deal of enthusiasm for the subject of medical jurisprudence.

Reviews.

CLINICAL AND OPERATIVE GYNAECOLOGY.

Those who are familiar with Professor Munro Kerr's valuable book on *Operative Midwifery*—and their name must be legion—will have noted with interest and high expectation the announcement that a volume by him on *Clinical and Operative Gynaecology*[1] had been added to the list of the Oxford Medical Publications. At the outset it should be stated that the two books are not quite on the same plane. The earlier was a treatise on operative obstetrics written by an obstetrician of large experience, and it is so much thought of and so frequently quoted by his fellow specialists as to have acquired the rank of the standard British authority on the subject. The new volume is avowedly no treatise, but, according to the publishers' circular, is designed as a book to which the general practitioner can turn when faced with a gynaecological case which presents difficulties to him, or when he desires to refresh his knowledge. The clinical aspects of the subject are therefore kept uniformly to the front, and only so much anatomy, physiology, and pathology is offered as is considered essential to the proper comprehension of the clinical conditions. At the same time the book is no mere index of gynaecological treatment; rather might it be described as a presentation of the clinical knowledge of a practical teacher of ripe experience. The various points are illustrated throughout by short extracts from the author's notes of actual cases, a method which appeals to readers, and which in the present volume has been used with commendable brevity and not pushed to the point of wearisomeness.

Like "all Gaul," the volume has been divided into three parts. The first and largest is devoted to clinical gynaecology proper. Opening with a chapter of useful generalizations on the etiology, symptomatology, and principles of treatment, the author passes on to the usual summary of female pelvic anatomy. Next the examination of the patient is the subject of a full description; here five pages are occupied by a series of very small diagrams illustrating the various likely and unlikely swellings and resistances that may be found on pelvic examination. We must admire the artistic ingenuity displayed, but it is open to question whether the help the reader will derive from the diagrams justifies the space they occupy. The two succeeding chapters deal with the physiological functions of ovulation and menstruation and their disorders, and the author does not hesitate to dogmatize on points such as the cause and real significance of menstruation, which are still subjects of inquiry and speculation. The author's attitude to some of the more recent work on menstruation, as summarized, for example, in Novak's monograph, is not made evident. This chapter is followed by one on nervous disorders in relation to abdominal and pelvic disease written with characteristic ability and erudition by Dr. Ivy McKenzie, who shows himself a master of the subject and eminently qualified to expound the present state of knowledge of this highly complex relationship. Professor Bryce contributes an account of the development of the reproductive organs as a preface to the discussion of malformation.

Professor Munro Kerr then takes up the thread again in two excellent and practical chapters on displacements and injuries. With a view to simplifying the subject to the practitioner, he has deliberately departed from a strictly pathological classification of the various clinical conditions. While this may be regretted from the educational point of view and also from that of scientific accuracy, we cannot but agree that a strict adherence to any such schemes as have already been devised presents difficulties, especially in a book of this kind. Amends for his heresy are, however, amply provided in a chapter on general considerations regarding infective disease of the reproductive system. It is interesting to have a British authority declare in no uncertain terms his opinion that puerperal infection is a more common cause of pyosalpinx than gonorrhoea. We believe that other gynaecologists in Great Britain are of the same opinion (see, for instance, the recent *Encyclopaedia of Midwifery and Diseases of Women*, edited by Dr. Fairbairn), but the almost unanimous voice of American and Continental writers would lead one to consider the gonococcus blameworthy in the vast majority of such cases. Professor Munro Kerr points out also that even where the gonococcus is the primary infective agent the main damage to the tubes is the work of the almost inevitable secondary infection by the *Bacillus coli*. Venereal diseases are discussed in detail in an interesting special chapter by Dr. David Watson. With regard to the vexed question of chronic endometritis the view expressed is that, in addition to the true inflammatory "interstitial" form, a "glandular endometritis" of infective origin is also sometimes found. This we believe to be more consistent with general experience than the extreme position taken up by some recent writers.

A practical and adequately full discussion of uterine tumours is followed by chapters describing the infectious and new growths of the tubes. The chapter on ectopic pregnancy is one of the best and most practical in the book, and deals very fully and lucidly with the great difficulties that may be encountered in making the all-important diagnosis of this condition. Affections of the peritoneum and cellular tissue and diseases and new growths of the ovary occupy the next two chapters; finally there is a brief discussion of such renal, ureteral, vesical, and bowel diseases as may complicate or simulate conditions more strictly gynaecological.

The second part consists of a single chapter on the medical treatment of gynaecological affections, including electrical and radiological methods. In the treatment of menorrhagia due to subinvolution in women near the menopause, Professor Munro Kerr recommends the Roentgen rays—after a curettage to exclude malignant disease or pre-malignant changes in the endometrium. He reserves his judgement on the treatment of fibroids by the rays; on the subject of radium in cancer also he preserves an open mind tinged with hopefulness for the future developments of the method. Up to date he has not had any actual cure, but he has found a preliminary irradiation facilitate the performance of the radical operation. Dr. Hendry contributes to this section an interesting page or two on the importance of proper diet and the regulation of metabolism in gynaecological cases.

The third part deals with operative gynaecology, and opens with general introductory sections on the preparations for operation, post-operative treatment and complications, and general technique. Special sections are contributed on anaesthesia by Dr. Paton Boyd, and on blood transfusion by Dr. W. Rankin. Thereafter the various minor and major operations are described seriatim. The method adopted is admirable in conception and intention, and only a little less excellent in performance. In the case of each operation two or three drawings of the essential steps are given on the right-hand page, while on the left-hand page is the descriptive letterpress, paragraphed to correspond with the figures. It is thus easy even for a beginner to follow the steps as illustrated, and our only criticism is that in some cases the illustrations are not sufficiently numerous, gaps being left which may not easily be bridged by readers who are unfamiliar with the technique. On the whole, however, both Mr. A. K. Maxwell's drawings and the letterpress are adequate.

In this last section it would seem as though the author had altered somewhat his conception of the aim of his book, for he describes and illustrates several operative methods to which only specialists are likely to resort—for example, the various methods of decollation and bisection of the uterus in difficult cases of pyosalpinx. Baldwin's operation for the formation of an artificial vagina from a loop of ileum seems even more conspicuously out of place, as its justifiability in any circumstances is challenged by some eminent gynaecologists.

Professor Munro Kerr's position and his long experience as a practising gynaecologist are sufficient warrant for the soundness of the doctrine contained in this book. His experience as a lecturer and his reputation as an author provide a similar guarantee of the lucidity of his teaching. It is perhaps the very easiness of his style that gives rise to just a suspicion of desultoriness in parts. The author has confessedly avoided writing a "treatise," and what we mean may perhaps be better conveyed by saying that, compared with the almost photographic precision of outline to which most modern textbooks of a comparable size have, as we think very properly, accustomed us, he has adopted an impressionistic style. Obviously, however, it is an arguable point whether this is to be deprecated; and, whether it be or not, the book remains a notable addition to British gynaecological literature.

[1] *Clinical and Operative Gynaecology*. By J. M. Munro Kerr, Professor of Obstetrics and Gynaecology, Glasgow University (Muirhead Chair); Gynaecologist to the Royal Infirmary, Glasgow; formerly Lecturer in Obstetrics, Leeds School of Medicine; and Hedley Atkins, Assistant Obstetric Surgeon, the London Hospital. Illustrations, 12 coloured plates. £2 10s.] 1922. [Cr. 4to, pp. 848; 450

SURGICAL DISEASES OF CHILDREN.

In his preface Mr. Pybus says that his book, *The Surgical Diseases of Children*,[2] does not pretend to be a complete treatise, but rather a record of personal experience of the commoner conditions met with on the surgical side of a children's hospital. It is probably for this reason that it is so readable, and that even for those of experience it is interesting and instructive. To the house-surgeon it should be invaluable, for some of its best paragraphs are those on signs and symptoms, their valuation and use in differential diagnosis. Despite brevity, and without sacrifice of definite statement, the author yet manages to convey his sense of the element of uncertainty that occasionally besets the accurate recognition of cases usually simple; the reader will have the more confidence in the positive assertions. The book is divided into twelve sections, which deal in turn with congenital malformations; injuries, including birth injuries, fractures, and dislocations; deformities; cysts and tumours; acute infections; tuberculosis; congenital syphilis; abdominal infections; diseases of the rectum; genito-urinary diseases; surgery of the head; and surgery of the throat, nose, and ear. As, added to these, there is a little introduction on examination and general treatment, it will be seen that the whole ground is pretty well covered. It is notable that of 162 children admitted, 32 per cent. had acetonuria on entry, 25 per cent. had it before operation, and no less than 83 per cent. showed it afterwards. Carbohydrates are administered right up to the time of operation—a meal of porridge and treacle four hours before—and glucose is given by mouth and rectum as soon as possible afterwards.

In relation to congenital malformations generally, it seems that the author is something of an optimist, and that certainly implies the only spirit in which their treatment can be brought to a satisfactory result. The account of spina bifida is clear and well judged. The Spitzy splints for fractures in infants are well figured; they should be better known. Only about forty pages are devoted to deformities, so that the descriptions are a little sketchy, and rickets as a disease of metabolism might well have had more space. Scurvy-rickets has only passing mention. In the chapter on cysts, hygroma appears as a simple affair, and the student gets no hint of the disasters that sometimes attend its course. The pyogenic affections, whether of the soft parts, the bones, or of the joints, are admirably reviewed, and the account of the tuberculous invasions of bones and joints which follows, maintains the continuity of pathogeny and of underlying principle in treatment, as logically it should.

Most of what is written about abdominal diseases is to the point, but some paragraphs are by no means easy to understand. The "treatment" of appendicitis on page 317 has been badly paragraphed or hastily written. Does the author really mean that he would postpone operation when peritonitis is spreading, and leave the initial focus? If so he has returned to the German and French practice of twenty years ago—and perhaps he is right.

The section on genito-urinary troubles is quite adequate, and that on the tonsils, adenoids, and the mastoid sound. Formal circumcision is said to be "rarely necessary" and an incision of the prepuce along the dorsum all that is wanted. Does this not often leave a pendulous and useless piece of tissue?

The volume as a whole is so satisfactory, so compact, so pertinently illustrated, that a second edition is sure to be needed very soon. So good a book deserves a more careful proof reader; it is doubtless pedantic "to never split" an infinitive, but the verb should agree with its subject, and relatives deserve respect. However, students are not grammatical purists, and there is ample reason to recommend the book to them heartily.

PENAL DISCIPLINE.

After thirteen years of official life as H.M. Inspector of Female Prisons, Dr. Mary Gordon has given earnest expression to the conclusions she has reached on our present penal methods and their results in a book recently issued under the title of *Penal Discipline*.[3] The book will undoubtedly be widely read and discussed, and the more widely the better. Vigorous, racy, at times poetical in language, and throughout imbued with an active living sympathy for the derelict and diseased, it is the work of one who sees her fellow man or fellow woman even in the most abandoned criminal or "old lag."

We propose to give an account of Dr. Gordon's line of argument, and to reserve any words of criticism for the end. She tells us that in her conversations with prisoners in their cells they spoke about "topics that made life real to each of us—of men, or children, or drink; of money, or bets, or debts; of revenge, or of unlawful acquisition of lovers, or clothes, or of the sport of evading citizens' duties, or the police." So, to quote her own words, she "hunted the souls of others round their prison cells, and out at the doors, and under the proud waters that had gone over them, or over the mountain tops that had baulked them, and so back to their prison again." Those who have breathed prison official atmosphere for any length of time will not be surprised, therefore, at her statement that at her first round of inspections she unwittingly provided a sensation in several prisons, and also that, as an official, she fears she was never true to type. An imperfect official Dr. Gordon evidently was and must ever remain. It is to be doubted, however, whether outside the world of subordinate officers the perfect official exists; the higher and better the official, the less likely are humanity and sound common sense to be strangled in the coils of red tape. The book, however, is not a criticism of officialdom. Dr. Gordon sets out with the proposition that the prison system, with its principle of penal discipline, has not been made by the administrative body, but by the people of this country, citizens and voters. If, therefore, as Dr. Gordon avers, she found nothing in the prison system to interest her except as a gigantic irrelevance, a social curiosity; if she failed to mark a good effect on any prisoner, but, on the other hand, had no shadow of doubt either of the power of the system to demoralize or of its cruelty; if, as she says, we not only do not deter but actually make over the criminal to crime; and if, as is implied throughout, the whole system is futile and unscientific, the author lays the blame at the door of the public and not at that of its servants.

Dr. Gordon holds that the belief that punishment—that is to say, punishment by imprisonment—deters from crime is an assumption in large measure unfounded. She admits that "bodies of persons may be, and indeed are, deterred by the punishments they have ordained as the result of their findings," and that "those to whom imprisonment does represent a disgraceful and real punishment, on the whole take care not to incur it"—that is, if we take her rightly, the threat of imprisonment deters only the lawfully minded citizens who in the main do not require it, and affects hardly at all those who have actually experienced it. As one of the chief justifications for inflicting punishment is its deterrent influence, this is a serious statement. The great and steady diminution in the prison population of recent years is to be explained otherwise, Dr. Gordon suggests. She points out that, taking at random the years 1909 to 1914, while the number of men sent to prison during that period fell by 41,696, certain degraded offences—for example, rape, defilement of girls, procuring abortion, etc.—increased both relatively and absolutely. Her argument, we take it, is that the nature of the offences for which imprisonment has been awarded, rather than the total number of offenders sent to prison, truly reflects the actual position. The local prison for the petty offender, according to her experience, soon becomes a model lodging-house, a place of recuperation for another "bust," and a manufactory of "recidivists"; if it be a fact that imprisonment and the threat of it do not deter from crime, then the system must be an "expensive absurdity."

Dr. Gordon is on surer ground when she describes the effect of imprisonment on the imprisoned. In a chapter on "Systems and their fruits" she deals with results, and makes the striking statement that, whilst of 14,557 women in local prisons only 1 in 766 was punished for violence, and in convict prisons 1 in 26, no fewer than 1 in every 2 girls in Borstal and Aylesbury was so punished and 1 in every 8 had to be put in irons. This was in 1921, which Dr. Gordon says was an exceptional year. Of the Borstal boys, who were five times as many in number, only 1 in 226 was put in irons—a contrast which we cannot pretend to explain. Dr. Gordon does not question that the conduct of the girls was bad, but in the next chapter, on "Psychical considerations," she propounds a reason for their badness.

[2] *The Surgical Diseases of Children: A Handbook for Students and Practitioners.* By F. C. Pybus, M.S., F.R.C.S. London: H. K. Lewis and Co. 1922. (D my 8vo, pp. xviii+408; 228 illustrations. 18s. net.)

[3] *Penal Discipline.* By Mary Gordon, L.R.C.P., L.R.C.S.Edin., L.R.F.P. and S.Glasg., late H.M. Inspector of Prisons and Assistant Inspector of State and Certified Inebriate Reformatories. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. 1922. (Demy, pp. 238; illustrated. 7s. 6d. net.)

Modern psychology is largely based on a study of the primitive instincts and emotions, whereas a prison, Dr. Gordon says, has no use for the emotions. "The prisoner's part is to do as she is told and *consume her own smoke.*" In the words which we have put in italics Dr. Gordon sees the effective reason for much of the badness she finds in the Borstal prisoner. Repression of normal instincts and of acquired tastes and cravings; emotional conflicts; fantasy formation, fostered by long solitudes as the only escape from a cast-iron machine, and the development of an undergrouud mental life detached from a reality in which she has lost all interest, in the author's view, play their part in the moral and intellectual deterioration of the long-term prisoner. The result of her observations has convinced her that of those known in prisons as "feeble-minded" the vast majority are cases of hysteroid or paranoid psychoses. While she admits that all such do not originate in prison, she seems to consider that, in most cases, our penal system is responsible.

It is probably true that, in all but a few, long imprisonment maims as surely as the forfeiture of a limb, by undermining the prisoner's self-respect, initiative, and resource; thus he may become unfitted for the struggle for existence which awaits him outside the prison walls. The lectures, debates, and concerts which are now part of the prison system, the weekly summary of news read by the governor or chaplain, to which innovations reference is made in the Prison Commissioners' Report just issued, are all to the good. They furnish food for the mind but do little to improve the character. If, as has been suggested, an understanding with trade unions can be reached which would enable prison authorities to obtain partial access to the outside market, or if such a system of employing prisoners on a remunerative basis, as Dr. Gordon found in French prisons, were introduced, much of the repression of normal activities, the emotional conflict, and the final apathy and mental deterioration which may attend prolonged imprisonment would perhaps disappear.

Dr. Gordon finds nothing good in the whole of our existing prison system. "Penal discipline," she says, "must go." Instead she would institute "sufficient control to prevent offences, combined with scientific treatment of the prisoner's symptoms, that is, of his crime." Although it is never so stated in terms, it is not unfair to deduce from this that the author generally regards the criminal as a sick person and not as a wrong-doer. Pushed to its logical conclusion the argument of her book is really for a changed public attitude to the criminal, who is to be treated scientifically but neither punished nor reproached. Yet, strangely enough, Dr. Gordon notes the salutary effects of smart punishment on the petty offender. Punishment, even imprisonment, does, in fact, deter. "Control," to be effective, must have power behind. However deeply one may disagree with the author's sweeping condemnation of penal discipline, her book opens up many avenues for speculation and is bound to stimulate and beneficially influence reformative work.

A GERMAN HISTORY OF MEDICINE.[1]

THERE is an idle notion that scholars are dry, dull creatures whose studies have little relation to the real world. The estimate is born of misunderstanding and nursed by ignorance. We conceive that no one to whom has come the privilege of contact with a great scholar can doubt that the qualities which make for success in scholarship would raise a man to eminence in most walks of life. Only direct personal intercourse with such men can reveal the self-discipline, the energy and initiative, the power of organization, the alertness and devotion that go to make up a great work of scholarship. The German history of medicine here reviewed is the joint product of the work of two men who have exhibited these qualities in full measure. Professor Pagel, the founder of the work, died somewhat prematurely in 1912. Professor SUDHOFF is happily still with us, and is approaching the 70th year of his life.

Julius Leopold Pagel (1851–1912) was the son of a poor Jewish teacher in Eastern Pomerania. He went early to Berlin for his medical education. Without money or friends he soon made his mark, and while earning his living as a busy and successful general practitioner he yet found time to make considerable additions to the science of medicine. A man of extraordinary intellectual energy and tireless industry he read very widely and exhibited from the first a strong taste for historical study. His broad, tolerant, good-natured outlook and happy literary style especially fitted him for such work, while his great facility as a linguist gave him access to an unusual number of languages both occidental and oriental. He combined with all these qualities exceptional powers as a teacher. The work of such a man was bound to be readable, balanced, and erudite. In spite of his remarkable combination of qualities it was not till 1898, when 47 years old, that Pagel earned any academic recognition, and he did not get the title of professor—and even then it was little but a title—till 1902. No disappointments or failures deterred him, and he continued to turn out a mass of first-class historical work during the remainder of his life.

The keynote of Pagel's writings is their wisdom. He is among the sanest and most far-sighted of historians, his learning never conceals his vision, his opinions are never violent or fanatical, his treatment of a subject is always well proportioned. His book remains perhaps the best single volume history of medicine. Its weak points were certain inaccuracies in detail and indifferent bibliographical records.

The choice of Professor Sudhoff to edit Pagel's book was fortunate. All who follow the output of work on medical history know him for one of the leading living medical historians. His activity is immense and his erudition is combined with the high standard of accuracy demanded by scholarship. His published writings fill a whole shelf and each one of them exhibits originality. This is the second edition of Pagel's work that has passed through Professor Sudhoff's hands. Pagel's errors have been removed, an excellent and well-arranged bibliography has been prepared, and much of the work has been rewritten without changing the original form. Professor Sudhoff has been helped by that promising young Swiss historian, Dr. Henry Sigerist of Zurich, whom we are glad to remember as a student in this country and a guest at the recent International Congress of the History of Medicine in London.

Some may criticize the volume for the comparative compression of the most modern period—a characteristic of all histories of medicine except that of Garrison. The fact is that the qualities needed for the writing of the medical history of the last fifty years are very different from those demanded of the historian of the earlier period. The ideal history of medicine will perhaps be written by two men, one who will treat the subject down to the time of Pasteur and Lister, and the other the period beyond.

Professor Sudhoff is a German of the Germans and as hard a hitter in controversy as a man may be. There could be no doubt on which side a war between England and Germany would find such a man. But clean hard fighting has never been a quality which has earned the dislike of Englishmen, and if he could pay a visit to England he would find fewer enemies than he expected—or hoped for! In the meantime this book, which is generous to a fault in its treatment of English work, confirms his reputation with all scholars. Whatever personal differences may separate men of learning one from another, learning itself ought to be completely international.

[1] *Julius Pagel's Handbuch der Geschichte der Medizin.* Von Karl Sudhoff. Zweite, neu bearbeitete Auflage. Mit 11 Tafeln und 109 Abbildungen im Text. Erste Hälfte: Altertum, Mittelalter, Renaissance. Zweite Hälfte: Neuere Zeit. Lieferung 1. Pagel's *Einführung in die Geschichte der Medizin* (1899). Berlin: S. Karger. 1922. (The price should be ascertained from a firm importing German books.)

THE ELECTRICAL ACTION OF THE HUMAN HEART.

THE late Dr. AUGUSTUS WALLER had intended to publish in 1914 the lectures he gave in 1913 in the Physiological Laboratory of the University of London. They have now—by the care of his widow, whose death so soon followed his—been brought out, with a preface written this year, under the title *The Electrical Action of the Human Heart.*[5]

Of the four lectures, the first gives an account of his demonstration in 1889, before the International Congress of Physiology at Bâle, of the data, arguments, and conclusions concerning the electrical changes in the human heart as shown by Lippmann's electrometer. The second lecture, describing a demonstration given in 1894, followed Einthoven's invention of the string galvanometer and his introduction of the alphabetical rubric P.Q.R.S.T. for the waves and wavelets of the normal electro-cardiogram. Of this improvement Dr. Waller remarked that the galvanometer is to the capillary electrometer as a high is to a low power of the microscope, that it opened a new chapter in the clinical study of heart disease, and has played a part in medical literature that shows no sign of

[5] *The Electrical Action of the Human Heart.* By Augustus D. Waller, M.D., F.R.S. Edited by A. M. Waller. London: University of London Press. 1922. (Demy 8vo, pp. ix + 103; 4 plates, 25 figures. 7s. 6d. net.)

its physiological origin. The third lecture, on the form of the electro-cardiogram and its significance, deals with the information gained by the use of the string galvanometer between 1903 and 1913. As the two ventricular peaks are the prominent features of the normal electro-cardiogram, and are preceded by a smaller wave due to auricular contraction, the simpler rubric *a*, V_I, V_{II}, is regarded as more convenient than Einthoven's familiar P.Q.R.S.T., which has no particular meaning, but has been faithfully followed by most clinical writers. The last lecture goes over the same ground in geometrical and mathematical terms, and is followed by a bibliography arranged under the headings of physiology, anatomy, heart sounds, and apparatus, the latest entry being under the date 1912.

Presented mainly in the order of their chronological development, the contents of this volume form a useful footnote to the history of physiological researches which when first undertaken had, like many others that subsequently became the basis of medical work, no obvious bearing on practice. They also provide the last record of an enthusiastic and famous physiologist's labours.

SURGERY OF THE HEAD AND NECK FOR DENTISTS.

To supplement for the (German) dentist the surgical knowledge acquired during his prescribed six months' course of general surgery and to bring within the compass of a single volume the surgical conditions he is likely to meet with Dr. SEIFERT, private tutor in the university of Würzburg, has compiled a Surgery of the head and neck for dentists.[6] At present the dentist's choice is between a general system of surgery and a compendium—the one too full of information and the other (anathema to the author) wanting in fundamental information.

In this volume practically every surgical condition of the head and neck is dealt with and the main points of pathology, diagnosis, and treatment are briefly but clearly outlined. The dentist whose knowledge of the surgery of the head and neck went no farther than the covers of this book would still find himself well equipped for his profession. The author reflects the generally received surgical views of pathology, but, we think, insists too much on syphilis and too little on sepsis as causes of chronic glossitis and subsequent cancer. Reading the book, one gets the impression that in Germany the dentist is expected to deal with a far greater range of disease of the neighbouring parts than in England. The treatment of tongue injury, for example, seems often to fall to his lot. At most the English dentist is brought in as a second adviser to extract a tooth.

The illustrations are many and good, that of congenital torticollis being specially noteworthy. The fact that they are taken from actual cases in the author's practice may account for the unfortunate circumstance that malignant diseases are only illustrated in their inoperable stages.

We can recommend the book to those who are able to read German.

MENTAL NURSING.

DR. RICHARD EAGER has written a small book, *Hints to Probationer Nurses in Mental Hospitals*,[7] which is intended to supply in a small compass the information necessary for the nurse to possess at the outset of his or her training. In the first part the author lays down a number of rules to be observed, gives directions for dealing with the various emergencies which are apt to arise, and outlines the ward duties of the nurse. The second part is theoretical, and consists of an introduction to psychology. Though the author writes clearly on a difficult subject, it is rather doubtful whether this section is wisely included in a book designed for the use of a nurse in the first few months of training. We should have thought there was quite sufficient to engage her attention without being instructed in the meaning of "complexes," the "censor," the psychology of dreams, symbolism, and so on. It would have been more profitable, we feel, to have devoted these pages, not to rather unnecessary theory, but to a consideration of those nursing principles which should animate the staff of a mental hospital and are specially necessary in dealing with the insane. The precise and clear directions which the author provides in the first part will, however, be found definitely helpful to the nurse, and the book should be of value to those for whom it is intended.

[6] *Chirurgie des Kopfes und Halses für Zahnärzte.* By Dr. Ernst Seifert. München: J. F. Lehmann. 1922. (Roy. 8vo, pp. 202; 147 figures. 7s. 6d.)

[7] *Hints to Probationer Nurses in Mental Hospitals.* By Richard Eager, O.B.E., M.D.Aberd. London: H. K. Lewis and Co. 1922. (Demy 16mo, pp. 80. 1s. 6d. net.)

NOTES ON BOOKS.

THE eighth volume of the now well-known *Archives of Neurology and Psychiatry*,[8] issued from the pathological laboratory of the London County Mental Hospitals, consists of a series of papers, nearly all of which have appeared elsewhere. It is, however, very convenient to have so valuable a collection brought together in one volume. Of Sir Frederick Mott's nine contributions to the volume perhaps the most important are those on the pathology of dementia praecox. His views on this subject are now well known and have been fully stated by him in our columns; they have commanded the respectful attention of all who take interest in this very common mental disorder. That his opinions appeal more to the pathologist and to the student of endocrinology than to the psychologist may perhaps account for some of the criticism they have provoked. The many beautiful plates which illustrate these papers do much to enhance their interest and value. We are glad to see that Dr. Golla's Croonian lectures on the objective study of neurosis are included in this volume, for they will come as a welcome relief to many who have grown somewhat tired of being compelled to look at this problem from the purely psychological angle only. Now that the bequest of the late Dr. Henry Maudsley has been utilized in the establishment of the hospital bearing his name and doing the work he wished to see done, we may look forward to further contributions towards the elucidation of the many problems, both mental and physical, which still await solution by the scientific investigation of mental disease. In the creation of a wider interest and in the dissemination of new discoveries we have no doubt that these *Archives* will play a worthy part.

Sir R. H. FRITH, whose name is well known as the joint author of an important textbook of hygiene, has occupied some of his leisure since retiring from the Army Medical Service in writing a Christmas gift book, *Birds and Blossoms*,[9] which possesses the merits of being original and inexpensive. For each month of the year he has composed a little essay on the sights and sounds of that month, and each is illustrated by clever pen-and-ink sketches, mostly of birds. There are also four coloured plates of the flowers of the seasons. The author has an observant eye and a ready pen; he is an optimist and has a good word even for November. His book will appeal to Nature lovers, and will open the eyes of the boy or girl who receives it to what is going on in country lanes and city parks, so making more Nature lovers, to their lifelong happiness.

The new volume[10] of the Edinburgh Veterinary Series from the pen of the Principal of the Royal (Dick) Veterinary College deals with the thorax and abdomen of the horse. It is an account which impresses the reader by its accurate and scholarly descriptions. The description of the thorax will be found to be particularly good, that of the heart and the great vessels being excellent. The abdominal contents are well done, and both parts are adorned by Mr. J. T. Murray's illustrations. Those familiar with his work in Cunningham's *Textbooks of Anatomy* will readily recognize an old friend, and will see that he has now done for the horse what he first did for man.

The *Life and Times of Ambroise Paré*, which Dr. PACKARD published through Paul B. Hoeber of New York a year ago, is now published in this country by the Oxford University Press (London: Humphrey Milford. 1922. Price 28s. net). The only difference between the two issues is that the Oxford University Press has prepared a new title-page. The book appears to be printed from the American plates. The book was reviewed in our issue of December 3rd, 1921 (p. 949). In the same way Sir JOHN HARINGTON'S English version of the *Regimen of the School of Salernum*, published by P. Hoeber in New York in 1920 and reviewed in our columns on February 12th, 1921 (p. 231), has been taken over by the Oxford University Press (price 14s.). We mentioned recently that Hoeber's edition of the *Gold-Headed Cane* will in future be published in this country by the Oxford Press (price 16s.).

[8] *Archives of Neurology and Psychiatry, from the Pathological Laboratory of the London County Mental Hospitals, Maudsley Hospital, Denmark Hill.* Edited by Sir Frederick W. Mott, K.B.E., M.D., F.R.S. Vol. viii, 1922. London: P. and S. King, Ltd. (31s. 6d.)

[9] London: Bale Sons, and Danielsson. (8×11, pp. 32. 2s. 6d.)

[10] *The Topographical Anatomy of the Thorax and Abdomen of the Horse.* By O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S. Edinburgh: W. Green and Son, Ltd. 1922. (Sup. roy. 8vo, pp. xii + 264; 85 figures. 21s. net.)

Nova et Vetera.

SPOLIA NEMORALIA.

*(SHRUNK HEADS, EAR-PLUGS, AND LABRETS.)**

BY

SIR JOHN BLAND-SUTTON, F.R.C.S.,
CONSULTING SURGEON TO THE MIDDLESEX HOSPITAL.

INDIANS living in the dense forests bordering the section of the Amazon called the Marañon have acquired notoriety in preparing what are known in England as "shrunk human heads." While on a visit to the Amazon I got some of these curious heads and have been able to examine them critically, and also obtained some stories concerning the Indians.

Recently G. M. Dyott made an adventurous journey across Peru to Iquitos. After being treacherously abandoned by his guide on the return journey, he was rescued by some Aguarunas. Dyott, virtually a prisoner for many weeks, won the confidence of the Indians, and they helped him to reach Lima. While with the Indians he acquired some knowledge of their language, the secrets of the community, and a first-hand knowledge of their customs. These he described in his book entitled *The Silent Highways of the Jungle* (1922).



FIG. 1.—Aguaruna boy equipped for accompanying his father in the forest. (From a photograph by G. M. Dyott.)

THE AGUARUNAS: SHRUNK HEADS.

These Indians are well formed, with coppery skins and long raven-black hair, which is cut into a fringe across the forehead. The men average in height 5½ ft., the women rarely exceed 5 ft.

The men are clever hunters, use the blow-gun skilfully, and can hit a monkey, as it jumps from tree to tree, with the poisoned dart. They live on bananas, mandioca, and fruit. They also eat fishes, tortoises, sloths, monkeys, small wild pigs, and birds, especially toucans and parrots. The women are drudges; they collect, prepare, and cook the food. The men hunt and fight; in their hours of ease they amuse themselves spinning thread from wild cotton, and weave the material for the scanty clothes they wear.

In civilized countries human beings wear clothes for decency, protection against weather, and for warmth. With the Aguarunas decency does not count. Their scanty clothes protect them against insects and thorns. When it rains they take off their clothes, carefully fold them, and use large palm leaves to keep themselves dry.

The Indian (Fig. 1) shows well the luxuriant growth of hair and its arrangement. This boy is equipped for accompanying his father in the forest. The quiver, made of bamboo, contains light wooden poisoned darts, slender as knitting needles; the gourd attached to it contains a supply of wild cotton, which is used for adjusting the darts to the lumen of the blow-gun.

The pointed tip of a dart is smeared with woorali, the South American arrow poison. A mere scratch of the skin made with the tip of such a dart is quickly fatal, but a moderate quantity of woorali may be swallowed without harm. The flesh of a bird or an animal killed by a poisoned dart is eaten without danger.

The Amazonian Indians are familiar with the process of mummifying dead bodies. As a rule a corpse is flung into the river, but when killed in combat the body is mummified, wrapped in bark, and placed on a stand in the centre of the hut as an object of veneration. Some notion of their methods of mummification may be gathered from the way these Indians treat the heads of victims slain in combat. The conqueror cuts off the head, splits the scalp by a vertical incision in the occipital region (Fig. 2), and neatly removes the skull with the brain, eyes, muscles, jaw, and tongue, leaving the skin of the face and the scalp intact. The incision is closed with a continuous stitch and the cutaneous bag is packed with hot pebbles, or hot sand, and carefully dried in the sun. When this crude taxidermic process is complete the skin shrinks to the size of an orange, preserving the features. The lips are stitched together with threads, which are left long, and dyed red in such a way as to present alternate bands, coloured and uncoloured (Fig. 3). The lips are sewn together to prevent the victim retorting when his conqueror freely curses him, and to condemn him to eternal silence! A cord is attached to the vertex of the scalp to enable the trophy to be slung on the girdle of the warrior. Some of the cords are decorated with scarlet feathers. The skin of the face is smoked, polished, and sometimes smeared with red dye.

There are two shrunk heads in the Natural History Museum, South Kensington, probably the first examples seen in London. They were shown to the Anthropological Society, Paris, in 1862, by Dr. Moreno-Maiz, formerly surgeon-in-chief of the Peruvian army. He presented them to the museum. The heads were given to Moreno-Maiz by M. Galvey, the Peruvian Minister in Paris; they were found in an Inca tomb in the territory occupied by Jivaros Indians (Ecuador). Moreno-Maiz appreciated the heads as excellent examples of taxidermic art, detected the manner in which the skull had been removed, and the skill with which the shrinking had been carried out with conservation of the features. Dr. Bellavisencio examined pieces of the mummified skin histologically; sweat glands and their ducts, hair bulbs and sebaceous glands, and the layers of epidermis were easily recognized.

The heads were those of Jivaros warriors, and were probably preserved from religious motives, for these Indians did not bury the heads of the dead with their bodies in cemeteries, but after conservation placed them around their houses and preserved them with respect, for these cherished remains protected the families from their enemies. For these Indians death was not a natural phenomenon—it was a consequence of witchcraft, the occult and culpable action of enemies, known and unknown. Bollaert published a good account of the Jivaros Indian in 1863.

The knowledge of this peculiar method of preserving heads has come down from the Incas of Peru. The body of a deceased Inca was skilfully mummified and removed to the great Temple of the Sun at Cuzco. The Peruvian sovereign on entering the sanctuary of the dead might behold the effigies of his royal ancestors ranged in opposite files—the men on the right and the queens on their left. The bodies, clothed in the princely attire which they were accustomed to wear, were placed on chairs of gold, their faces exhibiting the natural dusky hue, their forms and lineaments true to life (Prescott). Garcilasso saw them (1560) and described them as "perfect as life without so much as a hair or an eyebrow wanting."

Mummified Incas were treated with reverence, but to-day Indians living in the seclusion of the dense forests are described as devoid of emotions such as love, pity, admiration, wonder, and joy. They are superstitious, and superstition is born of fear of spirits, good and evil. It is difficult to believe, as some assert, that Indians lack imagination, when they practise the diabolical art of curing the skin of an adversary's head, shrink it to the size of a lemon, preserving the features, even the eyelashes and eyebrows, and sew the lips together, so that when they curse the victim the leathery lips can make no reply. *Surely belief in spirits, good and evil, depends on the faculty of speech.*

In London there is now a fair number of these curious heads available for study. In addition to the two in the Natural History Museum the Royal College of Surgeons possesses six, the British Museum three, as well as a collection of hunting and domestic implements used by the Peruvian Indians. The Wellcome Historical Medical Museum contains

* Abridged from a paper read at a social meeting of the Royal Society of Medicine on November 10th, 1922.



Fig. 2.—Shrunk head of an Aguaruna. The hair has been removed from one side to afford a view of the scalp and to expose the line of the incision, which permits the extraction of the skull (half natural size). The material used to sew the lips together is twisted cotton thread. The scalp is slung by a plaited loop.

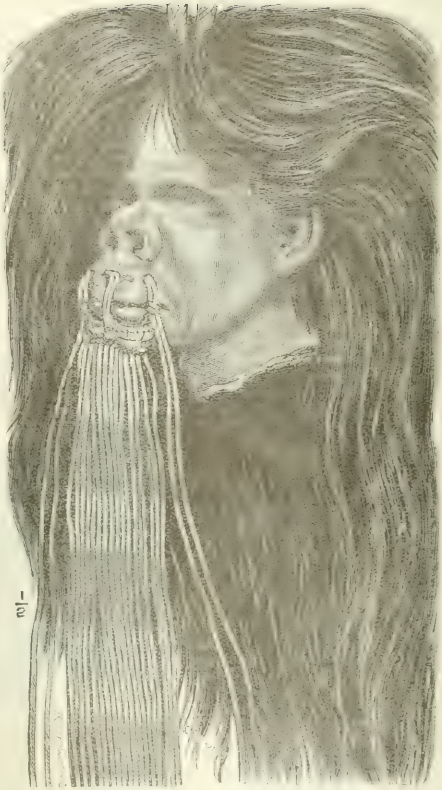


Fig. 3.—Shrunk head of an Aguaruna (half natural size). The hair is coarse like that of a mane or tail, raven black, and two feet in length. (Museum, Royal College of Surgeons.)

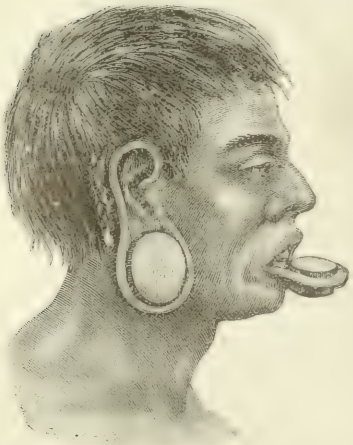


Fig. 4.—Head of a Botocudo with ear-plug and labret.



Fig. 5.—Head of Gotos Indian with ear-plugs (A. Miles Moss).

thirteen examples, and there are many kept as curios by travellers. When a demand for such heads arose many were forthcoming, but traffic in these gruesome curios is discouraged lest it lead to undesirable methods of obtaining them.

EAR-PLUGS AND LABRETS.

When Columbus discovered Honduras during his fourth voyage (1502) he named part of the seaboard "Costa de la Oreja," in reference to the ears of the natives enlarged with plugs. The Indians inhabiting the forests wear ear-plugs and labrets. Some of the tribes were named by the Portuguese "Botocudos" on account of this habit, *botoque* being the Portuguese name for a plug. The ear-plugs of the Botocudos are sometimes four inches in diameter. There are plugs of this size in the British Museum, and they resemble bungs. The plugs can be slipped in and out of the loops like buttons. Some ear lobes are so distended with huge plugs that they reach to the shoulders and resemble the wings of bats (Fig. 4).



FIG. 6.—shrunk head of a Jivaro Indian with a spigot of wood in the lobe of the ear. 1/1

Drs. Spix and Martius, in 1817, under the auspices of the King of Bavaria, made a journey for scientific purposes through the Amazonian forests. Spix was responsible for zoology and Martius for botany. They subsequently wrote an instructive book entitled *Travels in Brazil*. The first native American they saw was a boy of the cannibal race called Botocudos. He was in the house of M. von Langsdorff. The story of the boy is curious. A former Minister of State had applied to the district commander for an Indian skull which he required for Professor Blumenbach. The commandant had no opportunity for obtaining a dead specimen, so he sent two living Botocudos, who had been taken in a sudden attack by his soldiers. Von Langsdorff obtained one of them, to whom he soon became much attached, and "who served him not only as a living cabinet piece, but as a collector of objects of natural history." This boy wore not only ear-plugs but also a large labret.

Ear-plugs are instructive in regard to the view that the method of mummifying heads is of Incarial origin. The heir to the Inca throne received a military education with the sons of the nobles. At the age of 16 they were submitted to a public examination in order to show their prowess in the athletic exercises of warriors.

They were admitted into the order of chivalry by the Inca in the following manner: the novice knelt before him and he pierced the lobe of the ear with a golden bodkin, and this hole was gradually dilated until it became large enough to receive an ear-plug. "This monstrous deformity was regarded as a beauty by the natives" (Prescott).

The ears of shrunk heads sometimes contain a wooden spigot in the lobule (Fig. 6). The Royal College of Surgeons contains two examples, and I think this is peculiar to the Jivaros (Ecuador). There is a shrunk head in the British Museum, with preserved skins of brightly coloured birds hanging as ornaments from the lobe of each ear. Gorgeous plumes of feathers are worn by the men on festive occasions.

It is clear that there are two kinds of shrunk heads—one from enemies slain in combat and the other heads of chiefs. The former are freely cursed by their captors; the latter, decorated with iridescent wing-cases (elytra) of large beetles, bright-coloured feathers, and skins of gaudy birds, are venerated and worshipped as idols.

The Rev. Arthur Miles Moss (1909) made a journey for entomological purposes into the forests of Peru, and succeeded in recovering some photographs, obtained by Mr. Kroehle, of Indians living along the tributaries of the Amazon. Some of these photographs show Gotos Indians with ear-plugs (Fig. 5). Kroehle lived for some time among the Indians and received an arrow wound which "hastened his death." On the back of a photograph is written the significant word, "Anthropophagus."

Spix and Martius reported that the Botocudos were cannibals.

Opportunities for seeing Indians in Brazil with ear-plugs and labrets are rare. In British East Africa they are common, especially among the Masai and Kikuyu. These deformed ears are objects of great pride to their possessors and the envy of their neighbours. To break the loop is an insult. When men quarrel they snatch at the ear-loops and try to break them. If the loop is completely detached the damage is irreparable, but if merely broken it is mended in the following way: the torn ends are cut so as to leave sloping surfaces; the freshened edges are then superimposed and held in position with the finger and thumb until bleeding completely ceases. The apposed ends of the loop are bound together with a strip from a leaf, a blade of grass, or a piece of bast, and union quickly follows. Each tribe has a man who performs these operations. Without the plug the large ear-loops resemble rubber rings, and the men loop them over the helix for protection.

It is clear that Amazonian Indians, as well as the natives of East Africa, like surgeons in civilized countries, are familiar with the elastic properties of human skin.

Shrunk heads, ear-plugs, and labrets appeal to me. My father taught me to stuff birds at the time my mother stuffed me with the creed and ten commandments. Later in life I saw savages ornamented with feathers, skins, teeth, and claws in tropical forests; similar decorations are worn by fashionable human beings who strut in Piccadilly or parade the paddock at Ascot.

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REPLACEMENT OF CARS: INCOME TAX ALLOWANCE.

THE replacement of a medical practitioner's car frequently raises questions which are not only somewhat involved, but also affect substantially the amount of income tax to be paid. We propose to deal briefly with the matter in general terms in the hope that a few notes may be of assistance to our readers.

The key to the solution of most of the problems lies in a grasp of the distinction between current expenditure and capital outlay; the former is allowable for income tax purposes, but the latter is not. To take a simple case, suppose a medical man setting up in practice for the first time purchases a car—obviously the cost represents capital outlay; and if a second car is purchased while the first is retained in commission, that expense is precisely similar in its nature. On the other hand, if the second car is bought to replace the first, then the cost of the second car—assuming it is a similar one—less the amount allowed for the old one, represents the current expense of maintaining equipment the cost of which has already been charged to capital. But the facts are seldom as simple as this, because frequently the second car is a better one in grade, power, or condition than the one which is replaced, so that both maintenance and improvement are effected by the one transaction, and then the cost has to be divided accordingly into allowable and capital portions—or, to put the point another way, there has been a real addition

to the original capital outlay, and that addition must be excluded from the total expense for income tax purposes. Assuming for the sake of simplicity that motor prices have remained constant, the adjustment would work out thus:

In 1918 car "A" was purchased at second hand for (Original price of car was £500.)	... £250
In 1921 car "A" was sold for £150, and car "B" was bought for	... £500
Net cost of new car = £500 *minus* £150	= £350
Amount of capital—that is, improvement—cost £500 *minus* £250	= £250
Allowance for income tax purposes	... £100

Unfortunately for the calculation, motor car prices have not remained constant. The fact that a car bought as a renewal cost more than the car displaced does not at all necessarily imply that it is in any way superior—it may, in fact, be the opposite—but the local inspector of taxes may ignore this special factor and propose to treat the increase in cost as representing further capital outlay. If that increase were likely to be permanent, there might be a good deal to be said for that argument; but, whatever the merits or demerits of the technical question may be, they are, fortunately, only of academic interest, as the matter has been the subject of an authoritative statement. When official evidence was being tendered to the Royal Commission on Income Tax on behalf of the Board of Inland Revenue on the subject of the allowances made for the replacement of machinery and plant—and it is on that footing that motor cars used for professional purposes are dealt with—it was explicitly stated that when replacement was effected by a similar machine at an increased cost the whole of that cost, less the amount received for the machine displaced, would be allowed; and, further, that where an improved machine was purchased the net cost would be allowed up to the amount of the expenditure that would have been incurred if a similar instead of a more expensive machine had been purchased. An example may make the point clearer:

In 1916 original car "C" bought for ... ... (In 1921 a similar car would have cost £400.)	... £300
In 1921 a superior car "D" was bought for ... (The car "C" being sold for £150.)	... £500
The net cost of purchase is £500 *minus* £150 =	... £350
The capital outlay is £500 *minus* £400	... £100
The net cost of "replacement" allowable is ...	... £250

It is on this kind of case that discussions most frequently arise, some inspectors being apparently inclined to treat the capital outlay as the increase in the amount paid for the car—that is, £500 *minus* £300 = £200; and there is the further practical difficulty that there is sometimes no car on the market similar to the old car, in which case the sum represented in the above example by the amount of £400 has to be estimated—a question that is a particularly open one when the car replaced had been purchased at second hand, so that its then condition is an important factor in the problem. If, however, the principle is accepted, the figures can usually be agreed with the inspector of taxes by correspondence or by word of mouth.

It may be advisable to add that in the future falling prices will reverse the facts in many cases, and that a practitioner cannot claim a greater deduction than the net cost of replacing a car, even though the price of the new car is less than the original outlay on the car which he is thereby replacing. For instance, supposing that in the second example given above car "C" is replaced by a similar car "E," costing £250, then the amount to be allowed is the actual out-of-pocket expenditure—namely, £250 *minus* £150 = £100.

THE LONDON SCHOOL OF TROPICAL MEDICINE.

The annual dinner of the London School of Tropical Medicine was held on November 1st, under the chairmanship of Dr. Hugh Stannus, a former student. Many past and present students and members of the staff were present; among the guests were Sir William Leishman and Sir George Newman and Sir Arthur Robinson of the Ministry of Health.

The Chairman, in giving the toast of the School, said that this year they had to mourn the loss of the man who conceived the idea of a tropical school in London. The genius of Sir Patrick Manson had been recognized in every country, and the results of his work were reflected over a great area of the globe. Students who came under the spell of the man himself would remember him as the grand old man of tropical medicine, who was above all things himself a student, a seeker after truth, a keen investigator, a man of courage, imagination, and reasoning power. Manson created in the School of Tropical Medicine a tradition which would be an inspiration to many generations. The number of students who had passed through the School had now reached a very large total. The School had established a stranglehold upon disease around the equatorial regions of the earth, and the noose was being drawn tighter every year. The life of the student was strenuous—at one moment invited to plan an incinerator, at another to demonstrate a splenectomy, now examining with the ophthalmoscope the window through which the soul of man looked out, and now with the sigmoidoscope investigating the depths of the internal economy. Into the vast area of tropical medicine specialization had already entered, with its advantages and disadvantages, but it seemed that the walls of division between tropical and general medicine were fast crumbling. The investigation of ordinary diseases among tropical populations would well repay research in the future. The biochemist, again, had hardly touched as yet the fringe of tropical pathology. The practitioner in the tropics must be something of an anthropologist and a psychologist as well, for the mental outlook, the religious belief, and the social custom had to be reckoned with in studying disease.

Proposed Incorporation with the New Institute of Hygiene.

Sir Arthur Clarke, in proposing the toast of the guests, alluded to the negotiations now proceeding whereby the School may become incorporated with the new School of Hygiene in London, founded with the assistance of the generous gift made by the Rockefeller Fund. This matter had given much anxiety to the Board of Governors of the Seamen's Hospital Society, which had seen the school grow up under its care, and had placed it in its present absolutely sound financial position, while its success in teaching and research had been assured by the genius of Sir Patrick Manson and the ability of the teaching staff. If any such change came about it must be because it was in the best interests of tropical medicine and research and of the School itself as the teaching centre.

Sir Arthur Robinson, Permanent Secretary of the Ministry of Health, said that the question of incorporation with the School of Hygiene was one to which he could not make any extended reference. The essence of the proposal was that there was room in London for a school of instruction and research in public health, interpreting that term in the widest possible sense, national, imperial, and international. That was the conception put to the Rockefeller Foundation, and to carry it out the Foundation had made its magnificent gift. To this the British Government had replied by undertaking to meet the expense of running the institution when established. Progress had been made to the extent that a site had already been secured. The new institution must in any event have a close relation with the London School of Tropical Medicine, and it should if possible, and if it was agreed on all sides, amalgamate with the School. Speaking quite broadly, he would say that any amalgamation must be such as to secure the continuance of the great work done by the Tropical School. That was the fundamental condition. The Ministry of Health had to consider the subject from that point of view, and it was from that point of view that the Ministry had made certain proposals to the Seamen's Hospital Society. The great work of the School, and the fact that it had traditions, formed and forming, must always be kept in mind, and if amalgamation came about everything must be done to preserve the traditions of the Tropical School and to carry on and expand its work as part of the great general work of public health. The proposal was still under consideration, and the Ministry of Health, the Rockefeller Foundation, and the University of London, with which the School of Tropical Medicine was associated, would welcome the amalgamation most heartily if such a solution were found possible. If the amalgamation came about it would be on fair terms, and such as to secure the continuance of the work and to uphold the traditions of the School.

Sir Havelock Charles, Dean of the School, said that evidently there was a marriage in contemplation, the bride being the School, and it was only right and proper to consider the marriage settlements, for otherwise the bride did not know what might happen to her once the ceremony was over. The Tropical School was in a first-rate financial condition. All that it required to complete its equipment were laboratories for tropical hygiene. He thought he was expressing the desire of staff and students when he said that if the School was met fairly and well in its aspirations their loyal support of the new arrangement could be counted upon.

British Medical Journal.

SATURDAY, NOVEMBER 11TH, 1922.

THE STATISTICAL METHOD IN PSYCHOLOGICAL ANALYSIS.

In his presidential address to the Medical Society of London[1] Lord Dawson stated his belief that fuller and franker discussion of psycho-pathology within the profession was needed. Although Lord Dawson did not confine his remarks to the particular nexus of theory and practice popularly termed "psycho-analysis," he did refer specifically to that branch of the subject and in terms which, but a few years ago, were unusual. The psychological doctrines associated with the name of Freud have been debated in the columns of the medical press for more than ten years, with irregular epidemic exacerbations. Some six or seven years ago many distinguished members of the profession fell victims; a majority of them used language very different from that of Lord Dawson. Something must be credited to the war-time atmosphere, more to the example of an able polemist who expressed convictions, sincerely held, with more vigour than charity. It is at least certain, as the style of a current controversy testifies, that one obstacle to the discussion advocated by Lord Dawson has been overcome.

But although discussion of this topic is now more courteous—at least in professional journals—and accusations that "psycho-analysts" are corrupters of school children to be restrained by hierarchical authority are no longer popular even in the lay press, we are not sure that much progress towards intellectual agreement has been made. Perhaps a metaphor of Lord Dawson's gives us a clue. He spoke of mental surgery. Before we are in a position to canvass different operative methods we ought to have reached a measure of agreement on topographical anatomy. Sir Clifford Allbutt recently said that "popular psycho-analysis was false science; it had no units, no means of measurement, no separation of objective and subjective evidence," and he stigmatized psycho-analytical interpretations of dreams as "incredible nonsense." Sir Clifford was explicitly referring to popular "psycho-analysis," which we apprehend to be that form reprobated by Dean Inge as "a fashionable craze," especially of "flighty young women"—no doubt the people who have analysed so many school children—but it is pertinent to ask what attempts have been or can be made to apply to serious "psycho-analysis" logical criteria commensurable with those held to be applicable to other clinical procedures. Our grandfathers frequently discussed the diagnosis and treatment of "fevers." If—as may perhaps have been the case—some relied upon the use of a clinical thermometer, which others rejected as a new fangled, unreliable, and nonsensical instrument, there could be no agreement until a preliminary inquiry had settled whether the clinical thermometer was or was not a tool that could be trusted. We seem to be—we speak of the general body of the profession, not of the specialists—rather in this position. There is no agreement as to the precision of the diagnostic tools; this, then, is a point which should first be debated.

These reflections are suggested by an article on the question of the interpretation of dreams by Dr. A. v. Muralt of Zürich which appeared in a recent issue of the *Schweizer Archiv für Neurologie und Psychiatrie*.[2]

[1] British Medical Journal, October 28th, p. 781.
[2] Bd. xi, Heft. 1, pp. 12–55.

The problem Dr. v. Muralt set himself was this: If the record of a dream, the associations of that dream and the clinical history of the patient, as elicited by ordinary interrogation prior to the first analytical sitting, are submitted to a series of independent observers, will their interpretations be sufficiently concordant and sufficiently consistent with the subsequent history of the case to justify us in attaching scientific importance to the method of dream analysis? Including his own (written down immediately after the event), Dr. v. Muralt had seven interpretations of the dream, the collation of which has prompted him to write: "My investigation has, in my opinion, provided a proof—a point to which I desire to give special prominence—that different interpreters of the same dream material arrive at similar conclusions, and that therefore the interpretation of dreams is as a method on an equal footing with other scientific methods."

The field of experiment upon which Dr. v. Muralt has entered seems promising, although we cannot endorse the conclusion quoted. The arithmetical assessment of the value of testimony upon which Poisson expended so much mathematical genius did not, perhaps, deserve the scorn of Bertrand nor the more recently expressed contempt of Mr. J. M. Keynes, but it is undoubtedly a process beset with difficulties. If seven persons independently asserted, and correctly asserted, that a card turned up from a shuffled pack by an operator invisible to them was a heart, it might be rational to say that the odds against "chance" were thousands to one. But if beforehand they had read and believed a statement that it was a law of nature that a card turned up by a concealed operator was usually a heart, the seven would be reduced to a unit and the odds be only three to one. Now this argument weakens the value of evidence to which Dr. v. Muralt attaches importance. An incident of his patient's dream was the preparation of a sermon in the dreamer's father's study (the dreamer was a young student of theology, the son of a pastor). Associations with the dreamed incident were: "I have worked a great deal in this study with my father—Papa—I get on very well with him, we have the same ideas." The patient's symptoms were a scrupulosity and an indecision almost amounting to doubting mania. That all seven interpreters, all familiar with the writings of Freud and Jung, should attach significance to the relation with the father is not, we think, at all remarkable. A similar exegesis might be applied to the less complete but substantial agreement between the interpreters on the significance of other incidents in the dream.

The story presents other points of interest. We begin with a patient whose life is a misery to himself. Among the clinical data of the case we have a dream which, on the face of it, is mere nonsense. By the application to this material of certain rules—which, if we please, we may regard as quite arbitrary—certain diagnostic inferences are drawn. The subsequent history of the case is consistent with the truth of the diagnosis. Is the concordance fortuitous? The answer must depend on a knowledge of the frequency with which dream incidents of the type considered occur in the experience of youths not on the verge of mental collapse: the collection and analysis of such data is difficult, but not beyond the bounds of research possible for non-specialist medical men. We are not called upon to enter into the minutiae of the theory; we can begin with the broadest categories of dream types and ascertain their frequency in a normal population. It is hopeless to expect the adepts to do this for us. They, rightly or wrongly, are satisfied that their rules are correct. To apply the numerical method of Louis to this subject is more laborious and less flattering to one's intellectual vanity than abstract disquisition, but it is a scientific method. We recall

the literary history of masturbation, set out in one of Dr. Havelock Ellis's volumes. From the beginning of the eighteenth down to well past the middle of the nineteenth century there was hardly any physical or mental symptom which had not been specifically attributed by some eminent authority to the practice of masturbation. It was not until within living memory that the numerical method was applied to this problem, when it was found that a large proportion (in some samples a very large majority) of apparently healthy adolescents had been or were masturbators. This result certainly did not prove that masturbation was a harmless practice, but it did prove that the etiological significance of the high proportion of masturbators amongst the neurotic or psychotic was dubious. A comparison between the statements on the subject in textbooks of this and of the last generation will bring out the point we are attempting to make.

In our opinion, neither denunciations of the absurdity of the Freudian dream analysis nor pragmatic justifications of its success are adequate substitutes for a statistical verification. The significance of Dr. v. Muralt's paper lies not in its positive contributions to knowledge, not even in the precise numerical method adopted by him, but in the thesis that this problem too should be studied by the statistical method. Dream analysis is, of course, only one of the instruments of the analytical psychologists; it is perhaps the most disputable. But it seems to be one which can be tested in the domain of psychological experience accessible to all of us.

THE SMALL-POX OUTBREAK.

In an article at p. 943 of our present issue an account is given in detail of the measures which have been taken at and in connexion with Poplar workhouse to control the small outbreak of small-pox within the institution, and to try to prevent its extension outside. The three great measures are: first, vaccination of inmates and of officers, whether resident or not; secondly, search for contacts, with a view to their vaccination if discovered in time to enable vaccine to overtake variola, and surveillance so that they may immediately be isolated if the initial symptoms of small-pox appear; and, thirdly, hospital isolation forthwith of all discovered cases. Needless to say, disinfection and cleansing fall also within the scheme.

Experience indicates that though small-pox may come at any time, its extension is specially to be feared in winter, and we are now at the onset of that season. Also in the present outbreak a virulence of type is manifesting itself of which this country has seen comparatively little for a long time. Small-pox in most parts of Britain has in recent years been very mild, with a remarkably low fatality rate, such as has been experienced likewise in South Africa, Australia, and North America. Whether that strain of infection is now to be displaced with us by the kind of disease which was familiar half a century ago it is impossible to forecast, but there is undoubted cause for apprehension. A third factor in the case is the unprotected condition of a large section of the population, especially at the younger ages, owing to neglect of vaccination. On the other hand, the work of vaccination and revaccination carried out in the Forces during the war has conferred a large measure of protection upon the male adults of the country.

It is very satisfactory that the Ministry of Health is acting with foresight and promptitude. We have received a copy of two memoranda which are being issued, one to boards of guardians as the statutory authorities for vaccination, and the other to sanitary authorities as responsible generally for the public health. Both documents are distinguished alike by intimate knowledge and by common sense. In respect of contacts there is no exhibition of panic. They are not to be isolated either at home or in reception houses, as being capable of spreading the disease before it manifests itself on their own persons; but when the time comes at which the disease is likely to appear, in cases where it may have been incubating, surveillance is to be very thorough. Of course, for common lodging houses, with their casual and constantly changing inmates, special measures would have to be resorted to.

Satisfactory features of the position are that all who are now, in presence of the danger, successfully vaccinated will have the benefit of the recency of their vaccination. If an epidemic should come, it will be well past before the protective operation has had time to lose any of its initial value. Another comforting fact is that calf lymph can be quickly produced in quantity sufficient to meet the most extensive epidemic. That is a position very different from the times when the only source of lymph was from newly vaccinated babies, and when the supply was limited by the weekly vaccinations.

THE FIELD LABORATORIES, SHEFFIELD.

We publish elsewhere (p. 941) a remarkable address given by Sir Walter Fletcher, Secretary of the Medical Research Council, on a remarkable occasion. The occasion was remarkable for several reasons. In the first place it recalled the generous gift of the Sheffield Panel Committee of £1,000 towards the cost of erecting the Field Laboratories which are under the direction of Dr. Edward Mellanby, professor of pharmacology in the University of Sheffield. The Sheffield Panel Committee is financed, we understand, by a purely voluntary scheme, and when the financial situation was reviewed at the beginning of 1921 it was seen that economies practised had resulted in a considerable surplus, so that not only could the voluntary levy be suspended, but there remained over a sum of about £1,000. At a meeting of the insurance practitioners it was resolved that this sum should be transferred to the University, with a request that it should be earmarked for the equipment of the Field Research Laboratory. Professor Mellanby's department consists of a laboratory for experimental pharmacology at the University and of the Field Laboratories for dietetic experiments. The importance of associating the pharmacology department with clinical work is fully recognized in Sheffield, and Professor Mellanby has been appointed one of the honorary physicians to the Royal Infirmary, where the other physicians have given up 24 beds to him. In the curriculum at Sheffield students take part of the courses in physiology and anatomy, and the course in pharmacology while also doing elementary ward work; in this way it is hoped to bring the methods of the laboratory into closer touch not only with the clinical practice of physicians and surgeons but with the minds of the students also. The hope seems likely to be fulfilled, for students are displaying keen interest in the opportunities afforded to them. Sir Walter Fletcher's address was remarkable for many reasons: for once in a way he took for his subject the importance of medical research work in the daily life of the community. Workers in research, among whom he himself holds so distinguished a position, are too much fascinated by its interest and beauty often to explain themselves to the public, and he asked for the co-operation of practising members of the profession to act as interpreters of laboratory work to the public as they were already prepared to make use of the results of scientific research for the benefit of the public. Very happily he took for the text of a large part of his address the dictum of a one-time Minister who "did not hold with research, but believed that if disease was to be stopped the people must have better grub and less dirt." The fact that the occasion of the meeting he was addressing was the examination of some of the work Professor Mellanby is doing with regard to

deficiency diseases afforded an illustration to his hand of how "better grub" is to be provided, or at any rate of how its goodness in the promotion of growth in children and the prevention of disease in man can be judged by such researches as those now being carried out at Sheffield. The effects observed, under rigid conditions, of the withdrawal of vitamins are so astonishing that it is almost true to say that they must be seen to be believed, but no one who has seen them can doubt that a deficient supply of vitamins, short of their total withdrawal, must produce depressing effects on nutrition, retarding growth and predisposing to disease. Sir Walter Fletcher touched very lightly on the surprising new work on photo synthesis, which appears to show that direct sunlight, or even artificial light of a suitable kind, falling upon the skin, can stimulate the production of vitamins, or in some way make up for the want of them. We will not attempt to forestall the pleasure members will have in reading Sir Walter Fletcher's address, but we may express our sympathy with his humorous defiance of the people who, when told of a new thing, begin by saying it isn't true, and eventually assert that they knew it all the while.

THE LEAGUE OF NATIONS AND THE TRAFFIC IN DANGEROUS DRUGS.

The third Assembly of the League of Nations, held at Geneva in September, 1922, received a report from its Commission on the Traffic in Opium and Dangerous Drugs. From this it appears that Persia, Albania, Argentina, Colombia, Costa Rica, Esthonia, Luxemburg, and Paraguay have not yet unreservedly ratified the Opium Convention of 1912. Switzerland is expected to ratify by the end of this year, and it is hoped that Persia may shortly withdraw the serious reservations hitherto made. Turkey, of course, is still outside the League and the Convention. Very little progress has been made with the effort supported by the Advisory Committee to secure a system of Government certification from importers of these drugs, to the effect that the consignments are to be used for medical or legitimate purposes only. The success of such a system, it is recognized, is entirely dependent upon its general adoption, and no fewer than twenty-six States, members of the League, have not yet adopted it, although that system was unanimously approved by the second Assembly. A resolution was passed by the third Assembly, on the recommendation of the Commission mentioned above, inviting Governments which are parties to the Opium Convention to refuse licences for import of the drugs to any country which has not ratified the Convention and adopted the system of licence control of exports and imports, subject to the Advisory Committee reporting favourably to the Council on the proposal. The Provisional Health Committee of the League, which was last year requested to report on the amount of morphine, cocaine, heroin, etc., required in different countries for legitimate medical purposes, has not so far vouchsafed any definite results, and a request has been made to all Governments parties to the Convention to furnish estimates of their annual requirements of these drugs as speedily as possible, accompanied by a statement of the method by which the figures are arrived at. It is thus hoped that a provisional estimate of the world's legitimate consumption of the drugs may be arrived at and the way opened for the control of their production. The Commission observes that "as long as the dangerous drugs are produced in quantities exceeding the legitimate requirements, a great danger exists that the surplus will find its way into illegitimate channels. A control of production so as to limit it to the amount required for medical and legitimate purposes will therefore be the most effective way of putting a stop to the illicit traffic." This view has been emphasized in these columns for the last ten years, and we are gratified to find it adopted as a basis of policy by the League of Nations. The Commission recalls that the Opium Convention (Chap. II) contemplates the complete suppression of the traffic in opium prepared for smoking, and draws attention to the somewhat ominous increase of imports of opium into Hong-Kong of from ten to twenty chests a month. The statistics asked for from the different Governments showing the imports, exports, manufacture, distribution, and consumption of the drugs in question appear to have been very incompletely supplied, and an urgent request is made for fuller statistics for the current year. The Commission justly remarks that "if we are to carry through this great programme we must have the co-operation of all countries which are specially concerned in the cultivation, manufacture, and distribution of the drugs." The report concludes with five resolutions, which were submitted to and passed by the Assembly, embodying the views set out in the report; and the United States, which, like Germany, is not yet a member of the League, was invited to send a representative to the Advisory Committee, as has already been done by the latter Power. Thus all too tardily the provisions of the Opium Convention, already ten years old, are being put into operation. John Stuart Mill in his autobiography notes that "all questions on which there are strong private interests on one side and only the public good on the other have long periods of incubation to go through." The control of drugs of addiction would have served him as an apt illustration of his dictum.

RESEARCH DEFENCE SOCIETY.

It is a grave error to underestimate one's enemies, and it would be well if members of the medical profession reminded themselves more often of this military truism in connexion with the hostile forces of the antivivisectionists. The literature of these "campaigners against cruelty" is so ill informed, their arguments are so full of obvious fallacies, and they betray such naive narrow-mindedness that medical men and women often dismiss the subject with a smile and shrug of the shoulders, reflecting that cranks are as common as *kranken* (from which the word was derived). But the public does not notice how the antivivisectionists misrepresent facts, nor does it perceive how statistics are distorted by such tricks as that of confusing general mortality with case mortality, whilst the appeal to sentiment quickly reaches the tender spot in a race which justly prides itself on its humane treatment of dumb animals. Thus the mischief spreads, the benefits of research are belittled, and scientific investigators are represented as heartless tormentors of defenceless creatures. Every medical man knows that if the public were properly informed as to the way in which experiments are conducted and the magnificent results they have achieved the antivivisectionists would become as harmless and negligible a section of the community as the modern Jacobites. An animal experiment is not a private enterprise of a curiously minded scientist; it is by comparison with other methods of investigation only occasionally resorted to in research, and then only when all other known methods of investigation have failed. As the yearly Home Office Reports show, the vast majority of the experiments performed on animals are carried out for the protection of public health, and we all, just and unjust, reap the benefit of these unadvertised activities. These facts the Research Defence Society makes it its duty to declare to the world. This society was founded in 1908, under the presidency of Lord Cromer, "to make generally known the value and necessity of experiments on animals, the restrictions imposed on them by the Act of 1876, and the great saving of human and animal lives already obtained by means of such experiments." From the headquarters at 11, Chandos Street, Cavendish Square, reports are sent out to members and associates and distributed to public libraries; the magazine, *The Fight against Disease*, may be obtained through any bookseller or newsagent. Members subscribe 10s. and associate members 5s. a year, and the society is very anxious to increase its membership so that the plan of combating antivivisectionist propaganda may be carried out on a larger scale. With these objects all medical men must be in sympathy, for the antivivisectionists of to-day deserve the rebuke that Darwin administered in 1881. "I know," he said, "that physiology cannot possibly progress except by experiments on living animals, and I feel the deepest conviction that he who

retards the progress of physiology commits a crime against mankind." It is hard to understand how the antivivisectionists can regard as villainous and unnecessary such disinterested work as that to which Lister referred when he declared: "I have myself often performed experiments on the lower animals, and if I have been privileged in my professional career to do anything for the good of my fellow men more is to be attributed to these experiments than to any other work in which I have engaged."

THE PHYSIOLOGY OF DIGESTION.

Sir William Bayliss gave an interesting lecture, under the auspices of the Fellowship of Medicine, at the Western General Dispensary on November 6th, when he illustrated by experiment the action of the various digestive juices. He reminded his hearers that the product yielded by the action of saliva alone on carbohydrates was not glucose, but maltose, and that the process of conversion into glucose was completed in the small intestine. At the same time there was evidence that if saliva were allowed to act sufficiently long glucose was eventually produced by its agency alone. The time during which food was ordinarily exposed to the action of saliva was naturally brief, though it might be longer than some had supposed. The enzyme of the saliva could not act in the strongly acid solutions of the stomach, but experiments on rats, with whose food litmus paper had been mixed, showed that food did not immediately become acid in the stomach. After a certain length of time the rats were killed, and on cutting across the stomach it was found that only in the outer portion of the food contents had the litmus become red; in the inner part it remained blue. This suggested that there was an additional time during which the process of converting starch into sugar by the saliva might still be proceeding in the stomach. The action of pepsin in converting the proteins as far as peptones, and the action of trypsin in effecting their further conversion into amino-acids, were demonstrated, and also that pepsin acted only in acid and trypsin only in alkaline solutions. The action of erepsin in separating the small aggregations of amino-acids into their free individual constituents for absorption by the cells was illustrated with the help of the preparation called "ereptone." Sir William Bayliss also referred to the action of other enzymes, including the fat-splitting enzyme in the pancreatic juice, and the enzyme present in the secretion of the walls of the small intestine, which reduced cane sugar finally into glucose and fructose. The chief function of the bile—to dissolve the fatty acids—was also demonstrated by the use of a preparation of bile salts; by adding alkali the difficulty of the precipitation of the salts in a watery solution was overcome.

THE HARRISON MEMORIAL.

A memorial, erected by subscription in the rooms of the Chemical Society at Burlington House to the late Colonel E. F. Harrison, C.M.G., will be unveiled by Earl Crawford and Balcarres on the afternoon of Thursday next, November 16th. The memorial, which is the work of Mr. Ernest Gillick, is a bronze relief representing a trench scene at the moment when a gas alarm is given. It will be associated with the roll of honour of the Fellows of the Society who fell in the war. The total amount collected makes it possible to present a sum of over £1,000 to the Chemical Society, in trust for the institution of a money prize, to be awarded every three years to the chemist under 30 years of age who, during the preceding five years, has produced research work judged to be of the greatest merit and promise. Colonel Harrison at the time of his death was Controller of Chemical Warfare at the Ministry of Munitions. He had joined the army in May, 1915, and his technical attainments as a chemist were quickly appreciated. Later on his wide knowledge of his science and his fine character led to his appointment to even more responsible offices, and it is an open secret that still further advancement would have been his had he not succumbed in November, 1918, to an attack of influenza at the age of 49. Before entering the army, after a very distinguished early career, he was in independent practice as an analytical chemist. It was while thus engaged that he became associated with the British Medical Journal and undertook the series of analyses of proprietary articles, afterwards collected and published by the Association in the volumes *Secret Remedies* and *More Secret Remedies*. He gave evidence for the Association before the Select Committee on Patent Medicines, and the scrupulousness with which he prepared his case and the transparent honesty with which it was presented made a deep impression on the Committee.

EVIL EFFECT OF EXCESS OF PROTEIN IN MATERNAL DIET.

The effect on the offspring of the diet of the nursing mother is very clearly illustrated by some investigations recently made by Miss Gladys Hartwell, D.Sc.[1] She has shown that in rats, when the mother received certain typical diets, definite curves could be obtained for the rate of growth of the litters. For example, when the mother was given a good diet of bread and whole milk the young rats at the end of lactation weighed twice as much as when the mother received a poor diet consisting of bread only. It was observed also that when an excess of protein, such as caseinogen, was added to the standard diet of the mother the litters did not fare so well; they lost weight, some suffered from spasms, and many died. Further investigation showed that this detrimental effect of protein[2] followed the administration of edestin, blood and egg albumen, gelatin, and home-made gluten; such dietaries containing excess protein apparently rendered the milk poisonous and finally checked its flow. The mother suffered no ill effects from the excess protein diets, and Dr. Hartwell found in some cases that there was greater danger to the offspring when the mother gained in weight and flourished on this protein diet. Since the objection might be raised that these results were being obtained on a diet deficient in some accessory factor, Dr. Hartwell has repeated her experiments,[3] taking particular care to supply the nursing mother with butter, yeast extract, and lemon juice, thereby supplying ample amounts of the requisite vitamins. The same remarkable disturbances in the health of the offspring were found when excess of protein was added to physiologically perfect diets for the mother. If such a diet was begun before or during gestation none of the young survived; if started at birth, some survived but they were not normal, and the majority died. Until the eleventh day no defect could be observed, but about that time spasms commenced, the convulsions appearing at approximately the same period irrespective of the length of time the mother had been fed on the excess protein diet. This excess protein diet appeared to be excellent for the young rats when they began to eat for themselves, and a large number of experiments have shown that such a diet is adequate for growth, fertilization, and reproduction in the rat. These toxic symptoms could be prevented by the addition of large quantities of whole milk to the maternal diet, but, although the offspring under such circumstances did not develop convulsions, they did not show such good growth curves as litters raised by mothers not receiving excess protein. Large doses of commercial yeast extract added to the excess protein diet also prevented the onset of spasms. In more recent work shortly to be published Dr. Hartwell has shown that the addition of any substance containing large quantities of vitamin B, notably egg yolk, tomatoes, carrot juice, and potatoes, prevented the toxic symptoms developing in the offspring. It is remarkable that a diet apparently so satisfactory for the mother should yet be so disastrous for the young. The constant character of the spasms and the regularity and punctuality with which they are produced point to the excretion in the milk of some

[1] *Biochemical Journal*, vol. xv, No. 1, 1921.
[2] Ibid., vol. xv, No. 5, 1921.
[3] Ibid., vol. xvi, No. 1, 1922.

highly toxic substance; the fact that the disorder can be prevented by the administration of large quantities of vitamin B proves that an error of metabolism must be the underlying cause. If similar results are observed in other animals, it would seem as though another disease must be added to those known to be due to dietary disturbances.

SIR WILLIAM RAMSAY.

A memorial to Sir William Ramsay, one of the greatest of British chemists, was unveiled in Westminster Abbey by the Duke of York on November 3rd. The memorial, the work of Mr. Charles L. Hartwell, A.R.A., is a profile bust in bronze set in a marble frame, on the base of which is inscribed "William Ramsay, Chemist." The memorial was offered to the Dean and Chapter by the Duke, who was acting for the Prince of Wales; it was accepted by the Dean, who said that it would be added to the galaxy of memorials to scientists which had been set up in the north aisle. The persons so commemorated included Darwin, Wallace, Lister, Adams, Stokes, Joule, and Hooker. To these, the Dean said, was now added the name of the most famous chemist of our century. Among those present were the French Ambassador, the American Ambassador, the Belgian Ambassador, the German Ambassador, the Japanese Ambassador, the Spanish Ambassador, and the Chilian, Danish, Greek, Lithuanian, Netherlands, Swedish, Chinese, and Norwegian Ministers. Sir Charles Sherrington, President of the Royal Society, Sir T. Gregory Foster, Provost of University College, London, where Sir William Ramsay was professor for many years, attended, as well as representatives of the Universities of London and Sheffield. The French Académie des Sciences was represented by Professor H. L. le Chatelier. The Ramsay Memorial Fund, begun in 1917, consists of nearly £58,000, raised by private subscription all over the world; and the capitalized value of the additional endowments by Dominion and foreign governments is as much again. Eleven Ramsay Fellowships, each of the annual value of at least £300, enable promising research students from Canada, France, Switzerland, Greece, Italy, Norway, Sweden, Denmark, Spain, Holland, and Japan to carry on work in any selected chemical laboratory in Britain. There are also British Ramsay Fellowships, including one specially connected with Glasgow, Ramsay's *alma mater*. From the remainder of the Fund £25,000 is being devoted to a laboratory of chemical engineering at University College, London, where Ramsay taught and worked for twenty-six years; there, also, an annual Ramsay medal has been founded. Ramsay's name will be for ever associated with the discovery of the family of inert gases—argon, neon, helion, krypton, and xenon. Argon was the first of his discoveries, and he was led to it by the late Lord Rayleigh's observations on the discrepancy between the density of atmospheric nitrogen and that prepared from compounds. Helion had been presumed to exist on the strength of stereoscopic examination of the spectrum of the sun's chromosphere in 1868, but it was not until 1896 that terrestrial helion was proved by Ramsay to exist. It was in that year that Becquerel of Paris discovered the radioactivity of uranium; Rutherford later on showed that radioactive emanations were inert gases of the argon type, whereupon Ramsay took up the study of the radium emanations enthusiastically. Ramsay from the first had been attracted to the physical side of chemistry and found a congenial sphere of work in the borderland of physics and chemistry, which by the researches we have mentioned he did so much to map. He was a man of most attractive character, beloved both by his fellow workers and by students. He died on July 23rd, 1916, after a long illness which from the first offered no hope of recovery.

MEMORIAL TO LIEUT.-COLONEL E. M. WILSON.

A memorial tablet to Lieut.-Colonel Edmond Munkhouse Wilson, C.B., C.M.G., D.S.O., R.A.M.C., who died in the Queen Alexandra Military Hospital, Millbank, rather more than a year ago, was unveiled in the chapel of that hospital on November 3rd. Lieut.-General Sir John Goodwin, D.G. A.M.S., in a brief address, paid a tribute to an old friend and brother officer, who entered the Royal Army Medical Corps as long ago as 1881, and served for twenty-three years with honour and distinction, until ill health compelled him to retire in 1904. Wilson served in six campaigns, chiefly in the Sudan and on the Nile, and came home from the battle of Khartoum in 1899 to take up various important appointments in turn at the War Office and Aldershot. For a number of years he represented the Army Medical Service on the Council of the British Medical Association; he had also been president of the West London Medico-Chirurgical Society, and in various ways he did much to further the interests and the benevolences of his profession. As a man he had a host of friends and not a single enemy. No one could for a moment think any evil of him, for he thought evil of no man. The chaplain-general (Bishop Taylor-Smith) then dedicated the memorial, a marble tablet, bearing the name and titles of the late officer and the words, "He devoted his life to the Corps." There was a large attendance of officers, men, and nurses in the chapel for a brief service. Among those present was Major-General Sir William Macpherson, K.C.M.G., representing the Council of the British Medical Association.

THE ASSOCIATION'S WAR MEMORIAL.

This issue of the Journal bears the date of the fourth anniversary of the Armistice, which brought the war that began on August 4th, 1914, to an end. The Council of the British Medical Association has decided that the memorial to members who fell in the war shall take the form of a Book of Honour to be placed in the Library, a memorial tablet in the entrance hall, and a small book for issue to relatives, describing the Book of Honour. It will be seen from the Proceedings of the last meeting of Council, reported in the Supplement, that Mr. F. G. Hallett, Secretary to the Conjoint Examining Board in England, has generously undertaken, as a labour of love for the profession, to illuminate and superintend the engrossing of the Book of Honour.

The Ministry of Health has issued this week the final report of the Departmental Committee on the Causes and Prevention of Blindness. The Committee was appointed two years ago by Dr. Addison "to investigate and report on the causes of blindness, including defective vision sufficient to impair economic efficiency, and to suggest measures which might be taken for the prevention of blindness." The medical members of the Committee were Dr. J. C. Bridge, Dr. A. Eichholz, Mr. N. Bishop Harman, Mr. J. B. Lawford, Sir J. H. Parsons, and Dr. James Taylor, and Mr. C. J. Bond was afterwards made an additional member. We shall publish a full account of the report at an early date.

The next session of the General Medical Council will commence at 2 p.m. on Tuesday, November 28th, when the President, Sir Donald MacAlister, K.C.B., M.D., will take the chair and give an address. The Council will continue to sit from day to day until the termination of its business.

The International Society of Surgery will meet in London in July, 1923, under the presidency of Sir William Macewen. The organizing secretaries are Sir D'Arcy Power and Mr. J. E. H. Roberts, F.R.C.S. The society met last in Paris in 1920.

The eleventh International Physiological Congress will be held in Edinburgh from July 23rd to 27th, 1923, under the presidency of Sir Edward Sharpey Schafer. The treasurer is Professor Arthur R. Cushny, the secretaries are Professor George Barger and Professor Jonathan C. Meakins, and the assistant secretary is Miss Dorothy Charlton, to whom inquiries may be addressed, at the Department of Physiology, the University, Edinburgh. On request she will send particulars of hotels and lodgings.

THE UNIVERSITY OF SHEFFIELD.

THE FIELD LABORATORIES AND PHARMACOLOGICAL DEPARTMENT.

SIR WALTER FLETCHER ON MEDICAL RESEARCH AND DAILY LIFE.

The new Field Laboratories of the University of Sheffield are now working at full capacity, and on November 2nd were visited by a party of panel practitioners in the neighbourhood.

The Field Laboratories were erected last year at the request of Professor Edward Mellanby on his acceptance of the chair of pharmacology in order that his work on experimental rickets and other dietetic problems, which he had been carrying on in London and at Cambridge, might be transferred to Sheffield. The sum already expended on the erection of the buildings and their equipment is £7,000, and towards this the Panel Committee contributed £1,000, thus affording evidence of the living interest of insurance practitioners in scientific research in medicine.

The buildings of the Field Laboratories have been erected in a field rather more than three acres in area, situated on the edge of the moors at an altitude of nearly 1,000 ft. and about four miles from the university and six from the centre of the city. The buildings consist of a series of army huts suitably modified for their various purposes. One of these (60 by 20 ft.) is used as a residence for the caretaker and assistant. Direct access is provided into a second hut, which is divided into three rooms; one is a chemical and histological laboratory, another is used for *post-mortem* examinations, and the third for weighing and preparing the food for the animals. Between the laboratory and the main building which is used for housing the animals there is a store room in which anthracite, sawdust, and chips are kept. The animal house measures 80 by 30 ft., and is divided into three rooms, which lead into one another; these rooms provide separate accommodation for 65 puppies. A second building, about forty yards from the main group, will be erected for isolation purposes and for treating infective conditions, but owing to the lack of funds this has not yet been completed. At their visit last week the party was afforded the opportunity of seeing the experiments now in progress. The majority of these are designed to throw light on the etiology of several well-known diseases. The extraordinary differences in the growth structure of tissues and general activity of the animals produced by small differences in diet were very clearly to be seen.

In an informal manner Professor Mellanby demonstrated the effect of different diets in the production of rickets. A series of dental specimens, which illustrated the work of Mrs. Mellanby on the influence of diet on dentition, were shown also. Most impressive of all, perhaps, were the remarkable effects on the appearance and activities of puppies fed on different diets.

After the inspection the party returned to the university, where, after tea, they assembled to hear an address from Sir Walter Fletcher, M.D., F.R.S., Secretary of the Medical Research Council. The Vice-Chancellor, in introducing Sir Walter Fletcher, in a few words thanked the practitioners for their help and support.

MEDICAL RESEARCH AND DAILY LIFE.

Sir Walter Fletcher said that the Medical Research Council was grateful to the University of Sheffield for the unique arrangements made for the research work conducted by Professor Mellanby and his immediate colleagues, but especially was it grateful for the singular generosity which had inspired members of the medical profession in Sheffield to give important financial support to that part of the work which was being done at the Field Laboratories. The Medical Research Council was making a large annual contribution to the work, but its means were strictly limited and it was a very great encouragement to have voluntary support. It was especially encouraging when support was given directly by members of the medical profession. It was not the case of a benevolent millionaire, though he hoped there might be many such, giving a generous donation towards scientific work as to the nature of which he was imperfectly instructed; but it was the case of men who really knew the meaning of the work giving it support.

Grateful as the Council was for that financial co-operation, it was the interest that generosity evidenced which was specially welcomed. Those interested in the advance of knowledge by scientific research work in the field of medicine needed the help of medical men, at every turn, wherever it was a question of making available for the benefit of the public the practical fruits of research work. There were many directions of inquiry in which the laboratory man was helpless unless the man of practical experience of human needs was closely co-operating with him. That co-operation might almost be taken for granted, but the research worker needed also the help of the profession as interpreters to the public. The laboratory man was buried in the laboratory, and little seen by the public. But the doctor went everywhere, and had the necessary knowledge to guide and enforce public opinion—hitherto backward in this country—which was to support research; public interest and knowledge must be moulded and stimulated by medical men.

"I was reading last week," the speaker continued, "that delightful essay by John Brown of Edinburgh upon Sydenham. Writing in the last generation, long before this most recent busy output of pathological and physiological work, he looked into the future and said that the progress of scientific knowledge affecting medicine was going to increase in a manner which would defy all calculation, and he said that it would have the most important effect upon the quality of the medical profession. He prophesied that the office of physician would in a high sense become more difficult than before, because it would require a greater compass and energy of mind—it would be working in a wider field and with finer weapons. Surely that prophecy has been fulfilled, and the medical man of to-day is working with an incomparably greater compass and incomparably finer weapons than his predecessors of only a generation ago."

Sir Walter Fletcher went on to speak on the general topic of his address—the obvious and visible importance of medical research work in the daily life of the community. The ordinary layman, who put himself unquestioningly in the hands of the physician or surgeon, and accepted all the resources brought to bear to help him, was necessarily little aware of the laborious researches upon which those resources, from large measures of treatment down to tiny points of technique, were based. Research workers had difficulty in bringing home to the public how the work they did bore fruit in practical life outside the technical field of the operating theatre or the medical ward. Research work did not get, or until recently had not got, the same public support and encouragement—and gratitude—from Englishmen as it had received, and was receiving, in countries like Germany and America. The Englishman was in some ways paradoxical. He was characteristically kind-hearted; he hated pain, and if pain were presented to him he desired to help it. British charities for the diminution of suffering were earlier, and had been more generously supported, in this country than in any other, and our nursing services have been earlier and better than those of any other country. But the Englishman was not so imaginative as the instructed public of those other nations. If the pain was stopped, or at least if it were out of his sight, he forgot it, and he did not think so deeply of the importance of preventing it for the future. The sums of money given in this country for the removal of immediate pain and immediate disease and suffering were enormous when compared with the trifling amounts offered either by gift or bequest for the scientific research work by which alone secure advances could be made towards the permanent prevention or further palliation of suffering. There were two ways in which the research worker and his work were apt to be undervalued and underestimated. All work which aimed at preventing pain and disease suffered under a conspicuous handicap. The more successful it was, the less obvious the results. If a disease were practically abolished, as for example small-pox in this country, the boon was easily forgotten. "I am just old enough," the speaker said, "to remember what a pock-marked face is like. I should say that very few of the undergraduates in this room know really what I mean when I speak of a pock-marked face. They have probably no vivid visual recollection of that, and yet their grandfathers could remember a time when a girl's chances of marrying were enormously increased if she were not pock-marked." A more recent example was the inestimable triumph of the virtual abolition of enteric fever and its congeners during the late war. It had often been spoken about, but it was already being rapidly forgotten.

In the South African war very many more men died from the bacillus than from the bullet. But in the late war, owing to research work diligently pursued in the interval in the Army Medical Service, the position was exactly reversed, and, for the first time in recorded history, there were more deaths from the bullet or the shell than from disease. Enteric fever was practically negligible in our army, in spite of the incredibly insanitary conditions of most of the fighting area. Had the lesson really sunk home in the minds of the people of this country?

"I noticed quite lately," Sir Walter Fletcher continued, "two war memorials in the same village—one for the South African war, and one close by for the late war, the great war. I noticed with interest that upon the South African memorial there are a few names, a handful of names, of those who were killed by bullet or shell, and then a long list of those who 'died from illness'—which meant enteric fever. Close by was the memorial to those who fell in the great war, unhappily with a much greater roll of names, but not one of those had died from enteric disease. Imagine what it would be if by some magic you could see inscribed, in any given village, the roll of the names of those who would have died but for that research work. The roll of names would be much longer than the mournful roll of those who actually fell, and it would keep alive our debt of gratitude to the men who produced that result. Yet it was only in the last session that more than a hundred members of Parliament voted in the House of Commons in favour of a resolution that no further public money should be spent upon medical research work. More than a hundred members of Parliament voted in favour of Kenworthy's bill, which would preclude for all future time—until it was rescinded, as future generations would rescind it—any similar research work on behalf of the Army, or the Navy, or for any other Government department, or in the universities of the country, supported by public funds."

There was another kind of difficulty. When the fruits of research had been gathered in—and this was especially true of results of research work like much of that done at the Field Laboratories, which touched the practical daily life of mankind—there was a persistent tendency on the part of what was called the practical man to say "Yes, but of course we knew that before; common sense would have told us that." An old saying, which contained a great deal of truth, was that in this country any scientific discovery was submitted in successive stages to three kinds of criticism. In the first stage men said frankly that they did not believe it, that it was untrue; in the second stage that it was contrary to the doctrines of the Christian religion; and in the third that they knew it before. The "knew it before" attitude was very common, especially in the field of medical research.

Of this the speaker gave two definite instances: "When I went from Cambridge to London to begin my present work in 1914, shortly before the war, I met the Minister of the department which is in duty bound to take chief interest in the results of medical research work, and he was good enough to have a long talk with me on the terrace of the House of Commons. And I remember he cheerfully and frankly said to me, 'Well, doctor' (I have never pretended, then or since, to be a doctor)—'well, doctor, I don't hold with research. If we want to stop disease we must give the people better grub and less dirt.' Now that was the considered opinion of a responsible Minister. There is, of course, much truth in what he said, that given 'better grub' and given 'less dirt' disease would be incalculably lessened in this country; and my reply of course was that I entirely agreed—if he could tell me what better grub was and what less dirt was, for I know no way of finding out those two things except by persistent scientific research work."

"As we look back now we can see how clear a guide has already been given us in many directions towards knowing what 'better grub' means, by scientific work only made possible by public expenditure." Of this illustrations were at hand in some of the work in the Sheffield laboratories. The nation ought to be very proud of the studies of vitamins going on so actively, not only in Sheffield but in other centres of research work; proud because the fundamental discovery underlying it all was made in this country. The whole subject, so to speak, had been the almost exclusive property of the English-speaking races. The Americans had actively pursued it, but the Germans, the Austrians, the French—so active in other directions of research work, especially before the war—were still far behind us in this vitally important subject.

The fruitful and practical applications of the work were immediate and obvious. Further knowledge must simplify the process of getting knowledge, but at present such investigations were expensive, because they had to be done slowly, by the use of animals. But they told us about "better grub" for the people. Already, although we were still ignorant, only at the dawn of the subject, although even Professor Mellanby had, the speaker felt confident, no clear idea in his mind when he used the word "vitamins" in regard to their chemical nature or the mode of their action—already there was abundant practical fruit, a circumstance quite unusual in the history of the growth of science: the British housewife could now be advised, and should now be advised by the proper authorities, of the differences to the present and future lives of her children that depended upon whether she gave them butter or margarine; the differences between one kind of butter and another kind of butter; the time for which she boiled the cabbage (that was a matter of very great importance, or might be, to the lives of her children); and whether she should use lard or other forms of fat; other illustrations would be familiar to medical men. It was being said that all that was "known before." It was obvious, some people said, that milk would be better if it came from a cow eating green grass than if it was eating hay in the winter, and so on. Well, if all this was known before those who knew it and concealed the secret were homicidal criminals. Those who had seen some of the experimental work at the Sheffield Field Laboratories would know the tremendous power of control over the bodily shape and bodily health of the animal which relatively minute differences of diet would bring about. And the study was yet in its infancy; much more work was urgently needed, yet it was possible now to look forward confidently to a time when immeasurable benefit could be brought to the populations of our great cities through this work. Yet more than a hundred members of the last Parliament voted against its continuance.

There must have been very few during the war who did not notice, with a good deal of heart sinking, the passage of the Australians and New Zealanders about our streets, with their splendid figures and faces, who did not reflect sadly that these men were of the same bone and blood as ourselves, and yet seemed to be members of a superior race as compared with the ordinary Londoner: if they had come in the same numbers to Sheffield the contrast might have been even more marked. There was a time coming, to which scientific research work was fairly pointing the way, when it would be regarded as a shameful anomaly if the average Englishman was not at least as finely developed in body and face as those men were. "I hope," Sir Walter Fletcher said, "I may live to see the day when beauty again of that type comes back to the faces of the populations of our great cities."

He could not stay to touch upon the interesting new work about the action of light, and the remarkable way in which sunlight or artificial light, falling upon the skin, seemed able to do part of the work done ordinarily by vitamin substances in food. There again the common-sense man said, "Only a fool could ever doubt that sunshine is good for man. We knew it before." That was true, but in our northern island vast numbers of our fellow countrymen lived in smoky cities, and the knowledge of how to supply by appropriate artificial means proper artificial light, and if necessary food—the equivalent of the rich man's holiday time on the Riviera—would work untold benefits to this country. From a purely scientific point of view there was hardly any more interesting chapter in biology than that now opening, which seemed to point to cod-liver oil as being, in some literal truth, bottled sunlight; we might have to depend upon artificial light and artificial conditions of food until the results of the industrial revolution were palliated and we had built Jerusalem again in "England's green and happy land."

"So much," Sir Walter Fletcher said, "for grub. I had meant to say something about dirt, the lessened dirt that my friend thought would do so much for the diminution of disease. But what is dirt? Let us think of the soldiers in the trenches. It was wholly impracticable to say, 'Let them be clean.' It is impracticable to tell a coal miner to be clean. Almost all our industrial population are in a sense waging a kind of warfare where personal cleanliness of the ordinary kind is impossible during the hours of labour. But it was not dirt in the ordinary sense of the word that injured the soldiers. It was not the mud of the trenches. That brought them nothing beyond inconvenience. It did not bring them death unless it was dirt of a particular kind, and only the scientific

man was able to say what were the dangerous kinds of dirt, and how they could be avoided—how scabies could be prevented, which was one of the greatest sources of loss of man power during the war; how tetanus, coming from the soil, could be prevented; how typhus and trench fever could be kept at bay by tracing out the exact mode by which those diseases are conveyed from man to man by lice, where not mere cleanliness is sufficient, but measures which are effective to destroy particular insects. And in the mines of Cornwall it is not dirt which injured the men's health, but over a large district it was hookworm disease, where the particular stage of the parasite entered through the skin, and so spread the infection; and a knowledge of the precise mode of propagation was sufficient to stamp out the disease. Many are the instances of that kind that will occur to everyone here.

"So many of our opponents—because we have opponents, as well as those who are merely passive—the opponents of medical research work are fond of saying that this or that triumph of medical science is the result of improved sanitation. That can be definitely disproved in many instances. But even our drainage, the enforcement and development of our drainage schemes, has throughout been stimulated and guided by a growing precision in our knowledge of the organisms of disease. Even now research is actively in progress, and is still needed. Research is needed into the new process, the activated sludge method, recently installed in Sheffield. It appears to be completely successful, but it is not perfectly understood, and we may be certain that until it is perfectly understood it can never be constantly successful, and there will always be times when something may go wrong without an available remedy.

"I am sometimes tempted to think that the stimulus of research work has driven sanitation too far. Our knowledge as it has grown has, I think, shown that a great deal of the modern plumbing which is insisted upon by various by-laws is really unnecessary, and dates from a time when a mysterious agent called effluvium was supposed to convey disease. I firmly believe that the cost of housing might be cut down in an important way if science were allowed full play, as it is in some parts of America, in the devices which are now used.

"I should not like to leave the subject, especially when speaking in a university, without trying to remove any impression I may have given that I or any other scientific man, or any of the research workers of the country, are thinking all the time of the material benefits they can produce. They have produced those material benefits, and all mankind owes them gratitude, but it is not for these mere additions to our comfort that these men are working, and it is not merely for the practical fruits that, in my opinion, the public support and public money should be given. It is quite unnecessary, in a place of this kind, to point to the value of knowledge for its own sake. In the instances I have briefly touched upon, where I have appeared perhaps chiefly to think of the practical boons conferred, the interest and beauty of the scientific work involved is very great indeed. This kind of work in any civilized nation is needed not only for utility, though Heaven knows that is justification enough, but for its interest and its delight, for our self-respect and for the dignity of man, and, I would add, for our worship. After all, the second great commandment about loving our neighbour cannot be more than an empty sentiment nowadays unless the love takes a practical form, and unless it is free, so far as possible, from ignorance. This scientific work is necessary for the fulfilment of that commandment. It is necessary, too, for the fulfilment of the other great commandment. That consideration has, I think, never been better expressed than by a physician, Sir Thomas Browne. You remember he said: 'The wisdom of God receives small honour from those vulgar heads that rudely stare about and with a gross rusticity admire His works. Those highly magnify Him who by deliberate research into His creatures and judicious inquiry into His acts return the duty of a devout and learned admiration.'"

Sir Walter was heartily thanked for his address on the proposition of Dr. Arthur Hall, seconded by Dr. Forbes, secretary of the Sheffield Panel Committee. In reply, he said: I know that my Council have it in view to ask Sheffield, if I may use so comprehensive a word, to undertake another very important piece of work, and I hope I may take back a favourable answer with regard to that when I return.

SMALL-POX IN LONDON.

THE total number of cases of small-pox reported in and near London during the year 1922 down to November 4th is 62, with 17 deaths; that is greater than in any year since 1904. Reference to the following table shows that this figure is possibly comparable with the 63 of 1891 and with the 66 of 1900. Each of these figures was followed by a heavy outbreak in the following year; the outbreak which appears now to be impending may be further postponed, as it has already been postponed, both by the improvement in public education on the subject of small-pox and by the heightened efficiency of the public health service: but there is no doubt whatever that the present external pressure of small-pox on the one hand, and on the other the negative internal susceptibility to the disease, brought about by the neglect of vaccination, have reached such a point that an adjustment is extremely likely to take place by means of a smart if not a heavy epidemic.

Year.	Deaths from Small-pox		Admissions to M.A.B. Hospitals.
	England and Wales.	London	
1881	3,098	2,367	8,551
1882	1,317	470	1,799
1883	957	136	598
1884	2,224	1,236	6,363
1885	2,827	1,317	6,146
1886	275	20	99
1887	505	9	56
1888	1,026	9	62
1889	23	1	6
1890	16	3	22
1891	49	8	63
1892	431	29	325
1893	1,457	186	2,376
1894	8 6	89	1,117
1895	223	55	941
1896	541	9	150
1897	25	16	70
1898	253	1	5
1899	174	3	18
1900	85	4	66
1901	356	229	1,743
1902	1:0	2,464	1,314	7,842
1903	760	13	355
1904	507	25	149
1905	116	10	55
1906	21	0	27
1907	10	0	2
1908	12	0	1
1909	21	2	15
1910	19	0	5
1911	23	9	70
1912	9	1	5
1913	10	0	1
1914	4	0	1
1915	13	3	11
1916	18	0	1
1917	3	0	0
1918	2	0	36
1919	25	5	27
1920	29	4	18
1921	5	0	2

Cases certified in England and Wales.

The present run of cases began with the disclosure at a consultation on October 27th, 1922, at St. Andrew's Hospital, Bromley-by-Bow, formerly the Poplar and Stepney Sick Asylum, of a case of small pox in the person of an inmate who had been admitted from the Poplar institution, formerly the Poplar workhouse, on October 24th, 1922. On October 27th a rash appeared on his skin, and he was removed that evening to the small-pox receiving station of the Metropolitan Asylums Board. Vaccine lymph was sent for by special messenger, and vaccination of the immediate contacts was begun the same evening. Revaccination of all of the staff of the hospital has been brought up to date, and nearly all of the inmates have now been revaccinated. The risk of a spread in this institution is minimized owing to this case having been detected on the same day that he became infectious, and to the prompt measures which have been taken.

On the morning following this occurrence—namely, on Saturday, October 28th—consultations were held on certain cases in the Poplar institution, and as a result there were at once certified five cases of small-pox from two of the men's wards. There was thus suddenly disclosed a most serious situation, inasmuch as there was then reason to suspect that further cases of small-pox were scattered throughout the institution. This, in fact, proved to be the case. Apprehension also arose that infection might have been conveyed outside owing to the free ingress and egress of the inmates and staff.

A rapid plan of operations to meet the emergency was at once drawn up, embracing the following main indications: (1) to search for every further existing case; (2) to remove or destroy the infection thus disclosed, by prompt transfer of the patients and immediate disinfection; (3) to protect the contacts as far as possible by vaccination, and to watch for further cases arising; (4) to ascertain the origin of the outbreak.

Various remedial steps, falling under one or other of these main heads, were taken almost simultaneously. All ingress to and egress from the institution was at once stopped. Immediate notice was given to the Poplar Borough Council, the London County Council, and the Ministry of Health.

Vaccine lymph was sent for; removal of the small-pox cases hitherto discovered, and disinfection of infected articles and places was immediately undertaken; and an individual examination of all the persons resident in or nearly connected with the institution was begun. Acting under medical advice these various steps were ordered or sanctioned by the House Committee, whose Chairman was at once on the spot; and as a result of this and of other conferences which took place as occasion required a situation of much gravity was thoroughly well in hand within thirty-six hours from the discovery of the first cases; apprehension for the future occurrence of small-pox within the institution, except for the considerable number of cases already infected, was at an end.

The individual inspection of all persons in the building was a task of some magnitude. The most exposed groups of persons were taken first. At the discovery of the first group of small-pox patients an immediate note had been made of the age, name, original ward or dormitory, date of transfer and to which ward, date of onset of acute illness, date of rash. Many of the inmates were aged and infirm, it being the practice to transfer cases of serious illness from the institution. As soon as the above particulars were had, it was obvious that certain other wards were likely to contain further small-pox patients; and also, from a comparison of the dates of onset and rash of these five cases, it was apparent that they were infected by a common source which certainly had been acting on or about October 13th to the 15th; accordingly inquiry was at once made for a person who had fallen ill about that date and possibly escaped recognition. This person was speedily found; he had fallen ill on October 13th and had had what now proved to be the rash of small-pox on October 15th and had infected some of the above cases, and others which followed. Whence he contracted his disease is not known. He must have been infected on or about October 1st. He was engaged in laundry work, in which occupation he had the opportunity of handling the clothing of recent admissions. It was also noteworthy that some of the cases which eventually came to light were probably infected about October 10th; the whole origin of the outbreak, therefore, is still undetermined.

As a result of these personal inspections there were discovered and sent away for isolation four further cases on October 28th. That evening a plan was drawn up for the medical inspection next morning of every individual in the building by the medical personnel, who were provided with sleeping accommodation in the building by courtesy of the House Committee. Eight more cases were discovered on Sunday, October 29th. Careful medical inspection was maintained from day to day, as a result of which on October 30th 2 more cases came to light, on October 31st 5 cases, on November 1st 3 cases, on November 2nd 3 cases, on November 3rd one, and on November 4th one, making 32 cases in all arising within the institution.

In the original plan of operations the following classes of contacts were drawn up:

1. Other inmates.
2. Inmates discharged from the institution between October 10th and 28th. This list was added later.
3. Medical and nursing staff in attendance.
4. Scrubbers and other attendants.
5. Male porters.
6. Occasional visitors to the wards, such as guardians and chaplains.
7. Various classes of staff, such as engineers, laundry staff, and others.

These had to be listed and the sleeping places ascertained. In this manner four other cases were detected outside—namely, a medical officer who had been acting as locumtenent, a fireman, a laundry hand, and a scrubber. Instant steps were taken to control the infection likely to spread from these individuals, the contacts at once being vaccinated.

Vaccination of the staff of the institution and of the inmates was begun the same evening (Saturday, October 28th) and was pushed with such energy that by the evening of Sunday, October 29th, about 900 vaccinations had been performed. The staff and inmates of the institution numbered about 950, and the remaining 50 were vaccinated on the morning of October 30th; four vaccinators were at work. Subsequently some stragglers were discovered and immediately vaccinated.

The cases of small-pox observed fell roughly into four classes. Many of the inmates had mild attacks, their wrinkled and inelastic skin showing papules, vesicles, and pustules which were insignificant and ill developed. Some such individuals, however, developed attacks of the greatest intensity. Several initial rashes of the severe petechial type were noted, and two patients developed haemorrhagic small-pox in its worst form, their skin assuming a universal dull crimson tint from head to foot, accompanied by marked effusion of the conjunctivae. One of these patients, as is not uncommon in such attacks, stated, in reply to questions, that "he felt beautiful." He died the next day.

Among the staff and others in ordinary health, cases of all grades were well developed, from the mild discrete cases ushered in with a severe "cold," followed by a few insignificant spots, to others marked by initial symptoms of great intensity followed by a confluent rash. The total number of cases in or connected with the Poplar institution up to the end of last week has been 38, with 11 deaths.

At the present time, owing to the thorough steps which have been taken, the Poplar institution is almost free from risk of small-pox to its inmates. Inmates discharged, however, between October 10th and 28th constitute a risk to those outside and to other institutions to which they may be admitted. One such case admitted to another institution was speedily detected.

The alertness and decision with which the Institution Authority acted in this emergency deserves high praise, and may well form an example to others similarly placed.

CONFERENCE OF CREMATION AUTHORITIES.

A CONFERENCE of cremation authorities, convened by the Cremation Society of England, was held on October 26th at the Guildhall, London. The main purpose of the meeting was to discuss the causes that deter people from adopting cremation as a substitute for earth burial; the methods by which information about the advantages of cremation might be spread and its practice facilitated and cheapened; and the appropriate fee for medical practitioners or medical officers of health certifying deaths on form C, under the Home Office regulations. The chair was taken by Sir MALCOLM MORRIS, F.R.C.S., and there were present, in addition to representatives of various London and provincial crematoria, Sir William Willcox, M.D., Dr. Louis Parkes, Dr. Chalmers Mitchell, F.R.S., and Mr. H. T. Herring, Medical Referee of the London Cremation Company.

The CHAIRMAN at the opening of the proceedings explained that this was intended to be a round-table conference for the exchange of views rather than for the passing of formal resolutions. Almost every speaker touched on the very slow progress which cremation had so far made, and attributed this largely to uninformed sentiment, but in part also to apathy and indecision among those who approved of cremation. It was agreed that the education of the public in what cremation meant, and how it was carried out, must be pressed forward. Representatives of cremation authorities in several large cities spoke of the lack of public interest with which they had to contend, and of the difficulty experienced in making known the advantages of cremation. A Liverpool alderman ascribed the slow progress rather to indifference than to active opposition; although his authority had done everything possible to overcome hindrances due to the formalities imposed by the Home Office the number of cremations in Liverpool was still very small. Dr. CHALMERS MITCHELL in the course of his remarks expressed the view that in an appeal to public feeling it was most important to recognize the psychology of the public addressed. Popular propaganda in this matter should, he thought, be more dialectic.

Cremation and Death Certification.

Sir WILLIAM WILLCOX emphasized the sanitary argument in favour of cremation, and discussed briefly the safeguards now imposed upon the practice of cremation in order to prevent the possibility of concealment of crime. He recorded his belief that the popularizing of cremation was intimately bound up in a much bigger subject—namely, reform of death certification. The present system of death certification, he said, urgently needed revision; much more care and detail ought to be required for ordinary certification; under a perfect system concealment of crime would be impossible. Mr. HERRING also dwelt on the importance of pressing for reform of the present lax system of death certification. In view of public indifference to hygiene, he thought that propaganda should dwell rather on the aesthetic than on the sanitary aspect of cremation. He added some practical suggestions for dealing with the question of the fee for medical certificates for cremation. Dr. PARKES expressed the view that cremation would not get much farther forward until the medico-legal questions, especially that affecting concealment of crime, had been settled. He agreed that the position of death certification in this country was most

unsatisfactory, and declared that successive Governments had neglected their duty by failing to bring about reform. Provided the medico-legal difficulties were overcome, he could see no reason why arrangements for cremation should not be undertaken as a public measure by municipal authorities.

An informative discussion came to a close with a decision that the conference should be kept in existence to meet again on future occasions.

THE GENERAL ELECTION.

Of the fifty-seven members returned to the House of Commons on Saturday in the absence of any opposition two are members of the medical profession. Sir William Whitla, who again represents Queen's University, Belfast, was President of the British Medical Association in 1909, and has not ceased to give the Association his support both in and out of Parliament. Sir George Berry is returned as one of the members for the Combined Scottish Universities, in succession to Sir Watson Cheyne, who did not seek re-election. Sir George Berry is consulting ophthalmic surgeon to the Edinburgh Royal Infirmary, and has been President of the Royal College of Surgeons of Edinburgh. Sir Henry Craik, also returned as one of the members for the Combined Scottish Universities, represented the Universities of Glasgow and Aberdeen from 1906 to 1918, when the combined constituency was formed and he was elected one of the representatives. He was for many years associated with the Education Department, and from 1885 to 1904 was Secretary of the Scottish Education Department. His constituency probably contains a larger number of medical men than any other. He has exhibited a keen appreciation of the aspirations and needs of the medical profession, has shown his willingness to consult the British Medical Association, and has on many occasions cogently placed the views urged by the Association on behalf of the profession before the House of Commons.

English and Welsh University Constituencies.

At Oxford the representatives in the late Parliament, Lord Hugh Cecil and Sir Charles Oman, both described as Unionists, have to defend their seats against Professor Gilbert Murray, Regius Professor of Greek, described as a Liberal. At Cambridge, Mr. J. R. Butler (Independent), secretary of the Board of Historical Studies, is standing against two Conservatives, Mr. J. F. P. Rawlinson, K.C., and Dr. W. R. Sorley, Professor of Moral Philosophy. For the single seat of the University of Wales there is a triangular contest between Sir E. J. Ellis Griffith, K.C. (Liberal), Mr. T. A. Lewis (National Liberal), and Dr. Olive Wheeler (Labour), who is not, we believe, a member of the medical profession. These contests, therefore, have no direct interest for the medical profession. It is otherwise with those for the representation of the University of London and for the Combined English Universities.

University of London.

For the single seat of the University of London there are three candidates—Sir Sydney Russell-Wells, M.D. (Unionist), Professor A. F. Pollard (Liberal), and Mr. H. G. Wells (Labour). Sir Sydney Russell-Wells, M.D., whose candidature is approved by the British Medical Association, is standing as a Conservative. He was for twelve years Chairman of the University Council for External Students and was elected vice-chancellor in 1919, a position he resigned recently. He is physician and pathologist to the National Hospital for Diseases of the Heart. He looks upon the position of University members as exceptional, since they are not so closely bound by party ties as other members. He is opposed to any attempt to erect two universities in London; and desires that the University should retain its full autonomy and freedom from Governmental control or departmental interference. The Government should help with funds by way of block grants, and not for specific purposes, grants in the latter form being less useful and more extravagant. With regard to health matters he says:

"The health of its people is rightly the concern of any Government. Much has been done, but much more can, I believe, be done without increased expenditure. The present system of overlapping and competing local authorities is both wasteful and confusing. The existing medical benefits under the National Health Insurance Acts should be continued, and should as now be controlled by publicly elected bodies, though the present Insurance Committees are capable of improvement: but the benefits are incomplete and require supplementing by consultant, specialist, and expert pathological assistance, and in many instances hospital treatment. The establishment of a whole-time and State salaried medical service would, however, in my opinion be a disastrous step, for it would in the long run be very costly; it would minimize the personal and friendly relationship between doctor and patient, and would encourage constant official interference and standardized methods which, in an imperfect and constantly progressing science like medicine, would have a sterilizing effect. War conditions have increased the number of woman medical practitioners, and in all medical appointments no discrimination should be made in emoluments on the ground of sex. Improving the education and widening the knowledge of the medical profession are probably the greatest aids to the health of the community, and increased grants to universities for teaching and research are therefore in this respect, as in many others, a sound investment and true economy."

Professor A. F. Pollard, who is standing as a Liberal, is Professor of English History and Chairman of the Institute of Historical Research in the University of London; previously he was Professor of Constitutional History at University College. He also observes that a university franchise is a privilege grounded upon a special qualification of intellectual attainment and has to find its justification in its results. In dealing with the question of economy, he says:

"There is no source of wealth comparable to the health and brains of a people, and expenditure on those first conditions of national welfare is the soundest kind of saving. There is no economy in disease, and ignorance is the prolific parent of waste." He recognizes that "with a national debt ten times as great as that before the war we have not the means that we had to spend on social reforms, and waging war on private enterprise will not conduce to thrift." Every kind of expenditure is not waste. "Prevention of disease, the building of houses that are needed for living and not for luxury, the improvement of transport, the education of the people are necessary economies, and the fact that we are poor is all the more reason why we should make a remunerative investment of what we have."

Mr. H. G. Wells is a candidate on behalf of the Labour party. He is best known as a novelist, but is a Bachelor of Science, was for some time a secondary teacher, taking the diplomas of Licentiate and Fellow of the College of Preceptors, and has written popular educational books.

In his address he says that he would "battle against the violence of wild men with 'axes' chopping insanely at the endowment of knowledge and the health and education of our people." "I am opposed to all this 'axe' mischief in the sphere of public health, education, and research. . . . Let us get on with scientific research and teaching, with education, with production, the development of international controls and world disarmament."

Combined English Universities.

In the Combined English Universities there are six candidates for two seats. The late members, Mr. H. A. L. Fisher (N.L.), until recently Minister of Education, and Sir Martin Conway (U.) are standing again. They are opposed by two other Unionists, Mr. W. B. Faraday, LL.B. Manchester, and Dr. Sydney C. Lawrence, who graduated M.B., Ch.B. Birmingham in 1903; their appeal to the electors is based partly on the fact that each is a graduate of one of the constituent colleges and that it is desirable that the University should be so represented. An independent candidate has come forward in the person of Mr. John Strong, Professor of Education in the University of Leeds; he anticipates a large measure of support from teachers who are graduates of one or other of the universities. The sixth candidate is Mr. L. S. Woolf, who is standing in the interests of the Labour party.

Counties and Boroughs.

To the list published last week of twenty-eight medical candidates for the representation of counties or boroughs we have to add three names. Dr. Leonard Molloy, who is a candidate for Blackpool in the Conservative interest, is consulting physician to the Victoria Hospital, Blackpool, served as a combatant in the Duke of Lancaster's Own Yeomanry during the war, and received the distinction of D.S.O. for his services. He is opposed by a Liberal. Dr. C. Harvey Dixon of Oakham is standing as a Conservative for the Rutland and Stamford Division of Lincolnshire, where he is opposed by two candidates, one described as belonging to the Liberal party and the other as an agriculturist. Dr. R. Dunstan is standing in the Labour interest for the Ladywood Division of Birmingham against Mr. Neville Chamberlain. Dr. H. B. Brackenbury, who stands as an Independent Liberal for East Walthamstow, is well known to the members of the British Medical Association, for he is Chairman of the Insurance Acts Committee and has been deputy chairman of the Representative Body since 1921. His candidature has the official approval of the British Medical Association. He has to meet a Conservative, who was until

the dissolution the sitting member, and a Labour candidate. Dr. D. F. Todd, who is a member of the Association and at one time active on its Council and committees, is opposing the late member. Mr. J. J. Lawson (Labour), in the Chester-le-Street Division of the County of Durham. The profession will wish him success.

England and Wales.

Library of the Bristol Medico-Chirurgical Society.

We mentioned three weeks ago (October 21st, p. 767) that the Bristol Medical School had been completely incorporated with the University of Bristol. We are now able to announce that the Bristol Medico-Chirurgical Society has presented its library to the University, and that the gift has been gratefully accepted by the Council of the University. The collection comprises over 15,000 volumes, and has been valued at over £12,000. It contains some rare books, and over 100 current periodicals are received in exchange for the *Bristol Medico-Chirurgical Journal*, which is published by the society.

Radiology and Electrotherapy: The Manchester Meeting.

As briefly announced in last week's issue, a joint meeting of the Röntgen Society and the Electrotherapeutics Section of the Royal Society of Medicine will be held at Manchester, in the Physics Department of the University, on Friday and Saturday, November 17th and 18th. On the Friday afternoon short papers and demonstrations will be given by Professor W. L. Bragg on "The structure of metals as analysed by *x* rays," and by Professor A. V. Hill on "The psycho-galvanic reflex" and "The hot wire sphygmograph." At 5.15 p.m. Professor Jacobaeus, of Stockholm, will lecture in the clinical theatre of the Manchester Royal Infirmary on "Canterization of pleural adhesions under fluoroscopic control"; concurrently, Mr. J. R. Clarke will lecture on "Measurement of high voltages," Mr. E. G. McKinnon on "Storage batteries," and Mr. V. E. A. Pullin on "Examination of metals." In the evening there will be a dinner, at which Professor Jacobaeus will be the guest of the evening, supported by Sir Humphry D. Rolleston, P.R.C.P., President of the Röntgen Society, and Dr. Robert Knox, President of the Electrotherapeutics Section of the Royal Society of Medicine. On the Saturday morning arrangements have been made for visits to the works of the Ford Motor Company and the Metropolitan Vickers Electrical Company, in Trafford Park, and other important industrial undertakings, and to the Radium Institute, and the *X*-ray Department of the Skin Hospital. In the afternoon, at 2.30 p.m., the new *X*-ray and Electrical Department of Manchester Royal Infirmary will be opened by Sir Humphry Rolleston, and thereafter the new department will be open for inspection. The meeting is open to non-members, and any medical practitioner who wishes to attend any of the meetings or the dinner will be welcomed; further information regarding arrangements may be obtained from Dr. A. E. Barclay, the Royal Infirmary, Manchester.

Middlesex Hospital War Memorial.

The war memorial at the Middlesex Hospital Medical School in memory of those students who lost their lives in the great war has, after careful thought, taken the following form. In the hospital chapel four stained-glass windows have been erected, and the architect of the chapel, Mr. Frank L. Pearson, has made an appropriate choice of subjects by selecting for these windows four soldier martyrs—St. George, St. Alban, St. Martin of Tours, and Joan of Arc. The main part of the memorial to the fallen students is in the medical school. Memorial tablets have been placed in the old entrance hall, and the common room has been panelled in oak and a portrait of Captain John Fox-Russell, V.C., M.C., painted by Mr. Ronald Gray, has been placed in the central panel. The dedication and unveiling ceremony took place on Wednesday, November 1st, All Saints' Day. The Bishop of London conducted the service in the Chapel, which was attended by the Earl of Athlone, many members of the Board of Governors, the chairman of the medical school, Mr. S. G. Asher, the dean of the medical school, Mr. A. E. Webb-Johnson, the chairman of the memorial committee, Mr. Comyns Berkeley, members of the staff of the hospital and school, relatives of the fallen, Surgeon Vice-Admiral Sir Robert Hill, K.C.B. (Medical Director-General, R.N.), Lieut.-General Sir John Goodwin, K.C.B. (Director-General, A.M.S.), and a large number of past and present students. After the ceremony in the chapel and the dedication of the windows by the Bishop of London those present proceeded to the medical school, where Sir Robert Hill, on behalf of past and present students, invited Sir John Goodwin to unveil the memorial tablets. He remarked on the large number of the fallen who had served in the R.A.M.C., and the conspicuous service the Directors General of the Army Medical Service had rendered by the way they had mobilized the medical profession for war service. Sir John Goodwin made a sympathetic reference to the services rendered by the students of the Middlesex Hospital. Of the forty-six who had fallen and whose names were inscribed on the memorial tablets, eighteen had served in the Officers' Training Corps previous to the war and by the sacrifice of their leisure had been available as trained officers when war broke out. He remarked on the fact that of the forty-six killed fifteen were holding permanent commissions in the R.A.M.C. Conspicuous among these, though only an example of the gallantry shown by all, was John Fox-Russell, who lost his life in the campaign in Palestine, and was awarded the Victoria Cross—

> "For most conspicuous bravery displayed in action until he was killed. Captain Fox-Russell repeatedly went out to attend the wounded under murderous fire from snipers and machine guns, and in many cases where no other means were at hand carried them in himself although almost exhausted. He showed the highest possible degree of bravery and valour."

Sir John Goodwin concluded his speech by expressing admiration for the noble sacrifices which had been made, and stated that the sacrifices would be a source of pride to the Middlesex Hospital Medical School for all time. He then unveiled the memorial tablets, which were dedicated by the Bishop of London, and opened the new common room.

The Welsh National Medical School.

An appeal is being made to the county councils of Wales to undertake to contribute a sum equal to a rate of one-eighth of a penny towards the Welsh National Medical School. At the meeting of the Brecon County Council last week the Finance Committee recommended that the council should agree to make the contribution on condition that all other county authorities in Wales and Monmouthshire did the like. Two amendments were moved, one proposing that a grant should be made unconditionally, and the other that the council refuse to make a grant under any conditions. Both amendments were rejected and the recommendation of the Finance Committee adopted.

Scotland.

Medicine and Credulity.

Professor Edwin Bramwell delivered his inaugural address as Moncrieff-Arnott professor of clinical medicine in the University of Edinburgh on October 30th. Principal Sir Alfred Ewing, who presided, said, in introducing Professor Bramwell, that they were welcoming the distinguished son of a distinguished father. The subject of Professor Bramwell's address was "The progress of medicine and the retarding influence of incredulity."

After briefly reviewing the history of the progress of medical knowledge, he said that all advance had been founded upon observation and a correct appreciation of the relationship of cause and effect. Mysticism, superstition, and an undue veneration for authority had been the chief factors which from time to time had retarded progress. Various forms of mental healing were popular at different periods, and yet, if the general public only knew it, these were merely adaptations of psychotherapeutic measures which physicians were constantly employing, and the results obtained were no more striking than those obtained by the physician. The difference, however, lay in the fact that medical men applied their treatment with intelligence and did not advertise their cures, while the unqualified practitioner, who depended upon advertising for success, reported his cures and made no mention of his failures. The influence of the press upon

public opinion was far greater to-day than ever before. While the medical profession recognized that for the most part the press was doing all it could to further the progress of science and of medicine, no one would deny that some of the daily papers were largely responsible for perpetuating that spirit of credulity which was so detrimental to the public interest. It was obvious that competition among newspapers was responsible for this state of affairs.

The association of the Church with medicine had been of the closest from the earliest days. To affirm that the deepest religious conviction was compatible with the highest scientific attainment was to admit a fact which was universally acknowledged. Doctors recognized that the minister of religion might be their most trusted ally. All who believed in the existence of a Creator would agree that both the possibilities of scientific progress and of treating disease were dependent upon the will of God. No doubt the minister would be right were he to say that this was not sufficiently realized by the patient. When the minister, as he often did, impressed the patient with this fact and at the same time strengthened the patient's faith in the ministrations of the doctor, he was doing a inestimable service to the cause of medicine. When, however, he proceeded to analyse causes and effects in so far as they had any relation to the practice of the healing art, then, Professor Bramwell ventured to believe, with all due deference, the minister was entering a province for which his training did not fit him.

The Aberdeen Medico-Chirurgical Society.

A meeting of the Aberdeen Medico-Chirurgical Society was held in the Society's Hall on October 26th, when Dr. Scott Riddell delivered his presidential address on "The records of the Aberdeen Medico-Chirurgical Society from 1789 to 1922, with some recollections, recommendations, and reflections." He explained that in process of preparation certain sections of the address dealing with the early history of the society, of its association with the infirmary, and of its relations with the medical schools and universities of Aberdeen, had expanded so considerably as to preclude the possibility of oral delivery at one session. The address had therefore been recast, largely added to, and put in permanent form, so that the members might have a complete narrative at their disposal. A copy of the published history of the society—an illustrated book of some 150 pages—was handed to each member after the address. Professor Marnoch expressed the thanks of the society to the president for his interesting address and for the trouble he had taken in preparing and publishing a history of the society as a record of its work and influence during the past hundred and thirty-three years.

At the first business meeting, held on November 2nd, Dr. J. S. Anderson of the City Hospital, Aberdeen, read a paper on "Meningismus." After a brief historical note he mentioned the difficulty arising in the diagnosis of certain cases which show pyrexia associated with severe cerebral symptoms, such as headache, mental dullness, or even head retraction and coma, and he urged the necessity for co-operation with the laboratory in the diagnosis. In meningismus cases, where the cerebro-spinal fluid was said to be normal, the laboratory supplied the essential criteria. These were (1) transparency, (2) no increase of globulin as tested by the Noguchi method, (3) power to reduce Fehling's solution, (4) absence of precipitation in the colloidal gold test, (5) a cell count of five cells or less per cubic millimetre. In an analysis of 25 cases of meningismus Dr. Anderson referred to the underlying diseases, the incidence among children of school age and under, and the symptoms. He considered that Kernig's sign was occasionally present in cases other than uraemia, and that the uncertainty regarding its presence was due to differences in the method of eliciting it. Comment was made on the excellent prognosis and the immediate benefit obtained by lumbar puncture, repeated if necessary; a urea estimation of the cerebro-spinal fluid should be made in any doubtful case. The paper was discussed by Professor Ashley Mackintosh, Sir Henry Gray, and Drs. Cruickshank, Souter, Richards, Skinner, and Colt, and on the motion of the president, Dr. Anderson was cordially thanked for his interesting paper.

The Joint Hospital Scheme for Aberdeen was considered, and it was unanimously agreed on the motion of Dr. Scott Riddell, seconded by Professor Ashley Mackintosh, that the society express approval of the proposed Burnside-Foresterhill site.

Suspected Food Poisoning.

The Scottish Board of Health has received from Mr. Bruce White, B.Sc., of the Pathology Department of Bristol University, the report on his examination of the materials sent to him in connexion with the case of suspected food poisoning that occurred at Rosewell, Midlothian, in September last. It will be remembered that three children of a farm labourer were affected in this outbreak, and that the youngest child, a girl aged 3 years 10 months, died, the suspected cause of the illness being tinned pears. The materials sent to Bristol were subjected to exhaustive bacteriological examination, but no positive evidence that the illness was due to direct bacterial infection has been obtained. On the contrary, the evidence was strongly against the presence of any such primary infection. This, however, does not preclude the possibility of the illness being due to the activity of toxins of bacterial origin.

Ireland.

Ulster Medical Society.

The opening meeting of the session of the Ulster Medical Society was held on November 2nd in the Medical Institute, Belfast. The retiring president, Dr. R. Hall, introduced his successor, Professor R. J. Johnstone, M.P., who took the chair. The President then proposed a hearty vote of thanks to Dr. Hall for his conduct in the chair; this was seconded by Dr. Colville, and passed with acclamation. In his inaugural address the President made sympathetic reference to the deaths during the year of four Fellows—Dr. Brice Smyth, of Belfast, the father of the profession in Ulster; Dr. St. George, of Lisburn; Dr. Wilson, of Castleblayney; and Dr. Washington Tait, of Downpatrick. He then dealt with the subject of his address, "Some aspects of pain in gynaecological practice." Complaints of pain, he said, were ever present in the doctor's ears; its constant recurrence, its variations in the same patients; the same kind of pain apparently arising from diverse causes, all rendered judgement difficult. Films were thrown on the screen showing the nerve supply of the female organs, and the sites of the referred pain in different diseases. Professor Johnstone said that the ovary was often blamed when it was innocent, and escaped censure when it was guilty. Pain was considered ovarian, but examination or operation had revealed chronic faecal accumulation in the caecum, cervical erosion, a stone in the ureter at pelvic brim, or adhesion to a coil of intestine. If the tissue of the ovary was slowly distended, pain was absent, but if the distension was rapid, as by haemorrhage into a cyst, pain was marked. Other causes of true ovarian pain were mentioned, and Professor Johnstone said that his experience was that it was seldom or never necessary to remove both ovaries in entirety, always some healthy tissue was found. The uterus was most tolerant; it could be torn, displaced, bent without pain; and cancer of the cervix was also free till adhesions formed or glands enlarged. In the later stage of cancer there should be no quibble as to free exhibition of opium. Dr. John Campbell, M.P., proposed a cordial vote of thanks to the President for his address; such a paper proved the great advance in diagnosis and treatment that had taken place in the last thirty years, and the broad and scientific base on which they were built; Dr. Thomas Houston seconded.

The President welcomed Major-General Gibbard, D.D.M.S. of the Irish Command, who was present at the meeting. Dr. John Campbell drew attention of the meeting to the selection of Sir William Whitla as candidate for the Imperial Parliament, and asked those who were entitled to sign the nomination paper. A special general meeting was held immediately after the opening meeting. The Honorary Treasurer, Dr. Turkington, made a statement on the finances, which showed a deficit each year for the last few years. The Council recommended that the subscriptions should be raised 50 per cent. This was proposed by the Honorary Treasurer and seconded by Dr. W. Burns. Dr. Lee proposed and Dr. Robin Hall seconded that the original subscription be retained for members for two years after their graduation. Dr. Rentoul, Dr. Ritchie, and Dr. J. R. Davison also spoke, and Mr. Mitchell offered to join in a fund to clear off the deficit. The original proposition as amended was passed unanimously.

Limerick City Home Hospital.

At a recent meeting of the Limerick medical practitioners in connexion with the proposal of the Health Committee to

dispense with the services of the two visiting surgeons, the following resolution was passed:

"We, the medical practitioners of Limerick, have learned with surprise that it is proposed to dispense with the services of the two visiting surgeons to the Limerick City Home and Hospital, and to replace them by a junior resident doctor. We protest very earnestly against this change as involving a great injustice to two gentlemen who have for more than twenty years efficiently and faithfully discharged their duties to this institution; and also a great injustice to the poor, who will be thus deprived of the services of those very experienced practitioners; while to ratepayers any saving effected will be so trifling as to be absolutely negligible. We would point out that it is quite illegal for any medical man who is not an apothecary to compound the prescription of another."

Correspondence.

THE DOSE OF THYROID.

SIR,—My attention has been drawn by my pharmaceutical colleagues to the dose of dry thyroid gland which is given in the *British Pharmacopoeia* as 1/2 to 4 grains. Physicians using the gland in hospital practice generally prescribe it in this form, which is dispensed in the hospital; and it is in this way that students obtain their knowledge of the dose and uses of thyroid.

In private practice the gland is given almost always in tablet form, and the dose is weighed as fresh gland, which represents only about one-fifth of the dry gland. That is, if the physician orders 1 grain of thyroid gland the patient receives 1.5 grain of the *British Pharmacopoeia* thyroideum siccum.

I have reason to know that misunderstanding of these facts has occurred.—I am, etc.,

Cambridge, Nov. 7th. W. E. DIXON.

INSULIN AND DIABETES.

SIR,—The General Statement of the Physiological and Therapeutic Effects of Insulin, published by Professor Macleod in the JOURNAL of November 4th, leads me to place on record certain results of work with which I have been engaged for the past three years. The full particulars of this work I hope to publish shortly. Some of the provisional conclusions that I had reached were set forth in a lecture which I delivered before the Birmingham Branch of the British Medical Association a year ago.

It is now established that, in normal animals and man, after the ingestion of glucose by the mouth there occurs a definite transitory increase in the sugar of the blood, the extent of which may be fairly accurately determined by repeated estimations of the blood at short intervals before and after the administration of the glucose.

It occurred to me that it would be interesting to ascertain whether the extent and duration of the normal alimentary hyperglycaemia could be modified by intravenous injections of a boiled and filtered watery extract of the pancreas which conceivably would contain Cohnheim's substance.

For the purpose of experiment I chose rabbits. The blood sugar curve was determined after 10 grams of glucose had been introduced into the stomach by a tube. A week later with the same animals I determined the curve in exactly similar conditions except for the intravenous injection of a small quantity of the extract. The result was very striking, for the alimentary hyperglycaemia which was very definite in the first experiment was entirely absent in the second. I confirmed the result with other rabbits, and none of these animals suffered any apparent ill effects.

The next step was to conduct a similar experiment on a normal man, and inasmuch as my colleagues at the General Hospital were doubtful if such an experiment was justifiable I injected the extract into my own vein, and obtained a considerable flattening of my normal blood sugar rise after a dose of 50 grams of glucose by the mouth. Subsequently I had a headache and felt ill for a few hours, but so far as I know the injection had no ill effect. I next injected the extract intravenously in a diabetic after a standard test-meal, having previously determined the response of the blood to this meal. In this case I obtained a slight fall in the hyperglycaemia, but the effect was in no way comparable in degree with the fall obtained in my own case. In this patient I later injected the extract several times in one day, but only succeeded in reducing the hyperglycaemia slightly. She complained of severe headache and of feeling ill, but recovered her usual state of health in a few hours.

About this time a rather startling fatality occurred in one of the laboratory animals, and I was led to conclude that the doubts of my colleagues as to the propriety of human experiment were sound, and I felt I had discounted my own malaise and my patient's evident illness after the injections a little too lightly.

Dr. Hillier, at the General Hospital, at this stage very kindly undertook to examine the pancreas of different animals in order to discover the distribution of the islets of Langerhans with a view to obtaining a more potent extract of the islets by using only those portions of the pancreas in which they appeared more numerous. It is worth while recording that Dr. Hillier and I found that our crude extract, which produced such remarkable effects on intravenous injection, was quite inert *in vitro*.

About this time I had the opportunity to investigate the effect of intravenous injections of other substances than the crude pancreatic extract I had been using. In a patient undergoing treatment for asthma I found a lowering of the curve after an intravenous injection of peptone. I have since found that salvarsan intravenously and even T.A.B. vaccine limits the normal alimentary hyperglycaemia after 100 grams of glucose in some patients.

I came to the conclusion that the results that I had observed after the injections of pancreatic extracts were non-specific. For this reason, until I have had an opportunity of examining the controls practised by the Toronto School, I shall reserve my judgement of the ultimate value of insulin. The crucial test will be that of clinical experience.

It would take too long adequately to discuss the significance of the curious fact that injections which flatten the alimentary curve in a normal person only very slightly reduce it in the case of a diabetic. I have had no experience of work with animals after pancreatectomy, but I still remain a little sceptical after fairly extensive reading of the literature whether the condition of animals after that operation is exactly equivalent to the extraordinary variety of conditions in man which are collected under the name "diabetes."—I am, etc.,

Birmingham, Nov. 7th. A. P. THOMSON.

THE OBJECT OF INVESTIGATION AT THE ST. ANDREWS CLINICAL INSTITUTE.

SIR,—From the notices that appear in the medical and lay press there is some danger that our modest enterprise here may become fashionable before it is understood. Some teachers tell us that they have been doing for a long time what we are attempting, in that they have kept in touch with the out-patient department and taught students the early symptoms of disease. I have been engaged in the study of these early symptoms for over thirty years, and if I were asked to teach students this subject I would decline, for the simple reason that my knowledge is too scant.

Medicine is to-day so befogged that it cannot see the path of progress nor understand its own limitations. A consideration of the state of knowledge on some subjects and a glance back over the course which medicine has pursued may reveal where it has gone astray. In the middle of last century the study of diseased organs, as revealed on the *post-mortem* table, attained such importance that pathology was assumed to be the foundation of medicine. It was imagined that the nature of ill health and the cause of death could be found there. In consequence of this physicians began to search for the signs of damaged organs during life, and so laid the basis of that diagnosis by physical signs which has ever since dominated clinical medicine, and thus diverted attention from the real cause of ill health.

No doubt pathology is of great value, but the mistake lay, as happens so often in medicine, in expecting a subject to yield a kind of information which it is not capable of doing. The examination of a dead body may reveal a damaged cardiac valve or an inflamed lung, but these are not the causes of death, nor do they account for the symptoms of the antecedent ill health.

The body is maintained in health by the harmonious working of all the organs. Each organ possesses a mechanism which regulates its function, so that the organ is able to meet the ever-varying demands made upon it by the conditions of life. It is the disturbance of this mechanism which provokes the condition of ill health and leads to death. The damaged organ, and particularly the impaired function of the organ, may occasion this disturbance of the regulating mechanism, thus producing the symptoms of ill health or causing death. The change in the organ itself is only an agent which may originate the disturbance. In the same way ill health due to microbic invasion is not due to the microbe, but

to the disturbances set up by the microbe or its toxins. When we reflect upon the great expectations raised by the introduction of bacteriology, and consider the meagre results it has achieved in the elucidation of the diseases common among the people, we will find the cause of this failure to be that bacteriology has devoted itself entirely to the study of the supposed agent of disease, and not at all to the disturbed processes which constitute the disease. This, perhaps, will be better realized if we consider the question of the danger of chloroform anaesthesia. The examination of the body after death has failed to throw any light upon the question. The great number of investigations by "experts" of various sorts—singly and in groups—have failed to indicate the nature or source of the danger. The reason seems simply to be due to the fact that chloroform acts by disturbing the processes concerned in regulating the function of organs, and medical knowledge has not advanced so far as to enable anyone to appreciate the nature of these processes.

If this aspect of the subject is grasped it will be at once apparent why the numerous investigations into medical problems so frequently fail. Indeed, on the same grounds one can forecast with certainty the failure of most projects that are being attempted to-day.

Progress depends more on recognizing the cause of failure than on the contemplation of success. One great cause of the failure of medical investigation is that investigators undertake the solution of the problem without realizing that they have not the requisite knowledge. It wants no prophet to foretell that an enterprise which requires knowledge of a certain kind will fail if it be undertaken on the assumption that that knowledge exists when it does not exist. This is the reason of the failure in many, if not in all, of the wrecked enterprises with which the path of medicine is strewn.

In the enterprise we have set ourselves we have taken the first step—the recognition that we do not yet possess the knowledge necessary for its achievement. Our present duty is to train and educate ourselves. We see that before we can detect and appreciate the significance of the early symptoms of disease we must know the mechanism of these symptoms. We have gone so far as to recoguize that most symptoms are due to the disturbance of that mechanism which regulates the function of the organs, and we are endeavouring to understand this mechanism. It is a field of knowledge which is to all intents and purposes unexplored, for we find the knowledge lacking which would enable us to understand the nature and significance of the simplest symptom—such as, for instance, the mechanism of an increase in the pulse rate, of a cough, of nausea, of vomiting, of pain. Hitherto the profession has contented itself with the idea that as much of these symptoms was known as was necessary for practical purposes. So long as this delusion prevails no progress can be made.

An inquiry into the mechanism of this process, which regulates the functions of organs, how it is disturbed, and the agents that cause the disturbances, is the object of our investigations at present. What further steps will have to be taken are at present hidden from us. But of this we are assured, that until this kind of knowledge is acquired there is no prospect of the real problems of disease ever being solved.—I am, etc.,

St. Andrews, Fife, Nov. 2nd. J. Mackenzie.

X RAYS IN HYPERTRICHOSIS OF THE FACE.

Sir,—Having read Dr. H. C. Semon's letter in your issue of November 4th, I cannot help feeling that he has said both too little and too much. Too little, inasmuch as he gave no details of the technique employed as regards filters, dosage, and exact frequency of application; too much because, though the case he refers to was treated presumably in accordance with the imperfect technique of eleven years ago, he applies his generalizations to present-day methods. I do not dispute that his deductions may be right, but if the same method of reasoning, and the adage, "*primum non nocere*," had been applied to various medical and surgical modes of treatment of many diseases a dozen years ago, would not both medical and surgical progress have been retarded? It is by trial and error that we progress.

Twelve years ago many leading engineers and physicists said heavier than air flying machines were impossible. To-day we know they were wrong. Twelve years ago Dr. Frank Schultz of Berlin condemned the *x* ray treatment of hirsuties. Last year Dr. Thurstan Holland said nothing would induce him to treat hirsuties with *x* rays, and both were men of great experience; but for 2,200 odd years we considered Euclid infallible till Einstein came. And so it may be again. I have been carrying on the active practice of *x*-ray treatment for only sixteen years, and so will not venture to dogmatize any more than Dr. Semon. Still, it is helpful if the least of those amongst us contributes his quota of experience and judgement.

Ten years or more ago I had the misfortune, while treating tinea tonsurans, to cause permanent alopecia on a number of heads without any immediate or subsequent dermatitis. During the past five years I have treated over 1,000 cases of the same sort without failure either way. The beard is, of course, quite a different proposition; still it is difficult to see why, if permanent alopecia can be accidentally produced on the head without bad results to the skin, it cannot also be induced in the beard likewise, and I believe it can. During the last seven or eight years—before I had Erlangen apparatus—I had to administer post-operative prophylactic irradiation to several adult male patients with various malignant conditions about jaws, mouth, and tongue, and my method was to treat once a fortnight, giving 1 B pastille dose measured through 3 mm. of aluminium, about twenty such doses being given. In each case I produced permanent alopecia of the beard over the treated areas, and in none have any atrophic changes appeared on the skin, which is soft, elastic, and of normal colour.

Applying the same technique to hirsuties in young females I have obtained similar results, although sufficient time has not yet elapsed to guarantee that no telangiectasis will follow. In each case I warned the patients of the risks, and they were willing to take them. Hypertrichosis in a young and pretty girl is a very serious condition as it tends to become a bar to marriage and has led sensitive natures to suicide. I think therefore we must make every effort to find a remedy. They all abhor the idea of shaving—which is really the safest and best remedy—chemical depilatories by congesting the skin only make the growth of hair stronger, and electrolysis, besides being only a partial remedy, disfigures the face as much almost as *x*-ray atrophy. In the early days of *x*-ray therapy, when we had no proper mode of measuring doses, when our tubes were all too soft as a rule, when we treated too frequently, thereby producing a summation of doses sufficient to induce erythema, and when we used no filters, nearly every case developed atrophy. We then had ample opportunity of studying this terrible condition. Since the introduction of aluminium filters I have found telangiectasis follow the use of a 1 mm. filter frequently; I have also seen it follow a 2 mm. filter though much less frequently, but although I treat many thyroids in cases of Graves's disease I have not yet seen telangiectasis follow through a 3 mm. filter.

To sum up, then, my view is that hirsuties treated at monthly intervals through a 3 mm. filter, or preferably a 4 mm. filter, giving 4/5 B to 1 B doses on a London pastille, and giving up to twelve to fifteen treatments, good and safe results may be obtained.—I am, etc.,

Bradford, Nov. 4th. William Mitchell.

ALLEGED FAULTS IN MANUFACTURE OF NEO-SALVARSAN AMPOULES.

Sir,—One fatality and some toxic phenomena having been observed in the Lock Hospital in Cairo, some of the salvarsan ampoules were handed to us for investigation. The tubes were suspected to be faulty and to have allowed decomposition of the contents, for the following peculiar but interesting reason. On immersing the tube in alcohol the contents became sticky and adhered to the glass, and it was thought that this meant that alcohol had penetrated into the interior of the ampoules. We verified the statement as to stickiness, but we further observed that this condition of stickiness did not appear till after withdrawal from the alcohol and then only lasted a brief time, after which the contents became as powdery as before. It seemed clear that there must be some special physical explanation of this very peculiar phenomenon, for there were certainly no holes in the capsules. The phenomenon was found to be exaggerated when ether was used in place of alcohol. This gave the clue to the mystery. We immediately plunged the ampoules in ice and found that the powder in them again adhered strongly to the glass even more than with alcohol or ether. We had already found that the contents of the ampoules were under reduced pressure.

The explanation of the phenomenon is therefore as follows:

On removing the ampoules from alcohol or ether the surface evaporation cools the ampoules just as they are directly cooled by the ice. In all three cases the cooling increases the vacuum, especially of the spaces between the particles of the light powder, and the powder and the walls of the ampoule; doubtless this is because the glass and the solid powder conduct and absorb heat more quickly and to a greater degree than the air within the ampoules. The particles of powder once brought together by the contraction of the imprisoned air now adhere by cohesive force until shaken apart. That the phenomenon only occurs with certain powders is probable. It is also possible that traces of vapour within the ampoules may be deposited as dew on the particles and on the walls of the vessel and aid cohesion, but this would not be easy to prove. The important fact, however, and the one to which we desire to draw attention, is that the explanation lies in the contraction due to cooling, and the phenomenon is purely physical and may be repeated at will; it does not in any way show the capsules to be unsound. On the contrary, it probably only occurs when the capsules hold a partial vacuum. Although anyone looking at the capsules when quickly cooled would almost assuredly assert that the powder was wet, this is not the case. After a few seconds' standing and shaking the powder looks dry again. Examination of the ampoules for toxicity revealed no special potency of this preparation as compared to other batches.

We think these observations worthy of record because we have not heard of a similar report, and certainly at the time of the accidents due to the injections the suggestion that the cause lay in faulty ampoules caused much alarm. We also think the observation may be of interest to manufacturers, because it might again happen, as it certainly has happened here, that many a medical man would think the manufacturer at fault and get his preparation elsewhere. The thin ampoules show the phenomenon best because they so readily respond to the cooling, and thus neo-salvarsan put up in thick tubes appears drier than that in the thin tubes. In our samples the French neo-salvarsan of Poulenc Frères was in thin capsules and the German preparation in thick. As we have shown, there is no ground for the idea that the ampoules were at fault in any way.—We are, etc.,

Egerton Charles Grey,
Professor of Chemistry.
Reginald S. A. Heathcote,
Professor of Pharmacology.

Government Medical School, Cairo, Egypt, Oct. 17th.

THE RADICAL PREVENTION OF VENEREAL DISEASE.

Sir,—I for one cannot agree with the recent letters of Dr. Herbert Caiger. What is needed is a clean-cut understanding of our line of action, and when the subject is crystallized out it resolves itself into one of discretion only. A man is wise for himself.

Dr. Caiger's disparaging remarks about the administration of Moses shows a lack of humility, as if we had improved on his system of government. Circumcision was not instigated to prevent venereal disease, though it lessens the risk. There was probably no syphilis in the time of Moses, and this alone made it more evident that other deterrent influences should operate. Dr. Caiger complains of the use Moses made of fear in establishing an A1 nation, and in "doing justice to St. Paul" he seems to think there was no fear in St. Paul's teaching. How comes it, then, that a man "must work out his own salvation with fear and trembling"?

What, then, are our means by which we can prove our friendship towards the youth of the nation? Shall we preach indulgences and recommend appliances and disinfecting agents, and so call evil good? By these means we might possibly, but not probably, stamp out syphilis, but the remedy would be a hundredfold worse than the disease, inasmuch as it would lead to a universal physical weakness and degeneracy unparalleled in history. We should then be under the obligation of stamping out the means itself, for mental as well as physical abnormalities come under our sphere. Shall we show reckless disregard and allow a nation to become thoroughly syphilized? This would lead to a worse degeneracy, and although the fear of syphilis would disappear on account of the loss of its virulence, other fears of a worse type would take its place.

Neither of these methods is admissible, although most of us would rather see a youth escape even though he escaped by the means of those who preach indulgence. But considering there is more than enough indulgence, why need this be preached? It is enough in the interest of knowledge to barely mention it, but to strike out the fear of consequences is to head for the day of calamity.

We are therefore left with the only one safe method—discretion—and our only weapon is fear. The windy doctrines of morality and patriotism take no hold on youth. In teaching youth discretion it is well to try to recollect that we were once young ourselves, and to recall to mind the special proclivities and early canker in even the fairest of flowers. The hereditary uprightness is more marked in youth than in age, when faith tends to become weak and idols strong. Fear, therefore, has more terrors and is consequently more powerful. The fear of a broken spirit, the clipped wings shutting off the vista of future happiness, sinks more into the heart of youth than any amount of proffered mythical fruit of modern towers of Babel. Who are they who have pulled through? The discreet ones, those whose teachers have struck fear into their hearts, medical students (caught young) and ambulance men who have dusted with calomel the condylomata of others, and those who have taken heed to the acceptable words of sensible men.

In rebuking youth, as in rebuking anyone else, the rebuke to be of any good must be terrible. Hard words are not necessarily unkind words. The sting of the rebuke must be directed against those whom it is intended to benefit, not against the cause, so that justice may be tempered with mercy.—I am, etc.,

Huddersfield, Oct. 31st. T. Dobson Poole.

Sir,—I am interested to read the letter by Mr. E. B. Turner in your issue of October 23th. I lectured to the soldiers and officers at the Tooting Grove Military Hospital, but not to such a great number as he refers to.

I certainly could never see any reason for appealing to their patriotism, as I considered that they had shown this in volunteering to go to the front and risking their lives, when we had so many who were trying to avoid service abroad by various means. It was natural that these men, full of virility, should, owing to the slackness of the authorities, contract disease. The Government took no steps whatsoever to protect these young men. I am certain that if the diseases had been made notifiable and all sufferers isolated the number of cases would have been considerably reduced. As it was not a notifiable disease the authorities were unable to deal with the cases of men who wilfully, maliciously, and of aforethought spread the disease.

About 10 per cent. of the officers at Tooting Grove did not appear to be very anxious to get well, and during their sojourn in the hospital, and while under treatment and the disease in an active state, they broke bounds and spread their complaint among the residents in the neighbourhood. When this matter was brought before the colonel of the hospital he had no method of dealing with it satisfactorily, and referred the cases to the G.O.C., who came down and gave a lecture to the officers, in which he stated that he knew that none of them would forget they were officers and gentlemen and would stoop to such a thing as spreading infection, but at this time he had had brought to his notice the names of over fifty officers who had committed this offence.

The fact is there was no law to deal with the matter, the diseases not being notifiable. Some of the most patriotic men in the world have contracted these diseases. In fact this class of man is the most liable to err in this direction.

I am certain there is only one way of stamping out these diseases, and that is by dealing with them as we have with other contagious diseases. If the number of innocent victims who get infected year by year were known I am certain that public opinion would compel the authorities to act in this matter.—I am, etc.,

London, W., Nov. 4th. John Armstrong.

Sir,—In the British Medical Journal of October 28th (p. 827) my friend the enemy of self-disinfection, Mr. E. B. Turner, protests against the inference conveyed in my letter in your issue of October 21st, that numbers of men deliberately allowed themselves to be infected with venereal disease to escape the firing line.

My reply in detail is:

1. *British Troops.*—In August-September, 1917, over 5,000 troops came on leave to Paris, and 1,038—over 20 per cent. became infected, no calomel tubes being issued; but when calomel tubes

were issued and prophylactic lectures given from November 8th, 1917, to March 31st, 1918, and nearly 30,000 troops were on leave in Paris, the medical officer in charge stated that the venereal disease rate had been reduced to only 3 per cent., and that, "of this 3 per cent., it was ascertained by questioning the men personally that . . . one-third wanted to contract venereal disease because they preferred to be in hospital to being in the front line."

2. *American Troops.*—Venereal disease was quite well recognized as a self-inflicted disease among the American troops, and orders were issued warning officers to watch for "wilful infections"—sometimes sought for trivial reasons, such as obtaining a change of Command (vide *Manual of Military Urology*, issued by American Red Cross, 1918). For example, p. 20: "Requisites of treatment of venereal disease :—I. Soldier treated in his own unit to save wastage; 1. To treat the soldier as far as possible in his own command *lest venereal disease be made a convenient excuse to escape military duties.*"

3. *English Prostitutes.*—Diseased women on the streets of London and elsewhere offered sexual intercourse to soldiers at a higher price because of being diseased. The Canadian, Australian, and New Zealand authorities made special reports to the British Government on the matter, and tried without avail to get these women isolated.

4. *English Soldiers.*—During the war English soldiers were reported for buying and selling tubercle sputum and venereal discharge, and in other ways seeking different forms of self-inflicted diseases. Some men wilfully infected their own eyes, not knowing they would become blind.

These facts can quite well be verified by Mr. E. B. Turner in the proper quarters—namely, in the experiences of Army Commanders, medical officers in charge of venereal disease isolation hospitals, general hospitals, casualty clearing stations, convalescent camps, etc. Among our soldiers there were many saints and more heroes who can rightly claim our highest love and admiration; but alas, there were also many frightened men, worn-out men, mad men who committed cowardly and antisocial acts, yet for whom, nevertheless, those of us who really *know* war have only an infinite pity.—I am, etc.,

London, Nov. 2nd. ETTIE A. ROUT.

POST-GRADUATE COURSES.

SIR,—I am a member of the post-graduate class now enjoying a series of clinical demonstrations at the Royal United Hospital, Bath, and a notice of the work being done may be of interest.

The medical staff of the hospital have arranged a series of six demonstrations: they are open without fee to all practitioners, and the attendance of the two so far held has been very good, some thirty medical men of the city and the country round being present.

At the first class, cases of lymphadenoma and pernicious anaemia were shown and a short clinic was given on these cases and a case of splenic anaemia which had been successfully operated on; the spleen and films of blood from the different cases were then shown by the pathologist, who also gave a demonstration of blood grouping tests. Then a blood transfusion in a case of pernicious anaemia was done in the theatre.

At the second clinic a gastro-enterostomy was performed and a case operated on for gall stone; each operation was preceded by a short lecture. The pathologist then showed methods of examining stomach contents, and afterwards *x*-ray photographs of stomach and bowel were shown.

The remaining clinics are to deal with kidney, heart, nervous, and orthopaedic cases, and with any other cases of surgical or medical interest that may occur.

The staff most hospitably provide tea at the end of each meeting. That the greatest interest is taken in these lectures by everyone present is obvious, and one cannot but realize what a profound effect this sort of course must have not only on the work of each medical man but also on the whole medical service of the neighbourhood, including insurance service and the hospitals.

How much this sort of thing must do to make general practice more interesting and enjoyable those who have long practised without this advantage are possibly the best judges, and as one of them I felt it would be but bare justice and gratitude to give some idea of what is being done.—I am, etc.,

October 30th. A RUSTY G.P.

PERIODICITY OF GNAT BITES.

SIR,—It is a matter of common observation that the site of a gnat bite is subject to recurrent irritation at periods of twenty-four, forty-eight hours, etc.

Allowing that the primary irritation increases local vascularity and so aids the insect to get her fill of blood, it is not so clear how, or why, the subsequent irritations occur.

May I ask for any information which can elucidate the subject?—I am, etc.,

Ringwood, Hants, Oct. 25th. WM. OLIVER BEDDARD, M.D.

Obituary.

LEOPOLD GEORGE HILL, M.D.Dunelm., M.R.C.S.,

Physician to the Church Missionary Society.

DR. LEOPOLD HILL, whose death took place in London on October 26th, was a student at the London Hospital during the late eighties and early nineties. He obtained the M.R.C.S. and L.R.C.P. diplomas in 1893, and the M.D. degree of Durham University in 1911.

Dr. C. F. HARFORD writes:

Leopold Hill was one of a large body of students at that period who were led to see, in a manner which has hardly been repeated since, the imperative call of medical missions. It is difficult to interpret the meaning of those movements which affect certain periods of history, and without inquiring too closely into the influences which specially brought Hill to his decision, yet one who was practically a contemporary can trace something of the inward secret of this remarkable period. In the first place, there was the new realization of the meaning of Christianity and the spiritual life which was associated with the work of two humble Americans, Moody and Sankey. They succeeded in showing to the young people of that day that the Christian religion was not a mere matter of forms and ceremonies but a vital force which could not only transform individual lives but the world.

The most sensational development of that period was the going forth of "the Cambridge seven," a band of leading athletes headed by C. T. Studd, perhaps the best all-round amateur cricketer of his day. The same spirit touched the medical schools of this land, and one who fanned the flame of enthusiasm and directed it into most useful channels was the late Dr. J. L. Maxwell, formerly a Presbyterian missionary in Formosa, and a real leader of men. Hill, like others, came under Maxwell's influence, and his sound common sense led many to see that medical missions demanded a good all-round medical training as a partner to the missionary spirit, both of which are essential to the making of a medical missionary.

The London Hospital received a considerable number of those who were definitely preparing for this special service, and Hill was a popular and particularly well qualified man who emerged from that band of students. Hill offered his services to the Church Missionary Society, and was fortunate in being assigned to Pakhoi in South China, where he was associated with Dr. Horder, who already had organized a well-equipped hospital and leper asylum. In the development of this Hill took a prominent part, and the influence of the hospital affected a very wide area, while the leper work was of a particularly high order. South China has been fortunate in securing the services of a series of eminent medical practitioners in its varied centres, Manson and Cantlie having been among the number, and Hill took his share in the work for the Imperial customs and consular service. On being invalided home in 1904 he took up busy work as a general practitioner in North London, in which he was engaged up to the time of his death. While doing this he held the post of physician to the Church Missionary Society from the year 1911, and worthily maintained the traditions of this great office, which is concerned with the physical needs of about 1,400 individuals scattered mainly throughout the tropics. Hill's careful clinical methods and sympathetic manner earned for him the respect and confidence of the medical board and of the society generally, and he was beloved by all his colleagues.

THE LATE PROFESSOR CRUM BROWN.

SIR JAMES WALKER, F.R.S., Professor of Chemistry in the University of Edinburgh, has been good enough to send us the following brief appreciation of his predecessor: "As Crum Brown's pupil, friend, and successor I am glad to be allowed to add a few lines to Dr. Ballantyne's obituary. The student of medicine who listened to his lectures during a winter session could form little idea of his scientific eminence; to science students his advanced lectures on organic chemistry were a revelation. Philosophical and suggestive, they compelled the listener to think; but it was after all the delightful laboratory talks which constituted the chief feature of his advanced teaching. He was always ahead of the time—even

his thesis written while still a medical student was a decade in advance of the views of the ordinary professor. I have often found that novel theories beginning to attract attention had to me the aspect of familiarity, and this familiarity I could always trace to some conversation I had had with Crum Brown. Had he been tinged in the slightest degree with ambition he would have been recognized as one of the foremost theoretical chemists of the age. As it was, his merits were known to comparatively few, but their admiration of his great gifts is unbounded."

The death took place recently of Dr. W. F. Litchfield, of Glebe Point, Sydney, at the age of 51 years. He was born in New South Wales, and was educated at Newington College and the University of Sydney, where he graduated M.B., Ch.M. in 1893. He was for three years resident medical officer, and afterwards for more than twenty years honorary physician to the Royal Alexandra Hospital for Children; he was a member also of the Board of Directors. He was president of the Section of Paediatrics at the last Australasian Medical Congress in Brisbane (1920). He was also a member of the councils of the Royal Welfare Society for Women and Children, and of the District Nursing Association; he was honorary physician for the Church of England Homes, Glebe, and a member of the board of directors of the Royal Alexandra Hospital for Sick Children. Dr. Litchfield took a great interest in the work of the New South Wales Branch of the British Medical Association, being a member of the Council for several years, medical secretary, and at the time of his death vice-president. As a young man he was keenly interested in debating societies, especially those at Glebe Point, and in later years was a popular member of the Drummoyne Golf Club. He has left a widow, two daughters, and four sons.

Mr. Charles Hobham Evans, F.R.C.S., died in London on October 21st. He was the fourth son of the late Dr. Evan Evans, R.N., and was educated at Edinburgh and at University College, London, taking the L.S.A. in 1885, the M.R.C.S. and L.R.C.P.Lond. in 1886, and the F.R.C.S.Edin. in 1912. He filled the posts of house-surgeon at the Miller Hospital, Greenwich, and at St. John's Hospital for Diseases of the Skin; and afterwards was surgeon for out-patients to St. Anne's Hospital. He was a member of the British Medical Association, and a Fellow of the Royal Society of Medicine. He joined the R.A.M.C. in the first week of the war, taking a temporary commission as lieutenant on August 12th, 1914, and was promoted to captain after a year's service.

Deputy Surgeon-General William Carden Roe, Army Medical Department (retired), died at Bournemouth on October 6th, aged 88. He was born at Boris-in-Ossory, Queen's County, Ireland, on November 30th, 1833, and took the L.R.C.S.I. in 1854. Entering the army as assistant-surgeon on December 1st, 1854, he attained the rank of brigade-surgeon on November 27th, 1879, when that rank was first introduced, and retired on November 11th, 1880, with an honorary step as deputy surgeon-general. He served in the Crimean war of 1855–56, in the 89th Foot, the Royal Irish Fusiliers, and was present at the siege and fall of Sebastopol, receiving the medal with a clasp, and the Turkish medal. According to the Army List, there are now only four medical survivors of the great wars of the middle of last century; one who served in the Crimean war, two in the Mutiny, and one in both.

The Services.

DEATHS IN THE SERVICES.

Lieut.-Colonel Robert Talbot Beamish, R.A.M.C. (retired), died suddenly in London on October 26th, aged 73. He was born at Cork, educated at Queen's College, Cork, and graduated M.D. of the Queen's University, Ireland, in 1873, and M.Ch. in 1874. He entered the army as surgeon on February 3rd, 1878, he became lieutenant-colonel after twenty years' service, and retired on April 20th, 1901. He served in the Burmese war in 1886–87, receiving the medal with a clasp; and in the South African war, in the operations in Orange River Colony, where he was in charge of a general hospital, with the local rank of colonel, and received the Queen's medal with two clasps.

Lieut.-Colonel Medhurst Haynes Thornhill, Indian Medical Service (retired), died at Lyndon on October 30th, aged 47. He was educated at Guy's, and took the M.R.C.S. and L.R.C.P.Lond. in 1897, the D.T.M.Liverpool in 1909, and the F.R.C.S.Edin. in 1910. He entered the I.M.S. as lieutenant on January 27th, 1900, obtained the rank of lieutenant-colonel on July 27th, 1919, came home on furlough preparatory to retirement last year, and actually retired so recently as October 8th last, three weeks before his death. He spent several years on military duty, during which he served in the Waziristan campaign of 1901–2, on the north-west frontier of India, receiving the frontier medal with a clasp. He then entered civil employment in Bengal, and, on the division of that province in 1911, was posted to the newly-formed province of Bihar and Orissa. There for the last few years he was civil surgeon of the important station of Cuttack, the headquarters of Orissa, and also superintendent of the Cuttack medical school and of the Cuttack lunatic asylum. He served in Egypt during the late war.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on November 4th the honorary degree of M.A. was conferred on H. R. Dean, M.D.Oxon., Professor of Pathology, who was presented by the Public Orator. The following medical degrees were conferred:

M.D.—H. W. Hales.
M.B., B.Ch.—A. A. Prichard.

The Vice-Chancellor has informed the Senate that under the will of the late Sir William Dunn a further sum of £45,000 now accrues to the School of Biochemistry, making a total grant for the purpose of the school of £210,000.

It is announced that the General Board considers it desirable that a University Lecturer in Embryology should be appointed at a stipend of £250.

UNIVERSITY OF WALES.

The following have passed the examination in Pathology and Bacteriology for medical and surgical degrees:

D. I. Bowen, D. A. Davies, D. T. Davies, *Edith M. Davies, *L. C. Edwards, Ann C. Evans, Martha Griffith, E. C. James, *T. G. I. James, *E. D. Owen, T. P. Rees, Muriel A. Stephens, W. E. C. Thomas, Constance Walters.

* With distinction.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

Harry Godfrey Massy-Miles Prize, 1922.

At a meeting of the College on November 3rd the Harry Godfrey Massy-Miles Prize for the year 1922 was awarded to Dr. Michael Brandon Devane. Dr. Devane obtained over 80 per cent. of the possible marks in the Final Examination in Midwifery held by the Royal Colleges in March, 1922. The Harry Godfrey Massy-Miles Prize has been established in the Royal College of Physicians of Ireland by Mrs. Massy-Miles in memory of her husband, Captain Harry Godfrey Massy-Miles, M.C., R.A.M.C., a Licentiate of the College, who died of wounds received in France on April 18th, 1918.

Medical News.

The joint committee of the Royal College of Physicians of London and the Royal College of Surgeons of England, which administers the trust founded by Mrs. Streatfeild for the promotion of research in medicine and surgery, has appointed Mr. Kenneth M. G. Bailey, M.B., L.R.C.P., M.R.C.S., to be a Streatfeild scholar. The subject of his research is infection of the urinary tract by coliform bacilli; it will be conducted at St. Bartholomew's Hospital.

The Medico-Psychological Association of Great Britain and Ireland will meet at the Bethlem Royal Hospital, Lambeth, S.E.1, on Thursday, November 23rd, at 2.45 p.m., when the president, Professor G. M. Robertson, M.D., will give an address on the discovery of general paralysis, from Haslam to Bayle, and Dr. E. W. Scripture will read a paper on the treatment of general paralysis by malaria and the use of speech inscriptions for early diagnosis.

Among the members recommended for election to the Council of the Royal Society at its anniversary meeting on November 30th are Professor T. R. Elliott, M.D., Professor G. H. F. Nuttall, M.D., and Professor D. Noel Paton, M.D. Sir Charles Sherrington is again proposed as president, Sir David Prain, M.B., as treasurer, and Mr. W. B. Hardy, lecturer in physiology in the University of Cambridge, as one of the secretaries.

A meeting of the Medical Officers of Schools Association will be held at 11, Chandos Street, W.1, on Friday, November 24th, at 5 p.m., when Dr. A. R. Friel will read a paper on the ionization treatment of otorrhoea. There will be a demonstration of apparatus used, and also lantern slides. A discussion will follow. All medical practitioners interested in the subject, as well as medical officers engaged in the treatment of otorrhoea at that treatment centre, are invited to attend.

THE Aberdeen University Club London dinner will be held on Thursday, November 16th, at Gatti's Restaurant, at 7 for 7.30 p.m. Dr. Milligan, 11, Upper Brook Street, W.1, will be very glad to hear from any past or present graduate wishing to attend.

THE annual dinner of the London School of Medicine for Women (Royal Free Hospital) will be held at the Holborn Restaurant on the evening of Friday, December 1st.

THE Harben lectures before the Royal Institute of Public Health will be delivered in the Lecture Theatre, 37, Russell Square, W.C.1, by Professor Theodore Madsen, M.D., Director of the State Serum Institute, Copenhagen, at 5 p.m., on Friday, December 1st, Monday, December 4th, and Tuesday, December 5th. The subjects of the lectures are: "Specific and unspecific antitoxin production," "Antitoxic treatment," and "The influence of temperature on antigen and antibodies." All interested are invited to attend.

A MEETING of the Harveian Society will be held at the Town Hall, Harrow Road, Paddington, on Thursday, November 16th, at 8.30 p.m., when Sir J. Thomson Walker will give an address on "Problems of prostatectomy," to be followed by a discussion in which Messrs. Cyril Nitch, Roche Lynch, A. Clifford Morson, J. H. Chaldecott, Montague Smith, and John Macevoy will take part.

AT the meeting of the Royal Microscopical Society at 20, Hanover Square, W.1, on Wednesday next, at 8 p.m., Dr. Charles Singer will read papers on the first mechanical microtome and on the first microscopical drawings.

DR. ANNETT and Mr. M. N. BOSE are engaged in experiments on poppy selection with a view to the production of medicinal opium of high quality. As the quantity of opium available from the few plants produced in such selection experiments is not large they have devised a method, which they reported to the meeting of the Society of Public Analysts on November 1st, for estimating the principal alkaloids in small quantities of opium.

THE Council of the Optical Society has decided to hold a conference and exhibition on ophthalmic optics, spectacle frames, and lens construction on Thursday, November 30th, at the Imperial College of Technology, South Kensington, London, S.W. The exhibition is not confined to those of British origin; it will consist of all apparatus, frames, and lenses connected with spectacle fitting and construction. It will be open from 2 to 7 p.m. From 4.30 to 10 p.m., with an interval, papers will be read on the above subjects by ophthalmic surgeons, physicists, and members of the industry. The president of the society is Sir Frank Dyson, F.R.S., Astronomer Royal.

TWO cases of rabies, one in a dog and the other in a cow, occurred in Holland during September, both in the province of Overijssel.

THE first meeting of the session of the Assurance Medical Society was held at 11, Chandos Street, W., on November 1st, when the president, Dr. R. A. Young, read a paper on the assessment of elderly lives for life assurance. The next meeting of the society will be held on January 3rd, 1923, when Dr. J. Strickland Goodall will speak on the significance of the extra systole.

THE French Government has offered a number of scholarships to Canadian universities, including the Universities of Toronto, Montreal, Laval, and Ottawa. The winner of a scholarship will spend the next academic year in France; the scholarship has a value of 6,000 francs, with an additional 1,000 francs for travelling expenses.

AT a meeting of the trustees of the Warren Triennial Prize at the Massachusetts General Hospital on October 13th it was decided that, owing to the difficulty of determining the relative merits of the first two papers, two prizes instead of one should be awarded this year, the first of 500 dollars and the second of 250 dollars; the second prize was not to be taken as establishing a precedent. The first prize was awarded for an essay on "The circulation in the mammalian bone marrow" by Dr. C. K. Drinker, Dr. Katherine M. Drinker, and Dr. C. C. Lund, of Boston, U.S.A. The second prize was awarded for an essay on "The effect of x rays on the nuclear division" by Dr. J. M. Mavor, of the Union College, Schenectady, New York.

THE thirty-first meeting of the Association of Military Surgeons of the United States was held in Washington on October 12th, under the presidency of Captain F. L. Pleadwell, U.S. Naval Medical Service. Major-General M. E. Ireland, Surgeon-General of the U.S. Army, and Rear-Admiral E. R. Stitt, Surgeon-General of the U.S. Navy, outlined the medical work of the army and navy of the United States. Representatives of the army and navy medical services of Britain, France, Spain, Japan, Peru, and the Argentine Republic were present as guests of honour; Surgeon Rear-Admiral C. M. Beadnell, R.N., and Colonel P. G. Goldsmith, of the R.A.M.C., were the British delegates.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

STIES.

"M. P." asks for hints in the treatment of persistent and recurrent sties on eyelids. He has tried calcium sulphide internally and disinfecting lotion without improvement.

URINE TESTS.

MR. W. H. MARTINDALE, Ph.D. (London) writes: In reply to Dr. Washington Isaac's inquiry (September 30th, p. 620) about the stoppers of bottles containing Fehling's solution becoming fixed and crystallized, the only satisfactory way to prevent this is to use a little soft paraffin on the stoppers. One could not advocate the use of glycerin in this instance. The same applies in the case of acetic acid and brine used for albumin testing. Another good plan is to employ rubber corks instead of glass stoppers. Furthermore, the amount of reagent required can easily be removed with the aid of a small pipette and teat without even touching the lips of the bottles.

INCOME TAX.

"A." sold one-half share in his practice to "B." as from December 1st, 1921. For 1922–23 "A." has been charged on his average earnings over the three previous years and "B." on his earnings for the four months to April, 1922.

*** There should be one assessment only on the profits of the whole practice determined by the three years' average profits thereof. The duty chargeable on that assessment is divisible between the partners but payable by the firm. The division should be made by calculating each partner's tax as due on the gross assessment less his personal allowances.

"W. S. W." is a partner in a practice which, since 1914–15, has accounted for income tax on the basis of cash receipts, but the local inspector of taxes wishes to change to the basis of bookings.

*** We are of opinion that the inspector's request should be resisted—see a reply to "G. M." in our issue of November 4th (p. 898). The fact that the assessment was on the "bookings" basis in 1913–14 and 1914–15 may be due to special circumstances—for example, it may have been a new practice or may then have but recently changed hands.

"C. W. E." inquires as to the proper assessment of a practitioner entering a partnership.

*** Liability is determined by the share of the partnership assessment—on the three years' average basis. Bank interest can be treated as a professional expense, or alternatively repayment can be claimed on the amount of interest paid in the financial year. Instalments of the purchase price are capital payments, and no deduction can be claimed for them. This applies also to the purchase of the original equipment of instruments, books, etc., and to its improvement; any sums spent on maintaining and repairing the equipment can be claimed as a professional expense in determining the average profits.

"W. R. B." has a resident appointment in a Poor Law infirmary and is being taxed on his emoluments.

*** It was decided in 1892, in the case of Tennant *v.* Smith, that emoluments received in kind and not capable of conversion into money were not taxable—the case dealt with a bank

manager's privilege of rent-free residence. We know of no case specifically dealing with Poor Law emoluments, but it would be governed by the House of Lords' decision in the above-quoted case, unless the facts are essentially different—for example, if "W. R. B." was engaged at a salary subject to deductions for board, etc., supplied, he would be liable on the full salary and not on the balance paid over to him.

"A. N." has sold a side-car outfit and bought a Morris Cowley car.

*** The allowable expense is the amount that the replacement of the side-car outfit would have cost—that is, £140–£5=£85. "A. N." is apparently assessed for a public salary, under Schedule E, and not for general profits, under Schedule D; technically, therefore, he is not entitled to the allowance unless the replacement was "necessary" and "wholly" effected for the performance of the duties of his office.

LETTERS, NOTES, ETC

Sweating in Pulmonary Tuberculosis.

Dr. Marcus Paterson (Medical Superintendent, Colindale Hospital, Hendon) writes: Your correspondents will be interested to know that night sweats can easily be prevented without drugs by the use of a Japanese grass mat placed over the mattresses and under the sheet. Such mats are obtainable from Messrs. Mayer and Phelps, New Cavendish Street. An article going into great detail with regard to these slumber sweats was published by me last August in the *Lancet* on page 225. It is interesting to see that both your correspondents have noticed the effect of good hygienic conditions on night sweats—a matter to which I have referred in that article. Dr. Porter's method of waking the patients is a sure but unnecessary method of stopping the sweats. In the article mentioned it states that these sweats should be called "slumber" and not "night," as they may occur at any time when a patient goes to sleep. Waking the patient without even the whisky will surely stop the sweats! I do not agree with Dr. Pirie that there is any connexion between the heart and the sweats, except in so far as increased toxaemia may be the cause of the tachycardia. In that case, the tachycardia would be the result of the same condition as that which was producing the slumber sweats.

Herpes and Varicella.

Dr. Wm. McCallin (Southampton) writes: The following may be of interest to those who are on the look-out for cases bearing on the question of the connexion between chicken-pox and herpes. Sixteen days after the first appearance of chicken-pox in a boy aged 6 years, I saw his sister, aged 1 year and 9 months, who was supposed to have the same disease. The eruption consisted of numerous vesicles with the distribution of chicken-pox, and herpetic patches on the left side of the chest. It has taken the ordinary course of herpes. There have been neither chicken-pox vesicles nor fresh crops.

Is Desquamation after Scarlet Fever Infective?

Dr. Jules F. Rey (Boguor) writes: Many years ago—about 1905—I remember reading of an experiment carried out in Germany where desquamating children from scarlet fever were washed with soap and water and the skin covered with sterile dressings for some days, then the desquamations were collected therefrom, and spread on bread-and-butter and given to children to eat, who had never had scarlet fever. None of them contracted the disease. Secretions from the body are the all-important sources during the first ten days; after this they only persist in chronic inflammations (such as naso-pharyngeal) and sores, however small or where situated. If the child after fourteen days has none of these he is no longer infective, and it is unnecessary to further segregate him. On the other hand, infectivity may be present for a year or more in chronic naso-pharyngitis or any discharge such as otorrhoea. There is recorded an instance where some children played with a skin foot-cast (which came from a scarlet fever case ten or twelve years previously and was kept under a glass shade). They developed typical scarlatina a few days later—another evidence of the longevity of the virus in the dry state, for, no doubt, dried secretions were present upon the cast, for there is no mention of the foot having been washed beforehand. The way virulent dry secretions can be conveyed is truly remarkable.

Psycho-analysis.

Dr. Arthur Lynch (London, N.W.) writes: I propose to introduce into this discussion considerations which may seem as strange to your readers as those of Pasteur when he first astonished the medical men of Paris by neglecting to talk mediaeval nonsense and by proceeding to draw figures of organisms on a blackboard. Similarly what I now state will be subsequently so definitely accepted that future generations will wonder how scientific men could be content to speak in any other form on problems of mental analysis.

If we were to place ourselves in face of the whole world of thought, and if we proceeded by successive operations of analysis to reduce our knowledge to its ultimate elements, we would find ourselves as a result of these as I have called them fundamental processes of the mind: (1) immediate presentation; (2) conception of unit; (3) memory; (4) association; (5) discrimination; (6) generalization; (7) feeling of effort; (8) impulse; (9) hedonic sense; (10) sense of negation; (11) conception of time; (12) conception of space. These fundamental processes are, as I have proved by methods of entire rigour, necessary and sufficient to cover the whole field. I may remark that it was the failure to obtain such a mode of demonstration that rendered the psychological systems of Aristotle and Kant defective, and the superstructure which they reared on that psychology, being vitiated by the basic error, became scientifically valueless.

The interplay of these fundamental processes constitutes the mode of action, or the mechanism, of all forms of thought. Has Freud shown any analysis of this sort? No. Proceeding from a remark of Charcot, whose own psychology was very inadequate, he catches on to one element—that of association; and then, bringing in a heterogeneous mass of observations, suppositions, obsessions, and silly reasonings, he builds up his system. It may be objected that I merely posit my fundamental processes here. Yes, but the complete demonstration will be found in *Psychology: A New System*; and hence I merely quote conclusions. In that book there is no allusion to Freud, but in my forthcoming *Principles of Psychology* I make that reference and overthrow the whole fabric of his nonsense. How? Simply by way of corollary in a footnote, by showing that it is inconsistent with the scientific principles I establish. Thus, for example, when the principle of conservation of energy is set forth it is laudable to reject every pretended invention that runs counter to it, and that indeed constitutes the only scientific form of criticism.

I will leave discussion of applications till later, only now saying that for years I carried on definite experiments in memory; Freud has nothing of the sort to show. The result is that his discussion of memory is worse than useless, it is misleading, while I have laid down—I speak again confidently for I have brought the matter here also to demonstration—certain basic laws. Professor L. Dugas in a recent book, *La Mémoire et l'Oubli*, adopts my results as decisive.)

The Acting Commanding Officer Decides.

The *Western Morning News* recently contained a rather amusing account of a court-martial, held at Devonport, to inquire into a charge of drunkenness against a naval officer. He had been reported to the acting commanding officer as having come aboard drunk. The commanding officer agreed with the diagnosis. The accused denied that he was drunk and urged that he was wilfully prevented from having the opportunity of calling medical evidence. The commanding officer in defending his action said that he had not sent for the medical officer because he had always understood that if the commanding officer of a ship said a man was drunk the medical officer could not reverse his decision. This is an amusing illustration of the view some executive officers take of the extent of their authority, but the point of the story is that the court-martial acquitted the accused.

The Alvarenga Prize.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, amounting to about 300 dollars, will be made on July 14th, 1923, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the Secretary of the College, 19, South Twenty-second Street, Philadelphia, U.S.A., by May 1st, 1923. Each essay must be sent without signature, but marked with a motto and accompanied by a sealed envelope having on its outside the motto and within the name and address of the author. The successful essay or a copy of it must remain in possession of the College; other essays will be returned upon application.

Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 183.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Advertisements should be delivered, addressed to the Manager, 423, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

Note.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF PATHOLOGY (HUMAN AND COMPARATIVE).

Professor Robert Muir, M.D., F.R.C.P.Edin., F.R.S., President.

DISCUSSION ON ANIMAL AND VEGETABLE PATHOLOGY IN RELATION TO HUMAN DISEASE.

OPENING PAPERS.

I.—ANIMAL PATHOLOGY IN RELATION TO HUMAN DISEASE.

BY

Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E.,
Honorary Veterinary Surgeon to H.M. the King; formerly Professor in the Royal Veterinary College, London.

The study of animal and vegetable pathology has many points in common with that of the study of human disease, and will well repay a much greater research in the future than has been made in the past.

Members of the medical and veterinary professions have much in common, and to collaborate more closely and interchange their ideas cannot help but be of mutual benefit, not only to themselves but to the world in general, as the day of the "watertight compartment" system of opposing the ravage of disease is past. By progressing hand in hand much interlocking of ideas and side-tracking can be avoided and a more rapid advance gained against the common foe.

The *vegetable* aspect of the question is in the able hands of Professor Lang, F.R.S., and in the time at my disposal I shall endeavour to draw your attention to some of the salient reasons which concern *animal* pathology in relation to human disease.

That there are a number of diseases communicable from animals to man is well known, but the important part played by the trained veterinarian in preventing this communication has not yet been sufficiently appreciated, and in certain of these diseases the worker on the animal side *must*, of necessity, occupy the front trench, in order effectively to protect his medical colleagues and their human patients.

We have at the present time in Great Britain at least the following, which are indisputably communicable: glanders, rabies, anthrax, tuberculosis, foot-and-mouth disease, cowpox, mange of all animals (horses, cattle, dogs, and cats), ringworm (especially of the horse, calf, cat, and mouse), and certain forms of seborrhœa (such as blacksmiths contract from handling horses with greasy legs). The *Bacillus abortus* of Bang is also under suspicion as a source of contagion from cattle, and I think that the great prevalence of pyorrhœa in pet dogs (which are kissed by their fair owners and allowed to lick their lips and hands) should be regarded as a possible factor in the spread of that disease in human beings.

Others produced by parasites require an animal host in order to make their respective life cycles complete before they can become pathogenic to man, such, for example, being the echinococcus, the *Cysticercus bovis* (the larval stage of the *Taenia saginata* of man) and *Cysticercus cellulosae* (the larval stage of *Taenia solium*), the parasites of measly beef and measly pork respectively; and the *Trichina spiralis* of the muscles of the pig, which give rise to trichinosis in man in countries where ham is largely eaten smoked and not necessarily cooked.

Then, in addition to those which are intercommunicable, we have in animals many diseases which are analogous to those in man—analogous in many ways in symptomatology, in the situations of the body which are attacked, in the ravages set up in the various body organs and in other ways, the knowledge of which sets one thinking, and often deters one from making grave errors of diagnosis and judgement.

Take, for example, the old-time instance of the man with the cirrhotic liver. There was a time when excessive indulgence in alcohol was almost always blamed for this, and the term given, "gin-drinkers' liver," was a byword. Animals are not alcoholic, and yet cirrhosis of the liver is one of the commonest things observed when making *post-mortem* examinations of old animals.

The study of cancer is equally interesting in animals as in man, probably almost more so, and the situations on which this disease occurs in our respective classes of patients are well worth serious thought when considering the irritation, and other, theories.

The knowledge that certain species of animals are refractory (or even completely immune) to certain diseases is of enormous value to the student of disease problems, and this fact requires a satisfactory explanation, if only it can be discovered. The immunity of the ox tribe to glanders is the best illustration of a disease of this kind.

Why should the ox be immune to glanders, when the horse, ass, mule, certain carnivora, and man, fall easy victims to it? There must be a valid reason, and if only that knowledge could be attained, and put into practical shape for purposes of conferring immunity on those susceptible, the fight against glanders would have scored a point—a great point, too—on the side of progress. Then again, one must not forget the danger of the animal as a carrier of disease, so that to the scientific worker a knowledge of the habits of the animal in health is as useful and necessary as a knowledge of the symptoms when in a state of disease.

The time is not long enough to take each disease in full detail, as to each one might allot a whole day, and then not exhaust all the comparative aspect, so that it is my intention briefly to bring forward for your consideration the most salient points which affect man and the lower animals mutually, and particularly emphasize in this category the value of a mutual collaboration between the medical and veterinary professions.

Let me read you a brief paragraph I cut out of a morning paper only so recently as the 6th of last month. A Reuter telegram which was sent from Helsingfors, and came to London via Paris, is as follows:

"The *Soviet Red Gazette* announces that the Bolshevist authorities in one of the famine districts, 'for humanitarian and sanitary reasons,' have shot 117 children afflicted with glanders which developed after eating the flesh of horses suffering from that complaint."

It makes one meditate, safe within this England of ours, what can occur when the laws of preventive comparative medicine are disregarded, and is a striking instance of the value of the trained veterinarian to his medical confrère and the general public.

Glanders and rabies, two of the most horrible diseases which can affect man or beast, show what can be done by organized collaboration of the two professions. Each is primarily a disease of animals, and only comes to man from them.

Let the veterinary scientist eradicate glanders from his patients of the horse tribe, and rabies from the canine race, and neither of these diseases will appear in man: and I am happy to say that there is every reasonable hope that by the end of this year this will have been achieved in regard to Great Britain. The credit for this important result, which is of equal importance to man and animals, must be given entirely to those to whom it is due, the veterinary advisers (with Sir Stewart Stockman and Sir John McFadyean at their head) of the Ministry of Agriculture; and so long as we maintain a rigid system of mallein testing and quarantine under expert veterinary supervision on all animals of the horse tribe before they are allowed to enter the country, there will be no danger of the reintroduction of glanders to Great Britain.

Glanders.

I can remember the time when London was so full of glanders that every stable groom, and particularly those in cab and omnibus stables, knew the meaning of the word "glanders" as well as he knew the hour of his midday meal.

In 1901 (only twenty years ago), some 2,370 horses were destroyed for glanders in Great Britain (1,828 from London alone), whereas the statistics of the Ministry of Agriculture show that for this year, up to the present date, no case has been reported.

The discovery of mallein, and the mallein test, placed in our hands an infallible method for the detection of glanders, and by its means the disease can within a very short space of time be, with certainty, eradicated.

By its aid, applied by the officers of the Royal Army Veterinary Corps, glanders was completely kept under control amongst the hundreds of thousands of horses and mules in the British army during the recent war; and afterwards some 150,000 were sold to the public with perfect safety; and I believe I am right in saying that, in the British army, no case in man was reported during the whole of the war.

Twice have I been present officially in civilian life at the *post-mortem* examination of men who had died of glanders, and in neither case was the disease suspected by the medical attendant until just before death, one patient being treated for about ten months for chronic rheumatism and the other for chronic pleurisy.

The infection is usually transmitted to man from a glandered horse, ass, or mule, by discharge from the nose, from a farcy bud, or by contact of an abraded surface with a sponge or brush (stable utensil) which has become contaminated with some of the infectious discharge from a horse or mule. The men most commonly infected are those whose life brings them in contact with horses or with the preparation of glanders cultures, and records in medical journals show the hopelessness of treatment when once the disease has gained a foothold.

I believe I am correct in saying that there is only one man alive in Great Britain at the present time who had been indubitably infected with glanders and completely recovered. I refer to Professor Gaiger, the energetic Principal of the Glasgow Veterinary College, who has published a full description of his own case in the *Journal of Comparative Pathology and Therapeutics* (1913 and 1916). It is a most fascinating account of a plucky fight against a loathsome and terrible disease, and is of great scientific interest.

It is appropriate that Professor Gaiger should be with us at this meeting to-day, and I am sure that I am expressing the wishes of all of us who are present when I say that we all, medical and veterinary alike, congratulate him and his medical advisers on the successful issue to the gallant fight that was made for his life.

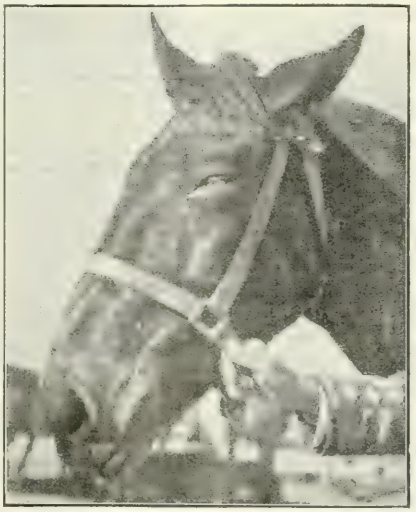


FIG. 1.—Intradermo-palpebral reaction to mallein. (From the clinical article in the *Veterinary Journal*, August, 1920, by Captain Howard B. Collet, B.V.Sc., M.R.C.V.S.)

Rabies.

The energetic watchfulness of the veterinary officials of the Ministry of Agriculture has kept Great Britain free from rabies for nearly twenty years, and until some thoughtless person committed the stupid and criminal offence of surreptitiously smuggling a dog (which happened to be infected and in the incubative stage) into the country, the much dreaded disease existed in this country only in name.

The first case was reported in the district of Plymouth about May, 1918, and during 1919 alone some 179 persons were bitten by animals in the scheduled areas, 46 of them by animals proved to be rabid. Prompt measures were taken, and treatment was arranged by the medical department of the Ministry of Health, and it is a triumphant tribute to the memory of Pasteur that there have been no deaths in England from hydrophobia. Under the present laws the head and neck of a suspected dog are sent to the Veterinary Laboratory of the Ministry of Agriculture, together with as much history as can be collected by the veterinary inspector to whom the case has been reported. The Negri bodies are searched for and inoculation made if necessary, with the result that in 96 per cent. of cases a decision can be given within a few hours, thus saving those who have been bitten much painful suspense and anxiety; and, what is more, enabling the medical officer, if necessary, to advise and immediately commence antirabic treatment.

All Continental countries, with the exception of Norway, Sweden, and Denmark, are infected, and although mainly seen in the dog, rabies is also met with in the horse, cow, sheep, cat, fox, wolf, and even the fowl.

In some of these veterinary patients rabies produces a train of symptoms which are rather curious, and which to the layman may not give rise to any suspicion of the disease, and thus perhaps lead to disaster.

Everyone knows something about the suspicious signs in the dog, although the classical symptoms are by no means constant. The change of manner, desire to hide in dark places, great excitability, restlessness, snapping at imaginary objects, attempts to swallow, the futile attempts to drink water, and the final rage in the violent forms, or the typically dropped jaw in the paralytic form, are all characteristic of the rabid dog. It is strange, too, what long distances dogs will wander in their unconscious frenzy, and it is for this reason that large areas have to be placed under restriction. The bark becomes changed and the peculiar howl of a rabid dog, once heard, can never be forgotten. Paralysis of the hind quarters and complete exhaustion finally close the scene if the disease is allowed to terminate the poor brute's existence.

A rabid cat is even more to be feared than a rabid dog, as it will attack either man or animal in a most reckless fashion; the disease terminates in death preceded by a stage of paralysis of the hind quarters. In the horse and ox one particular symptom which has been frequently observed is a tendency to attempt to bite or rub the scar at the site of infection, whilst in the sheep sexual excitement has frequently been noted.

Until the muzzling order has been finally withdrawn from every district it is necessary for both medical and veterinary practitioners to be on the alert for rabies, but there is every reason to hope that before the end of this year this disease, like glanders, will be relegated to its place with those which are only memories and no longer realities. Here again the veterinarian can say that he is of signal service to his medical colleague.

Anthrax.

Anthrax has been very much in evidence, both as regards man and animals, during the past few years, and it is time that very much sterner preventive measures were taken against it. As the editor of a professional journal I get cuttings from press agencies all over the country, and it is rare for a week to pass without receiving evidence of its appearance in either man or beast. When it is of sufficient importance for the public press to notice it constantly one may reasonably surmise that it has become fairly prevalent.

It is a scheduled disease, and Government statistics prove its prevalence in man, particularly amongst those who deal with skin, hides, wool, and hair from abroad, and those who make, or assist at, *post-mortem* examinations of animals dead of it.

The veterinary practitioner sees the disease most commonly in cattle, although it may be met with in the horse, sheep, pig, and even the dog; the latter animal is, however, less susceptible than the others.

Bone manure, foreign cake, and other feeding stuffs, obtained from countries where anthrax is rife and improperly controlled, are blamed largely for its appearance amongst stock. It is a

troublesome disease and difficult to control, but the precautions of the Ministry of Agriculture have reduced the number of outbreaks very considerably; and if only the disinfection of imported things such as hides, wool, and hair, and even the much abused Japanese shaving brush, can be effectually controlled on entry into the country we shall hear of fewer cases in man. The same may be said in regard to the supply of cotton and other cakes imported into Great Britain as a food for cattle.

It is practically always through animals or animal products that anthrax reaches man, so that to stamp it out of the lower animals would mean its eradication from man—a further proof of the necessity for close combination between the veterinary and the human medical professions, and the importance of the study of animal pathology in relation to human disease.

Several communications to be read before the meeting to-day bear on the subject of the intercommunicability of this disease from animals to man, and its seriousness when once contracted.

Sclavo's serum, the sheet anchor in the human treatment, is unreliable for the animal, and both in horses and cattle this disease still holds its own as one of the most rapidly fatal, for the patients of the veterinarian, of all the microbial diseases.

Tuberculosis.

If there is one disease more than another to which attention is to be drawn as an instance of the importance of animal pathology in relation to human disease, it is tuberculosis. To medical men and veterinarians alike it is one of the most important and devastating diseases of the day, and when one reads statements that no less than 85 per cent. of the cases of tuberculosis of the glands of the neck occurring in children are of bovine origin, that over 10,000 children die annually from drinking tuberculous milk, and that we have fully a million tuberculous cattle in Great Britain, it makes one shudder and wonder what our sanitary advisers and legislators are doing in regard to tackling the question from the animal standpoint.



FIG. 2.—Typical eye (intradermal) and neck (hypodermic) reactions on a glanndered horse. (Captain Hewer's clinical article, *Veterinary Journal*, vol. 27.)

One scarcely ever picks up a daily paper without reading some statement or other about tuberculous milk, and I cannot understand why the Cattle Tuberculosis Order, which was really making headway in 1914, and was temporarily suspended during the war, has not been re-established.

The report of the Medical Officer of Health for the City of London (Dr. W. J. Howarth) for 1921 states that out of 50 consecutive samples of milk purchased in the City no less than one in four proved to be tuberculous; and Dr. Bigger, at the last meeting of the Statistical and Social Society of Ireland, asserted that 6 per cent. of all deaths from tuberculosis was due to drinking tuberculous milk.

Does it not seem astonishing that such a state of affairs can exist in Great Britain, the richest and most sanitary country in the world? Yet we do not move, although it costs us 10,000 human deaths annually, and the loss of many hundreds of thousands of pounds to the agricultural and dairying communities.

Surely it is time a move was made to enforce that milk, when sold, should be clean and free from tubercle, and, if it is not asking too much at this, my first appearance before you, I would like a resolution to go up from this meeting in similar terms to that which was unanimously passed at the combined meeting of the Royal Society of Medicine and the Central Veterinary Medical Society, on the proposition of Sir John McFadyean, in March last, namely:

"That the prevalence of tuberculosis in cattle in this country continues to be a serious menace to the health of human beings, and that to counteract this danger, the reintroduction of the Animals' Tuberculosis Order, which was suspended in 1914, is urgently needed."

Given a free hand, we of the veterinary profession could stamp out tuberculosis of cattle in the same way as we have stamped out glanders and rabies. It would take time and would cost money, but the saving of the suffering and misery entailed by the loss of 10,000 human lives annually would more than counterbalance that, and surely should weigh down the right-side scalepan. Money ought not to count where human life is at stake. Having done our part, it would then rest with us to see that this bovine scourge never again got the upper hand, and was relegated to the same position which is now held by glanders and rabies. By doing so we should have again proved the value of having worked together, as opposed to the plan of separate and watertight compartments.

At the present moment a method of immunization of calves, introduced by Dr. Nathan Raw, is on trial, but it is too early yet to say anything about its results. Should it prove successful, it will be one of the greatest boons ever conferred upon the agriculturist, and, through agriculture, to mankind, for it will materially help to abolish this dire disease from this country.

Foot-and-Mouth Disease.

Although mainly a disease of cattle, sheep, and pigs, foot-and-mouth disease is of importance because of the risk of the milk for mankind, especially for children. For the moment it has gained a footing in Great Britain, and has cost the taxpayer already over a million pounds. A few instances have been reported of contagion to man, but in reality, owing to the strict quarantine and stamping-out methods of the officials of the Ministry of Agriculture, the disease has not had much opportunity to spread in this direction. Beyond, therefore, alluding to it in passing, and making the statement that it is one of the most insidiously contagious diseases of cattle with which we have to deal, I will not dwell upon it now. Some indication as to the extent to which it will spread may be gathered from the statement that in 1892 in Germany no fewer than 1,504,299 cattle, 2,193,157 sheep, 17,782 goats, and 438,262 pigs were affected in one year's outbreak alone.

Cow-pox.

This disease, too, I propose to pass over with a mere allusion, as it has, since the time of Dr. Jenner, received such widespread publicity that its position is definite, and everyone whether medical man, veterinarian, or agricultural herdsman, knows full well its importance in animal pathology in relation to human disease. It is highly infective from cattle to man, and although its course in man is tolerably benign, yet it is one of those little things which we would rather be without.

Mange.

The horse, cow, camel, pig, dog, and cat each has its special varieties of parasite, and it only needs a certain length of time in contact with the skin of man for the acarus to change his residence.

Three varieties of parasite are found on the horse—a sarcopt, a psoropt, and a symbiote, the two former being those which most commonly transfer themselves to man.

Grooming a mangy horse is risky, and riding one is almost certain to transmit the ailment. Knackermen are frequently

infected when employed in skinning mangy horses; and a recent case reported in the *Lancet* by Mr. A. S. Macdonald, B.Sc., M.R.C.V.S., proves that the veterinary student is by no means immune. The circumstances were a little peculiar, and worth relating:

A class of veterinary students were engaged in performing *post-mortem* operations on a horse. The horse had generalized sarcoptic mange, and was very badly affected. It was destroyed one Saturday morning at 10 o'clock, and thereafter was left lying upon a concrete floor while the students in question palpated, dissected, and operated upon the carcass for a period of time which varied with the individual from two to five hours. Of the students who had any contact with the carcass in question, approximately 53 per cent. became infected. On the other hand, the non-infected individuals were either those who were engaged upon the head and neck (which parts had been cured by the previous treatment) or those who had been little more than onlookers, in that they had been engaged in swabbing incisions, etc., to assist the actual operators. In short, of those students whose hands and clothing came into direct and prolonged contact with the infected carcass 100 per cent. complained of subsequent symptoms.

The most constant symptoms common to every case were:

(*a*) Itch of a most pronounced and continuous nature, accentuated by surface warmth, induced by exercise, by lying in bed, and by friction in the process of inunction of the affected areas.

(*b*) A papular eruption. This was present in all the affected cases at the site of contact with the carcass—*i.e.*, forearms, ankles, and calves of the legs. The hands in most cases, though not in all, escaped infection, no doubt owing to washing with carbolic soap immediately after, or in some cases during, the work on the dead subject. In some cases the forearms escaped while the ankles were affected, or vice versa. Lesions on the shoulders, upper arms, trunk, and thighs occurring in some of the students were in all cases secondary, there being no direct track of infection on the skin. The papules were the size of a large pin's head, of a fiery-red colour, and were slightly elevated above the surface of the surrounding skin. They seemed to correspond to hair follicles, and the crops were luxurious. It is perhaps significant that in one the interdigital spaces were the seat of the infection; here also the papules were more circumscribed, more elevated, and slightly pointed.

Treatment was troublesome, consisting mainly of hot baths and the after application of sulphur preparations, but eventually all made a complete recovery.

In Great Britain mange in the horse is a notifiable disease, and must be reported to the authorities, but mange in the dog is not.

That mange in the dog and cat is transmissible to man does not seem to be so generally known in the medical profession as it should be, and some time ago Dr. Whitfield and myself published the histories of some seventeen cases, in which he confirmed the existence in the human subjects, and I in the dog.

In a canine *clientèle* one frequently gets a person with an itchy dog who complains of an irritable skin, and in a very high proportion of cases, if the dog has mange, the owner will have contracted it. Small vesicles are produced, scattered over the surface, and not in grouped lesions. The intense irritation leads to scratching and the consequent decapitation of the little vesicles, and their original site becomes covered with a serous or a blood scab. If left untreated, the canine sarcopt will live on the human subject for about six weeks, but, if recognized and treated, I understand that it is easily got rid of. Several communications upon this subject will be presented to you by others interested in the comparative pathology side of the question.

Ringworm.

All the ringworms of animals are contagious to man. Every cowman knows of the risk he runs when dressing calves, or cattle, suffering from this complaint, and the ringworm of the horse is also contagious. The man who gets infected with either does so with his eyes open; but in the coat of the domesticated cat there lurks an unexpected danger which might not occur to one to suspect, did one not know. The cat's hair can be a carrier of ringworm spores without necessarily becoming infected to a sufficient extent for an owner to see it. In fact, it may escape the attention of the medical attendant and veterinary attendant alike for a considerable time; to fix this upon your attention I shall ask you to take note of the report of a case of transmission of ringworm from a cat to some children, which has been sent to-day by Mr. E. Livesey, M.R.C.V.S., in detail:

Briefly, the facts were that Mr. Livesey was asked to examine a young cat, in regard to the presence or absence of skin disease. He failed to find anything, but within three weeks developed tinea circinata on his left wrist, several other places following later. His wife, too, developed lesions. The owners of the cat developed it, as also five other persons in the house of a friend to whom it was given as a present. Further microscopical examination of the hair of the coat behind the ears revealed tinea spores, and the source of the infection was thus explained. In all, 15 people were affected.

Measles, Trichinosis, etc.

To the diseases found in meat I propose to do no more than allude, as they in themselves would form a separate paper of great importance. Suffice it to say that they play their part in the category covered by the title of the paper, in that they come under "Animal pathology in relation to human disease." Their presence furnishes a plea for proper and efficient meat inspection, the general neglect of which in England is deplorable.

It is entirely owing to the fact that we cook our food well that we enjoy our freedom from diseases in which a portion of the life history must be spent in an animal and part in man; a further tribute to the necessity for the study of comparative animal pathology.

Conclusion.

In conclusion, I desire to congratulate those of the Committee who selected as the title for the discussion "Animal and vegetable pathology in relation to human disease," for its part is an important one, and there are numbers of diseases which are intercommunicable and analogous. It behoves us to work together, to exchange ideas, and to work in unison, and by doing so we shall hasten forward the good work which is being done daily in the combat against disease.

Note.—A number of case reports and actual instances of the above diseases being communicated from animals to man were read by the essayist at intervals during his paper, the names of the medical and veterinary authors being given in each case. Space does not permit of these being given in detail.

II.—SOME ASPECTS OF VEGETABLE PATHOLOGY IN RELATION TO HUMAN DISEASE.

BY

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DIRECT comparisons between the normal development and construction of plants and animals have often proved more misleading than helpful, and it is even more necessary to be on guard against false analogies when the comparison is extended to pathological processes. The common features of all living things justifies the attempt, but it is well to maintain a critical rather than an optimistic attitude.

Evolutionary history shows that the connexion between plants and animals lay very far back, and is particularly indirect for the higher animals and the higher plants. Pathological reactions and processes have a similarly long history behind them, though we can hardly hope to get more than occasional records of them from the fossils. If we could compare the reactions, for instance, to wounding, in the earliest vertebrate animals and the earliest land plants we should doubtless find them as dissimilar in essentials as those of a man and a flowering plant to-day.

Some ancient plants recently found in the Old Red Sandstone of Scotland afford the earliest examples of pathological reactions of the tissues of plants that I know. These plants had, like other land plants, an epidermis with minute openings or stomata through which gaseous interchanges between the air and the internal atmosphere in the intercellular spaces took place. Noxious gases, perhaps the result of volcanic activity in the neighbourhood, appear to have sometimes entered the stomata, stimulating the cells around and underneath to enlarge and divide. The interest of the small projections of tissue thus produced lies in their remarkable similarity to the intumescences formed in some living plants when exposed to irritating vapours. The resemblances of the pathological reactions of these Devonian plants and those of the present day do not stop here. When the unknown cause had led to the necrosis of a portion of the tissues of the stem, the adjoining living cells reacted by enlargement and repeated division to the presence of the necrosed mass or the wound left by its decay and disappearance. The result in some cases is as beautiful an example of wound-callus, progressing towards the obliteration of the cavity and the healing of the wound, as can be obtained from living plants. The perfection of the preservation of this, the most ancient wound reaction that is known, is of interest for its own sake, and will serve as a starting point for some general

considerations on reactions of vegetable tissues to irritants and parasites.

Even from this example it will be obvious that a general correspondence can be traced between the healing of a wound in the plant and animal body. If, however, we were tempted to make more specific comparisons—for instance, between the processes of the wound-callus and the projections of granulation tissue in an animal wound—we should probably get astray and pass from scientific study into regions of fancy.

The same general conceptions arise in the study of diseases of plants and animals, and the same names, such as wound reactions, parasitic diseases, and tumours, are naturally used. The interest of comparison in all these cases has long been recognized by human pathologists, though it can hardly be said to have been actually useful.

Of late years very direct comparisons have been made between a remarkable disease of plants known as "crown gall" and malignant tumours in man and animals. It will afford the necessary limitation to the scope of my remarks if they are made to bear on the consideration of this disease and of these comparisons. I venture to do this since I have had the advantage of being in close touch with a study of crown gall which Dr. Wilfrid Robinson and Mr. H. Walkden have been making in my laboratory. Without anticipating their results, which will shortly be published, this will enable me to present some of the problems suggested by the published accounts of this disease in a form that may be of use in this discussion.

The tumour-like growths of crown gall have long been known, especially in relation to wounds made in cultivated plants from horticultural operations such as grafting. The disease was proved to be transmissible from one plant to another, and was later shown by Smith and Townsend to depend on a bacterium which they successfully isolated and named *Bacterium tumefaciens*. The causal organism having thus been obtained in pure culture, the experimental production of the disease has been extensively carried out, especially by Erwin Smith. We owe much of our knowledge of crown gall to his papers, which contain a wealth of illustration by excellent photographs of the varied effects of the introduction of *Bacterium tumefaciens* into a number of different plants.

Bacterium tumefaciens is a rod-shaped bacillus with rounded ends, 1.2 to 1.5 μ long by 0.5 to 0.6 μ broad, and motile by means of one, or occasionally two or three, polar flagella. Its cultural reactions have been fully studied by Smith and, as independently isolated in this country, by Walkden. Its regular occurrence in relation to the crown-gall tumours has been proved bacteriologically by obtaining from them pure cultures of the organism which can again cause the disease.

The main features of the growths caused by this bacterium may be briefly stated. There is no evidence that infection occurs except by a wound, though a needle-prick is sufficient. The galls have been obtained on roots, stems, and leaves of many plants, attaining the largest size when the inoculation affects immature tissues or the cambium of stems with secondary growth. Especially large tumours form on parts with very active and anomalous secondary thickening, such as the root of the sugar beet. What have been distinguished by Smith as secondary tumours appear in some cases at a distance from the main tumour. When the inoculation is made into apical or axillary buds the further growth of these is profoundly disturbed and irregular growths bearing more or less altered organs (leaves, shoots, flowers) result. Definite organs of the plant may also appear on tumours apart from pre-existing rudiments. Thus roots develop in the condition known as "hairy root," and shoots when inoculations have been made on the cut surface of a young internode, into the internode of a stem, or into the midribs of a young leaf.

The tissues of the gall or tumour, resulting from the stimulation of unknown nature exerted by *Bacterium tumefaciens* on the more or less immature part of the host plant, show an abundant irregular multiplication of cells. Some of the resulting meristematic cells undergo differentiation into mature tissue elements, especially into those of an irregularly arranged wood. Others may form the starting point for the adventitiously developed organs (roots, shoots) mentioned above. The published figures show that the effect may extend back some distance from the inoculated surface in the vascular bundles. Smith holds that there is an actual infiltration of the tumour cells between the normal cells of the tissues around, and explains in this way the origin of the secondary tumours connected by tumour strands with the main tumour.

On the ground of such facts as have now been summarized Smith makes detailed comparisons with malignant tumours of man and animals, and also treats the production of new organs in crown gall as comparable to the embryomata and teratomata of the animal pathologist. Further observations and comparisons on these lines have been made by Jensen, both by inoculating crown-gall bacteria into beets and also on certain tumours of this plant from which it is not clear that *Bacterium tumefaciens* can be obtained. Jensen has successfully transferred the latter tumours by grafting between yellow and red forms of *Beta;* these grafts show little indication of any real infiltration of the normal tissue.

In attempting to form a critical estimate of this disease, and of the comparisons that have been made between it and pathological processes in man, we must take into account the normal construction and mode of growth of the affected portions of the plant as contrasted with animal tissues; the reactions to wounding in plants; the reactions of the plant to various parasitic organisms; and the relation of tumour formation in the plant to wounds and parasites. It will be found that these problems are connected, and that collectively their consideration puts us in a better position to appreciate the reactions of the vegetable tissues to the crown-gall bacterium.

The absence of a nervous system, and, still more important, of anything corresponding to the circulatory system of the higher animals, must always be kept in mind when considering disease reactions in the plant. Along with the absence of blood and lymph we must note the special type of the tissues in plants due to their being composed of cells with the protoplasts enclosed by cell walls. Another important difference from the higher animals is found in the continued development of most plants. The formation of new tissues and organs continues throughout life at the growing points of the stems and roots. The enlargement of the parts thus laid down, and the separation of such organs as the leaves of the bud, takes place as their cells become vacuolated in attaining their mature size and condition. In addition to the activity of the primary meristems at the growing points a continued production of new tissues proceeds from layers of meristematic tissues within the plant. The most important of these layers is the cambium, between the wood and the bast, to which secondary thickening is due.

Many of the features of the reactions in crown gall depend on these general characteristics of growth and construction in the plant. A point to which attention may be specially directed is that the distance over which the effect of an inoculation is manifest may be almost entirely due to the subsequent enlargement and separation of the parts as the bud expands into a shoot. This will be seen to have an important bearing on the distance separating the secondary from the main tumours.

The condition of correlation between the parts of the whole organism controls in the plant, not merely the balance of the mature tissues, but the production of new organs and the arrangement of these and of their tissues. This correlation becomes evident when it is disturbed in any way, and plays an important part in the pathological reactions to wounds or parasites. The removal of parts of the plant—for instance, of the terminal bud—may so alter the balance of the whole as to cause dormant growing points to become active or others to change their reaction to the environment.

When the tissues are relatively mature there may be little reaction at the wound itself, save some drying of the surface or the production of a protective layer of cork. In other cases a marked alteration of growth indicates the disturbance of the normal correlation of the tissues. This is best seen when the latter are immature, but wounding may lead to a rejuvenation of the adjacent living cells even when these form a mature tissue. Thus in the wound reactions of stems of dicotyledonous plants living cells of the cortex and pith proliferate to form a new growth of wound-callus, but the main development of this is from the meristematic layer of the cambium. The effect may extend some distance back from the wound, and the callus itself may not only close the wound but may become the seat of new growths such as shoots or roots. The cells of the callus become organized as permanent tissue, which often has an irregular or atypical arrangement, as is best seen in the characters of wound-wood.

A number of the features of crown gall will thus be seen to be paralleled in wound reactions of plants. The causal influence of *Bacterium tumefaciens* is, however, shown by the fact that callus-like galls of considerable size develop where

there would otherwise be only a relatively slight wound reaction in the particular plant.

The tissues of the normal intact plant are free from foreign organisms except in certain cases of symbiosis, which for our present purpose can be grouped with parasitic diseases. The effect of intrusive parasitic organisms differs in accordance with the specific nature of both host and parasite. There may be little or no evidence of reaction on the part of the host; this is especially the case when the affected parts are relatively mature. Marked reactions are usually associated with incompletely differentiated tissues or with meristems, whether primary or secondary.

The numerous new growths or galls on plants due to parasitic animals can only be mentioned without entering into details as to their variety. They always involve more or less wounding, but the effect of the secretions and excretions of the animal parasite in the gall is predominant. A detail of some interest to animal pathologists is the production of multinucleate giant cells in relation to the presence of parasitic eel-worms in the roots of various plants, in other galls, and in crown gall itself. The common oak-apple may be mentioned as one example of insect galls on account of the similarities which it, like some specimens of crown gall, shows to the development of wound-callus on the end of a cut stem. In this case the terminal bud of the oak is, in fact, considerably wounded by the gall-insect before she lays her eggs. The further callus-like growth which encloses these in the soft tissues of the gall is mainly due not to the wounding but to the irritation of the parasites.

Marked reactions to parasitic organisms without the complication of wounding are found in the case of vegetable parasites. Striking examples are afforded by the wart disease of the potato, where axillary buds are affected by *Synchytrium endobioticum*, and by club-root, where the cambium and secondary tissues of the cabbage or turnip are stimulated by the presence of plasmodiophora brassicae within the cells. The alterations of form of the host-plants due to uredineous fungi affecting the primary or secondary meristems or immature tissues can be contrasted with the relatively slight reactions due to similar fungi affecting more fully grown stems and leaves. In some cases, as in certain fern leaves affected by Exoascaceae, new leaf-like growths result from the presence of a fungus.

Many bacterial diseases of plants are of the nature of "rots" with little or no reaction, but in the bacteriosis of the olive tree we find irregular tumour-like growths with the causal organism evident in cavities. The well-known root tubercles of the Leguminosae afford another example of a marked reaction due to the intrusion of a bacterium, the presence of which is in this case beneficial to the host.

In the various cases of irritation by animal or vegetable parasites resemblances to crown gall are evident. This is of course not surprising, since we know that this disease is due to the influence of a parasitic bacterium.

Tumour-like growths in plants are in many cases, as will be evident from what has been said above, the result of the stimulation due to parasitic organisms. Others are due to wounding or are associated with the wound-callus formed as a reaction to this. Some of the globular woody tumours found in the cortex of trees are of this nature, the wood developing from layers of cambium formed around groups of cells of the bark. Other tumours, superficially like these, have their cambium derived from that of dormant buds which may lose their connexion with the wood of the trunk. The latter examples have long been recognized as giving a point of comparison in plants to Cohnheim's explanation of the origin of animal tumours. True tumours, apart from wounding or the presence of parasites, are, however, rare in plants, and comparison with animal tumours is thus limited. In all tumour-like growths in plants the tissues are liable to be more or less atypical in their histology.

In the light of this brief survey of some other pathological reactions in plants crown gall appears as a particular case of a callus-like tumour growth following on the introduction by a wound of *Bacterium tumefaciens*. There is no doubt that the resemblances between the appearances presented by sections of some of the tumour-like growths in this disease and animal tumours are striking and may well interest the human pathologist. To what extent even in the case of this particularly favourable plant disease it is wise, safe, or useful to make specific comparisons with particular pathological processes in man is, however, open to discussion.

How closely the comparisons between crown gall and malignant animal tumours have been pressed can be seen by reference to Erwin Smith's papers and his recent *Introduction to Bacterial Diseases of Plants*.

The importance and interest of the pathological processes in crown gall fully justify their comprehensive study which we owe so largely to the work of this investigator. It does not appear possible, however, to accept on the evidence before us all these direct comparisons with malignant tumours in animals, nor to draw conclusions as to the etiology of the later from the undoubted facts as to *Bacterium tumefaciens* being the cause of crown gall.

The cell multiplication and the imperfect differentiation of the resulting tissues have been seen to be common to a number of disturbed growths in plants. The tendency to a production of new organs from the crown-gall tumour is paralleled in the case of wound-callus, galls, and some parasitic diseases of plants. There is real danger of being misled by a name if we speak of these new growths in this plant as teratomata or embryomata. In regeneration in plants the formation of a complete plant from a somatic cell or group of cells is common. The conception of embryomatous tumours in animals involves the early distinction of the germinal layers and of somatic and reproductive cells; there is no strict parallel to this in plants.

Passing from these more general features to the peculiarities of crown gall which have been made the ground of special comparison with malignant tumours we find that some of the more critical facts are uncertain and in need of re-investigation. One of these concerns the actual place occupied by the bacteria in the crown-gall tumour, from which there is no doubt they can be obtained. In earlier accounts Smith figured bacteria in small numbers in the cytoplasm of the tumour cells. More recently he has stated that the bodies thus demonstrated are not bacteria. He still, however, assumes that bacteria are present within the cells, and are there liberating products which lead to the tumour growth. As the matter stands there seems no evidence for arguing from crown gall in support of intracellular parasites in maligant tumours. The uncertainty as to the position of the bacteria in the active tumour evidently bears on the further hypothesis of Jensen that the bacteria may disappear, leaving the cells with the abnormal type of growth impressed upon them.

We thus come, as the real ground for comparing crown gall with malignant animal tumours. to the power of intrusion of the tumour tissue into the normal tissues of the plant and of there producing secondary tumours at a distance. The question of actual intrusion, as distinguished from extension of the morbid process to adjoining cells, requires critical reinvestigation. There is no doubt as to the existence of what have been termed secondary tumours, connected with the main tumour by a more slender strand of tumour tissue. It is by no means clear, however, in what sense or degree these represent intrusions, and a fuller explanation of their mode of origin is required, due allowance being made for the extension of the parts by growth from their condition at the time of infection.

One feature of the secondary tumours in the leaf on which stress has been laid is that they appear to repeat the structure characteristic of the stem, where the main tumour is situated. The radial arrangement of the vascular tissues in the secondary tumour and the tumour strand does not, however, appear to involve this interpretation. It cannot be taken as corresponding to the repetition of histological characters peculiar to the primary tumour in secondary maligant tumours in the animal body.

Crown gall, as one of the plant diseases most fully studied from this point of view, thus appears to bear out the apprehension expressed at the outset as to the soundness of detailed and direct comparisons between particular diseases in animals and plants. Doubtless, as our knowledge of normal protoplasm increases, and as pathological processes are traced back to changes in the cells and their protoplasm, fundamental common features of disease in plants and animals will become more and more evident. Though this aspect of the subject cannot be pursued here, it is of interest to note that Erwin Smith's studies of crown gall have led him to consider and experimentally attack such general underlying problems.

It will evidently be advantageous for a student of plant pathology to study some animal diseases, and conversely for a human pathologist to pay attention to some diseases of plants. Such studies must, however, always be conducted in the light of the differences in morphology and physiology which characterize animals and plants. The value of taking

plant diseases into consideration in human pathology (and in passing one may add of including some plant pathology in the education of the medical student) comes rather from this widening of outlook than in the form of direct inferences from the one subject to the other. To the philosophical human pathologist the study of some plant diseases may well be light-giving, and it is perhaps better not to expect it to be fruit-giving.

"*Et lucifera experimenta, non fructifera quaerenda.*"

DISCUSSION.

Sir CLIFFORD ALLBUTT said that he was ashamed to lay before the Section mere general considerations, in contrast with the solid results contributed by his expert colleagues. The President kindly called upon him to speak because he had taken a great interest in comparative pathology for many years. When President of the Section of Medicine, in 1882, he had pointed out the need of the Comparative Method in the study of disease; and again, in the Bute Hall of the Glasgow University, in the address on Medicine in 1888, he had urged the same message. At last, by the cordial co-operation of the President of this morning, the importance of the subject had not only been emphasized, but had also been fully vindicated, by the papers they had heard during the forenoon. Sir Clifford urged that no scientific subject could progress without the comparative method; history, philology, anatomy, physiology, etc.—even religion—owed much of their accumulated and systematized knowledge to the method. Outside the nosology of Man there were many workers—workers on the diseases of animals and of plants; therefore there was the less excuse for neglect of comparative methods by human nosologists. This supineness inflicted the same sterility upon the workers in other fields, such as veterinary medicine, plant pathology, and so on; each body of experts was working in isolation.

In his masterly paper Professor Lang had warned the students of Comparative Pathology against the snare of false analogies; but might not the adjective be left out? Arguing by analogies had been the bane of medicine from the earliest times. We had now to go beneath analogies and similitudes to underlying affinities, which indeed were often far from apparent. Even in the comparison of proper names—for example, surnames and names of places—we found every day the errors of derivation from appearances and analogies; when their history was traced in ancient records such derivations often proved to be false. We must be careful then in making direct cross-references, but rather trace genetic affinities from leaf to twig, to branch, to stem, until we reached a general view of the development of the processes concerned. It was true, as Professor Lang had said, that this method made us go a very long way back; but he had himself carried his striking comparisons back to a remote geological record. Furthermore, the biologist must be continually conversant with the properties of colloids, and so farther back again to physics with its laws of interface actions, adsorption, osmosis, and so on. We must seek for origins, however far back they may be. To take a simple modern and practical instance: Whence comes the healing virtue of cod-liver oil? As Dr. Hjort had shown, to find an answer we had to go back to certain marine algae which formed a part of the plankton on which fishes feed. It was in these lowly vegetables that the vital agents seemed to be created which gave their virtue to the oil that might be extracted from the livers of many fishes, but chiefly of the cod. The same result was seen in the virtue of the sprouting seed, of the pea, for instance, as contrasted with the impotence of its dry state.

Again, one of the mysteries of the animal body was the part played in metabolism by certain salts—by calcium, for example. The simplest forms of life might indicate the nature of this and of many other processes, which in highly developed animals were too entangled to be tracked out. The absence of a nervous system, and indeed of a definite circulatory system, might leave open to the observer the beginnings of the most essential principles or rudiments of vital processes. Thus the implicit capacity for fever could hardly emerge without the thermotaxy of a nervous system, whereby a local morbid change became subordinate to the balance of systemic forces. Our purpose was to detect the behaviour of protoplasm under an infinite variety of conditions, not here and there only, in several closed compartments. We knew, on physical, chemical, and biological grounds, how extremely slight were the structural differences which might issue in extremely different functions; as in adsorption, catalysis, chemical substitutions, immunities, and so on. When we got some command over such slight differences we should gain large powers over the perversions of molecular construction. A small rudder might control a very big ship. Morbid changes by no means always came about by gradual augmentation of differences, but by leaps and bounds, as musical flames fitfully responded to scales of vibration. Therefore clinical "Types" could form no basis for nosological classification. Besides, there was mimicry in disease, under which guises must be detected those processes which were alike at the core (*αὐτοφυῶς ὅμοιοι*). An internal change which converted a benignant or anabolic process into one of destructive malignancy might be very small; for instance, cacodylic acid, which was soluble and contained 70 per cent. of arsenic, was non-poisonous; and again, the non-poisonous cyanides and carbamides exhibited vital differences generated by slight molecular dislocations. Great secrets, then, might lie in the simpler play of uncomplicated principles, could we but get down to such conditions. As Professor Welch had said to the speaker in a recent letter, "we need a mode of research in which the first word shall be Comparison." But in such research we should be hampered if physicians would persist in supposing diseases to be "clinical (or other) entities"; they might as well attribute them to demons.

Of the tremendous importance of the study of diseases of animals or plants which were transmissible to man we had learnt much again from the contribution of Professor Hobday; into that utilitarian side of Comparative Pathology—pressing as it was—the speaker could not then enter; he had to keep to his own side—the research side—of the problems, a side on which he felt less incompetent to speak. He desired to insist upon the genetical, the historical, the geographical, the experimental methods. For there could be no complete system of therapeutics until the science of Comparative Nosology—a science as yet hardly recognized—until the genetic affinities of diseases, their origins, parent stems and alliances, as well as their issues, were worked out.

Note.—These reflections were subject to exceptions, such as the brilliant work of Sir John Bland-Sutton (*Introduction to General Pathology*, etc.) and of a few others. Some passages of the present argument were quoted from the speaker's two former addresses.

Professor S. H. GAIGER (Glasgow) said: Professor Hobday's list of animal diseases communicable to man is sufficiently long without any additions, but to it there can be added certain of the African trypanosomiases where the rôle of animals in the spread of the human disease has been much discussed in recent years. It is questionable whether in his list there should have been mentioned as a possible danger to human beings the *Bacillus abortus*; more probable is it that it should have been left out. It is a matter for much satisfaction that science has shown the method by which glanders and rabies can be stamped out. The recent outbreak of rabies in this country shows clearly that the advice of the veterinarian with regard to visitations of disease is infinitely preferable to the advice of the lay administrator. The country has to buy its experience in such matters, and if the recent outbreak of rabies with its 179 persons bitten has taught Britain this fact it was worth it. Animal diseases cannot be got rid of in Britain without a knowledge of veterinary pathology any more than human diseases can be combated without a knowledge of the pathology of human diseases. Though glanders and rabies are practically stamped out in Britain they are rampant in many other countries, including some countries within the British Empire. In the case of anthrax we are dealing with a more insidious disease. The causal organism is a sporulating one, and therefore capable of living for presumably indefinite periods apart from the animal body. Official control of such a disease lessens the risk of bacterial multiplication from actual cases of anthrax, but at present gives no protection against spores brought in animal products from abroad. There is no doubt that progress against anthrax will be slow but sure, and that concerted action will in time eradicate the disease. It is not lack of pathological knowledge that prevents the eradication of bovine tuberculosis. We have a reliable diagnostic agent in tuberculin, and we are dealing with a non-sporulating organism which cannot live indefinitely away from the animal body. We have all the means at our disposal to enable us to stamp out tubercle from our herds except funds and organization to allow us to carry on. The matter is a very serious one, but only a spasmodic effort or two is being made

at present instead of the necessary campaign. The tubercle bacillus makes no spasmodic effort, it is war spread broadcast, and measures to cope with it must be correspondingly extensive.

The medical man and the veterinarian can both derive great benefit from the study of comparative pathology apart from the communicable diseases. Take, for example, diseases caused by the pathogenic anaerobes in man and animals. Up to the war period the position of our knowledge of these infections was one of almost hopeless confusion. None knew what really was the correct account of the biological characters of any pathogenic anaerobe. Some gave their descriptions from pure cultures, others from impure cultures, and the impurities were by no means always the same. The war period brought with it the necessity for the study of wound infections. We were found totally unprepared for the specific treatment of gas gangrene, and prior to making antiserums for the treatment of this condition it was necessary to suffer delays from the indispensable preliminary bacteriological study of the causal organisms. This delay meant the loss of many valuable lives. It has fallen to me in the last few years to investigate certain anaerobic infections in animals, and particularly braxy in sheep. Braxy is an example in animals of a pure infection with an anaerobe. It is true it is not a skin-wound infection. It is a stomach-wound infection, not a wound in the usually accepted sense of the term but an injury from the lowering of the tissue defences from chills, from frosted food, etc., and the anaerobe is enabled to gain entrance. It invades the system in pure culture. Bacteriologists studying gas gangrene spent much time purifying the anaerobes from that condition, and one way they did so was by passage of the bacilli through the animal body; yet here in braxy in the sheep, had it been known, was to be found one of the most important of the gas gangrene organisms invading the system in pure culture from the stomach, leaving other anaerobes and aerobes behind. It is, in fact, a natural purification of this bacillus by animal passage, but no one knew of it. I believe that time is going to show the pathogenic anaerobes to be of vast importance to the veterinarian. My investigations into braxy will be published in a few weeks, but that is only one instance. There are others. In peace time anaerobic infections in wounds in man are negligible in number. In war time it is quite the reverse. In animals many do not yet realize the extent of such infections. Had a thorough knowledge of anaerobic infections in animals been available before 1914 the medical scientist would have been greatly helped and serum treatment would have been available early in the war instead of just as the war was closing. As it is, the veterinary pathologist has been greatly assisted by the war-time studies of the human pathologist. Let us hope that the day is not very far distant when veterinary research in Britain will be directed by a Veterinary Research Committee, after the manner in which research into human diseases has been so ably assisted by the Medical Research Council.

Mr. William B. Brierley (Rothamsted Experiment Station) said: May I state at once that I agree fully with the greater part of what Professor Lang has said? The unbridgeable gulf between the morphology, anatomy, and physiological processes of animals and plants resulting from the complete divergence in their evolutionary sequences must be recognized. There is in animals nothing comparable with the rigid-walled cells of plants, and in plants nothing comparable with the blood vascular system, the lymphatic, alimentary, nervous, muscular, and skeletal systems. It is these characteristic features that give rise to and make possible the specific pathological responses associated with disease. Occasionally interesting but purely superficial general parallels exist, but to find exact analogies in development and structure, and even more to trace exact correspondences in the details of the morbid histology of diseased host tissues of animals and plants, and to reason from one to the other is to falsify and confuse every issue. These differences are fundamental, and comparative investigations can only have value if they are borne acutely in mind. Within recent years detailed comparisons have been made between that very remarkable disease of plants, crown gall, and malignant animal tumour. Professor Lang has indicated that in his view this comparison, except along the most generalized lines, must be regarded with much circumspection, and on the whole I would associate myself with Professor Lang. One point on which, however, I would definitely reserve my opinion is whether the tumour strand is an infiltrative tissue. I have had the very great privilege of examining many of the wonderful series of specimens and preparations of Dr. Erwin F. Smith, to whom we owe all our knowledge of crown gall, and as I remember the microscopic appearances I find it difficult in certain cases to interpret the development of the tumour strand as other than an infiltration into foreign tissue. Secondly, Professor Lang referred to the absence of infiltrative development in the case of Jensen's beet tumour grafts. Their absence here would not appear to me to be conclusive, for I think that on the whole such developments are hardly to be expected in such complexes. The conclusion to which I am drawn from a comparative review of diseased states in animals and plants is that as regards the host tissue responses there is little if anything in common save the most general reaction of wound healing. There are, however, many other aspects of pathology, and I wish to spend a few minutes dealing with certain of these.

As in animals and man, so in plants many diseased states are due to the operation of environmental factors, such as malnutrition, light, temperature, humidity, specific toxic agents, and so forth. Is it here that we shall find greater scope for comparative studies and more exact and detailed analogies? A broad survey of the evidence does not lend hopeful augury, and save in the most generalized pathological reactions and perhaps in regions of protoplasmic response and cell chemistry, to which we have as yet hardly penetrated, the two kingdoms appear to be remote from each other. Most of the diseases, however, to which we, as pathologists, direct our attention are caused by living parasites—bacteria, fungi, protozoa, myxomycetes, helminths, and arthropods of various sorts. I will say at once that it seems to me that it is in the comparative study of these organisms that animal and plant pathologists find their most intimate and real contact, for it is only in the full understanding of the causes that the rational control of the effects can be brought about and a solid foundation laid for future progress. May I in a few words indicate what are to me the most salient aspects of this point of intimate contact?

A knowledge of the structure of any particular pathogen and of related types is essential as a basis for classification and nomenclature. It is surely evident that where animal and plant pathologists are dealing with like groups, common genera, and occasionally even with the same species, that similar systems should be adopted, comparative studies made and the results pooled.

Again, related species frequently have similar developmental phases in their life cycles, and as wide and intensive a knowledge of life histories as possible is a fundamental part of the mental equipment of any pathologist. If life history studies are to have any real value they must be comparative.

A third aspect in which the value of comparative investigation seems to me so obvious as scarcely to need comment is in regard to the physiological qualities of pathogens. All problems of virulence, of disinfection, of invasive power by enzymatic or mechanical action, of physiological classifications and so forth, are essentially the common ground of both animal and plant pathologists. The fact, for example, that bacteria commonly found in the soil can oxidize phenol and cresol is of vital importance to the animal pathologist.

A fourth and very important aspect of study which can only be carried out in a comparative way is that of the genetics of micro-organisms. Problems of adaptability, modification, and mutation, the scope and permanence of these changes and their relation to the immunity, resistance, or susceptibility of specific host tissues is vital and common ground to all microbiologists. Perhaps I may be allowed to illustrate by one example. Physiological classification is based on an assumption of the permanence of certain physiological qualities; vaccine and serum therapy is based on an assumption that certain physiological qualities can be permanently changed; breeding for disease resistance is based on an assumption that certain physiological qualities are unchangeable and so forth.

A further aspect of very great comparative interest is in the geographical distribution of micro-organisms. Very little is yet known of this subject, but it presents undoubtedly a very wide and deep field for comparative study. An aspect of pathology which, from the animal point of view, is very difficult of direct experimentation concerns epidemiology. This is an easy and almost untouched field in plant pathology. It is, however, obviously a comparatively simple matter to study

problems of the dispersion of any particular pathogenic organism among a hundred or a thousand individuals of wheat or tomatoes, etc., under standardized and controllable conditions. It would not be easy to carry out such experiments on animals or man. Finally, all pathologists, whether of the plant, medical, or veterinarian persuasions, are dealing essentially with the same groups of organisms and using the same methods. Advances in laboratory apparatus and technique made by animal pathologists are applicable in botanical or veterinary laboratories and conversely.

Perhaps I have occupied overmuch time with this summary, brief though it be. When, however, one realizes the great gulf between veterinarians, medical men, and botanists and agriculturists, and the great masses of knowledge which are of vital interest to all, and should be common to all, and yet which are unknown to those not actively working in this or that particular field, I do not think I am unjustified. One aspect of disease in plants which is daily growing in importance concerns that little understood group known as "virus" diseases. A later speaker will deal in detail with this, but I wish to say a very few words on the subject. Viruses and filter passers are now well known in both animal and plant pathology, and in the latter division there is a series of hitherto unrelated diseases passing under various names which undoubtedly belong here. The host responses of plants have little in common with those of animals save that in both divisions the "carrier" problem is present. Recent investigations of certain mosaic diseases would appear to indicate that bodies similar to Rickettsia and to the well-known Negri bodies may be found in the diseased tissues. Many of these virus diseases have proved to be carried by insects (although with others this is not necessary), and in the disease known as curly-top of sugar beet there are indications that the virus passes through a developmental life cycle, one moiety taking place in the insect, the other in the plant. In any case the vital comparative interest of these diseases must be patent to all.

In conclusion, I would like to make a plea for the definite recognition of a science of medical mycology similar to that accorded to medical entomology. Only a very few years ago entomologists were not regarded seriously in medical science. What might almost be regarded as a series of lucky accidents brought entomology into the very front line of medical research, and led to the recognition of medical entomology as a definite science of primary status. University chairs were founded, opportunities for research and teaching were given, and the value that has resulted is incalculable. Equally necessary is the recognition of medical mycology with similar opportunities for research and teaching. Medical mycology would give scope for that intimate contact between veterinarians, medical men, botanists, and agricultural bacteriologists, and one might even hope that thereafter the fungi pathogenic to animals and man would receive adequate and critical study. I venture to think that the first university or medical institution founding a research and teaching school of medical mycology will have taken a vast forward step in medical science.

May I in a few words summarize the points that I have wished to make? There is little that can be helpful, and there are great possibilities of confusion in making detailed comparisons of host tissue responses in plant and animal diseases. There is a vast field for common study of the great groups of micro-organisms. There is much need for common meeting grounds and the utmost value can be obtained from an intimate exchange of facts and points of view. There is vital need for the recognition of a science of medical mycology, and this meeting would be memorable if it led to such a foundation.

SOME CHARACTERISTICS OF THE VIRUS DISEASES OF PLANTS.

BY

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The diseases of plants caused by an ultramicroscopic agent or virus appear to fall into four main classes. The largest is the group to which the mosaic disease of tobacco, first shown to be caused by a filtrable virus in 1892, belongs. The diseases in this group can be transmitted to healthy plants by grafting, in most cases (perhaps always) by sucking insects, usually by inoculating with the expressed juice or crushed tissues, and occasionally through the seed. There are no definite necrotic lesions, except in rare cases where necrosis of the parenchyma cells has been observed. They are not usually fatal, though often very harmful.

A second, small, group consists of diseases of which peach yellows is the type. Transmission has only been effected by grafting, but natural infection takes place in some unknown way, perhaps by insects. Transmission by inoculation with the juice or crushed tissues or by the seed has not been accomplished. No specific necrotic lesions are caused, but the cases are fatal.

A third group comprises the forms of variegation which can be transmitted to normal green plants by grafting. The affected plants are somewhat less resistant to unfavourable conditions than those that are normal, but the disease (if disease it can be called) is of a very mild type. Natural infection is not known.

Finally, there is a small group resembling the mosaic diseases in many respects, but characterized by definite necrotic lesions in that part of the vascular strands through which the elaborated food is conveyed to the growing or storage parts—the phloem. This group can be transmitted by grafting and also in some cases by insects, but not, so far as is known, by juice inoculations or through seed.

Transmission.

In all the cases investigated transmission can be effected by causing organic union between the tissues of a diseased and healthy plant, as by grafting or budding. In no case is mere contact sufficient. The next most general method is transmission by insects, this being common in the mosaic and phloem-necrosis groups, and possible, though not proven, in the peach yellows type. Transmission by inoculating with the juice of infected plants is only certainly known to occur in the mosaic group (much the largest). Transmission through the seed is rare, but has been fully established in certain mosaic diseases.

In transmission by grafting not every variety of plant that can be successfully grafted can be infected, though some of these diseases have a wide range of hosts. Sometimes, also, the virus is transmitted, but the new host shows no symptoms other than the ability to transmit the disease with full virulence by grafting on a susceptible host. Thus the phenomena of immunity and of "carriers" are known.

In transmission by insects usually there is no evidence that the insect is a necessary secondary host. Infection will occur if the insect is placed on a healthy plant immediately after feeding. In the "curly-top" disease of beet, however, infection cannot be conveyed for some time after feeding (four hours at high temperatures, up to forty-eight hours at lower temperatures). There is some evidence (as in several other allied diseases) that the infective agent is not always taken up with the plant juices by the insect, possibly because it is not always in a stage accessible to the latter. No other method of transmission than by the insect (*Eutettix tenella*) and by grafting is known. Evidently the causal agent must be an organism possessing a definite life history in host-plant and insect.

Spinach blight can be transmitted by several different insects and by juice inoculations. The incubation period in the plant varies according to the age of the plant and of the insect transmitter. The infective agent is hereditary in the insect up to at least four generations. The juice of infective aphids is infectious.

Transmission by inoculation with juice or crushed tissue has been most fully studied in the tobacco mosaic. The virus is present in all parts of the plant except the embryo of the seed. Infection can be produced by inoculating any part of the plant after abrading the cuticle. The leaf hairs of infected plants contain the virus, and it can be inoculated successfully by merely cutting first infected hairs and then those of a healthy plant with fine scissors. *Nicotiana viscosa* is immune to the mosaic of common tobacco (*N. tabacum*) but has a mosaic of its own, and both diseases will infect *Datura stramonium*. Carrier species are known—for example, *Physalis* can transmit the disease without showing any symptoms. Some species of aphids transmit readily, others fail though they feed and multiply on the plant.

In many mosaics the crushed plant tissue is more infective than the juice, but insects are often better than either. In some the virus is limited in distribution, and does not reach the root, for instance. In a few cases biting insects (for instance, *Diabrotica* beetles) can carry infection.

Passage of the Virus within the Plant.

There is a good deal of evidence that the virus is conveyed chiefly through the phloem. This is practically the only tissue that shows necrosis in certain of these diseases. The most usual transmitting insects are aphids, and it is now known that many of these feed chiefly or exclusively by sucking the juices from the phloem. Translocation of starch (effected through the phloem) is impeded in several virus diseases. Removing the bark (including the phloem) around the shoots prevents the passage of the virus in the infectious chloroses. The failure to reach the embryo, which is such a marked character of many of these diseases, may be explained by the fact that the vascular strands terminate in the integuments and do not reach the embryo, which is nourished by osmosis from the tissues outside the embryo sac. In the cucurbits, in which mosaic is transmitted by the seed, there are special nutritive adaptations for feeding the embryo which may serve to explain its infection.

The passage of the virus is slow in the tobacco mosaic, where it may take over three days to traverse a leaf and its stalk. In cucumber mosaic a case is recorded where it took nine hours for the virus to traverse thirty inches of stem in an upward direction.

In the infectious chloroses there is evidence that though the virus may be distributed throughout the plant it only multiplies in the chlorotic areas. If these are removed the plant will ultimately give normal green leaves. But the virus persists in a latent condition in the dormant buds of such plants, and if these are forced into growth they give chlorotic shoots which reinfect the new growth of the whole plant.

Properties of the Virus.

The virus of tobacco mosaic filters through most porous filters. In one case filtration through the Chamberland filter gave 91 per cent. infection, through the Berkefeld normal 63 per cent., the Berkefeld fine 47 per cent., and the Kitasato 40 per cent. It is retained by the Livingstone atmometer porous cup and by seven-eighths of an inch of powdered talc. The whole of the virus in infective juice is carried down with the precipitate from 45 to 50 per cent. alcohol or with an aluminium hydroxide precipitate, without losing infectivity. Antiseptics give irregular results, mercuric chloride being sometimes less effective than copper sulphate for instance. Heating to 70° C. destroys the infectivity of some viruses, others may survive 90° C. Dried infective leaves may retain 100 per cent. virulence after three years, and bottled juice up to fifteen months, even when it putrefies. Evaporated juice is less resistant. Dilution to 1 in 1,000 does not reduce the infectivity, and 1 in 10,000 does not destroy it. Cucurbit mosaic virus is much less resistant than that of tobacco mosaic, and may not survive keeping for even a couple of days.

The optimum temperature for the activity of the tobacco mosaic virus, as judged by the length of the incubation period, is 28° to 30° C. and the maximum near 36°. No symptoms appear when cooled sufficiently to check growth of the plant or heated above 36°, but they reappear when normal temperatures are again used. In certain areas in Canada infected potato plants show no symptoms and give almost normal yields, so that climate may make a plant become a "carrier" of its own virus.

Only quite recently have bodies that may possibly be organisms been definitely observed in the cells of infected tissues. In the maize mosaic and that of *Hippeastrum*, Kunkel of Hawaii has seen bodies which he compares with the Negri bodies of rabies or with *Cytoryctes variolae*, but which from his figures also resemble Rickettsia in certain stages. In tobacco mosaic, Palm of Java has just reported the presence of bodies agreeing in every respect with Lipschütz's "Strongyloplasma" or the "Elementarkörperchen" of v. Prowazek, and in another form with Guarnieri's bodies (Cytoryctes). Neither author refers to Rickettsia, but there would seem to be evident resemblances.

Though the first demonstration that disease can be caused by a filtrable virus was made in a plant disease—tobacco mosaic—human pathologists have advanced the study of the possible causative agents beyond the stage reached by plant pathologists. The latter may, however, claim to have been among the earliest to have convicted insects of playing a primary part in natural infection; they have proved that these diseases can be hereditary in host-plant and in insect; and on the experimental side, owing to the naturally greater ease of experimenting with plants, have made them amongst the best known diseases. They have shown that the plant cuticle presents an impassable barrier to infection; that a saprophytic life of the organisms is highly improbable; and that they are often so closely associated in some way with the living tissues that infection is only possible when organic union between diseased and healthy tissues is effected. Finally, they are demonstrating the remarkable effect of the environment, especially temperature, on the course of some of these diseases.

DISEASE RESISTANCE IN PLANTS.

BY

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As in human beings, many diseases of plants are caused by parasitic organisms, but whereas in man the parasites are chiefly bacteria and protozoa, in plants most pathogenic agents are fungi. Among men and women great differences in susceptibility to various diseases are manifest, and there are in most of us individual diversities or idiosyncrasies as regards reaction to disease. This is perhaps an expression of the much greater complexity of organization in man than in even the most highly developed plants. In plants of the same kind these individual differences as regards disease are much more obscure, and probably do not exist to anything like the same extent as in man. Thus two wheat plants under uniform soil conditions in the same field will react to attacks of rust fungi in identical fashion. On the other hand, all cultivated plants exist in innumerable races, and these do show marked differences in susceptibility to specific diseases. These races of cultivated plants are perhaps comparable genetically to the races of mankind, so that the difference in degree of attack by rust exhibited by two kinds of wheat may be compared with a differing susceptibility to some common malady exhibited by the white and the negro races; the genetic constitution of man, however, is so much more complex than that of the higher plants that a strict parallel cannot be drawn.

It is a matter of common observation to cultivators that different varieties of the same cultivated plant show marked differences in the power of resisting certain parasitic diseases. Thus one kind of rose will be badly attacked by mildew and another closely related variety, growing under the same conditions, will remain practically free from attack. Again, one kind of apple tree will show extreme liability to canker, while another, side by side with it, will remain entirely free from this disease. There must clearly be some constitutional or genetic difference between these closely related plants to account for such phenomena.

As to the actual causes of the immunity or marked degree of resistance to disease in such plants we know as yet very little, although inklings of the truth have been discovered in certain directions. It is already known that much of this so-called immunity is really disease escape—that is, through some slight structural peculiarity or divergence in mode of life on the part of the host, the germs of disease are unable to establish themselves therein, with the consequence that ill health is avoided. In such plants there is no active resistance to parasitic attack. Thus it has been shown in America that if a tomato fruit has a skin which is strongly cuticularized it remains free from attack by the fungus *Macrosporium tomato*, whereas if the cuticle be thin the fruit is readily attacked. Structural differences of this kind also often account for a fungus attacking one part of a plant and not another. Thus the petals of flowers readily fall a prey to the spores of *Botrytis cinerea* under moist conditions whereas healthy green leaves of the same plant in the same environment remain unaffected by these spores. This is partly because the petals, having practically no cuticle, allow of the exosmosis of nutritive substances to the fungus from the interior of the host, thereby causing stronger growth, and partly because the thinner cuticle is a less efficient barrier to the fungus than in the leaf. Another example of disease escape is shown by early varieties of potatoes, which in this country are usually free from attack by blight. It is not that these varieties are immune to the fungus *Phytophthora infestans*; they remain free from disease because they mature before spores of the blight fungus are available to cause infection. Again, early or late sowing may enable cereals to escape certain smut diseases which infect the seedlings, because of the different temperature conditions favourable to host and parasite respectively.

A specific example of the profound effect of the influence of temperature upon the incidence of a plant disease may be given. In the northern part of the United States a certain smut fungus, *Urocystis cepulae*, causes a common and serious disease of the onion, whereas in the southern States the disease is unknown, although the same varieties of onion are grown. The factor determining this difference in the occurrence of disease is the soil temperature, it having been shown that a temperature of 29° C. and above during the critical period of growth completely inhibits infection.

On the other hand, the host does sometimes actively resist penetration by a parasitic fungus, and there is definite knowledge of some of the phenomena accompanying this resistance in certain of the rust fungi which attack cereals. Sometimes the rust fungus attacks the host so feebly that haustoria—the absorbent suckers of the fungus—cannot be established in the host cells, so that the parasite quickly dies. In other cases the parasite attacks the host so vigorously as to kill the cells in its immediate vicinity; in this way the fungus surrounds itself with a barrier of dead cells which it is unable to penetrate, for in the rust fungi it is only when a quasi-symbiosis is established with the host that the parasite flourishes. In the latter example the immunity to attack is really due to the parasite attacking initially so vigorously as to defeat its own object. Immunity of this kind is sometimes said to be due to a hypersensitiveness on the part of the host. This phenomenon is by no means rare in cereals, and most of the varieties of wheat immune to rust attack owe their immunity to this hypersensitiveness. Again, with some varieties of cereals practically immune to mildew (*Erysiphe graminis*) the resistance can be broken down by reducing the vitality of the host—for example, by subjecting the leaves to the vapour of chloroform or ether.

If closely related varieties of wheat, one of which is susceptible and the other immune to yellow rust, are hybridized, it has been shown recently by Biffen and others that susceptibility and immunity behave as a pair of Mendelian allelomorphic characters segregating sharply from one another in the second and subsequent generations. In this example susceptibility is dominant to immunity, but with other parasitic fungi there is evidence that immunity may be dominant to susceptibility. Apart from certain diseases, such as colour-blindness and haemophilia, which are sex-linked in their inheritance, I know of no human diseases, certainly none of parasitic origin, susceptibility to which is transmitted hereditarily according to Mendel's law. It may be that in man susceptibility to disease depends upon a multiplicity of factors in the Mendelian sense, whereas in the above examples taken from plants only a single factor appears to be involved.

In this connexion it must be pointed out that the interactions of host and parasite resulting in immunity are purely local in effect, and any antibodies formed during the struggle are not transmitted to other parts of the plant, there to confer immunity. With few exceptions parasitic attack in plants is relatively localized, the parasite only gradually enlarging its domain by progressive advancement. In the higher plants there is nothing comparable with the blood stream of vertebrates, the circulation of sap being essentially different in important respects; hence antibodies formed in response to parasitic attack in one part are not readily carried to other parts. On the other hand, fungi inhabiting the vascular systems of plants sometimes secrete toxic substances which, carried in the sap, cause death in distant parts.

Although susceptibility and immunity to certain plant diseases are phenomena of genetic significance, it is clear from recent investigations that the expression of the genetic factor may be modified by environmental influences. Thus a wheat genetically immune or highly resistant to yellow rust may, under certain abnormal weather conditions, become quite susceptible to this parasite but this is only an illustration of the fact that organisms in general are the result of hereditary tendencies moulded by environment. The environmental factor is, however, of particular significance as regards the incidence of plant diseases. Unlike human beings, who, within certain limits, can control their environment, plants are relatively passive and cannot control the conditions under which they live. To give one illustration: the internal temperature of man is practically constant, whatever the weather may be, whereas a plant possesses very little power of controlling its internal temperature, this being almost entirely dependent upon external conditions. One is not surprised, therefore, to learn that plants genetically highly resistant to certain diseases fall a prey to these troubles under abnormal conditions. A few examples of this breaking down of the resistance of the host may be given. The variety of wheat known as Einkorn is entirely immune to attacks of black rust under normal climatic conditions, but during the height of the hot spell in the plains of northern India it readily falls a prey to this fungus disease. Again, agricultural experience shows that crops in general become more susceptible to fungoid disease when manured excessively with nitrogen; on the other hand, heavy manuring with potash tends to confer an additional degree of resistance to disease. Simple changes of this kind obviously exert some modifying influence upon the host protoplasm which leads to alterations in the incidence of disease. Another example illustrates a phenomenon of a more obscure nature. As is well known, commercial varieties of apples are usually grafted upon a stock of a somewhat different nature. One of the most commonly grown varieties of apples, Bramley Seedling, is almost entirely immune to the disease known as apple canker when grafted upon most kinds of stocks, but when grafted upon one particular type of stock it is so badly attacked by this disease as to be commercially worthless. There is as yet no explanation for this remarkable change.

Generally in plant diseases there is no such thing as unmodifiable immunity. In plant pathology one deals rather with examples of high resistance than with absolute immunity, and it has been pointed out that a pronounced degree of resistance may be altered to some extent by environmental influences. But there is one plant disease, and it happens to be one of serious importance in this country, in which the immunity of certain races is absolute, and, as far as is known, entirely unchanged under all conditions of environment. I refer to wart disease of potatoes due to the fungus *Synchytrium endobioticum*, which causes the tubers to proliferate into monstrous growths. There are some varieties of potatoes which are absolutely immune to this disease under all conditions, while others show differing degrees of susceptibility. Unfortunately it is not yet known why some varieties exhibit this clean-cut immunity, but as investigations are proceeding in this matter it is hoped that light will soon be thrown upon it.

Another difference between animal and plant pathology lies in the fact that no examples are known in plant pathology of the conferring of artificial immunity by inoculation of a susceptible plant with a weak strain of an otherwise virulent parasite. As mentioned above, parasitic attack in plants is usually localized, and there is no mechanism for the circulation of any antibodies which may be produced in consequence of this attack to other parts of the host plant. Plants attacked by parasitic diseases not infrequently recover, but this is no guarantee against attack again in the immediate future. Thus a plum tree suffering from silver-leaf disease caused by the fungus *Stereum purpureum* may completely recover, and then, upon this fungus being introduced again by inoculation, will readily become affected a second time.

Many plant diseases are due to a class of fungi known as wound parasites. These are peculiar in their mode of life in that they cannot infect living tissues directly, but only via dead cells. Many tree-destroying fungi are of this class. For example, one of the commonest bracket fungi, *Polyporus squamosus*, which frequently kills elm trees, is only capable of causing infection if its spores alight upon some exposed wound. The fungus, therefore, begins its life as a saprophyte and passes to the interior of the tree where all the cells are dead, still maintaining its life completely as a saprophyte. In its capacity as a saprophyte it may cause grave damage to the tree, rotting the central wood of the trunk, so that loss of rigidity may cause the tree to be blown over in a high wind. It is only after long existence as a saprophyte that *Polyporus squamosus* begins to attack the living cells of the sap-wood of its victims, when, of course, it is acting as a parasite. The higher plants frequently contain much more dead tissue proportionally than the higher animals, and with these wound parasites the actual damage inflicted on the host often concerns the dead tissues more than the living. It is impossible to speak of active disease resistance by dead tissues, although there is often exhibited a passive disease resistance, dependent upon such factors as the texture of the wood, its air content, and its chemical composition.

Where the degree of disease resistance to specific wound parasites of closely related plants differs greatly it is not yet known how much of this resistance is due to active opposition on the part of the protoplasm and how much to passive resistance dependent upon the factors mentioned above. With a wound parasite such as *Stereum purpureum*, the

cause of silver-leaf disease in fruit trees, marked differences in susceptibility are shown by closely related varieties. Thus the Victoria variety of plum is very susceptible to this disease, while the variety Pershore is rarely affected by it. Although these differences in susceptibility to disease are just as marked with wound parasites as with obligate parasites such as rust fungi, the explanation of relative immunity is probably of a considerably different nature in the two categories.

Finally, it need scarcely be pointed out to pathologists that, in plants as in man, resistance to one particular kind of disease does not imply resistance to other diseases.

PERSISTENT EOSINOPHILIA WITH SPLENOMEGALY.*

BY

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[*With Special Plate.*]

DURING the past year we have had under observation a case of persistent eosinophilia, associated with a high total leucocyte count and marked splenomegaly. The condition, so far as we can determine from the literature at our disposal, appears to be extremely rare. We have only found records of two similar cases, both in America. The present case is still under observation, and, though we have come to no final conclusion as to the etiology and nature of the condition, we have thought it worth while to record the case in the hope that others who may have observed the condition will publish their results.

As splenectomy was performed with marked improvement in the patient's physical condition, the case may have some special interest at present in view of the modern tendency to remove the spleen in cases of various "blood diseases" of unknown or uncertain origin. The existence of such a high degree of an eosinophilic leucocytosis has also given us an opportunity of making some observations on the phagocytic capacity of the eosinophiles and on the relationship of the eosinophile cells to the formation of Charcot-Leyden crystals.

CLINICAL HISTORY OF THE CASE.

The patient, J. H., was admitted to the Royal Victoria Infirmary, Newcastle-upon-Tyne, on July 14th, 1921. We are much indebted to Mr. A. M. Martin (under whose care the case was admitted) for permission to publish the case, and for the use of the clinical records; we are also much obliged to Dr. Philip of Morpeth, who has kept us in touch with the patient since the operation. The patient on admission gave the following history:

> For the last seven years he had been troubled with vomiting in the morning, but this had not interfered with his work, at which he had continued till the day of admission. His occupation is that of a hedger and ditcher, and his work being outside he had been constantly exposed to "all sorts of weather." He has never had any serious illness and has never had occasion to consult a doctor till now. He is 46 years of age. His family history is perfect; father and mother are alive and well; he is married, and his children are all healthy. He has always been rather a small eater, taking very little meat and living mainly on bacon and eggs. He is rather a spare, lightly built man, and his normal weight is about 10 stone. Beyond some slight indigestion and flatulence he states that he had nothing to complain of, but on being questioned he admitted to having felt rather done up lately, and being conscious of loss of weight he consulted his doctor five days before admission.

Dr. Philip on examination found an abdominal tumour, and this, coupled with the loss of weight and some gastric symptoms, suggested a possible malignant growth. He was recommended for admission to hospital under Mr. Martin.

On admission on July 14th, 1921, he was found to be suffering from an enlarged spleen; there was no pain. He looked in very poor condition, and was obviously ill. Careful physical examination, however, revealed very little. His weight was only 8 stone. There were no enlarged glands, and but for the splenomegaly and a marked blood change there was nothing of importance to note. A blood examination (see Table I) showed a leucocytosis of 34,000 per c.mm., and a differential count gave a very high percentage of eosinophiles (71·4 per cent.). There was only a slight degree of secondary anaemia. The blood picture did not in the least suggest an ordinary leukaemic condition, and, though there was no evidence of a parasitic cause, the possibility of a hydatid infection was suggested, and Mr. Martin explored the abdomen on July 29th, 1921. Finding a freely movable spleen with no adhesions, he performed splenectomy. The liver looked normal and was not enlarged. No special difficulty was experienced; there was very little haemorrhage, and the patient made an uninterrupted recovery from the operation.

The details of the subsequent blood examinations will be given later, but it may be briefly stated that since the operation there has been an increasing leucocytosis, rising in December, 1921, to 92,800 per c.mm.; the percentage of eosinophiles has remained fairly constant and has risen now to 82 per cent. Together with this there was steady improvement in the patient's physical condition. He left the hospital with a soundly healed scar on August 27th, 1921. He returned again on November 10th, and stated that he was much better and was already able to do some light work; there was no enlargement of the liver and no enlargement of lymph glands.

He returned again to the hospital for examination on December 15th, and said that "he was almost himself again." He had been doing a full day's work for the past six weeks. His weight was restored to 10 stone. On examination it was noted that there was no enlargement of the liver, but there were a few moderately enlarged glands present in the posterior triangle of the neck on the left side and one similar gland above the inner third of the right clavicle. Very slightly enlarged glands could be detected at the apices of both axillae, but the occipital, epitrochlear, and inguinal groups could not be detected.

In order to report progress for the purposes of this paper he returned for a further examination on June 29th, 1922. He stated that he had not missed a day's work since he left hospital in December. His appearance, however, did not bear out his statement that he felt quite well. He was thin and pinched-looking; his weight was only 8 st. 11 lb. He said that he had an influenzal cold in February, but continued to work; up till May he had a succession of slight "colds" and felt very tired at times. He seems to have had "rheumatic" pains in his limbs and the soles of his feet. There had been no return of stomach trouble, and for the past three weeks he had felt very well indeed. On examination the glandular enlargement was as in December, 1921. There was distinct deterioration in the blood condition (see Table I); there was albuminuria with casts, granular and epithelial, and some red blood cells and leucocytes in the centrifugalized deposit; no eosinophiles were detected. The faeces were examined microscopically on six occasions during the year, and no evidence of parasitic invasion of the alimentary canal was found. The general impression conveyed was that he was distinctly failing.

Blood.

Examination of stained films before operation (July 16th, 1921) showed a considerable degree of anisocytosis and poikilocytosis. There was also a slight degree of polychromatophilia and an occasional red cell with punctate basophilia. No special abnormality was noted on the part of the blood platelets; an occasional nucleated red cell was observed. The only striking alteration in the blood picture was the great number of eosinophilic leucocytes (see Table I, B). The majority of the eosinophiles appeared to be larger than normal, though some were distinctly smaller. The nuclei appeared, on the whole, to be distinctly more lobulated than normally. A differential count of 300 eosinophiles with reference to the degree of lobulation of the nucleus was made on each occasion when the blood was examined, and the results are seen in Table II. Eosinophilic myelocytes appeared to be smaller in size than normally and only constituted 0·7 per cent. of the total count. The granules in all the eosinophilic cells were fairly uniform in size; in the case of a few cells they seemed to take the stain less intensely. In the five subsequent blood examinations following the splenectomy the above observations were generally confirmed; some exceptions, however, are to be noted.

As regards the red cells, there was a distinct rise in the number of nucleated forms (see Table I, B). In the last two examinations megaloblasts were present in an appreciable amount; in the last examination there appeared to be a slight increase in the average diameter of the red cells and blood platelets seemed to be more scanty. From August 17th, 1921, it will be observed (Table I) that there is a steady diminution in the number of the red cells. In the last examination (June 29th, 1922) the diminution was still more marked. A fragility test for the red blood corpuscles made on December 16th, 1921, showed no abnormality. The coagulation time, as estimated by Boggs's coagulometer, was three and a half minutes, compared with four and a half minutes in a control. As regards the leucocytes, it will be observed from Table I that there was a steady and considerable rise in the numbers up to December 15th, 1921, when the highest count—namely, 92,800—was reached; there is, however, a slight fall in the last count (June 29th, 1922).

An examination of the differential counts shows on the whole a gradual fall in the percentage of polymorphs, with a corresponding increase in the lymphocytes—possibly the result of the splenectomy. The percentage of large mononuclears and basophiles has remained almost constant. The percentage of eosinophiles has remained much the same throughout though it may be noted that the highest figure obtained (82 per cent.) was found in the last examination. As regards the percentage of eosinophilic myelocytes, it will be noted that it has always been small and distinctly uniform—usually about 1 per cent. On one occasion only did it reach 2·7 per cent.

An examination of films made at various times since splenectomy shows on the whole distinct uniformity, and the following points may be noted: The eosinophiles appeared to be less fragile than normally, and ruptured cells were comparatively rare. They

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TABLE I.—*Blood Examination of a Case of Eosinophilia with Splenomegaly. (Splenectomy was performed on July 29th, 1921.)*

Date.	A. Blood Count. Red Cells.	White Cells.	Hb.	Colour Index.	B. Differential Count (based on 300 leucocytes). Eosinophile Leucocytes.	Polymorphs.	Lymphocytes.	Transitionals. Large Monos.	Basophiles.	Eosinophile Myelocytes.	Normoblasts per 100 W.B.Cs.	Megaloblasts per 100 W.B.Cs.
			%		%	%	%	%	%	%		
July 16, 1921 ..	5,490,000	34,000	70	0.65	71.4	14.0	11.3	1.0	1.7	0.7	0.3	0.0
Aug. 8, 1921 ..	4,403,000	35,000	75	0.70	77.3	9.7	7.7	2.3	1.7	1.3	1.0	0.0
Aug. 17, 1921 ...	5,420,000	40,625	75	0.70	80.0	5.0	10.0	2.0	1.6	1.3	1.3	0.0
Oct. 10, 1921 ...	4,800,000	66,250	68	0.00	75.7	2.3	16.3	3.3	1.7	0.7	1.3	0.7
Dec. 15, 1921 ...	4,560,000	93,800	84	0.88	72.0	7.0	13.7	3.0	1.3	2.7	0.7	0.3
June 29, 1922 ..	3,576,000	73,680	60	0.85	82.3	4.7	8.7	0.7	2.0	1.3	2.3	0.7
*Sept. 29, 1922 ...	4,087,000	128,250	58	0.71	79.3	8.3	4.7	0.3	1.7	4.7	0.7	0.0

† In the differential counts up to December 15th, 1921, no neutrophile or basophile myelocytes were seen, though examination of the films generally showed their presence. On December 15th, 1921, there were 0.3 per cent. neutrophile myelocytes, and on June 29th, 1922, there were 0.3 per cent. basophile myelocytes.

varied much in size, many being little more than half the diameter of others, while cells very much larger than the ordinary eosinophiles were common. A striking feature in many of the cells was distinct vacuolation of the cytoplasm. The granules themselves varied in size and in their affinity for eosin. In many of the cells the granules were distinctly scanty, clear areas being left in the cytoplasm, which sometimes showed a diffuse basic tint. A few basophilic granules of varying size could sometimes be observed scattered irregularly among the eosinophilic granules. The polymorphs were often observed to be staining faintly, the appearance suggesting either immaturity or degeneration. The granules varied in size to some extent, but there never was the slightest difficulty in distinguishing them from the eosinophilic cells.

TABLE II.—*Showing Proportion of Nuclear Varieties in Cells containing Eosinophile Granulations, based on a count of 300 Cells on seven separate occasions.*

Date.	Myelocyte.	Simple	Two Lobes.	Three Lobes.	Four Lobes.	Five Lobes.
July 16, 1921 ..	6.0	9.7	63.3	17.7	3.0	0.3
Aug. 8, 1921 ..	2.7	9.0	70.3	15.0	2.7	0.3
Aug. 17, 1921 ..	3.0	9.7	65.0	17.3	4.0	1.0
Oct. 10, 1921 ..	2.8	9.3	66.0	18.3	3.3	0.3
Dec. 15, 1921	3.3	14.7	58.7	17.7	5.0	0.6
June 29, 1922	7.2	13.7	57.5	17.5	3.2	0.9
*Sept. 29, 1922 ...	8.7	23.3	51.0	14.0	3.0	0.0

Note.—Under myelocytes are included only those cells with round or oval nuclei; under the term "simple," nuclei which are indented but not distinctly lobed.

Many of the granules were poorly coloured, and some showed a faint basic tint. A few isolated white cells were observed whose nature could not be determined with certainty. The nuclei varied from a horseshoe shape to a more convoluted type. In the cytoplasm were both distinct eosinophilic and basophilic granules. Some of these may have been merely degeneration forms, others may have been phagocytic mononuclear cells.

In the last two blood examinations a few distinct neutrophile and basophile myelocytes were seen; they never exceeded 0.3 per cent. The oxyda-e reaction with alpha-naphthol and paraphenylene-diamine was done on two occasions. The eosinophiles were definitely positive, but the polymorph leucocytes stained poorly, and some of these gave a negative reaction.

Prolonged examination of numerous films failed to show any bacterial or protozoal parasite. A blood culture on June 29th, 1922, also gave a negative result, and the Wassermann test was negative.

Spleen.

This organ was markedly enlarged; it was placed at once in Kaiserling and no cultures were made. After fixation it weighed 1,276 grams and measured 18.5 by 14.5 by 8 cm. There was distinct alteration in shape, being more rounded than normally. There were no adhesions, but the capsule was thickened and showed numerous small round localized patches of fibrous thickening. On removal the organ was fairly firm and elastic. There were no infarcts. On section the pulp was fairly uniform in appearance, being greyish pink in colour. The Malpighian bodies could be seen but were not prominent. They seemed to be reduced in number and varied in size. In or near some of them were dark red and yellow points, apparently indicating haemorrhages of varying age. Towards the hilus were two small glands about the size of peas. On microscopical examination they appeared to be haemolymph glands; they may, however, be lymph glands.

MORBID HISTOLOGY.

Pieces of the spleen and the lymph glands were fixed in formol and stained with haematein-eosin, Van Gieson, methylene blue-eosin, Leishman, Gram's stain, carbol thionin, Levaditi for spirochaetes and also for haemosiderin.

Spleen.

The capsule shows no obvious thickening, and no infiltration with cells. The trabeculae appear to be slightly thickened by rather hyaline fibrous tissue and are infiltrated with eosinophiles in variable numbers. In some trabeculae there is a considerable quantity of haemosiderin both free and within connective tissue cells and especially in the adventitial walls of the vessels. Comparatively few of the Malpighian bodies are of lymphoid structure. Such of these as are present are small with irregular outline and composed of lymphoid cells and no germinal centres. The arteriole shows hyaline thickening. Scattered eosinophiles are present in these nodules, more especially at the periphery; no haemosiderin is found. The majority, however, show definite fibrosis of variable degree and disappearance of the lymphoid tissue. In the more advanced stages the bodies are converted into a small, round, dense nodule of hyaline fibrous tissue. Practically no lymphoid cells are present; connective tissue cells are scanty; but a small number of eosinophiles are present in the interstices of the fibrous tissue. Where the process is less advanced the individual bundles of fibrous tissue, concentric in arrangement are seen, and connective tissue cells are more numerous. In the interstices are numerous eosinophiles and frequently deposits of intra- and extracellular haemosiderin. Lymphoid cells are more numerous and may be rather abundant in one of the sectors at the periphery of the nodule, forming a definite nest of cells. Some of these are situated a little distance from the fibrous nodules, with which they appear to have no connexion, suggesting that they may be foci of compensatory lymphoid regeneration. Others appear to be definitely a residual portion of lymphoid tissue of the main body. In a few of the cellular Malpighian bodies a large area of the lymphoid tissue appears to be replaced by eosinophiles, both leucocytes and myelocytes, while in the surviving portion numerous eosinophiles are scattered. In relation to some of the trabeculae veins of considerable size are seen crowded with leucocytes, mostly eosinophiles.

The pulp is highly and uniformly cellular and filled with nucleated cells. There is no evident thickening of the reticulum. The sinusoids are well seen and are filled with nucleated cells; there is no obvious thickening of the walls, and while the endothelial cells are seen they are not unduly prominent. In several places there appear to be fairly recent haemorrhages into the pulp, and some of these are in the vicinity of a trabecula or fibrosed Malpighian body. The red cells appear very pale. The whole pulp is filled with cells, of which by far the greater number are eosinophile cells. The sinuses, too, contain a great number of these elements, and in many cases to the exclusion of practically all other cells. Eosinophiles are not confined to these places, but also infiltrate the trabeculae, where not infrequently they become elongated or flattened out in the interstices of the connective tissue fibres. They are also seen in similar fashion in the fibrosed Malpighian bodies. In the cellular Malpighian bodies they are found scattered between the lymphoid cells, especially at the periphery. As previously mentioned in one or two instances, they occur in large numbers at the periphery and seem to be replacing the lymphoid cells; nevertheless they are frequently absent from the central area of the Malpighian body.

Beneath the capsule are continuous lines of quite recent haemorrhage in which the red cells are of good colour. These haemorrhages are probably the result of the operation. In both the pulp and sinuses the predominant cells are eosinophilic leucocytes and myelocytes, of which the former are more numerous. The eosinophilic myelocytes vary greatly in size; many are large cells with a large round vesicular nucleus; others are smaller and have a dark round nucleus. The eosinophilic leucocytes are similar to those observed in the blood; the majority have either

a two-lobed or three-lobed nucleus, while cells with four and five lobes in the nucleus occur in smaller numbers. Simpler forms in which the nucleus is merely indented are also seen. Eosinophilic cells were often seen in the process of passing through the wall of the sinuses, but the direction of their progress could not be absolutely determined. After prolonged search a very few examples of what appeared to be a mitotic figure in the nucleus of an eosinophilic myelocyte in the pulp were found, but these were the only indications of proliferation of eosinophilic cells observed in the organ. There was, however, evidence of disintegration and destruction of the eosinophile cells as shown by nuclear karyolysis and disappearance of the granules, and examples of phagocytosis of these cells by mononuclear cells of the pulp and by endothelial cells lining the sinuses were observed. Various stages in the process of phagocytosis could be traced from the inclusion of a comparatively normal cell to the presence of nuclear debris and residual oxyphile granules. The changes concerned both the myelocytes and leucocytes, and were more conspicuous in the pulp than in the sinuses.

In addition, however, to the evidence of destructive change there was also observed to be a definite phagocytic activity on the part of the eosinophilic myelocytes and especially the eosinophilic leucocytes. In and around the splenic trabeculae, where haemosiderin was abundant, there were found oxyphile cells containing several granules of this pigment within their substance, but these cells were not as active in this respect as the mononuclear cells of the pulp and endothelial cells of the sinuses. Where haemorrhages were present, and to a lesser degree in other parts, it was found that some of the eosinophilic leucocytes had ingested red blood cells and there were appearances which indicated that the included red cell underwent digestion. Apart from the great accumulation of eosinophilic cells in the substance of the organ there is little to record concerning the other cellular elements. Red blood cells were distinctly scanty except in the areas of haemorrhage; they were deficient in colour and tended to be conglutinated, and though an occasional nucleated form was observed there was nothing to suggest an erythroblastic reaction. Polymorph leucocytes occurred in small numbers, but no neutrophile myelocytes were seen. Mononuclear cells were scattered in the sinuses and pulp and were actively phagocytic towards red cells, haemosiderin, and oxyphile cells. An occasional giant cell with multilobulated nucleus was observed in the pulp and resembled the myeloplaques of the bone marrow. In sections stained by Gram and carbol thionin no organisms were detected, and Levaditi's method gave a negative result for spirochaetes.

Haemolymph Glands.

Both of these showed a similar structure. The lymphoid tissue was well developed. The follicles, which showed no germinal centres, were thick and cellular, and there was no evidence of atrophy or fibrosis. Eosinophilic cells—both leucocytes and myelocytes—were scattered irregularly in the interstices of the follicles, and more especially in the lymph cords, where they were abundant in the vicinity of the sinuses. They were very scanty in the centres of the dense follicles at the periphery of the glands. In a few places there were appearances analogous to those seen in the spleen—namely, large areas where the lymphoid tissue had been replaced by a dense accumulation of eosinophilic cells, the majority of which were leucocytes. The sinuses contained red blood cells, phagocytic mononuclears, and numerous eosinophiles. The latter presented the appearances already described in the spleen. Frequently oxyphile cells were seen passing through the wall of the sinuses, but here too it was impossible to determine the direction of progress. Eosinophile myelocytes—especially the larger forms—were more numerous in the interstices of the lymphoid tissue than in the sinuses, but no histological evidence was obtained that these cells arose in the former situation. The only mitotic figure seen occurred in an eosinophilic myelocyte lying free in a sinus. Similar changes were noted as regards destruction of eosinophiles as were found in the spleen; in the lymphoid tissue, and especially in the sinuses; phagocytosis of these cells by mononuclear cells was observed.

Eosinophiles were present in both the sinuses and lymph cords, which were phagocytic to red blood cells, and some of them contained granules of haemosiderin. The only other feature of special note was the presence of considerable quantities of haemosiderin which occurred as intra- and extra-cellular masses throughout the follicles and cords in particular, and to a lesser extent within free phagocytes and lining endothelial cells of the sinuses. Further evidence of blood destruction was seen in the presence of numerous mononuclears in the sinuses which had ingested red cells.

Phagocytic Activity of the Eosinophiles.

The richness of this patient's blood in eosinophiles afforded a good opportunity of attempting to estimate their phagocytic power, and observations were made on two separate occasions.

For this purpose we used a culture of *Staphylococcus aureus* from a fatal case of acute infective osteitis; the same organism (twenty-four hours' culture) was used on both occasions. One volume of a standardized emulsion of this coccus with two volumes of the patient's blood was incubated at 37° C. and examined after twenty minutes. The observations were controlled by comparison with the blood of one of us. It was obvious that the eosinophiles were distinctly phagocytic towards the cocci. On each occasion the cocci were counted in 300 eosinophiles. Though a prolonged search was necessary, the number of cocci in 300 of the patient's polymorphs was also noted. In the case of the control blood the eosinophiles were so scanty that only corresponding observations on 300 polymorphs were attempted. The attached table shows the results. (Table III.)

TABLE III.—*Eosinophilia.*

Illustrating the phagocytic power of patient's eosinophiles as compared with his own polymorphs.

Date.	Phagocytic Index of Polymorphs.	Phagocytic Index of Eosinophiles.	Ratio of Phagocytic Power of Eosinophiles to Polymorphs.
December 16th, 1921 ...	6.95	1.78	1 : 3.9
June 29th, 1922 ...	6.86	0.72	1 : 9.5

Illustrating the phagocytic power of patient's eosinophiles as compared with control's polymorphs.

December 16th, 1921 ...	5.18	1.73	1 : 3.0
June 29th, 1922 ...	5.45	0.72	1 : 7.57

These observations leave no doubt as to the very considerable phagocytic power of the patient's eosinophiles, and considering the great increase of these cells in his blood it is obvious that the total phagocytic activity of the oxyphile leucocytes is pronounced. It is also apparent that on the date of the last examination there was a very considerable depreciation of the phagocytic power of the eosinophiles. We have only made a few observations on the relative phagocytic power of the different types of eosinophile leucocytes. The result of these preliminary observations was that while we found some phagocytic power on the part of the eosinophile myelocytes, those with the simple indented nucleus were about twice as active, while the cells with two-, three-, and four-lobed nuclei were evidently the main phagocytes.

Observations on Charcot-Leyden Crystals.

Although the nature and significance of Charcot-Leyden crystals are still undetermined, yet there appears to be strong evidence in support of the view that they are in some way a product of eosinophile leucocytes. The marked eosinophilia present in this patient has afforded an opportunity of inquiry along these lines.

Two volumes of blood were withdrawn, under aseptic conditions, into two tubes on two consecutive days, kept at 37° C., and examined periodically both in the fresh state and in films stained by Leishman. A volume of normal blood was used for control observation. In the first forty-eight hours no crystals were found and the oxyphile leucocytes were well preserved. On the third day an occasional eosinophile leucocyte was observed containing a typical Charcot-Leyden crystal. All the crystals found were intracellular; some were considerably smaller than the diameter of the cell, while others were longer and showed one end projecting outside the cell boundary. The eosinophiles were still well preserved, and there was little evidence of disintegration. On the fourth day large numbers of crystals which varied greatly in length were present. Many of the small forms were intracellular, while the large ones—several times the diameter of a leucocyte—were lying free. Frequently two or more small crystals were observed within the same cell. In the stained films both extra- and intracellular crystals were coloured a faint blue by the Leishman, while a few eosinophiles were seen to contain clear colourless spaces in their cytoplasm which from their shape and size evidently represented the positions of crystals which had been dislodged from the cell. There was now more evidence of broken down leucocytes than previously, although eosinophiles of normal appearance were abundant.

Examinations made on the fifth, sixth, tenth, and fourteenth days confirmed the appearances already noted, save that on the last occasion the blood had become contaminated by bacteria. It is of interest to note that eosinophiles of practically normal appearance persisted throughout in large numbers. No crystals were found in the normal blood at any time during the observations. Throughout the series of examinations the appearances strongly suggested that the small crystals were contained within the oxyphile leucocytes, and not merely adherent to the surface of the cells. In fresh preparations agitation and pressure failed to release the crystals until the cell had been ruptured, while the appearances already described in the stained films confirm this view. The presence of intracellular crystals did not appear to be associated with any specific alteration in the structure of the cell, the crystals being found within both well-preserved cells and ones which were obviously degenerated. As far as could be seen there was no appreciable difference in the number of crystals found on the fourth day and the fourteenth day. No evidence of crystal formation was found in the polymorph leucocytes or other cells of the blood. The crystals were a faint green tint, refractile, and had an octahedral shape. They were soluble in hot water, 2 per cent. acetic acid, and NaOH; insoluble in absolute alcohol, ether, xylol. They did not stain with 5 per cent. alcoholic eosin or Sudan III.

The appearances found lead us to suggest: (1) that the crystals are first formed within the substance of the eosinophile leucocytes; (2) that the cells eventually break down and liberate the crystals, which then grow into larger formations;

(3) that there is no definite evidence that the crystals primarily arise from the oxyphile granules of disintegrated eosinophile cells; and (4) that the conditions which lead to the formation of crystals appear suddenly about the third to fourth days. This case would appear to afford a good opportunity for further work on the lines of Liebreich's[1] investigations on the relationship of eosinophilic granulations to the coagulation of blood.

In view of the suggestion which has been made by some writers that the yellowish tint of the lymph glands in lymphadenoma is due to the presence of eosinophilic cells, it seemed to us that the present case provided a suitable opportunity for determining the colour produced by eosinophilic leucocytes *en masse*. About 5 c.cm. of blood were obtained from a vein and allowed to coagulate. The "buffy coat" which formed showed no yellowish tint, and appeared identical in colour with a normal control coagulum, nor did any such tint develop after more than a week.

Conclusions.

It is only possible to speculate as to the real nature of this condition. Judging from the literature we have access to, it seems to be extremely rare. The only similar case which has been recorded in any detail was described by Giffen.[2] The case was observed in the Mayo Clinic and was described as "persistent eosinophilia with hyperleucocytosis and splenomegaly." The case presents in all its essential features such a close similarity to our own that it is impossible to come to any other conclusion than that we are dealing with a definite clinical and pathological entity. Giffen summarizes the case as follows:

"F. H., male, aged 31 years. Marked splenomegaly. Slight enlargement of superficial lymph glands. Leucocytosis 21,800 before splenectomy, with an eosinophilia of 73.6 per cent. Splenectomy July 15th, 1914. Weight of spleen 2,110 grams. Macroscopic appearances of spleen similar to that of myelogenous leukaemia. Rapid increase of leucocyte count to 97,200, and later to 211,000; eosinophilia from 79 to 90.7 per cent. Good general condition for period of four years following splenectomy. Death January 19th, 1919, of empyema following pneumonia. Necropsy: Enormous numbers of eosinophilic polymorphonuclears in all haemopoietic organs. Eosinophilic myelocytes numerous in lymph glands, spleen, and bone marrow. Obliterative pericarditis and fibrous perihepatitis."

[*Note.*—There is probably a clerical error in the above account. The description of the spleen, which had been removed four and a half years previously, is included in the *post-mortem* record.]

One gathers from the account of the case that the patient was first seen in March, 1913, and at that time the total white cell count was 15,400, with 66.3 per cent. of eosinophiles; the liver and spleen were enlarged. The known duration of the disease was six years, while the clinical history suggested one and a half years prior to this. Splenectomy was performed in 1914. It is stated that the eosinophiles in the spleen at this time were much less numerous than in the lymph glands examined at the *sectio* four and a half years later.

In reviewing the literature Giffen states that he has only found one similar case, that of Stillman.[3] Stillman describes his case only very briefly under the title of "Myeloid leukaemia with predominance of eosinophile cells."

The patient, a native of Spain, was observed in the New York Hospital in 1911. He was a man 27 years of age, and was apparently syphilitic. He was anaemic, and showed some general enlargement of lymph glands. There was enlargement of liver and spleen. The urine constantly showed a trace of albumin and a few casts. There was no evidence of a parasitic invasion of the alimentary canal.

The leucocyte count varied from 118,000 to 165,000 per c.mm., and eosinophiles from 85.8 to 91 per cent. A differential count at a time when the number of leucocytes was 165,000 gave the following results:

Polymorphs	3.8 per cent.
Eosinophile polymorphs	69.8 ,,
Eosinophile metamyelocytes	19.4 ,,
Eosinophile myelocytes	1.8 ,,
Mesoblasts	0.2 ,,
Transitionals	0.8 ,,
Lymphocytes	4.2 ,,

The eosinophiles were rather larger than those usually seen in the blood and the granules were rather smaller. Normoblasts were present in a ratio of 2 per 100 leucocytes.

The patient was lost sight of and the subsequent history is unknown.

Assuming that the "metamyelocytes" in this account were only varieties of the eosinophiles, and that the true myelocytes were only 1.8 per cent. as stated, the case can hardly be described as an ordinary leukaemia, and would apparently find a place in the special group we are now considering.

It is indeed remarkable that, considering the very definite blood changes in this condition, we have found such a small number of recorded cases. The condition could hardly be missed in an ordinary full examination of the blood, and even assuming that other cases have been recorded since 1919 the condition must be regarded as very rare indeed.

We have heard of another case, under the care of Dr. Edwin Matthew, Edinburgh, in 1909, which has some points of resemblance to ours. The patient, a girl of 12, was under observation in Leith Hospital for about six weeks. She was admitted for digestive trouble, but a marked eosinophilia was found, the leucocyte count from 12,000 to 15,000, and repeated differential counts showed an eosinophilia percentage of 85. Parasitic infection was excluded. There was no splenomegaly. This may well have been an early stage of the condition we are describing, and the subsequent history would have been most interesting. Unfortunately the family left the district soon after the patient's discharge from hospital, and nothing further has been heard of the case. Aubertin and Giroux[4] report a case which resembles those described by Giffen and Stillman.

The patient was under observation for four years suffering from dyspnoea and cyanosis. A diagnosis of primary sclerosis of the pulmonary artery with consecutive cardiac insufficiency was made. The spleen was slightly enlarged. There was a marked permanent eosinophilia; the total white cell count averaged about 10,000 per cubic millimetre, varying between 6,900 and 26,000. The percentage of eosinophiles remained constantly between 65 and 70.

A parasitic origin of the eosinophilia was excluded; the Wassermann reaction was negative. The patient died of cardiac failure. The autopsy confirmed the clinical diagnosis of sclerosis of the pulmonary artery but, unfortunately, no study of the blood-forming organs was made.

The authors consider that the cause of the eosinophilia in this case was anoxaemia, and point out that Giffen's case also was associated with serious cardiac disease. So far as the clinical observations on Stillman's case go, it may be pointed out that there was no evidence of cardiac disease. They discuss the arguments for and against the condition being a leukaemia, but appear to negative the idea. It is doubtful if this case can be considered as belonging to the group we are now describing—the total leucocyte count never exceeded 26,000 and the blood condition did certainly not progress as in Giffen's case and our own. The subsequent history of cases resembling that of Aubertin and Giroux may be very interesting, for we have no real evidence in our own case nor in those of Giffen and Stillman of how long the disease had been in existence when the patient first came under observation. Apart from splenic enlargement or from some complication, it is difficult to imagine how attention would be directed to the blood, and without a blood examination the condition could not be recognized.

Of more importance, however, in our present discussion is a case of "splenomegaly with polymorphonuclear neutrophil hyperleucocytosis" described by Tuohy.[5]

The case was that of a female, aged 58. She had acute arthritis at 16, but there was nothing else of moment in her family or past history till she developed uterine prolapse at the age of 40. Her present illness started with pain in her side, and on examination she was found to have an enlarged spleen. On physical examination nothing was discovered beyond a pessary, which she had worn for fourteen years. There was local irritation as a result. This soon subsided. A blood examination showed a leucocytosis of 65,000. A differential count showed 99 per cent. polymorphs. The discomfort and abdominal distress suggested the advisability of splenectomy. This was carried out successfully, with an uninterrupted recovery. The leucocyte count rose, however, in three days to 240,000, but the leucocytosis subsided in about a month to 45,000. For over a year she was able to carry on her household duties, but some seventeen months after the splenectomy she succumbed to an acute pneumonia after a week's illness. Unfortunately no details of the blood condition after she left hospital in 1917 are available, and an autopsy was not permitted.

In discussing the case, Tuohy draws a parallel between his case and that of Giffen, and regards them both as examples of a condition where there must be a hyperplasia of individual elements in the bone marrow—namely, the neutrophile myelocytes and eosinophilic myelocytes respectively. He regards the condition as a hyperleucocytosis rather than a leukaemia. He draws a distinction depending on whether the myeloblastic reaction is lawful and benign, or, as he puts it, Bolshevistic and malignant. We have heard of another case of hyperleucocytosis, where basophile leucocytes were the predominant cells. We have no details, however, and cannot vouch for the observation. Gluzinski and Reichenstein[6]

report a case of myeloma in which a large proportion of 39,640 leucocytes per cubic millimetre were of the plasma cell type, and speak of a plasma cell leukaemia.

As will be stated presently, we are rather inclined to regard our case as one of leukaemia of a special type, and in view of the above observations it may be necessary to widen our conception of leukaemia and be prepared to find isolated examples of benign leukaemias affecting neutrophile, eosinophile, and basophile elements.

As we have said, one can only speculate as to the cause and nature of this condition. It seems possible, however, to arrive at some general conclusions. Giffen[2] was inclined to regard the condition as an instance of an "eosinophilic leucocytosis, the blood picture of which was remarkably altered by splenectomy," rather than a true leukaemic condition, though he is not prepared to exclude altogether the latter suggestion. He further states that the condition "may be indicative of some special function of the spleen with respect to eosinophilic cells or with respect to the toxins which eosinophilic cells are capable of absorbing."

In the first place, we cannot see that the splenectomy has seriously influenced the condition or modified the blood picture to any extent in either his case or our own. The splenectomy has only been followed by a more marked blood condition, the essential qualities of which have been otherwise unchanged. It may be pointed out also that Stillman's case, which appears to be of the same nature, ran a similar course in the absence of splenectomy.

An attempt to draw a distinction between an eosinophilic leucocytosis in response to some definite toxic influence, and a true leukaemic condition would appear to us to be extremely difficult in the present state of our knowledge, but it is very difficult to bring this small group of cases into line with cases of eosinophilia due to known toxic influence. The degree of eosinophilia here, both relative and absolute, its persistence, and its increasing intensity do not seem to us to fit in with what we know of eosinophilia due to a definite toxin, say of some animal parasite. We have excluded so far as we can in our case the ordinary established causes of eosinophilia, with the exception of trichinosis. Giffen, in his case, did this during life by removal of a portion of muscle, and the *post-mortem* examination also proved negative in this respect.

We are rather inclined to the view that we have here a condition of the bone marrow primarily affecting the eosinophilic elements; a condition therefore more allied to a true leukaemia but of a most unusual type. The essential source of the eosinophiles we regard as the bone marrow. We do not find any active formation of eosinophiles in either the spleen or the haemolymph glands examined. The intense infiltration of these organs with eosinophile cells we regard as merely the result of filtration of these cells from the blood. Evidence of actual mitotic division of eosinophilic myelocytes, though present, is extremely slight. It appears to us much more probable that the few dividing eosinophiles observed came from the blood and were not formed locally. On the other hand, evidence of destruction of the eosinophiles by a phagocytic action on the part of the other cells in the spleen and lymph glands seems perfectly clear in our case. The gradual rise in the number of the eosinophiles may be due to the persistence of the original cause whatever it may be, but this may be accentuated by the loss of so much phagocytic tissue following removal of the spleen, or by the gradual loss of the phagocytic action of the endothelial or other cells through the slower retrogressive change in the spleen where not excised—for example, in Stillman's case—and in the lymph glands. As we have said, we have entirely failed to demonstrate any infective agent in this case, and, though this does not enable us to deny its existence, it seems fully more reasonable to explain the condition by some altered habit of the cell such as occurs in true neoplasia and not necessarily dependent on some external agent or influence.

It is to be feared that there is less doubt as to the course and termination of the disease. So far there is no evidence that this patient's blood is inferior to that of a healthy person in phagocytic and protective power. We have inquired particularly in this direction and, so far as we can ascertain, this patient, who by the nature of his work often suffers from cuts and abrasions on his hands, differs in no way from a normal person in the direction of a greater liability to local infections or in the healing power of his tissues. Not only, however, must there be a great and increasing strain on the bone marrow from this eosinophilic hyperplasia, but the other bone-marrow elements must be suffering from the excessive infiltration with eosinophiles, and we must expect a steady deterioration of the marrow as a whole with a consequent increasing risk of secondary infection. A terminal infection will still further complicate the problem, and in the event of a fatal issue we can hardly expect much light on the original and essential cause of the disease.

The result of splenectomy in this case seems worthy of some consideration. As in Giffen's case, removal of the spleen has resulted for the time being at least in great improvement in the patient's physical condition, all the more remarkable when one notes that during this time the eosinophilia was becoming more marked. Splenectomy is the fashionable operation of the day. In many conditions no doubt—for example, certain types of splenic anaemia and acholuric jaundice—splenectomy may result in an apparent cure. We have seen examples of this, and apparently in some localized infections of the spleen—for example, syphilitic and tuberculous—a favourable result may also be obtained by splenectomy. The operation has, however, been frequently performed in recent years in conditions where at best only a temporary improvement can be anticipated, though a study of the after-results in these cases may add to our knowledge of the obscure problem of the functions of the spleen. Time does not permit us to even refer to the many theories, or rather vague hypotheses, which have been advanced. A glance at the cursory way in which the subject is dealt with in even our standard works on physiology will convince us of our ignorance in this direction. Though the operation has often been performed in diseases in which cure cannot be looked for by this treatment, there seems no doubt that an apparent temporary improvement often occurs, and there is increasing evidence to show that the spleen may have an important though indirect influence on blood formation in addition to the well-established destructive action on effete cells. Recent experimental work by Eddy[7] points in this direction. It may well be that the explanation of some obscure blood conditions will be found in a perversion of this function.

In our present case the improvement in the physical condition following splenectomy, associated as it was with an increase in the eosinophilia, appears to us to be evidence in favour of the view that no active formation of eosinophiles was occurring in the spleen. The rise in the eosinophile count is more easily explained by the loss in amount of the phagocytic tissue of the spleen. It must be admitted that if this were so one would have expected that for a time at least after the removal of the spleen the blood counts would have shown a higher proportion of older eosinophile cells if, as seems reasonable, an increasing lobulation of the nucleus points to an older type of cell. As has been pointed out, however, the proportions of the different types of eosinophiles has remained remarkably constant. It must be remembered, of course, that in this case the spleen was removed after it had undergone a considerable amount of structural change, and judging from the alteration in the haemolymph glands and from the evidence of their increased phagocytic action, some of the functions of the spleen had evidently been already taken on by the glands for some considerable time. The alteration produced by the splenectomy was therefore not so sudden as may appear at first glance and the preservation of the different proportions of the eosinophiles may be only further evidence of the delicately regulated mechanism for dealing with effete blood cells, both red and white.

It is, of course, clear that patients may survive a splenectomy without apparent harm being done to the general health. Splenectomies necessitated by traumatic rupture prove this. At the same time one is left with a certain uneasy feeling that we have no clear conception of what actually occurs when the spleen is removed. The size of the spleen, its anatomical relationship (especially its relation to the portal circulation), its possible relation to gastric function, all seem to make it very improbable that all of its function can be completely compensated for by a hyperplasia of lymphoid tissue elsewhere in the body. Further information would seem to be urgently required as to the later histories of cases of splenectomy. The *post-mortem* examination of cases which survive the operation for some years might yield some information of importance, and the clinical histories of such cases should be even more carefully studied than has been the case in the past, with special reference to the question of increased liability to infection or diminished capacity to deal with it when it does occur. In such a condition as the case now recorded, of course, a liability to secondary infection might almost be looked for as a direct result of the disease and the consequent strain on the bone marrow.

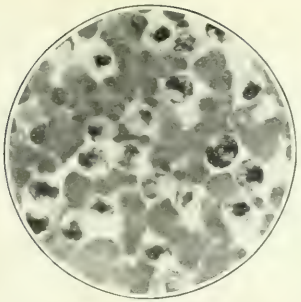


Fig. 1.—Blood film showing the degree of leucocytosis; practically all the cells present are eosinophiles. The variation in the size of the white cells and in the number of the granules is well seen.

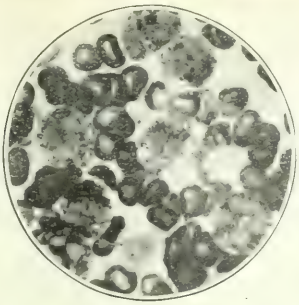


Fig. 2.—Blood film showing the characteristic eosinophilic granulations. In the cell towards the top of field the clear vacuoles described in the text are well seen.

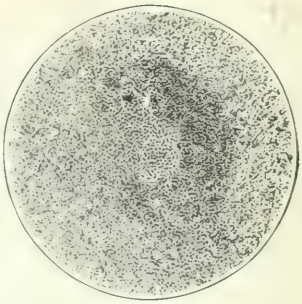


Fig. 3.—Section of spleen showing replacement of a large area of a Malpighian body by eosinophiles. (The larger cells towards one side of the body.)

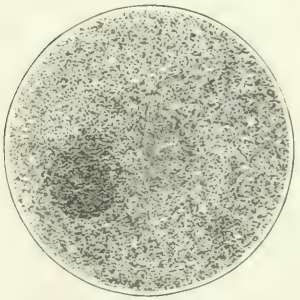


Fig. 4.—Section of spleen, showing in the centre of the field an atrophied Malpighian body with replacement fibrosis. The lymphoid nodule in the vicinity may represent the remains of the Malpighian body or an attempt at compensatory lymphoid hyperplasia.

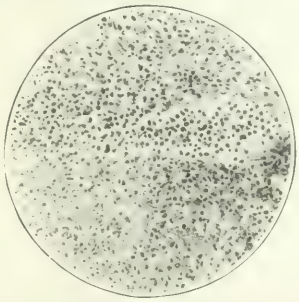


Fig. 5.—Section of spleen, showing a sinus crowded with eosinophiles, which are also infiltrating the surrounding pulp.

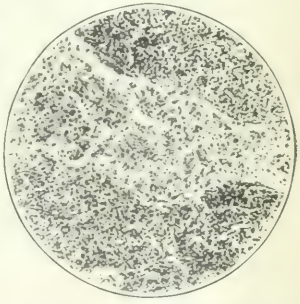
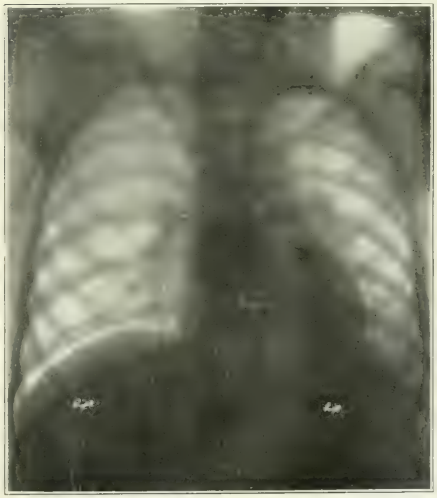


Fig. 6.—Section of haemolymph gland, showing a sinus containing red cells, numerous eosinophiles, and phagocytic cells enclosing haemosiderin. Free red cells and eosinophiles are present in the surrounding lymphoid tissue.

TILLEY: PAPER FASTENER REMOVED BY DIRECT PERORAL BRONCHOSCOPY.



Dr. Salmond's skiagram of patient's chest, showing the paper fastener in the distal portion of the left bronchus.

SOUTHAM AND WILSON: CANCER OF SCROTUM.



Photograph showing the characteristic attitude adopted by the mule-spinner when leaning over the machine to piece the broken threads.

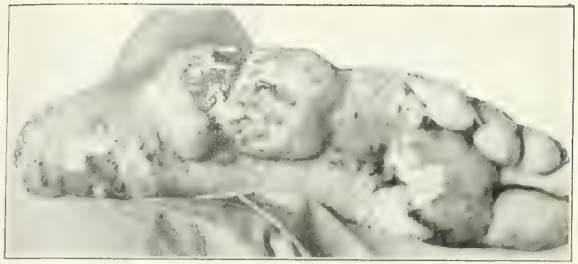


FIG. 1.—Plantar aspect of squamous epithelioma and hyperkeratosis, following arsenical administration.

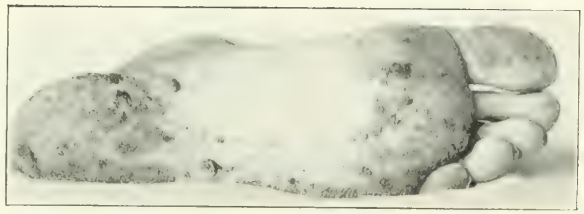


FIG. 2.—Keratosis plantaris (arsenical).



FIG. 3.—Keratosis palmaris (arsenical).

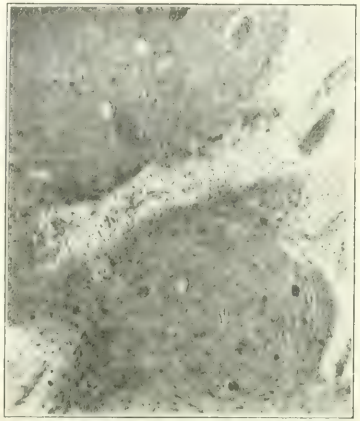


FIG. 4.—Microphotograph (1/5 Zeiss objective). Squamous-celled epithelioma with cell nests, and neoplastic endolymphatic extension, etc.

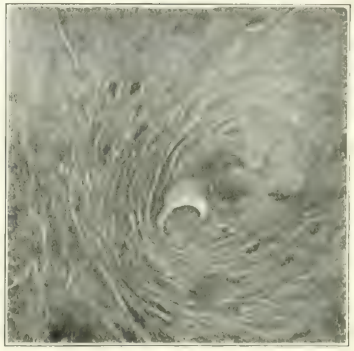


FIG. 5. As Fig. 4 (1/7 Zeiss objective). Note cell nest.

The Digitized Medical Journal

What may actually happen after excision of the spleen is well illustrated by a case published by McAdam Eccles and Freer.[6] In this case splenectomy was performed for traumatic rupture in 1910. In 1920 the patient was again operated on for a ventral hernia, the result of the first operation, and on this occasion what appeared to be a spleen normal in every respect was observed in the course of the operation. The evidence of a new formation of a spleen seems perfectly clear from the facts presented. The authors regard this as having resulted from a hypertrophied spleniculus which may well have escaped notice at the first operation. This remarkable occurrence seems to indicate clearly the advisability of leaving behind any such spleniculus which may be observed in the course of an operation for splenectomy necessitated by trauma.

Further Report.

Since this paper was read we have had another opportunity of seeing the patient and making a further blood examination with the following result. The details of this blood examination appear at the end of Tables I and II, and are marked with an asterisk.

The patient reported, by request, at the Royal Victoria Infirmary on September 28th, 1922. He says that he feels perfectly well, appetite is good, and he has no pains anywhere. Is still constantly at work, which is obviously strenuous. He looks rather fine drawn; his appearance suggests some anaemia. His weight is 9 st. 3 lb., representing an increase of 6 lb. since the end of June. The superficial glands referred to previously are still palpable, but if anything are smaller than previously. There is no enlargement of liver; there is no dullness in splenic region.

Urine.—Reaction, acid; albumin, nil; sugar, nil. Deposit: No casts or cells; abundant deposit of amorphous urates.

Faeces.—No parasites or their ova found.

Blood.—Red blood corpuscles, 4,087,000 per c.mm.; white blood corpuscles, 138,250 per c.mm.; haemoglobin, 58 per cent.; colour index, 0.71. The appearances of the films show no essential difference from that previously seen. In a differential count of 300 leucocytes the eosinophiles account for 79.3 per cent. Coagulation time was 4 minutes, against a normal control time of 5½. There appeared to be again some diminution in the blood platelets.

The result of this last examination gives further proof of the progressive nature of the disease so far as the blood condition is concerned. The patient remains under observation and the progress of the case will be recorded at a later date.

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CANCER OF THE SCROTUM:

The Etiology, Clinical Features, and Treatment of the Disease.

BY

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[*With Special Plate.*]

Epithelioma of the scrotum has hitherto been generally regarded as a disease which occurs chiefly among chimney-sweeps. It is practically the only type of malignant disease met with in the scrotum, and has received the distinctive name of "chimney-sweeps' cancer" for that reason.

The earliest accounts of sweeps' cancer appear to have been written by Mr. Potts and Mr. Henry Earle[1] in 1832. Sir James Paget in his *Surgical Pathology*, published in 1853, states that this disease is fairly common in England in large towns, but in other countries is rarely seen. The most interesting communication on this subject was Sir Henry Butlin's[2] three lectures at the Royal College of Surgeons in 1892 on "Cancer of the scrotum in chimney-sweeps and others." He found the disease was seldom seen except in Great Britain, and that it occurred chiefly among sweeps. In 48 collected cases 34 were chimney-sweeps, the remainder being in other employments, showing an enormous preponderance among the former class. He came to the conclusion that it was due to the irritant action of soot on the parts, and he further pointed out that it did not occur where wood, peat, and charcoal were burnt, nor did coal-miners suffer from this condition.

In the report of the Departmental Committee on Compensation for Industrial Diseases (1907) it is stated that the mortality for cancer among chimney-sweeps is twice that among occupied males generally. For the three years 1900–2 the comparative mortality figure for cancer among sweeps between the ages of 26 and 65 was 133, as compared with 63 among other occupied males of the same age.

In 1916, in *Diseases of Occupation*, Sir Thomas Oliver states that scrotal cancer is prevalent in chimney-sweeps and he attributes this to some peculiar chemical change when coal is burnt, whereby the soot formed has specially irritating characters on the skin. Reference to any of the leading surgical textbooks gives a general impression that epithelioma scroti is relatively common in chimney-sweeps, whilst Thomson Walker[3] writes: "Epithelioma of the scrotum is more frequent in chimney-sweeps than in other males, and has thus received the name 'chimney-sweeps' cancer.'" It has more recently been established that prolonged exposure to tar and its products tends to produce epitheliomatous ulceration of the skin. In January, 1920, the Home Secretary made epitheliomatous ulceration due to tar, paraffin, and mineral oil a notifiable industrial disease. This form of ulceration is liable to occur on the scrotum. In view of these statements we were led to make further inquiry into the incidence of this disease, and proceeded to collect and investigate all the cases of cancer of the scrotum admitted to the Manchester Royal Infirmary from the years 1902 to 1922. During this period 141 cases of this nature attended the hospital, and out of this total there was only one single case whose occupation was that of chimney-sweep.

Further inquiry has enabled us to throw additional light on the etiology of this condition—a matter of considerable importance, both as regards the causation of cancer of the scrotum and the preventive methods that may be adopted to reduce the occurrence of the disease.

Etiology.

During the period under review 141 cases of cancer of the scrotum attended the Royal Infirmary—an average of seven cases each year. The average age of these patients was 51 years when seen at the hospital. The following is an analysis of their occupations, and is of considerable interest:

Mule spinners	69
Tar and paraffin workers	22
Sweeps	1
Various occupations*	38
Occupations not stated	11
	141

These figures show that epithelioma of the scrotum was largely associated with two occupations in South Lancashire—cotton spinning and workers in tar and paraffin. Spinning being one of the chief industries in the district we were led to continue our investigations and endeavour to ascertain what connexion, if any, existed between this occupation and the disease under consideration. It would appear that there is some factor in the trades of sweeps, tar workers, and cotton spinners whereby the skin of the scrotum is liable to the occurrence of cancer.

1. *Chimney-sweeps.*

Sufficient has already been written under this heading to show that in the past soot was considered an important factor in the production of cancer. In our series of 141 cases, however, there was only a single chimney-sweep. It may be assumed that with improved methods of chimney sweeping, and greater attention to cleanliness on the part of the workers, chimney-sweeps' cancer is on the decline, in Lancashire at any rate.

2. *Tar and Paraffin Workers.*

The relation of tar and cancer was first recognized by Professor Volkmann[4] in 1875. He published a paper on "Tar,

* No definite etiological factor was discoverable in this group, many being classified as labourers, and no details of their employment given. In two cases a truss had been worn on the side of the growth for a number of years.

paraffin, and soot cancer," and described three cases where epithelioma of the scrotum occurred in workers in these substances. In 1876 Dr. Joseph Bell[5] independently described two cases of carcinoma of the scrotum under the title "Paraffin epithelioma of the scrotum." Tar and paraffin are now regarded as active agents in the causation of cancer, due to their irritant action on the tissues.

Recent research has shown that cancer can be produced in animals. Bloch and Dreifuss[6] produced tumours in mice by painting their backs with coal tar in 160 days, and also found metastatic deposits in their lungs. As already stated the Home Office has made ulceration due to tar and paraffin a notifiable industrial disease. Forty-five cases of this nature were notified in 1920. One may therefore conclude that from experimental and clinical evidence it is possible by the repeated application of these substances to produce cancer of the skin. In man there appears to be a correlation between these substances and cancer of the scrotum, just as smoking has long been considered to predispose to cancer of the mouth.

3. *Cotton-spinners.*

In the present investigation we propose to discuss another occupation which accounted for the largest number of cases in the series. Cotton-spinning has not hitherto been considered an industry of importance in this respect. In the present series 53 per cent. of the cases whose employment was ascertainable were engaged as mule-spinners. To further investigate this matter we have visited a cotton mill in the Pendleton district of Manchester, and examined the men and the conditions under which this class of work is carried out.

Mule-spinning is undertaken entirely by men, women not being employed in this process of the cotton trade. Many of the workers have spent the greater part of their lives in the mill—often upwards of thirty years. The fact that in so large a proportion of the cases the growth has been found to be situated on the anterior aspect of the left side of the scrotum led us to consider if there was any special factor in the occupation of mule-spinning to account for that position.

For the information of those who are not familiar with the mule-spinning process it may be said that the special feature is a type of movable rack, known as the carriage, which carries the receiving spindles for the yarn that is being spun from the cotton. This carriage varies in length, and may be as long as ten to twenty yards, and carry 1,000 or 1,500 spindles. The carriage is worked by machinery, moving continually to and fro, the stretch being usually sixty-four inches. This movement occurs three times in the minute. On the carriage, about three feet from the ground, is a steel bar extending the length of the machine. This bar is found to be moist with the lubricating oil thrown out by the spindles as they revolve; the oil further contaminates the clothes of the spinner, for careful oiling of the spindles is necessary. As the carriage moves to and fro the cotton threads which are being spun into yarn may break from time to time. It is the duty of the mule-spinner, or minder, to follow the mule and attend the spindles and piece the threads when they break. This necessitates him constantly leaning over the carriage, which brings his thighs and scrotum into contact with the oil-covered bar and its accessories. In watching the spinner at work one is struck by the fact that when leaning over to piece the threads he almost invariably stands on the left leg, the right leg being thrown out behind to act as a counterbalance as he bends forwards. He meanwhile pieces the threads with his left hand. This results in the left groin and left side of the scrotum continually coming into contact with the bar of the carriage. The workers state that they are accustomed to adopt this attitude from their earliest days. (See Special Plate.)

The atmosphere in the mill where the work is carried on is extremely warm and humid and the men perspire freely. Under these conditions the mule-spinner wears the minimum amount of clothing. He works in a shirt and a pair of washable linen trousers and has bare feet. These trousers are said to be washed each week, and an inspection at the end of that period shows a well-marked oil zone, six to eight inches in depth, across the body at the level of the upper part of the thighs and lower abdomen. This oil penetrates the trousers and the lower border of the shirt also becomes soaked with it. The skin in this region is therefore constantly exposed to contamination and irritation from the oil, and itching and scratching of the parts is found to be by no means uncommon. The oil in general use is said to be a mineral oil of the paraffin series.

The striking feature which becomes evident is the liability of the scrotum to be affected with cancer in certain occupations. Epithelioma of the scrotum is a disease of adult life and mature adult age, and in the majority of cases it appears to arise as the result of the specific action of some substance on the skin of the scrotum. This substance may be met with in soot, tar, and oil, and probably acts as a local irritant, and so prepares the tissues whereby cancerous growth may take place. In the case of the mule-spinner it would appear that the scrotum is liable to irritation, a point further emphasized by the fact that in most of the cases the ulcer was found in the same situation—namely, the anterior aspect of the left side of the scrotum. The actual cause of the irritation seems to depend on two factors:

1. *Mechanical.*—The result of friction of the parts with the clothing and the repeated traumatism of the body against the machine over which the spinner works. In addition there is the contamination of the clothes with dirt and sweat unless particular attention is paid to cleanliness.

2. *Contact with Oil.*—As regards the oil factor, the continual soiling of the clothes with oil and the knowledge that in other forms of cancer tar and paraffin are recognized as direct etiological agents—a view which has received considerable support from experimental work on animals—suggests that the oil, which has a highly irritant action on the tissues of the skin, may be of considerable importance.

These factors may lead to the production of a wart, the usual form in which the growth is found to originate, and in those above middle age, and in individuals susceptible to its effect, takes on the characteristics of epithelioma. It is our intention to further investigate at the Manchester University the cancer-inducing properties, if any, of the various lubricating oils in common use in cotton mills.

Clinical Features.

From anatomical considerations it might be expected that the scrotum would be peculiarly liable to cancer. Its position, its exposure to continual irritation, its roughness, and the presence of hairs all predispose to the accumulation of dirt and septic matter and lead to irritation of the parts.

Whilst in general features epithelioma of the scrotum closely resembles other forms of surface cancer, particularly epithelioma of the lip, yet it exhibits certain differences from the typical chimney-sweeps' cancer as described by Butlin. Multiple warts are not the rule. The growth, in our experience, is nearly always solitary and most commonly situated low down on the anterior aspect of the scrotum on the left side (84 per cent. of cases). In 10 per cent. it was localized to the right side, and in 6 per cent. it commenced in the mid-line of the scrotum.

The earliest manifestation is almost invariably a wart, yet even this cannot be regarded as of an innocent nature, for local removal of this wart is frequently followed by the appearance of malignant deposits in the groin some twelve to eighteen months later. This no doubt explains the so-called cases of primary epithelioma of the inguinal glands described by Butlin and others. The patient has forgotten all about the wart, and the resulting scar is so small and difficult to recognize in the rugose scrotum, or the growth has been missed owing to imperfect observation. It would appear that there is no definite pre-cancerous stage but that the wart is malignant from the beginning. The warty stage persists for some four to six months, the tumour varying in size from sixpence to half a crown, then ulceration occurs, and the typical epitheliomatous ulcer develops. The rate of growth varies, but on the average from the time of onset to the time the patient came to hospital for treatment was twelve months.

Local spread is not of a very rapid character; in 6 cases of the series the testicle was involved by the growth, whilst in only 3 did it spread on to the penis. On the other hand, secondary involvement of the inguinal glands is extremely common, the early enlargement being due to inflammatory changes. Later they become the seat of definite malignant deposits.

Recurrence of the disease in the groin is very common; this is probably owing to the fact that in many cases a radical operation had not been performed, the glands having simply been locally excised, and only in the more recent cases has the operation performed been of sufficient extent to remove all the infected tissues.

As regards the last stages of the disease the most conspicuous feature is the breaking down of the malignant

glands in the groin, death in some cases being due to haemorrhage from the external iliac or femoral vessels; in other cases death is due to septic absorption and exhaustion. In only one case of the series was the peritoneum involved; in this case, as the bowel also was affected, it was necessary to do a colostomy. There appears to be little tendency to the formation of metastases in distant organs.

Treatment.

The operative treatment of cancer of the scrotum usually receives but brief discussion in the surgical textbooks. The technique of the operation is of considerable importance, for when this is radically performed there appears a good prospect of a successful result. Glandular metastasis occurs fairly early, and it is only by a complete dissection that all the infected tissues in the inguinal regions can be satisfactorily removed. The importance of the lymphatics draining from the scrotum was emphasized by Morley[7] in 1911, and an attempt made to place the operation on a sound anatomical basis. The technique here described is largely based on the result of that work.

The radical operation consists in removal of the growth in the scrotum together with a wide margin of healthy tissue around it, and the complete excision of the glands and surrounding fatty tissue in both groins. The operation is in many respects similar in type to the radical amputation for carcinoma of the breast and merits equal attention. The scrotal growth is excised with at least one inch of healthy skin surrounding the base of the tumour; the whole thickness of skin and dartos should be taken away. The lymphatic glands must always be removed from both groins. There is free anastomosis between the superficial lymphatic network of opposite sides, and if the growth approaches the median raphe bilateral infection may be present at an early date.

The operation differs in one respect from the radical amputation of the breast in that the so-called block dissection, where the entire glandular area and the lymphatic trunks between the tumour and the glands are cleared away, does not appear to be necessary. It is found sufficient to remove the scrotal growth and the tissues of the groin through separate incisions. This is comparable to the operation performed for malignant disease of the tongue, where it is not usually considered necessary to remove the tissues between the growth and the glands. The best incision for removal of the glands is one parallel to and below Poupart's ligament, extending from the anterior superior spine to the spine of the pubes; from the centre of this a vertical incision is carried a short distance down the thigh. This incision allows good exposure of the infected tissues and their easy removal. The earliest glands that may be infected, when the growth is on the anterior aspect of the scrotum, lie just internal to the anterior spine, so the dissection must be carried out to this point. All the glands and fatty tissue in Scarpa's triangle should be excised and the vessels left stripped clean, whilst the upper part of the saphenous vein may be removed with advantage.

Conclusions.

1. Epithelioma of the scrotum is rare among chimney-sweeps in South Lancashire.
2. In this district the disease is most frequently met with in mule-spinners ("mule-spinners' disease").
3. The growth is usually situated on the anterior aspect of the left side of the scrotum, a position explained by the occupation of the spinner.
4. The etiology appears to depend on chronic irritation, the result of friction and contact with oil.
5. It is doubtful if the condition is preceded by an innocent stage.
6. The disease is similar in general features to other forms of cutaneous cancer and equally malignant.
7. The only hope of successful treatment lies in early and radical operation.

Through the courtesy of the members of the honorary staff of the Manchester Royal Infirmary we are enabled to record the cases in this series.

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THE REMOVAL OF A PAPER FASTENER BY DIRECT PERORAL BRONCHOSCOPY

After its Impaction for Twenty-one Months in the Left Bronchus.

BY

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[*With Special Plate.*]

The case here recorded has so many features which should be of practical interest to every class of practitioner that I have thought it worthy of record.

On Saturday, October 2nd, 1920, J. H., aged 5, swallowed a paper fastener. A violent fit of coughing immediately occurred and lasted about five minutes; this was accompanied by "pain in front of the left chest, which passed off in some three hours." Four days later, while at a children's party, such an alarming fit of coughing came on that the child's father and doctor were sent for and the patient was taken home in a motor car. He remained in bed for a month with symptoms of "acute bronchitis of the left lung." As the symptoms did not clear up a skiagram of the chest was taken on November 29th, but the result was so imperfect that it afforded no clue to the cause of the trouble. From that date to the removal of the foreign body the father states that the child "was always bronchial and short of breath," and "the noise he made at night was like air passing through a small hole."

On different occasions he would "suddenly get cold and the temperature rise as high as 104°; the attacks sometimes ended with vomiting followed by a sound sleep; then all would be well again until similar symptoms reappeared." In June, 1921, his tonsils, which were much enlarged, were enucleated, because "it was thought that they kept up the bronchitis," but the chest symptoms were in no way benefited by the operation.

Since August, 1921, the attacks of pyrexia occurred every two or three weeks, and especially after any exertion such as walking; in the meantime the appetite was failing and milk became the favourite food. A further consultation was held and the question of removing the appendix was discussed. During June, 1922, the child was so far from improving that Dr. Batty Shaw was then asked to see him, and I append some brief notes which he sent me of the physical signs which he found in the patient's chest. The chief amongst them were "expansion of the chest very poor, nearly all breathing being done by the diaphragm. The right chest, however, expanded a little, but the left, especially in the lower part *in front, collapsed* on inspiration; moreover, the left lung behind was dull on percussion, vocal fremitus was normal, and I heard a râle or two."

In view of the history of the case, and that the physical signs were chiefly located in one (the left) lung, Dr. Shaw advised that the chest should be "screened," and Dr. Salmond's services were enlisted. He clearly demonstrated that the foreign body was lodged in the left bronchus with the clips fully spread and pointing upwards (see Special Plate), a condition of things which made the question of removal difficult, not without danger, but nevertheless possessed of fascinating problems to the practical endoscopist.

(I take this opportunity of thanking Dr. Batty Shaw for asking me to help him in the matter.)

Some of the difficulties were obvious. We could be sure that the points of the fastener would be invisible and embedded in the walls of the bronchus. In the early hours of the accident each inspiration would suck downwards and deeper into the bronchus the flat piston-like head of the foreign body, while the expiratory blasts of coughing would force the points of the wings into the soft contracting walls which surrounded them.

Furthermore, it might safely be assumed that the foreign body would be embedded in vascular granulations which would bleed on the slightest touch and thus obscure the small field available for operative manipulations. For the same reason a good deal of time would necessarily be spent in checking the haemorrhage.

Finally, one knew that in a child of 7 years only a tube of narrow calibre could be employed, and through this a long and slender forceps would have to be passed and its grasp directed by monocular vision. In an attempt to neutralize

this last handicap, I spent several hours in removing paper fasteners which were firmly fixed in rubber tubing of a size corresponding to that of the patient's bronchus.

The value of this preliminary practice cannot be overestimated, because there is no limit to the training of co-ordinated movements between the eyes and the fingers. These *must* work in harmony, for although the experienced eye may see the foreign body, if the hand be unskilled its work will frequently end in failure, and too often the extent of this has only been revealed during the *post-mortem* examination on the patient.

Operation.

At 7 a.m. on June 29th a hypodermic injection of 1/100 grain atropine was given, and a second injection of the same amount at 9 a.m.; the object of this was to check the secretion of mucus in the lower air passages. Children tolerate atropine well.

At 10 a.m. Dr. Felix Rood administered open ether until the laryngeal reflex was abolished, and continued with a mixture of chloroform and oxygen during the remainder of the operation. The help he rendered me in many ways was invaluable.

A bronchoscope, modelled on the Chevalier Jackson principle by Irwin Moore, was then passed through the glottis into the left bronchus, and just beyond its distal end a mass of granulations could be seen. To this was applied a small swab of gauze moistened with equal parts of a solution of 10 per cent. cocaine and adrenaline chloride. After an interval of some five minutes I removed an oedematous granulation about the size of a green pea. The oozing of blood and mucus which we anticipated necessitated oft-repeated swabbing, and it was at least ten minutes before a reasonably dry field enabled me to detect the foreign body.

By means of Jackson's side-gripping forceps it was now possible to secure and dislodge the lower point of one wing of the paper fastener and to manœuvre it just within the bevelled end of the bronchoscope. After further bleeding had been checked the second wing was secured, and finally tube, forceps, and foreign body were withdrawn together.

The patient recovered quickly and left the nursing home two days after the operation. I saw him again on July 6th; he appeared to be quite well, and the physical signs in the left lung (vide supra) had practically disappeared.

General Considerations.

1. Probably the first and most important lesson to be learnt from this case, and from so many others of like nature which have been reported, is contained in the history of the symptoms which followed the entry of the foreign body into the lower air passages. It should teach all practitioners that the sudden onset of cough associated with unilateral pulmonary symptoms in a previously healthy child is very suggestive of the inhalation of a foreign body. If this be granted, it follows that no method of examination should be neglected until all doubt upon the point is set at rest.

In the present case the history was clear enough and the patient was "screened," but unfortunately the negative was so defective that it led to the assumption that the symptoms were not due to a foreign body; consequently the treatment of the pulmonary symptoms was ineffectual, and caused much anxiety to the parents on account of the continued ill health of their child.

2. Therefore the second lesson we learn is that it is very unwise to rely on any one method of investigation, and particularly so when the means employed are imperfect. If an expert radiographer had examined the patient in the first instance the diagnosis would have been clear, and the treatment obvious, immediate, and probably successful.

On the other hand, let us suppose that a child is suffering from symptoms very suggestive of the inhalation of a foreign body into the lower air passages, and yet no history of the accident has been obtained. This has often happened in the case of children owing to their nervousness or to the fear of scolding or punishment. Furthermore, let it be assumed that the foreign body is a fish-bone or some substance not impervious to the *x* ray. What course should be pursued? To this question there is only one answer—namely, look and see; and herein lies the inestimable value of the bronchoscope, both from the point of diagnosis and immediate treatment.

3. One more word about symptoms. Violent fits of coughing, unilateral emphysema, and localized fine crackling rales are common and early signs of the accident under discussion. These will vary with the nature, situation, size, and shape of the foreign body, and their severity may alter from time to time if there should be any alteration or shifting of its position. Later on the symptoms may take the form of pulmonary collapse, consolidation, abscess, bronchiectasis, pleurisy, or the physical signs and constitutional disturbances may closely simulate those of tuberculosis, excepting the presence of the characteristic bacilli in the sputum. It would be nearly true to say that bronchiectasis in children is always caused by a foreign body. In adults such a factor is more likely to be overlooked or forgotten, as in a case reported by me in the *Lancet* of April 22nd, 1911, where a large piece of mutton bone had been impacted in the right bronchus for three years!

4. It will have been noted that the paper fastener lodged in the left bronchus, whereas most foreign bodies pass into the right because it is larger and more in the direct line of the trachea. From the same situation (left) I have removed two shawl pins, the cap of a lead pencil, and a portion of shrapnel casing (vide author's *Diseases of the Nose and Throat*, Lewis and Co.).

Anæsthetic.

My American colleagues may ask why a general anæsthetic was employed when Chevalier Jackson is able to report hundreds of consecutive cases successfully treated without any anæsthetic, local or general. My answer is that he is able to command the services of trained nurses and assistants who know his instruments, how these should be arranged for the operation, and how to clean them afterwards without ruining them. They understand the preparation of the patient before the operation and how to fix, immobilize, or alter the position during the operation. Each has his or her particular duty to be shared by no one else. They are the specialists of their profession, and happy is the surgeon who can command their services.

Such team work seems impossible in this country, even if there were sufficient material to make its organization worth while, and up to the present one has failed to persuade certificated nurses to confine their attention to, and become experts in, any one branch of work.

In consequence the endoscopist is driven to general anæsthesia in order to have his patient under complete control, and fortunately we enjoy the services of highly skilled anæsthetists who secure this end with the minimum of risk; at the same time they render the patient oblivious of what must often be a very uncomfortable and distressing experience.

This is scarcely the occasion to describe the technique and delicate manipulations which were employed to remove the foreign body in this particular patient. They will be familiar to experts but more or less devoid of interest to the average reader. Bronchoscopy is an art which bristles with important details. Its practice demands a degree of patience and gentleness not excelled by the expert angler with his dry fly. To grope blindly or to use force and lacerate delicate tissues which are often bathed in septic secretions is to betray a great trust and to show small respect for the sanctity of human life.

It will suffice to say that I used a Jackson bronchoscope—that is, with the little electric lamp at the distal end of the tube—and was therefore freed from the top-hamper of the proximal light carrier of Brüning's instrument, which is still in common use in this country and on the Continent.

In conclusion, it seems a fitting opportunity for acknowledging the debt which endoscopists owe to Chevalier Jackson of Philadelphia, U.S.A., for his work in this department of medicine. Speaking for myself, and putting aside my appreciation of his many acts of personal kindness, it is impossible to appraise the value of his inventive genius or of his inspiring enthusiasm. Nor can the written word express my admiration and envy of the quiet but unrivalled skill with which he uses the instruments which bear his name.

THE next meeting of the Czech Tuberculosis Society will be held at Prague in the spring of 1923. This society was founded in 1920 for the purpose of promoting research in tuberculosis. Various scientific problems in connexion with the subject are being studied in the medical department of Prague University.

A POST-GRADUATE course in diseases of women and heart disease, lasting four days, was given at Franzensbad during the third week of September. In the following week a post-graduate course was held in Carlsbad; the lectures covered a number of different subjects, including diseases of the abdominal organs and disorders of metabolism.

A CASE OF ARSENICAL KERATOSIS FOLLOWED BY CANCER.

BY

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[*With Special Plate.*]

The late development of epithelioma on a pre-ex's'ing basis of hyperkeratosis produced by prolonged arsenical medication is a rare phenomenon, and MacLeod,[1] in his textbook of skin diseases, states that only about fifteen authentic cases have been recorded in the literature. The part played by arsenic in the production of cancer has been disputed in some quarters,[2] on the ground that malignant disease is apt to develop in patches of psoriasis, etc., in which the drug has never been administered. If this objection be conceded, there still remain cases in which it was given over a prolonged period for conditions other than dermatological and in which epithelioma of the skin subsequently occurred.[3] The argument is really beside the point, for most authorities are now agreed that the etiology of such growths is multiple, and that arsenic may be regarded as a predisposing factor of malignant degeneration, in virtue of its property of producing hyperplastic growth in surface cells, which are particularly exposed to traumatic and irritating influences, such as sunlight, variations of temperature, dust, friction, and recurring physical stimuli of all kinds.

Carcinoma linguae, from the etiological point of view, is more strictly akin to "arsenical" cancer than are "tar" or "*x*-ray" cancer, for in these the predisposing factors are local, while in the former two they may fairly be regarded as systemic (that is, syphilis, which produces leucoplakia, and arsenic, which produces an almost identical histological condition—hyperkeratosis). The credit of priority in the discovery of the relationship under discussion belongs to Jonathan Hutchinson, and the evidence which he first brought forward in 1887[4] has since accumulated and received confirmation from the pens of such well-known dermatologists as Dubreuilh,[5] Darier,[5] and Hartzell,[6] while, among the surgeons, Bland-Sutton[7] published a case in this JOURNAL as recently as 1916.

The possibility of an impending increase in the incidence of the disease, as a result of the world-wide injection of arsenical compounds for syphilis, yaws, etc., has been raised by K. Ullmann.[8] Salvarsan dermatitis, however, is an acute eruptive condition which tends to a *restitutio ad integrum*, and does not go on to keratodermia, which is the necessary preliminary to epithelioma.

Most of the cases of arsenical keratosis reported have followed the oral administration of the drug, but the dosage and the duration of treatment were by no means constant. In the cases published by Dubreuilh[5] a keratosis of the palms and soles was noted as early as six months from the date of commencing the treatment, but the average incidence of cutaneous change is about two years, and the usual dose given has been from 15 to 30 minims of Fowler's solution thrice daily. The same author states that gastric and intestinal intolerance are danger signals, and that the occurrence of pigmentation, which usually precedes the development of keratosis by some weeks, is an absolute indication for cessation, or at least a prolonged intermission, of the drug. My own case conforms in every particular with the classical picture first enunciated by Hutchinson.

The patient, aged 40, who was referred to me by Dr. H. C. G. Pedler (London), had a more or less generalized psoriasis at the age of 12, and as the eruption was controlled by arsenic he persisted with its administration, and without further medical advice, for seven years. By this time (1901) pigmentation of the abdomen and warty growths on the palms and soles had developed, and his father consulted Sir Malcolm Morris, who at once recognized the cause, and forbade any further treatment with arsenic in any form. In 1905 he consulted the late Sir Lauder Brunton for oedema of both feet, one wrist, and the dorsum of the left hand.

In 1914 (that is, fourteen years after cessation of the drug) the hyperkeratosis on palms and soles was as obvious as ever, and a small painless ulcer made its appearance in or around one of the warty growths on the outer border of the right sole. The ulcer persisted, and was not regarded as serious apparently, for from February until July of the current year (1922) he received treatment by ionization in a country town. The size and appearance of the neoplasm, when I saw him on August 16th, is so well illustrated in the accompanying photograph (Special Plate, Fig. 1) as to need no further description. The associated plantar and palmar keratosis is also clearly depicted (Figs. 2 and 3), and it only remains to say that the skin as a whole was remarkably dry, free from any abnormal pigmentation, showing a trace of psoriasis on the knees, elbows, and chest only. A slight degree of oedema, which pitted on pressure, and was therefore subcutaneous and not confined to the epidermis, was noted on the dorsal aspect of both feet.

The right leg was amputated through its lower third by Mr. T. T. Higgins on August 18th, and recovery was uneventful.

As in a somewhat similar case reported by Sir John Bland-Sutton,[7] no glands, either in the popliteal space or in the groins, could be regarded clinically as containing malignant deposits. Bland-Sutton writes (loc. cit.): "It is said this form of cancer does not reproduce itself in the lymph nodes."

The histological appearance of the tumour is reproduced in the microphotographs (Figs. 4 and 5), and I am greatly indebted to Dr. G. W. Nicholson, of Guy's Hospital, for the following note on its structure:

"1. A squamous-celled carcinoma with extensive keratinization and formation of cell nests. The stroma is loose and oedematous, and contains numerous areas of inflammatory reaction. At its periphery the section is covered by hypertrophied epidermis, with lengthened irregular papillae. Its centre is ulcerated, the base of the ulcer being occupied by granulations, most of which possess a covering of squamous epithelium obviously derived from the cells of the neoplasm itself. There is extensive infiltration of the cutis and subcutaneous tissues by columns of new growth, some of which are definitely within lymphatics.

"2. A section through a keratodermic nodule shows a strip of skin with irregular papillae, a well-marked stratum granulosum, and a greatly hypertrophied stratum corneum. The cutis and superficial layers of the subcutaneous tissue are fibrotic, the walls of the small blood vessels much thickened, and the sweat glands and their ducts small and atrophied."

The presence of thickened blood vessels noted by Dr. Nicholson affords a possible clue to the persistent oedema of the feet, and the paucity of sweat glands and the atrophy of their ducts doubtless account for the general xerodermia. The thickened blood vessels—the Wassermann reaction being negative in this case—may be presumed to have followed a preceding endarteritis, such as has often been described in the *post-mortem* records of the brains from fatal cases of salvarsan poisoning. If this theory is correct, it is not difficult to explain the oedema which is the result of the transudation of lymph through endothelium damaged or paralysed by the action of a protoplasmic poison.

Summary.

1. The case illustrates the danger of prolonged arsenical medication by the mouth.

2. Where keratosis has occurred as a result of this the drug must be immediately suspended, and every effort made, by keratolytics, *x* rays, etc., to destroy the small warts and check their continued formation, and their pronounced tendency to spontaneous degeneration and necrosis.

3. For a growth of the size depicted there is, of course, no effective treatment other than amputation. The site of the removal will depend on the situation of the tumour, the presence of infected glands, and other considerations of surgical importance.

For small growths of recent appearance, without evidence of gland infection, the treatment by *x* rays or radium should receive a trial. Local excision is not recommended.

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THE first course of lectures under the Charles E. Dohme Memorial lectureship was given at the Johns Hopkins Hospital, Baltimore, on October 10th, 11th, and 12th, by Dr. H. J. Hamburger, professor of physiology at the University of Groningen, Holland. The lectureship was established in memory of the late Mr. Charles E. Dohme, a well-known chemist of Baltimore, and its purpose is to promote the development of a more intimate relationship between chemistry, pharmacy, and medicine. The lectureship, which is of the annual value of 1,000 dollars, is open to scientists from any part of the world, and the selection of a lecturer is made by a committee representing the departments of pharmacology, chemistry, and medicine of the Johns Hopkins medical school.

PUERPERAL INFECTION MORTALITY IN WALES.*

BY

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[Dr. Maclean, having traced in considerable detail the historical basis upon which our present knowledge of puerperal infection rests, and having discussed the questions of definition and classification, continued:]

It would not be consonant with the title or purpose of this paper to pursue in detail the etiology and pathology of puerperal infection, but some consideration must be given to the important questions of its frequency and distribution.

Arnold Lea, writing in 1910, drew attention to the fact that the reports of the Registrar-General showed that in the British Isles during the previous forty years the mortality from puerperal infection had but slightly diminished, notwithstanding the revolution which had occurred in surgical practice by the application of the principles evolved by Pasteur and Lister. The lying-in hospitals only participated in the betterment so far as midwifery was concerned, and in these institutions the mortality had been reduced to a minimum. Taking a quinquennial period of seventy years ago the puerperal death rate from all causes was 4.9 per 1,000 births, as compared with 4.2 for a similar period of sixteen years ago, and deaths from puerperal infection account for 50 per cent. of these rates. The Registrar-General's report for 1920 makes reference to the tale and toll of the intervening years.

In 1920 the number of deaths assigned to pregnancy or childbirth corresponded to a rate of 4.12 per 1,000 births, as against an average rate of 3.78 in the ten years immediately preceding and 4.12 for 1919.

The lowest level reached was 3.55 in 1918, so that the increase to 4.12 in 1919 and 1920 has been sudden as well as considerable, and when distinction is made between deaths ascribed to *septic* and to *other causes* it emerges that the increase is almost entirely due to sepsis, the rate for which is higher in 1919, and still more so in 1920, than in any of the preceding ten years. It may be significant or merely coincidental that the erysipelas mortality of 1920 is the highest since 1915.

The chief medical officer of the Ministry of Health in his report for 1921 is able to indicate some improvement in the number of deaths from puerperal sepsis as well as from other causes, the inclusive rate being 3.9 per 1,000 births, as compared with the 4.1 already quoted for the two previous years. He adds:

> "The fact that in England 3,323 mothers lost their lives on account of childbirth last year cannot be regarded without grave concern. It is a matter which should receive the careful and continued consideration of teachers and practitioners of midwifery and of all responsible for making due provision for the mother at the time of her confinement."

Of the total number of registered births in England 54 per cent. were notified by midwives, and he points to the obvious importance of a high standard of practice by midwives being encouraged, and to that end recommends that in all districts, urban and rural, there should be an adequate number of competent, sufficiently remunerated, and, where necessary, a subsidized service of midwives. He stresses the importance of ante-natal supervision and urges the provision where possible of lying-in accommodation, not only for abnormal cases but for women who cannot safely be confined at home. But lest, like Mark Twain in his classic lecture on the Babes in the Wood, I should be guilty of saying nothing connoted by the title of the paper, I must focus the forcgoing in its application to conditions prevailing in the Principality.

A recognized authority on the geographical distribution of puerperal infection in England and Wales—the late Dr. William Williams, the distinguished medical officer of health for the county of Glamorgan, whose friendship many of us were privileged to enjoy—found that the puerperal septic death rate varied from 1.4 to 3 per 1,000 in different centres, the maximum being reached in Lancashire and Wales, while many of the counties were represented by a figure below 1.4.

Deaths from accidents in childbirth, however, are most numerous in agricultural districts with a scattered population, and reach the minimum in London and its surrounding counties. This is generally attributed to the greater availability of skilled assistance in emergencies in the more densely populated districts.

Dr. Williams studied in detail the distribution of mortality in South Wales, and found that infection occurred most frequently amongst women attended by ignorant or untrained midwives, and that density of population, climatic conditions, and even the presence of zymotic diseases, such as scarlet fever and diphtheria, had little influence. Dr. Williams, as well as subsequent writers, and, indeed, every authoritative report dealing with the matter, draws attention to the exceptionally high puerperal mortality among women in Wales. In one period, when the average mortality from childbirth and childbed in London was 3.9 per 1,000 births and in England and Wales 4.7, the figure for South Wales was 6.1 and for North Wales rather higher still. And again, in the puerperal mortality census for England and Wales, 1911–14, when the mortality rates per county were indicated by degrees of shading, there were only two black counties, both of which were in Wales—Cardigan and Merioneth—the qualification of a black county being that as many as 8.9 mothers died per 1,000 births. In the latest report (1920) of the Registrar-General the figures show that in the maternal mortality rate per 1,000 children born alive Wales is definitely higher than any or all parts of England, and, therefore, than the combined rate for England and Wales. This applies to county boroughs (5.79—England and Wales 4.42), urban districts (5.27—England and Wales 4.46), and rural districts (5.77 England and Wales 4.54), the consolidated Welsh rate being 5.52 as against 4.33, the average for England and Wales. For puerperal deaths due to sepsis the Welsh rural districts still hold, unfortunately, an outstanding position in the whole of England and Wales (2.22 per 1,000 live births, as against England and Wales 1.68).

I am indebted to Dr. Llewellyn Williams, of the Welsh Board of Health, for his kindness in furnishing a map and recent figures indicating the prevalence of puerperal infection in Wales, notifications received in connexion therewith, and the deaths ascribed thereto. There can be no doubt that many cases of puerperal infection are not notified, and that this is especially so in the rural districts. I have gladly accepted Dr. Llewellyn Williams's courteous invitation to co-operate with himself and his able staff in an investigation into the whole of this urgent problem.

Dr. W. Williams, in a communication on puerperal mortality to the Epidemiological Society of London in 1896, deals with many points common to the disease occurring anywhere and with some points having especial bearing on conditions in Wales. At to the higher mortality of puerperal infection in primiparae, he relates that in an epidemic investigated by him no less than 75 per cent. of the primiparae affected died.

Attention is drawn to the excessively high puerperal infection rate in Merioneth and Cardiganshire—two typical instances of purely agricultural and hilly counties—as compared with a low rate in Pembroke, Anglesey, and Radnor, also purely agricultural but comparatively flat. The mining county of Glamorgan and the mixed mining and agricultural counties of Carmarthen and Carnarvon show a mean rate.

Of the counties, Glamorgan alone may be called "densely populated"—that is, with less than one acre per person. Flint had less than two acres, while the remainder may be termed "sparsely populated." The figures quoted tend to show that density of population is not a factor of much importance in determining puerperal infection, but rather that the higher mortality from both sepsis and the accidents of childbirth prevails in those counties which are mountainous, hilly, and sparsely populated, and where, consequently, locomotion is tedious and medical assistance difficult to obtain.

The Registrar-General of forty-five years ago said in one of his reports: "In North Wales, where the mothers are left to nature or to unskilful old women, the mortality is double that of London, and 9.4 mothers die to 1,000 children born." Dr. Williams admitted there was much truth in this remark, and that it was within his knowledge that in the counties of Merioneth and Cardigan, so prominent in their mortality rates, most of the confinements among poorer women were attended by untrained women; that similar conditions obtained in all the county districts, villages, and small towns of

* Presidential Address to the Cardiff Medical Society.

Wales; and that in Glamorgan puerperal infection was often spread broadcast in this manner.

When first appointed medical officer of health to the county of Glamorgan he was called upon to investigate an epidemic of puerperal infection in the Garw and Ogmore valleys, in both of which, and especially the Garw, the disease had acquired the reputation for years of being almost endemic. The two valleys are certainly topographically distinct, and at that time, at all events, there was no appreciable interchange between their midwives. On the basis of his investigations and the experience of a local practitioner he makes the interesting statement that the majority of cases confined in houses infected with scarlet fever escape puerperal infection, and that if occasionally a lying-in woman takes scarlet fever she does not develop puerperal infection symptoms and generally recovers. One of Dr. Williams's observations recalls the saying of Gordon of Aberdeen: "The infection in this disease is most subtle, persistent, and portable, and more difficult to get rid of than in almost any other disease."

Many further facts and figures might be furnished to support the view that in Wales the subjects of puerperal mortality, and especially of puerperal infection, still afford an outstanding problem which all bodies and persons executively concerned should strive to solve. Ultimately I believe the great betterment will come along the lines recommended in the second report of the Welsh Consultative Council, but meanwhile much can be done by the intelligent and conscientious observance of preventive measures and by the harnessing of the new facts which evolve from laboratory and clinical research.

Preventive Measures.

The range of prophylaxis must include pregnancy, labour, and the lying-in period.

1. *During pregnancy* attention should be directed to the general health, urinalysis, personal hygiene, and the careful treatment of erythematous or eczematous conditions of the vulva, vaginitis, or fistula in ano, etc. Particularly in primigravidae a systematic pelvimetric examination is of the greatest importance.

2. *During labour* the selection and preparation of the lying-in room and the exclusion of all persons suffering from diseases such as tonsillitis or any form of septic infection call for attention. The arrangement of the bed and the preparation of the patient, her clothing, and detailed disinfection of the vulva as the centre of the "field of operation" are of the utmost value. As regards vaginal douching, this practice in normal labour is unnecessary and may be harmful, the essential point being to carry out complete antisepsis of the vulva. Too much importance cannot be attached to the disinfection of the hands and the intelligent use of rubber gloves. The number of vaginal examinations during labour should be limited by real requirement, and the same comment applies to the number of obstetrical operations, including not only instrumental interference, but the most dangerous of all obstetrical operations, the manual removal of the placenta, involving, as it does, the definite risk of the direct inoculation of organisms on the placental site. There are instances, of course, where that risk must be accepted—as, for instance, in *post-partum* haemorrhage or cases where full time has been allowed and where the various methods of expression have been thoroughly tried without effect. The retention of a small portion of membrane within the uterine cavity does not in itself justify manual exploration. Vaginal or intrauterine douching after normal labour is not called for, but should be practised only when there is reason to surmise that by hand or instrument organisms have been introduced. The repair of injuries produced during delivery should be undertaken with the fullest regard to aseptic and antiseptic precautions.

3. *After delivery.* A careful rit al observed during labour is too often relaxed or abandoned forthwith, whereas the maintenance of asepsis is of prime importance, and this involves the carrying out of general and local measures to that end; especial danger attaches to careless sponging of the vulva, and, as far as possible, all manual interference with the vulva or vaginal orifice during the early days of the puerperium should be avoided.

There is but time to put forward these few indications on preventive lines and to add that we, and all others interested in this profoundly important topic, must feel that there is much yet to be learned both at the bedside and in the research laboratory, and that the improvement we seek on behalf of the community, and in particular on behalf of Wales, "can only be brought about by a full appreciation of all that is known of the etiology of the disease, and an adequate sense of the responsibility on the part of all those brought into relation with the lying-in room."

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

"HAEMORRHAGIC" CHICKEN-POX.

By the courtesy of my colleagues, Dr. Alexander and Dr. Binns (the latter being in charge of the patient), I am able to submit the following notes of an interesting and very unusual case of chicken-pox.

A girl child, aged 3, was seen to be sitting up in bed eating a piece of cake; she was to all appearance perfectly well. Pulse 84, respirations 16, temperature normal. Urine clear, stools normal. Without any initial illness there had appeared some spots on her skin on November 3rd, which by November 5th had turned black. On November 6th these spots were noted to present the following approximate number and appearance: right hand 3, right forearm 9, right arm 18; left hand 4, left forearm 9, left arm 15; face 34; front of chest and abdomen 36. There were less than 150 lesions on the whole skin.

One lesion, selected for close examination, was situated near the apex of the right scapula. It was crenate in outline, irregularly lozenge-shaped, its long axis being parallel to the natural folds of the skin in this region; the appearance was exactly that of a chicken-pox vesicle recently collapsed, except that the contents were now perfectly black, and apparently consisted of dried blood. Immediately around the vesicle was an area of pale crimson skin, which in its turn was surrounded by a faint purplish area, having much the appearance of a recent bruise. The whole of this area of discoloration measured about 14 by 15 mm.; it was covered by a half-sovereign. Nearly every complete lesion was surrounded by a similar ecchymosis, and some of the aborted lesions showed a very slight but unmistakable discoloration around them. There had been epistaxis. There was a bruise under the left eye on the upper part of the cheek. No subconjunctival haemorrhages were noted. There were three black spots on the tongue, one on the lower lip. Both labia majora were ecchymosed, the left markedly so.

The child was seen again on the following day (November 7th), and her somewhat anaemic condition was remarked. Otherwise she appeared to be well, and was giving all her attention to her toys. A small subconjunctival haemorrhage was noted in each eye. The left eye was surrounded by ecchymoses or bruises apparently associated with spots. Numerous brownish bruises were noted on the right leg and some on the right arm.

The case was unquestionably one of chicken-pox of mild degree, as well as could be gauged from the number of the spots and the absence of constitutional symptoms. It seemed probable that some idiosyncrasy in the child, of which this was perhaps the first intimation, had led to these haemorrhages and bruises. I have heard of one similar case, in the person of a lady in middle life who had an attack of chicken-pox, but do not know whether she suffered from haemophilia or not. I should like to hear of similar cases.

London, S.E. W. McC. Wanklyn.

POTASSIUM PERMANGANATE IN DERMATOLOGY.

The treatment of skin diseases by potassium permanganate as advocated by S. Feldman and B. F. Ochs in the *Archives of Dermatology and Syphilis*[1] is not in any way a new form of treatment.

My friend and teacher Dr. Douglas Heath of Birmingham has been using potassium permanganate quite extensively for a number of years, not only for the skin conditions mentioned by Feldman and Ochs, but also and chiefly for the treatment of the moist type of lupus vulgaris, which it dries up in a very short time. For these cases Dr. Heath advocates the use of a saturated solution of potassium permanganate. Personally I have been using with very satisfactory results an alkaline potassium permanganate paint in the treatment of Bockhart's impetigo. I use the following solution:

R Pot. permang.	... ...	gr. xv
Sod. bicarb.	... ...	gr. x
Aquam	... ...	℥j

It is applied once a day to the lesions and skin around them after letting the pus out with a needle.

Birmingham. James Avit Scott.

[1] British Medical Journal, Epitome, November 4th, 1922, p. 334.

Reports of Societies.

PERNICIOUS ANAEMIA.

A discussion on pernicious anaemia took place at the meeting of the Medical Society of London on November 13th. The President, Lord Dawson of Penn, was in the chair.

Dr. P. N. Panton, in opening the discussion, said that he, with two colleagues, had succeeded in collecting 117 cases from the records of the London Hospital over a period of eleven years, and all but sixteen of these cases had been followed up. Pernicious anaemia was an uncommon, but not a rare condition. It ran a characteristic course, almost invariably fatal. Medicine had little or no control over the chronic condition, it appeared to play no part in the rare cases of recovery, and probably the treatment of the more characteristic cases had even less influence on their course than those in charge of them supposed. The underlying factor was hidden; it might be a single entity or a group of conditions. Pernicious anaemia was a condition of severe anaemia, to be explained neither by the history obtainable from the patient nor by a study of his clinical condition. The haemolysis was slow and continuous, and associated with the clinical condition was a characteristic blood picture, of which the main features were a severe loss of red cells (and certain changes in the cells) without a corresponding great loss of haemoglobin. It was this combination of the clinical study and the blood picture which rendered the diagnosis relatively simple. Complicating conditions were very rare, with the exception of subacute combined degeneration of the cord. There were certain definite and constant *post-mortem* changes. Associated with the clinical study were oral sepsis, achylia, and pyrexia. There was no striking evidence that oral sepsis was an etiological factor. Many of the patients with whom he had had to deal received the most thorough dental treatment, with disappointing results. Not a single case recovered as a result of the treatment of the dental sepsis. Achylia had attracted considerable attention. Pernicious anaemia might occur, though rarely, without achylia. A severe secondary anaemia, particularly if prolonged, might be associated with achylia, and if that secondary anaemia was cured the achylia might still persist. Too much attention should not be paid to achylia as a possible cause: rather he would regard it as part of a vicious circle. Conceivably it might be an important predisposing factor. Pyrexia was an extremely constant accompaniment of pernicious anaemia. It was present at one time or another in ninety of the cases included in his investigation. As a rule it coincided with exacerbations of the disease. This fact had been used as an argument for an infective agent, but the haemolysis which was going on would alone be sufficient to account for the fever. As for treatment, it was, of course, desirable that the oral sepsis should be attended to, but he was against any wholesale extraction of teeth. Of two patients shown to the Society that evening, representing two of the very few successful cases, one had marked pyorrhoea still present, and the other still had carious teeth. Vaccine treatment was practically of no value. Benefit came to the patient by treating his achylia. Treatment by splenectomy never seemed to the speaker to have any theoretical or practical justification. In his cases it was performed only in one, and the patient lived for three years afterwards. A few cases were treated by blood transfusion; this was a course which should only be adopted for some specific reason. One lady, for instance, much desired to live to see her son, who was returning from abroad, and her life was prolonged for six months by blood transfusion. It was possible that the value of treatment by arsenic had been overestimated; its apparent efficacy might depend upon the period in the "wave" of the disease at which it was administered. He described a number of conditions allied to pernicious anaemia, in which the connecting link was internal haemolysis, and in all of which the blood picture of pernicious anaemia was closely simulated.

Dr. A. Maitland-Jones, who was associated with Dr. Panton in this investigation, gave further details of the 117 cases. It appeared that the average number of remissions in each case was about two; if the number exceeded two it might go on to five or six. The average duration of remissions was about four months; a longer period than four months was uncommon, a longer period than nine months very rare. The average red cell count when the patients came into hospital was 1,300,000, and when discharged on remission 2,400,000. It might be supposed that the blood count approached somewhere near to normal during remissions, but this was not so. The recovery of the blood was not so marked as might be expected. The number of red cells during the remission period rarely exceeded 3,500,000. Yet the patient was greatly improved, and it seemed as though his feeling of well-being during remission was not so much dependent on an increase in the red cells as on an increase in blood volume. A number of cases had no remissions at all. This applied in 18 out of the 101 cases which had been followed up; the average duration of these cases was nine months from the beginning of symptoms. The average duration of the whole 101 cases from the beginning of symptoms was twenty-eight months, and from the time of admission to hospital thirteen months. Of these 101 cases 93 were dead. Of the 8 which were alive, 1 had been alive for seventeen years, 1 for fourteen years, 2 for eight years, 2 for seven years, and the others for shorter periods. One man who was brought before the Society that evening was an apparent cure; he was admitted thirteen years ago into the London Hospital, when his red cells were 700,000, and he had complete achylia. His blood count was now 5,000,000, and he still had complete achylia. Another case, a woman, was an example of arrested disease. Her blood count was 1,300,000 in 1909, and at the present time it was 4,400,000.

Dr. A. F. Hurst devoted himself to a consideration of the part played by achlorhydria in the pathogenesis of pernicious anaemia. He believed that achlorhydria was almost invariably the predisposing cause. It had been suggested that it was secondary to the anaemia, but he had collected twelve cases in which it was known to have preceded the onset of anaemia by periods varying between one and twelve years. Moreover, it had been found in the early stages of the disease when the haemoglobin percentage was still as high as 80. There was nothing specific about the achlorhydria which disposed to pernicious anaemia, as it was the absence of free hydrochloric acid, and not the cause of this absence, which was the important factor. In the majority of cases the achlorhydria was probably due to constitutional achylia gastrica—an inborn error of function. Several authors had lately drawn attention to the occurrence of pernicious anaemia as a family disease, and it seemed probable that achylia was the inherited factor. The absence of gastric juice resulted sooner or later in secondary chronic gastritis, and, even after many years, in partial atrophy of the mucous membrane. But these were secondary to, and not the cause of, the achylia, which was just as complete in the absence of all pathological changes as it was with severe atrophic gastritis. In considering the possibility of subacute combined degeneration of the spinal cord being associated in rare instances with cancer of the stomach, Bell and he had suggested that if this ever really occurred it would probably be in one of the 50 per cent. of cases of gastric cancer which were accompanied by achlorhydria, when it would be secondary to the latter, and not due directly to the cancer itself, and that it would also certainly be associated with pernicious anaemia. Achlorhydria not only favoured infection of the intestine, but it resulted in the arrival in the intestine in an unaltered condition of proteins taken in the food. The result was that the digestion of protein, though eventually complete, was delayed, and an undue proportion remained in the lower part of the ileum in a form in which it could undergo bacterial decomposition. Thus achlorhydria not only predisposed to intestinal infection, but it resulted in the provision of material which was likely to form toxins, one of which might be presumed to be haemolytic and the cause of the anaemia, another a neuro-toxin causing subacute combined degeneration of the cord, and possibly a third acting upon the bone marrow and causing it to form an abnormal type of red cell. Every patient with achlorhydria should be regarded as a potential case of pernicious anaemia. Hydrochloric acid should be given in adequate doses at every meal for the rest of the patient's life, and his teeth should be put in perfect order, and kept so by periodic treatment. The treatment of pernicious anaemia should consist in radical treatment of the oral sepsis, the administration of hydrochloric acid, the regular use of sour milk, and inoculation with a vaccine prepared from streptococci isolated from the patient's own duodenum by means of a Ryle's tube. In most cases 1½ to 2 drachms of dilute hydrochloric acid added to 4 or 6 ounces of water to make a strength equivalent to that of the gastric juice was required to produce an approximately normal curve of acidity with a fractional test meal. If lemon

juice and sugar were added the mixture made a palatable beverage. In most cases symptomatic treatment was also required for the anaemia, and he was inclined to recommend transfusion, and possibly splenectomy, in addition to the usual arsenic. With early diagnosis the prospects of successful treatment on those lines were favourable.

Dr. J. J. Conybeare said that the records of all cases of pernicious anaemia at Guy's since 1850 had been collected. Dr. French brought the series up to 1909, and Dr. Campbell and himself completed it to the beginning of the present year. The records suggested that the disease had become more common. During the period 1909–22 the average number of cases in the hospital each year was 5.4, whereas when the records were first taken the number was only 1 per annum. In the cases which he and his colleague had collected during the last fourteen years some gastro-intestinal symptoms, either vomiting, abdominal pain, or diarrhoea, occurred, concurrently with the development of anaemia and before the patients had anything in the way of arsenic, in 35 per cent. Pigmentation was present in a great many more cases than was expected. Dr. French's cases, tabulated earlier, showed 18 per cent. to have pigmentation in the skin and 3 per cent. in the mouth. In the later cases, excluding all pigmentations due to arsenic, 12 per cent. had pigmentation on the skin and 5 per cent. in the mouth.

Dr. C. Price-Jones showed diagrams to illustrate the great variations in the size of the blood cells in pernicious anaemia. In healthy persons the red cells were homogeneous; in pernicious anaemia they were heterogeneous. In this condition the basic thing was the formation of large cells which were readily haemolysed, and it was this haemolysis which gave rise to the anaemia.

Dr. H. L. Tidy mentioned a unique case which he had recently seen. At the autopsy, on the femur being cut through a sharp dividing line was discovered in the bone marrow, on one side of which, when examined through the microscope, there was an evident condition of pernicious anaemia, and on the other side one just as evident of aplastic anaemia. The same curious condition was found in the ulna and other bones.

Dr. F. J. Poynton referred to the question of anaemia gravis in children, which many authorities looked upon as aplastic anaemia, but which closely resembled pernicious anaemia in adults. What was called an aplastic anaemia in children was not purely aplastic. This disease advanced in waves and went back again, just as in adult pernicious anaemia. If it was essentially a pernicious anaemia in the young, one must eventually learn something from a study of its special features, and if it was a different disease it was equally worthy of study in relation to the other. He believed that the proper study of all these blood affections was to some extent hindered by a continued adhesion to blood pictures.

Sir Percy Bassett-Smith said that in sprue (which had been mentioned by one speaker) there was an extremely low red cell count; but sprue differed from pernicious anaemia in that the colour index was low, so that it was true secondary and not primary anaemia.

Dr. George Riddoch gave some account of the neurological manifestations and of the histological evidence *post mortem* of gross lesions found in the spinal cord, mainly, but not exclusively, in the mid-thoracic portion. Subacute combined degeneration of the cord, which had been associated by clinicians with pernicious anaemia, might appear with little or no evidence of blood changes. On the other hand, cases with gross changes of the blood might go through all the stages to death without any gross manifestations of cord involvement.

Dr. M. E. Alexander referred to the introduction in America of germanium dioxide as offering a possible method of treatment, being less toxic than arsenic, and causing in laboratory animals a distinct rise in the number of blood cells. He had employed this in six cases, and while theoretically it ought to be of use, practically the results were negative, and, as the new remedy was expensive, it was as well to put this on record.

Dr. Panton, in a brief reply, referred especially to children's anaemias. The diagnosis of blood diseases in children was extraordinarily difficult. He had never been able to convince himself that he had seen a case of pernicious anaemia in a child under 12 years of age. He would consider a low colour index to be a great argument against these children's anaemias being regarded as pernicious. He agreed that not too much should be made of the blood picture, but unless a very careful blood picture was made there would be a great deal of clinical confusion.

HYDROCEPHALUS.

At a meeting of the Edinburgh Medico-Chirurgical Society held on November 2nd, with the President, Sir Robert Philip, in the chair, Mr. John Fraser and Dr. N. Dott read a communication on hydrocephalus. The normal anatomy and physiology of the parts were first described. The cerebro-spinal fluid was produced from the choroid plexus and from the perivascular spaces. It was absorbed normally by the Pacchionian bodies, the arachnoid villi, the arachnoid mesothelial cells, and by the cortical lymphatics. The three possible factors at fault were overproduction of fluid, blockage of its channels of circulation, or diminished absorption. With the exception of the true congenital type the condition was always due to blockage, the seat of obstruction being either inside the ventricular system or between the crura and the edge of the tentorium cerebelli: overproduction of fluid practically never occurred. Factors in the etiology were birth haemorrhages, pressure by tumour, congenital syphilis, and basal meningitis. It was necessary to investigate the origin of the condition, whether the block was intra- or extra-ventricular, and if intraventricular the actual seat of obstruction. A solution of phenolsulphonephthalein was injected into the ventricles, and lumbar puncture was carried out twenty minutes later, the presence of colouring matter showing that the lesion was extraventricular, its absence that it was intraventricular. If intraventricular the seat of the lesion was determined by ventriculography, oxygen being used to replace the cerebro-spinal fluid withdrawn. *X*-ray examination of the head in different positions showed whether the obstruction was situated in the aqueduct, the foramen of Monro, or in the roof of the fourth ventricle. The operative treatment was described in detail. In extraventricular cases ligation of the carotids was stated to be the best treatment. The communication was illustrated by lantern slides, and cases which had been under treatment were shown; the oxygen apparatus was also demonstrated.

Professor Edwin Bramwell spoke of the value of ventriculography in the diagnosis of cerebral tumour. He described a case in which a woman, after an illness of ten days, had died with cerebral symptoms, a simple cyst of the choroid plexus blocking the foramen of Monro being found *post mortem*. Dr. Claude B. Ker referred to cases of cerebro-spinal meningitis in which large amounts of fluid were withdrawn by repeated puncture, and expressed the view that in these cases there was overproduction of fluid. Mr. D. M. Greig and Miss Herzfeld emphasized the importance of syphilis in the etiology and the value of novarsenobillon in treatment. Dr. Traquair and Dr. J. S. Fraser also spoke, and Mr. John Fraser replied.

Influenza, Encephalitis, and Cerebro-spinal Meningitis.

Dr. Alexander James then read a communication on some etiological considerations in influenza, cerebro-spinal meningitis, and epidemic encephalitis. Dr. James believed that recent outbreaks of influenza were simply recrudescences of the epidemic which began in 1889. Charts of the mortality and notification records were shown demonstrating the close relationship which the cerebro-spinal meningitis epidemics of 1907–08 and 1914–19 had with the various outbreaks of influenza since 1889. The similarity was less striking now than formerly, since epidemic encephalitis had been recognized as distinct from cerebro-spinal meningitis. Epidemics of these two conditions often occurred together and had many symptoms in common. The inference was that their etiology was similar. Referring to the frequency with which outbreaks of these diseases were associated with outbreaks of influenza, Dr. James expressed the view that influenza had a devitalizing influence on the central nervous system, lowering its resistance to the organisms or toxins producing these conditions. In his opinion disseminated sclerosis and paralysis agitans sometimes occurred as sequels of epidemic encephalitis.

Professor Edwin Bramwell suggested that influenza encephalitis and cerebro-spinal meningitis were possibly predisposed to by some common factor. Outbreaks of poliomyelitis were sometimes related to those of cerebro-spinal meningitis though their etiology differed. He had never met with a case of disseminated sclerosis arising as a complication of encephalitis. Dr. Claude B. Ker also thought that influenza, cerebro-spinal meningitis, and encephalitis were essentially different diseases, possibly with a common predisposing factor.

Clinical Cases.

Professor Lovell Gulland showed two cases. One was a case of Addison's disease with a previous tuberculous history; the patient was improving under tuberculin and large doses of adrenaline. The other case was that of a woman of 47, who had developed polycythaemia vera with the onset of the menopause; she was improving under *x*-ray applications to the long bones.

Dr. Cranston Low showed several cases of diseases of the skin, including one of lupous carcinoma, which after scraping was being treated with massive doses of radium.

JOINT MEETING IN MANCHESTER.

A joint meeting of the Manchester Medical Society and the Liverpool Medical Institution was held in the University of Manchester on November 1st, with Sir William Milligan in the chair.

The Ductless Glands and Skin Affections.

Dr. R. W. MacKenna (Liverpool) read a paper on "The relation of the ductless glands to some affections of the skin." He began by pointing out that the subject was one beset by difficulties, but he believed that the elucidation would come from clinical observation rather than from laboratory experiments. After dealing with the definite cutaneous changes associated with hypo- and hyper-thyroidism he showed how thyroid substance had been administered, more or less empirically, in psoriasis, ichthyosis, eczema, lupus, keloid, sclerodermia, and other diseases of the skin, sometimes with striking benefit, but sometimes with little apparent result. He then proceeded to review the action of the other ductless glands, mentioning particularly the influence of the parathyroids on calcium mobilization, the action of the suprarenals in influencing pigmentary changes in the skin, and their possible relationship to acanthosis nigricans and neuro-fibromatosis. Finally he discussed the internal secretion of the gonads, more particularly with reference to their effect on the growth of hair; hirsuties in women he definitely correlated with diminished ovarian secretion.

Angina Pectoris.

Dr. John Hay (Liverpool) offered some observations on a case of angina pectoris in which the electrocardiogram showed indications of a right bundle lesion, and in which the dominant site of the pain was epigastric. He discussed the significance of abnormal electrocardiograms in patients suffering from angina, and the view that an electrocardiogram showing marked deviation from the normal Q.R.S. complex was an indication of cardio-sclerosis. In the case described the electrocardiogram was of the type indicating some interference with the right branch of the bundle. Examination revealed no organic block, but there was some increased fibrosis and atheroma of the coronaries. Of 25 anginal patients who were electrocardiographed, 10 showed definite abnormality in the Q.R.S. complex. Of these, 8 died, as compared with 15 anginal patients with normal electrocardiograms, of whom 6 died during a similar period of time—that was a comparison of an 80 per cent. with a 40 per cent. mortality. From these and other figures the justifiable inference was that in angina pectoris an electrocardiogram showing branch bundle lesion or arborization block made the prognosis much graver. Reference was made to those cases in whom epigastric pain was the dominant symptom. Numbers were given showing the ratio of incidence to be 16 epigastric anginas in a total number of 288 patients. In the one patient before mentioned the pain was primarily epigastric in site, but examination revealed no lesion of the liver, gall bladder, or gastro-intestinal tract to account for the pain. Special attention was drawn to the importance of angina minor, the earlier manifestations of which are unobtrusive but significant, more particularly the substernal oppression or feeling of substernal distension which is induced by effort and which disappears with rest.

Indications for Cholecystenterostomy.

Mr. T. C. Litler Jones (Liverpool) discussed the indications for cholecystenterostomy. His usual practice, he said, was to anastomose the gall bladder to the duodenum, and in one case where a fistula was found between the gall bladder and the colon the fistula was re-formed with satisfactory results. This operation was of considerable value in relieving the symptoms in cases of malignant disease of the head of the pancreas. In cases where difficulty was experienced in removing stones from the common duct he had found the transduodenal route a good means of access. The duct ran for about half an inch in the wall of the bowel, and could be safely incised for this distance in removing stones. It might be difficult to find the papilla, but by using a probe or pressing on the duct above it could generally be identified. The pains so commonly seen after cholecystectomy might be due to the constant flow of bile into the duodenum, due to the relaxation of the sphincter of Oddi.

CARDIFF MEDICAL SOCIETY.

At a meeting of the Cardiff Medical Society held on November 6th Professor Ewen J. Maclean gave his presidential address on puerperal infection mortality in Wales. The address is printed this week at page 975.

Colloidal Silica.

Dr. W. H. Tytler, bacteriologist to the National Memorial Association, gave a demonstration in the absence of Professor S. L. Cummins. Recent work in the Tuberculosis Department of the School of Medicine and the Welsh National Memorial Association showed, he said, that silica colloid had a marked power of inhibiting the action of "complement," and thus prevent the lysis and destruction by bacteria of the blood fluids. The specimens illustrated how completely the lytic effect of fresh blood upon typhoid bacilli was stopped by the presence of colloidal silica. In one series of preparations serial dilutions of a typhoid broth culture had been mixed with an equal volume of sterilized normal salt solution, and from this mixture a measured volume had been added to an equal amount of fresh normal human blood, the preparations being then placed in the incubator at 37° C. for one hour and forty minutes. At the end of that time the whole contents of each tube were transferred to the surface of a trypsin agar slope and incubated over night. Very few colonies developed on the agar, showing that the bacilli had been killed by the lytic action of the blood.

In the next series similar serial dilutions of a typhoid broth culture had been mixed with an equal volume of silica colloid, and afterwards equal volumes of the mixture and fresh human blood were prepared and treated as in the former case. In this series the trypsin agar slopes were seen to be covered with a thick growth of typhoid bacilli, showing that in spite of the presence of the lytic substances of human blood the bacteria had been preserved from destruction during the period of one hour and forty minutes' contact at blood temperature. That this prevention of lysis was due to interference with "complement" was shown by the next series of tubes in which the complete inhibition of lysis of sensitized red blood corpuscles by the presence of silica colloid was demonstrated.

Dr. Tytler concluded that these observations might, perhaps, have a bearing on the action of silica in leading to the establishment of bacterial diseases in the tissues to which attention had recently been drawn by Gye and Kettle; while the inhibition of cytolytic activity noted might explain the fact, observed by Mavrogordato in South Africa, that macrophage cells containing ingested silica dust were protected from "autolysis" and digestion in the lymph spaces.

X-RAY DIAGNOSIS OF GASTRIC AND DUODENAL CONDITIONS.

The 700th ordinary meeting of the Brighton and Sussex Medico-Chirurgical Society was held on November 2nd, with the President, Mr. A. J. Hutchison, in the chair, when Dr. W. Barrington Prowse read a paper on "*X*-ray diagnosis of some abnormal conditions of the stomach and duodenum." In introducing the subject he made a point of its increasing usefulness, although there are many who are inclined to discount its value, and predicted that further experience, together with improvement in technique and apparatus, would increase its value still more. He gave a warning against too absolute a value being attached to the *x*-ray picture; the diagnosis was a personal matter, involving intimate knowledge of radiographic procedure and experience, combined with careful observation and interpretation of diverse signs. All radio-

graphic evidence should be considered together with, and in the light of, the clinical aspect of the case. Some reference was then made to the opaque meal, its composition and method of administration, and, following that, a description of the anatomy and radiographic appearances of the normal stomach. It was made clear that there is more than one type of stomach, and that the normal varies within moderately wide limits, and to a large extent in conformity with the general type of the individual. Then various points were dealt with which have to be considered in estimating the normal or abnormal condition of any stomach: these are its position, form, size, outline, tone, mobility, peristalsis, and motility, and they were described and considered in detail, and reference was made to circumstances which influence them. Dr. Prowse then turned to the particular consideration of some abnormal conditions. He referred first to gastroptosis, and deprecated its being looked upon as a pathological entity. It was an abnormal condition, not necessarily of itself giving rise to definite symptoms, but generally associated with, or secondary to, other conditions—especially organic lesions of an obstructive kind, though a number of cases appeared to be of mechanical, or possibly developmental, origin—or secondary to conditions of general health and chronic functional disturbance of the digestive organs. Gastric ulcer was then dealt with. He said that there were four classes: (1) superficial erosions, (2) penetrating ulcers, (3) perforating ulcers, (4) carcinomatous ulcers. The first were the most difficult to demonstrate, because they do not give rise to direct signs. The direct signs of ulcer were the barium-filled ulcer crater, and its accessory pocket, when perforating. The indirect signs included the various forms of spasm, from the incisura to hour-glass contraction, organic hour-glass, undue retention of food, alterations in peristalsis and tone (hypotonus), lessened mobility, and other minor signs. These were all considered in detail, together with their significance. The indirect signs were practically pathognomonic; the indirect required very careful interpretation and weighing in conjunction with the clinical evidence. Dr. Prowse then spoke of gastric cancer. X-ray diagnosis of this disease was of prime importance; the majority of gastric cancers gave radiological evidence of their presence, of their situation, and very largely of their extent. The most important sign of gastric cancer was alteration of contour, or filling defect; this must be fixed and permanent. Other signs were alterations in capacity of the stomach, diminished flexibility of stomach wall, patency or obstruction of the pylorus, changes of peristalsis, and alterations in motility of gastric contents. Finally, duodenal ulcer was dealt with. After a brief description of the anatomy and radiographic appearances of the duodenum, the irregularities which might be present in abnormal conditions were indicated. These affected outline, especially that of the first part of the duodenum, motility, and peristalsis. The signs of duodenal ulcer, like those of gastric ulcer, were (1) direct and (2) indirect. The only direct sign was deformity of outline; this was of various types, but the one essential characteristic of them all was persistence throughout examination. The indirect signs of duodenal ulcer were found in the stomach, and were concerned with changes in tone, peristalsis, and motility; gastric spasm might also be present. All these signs were described and considered in detail and their significance indicated. One combination of indirect signs was almost pathognomonic of duodenal ulcer—namely, hyperperistalsis associated with normal outline, though perhaps increased capacity of the stomach and undue retention of food. The paper was illustrated by lantern slides and reports of cases.

Dr. Donald Hall showed a lad, aged 19, suffering from general paralysis of the insane and locomotor ataxy. The patient was the fifth of nine children, seven of whom were alive, the last two having been born dead. His father had tabes dorsalis and had been blind for nine years. The only stigma of congenital syphilis in the patient was a sunken bridge to the nose. He had had difficulty in walking for several months, and more recently his mother said he had become "nasty-tempered" and untidy in his habits. Clinically he showed gross ataxy of all four limbs, inactive pupils, absence of Achilles jerks, the knee-jerks still being present although diminished, double extensor response, tremor of face and tongue, characteristic speech, and mental enfeeblement. That day he had had a severe gastric crisis. Dr. H. M. Galt reported that the Wassermann test was ++++ both in blood and in cerebro-spinal fluid; the gold test was positive, and cells in the cerebro-spinal fluid were 35 per cubic millimetre.

Reviews.

RESPIRATION.

Under the simple and inclusive title *Respiration*[1] Dr. J. S. Haldane of Oxford has published his Silliman Memorial Lectures at Yale University. Not only does the volume contain an excellent exposition of the subject of respiration by a worker who has long been regarded as one of the greatest living authorities in this field, but it is stamped throughout with the author's personality, and is one of the most peculiarly individual books that has ever been published on a purely physiological theme. It is in the main a development of a smaller book also published by the Yale University Press in 1917 under the title, *Organism and Environment as illustrated by the Physiology of Breathing*, in which Haldane dealt with the more general conclusions to which his life-long investigation of the problem had led him. The special merit of the volume now under review lies in the fact that it is no mere compilation and critical discussion of previous work, but is a fresh and original attack on a most interesting and, from a medical point of view, highly important problem.

The whole atmosphere of the book carries one back to a previous generation when authors did not fear to discuss their results and deductions in a broad philosophic way, not merely in relation to the organs and tissues examined, but to the organism as a whole and to its place in the scheme of Nature. To quote from the preface: "The time has come for a far more clear realization of what life implies. The bondage of biology to the physical sciences has lasted more than half a century. It is now time for biology to take her rightful place as an exact independent science: to speak her own language and not that of other sciences." But Dr. Haldane does not content himself with what many may regard as mere quixotic tilting at a frigid mechanistic conception of life, at the well-nigh ridiculous position taken up by many workers obsessed by the so-called facts of chemistry and physics; he has made a real and successful attempt to bring physiology and medicine into closer communion.

He opens with an historical introduction in which, in the space of fourteen pages, he gives a succinct and most readable account of the development of the subject from the time of Boyle and Mayow up to modern times. Room, however, might have been found for reference here to the interesting and ingenious work of Crawford, who claimed, with perhaps a certain amount of justification, that he had anticipated the discoveries of Lavoisier. This is followed by a couple of chapters on the regulation of breathing, where both the chemical and nervous control are fully dealt with. The discussion of the Hering-Breuer reflex in relation to "shortness of breath" in many nervous cases is very interesting. It may surprise some readers to learn that the respiratory centre so often referred to has not been anatomically determined and that the exact meaning to be attached to the term is still doubtful. Two chapters are devoted to the blood as a carrier of oxygen and of carbon dioxide. Although varying composition and concentration of the salts contained in the blood may account for varying dissociation curves of the oxyhaemoglobin in whole blood, the author maintains there can be no escape from the conclusion "that in different individuals of the same species as well as in different species the haemoglobin molecules are different."

In two more chapters Dr. Haldane discusses in detail the effects of oxygen want and the causes of anoxaemia. Both of these chapters are full of material of first-class clinical value. He believes that anoxaemia is frequently present in disease, but is seldom recognized. A detailed account of the methods of treatment of the condition of anoxaemia is also given. He writes here, "If there were only one clinical lesson derived from a perusal of this book I hope it would be that anoxaemia is a very serious condition." The important question of the relation of the reaction of the blood to respiration is discussed in Chapter VIII. The general conclusion reached is that the regulation of breathing in man during rest, under normal conditions, is regulation of the blood reaction. The actual changes involved are, of course, very small; so small indeed that, as the author says, "one might as well try to cut delicate histological sections with a blunt carving knife as try to demonstrate ordinary very minute changes in blood reaction

[1] *Respiration*. By J. S. Haldane, M.D., LL.D., F.R.S. New Haven: Yale University Press; London: H. Milford. 1922. (Med. 8vo. pp. xviii + 427; 104 figures. 28s. net.)

by the existing physical and chemical methods." Acidosis and alkali reserve are also discussed here in detail.

In Chapter IX the problem with which Haldane's name has so long been associated—namely, gas secretion in the lungs—is dealt with. There is a very clear statement of his own views and a fair criticism of those who do not accept his explanations. He adheres to his position in no unmistakable terms. "All the facts, therefore, and not merely our direct measurements, go towards showing that oxygen secretion is a most important physiological factor, not merely under exceptional circumstances, but during ordinary life at sea level." He has a very pretty jibe at the so-called purely objective methods at the end of this chapter. The next is devoted to the relation of blood circulation to breathing. It is maintained that the general circulation is correlated with the gas pressure in the capillaries, and hence it is neither the heart nor the bulbous nervous centres which govern the circulation rate, but the tissues as a whole. The regulation is as accurate and delicate as is the case in breathing. The conditions grouped together under the title "shock" are here discussed.

In Chapter XI the influence of the more commonly occurring impurities in air are examined—lighting gas, blackdamp, afterdamp, smoke, dust, etc. Many practical details in connexion with the industrial aspect of the problem are considered. Chapter XII deals with the effects of high atmospheric pressures and the practical applications of the observations made in special chambers for diving and caisson working; and Chapter XIII describes the effects of low atmospheric pressure, with special reference to mountain ascents and aeronautics.

Dr. Haldane sums up his general conclusions in a final chapter which is undoubtedly one of the most original and stimulating in the whole book. It clearly states his position, it gives his philosophy, and it reveals a man who has the courage to face his facts and to interpret them in the light of his own experience and reason. "The universe is a spiritual universe, and not a dualistic universe of matter and mind."

The book, alas! is *not* provided with an index.

INFECTIONS OF THE HAND.

THE sum-total of disability and loss of wage-earning capacity resulting from whitlows and suppuration in the palmar spaces is so great, and the proper treatment is so often delayed, that a detailed study of *Infections of the Hand*,[2] such as that by Dr. ALLEN B. KANAVEL, should find very many readers; indeed, the book has already reached its fourth edition. Unfortunately the pages are a little overloaded with case records, and notwithstanding the thorough basis of anatomical and experimental demonstration, with commendable repetition of important points and a multiplicity of illustrations, the book is not an easy one to read, though it well repays even impatient study. The fact of the matter is that the number of possible paths and routes of extension for pus in fingers, palm, and forearm is great, and although the author's injection experiments seem to show definite paths, yet in practice the permutations and combinations of extension obscure the track. Nothing but good can result from memorizing the diagrams scattered over the pages; nothing but good can follow the employment of the sites for incisions indicated; and certainly much function in hand and fingers will be saved by following out the precepts for after-treatment in the chapter on exercise.

The author has a good deal to say about the prevalence of hand infections; yet, in the factories in which he investigated the cases, only about 20 per cent. of hand injuries became infected. Apparently about 6 to 10 per cent. of all industrial disability is due to hand infections. It is no wonder that he insists on the importance of early treatment of even the slightest scratches or abrasions. As a matter of fact, he found that the serious accidents rarely resulted in sepsis, because they necessitated immediate recourse to the doctor. An interesting point is brought out in reference to the relation between the prevalence of such an infection as tonsillitis and that of hand infections, which seem to follow much the same curve.

It would be a service to industrial surgery if a very small abstract of the volume under review—say, just the summaries at the end of each chapter or section, together with the diagrammatic illustrations—were published as a pamphlet at a low price.

Dr. Kanavel's book itself deserves to be widely known to the medical profession.

[2] *Infections of the Hand.* By Allen B. Kanavel, M.D. Fourth edition. Philadelphia and New York: Lea and Febiger. (Med. 8vo, pp. xiii + 500; 185 figures. $5.00 dollars.)

A MANUAL OF ANATOMY.

A Manual of Practical Anatomy,[3] by Professor WALMSLEY of Belfast, is the latest addition to the number of books designed to serve the student as a guide in the dissecting room. Considering how old are the study of anatomy and the practice of dissection it is somewhat surprising that there should be room for so many textbooks dealing with these subjects. The explanation, we believe, is that a considerable difference of opinion exists, not as to the facts of anatomy or the advisability, not to say necessity, of dissecting, but as to how much assistance it is desirable to give a student, how best that assistance can be given, and, lastly, how much a student is able to learn and retain in the limited time at his disposal. Each teacher has his own views, although probably these would not be so divergent were the curriculum longer and the mental capacity of the student a more constant quantity. Professor Walmsley appears to us to have adopted on these questions a very fair and judicious attitude. He appreciates the danger of giving too much assistance, and impresses upon the student the wisdom of making his own dissections and observations, encouraging him to that end by the provision of most explicit instructions and by withholding from him those elaborate and artistic illustrations which so sorely tempt him to dispense with the labour of dissecting. The illustrations are in the main simple line drawings, which give the conscientious student all the assistance he requires. We consider Professor Walmsley has succeeded in his aim to a noteworthy degree, and we can assure any student who works steadily through these volumes that he will acquire a thorough and sufficient knowledge of the main facts of anatomy, and this in a way which is more likely than any other to ensure remembrance.

The subject scarcely lends itself to originality in the method of its presentation, but whenever an opportunity occurs of breaking away from tradition the author is not slow to take advantage of it, as, for example, in the illustrations of the dissection of the lesser sac of the peritoneum and in the schematic figures showing the anatomy of the perineum—always a difficult region for the student to understand. A further extension of such examples may be suggested in view of the likelihood of later editions, for there is a tendency among writers of such textbooks to present the anatomy of the various regions always from the same point of view and to appraise too lightly the simple schematic figure as a help to the student.

The text and illustrations of the *Manual* under review attain a high standard of accuracy and of interest, and we have no hesitation in warmly commending it to the student as a thoroughly sound and trustworthy work which provides him with all that he is ever likely to require either in the examination room or in the course of his future career as a medical practitioner.

CHLOROFORM ANAESTHESIA.

THE aim of Dr. GOODMAN LEVY in writing his book on *Chloroform Angesthesia*[4] is to bring that method into close touch with the experimental sciences. He treats very fully of chloroform from the points of view of its physical properties, its pharmacology and toxicology, its physiology, the effects of deprivation of oxygen and the onset of asphyxia in its administration, the mechanism of its absorption and elimination, methods of administration, and delayed poisoning resulting from it.

The book thus goes deeper into fundamentals than is usual in a merely practical treatise, and will on this account be welcomed by all anaesthetists who are interested in the sciences which have made possible their technical skill in administration. That most of the alarming symptoms that may be met with in the course of the administration of

[3] *A Manual of Practical Anatomy.* In three parts. By T. Walmsley. Part I: The Upper and Lower Limbs. Part II: The Thorax and Abdomen. Part III: The Head and Neck. London: Longmans, Green, and Co. 1920–21–22. (Demy 8vo. Part I, pp. 176; 59 figures; 9s. net. Part II, pp. 233; 82 figures; 10s. 6d. net. Part III, pp. 272; 96 figures; 10s. 6d. net.)

[4] *Chloroform Anaesthesia.* By A. Goodman Levy, M.D., M.R.C.P. With a foreword by A. R. Cushny, M.D., LL.D., F.R.S. London: J. Bale, Sons and Danielsson, Ltd. 1922. (Demy 8vo, pp. viii + 159; 9 figures. 7s. 6d. net.)

chloroform occur in the early stages of anaesthesia is common knowledge, and therefore the author's statement that when chloroform is administered by a careful anaesthetist danger lies more in under- than in over-dosage will not cause surprise. The grounds on which the statement rests are fully gone into. Ventricular irritability is most marked under light, and least under deep, anaesthesia. There is little experimental evidence that cardiac inhibition has anything to do with cardiac syncope, and it is by no means clear that sudden death under chloroform is due to depressive action of the drug on the vasomotor centres. Some other explanation must be found, and the most probable is the onset of ventricular fibrillation. To produce the various forms of stimulation known to lead to ventricular extra-systoles under chloroform anaesthesia the narcosis must be light; they are difficult to evoke, and have never been known to progress to the usually fatal condition of ventricular fibrillation, when anaesthesia is deep. The human subject can recover from a first and even, though rarely, from a second attack of ventricular fibrillation, but the condition is extremely grave and can best be avoided by giving a sufficiently concentrated vapour from the very commencement of the chloroform induction. Administration must be regular as well as sufficient in vapour strength, and, if struggling occurs, the administration should be continued and the vapour strength increased, but the opposite course is commonly taught. We suspect that medical anaesthetists may perhaps have some lessons to learn from veterinarians; we understand that in horses a very stiff dose is safer and is habitually used, whereas in dogs and cats the strength of the vapour must be low.

Dr. Levy's book deserves recommendation, even though it does not settle the controversy as to the indications for chloroform and ether respectively. There are still certain cases in which chloroform is clearly indicated as the drug of choice; but if there must be a routine anaesthetic, then ether is to be preferred until some other anaesthetic that can be said to be ideal in every case has established its reputation.

HEALTH SERVICE IN INDUSTRY.

In his book on *Health Service in Industry*[5] Dr. W. Irving Clark, Junr., gives a very clear and succinct account of the best methods for investigating and improving the health of the workers in factories. He describes what may be regarded as almost an ideal system, which is necessarily somewhat expensive, but such a system is in actual operation in many large American factories. Dr. Clark suggests that in a factory of 3,000 workers there should be one full-time doctor, two part-time doctors, and three nurses. Part-time dentists and ophthalmic surgeons should also be available. He estimates that a service such as this, with the necessary equipment of dispensaries and medical supplies, would cost about 6 dollars a year per worker; he states that in actual practice a number of factories have been found to expend about 5 dollars, though in some establishments it reached 11 dollars.

And what is the return for this considerable outlay? So far as estimates can go it is more than equivalent to it. First, each applicant for work is submitted to a thorough medical examination, including tests for all the principal joints in the body, and he is graded in one of four classes, according to his health and strength. Thereby the firm is enabled to select suitable applicants for various kinds of work, and to reduce its labour turnover, which is always a very expensive item. Periodical examination of the employees, coupled with inquiries into cases of sickness and accident, and proper treatment of any injuries incurred during work, reduce the time lost from sickness and the expense of compensation. Maintenance of the best conditions of lighting, heating, ventilation, and sanitation in the factory not only directly promotes the health and efficiency of the workers, but it increases their goodwill and contentment, and constitutes a bond between employers and employees. These and other advantages secured by a complete medical service are undeniably of enormous value to the workers, and it is to be hoped that in course of time they will become available in all the large factories of this country; but alas, in how many do we find them at the present day?

An elaborate medical service is impossible in small factories, which, after all, constitute the majority of the industrial establishments in this country and in America. Dr. Clark points out that in them most of the service suggested can be carried out by means of a part-time doctor, backed up by a trained assistant from the ranks of the factory workers. In a factory of 1,000 workers a full-time nurse should be employed, for, in addition to the treatment of minor injuries and cases of sickness, she should be made responsible for maintaining accurate records. For this purpose a number of suitable forms and tables of directions are given by Dr. Clark. In fact, his book is full of practical details which could only have been collected as the result of long personal experience. On every ground, therefore, it is cordially recommended to everyone interested in the welfare of our industrial classes.

[5] *Health Service in Industry.* By W. I. Clark, Junr., M.D., F.A.C.S. New York: Macmillan Co. 1922. (Cr. 8vo, pp. 168; 10 figures. 9s. net.)

A GUIDE TO INSURANCE MEDICAL PRACTICE.

Insurance practitioners, by their want of acquaintance with the regulations which govern medical benefit under the Insurance Acts, sometimes throw a great deal of unnecessary work on the shoulders of those who assist in administering the Acts, and especially upon the members of their own Panel Committees and Medical Service Subcommittees.

The ordinary busy doctor may grudge the time and often has not the inclination to refer to the official regulations when in doubt as to his duties, nor does the legal terminology of these documents offer him any attraction to do so. Consequently he will welcome *Medical Insurance Practice*[6] as a handy reference book, giving a concise yet readable interpretation of the National Health Insurance Acts and regulations, with an authority which, though not claiming to be official, is based on information obtained at the Ministry of Health.

The scope of the work undertaken by Mr. R. W. Harris and Mr. L. S. Sack may best be indicated by a brief summary of its contents. The first chapter gives an introductory sketch of the general field of insurance practice and of the relationship of the medical man towards the insured person. The second chapter describes the responsible authorities and the relationship of the practitioner towards them; the third and fourth chapters deal respectively with insured persons for whose treatment the practitioner is primarily responsible, and those who are on other doctors' lists. Chapters V and VI explain the limitation of doctors' lists, and the position in regard to deputies, assistants, and partners. The four following chapters deal with the nature and scope of medical treatment and attendance; prescribing and the supply of drugs and appliances; certificates of incapacity, and records of illness. The relation between practitioners and the regional medical staff is discussed in Chapter XI. Four chapters are devoted to remuneration, and three to complaints, appeals, and disciplinary action. The last two chapters treat of withdrawal from insurance practice, the transfer of practices, and some miscellaneous matters. The appendices give extracts from official documents, and there is a comprehensive index.

Prefaces commending the work to insurance practitioners at large or to particular groups of practitioners are contributed by Dr. H. B. Brackenbury, Chairman of the Insurance Acts Committee; Dr. H. G. Dain, Chairman of the Conference of Local Medical and Panel Committees; Dr. H. J. Cardale, Chairman of the London Panel Committee; Dr. J. P. Williams-Freeman, Chairman of the Rural Practitioners' Subcommittee of the Insurance Acts Committee; and by Dr. J. R. Drever, Scottish Medical Secretary of the British Medical Association.

The authors are to be congratulated on the manner in which they have accomplished their object, and insurance practitioners will find this handbook very helpful. The chapters relating to the issue of certificates and charging fees to insured patients may be quoted as good examples of clear information on points that are constantly being misunderstood by panel doctors. The information on transfer of practices in Chapter XIX does not seem to be quite clearly enunciated: the concession that the Insurance Acts Committee has so strongly urged upon the Ministry of Health has now been granted and a great grievance removed. We should like to see added in any future edition a clear statement of the practitioner's duty to an insured patient whose name is removed from his list as from some previous date.

We recommend Panel Committees to consider in their own interests how they may best bring this excellent work before the notice of their constituents.

[6] *Medical Insurance Practice.* By R. W. Harris and L. S. Sack London: Scientific Press, Ltd. 1922. (Cr. 8vo, pp. xiv + 327. 7s. 6d. net.)

THE ANNALS OF MEDICAL HISTORY.

The portrait of William Hunter on the cover of the summer number of the *Annals of Medical History*[1] illustrates Dr. Thomas McCrae's account of the two brothers, William and John, whom he compares, showing reason to regard William as not so much the inferior of his younger brother as is perhaps generally thought. This number is prefaced by the frontispiece of Jean Riolan's *Manual of Anatomy*, which also supplements an article with fine illustrations—that of Dr. F. R. Packard on Guy Patin and the medical profession in Paris in the seventeenth century. Guy Patin's fame must rest, so the editor is convinced, not so much on his professional writings as on his outspoken letters, which were published eleven years after his death and contain reflections on those in high places, including Richelieu and Mazarin. Dr. H. Viers gives an account of Cardinal Nicholaus Cusanus (1401–64), like Roger Bacon, a pre-Renaissance scientific seer much in advance of his time, and reproduces a translation, provided by the late Sir William Osler, of his *De Staticis Experimentis*. The life and work of Louis Daniel Beauperthuy, who, as was shown in these columns some years ago, may be considered to be the father of the doctrine of insect-borne disease, are sketched by Dr. Casey A. Wood, who spent the winter of 1920–21 in British Guiana within sight of Beauperthuy's grave, and has therefore been enabled to verify some published statements, and to correct others, relating to this pioneer in the now established part played by the mosquito in the spread of disease. In a short but attractively written article on the treatment of convulsions (tetany) with calcium in the seventeenth century, Dr. P. G. Shipley of Baltimore, who has done so much work on experimental rickets, relates how in the first year of the reign of William and Mary Dr. Walter Harris, their physician, treated empirically the disease afterwards known as tetany with calcium salts according to the best science of his day. Sir Richard Blackmore, a voluminous writer of verse and prose, some of which was intended to counteract the gross licentiousness of the drama and poetic literature, and to reprove the wits for their immorality and irreligion, is now probably remembered chiefly for the revenge taken on him by Pope, Codrington, Garth, and Steele. As a corrective to the general impression of Blackmore as a pompous and stupid pedant it is therefore well to have Dr. T. H. Toomey's justification of this physician, based on original records unknown to his earlier biographers. His medical writings are described as suffering from a lumbering style, and as having not only omitted the aphorisms of the Fathers of Medicine but insisted on the necessity of Aesculapians being endowed with eyes to see and souls to comprehend. In his attractively written narrative "What was Kappa Lambda?" Dr. Chauncey D. Leake touches on the psychology of secret medical societies, and gives an account of "the Kappa Lambda Society of Aesculapius," founded by the idealistic Dr. Samuel Brown at Lexington in 1819 to improve the ethics and mutual relations of medical men; established with these high ideals and with branches scattered over North America it is sad to find that it came to grief within twenty years, not without acrimony and scandal. There is a short note on Benjamin Franklin's invention of bifocal spectacles in 1785; as usual the editorials provide interesting reading.

[1] *Annals of Medical History*. 1922. iv, No. 2. Edited by F. R. Packard, M.D. New York: Paul B. Hoeber. (Yearly subscription, [illegible])

NOTES ON BOOKS.

In *Difficulties: An Attempt to Help*[2] Mr. Seymour Hicks gives to young men advice expressed in the simple and friendly language that every father may use to his son. Too often, however, the British father, restrained by shyness and self-consciousness, fails to provide his son with the warnings that he knows are so sorely needed; indeed, to discuss intimate details with a boy "who has all the goodness of his mother's nature shining through his eyes is perhaps one of the most difficult tasks a father has to face"; it is for this reason that Mr. Seymour Hicks's series of seventeen talks, mainly addressed to boys about to leave school for their life's work, supply a definite want. The subject-matter covers the large field of the physiology of healthy life, religion, occupation, sport, gambling, personal finance, the choice of friends, reading and recreations, drink, marriage, sexual matters, and blackmail. Throughout the kindly and shrewd admonitions there runs the brightening thread of humour, which is happily described as a sixth sense—the greatest of our senses, and the motif of genial sympathy with the weakness of poor human nature. The care of the teeth with the use of dental silk and quarterly visits to the dentist is insisted on; smoking is permitted, but a number of wise cautions are appended, and on the whole it is held that were tobacco banished from the country it would be an advantage, though in that event "there would be fewer throat specialists and 'the lost chord' might never have been written." The chapter dealing with matters of sex, which was admittedly hard to write, is the most important of them all. Continence is first enjoined, with commonsense recommendations on the value of physical fatigue as a help; then the results of venereal disease are sketched, and the necessity for preventive measures is emphasized, though the details are not given, reference to Mr. H. M. Robson's book, *Sexual Disease and Protection*, and the publications of the Society for the Prevention of Venereal Disease being made for this purpose. The author has some very plain words on the vital importance of early skilled treatment being sought should infection be contracted. The medical details upon which Mr. Hicks ventures are correctly given, and we can commend the book as full of common sense and wise advice, all the more likely to be effective because expressed in an unconventional way.

[2] *Difficulties: An Attempt to Help*. By Seymour Hicks. London: Duckworth and Co. 1922. (Pp. 318; one plate. 10s. 6d.)

Paraguay, among the South American States, is that probably of which the average Englishman knows least, which is saying a good deal. It was therefore with some expectation of instruction as well as amusement that we opened *The Golden River*,[3] by Major J. W. Hills, M.P., and Ianthe Dunbar. We ought perhaps to have been warned by the name of the historian of fly fishing for trout that it would be a book mainly about fishing. The fish the party of four—two men and two women—went out to catch was the dorado, a big fish (several over 40 lb. were taken), a very sporting fish, fighting as gamely as the salmon, displaying similar tactics, and having a pink flesh very good to eat. It is not a salmon (it belongs to the Characinidae); it does not go to the sea, and it is doubtful whether it migrates at all. Where it spawns is not known, but it has fifteen hundred miles of waterway from north to south and as much from east to west to choose from. Later on, when some of the party visited the Chaco, we hear a little of the birds of that great plain. None of the party seem to have been ill, though mosquitos were numerous, and sandflies in clouds found them as much of a treat as Paget, M.P. Mosquito veils by day and nets by night were essential, and one of the writers—a lady—praises citronella, by which is probably meant citronella oil, which has a considerable reputation for driving off mosquitos; it is sometimes mixed with carbolic acid. It is, we believe, desirable to get the oil made under the direction of the Ceylon Government. The book is well illustrated, mostly by photographs, but there are some pleasant pencil sketches in the text.

[3] *The Golden River*. By J. W. Hills, M.P., and Ianthe Dunbar. London: P. Allan and Co. 1922. (Demy 8vo, pp. 187; illustrated. 10s. 6d. net.)

Professor S. Lyle Cummins has written in verse eight little plays for children.[4] Each of the three volumes amongst which the plays are distributed is prefaced by excellent hints on how to produce children's plays; and the little books are made additionally attractive with illustrations by G. L. Stampa. The author evidently recognizes the innate strain of cruelty in children, and nearly all the subjects he has selected are of the blood-thirsty or blood-curdling variety. The blood-curdling effect is increased by some of the professor's descriptions, as in the remark of Bluebeard about the heads of his former wives in the chamber of horrors:

> "And just to ensure that they always look nice?—
> I know 'tis expensive—I keep 'em . . . *on ice*."

We are not sure that Professor Cummins is wise in his "Forewords," and in sundry passages in the plays, in making cryptic allusions to current political topics. A modern juvenile Bluebeard may understand the couplet:

> "In destroying poor Bluebeard you drive the last nail
> In the coffin of 'power in the hands of the male.'"

Or the line:

> "And the masculine dies at the hand of the *male*."

But, as the mouse says to the Sleeping Beauty, "I don't think!"

[4] *Plays for Children*. By S. Lyle Cummins. Illustrated by G. L. Stampa. Vol. i: *Bluebeard; Haroun al Rashid*. Vol. ii: *St. George and the Dragon; The Sleeping Beauty*. Vol. iii: *Goldilocks and the Three Bears; Torquil Mac Ferron; Thomas Olifant; Tyranny*. London: Methuen and Co. 1922. (Demy 16mo; illustrated. 1s. 6d. per volume.)

CAUSES AND PREVENTION OF BLINDNESS.

FINAL REPORT OF THE COMMITTEE.

In September, 1920, Dr. Addison, then Minister of Health, set up a Committee "to investigate and report on the causes of blindness, including defective vision sufficient to impair economic efficiency, and to suggest measures which might be taken to prevent blindness." A Committee of fourteen was appointed, including the Right Hon. G. H. Roberts, M.P. (chairman), Dr. J. C. Bridge (Factory Department, Home Office), Dr. A. Eichholz (Board of Education), Mr. E. D. Macgregor (Ministry of Health), Mr. J. S. Nicholson (Ministry of Labour), Mr. G. F. Mowatt (National Institute for the Blind), Mrs. Wilton Phipps (London County Council), Mr. W. M. Stone (Scottish Board of Health), Dr. James Taylor, the neurologist, Mr. Bishop Harman, Dr. J. B. Lawford and Sir John Parsons, ophthalmic surgeons, and Mr. Stephen Walsh, a Labour M.P. Mr. C. J. Bond was added to the Committee in April, 1921. For the first year of the Committee's working the medical secretary was Dr. R. A. Farrar, who died in Russia recently "during the performance of duties finely and humanely inspired"; for the second year that office was undertaken by Dr. James Pearse of the Ministry of Health.

The Committee held forty-six meetings and numerous meetings of two subcommittees. Sixty-six witnesses were examined and special inquiries were made. An interim report was issued in 1921 relating to the light used in kinema studios; this was noticed at the time in our columns. The final report of the Committee is now issued,[1] a concisely written octavo pamphlet of 136 pages.

The Number of the Blind.

The Register of the Blind for England and Wales, compiled by the Ministry of Health, shows that in 1921 there were 34,894 persons "too blind to perform work for which eyesight is essential." Males are slightly in excess of females; 8 per cent. are under the age of 16 years, 37 per cent. between 16 and 50 years, 34 per cent. from 50 to 70 years, and 20 per cent. over 70. The latest return of the age at which persons become blind shows that 21 per cent. become blind within the first year of life, and thereafter about 10 per cent. for each decade up to 70 years.

The Causes of Blindness.

In this section figures are given from several returns of blind infants, children, and adults. The chief returns are those published by Mr. Bishop Harman, which cover figures under each of these heads, including the large volume of figures which he has collected from the blind schools of the London County Council; other returns have been collected by special inquiries made for the Committee by the Board of Education, and by Mr. P. G. Doyne of London, Mr. H. R. Bickerton of Liverpool, and Dr. A. Fells of Bristol. From these several sources there is obtained a fair appreciation of the relative incidence of the several causes of blindness, and thereon the report considers them seriatim. The order given is as follows: ophthalmia neonatorum, syphilis, congenital malformations, surface inflammations in childhood, trachoma, myopia, glaucoma, industrial disease and accident, eye accidents in civil life, blindness due to the war, sympathetic ophthalmia.

Ophthalmia Neonatorum.

The incidence of blindness due to this disease varies according to the age at which the inquiry is made. In infants the incidence is as high as 49.2 per cent., in school children between 20 and 28 per cent., and in adults it falls as low as 3 per cent. It is evident that this disease is a very serious factor in the causation of blindness, and constitutes a problem of vital national importance, the more especially as an individual blinded is affected from birth and throughout the years of highest economic efficiency. The incidence of the disease appears from statistics to vary considerably in different districts. It is low in counties—less than 10 per 1,000 births; it is high in county boroughs, in which the rates vary exceedingly. The variations are so marked that they appear to indicate differences in conditions notified rather than actual differences in the prevalence of the disease. Accordingly there is some hesitance in making deductions from the figures; but so far as this is allowable it appears that there is no diminution in the incidence of the disease notified, but rather material increase, since the year 1918. It is, however, considered that notification does serve its main purpose—that of enabling cases to be brought under early and efficient treatment; for, whilst there is a higher rate of notification, there is definite evidence that blindness due to the disease is lessening. The report states:

"We have, however, clear indication, from figures submitted to us by Mr. Bishop Harman with regard to school children in London, that the proportionate incidence of blindness due to this disease has markedly decreased. These figures show that between 1907 and 1913 inclusive there were admitted to schools for the blind 737 children, of whom 134 were blind from ophthalmia neonatorum, or 18.03 per cent. The number admitted between 1914 and 1920 was 755, with 89 blind from the disease, or 11.91 per cent., a very material diminution. Again, if the figure for the first period of 134 children blind from the disease be related to the average of the elementary school roll in London over the years 1907–13, this shows blindness from this cause in 18.3 per 100,000 children, and if the figure 89 of the second series be related to the average roll over the years 1914–20 the incidence is 12.5 per 100,000."

Despite this definite evidence of a diminution in the cases of blindness from ophthalmia neonatorum, the Committee is not satisfied with conditions as they exist. It emphasizes the necessity for the prevention of the disease by combating gonorrhoea, which is mainly responsible for the severe inflammations which may result in blindness. This is a matter engaging the attention of the Ministry of Health in dealing with the prevention and treatment of venereal disease in general. The next line of defence is the treatment of the expectant mother. The report says:

"It is gratifying to note that we owe to an Englishman, Benjamin Gibson of Manchester, who wrote in the year 1807, the first clearly reasoned description of the rational means for preventing ophthalmia neonatorum. It is difficult to believe that his words, which are quoted below, could be bettered even at the present day. They were as follows: 'First to remove, if possible, the disease in the mothers during pregnancy; second, if that cannot be accomplished, to remove artificially as much of the discharge as possible from the vagina at the time of delivery; and third, to pay at all events particular attention to the eyes of the child by washing them immediately after delivery with a liquid calculated to remove the offending matter or to prevent its noxious action.'"

The more general adoption of clinical investigation during pregnancy should lead to early discovery of cases of vaginal discharge, research into its bacteriology, and prompt measures for securing treatment by a private practitioner, at a general hospital, at a special session of an ante-natal clinic, or at a venereal disease clinic.

Prophylaxis at birth is now very generally adopted. The detailed care of the eyes of the newborn has been the subject of special attention by the Central Midwives Board. If the rules of the Board were carried out universally there is little doubt that ophthalmia neonatorum occurring in the practice of midwives would be materially reduced. It does not appear to the Committee that the average practising midwife is, as a rule, either suitably trained or equipped for this purpose. Six months' training is insufficient, especially when it is found that the standard of general education of candidates is so low that "many pupil midwives who present themselves for examination have not had sufficient education to enable them to express themselves on paper and have to be examined *viva voce*." Further, there is no security that a midwife will ever have seen a case of ophthalmia neonatorum before being placed on the register. The Committee recommends:

"That arrangements should be made for pupil midwives to visit ophthalmic hospitals or the ophthalmic departments of general hospitals for the purpose of gaining direct experience of ophthalmia neonatorum."

Considering the use of prophylactic drugs, the Committee is fully satisfied as to the efficacy of Credé's method in skilled hands, but cannot recommend it for routine adoption by midwives. There is risk that they may think this is all that is necessary and neglect the scrupulous cleansing, which is even more important, or mistake as "only a little reactionary discharge" what is really a manifestation of the disease itself. The report adds:

"We consider, however, that Credé's method should be used under medical supervision in all cases where vaginal discharge is known to exist. Where such prophylactic method is adopted, we consider nitrate of silver to be the most effective agent, but that it should not be used in stronger solution than 1 per cent."

The Committee considers it of paramount importance that the disease should be diagnosed and notified at the earliest possible moment in order that nursing facilities may be available or provision made for admission to hospital. It thinks that if medical practitioners had facilities provided for

[1] London: H.M. Stationery Office, or through any bookseller. 1922. Pp. 136. 4s. net.)

consultation with an ophthalmic surgeon at the home of the patient, and for prompt bacteriological investigation, there would be less delay in the proper treatment of the disease, and it recommends accordingly. Under the Notification of Births Act, 1915, visits of health visitors have been of material assistance; no less than 93.5 per cent. of the cases of ophthalmia neonatorum occurring in 1919 were so visited. Arrangements for home nursing have been made in most metropolitan and county boroughs—that is, the areas in which the disease most frequently occurs. But the Committee is not satisfied that the arrangements are always sufficient.

"Ophthalmia neonatorum is emphatically a disease which requires skill and experience in nursing, and, if the case is to be successfully treated at home, skilled nursing should be available at the earliest possible date." The midwife is inadequate for the purpose. "Irrigation by a trained nurse must be carried out at frequent intervals, both by day and by night, if the sight is to be saved."

The Committee recommends that the Ministry of Health should take steps to ensure that adequate nursing provision is always available for cases of ophthalmia neonatorum which are not admitted to hospital.

The Committee found evidence that some medical practitioners failed to recognize early and notify promptly cases of the disease. It considers that the inadequate knowledge of the diseases of the eye possessed by the large majority of medical practitioners on admission to the *Register* is in a large measure due to the very limited amount of training in this subject which they receive as medical students, and the common absence of any examination in the subject for qualification. It therefore recommends that "the General Medical Council again be urged to insist that every student presenting himself for a qualifying examination in medicine shall be examined in ophthalmology."

Speaking generally, it is found that in London and large cities and in many county boroughs provision is made for hospital accommodation both for babies and their mothers, but in some towns and in many rural areas there is no such provision. Examining special arrangements made for these cases, it is considered preferable that hospital accommodation should be provided by securing beds in a few of the well-known teaching hospitals in centres convenient to the great masses of the population, rather than in special hospitals provided for the purpose as has been tried in London. There would be the advantage in the use of general hospitals in that students attending the practice of these hospitals would become familiar with the care and treatment of these cases, which they would not so readily do if provision were made at one special hospital alone. Also it is found that a special hospital soon becomes stigmatized and mothers are unwilling to enter. The report adds that—

"in a few places cases of ophthalmia neonatorum are treated in hospitals for infectious diseases. In our opinion it is not desirable to expose mothers during the puerperium or their infants to even a remote risk of infection."

Syphilis.

Syphilis, both congenital and in the acquired form, is responsible for a large amount of blindness. It causes interstitial keratitis, iridocyclitis, choroiditis, and optic atrophy. In children the incidence of blindness from this cause may reach as high as 31.4 per cent. The figure is less when with added years other factors producing blindness come into play; but—

"considering the information available to us we think it would be correct to estimate that syphilis is the direct cause of not less than from 10 to 15 per cent. of the blindness at present existing in this country. This is an alarming figure, and it is to be remembered that many other cases of blindness are due to degenerative changes consequent on vascular disease possibly syphilitic in origin, which cannot be accounted for in the statistics. . . . Syphilitic blindness is but part of the wide problem of the menace of syphilitic disease in general. Its diminution will depend upon the success of the various measures—moral, social, medical—directed against the evil. It is to these measures and to the recognition by the affected person of the necessity of early treatment and its continuance over several years that we look for the prevention of blindness from this cause. Patients too readily relinquish treatment after the first abatement of symptoms, and consequently develop later manifestations, including affections of the eye, which would have been prevented by persistent treatment."

Congenital Malformation of the Eye.

Cataract, dislocation of the lens, absence of iris, and albinism account for a considerable amount of blindness in school children, varying from 20 to 30 per cent. Certain defects occur in families, but the majority appear sporadically. Knowledge is not at present available to enable the indication of preventive measures for these conditions, except that where an inherited tendency is manifest marriage and parenthood are undesirable.

Surface Inflammations in Childhood.

The exanthemata, measles particularly, take a toll of infant eyesight. These cases account for from 3 to 5 per cent. of blindness in school children. Phlyctenular keratitis and chronic blepharitis also do much damage, the keratitis alone being responsible for another 3 per cent. of blindness in school children. Poor districts are particularly liable to these diseases. Dr. P. J. Hay of Sheffield showed that in the good districts only 6 per 10,000 of the children were affected by blepharitis, whereas in the bad districts the rate was as high as 26 per 10,000. The actual blinded eyes form only a small proportion of the injury done by the inflammations. For the prevention of these diseases attention must be directed primarily to improvements in diet, housing, sanitation and ventilation, and in personal cleanliness; for treatment the provision of special institutional accommodation, such as that recently arranged in London between the school authorities and the Metropolitan Asylums Board, is essential; the provision is at present inadequate. Some difficulty arises in the treatment of these chronic cases where parents are of the more ignorant sort. They will not allow their children to remain under treatment for a sufficient time to effect a cure. The powers of the "Children's Act" are insufficient to effect the purpose, and the Committee recommends:

"That the Board of Education should consider the question of seeking additional powers to enable a local educational authority to require a parent to submit a child suspected to be suffering from chronic external eye disease to medical inspection and adequate medical treatment where the authority deem such inspection and treatment necessary."

Trachoma.

This disease, once so terrible in this country, and still disastrous in causing blindness in other countries, is now rare here. Out of 1,855 school children only 4, or 0.21 per cent., owed their condition to the disease; and out of 601 blind of all ages 8, or 1.3 per cent. The main necessity is to secure that the disease shall not be reintroduced into this country by unguarded alien immigration. The Committee inquired into the arrangements for the examination of immigrants, and considered that the Aliens Acts, which formerly provided many loopholes by which aliens suffering from the disease might enter the country, are now so administered as on the whole to deal adequately with the risk. It recommends, however,

"That in sanctioning appointments as medical inspectors under the Aliens Acts, the Ministry of Health should endeavour, as far as possible, to secure that such officers, if they have not already had special experience of contagious eye diseases, and particularly of trachoma, should be afforded the opportunity of acquiring it."

Reference is made to the singularly effective measures taken in France during the war, under the superintendence of Sir William Lister, to stamp out trachoma amongst the labour corps imported from Egypt and China. The earliest recruits were badly affected, later companies were selected at the port of embarkation, so that the incidence was much lower. Measures taken to separate the affected men had the most beneficial results. The whole incident forms a striking illustration of the value of preventive medicine. The application to civil life is obvious.

Myopia.

Actual blindness due to degeneration of the eyes from the effects of myopia accounts for some 3 to 6 per cent. of blindness in school children, and up to 14 per cent. amongst blind persons of all ages. It is also responsible for a serious amount of impairment of vision short of actual blindness. In a series of 3,300 blind and partly blind children collected by Harman in London, besides 54 quite blind there were 1,191 cases of myopia of a degree sufficient to necessitate education in special myope classes. The majority of the children had myopia of over 10 diopters. It is obvious that even when provided with suitable glasses these children see with difficulty. Further, there is evidence that these eyes are frail, and there is ever-present risk of damage to or degeneration of the retina, and this risk is increased by strain. The Committee reports very favourably on the work of the

myope classes first instituted in London in 1908, and since adopted in many towns in this country and abroad; and it recommends:

"That further provision should be made by education authorities for the education in myope classes or by similar methods of children with serious defect of vision requiring such facilities, and that steps should be taken to discover these cases at such an early age as will allow of preventive measures being adopted."

Reference is given to Harman's recent evidence of the risk of breakdown and inefficiency in work, of myopes engaged in habitual close eye work. Taking cases of myopia above 3 D. of ages from 20 to 60 years the myopes who habitually did close work had 53 per cent. of failures, as against 9.4 per cent. amongst myopes who did no continuous close work. It is therefore considered that every encouragement and assistance should be given to children's after-care committees and juvenile employment committees in the selection of suitable occupations for these short-sighted children. A classification of suitable occupations is given based on London experience.

Glaucoma.

The incidence of blindness due to this disease varies from 9.15 per cent. for a group of blind of all ages to 29 per cent. in a home for the aged blind. The determining cause of primary glaucoma is unknown and therefore unpreventable. Blindness can be obviated by early and adequate treatment. It is essential to emphasize that in the early stages glaucoma may appear to be relieved by the frequent change of glasses; and in this connexion the Committee draws attention to the grave risk which arises from the treatment of these cases by opticians who are not qualified to detect the real condition. The difficulty of and the necessity for prompt recognition of acute and chronic glaucoma also give added weight to the recommendation for more thorough training of the medical student in ophthalmology. The general practitioner sees such cases first. The acute form may be mistaken for iritis, with disastrous results if it be treated as such; the headache and vomiting may suggest a bilious attack, to the overlooking of the eye condition. The chronic form is so insidious in its onset that it may easily be overlooked. Hence the necessity for trained and alert practitioners.

(*To be continued.*)

THE HISTORY OF TUBERCULOSIS.

SCHORSTEIN LECTURE.

THE Schorstein Memorial Lecture was delivered by Dr. PERCY KIDD at the London Hospital Medical College on November 8th. The title was "Forty years in the history of tuberculosis," but the lecturer traced the earlier history also.

Early History.

Dr. Kidd said that forty years ago, when the tubercle bacillus was discovered, there was a distinct parting of the ways in the history of tuberculosis. The malady had attracted attention as far back as the time of Hippocrates, who held that phthisis was an ulceration of the lungs. Hippocrates made no mention of consumption as being contagious, but Aristotle expressly said that it was, and Galen regarded consumptives as dangerous persons to live with. No real advance in the knowledge of phthisis took place until the seventeenth century, when Sylvius recognized the existence of lymph nodes or tubercles in the lung, which he regarded as enlarged glands, the enlargement being the result of an accumulation of viscid humours or secretions. Richard Morton, later in the century, embraced Sylvius's views with regard to the glandular origin of tuberculosis, but insisted upon the frequency with which healing took place. Thomas Willis, a contemporary, was the first to controvert the prevailing belief that phthisis invariably depended upon an ulceration of the lungs; he had made autopsies on persons who had died from the disease, and found the lungs free from ulceration. Desault, a Frenchman, compared tubercle in the lungs with the condition of scrofula, and attributed contagion to the presence of worms—a remarkable foreshadowing of the parasitic theory of disease. William Stark, who died in 1770, furnished an excellent anatomical description of a tuberculous lung. Towards the end of the eighteenth century Nathaniel Baillie, physician to St. George's Hospital, gave a complete description of the pulmonary lesions in consumption, such as could hardly be bettered to-day. It was interesting to trace the persistence of the Hippocratic notion, despite the knowledge that phthisis might occur without any ulceration of the lung. The existence of tubercles in organs other than the lungs did not escape Baillie's observation, but he failed to see any connexion.

The Nineteenth Century.

The nineteenth century marked much greater progress. Among the first of the great workers was Bayle, who traced the coexistence of tubercles in various organs to a common cause, and who gave the name of tuberculosis to the disease. But a greater than Bayle was at hand to throw light in the darkness. In 1819 Laënnec published his memorable work, *Traité de l'auscultation médiate et des maladies des poumons et du coeur*, which revolutionized the theory of consumption and the clinical treatment of tuberculosis. He declared that all phthisis was tuberculous in character, and that tubercles might arise in any organ, and were connected by a special disposition or diathesis. Laënnec's chief claim to immortality rested upon his mediate auscultation, but his pathological study of consumption alone would entitle him to be regarded as one of the great pioneers of medicine. His views did not find universal assent, and in Germany Virchow insisted that the caseous change was not characteristic of tubercle, and that a similar change occurred in new growths unrelated to tubercle. The promulgation of these views let loose a flood of controversy, especially in Germany, and foremost among Virchow's supporters was Niemeyer, who applied his master's doctrine in a most uncompromising manner. In 1865 Villemin announced his discovery that tuberculosis was a specific affection, its cause residing in an inoculable agent, and that it belonged to the class of virulent maladies. It was not surprising that Villemin's conclusions should have been contested. Attempts were made to show that tuberculosis could be induced in animals by inoculation of non-tuberculous material, but further experiments under stricter conditions only served to demonstrate the truth of Villemin's hypothesis. William Budd came to the conclusion that tuberculosis was a zymotic and infectious disease like scarlet fever; but it was long before the doctrine of infection found general acceptance.

Discovery of the Bacillus.

It came, therefore, more or less as a revolution in the medical world when, in 1882, Robert Koch announced his discovery of the tubercle bacillus—a discovery which completely revolutionized the views of the profession both as to diagnosis and treatment. Before long the identity of human and bovine tuberculosis came to be generally accepted. Professor Bulloch had stated that between 1882 and 1900 very few seriously doubted that human and bovine tuberculosis were identical, though dissentient voices were raised here and there. In 1901 Koch declared that they were not identical. As a result of extensive experiments on young cattle inoculated in various ways he convinced himself that human tuberculosis could not be communicated to cattle, whereas in animals infected with bovine tubercle bacilli general tuberculosis of the bovine type usually resulted. Obviously the question of the infection of man with bovine tuberculosis could not be satisfactorily settled, but Koch considered such infection improbable. These statements stimulated much experimental work, and Koch's conclusions were challenged. Some investigators thought that the morphological and cultural distinctions characterizing the two types were well marked, others that the differences were unimportant. It seemed now to be established that Koch was right in stating that human and bovine tuberculosis were not the same disease; that there were pathogenic differences could not be doubted. In the course of his researches Koch discovered that tuberculous animals were very sensitive to extracts of the cultures of the tubercle bacillus, the result being a febrile illness combined with inflammatory and necrotic changes in the tuberculous foci. He was led to apply tuberculin to diagnosis and treatment, and the result of his experiments on cattle showed the tuberculin test to be trustworthy for diagnosis. In the case of the human being the question could not be settled so simply. In some instances of severe progressive tuberculosis no reaction occurred, and a negative reaction was found in some tuberculous persons suffering from typhoid fever or other specific diseases and in pregnant women. Objections had been raised to the specific diagnostic value of tuberculin, and clinicians had come to discount its value. Von Pirquet's cutaneous test and Calmette's ophthalmic test avoided the severe results of tuberculin, though in the case of the latter the conjunctivitis sometimes set up was the reason for its non-acceptance.

Diagnosis.

When *x*-ray examination came to be applied to the diagnosis of pulmonary diseases, in practically every case radiating shadows were seen passing from the root of the lung upwards, and frequently patchy shadows in the neighbourhood of the root. Some radiologists looked upon these fan-shaped markings as indicating tuberculous lesions. Dr. Jordan had stated that in every case tuberculous invasion started from the root; in other words, that tuberculosis of the apex was not primary but secondary to invasion from the root along the

lymphatics. *X*-ray examination was a very valuable help in the diagnosis of pulmonary diseases, but it could not reveal the earliest stage in the formation of tubercle, and it was doubtful whether it could differentiate between active and quiescent lesions. While acknowledging the assistance of the *x* rays, the lecturer felt that in diagnosis and prognosis reliance must still be placed upon the well-tried methods of physical examination combined with a consideration of the patient's history and symptoms. It appeared to him that at the present day less attention than formerly was being paid to the niceties of physical examination; the younger generation hied off to the laboratories for special examinations before the information possibly to be yielded by ordinary methods had been exhausted.

Treatment.

In reviewing the advances made in the treatment of pulmonary tuberculosis during the last forty years three methods stood out: (1) tuberculin; (2) sanatorium treatment; (3) induction of pneumothorax. It was not surprising that the method of injecting tuberculin, ushered in under such credentials, excited the liveliest interest and hope. In the early days the treatment was surrounded by an atmosphere of mystery. The exact nature of the remedy was not revealed. Doctors in all countries were naturally anxious to make a test, but at first only a limited supply of the agent was available for foreign use. Local results were strikingly manifested in lupus, but when, in accordance with Koch's instructions, the dose of tuberculin was gradually increased, constitutional symptoms of a severe nature were frequently excited, with fatal results in some cases. After a time some workers began to use tuberculin on a different principle, giving increasing doses spread over a considerable length of time so as to avoid constitutional reactions. The results of tuberculin treatment in pulmonary tuberculosis had, generally speaking, been disappointing; better results had attended its use in tuberculosis of the bones and joints. Sanatorium treatment, like treatment with tuberculin, raised extravagant hopes which made disappointment inevitable. Some modifications of the original sanatorium routine had been found necessary. The excessive feeding first insisted on had been abandoned. If permanent benefits were to be secured by sanatorium treatment after-care was necessary, especially in the case of the poorer patients. The difficulty of applying such treatment to early cases was obvious. The diagnosis of the disease in its earliest stage was, generally speaking, at present beyond the powers of medical men. Very few people who had slight symptoms thought it necessary to submit themselves to examination. Consequently patients labelled early by their medical advisers were not really early cases at all. The lecturer's conviction was that this method had given better results than any other so far. Among well-to-do patients there had been cases in which a successful result had persisted for some years. In less successful cases life had been prolonged for a period. One of the great merits of sanatorium life was its educative value for the patient and, through him, for his family. The complexion of the average case of consumption seemed to the lecturer to have altered during the last forty years; in his experience rapidly progressive cases were less frequent, both in private practice and at the chest hospital. For the third of the modern treatments—induction of pneumothorax—the selection of suitable cases was not an easy matter. It was limited originally to cases in which the disease was confined or nearly confined to one side. The tendency during the last few years had been towards a less rigid limitation of the cases submitted to operation. In many apparently hopeless cases great improvement had been gained, and some patients had been able to return to their work. There were obstacles in the way of the adoption of the method in many cases, but as a palliative measure it had its place. He summarized the highly favourable conclusions as to pneumothorax operations given in the recent report of the Medical Research Council (BRITISH MEDICAL JOURNAL, September 30th, 1922, p. 606). On the other hand, in cases of low resisting power and progressive disease, little benefit could be expected.

In conclusion, Dr. Kidd said that great progress had been made during the last forty years in etiology and diagnosis, and, seeing that tuberculosis mortality had fallen considerably, it might be inferred that there had been a corresponding improvement in treatment; but the mortality had begun to fall before the general recognition of the infective nature of tuberculosis, and he attributed the lessened mortality largely to the improved standard of living and more widespread knowledge of hygiene. Segregation of advanced cases was desirable, but it involved the provision of special hospital accommodation on a large scale. It seemed unlikely that the tubercle bacillus could be eradicated. Must they then despair, and say with Falstaff: "I can get no remedy against this consumption"? If it were true that a large proportion of the population had become partially immune, it might be hoped that future research would discover means of increasing such immunity. The key to the prevention of tuberculosis was the discovery of the biochemical conditions which favoured immunity. If tuberculosis could never be completely exterminated, it would be possible, nevertheless, in the future to bring it under better control.

VIENNA.

Some Recent Medical Work.

Dr. E. W. Scripture, physician to the Speech Clinic, West End Hospital for Nervous Diseases, London, in a recent address on "Some medical novelties in Vienna," delivered before the Medical Section of the British Psychological Society, touched upon several matters which are now attracting interest in that famous medical centre. In the course of his remarks Dr. Scripture mentioned the magnificently equipped neurological institute now under the charge of Professor Marburg; he described this as a factory for producing research, and observed that one of its workers, Dr. Pollak, has just published an extensive monograph on a piece of British intellectual property that has been annexed by Vienna—namely, "die Wilson'sche Krankheit," the disease named after Dr. S. A. Kinnier Wilson, who first described it. Dr. Scripture next gave a short account of the treatment of general paralysis by malaria inoculation, first proposed in 1887 at the Vienna Psychiatric Clinic by Professor Wagner-Jauregg, and now reinforced by injections of salvarsan. He then referred to the large phonetic laboratory, directed by Dr. Stern at the Throat Clinic of Professor Hajek, where cases of aphonia and defective mutation are treated by methods of suggestion and re-education. A specialty of this laboratory is the treatment of post-operative cases of carcinoma of the larynx. After removal of the larynx the patient is taught to swallow air into the stomach and then use it to produce sounds. A kind of tone is produced by some constriction in the lower pharynx. This method is very favourably reported on by Dr. Stern. The Vienna Physiological Institute also maintains a laboratory of experimental phonetics, and there is a flourishing society of experimental phonetics predominantly medical in its membership.

Steinach's Operation.

Dr. Scripture then discussed in somewhat greater detail the experimental work carried on by Professor Steinach in one of the departments of the Institute for Biological Research. He said:

As far back as 1912 Professor Steinach published the results of experiments on guinea-pigs and rats in regard to the determination of the sexual instinct and the secondary sexual characters as the results of the internal secretions of the sexual organs. He showed that the transplantation of an ovary in a castrated male causes that male to develop bodily and mentally like a female. Later he showed that when the ovary becomes firmly fixed the feminization goes abnormally far. The male does not stop at taking on the small size of the female with corresponding distribution of hair, development of the breasts, and mentality: the breasts even begin to secrete—without any pregnancy—and the feminized male actually suckles the young that are presented to it. When a testicle is implanted in a castrated female, the genital organs change toward the male type, the bones and muscles become larger, the hair becomes coarse, the general appearance is robust and masculine, manly courage appears, and the animal drives away normal females but attempts sexual activity with a female in rut.

The opportunity arose for an experiment on human beings.

A soldier, 30 years old, had tuberculosis of the testicles—that is, he was practically castrated. His appearance was feminine, his breasts were well developed, the hips were wide, and the hair on the body had the feminine distribution. For many years he had been an actual strong homosexual, taking the passive part. The removal of the tuberculous testicles was indicated. In the same hospital was a man with a painful undescended testicle. The two patients were placed in neighbouring beds. The diseased organs were removed from the soldier and the healthy testicle was taken from the other man and placed in the groin of the soldier. The soldier afterwards took on a manly appearance, became heterosexual in his mental attitude, and subsequently married.

It is impossible even to sketch Professor Steinach's further experiments; only some of the firmly established conclusions

can be summarized. In the first place, the secondary sexual characteristics and mental attitude of the male depend on the internal secretion of the testicles furnished by the interstitial cells, not the sperm cells. These cells are termed the "gland of puberty." Steinach has shown that ligature of the vas deferens, whereby the outflow of sperm is hindered, causes a degeneration of the sperm cells and an increased growth of the interstitial cells. There is consequently an increased amount of the hormone from the interstitial cells passing into the blood. Most remarkable of all is the effect of this hormone on the bodily and mental constitution.

I will now describe a series of photographs shown me by Professor Steinach from a recent investigation.

The first was an anatomical preparation showing the undeveloped sex organs of a normal young rat. The second was a similar one of a fully developed rat. The third was that of a rat whose testicles had been removed in early life and transplanted in the abdominal wall. This rat had grown to full size and was potent. An examination of the implanted testes showed that they contained only interstitial cells and no sperm cells. The fourth was that of a rat of the same age as the last in whom the testicles had simply been removed in early life and not transplanted; this rat had rapidly become old. The fifth was that of a normal old rat with atrophied sexual organs. The sixth was that of an old rat in whom the ductus deferens had been tied in old age; this rat had at once become energetic and sexually potent. The seventh was that of a rat killed at the age of 1 year; at birth he had been removed and kept absolutely alone; his sexual organs had not developed to the normal size but had remained infantile. The eighth was that of a rat of the same litter likewise kept isolated for a year but thereafter placed with females. He became strong and potent. After he was killed his sexual organs were found to be of normal size, but the testicles contained almost entirely interstitial cells and very few sperm cells.

Professor Steinach has a theory that there are two kinds of interstitial cells, the small and the large. Each produces a hormone that controls the sexual instincts. One set gives the driving force to the heterosexual impulse, the other to the homosexual impulse. According as one kind or the other predominates, the animal becomes heterosexual or homosexual. This theory would come as a shock if we had not already been prepared for it by psycho-analysis. We now know that all human beings possess both these impulses at and after birth; whether the child later becomes predominantly heterosexual or predominantly homosexual depends, according to the analysts, on the way in which he is brought up. The average boy becomes predominantly heterosexual because he is first attached to his mother and is later able to transfer his attachment to other females. He may become homosexual because the homosexual attachment may be made predominating by over-attachment to father or brother, or because an intolerable over-attachment to mother may be so violently suppressed that it drags with it all the heterosexuality, leaving the homosexual element alone active. A similar result may occur where heterosexual attachment is difficult or impossible. According to Steinach, however, the final predominance is determined simply by the relative degrees of development of the two kinds of cells.

These two views need not be conflicting. Professor Steinach says—and I am certain he does not mean to joke—that psycho-analysis (as well as all psychic treatment) has an effect because it alters the internal secretions and thereby influences the bodily and mental character. This means that the mental influences of childhood go along with changes in the endocrine glands.

There is a type of patient that is the despair of the general practitioner and the physician in the out-patient department.

As an example I will take the case of a stone-polisher, 47 years old, who complains of tiredness and inability to do any work. He falls asleep during the forenoon while sitting on a chair. His memory has become very bad. During the last two years he has lost 50 lb. in weight. He is quite unable to earn his living. He looks emaciated, aged, and depressed. The hair on his temple is grey. Hands and ears are cyanotic and cold. Bodily investigation shows nothing abnormal. The Wassermann reaction is negative. The general practitioner would probably make a diagnosis of early arterio-sclerosis, and would continue to give potassium iodide and certificates of "unfit for work" until the end of his life.

A psycho-analyst would recognize this as a very common type of mental disturbance that might be curable by proper analysis. Such a diagnosis, however, does not help the patient in the least. He is a poor man, and psycho-analysis is only for those who can pay good fees. Apparently the case is hopeless.

I have purposely chosen this case from the advance sheets of a book that will shortly appear by Dr. Schmidt of Berlin giving his results with the Steinach operation.

On February 7th this patient underwent the operation of vaso-ligature on the right side. On March 10th he states: "To-day I can count the tiles on the roof opposite, which five weeks ago appeared to me only as a confused mass. I am as well now as I ever was. My mind is clear. The tiredness has gone. I can work as well as formerly." On April 15th he was seen again. He looked fresh and rosy and much younger than 47. He was working daily from 4 in the morning till 6 in the evening. On October 10th he was seen once again. He looked like a man in the thirties. His hair had become dark brown and much thicker. He had undertaken a very large piece of work and carried it out with an intensity and joy such as he had never before had in his life.

Dr. Schmidt reports a whole series of such cases, with similar results. There are also other cases in which no benefit is obtained. In going over his histories I am struck with the fact that he does not seem to have made a previous psychological study of them. The proportion of successes would have been still greater if certain types had been excluded.

With the Steinach operation the ligation of the vas deferens hinders the outflow of sperma. This at once produces pressure on the interstitial cells and accelerates their internal secretion into the blood. This causes the sudden rejuvenation of the first few days. Thereafter there is a pause. The sperm cells degenerate and are replaced by increased numbers of interstitial cells. This is followed by an abnormal amount of internal secretion. This, as was first shown in the case of rat No. 8 above, produces a real rejuvenation of the tissues. The patient actually becomes a younger man.

Steinach has given no explanation of the effect on the mind in such cases. I may suggest that the internal conflicts due to repressed unconscious complexes have been kept down as long as the person was young and vigorous. With exhaustion or shock or approaching age the diminished vitality lessens the control of the conscious mind and the complexes have a chance of breaking forth and more or less disabling the person. The rejuvenation, I suggest, brings back the energy needed for the repression.

The problem lies before us of introducing the Steinach operation into general and hospital practice for suitable cases. It is not expensive. If the cases are suitably selected it is highly successful. It does not interfere with the procreative power because it is done on only one side. A successful result restores the man to work, whereby he becomes a useful member of the community instead of a living corpse. It usually restores his potency.

The relation of the Steinach operation and other forms of hormone therapy to psycho-analysis is a very close one. Even if we do not believe that psycho-analysis acts only by changing the action of the endocrine glands, and that the changes in character result from the glandular changes, and not directly from the analytical treatment, yet we can think of the possibility—at least in some cases—of using hormone therapy instead of psycho-analysis. The possibility of curing a portion of the countless cases of anxiety neurosis (including hysteria) by a simple inexpensive surgical operation is worth considering. The problem is also important to the analytical specialist. With quite a large number of patients undergoing psycho-analysis the point is reached where the resistance proves too great to be overcome. The treatment must then be broken off as hopeless. The patient thereafter usually falls into a condition of secondary repression which is worse than the original one. Such a result is more common in advanced life. It is in just such cases that perhaps a Steinach operation would effect a cure.

Dr. Scripture next recounted a case bearing upon the interpretation of patients' dreams, with the object of bringing out his contention that the main psychological complex may be quite other than the sexual complexes usually sought for by psycho-analysts. He concluded his address with a brief tribute to the efforts of the Vienna Medical School to rise above the misfortunes of the present time.

To those of us who know and love Austria (he said) there is something deeply touching and profoundly inspiring in finding that in Vienna the devotion to scientific research still remains a vital force amid poverty and disaster at a time when most of the rest of Europe is mainly concerned in using the situation for commercial profit. The nation that can still maintain the University of Vienna deserves a better fate than to become the exploited slave of international financiers.

THE next French Congress of Medicine will be held at Bordeaux in 1923 under the presidency of Professor Arnozan, when the following subjects will be discussed: remote sequelae of malaria, relations between the sympathetic and endocrine glands, and treatment of meningococcal infections.

OWING to a scarcity of rabbits the Breslau Pasteur Institute has decided that everyone applying for antirabic treatment must supply at least two rabbits, the price of which will be refunded by the Institute.

British Medical Journal.

SATURDAY, NOVEMBER 18TH, 1922.

ANIMAL AND PLANT PATHOLOGY.

We turn from the study of human disease to consider the morbid processes affecting animals and plants in the hope that here may be found an answer to some of the problems which laborious research on human infections has hitherto failed to solve. Diseases in plants and animals can be investigated by the experimental method, the origin, course, and treatment of disease being examined with a thoroughness rarely possible in human patients. Comparative pathology is studied also for reasons of public health. The animals with which we are often in contact are themselves liable to invasion by bacterial enemies, many of which are capable of infecting man, and the diseases by which plants are beset, though not directly transmissible to man, are of great economic importance. In moments of reflection also our thoughts may turn from the more pressing claims of human disease to notice how in every manifestation of life health is constantly in jeopardy. Fevers and distempers disturb the existence of birds; mammals and reptiles, fishes, insects, and worms are liable to invasion by unwelcome parasites; trees suffer from tumours, cereals from blight; and even tobacco does not escape from the ultramicroscopic filter-passing virus. Throughout the animate world perfect health is a very rare gift.

But, it may be asked, can we hope to derive any practical benefit to human medicine by a study of the diseases of animals and plants? The knowledge of the rudiments of botany and zoology which the medical curriculum prescribes ensures a broad-minded outlook on the natural world; this having been assured, at least in theory, what expectation have we that an excursion into the realms of plant and animal pathology will yield information of value in the study of human disease?

The problem is not a new one for the British Medical Association. The possibility of getting light from vegetable pathology was brought to notice over forty years ago by Sir James Paget in an address to the Section of Pathology at the Annual Meeting at Cambridge in 1880. Sir Clifford Allbutt, in his Address in Medicine to the Annual Meeting in Glasgow in 1888, covered a rather wider field, and in his presidential address in 1920 to the Annual Meeting of the Association in Cambridge he recurred to the subject. In the Section of Pathology (Human and Comparative) at Glasgow this year a discussion on animal and vegetable pathology in relation to human disease was opened by Professor Frederick Hobday, F.R.C.V.S. During that discussion, a report of which is published in our issue this week, Professor W. H. Lang warned students of comparative pathology against the snare of false analogies, but Sir Clifford Allbutt, who followed, desired to delete the word "false," maintaining that argument by analogies had been the bane of medicine from the earliest times. The path of advance, he said, was to go beneath analogies and similitudes to underlying affinities, which, indeed, were often far from apparent.

It must be admitted that only with the greatest caution can comparisons be made between diseases of plants and the diseases of animals, since the structure of the tissues is so fundamentally different, the characters of the infecting agents so diverse, and the mechanism of resistance based on such opposite systems. Animals provided with a general circulation of body fluids can bring to bear on an infective agent protective substances derived from all parts of the organism in the attempt to save the health of an injured member; plants, on the other hand, can only resist locally, and often the wisest plan is to isolate the infected area and sacrifice the diseased tissue. Yet in spite of these apparent dissimilarities, in all manifestations of life the nature of this reaction is fundamentally the same—namely, an attempt to preserve the integrity of the cell against an injurious agent. The protection of the cell is the basis of immunity in plants, in animals, and in man, yet we know almost nothing of the means by which it is secured or the defects which lead to its default. Researches in resistance to human disease have been concerned chiefly with acquired immunity, and we are now fairly well informed of the reactions which take place in an infected area and of the protective substances which make their appearance in the body fluids. But of natural immunity and the security enjoyed by individual cells we know no more than is expressed by the word "susceptibility." The difficulties which beset the study of natural immunity in man are great, but it is probable that light will be thrown on the problem by the study of the phenomenon as it presents itself in plants and the lowlier forms of animal life; the prospect of enlightenment in this way warrants the closest interest in comparative pathology.

Professor Hobday's review of the diseases communicable from animals to man proves how important comparative pathology is from the point of view of public health, and indicates the extensive benefits the community has derived from advances already made. Thanks to the efficiency of the veterinary service, glanders and rabies are practically stamped out in this country, whereas only twenty years ago glanders in horses was common, and many human beings were exposed to this terrible infection. If, however, there is reason for congratulation on what has already been accomplished in certain fields, there is reason for shame also at the paralysis which has overtaken administrative measures designed to combat the most widespread of all communicable diseases—namely, tuberculosis. There are at present a million tuberculous cattle in Great Britain, and it is reckoned that over 10,000 children die annually from drinking tuberculous milk, yet the Cattle Tuberculosis Order, which was temporarily suspended during the war, has not been re-established. Professor Hobday states on behalf of the veterinary profession that, given a free hand, they could stamp out tuberculosis in cattle in the same way as they have already stamped out glanders and rabies; and he calls on the medical profession to assist in bringing pressure to bear upon the authorities for the reinstitution of the Cattle Tuberculosis Order.

Disease processes in plants are worthy of study not because of possible transmission to man, but because they may yield a clue to some of the mysteries which enshroud malignant disease in man. Professor Lang described that remarkable disease crown gall, but although he warns us against drawing inferences from morbid processes developing in such fundamentally different tissues as those of plants and animals, yet the resemblances are very striking and provide material for thought. The tumour-like growths of crown gall follow the inoculation of the tissues of the plant with *Bacterium tumefaciens*, and consist of irregular masses of cells stimulated to riotous overgrowth by the presence of the infective agent. The first response of the plant to this infection is merely an exaggeration of the normal process of wound irritation, but the same comment is equally

applicable to human neoplasms, since in these also irritation is often an important factor in the early stages. Later the cells of the crown gall tumour invade the normal tissues and set up secondary tumours at a distance, a sequence of events reminding us at every point of the familiar features of malignant disease. If we knew as much of the initiation and spread of cancer as we do of the tumours of crown gall a notable advance would have been achieved.

The nature of the so-called filter-passing virus is a fascinating problem. Here the investigator is dealing with a form of life too small to be seen with the highest magnifications of the microscope, and yet capable of initiating grave disturbances in both animals and plants. The first demonstration that disease can be caused by a filtrable virus was made in the plant disease known as tobacco mosaic, and many other plant diseases have since been shown to be due to ultramicroscopic organisms; the number of human diseases attributable to this form of infection is yearly increasing. The plant pathologists have taught us much concerning these infections. They have proved that these virus diseases are commonly transmitted by the bites of insects; they have established that these diseases can be hereditary both in host-plant and in insect; they bring forward evidence against the probability of any saprophytic life for these organisms, and have indicated how very dependent this form of life is on suitable environmental conditions.

Hitherto the diseases of man, animals, and plants have been studied by three separate specialized groups of workers—the human, the veterinary, and the plant pathologists; each has proceeded along separate lines of inquiry, and there has often been lamentable ignorance of the progress made in the kindred sciences. Yet many diseases are common to man and animals, and in the study of them—we may instance anthrax—it is obviously desirable that veterinary and medical pathologists should combine. In fact, the number of diseases of plants or animals which either directly or indirectly affect the health of man makes a long list; of the essential details of the disease processes in animals and plants the medical pathologist should be accurately informed. But the subject will be of interest not only to pathologists, and not only on account of the questions of public health which we have seen to be so intimately involved. Echoing the words of Sir Clifford Allbutt, we will venture to assert that the significance of disease will never be rightly understood if attention is confined to those morbid processes affecting man which it is our duty as a profession to attempt to relieve. Ill health is often attributed to constitutional defects and perverse habits; in a limited sense this may be true, but we are all familiar with diseases which attack the strong and spare the weak. May we not recall the rebuke: "Those eighteen, upon whom the tower in Siloam fell, and slew them, think ye that they were sinners above all men that dwelt in Jerusalem?" Bacteria were not created for the express purpose of inconveniencing or punishing man; they came into existence to perform an indispensable function in nature, and life on this planet is only possible thanks to their ceaseless activities. Throughout the animal and vegetable kingdoms we find the incessant conflict of two forces, one endeavouring to preserve health, the other attempting to undermine it. In many plants the dispute is settled by the establishment of symbiosis, in which both forces combine to work for the common good. It is possible that even in man this happy compromise is sometimes achieved. By reflecting on this conflict as it manifests itself throughout the natural world we shall escape from too narrow an outlook on the question of health and disease.

THE TREATMENT OF DIABETES BY INSULIN.

Recent scientific work in the laboratories of the University of Toronto, the nature of which was described in some detail on November 4th (p. 833) by Dr. J. J. R. Macleod, Professor of Physiology in that University, has yielded results which, it is perhaps not too sanguine to hope, have opened a new chapter in the history of the treatment of diabetes. As our readers have learnt from Professor Macleod, the effects observed in animals have justified the trial of insulin in man, and diabetic patients have eagerly flocked to take advantage of the new treatment. It consists in the administration of a substance, to which the term "insulin" has been applied, present in an extract made by a new method from the pancreas of the ox, pig, or sheep. The authorities of the University have taken special measures, appropriate to an exceptional situation, to protect and control the manufacture and use of this substance in Canada and the United States, and they have offered as a free gift to the Medical Research Council all rights in a patent covering the product and the process of its preparation, for which application has been filed in this country on behalf of the University of Toronto. The University has done this with the object of putting into the Council's hands the means of exercising the same powers of control over the preparation of this important new substance for trial in this country as the University has found it desirable in the public interest to exercise in the American continent. Representatives of the Council have recently visited, by the courtesy of the University, the various centres of work in Canada and the United States, and have examined closely the progress already made there, with a view to finding the conditions under which the production of insulin for a careful trial of its properties may best be accelerated in this country. In view of the great importance and growing interest of this subject, both to the public and to the medical profession, the Medical Research Council, which has accepted the generous offer of the University of Toronto, has now made a public statement of the present situation and of the considerations by which the policy of the Council is being guided.

At the outset it is explained that the new substance insulin is not yet available in this country in any form. It is being made on a moderate scale at Toronto, and on a small experimental scale in one or two laboratories in the United States, and these sources of supply are hardly sufficient for the daily needs of the diabetic patients selected for experimental treatment at those places. Under control and guidance from Toronto, manufacture by one American firm is being developed upon a large scale, but no supply at all is yet available for the medical profession in general. The preparation and administration of insulin are alike still in the experimental stage.

There can be little doubt, as we observed a fortnight ago, that the new treatment opens a bright prospect of relief, of longer life and less severe deprivation, to many of the sufferers from a disease so distressing and hitherto intractable as diabetes. The improvement of the methods of the preparation and administration of insulin, and the determination of the limits of its efficacy—whether in any cases and by any method of application it can effect a permanent cure, or only, as hitherto, relieve at each administration an incurable defect—these are matters urgently demanding further research.

The active pancreatic principle (insulin) is of unknown chemical nature, and is easily destroyed in the course of its extraction. The possibilities of the new treatment

have sprung from the discovery of a method whereby this active substance can be extracted and freed from concomitants which, when ordinary methods are used, lead to its rapid destruction. A process which succeeds on an experimental scale in the laboratory presents new and much more serious difficulties on a large scale in the factory. Even under the best conditions yet available it appears that great variations in activity may occur between individual batches of the extract, made without any known variation of the process. While the use of an inactive preparation would bring painful disappointment to the patient and bring the treatment into undeserved discredit, the use of a preparation of unexpectedly high potency may be definitely dangerous. No indication of the activity, and so of the remedial value, can be obtained except by experiments on the potency of each sample, previous to its actual use for a patient in the hospital ward, and these require a well-equipped physiological and biochemical laboratory. The degree of permanence and condition of stability of the extract are as yet practically unknown. In face of these conditions, to leave the production of the remedial extract to unassisted and uncontrolled commercial enterprise would be to imperil the credit and success of the treatment, and entail for many sufferers not only disappointment but serious danger. Apart from any of the obvious possibilities of improper exploitation, it is clear that even preparations made with a conscientious effort to adhere to the methods and precautions so far indicated by the discoverers might prove to be at once useless and harmful.

In these circumstances the Medical Research Council has considered it a duty to use any means placed at its disposal for safeguarding, while accelerating, the proper production of this remedy. The Council is already arranging for the preparation of insulin for trial and study at several hospital centres where the necessary facilities exist. The scientific workers who accept this responsibility will undertake to work as members of a co-ordinated team in close touch with the National Institute for Medical Research at Hampstead, with a view to achieving the most rapid progress possible towards improved methods of preparing and of using the extract. At the same time, and independently of this immediate research work, the Council is considering under what conditions it may be possible to grant licences to private institutions or factories having proper facilities for making and testing the extract. It may be that some of the existing commercial organizations may find it possible to deal satisfactorily with the problem of providing insulin and of keeping pace with the demand. This demand will grow rapidly and continuously if the methods of treatment and precautions against danger become so simplified by research work that the remedy can pass into general, as distinguished from hospital or specialist, practice. It may prove, on the other hand, that the needs of the situation can best be met by a special organization, established with the primary aim of relieving the many sufferers from diabetes, and with no view to making profits on an ordinary commercial basis. If this should prove to be the most effective method for providing the remedy, money for its establishment would be needed. The Medical Research Council has no funds at present which it could apply to such a purpose.

The intention of the Council is to promote, in the light of recent experience in Canada and of such new knowledge as research will gain, whatever enterprise or organization is best fitted for securing the earliest production of the insulin extract under proper conditions of safety and control, and so to facilitate, with the least possible delay, a thorough and scientific trial of the new treatment in this country.

THE AUSTRALASIAN MEDICAL CONGRESS, 1923.

On November 4th we published, at page 890, a short note from our Victorian correspondent on the sectional arrangements for the Australasian Medical Congress to be held in Melbourne in November, 1923. At the last meeting of the Central Council (as recorded in the Supplement of November 11th, p. 175) a communication was read from the President of the Congress (Mr. G. A. Syme, M.S., F.R.C.S.) calling attention to this event and to the fact that it would be the first session of the Congress to be held under the control of the Australian Branches of the British Medical Association and of the Branches in New Zealand. Mr. Syme's letter conveyed a request that the President of the Association, or some distinguished officer, should attend the Congress. This invitation was most cordially received and the Finance Committee was instructed to consider ways and means. The President, Sir William Macewen, said that he had all the will to go, but would like a little time to think over the project before making a decision; we know we express the view of every member, both here and overseas, in hoping that he may find it possible to accept. We have now received from Dr. A. L. Kenny, the General Secretary, an advance proof of the preliminary programme for the Congress. He tells us that the aim of the local executive is to make this meeting in Melbourne a memorable occasion in order to ensure a long sequence of successful congresses under the same control. "We hope," he adds, "to be in the position to give a very cordial welcome to members of the parent Association, and to this end we invite your powerful aid." The Congress will be held in the buildings of the University of Melbourne from November 12th to 17th. The Patrons are the Governors-General of the Commonwealth of Australia and the Dominion of New Zealand, the Governors of New South Wales, Victoria, Queensland, and Western Australia, and the Chancellor of the University of Melbourne. The Vice-Presidents are distinguished representatives of the science and practice of medicine in the Commonwealth, the Dominion, and in Tasmania. The treasurer is Dr. C. H. Mollison, and Dr. Kenny is assisted in his secretarial duties by Dr. F. L. Davies and Dr. W. S. Newton. Besides these honorary officers in Melbourne there are local secretaries in Sydney, Brisbane, Adelaide, Perth, Auckland, Dunedin, and Hobart. The scientific work of the meeting has been organized in the following sections: Medicine, Surgery, Obstetrics and Gynaecology, Pathology and Bacteriology, Preventive Medicine and Tropical Hygiene, Ophthalmology, Otology Rhinology and Laryngology, Neurology and Psychiatry, Diseases of Children, Naval and Military Medicine and Surgery, Dermatology, Radiology and Medical Electricity. Officers have been appointed for each section, and the general arrangements for the Congress are in the hands of a number of committees; the plan thus follows very closely that of the Annual Meetings of the parent Association. We note with interest that much prominence is given to a resolution of the Executive Committee as follows: "In all the work of the Congress particular attention shall be given to the preventive aspect, including medical research." Another matter of a different kind, though well worthy of note, is that the Railway Commissioners of the Commonwealth and of the Australian States have agreed to make generous reductions in the price of railway tickets for those attending the Congress. In this respect the Australian railway authorities have shown good sense and public spirit. It is to be hoped that the British Railway Clearing House, which declined to grant reduced fares for the Annual Meeting at Glasgow, will follow the example from overseas before the Association meets in Portsmouth next summer. All communications regarding the Australasian Medical Congress should be addressed to Dr. A. L. Kenny, Medical Society Hall, Brunswick Street South, East Melbourne, Victoria. We wish him and his colleagues every success, both in the quality of the work done and in the number of those who attend.

INTRATHORACIC SURGERY.

When Sir William Macewen first showed that the thorax could be opened without collapse of the lungs the importance of his observations and operations does not seem to have been sufficiently appreciated by surgeons; at any rate, his methods were not adopted in general surgery. This failure to appreciate a new observation is not uncommon, and is difficult to explain. The fact remains that Macewen's work remained almost unrecognized until the progress made in intrathoracic surgery during the war won acknowledgement for it. Of how great that progress has been Mr. T. P. Dunhill, assistant director of the surgical unit at St. Bartholomew's Hospital, has given some striking instances in a paper published recently in the *British Journal of Surgery*.[1] "Fear of the unknown within the thorax has," he says, "hitherto made us pause in dealing with tumours in this part of the body. . . . A greater familiarity is tending to remove our fear." The article describes three intrathoracic tumours removed through an incision which split the upper half of the sternum, a method of approach which Professor Gask had practised even before the war. In the first case a fibroma growing from the spinal column occupied the dome of the right thoracic cavity. Intratracheal anaesthesia was employed, in order, as Mr. Dunhill states, to prevent collapse of the lung when the thorax was opened. The tumour seems to have been fairly easily freed from its surroundings save for an attachment to the periosteum covering the body of a vertebra. This attachment was divided without difficulty or troublesome haemorrhage. The result was complete recovery after an uneventful convalescence. The second case was one of an elongated colloid adenoma of the thyroid, the upper end of which was visible in the neck, while the lower portion extended down behind the sternum to the level of the seventh dorsal vertebra. The tumour was attached by dense adhesions to the aortic arch and other neighbouring structures. The sternum was divided longitudinally and then transversely at the level of the third costal cartilage, so that the anterior thoracic wall could be opened by double doors as it were. The tumour was separated and removed intact. It is interesting to note that in this case intratracheal anaesthesia was not used, but the operation was performed under open ether without apparent disadvantage. Evidently collapse of the lung (to avert which intratracheal anaesthesia had been chosen for the first case) did not occur in this patient. The after-result suggests that the tumour, although removable, was malignant, and it is feared that recurrence of the growth has begun in its original site. The third case was one of retrosternal cystic adenoma of the thyroid. Local anaesthesia was employed and the tumour removed after splitting the sternum. Adhesions to the aorta had to be separated; the manipulations must necessarily have been very gentle, and do not appear to have offered grave difficulty or danger in either this or the former case. The patient made a good recovery and remains greatly relieved. The record of these operations shows how far we have advanced with intrathoracic surgery. It might of course be argued that cases requiring such operations are so rare in civil practice that these surgical procedures can only be embarked upon with any prospect of success by surgeons who became familiarized with intrathoracic methods by vast and rapidly gained experience in battle surgery. The history of abdominal surgery does not bear out this view. Once the way has been proved practicable the careful surgeon of the future should not find it difficult to follow. Intrathoracic surgery has been established, and we feel confident that we are on the eve of a new era. One point in particular requires emphasizing: these operations can be safely performed under any form of anaesthesia. Macewen had proved that elaborate pressure chambers were unnecessary for the performance of thoracotomy. Gask and Dunhill have confirmed this and shown in addition that neither local nor intratracheal anaesthesia is essential. It is not every patient who is suitable for operation under local anaesthesia, nor, if we may say so, is every surgeon fitted temperamentally for operating with his patient conscious and anaesthetized only in the area of the operation. One further remark may be ventured. During the pioneer stages of intrathoracic surgery the public will, perhaps, consider that such operations are more safely performed by the surgeons who have made them their particular study. Yet by the terms of appointments to the surgical unit at St. Bartholomew's private patients cannot, so we understand, have direct access to the knowledge and experience of Mr. Dunhill or Professor Gask if they should stand in need of such operations as form the subject of this paper.

[1] Vol. x, No. 37, 1922.

SMALL-POX AND VACCINATION.

In the pamphlet on small-pox and vaccination the Research Defence Society has very opportunely issued it is pointed out that there are in England and Wales at the present time about fifteen million persons unprotected against small-pox, and that among them are multitudes of unvaccinated children. Reference is made to the epidemic in Gloucester in 1895–96, when 279 unvaccinated children under 10 years of age died of small-pox, while only one child died out of more than 8,000 who were vaccinated before or during the epidemic. Another instance of how small-pox picks out the unvaccinated children was the outbreak which occurred in 1903 at Ossett, in Yorkshire, where, in a school of 169 children living under similar conditions, of the 14 revaccinated pupils none took small-pox, of 78 vaccinated pupils 5 took small-pox, and of 77 unvaccinated pupils 37 took small-pox. A very usual argument of antivaccinationists is that small-pox has been abated, not by vaccination, but by sanitation. It is controverted by many historical facts. For example, the immediate results of Jenner's discovery of vaccination in 1796 were not due to sanitation. The great abatement of small-pox was already achieved by 1812, while the rise of modern sanitary science came later, with the work of Edmund Parkes, Sir Edwin Chadwick, and Sir John Simon; the Public Health Act did not become law until 1875. The pertinent question is put—Why, if sanitation alone were sufficient to prevent epidemic diseases, have not measles, diphtheria, scarlet fever, and whooping-cough been reduced to the same extent as small-pox? No one contends that vaccination is our one and only defence against the spread of small-pox—the disease is fought also by sanitary measures, but sanitation alone is insufficient. Pamphlets for the instruction of the lay public as to the risks of small-pox and the value of vaccination have been published from time to time—by the British Medical Association, for example, and recently by the Ministry of Health.[1] These have proved useful for their purpose. The present outbreak has furnished opportunity for similar effort, and in addition to the Research Defence Society's pamphlet Dr. McConnel Wanklyn has published in attractive form an address[2] to the Society of Medical Officers in March last. The pamphlet differs from other tracts in presenting to the public a pronouncement made by a medical man to medical men, so that there can be no suspicion of special pleading or polemics; at the same time, it is an address which any layman can understand. Also, he has issued through the same publisher a leaflet at the modest price of 2d., addressed to the public. The most directly successful advocate of vaccination, however, is small-pox itself, as is at present being witnessed in London. Up to November 14th cases treated by the Metropolitan Asylums Board since October 25th had increased to fifty, of which fifteen had proved fatal. Forty-five of the fifty were in Poplar. A case has occurred in Shoreditch, another in Lincoln, another in Paddington, and it has been stated that cases have occurred also in Lambeth, Tulse Hill, and Streatham, but we have not been able to verify these. A scheme of "mass vaccination" is being taken up by many leading business firms in London, whilst the Westminster

[1] British Medical Journal, August 19th, 1922, p. 316.

[2] A Survey of the Present Position of Small-pox and Vaccination affecting this Country. G. A. Wareham, 90/91, Queen Street, Cheapside, E.C.4. (Pp. 23. 1s.)

Guardians have authorized their public vaccinators to vaccinate persons employed in Westminster though resident elsewhere.

THE STRASBOURG MEDICAL DEPUTATION.

On the evening of Wednesday, November 8th, the Fellowship of Medicine gave a small dinner, hastily arranged, to meet members of the delegation from the University of Strasbourg, who, as we mentioned a fortnight ago, on their return from an inspection of medical schools in America, visited this country with the same object. Sir George Makins, President of the Fellowship, was in the chair, and Sir Humphry Rolleston, President of the Royal College of Physicians and Chairman of the Executive Committee of the Fellowship, was among the hosts. The members of the Strasbourg delegation present were Dr. Maurice Nicloux and Dr. Lucien Pautrier. Dr. Nicloux, who is professor of physiological chemistry in the University of Strasbourg, has done much important work in pharmacology, particularly with reference to alcohol. For a time he was associate professor in the University of Paris, served during the war, and was appointed to the University of Strasbourg at its reorganization in 1920. Dr. Pautrier is professor of dermatology and head of the cutaneous diseases clinic at Strasbourg; he is particularly known for his writings on tuberculosis of the skin. He also served during the war and was appointed to the University of Strasbourg at the time of its reorganization. After the health of the King and that of the President of the French Republic had been duly honoured, Sir George Makins gave a toast to the University of Strasbourg; he recalled its long history and mentioned some of its many vicissitudes, including the period of over forty years during which it was a German university; he also spoke of the fine temper shown by the French in the reorganization of the University, and praised the enterprise of the faculty in sending a delegation to America and Great Britain to study methods of medical teaching and research. Sir StClair Thomson, chairman of the Social Committee of the Fellowship, followed with a spirited speech, in French, during which he expressed the fear that the delegation might not have learnt much in studying the English system of medical education, since there was, in his opinion, no such system, each school having its own individualistic methods. Professor Pautrier, in reply, immediately countered Sir StClair Thomson by asserting that the delegation had indeed learnt much in Great Britain and that the very fact that the schools each had so much individuality was in itself a lesson. He sketched some of the recent developments of the University of Strasbourg and expressed the hope that many members of the British profession would visit the city next year during the celebrations of the hundredth anniversary of Pasteur's birth. Immediately afterwards the company adjourned to the house of the Royal Society of Medicine, where that evening a conversazione was held, during which Sir John Bland-Sutton charmed a very large audience with the address "Spolia nemoralia," published in our columns last week; during his address he exhibited the specimens illustrated in our report of his address. They are to be placed in the Museum of the Royal College of Surgeons of England. The dinner was a model in its way; it was timed for seven o'clock, started a few minutes afterwards, and was over by twenty minutes to nine. Judging from remarks we heard, those present, who included many ladies, enjoyed the dinner far more than if it had been prolonged by many set speeches.

HEALTH PROBLEMS IN THE WEST INDIES.

An article in *United Empire*, the journal of the Royal Colonial Institute, for November, 1922, by Dr. G. B. Mason, discusses many points of importance in regard to health problems in the West Indies. The need for improved conditions of public health and sanitation and for an efficient and adequately paid medical service has lately been emphasized in the report on the West Indies[1] by the late Under-Secretary of State for the Colonies, the Hon. E. F. L. Wood, and by the resolutions passed by the West Indian Medical Conference at Georgetown, British Guiana, in July, 1921.[2] The latter conference made twenty-three recommendations to the Secretary of State, but Dr. Mason points out that it did not refer to the high infantile mortality and death rate prevailing in the West Indies, which are preventable, to the absence of suitable quarters for married men in many districts where medical officers are required, nor to the provision of an adequate nursing service under Government control. In his paper Dr. Mason gives an analytical table of the different British colonies in the West Indies, their population, revenue, birth rate, death rate, infantile mortality rate, and the percentage of the revenue spent on medical services. In 1920–21 the total trade of Bermuda, the British West Indies, British Guiana, and British Honduras amounted to £66,532,328, and the four colonies of Barbados, Trinidad, Jamaica, and British Guiana each had a total trade of over ten millions. The ratio of total revenue to total trade shows that taxation is light, usually about 10 per cent.; the percentage of revenue spent on medical and allied services varies from 4.44 in Bermuda to 18.82 in Antigua, with an average of about 10 per cent. In the last report of the chief medical officer of the Ministry of Health it is shown that the percentage of the total amount of rates for England and Wales in 1919–20 applied to expenditure on health was 21.9 per cent. The birth rate in the West Indies is much higher than in Great Britain, but the infantile mortality rate is in many cases appalling; it is for instance 270 per 1,000 births in Barbados, 233 in Antigua, and 322 in St. Kitts. In the last named island this may be partly accounted for by the fact that the illegitimate births are more than three times the legitimate births; similarly in Antigua the illegitimate births far exceed the legitimate births, and the children die through poverty, neglect, and ignorance. The infantile mortality of St. Vincent is lower than that of any other of the islands—except the small and prosperous island of Anguilla, with a population of just over 4,000, where special conditions exist—and is lower than that of the other islands in the Windward group; it is suggested that this is due to the fact that trained Government midwives practise there. The facts elicited by Dr. Mason's analysis show an extremely unhealthy condition of affairs in many of the West Indian islands. He has, however, much to say in the way of constructive criticism; he advocates the establishment of a proper system of public health administration in the West Indies, including full-time medical officers of health, sanitary inspectors, district medical officers, and Government district nurses. He suggests that it would be a financial economy to have properly equipped hospitals in the towns, to which all serious cases could be sent by boat or ambulance by the district medical officers. Unless a Government district nurse is within reach, the nursing which a patient could be expected to receive in out-districts in the West Indies is, he states, very primitive, and not of the kind that would help the doctor's treatment. The excuse given, of course, for the prevailing conditions in many of the West Indian islands is their lack of money, but Dr. Mason has performed a valuable public service in showing that even under the present financial conditions of the islands the proportion of the revenue spent upon health is entirely inadequate, and should be increased.

VENEREAL DISEASE AS A WAR CASUALTY.

At the War Section of the Royal Society of Medicine on November 13th Surgeon Rear-Admiral W. Bett, in opening a discussion on "Venereal disease as a war casualty," gave figures showing the incidence of venereal disease in the British army at different periods. In 1860 it was 316 per 1,000 of strength; in 1895, 238; and in 1911, 114. In 1922, during the first half of the year, he believed it had come down to 34. In 1888 the percentage of venereal disease to all diseases was 30.7; in 1912, 16.3; and in 1921, 7.5. In 1888 the number of cases of gonorrhœa and syphilis were approximately the same; in 1921 (in the southern command) there

[1] British Medical Journal, July 15th, 1922, p. 99, and Supplement, p. 22.

[2] British Medical Journal, September 24th, 1921, p. 493.

were 3.3 cases of gonorrhoea to 1 of syphilis. The figures for the navy did not fluctuate as widely as the military figures. In 1870 the admission ratio in the navy was 98 per 1,000; in 1913 it was 93; in 1915, 67. Syphilis was supposed to have been very prevalent in the French army during the eighteenth century, and in the Peninsular wars it was rife. In the Crimean war the British army did not appear to have suffered severely; in most cases the disease was contracted at home. The incidence in the Baltic fleet during that campaign was 47 per 1,000, and in the Black Sea fleet, which was farther from home waters, 26 per 1,000. In the South African war the incidence in the British army was diminished, though there was an increase after the war. It was difficult to get precise figures for the European war. In 1917 from 7,500 to 9,000 cases were constantly in hospital in the United Kingdom. In France during the same year it was calculated that there were about 8,000 cases constantly in British hospitals. In both services much had been done to combat the disease. Lectures were given in all ratings, and measures of personal prophylaxis described in detail. Men were made acquainted with the earliest symptoms in order that they might report at once, and concealment had become quite uncommon. His own opinion was that the evil was so great and widespread, and so apt to involve the innocent, that almost any measures were justifiable if only they were efficient. The best method of prophylaxis seemed to be thorough washing with soap and water immediately after the act, together with micturition. Ointments and lotions should also be used if available. It seemed quite clear that "packets" had been of great service in causing diminution of the disease. Much could be done also by the encouragement of games, the provision of reading rooms, and instruction in handicrafts and the like. Colonel P. H. Henderson said that in the command in which he was serving the incidence of gonorrhoea had been reduced very little since the introduction of prophylaxis. In 1913 the ratio was about 24 per 1,000, and in 1921 it was 21. The incidence of syphilis, on the other hand, was 16 per 1,000 in 1913, and 6.12 in 1921. He did not put the whole of this improvement down to prophylactic measures; officers of units were now taking much more interest in sports for their men and in the comfort of barrack life. Sir Robert Hill, Medical Director-General, R.N., said that the incidence of venereal disease in war depended largely on opportunity. In the big ships of the Grand Fleet, on which shore leave was given only once a year, the incidence was lower in war than in peace; whereas in the destroyers, which could not go on for longer than three months without refitting, the conditions as to venereal disease became alarming—at one period one-third of a ship's company was infected. Major A. T. Frost thought that prophylactic outfits had failed, not so much because they might not prevent the disease, as because they were difficult for the average man to use. Sir William Macpherson agreed with Rear-Admiral Bett that venereal disease was not strictly a war casualty: the incidence per thousand in the British army in France in wartime was relatively low as compared with the peace-time figures. Sir Percy Bassett-Smith, R.N. (ret.), expressed the view that the ratio of venereal disease was not higher in the services than in the civil community. Until notification became compulsory there was little chance of preventing the disease; though public opinion was against compulsory notification, the evident danger arising from the number of people who left the clinics before their cure was complete might be the thin end of the wedge of notification. The Chairman, Sir A. P. Blenkinsop, remarked that the effect of opportunity was strikingly brought out in the Mesopotamian campaign, where the incidence, as compared with other fronts, was low, until the borders of Kurdistan and Persia were reached. In Persia at that time whole populations were in dire necessity, and women were driven to prostitution for the most trifling rewards. If prophylactic outfits were to be continued they must be simplified; the present arrangement was cumbersome and inefficient.

A CO-OPERATIVE CLINIC IN PSYCHIATRY.

At the Court of Governors of the Middlesex Hospital, to be held on November 30th, we understand that the Board will present a report on proposals for co-operation between that institution and St. Luke's Hospital, in the City of London. The object of this working arrangement between a large general hospital and a registered hospital for mental disease is, briefly, to improve the treatment of early mental and functional nervous disorders. The scheme, which has been under discussion for some years, aims at co-operation in respect of funds, material, personnel, and experience in management, and thus at securing greater economy in administration, with more rapid and efficient treatment of the patients. It is proposed to establish two new wards for male and female in-patients at the Middlesex Hospital, where cases will be treated by members of the medical staff of St. Luke's Hospital under the care of its trained mental nurses. In addition a special out-patient clinic will be set up for dealing with border line cases; this, in effect, will constitute a psychiatric section of the neurological department of the Middlesex Hospital. It is hoped that in this way patients with symptoms of early mental disorder will be encouraged to seek prompt treatment and advice. Those admitted to the new psychiatric wards will be on the same footing as ordinary patients in the general wards of the hospital. Patients attending under this scheme will have the advantage of the full resources of a general hospital, and of the services of a staff skilled in the treatment of mental disease; the need for certification may thus be avoided and the prospects of cure improved. We cordially welcome this development of the work of the two institutions; its results will be watched with sympathetic interest by the medical profession. In our issue of September 23rd, at page 577, we mentioned the out-patient clinic in psychiatry which has been established at Cardiff under Dr. Edwin Goodall, by co-operation between the City of Cardiff Mental Hospital and the King Edward VII Hospital. The clinic is held in the out-patient department of the general hospital, but until suitable indoor accommodation is also available this scheme is regarded by Dr. Goodall as incomplete. The success of the Middlesex and St. Luke's scheme in London would no doubt strengthen his hand in pressing for full development of his plan, although it seems a pity that Cardiff, having started so well, should hesitate to make its scheme complete; the hesitation may perhaps be due to the fact that the King Edward VII Hospital is too small for a centre such as Cardiff and cannot be enlarged on its present site. The difficulties of an out-patient mental department without beds are graphically described in a letter by Dr. R. H. Steen, printed at page 998 of our present issue.

THE NOBEL PRIZES, 1921, 1922.

The Nobel Prize for Chemistry for 1921 has been awarded to Professor Frederick Soddy, F.R.S., Lee's Professor of Inorganic and Physical Chemistry, Oxford, whose work on the radio-active elements and on the constitution of the atom is so well known; that for 1922 is awarded to Dr. Francis William Aston, F.R.S., Research Fellow of Trinity College, Cambridge, who has made many important investigations into the electrical discharges in gases and with regard to isotopes. The Nobel Prize for Physics for 1921 has been awarded to Professor Einstein for his work in theoretical physics, especially the discovery of the law of photo-electric effect; and that for 1922 to Professor Niels Bohr of Copenhagen in recognition of his investigations into the structure of atoms. The Nobel Prize for Literature for 1922 has been awarded to Señor Jacinto Benavente, the Spanish dramatist.

On Wednesday next, November 22nd, at 5 p.m., Professor H. C. Jacobaeus, of Stockholm, will give a lecture at the Royal Society of Medicine on the practical importance of thoracoscopy, especially in the pneumothorax treatment of pulmonary tuberculosis. It is understood that he will exhibit the instruments he uses and show some cases.

England and Wales.

London School Medical Service.

The inspecting officers of the Board of Education have made certain criticisms of the school medical service of the London County Council. They have called attention to the need for further administrative supervision at the treatment centres in order that time may not be wasted by failure to supply medical and dental practitioners with a full complement of cases at each session, and to the need for further professional supervision, especially with regard to the administration of anaesthetics, operation treatment for tonsils and adenoids, and dental work. The inspectors state that the skill of those appointed to do operative work and administer anaesthetics at the centres should be in no way inferior to that available in the best managed hospitals. Apart from these criticisms, the inspectors describe the Council's scheme as admirable. In reply, the London Education Committee states that the inspection in 1922 took place at an unfavourable time. During 1921 the centres were full to overflowing, but in 1922, at the time of the inspection, there was a falling off in many areas. Among other reasons for this were the great prevalence of infectious disease and also the unjustified attacks in a section of the public press on throat operations. The Education Committee is addressing itself to the standardization of the qualifications and experience required of medical officers, and has now agreed that for any appointment involving specialist work a tenure of hospital or other appointments affording special opportunities for acquiring experience, or some special academic or post-graduate study or recognized proficiency and experience in the particular capacity for which the service is offered, shall be required. It has also been decided that no surgeon shall be required, as a rule, to operate on more than eight tonsil and adenoid cases per session of two and a half hours (hitherto the number has been ten). The British Medical Association has asked that a clause might be inserted in agreements prohibiting visits to the centres by unauthorized persons, and the Education Committee accordingly has decided that agreements shall provide that no lay person other than the Council's organizer shall be admitted to the consulting room during treatment without the consent of the doctor. The existing agreements provide that the committees of school treatment centres shall, if required by the Council, certify whether a child patient is fit to attend school during the period of treatment; the Education Committee considers that the doctor in attendance at the centre, and not the committee, should so certify. It has also been arranged that a time-book shall be kept at each centre in which the hours of arrival and departure of the medical staff shall be recorded.

Birkenhead Medical Society.

The annual report of the council of the Birkenhead Medical Society states that there are now on the membership roll the names of 55 members and 2 associated members. During last session the council met four times. Six ordinary meetings were held, at which interesting clinical papers were read and discussions took place, and on one occasion cinematograph films showing bacteria were exhibited. The average attendance was larger than in the previous year. At the annual dinner, held at Birkenhead Town Hall last April, 28 members and 26 guests were present. The following officers and members of council have been elected for the ensuing session: President, Dr. W. A. Pierce; Vice-Presidents, Dr. R. Wyse and Dr. H. Laird Pearson; Honorary Treasurer, Dr. W. A. Pierce; Honorary Secretary, Dr. D. Morley Mathieson; Members of Council, Drs. Fountain Browne, Fardon, Hocken, Francis Johnston, and Owen. The society was founded in 1856.

Tuberculosis in Birmingham.

The report on tuberculosis of the Birmingham Public Health Department states that new cases have been much fewer, the deaths less numerous, and the incidence and mortality among children considerably diminished during the year, both as regards pulmonary and non-pulmonary tuberculosis. There has been a continuous decrease in the number of cases notified and of deaths from tuberculosis since 1913: in that year 5,196 cases were notified, and there were 1,341 deaths—a death rate of 1.53 per thousand, while in 1921 2,247 cases were notified, and there were 1,035 deaths—a death rate of 1.13 per thousand. As regards preventive measures, the antituberculosis administration in Birmingham is carried out by a staff of fifteen tuberculosis visitors, including a superintendent, and the efforts of this staff are directed, first, to induce the patient to obtain early treatment and to follow out the advice given, and second, to improve some of the general social conditions which tend to spread infection. In regard to the treatment of tuberculosis, at the Broad Street Centre for out-patient treatment a total of 31,204 attendances was made by old and new patients, and 815 new patients attended for treatment. There were 670 beds available for sanatorium and hospital patients, and during the year 2,262 patients were admitted for observation, instruction, treatment, or isolation. At the General Dispensary Tuberculosis Department there was a total of 12,371 attendances for treatment.

Scotland.

Royal Faculty of Physicians and Surgeons.

The annual meeting of Fellows of the Royal Faculty of Physicians and Surgeons, Glasgow, took place on November 6th, when office-bearers were appointed as follows: President, Dr. W. G. Dun; Visitor, Dr. W. R. Jack; Treasurer, Mr. J. Hogg Macdonald; Honorary Librarian, Dr. E. H. L. Oliphant; Councillors, the president, visitor, treasurer, librarian, Dr. James A. Adams (as Faculty representative to the General Medical Council), Mr. Henry Rutherfurd, Dr. A. K. Chalmers, Mr. J. Mason Noble, Sir Kennedy Dalziel, Dr. A. Freeland Fergus, Mr. A. Ernest Maylard, and Mr. J. Hogarth Pringle.

Child Welfare in Edinburgh.

At a meeting of the Edinburgh Town Council on November 2nd a recommendation from the Public Health Committee to close Gogarburn House—a convalescent home associated with the child welfare activities of the council—at the end of the current financial year, was adopted by a large majority. It was stated that the committee had realized that the proper way to treat children between 2 and 5 years of age was not in special institutions. Gogarburn House was intended to house a hundred children, but it had never had more than forty-five, and the expense of each child worked out at £150 a year. It had cost, including the outlay on alterations, something like £10,500; when it was bought an isolation building was found necessary, and for this a hut was bought at a cost of £70, but to convert the hut for the accommodation of children cost over £2,000. It had been found impracticable to treat children up to 2 years of age so far out of reach of the town, the parents, and the doctor as at Gogarburn. If the children were given a fair start in life between the ages of 1 and 2 it was believed that they should not need treatment after the age of 2.

The Census of Scotland, 1921: County of Bute.

The county of Bute[1] consists of seven inhabited islands in the lower part of the Firth of Clyde—Bute, Arran, Great Cumbrae, Little Cumbrae, Holy Island, Inchmarnock, and the lighthouse islet of Pladda, south of Arran. The whole group is within the most popular holiday region of industrial Scotland, and postponement of the census from April till June has completely vitiated the statistics, alike as to amount of population, its relation to house accommodation, and ages, sex, and occupations. Rothesay, for example, shows an increased population of 63.7 per cent., and Millport of 261.5 per cent., whilst in 33,711 of a total enumerated population in the county no less than 13,745 were returned as born in Lanarkshire. All these things being so, it is needless to enter into any details of the contents of the report, excepting, perhaps, to note that 1,453 persons were Gaelic speakers, or 628 less than in 1911. The whole 1,453 were bilingual.

Glasgow Medical Lunch Club.

At the usual meeting of this club, held on November 9th, Dr. W. L. Reid presiding, Mr. D. M. Cowan, M.P. for the Scottish Universities constituency, was present as the guest of honour. After lunch Mr. Cowan gave a short address, touching on several matters of medical legislation, and impressing on

[1] Ver. i, Part 10, of Census of Scotland, 1921. H.M. Stationery Office, 23, Forth Street, Edinburgh. 4s. 1½d. post free.

members the need on the part of lay members of Parliament for guidance from the medical profession on all matters of medical importance. He said that he would welcome some authoritative lead from the profession on all legislation pertaining to medicine. Dr. James Dunlop (Shettleston), in expressing the thanks of the members to Mr. Cowan, assured him that the medical profession in Glasgow would gladly help him in the matter of medical information.

Sydney.

Retirement of Dr. G. E. Rennie.

Under the regulations of the Royal Prince Alfred Hospital, Sydney, fixing the age limit for retirement from the active staff at 60 years, Dr. G. E. Rennie has retired from the position of senior honorary physician and has been appointed on the honorary consulting staff. Dr. Rennie gave a farewell address to the students and the honorary medical staff. He, along with Dr. F. Antill Pockley, who has also recently resigned the lectureship in ophthalmology in the university and the position of senior ophthalmic surgeon to the hospital, were entertained at a complimentary dinner by the members of the honorary medical staff.

Industrial Hygiene.

At the invitation of the industrial department of the National Y.W.C.A. the welfare nurses employed in business houses in Sydney recently heard an address from Dr. Lanza, the Commonwealth expert in industrial hygiene. He first sketched briefly the development of industrial hygiene work, beginning with the effort at accident prevention. The next step was in regard to dangerous occupations, such as those involving the risk of phosphorus or lead poisoning. After a time it became evident that there were problems of health not so clearly defined as accidents and occupational diseases but yet involving an economic loss to the community. The employment of the trained nurse in the industrial plant had been a great step forward. The work of the nurse at the dispensary was much more than attention to minor accidents—it was preventive work and was of great value from the business as well as the human point of view. He emphasized the necessity of the nurse keeping proper records of all cases treated, showing the nature of the injury, the amount of time lost, and the department from which the patient came. In this way it was possible to compute how much time was lost to business. A run of some particular ailment in one department might point to some defective condition in it, such as the lighting. Dealing more especially with the industrial prospects of Australia, he said that the natural development of industry in a country so largely wool-producing would be in the direction of an increasingly large number of women workers. While there was a variety of opinions as to the effect of industrial conditions on the health of women, there was not much accurate information; it was necessary, therefore, that those who were working in plants employing women should keep accurate records if any scientific conclusions were to be reached. As an illustration of the value of deductions to be made from such records he spoke of one firm which had experienced heavy loss in selling silk reels because of bad matching. The health department on investigating this matter found that headaches were common among the employees, and that these were due to defective eyesight. Under appropriate treatment with glasses the trouble disappeared and the firm's loss also ceased.

Proposed Cancer Home.

It is proposed to build a home for cancer patients in the grounds of the Home for Incurables at Ryde, near Sydney. The urgent necessity for some accommodation for patients suffering from cancer has long been recognized, but the authorities of the Home have not been able to accommodate these cases. Plans for the proposed institution are now being prepared. It is estimated that the building will cost £27,000, and of this amount £23,000 is already in hand. The necessity for this home is obvious from the striking figures quoted by the Government statistician. During the years 1914–20 more patients died from cancer and other malignant growths than were killed in several of the spectacular battles on the Somme, the total for seven years for the whole of Australia being 28,556. The statistician points out that the male death rates from cancer in 1920 were in excess of those from tuberculosis in all the States except Western Australia, while the female deaths from cancer were in excess in all the States. While the death rates from tuberculosis show a general tendency to decrease, the death rates from cancer display an increase in nearly every recent year.

Attention was directed to the question of the increase in cancer and the reported advances made in its treatment by *x* rays by a question asked in the Legislative Assembly by Dr. Richard Arthur: "In view of the favourable reports of medical authorities that cures of cancer can be effected, and other forms alleviated, by the use of *x* rays, will the Minister of Health consult with the experts with a view to securing a modern *x*-ray plant, and place the necessary sum on the estimates for this purpose?" The Minister agreed to adopt this course.

Correspondence.

INSULIN AND DIABETES.

Sir,—In connexion with Professor J. J. R. Macleod's interesting article on insulin and diabetes, and the difficulties of manufacture arising from the circumstance that the trypsin of the pancreas attacks and destroys the insulin, I may perhaps suggest to those working on this subject that the trypsin might be neutralized and got out of the way by pounding up the pancreas in serum.

I have elsewhere[1] drawn attention to the relevant fact that the erosion of the abdominal walls by tryptic ferment, which is so great a source of misery in duodenal fistula, can be very easily and effectively combated by calling in to our aid the antitryptic powers of the serum—in other words, by applying lint soaked in normal horse serum.—I am, etc.,

London, W., Nov. 11th. Almroth E. Wright.

Sir,—It has been known for some time that the injection of a fresh extract of the pancreas reduces the sugar content of the blood in normal animals, and on this point the experiments quoted by Dr. Thomson[2] confirm the observations Howard, Forsyth, and I published in 1921.[3] For a much longer time it has been recognized that such injections temporarily improve the glycosuria and hyperglycaemia following pancreatectomy, but numerous attempts to apply this knowledge clinically to the treatment of diabetes have ultimately ended in failure, in spite of an ephemeral success in some instances.

The most satisfactory results appear to have been obtained by Zuelzer and his associates,[4] who employed an expressed extract of the gland treated with alcohol. Six cases were given injections of this preparation, and the effects were reported to be uniform and constant, the sugar, acetone, and aceto-acetic acid always diminishing and usually disappearing from the urine in two to three days. The after-history of these cases has not been reported, nor have further successes been claimed for the treatment. Later Forschbach, employing the same method,[5] obtained similar results with depancreatized dogs, but was not so fortunate with human diabetics, for, although he found a temporary reduction in the glycosuria, the acetone excretion was not affected, the temperature was raised, and other serious symptoms developed.

The main point in which the earlier work of the experimenters in Macleod's laboratory differed from that of previous observers appeared to be that they had succeeded in devising a method of preparing an extract of the islands of Langerhans, free from the digestive ferments of the pancreas, by making use of Schulze's observation that ligature of the ducts leads to degeneration of the glandular acini, while the cell islets remain intact, and later by taking advantage of Ibrahim's statement that the foetal pancreas is almost free from proteolytic enzymes. Now, however, they seem to have abandoned these procedures and reverted, more or less, to the methods previously adopted by Zuelzer and Scott, using the whole pancreas of the full-grown ox and alcohol as a means for removing the protein and digestive ferments. The strict propriety of the name "insulin" for this preparation is therefore open to question.

As was the case with Zuelzer's, and later with Scott's, preparation, the extract now being used by the Toronto workers gives encouraging results with depancreatized

[1] *Technique of the Test and Capillary Tube.* Clinical Appendix on the Antitryptic Function of the Serum.
[2] British Medical Journal, November 11th, 1922, p. 948.
[3] Ibid., October 15th, 1921, p. 585.
[4] *Zeit. f. exp. Path. u. Therap.*, 1908, v. p. 397.
[5] *Deut. med. Woch.*, 1909.

animals, but I am quite in agreement with Dr. Thomson when he says it is doubtful "whether the condition of animals after that operation is exactly equivalent to the extraordinary variety of conditions in man which are collected under the name diabetes." My experience with the methods of differential diagnosis that I and my fellow workers have recently elaborated has suggested that insufficiency of the internal secretion of the pancreas is the dominant factor in less than half the cases of glycosuria met with in practice in this country, and one would therefore expect that "insulin" would be useful in some such proportion of diabetics, but as it must be administered intravenously or subcutaneously, and the effects are transient, it is evident that it is not a method of treatment to be lightly undertaken or that can be continued indefinitely. As yet the clinical data are too scanty for a definite conclusion to be reached, but so far as can be seen at present it seems likely, as Macleod himself has said,[1] that insulin will be chiefly of value in tiding patients over those crises which are frequently uncontrollable by other means. It is advisable that stress should be laid upon this statement in view of the optimistic forecasts as to its curative properties which have been so widely circulated in the press recently, thereby raising exaggerated hopes, which are not likely to be fulfilled, in the minds of many diabetics.—I am, etc.,

London, W., Nov. 11th. P. J. CAMMIDGE.

THE TREATMENT OF ACUTE SALPINGITIS.

SIR,—After reading the paper by Dr. Campbell on the treatment of salpingo-oöphoritis and the discussion thereon at the Annual Meeting of the British Medical Association, reported in your issue of October 14th, I was surprised that no mention was made of treatment of acute suppurative salpingitis by salpingostomy—that is, a complete laying open of the tube from the abdominal ostium to the uterine cornu, followed by drainage of the pelvic cavity for a variable number of days. So crude a procedure as the removal of the suppurating tube is advocated by Dr. Campbell at the earliest possible moment, apparently on the baseless analogy drawn between suppurative inflammations of the tube and appendix. The reasoning is that apparently both tube and appendix have something of the same gross appearance, both are liable to contain pus, and both may cause a varying degree of peritonitis, therefore why should not the suppurating tube be treated in exactly the same manner as an appendix in a similar condition? There is so patent a confusion of thought in this reasoning that some of those who took part in the meeting assumed that Dr. Campbell had put forth his thesis chiefly in order to provoke a discussion which otherwise might have languished. But in his closing remarks Dr. Campbell is reported as having maintained his ideas of the analogy of the appendix and the tube, and we must therefore accept his views of treatment as his considered judgement.

To my mind the analogy breaks down when we remember the fundamental differences in bacteriology and morbid anatomy of inflammation of the appendix and the tube and in the clinical differences and dangers of the two diseases. In the one case is a virulent combination of streptococcus and *B. coli* derived from the bowel, liable, as we know, to set up a rapidly disseminated general suppurative peritonitis, usually fatal; while in the second case the organism is ordinarily the gonococcus (except in puerperal cases, when the streptococcus is often present in addition), a microbe of much less danger to the peritoneum, and seldom the cause of a spreading peritonitis. The perforated appendix is virtually of the same order of lesion as the perforated colon, for by its rupture it liberates the same organisms into the peritoneum—an accident of the greatest potential danger.

Moreover, the appendix is situated in the abdominal cavity proper, while the tube leaks its pus into the depth of the pelvic cavity (puerperal cases excepted), where it is in the large majority entirely shut off from general dissemination.

Treatment of the acutely suppurating tube, therefore, is seldom required for an extending general peritonitis, but should be designed with these objects:

1. To prevent the persistence of a chronic pelvic peritonitis, due to interstitial salpingitis.
2. To prevent the formation of a pyosalpinx.
3. To preserve the patient's chances of future child-bearing.

Removal of the tubes will ensure the first two conditions provided the ovary is not infected, but it will condemn a woman, frequently young and recently married, to a life of sterility.

[1] *Proc. Amer. Physiol. Soc.*, December, 1921.

Salpingectomy is an unnecessarily harsh treatment, and, in my opinion, should not be practised unless the tube has been previously damaged beyond functional repair by former attacks of inflammation. For a first attack complete salpingostomy is a more rational form of treatment of the tube. First, by affording wide evacuation of pus along the whole lumen, it allows resolution of the tube wall, rapidly restoring it to a condition indistinguishable from the normal slit tube (as proved in one of my own cases at a subsequent *post-mortem* examination following death from pneumonia); secondly, the formation of a pyosalpinx is obviously impossible; and, thirdly, the tube, after full resolution, is able to function again as a gutter along which ova can be conveyed to the uterus.

The greater number of cases of salpingitis are mild enough to escape operation, but where I join issue with Dr. Campbell is that, having opened the abdomen, salpingostomy is a more rational mode of dealing with the tube than salpingectomy.—I am, etc.,

London, W., Oct. 31st. ALECK W. BOURNE.

PSYCHO-ANALYSIS.

SIR,—The leading article in your issue of November 11th tempts me to urge the foundation of a special institution for psycho-analysis—call it hospital or clinic or what you will.

To your readers facts about my work may be of little interest, but at the risk of being egotistical, I feel I must give them as they are not hearsay evidence, and I believe can be confirmed by the experience of others.

At King's College Hospital, Denmark Hill, I have an out-patient department for mental diseases. The following patients have consulted me:

A young man who has, as the principal symptom, the fear that he will swallow one of his buttons. At frequent intervals during the day the unfortunate youth is compelled to count each button on his clothing lest, perchance, one may be missing, and he may have swallowed it. He is virtually a prisoner, as he cannot even go into the tiny garden at the back of the house for fear he may swallow a fly, or spider, or something else.

A young girl has an uncontrollable impulse to walk to the left. Examination by experts in other departments can find no physical basis for this symptom.

A young girl has auditory hallucinations recognized by herself as hallucinatory. The "voices" are very disgusting and cause her much distress.

A man has irrepressible blasphemous thoughts which he hates and which interfere with the proper discharge of his duties. Another has loss of memory for a definite period of his life extending over years. Then there are the cases of anxiety neurosis—a numerous class.

These are only a few illustrations out of many. I wonder if the majority of your readers realize the unhappy plight of these unfortunate people. Their sufferings are intense. In most cases all social life is impossible for them and in severe instances they are unable to engage in any occupation. What is to be done? Treatment on ordinary medical lines is useless in my experience. With the help of several enthusiastic students I am able to give therapeutic conversations and other psycho-therapeutic measures with a certain amount of benefit. These procedures are not to be confused with a course of psycho-analysis and are of value only in early cases. But my time is limited, numerous other cases await my attention, and I personally cannot undertake a true psycho-analysis.

Attached to the Neurological Clinic and my own is a department for psycho-therapy. The officer in charge has recently resigned, and his successor has not yet been appointed. So I can speak impersonally when I say that even he cannot be expected to give the time required for a full analysis of all the cases which could be sent to him.

Many of these cases also need in-patient treatment. They require rest and removal from domestic worries and injudicious relatives. The mental hospital is not the place for them. They are not insane in the ordinary sense of the word. No general or special neurological hospital will receive them. The Maudsley Hospital may help, but I fear will soon be filled with early cases of the psychoses. The only thing to be done, therefore, is to found a special hospital with out-patient clinic.

It should be staffed with whole-time, well-paid, and comparatively numerous medical officers. Specialists of all kinds should be attached for consultations. Other details are unnecessary for the moment. The advantages of such an institution would be many: I name a few as illustrations. Cases such as I have instanced would receive proper treatment.

Extensive study could be made upon them and results and details could be published in a manner which is not possible in the case of private practice. Research work on the lines indicated by your leading article could be undertaken, and it would afford a splendid opportunity for post-graduate teaching.

Where is the money to be found? I have no doubt that the public would provide the money if the profession were to endorse such a scheme. The first thing is to convert the medical profession. Hence this letter.—I am, etc.,

R. H. Steen.

City of London Mental Hospital, Dartford, Kent.
Nov. 15th.

Sir,—I was astonished to find from Dr. Steen's letter (November 4th, p. 894) that he apparently believes that thought can occur without physiological nerve and brain activity, and that he considers belief in the latter to be demoralizing. Thus he would condemn every scientist who uses it as a working hypothesis as demoralized. He then recommends the anxious inquirer to study Dr. Hart's "little book" in which he himself has such implicit faith. This seems to me very much like suggesting a Sunday school tract as a serious contribution to a discussion on some abstruse problem in exegesis, for I can find nothing either in Dr. Steen's letters or Dr. Hart's book to justify faith in what the writer of your excellent leading article has called "the diagnostic tools" of the psycho-analysts. The question of suggestion has been ably dealt with by Dr. Elder. To respond with a direct negative in no way disposes of it.

Throughout Dr. Steen seems to reject that which according to knowledge and analogy is probable and to accept that which is so improbable as to require much to be taken on trust in order to make it appear conceivably possible. Under these circumstances it is surprising to find your correspondent indulging in cheap sarcasm with regard to the former. In the third paragraph of his letter there is something remarkably like an attempt to avoid the main issue if not to side-track it.

Dr. Steen is good enough to ask for suggestions as to literature. In all seriousness I would recommend a study of psychology—such works, for instance, as *Psychology from the Standpoint of the Behaviourist* by John B. Watson, *Human Psychology* by Howard Warren, and *Human Behaviour* by Stewart Paton. In the last he will find the following sentence: "We now know that there are no specific differences of kind but only those of degree between the reflex activities of the protozoa and the highest mental processes of man." The perusal of such works will show Dr. Steen that psychological problems can be studied by the aid of physiology and logic. Assumptions, assertions, and sarcasm may have their uses, but are out of place in scientific controversy. —I am, etc.,

P. McBride.

Harrogate, Nov. 12th.

Sir,—In connexion with the correspondence in your columns on psycho-analysis I trust you may find room for this (the first) intimation of a discovery on the subject of dreams which you may agree to be of epoch-making importance—or you may not.

The origin was very simple. I dreamt that the newspaper had not come; and where this might have led I cannot say, but—perhaps fortunately for the future of psychology—I awoke, and my thoughts turned at once to the interpretation of the dream. The thing seemed so simple and apparently so innocent that I knew from my Freud it could only refer to some gross and coarse erotic desire, of a nature so base that I could only be thankful that I was unable to recognize it; and I knew that it remained unsatisfied, for otherwise it could not have caused my dream. But I soon became conscious of mental conflict, and I lay awake and thought. Was Freud right? Of course he was—no, he wasn't. Was I really of so base a nature? Of course I was—no, I wasn't. Ever-increasing conflict. The strain became almost intolerable, and might well have upset better balanced minds than mine when—unexpectedly, mercifully—the conflict was resolved, not by the discovery of the subconsciously desired orgy, but by the recognition of a truth which underlies, and incidentally both confirms and the opposite (upsets), all that Freud has taught. For I had interpreted my dream—and, as a necessary corollary, a sense of peace came over me. "The newspaper had not arrived!" At last I knew what it meant, and my conviction became complete when the maid came in with my early cup of tea—it meant that I wanted my breakfast.

From this simple explanation of this simple dream emerges a new theory of dreams, based on the work of Freud, but going deeper and incriminating the most primitive of all instincts. Obviously all dreams refer to food and to the desire for food—an instinct more all-prevailing and, to some natures at least, more frequent even than that of erotic desire.

A few of my deductions will show how completely this theory explains all dreams. All newspapers refer to breakfast, or the opposite (evening papers). All very hard objects are either bones or oyster shells (inedible) or the opposite (soft, inedible—for example, sand). All soft objects are puddings or, if very soft, soufflés—or the opposite (not soufflés). An india-rubber ball is clearly gristle (can be chewed but not swallowed) or the opposite (*must* be swallowed—conflict; for example, party with all eyes on the gristle-chewer). All colours I find refer to drinks—for example, yellow stands for beer, or the opposite (not beer—conflict); while green stands for undrinkable things generally (accepted—no conflict), or the opposite (Chartreuse; idea again accepted—no conflict). All rhythmic movements—riding, organ-grinding, the treadmill, etc.—obviously refer to mastication, and children who grind their teeth at night have greedy natures, or the opposite (ungreedy natures); and so have we all, if we will only be honest with ourselves.

But I take up too much of your space. Anyone can elaborate the theme to suit his fancy. As I desire to avoid an overwhelming correspondence, I beg to subscribe myself —Obediently yours,

A. Dreamer.

October 31st.

LILLIPUTIAN HALLUCINATIONS.

Sir,—The attention called to the above syndrome in the Epitome (November 4th, 1922, No. 331) is of interest because of its rarity and the fact that it has so far received little notice in the textbooks and literature, and, therefore, the following case of a bedridden old lady may be worth recording.

Mentally she was exceedingly clear in every other respect, but she used to describe to me most vividly pictures of hosts of very little people who appeared to her to be working upon buildings, fortresses, etc., all within the range of her own small room, the operations apparently taking place around and about the foot of the bed, and the furniture. She was generally quite interested in watching and describing their work, hundreds being employed and miniature horses and wagons used to haul timber and stone, and she would enter into details as to the way they were dressed and harnessed. Some of the figures apparently worried her a little because they ranged themselves just outside the window and gazed at her as she lay in bed, but it was not until some visiting ecclesiastic tactlessly told her that they were "bad angels come to punish her for her sins" that they seriously upset her, and it took considerable time and effort to dislodge this wicked suggestion from interfering with her otherwise peaceful serenity.

Her descriptions conjured up scenes similar to those met with in *Gulliver's Travels*, though I doubt very much whether she had ever read, or even heard, of Swift's inhabitants of Lilliput.—I am, etc.,

F. M. Rowland, M.D.

Lichfield, Nov. 4th.

SERUM BY THE MOUTH.

Sir,—In the Journal of October 14th Dr. D. Montgomerie Paton of Melbourne states that I used serums orally in 1892, and adds "where Dr. Allison admits he still is my work begins." I, however, am hardly where I was in 1892, my statement being: "I think 5,000 units of (antidiphtheria) serum more powerful in this way (raising body resistance) than 20,000 units of any other variety. Why I do not know, but it cannot be the horse serum (that is, the common basis) *per se*."

If Dr. Paton can tell me I shall be glad. And perhaps I may be allowed to use, Mr. Editor, some words of your own, as uttered in the Journal of October 28th in this connexion:

"Whether it be the chemist observing an unexpected precipitate, or an astronomer measuring the variability of a star, the new phenomenon must be accurately recorded and verified before the explanation is sought. The observation of the effect must precede the cause; the existence of a problem must come before its solution can be considered."

And it often requires, I think, different types of minds to make the whole of a problem complete. The experimental mind makes the experiment; the observing mind notes the occurrence; the analytical mind seeks the explanation. But the observation precedes and causes the explanation.

The work of Sir Patrick Manson is deservedly honoured, but has the Peruvian (?) medicine man who discovered cinchona bark and the treatment of malaria had his fair share of recognition? And of the two—Manson or medicine man—which was really the greater human benefactor? Malaria (its hot stage preventing sweating, which means torture in the tropics) was the problem, the mosquito was its solution, but quinine was its cure. And the malaria and quinine came first.

And so in a less degree with serums and vaccines orally. The administration comes first and causes the explanation, which comes later. Only the observation is not where it was in 1892, because it has been extended by the giving of anti-diphtheria serum orally in follicular tonsillitis, pneumonia, and influenza. In doing so I think I have proved that this serum is not specific for diphtheria alone, but that it is a specific (and a potent one) in raising the resistance of the body to diseases other than diphtheria.

Whilst the practical results appeal to me far more than the explanation, if Dr. Paton, in *New Serum Therapy*, can say why the effects of antidiphtheria serum are so much better than other serums, I shall be very pleased to have the explanation, because it may mean that others will try the oral methods and the extended use of this valuable remedy. And this will be to the common good, as in my opinion the oral method reduces the incidence of anaphylaxis and other drawbacks of the hypodermic method, the dosage being the same.—I am, etc.,

T. M. Allison, M.D.,
Honorary Physician to the Wingrove Hospital, Newcastle-upon-Tyne.

November 4th.

P.S.—Since this was written there has been published in the Epitome of November 11th a note showing that the oral administration of vaccines is exciting interest abroad. The note states that Nicolle and Conseil have brought forward evidence in favour of the efficacy of this method in Malta fever and bacillary dysentery.

ETIOLOGY OF RICKETS.

Sir,—The interesting discussion on the causation of rickets in the British Medical Journal of November 4th (p. 846) must appeal to many general practitioners. As one of them, I may be permitted to offer a few observations on the disease.

There are, I suggest, two factors, and only two, concerned in its causation: (1) the state of the air the child breathes—the air factor; and (2) the kind of food the child is fed on—the food factor. Both these factors act and interact, so that it is, in some cases, not easy to determine the predominating factor. I believe in the vast majority of cases of rickets the air factor is the predominating one. A father and mother, belonging to the poorer paid members of the working class, live in a kitchen with four or more children. The window is closed; likewise the door of the apartment. These are the ideal conditions for breeding rickets. And here, in accordance with the theory involved, it is not usually the first born that suffers from rickets. It is the "late arrivals" on whom the brunt of the disease falls. It is, in my opinion, the poisoned state of the air the child breathes that is the great factor in developing the disease. It does not necessarily follow that rickets is due to a defective supply of oxygen, although if the kitchen window is kept open for three or four inches by night and by day the disease will, as in the cases I have watched, probably become arrested.

The early symptom of rickets is sweating about the head, especially at night; the hair in consequence becomes matted. Although convulsions in childhood are generally ascribed to the cutting of teeth, indigestion, etc., I think there is usually a rickety basis. My belief is now so strong that I go so far as to tell the mothers of children who have fits that if they will keep the window open night and day their child will never have a fit.

I am not so competent to discuss the food factor. But my daughter, in the early months of her life, was fed on pasteurized milk. She developed signs of rickets, sweating about the head, and a tendency to lunar curves of the tibias. There was nothing for it than to put her back on plain cow's milk and run the risk of bovine or other infection. The signs of rickets disappeared, but the tonsils and the adenoid tissue in the roof of the pharynx became infected. I have little doubt that these disorders are due to bovine infection. —I am, etc.,

Glasgow, Nov. 6th. John T. MacLachlan, M.D.

Sir,—I have been reading the discussion on the etiology of rickets in the Journal of November 4th with great interest, and cannot believe it is a disease due entirely to faults in diet. I was in charge of the Madras Maternity Hospital for some years, and over 20,000 patients passed through my hands, and I can recall no case of a truly rachitic pelvis. There were numbers of cases of flattened pelvis, and this we attributed to the habit of children and young adults of carrying heavy pots of water on their heads. A few of the higher caste Brahmin and Gosha Mohammedan women came as inmates. The rest of our patients consisted of Europeans, Eurasians, Mohammedans, and Hindus, the last largely predominating.

The diet of the poor in South India consists of raggi, cumbu, or cholum, with a few pieces of meat in the curry at night, now and again. Rice is not the staple diet of the native of the south, as pointed out years ago by the late Surgeon General Cornish, C.I.E.—rice to the poor is a luxury. Ghi (clarified butter) or gingelly oil are used in cooking. Butter milk is occasionally drunk.

Children run about in the sun as soon as they can toddle, and are naked except for a string round their middle. They take the breast up to 3 years of age, and are dosed almost daily with castor oil. In the *Indian Medical Gazette* I used to read the reports of the midwifery hospitals in the north of India, and the number of operations required on account of rachitic pelves was large. I cannot certify the diet of the poor in the north, but bajri—a millet—seems the staple article; moreover, they eat chupatties, made of unleavened flour and ghi, which are not used in the south. The diet in the north is as nourishing or more so than in the south; in the latter rickets is unknown, whereas in the former it is a common complaint. In the south it is never cool; in the north frost prevails; the sun is, however, hot. In Iceland rickets is stated to be unknown.

Surely there is something more than diet to account for such a discrepancy. Most diseases nowadays are due to microbes or infection—why not rickets?—I am, etc.,

A. J. Sturmer,
Clifton, Bristol, Nov. 7th. Lieutenant-Colonel I.M.S.(ret.).

TREATMENT OF FEVER.

Sir,—In your issue of June 4th, 1921 (p. 835), you were good enough to publish a letter from one of us on the treatment of toxaemia by means of the following complex:

Aspirin	...	...	...	...	gr. x
Phenacetin	...	...	...	...	gr. v
Pulv. ipecac. co.	...	...	...	...	gr. v

It was suggested that in febrile diseases the sweat centre is paralysed by the toxins (hence the dry skin), that toxins are eliminated by the sweat (hence the moist skin which accompanies recovery), and that the complex tends, without producing ill effects, to restore the centre to action. Since then the treatment has been extensively tested with very considerable success in a number of acute febrile diseases—measles, pneumonia, diphtheria, erysipelas, puerperal fever and sepsis generally, inflammation and threatened abscess (before pus formation), and the like. Even in pyorrhoea it gives quick but only temporary relief. The action in erysipelas is typical and striking. If given early and continued day by day, the guide being the temperature, the inflammation will be reduced at the site of origin, commonly within twenty-four hours, and the patient will declare himself much relieved; but there will be a ring of inflammation, somewhat narrow and faint (comparable to the ring in ringworm), round the original site. Next day the ring will have retreated farther and be fainter, and so on, day by day. About the fifth or sixth day the patient will have recovered.

The almost invariable result of this treatment in acute disease is sweating, fall of temperature, and immediate relief from pain and feelings of illness. The signs and symptoms may, commonly do, recur; but they can be reduced again and again. In any case, the illness tends to run a short course of

reduced severity. A more extended statement is in preparation. Meanwhile we have had no opportunities of trying the treatment in small-pox. May we appeal for help to your readers, and express the hope that they will publish their results? Our hopes, we may almost say expectations, are that, if the treatment be employed early in the disease, vesication may be prevented; or, if not vesication, pustulation; or if not the prevention of pustulation, at least a mild attack may be secured.—We are, etc.,

R. J. G. Parnell, Surg. Comdr. R.N.
Stephen Green, M.B., Ch.B., D.P.H.
G. Archdall Reid, M.B., C.M.

Southsea, Nov. 7th.

THE OUTBREAK OF SMALL-POX AT POPLAR WORKHOUSE.

Sir,—I have read with interest your report on the above outbreak appearing in the British Medical Journal for this week. In many ways the outbreak appears to resemble closely the one which occurred in the Mile End Infirmary in 1911. That outbreak originated in an overlooked case, a girl of 12, who was allowed to remain unisolated in the institution until the occurrence of secondary cases revealed the true nature of her illness. The outbreak resulted in nearly 70 cases, 10 of which proved fatal. In the press reports of the outbreak, although the neglect of vaccination in the East End of London was emphasized as a cause of the outbreak, no mention was made as to the vaccinal condition of the unrecognized case, who as a matter of fact was a vaccinated child.

In the present outbreak at Poplar also no mention is made in your report as to the vaccinal condition of the patient whose overlooked attack is responsible for the outbreak. Judging by past experience I think we may conclude that he had been vaccinated. It is unlikely, had he been unvaccinated, that his attack would have been unrecognized. I feel fairly confident, therefore, in surmising that he had been vaccinated, and, if this is so, it will be interesting to learn whether his attack was one of those modified attacks which so often occur in vaccinated subjects, and in which diagnosis is so difficult that mistakes easily occur and cause so much mischief by spreading the disease.—I am, etc.,

Town Hall, Leicester, Nov. 13th. C. Killick Millard.

THE WHITE MAN IN THE TROPICS.

Sir,—In your article, "The Place of the White Man in the Tropics," you make some statements which do not seem sufficiently explicit. I have not read Dr. Hewetson's paper, but most of the points reproduced by you will be readily understood by anybody with a knowledge of the tropics, though I prefer to think that a more limited indulgence in "cocktails" and such-likes and a better appreciation of the fitness of things will win for the tropics a more favourable reputation.

Your article seems to suggest that both the coloured and the white races appeared on the face of this earth at the same time, and that the coloured races were in the tropics or migrated to that region to suit their colour. This idea conflicts with the long accepted theory that pigmentation is a response of Nature to the heat of the sun—an adaptive modification so commonly seen in the animal world.

Not long ago Sir Arthur Keith, doubtless working on these lines, elaborated the pigmentation theory. He was of the opinion that at first all were white people, and that the colour of the tropical man was due originally to a mild chronic affection of the suprarenals caused by the tropical conditions, and that subsequently the system acquired a habit of constantly producing the pigment. This theory of resultant pigmentation gains support from the historic fact that both the Hindu and the Anglo-Saxon are of the same Aryan family, their present differences being probably due to the climatic conditions of the parts they migrated to.

If evolution, ethnology, and the pigmentation theory, with—if you will—Keith's elaboration of it, be accepted, one wonders why now the white man should not be able to live and colonize permanently in the tropics if he will live a sober and regulated life. I do not mean that the physical qualities of the offspring in the tropics must or will necessarily be the same as his ancestors; but is that not a detail?—I am, etc.,

London, Nov. 4th. A. Annesley Gomes, F.R.C.S.

Far be it from us to pretend to settle, in the course of a paragraph, the vexed question of the origin of the races of man. Though some respectable authorities have held the contrary opinion, it is perhaps probable that all races are derived from a single ancestral stock, but if so the separation of the several races now existing must have occurred so far "in the dark backward and abysme of Time," that we may properly regard the white man, the yellow man, and the negro as aboriginal.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Sir,—I deplore the relaxation of the Regulations as affected by the repeal of By-law CXIV. I am of opinion that "the honour and dignity" of the College will be impaired thereby, and that the proofs of "general culture" as at present required will be lowered. In order to counteract this tendency I submit that exemptions to candidates over 40 years of age should be abolished, and that no candidate should be admitted to examination under 30 years of age; also that the examinations in languages should apply to all candidates, and that especially the examinations in Latin and Greek should be expanded, made more comprehensive and more thorough. Membership of the College is now rightly regarded as the professional and educational passport to the Fellowship; therefore the general standard should be raised, especially in view of the new by-law.—I am, etc.,

November 10th. M.R.C.P.

DERMATITIS AMONGST CEMENT WORKERS.

Sir,—With reference to the letter from Dr. S. Norman Dykes, published in the British Medical Journal of October 28th, the following case may be of interest:

J. T., a man aged 38, describing himself as a plasterer's labourer, consulted me in February, 1921, for a desquamating rash, limited to a few spots on the arms and hands. I saw him only once then, and gave him arsenic internally and calamine ointment, which apparently cleared the condition up. I saw him again in September, 1921, when the condition had recurred more extensively, with much itching. I then treated him with a lotion containing lead, tar, and glycerin, but he was back again in November worse than ever. In December I certified him unfit for work, when the condition rapidly cleared up. In April, 1922, he came again, with both hands and forearms completely covered with a profusely exfoliating eczema, similar to that described by Dr. Dykes. This proved very obstinate. Of a variety of lotions and ointments which I tried, I think it improved most with ung. terr., "Fuller's." It has gradually cleared up, but the man is still unfit for work. He told me that his work was chiefly with cement, and that several other men working with him were similarly affected to a less degree.

Perhaps the most interesting feature of the case, regarding it as an occupational disease, lies in the fact that the patient was successful in securing compensation under the Workmen's Compensation Act. His approved society took it up, as I was prepared to certify that I considered the condition due to the man's work, and apparently the employer's insurance company did not make any difficulty about paying compensation. At all events the case did not go to court. This leads me to believe that these are not isolated instances, and that we must recognize cement as a cause of occupational eczema.—I am, etc.,

York, Oct. 31st. J. C. Lyth.

ALOPECIA AREATA AND STRABISMUS.

Sir,—I have read with much interest the comments made by Dr. Charles F. Harford, in his letter of September 30th, and by Dr. W. Inman, in his letter of November 4th, upon my paper, "Alopecia areata and strabismus," contributed to the proceedings of the Dermatological Section at the recent Annual Meeting. I hope to make, at an early date, the further investigations suggested by Dr. Inman.—I am, etc.,

Glasgow, Nov. 12th. J. Goodwin Tomkinson.

Universities and Colleges.

UNIVERSITY OF OXFORD.

The gift of £100,000, made in accordance with the will of Sir William Dunn for the establishment of a school of pathology at Oxford, will be formally reported to a congregation next week, when a proposal to allocate a site in the parks will be made. The gift is subject to the condition that the University shall provide a site, and make permanent provision for the upkeep of the chair of pathology with a full teaching staff. The school is to be known as the Sir William Dunn School of Pathology. The trustees have also offered £3,000 for the adaptation of the existing department of pathology for the school of pharmacology.

UNIVERSITY OF LONDON.

Graham Scholarship in Pathology.—As announced in our advertisement columns, applications for the Graham Scholarship in Pathology must be received by the Principal Officer of the University of London, South Kensington, S.W.7, not later than by the

first post on January 1st, 1923. The scholarship, which is of the value of £300 per annum tenable for two years, was founded under the will of the late Dr. Charles Graham, to enable "a young man to continue his pathological researches and at the same time to secure his services to the School of Advanced Medical Studies connected with the University College Hospital as a teacher under the direction of the Professor of Pathology."

UNIVERSITY OF GLASGOW.

THE following degrees were conferred on November 11th:

M.D.—John Stewart (with commendation).
M.B., CH.B.—W. Morison, G. J. Mullier.

UNIVERSITY OF DUBLIN.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., PART I.—*Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology:* *R. F. J. Henry, *L. C. Brough, *J. R. Bradshaw, *M. A. Gerrard G. A. Sloan, A. J. Mooney, J. McClelland, Evaline E. Mooney, S. Wigoder, D. K. Lyons, Lucy M. Joly, W. A. Taylor, R. K. Carson, R. L. G. Proctor, H. Isaacson, S. E. Magowan, F. V. Duke, I. J. Isaacson, Dorothy J. Booth, P. B. Robinson, L. M. Whitsitt, J. S. Armstrong, L. MacS. Bell, S. Narunsky, W. A. Redmond, P. P. Van der Merwe, J. E. Stokes, Lucy E. R. Pigott, H. W. Strong. *Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene, in completion:* W. L. W. Smith. *Pathology and Bacteriology, in completion:* S. McDermott, Gladys Weatherill, A. V. B. Crawford. *Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene only:* J. E. Beatty, J. L. Levingston, C. Lord-Flood, J. Craig, P. C. de Plessis. *Materia Medica and Therapeutics; Pathology and Bacteriology only:* J. L. Marshall, A. Hawthorne. *Medical Jurisprudence and Hygiene; Pathology and Bacteriology only:* P. D Piel. *Medical Jurisprudence and Hygiene only:* H. Birney.

D.P.H., PART I.—*Chemistry, Bacteriology, Physics, and Metcorology:* T. F. Wilson.

DIPLOMA IN GYNAECOLOGY AND OBSTETRICS.—H. S. Jacobs.

* Passed on high marks.

NATIONAL UNIVERSITY OF IRELAND.

AT a recent meeting of the Senate the following, among other awards, were made:

Medical Travelling Studentship (*Pathology*).—Theobald W. T. Dillon, M.B., B.Ch., University College, Dublin.

The Dr. Henry Hutchinson Stewart Medical Scholarship.—*Physiology:* Catherine Mary O'Brien, University College, Galway; *Anatomy:* John Mowbray, University College, Dublin.

The Senate decided that the conferring fee for all Bachelors' and Masters' Degrees should be £5 (except in the case of medicine and dentistry, the conferring fees for which should remain unchanged).

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on November 9th, when Sir Anthony Bowlby, President, was in the chair.

Issue of Diplomas.—Diplomas of membership were issued to the candidates found qualified at the recent examinations. (The names were printed in our report of the comitia of the Royal College of Physicians, published in our issue of November 4th, p. 894.)

Alterations in the Regulations for the Conjoint Degree.—These, which have been approved also by the Royal College of Physicians, will come into force, and be applicable to candidates who have not passed the required preliminary examination in general education before January 1st, 1923.

The President reported that Mr. K. M. G. Bailey had been elected the Streatfeild research scholar, and that Sir John Lynn-Thomas had been appointed a member of the Advisory Board of Medicine of the University of Wales.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

AT a meeting of the Royal College of Physicians of Edinburgh, held on November 7th, Sir Robert Philip, President, in the chair, J. R. Currie, H. A. Foy, G. Lange, N. Hirschman, and H. J. Parish were elected to the Membership of the College.

The Honorary Fellowship of the College was conferred on Professor Bordet of the Institut Pasteur, Brussels, on account of his distinguished services to medical science; and the Honorary Membership of the College was conferred upon Sir Temulji Nariman, The Fort, Bombay, in recognition of his services to medical education in India.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

WILLIAM JOSEPH DEIGHAN, L.R.C.P. and S.I., having passed the examination, has been duly admitted a Member of the College.

The Services.

NAVAL MEDICAL MEMORIALS.

A BRONZE tablet erected at the Royal Naval Hospital, Chatham, to commemorate the medical officers and members of the nursing staff of the hospital who gave their lives during the war was unveiled by Surgeon Vice-Admiral Sir Robert Hill, Medical Director-General of the Royal Navy, on November 11th. The memorial having been dedicated by the Rev. H. Lloyd, R.N., a wreath was placed at its base by Surgeon Rear-Admiral G. A. Dreeper, C.B.

AUXILIARY R.A.M.C. FUNDS.

AT the recent quarterly committee meeting of the Auxiliary Royal Army Medical Corps Funds, grants were made to cases in the Benevolent Branch for the orphans of officers, amounting to £111 5s. 11d., and grants in the Relief Branch for the widows and children of the rank and file, amounting to £1,301. These funds are for the relief of widows and orphans of commissioned officers, non-commissioned officers, and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force and New Armies, and also for the relief of the children of those who have been so severely disabled in the late war that they need help for the education of children. Requests for relief should be addressed to the Honorary Secretary, at the Offices of the Funds, 11, Chandos Street, Cavendish Square, W.1.

Obituary.

J. M. RATTRAY, M.D.,
Late of Frome.

DR. J. M. RATTRAY, of Frome, who was very well known to members of the British Medical Association ten or fifteen years ago, owing to the frequency of his attendance at the Annual Meetings, died suddenly in London on November 4th.

John Moysey Rattray was the son of Dr. John Rattray of Aberdeen, and was born in that city in 1857. He graduated M.A.Aberdeen in 1877, M.B., C.M. in 1882, and M.D. in 1891. After holding the appointment of house-physician to Aberdeen Royal Infirmary he settled in Frome, where he enjoyed a large practice and took an active share in the life of the town. He was for many years police surgeon and medical officer of the union, and at the time of his retirement was senior honorary medical officer to the Frome Victoria Hospital. He was also connected with the St. John Ambulance Association, for which he was a lecturer. He became a member of the British Medical Association in 1883; he was a member of the Bath and Bristol Branch Council for two periods and president of the Branch in 1911. In 1910 he was chairman of the Trowbridge Division of the Association. Dr. Rattray's health had never been robust, and in May, 1917, he was shot at and rather seriously injured by a patient who was in a state of great mental excitement. A long illness ensued, and eventually Dr. Rattray retired from practice and settled in London. He took a great interest in historical subjects, especially those connected with Scotland, and frequently wrote upon them, for he had a facile pen. He was a Fellow of the Royal Historical Society.

He was a man very much esteemed by all who knew him. His honesty of purpose was transparent, and his kindness of heart was constantly finding expression. The funeral, which took place at Frome on November 9th, brought together a very large attendance of friends, and during the day the flags on the public offices and the Conservative Club were flown half-mast.

T. W. PARRY, M.R.C.S.ENG., L.R.C.P.EDIN.,
Ferndale, Glamorgan.

THE death took place on November 3rd at Ferndale, Glamorgan, from bronchopneumonia of Dr. Thomas William Parry, J.P. He was born at Dolgelly, North Wales, in 1848, and was educated at Edinburgh, where he was considered one of the best students of his year; he took the diplomas of L.R.C.P.Edin., M.R.C.S.Eng., and L.S.A. in 1871. Some fifty years ago he settled at Ferndale, then a small place of about 1,000 inhabitants, where collieries were being sunk; the population has now increased to 25,000. Dr. Parry became surgeon to the collieries and identified himself with every social and philanthropic movement for the welfare of the district. He was greatly beloved by his patients, and his skill as a surgeon was recognized beyond his own area. He retired from active practice twelve years ago, when he was presented with a valuable testimonial by the townspeople. He was one of the senior magistrates of Glamorgan, and until recently sat regularly at Porth police court, where his portrait was unveiled a short time ago. Dr. Parry was an old member of the British Medical Association and was seldom absent from the Annual Meeting. He was a member of the Council of the South Wales and Monmouthshire Branch from 1888 to 1892, and was Vice-Chairman in 1905 and Chairman in 1906 of the North Glamorgan and Brecknock Division. In 1877 he was one of the twelve medical practitioners who were awarded the Medal for Distinguished Merit of the British Medical Asssociation for heroic conduct and self-denial at

a colliery disaster at Pontypridd. Dr. Parry's wife and two of his daughters died some years ago; he is survived by his two younger daughters.

S. H. writes: As an old assistant of Dr. Parry, I desire to pay a tribute to his many estimable qualities. He was a fine representative of the old school of doctors, possessing a remarkable personality. He was a skilful surgeon, and, working without even the advantage of a cottage hospital, he performed many skilful operations in the homes of his patients. He was a charming colleague, and his invariable good humour relieved the sense of tedium associated with medical practice in the grey surroundings of a colliery district. He was always most sympathetic, and his outlook on life was optimistic. As Horace says (*Odes*, II, 3):

> "Omnes eodem cogimur; omnium
> Versatur urna, serius, ocius,
> Sors exitura."

Medical News.

DR. J. J. E. BIGGS, O.B.E., has been re-elected Lord Mayor of Cardiff. Seven members of the medical profession have been elected to the office of Mayor: Dr. E. A. Farr, Andover (re-elected); Dr. C. F. Oldacres, Daventry; Dr. J. T. T. Ramsay, J.P., Blackburn; Dr. F. L. Thomas, Barnstaple; Dr. H. Tibbits, Warwick (re-elected); Dr. H. S. Walker, Louth (re-elected); Dr. J. W. Cleveland, St. Albans. The Lord Mayor of Cardiff and all the medical mayors with one exception are members of the British Medical Association.

THE annual old students' dinner of St. Thomas's Hospital was held on November 10th, at Princes Restaurant, Piccadilly, with Sir Charles Scott Sherrington, President of the Royal Society, in the chair. The company, which numbered over 200, included Sir Anthony Bowlby, President of the Royal College of Surgeons, Sir Robert Hill, Medical Director-General, R.N., Sir George Makins, Sir George Newman, Sir R. Havelock Charles, Sir Seymour Sharkey, Sir F. Stanley Hewett, Sir Arthur Newsholme, Sir Walter Fletcher, Sir Archibald Reid, and Sir William Thorburn. The chairman, in proposing the toast of "St. Thomas's Hospital and Medical School," referred to his own days as a student at the medical school, and spoke of its present prosperity. Sir Cuthbert Wallace, dean of the medical school, who replied, reviewed the year's doings, sporting as well as academic. He regretted the absence of the treasurer, Sir Arthur Stanley, on account of the general election campaign, but he could state that the finances of the hospital were healthy and were now within measurable distance of balancing, the deficit being only about £3,000. The scheme for the erection of a war memorial was now well in hand. The health of the chairman was proposed with a wealth of encomium by Sir Charles Ballance, and was received with acclamation, and Sir Charles Sherrington briefly responded.

A CHANCEL screen erected in the chapel of the Horton Mental Hospital, Epsom, in memory of the fallen members of the hospital and those who died on service at the institution when it was a war hospital, was unveiled on November 11th. On each side of the screen is a memorial tablet bearing the names of fifteen members of the mental staff, and eleven names of the war staff, including a sister, a nurse, and four captains of the R.A.M.C.

A POST-GRADUATE course on recent progress in surgery and orthopaedics, urology, and obstetrics and gynaecology, with special reference to treatment, to be given by members of the medical faculty of Vienna, will begin on December 4th and terminate on December 16th. The hours from 8 to 11 and 3 to 6 will be occupied on each day. The first lecture will be given by Professor A. Eiselsberg, on the lessons of war surgery for civilian surgery. Particulars as to this course can be obtained from Dr. A. Kronfeld, Porzellangasse 22, Wien IX. Another course of the same kind will be held next year from February 12th to 24th. Courses of instruction in special subjects can also be obtained in Vienna during December.

AT the meeting of the Medico Legal Society to be held at 11, Chandos Street, W.1, on Tuesday, November 21st, at 8.30 p.m., Earl Russell will read a paper on the ethics of suicide.

DR. PORTER PHILLIPS will read a paper on "The position of insanity in criminal law" before the Hunterian Society, on Monday, November 20th, at 9 p.m., at the Cutlers' Hall, Warwick Lane, Newgate Street. Members of the medical profession and of the Medico-Legal Society are invited. A discussion will follow the paper.

DR. HARVEY HILLIARD, formerly Chairman of the Westminster Division of the British Medical Association, is among the recipients of honours bestowed by His Majesty on the advice of the ex-Prime Minister; he is created a Companion of the Order of the British Empire in recognition of public services.

A PAPER on "The economy of smoke abatement" will be read before the Royal Society of Arts, John Street, Adelphi, W.C.2, on Wednesday, November 22nd, at 8 p.m., by Ex-Bailie William B. Smith of Glasgow, a member of the Departmental Committee on Smoke Abatement. Lord Newton will preside.

THE annual dinner of the Chelsea Clinical Society will be held on Wednesday, November 22nd, at 7.30 o'clock, at the Café Royal, Regent Street, W.1.

A MEMORIAL fund has been opened to the late Sir Charles Ryall, C.B.E., F.R.C.S., by the Cancer Hospital, Fulham Road, London, at Coutts Bank. It is proposed that, subject to the necessary funds being forthcoming, the memorial shall take the form of a new operating theatre unit.

THE Department of Scientific and Industrial Research has issued a report of its Food Investigation Board (H.M. Stationery Office, 1s. 6d. net) on the transmission of heat by radiation and convection. It relates a large number of experiments made by Mr. Ezer Griffiths, D.Sc., and Mr. A. H. Davis, M.Sc., directed especially to problems of insulation connected with cold storage construction. Ultimately the inquiry extended beyond this, and yielded results which will be of considerable interest to physicists.

THE Chelsea Clinic of Auto-suggestion, 268, King's Road, S.W., was opened in October, 1921, and is in charge of Dr. Monier-Williams and Dr. Charles Harford, who are testing the treatment of disease of organic as well as of functional origin by the method of collective auto-suggestion initiated by M. Emile Coué of Nancy and expanded by Professor Baudouin of the Geneva School of Psychology. The clinic being entirely free is intended for patients unable to afford ordinary professional fees. Medical practitioners are invited to send any cases they consider suitable. Women are seen on Wednesdays at 5.15 and men on Fridays at the same hour.

A PUBLIC lecture on the pasteurization of the public milk supply will be delivered at University College, London, by Dr. Henry Kenwood, C.M.G., Edwin Chadwick Professor of Hygiene and Public Health, on Thursday, November 23rd, at 5 p.m. The chair will be taken by Sir William Collins.

THE Hunyadi Janos bitter water can now again be obtained in this country. The water is very well known, and the proportion of salts in it is clearly very constant, since the analysis made by Liebig agrees very nearly with others made in recent years. The principal salts are magnesium and sodium sulphates; both are present in the proportion of about 16 parts in the 1,000. The water is bottled at the springs, which rise a few miles south of Budapest, and great care is taken to ensure that the water exported is uniform and free from accidental contamination. The English agents are Messrs. Ingram and Royle, 45, Belvedere Road, London, S.E.1.

DR. R. A. DART has been appointed Professor of Anatomy in the University of Witwatersrand, Johannesburg. He is an Australian by birth, and first attended the University of Queensland, where he took the degree of M.Sc. Afterwards he studied medicine at Sydney University, and graduated M.B., M.S. He served with the Australian Expeditionary Forces, and when demobilized became senior demonstrator of anatomy and lecturer on histology in University College, London, under Professor Elliot Smith.

MESSRS. J. AND A. CHURCHILL announce for early publication: *Sterility in Women, Its Causes and Treatment*, by Dr. R. A. Gibbons; *Applied Pharmacology*, by Dr. A. J. Clark, Professor of Pharmacology, University College; *The Theory of Emulsions and Emulsification*, by Dr. W. Clayton; the second edition of Dr. J. D. Gimlette's *Malay Poisons and Charm Cures*, with a preface by Sir William Willcox; and the eighth edition of *Tomes's Dental Anatomy*, edited by Dr. Marett Tims and Mr. C. Bowdler Henry.

THE number of street accidents recorded by the Metropolitan Police during the months of July, August, and September reached the total of 15,419. Of these 198 were fatal, 174 being caused by mechanically propelled vehicles.

UP to the time of going to press the following members of the medical profession have been elected to represent the constituencies indicated in the new Parliament which will meet next week: Sir George Berry (Con.), Scottish Universities; Sir John Collie (Nat. Lib.), Glasgow, Partick; Major L. G. S. Molloy (Con.), Blackpool; Dr. A. Salter (Lab.), Bermondsey, West; Dr. T. Watts (Con.), Withington; Sir Wm. Whitla (U.), Queen's University, Belfast. Ten other medical men in the results so far declared have been unsuccessful.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

PSYCHICAL TRAINING.

A MEDICAL practitioner, "F. J.," writes: Lord Dawson, during the course of his address published in your issue of October 28th, speaks of the psychical training of children by the aid of rhythm, relaxation exercises, etc. I should be grateful if I could be informed where I could obtain further information on this matter in both practice and literature.

LEFT-HANDEDNESS AND STAMMERING.

DR. C. L. LAPPER (Loughborough) asks for advice in regard to a boy, aged 6 years, who is left-handed from birth. "Ought he to be taught to write with his right hand? Also, Is there any "connexion" between his left-handedness and stammering speech? He has an uncle who is left-handed and has a pronounced stutter. I cannot trace any further family history of left-handedness or stammering."

WARMING THE GARAGE.

"ROVER" writes: May I ask for the experience of motor users with regard to the heating of the garage, thus avoiding the necessity of emptying the radiator every night during the winter. I do not refer to the usual steam-heater radiators, but rather to the type of stoves advertised in the motor papers.

CLIMATE FOR ARTERIO-SCLEROSIS.

"R. B.," a doctor, age 65, suffers from high blood pressure and arterio-sclerosis. He cannot afford to retire. Where—in England—in order to prolong his life is the best place for him to live? What form of light employment could he do?

A STRANGE "WILD-FOWL."

DR. FRANK G. LAYTON (Walsall) writes: The other day a middle-aged woman came into my consulting room very bashfully. Plainly she had something on her mind. She told me she had come on a very funny errand, and she did not like to talk about it. However, I managed at last to persuade her to let me have a look; and then I discovered that whatever it was she had on her mind, there was something entirely tangible on her body. On the front of her abdomen was what looked like a small pedunculated mole. I felt disappointed. It seemed a poor thing to be so bashful about. But when I turned it up with a pair of forceps, and looked at it with a lens, I found four moving legs on each side of a fat brown body, and a black shiny neck. The snout was in the lady's skin. I tried peaceful persuasion, with no luck. The beast refused to let go. Then I chloroformed him. Still he sat tight. Finally I dug his head out with a small pair of scissors, and, unhappily, the beast died and dried up; but the patient became cheerful. It appeared that she had been spending a holiday in Surrey, and that three or four days before her visit to me she noticed something pricking; but she had seen nothing till the day of our interview. Will one of your Surrey readers be kind enough to tell me what it was? For all I know that kind of beast is common in the wilds of the South; but I can find no one in the civilized Midlands who has heard of anything of its sort.

INCOME TAX.

"OXON." is about to buy a one-third share in a practice in which he has been acting as assistant for the past year. Abnormal realization of book debts has swollen the cash receipts so that our correspondent anticipates that he will in the future have to bear his share of an average assessment inflated beyond the then probable yield of the practice.

*** Under Rule 11, Cases I and II, Schedule D, "where a change occurs in a partnership of persons engaged in any . . . profession . . . the tax payable in respect of the partnership . . . shall be computed according to the profits . . . during the periods . . . prescribed"—that is, during the three years' average—"unless the partners . . . prove to the satisfaction of the Commissioners that the profits have fallen short . . . from some specific cause since such change took place . . . or by reason thereof." We suggest that "Oxon." ask the inspector of taxes whether he agrees that this provision will enable the firm to claim a reduction of the 1923–24 assessment to the profits of the year if they should fall below the amount of the assessment as determined by the past average profits. It appears to us that this claim would be in order, and that it provides an avenue of escape from the hardship which "Oxon." would otherwise suffer.

"K. A. C." is in the employment of a county council and receives an allowance of £250 a year for the use of a car in his work. He calculates that this approximately equals the annual running cost and has claimed the cost of replacing his car as a deduction from his salary.

*** We do not know the precise terms of the council's grant of £250 a year, but in general such allowances are intended to cover all *necessary* car expenses, including periodical renewal. "K. A. C." is entitled to be assessed on the salary *plus* allowance after deducting all "expenses incurred wholly exclusively and necessarily in the performance" of his duties, but we apprehend that he will find great difficulty in convincing the income tax authorities that the specific council allowance of £250 is insufficient to cover those expenses. He has, of course, a right of appeal to the General Commissioners for Income Tax of his district.

LETTERS, NOTES, ETC

HYPERTROPHY OF THE PROSTATE.

DR. J. REID writes: The common enlargement of old age is due chiefly to increase of the muscular substance. It occurs in about 30 per cent. of men over 60 (Coates's *Manual of Pathology*, 1898). Is *fibroid* prostate a disease or is it like the *muscular arm* of the blacksmith? The ergography of the prostate has not been estimated, still less the functional activity of its muscles. The disuse of muscle does not lead to hypertrophy.

NORTHUMBERLAND YEOMANRY.

AN advertisement is published this week asking for information as to Trooper J. L. Pumphrey, Northumberland Yeomanry, who was severely wounded in Polygon Wood on October 24th, 1914. He is supposed to have been sent by the 4th Field Ambulance to the convent school of St. Charles, between Potijze and Verlorenhoek, near Ypres.

THE VIOLATORS OF VACCINATION LAW.

DR. H. P. REYNOLDS, F.R.C.S.E., Public Vaccinator (Upwell, Wisbech), writes: The persons responsible for the thousands of unvaccinated people in Britain are the ignorant people called justices of the peace. A mother gets a vaccination paper for her child and at once rushes off to a J.P. with some cock-and-bull story, and secures without difficulty an order absolving the child from the operation. Every month I come across mothers who pride themselves on their cleverness; I tell them the time will come when they will regret their silly action.

MOTOR CAR SHOW IN LONDON: A CORRECTION.

THE price of the 23-50-h.p. Vauxhall-Kington open touring car, referred to in the article on the Motor Car Show in London (November 4th, p. 879), is £895, and not £1,150 as printed.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *191*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING

OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF SURGERY.

Professor H. Alexis Thomson, C.M.G., M.D.Edin., F.R.C.S., President.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF CHOLELITHIASIS.

OPENING PAPERS.

I.—RUTHERFORD MORISON, F.R.C.S.,

Emeritus Professor of Surgery, University of Durham.

During the last twenty-five years there has been an enormous output of literature on the subject of cholelithiasis and its treatment. My interest in the subject extends back more than thirty years, and my first paper bearing on it was published in the British Medical Journal in 1894. The title of it was "The anatomy of the right hypochondrium relating especially to operations for gall stones." The fashionable operation of that time was done through a *vertical* incision in the linea semilunaris sufficiently large to admit two fingers; the operation I advocated was to be carried out through a transverse incision of sufficient size to enable the whole field of operation to be fully and easily explored. This and other papers can be found in vol. ii of *Surgical Contributions*, and the page references throughout are to this book of mine.

My next paper complementary to this was published in the *Annals of Surgery* for August, 1895 (p. 141 et seq.), and it has been with some dismay that I have discovered on rereading it how small are the additions I have been able to make since to my knowledge of the subject. I will first quote the conclusions arrived at then, omitting the notes of the cases upon which they were based. Further conclusions extracted from papers which followed, along with a short note of any additional information I have since acquired, will provide a complete history of my beliefs concerning gall stones up to date.

There are still many questions unsettled and unsolved, so that discussion should be useful if each one taking part in it contributes something from his own experience.

1895.

My 1895 conclusions were as follows (p. 141):

"Gall stones are formed in the great majority of cases in the gall bladder. Mucus seems to be essential to their formation, and this is only secreted by the gall bladder and larger ducts. The circulation in the larger ducts is so constant that deposition of salts and inspissation of bile would be difficult there, but in the gall bladder the relative stagnation and other conditions are favourable to gall stone formation. Though gall stones are not infrequently found in the smaller bile ducts, it does not follow that they are formed there. It is not difficult to believe that they are carried and deposited by a back-flow of bile, which must be a common occurrence in the complicated biliary circulation."

"My belief is that the pain of gall-stone attacks is due to the presence of a stone and cholecystitis. Neither stone alone nor distension alone causes contractions of the gall bladder, which are the cause of the painful attacks."

Diagnosis.

"Painful spasms" commencing in the epigastrium are the earliest symptom of gall stone. These are due to forcible contractions of unstriped muscle, probably stimulated by cholecystitis. A stone small enough to obstruct partially the cystic duct causes some distension of the gall bladder, which can be palpated, and the disturbance intermits.

"When the gall bladder is distended without jaundice, and pain after the first acute attack is absent, a stone has completely blocked the mouth of the gall bladder or the cystic duct. Such a gall bladder can continue as a painless swelling for weeks or years if its mucous membrane does not become infected."

"Attacks of severe pain in the epigastrium and right hypochondrium, accompanied by vomiting and shivering and followed by sweating, complete relief, and transient jaundice, are due to the passage of a gall stone from the gall bladder through the ducts into the duodenum."

"If relief after the pain is incomplete, the jaundice more or less persistent, and the patient every now and again attacked by ague-like paroxysms, generally with, or perhaps without, pain, each attack being followed by a temporary increase of jaundice, a stone is impacted in, but not completely blocking, the common duct. Operation in these cases shows a much dilated common duct and a small contracted gall bladder. The dilatation of the duct is what surgeons who know of the behaviour of all muscular ducts with foreign bodies in them would expect. At first the intruder is firmly gripped, but shortly dilatation commences, and the walls of the tube tend to recede more and more from it. The gall bladder in the early stages can be felt enlarged and tender: in the later stages the local signs are tenderness and enlargement of the liver, for then the gall bladder is shrunken and thick-walled, and generally buried in adhesions. Like the urinary bladder the gall bladder will become contracted and hypertrophied when dealing with a partial obstruction, and, like it, will dilate painlessly when its efforts to overcome the obstruction are futile."

Treatment.

Gall stones are a serious possession, and only operative measures are of any real use. The diagnosis of gall stones should consequently mean the recommendation of an operation, because this is safer than expectancy; recovery after operation is expeditious and complete in cases uncomplicated by delay, and the suffering of patients operated upon is incomparably less.

The operation advocated by me opens up by a transverse incision extending from over the rectus muscle in front to the loin behind, midway between the costal margin above and the iliac crest below, the pouch I described in 1894. This gives free access, allows of the best drainage, and is seldom followed by hernia.

1. When the gall bladder is not contracted (after removing all stones) the opening in it should be closed by sutures and the viscus returned to the abdominal cavity with drainage of the pouch.
2. When the gall bladder is shrunken it may be returned unclosed.
3. When a stone is impacted in the cystic duct and evades all ordinary efforts to remove it, the gall bladder should be excised and the cystic duct ligatured.
4. When a stone is impacted in the common duct, the duct should be incised, and after the stone or stones are removed the opening may be left unclosed if there is any difficulty in applying a satisfactory suture, as drainage of the hepatic pouch behind will suffice.
5. When a stone is impacted in the common duct, it depends upon what part of the duct it is lodged in, whether finding it during the operation is difficult or easy, and its removal safe or complicated. The stone may be lodged above that portion of the duct which comes into relation with the head of the pancreas, when it can be grasped and removed by a direct incision, after exposure of the portion of duct in which it is lying, the separation of (often troublesome) adhesions being the chief difficulty; or it may be lodged in the ampulla of Vater, where it is entirely covered up by the head of the pancreas, and interferes with the flow from the pancreatic duct. Inability to feel the stone and the induration of the head of the pancreas in such a case may lead the operator to believe that he is dealing with a pancreatic tumour. If, after opening the duct, a stone cannot be removed through the ordinary incision, it should be taken out through the duodenum, as recently advised by McBurney.
6. The gall bladder should never be sutured to the parietes.
7. If the usual operations are followed by the fresh formation of gall stones, resection of the gall bladder must be the rule.

1897.

In 1897 (p. 241) I drew special attention to cases in which a painless gall-bladder tumour and painless jaundice might mislead if the early history of pain had been forgotten, and also recorded a case of sacculus of the gall bladder, pointing out the possibility of rupture into the peritoneum, which I believed was a not uncommon event in gall-stone cases.

1898.

In 1898 (pp. 289–299) the importance of a gall-bladder tumour and its differential diagnosis was pointed out.

"Proof that gall-stone pain is due to contractions of the gall bladder is found in the facts that prolonged distension of

it produces no pain; that the closure of a fistula, if the obstruction be not removed, is followed by pain immediately relieved by discharge from the fistula, and that the injection of such a fistula with fluid distending the gall bladder produces characteristic gall-stone pain, just as tension from injection of the kidney pelvis produces renal colic.

"After an attack the bowel excreta should be carefully searched and if stones are found this is an encouragement to wait, but even then the wait must not be prolonged. If no stones are found, and the attacks are repeated, it is probable that a stone is impacted, and the sooner it is removed the better.

"In jaundiced cases the discovery of adhesions, which often point to old ruptures of the gall bladder, during the operation is of considerable diagnostic value and important because they are an encouragement to continue a search for stones."

1903.

In 1903 (p. 491) is a record of cases dying after operation, showing that the mortality chiefly depended upon delay resulting in the pathological changes which had occurred in the liver and ducts—hepatitis, cirrhosis, and cholangitis.

1905.

In 1905 (p. 652–671) "that serious results are scarcely at all due to the hundred more or less stones in the gall bladder but to one or more driven into the ducts" is emphasized.

That complete obstruction, with an active inflammation superadded, resulted in tension gangrene—that is, gangrene commencing at a spot most remote from the source of the vascular supply, such as could occur in every hollow viscus.

That sacculi were common to all of these hollow muscular viscera.

That pancreatitis in some cases so closely simulates gall-stone attacks as to make diagnosis impossible. In many of these cases the intermission of the pains and jaundice can only be explained by the view that a temporary increase of the pancreatic swelling causes for a time obstruction of the common duct, and this explains the fact, which I have not seen previously noted, that the gall bladder may be thick-walled and contracted, whereas when the obstruction is complete, as in cases of pancreatic tumour, the gall bladder is thin-walled and distended and the jaundice permanent. During operation the size and condition of the gall bladder may be of considerable diagnostic value in these pancreatic cases, for it is impossible from examination of the hard enlarged nodular pancreas to say whether the infiltration is due to malignant or inflammatory deposit. A small bladder favours the diagnosis of simple, a large one that of malignant change in the pancreas.

When a single good-sized stone is present in the contracting gall bladder it may be driven into, but not impacted in, the neck and fall back when contractions cease.

If a large stone completely blocks the gall-bladder neck the attack is attended as a rule by unusually severe and long continued pain, which only gradually abates. Sooner or later after this attack the swollen, tense gall bladder will be discovered as a tumour under the right costal margin.

The case may then assume one of three types:

1. The condition is chronic, and the gall bladder is distended with clear fluid (hydrops of the gall bladder). In this case I suggest that the gall bladder had emptied itself before the stone became impacted, and that the mucus filling it and secreted by its wall, possessed, as all mucus secretions probably are, of some antiseptic quality, had destroyed any infection which might be present.

2. The distended gall bladder contains pus (empyema of the gall bladder). The diagnosis is based chiefly upon the tenderness of the tumour, which never disappears; and upon its becoming later more indefinite in outline, from omentum adhering around it.

3. In the most severe type, a few hours after the commencement of the illness, the swollen, very tender, and tense gall bladder may be felt as a hard tumour, the patient looks very ill, and acute pneumonia is a frequent complication (gangrene of the gall bladder). In these cases the gall bladder is found to be distended with highly infected, dark-coloured bile. It must have been full of this at the time impaction of the stone occurred, and I offer this explanation of the serious result.

Jaundice and pain may both be absent and stones can be found accidentally in the common duct.

Repeated shivering attacks, *without* pain, but attended by fever and followed by jaundice, may be the only evidence of gall stones in the common duct.

* D. P. D. Wilkie's experimental results in occluded loops of intestine corresponded exactly with the three conditions I had here described in the gall bladder.

Natural cure can occur at all stages of the attacks, and in the most serious cases an imitation of Nature's methods points to drainage alone, or cholecystenterostomy, as possibly the best treatment.

The danger of gall-stone operations is the result of delay and complications.

Operations for the removal of gall stones are most satisfactory when the stones are still in the gall bladder and their escape into the ducts can be prevented.

Shock, haemorrhage, and sepsis, the dangers common to all operations, are increased in jaundiced patients, and it may be impossible to remove stones from all the liver ducts, where I have not infrequently found them at *post-mortem* examination of neglected cases.

Treatment.

During the operation it is important to feel the neck of the gall bladder and the main ducts between a finger and thumb introduced into the liver pouch and the foramen of Winslow.

If the gall bladder is emptied of stones, there are none in the ducts, the cavity and walls of the gall bladder look fairly healthy and the cystic duct is patent, the gall bladder should be completely closed and returned to the abdomen with a small tube drain in the hepatic pouch. Patency of the duct is assured if, during operation, bile escapes back into the gall bladder; if not, it can be tested by pumping saline from the gall bladder into the duodenum.

If the illness is recent, and the cystic duct is obstructed by what is probably temporary swelling, or if there are signs—such as thickening, reddening, or presence of surrounding adhesions—that its walls are infected, the gall bladder should be drained.

After removing all palpable stones from the common duct it should be fully explored if possible by a finger, or with a thick metallic probe. This should be first passed upwards into the hepatic ducts, then downwards into the duodenum, to assure as far as possible that all stones have been taken away.

If stones are discovered in the hepatic ducts all that are easily accessible should be removed, but no prolonged or serious manipulation should be indulged in. Drainage must do the rest.

In the most acute cases, with gangrene of the gall bladder, after removal of the stones drain freely, with as little disturbance of the enveloping omentum as possible. Excision of the acutely infected gall bladder adds a serious risk to the operation.

In 1910 I operated upon a high-livered, short, fat, muscular man who required cholecystectomy. The physiological difficulties of performing the operation in the ordinary way were forbidding. Instead, I laid the gall bladder open from fundus to cystic duct, destroying what remained of its lining membrane with a thermo-cautery, put in a tube, and sutured the outer coats over it. He made such an easy recovery that I have since performed the operation on more than twelve occasions. All of the patients recovered, and I have heard of no recurrence in any of them.

CONCLUSIONS IN 1922.

To sum up latest conclusions I start with *Etiology*.

A great many explanations have been offered for gall-stone formation. The most universally popular has been, and perhaps still is, that they are all due to infection of the gall bladder. There is sufficient evidence against this view to condemn it. Until the cause of calculus formation everywhere in the body can be explained—and the explanation is likely to come from chemists—doubts as to the etiology of those in the gall bladder will not be dispersed. Some predisposing causes are more common than others—for example, repeated pregnancies, obesity and a sedentary life, a previous attack of typhoid fever (now a rare disease in this country); but in my experience the most common of all is that the patient is an abstainer from fluids, either by taste or prejudice, so that women and teetotalers are frequent victims.

So much depends upon knowledge of the behaviour of the gall bladder that a short note on this may be useful.

There are now doubts raised by some laboratory workers as to the possibilities of contraction of its wall, judging by their experimental research and histological examination. In my earliest cases, and often since, I have removed portions of the walls of gall bladders which contained stones and given them to a competent histologist. He found, when the walls had not been destroyed by inflammation, that the thickening was due to an increase of the muscular coat.

The smooth facets on multiple stones, and the occasional fracture of even hard stones in the gall bladder, are further evidence of the power an irritated gall bladder may exercise.

The strongest evidence is clinical, and an early experience taught me a valuable lesson.

About thirty years ago I assisted the late Professor Page with an operation on one of the older sisters in the infirmary. She had had many attacks of gall stones, and had in her possession a large collection evacuated naturally at different times. Latterly the attacks were increasing in severity and frequency to such an extent that immediately after the last one she decided to have an operation, as she had heard that this was now possible. On opening her abdomen the gall bladder was seen to be about the ordinary size, was free from adhesions, but thick and red. Neither Professor Page nor I could feel any stones, either in it or in the thickened duct, and we ventured to hope she must have passed the last one. Three days later a stone of the usual shape and size, something like a faceted horsebean, was recovered from the first faecal evacuation, and the patient had no further recurrence of her attacks during the time she was under observation—more than five years. To pass stones of this size through a duct the size of the cystic, and to impact so tightly in the neck of the gall bladder such large stones as are found there, demands some muscular activity.

No one with experience and an impartial mind can doubt that gall stones may lie for long periods without producing symptoms either in the gall bladder or, though rarely, in the common bile duct. It can also be said that certain stones are more unlikely than others to offer evidence of their presence.

There are, as in the kidney, three clinical types of stone:

1. Multiple, small.
2. Medium, a few or single.
3. Giant stones.

The multiple, small variety, from the patient's point of view, gives most trouble both in gall-bladder and kidney cases, because these stones are apt to escape into the ducts and pass through them, producing urgent temporary symptoms and repeated attacks. Medium stones, say of the size of a hazel nut, in gall bladder and kidney are apt to cause a sudden obstruction by blocking the outlet. Giant stones in either locality cause no typical symptoms, and are generally discovered when complicated by a serious infection, and, in the case of the gall bladder, by intestinal obstruction.

Diagnosis.

There is only one subjective symptom on which a diagnosis of gall stones can reasonably be based, and that is *pain*—but it must have special characteristics. It should be severe, often so sudden in onset as to be compared to a stab, lasting only a few moments in some cases (especially those with single rounded stones), in others for hours, referred to the epigastrium, catching the breath before inspiration is complete, and on its cessation leaving the patient entirely well. It often awakens the patient at night, like all colics, and is ascribed to some particular food, is frequently followed by vomiting, and is called "indigestion."

A tender area over the gall bladder on deep palpation during forced inspiration, discovered during the attack of characteristic pain, and lasting for a time after it, form the ordinary reasonable grounds for a diagnosis of gall stones, and will be correct in eight cases out of ten.

When all stones have escaped from the gall bladder into the common duct, attacks of pain, but less violent, still usually occur.

Of the signs, a gall-bladder tumour or jaundice preceded by a typical attack of pain are clinical guides that seldom fail. In my experience, in 29 of 30 cases the gall-bladder tumour is due to obstruction by a large stone; in 18 of 20 cases the pain and jaundice are due to a stone forced into the common duct.

It is likely that no great advance in diagnosis will be made till *x* rays demonstrate gall stones in the bladder and ducts as they now do in the kidney and ureter.

Treatment.

The knowledge that there is only one reasonable treatment—namely, operation—is even yet not sufficiently realized, but there is an enormous improvement in this respect, as in the results of operations, on twenty-five years ago.

Since surgeons learnt that abdominal operations cannot be performed properly with two of their fingers in the abdomen and their eyes on the ceiling many new abdominal incisions have been suggested for the removal of gall stones, and though I am not going to say that my own is the only one to be considered, or the best, I know that it is so for me. In addition to the advantages, especially drainage, already mentioned, I would add that only the eleventh intercostal nerve is divided by this incision, and that opening up a limited area, such as the pouch described, produces less disturbance than such a free exposure of the general peritoneal cavity as is necessitated by any other, if the vermiform appendix be examined, as it always should be.

Recurrence of gall-stone attacks and the external fistulae, either mucous or biliary, occurring after operations are still frequently due to stones left behind, and sometimes from insufficient exploration, which it is impossible to make efficiently through an inadequate incision.

Good results are likely to follow all careful operations for the removal of gall stones, but recurrence has followed skilful cholecystotomy, cholecystostomy, or cholecystectomy, and every experienced surgeon knows this. He does not yet know the pathology and bacteriology of gall bladders and bile ducts in which this is likely or unlikely to happen, and to settle this will require more patient research. Until this knowledge has been acquired rules for operative guidance cannot be satisfactorily laid down.

Since my earliest paper and in every later one I have advocated cholecystotomy as the best operation when the cystic duct was patulous, and this is still my conviction. In the January and February numbers of the *Annals of Surgery* and *Surgery, Gynecology, and Obstetrics*, 1922, are two papers by distinguished American surgeons, advocating the "resuscitation" of this neglected operation, so that it is possible more may be heard of it. I have never closed the abdomen entirely, but have left a small tube drain in the hepatic pouch, because many years ago a small leak occurred in one of my cases, and I prefer to take no risks.

If the gall bladder be seriously infected it should be opened freely, the stones removed, and its walls and its interior carefully inspected—unless it is so obviously pathological that recovery seems impossible it should have the benefit of the doubt. I know, from opportunities of inspecting it later, that it can recover from almost hopeless-looking conditions of disease if given a chance by removal of stones, followed by drainage through a tube maintained in position by a water-tight catgut suture. If bile discharges freely from the tube it should not be kept in for more than a few days, and never for more than two weeks. The one disadvantage of this operation is that in a small percentage of cases, though every stone be removed a second operation may be required for recurrence of symptoms, but this possibility should be faced. A second operation on the abdomen shows that the first has increased the natural peritoneal immunity to such an extent as to make the consequences of the second of considerably less importance.

If the gall bladder is so much diseased that its recovery seems impossible it may be dealt with by cholecystectomy or the thermo-cautery.

My present views are against cholecystectomy as the operation of election in gall-stone cases. Just here again I want to compare the gall bladder with the urinary bladder. Every surgeon expects that after removing a stone from the urinary bladder a cystitis accompanying it is likely to disappear very soon; he also realizes how difficult it is to get rid of a cystitis without stone. I believe the same to be true of the gall bladder, and that for a calculous cholecystitis removal of the stone may suffice, but that cholecystectomy may be the operation of election for a primary cholecystitis. The dangers of the actual operation may be dismissed, as in capable and experienced hands they should not be greater than from any other gall-stone operation: my objection to it arises from physiological considerations (gall-bladder functions) and the after-results in some cases. Patients upon whom this operation has been performed may afterwards develop attacks which, they say, are similar to their old ones. After a time they become jaundiced, a difficult and dangerous operation is performed, and no gall stones are found. The common duct is thick-walled and dilated, the liver looks fibrous, and that is all the discoverable gross pathology. Further evidence will require time to collect, for in one of the cases in which, ten years earlier, I had done cholecystectomy and choledochostomy and drained the common duct, the patient was well for seven years, and not until ten years had elapsed after the first operation did she become ill enough to require a second.

It may be laid down as a general principle that the ducts of the body possess a protective mechanism which is of considerable value to the viscus with which they are connected. It is well known from experimental and clinical evidence that dilatation of the common duct follows cholecystectomy. This upsets the protective mechanism of a duct opening into a potentially septic area—the duodenum—and this cannot, I think, be done with impunity.

It is likely that a new form of hepatic cirrhosis is in course of development since the surgical craze for cholecystectomy has become widespread.

Since the beginning it has been recognized that patients with jaundice, especially when deep or prolonged, are liable to die from haemorrhage oozing, in spite of the occlusion of all visible blood vessels at the time of the operation.

If tests of the blood show that it does not coagulate in less than eight minutes means should be adopted before operation to secure this. For many years calcium preparations have been used for this purpose, but doubts are still entertained as to their efficiency. It seems probable that transfusion of blood a day or two before the operation will now receive a fair trial.

When stones have been removed from the common duct I have, during later years, drained it with a tube sutured in, though my early practice of leaving the gall-bladder and duct incisions open and draining the hepatic pouch only was successful. Acting on an American suggestion I have left an india-rubber catheter in the same duct opening and passed through into the duodenum for the introduction of fluid and nourishment in specially weak patients, with, I feel sure, considerable advantage. Drainage tubes should not be left in for more than two weeks, when efficient natural drainage should have been established. Retained tubes are more likely to increase than to decrease any existing infection.

In one very rare case I operated upon in 1903 the patient, a man of 63, had been afflicted by gall stone attacks for five years, and on admission was very ill and slightly jaundiced. On opening his abdomen the gall bladder was found to be large, thin-walled, and much distended, and his common duct was as large as his duodenum. Both gall bladder and common duct contained several large stones and clear fluid quite unlike bile—the so-called "white bile." There was no blocking of the cystic duct. A radical operation was done; all the stones were removed and the gall bladder and common duct were drained. Nine days after operation the patient died—the necropsy showed from septic infection. If the condition of this patient had been realized when his gall bladder, free from obstruction, was found to be full of "white bile," and whether or no his common duct had been explored with a small needle to discover if similar contents were to be found in it, all attempts to do a radical operation should have been abandoned, and the gall bladder drained through a small tube. He would then have had a fair chance to recover temporarily. If, later, bile had been discharged through the tube in sufficient quantity, the operation should have been completed, as is now done in prostatic cases with a similar outlook.

In conclusion, I would like to raise an objection to the various textbook descriptions of cholecystitis. The terminations of cholecystitis are the same as the end-results of inflammation everywhere in the body. They may be catarrhal, or ulcerative, or phlegmonous, or suppurative, or gangrenous, or anything else adding to the difficulties of understanding them, but that should cease to be the teaching of writers who are to train the younger surgeons.

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For the formation of gall stones in the gall bladder there seems little doubt that two factors are essential—namely, bacterial infection and a degree of stasis. In no experimental work has it been found possible to produce definite concretions without the combination of these two conditions.

It seems just possible that pure cholesterin stones, or more commonly a single cholesterin stone, may develop in the gall bladder in the absence of infection. While experimental work gives no support to this view, and indeed tends to throw doubt on the possibility of its occurrence, the clinical history of cases in which such a stone gives occasion for surgical intervention clearly gives support to the view that such stones may be formed without any contamination of the bile by bacteria. Unlike the mixed gall stone the pure cholesterin stone gives rise to no premonitory symptoms before a block in the cystic duct takes place, and the hydrops of the gall bladder which follows is never associated with the development of an empyema of the gall bladder.

There is, of course, the possibility that, at the beginning of the development of such a stone, there may have been infection which has subsequently been washed away from the gall bladder by the flow of bile; but in these cases the invariable absence of prodromal symptoms before the cystic duct is occluded and the freedom from development of pus in the gradually distending gall bladder make this rather an unlikely hypothesis. The great majority of the cases of cholelithiasis which require consideration by the medical man belongs to the class in which the stones are mixed in character, and there seems no doubt that in all of them the two factors of infection and stasis are present, at least at the beginning of the formation of the stones.

In test tubes cholesterin has been precipitated from normal bile to which have been added bacteria, especially *B. coli*, and there seems little doubt that the deposit of the main cementing substance, calcium bilirubin, depends on the precipitation of this substance from bile by the excess of mucus which is excreted as a result of a catarrhal condition of the gall bladder. The exact course of the infection has been a subject of much dispute, the majority of those who have written on the subject claiming that the mode of infection is by way of the portal circulation and liver to the ducts and then the gall bladder, while others believe that the infection takes place directly from the systemic circulation. It is possible that both modes occur; but there seems no reason to doubt that in the great majority of cases, if not in all, the infection of the gall bladder takes place by way of the ducts.

It has been proved experimentally that animals fed on material contaminated by bacteria, and in whom the common duct has been ligated, will within a few hours give cultures of the ingested bacteria from the gall bladder and ducts. That this is not an accidental contamination unassociated with the ingestion of bacteria has been fairly conclusively shown by the use in these experiments of *B. pyocyaneus*, which is not under ordinary circumstances found within the bile passages.

It is, of course, true that micro-organisms present in the general circulation can also be obtained in the gall bladder and bile ducts; but this in no way negatives the view that they reach these places through the avenue of the portal vein and liver. Two features, which do not appear to have been emphasized, seem to me to point more directly to the latter being the usual mode of entrance. The first is that in order to give rise to a stone-forming catarrh in the gall bladder the bacteria require to be attenuated, and it seems likely that this process of attenuation most probably occurs during their passage through the liver. The other is the infrequency with which abscesses develop in the wall of the gall bladder, even when the wall is greatly thickened. In about 500 gall bladders with which I have had to deal I have only seen two in which this had occurred. In both cases the gall bladder was much thickened and in both the abscesses were multiple, and therefore an embolic origin was suggested. In both also the offending micro-organism was *B. coli*; but in neither were there any symptoms to suggest a septicaemia, and in both the removal of the gall bladder led to the immediate disappearance of all symptoms. It is quite possible, therefore, that, even in these cases, the infection which led to the development of the abscesses took place not through the blood circulation but by way of the lymphatics. If the infection of the gall bladder took place at all frequently through the systemic circulation one would expect to find much more frequently than one does abscesses develop in the wall of the gall bladder where it has been much thickened.

Another fact which points strongly in favour of the view that the bacteria reach the gall bladder by way of the ducts is the frequency with which pancreatitis is associated with cholelithiasis—the inflammation being limited as a rule to the part of the organ which is in most direct connexion with the bile ducts. Direct infection upward from the duodenum has been held to play a part in the infection of the gall bladder, and it has been shown experimentally by Bond that such a process can occur. On the other hand, no part of the bowel is normally as free from infection as the duodenum; indeed, it is probably sterile save when food is passing through, and during the time that this is occurring there is an intermittent expulsion of bile which presumably will prevent any invasion of the common duct from the bowel. Taking everything into consideration, there seems every reason to believe that the usual, if not the only, mode of introduction of the infection is by way of the portal circulation and liver.

The origin of the stasis of bile is not so readily understood. It may be due to any condition which increases the viscidity of the bile, or to any interference with the calibre of the ducts from external pressure or from kinking. That the former condition is probably a main factor in some cases is, I think, shown by the very much greater frequency with which gall stones are said to be found in the *post-mortem* room in individuals dying from heart disease than in those who die from other causes.

In the majority of cases this undue viscidity of the bile does not appear to be the main cause, and one must look for some external source of interference with the flow of bile in the ducts. It appears to me to be likely that the suggestion of Waugh that this cause may be found in the drag of a mobile ascending colon will be found to be the probable explanation in the great majority of cases. It is certainly noteworthy that the majority of the usually accepted predisposing causes of gall stones are all such as tend to exaggerate any ptosis which may be present. All of them are such as to lead to diminution in the tone of the muscular wall of the abdomen, and thus, by allowing a prolapsed colon to sag further, will be likely to lead to more or less kinking of the bile ducts.

In the case of one of the commonest predisposing causes—pregnancy—it is quite possible that the increased cholesterol in the blood and the direct pressure upwards of the gravid uterus may be important factors; but the infrequency with which gall-stone colic occurs during the course of pregnancy appears to me rather to negative the view that direct pressure takes much part in interfering with the flow of bile. It is more likely that repeated pregnancy acts by the ptosis of the abdominal organs which supervenes on labour leading to kinking of the ducts. Very much in support of Waugh's view is the undoubted fact that recurrent attacks of cholecystitis may entirely cease in such cases after the ascending colon has been fixed in accordance with his method. Since he drew attention to this possible cause for the relative stasis of the bile, I have noted the condition of the colon in all of the cases of gall stones on which I have had to operate, and in all the ascending colon has been unduly mobile. It appears to me that we have in this suggestion the probable explanation in the majority of cases of the second factor, relative stasis of bile, in the etiology of gall stones.

A well-developed case of cholelithiasis presents no particular difficulty in diagnosis if seen during the hepatic colic. The character of the colic, coupled with the site of the pain under the right costal margin, radiating to the back, and the tenderness in the same situations usually make the diagnosis one of little difficulty, especially if, as is usual, there is some degree of dilatation of the gall bladder, sufficient to render it palpable even under the rigid upper right rectus. The only conditions which could readily simulate it are perforation of a pyloric or duodenal ulcer, renal colic from stone or from infection with *B. coli*, appendicitis, acute pancreatitis, or pancreatic calculus.

In differentiating between hepatic colic and gastric or duodenal perforation the characters of the antecedent dyspepsia in cholelithiasis, to be spoken of later, are of the very greatest importance; but, even without such a history, which in the condition of the patient may not readily be obtainable, the local signs, if they are carefully observed, are such as to make a mistake unlikely. First in importance is the extent of the rigidity of the abdominal wall. In every case of perforation of gastric or duodenal ulcer into the free cavity of the peritoneum, in the early stages and for some hours after the onset the whole anterior muscular wall of the abdomen is rigid and board-like and gives no relaxation at the end of inspiration or expiration. On the other hand, in hepatic colic, as in all cases of limited peritoneal irritation, the muscular rigidity is limited to an area corresponding to the inflamed peritoneum and gradually fades as one tests it by moving the pressure away from the area implicated.

In hepatic, as in all other colics, the patient does not lie quiet and resent movement, but tends to toss about seeking, but not obtaining, relief to his distress; whereas in perforative peritonitis involving the upper abdomen the patient lies quietly on his back, usually with his legs drawn up, and never tosses about. If the patient be turned on his side and heavy percussion be made to the right of the spine from above downwards as one approaches below the angle of the scapula a sudden acute exacerbation of discomfort, often felt most pronouncedly in front, will be found to take place in every patient suffering from hepatic colic, while no such localized alteration in the amount of discomfort will occur in perforative peritonitis.

Should vomiting occur it is more likely to be repeated in hepatic colic than in perforative peritonitis, and whereas in the latter it has little effect on the pain, except to aggravate it at the moment of emesis, in the former it is quite usual at and immediately after the act of vomiting to have the pain moderated or even to have it disappear entirely, only for it to recur within a few minutes with its original intensity. Further, the pain in perforative peritonitis is never so characteristically colicky in character as is the case in hepatic colic; usually, indeed, the intensity of the pain does not vary except with change of position or on manipulation of the abdominal wall.

Renal colic, whether depending on calculus or on infection of the pelvis of the kidney with *B. coli*, may simulate hepatic colic quite closely. In neither of these renal conditions need there be, though there usually are, other signs or symptoms suggestive of infection of the urinary tract, nor is it invariable, particularly in *B. coli* infection, to have the pain radiate down the course of the ureter. It is in cases such as these that the difficulty will arise, but even in them the two varieties of colic may be distinguished usually without difficulty. If the back be percussed in the fashion mentioned above it will be found that in hepatic colic the site where percussion gives rise to greatest pain is just under the angle of the scapula, whereas in conditions giving rise to colic originating in the pelvis of the kidney the site of the greatest pain is at a distinctly lower level over the last two ribs. Direct pressure, in the case of an inflamed gall bladder, is most painful just under the right costal margin in front or midway between that and the umbilicus: but in renal conditions the tenderness is most pronounced when pressure is made behind and just below the last ribs. In *B. coli* infection of the pelvis of the kidney, which is more frequently unassociated with other urinary symptoms than is calculus, examination of the urine will always show the presence of the micro-organisms though there may be no pus or albumin. In renal conditions no history of preceding dyspepsia is to be obtained, while in almost all cases of hepatic colic there has been, previous to the acute symptoms, a more or less prolonged story of gastric disturbance.

Appendicitis should not, except rarely, give rise to difficulty in diagnosis, even when the disease is associated with an imperfectly descended caecum. The real difficulty is that very occasionally the pain in gall-stone colic radiates to the right groin, and thus may mislead the unwary. In appendicitis it is very unusual for the acute pain to start with such dramatic suddenness as is the rule in hepatic colic. When the pain becomes localized it does so at a much lower level than is the case in gall-stone colic, and the site of maximum tenderness is similarly placed. There is no exaggeration of the pain by percussion over the angles of the ribs below the scapula, and vomiting does not relieve the pain of appendicitis, but rather tends momentarily to aggravate it. Further, recurrence of vomiting, though not so prominent a feature as in pancreatitis, may and frequently does take place during severe hepatic colic, whereas this is very rare in appendicitis unless the general peritoneal cavity is widely involved in the inflammation, and before this has had time to occur a correct diagnosis should be assured.

Acute pancreatitis presents particular difficulty because of its frequent association with the presence of gall stones in the gall bladder, often indeed with preceding overt manifestation of their presence in the shape of previous attacks of hepatic colic. The pain in this disease, though frequently colicky in character, remains localized to the epigastrium and left hypochondrium and never passes to the right costal margin. If it shoots towards the back it is always to the left of the middle line and not to the right as in hepatic colic. Vomiting is an early symptom, and is so frequently repeated that it simulates that occurring in intestinal obstruction rather than what obtains in hepatic colic. It is associated with persistent nausea, and the act of vomiting does not at all frequently give even temporary relief, in both these respects differing from what usually obtains in hepatic colic. The rigidity is limited to the same area as that affected by the pain, and is epigastric or under the left costal margin. It is never so pronounced as over an inflamed gall bladder, and is usually so comparatively slight that one is able to appreciate that under the abdominal wall is a diffuse swelling corresponding roughly in shape and distribution with the distended inflamed pancreas. Pressure in the left costal-iliac space, if

present, as it is said to be not infrequently in acute pancreatitis would be a complete proof that one was not dealing with a case of hepatic colic. In pancreatitis the collapse which is present is associated with cyanosis, sometimes with mottling of the abdominal wall, whereas the collapse associated with hepatic colic is accompanied by pallor.

Pancreatic calculi do not present many symptoms that enable one to differentiate between them and gall stones. I have never seen, or at least never recognized, such a condition; but it is said that the pain is referred to the left side rather than to the right, that in a large proportion of these cases there is intermittent or constant glycosuria, and that in a large percentage of such cases, in the absence of jaundice, calcium oxalate crystals are found in the urine. The only method which enables one to distinguish absolutely between the two conditions is the use of the *x* rays. It is rare by this means to get evidence of the presence of gall stones, whereas pancreatic calculi always give a dense shadow.

While a well-developed case of cholelithiasis presents symptoms that unmistakably point toward the source of the trouble, it is only in a very small minority of cases that one gets anything approaching hepatic colic in patients who yet are troubled with gall stones. In practically all patients who are the subject of gall stones careful inquiry will elicit a history of preceding persistent indigestion of longer or shorter duration before the onset of colic, and all patients who are subject to attacks of hepatic colic will be found in the intervals to be constantly troubled with indigestion which presents fairly characteristic features.

The main features which characterize the indigestion of gall stones, and which usually enable one to distinguish it from a similar condition arising in the stomach or duodenum, are three in number. First, it is not materially affected by variations in the character of the food ingested: it occurs equally after a light or after a full meal, though it may not be quite so intense; secondly, it is constantly present over long periods, and does not show the longer or shorter remissions of freedom from pain which almost invariably obtain in gastric or duodenal ulcer; and thirdly, it does not recur so regularly at a stated interval after meals, but tends to be variable in the time of onset and may occur through the night.

The character of the indigestion is that of a flatulent dyspepsia, associated with what the Americans very accurately describe as "gas pains," which is so frequently associated with gall stones that patients come to look on it as a normal happening, and in many cases will not mention it unless it is specially inquired for; but if that is done, in my experience, they almost invariably admit its existence. So frequently is it present in gall stones and cholecystitis (though, perhaps, less regularly so in the latter) that I think it may safely be said that the vast majority of well-nourished patients who are constantly and persistently the subject of gastric flatulence either have gall stones or cholecystitis. It is a striking fact that such patients may have this "indigestion" persisting over a period of twenty or thirty years without any interference with their general nutrition, in this respect differing markedly from those who are the subject of gastric ulcer, but resembling a fair proportion of those suffering from duodenal ulcer. Of course, gastric flatulence may obtain in any patient who has a chronically dilated stomach; but these always show evidence, both local and general, of the existence of this condition, and in particular they invariably show signs of malnutrition. Further, when the eructation of gas is due to dilatation of the stomach in the course of a few years the gas tends to be malodorous. This never occurs in the cases due to gall stones.

It is in these less typical cases that Mayo-Robson's observation of a tender spot about midway between the umbilicus and the ninth costal margin in gall-stone disease becomes so valuable. In my experience it is in these "silent" cases of gall stones that one almost invariably gets this sign, while in the more advanced cases with colic the point of greatest tenderness is more frequently just under the costal margin at the most prominent part of the costal cartilage or between this and the xiphoid. Some—though only a small proportion—cases of cholelithiasis are practically indistinguishable from duodenal ulcer. In these, as in duodenal ulcer, pain comes on regularly about two hours after food, and is immediately relieved by the taking of food, and the *x*-ray picture may not be sufficiently characteristic to enable one to distinguish between the two conditions. It is of course unusual to come across patients suffering from duodenal ulcer in whom there are not considerable periods of time during which all symptoms are in abeyance or in whom variations in the character of the ingesta do not affect the intensity of the symptoms; but occasionally such cases do occur, and I am not aware of any means by which such cases can be differentiated from the anomalous cases of cholelithiasis in which "hunger pain" is the prominent feature.

The symptoms of the single cholesterin stone, when that does give trouble, are so characteristic as to present no difficulty in diagnosis, since the progressively distending gall bladder is always preceded by hepatic colic of great intensity without any antecedent symptoms, gastric or other, pointing to trouble in the region of the liver. The only error which is likely to occur is to mistake a distended gall bladder for an enlarged kidney—a markedly distended gall bladder always being found pointing outwards and not, as the textbooks say, towards the umbilicus.

Treatment.

The radical treatment of gall stones, as distinguished from the treatment of the symptoms in cholelithiasis, is purely a question of when the surgeon should intervene. There is no medical treatment save that which may be directed to diminishing the liability to attacks of colic, or to palliate the dyspepsia which is the sequel to the presence of gall stones in the gall bladder. It is very doubtful whether much can be done that is effective in either direction. There seems little doubt that an attack of colic in the ordinary case of gall stones is the result, not so much of displacement of stones as of an increase of the inflammation in the gall bladder, and it is just possible that a similar statement may be true of the origin of the dyspepsia, though the persistent character of this latter symptom renders this explanation unlikely. The removal of any septic focus, especially if that be located in the area drained by the portal vein, is an obvious indication, and similarly the avoidance of constipation would give some hope that the attacks of colic may be diminished in frequency. Any attempt to render the bile antiseptic by the use of such drugs as urotropine in doses which would not do harm otherwise seems to me to be quite obviously futile, and, laboratory experiments to the contrary notwithstanding, it is very doubtful whether by the use of any drugs the bile can in practice be so altered in consistency as to have any material effect either in altering its amount or its rate of expulsion.

Though no alteration in the character of the food ingested will in most cases entirely abolish the dyspepsia associated with cholelithiasis, this is aggravated by the taking of much green vegetables or of an excess of starchy foods, and these should be avoided.

Admitting that there are no medical remedies which can cure patients afflicted with gall stones, it does not follow that all cases of cholelithiasis demand operation, even if consideration is limited to those in whom the general condition of health is such as not in itself to contraindicate surgical intervention.

The great majority of the victims of cholelithiasis suffer throughout only from indigestion, and if they are willing to submit to the discomfort and inconvenience of this it is doubtful whether the surgeon is justified in urging operation on them. It is quite certainly not justifiable to urge it on such grounds as is contained in the assertion by a well-known and rightly distinguished surgeon, that "the danger of carcinoma alone is five times as great as is the mortality following operations for the relief of simple gall-stone disease." Such an assertion deserves no credence whatever. It is true that his statistics show that the incidence of carcinoma in the cases coming under his care is in that proportion greater than the mortality among those subjected to operation for simple gall-stone disease. But this in no wise justifies such an inference as he makes. Before any accurate decision as to the incidence of cancer in cholelithiasis can be made, it would be necessary to ascertain the total number of individuals who have had gall stones in a certain community and the number of those who have developed cancer in the gall bladder or bile ducts. As the great majority of those who have gall stones suffer merely from indigestion and in many cases probably never consult a medical man for this, or, if they do, are treated for their symptoms without any accurate diagnosis being made, it is obviously impossible for anyone to state what the true incidence of cancer in this disease is.

No doubt if a patient consults a surgeon for more or less long continued indigestion and a diagnosis of gall stones is made it is right that he should be told that the only cure is by way of surgical operation; but it is very questionable to

my mind whether under these circumstances the surgeon is justified in urging the patient to submit to operation.

The position is altogether different where there has been an attack of colic, and still more where there have been repeated attacks of this nature. In the former case, while no doubt in a fair proportion of cases there are gross structural alterations in the gall bladder and infection of a minor grade in the ducts and affecting the head of the pancreas, it is frequently impossible to be quite certain of this; whereas in the latter the mere fact of colic indicates a more severe infection in the gall bladder with a much greater probability, if not indeed a certainty, of infection of the ducts and inflammation of the pancreas. A single attack of gall-stone colic, unless the general condition of the patient contra-indicates it, is, in my opinion, a good ground for urging operation on a patient, and still more, of course, if the hepatic colic has been repeated. It is difficult for a surgeon to say in what proportion of patients only one attack occurs, but the impression I have gathered from talking the matter over with the only class of the profession who are in a position to know, the general practitioners, is that it is distinctly unusual for a well-marked attack of cholecystitis with colic not to be followed at longer or shorter intervals by others. As repeated attacks, by inducing contraction of the gall bladder and the formation of adhesions, make the operation not only more difficult but more dangerous, it is clearly the duty of the surgeon consulted by anyone who has a well-marked attack of cholecystitis, not merely to advise operation, but to urge it on the patient. It is, of course, true that in the hands of the expert surgeon the mortality from operation in cases of cholelithiasis in the early stages would be small, and if all cases were operated on in this stage it is equally true that the mortality of the cases now operated on, including as it does those with all sorts of complications, would cease to be so high as it is. But it seems to me to be very open to question, in view of the enormous number of people who possess gall stones, whether the total of those who would die if all these were to be operated on would not be greater than is the case with the adoption of less strenuous surgery. In my experience, at any rate, it is unusual for serious complications, other than gangrene or empyema of the gall bladder—in each of which the indications for operation at the time are clear—to occur unless there have been repeated attacks of cholecystitis, and it seems to me that the proper course for the surgeon is to wait until hepatic colic has occurred before he feels justified in urging operative interference, though patients with the minor symptoms should be told that operation will completely remove their symptoms and obviate the possibility of more serious conditions developing. The choice between the two evils should be left to them after the matter has been explained.

Operation having been decided upon, the question of whether cholecystectomy or cholecystostomy should be done must be considered. Where gangrene of the gall bladder is present or an empyema has developed, where the gall bladder is much thickened or has lost its elasticity and is found contracted round stones, where the so-called "strawberry bladder" is present, or where there are stones in the cystic duct, whether impacted or not, there seems little doubt that the only wise course is to remove the gall bladder. If this is not done it is highly probable that symptoms will return in the course of a few months or a year. Under the circumstances noted above, the only condition the presence of which would make one hesitate to perform cholecystectomy would be a well-marked chronic pancreatitis. When that is present the proper procedure would be to do a cholecystenterostomy or cholecyst-gastrostomy if the condition of the gall bladder makes that feasible, or to drain the gall bladder for a long time if it is not possible to make an anastomosis.

When the gall-bladder wall is merely slightly thickened and the gall bladder not materially altered in size the procedure is not so obvious. The consensus of opinion among the best known authorities at the present time is all in favour of the removal of the gall bladder; but before agreeing to follow the advice offered by them it is perhaps worth remembering that these authorities are the same who in the past have published long series of cases of cholelithiasis treated only by removal of the stones and drainage, with perfect cures in all those surviving. I sometimes doubt whether great authorities are always wise counsellors. Largely because of their eminence in some special department of surgery they tend to have sent to them for treatment the more difficult and complicated cases, and I have sometimes thought that as a consequence of this feature of their practice they sometimes lose a sense of proportion. They seem also sometimes to forget that operative procedures which they can safely perform cannot be carried out with equal impunity by less experienced surgeons.

If it could be proved that the removal of the gall bladder is less likely to be followed by symptoms than is a cholecystostomy then it might be wise, even though the mortality from the former operation is slightly greater, to do the major operation as a routine. It appears to me to be extremely doubtful whether this is the case. Recurrence of stones in the common duct appears to be at least as frequent after cholecystectomy as is their reappearance in the gall bladder after simple drainage has been carried out. That other complications may occur after removal of the gall bladder is, I think, clearly shown by the fact that during the past year I have operated on three cases of acute or subacute pancreatitis within two years of the patients having been deprived of their gall bladders without drainage.

Chronic pancreatitis is so frequent a sequel to cholelithiasis that I have always hesitated to remove the gall bladder where it could be left, lest one should deprive oneself of the only really efficient method of dealing with this condition should it not subside, by making an anastomosis between the gall bladder and the stomach or duodenum. Judging by my own experience of cases which have required to have their abdomens opened at some date subsequent to operations on the gall bladder, I should say that adhesions of a crippling character are more frequent after cholecystectomy than after cholecystostomy.

It is not from statistics collected by surgeons, still less from statistics of their own cases however honestly given, that the decision whether the gall bladder should be removed or not ought to be made. It is the general practitioner, who has to live "round the corner" from his patient after the surgeon is done with him, who alone can give a real statement as to the relative frequency of late symptoms after a particular operation, and it would be a great boon if this matter could be gone into by collecting statistics from a sufficient number of them to decide this question. As it happens none of those with whom I have discussed the subject have displayed any preference for the major operation, while some have been emphatic in the opposite direction. Should it be decided to remove the gall bladder I would advise that this be done beginning at the fundus rather than at the cystic duct. If this rule were followed there would be fewer cases of injury to the hepatic or common ducts than one is inclined to believe occur.

Believing as I do that the real danger in cholelithiasis lies in the infection accompanying it, I have always arranged for drainage alike where cholecystostomy or cholecystectomy has been performed, and for the same reason I have always hesitated to do the so-called "ideal" operation of cholecystotomy notwithstanding the able advocacy of so distinguished an authority as Professor Rutherford Morison.

DISCUSSION.

Mr. D. P. D. Wilkie (Edinburgh) said: Professor Rutherford Morison indicated what great advances have been made in the last twenty-five years in the diagnosis of gall stones. The early reflex digestive disturbances and mild attacks of cholecystitis are now taken to be sufficient evidence to indicate the necessity for operative interference, and we no longer wait for the symptoms once held to be classical but now known to be the evidence of complications which should be anticipated and not awaited. Increasing experience and improved apparatus are now bringing the x-ray demonstration of gall stones into the field of practical diagnosis and ere long I feel sure this will become a routine clinical method. The use of the duodenal tube, while in its infancy in this country, is sure to play an important part in the diagnosis and probably in the treatment of many, and particularly of the more obscure, infections of the biliary passages. Now that we know how to relax the sphincter of Oddi the problem of biliary sand and chronic cholangitis should be simplified considerably.

As in so many discussions on this subject, attention tends to be focused on the question as to whether cholecystostomy or cholecystectomy should be the operation of choice in dealing with cases of gall stones. Whilst we cannot for a moment regard the gall bladder as being an organ without any definite and possibly quite an important function to

perform, we know that it can be dispensed with without any notable inconvenience. We have now very strong experimental proof that infection reaches the gall bladder by the blood stream—that is, by the cystic artery. We know that micro-organisms can frequently be grown from its submucous coat when the bile and the surface of the mucous membrane are sterile. It is this cryptic infection of the wall which prompts removal as opposed to drainage of the gall bladder. The gall bladder has been compared to the urinary bladder, but I think that it were a fairer comparison to say that in this question of infection it occupies an intermediate place between the urinary bladder and the appendix. We do not think of opening the appendix, removing concretions, and closing it again, because we know that the wall is usually infected and damaged. If, therefore, we regard the infected gall-bladder wall as the primary seat of mischief in most gall-stone cases, if further we recognize it as a focal infection, a source from which other infections, pancreatic and much more distant, may arise, our obvious duty is to remove it unless by so doing we are either adding appreciably to the immediate risk of the operation or are depriving the patient of an alternative biliary channel of which there is some likelihood there may be need at some future date. Accordingly my practice is to perform a cholecystectomy in all cases where the gall bladder is obviously diseased, except those where technical difficulties make it fraught with added risk to the patient, and in those where a dense sclerosis of the head of the pancreas foreshadows a possible secondary obstruction of the common duct for which a cholecystenterostomy might be required. In two such cases in which I had at a first operation removed the gall bladder I would have given much at the second to have had it back again.

Too much has possibly been made of this question of removal of the gall bladder to the exclusion of the more important question of the common duct, which is the *pons asinorum* of gall-bladder surgery. Operations on the biliary passages include some of the most difficult in the whole field of surgery. Unless the surgeon is prepared to explore fully and deal with any of the varied and often complicated conditions which may confront him he should leave this class of case alone. It is no field for the surgical dabbler; and, further, it is one where incomplete operation makes the subsequent handling of the case a matter of great technical difficulty. As Professor Rutherford Morison has taught for so long, free exposure of the parts with accurate assessment of the full extent of the pathological process and the adoption of methods adequate for this are the two essentials. Beside these, the question of removing or of leaving the gall bladder is one of entirely secondary importance.

Mr. Archibald Young (Glasgow) said: There are great names in our profession, and the bearers of these names are worthy of our respect. Their opinions, especially when given carefully and with consideration, deserve instant and adequate consideration in return. But with all this in mind we are—even the humblest of us—bound to reserve our individual rights of private judgement on any of the problems that concern us in our daily work. Mr. Rutherford Morison's name is one of the great names of our day by reason of his original work in surgery and of his vigorous and independent thought. To me, personally, his name has been, since ever I had reached the stage in my medical and surgical career to be able to appraise for myself the surgical importance of his investigations, one of a comparatively few of the great surgical names of the day in this country. I have had the opportunity of perusing, in advance, the general statement which Mr. Rutherford Morison has given of his position in respect of present-day views on gall-bladder surgery, and regarding etiology, diagnosis, and treatment of cholelithiasis. I was not unfamiliar previously with his general views on the subject, nor was I unaware of his vigorous personality or of his facility in defending any position he might find his most logical mind lead him to take up on a disputed matter. I have always admired his originality of judgement, his independence of thought, his enterprise in research, and his courage in cultivating new lines of attack upon difficult problems in surgery. If I preface what little I have to say on the subject of to-day's discussion by this most sincere tribute to the man and his work I do so as preliminary, I fear, to making for myself a profession or confession of faith which must run, in many important respects, almost directly counter to the views Mr. Rutherford Morison seems to hold to day, much as he held them nearly thirty years ago. From what I have been able to gather of Mr. Rutherford Morison's personal attitude to other workers and other thinkers I am very sure that any divergence of view that I may be led to express will meet with his generous consideration.

First of all as to etiology—though that does not seem to come properly within the compass of the discussion—I wish to say quite definitely that I am not prepared, even at Mr. Rutherford Morison's direction, to dismiss the theory that would trace biliary calculus formation to a bacterial source. I do not think that "there is sufficient evidence against this view to condemn it." Not that I think the theory of bacterial origin meets all the facts, nor that it can ever be taken as adequate in itself. But, after all, in very few conditions, admittedly caused or at least contributed to by bacteria, does one pretend that other factors do not also come in. Indeed, there are almost always contributory agents which play a varyingly important part in etiology. But Mr. Rutherford Morison must surely be prepared to advance some sort of more or less definite substitute before he can expect us, at his fiat, to give up the bacterial theory, even in favour of his rather indefinite suggestion of a purely chemical cause. The predisposing causes which he cites are as consistent with a bacteriological cause as with any other. Indeed, in my view, they greatly add to the probability of it ultimately proving to be the correct theory.

The diagnosis of gall stones is not by any means the easy or plane-sailing affair that I confess my perusal of Mr. Rutherford Morison's statement would lead me to think he wishes us to accept. Most surgeons, I imagine, must have realized long ago how difficult it is in many cases to arrive at a diagnosis in respect of at least three conditions, which take origin and produce symptoms in the segment of the abdomen in which are situated gall bladder, pylorus, first part of duodenum, and head of pancreas—I refer more particularly to purely gall-bladder conditions, pyloro-duodenal ulcer or pyloric cancer, and pancreatic lesions. Indeed, the upper right quadrant of the abdomen furnishes material for many clinical problems, and not few are the conundrums which present themselves from that area, only to be solved when the surgeon opens the abdomen—if even then. Pain in that area, or even—and perhaps all the more if—referred to the shoulder, or to some other site related to the same or contiguous spinal segment, may equally well be the result of several different lesions, of which gall stones and cholecystitis form only one, and perhaps not the most frequent. Then there is the possibility of confusion between biliary colic and the pain associated with appendix lesions—not at all an infrequent difficulty. Of course, such initial difficulty may not greatly matter where the condition is not acute and where time remains to consider the case from various angles. But it is precisely in the urgent and critical cases that this possible difficulty perhaps most often emerges, and pain in these is often enough a very unreliable guide from the point of view of localization of the lesion causing it. Over and over again I have been asked to see a patient supposed to be suffering from appendicitis, only to form a quite different diagnosis: the condition either obviously one of gall stones, with very acute cholecystitis, or another lesion of an acute inflammatory kind, related to the upper right abdominal quadrant. But this must be a familiar problem to most surgeons of experience. For these and other reasons I would urge that what we most want is not to be told about the diagnosis of gall stones in a merely general way but to have worked out for ourselves and others something like a coherent and consistent differential diagnosis.

Treatment of gall stones, of the cholecystitis associated with them, and of related conditions such as pancreatitis, is, however, probably the more important part of to-day's theme. I can touch on only a few aspects. First of all, as to the mode of approach to the gall bladder and ducts. I have been accustomed to employ the upper right rectus incision—the Robson method, as I know it. I am aware that Moynihan and many others have advocated oblique or transverse hypochondrial incisions, and Mr. Rutherford Morison's incision has its supporters. We know how vigorously he is prepared to defend it himself. I understand that the Morison route of approach is advocated for two main reasons—(1) as giving the most free and adequate access to the gall bladder and ducts. (2) as giving, if required, an efficient route for drainage. Regarding the former, I can only say that I have found the Robson route give as free access as one can want, and one can enlarge the incision in a downward direction as much as may be required. Robson suggested its prolongation upwards as required. If properly made, it

takes one down, in nearly every case, directly upon the fundus of the gall bladder, and from there the region can be readily explored as may be proper. I am at one with Mr. Rutherford Morison as to the advisability of making a full and free incision. I have always been against any operative procedure that involves working in the dark. A generously made wound, no matter how large, cleanly cut, and not stretched and contused, will heal with far less risk of trouble, at the time or after, than a small wound which has required to be stretched and drawn upon to admit of the operative procedures being carried out at all. Further, it will have permitted of the most satisfactory carrying out of the crucial purposes of the operation. Regarding the second claim in respect of drainage, I am fully persuaded that I can procure as adequate drainage by the Robson route as by any other, provided that the patient is nursed in the Fowler—or, rather, the sitting-up—position. And when I say "sitting-up" I actually mean what I say. Often enough I have found it a little difficult to bring this home to new nurses or new house-surgeons. I have found by experience that this position is most comfortably secured by pillows alone. The patient is sat right up in bed, close up against a pile of pillows, say six pillows set flat on top of each other; and a further pillow is placed close up under the patient's knees, and kept from slipping away by a strong band from each end of the pillow tied securely to the top of the bedstead. The idea that by sloping the pillows the patient can be made more comfortable is a mistaken one, and has only the effect of causing pillows and patient to slide constantly from the proper position. In this bolt-upright position, the patient is comfortable, is seldom sick after the anaesthetic, and is assured, even with the Robson incision, of adequate free drainage. A final recommendation, in my opinion, of the Robson incision is the fact that hernia afterwards—no matter how much sepsis may have to be dealt with, or how long the wound may have to be drained—does not occur. I always, of course, close the wound in layers, leaving only the part where the drainage tube or the packing emerges. The only case in my experience where hernia followed upon one of my gall-bladder operations was the only one in which I was tempted to depart from the Robson incision in favour of an oblique transverse one. That may be, of course, only my luck, but the fact is there. Next, as to the type of operation to be performed, it seems to me that this is impossible of settlement on any general principle except this, that each case must be judged on its merits. In only a few cases is it possible to say beforehand, "This is a case for drainage of the gall bladder," or "This is a case for excision of the gall bladder." My own statistics show that the period of convalescence is considerably shorter after cholecystectomy than after cholecystostomy. One is not surprised at this, of course. The progress of events after the two operations is altogether different, and rapidity of closure of the wound must be different in each. It is possible to say, too, that the death rate after cholecystectomy is greatly less than after cholecystostomy. But that is not to say that cholecystectomy is safer as an operation in all gall-bladder conditions than is cholecystostomy. Indeed, it is not so. It merely implies that, in suitable cases, cholecystectomy is a safe operation in the hands of a competent surgeon. If death is more frequent after cholecystostomy—as my own and, I fancy, other statistics have shown—it is because that operation, while being the only correct line of treatment in certain grave cases for which cholecystectomy could never have been employed, has yet failed to save the patient. It has so failed, not because of defect in the operation as such, but because the patient has been so profoundly poisoned or so greatly weakened beforehand that no operative treatment could avail.

In conclusion, may I give certain facts and figures from my own records of operations on the gall bladder and ducts? They do not cover anything like the total number of gall-bladder operations that I have carried out, of very many of which, especially during the period of my earlier years of junior work, I have, unfortunately, no record. The figures are of cases of which I possess the records, in most cases fairly completely and carefully kept. The cases recorded number, in all, 91—78 females and 13 males. Cholecystostomy was performed, alone, in 50 of the 91 (Group 1); cholecystectomy, alone, in 25 of the 91 (Group 2); partial cholecystectomy, alone, in 7 of the 91 (Group 3); cholecystostomy *plus* choledochostomy in 4 of the 91 (Group 4); and cholecystectomy *plus* choledochostomy in 5 of the 91 (Group 5). In Group 1 (cholecystostomies), death took place in 5 out of 50. In Group 2 (cholecystectomies), death did not occur at all—all the 25 cases in the group recovered. In Group 3 (partial cholecystectomies), there was no death—all 7 patients recovered. In Group 4 (cholecystostomies, in which choledochostomy was done at the same time), death took place in 2 out of 4 cases. In Group 5 (cholecystectomies combined with choledochostomy), death occurred in 1 case out of 5. Or, putting these figures another way, 8 deaths occurred in the 91 cases—a percentage of 8.8. Of Group 1, 5 out of 50 died—a percentage of 10. Group 2 had no deaths—a percentage of 0. Group 3 had no deaths—a percentage of 0. Group 4 had 2 deaths out of 4—a percentage of 50. Group 5 had 1 death out of 5—a percentage of 20. When one comes to consider, however, what were the conditions present in the fatal cases it becomes evident, I think, that in few—indeed, in hardly any—could the type of operation adopted be regarded as, in itself, determining the fatal issue. In other words, in almost all, death resulted not because of any inherent defect in the type of operation, or in its execution, but from the intrinsic weakness of the patient or the already advanced stage of the disease. The causes of death in the 8 fatal cases were as given in the following list: (1) Profound toxaemia—death on twelfth day; (2) primary carcinoma of liver, originating in bile-duct epithelium (*post mortem*); (3) pneumonia—death on eleventh day; (4) primary cancer of common duct—death on sixth day (*post mortem*); (5) toxaemia, acetonaemia—death on second day; never rallied from anaesthetic; (6) carcinoma of pancreas—death on second day (*post mortem*); (7) haemorrhagic pancreatitis—death on fourth day; (8) general exhaustion, following prolonged suppurative cholecystitis untreated till late—death on fourth day after operation. Amongst the cases which recovered were many difficult and grave enough, requiring operative procedures testing not merely the endurance and physical powers of the patient but also the courage of the operator. In one case transduodenal choledochotomy was necessary; in many the appendix was removed at the same operation; in two cases gastro-jejunostomy was combined with cholecystostomy; in another case cholecystectomy was combined with appendicectomy and colopexy, according to Waugh. All these cases did well. It seems clear that it is something quite apart from the mere severity of the operation chosen, as such, that determines the issue, successful or the reverse.

Mr. R. H. PARRY (Glasgow) said: I have been reviewing my work on the biliary tract, on the completion of thirty years' work in the Victoria Infirmary, and I have been much impressed by the influence of delay both on the extent and character of the pathological changes in it. Even in the last five years of this period the number of cases of suppurating gall bladder and of large stones in the common duct were too numerous, and would suggest a lack of lead on the part of physicians and surgeons on the value of early interference. Draining of the gall bladder or excision of it must depend on the interpretation of the pathological changes as influencing the function of the gall bladder and of the possibility of infection spreading from it by the lymphatics to the contiguous structures. In a definite attack of gall stones we should emphasize the importance of early operative interference as we do in the first attack of appendicitis. I believe that if this were to become the rule, and were the same subject to be discussed at the next meeting of the British Medical Association in Glasgow, it would be found that the treatment had been very much simplified. It should also be more definitely recognized that the presence of large gall stones in the common duct, whether primarily formed there or discharged from the gall bladder, and the disturbance which attends their removal may lead to serious changes in the function of the duct and of the valve at its junction with the duodenum. Regurgitation of the contents of the duodenum into the common duct has been shown to take place in some cases previously operated on but which called for exploration and drainage of the dilated common duct for the recurrence of pain and jaundice. Any measure directed to the protection of the common duct and the maintenance of its full functions is of paramount interest and importance.

Mr. T. S. NOVIS (Bombay), in speaking of the infection of the gall bladder with the bacillus of enteric fever, narrated his experiences of a case in which a patient came to him with a discharging sinus connected with the gall bladder, the discharge from which contained typhoid bacilli.

Mr. R. D. Mothersole (Bolton) had had experience of a case in which drainage of the gall bladder had been performed by Robson, and the patient had been free from symptoms for ten years. Symptoms of cholelithiasis again appeared, and another operation (twelve years after the first) was performed; on that occasion the gall bladder was shrunken, and in the common duct there was a huge stone three by two inches. Another point of interest in the case was that the drainage tube at the second operation came out too soon, and after its replacement duodenal contents began to escape through it.

Mr. R. M. Handfield-Jones (London) said: The difficulties of diagnosis of gall stones having been alluded to this morning, and the increasing efficiency of *x*-ray methods by Mr. Wilkie, leads me to present to you a method which will render a radiological diagnosis correct in a very large majority of cases. I refer to the method of producing pneumoperitoneum. Some of those present will remember the very striking demonstration of such a method by Professor Carelli at the Royal Society of Medicine last winter. Briefly, oxygen or CO_2, or preferably a mixture of the two in equal quantities, is injected through a very fine needle into the peritoneal cavity. The injection must be done slowly and at no great pressure—a mercury blow-off prevents more than 10 mm. of Hg, and a mercury manometer in the apparatus will give the intra-peritoneal pressure. The dangers are—first, that the needle may penetrate the intestinal canal; this can be judged by a fall in the manometer reading on entering the peritoneal cavity and a rise if it enters the intestine; secondly, when the injection is complete (namely, about 500 c.cm.) the patient must not move himself at all during the taking of the plates; and thirdly, the gas must be removed before moving the patient from the table, by introducing a large bore cannula into the peritoneum. With regard to treatment, without going into the vexed question of cholecystectomy versus cholecystostomy, I would say one word about the technique of the former. I readily endorse Mr. Young's remarks on the desirability of starting the dissection at the fundus and not at the duct. The upholders of the latter procedure must take it for granted that in all cholecystectomies there is no induration of and around the cystic duct. As a dissecting-room exercise in a normal subject, the duct and artery are readily identified, but in those cases in which cholecystectomy is justified the structures of the pedicle are quite incapable of identification.

Mr. C. P. Childe (Portsmouth) was opposed to the employment of the transverse incision. He preferred an incision along the outer border of the rectus, and if further room were required the rectal sheath was divided and the rectus muscle mobilized. He narrated two cases where the use of the transverse incision had resulted in the formation of enormous inoperable ventral herniae.

Dr. Arthur T. Jones (Mountain Ash) thought that it would be of great advantage if the public could appreciate the necessity for speedy operation in gall-stone disease as they had in diseases of the appendix. The great difficulty was to get the public to submit to operation, as they did not sufficiently realize that although one attack had been recovered from another was a likely occurrence.

Mr. H. S. Souttar (London) said that when the gall bladder was drained every precaution must be taken to avoid typhoid infection in those handling the case, the organism being present in an active form in 4 per cent. of cases of gall stones. A median, or approximately median, incision was the only scientific one, the chief difficulty of the operation centering round the common bile duct, an almost median structure.

Mr. H. N. Fletcher (Brighton) said that Mr. Wilkie had emphasized the bacterial origin of gall stones. It was difficult on this theory alone to account for the fact that for every male who came to operation there were eight or nine females. There must be some other factors at work, and there were two, he thought, which were specially present in the female—namely, (1) increased cholesterol content in the blood, which, for example, was often notably increased by pregnancy and by sedentary habits, and (2) biliary stasis. Apropos of the first, he had observed that a large proportion of patients who suffered from gall stones were subject to migraine attacks, an occurrence which might possibly be explained by a hypercholesterolaemia. In regard to stasis, apart from its occurring from hyperviscid bile, there was the fact that visceroptosis, so much commoner in the female than the male, might, as Mr. Wilkie had suggested last year, cause duodenal stasis by the drag on the superior mesenteric vessels as they crossed its third part; and since Mr. Wilkie's suggestion he (Mr. Fletcher) had observed three cases of gall stones in which this was well marked and in which the proximal duodenum was much dilated. Again, there was no doubt, as Mr. Waugh had pointed out, that in some cases a proptosed proximal colon could, by its pull on the peritoneum passing from the hepatic flexure to the gall bladder and cystic duct, kink the latter. Given, then, an increased cholesterol blood content *plus* stasis, organisms reaching the gall bladder would find exceptionally favourable conditions for their growth. Much attention had been devoted to the "digestive" symptoms in gall stones. In the past year he had kept records of twenty-three cases, and found that, in a quarter of them, pain half to one hour after food, referred to the mid-epigastrium, was a prominent symptom, and that in nearly three-quarters of them prolonged flatulent dyspepsia was present.

DISCUSSION ON THE TREATMENT OF NON-MALIGNANT AFFECTIONS OF THE COLON.

OPENING PAPERS.

I.—Sir W. ARBUTHNOT LANE, Bt., M.S., F.R.C.S.,

Consulting Surgeon to Guy' Hospital.

When I was asked to open this discussion I willingly acquiesced, though I felt the honour was greater than I was able to do justice to.

Formerly it was customary to regard the several abnormal conditions of the colon as separate entities or diseases. Personally I do not accept this situation, but consider them to be one and all the direct or indirect results of chronic intestinal stasis.

In order to substantiate the accuracy and correctness of my views I must first draw your attention to the two great groups of conditions which I found in the living abdomen—namely, those cases of intestinal stagnation in which a reaction takes place and those in which it is altogether absent.

Group characterized by the Formation of Bands.

In the vigorous subject delay of the accumulated contents in the pelvic colon leads to the formation of acquired bands on the under surface of the mesentery securing the junction of the ileal and the pelvic segments of the colon. The mode of formation of this, as of all the other acquired bands which develop to hold up and secure a loaded colon, is very simple. They commence as streaks on the surface of the mesentery, starting from its base and encroaching gradually along its length. After a time they reach the wall of the intestine. The streaks soon become a distinct membrane, which at a later period may be separated from the mesentery except at its base and at its terminal extremities. This membrane tends to contract and to drag the bowel towards the iliac fossa, where it finally becomes firmly fixed. The fibres that grip the colon not only diminish its lumen by angulating it, but they also tend to reduce its calibre still further by rotating it on its long axis.

Like most of the efforts that Nature makes to help the individual to bear a useful relationship to his surroundings, this membrane serves a beneficial purpose in the first instance, tending to support the loaded bowel, and so opposing its elongation and prolapse. Later this originally useful structure tends by its contraction to obstruct the lumen of the bowel, and to place the life of the individual in serious peril. This membrane in its development is very liable to grip the ovary and Fallopian tube and to fix them immovably on the iliac fossa.

It may interfere with the function of the Fallopian tube, impeding the passage of the ovum through it and causing extrauterine foetation, or it may prevent the entry of the ovum and so render the patient sterile on the left side. Besides securing and fixing the ovary it sooner or later surrounds it, and causes it to undergo a cystic change. Later the degenerating ovary increases in size and bursts through the surrounding membrane and forms a mobile ovarian tumour.

Gynaecologists are only too familiar with the pain which women experience in the left iliac fossa and which is so often exaggerated by the approach of the period in the struggle of the bowel to force faecal matter through the anchored and obstructed colon over the sensitive ovary gorged with blood. These conditions have been referred to fully in *Guy's Hospital Gazette* in a paper by Mr. Chapple entitled "Pain in the lower abdomen of women" (*Guy's Hospital Reports*, 1921, vol. 35, p. 164).

To this particular acquired band and to its effect on the colon I gave the name of the "first and last kink." The first because it is the earliest of the acquired membranes to develop, and the last because it is the lowest in the drainage scheme.

This development of a band controlling the lumen of the lower portion of the bowel is perhaps the most important acquired change in the whole body, since it is the primary cause of a vast amount of subsequent trouble in the gastro-intestinal tract and elsewhere. Its immediate effect in producing an obstruction at this point is to render the partially occluded colon a very common seat of cancer, while in fat subjects the bowel proximal to it is a very usual site of diverticulitis. The indirect consequence of the obstruction to the passage of faecal matter through the first and last kink is the accumulation of material in the whole length of the colon. The increased load in the obstructed bowel results in the development of precisely the same type of acquired membrane on the outer layer of peritoneum which extends from the convexity of the large bowel to the abdominal wall. It serves to fix the colon and to prevent its elongation and prolapse. It is most marked in certain positions where the consequent constriction of the lumen of the bowel may produce inflammatory or cancerous changes. The localities so affected are immediately above the iliac crests, at the splenic flexure, below the gall bladder, where an acquired band from the liver, gall bladder, duodenum, and pylorus descends to hold up and later obstruct the transverse colon, over the outer aspect of the caecum, where it has recently been called Jackson's membrane, and again on the under surface of the terminal mesentery of the small intestine, which with the end of the ileum supports the caecum, forming its internal lateral ligament. In America this particular band has been given my name and is called Lane's kink.

What I want particularly to call attention to is that these so-called separate bands are all evolutionary, and identical in origin, function, and structure, and are due to the effort of the organism to meet an abnormal loading up of the bowel because of a distal obstruction, and to enable it to perform its function to the best of its capacity and not to prolapse. As I have already pointed out the initial purpose of their existence is carried out efficiently for a time, but later the continued contraction of the newly formed membranes results in obstruction of the lumen of the bowel and in consequent disease. This is usually most marked at the ileal kink (as I call the one named after me) and at the splenic flexure.

Too much attention cannot be paid to the mechanism of these acquired membranes and to the effect they exert both immediately and secondarily upon the functioning of the large bowel. When I first described them their existence was altogether denied. Later when they were found to be only too obvious the tendency was to regard them as separate and independent structures, to argue as to whether they were congenital or inflammatory in origin, or to assert that they have no influence whatever upon the normal function of the intestine. Mr. Chapple carefully examined fifty-two newly born foetuses in Guy's Hospital and could find no trace of bands similar to those present in the adult. This shows that they are obviously not congenital.

No one familiar with the appearance, structure, and mode of development of the bands in the living subject could regard them as inflammatory. On the other hand, anyone who has studied the several changes which the skeleton and soft parts undergo in the varying mechanical relationship of the individual to his surroundings can have no doubt as to their evolutionary origin.

Another important development which arises not infrequently in consequence of the strain exerted by the loaded caecum is what I called "the controlling appendix." It is one of very great pathological and clinical importance. This, like the ileal kink, has now been pretty generally accepted by surgeons. Instead of developing a membrane on the under surface of the mesentery of the terminal ileum the appendix is employed in the novel function of a ligament. It becomes attached by acquired adhesions to the under surface of the mesentery and therefore it lies behind the end of the ileum. By the gradual contraction of the acquired adhesions it is rendered progressively more tight. Its situation is such that when the ileum and caecum drop into the pelvis the ileum is kinked abruptly over the anchored appendix, and like an uninflated tyre hung over a hook its lumen is more or less occluded in consequence. This controlling appendix, or the equally damaging ileal kink, is responsible for very much of the ileal stasis and infection consequent on their presence and which play such an important part in the sequence of chronic intestinal stasis. The kinking of the anchored appendix itself renders its own lumen liable to become obstructed. Consequently inflammation follows, and this attracts attention to it. The removal of such an anchored appendix is followed by great benefit to the patient.

It is in this type of static colon that cancer commonly occurs, since the factors that determine cancer and which are simply mechanical are present in a more or less marked degree. Many of the patients are robust and are regarded as healthy people by the casual observer.

Group characterized by Absence of Bands.

The other extreme type of chronic intestinal stasis is characterized by a complete want of effort on the part of the organism to oppose the elongation and prolapse of the large bowel, no new acquired bands or membranes being formed. The pelvic colon becomes greatly elongated, and puddling in the pelvis this long, loose bowel forms many abrupt angles and offers a great obstacle to the passage of solid material through it, since the more the individual strains to expel the bowel contents the farther is the flaccid gut driven into the lower limit of the pelvis.

While in the type first described the acquired band forming the first and last kink constitutes the chief obstacle to the emptying of the colon, in this type obstruction is due to the great elongation and prolapse of the pelvic colon, so that the mechanical conditions are perfectly distinct in the two extremes.

Following on this obstruction the proximal colon elongates to a great extent and prolapses. As far as I know the mere prolapse of the rest of the large bowel in no way affects its function except in the case of the caecum, when it may twist the end of the ileum and obstruct its effluent.* This condition of the caecum and ascending colon may be greatly benefited by plicating the bowel or by the method of anchoring advocated so strongly by Mr. George Waugh. Curiously enough the prolapse of the large bowel, or as it is technically called enteroptosis, has monopolized the attention of most operators who attempt to relieve the symptoms of the patient by fastening the bowel in position or by excising portions of the elongated transverse colon. I have seen no permanent advantage from such operations in patients on whom I have operated subsequently since such conditions are obviously secondary and not primary.

In consequence of the obstruction to the passage of the intestinal contents which results from the elongation of the pelvic colon an infection of the mucous membrane of the proximal colon takes place, producing a condition called colitis. This infection causes a spasm of the muscle wall of the colon and a consequent reduction of the lumen of the inflamed bowel, so producing a very serious mechanical obstacle to the passage of material through it. As I have previously indicated, *the mechanical conditions are perfectly dissimilar in the two extreme varieties of stasis*, while between the two extremes every variety of degree and combination exists.

In this type there is no point of constriction at which hard faeces can be definitely obstructed, and therefore no area of impact where cancer is likely to develop. For this reason cancer of the colon is not seen as a sequel in this form of stasis, though it is common in parts of the body other than the gastro-intestinal tract. I have described this fully on many occasions.

I feel that it is most important from the point of view of treatment, medical as well as surgical, that we should render ourselves perfectly familiar with the exaggerated types I have described and with the intermediate varieties.

* This was described and demonstrated in a remarkable manner by Dr Jordan.

Operative Interference in the Type characterized by the Formation of Bands.

In the first extreme type of stasis the condition which calls for operative interference on the colon apart from cancer is the obstruction caused by acquired bands, *by far the most important of which is that which produces the first and last kink.*

The operation that I perform with great frequency is the careful separation of the bands which form this kink and the accurate apposition of the peritoneal edges should any surface be left deprived of its serous covering. Other controlling bands are sought for and if present are divided. The termination of the ileum is examined, and should a controlling appendix or an ileal kink be present these are dealt with and any raw surfaces carefully covered in by peritoneum. If the membrane forming the ileal kink is at all extensive it is important, after freeing it, to leave a drainage tube in position, for the reason that the lymphatics which are divided in the acquired membrane contain septic organisms which, if not drained, readily escape and set up a local peritonitis which may terminate fatally.

The presence of such septic organisms in the area from which the acquired membrane was removed have been demonstrated by cultures made by Dr. Nathan Mutch at the time of operation. This fact accounts for many cases of unexplained fatal peritonitis in operations on the appendix. I may say that I go through this sequence most systematically when dealing with any of their sequelae, such as gastric and duodenal ulcer, gall stones, etc.

The other but very much less frequent complication in this type in fat subjects is diverticulitis. This usually occurs in the area of bowel proximal to the last kink, or it may develop in any portion of the large bowel behind an obstruction. If still definitely non-malignant, the most simple method of dealing with this diverticular formation in fat subjects consequent on obstruction is to put the divided end of the ileum into the pelvic colon. *In this case, as in that of colectomy, the patient should be instructed to secure three evacuations daily.* By such means any regurgitation of the contents of the ileum into the colon proximal to the junction can be readily avoided.

Occasionally it is advisable to excise the diseased area and to unite the proximal bowel to the pelvic colon. This must depend on the possibility of mobilizing the bowel and upon the nature of the intestinal wall. In some rare cases colectomy offers the best results.

Another complication of this type of stasis is tuberculous ulceration of the colon, which is frequently limited to its proximal half. For this a complete colectomy may be performed, or, if the condition of the patient renders it advisable to limit the extent of the operation as much as possible, the ileum may be divided and be put into the pelvic colon and the colon excised beyond the limit of the area affected by tubercle. What procedure is adopted must vary with the conditions present at the operation.

It is the opinion of certain experts in tropical diseases that dysentery only becomes chronic in those affected by intestinal stasis, and it has been demonstrated by Mr. J. W. Jackson in a most interesting communication ("The relation of chronic intestinal stasis to chronic amoebic colitis") in the *Medical Press and Circular*, May 3rd, 1922, that chronic amoebic dysentery can be frequently cured by freeing the intestine from obstruction by band or controlling appendix.

Operative Interference in the Group characterized by Absence of Bands.

In the second type of static colon the mechanical difficulties are in the first instance the elongated pelvic colon, and in the second the obstruction consequent on the spasm of the muscle coat of the bowel produced by the inflammation of its mucous lining.

The symptoms which call for operation in this type are not due so much to the pain and constipation or diarrhoea, but to the auto-intoxication which is the result of infection of the contents of the small intestine, which produces the most serious degenerative processes in every tissue of the body and renders the subject liable to infection by other diseases such as rheumatoid arthritis, tubercle, etc.

It would seem that the simplest operative procedure would be to excise the surplus pelvic colon and to restore it to its normal length; such a measure is beneficial in certain circumstances, but in the majority of cases the best results can be obtained by a colectomy or by dividing the ileum and putting it into the pelvic colon, taking subsequent precautions to secure the frequent evacuation of the pelvic colon which have been already indicated. Needless to say, no operation should be considered till every medical means have been taken to overcome the constipation, to allay the spasm of the muscle of the bowel by curing the colitis, and to free the ileal effluent.

I have described the operations of ileo-colostomy and of colectomy so frequently that it is unnecessary to repeat them again in detail. I would merely point out that in this type, as opposed to the other, colectomy is rendered very easy because of the prolapse and elongation of the bowel and by the absence of any retaining membranes.

A complication of the elongated large bowel which increases the obstacle to the passage of its contents is a twist. It is usually chronic, but owing to the abrupt exaggeration of the twist it may become acute and produce a volvulus. In certain cases I have excised the volvulus and in others I have performed a colectomy. The same treatment applies equally to the congenital enlargement of the colon, sometimes called megacolon.

As regards ulcerative colitis, when medical treatment has failed to bring about a cure of the condition, the only operation which has been of any real service in my experience has been a colectomy. Even after a colectomy prolonged local and vaccine treatment is usually necessary for a considerable period, to get rid of the residual ulceration which so often exists in the rectum and in the portion of pelvic colon which has necessarily been left in the body.

Much the same operative treatment applies to severe cases of mucous and membranous colitis, but it is resorted to much less frequently.

Before leaving the subject of these operative procedures I would urge the importance of attempting to avoid the sequence of conditions which result from stasis and which produce so much misery and death.

Cancer is the final stage in the sequence of chronic intestinal stasis. It is the last chapter in the story of defective drainage of the large bowel, as it is in the rest of the gastro-intestinal tract. Its treatment has been excluded from consideration in this discussion.

Another effect of infection of the badly drained colon is inflammation of the appendix. On the treatment of this complication we are in general agreement.

I cannot impress on you too strongly Colonel McCarrison's experience in India. He spent nine years in the Himalayas, during which time he did a large practice, performing more than four hundred capital operations each year. During that time he never saw one case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis, or of cancer, all evidences of chronic intestinal stasis in their normal sequence. I have obtained precisely similar evidence from other very experienced medical men who have been engaged in practice for many years among the primitive races.

It is clearly our duty not so much to devise new operations as to attempt to prevent the diseases for which so many operations are done. This is the biggest problem before the profession at the present moment, and it is one that must be solved.

II.—GEORGE WAUGH, F.R.C.S.,

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THE study of non-malignant diseases of the colon might easily extend over several days; this Section has allotted a few hours to it, and the individual speaker must try to content himself with a few minutes. It is not possible, therefore, within such limits to do more than indicate an outlook upon diseases of the alimentary tract which appear to depend for their origin upon non-malignant affections of the colon; to outline a mode of investigation that can be conducted by every surgeon; and to suggest conclusions that may be reached only by the patient contemplation and criticism of results that have stood the test of time.

Disease has a biological aspect that cannot be ignored in considering functional disabilities of the alimentary tract as they manifest themselves in Nature's first experiment in upright bipeds—the human race. Structure and environment must have established an equilibrium that has rendered possible the survival of man as a healthy individual, and the failure of his alimentary tract to function in such a way as to maintain a high standard of health for him can only

depend upon a maladjustment of these two factors. The interplay of these two factors has long been studied from the aspect of variations of environment, but the variations of structure representing arrested stages of embryological development of the alimentary tract have received but scant attention. The environment of man's alimentary tract differs from the environment of that of the rest of the animal world in that it is exposed to the action of gravity as a consequence of his upright position—possibly a very significant difference, and one that would require a structure specially adapted to cope with it.

The colon more than any other viscus is subject to variations of position, fixation, and structure which reveal like geological strata the successive phases of its development; and the colon, as a reservoir of solid material that increases in weight by steady accretions during each twenty-four hours, should be essentially perfect in its development to resist the strain that gravity peculiarly imposes upon it. With these malformations of the colon, primitive forms of embryology of the omentum, the biliary apparatus and the small intestine are associated in variable degree, and from their intimate anatomical relationship to the colon they must be considered in any study of structural defects.

At this stage it may be well to enumerate the structural variations that have been observed before considering their possible significance and their effect upon our concepts of the origin of disease that manifests itself in terms of functional inefficiency of the alimentary tract. The series of observations have been made upon 518 operations for the purpose of finding structural variations and restoring them to type within the limits imposed by surgical procedure. At the same time they have been studied in a series of *post-mortem* examinations in 110 children under the age of 12 years by the surgical registrar, Mr. J. F. H. Stallman, at the Hospital for Sick Children, Great Ormond Street; the cases were consecutive as far as possible, they had died from many varieties of disease, and were not in any way selected. The following structural variations were found in these 110 children: in 38 there was a complete primitive mesentery to the ascending colon; in 9 there was a long primitive mesentery to the iliac and pelvic portions of the descending colon; in 14 Lane's parieto-colic membrane was present; in 45 there was a ventral mesentery to the gall bladder; in 1 the caecum was under the liver; and in 1 the foramen of Winslow was absent. The age of the youngest child with a primitive mesentery to the ascending colon was 1 month; with a primitive mesentery to the descending colon 2 months; with Lane's parieto-colic membrane 1 month; with a ventral mesentery to the gall bladder 3 weeks; with an absence of the foramen of Winslow 2 weeks; and with an undescended caecum 3 years.

The operation group may be subdivided into 396 adults and 122 children; of these an analysis of the first 308 cases appeared in the *British Journal of Surgery* in January, 1920, leaving for record to-day the findings at 210 operations performed since December, 1919, upon 188 adults and 22 children.

In all of these cases, 210 in number, the ascending colon had retained its primitive mesentery; entirely in 177 of them so that it could be lifted out of the abdomen in its whole extent, and placed upon the towels to the left of the middle line. In the remaining 33 cases it was tied down strongly at the mid-point, with the primitive mesocolon persisting in variable degree behind the segments above and below this point. This tie-band, which passes from the antero-external aspect of the ascending colon to the parietes in the immediate neighbourhood, appears to represent the site at which disappearance of the primitive mesentery normally begins; but in these cases the process had been arrested there.

It is thus a fixed point upon which the mobile portions of the colon above and below it exert traction and modify it by drawing out the fascia of the post-lateral abdominal wall in varying degree. It is *opaque, non-vascular*, and on cutting through it the cellular tissue covering the quadratus lumborum muscle is revealed. It has no feature in common, therefore, with the membrane which Jackson has described in the *Annals of Surgery*, 1913, as "a *transparent vascular* structure like a complete new layer of peritoneum, bearing a relation to the colon that may be likened to that of the pia arachnoid to the brain, with bright red blood vessels running parallel with the long axis of the ascending colon and extending over the anterior surface of the colon from hepatic flexure to caecum." He suggests that this membrane has been overlooked frequently on account of the smallness of the incisions used by many operators in opening the abdomen, which do not reveal the whole of the ascending colon. That criticism is not valid in this series of cases, in which the whole of the ascending colon was not only exposed but fixed along its whole length.

For nine years I have sought in vain for Jackson's membrane, persuading myself with difficulty that in two or three cases I had found something that bore some faint resemblance to the structure that he had described. But what has been present in these cases at the mid-point of the ascending colon is Lane's parieto-colic membrane, described by him in 1903, five years previous to Jackson's publication, and bearing the imprint in his description of it of his matchless mastery of anatomical detail. For the sake of historical and scientific accuracy it should be restored to its proper position in surgical literature under the title bestowed upon it by the distinguished surgeon who originally and accurately described it.

These are the chief variations in fixation, and those of position and structure must now be mentioned. In two cases the whole of the colon lay in the left iliac fossa and the left side of the pelvis, having made no attempt to rotate from its primitive embryonic position and retaining a primitive dorsal mesentery over its whole length.

In five cases the caecum lay under the liver—that is, rotation had been completed but descent had been arrested. In three of these cases the colon passed directly to the left from the caecum in the ordinary direction of the transverse colon, and with omentum arising along the whole of the horizontal loop; but in the other two the colon dropped down abruptly to the right side of the pelvis, so that with the caecum under the liver the hepatic flexure lay in the pelvis, and the ascending colon was actually upside down! From this prolapsed hepatic flexure the gut turned abruptly upwards to reach the splenic flexure, and only along the ascending limb was there an omental attachment. In these cases of subhepatic caecum the ileum made a steep vertical ascent for two to three inches along the side of the bodies of the lumbar vertebrae to reach the caecum, and was tied down as an entirely retroperitoneal viscus over that part of its course. That the ileum compelled to pursue a vertical ascent should be devoid of mesentery is not without interest.

In two cases the colon had completed its rotation, but had dragged an opaque membrane with it over the whole of the rest of the viscera, which, with the exception of the stomach, were entirely invisible; and one had the unique experience of cutting a small hole in this membrane, which was about a quarter of an inch thick, to prove that the patients did possess a liver! They had been treated as cases of gastric ulcer, but the stomach did not reveal any abnormalities of structure.

In 128 cases the transverse colon lay below or over the sacral promontory, and the stomach was prolapsed according to variations of attachment and length of the omentum which passed between the two—that is, an excessively long loop of transverse colon with a great depth of omentum would not necessarily be associated with a prolapsed stomach, since the omentum could continue to pay out as the colon sagged without becoming sufficiently taut to exert a pull upon the stomach; while, on the other hand, a shorter loop of transverse colon, with only a short omental attachment, would be associated with an equivalent prolapse of the stomach.

Thus a prolapsed colon can be present without a prolapsed stomach, but I have never seen a prolapsed stomach alone without a prolapsed colon during any operations upon these cases; and to treat gastroptosis without reference to the colon can only be done in ignorance of the precise relationship between the two established at operation.

Associated with these variations of position and mobility of the colon is an atrophy and dilatation of its structure. In all these cases the ascending colon was atrophic and dilated, these changes being most marked in its most dependent portion. These changes were also present in addition in the transverse colon, involving its right half only in 98 cases, and involving the whole of it up to the splenic flexure in 30 cases. This is an approximate classification that showed that a tendency existed for these changes to spread from the right to the left of the colon to an extent that varied with the chronicity of the case. In the descending colon a patchy distribution of these changes was confined to those parts of the descending colon that were excessively mobile from persistence of primitive mesenteries. Between the splenic flexure and the brim of the pelvis it was rare to find them when the gut was normally fixed, while the pelvic loop

appeared to be more and more ballooned in proportion to the length of the primitive mesentery that supported it.

In 5 cases the whole of the colon was atrophic and dilated from caecum to rectum; it could be lifted entirely out of the abdominal cavity, including the splenic flexure; and, although they were all under the age of 30 years and had drifted from bad to worse under all forms of treatment, I did not consider that surgery could step in at that stage with advantage, or with any hope of undoing the irreparable damage that had converted their healthy adolescence into a premature middle age.

Of associated structural variations a stout mesentery passing from the ventral aspect of the gall bladder and tying it down across the duodenum to the colon in the region of the hepatic flexure was present in 76 cases.

In 7 cases the foramen of Winslow was absent and was represented by a dimple in the posterior layer of the gastro-hepatic omentum, which then passed abruptly backwards to the posterior abdominal wall.

In 18 cases a stout membrane passed from the hinder edge of the under surface of the liver along its whole length, both in the greater and lesser peritoneal sacs to the viscera in immediate relationship with it, more especially the pancreas, the pylorus, the duodenum, the upper and outer aspect of the ascending colon, and the right kidney. At no point except at the extreme tip of the right lobe was it possible to pass between the liver and the diaphragm. Through these membranes—the one from the ventral aspect of the gall bladder and the one from the under edge of the liver—the mass momentum of the liver pounding up and down during respiration is transmitted to the viscera to which they are abnormally attached; and these are not normally subjected to such a stimulus. It is not unthinkable that such a stimulus may have some effect upon the blood supply, the nerve supply, or even the structure of the viscera implicated.

Time permits of no more than this hurried summary of gross structural variations present in patients suffering from gross functional inefficiency of their alimentary tract. The clinical features of these cases have already been described in full detail in the *British Journal of Surgery*, but characters peculiar to most of them in their early stages may be recalled briefly.

In their distribution they were independent of environment and no common environmental factor depending upon the differences of their social strata and personal habits could be detected as exerting any influence upon the onset of their diseases. The period of life during which functional inefficiency first manifested itself was common to most of them—between the ages of 18 and 25 years. Only a few of them had had an unhealthy childhood from diseases of the alimentary tract.

The initial symptoms were generally discomfort in the upper half of the abdomen that yielded to no remedies, and that was eventually overshadowed by pain that appeared during the course of a year. The pain also was generally experienced in the upper half of the abdomen, but was liable to variations of distribution, conduction, and character; whilst more than one kind of pain, together with a variety of discomforts, could be identified not infrequently in an individual patient.

One type is of particular interest, and was present in 97 of these patients, a type that has been described as "hunger pain," and that is peculiarly amenable to change of position from the upright to the horizontal, and is very frequently relieved by the taking of food.

Of all the alleged modes of origin of visceral pain there is one that has been translated from the realm of theory to the realm of fact, and it may be well to recall the experiments that established it beyond all dispute. Nearly thirty years ago Lennander of Upsala and Arthur Baker of London performed most of the present-day operations upon the alimentary tract under a local infiltration of the abdominal wall only with beta-eucaine and adrenaline. During the course of these operations it was clearly and scientifically shown that when tension was made upon a mesentery beyond a certain degree of tautness, pain was experienced by the patient, and no other stimulus elicited any sensation that the patient could record. Antecedence and consequence followed in an unbroken procession, establishing a law that there was a minimal strain for each mesentery which could not be exceeded without the production of pain.

The occurrence of hunger pains in patients possessing primitive mesenteries to their ascending colons, together sometimes with other embryonic bands, may well be reviewed in the light of these experiments. Not only is that mesentery peculiarly exposed to strain by the downward-acting weight of the colon and its load, but also the strain may be taken off it by change of posture and by shifting of the load. There is a time occurrence of these pains revealed by the patients so constant that they might well be renamed "four o'clock in the afternoon" pains and "small hours of the morning" pains. So infrequently do they occur at other times in the day that patients confess they are panic-stricken by such happening, although the majority of them had never had such an experience. With regard to their habits, most of them had eaten a good breakfast and a good midday meal, so that at about 4 p.m. most of the residue of both these meals would be in the ascending colon; a good meal was eaten again as the last meal of the day, the total residue from which would ordinarily be accumulated in the same site at about midnight.

By taking a cup of afternoon tea, a pinch of sodium bicarbonate, or a biscuit kept by the bedside for the purpose, the pain would be speedily relieved. It is known that by any act of ingestion into the stomach a gastro-colic reflex is initiated whereby the load from the ascending colon may be passed on into a more distal segment of gut; this presumably happened in these patients, and afforded them the expected relief.

Change of posture was temporarily effective if they could get their heels higher than their head; but the relief was purely temporary, and in some cases no relief at all was afforded when the ascending colon hung so far over the pelvic brim that it could no longer ride up on assuming such a position.

In the light of these facts it seems a reasonable inference that this particular pain does originate from the downward drag of the loaded ascending colon upon its own mesentery, and that the relief from the pain afforded by fixing the colon cannot be regarded as a pure coincidence.

None of these cases had duodenal ulcers discoverable by operation; 46 of them had already had the appendix removed—the purely epigrammatic solace for failing to find the ulcer or gall stones so confidently diagnosed in these cases—without relief to their symptoms; and the precise diagnosis of duodenal ulcers, together with those of gall stones and gastric ulcers, may well be grouped together as unscientific conjectures that are sometimes right.

By the time that pain had become an established feature of these cases general malnutrition, as shown by an average loss of 1 st. to 3 st. in weight, proceeded on its course unchecked by many remedial measures such that changes of environment could afford; and the buoyant adolescent of 18 had now become the weedy dyspeptic adult of 25.

Such are the common features of the early stages of failure in function of the alimentary tract in these individuals whose gross structural anomalies have been demonstrated upon the open abdomen. Further, it may be noted that they were not cases of primary constipation or of general visceroptosis. In only 28 of them had constipation preceded the other troubles, whilst its appearance was delayed in most of them until four or five years of suffering had been experienced.

The position of the viscera and their range of excursion were noted by the only precise method at our disposal—that is, when the abdomen had been opened with the patient in the horizontal position on the operating table. All of them had a prolapsed ascending colon, some of them had a partially prolapsed transverse colon and stomach, 95 of them had a right prolapsed kidney; but none of them had a prolapsed liver, spleen, pancreas, descending colon, or left kidney. To be quite precise, the left kidney was mobile and prolapsed in three of them.

A description of the individual variations in symptoms added on to the common symptomatology cannot be entered upon now, and it must be mentioned merely in passing that several of them had had renal crises with healthy kidneys and normal renal secretion, and had been suspected of harbouring renal calculi; others of them had had biliary crises with healthy gall bladders and healthy contents, and had been treated for gall stones.

Thirty-two of them had undergone "cures" for colitis, in some instances lasting as long as five years, whilst under the many diagnoses of duodenal ulcer, gastric ulcer, gastroptosis, gastralgia, gastric neurosis, neurasthenia, and psychasthenia the most ingenious changes of environment had failed to stay the course of their sufferings.

Of surgical measures that had proved ineffective before these patients came under my care, from 46 the appendix had

been removed, in 5 the gall bladder had been drained, in 9 a gastro-jejunostomy had been performed, and in 1 of them a gastroplication.

To summarize briefly the operative procedures performed upon these 210 cases: In all of them the ascending colon was fixed to the posterior abdominal wall in what approximated to the normal position. As additional measures the atrophic right half of the transverse colon was fixed by Coffey's method in 128 of them; the ventral mesentery of the gall bladder was cut away clean up to the free edge of the gastro-hepatic omentum in 76 of them; the gastro-jejunostomy union was resected and the stomach and jejunum restored to their normal isolation in 6 of them; gall stones incidentally found were removed and the gall bladder drained in 3 of them; and the gall bladder excised from 1 of them who had a permanent biliary fistula from a previous drainage operation done elsewhere.

The appendix, which was still present in 164 of them, was removed and was obviously diseased in 4 cases; whilst in the remainder it was strikingly small and healthy in appearance. In 2 cases ileal kinks were cut away. With regard to the "first and last kink" I was unable to differentiate it from the fascia covering the iliacus and obturator muscles on the left side, drawn out by a pendulous loop of iliac and pelvic colon that had retained its primitive mesentery. This condition was only present in 35 cases. Masses of adhesions from previous operations had frequently to be waded through before the final operation of reconstruction could be begun. There were four deaths from the operation in the total series of 518 cases; two of them have already been recorded in the original paper, while the third occurred in the series of cases now under review from post-operative pneumonia followed by an empyema that proved fatal on the seventeenth day after operation. The fourth—the only one that occurred in a child—was from diphtheria, for which tracheotomy had to be performed within thirty-six hours of the operation, but the patient died a few days later. The operative death rate is thus only a fraction of 1 per cent., and the operation of reconstruction of the alimentary tract may at least claim to range itself amongst the safest of surgical procedures.

Of late complications, in 8 cases attacks of intestinal obstruction from adhesions came under my notice during the last eleven years. In 6 of them a knuckle of small intestine was adherent to the under aspect of the laparotomy scar and in 2 of them the omentum was adherent to the floor of the pelvis. Thus the formation of adhesions as shown by their distribution was not peculiar to an operation for readjustment of the position of the colon and they appear to represent a very average risk of any interval abdominal operation.

The number of patients who had extensive peritoneal adhesions from previous operations before coming into my hands were 58. These adhesions were carefully undone before proceeding with the operation of reconstruction, and in estimating end-results have necessarily to be taken into account.

The results can only be presented to-day roughly in three groups—failures, improvements, and apparent cures. Twenty patients write to me that they are no better (in the space on the form that they are asked to fill in under the heading "Present condition," one of them writes laconically the single word "Rotten"), but they add that they are no worse!

There is an intermediate group who have lost a great many of their old troubles, and, whilst they are not entirely free from all symptoms, they say that their health has been materially improved, and are gratified by what has been achieved for them.

Whilst finally, as a set-off to these two groups, there are 98 who declare, after periods varying from eight to five years since the operation, that they are enjoying a degree of health that they had never previously experienced, and that they regard themselves as perfectly well.

Many enumerate in detail how they have passed from a life centered around the search for new remedies for their intestinal troubles to one of active participation in sport and work. The rate of improvement in their records is most variable and interesting: in some, a long climb uphill to a reasonable standard of health was in front of them, in others an abrupt and dramatic change for the better has occurred.

Two patients, both under 30 years of age at the time of operation, performed seven years and six years ago respectively, had been practically bedridden for one year beforehand. During the subsequent year they made a slow and steady improvement, at the end of which time they have entered upon a practically unbroken spell of buoyant health and have increased their weight by an average of 2½ st. apiece.

As a contrast, a young man of the severe hunger pain type, of two years' duration, estimates one year later that his progress is "pretty fair," adding incidentally that his weight in that time had gone up from 10 st. 1 lb to 12 st. 7 lb.

Such, then, is the brief picture of gross structural variations in the alimentary tract of 210 cases; of the clinical aspect of the functional disabilities of the alimentary tract from which they suffered; of the method, details, and risks of an operation of reconstruction undertaken to restore them to type (essentially conservative and physiological in its principles and not substituting an alternative pathological condition for the original one); and of the end-results that have been achieved.

The general principles involved in these studies must once more be referred to in conclusion. The whole philosophy and practice of medicine from time immemorial has regarded environmental factors as the cause of early stages of functional disability in the alimentary tract, and the question of whether pre-existing structural defects that have been present from birth have at last revealed their presence by an inevitable failure of function has seldom, if ever, been raised.

As the logical outcome of such a premiss, changes in environment have formed the basis of treatment, which comprises elaborate changes in the proportion of the protein carbohydrate and fat elements of diet, and the administration of animal, vegetable, and mineral substances from a swollen pharmacopoeia.

With the failure of these measures to afford relief, fresh concepts of functional inefficiency in the endocrinic system, the autonomic nervous system, the central nervous system, and finally the psychic nervous system, have been evoked to explain the slow progressive breakdown of normal function in the alimentary tract, in spite of the environmental readjustments to which it has been exposed. That lesions of one or all of these systems should have caused patchy distribution of the deformities already enumerated seems unlikely; but that the structural deformities primarily present in such a case may have been responsible for a secondary involvement of these systems is not unthinkable, with the ultimate establishment of a vicious circle.

Now the perfectly developed alimentary tract can only have been one with a structure of enormous resistance to hostile factors in environment to have permitted the human race ever to survive. The incredibly filthy habits of the cave man with his uncooked, unanalysed, and unwashed food, his unwashed hands, his unclipped nails, his louse-infected body, and his ignorance of sanitation, would long ago have swept the human race from the face of the earth unless many of them had been adapted structurally to resist such an environment successfully.

This environment is faithfully reproduced in the homes and habits of slum dwellers of to-day. Yet from these same slums you may hale forth eupeptics, affording a contrast between the rude health they enjoy and their violation of all laws of sanitation and dietetics, that is an astounding testimony of the innocuousness to them of their environment.

The dyspeptics are there too, and in large numbers; but so also the eupeptics and dyspeptics abound in the teeming multitude of suburban dwellers and amongst the ranks of the wealthy and leisured classes. Than the last class perhaps none are brought up more strictly from childhood under the guidance of distinguished leaders of medical thought in the laws of dietetics—that is, amidst an environment for the alimentary tract in which function should be performed most efficiently and with the least exposure to the menace of hostile factors.

Nevertheless, in these three large social subdivisions of the human race whose environments are characterized by the most divergent elements, eupeptics and dyspeptics abound with a constancy both inexplicable and bewildering if variations in environment are to be regarded as the sole determinants of efficient or inefficient functioning of the alimentary tract.

This theory of the sole influence of environment clearly breaks down in the presence of such widely distributed phenomena of alimentary tracts defying the foulest environment with success, and succumbing ignominiously when sheltered by the fairest. Some other factor that determines so erratic a distribution of these ills must be taken into account, and I venture to suggest that that factor is represented by gross structural anomalies of the alimentary tract which are present from birth. For them no environment that is suitable has as yet been found; whilst in their absence it seems biologically true that no environment is unsuitable.

The exposure of the alimentary tract to the influence of gravity as the result of man's upright position has imposed upon it a strain unique in the animal world. Solid ingested material has to move against a resistance that can no longer be merely expressed in terms of the coefficient of friction between itself and the mucous membrane of the alimentary tract, since a vertical uphill path has to be traversed in part of its course against the tendency of its own weight to drop downwards. This tendency, moreover, is still active during the resting phase of the solid material, so that its full weight has to be supported with the minimum expenditure of energy and the force of expansion exerted upon the wall of the segment of gut that contains it appropriately overcome.

A structure efficient on the physical side for the purposes is likely to have been evolved and probably finds its best expression in a fixed ascending colon that has rotated to its appropriate position on the right side of the body. In the absence of such fixation the gut and its load must slip downwards, whilst the expansile force of the load will exert its maximum effort unchecked by the unsupported walls of the gut.

That atony and atrophy of its fatigued musculature should ensue over the areas where the strain is greatest is no matter for surprise in accordance with the physiological law of the effect of continuous stimulation. Not only would hypertrophy be utterly impossible under these conditions, but its occurrence would be so inexplicable as to need revision of these laws.

The involvement of the nerve terminals of the mesentery, at least to the extent of the production of pain, and the alteration of the venous exit of blood from the horizontal to the vertical direction through the vessels of the ascending colon, are additional factors probably in producing this condition and cannot be ignored; although the precise amount of their influence cannot as yet be demonstrated experimentally.

The effect of rest cures upon these patients prior to operation affords a study of great interest, since the common feature of all their cures was the removal of the patient from the position of the biped to that of the quadruped by permanent maintenance in the horizontal position. With very few exceptions all of them to the number of forty-six experienced great relief, and when the relief passed off on resumption of their ordinary life as a biped their faith was only slightly shaken in its efficacy of finally affording them a permanent cure.

A series of cures ultimately shattered their faith that by such means their viscera would be made to stay permanently in their normal positions, although such a promise could only have been made to them with a total ignorance of the structural lesions that were actually present in their alimentary tracts.

Ultimately 19 of them were persuaded to undergo rest cures in the Trendelenburg position—a mode of treatment whose pharmacological action can hardly be stated, but whose mechanical effect can be appraised with accuracy. Of necessity this method also failed and permanent relief was only obtained after a reconstruction operation upon the alimentary tract had been performed. But the flotsam and jetsam of spas, health resorts, and systems of cures are not cases at a stage when surgical measures as a last resource should be undertaken for them.

Such final chapters of pathology should never have been written, and they can merely be used to point the moral that the prevention of their occurrence by successful treatment in the earlier stages is the direction in which progress must travel. That I believe is the essence of the teaching of the distinguished opener of this discussion.

I have never performed a total colectomy or a short-circuiting operation and only two hemi-colectomies for non-malignant diseases of the colon; but to have done so upon the many cases upon whom I have refused to operate at all could not have added to their miseries, and I realize that I have abandoned them to the hopeless quest for relief by some other means.

By way of recompense for such an omission the boundless measure of thanks from those enumerated in this series, to whom reconstruction operations have restored so great an amount of health, should be gratefully offered as tribute to the pioneer, Sir Arbuthnot Lane, who has guided our thoughts in the direction of a search for procedures that may prevent the total and final débâcle of all alimentary tract functions.

III.—Sir HENRY M. W. GRAY, K.B.E., F.R.C.S.Edin.,

Surgeon, Aberdeen Royal Infirmary.

In contributing to this discussion I propose to deal chiefly with developmental pericolonic adhesions, but in a very different way from Sir Arbuthnot Lane, as I disagree with him entirely with regard to their etiology. For many years they have been to me the most interesting of the non-malignant affections of the colon. Their developmental *origin* became evident to me very soon after I began to study them systematically. Their *effects* are still, in the opinion of many surgeons, problematical. The question of their *treatment* must therefore be considered to be very much in the melting-pot. I shall discuss only those found on the right side of the abdomen. They are the most frequent and the most frequently assertive in causing interference with normal health. It seems reasonably justifiable to believe that, so far as the functions of the colon as a whole are concerned, the first part, consisting of the caecum and ascending colon, is the most important, in that it makes the pace, so to speak, for the rest. If it is out of gear the rest of the colon will not work properly. Therefore, if abnormalities of this first part are found, it seems to me that it is one's duty to try to decide whether these abnormalities are actually causing or are likely to cause interference with health, and if so to settle what is the best way of correcting them. I believe that in most cases this will be attained by rearranging the parts in conformance with Nature's intention. Therefore it is essential to know the real process of development of these abnormalities. Abnormalities are so frequent that this becomes an important question if patients are not to be subjected to repeated operations, or if, in other words, they are to be restored to the most perfect attainable health by one operation.

One must not disregard other congenital adhesions which may affect the splenic and sigmoid flexures, sometimes in a very deleterious manner. Sir W. Arbuthnot Lane has devoted much attention to these adhesions, and he deserves very great credit for pointing out so well the evil effects of chronic intestinal stasis; but I venture to say, with all deference, that his theory that such adhesions are due to chronic constipation does not by any means sustain the acceptance which it obtained when he first enunciated it. He placed the cart before the horse. As I stated years ago, these adhesions may *lead* to constipation and may be aggravated by the inflammation which sometimes results from such constipation. According to Lane, the various abdominal bands of adhesions found at different parts are due to "crystallization of the lines of strain." This expression is difficult to comprehend, especially when one finds such bands already very evident in the foetus and in young children whose structures cannot have been subjected to any but the slightest strain, if indeed to any at all. The effect of strain on other intra-abdominal adhesions is usually to stretch them and promote their absorption. Such an independent observer as Bryant[1] of Boston found such bands present in some part of the abdomen in all the male foetuses he examined and in 87.5 per cent. of the female foetuses. It is interesting to hear that Mr. Chapple, a vigorous supporter of Sir Arbuthnot Lane, could find "no trace of bands similar to those present in the adult" in any of the foetuses he examined. From my experience of abdominal surgery in young children, I cannot believe that Bryant is very far wrong in his observations.

Ruthless sacrifice of the colon has not found general permanent favour in the minds of the profession, and I feel that the results of extensive colectomy in such cases have not improved the condition of my patients to a degree at all commensurate with the severity of the procedure. In only two out of eleven cases of removal of the major part of the colon in my private practice have the patients expressed themselves as being satisfied with the result of the operation.

The more one studies the interior of the abdomen and the attachments of the viscera to the parietes the more convinced does one become that any explanation of these abnormal arrangements which is not founded on the vagaries of development is not worth considering. One is, further, so much impressed with the frequency of their occurrence that one wonders why a description of their appearance does not find a place in the ordinary anatomy books.

Abnormalities in the mobility of the various parts of the colon are due chiefly to increase or decrease in the fusion of, or in the length of, the various folds of peritoneum formed in connexion with the development of this part of the bowel. Thus the mobility of the caecum and ascending colon is

chiefly dependent upon the extent and density of the fusion of the peritoneum lining the posterior aspect of the corresponding part of the mesocolon and of the colon itself with that lining the posterior abdominal wall. The height, fixity, and to a great extent the angulation of the hepatic and splenic flexures depend on the length of the right and left borders of the omentum which tack these flexures to the abdominal wall or adjacent viscera. Interference with motility as well as mobility may be caused by these slings and by the other developmental adhesions whose mode of formation I shall now discuss. These membranes are of little use as support to the bowel, although they may exert a deleterious kinking action. I shall deal chiefly with the so-called Jackson's membrane, but I feel that I may be excused if I include also the band known as Lane's terminal ileal membrane ("Lane's kink"), as the two are frequently associated. The reason for the frequency of the combination will, I hope, be made clear to you. I am greatly surprised to read Mr. Waugh's statement,[2] made in 1920, that he found Jackson's membrane only once in 180 cases. I find that it is present, to a greater or less extent, in the majority of patients in whom I open the abdomen.

As is well known, the caecum during development descends from the subhepatic region along the posterior abdominal wall to its usual situation in the iliac fossa. At first the lower end of the ileum and the ascending colon are provided with a long mesentery and mesocolon. During and after descent of the caecum these structures become blended or fused with the peritoneum lining the posterior abdominal wall so that the lower part of the ileal mesentery becomes quite short and the mesocolon as a separate entity disappears, while the colon itself frequently becomes "sessile."

Sometimes the caecum does not descend, and in these cases one may find that the lower end of the mesentery and the ileum have become plastered on to the posterior abdominal wall in the same way and in the same position as the mesocolon and ascending colon normally are arranged. If *delay* in descent of the caecum occurs, this adhesion of the mesentery and ileum may take place, so that when, later on, the caecum descends and of course pushes the ileum in front of it, the lower part of the ileum never becomes quite free from the posterior abdominal wall—a band, Lane's terminal ileal membrane, binds it back. This "band" may be several inches broad, it may be a continuous membrane or consist of one or more tags, or any gradation between these extremes may occur according to the amount of absorption of the abnormality which takes place in Nature's struggle to reach the normal anatomical arrangement. The membrane may reach the antimesenteric aspect of the ileum or be merely attached to the mesentery according as early fusion to the posterior wall has affected the whole of the posterior aspect of the ileum and mesentery or merely the mesentery alone. (Compare the "normal" arrangement of the colon and mesocolon.) It will easily be seen that this binding of the ileum, when the membrane reaches the antimesenteric border, produces a rotation of the ileum in its long axis when it is pushed down by the caecum. When the membrane is divided the ileum almost springs into its normal position. The explanation of the fact that the ileum sometimes enters the posterior aspect of the colon becomes clear in view of what I have said. The presence of retrocaecal or retrocolic peritoneal pouches and some retroperitoneal cysts is also easily explained.

The anatomy books at my disposal are unpleasingly vague about the parts of the *omentum* which are important for us to consider, both with regard to their arrangement and development. The omentum extends much farther to the right than is described in them and implicates the viscera in the north-west territory of the abdomen to an extent not even hinted at. Ordinarily the omentum is depicted as stopping short of the pylorus, whereas there is no distinct margin at its attachment, on the right, to the stomach or transverse colon. It blends with a membrane, often very distinct, which stretches from the transverse colon up over the pylorus and duodenum to the lesser omentum and gall bladder. To the right of the foramen of Winslow this membrane passes up frequently to the under surface of the liver and in practically all cases to the posterior abdominal wall just below that viscus.

The chief cause of non-descent of the caecum appears to be abnormal entanglement thereof by this right margin of the omentum, which becomes much more evident in these cases. If the caecum ultimately overcomes this obstruction to its descent the affected part of the omentum becomes drawn out into *Jackson's membrane*. This usually filmy structure, with its long linear vessels and occasional little islands of fat, has a very variable attachment above and externally, but can be traced below and internally usually to the anterior longitudinal band, where it ends in the same manner as the main part of the omentum does on the transverse colon. Curiously in the adult it does not often reach the caecum. A well-marked Jackson's membrane can always be shown to be directly continuous with the ordinary omentum. As the transverse colon is approached more and more fat is found in this membrane, so that there is no real line of demarcation. While the upper end of Jackson's membrane is usually attached more or less broadly, and sometimes quite low down, to the posterior abdominal wall below the liver, or may extend a little on to the adjacent under surface of the liver, I have seen several cases where the membrane arose chiefly from the under surface of the liver external to the gall bladder, and from the adjacent anterior abdominal wall as well. It is not to be wondered at that this membrane should vary in obliquity and in length and thickness at different parts, so much so that quite substantial bands may be present which may be so short as to interfere with the movements of the colon—that is, at any part it may be a direct cause of stasis because of the kinking which is caused. There is often quite a thick part attached to near the middle of the ascending colon. As already indicated, chronic irritation from absorption of toxic products may lead to further thickening of such pericolic membranes, and thus a vicious circle is produced. In this connexion I cannot understand why Sir Arbuthnot Lane should assume that a reaction from stasis should occur in one class of his cases and not in the other.

When the descent of the caecum is retarded by omental adhesions the appendix is usually implicated by them. In my opinion this is the usual cause of a retrocaecal or retrocolic position of the appendix. The appendix, before it leaves the subhepatic region, becomes caught up by the short margin of the omentum which connects it, usually near its terminal portion, to the posterior abdominal wall. Later, when the caecum descends and distends, the appendix lags behind and assumes a position posterior to the caecum and colon. In such an appendix there is usually evidence of chronic inflammation, especially near the tip, which is often hook-shaped, and the strands of Jackson's membrane in connexion with it are, as a rule, unusually fibrous in structure. When it is freed the anatomical arrangements are usually found to be normal, both as regards the origin of the appendix at the caecum and the appendicular vessels. It is rare to find a subhepatic appendix lying anterior to the caecum and colon. In such cases the appendix has not been caught in the toils of the omentum, although the caecum has usually descended imperfectly. It can be appreciated easily that the appendix, if it occupies a position internal to the caecum, may be caught up during the process of obliteration of the lower part of the mesentery and become more or less incorporated with the under layer of that structure. This is the real explanation, in my opinion, of Lane's "controlling appendix." Of course, in some cases the appendix becomes secondarily adherent to the under surface of the mesentery as the result of inflammation, but the two types of case can usually be easily distinguished.

I do not think it necessary to do more than mention the fact that the ascending colon and the beginning of the transverse colon sometimes become bound together by the omentum so that the arrangement is sometimes likened to the barrels of a shotgun. This abnormality is usually only part of a "complex." It is evident that all manner of variations in the ultimate anatomical arrangement of these bands and of the parts of the bowel affected by them are possible and indeed are found but they can all be traced to deviations from the general process which I have described.

The counterpart of Jackson's membrane on the left side is usually very scanty, and does not reach far down the descending colon. Usually only a few scattered linear vessels are all the evidence of its presence. It rarely exists as a distinct membrane.

In papers published in 1912 and 1913, written in collaboration with Mr. William Anderson, I described most of the conditions drawn attention to by Mr. Waugh in his paper published in January, 1920. You will find, especially in our papers published in the *Lancet* in May, 1913, that the descriptions of the anatomical conditions and symptoms tally fairly accurately with those he has given. The European war interrupted my opportunities for observation, but I may say that both before and since the war my conclusions have inclined me to take up an attitude similar to his. In one respect my experience differs

from that of Mr. Waugh. I do not often find in my patients a true ascending mesocolon. There is practically always some evidence of attempted fusion with the posterior abdominal wall, although this may consist of only filmy, loose connective tissue. In my cases, also, there is always a more or less definite Jackson's membrane. This association indicates to me that subhepatic entanglement of the caecum by omentum has taken place which has delayed the descent of the caecum until the period has passed during which intra-abdominal adhesion normally takes place. A late descent of the caecum means that faulty fusion will probably occur. It is not surprising that in many such cases the abnormal drag of the late descending caecum and ascending colon acts upon the adjacent short right part of the omentum, and results, by reason of the continuity of the structure, in formation of a potentially constricting band running over the front part of the duodenum or pylorus. Such a band may well be continuous with the congenital fold of peritoneum which fairly frequently affects the cystic duct or gall bladder to a variable extent. This connexion affords the explanation of symptoms referred to these organs in the upper part of the abdomen.

We can now consider in a rational way the probable effects of such abnormalities, and I propose to deal with these very shortly. I believe that such abnormalities are present in a large number of people who are in apparently perfect health—that only in a minority of persons are there definite symptoms which have been ascribed to their presence.

For many years I have appreciated the necessity for opening the abdomen in such a manner that the whole cavity may be explored, even although the operation may have as its primary object the treatment of symptoms which have been ascribed to disease of only one organ—for example, to a chronically inflamed appendix. One cannot always diagnose accurately the conditions which may have provoked the appendicitis or which have resulted from repeated attacks, and I feel that these often cannot be investigated thoroughly or treated efficiently through such inadequate exposure as, for instance, is afforded by the still too favoured "gridiron" incision. In justice to my patients I have become accustomed to use an extensive paracentral incision, displacing the rectus muscle outwards.

As a result of such exposure I find in the majority of my patients that "abnormalities" occur at one or more parts of the colon. A caecum and ascending colon, abnormally mobile according to ordinary anatomical descriptions, is most frequently present. This is usually accompanied by a more or less well developed Jackson's membrane, and in a considerable number of cases by Lane's terminal ileal membrane as well. The variability of the first part of the colon and its attachments forces one to a consideration of the question as to how far deviations from the normal cause abdominal symptoms or affect the general health. The same question arises in connexion with the colon as a whole. It seems that the arrangement of the colon as depicted in anatomy books is really not often found by *x*-ray examination. For example, the transverse colon is found in ordinary cases at a much lower level than in formalin-hardened cadavera, or in most patients who have been carefully prepared for operation. Its height varies greatly with posture and with the amount and quality of its food content. It is extraordinary how frequently well-marked kinks and convolutions in abnormal places or apparently excessive angulations at the flexures occur, without any apparent effect on the regularity and completeness with which the colon and rectum are evacuated. On the other hand, it is remarkable that an apparently normal colon, as outlined by *x*-ray examination, is present so often in patients who are sufferers from chronic constipation. It would appear that *x*-ray examination is of value in such conditions only when it reveals distinct stasis. I believe that in the average case of constipation this is due to lesions in the upper part of the gastro-intestinal tract—in the stomach, gall bladder, and appendix—probably more frequently than it is due to fault in the colon. I am glad to find that these opinions, deduced from examinations made during operation, are supported by observations made at Duff House by Dr. Spriggs and Mr. Marxer. Of course, in many cases there can be no doubt that the colon is at fault and must be dealt with. I am sure that Mr. Waugh has done good service in urging attention to the possible effects of the drag of a heavily laden mobile caecum and ascending colon. There is no doubt in my mind that this is the cause in many cases in which the symptoms are referred to stomach, duodenum, gall bladder, or right flank, and in which these symptoms are capricious in their appearance and variable in their intensity according to the posture of the patient, his general fitness, the functioning of his bowels, etc. I think that the term "hypochondriacal" as applied to many such patients is by no means a misnomer, and that a large number of them can be relieved by operation. The beneficial results of dividing abnormal adhesions in connexion with the organs mentioned and of fixing the caecum and ascending colon bear out the correctness of this statement. The symptoms caused directly or indirectly by such bands often mimic those of other lesions with wonderful accuracy, until closer observation reveals their capriciousness and variability, as I have just indicated. As already pointed out in 1912, and confirmed by Mr. Waugh, lesions of other organs may actually exist, being secondary to such adhesions. The possibility of such a connexion should always be investigated, and colopexy should be done if the necessary indications are present. Mr. Anderson and I further pointed out in 1912–13 that these symptoms often begin within a few years after the patient has, owing to circumstances or choice, given up the ordinary physical activities of childhood and early youth, or has, in other words, begun to lead a more sedentary or confined life. We showed that symptoms begin with loss of tone, especially of the patient's abdominal muscles, and that they vary according to his general health or tone. His alimentary canal shares in this variability of tone. Ultimately, unless he can spare odd times and cash to spend in special institutions where he can be stimulated to "carry on," he tends to become more or less a chronic invalid of the type with which Sir Arbuthnot Lane has made us familiar.

I wish now to put before you a few further remarks concerning treatment. I believe that very few cases indeed call for extensive resections of the colon as has been advocated by Lane. In my opinion this is justified only when *x* rays have revealed unusual stasis in various parts of the colon and when exploration shows that the colon is unusually long, convoluted, kinked, hypertrophied, and affected by adhesions which probably interfere with its motility. In two such cases, already mentioned, I removed the ascending, transverse, and descending parts of the colon. The sigmoid colon was so long that I was able to make a new transverse and descending colon out of it. I fixed the closed proximal end of the sigmoid to the posterior abdominal wall under the liver and tacked the new splenic flexure over a broad area to the diaphragm on the outer side of the spleen. I implanted the cut end of the ileum close to the right extremity of the new transverse colon. I would here urge the importance of making the blind end of the colon, proximal to such an anastomosis, as short as possible. A long blind end is almost certain to cause trouble from dilatation, consequent stasis and dragging, even although attempts are made to get evacuation of the bowel several times a day. I may say that ten years after operation both these patients are now enjoying life, free from their old troubles, especially that of constipation. It is but just to say, however, that in one of them gastro-enterostomy was done, at the same sitting, for a well-marked duodenal ulcer.

In the more ordinary cases, however, the colon is not arranged in such a "snarl." One opens the abdomen in a patient who, for example, has complained of symptoms simulating those caused by gall stones or cholecystitis, or gastric or duodenal ulcer, or appendicitis, or such discomfort in the right flank that one suspects obstruction of the colon or renal affection. One finds no gall stones, no ulcer, no real renal abnormality. There are more or less strongly marked peritoneal bands affecting one or more of these organs in the way which has been described, and there are besides a mobile, dilated, or possibly hypertrophied caecum and a similarly affected ascending colon, which, when weighed down by contents, exert a drag on these bands. In such cases the appendix is practically always thickened and congested, possibly kinked and dilated, whether it occupies a fairly normal or a retrocolic or submesenteric position. Years ago one used merely to remove the appendix under these circumstances, but the results were frequently so unsatisfactory that one felt driven to do more. One then divided the peritoneal bands, but still the results were not all that could be desired, so that one proceeded farther, and, arguing from the fact that the mobile and distended caecum and ascending colon were not normal, one imitated Nature, and fixed the caecum and colon in the right iliac fossa and flank, as advocated by Wilms[3] in 1908 and, twelve years later, by Waugh. I have done this with increasing frequency since 1912, and, I am

bound to say, with increasing satisfaction. The good results of this operation have almost weaned me entirely from performing excision of the caecum and ascending colon for this condition. It seems to me that this part of the colon gives rise to most trouble, and that if it is fixed it will, in the great majority of cases, regain and maintain its proper rôle in the mechanism of digestion and absorption of food. So convinced have I become of the potential evil effects of mobile caecum and ascending colon that, if I find them present when I open the abdomen for any reason, I now fix them if the condition of the patient permits the extra expenditure of time, even though no symptoms ascribable to the condition have been present. It has become to me almost as "natural" a thing to do as to remove the appendix when the abdomen has been opened for other conditions.

In performing the operation I recommend that the filmy, fibro-fatty tissue at the back of the colon be removed or pushed aside so that the colon may form really firm adhesions to the posterior abdominal wall. Care should be taken that the subhepatic flexure be not unduly constricted or kinked by the upper sutures. The caecum and colon are usually also plicated, concertina-wise, in a longitudinal direction, by catching the anterior and external longitudinal bands in the fixation sutures, so as to narrow the circumference of the bowel.

I believe that this operation should be performed much more frequently than it is at present in order to avoid disappointments in the effort to regain thoroughly good health for our patients, and also in order to prevent development of the numerous ills which are attributed to auto-intoxication from absorption. We must remember that the abnormalities which I have discussed begin to assert their evil influence insidiously at a comparatively early age, that their effects often become aggravated after any serious illness, and that their presence can be fairly accurately diagnosed by a just consideration of the local symptoms, especially if the patient shows the narrow abdomen and rather broad pelvis which may be looked upon as being frequent concomitants.

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IV.—HERBERT J. PATERSON, C.B.E., M.Ch., M.A.,

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It is indeed a sign of the times that a subject should have been chosen for discussion in the Surgical Section of the British Medical Association which only a few years back was referred to in the medical press in such terms as "meddlesome and dangerous surgery," and "an unnecessary and unjustifiable operation." It seems, however, that the council of the Section, with that "canniness" which is appropriate to a meeting in the second city of the empire, have thought it wise to tread warily, and have camouflaged the discussion with the title of "The surgical treatment of non-malignant affections of the colon," when in reality they mean the surgical treatment of intestinal stasis, as is clear from the fact that they have selected the great advocate of this treatment to open the discussion.

Sir Arbuthnot Lane has been a pioneer in the subject of disorders of the colon, and has not escaped the fate of those who advocate revolutionary proposals. I remember when I was a student, a great surgeon and teacher was accustomed to hold up Sir Arbuthnot Lane as a terrible warning and example of a brilliant surgeon with a mental twist in regard to the treatment of fractures. In later times it has been assumed by many that the various kinks and other abnormalities described by him are the figments of disordered cerebration.

Sir Arbuthnot Lane has received much hostile criticism with characteristic imperturbability and indifference, and although for years he was as one crying in the wilderness many of those who came to curse have remained to bless.

There are still some who scoff at the idea that there is ever any necessity for surgical treatment in intestinal stasis, and maintain that medical treatment is all that is required. Of such I would say that such an attitude of mind is a tribute, not to the soundness of their judgement or the adequacy of their treatment, but rather an indication of the ease with which their consciences are satisfied.

In many cases the kinks described by Lane are so obvious that one wonders why we failed to recognize them, and, contrary to what has been said by Sir Henry Gray, it is difficult to believe that they are other than acquired.

Although we may not all follow Lane along the whole of the road he has travelled, we must admit that he has taught us the great truth, that toxaemia due to intestinal stasis may produce serious disorders in the working of the human organism. I say "may produce" advisedly, because there may in some cases be a very great degree of stasis without any *obvious* inconvenience or damage to the individual. In connexion with intestinal toxaemia we should not forget to associate with Lane a distinguished Scottish physician, one of the many alumni of the north who have come south. I refer to Dr. William Hunter, whose work on pernicious anaemia has proved so valuable and so suggestive.

I will deal very briefly with three points:

1. Is there any proof that intestinal stasis causes the symptoms alleged?
2. What are the indications for surgical treatment?
3. What surgical procedures may be employed?

1. *Is there any proof that intestinal stasis produces the symptoms alleged?*

I will deal very briefly with one point, to which attention has not been called before. In many cases of intestinal stasis the symptoms are mainly gastric—flatulence, distension, pain shortly after food, occasional vomiting, and in some cases even gastrostaxis—a clinical picture which formerly was regarded as diagnostic of gastric ulcer.

Examination of the gastric contents of these patients reveals almost always a total absence of free hydrochloric acid. Now, if the stasis be relieved by a short circuit, not only are the gastric symptoms improved, but in many cases there is a return of the secretion of free hydrochloric acid. This sequence is so frequent that I think we are justified in regarding it as strong proof of the interrelation of the gastric secretion and intestinal stasis. I think it is probable that the secretion of hydrochloric acid is inhibited by some toxin absorbed from the alimentary canal.

2. *What are the indications for surgical treatment?*

What degree of intestinal stasis requires surgical treatment? A rough and ready test is to give the patient a dose of charcoal and watch for its appearance in the stools. In the absence of definite evidence of a kink or of a diseased appendix I would not consider surgical treatment unless the appearance of the charcoal is delayed for at least four days (100 hours). While recognizing fully the valuable help which is given by a skilled radiologist, in these cases I do not attach too much importance to radiography, unless it be confirmed by the charcoal test. A dog should wag his own tail, but not the tail wag the dog. There is perhaps a tendency at the present time to rely so much on bacteriology, radiology, and other diagnostic methods, that they are allowed to outweigh and even contradict the deductions from clinical observation—in other words, the radiological tail is wagging the surgeon. The surgeon should wag his own tail.

3. *What surgical procedures may be employed?*

When there is evidence of definite kinks or obstruction by bands clearly surgical treatment is indicated. When the stasis is due to atony of the large bowel or a large mobile caecum, medical treatment should have had a prolonged and thorough trial and have failed before surgical treatment is considered. Of such cases in my experience there are few which cannot be relieved by medical and mechanical treatment. It is only in the severe and worst cases that surgical treatment is indicated. There are six surgical procedures which may be adopted:

1. Division of bands.
2. Ileo-sigmoidostomy.
3. Partial excision of the large bowel.
4. Total colectomy.
5. Fixation of the ascending colon.
6. Colonic exclusion.

1. In my experience division of bands is a most satisfactory operation provided the bands are not very extensive. The kinks are permanently relieved, and I have had a number of opportunities, when the abdomen has had to be reopened for other conditions, of proving that the bands are not re-formed. If the bands are extensive I consider that their division is a dangerous operation, apt to be followed by severe and dangerous post-operative ileus. In such cases the operation of colonic exclusion, to which I shall refer later, is preferable.

2. In my experience ileo-sigmoidostomy is an unsatisfactory operation. The results in some of the cases are brilliant, but in many faeces accumulate in masses in the short-circuited ascending and transverse colon, and give rise to pain and in some cases to toxaemia. I have performed this operation on 41 occasions, and in 20 of them I found it necessary later to remove the colon above the short circuit.

3. Partial colectomy, in which the divided ileum is anastomosed to the transverse colon, and the caecum, together with the ascending and half the transverse colon, is excised. I advocated this operation in a paper read before the Surgical Section at the Annual Meeting of the British Medical Association in 1913. The results of this operation, so far as the relief of symptoms is concerned, are excellent; but after a year or two one learnt that portions of small intestine were prone to become adherent to some of the many tags of ligatured omentum, and result in either acute or chronic intestinal obstruction. I have performed this operation 27 times, and in 6 of these cases an operation was necessary later for the relief of intestinal obstruction.

4. I have never performed a primary total colectomy for intestinal stasis. In my judgement the operation is inadvisable for the same reason as partial colectomy—namely, the danger from the adhesions of intestine to the tags of omentum. Of the 20 patients on whom I had to perform total colectomy subsequent to ileo-sigmoidostomy, 6 later on had intestinal obstruction, 5 were operated on and recovered, and 1 died without operation, out of reach of speedy surgical treatment. Until we discover some means of preventing adhesions I think we must regard total colectomy as an operation the remote risks of which are too great to permit of its use in the treatment of intestinal stasis.

5. Fixation of the ascending colon has been discussed so fully by Mr. Waugh that I need not dwell on it. My personal experience of it is limited to two cases. It is not without its difficulties and its danger, and I confess from what I have seen and heard that I am sceptical of its value.

6. After the war I began to perform what may be termed colonic exclusion for severe cases of colonic atony and kinks caused by bands too extensive for safe division. So far as I am aware this operation has not been advocated before for intestinal stasis. The technique of the operation is as follows.

Technique of Colonic Exclusion.

Incision in middle-line three and a half inches long. Ligature and divide mesentery and terminal ileum for distance of one and a half inches, four to six inches from ileo-caecal valve.

Crush ileum at this interval with powerful crushing clamp. Tie two catgut ligatures round ileum, one at each extremity of the crushed portion.

Divide the intestine between the two ligatures with the actual cautery. Leave catgut ligature on distal portion of ileum long, cut catgut ligature close on proximal portion. The stump of distal portion of ileum is invaginated by a peritoneal purse-string suture.

The proximal portion of ileum is now anastomosed laterally to the sigmoid colon. The stump of the ileum is inverted by a peritoneal thread suture, commencing at the mesenteric border half an inch from the end of anastomosis and continued diagonally to such a degree that the end of ileum is flush with distal extremity of the anastomosis. In this way no projection of the blind end is left.

The sigmoid mesocolon is ligatured and divided for a distance of two inches, one inch above the anastomosis. The sigmoid colon is crushed in the portion separated from its mesocolon. Two catgut ligatures are tied round the crushed intestine one at each extremity of the crushed portion. The intestine is divided between the two ligatures by the actual cautery. The stump at one end of the divided colon is then buried by a peritoneal thread suture, passed diagonally, commencing at the mesocolic border, one inch from the end of stump. The gap between the meso-sigmoid and mesentery of ileum at site of anastomosis is closed by a continuous thread peritoneal suture.

The appendix is brought out through a stab wound in the linea semilunaris, and secured to the edges of the skin by two sutures. The appendix is cut off just above level of skin and a large catheter passed into caecum and tied in.

If the appendix has been removed previously the caecum is brought into the stab wound and secured to the skin by two sutures and a catheter tied in.

I have performed this operation on nineteen occasions. One patient died from the operation sixteen days later from suppuration in the right iliac fossa, the cause of which was not obvious. Of the remaining 18 patients the result has been excellent in 16. One patient has had from time to time slight attacks of pain apparently due to distension of the caecum with gas, as the pain is relieved by passing a catheter into the opening of the ileum. One patient died eighteen months subsequent to operation from chronic perforation of stercorous ulcer resulting in a large intra-abdominal abscess.

This operation, it appears to me, has all the advantages and none of the drawbacks of total colectomy. It is a less severe operation than total excision of the colon; the mortality rate should not be more than 2 or 3 per cent.; nothing is removed; but above all there are no raw surfaces or tags left behind to lead to intestinal obstruction later. I venture to think that it is an operation which merits trial in those severe cases of intestinal obstruction which do not yield to medical treatment.

Magna est veritas et praevalebit. I believe that time will confirm the truth of the principles which Lane has taught us, although more knowledge may modify the methods of treatment he has advocated with such brilliance and enthusiasm.

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[*Abstract.*]

Mr. A. J. Walton said that he had no fixed views on the question; his disagreements with Sir W. Arbuthnot Lane were on small points in detail and not on the main principles. His first point was that these kinks and bands were not so frequent or so common as had been suggested. In the next place they were mostly congenital: he found bands and membranes in quite young children. The symptoms of that intestinal disturbance were present clinically in women chiefly (he thought 80 per cent. were women), but the bands and membranes were equally common in males and females. As to ptosis, the position was that if 50 per cent. of people were born with membranes or bands those without ptosis had no symptoms, those who developed ptosis presented symptoms. Many women who had had frequent pregnancies had profound degree of ptosis but no symptoms. He thought that they were finding the development of visceroptosis much more commonly in young women now than formerly, and the explanation was that in muscular development young women were approximating much more to the male type than to the female, and that the more muscular they became the more apt was the formation of visceroptosis. He reminded them of Sherrington's theories as to the two muscular groups: static or involuntary, and the voluntary. Young women to-day were neglecting their static muscles. In regard to the relation between this condition of intestinal stasis to secondary lesions of the intestinal canal his view was that ptosis or stasis was in no way the cause of duodenal ulcer or gall stones. Only 10 per cent. of his 500 cases of duodenal ulcer or gall stones presented stasis, and over 70 per cent. of his cases of gastric or duodenal ulcer were in males, whereas 80 per cent. of his operations for stasis were in females. Stasis was not the cause of gastric ulcer, though it closely resembled it in symptoms. There was no relief to stasis, in his view, in removal of appendix or fixation of caecum. In regard to treatment, operation should not be performed in early cases of stasis. It was a medical disease, and operation should be performed only if medical treatment had absolutely failed and only in very advanced cases. Most of these cases of stasis gave rise to symptoms various in their effects, resembling gall stones or chronic appendix or gastric ulcer, and they had to make accurate differential diagnosis between these conditions. He limited fixation of viscera to cases in which the symptoms were confined to those viscera.

THE OPERATIVE TREATMENT OF DIFFICULT HERNIAS.

BY

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Of the many problems which arise in dealing with a difficult hernia perhaps the most important is that of closing the aperture securely and permanently. For this purpose the normal supporting tissues of the region may be unavailable, either having entirely atrophied or being so thin and delicate as to tear on the first attempt at suture and to be quite useless for repair. Overlapping operations are severe in execution and necessarily involve serious distortion of the abdominal wall, whilst the difficulty of the procedure is increased by encroachment on the abdominal cavity. In some cases the difficulty had been overcome by the introduction of perforated plates of celluloid or aluminium, and the wire filigrees of McGavin have achieved conspicuous success. These methods, however, involve the introduction of a foreign body which can never in any sense be assimilated by the

tissues. The ideal solution of the problem demands some material which, whilst it is not absorbed, is so far assimilated by the tissues as to become an integral part of them, providing a scaffolding around which fibrous tissue may be laid down, but preventing the stretching to which such tissue is liable. I believe that we possess such a body in mercurialized silk.

This material was introduced by Lange some fifteen years ago for the construction of artificial tendons and ligaments. He directed that thick floss silk should be boiled for an hour in 1 in 1000 mercury perchloride, in order thoroughly to impregnate it with the salt. It was then dried and kept in sterile parolein, in which the salt is insoluble. The resulting material is hard and wiry, and I find it a great advantage to substitute mercury biniodide for the perchloride. As drying the silk under aseptic conditions is troublesome I transfer it for dehydration to a 1 in 1000 solution of biniodide in absolute alcohol, from which it is finally transferred to sterile parolein. Silk thus treated is perfectly soft and flexible, whilst it retains its full tensile strength. When introduced into the tissues it sets up no irritation, and it has the curious property that although it is not absorbed it is so absolutely assimilated that the resulting structure is a close imitation of normal tendon or aponeurosis, possessing, however, the great advantage that it will never stretch. Microscopic sections show the strands of silk impregnated with fibrous tissue cells, the whole forming substantially a single structure.

The method of darning hernias was, I believe, first suggested by Sampson Handley in 1918, and I can only attribute the limited use which has been made of it to the absence of a suitable material. The facility with which ordinary silk may become infected is notorious, and the introduction into the tissues of the many yards which may be required involves considerable risks, for if it should become infected its removal is a serious matter. In any case plain silk is in many cases not assimilated by the tissues, and we have all found knots of silk ligatures encysted in old wounds. I have now used mercurialized silk for several years, and in no case have I seen any sign of irritation, nor has it ever been necessary to remove the silk.

The closure of hernial orifices by this method is exceedingly simple. If a peritoneal sac existed the margins are drawn together, care being taken, if necessary, to retain a portion of the sac sufficient for the purpose. The method we are describing is quite satisfactory in the case of landslide hernias in which no true peritoneal sac exists. The surrounding tissues are so far defined as to provide an adequate attachment, and the opening in the muscular abdominal wall is now darned by means of interlacing strands of silk, running from side to side of the aperture, through the margins of which they pass. These strands are so arranged as to form a net with meshes perhaps a quarter of an inch square, every opportunity being taken to bury the strands in any tissue which may be available. No attempt is made to close the aperture by dragging the sides of the opening into apposition, only such tension being applied as will bring the margins to their normal anatomical position. It will usually be possible to cover the net with some remnant of the fibromuscular structures of the wall, but if this is impossible a substantial covering of skin and subcutaneous fat will suffice. In most cases of this description the latter tissue at least will be present in sufficient quantity.

I have closed very large apertures by this method, a defect six inches in diameter being in one case filled. The advantages of the method are its extreme facility, the avoidance of extensive dissection and of traction, with a resulting absence of shock, its applicability to every conceivable form of hernia, and the security of the result. A remarkable feature is the normal appearance of the abdominal wall. After several months the aperture has become so perfectly obliterated that in more than one case it has been difficult to convince oneself that it ever existed.

From a series of large hernias so treated I should like to describe two as typical of the results one may expect to obtain:

Case I.

A woman of 55 had six years previously been operated upon at another hospital, a large ventral hernia resulting. For five days she had had severe abdominal colic, vomiting, and absolute constipation. She was a very stout woman, with a gigantic, tense, irreducible ventral hernia. On operating, two large sacs were opened containing large and small gut, the latter distended and obstructed. With a good deal of difficulty the gut was freed and returned, and the peritoneum closed. There was a gap of fully six inches between the recti, the wall consisting of scarcely more than skin and peritoneum, with a little fat between. The whole space was darned in the manner described. Seven months later there was a sound abdominal wall between the recti. There was no sign of a hernia, she was in perfect health, and had no discomfort of any kind.

Case II.

A man of 64 had a gigantic bilateral inguinal hernia of ten years' standing. The scrotum hung down almost to his knees, and as he was a vagrant it will be understood that he was not an attractive surgical risk. Under spinal anaesthesia the hernias were reduced by open operation, the chief difficulty in reduction being the lack of room in the abdominal cavity to accommodate the contents. The sacs were closed in the usual way, and the large apertures remaining in the abdominal wall darned with mercurialized silk, no attempt being made to bring the margins into actual approximation. The man made a normal recovery, and five months later he was perfectly well and the abdominal wall was absolutely sound.

These cases are merely illustrations of a method of wide application. It is difficult to imagine a hernia which could not by these means be brought under control.

THE BACTERIA OF THE TONSILS AND ADENOIDS.

BY

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The results recorded in this paper were based on an examination of the tonsils and adenoids removed by operation on children under 16 years of age at the out-patient department of the Royal Hospital for Sick Children and the school clinics.

The specimens were collected by the observer, and examination was begun generally within one hour of collection. All the specimens showed hyperplasia, but no evidence of acute inflammatory or any other special pathological conditions visible to the naked eye. The object of the investigation was to determine the bacterial flora of the tonsils and adenoids in ordinary hyperplasia, and to estimate the frequency with which they are infected by *B. tuberculosis*.

A culture was first made from the surface, then, after cauterization with a hot scalpel, a second culture was made from the bottom of the crypts by means of the platinum loop.

Cultures were made on (1) nasgar slopes, (2) nasgar smeared with human blood, and (3) blood serum slopes. The remainder of the specimen was then minced as fine as possible with scissors, pounded in sterile normal saline and completely macerated. This mixture was treated with 33 per cent. antiformin and incubated for two hours at 37° C., centrifuged for half an hour, and the supernatant fluid poured off. Sterile saline was next added and centrifuged again. This process was repeated two or three times to eliminate all traces of antiformin. The fluid was then inoculated subcutaneously into the groin of a guinea-pig. At the end of six weeks the animal was killed and examined for enlargement of glands at the site of inoculation, for any other glandular enlargement, and for evidence of *B. tuberculosis* in these glands or in any of the organs. Films were made from the enlarged glands and stained by the Ziehl-Neelsen method and examined for acid-fast bacilli. Sections in paraffin were made from the remainder of the glands and examined for any evidence of infection with *B. tuberculosis*. If nodules were found to be present in any organ they were also examined histologically.

Bacillus tuberculosis.

The inoculations made from tonsils or adenoids numbered 170 (120 patients). Three of these inoculations revealed the presence of *B. tuberculosis*; in each case the examination was tonsillar, and the examination of the adenoids gave a negative result. The percentage of positive cases was 2.5. In the positive cases there was no clinical evidence or history of tuberculosis.

Forty-three adenoids and 37 tonsils were examined for other bacteria with the following results.

Diphtheroids.

Blood serum was used as the culture medium, and films from these cultures were stained with methylene blue, Neisser's stain, and Gram's stain. Bacilli which were Gram-positive and which showed the presence of granules with Neisser's stain and with methylene blue were classified as diphtheroids. The pathogenicity was tested in many cases by inoculations into guinea-pigs. None

of those tested were pathogenic to these animals. Diphtheroids were present in 30 per cent. of the cases. They were obtained from the superficial surface of 24 per cent. of the tonsils and 9 per cent. of the adenoids, and from the depths of the crypts of 15 per cent. of the tonsils and 11 per cent. of the adenoids.

Streptococci.

Nasgar smeared with human blood was used as the culture medium. The colonies were examined with reference to the following properties: solubility in bile, fermentation of inulin, and haemolysing power. They were all insoluble in bile and did not ferment inulin. The haemolytic property was tested by direct examination of the plate and again by adding a pure broth culture of the streptococcus to the washed red blood cells of the sheep. They were classified according as they gave complete haemolysis, partial haemolysis, or no haemolysis.

Group I was found in 84 per cent. of the cases, and was obtained from the superficial surface of 37 per cent. of the tonsils and 11 per cent. of the adenoids, and from the depth of the crypts of 89 per cent. of the tonsils and 58 per cent. of the adenoids.

Group II was found in 34 per cent. of the cases, and was obtained from the superficial surface of 13 per cent. of the tonsils and 9 per cent. of the adenoids, and from the depths of the crypts of 16 per cent. of the tonsils and 27 per cent. of the adenoids.

Group III was found in 92 per cent. of the cases, and was obtained from the superficial surface of 75 per cent. of the tonsils and 90 per cent. of the adenoids, and from the depths of the crypts of 64 per cent. of the tonsils and 67 per cent. of the adenoids.

The streptococci giving complete haemolysis were more frequently present in the depths of the crypts of the tonsils and adenoids than on the surface. This strain is usually considered to be the most pathogenic, hence the removal of this organism by swabbing alone is difficult, and its appearance on swab culture would be relatively infrequent. Streptococci giving no haemolysis are of frequent occurrence, being present in nearly all the specimens examined.

Pneumococci.

Nasgar smeared with human blood was used as the culture medium. The colonies were examined as regards bile solubility, haemolytic properties, or inulin fermentation. They were found to be bile-soluble and capable of fermenting inulin, and showed no power of haemolysis. They were not classified further. Pneumococci were present in 56 per cent. of the cases, and were obtained from the superficial surface of 46 per cent. of the tonsils and 44 per cent. of the adenoids, and from the depths of the crypts of 40 per cent. of the tonsils and 41 per cent. of the adenoids.

B influenzae (Pfeiffer's Bacillus).

Nasgar smeared with human blood was used as the culture medium. Small greyish-white colonies were found in some cases. Film examination showed that these consisted of short Gram-negative bacilli. They showed no power of haemolysis, and were considered to be the *B. influenzae*. They were present in 18 per cent. of the cases and were obtained from the superficial surface of 10 per cent. of the tonsils and 13 per cent. of the adenoids, and from the depths of the crypts of 8 per cent. of the tonsils and 9 per cent. of the adenoids. It was further noticed that those colonies present were usually adjacent to the more closely packed colonies of streptococci.

Dr. Shri Kent, working independently in this laboratory, made similar observations. At the time of examination the city was free from an epidemic, hence normally the *B. influenzae* does not frequently inhabit the tonsils and adenoids of children.

Meningococcus.

Nasgar smeared with human blood was used as the culture medium. Minute transparent colonies were obtained in a few cases which, on examination by a Gram-stained film, had the appearance of meningococci. They were further inoculated into sugars, and gave acid in glucose and maltose, but did not ferment galactose and saccharose. Subcultures on nasgar showed no growth. These colonies were considered to be meningococci and were found in 8 per cent. of the cases. They were obtained from the superficial surface of 5 per cent. of the tonsils and 2 per cent. of the adenoids, and from the depths of the crypts of 5 per cent. of the tonsils and 2 per cent. of the adenoids. Hence the meningococcus is rarely present and is a more frequent inhabitant of the tonsils than of the adenoids.

Bacillus coli.

Nasgar was used as the culture medium. The greyish-white colonies were subcultured on to bile salt, neutral red lactose agar, red colonies being formed. They were further examined as regards motility, production of indol, and fermentation of certain sugars. They were found to be motile and produced indol. They gave acid and gas in lactose, saccharose, maltose, glucose, and mannite, and acid and clot in litmus milk. They were considered to be *B. coli communis*, and were present in 8 per cent. of the cases. The bacillus was never obtained from the adenoids. It was obtained from the superficial surface of 10 per cent. of the tonsils and from the depths of the crypts of 6 per cent. of the tonsils.

The remaining organisms found were *Micrococcus catarrhalis*, *Staphylococcus aureus*, *Staphylococcus albus*, *Micrococcus flavus*, *Pharyngeus siccus*. They were classified by means of their cultural characteristics, Gram stain, and fermentation of sugars.

Micrococcus catarrhalis was present in 94 per cent. of the cases, and was obtained from the superficial surface of 97 per cent. of the tonsils and 90 per cent. of the adenoids, and from the depths of the crypts of 64 per cent. of the tonsils and 72 per cent. of the adenoids.

Staphylococcus aureus was present in 56 per cent. of the cases, and was obtained from the superficial surface of 54 per cent. of the tonsils and 41 per cent. of the adenoids, and from the depths of the crypts of 27 per cent. of the tonsils and 16 per cent. of the adenoids.

Staphylococcus albus was present in 50 per cent. of the cases, and was obtained from the superficial surface of 35 per cent. of the tonsils and 11 per cent. of the adenoids, and from the depths of the crypts of 16 per cent. of the tonsils and 11 per cent. of the adenoids.

Micrococcus flavus was present in 66 per cent. of the cases, and was obtained from the superficial surface of 43 per cent. of the tonsils and 44 per cent. of the adenoids, and from the depths of the crypts of 24 per cent. of the tonsils and 30 per cent. of the adenoids.

Pharyngeus siccus was present in 28 per cent. of the cases, and was obtained from the superficial surface of 10 per cent. of the tonsils and 23 per cent. of the adenoids, and from the depths of the crypts of 11 per cent. of the adenoids.

It was observed that in every case fewer colonies were obtained from the adenoids than from the tonsils, and fewer varieties of organisms.

The observer wishes to express her indebtedness to Professor Beattie, in whose laboratories the work was done, to Mr. Leathart, honorary surgeon to the Children's Royal Infirmary, to Mr. Courtenay Yorke, honorary surgeon to the Northern Hospital, and to Mr. Horace Mather, honorary surgeon to the Birkenhead Children's Hospital, for their kindness in placing specimens at her disposal.

THE CLINICAL THERMOMETER IN THE PREVENTION OF PULMONARY TUBERCULOSIS.

BY

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DISEASE as we see it in great hospitals is, in a majority of the cases, incurable. To go forward we must go back—behind the physical signs which, until recently, have been almost the sole criteria of disease, to the realms of early symptoms, whose importance the pioneer work of Sir James Mackenzie is impressing upon discerning minds. To no disease do these principles apply with greater force than to pulmonary tuberculosis.

Much thought and ingenuity have been expended upon the problem of how to scotch the invader before it has had time and opportunity to pass our defensive systems and entrench itself in the pulmonary tissues. The stethoscope, even in the ears of the expert, has had to go. To realize its impotence to detect the first inroads of the disease we need but to remember that the lung may be the seat of an extensive pneumococcic infiltration without producing physical signs, if the disease be deeply placed.

Unfortunately, efforts in other directions have introduced elements of risk without eliminating uncertainty. My purpose is to urge the claims of the clinical thermometer, *understood and properly used*.

At the outset let me emphasize two elementary facts: (1) a distinctive characteristic of active tuberculous infiltration is fever of varying degree; (2) the vast majority of civilized persons is infected with the disease at some period, commonly in early life.

It appears reasonable, therefore, to assume that a very large number of cases of anomalous feverish attacks both in children and adults are due to infection by the tubercle bacillus. How often do such cases occur in the experience of every medical man! Fever, headache, nausea, malaise, perhaps some cough; no physical signs: diagnosis, "? influenza"—a word probably responsible for more deaths than the disease itself—or "an anomalous feverish attack due to some toxin." The commonest, the universal toxin is that of tubercle. It is argued that the patient recovers in a week, and that tubercle is a chronic, persistent affection. But does the patient recover in a week, and is tuberculosis so obstinate in its first manifestations? If it were the whole population would be in bed. Tubercle is, perhaps, of all diseases the most amenable to treatment in the great majority of cases, if promptly recognized and dealt with. But what it lacks in initial severity it compensates for by subtlety. It can appear in many guises, and may relax its grip sufficiently to convey the impression that the illness is over; but each successive attack is a little more obstinate than its predecessor, each intervening period of comparative health a little more difficult of attainment, until suddenly comes the knock-out blow and the ensuing struggle, either hopeless from the start, or resulting, at best, in comparative restoration of health after a weary fight of months or years. This tragedy the thermometer,

rightly used, would have prevented, by demonstrating the slight persistent fever, and thereby ensuring rest.

In cases of illness the thermometer is in great measure the final court of appeal, but by misusage the instrument is prevented from affording the help of which it would otherwise be capable.

In the first place, ignorance obtains as to what constitutes a normal temperature; and secondly, the means adopted to register the body heat are inadequate. The normal temperature is almost always assumed to be 98.4° F., but a record normal at one period of the twenty-four hours or under one set of conditions would be subnormal or supernormal at another time or in other circumstances.

The late Sir G. Sims Woodhead, in collaboration with Dr. Varrier-Jones, carried out a large number of experiments in continuous rectal readings in both healthy and tuberculous persons. The records are of the first importance, though the technique is too complex for use by the general practitioner. In his report Professor Woodhead referred in several places to the teaching contained in Dr. S. Vere Pearson's paper on "The temperature as a guide to the treatment and prognosis of phthisis," which appeared in the *Lancet* of September 18th, 1909. That paper contains matter of very great value, and a real grasp of the essential points regarding the various types of temperature curve would give the practitioner a good working knowledge of the right use and interpretation of the thermometer.

I reproduce, by permission, Dr. Pearson's diagram illustrating the four principal types of curve that may be met with.

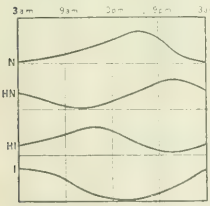


Chart representing Normal (N), Half-Normal (HN), Half-Inverse (HI), and Inverse (I) types of temperature curves respectively.

For the purpose of this paper it is sufficient to draw attention to the N curve, which is that found in the vast majority of normal persons. In the event of his meeting with one of the other three or any variation of them the practitioner should investigate further. It will be noticed that the lowest point of the normal curve is reached at about 3 a.m. and the highest somewhere about 6 p.m. The curve is representative of temperatures taken after rest. Without going into the differences in the normal points obtaining in different persons I think it may be stated that the morning temperature before rising should be below 98° F. and the 6 p.m. reading not above 98.6° after thirty minutes' rest.

One or two variations which may be regarded as normal are as follows: In women during the week or ten days preceding menstruation there is usually a rise of several tenths. This disappears either with the commencement of the flow or a day or two later. Exercise raises the body heat from 1° to 2° F. in proportion to the energy expended. In young children a certain amount of latitude may be allowed, their heat-regulating centres being imperfectly developed. This must not blind us, however, to the fact that, while slight causes will upset a child's temperature, we have no guarantee in a given case, without definite signs to account for the rise, that the cause is slight. Any persistent rise should be noted carefully and appropriate steps taken. Childhood is beyond all other periods that in which tuberculosis makes its first attack.

Lastly, in this connexion, there is no law in medicine, and a few persons with early lung disease have consistently subnormal temperatures.* There are many complexities concerned in accurate temperature readings, but the broad outline given should enable the practitioner to safeguard his patients' health.

Finally, we must deal with the method to be adopted if the actual body temperature is to be accurately determined.

The procedure adopted practically without exception, outside of sanatoriums, is to place a thermometer in a patient's mouth, axilla, or a groin, and after a couple of minutes to pronounce a result of 98.4° as normal—and this without regard to the time of day. It is true that in a case of marked fever any of these crude methods will give a rough idea of the actual temperature, and the higher the fever the nearer will such readings approximate to the truth. But in such cases strict accuracy is not of vital importance. It is immaterial whether the temperature of a feverish patient be 102° or 103°. What is of paramount importance is that we should know whether it has dropped to within normal limits with the subsidence of the more obvious symptoms of the illness. It is here that the methods in vogue completely fail to enlighten us. In slight rises of temperature it is necessary to keep a mouth thermometer in position for anything from fifteen to thirty minutes in order to obtain the best record the oral method is capable of yielding, especially in a cold room, and even so the actual body temperature is not obtained. In spite of these facts these two-minute records of 98.4° or thereabouts are being accepted as normal temperatures every day by virtually the whole of the medical profession.

Pulmonary tuberculosis is manifested in its earliest inroads by a feeling merely of being below par, together with a slight degree of fever, which, under present conditions, goes unrecognized.

There is one way by which these slight rises may be registered, and that is by rectal readings. Whatever the external temperature, an accurate record is obtained by a three minutes' insertion. All the temperatures given above as falling within the normal variations are records of rectal readings. The objections to the method are entirely negligible, and I have never found them to persist for twenty-four hours, even in the most sensitive and fastidious patients. Until this method is in general use we shall continue to "get upon their feet again" patients who ought to be on their backs, and who, under such conditions, would quickly and permanently restore the balance, with an increased resistance and immunity, but who, under our present illogical system, are having prepared for them a harvest of sorrow, to be reaped in months or years to come.

* Since writing this I have had the advantage of Dr. Vere Pearson's criticism. With the exception of this statement he has expressed approval of all I have written. These low temperatures he is inclined to look upon as suggestive of arrested disease, in the same way that one gets subnormal readings temporarily after pneumonia. At any rate they should serve to keep the question of tubercle in the practitioner's mind. For this reason I have not deleted the sentence.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ACUTE PROCTITIS CAUSING GENERAL PERITONITIS AND DEATH.

The following unusual case of general peritonitis and death recently came under my care whilst in clinical charge at the Oldham Borough Fever Hospital.

A woman, aged 35, was sent in as a case of scarlet fever as she was said to have had a rash, but on admission no rash was present, nor were there any signs of scarlet fever. She had, however, signs of inflammatory trouble in the left iliac fossa, with a temperature of 100° and a pulse of 100. Next day she was very much worse, and a surgeon and gynaecologist were called in. General peritonitis had developed rapidly, with all the usual signs, and one considered that an infected Fallopian tube was probably the *fons et origo mali*. A vaginal examination failed to reveal any very definite tumour nor any definite tenderness. Rectal examination, however, did reveal a tender area, high up anteriorly, and the original diagnosis was adhered to, on the strength of this, failing a better one.

No operation was performed, as the patient was too ill, and next day she died; a *post-mortem* operation was performed in order to elucidate matters, with the following result.

General sero-purulent peritonitis was present, with much fluid in Douglas's pouch; no specially intense inflammatory focus was observed to guide one to the cause of the trouble, and a careful examination of the hollow viscera, for possible perforation, was undertaken, but with a negative result. No other focus was discovered which might account for the trouble, either in the pelvis, abdomen, or thorax, until, as a last resort, Douglas's pouch was opened and the rectum opened out to inspection. The musculature of the rectum was acutely inflamed throughout its whole length, and was infiltrated with yellow pus. There was no sign of abscess formation, rectal or peri-anal, and the peritonitis was apparently due to contiguity rather than to perforation, of which there was no sign. There was no sign of haemorrhoids, fistula, or diverticulae to account for the condition, and it was strange that the patient never complained of any rectal pain or discomfort of any sort, even upon defaecation, and a rectal examination had entirely failed to suggest a proctitis. The inspection of the rectum left no doubt that the peritonitis was secondary to the proctitis, and not vice versa.

My thanks are due to Dr. Godson, of Oldham, for his help in the elucidation of this case.

W. H. DU PRÉ, M.B., B.S.Lond.,
Late Assistant M.O.H. for Oldham.
St. Just, Cornwall.

FIBROIDS COMPLICATING SEPTIC ABORTION.

The following case, of multiple fibroids complicating a septic abortion, appears to be worthy of record.

H. L., aged 39 years, a laundrywoman, had been married six months; she was well developed and gave no previous history of any serious illness. She complained of constant griping pains in the lower abdomen accompanied by haemorrhage from the vagina. She had had amenorrhoea for three months; previous catamenia were regular but profuse, lasting six days. She said that her abdomen had enlarged during the last year; she had had difficulty with her urine for six weeks, and latterly incontinence. Pain and vaginal discharge had lasted four days, and the pain was getting very much worse.

Two pints of urine were withdrawn from the bladder, and a large, smooth, solid tumour was found reaching to the lower border of the ribs, extending three inches above the umbilicus. Per vaginam a similar tumour filled up Douglas's pouch and was intimately connected with the first tumour. The os uteri was not palpable; the vagina was elongated and pulled up anteriorly, and there was a stinking vaginal discharge. It was not possible to disimpact the posterior tumour from the pelvis. The patient's pulse rate was 112, and her temperature 99°. She was removed to Oakham Cottage Hospital, and as it did not seem possible to empty the uterus and leave it uninfected, I decided to remove the whole uterus, clamping the os in a bag of vagina, as in panhysterectomy for malignant cervix. The patient made an uneventful recovery. The mass weighed 10 lb. 11 oz; the long axis of the cavity was upwards and forwards with a very much elongated cervix.

F. Herbert Wallace, F.R.C.S.Edin.,
Uppingham. Geoffrey Wilson, M.R.C.S.

Reports of Societies.

PHYSIOLOGICAL EFFECTS OF LIGHT.

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on November 14th, a discussion took place on "The physiological effects of light." The President, Dr. W. Langdon Brown, was in the chair.

Sir William Bayliss, in introducing the subject, said that everyone was familiar with the fundamental law that light did not produce any effect unless it was absorbed by the medium through which it passed. It appeared in all the biological reactions so far investigated that energy from the light was absorbed, in some cases largely (as in the green chlorophyll of plants) and in other cases much less obviously. There were cases in which the light did not appear to impart much energy, and yet it might suffice to give the original stimulus for the starting of a process. In speaking of effects of the light he thought it more convenient, though possibly less accurate, to refer to them as photo-chemical effects (resulting in the production of some active chemical substance), rather than photo-electrical effects (in which the process was supposed to depend upon the emission of electrons). It was perfectly clear, especially from the observations on rickets and tubercle, that light acting on the skin produced something which must pass into the blood and be carried through the whole body. An important question which arose in this connexion was that of pigment. Was the function of pigment to absorb a particular wave-length of light? Did it act as a sensitizer? Hess of New York had shown that black rats were much less easily cured of rickets by light than white rats. If it were true that it was vitamin A which was concerned in the cure of rickets, it seemed pretty obvious that it ought to be possible to replace vitamin A by light. This replacement could take place to a partial extent. An animal on insufficient vitamin A could, by the action of light, grow as well as if it had a sufficiency of vitamin, but the converse of this did not hold good: by giving sufficient vitamin A rickets could not be cured in a dog kept without light. Another possible aspect of the light effect on tissues and structures must not be forgotten—namely, that the light rays passing through the skin became converted into heat rays in the blood.

Professor Leonard Hill spoke chiefly on the question of pigmentation. The evaporative power of the skin was conditioned largely by pigment. It was the pigment layer which made the skin of the negro better able to lose heat than the skin of the white man. The sweat glands also appeared to be more active in the black skin. He related some experiments on the effect of pigmentation under sun heat, which showed that this took place better on wet than on dry skin, probably owing to the deeper penetration of the ultra-violet rays; it occurred less well in skin exposed to currents of wind, and very imperfectly in skin covered by glass. From observations on children it appeared that it was the cooling power, not the sun, which had the greatest effect on the metabolism, though the sun had a profound effect also. The speaker had confirmed Hess in every respect as to the effect of light upon rickets. By means of light, rickety changes in the bone could be stopped altogether, without very much improvement in growth, and the animals exposed to light were also healthier looking and with a cleaner skin. Phosphorus in the blood, which was very low in the rickety subject, was increased a little—not very much—by exposure to light. A fact which might appear puzzling was that children in some tropical or subtropical countries got rickets. This was probably explained by the effect of excessive temperatures. Rats living in moist heat on a normal diet showed signs of rickets and a tendency to die of pneumonia.

Sir Henry Gauvain gave illustrations of the effect of light treatment in cases of surgical tuberculosis at the Alton Cripples' Home and at Hayling Island. One difficulty he had experienced was due to the non-pigmentation of certain children. Children with a tendency to freckle and not to pigment failed to do well under light treatment, and could not indeed stand long exposures to the sun. The absence of pigmenting power was of prognostic significance. Frequently there was latent tuberculosis in such children, and a new lesion might be expected to develop or an old one to recur. When this relapse did take place the children often acquired pigmenting power and thus became more amenable to treatment. Sun treatment should not be given to children without proper arrangements to avoid blistering, and the children, by means of occupations and amusements, should have their attention diverted from the fact that they were receiving a course of treatment. The strong exposure to the light obtainable by the seashore at Hayling Island was not suitable for very young or very weakly children. It should be reserved for the stronger or those with good pigmenting power.

Professor C. J. Martin summarized the results of certain observations by the workers at the Kinderklinik in Vienna, which showed that in winter, among children on ordinary diet, not arranged to include a certain amount of the required vitamin, a considerable proportion developed rickets, whereas in summer the diet did not signify, for neither the children who had no cod-liver oil nor those who had it tended to get rickets. He thought that the discovery of the power of light in preventing and curing rickets was one of the most important of recent years.

Dr. Elsie Dalyell described the treatment of rickets by mercury-vapour lamps, beginning with an exposure of five minutes daily at a distance of 100 cm., and gradually increasing the time and diminishing the distance until an exposure of thirty minutes was given daily at a distance of 70 cm. The first signs of healing in the case illustrated appeared on the seventeenth day, by which time the child had had a total exposure to the light of 1 hour 50 minutes. After a total exposure of 4½ hours, spread over seven or eight weeks, an *x*-ray photograph showed a restoration of the contour of the bone and apparently normal calcification proceeding.

Dr. Goldblatt of the Lister Institute described how animals had been put on a diet deficient in fat-soluble A, and after they had definitely stopped growing for two weeks they were irradiated by light, with the result that there was a temporary resumption of growth. His conclusion was that no synthesis of fat-soluble A occurred as a result of the radiation, but that a kind of economy of the fat-soluble already stored in the animal took place owing to the light action, and that this led to a better curve only for as long as the vitamin lasted.

Dr. W. Cramer also gave an account of experiments on animals which went to show that the effect of light was really a physiological stimulus to the mechanism which formed the platelets or blood-plates. The nature of this mechanism was not known, but if the assumption could be made that the platelets were formed in the endothelium one could understand why the light acted as it did.

At the end of the meeting a paper on a cognate subject was read by Dr. J. W. Trevan, in which Miss E. Boock had collaborated. It gave an account of experiments on colour changes in frogs under the action of light. It was easy to turn a frog from dark black to yellow in the course of a few hours. The frog that had been exposed to light was definitely more susceptible to digitalis and to the group of which digitalis was a member than the frog which had been kept in the dark. Frogs which had been kept in the light were more susceptible also to quinine. It was possible that

in the mammal there was some such mechanism as that which produced colour changes in the frog; there might be nervous receptors in the skin as well as in the eye which were affected by light, and which influenced in some way the metabolism of the whole animal.

TUBERCULOSIS OF THE FEMALE PELVIC ORGANS.

THE Obstetrical Section of the Royal Academy of Medicine in Ireland met on November 3rd, with Sir WILLIAM SMYLY in the chair, when the President, Dr. BETHEL SOLOMONS, read his presidential address on "Tuberculosis of the female pelvic organs." Having referred to the diagnosis and treatment of tuberculosis of the vulva and vagina, he dwelt on the possibility of infection of male by female and vice versa. The difficulty of making a diagnosis between cancer and tuberculosis of the cervix was sometimes great, and much care must be exercised by the pathologist when making his report. Tuberculosis of the body of the uterus was found as a tumorous condition or in the form of endometritis, these types were commonly associated with tuberculous salpingitis. Tuberculosis of the Fallopian tubes might be regarded as one of the common ailments among women. Dr. Solomons had sent a questionnaire to a series of 54 cases on whom he had operated, and from the answers obtained he concluded that resection of the tubes in these cases was undesirable; that complete salpingectomy was the treatment of choice; and that hysterectomy was unnecessary except when the uterus was greatly enlarged or in a state of pyometra. For abdominal tuberculosis operation was considered the best treatment; occasionally post-operative *x* rays or vaccines were of benefit; but the treatment by *x* rays or vaccines in operable cases, or where a diagnosis had not been made definitely, was to be deprecated. The difficulty in making a definite diagnosis in cases where there was much intestinal involvement was sometimes extremely great.

Sir WILLIAM WHEELER said that he would like to thank the President and members of the Section for inviting him as President of the Surgical Section to hear a most interesting address. Tuberculous peritonitis was a very common malady, and, in the first instance at any rate, the patient consulted either a surgeon or a physician, yet in the majority of cases in females the primary focus was in the Fallopian tubes. It was interesting to note how tuberculous peritonitis arose from the Fallopian tubes, for it threw a bright light on the whole subject. In gonococcal and all infections of the tubes, except tuberculous infection, the fimbriated extremities were closed and the peritoneal cavity was safe from direct invasion; but in tuberculous infection the fimbriated extremities remained open, and the tubes spued their contents into the abdominal cavity, setting up tuberculous peritonitis. As a matter of fact, the fluid developed in the peritoneum was probably protective and defensive fluid, such as occurred early in perforated ulcers, and the real tuberculous peritonitis came on much later if the *fons et origo* was not removed. In the ascitic form, when the abdomen was opened and the fluid removed, the open ends of the tubes were closed by becoming adherent to some neighbouring viscus, and the peritonitis disappeared. The tubes then developed into pus tubes, and could be recognized as large pelvic masses, or else after years they disappeared and left behind a mass of adhesions fixing the pelvic organs. Murphy and Mayo had long ago proved those generally accepted facts. In cases of tuberculous peritonitis a certain cure could be predicted if tuberculous Fallopian tubes, or any other primary focus such as the appendix, could be removed. Adhesions appeared to occur in cases of tuberculosis in the pelvis without mixed infection, but the adhesive variety of tuberculous peritonitis above this level was always due to the entrance into the area of pyogenic organisms. These organisms were destroyed early, but the tubercle bacilli remained. Sir William Wheeler thought that the prognosis of tuberculous peritonitis depended almost entirely upon whether the primary focus could be removed. If it was not found or could not be removed the patient might recover for a time, but would succumb to tuberculosis within a few years. It was sometimes very difficult to distinguish between tuberculous peritonitis and the rupture of a small carcinomatous ovarian cyst. It was a curious thing that tuberculous peritonitis was found clinically twice as often in females as in males, but *post-mortem* examinations indicated the reverse to be the case. This was an illustration of the difference between the pathology of the living and the pathology of the dead, and an example of why clinical pathologists were needed who were interested in the living as well as in the dead. As regards operation in cases of tuberculous peritonitis, the difficulty was to decide whether the inside of the Fallopian tube was tuberculous or not. Tuberculosis on the outside was no indication for removal, for this might be part of the general spread of the disease, from a caseating gland or elsewhere. In many other abdominal lesions the work of the surgeon and the gynaecologist overlapped. Active tuberculosis became more active and destructive during pregnancy, as distinct from quiescent or latent tuberculosis, which was not affected. In conclusion, he said that they were backward in Dublin, as compared with other cities, in connexion with team work.

Dr. T. G. MOORHEAD said he felt at a disadvantage as compared with other speakers inasmuch as they were able to consider from a local standpoint, whereas it was only the general aspect which appealed to him and to most physicians. He was struck by the fact that Dr. Solomons had stated in his paper that the acquiring of mild tuberculosis early in life prevented that person from getting severe tuberculosis later on. The same thing was found in connexion with pulmonary tuberculosis. Paterson, in discussing the subject at the recent Annual Meeting of the British Medical Association, pointed out that old tuberculous lesions were rare in people who died of phthisis. This confirmed Dr. Moorhead's opinion that the best thing that could happen to children was to get a mild infection of bovine tuberculosis as early as possible. The only misfortune was that one could not control the degree of infection. As regards tuberculous peritonitis, he was glad to learn, from the remarks of the previous speakers, that surgical treatment was now practically abandoned. In his opinion, the only justification for surgery was to remove some local lesion, such as the Fallopian tubes. The idea that opening the abdomen, letting out fluid, and stirring up the contents produced cure was quite a mistake. Medical treatment gave far better results than surgical. Occasionally tuberculosis of the Fallopian tubes came before the physician as a cause of unexplained pyrexia. In such cases the diagnosis rested with the gynaecologist. Tuberculin tests, whether hypodermic or cutaneous, were quite unreliable.

Dr. W. D. O'KELLY remarked that in dealing with tuberculosis of the tubes certain points arose. In a so-called primary case of tuberculosis how did the disease get into the tubes? The tubes were not at all liable to injury. Why were they so frequently involved? With regard to the tuberculosis of the ovary, a case of this was brought to him by a surgeon, who operated for tumour of the ovary, and when shown to him it looked like a cancerous tumour of the peritoneum. He would like to know if the President had met with any cases of tuberculosis of the uterus developing after pregnancy.

Dr. GIBBON FITZGIBBON said that he had hoped to receive some information on the treatment of tuberculous disease. Sir William Wheeler was of opinion that the tubes should always be removed, but on that subject he had an open mind. He generally based his treatment on the individual case, according to whether he thought the case was one in which tuberculosis had been cured, or one in which it was active. One practically never diagnosed a case as being one of tuberculosis of the tubes. The question of operation held out in the paper that night seemed very drastic. Tuberculosis of the uterus was rare, as shown by the number of cases in which the uterus was taken away and found to be non-tuberculous. The majority of tuberculous tubes met were cases studded over on the surface. The paper that evening had been extremely interesting, and it was very valuable to them to hear the remarks of the physicians and surgeons on a subject with which they had to deal a good deal.

Dr. R. J. ROWLETTE remarked on the rarity of tuberculous disease of the uterus, at any rate as compared with tuberculosis of the tubes. He used to think that infection by coitus must be an event that occurred with a certain amount of frequency, but he could never find any evidence to support this. Though one got a good result as regards cure by operation, yet there were a great many people who had not been operated on, who recovered from the disease and lived healthy lives afterwards. The President had spoken of the rarity of tuberculosis of the ovary, but he had no suggestions to make as to why it was so rare.

Sir WILLIAM SMYLY said that what struck him most was that the remarks made were not a mere repetition of what one found in textbooks, but were in a great many cases opposed to textbook teaching. He hoped it had given a death blow to the Alexander-Adams operation. One often operated for retroversion, and found tuberculosis in the pelvis, which could not be diagnosed. He would like to know, in connexion with operation for tuberculosis of the tubes, if there were very dense adhesions was it worth going on and risking faecal fistula?

Sir ANDREW HORNE congratulated the president on his paper, and also on the idea, which emanated from him, of asking surgeons and physicians to attend the meeting. It was a very happy augury for the Academy of Medicine.

Dr. BETHEL SOLOMONS, in reply, agreed with Sir W. Smyly that tuberculosis of the tubes was a striking argument against the Alexander-Adams operation. He (Dr. Solomons) had opened the abdomen of several women suffering from tubal disease on whom this operation had been performed. It was regrettable that an operation which had been practically given up in most countries was still extensively indulged in in Dublin, to the detriment of patients. While tuberculous tubes should be removed when possible, in some cases adhesions were extensive and the operator must then consider whether the dangers of large raw areas, faecal fistulae, and haemorrhage were not greater than the danger of leaving the tubes *in situ*. Of course the tubes often shelled out quite easily. Tuberculous tubes varied, but usually they were closed at the abdominal ostia. Drainage was not carried out except when oozing was intractable, and then by gauze through the posterior fornix. The question whether labour should be induced for a woman who was four months pregnant and suffering from a tuberculous knee was difficult and could not be decided on generally: the individual case would require much consideration. Dr. Moorhead had raised the question of pasteurization of milk; he had himself seen so many fatal cases in infant clinics when the milk had not been pasteurized that he was a strong advocate of pasteurization—the supreme argument for it was the inability to control the dose of tubercle bacilli. According to the literature of the present time complement fixation tests were of little value. Tuberculosis seldom affected the body of the uterus, because of the constant movement with menstruation. The tubes were affected most commonly because of the small diameter of the ostia and many plicae. The prime reason why most of his patients with tuberculous tubes consulted him was for the cure of sterility.

LIFE HISTORY OF THE SANDFLY.

A LABORATORY meeting of the Royal Society of Tropical Medicine and Hygiene was held at the London School of Tropical Medicine, Endsleigh Gardens, on November 15th, when a number of interesting demonstrations were given.

Squadron-Leader H. E. WHITTINGHAM, R.A.F.M.S., detailed the life history of the sandfly, *Phlebotomus*, and demonstrated methods of maintaining these insects in captivity, illustrating his remarks by a large number of specimens. He said that in the summer of 1921 the Royal Air Force Sandfly Fever Commission commenced its investigations. Researches carried out that year showed that a small percentage of so-called "sandfly fever" cases harboured in their blood stream a leptospira, morphologically indistinguishable from *Leptospira ictero-haemorrhagiae*. The simple nature of the disease was in question, as most of the cases from which the leptospira was isolated were accompanied by a relatively severe type of fever and some even developed jaundice. It was decided that the only feasible way to attack the problem was to endeavour to establish definitely the mode of transmission of sandfly fever and to reproduce it in an area free from that fever. Formerly many points in the etiology of this disease had been, without full confirmation, accepted as correct. The phlebotomus, rightly accused of transmitting the disease, had never had its life history fully elucidated, nor had it ever been bred in captivity from ovum to imago. It was first necessary, therefore, to restudy the habits of phlebotomi and to attempt to rear those flies in captivity; the latter was accomplished during last summer in Malta, and several hundreds of the flies had now been bred through to maturity.

From a close study of the natural habits and habitats of the phlebotomus, confirmed by experiments, it was found that the imago hatched out between sunset and dawn, usually between midnight and 4 a.m., when the atmospheric humidity was about 90 to 100 per cent. The wings were first crumpled up and held horizontally, but dried in the course of a few hours, the period depending on the amount of moisture in the air. When dry, the wings were raised almost vertically over the body and the insect was able to fly. By this time the mouth parts were hardened, and a blood feed was taken within the first twenty-four hours of adult life.

The ovum measured 0.385 mm. in length by 0.12 mm. in breadth, was brown in colour and sausage-like in outline, convex dorsally and concave ventrally. Eight days after oviposition the transversely segmented embryo could be seen through the egg-shell; on the ninth day the outline of the embryo was more marked and the caudal bristles were distinct. Usually the larva hatched out within a few hours of the caudal bristles becoming clearly visible; just prior to the hatching a slight side-to-side rolling motion of the ovum was observed. Four distinct stages were found in the larval life, with a complete moult between each. Immediately after each moult the larva was pearly white, except for the brown coloration of its mouth parts and the black pigmentation of its caudal bristles. The head and body darkened within two hours, by which time the larva was moving freely and feeding voraciously. The whole larval life was completed in four weeks. Pupation occurred between the twenty-fifth and twenty-eighth days of larval life, the pupa emerging from the dorsum of the first and second body segments of the larva. The discarded larval skin enveloped the two distal segments of the pupal body like a wrinkled stocking, and was clearly recognized by the yellow body hairs and two pairs of black caudal bristles. The duration of pupal life was usually nine days.

Special boxes were constructed to breed the phlebotomi in captivity, made of wood with a front of glass. A tightly fitting aluminium tray was fitted to the bottom of each box to prevent moisture being absorbed by the wood. The actual breeding grounds were constructed from small pieces of Maltese limestone varying in size from that of a peanut to that of a walnut, with imported garden earth or ordinary Maltese earth, and nitrogenous organic matter in the form of the faeces of lizards, crushed insects, or dried human blood. Before being placed in the boxes all these constituents were sterilized for two hours at 140 C. Water was added to each box daily after sunset, sufficient to moisten the lower levels of the mounds; the exact amount varied with the stage of the life cycle. For oviposition the soil was kept well moistened; during the non-motile stages of development (maturation of the ovum and pupal life) less moisture was added, but in the motile stage (larval life) more water was added as the larvae could move about and select a level with the necessary amount of moisture. The cages were kept in baby incubators at a temperature of 80 F. In this manner three generations of flies were reared.

Colonel A. ALCOCK, F.R.S., demonstrated Mansonia larvae, termites' nests, etc.; Colonel S. P. JAMES, the eggs of some English culicines; Dr. P. H. MANSON-BAHR, a case of *Filaria loa* infection, and also the ulcerative condition of the intestine in sprue; Dr. A. C. STEVENSON, the cycle of *Filaria loa* in *Chrysops dimidiata* (as elucidated by Dr. A. Connal and Mrs. S. L. Connal); Mr. CECIL HOARE, the life cycle of *Trypanosoma melophagium* in the sheep, the sheep ked, and in cultures; Dr. J. G. THOMSON and Dr. A. ROBERTSON, stages in the development of *Trypanosoma cruzi* in experimental animals; and Lieut.-Colonel H. MARRIAN PERRY, developmental stages of *Bulinus contortus*, the invertebrate host of *Schistosoma haematobium*.

MILK CONTROL AND DISTRIBUTION IN AMERICA.

A MEETING of the Society of Medical Officers of Health was held at 1, Upper Montague Street, Russell Square, on November 17th, with the President, Dr. T. EUSTACE HILL, in the chair.

Professor JOHN ROBERTSON read a paper on the American milk supply, its control and distribution. He said that he had recently paid a visit to the United States for the purpose of obtaining at first hand a knowledge of the methods adopted in that country in connexion with the production and distribution of milk. He was accompanied by an English dairy farmer and a representative of the great milk distributors, so that he was able to obtain from American farmers much fuller information than if he had been alone. He visited nearly a hundred farms and also investigated the

town supplies. The conclusion he arrived at was that the milk supply in American towns was enormously better than in England. As a general rule it was richer, cleaner, had better keeping qualities, and was freer from the possibility of conveying scarlet fever, typhoid fever, or tuberculosis. There was a feeling among the people that the supply was a safe one. The general principles adopted to bring this about were that the supply was of good quality, all vessels were sterilized and well dried before use, the udders were cleaned, covered milking pails were used, and cleanliness was enforced. The farmer was paid for his supply on a fat basis. If the monthly average of samples taken daily was above 3.5 per cent. he received increased payment; if below he was paid less. It paid, therefore, to produce good milk. A great deal of milk was distributed in bottles, which were stoppered with a disc indicating the day of the week on which the milk was produced. The cost of production had not been materially raised by the improved methods of production, and the consumption of milk in America was about double that in England. Professor Robertson referred to the effect of pasteurization on milk and considered that the extra cost entailed by adopting this process might be met by a reorganization of the methods of distribution.

The President said that in the northern counties of England no attempts were made at pasteurization except in one or two large towns. He pointed out that the vitamins in dried milk were not destroyed by sterilizing, and urged that dirty, ill-constructed cowsheds had a demoralizing effect on the workers. Dr. T. Evans thought there would be great difficulty in using sterilizers in many English farms. Professor Kenwood said that there was at the present time being sold in England a large amount of pasteurized milk, which was distributed in bottles at the same price as raw milk. There was only one delivery daily, thus reducing the cost of distribution. Dr. Howarth suggested that there was no waste to the retailer who sold milk in bottles. He believed that the milk produced in England by the big combines was as good as American milk.

Dr. W. Butler thought it was a pity to contemplate a milk supply which required sophistication. If milk were produced in a cleanly condition there was little to fear from its consumption. We must have a milk that is initially clean, and not forget that contamination could be effected in the house. These views were supported by Dr. Herbert Jones, Dr. C. S. Thomson, and Dr. F. J. H. Coutts, the last of whom agreed that, though the ideal to be aimed at was to produce clean milk, this could only be attained by increasing its price to the consumer; he certainly did not like the idea of sterilizing dirty milk.

A meeting of the Bath Clinical Society was held at the Royal United Hospital on November 3rd. Mr. Lace showed a specimen of a neuroma of the plantar nerve removed from a case of intractable metatarsalgia which was cured by this procedure. Dr. Coates showed two cases of dysentery, one of which showed an infection with bovine tubercle added to the dysenteric infection. Mr. Fraser showed a case of painful foot with a calcaneal spur; a case of epithelioma of the tongue, and one of suppurative dacryocystitis cured by operation from the nose. Dr. Gordon showed a case of congenital dislocation of the hip in a man of 66, and a case of infantilism in a girl aged 17½. Mr. Mumford showed two cases of congenital dislocation of the hip in children. Mr. Levis, in a paper on the treatment of varicose ulcer, mentioned the various methods of treatment usually in vogue, and described his own method, which he has found very satisfactory. This consists in (1) compresses of strong solution of sodium bicarbonate for a few days. (2) The limb is elevated for half an hour to two hours and painted from knee to toes, regardless of the size of the ulcer, with a solution of crystal violet and brilliant green 1 to 2 per cent. When the stain is thoroughly dry two or three ordinary 3 inch bandages well soaked in Unna's paste are applied. This may have to be repeated two or three times in the first ten days, then every three weeks to three months. The last bandage to be worn six to twelve months.

The seventeenth annual conference of the All-India Sub-Assistant Surgeons' Association will be held at Indore (Central India) in December, 1922.

The next meeting of the International Union Against Tuberculosis will be held at Berne, Switzerland, in 1924. It is proposed that the meeting in 1926 shall be held in the United States, under the presidency of Dr. Theobald Smith, director of the Rockefeller Foundation Animal Research Laboratory at Princeton.

Reviews.

OLD AGE.

Sir Humphry Rolleston has turned his Linacre lecture given this year at St. John's College, Cambridge, into a very interesting book, compact of matter but yet easy to read. The lectureship is one of the oldest medical foundations in England, for it dates from 1524, six years after Henry VIII granted a charter to the Royal College of Physicians, with Linacre as its first president. The lectureship has recently undergone a process not dissimilar to that biologists term rejuvenescence, of which the author has a good deal to say in several of the early chapters of his book.

The title is *Some Medical Aspects of Old Age*,[1] and in the first chapter the duration of life is considered in a general way; this is followed by a brief description of the onset of old age in man, and by discussions of the factors influencing longevity and of the causes of senescence. This part of the book is illustrated by portraits of a number of persons reputed to have attained great age. The author is properly sceptical as to the facts in the majority of the extreme instances, but his last portrait is that of Sir Henry Pitman, who was born in 1808, was for thirty-one years Registrar of the Royal College of Physicians, and died in 1908, a few months after he had become a centenarian. He was a remarkable example of the retention of mental powers into old age. Only a few years before his death and long after he had resigned the registrarship, which he did in 1889 at the age of 82, he went down to the college and made a speech as clearly delivered, as well put together, and as closely reasoned as in his best days; but it was an effort for which he had carefully nursed himself; in the most vigorous aged persons fatigue is quickly produced. Upon this Sir Humphry Rolleston has a good deal to say in several places, but particularly in the chapter on the physiology of old age, which we would particularly commend to the attention of the younger members of the profession, who naturally find it difficult to realize how the whole of an old man's life, even if he be free from any distinct manifestations of disease, is coloured not only by the slowly growing physical disabilities, but also by the decline of the power of making any continued mental effort. The inevitable loss may be hastened by psychical causes. "As the years advance and the younger generation come up the suggestion that 'his day is done,' that he has had his innings, and that it is time for him to step aside, is made to the senior not only by his family and his juniors—hetero-suggestion—but by himself, and he may then, after the modern fashion, get into the habit of repeating mentally 'I am getting older and older every day.'" This very true observation leads on to a consideration of the injurious effect giving up work may have. In a "healthy vigorous man enforced retirement at the age of 65 or 70 is not to the advantage of either the retiring victim or the community."

Healthy—"ay, there's the rub." Sir Humphry Rolleston devotes his last chapters to the distinction between healthy and morbid old age. "Violent death in one form or another—traumatic or infective—is," he says, "so much the rule that the occurrence of natural death in the animal kingdom has been questioned." The pathology of the aged includes the damage done in the past, perhaps in youth, as well as morbid processes starting during advanced life: the author enumerates these and discusses most of the more important and frequent. When considering the influence of personal habits on longevity, diet, alcohol, and tobacco come under impartial review. While he is emphatic that there can be no reasonable doubt about the bad influence on longevity of alcohol, even in moderate amount, he rather leaves the reader with the impression that his prolonged study of the subject has brought him to the conclusion that overeating is even more injurious; it is at least significant that the life histories of centenarians show that they have usually been small eaters, especially of meat, and Lacassagne's aphorism is quoted that "the greatest dangers for an old man are a good cook and a young wife." Tobacco is dismissed with the Scottish verdict—"not proven."

Scattered through the book are many shrewd pieces of worldly wisdom; for instance, "as a kind of protest against the inevitable there may, in the early stage of old age, be a

[1] *Some Medical Aspects of Old Age.* By Sir Humphry Rolleston, K.C.B., M.D., President of the Royal College of Physicians of London. London: Macmillan and Co. 1922. (Cr. 8vo, pp. 175; 9 plates. 6s. net.)

tendency to ape the young and to conceal the true age; thus a man may remove the date of his birth from *Who's Who* and books of reference, and a mother may delay the coming out of her daughter." We find incidentally also some instructive clinical observations; for example, the reader is advised to bear in mind that the use of thyroid and other gland extracts having a definite effect on metabolism is not devoid of risk to cells that are gradually undergoing involution; for by stimulating metabolism unduly vitality may be exhausted, and a flash in the pan be followed by more rapid loss of function. Again it is said that "migraine usually becomes less troublesome or disappears with the march of years." Sir William Jenner, who often comforted sufferers from this distressing malady with an assurance to this effect, associated its disappearance with the decline in the activity of the sexual glands.

We have said enough to show that the book is a valuable contribution to clinical medicine, and we will repeat that it will be particularly helpful to young practitioners.

FRACTURES AND DISLOCATIONS.

The third edition of Professor Helferich's treatise on fractures and dislocations was considered to be of such interest as to warrant the issue of a translation by the New Sydenham Society. The tenth German edition[2] has recently appeared and in its general arrangement conforms to that of its predecessors. There is a good deal of new material based in large measure on experience gained in the great war. The method of nail extension introduced by Steinmann with several modifications by other authorities receives favourable notice. The operative treatment of fractures in general is referred to in relation to most types, though little attempt is made to give a detailed description of methods of technique. It is also noticeable that the use of bone grafts or pegs is not referred to.

The attitude towards the treatment of fractures of the neck of the femur, in contrast to that adopted by several American and French authors, may be classified as pessimistic, though no doubt pessimism in this relationship may be deemed justifiable by many experienced surgeons.

A number of new figures have been introduced. They are chiefly radiograms, and include a useful series showing the appearance of normal joints. Most of the old coloured plates are retained, and though they appear somewhat old-fashioned they give a very clear presentation of the anatomy of various injuries. The book endeavours to cover the subject in a very complete manner, and goes so far as to include the various forms of internal derangement of the knee-joint. This encyclopaedic character in a work, compressed as it is into little over 450 pages, detracts from the practical value of the volume, for it of necessity leads to the omission of many details of methods of fixation and management which the practitioner might look for in a work of this character.

As a whole the volume gives an impression of being crowded—an impression increased by the free use of small type for the description of technical procedures and the descriptions of figures in the text. In general, however, the book may be regarded as giving an authoritative exposition of the subject from the present-day German standpoint.

[2] *Atlas und Grundriss der traumatischen Frakturen und Luxationen.* By Professor Dr. R. Helferich. Tenth edition. Munich: J. F. Lehmann. 1922. (Cr. 8vo, pp. viii + 475; 443 figures, 61 plates. 15s.)

LAWSON TAIT.

Lawson Tait died over twenty-three years ago after a very full life. This Journal in an obituary notice published on June 24th, 1899, said: "To see him once was to remember always his short burly figure, his leonine head, his determined mouth, and his masterful expression. Self-reliant, possessed of great abilities, an indomitable will, a dauntless courage, and a consciousness of his own genius, he would have risen to eminence in any profession. . . . No one could meet him without feeling the influence of his strong individuality, the vigour of his thought, and the originality and freshness of his views. He took part in many fierce controversies, both in the medical and in the lay press. He was a born fighter, he revelled in the joy of conflict, and would fling himself with all the ardour of his pugnacious nature into the arena of debate."

Dr. Stewart McKay of Sydney has now written a rather large book—*Lawson Tait: His Life and Work*,[3] which has for its subtitle, "A contribution to the history of abdominal surgery." It contains a general account of Tait's life and work, supplemented by personal observations made whilst Dr. McKay was his assistant in 1891.

The book commences (Ch. I and II) with an account of Tait's parentage and education until in 1866 he obtained the diplomas of L.R.C.P. and S.Edin. In 1867 he became house-surgeon at Wakefield Hospital, where he had the unusual opportunity of performing five ovariotomies. In 1870 (Ch. III) he started at Birmingham in general practice, but having taken the diploma of F.R.C.S.Edin. he began to publish contributions on gynaecological subjects, based on what he had learnt from Sir James Simpson, and to advocate the establishment of a special hospital for women in Birmingham. After a public meeting a house (No. 8, The Crescent) was taken. Tait, who in 1871 had passed the examination for the F.R.C.S.Eng., was appointed surgeon; he continued to serve on the staff until 1893. Chapter IV details his first remarkable case of an enlarged ovary, containing a chronic abscess prolapsed into Douglas's pouch. The patient had suffered from the condition for many years; the result of its removal by abdominal section in 1872 was most successful. Through this case and through Battey's communication in the same year, an excessive performance of bilateral oöphorectomy was brought about (Ch. XXVI).

In 1880 (Ch. XVII and XVIII) Tait made a most important contribution to the advance of surgery in his paper on the treatment of pelvic suppuration by abdominal section. His systematic writings on gynaecology began with his essay on the pathology and treatment of ovarian disease, for which he was awarded in 1872 the Hastings gold medal of the British Medical Association. The essay was published in 1873 (Ch. V and VI). Tait's final systematic work was to have been a treatise on *Diseases of Women and Abdominal Surgery*, in two volumes; the first volume was published in 1889, but the second did not appear. Tait began his communications on hysterectomy for uterine fibroids, and hystero-myomectomy, in 1874 (Ch. VII and XXX).

In 1877, following Simpson, Tait wrote on hospital mortality, advocating small hospitals (Ch. IX), and after that took up an attitude of antagonism to bacteriology and Lister's system of antisepsis in its application to ovariotomy (Ch. XV).

Previously the dominant consideration which prevented surgical operations on the abdominal cavity had been the danger to the peritoneum of infection from without, and Spencer Wells was well advised in adopting Lister's method to prevent catastrophes. It chanced, however, that the peritoneum was tolerant of some micro-organisms, whilst the methods which Lister had introduced for compound fracture of the leg and for wiring a fractured patella, so far as the spray and the insertion of solutions of carbolic acid or mercury perchloride were concerned, proved not only unnecessary but actually harmful in the case of the peritoneum. Tait in decrying bacteriology and deductions from it was virtually trusting, though without being aware of the explanation, to the special tolerance of the peritoneum, as well as to the chance that there would not enter the peritoneum any infection which it could not tolerate (Ch. XVI and XXXII). Although he did not originate them, Tait took an important part in popularizing operations on the gall bladder and hydatid cysts of the liver (see Ch. XI and XIV); an important section of the book is contained in Chapter XII, which gives a full description with good illustrations of Tait's operation for the repair of rupture of the perineum. Even more important are Chapters XX and XXVIII, relating to his operations for rupture of ectopic pregnancy, which he began to perform in 1883. John Parry of Philadelphia, in his essay published in 1876, had emphasized the results of the pitiless termination of extrauterine gestation when left to itself. Besides these principal subjects, a number of others, with the advance of which Tait was concerned, receive notice in various parts of the book. Dr. McKay does not profess to be impartial, and he frankly warns his readers in the following paragraph, with which the final chapter of the book concludes:

"I have held a brief for my dead master, and I trust that I have been able to show in the preceding pages that Lawson Tait was one of the great pioneers in surgery, inasmuch as he was the real founder of modern abdominal surgery."

[3] *Lawson Tait: His Life and Work.* A Contribution to the History of Abdominal Surgery and Gynaecology. By J. Stewart McKay, M.B., M.Ch., B.Sc. London: Baillière, Tindall, and Cox. 1922. (Roy. 8vo, pp. xii + 573; 54 plates. 25s. net.)

The reader will therefore expect to find Tait's achievements praised without much discrimination, but he will be surprised that Dr. McKay has not kept to the rule—"of the dead nothing unless good." We have said that the book is large; it must, we fear, also be said that it is not well balanced. What is good and worthy to be remembered concerning Tait is set out, but attention is diverted by the introduction of extraneous matter, such as a sketch of the history of gynaecology from the earliest times, about which Tait, when he began to write, knew little and perhaps cared no more. The account of the state of abdominal surgery and gynaecology at that time, whether in this country, on the Continent, or in America, with which Tait might have been expected to have acquainted himself, and which therefore properly finds a place in any biography of him, is rather obscured by long excerpts from papers by him, in which much that is of the highest merit is mingled with the trivialities of bygone controversies. Dr. McKay does not indicate that he has himself made any investigations to ascertain the truth or otherwise of the statements he repeats—some made by Tait himself, some by others. The book contains a chapter entitled "Personal narrative of Tait's method of work," and Dr. McKay also produces descriptions by visitors to Tait's earlier operations; they differ very little from what he himself has written, and may be considered superfluous. Whereas in earlier years Tait appeared to lead as regards surgical technique he fell behind later on. Researches in the science of bacteriology founded by Pasteur were steadily effecting a revolution in surgical procedure, represented in the earlier stages by Lister's antiseptic system, and modified later by the change which followed upon the experiments and writings of Schimmelbusch. The impression therefore made on visitors to Tait's operations depended upon the individual visitor's acquaintance with the influence bacteriology was already exercising on surgery. Hence the opinions expressed by surgeons who were following the guidance of bacteriology were very different from those quoted by Dr. McKay.

When Dr. McKay decided to revive some stories, why did he omit others just as well or ill founded? Surely he would have better fulfilled his object if he had restricted himself to the expansion of such accounts of Tait as those by Sir D'Arcy Power in the *Dictionary of National Biography*, by Mr. Alban Doran, and others. Why did he not limit himself to a full description of what is of permanent importance in Lawson Tait's work concerning ectopic gestation, pelvic and tubal suppuration, the repair of the perineum, and the number of other advances made?

In exhuming various passages in Tait's life Dr. McKay has done his master ill service. Chapter I, page 3, begins: "Robert Lawson Tait was born at 45, Frederick Street, Edinburgh, on May 1st, 1845. He was the son of Archibald Campbell Tait, of Dryden, who was a guild brother of Heriot's Hospital." It is then stated that his father was a lawyer and cousin of the Archbishop of Canterbury, next his mother's name and her birthplace are given, and it is added that Tait was educated at Heriot's Hospital until he entered with a scholarship the arts course at the University in 1860; yet after these specific statements Dr. McKay must needs proceed to revive the gossip that Tait was the son of Sir James Simpson, and rather emphasizes the matter by printing opposite one another (see Pl. IV and V, p. 8) photographs of Tait and Simpson. There follow various assertions, impressions, inferences: that Tait did not deny this paternity when mentioned in his hearing, and that he asserted that he had assisted Simpson on many occasions. Dr. McKay returns to this story several times without adducing any real evidence on the matter. Contemplation of the following dates might well have made him reserve his opinion. Simpson was born in 1811; in 1839 he became professor of midwifery, and in that year he married; he had nine children, and died in 1870. Tait after quitting the arts course for medicine was apprentice, pupil, and assistant to McKenzie Edwards, Lecturer on Surgery in the Extramural School; Tait claimed (cf. Tait on Lumbar Colotomy, *Lancet*, June 25th, 1898) that for about six years he assisted Simpson, beginning in 1862 (cf. Tait on the Operation of Extirpation of the Coccyx, *Lancet*, May 14th, 1870) when aged 17, and at the most only in his first year as a medical student. Indeed, Dr. McKay, in Chapter I, appears to follow Tait in applying the term "assistant" to the ordinary attendance of a medical student at the professorial classes. Again, there are various references to vivisection, whilst Tait's remarks on vaccination are omitted. In 1832 Tait read at Birmingham a paper "Upon the uselessness of vivisection upon animals as a method of research" (British Medical Journal, 1882, i, 677). In 1893, after Horsley had advocated a resolution in favour of the objects of the British Institute of Preventive Medicine, Tait said that he cordially assented to the resolution (McKay, p. 521, and Paget's *Life of Sir Victor Horsley*, p. 214). On page 522 Dr. McKay adds, "Tait certainly made the admission, but to his dying day he still held tenaciously to his objections to vivisection." Mr. Picton, M.P. for Leicester, on April 5th, 1889, in moving a resolution in the House of Commons which has a direct bearing upon the small-pox question at the present moment, said, "Dr. Lawson Tait was not an antivaccinist; but in a paper read at Birmingham in 1832 he said that zymotic diseases were absolutely preventable by securing fresh air, pure water, and abundant light. Many towns had shown by sanitation how to drive away the disease of small-pox."

W. G. S.

"POST-GRADUATE MEDICINE."

In his book entitled *Post Graduate Medicine*[1] Dr. Augustus Caillé presents the fruits of an experience of forty years in practice, during thirty of which he has been engaged in undergraduate and graduate teaching. As the title explains, this book is intended primarily for practitioners and advanced students. The author makes a special point of dealing with the prevention of disease and the preservation of health, rightly observing that preventive and corrective measures must go hand in hand and that a book on therapeutics should also be a guide to prophylaxis. He follows the usual lines of classification of disease under the various systems, adding sections on the non-bacterial parasitic diseases, minor ailments, medical emergencies, drug addictions, and poisons and their antidotes. In order to emphasize their clinical importance, especially as regards prevention, early recognition, and treatment, a special section is devoted to the consideration of tuberculosis, syphilis, and carcinosis. Another section is given up to a survey of bedside and office technique. We lay down the book with a feeling that the author has attempted to do too much in the space of one volume. The book contains a great deal of useful information, but the standard is not uniform, and there is evidence at times of the lack of a proper sense of proportion—for instance, quite an elaborate little dissertation is given on the proper method of passing a catheter on the male, with wood-cut drawings to illustrate the position of the catheter in the urethra. Again, in the chapter on syphilis there is a very full description of the method of giving intravenous injections, but when we turn to the chapter on diseases of the heart the electrocardiograph is not even mentioned. The whole chapter on diseases of the heart is below the standard one would expect to find in a work of this nature, particularly in view of the amount of attention which has been given to cardiology during the last ten years, and the revolutionary changes in doctrine consequent thereon. Dr. Caillé pays much attention to dietetics, and gives many useful diet tables for use in various diseases; but we fail to see the scientific value of a table which purports to give the heat equivalents of an "average helping" of different articles of food. The individual's idea of an "average helping" must vary so much as to make it impossible to estimate food values on such uncertain data. The author favours an almost strictly vegetarian diet in all forms of malignant disease, as he states that the normal sulphur metabolism is upset in these conditions.

It may be said that taking the book as a whole the descriptions of signs and symptoms are somewhat too brief and sketchy, but the advice as to treatment is thoroughly sound, practical, and free from bias. The practitioner will find many useful hints in the field of therapeutics and much practical help in the correct interpretation of the results of chemical and serological tests. Dr. Caillé adopts a very sane and well-balanced attitude in regard to the proper relation of laboratory methods to clinical investigation. There is an excellent index, but it is a pity that a wiser discrimination has not been shown in the choice of the illustrations, which in some instances serve no useful purpose whatever, while the standard of reproduction falls much below that of the printing.

[1] *Post Graduate Medicine: Prevention and Treatment of Disease.* By Augustus Caillé, M.D., F.A.C.P. New York and London: D. Appleton and Co. 1922. (Roy. 8vo, pp. xxxviii + 1025; 172 figures. 40s. net.)

INFANT MORTALITY.

The first edition of Dr. Hugh T. Ashby's *Infant Mortality*, which appeared in 1915, greatly aided the campaign for the saving of infantile lives which was then (notwithstanding all the preoccupation of the war) in progress. The second edition,[5] which has now been published, whilst hardly so necessary for propaganda purposes, will be welcomed for the masterly survey it gives of what has been accomplished and of the manner of its accomplishment. The title scarcely conveys a true idea of the contents of the book: "infant life saving" would be more descriptive, for that is the prime object of Dr. Ashby's work. Indeed, as was pointed out in the review of the first edition (July 17th, 1915, p. 99), it is the second part of the volume which has the greater value, and it deals with the administrative measures which are directly concerned with the prevention of death among the young. The author is entitled to take some credit to himself and his book for the improvement in the infantile mortality rate for the nation, which fell to 80 per 1,000 births (or rather live births) for 1920. This figure, however, as the Registrar-General pointed out, contained a fallacy (the large increase in the birth rate for the year), and should be 85; but even this is a great improvement on the previous lowest—namely, 91 in 1916 and 1917. Dr. Ashby says in his preface: "This figure would have been thought impossible to achieve a few years ago"; and he continues: "Another good point is that the birth rate has increased; these two factors show that we as a nation are becoming more healthy." The reviewer agrees with Dr. Ashby in this conclusion, but it is possible that another opinion may be voiced by the Neo-Malthusians. Dr. Ashby is anxious about the increase in maternal mortality during the past two years, and rightly so, for even if the child live he is sorely handicapped by the death of his mother in labour. Dr. Ashby thinks the solution is improved midwifery, and specifies more ante-natal supervision and treatment as one of the means to be used. He is quite right to draw attention also to the stillbirths rate and the primi-hebdomadal (or first-week) mortality, which are both still too high. There is great need for a concentration upon the mortality in the first month at any rate, if not in the first week of life, and that must be done, as was proved at the meeting of the British Medical Association in Glasgow in July, by increasing attention to ante-natal work.

NOTES ON BOOKS.

A twelfth edition of Murrell's *What to do in Cases of Poisoning*[6] has appeared under the able editorship of Dr. Philip Hamill. In this edition, which is in larger print than the last, Dr. Hamill has, by judicious omissions, reduced the number of pages by ten, yet has in no way impaired the value of the book, which has been of classic interest and importance for the past forty-one years. War poisons have been wisely avoided, and the omissions include obsolete pills and potions; and there are well-known commercial and other preparations which now figure under more modern terms. Dr. Hamill has added a few new poisons applicable since 1912, the date of the last edition. We are sorry, however, to miss the page on aqua tofana, as, although unimportant in practice, its historic interest varied the condensed style inseparable from such a work; and Socrates still lacks a reference. It is surprising how much and how valuable is the information contained in so small a compass; in an emergency the presence of such a book must be most helpful. This small work should be in the possession of every medical man, and, indeed, has latterly been included as an essential part in an antidote outfit.[7] We might suggest that a short bibliography would have added to the book's utility.

But for the war, *Aids to Tropical Hygiene*[8] would doubtless long ago have reached its second edition, but, as Colonel Blackham observes in his preface, the allied armies campaigned in many tropical theatres of war, and the medical experience gained has resulted in so great an increase in our store of knowledge that he has had to rewrite the greater part of the volume. There are twelve chapters, dealing with climate, air and ventilation, water and water supplies, food, clothing, sites and soils, the disposal of refuse, disposal of the dead, insects, animal parasites, the prevention of malaria, and disinfectants; an epidemiological table of diseases; several appendices; an index completes the book. Much useful information is contained in it, and a run through it will not be without advantage even to the expert. For the student it should also prove of value in showing him what specially to study and the various points he is expected to know about. There are many useful hints which the layman could also quite well appreciate. For missionaries going abroad and out of reach of doctors it should prove of use. The sanitary part is particularly good, but the whole of the text, with a few exceptions, can be recommended.

Dr. G. W. C. Kaye, head of the Radiology Department of the National Physical Laboratory, has done well to bring out in a convenient form a clear account of *The Practical Applications of X Rays*,[9] largely based on his Cantor lectures before the Royal Society of Arts in 1921. The text, which is comparatively short, has been most successfully and generously illustrated, the number of pages being not very much in excess of that of the figures. The first chapter deals with the nature of x rays and their relation to the electron, Moseley's law, and the generation and the detection of x rays. The x-ray bulb and the high potential generator are fully described in the next two chapters, and then the problem of the measurement of x rays is discussed in twenty pages with many tables and figures. The medical applications of x rays are rapidly summarized, the advance in technique and apparatus being illustrated by two radiographs of the hand, one taken in 1896 with an exposure of twenty minutes, the other taken last year by Dr. R. Knox with an exposure of one-hundredth of a second. There is a radiograph of the finger-prints taken, according to Béclère's method, after the finger-tip had been rubbed with red lead; it shows the design of the finger-print peculiar to the individual and also the shape of the bone. The chapter on the industrial applications is fuller and contains a number of interesting examples, such as the detection of imperfect filling of stars in army signal rockets, examination of the parts of aircraft for flaws, which was introduced by the author and Dr. R. Knox during the war, and the distinction between true old masters and copies. There are two appendices, the first containing the reports of the X-ray and Radium Protection Committee, and the second the definitions of x-ray and electromedical terms approved by the British Engineering Standards Association. Dr. Kaye must be congratulated on the production of a well-written and interesting handbook.

Volume XXXIV of the *Transactions of the American Pediatric Society*[10] contains thirty-four contributions on a variety of subjects. Rickets, both on the clinical and experimental side, continues to receive a good deal of attention. Drs. Hess and Unger contribute a valuable study dealing with the relative importance of the clinical signs and the radiographic and chemical data of the disease. Drs. J. H. Hess, Moore, and Calvin examine, by strict laboratory tests, the claims of certain well-known proprietary vitamin products and find them wanting, especially in antiscorbutic properties. Drs. J. Howland and Kramer discuss the calcification of bone with regard to the calcium and phosphorus of the serum in rickets, both from clinical and experimental data. Dr. H. Heiman utters a strong note of warning against indiscriminate tonsillectomy in infancy and childhood. There is a long and careful paper on brain tumours in young children by Dr. Martha Wollstein and F. H. Bartlett. Seven cases are dealt with: all died, and in all *post-mortem* examinations were made. The careful detailed record of the clinical and pathological data makes this an interesting and valuable study. A number of papers record individual cases of special interest and rarity. Altogether the quality and interest of the contributions to the volume are fully up to the standard of previous years.

Dr. Wilhelm Stekel has published yet another large volume (the sixth) on *Impuls-Handlungen*,[11] dealing, among other subjects, with dipsomania and kleptomania. It contains a general discussion on these and allied subjects, illustrated by many cases related at great length.

[5] *Infant Mortality.* By Hugh T. Ashby, B.A., M.D., F.C.Camb., M.R.C.P.Lond. Second edition. Cambridge Public Health Series, under the editorship of G. S. Graham-Smith, M.D., and J. E. Purvis, M.A. Cambridge: The University Press. 1922. (Demy 8vo, pp. 224; 9 figures. 15s. net.)

[6] *What to do in Cases of Poisoning.* By William Murrell, M.D., F.R.C.P. Twelfth edition, revised by P. Hamill, M.D., D.Sc., F.R.C.P. London: H. K. Lewis and Co., Ltd. (32mo, pp. 279. 4s. 6d. net.)

[7] An Outfit for Immediate Treatment of Cases of Poisoning. By C. A. Stidston, M.D. British Medical Journal, February 12th, 1921, p. 232.

[8] *Aids to Tropical Hygiene.* By Colonel R. J. Blackham, C.B., C.M.G., C.I.E., D.S.O., M.D., etc. With a Preface by Lieut.-General Sir J. Goodwin, K.C.B., F.R.C.S., etc. Second edition. London: Baillière, Tindall, and Cox. (Fcap. 8vo, pp. viii + 240. 4s. 6d. net.)

[9] *The Practical Applications of X Rays.* By G. W. C. Kaye, O.B.E., M.A., D.Sc., A.R.C.Sc. London: Chapman and Hall, Ltd. 1922. (Demy 8vo, pp. viii + 135; 56 figures. 10s. 6d. net.)

[10] *Transactions of the American Pediatric Society.* Thirty-fourth Session. Edited by Henry L. K. Shaw, M.D. Volume xxxiv. Albany, New York: J. B. Lyon Company. 1922. (Med. 8vo, pp. xviii + 332.)

[11] *Impuls Handlungen.* By Dr. W. Stekel. Berlin and Vienna: Urban and Schwarzenberg. 1922. (Sup. roy. 8vo, pp. ix + 520; 4 figures.)

CAUSES AND PREVENTION OF BLINDNESS.

FINAL REPORT OF THE COMMITTEE.

(*Concluded from page 987.*)

Industrial Eye Disease and Accident.

Blindness and impairment of vision from industrial causes arise in the main from accidents; they are serious and responsible for much economic loss.

In the Scottish Register of the Blind in 1922 there was a percentage of 7.2 whose blindness was due to accidents occurring in their occupations.

The miners and engineering and metal trades headed the list in equal proportions; the greatest incidence is between the ages of 20 and 30 years. Of some 3,700 hospital in-patients suffering from the effects of eye accidents 2,336 were industrial.

Statistics were furnished by Mr. McBride of the Commercial Union Assurance Company of claims made by accident insurance companies. Of 111,000 claims 2,585, or 2.33 per cent., were eye accidents. This witness suggested that it might be assumed that in general industry 1 workman in 30 meets with an accident a year and that 1 in every 1,287 would meet with an eye accident involving injury.

Statistics are deficient on the point of the amount of loss of vision in various industries; even the figures for mines and factories are unsatisfactory. The Committee therefore recommends the pooling of information in possession of the insurance companies regarding accidents, and that this information should be made available to the Government departments concerned.

Industrial Disease Affecting Eyesight.

The principal industrial diseases that affect eyesight are various forms of poisoning, cataract in glass and iron workers, pitch ulceration, and miners' nystagmus. Apart from miners' nystagmus the number of cases of loss of vision is small. The dangers involved are, however, serious, and the relative immunity is due to the stringent precautions taken.

Lead poisoning is now rare; formerly cases of blindness due to lead were found in institutions, now there are practically none. Amongst house painters thirteen such cases were reported from 1905 to 1910, but only three since the later date. These good results are due to the removal of lead dust by exhaust ventilation, use of leadless or low solubility glazes, introduction of labour-saving devices, and the periodic medical examination of the workers by the certifying surgeon. Rare cases of blindness have been debited to poisoning by trinitrotoluene and carbon bisulphide. No authentic case of poisoning with wood alcohol is known here, but it is said to be frequent in the United States. Glass workers' cataract is not common, and it would be abolished if the workers wore the spectacles made of the glass specially devised for their use, but attempts to persuade them to do this are very disappointing. Dr. Legge, of the Home Office, said that the use of machinery in bottle making would probably eliminate the risk. Iron-workers' cataract is due to the same effects of intense light and heat, and is only to be prevented by the use of appropriate glasses. There was no evidence of injury arising from electric welding where such glasses are always worn. Pitch ulceration affecting men engaged in dealing with patent fuel is a less rare cause of trouble; goggles or crêpe afford protection, but it is hoped that better methods of handling the stuff will be found. Miners' nystagmus has been so recently dealt with by a special committee that this committee deemed it unnecessary to make any inquiry, but it reproduces and emphasizes the findings of the Miners' Committee that light and more light is the way to prevent the disease.

Eye Accidents in Factories and Workshops.

The evidence shows that in factories and workshops the chief source of injury to the eyes lies in the metal and engineering trades, including shipbuilding. There are some few accidents in other trades, such as aerated water manufacture, the textile trades, and industries using chemicals.

Figures for metal workers show an incidence of eye injury from 2.5 to 5.49 per cent., according to whether light or heavy work was done. The majority of accidents are due to flying fragments of metal; these account for about 68 per cent. of cases; splashes of molten metal are the chief cause of the others. The report deals with the special measures necessary for the prevention of accidents in the several branches of the industry and at some length. Many difficulties are involved, especially where the work done has some risk to life and limb only to be obviated by the freest and most unobstructed eyesight. Accidents from bursting soda-water bottles are now rare, mainly due to the use of better machinery. The wearing of goggles is compulsory, but workmen are loath to wear them. In textile industries the special dangers arise from flying shuttles, but cases are "infinitesimal compared with the number of looms." Nevertheless there is room for improvement, and it is recommended that the Home Office should invite the textile industries to investigate the danger of injury from flying shuttles with a view to securing improvement in the guards.

Chemical accidents are very rare:

> "We are impressed by the very low record of serious impairment of vision which the evidence reveals; such a result reflects great credit on the efforts to secure protection and treatment of those accidents that occur."

The risks of eye injuries in factories and workshops are greatly increased by defective vision in the workers; it is therefore important that corrective glasses should be used. Children under 16 years of age are examined as to fitness before entry to the factories, but over that age, with rarer exceptions, there is no eye examination. The Committee thinks this omission should be remedied. Better lighting and better screens and guards are also needed, and there is a recommendation to this effect.

Goggles and Masks.—Considerable attention is given to the use of protective goggles and masks in various industries. Often these are the best means of protection from injury; the evidence is emphatic on the point. It is, however, notorious that there is a widespread reluctance on the part of workmen to wear goggles. The employers provide them freely, but it is rare to find them on the workmen. Part of the objection arises from the bad fit of frames, and the frosting and steaming of lenses, but "there is an old prejudice, hard to remove, especially amongst chippers and fitters, that the use of goggles implies a certain lack of that skill in so cutting the metal that it will neither injure the operator himself nor a fellow worker, also a suggestion of overcaution which the younger worker rather resents." The Committee makes observations on several points in regard to the fitness of goggles for work, and recommends that the Home Office should take immediate steps to issue detailed specifications of the most suitable forms of goggles and masks for the respective industrial processes. Better goggles would mean less objection to them. The Committee looks for much help from the Joint Industrial Councils, whereby the workmen themselves will become the propaganda agents of their use, and it recommends the encouragement of the Works and Safety Committees. Ultimately it may be desirable in many trades to make the wearing of face protectors compulsory, but the time for that is not ripe.

First Aid in Factories.—The importance of securing prompt treatment of eye accidents is strongly emphasized. A trifling injury may become septic and lead to the loss of the eye. Dr. Lister Llewellyn gave details of 163 accidents; of these 44 resulted in loss of one eye, yet with prompt treatment he thought at least 33 of these might have been saved. In Glasgow Ophthalmic Hospital, of 1,000 in-patient cases of eye accidents 300 were infected corneal abrasions. A leaflet is now issued by the Home Office, which is included in every first-aid dressing-box, giving instructions for the early attention to eye injuries. In mines the position is less easy owing to the injuries occurring underground, where there can be no satisfactory ambulance provision; yet in these places injuries are very common, and lead to a large loss of working time. The aggregate of absences due to 4,340 of such accidents accounted for some 18,000 weeks. It does not appear that any sufficient protection against such accidents can be given except by some forms of face protector, but with the insufficient lighting of mines these are impracticable. With improvements in lighting something might be done. In quarries goggles are now largely worn, and their use should be extended. The provision of surface ambulance equipment to mines is extending; marked interest is shown in this connexion by managers. As an ideal it would no doubt be advisable that after every eye injury, however slight, the worker should at once proceed to the surface for first aid or medical treatment. But this is not practicable. It is advised that at least some form of provision for washing out an injured eye below ground should be provided, and the Committee recommends accordingly.

Accidents in Civil Life.

In agriculture accidents occur in hedging and ditching, in stack making, tending cattle, broadcasting fertilizers. In some of these tasks suitable goggles could be worn, but in the unorganized state of the industry it does not appear that effective measures could be taken in this regard.

In civil life there are many accidents. The risk of these is inevitable under the conditions of modern life. Their prevention, so far as they are preventable, appears to be a matter mainly of individual common sense and caution.

"We may, however, draw attention to the large number of accidents amongst children caused by forks, scissors, knives, hat pins, and similar objects, and also to the frequency of accidents from stone throwing, catapults, tip cats, etc. In view of these instances and of the large proportion of accidents occurring before the age of 16 years, we think that instruction and warning could usefully be given in infant welfare centres and schools, and that this should be reinforced by the use of suitable posters."

The war has been responsible for a large addition to the number of the blind. The number of pensioners totally blind in England, Wales, and Scotland is 1,520; besides these there are many cases of seriously impaired vision.

Sympathetic Ophthalmia.

A tragic feature of accidental injuries is the liability to sympathetic ophthalmia. The condition may arise from injuries that at first sight do not appear dangerous. Children appear specially liable to the risk. In a number of returns accounting for 4,000 cases of blindness the incidence is 2.4 per cent. The incidence has markedly diminished in recent years under modern methods of treatment, but the disease is still a serious source of irremediable blindness, and might be further reduced. An example of what can be done is given from war conditions. Mr. Ormond reported only 2 cases amongst 4,000 eye cases, of whom 780 had a damaged eye removed, whereas in the American Civil War there were 16 per cent. of cases and in the Franco-German 17.9 per cent.

"Although obviously not universally applicable, prompt removal of the injured eye eliminates all risk of sympathetic ophthalmia, and it is probably owing to this that the sympathetic ophthalmia after eye injuries showed such an extremely low incidence in the recent war."

The danger of the development of this fell disease should always be present in the mind of the medical practitioner, and all cases of penetrating wounds of the eye should be placed immediately under the observation of an ophthalmic surgeon.

The Committee emphasizes the necessity of promptitude in the diagnosis and treatment of disease and injuries of the eye. In this connexion it is necessary that there should be no deficiency in the provision available, whether in the knowledge and equipment of the general practitioner or in the readiness of access to specialist services. The Committee welcomes the beginning which has been made in the provision by certain approved societies of ophthalmic benefit for insured persons, and hopes that every effort will be made to extend such arrangements on a satisfactory basis.

Treatment by Unqualified Persons.

A separate section is given to the consideration of the treatment of eye disease and errors of refraction by unqualified persons. The findings of the inquiry held by the Privy Council in 1908 are summarized; these show the disastrous results that may follow treatment by persons who assume such titles as "ophthalmologist," "qualified ophthalmic optician," and the addition to their names of such letters as F.I.O. or F.S.M.C.(London), which lead the public to believe that they are fully qualified medical practitioners. At the time of the Privy Council report there was a dearth of skilled medical advice in eye diseases, but the Committee reports: "The number of medical practitioners who are competent to deal with errors of refraction and diseases of the eye is rapidly increasing at the present time. This is largely to be attributed to the fact that medical inspection of school children is now being rapidly developed, and in an increasing number of schools throughout the country errors of refraction are corrected and spectacles are provided. In most areas little difficulty is now found in obtaining medical practitioners sufficiently qualified in ophthalmic work to deal with refraction in school children."

Evidence was given to the Committee on behalf of organized bodies of opticians, "that many people who test sight and prescribe spectacles are untrained and incompetent," and on that account these organized opticians desire that there should be "an official register of trained and qualified opticians."

The Committee states:

"An optician who practises ophthalmoscopy, and who advises and prescribes glasses for clients who consult him directly, poses by implication as an expert in the detection and treatment of eye defects, and claims a degree of medical knowledge which he does not possess. There is only one place where ophthalmology can be learnt, that is at a hospital, and an optician may do positive harm by prescribing glasses for cases in which error of refraction is accompanied by some disease which he is incapable of detecting. . . . Even reputable opticians . . . are liable through lack of medical training to fail to recognize diseased conditions. But unscrupulous persons who deliberately advertise themselves as competent to treat diseases of the eye are a far greater danger to the public. If such a register as is suggested were established, it would probably be difficult to prevent such persons, who might succeed in obtaining admission to the register, from posing and advertising themselves as experts competent to treat diseases of the eye."

Also:

"The public would regard the register as an official guarantee that those whose names were included in it were competent not only to provide but to prescribe glasses, and generally to deal with defects of vision from whatever cause arising. For the above reasons we are of opinion that it would be undesirable in the interests of the public to establish a register of opticians such as has been suggested. The proper function of the optician is not to prescribe glasses, but to provide them to the prescriptions of an ophthalmic practitioner, and an official register of opticians would tend to mislead the public into thinking that registered opticians were competent to discharge functions which belong only to those who have had a medical training. . . . Our views on this question are based upon our opinion that ophthalmology cannot be practised without a knowledge of medicine."

From time to time men or women professing to cure diseases of the eye gain notoriety by the aid of specious advertisements, and thereby attract for treatment large numbers of the public. The methods adopted by these persons are many and various; some proffer special lenses, others advocate the disuse of any kind of lens, whilst others advocate the use of electricity, magnetism, and so forth. Evidence was taken concerning one of these so-called "systems."

The Committee reports:

"As our opinion has been definitely challenged in this matter we feel it our duty to record the conviction that the resort by sufferers from eye troubles to irregular practitioners who practise for gain . . . so-called 'systems' of treatment is not only futile but positively dangerous, particularly in those cases of disease in which prompt use of appropriate medical or surgical remedies is of vital importance, and where delay may entail the risk of irreparable damage to the eyesight. The Committee is also convinced from the experience of those having special knowledge of work in institutions for the blind that the circulation among the blind or nearly blind of such advertisements as were submitted by a witness does positive harm by arousing false hopes, which are doomed to bitter disappointment."

Conclusions.

The Committee concludes:

"It is certain that much blindness is preventable. The perfecting of medical diagnosis and technique will effect much, as will the success attending public health activity directed against unhygienic environment and conditions inimical to health. Certain factors predominant in the production of blindness in former days, as small-pox and trachoma, both dependent upon infection, have now been checked, and we have little doubt that a later generation will similarly view some present causes. Ophthalmia neonatorum and syphilis, predominant to-day, are also dependent upon infection, and although the problem of dealing with them is more complicated success in the campaign against venereal disease is, in our view, the key to the prevention of blindness from these two causes."

"Prevention of blindness from the more strictly medical aspect consists in the efficient treatment of already present disease or injury. Here the first line of defence must be the general practitioner: hence the necessity of an adequate training in ophthalmology which, in our opinion, is not at present assured. Further, in view of the frequent occurrence, in disease and injury of the eye, of cases which require the supervision of an ophthalmic surgeon, there must be facilities to ensure that specialist services are readily available. These conditions being fulfilled, there would then be the less opportunity for the unqualified practitioner, whose specious claims too often delude sufferers until the possibility of amelioration has passed."

The report gives a summary of the seventeen recommendations under the following heads: those referring to the prevention of ophthalmia neonatorum; to the educational provision of blind and partially blind children; for the better education of medical students in ophthalmology; and for the prevention of industrial eye injuries. Each of the recommendations has been given in our summary of the report.

As we have said, the report is commendably brief; it is also simply written and with a minimum of technical terms, so that its purport may be readily comprehended by all.

British Medical Journal.

SATURDAY, NOVEMBER 25TH, 1922.

MEDICAL ORGANIZATION IN SOUTH AFRICA.

In the Supplement this week we reproduce a letter which has been sent from the head office of the British Medical Association in London to all members of the Association resident in South Africa. The letter is signed by the Chairman of the Organization Committee and the Medical Secretary, and we may express the hope that it will be weighed most carefully by every medical man and woman to whom it is addressed. The organization of the South African profession, as many of our readers are aware, presents a difficult problem in medical statesmanship, needing for its solution, not only sound sense and wise forethought, but also goodwill, patience, and tact.

Among other difficulties the matter is complicated by racial issues; there is a considerable section of the profession and of the public in South Africa with whom the word "British" is highly unpopular. This feeling, which it would be affectation to ignore, is a factor that has to be reckoned with by the British Medical Association in its efforts to promote medical unity among our colleagues of that country. The position in South Africa is complicated also by the presence of many medical men, both British and Dutch, who belong to no professional organization, and whose apathy is unlikely to be shaken by anything that may be done by their colleagues at home or in England. Last year a referendum was taken of all the practitioners in the Union of South Africa on the question of the future organization of the profession in that country; not more than half replied. A fresh referendum is now about to be taken. In essence the question is whether, in order to secure unity of the profession in South Africa, it is necessary that the machinery of the British Medical Association in that country shall be broken up and its organization replaced by a new body, independent and autonomous but affiliated to the parent Association. Further information regarding the referendum will be found in the report of the last meeting of the South African Committee of the British Medical Association, which also appears in the Supplement this week.

The principle of federation has been formally accepted by the Representative Body of the whole Association, and it follows that dissolution of the South African Branches and of the South African Committee, as a preliminary to federation, if desired by a sufficient majority of the members of the British Medical Association in that country, would be acquiesced in (though with great regret) by the parent body. This attitude of the parent Association, we hasten to say, has been generously acknowledged in the medical press of South Africa and in many private communications. The conditions to be observed and the several points which should be present in the minds of South African members when deciding this momentous issue are set out in the letter printed in the Supplement. The whole tenor of the letter is governed by the closing paragraph, and this is of such importance, as a safeguard against any possibility of misunderstanding, that we quote it again in full: "It must be clearly understood that in putting these considerations before you the Council wishes, if possible, to retain its South African members as organized members of the one great Association, and it would do much to secure this. But it has no intention of withdrawing from the offer it has made. If the members of the British Medical Association in South Africa come deliberately to the conclusion that it will be better for the profession in South Africa that the British Medical Association should disappear from that country to make room for an organization believed to be more likely to satisfy South African needs and aspirations, the Council will accept that decision loyally and will proceed with the process of federation, so that the new body may be kept in as close relation to the British Medical Association as the new circumstances will permit."

It only remains to assure our colleagues in the Union of South Africa that the one concern of the Council of the British Medical Association is to bring about a solution of this difficult problem which shall best conduce to the advantage of the profession in South Africa and throughout the sister nations.

THE CAUSES AND PREVENTION OF BLINDNESS.

In our issues of last week and of to-day we have given a full summary of the report of a committee on the causes and prevention of blindness. Sympathy with the blind, and the sense of responsibility which the community feels for them, has been given concrete form in the Blind Persons Act of 1920, and this makes the report most opportune. All efforts must be concentrated on the prevention of blindness, for no sympathy, sentimental or practical, can make up for the loss of sight. We look to the committee's report to tell us what are the most frequent causes of blindness, and how these causes may be removed. The answer to the first question, What causes blindness? can only be reached by careful examination of the statistical information which has been gathered during many years past. The committee gathered from many sources the fullest information available, but, as with so many similar inquiries—for example, the Royal Commission on Venereal Diseases—though much labour has been given to their collection, the data rarely proved to be sufficient.

One point, however, is clear: among 25,840 blind persons (out of a total of 34,890 known to be alive in England and Wales on January 1st, 1919) no less than 21 per cent. were blinded within the first year of life. Thereafter the number was increased by almost exactly 10 per cent. for each decade of life up to 70 years. At any one time the greatest number of blind persons will be found in adult years—15 to 50—for in that period is the greatest aggregation of population. The heavy incidence of blindness in infancy brings us at once to ophthalmia neonatorum, which, according to Mr. Bishop Harman's figures, accounted for a full half of the tale of blind infants. The report shows that in recent years medical practitioners have learnt more fully to realize the gravity of the condition; that there has been a steady growth of knowledge of this disease among midwives and sanitary authorities, and that this knowledge has been reflected in practice. There is better observation of pregnant women, scrupulous cleanliness at the birth, the use of Credé's method in cases of suspicion, watchfulness for untoward symptoms in the first few days of life, and better and prompter treatment. It thus comes about that despite an increase in the number of cases notified in recent years, which is probably an effect of the greater activity with which the disease is being combated, there is good evidence that the number of cases of blindness due to this cause is diminishing. The London statistics quoted from Mr. Harman's evidence are significant. In two succeeding periods of seven years the number of children admitted to the schools for the blind was almost equal, but in the first period the percentage of those blind from ophthalmia neonatorum was

18.03, as against 11.91 in the second period. Figures were obtained from other sources, showing that there has been a reduction in blindness from this cause elsewhere. A purulent inflammation of the eyes may occur in the newborn as a result of several bacterial infections, but almost the only dangerous organism is the gonococcus; this points to the need for ante-natal treatment. So also with syphilis, which takes a heavy toll of sight by manifestations of congenital disease in children and of the acquired disease in adults. At present venereal diseases are the most prolific causes of blindness; prevent or cure them, and blindness due to them may become as rare as blindness from small-pox, that old-time destroyer of sight.

The increasing stress of highly organized modern life makes defects of vision of serious importance; hence the need for preventing damage to eyes by inflammation in childhood or by the accidents of industry in later years. Phlyctenular keratitis in children causes much injury: it is a condition dependent mainly upon poor nutrition —possibly an avitaminosis. At any rate, the best cure for it is cod-liver oil and the better conditioning which comes by a change to healthier surroundings, so that its prevention is almost wholly a matter of social organization. We can never hope completely to abolish accidents in civil life; some are so accidental as to be unavoidable —they can neither be foreseen nor prevented. But most industrial accidents may be avoided by the suitable guarding of machinery, the use of goggles, and the improvement of methods of manufacture; and, above all, by the provision of good light for all work and the selection of workpeople who can see well.

The committee does not encourage any hope of a dramatic reduction in the number of blind persons, save only among those arising from venereal disease; as the only measures available it urges that greater attention should be given to the education of medical students in eye diseases, that specialist services for the prompt diagnosis and treatment of eye defects and disease should be extended, and that steps should be taken for the betterment of social and industrial conditions where these are the determining factors. There is no short cut to the attainment of these objects. This is equally true of the regular examination of patients' eyes for lesser defects of vision, and the prescription of correcting glasses. Some would raise up a new class of minor practitioners—prescribing opticians—and register them. The committee urges, and we think rightly, that the importance of sight is such that there is no room for minor practitioners; their existence involves a major danger—blindness from unrecognized disease. To encourage well-trained medical practitioners to undertake eye work there is no better way than by making official appointments for ophthalmic work part-time posts. A part-time officer gives the rest of his time and service to the general public, to the common advantage. The whole-time officer is withdrawn from private practice, and the value of his skill is lost outside his limited scope. Altogether the report of the committee is an eminently practical document which ought to have a very useful effect both on public opinion and on administrative bodies.

CHEESE POISONING.

Last July three outbreaks of food poisoning, all attributed to cheese of Canadian origin, occurred in widely separated areas in this country— Dover, Warrington, and a village in the Newmarket Rural District. Cheese is not an article popularly associated with outbreaks of food poisoning, although there are a number of references available in the literature.[1] Vaughan reported some 300 cases with no deaths in 1883 and 1884 in Michigan. The chief symptoms described were diarrhœa, vomiting, and abdominal pain, with a certain amount of fever; rigors and collapse were often present. The incubation period, which was usually from two to four hours, might be prolonged to eight or twelve hours. In 1901 Sir George Newman, at that time Medical Officer of Health for Finsbury, reported outbreaks in Finsbury, Bermondsey, and other districts. These were attributed to cheese of Dutch origin, though nothing was found wrong in its taste, odour, or appearance. Both Sir George Newman and the wholesale merchant who sold the cheese ate some of it and were attacked. The incubation period in these outbreaks was from two to eight hours. From an aqueous extract of the cheese associated with the Michigan outbreak Vaughan separated a crystalline body which he called tyrotoxicon; it resembles diazobenzene. This body was isolated also from some of the cheese associated with the London outbreaks. Other similar occurrences include two in the United States in 1886, without any deaths, tyrotoxicon being found. In Aldershot[2] twenty-seven cases with three deaths occurred, and in addition to the usual symptoms jaundice was noticed in many of the cases. Some of the patients, however, were stated not to have eaten the suspected cheese. Tyrotoxicon was found in cheese recovered from the stomachs of sheep which had eaten the remains of the suspected cheese. It is not present in all poisonous cheeses. Savage remarks, perhaps significantly, that "there are few, if any, recent references to the finding of tyrotoxicon in cheese, and all these reports date from the period when the chemical and ptomaine theory of food poisoning was predominant." His view is that this form of food poisoning is usually due to the production of powerful toxins by bacteria, probably virulent strains of bacilli of the coli or Gaertner group.

In the outbreak at Dover in July, 1922, after eating Canadian cheese derived from one wholesale source, some 100 persons in about thirty families (about 90 per cent. of those eating it) were attacked; the symptoms included abdominal pains, in many cases amounting to severe colic, diarrhœa in most cases, and vomiting in many. There was a moderate rise of temperature, and a quickening in the pulse rate. The incubation period was from four to twelve hours. There were no deaths. Suspicion was not attached to any other article.

The recent Warrington outbreak, which occurred at the Union Workhouse, affected some 130 inmates, about half of those who ate some Canadian cheese; none of the staff, except the cook who alone tasted it, was attacked. The main symptoms reported were intense abdominal pain, vomiting, and diarrhœa. There were no deaths. The outbreak in the Newmarket Rural District was a small affair; about a dozen cases in some half-dozen families are known to have been attacked; possibly there were a few more. Acute diarrhœa and vomiting, with violent abdominal cramp and pains, occurred within six or seven hours.

Bacteriological examination of these cheeses by aerobic and anaerobic methods on various media yielded no positive information of value. Chemical investigations for tyrotoxicon and poisonous metals such as arsenic and antimony also gave negative result. Experiments on mice gave toxic but variable results, depending probably on the distribution of the toxin in the cheese. Within varying periods, from twenty-four hours to a few days, the affected mice suffered from loose but not liquid stools, with paralysis or weakness of the hind legs; in some cases the animals are described as being wet, and ceasing to care for their appearance; two mice died with spasmodic movements of the whole

[1] See W. G. Savage, *Food Poisoning and Food Infections*, Cambridge University Press, 1920.

[2] British Medical Journal, 1899.

body, and others showed tremors. At necropsy minute or, rarely, well-marked petechial haemorrhages were found in the gastric and intestinal mucosae.

The bacteriologist (Mr. Bruce White) of the University of Bristol made feeding experiments upon himself with the raw cheese. With about 5 grains of the Dover and Warrington samples respectively, he produced illness within some seven hours. From the Dover cheese this was mainly nausea and headache, lasting for about a day, and with the Warrington cheese considerable internal discomfort persisting for several days. Alcoholic extracts of the cheese were found not to be toxic, and an extract of cheese made with distilled water for forty-eight hours at 52° C. gave with a 10-grain dose no result; both the Dover and the Warrington cheeses, extracted with distilled water, with grinding and shaking, and then filtration, produced within a few hours, when the equivalent of about 7 grains of cheese was taken, considerable internal discomfort which lasted for about two days. Various other experiments were made without positive result. It was concluded that the poison was in the nature of a protein or a true "toxin," unevenly distributed throughout the cheese. No evidence of the food-poisoning groups of organisms was found in these Canadian cheeses, nor any metallic poison or tyrotoxicon.

THE SMALL-POX OUTBREAK.

The struggle continues of the public health authorities and the guardians to stamp out the severe strain of small-pox which has appeared in Poplar and various places in and near London. In a statement to the Metropolitan Asylums Board on November 18th the Chairman of the Infectious Hospitals Committee reported that since July 25th 67 cases of small-pox had been admitted, of which 22 had proved fatal, 9 had been discharged, and 36 remained under treatment. None of the fatal cases had been vaccinated since infancy. Since the date of this report another death has been recorded, and several new cases have occurred at Poplar, and one at Bermondsey. On November 21st there were 34 cases under treatment—namely, 29 from Poplar and one each from Bexley, Paddington, Bermondsey, Dartford, and Stepney. Meanwhile large numbers of prudent people are taking the precaution to render themselves invulnerable to attack, and the red band round the left coat sleeve was in evidence among M.Ps. at the reopening of Parliament. A later development is the discovery of a case on board the Canadian Pacific steamer *Montclare* before reaching the quarantine station a few miles below Quebec. The vessel had left Liverpool on November 10th. The passenger affected was from Wales, and was aged 24. He was a cabin passenger on his way to settle in Western Canada. As a result of the discovery 221 cabin passengers had to disembark for detention in quarantine, as both the emigrant and his bride had been mingling freely with the other cabin passengers. All were immediately vaccinated, together with the rest of the passengers and crew. The equipment at the quarantine station was so limited that bedding and food had to be provided from the ship, which after thirty-two hours' detention and thorough fumigation proceeded on its voyage. With regard to the difficulty which may be encountered in the diagnosis of small-pox and the dire results which may follow "missed cases" we would direct the attention of readers to the letter from Dr. Wanklyn which is published at page 1045. His experience of small-pox is probably unrivalled at the present day, and all the points he makes are worthy of the most careful attention; for, as he says, very many practitioners, and not only those in the younger years, have never seen a case of small-pox, so completely has the disease been controlled by efficient vaccination. At the same time he praises the acumen of many medical men in making a correct diagnosis in the first case of small-pox they have ever seen.

ADENOMYOMA OR ENDOMETRIOMYOMA OF THE OVARY.

For some years it has been known that islands of tissue, identical in structure with the mucous membrane of the uterus, were occasionally to be observed in the ovary; but that such islands are indeed endometrial, not only anatomically but also functionally, was first demonstrated by J. A. Sampson in a paper read before the American Gynecological Society last year. In this paper, an abstract of which appeared in our columns on February 4th, 1922, Sampson recorded 23 cases of what he called "perforating haemorrhagic cysts of the ovary." He believes that such cysts are not rare, and that when they do occur are frequently bilateral, usually densely adherent, and apt to rupture during operative removal owing to the reopening of a previous perforation which had become sealed by adhesions. Microscopic study led him to the conclusion that the cysts are due to the accumulation of blood in the gland spaces in the endometrial islands. During the present year convincing support for this view has been supplied by British gynaecologists, and the autumn number of the *Journal of Obstetrics and Gynaecology of the British Empire* contains three papers on the subject by Professor Archibald Donald, Professor Blair Bell, and Drs. Fletcher Shaw and Addis. The most interesting point emerging from these three papers is undoubtedly that Professor Donald had, from purely clinical observation, formed and expressed the opinion as long as three years ago that these "tarry" or "chocolate" cysts were related to the condition of adenomyoma. He had, however, failed to obtain clear histological proof of his view although his assistants had been investigating several specimens histologically. The first histological proof in this country was supplied by Professor Blair Bell, and immediately afterwards other cases in which the histological characters could be demonstrated were met with by Dr. Fletcher Shaw. In the cases recorded by Donald and by Fletcher Shaw and Addis there was the further most interesting feature that in thirteen out of seventeen instances the "tarry" cysts of the ovary were associated with adenomyoma in the recto-vaginal space. This is a matter of great interest clinically and may be of great importance pathologically; the frequency of the association—over 75 per cent.—is unquestionably significant. Dysmenorrhoea coming on after the age of 30 or becoming markedly aggravated at or after that age would appear to be one of the most uniform symptoms, and in general the cases are probably such as would be diagnosed as "chronic pelvic infection." Probably many such cysts have been wrongly regarded as "lutein cysts" in the past. There can be no doubt that Sampson's paper in America and the three papers to which we have referred will stimulate research into the subject, and it is to be hoped that further light will be forthcoming as to the origin of adenomyomata in general. Professor Blair Bell makes an emphatic appeal for the employment of the term "endometriomyoma" because the essential element in all these tumours is tissue which is not merely anatomically but also functionally "endometrium." The older term is, however, so closely interwoven with the early literature of the subject that it is doubtful whether the advantage of greater scientific accuracy in nomenclature will bring about its displacement.

THE HOME AMBULANCE SERVICE.

The Home Ambulance Service, organized jointly by the Red Cross Society and the Order of St. John, is steadily being extended and new ambulances are put in commission as local demands arise. The total number at the end of September was 317. During the third quarter of this year six new ambulance stations were opened, and the number of cases carried was 13,403. The increase is, we believe, in part due to the fact that members of the medical profession are becoming better acquainted with the facilities the service offers. Information regarding ambulance stations in his neighbourhood will be supplied to any medical man who cares to apply to the Secretary of the Home Service Ambulance Committee,

19, Berkeley Street, London, W.1. The ambulance can be used for the transport of patients from their homes to a hospital, or vice versa, and their aid is invaluable in accidents. Having this in mind the Committee has supplied a list of ambulance stations to road scouts and patrols of the Royal Automobile Club and the Automobile Association; both these institutions have shown a keen interest in the service and have given much help in its development. Although such a service, covering the whole country, was not thought of until demobilization placed a number of ambulances which had been in use in France at the disposal of the Joint Council, already the public has become so accustomed to the existence of the service that it has learnt to feel it a grievance if an ambulance is not immediately available. One London daily newspaper in a critical article asserted "that it is better that two ambulances should arrive at the scene of an accident than none." With that expression of opinion everyone will agree, but it is an extravagant method which ought to be avoided. Difficulties have sometimes occurred—not we believe in the case of ambulances maintained by the Home Service Ambulance Committee—owing, as is alleged, to uncertainty as to the financial liability that may be incurred by sending for an ambulance. It is clear, of course, that a national ambulance service such as has been established in England, and does not exist to a like extent in any other country, can only be maintained on a voluntary basis if due provision is made for the cost of upkeep, either by public subscription or by charging reasonable fees for the use of the ambulances. Only in this way is it possible to provide for the transport of necessitous cases outside the scope of the Poor Law, who form so large a proportion of those carried by the Home Ambulance Service. It is, however, the universal practice of those in charge of Home Service ambulances to meet calls promptly, and, if necessary, postpone questions of payment until the work is completed. Both methods of maintaining an ambulance station—that by public subscription and that by charging fees—are in use, and in some districts the two are combined. A district Motor Ambulance Association in Brecknock, which is financed by public subscription and makes no charge for the use of the ambulance, was able to show a substantial balance for the year ending May, 1922. As an example of the other method we may take the facts given in the annual report of the Sussex Branch of the Red Cross Society for 1921, where charges are made for each use of an ambulance. There was a small loss on the first quarter, and a small profit on each of the other three quarters, so that the final result for the year was that the receipts were £1,028 and the expenditure £976. We believe that any difficulties at present existing—and they are not numerous—will pass away as the system becomes better known, and members of the medical profession can do very much in this direction. Difficulties will diminish also as the system becomes more complete and co-ordinated. In this connexion we are glad to observe that a number of independent ambulance stations have become affiliated with the Home Ambulance Service established by the Joint Council. It is not possible to make any general statement as to the charges made in those areas in which the ambulance is not maintained wholly by voluntary subscriptions as the method adopted varies. In some instances a flat rate is charged within the area; in others, perhaps the majority, there is a mileage rate varying from 1s. 3d. to 9d. a mile. The local committee determines the manner and rate of payment. It should, perhaps, be added that arrangements will be made to transport patients long distances, either direct, if this be necessary, or by taking patients to the railway station at the one end and fetching them from the other.

THE CONVERSAZIONE AT THE ROYAL COLLEGE OF PHYSICIANS.

The outside of the Royal College of Physicians, at the corner of Trafalgar Square and Pall Mall, is heavy in design and always grimy, owing, possibly, to the character of the stone of which it is built; but the interior is a very agreeable example of the domestic architecture of a hundred years ago. It was built from the designs of Sir Robert Smirke, R.A., and was completed in 1825. The greater part of the ground floor is occupied by a large reading room and by the hall. The central staircase, which becomes double at the first landing, leads to a large library in which meetings are held. It was here that the President, Sir Humphry Rolleston, and Lady Rolleston received those invited to the conversazione given by the President and Fellows on November 21st. It was the first held since the war and was very largely attended. Opening off the large library is the room used by the Censors; it looks eastward over Trafalgar Square, and is one of the most charming examples of how architects in the early part of the nineteenth century got their effects from proportion rather than ornament. In this room are collected some of the best and most interesting of the portraits possessed by the College. Some of the manuscripts and early printed books possessed by the College were displayed, as also the silver caduceus made for Dr. John Caius in 1566, the large silver-gilt mace presented by Dr. John Lawson in 1683, and a number of other pieces. The gold-headed cane used by Dr. Radcliffe, Dr. Mead, Dr. Askew, Dr. Pitcairn, and Dr. Baillie, Harvey's demonstrating rod, and Jenner's cow's horn, as well as other curiosities, were also shown. In the theatre on the second storey nature films, lent by the Regent Film Company at the instance of Lord Ashfield, were shown.

BODY TEMPERATURE OF BIRDS.

The essential difference between the two great groups of warm-blooded and cold-blooded animals is that the former have a constant temperature independent of their environment, whereas the latter have a variable temperature which is practically the same as that of the surroundings in which they live. This is due to the presence in warm-blooded animals of a heat-regulating mechanism by means of which the heat production and heat loss are so balanced that the body temperature remains practically constant; cold-blooded animals possess no such heat-regulating mechanism. The body temperature of birds has been made the subject of an exhaustive study by Alexander Wetmore,[1] the main features of which are analysed by Professor Sutherland Simpson in *Nature* (October 28th, 1922). The heat-regulating mechanism and normal temperature of birds has, as Professor Simpson points out, received very little attention from physiologists, so that this monograph forms an important contribution to avian physiology. Altogether more than 1,558 individuals of 327 species of birds were investigated by Wetmore, who used specially constructed thermometers of the clinical type, but with a range between 95° and 115° F. The temperatures of birds were found to present the same diurnal rhythm as occurs in warm-blooded mammals, but in nocturnal birds, such as owls, the normal rhythm was reversed, the temperature being highest during the period of activity at night, and lowest during the day—the period of rest. This diurnal rhythm would be reversed in day birds by keeping them in darkness during the day and exposing them to artificial illumination during the night—an observation which lends support to the view that the normal diurnal rhythm of warm-blooded animals is due merely to the action on the body of various outside influences, and not to a fixed periodicity of which the temperature rhythm is an expression. There appears to be no evidence of seasonal temperature variation in birds in spite of the fact that they show such marked cyclical bodily changes as are manifested by moulting and adornment with fresh plumage. As in the case of mammals the temperature of the female was usually found to be slightly higher than that of the male of the same species, and the temperature control of nestlings and immature birds was less perfect than that of adults. Very little heat is lost by radiation and evaporation from the skin, owing to the feather coating and absence of cutaneous glands, so that heat loss is controlled by the respiratory system, an important part being played by the air spaces. It holds as a general rule, though there are some exceptions,

[1] Smithsonian Miscellaneous Collections, Vol. 72, No. 1°

that the higher the bird in the zoological scale the higher is the body temperature. The highest average temperature for both sexes was found in the western pewee with a mean of 110·2° F. Pigeons, cuckoos, and woodpeckers stand high in the list, but contrary to general belief swallows, as a group, possess the lowest average body temperature, usually below 107° F.

RAT CONTROL.

In connexion with the fourth annual National Rat Week a conference was held at the offices of the Holborn Borough Council on November 6th, with the Mayor of Holborn in the chair. Mr. E. C. Read (technical adviser on rat repression to the Ministry of Agriculture) said that the geographical position of Britain made it the great centre of rat attraction, because of the goods conveyed in ships to this country and because it had the largest warehouses in the world; thus Britain harboured a large percentage of the rats belonging to other countries. In cities rats had excellent means of communication through the sewers; if the sewers were not kept clear the buildings would never be rid of rats. He suggested that the London County Council, the City Corporation, the metropolitan boroughs, and the home counties should organize one unified scheme for the treatment of sewers in that big area. He believed that as science advanced many diseases would be related to the presence of rats and mice in human habitations. In regard to rat poisons, barium carbonate and squills in various preparations were the most efficacious. Sir Frederick Andrewes emphasized the danger of using bacterial rat virus for the destruction of rats in urban districts. Up to a certain point those preparations were efficacious, but unfortunately all the animals which ate them did not die, and he had found that many of the rats that survived had acquired immunity. Of the rat viruses sold some were made from the Gaertner bacillus and some others from the Aertrycke bacillus. A considerable number of cases of food poisoning, however, had been traced to one or other of the two bacteria he had named, so that it had not been proved that those viruses were harmless to man. Dr. F. J. Allan (M.O.H. City of Westminster) concurred in the view that it rats could be got rid of from the sewers houses would be practically free of them. The difficulty was in keeping them out of the sewers; though poison was put down time after time a great number of rats seemed to survive somehow or other. Rat-lime had been used a good deal in the City of London and other districts, and had been found very effective. Dr. G. Millson (M.O.H. Southwark) said that in his district there were ten to twenty acres of new houses, but not a single old drain had been taken up, and these formed rat runs. He had applied to the London County Council, but was told that they did not intend to do it. For catching rats he had used varnish with great success in hundreds of cases. Dr. W. M. Willoughby (M.O.H. Port of London) said that what was most necessary was to get the rat above ground and then rat-proof the food stores. If the rat lived down a drain it must come up for food and should then be cut off. The two great factors in rat increase were undisturbed nesting and access to food. Mr. A. E. Moore said that poisoning should be reinforced by rat-catching. He suggested that it was the duty of the Ministries of Health and of Agriculture to see that the whole matter of an efficient rat poison should be thoroughly thrashed out. The Mayor of Holborn thanked Dr. Hutt (the Medical Officer of Health) for his services in calling the meeting together and for bringing to general notice the extent of the rat pest.

SMALL-POX IN SHANGHAI.

Small-pox is endemic in China, and we learn from the Report for 1921 by Dr. Arthur Stanley, Commissioner of Public Health for Shanghai, that that city was affected by the disease in epidemic form towards the end of the year. In the whole year it caused 248 deaths, of which 204 were in the Chinese population and 44 in the foreign. In November there were 31 deaths amongst the Chinese, and in December 161, whilst among the foreign residents in the same two months there were 23. The population of Shanghai is estimated at 804,000, of whom 24,000 are foreign, the rest Chinese. The last previous outbreak was in 1918. There is the usual tendency to ignore vaccination when small-pox is absent, but in 1921 there were close on 34,000 vaccinations, or more than had been done during the years 1904 to 1912 inclusive. Since the latter year there have been nearly 200,000 free vaccinations. Dr. Stanley insists that "China is no place for the unvaccinated. It seems necessary to give a warning to those who are responsible for bringing employees out to China that vaccination should always be done before embarkation." The death rate from all causes in Shanghai was 18.2 per 1,000 amongst foreigners and 11 amongst Chinese. Dr. Stanley's report indicates how much good work is being done by his department. In particular mention may be made of a general public health notice for foreigners published during the year. It points out the preventability of many diseases and the availability of the health staff for advice and assistance. It gives instruction as to individual measures, especially as to care in eating and drinking under the conditions of Shanghai. Nothing should be consumed that has not been recently cooked, boiled, or sterilized. Advice is afforded as to various items of dietary, because "the preventable diseases specially prevalent in Shanghai are mostly caused by infected food." Exclusion from houses of flies, rats, and mosquitos is urged, and the risks are pointed out of vegetables and fruit grown near the ground being contaminated by water containing night soil. The whole report is thoroughly practical, and shows how an officer trained in the broad principles of disease prevention can apply them to the circumstances of a foreign country and climate.

THE ROYAL SOCIETY MEDALS.

The Royal Society has awarded one of the Royal medals to Mr. J. Barcroft, F.R.S., of Cambridge, for his researches in physiology, and especially for his work in connexion with respiration, and the Buchanan medal to Sir David Bruce, K.C.B., F.R.S., for his investigations and discoveries in tropical medicine. It has awarded the Copley medal to Sir Ernest Rutherford, F.R.S., for his researches in radio-activity and atomic structure, the Davy medal to Professor J. F. Thorpe, F.R.S., for his work in synthetic chemistry, and the Darwin medal to Professor R. C. Punnett, F.R.S., Professor of Genetics in the University of Cambridge.

LECTURES AT THE ROYAL COLLEGE OF SURGEONS.

The Bradshaw lecture to the Royal College of Surgeons of England will be delivered by Sir William Thorburn, K.B.E., F.R.C.S., on Friday, December 8th, at 5 p.m. The subject is the surgery of the spinal cord. The Thomas Vicary lecture will be delivered by Mr. Walter G. Spencer, M.S., F.R.C.S., on Thursday, December 14th, at 5 p.m. He will speak on Vesalius and his delineation of the framework of the human body. Fellows and Members of the College are invited to attend; students and others who do not belong to the College will be admitted on presentation of their private visiting cards.

A lecture on the warble fly, its history and methods of exterminating it, will be given on Friday, December 8th, at 2.15 p.m., by Professor G. H. Carpenter, of Dublin University, under the auspices of the Governors of the Leathersellers' Company's Technical College, at the Leathersellers' Hall, St. Helen's Place, Bishopsgate, E.C.3. It will be remembered (Supplement, October 28th, 1922, p. 161) that the British Medical Association has appointed representatives to take part in a conference with the object of petitioning the Board of Agriculture to make it compulsory for farmers to take steps to eradicate this pest. Professor Carpenter will outline the work that the Warble Fly Committee has carried out, and his lecture will be illustrated by lantern slides showing the various experiments that were conducted. Medical practitioners who are interested in the subject are invited to be present at the lecture.

MEDICAL MEMBERS OF THE NEW PARLIAMENT.

The following medical men who sat in the last Parliament have been returned to the House of Commons:

Dr. Walter E. Elliot (U.), Lanark. Majority 2,193 on a total poll of 21,817.

Dr. F. E. Fremantle (U.), St. Albans. Majority 3,932 on a total poll of 25 256.

Dr. J. E. Molson (U.), Gainsborough. Majority 1,799 on a total poll of 21,115.

Sir William Whitla (U.), Queen's University, Belfast; returned unopposed.

To the above names may be added those of two medical men who have previously sat in the House of Commons:

Dr. W. A. Chapple (L.), Dumfries. Majority 2,241 on a total poll of 24,351. (Dr. Chapple formerly sat for Stirlingshire.)

Mr. C. Harvey-Dixon (U.), Rutland and Stamford. Majority 3,042 on a total poll of 21,985. (Mr. Harvey-Dixon has, we understand, long retired from practice.)

New Members.

The following members of the medical profession have been elected to Parliament for the first time:

Sir George A. Berry (C.), Combined Scottish Universities. Returned unopposed in succession to Sir Watson Cheyne, as joint Member with Sir Henry Craik and Mr. Cowan.

Sir George Berry, LL.D., is honorary surgeon-oculist to the King in Scotland and consulting ophthalmic surgeon to the Edinburgh Royal Infirmary; he has been President of the Royal College of Surgeons of Edinburgh and of the Ophthalmological Society of the United Kingdom.

Sir John Collie (Nat. Lib.), Glasgow, Partick. Majority 5,472 on a total poll of 18 036.

Sir John Collie, C.M.G., M.D., was formerly Director of Medical Services at the Ministry of Pensions and president of the Special Medical Board for Neurasthenia. He is medical examiner to the London County Council and chief medical officer of the Metropolitan Water Board.

Dr. L. G. S. Molloy, D.S.O. (U.), Blackpool. Majority 166 on a total poll of 36,246.

Dr. Molloy is honorary consulting physician to the Victoria Hospital, Blackpool. During the war he served in France and Flanders as major in the Duke of Lancaster's Own Yeomanry; he was twice mentioned in dispatches and awarded the D.S.O.

Sir Sydney Russell Wells, University of London. Majority 1,653 on a total poll of 7,440.

Sir S. Russell-Wells, M.D., is physician to the Seamen's Hospital, Greenwich, and the National Hospital for Diseases of the Heart. He was Vice-Chancellor of the University of London from 1919 to 1922.

Dr. A. Salter (Lab.), Bermondsey West. Majority 2,325 on a total poll of 16,917.

Dr. Alfred Salter is the senior partner in a large practice in South London, and has taken a prominent part in social work and local politics. He is a distinguished student of Guy's Hospital and a gold medallist of London University.

Dr. T. Watts (U.), Withington. Majority 670 on a total poll of 22,686.

Dr. Thomas Watts is a past chairman of the Ashton-under-Lyne Division of the British Medical Association, and has been president of the Association of Certifying Factory Surgeons. He practised for many years at Hyde, Cheshire, where he was a member of the Town Council.

Dr. J. H. Williams (Lab.), Llanelly. Majority 7,266 on a total poll of 39,160.

Dr. John Henry Williams, J.P., is in practice at Burry Port, Carmarthenshire. He is a member of the Carmarthenshire County Council and chairman of the Health Committee.

Five medical men who sat in the last Parliament did not seek re-election—namely, Sir Watson Cheyne, Dr. A. C. Farquharson, Dr. Nathan Raw, Dr. P. F. B. Macdonald, and Sir Robert Woods. The last-named was one of the representatives of Dublin University, which under the Home Rule Act no longer returns members to the British Parliament. Two medical men who were in the last Parliament were defeated at the polls—namely, the Right Hon. Christopher Addison, who sat for Shoreditch, and Dr. Murray, who was member for the Western Isles.

Mr. Whitley was re-elected Speaker on November 20th, and on the following day members came up in line at the table in the Commons to take the oath and subscribe the roll, preliminary to the State opening of Parliament by the King on Thursday.

RADIOLOGY AND ELECTROTHERAPY.

Joint Meeting in Manchester.

A joint meeting of the Röntgen Society and the Electrotherapeutic Section of the Royal Society of Medicine was held on November 17th and 18th in Manchester. At the opening of the proceedings in the Physics Department of the University, Dr. Robert Knox, President of the Electrotherapeutic Section, who was in the chair, said that this was the first visit of the combined societies to the provinces, and expressed the pleasure the London members had in visiting Manchester.

The Structure of Metals as Analysed by X rays.

Professor W. L. Bragg, F.R.S., who read a paper on this subject, said that the *x*-ray analysis of metallic structures opened up an entirely new field of research. Just as chemical analysis told the nature and properties of the constituent elements which went to build up a complex substance, so this new type of "physical analysis" told what crystalline solids were present in a substance and how the atoms in these solids were arranged relatively to each other. Much of the pioneer work in this region had already been done, for the structures of most of the pure metals had been ascertained, but the modifications of metallic properties due to the admixture of other elements were of vast interest to the metallurgist and engineer. An indication of what might be done in this direction was afforded by Westgren's work on the irons and steels. The metallic structures could be elucidated, the effect of dissolved impurities studied, admixture of other phases recognized, coefficients of temperature expansion accurately measured, and the size of crystalline grains determined when these were of colloidal dimensions. It was of the greatest importance that the possibilities of this new method of analysis should be recognized, and research workers trained in its technique. Mr. W. J. Wiltshire, of the Research Department, Woolwich Arsenal, said that during the last year or so *x*-ray examination had been applied commercially in various directions, but there were many other possible applications, even at the present stage of development. He discussed various practical points in the use of *x* rays for non-medical purposes. The effect of "scattering," particularly in the photographic plate itself, was dealt with, and also points in the rendering of fine detail in a metal radiograph, and the gauging of correct exposures from absorption curves. The conditions for visual work with the fluorescent screen and the possibility of detecting small flaws with the screen were discussed. Slides were shown of a portable factory *x*-ray apparatus, and also a method of rapid radiographic examination of large quantities of a particular article at the rate of 2,000 a day, designed in the research department at Woolwich Arsenal. Other *x*-ray applications were the accurate measurement (to 1/1000 inch) of hidden components, and also the rapid estimation of the lead content of brass or other alloys.

The Hot Wire Sphygmograph and the Psycho-galvanic Reflex.

Professor A. V. Hill demonstrated the "hot wire sphygmograph" and the "psycho-galvanic reflex." The former, he said, recorded on a string galvanometer the change of electrical resistance of a fine platinum wire suddenly cooled by a puff of air. The record was valuable in studying the time relations of mechanical events occurring in the body, and particularly in measuring the velocity of the pulse wave and therewith the elasticity of the arteries in man. The latter was a vivid physical expression of involuntary bodily reactions to emotion or changes of "attention"; it consisted merely in an alteration of electrical resistance (or rather of polarization) set up through the agency of the involuntary nervous system.

Storage Batteries.

Mr. E. C. McKinnon, A.M.I.E.E., said that during the last thirty-five years a great amount of attention had been devoted by engineers, scientists, chemists, and inventors to the production of storage batteries for use in science and commerce. They had played a most important part in the great war; the submarine, for example, would be innocuous without storage batteries. Millions of such batteries were made annually for innumerable purposes; the world consumption of lead in their construction amounted to many thousand tons a year, and the number of persons engaged in the industry was estimated at from 100,000 to 150,000. Any real advance in the art must

be looked for from scientifically trained men engaged in technical research, and completely conversant with commercial conditions. Performance in laboratories bore litt'e relation to performance under service conditions. Competition had tended to crush out any refinements which increased cost of manufacture and upkeep, and to reduce the products to a common standard. Standardization also had wiped out many anomalies. The standard battery was a compromise of the factors—capacity, weight, bulk, and durability. Scientific management was necessary to obtain the best results from a battery; a fool-proof battery appeared to be impracticable. Mr. McKinnon detailed some of the technical essentials in storage battery manufacture, and concluded by demonstrating numerous types of batteries and their component parts.

Measurement of High Voltages.

Mr. J. R. Clarke, M.Sc., said that the methods of measuring high voltages which only gave mean values were not much use to the radiologist, who was chiefly concerned with the peak value of the wave he used. Hitherto the peak value had usually been measured by the spark-gap, though other methods involving condensers, rectifiers, and similar apparatus had been employed. The latter required careful attention in order to obtain good results, and the spark-gap could not be continuously in parallel with the tube. The utilization of the corona in air from a wire surrounded by a coaxial cylinder was suggested. Corona commenced when there was a definite potential difference between the wire and cylinder, depending only on their radii and the density of the air. Such an arrangement could be connected in parallel with the *x*-ray tube, and the corona current between wire and cylinder could be detected either by a galvanometer or telephone. The voltage applied to the tube could thus be measured by observing the conditions under which corona occurred. If the radii were suitably chosen there was extremely little tendency for sparks to pass between the wire and cylinders. By regulating the radii and the density of the air so that corona just should not occur no power was consumed in the voltmeter and it could be operated continuously in parallel with the tube. The corona current might be amplified if desired, to act as a control by means of which the voltage in the high tension circuit could be maintained at a constant value.

Cauterization of Pleural Adhesions under Thoracoscopic Control.

At the Royal Infirmary, in the afternoon, Dr. H. C. Jacobaeus, Professor of Medicine in the University of Stockholm, gave an address before a large audience on the cauterization of pleural adhesions under thoracoscopic and *x*-ray control. He said that for ten years he had been using the endoscope in studying the peritoneal and pleural cavities. At first he had been concerned only with the diagnostic advantages of the method, and used it chiefly in cases with ascites. After replacing the ascitic fluid with air he was able to obtain a clear and comprehensive picture of the abdominal organs. Later on he combined this laparoscopy with the simultaneous *x*-ray examination of the abdominal organs after introduction of air. The most interesting application of the method was for the examination of the pleural cavity: it was so simple and direct that it could be performed without inconvenience in any case of pleurisy with effusion in which thoracocentesis could be done. After sufficient practice it was possible to distinguish with some certainty between tumour metastases and tuberculous changes. In doubtful cases it was possible to determine the nature of the pleurisy by making an excision under guidance of the thoracoscope. In cases of pulmonary tuberculosis subjected to the pneumothorax treatment a clear picture could be obtained with the thoracoscope of string-like or membranous-like adhesions which might exist, and, by attaching the lung to the thoracic wall, prevent it from collapsing and thus cause the pneumothorax treatment to be a failure. He had devised a method of severing such adhesions with the galvano-cautery. Local anaesthesia was used in almost all cases, and the thoracoscope was introduced through the back. The selection of the point at which to introduce the galvano-cautery to sever the adhesions was of great importance. As in most cases adhesions were high up and to the side, he as a rule introduced the galvano-cautery in the antero-axillary line in the seventh, eighth, or ninth intercostal space. If necessary the cautery could be introduced still higher up, in the axillary line; if the adhesions were near the diaphragm the cautery might be introduced in the lower part of the thoracic wall. The application of the platinum needle of the galvano-cautery was made under the guidance of the thoracoscope. To obviate the risk of haemorrhage the needle was kept at a slight glow.

Among the complications which might occur after the operation was emphysema of the skin, originating from the puncture, but it caused trouble only for a day or two. More important were the pleuritic exudates which might develop after the operation, as shown by the following table:

Without exudate	36
With slight exudate	19
Long lasting exudate and fever	11
Long lasting exudate and fever, accompanied by empyema	7*
Exudate appearing only one to three months after operation	2
	75

* Of the 7 cases of empyema 4 died, 1 soon after operation.

Of the first 78 cases reported, in 55, or about 75 per cent., the method was technically successful in removing adhesions which had prevented the complete collapse of the lung. The clinical results were not so favourable, as only 49 cases, or about 63 per cent., had been freed from symptoms. The following table shows the results in 103 cases from various sources:

Results of Cauterization.

Jacobaeus.	No. of Cases.	Cauterization Complete, or Sufficient for Collapse of Lung.	Good Clinical Result.	Incomplete Cauterization.
Apical adhesions ...	10	9	8	1
Lateral adhesions ...	62	45	41	17
Diaphragmatic adhesions..	3	3	1	—
Total	75	57	50	18
Holmbœ	12	7	7	5
Gravesen (Saugmann) ..	16	9	7	7
Total	103	73	64	30

Dr. Jacobaeus then passed on to consider certain cases of tumour operated upon by Dr. Key after examination by the *x* rays and the thoracoscope. His general conclusions were that an *x*-ray examination, both before and after the induction of pneumothorax, was of great importance in the diagnosis and localization of pleural and pulmonary tumours, and that thoracoscopic examination gave valuable information in the diagnosis and localization of such tumours, and verified the *x* ray examination. Where it was not possible to use a pressure-difference apparatus it might be advantageous to induce pneumothorax previous to operation in the pleural cavity. If a pressure apparatus were employed then pneumothorax for the thoracoscopic examination ought to be induced as shortly before the operation as possible, in order that the inflation of the lung after the operation might not be rendered impossible. If the lung was inflated after the operation more favourable conditions for healing were eventually obtained.

Sir Humphry Rolleston, K.C.B., M.D., President of the Röntgen Society, who was in the chair, in proposing a vote of thanks, said that the work Professor Jacobaeus had done on this subject broke new ground which required a good deal of thought. Professor G. R. Murray spoke of the treatment of pulmonary tuberculosis by artificial pneumothorax, and of the work of Professor Jacobaeus as being definite advance. Professor A. H. Burgess discussed the technique of the operation, and favourably compared the method of Professor Jacobaeus by cauterization under thoracoscopic control with division of pleural adhesions by the knife under *x*-ray control.

Dr. Marsden said that, though he was not an enthusiastic supporter of the method of treating pulmonary tuberculosis by artificial pneumothorax, he thought some of the failures might be due to the presence of adhesions preventing full collapse of the lung.

Mr. Thurstan Holland, speaking as a radiologist, praised the series of beautiful radiographs shown by Professor Jacobaeus, and advanced as a reason for the failure of artificial pneumothorax the fact that it was too often done in this country without proper radiographic control.

Manchester Royal Infirmary.

Opening of the New X-Ray Department.

On the afternoon of Saturday, November 18th, the new *x*-ray department of the Manchester Royal Infirmary was opened by Sir Humphry Rolleston. The proceedings were presided over by Sir William Cobbett, chairman of the Board of Management. In his opening remarks the chairman referred to the gift by Mr. Robert McDougall of £5,000 for the equipment of the new department in memory of his father, Mr. Arthur McDougall, B.Sc.; also to an anonymous gift of £4,000 for the intensive *x*-ray treatment equipment and the provision of a research scholarship in this method of treating cancer. Dr. A. E. Barclay, senior honorary radiologist, explained the organization of the department, with lantern slide illustrations. Mr. McDougall responded to the expression of thanks conveyed by the chairman, and Sir William Milligan, M.D., chairman of the Research Committee, replied on behalf of the anonymous donor.

Sir Humphry Rolleston's Address.

In the course of his address Sir Humphry Rolleston expressed admiration for the splendid *x*-ray department now possessed by the Royal Infirmary, and his pleasure at having that opportunity of seeing what Manchester was doing to-day in one of the most progressive branches of the science and art of medicine. The finished product prompted him to glance briefly at the history of the development of radiology in connexion with that institution since the early days of the application of Röntgen's discovery to medicine. At first the practical utility of *x* rays appeared so problematic that even so finely conceived an institution as the new Manchester Royal Infirmary was planned without provision for a department, and it was not till 1908 that a small room in the basement was formally assigned to the work. The Royal Infirmary was to be congratulated on the patient enthusiasm of Dr. Barclay, who had done so much for its reputation by working up the organization of this department; his great services were recognized by his appointment in 1918 as a member of the honorary staff.

Sir Humphry Rolleston continued:

> It is most important that there should be the closest co-operation and communication between the workers in the wards on the one hand and those in the laboratories and radiological department on the other hand. Without such team work and the resulting sympathetic insight into the mutual aims, difficulties, and limitations of these two classes of workers the progress of medicine must suffer and be delayed. Wisely recognizing this essential condition for success those responsible for the construction of this *x*-ray department have provided a large demonstration room with a big *x*-ray and screening apparatus, so that patients can be brought down and examined by the radiologist and the physician or surgeon and the attendant students. In addition a lantern is provided for the demonstration of slides from similar cases to that under discussion, so that light may be thrown on any unusual features in these cases. There will thus be available a collection of negatives and slides—comparable to a museum of pathological specimens—which will become more numerous and so more progressively valuable for teaching and research in medicine and surgery. Team work between radiology and the other branches of medicine may be confidently expected to bear much fruit in research and the advancement of medical science, diagnosis, and treatment. In the case of the Manchester Royal Infirmary the omens in this respect are specially propitious, for not only has Dr. A. E. Barclay an international reputation for original investigation, especially as regards the gastro-intestinal tract, but a generous benefactor who prefers to remain anonymous has provided £4,000 for research in connexion with the intensive *x*-ray treatment initiated at Erlangen, and a strong committee has been set up consisting of Sir William Milligan, Professor Bragg, Professor H. R. Dean, Dr. C. Powell White, Dr. A. E. Barclay, Dr. A. Burrows (of the Manchester Radium Institute), and James Watt, junr.; in May, 1921, Dr. C. C. Anderson was appointed Research Scholar and worked in Germany from July, 1921, to January, 1922. The combination of radiology and anatomy has greatly advanced our knowledge and efficiency in both these subjects; radiology has thrown a flood of new light on normal anatomy, especially of the abdomen; in this field of advance Dr. J. S. B. Stopford, professor of anatomy here, is the pioneer; and it is most appropriate that Dr. J. M. W. Morison was in 1921 appointed lecturer in applied anatomy (radiology) in the University of Manchester. It is obvious that a knowledge of the normal *x* ray appearances and of their physiological variations is fundamental in the estimation of morbid changes and in the detection of disease, and on this subject there still remains much to be done. Team work with pathologists offers an attractive field for investigation; the *x*-ray examination of bodies before *post-mortem* examination, originally practised by Dr. F. H. Williams, of Boston, Mass., in 1906, and found to be of great value in the diagnosis of the thoracic complications of virulent influenza in 1918-19 (H. E. Robertson), is a perennial source of information. Possibly, by combined investigations with pathological workers, the severe reactions of a toxaemic nature that may follow intensive radiations, and are a serious factor in the utilization of the method, may be found, as Arib and Witherbee's experimental work on rabbits suggests, to be preventable by increasing the resistance of the normal cells of the body by some procedure such as the injection of horse serum.

Sir Humphry Rolleston then spoke of the vigorous growth of the art and science of radiology, and the vast increase that this had led to in the demands made on the radiological department. The whole subject, he said, was rapidly expanding and advancing, so that in the near future it would be necessary elsewhere, as had already been done in Manchester, to provide a university hospital with several radiologists, each specializing in a branch of the subject.

The vote of thanks to Sir Humphry Rolleston was proposed by Dr. Ramsbottom, Chairman of the Medical Board. The new department was visited during the afternoon by the members of the two societies. The main features of the department are briefly:

1. Its complete equipment for all kinds of *x*-ray work, both diagnostic and therapeutic.
2. The extensive and well-ventilated premises.
3. The efficient protection of the workers by the use of barium plaster on the walls.
4. A well-fitted workshop in which minor repairs can be done and experimental apparatus made.
5. A demonstration room fully equipped for the exhibition of cases and the teaching of radiology to students.

Dinner.

A dinner was held at the Midland Hotel at 7.30 p.m. About eighty members and friends were present, including the presidents of the two societies. The guest of the evening was Professor Jacobaeus, whose health was eloquently proposed by Dr. R. Knox. Later on several speakers referred to the value of co-operation between physicists, manufacturers, and radiologists. Sir Archibald Reid outlined a scheme for a British Institute of Radiology which it is proposed to establish in London. The proceedings terminated with various votes of thanks to those who were responsible for the successful arrangements in connexion with the conference.

Visits.

On Saturday morning opportunities were afforded for visits to various works, including the Chloride Electrical Works, which make storage batteries. Visits were also paid by the medical members of the meeting to the Radium Institute and to the *x* ray department of the Skin Hospital.

Scotland.

The Samson Gemmell Bequests.

The late Dr. Samson Gemmell, admired and beloved by many generations of Glasgow students, and for five or six years before his death in 1913 Regius Professor of Medicine in the University, left a considerable fortune, which passed to his only brother, Mr. William Gemmell. He died recently, and by his will bequeathed his estate, which it is believed will amount to about £100,000, for the benefit of Glasgow institutions. He left £20,000 to trustees for the purpose of establishing a chair in the faculty of medicine or science, to be called the Samson Gemmell chair. The trustees are to confer with the University authorities as to the subject of the chair and the arrangements for the appointment. The trustees are to hold the remainder of the estate as a permanent Gemmell Bequest Fund; its income is to be applied to charities in Glasgow, and mention is made also of charities in the parish of Sorn, Ayrshire, from which place the Gemmell family came.

Central Midwives Board for Scotland.

The examination of the Central Midwives Board held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, concluded on November 8th with the following results: Out of 116 candidates who appeared for the examination 99 passed. Of the successful candidates 21 were trained at the Royal Maternity Hospital, Edinburgh, 37 at the Royal Maternity

Hospital, Glasgow, 3 at the Maternity Hospital, Aberdeen, 11 at the Maternity Hospital, Dundee, 7 at the Queen Victoria Jubilee Institute, Edinburgh, 11 at the Cottage Nurses' Training Home, Govan, Glasgow, and the remainder at various recognized institutions.

Glasgow Medical Lunch Club.

At the meeting of this club held on November 16th the vice-president, Dr. John Henderson, occupied the chair, the guest of honour being Sir William Martin. After lunch Sir William Martin gave a very interesting and illuminating account of the inception and development of the Royal National Lifeboat Institution, and its increasing value to the country. He emphasized that all along it has been supported by voluntary subscription, without any aid or subsidy from the State. The lecturer illustrated his remarks with many important figures, financial and otherwise, indicative of the valuable work done by the institution for the nation. The address was thoroughly enjoyed, and the pleasure and thanks of the members were suitably expressed by Dr. McKail. He referred to the untiring efforts of Sir William Martin in the advancement of the lifeboat cause locally and generally, as, for many years past, organized public collections had been made on an appointed day, and that to these was due the inception of "flag" days, which had proved so valuable in swelling the funds of so many deserving objects all over the country.

Ireland.

Presentation to Dr. M. F. Cox.

On the occasion of his election to be president of the Royal College of Physicians of Ireland, Dr. Michael F. Cox, senior Physician to St. Vincent's Hospital, was presented on Saturday, November 11th, with a beautiful replica of the Ardagh Cup by his colleagues in the hospital. The presentation was made at a complimentary luncheon to Dr. Cox in the Shelbourne Hotel. Surgeon McArdle, who presided, in making the presentation, said that it was a small recognition of life-long work and of the affection and respect with which his colleagues in the profession, as well as in the hospital, regarded him. The honour of being elected President of the College of Physicians was long overdue. As far as his memory went back Dr. Cox had carried himself first of all as a brilliant Irishman, and secondly as a staunch Irishman. There were brilliant Irishmen, he might remark, who were of no use to their country, but the man who combined staunchness and brilliance rightly won their highest appreciation. Throughout his life Dr. Cox had been continuously straightforward with everyone who met him and always true to the poor. He had known him for thirty years and could say that no other man he knew had been so invariably considerate. His loyalty to his hospital was a model for physicians. Surgeon McArdle then proposed the toast of Dr. Cox, a friend of the poor, a patriotic Irishman, and an honour to his profession. After the toast had been duly honoured, Mr. John Dillon, ex-M.P., and a Licentiate of the Royal College of Surgeons in Ireland, thanked the organizers for the opportunity to pay a brief tribute to his old friend, Dr. Cox. Since they had been students together they had remained on terms of the closest intimacy. He did not think there was another physician in Dublin who had been so uniformly and meticulously kind to the poor, or a more steadfast and generous friend. He had steered a straight and honest course through life, and his reward was that there was not a man in the medical profession to-day who was more beloved by the people of Dublin. Dr. Cox, in reply, thanked his friends for their very great kindness; they made him feel very proud and happy, for he realized the generosity which prompted their action. St. Vincent's Hospital and the good sisters were beloved by them all, and he thought he could say that a better staff was possessed by no hospital. He thanked them from the bottom of his heart collectively and individually. The Right Hon. Thomas O'Shaughnessy, Recorder of Dublin, proposed the toast of the Chairman, which was duly honoured.

Mr. Andrew Fullerton.

Mr. Andrew Fullerton, C.B., C.M.G., F.R.C.S.I., surgeon to the Royal Victoria Hospital, Belfast, read a paper on unilateral diuresis at the Congress of the American College of Surgeons in Boston, which began on October 23rd and terminated on October 28th. He also gave an address before the Toronto Academy of Medicine, and spoke at the Mayo Clinic, Rochester. Since his return to Belfast he has received many congratulations on his election to the honorary Fellowship of the American College of Surgeons. He is the first surgeon in the North of Ireland to receive this distinction.

Small pox Menace.

In view of the outbreak of small-pox in England, precautions are being taken to prevent the introduction of the disease through the port of Dublin. Incoming vessels are thoroughly inspected, and the slightest case of illness on board is reported to the Port Medical Officer. Where any doubt exists, no member of the crew is allowed ashore until the medical officer is satisfied that all risk is removed. Owing to the possibility of infection from second-hand clothing, the acting Port Medical Officer (Dr. M. J. Russell) has instructed the Port Sanitary Inspector to prevent the importation of such articles, and the various shipping companies have expressed their readiness to give immediate information of the arrival of such goods, with a view to disinfection. Dr. Russell reports that during October no case of infectious disease was reported from, or detected in, any vessel which had entered the port; twenty-five foreign vessels were inspected, and fourteen notices were served requiring the keeping of rat guards on the mooring ropes, as a precaution against disease being carried ashore. During the week the Dublin Board of Guardians passed the following resolution by a majority of one:

> That owing to the danger of an outbreak of small-pox in Dublin, the following resolution, passed by the Board on August 4th, 1920: "That it be optional for parents to have children vaccinated," be, and is hereby, rescinded, and that the Board give instructions to have the Vaccination Regulations carried out.

Correspondence.

SMALL-POX DIAGNOSIS.

Sir,—Will you permit me to submit to your readers some observations on this topic which are of urgent professional, and public, importance?

An actual occurrence may give point to my remarks. The first of the 10,000 cases certified as small-pox which I saw in 1901–03 was that of a girl child of a litigious mother, who brought an action for damages against her physician, a competent and careful practitioner, in that he had certified her child to be suffering from small-pox when, in fact, she was suffering from chicken-pox, and by his negligence had ruined the mother's business. The case hung over his head for more than a year, and but for being most ably defended by the Medical Defence Union would probably have caused him severe loss. Before my evidence was called the case was stopped by the jury, who by then were satisfied in effect (*a*) that the physician had taken every care to render himself competent in the branch of medicine in which he was practising and was so competent, (*b*) that on this particular occasion he had taken all due and reasonable care. He had done his best, and no man could be asked for more. The verdict was for the defendant.

That was in 1901. What of 1922? We all know that "missed" cases continue to occur, but in my experience they are much fewer than they used to be: and it makes me exceedingly proud of our profession to find, as I have found on three occasions lately, that colleagues who previously had never seen a case of small-pox had recognized the disease on the first day of the rash. That is an achievement of high merit and shows what can be done by junior men, even though the majority of physicians have never seen a case of small-pox—for the simple reason that there have been none to see.

All the same, cases are still missed, being taken for measles, or chicken-pox, or a drug rash, or scarlet fever, or influenza; and such occurrences lead to a sequel of five, ten, fifteen or more deaths as the case may be.

Those of us, however, who have seen much small-pox know exceedingly well that many cases present remarkable difficulty in recognition; the majority of the recent London cases have been far from straightforward; this phenomenon has not been due to their vaccinal condition, which, contrary to the experience of Dr. Killick Millard, I have found rather facilitates than obscures the diagnosis, but more often to

a commonly overlooked factor—namely, the specific skin texture and constitution of the individual patient; and anyone who vividly recalls his own early efforts successfully to tackle this most formidable enemy—for myself that was in the early nineties—can have nothing but profound sympathy for the stress and anxiety often thrown on members of our profession. It was this consideration which greatly influenced me in producing my various works on small-pox diagnosis, and now prompts me to mention the matter. Beginning in 1902, I have constantly done all I could to coach my colleagues therein, or at least to place this knowledge easily within their reach. It has been, one might almost say, a labour of love, has occupied my leisure during year after year, and I suppose has cost me not less than £500 of my private means. I find no mention whatever of these rudiments of small-pox diagnosis in leading textbooks of medicine, though the pregnant work of the late Dr. T. F. Ricketts has been before the profession for over twenty years and has been proved by many physicians to be of priceless value; yet many of my medical friends have no idea where to light upon this to them recondite work. Complaint I have none; I only deplore the deficiency in my own powers of persuasion, which I am now attempting to remedy. May I venture to digress here in order to request for future work the loan of any striking small-pox photographs in the possession of your readers, especially if they should have photographs of any of the Poplar or other recent severe cases.

What I am more especially concerned with now is that I am not immortal, and it has always seemed to me one of the real tragedies of existence that a stone of experience which some Sisyphus has rolled up a particular hill should roll down again unchecked at his death; in brief I wish to do all I possibly can to make this invaluable knowledge more widely available. I have done nearly all I can do in this matter, and by way of removing any suspicion of personal advantage—there never was any—I have for some years now been in the habit of placing any surplus over cost of the production of my work towards a special fund for the general furtherance of this knowledge. If you or any of your readers can suggest a more suitable basis I will gladly consider it.

What I do most earnestly seek at this juncture, when the external pressure of small-pox infection seems higher than for twenty years, when the susceptibility of our population, largely owing to non-vaccination, seems also higher than for a long time past, when a single "missed" case may involve us all in a huge disaster, and when in consequence the utmost possible medical vigilance on the part of us all is necessary to tide us over a critical period of great anxiety until the time when the common sense of our people asserts itself (as I rejoice to say it is slowly asserting itself) and voluntary vaccination becomes the rule and finally saves the situation—at such a time I do beg to be allowed to tender to my colleagues whatever assistance of this nature may be convenient to them and in my own power.

In my daily experience I note that the laity themselves are much more educated and alert upon this question than twenty years ago, and in several obscure cases lately the correct diagnosis has been first suggested by the patient. Many laymen are at least cognizant of the marked advance which medical research has made in small-pox diagnosis in this twenty years. It is indeed as striking an advance as any in surgery or medicine. That young practitioners who have never seen a single case should be able to make a correct diagnosis of small pox on the first day of the rash is indeed a portent; and I surmise that if again one of us finds himself arraigned in the courts by an infuriated patient for having ruined his business by a misdiagnosis, the question will probably be asked by the court what steps the defendant has taken to familiarize himself with recent diagnostic methods, and the verdict will be influenced thereby.

Lectures have been given at several of the London general hospitals, and at one of them the question is understood to be under consideration whether it is desirable to require that applicants for house appointments should have attended a short course of instruction upon the subject. It is to be hoped that this admirable example will come to maturity and be widely followed.

May I, Sir, in thanking you and your readers for your kind attention, submit that the very key of our success in holding this invader in check is instant recognition, and is the very key, too, of success in that ultimate objective upon which we are obstinately determined—namely, the summary expulsion of this pest from among us and the complete security of our island from its loathsome interference for all time to come.—I am, etc.,

London, S.E.1, Nov. 17th. W. McC. Wanklyn.

P.S.—I append a list of publications which may be obtained from the *Medical Officer*, 26, Whitefriars Street, E.C., and from George Wareham, 1, Budge Row, Cannon Street, E.C.: "How to Diagnose Small-pox" (5s.). "Small-p x Notes for Medical Practitioners, with Hints on Small-pox Diagnosis" (6d.). "A Survey of the Present Position of Small-pox and Vaccination as Affecting this Country" (1s.).

THE OUTBREAK OF SMALL-POX AT POPLAR WORKHOUSE.

Sir,—I gather from Dr. Killick Millard's letter (November 18th, p. 1001) that in 1911 some 70 cases of small-pox (with 10 deaths) arose at Mile End, following upon the occurrence of an "overlooked" case of a girl of 12, who had been vaccinated. Dr. Millard says that the press emphasized the neglect of vaccination as a cause of the outbreak, but did not mention that the first case, a girl of 12, had been vaccinated. Dr. Millard is "fairly confident" that a vaccinated case, presenting a modified attack of small-pox, was the cause of the present outbreak.

I deduce from Dr. Millard's letter that it would be better to stop vaccinating, so that when the first case occurs, this being unvaccinated, it could be readily diagnosed, and then would be the time to vaccinate contacts. If this be Dr. Millard's view, I say that it is dangerous, fallacious, and, if adopted, would lead to widespread epidemics of small-pox.

Dr. Millard's unmodified first case, in actual practice, would not be likely to oblige by walking right into the arms of a medical man. More than likely the sufferer would have visited forty or fifty public houses, churches, or cinemas, and, it may be, would have danced at a night club or have attended a meeting of the society for the propagation of contraceptives amongst the heathen (home mission scheme). In this manner the heather would soon be set on fire.

As the crow flies, we in Deptford are not more than three miles from Poplar, and quite naturally there has been an element of expectancy—nay, indeed, strain. With so many unvaccinated people going about, and with a vaccination campaign (and a successful one) on hand in Deptford, Dr. Millard's theorizing is irritating, and might be injurious. At our Council meeting a week ago, when chicken-pox was made notifiable *pro tem.*, an alderman expressed views unfavourable to vaccination, and referred to "eminent medical men" who were against it.

The British Medical Journal is freely quoted by the press, and who knows but what this "beavered hare" that has been let loose upon an unsuspecting public from the Leicester Public Health Department may be quoted with disconcerting results? Let us have vaccination in infancy, revaccination at 12 to 14, and a third session at 21, with additional interviews with the scarifier as and when necessary. With such sound and convincing practice we would not need to let our hearts be troubled with the "shimmy shake" ideas we are asked to believe.—I am, etc.,

Charles S. Thomson,
Medical Officer of Health.

Town Hall, Deptford, S.E.14, Nov. 18th.

Sir,—Dr. C. Killick Millard may or may not be correct in his supposition that "the patient whose overlooked attack is responsible for the outbreak" of small-pox at Poplar was a vaccinated person. Assuming, however, that his "confident surmise" is correct, it would be interesting to know what he proposes to do about it. The logical sequel of his letter would appear to be the suggestion that vaccination should be made a criminal offence. In this he might be supported by Mr. Arnold Lupton and Dr. Walter Hadwen, although in justice to these gentlemen I must say I am not aware that they have ever openly advocated such a course. I fear it would be but small consolation to the friends of a person who had died of virulent small-pox that there was no difficulty in the diagnosis of his disease. There would still be mild cases of small-pox, just as there are mild cases of scarlet fever and measles which are sometimes difficult of diagnosis. Even now severe cases are sometimes overlooked. I was recently in the company of an eminent surgeon, who, when a house surgeon forty years ago, had been for eight weeks or so shut up in a

ward of a general hospital along with a small-pox patient who had been admitted under the diagnosis of "pustular eczema." I grant that there would probably be *relatively* fewer mistakes in diagnosis, because every medical man, and perhaps most others, would be only too familiar with small-pox, whereas now hundreds of medical men have never seen a case. It is possible, however, to pay too dearly for the education of medical men and the public in the diagnosis of small-pox.—I am, etc.,

Reading, Nov. 20th. F. W. Stansfield, M.D., D.P.H.

CANCER OF THE SCROTUM.

Sir,—The article by Messrs. A. H. Southam and S. R. Wilson in the Journal of November 18th (p. 971) is of great interest. They attribute to the lubricating oils used in the cotton mills of South Lancashire the property of inducing cancer of the scrotum in mule-spinners, and they announce their intention of investigating the question experimentally.

Though it has long been known that the crude mother liquids from which lubricating oils are prepared predispose to, if they do not actually produce, cancers in the workmen engaged in the refineries, yet no one hitherto has recorded cases of cancer traceable to the action of lubricating oils themselves. At the Glasgow meeting of the British Medical Association in July last, in communicating the results of experiments with the cruder mineral oil products, I reported the fact that I had produced malignant disease in mice with such substances. That paper will, I hope, soon appear in the Journal when the various papers read at the Pathological Section are printed; but may I be allowed to say, meanwhile, that I succeeded in inducing epithelioma experimentally with a lubricating oil which must be similar to, if it is not identical with, that implicated by Messrs. Southam and Wilson? It is interesting, therefore, to have such an unexpected verification from the clinical side of what I had previously shown experimentally. We are gradually working through a series of the mineral oil products used in this country.

The authors, commenting on the apparent rarity of chimney-sweeps' cancer in South Lancashire, make the same statement that other writers on the subject have made since the time of Percival Pott (1775)—namely, that the disease is becoming rarer. All the figures at our disposal show that chimney-sweeps' cancer is as common or as rare now as it ever was: there are on the average five or six cases a year in the whole of England, and in the ordinary course of things there must be instances of large general hospitals which do not have a single case for several years. The disease is, and always has been, very rare in Scotland, and it is rare in Continental countries. This is possibly due to the different coals used.—I am, etc.,

Archibald Leitch.

Cancer Hospital Research Institute,
London, S.W., Nov. 17th.

"THE RADICAL PREVENTION OF VENEREAL DISEASES."

Sir,—I have read the correspondence that has been going on under this heading with much interest. It is obvious that if Dr. Caiger's high ideals could be reached all would be well, not only in this, but in other directions too. After 2,000 years, however, of Christian teaching there is still, as someone has said, "too much human nature in humanity." We have to face facts as they are, not as they should be. I think it is a weakness in our profession, when we discuss this subject, that we confound medicine and morals. We are doctors first, and moralists afterwards. We are too apt, in our advice to the public, to let our medical knowledge be warped by expediency and sentiment. By all means let us join those who preach continence and other high ideals; but let us first teach the means for preventing venereal disease.

The time is coming when the State must take strong action in dealing with this question. I feel strongly that Dr. Armstrong is right in his letter of November 11th in advising the notification of venereal diseases. It is the present secrecy of the consulting room and of the chemist's back parlour that encourages much of the immorality that goes on.

I am moving at the next meeting of the Health Committee of this city that the authorities be approached with a view to the inclusion of syphilis and gonorrhoea in the list of notifiable diseases. I hope other members of the profession who are on public bodies in their various centres will do the same.—I am, etc.,

Bath, Nov. 19th. Preston King.

PREVENTION OF ANTHRAX.

Sir,—With reference to Professor Hobday's valuable paper in your issue of November 18th (p. 955)—in which he remarks, "It is time that very much sterner preventive measures were taken against it" (anthrax)—may I point out that the present unsatisfactory condition of the law is, I consider, responsible for some of the cases?

It is at present impossible for anyone contracting anthrax from a shaving brush to bring an action for damages *directly* against the responsible manufacturer or importer of the brush. If this absurd defect in the law were altered, so that the manufacture and import of anthrax-infected brushes became financially dangerous to those responsible for them, the number of cases of anthrax from infected shaving brushes would, I feel sure, quickly diminish.—I am, etc.,

Exeter, Nov. 18th. W. Gordon.

PSYCHO-ANALYSIS.

Sir,—"A. Dreamer" in your last issue concludes his letter by saying that as he desires "to avoid an overwhelming correspondence" he adopts a pseudonym. Therein he shows his wisdom, as it is much easier to enter a correspondence column than to leave the same.

The silence in your issue of November 11th led me to think that all was over, but it was a vain hope, as Dr. McBride returned to the fray on November 18th. I am bound to reply, as I have to enter the protest that I have been misrepresented. The offending passage is: "He [Dr. Steen] apparently believes that thought can occur without physiological nerve and brain activity." I can assure your readers that I believe nothing of the sort, and furthermore I did not say so. I do not accuse Dr. McBride of wilfully misquoting me, and I fancy I understand how he made the mistake. I shall try to make my explanation as short as possible.

There are two conceptions of disorders of mind—the physiological and the psychological. In the physiological conception the assumption is that mental activity is accompanied by corresponding changes in the nervous system. The worker in this branch of study will therefore devote his attention to any alteration in the nervous system which he may observe, and he will try to discover laws which will summarize the knowledge he has gained. These laws will be expressed in physiological terms only.

The psychological conception concerns itself only with mental processes. The student here will collect mental facts, and when he has a sufficient number at his disposal will try to formulate laws, which will be stated in psychological terms only.

> "It is of the utmost importance that, in the final 'laws' obtained by either the physiological or psychological conceptions, there should be no mixing of the terms. The physiological laws must contain no psychological terms, and the psychological laws must contain no physiological terms. Nothing but hopeless confusion can result from the mixture of 'brain cells' and 'ideas.'"

Dr. Hart, from whom I am quoting, has discussed the matter with great clarity and brevity. Misconceptions are bound to arise if arguments on big subjects have to be compressed into the limits of letters. This was my main point when I wrote my first letter.

Wild horses will not drag me into a discussion of the relationship between mind and matter.

I have to thank Dr. McBride for the names of the books he recommends, one of which is well known to me. I can also assure him that I did not realize that I was being sarcastic.—I am, etc.,

City of London Mental Hospital, Dartford, Kent, Nov. 20th. R. H. Steen.

THE TEACHING OF PSYCHOLOGY.

Sir,—In the Section of Neurology and Psychological Medicine at the Annual Meeting of the Association in Glasgow, the proceedings of which were published in your columns on September 23rd, 1922, a resolution was unanimously passed asking for the inclusion of the teaching of psychology and psychopathology in the medical curriculum. The urgency of the matter may be shown by the following practical considerations.

1. Dr. Steen, in a letter in your issue of November 18th, gives some samples of cases of acute mental distress which he meets with at his out-patient department. Every experienced medical practitioner could point not only to cases such as these, which would naturally be referred to someone devoting special attention to mind ailments, but he could show that in almost every illness it is the psychical element which is responsible for the major part of human suffering. People are afraid that they are going blind, that the noises in the head indicate serious brain disease, that they are afflicted by some incurable malady, or that they are indeed "going mad." Often these fears, which may be devoid of any foundation, are kept secret lest they be laughed at; thus a vast amount of preventable suffering continues.

2. Everyone who is engaged in any sense in the practice of psychotherapy, whether or not he is technically a psychotherapist, knows that the greater number of these cases in their early stages are easily curable. On the other hand, they also know that it is only by certain methods that these troubles can be relieved. Psycho-analysis is undoubtedly one of these, and we owe to Freud an unspeakable debt for the light he has thrown on the problems of the "unconscious," but I am not a psycho-analyst and therefore I will not attempt to discuss this thorny subject. My own interest in the matter lies mainly in the system of collective treatment by conscious auto-suggestion which has been designed by M. Emil Coué. By this method groups of cases can be advantageously treated, and Dr. Monier-Williams and I, who are testing this particular system, are most sanguine as to its wide utility. You have kindly referred to the small free clinic which has been established for this purpose in Chelsea, but it would be of much wider usefulness if some of the larger hospitals would allow this form of treatment to be tested in connexion with their out-patient departments.

3. Unless this matter is seriously dealt with by the leaders of the profession, the inevitable result will be another great extension of the evils of unqualified practice. The public are rapidly learning that mind treatment is necessary for the relief of suffering, and we cannot blame them for seeking help in other ways if the medical profession is not alive to their needs.

I hope that all psychotherapists will combine to press this matter upon the attention of those in authority.—I am, etc.,

London, Nov. 17th. CHARLES F. HARFORD.

INDIRECT RESULTS OF PROSTATECTOMY.

SIR,—It is commonly supposed that the improvement which follows prostatectomy is due to renal relief by the removal of a mechanical obstruction. May I suggest that something has happened which is often of greater importance? The surgeon's attention is often drawn to cases in which there has been little urethral obstruction and no residual urine or back pressure, but in which amazing improvement has followed an operation only rendered necessary by slight haematuria. In such patients the prostate is often larger than many which produce obstruction. There may be no signs of renal mischief and yet the patient has been for years in lamentable health characterized by anorexia, progressive loss of weight, grave depression, irritability, incapacity for prolonged work, and very frequently that lamentable form of sexual irritability which leads to irreparable social disaster. Not unnaturally he gets classed among the neurasthenics and is thereby barred from any real prospect of relief. Such patients are the despair of physicians, who find nothing to account adequately for the condition. It seems to me that there is an explanation of these undoubted facts which has never been offered. It amounts to the definition of a new endocrine disease, which should be called "hyperprostatism." If externally the prostate secretion is powerful, and its effects, however administered, are now beginning to be recognized, it must also act as an internal secretion. But the normal gland weighs, say, half an ounce, while it may increase to ten ounces or even more when adenomatous. The morbid symptoms may be put down to the glandular secretion being itself morbid. This, however, is an unnecessary hypothesis, since oversecretion of a kind the organism is not prepared for is morbid by itself. Such oversecretion probably causes a heavy drain on the body's powers of immunization, and when these break down toxic symptoms result. It must surely be held that any glandular secretion without evolutionary work to do should be regarded as a facultative toxin. Work I am doing elsewhere strongly supports the view that any "out-of-work" secretion is a poison. In this case, therefore, I prefer simple hyperprostatism to dysprostatism, there being no real evidence that adenomatous tissues secrete abnormally. The patient is in the position of possessing a huge abnormal accessory gland for which there are no evolutionary safeguards, and thereby occupies a position strictly analogous to that of a sufferer from hyperthyroidism.

I am allowed to say that these conclusions have met with the general approval of Dr. Langdon Brown, and also with that of Dr. G. W. Nicholson, whose work on tumours is becoming generally recognized; he considers that as a pathological entity this disease has its natural place in morbid endocrinology, while Mr. Sydney MacDonald, whose practical experience in these cases is very great, finds in such a view an explanation of observed phenomena which seemed previously inexplicable. It follows that complexes of symptoms such as those enumerated should, in the case of males in whom tuberculosis and malignancy have been negatived, lead physicians to make the tentative diagnosis of hyperprostatism and to send them to the urologist for examination. Such views will also lead the surgeon to remove non-obstructive adenomatous prostates wherever there is a characteristic but hitherto unexplained cachexia rather than merely to watch them, and to take the same course where dangerous sexual irritability is found. For it must be noted that the removal of a large non-obstructive prostate is followed in most cases by a rapid return of healthy appetite, a great increase in weight, the removal of depression, irritability, morbid sexual erethism, and incapacity for work, while the patient both looks and feels many years younger. I think it may be added that such rejuvenescence is not likely to follow so rapidly upon mere relief to renal disturbance, and therefore submit that from start to finish the drama shows every mark of progressive morbid endocrinism until a revolution is brought about by radical surgery.—I am, etc.,

London, Nov. 15th. MORLEY ROBERTS.

BILE SALTS AND CALCIUM.

SIR,—The letter of Dr. S. Pern in the BRITISH MEDICAL JOURNAL of September 16th (p. 532) on the etiology of goitre gives one much cause to think. It is, however, in its bearing on tuberculosis that it has especial interest for me. All will agree that calcium deficiency plays a great part, perhaps the chief part, in tuberculosis, and I think I am right in saying that hyperthyroidism is very much more common than the opposite condition. What, however, specially concerns me is his statement that bile salts aid in the absorption of calcium. I have for some time been in the habit of using bile salts and duodenal extract in the treatment of tuberculosis, as they stimulate the flow of bile and in this way probably aid in the elimination of toxins.

If bile salts directly aid in the absorption of calcium why should surgeons so fear jaundice in gall-bladder operations? Moynihan, in his work on *Abdominal Operations* (p. 620), dealing with gall bladder operations upon those suffering from chronic jaundice, referring to the diminished coagulability of the blood and the consequent danger of haemorrhage, says: "I have never been convinced that this drug [calcium chloride] had any effect in this direction"—namely, increasing the coagulability of the blood in cases of jaundice. If bile salts favoured the absorption of calcium, surely there would be a tendency to increase coagulability of the blood when calcium was administered in a case of obstructive jaundice. But apparently it is not so.

Langdon Brown, in his *Physiological Principles of Treatment*, says (p. 8):

> "Among the less known effects of iodothyrin on metabolism is its influence on the liver. . . . After ligature of the bile duct the colloid in the follicles and lymphatics of the thyroid gland increases." Again (p. 380): "It is claimed that calcium deficiency may result either from defect or excess of thyroid secretion, but the usual result of thyroid excess is to increase the excretion of calcium, preventing it from being fixed in the tissues or reaching a high level in the blood."

It seems, then, to me that bile salts increase the flow of bile and thus lessen the excess of bile in the liver. The liver being relieved the thyroid has less work to do, becomes more normal, and ceases to excrete calcium.

I raise this point in no controversial spirit, but in the hope that someone with a wider knowledge of endocrinology than mine may give a better explanation.—I am, etc.,

London, W., Nov. 14th. F. E. GUNTER.

CHOLERA OR DYSENTERY.

Sir,—I observe in your review of the War Office statistics in the British Medical Journal of October 21st a note of the "appalling" death rate of cholera in Mesopotamia—that is, over 40 per cent. Having been there in the hot weather of 1916 as a consulting surgeon I had a chance of seeing the cholera cases. During more than thirty years in the Indian Medical Service I have seen a good deal of tropical disease. I was one day asked by one of the ablest of the R.A.M.C. temporary officers to see his cholera cases. I asked him what was his death rate; he said about 45 per cent. I told him that that was good as I would expect it to be 90 under the conditions prevailing. When I saw the cases I said they were not cholera but bacillary dysentery, and advised the officer to stop milk diet, to feed the patients on dilute rice water, and to give them sufficient magnesium sulphate to get several motions daily until all mucus disappeared and the temperature was normal. I told him under no circumstances to give them opium or other drug to stop the diarrhoea as such would be fatal in a few hours.

I saw him a fortnight later and asked how his cases were doing. The reply was that he had had only one death out of many cases since he adopted the rice water and magnesium sulphate, and in the case of that one the patient complained in the night of gripes and the nurse gave him a dose of chlorodyne on her own account and he died a few hours later.

If the war statistics (medical) are no better than those of cholera in Mesopotamia it would be a good thing for posterity if they were scrapped.—I am, etc.,

Henry Smith, C.I.E.,
Sidcup, Kent, Oct. 30th. Lieut.-Col. I.M.S.(ret.).

X RAYS IN HYPERTRICHOSIS OF THE FACE.

Sir,—Dr. William Mitchell's able and courageous critique of my letter to you on this subject is worthy of a better cause, for if the evidence of nearly all the living dermatologists in this country, in America, and on the Continent is to be considered at all, that cause is lost. He need but refer to the articles on the radiotherapy of hirsuties in the most modern editions of their textbooks by Sequeira, MacLeod, Whitfield, and MacKee of Columbia University, to see how overwhelming is expert opinion against the practice he advocates. The last author has minutely discussed the subject in all its bearings, including the medico-legal, and I venture to think—all ethical and other considerations apart—that as in America, so in this country, an indemnity, verbal or written, would hardly avail to protect the operator, in case of a prosecution, for ensuing disfigurement.

Dr. Mitchell has selected in support of his argument for further trial of the method the fact that "twelve years ago many leading engineers and physicists said heavier than air flying machines were impossible." He could scarcely have chosen a more trite illustration, from both his angle and mine, for in both aviation and radiotherapy there still occur disasters of a most distressing kind. This indisputable fact surely goes to confirm my view that the instrument he employs is at present too dangerous a weapon in what is after all a minor disability, for which other therapeutic measures exist.

In one respect I have to cry "touché" to Dr. Mitchell's criticism. I certainly said "too little" in the important matter of the technique used eleven and a half years ago in Sister B.'s case. I can add only one fact to the description already given—no screen was used. I gladly concede this grave error in application of the rays, but I would again emphasize the fact that no stigma appeared for three years thereafter.

I do not desire to base any argument whatever on the results in this case, which is merely cited as an incidental and contemporaneous illustration of the harm that may ensue. I am concerned here with principles only, and those enunciated by Dr. Mitchell I feel bound to condemn. Dr. Mitchell further states, in substance, that "in a number of cases of tinea tonsurans, etc.," in which permanent alopecia was accidentally caused by radiotherapy, there were no bad results as regards the skin.

To this assertion I find it particularly hard to give credence. Every single case of permanent *x* ray alopecia that has passed through my hands at three general London hospitals has shown coincident or subsequent atrophy, as evidenced by wrinkling and loss of elasticity of the scalp, while not a few developed pigmentation and telangiectases as well.

It has been proved by many histological biopsies in animals that with every epilation dose (or less) to the skin a set of definite vascular and cellular disturbances occur in the epidermis, and that if these irradiations exceed a variable minimum, permanent and irretrievable damage is certain to ensue. Now the germ cell layer of the Malpighian body, and that invaginated portion of it which produces the hair shaft, are anatomically continuous, and pass insensibly the one into the other.

Is it probable that an *x* ray application which causes even a temporary inhibition of hair growth and epilation can under any circumstances leave uninfluenced the equally prolific (and therefore radio-sensitive) germ cell layer of the glabrous skin, which is actually less protected by overlying tissues and nearer the anticathode than the base of a hair follicle? *A priori*, the answer should be no, and in practice the reply is given by the appearance, sooner or later, of the various stigmata already instanced.

There is a small yet important discrepancy in Dr. Mitchell's position to which attention should be called. In the fourth paragraph of his letter he writes: "In each case I warned the patients of the *risks*," and in his concluding sentence are the words: ". . . good and *safe* results may be obtained." Such inconsistency is a bad friend to his own convictions, and scarcely needs further comment from me.—I am, etc.,

London, W., Nov. 12th. Henry C. Semon, M.D.

PERIODICITY OF GNAT BITES.

Sir,—As no one has yet replied to Dr. Beddard's query as to the periodicity of gnat bites (November 11th, p. 951) I venture to offer my suggestion that the recurrent irritation may be due to the acid and alkaline wave which passes over the blood during fasting and digestion. It is well known that in certain skin troubles the irritation increases when the stomach is empty and lessens or altogether ceases after a meal. This relief has been thought to be due to the increased alkalinity or lessened acidity of the blood caused by the withdrawal of acid during gastric secretion. During this last summer I have had several very severe gnat bites, and have always noticed that the irritation was greatest immediately after getting out of bed in the mornings and not ceasing until I had broken my fast. The irritation would return as soon as the stomach was empty, to be relieved by the next meal. I judge that the severer irritation in the mornings was due to the prolonged fast during the night. Hence in my experience the irritant periodicity of gnat bites is much less than twenty-four or forty-eight hours, as stated by Dr. Beddard, and does not differ from irritant periods in other skin troubles.—I am, etc.,

Liverpool, Nov. 19th. William Bramwell.

Obituary.

G. N. BIGGS, M.B., B.S.,

Surgeon to the Ear, Nose and Throat Department, Seamen's Hospital, Greenwich, and to the Hospital for Paralysis and Epilepsy, Maida Vale.

George Nixon Biggs, M.B., B.S., Lieut.-Colonel R.A.M.C.(T.) and R.A.F., died at the age of 41 years on November 10th, 1922, after an illness lasting from August 23rd, and due to appendicitis and its complications. With his premature death the medical world of London loses a man of exceptional ability, of winning personality, and of great kindliness.

The only son of Dr. M. G. Biggs of Northcote Road, S.W., for many years a member of the Council of the British Medical Association and Chairman of the Central Ethical Committee, G. N. Biggs was educated at Westminster School and St. Thomas's Hospital and in the University of Durham. On returning to London he passed through the appointments of house-surgeon to the Royal Ear Hospital and of Registrar to the Metropolitan Ear, Nose and Throat Hospital, to the honorary staffs of several London hospitals; thus he became surgeon to the Ear, Nose, and Throat departments of the Evelina Hospital for Children, the Dreadnought Hospital for Seamen, the Royal Waterloo Hospital for Children and Women, and aural surgeon to the Hospital for Nervous Diseases, Maida Vale. On his retirement from the Evelina Hospital he was honoured with appointment as consulting surgeon, although at the time a young man. As teacher in practical rhinology, laryngology, and otology in the post-graduate school at the Seamen's Hospital, Greenwich, he

carried on one of the most attractive and popular courses there; many old post-graduate students throughout the world will have very pleasant memories of his skill as an operator, his unfailing courtesy and unwearying patience in the demonstration of the work of his department.

Although the activities of his laborious hospital appointments and very busy private practice would have overwhelmed many men, Biggs's power of work was such that he was able to devote enthusiastic attention to many other sides of life. No friend ever called upon him for help without immediately securing ungrudging devotion of time and energy. In his private capacity his unselfishness, kindliness, and gentle courtesy never seemed to fail. He found time to write a valuable book on *Diseases of the Ear, Nose and Throat*, articles in the *Dictionary of Practical Medicine*, and many papers in the *Archives of Otology*, the *British Medical Journal*, and the *Proceedings* of the Royal Society of Medicine.

From an early period of his life he took great interest in the R.A.M.C., and, after a service in the Volunteers that began in his student days, he joined the Territorials at their inauguration and was soon promoted to the rank of major. For some years before the war he was one of the few that regarded Lord Roberts's warnings and, foreseeing war with Germany, worked enthusiastically to improve his Territorial unit and to perfect the details of the scheme for its mobilization; for years his only holiday was taken in camp during the annual training periods. He was called up on August 3rd, 1914, as Major and Registrar for the No. 4 Territorial General Hospital and served in that capacity until Easter, 1917. He was then promoted to the rank of lieutenant-colonel and sent to France in command of the Territorial Hospital No. 54; later he was Consulting Aural Surgeon to the Boulogne district. He was mentioned in dispatches, and by the Portuguese Government was made a Commander of the Order of Luis. He was afterwards given the Territorial Decoration, and on return from France in 1918 was attached to the Medical Staff, Royal Air Force.

A man of keen enthusiasms and of lovable character, George Nixon Biggs will be greatly missed.

ROBERT MILNE, M.D.,

Medical Officer of Dr. Barnardo's Homes and Hospitals.

Dr. Robert Milne, whose death on November 8th we regret to announce, was born on a Deeside farm in Aberdeenshire in 1849. He was educated at the Aberdeen Grammar School, and received his medical education at Marischal College, Aberdeen, where he graduated M.B., C.M. in 1874, and M.D. in 1886. For some months he was assistant to Dr. Burns Thomson of Edinburgh, with the idea of going out as a medical missionary to China, but while in Edinburgh he began to have symptoms which were diagnosed as tuberculosis of the hip-joint. He returned to Midmar, Aberdeenshire, where he was confined to bed for a year, and in 1876, while still walking with crutches, he started practising in Midmar. In February, 1880, he accepted an urgent invitation from the late Dr. T. J. Barnardo to come to London to assist in dealing with an outbreak of scarlet fever at the Girls' Village Home, Barkingside, and in the following May he became medical officer to Dr. Barnardo's Homes. Since that time—for nearly forty years—he remained their chief medical officer; he retired at the end of 1919. During those forty years the Barnardo Homes greatly increased, and now have over 7,000 children under their care. Dr. Milne was beloved by the children and most highly esteemed by every worker with whom he came in contact. His was a many-sided post, especially in the early days, and many a child owes his life and limb to his surgical skill, while to many another death lost its terrors through his Christian and kindly ministry.

Dr. Milne's name will perhaps be best remembered by the medical profession in connexion with his advocacy of the use of inunctions of eucalyptus oil (or carbolic oil 10 per cent.) in the treatment of scarlet fever. He considered that systematic, thorough inunctions, in conjunction with the application of 10 per cent. carbolic oil to the throat during the first few days of the fever, modified the severity of the attack and rendered isolation unnecessary. He published articles on the subject in this Journal (October 31st, 1908, p. 1333) and elsewhere. Much success in the treatment of scarlet fever—and also of measles—is stated to have been achieved both in this country and abroad on the lines laid down by Dr. Milne, and his own results were undoubtedly excellent. The general opinion to-day is, however, that in the present state of our knowledge Dr. Milne's views regarding the absolute efficacy of inunction with antiseptic oils in certain infectious diseases must be received with caution.

Dr. Milne's last illness was mercifully short. A gastric ulcer was found at operation on Monday, November 6th; all went well at first, but haemorrhage from the ulcer commenced, and he sank and died on November 8th. He leaves a widow, five daughters, and three sons; of the latter one is joint medical officer to Dr. Barnardo's Homes, one is surgeon to the London Hospital, and the third is studying medicine.

EDWARD JEPSON, M.D.,

Formerly of Durham.

Dr. Edward Jepson died at Ruislip, Middlesex, after a long illness, on November 13th, aged 73. He was educated at St. Bartholomew's Hospital Medical School, and took the diplomas of M.R.C.S.Eng. and L.S.A. in 1872 and 1874 respectively, and graduated M.D.Durh. in 1839. For forty-two years he practised in Durham and held several appointments. He was honorary surgeon to the County Hospital, medical officer to the Urban District Council, medical officer to the Men and Women's Diocesan Training Colleges. He was Mayor of Durham for two years and a J.P. for the city. He was instrumental in obtaining a higher scale of remuneration for doctors practising in colliery districts. In October, 1905, Dr. Jepson was entertained at dinner by the members of the County of Durham Medical Union and was presented with a roll-top desk and bookcase bearing the following inscription on silver plates: "Presented to Edward Jepson, Esq., M.D., J.P., by the members of the county of Durham in grateful recognition of his arduous and unselfish labour on behalf of the profession in the county and as president of the Union from 1898 to 1905." On the same occasion Mrs. Jepson was presented with a silver tea service. In the amalgamation of the County of Durham Medical Union with the British Medical Association Dr. Jepson took a leading part. He was a member of the Central Ethical Committee of the British Medical Association from 1902 to 1906.

Owing to ill health he left Durham for the south, and after a voyage to India as ship surgeon he was able to take a small practice at Ruislip, which he held until a year before his death. During the war he assisted at Eastcote Red Cross Hospital, and also at Victoria Park Hospital, London. He married Jessie Maria, youngest daughter of George Gilliat of Horncastle, who survives him, and one son and four daughters.

ERIC HASTINGS EASTWOOD, M.B., Ch.B.Liverpool,

Lecturer on Pathology, University of Liverpool.

We regret to record the death on November 13th, at Formby, Lancashire, of Dr. E. H. Eastwood, at the early age of 30. Dr. Eastwood entered Liverpool University from Merchant Taylors' School, Crosby, with a Robert Gee Entrance Scholarship. During his academic career he gained the following distinctions: Senior Lyon Jones Scholarship; University Exhibition in Anatomy and Physiology; Torr Gold Medal for Anatomy; and Holt Medal for Physiology. In March, 1916, he graduated M.B., Ch.B. with honours, and distinction in obstetrics and gynaecology.

During his war service he determined to specialize in pathology, and held in succession the appointment of bacteriologist to the Deccan British War Hospital, Poona; to the North Russian Expeditionary Force (Murmansk), and to the Royal Victoria Hospital, Netley. After demobilization he was appointed Pathologist to the Royal Southern Hospital, Liverpool. He held this post for eighteen months, and was then elected Demonstrator of Pathology in the University of Sheffield. Only three weeks before his death he was appointed Lecturer of Pathology in Professor Ernest Glynn's laboratory at the University of Liverpool.

All those with whom Dr. Eastwood worked unite in paying tribute to his ability, his enthusiasm, and his loyal co-operation. The loss of one whose short life was so full of promise is to be deeply mourned.

THOMAS LYLE, M.D.,

Newcastle-upon-Tyne.

After having recorded his vote on November 15th, at midday, and having called at the office of the Conservative candidate to intimate the fact, Dr. Lyle, who to all appearances seemed to be in his usual health, made his way home

wards. After luncheon he was found by one of his servants lying on the floor dead. It appears that he had not been feeling quite well, for he had consulted at least two of his friends in the profession.

Dr. Lyle was well known and highly esteemed in Newcastle-upon-Tyne, where he had practised for over thirty years. At the time of his death he was 76 years of age. A native of co. Antrim, he studied at Glasgow University, where he graduated M.B., C.M. in 1870 and M.D. in 1872. In the early years of the practice of his profession he held an appointment in Newcastle City Asylum, subsequently in that of the county of Cheshire, and from 1878 to 1900 he was medical superintendent of the Birmingham City Asylum. The experience of lunacy which he thus gained was of great service to him in Newcastle, where his opinion and advice were frequently sought in cases of mental disease. In this department of medicine Dr. Lyle was regarded as a sound and capable adviser. Quiet and unobtrusive in manner, and without malice or jealousy, he made many friends, with whom he remained on intimate terms to the last. Although a keen Conservative he never thrust his political opinions before people. On November 18th his body was laid to rest in Old Jesmond Cemetery. A Presbyterian, the service at the grave was of the simple order of the Church to which he belonged. Many friends, civil and professional, were present at the cemetery.

In the death of Dr. Charles Edwin Solomon, after a brief illness, Liverpool has been deprived of one of its well-known practitioners. Dr. Solomon, a native of Cornwall, studied medicine at the Liverpool Royal Infirmary School of Medicine, took the diplomas of L.R.C.P. and L.R.C.S. and L.M.Edin. in 1884, and graduated M.D.Durh. in 1905. He settled down immediately after qualification, and through his diligence gained a considerable practice. He was a member of the Liverpool Division of the British Medical Association and of the Liverpool Medical Institution, whose meetings latterly he attended with regularity. He acted as honorary physician to the C.E.T.S. Women's Temperance Home, where his medical services were greatly valued. Dr. Solomon was essentially a sound practitioner, deeming nothing too trivial that would ensure the comfort of his patient. He was a kind man, and his cheery disposition attracted and retained the friendship alike of his professional colleagues and patients. The funeral took place on November 18th, and the number of mourners present showed how highly esteemed and affectionately regarded the late doctor was. Canon Irvine, who conducted the service, pronounced a sincere eulogy on the departed doctor, whom he truly described as a Christian gentleman, a beloved physician, and a trusty friend. Dr. Solomon was a widower, having lost his wife comparatively recently. He leaves behind a grown-up family of two sons and two daughters, to whom we tender our sympathy.

Dr. Myer Akiba Dutch died at Brighton on November 10th at the age of 59. He was born in Dublin and educated at the Wesleyan and Erasmus Smith High School. He commenced his medical studies at the Royal College of Surgeons Medical School, where he won several scholarships in medicine and surgery, and qualified in 1882. He practised for several years at Crewe, Cheshire, and, coming to London, established himself in general practice at Walm Lane, Cricklewood, where he made many friends. In 1904 he obtained the M.D. degree of Durham University, and the F.R.C.S.Edin. in 1908; he had taken the D.P.H. of Cambridge in 1891. During the war he was physician to the Bermondsey Military Hospital, and later he took on the duties of officer in command Tudor House and Beech House Military Hospitals, Brondesbury, his services being specially commended. Dr. Dutch was well known in Masonic circles; he was Past-Master of the St. George Lodge, which he founded, and received many Masonic honours. His body was cremated at Golders Green, and his ashes were buried at Willesden Cemetery. He leaves a widow, two sons, and one daughter.

Dr. Henry Pierce Cuthbert died at Pitlochry, Perthshire, on November 6th, aged 59. He was born at Oswestry, the son of the late Rev. George Cuthbert, and on his mother's side was descended from Simon, Lord Lovat, and from Sir Isaac Newton. He was educated at the London Hospital, and, after taking the M.R.C.S. and L.R.C.P.Lond. in 1889, went into practice at Clun, where he was surgeon to St. Catharine's Hospital and to Trinity Hospital. In 1906 he removed to North Queensferry, Fife, where he was surgeon and agent to the Admiralty and to the coastguard and wireless telegraph station. During the war he took a temporary commission in the R.A.M.C., and served in France and Italy and on troopships.

Deputy Inspector-General Francis Yeates Toms, R.N. (ret.), who died at Hove on November 13th, was probably the senior member of the medical profession in Great Britain, for he had attained the great age of 96. He took the diplomas M.R.C.S. and L.S.A. in 1848, and entered the navy in the following year, attained the rank of fleet surgeon on April 28th, 1872, and retired, with an honorary step as D.I.G., on April 1st, 1881. He served as assistant surgeon on H.M.S. *North Star* in 1852–53 in the Arctic Expedition in search of Sir John Franklin, and received the Arctic medal; and in H.M.S. *Sparrow Hawk* in the China war of 1859–60, taking part in the attack on the Chinese forts and gaining the medal. He was awarded a Greenwich Hospital pension on February 6th, 1890.

Universities and Colleges.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Annual Meeting of Fellows and Members.

The annual meeting of Fellows and Members of the Royal College of Surgeons of England took place on November 16th. Sir Anthony Bowlby (President) took the chair, and placed before the meeting the report of the Council. He indicated the different sections of the report without any particular comment, and called upon Sir John Bland-Sutton to speak of the considerable section dealing with the museum. Sir John Bland-Sutton said that the museum still maintained its pre-eminence. The Council was proud to think that it had been entrusted with what was now known as the Medical War Collection. This numbered altogether some 2,500 specimens, illustrating every phase of injury and disease incidental to the great war. The housing of these specimens had entailed a good deal of structural alteration, but the collection was well worthy of it, not only on account of its size, but because of the interest of the specimens and their careful preservation. Accommodation had also been provided for the Onodi Collection of oto-rhinological specimens, which was now under investigation for the purpose of description and cataloguing. The work would be completed by this time next year.

Dr. Redmond Roche asked the President certain questions with regard to the annual meeting which was summoned last year, and was not held owing to the absence of a quorum. The action of some of the members on that occasion in holding an irregular meeting was the subject of some admonitory remarks in the report. Dr. Roche asked whether it was a fact that members of the Council were in the precincts of the College at the time, but did not make their appearance, as if they had done so a quorum would have been secured; also, whether there was a by-law depriving lady Fellows or Members of the right of voting at the annual meeting. On the last occasion one lady was present, and had it been possible to count her the number would have been the thirty necessary for the quorum.

The President said that the annual meeting was an occasion when Fellows and Members were invited to meet the Council, and as the Council consisted of twenty-four Fellows it was obvious that an attendance of six, apart from the Council, might be sufficient for an annual meeting. This was not desirable, and therefore it was thought well to require the attendance of the thirty apart from members of the Council. Members of the Council were in the precincts of the building on the last occasion. With regard to ladies, the Council was bound by the Act of Parliament under which women were admitted to the College to preclude them from taking part in the management of College affairs.

Dr. Roche then moved a resolution affirming the desirability of admitting Members to direct representation on the Council, and asking for the nomination of at least two Members in general practice. He said that this resolution had been brought forward for twenty years, and had been carried almost invariably by overwhelming majorities, only to be strangled by the Council and buried in the waste-paper basket. No reasons had ever been given for refusing the request of the Members. The government of the College was a mediaeval anachronism, and the constitution of the electorate an unblushing usurpation. The result was a Council consisting exclusively of surgical specialists who had no right to speak for general practitioners, who formed the bulk of the members.

The resolution was supported by Dr. F. G. Lloyd, Dr. Arthur Haydon, Dr. Ware, and others, and on being put to the vote was carried by 26 in favour, and two or three against; the members of the Council did not vote.

Dr. M. I. Finucane moved a further resolution requesting the President to make a detailed statement of the reasons, legal and

STIES.

IN reply to the inquiry about sties (p. 953), Dr. Temple Grey (London) writes: Let "M. P." cut down the carbohydrates and give a liberal dose of sodium bicarbonate before the evening meal, avoiding all local interference (such as pulling out an eyelash), bathing, fomentations, patient's fingers, etc.), and the condition will resolve.

LOSS OF HAIR IN SEBORRHOEA.

"M.B., B.S." writes: Having read the recent discussion on seborrhoea, I should like to inquire whether loss and degeneration of hair can be counteracted by (1) "high frequency" treatment, (2) endocrine administration. In a patient under my care—a woman aged 31 years—local treatment and dieting have been carried out over a considerable period. The somewhat greasy seborrhoea, which seems to date from puberty, is mild in degree, but thinning of the hair is marked and progressive.

INCOME TAX.

"W. B. H." inquires whether the cost of medical books and subscriptions can be deducted in assessing a public salary.

*** Our opinion has been frequently expressed; it is that expenditure incurred in keeping professional knowledge up to standard—not in improving it or in building up a medical library—is analogous to that of maintaining professional instruments in proper condition. The words used in the Act are, however, stringent—incurred wholly, exclusively, and necessarily in the performance of the duties of the office—and where the Commissioners take a different view an appeal would be troublesome and expensive.

"HARD HIT" is in general practice, and has been assessed on the three years' average. Owing to a serious illness he has had to hand over his practice to a neighbouring practitioner, who receives half the fees.

*** Our correspondent is liable to pay tax on the average of the three previous years, and has, we regret to say, no right of relief, in spite of the fact that his professional profits are so drastically reduced.

"H. J. C." bought a Saxon two-seater for £82 10s., and sold it in 1920 for £160, buying a Dodge four-seater for £560. In February, 1921, he bought a Hillman two-seater for £560, but sold it a few months later for £350.

*** If "H. J. C." can show that the car for which he paid £82 10s. would have cost more than £160 when he sold it for that amount, the excess can be charged as an expense of the year 1920 The Hillman car transaction is of course unusual: as the Dodge car was not sold, what really happened was that a further outlay of capital was made, and, in fact, lost. Unfortunately, the Income Tax Acts make no allowance for capital losses, but only for the expense of maintaining the capital sunk in equipment, etc. If "H. J. C." should again buy a second car he could claim to deduct so much of that cost as represented the net cost of replacement of the Hillman car, but the purchase and sale of that car have not, *per se*, given rise to any valid legal claim. On equitable grounds there is a fair claim, but that applies in a somewhat different form to every practitioner who sells a car at a loss when he retires, or for any other reason does not replace it.

"A. R." inquires as to the allowance for various car transactions.

*** (*a*) Cost of replacement as effected—that is, £225 less £70 = £155. (*b*) Similar cost—that is, £60 less £20 = £40. (*c*) Cost of replacement of equipment viewed as a whole would be £225 less £90 = £135. It has to be remembered that the actual out of pocket cost is the maximum amount allowable.

LETTERS, NOTES, ETC

INTRAUTERINE DECAPITATION?

DR. J. D. POLE (Mexborough, Yorks) writes: On the afternoon of November 6th I was urgently called to attend Mrs. J., aged 22, who had been married two and a half years. She said that she gave birth to a child a year ago, which died at 8 months from "consumptive bowels." Since last July menstruation had been irregular, and she had had menorrhagia for several months (periods three-weekly), but latterly practically amenorrhoea. She said she had been assured by a doctor a month ago that she was not pregnant. Pain in right lower abdomen had occasionally troubled her. On November 5th she had a fall, her lower abdomen striking a piece of furniture. About midday on November 6th she felt a desire to defaecate, and a foetus *minus* the head was ejected, accompanied by a fair amount of haemorrhage. Downbearing pains followed and continued. I estimated the decapitated foetus shown me as four to five months, and there was 8 to 10 inches of cord attached; the neck and end of cord gave appearance of being wrenched or twisted off; the right leg was bruised. A rounded firm mass could be felt through the os and in the anterior fornix fairly high up. No laceration of vaginal walls was obvious. The uterus was palpable two finger-breadths above the symphysis and firm. Ergot was given, and shortly afterwards the head and membranes were passed with fairly profuse haemorrhage. When seen next day the uterus was no longer palpable; the patient has since felt comfortable, and discharge is slight. I have been puzzled to account for the injury to the foetus. If from the fall, there would surely have been much more evidence of abdominal injury and general shock. If from natural expulsive power, the strength to break through the attachments of foetal head to trunk is greater than what I have hitherto known the uterus to be credited with. The possibility of interference occurred to me, but this was negatived.

*** It seems rather unlikely that the abdominal traumatism on the preceding day was the cause of the decapitation of the foetus expelled by Dr. Pole's patient. Since Dr. Pole was not present when the body of the foetus was born it is conceivable that the woman, consciously or unconsciously, may have pulled upon the foetal trunk and so separated it from the head. Such a separation does not require a large amount of force in the case of a four months' foetus; but this possibility could have been judged better if the weight and length had been given. It is, of course, undoubted that injuries of a marked sort when applied to the mother's abdomen in pregnancy, and more especially in the absence of the usual amount of liquor amnii, may cause fractures and dislocations in the foetus—Ballantyne in his *Antenatal Pathology*, vol. i, The Foetus, pp. 48, 393; and vol. ii, The Embryo, p. 139, records cases—but commonly there is abnormal fragility of the skeleton in such cases, and these injuries are very different in degree from separation of the head from the body. The "spontaneous amputations in the foetus" described so fully by Sir James Y. Simpson are probably due either to amniotic bands or to some skin lesion; but in one or two of the instances which he reported an abdominal injury to the mother was the alleged cause. The limbs were the amputated parts in Sir James Simpson's cases, not the neck.

APPARENT ABSENCE OF TUMOUR IN CASE OF INTUSSUSCEPTION.

DR. B. S. HOLLICK (Sturminster Newton) writes: In the case of intussusception reported by Drs. Herbert and Norbury (November 11th, p. 922) it is interesting to note the observation that no tumour could be felt through the abdominal wall under the anaesthetic, in the light of a similar case which I saw recently with my partner—Dr. Watts-Silvester—who suspected an intussusception in a baby in whom the symptoms were by no means definite. No tumour could be felt, but as it was difficult to form an accurate diagnosis and the baby very difficult to examine, a little chloroform was administered, after which a distinct tumour could be felt in the right hypochondrium. The child was admitted to a nursing home for laparotomy about two hours afterwards, and on examining the abdomen under complete anaesthesia no tumour could be felt by ordinary palpation, but one became manifest only when examining bimanually (that is, with one hand behind the right lumbar region). The abdomen was then opened and an intussusception found, involving the ileo-caecum and extending to the transverse colon, and it was reduced. Complete recovery followed. There are two points about this case which induced me to record it: (1) The importance of giving chloroform in a doubtful case of acute abdomen in a small child to facilitate examination; (2) the importance of bimanual examination in addition to the ordinary palpation of the abdominal viscera.

"BAD ARMS" AFTER VACCINATION.

"R. N. M." writes to point out the value of the treatment of bad arms from vaccination by painting the marks and surrounding skin once daily with an application containing equal parts of glycerin and liquor ferri perchloridi (not the tincture). Means should be taken to prevent staining of the underclothes, otherwise a permanent rusty mark will be left on them.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 31, 33, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 199.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING

OF THE

British Medical Association.

Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICINE.

Professor T. K. MONRO, M.D., F.R.F.P.S., President.

DISCUSSION ON DEGENERATIVE DISEASES OF THE LIVER.

OPENING PAPER

BY

SIR HUMPHRY ROLLESTON, K.C.B., M.D., D.C.L.,
President of the Royal College of Physicians of London; Emeritus Physician, St. George's Hospital.

Introduction.

THE change that has taken place in the outlook of clinical medicine, from the era of physical signs to that of functional disorder, is reflected by the subject chosen for this discussion—namely, the degenerative diseases of the liver—for the detection of degeneration of the liver in its early stage largely depends on tests for functional efficiency which are not too elaborate to be carried out in hospital practice. It has thus been shown that functional disturbance, such as may be due to degeneration, may occur in the absence of obvious symptoms, at any rate at the time, and thus information is obtained of diminished resistance in, and damage to, the liver, which may be of value as regards the future treatment of the patient. The experiences of the war in the toxic jaundice of munition workers and the increased attention directed to the jaundice following the treatment of syphilis by salvarsan were discussed in the Pathological Section at the 1920 meeting of the British Medical Association (Miller and Rutherford[39]), and the subject of the degenerative diseases of the liver is therefore now ripe for clinical consideration.

The Forms of Hepatic Degeneration.

In discussing the somewhat extensive subject of the degenerations of the liver it is obviously desirable first to determine what are the diseases that may fairly be considered as coming under that heading, and later to refer to their clinical aspects and diagnosis. On clinical grounds it may be well to divide the cases of degeneration of the liver cells into: (1) those that are primary or at least simultaneous with changes in the supporting and vascular tissues of the organ, including Kupffer's cells; and (2) those secondary to (*a*) gross disturbances of the vascular supply of the organ—for example, in portal thrombosis or cardiac failure; (*b*) inflammation or suppuration, as in abscess, pylephlebitis, or cholangitis; and (*c*) biliary obstruction. There is not any distinction to be drawn between the pathological changes in these two groups, but it is to the first group that attention will be almost exclusively directed in the introduction to this discussion. They may be classified as (1) acute and subacute, and (2) chronic.

The primary acute degenerations of the liver cells may be clinically divided into the slight and the grave; the slight often transitory and without any obvious symptoms, though the recent tests for hepatic function may reveal insufficiency of the liver cells. That recovery may occur was proved experimentally by Whipple and Sperry,[7] who produced hyaline necrosis of the central two-thirds of the hepatic lobule by repeated chloroform anaesthesia for one to three hours on successive days. Acute degenerative changes may supervene in a previously damaged liver, as in cirrhosis or in the liver of chronic venous engorgement, and in this latter instance the change has been described as aseptic (Bolton[4]), as due to cytolytic ferments derived from the liver cells (Oertel[26]), or as bacterial (Mallory,[42] Frothingham[11]).

The chronic degenerations of the liver include senile atrophy, fatty change, amyloidosis, cirrhosis, and the cirrhosis of haemochromatosis; the relation of primary carcinoma to degeneration of the liver will also be discussed.

Acute Degenerations of the Liver.

Acute infections and intoxications may produce partial or total degeneration of the lobules of the liver. Zonal necrosis of the hepatic lobule was studied by Opie[52] in 1904; the peripheral zone is seldom affected as it is supplied by the portal vein and the hepatic artery, and poisons are prone to be swept on by the arterial blood into the intermediate zone, causing mid-zonal necrosis; out of 500 cases examined there were 4 only of peripheral necrosis, 3 being associated with puerperal eclampsia. Mallory,[42] who previously described two forms of necrosis—focal and diffuse or central—found the latter to be specially connected with streptococcic infection; and more recently the central zone, which from its poor blood supply is the most vulnerable, has been found to be earliest and most affected in tetrachlorethane, trinitrotoluene, and arsenobenzol poisoning (Turnbull[75]). Combined necrosis of the middle and central zones is, as Opie pointed out, an early stage of the process that terminates as acute yellow atrophy.

Acute parenchymatous degeneration or cloudy swelling of the liver cells, such as occurs in various fevers, infections, and intoxications, is the effect of a process either less virulent generally or with less selective power to act on the liver. It may be the first sign of degeneration which subsequently shows fatty or necrotic change, or it may not proceed further and be followed by recovery of the liver cells. There are thus these three grades, or perhaps it would be safer to say three forms, of degenerative change. How far cloudy swelling is concerned in the production of symptoms in fevers and intoxications is an interesting question on which information is required and may be provided by functional tests, and it is possible that its importance has been overlooked in the past, even as regards the production of acidosis.

Acute and subacute hepatitis show in a varying degree, which may be regarded as depending on the nature of the causal agent, the attempts to repair the accompanying cellular degeneration—namely, cellular regeneration and proliferation of the interstitial connective tissue. It may be suggested that those forms of hepatitis that from the start are characterized by well-marked regeneration are less prone than the forms showing mainly degeneration to be followed by cirrhosis. Thus it is remarkable how very rarely cirrhosis can be ascribed to malarial hepatitis in which regeneration of the liver cells is a prominent feature. It is true that Jonesco and Popper[29] have recently described a malarial hepato-splenic cirrhosis, but they adopt Chauffard's[57] explanation that it is due to poisons derived from the spleen, a process analogous to Banti's disease and Egyptian splenomegaly (Richards and Day[58]), in which hepatic cirrhosis eventually supervenes. It will be interesting to hear if cirrhosis is a sequel of spirochaetosis icterohaemorrhagica, in which well-marked regeneration of the liver cells may be present microscopically; at present there does not appear to be any evidence of this. On the other hand, Leonard Rogers[60] has shown that cirrhosis follows kala-azar and amoebic dysentery, in both of which degenerative rather than regenerative changes are seen in the liver cells. Possibly the connective tissue proliferation, which Nathan[48] argues serves a useful purpose as a nutrient medium for the liver cells, is only called into being when the liver cells fail to regenerate and proliferate without this help.

The grave acute degenerations of the liver provide the cases of the rather ill-defined clinical condition of icterus gravis, forms of which may be roughly catalogued as: (1) Acute yellow atrophy of inconstant or unknown etiology, usually sporadic, and characterized by naked-eye atrophy of the organ, extensive necrosis, and subsequent autolysis of the liver cells. If not immediately fatal, it is succeeded by the process variously described as subacute atrophy, multiple nodular hyperplasia, acute cirrhosis, nodular hepatitis. (2) Due to known infections, such as streptococci, *Treponema pallidum*, *Leptospira* (*Spirochaeta*) *icterohaemorrhagiae*, *Leptospira icteroides* of yellow fever, in which gross atrophy and autolysis are not in evidence. (3) Due to known poisons, which either produce severe degeneration with necrosis—such as tetrachlorethane, trinitrotoluene, and arsenobenzol (salvarsan) preparations—or well-marked fatty degeneration, as in phosphorus, chloroform and iodoform poisoning. Some of these will be briefly passed in review.

Syphilis.

Syphilis in its early stage may produce a benign jaundice which is probably due to disordered action of the liver cells and not to intrahepatic and intralobular obstruction. But that this is the sole explanation may from the rarity of this

complication (0.3 per cent.) be questioned; possibly some other factor, such as an infection of so low a virulence that it would not damage a healthy liver, is able to exert this effect in an organ with its resistance already impaired. In exceptional instances, of which Parkes Weber[77] collected 53 cases before the era of arsenobenzol compounds, the lesions of acute yellow atrophy are induced, and here again the question of the sole responsibility of syphilitic infection may be raised. Whether or not the *Treponema pallidum* is present in the liver still requires an answer.

Since the treatment of syphilis by arsenobenzol compounds has become general, the incidence of benign jaundice (0.56 per cent. among 39,377 military cases[67]) and of acute yellow atrophy has increased. The occurrence of such cases in groups and sometimes in association with epidemic jaundice or other infection (Stokes, Ruedemann, and Lemon[71]) in the neighbourhood has lent support to the natural suggestion that infection is the additional factor responsible for jaundice in syphilitic patients undergoing arsenobenzol treatment—an attractive but so far unproved explanation. The whole subject has been much discussed, and the Salvarsan Committee of the Medical Research Council has issued one report and has in the press another (Special Report Series, No. 66), which contains information on as yet unpublished work done by Mackenzie Wallis on functional tests—the laevulose tolerance and the blood lipase—showing that temporary hepatic insufficiency almost always follows a course of arsenobenzol injections. Spence and Brett[68] by the blood laevulose test found evidence of hepatic insufficiency in cases of benign jaundice following arsenobenzol treatment, and Widal, Abrami, and Iancovesco[80] obtained positive results in the cases following salvarsan treatment, both without jaundice, and more markedly in cases with jaundice, by their haemoclasic reaction, which, however, awaits further confirmation.

Spirochaetosis Icterohaemorrhagica.

In spirochaetosis icterohaemorrhagica the microscopical appearances show much variation, and jaundice, which is not an essential feature, does not correspond with the degree of structural change; it may indeed be extremely prominent in association with but slight microscopic change, and vice versa (Garnier and Reilly[17]). McNee[40] describes three groups of cases: (1) those with necrosis in the central zone of the liver; (2) those showing regenerative changes in the liver cells which are separated from each other and contain bile pigment, but have not undergone necrosis; (3) those with little change. The jaundice has been regarded as obstructive or as haemolytic (Basile[5]), but Brulé[6] and McNee consider it to be due to disordered function of the liver cells. Spirochaetosis icterohaemorrhagica is an example of the syndrome of hepato-renal insufficiency or of the cases otherwise described as acute nephritis with jaundice or hepato-nephritis, in which both organs are affected by the causal agent, and thus differs from cases in which the kidneys undergo degenerative changes from the intoxication due to grave hepatic lesions. The prognosis of cases of icterus gravis is in great measure determined by the functional activity of the kidneys, and this is particularly so in spirochaetosis icterohaemorrhagica, in which grave symptoms may be due to uraemia. Garnier and Reilly[16] indeed contrast the gravity of spirochaetosis icterohaemorrhagica, which they regard as depending on renal insufficiency, with that of acute yellow atrophy, which is due to hepatic insufficiency.

Toxic Jaundice.

During the war 100,000 persons in this country worked in *trinitrotoluene*, and among them 404 cases of toxic jaundice were reported to the Home Office (O'Donovan[13]); but after preventive measures were introduced, as the result of the late Benjamin Moore's[15] demonstration that the absorption of trinitrotoluene took place through the skin, the incidence of jaundice fell in a remarkable manner. The outbreak was fully investigated under the auspices of the Medical Research Committee, and two valuable reports ([45] [49]) were issued. A noteworthy point was the latency shown in the onset of jaundice—namely, the long interval that might elapse between the last exposure to the poison and the onset of jaundice, even up to nine months (E. E. Glynn); there was evidence to show that serious damage to the liver might occur without any symptoms (Panton[49]). The causation of the hepatic changes—which, like those of tetrachlorethane and salvarsan poisoning, are much the same as those of acute yellow atrophy—has given rise to some discussion. Benjamin Moore argued that trinitrotoluene first attacked the blood, and that from the resulting excessive metabolism of haemoglobin the liver became exhausted and underwent the grave degenerative lesions. Panton[49] disputed Moore's statement of constant blood destruction, and it may be added that if excessive haemolysis so exhausted the liver as to lead to grave lesions this should occur in pernicious and other forms of severe haemolytic anaemia. Though it was very difficult to induce the hepatic lesions in experimental animals by trinitrotoluene, the changes in the liver were regarded as due to the direct action of the poison on the hepatic cells. But from the comparative infrequency of toxic jaundice and from its tendency to occur in outbreaks the existence of some additional factor, such as a coliform infection, harmless or trivial in its effects on the healthy liver, but capable of producing grave changes in a liver with its resistance lowered by prolonged exposure to trinitrotoluene, has naturally been suggested. But no definite proof of this could be obtained. The position is exactly the same as regards the hepatic lesions seen after the administration of arsenobenzol compounds, and in both the factor of individual want of resistance on the part of the liver is a possible explanation.

On the histological evidence H. M. Turnbull[79] regarded the jaundice as obstructive and not haemolytic in nature, but he admitted that the escape of bile into the blood as the result of parenchymatous disintegration could not be excluded. Workers absorbing trinitrotoluene pass a chromogen, derived from trinitrotoluene in the urine, which is detected by Webster's test; but with the onset of toxic jaundice the chromogen disappears, and Dale[49] shows that this azoxy compound is the most satisfactory method of eliminating trinitrotoluene from the body. So although a positive Webster test shows that the individual is absorbing trinitrotoluene its disappearance should be regarded as a danger signal of toxic effects.

Tetrachlorethane was employed early in the war as "dope" for rendering the wings of aeroplanes impervious to air and moisture, and in November, 1914, cases of toxic jaundice appeared. Up till July, 1916, when its use was given up, there were in all 70 cases of jaundice with 12 deaths (T. M. Legge[33]). In 1913 a few cases had occurred in this country and in Germany. This form of toxic jaundice, specially investigated by Willcox, Spilsbury, and Legge,[83] was due to the inhalation of the vapour of tetrachlorethane, and both experimentally and in man caused first fatty change in the liver, kidneys, and heart, and then extensive degeneration of the liver cells with diminution in the fat content, so that the lesions resemble those in trinitrotoluene poisoning. Willcox[82] draws attention to the insidious onset of symptoms, the comparatively long duration of the acute stage with deep jaundice (thus differing from acute yellow atrophy), the freedom from much fever (a distinction from infective jaundice), the absence of anaemia, and the well-marked jaundice.

Opie's[53] observation that whereas neither *Bacillus coli* nor chloroform alone produces acute degeneration and atrophy, this lesion may result from their combined action, has an important bearing both on the etiology and clinical aspects of icterus gravis and acute yellow atrophy. Thus it helps to explain the incidence of these manifestations when an anaesthetic is administered during the course of an acute intestinal or other infection. In this connexion the observations of E. A. Graham[19] that the resistance of the liver cells runs *pari passu* with their glycogen content has obviously a practical application: it has been shown experimentally by Davis and Whipple[10] that sugar given before anaesthesia protects the hepatic cells against damage by chloroform, and when given after anaesthesia enables the cells to recover rapidly, that proteins are much less effective in this respect, and that the administration of fats facilitates the changes in the liver cells. On these grounds sugars and carbohydrates should obviously be given before and after operations, proteins sparingly, and fats avoided.

Widespread, if not total, degeneration of the zones of the hepatic lobules without necrosis may be due to poisons such as alcohol, phosphorus, chloroform, and iodoform, and be followed by excessive fatty change. I have seen an intensely fatty liver weighing 10 lb. in an alcoholic woman. Leathes[32] has shown that this extensive accumulation of fat may occur rapidly; and it appears reasonable to regard degeneration of the cells as the cause of the failure of the normal desaturation of fat by the liver, and so of accumulation of fat in the liver. It must, however, be admitted that such pathological fatty accumulation may also be a chronic

condition—for example, in alcoholic and tuberculous patients—and so come in the later category; in determining this point the tests for hepatic efficiency should lead to certain knowledge. The detection by functional tests of the presence of degeneration and fatty changes in the liver before operation would obviously be of value in the prevention of further hepatic degeneration by forbidding chloroform anaesthesia and by emphasizing the need for the administration of sugar.

Clinical Manifestations.

The clinical manifestations of acute degenerations of the hepatic cells vary greatly; in the severe forms there may be jaundice, cholaemia, and other obvious signs of hepatic insufficiency—as in acute yellow atrophy and icterus gravis; on the other hand, in the slight cases jaundice may be absent, and it is only by means of tests for hepatic insufficiency that the existence of impaired function of the liver can be established. The clinical latency of acute degeneration of the liver cells is suggested by two events: (*a*) the occurrence of acute symptoms a considerable time after exposure to the responsible poisons, such as trinitrotoluene and arsenobenzol preparations; and (*b*) the evidence of hepatic insufficiency revealed by efficiency tests—the blood laevulose and the lipase tests—after courses of salvarsan. To explain why symptoms do not appear at once when acute degenerative changes have presumably occurred, it may reasonably be suggested that the initial degeneration is not sufficiently widespread to exhaust the compensatory power of the liver, and in support of this the well-known cases of subacute atrophy may be instanced.

The delayed occurrence of acute atrophy in persons removed from exposure to trinitrotoluene, or in patients weeks or months after the termination of a course of salvarsan, is a difficult problem; three explanations may be tentatively mentioned: (*a*) A bacterial or other poison derived from the intestine or elsewhere may attack the liver cells, which, being already damaged, are not able to offer effective resistance to a poison against which they have no acquired immunity. It appears probable that the influence of two poisons acting successively on the cells and tissues of the body has hardly received due attention, though Opie's work has thrown light on this subject. Stuart McDonald[30] suggested infection with organisms of the coli typhoid group, acting on a liver damaged by syphilis and by salvarsan, as the additional factor responsible for the occurrence of the grave hepatic lesions following treatment by arsenobenzol compounds, but Turnbull's[75] histological examination of the livers in 8 cases did not lend any support to the view of bacterial infection. (*b*) Foulerton[13] pointed out that chloroform, ether, and tetrachlorethane are fat solvents, and that three other substances which produce degenerative changes in the liver—phosphorus, dinitrobenzol, and trinitrotoluene—are readily soluble in fats. He suggests that these poisons become linked with the reserve fats in the subcutaneous and visceral adipose tissue, and when on an emergency these fats are mobilized in considerable quantities and carried to the liver to be desaturated and converted into available organic fat, these poisons pass to the liver in such quantities as to set up grave lesions in an already damaged organ. In conjunction with Hewitson he found that arsenic is present in the largest quantity in those parts of the body that are richest in fat. (*c*) The action of the poison may be progressive, and finally the lesions may become so extensive that complete hepatic insufficiency results; Turnbull[75] considered that in the livers of arsenobenzol and trinitrotoluene poisoning there was strong evidence of the progressive action of the poison.

In degeneration of the liver the multiple functions of its cells are, at any rate from a clinical point of view, less impaired than might have been anticipated: indeed on this point our knowledge is probably more deficient than is generally recognized, and should be greatly extended by the wide employment of the recent tests for functional efficiency. But in connexion with these functional tests the share taken by other parts of the body, such as the pancreas and muscles, must be borne in mind. The most obvious defect is jaundice due to retention of bile pigment in the circulation as the result of disordered function of the liver cells, the bilirubin being shunted into the blood or lymph capillaries instead of into the bile capillaries. But even here we are not on sure ground, for it is no longer certain that the liver cells manufacture the bile pigment; Brulé[6] argues that the liver cells merely pick out bile pigment and salts from the blood and excrete them; and it has been thought that bilirubin is manufactured by the vascular endothelium generally and by Kupffer's cells in the liver (Lepehne[34]; Hatiégannu[24]; C. M. and B. B. Jones[28]) and then passed on to the liver cells, which, possibly after altering the bilirubin in some way, excrete it into the bile capillaries. It is thus possible that the liver cells modify the bilirubin in a manner analogous to their action on fats as described by Leathes[32] Dr. J. W. McNee has suggested to me that this hypothetical action of the liver cells may account for the form of bilirubin which gives the direct or immediate reaction with van den Bergh's diazo-test of the blood serum[41 76] (in mechanical or obstructive jaundice), and that the delayed or indirect reaction with van den Bergh's test is given by the form of bilirubin (in haemolytic and non-obstructive jaundice or Lepehne's functional jaundice) which has not undergone this modification by the liver cells.

Dissociated jaundice in which either bile pigment or bile salts, but not both, are retained in the blood stream as the result of disordered function of the liver illustrates the diverse, almost capricious, manner in which the degeneration of the liver cells may show itself. Here again we are reminded of the imperfect state of our knowledge, for although Grigaut[21] believes that the cholesterol yields cholalic acid, and that functional disorder of the liver cells interferes with this transformation and so leads to an increased cholesterol content in the blood, the mode of formation of bile acids is far from established. Discussion may perhaps be directed to the view recently put forward by C. M. Jones[27] that the lowered haemoglobin content in the course of acute infections such as pneumonia, enteric, scarlet fever, and septicaemias, and also in chronic degenerative conditions such as cirrhosis, Banti's disease, and hepatitis, is not due to haemolysis but to failure of the liver to resynthesize the derivatives of bilirubin—namely, urobilinogen and urobilin—with the iron into haemoglobin, and that as a result there is an excess of bile pigments obtained by aspiration from the duodenum.

The manifold proteolytic functions of the liver cells depend upon a number of ferments, and, although little is known of those concerned with the metabolism of cystin, alkapton, and the porphyrins, it would seem that these ferments, whether they be confined to the liver or not, must be highly resistant, because the manifestations of cystinuria, alkaptonuria, and porphyrinuria, which Sir Archibald Garrod has happily called inborn errors of metabolism, are so rarely seen even in very grave and extensive degenerations of the liver cells. As a rare example, Simpson's[67] description of haematoporphyrin in the faeces of a case of malaria may be quoted. Non-diabetic acido-is is often associated with fatty liver—for example, in cyclical vomiting, pregnancy, appendicitis, cholecystitis, and delayed chloroform poisoning—because the ketone acids liberated in the de aminization of the amino acids are not oxidized. A question for discussion arises as to the causation of the general haemorrhages seen in grave degenerations of the liver; they may be due to diminution in the fibrinogen in the blood from damage to the liver cells, and in support of this there are observations showing that chloroform and phosphorus poisoning and cirrhosis are accompanied by a fall in the fibrinogen content and the coagulation power of the blood (Whipple, Gram[29]). But the poisons or infections responsible for the hepatic degeneration, such as arsenobenzol preparations, may act as acute endotheliolytic agents, and so directly cause haemorrhages; or toxins absorbed from the intestines may, from failure of the liver to stop them, pass into the general circulation.

Prognosis.

The prognosis of cases in which recovery from clinically severe acute degeneration of the liver has occurred and in which the liver has presumably undergone permanent damage, such as subacute atrophy with cirrhosis and compensatory hyperplasia, is a subject on which more information is desirable; for trinitrotoluene poisoning must have left a legacy of many cases of this kind, and others will arise from time to time from non-fatal sporadic acute yellow atrophy and from the ill effects of salvarsan treatment. Rous and McMaster's[58] experimental work showing the great reserve power of the liver both in structural reparation and in function, and the knowledge that ordinary multilobular cirrhosis may become compensated and remain latent, make it probable that in favourable circumstances—namely, freedom from renewed intoxication and secondary infections—the outlook should be fairly good. M. Stewart[70] followed up 17 patients two to three years after recovery from toxic jaundice due to trinitrotoluene, and found that they all were in reasonably good health and had been free from any relapse of

jaundice, but that practically all of them suffered from a certain amount of epigastric pain.

The *treatment* of acute degenerations of the liver, especially from the point of view of prophylaxis, by increasing the resistance of the liver cells by dietetic measures—namely, the administration of carbohydrates—as shown experimentally by Davis and Whipple,[10] has been briefly mentioned above.

Chronic Degenerations.

The *senile atrophy* of the liver with diminution in the size of the lobules and of the cells which contain granules of a so-called lipochrome pigment is not accompanied, as are most chronic degenerations of the liver cells, by hyperplasia of the interstitial tissues, possibly on account of the general loss of vitality of the whole organ.

Pathological fatty accumulation of the liver cells results from degeneration due to infective and toxic processes, and is accompanied by other evidence of impaired functional activity; thus Auld[2] found that blood pigment liberated in the spleen in haemolytic experiments was not stopped by liver cells showing fatty change, though Kupffer's cells were loaded with blood pigment. In normal conditions the blood contains a fat-splitting ferment—lipase—the amount being remarkably constant; in hepatic disease the blood lipase is increased and it has therefore been thought that normally the liver inhibits the formation of lipase. Whipple found the amount of blood lipase increased in experimental chloroform poisoning; he employs a test consisting in the addition of ethyl butyrate to the blood serum as a means of estimating the functional efficiency of the liver. The frequent absence of jaundice in fatty livers shows that the function of biliary secretion is not necessarily affected in a severe manner to correspond with failure in its activity in fat metabolism.

Amyloid liver, which is an infiltration of the vascular framework of the liver, is by definition not a degeneration, but it has as much claim to be mentioned here as the fatty liver, except that the pathological fatty infiltration is secondary to degeneration of the hepatic cells. In the amyloid liver the hepatic cells often show a secondary degenerative change, as evidenced by fat or atrophy, and it is therefore noteworthy that cirrhosis does not occur; possibly, as Kanthack[70] suggested, this depends on impaired vitality of the connective tissues.

Cirrhosis.

Portal or multilobular cirrhosis is the result of attempts to repair the damage done by multiple focal degenerations of the cells in the peripheral and intermediate zones of the lobules. Though this process is usually spread over a long period of time, it is not always chronic, for in subacute atrophy and in poisoning by tetrachlorethane and trinitrotoluene the cirrhosis merits the description acute or subacute. Indeed, acute yellow atrophy and portal cirrhosis are the poles of a process similar in nature, though differing markedly in their rate of progress, with transitional stages such as the subacute diffuse hepatitis described by Symmers.[72] The fibrosis in portal cirrhosis has usually been regarded in the light of cicatricial tissue and as devoid of any useful purpose; but the recent experimental work of Nathan,[18] in implanting the omentum into the kidney and liver, suggests that young connective tissue, by providing the liver cells with a nutrient medium which is effective in proportion as it approaches the structure of the embryonic mesenchyma, favours their multiplication and compensatory hyperplasia. In this connexion it may be remembered that the newly formed connective tissue in hepatic cirrhosis is very freely supplied with vessels from the hepatic artery which is normally responsible for the nourishment of the hepatic parenchyma; in fact, there is in cirrhosis a much freer communication between the hepatic artery and the portal vein than normally (F. C. Herrick[24]). The formation of connective tissue in hepatic cirrhosis, therefore, initiates a means of furthering compensatory hyperplasia, but after stimulating the growth of hepatic cells, even to the formation of adenomas, the fibrous tissue, having accomplished its end, becomes old and no longer of any use; indeed, by cicatricial contraction it does harm, and thus is an example of a compensatory process that fails. The secondary changes succeeding the original degeneration in the hepatic cells in cirrhosis that have been mentioned so far are those of a compensatory nature, but their degeneration leads to the production of de-differentiated cells in which the property of active growth is developed at the expense of the higher functional powers. The bearing of such cells on the problem of tumour formation will be referred to later.

The factor of alcoholism in the production of multilobular cirrhosis, though it must still be regarded as important from its frequency and chronicity, is now recognized as one only of the conditions that may, directly or indirectly, produce focal degenerations followed by repair of the liver. Attention has recently been directed to the part played by syphilis in the etiology of cirrhosis, mainly because the Wassermann reaction is so frequently positive in the subjects of that disease (Symmers,[73] Letulle,[35] Owen[54]). It should be mentioned that as long ago as 1900 J. F. Payne[56] expressed his opinion that multilobular cirrhosis in children was generally due to syphilis, and this appears to be specially applicable to familial cases except those of Wilson's progressive lenticular degeneration, for which Hall,[22] who has collected 63 cases, suggests the name "hepato-lenticular degeneration." In adults alcohol very probably acts at an advantage in a liver with its resistance impaired by syphilitic infection. Tuberculosis, also, has been stated to be a cause of cirrhosis, especially by Roque and Cordier,[61] who regard the ascites of cirrhosis as always tuberculous; but even if this latter view is correct, the infection of the peritoneum might be secondary to, and different from, that causing the degeneration of the liver cells. When focal degenerations in the liver occur as the result of infections and intoxication, hepatic cytolysins should be produced from absorption of their protein and a vicious circle result (Fiessinger[12]). How far this may take place is open to considerable doubt. After repeated anaphylactic shock, Longcope[37] found the livers of experimental animals to be cirrhotic as the result of fibrosis around the necrotic foci.

The glycogenic function of the liver has for many years been tested by the examination of the urine after the ingestion of 100 grams of some form of sugar—such as cane, grape, or galactose—by the mouth; but now the laevulose tolerance test, which should not in health give rise to hyperglycaemia, has superseded tests in which the threshold of the kidney introduces a disturbing factor. Chauffard, Brodin, and Zizine[8] find that active cirrhosis is characterized almost constantly by hyperglycaemia, and generally by the presence of bile salts and urobilin in the urine.

The excess of urobilinogen and urobilin in the urine of patients with cirrhosis has long been regarded as evidence of hepatic insufficiency. The mechanism of the formation of urobilinogen and urobilin has received a number of explanations, and recently the commonly accepted view—the entero-hepatic—has been attacked by Hooper and Whipple,[25] Brulé,[6] and C. M. Jones.[27] According to the entero-hepatic explanation urobilin is formed only in the intestine by the nascent hydrogen liberated as the result of bacterial activities, and the urobilin thus formed partly escapes as the stercobilin of the faeces and is partly absorbed and carried to the liver to be reconverted into bilirubin; but if the functional power of the liver cells is impaired, or if they are overworked by dealing with the blood pigment of excessive haemolysis, some of the urobilin passes into the blood and so into the urine. In place of this explanation it is now urged that there is an intrahepatic formation of urobilin from bilirubin, a valid argument in its favour being that duodenal aspiration—that is, above the intestinal level where bacterial activity would lead to the formation of urobilin—shows the presence of urobilin. Whipple[78] contends that there is no evidence of absorption of urobilin from the intestine. Increase in duodenal urobilin occurs in haemolysis, but is also found in cases of anaemia without any other evidence of haemolysis, and, as mentioned above, C. M. Jones,[27] following Wilbur and Addis,[81] suggests that from impaired function the liver fails to resynthesize the urobilin with iron into haemoglobin, and that hence there results an excess of urobilin in the duodenum and a deficiency of haemoglobin in the blood. This would account for the anaemia sometimes associated with portal cirrhosis when there is no evidence of loss of blood by the bowel, such as may be shown by the benzidene test for occult blood.

The pigmented cirrhotic liver of haemochromatosis—a subject discussed in the Section of Pathology and Bacteriology at the meeting of the British Medical Association last year (vide Dunn[11])—presents several features of interest in connexion with the degenerative diseases of the liver. In cirrhosis some degree of siderosis of the liver cells is common (Kretz,[31] Abbott[1]); and, in opposition to the old view that siderosis of haemolytic origin was the cause of cellular degeneration and cirrhosis, it has been argued by Potter and Milne,[57] and, as the result of repeated transfusion of blood for months in rabbits, by Rous and Oliver,[64] that the primary

lesion in haemochromatosis is multilobular cirrhosis of the liver. That haemolysis is not responsible for the excess of haemosiderin was urged by Meltzer,[43] G. Parker,[55] Sprunt,[69] Garrod and his co-workers,[17] and on experimental grounds by Rous and Oliver, who showed that the distribution of iron in the body differs in haemolysis from that in haemochromatosis. But, nevertheless, the haemosiderin should be regarded as derived from the haemoglobin, though its origin from the iron-containing proteins of the cells of the body has been suggested by Mackenzie Wallis[47] and by Sprunt. It is now generally agreed that iron is retained in the body, especially in the liver, which is normally concerned with the storage of iron and the metabolism of blood pigment. The damaged liver cells are apparently unable to deal with the pigment, which therefore accumulates, with the result that further cell destruction and secondary cirrhosis follow. But the question arises whether the haemosiderin collects first in the liver cells or in Kupffer's cells, which are said to be the main repositories of the pigment (W. G. MacCallum). It may be noted that the cirrhotic liver of haemochromatosis is remarkable for the presence of endarteritis, and that there is a close relation between the vessels and Kupffer's cells. The connexion between injury of the cells of the body and the presence of haemosiderin was noted by Potter and Milne and by Garrod as regards the cutaneous distribution which is on the exposed parts, and by Rous and Oliver in the viscera and atheromatous areas of arteries; but there must be some special factor concerned, for visceral and other lesions are common in the absence of siderosis.

The origin of the pancreatic changes, which when advanced are responsible for the terminal stage of bronzed diabetes, is worthy of discussion; the pancreatic fibrosis is still regarded as secondary to the haemochromatosis, whereas the hepatic cirrhosis is considered to be primary. But as some degree of pancreatitis is commonly associated with hepatic cirrhosis, it might logically be urged that this favours the incidence of siderosis, though, as in the case of the liver, the siderosis leads to a secondary and superadded fibrosis—a vicious circle. The sex incidence of haemochromatosis is remarkable: for two cases only (Abbott,[1] Roberts[62]) have been reported in women out of about 80 recorded cases, Roberts's case showing glycosuria. In this respect it corresponds with primary carcinoma in a cirrhotic liver—another, possibly degenerative, sequel of cirrhosis; out of my 52 collective cases of primary carcinoma in a cirrhotic liver 47 were in males; cirrhosis is of course more frequent in males than in females, but the proportion is probably not so high as 3 to 1, whereas the proportion in primary carcinoma arising in a cirrhotic liver is 10 to 1, and in haemochromatosis 40 to 1.

As ordinary multilobular cirrhosis may be followed by primary carcinoma it is not surprising to find that the same sequence of events may occur in connexion with the cirrhotic liver of haemochromatosis, and indeed appears to be rather unduly frequent; Lochlein[36] collected three such cases in 1907, and at the Pathological Section of the British Medical Association meeting last year Maxwell Telling[71] and Matthew Stewart[70a] referred to two cases that occurred at Leeds and were detected at necropsy only.

The amount of iron retained in the body is enormous and may amount to 40 grams, or eight times the normal quantity (5 grams according to Muir and Dunn[47]); and the liver, which normally contains 20 cg., has been found to have 100 times this quantity. There is some evidence that this is due to diminished excretion by the kidneys and intestines (C. P. Howard and Stevens,[26] McClure[45]); but this retention is not absolute. Although Garrod[17] reported absence of iron in the urine, faeces, and bile, Rous[62] described the presence of haemosiderin in the urine as a diagnostic sign of haemochromatosis. A relative retention of iron over a long period would suffice to lead to the enormous accumulation mentioned above.

The clinical features of the complete disease, bronzed diabetes—namely, the peculiar bronzing differing in some respects from that of Addison's disease, especially in avoiding the oral mucous membrane, the enlarged liver with occasionally prominence of the left lobe, and the enlarged spleen and the glycosuria—were regarded by Potter and Milne as a chain of circumstances which is rarely completed rather than as a definite symptom complex. Garrod,[17] who also inclines to the view that it is not a definite disease, brings out the distinctive features of the pigmentation—namely, its occurrence on parts exposed to the air and light rather than to pressure and irritation, thus showing a resemblance to the pigmentation he has recently described in porphyrinuriacs, and its superior claim to the adjective "bronzed" as compared with that of Addison's disease and of chronic arsenical poisoning. He refers to the somnolence and asthenia as the results of the cirrhosis rather than as due to diabetes. From pigmentation of the ductless glands pluriglandular insufficiency and disappearance of the secondary sex characteristics have been described (Claude and Sourdel[9]). The blood shows hyperglycaemia but no anaemia. Skiagraphically the liver does not show any increased opacity (Shattock[66]), so *x* rays do not help in the diagnosis.

Diagnosis.—The association of glycosuria, hepatic cirrhosis, and cutaneous bronzing makes recognition easy; but glycosuria is usually a late event. In cases of cirrhosis with cutaneous pigmentation examination of a piece of skin may clinch the diagnosis by showing the presence of haemosiderin microchemically, and the discovery of the pigment in the urine has a similar significance; but negative results with these tests are not of any value.

Primary Carcinoma.

Primary carcinoma of the liver is not usually regarded in the light of a degenerative process, but as the result of a proliferation which has run riot. Primary carcinoma following cirrhosis is the form of hepatic new growth in which degeneration would appear to be most likely to play a part, for here progressive degeneration is known to occur and to be followed by compensatory hyperplasia of the liver cells; but according to Muir[46] the most reasonable explanation is that of Orth—namely, that for some unknown reason the proliferation oversteps the normal and takes on the autonomous character of a neoplasm. Thus carcinoma has been regarded as a regenerative process in which the de-differentiated cells have taken over the power to invade and destroy other cells (Broders[5]). But the view that degeneration is the primary step in carcinoma deserves consideration; from the study of senescence in dogs Goodpasture[18] concludes that degeneration, besides leading to the death of some cells, is followed by de-differentiation of others which become simpler in structure and function and recover their earlier power of growth, so that metaplasia and neoplasia are accidents of commencing old age. Oertel[51] also regards the transformation of degenerating into carcinoma cells as a phenomenon of senescence and due to disturbances in the nucleus-plasma relations, specifically the loss of nuclear chromosomes. He argues that of the two groups of chromosomes those with higher functions disappear while those concerned with growth survive, and that hence there develops a race of cells lacking the differentiation of normal cells but endowed with vegetative and reproductive process.

Points for Discussion.

The extensive subject of degenerative diseases of the liver raises many interesting questions, of which the following are a few only.

1. The tests for functional efficiency of the liver; their scope, limitations, and results, especially in slight and latent degenerations of the liver.

2. Is the jaundice occasionally seen in early syphilis, in syphilitic patients after arsenobenzol treatment, and the jaundice of munition workers due to an additional factor—namely, infection—or does it merely depend on inherent weakness of the liver?

3. What is the explanation of the delayed onset of symptoms in persons previously exposed to the action of poisons such as trinitrotoluene and arsenobenzol preparations?

4. In degenerative diseases of the liver is jaundice due to (*a*) failure of the damaged cells to remove from the blood bilirubin formed elsewhere, or (*b*) do the liver cells, as the result of disordered function, shunt the bile pigment into the lymph or blood capillaries instead of into the biliary capillaries?

5. Is anaemia in hepatic degeneration due to failure of the liver cells to resynthesize urobilin and iron into haemoglobin?

6. The intrahepatic formation of urobilin.

7. How far is the incidence of cirrhosis after hepatitis accompanied by degeneration of the liver cells obviated by concomitant hyperplasia of the liver cells?

8. Is the interstitial hyperplasia in cirrhosis initially a beneficial process?

9. The value of haemosiderinuria in the diagnosis of haemochromatosis.

10. The relation of primary carcinoma of the liver to a previous degeneration and de-differentiation of the liver cells.

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DISCUSSION.

Professor HUGH MACLEAN (St. Thomas's Hospital, London) said: Sir Humphry Rolleston has given us such an excellent and concise summary of the present position of liver pathology that I think little remains to be added. Personally, I should like to say something in connexion with liver tests, and more particularly with regard to the new laevulose test. Every investigator who tries to evolve tests for liver deficiency is always confronted with the difficulty that the functions of the liver are not really understood, and consequently it is not easy to suggest suitable methods. The two tests of which I have had most experience are the lipase test and the modern laevulose test. In my opinion the lipase test is, on the whole, not very satisfactory, as it cannot be relied upon to indicate the slighter derangements of liver activity. In certain cases it is useful, but on the whole not very helpful except in gross cases. With regard to the laevulose test, I should like to give its history very shortly, so as to clear up certain possible misunderstandings. The modern laevulose test was first used at St. Thomas's Hospital over three years ago by MacLean and de Wesselow, and afterwards by Spence and Brett; it was based on an observation made by the former observers, which was published in the *Quarterly Journal of Medicine* in January, 1921. This observation was to the effect that whereas all the ordinary sugars such as glucose, cane sugar, lactose, maltose, and galactose, when ingested raised the concentration of sugar in the blood, this did not happen when laevulose was given. Thus, if 50 grams of glucose were given to a healthy person, the blood sugar concentration was increased in the first half-hour or so from the usual 0.1 per cent. to about 0.16 or 0.17 per cent. From this maximum point the concentration began to decrease, and in about one and a half hours the blood sugar had returned to its normal value. When, however, 50 grams of laevulose were given, and the blood sugar was estimated at half-hourly intervals as before, no rise was found to take place. The effects of the two sugars on a healthy subject might be represented graphically by a distinct curve for glucose, and by a straight line for laevulose. From various considerations it was known that this lack of power on the part of laevulose to raise the blood sugar depended on an intact liver, for it was found that in patients suffering from a definite lesion of the liver the laevulose acted more or less like glucose and caused a marked increase in the blood sugar concentration. The modern laevulose test is therefore based on two facts: (1) laevulose, when given by mouth in doses of from 30 to 50 grams, does not raise the blood sugar in healthy subjects with an intact liver; (2) when the liver is defective it is not able to prevent laevulose from entering the blood stream, and so a rise in blood sugar concentration follows the ingestion of this sugar.

I should like to point out that laevulose and nearly all the other sugars have from time to time been used as liver tests, and that laevulose has been specially employed by Strauss. Now Strauss just gave a dose of laevulose and afterwards tested the urine for the presence of sugar. If the urine gave a sugar reaction the fact was taken as indicating liver involvement. It hardly seems necessary for me to point out that the modern laevulose test described has no connexion whatever with Strauss's test, except that in both cases laevulose is used. To say that the tests are in any way similar betrays an entire ignorance of the fundamental basis of the modern laevulose test. One might as well say that two entirely different surgical operations were the same because, in both cases, the surgeon used the same scalpel. A very slight experience of Strauss's test shows that it is of little value. This is fully explained in the light of the results of the modern test. Strauss's test could only give reliable results in gross cases where the renal threshold for laevulose had been exceeded. It is quite common, however, to find a marked sugar reaction with this test in patients in whom the liver is quite efficient, as indicated by the modern laevulose test and by the clinical condition. On the other hand, in many cases of obvious liver involvement no indication whatever of the condition is obtained by Strauss's test. It is quite impossible to enter into the reasons for these discrepancies here, but so marked are these anomalies that the test has long ago fallen into disrepute. The modern laevulose test is based not on Strauss's work, but on the observation already described, that when the liver was intact laevulose would not raise the blood sugar concentration. The test resulted directly from this observation, and until this essential fact was established the blood sugar method could

not be utilized as its results could not be interpreted. Further, it seems certain that in many cases the apparent positive results with Strauss's test were much more intimately associated with impurities in the laevulose than with any liver deficiency.

With regard to the prevention of toxic jaundice after the administration of arsenobenzol, it would appear, from the results of observations made by Colonel Harrison at St. Thomas's Hospital, that the ingestion of some sugar before the injection of the drug was of material benefit in warding off such attacks. In a set of patients receiving sugar before injection there were only two or three cases of jaundice after treatment, while in another set not receiving sugar there were nearly fifty cases. Whether or not a larger experience will justify these results must of course depend on future observations.

Dr. C. M. WILSON (London) said that hepatic insufficiency might be betrayed either by obvious signs or symptoms, such as jaundice, or in the absence of these by laboratory tests demonstrating the latent insufficiency. Clinicians required a test which would apprise them of impaired function of the liver when there were no symptoms to warn them of that impairment, or at any rate before such symptoms appeared. They needed, for example, not so much a test which would tell them the exact extent of the damage that chloroform administered as an anaesthetic had done to the liver, or even the date when that damage had been repaired, but rather one that would veto chloroform as an anaesthetic by warning them of hepatic insufficiency, just as glycosuria arrested the hand of the surgeon. Had we up to the present any such test of liver efficiency? He did not wish to belittle the value of the work done in that field, nor was he blind to the light that by means of these tests was being directed on the multiple functions of the liver cells; but for the moment he was concerned to question whether they possessed any test of liver efficiency sufficiently delicate to tell them what they wanted to know at a time when it was most needed—namely, before the advent of signs and symptoms revealed the nature of the trouble. He would be content in his contribution to that discussion to attempt to find some answer to that question. If he appeared unduly cautious they might, perhaps, agree with him that in chemical pathology at the present time, in its application to clinical work, a conservative view was not without value.

To obtain some idea of the comparative value of such tests, their scope and limitations, he had taken thirty apparently normal male students of practically the same age and carried out on them tests of hepatic efficiency by five methods—the estimation of the lipase and cholesterol of the blood, the laevulose tolerance test, the nitrogen distribution of the blood, and the haemoclasic crisis. Starting from that basis—and in the present confusion in the literature it was necessary to begin by establishing the normal—the same tests were applied to all abnormal conditions of the liver that came under his observation. An investigation of that nature was a laborious undertaking requiring many months for its completion, and he could only furnish them with tentative conclusions. Moreover, the time at his disposal in that discussion robbed these conclusions of their supporting facts, leaving them in the air as a few bald and isolated statements. He would once more remind them that they were seeking for a test whose warning preceded the onset of symptoms. In the course of that discussion a claim had been made that the lipase test satisfied these requirements. This test depended on the increase in certain diseases of the liver of the fat splitting ferment lipase, which was normally present in the blood. In the thirty students used as controls the figure varied between 0.1 and 0.32. But when the test was applied to diseases of the liver it was found, as Whipple maintained in 1913, that the figure rose only when there was actual necrosis of liver cells. It provided information in certain diseases of the liver, but it did so only when that information had been already furnished by clinical means. The test had little or no value in unmasking a latent inefficiency. And this applied to some of the other tests.

He concluded provisionally that, with the possible exception of the laevulose tolerance test, the only test which gave an early warning of hepatic insufficiency was that described by Widal as the haemoclasic crisis. Under that rather forbidding name was concealed a test disarming in its simplicity. The haemoclasic crisis depended on the fact that the normal digestion leucocytosis was replaced by a leucopenia when the liver was diseased. A white cell count was taken before the patient's breakfast, seven ounces of milk were then drunk, and another count made twenty minutes after the milk. Of thirty normal students more than half showed a rise in the second count of 3,000 or upwards, while only two failed to show a rise of less than 1,000, so that the individual error in the count was not a factor. In two of the thirty the rise was delayed till forty minutes after taking the milk, so that it was advisable to do three counts if the second showed no rise, but commonly only two counts were necessary. In diseases of the liver there was an invariable fall in the second count. The question in this test appeared to be not whether it was positive in the early phases of diseases of the liver, but rather in how many other conditions a fall of the leucocytes followed drinking milk. Since Widal's observation, a certain amount of work had been recorded in Continental journals, recently summarized in *Medical Science*. The haemoclasic crisis was found not only in obvious diseases of the liver, such as carcinoma, but also in the course of certain infections wherein the liver was apparently affected. But it occurred, too, in diseases where the existence of hepatic involvement was either unsuspected or, at any rate, rested on mere speculation. Widal, for example, had found a positive result in asthma and in his (the speaker's) experience the most marked reaction occurred in that malady. He (Dr. Wilson) had also performed the test on 19 epileptics, 18 of whom gave a positive result. It was premature as yet to affirm that the test supplied what they wanted, but from many observations made during the past few months he could testify to its value and to the interesting possibilities that the test opened up. Perhaps the notes of two cases would illustrate in what direction we might look to this test for assistance.

CASE I.

A stout, red-faced countryman attended his out-patient department in May, complaining of epigastric pains. It was not easy to obtain any information through the protecting muscles of the abdominal wall, but he was surprised to find the haemoclasic crisis. The other tests of hepatic insufficiency to which reference had been made failed to support the evidence of the haemoclasic crisis. The physician to whose wards he was admitted could find no cause for the pain, and after a fortnight's observation the man was discharged. The pain, however, continued, and his faith in the test was restored by the reappearance of the man some weeks later with jaundice. The lipase had now risen to 0.83. Laparotomy in July revealed a malignant mass in the region of the pancreas and a smaller tumour in the neighbourhood of the gall bladder.

In this case the test had met the requirements he had put before them in that it furnished information of value in diagnosis before the nature of the illness had been demonstrated by signs and symptoms.

CASE II.

A man of 38, for many months had suffered from a vague malaise. Easily exhausted, he would wake on one or two mornings in the week with a headache and a yellow fur on the tongue. The headache was not severe, and passed off in the course of the morning. He himself ascribed his condition to being "liverish." On the mornings that the patient had a headache he showed the haemoclasic crisis, but on the other mornings he behaved as a normal individual, and showed a digestion leucocytosis. Counts were made on fourteen consecutive mornings. His condition sensibly improved if meat was excluded from his diet. The observation opened up an interesting field of inquiry into a condition which was common and hitherto of obscure causation. Did the liver, acting as a defensive barrier, prove inefficient on the mornings when the haemoclasic crisis occurred?

At that point he was checked by the recollection of his plea for caution, from which he had, perhaps, been temporarily seduced by the interesting possibilities of this test. Real progress lay, not in the application of the test to clinical work, but in the correct interpretation of its meaning and mechanism.

Dr. J. C. SPENCE (London) said: My contribution to the discussion will be limited to a brief description of the laevulose test for liver efficiency, and of its value in the investigation of certain diseases of the liver. I shall dwell more particularly on results I have obtained in cases of catarrhal jaundice. Thereby I shall be able to illustrate how this test can be used as a new experimental method of approach to the further study of liver diseases. I hope to be able to show that the results I obtained in catarrhal jaundice justify me in including this disease among those implied in the title of this discussion—namely, as a true degenerative disease of the liver.

Professor Maclean has already dealt with the principle of the test and the details of the method to be employed in its

use. There is no difficulty in carrying it out, and accurate results can be readily obtained by anyone familiar with one of the newer and more accurate methods of blood sugar examination; 30 to 50 grams of laevulose, according to the weight of the patient, should be given after four to five hours' fasting. These amounts in a normal person will cause no rise in blood sugar. If the liver's efficiency be impaired in any way the sugar brought to it after absorption from the alimentary canal will not be stored in the liver, but will pass through the organ to appear in the systemic circulation, and a rise in the blood sugar content of the blood will result. The height and length of the blood sugar curve, which portrays this rise, will be in proportion to the degree of hepatic inefficiency present. When using the test the possibility of diabetes mellitus must first be excluded, as this disease gives blood sugar curves similar to those of extreme hepatic inefficiency.

[Dr. Spence then showed charts which illustrated results he had obtained in normal people in cases of toxic salvarsan jaundice of various degrees of severity, and in cases of obstructive jaundice due to impaction of a stone in the common bile duct.

Fig. 1 illustrated the result in a normal person. After 40 grams of laevulose there was no appreciable rise in blood sugar. The results obtained in various diseases of the liver be classified as moderate, severe, and extreme degrees of liver inefficiency, according to the height of the curve.

Fig. 2 indicated a moderate degree of liver inefficiency in a case of toxic salvarsan jaundice. After 50 grams of laevulose the blood sugar percentage varied from 0.090 to 0.126 after half an hour, to 0.148 after 1 hour, to 0.137 after 1½ hours, and to 0.112 after 2 hours.

Fig. 3 showed a severe degree of liver inefficiency in a man who developed jaundice after an injection of N.A.B. After 50 grams of laevulose the blood sugar percentage varied from 0.125 to 0.137 after half an hour, to 0.192 after 1 hour, and to 0.154 after 1½ hours. In this case the rise of blood sugar was higher and more prolonged than in the former.

Fig. 5 showed the result in an extreme case of liver inefficiency. The blood sugar percentage was 0.117, 0.150 after half an hour, 0.141 after 1 hour, 0.161 after 1½ hours, 0.192 after 2 hours, and 0.184 after 2½ hours. This was a significant result in an important case, and required more detailed comment. It was a case of a man, aged 57, who developed jaundice after two courses of silver salvarsan. The test was carried out in the third week after the appearance of the jaundice. At that time his symptoms suggested only an attack of moderate severity, with a correspondingly good prognosis. The result of the test led to suspicion of a greater degree of liver damage than the clinical manifestations showed. These suspicions were confirmed. Two days later the patient passed into a condition of cholaemia and died. *Post-mortem* examination revealed extreme toxic necrosis of the liver.]

In applying the test to these cases of salvarsan jaundice my experience has led me to formulate this working rule: If the laevulose test produces a blood sugar rise of 50 mg. per 100 c.cm. (for example, from 0.110 to 0.160 per cent.) which does not fall to the normal level within one and a half hours, the case must be regarded as serious and requiring the most careful treatment, however slight the other clinical manifestations may be. The following result represents the findings in a typical case of pure obstructive jaundice, due to the impaction of a stone in the common bile duct. After 50 grams of laevulose the blood sugar levels were 0.110 per cent., 0.116 per cent., 0.133 per cent., and 0.120 per cent. This indicates only a slight degree of liver inefficiency, in spite of the fact that the patient was very deeply jaundiced. By contrasting the results of the test in typical conditions of toxaemic or in the hepatic jaundice with those of obstructive jaundice, it will help us to approach the problems of other diseases the pathology of which is not so clear. Catarrhal jaundice is such a disease, for the reason that the opportunities for *post mortem* examinations are so rare.

The results of the laevulose test in cases of catarrhal jaundice which I investigated, showed that a very severe degree of liver inefficiency was present at an early stage of the disease before marked jaundice was present. The recovery of hepatic efficiency in these cases was very rapid, and in some cases was very evident before the jaundice reached its height. Taking into account these two facts, that there is marked hepatic inefficiency during the first few days of the disease, and that this inefficiency, as shown by the laevulose test, is much greater than that usually found in pure extrahepatic obstructive jaundice, it is reasonable to believe that the actual pathological change is one affecting primarily the liver cell, and probably of the nature of a hepatitis. This view, that catarrhal jaundice is an affection of the liver tissue of the nature of a hepatitis, and not an inflammatory obstruction of the common bile duct, is supported by two clinical phenomena which are almost constantly associated with it. These phenomena are the enlargement of the liver and spleen. In some cases the liver reaches the umbilicus, and the spleen is palpable well below the costal margin. This enlargement of the liver is present early in the disease, when, as I have shown, the liver inefficiency is at its height. This early enlargement of the liver is well illustrated in those cases which are often admitted to children's hospitals with a history of fever, vomiting, and drowsiness. Clinical examination reveals only an enlarged liver, and the presence of acetone bodies in the urine. *Faute de mieux* the diagnosis of "acidosis" is made. A few days later jaundice develops, and the diagnosis is now changed to one of catarrhal jaundice. In these cases, at any rate, the enlargement of the liver precedes the appearance of the jaundice, and would confirm the view I have put forward that the condition is probably a hepatitis.

In conclusion, I can but comment on some aspects of the scope and value of the laevulose test. Its chief value is that its results are quantitative. It measures something, whether it be total hepatic efficiency or merely the ability of the liver to store carbohydrates. This being so, its main use will be as a new experimental method with which to approach the problems of liver diseases. Without being as yet in a position to give you a definitive opinion of the comparative value of this test with van den Bergh's test, and Widal's "haemoclasic crisis" test, I hold at present the view that its results give more direct evidence of the condition of hepatic efficiency than do either of these other tests, from which the evidence obtained is largely circumstantial. The laevulose test is of clinical value in controlling the administration of salvarsan. By its routine use between the successive courses of treatment a latent damage of the liver can be revealed. Further treatment could then be modified according to the results of the test. It is a useful aid in the differential diagnosis of toxaemic from obstructive jaundice if it be remembered that very mild cases of the former and very extreme degrees of the latter are likely to give anomalous results. Its ultimate scope has yet to be determined. But it will serve a most useful purpose if, after having added a little to our knowledge, it follows the law of evolution, which affects all clinical methods, and is replaced by a still better test of liver function.

Dr. J. W. McNee (University College Hospital, London) said: Sir Humphry Rolleston, in opening the subject set down for consideration to-day, has indicated its scope and suggested some lines along which discussion might be profitable. Some of them will be fully dealt with by those who have specially worked on such parts of the subject, and for this reason I have thought it best to take up briefly some rather general but fundamental questions which influence greatly the study of degenerations of the liver, but which are less likely to be covered by other speakers.

Let me begin by saying that, to understand the various kinds of damage which may affect the liver, it is obviously essential to know the structure of the normal organ. It seems, in a way, extraordinary to have to admit that the fine relationships of the structures forming the liver lobule are by no means completely worked out. Our main lack of knowledge is concerned with the intimate connexions between the blood capillaries of the portal vein, the polygonal cells, and the finest bile capillaries. We do not know for certain, although it is commonly inferred, whether any substance, in passing from the vascular capillaries to the bile ducts, must pass through the protoplasm of the polygonal cell. Yet for a complete understanding of the normal and abnormal metabolism of bile pigment such knowledge is essential. The accepted views of the structure of the liver lobule mostly date from the old days of gelatin-carmine injections, some of the best and most widely quoted of which were carried out by Lionel Beale in London as far back as 1856. It is easy to inject and trace the vascular capillaries, but impossible to inject the blindly commencing bile capillaries. All I wish to say here is that I have repeated such injection experiments and made use of other more modern methods of staining, and am unable to confirm some of the descriptions which have crept into most text-books of normal histology. We do not know whether all the glandular cells of the liver lobule have the same function or if they all act together. Various observers have described in some of the lower animals two distinct types of cell within the same lobule, differing in size and in the characters of the contained granules. In a bat, known as *Rhinolophus hippocrepis*, the difference is stated by Oppel to be very obvious

indeed, collections of large clear cells lying amidst groups of smaller, coarsely granular cells. I have in the past two years examined sections from a wide variety of mammalian, avian, and reptilian livers obtained from the London Zoological Gardens, but have never seen more than minor and easily explained differences in the types of cell.

With regard to the functions of one element of the cellular structure of the liver lobule, our knowledge has greatly increased, chiefly as a result of experimental work. This knowledge is of great importance in connexion with the interpretation of the results and signs of many hepatic diseases. I refer of course to the so-called star cells of von Kupffer, large endothelial cells which lie along the walls of the vascular capillaries. In birds these cells form an almost complete lining to the capillaries of the outer part of the liver lobule. In man they appear less numerous. The great importance of these endothelial cells in the metabolism of bile pigment has now been fully recognized, and it seems improbable that the polygonal glandular cells of the liver are concerned in bile pigment metabolism, except in a secondary way. In birds, where the Kupffer cells are extremely numerous, the whole process of bile pigment formation can be watched under favourable experimental conditions. If, for example, blood destruction be induced experimentally in birds, the Kupffer cells may be seen to contain at one and the same time, (*a*) red blood corpuscles in process of disintegration, (*b*) bile pigment, which in birds is the bright green biliverdin, and (*c*) the iron-containing part of the haemoglobin molecule—haemosiderin—which gives the characteristic blue reaction with potassium ferrocyanide and dilute hydrochloric acid. Under such circumstances I have never seen anything suggesting bile pigment within the polygonal liver cells, but only in the Kupffer cells, and again in the bile capillaries. I have stated that in birds the Kupffer cells in the liver are much more numerous than in man, and I have published work in favour of the view that in man the great development of the spleen as an organ must be taken into account. I believe that the endothelial cells of the spleen have in man taken on part of the same function as the Kupffer cells in the liver. In birds the spleen is relatively very much smaller than in man when compared with the liver. This view of a combined action of the endothelial cells of the spleen and Kupffer cells of the liver in the metabolism of bile pigment has now received wide recognition on the Continent, and is fully accepted in a large monograph recently published by Eppinger and others, who deal with the group of diseases such as acholuric jaundice, etc., under the title of "The Liver-Spleen Diseases" (*Die Hepatolienalen Erkrankungen*).

Briefly put, the views which I at present tentatively hold with regard to the metabolism of bile pigment are as follows—these are not original views, and have been supported in whole or in part by others: I believe that in man bile pigment is normally formed in the endothelial cells of the spleen and liver (Kupffer cells), and probably (although this is unproved) passes through the glandular cell to reach the bile capillary. Sir Humphry Rolleston has spoken of a possible explanation of the two kinds of bilirubin described by van den Bergh on the supposition that the pigment is modified in some way in its passage through the polygonal cell of the liver. If the liver cell be damaged or degenerated, the bile pigment, formed in the endothelial cells, may not be taken up by the polygonal cells, with the result that the bilirubin passes on into the blood with the ultimate production of one variety of clinical jaundice. The production of bile pigment by the endothelial cells is probably one of the last functions to cease in hepatic degenerations, and—for example, in acute yellow atrophy of the liver—the vascular capillaries may appear intact when the polygonal cells are largely necrosed.

I may now summarize briefly my ideas concerning the occurrence of jaundice in acute diseases of the liver. If the view I have put forward with regard to the functions of the endothelial cells of liver and spleen be correct, then it would appear possible for icterus to arise under three sets of circumstances:

1. Where there is direct obstruction to the outflow of bile—for example, gall stones blocking the common bile duct.

2. Where there has been increased haemolysis in the body and an excess of bile pigment is formed in the endothelial cells. This excess may be more than the liver cells can deal with, and the excess passes into the blood and may result in icterus—for example, acholuric jaundice, icterus neonatorum, the "latent icterus" of pernicious anaemia, etc. Such an icterus might be expected to be of light degree and symptomless.

3. Where the glandular cells of the liver are damaged, while the endothelial cells continue to functionate normally. In such circumstances one must suppose the liver cells unable to take up in whole or in part the bilirubin offered to them, which therefore has to pass on along the blood capillaries into the circulation—for example, the toxic jaundice of typhoid fever and pneumonia, associated with cloudy swelling of the liver cells; so-called catarrhal jaundice, with acute hepatitis; "late" or delayed jaundice after salvarsan, etc.

In cases like acute yellow atrophy, where in addition to necrosis of many cells the whole liver lobule is finally disorganized, the exact mechanism and type of the icterus is less easy to suggest, and may probably vary at different stages of the disease.

Turning now to some other points in connexion with acute degenerative lesions of the liver. It is evident that far too much attention has been paid to the presence of visible jaundice as a diagnostic sign of acute hepatic disease. It is here that functional tests may be of value in indicating hepatic derangement in the absence of jaundice, especially if the results of the tests can be correlated with the symptoms and signs in the patient. It is not difficult to imagine that different parts of the manifold functions of the liver may be deranged in different ways and at different times without jaundice appearing at all. This has indeed been recognized to occur in one form of "dissociated jaundice"; and since the recognition of bile pigments in the serum has been made much more delicate by the methods of van den Bergh, we know that latent icterus may be present which is unrecognizable in the skin. Further, a study of the clinical features, and later of the histology, of cases of spirochaetal jaundice, has shown me that it is impossible to correlate the intensity of icterus with the extent of the hepatic damage. Sir Humphry Rolleston has referred to some of my results in this connexion. I have described three types of hepatic lesion in cases of this disease, all showing icterus of moderate severity: those with little histological evidence of damage at all, those in which the cells of the lobule are dislocated and individual cells are necrosed, and those in which there is intense necrosis of the central part of the lobules. In passing I may state that I regard the second type of lesion, which I have seen in other acute hepatic inflammations, as exactly corresponding to the desquamation and necrosis of individual cells seen, for example, in the renal tubules in acute nephritis.

I would like to refer very briefly to another type of hepatic degeneration—the so-called fatty degeneration which is seen so well in phosphorus poisoning. Munk has published work on fatty degeneration, especially of the renal epithelium in cases of "large white kidney," which appears to have a direct bearing on this form of hepatic lesion. Munk would place fatty degeneration as a reaction of the cell to damage, which is greater in severity than that producing cloudy swelling, but less severe and slower in action than that causing actual cellular necrosis. Such a view would bring fatty degeneration into line with other types of degeneration of the liver, the reaction of the damaged cells ranging from cloudy swelling right up to complete necrosis. It is well known that the lesion of acute yellow atrophy is easily distinguished from, for example, phosphorus poisoning by the almost complete absence of fatty degeneration of cells, the essential lesion in the first-named disease being cellular necrosis.

Professor ROBERT MUIR, after stating his appreciation of the very valuable contribution given by Sir Humphry Rolleston to the whole subject, first referred to certain points in the pathology of jaundice. The lesions concerned in its production might be distinguished as affecting (*a*) the bile ducts, (*b*) the liver cells, and (*c*) the blood and extrahepatic tissues. Jaundice due to biliary obstruction was, of course, well understood, but he thought that a lesion essentially obstructive, in the sense that the bile was formed but could not be got rid of, might be located in the liver cells themselves. In some cases of acute toxic jaundice lasting some time, small granules of bile pigment might be found in the liver cells, and this seemed to indicate that the bile pigment was being abundantly formed but could not be passed on to the biliary channels. It was conceivable that such lesions as partial necrosis, dislocation of liver cells, and even marked swelling of the parenchyma, might produce this result. The term "obstructive" should thus be taken in a wider sense than

was usually done. With regard to haematogenous jaundice there were two main questions, which were often not sufficiently distinguished by those who used the term. The first was, Could bile pigment be produced by the cells of other tissues than the liver? The second, Did this extrahepatic formation of pigment ever occur to such an extent as to lead to jaundice when the condition of the liver was normal? The first question could, of course, now be definitely answered in the affirmative—in fact, it appeared to be a common property of cells to be able to split haemoglobin into a moiety of the bilirubin type and an iron-containing moiety. To the second question, he considered a definite answer could not yet be given. It seemed doubtful whether a haematogenous jaundice in the strict sense—that was to say, with normally functioning liver cells—had been produced in experimental conditions. His observations in conditions of haemolysis led him to believe that the haemoglobin was split up within the liver cells as well as in the Kupffer cells, and that the latter, to judge from the amount of haemosiderin within them, played a smaller part in the human subject than in many of the lower animals.

With regard to cirrhosis, the all-important question concerned the etiology, and with regard to this our knowledge was very defective. Classifications might be made on an anatomical or on an etiological basis, but they did not correspond. The hob-nail liver, for example, was often produced by other causes than alcohol, whilst alcohol seemed to produce various types of cirrhosis. Cases of atypical cirrhosis seemed to him to be more frequent in recent years than formerly. In cirrhosis generally the essential factor appeared to be toxic action, with twofold effect: on the one hand, leading to degeneration and disintegration of the liver cells, and, on the other, stimulating overgrowth of the connective tissue—neither of these could be said to produce the other. He did not agree with the suggestion put forward that the interstitial overgrowth was to be regarded as a beneficial process, leading to hyperplasia of the liver cells. It seemed rather to be a case either of simple repair following damage, or of reaction to a slight irritant; and hyperplasia of liver cells occurred to a remarkable degree without any interstitial change—in fact, whenever there was any functional call for it. In regard to haemochromatosis he had practically nothing to add to what he had already published with Professor Shaw Dunn. He considered that there was no doubt that the cirrhosis of the liver preceded the deposition of pigment, and his observations also showed that a similar sequence of events might obtain in the case of the pancreas. He had no experience in detecting haemosiderin granules in the urine in the disease. The method, however, should be tried, as, apart from this and the pigmentation of the skin, there was no means, so far as he knew, of diagnosing haemochromatosis during life. As to the origin of cancer in cirrhotic livers, he maintained his former view that the malignant proliferation was a sequel of the hyperplastic proliferation. Microscopical examination showed that, although de-differentiated cells were present, the cancer cells did not take origin from these, but from the large actively functioning liver cells of the hyperplastic foci.

Sir WILLIAM WILLCOX (Medical Adviser to the Home Office), in continuing the discussion, said:

Toxiphylactic Function of the Liver.

A very important function of the liver which has not been sufficiently recognized is its protective function against exogenous poisons. This property of the liver is exhibited markedly when chemical poisons are taken into the system whether by the mouth or by the blood stream; all that is necessary is for the poison to be absorbed into the blood stream so that it passes by it to the liver. The liver has the property of acting like a sponge retention filter and absorbing the chemical poison. It is thus seen that in almost every fatal case of chemical poisoning the bulk of the absorbed poison is found in the liver if death occurs within a few days. Thus, in the case of arsenical poisoning, if the poison—arsenious oxide, for example—is taken by the mouth, after absorption by the gastro-intestinal tract the poison is carried to the liver and a great part is retained there. Again, if the arsenical preparation such as one of the arsenobenzol derivatives be given intravenously and death occurs within a few days, a large proportion of the poison will be found in the liver. Exactly the same rule holds good for metallic poisons such as mercury or lead, and for organic poisons such as chloroform, phenol, trinitrotoluene, etc. In the case of the alkaloidal poisons this property of the liver is particularly well exhibited, for in fatal cases the greater part of the absorbed poison is found in the liver. In the case of morphine poisoning it has been shown that the liver has the power of retaining a large proportion of the absorbed alkaloid, and the excretion of this absorbed morphine takes place from the liver into the stomach. It is probable that a similar action of the liver occurs in the case of other alkaloidal poisons. This protective function of the liver against exogenous poisons should, I think, be called the "toxiphylactic function" of the liver.

It cannot be claimed that the liver stands alone in possessing a toxiphylactic function, for it is well known that both the spleen and kidneys, and probably the other tissues of the body, have the power of retaining absorbed poisons, but to a much less extent than the liver. The liver in the exercise of its toxiphylactic function suffers often serious damage, and this is shown by the degeneration to which its cells are subject, such as the cloudy swelling and the more advanced condition of fatty degeneration following the effect of these absorbed poisons. In many cases the liver may truly be said to have laid down its life in its endeavour to protect the body from the action of exogenous poisons. For example, in phosphorus poisoning the liver cells may become almost entirely destroyed, and in cases of acute fatal poisoning by salvarsan, tetrachlorethane, trinitrotoluene, etc., such extensive fatty degeneration of the liver cells is found that it is quite clear that the normal function of the liver in the body metabolism must have been destroyed, and in such cases the real mode of death is an auto-intoxication due to loss of liver function, rather than a direct action of the poison in question. It is not only in the case of chemical poisons that the toxiphylactic function of the liver is exercised. Exactly the same result follows, though in different degree, the poisons produced by bacterial or protozoal organisms, or auto-intoxications. Toxic degenerations of the liver are therefore shown from the following conditions:

1. *Chemical poisons*, such as tetrachlorethane, trinitrotoluene, dinitrobenzene, dinitrophenol, arsenobenzol derivatives; inorganic arsenic and antimony compounds, phosphorus, arseniuretted hydrogen, phosphoretted hydrogen, chloroform, phenyl hydrazine, toluylene diamine, and many others.

2. *Bacterial poisons*, such as the toxins produced in enteric and paratyphoid fevers, typhus fever, influenza, pneumonia, streptococcal infections, etc.

3. *Protozoal poisons*, such as the toxins produced in syphilis, yellow fever, spirochaetosis icterohaemorrhagica, kala-azar, amoebic dysentery, malaria, etc.

4. *Auto-intoxications*, such as the changes in the liver found in uraemia, recurrent vomiting, etc.

The Time Factor in Toxic Degenerative Conditions.

The time factor has not, I think, received the attention it deserves in considering the degenerative conditions resulting from the action of toxins. This was well shown in the fatal cases of tetrachlorethane poisoning described in my Lettsomian lectures, 1919. In some of the acute cases an extensive degeneration of the liver occurred followed by death with jaundice. In one fatal case the illness was prolonged over many weeks, and symptoms of ascites and portal obstruction supervened before death. Dr. Spilsbury found, on *post-mortem* examination in this case, marked fibrosis of the liver in addition to fatty degeneration of its cells, the fibrosis, which he termed "replacement fibrosis," having occurred in the areas of the liver in which the cells had undergone necrosis from the effects of the poison. In another case which was seen by me several times ascites and portal obstruction followed the attack of tetrachlorethane jaundice. Paracentesis was performed on the patient twice and he made a complete recovery. Two fatal cases of acute fatty degeneration of the liver due to alcohol have been investigated by me in which the liver was very enlarged and yellow, the cells showing very marked fatty degeneration, exactly as is seen in fatal cases of delayed chloroform poisoning. These cases of acute alcoholic fatty degeneration of the liver are rare, but they are very interesting as showing that in some cases alcohol may act as an intense liver poison like chloroform, phosphorus, etc. It appears that the common form of multilobular cirrhosis usually associated with alcohol is brought about by the comparatively slow action of alcohol in causing degeneration in certain parts only of the lobule of the liver, and the destroyed cells become replaced by fibrous tissue, giving the characteristic histological picture of portal cirrhosis. Under this view the two cases of tetrachlorethane poisoning which developed cirrhosis would be comparable

with the condition resulting from the more prolonged and less intense action of the poison alcohol.

The question has been raised as to whether the jaundice resulting from chemical poisons such as tetrachlorethane, trinitrotoluene, arsenobenzol compounds, etc., may not be really due to some bacterial poisoning rather than to the direct action of the chemical poison. It has been said that only a relatively small proportion of cases of jaundice occurred amongst the workers in the two first-named poisons, and that if the poison had been the cause of the jaundice a higher jaundice incidence would have been expected. I think that the best answer to this question is the clinical evidence. In 1914 I personally examined a large number of the workers exposed to tetrachlorethane vapour, and a large proportion of these were suffering from toxic symptoms, such as anorexia, morning sickness, general malaise, headache, etc., a group of symptoms often called "toxic gastritis." Jaundice was the result of long continuance of these symptoms, and hence occurred in a comparatively few cases, since most of those suffering from early symptoms gave up work for a time, thus preventing the occurrence of jaundice. Dr. W. J. O'Donovan, who very carefully investigated clinically the workers exposed to trinitrotoluene, found that a considerable proportion suffered from "toxic gastritis," though the jaundice cases were comparatively few. The condition is exactly comparable to the effects of alcohol, since, as everyone knows, symptoms of "toxic gastritis" occur for a long period before the definite clinical symptoms of cirrhosis, with possibly jaundice. In the case of the arsenobenzol compounds, symptoms of "toxic gastritis" usually occur during the twenty-four hours following the administration of the drug. These are probably due to impaired hepatic function, and the evidence of fatty degeneration of the liver cells in the acutely fatal cases is sufficiently conclusive in all three poisons. It appears to me that there is no doubt that the toxic jaundice resulting from the action of chemical poisons is due to the direct effect of the poison on the liver, and that bacterial influences are unimportant.

Delayed Jaundice following Salvarsan Poisoning.

It has been suggested that the delayed jaundice occurring after salvarsan poisoning is due to retention of arsenic in the body, and that this retained arsenic only acts on the liver at a considerable period after its administration. It is well known that in trinitrotoluene poisoning jaundice may occur many months after exposure to the poison has ceased. In two cases the period was over nine months. It is also known that in the jaundice cases following trinitrotoluene the urine was found free from trinitrotoluene during the jaundice attack. It is quite clear that the jaundice resulting from trinitrotoluene was due to the liver cell damage (hepatitis) consequent on the trinitrotoluene exposure, and that when the jaundice was present the trinitrotoluene was not at that time exerting its effects. The jaundice was the sequence of the toxic action of the poison on the liver. In the case of arsenobenzol jaundice exactly the same explanation holds good. After a single arsenobenzol administration the urine is after three weeks found free from arsenic, but no doubt some arsenic is deposited in the hair, nails, and epidermal tissues. The liver is then comparatively free from arsenic and the minute amount present cannot have any detrimental effect. The toxic effect of arsenobenzol on the liver occurs within a few days of its administration and if several doses are given there is a summation of toxic effects. These give rise to a degeneration of the liver cells and consequent liver changes which may be included under the term "hepatitis." It is the "hepatitis" resulting from the administration of doses of arsenobenzol compounds which gives rise to jaundice, and, just as in the case of trinitrotoluene poisoning, this jaundice may be delayed for months. In no cases of delayed arsenobenzol jaundice have amounts of arsenic been found in the liver which could at that time have been causing harm to the liver. The small amount of arsenic found in the liver in delayed arsenobenzol jaundice where a prolonged course of the drug has been given are accounted for by the deposition of the arsenic in the epidermic tissues and the gradual absorption therefrom of slight amounts of arsenic which could not of themselves be toxic.

Catarrhal Jaundice.

Dr. Spence, in his most interesting contribution, has pointed out that in catarrhal jaundice there is for a few days definite evidence of impairment of hepatic function, as shown by the laevulose test. I have no doubt that "catarrhal jaundice," as seen in peace time, is exactly the same condition as the "epidemic catarrhal jaundice" which occurred during the war, and which was described by me in the Lettsomian lectures, 1919. The enlargement of the liver and spleen occurs in both of these conditions and the symptoms are identical. The jaundice is due to pathological changes in the liver itself, probably arising from a bacterial infection. The degeneration of the liver cells in catarrhal jaundice may, as in some cases recorded by me, be of such severity as to cause death from auto intoxication and atrophy of the liver; this only occurred in about 0.4 per cent. of the cases of "epidemic catarrhal jaundice" seen in Mesopotamia in 1917. It would be expected that if catarrhal jaundice is hepatic in type it would show a definite impairment of hepatic function, and Dr. Spence's confirmation of this is of great value.

The differential diagnosis between catarrhal jaundice and arsenobenzol jaundice can, however, be clearly made. In arsenobenzol jaundice there is a history of the administration of the drug; there is absence of splenic enlargement; the enlargement of the liver is not always so uniform as it is in catarrhal jaundice—thus the right lobe may be relatively more enlarged than the left in salvarsan jaundice. In both kinds of jaundice the liver diminishes in size considerably during the continuance of the jaundice, but the diminution is usually more marked in the case of arsenobenzol jaundice. In arsenobenzol jaundice the laevulose test for hepatic function remains negative for a longer period, while in catarrhal jaundice Dr. Spence has found that the test only remains negative for about three days. The absolute differentiation is shown by the presence of arsenic in the urine, the hair, and the nails in the case of arsenobenzol jaundice. It is important that in the analysis a reliable method for the detection of arsenic should be employed, such as the electrolytic Marsh-Berzelius test, the organic matter being destroyed by treatment with arsenic-free sulphuric and nitric acids.

Professor M. J. STEWART (Leeds) made the following contribution to the discussion:

Toxic Jaundice due to Trinitrotoluene.

In the discussion on atrophy of the liver at the Cambridge meeting two years ago, brief reference was made to the after-history of a series of cases of toxic jaundice due to trinitrotoluene. The result of that investigation was so striking, as showing the remarkable powers of recovery of the liver from what must have been, in some of the cases at least, a very severe destructive lesion, that I felt that the result of a further "follow up" might be of interest in connexion with the present discussion. Within the past fortnight, therefore, I have obtained information about all of the 17 cases in that series, and I have personally seen 13 of them. They had all suffered with toxic jaundice during 1916 or in the early part of 1917, so that a period of from five to six years has now elapsed since their illnesses. Twelve patients, including 3 who were dangerously ill (one with a red cell count of less than a million), and 5 others who were deeply jaundiced, are now in excellent health. Five of them have married, of whom four have borne children (one, one, two, and three respectively) without trouble or difficulty of any kind. Only 3 of the twelve now complain of occasional attacks of epigastric pain, although two years ago nearly all of them had this symptom. Of the remaining 5 cases in this series, 2 appear to be really ill—one with gastric ulcer, for which she has already had an operation, the other with severe epigastric pain after food, and occasional vomiting. Neither is at present incapacitated, and the latter especially is well nourished. The other 3 patients are full of complaints, but give a rather unconvincing and incoherent account of their symptoms. Their attitude rather suggests a vague hope of further compensation. No single patient has had any return of jaundice, and none of them have ascites. On the whole I think it may be said that so far as ordinary signs and symptoms are concerned, none of these 17 patients appeared to have suffered from hepatic inadequacy. That a number of them had atrophy of the liver is beyond doubt. At the time of their illness 3 of them appeared, symptomatically, to have the disease in as severe a form as several of those who died, and half of them were deeply jaundiced. No doubt in such cases the liver is now the seat of an irregularly distributed fibrosis, but the after-histories given above suggest that this is a strictly limited and non-progressive lesion, probably a pure replacement fibrosis. It is equally clear that sufficient regenerative hyperplasia of the undestroyed liver tissue has

taken place to render the organ functionally sound. In due time, no doubt, old cases of T.N.T. jaundice will come to the *post-mortem* room, and opportunity will be afforded for studying the anatomy of the healed lesion.

The Cirrhosis of Haemochromatosis.

As Sir Humphry Rolleston has mentioned in his opening paper, one of the many unsettled problems in connexion with haemochromatosis is the relation to one another of the two chief hepatic lesions, siderosis and cirrhosis. The older view, which, however, is still held by many, is that the siderosis is the cause of the cirrhosis. A number of recent writers believe, on the contrary, that degeneration and cirrhosis constitute the primary lesion, and that deposition of haemosiderin occurs in consequence of this. A third group takes the view that "neither factor is causative of the other, and presumably the two are due to some third unrecognized cause" (Dunn). In connexion with this problem there is one aspect of the disease on which I think sufficient stress has not been laid; I refer to its chronicity. The observations of Muir and Dunn, Howard and Stevens, and others have shown that in well-marked haemochromatosis the total amount of iron stored up in the liver and other organs is simply enormous, requiring for its deposition many years at the ordinary dietetic rate of iron intake; Howard and Stevens even suggest forty years as the possible length of time in their case. Now it seems to me unlikely that such a state of affairs could be initiated, and continued, by a degenerative and cirrhotic condition of the liver, whereas a primary siderosis, lasting many years, might very well be the starting point ultimately of the degenerative hepatic changes. From an examination of seven cases of haemochromatosis met with in the *post-mortem* room, and illustrating various stages of the disease, I have endeavoured to ascertain whether or not there was any correspondence between the amount of hepatic siderosis and the degree of cirrhosis. The result may be shown in tabular form:

Cases of Haemochromatosis (all men).

Case.	Age.	Amount of Hepatic Siderosis (Microscopically Estimated).	Amount of Free Iron (Percentage of Dry Weight).	Degree of Cirrhosis (Microscopically Estimated).
1	49	+ + + +	3.78	+ + + −
2	71	− − − −	2.98	− − −
3	61	−	—	−
4	51		1.75	− −
5	44	−	—	−
6	52	+ + + +	4.5	
7	63	+ + − +	3.6	

Cases 1 and 2 had primary cancer of the liver.

The result of this examination is to show that the two processes, on the whole, keep pace with one another, but that, if anything, the cirrhosis tends to lag behind the pigmentary deposition. A notable point emerging from this study is that haemosiderin may exist in large amount in liver cells which, apart from the presence of the pigment, appear quite healthy, with large, well-stained nuclei.

Carcinoma of Liver in Cirrhosis and Haemochromatosis.

In a series of 6,000 *post-mortem* examinations made during the past twelve years at the Leeds General Infirmary there were in all 8 cases of primary carcinoma of the liver, an incidence of 0.13 per cent. In 4 cases the tumour or tumours originated in a cirrhotic liver, and in 2 others in an organ which was the seat of haemochromatosis as well. In all there were 149 cases of portal cirrhosis in the series, and the incidence in this group is thus no less than 4 per cent. So far as cancer in haemochromatosis is concerned, I know of three published cases (Rudfleisch, Löhlein, and Achard and Leblanc) and one unpublished (Dunn), in addition to the two mentioned above. Inasmuch, therefore, as the number of recorded cases of haemochromatosis must now be well over 100, it looks as if the incidence of carcinoma in this disease is no higher than in portal cirrhosis generally.

Professor STUART MCDONALD (Newcastle-upon-Tyne) said: I very much regret that I have been unable to hear the whole of the papers given in this discussion owing to my having to take part in the proceedings of another Section. I have had the opportunity, however, of reading Sir Humphry Rolleston's opening paper and am particularly interested in what he said in regard to the grave acute degenerations of the liver which may occur in syphilis and particularly in syphilitic cases treated by arsenobenzol compounds. I am particularly obliged for the opportunity of pointing out a slight error which Sir Humphry Rolleston has inadvertently made with regard to my views on this subject. In a paper which I wrote in the beginning of 1918, and which was published in the BRITISH MEDICAL JOURNAL (1918, i, p. 76), dealing with a group of cases of acute liver atrophy in syphilitic patients under salvarsan treatment, I arrived at some general conclusions with regard to the etiology of the condition. In that paper I made certain suggestions which have attracted some attention, and which have been referred to in the recent report of the Salvarsan Committee of the Medical Research Council (Special Report Series, No. 66). The subject is an extremely difficult and obscure one, and the Committee have been unable to come to any definite conclusion as to the exact part played by salvarsan in the production of acute yellow atrophy. From the evidence they present there can, I think, be little doubt that salvarsan accounts for the increased incidence of jaundice in syphilitic patients under treatment by modern methods. Arising out of my paper referred to above, investigations were conducted in Newcastle on this point, and I am at liberty to state that Dr. R. A. Bolam, who was primarily responsible for the clinical side of the investigation, is also convinced as to the relationship of the jaundice to the salvarsan administration. His opinion may be stated thus:

"In the ordinary course of treatment of syphilis by salvarsan compounds a number of cases of jaundice occur towards the end of the course or within two or three months after its completion. This raises the incidence of jaundice in syphilis considerably beyond what was observed in pre-salvarsan days. If a more intensive course be given, the percentage of jaundice cases rises still higher."

In the case of acute liver necrosis, however, the direct relationship cannot be made out so clearly, and the exact etiology of the condition still remains obscure. The Salvarsan Committee's final conclusion includes a statement "that the poisonous action is possibly dependent for its occurrence on the presence of adjuvant circumstances of a nature as yet unknown." There must be something to account for the extreme rarity of the condition. Considering the thousands of cases of syphilis which have been treated by salvarsan compounds the total number of cases of so-called acute yellow atrophy is extremely small. I have suggested the possibility that the condition only occurs when several factors are working together. It is well known that acute liver necrosis occurred in syphilitic patients in pre-salvarsan days and it appears to me that the syphilitic toxin is an important factor in the process. We know, of course, that certain other toxic agents—as, for example, trinitrotoluene, and possibly certain metabolic poisons—may induce a similar or closely related change in the liver. We are not concerned with these agents in this particular group of cases, but for practical purposes we may fairly, I think, take the syphilitic toxin, and the arsenic, and possibly mercurial factors as constant. I have suggested that the typical phenomena of acute yellow atrophy only appear when still another factor, bacterial infection, acts in conjunction with some or all of the others. In the particular group of cases I described I did obtain evidence of bacterial invasion. Admittedly the evidence is incomplete, as it was only obtained *post mortem*, but similar observations have been made elsewhere, and I am still convinced that in the cases I referred to bacterial infection did play a part in the process. The Salvarsan Committee points out very fairly that in certain cases, or groups of cases, there is a certain amount of evidence, apart from the actual bacteriological findings, that infection may be an important factor. I am of opinion that no final conclusion is likely to be arrived at without experimental work, and I intend to continue my investigations on those lines.

Sir ARCHIBALD GARROD, in summing up the discussion, referred to the observations of Hermann Strauss, published some years ago, upon the effect of diseases of the liver in lowering tolerance for laevulose as evidenced by the occurrence of alimentary laevulosuria after comparatively small doses of that sugar.

DISCUSSION ON THE PROGNOSIS AND TREATMENT OF CHRONIC RENAL DISEASE.

OPENING PAPER

BY

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EVERY medical man interested in the pathology of the renal system will probably agree that the subject of chronic renal disease presents problems that are as difficult and obscure as any arising in the whole field of clinical medicine. Many of our older views of kidney disease have gradually changed in the light of modern knowledge, and we can now obtain a very good idea as to the general state of the renal efficiency in any given patient, but the problem of prognosis, and particularly that of treatment, still bristles with innumerable difficulties.

Much has been published recently on the various aspects of renal disease, but I do not propose to enumerate the different opinions expressed, since this would take too long, and at best could only be a summary of very diverse views and conclusions. Instead of this I propose to give you certain conclusions, based chiefly on the results of a large scale experiment carried out on patients obtaining pensions for nephritis from the Ministry of Pensions. In 1919 an arrangement was made with the Ministry by which all patients in one of the London areas should be carefully examined at intervals, and the results obtained from time to time noted for comparison. This investigation was made possible by the Medical Research Council, which was good enough to furnish the necessary equipment and cards. This experiment has now gone on for three years, and it is hoped that it will ultimately furnish data on which the principles of prognosis may be established with some accuracy. Already many interesting points have come to light, but it will, of course, take several years before the full fruits of this investigation can be obtained. Already over 17,000 complete examinations have been carried out and the results tabulated, while several patients have been under observation for nearly four years.

Before passing on to a detailed discussion of prognosis and treatment, it is necessary to give a short account of the different varieties of chronic renal disease. In this connexion I wish to make it quite clear that I do not intend to enter into the problem of the histological appearances of the kidney in renal disease. This is largely of academic interest and has little or no bearing on either of the points under discussion to-day. In spite of the activity that has so frequently been exhibited in endeavouring to elucidate this aspect of the problem of renal disease, it is still impossible to forecast the exact histological condition that will be found *post mortem* in any case of chronic nephritis. In reality the pathological findings are of little clinical importance, for what we have to deal with is not dead histology but living function. It matters little what the microscopic or macroscopic appearances of the organ may be, for, whatever the nature of the *post-mortem* changes ultimately found, they all operate during life in one direction, and give rise to a more or less impaired efficiency of the renal system with all its detrimental consequences.

Looking at the problem from the biochemical point of view, I think all observers are now generally agreed that two distinct types of chronic renal disease are encountered. In the first type to be described the chief symptom is marked oedema, and frequently no other important manifestation is present. The accumulation of fluid in the system is often so great that the internal organs of the chest and abdomen are waterlogged, and unless relief is afforded the patient dies from what may be described as drowning. Sometimes a certain degree of cardiac and general weakness is also present, and the patient may occasionally succumb from cardiac failure and general asthenia.

The Hydraemic Type of Nephritis.

On investigating such a case by the usual biochemical tests no evidence of renal inefficiency is found, with the exception that chlorides are either absent or deficient. The amount of urine passed is small, and it always contains excessive amounts of protein, and frequently large numbers of hyaline and other casts, but there is little or no evidence of cardio-vascular changes. Examination of the blood shows no retention of nitrogenous bodies; the percentage of urea and other nitrogenous urinary constituents is normal, or even above the average, and the urea concentration test shows that the kidney is capable of concentrating urea nearly if not quite as well as in the normal subject. Shortly, in such a case there is no evidence whatever of any defect on the part of the renal system in eliminating the waste products of nitrogenous metabolism; the only apparent failure is in the excretion of salt and water. Because of the marked retention of water in these patients I have on former occasions referred to this type of case as the hydraemic variety of chronic nephritis; in a general way the condition corresponds to the textbook description of chronic parenchymatous nephritis, but it is really more a subacute than a chronic condition, for in a comparatively short time either the oedema clears up or the patient succumbs.

The Azotaemic Type of Chronic Nephritis.

This type of chronic nephritis is quite different in its manifestations from the hydraemic variety just described, and is characterized by a defect on the part of the renal tissue in the elimination of nitrogenous waste products. Salt and water are excreted quite well; indeed, the amount of urine passed is often excessive. In typical advanced cases, examination of the blood shows an increase in the urea and other nitrogenous bodies such as uric acid and creatinin. The normal power of the kidney to secrete a urine containing a much higher concentration of urea and other bodies than exists in the blood plasma is markedly interfered with, so that instead of concentrating urea in the urine to an extent 70 to 100 times that present in the blood the concentration is much lower and the urine may not contain more than 10 times or less the urea in the blood. The urea concentration test gives low figures, and frequently the diastatic value is also low. This condition is often associated with cardio vascular changes, which may be very marked. Generally, albuminuria is not very extensive; indeed no protein at all may be passed. Large numbers of casts are often present, but, on the other hand, it may be impossible to detect any casts even in carefully centrifuged specimens. Since the principal result of this type of chronic disease is an interference with the normal power of the kidney to excrete nitrogenous bodies, it may be referred to as the azotaemic type. This is the condition which is always present in real chronic renal disease and it corresponds with the usual textbook heading of chronic interstitial nephritis.

Mixed Types of Chronic Nephritis.

The above brief description of the two types of renal disease refers to typical cases. Not infrequently the two types may be manifest in the same patient, when marked oedema and retention of fluid will be associated with a more or less definite inability on the part of the kidney to excrete nitrogenous bodies and to concentrate urea and other substances. This combination frequently gives rise to a very grave clinical condition, and often terminates fatally.

Briefly, the chief points which characterize the different types may be summarized as follows:

Hydraemic Type.	*Azotaemic Type.*	*Mixed Type.*
Marked retention of fluid in tissues; severe oedema, etc.	No oedema.	Oedema may be well marked.
No retention of nitrogenous products.	Tendency to retention of nitrogenous products.	Retention of nitrogenous bodies.
Retention of salt and water.	No retention of salt and water.	Retention of salt and water.
Little evidence of cardio-vascular changes.	Cardio-vascular changes known to be well marked.	Cardio-vascular changes may be marked.

Indications on which Prognosis is Based.

The prognosis in any case of chronic nephritis depends chiefly on three factors: (1) the general clinical condition of the patient; (2) the physical state of the cardio-vascular system; (3) the results of biochemical tests.

With regard to the clinical condition it is unnecessary to say much here, since the main symptoms of chronic nephritis are well recognized. General weakness, loss of flesh, severe headaches, vomiting and gastro-intestinal symptoms, twitching of the muscles, convulsions, mental phenomena, and other uraemic manifestations are, if at all well pronounced, sure evidence of a grave condition which indicates a bad prognosis. It is, of course, well understood that even very definite uraemic manifestations—such as convulsions, for instance—are

not necessarily associated with an immediately fatal issue, and sometimes patients recover temporarily and live for several months, or perhaps a year or more, after these attacks. In my experience, however, no patients in whom the above symptoms were well pronounced lived for any considerable time. Further, in all cases the prognosis is markedly influenced by the state of the cardio-vascular system. This will be fully discussed later.

With regard to renal tests it may at once be said that they afford much more definite evidence of the real state of affairs than is indicated by the clinical condition. Indeed, it is not uncommon to have patients bordering on fatal uraemia who show practically no clinical symptoms whatever, and who are quite unaware that they are suffering from any serious disease. Such patients always show quite definite evidence of the true condition when subjected to renal tests. So marked is the contrast between the clinical condition and the results of tests in some patients that at first one hesitated to accept the grave indications of the tests. Unfortunately, however, in the great majority of cases the result belied the clinical condition, and very soon definite symptoms appeared, terminating in the death of the patient. As the result of observing a large number of patients suffering from nephritis I now take the view that in cases where the clinical condition is not in accordance with the results of tests the clinical condition should not be considered very seriously. I am aware that this view is not accepted by all observers, but on inquiry it will generally be found that the upholders of the clinical condition as against the results of renal tests are generally individuals who have had little or no personal experience of modern methods of renal investigation.

Methods of Examination for Renal Efficiency.

Whatever tests an observer makes use of, it is important that he should adopt some definite system and apply this in all cases. This is the only means by which familiarity with the results of renal tests can be obtained, and by no other method is it possible to arrive at a correct interpretation of these results. At St. Thomas's Hospital we make use of the following scheme; it is easily carried out, and, in my opinion, furnishes all the information required in the great majority of renal patients. In each subject the following points are investigated:

A. General condition and symptoms.
B. Cardio-vascular condition: Blood pressure; position of apex beat; nature of second aortic sound; condition of peripheral arteries.
C. Renal tests: (1) Blood urea estimation. (2) Examination of urine for protein, casts, blood, leucocytes, etc. (3) Urea concentration factor. (4) Urea concentration test. (5) Diastatic test.*

The Part Played by Renal Tests in Prognosis.

Before proceeding to a discussion of the importance of the cardio-vascular condition in prognosis, it will simplify matters if the interpretation of the renal tests referred to is now described. In chronic renal disease the results of blood examination, taken in conjunction with the urea concentration test, furnish perhaps the most useful knowledge as to the condition present.

Examination of the Blood.

The estimation of the so called non-protein nitrogen of the blood is of very great value, but since the blood urea is more easily estimated than the total nitrogenous products the content of the blood in urea is frequently relied on in renal investigations. This estimation gives, in the great majority of cases, all the information required, but it must be understood that the normal variations of blood urea are comparatively large and depend to a great extent on the nature of the food. In the healthy normal individual on ordinary diet the figure for blood urea should lie somewhere in the region of from 20 to 40 mg. per 100 c.cm. blood. In elderly people, however, it is not uncommon to find 50 mg. or even more, without any definite evidence of renal disease apart from the normal senile changes. While one might be justified in taking a serious view in the case of a young patient, aged say 20 years, whose blood contained 60 mg. urea per 100 c.cm., a similar urea content in a patient of 75 years, and taking a similar diet, would have an entirely different significance. It is impossible to give exact figures, since the blood urea content varies so much as the result of different factors; but in general it may be said that the older the patient the more liable he is to have an increased blood urea content, and for practical purposes the blood urea concentration of the average normal individual on ordinary diet may be taken as ranging from about 15 mg. per 100 c.cm. in the young adult to 60 mg. or so in individuals over 70 years of age. When we get beyond this amount, the condition is undoubtedly abnormal, but any conclusions drawn from blood urea examinations must be considered in relation to age and diet. A persistent high urea content of over 60 mg. per 100 c.cm. in a young man, or a somewhat higher content in an elderly man, is of grave significance, as it indicates that probably about three-quarters of the renal tissue is not functioning.

It is most important to note that no prognostic significance can be attached to a single blood urea estimation, unless other tests and the clinical symptoms present indicate that the condition is really a chronic one, for temporary increases of the blood urea are by no means uncommon in patients suffering from very slight degrees of nephritis, and even in cardiac and other cases where there is no reason to suspect the presence of nephritis at all. Persistent high blood urea, however, is a most important feature, and is of much significance in enabling us to form an opinion as to the gravity of the condition. In chronic diseases the increased urea is practically always accompanied by some increase in the uric acid and creatinin of the blood as well, and when these substances are found to be definitely raised the outlook is certainly bad. An increase of blood urea, without a corresponding increase in the total non-protein nitrogen, is not necessarily of much importance, but it is rarely, if ever, that a definite increase in urea concentration is found in chronic nephritis without a corresponding increase in the uric acid and creatinin. In certain non-renal conditions this may occur, but even then it is unnecessary to estimate anything but the urea, for the true aspect of the case can be ascertained by combining the result of this test with that found by means of the urea concentration factor and the urea concentration test now to be described.

Urea Concentration Factor.

One of the chief functions of the kidney is to excrete the waste products of the blood in a concentrated form in the urine. A normal kidney has to deal, on the one side, with blood containing, say, 20 mg. urea per 100 c.cm.; while, on the other side, it secretes a urine containing perhaps 1 600 mg urea per 100 c.cm. Thus in the formation of urine it concentrates the blood urea 80 times, and it is this power of concentrating that is referred to as the urea concentration factor. In disease this power of concentration is frequently very much diminished, the extent depending, of course, on the gravity of the lesion. In chronic nephritis of moderate severity the urea concentration factor may amount only to 30 or 40, while in severe cases it may be as low as 5 or even lower. Generally speaking, when this factor is below 10 the outlook is grave. The urea concentration factor should always be estimated in patients in whom a blood urea estimation is made by taking a sample of urine immediately after taking the blood and estimating the urea in both blood and urine. The result obtained from the fraction

$$\frac{\text{Milligrams of urea in urine per 100 c.cm.}}{\text{Milligrams of urea in blood per 100 c.cm.}}$$

gives the urea concentration factor.

This factor is of very great value in correcting our interpretation of certain cases in which the blood urea is high. If the urea concentration factor is also fairly high—or, in other words, if the urine contains a high percentage of urea (say 2.5 or so)—it is very improbable that the kidneys are inefficient, and the high blood urea is probably dependent on some accidental condition rather than on renal changes.

Urea Concentration Test.

This test was introduced by Maclean and de Wesselow a few years ago, and is based on the principle of ascertaining the power of the kidney to concentrate urea in the urine when an excessive supply is present in the blood. The patient, after emptying his bladder, receives 15 grams urea dissolved in a few ounces of water. Urine is collected at the end of each hour for two or three hours and the urea content estimated. Generally the urine passed at the end of the second hour shows a higher concentration than that of the first hour, and this sample is usually taken for the urea estimation. The lower urea content of the first hour's urine is due to diuresis set up by the urea; this diuresis generally passes over during the first hour, but may continue so as to

*For a full description of these tests see *Modern Methods in the Diagnosis and Treatment of Renal Disease*. Constable and Co. London.

influence the result of the second hour's urine. In such cases the urine passed after the third hour should be taken. The total amount of urine excreted should not exceed 120 c.cm. during the hour in which the urine taken for the urea estimation is passed. It is important to note that this test depends on concentration of urea alone and not on the amount of urea passed during a given period or other irrelevant points. It is necessary to emphasize this, as the principle of the test has been completely misunderstood and mixed up with other tests in quarters where, perhaps, such confusion might hardly be expected to prevail.

If after the ingestion of 15 grams urea the patient passes a sample of urine containing over 2 per cent. urea, the renal condition is fairly good; if the concentration is 2·5 per cent. or over, experience indicates that the kidney may be accepted as being quite efficient. In the absence of diuresis, concentrations of 1.5 per cent. or so indicate a moderately severe condition, but where the concentration is only 1 per cent. or less the outlook is grave.

Diastatic Test.

This test has been much utilized in the investigation of renal disease, but its results are somewhat erratic and its interpretation frequently difficult. The test depends on the fact that normally a certain amount of diastase is secreted from the blood into the urine, the amount passed being dependent on the integrity of the kidney. Expressed quite empirically, the urine of a normal individual generally contains from 6 to 20 units of diastase. When the kidneys are diseased the amount of diastase in the urine is reduced, and may be represented by a value of 1 or even less. In short, the lower the diastatic value the more intense the pathological changes in the kidney are likely to be. The test is useful but too erratic to be of much value by itself; in conjunction with other tests it is sometimes helpful.

In the absence of marked cardio-vascular lesions the interpretation of these tests and their bearing on prognosis may be summarized as follows. When severe cardio-vascular manifestations are present in addition to the nephritis the prognosis is correspondingly worse.

Blood Examination.

When the blood urea is persistently much over 50 milligrams per 100 c.cm. in a young adult, or 60 milligrams in an elderly subject, the prognosis is not hopeful, provided the other tests give similar indications. The possibility of increased blood urea as the result of a temporary exacerbation grafted on to a chronic nephritis must not be lost sight of, and various other causes of increased blood urea, quite apart from kidney lesions, must be remembered. In cases of high urea content there is generally an increase in inorganic blood phosphates, and such a combination is of serious import. Indeed, it would seem that the retention of phosphates is in some way connected with the onset of uraemia, so that phosphate retention must be considered as a serious indication. Progressive increase of blood urea concentration is also a most unfavourable omen.

Urea Concentration Factor.

When this is low the outlook is very grave. When it gets to the region of 2 or 3 the case is hopeless and life cannot be long sustained. Whatever the concentration of the blood urea the prognosis is good if the urea percentage in the urine is high.

Urea Concentration Test.

When the blood urea is high it is unnecessary to do this test as sufficient urea is already present in the blood, and all that is required is to estimate the urea concentration in a specimen of urine. Even if 15 grams urea be given in such a case no increase in urinary urea is obtained. When the blood urea is normal the pathological condition is naturally less severe, but the extent of the lesion can generally be indicated by the results of this test. If the urea percentage when using this test is over 2 or 2.5 the kidneys are quite efficient to carry out their functions. If much lower prognosis is more serious.

Diastatic Test.

In severe renal lesions the diastatic value will probably be less than 5, but little importance can be attached to this test alone in any given case.

Importance of Cardio-vascular Condition in Prognosis.

The state of the heart and arteries is of very great importance in helping us to forecast the probable course of chronic nephritis of the ordinary azotaemic variety. The opinion is widely held at present that arterial sclerosis and other vascular manifestations are generally associated with marked deficiency of the kidney, and that many of the symptoms exhibited by patients with high blood pressure are largely dependent on the renal condition. Thus it is generally assumed that a patient who shows definite cardio-vascular changes combined with slight albuminuria, and perhaps the passage of a few casts, is almost necessarily suffering from more or less grave nephritis; indeed, the tendency is to regard the cardio-vascular changes as essentially secondary to the kidney lesion. This undoubtedly is the correct view to take in many cases, but there is now sufficient evidence to prove quite conclusively that in many patients with high blood pressure and other cardio-vascular changes the kidneys may be but slightly if at all affected. The more one investigates these cases the more apparent does it become that there is no necessarily close relationship, in all cases, between the condition of the kidney and the condition of the cardio-vascular system. In many patients suffering from chronic nephritis the cardio-vascular changes undoubtedly become more marked as the renal defect progresses; there are, however, many subjects who show but little evidence of marked cardio-vascular changes, but in whom the renal system is hopelessly inefficient. Conversely, it is not uncommon to find patients with very marked cardio-vascular changes in whom but little evidence of renal disease can be ascertained. These points must always be taken into consideration in estimating prognosis, for, in a general way, apart from such accidents as cerebral haemorrhage, the outlook in a patient with high blood pressure is not so bad if the kidneys are efficient. Indeed, such patients may enjoy comparatively good health for many years, even with a blood pressure as high as 200 mm. mercury or even more. This observation explains the curious cases one occasionally finds quoted in the literature, in which a history of high blood pressure of 250 or over, frequently associated with retinitis and other eye changes, was not incompatible with the enjoyment of fairly good health for several years. In such patients the kidneys were undoubtedly effective, at least during the earlier stages of the condition; in some instances the so-called uraemic manifestations which were said to be the cause of death were nothing more than the

TABLE I.—*Patients with High Blood Pressure but Efficient Kidneys.*

No.	Date of Examination.	Duration of Disease.	Blood Pressure (systolic).	Blood Urea per 100 c.cm.	Urea Concentration Test.	D Value.	Protein	Casts.
				Mg.				
1	12.4.20	5 yrs.	182	28	3.2	10	Slight	Few hyalo-granular.
	27.4.21	—	176	25	3.2	10	Trace	
	3.5.22	—	164	30	3.2	20	Slight	
2	26.3.20	5 yrs.	155	30	3.1	10	Trace	Nil.
	25.4.21	—	165	25	2.9	6	Trace	Few hyaline.
	20.2.22	—	180	22	2.8	15	Trace	Few hyaline.
3	5.9.20	4 yrs	197	33	2.5	6	++	Few granular and epithelial,
	22.2.21	—	185	27	2.7	10	++	
	4.8.22	—	190	26	2.6	5	++	
4	12.7.21	6 yrs.	205	—	3.4	6	++	Few hyaline.
	18.1.22	—	210	24	3.1	10	++	Fair number hyaline and granular.
5	14.4.20	6 yrs.	180	33	3.0	10	Trace	Nil.
	15.6.21	—	180	29	3.1	10	Nil	Nil.
	9.4.22	—	180	—	2.9	6	Trace	Nil.
6	19.6.20	4 yrs.	183	35	2.8	15	Trace	Nil.
	6.6.21	—	195	—	2.7	15	Nil	Few hyaline.
	20.4.22	—	200	—	2.7	10	Fair amount	Nil.
7	6.6.21	5 yrs.	180	—	3.2	6	Trace	Few hyaline.
8	20.4.22	5 yrs.	210	25	2.8	6	Trace	Few hyaline.
9	14.2.22	6 yrs.	215	32	2.6	6	Trace	Numerous hyaline and epithelial.
10	20.1.22	Uncertain	240	26	3.1	10	Fair amount	Few hyaline.
11	15.3.22	5 yrs.	210	—	2.5	10	Trace	Numerous hyaline and epithelial.
12	20.12.21	4 yrs.	206	35	3.3	10	Trace	Nil.
13	10.2.22	5 yrs.	193	—	3.0	15	++	Few hyaline and epithelial.
14	5.2.22	Uncertain	230	24	2.9	10	Trace	Few hyaline.
15	20.6.22	21 yrs.	205	—	3.1	10	Faint trace	Few hyaline.

direct results of cardio-vascular degeneration and could not be regarded as evidence of death from renal disease. High blood pressure, when associated with definite and advanced renal changes, may be regarded as hopeless. In Table I are given the results obtained in a series of 15 patients with high blood pressure and vascular changes, in whom renal efficiency tests showed definitely that the kidneys were but little affected and quite efficient to perform their ordinary functions. In the majority of these patients there was a history of acute nephritis some years before. In spite of the high blood pressure and other changes present, the prognosis in such cases is much more hopeful than it would be if the renal system were badly involved.

That there are some grave cases of nephritis in which the cardio-vascular system is not involved to any appreciable extent is seen from the results given in Table II. Here, as the figures show, the renal efficiency in many cases was hopelessly bad and the prognosis about as grave as could be.

TABLE II.—*Patients with very Defective Kidneys, but no Blood-Pressure Changes.*

No.	Duration of Disease.	Blood Pressure.	Condition of Arteries.	Blood Urea per 100 c.cm.	Urea Concentration Test.	D. Value.	Condition of Urine.
				Mg.			
1	6 yrs.	160	Good	194	0.85	1	Large numbers of hyaline, granular, and epithelial casts. Much protein.
2	4 yrs.	150	Good	200	0.9	1	Casts of all kinds exceedingly numerous. Much protein.
3	Uncertain	125	Good	240	0.9	2	Protein and casts in abundance. Some leucocytes.
4	Uncertain	145	Fair	303	0.7	—	Fair amount protein. Hyaline and epithelial casts.

Note.—The position of the apex beat was normal in Cases 1, 3, and 4; in Case 2 it was just inside the nipple line in the fifth space. The second aortic sound was normal in all four cases.

It is no doubt true that slight renal involvement associated with marked cardio-vascular changes is not more common than the converse—marked renal involvement with little or no cardio-vascular changes. Usually, of course, chronic nephritis is accompanied by some involvement of the cardio-vascular system, but this is not necessarily very marked, and varies considerably in extent. Types of marked involvement of both cardio-vascular and renal systems are given in Table III.

TABLE III.—*Patients showing Well-marked Vascular and Renal Lesions.*

No.	Date of Examination.	Duration of Illness.	Blood Pressure.	Blood Urea per 100 c.cm.	Urea Concentration Test.	D. Value.	Condition of Urine.
				Mg.			
1	2.9.21	12 yrs.	248	—	1.1	1	Much protein; numerous casts of all kinds.
2	5.10.21	7 yrs.	184	—	1.3	5	Fair amount of protein; many epithelial casts.
3	6.8.21	6 yrs.	178	60	1.1	6	Very large amount of protein; numerous casts.
4*	7.9.22	4 yrs.	280	—	0.9	2	Protein in fair amount. Numerous epithelial and granular casts.
5	8.4.22	5 yrs.	258	—	1.0	4	Very large amount of protein with very numerous casts.
6	6.4.22	6 yrs.	250	95	1.2	4	Protein moderate; epithelial and hyaline casts.
7*	10.10.21	Uncertain	246	210	0.7	1	Fair amount of protein; very many casts of all kinds.
8*	29.6.21	7 yrs.	230	—	0.6	2	Much protein; fair number of epithelial and granular casts.
9	31.3.22	11 yrs.	200	—	1.0	1	Protein abundant; fair number of casts.
10	7.10.21	Uncertain	280	92	1.2	5	Moderate amount of protein; few epithelial casts.

* These patients died.

Some General Observations.

In the majority of renal patients suffering from chronic interstitial nephritis azotaemic nephritis) it is not very difficult to arrive at a fairly accurate prognosis when the method of examination suggested is carried out; this is more especially the case when the patient is under observation for some time. In severe conditions the clinical symptoms alone will often indicate that the end cannot be far distant. Probably it is true that chronic renal patients with marked eye changes, such as retinitis and haemorrhage, do not as a rule live more than one or two years, but there certainly are many exceptions. When, however, we consider very carefully the state of the cardio-vascular system and the results of renal tests, there is very seldom any great difficulty in arriving at a definite conclusion as to the condition existing at the time of examination. On the other hand, it is not so easy, in some cases, to estimate the probable rate of progress of the disease, and frequently this can only be done by repeated examinations at intervals. Again, the liability of contracting an acute attack of nephritis must always be considered, but cannot of course be foreseen, and to this extent we must always be working in the dark.

The following results (Table IV) obtained from patients with varying degrees of nephritis illustrate some of these points:

TABLE IV.

No.	Blood Pressure (Systolic).	Blood Urea per 100 c.cm.	Urea Concentration Factor	Urea Concentration Test.	Condition of Urine.	Opinion of Case.
		Mg.				
1	240	116	8	0.9	Much protein; epithelial and granular casts.	Condition serious; prognosis very bad.
2	200	38	60	3.1	Protein small amount; few epithelial casts.	Kidneys good; prognosis good as regards renal condition.
3	160	30	50	2.8	Fair amount of protein; few hyaline casts.	Condition fairly good; prognosis quite hopeful.

Note.—The arteries were thickened in Case 1, and slightly so in Case 2; in Case 3 they were normal. In Case 1 the apex beat was in the left nipple line, fifth space; in Cases 2 and 3 it was in the normal position.

Prognosis in Surgical Operations.

Not infrequently the question of operation arises in the case of patients who happen to be suffering from some degree of chronic nephritis. In all such patients renal tests on the lines just indicated should be carried out, when it will generally be quite possible to say whether or not the renal lesion precludes operative interference. If there is no increased blood urea, and the result of the urea concentration test is good, it may be stated with some certainty that the renal condition does not contraindicate operation. This is a very large subject which it is impossible to discuss more fully here, but it may be said that experience shows that extraordinarily accurate forecasts can be made.

Frequently after operations on the genito urinary organs, or after other major abdominal operations, the patient does very well for a few days, and then passes into a condition which is frequently associated with serious symptoms, and is variously labelled as "peritonitis," "acute post-anaesthetic dilatation of the stomach," "delayed shock," "paralysis of the intestine," etc. It is hardly recognized that the majority of these cases appear to be of a uraemic nature, and generally clear up if the kidneys are moderately efficient. In conjunction with Dr. I. Jones I have made a considerable number of observations on this type of case, but as a full report will shortly appear it is unnecessary to discuss the matter further at this stage.

Treatment of Chronic Nephritis.

The detailed treatment of chronic nephritis requires little comment; it really resolves itself into the treatment of symptoms and is carried out by the use of the ordinary well-known remedies, with slight variations depending on the particular fancy of the medical practitioner. In all cases the general régime is important. Warm clothing, hot baths, careful attention to the bowels, avoidance of exposure to cold and wet, and, if possible, residence in a warm climate, are factors which no doubt frequently result in prolonging life. Unfortunately, it is often difficult or impossible for the patient to avail himself of all these measures. When he can do so nobody will, I think, deny that they are likely to prove helpful. The chief interest, however, in the treatment of chronic renal disease revolves round the question of diet, and nearly all medical men are careful to give very stringent injunctions as to the nature and amount of the

food which the nephritic patient may eat. In discussing this problem it is necessary to remember that the two forms of disease already mentioned—the hydraemic or chronic parenchymatous form and the azotaemic or chronic interstitial form—present rather different problems, and must be dealt with separately.

Diet in Chronic Interstitial or Azotaemic Type.

The usually accepted diet for chronic interstitial nephritis is one in which the protein constituent is low. The view adopted is that, the renal system being the chief means by which waste nitrogenous products are eliminated, these products should be reduced to the minimum in order to spare the kidneys. This conception, no doubt, contains a germ of truth, but it was formulated in other days when our conceptions of protein metabolism and of renal activity were very different from what they are to-day. Really it is quite an open question whether protein in itself is at all detrimental even in cases of advanced renal disease. I am at present carrying out experiments in connexion with this problem, but the subject is a difficult one from the experimental standpoint. It is quite certain that even complete withdrawal of protein from the diet in cases of advanced lesions associated with uraemia does not influence the uraemic manifestations. It is frequently not difficult by the use of a carbohydrate diet to reduce the blood urea and non-protein nitrogen in a uraemic patient to well below the normal value, but this does not influence the uraemia. Until our information on this subject is largely increased it will, no doubt, be wise to restrict the amount of protein consumed when treating advanced cases. On the other hand, it is important to bear in mind that the ordinary healthy individual requires protein in order to maintain health, and that the minimum amount necessary seems to be about one gram per kilogram of body weight. When this amount is materially reduced the individual suffers sooner or later. It would, therefore, seem best to allow this amount of protein in all but advanced cases. In patients with slight or only moderately severe lesions, it seems best to give a diet containing a fair amount of protein, and the present custom of putting such patients on slops containing but a minimum of protein is to be deprecated. Many such patients suffer more from treatment than from the renal condition. When, therefore, the renal tests show that the kidney lesion is not severe, much benefit is frequently derived from an increase of protein food. On the whole, there is little doubt that the dietetic treatment of the milder forms of interstitial nephritis is at present too strict, and the patients do much better on a more liberal ration. In every case before putting a patient on any form of restricted diet the condition of the kidneys should be carefully ascertained, for sometimes the presence of a little albuminuria is the sole condition that can be found. In such patients dietetic treatment is superfluous, and frequently does harm. In the more severe types of disease it is probably advisable to limit the protein, but even here a fair amount should be given. It must be remembered that the body will itself supply waste products from its own tissues when little or no protein is given as food, so that it is impossible to eliminate altogether the work of the kidneys in excreting waste products.

Diet in Hydraemic or Parenchymatous Nephritis.

As already indicated, there is no retention of nitrogenous waste products in this variety of disease, and no apparent difficulty on the part of the renal system in excreting these products. Theoretically, therefore, there is no need to restrict protein. Since a large amount of protein is generally lost in the urine, an additional reason for the giving of protein is supplied. Practically it is found that a large protein diet is generally more effective than any other measure in clearing up the oedema and in helping to restore the patient to comparative comfort. This type of disease constitutes a phase which is essentially of moderate duration, for under favourable conditions it tends to pass into what is usually a mild form of interstitial nephritis. It may, however, pass into a very severe form of the interstitial variety, and in such cases the prognosis is grave. Until this condition—representing the chronic interstitial type of nephritis—supervenes, the ascites and oedema persist. Epstein and others have shown that the best method to get rid of the excess of tissue fluid is to give large amounts of protein in the diet. There is no doubt that large protein ingestion gives wonderful results in many cases, and this method should be adopted with all patients suffering from typical hydraemic nephritis without any azotaemia. Sometimes the elimination of salt from the diet has a marked beneficial effect, but generally this alone is not sufficient; combined with high protein diet it is very often helpful. The exact mechanism by which protein acts in clearing up the oedema is not quite understood, but the increase of blood urea which naturally follows the increased protein ration is probably the chief factor on which this favourable result depends. The urea acts as a diuretic and so causes an increased flow of urine. In proof of this it is frequently found that daily dosage with 15 to 30 grams of urea for a few weeks will clear up very obstinate cases. In short, the best treatment for hydraemic nephritis is a large salt-free protein diet, accompanied at first with some urea given by mouth. This should be combined with rest in bed, hot-air baths, and free action of the bowels.

Decapsulation of Kidneys in Hydraemic Nephritis.

This is the type of case in which decapsulation of the kidneys is frequently attended with an improvement of the condition. While the results of this treatment are by no means uniform, it does seem that many patients suffering from obstinate hydraemic nephritis are greatly benefited by this procedure. The symptoms appear to suggest that the renal channels are blocked up with débris and swollen cells so that fluid can pass with difficulty, and so it is easy to understand how relief of this tension might give good results. Personally I have not had much experience of this treatment, but what I have seen suggests that in hydraemic nephritis operative procedures of this nature will play a much larger part in the future than has been the case in the past.

Though the discussion of the treatment of chronic nephritis is necessarily somewhat curtailed, we must face the fact that at present there is no specific treatment for this condition, and much work must still be done before we can be at all certain of the best means of combating this insidious lesion, and, if possible, preventing its advance.

DISCUSSION.

Dr. JOHN D. COMRIE (Edinburgh) said: One should not lose sight entirely, I think, of certain old and simple methods of testing the condition of the kidneys. The absolute amount of albumin that a nephritic patient passes is no criterion whatever of the state of kidney inefficiency, for the leak may be of a merely functional character, even when it is pronounced in degree; and on the other hand the kidneys are often very much damaged in structure and in efficiency when a mere trace of albumin appears in the urine. Nevertheless, if a case of parenchymatous nephritis be under continual observation and treatment, and if the albumin be carefully estimated every day, a useful indication as to prognosis is obtained, so that if a progressive diminution is noted the sign, *caeteris paribus*, is favourable. Again, the question as to how the patient secretes water—or in other words the maintenance of the normal proportion between the amounts of day urine and of night urine—is of much importance. This is an indication mainly, I think, of the state of the cardiovascular system as regards hypertrophy and sclerosis. Various methods have been suggested by Leathes,[1] John,[2] etc., for carrying out this test, but the most satisfactory in my opinion is to measure the quantity of night urine (9 p.m. to 7 a.m.) in one collection, and the day urine in seven two hourly (7 a.m. to 9 p.m.) collections. Normally the total night urine is not greater than any one of the two-hourly day urine samples, which show also considerable fluctuation. In the nephritic with marked arterio-sclerosis there is "fixation" of the rate of excretion, the two-hourly excretion tending to be more and more the same by day and night as the condition becomes progressively worse. This rule, as shown by Boyd and Malcolm Smith,[3] is not, however, always true, especially in cases of severe nephritis with little arterio-sclerosis, and thus the test is not of value in all cases. The same unreliability attends the estimation of the rate of secretion of chlorides, of potassium iodide, and of some other easily soluble substances, whose amount is a function of the water excretion. The amount of pancreatic diastase excreted in the urine I have also found to be so variable as to be often unreliable.

The three tests upon which I place most reliance are: (1) the estimation of blood urea; (2) the urinary urea concentration test; (3) the excretion of phenolsulphonephthalein. Any one test is liable to have fallacies, and the kidneys may give a fair reaction with one while being less

[1] *Lancet*, 1920, ii, p. 923.
[2] *Münch. med. Wochenschr.*, February, 1921, p. 180.
[3] BRITISH MEDICAL JOURNAL, 1921, ii, p. 428.

efficient with the others, so that these tests form useful mutual controls.

1. The estimation of blood urea is simply carried out by the urease method. One must be sure that the ferment used is active, and for the same reason one must be careful not to raise the temperature of incubation above 110° F. Any rise above 50 mg. per 100 c.cm. of blood indicates a marked urea retention; and if it be permanently over 100 the case is almost invariably a serious one; in bad cases of acute uraemia it may reach two or three times that amount and death is then very likely. A negative result is not, however, proof of normal renal efficiency, since persons with marked nephritis often have a normal blood urea of 30 mg. or thereabout. This applies to cases of subacute diffuse nephritis, or hydraemic nephritis, with a special tendency to dropsy. In such cases the patient may throughout the whole course of the disease show no accumulation of urea in the blood. This fact is particularly important to bear in mind in cases where the estimation of blood urea is used as a test for the capacity of the patient to undergo a severe surgical operation. The blood urea is also a valuable dietetic indication. These dropsical patients with low blood urea are benefited by a diet containing protein foods of easy digestibility—for example, mutton, chicken, and fish—while cases of the azotaemic type, with raised blood urea, should be kept for long periods on a milk and carbohydrate diet.

2. The urinary urea concentration test is the simplest test to carry out, and affords a very good general indication of the renal efficiency. It is carried out by administering 15 grams of urea in 200 c.cm. of water, and estimating the percentage of urea in the second hour's specimen of urine. A percentage of 3.5 or over indicates a normal renal function; over 2 per cent. it is compatible with a fair degree of health; and persisting below 2 per cent. in spite of treatment it is very unsatisfactory. Persisting below 1 per cent. it is a sign of impending death. It is often noticed that the diuresis caused by the urea produces a low reading, and I would suggest a correction as follows for the watery state of the urine produced by this hydrodynamic response of the kidney. The usual amount of urine passed after the urea test, in the second hour, is about 150 c.cm., and the reading could be corrected to that amount by the following formula—

$$C = U \times \frac{Q}{150},$$

where C is the concentration expressed in terms of the average quantity of urine passed in the second hour after the test, Q the actual quantity passed, and U the percentage of urea found in this. For example, if the patient passes 250 c.cm. in the second hour and this is found to contain 2 per cent. of urea, then

$$C = 2 \times \frac{250}{150} = 3.3 \text{ per cent.},$$

that is, the figure corrected for the watery diuresis. Otherwise, if the quantity of urine is much above or below 150 c.cm., one must simply discard the test and try it again next day.

3. The phenolsulphonephthalein test has been used by the writer[1] constantly for the past twelve years, and he regards it as the best, though not the simplest, individual test. It has certain requirements and fallacies. In the first place, one must measure very accurately for intramuscular injection 1 c.cm. of the phenolsulphonephthalein solution (containing 6 mg. of pigment). The urine must be completely voided for the two-hourly samples, and rendered strongly alkaline by 10 c.cm. of 10 or 15 per cent. caustic soda. The pigment of the urine, and especially the presence of blood, constitute considerable fallacies unless care be exercised. These can be avoided by filtration and the use of a suitable optical filter introduced below the prism of the colorimeter, as shown in the following table, which gives the average of a number of observations:

	Greenish-yellow Diabetic Urine.	Dark Brown Clear Urine.	Urine Smoky from Blood.
Actual percentage of phenolsulphonephthalein present	50%	50%	50%
Reading unfiltered	59%	70%	55%
Reading when filtered and colour screen used	53%	53%	52%
Reading when shaken with charcoal and filtered	-	-	48%
Reading after shaking with lead acetate and filtering	0	0	0

[1] *Edin. Med. Journ.*, February, 1922, p. 34.

The most correct reading is thus obtained by filtering the urine through a fine filter paper and using an optical colour screen. The excretion of this substance should take place chiefly in the first hour, and the amounts of the two hours should total at least 70 per cent.; excretion of 50 per cent. is compatible with recovery under treatment; 30 per cent. is low, but life may proceed on a low plane of vitality; an excretion below 20 per cent. is bad, and if it persists much below this figure death usually ensues within a few months.

Dr. J. ODERY SYMES (Bristol) said: I wish to confine my remarks to the prognosis and treatment in chronic parenchymatous nephritis. All textbooks agree that this is one of the most unfavourable and rapidly fatal forms of nephritis. Jeanselme in his recent work, *Maladies des Reins*, says: "Death takes place in from three to twelve months, and is often hastened by cardio-pulmonary or intestinal complications, septic infections, cachexia, and emaciation." The question I wish to ask is: Is there such a condition as pure chronic parenchymatous nephritis (large white kidney), and, if there be, is the prognosis so invariably unfavourable as is generally accepted? By chronic parenchymatous nephritis is generally meant a tubular nephritis accompanied by much oedema, deficient excretion of salt, diminished quantity of urine of high specific gravity, much albumin, numerous casts, but in which uraemia is uncommon, the blood pressure is not raised, ocular symptoms are rare, and, most important of all, the renal efficiency is fair. My clinical experience has been that if such a condition as tubular or chronic parenchymatous nephritis exists it is extremely rare, and if it exists we must considerably modify our view of the gravity of the prognosis.

Since I have adopted renal efficiency tests and blood urea estimations I have had fifty-two cases of nephritis in my wards. Two of these were diagnosed as chronic parenchymatous nephritis. Both are still alive three years from the commencement of their illnesses, and a closer examination of their cases makes it almost certain that the condition was one of subacute diffuse nephritis. Similarly with cases seen before the renal tests were introduced—a very striking example of chronic parenchymatous nephritis who was admitted under my care in 1904 is still alive to-day. He was in the Bristol General Hospital from February to October, 1904, with gross oedema requiring repeated tapping, and was discharged in the same condition. He had all the typical signs—anaemia, dyspepsia, small amount of urine (specific gravity 1020), albumin 7 to 9 parts per 1000, low blood pressure, urea excretion fair. The oedema persisted for six months after his discharge. In 1911 the high total of daily urine, low specific gravity, and a trace of albumin suggested secondary sclerotic changes, and in 1919 this was the same, and his phenolsuphonephthalein excretion was 23 per cent. only. The blood nitrogen was very high. The sodium chloride excretion was normal, the two hourly specific gravity never above 1012. Here was a case—the most typical of chronic parenchymatous nephritis I can produce in twenty years of hospital work: yet he has lived eighteen years after his initial attack. I recall one other case, a minister. He was superannuated in 1885 on account of chronic parenchymatous nephritis (large white kidney), but is alive and well to-day at the age of 69 years. The albumin amounts to 2 parts per 1000, the vessels are slightly thickened, the heart is not enlarged, the blood pressure not raised. The point I wish to emphasize is that we must either sternly modify our conception as to the grave prognosis in this disease, or we must deny altogether that there is such a condition as a chronic tubular nephritis. Personally, I favour the latter course not only on clinical but also on pathological grounds, for, except in the kidney of pregnancy, I never see a case in which the brunt of the disease is borne by the tubuli whilst the glomeruli are but slightly affected. Nephritis is essentially a vascular intoxication, and invariably the glomerulus suffers primarily and the tubular destruction is entirely secondary and consequential. There is no ground for the view that large white kidney is a disease *per se* and that the prognosis is peculiarly unfavourable. The terms "parenchymatous nephritis" and "tubular nephritis," with their evil omen, ought to be abolished from our nomenclature, and the large white kidney regarded as a phase of a glomerular (or diffuse) nephritis; a subacute or chronic phase, probably progressive towards an interstitial nephritis but not necessarily immediately dangerous, and indeed compatible with a prolonged period of comfortable living.

With regard to the question of treatment of the chronic oedematous type of nephritis I have only to note two points.

First, it is not worth while submitting the patient to the prolonged salt-free diet of Karrell or the still more prolonged super-protein diet of Epstein when a diuresis immediate and in every way satisfactory can be established by the administration of urea. There appear to be no ill effects following the administration of urea. I have recently had two boys under my care aged 12 and 14, and one took 18,000 grains in thirty days and the other 7,000 grains in thirteen days with great benefit. The blood urea in the first case at the end of the course was 50 mg. per 100 c.cm. For many days after the drug is withdrawn the diuresis continues and the oedema shows no sign of returning. I have not hesitated to give to these oedematous cases a diet containing 30 to 50 grams of protein a day, and they appear to do better than when on a limited scale. The second point is that the oedematous case may be kept too long in bed. There is no doubt in my mind that a moderate degree of exercise hastens the disappearance of the oedema and generally benefits the patient. It should not be forgotten that chronic nephritis in any form leads to an anaemia of the aplastic type, and that this condition is greatly benefited by the administration of iron and arsenic.

Professor J. SHAW DUNN (Birmingham) said: Until we have more certain information regarding the normal physiology of renal secretion it will be impossible to obtain any complete conception of the relation between the morbid changes in the kidneys and the impairment of renal function in nephritis. Still, something may be gained for the prognosis and treatment of chronic renal disease by a more thorough correlation of modern clinical and pathological methods of investigation. Generally speaking, in nephritis the glomeruli and tubules are always both affected by pathological change, although the type of lesion, its extent, and the proportion between glomerular and tubular lesions vary greatly in different instances. As regards type, the lesions may be grouped provisionally under the headings (1) alterative and (2) destructive.

1. *Alterative.*—Here the glomeruli are free from gross changes and their capillaries are patent: there may be some fatty degeneration of the capillary endothelium, and there is evidence that the capillary walls allow the leakage of albumin from the blood. The tubular changes are more obvious, comprising fatty degeneration, hyaline-droplet degeneration, and oedematous swelling of the epithelium, but there is often little actual catarrh or loss of cells. Where alterative changes are present in the purest form the nephritis is most purely of hydraemic type and shows least evidence of urea retention. The evidence suggests a loss of balance, a pathological modification of excretion, rather than a diminution of excretory power. It is quite possible that the function of the tubular epithelium is so altered as to cause a greater reabsorption of constituents than normal, thus accounting for abnormal retention of water and salts.

2. *Destructive.*—Here the glomeruli are obviously grossly diseased; the capillaries are often blocked by endothelial cells, or there may be closure of groups of capillaries by miliary thrombi resulting in infarction and fibrosis of the tufts. Accompanying this there may be catarrh of the glomerular epithelium, adhesions between tuft and capsule, and thickening of Bowman's capsule. All of these phenomena tend to the ablation of glomerular function, thus cutting off the function of excretion at its source. It is important that these lesions are often focal in character, and some tufts may remain normal. The tubules here also suffer markedly; the epithelium becomes lowered in type; there is much catarrh, and in later stages there is more and more total destruction and atrophy of tubules. Associated with these grosser changes in the parenchymatous elements there is extensive overgrowth of interstitial fibrous tissue. The effects of the destructive type of change are seen in purest form in so-called chronic interstitial nephritis, and comprise mainly a tendency to retention of urea and to elevation of arterial blood pressure. These effects may be assumed to depend on lack of filtration owing to loss of glomeruli. The tubular function must also be greatly diminished, as the loss of tubules is enormous; possibly this accounts for the tendency to polyuria in such cases owing to inefficient reabsorption of the glomerular filtrate. While it is possible to define these two main groups of renal lesions it is probably comparatively seldom that they occur in approximately pure form. In many instances they are combined, and, further, they occur together in varying proportion, so that it is extremely difficult, if not impossible, to project the nature of renal lesions from a consideration of the clinical aspects of a case. Reference has been made to the recognition of cases showing clinically a high blood pressure with totally unimpaired renal function. In relation to this it may be remarked that in *post-mortem* work it is much commoner to find evidences of the existence of a high blood pressure associated with arterio-sclerotic atrophy of the kidneys than with any form of chronic nephritis.

Dr. KATHERINE O. ROBERTSON (Glasgow) said: Judging from the literature on renal disease it appears that while much has been done in the study of renal disorders from the pathological, clinical, and more recently from the biochemical points of view, little attempt seems to have been made to correlate these findings, although various authorities have fully recognized this necessity. With this in view I have tried to follow my cases to the final court of appeal and correlate my clinical findings with the condition of the kidneys and blood vessels at *post-mortem* examination. So far I have only succeeded in making a complete study of six cases. These consisted of two cases of primary arterio-sclerosis with secondary involvement of the kidneys, two cases of primary chronic nephritis with secondary arterial degeneration, one case of advanced pernicious anaemia, and one case of acute malignant endocarditis. The two cases of arterio-sclerosis, Nos. 17 and 31, had many features in common. The blood pressures were respectively 190 and 240. Case No. 17, however, did not come under observation until cardiac failure had set in. Both cases complained of long-standing gastric and intestinal disturbances, and more recently of polyuria and breathlessness. Both cases had enlarged hearts. Neither case gave any history of long-standing renal disorder. Case No. 17 had been treated eleven years ago for haemorrhage from the bowel, and at that time was diagnosed as a case of cirrhosis of the liver; the heart was somewhat enlarged, but there was no albumin in the urine. Patient improved under treatment, and his health remained fairly good till three months before his death, when breathlessness and heart failure set in. By the time the patient was admitted to the hospital he was suffering from headache and the chronic slight uraemia so common in these cases. At *post-mortem* examination there was no sign of cirrhosis of the liver. Case No. 31, on the other hand, remained mentally clear almost to the end, though headache was a distressing symptom. An interesting point in this case is that about five weeks before her death a urea concentration test was carried out, and the highest point reached was 2.1 per cent. in the third hour after the usual dose of 15 grams urea by the mouth. The blood urea was estimated in the third hour and found to be 112 mg. per 100 c.cm., giving a urea concentration factor of 18. Eight days later the test was repeated, and this time the highest point reached was 1.5 per cent. in the first hour, the concentration in the third hour being 1.3 per cent.; the blood urea in the third hour was 103 mg. per 100 c.cm., giving a urea concentration factor of 12. This low reading may have been due to the fact that the patient vomited about half an hour after taking the urea, but a blood urea of 103 mg. should have stimulated a reasonably active kidney to concentrate to its fullest capacity. In cases giving good concentrations in the urine I have found that the blood urea estimated in the third hour after the dose of urea was well below 100 mg. per 100 c.cm. *Post-mortem* examination showed even more resemblance between these two cases. Both cases had hypertrophied hearts: the kidneys were granular but not much altered in size. Microscopically the vessels of the mesentery, both large and small, were greatly sclerosed and the lumen of the vessels decidedly narrowed by the multiplication of the internal elastic lamina. The kidneys showed marked interstitial and glomerular fibrosis of vascular distribution. The small vessels of the kidney were tortuous and thick-walled, in many the lumen was almost completely occluded. It seems wrong to class these as cases of kidney disease. The renal manifestation was a late symptom of the general vascular degeneration, which in each case had given rise to gastric and intestinal symptoms long before any functional change was noticed in the kidney. On the other hand we have cases Nos. 15 and 20, which were both primary kidney conditions. Here the history revealed repeated attacks of nephritis. The blood pressures were respectively 190 and 220. Case No. 15, however, was suffering from heart failure when the blood pressure was taken. They showed the headache and slight chronic uraemia of the previous two cases. Both gave a poor urea concentration and the blood urea estimated in the third hour

was high, giving a low urea concentration factor. Case No. 20 showed retinal and sclerotic haemorrhages. Neither case gave a history of long-standing gastric or intestinal disturbances. At *post-mortem* examination both were found to have enlarged hearts, the kidneys were granular but not much contracted. Microscopical examination showed that the larger vessels of the mesentery and kidney were more affected than the smaller ones. The change was chiefly a medial fibrosis, though the renal artery in case No. 20 showed marked patchy thickening of the intima. The kidneys showed generalized interstitial and glomerular fibrosis. There was no sign of vascular distribution. Thus we have four cases which in the late stage were clinically indistinguishable. The albumin was not excessive; the blood pressure was high with enlarged heart; the urea concentration test was low. There was headache, restlessness, breathlessness, cardiac failure, and chronic slight uraemia tending to deepen in all four cases. The clinical difference lay solely in the history which, as has been pointed out in the arterio-sclerotic cases, centres round the alimentary tract and in the cases of chronic nephritis round the kidney. The *post-mortem* examination also showed resemblances between the four cases. The heart was hypertrophied and the kidneys were granular but of nearly normal size in all four cases. Microscopical examination showed interstitial and glomerular fibrosis in all four cases. In the arterio-sclerotic cases the fibrosis showed vascular distribution, but this was absent in the other two cases where the fibrosis was equally distributed. Another difference was seen in the distribution of the vascular degeneration which, in the arterio-sclerotic cases, affected large and small vessels alike, but in the chronic nephritis cases affected the larger vessels more than the smaller ones. This brings me to the case of pernicious anaemia, which gave a low urea concentration. It is just possible, however, that this may have been due to poor absorption, as the blood urea estimated in the third hour was very low. In this case the kidneys showed marked catarrh of the secreting tubules with cloudy swelling and some fatty degeneration. It is interesting and suggestive to note that there is one factor common to all these five cases, and that is the poor supply of oxygenated blood received by the kidney. The sixth case, one of acute malignant endocarditis, gave a very good urea concentration the day before she died. Death in this case was sudden. The kidneys showed marked catarrhal and interstitial nephritis with cloudy swelling, and were of large size. The mesenteric and renal arteries showed commencing medial degeneration. These cases all showed other interesting features clinically, biochemically, and histologically, but time does not admit of further detail.

DR. O. L. V. DE WESSELOW (London) pointed out that, though in chronic interstitial nephritis the rise in the blood pressure often bore some relationship to the degree of impairment of nitrogenous waste products, this relationship was not one of cause and effect. In certain surgical affections of the kidney, in amyloid disease, and in cystic kidney marked nitrogenous retention was often associated with a normal blood pressure. From the point of view of immediate prognosis, he regarded the estimation of the inorganic phosphorus content of the plasma as valuable. The figure for inorganic phosphorus in the normal was in the neighbourhood of 3 mg. per 100 c.cm. of plasma. In acute nephritis figures of 5 to 7 mg. were common. An inorganic phosphorus content above 10 mg. appeared to indicate an exceedingly grave prognosis. A patient in whom a definite urea retention was associated with a retention of inorganic phosphorus was in a much graver condition than a patient showing a similar rise in the blood urea but a normal phosphorus content. From the clinical point of view the symptoms of uraemia showed a much closer connexion with phosphate retention than with retention of the nitrogenous waste products. A diminution in the calcium content of the serum was frequently found in nephritis, but this diminution did not appear to bear any relationship to the convulsive phenomena. In the only case in which he had found an extreme reduction in the serum calcium, administration of calcium per os produced no increase in the calcium of the serum. This was to be expected, since in view of the large calcium reserves of the body the deficiency in the serum was more likely to be due to a change in the chemical composition of the blood than to actual lack of calcium.

DR. H. L. TIDY (London) thought it was our duty to correlate both the clinical symptoms of the disease and the renal efficiency tests with the histology of the kidneys. For many years physicians, from observation of clinical symptoms, had foretold with considerable accuracy the type of pathological changes which were present in the kidneys. Obviously the clinical symptoms and pathological changes had some relationship. So, too, had the clinical symptoms and the renal efficiency tests. He considered consequently that the renal efficiency tests and the histological changes in the kidneys must be capable of correlation. He did not agree with former speakers that histological types could be clearly divided into two classes, and he believed that this view was partly responsible for the failure hitherto to connect the renal efficiency tests with the histology. There were, he held, at least four types. He was surprised that the small white kidney had not been mentioned during the discussion. It was a definite pathological type which could often be diagnosed from its clinical symptoms.

DR. E. J. TOYE (Bideford) made a few remarks on the subject from the point of view of the general practitioner. He emphasized the simplicity and utility of the urea concentration test. He concluded by stressing its great value in testing the adequacy of the renal function in cases of albuminuria of pregnancy.

Before calling on Professor Hugh Maclean to reply, the PRESIDENT emphasized the value of the urea concentration test as a means of ascertaining the actual condition and the progress of a case of nephritis. It could not replace the observation of symptoms or the study of certain other well-recognized signs, but it had the advantage, not shared by many other signs and symptoms, that the findings could be kept on record in black and white for comparison with corresponding results obtained in the same case later on. It would be a great gain if one could recognize the existence of a lesion, whether stationary or progressive, which had diminished the total functional capacity of the kidneys and yet had left them with sufficient reserve power to respond to all tests to which, at the present time, they might be subjected by the physician. Patients who came under observation on account of acute or subacute nephritis sometimes gave a history of previous attacks many years before; and one would like to know whether each of these earlier attacks had left behind it a lessened reserve of functional capacity, or whether the attacks merely revealed the weak spot in the particular patient and passed off without doing any permanent harm, and without diminishing the enormous reserve power of the kidneys.

NOTES OF A CASE OF ACUTE MYELOGENOUS LEUKAEMIA AND OF A CASE OF APLASTIC ANAEMIA.

BY

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AND
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Case of Acute Myelogenous Leukaemia.

J. S., a male aged 58, was admitted to Dr. Fleming's wards on October 28th, 1920, on the recommendation of Dr. Lang. He complained of feverish attacks, each attack lasting for one to two hours, during which his temperature rose to 104° or 105° F. and fell with profuse sweating. He had two or three of these attacks each twenty-four hours, and each commenced with a rigor. His occupation, originally that of a shale miner, had for three years been limited to loading ammonia sulphate into bags.

His past history was as follows. He had had rheumatism three months before admission, with pains in shoulders, elbows, wrists, and fingers, and the pains flitted from joint to joint. He had no fever at that time, and recovered in four weeks. There was also a history of influenza in 1919, lasting for seventeen weeks. His family history was unimportant.

On examination on October 28th, 1920, there was no splenic enlargement, no enlarged glands were found present, and nothing abnormal was noted in his blood. On November 8th the spleen was found to be definitely enlarged, and he complained of pain due to perisplenitis. His red cells numbered 3,330,000 and his leucocytes 8,000. On November 9th his leucocytes had increased to 18,500 and the differential count showed polymorphs 30 per cent., eosinophils 1 per cent., myelocytes 11 per cent., large mononuclears 15 per cent., and small lymphocytes 44 per cent. The majority of the

larger cells resembled myeloblasts, and were difficult to place accurately in any group. Films stained by Leishman's method showed a dark basophil cytoplasm in certain cells with numerous azurophil granules. Some cells had an intensely basophil stained cytoplasm. The nuclei were large, varying in shape. Some of the cells showed mitotic division with beautiful examples of monaster and diaster stages.

On November 11th numerous petechial haemorrhages were noted over the chest, and especially round the hair follicles. On November 14th the patient died, twenty-one days after the pyrexial attacks commenced and six days after his spleen was found to be enlarged. The lymph-gland groups enlarged coincidently with the spleen, particularly in the cervical region.

Slides of the blood, spleen, bone marrow, and liver were demonstrated.

Case of Aplastic Anaemia.

J. W., a female aged 26, a cook, was admitted to Dr. Fleming's wards on the recommendation of Dr. John Craig, Edinburgh, on November 11th, 1920. The duration of the illness was from December, 1918, and her chief complaints were weakness and shortness of breath.

She had had no previous illness before 1918, except "headaches." Since 1918 she had a "blister-like" rash on her face, shoulders, and chest, in 1919 lasting for three weeks. There was also severe pyorrhoea, which gave continuous trouble and required much treatment. Her mother and her only sister were anaemic, and both had a history of gastric ulcer. Her father died of pulmonary tuberculosis at the age of 35.

On examination the patient was stout and very pale, but with a lemon-tinted skin. She had the usual haemic murmurs and a slightly dilated heart. There were periods of pyrexia lasting for ten days at a time with no definite periodicity. The diagnosis of aplastic anaemia was made because, during the patient's stay in the wards, extending up to the time of her death on October 19th, 1921 (a period of eleven months), her blood never showed any normoblasts or megaloblasts. There was poikilocytosis, varying in degree from time to time, but no punctate basophilia and no polychromatophilia. Anisocytosis was peculiarly marked, there being many microcytes and megalocytes.

Direct transfusion proved the only really effective treatment, although the benefit obtained was temporary.

The *post-mortem* examination showed that an extraordinary degree of haemolysis had occurred.

Slides of the blood, the bone marrow, etc., were demonstrated.

A CASE OF INTRAPERICARDIAL ANEURYSM OF THE AORTA.

BY

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THE patient, a labourer aged 48, attended hospital on August 10th, 1920, complaining of pain in the chest, on the right side especially, shortness of breath, and cough during the previous four weeks.

Physical Examination.

The findings at the physical examination were as follows:

A well-developed man, somewhat above the average in general physique; expression anxious, cheeks sunken, malar eminences flushed; obvious pulsation in carotid, temporal, brachial, and other superficial arteries. Chest wall well covered, normal contour except for visible pulsation to the right of the sternum in the third, fourth, and fifth spaces; area of cardiac dulness extends 4 inches to the left of the mid-sternal line to the apex beat, which is situated in the sixth intercostal space and 3½ inches to the right of the mid-line at the level of the fifth rib and corresponding space. The apex beat is forcible in character, diffuse in extent; there is a heaving impulse to the right of the sternum of maximum intensity in the fifth, but also felt in the third and fourth spaces. On auscultation a short systolic and long diastolic murmurs are audible over the entire precordium, the latter being of maximum intensity at the aortic area, but clearly heard over the dull region to the right of the sternum, and conducted upwards into the vessels at the root of the neck. The arteries are thickened and tortuous, the radial pulses collapsing in character and synchronous; the jugular veins are unduly prominent in the recumbent position, otherwise there is no evidence of venous stasis or obstruction of either superior or inferior vena cava. The pulmonary excursion and air entry are normal over both lungs, no tracheal tug; no indication of pressure on vagus, phrenic, recurrent, or sympathetic nerve trunks. The electrocardiogram suggests left ventricular preponderance, but is otherwise normal as regards wave sequence and conformity in all the leads.

The *x*-ray examination defines the left margin of the heart sloping towards the apex region in the sixth intercostal space, 4½ inches from the mid-sternal line; the aortic shadow is abnormally wide—namely, 3½ inches; its margins are blurred and irregular; a pulsating swelling, similar in density to the cardiac shadow, and apparently continuous with this latter, is seen to extend 3½ inches to the right of the mid-sternal line, its edge, sharp and clear, stretching inwards at its superior extremity to join the aortic shadow at an acute angle, its lower margin, distinctly above and separated from the diaphragm, blending imperceptibly with the inferior aspect of the cardiac shadow; the lungs appear to expand normally, and the range of diaphragmatic movement is unimpaired.

Simultaneous curves recorded on a rapidly moving drum from small receivers placed over the apex and the pulsating tumour to the right of the sternum indicate that the impulse in each region is an outward thrust, and measurement makes it clear that the movements are not synchronous, the apex beat, by a fraction under a fiftieth of a second, being the prior event.

The urine was normal in every respect. The Wassermann test was positive.

Discussion of Diagnosis.

The condition was thought to be an intrapericardial aneurysm of the aorta; and in arriving at this diagnosis one was largely guided by the following considerations:

1. The punctate heaving quality of the pulsation, which to palpation appeared synchronous with the arterial pulse.

2. The presence of aortic reflux, which, in view of the positive complement fixation test, would suggest syphilitic disease of the aortic stem, and the conduction of the diastolic murmur from its seat of production over the entire region of the tumour and upwards into the cervical vessels.

3. The fact that the aortic root and the first 2 inches of its ascending arch are situated within the confines of the pericardial sac.

4. That the direction of least resistance to the spread of a dilatation aneurysm proceeding from the aortic root would be downwards within the cavity of the pericardium.

5. The fluoroscopic appearances which identified the shadow of the tumours with that thrown by the heart and great vessels, and the distinct line of continuity which connected the marginal extremity of the tumour with the right-hand border of the ascending aorta; also the definite character of the expansile pulsation which seemed to warrant the exclusion of new growth or encapsuled pericardial effusion.

6. The absence of pressure signs, which, moreover, would be hardly likely to complicate the early stages of an aneurysm originating within, and governed in the matter of the direction of its spread by, the pericardial investments.

After-History and Progress.

Considerable relief to the subjective symptoms was noted during the first three months of treatment, for which, no doubt, physical rest was mainly responsible; there was, however, no material improvement; the aneurysm was palpably increasing in size, a note of February 18th, 1921, giving its outer border a distance of 4½ inches from the mid-sternal line, and the patient was at that time complaining of sharp attacks of pain with the least effort, also cough and a feeling of suffocation, the latter aggravated by any attempt to assume the recumbent position. A month later the outer border of the impulse extended 5¼ inches from the mid-line, and examination at this time made it clear that pressure was being exerted on the right bronchus, and, further, that the superior vena cava was suffering obstruction. During April the symptoms increased in intensity; the cough, more especially troublesome at nights, the violent pain and the insomnia combining, at this time, to produce an extreme degree of debility and physical exhaustion; the outer border of the impulse was then to be found extending a distance of 5¾ inches from the mid-line; moist sounds were heard at both pulmonary bases; the air entry to the right lung was diminished.

During the last fortnight of life expectoration was profuse, and every paroxysm of coughing was accompanied by violent

and intense prostration. On May 13th the sputum became tinged with blood, and several small recent clots were expectorated. The patient died next day.

Autopsy Findings.

The two layers of the pericardium were found to be closely adherent, and numerous firm adhesions united the pericardial surface to the pleura on each side. The pleural cavities were in great part occupied by dense adhesions in the neighbourhood of the pericardium, but on separating these on the right side the cavity was found to contain a large amount of recent blood clot.

The heart was considerably enlarged; the aortic valve was incompetent; the cusps of the aortic valve, more especially the anterior and right posterior, were thickened, retracted, and distorted; there were no obvious vegetations; the wall of the aorta showed extensive atheromatous changes, the macroscopical appearances indicating an advanced degree of the process. Immediately above the aortic valve, at the junction of the anterior and right posterior cusps, a large saccular aneurysm measuring 4½ inches by 4½ inches arose; it was completely covered by the adherent layers of the pericardium, and it was about two-thirds full of laminated clot; its upper aspect was adherent to the right pleura and lung, which had suffered much dislocation, and here it was that the aneurysm had ruptured into the adjoining pleural cavity and pulmonary tissue.

THE PRESENT VALUE OF THE WIDAL REACTION IN THE INOCULATED SUBJECT.

BY

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AN acutely febrile case was recently admitted to the Princess Alice Hospital, Eastbourne, on which I was asked to perform a Widal reaction. The technique used was Dreyer's macroscopical method with the Oxford standard cultures. The result read as follows:

CASE I.

	Serum Dilutions.			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	+	+	+	+
Paratyphoid A	Trace	–	–	–
Paratyphoid B	–	–	–	–

The reading was "strongly positive for typhoid."

The patient was an ex-soldier, inoculated for enterica during the war, the last time most likely in 1917. The clinical signs were those of continuous fever with some physical signs in the chest, and a provisional diagnosis of pneumonia had been made. The case was subsequently regarded, on the strength of the Widal reaction, as typhoid fever, probably pneumonic in type, it being assumed that the war-time inoculins had died away by this time.

The day after the test the patient was removed to the Borough sanatorium as an infectious febrile case. He died some days later. Clinically the symptoms were not typical of enteric, and a *post-mortem* examination was performed. Miliary tubercle was found to be the cause of death. It was then suggested by Dr. W. G. Willoughby (M.O.H. for Eastbourne), under whose care the case had been, that the positive Widal reaction might have been due to residual effects of war-time inoculation. I reported the case to two leading authorities for their opinions. One of them held that miliary tubercle may accentuate any existing agglutinins. He also pointed out that miliary tubercle and enteric may coexist, and that he had had a case of this kind where Peyer's patches showed no signs of inflammation yet where culturally 50 per cent. of the colonies in the mucous membrane of the lower part of the small intestine agglutinated with paratyphoid B serum in high dilutions, the blood of the same case also giving a highly positive Widal reaction to paratyphoid B, on which alone a diagnosis was made. The second authority offered the opinion that it was quite possible that "residual" agglutination could account for my results, but that one would expect, if this were so, a lower titre of agglutination than 1 in 250 after four or five years unless the man had given a very high response to his inoculations.

In order to prove what degree of residual agglutinins occur normally I estimated the agglutinin reactions to typhoid, paratyphoid A, and paratyphoid B of five healthy ex-soldiers, with the following very instructive results:

CASE II.

	Serum Dilutions:			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	+	+	+	+
Paratyphoid A	–	–	–	–
Paratyphoid B	–	–	–	–

This case had had Flexner dysentery in 1916, and agglutinated Flexner's bacillus up to 1 in 250.

CASE III.

	Serum Dilutions:			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	–	–	–	Trace
Paratyphoid A	+	Trace	–	–
Paratyphoid B	–	–	–	–

CASE IV.

	Serum Dilutions:			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	+	+	+	Trace
Paratyphoid A	–	–	–	–
Paratyphoid B	Trace	–	–	–

CASE V.

	Serum Dilutions:			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	+	+	–	–
Paratyphoid A	–	–	–	–
Paratyphoid B	–	–	–	–

CASE VI.

	Serum Dilutions:			
	1 in 25.	1 in 50.	1 in 125.	1 in 250.
Typhoid cultures	+		–	–
Paratyphoid A	–		–	–
Paratyphoid B	–	–	–	–

We thus have a fairly complete answer to our queries. Fifty per cent. of the cases agglutinate typhoid up to 1 in 250, so that such a high response is no uncommon thing in the inoculated after four or five years. Paratyphoid agglutinins are very slight in all cases as compared with typhoid residua. The explanation of this no doubt lies in the greater strength of the typhoid vaccine given and possibly also because this was used alone at first during the war.

I cannot agree that the existence of miliary tubercle accentuated any potential agglutination titre, otherwise the paratyphoid titres in Case I should have been higher, but of course one cannot generalize too much from these few cases.

The essential point of the matter is that a positive Widal reaction in the inoculated subject, even some four or five

years after inoculation, *is of no diagnostic value whatever in typhoid fever and is of very doubtful value in paratyphoid fevers unless of markedly high titre. But this in no way detracts from the superlative value of the reaction in the non-inoculated.*

A repetition of the reaction after several days' interval is, as a rule, not sufficiently decisive in everyday work to recommend itself to those of us who must, if possible, supply a rapid and unequivocal answer to our colleagues in the wards, but where this can be done it is sometimes helpful as an aid to diagnosis, but no more. Finally, this note illustrates very clearly the need for close co-operation between the pathologist and the physician in all obscure cases of this nature.

I am indebted to Dr. A. Deane, Surgeon to the Princess Alice Hospital, and also to Dr. W. G. Willoughby, Medical Officer of Health for Eastbourne, for their helpful suggestions and for their permission to report the original case; likewise to Dr. Dennis Embleton and Dr. A. D. Gardner for giving me the benefit of their wide experience in these matters.

LAPAROTOMY FOR INTESTINAL OBSTRUCTION ON BOARD SHIP.

BY

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SURGEON TO THE ROYAL MAIL STEAM PACKET COMPANY.

LAPAROTOMIES on board ships of the mercantile marine are perhaps sufficiently uncommon to be worthy of record, and the case related below presents certain points of interest:

During the voyage of the R.M.S.P. *Desna* from Liverpool to Buenos Aires, on the day after leaving Lisbon (August 20th), a Portuguese lad, aged 17, went down with abdominal pain and vomiting. He was seen by Dr. Serao de Carvalho, the Portuguese surgeon, and the condition was provisionally diagnosed as intestinal colic. Next day he was no better, and Dr. Carvalho concluded that the case was one of intestinal obstruction and asked me to see him.

Dr. David de Sarmento, professor in the faculty of medicine, Lisbon, who was a passenger on board, also very kindly joined us. We found all the classical signs of intestinal obstruction present, and the question was whether the causation was volvulus, intussusception, or strangulation of the internal hernial type. As the patient seemed to be relatively well—that is, not so severely ill at the moment as one would have expected—the possibility that it might be one of those uncommon cases of pseudo-strangulation such as is described by Lejars (*Medicina de Urgencia*, Oddo, p. 375) crossed one's mind. Perhaps the wish was rather father to the thought, as operation under the conditions was not particularly attractive. Anyhow, valuable time was wasted with no results. By the evening of August 23rd it was clear that intervention was imperative, but, his state being still fair, it was left until the morning of the 24th.

He was taken to the ship's operating theatre; Dr. Carvalho gave chloroform, and Dr. Sarmento was good enough to assist me. On opening the abdomen, by an incision four inches long a little to the left of the umbilicus, the enormously distended and congested small intestine protruded in a troublesome fashion. A considerable quantity of sero-sanguinolent peritoneal fluid escaped, and patches of lymph were to be seen on the visceral peritoneum. It was not difficult to bring the seat of the trouble into view—a knuckle of ileum, about two feet from the cæcum, was incarcerated in a mesenteric pocket; this was withdrawn. The condition of the compressed portion, about three inches long, was not encouraging, and one now regretted not having operated earlier. Had the loop been a longer one it would surely have been gangrenous, whereas this one was small and comfortably supported all over its surface, and had avoided the deadly venous congestion of the ordinary hernia. It looked just possible to avoid resection, and I decided to chance it, as excision of a piece of intestine, with the central end in the condition it was, would probably have been disastrous anyhow. Further, a temporary anus seemed almost as risky. The protruded intestines were replaced, no flushing of the peritoneal cavity was employed, and the abdominal wall was sewn up in the usual three layers. This latter, owing to the vagaries of Father Neptune, was the most tiresome part of the whole procedure. Still, the weather was very good; we were about the latitude of Cape Verde, and there was only a moderate swell on. Simple dressings, sterilized on board, were applied and kept in place with a many-tailed bandage.

During the ensuing night the patient passed flatus, and next day a large motion. He then started eating well and with a good appetite. There is nothing further to relate of any moment, save that an abscess of the abdominal wall had to be evacuated a few days later, by loosening the two lowest stitches. Foul faecal-smelling pus escaped, evidently due to infection of the wound by the peritoneal contents. On September 7th he was landed in Buenos Aires in good condition, the abdominal incision almost healed.

Surgery at sea raises many interesting questions, which it is not possible to discuss here. But the ship's surgeon must be prepared, above all, to open an abdomen if necessary, as this is obviously the most likely form of urgency to be met with. It therefore behoves him to have ready in his mind the requisite plan of campaign, the best place to operate, likely assistants, the anaesthetic, the simplest ways of dealing with the conditions found, simple dressings, and arrangements for after-treatment.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

"HAEMORRHAGIC" CHICKEN-POX.

THE following personal history may interest Dr. Wanklyn (November 18th, p. 977). When within three months of my final examination I saw in the Sick Children's Hospital a case of chicken-pox. The child was isolated in a side room awaiting transfer to the fever hospital, and the physician showed the case to a few students and asked for a diagnosis. I was in the room for about one minute and did not touch the patient. Exactly fourteen days later I began to feel rather seedy and the idea occurred to me that I had got chicken-pox. I stayed in bed and looked anxiously for the rash next day, but nothing was to be seen. On the second day, however, a few characteristic spots were present. Not more than a dozen appeared in all, but haemorrhages took place into several of the larger vesicles. I do not think there was any surrounding ecchymosis. There is still a faint scar from one on my wrist. Slight fever and malaise for a couple of days constituted the whole illness. I was much too annoyed to let a real doctor see me, but I think Dr. Wanklyn may take it that the diagnosis was correct.

W. F. SHANKS, M.B., Ch.B.

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ACUTE MENINGITIS FOLLOWING INFLUENZAL MASTOIDITIS.

As acute meningitis, following aural suppuration, is always looked on, and unhappily rightly so, as a fatal complication we venture to publish the following report. We regret that the exigencies of the case did not allow of a bacterial examination of the cerebro-spinal fluid.

G. E., aged 7, developed influenza during the March epidemic of this year. Pain in the right ear was complained of on the third day, with gradual increase, until discharge was noticed on the sixth day. Except for the aural discharge no other sign or symptom was noted though carefully looked for, and the child rapidly convalesced, when measles developed on the thirteenth day.

The measles took a normal course, and on the nineteenth day the child was apparently well, sitting up and playing with toys. The aural discharge continued, but there were no mastoid symptoms whatever, when suddenly on the twenty-first day the child complained of deep pain behind the ear, and two hours later typical cerebral vomiting commenced. Five hours later we found the child collapsed with clammy skin, roused with difficulty and then very irritable. There was marked photophobia with right external squint. There were no external mastoid symptoms and no tenderness; the discharge was profuse and ropy, the drum red, and the posterior inner meatal wall red and swollen. Marked head retraction was present. Kernig's sign positive, and vomiting frequent.

An immediate operation was advised and carried out under light anaesthesia given by Dr. J. F. Walker. The mastoid was of the pneumatic type and bathed with pus throughout, the intercellular bone being largely necrosed and easily removed; the lateral sinus was inflamed and granulated. On removing the tegmen antri a bulging dull red dura was exposed, and on making an opening into this much very turbid fluid escaped under pressure. The posterior cranial cavity was similarly drained in front of and below the sinus, a small wick drain being left in each fossa. The whole operation occupied nine minutes, as speed was in our opinion most necessary.

Next day the child was given 12½ c.cm. of polyvalent anti-streptococcal serum, a similar dose being injected on the five following days. The dressing was changed daily, also the wick drains. For two days the condition was extremely serious; all the meningeal symptoms remained, but the vomiting was even more persistent. Slight improvement was noticed on the third day, and it continued till the eighth day, when all meningeal symptoms had disappeared and a complete recovery eventuated.

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IN a recent visit to Guatemala and other countries of Central America Professor Fülleborn, of the Hamburg Tropical Institute, found that 90 per cent. of the Indian labourers in the coffee plantations were suffering from ankylostomiasis.

Reports of Societies.

BLOOD TRANSFUSION IN CIVIL PRACTICE.

AT a meeting of the Medical Society of London on November 27th, with Lord DAWSON OF PENN (President) in the chair, a discussion took place on "Blood transfusion in civil practice."

Mr. GEOFFREY KEYNES, who introduced the subject, exhibited the title-page of the earliest monograph on transfusion, published in Italy in 1663. The practice, he said, was in abeyance in the eighteenth century and was revived in the nineteenth. The literature was now growing very fast, and the great majority of contributions in recent years had been American. Earlier methods were by direct transfusion, which the speaker regarded as being now only of historical interest. There were at present two schools of technique, one of which held that whole blood was the more desirable, while the other insisted upon the use of an anticoagulant. Whole-blood methods were satisfactory in the hands of those accustomed to them, but anticoagulant methods, depending upon the employment of solution of sodium citrate, were most satisfactory for general use, and it was these which had popularized transfusion. A good many fatalities followed transfusion in former years, and the cause was supposed to be the introduction of air bubbles into the circulation, but a certain small amount of air could be introduced without harm, and it was probable that in most of these cases incompatibility of bloods was the responsible factor. Post-transfusion reactions were occasionally severe, owing to gross incompatibility, but there were also a number of slight reactions following the transfusion of compatible bloods, and suggested causes for these were;

(1) The anticoagulant; (2) incipient clotting; (3) effect of anaesthetics on serum; (4) "minor agglutinins"; (5) protein shock; (6) distilled water for dissolving anticoagulant.

These slight reactions were of no very great importance; he had never seen them interfere with the efficacy of the method, and it was not necessary to be alarmed even with a rise in the pulse rate to as high as 150. In addition, moderate reactions had been noted attending second or later transfusions, the causes of which were induced incompatibility and possibly true anaphylaxis. The disquieting thing about these moderate reactions was that they could not be eliminated even by the most careful grouping of bloods, but they did not seem to happen often enough to make necessary the abandonment of transfusion on account of the danger. It was well never to use the same donor twice, if possible, and to ensure that blood of the same group as that of the recipient's blood was always used. He classified the indications for transfusion as follows (italics indicate that in those cases transfusion is of less importance or of doubtful value):

Haemorrhage and Shock: Traumatic haemorrhage, ectopic gestation, post-partum haemorrhage, gastric ulcer, etc.

Pre-operative: Debility or cachexia, haemorrhage.

Post-operative: Following severe operations. Cases involving much loss of blood are more benefited than those suffering purely from post-operative shock.

Haemorrhagic Diseases: Haemophilia, melaena neonatorum, *jaundice, purpura.*

Blood Diseases: Pernicious anaemia, *leukaemia.*

Toxaemias: Pyogenic, severe burns, *carbon monoxide and nitrobenzol and benzol poisoning.*

Blood transfusion was a very useful therapeutic measure, though its limitations were quite definite. In this country its use was restricted owing to the absence of any system of professional donors, such as existed in America, and possibly also to an exaggerated idea of the technical difficulty.

Mr. GORDON TAYLOR, who had a preference for the whole-blood method, said that he had seen only one case of post-transfusion reaction. During the last three years he and colleagues associated with him had done nearly one hundred transfusions. In cases of pneumococcal peritonitis very favourable results had been reported from blood transfusions, and in at least one such case within his own experience the result had been almost dramatic. From what he had seen in that case and in one or two others he would be disposed to go on using blood transfusion from the moment of the septicaemic onset. In operations of magnitude he had used blood transfusion several times with very good results. Pre-operative transfusion had been used successfully in malignant disease of the stomach and bowel. In ten cases of bleeding gastric ulcer, in which haemorrhage continued in spite of medical treatment, partial gastrectomy was done, and the patients were transfused either before, during, or after operation, with recovery in nine of the cases.

Dr. A. E. GOW said that in cases of pernicious anaemia in which the blood picture of the first attack suggested that the anaemia was due to increased haemolysis, as apart from the distinctly aplastic type, a single transfusion of 600 to 800 c.cm. of citrated blood was usually of benefit. The result was far more rapid than with arsenical medication alone. The choice of donor was important if a powerful reaction was to be avoided. In the aplastic type of pernicious anaemia transfusion might stimulate the marrow to activity, though the effect was temporary. The transfusion acted as a "strike-breaker" for a time, but the "strikers" eventually gained the day. It was better in these cases to give a small dose of not more than 200 c.cm. and repeat it in five or seven days, rather than to transfuse a larger quantity.

Dr. ALEX. FLEMING described the technique employed in the transfusion of defibrinated blood, which he and his colleagues at St. Mary's had used recently in place of the citrate method. Sir Almroth Wright had been doing what he called immunal transfusions in septic cases during the past few months, using defibrinated blood, to which was added a very small quantity of a vaccine, giving an increase in the antibacterial content to the staphylococcus or streptococcus, and after the blood was introduced there was an almost immediate increase, which could be tested, in the bactericidal power of the recipient's blood.

Sir THOMAS HORDER expressed disappointment at hearing Mr. Keynes say that this was a therapeutic measure with very definite limitations. He still hoped that these limitations were not so definite, if only because he felt that any therapeutic method which did not put money into the pockets of wholesale chemists was one that deserved exploiting to the utmost. With regard to gastric ulcer, he was not sure that the extraordinary improvement which followed transfusion was due only to the effect upon the haemorrhage. He thought that the healing of the gastric ulcer was more rapid with transfusion than without it. In six cases of gastric or duodenal ulcer within his experience transfusion had been employed; the astonishing difference in the results he attributed to the type of the disease and the age of the patient, but generally speaking he was convinced that the ulcerative process itself was influenced. In ulcerative endocarditis, notoriously very disappointing in its therapeutics, he was coming more and more to believe that transfusion was a valuable method. He thought it more useful to give many small transfusions frequently than a few larger transfusions at longer intervals. He had seen benefit from transfusion in ulcerative colitis. In some of those difficult cases in which the colon seemed to be intolerant of chemicals and the patient of vaccines possibly small repeated transfusions might be of great value. In pernicious anaemia he had been disappointed, so much so that in his practice he did not transfuse in this condition unless the relatives suggested it and seemed disturbed because it was not done.

Mr. KENNETH WALKER had been struck by the extraordinary result that followed the transfusion even of a very small quantity of blood. Sometimes it had been possible to use only 200 c.cm. in bad surgical cases, and yet the results had been altogether out of proportion to the amount of blood used. He emphasized the importance of fluids to supplement blood transfusion in cases where there had been haemorrhage and severe shock. The blood appeared to "fix" the fluid in the veins and prevent the transudation which occurred when using saline alone. There was no branch of surgery in which blood transfusion had greater scope than in genito-urinary cases. From American literature it appeared that good results had followed in uraemia from a combination of venesection, blood transfusion, and saline injections. He favoured the citrate method on the ground of simplicity.

Mr. EARDLEY HOLLAND said that in obstetrics and gynaecology, while he could not get on without blood transfusion, the cases in which he employed it were fewer than formerly. At the London Hospital its use had been given up in acute puerperal sepsis. Haemorrhages in obstetrics and gynaecology might be divided into two groups: (1) acutely arising haemorrhages in otherwise normal cases, of which ectopic gestation was an example, and (2) repeated haemorrhages, of which examples were placenta praevia and secondary *post-partum* haemorrhages due to sloughing of deep tears of the cervix. In the former, while blood transfusion was useful, the opportunity was not always forthcoming, neither donor nor apparatus being immediately available; but in the latter, the patients being in no state to withstand the slightest additional

shock, blood transfusion was extremely valuable, and, in the nature of the case, more practicable also. He had rarely seen a case of ectopic pregnancy in which transfusion was essential for saving life.

Mr. KEYNES, in a brief reply, said that in a good many surgical cases transfusion might be a luxury, but undoubtedly operative risk was reduced, even though it was not possible to say that a patient would have died if there had not been transfusion. In the technique rapidity was not of first importance; he had given citrated blood twenty-seven hours after it had been taken from the donor, and the result was as good as if it had been given immediately, and there was no reaction whatever.

EPIDEMIOLOGY OF SCARLET FEVER.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine held on November 24th, the President, Dr. R. J. REECE, in the chair, Dr. F. M. TURNER read a paper on the age and sex distribution in scarlet fever. The author submitted a full biometric analysis of the statistics of age distribution amongst both notified cases in London and cases admitted to the Metropolitan Asylums Board's hospitals, together with tables relating to certain provincial cities. Notwithstanding the general similarity of the figures from year to year, it was possible to show that the age distribution differed more than would be expected, were the fluctuations random, in successive years. The mean age of females in notified cases was always higher than that of males and, with one exception, in the admitted cases. The mean ages of cases notified uniformly exceeded that of cases admitted. The statistics showed a general tendency for the mean age to increase with the prevalence, although the arithmetical value of the coefficient of correlation between mean age and number of cases notified was small. The mean age had increased over the period studied (1887–1922). Manchester statistics likewise showed an apparent increase of mean age in periods of prevalence and a general increase of mean age through the series.

In opening the discussion on the paper, Dr. HAMER pointed out the existence of a tendency for the mean age and the prevalence to increase together in the case of small-pox mortality statistics. In his view the phenomenon was dependent upon changes in the amount of susceptible material in the population; this explanation he was sure best accounted for the epidemiological course of measles. Measles was an easy case, influenza a very difficult one, scarlet fever fell between the two. Dr. ISSERLIS, in commenting upon the statistical aspects of the paper, remarked that the application of the theory of sampling to a problem such as this involved theoretical difficulties, so that it was necessary to be particularly cautious in drawing inferences as to the limits of chance fluctuations. Dr. MAJOR GREENWOOD congratulated the author on his valuable contribution to biometry; he suggested that the smallness of the coefficient of correlation between prevalence and mean age might be due to non-linearity of regression, so that the prima facie inference that the correlation was a real one might be justifiable. The biological interpretation of this suggested by Dr. Hamer seemed the most feasible one. Dr. BROWNLEE said that it was essential to bear in mind the factor of mass of infection; whenever the mass of infection was great—for instance, in milk epidemics—the mean age of attacked persons was high. Dr. MCVAIL inquired whether the excessive incidence upon females might not be accounted for by the greater proportion of females in the general population at susceptible ages. Dr. BUTLER commented on the difference between the age incidence in a disease such as scarlet fever to which the whole population was not susceptible and that of a disease such as small-pox attacking an unvaccinated population. It appeared that in the former case immunity came with age and that an accumulation of susceptible material was not the whole explanation. Dr. TURNER, in replying, remarked that an obvious and possible explanation of the higher mean age of females attacked was that the girls nursed children in the interval before the latter were removed to isolation hospitals.

Dr. JOHN BROWNLEE then read a communication on the relation between rainfall and scarlet fever. He exhibited an extensive series of charts which led him to conclude that the influence of deficient rainfall upon the prevalence of scarlet fever, to which the late Dr. Longstaff had devoted special study, was not a direct one. There was some evidence that if a period of deficient rainfall coincided with the epoch at which, from a study of the periodicity of the disease, an epidemic was to be expected, the rainfall deficiency increased the magnitude of the epidemic. Deficiency of rainfall was not, however, a sufficient single cause of an epidemic. Sir GEORGE BUCHANAN inquired whether the English rule that scarlet fever was an autumnal epidemic were universal and whether grouping rainfall in smaller than annual units had been tried. Dr. BROWNLEE said that the case in favour of deficiency of rainfall as a precursor was not strengthened but weakened when a fine time unit was adopted.

THERAPEUTICS OF QUINIDINE.

A MEETING of the Liverpool Medical Institution was held on November 16th, with the President, Dr. J. HILL ABRAM, in the chair, when Dr. JOHN HAY read a paper on the after-results of quinidine in disorderly action of the heart. He reported the results of treatment with quinidine in 21 cases; 13 of these had been described in an earlier communication to the society, and of the 13 cases only 3 had retained a normal rhythm. During the last seven and half months quinidine had been administered to 8 additional patients, and in each case the fibrillation had been broken and a normal rhythm restored. Four, however, had relapsed. In all there were 6 complete failures; 8 cases had relapsed after temporary cessation, and 7 patients had maintained a normal rhythm. Not included in the above series were two recent responses to quinidine, but it seemed to him a little early as yet to include them in the successes. Dr. Hay discussed the type of cases suitable for treatment with quinidine, and also the type of case in which the exhibition of that drug was unjustifiable.

Dr. A. DOUGLAS BIGLAND described observations made by Dr. Voigt and himself on patients treated with quinidine. Out of 7 cases of auricular fibrillation 2 had regained normal rhythm and maintained it up to the present, over periods of six and five and a half months respectively. One case died suddenly after having had a normal rhythm for five weeks. Two cases had relapsed and were still under observation, while two other cases were not able to continue the treatment.

Dr. I. HARRIS considered there were three striking facts in connection with quinidine: (1) Provided that the drug was given long enough and in sufficient quantities, in a great majority of cases a normal rhythm could be restored. (2) There was a pronounced tendency to relapse after a normal rhythm had been restored. (3) The sudden restoration of the normal rhythm effected by quinidine favoured embolism. The drug as such was not dangerous. He had given the drug in normal cases without observing ill effects. Dr. Harris considered that there was another factor in the treatment by quinidine which might bring undesirable results. In the great majority of cases of fibrillation the pressure in the veins was greatly increased, which suggested that the total output of the heart was diminished and the strain on the heart muscle correspondingly lessened. To restore the rhythm meant increased output and increased strain on the heart muscle. Dr. Harris was of opinion that, since quinidine was a dangerous drug and did not influence the heart disease itself, it was questionable whether it was worth while endangering the patient's life for the sake of restoring the normal rhythm, considering that in many instances, after a shorter or longer period, fibrillation returned. He thought that further observation was necessary before a definite conclusion could be arrived at regarding the value of quinidine in fibrillation.

Blood Transfusion.

Mr. J. T. MORRISON read a paper on two cases treated by blood transfusion.

The first patient, a girl 5½ years old, subject to nose bleeding, had a very severe epistaxis one week before admission to hospital. On admission her nose was bleeding in spite of having been plugged. Her pulse rate was 176, her temperature 99.6°. She was blanched, and her haemoglobin was below 20 per cent.; the white blood corpuscles numbered 44,650, no abnormal types being present. There were purpuric spots on her back and legs. The cervical glands were enlarged (perhaps from recent impetigo), the spleen was palpable, the liver apparently normal. The treatment given was horse serum, 10 c.cm. subcutaneously, and calcium lactate, 10 grains four-hourly. During the following three days there was no improvement; indeed, there were further haemorrhages. After four days transfusion was decided on, her condition being desperate (pulse rate 164). To supply the supposed missing factor in coagulation without unduly raising the blood pressure only 50 to 60 c.cm. of blood were used. The father of the patient was the donor, his red cells having been previously tested. The technique used—as the

quantity was so small—was the multiple syringe method: 20 c.cm. Record syringes, dried with ether and sterilized in liquid paraffin, were employed. The blood was injected into the external jugular vein of the patient, the vein being exposed under local anaesthesia. Great improvement followed, and the transfusion was repeated the following day; convalescence thereafter was uninterrupted. The patient had had an operation safely since.

The second case was a boy, aged 6, who had had tonsils and adenoids removed, with a good deal of reactionary oozing for the first two days. On the third and fourth days there was no more oozing; on the fifth day, however, there was a sharp haemorrhage from the post-nasal space. Calcium lactate and horse serum were given as in the previous case. The sixth day was uneventful, but on the seventh day bleeding began again and oozing was very persistent. A dangerous degree of anaemia was soon reached. The case was regarded as one of secondary haemorrhage, but transfusion was tried in spite of the fact that the source of the bleeding could not be controlled. Between 50 and 60 c.cm. were given, as already described, from a No. 4 blood donor, and immediate improvement was obtained. There was no further bleeding, but it was thought advisable to repeat the dose on the next day, and no further trouble of any kind ensued.

Mr. Morrison concluded by saying that this experience confirmed some of the indications for transfusion now beginning to be recognized—namely, the haemorrhagic diseases, including melaena neonatorum and haemophilia, CO and benzol poisoning, and, above all, desperate cases of primary haemorrhage. Except in the last named, the amount transfused need not be large.

Observations on General Anaesthetics.

Dr. MINNITT read a paper entitled "Some observations on general anaesthetics." He explained what ethanesal was and how it was obtained, and, in reviewing his experience of about 300 cases, he contrasted its advantages and disadvantages as compared with ether, the result being greatly in favour of ethanesal. He pointed out important matters in connexion with an induction, laying stress upon full anaesthesia being obtained before operative interference began. He then described his observations with regard to blood pressure during operations, and showed how there was a normal graphic record in ordinary cases. He compared the differences from this normal graph with the variations in difficult cases, and showed that these observations would be valuable to both the anaesthetist and the surgeon. He instanced McKesson's interpretation of blood pressure findings, and suggested treatment in the case of patients having a poor blood pressure, emphasizing the value of heat, administrations of oxygen, and hypodermic injections of pituitrin. Dr. Minnitt exhibited a specimen of a hot-water bottle to warm the air breathed from the mask by the patient. Slides were also shown depicting the influence of oxygen and pituitrin upon falling blood pressure. Gas and oxygen anaesthesia was discussed, and Boyle's apparatus and a No. 8 Ohio monovalve apparatus were shown.

Dr. G. F. R. SMITH confirmed Dr. Minnitt's favourable opinion of ethanesal, but was doubtful if its advantages over ether rendered its use in hospital practice justifiable in view of the greater expense. Dr. Smith thought that equally good results could be got with nitrous oxide and oxygen, with simpler and cheaper apparatus than those on the market. He gave a word of warning in regard to the danger of that method in major surgery.

ACUTE NEPHRITIS.

A MEETING of the Manchester Pathological Society was held on Wednesday, November 8th, when Professor SHAW DUNN read a paper on some aspects of acute nephritis.

Professor DUNN referred to the impetus which the study of the minute morphological changes in the kidney in acute nephritis had received of recent years—on the one hand through the wealth of material afforded by the appearance of the disease in epidemic form in the armies of the western theatre of war; on the other hand by the acquisition of a fuller knowledge of the minute structure of the normal kidney. The modern conception of the kidney as an organ composed of nephrons or units each composed of a glomerulus and tubule, with a blood supply rather more than less of their own, had an important bearing on the interpretation of diseases of the organ. The correlation of disturbed anatomy and disordered function became more interesting and more fraught with possibilities and with clinical profit.

Histologically, the majority of cases of nephritis dying in the acute stage showed predominantly a diffuse glomerulo-nephritis. This had been the case not only in the war necropsies but in civilian practice as well. The glomerular capillaries were blocked by proliferated endothelium and leucocytes; thus the lesion was vascular. At times there occurred in addition catarrh and accumulation of desquamated cells in Bowman's capsules, this type of lesion generally being more destructive to the kidney as a whole.

Professor Dunn analysed the results of his investigations on the kidney, both in cases clinically diagnosed as acute nephritis and also in a further series where no special renal disturbances had been noted during life, but where the naked-eye appearances had led him to make detailed studies. In two cases with oedema, dying of uraemia and coming to necropsy, a diffuse glomerulo-nephritis was present of such degree as to give the impression that renal function had been largely arrested. The cases which were incidentally discovered at necropsy fell into two histological groups. A small group corresponded closely to Gaskell's focal embolic nephritis, plugs of thrombus being found in the glomerular capillaries. The second type showed a condition similar in kind to that exhibited by the uraemic cases, but less in degree. It was interesting to note that these latter all occurred in cases dying of sepsis of some kind, and it appeared that this was a most important factor in the causation of diffuse glomerulo-nephritis. On the extent of such a glomerulo-nephritis—an extent varying from case to case—depended the presence and quality of physical signs of kidney disease. In those cases where bacteriological examinations were carried out the infecting organism was found most commonly to be the haemolytic *Streptococcus pyogenes*.

DEMENTIA PRAECOX.

A MEETING of the Ulster Medical Society was held in the Medical Institute, Belfast, on November 16th, with the President, Mr. R. J. JOHNSTONE, in the chair, when Dr. W. CALWELL read a paper entitled "Dementia praecox from the ordinary physician's point of view."

Dr. Calwell drew attention to the claim that this type of case was a distinct group in insanity, just as one hundred years ago the same claim was made for general paralysis of the insane, a claim now fully substantiated. Kraepelin's classification of mental diseases, based on age at onset, general course, peculiar symptoms, progress, and termination, was an advance on the older one, based on mental symptoms alone; but, just as in skin diseases, it would, he believed, ultimately give place to a classification based on pathological findings. Kraepelin's guiding points in dementia praecox—the age of adolescence at onset, the progressive but intermittent course, the hopelessness of prognosis, and ultimate termination in complete dementia, with absence of direct fatal termination—had all many exceptions. The onset was generally slow and insidious, but little or no reference had been made to the question of any preliminary illnesses; this was a subject that required investigation, and that could be carried out only by the practitioner in charge of family work. If a case of infantile paralysis or of encephalitis lethargica was seen a year after onset, it would be difficult to reconstruct the initial trouble. Long lists of symptoms could be made; perhaps some sort of order could be evolved by a study of psychology and by the application of Hughlings Jackson's dicta that in degeneration the higher levels went first and were marked by a loss of function of this level and an uncontrolled action of the lower. It must, however, be remembered that the destruction in that case was so slow as to be imperceptible, like the hour hand of a clock; and, while that destruction was taking place, it was accompanied by a certain amount of perversion, such as would be expected from the slow, minute deterioration found in the nerve cells. Besides, there were no clearly defined authorities in the mental hierarchy, one above the other, but a gradual evolution from the projection centres in front of the Rolandic fissure, forward to the intermediate, and then to the frontal and the pre-frontal areas, where the motor type of cell seemed to act as the physical basis of will, conation, and the sense of effort, as well as of high intellectual concepts requiring a motor basis. Similarly, the sense of sight rose in evolution as it spread forward from the occipital lobes, and of hearing as it spread from the Sylvian fissure. Much difficulty existed as regards diagnosis, as the delimitations had not been agreed upon, but the mentally deficient were always a stumbling-block. The extent of the disease was impossible to ascertain, as the name was not yet universally adopted, but 10 to 20 per cent. of admissions to asylums were of this nature, and as such patients lived and became more

markedly affected these institutions became crowded with them. Of the pathological theories advanced, that of Mott's seemed to bear a critical examination best—namely, a genetic weakness in the higher cortical cells, which yielded to any stress, physiological, psychological, or toxic, under the stimulation of the onset of puberty. The coincidence of the degeneration of the nerve cells in the cortex, of atrophy of the seminiferous tubes in the testes, and also of atrophy of the ovary, pointed to a cause acting on both nerve and reproductive organs, and seemed to ask for some close connexion. The testicular atrophy was much in excess of that found in other forms of brain degeneration. Prophylactic treatment should be entertained. Heredity existed in a very large percentage, but the infections of the mother when pregnant, influencing the thyroid, when the nervous system of the foetus was at a stage of critical development, should not be forgotten. The peculiar mental ataxia, or schizophrenia, where the perception, the intelligence, and the memory were but little impaired, but the emotion, the will, conation, interest, were markedly so, suggested an escape of the receptive cells, and a susceptibility of the motor type of cell, as was seen in infantile paralysis and in encephalitis lethargica. Dr. Rivers's suggestion of trying to discover the children who developed dementia praecox was valuable. Hope lay in prevention, and, perhaps, in very early treatment.

Colonel DAWSON said that the want of interest and emotion in the patient rendered cases of dementia praecox hopeless for suggestion as a treatment. He had, however, seen cases with all the manifestations of dementia praecox recover. As regards heredity, it had been stated that many of these cases were the offspring of general paralytics. He also pointed out that negativism meant an active reverse of the request, not merely a passive resistance. Professor LINDSAY and Dr. ADAMSON also spoke, and Dr. CALWELL replied.

EDINBURGH OBSTETRICAL SOCIETY.

THE first meeting of the eighty first session of the Edinburgh Obstetrical Society was held on November 8th, the President, Dr. J. LAMOND LACKIE, in the chair. The President delivered his inaugural address, and drew attention to the fact that the mortality and morbidity among women in childbirth were no less than seventy years ago, and that childbirth was second only to tuberculosis as a cause of death among women. Such a state of matters could only be improved by close co-operation between the practical obstetrician and the laboratory worker—biochemist and bacteriologist—and by intensive training of students by actual residence in the maternity hospital and constant practice for a fixed period, including instruction in the ante-natal and post-natal departments, with subsequent attendance upon cases in the extern department. Unless the bedroom could be converted into a surgical operating room, every lying-in woman should be removed to hospital or nursing home. Each practitioner should have his private ante-natal department, and should regard it as his duty to exercise the closest supervision of every pregnant patient. He advocated a mixed diet during pregnancy, red meat being taken once or twice weekly, the necessary protein being obtained from eggs, fish, fowl, peas, beans, and nuts, with cereals. By limitation of fluids, especially milk, and of carbohydrates, according to the Prochownick method he believed it possible to obtain a smaller child with consequent diminution of the risk of dystocia. A timely induction of labour was often a far finer thing than the most brilliantly executed Caesarean section, which was too often the outcome of bungled midwifery. "Prophylactic forceps" as practised by certain American obstetricians he considered an unjustifiable proceeding, and advocated patient "standing by" combined with twilight sleep, provided pelvis, foetal head, presentation, and position were normal as often yielding better results than the most brilliant abdominal or vaginal surgery. He now used forceps much less frequently than formerly and high forceps very seldom. Neither was he convinced of the value of the so-called Potter's version, which he looked upon as the best example of meddlesome midwifery, the introduction of which into this country as a routine method of delivery he would deeply deplore. The greatest need in the modern maternity hospital was a follow-up department to which the women should return, well or ill, for examination and advice. Much suffering might be prevented by early recognition and treatment of pelvic abnormalities resulting from parturition. Maternity insurance would also be of advantage in that it would tend to assure a period of proper convalescence.

Reviews.

CRIME AND PSYCHO-ANALYSIS.

THE author of *The Psychology of the Criminal*,[1] Dr. HAMBLIN SMITH, has had twenty-three years' experience as a medical officer in the English prisons, both "local" and "convict," and has given great attention during the last three years to the mental condition of offenders sent specially to him for examination and report from the courts at Birmingham, where he is chief medical officer of the prison. He is also lecturer on criminology at the University of Birmingham, and thus is specially equipped for undertaking to illustrate in this book the principle that "the intensive investigation of individual cases is the road to the solution of the problems of criminality."

The author deals with various aspects of his subject, but the most novel feature of the book is his discussion of psycho-analysis in relation to the criminal, and to this I propose to devote the greater part of the space at my disposal.

It may be said at once that a careful study of each individual offender's bodily and mental condition and behaviour, including as far as possible inquiry into his early mental history as evidenced by his conduct, is unquestionably an important desideratum in order to arrive at the best judgement on the questions whether he should be punished, and what, if he be rightly punishable, should be the nature of the penalty awarded. From a practical point of view it may be said further that the more we know of the individual offender the less we are concerned with what are so frequently and indefinitely alluded to as the "problems of criminality"; and all may agree with what the author in his first chapter somewhat obscurely lays down "as a fundamental position, that conduct is the direct result of mental life," etc. This dictum will scarcely at first sight be questioned by any psychologist to-day. Many years ago Dr. Charles Mercier persistently taught that a person's conduct is the main index to his mind, and that the careful study of his conduct is the essential preliminary to forming a judgement on the health or defect of his mental state. But much that is said in this book indicates that Dr. Hamblin Smith really means that study of the "mental life" is the necessary preliminary to a judgement on a person's conduct, and that the term "mental life" implies here the hypothesis of the "unconscious mind." In one place, indeed, he virtually sums up the matter of the problems of criminality in these words: "It follows that the real question is not so much what should be done to an offender in the way of punishment, but what can be done for him in the way of treatment," and proceeds to emphasize his view that the right method of studying "the psychology" of the criminal, or indeed of anyone, is to act on the Freudian hypothesis of the "unconscious mind." This "discovery" he ranks in value with those of Copernicus and Darwin. Each of these, he says, "changed our whole conception of our origin and destiny; but there has arisen another in this our time. Sigmund Freud, by his hypothesis of the unconscious mind, has radically altered all our views of human nature."

Two chapters—nearly half of the book—are devoted to the "offender's unconscious mind," and include an exposition of Freud's psychological doctrine and the method of applying it in practice now widely known as psycho-analysis, or as the new psychology, or, simply, as psychotherapy. Psycho-analysis is pronounced to be a science, and the discovery and elaboration of it to have been made in a scientific manner. The author is certainly to be credited with full success in his expressed endeavour to state fairly and dispassionately his own views on psycho-analysis, and most of the exponents of the Freudian teaching will probably accord him their approval. It is clear from what has been said above and from the trend of the last two chapters of the book that Dr. Hamblin Smith fully accepts the Freudian doctrine as indicating the best form of intensive investigation of individual cases, as the true road to the solution of the problems of criminality, and equally appropriate to the study of mental activities generally. It follows that an adequate notice of this book would require a more or less detailed consideration of the hypotheses the truth of which the author assumes as his postulate, though he

[1] *The Psychology of the Criminal.* By M. Hamblin Smith, M.A., M.D. Medical Officer of H.M. Prison, Birmingham; Lecturer on Criminology in the University of Birmingham, and at Bethlem Royal Hospital, London London: Methuen and Co., Ltd. (Cr. 8vo, pp. vi + 182. 6s. net.)

admits that "there is much in psycho-analysis which is still highly controversial."

It is impossible within the limits of this notice to attempt an adequate criticism of the doctrines on which the author relies for his contentions. But it may be briefly noted that the hypothesis of the "unconscious mind," with all that it is held to imply by those who regard it as an established "discovery," is but an elaborate and complicated guesswork and wholly lacks scientific verification. One may search in vain in the writings of the originators and disciples of the various schools which hold this doctrine in common, however much they may differ *inter se* on more or less important details of practice, for anything like a clear setting forth even of the exact meaning they attach to the terms "mind" and "consciousness." Without some consensus on the extent and content of the fields of mind and of consciousness the concept of the "unconscious mind" is at least extremely nebulous; and, unless it be assumed that the innumerable processes of cerebration and nervous action which persist while the individual subject is quite unaware of them are to be declared as "mental" phenomena, the very notion of the unconscious mind will "pass into nothingness." Even apart from its usage in the newly formulated hypothesis of the unconscious mind the meaning of the term "unconscious," as often applied to actions and thoughts and desires by many speakers and writers, is generally vague and mostly misleading. The psycho-analytic schools, however, treat the "unconscious" as if it were a recognized and definite compartment of a somewhat indefinite whole called *Mind*, and apparently hold that in this compartment are retained in potential or actual activity all the impressions that have been instinctively experienced or otherwise *learnt* during an individual life from its outset. Many of such memories, as all must agree, can be instantly recalled on receipt of the appropriate stimulus; but many others, and especially such as are related to instinctive desires and have unpleasant associations, are held, on the hypothesis in question, to be preserved and active in the unconscious mind, having been purposively or otherwise repressed thither by the conscious mind. In view of the indefinite nature of what may be implied in the term *consciousness*—that "vague and treacherous word," as some psychologist has styled it—it appears that the basic principle of the methods of psycho-analysis is a highly fanciful and unverified assumption of a vast region of the mind, the most important contents of which are consciously—or unconsciously—repressed and purposive activities, frequently or constantly struggling, in the case of large numbers of persons, to escape from this repression which they suffer from the counter-activity of the conscious mind, or of some special factor of it assumed to exist, and to be delegated to carry out the repressive function while the whole mind's personal proprietor is quite unaware of the process.

This is, of course, but a very scanty outline of the hypothetical system on which the practice of psycho-analysis is founded, but it may serve to indicate the point of the allegation that the teaching of the new psycho analytics does not satisfy any of the requirements of scientific investigation. The home of this school, indeed, seems to be much in the clouds, and its philosophers, like the Socrates of Aristophanes, to be "walking on air" while they "contemplate the sun."

But quite apart from this important question as to whether there is any scientific basis for the Freudian doctrines it must be recognized that the spreading employment of the now popular therapeutic methods arising from those doctrines is liable to produce, and actually does produce, multiform harm to many sufferers from various kinds of mental or nervous disorder. Doubtless some patients are benefited or may recover under treatment by psycho-analysts; so also do many who are treated by those who analyse (in the pre-Freudian sense) the cases of mental disorder which come before them, whether without knowledge, or with knowledge and general disapproval, of the Freudian doctrines. It is indisputable that minute and careful inquiry into the previous individual histories of all that large group, commonly called "functional" or "nervous" cases, has, for long, been made by thoughtful and experienced physicians, whether mental specialists or not, nor is it doubtful that there is a considerable field worked in common by some of the new psycho-analysts and the large group just indicated who ignore, or reject, the conception of the "unconscious mind" as set forth in the new psychology.

Since the main intention of the author of this book is to advocate the wide employment of the Freudian psycho-analysis in the medical investigation of criminals generally, the consideration of a few points mentioned by him seems to be of importance and to require short comments.

1. In the last three paragraphs of Chapter IV, "On the offender's unconscious mind," Dr. Hamblin Smith writes:

> "And what is the conclusion of the matter? . . . It is summed up in the saying that to understand all is to pardon all: the author does not mean that nothing is to be done to delinquents. He considers them worthy of the most careful treatment. . . . It is not meant that they" (that is, any officials of the law or others appointed in connexion with institutions "are to make the necessary investigations. The Court must have the ultimate responsibility of dealing with the case. But it must employ experts in making the investigations."

It is clearly intended to imply that such experts must be chosen from among "psycho-analysts" only. Therefore further comment is needless on this extraordinary proposal to employ only one section of the medical profession to serve the State in this matter. Who is to direct the State authorities in this important matter of its choice of doctors?

2. On page 74 it is stated that "psycho-analysis is a science consisting in the investigation of the mode of working of the unconscious mind," and on page 79 we read that "nothing has to be more carefully avoided in psycho-analysis than any trace of suggestion by the psycho-analyst." This precaution is one on which there may or not be general agreement even among psycho-analysts, but it is to be gravely doubted whether the advice is likely to be generally followed in this form of practice.

3. The possible, or even probable, risk during the process of psycho-analysis of the transference of the patient's feelings towards other persons (whatever the feelings may be) to the psycho-analyst himself is strongly emphasized by the author.

> "It will be seen," he writes, "that psycho-analysis is a method of great difficulty, requiring knowledge of a special technique, much experience, and perhaps certain gifts which are not possessed by all. It is a trying process for the psycho-analyst; until an attempt has been made no one can conceive what a severe strain this method is."

This warning by Dr. Hamblin Smith doubtless comes from one who is unbiased by any consideration other than a desire to advocate the best method of investigation into the mental workings of offenders sent to him by courts of law, and whose evidently earnest belief is that psycho-analysis is the best method. One reflection following on the reading of these words of his is that only a very small proportion of men or women doctors could possibly be expected to combine all the qualities necessary to practise psycho-analysis properly, even were its soundness as based on science, and its successful application in practice, to be generally admitted. Several other comments suggest themselves on some of the actual results of this practice, but space forbids further enlargement on this particular point.

4. There is much significance in what the author says about the frequent resistance made by the subjects of psycho-analysis and the necessity for such persons to be frankly willing for the investigation to be made.

> "There is a form," he says, "of unconscious resistance, more common among intelligent patients. Some psycho-analysts think that intelligent subjects are the best to deal with, and that lack of intelligence is a great handicap to the method. If this opinion be correct it will limit the application of psycho analysis to court work."

The author, however, states that he has had "some success in dealing with subjects who are far from intelligent," but he gives no details.

In his last short chapter, "Conclusions," the author faces the above-mentioned and other difficulties, and sketches a preliminary scheme for introducing the method of psycho-analysis into the English prisons, recommending that at first the effort should be limited. But although he regards it as doubtful whether any offender should be placed by a court even on "probation" without the most thorough examination, he suggests that a beginning might be made only with: (1) young offenders; (2) those who repeatedly commit the same kind of offence, especially when the motive is not apparent; (3) cases in which there is any other marked peculiarity about the offence. But this condition is extremely wide, for it must be remembered that of the large numbers of thieves, burglars, persons who obtain money on false pretences, and so on, nearly all confine themselves to one special line of offence only. The motive for this specialization is in most cases sufficiently apparent, and gives no occasion for raising any psychological problem: the criminal, like other

men, recognizes that practice in his craft, as in others, leads to perfection.

There are parts of this book well worthy of study by prison administrators and reformers, apart from the special matters already noticed. In the second chapter especially, where Dr. Hamblin Smith deals with the subject of the "Offender's conscious mind," there is much that deserves attention, and especially his thoughtful comments on the various test methods devised for arriving at a normal standard of intelligence for the purpose of comparison with the intelligence of persons whose mental power is under investigation.

Both professional and lay readers of the book who may be already acquainted with some of the many works on psychoanalysis which are issued frequently from the press will accord to the author their recognition of the high degree of clarity in expression and logical consistence that mark his writing, qualities not readily detectable in most publications by adherents of this school.

H. BRYAN DONKIN.

FEEDING IN INFANCY AND CHILDHOOD.

THE fourth edition of Dr. ERIC PRITCHARD'S *Physiological Feeding of Infants and Children*[2] is a much larger book than its predecessor. The new edition will be welcomed, and deserves a high place among British textbooks devoted to this difficult and very controversial subject. Dr. Pritchard has given much study to the theoretical side of the subject, and has had a very extensive experience in the practical side; his opinions therefore have weight and authority. It does not at all detract from that authority that he frankly confesses in his preface that he has changed his views in some important respects; he now advocates feeding from the first day of life, at intervals of three hours, and opposes also the doctrine that as the artificially fed infant grows older its milk mixture should be made stronger.

The title of the book fairly indicates its scope—the proper food for infants and children up to puberty, both in health and sickness, and the guidance of dietetics throughout this period by physiological teaching. The greater part of the book deals with infants, and the physiological standards here are human milk and maternal nursing. After setting out the physiological laws of breast-feeding, Dr. Pritchard lays down the main principles which should govern the artificial feeding of infants. The total daily energy value of the food taken must be known, and must correspond to the output of energy; the ratio of the organic constituents in the milk mixture must roughly approximate to that in human milk; accessory factors in the diet, such as vitamins, salts, and lecithin, must not be omitted; the importance of training the digestive organs of the infant to a fuller capacity must be kept in view. The illustration and application of these main principles run throughout the book, and it is by his insistence and reliance on principles that the author is able to give clearness and cohesion to his exposition of a complicated subject. He will, perhaps, not expect that all his doctrines, theoretical and applied, will be accepted by the critics; but he may be assured that they have the great and not too common merit of being readily understood. It is a great point with Dr. Pritchard that the energy output of the baby should be roughly measured and allowed for in planning his diet; that, for example, a lively, vigorous baby should be given a larger ration than a quiet and passive one; also that in wasted infants heat and energy should be conserved by warm clothing. He also strongly recommends the daily use of a vegetable and bone soup (for which a recipe is given) in order to supply salts, extractives, lecithin, and cholesterin; in addition to this, he advises the daily use of orange-juice, of some animal fat, and even of yeast preparations. He favours the use of barley water, and even of dextrinized flour in small amount, after the third month; and, after the sixth month, of some farinaceous food, to replace an equivalent amount of sugar. On all these and many other important, and often disputed, points in the dieting of infants and children Dr. Pritchard offers clear and reasoned opinions drawn from his own experience and study. Further experience and fresh discussion may change or confirm these opinions, but meantime, as presented in this book, they are an authoritative contribution to the subject.

[2] *The Physiological Feeding of Infants and Children.* By Eric Pritchard, M.A., M.D.Oxon., M.R.C.P.Lond. Fourth edition, entirely rewritten and enlarged. London: Henry Kimpton. 1922. (Roy. 8vo, pp. xvi + 500; 90 figures. 21s. net.)

DURATION OF FATAL LUNG TUBERCULOSIS.

THE *Clinical Course and Duration of Fatal Lung Tuberculosis*[3] is an unpretentious little book compiled by Dr. C. H. WÜRTZEN from statistics collected over a period of nearly fourteen years at the Oeresund Hospital, Copenhagen. In order to avoid the fallacies inherent in all methods dependent upon the following-up system, he has confined himself to the consideration of those patients who actually died during their stay in hospital. In this way he had before him data referring to 1,032 men, 780 women, and 87 children, nearly all of whom belonged to a more or less homogeneous class of insured people working in the city. Dating the onset of the trouble from the first manifestation of symptoms, adding together the number of months elapsing in each case before death, and dividing by the total number of patients, he has obtained a figure which represents the mean duration of the disease. For men this works out at 37.1 months, for women at 34.4 months, and for children at 11.9 months. Further, by subdividing each class into age and sex groups, he has shown that though the preponderating incidence of phthisis falls amongst young adults, the greatest fatality occurs in childhood and old age. An initial haemoptysis appears to be a favourable sign, while complications such as diabetes and syphilis increase the gravity of the prognosis. Limited as the book is in its scope, the data themselves are of considerable interest.

PUBLIC HEALTH CHEMISTRY.

The Chemical Examination of Water, Sewage, Foods, and Other Substances[4] is the title of a book written by J. E. PURVIS and T. R. HODGSON for those who perform laboratory investigations for public health purposes: it deals also with a number of other matters of a kind commonly submitted as subjects of inquiry to analysts. The first chapter describes methods for determination of the dissolved constituents of water and sewage, and gives the results of analytical examination of a number of samples; analytical methods applicable to works effluents are also noticed. In the second chapter milk, cream, dried milk, and condensed milk are dealt with on a similar plan. Succeeding chapters relate to oils, edible fats, beverages, cereals, spices, and other articles of diet. One chapter is devoted to the recognition of poisonous metals in foods, another to toxicological analysis. Air, coal gas, rag flock, and the examination of urine are included among the miscellaneous subjects.

The text consists chiefly of methods which are well known to experienced analysts and which are described, often with greater detail, in other works; a certain number, however, are based on principles differing from those of the older type. There is no remarkable departure from the plan of other books of its kind and no fault is to be found with the quality of the matter—indeed the information given is presented tersely and without ambiguity; but anyone looking for the help that will lift him above the difficulties inherent in analytical practice will be disappointed. There is a growing disposition to give directions in the terms that might appropriately be used to a chemical factory hand, and to omit reference to the highly important principles of theoretical chemistry involved in the instruction. Such directions are suited only for routine work; those who have to deal with the same problems complicated by unusual conditions are obliged to seek refinements in methods of procedure and prefer to receive directions couched in the language which one chemist would use to another. What the authors have done in this direction is only sufficient to make prominent the need for more chemistry in the discussion of technology. The collection in a handy form of much that is required for public health work renders the volume quite suitable for those engaged in that practice. It contains some interesting descriptions of the authors' own results in the analyses of sewage products and other matters.

The fact that the work has reached its second edition in a brief period is proof that it has met with appreciation; it can be recommended to those who already possess treatises on its subject, since some of the methods of procedure offer advantageous alternatives to the older methods of practice.

[3] *A Contribution to our Knowledge of the Clinical Course and Duration of Fatal Lung Tuberculosis.* By Dr. C. H. Würtzen. London: Gyldendal. 1922. (Med. 8vo, pp. 95. 2s. 6d. net.)

[4] *Chemical Examination of Water, Sewage, Foods, and Other Substances.* By J. E. Purvis, M.A., and T. R. Hodgson, M.A. Second and enlarged edition. Cambridge: The University Press. 1922. (Demy 8vo, pp. 346. 20s. net.)

NOTES ON BOOKS.

THAT a second edition of TIDY'S *Synopsis of Medicine*[5] should be called for within sixteen months of the publication of the first proves that it is popular and has realized the objects intended by the author. The book is not meant to take the place of the larger treatises of medicine, but by its compactness, its accuracy in detail, and its clearness of arrangement will appeal to the student reading for an examination and to the examiner himself. The new edition does not differ substantially from the first; a few minor mistakes have been corrected and the section on encephalitis lethargica has been rewritten. Had a fuller revision been considered desirable we might have hoped for more on the subject of the pathogenesis of gastric ulcer, which is barely touched on. We note also that Vincent's angina has been omitted and are somewhat surprised to find that in the section on asthma no space has been allotted to the discussion of the relation of that disease to hypersensitiveness, whereas in the section on the nervous system perhaps too much space has been given to such conditions as myotonia congenita, paramyoclonus multiplex, and amaurotic family idiocy. Otherwise we have nothing but praise for the book; impartial consideration has been given to all views of any importance, and the information provided is nearly always comprehensive and up to date. A word of praise is due also to the skilful way in which Dr. Letheby Tidy has dealt with the treatment of each particular disease; for this reason alone the book is of great value for reference in a difficulty, and it has a good index.

The modern nurse is expected to absorb so much science in the course of her training that it is sometimes urged against her by her critics that the pursuit of knowledge leaves her no time to cultivate that sympathetic attitude which means so much to the helpless patient. There should be no room for any such criticism in the case of anyone who takes as her textbook Miss BERTHA HARMER'S *Text-book of the Principles and Practice of Nursing*.[6] In the course of the introduction Miss Harmer sets out in clear and simple language the spirit and ideals of the nursing profession and those qualities which every nurse should strive to cultivate. Something deeper than sympathy, kindness, and unselfishness is called for in the perfect nurse, and can only be attained by a wide professional knowledge, assisted by the priceless gift of understanding which brings not only comfort to the body but ease and rest to the mind of the sufferer. Miss Harmer never allows the reader to regard the patient merely as a subject upon whose body certain rites have to be performed; the patient is always a sensitive human being whose feelings are to be respected. The first half of the book covers the general principles of elementary nursing, the second part being devoted to a more detailed account of the technique of medical and surgical nursing. There is also a section on the care of eye, ear, nose, and throat cases. In each instance the underlying principles are lucidly explained, so that the student can adapt the teaching to meet any conditions, whether in a private house or in hospital. The various methods and procedures are very fully described, and no pains have been spared to make every detail perfectly clear. The illustrations have been well chosen, and the publishers are to be congratulated on the excellence of their execution. This book is a mine of information for the probationer who is preparing for her examinations; it should prove of equal value to the fully qualified nurse, and should be of great assistance to those responsible for the teaching of the coming generation of nurses.

The report[7] of the Conference on Mental Deficiency, held at the Caxton Hall, Westminster, on July 26th and 27th (of which an account appeared in the JOURNAL of August 5th, 1922, p. 222), has been published by the Central Association for Mental Welfare, and copies may be obtained from the honorary secretary of the association, Miss Evelyn Fox, 24, Buckingham Palace Road, S.W.1. The report contains papers on "Crime and mental deficiency," by Sir Bryan Donkin, on "Criminal defectives," by Dr. W. Norwood East, and on "Economic difficulties which prohibit the development of special schools," by Dr. H. B. Brackenbury, with speeches by Sir Leslie Scott, Mr. H. A. L. Fisher, and others, and a full account of the interesting discussion which took place.

[5] *A Synopsis of Medicine*. By Henry Letheby Tidy, M.A., M.D., B.Ch.Oxon., F.R.C.P.Lond. Second edition, revised. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd.; Toronto: The Macmillan Company of Canada, Ltd. 1922. (Cr. 8vo, pp. xv + 956. 21s. net.)

[6] *Text-book of the Principles and Practice of Nursing*. By Bertha Harmer, B.Sc. Columbia Univ., R.N. New York: The Macmillan Company. 1922. (Demy 8vo, pp. xiv + 695; 153 figures. 14s. net.)

[7] *Report of a Conference on Mental Deficiency*. To be obtained from Miss Evelyn Fox, 24, Buckingham Palace Road, S.W.1. Price 3s.

SIGHT-TESTING BY OPTICIANS.

REPORT BY THE COUNCIL OF BRITISH OPHTHALMOLOGISTS.

THE following report on sight-testing by opticians has been issued by the Council of British Ophthalmologists, and will appear in the *British Journal of Ophthalmology*. We are indebted to the Honorary Secretary for an early copy.

In 1906, and again in 1919, opticians have made application to the Legislature that their craft may be legally recognized for the purpose of sight-testing, and it is consequent upon these efforts that the Council of British Ophthalmologists has thought it desirable to consider the matter in the interests of the general public.

Training of Opticians.

The Council would warmly welcome any scheme which would lead to greater efficiency in the making and fitting of spectacles. It fully recognizes that there is a very definite need for a greater supply of properly trained opticians, and ophthalmic surgeons often have cause to deplore the inefficiency displayed in carrying out their prescriptions for glasses.

Sight-testing by Opticians.

In a recent petition (1919) the British Optical Association claimed that opticians should be recognized as capable, not only of carrying out the optician's art of making and fitting glasses in conformity with prescriptions, but also of measuring and determining what glasses are required to compensate for defects of vision in any member of the public who may apply to them. Paragraph 10 of the petition stated:

"In a very large majority of refraction cases which can be treated by glasses, members of the public do, in fact, visit an optician rather than an ophthalmic surgeon or medical man, and the association humbly submit that it is eminently in the public interest that the optician should be a skilled man and under suitable supervision. A qualified optician, especially when holding a Fellowship Certificate of the Association, would recognize a case in which the eye, through disease or otherwise, could not be properly treated by glasses, and would direct the patient to an ophthalmic surgeon or medical man. An ignorant optician would be likely to supply the patient with glasses which might do great harm."

Training Necessary for Sight-testing.

The Council, however, considers that no course of training short of that required for full medical qualification can produce the skill and judgement necessary to secure the requirements stated in the above paragraph. Every medical man dealing with ophthalmic cases must be equipped with the knowledge necessary for ordinary qualification in medicine, and, in addition, with special knowledge of the most delicate and complex sense organ in the body.

It is the opinion of the Council that any State recognition of sight-testing by persons possessing only an optical qualification would not be in the interests of the community.

The Scientific Principles of Sight-testing.

The art of prescribing glasses can be divided into two periods—the purely empirical period preceding 1850, when only subjective methods of testing were available, and the period following 1850, when accurate objective measurements began to be used. (See Appendix.) Those scientific methods have been developed by medical research, and to a great extent they are not available to the optician. The statement that where defective vision is due to other than optical conditions it should be treated by a duly qualified medical practitioner (see petition of the British Optical Association, par. 10, quoted above) is in itself sufficient argument against the optician's claim, since it is well known that changes in the refraction of the eye are often produced in the early stages of serious eye disease. In many such cases an optician may be successful in raising the acuteness of vision to a normal standard, but he would almost inevitably fail to recognize the disease which is the cause of the refractive error. In fact, disease very serious to the eye, or threatening even life, may occur in an eye with perfect acuity of central vision.

Use of Drugs.

An adequate examination of the eyes and a correct determination of the error of refraction cannot be made in young children, especially in cases of squint, while the accommodation (that is, focusing power) is active. The absence of accommodative effort can only be ensured by the use of certain drugs, which also dilate the pupil. These drugs

must not be used in an indiscriminate manner. In certain conditions of the eye their employment is attended by grave risk to sight. In some individuals they produce serious constitutional disturbances. As dilators of the pupil their use is frequently essential in order to determine the presence or absence of changes in the retina or optic nerve. Such changes may be the first indication of general disease, by the prompt treatment of which the life of the patient may be saved or prolonged.

Eye Defects and General Disease.

The treatment of headaches, associated with errors of refraction, demands not only the use of glasses, but also constitutional treatment, which can only be determined by a medical man. In some cases of defects of the muscular balance of the eyes the use of prisms is necessary. The correct estimation of these and a complete investigation of the case are most difficult problems, since some of these muscular defects are among the earliest signs of serious diseases of the nervous system.

Changes in the refraction of the eyes are often produced in the early stages of eye disease. For example, myopia ("short sight") often appears in the early stages of cataract, or of chronic glaucoma, a disease which untreated inevitably leads to blindness. Hypermetropia ("long sight") may be met with in the early stages of a malignant tumour. In such cases glasses may bring visual acuity up to a normal standard, but an optician will fail to recognize the disease, which will thus be left to run its course.

Optical defects and disease constantly overlap; the former cannot be differentiated with certainty from the latter, nor the latter definitely excluded, by any, but a medical practitioner who has had special training and experience.

Optician's Standpoint.

The "sight-testing optician" endeavours either to supply spectacles with which the customer considers he can see to his liking, or to provide such lenses as will convert optically imperfect eyes into accurately focusing instruments. All are agreed that the former procedure is indefensible: the latter needs further consideration.

The eye is an integral part of the human body. Developmentally it is, in its most essential elements, an offshoot of the brain. There is practically no organ of the body which does not react upon it to its advantage or its detriment. Without exposing it to the gravest misfortune it cannot be dealt with as an inert, isolated optical instrument, yet it is in this way only that the optician can view it, and in this way only can he adapt mechanical apparatus to such of its optical defects as his limited means may enable him to recognize. Without the use of drugs to dilate the pupil or paralyse the focusing muscle, in many cases he cannot measure accurately the error of refraction or be in a position to identify the cases which demand medical advice and treatment. If he were allowed to use such drugs he would become an even greater danger to the community by reason of serious disease which he in his ignorance might produce.

Ophthalmic Surgeon's Standpoint.

The ophthalmic surgeon approaches his refraction work from an entirely different standpoint. To him the eye is an optical instrument, but it is also an integral part of the human body in complex interrelation with the other parts. Its anatomical proportions and its physiological activities are before his mind. Its pathological disturbances, both local and those dependent on general disease, are known to him. He has at his disposal the use of all drugs necessary for his purposes, and of the indications for and against their employment he is fully aware.

In the investigation of diseases of the eye, the measurement of the acuteness of vision, both with and without lenses, is one of the first steps in the examination of the patient. In refraction work the surgeon takes into consideration the physiological activities of the normal eye. The hypermetropic eye he regards as developmentally imperfect. Astigmatism may be due either to developmental malformation or to disease. Presbyopia (loss of focusing power associated with advancing age) is a physiological condition, but undue rapidity in its progress may herald glaucoma, and apparent recovery of focusing power may indicate the earliest stage of cataract. Myopia is in many instances pathological, and the myopic eye is exposed to grave disorders. With a comprehensive knowledge of facts such as these, the ophthalmic surgeon decides in a pure refraction case what lenses should be prescribed. With what lens the patient sees best is only one point he takes into consideration when prescribing. His aim is not only to improve vision, but also to secure the health and comfort of the patient. No case is dismissed until full ophthalmoscopic and other examination has excluded all objective signs of disorder.

If disease be present, its causation, whether local or general, has to be ascertained, and this demands a knowledge of the diseases of the other organs of the body which produce changes in the eye. The ophthalmic surgeon must have an adequate knowledge of diseases of the brain and central nervous system, of the blood vessels and vascular system, of the kidneys, of the nose and its accessory sinuses, of the various ductless glands, etc. In fact, there is no branch of medicine which is not in close relationship with this special domain, nor is there any specialty in which a general medical knowledge is of greater importance.

The Public Interest.

It cannot be in the interests of the community to allow such grave responsibilities to pass into the hands of men with no medical training, and to hall-mark by official recognition a practice involving such dangers.

Many people in the past have gone to opticians to obtain glasses for failing vision under the impression that they are fully qualified to prescribe. Official recognition of sight-testing opticians would encourage the practice and would increase the feeling of security which our arguments show to be unwarranted. There can be little doubt that this impression has been fostered by such "qualifications" as F.S.M.C., F.B.O.A. (Fellowship of the Spectacle-makers' Company, Fellowship of the British Optical Association), etc. It is the duty of the State to guard against legislation which may in any way entail detriment to the community.

APPENDIX.—HISTORICAL.

An inquiry into the history of the science and art of refraction will show that this branch of ophthalmic work has been initiated and developed by medical men, and that even at the present day the optician works, and must of necessity work, largely on the more purely empirical lines of the early part of the nineteenth century.

The discovery of spectacles as an aid to vision dates from the thirteenth century. There is no absolute certainty as to their first inventor, but the probabilities point to Roger Bacon (1214-1294), who, in his "Opus Majus," wrote of the enlarging power of a plano convex glass and of its value "senibus et habentibus oculos debiles." Either directly from Bacon, or from some other monk, the discovery became known in Italy, and at the end of the thirteenth century spectacles were being made by Alessandro de Spina, a Dominican friar of Pisa. He did not claim to be the actual inventor, but had seen glasses made by someone else who was unwilling to reveal the secret. It may have been from Salvino d'Armato, of Florence, that Spina obtained the secret, since Armato's tombstone bears the inscription: "Here lies Salvino d'Armato degl' Armati of Florence, inventor of spectacles. God forgive him. Anno D. 1317."

If Roger Bacon invented spectacles it was probably some time before the year 1267, when the "Opus Majus" was written for Pope Clement IV. By the middle of the fourteenth century convex glasses had become fairly common. Concave glasses seem to have come into use first in the sixteenth century, and early in the seventeenth century Kepler wrote the first important scientific work on the use of spherical lenses.

The next important discovery did not take place till the beginning of the nineteenth century, when Thomas Young, the distinguished physician and physicist, in his "Memoir on the mechanism of the eye" (*Phil. Trans. Roy. Soc.*, 1801), gave the first description and measurement of astigmatism and a table of optical constants in close agreement with modern determination. He had previously (1793) written a paper on the mechanism of accommodation which secured his election to the Fellowship of the Royal Society. His observations were subsequently confirmed by Airy in 1823, but remained practically unknown to opticians.

Until the year 1853 the prescribing of spectacles was entirely empirical. It was known that men, as they reached middle life, had difficulty in seeing to read, and that their difficulty was relieved by wearing suitable convex glasses. It was occasionally found that younger people also were helped in reading by the use of convex glasses, and they were said to have "oldsight," a phrase still to be heard in use amongst opticians. Another group of people was said to have "weak sight," and it was found that they were enabled to see more clearly in the distance by the use of concave glasses. The sale of spectacles was often in the hands of country pedlars, and people chose from the stock what seemed to suit them best.

With the discovery by Helmholtz of the ophthalmoscope and the ophthalmometer in 1853, the scientific investigation of the refractive media of the eye became possible and the work of Donders, the great Dutch surgeon, speedily laid the foundations on which all modern refraction work is built. He showed the way in which a hypermetropic eye and a myopic eye depart from the normal, and the liability to disease existing in a myopic eye. He showed the relationship between the long-sighted eye and squint, and the essential difference between long sight and old sight. He discovered the frequency of astigmatism and laid down the rules for

its detection and estimation, and showed how to determine the strength and position of the cylindrical glasses necessary for its correction. Donders also established a standard for normal vision, and for the first time rendered accurate "sight testing" possible. He reconstructed the scale of lenses, substituting the metre for the inch as the unit of measurement.

This work has been continued and extended, corrected and amplified, but the progress has been entirely due to the work of medical men. In 1873 Cuignet, a French military surgeon, discovered an additional method of measuring the refractive condition of an eye, which rendered the ophthalmic surgeon still less dependent on the subjective methods previously in use. By the method of retinoscopy the skilled ophthalmic surgeon is enabled to make accurate measurements of the static error of refraction. These measurements can only be accurate in the absence of any accommodative effort on the part of the patient under examination. This condition of absence of accommodative effort can only be ensured by the use of drugs which paralyse the ciliary muscles. At a later date the use of prismatic glasses was introduced by medical men to alleviate symptoms due to errors in the muscular balance of the two eyes, and the determination of the conditions under which prisms should be ordered is one of the most difficult problems an ophthalmic surgeon has to solve. It involves the knowledge, not only of the inborn defects of musculature, but also of acquired defects, and of the pathological causes which may produce them.

Nova et Vetera.

THE INTRODUCTION OF ETHER ANAESTHESIA.

If we exclude early experiments with nitrous oxide gas the first vapour or gas to be used for the purpose of producing general anaesthesia was ether. The story of its introduction by William Morton, a dentist, was told at considerable length in an article on the Jubilee of Anaesthesia published in this JOURNAL on October 17th, 1896. It was written by the late Mr. C. Louis Taylor, then Assistant Editor of this JOURNAL, and the substantial accuracy of the story has not been called in question. But some confusion has been introduced owing to the fact that Morton had used ether in private before it was used in public. The use of ether had been suggested to Morton by Dr. Charles T. Jackson of Boston, a distinguished chemist whose pupil he had been. Morton proceeded to make some experiments on himself, and finally on a patient who had gone to his surgery to have a bicuspid tooth extracted. The ether was given on a handkerchief, but it seems clear that general anaesthesia was produced. The first operation in public under ether was performed by Dr. John C. Warren, senior surgeon to the Massachusetts General Hospital, on October 16th, 1846; it was for congenital vascular tumour of the neck in a young man. General anaesthesia was produced; after the operation Dr. Warren, turning to the audience, said in an impressive tone, "Gentlemen, this is no humbug."

We are indebted to Dr. H. C. Crouch of Ascot for a copy of the following letter he has received from Dr. W. W. Keen, who has lately celebrated his eighty sixth birthday:

1520, Spruce Street,
Philadelphia,
October 6th, 1922.

Dear Doctor Crouch,

In reading your article on anaesthesia in the eleventh edition of the *Encyclopaedia Britannica* I was much struck by the fact that you gave prominence to the operation done under ether on September 8th, 1846, but did not mention the operation of October 16th, 1846.

The operation on September 8th was a private affair in the office of Dr. Morton. It was not witnessed by any number of people; it was not made public; it made no impression on the local community or on the world at large.

I am sending you, under separate cover, a pamphlet by Professor Welch of Johns Hopkins University (whom you know, of course, by name) which enters into the whole question of the introduction of surgical anaesthesia in a most candid and critical spirit. At the same time it gives the actual facts which attended and followed that notable operation of October 16th, 1846. This operation was done in the presence of the medical class of Harvard University, of a large number of physicians of the city of Boston, of the surgeons of the hospital themselves, and immediately was flashed round the world, by mail in those days of course. It aroused at once the deepest interest in England, and, to state the result in a word, it was the single starting point for the wide dissemination of the fact of surgical anaesthesia.

Moreover, it was the origin of the whole nomenclature relating to it. Prior to October 16th, 1846, the words anaesthesia, anaesthetic, anaesthetist, etc., were not in existence. They were happily coined by Oliver Wendell Holmes, the Professor of Anatomy at Harvard, and who was distinguished the world over for his later literary work. You will observe, therefore, that from the point of view of publicity, of importance, and of initiative, that date stands out conspicuously.

I wrote to the editors of the *Encyclopaedia*, in this country, asking them to transmit to the central office in London, and to the author, yourself, a letter calling attention to the inadequate—or I ought rather to say incorrect—statement in this article, incorrect by omission.

May I also add a delightful witticism of Dr. Holmes? When it was proposed to put up a monument to the discoverer of ether in the public gardens of Boston, where the monument now stands to-day, immediately a great contest arose as to whether Morton's name or Jackson's name should be inscribed on the monument. Naturally they came to Holmes for a solution of this difficulty. With his ready wit he replied at once, "Nothing is easier; put up your shaft with a bust of Morton on one side and of Jackson on the other, and between them 'To ether.'"

Of course, the witticism would be lost very much by the pronunciation of "either" as if it were spelled "eyether." In those days the almost universal pronunciation in America was "eether." Of late years the English pronunciation of the long "i" in the first syllable has grown into considerable use, though still yet, I think, not the prevalent one in the United States.

Yours very truly,
W. W. KEEN,
Hon. F.R.C.S.,
Eng., Edin., and Ireland.

In a letter dated Boston, April 2nd, 1893, Dr. Oliver Wendell Holmes, who in 1846 was Professor of Anatomy at Harvard, wrote:

"The discovery was formally introduced to the scientific world in a paper read before the American Academy of Arts and Sciences by Dr. Henry J. Bigelow, one of the first, if not the first of American surgeons. . . . He had taken a great interest in the alleged discovery, had been present at the first capital operation under its influence, and was from the first the adviser and supporter of Dr. W. T. G. Morton, who had induced the surgeons of the hospital to make trial of the means by which he proposed to work this new miracle. The discovery went all over the world like a conflagration."

It reached London within about two months, the flame being carried in a letter from Dr. Bigelow to Dr. Boot of Gower Street, who immediately communicated the facts to Mr. Liston, then surgeon to University College Hospital. Liston consulted a friend, Mr. Peter Squire, a well-known pharmacist. It so happened that Mr. Squire had a nephew (afterwards Dr. William Squire) who had entered University College that October, and that this young man had made some experiments on himself with ether in the chemistry class at the College and had found out that he could bruise his knuckles across the iron ends of the classroom desks without any sense of pain at the time. Young Squire rigged up an apparatus with a glass bottle and inhaled ether in Liston's presence. Liston made a small puncture under Squire's finger-nail and was satisfied that he was insensible to pain. Liston had at that time under his care a delicate fair-haired man worn out by suppurating disease of the knee and loss of sleep from the jerks caused by eroded cartilage. On December 21st Squire administered ether to this patient and Liston amputated above the knee. Liston was famous for his speed, and the amputation was completed in twenty-seven seconds. The patient was quite unconscious during the operation, and so remained when removed from the theatre. Dr. F. William Cock gave many details of the occasion in the *University College Hospital Magazine* in 1911. He had consulted the notes made in the case book at the time and had conversed with three persons who were present—the late Dr. Frederick Cock (Dr. William Cock's father), his brother-in-law, Dr. Henry Maund, and Dr. William Squire, whose name has already been mentioned. It may be remembered that it was announced at the recent annual dinner of past and present students of University College Hospital that Dr. William Cock had had two chairman bells made to commemorate the first operations under ether in America and in this country. He presented one of the bells to the Massachusetts General Hospital, where the first operation under ether was performed, and the other to University College Hospital. The bells are made from the metal of an old bell in the church of Appledore in Kent (1621), and each is supported on an iron hoop made from the rails of the surgical theatre in the old University College Hospital. The stand is made from the oak frame of the old bells at Appledore (1685). Each bell bears the same inscription round the crown, NOLAE PULSATIO AMORIS RATIO. On one side is "Genl. Hosp. Mass. Oct. 16th," on the other "Univ. Coll. Hosp^{l}. London. Dec. 21st," and, in the middle, the year—1846. In explanation of the inscription round the crown it may be said that Nola in Campagna was the chief place for bell founding in the early times, so that its name became synonymous with bell. The inscription may be freely translated "When I do sound let joy abound."

British Medical Journal.

SATURDAY, DECEMBER 2ND, 1922.

STANDARDIZATION OF PITUITARY EXTRACT.

THE first of the reports of the Medical Research Council on "biological standards"* deals with the methods available for the standardization of pituitary extract, and gives an account of experiments carried out by Dr. J. H. Burn and Dr. H. H. Dale with a view to establishing a more accurate method of estimating the activity of this substance. Extracts of the pituitary gland are widely used in medical and surgical practice, yet up to the present very little attempt has been made by different manufacturers to provide extracts of similar potency. Some system of standardization is all the more necessary because this remedy is often used in emergencies—as, for example, in the difficulties and accidents of childbirth—and on such occasions it is all-important that the correct dose should be administered. Pituitary extract, a remedy of great value when accurately used, may, when inaccurately employed, produce dangerous and even fatal consequences. Obviously the physician should know the strength of the preparation he intends to administer, yet the experiments described in this report show that commercial preparations may vary so greatly that the most potent may have eighty times the strength of the least potent. Thus a doctor, having become thoroughly familiar with the activity of one preparation, may, when employing another which is apparently equivalent, inadvertently administer eighty times the intended dose. This absence of uniformity in the strength of different preparations is not necessarily the fault of the manufacturers, since no official guidance has in this country been given to them as to the strength of the extract most suitable for therapeutic purposes, and there has been no standard of activity available for common use by which fresh extracts can be judged. The authors of this report describe a method by which a preparation of uniform activity can be made and used for purposes of reference, and recommend the adoption of a definite standard of potency in the *British Pharmacopoeia*. The absence of official standards of value and authenticity for drugs of this kind and for the numerous biological preparations, such as serums and the like, used in general practice, has already been publicly denounced as "discreditable to our national position in the world of science and a source of grave danger to the community."

Burn and Dale point out in the report that the active principles of the posterior lobe of the pituitary body are unknown, so that the only method of estimating their presence is the physiological. A watery extract is very unstable. The active principles are easily destroyed in the process of preparing the extract, so that the first essential is some standard with which all preparations can be compared. The therapeutic properties of pituitary extract depend on at least two principles, one acting on the blood pressure and one on the uterus, and any method of standardizing must measure one or other of these activities accurately. Difficulties arise when the blood pressure is selected as the standard, owing to the fact that no great delicacy of discrimination can be secured in estimating the pressor activity of the gland, the total effect being dependent in all probability on the action of more than one pituitary principle. Moreover, recent work has shown that tolerance is rapidly established for the action of the most important pressor principle, a fact which further complicates attempts to estimate the value of the extract on the basis of its effect on blood pressure. On the other hand, tests made on the isolated uterus of the guinea-pig detect differences of activity within much narrower limits, and actually determine the particular form of activity which has given to the extract its widest use in therapeutics. The authors conclude that this test is by far the most suitable for quantitative comparisons with a standard, but that it should be supplemented occasionally by a test on the blood pressure to ascertain that the pressor activity is not disproportionately defective.

Full particulars of the method recommended are given in the report, but the essential details are as follows. The apparatus consists of a cylindrical glass testing vessel holding about 200 c.cm., set in a stout copper thermostat bath filled with water kept at 37° C., the testing vessel being so arranged that it can be emptied and refilled from a reservoir of warm saline. The uterus to be examined is fixed in the testing vessel, and the upper end attached to a lever which writes on a rotating drum. The fluid used in the testing vessel is a modification of the Locke-Ringer solution, differing in that it contains more sodium bicarbonate and a minute proportion of magnesium chloride, which has the useful effect of weakening the tendency to irregular spontaneous rhythm and preserving the excitability of the muscle to pituitary extract. Virgin guinea-pigs weighing between 200 and 300 grams are chosen for the experiments; when the uterus is "on heat" it is unsuitable, and the authors recommend that the young females should be segregated as soon as they are ready to leave the mother, and that the absence of oestral activity should be verified by external inspection before the animal is killed. The whole horn of the uterus should be used, suspended between a cervical tag at one end and the ovary at the other. The pituitary extract for the test is diluted 100 to 200 times with Ringer's solution, so that the dose to be added to the bath shall not be too small for reasonable accuracy of measurement, or so large that its addition unwarmed will sensibly affect the temperature of the solution in the testing vessel.

It would be a great advantage if a stable chemical substance could be prepared of known chemical composition which acted on the uterus in the same way as the pituitary extract, and which might be used as a standard with which the pituitary extract could be compared. Many experiments were carried out with histamine in the hope that it would fulfil these requirements, but the authors were led to the conclusion that the uteri from different guinea-pigs vary independently in their sensitiveness to histamine and to pituitary extract respectively, and these variations are such that histamine as a standard for pituitary extract is unsatisfactory. A similar disappointment attended attempts to use potassium chloride as a standard, for here again it was found that sensitiveness to potassium chloride did not run concurrently with sensitiveness to pituitary. No satisfactory artificial standard having been found, an extract made from the perfectly fresh pituitary gland was chosen as a standard. This extract must be prepared from glands received direct from the slaughterhouse as soon as possible after the ox has been killed. The posterior lobe is shelled out and divided up with small dissecting scissors and weighed, extracted with water in the proportion of 1 gram of gland to 40 c.cm. of water, raised rapidly to the temperature of boiling water and filtered. The filtrate represents 2.5 per cent. extract of the fresh gland substance.

In carrying out the test a fiftyfold dilution of the standard fresh extract is added to the testing vessel and the effect on the uterus recorded on the drum. The aim

* Reports on Biological Standards. 1: Pituitary Extracts. Special Report Series No. 69. By J. H. Burn, M.A., M.B., and H. H. Dale, C.B.E., M.D., F.R.S. (1s. 6d. net.)

in every case is to establish for the particular preparation the dose, which is about 60 to 70 per cent. of that needed to produce contraction of the muscle to the maximum. When the standard dose is thus fixed the determination of the exactly equivalent dose of the preparation to be tested is made from another series of experiments.

There are many stages in the preparation of the standard extract where any departure from the method recommended will result in serious loss of activity, but the authors have shown that an extract of perfectly fresh infundibular material, prepared by a method kept exactly constant in all its details, furnishes a sufficiently constant standard of reference for the biological testing of pituitary extracts. It is, however, not possible to prepare the large quantities of pituitary extracts required to meet the present-day demands with all the precautions observed in the preparation of the standard extract, and local conditions and the different processes adopted by commercial firms are the causes of the widely differing potency of various extracts to which reference has already been made. Dale and Burn have compared three British and two American makes of the extracts on the English market with the standard extract previously described, and have found very marked variation both in the effect on the isolated uterus and in the pressor effect on blood pressure, although in each case the extracts were described by the manufacturers as "physiologically standardized." This variation is due to two different factors. In the first place, the proportion of gland substance in a given volume is not constant for different preparations. Several manufacturers have now abandoned the custom of stating the supposed strength of their extracts, and medical practitioners, finding two different preparations of the pituitary gland, both dispensed in sealed ampoules containing 1 c.cm., are naturally apt to assume that they are equivalent, or intended to be so. The *British Pharmacopoeia* has not yet recognized the existence of this remedy, but the United States *Pharmacopoeia* has officially settled the theoretical strength at 10 per cent. of the fresh infundibular substance. The report recommends the general adoption by British manufacturers of this theoretical standard, so that the practitioner may be justified in his assumption that the dose contained in the same volume is at least supposed to be the same, whatever preparation he uses.

In the second place the actual yield of activity obtained from the same weight of gland substance is widely different in the case of different preparations, owing to variations in the method of manufacture. Preparations as potent as the standard fresh extract cannot be produced on a commercial basis, but the report suggests that 60 per cent. of the activity of the standard extract is a level which should be attained without difficulty by any manufacturer who has the necessary equipment and staff for the careful extraction of fresh material which has been dried at low temperatures when perfectly fresh and used without unduly long storage. The standard should be freshly prepared as often as required, but it is not suggested that a new standard solution is necessary for the assay of every batch of commercial extract. A comparison of each batch with its predecessor would suffice for limited periods, reference being made to the independent standard at regular intervals.

Until some such uniformity has been achieved it will be impossible to arrive at any correct value for the dose of pituitary extract to be used in treatment. A committee appointed by the Obstetrical Section of the Royal Society of Medicine, with the co-operation of the Medical Research Council, is conducting a thorough investigation into the question of the doses appropriate to various conditions.

SUICIDE AND FELO DE SE.

OBSERVATIONS made from time to time by coroners show that there is still considerable misunderstanding as to the precise meaning of the words "suicide" and "*felo de se*," and of the effect of adding to a verdict the words "while temporarily insane" or "while of unsound mind." The general practice at inquests is to use the word "suicide" where the jury or coroner is of opinion that the deceased, through unsoundness of mind, was incapable of appreciating the distinction between right and wrong, and accordingly of committing a crime; the term "*felo de se*" being restricted to the very small proportion of cases in which the deceased was considered to have been of sound mind. This custom appears to have grown up among coroners without any legal sanction or guidance.

The whole question of terminology and legal effects in these cases was very thoroughly investigated by Mr. Henslowe Wellington, whose able paper on the subject will be found in Volume I of the *Transactions* of the Medico-Legal Society. In law, there is no distinction between suicide and *felo de se*. The word "suicide" does not seem to have been used in works on law previous to 1736, when it appears in Hales's *Pleas of the Crown*, edited by S. Emlyn sixty years after Hales's death. A long series of judicial decisions and opinions show conclusively that suicide means self-murder.

Sir James Fitzjames Stephen says in his *Digest of Criminal Law* (fifth edition, 1894) that "a person who kills himself in a manner which in the case of another person would amount to murder is guilty of murder, and every person who aids and abets any person in so killing himself is an accessory before the fact, or a principal in the second degree in such murder." It is for this reason that when two persons agree to commit suicide together and only one dies, the survivor can be indicted for murder. Suicide is accordingly the same as *felo de se*, and the use of one or the other term might well be discontinued. The verdict "suicide while of unsound mind" is a contradiction in terms, and from the legal point of view meaningless. Chief Baron Pollock stated in 1847, "in point of law, as soon as it is ascertained that a person has lost his sense of right or wrong (it matters not what else of the human faculties or capacities remain) he ceases to be a responsible agent, and in my judgement can no more commit suicide than he can commit murder." The Home Office Departmental Committee on Coroners in its report published in 1909 recommended that the verdict of *felo de se* should be abolished. It advised that in cases of suicide the verdict should simply be that the deceased died by his own hand (stating how), but the jury should be at liberty to add to their verdict that there was no evidence to show the state of his mind, or that at the time of taking his life he was of unsound mind.

It seems clear that the verdict "suicide" coupled with the words "while temporarily insane" came to be used by coroners' juries for the purpose of avoiding the degradations which were inflicted upon the corpse of the *felo de se*, and the penalties which his relatives suffered. Until 1823 it was the practice to bury those found *felo de se* in a public cross-road, with a stake driven through the body. This barbarous ceremony was last performed in that year on the body of one Griffiths, who was buried at the junction of Eton Street, Grosvenor Place, and King's Road. The driving of a stake through it was, however, on this occasion dispensed with.

By an Act passed in 1823 the interment in a churchyard or other burial ground of persons who had committed *felo de se* was authorized, but performance of the rights of Christian burial was still prohibited. Under an Act of 1882 any form of orderly religious service may

now be used at the interment of a person who has committed *felo de se*, except that of the Church of England by a minister of the Church of England, since this is forbidden by the rubric. The practice of forfeiting the goods and chattels of a suicide to the Crown originated in Anglo-Saxon times, and was not abolished by law until 1870, though it had fallen into desuetude long before that date. Pepys gives an interesting account of the precautions relatives were led to take in consequence of this cruel practice. Antony Joyce, his cousin's husband, threw himself into a pond at Islington, and, though rescued, was dangerously ill. Pepys went to see the wife, and found her, to quote his words, "in fear that the goods and estate would be seized on, though he lived all this while, because of his endeavouring to drown himself. My cozen did endeavour to remove what she could of plate out of the house, and desired me to take away my flagons, which I was glad of, and did take them away with me in great fear all the way of being seized; though there was no reason for it, he not being dead, but yet so fearful was I." Antony died, and an inquest was opened. After several adjournments, during which Pepys saw the King and endeavoured to get his help, the jury eventually found that the deceased died of a "feaver."

The last point which remains to be considered is the effect of suicide on claims under insurance policies. If a person who has insured his life kills himself, and is not found insane and irresponsible for his actions, the policy is vitiated. Some companies include in their policies a condition vitiating the policy if the insured takes his own life. If there is no such condition the rule of common law is that whether the amount of the policy can be recovered depends on the question whether or not the person was at the time responsible for his own acts. Some companies protect themselves by a clause which excludes the risk of suicide for a certain period of years or months. But most companies pay in the case of death from suicide except where there is reason to believe that the deceased had insured his life with fraudulent intention.

THE MAUDSLEY HOSPITAL.

The building of the Maudsley Hospital established by the London County Council at the suggestion of the late Dr. Henry Maudsley, who made the munificent gift of £30,000 towards its cost, had just been finished at the outbreak of war. It was lent in the first instance to the military authorities, and later to the Ministry of Pensions for the treatment of neurological cases. Its reorganization for its original purposes is now approaching completion. The hospital is intended for the treatment—entirely on a voluntary basis—of nervous disorders, both organic and functional, and of early and recoverable types of the psychoses. It is designed also for the investigation of cases presenting unusual scientific interest or difficulties of diagnosis, for research into the causation of nervous and mental disorders, and for education. It will, we believe, be the first institution in this country on the lines of the neurological and psychiatric clinics of other countries. The medical staff so far appointed includes Dr. E. Mapother, medical superintendent; Dr. A. A. W. Petrie, deputy medical superintendent; and Dr. W. S. Dawson, senior medical officer. Additional medical officers will be added as the work of the hospital increases, and there will be vacancies for qualified medical men and women as voluntary clinical assistants. Those desirous of acting in the latter capacity are invited to communicate with the medical superintendent. The staff will very shortly be supplemented by the appointment of a consultant surgeon, a gynaecologist, a dentist, and specialists in diseases of the eye, ear, nose, and throat. The association with the hospital of the pathological department under the direction of Sir Frederick Mott assures the application of the most modern laboratory methods of diagnosis and treatment. The hospital will afford facilities for all remedial measures, including physical methods, as well as various forms of psychotherapy. The out patient department is to be opened on December 4th, in advance of the wards, and cases will be seen there on four days a week from 2 p.m. (men, Mondays and Thursdays; women and children, Tuesdays and Fridays). A charge will be made for attendance as at the general hospitals. Cases with all types of nervous and mental disorder will be eligible as out patients, but especially those whose symptoms and desire for treatment would render possible their later admission to the wards, if necessary.

SIGHT-TESTING OPTICIANS.

During recent months much activity has been observable amongst the sight-testing opticians. There is a strong move on the part of some of them to secure a State register, ostensibly for the protection of the public against the dangers of the more ignorant of their fraternity. The more established of the sight-testing opticians have for some years banded themselves together, through the Spectacle-makers' Company and the British Optical Association, for the conferment of such cryptic appendages as F.S.M.C.London and F.B.O.A. These elder self-examiners view with apprehension not unmixed with indignation the action of another and newer association of opticians which grants "diplomas" after an examination the standard of which they hold in some scorn. This stimulus from within arouses the elder opticians to try to secure their position before they are swamped by the smaller fry. There is also perhaps a stimulus from without. The establishment of a midwives' register some years ago, the more recent formation of a register of nurses, the extension of the dental register, possibly also the registration of teachers, have all stimulated the desire for the protection and status which such a registration gives. The movement has not been overlooked by those best able to judge. We print on page 1084 the report of the Council of British Ophthalmologists on this matter. It is a detailed and reasoned statement; it is simply written and can be understood by everyone. It leaves no room for misapprehension of its purport. The ophthalmic surgeons of distinction and experience who form that Council are of opinion "that any State recognition of sight-testing by persons possessing only an optical qualification would not be in the interests of the community." But it may be argued that this Council by reason of its personnel is prejudiced; being themselves ophthalmic surgeons they may fear that a register of sight-testing opticians would endanger their own calling. Such a suggestion can scarcely be maintained of members of a profession whose interest in the public weal is unquestionable. But there is another basis for judgement. Last week we gave the concluding instalment of a summary of the Report of the Committee on the Causes and Prevention of Blindness. That committee, we understand, dealt with this subject at the request of some of the protagonists of the sight-testing opticians. The committee had a mixed personnel; seven were laymen experienced in public affairs and health matters, four were Government officials, and only three were practising ophthalmic surgeons. This committee, with its preponderance of laymen, without hesitation reported that the proposal for registration of sight testing opticians is a danger. "The public would regard the register as an official guarantee that those whose names were included in it were competent not only to provide but to prescribe glasses, and generally to deal with defects of vision from whatever cause arising." The organized bodies of opticians who state "that many people who test sight and prescribe spectacles are untrained and incompetent" tell the truth; but the truth is wider than they admit. Their statement is true not only of the chemists, drapers, toy vendors, and petty hucksters who sell glasses to those who will buy: it applies also to their own practice; they themselves are incompetent in the absence of medical training, and sometimes they are the more dangerous by

reason of the "qualifications" with which they seek to reassure the public. Admittedly there is a problem: the provision of a sufficient number of practitioners competent to do eye work. But the cure is not to be found by an increase of sight-testing opticians, but by an increase of medical practitioners trained in the work of refraction. This provision is being brought into being rapidly. The institution of treatment for elementary school children has given it a great impetus. Public authorities can stimulate the provision and make it widely available by arranging that those practitioners who do ophthalmic work for them shall be part-time officers and not whole-time officers, so that in their unofficial time their skill and experience may be at the service of the community generally. Sight is the master sense of man; it plays an ever-increasing part as civilization becomes more complex. No member of the body is more closely knit with the welfare of the body generally, and none is more delicate, than the eye. "Safety first" applies with peculiar force to vision, and that can only be secured by those who would practise eye work undergoing the strenuous discipline in observation and treatment which a full medical curriculum and hospital course provides. There is a subcommittee of the British Medical Association which has this matter under consideration; through it any necessary action for the enlightenment of both public and legislators could be initiated.

THE ART OF VACCINATION.

A POSSIBLE disadvantage incidental to extensive resort to vaccination during small-pox prevalence may consist in the heavy pressure on the time of a busy public vaccinator or private practitioner. If people would only take the trouble to get vaccinated or revaccinated in quiet times there would be no chance of omission of any of the precautions which may with advantage be observed in the operation—the cleaning of the surface of the skin, the use of sterilized instruments, including a blower instead of the operator's lips, and the protection of the vaccinated surface against extraneous infection in vaccinating and in inspecting the result—all as specified in the "Instructions to Vaccinators under Contract" of the Ministry of Health. The private practitioner has the additional responsibility of providing himself with suitable lymph, which duty in the case of the public vaccinator is performed by the Ministry of Health. As regards the art of vaccination, we have asked a public vaccinator of high standing and great experience to give our readers the benefit of his views. They are to the following effect: Primary vaccination has been so standardized by the use of the Government's vaccine and the simple methods of asepsis employed, and accidents are so rare, that occasion does not exist for much further improvement. If a vesicle be accidentally broken or a crust prematurely detached an opportunity for introduction of infection may occur, but that possibility attaches to every scratch of a pin. In revaccination the real difficulty lies much less in the technique of the operation than in the fact that people beyond infancy are not under the watchful eye of the mother, and the site of vaccination is open to all kinds of mechanical interferences which lead to the breaking of the vesicles and possible staphylococcal or streptococcal infection of the vaccinal site. The irregular vesiculations of revaccination are more vulnerable than the full, hard vesicles of primary vaccination, and ought therefore to be protected with special care. Probably not many "bad arms" are due to infection from the skin directly, but to violence of some kind or other; when once the vesicle is open and lymph exudes, germs may get in. The character of the dressing is of consequence in determining whether a vesicle shall break or not. A pad of boric wool over the site, fixed by two strips of rubber plaster or zinc oxide plaster, works well, but sometimes there is a slight adherence to the vesicle or crust when the dressing is removed on the eighth day, or the pad may be damp with lymph. On removing the pad it is a very useful precaution to paint with tinctura iodi mitis, though it may cause smarting for half a minute after application. The iodine hastens the drying of the scab and reduces risk of infection. "Bad arms," however, are often not septic at all, but due to intense reaction tending to choke temporarily the axillary glands, resulting in some degree of lymphatic stasis. In such cases the vesicles are not broken, but become crusts quite regularly. If there is axillary pain, a hot sponge in the armpit gives relief; and if occasionally the skin of the arm is tight and shiny, a hot lead and opium lotion will usually clear up matters in twenty-four hours. If some accident to the crusts should lead to their separation, any small raw surface left may, if dry at the base, be painted with iodine, but if inclined to "weep," a simple antiseptic ointment, or, still better, a moist, warm fomentation may be applied. For preparation of the skin before vaccinating, methylated spirit is suitable and convenient, but iodine washed off with alkaline spirit soap might be worth a trial.

THE STAGES OF HUMAN LIFE.

THE progress of human life from the cradle to the grave is so naturally interesting to all humanity as to have engaged the thoughts and the pens of writers in every age. Few students can have steeped themselves more thoroughly in the literature of the subject than Dr. J. Lionel Tayler; he has fullness of knowledge and a fitness in selection and quotation. The subject has many aspects, and the best known classification of the ages of man is that which Shakespeare put into the mouth of the melancholy Jaques. It is too hackneyed to quote, and we may turn to a new classification which Dr. Tayler has made from a biological point of view. He has written a series of essays marked by knowledge and wisdom and full of judicious advice, and has collected them in a volume[1] published some time ago. For one or two of the stages into which he divides human life he has had to devise new names, which, however, are self-explanatory; they are ante-natency, natency, infancy, weanlinghood, childhood, pubescence, adolescence, youth and maidenhood, maturity, and old age—not seven ages but ten. To whatever period of life a reader has attained he will find much that will be of value in aiding him to govern himself and to regulate wisely his relations with others. In the parts concerned with the life periods through which he has already passed he will probably feel some regret that he had not the benefit of Dr. Tayler's suggestions and guidance—say in the training of his own children and in his attitude to them after they had passed the age for direct parental control, so that they should develop from dependency into companionship. He deals with every stage of life, whether past or current or still to come, in an interesting manner, and the family doctor, who is often the confidential consultant outside the directly medical sphere, will find the volume one to keep on his bookshelf, to be taken down at any time for a quiet hour's browsing. The following exordium addressed to the adolescent, concerning spiritual travellers, may be quoted as a sample of the author's quality, and of how he utilizes his wide reading to help him in his own message: "Or perhaps your sympathies are with another kind of traveller, the enthusiast, the prophet, the seer, and you like the lonely untrodden path not of 'the has been' but of 'the will be.' If so take Lessing with you as your guide and accept one of his warnings. Do not be one of those enthusiasts who egotistically wishes the world accelerated through him: you will be made use of, have no fear of that if you do your part, but remember that that which takes thousands of years to mature will not specially hurry its ways because some human being wants it to come in the moment and only the moment of his existence. You must take disinterested joy in all your journey, and remember to learn, as Herbert Spencer bids us, that in a world so vast as ours, single efforts seem comparatively so very small when we look at them after a few years of striving, or even at the end of our lives, but that little must be felt worth while to us."

[1] *The Stages of Human Life.* London: John Murray. (Demy 8vo, pp. 392. 18s. net.)

THE ROYAL DENTAL HOSPITAL.

THE annual dinner of past and present students of the Royal Dental Hospital of London was held at the Trocadero Restaurant on November 25th, with Mr. P. L. Webster in the chair. After the loyal toasts had been honoured, the chairman presented the scholarships, prizes, and certificates to the successful students. In proposing the toast of the "Past and Present Students of the Royal Dental Hospital and Dental School," Mr. Webster said that during the afternoon he had had an opportunity of visiting the hospital and inspecting the new departments made necessary by the introduction of new branches in dental science and changes of ideas and methods, and he was almost overwhelmed. While agreeing that students should have the highest standard of teaching, he warned them of the danger of specializing too much and losing sight of general principles and also the sense of proportion. He urged past students to make a point of attending the "At Home" held in the afternoon of the day of the annual dinner and to see something of the progress which had taken place during the year, and thus keep in touch with new methods and ideas. One of the great advantages of the annual dinner was that it afforded past students an opportunity of renewing old friendships. The toast was acknowledged by Mr. F. Breese for the old students and by Miss F. H. Bachrach for the present students. The dean of the school, who also replied to the toast, reported the progress made by the school, and certain changes which had taken place. He said that during the year sixty students had obtained diplomas, and that the University of London had decided to continue the school as a school of the University for a further period of three years. The University had also instituted a degree of Bachelor of Dental Surgery. The athletic side of the school had been very successful, and he appealed for subscriptions for the purchase of a recreation ground for the students. The toast of "The Visitors," proposed by Mr. J. G. Turner, was acknowledged by Sir Humphry Rolleston, President of the Royal College of Physicians of London, and Sir Anthony Bowlby, President of the Royal College of Surgeons of England. Sir Frank Colyer proposed the health of the chairman, which Mr. Webster acknowledged. The music and recitations during the evening were provided by students of the hospital.

THE GENERAL MEDICAL COUNCIL.

SIR DONALD MACALISTER opened the winter session of the General Medical Council with an address as lucid as ever, but shorter than usual because the Council has less than its customary amount of work to do. The reason is that it has said its say for the present about medical education and the curriculum, and the matter is now transferred to the licensing bodies, some of which have already taken steps which show readiness to accept the Council's recommendations. The President expressed his confidence that all will come into line, recognizing that the Council's schemes should each be considered by them as a connected and co-ordinated whole, though opinions may differ as to minor details. To one such detail the President made specific reference—to that of what he called "the pre-registration test" in chemistry and physics. He made it plain that the Council intended the test to be in addition to any examination in these subjects at matriculation. A student intending to enter medicine is to complete his school course of general education to the same level as his fellows intending the faculties of arts or pure science, and then to acquire in addition, in his post-school but pre-registration stage, such further knowledge of chemistry and physics as will enable him, immediately after registration, to take up the study of these sciences in their application to medicine. This is a change—we venture to say a reform—of greater importance than may at first sight appear, for it ought to ensure that the schoolboy, whether on the classical or modern side, shall not specialize on quasi-professional subjects, and that he shall, after he has finished his school days and matriculated, go on with the study of these sciences, which underlie the special professional subjects to which the rest of his life is to be devoted. If the purpose is to be justified it must have the loyal co operation of the teachers of these subjects to medical students. The President's observations to these schemes of the Council lent point to his graceful reference to the admirable work done in their preparation by Dr. J. C. McVail before his second term of office expired this year. The revised curricula, Sir Donald MacAlister said, include much that is due to the initiative and perseverance of Dr. McVail, who in this and other ways has left the profession his debtor. The debt has been recognized by the British Medical Association and by the Royal Society of Medicine, as well as by his own university, but it may not be out of place to recall that Dr. McVail was a great public servant the State should delight to honour. The full text of the President's address is published in the SUPPLEMENT this week. It will be seen that the Council welcomed two new members—Sir Humphry Rolleston, representative of the Royal College of Physicians of London in succession to Sir Norman Moore, who has resigned office after twenty one years' service, and Dr. R. B. Wild, who succeeds as representative of the University of Manchester Professor Roy Dean, recently appointed to the Chair of Pathology, Cambridge. Sir W. Leslie Mackenzie, the new Crown nominee for Scotland, was absent, owing, unfortunately, to illness.

THORACOSCOPY IN SURGERY OF THE CHEST.

THE occasional lecture, which Dr. H. C. Jacobaeus, professor of medicine at the University of Stockholm, gave to the Royal Society of Medicine on November 22nd, when the president, Sir William Hale-White, was in the chair, followed the same lines as that which he gave at Manchester on November 17th, already reported at some length in our columns (JOURNAL, November 25th, p. 1043). During his visit to London Professor Jacobaeus gave two practical demonstrations of his method of dealing with pleural adhesions—one at Guy's Hospital and the other at the Brompton Chest Hospital. In his lecture at the Royal Society of Medicine he dwelt on the practical importance of the thoracoscope, especially in the pneumothorax treatment of pulmonary tuberculosis, and illustrated his remarks by a large number of lantern slides of skiagrams, which showed the excellent results of his method for the cauterization of pleural adhesions under thoracoscopic control. Mr. Geoffrey Marshall, who described a case in which that morning, at Guy's Hospital, Professor Jacobaeus had cauterized pleural adhesions, said that it was particularly noticeable how comfortable the patient was throughout the course of the operation, which was performed under a local anaesthetic. Dr. Vere Pearson congratulated Dr. Jacobaeus on his results, and asked for information regarding the improvement in the clinical condition of the patients after pleural adhesions had been cauterized, as compared with other patients who had not undergone such treatment. Professor Jacobaeus, in reply, recalled his statement that in about 75 per cent. of the cases reported the method was technically successful in removing adhesions which had prevented the complete collapse of the lung; the clinical results were not so favourable, but about 63 per cent. of the patients had been freed from symptoms.

INTERNATIONAL ADVISORY COMMITTEE ON ANTHRAX.

THE Government of the Commonwealth of Australia has appointed Sir Thomas Oliver, M.D., of Newcastle-upon-Tyne, to be the Australian representative on the Advisory Committee on Anthrax of the International Labour Organization of the League of Nations. The other members are: Dr. Gilbert (Belgium), M. Boulin (France), Dr. Frey (Germany), Lieut.-Colonel Hutchinson (India), Professor Loriga (Italy), Dr. Hoshiai (Japan), Mr. R. W. Dixon (South Africa), Professor Roca (Spain), Mr. Ribbing (Sweden). The Government of the United States will be represented in an unofficial and consultative capacity by Dr. M. Dorset of the United States Department of Agriculture. The Committee will meet in London on Tuesday next, December 5th, under the chairmanship of Sir William Middlebrook, the nominee of the British Government. The Committee is instructed to inquire

into the disinfection of wool and hairs infected with anthrax spores, and also into the practice and effective methods of preventing infection among flocks. It is to report on these subjects to the governing body of the International Labour Office in time for the consideration of the International Labour Conference in 1923. It is also to inquire into the possibilities of dealing with infection by anthrax from hides, skins, and other materials. The Committee is prepared to receive representations on these matters, which should in the first place be addressed in writing to Sir William Middlebrook, care of the International Labour Office, 26, Buckingham Gate, London, S.W.1.

INSTRUCTIVE MISTAKES.

IT is admitted on all hands that it is a good thing to learn from our mistakes, and the meeting of the Surgical Section of the Royal Society of Medicine which will take place on Wednesday next, December 6th, at 5.30 p.m., will be given up to hearing from the President of the Section, members of its Council, and several other well known surgeons, the story of a mistake in diagnosis or treatment. Each instance is to be related quite briefly, each must have befallen the surgeon himself, and the lesson to be learnt from it is to be pointed out. The details of these cases will not afterwards be published. It ought to be a most interesting meeting and we foresee a large attendance. Surgeons wishing to take part in the meeting by relating instructive mistakes of their own are requested to communicate with the Junior Secretary, Mr. Philip Turner, addressing him at the Royal Society of Medicine, 1, Wimpole Street, London, W.1. A good many years ago Mr. Ernest Hart, then Editor of this JOURNAL, established a column which he called "The Confessional," for the receipt of reports of mistakes. This column started fairly well, but it very soon became apparent that most of the contributors to it wished to relate the mistakes of other people, and after a short trial it had, on this account, to be given up. We wish the President of the Section, Mr. James Berry, success in the rather difficult task he has set himself of presiding at a "mistakes meeting."

SIR CLIFFORD ALLBUTT has recently accepted the position of President of the West London Hospital Post-Graduate College. In accepting the invitation and wishing success to the College, Professor Clifford Allbutt, whose interest in post-graduate education is well known and whose recent lectures at the College on "Kinds of pneumonia" and "Angina pectoris" attracted large and appreciative audiences, expresses his conviction that the future of medicine in Great Britain depends upon the continued development of general practice and its opportunities.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Conditions in the Near East.—In the course of the debate in the House of Lords on November 23rd, on the address in reply to the King's speech, the Archbishop of Canterbury referred to conditions in the Near East. He was in closest touch with the Patriarch of the Orthodox community. There were at this moment a million and a half persons the great proportion of whom were not members of the poorer classes a little while ago, but were to-day literally without the means of subsistence or shelter or a home of any kind. The matter called for the thought of European statesmanship and the intervention of European funds if appalling dangers were to be stayed—dangers of pestilence which might spread to a degree that it was impossible to calculate. He was receiving constant accounts from the Piraeus and Athens, where the floors of the ordinary goods sheds and stations were covered with people sitting down on them without food or adequate covering. The conditions at the ports were almost beyond belief. He read a telegram giving an account of 50,000 persons who had been travelling on foot for ten days, the majority without food. The rain and cold increased the suffering and were causing many deaths. An utter lack of sanitation threatened cholera and typhoid. Scarlet fever had broken out. The services of doctors, nurses, and medicine were imperatively needed. The greatest suffering was occurring among the babies owing to lack of milk.

The Medical Group.—The four surviving members of the medical group in the last House of Commons have invited the nine newly elected medical members to dinner in the House next Monday, and from this gathering, doubtless, the group will again be constituted.

NOTES ON SMALL-POX.

BY

W. McCONNEL WANKLYN, B.A.CANTAB.,
M.R.C.S., L.R.C.P., D.P.H.

GENERAL OUTLOOK.

To keep himself posted in a general way about the current position of small-pox is an essential for every medical practitioner. A table giving the deaths from small-pox in England and Wales (London deaths recorded separately), and the admissions to the hospitals of the Metropolitan Asylums Board, from 1881 to 1921, together with the total cases certified for the years 1911–21, was printed in the JOURNAL of November 11th at page 943. The following figures give the number of cases recorded this year down to November 28th: Cases certified in England and Wales, 890 (approximately); total deaths, not yet ascertained; London deaths, 20; admissions to Metropolitan Asylums Board hospitals, 62.

All the 1922 London cases have occurred since the end of July; that is to say, for the first six months of the year London was clear of small-pox. How it was introduced is unknown. The first known case fell ill on July 1st and was overlooked until August 3rd, when he was discovered owing to the occurrence of a group of secondary cases; it is probable that infection came from the Continent, and possibly by means of a London resident returning infected from a visit there.

It will be noted that the death rate is over 30 per cent. London proper and parts of the home counties are inseparable so far as small-pox is concerned, for it occurs in them without respect of boundaries; the figures for the wider area are therefore of importance; they show 75 cases and 24 deaths for 1922. The rest of England, mainly the North, has had nearly 1,000 cases which have been proceeding steadily throughout the year. These have been of a light type, only one death having been reported in 700 cases. This latter type is often spoken of as "aberrant" or "atypical," phraseology not justified by the facts. Severe and mild epidemics of small-pox are equally classical, being recorded by Sydenham, van Swieten, Jenner, and many others; the mild epidemics have comprised cases which certainly must be reckoned in millions; the type is of equal interest in diagnosis, inasmuch as it displays the distribution which is characteristic of the disease.

Guiding Points in Small-pox Diagnosis, with Illustrative Cases.

If I were discussing the subject with junior assistants whom I wished to arm with sound equipment, I should beg each one of them first of all to do three simple things, which, in fact, I should make obligatory: (1) bring his own state of vaccination to date; (2) understand the few simple facts about the repeated invasion of small-pox into the country; (3) know exactly where he can get further information about small-pox. As a rule these last two points are ascertainable from the respective medical officer of health.

I should then counsel him most emphatically to place this question in his mental armoury for use during the rest of his life: "Can this case before me possibly be small-pox?" That is, he should use that test question, amongst others, in respect of every single case the diagnosis of which has not been positively made. I should tell him that while he might put this question one thousand times and have "No" for an answer, the one thousand and first case might be small-pox. That probably he would never see a case of small-pox in his life, but that the present position is such—it being now not to the point whether it be reasonable or not—but in fact is such that a single "missed" case may result in hundreds of deaths, and in hundreds of thousands of pounds sterling being spent; that in consequence of the mass of the community having divested themselves of their individual anti-small-pox protection—namely, their immunity obtainable from vaccination—an almost inconceivable strain is thrown upon our profession which is more than any human flesh and blood should be asked to undertake; that is the obligation for every one of us instantly to recognize every single case of small-pox which may be presented to him, a watch requiring an almost inconceivable degree of perfection, so that we are to be right one hundred times in one hundred. That is the task which is set us under pain of letting in a devastating and diabolical invader, an effort which we could hardly undertake to continue were it not that the laity, at last

perceiving the extreme gravity of the situation, is slowly coming to our assistance in the matter by means of the individual protection afforded by vaccination. So much it is necessary for us all to realize.

This, then, is our first and invariable item of equipment, "Can this be small-pox?"

I should then try to place my friend in possession of the questions with which I try to follow this up. Assuming that the case is small-pox and must be proved to be such, can a definite short illness be shown, not necessarily acute in the sense of being fulminating or even severe, but a definite short illness followed after about three days by definite blemish of the skin? Can this be shown? Can papules be shown, or less commonly an erythema, or a purpura? Can a relatively severe degree of initial prostration be shown? Does the rash, however scanty or dense, possess nevertheless a characteristic distribution? A characteristic depth in the skin? A characteristic maturation?

Those are some of the questions to be answered. I should further remind my audience that their position, happily for them, seldom requires an exact and final diagnosis, and they may be pleased to refrain from racking their equanimity to that extent; that what is usually required is a prima facie case with the clear grounds of their suspicion, which will warrant an appeal to their respective medical officer of health.

My readers may perhaps permit me to recite the features of two cases, both small-pox, which were recently presented to me.

The first was that of a young married woman, aged 28, who had eaten some unusual fish, part of a skate, on a Saturday and on the Sunday and Monday had had vomiting and a good deal of aching and pain in the back; a definite but not very profuse rash on the Tuesday, which was far from inconsistent with a papular urticaria. The elements were soft and hardly palpable, and there were some few irregular patches of erythema. I saw the case for the first time on the Wednesday, when the rash was stated to present much the same appearance as on the day before except that there was now more of it; the whole picture obviously and strongly suggested small-pox, but rather resembled the rare acute general papular erythema which is one of the cleverest mimics of small-pox there is. On this second day of the rash, assuming the case to be one of small-pox, there was a most remarkable delay in its maturation, there being no obvious commencing vesiculation.

The next day there was still, in the difficult half-light and natural hindrance to complete examination in a cramped room, no obvious vesiculation, an uncommon feature in my experience in an attack of small-pox of this degree of severity, as judged by the papules, which were numerous but discrete. At the same time more spots had appeared, both on the face and hands; the circumoral skin, for instance, which at first had been remarkably clear, though the skin in that region was irritated, was now showing papules. Evidently some spots had come out on the face and upper extremities on the Tuesday, others on the Wednesday, and others on the Thursday; on this Thursday, the third day of the rash, the spots were soft and insignificant papules, compatible certainly with the first day of a small-pox rash, but very uncommon for a third day; there was, however, one lesion over the sacral region which had excited suspicion from having somewhat the appearance of vesiculation, though it was hardly palpable. There were some erosions on the soft palate which, by the Thursday, had coalesced and presented a condition almost of ulceration. Generally speaking, the rash strongly resembled that of variola at the end of the first twenty-four hours, which had then come to a full stop.

Nevertheless, the case for small-pox could be sustained (*a*) by the relative distribution of the rash, which was characteristic, by its abundance on the face and forearms, and by its scantiness on the chest; (*b*) by the severe initial prostration; and (*c*) by very faint and yet unmistakable early signs of vesiculation among the lesions on one of the forearms. Accordingly she was certified, and so resulted.

So much delay in the maturation of the rash is uncommon; the rash itself could neither be called shotty, though it had a degree of firmness, nor had it that velvety quality occasionally seen in some ill-developed small-pox rashes and very severe attacks; this attack, as indicated by the number of spots, did not portend at first at least extreme severity.

The case illustrated once more three very well ascertained factors in diagnosis: the comparative unreliability of a "history," the reliable nature of early prostration, and also of the distribution of the rash. In my experience such anomalies of the rash as this case presented often depend on the individual constitution of the patient or the skin; I was not surprised, therefore, to hear the patient, who did not look robust, say in answer to a question that she had previously had an attack of enteric fever. She had never been vaccinated.

The second of the two cases mentioned, also small-pox, presented not the slightest impediment to diagnosis. She had been intimately exposed to infection on the 8th of the month, and had been vaccinated on the 13th. Most fortunately for her, the vaccinia had apparently run a rather more rapid course than usual, and the rash of small-pox which she developed on the 22nd of the month was discrete and benign in every way, being much modified by her vaccination. Nevertheless, the distribution of the twenty or twenty-five spots which she had was entirely characteristic and unmistakable, as was also the full vesico-pustular appearance of some of the pocks.

These two cases are an illustration of what I meant by saying (BRITISH MEDICAL JOURNAL, November 25th, p. 1045) that the vaccinal condition serves rather to facilitate than to obscure diagnosis, and that the most puzzling cases are more apt to derive their obscurity from some idiosyncrasy of the individual patient.

England and Wales.

A MEDICAL ART PATRON.

THE history of the royal borough of Reading, and particularly of its ancient abbey, owes much to the researches and archaeological enthusiasm of Dr. Jamieson B. Hurry. He has again put Reading in his debt by presenting to the town a picture, painted by Mr. Stephen Reid and exhibited at the last Royal Academy, representing the appointment of the Mayor of Reading, from among three burgesses nominated by the Guild Merchant, by the abbot of Reading Abbey, John Thorne, in 1460. As will be remembered by those who saw it at the Academy exhibition, the painting is a vivid reconstruction of an interesting historical episode. Reading was a town that had grown up around an abbey, and only after a bitter struggle for two hundred and fifty years did the burgesses, being under the authority of the abbot, acquire the privilege of self-government which other English boroughs were enjoying. Eventually peace was restored by King Henry III, who granted a charter of incorporation to the Guild Merchant, and an agreement was drawn up by which the burgesses acknowledged the abbot's right to appoint one of three burgesses selected by themselves to be the *Custos Gilde* or mayor, who should take an oath of fidelity to the burgesses as well as to the abbot. The scene of the painting is laid in the abbot's memorial hall, at the inner gateway of the abbey, which is still standing.

SMALL-POX IN LONDON.

Constant search for and vaccination of contacts, surveillance of them until the small-pox incubation period had passed, together with immediate hospital isolation of discovered cases, and free resort to vaccination on the part of an appreciable section of the general public, have had the effect of checking the threatened epidemic of small-pox, and of giving grounds for the hope that success in arresting the threatened outbreak of the disease may be achieved. It is particularly satisfactory that Poplar, the borough in which vaccination has been more neglected than anywhere else in London, and in whose workhouse the outbreak has taken place, should now be awake to its danger, and have taken much advantage of the offer of protection. But the danger is not at an end. It has been a frequent experience that epidemic small-pox has been slow in developing, that months have elapsed during which sporadic cases have occurred before the bursting of the storm. That was the London experience of 1901. As recorded in Dr. J. C. McVail's Milroy lectures in 1919, the following were the monthly admissions of cases to hospital—at the beginning of the year there was already one case:

January	2	July	14
February	1	August	82
March	0	September	167
April	0	October	272
May	1	November	438
June	5	December	761

In the great epidemic which unvaccinated Gloucester went through in 1895–96 the following was the course of events:

Month.	Cases.	Month.	Cases.
1st	1	9th	145
2nd	0	10th	604
3rd	3	11th	733
4th	1	12th	283
5th	3	13th	122
6th	7	14th	13
7th	12		
8th	52	Total	1,979

In Gloucester the pestilence was not stopped until it had become the best vaccinated city in England.

Dr. Seaton, in his book on vaccination published in 1868, pointed out that the stories of Cardiff and Sheffield in 1857

were similar. He regarded it as characteristic of all small-pox epidemics, but there, as after events proved, he was mistaken; the Edinburgh epidemic of 1903–4 showed no such hesitation in its onset. The lesson, however, is that throughout the winter which has now begun the public authorities concerned—namely, the Guardians and the Borough Councils—should in no degree relax the efforts in which they have so actively engaged to protect the populations for which they are responsible.

It is good to learn that meanwhile the Education Committee of the London County Council is exercising special vigilance over schools in the affected area. In Poplar every absentee in a group of fourteen schools is being followed up by the divisional medical officer and the borough medical officer; the scheme is working smoothly; the head teachers of the schools in question have been given any necessary advice as to vaccination of pupils, and arrangements have been made for the public vaccinator visiting thirteen of them. Under the present law there can be no compulsion to vaccination, but it is right that the offer should everywhere be freely made.

Central Midwives Board.

A special meeting of the Central Midwives Board for England and Wales was held on November 16th, with Sir Francis Champneys in the chair. Eight cases were down for hearing and the Board removed three of the midwives from the Roll. At the ordinary monthly meeting held next day the Standing Committee considered a letter from the Macalpine Maternity Home, Manchester, forwarding a copy of the following resolution:

"The Committee of the above Home desires to urge upon the Central Midwives Board its conviction of the need for a longer and more adequate training for midwives. It asks the Board to give immediate attention to this matter and urges them, before any changes is made, to make careful investigations into the methods and scope of traini g in other countries and into the needs of all classes of institutions employing midwives."

It was agreed to inform the Macalpine Maternity Home that the Board has already under consideration the question of lengthening the period of training. To a letter from the Central Midwives Board for Scotland it was agreed to reply:

That in the opinion of the Board it may be a matter of extreme difficulty for a Local Supervising Authority to inspect satisfactorily in respect of cases, taken in the area of another Local Supervising Authority, as the Local Supervising Authority of the area in which the cases are taken is likely to have t e better knowledge of them. The Board thinks, however, that the matter might be satisfactorily adjusted if the Local Supervising Authorities concerned were to come to a working arrangement on the subject as is done, with good results, in many areas in England, as, for instance, the counties of London and Middlesex and in other adjacent areas.

The report on the work of the Board for the year ending March 31st, 1922, was considered and it was decided that after amendments and signature by the Chairman and Secretary it te forwarded to the Ministry of Health.

Scotland.

Glasgow Students' Handbook.

THE issue for 1922–23 of the *Students' Handbook*,[1] published at Glasgow University under the auspices of the Students' Representative Council, has appeared. The intention of this volume is mainly to enlighten the students of Glasgow on many matters which, on their entrance upon academic life, it is to their interest to know, and a great deal of information is given in it regarding the innumerable students' societies and clubs. The volume is prefaced by a little story told inimitably by Mr. R. B. Cunninghame Graham, the moral of which is that "a university training gives a man the arms with which to face life, but he has to learn to use them himself." The Student Welfare Scheme of the University is commended in an introduction by the Principal, Sir Donald MacAlister, and articles on the different faculties, and on such subjects as the O.T.C. and the higher Civil Service examinations, are contributed by authorities. In the section devoted to the Faculty of Medicine Professor E. P. Cathcart reminds his readers that the profession of medicine is going to be a crowded career, and that, although undoubtedly it is a magnificent career, the practice of medicine is difficult and its disappointments many; it calls for enthusiasm of a robust type. Medicine, he continues, is not an art to be acquired in the few years of the student curriculum. These are merely years of elementary apprenticeship. The real knowledge, the knowledge which will be of inestimable value, is mainly obtained during the first few years following graduation, provided they are rightly used. It is rare, he says, to find the student who has really grasped and fully appreciated the fact that the curriculum, as at present designed, is not drawn up at random for the gratification of a body of pundits out of touch with reality; the presence of each subject in the course, its position in the course, and the amount of time to be devoted to it, have all received the most earnest consideration. The volume is distinguished by a cover design by Mr. Louis Raemaekers and contains many excellent photographs. It is edited by Mr. H. H. Livingstone, and he and his undergraduate committee are to be congratulated on the result of their efforts.

[1] *Glasgow University Students' Handbook, No. XLII, 1922–23.* Edited by H. H. Livingstone. Glasgow: The Students' Representative Council of the University of Glasgow. 1922. (Cr. 8vo, pp. 152; illustrated.)

Aberdeen Medico-Chirurgical Society.

The annual business meeting of the Aberdeen Medico-Chirurgical Society was held in the Society's hall on Thursday, November 23rd. The following office-bearers were elected:

President, Dr. Alexander Ogston; Vice-President, Sir H. M. W. Gray; Secretary, Dr. G. M. Duncan; Treasurer, Dr. George Rose; Assistant Secretary, Dr. H. Edgar Smith; Recording Secretary, Dr. H. Ross Souper; Editor of *Transactions*, Mr. G. H. Colt. Members of Council: Dr. J. Scott Riddell, Dr. George Williamson, Dr. Henry Peterkin, Dr. Robert Richards.

Glasgow Sewage Disposal.

At the weekly meeting of the Glasgow Medical Lunch Club, held on November 23rd, the guest of honour was Mr. F. W. Harris, F.I.C., analyst to the city of Glasgow. After lunch he gave an interesting address on the modern methods of sewage disposal. He pointed out that Glasgow had to deal with a dry-weather flow of 90,000,000 gallons, and he described the methods of disposal formerly in use and the improvements therein introduced in recent years. He showed how the most recent methods were really natural methods artificially intensified. The system of activating sludge by the introduction of certain insects into the media was first employed in Glasgow in 1921, and by August of this year five filters showed successful colonization. The effect of these insects saved the corporation thousands of pounds, and their efficiency resulted in a very appreciable reduction in capital expenditure on plant. The process was still in its infancy, but it gave promise of notable success. He also made reference to the high manurial value possessed by the sludge following the use of modern methods, and to its use commercially as a fertilizer. The annual return therefore in the future from this source was likely to prove a very valuable asset to the local authorities.

Edinburgh Surgical Appliance Society.

Sir Montagu Cotterill presided at the annual meeting of the Surgical Appliance Society in Edinburgh on November 24th. The annual report, submitted by Miss S. Malcolm, honorary superintendent, stated that during the year 237 appliances had been supplied, as against 291 in the previous year. As compared with last year only half the amount of work had been done for ex-service men, but the number of splints supplied to civilians was doubled. The amount received for splints was £153, an increase of about £25, which was accounted for by the appliances being on an average larger and more costly than previously; when the cost of materials was deducted there was only a balance of £78 towards the working expenses, which amounted to £162. Although the whole of the work was done by voluntary workers, the society was unable without outside support to cover working expences. Sir Montagu Cotterill said that complaints had been made by some instrument makers that it was not fair and right that a society of this kind should compete with them. To take a fair view of the matter, he believed that the voluntary workers of the society who chose to spend their time and energy in making splints and other appliances for poor and necessitous people, at a price which suited their pockets, were doing a charitable work at which no one could cavil. If the society were to supply a class of patient able to pay a reasonable fee to an instrument maker then he thought it would go beyond what was right; but so long as members of the society were doing charitable work they were entirely within their rights, and that should be the basis on which they stood. The

society should make it clear to surgeons who sent it orders that it was not prepared to give them these splints at the usual price, or anything approaching it, unless they could assure the society that those patients were in such a financial position that charitable help was appropriate. Mr. Pirie Watson said that the only way he saw out of the difficulty was for the society to be accommodated in a hospital, and to become, as it were, a voluntary staff attached to a hospital, such as the Sick Children's Hospital. The chairman said that it would be worth while seeing whether the Sick Children's Hospital would entertain such a proposal. He quite agreed that it would be a good way of carrying on the society.

Ireland.

Ulster Medical Services.

Dr. John Campbell, M.P., at the meeting of the Ulster Medical Society on November 16th, called attention to the position of the medical services under the Government of Northern Ireland; he desired the support of the Ulster Medical Society to help the medical members of Parliament to remedy the position. (1) The salary of the chief medical officer was £1,000, rising to £1,150; the parliamentary counsel to the Ministry of Finance received £1,200, rising to £1,500. The two medical inspectors received, on a basis, £500—a salary fixed twenty years ago, and they now had to make inspections of all medical services; their duties had much increased, but not their salaries; clerks formerly in receipt of £500 a year now received £1,000. The prospects of promotion for the medical officers were also substantially reduced. (2) The Ministry of Labour had now charge of the administration of the National Insurance Act; formerly there were three medical men employed, now there were none. (3) The office of Registrar-General was always held by a medical man, and this was very suitable, considering the technical work; it was now under the Ministry of Finance, and the duties were discharged by a layman. (4) The very inadequate, unequal, and unfair salaries which were still being paid to medical officers in some of the unions in Northern Ireland should be reconsidered. The various unions should be placed on a more uniform and equitable basis. He moved that a committee should be appointed to draft resolutions on the points under discussion and to submit a proposal for the appointment of a permanent medico-political committee. This resolution was seconded by Dr. Morrison, M.P., and carried unanimously.

Coombe Maternity Hospital, Dublin.

The report presented to the annual meeting of the Coombe Maternity Hospital, Dublin, showed that the ordinary income of the year was £5,707, but by the receipts from the hospitals fête and the National Relief Fund, and bequests, the total was raised to £9,954. The total expenditure amounted to £6,399, but this included the purchase of premises adjoining the hospital for £234. Owing to the special efforts made the deficiency, which last year was £4,907, was reduced to £1,352.

Dr. Louis Cassidy, master of the hospital, in moving the adoption of the report, said that in four years the hospital would celebrate its hundredth year, and any hospital that had been before the public for so long a time needed no further recommendation. He impressed on the meeting the importance of further apparatus for dealing in a scientific way with disease. He appealed especially for funds to provide an *x*-ray installation in the hospital. Five hundred women died every year in Ireland from cancer of the womb: of these, a large proportion could be saved if the hospital had the necessary scientific apparatus and an *x*-ray department. The apparatus would cost £600. A research laboratory also was needed, and that would cost £400 a year. A number of people who used to support the hospital had left the country for one reason or another, and another class of people had arisen who did not seem fully to recognize the responsibility they were under to support it.

The chairman said that the Coombe Hospital deserved the most earnest support of all classes and denominations. The institution was pre-eminently a city hospital, and it had been provided in the Charter that the chairman and vice-chairman should be the Lord Mayor and High Sheriff respectively. The report showed that the number of cases treated during the year was practically 7,000. That fact alone should make the citizens rally to the support of the hospital. He suggested that they should make every effort to establish a pre-maternity department and an infant welfare department. The Edinburgh Maternity Hospital had such departments, and they had proved a blessing to mothers and infants. Workers should also be asked to pay twopence a week of their wages towards the support of hospitals, to which the employers should also give a contribution. He also appealed to the merchant princes to lend their aid to the governing body to provide the scientific equipment needed. Sir John Moore, who seconded the resolution, agreed with the chairman as to the necessity for an organization to provide for mothers before pregnancy and for infants newly born. Infant mortality was higher in Dublin than it should be; this was due to ignorance, though not wilful, on the part of mothers as to the care of infants. The main support of hospitals should come from the people voluntarily, but he agreed that appliances should be provided by the State. The *x*-ray installation in the Meath Hospital cost £600, but that was not a fair charge on the funds of any hospital. Sir John Moore concluded by paying a tribute to the excellent staff in the Coombe Hospital, and to the good work done by them.

Correspondence.

PREVENTION OF PUERPERAL INFECTION.

Sir,—Nearly every year a valuable paper by an expert appears in the Journal lamenting the frequency of puerperal infection. May I as a general practitioner draw attention to three points which in practice are very often neglected?

The first is the thorough washing out of the rectum by an enema or enemata in the early stage of labour. That it often encourages a hesitating os to dilate freely, that it gives more room in a forceps operation, and that it cleanses a part into which the "field of operation" occasionally extends is well known to everyone. Why is it then not a matter of routine in all confinements? Why is it not made obligatory on all midwives and nurses in the preparation of a case?

The second point is the proper use of soap. Ordinary soap is not a disinfectant, nor even a detergent *per se*. It merely disturbs the cohesion between dirt and the skin. To illustrate. I have seen a practitioner dip a piece of soap in water and rub it vigorously over the nates and vulva. Thereupon he made his examination, having used the only available hot water to wash his hands. Again, some years ago a writer in a medical journal remarked that he was so impressed with the value of soap as a cleansing agent that he was always careful in making a vaginal examination, having washed his hands, to take up a quantity of soapsuds on his finger before introducing it. Soap without running water or many changes of water is often a delusion and sometimes a snare.

The third point is the avoiding of contamination of the hands in general practice. For pus some sort of protective swab is always available, and for the examination of a body cavity a rubber finger stall is essential.—I am, etc.,

Westcliff-on-Sea, Nov. 20th. J. C. Smellie.

Sir,—Dr. Maclean has rendered a very important service by his presidential address to the Cardiff Medical Society (British Medical Journal, November 18th, p. 976) pointing out the terrible mortality rate of puerperal fever. No doubt more might be done in the way of prophylaxis—for instance, the putting of the infant to the breast at the earliest possible moment, which not only stimulates the production of milk and so benefits the baby, but also produces powerful contractions of the uterus with consequent expulsion of clots, shreds of membrane, and so on. But, in spite of all prophylaxis cases will occur. Many patients have microbes in their circulation which find in the uterus after parturition a place of low resistance. With our present resources there is no need whatever for such a mortality. In the Rotunda Hospital, while Dr. Tweedy was master and Dr. Rowlette pathologist, the death rate from puerperal fever was reduced to a very small percentage. In my own practice during the past twelve years not a single case I have been consulted about has died! Many of these cases were in cottages far distant down the country, and some were in similar dwellings in the city. It is generally thought that the manufacture of an autogenous antigen (vaccine) for such cases is a slow process. It is nothing of the kind. I have often received uterine swabs at 12 o'clock in the morning, and had the doses

of antigen a hundred miles down the country by 3 o'clock the next afternoon. It is of the utmost importance that the material for culture should be taken from the uterus before any douching of any kind has been used.

I feel very strongly about this matter, and assert again, as I have often done before, that no doctor can be considered to have done his duty to his patient in this condition who has not employed this method of treatment, for no other method has given any material results.—I am, etc.,

W. M. CROFTON,

November 24th. University College, Dublin.

THE LIGHT SENSE WITH REFERENCE TO NAVIGATION.

SIR,—A month ago (October 28th, p. 783) an excellent paper was published on the above subject in this JOURNAL; the author, Dr. Freeland Fergus, is a well-known yachtsman, and for that reason his views demand close study. The most noteworthy points that he emphasizes are these:

(1) The inadequacy of our ordinary tests, which determine only macular vision; and

(2) The importance of good field vision, which depends very largely upon the seaman's light sense.

Our present tests for seamen on watch are too severe with respect to macular vision, and will not detect a contraction of the field of view nor any failure of light sense. And yet without good peripheral vision one will not see what to look at. Peripheral vision, though very ill defined, is extraordinarily sensitive to a difference between light and shade, and it is quite independent of any refractive defect. I have found that on a very dark night both I and a myopic (— 8 D.) friend without his glasses could see equally well distant objects; indeed, it will be found that motorists and bicyclists will see far better on a dark night without their glasses than with them. This is no doubt due to the fact that a considerable part of the incident light (17 to 20 per cent.) is reflected and absorbed by the glasses, and in a very dim light the "marginal utility of the commodity," to use an economist's term, is very high.

I note with pleasure that the author states his strong preference for Landolt's broken-ring test types, which I have strongly urged that the Council should recommend as the standard test for macular visual acuity; it is international, and is well adapted for illiterates.

Neurologists should be very grateful to Dr. Fergus for urging them to test the light sense of their patients. A defect of the light difference test is probably the earliest symptom of a lesion in the optic nerve; it will reveal a retrobulbar neuritis, which most physicians neglect, as it is not associated with the obvious signs of a choked disc, and yet pathologically it has the same significance. A retrobulbar neuritis is merely a choked disc which owing to anatomical peculiarities occurs further back, usually at the optic foramen.—I am, etc.,

Newcastle-upon-Tyne, Nov. 27th. ARCH. STANLEY PERCIVAL.

THE TREATMENT OF ACUTE SALPINGITIS.

SIR,—The operation which Mr. Aleck W. Bourne advocates (November 18th, p. 998) is useless for the purpose which he has in view—namely, the prevention of sterility—because the adhesions in the drainage area will almost certainly prevent the ovum from getting into the tube. It is mischievous, because, if the other tube be healthy, pelvic drainage is very likely to cause adhesions which will destroy its function. It is also likely to be a cause of vexation to both surgeon and patient, because the secreting lining of the split tube may cause a sinus in the track of the drain. If we desire to give a patient suffering from suppurative salpingitis the best chance of future pregnancy, we must avoid drainage. The bulk of the tube must be removed; a new mouth must be made for the portion left; and the abdomen must be filled with saline solution and closed without drainage. This procedure attains the three objects mentioned by Mr. Bourne. His own method does not.

As regards the analogy between an inflamed appendix and an inflamed tube, the facts are: In a well-defined case the inflamed organ, whether appendix or tube, forms a bag of infective material. Either may burst and quickly cause death. Either may form a localized abscess, abdominal or pelvic. Either may temporarily recover and become subject to recurrent acute inflammatory attacks. Either may permanently recover and give no further trouble. There is such an obvious similarity between the two organs when inflamed that it is proper to remove them when the attack is severe and dangerous. The surgeon no longer poultices the acutely inflamed appendix. The gynaecologist continues to poultice the equally acutely inflamed tube by means of hot douches and perhaps vaginal tampons. The inconsistency of the gynaecologist is sometimes seen when he opens the abdomen to remove what he has diagnosed as an acutely inflamed appendix and finds the cause of the trouble to be, not the appendix, but an inflamed tube. He then removes the tube. It seems strange that he should remove the tube when he comes upon it by accident, and should so strongly object to operate upon it when he knows it to be the seat of the trouble.

My critics are confused. Possibly their state of mind results from the fact that the appendix seems to have no important function, while the tube is necessary for reproduction. They forget that a tube which is the seat of an acute or chronic pyosalpinx, or even of a hydrosalpinx, has lost its function and has become as useless as an appendix. They also forget that operation on such a tube affords the only hope of restoring its function. Some of my critics may possibly be influenced by the fact that it has become customary to remove the appendix when the evidence against it is very slight, and indeed to execute it frequently on suspicion. They fear that the poor tube may get the same scanty measure of justice. This is no argument against the contention that a badly inflamed tube should be operated on as soon as possible. That the surgeon is an appendix-snatcher is no reason why the gynaecologist should become a tube-snatcher.

When I was honoured by an invitation to open the discussion on this subject in Glasgow I knew that I had no need to go out of my way to be provocative. I had only to follow the trend of much of the most recent literature and of my own thoughts to excite opposition. "My head is bloody, but unbowed."—I am, etc.,

Belfast, Nov. 21st. JOHN CAMPBELL.

THE ALEXANDER-ADAMS OPERATION.

SIR,—In common with a large number of readers I have read with interest the summary of Dr. Bethel Solomons's presidential address at the Obstetrical Section of the Royal Academy of Medicine in Ireland on tuberculosis of the female pelvic organs (BRITISH MEDICAL JOURNAL, November 25th), with the subsequent discussion (taken part in by physicians and surgeons as well as by gynaecologists of renown), which cannot but be of mutual benefit, especially on a subject like this which overlaps all departments.

I have no criticism to make on the general subject of the discussion, which will well repay perusal, but I would take exception to a statement made by Sir William Smyly and endorsed by Dr. Solomons, that he hoped the paper had given a death-blow to the Alexander-Adams operation. I have not of course had the advantage of reading Dr. Solomons's paper in full, but I would protest strongly against such a sweeping condemnation of an operation which has a useful rôle, albeit a limited one, in gynaecology.

The Alexander-Adams operation has fallen into disrepute mainly from the fact that it has been done so often in unsuitable cases—surely no reason for discarding it when performed with judgement and ordinary prudence. I shall not here enter into the indications and contraindications for the operation, but would only say that a careful pelvic examination, if necessary under an anaesthetic, can in practically all cases eliminate the conditions which would render the operation unsuitable or undesirable.

Dr. Solomons states that he has opened the abdomen in several women suffering from tubal disease on whom the Alexander-Adams operation had been performed. That merely shows that the operation had been performed in an unsuitable case, or that tubal mischief had developed later. No one deprecates the indiscriminate resort to the Alexander-Adams operation more than I do, but I would equally deprecate the indiscriminate condemnation of an operation which has proved itself of value in certain cases even in these days when the peritoneal cavity is not always opened with discrimination.

I have occasionally had to open the abdomen after an Alexander-Adams operation where an ovarian cyst or an ectopic pregnancy had subsequently developed, but manifestly the Alexander-Adams operation was not to be blamed for that.

I have invariably found that the Alexander-Adams operation stands the strain of subsequent pregnancy better than

any of the intra-abdominal operations on the round ligaments, and I have seen no instance of failure, even after three subsequent pregnancies. As an indication of the limited number of cases suitable for the Alexander-Adams operation, I would say that in a large yearly operative turn-over in hospital and private, perhaps about twelve cases will be found where the operation can be really recommended. Peradventure even twelve successful cases per annum in the experience of one operator may lead Sir William Smyly and Dr. Bethel Solomons to withhold their threatened death-blow from the Alexander-Adams operation.—I am, etc.,

JAMES HAIG FERGUSON, M.D.,
F.R.C.S.Edin.

Edinburgh, Nov. 26th.

TREATMENT OF FEVER.

SIR,—I have read with interest the letter in your issue of November 18th (p. 1000) containing arguments in favour of treating various acute diseases with a compound powder containing aspirin gr. x, phenacetin gr. v, and pulv. ipecac. co. gr. v.

My experience with this combination of drugs in acute specific diseases and in all conditions of acute toxaemia has been very similar to that described by Surgeon Commander Parnell and others. In my opinion the importance of this line of treatment cannot be overestimated.

As I understand it, recovery from acute toxaemia (any acute disease) is due to that increase of resisting power which we call "acquired immunity," and that the essence of such acquired immunity is an habituation to the particular toxin of the disease from which the patient recovers—just as a man becomes used to nicotine or a horse to diphtheria toxin.

There are three ways in which an individual may become habituated to a toxin: (1) by a huge and continuous dose, as in disease—a dangerous method; (2) by weakening the toxin and so providing stepping stones for reaction, as in vaccination and serum treatment; and (3) by giving small doses of the toxin, as in tobacco and opium smoking and in those cases in which individuals remain immune to a disease (for example, yellow fever) as long as they dwell in a country where it is prevalent but acquire it after return from a country where it is not prevalent.

This new treatment applies the third method. By means of it toxins are continually withdrawn in the sweat, so that the individual experiences a series of small doses. The applications of the treatment are more numerous, and it is more easily applied than the serum treatment. At any rate it opens out a new line of inquiry and ultimately may prove as useful as the serum treatment itself. In conjunction with serum treatment (for example, in diphtheria) it is admirable.

Doubtless there are injurious ways of lowering the temperature, and it is an axiom in medicine that the temperature in acute diseases should not be too much lowered by artificial means; but only those who have employed this treatment when themselves suffering from acute disease are able to appreciate the extraordinary and immediate relief and benefit which follows. What can be the explanation other than that which I have indicated?—I am, etc.,

W. BASTIAN,
Surgeon Commander R.N.

H.M.S. *Victory*, Portsmouth, Nov. 20th.

SIR,—The prescription given in the letter on the treatment of fever in your issue of November 18th (p. 1000) was extensively used in the British Stationary Hospital, Baghdad. It was used as an almost universal prescription in most of the fever cases admitted. Admissions numbered anything up to 35 per diem during the sandfly period of the year, and it invariably relieved the symptoms. To the first powder given on admission calomel gr. iv was added.

During one busy day a sergeant (R.A.F.) was admitted with typical symptoms of sandfly fever. I noted, however, that the pain in the back was more severe than usual; the temperature on the third day was normal, the chart being a typical one of sandfly fever. The above prescription was used. The following day he complained of heat rash. This struck me as peculiar, as his temperature was normal; on examining him I found him to be suffering from small-pox. His symptoms were only mild, and he was never very ill; he had never been vaccinated. This may have been due to the elimination of toxins through the skin in the early period of the disease. As he was sent to the isolation hospital the case was lost sight of; unfortunately just one month later, when convalescence was just established, he died suddenly, from what cause I do not know.

We got to believe in this prescription to such an extent that we invariably gave it to all heatstroke cases. During the hot weather of 1921 the percentage of deaths from heatstroke was much lower than it had been previously; whether this had anything to do with the administration of this prescription is, of course, an open question, but it certainly tends to give one faith in using it.—I am, etc.,

T. GELSTON ATKINS,
Captain R.A.M.C.

London, W.C., Nov. 23rd.

SIR,—I noted with considerable interest the joint letter of Surgeon Commander Parnell, Dr. Green, and Sir Archdall Reid. For several years I have employed an almost identical prescription with such general satisfaction that I sometimes accuse myself of using it almost as a placebo. The intention is very remote from this, and although its original use was in some degree empirical it had a liberal element of pharmacological justification. The prescription is very simple: Aspirin, pulv. ipecac. co.—aa gr. x. During the paroxysms of malaria its effect is extremely comforting and beneficial, as I demonstrated in a recent paper (*Medical Officer*, October 21st, 1922). In the prodromal stages of ordinary catarrhal colds and influenza it produces not only a sense of well-being but I am sure often stops further developments. In the notorious P.U.O. of active warfare days, which no doubt had a definite though unknown pathology, one found its use very satisfactory. In such cases as parotitis appearing as a metastatic effect following laparotomies I have seen marked relief. In short, in most febrile states, including the exanthemata, its effect is marked and valuable.

Whether its use is specific or purely palliative, as one is almost compelled to suppose, it is nevertheless a most useful simple combination. Pulv. ipecac. co. in doses of gr. x practically never induces emesis in adults.—I am, etc.,

DONALD BUCHANAN.

London, S.E., Nov. 18th.

THE SMALL-POX OUTBREAK AT POPLAR WORKHOUSE.

SIR,—Dr. C. S. Thomson, in his letter in the BRITISH MEDICAL JOURNAL for November 25th, says that:

> The "unmodified first case, in actual practice, would not be likely to oblige by walking right into the arms of a medical man. More than likely the sufferer would have visited forty or fifty public houses, churches, or cinemas," etc.

I suggest that Dr. Thomson is quite wrong. The unmodified case of small-pox, in my experience, is much too ill to visit places of entertainment, and if he does not go to the doctor he goes home to bed and sends for the doctor to come to him.

Dr. Thomson tells us that his prescription for preventing small-pox is "vaccination at infancy, revaccination at 12 to 14, and a third session at 21," with additional vaccinations as and when necessary. I quite admit that it such a prescription could be applied to the whole population, without exception, small-pox would be quite effectually controlled; but Dr. Thomson must know quite well that such a prescription never has been, is never likely to be, and indeed never could be applied in this or any other country. Moreover, granted that it could be applied, I venture to suggest that the premium to be paid (in the form of so much vaccination) is out of all proportion to the risk to be insured against. Why saturate forty-five millions of people, old and young, with vaccination when there is good reason to believe, from the experience of the past twenty years, that small-pox can be effectually controlled without it? As well advocate the repeated inoculation of the entire population of this country against enteric fever. Perhaps Dr. Thomson would do so, but few common-sense business men would think of listening to him.

As regards Dr. Stansfield's letter, he says that even if we got rid of the danger arising from modified small-pox in vaccinated subjects there would still remain a possibility of missed cases in naturally mild small-pox in unvaccinated persons. My answer to this is that naturally mild small-pox *tends to "breed true,"* and gives rise to a mild strain of small-pox with a negligible mortality (small-pox of this type is really not worth the fuss that is often made about it). Small-pox modified by vaccination, on the other hand, does not breed true, and, so far from giving rise to modified small-pox, it may and often does spread a very virulent form of the disease. Hence vaccinated (but incompletely protected) persons may be a far greater danger to their neighbours than the unvaccinated, under present-day conditions, are ever likely to be.

It is interesting to learn that all of the 22 fatal cases in the present outbreak had been vaccinated, presumably in infancy.

It does not look as if the neglect of infantile vaccination in the East End had had much to do with the present outbreak, certainly not with its fatality. On the other hand, if, as I suspect, the man who originated this disastrous outbreak had been vaccinated, and if the nature of his attack was not diagnosed because it had been "masked" by vaccination, then it would not be unreasonable to contend that not neglect of infantile vaccination, but the presence of it was responsible. This may seem a hard saying, but it may be true and worthy to be believed nevertheless.—I am, etc.,

Leicester, Nov. 27th. C. KILLICK MILLARD.

Obituary.

CHRISTOPHER VISE, M.D.,

Physician to the General Hospital, Tunbridge Wells.

DR. CHRISTOPHER VISE of Tunbridge Wells died on November 14th, aged 66. He was the son of Mr. Edward Vise, surgeon, of Holbeach, and received his medical education at University College, London, and the University of Durham, took the diploma of M.R.C.S.Eng. in 1880, and graduated M.B.Durh. in 1882 and M.D. in 1884. After serving as ophthalmic assistant at University College Hospital, house-physician to the Hospital for Consumption, Brompton, and assistant demonstrator of anatomy at the University of Durham, he became house-surgeon and secretary of the General Hospital, Tunbridge Wells, from 1882 to 1887, and in 1893 was appointed an honorary physician, which post he retained until his death. He was gazetted surgeon lieutenant to the old Kent Volunteer Battalion in 1893, and received the Territorial Decoration on completion of twenty years' service. During the first two years of the war he served with the rank of Major R.A.M.C. as medical officer to the 4th Battalion Queen's Own Royal West Kent Regiment and the 5th Battalion of the Buffs. During the last two years of the war he was in charge of military hospitals at Doncaster and Worksop, and concluded his period of war service on the headquarters staff of the northern command at York. On demobilization he returned to Tunbridge Wells and resumed his duties as senior physician at the General Hospital. He was a member of the Tunbridge Wells Division of the British Medical Association, and for many years honorary physician to the Convalescent Hospital for Children at Hawkenbury; latterly he was local referee to the War Pensions Committee. He took a great interest in freemasonry, and served in 1890 as Worshipful Master of the Holmesdale Lodge, with which he had been connected for forty years. He leaves a widow, a daughter, and three sons. His sons all passed through Tonbridge School with distinction, and two of them gained scholarships to Oxford.

SIR STCLAIR THOMSON sends us the following notes: Christopher Vise was my very oldest friend in the profession, for we both commenced our studies together in the now extinct stage of "apprentices." He and I were "pupils" in the Infirmary in Peterborough under the well-known Dr. Tom Walker, who was one of the most distinguished surgeons in the Midlands of his time; his name will go down in the history of laryngology as being the first in this country to remove a growth from a vocal cord, through the mouth, by the help of the laryngoscope. Vise represented the sixth generation of medical men in one family who had all practised in the south of Lincolnshire. He presented to the Medical Society of London during the year that I was President (1917) the patent of election of that body given to his great-grandfather. It is printed in Latin, dated "*Die Martis, 4to Augusti*, 1789," and is addressed to *Viro Celeberrimo Gulielmus Vyse, Chirurgo Praeses et Societas Medica Londinensis S.P.D.*" In his sterling character, genial manners, guileless nature, and unselfish service to friends and patients, Christopher Vise was a worthy descendant of this long line of medical men. His simple-hearted devotion to all his duties—private, professional, or civic—his unruffled temper, and his delightful urbanity, made everyone his friend. He lived to please and to be pleased, and all who knew him rejoice to think that he never made an enemy.

THE death took place on November 17th at Hampstead of DR. JAMES ANDREWS, in his 93rd year. He was born at Pershore, and served, as was then the custom, an apprenticeship in his native town. In 1848 he entered as a student at Guy's Hospital. At this time Aston Key was at the height of his career, and Addison and Bright were active members of the staff. Dr. Andrews was dresser to Bransby Cooper, and after taking the diplomas of M.R.C.S. and L.S.A. in 1851, and the M.D.St. Andrews in 1854, commenced practice in the Camden Road. In 1872 he removed to Hampstead and continued in active practice there until his retirement in his 80th year. He knew and had interesting reminiscences of most of the great consultants of the last century, and his greatest admiration was for Sir Thomas Watson. To the last he retained all his faculties, and took a keen interest in modern developments both in medicine and public affairs. His son, Dr. E. Collingwood Andrews, is in practice at Hampstead.

WE regret to announce the death, in his 67th year, of Dr. DAVID MAVER, an esteemed country medical practitioner of Bucksburn, near Aberdeen. Dr. Maver graduated at Aberdeen University M.B., C.M. in 1878. Besides having an extensive practice in Bucksburn he had several parochial appointments, and was superintendent of the Summerfield Hospital. He was a justice of the peace for the county of Aberdeen and was also a member of the educational authority.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examination indicated:

DIPLOMA IN PSYCHOLOGICAL MEDICINE (*with special knowledge of Psychiatry*).—H. E. L. Canney, G. F. Cobb, R. D. Gillespie, D. I. O. Macaulay, D. Matthew, H. M. North, W. R. Page.

A course of five lectures on "The nature of ultramicroscopic viruses" will be given by Mr. F. W. Twort, superintendent of the Brown Institution, in the theatre of the Royal College of Surgeons, Lincoln's Inn Fields, W.C., on December 11th, 12th, 15th, 18th, and 19th, at 4 p.m. Admission will be free without ticket.

UNIVERSITY OF GLASGOW.

THE following appointments to bursaries are announced:

The Arthur (Medical) Bursary, value £20 for three years, to Mary G. Gorrie, who took the highest place among the Queen Margaret College candidates at the First Professional Examination held at the University.

Lorimer (Medical) Bursary, £25 for three years, William Scobie.

Rainy Bursary, £30 for two years, Morton A. Foulis; Monteith Bursary, £21 for two years, Raymond A. Currie; Davidson Bursary, £34 for three years, Robert B. Smith; Weir Bursary, £18 for one year, David Rynd, M.A.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary Comitia of the Royal College of Physicians of London was held on Friday, November 24th, when the President, Sir Humphry Rolleston, was in the chair.

Licences to practise physic were granted to Cyril Rickwood Lane and Ella Kennedy Will.

Permission was granted to the Museum Galleries to photograph certain oil paintings in the possession of the College, and to the Dean of the Middlesex Hospital Medical School to have a copy made of the portrait of Sir Thomas Watson. It was agreed to lend to Mr. Percy Bigland (who painted it) the portrait of Sir Samuel Wilks, now in the College, for the purpose of exhibiting it at the Corporation Gallery Hall.

The resignation of Dr. R. A. Young of the office of Examiner on his appointment to the Committee of Management was accepted as from July, 1923.

The President announced that Dr. Kenneth N. G. Bailey has been appointed Streatfeild Research Scholar.

Dr. H. G. Turney was appointed Representative of the College on the Council of the Queen's Jubilee Fund for Nurses, vice Sir Dyce Duckworth, resigned.

Sir Humphry Rolleston was elected Representative of the College on the General Medical Council, vice Sir Norman Moore, resigned.

The Services.

DENTAL OFFICERS, R.N.

AT the recent examination of candidates for entry into the Royal Navy as dental officers, held at the Royal Dental Hospital of London, in November, the following qualified for appointment:

J. M. Park, L.D.S. (Glasgow); W. T. L. Douglas, L.D.S. (London); J. L. Edwards, L.D.S. (Liverpool); S. E. Brown, L.D.S. (Dublin).

The names are arranged in order of merit.

The fourth annual 19th Casualty Clearing Station dinner will be held at the Imperial Restaurant, 62, Regent Street, London, on Friday, December 15th. All who were active members of, or associated with, 19th C.C.S. are invited to attend. Tickets, 15s. exclusive of wine, may be obtained from the Rev. E. C. Doddnell, 6, Alexandra House, Regent's Park Road, Finchley, N.3.

Medical News.

A REUNION dinner of graduates and undergraduates of the Durham University College of Medicine will be held at the County Hotel, Newcastle-upon-Tyne, on Thursday, December 14th, at 7.30 p.m. The chair will be taken by Professor H. Brunton Angus, and the guest of the evening will be Mr. Cecil A. Cochrane, M.A., D.C.L. Applications for tickets (undergraduates 6s., graduates and others 12s. 6d.) should be sent to Mr. G. C. Parkin, College of Medicine, Newcastle-upon-Tyne, on or before December 6th.

SIR ARTHUR NEWSHOLME, K.C.B., M.D., will give two Chadwick lectures on relative values in public health at the Royal Society of Medicine on Thursdays, December 7th and 14th, at 5.15 p.m. on each day. Sir James Crichton-Browne will preside at the first lecture, which will deal with vital statistics, professional and popular education, and the influence of general sanitation, specific sanitation, and combined action. The second lecture, at which Mr. W. Addington Willis, a Chadwick trustee, will be in the chair, will deal with the degrees of preventability of disease and with financial questions.

THE annual dinner of the Epsomian Club will take place at the Trocadero Restaurant on Thursday, December 14th, at 7.30 p.m. The price of the dinner will be 12s. (exclusive of wine) and will be collected at the table. Any members intending to dine are requested to notify the honorary secretary, Mr. S. Maynard Smith, 49, Wimpole Street, W.1, as soon as possible, and to give the names of friends they wish to sit near so that table plans may be prepared.

PROFESSOR S. LYLE CUMMINS, C.B., will read a paper on "Acquired resistance to tuberculosis: a factor in clinical type and prognosis," at the meeting of the Bristol Medico-Chirurgical Society on Wednesday, December 13th, at 8 p.m. The meeting will be held in the medical library of the university. Dr. J. A. Nixon, C.M.G., president, will be in the chair.

THE King has appointed Dr. Percy James Kelly (Surgeon General) to be a member of the Executive Council of the Colony of British Guiana.

AT a meeting of the Association of Economic Biologists to be opened in the Botanical Department of the University of Manchester on Friday, December 15th, Dr. W. Lawrence Balls will introduce a discussion on genetics in relation to applied biology. After dinner (in the university refectory) informal discussions will take place on the place of applied biology in universities, and on the relation of biology to medicine. On Saturday a visit will be paid to the British Cotton Industry Research Association at Didsbury.

THE Industrial Fatigue Research Board has issued a report containing two documents, one, on the influence of temperature and other conditions on the frequency of industrial accidents, by Miss Ethel E. Osborne and Dr. H. M. Vernon, and the other, on the relation of fatigue and accuracy to speed and duration of work, by Mr. B. Muscio. We intend to publish a review of the report in an early issue.

THE annual dinner of the Chelsea Clinical Society was held on November 22nd at the Café Royal, with Dr. Campbell McClure, president of the society, in the chair. Sir Sydney Russell-Wells, in proposing the toast of "The Chelsea Clinical Society," pointed out the advantages of the smaller informal medical societies as contrasted with those which were larger and necessarily more formal. In the smaller societies it was better, he said, to discuss things freely without set papers, to discuss failures as well as successes, and to encourage the spirit of research rather than to have as their ambition volumes of printed transactions lying unread in some dusty library. Dr. Campbell McClure, in his reply, said that their society included men from all the many and varied branches of the medical profession. He emphasized the benefit that some years' experience of general practice gave to the specialist, and the value to the surgeon of having been a house-physician. It was a great advantage to the general practitioner to make a point of being present at operations on his own patients. The health of the guests was proposed with many compliments by Mr. Ivor Back. Sir Humphry Rolleston, President of the Royal College of Physicians, recalled, in reply, the many links between Chelsea and the Royal College of Physicians: Sir William Hale-White, President of the Royal Society of Medicine, also replied. The health of the chairman and officers of the society was proposed by Dr. Halls Dally, who stated that the society was never in a more prosperous condition than it was at present; Dr. Campbell McClure and Dr. Eckenstein (treasurer) replied. During the course of the evening some excellent songs were sung by Captain Radcliffe and by Mr. Norman Long.

THE Home Secretary gives notice under date November 24th that in view of the fact that the Dentists Act, 1921 (which prohibits the practice of dentistry by persons who are not registered dentists), comes into force on November 30th he has withdrawn as from the same date the special authority under the Dangerous Drugs Act, 1920, which was given to certain unregistered dentists to purchase local dental anaesthetics containing cocaine. On November 30th those unregistered dentists—if any—to whom the special authority applied, and whose names have not been put on the *Dental Register*, ceased to have any authority to be in possession of cocaine solutions, and should dispose forthwith of any stocks remaining in their possession to an authorized person.

THE third annual dinner and dance arranged by the Panel Committee for the County of London will take place on December 7th, at 7.30 p.m., at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2. Tickets (gentlemen 21s., ladies 15s., exclusive of wine) may be obtained from Dr. Robert J. Farman, Staple House, 51, Chancery Lane, W.C.2. All practitioners will be welcomed. Carriages at 2 a.m.

THE annual dinner of the Medical Society of University College Hospital will take place on Tuesday, December 12th, at Gatti's Restaurant, Strand, at 7.30 p.m. Mr. T. H. Somervell, F.R.C.S., who was a member of the Mount Everest expedition, and has returned to England lately, will be the guest on this occasion. Tickets, 10s. 6d. each, may be obtained from the honorary secretary, J. A. Hadley, University College Hospital.

THE annual address before the Newcastle and Northern Counties Medical Society will be delivered on Thursday, December 7th, at 4.30 p.m., in the Physical Theatre, Armstrong College, by Sir Humphry Rolleston; the title of the address is "Some reflections on high arterial blood pressure." The annual dinner is to be held on the evening of the same day, when the guest will be Sir Humphry Rolleston.

AT a meeting of the Maternity and Child Welfare Group (Metropolitan and Home Counties) of the Society of Medical Officers of Health on Tuesday, December 12th, at 5.15 p.m., Mr. Eardley Holland will read a paper, well illustrated with lantern slides, on the dangers of breech presentation to foetal and infant life. The meeting is open to members of the medical profession.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"D. B. J. F." asks whether he can deduct as professional expenses a proportion of the rates, ground rent, and repairs of his leasehold house.

*** We assume that our correspondent has a consulting room and, probably, other professional accommodation at his residence. He is entitled to include in his professional expenses a reasonable proportion of the rates and repairs and of the net assessment to income tax, Schedule A, of the property. This latter deduction takes the place of a proportion of the ground rent.

"H. J. H." bought a secondhand 10 h.p. Singer in 1920 for £350, and sold it in 1922 for £80; in that year he purchased a new 10 15 h.p. Fiat for £735, claiming as an expense £735 − £80 = £655.

*** The amount allowable is £350 − £80 = £270 only; the balance of the expenditure—namely, £385—was incurred in improving, not merely in maintaining the equipment.

"W. G.'s" car transactions have been as follows:

1920.	Overland car bought for		£505
1922.	.. .. sold for		£150
1922.	Rover .. bought for		£350

The price of an Overland car similar to the one sold is understood to have been £268 when the Rover car was bought.

*** In our opinion "W. G." is entitled to claim the amount expended, provided that he does not increase the amount of capital sunk in his equipment. On that basis his allowance would be £505 – £150 = £355. We assume that the question is not complicated by his having received an allowance for the Overland car as an expense of 1920.

First Aid in Coal Mines.

"COLLIERY SURGEON" asks if there is anything published that could be of use, as far as the first-aid attention to wounds is concerned, to the comparatively untrained attendant of a colliery ambulance room, who works under the colliery surgeon's weekly supervision.

A Strange "Wild-fowl."

DR. JAMES R. WHITWELL (Melton) writes: It is probable that this is one of the Ixodoid Acarinae which not infrequently attach themselves to any mammal, and are usually obtained from herbage of some kind. The description given, however, is insufficient for identification. They are to be found even in the high civilization of the Midlands!

DR. J. D. ROBSON (Dumfries) writes: I would suggest that Dr. F. G. Layton's strange "wild-fowl" was one of the Arachnids or ticks which infest sheep and sometimes dogs. Shepherds are often affected by them after sheep-shearing, and if the parasite gets itself well dug in it is no easy matter to remove it. Some time ago a child was brought me with one attached to the back of the neck, and it was so gorged with blood that it looked like a naevus until its movements gave it away.

SURGEON REAR-ADMIRAL W. EAMES, R.N., retd. (Bournemouth), writes: The strange "wild-fowl" would appear, from Dr. Frank G. Layton's account of the tenacious hold it had on the patient's skin, to be the ordinary sheep tick, which so frequently attaches itself to dogs moving in sheep-grazing areas, and the removal of which, owing to its extremely firm hold on the skin, causes, in some instances, much pain.

Warming the Garage.

DR. GEO. SMITH SOWDEN (Elgin) writes to recommend Brown Bros.' "Buckingham" radiator lamps. "I used one," he continues, "in a very cold part of the country all last winter, with excellent results. The lamp is constructed on the principle of the miner's safety lamp, and, when not used on the car, can be used as a garage light. Paraffin is the fuel to employ, and if the frost be very keen a rug thrown over lamp and radiator is quite sufficient." The cost of the lamp is 32s. 6d.

"ANOTHER ROVER" suggests the use of Davy colliery lamps—one, two, or three, according to the weather—under the bonnet, provided the garage is not draughty.

MESSRS. GAMAGE (Holborn, E.C.1) have on sale the Ever Warm radiator lamp, made on the principle of the miner's lamp, price 17s. 6d. It is recommended for warming garages.

LETTERS, NOTES, ETC.

Bad Arms after Vaccination.

WE publish in this issue under the title "The Art of Vaccination" (p. 1090) a statement which a very experienced public vaccinator has been good enough to write, giving the precautions which in his opinion should be taken to prevent the occurrence of "bad arms," and we may be able to recur to the subject in a future issue. Meanwhile we may say that Dr. Edgar J. Tyrrell (London, E.C.3) has written to recommend the local application of a 10 per cent. solution of glyco-thymoline if the arm is swollen and irritable.

The Violators of Vaccination Law.

DR. C. D. SOMERS, Public Vaccinator (Aldeburgh-on-Sea), writes: Might I point out to Dr. H. P. Reynolds (November 18th, p. 1004) that all a J.P. has to do is to witness the signature of the application and has not to satisfy himself whether the applicant is a conscientious objector or not. If the applicant insists that he is, the J.P. cannot refuse to witness his signature. I used to think it was the fault of the J.P., but I no longer think so.

Removal of a Paper Fastener from the Bronchus.

MR. E. MUSGRAVE WOODMAN, F.R.C.S. (Birmingham), writes: I congratulate Mr. Herbert Tilley not less on the successful issue of his case than on the polished English of his article. Only those accustomed to work in the dismal and dark recesses of these tubes can fully appreciate the difficulties that may be met with. Not the least of these is the impossibility of having at hand the right instrument for each particular case—in regard both to length and to forceps ends. I sympathize with the words of Chevalier Jackson: "When I have fully diagnosed a case I go into my workshop and make an instrument of appropriate length and design for the work it has to do." One thing I am sure of: Mr. Tilley need make no apology for the use of general anaesthesia. We in this country are blessed by the help of anaesthetists trained to an extent not often found either in Europe or America. I think that general anaesthesia will always be the method of choice in this country.

The Determination of Sex.

DR. J. WEST (Ramna, Dacca, Bengal) writes: Dr. R. W. Marsden, in your issue of September 30th, 1922 (p. 616), brings forward a new theory regarding the determining factors in the production of sex in man. During the past six years from time to time letters have appeared discussing this subject. This has caused me some surprise, and at times some confusion. I was on the point of writing to inquire whether the theory expressed sufficiently definitely by E. G. Conklin of Princeton University (*Heredity and Environment in the Development of Man*, Oxford University Press, 1915) was not generally accepted as regards man, since these frequent revivals of the "problem" appeared to ignore it. It so happened, however, that before I had carried out my intention the mail brought in the 1922 edition of this book, in which I read on page 166: "These discoveries appear to settle once for all this vexing question and to establish the *fact* that in man, as well as in many other animals, sex is determined . . ." Instead of completing the quotation I prefer to refer your correspondent to the original work.

Pluriglandular Tablets.

"B." writes, in reply to "Stratford": I have taken tetraglandular tablets (P. D. and Co.) for about three years—present age, 61. I take one in the morning and another in the afternoon. They are markedly restorative when one feels tired, and have no ill effects. They do not tend to preserve the eyesight, however, nor help a cardiac murmur. I propose to try hexaglandular tablets for a while. When bicycling and climbing in Switzerland this summer I found that children of 16 were greatly helped by such a "tetra" tablet when tired, though the effect soon wore off.

Scopolamine-Morphine during Labour: Correction.

DR. N. HIRSCHMAN calls attention to an error of dosage printed in his paper on the "standardized-dosage" method of using scopolamine-morphine during labour (BRITISH MEDICAL JOURNAL, October 14th, 1922). Under "Results" (p. 670, col. 2) the first two lines of Series I should read as follows: "The cases in this series had an initial dose of 2 3 grain omnopon and 1 150 grain scopolamine, with an hourly injection of 1 450 grain scopolamine."

A Pharmacist's Oath.

DR. ROLAND GUÉBHARD (St.-Cézaire) has recently sent to *La Chronique Médicale* a copy of the oath taken by pharmacists in France in the seventeenth century. It may be freely translated as follows:

> I swear before God, the author and creator of all things, to respect and serve as well as in me is, not only the doctors of medicine who have given me instruction in pharmacy, but also my pharmacist teachers under whom I have learnt.
>
> Not to speak evil of my former doctors, pharmacist teachers, or any other persons, whoever they may be.
>
> To do all that I possibly can for the glory, honour, ornament, and dignity of the profession.
>
> Not to teach its secrets and curiosities to idiots or unsuitable persons.
>
> Not to do anything rashly without the advice of doctors.
>
> To conduct myself properly with women when it is necessary to apply a remedy, and never to give any kind of poison to any person.

Vacancies.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 203.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

Observations ON THE EFFECT OF CESSATION OF THE IRRITANT ON THE DEVELOPMENT OF EXPERIMENTAL TAR CANCER.

BY

ARCHIBALD LEITCH, M.D.,

DIRECTOR OF THE CANCER HOSPITAL RESEARCH INSTITUTE, LONDON.

[*With Special Plate.*]

In the development of tar tumours, as well in man as in laboratory animals, a long time elapses before there are any visible signs of tumour formation. In the case of mice that have had frequently repeated applications of coal tar it is not till near the end of three months that we see the beginnings of the neoplastic reaction. During this period the area affected has lost its hairs, temporarily or permanently, and the skin has become harsh and scaly: microscopic examination of that particular part of skin in those mice which have died shows irregularity and hyperplasia of the epithelium, destruction of the hair follicles, disorganization of the papillary processes with their superficial elastic felting, and evidences of chronic inflammatory reaction in the corium. But these features are inconstant, and, as I pointed out in January last when communicating to the Pathological Society the results of a year's observations on experimental tar cancers, there are no specific characteristics which we could label as pre-cancerous. As the time goes on, definite hyperplastic plaques make their appearance in the epithelium and small warty growths are formed. The latter generally start as upgrowths from the surface and are found in their early stages microscopically to consist of a branching stalk of connective tissue covered by proliferated epithelium which on the surfaces is excessively keratinized. The connective tissue stalks are well vascularized, but as the wart grows they become more encroached upon by infoldings of the epithelium, and there is downward proliferation of the epithelium below the bases of the tumours: such ingrowing buds, as a rule, exhibit central keratinization. The papilloma grows, too, by further implication of the neighbouring surface epithelium. The cells of the ingrowth may occasionally lack the usual differentiation. How far this ingrowth must proceed before we can call the tumour malignant is, of course, a matter of opinion. There are no hard and fast lines between simple and malignant tumours at any time, and in these particular tumours where the progress from the one to the other is almost certain no one can draw a sure distinction. When, however, the panniculus carnosus is penetrated few will hesitate to pronounce the tumour malignant. In the living mouse deep infiltration can be appreciated by the fingers after a time, and, if we can exclude inflammatory processes, we may be sure that the deep tissues are penetrated. The tumours may increase to a considerable size on the surface, covered by hard horny material, or they may break down. Metastases occur in the lymph glands, the lungs, or other organs. Occasionally the stage of benign wart formation is omitted, and the first sign of neoplasia is an ingrowth with a superficial ulcer; and in such instances it is difficult to date the commencement.

In some of our former experiments we stopped the applications of tar as soon as basal induration was evident, and we found that nevertheless the tumours went on growing with undiminished rate: the removal of the irritant did not arrest the process when once the malignant stage was reached. The failure therefore to detect a causal agent in a cancerous growth cannot be held to be a proof against the previous existence of such.

Now, what would happen if the irritant were suspended before the tumour had reached a malignant stage? Clinical observations in human cases point to various possibilities: some warts disappear, some remain simple for many years and would presumably continue so indefinitely, and some progress to malignancy: instances of all three are known in the soot warts of chimney-sweeps, in the warts of tar and pitch workers, and in the warts of paraffin workers.

It would seem merely to be a question as to how far the development of the wart had gone when the irritation ceased. Yamagiwa and Ichikawa,[1] who were the first to produce tar tumours experimentally, found that when they stopped the applications of tar in rabbits some of the papillomata went on increasing whilst others diminished and disappeared. In my own experiments with rabbits I noticed in several cases that papillomata disappeared though the tar applications were not suspended; and the same thing happens in mice, though apparently less frequently. It cannot therefore be said that the diminution or disappearance of warts is wholly due to the cessation of the irritant. In order to answer the question posed we took two batches of mice which had undergone repeated tar applications for periods of four and five months respectively; the treatment was stopped, and they were examined every few days. Some of these mice already showed evidence of tumour formation, and in all cases we had fairly accurate information regarding the date of their first appearance; in other mice there was no sign whatever of papillomata or even hyperplastic plaques. After the cessation of the tar applications the hair grew again, except where a wart was actually present, and the skin, previously rough, became smooth in some cases and in others remained rough, but the succeeding events could not be correlated with the degree of the return to the apparently normal condition.

Result when Tumours were Present.

When the tar was discontinued there were 15 mice, of which 14 had small warts varying in size from a pinhead to a hempseed at most, the warts having been in existence for different periods from a few days up to a month, and another mouse which had a small subcutaneous tumour with superficial ulceration. Judging from our histological observations on numerous similar growths in animals which died, we would have no hesitation in pronouncing all of them simple, with the possible exception of the one mentioned. The subsequent history of these 15 mice showed that in 5 cases the papillomata disappeared, spontaneously or otherwise, in 3 cases the warts remained simple, 1 had a doubtful ending, and 6 became malignant.

Temporary Tumours.

1. A wart was present, small and flat, less than one-eighth of an inch in diameter, which had arisen within 13 days. It disappeared within a fortnight after the tar was stopped, leaving roughened skin. At the end of 22 days another small flat wart was seen to the right of the site of the former, but after another week it too disappeared, and a rough irregular condition of the skin without further neoplasia continued till the death of the mouse, 71 days after cessation of tar painting. Histological examinat on of the skin showed irregular hyperplasia of the epithelium, with small nodules of epithelial cells isolated in the corium and surrounded by round-cell and fibroblastic reaction. Many of the epithelial masses had degeneration of the central keratin, and appeared as pseudo-cysts. The panniculus carnosus was not encroached upon. (Five months' treatment previously.)

2. A small wart the size of a pinhead was present, which increased slowly in size till 70 days after the tar was stopped, when it appeared as a conical horny wart a quarter of an inch in height. Pulled off, it left merely a small area of abraded skin, which showed no sign of tumour when the mouse died a week later. (Four months' previous treatment.)

3. After tar had been applied for 4 months a minute wart was observed which had grown to the size of a hempseed one month later, when the applications were suspended. It had not increased 13 days later, but a pinhead-sized wart had appeared in front of it, and a scab had formed immediately behind it. At the end of 22 days the scab had taken the place of the larger wart. It was difficult to determine whether there was horn formation or merely a scab. However, it seemed to increase in size and to show induration beneath. This proved to be a septic condition; an axillary gland became infected and the mouse was killed, but no sign of tumour could be detected, merely acute inflammation.

4. Tar had been applied for 5 months. When it was discontinued a minute wart 1 mm. in height, which had not been there a week previously, was found. For a month afterwards it increased slowly in extent, though remaining flat. At the end of 2 months it seemed to show a deeper area of induration, and another tiny wart had appeared near it. A week later it was found that the induration was inflammatory, and pus was evacuated. The animal died at the end of 71 days, and the wart came away at autopsy, leaving no trace of tumour formation underneath.

5. Tar had been applied for 5 months, and a small wart, which had been in existence for a month, showed commencing ulceration, when the tar was stopped. This ulceration had increased, when the animal died 13 days later, but histological examination showed only the necrotic remains of the wart.

[1] A paper communicated to the Pathological Society of Great Britain and Ireland, July 15th, 1922.

Simple Papillomata.

1. Tar had been applied for 4 months, and had produced a single wart of the size of a hempseed at the end of that time, when the applications were stopped. A fortnight later two other smaller warts appeared in the neighbourhood. Progress was slow: at the end of 48 days there were still three warts, two of the size of hempseeds and the third pinhead size. The mouse died at the end of 63 days, the tumours having shown little advance.

2. Tar applied for 4 months. A small wart appeared in the last 20 days, and when the tar was stopped there were two growing warts. One of these disappeared 20 days afterwards, but the other continued growing. The mouse died in 29 days with a papilloma histologically simple.

3. Tar applied for 4 months: in the last 20 days a wart appeared which had formed a small horn a week old when the tar was stopped. It measured then a quarter of an inch high by one-eighth of an inch thick, and a tiny wart had just appeared in front of it. Twenty days afterwards four warts were found. At the end of a month two of these had disappeared, but another was beginning. In 43 days a papilloma, the size of a large pea, had formed from the coalescence of two neighbouring warts. The warts diminished in number and size, and the mouse died 86 days after the cessation of tar applications. The papillomata were histologically simple.

Doubtful Case.

Tar applied for 5 months. A wart was noticed at the end of the fourth month, two warts in the last 18 days, and when tar was stopped there were four closely set warts all about the size of pinheads. They gave place 15 days later to a flat irregular plaque surrounded by hair. This disappeared, and at the end of 22 days a small pinhead-sized wart appeared in front of this. This in turn gave place to a shallow ulcer which seemed to be healing. At the end of 2 months there was very doubtful superficial induration, and this did not become more definite when the mouse died in 78 days after the tar had been stopped. The carcass had been eaten by the other mice and no histological examination was possible.

Malignant Tumours.

1. Tar applied for 5 months. During the last month the skin was very rough, and in the last 13 days two warts made their appearance. When the tar was stopped the larger was the size of a hempseed and the smaller less than half of that. Another papilloma, hempseed in size, appeared 20 days afterwards. At the end of a month there were three horns with doubtful induration beneath. The horns became flatter but the induration proceeded, and at the end of 43 days it seemed definitely to be malignant. The tumour became fixed to the deeper tissues. When the mouse died after 60 days it had a horn, five-eighths of an inch high, set on a broad indurated base. Histological examination proved the tumour to be a squamous-cell carcinoma spreading laterally in the subcutaneous tissues and infiltrating the muscles (Plate I, Figs. 1 and 2).

2. Tar had been applied for 5 months. A tumour arose during the last month, and formed a horny pedunculated wart about the size of an oatseed, with a tiny wart behind it, when the tar was stopped. Fifteen days afterwards three or four minute warts appeared in the neighbourhood. Progress was slow. At the end of 2 months there was an area of induration detectable at the edge of the warty masses. The growth thereafter was rapid, and the mouse died in 81 days with a warty mass which on the deep side was infiltrating the muscles of the back (Plate I, Figs. 3 and 4).

3. Tar had been applied for 4 months, and on its cessation there was found a hemispherical subcutaneous tumour with a central eschar measuring a quarter of an inch in diameter. It had not been observed 8 days previously. It reached a diameter of nearly half an inch 20 days after the tar had been stopped, and it showed central ulceration. The mouse died in 25 days, and microscopic examination showed the tumour to be an epithelioma infiltrating the muscles. This tumour was of rapid growth, extending over little more than a month, and may have been malignant even at the time when the tar was stopped.

4. Tar had been applied for 4 months. Within the last 20 days a wart appeared, and by the time the tar was stopped it had reached the size of a hempseed. It had increased 20 days later, and two smaller warts appeared in the neighbourhood. Progress was rapid. The mouse died in 24 days, and microscopic examination showed an epithelioma infiltrating the muscles (Plate I, Fig. 5).

5. Tar had been applied for 4 months, and a wart the size of a milletseed had then been in existence for 8 days. It decreased somewhat 20 days after the tar was stopped. At the end of a month the top of the wart was accidentally removed. In 43 days there was a flat ulcer with slight induration. Progress was then slow. In 76 days there was a red ulcerated area with exuberant growth in the centre, and the condition was now considered to be malignant. In 86 days the ulcer had scabbed over, the induration seemed less marked, and two small warts had appeared in the neighbourhood. The mouse died next day. Histological examination showed an epithelioma penetrating the deep muscles (Plate I, Fig. 6).

6. Tar had been applied for 4 months; a small wart appeared during the last 8 days and had grown to the size of a small hempseed when the tar was stopped. Twenty days afterwards there were two small warts and two flat scab-covered areas measuring three-eighths and a quarter of an inch in diameter respectively, and beneath these there was some irregular induration. This induration by the end of a month had spread underneath the adjacent warts. These warts lost their prominence as the induration extended, so that in 43 days a raised indurated area obscured their position. At the end of 7 weeks there was an extensive indurated area nearly three-quarters of an inch in greatest diameter, with two ulcerated patches on its surface, and it was now considered indubitably to be malignant. The mouse died in 63 days, and the carcass was eaten by the other mice, and therefore the histological confirmation is awanting.

These experiments show that some warts will disappear, some will increase for a time and then diminish and disappear, some will increase but still remain simple, and others will go on to malignancy probably as rapidly as if the irritant had continued. We can make three deductions from this: (1) that the production of the cancerous state is not necessarily the result of the action of the irritant on neoplastic, as contrasted with pre-neoplastic, tissues; (2) that the bias towards malignancy is given to the cells probably during the pre-neoplastic stage; and (3) that the successful transplantation of a tumour in the histologically doubtful stage is not a sure proof of the malignancy of the tissue at that particular date, seeing that left alone in its natural environment it will tend to declare itself as an epithelioma.

Such conclusions would be rendered much more certain by observations in cases where the irritant had been suspended before any neoplastic reaction had taken place—that is, during the prodromal period. Cases are known where men have been exposed to the action of soot, paraffin, or aniline products for a length of time and have given up such employment, and yet years afterwards they have developed the particular kind of epithelioma associated with these irritants. These cannot be lightly dismissed as strange coincidences, and they would seem to show that the essential damage to the tissues, finally resulting in malignant proliferation, is done at a comparatively early stage.

A second batch of mice was taken which had been painted thrice weekly with tar for four or five months without any sign of tumour formation resulting, and the tar applications were stopped.

Result when Tumours were not Present.

At the time the tar painting was suspended there were 20 mice with no visible sign of neoplastic reaction. Of these, 6 remained negative till they died, 4 developed temporary warts, 4 developed simple papillomata, and 6 developed malignant tumours. The 6 negative cases lived for 29, 42, 43, 48, 65, and 75 days respectively after the tar was discontinued, and no sign of tumour was at any time observed.

Temporary Tumours.

1. Tar applied for 4 months. Twenty days afterwards a pinhead-sized wart was seen. This had disappeared a week later, and the mouse died in 63 days without further wart formation.

2. Tar applied for 4 months. A month afterwards a wart the size of a hempseed was found. This made slow progress for another month and then disappeared. The mouse died in 83 days without further wart formation.

3. Tar applied for 4 months. Two months later a tiny wart was found amidst the regrown hair. This persisted unchanged for nearly a month, then diminished in size and disappeared completely at the end of 100 days. The mouse died in 110 days without further wart formation.

4. Tar applied for 4 months. Twenty days afterwards a wart the size of a pinhead was found. It did not increase appreciably in size, and had disappeared when the mouse died in 48 days.

Simple Papillomata.

1. Tar applied for 4 months. The hair grew again. Forty-three days afterwards a small, flat, pinhead-sized wart was noticed. For another month its progress was slow. In 86 days it was just palpable, having diminished for 10 days. A fortnight later it developed into a cutaneous horn. The mouse died in 112 days. Histologically a typical papilloma.

2. Tar applied for 4 months. Twenty days later a wart the size of a large hempseed was observed. This increased slowly till the mouse died in 42 days.

3. Tar applied for 4 months. Twenty days later two small warts were seen, one the size of a hempseed, the other of pinhead size. A week later the smaller had disappeared and the larger had grown no bigger. Progress was very slow. The mouse died in 63 days.

4. Tar applied for 4 months. Twenty days later four minute warts were found. Two of these coalesced a week later. Progress of all very slow. The mouse died in 42 days.

Malignant Tumours.

1. Tar applied for 5 months. The skin was rough when the tar was stopped, but the hair grew again. A month afterwards the skin was very rough and scabby. In 33 days there was doubtful growth under a scab which was pulled off. In 45 days there was definite horn formation, with doubtful basal induration. By the end of 2 months tumour formation had progressed, but the induration was still doubtful. The horn was broken off in handling. The mouse died in 71 days, and histological examination showed the tumour to be a large cornifying epithelioma definitely infiltrating the deep muscles of the back.

2. Tar applied for 4 months. Twenty days later a tiny wart was noticed. At the end of a month another wart appeared, and the first had grown to the size of a hempseed. In 45 days several warts were seen, one of them growing very well. At the end of 2 months progress had been maintained and induration of the base was suspected. A week later this induration was marked and the diagnosis of epithelioma was practically certain by 76 days. The mouse died in 98 days. Microscopic examination showed an epithelioma (Plate I, Figs. 7 and 8).

3. Tar applied for 4 months. Twenty days later there was found a wart the size of a hempseed with two tiny warts in front of it, all surrounded by hair. At the end of 27 days the largest had reached the size of a small pea. For another week it was stationary, though the base seemed somewhat indurated. Superficial ulceration commenced in 43 days and the basal induration extended. Another small wart now appeared. Five days later necrotic material was expressed from under the larger wart, and by the end of 63 days there was merely a flat scab half an inch in diameter, and it was thought that the greater part of the process must have been inflammatory and not malignant. The mouse died in 70 days, and histological examination showed an epithelioma of atypical cells deeply infiltrating the muscles.

4. Tar applied for 4 months. Twenty days later a hempseed-sized wart was observed. It increased in size and in 38 days another wart appeared beside it. Progress was then slow. In 70 days it was thought that the base of the larger showed signs of induration, but as the growth was very slow and the induration did not extend doubt remained until the mouse died in 90 days. Histological examination proved it to be an epithelioma with epithelial cell masses penetrating beyond the panniculus carnosus.

5. Tar applied for 4 months. The skin was then bald but smooth. From the 20th to the 34th day afterwards the skin was rough but again became smooth. In 63 days a small wart was detected. This increased in size and the skin grew rough. In 76 days there were two warts in this rough area. These progressed in size and the whole skin showed a verrucose appearance. The mouse died in 96 days. Microscopic examination revealed an epithelioma just penetrating the panniculus carnosus (Plate I, Fig. 9).

6. Tar applied for 4 months. One month afterwards minute raised points, hardly to be called warts, were found. A week later they might have been described as tiny warts set closely in a rough scaly skin. In 43 days they had coalesced to form a flat wart. Five days later serous fluid exuded from it and a crusted area took the place of the flat wart. In 63 days blood-stained serum exuded from this, and three small warts made their appearance. Sepsis became evident, and the resulting ulcer was taken to be merely a septic condition until the mouse died in 86 days, when microscopic examination revealed a typical epithelioma invading the deep muscles of the back (Plate I, Fig. 10).

These experiments clearly show that when tar has been applied repeatedly for a certain length of time and the irritant is then removed, tumours, even carcinomata, may make their appearance at a later date. It must be that the irritation produces in the normal cells subjected to its influence some profound change, undetectable by the microscope, so that they eventually proliferate in an unrestrained and in a harmful fashion. We may conclude that the neoplastic response to an irritant is a slow tissue reaction that exhibits no defensive property, that subserves no useful function. The internal changes in the cells in the earliest stages may some day be analysed: at present they are quite unknown. In the skin epithelium we have a tissue which we have been taught to believe is constantly being shed and constantly regenerated, and one would imagine that the damaged cells would soon have been shed leaving a new and healthy race to take their place. Of course, in man the processes take a much longer time to evolve. In mice we can discover the minimum duration of exposure to a tissue irritant that will be necessary to produce cancers, and thus form an idea of the length of the latent period before they are evident, and it is possible that this will vary with different agents.

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NINETIETH ANNUAL MEETING

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PROCEEDINGS OF SECTIONS.

SECTION OF PATHOLOGY (HUMAN AND COMPARATIVE).

Professor ROBERT MUIR, M.D., F.R.C.P.Edin., F.R.S., President.

THE PRODUCTION OF CANCER BY SPECIFIC FORMS OF IRRITATION.

BY

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THE modern experimental study of cancer etiology begins with Fibiger's experiments with the Spiroptera cancer of rats. The specific irritant is introduced by feeding rats with cockroaches carrying the larval nematodes. The cycle is completed by feeding cockroaches with the faeces of infected rats. Squamous carcinoma of the rat's stomach and tongue follows in a variable percentage of animals. Some races of rats are apparently quite resistant, and never show any lesions graver than papillomatous thickening of the gastric mucosa. Analogous results have been obtained by feeding rats with ova of *Taenia crassicollis* from infected cats. In this case sarcoma of the liver is obtained in as many as 50 per cent. of young rats (Bullock and Curtis). Both methods are convenient in application, but have the disadvantage that the animals have to be killed to observe the result.

The external application of coal-tar, first successfully utilized by Yamagiwa and Ichikawa on the rabbit's ear, though much more laborious, permits continuous observation and experimental variation in the degree of irritation. The extension of this method to the mouse by Tsutsui, and later by Fibiger and Bang, Murray and Woglom, Bloch and Dreyfuss, Deelman and others, has put us in possession of a certain method of producing undoubted malignant growths (squamous-cell carcinoma) in a high percentage of the animals used. This is evidenced by progressive growths, local infiltration, and lymphatic and vascular dissemination. In addition, Murray and Woglom have shown that artificial metastasis can be carried out with these growths. In this way very strong evidence of their malignancy can be got at an early stage, before even local infiltration has had time to occur.

So far an interval of at least three months has elapsed before true malignant growth occurs, and in some animals tarring must be kept up for as long as eighteen months to produce this result. No one has succeeded with the rat or guinea-pig, and it is probable that success with the mouse is, in part at least, to be attributed to the short life cycle of that animal. The surmise is borne out by the fact that in tar distillers and pitch workers the interval is never less than ten years, and may extend to thirty and forty years before malignant disease is set up. These observations furnish a rational explanation of the characteristic age incidence of cancer, since it is probable that the irritational factors responsible are neither so continuously nor so energetically applied in these industrial forms of the disease as in the experiments with mice.

Bloch and Dreyfuss are of opinion that the active substance is contained in the anthracene fraction of coal-tar boiling at over 300° C. I have found that an extremely active extract can be prepared from tar by successive extractions with water, alcohol, and ether. The ethereal extract gave 50 per cent. malignant growths in twelve months, reckoned on the total number of animals which survived for four months.

Result of an experiment in which unaltered tar, alcoholic extract, and ethereal extract of tar were applied to separate areas of the dorsal skin of each of 60 normal mice. After four months, when the first tumour appeared, 50 mice survived, and

in these 25 presented malignant new growths distributed as follows:

No. of Mice.	Tar.	Alcoholic Extract.	Ethereal Extract.
11	–	–	–
10	+	–	+ } 22
1	–	+	+ }
2	+	–	–
1	–	+	–
25			

Twenty-two out of 25 animals bore carcinomata at the site painted with the ethereal extract, 12 had carcinomata at the site treated with the original tar, and 2 only at the site treated with the alcoholic extract. In one of these animals no tumours appeared at the sites treated with the apparently much more efficacious whole tar and ether extract.

The alcoholic extract only produced two new growths in the same series of animals, but other experiments raise the suspicion that this does not truly represent the power of the alcoholic fraction to produce cancer. The other experiments were carried out by tarring animals, which had already responded to tarring with carcinoma production, in another situation remote from the area in which the first growth was produced. So far no second initiation of cancer has been observed, although in several instances tarring has been continued for longer periods than were required the first time. Mice which had developed spontaneous mammary carcinoma have been operated and tarred for long periods without success, and the two sets of experiments seem to indicate that the previous existence of a cancerous growth may in some way hinder the production of a second primary tumour. Further experiments are in progress to test this possibility in unequivocal fashion, as it is obvious that, if proved, it furnishes an explanation of the rarity of multiple primary growths, and may lead to a rational diagnosis and prophylaxis of malignant disease.

PARAFFIN CANCER AND ITS EXPERIMENTAL PRODUCTION.

BY

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[*With Special Plate.*]

ABOUT the middle of last century the distillation of paraffin oils from the oil-bearing shales that exist in the West Lothian district of Scotland was begun, and the methods now employed universally in the refining of mineral oils originated there. The shale, as it is brought up from the mines, is a hard, black, non-crystalline substance which roughly resembles lumps of pitch. Heated in tall high-temperature retorts, it yields a dark viscid fluid, from which ammonia, naphtha, lubricating oils, illuminating oils, and solid paraffin are obtained by subsequent refining processes. The workmen engaged in the treatment of the cruder products are prone to various skin eruptions, affecting principally the arms, which are directly exposed, and also other parts, especially the scrotum, through their oil-sodden clothing. These skin affections comprise acute paraffin dermatitis, which most of the workers develop within a few days of starting employment, more chronic conditions which make their appearance later and may persist for years, and finally papillomata and true epitheliomata.

The occurrence of cutaneous cancers of the arms and scrotum in paraffin workers has been well recognized for over fifty years by medical men practising in that district of Scotland, though few of them have recorded their observations in medical journals. Ogston,[1] from his examinations of workmen employed in a small paraffin refinery in Aberdeen, was the first, in 1871, to publish an account of acute and chronic paraffin dermatitis, but his description was necessarily incomplete, though it is still worth reading if only to admire the beauty of his literary style. The first actual record of paraffin cancer, however, is to be found in a paper by Volkmann,[2] who in 1875 reported three cases of cancer of the scrotum. The distillation of lamp oils from the German brown coal—a mineral closely allied to shale chemically and geologically—had then been in operation in the neighbourhood of Halle for some fifteen years. Indeed, all the cases of paraffin cancer recorded in German literature—and they are few—have occurred in that locality, whilst all the cases recorded in English have come from the above-mentioned part of Scotland. It is possible that as the refining centres for crude petroleum multiply in this country we may encounter more cases unless special precautions are adopted. As far as I know only two cases have been reported from such refineries in the United States. In 1876 Joseph Bell of Edinburgh[3] (the prototype of "Sherlock Holmes"), unaware of Volkmann's communication, published a description of two cases of paraffin cancer. A case under the care of Hector Cameron of Glasgow was recorded in 1879, and his reporter noted that this was Cameron's third case, and stated that Longmuir and other practitioners in the Scottish shale country had long been familiar with the condition.[4] The literature on the subject is meagre: Tillmanns of Halle in 1880,[5] Longmuir of Bathgate in 1883,[6] Schuchardt of Halle in 1885,[7] George Buchanan of Glasgow in 1894,[8] Kirk of Bathgate in 1903,[9] and Franklin Davis of Chicago in 1914,[10] are the only others who have recorded cases. The total number of cases in the literature, excluding the frequent repetitions of the same cases in Germany, is less than a score, although undoubtedly many more cases have occurred. Dr. Alexander Scott of Broxburn has had an unrivalled experience of paraffin cancers, and we look forward to his communications.*

Some interesting facts emerge from a consideration of these cases. The subjects have been long exposed to the action on the skin of crude mineral oils, and though we refer to the lesions as "paraffin cancers" it is by no means certain that the particular harmful agent in the oils is a member of the paraffin series: both shale and German brown coal yield, in addition, olefines, naphthenes, aromatic compounds, and a host of other chemical substances in lesser amounts. The workers in the refineries who deal with solid paraffin or with the more refined oils are not prone to dermatitis or cutaneous tumours. But whatever the chemistry of the substances may be, we have in crude paraffin oils something that induces neoplasia. The skin cancers that they produce are all of an exactly similar type; they occur on sites unusual for squamous carcinomata unassociated with definite forms of irritation; they are frequently multiple; they are generally preceded or accompanied by warts or other hyperplasias; they are often of a low degree of malignancy; and it takes several years of exposure to the noxious substances before they develop—never less than ten years in the German industry and probably never less than fifteen in the Scottish oil works. Although the patients are usually of middle age or more, it is perhaps more a question of the length of exposure than of the age of the individual. Can we say that the substances under consideration are the actual cause of the epitheliomata? The generally accepted opinion has been to regard them as mediate or predisposing rather than as proximate causes: they bring about such a pathological condition of the skin that the soil is rendered suitable for the operation of some other and hitherto mysterious cause. It is impossible to controvert such an idea. But the success that has attended our efforts to produce cancer experimentally minimizes its cogency. No one doubts that the crude paraffin oil produces chronic as well as acute inflammatory reactions; no one has doubted the fact that it causes hyperplasias of the epithelium and even definite wart formation; why should one have to premise the intervention of a new factor in the succeeding development of the malignant stage?

In our previous experiments with coal tar we found, as other workers have found, that it was comparatively easy to induce cancer formation in mice by continuing the applications to the same area of the skin for several months. Generally, though not invariably, the epitheliomata passed through a preliminary stage of benign papilloma, and if the animals lived long enough they all developed malignant tumours. We wished, therefore, to see if we could obtain similar results by the use of shale oil. Thanks to the kind offices of Dr. Scott and the courtesy of the Pumpherston Oil Company and their chief chemist, Mr. E. M. Bailey, I obtained samples of the more unrefined oils, and the experiments were started in September of 1921. Four crude products were used, known as "green oil," "blue oil," "unfinished gas oil," and "unfinished lubricating oil"—representing a series advancing in purity, from each of which solid paraffins in decreasing amounts may be obtained. All these were applied by means of a camel-hair brush to a small area between the shoulders three times a week for several months, but naturally the oil diffused through the hair and affected a much greater area. This was an undesirable but unavoidable occurrence,

* See p. 1108 of this issue, and also p. 381, August 26th, 1922.

for the animals licked some of it off and we lost a large number of mice in consequence. At a later date we used rats, cavies, and rabbits in addition, but hitherto no tumours have been obtained in these animals. After one or two applications the hair falls out over the area affected; generally after some weeks it grows again, but by continuing the applications it becomes permanently lost, leaving a bald, shiny area of skin. Sometimes this bald skin shows a slight scaly eczema, and in a few animals there are small points of excoriation due to scratching, but in no cases have we ever found acute or chronic dermatitis of the types found in the human subject. Occasionally we have observed minute skin plaques, probably representing local hyperplasia of the epithelium, which have immediately preceded wart formations; at other times they seem to have disappeared spontaneously. By the end of the third or the beginning of the fourth month papillary upgrowths may be expected to make their appearance, increasing in size and number, generally forming extremely keratinized warts or horns, and progressing in the course of time to squamous-cell carcinoma.

Experiments with "Green Oil" (Fraction A).

This is a dark, thick, viscid fluid which contains a considerable amount of semi-solid paraffin in suspension. The crude distillate that comes from the retorts is treated with sulphuric acid and soda and again distilled, and the product is the first with which the workmen come in contact. A series of 100 mice was used. At the end of a hundred days only 29 remained alive; of these, 16 never developed tumours, 4 exhibited small warts which subsequently disappeared, 8 developed simple increasing papillomata, and 1 developed a malignant tumour.

Negative Cases.

The animals lived for periods lasting for 105 to 175 days. Histological examination of the skin showed extensive destruction of the hair follicles, irregular hyperplasia of the epithelium, often hyperkeratinization, and, not infrequently, round-cell infiltration of the cutis with increased vascularity. A common feature in these, as in many of the animals that died later, was an extreme degeneration of the liver parenchyma.

Temporary Tumours.

It was probable that in the majority of cases the small warts were scratched off by the animals themselves; possibly they sometimes disappeared spontaneously.

1. Two minute warts were formed in 98 days, but they disappeared within a fortnight, and there was no sign of tumour formation when the mouse died in 144 days.

2. A small wart was detected in 111 days, but no trace was left 16 days later, and the mouse died in 139 days without sign of tumour.

3. A papilloma appeared in 111 days, and a second in 127 days. The growth of both was very slow. The second had gone in 147 days and the first in 172 days. The mouse died in 180 days without sign of tumour.

4. Two warts were seen in 117 days, a third appearing in 140 days and a fourth in 147 days. In 172 days three of these had disappeared, and the fourth had gone in 181 days. The mouse died five days later with no visible tumour.

Increasing Papillomata.

The first tumours in all cases made their appearance before the end of twenty weeks, but their rates of growth varied considerably.

1. A wart was noticed in 98 days; in 111 days there were four warts, in 117 days five, and in 127 days six. The mouse died in 133 days. Microscopic examination showed multiple, strongly keratinized papillomata with hyperplasia of intervening skin and complete destruction of hair follicles.

2. Two warts were evident in 98 days: in 117 days there were five warts altogether. The mouse died in 141 days. Microscopic examination showed keratinizing papillomata with irregularity of adjacent epithelium.

3. Two warts were observed in 98 days. The animal died in 109 days and microscopic examination showed a branching papilloma with dilatation of the vessels of the corium.

4. Two warts were noted in 98 days. One remained a flat wart and the other formed an upstanding horn. Several more appeared in 147 days. The animal lived for 155 days. The tumours were simple papillomata.

5. The first wart was found in 98 days and another appeared in 111 days. In 140 days there were two large and several small warts and the number and size had increased in 147 days. The animal died in 166 days. Multiple benign papillomata.

6. A wart started in 140 days and had formed a thin tall horn when the mouse died in 155 days.

7. A small papilloma appeared in 111 days, but its progress was very slow, and it had only attained the size of a hempseed when the animal died in 163 days.

8. A single papilloma was noticed in 111 days, three in 127 days, and three or four more in 140 days. In 147 days the two largest had coalesced. There was marked horn formation in 153 days, and the oil applications were then stopped. Progress was maintained: in 158 days there were four large horns. The oil was resumed in 214 days, but without any resulting acceleration of growth. The animal died in 268 days with comparatively huge multiple horny papillomata that showed no basal induration. No microscopic examination of the tumours was made as the specimen was required for other purposes, but it is probable that they were all still in a benign stage (Plate II, Fig. 1).

Malignant Tumour.

This was the first animal in this series to develop a tumour. In 87 days two small warts were found; in 111 days another appeared, and in 140 days there were seven warts altogether (Plate II, Figs. 2 and 3). In 181 days there were three large papillomata and one smaller on the back and another two on the left side (Fig. 4). Under the lower of the last two there was a suspicious basal induration. The oil applications were therefore stopped on this day. The suspicious patch of induration became more definite; it undermined the neighbouring small wart, and the two warts were lost by superficial ulceration. In 200 days this indurated area, raised from the surface and superficially ulcerated in the centre, was a good half-inch in diameter. The animal died in 206 days (Fig. 5). Microscopic examination of one of the horny warts on the back showed advanced papilloma, with considerable irregular downgrowth of the epithelium. It was impossible to say whether it was simple or benign; the fibres of the panniculus carnosus could not be found beneath the downgrown epithelium, but, judging from the position of remnants of that muscle on either side, it had not penetrated beyond that level; and if we take penetration of the panniculus as the histological criterion of malignancy we shall have to record this as a doubtful tumour (Fig. 6). But the ulcerating tumour on the side was of a different character; it was a spindle-cell sarcoma which infiltrated the deep muscles (Fig. 7). No metastases were found in the internal organs nor in the lymphatic glands.

Experiments with "Blue Oil" (Fraction C).

This substance differs from "green oil" only in the fact that it contains less of the solid and semi-solid paraffin, which has been removed by refrigeration. The workmen at the presses are continually in contact with this crude oil. In the experiments a series of 100 mice was used. At the end of a hundred days only 22 mice were alive; of these, 9 remained negative, 1 showed a temporary tumour, 10 had increasing papillomata, and 2 developed malignant tumours.

Negative Cases.

The animals lived for periods lasting for 111 to 281 days. It is remarkable that one mouse survived the thrice-weekly applications for over nine months without at any time showing any neoplastic reaction. The microscopic examination of the skin of these mice showed appearances identical with those in the negatives of the former series.

Temporary Tumour.

On one mouse which remained refractory for a long period a small wart arose in 186 days, but it never increased above the size of a pinhead. It had disappeared when the mouse died in 200 days, and histological examination of the site it occupied showed merely a healed scar.

Increasing Papillomata.

The tumours appeared in from three to six months and showed various rates of progress.

1. Three warts were observed in 98 days: in 111 days two of these had increased, but one remained stationary. The progress was now slow. In 140 days there was only one good wart. In 147 days another had just appeared. In 147 days there was a good-sized flat wart which in 181 days measured 7 mm. by 5 mm. The mouse died in 186 days. Microscopic examination showed a simple papilloma.

2. In 98 days a wart was seen which by 111 days had reached the size of a large hempseed. In 117 days another wart appeared beside it. These went on increasing and coalesced to form a good-sized flat wart in 140 days, at which time another smaller wart appeared. All progressed till the animal died in 164 days.

3. A small wart appeared in 98 days; in 111 days there were two papillomata growing well; in 127 days these had formed two adjacent horny warts; in 147 days these two upstanding horns were separated only by a very narrow cleft, and a third wart appeared beside them. Gradually all three coalesced to form one large horn. The mouse died in 179 days. Histological examination showed an excessively keratinized papilloma with downgrowth of epithelium which reached but did not actually invade the panniculus carnosus.

4. A small wart was seen in 98 days, which reached the size of a hempseed by 110 days, when the animal died.

5. In 98 days a wart appeared which grew till the animal died in 111 days. Microscopic examination showed a small branching papilloma which was markedly cornified. The tissues of the corium, the panniculus carnosus, and even the subjacent muscles, were domed upwards towards the stalk of the papilloma. The hair follicles in the vicinity were lost, and there was no evidence of round-cell infiltration in the corium.

6. A small wart was discovered in 111 days; in 127 days it had formed a tall, slender, horny papilloma; in 140 days it had grown larger, and a second but flatter wart had appeared. The mouse died in 144 days. Microscopic examination showed a simple papilloma with considerable hyperplasia of the epithelium in the neighbourhood.

7. Only at the end of 140 days was a small pinhead-sized wart discoverable, but this showed progressive growth till the animal died in 172 days.

8. In 140 days a very small pointed wart made its appearance on the right posterior part of the exposed area. In 147 days other two small warts appeared on the opposite flank, and these coalesced in 181 days. In 186 days there were three warts, one on the right flank, one on the left flank, and one on the right shoulder. In 201 days there were two warts on the left flank and one on the right, but the wart on the shoulder had disappeared. Progress was now very slow. The mouse died in 236 days with three fairly large, and several small, horny warts. Microscopically they were simple papillomata.

9. The first sign of a wart was not seen for 172 days. Its succeeding progress was very slow, and it never exceeded 2 mm. in diameter. It disappeared entirely in 201 days. A second small wart appeared at another situation and measured 1.5 mm. by 2 mm. in 214 days. The mouse died in 222 days. Histological examination showed a small but typical cornifying papilloma.

10. Not until after 181 days did a minute wart make its appearance. The progress was exceedingly slow. In 294 days it had formed a little horny papilloma about an eighth of an inch in height. The mouse died in 299 days. Histologically it was a simple wart, but it was remarkable that the adjacent epithelium showed neither hyperplasia nor irregularity.

Malignant Tumours.

1. The earliest tumour formation in any of the oil experiments occurred in this animal. In 83 days there was found a spherical semi-sessile wart of the size of a hempseed. By 111 days it had shown considerable increase. In 117 days there were three papillomata; in 127 days several minute thickened plaques of skin were also evident; in 140 days there were five separate papillomata, and another had appeared in 147 days. Increase in size was very slow now for a long time (Plate II, Fig. 8). Thus in 201 days there were still six papillomata. In 208 days another wart appeared on the right foreleg. In 214 days it was thought that there might be basal induration of one of the warts situated on the neck behind the left ear (Fig. 9). The other warts were then short and not progressive. In 247 days it was certain that the tissues under the post-aural wart were being infiltrated; in 257 days the subcutaneous infiltration extended under the skin of the ear; in 264 days this tumour showed cracks on its surface and it was infiltrating subcutaneously towards the occiput. Another smaller wart situated over the left shoulder showed suspicious basal induration. Besides these there was a good horn in the mid-line, a wart over the right shoulder, and three other flat warts on the back. The animal was killed on the 265th day (Fig. 10). Microscopic examination of the post-aural tumour revealed an epithelioma with somewhat atypical cells and comparatively little keratinization; the tumour cells infiltrated the deep muscles (Fig. 11). The smaller tumour situated over the left shoulder was also an epithelioma infiltrating the muscles, and it was entirely separate from the former. Thus there were two distinct epitheliomata produced in this mouse. No metastases were seen.

2. In contrast to the last case, no lesion of any kind could be detected before 186 days, when a very doubtful minute plaque was seen behind the left ear, but this had disappeared entirely within a fortnight. In 208 days a tiny wart was noticed in the mid-line behind the shoulders, but it did not increase in size. In 238 days a small wart appeared behind the left ear; in 239 days it had shown little or no progress, and the wart in the mid-line had disappeared. In 264 days the post-aural wart measured less than a quarter of an inch in diameter and in height; in 295 days it was no larger than a hempseed, though it grew later into a horn which curled towards the mid-line, and the base indurated shortly before the animal died in 339 days (Plate III, Figs. 12 to 14). During manipulation at autopsy the horn was broken off, leaving an area of basal induration. No metastases were seen. Histological examination of the basal part showed, to our surprise, a spindle-cell sarcoma infiltrating the deep muscles (Fig. 15). The surface of this where the horn had been detached was covered by a rather indefinite hyaline material, but the surface epithelium on either side of this was not much altered. Examination of the broken-off horn showed the usual highly cornified epithelium. There was no transition between the epithelial cells and the underlying sarcoma. The picture, including the superficial hyaline material which I take to represent degenerated keratin, was identical with that given by the sarcoma produced by the "green oil" above.

Experiments with more Refined Shale Oils.

From "blue oil" which has been treated with sulphuric acid and caustic soda and then distilled three products are obtained—unfinished gas, cleaning, and lubricating oils. I am not aware that cutaneous cancers have developed in workmen dealing with these products. Two series of fifty mice were painted with unfinished gas oil and unfinished lubricating oil. These were started in the beginning of this year. The death rate, as with the cruder oils, has been very high, and as the experiments are still going on only an imperfect account can be given. With both substances we have succeeded in producing tumours.

Unfinished Gas Oil.—With this oil, which is a golden-yellow transparent fluid, but from which solid paraffin can still be extracted, only one temporary tumour was obtained amongst 13 mice which had survived for a hundred days.

A papilloma was observed in 102 days, and it reached the size of a hempseed in 110 days. Its progress was slow. In 135 days it had been scratched flat. In 145 days it had gone, leaving a small excoriated area. In 152 days there was another wart on a different site measuring 1 mm. thick and 2 mm. in height; in 180 days it had grown laterally somewhat but had not increased in height, and it slowly disappeared.

Unfinished Lubricating Oil.—This is a dark green oil still containing solid paraffin in solution. With this three tumours have been produced amongst 10 mice which survived for a hundred days.

1. Two minute warts close together were found in 124 days, but they were still small when the mouse died in 185 days.

2. A tiny wart was discovered in 180 days, but it disappeared entirely. Another started in 255 days, and measured 2 mm. high by 1.5 mm. broad a week later. The mouse is still alive.

3. A small papilloma appeared in 123 days, and had reached the size of a lentil 12 days later. In 145 days there were three separate warts which showed fair growth (Plate III, Figs. 16 to 18). When the mouse died in 235 days it showed three tumours—one a large horn about three-quarters of an inch long growing from the back of the neck, a small wart about the size of a hempseed, and a circular superficially ulcerated infiltrating tumour on the left flank. Microscopic examination of the last tumour showed it to be a typical epithelioma infiltrating the deep muscles (Fig. 19). No metastases were seen.

[The dates for the appearance or disappearance of tumours in all the experiments are correct to within seven days.]

By the frequent application of crude shale oils containing paraffins we have thus produced tumour formations in no less than 30 out of 74 mice which survived the treatment for over a hundred days. Owing to the increasing death rate after that time it is impossible to say how many more would have developed tumours had they lived long enough, or how many of the simple tumours produced would have gone on to malignancy. Certainly one animal resisted for over nine months. The disappearance of some of the simple papillomata corresponds with what is found in man. In many of the older papillomata considerable difficulty has been encountered in forming a judgement of their benignity or malignancy; the boundary line between them is nebulous, and I have adopted the convention of not reckoning a tumour as malignant no matter how extensive the heterotopy of epithelium or the lack of differentiation of the cells, unless the panniculus carnosus has been definitely penetrated. I have not used the method of transplantation as a criterion of malignancy because I do not believe it gives any surer, or even additional, information on that point. But in the two epitheliomata I have produced the invasion has gone far deeper than the panniculus carnosus and the evidence, even though metastases have not occurred, is clear beyond doubt. The sections of the two sarcomata have been seen by several pathologists of distinction, and all agree with the diagnosis. It might be thought that the cells composing these latter tumours are much altered, undifferentiated epithelium, but careful examination and the use of special staining methods seem to put this interpretation out of court. The sarcomatous development which in these two cases occurred underneath previously existing papillomata is probably due to the entrance of the carcinogenic agent into the subcutaneous connective tissue through small fissures in the overlying epithelium. Sarcomatous formation has not been found in the workmen in the paraffin refineries, but the observation in mice is of interest in that it demonstrates that the same causal agent may produce two such widely different kinds of malignant tumours as epithelioma and sarcoma. If we reckon that the life of a mouse is roughly one-twentieth that of man and that its reactions, as far as neoplasia are concerned, are correspondingly speeded up, we may conclude from our experimental evidence that it takes at least ten years of exposure to paraffin oils to produce cancer in man—which corresponds to actual experience. And the result of our experiments, in which we have cut out as far as is humanly possible all the accessory factors that disturb the deductions in the human subject, goes far to show that we are dealing with an actual, in contradistinction from a predisposing, cause of cancer.

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LEITCH: EFFECT OF CESSATION OF IRRITANT ON DEVELOPMENT OF EXPERIMENTAL TAR CANCER.

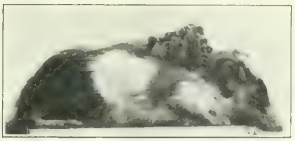


FIG. 1.—Large horny wart with basal induration. Tar had been applied for 5 months, and for the last 15 days a wart was present. Photo on day before death, 60 days after cessation of treatment.



FIG. 5.—A very cellular epithelioma with little keratinization, spreading laterally beneath the panniculus carnosus, which may be seen crossing obliquely upwards from the middle of the left margin. Age of tumour 44 days. Tar applied for 4 months, and tumour started 20 days before cessation of applications.

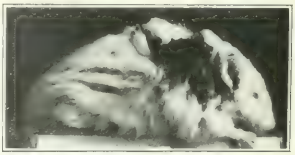


FIG. 7.—Tar applied for 4 months. Tumour started 20 days later. Photo a week before death. A large cornified mass with basal induration.

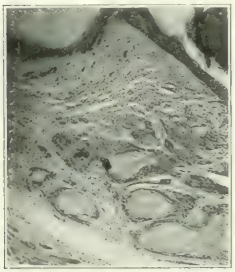


FIG. 2.—Section of No. 1. An epithelioma showing lateral subcutaneous spread. Muscle fibres were easily identified amongst the epithelial cell masses. Age of tumour 73 days.



FIG. 6.—An epithelioma infiltrating muscle, part of which is seen below. Age of tumour 95 days. Tar applied for 4 months, and tumour started 8 days before cessation of applications.

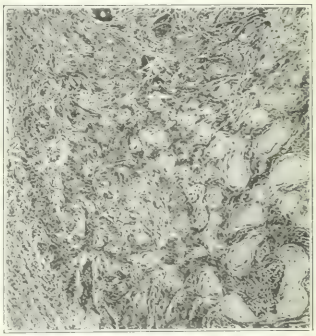


FIG. 8.—Section of No. 7. Epithelioma with moderate keratinization. Age of tumour 78 days.



FIG. 3.—Multiple cornified warts, the larger with deep infiltration. Tar applied for 5 months; tumour formation started at end of 4 months. Photo on day before death, 80 days after cessation of applications.

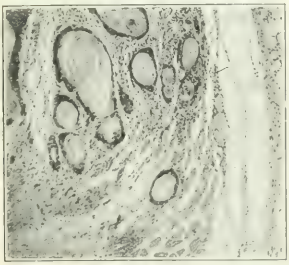


FIG. 4.—Section of No. 3—an epithelioma with large cornifying cell masses infiltrating the deep muscles of the back. Age of tumour 111 days.

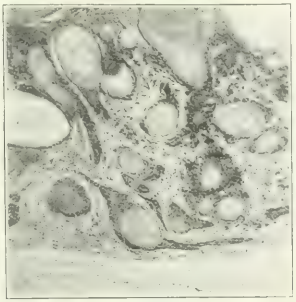


FIG. 9.—An epithelioma just penetrating the panniculus carnosus. Tar applied for 4 months. Tumour started 2 months later. Age of tumour 33 days.

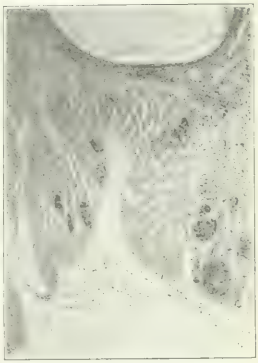


FIG. 10.—An epithelioma. Epithelial cell masses can be seen amongst the fibres of the deep muscles of the back. Tar applied for 4 months. Tumour started one month later. Age of tumour 55 days.

PLATE II.

LEITCH: PARAFFIN CANCER AND ITS EXPERIMENTAL PRODUCTION.

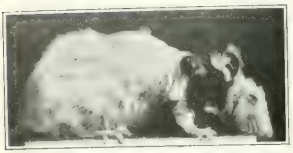


FIG. 1.—Large multiple horny warts over the shoulder region produced in 9½ months by applications of crude shale oil (fraction A).



FIG. 2.—Tumours produced by crude shale oil (fraction A). Warts on neck and left flank. Photo on 115th day.



FIG. 3.—Same mouse after 151 days. More warts on shoulder and much scaly dermatitis.



FIG. 4.—Same mouse after 177 days. View from right side.

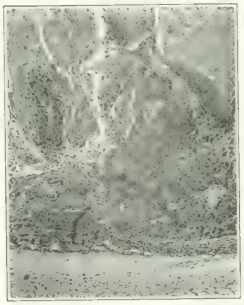


FIG. 6.—A section of the tumour behind the ears. Much downgrowth of proliferated epithelium reaching level of panniculus carnosus—a doubtful epithelioma. Age of tumour 119 days.

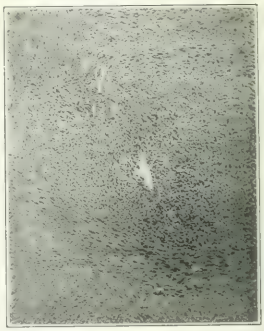


FIG. 7.—A section of the tumour on the left flank—a spindle-cell sarcoma. Low power photo. Compare with Plate III, Fig. 15. Age of tumour 25 days.

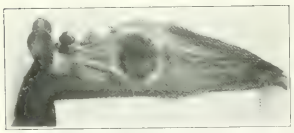


FIG. 5.—Same mouse after death, 206th day. The large tumour on the left flank had developed within a month. Note the horny warts on the neck and shoulder.



FIG. 8.—Tumours produced by crude shale oil (fraction C). Warts on neck and shoulder after 180 days.



FIG. 10.—The same after 265 days. The dorsum of the ear is infiltrated, and beneath this tumour there is another smaller tumour which shows basal induration.



FIG. 9.—The same after 212 days. Suspicious induration noted beneath the growth immediately behind the ear.

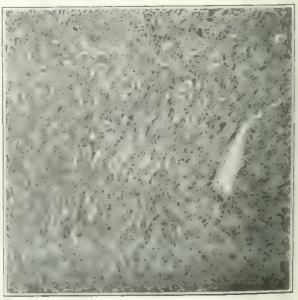


FIG. 11.—Section of the tumour infiltrating the ear—a very cellular epithelioma with very little keratinization. Remnants of muscle fibres can be detected amongst the invading cells. Age of tumour 151 days.

LEITCH: PARAFFIN CANCER AND ITS EXPERIMENTAL PRODUCTION.



FIG. 12.—Tumours produced by crude shale oil (fraction C). Photo of wart at base of left ear after 265 days.

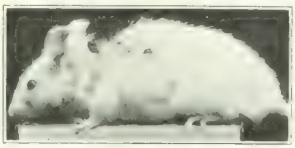


FIG. 16.—Tumours produced by more refined shale oil (fraction G). Warts after 170 days.

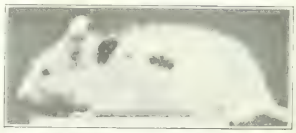


FIG. 17.—The same after 185 days.

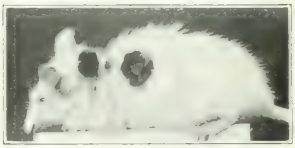


FIG. 18.—The same after 225 days.

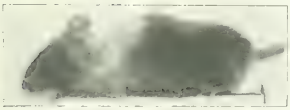


FIG. 13.—The same after 282 days, showing practically no progress.

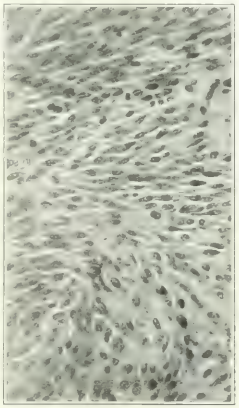


FIG. 15.—Section of tumour when mouse (Figs. 12, 13, 14) died on the 329th day. High power. It is a spindle-cell sarcoma similar to that in Plate II, Fig. 7. Age of tumour 111 days.

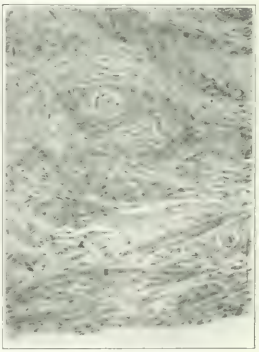


FIG. 19.—Section of the larger tumour on the left flank (Figs. 16, 17, 18). It is a typical epithelioma infiltrating the muscles, fibres of which can be detected amongst the epithelial cell masses. Age of tumour 112 days.



FIG. 14.—The same after 297 days, slightly larger.

PLATE IIIA.

LEITCH AND KENNAWAY: EXPERIMENTAL PRODUCTION OF CANCER BY ARSENIC.



FIG. 1.—Photo taken after death at the end of 53 months, showing large tumour at back of neck with small wart in mid-line directly behind it.



FIG. 2.—The same from above.

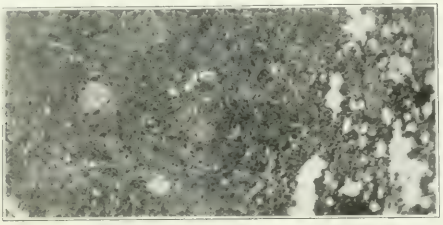


FIG. 4.—Section of the metastatic nodule in the left lung.

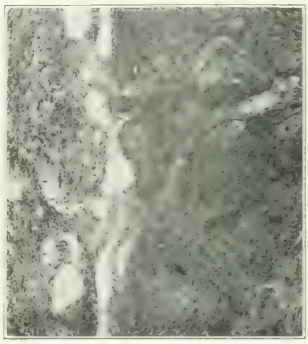


FIG. 3.—Section of larger tumour showing typical cellular epithelioma on right side. On the left side may be seen the subcutaneous tissues with evidences of chronic inflammation. Age of tumour 76 days.



FIG. 1.—Recent papular dermatitis occurring after a few weeks' service in paraffin departments. This eruption had almost completely disappeared three weeks after its onset.

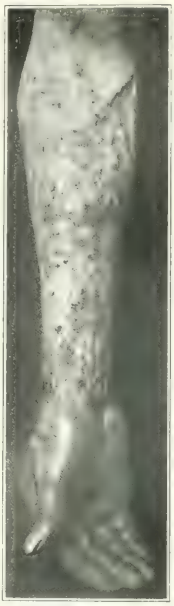




FIG. 2.—Advanced dermatitis erythematosa, after over twenty-four years' service as paraffin worker. Note warts, scars, scales, and patches of atrophied skin.

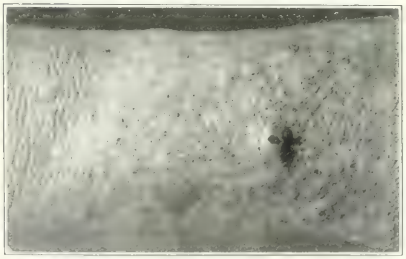


FIG. 3.—Horny papule in midst of indurated skin. Note leathery appearance of skin.

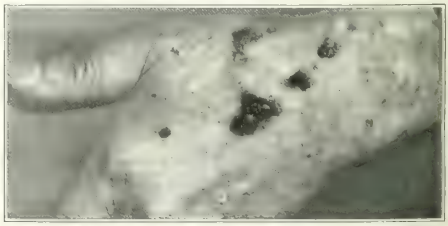


FIG. 4.—Horny warts on hand. Paraffin worker 83 years of age, sixty years' service as paraffin worker.



FIG. 5.—Large paraffin wart, with central necrotic area, approaching malignancy. Paraffin worker for thirty years.

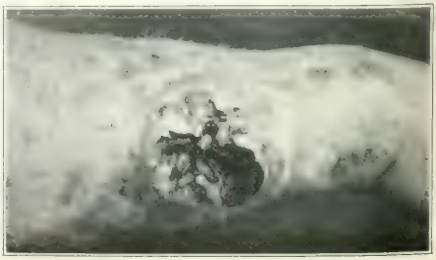


FIG. 6.—Large ulcerating epithelioma. Paraffin worker for over forty years.

EXPERIMENTAL PRODUCTION OF CANCER BY ARSENIC.

BY
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[*With Special Plate.*]

A few cases had been recorded previously of epithelioma of the skin occurring in patients the subject of psoriasis without any definite relationship between the two diseases having been suspected. Jonathan Hutchinson was the first to attach an important significance to the association. In a communication to the Pathological Society of London in 1887,[1] in which he reported with illuminating details six cases that had come under his care, he maintained that the bond of connexion between the skin disease and the cancer was to be found in the influence of the drug (arsenic) given for the cure of the skin affection. His careful observation and his extensive experience enabled him to detect in these cases a new appearance that was absent in the ordinary phenomena of psoriasis; this was the occurrence of keratoses and warty formations on the palmar surfaces of the hands and feet. "By the prolonged use of arsenic," said he, "the nutrition of the skin may be seriously affected, and, amongst other changes, warty or cornlike indurations may be produced, and if the drug be continued these 'arsenic corns' may assume a tendency to grow downwards and pass into epithelial cancer." He suggested that the effect of the arsenic on the skin was to render it less able to withstand friction and the common kinds of irritation. The striking illustrations which he brought forward in support of his contention excited much interest, and it was not long before more cases were reported from various parts of the world in corroboration. In succeeding years Hutchinson's convictions grew stronger, and he endeavoured, not very convincingly it may be, to attribute many other forms of cancer to the operation of the same agent. Thus, the presence of arsenic in soot explained the occurrence of chimney-sweeps' cancer of the scrotum; the finding of arsenic in beer accounted for the undue prevalence of cancer in brewers and publicans and its frequent incidence in the general population; and even cancer of the tongue might be traceable to the arsenic contained in cured tobacco. He rode the idea with a loose rein. The quest of a single cause of cancer has always led to much speculation, much special pleading, and much disappointment. Certainly arsenic is widely distributed in nature and is present in traces in many of our foodstuffs. Professor Bayet of Brussels is a strong supporter of the "arsenic theory"; he thinks that practically all our industrial cancers are due to the action of the arsenic contained, even in excessively small amounts, in the substances with which the workmen come in contact—soot, tar, pitch, paraffin, and aniline derivatives.[2]

Apart, however, from cases of psoriasis and other skin diseases in which arsenic has been taken in medicinal doses over long periods, there is little clinical evidence in favour of the theory that arsenic can induce cancer. In this country there are only two instances on record which could reasonably be attributed to employment in arsenical works—two workmen who dealt with sheep-dip; miners dealing with ores of high arsenic content show no special liability to cutaneous cancers. The reputed prevalence of lung cancer amongst the Schneeberg miners in Saxony, where the ores contain arsenic, has never been satisfactorily verified. The semi-mythical arsenic eaters of Styria have not been known to furnish any examples. The amount of arsenic in coal tar and paraffin is very small, and there is no evidence that it is the tumour-producing agent in these substances; nor is there any good reason for the belief that arsenic, amongst all the various substances employed in the preparation of dyes, is responsible for the typical bladder cancer of aniline workers.

Nevertheless, a consideration of the reported cases of epithelioma arising in psoriatic patients who have been treated with arsenic must impress one with the possibility that this substance may induce cutaneous cancer. A few years ago Pye-Smith[3] collected most of the reported cases. In all the known instances arsenic, generally in the form of Fowler's solution (containing 1 per cent. As_2O_3), had been taken by the patients for long periods—two to thirty years; in more than half of the cases the epitheliomata were multiple and on different parts of the body; in more than two-thirds the hands or feet were affected, and several were quite young people. Still, the number of cases recorded, some thirty in all, must be very small in comparison with the large number of patients who have taken arsenic medicinally, and certainly no one has yet suggested that the wide use of arsenical preparations in the treatment of syphilis has been productive of cancer. It might be argued that psoriasis is merely one form of reaction to an unknown agent which may otherwise induce epithelioma.

In the hope, therefore, of determining experimentally if arsenic might act as a tumour-producing, or carcinogenic, agent, but realizing that the chances of obtaining a positive demonstration were against us, we fed a series of rats and mice on bread containing arsenic. The bread was soaked in a weak solution of potassium arsenite and then dried, and a ration of dried bread was given to each box of animals, so that each rat would receive approximately the equivalent of 0.075 c.cm. of Fowler's solution, and each mouse 0.05 c.cm. of the same, on each of three days in the week. Even with such small quantities the death rate was unusually high, and the experiments were unsuccessful in the matter of tumour production, although in the rats there was clear evidence that the skin was affected by the elimination of the arsenic. In order to avoid constitutional effects as much as possible, and to give us more latitude in the quantity of arsenic we could use with safety to the animals, we applied the arsenical solution directly to the skin in 100 mice. An area between the shoulders was epilated with sodium sulphide, and a drop of the solution—potassium arsenite in alcohol—was applied by means of a camel-hair brush thrice weekly. The particular site was chosen in order that the mice should not lick off the arsenic, and an alcoholic solution was used so that it might evaporate rapidly without spreading through the adjacent hair. The first applications contained 1.8 per cent. of arsenious oxide, but the quantity was reduced on account of the high death rate to 0.12 per cent. in a fortnight and continued at this strength. Thus for the most part of the time we used a solution of arsenic eight times weaker than Fowler's solution. The exact quantities are of no importance, because the concentration on the skin, owing to evaporation of the solvent, would be relatively high. In three months' time we had lost two-thirds of the mice, but we had succeeded in producing a growing tumour in one of the survivors.

In 86 days a tiny wart appeared on the small area to which the arsenic was applied. In 93 days another small wart arose behind the former, which had now attained the size of a hempseed. The larger wart increased quickly in size, so that in 140 days it was a centimetre in diameter, forming a disc-shaped tumour, freely movable over the deeper structures, raised about 2 mm. above the surrounding skin, and slightly excoriated on the surface, whilst the smaller tumour showed little increase in size. The larger growth increased, becoming more elevated and extending laterally, and definite subcutaneous induration was observed. As there seemed little doubt about the malignancy of the tumour the animal was killed at the end of 5½ months (162 days). The principal tumour, situated on the back of the neck between the shoulders and the ears, measured 2 cm. across by 1.25 cm. from before backwards, and stood well up from the skin level. It was a hemispherical whitish growth, with a reddish, slightly ulcerated dome, hard and white on section, spreading under the adjacent normal skin, and apparently infiltrating the deep muscles (Plate IIIA, Figs. 1 and 2). Close behind it was a simple wart. In the left lung there was a hard white spherical nodule, 2 mm. in diameter, and another nodule half that size in the gastro-hepatic omentum. The cervical and axillary lymphatic glands and portions of liver, spleen, and other organs were taken for examination. Microscopic examination of a section through the large tumour showed it to be a typical squamous-cell carcinoma with cell-nest formation, though not markedly keratinized, spreading underneath the panniculus carnosus for a distance on each side and infiltrating the deeper muscle (Fig. 3). The nodule in the lung was a metastatic deposit repeating the histological features of the parent growth (Fig. 4). The nodule in the omentum was merely a structureless calcified node, and no deposits were found in the lymphatic glands nor in the organs examined.

The experiments are being repeated in order to obtain further examples, but there is little room for doubt, owing to the situation of the tumour on the exact spot where the

arsenic had been applied, the time of its appearance, the fact that another wart appeared also beside it, and the extreme rarity of epithelioma of the skin in mice, that this is an experimentally produced cancer. Rarely induced in man, it may not be more easily induced in mice.

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ON THE OCCUPATION CANCER OF THE PARAFFIN AND OIL WORKERS OF THE SCOTTISH SHALE OIL INDUSTRY.

BY

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[*With Special Plate.*]

WHILE the term "paraffin cancer" has become classic, it is not so generally known that the paraffin workers of the Scottish shale oil industry suffer from various well-defined skin lesions, due entirely to their employment, and arising from the handling of and coming into contact with paraffin materials over lengthened periods.

The lesions may be enumerated as follows:

1. Occupation comedones.
2. Folliculitis and perifolliculitis.
3. Pustular dermatitis.
4. Simple erythema.
5. Dermatitis papulare (erythema papulatum).
6. Dermatitis erythematosa.
7. Epithelioma.

The first four of these conditions need not be referred to further, so far as this discussion is concerned, as they play no part in the production of malignant conditions. The other conditions, being of importance in this respect, may be briefly described.

Papular Dermatitis.

This consists of an eruption of small rounded elevations of a reddish colour, varying in size from that of a small pepper-corn to that of a small pea. They are solid, superficial, rounded in shape, and contain no fluid. There is as a rule no inflammatory areola around the typical papule; there is neither itching nor irritation; the papules do not tend to coalesce, and as a rule heal spontaneously. They may be present singly or in twos or threes, or in larger numbers until there may be a diffuse eruption of discrete papules. Between 40 and 50 per cent. of the workmen are affected with this type of eruption, and of those affected approximately 50 per cent. show not more than three or four papules, 45 per cent. have a limited extent of eruption confined to a small area, and 5 per cent. have a diffuse eruption. The distribution of the papular eruption is very typical. In the great majority of cases it is confined to forearms, especially over the ulnar aspects, though it is also prevalent over anterior and posterior aspects, around wrists, and on backs of hands. Less frequently a few papules are present on the shoulders, legs, and dorsal aspects of feet. In old-standing cases they are seen over the lower thirds of arms and around elbow-joints. Approximately 75 per cent. of those affected have eruption on hands and arms only, 20 per cent. have both arms and legs affected, and about 5 per cent. have some eruption on the body, as well as on either arms or legs. The earliest appearance of papules after men begin work in paraffin sheds occurs in from ten to twelve days, and they may persist throughout the duration of employment.

Occasionally in old-standing cases the papules assume a warty appearance, due to proliferation of superficial layers of epidermis, forming scaly warts, at first soft, but gradually becoming harder and more indurated, this warty appearance being of a permanent nature. As a general rule this indurated type of papule is first observed on workmen who have been continuously employed in paraffin departments for over eight years or so, and they are present at first singly or in small numbers, and only after fifteen or twenty years of service as paraffin workers are they present in greater numbers, especially over backs of wrists and hands. They may persist in this condition indefinitely.

In the most chronic types of this condition of warty papule there is occasionally a tendency to increase in size, accompanied by the formation of a central necrotic area, which may separate and be followed ultimately by the disappearance of the warty growth, with the formation of a scar. These more chronic types are, as a rule, associated with an old-standing induration of skin. Occasionally a warty papule, instead of disappearing, grows until it assumes the characters of an epitheliomatous growth, with the usual clinical and pathological features of that condition.

Dermatitis Erythematosa.

This is a chronic inflammation of the various layers of the epidermis and cutis vera, followed by induration and, in the most advanced stages, by partial or complete destruction of small areas of the skin in the affected parts. The early appearances are first seen on workmen who have been in contact with paraffin substances for seven or eight years. In the first stages the lesion consists of dull red erythematous patches distributed irregularly over the forearms, giving a mottled or honeycombed appearance. At first the condition is limited to small areas, but, as it becomes more old-standing, involves larger areas, the whole surface of the forearms being frequently affected. This erythematous stage may persist for long periods without further change, or healing may take place, the redness disappearing, being replaced by some induration of the superficial layers of the skin, with a characteristic dry scaliness which is practically permanent. Frequently the erythematous dermatitis progresses so that the deeper layers of the skin are infiltrated and, as the inflammatory process subsides, small patches of atrophied skin, white in colour, appear, or there may be scar formation, according to the depth of the inflammatory changes. There is frequently a tendency to the formation of small, flat, scaly warts, usually oval or circular in shape, which are very typical of old-standing dermatitis due to paraffin. The advanced condition of dermatitis may persist for many years or for a lifetime, with permanent roughness and wartiness of skin and a chronic desquamative process going on.

Chronic dermatitis as described above usually coexists with old standing papular dermatitis, in which the papules are of the indurated type, being hard and scaly. Thus in an advanced stage the forearms show pigmented patches, small white areas of atrophied skin, scars, scaly warts, and indurated papules. The distribution of erythematous dermatitis is confined solely to parts in contact with paraffin substances. The forearms principally are affected, either in parts (especially over ulnar aspects) or generally. In advanced cases the lower thirds or halves of arms are usually also affected. While a considerable proportion of the older workmen show evidence of healed or old-standing dermatitis the condition has become less evident in recent years, and is practically confined to those who have been paraffin workers for years, the recent employees being free from this type of skin lesion.

Epithelioma (Paraffin Workers' Cancer).

Epitheliomata, as seen among the paraffin workers of the Scottish shale oil industry, occur only in those about or over middle life who have been so employed for twenty years or more. They usually arise from warts due to a chronic dermatitis or from indurated papules, and therefore usually coexist with an advanced dermatitis erythematosa in which wartiness is a predominant feature, or with numerous indurated papules of a simple nature. The usual appearance is that of a gradually growing epithelioma in the midst of a chronic indurated dermatitis, with numerous simple warts or indurated warty papules, only one of which has become malignant. I have never seen more than one epithelioma at one time on the same individual, though it is not uncommon for the same workman to have several different growths at various times over a period of years. The warts or papules from which this condition arises have as a rule been present for many years in a benign form, until the epithelial covering begins to proliferate more rapidly, with increasing growth of the primary lesion, until the characters of malignancy develop. These epitheliomata are only met with on those who have been paraffin workers for many years, and, indeed, those which I have seen have occurred after twenty or more years' work among the paraffin materials, the majority being seen after between twenty-five and thirty years of such service. In the early stages of the degeneration the naked-eye appearances vary according to the primary condition, so a short outline of the development from a wart and an indurated papule may conveniently be given.

(*a*) *Arising from Scaly Wart.*—In the benign condition the wart is somewhat oval or circular, about the size of a sixpence. It is covered by small scales, which are readily removable, leaving a somewhat indurated base. The wart does not protrude to any extent above the level of the surrounding epidermis. As the epithelium undergoes proliferation the wart increases in area, and also becomes more raised above the level of the surrounding skin, until it gradually assumes the size of half a crown in area, raised about a quarter of an inch or more above the surface and covered with thick horny scales. On reaching this size there is a tendency for the formation of fissures, or abrasions of the surface, from which a serous fluid exudes, causing crusting of the surface. The crusts are readily removed by any slight injury, but re-form. This appearance persists for some months, the area gradually increasing until the incrustation and warty covering of the growth eventually slough and disappear, leaving a superficial ulcer, from which sero-sanguineous fluid exudes. Subsequent growth of the ulcer in depth and size takes place slowly.

(*b*) *Arising from a Papule.*—An indurated papule has been already described as occurring in old-standing erythematous dermatitis. The papule as a rule persists in this benign form for many years. A central necrotic area may form, accompanied by the gradual growth of the primary lesion. After separation of the slough it may grow until it assumes much larger proportions than formerly, the growth having a central ulcer surrounded by indurated edges. The growth of the ulcer extends peripherally and also in depth, the edges being indurated and undermined until all trace of elevation of tissue above the level of the surrounding skin disappears, so that a large open ulcer is formed, with a base of red, angry-looking granulation tissue, bleeding profusely on the slightest touch. When the growth is situated on the scrotum there is, as a rule, in the ulcerative stages, an overgrowth of epithelial tissue forming large masses, protruding above the surrounding surface, giving the appearance of a cauliflower excrescence, and, being very vascular, they bleed profusely. Ultimately the lymphatic glands are involved in this excrescence, so that in the latest stages the whole inguinal region is invaded by a large ulcerating cauliflower-like mass. The malignancy for a long time is not great, as the lymphatic glands do not become involved till a late stage, but this varies according to the situation, the glands being involved earlier when the lesion is situated on the scrotum than when the site is on the arm or forearm. I have seen occasionally quite advanced tumours and ulcers removed without recurrence, though sometimes amputation of a limb has been necessary, the after-results being satisfactory. In cases terminating fatally death is as a rule due to extensive ulceration with exhaustion, rather than to metastases. I have known very extensive ulceration of the scrotum and inguinal glands, ending in death, unaccompanied by any gross secondary lesion as far as clinical investigation or symptoms indicated. The most common site is on the back of the hand or on the lower third of the forearm, but it is also common on the scrotum, especially among oil workers and labourers, a fact which will be considered later. Epitheliomata have been seen on the face, and at the outer and inner angles of the eyelids, in which latter case the features of a rodent ulcer may be assumed.

Epitheliomata also occur among retortmen, oil workers, stillmen, and labourers, these being a large group of workmen, approximately five thousand in number, quite distinct from the group of paraffin workers. These men do not come into such intimate contact with paraffin substances in the course of their work and accordingly do not suffer from any of the papular or inflammatory lesions which occur among the paraffin workers. On these workmen they do not arise from pre-existing warts or papules, but generally begin as a reddish pea-shaped nodule, in which the typical "cell nests" are present practically from the onset; or they may occur at the site of a simple papilloma or small cyst or mole—simple conditions found frequently on the scrotum under ordinary conditions apart from any occupation cause—but in the great majority of cases the growth is a primary lesion. There is epithelial proliferation, accompanied later by the degenerative changes associated with an epitheliomatous growth. The epitheliomata which occur in oil workers and labourers, as distinguished from paraffin workers, without any primary condition of dermatitis, are as a rule found among those men—such as retortmen, labourers, stillmen, oil workers, etc.—who come into contact with ash, coke, or other gritty material. The scrotum is most frequently the site of such lesions, this being due to the difficulty of ensuring cleanliness of this region.

I have made a list of all cases of paraffin epithelioma which have occurred during the twenty-two years from January 1st, 1900, to December 31st, 1921. In all 65 cases have occurred, of which 19 have been on paraffin workers proper, most of which cases have been seen by me, and 46 among the other grades of labour employed, such as retortmen, stillmen, etc., many of these cases having come under my observation. Since 1918 I have periodically inspected the paraffin workers proper and so have been able to observe the gradual development of malignant features from simple primary lesions, and to have growths removed at an earlier stage than formerly.

In the oil works comprised under Scottish Oils, Ltd., there have been employed approximately five thousand workmen annually for many years, which number includes all forms of labour necessary in the distillation of oil shale and the refining of its products. It will be thus seen that the cancer incidence is approximately 1½ per cent. in twenty-two years, or under 0.1 per cent. per annum. Nineteen of these cases have occurred among those definitely known to have been employed in green sheds (paraffin sheds or crude paraffin departments), there being approximately two hundred men thus employed annually by Scottish Oils, Ltd., during those years. The incidence of this condition among these workers is thus 0.5 per cent. per annum approximately. The ages of the cases recorded vary from 37 to 79 years.

Three were under 40 years of age.
Thirteen were between 41 and 50 years.
Twenty-three were between 51 and 60 years.
Sixteen were between 61 and 70 years.
Ten were between 71 and 79 years.

Of the 19 cases among paraffin shed men the lesions were most prevalent on the arms, forearms, and hands, thus:

Hands, forearms, and arms	12 = 63	per cent.
Face, neck, and ear	3 = 16	,,
Scrotum	3 = 16	,,
Groin	1 = 5	,,

Of the 46 cases occurring among oil workers and labourers the sites were:

Scrotum	28 = 61	per cent.
Arms, forearms, and hands	9 = 20	,,
Face, neck, and ear	7 = 15	,,
Leg	1 = 2	,,
Anus	1 = 2	,,

These figures are in accordance with the facts stated that among oil workers, retortmen, and labourers the tendency is for the primary lesion to occur on the scrotum, being malignant practically from its early stages; while among paraffin shed workmen, as a general rule, the lesion occurs as a degenerative stage of warts or papules, which are most commonly situated on the forearms.

The chief etiological factors predisposing to the formation of paraffin workers' cancer are age, length of service in paraffin department, and idiosyncrasy.

Age.—Age has an important influence on the occurrence of epitheliomata, these being practically never seen under 40 years of age, and as a rule appear at more advanced ages than this. This will be seen from the age incidence already given.

Length of Service.—The importance of a long period of service in paraffin departments as a predisposing cause of chronic indurated dermatitis and epitheliomata is apparent from the following figures. Of twelve paraffin workers who had extensive indurated dermatitis (dermatitis erythematosa) at one examination, the individual lengths of service were 39, 38, 36, 34, 33, 29, 28, 27, 22, 21, 18, 18 years respectively. As epitheliomata of paraffin workers are associated with this indurated dermatitis, the importance of long service is apparent.

Idiosyncrasy.—This plays an important part as a predisposing cause of paraffin epitheliomata. Many workmen have indurated papules and warts due to occupation, from which epitheliomata may develop, but only a small percentage of these undergo malignant degeneration, and, on the other hand, several workmen have had primary growths at different sites on different occasions showing a tendency towards this condition. I have frequently had under observation large warty growths, with a central necrotic area, suggestive of the stage immediately preceding malignancy, which instead of degenerating have healed after separation of the central necrotic area. Cases such as these may be considered as only lacking in the "personal factor."

ADDER BITE.

BY

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PERHAPS it may not be out of place if I draw attention to a subject which is seldom touched upon in medical literature—I refer to the effects of, and the dangers incidental to, adder bite. In June last I saw, on the recommendation of Dr. E. H. Grant Morris of Dalbeattie, a lady living in South Durham, on her way home from Scotland. She had been bitten on the ankle by an adder.

An adder strikes suddenly, and, in the act of striking, the venom is pressed through the hollow fangs into the tissues of the victim. In India snake bite exacts every year a heavy death toll, but we have no exact information of the number of people bitten by adders yearly in Scotland. It may, I think, with safety be said that the number of fatal cases of adder bite is small. While walking over heather-clad moors in Ayrshire it has been my privilege to see adders, also my good fortune never to have been bitten by one. Adders are timid creatures and generally glide rapidly out of sight; they do not bite unless trodden upon or when attacked.

A married woman, aged 54, no children, inclined to stoutness, whose menses ceased at 40, and who occasionally had headache and slight functional cardiac trouble following influenza seven years ago, was in June last, when walking on a moor close to the Solway, bitten by an adder above the left ankle. She saw the reptile escape. On turning down her stocking two small punctures were observed; these were bleeding. She was assisted to a cottage a little distance away; there the wound was not bathed, but the limb was kept elevated. An hour afterwards she was seen by Dr. Morris, by whom the wound was dressed and a stimulant administered. Meanwhile severe vomiting and diarrhoea had developed. A stretcher having been obtained, the patient was carried across the moor half a mile to a point where a motor bus had been brought, and in it she was conveyed to her rooms. There she reached in a condition of collapse. When the limb was again examined it was found to be swollen up to the knee; it was red, but not very tender. She felt, however, extremely ill. The limb was dressed with ichthyol and glycerin. That evening and for the first few nights she slept very well. The vomiting and diarrhoea referred to only lasted a few hours. By degrees she got better, but dependency of the limb caused much pain.

When I saw the patient ten days after the bite she was fairly well generally; her emunctories were acting normally, the pulse was 94, the blood pressure 120 mm. Hg, and the urine was free from albumin. The heart and lungs were normal. The left foot and leg, to within four inches of the knee, were red and considerably swollen; the instep was particularly red and swollen; the calf was oedematous, the veins not enlarged, and the knee-jerks were normal; the two minute punctures of the skin were still visible. A film of blood was sent to Professor Stuart McDonald, who reported the absence of abnormality. The patient, after resting in Newcastle for two days, reached her home all right, but it was nearly three months after the injury before the swelling of the ankle disappeared.

In his letter Dr. Morris reminds me that when he first saw the patient the symptoms were entirely local, but soon afterwards there were the gastro-intestinal troubles I have mentioned, attended by collapse and by an almost imperceptible pulse. The vomiting occurred every ten minutes and the diarrhoea was frequent. Dr. Morris, who has seen other cases of adder bite, considered the symptoms unusually severe. He had not met with diarrhoea in other patients, although in the case of a dog bitten by an adder he had observed vomiting.

Several medical men in the Highlands of Scotland to whom I wrote for facts bearing upon adder bite have replied that they had not seen any cases. Dr. Donald McDougall of Brodick, Arran, gave me details of a lady visitor to Arran whom he had successfully treated for such an injury. The Marquess of Ailsa informs me that, in the case of one of his dogs who was bitten on the pad of one foot by an adder, the limb swelled enormously, and that shortly afterwards the animal appeared to be dead, but that after one of the gamekeepers had slit the wound open with a penknife, squeezed the foot and bathed it with whisky, the beat of the heart and respiration were re-established, and in three days the dog was quite well.

Dr. Lachlan Grant of Ballachulish, to whom I had also written, kindly referred me to ex-Sergeant Morrison of Campbeltown, who is a recognized authority on adders. To Mr. Morrison I am indebted not only for the loan of his typed copy of the pamphlet he intends to publish, but for permission to make use of some of the information it contains.

There are three different species of snakes in Great Britain: the ring snake, the smooth snake, and the adder. The ring snake is olive grey in colour and measures 2 feet or more; the smooth reptile is usually just a little less than 2 feet in length and is reddish-brown; while the adder is about 21 inches in length. The first two types are non-poisonous. The head of the adder is rather flat and tends to broaden towards the neck. The tail differs in the two sexes, that of the male being short and blunt, while the tail of the female is long and pointed. It is owing to the reproductive organs of the male being contained in the tail that the terminal portion of his body is broader than that of the female. Clothed in a coat of mail of scales and plates with a succession of dark inverted V-like markings stretching from head to tail, and with patches of yellow colouring running into the apex of the incomplete triangles, the reptile can be thus recognized and differentiated from the snakes already mentioned. The adder is found widely distributed over the west of Europe—from Spain, through Great Britain, to the north of Europe. It is common in Scotland. The disputational statement of its absence from Ireland, and from some of the western islands of Scotland, such as Iona, does not for the moment concern us. Like the snake tribe generally the adder hibernates in winter. On the approach of winter adders retire into crevices, and therein they remain in a state of torpidity until February or later. Although cold-blooded they are sensitive to cold; they like to bask in the warmth of the sun. Once, at least, during the year they cast their outer covering. The adder produces its young alive. Mating in April, the young are born four and a half months afterwards, towards the end of August or the commencement of September. Little is known of the family life of the adder, for it does not breed in captivity. Morrison on one occasion captured a female adder, took it home, and in about a week afterwards she gave birth to a family of seven, all of whom died within a week afterwards. These animals were 6¾ inches long at birth.

Although the phrase "stung by an adder" is frequently used, an adder does not sting, but bites. There is nothing to fear from the forked tongue, which is repeatedly being shot out and retracted again; it is an organ of touch, and is constantly in requisition, since, owing to the fixed orbits of the animal, the range of vision for objects immediately in front of it is extremely limited, especially on the inner half. The fangs of the adder are two slender sharp-pointed teeth on each side of the upper jaw, curving inwards, and barely three-quarters of an inch in length. They are hollow, and lie in a sheath in the palate; in this sheath is also contained a reserve of another pair of fangs ready to be used should the first be destroyed through accident. The poison glands lie behind the eyes; they secrete a clear fluid, like saliva, which is carried by ducts into the fangs. When the animal is about to strike it opens its mouth to nearly an angle of 90 degrees, erects the fangs, darts its tongue out and in with a hissing noise, and then, all at once, the tongue is swiftly withdrawn and the fangs are plunged into the victim. In the act of biting the poison glands are compressed by muscular contraction, and as a consequence two or three drops of venom are driven along the ducts into the fangs, from the tip of which the poison is injected into the wound inflicted, two minute punctures marking the site of the injury. Although the bite of these animals is dangerous, and must never be lightly considered, yet Morrison has frequently removed the fangs from living adders—a dangerous procedure, and an operation never to be undertaken by any person who is not familiar with the handling of snakes, for, if an adder strikes, it does so with unerring certainty.

In confirmation of the severity of symptoms due to adder bite I can hardly do better than refer readers to the story told by Dr. R. S. C. Edleston of Baslow[1] of the sufferings experienced by Dr. H. Peck, Medical Officer of Health for the Chesterfield District of Derbyshire, who was bitten by an adder, first on the right thumb and hand, and immediately afterwards on the left thumb, when near a reservoir, testing water for peaty acids. Seeing a snake on the ground he picked it up and was bitten. He at once sucked the wounds. Shortly afterwards he felt as if his head was bound by a tight girdle; he became faint and vomited; his lips, tongue, and fauces swelled and breathing became difficult. When seen three hours afterwards by Dr. Edleston there was great

[1] BRITISH MEDICAL JOURNAL, September 11th, 1909.

exhaustion, for which stimulants were given, followed by the hypodermic administration of digitalin and strychnine. For several hours the patient was extremely ill. The right arm swelled considerably, and at one time it seemed as if it might become gangrenous. It was three weeks before the swelling of the arm disappeared.

Probably some persons are more susceptible to the influence of adder bite than others, but no one is altogether immune, nor are such animals as the horse, dog, and sheep. Morrison carried out a series of experiments with frogs and toads, and he found that these animals were immune to the bite of an adder which had been five weeks in captivity. The immunity does not appear to be due to the fact that these animals are cold-blooded, for a lizard bitten by the same adder died twelve minutes after being bitten. Morrison, after raising the question as to whether the immunity possessed by frogs and toads may not be due to the presence of an antitoxin in their tissues, states that he has submitted the results of his experiments to the Wellcome Bureau of Scientific Research.

Treatment.

All writers upon the subject are agreed that since symptoms rapidly supervene, and quickly assume an alarming nature, treatment should be prompt; but as the accident occurs usually in out-of-the-way places, and often at considerable distance from a human habitation, help is often not readily obtained. Such constitutional symptoms as difficult breathing, attended by collapse and a small and irregular pulse, call for the immediate use of stimulants, and upon the value of the prompt administration of whisky or brandy there is complete unanimity of opinion. So far as I know, there is no antivenom treatment for adder bite. Since the poison rapidly produces constitutional effects, an attempt should be made to prevent it being absorbed by sucking the wound, if there are no cracks on the lips, by incising the wound and allowing it to bleed rather freely, also by applying an alcoholic lotion or a fairly strong solution of potassium permanganate. In the case of many persons who have been bitten by an adder a ligature has been tightly applied round the limb on the cardiac side of the injury. Dr. McDougall of Brodick successfully treated his case of adder bite by freely incising the bitten part, cauterizing it with pure carbolic acid, and dressing the wound with permanganate solution. In his patient very few constitutional symptoms followed, notwithstanding the swollen state of the foot. In Dr. Morris's patient the constitutional symptoms were already severe before he arrived on the scene, or at any rate shortly afterwards, but, combating the collapse by means of stimulants, subsequently dressing the swollen limb, first with ichthyol and glycerin, followed later by warm lead lotion, and the internal administration of quinine and phosphoric acid, the patient was placed out of immediate danger in the course of a few days.

Natives of East Africa are extremely afraid of snakes. Discussing this subject with Dr. A. R. Cook, the well-known medical missionary of Uganda, he told me that the number of persons bitten by snakes in Uganda is small, also that he had found the application of a ligature on the cardiac side of the wound, incision, and the application of permanganate crystals gave the best results. The various methods of treating snake bites form interesting reading. The old European method of treating snake wounds in India was to incise the wound, pack it with gunpowder, and ignite the powder. In tropical countries the Arabs used to be treated by the natives by means of a charm—the serpent's stone—which was said to adhere to the wound and later on to fall off.

Incidental to what has just been stated in regard to adder bite, and bearing upon the collateral subject of snake bite, there have recently appeared in the *Times* abstracts of letters relating to the African puff-adder. The writer of one communication states that he himself had been bitten by an African puff-adder and that he knew of four other white men who had been similarly injured, also of nine natives and Indians. He himself suffered agonies until he was relieved half an hour afterwards by a Kaffir witch doctor; with an experience of thirty cases the fatalities, he said, were 80 per cent.

Snake bites are extremely fatal, and frequently with great rapidity. One of my nephews who has recently returned from Burma informs me that when in that country he saw an American oil-well driller who, on dismounting from his horse, inadvertently trod upon a small snake. The reptile struck him upon the inner side of one of his ankles. The accident occurred in the interior of the country. My nephew, who is not a medical man, but who had witnessed the accident, at once applied Condy's fluid to the wound, dressed the limb, and advised the American to go to the nearest hospital three miles away. The patient did not then feel sick, neither was he collapsed, nor did he feel ill. He remounted and galloped off to the hospital, but he had only gone about half a mile when my nephew, who was watching, saw him fall from his horse, and running forward he, on reaching the spot, found that the American was dead. Death occurred in this instance within half an hour after the injury.

In alluding to the African puff-adder mention was made of the rapid cure of snake bite by a native witch doctor. My nephew told me an interesting story which I simply reproduce, in the hope that it may be corroborated or refuted by those concerned, should they perchance ever read this article. One afternoon he went to Pakokku to spend a few hours with the British doctor at the hospital. In the hospital compound at the time were several snake charmers with whom conversation sprang up. Although these charmers can apparently force snakes to do almost anything they wish yet occasionally the men get bitten. At any rate they showed several minute scars on their hands and arms, which might, or might not, have been caused in the manner they stated. On being asked if they had ever been affected by the poison the men replied in the negative, but they would not say why they had not suffered. Ultimately the snake charmers agreed to a suggestion of the doctor that three experiments should be tried: (1) a chicken was to be bitten by a snake and treated by the snake charmers; (2) a chicken was to be similarly bitten and not treated; and (3) a chicken similarly affected was to be treated by the doctor. The results were as follows: the chicken which was not treated died in twenty minutes; that treated by the doctor died in about the same time. Chicken No. 1 was taken by the men to behind some brushwood quite close at hand, but where their movements could not be seen; they returned with the animal after being absent about ten minutes, and on the following day the fowl was quite well and remained thus. Nothing could draw from the natives the method of treatment they had adopted.

A SIMPLE METHOD OF TREATING CLUB-FOOT

(CONGENITAL TALIPES EQUINO-VARUS).*

BY

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THE following is a simple method of treating club-foot that I have employed for the last ten or twelve years.

It is, of course, well known that the apparent correction of the deformity of club-foot does not in itself constitute a cure. It is necessary after the deformity has been corrected to employ some means of keeping the foot continually in the corrected position until growth and adaptation have changed its anatomy and rendered the correction permanent. This end was attained formerly by putting the child into a walking instrument or apparatus designed to keep the foot in the corrected position during the day—a splint being used at night. Such an instrument is expensive in the first instance. It requires constant adjustment in the case of a growing child, frequent repairs to make good breakages and wear and tear, and an amount of intelligence, which is not always forthcoming, on the part of the parents or guardians to see that it is put on properly and is doing its work efficiently. One has seen many relapses and poor results owing to the failure of instruments to act efficiently from one cause or another, and such causes are often beyond the control of the surgeon. But, apart from this, it is a most unfortunate thing to have to put a healthy child into "irons" for some of the best years of its life.

In recent years a good deal has been done to eliminate instruments from the treatment of club-foot. Some surgeons treat these cases in a succession of plaster casts until they judge that the correction is permanent. Others have done simple or elaborate tendon transplantation or other operations. No orthopaedic surgeon nowadays does drastic bone operations on club-feet in children. The method here described appeals to me because it is simple, efficient, and

* Demonstrated before a meeting of the British Orthopaedic Association in London on October 20th, 1922.

it does not interfere with the anatomy of the child's foot. The procedure is as follows:

Correction of the Deformity.

The apparent deformity is first fully corrected in the ordinary way by tenotomy, manipulation, and splinting. I personally always divide the two tibial tendons and frequently some of the ligaments on the inner side of the foot, because I believe that better correction is obtained after tenotomy than without it, and I have never seen any ill effects follow the division of these tendons in club-feet. We prefer gradual correction, by daily manipulation and the use of a splint, to forcible redressment under an anaesthetic, because a much more natural and supple foot is eventually obtained by the gradual method. When the varus part of the deformity has been completely corrected or overcorrected I divide the tendo Achillis and frequently the posterior ligaments of the ankle-joint, and again I have never seen the slightest ill effects from this tenotomy in club-foot cases. The equinus deformity is now completely corrected, and the foot is put on a trough splint with a footpiece at a right angle ("tin shoe"), or it may be put in plaster. It is allowed to remain thus for at least a week or two—sometimes it is convenient to wait some months—before the fixation operation.

Fixation Operation.

The object of this operation is to secure permanent fixation of the foot in a corrected position by means of an artificial ligament attached to the outer border of the foot below and to the outer side of the tibia above.

Pearsall's No. 3 pearl silk is prepared according to Lange's formula.* A suitable length is taken out of the melted paraffin with forceps, and the excess of paraffin is removed with a sterile swab.

An incision a quarter of an inch long is made down to bone on the dorsum of the base of the fifth metatarsal bone. A drill with an eye near the point is passed through the base of the fifth metatarsal and thrust out through the sole of the foot. A guide loop of salmon-gut is threaded into the eye of the drill, and by means of this one end of the silk is pulled into the sole, through the base of the fifth metatarsal, and out through the incision on the dorsum. The drill is again passed into the same incision, but this time round the outer side of the metatarsal, and it is made to emerge through the same puncture in the sole. The eye is again threaded with a loop of salmon gut, and the other end of the silk is pulled through to the dorsum. The two ends are pulled out to an equal distance, so that the middle of the silk surrounds the outer half of the base of the fifth metatarsal.

On pulling the loop tight it will often be found that the skin of the sole is dimpled at the point where the silk was passed through, and we have found that when the dimple is allowed to remain the patient sometimes complains of pain afterwards at that spot. So it is well at this stage to give the middle of the loop a few sawing movements—like using a Gigli's saw—and the dimple will then disappear. This also ensures that the loop lies close to the bone and prevents subsequent slackening. A single hitch is now tied in the middle of the loop of silk.

Next a long special probe with an eye near the tip is thrust into the incision on the dorsum of the foot and is carried deeply in the subcutaneous tissues up the outer side of the leg. The tip should be kept well back, and it is made to project beneath the skin somewhere in the lower third of the leg, just in front of the plane of the fibula. A stab incision is made over the tip, which is then thrust out of the leg. The eye is threaded with a salmon-gut loop, and this is pulled down to, and out of, the incision on the dorsum of the foot. Both ends of the silk are then passed into the loop and pulled up to, and out of, the upper incision.

The last step is to pass both ends of the silk separately through the tibia, and to tie them on the inner side. The bone drill is therefore passed into the upper incision and bored straight through the middle of the shaft of the tibia until its point projects beneath the skin on the inner side of the leg. A curved incision is made down to bone, so as to turn back a small flap over the point of the drill. The drill is then pushed out of the wound and its eye is threaded with a loop of salmon-gut. This loop is pulled through to the outer side of the leg, and one end of the silk is passed into it and pulled through to the inner side. The other end of the silk is passed in exactly the same way, but through a separate drill hole at a slightly higher level.

An assistant now holds the foot firmly in an overcorrected position—that is, abducted and everted. The two ends of the silk are pulled tight, first separately, and then together. Finally, they are tied very tightly in a triple knot on the inner side of the tibia. The little wounds are all closed with fine horsehair stitches.

The foot is now held permanently in the corrected position by a stout ligament attached to bone above and below. It is put on a tin splint for a week or ten days. The stitches are then taken out, and the foot and leg are put in plaster. The plaster is kept on for two months, then it is cut off, and the patient is allowed to walk in ordinary boots or shoes. It should, however, be seen that the boot or shoe is made flat on the inner side.

Instruments.

One or two special instruments will be found useful for this little operation. One is a steel probe for passing the silk up the leg. This has a straight shaft about seven inches long mounted on a handle. The tip is smooth and rounded and slightly turned up (coudé), and there is an eye near the end. The other is a bone drill with a cylindrical shaft. Most of the bone drills on the market have a shaft which expands more or less from the point towards the handle, so that when they have penetrated some distance one is attempting to drive a cone into the hole made by the point. I have therefore had drills made with straight cylindrical shafts, so that they can be passed easily for their whole length. The best form of point is, I think, the miniature gouge, but there should also be a slight groove on the convex side, otherwise the salmon-gut loop is cut as it is pulled back through the bone. These instruments have been made for me by Allen and Hanbury and Krohne and Sesemann.

Remarks.

Failures are nearly always due to faulty technique. Failure to obtain complete correction or overcorrection of the deformity before the fixation operation is the worst mistake. The silk should play no part in the correction; it should merely hold the foot in the corrected position. A certain amount of "give" must be anticipated, and the assistant must hold the foot well everted while the silk is being tied. The amount of correction often looks rather excessive at first.

Failure to keep the silk close to the bone, and to pull it tight enough, is another mistake. If a considerable amount of the soft parts is included in the loop in the sole this will subsequently be absorbed, and the silk will slacken.

The base of the fifth metatarsal is a small thing in a small child, and if the drill strikes it too near its outer side, or if the drill is too large, the thin slip of bone which is caught by the silk may give way. On the other hand, it is not satisfactory to pass the silk round the metatarsal, instead of through it, as I found in some of my earliest cases.

In working through small stab incisions it is impossible to avoid all contact with the skin, as one would like to do in silk operations. So that occasionally there is a mild infection, and a sinus forms, and the silk has to come out. This risk is not great, and I have preferred to take it rather than elaborate the operation.

In passing the probe up the leg the tip should be kept as deeply as possible in the subcutaneous tissues. It should not, however, pass under the annular ligament. The skin is very intolerant of pressure on its deep surface, and if the silk is placed too superficially the skin may slough over it where it crosses the angle between the foot and the leg.

When the silk has been in place for two months or more it will be found that the foot retains its position even though the silk be removed. I have shown by dissection that this is due to the formation of a fibrous cord around the silk, and that this fibrous cord acts in just the same way as the original silk ligament. The silk itself I have found to be absolutely unchanged after nearly two years. For this reason when a sinus forms, either from mild infection or sloughing, the silk should not be removed at once unless the discharge is excessive. When the silk has to be removed one of the cords is cut and the other is forcibly dragged out with Spencer Wells forceps. It nearly always comes out intact, knot and all.

* The silk is first boiled for twenty minutes in 1 in 1,000 mercury perchloride solution. It is then dried aseptically between sterile towels for two days. It is next put into a jar of melted soft paraffin (white vaseline) and cooked in this in a water-bath for two hours. It is kept in the paraffin while being allowed to cool, and it is melted down before each operation by standing the jar in an ordinary sterilizer.

In mentioning these causes of failure I may perhaps add that a little practice and familiarity with the operation goes far to eliminate them, and I see far less of them now than formerly. With these few exceptions I have found the operation entirely satisfactory. The children have nice supple active feet, permanently corrected, and they are from the beginning freed from the burden of instruments.

PNEUMOCOCCAL INFLUENZA.

BY

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THE name "influenza" is applied to a variety of ailments. In the recent great pandemic *B. influenzae* was shown to be the infecting organism in a very large number of cases; there may be, however, small local epidemics, influenzal in type, which are caused by other organisms. Clinically the cases have the appearance of influenza, and one might class them, as Sir William Osler suggested, under the head of "influenza nostras."

The series of cases here described occurred among the nursing staff and students of a hospital during the early part of this year. The epidemic began early in January and went on till March, and comprised some forty cases. The pneumococcus was the organism found in overwhelming predominance on examination of throat swabs by direct smear and culture in every case. *M. catarrhalis* and streptococci also occurred, but were in the minority, and *B. influenzae* was not seen. Pneumococci were also the cause of such complications as occurred. Clinically the cases varied from a slight headache, sore throat, and fever to very severe prostration.

In almost every case the first symptoms were referred to the upper air passages. Some complained of having had a cold for a day or two, or a sore throat; in others the onset was more sudden. Then followed headache, which was usually frontal, and attacks of shivering, with pains all over the body, especially in the back and limbs. Such symptoms are similar to those described as the nervous symptoms of influenza. The headache in some instances was intense. Most cases had more or less photophobia, and in some there was considerable conjunctival injection. The tongue was coated with white fur as a rule; in four instances there was vomiting, which persisted for three days in one case. There was no marked diarrhoea or constipation. Fever appeared with the other symptoms. The temperature in some cases reached 104° F.; in others there was only a slight rise. As a rule there was in uncomplicated cases no fever after four or five days.

Sore throat was the most common complaint, and there were patches on the tonsils in most cases; injection was acute in all. The throat and nasopharynx seem to have been the points of attack of the infecting organism. In five cases there appeared on the fauces and soft palate, and on the uvula to a varying degree, a whitish, shining exudate, which had a glazed look; it gradually spread over the surrounding parts, was very thin, almost transparent, and easily detachable. From each of these cases almost pure cultures of pneumococci were obtained. The parts of the throat not covered by the exudate were very injected. The presence or absence of tonsils did not appear to have any influence on the incidence of the infection, but the patients without tonsils got off more lightly. Only three slight cases of adenitis occurred, and the glands at the angle of the jaw were only affected to a small degree in the most severe cases of throat infection. There was not much tendency to downward spread of the infection; bronchitis occurred twice, and there were two cases with pulmonary consolidation; one of the latter ended in widespread bronchopneumonia which proved fatal.

In six of the most severe cases a scarlatiniform erythema appeared early in the illness. It showed itself uniformly on the limbs, trunk, and face at the same time. The extensor surfaces of the limbs tended to be most affected. There was no itching. As the temperature fell the rash faded, leaving the skin rather yellow. There was a very slight powdery desquamation afterwards in two cases. The appearance of the rash was the signal of acute infection, and the patient was soon very ill. The throat was always markedly affected in these cases, and four of them showed the distinctive exudate described above.

Direct spread of the pneumococcus caused such complications as there were. The pus from a double mastoid infection, which set in on the fourth day, gave a pure culture of pneumococci. The same was true of three cases of empyema of the antrum, as also of an acute case of conjunctivitis which began three days after the onset of the original infection.

Clinically these cases exhibited the rather protean symptoms of influenza, although *B. influenzae* was not the cause. The pneumococcus was often present as a secondary infection in cases of true influenza in the recent epidemics, but this outbreak illustrates the observation of Pulfrey[5] that a primary pneumococcal infection may cause an epidemic with all the clinical appearances of true influenza. This has also been noted by Peset,[4] who found the pneumococcus to be the cause in 62 per cent. of cases in an epidemic.

Toxic erythemata are seen in acute infections, generally streptococcal in origin. They may occur in pyaemia[1 3]. Such rashes have been described in cases of influenza by Hainiss[2] and others. Sir W. Osler mentions them as occurring occasionally in pneumonia. No doubt in the outbreak here described they were caused by the absorption of toxins from the throat; it may be noted that they were seen only in the worst cases. The appearance of the throat exudate described above was very striking and distinctive. It would appear to be characteristic of acute pneumococcal infection in the throat.

These few cases serve to show how closely true influenza may be mimicked by an infection due to another organism. My thanks are due to Dr. Harold Wiltshire for his kindness in allowing me to publish this account.

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A CASE OF BRONCHO-BILIARY FISTULA.

BY

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THE following case is an unusual one, and at the same time of sufficient practical clinical interest to merit its being placed on record.

A labourer, aged 47, went to his doctor in June, 1921, complaining of some loss of weight and of feeling generally weak and ill. A few days later a severe hiccup commenced which lasted for nine days and then ceased abruptly. It was so severe that it deprived him of sleep and seriously interfered with eating, and even with speaking. On its disappearance he complained of nothing beyond general weakness, but three weeks later a cough began with copious expectoration which he described as being "like brown jelly and sometimes streaked with blood." This continued for a month, when the colour of the sputum suddenly changed to yellow. It was now intensely irritating and associated with a violent paroxysmal cough which sometimes led to vomiting.

Such was his condition on admission to hospital on November 5th, 1921. His previous record included scarlet fever at 8, pneumonia at 16, and gonorrhoea at 19. He had never been abroad, and had never had any illness resembling dysentery.

He was found on admission to be coughing up large quantities of clear bright yellow fluid, which consisted almost entirely of bile. It contained a few Gram-positive cocci and one or two cells, but no pus. No traces were found of amoebae or the hooklets of *Taenia echinococcus*. He was emaciated and weighed 7 st. 4½ lb. Before his illness he weighed 9 st. 2 lb. He was not jaundiced.

Examination of the chest revealed a small area of impaired resonance at the base of the right lung over which medium crepitations could be heard. The breath sounds over this area were harsh and vesicular in character; the vocal fremitus and resonance were not altered.

The liver was a little enlarged and just below the right costal margin could be felt somewhat rounded and hard. There were several dilated veins in the abdominal wall, chiefly on the right side both above and below the umbilicus. The spleen was not enlarged, there was no ascites, and examination of the faeces failed to reveal any evidence of amoebae. The Wassermann reaction was negative and radiograms showed nothing abnormal.

It was clear that a communication had in some way been effected between the bile passages and the bronchi, and as the condition was causing acute distress Professor A. M. Connell operated on November 25th. Portions of the eighth and ninth ribs were resected on the right side and the upper surface of the diaphragm explored. Dense adhesions were found between the base of the lung and the upper surface of the diaphragm, but no opening through the diaphragm was seen. The adherent surfaces were

separated as completely as possible and a drainage tube inserted from which for a few days a small amount of bile escaped.

After the operation the coughing of bile ceased completely for five days and then began again. He continued to cough up a considerable quantity for some time, but it steadily diminished and ceased altogether about a month after the operation. He was discharged on January 9th of this year, feeling well, free from cough, and having gained several pounds in weight. The wound was quite healed, the crepitations at the right base had gone, but some dullness remained. The signs in the abdomen were unchanged.

When examined again, six months later, he felt perfectly well and was doing full work. He had regained his former weight, the enlarged veins in the abdominal wall had disappeared, and there were no abnormal signs in the chest with the exception of slight persistent dullness.

It is an uncommon event for bile, at any rate in quantity, to find its way into the thoracic cavity. When an abscess of the liver ruptures it does so most commonly upwards through the diaphragm, either into the pleura or into the lung, and in the latter case large amounts of pus may be evacuated via the bronchi, and sometimes the pus is mixed with bile. In the present case an abscess of the liver appears to have penetrated the diaphragm and discharged itself into the lung, and at the same time to have effected a communication with one of the larger bile passages, with the result that pure bile continued to escape long after all pus had disappeared. This seems altogether more probable than the alternative supposition that the primary focus was an empyema which burrowed through the diaphragm and deeply into the lung.

T. R. Elliott and H. Henry[1] described some cases of internal biliary fistulae—one into the lung and one into the pleura—which resulted from gunshot wounds. They noted particularly with regard to the latter, in which pure bile was aspirated from the pleural cavity, the absence of any evidence of an inflammatory reaction on the part of the pleura. The expectorated bile in the present case was similarly lacking in inflammatory products. There was no pus visible either to the naked eye or microscopically during the whole period of observation, though a few organisms were found in it.

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RESTORATION OF THE ROUND LIGAMENTS.

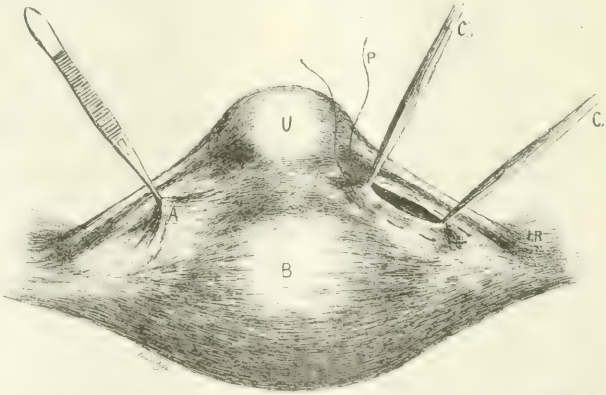
BY

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IN one of his many moments of inspiration Lawson Tait fixed the fundus of a retroverted uterus to the anterior abdominal wall by a silk stitch. Out of this inspiration to meet a sudden emergency during a pelvic operation was evolved the independent operation of hysteropexy—an operation which by its very simplicity captured the imagination of gynaecologists and very largely held the field a couple of decades ago in the surgical treatment of retroversion of the uterus. But with the progress of the years evil sequelae were reported, and then came the reaction from the early enthusiasm—a reaction threatening to relegate hysteropexy to the surgical scrap-heap.

Meanwhile the popularity of the Alexander - Adams operation had necessarily waned, in spite of its proven value, and in spite of Goldspohn and Stewart McKay having both shown that during the course of the operation limited access to the pelvic abdomen might be obtained through the same skin incision. It was not, however, until after the year 1900, when the intra-abdominal operation of Gilliam had entered the field, that the prestige of the Alexander-Adams operation was seriously imperilled. But with the advent of the Gilliam operation was ushered in a wave of enthusiasm for the free intra-abdominal method of curtailing the overstretched round ligaments, and to-day the Gilliam procedure or one of its modifications appears to be that most commonly employed in British communities, although it must be admitted that the Baldy-Webster operation has many warm advocates. This latter operation, as with certain others (Mann, Dudley, Murphy) shortens the overstretched round ligaments by eliminating its inner portion, while the Gilliam type and the Alexander-Adams cuts out the outer portion of the ligament.



Restoration of the round ligaments. A., Fold of anterior leaf of broad ligament, between round ligament and bladder; C.C., forceps and cut edges of incision in anterior leaf of broad ligament; P., purse-string; U., uterus; B., bladder; R.R., internal abdominal ring. Drawn from a dissection made in the Perth Hospital, with photographs by Dr. G. W. Barker.

Long simply puckers up ("shirring") as much of the intra abdominal portion of the ligament as may be necessary to produce anteversion of the uterus.

Genesis of the Operation.

With the exception of hysteropexy most of the numerous operations for retroversion are based on the view that the excess in length of the overstretched round ligaments should be eliminated by excision or by looping. This view is obviously opposed to the fundamental surgical principle that the ideal treatment of an acquired abnormality is that which restores it to the normal. The ideal treatment then of an overstretched round ligament would be the restoration of the ligament to its original dimensions. How was this end to be achieved?

It first occurred to me that, in retroversion, hysteropexy (Kelly) might be carried out, and the "false ligament" cut away a year or two later. I had seen cases in which this had been done, and in which the uterus had subsequently maintained its anteversion. In such cases the abdomen had been opened on the second occasion to deal with some fresh condition. To reopen the abdomen, however, solely to cut away the "false ligament" seemed to me, on consideration, unlikely to be practicable, and I abandoned the idea, although the fundamental principle as to the ideal treatment of acquired abnormalities still dominated my outlook.

Meanwhile I had been employing the Montgomery-Gilliam operation, but towards the end of 1913 I began a new procedure, sewing up a loop in the round ligament reached by a short incision parallel to it in the anterior leaf of the broad ligament. One day I noticed that when I had tied a purse-string to close the opening in the broad ligament the uterine anteversion was increased beyond that produced by the loop in the round ligament. In subsequent cases I applied this observation, when necessary, by deliberately extending the incision (and the outer and inner limits of the purse-string). But during this period I made two other observations: (1) that the material of the anterior leaf of the broad ligament generally appeared to be stronger than simple peritoneum; and (2) that in many cases of retroversion this leaf of the broad

* Read before the West Australian Branch of the British Medical Association on September 20th, 1922.

ligament was unduly lax. Whether this laxity was cause or effect I was unable to decide. It seemed plausible that it might represent a result of frequent overdistension of the bladder; but, on the other hand, it might represent an effect of long retroversion of the uterus, the primary fault being softening of the round ligaments from congestion extending from the uterus. However, whether the laxity was cause or effect, it appeared reasonable to think that by removing it and placing the uterus in anteversion the overstretched round ligaments would be given physiological rest and thus put in the best position for restoration to the normal.

By this time (about June, 1914) the meaning and force of my observations had become fairly well crystallized. I was satisfied that the material of the anterior leaf of the broad ligament was elastic and strong enough to hold the uterus anteverted, without direct interference with the round ligaments, and, furthermore, that by adequate extension of the incision (and purse-string) in the broad ligament the undue laxity of the anterior leaf of the broad ligament must be reduced.

The Operation.

The way was now clear to put these views to the test of practice, and on July 9th, 1914, I deliberately carried out the operation of restoration of the round ligaments in a case of retroversion in the Perth Hospital. This operation consists in splitting the anterior leaf of the broad ligament parallel to the round ligament, between the round ligament and the bladder, undermining the opening, and closing it by a purse-string, the outer limit of the purse-string being in the vicinity of the internal abdominal ring and the inner limit being towards the uterine cornu. The immediate effect is to bring the uterus into anteversion, and to demonstrate the round ligaments contracted down to their normal length—an interesting physiological experiment performed directly under the eye. Furthermore, the undue laxity of the anterior leaf of the broad ligament is seen to be reduced.

Results.

I have carried out the operation of restoration of the round ligaments in over two hundred cases, many of them subsequently going through pregnancy and parturition, so that I am in a position to speak with some little authority as to the value of the operation. In one case the operation was performed in about the sixth week of gestation, and there was no subsequent trouble, parturition being quite normal and the uterus remaining anteverted. In another case, recently reopened for some fresh morbid condition a few years after the operation, there was no obvious evidence of the primary operation, the uterus being in anteversion and having its normal motility, although there had been an intervening parturition. On the other hand, in another recent case, in which the Montgomery-Gilliam operation had been carried out some years earlier, hysterectomy proved exceptionally trying on account of the anatomical disorder in the pelvis caused by the first operation.

Standard of Efficiency.

The conditions to be fulfilled by an ideal operation for retroversion of the uterus may be stated as follows: (1) It will conform with the principles of rational surgery in that it restores the abnormalities to the normal; (2) it will permit of adequate access to the pelvic abdomen; (3) it will leave no condition which may prove a source of future disability or danger; (4) it will stand the strain of pregnancy and parturition; and (5) it will not complicate future operations on the pelvic abdomen.

I know of no operation which appears to fulfil these conditions so completely as restoration of the round ligaments. This restores the round ligaments to their original condition as nearly as is ever likely to be possible, while at the same time it reduces undue laxity of the anterior leaf of the broad ligaments. It practically restores the abnormal to the normal without introducing any factor that might prove a source of trouble either of itself or in case the abdomen should need to be reopened in the future. In none of the cases subsequently coming under my notice have pregnancy and parturition been attended with difficulty from the operation or with recurrence of the retroversion.

Operative Technique.

A good light and the Trendelenburg position are almost essential. The suprapubic abdominal incision may be the ordinary vertical or the transverse. Retraction of the wound edges should be adequate to expose the round ligament in its whole length in the abdomen. For the incision in the anterior leaf of the broad ligament a fold is raised between the round ligament and the bladder, snipped into, and the opening freely undermined, and extended outwards and inwards. The commencement (outer limit) of the purse-string suture (silk or Pagenstecher) is made near, and a little on the pelvic side of, the internal abdominal ring. The suture terminates just beyond the inner end of the incision. If the free ends of the purse-string are now caught together and pulled on, the tissue in which the thread is placed will be drawn somewhat inwards. This new point marks the outer limit of the purse-string when tied, and thus permits us to fix on the inner limit necessary to produce the desired amount of anteversion of the uterus. (The round ligament and the bladder must be avoided in passing the purse-string; when the purse-string is tied the raw edges of the incision should have been buried.) If, when the purse-string is tied, the uterine anteversion is found insufficient, it may be readily increased by the same suture either by taking in the uterus near the cornu or by taking a fresh bite farther outwards in the broad ligament. It is convenient to work from the side (of the patient) opposite to the round ligament being dealt with. When the operation is completed a narrow raised fold of the broad ligament is noted extending across the utero-vesical interspace; this can prove in no way a detriment to the patient.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A POSSIBLE CASE OF BRONCHO-PULMONARY SPIROCHAETOSIS.

IN the discussion on the differential diagnosis of pulmonary tuberculosis at the Glasgow meeting of the British Medical Association Dr. James Lawson referred to broncho-pulmonary spirochaetosis, and instanced a possible case under observation at Tor-na-Dee Sanatorium. The results of further investigation of this case are, I think, worthy of record, since the evidence is conflicting and leaves the diagnosis doubtful.

The patient was a lady aged 40, who had never been abroad except for a year at school in France and Switzerland. Down to five years before admission she had always had good health except for otitis media as a child. At the age of 33 she had whooping-cough, which left her with a cough and a little sputum for about four months. The sputum was streaked with blood once; it was repeatedly examined for tubercle bacilli, with negative results. She had an attack of influenza four years later, which was followed by a persistent cough with sputum, and on three occasions at intervals of about three weeks she had small but definite haemoptyses. She was seen by a consulting physician, who diagnosed pulmonary tuberculosis and advised sanatorium treatment.

There was no history of tuberculosis in her blood relations, but her husband had died of pulmonary tuberculosis six years before her admission. She complained of a rather troublesome cough with copious sputum, and slight huskiness of the voice on waking. The sputum was copious, thin, and very fetid, and on standing separated into an upper clear watery layer and a lower layer of yellowish-grey pultaceous material. Repeated examination by ordinary and concentration methods of twenty-four hours' samples failed to reveal tubercle bacilli, but numerous septic organisms were present, along with large numbers of spirochaetes which at first we thought were the spirilla of Vincent's angina, since she had severe pyorrhoea alveolaris, and the tousils were a little enlarged, congested, and cryptic. The mucous membrane of the nose and nasopharynx looked unhealthy, but the larynx was normal. The physical signs in the lungs were those of definite infiltration (with râles) of the upper half of the right lung, and doubtful infiltration (without râles) at the left apex. The *x* rays confirmed these findings, and in addition showed some calcareous deposit at the roots of both lungs, with two small dilated bronchi near the root of the right lung. Her general condition was quite good, and there was practically no systemic disturbance except slight tachycardia. The blood was normal, and the Wassermann reaction was negative.

A provisional diagnosis of pulmonary tuberculosis, with spirochaetal infection of the mouth and fauces, was made. After local treatment the consulting rhinologist declared the upper air passages healthy, and dental treatment was equally successful in clearing up the septic condition of the teeth and gums, but there was practically no diminution of the fetid sputum, and the spirochaetes were as numerous as ever. We therefore formed the opinion that broncho-pulmonary spirochaetosis was a possible diagnosis. An independent bacteriologist was asked to examine the sputum, and he reported that "the spirochaetes are certainly not *S. pallida*, and if infection from the mouth can be excluded it is very possible that they are of the type described by Castellani; they closely resemble the spirochaetes described by him, but similar organisms may be found in the mouth, so that it is not possible to say definitely that they are pathogenic in this case."

The von Pirquet test was inconclusive, only a slight reaction being obtained. Injection of samples of the sputum into guinea-pigs gave negative results as to tuberculosis, and no lesions of any sort were produced. Two successive samples of blood were sent to Drs. Gosse and Punch for the complement fixation test, and both were "*positive*."

On the above evidence it is very difficult to make an exact diagnosis, but taking all the facts into consideration I think it

is probable that the case was one of arrested pulmonary tuberculosis, with secondary infection of the mouth, upper air passages, and possibly the lung, with septic organisms and spirochaetes.

The spirochaetes were of the type described by Castellani as producing the pathological condition named by him "broncho-pulmonary spirochaetosis," and may have been responsible for the peculiar fetid sputum. The positive complement fixation results were unexpected by us since, according to Dr. Gosse,[1] a positive result is "an almost infallible guide to the presence of active tuberculosis," though he qualifies this by saying that "the blood may give a positive test for perhaps a year after the disease is arrested." Is it possible that Castellani's spirochaetes may, like *S. pallida*, sometimes produce substances in the blood which fix complement in the presence of tuberculous antigen?

The patient improved greatly under treatment with arsenic and antiseptic inhalations, but on discharge there was still a small quantity of sputum containing spirochaetes, and at the apex of the right lung a few râles after cough.

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ESERINE POISONING PRODUCED BY INTRAVENOUS INJECTION: RECOVERY.

THE following case, which was seen by me recently, is of interest:

M. S., aged 32, was admitted to the London Hospital suffering from psoriasis. Inadvertently the patient was given a quarter of a grain of eserine sulphate in 15 minims of water by intravenous injection. Within a minute she became unconscious, with laboured breathing, imperceptible pulse, and cyanosis, fibrillary twitchings of all muscles, and wide dilatation of the pupils. There was incontinence of urine and faeces, and a great flow of saliva, and the throat and larynx were filled with secretion. Immediately the mistake was recognized an injection of atropine 1/100 grain and strychnine 1/60 grain was given, and oxygen was administered by inhalation. An hour later the pulse could just be felt, the throat was clearer, but breathing was still laboured. A second injection of atropine 1/100 grain was given, and the inhalation of oxygen continued.

Shortly afterwards the patient began to regain consciousness, but it was at least an hour later before she spoke. She complained of deafness and blindness. The breathing was now calm and deep, and the twitchings had almost stopped. The pulse was weak and irregular. The oxygen was stopped; saline (2 pints) was injected by the rectum and retained. Gradually the sight and hearing returned, and the general condition steadily improved. The following day the patient felt rather weak, but was otherwise none the worse.

The course of the psoriasis appeared not to be affected by the incident.

B. L. SLATER, M.B., B.S.Lond.
House-Physician, Skin Department, London Hospital (Dr. J. H. Sequeira).

COLLOIDAL GOLD FOR THE LANGE TEST.

IN view of the difficulties so often experienced in the preparation of reliable samples of colloidal gold for the Lange test and the consequent limitation in usefulness of this valuable reaction, it may be of service to describe a greatly simplified technique for the preparation of the reagent, which in our hands is giving encouraging results.

Into a perfectly clean hard-glass flask, washed out several times with distilled water, take 100 c.cm. of distilled water and 1 c.cm. of $AuCl_3$,NaCl; bring to the boil, and from a Dreyer pipette add ten drops of 1 per cent. formaldehyde (2½ per cent. formalin); remove the flame to the edge of the wire gauze and from another Dreyer pipette add sixteen drops of a 2 per cent. solution of K_2CO_3, and then at intervals of fifteen seconds add one or two more drops—eighteen in all usually suffice, red streaks appearing at the seventeenth drop, converted at the eighteenth into a smart blush; cease now. There is no need to shake.

The sample as it cools in the flask will assume a rich old-rose colour to transmitted light, throwing on to white paper a red colour with a violet tinge; it will have a marked fluorescence to reflected light; 5 c.cm. of it will be rapidly decolorized by 1.7 c.cm. of a 1 per cent. solution of NaCl; and it will give luetic and paretic curves with appropriate positives and negative results with known negatives.

The reagent should not be used quite fresh; we do not use a sample prepared more recently than the evening before. On the other hand, the sample may not keep more than a week or ten days; hence the advantage of preparing it in small quantities.

The usual precautions as to scrupulous cleanliness of apparatus are taken, every single piece of apparatus used being reserved for this work and no other. Triple distilled water is not used; we use a fresh sample of water distilled in a copper retort which has been in use for some time.

Central Laboratory, Ministry of Pensions. TEMPLE GREY, M.B.

[1] BRITISH MEDICAL JOURNAL, October 21st, 1922, p. 741.

Reports of Societies.

GENERAL PARALYSIS.

THE DISCOVERY OF GENERAL PARALYSIS.

AT the ordinary quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland, held on November 23rd at the Bethlem Royal Hospital, London, the President, Professor G. M. ROBERTSON of Edinburgh, read a paper on the discovery of general paralysis, from Haslam to Bayle (1798–1822). On November 21st, 1822, he he said, a young man named A. L. J. Bayle presented a thesis for the Doctorate of Medicine to the Faculty of Paris, entitled *Recherches sur les maladies mentales*. In it he recorded the opinion that "general and incomplete paralysis" and disorder of the mind, developing side by side, were caused by chronic arachnitis; in other words, that these two groups of phenomena were the associated symptoms of a definite disease having a distinctive pathological anatomy. This was an opinion which had never been expressed before by anyone, and it had since been proved in its essential features to be true. The disease was the one now generally known as general paralysis of the insane. According to Baillarger, the recognition of the association of these two orders of symptoms signalized the greatest advance ever made in the history of mental disease.

The first case of undoubted general paralysis recorded in medical literature was described in 1798, by an Englishman named John Haslam, who was apothecary to Bethlem Hospital from 1795 to 1816, and was at one time President of the Edinburgh Royal Medical Society, and one of the original members of the Medico-Psychological Association of Great Britain and Ireland. Haslam was an acute observer, and he had the gift of literary expression. Less than three years after entering Bethlem Hospital he published the first edition of his *Observations on Insanity*. Professor Robertson then quoted verbatim Haslam's celebrated Case xv.

It was that of a man aged 42, whose illness suddenly developed on a hot day while he was working in the garden. Some years previously he had travelled over the greater part of Europe with a gentleman, and after the onset of his illness he sometimes conceived himself the King of Denmark, at other times the King of France. Though lacking education, he professed himself a master of all the dead and living languages, and he believed he had some recollection of having come over to this country with William the Conqueror. He was irritable and quarrelsome. After ten months in the hospital he became tranquil, relinquished his absurdities, and was "discharged well" in June, 1796. But in six weeks he relapsed and was readmitted. He now had a paralytic affection, and his speech was inarticulate. Then he became stupid, his legs swelled and afterwards ulcerated, his appetite failed him, he became emaciated, and died. Haslam made a *post-mortem* examination, and minutely described all that he found.

Probably, Dr. Robertson said, the man was infected with syphilis while travelling abroad, and he had the typical delusions of grandeur. Even at that early date Haslam believed that madness was always connected with disease of the brain and of its membranes. The great Pinel spoke very highly of Haslam's character.

In Paris the clinical symptoms of general paralysis were undoubtedly discovered by Esquirol, and in 1826 Bayle and Calmeil gave a complete picture of the symptoms, the course, and the naked-eye pathology of general paralysis. It was Pinel who insisted on a study of the symptoms of insanity on strictly scientific lines, and on a daily visitation of the patients, and a record of their symptoms and the progress of the cases. He appeared to have practised towards the patients the greatest consideration and kindness. Paris was in a fortunate position for the study of the disease, as at this period it possessed three large mental hospitals, and some years after the Napoleonic wars there arose a large crop of cases of general paralysis; no doubt there was a large infection of the soldiers with syphilis while passing through the various European countries. Still no one seemed to have thought of syphilis as a cause of general paralysis; the

latter was rather regarded as resulting from anxieties and alcoholic and venereal excesses.

Esquirol's thesis on the emotions, in 1805, recorded the existence of paralysis among insane persons, and said paralysis was a common complication of insanity, and when it was present added to the seriousness of the prognosis. His ideas, as set forth in the article on "Dementia" in the *Dictionary of Medical Sciences*, showed a conception of general paralysis nearer to the truth than that of Pinel. He certainly seemed able to diagnose the condition with precision.

At the Salpêtrière was a man only 25 years of age, Georget, who published a book on madness (*De la Folie*); it contained the most complete clinical picture of general paralysis so far given by any of Bayle's precursors. The disease was now named "chronic muscular paralysis." Down to this time the disease had been studied mainly from the clinical side, but Pinel, in 1800, touched on pathology. He considered that the primitive seat of insanity generally was in the region of the stomach and intestines, that it was from there the disorder of the intelligence propagated itself. Esquirol was a believer in the doctrine of sympathy.

A. Foville and J. B. Delaye, who were working at the Bicêtre mental hospital, won Esquirol's prize for an essay on the causes and the seat of mental diseases. They concluded that the grey matter of the convolutions was the organ of the intelligence, and that the white matter and the basal ganglia presided over locomotion; they also said that the disorders were of the brain, the organ of the mind. But there was no reference to lesions believed to be distinctive of and peculiar to general paralysis. Delaye believed that a particular modification of the white matter of the brain was the organic alteration which produced paralysis; whereas Bayle thought the primary change was a chronic arachnitis, and the former worker was the first to employ the term "general paralysis" for the disease.

Bayle commenced to study medicine in Paris in 1815, when he was but 16 years of age, and he concluded that mental diseases depended for their elucidation on anatomical and pathological researches. He performed over 400 *post-mortem* examinations in less than five years. He gave very minute descriptions of the changes he found, and added one or two symptoms to the disease; in fact he gave an accurate and almost complete description of the pathological anatomy of general paralysis. The inflammation of the meninges which he discovered he named "chronic arachnitis." Professor Robertson considered that the French were amply justified in calling the disease "la maladie de Bayle." In spite of illness Bayle also published a treatise on maladies of the brain and its membranes, a great classic, for which the Academy of Sciences awarded a special prize. Professor Robertson spoke of the commotion in medical circles which followed Bayle's contribution, and of the plain-spoken criticisms which emanated from Pinel and Esquirol.

In conclusion, Professor Robertson said that the hundred years had produced a band of hard-working and devoted followers, who had assisted to draw aside the veil which concealed the most terrible disease which afflicts humanity. Their successors had discovered its cause, and it remained for the present generation to either discover a remedy for it or to prevent it altogether.

On the motion of Dr. PERCY SMITH, a cordial vote of thanks to the President for his address was accorded by acclamation.

THE TREATMENT OF GENERAL PARALYSIS BY MALARIA, AND THE USE OF SPEECH INSCRIPTIONS FOR EARLY DIAGNOSIS.

Dr. EDWARD WHEELER SCRIPTURE said that there were on record undoubted cases in which general paralysis seemed for a time to have been cured, so as to enable the patients to return to their work; and although they afterwards relapsed the fact seemed to indicate the possibility of stopping the progressive paralysis. Attempts which had been made with mercury and salvarsan had not been encouraging. Tuberculin and mercury, used in the way described at the Buda-Pesth Congress in 1909, were said to have produced good results. The tuberculin treatment was a substitute for the method by which nature had been known occasionally to cure general paralysis—namely, by adding a fever to the disease. Wagner-Jauregg, in 1917, inoculated nine cases with tertian malaria, and six of them showed favourable results, three being still at work more than four years afterwards and showing no signs of the disease. For the inoculation, blood was taken from the vein of an untreated patient during the fever, and of this 2 to 4 c.cm. were injected under the skin of the back of the next paralytic. As a rule, the patient was allowed to have eight chills, after which the malaria was cut short by giving, for three days, twice a day, 0.5 gram of quinine bisulphate, and then for fourteen days once a day 0.5 gram. In nearly all cases there was no fever after the first dose. At the same time neo-salvarsan injections were carried on, an injection being made once a week for six weeks, the neo-salvarsan acting not only against the syphilis but the malaria also. Latterly silber-salvarsan was used instead of neo-salvarsan. The results had been very favourable, and the clinical signs of general paralysis were said to have often completely disappeared during the treatment. Incomplete cures with persistent marked abnormalities occurred in fourteen cases, the disease having endured for several years. Professor Wagner-Jauregg considered the malaria treatment was the best, but that where this could not be applied the tuberculin treatment was to be recommended. Emphasis was placed on the patients being treated if possible early in the disease, and Dr. Scripture described the method of making speech inscriptions, which served to reveal the earliest abnormalities of speech and present them in graphic form. The patient spoke into the mouthpiece of a wide tube leading to an apparatus which registered the puffs of air and the waves of speech on a drum; these records were then studied under the microscope. The cases of general paralysis showed the most varied bulbar, cortical, and mental signs, and of all degrees of severity. One sign was never missing in general paralysis—namely, asaphia (lack of precision in regard to type). With the normal person there was no variation in his speech, in the relative energy of the explosives, etc., but in the general paralytic this uniformity was lacking. The absence of asaphia could not yet be asserted to be a proof of the absence of general paralysis, though it was highly probable.

The PRESIDENT, in thanking Dr. Scripture for his paper, said that the vast majority of cases of the affection were diagnosed with great ease, but every now and then one was seen which, in spite of every care, could not be labelled general paralysis as against ordinary tertiary syphilis, and this additional means of testing, if its value were confirmed, would be a valuable addition. He would like to try the treatment of general paralysis by malaria in some cases, but he did not at present feel convinced on the subject. Still, the course of the disease was so relentlessly downhill that any promising treatment should be tested.

SURGICAL TREATMENT.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held in the College of Physicians on November 17th, with Sir ARTHUR CHANCE in the chair, when the President, Sir WILLIAM I. DE COURCY WHEELER, delivered his opening address, entitled, "What makes for success in surgical treatment." He referred to the part played in the development of Irish surgery by his predecessors in the chair, and to the presidential address of his father in 1883. In a plea for better team work in surgery, he emphasized the fallacy of sending specimens for report to a pathological laboratory at a distance, the surgeon never seeing the pathologist and the pathologist never seeing the patient. He described visits to various clinics in Europe and America, and thought that team work could be carried on without extra staff and without extra cost, to an extent sufficient to change antiquated and defective into modern and safer methods. He urged the necessity for travel for those about to undertake hospital appointments.

The preparation, the "ritual of the operation," and the after-treatment of patients were then discussed. It was his own practice to give patients alkalis for several days before operation, and glucose was added when any anxiety was felt. No laxatives to cause purging were ever given to patients preparing for operation, and no enema was given on the morning of operation. As a rule, surgical cases free of fever and non-drainage cases were allowed up two or three days after operation. All reports went to show that the healing of the wound was not interfered with by early movement; that probably the danger of pulmonary embolism was rendered less, and ventral hernia did not occur. Very hot operating theatres were condemned, and he advised that the head of the patient should be covered over with a blanket to prevent the inhalation of cold unfiltered air while being taken from the theatre to the wards. Sir William Wheeler said that he had experienced the calamity of pulmonary embolism in four cases. The part played by morphine,

the Trendelenburg position, the Fowler position, and the immunity of children were discussed. Moynihan's opinion was quoted to emphasize that all grades of infection might occur in wounds without the actual formation of pus. The aim should be the healing of a wound without any local or general reaction whatever, followed by a convalescence with little or no pain or discomfort. Union by first intention could be easily obtained, but that might be far from the finality of perfection. The combination of local anaesthesia with general anaesthesia as a routine in surgery was urged. He had adopted that method for almost the past twenty years.

Dr. LOUIS CASSIDY thought that what was needed in Dublin was an institution to deal purely with problems of research. He appealed strongly to the President and the other leaders of the profession to take steps to try and remedy this defect. He himself hoped to establish a biochemical laboratory at the Coombe Hospital, which would help towards the solution of those problems which demanded research work.

Dr. T. T. O'FARRELL said that in regard to team work where they failed in Dublin was in applying it. A pathologist was sent a specimen, but was given very few instructions, and knew nothing about it except what the microscope showed. He then sent in his report, and never heard anything more about the case. In his opinion the pathologist should be told how the case progressed. Dr. PERCY KIRKPATRICK said that, speaking as an anaesthetist, the first thing that made for success at an operation was that everyone concerned should remember that they were treating a sick person. He thought that the anaesthetist should be given an opportunity of examining the patient before the operation. Very often the anaesthetist knew nothing about the patient, and that did not make for success in surgical operations.

Dr. T. G. MOORHEAD thought that surgeons did not realize, in the same way as physicians, the extremely important part an operation played not only in a patient's physical welfare, but also in his mental welfare. In every case undergoing surgical treatment, except minor operations, it was essential for the patient to take things easily for three or four months at least. An operation was a shock to the nervous system. A patient made up his mind to be operated upon, and then was not given full time to recuperate, and so a great many people suffered from neurasthenia. Nearly every day he came across patients suffering from post-operative neurasthenia. Dr. MILNE HENRY said that combined forethought should be used in every case, and that every minutest detail should be thought over before operation.

Sir ARTHUR CHANCE wondered whether it was well for them to be so well satisfied with their work. They heard great praise of Irish surgery, and he wondered if this praise was really deserved. He would like to know if there was any team work done in Ireland. He believed that isolated team work was done, but that was not his conception of real team work. One point about operations was the after-result. Was any genuine inquiry made in the majority of cases as to the progress after operation? He did not think there was.

THE ENTERIC-SALMONELLA GROUP OF BACTERIA.

THE Pathological Section of the Royal Academy of Medicine in Ireland met on November 10th, when the President, Dr. W. D. O'KELLY, read a presidential address entitled "Some observations on the enteric-salmonella group of bacteria." He reviewed the position of the more important members of the salmonella and enteric groups of organisms in the light of recent work, and expressed the opinion that the trend of English bacteriologists was towards the grouping suggested by Tenbrock in America, while he thought that German workers were moving in the same direction. The great difficulty with regard to members of the salmonella group was to apportion the relative importance of cultural and serological differences, and also to determine how far varying degrees of virulence for animals assisted in the differentiation of the organisms concerned. Was, he asked, Hirschfeld's *B. paratyphosus* C to be classed with *B. suipestifer*, with which it was serologically identical, or with Schottmüller's bacillus, with which it corresponded in its fermentation reactions, or with the paratyphoids of animal origin, on account of its agreement with the latter organisms in cross-immunization tests against *B. suipestifer*? He suggested that the two groups of *B. suipestifer* described by Andrewes and Neavl corresponded to "super-" and "sub-strains" which Schütze had worked out. Instances of the Gaertner and Aertrycke organisms causing affections other than gastro-enteritis were recalled, and stress was laid on the fact that the enteric-salmonella organisms were more frequently responsible for affections of the respiratory tract than was hitherto believed. The importance of such cases in the search for the cause of an outbreak was emphasized, and the difficulty of isolating the organisms under review from the intestines of carriers was dealt with. The employment of larger amounts of faeces in fluid media by enrichment methods was advocated, and it was considered that the urine should be investigated, and perhaps also the sputum. The difficulties were increased by the occurrence of atypical varieties such as non-motile typhoid bacilli and the mucoid paratyphoid bacilli described by Walker and Fletcher. Even sluggish fermenters gave rise to a good deal of unnecessary work. These atypical varieties had been met with in "raw" strands as well as amongst stock laboratory cultures. The time had come for settling some, if not all, of the points raised, and the hope was expressed that Irish bacteriologists would devote some of their time to the solution of these problems.

Dr. BIGGER said that with reference to the sugar test he thought that the great difficulty was in getting many of the rarer materials in a pure state. If one relied on chemical tests one organism alone was found—namely, paratyphoid. It was only when serological tests were introduced that one could distinguish between paratyphoid A and paratyphoid B, and later between them and the other members of the group.

Dr. O'FARRELL and Dr. WIGHAM also spoke, and Dr. O'KELLY replied.

THE BLADDER IN GYNAECOLOGICAL CASES.

A MEETING of the North of England Obstetrical and Gynaecological Society was held at Sheffield on November 17th, with the President, Mr. HAROLD CLIFFORD (Manchester), in the chair, when Mr. ALFRED GOUGH (Leeds) read a paper on the bacterial flora of the bladder in gynaecological cases.

Mr. Gough said that his observations were based on the examination of catheter specimens of urine from 100 unselected cases in which no complaint of urinary symptoms had been made. The specimens were obtained by the routine catheterization of patients before operation and were examined in the following manner: With the least possible delay a single drop of urine was placed in a tube of agar culture medium and after incubating for forty-eight hours the number of colonies was noted; the deposit obtained by centrifuging was also submitted to microscopic examination. No search was made for tubercle bacilli, gonococci, or anaerobic organisms, but nevertheless the limited inquiry had yielded results of some interest. Of the specimens examined, 30 were sterile, in 39 the number of cultures was under 10, in 21 under 100, and in 10 over that figure. The organisms found were the *Staphylococcus albus* in 56 specimens, the diphtheroid bacillus in 17, coliform bacilli in 12, and a streptococcus, the *Staphylococcus aureus*, and *Bacillus proteus* in one each. Taking the 10 cases where the number of cultures was over 100, coliform bacilli were found in 8, this being in accordance with the predominant part played by these organisms in the causation of the more severe infections of the urinary tract. His numbers were too small to justify an analysis of different morbid conditions, but as a general rule most organisms had been found in cases of prolapse and pelvic infection. The only accurate and scientific method of determining the bacterial content of the urine in the bladder was to withdraw a specimen with a syringe through a suprapubic puncture. Catheter specimens were always liable to be contaminated during the passage of the instrument, and this fact might account for some of the cases in which small numbers of cultures had been found. It would not, however, explain the 10 cases where the cultures were numerous, so he felt justified in concluding that organisms were present in the bladder in 10 per cent. of gynaecological cases without urinary symptoms. He thought this would explain many of the cases where cystitis followed operation, as the retention of urine frequently met with after operation, and the diminished resistance of the patient, would give an opportunity to germs already present. Similar considerations would account for the occurrence of cystitis and pyelitis during pregnancy and in the puerperium.

Reviews.

THE THYROID GLAND.

PROFESSOR CRILE and his associates intend to publish a series of volumes on clinical subjects in order to present the knowledge by which the theory and practice of the Cleveland clinic is guided from day to day. "Both theory and practice, therefore, will be constantly subject to revision, and possibly reversal of opinion."

This first volume is on the thyroid gland.[1] It is a remarkable product of the work of fifteen men co-operating as a team and dominated by a refreshingly inspiring mind. The general outlook on the subject is always wide, and may be illustrated by the following three excerpts from the introduction written by Professor Crile:

1. "We wish," he writes, "first of all to express our sense of the obligation of medicine to Theodore Kocher in Europe for the secure foundation laid by him for surgery of the thyroid gland."
2. "Endemic goitre is a geologic deficiency disease due to a lack of iodin in the organism."
3. "We shall offer the general hypothesis that the body is an electro-mechanical mechanism in which the electric conductivity, hence oxidation, is controlled by the thyroid."

All will agree with No. 1, we believe No. 2 is not the whole story, whilst No. 3 is one of those "Crilean flashes" we look for from the author of *Mechanistic Views of Life and War*.

Although the volume starts its flight "as an ephemeral publication representing to-day's view-point of this clinic," there are in it many valuable contributions which will help to lighten the anxieties of those concerned (the surgeon, anaesthetist, and nurse) in performing operations on the thyroid gland, more especially for cases of hyperthyroidism.

Full details are given of how to guard "these sensitized patients" against "psychic, traumatic, biochemic, and anaesthetic stimuli," by pre operative management, in which the nurse plays an important part; full instructions are likewise given as to the arrangement of instruments and also for the post-operative treatment. There is one statement which if given as an order by a general in charge of an army during battle would forthwith mark him as *great*, and that is—stop operations when matters go against you. "In performing thyroidectomies, the extent of the operation will depend entirely upon the condition of the patient, and therefore he may be sent back to his bed at any moment . . . with the wound dressed open with flavin gauze."

In the Cleveland clinic preliminary ligations are made in about 40 per cent. of the cases, and are performed in the patient's bedroom on his own bed without his being informed of it beforehand. The patient is daily introduced to the use of the anaesthetic "nitrous oxid-oxygen," and on the psychological opportunity the operation is done. "The average reaction following ligation is practically the same as the reaction which follows admission to a hospital." Ether as an anaesthetic is tabooed.

On the burning question of treatment in hyperthyroidism, "*x* rays *versus* surgery," Crile favours the latter because "surgery now undertakes every case; the mortality is practically eliminated; much time is saved, and a more certain cure is achieved." "Since the adoption of the methods described in this volume we have performed 1,783 thyroidectomies, including 1,022 thyroidectomies for exophthalmic goitre, with a mortality of 1.4 per cent.; and 783 ligations, with a mortality rate of 0.76 per cent. No case has been rejected as inoperable, although some have been practically *in extremis*, with oedema of the extremities and with ascites." A truly remarkable achievement when one considers past records of operations in these perplexingly dangerous cases.

It is interesting to note that the plan of treatment so carefully and fully described in this volume is founded on experiments and on clinical studies of 3,535 thyroidectomies, among which 1,953 were for exophthalmic goitre. Although this is a big record of cases in one clinic, from our point of view, nevertheless it recalls a letter I (the reviewer) received from Dr. Albert Kocher of Berne some ten years ago, containing a postscript requiring no comment: "My father yesterday performed his 5,000 goitre operations. 12, iii, 1912." There is an interesting chapter on the "rôle of the radiologist in diagnosis of goitre," which is illustrated by many excellent figures well reproduced on thick paper.

A chapter on the "value of basal metabolism studies in goitre" brings this subject quite up to date; men of the old practical apprenticeship school will read with pardonable self-satisfaction that "the increase in pulse rate represents a fairly accurate index in lieu of actual metabolic measurements."

In connexion with the prevention of goitre, about which the reader would have been glad to hear more, reference is made to the use of iodine, sodium iodide, and mercuric iodide; as to this I cannot, I think, do better than quote the following passages from a letter I have received less than a couple of months ago from Dr. Albert Kocher, showing that the late Professor Kocher was of opinion that iodine was of value as a prophylactic, and was in the habit of using it for this purpose some forty or more years ago.

"As to the questions about goitre etiology you want to know, it is quite true that my father believed that the cause of goitre is either a hitherto unknown micro-organism, or more probably a chemical agent mostly transferred by water and made inoffensive by boiling the water. That is why he proposed, forty years ago, to boil all the drinking water, especially at the schools, to prevent goitre. But at the same time, forty years ago, he proposed to give the children twice or three times a year during some weeks a small dose of iodine to prevent goitre. He had then a malt preparation made with iodine and iron. The proof is that we were given it as boys three times a year, and at the same time were not allowed to drink any more boiled water at home or at school. The result is that we three brothers have absolutely normal thyroid glands, in size and consistency like the thyroid of Spaniards, etc., although my mother, grandmother, grandfather, uncles and aunts had goitres. On the other hand, I do not believe that it was my father's idea to give the school children the whole year round such doses of iodine as are given in America, and also here. . . . I believe this is dangerous, because it can give Graves's disease."

I have seen much of the late pioneer of our knowledge of thyroid gland surgery, the man who is commemorated in his native town (Berne) by the Theodor Kochergasse, and many times was told that goitre is a water-borne disease due to one of two causes, either (1) a subtle chemical compound which disappears on boiling, or (2) an elusive micro organism, and he felt confident that one day the one or the other would be run to earth.

J. LYNN-THOMAS.

DISEASES OF THE BLOOD, KIDNEYS, DIGESTIVE ORGANS, AND METABOLISM.

WE have received two volumes (IV and V) of the *Précis de Pathologie Médicale*,[2] which is being issued in Paris by the firm of Masson. Inasmuch as one of these volumes contains 628 pages and the other 800, it may be that the word "précis" has changed its connotation in France while retaining it in this country. The two volumes deal respectively with diseases of the blood, blood-forming organs, and kidneys, and diseases of the alimentary tract and metabolic disorders.

The section on diseases of the blood and haemopoietic system is by MM. P.-EMILE WEIL and MARCEL BLOCH. It is divided into two parts, the first concerned with biological and the second with clinical aspects. The important part played by the liver in blood formation in the adult, especially its influence on coagulation, is emphasized. The clinical pictures of the various types of anaemia, it is needless to say, are well drawn, but the paragraphs on treatment are, on the whole, sketchy and disappointing. X-ray or radium therapy is advised in myelocytic leukaemia in "large doses," but no reference is made otherwise to strength or frequency of application. The skin lesions in lymphatic leukaemia are fully detailed and well illustrated. But our French friends have no greater success in differentiating the various types of lymphatic glandular enlargement than have British and American writers.

In discussing the site of elimination in the kidney of the various constituents of the urine, M. VALLERY-RADOT, who is responsible for this section, expresses the view, in spite of a footnote reference to the work of Richards in Philadelphia, that secretion of urine takes place entirely in the convoluted tubules, the glomeruli being merely pumps. The discussion of the various theories as to the causation of orthostatic albuminuria is followed by the warning that in certain cases it may be the first sign of a developing nephritis or the last

[1] *The Thyroid Gland.* Edited by Amy F. Rowland. Clinics of George W. Crile and Associates. Philadelphia and London: W. B. Saunders Co. 1922. (Med. 8vo. pp. 288; 106 figures. 24s. net.)

[2] *Précis de Pathologie Médicale.* Tome IV: *Maladies du Sang et des Organes hématopoïétiques*, par MM. P.-Emile Weil et Marcel Bloch. *Maladies des Reins*, par M. Pasteur Vallery-Radot. (Cr. 8vo, pp. 623. 150 figures, 4 plates.) Tome V: *Maladies de l'Appareil digestif et de la Nutrition*, par MM. Marcel Labbé et G. Vitry. (Cr. 8vo, pp. 800; 316 figures, 2 plates.) Paris: Masson et Cie. 1922. (Price of each volume—paper, fr. 20; cloth, fr. 25.)

stage in the process of healing, but we are not told the globulin-albumin ratio in these circumstances. The subject of nephritis is well handled and it is clearly pointed out that the dominant feature of the disease is due either to chloride or to nitrogenous retention, the latter usually associated with a raised blood pressure, the former with oedema. In discussing urea retention, the author mentions that it may occur in conditions other than nephritis—in cardiac disease, lead poisoning, icterus gravis, and urinary obstruction among others—yet in such conditions a pathological state of the kidneys is surely the rule. We are told that in nephritis a blood urea between 1 and 2 grams per litre indicates death within two years; above 2 grams several weeks or months only will elapse; while above 3 grams death cannot be long delayed. The author urges that the term "uraemia" should be abandoned, and the syndromes designated "chloride retention," or "nitrogen retention," or "hypertension," as the case may be.

Diseases of the alimentary tract, including the pancreas, peritoneum, and liver, metabolic disturbances and "deficiency diseases" are well expounded in volume V by MM. MARCEL LABBÉ and G. VITRY. The work includes descriptions of several conditions usually regarded as surgical rather than medical in this country, and many surgeons would profit by reading Marcel Labbé's lucid account of malignant disease of the intestine, of haemorrhoids, and of fissure.

Each section contains a review of the anatomy and physiology of the organ under consideration, a description of methods of examination, and an account of the general etiology and main symptoms of disorder of the part, before the particular diseases are discussed. As in the previous volume, the paragraphs on treatment are apt to be disappointing, and methods in advance of those described which have stood the test of time in this country—for example, Leuhartz diet for peptic ulcer and the Graham-Allen treatment for diabetes mellitus—are not mentioned.

These two volumes are intended for students reading for examination and for practitioners; they are well illustrated, and contain more detail than an English student requires for the qualifying examination in medicine and medical pathology, but those reading for higher examinations cannot fail to find them of great assistance. We look forward with interest to the publication of the remaining four volumes in the expectation that the high standard of excellence reached here will be maintained.

THE TECHNIQUE OF PSYCHO-ANALYSIS.

THOUGH the literature of psycho-analysis has assumed considerable proportions, there has hitherto been no book which provides a clear and adequate account of the practical details of analytical therapy. Dr. DAVID FORSYTH aims to supply this want in a small volume entitled *The Technique of Psycho-analysis*.[3] The book is based upon the author's experience of psycho-analytical therapy, and it supplies in a compact form the practical information it is essential those who propose to take up the method of treatment with which it is concerned should possess. The difficulties which confront the would-be analyst are not minimized nor concealed, and it may be that some readers will feel that their vocation lies in other directions before they have reached the end of the volume. The initial difficulties concern the analyst himself, a topic which is discussed in the opening chapter. It is shown that in psycho-analysis the physician must assume an attitude towards his patients which involves a complete reversal of the habits and procedure acquired in ordinary practice. Thus he must be impersonal, passive, and no more than a shadowy figure in the background to whom the patient can reveal his temperament with complete freedom. As Dr. Forsyth observes, such an attitude of emotional detachment is more easily written about than achieved, and he considers that the analyst must acquire a knowledge of himself by being psycho-[illegible]; or, if this is not feasible, by psycho-analysing himself, in order to deal adequately with his patients.

The second chapter deals with the various details and precautions which must be heeded if the analytical work is to go forward in the most favourable circumstances. These details are included under the heading, "The pre-requisites of the treatment," and amongst the subjects discussed are the duration of the treatment (at least several months) and the type of case in which a favourable outcome may be anticipated. The remainder of the book deals with the analytical work itself, and in successive chapters the various stages of the treatment are described up to the termination of the analysis. The book is written with commendable clearness and brevity, and the author would appear to have achieved his aim and provided a useful guide to the practice of psycho-analysis.

[3] *The Technique of Psycho-analysis*. By David Forsyth, M.D., D.Sc. Lond., M.R.C.P. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1922. (Cr. 8vo, pp. viii + 133. 5s. net.)

INJURIES OF PERIPHERAL NERVES.

DR. BYRON STOOKEY'S *Surgical and Mechanical Treatment of Peripheral Nerves*[4] is a welcome addition to the list of truly authoritative monographs which have appeared during recent years in response to the stimulus of the experience of the reconstructive surgery of the war. This work may be justly regarded as representing American views and teaching in this special surgical field, and amongst the younger American surgeons the author is pre-eminently fitted to undertake such an exposition. Considerable space is devoted to those anatomical and physiological considerations which form the basis of a rational surgical treatment of the various lesions of peripheral nerve trunks. Professor Carl Huber has contributed a chapter on nerve degeneration and regeneration which constitutes one of the most valuable sections of the book, although we must confess to a little difficulty in extracting a broad conception of these processes from the histological minutiae described.

In discussing the general principles of nerve repair the author has everywhere adopted a sane and judicial attitude. He writes more confidently perhaps than British surgeons of the efficiency of nerve grafts—particularly of the "cable" grafts which have proved so popular in the United States—but he is emphatic that anything short of end-to-end suture is at the best a most imperfect method of repairing a nerve injury.

The chapters dealing with the lesions of the individual nerves are well planned. It is interesting to note that in discussing the advisability of exploring the brachial plexus in cases of obstetrical paralysis the author's conservative advice runs counter to that of certain other American neurological surgeons—most notably Taylor and Sharpe. But Dr. Stookey will here receive the support of the majority of surgeons who have had an extensive clinical experience of this type of nerve injury.

The many beautiful illustrations throughout the book have been carefully selected from various sources, and in its production of this book Messrs. Saunders have shown no deviation from their usual high standard.

[4] *Surgical and Mechanical Treatment of Peripheral Nerves*. By Byron Stookey, A.M., M.D., Assistant Surgeon, New York Neurological Institute. Philadelphia and London: W. B. Saunders Co. 1922. (Sup. roy. 8vo. pp. 475; 217 figures. 48s. net.)

QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

SINCE few of those who superintend the education of dental students have sufficient leisure to converse with or question each one separately, and since on this account the needs of the dental student are not disclosed, nor his mind directed in the manner best calculated to facilitate his studies, Messrs. W. and A. T. BARRITT have compiled *Questions and Answers for Dental Students*,[5] hoping thus to stimulate in the student a desire for further knowledge.

That a teacher in a dental school should feel the need of such a book and write such a preface as is to be found in it is a serious indictment both of the teaching of dental students and of the dental curriculum. There are probably other dental teachers who share the uncomfortable feeling disclosed by the authors that the medical side of the dental student's education is seriously defective.

As has just been indicated, the scope of the book is limited to the medical side, and of that to such only as strictly applies to the mouth. The questions and answers are short and definite, and if the student be not spurred to inquire for further knowledge, at least he will have learned something. As a special example of a question which might spur to further inquiry we may quote, "Why does nature provide periods of rest during eruption?" with its answer, "To allow for recuperation and prevent exhaustion." A thoughtful student might ask whether nature has any need for recuperation during growth! He might also ask whether fluctuation

[5] *Questions and Answers for Dental Students: Dental Surgery*. By Wesley Barritt, O.B.E., L.D.S. Eng., and Alfred Templar Barritt, L.D.S. Eng. London: Henry Kimpton. 1922. (Cr. 8vo, pp. 177. 6s. net.)

is the peculiar property of a chronic alveolar abscess, and what is the meaning of the phrase. "The stimulation of the salivary secretion acts as a prophylactic and curative agent." He may also marvel at the structure of the tongue, which is described as "covered with a mucous membrane resembling the skin in structure, together with a corium, a layer of papillae, and a superficial epithelium."

Whether such a book as this will stimulate the thirst for knowledge or be taken as the source itself of knowledge depends on the individual into whose hands it falls; but the student who desires to learn will find in it many a peg whereon to fix his first chaotic impressions of medicine as applied to dentistry.

A DOCTOR IN THE ARCTIC.

DR. HARRIS has done well to edit for publication his late father's diary, for it tells a story of adventure and endeavour, of human endurance strained almost to the breaking point, worthy to rank with any narrative in the language. Dr. Charles Edward Smith was surgeon on board a whaler, and though many doctors have lived adventurous lives (the great war did not find the profession wanting, the only bars to the V.C. being bestowed on doctors, and was not Dr. Jameson of South African fame one of the most remarkable adventurers in history?) yet no man could have borne and survived greater privation than he. The tale, appropriately called *From the Deep of the Sea*,[6] is told with an unaffected simplicity which fits the elemental nature of the subject and throws into strong relief the conduct of a devoted band of men in circumstances of extremest hardship. When reading it the mind naturally flies to the immortal story of Scott and Oates and Adrian Wilson in the Antarctic, and one marvels that Dr. Smith and his companions did not suffer a similar fate in the frozen north.

On Monday, February 19th, 1866, the *Diana*, a screw steamer of 355 tons, set sail from Hull for the Davis Straits on a sealing and whaling expedition. From the outset bad weather was encountered. It seemed, in the words of the diary, "that the spirit of the north was determined to do his utmost to dishearten us or delay our approach to his icy regions." Ill luck continued to follow the expedition. The sealing was an absolute failure, the ship arriving too late, delayed by bad weather and the ice, and the whaling, although not entirely barren of result, was also disappointing. It is this failure to reap material reward that makes the spiritual qualities of the men of the *Diana* shine the more brightly. Theirs was a long continued struggle with imminent death. They were continually threatened with destruction by the elements, and, most terrible of all, by starvation. Once they had the mortification of seeing the ship which could have rescued them from a perilous place apparently abandon them to their fate. But in the end they survived, and eventually reached home, though in a most wretched condition, and their company sadly depleted by death. The diary breaks off suddenly before the completion of the voyage; the surgeon-diarist became too busy attending the sick and dying, the crew being smitten with scurvy. Not only this, he was one of the few able-bodied men remaining, and he took his share in the routine work of the ship.

It is impossible to do full justice to this book in a review; it must be read. Not only does it tell a story of almost superhuman endurance, moving as all such stories must ever be to a sea-loving people; it brings us into contact with an inspiring personality whose courage and simple faith never deserted him.

PHYSIOLOGY AND BIOCHEMISTRY IN MEDICINE.

PROFESSOR J. J. R. MACLEOD and his collaborators are to be heartily congratulated on the appearance of the fourth edition of their book *Physiology and Biochemistry in Modern Medicine*.[1] The third was reviewed in our columns so recently as April 30th, 1921. The fact that a new edition of so expensive a work has been called for in less than two years certainly demonstrates that the profession is taking a real interest in the application of physiology to medicine. This new edition, although the paging is unaltered from the previous edition, has undergone many minor alterations, and several chapters, such as those on the output of the heart, the acid-base equilibrium of the blood, and movements of the stomach, have been more or less rewritten. In the chapter dealing with pancreatic diabetes there is a short section on the important research work on "insulin" which is now in progress in Professor Macleod's laboratory at Toronto, as described by him in our issue of November 4th (p. 833). In this volume we have an excellent, readable, and most useful book.

[6] *From the Deep of the Sea.* Being the diary of the late C. E. Smith, M.R.C.S., Surgeon of the whale-ship *Diana*, of Hull, edited by his son, C. E. Smith Harris, M.B., Ch.B., Surgeon, Cunard Steamship Company, late Surgeon-Lieutenant R.N. London: A. and C. Black, Ltd. 1922. (Demy 8vo, pp. vii + 288; illustrated. 10s. 6d. net.)

[7] *Physiology and Biochemistry in Modern Medicine.* By J. J. R. Macleod, M.B., assisted by R. G. Pearce, A. C. Redfield, N. B. Taylor, and others. Fourth edition. London: H. Kimpton. 1922. (Roy. 8vo, pp. xxxii + 992; 243 figures, 9 plates. 42s. net.)

NOTES ON BOOKS.

INVESTIGATORS and administrators who are concerned in the problem of ankylostomiasis will welcome the exhaustive *Bibliography of Hookworm Disease*,[8] published by the International Health Board of the Rockefeller Foundation. When the Board first undertook the task of co-ordinating measures for the control of hookworm infection one of its earliest steps was the preparation of a bibliography which should be at the service of hygienists and administrators. In the compilation of the elaborate register now issued, which contains 5,680 entries, emphasis has been laid on the social and economic aspects of the disease and the efforts to control it rather than on the biology of the parasite. A short introduction gives an historical summary of the prevalence of the disease and the measures taken to treat it and bring it under control. The bibliography proper consists of 366 pages. This is followed by a key to the abbreviations of the titles of periodicals, an author index, and a subject and place index. The volume is well printed, and all workers in this subject will be grateful to its compilers.

George Joseph Smith was a vulgar scoundrel whose only claim to notoriety is the fact that he appears to have discovered a new method of wife murder. We say "wife murder," but in fact not one of his deluded victims was lawfully married to him, seeing that his first wife was alive and undivorced when he went through the forms of marriage with the murdered women. Unlike some other cases dealt with in former volumes of the Notable British Trials series, this one[9] presents no novelty except that of the method employed. To the medical jurist the chief interest lies in the establishment of the fact that it is easy to drown a healthy woman in a bath without any alarm being raised and without any marks of violence being visible on the body. In each of the three cases Smith followed the same system. Having persuaded his victim to marry with him he got possession of her savings, insured her life, or got her to make a will in his favour if she had disposable property. Having removed her from the neighbourhood where her friends lived he took her to consult a doctor with a story of headache and "fits." His success in persuading his "wives," who were previously in good health, that they were ill is remarkable. No evidence was called of his having given them drugs in order to produce symptoms. Soon after this the patient would be found dead in a bath. The doctor would give evidence of having been consulted shortly before death and of finding nothing *post mortem* inconsistent with epilepsy. The inquest and funeral were hurried over before the friends of the deceased could arrive on the scene. The "widower" pocketed the money and departed to perpetrate more seductions, extortions, and murders. But the pitcher went to the well once too often. A relative of one of his victims saw a newspaper report of a subsequent murder and the game was up. Smith, who was so callous to his confiding victims, displayed abject terror after his sentence, and had to be carried to the drop. To the practitioner the ease with which the murderer succeeded in imposing his story of epilepsy and death owing to a fit, upon three different medical men and upon three coroners, should be a warning against too facile an acceptance of a suggested cause of death, when there is really no good evidence to support such a hypothesis.

Of the small number of Leech's sketches which have to do with medical men one shows the interior of a brougham in which a country doctor is changing into hunting kit on his way to a meet. There are, no doubt, still many country doctors, and town doctors too, who hunt, and to them we may commend the new edition of *Records of the Chase*[10] by "Cecil"; we may commend it also to that most respectable

[8] *Bibliography of Hookworm Disease.* Publication No. II. New York City: The Rockefeller Foundation International Health Board. 1922. (Demy 8vo, pp. xxvi + 417.)

[9] *Trial of George Joseph Smith.* Edited by Eric R. Watson, LL.B. Edinburgh and London: William Hodge and Co., Ltd. 1922. (Demy 8vo, pp. viii + 323; 12 illustrations. 10s. 6d. net.)

[10] *Records of the Chase.* By Cecil. Third edition. London: P. Allan and Co. 1922. (Demy 8vo, pp. xi + 23; illustrated. 12s. 6d. net.)

person, as Cecil would have said, the desultory reader, if he knows how to skip, an art the editor of this third edition has wisely practised in eliminating most of the detail about particular hunts the original author introduced into his second edition. The book was first published in 1854, and in the slightly pompous diction sporting writers affected gives a picture of the countryside in that day of great nobles and great commoners, men of broad acres, who did things in the grand style; incidentally it describes some "originals" both among them and their poorer fellow sportsmen who followed the hounds on foot.

The edition of the *Medical Directory* for 1923[11] has been published. It has not been allowed to increase in bulk; in fact, it contains fewer pages than the issue for 1922, but it does not appear to be in any respect less complete. We doubt, indeed, whether any profession is supplied with so comprehensive a directory to its members and to its principal institutions. The number of names in the volume has grown from 45,586 last year to 46,311 this year—an increase of 725. In the two previous years the increases were 660 and 666 respectively, but in the issue for 1920 there were 1,160 names more than in that for 1919. The numbers recorded are larger in each of the parts into which the *Directory* is divided, except under "Services," where the number has declined from 3,475 to 3,458; this is still rather larger than in 1913. Of the total increase of 725 names England, outside London, accounts for 260. In conclusion, we can only once more commend the publication to the profession as a most reliable work of reference.

In the preface to the fourth edition of his work on tropical diseases[12] Surgeon General STITT states that he has adhered to the original plan of the manual, as he believes the arrangement gives the student or tropical practitioner a concise and readily accessible presentation of the subject. He accepts the spirochaetal etiology of yellow fever, and has transferred the chapter on this disease to the section on protozoal diseases. But we may ask why the transfer is to this section. The leading protozoologists of the day do not accept the spirochaetes as protozoa, but regard them as more akin to the bacteria group. Six new chapters have been added in this edition. They deal with epidemic jaundice, rat-bite fever, tularaemia, tables of helminthic and arthropodan diseases, trench fever, and a chapter on the diagnostics of tropical joint, muscle, and bone lesions. Accounts of the treatment of ankylostomiasis by carbon tetrachloride and of methods of administering arsphenamine and antimony have been introduced. It was certainly very necessary to make these additions, which bring the book up to date. Many new illustrations have been added. Every effort has rightly been made to retain the feature of a pocket manual, but even so it has been necessary to increase the number of pages from 524 to 610 and the illustrations from 119 to 159. This deservedly popular little work should, in its new guise, retain its high place amongst works on tropical medicine.

[11] London: J. and A. Churchill. Seventy-ninth annual issue. 1923. (75s. net.)

[12] *The Diagnostics and Treatment of Tropical Diseases.* By E. R. Stitt, Ph.G., M.D., Sc.D., LL.D., etc. Fourth edition, revised. London: Lewis and Co., Ltd. 1922. (Post 8vo, pp. xiii + 622; 159 figures. 18s. net.)

MEDICINAL AND DIETETIC PREPARATIONS.

Hemostyl.

HEMOSTYL is the trade name given to a preparation of sterilized horse serum, obtained from horses in a state of active blood regeneration, induced by repeated bleedings. The claims made for it are based on the results of Professor Carnot of Paris, who maintained (1905) that such serum was of particular value in anaemia. Preparations are made for oral, rectal, or hypodermic administration. Horse serum from horses in a state of active blood regeneration is stated to be of value in anaemia by reputable investigators, but their claims cannot be considered as having obtained general acceptance. It is, of course, difficult to frame any theory to account for such an action, and it is surprising that horse serum, given by the mouth, should have any general action, particularly in persons living on a diet containing meat. It is scarcely necessary to remark that the estimation of the value of any agent as a cure for anaemia is a matter of very great difficulty whether in clinical practice or by laboratory experiments. The agents for hemostyl in this country are Bengué and Co., 52, Charlotte Street, Oxford Street, W.1.

Idozan.

Idozan is stated to be a neutral preparation, containing 5 per cent. of iron in a non-irritant form, which is readily dissociated to liberate ionized iron. Our examination showed that idozan had a sweetish taste and did not produce any astringent effect in the mouth, even when tasted undiluted. It was found to contain 5 per cent. of iron in a non-ionized form, and ultra-filtration tests showed that at least 97 per cent. of the iron was present in colloidal form. Free iron is slowly released on warming with dilute acids, and therefore the iron should leave the stomach in a form in which it can be assimilated. Idozan is therefore a concentrated non-irritant preparation of iron very suitable for therapeutic administration, particularly when it is desired to give large doses of iron. In the literature supplied interesting quotations are given from Professor Poulsen and Dr. Lichtenstein, urging the importance of intensive iron administration in cases of anaemia. The purveyors are Messrs. Chas. Zimmermann and Co., 9 and 10, St. Mary-at-Hill, London, E.C.3.

Opoidine.

An interesting new preparation of opium, called opoidine, has been placed on the market by Messrs. Macfarlan and Co. (11, Moor Lane, Fore Street, London, E.C.2). It is a preparation of the total alkaloids of opium in soluble form; one part of opoidine is equivalent to five parts of opium. Opoidine contains about 50 per cent. of morphine, the remaining 50 per cent. consisting of the other opium alkaloids—narcotine, codeine, etc. Straub and others have drawn attention to the remarkable action of narcotine in "potentiating" morphine. The minimal lethal dose for mice of morphine is 0.6 mg. per gram of body weight, and of narcotine more than 0.5 mg. per gram; but a mixture of morphine and narcotine may be fatal in a dose of 0.2 mg. per gram. In the case of opoidine, for example, the minimal lethal dose for the mouse is 0.3 mg. of total alkaloids per gram (hypodermic). The exact differences between the mode of action of morphine and of the total alkaloids of opium are not fully understood, but there is considerable evidence that the latter are of particular value when it is desired to act upon the gut or upon plain muscle. Certain preparations of the total alkaloids of opium of Continental origin are upon the market and have proved of value, and we welcome the enterprise of Messrs. Macfarlan in providing a British preparation of this nature.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held at 11, Chandos Street, W., on October 10th, 1922, 51 cases were considered and £627 1s. voted to 39 applicants. The following is a summary of some of the cases relieved:

Daughter, aged 20, of M.B.Durh., a staff surgeon in the Royal Navy who died in 1905. Applicant has a naval pension of £14 a year until she is 21, and a scholarship of £12 from the Royal Naval College. She asked the Fund to help her with fees for King's College. Her brother-in-law has promised her £1 a week towards expenses. Voted £10.

Daughter, aged 49, of M.D.Aberd. who died in 1915. Owing to ill health she is unable to work, and has been living upon her capital, which is now reduced to £200. Her relations are able to give very little—last year £20. Voted £25 in twelve instalments.

Widow, aged 52, of L.R.C.P. and S. who practised as a ship's surgeon. Help asked towards the education of her two daughters. School fees owing amount to £14 11s. Voted £26 in six instalments.

Widow, aged 57, of M.R.C.S. and L.R.C.P. who died recently. When the estate is settled it is expected that income will only amount to £65 per annum; she asked for assistance towards the school expenses of her son, aged 14. Voted £18 in twelve instalments.

M.B., Ch.B.Aberd., aged 37, with pulmonary tuberculosis and unable to work. He has been in a sanatorium fourteen months. Disability pension £10 a month, and after deducting 12s. a week he is able to pay his wife £7 10s. a month for herself and daughter, aged 4. Sanatorium allowance £6 6s. and Lady Dudley's Fund, £1 11s. 6d. This allowance pays fees at sanatorium except laundry and surgical dressings. Voted £20.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for secondhand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

AN institute for the study of the influence of mountain climates on tuberculosis has been opened at Davos, under the direction of Professor Adolf Loewy of Berlin.

IN Japan suicides caused by persons taking rat poison are rapidly increasing; in 1921, according to the *Japan Medical World*, there were 1,017 cases. During 1920 there were 640 deaths from this cause, and in 1919 there were 95. The attention of the Japanese Home Department was first called to this painful mode of suicide in 1914, when 6 deaths from it were reported.

Nova et Vetera.

MASTER JOHN ARDERNE.

For the general reader the imposing figure of Guy de Chauliac dominates mediaeval surgery. The reader has also perhaps heard the names of Henry of Mondeville and of the Fleming Jehan, while Haeser's notice of John Arderne excites without satisfying curiosity. Mr. H. S. Wellcome has increased the already heavy debt of gratitude owed him by historical students by causing to be published a translation of the old Newark practitioner's *de Arte Phisicali et de Cirurgia*.* The editor and translator is Sir D'Arcy Power, which is a concise way of saying that text, notes, and introduction leave nothing to be desired. The translation is of an illuminated manuscript, from an early fifteenth century hand, preserved in the Royal Library of Stockholm. The editor says that it "omits much, adds something, and takes out entirely the personal element and quaint touches which make the original manuscripts such excellent reading. It is in fact Arderne, spoilt by his editor—a catastrophe which still happens to some medical writers of repute." Sir D'Arcy Power is much too modest in the appraisement of his literary wares; indeed any one of the thirteen beautiful plates with which the volume is embellished establishes a better claim to be called picturesque than most historical monographs.

Master John Arderne was born in 1307 and lived to the end of the fourteenth century. He was probably (says Haeser) educated at Montpellier and certainly in the service of Henry Plantagenet, first Duke of Lancaster. The Duke died of plague in 1361 and Arderne perhaps then attached himself to John of Gaunt. He practised at Newark from 1349 to 1370 and then in London. He was essentially, says his present editor, an operating surgeon in good practice, a man of good education meeting his clients on terms of equality.

Sir D'Arcy Power propounds the fascinating hypothesis that the Stockholm manuscript may have been sent to John of Gaunt's granddaughter, Queen Philippa of united Norway and Sweden, by "some one who had known and loved the wise old surgeon who had been so long in the service of her grandfather."



JOHN ARDERNE.

John Arderne was a bold, practical surgeon; he had sufficient originality "to invent the operation for the cure of fistula which, after falling into disuse for nearly five hundred years, is now universally employed." The writer of the Stockholm manuscript has not, we submit, altogether dissipated the aroma of the original case notes in the following account.

"I cured a man from Northampton of the aforesaid Fistula in ano who had three openings in the left buttock and three in the cleft of the scrotum as is here depicted, and all in turn communicated the one with the other and had perforated through the middle of the scrotum. I cured him by incision of all the holes, both in the rectum and elsewhere. Blood welled out strongly from the incision in the rectum because the fistula was very deep. I, therefore, dipped a sponge in cold water and swabbed up the blood; afterwards I put on the wound a blood styptic of powdered madder, and a good sponge having been placed under the patient he was made to sit in a chair and immediately the bleeding ceased. When he had taken food the invalid was put to bed and slept well all that night without any bleeding forsooth, and in the morning he said he was 'fine.' Afterwards, however, viz., on the second day after the operation, I filled all the wound with powder 'sine pare' and with oil and eggs and sal. populi and with diaflosm, and in less than twelve weeks I cured him completely. And he said, indeed, that twenty doctors had treated him and he had been operated upon by ten. Nevertheless he rode on horse-back about the fortieth day after I made the incision."

The name of the "man from Northampton" has come down to us in another manuscript. He was one John le Colier, mayor of the town in 1326–27, and again 1339–40. We should think it was thanks to John Arderne's skill rather than to the twenty doctors he was able to be so regular an attendant at the Town Council that his name appears as a witness to thirty-three documents between 1315 and 1340.

John Arderne tackled a sequestrum in the leg of a nobleman in this way:

"I first removed the flesh down to the bone with an ointment of roses, and I scraped it every day. And one day when I was scraping the bare bone with an instrument it moved upwards and downwards. I watched this remarkable node: but for the rest I gave up any further operation and put nothing over the wound except licium mingled with new honey and the yolk of a raw egg applied on carded linen stupes, and I did this from day to day until the aforesaid bone, with the flesh receding from it, appeared at the end of the wound and became more and more moveable. And when I saw this I put the point of a scalpel under the edge of the bone: and raised it little by little. But that piece of bone was four thumbs in length and two thumbs in breadth, and in thickness it extended nearly to the marrow of the bone, and it was the front of the tibial bone, i.e., Schynbone. After the separation of the bone I finally closed the wound with a licium dressing of honey, etc., and the yolk of raw eggs."

His medical treatment was less spirited and dealt largely in "nasty or innocuous substances." "Against epilepsy," says John, "write these three names with blood taken from the auricular finger of the patient—Jasper, Melchior, Balthazar, and put gold, frankincense and myrrh into a box. Let the patient say three paternosters and 3 Ave marias daily for the souls of the fathers and mothers of these three kings for a month and let the patient drink for a month of the juice of peony with beer or wine." We may not agree that "without doubt this remedy never fails," but it is quite as effective as and much less nasty than draughts of the warm blood of gladiators which have classical authority.† We may laugh at the three kings from the East; we shall not laugh at another prescription, the recital of which shall conclude our brief notice of the wise old surgeon. "A good prayer to be said. O God, Who hath wonderfully created mankind and hast more wonderfully reformed him, Who hath given medicines to govern the health of men's bodies, of Thy great goodness look down from Heaven and give Thy blessing to this antidote: *or* electuary, *or* potion, that the bodies of those whom it shall enter may be worthy to receive health of mind and body through Christ our Lord. Amen."

* *De Arte Phisicali et de Cirurgia*, of Master John Arderne, Surgeon of Newark. Dated 1412. Translated by Sir D'Arcy Power, K.B.E., M.B. Oxon., F.R.C.S., from a transcript made by Eric Millar, M.A.Oxon. London: John Bale, Sons, and Danielsson, Ltd. 1922. (Double cr. 8vo, pp. 65; with coloured frontispiece and 13 plates.)

† "Quidam jugulati gladiatoris calido sanguine cpoto tali morbo se liberarunt: apud quos miserum auxilium tolerabile miserius malum fecit" (Celsus, *de Med.*, III, 23).

ANTHRAX PROTECTION.

THE GOVERNMENT WOOL DISINFECTING STATION.

IN our issue of December 3rd, 1921, on page 952, we described the station for the disinfection of wool and hair at Liverpool, and reproduced two photographs of it. We have now received a further memorandum from the director, Mr. G. Elmhirst Duckering, on the work done at the station. From this it appears that the institution has emerged from the experimental stage and is now an interesting example of the successful application of scientific investigations to an industrial and public health end.

"The disinfection process is arranged in seven stages, the machinery for opening the bales of raw material, feeding the material into the machines, disinfection, drying, cooling, and re-baling being designed to permit of the carrying out of all seven stages in sequence as one operation, without direct handling of the material by the workmen. They are as follows:

"*Stage 1.*—Hydraulically pressed bales as imported are placed on the moving platform of a feeding and opening machine and the steel bands and canvas covers removed. The material itself is not touched, but travels on the platform into the machine, where it is opened and delivered into the first process machine.

"*Stage 2.*—In the first process machine it is submitted for ten minutes to the action of a dilute alkaline solution at 102° F. in order to remove the albuminous matters by which the anthrax spores are protected. It is then squeezed through rollers and delivered into the second process machine.

"*Stage 3.*—The material is here acted on for twenty minutes by a dilute alkaline soap solution at 102° F. in two successive baths, the purpose being to promote a condition of the spores in which they can be killed with comparative ease. This stage is essential to the process, and it possesses the advantage that it also cleanses the material completely. It then passes through rollers into No. 4 process machine.

"*Stage 4.*—In this stage the actual disinfection is carried out, the material passing through two successive baths (with rollers between) of a 2·3 per cent. solution of formaldehyde at a temperature of 105° F. It then passes through rollers and is blown by air into a drying machine (Stage 5), from which it is discharged into a cooling machine (Stage 6), and from there blown by air into the charging box of a baling machine and baled into hard pressed bales of about 320 lb. (Stage 7)."

The two machines containing formaldehyde solution are completely enclosed; they have to be entered at times—for example, for rewrapping the rollers. The workers then wear army box respirators filled with charcoal. That no ill effects have occurred among the workers in the disinfection station is a proof of the efficacy of the measures taken to isolate the anthrax contamination and formaldehyde vapour from them.

"The conditions which must be rigidly controlled in order to secure disinfection are: (*a*) strength of solutions; (*b*) temperature of solutions; (*c*) time of exposure to solutions; (*d*) temperature of drying. This control can only be secured by constant tests, hourly thermometer readings, and chemical analyses, etc."

To check the efficiency of the disinfection samples of raw material and of material after disinfection are taken morning and afternoon and examined, in part by Dr. W. Campbell for the Bradford City Council as an independent authority, the remainder by Dr. F. W. Eurich, formerly bacteriologist to the now dissolved Bradford Anthrax Investigation Board.

This bacteriological examination is regarded as a direct control of the efficiency of the process; cultivation of colonies of bacteria other than anthrax does not necessarily indicate inefficient disinfection, but in general the culture of more than five colonies of other organisms is regarded as pointing to inefficiencies, and it these are not indicated plainly on the daily reports they are specially sought for.

Table showing Results of Bacteriological Examinations from the Beginning of Disinfection to Date.

Material Disinfected—	Raw Material.			Disinfected Material.			
	Samples Examined	Anthrax Found	Free from Anthrax, but over 100 other Organisms found.	Samples Examined	Anthrax Found	No Growth.	Free from Anthrax, but over 5 other Organisms found.
Compulsorily	231	24	119	301	0	166	29
Voluntarily ...	75	5	33	95	1*	50	5
Totals ...	306	29	152	397	1*	216	34

* The one case where anthrax was found after disinfection was "before proper control of disinfection was established when starting station. Temperature low. Exposure too short, and strength of formaldehyde solution low."

Note.—Voluntarily disinfected raw material in which anthrax was found comprised: Persian wool 3, East Indian wool 1, Indian cowtail hair 1.

The Anthrax Prevention Order of June 1st, 1921, required all wool and animal hair coming from or through Egypt and all East Indian goat-hair to be disinfected. The imports of these materials fell off, and efforts were made to induce voluntary sending of material for disinfection; this is a growing branch of the work as the following table shows:

Output of Disinfecting Station.

Periods.	Compulsorily Disinfected.	Voluntarily Disinfected.	Totals.
	lb.	lb.	lb.
July 4th, 1921, to March 31st, 1922 (9 months)	500 845	81,247	582,092
April 1st, 1922, to September 30th, 1922 (6 months)	584,558	123,478	708,036

Among the materials sent voluntarily were in order of bulk: East Indian wool, Persian wool, goat-hair, horse-hair manes and cowtail hair, mohair, alpaca, etc.

It was intended to make the station self-supporting, and a charge is made for disinfection. To make disinfection a commercial proposition for the trade the charge is 1½d. a pound, reckoned on the weight of the cleaned disinfected material. This is approximately the Bradford charge for ordinary washing of the material. As the cost of formaldehyde is almost three farthings a pound of disinfected material, to cover working costs an average output of 40,000 lb. a week is necessary.

Conclusions.

The memorandum we have summarized shows:

(*a*) The need for the compulsory disinfection of the materials so dealt with.

(*b*) The appreciable risk to health that was eliminated by the disinfection of the voluntary material.

(*c*) That the process is efficient, and that the workers are adequately protected from risk.

(*d*) That given a sufficient bulk of material the method, while itself self-supporting, is not expensive to the trader since he gets disinfection and cleansing of his material at the cost of cleansing.

Lastly, the report seems to indicate that the suggestion, made at the International Labour Conference of November, 1921, for universal compulsory disinfection of wool has been advanced to the stage of a practical possibility.

PROPOSED DISINFECTION OF WOOL BY A RADIOLOGICAL METHOD.

We have received a copy of another report by Mr. Duckering, on a test of a suggested method of disinfection of wool by means of ultra-violet rays. About a year ago reports were published in the press stating that two investigators had discovered a method of destroying anthrax spores in bales of wool by subjecting the bales to the action of rays described as ultra-violet rays. On inquiry it was found that the investigators proposed the use of both *x* rays and the rays from mercury-vapour lamps, and claimed that by this means the whole of the material in a warehouse could be sterilized in two minutes. The Anthrax Committee was strongly pressed to carry out experiments, as, if efficient, the method would be cheap and the bales could be sterilized in bulk without being opened.

Accordingly arrangements were made for the apparatus to be fixed up and for bales of wool containing known infected material to be submitted to the action of the rays. The test material was prepared in the same manner as in the experiments of the Departmental Committee on Anthrax—namely, by adding a large quantity of anthrax spores of known resisting power to fresh sheep's blood and preparing blood clots on wool from the blood so infected.

Two blood clots of the infected test material were placed in the centre of each of two bales, one being a press-packed bale of the usual type, the other a large hand-packed bag or "square." The test was carried out on March 15th in the presence of the two investigators and their assistants (who manipulated the apparatus), Dr. Arthur Eastwood, Dr. Eurich, and the members of the Departmental Committee. After the experiment the bales were taken to the Government wool disinfecting station, the infected blood clots removed and placed in sterile receptacles. One blood clot from each bale was handed to Dr. Eurich, and one clot from each bale was sent to Dr. Eastwood for examination.

In their reports on the infected test material after bacteriological examination both Dr. Eastwood and Dr. Eurich state that cultures from each sample yielded an abundant growth of anthrax bacilli as well as of other bacteria. Dr. Eastwood adds that the cultures produced fatal and typical anthrax in guinea-pigs in two days.

British Medical Journal.

SATURDAY, DECEMBER 9TH, 1922.

CANCER AND SPECIFIC IRRITANTS.

FOR none of the many theories relating to the causation of cancer has such concrete evidence been obtained as for the theory of irritation, expounded, if not indeed originated, by Virchow; but this evidence, striking though it be, is forthcoming only in a comparatively small number of cases of cancer, and is as conspicuously absent in the great majority. Whether future research will succeed in identifying any large number of cancer-producing agents in addition to those now implicated cannot of course be anticipated, but since Virchow's time many more specific irritants have been brought into prominence in this connexion. The Section of Pathology at the Annual Meeting of the British Medical Association was fortunate in bringing together such important contributions to the discussion on this subject. Even if irritation cancers should be found to represent only a small percentage of malignant tumours, the investigations, clinical and experimental, which are now being conducted may be expected to throw light on numerous problems in tumour pathology. Here, indeed, the clinician and the experimenter can work together. The observations of such cases occurring in man constitute experimental inquiries no less than those performed in the laboratory. Apparently the pathological processes take longer to develop in human beings than in laboratory animals, a fact which seems to permit of more detailed examination of the pre-cancerous states in man, and of the adoption of measures to combat the onset of the malignant stage; on the other hand, laboratory experiment enables the investigator to exclude many, if not all, of the adventitious circumstances that prevent a clear view of the real etiological factors.

The mere fact that so very few of the subjects exposed to the action of any particular suspected irritant do develop malignant disease, and then only after what seems an inordinate length of time, gives colour to the prevalent conception that the part played by the irritant is, even in these instances, quite secondary, and that we must still search for some single recondite cause that operates only on suitably prepared soil. According to this view the pre-cancerous alteration of tissues may result from the action of very diverse pathogenic agents, but the actual malignant tumour formation, which may or may not supervene, is an independent process, and not merely a further progressive development of the original tissue reaction. It thus comes about that, speaking broadly, two schools have arisen: the one regards cancer as a single pathological entity resulting in every case from some single identical cause, while the other considers cancer to be a broad classification of similar tissue reactions which may result from numerous different causal agents. Between these two contending schools no one can judge at present.

For a hundred years chimney-sweeps' cancer stood as the solitary example of the close association between a definite irritant and a peculiarly located disease. Within the last forty years others have been added—as, for example, tar and pitch cancer, kangri cancer, paraffin cancer, aniline cancer, and, perhaps most striking of all, *x*-ray cancer. The personal experience of any one man in most of these has been confined to the observation of very few cases, and has lacked the broad outlook over a large number that would be necessary to warrant the drawing of sure conclusions. Even more disconcerting was the fact that all attempts at experimental reproduction of cancer by any of these agents were, until quite recently, perfectly fruitless. The communications which we publish in this issue supply this deficiency: the clinical observers have had experience of a sufficiently large number of cases from which to draw conclusions, and the laboratory workers have been eminently successful in their experimental essays.

Epitheliomatous ulcerations occurring in industries dealing with tar, pitch, and paraffin are now compulsorily notifiable by order of the Home Office. The recognition of the peculiar liability of workmen in these trades to skin cancers as a result of their occupation allows not only of the recognition of the earliest signs of tumour growth, and consequently the prompt use of remedial means, but also of the institution of preventive measures against their occurrence. The general adoption of the precautions urged by Dr. Legge must do much to diminish the incidence of such occupational diseases. He points out that there are grounds for supposing that blast-furnace tar is devoid of the dangerous properties associated with ordinary gasworks tar, and we understand that this has been experimentally corroborated by Dr. Leitch. It is of interest to note that though chrome workers are liable to ulcerations from contact with chemical substances yet no case of cancer developing on these ulcerations has been reported to Dr. Legge. If it were merely a question of a predisposing cause it would be natural to expect that epithelioma would supervene just as frequently in them as it does in pitch and paraffin workers.

Dr. Alexander Scott during his twenty years of practice in a paraffin refining neighbourhood has had unique opportunities of investigating the occupation dermatoses of paraffin workers. More cases have come under his personal care than have previously been reported in the literature of the subject, and he has traced the development of the cancerous conditions to their earliest beginnings. The very long latent period before the onset of cancer in those exposed to the action of the irritating oils is a point that merits careful consideration in attempting to found causal relationships between a suspected primary agent and the pathological effect.

X-ray cancer may be considered as an instance of the experimental production of cancer in man. Mr. Rowntree, who has investigated and followed for several years practically all the cases that have occurred in this country, points out that a preliminary burn and frequently repeated small exposures to the softer rays seem to be essential to the production of epithelioma, and he is of opinion, in view of the recognized dangers and the precautions now adopted against them, that no more cases are now likely to develop.

During the last few years experimental cancer research has entered on a new phase, in that it has begun to concern itself with the direct investigation of possible causal agents. This development had its starting point in the patiently pursued and brilliant researches of Fibiger of Copenhagen, who was the first to produce indubitable cancer by experimental means. It will be fresh in the memory of all who read the full accounts published in our columns that, having found some cases of gastric cancer in a single batch of rats, he discovered in these tumours a hitherto unknown species of nematode, the *Spiroptera neoplastica*, and set himself to trace the origin of this worm, which passed its larval stage in the muscles of imported cockroaches; he succeeded in cultivating the parasite, and by transmitting it to other rats produced gastric carcinomata in them. Inspired by the success of his work, Yamagiwa and Ichikawa resumed again the attempts to induce cancer of the skin by long repeated applications of tar to rabbits. Their experiments, performed during the late war, might not have

gained general credence, even when they were more convincingly demonstrated on mice by Tsutsui, had they not been verified and extended by Fibiger and Bang, who were the first European investigators to realize their great value. In this country the observations have been continued by Murray and Woglom, Leitch, Cruickshank, Russell, and others, and many important facts have been elicited. The variations in individual susceptibility, the different rates of tumour development, the relation of tumour reaction to the duration of the irritant rather than to the age of the animal, the histological examination of the precursory conditions, and the endeavours to discover the particular noxious substance contained in the complex mixture of coal-tar, are some of the points that have been, and are being, dealt with. Dr. Murray finds in the ether-soluble fractions of tar a very potent tumour-producing agent, and Dr. Passey has succeeded in isolating from soot what are probably very similar substances—a research which throws some light on the etiology of chimney-sweeps' cancer.

Dr. Leitch, using experimental methods to supplement or explain clinical observations, shows that even though the operation of the causal agent be removed when only simple papillomata have been produced, yet the reaction of the tissues continues in many cases to the full development of carcinoma; indeed, he finds that if the irritant has been in action for a sufficient length of time and is arrested before any neoplastic change whatever is discoverable, epithelioma not infrequently declares itself at a later date. This convincing experimental demonstration appears to indicate that cancer is the result of cell damage done a long time before the response by new formation is in evidence. The same observer has also succeeded in inducing carcinoma by means of the paraffins of shale oils, and, strangely enough, he has been able to produce sarcoma by the same substances—a thing which has not yet been reported amongst the cases of paraffin cancer in man. Finally, he and Dr. Kennaway have produced cancer in mice by external applications of arsenic.

Thus cancer has now been produced by various agents—by the *Spiroptera neoplastica* (Fibiger), by tar (Yamagiwa and Ichikawa), by the *Cysticercus fasciolaris* (Curtis and Bullock), by paraffin oils (Leitch), by arsenic (Leitch and Kennaway), and by soot extract (Passey). Probably the number of substances that are capable of producing cancer will be largely increased in the near future, and the theory of irritation will in consequence become more impressive.

THE ASSOCIATION IN 1922.

THE year 1922 has been a fortunate one for the British Medical Association; its membership has increased, its political work for the profession has been carried on with success, and it had in Glasgow an ideal place for its Annual Meeting. That great city is not only a centre of huge industrial population for the benefit of which important hospitals exist, but it possesses also an ancient university whose renown has been in no way diminished, but, on the contrary, much increased, by the great staff of teachers which it now possesses. For its President the Association had one of the greatest of these teachers—Sir William Macewen, Regius Professor of Surgery in the university, whose renown as a clinical and scientific surgeon is world-wide. He had the cordial co-operation of his colleagues in making the Annual Meeting the scientific and social success it was. Reports of the work of the scientific Sections have been published in our columns during the past four months, and are now nearly complete. On many occasions during 1922 we have had opportunities of bringing to notice the clinical and scientific work accomplished by members of the Association in the Divisions and Branches, and have published a number of lectures given for the Association by many distinguished clinical and scientific workers—lectures which in themselves are important contributions to post-graduate study.

It would be impossible to attempt even to mention all the political and social work the Association has done during the year, but we may point to a few of the more outstanding events, turning first to its hospital policy, which has undergone great developments. Recent years have brought new problems in hospital administration. There has been a steady growth and elaboration of modern methods of treatment, and the expenditure thereon has necessarily become greater. That the popularity of the voluntary hospitals has grown is shown by the ever-increasing demands upon their resources. These conditions, together with the sudden alteration in money values following the war, brought the voluntary hospitals face to face with bankruptcy if newer methods of support could not be found. Temporary help was given by the Government upon lines that had been advocated by the Association—that is to say, through an independent intermediary body. Further support came from the patients themselves; for it was evident that the higher level of economic condition attained by the bulk of the patients now seen at hospital removed very many of them from the category of the indigent, for whom alone the free treatment of a charity could properly be provided. Payments by patients during treatment, and the expectation that there would be developments in contributory schemes through which fit and proper persons could provide against the possible necessity for hospital benefit during serious sickness, made much of the existing policy of the Association as regards hospitals out of date and valueless as a standard of medical policy.

The Council of the Association therefore undertook, through its Hospitals Committee, the preparation of a complete report on hospital policy. This was submitted to the Annual Representative Meeting at Glasgow in July, 1922. A document of such magnitude, dealing with so variable a problem as hospital practice, might well have been expected to provoke much criticism and possibly lively opposition. Thanks to the methods the Council had followed in the preparation of the report, especially the summoning of conferences of hospital staffs, the report was accepted with remarkably little emendation. The only point on which serious opposition developed was on the recommendation for assessment for the purposes of a staff fund of the smaller payments made by individual patients. On this there is now before the Divisions a recommendation from the Council, which it is believed will prove acceptable to all parties as a suitable line of policy in this regard.

The whole scheme of hospital policy, as approved by the Annual Representative Meeting, was published so recently in the JOURNAL (SUPPLEMENT, October 7th, 1922) that extended reference to it is scarcely necessary. The main provisions include, first, the recognition of a dual policy for voluntary hospitals in the continuance of the charitable side of the hospitals for indigent patients, who should receive maintenance and treatment free; and in making provision for others who cannot secure or pay for adequate treatment elsewhere, but from whom payment should be received by the hospital, and on account of whose treatment some method of remuneration of the honorary medical staff should be arranged. Secondly, the requirement that services rendered by the hospitals to the State (either central or local departments) should not fall upon the funds of the charity, but be met by the State or local authority, both as regards the costs to the hospital and the services of the medical staffs. Thirdly, the recognition of the principle of contributory schemes for hospital benefit, and the indication of standards by

which such schemes could be tested—for example, the protection of the hospital from insurance risks which properly fall upon the scheme or the contributors thereto; the preservation to the hospital of the right of determining the suitability of a patient for admission; the need for improvement of out-patient departments with the object of making them primarily places for consultation, and in this connexion securing that members of contributory schemes should not be collected into these departments but receive consultations and specialist treatment outside through independent practitioners. Already these standards are proving of value to medical staffs in enabling them to check the details of contributory schemes now being promoted—for example, that of the Hospital Saving Association for London.

The policy of the Association has been further developed with regard to Poor Law infirmaries and municipal hospitals. The Association desires that these should be no longer isolated institutions but brought into the main stream of medical practice; and to this end it aims to secure that private practitioners shall have opportunity for entry into these hospitals, so that they may treat therein their own patients who so desire. Further, the relations of the several forms of hospital provision—voluntary, Poor Law, and municipal—are under review, and it is probable that the Council will make recommendations for the unification or correlation of hospital policy throughout the country, with a view to preventing overlapping of provision and wasteful competition.

Two other issues of major importance were dealt with by the Representative Body at Glasgow; they were the conditions under which it is proposed to extend the support of the Association to members acting in vindication of the accepted principles of professional secrecy, and the expression of a considered verdict upon the merits of the experiment in the provision of medical benefit under the Insurance Acts. Both are matters of vital interest, not to the profession alone but to the community, and the fact that the machinery of the British Medical Association provides the only available method of concentrating the collective experience of the profession upon the solution of these and kindred problems of public policy is in itself most striking evidence of the place taken by the Association in national as well as in professional life.

In the field of public health the minimum salaries adopted as a temporary basis of remuneration during the latter part of the war have been successfully maintained in almost every area, and it has been possible to secure more suitable remuneration in certain important cases, notably that of the medical officer of health for Manchester. This, it is true, is but the beginning of the work for the public health services that lies before the Association, but it affords a sound basis. Several conferences have taken place between representatives of the Association and of the Society of Medical Officers of Health, and it is hoped to present an agreed programme in respect of public health salaries and conditions of service for the consideration of the Council at an early date. Meanwhile the general policy of the Association with regard to the development of municipal health services has been under review.

The past year has not been marked by legislative activity. As an earnest of the future it is worthy of note that the replies of members of the present Parliament to a series of questions submitted by the Association, based on the accepted policy of the Association, show a very considerable body of parliamentary opinion in support of the constructive measures of reform included in the Association programme.

Overseas, as at home, the year has brought developments of no small significance to the profession. In Australia final effect has been given to the provisions for autonomy within the Association, and, whilst the future of professional organization in South Africa is for the moment in suspense, it is clear that the decision of the South African Branches of the Association will be a determining factor in the solution of the present difficulties. It is satisfactory to recall that by common consent the Association has succeeded in providing means for the unfettered exercise of self-determination. In the Colonial Medical Services the problem of the moment is not to secure local freedom of action, but rather to exercise a stronger protective influence centrally. No Association and no Government can secure for the Colonial Services immunity from the devastating economic consequences of the war, but certain abuses call for remedy, in the interests not only of equity but of a sound economy. This is the case more particularly with the West Indian Medical Services, and whilst the year has necessarily been a period of waiting it is at least satisfactory that with the receipt in London of the local comments upon the Wood report, the Dominions Committee will at last be in a position to make a definite and final claim for reform in the interests both of the medical officers and of the public health.

At the beginning of the year the chief outstanding professional difficulty connected with medical benefit under the Insurance Acts was that arising from the Regulations concerned with the transfer of insured persons on the death or retirement of a practitioner. The great majority of insurance practitioners have held that these arrangements were inequitable to the doctors and were disadvantageous to insured persons, and they would, when fully operative, involve the distribution of insured persons who had been the patients of one doctor among other doctors at the will of a composite, but largely lay, committee. Such a procedure may be unavoidable with regard to a small number of persons in exceptional circumstances, but to establish it as a routine whenever a practice changes hands would seem to be highly objectionable. This difficult controversy has at last been settled. The Insurance Acts Committee has secured that, where the Panel Committee take the necessary steps, the credits which would have been due to the retiring or deceased practitioner shall be continued to his successor, and that not till eighteen months later will those insured persons concerned who have not then chosen any doctor be assigned to practitioners. It may now be said that all the important matters of the regulation of insurance practice have been settled, and that there remain only those minor adjustments which must be required where any attempt is made to control in any degree the relationship between fourteen thousand doctors and fourteen million patients, actual or potential.

Two other insurance matters, however, of great importance to the whole profession have emerged in the course of the year. They have reference not to the present conduct of the service, but to its development and extension. One is the question of the exercise of any control over medical benefit by the approved societies; the other is the provision and administration of specialist services for insured persons under the aegis of approved societies. With regard to the former it must be said at once that it is impossible for the profession to recognize such control in any form. It is believed, however, that this claim is not, in fact, advanced by the great bulk of responsible members and officers of societies, though it has undoubtedly been made by a few of the less thoughtful and restrained of their officials. The societies are, of course, interested in the proper working of the insurance service, and therefore, like others, have the right to be heard by the Government department concerned; but the terms

of the contract under which the profession agrees to give its services to the State must be arranged without the intervention of any third party. The Insurance Acts Committee is calling a conference early in 1923 to which representatives of all classes of approved societies, of Insurance Committees and their clerks, and of the pharmacists are being invited, and it is hoped that at this conference it will become evident that while all those represented sincerely desire to contribute to the efficiency of the service and its harmonious working, there is no wish on the part of any section to usurp functions which do not properly belong to it.

A beginning in the provision for the services of specialists for insured persons has been made during the year in two directions. If when a regional medical officer is consulted he wishes to have further help of a special kind this is to be available at the provision of the Ministry of Health. It is believed that this arrangement has not as yet matured, but it is obviously of great importance that the profession should watch carefully the method by which and the terms on which the services of such consultants are obtained. The funds of a number of approved societies, after valuation, have enabled them to provide certain "additional benefits"—such as ophthalmic benefit—for their members, and these remain under the administration of the societies so long as they take the form of a contribution to the cost of obtaining the particular service in question and not the direct provision of that service. It is unsatisfactory that additional services, whether those of nurses, dentists, or surgeons, should be available for a portion only of the insured population, and should be administered piecemeal by societies and not by public bodies. Serious difficulties are already arising, and here too the profession must watch carefully the narrow line which divides "contribution to cost" from "provision of treatment"; and those members of the profession who are approached to give such treatment should assure themselves as to the propriety of acceptance. The profession, no less sincerely than the societies, desires to extend the range of the medical benefit secured to insured persons, but the conditions under which this is brought about are of vital consequence, and every one, whatever his class of practice, should be prepared for united action.

INDIRECT ADVERTISEMENT.

BEFORE the General Medical Council brought its winter session to an end an interesting discussion took place on what has, for convenience, been called indirect advertising. The subject was raised by Dr. Bolam, who spoke from a sheaf of cuttings from lay newspapers collected during the last few months. Dr. Bolam's lucid and well documented statement convinced the Council, which unanimously resolved to instruct its Executive Committee to report on the expediency of amending its Warning Notice (No. 5) issued seventeen years ago.

The discussion is reported in the SUPPLEMENT, and it will be seen that Dr. Bolam, in his review of the situation, dealt with things old and new. Among the latter he instanced the insertion of announcement in the column of "Fashionable Intelligence," which in many newspapers follows the Court Circular. Sandwiched between announcements that a financial magnate has sailed for Mexico, and that a duchess has taken a new house in London where her new telephone number will be Westend 6000, we learn that Dr. C. has returned to 210, X Street, and that his telephone number is unaltered (Westend 4000). The announcement may be less crudely phrased, but, however ingeniously worded, it is an advertisement and is paid for—usually at a special rate. This sort of thing is not new, but we seem to be suffering from a recrudescence just now. Then there is the habit of writing letters to the lay press on some disease or epidemic in which the public happens to be interested at the moment. This also is not new, and such letters may be quite useful, but they come under suspicion when the writer appends to his name a string of diplomas and his address. There is more novelty in the publication of interviews and the like, sometimes illustrated by a portrait of the interviewee, and in the appearance in a series of lay journals of articles by the same hand on some specific medical subject about which the writer implies or asserts that he has had an extensive experience. These things are no doubt to be associated with the curious revival of "personal journalism" we are witnessing. In this the newspapers of to-day are coming to resemble those of a century ago, with this difference—that the personal articles then were often scathing criticisms, whereas now they are usually laudatory and only injure the person mentioned when the butter is clumsily spread or is laid on too thick. The discovery by the reporter of the Harley Street specialist dates back some ten or twelve years at least, and the average reader was at first mildly curious to know how it happened that the eminent one always lived in Tennyson's "long unlovely street" and never in the square at the bottom, or in one of the adjacent thoroughfares. After a time the more intelligent or the more cynical began to say with Mrs. Betsy Prig, "I don't believe there's no sich a person," or to suspect that he had been gathered to his fathers, leaving behind him a textbook convenient for reference; this theory seemed to find support in the somewhat antique character of some of the oracles. But the reporters had a ready retort, declaring, in the words of Mrs. Gamp, that such a doubter was a "bage creetur," and that it was simpler to use the telephone than to search a medical work of reference containing many terms with which they were unfamiliar. There was a simplicity, as of Brother Juniper, about all parties which rendered the plan almost innocuous, and the average man might even find that the thunders of his morning paper gave to the dishes he consumed at dinner the added zest of the forbidden.

But after a time His Eminence of Harley Street began to pall on the public; like Launcelot Gobbo's father, he "did something smack, something grow to—he had a kind of taste," and the reporter, being a man of resource, set out to search for a substitute; he found it quite easily in the interview. He may have remembered how Mrs. Gamp, who was a famous practitioner, though she did not live in Harley Street, when she repelled Mrs. Prig's bragian words, appealed to Mrs. Harris's "own sweet picter hanging up afore you all the time." So we may suppose arose the illustrated interview.

There is no reason why the editor of a lay paper should not get good articles written for him by authorities who really know what they are writing about. It is one of the advantages of anonymous journalism, upon which the press has flourished in this country and indeed in most countries (the signatures in French newspapers, except in the case of politicians, are mostly pseudonyms), that the anonymity makes the editor and his assistants more fully conscious of their responsibility towards their readers.

The task before the Council is not quite easy, and it is annoying that the tactless self-seeking of a few should have compelled it to be undertaken. The Council will be anxious to do nothing to hamper the discharge of the obligation under which the profession lies to inform the public of the progress of knowledge with regard to the prevention of disease and the preservation of health. Dr. Bolam touched on this aspect of the matter when he said that it was a man's right and duty (and

a woman's also) to take part in public work; he went on to point out that the degree of publicity necessarily attending such work need not, and with the high-minded did not, lead to the advertisement of the individual in his professional capacity.

THE FIRST FOULERTON PROFESSOR.

It may be remembered that last July the Council of the Royal Society announced that it had created a Foulerton Research Professorship, and that the duty of the professor would be to conduct such original researches in medicine or the contributory sciences as were calculated to promote the discovery of the causes of disease and the relief of human suffering. At the anniversary meeting of the Royal Society on November 30th the President, Sir Charles Sherrington, announced that Dr. E. H. Starling had been appointed the first Foulerton professor. The election, the President said, was "of happy augury for the success of the professorship. The fine work he has done is well known, not only to us of this Society, but to physiology and medicine throughout the world. As first Foulerton professor he is the distinguished forerunner of what we may hope will be a long line of distinguished successors in the Foulerton chair." In administering the emoluments the Royal Society would take advantage of the facilities of existing research institutions and endow selected workers wherever in those institutions they might happen to be, presupposing always the existence there of due facilities for their researches. The Society's research emoluments, therefore, did not compete with or tend to deplete existing research institutions, but to co-operate with and reinforce them. They did not withdraw the researcher from the university or other research institute to which he already belonged. "This dovetailing," the President continued, "with existing research appears especially important in its regard to the universities, because it affords help needed by the universities for the execution of research; and it seems a happy feature of the scheme that it assists research where that can be prosecuted in contact, so to say, with students, thus tending to promote research schools." Professor Starling will, we understand, continue to work at the Physiological Institute, University College, but by an arrangement between the College and the Foulerton Committee he will, after next summer, be relieved of administrative work and of the duty of teaching undergraduates, so as to give all his time to research and the training of men in research. The new laboratories at University College, with the extension to the physiological department, will be completed at the end of next term. May we humbly add our congratulations to the Royal Society on its choice. Professor Starling is one of the small band of men who have placed British physiology in the commanding position it holds throughout the world. Intellectually he is in the direct succession to the founder of British physiology, Sharpey, who in his teaching never failed to impress on his students that physiology is one of the institutes of medicine, and that though its fascination as a science might seem sufficient to justify its pursuit, it must ever have regard to the great part it can take in the advancement of medicine and in the promotion of the welfare of mankind. To few men can it have been given better to justify the position of physiology in this respect than to Starling; to him, for example, and his colleague Bayliss we owe the conception of hormones, which has had so profound an influence on medical thought and medical practice, an influence as yet by no means exhausted. We look on Professor Starling's work with that kind of gratitude which has been defined as the expectation of favours to come.

SUBCUTANEOUS VACCINATION.

The possibility of adopting, as an alternative to vaccination by scarification or incision, the subcutaneous injection of lymph by a hollow needle has received attention from time to time in recent years. In 1908 it was reported on in Germany,[1] to the general effect that immunity follows a sufficient injection both in man and animals, but that unless a considerable reaction is produced immunity is uncertain. In India,[2] owing to a native practice of wiping off vaccine lymph from the skin, Fearnside and Poi injected hypodermically in four places. There was reaction, but no vesiculation unless the needle used had scratched the surface. In twelve cases the result was tested by application of lymph by surface scarification in the ordinary way, in every case with a negative result. The interval between the original operation and the testing is not stated. Subcutaneous vaccination on a very considerable scale has been practised by Dr. J. R. Goodall, Assistant Professor of Gynecology, McGill University, Montreal.[3] In the army he used the method for about 6,000 troops, and for a number of children of officers. The skin of the arm was sterilized with iodine, and for each case about a half to three-fourths of a tube of lymph was used, with enough sterile water to make one cubic centimetre. A fine hypodermic needle was used, and the injection was made diagonally into the subcutaneous tissue. In a few cases it was unintentionally applied intracutaneously. In about 8 per cent. of the cases there was no reaction, and in these the operation was regarded as ineffective. In the others the reaction usually began on the second to the fourth day but was occasionally delayed until the twelfth or even the fifteenth. The reaction resembled that after antityphoid inoculation—local swelling, heat, tenderness, pain, and redness. In a few cases there was swelling and oedema of the elbow, and, in a very few, of the hand and arm. After the symptoms had subsided a hard nodule was left in the subcutaneous tissue for about a month. It is claimed in effect that subcutaneous injection (1) is a clean surgical operation; (2) involves no open wound nor dressing; (3) is attended by practically no risk of secondary infection (there was no case of infection in the 6,000); (4) has a high percentage of positive results (8 per cent. negative); (5) results in a very small percentage of complete temporary incapacity; (6) is comparatively painless; and (7) causes no difficulty with children, the operation being so quickly performed. Dr. Goodall does not mention whether he in any case applied the test of subsequent vaccination in the ordinary way. Perhaps he had no facilities for doing so, and may have relied on the twelve negative tests (after an unstated interval) reported by Fearnside and Poi in India. We hear that the subcutaneous operation has been adopted under the name of inoculation to some considerable extent in London in the case of ladies during the recent prevalence of small-pox. The news brings some misgiving. The production of a vesicle or pustule, resembling more or less that of variola, has commonly been regarded as essential to successful vaccination, and the extent of vesiculation—a total of half a square inch amongst four insertions—has been demonstrated statistically to be of value in respect of the duration of immunity. But the evidence of the worth of the subcutaneous method is as yet insufficient. As to immediate immunity, far more tests by subsequent scarification or incision are required. In the early days of vaccination the small-pox inoculation test and Bryce's test were applied on a very extensive scale in various parts of the world before testing was abandoned as needless. Also, as to the duration of immunity, it would be important to know whether many of the 6,000 troops and the children have subsequently chanced to be exposed to infection, and, if so, whether and how far they have succumbed. Possibly Dr. Goodall might give us the benefit of any experience he has had since the operations were performed. Science must always be prepared to accept new light, but the protection of humanity against small-pox is so tremendously important that the efficacy of subcutaneous injection of vaccine lymph should be proved very abundantly before being accepted as an alternative to a method the value of which has been demonstrated by the experience of a hundred and twenty years.

[1] Knoepfelmacher in Kraus and Levaditi's *Handbuch der Technik der Immunitätsforschung*, 1908, p. 685.
[2] *Ind. an Medical Gazette*, 1918.
[3] *Lancet*, 1919, vol. ii, pp. 285-6.

CALCUTTA SCHOOL OF TROPICAL MEDICINE.

THE long-term session 1922–23 of the Calcutta School of Tropical Medicine opened on October 16th. There was keen competition for admission. Only fifty places could be provided and eighty candidates applied; they came from all parts of India. Of the fifty seventeen were sent by the Imperial and Provincial Governments, and thirty-three were independent practitioners. The course will last for six months, and at the examination with which it will conclude a candidate must obtain 50 per cent. of marks both in the written and in the practical examinations. The equipment of the school, which is of the most modern type, includes a large laboratory for experimental pharmacology, where work is being done on the investigation of Indian indigenous drugs reputed to possess therapeutic value. The Hospital for Tropical Diseases is continually full, the demands upon it being in fact in excess of the accommodation provided. The out-patient department, which was opened in 1921, is also full to overflowing and already needs enlargement. The facilities for research work at the school are limited only by the funds at disposal; although the public has given generous financial support it is insufficient to meet all the demands of a promising programme of research work.

THE CAUSATION OF INDUSTRIAL ACCIDENTS.

A REPORT (No. 19)[1] issued recently by the Industrial Fatigue Research Board contains two contributions to the study of accident causation. A preface by the Board itself affords an interesting introduction to the very difficult and involved problem discussed by Mrs. E. E. Osborne and Dr. H. M. Vernon, who describe observations they made on accidents in relation to temperature and other conditions at two large shell factories. The temperature was registered continuously for periods of nine to twelve months by means of thermographs, and at the same time the accidents treated at the surgeries were tabulated. Immunity from accidents was greatest at 67° F.; at lower temperatures their frequency gradually increased till at 52° they were 35 per cent. more numerous than at 67°. At a still lower temperature (47°) they fell off slightly, perhaps because the workers were too cold to work with their usual speed, so that there was a consequent diminution of accident risk. At temperatures above 67° the accidents showed a small rise in the women, but the men suffered 39 per cent. more accidents at 77° than at 67°, their greater liability being due, in all probability, to the heavier and more trying nature of their work. Considerable doubt exists as to the causation of the gradual rise in accident frequency which commonly shows itself in the course of the morning and afternoon spells of industrial work. It is usually attributed to fatigue, but Mrs. Osborne and Dr. Vernon bring forward evidence which indicates that under ordinary working conditions fatigue plays but a very small part. It is true that when the women at a shell factory changed over from a 61-hour week of work to a 39½ hour week their accident frequency, compared with that of the men, who continued on the 61-hour week, fell off some 25 per cent., but since the war no women are called upon to work 61 hours, and indeed very seldom more than 48 hours. The chief controlling factors in accident causation are speed of production and the psychical state of the workers. This latter factor is suggested by the accident incidence of the night-shift workers at the munition factories, for they showed a maximum liability to accidents when they first came on to work. They were then for the most part in a lively and excited state, but as they calmed down in the course of the night accidents gradually fell to half the original number. The unimportance of moderate fatigue as a factor in accident causation is suggested by the laboratory experiments described by Professor B. Muscio in the second part of the Report. When a test involving moderate muscular activity (the pendulum test) was carried out continuously for a period of three and a half hours the accuracy attained improved throughout, though much more slowly in the latter half of the experiment than in the first half. There was no indication of loss of manual skill, such as might under industrial conditions have led to increased accident liability. Still, it is possible that if the test were continued for a longer time, and were repeated by other subjects, it might not always yield the result described. Another test (the aiming test) was tried at half-hour intervals during the course of the day; it showed a gradual increase in accuracy of performance during the morning, a relapse to minimum accuracy during the midday break, followed by another increase of accuracy during the course of the afternoon; but as the intervals between the tests were occupied with mental work it is doubtful whether the results obtained can be applied to continuous manual work.

[1] Medical Research Council: Reports of the Industrial Fatigue Research Board. No. 19. *The Causation of Industrial Accidents.* By Mrs. E. E. Osborne and Dr. H. M. Vernon. London: H.M. Stationery Office. (1s. 6d.)

HOSPITAL FINANCE.

A CONFERENCE arranged by the Federation of Medical and Allied Societies was held in London last week, to discuss the future financial stability of the voluntary hospitals. Lord Islington, in taking the chair, suggested that the hospitals should be relieved from certain public charges, such as local rates and legacy duties, and that contributions and donations should be allowed as a reduction for income tax purposes. Dr. Gordon Dill (Brighton), who opened the discussion, expressed the opinion that no reduction in the cost of voluntary hospitals could be expected, but rather an increase with the advance of knowledge. Though the voluntary hospitals were established for the benefit of the poor and necessitous, such persons now constituted only 25 per cent. of the patients. As they could not obtain them elsewhere the services of the hospitals were equally important and necessary to the remaining 75 per cent., who were not necessitous. The contributions from patients admitted to hospitals produced a large sum in the aggregate, but the average contribution did not amount to more than 12s. a week. The difference between what patients paid and what they cost was the largest item of hospital expenditure. The only way in which non-necessitous persons could pay for hospital treatment when it became necessary for them was by way of annual subscriptions during health. Beyond annual subscriptions, the ordinary income of a hospital consisted mainly of the proceeds from endowments and capital account, to which items of extraordinary income should be added. Dealing with the multiplicity and irregular distribution of the smaller hospitals, Dr. Dill, while admitting that hospitals for certain special diseases were necessary, raised the question whether the treatment of one particular organ of the body could not be as well and much more economically done at special departments of large general hospitals. A check should be placed upon the establishment of new hospitals without regard to the needs of the area. Much economy might be effected if hospitals would agree to make their out patient departments consultative, except for the necessitous poor. All hospitals should strive for a closer agreement both on policy and in action. Viscount Hambleden (Chairman of King's College Hospital) agreed with Dr. Dill that there could be no finality in the expenditure of the larger hospitals, for the increase in size and number of special departments must go on. He thought that steps should be taken to encourage local practitioners to send patients to the out patient departments; co-operation between practitioners and the hospitals would ensure a certain saving. United action was necessary, and the arrangement of the approved societies for the payments of contributions in respect of their members while in hospital was a step in advance. Payments by patients did not represent 50 per cent. of the increase in the present maintenance costs. The Hospital Saving Association was prepared to launch a scheme for the regular collection of small subscriptions, either weekly or annually, from persons who used the hospitals; he believed that the future of the voluntary hospitals depended upon the success some such scheme could achieve, and upon the amount of co-operation which could be arranged between the hospitals.

Sir Arthur Stanley (Chairman of the Joint Council of the St. John Ambulance Association and British Red Cross Society) argued that if once the hospitals were divested of the elements of charity it would not matter whether the voluntary system were maintained or not. He commended the plan of the Hospital Saving Association. Mr. E. W. Morris (Secretary of the London Hospital) considered that it should be possible to reduce the expenditure much below the present cost, which was at the rate of £5 a bed a week. He thought that the scheme of the Hospital Saving Association was the only way in which voluntaryism could be saved. The alternatives were either to go back to disease, or for the State to take over the institutions. "Anything but the State," he said, "but the State rather than back to disease."

SOME OLD-FASHIONED REMEDIES.

SIR DYCE DUCKWORTH has contributed to the current volume of *Saint Bartholomew's Hospital Reports*[1] some notes "on the value and employment of some remedies now much forgotten or ignored." He sets forth in measured phrase his view that the medical scientist owes much to empiricism, and expresses his sympathy with the point of view of our ancestors, who, as physicians, pondered upon the effects of their remedies, and repeated their practice without undue cagerness to publish the results. He pleads that the changes in our therapeutic measures should not be too rapid either for the sick or for ourselves. Probably there are few practitioners who will regard as forgotten such drugs as arsenic and mercury, or turpentine or valerian, of which Sir Dyce Duckworth recalls some of the uses. But not many of the younger generation are likely to have prescribed musk or sarsaparilla. The art of using these drugs has, says Sir Dyce Duckworth, been lost; but he has satisfied himself that musk has great virtues in the treatment of severe cases of pneumonia, while in his opinion sarsaparilla is a restorative tonic in cachetic conditions and anaemia, though Professor Syme regarded its value as no greater than that of so much hay. Rhubarb powder has promoted healing in severe bedsores when other applications have failed, and Sir Dyce Duckworth is pleased to find that the mistura ammoniaci is retained in the *Pharmacopoeia* as a remedy for bronchitis in the aged. He mentions the value of poultices and of leeching; and with diffidence, as referring to a surgical matter outside his duty, a protest is entered against the *nimia diligentia* of the modern dresser and nurse, who in the cause of absolute asepsis too often disturb open wounds and ulcers. There is a pleasant old-world flavour in these notes, comparable to that afforded by reading a book by Jane Austen after a hectic course of modern psycho-analytic novels, and the reader feels that he is in the presence of a physician who has studied the art of treating the patient no less than the disease. This volume of the *Reports* contains also biographies, with portraits, of Dr. Wickham Legge, by "A. E. G." and of Dr. F. A. Bainbridge, F.R.S., and an essay on the life and works of Sir Astley Cooper (1768–1841) by Mr. Geoffrey Keynes.

THE GENERAL MEDICAL COUNCIL.

THE winter session of the General Medical Council occupied five days. It was an unusual session in that considerably more than half the time for which the Council sat was spent *in camerâ*. In little more than one morning and one afternoon the Council dealt publicly with eight disciplinary cases, adopted the reports of six committees, and transacted other business. For about thirteen hours it was concerned with one disciplinary inquiry in which the charges were of such a nature that it was decided, quite properly, to close the doors to the public and the press. The case appeared to arouse great interest among a certain section of the population of the East End, the neighbourhood in which the practitioner concerned carried on his practice, and the corridors and staircases were crowded with people, some of whom, by listening at any chink that offered itself, failed to respect the privacy of the Council's proceedings. Eventually, through the firm action of the Registrar, the place was cleared, and when at length the Council reached a decision and announced it publicly, the galleries were almost empty, and there was no demonstration, although this had appeared to be brewing. A full report of the discussion on Dr. Bolam's motion calling for an inquiry by the Executive Committee into any action the Council can take with regard to the prevalence of oblique or indirect advertising by medical practitioners in the lay press appears in the SUPPLEMENT, and we have commented upon it above. It was a difficult question to argue, because the advertising complained of is subtle and might even not be obvious at a first reading. Moreover, Dr. Bolam felt himself to be under the necessity of not mentioning any names, either of individuals or of journals. Yet he was able, in a masterly speech which was listened to with interest in all quarters of the Council, to put forward his points with sufficient explicitness to make every member understand what precisely it was of which he complained, and how widespread the practice had become. The Council is accustomed to hear the pleading of some of the most distinguished legal advocates, but Dr. Bolam's speech was a model even to them of logical and restrained advocacy. He was ably supported by Dr. Macdonald, Mr. Turner, and Sir Jenner Verrall, as well as by one or two others, but the discussion as a whole was ill-proportioned to the introductory speech because the Council was working under a time limit. If it had not been for the necessity of the closure another hour of extremely interesting discussion might well have been forthcoming on a matter of some public interest. The death of Sir Norman Moore cast a shadow over the proceedings of the Council. He was one of its best-liked figures. For more than twenty-one years he was the representative of the Royal College of Physicians of London on the Council. At the date of his resignation he occupied the position of treasurer, a place that is now to be filled by Sir George Newman. The news of his death was received while the Council was actually sitting, and though no extended eulogy was attempted it was evident that it came as a personal grief to the President and members. It had been noticed in recent sessions that his health was failing, but the members of the Council hoped that he had before him many years of retirement in which, as the President expressed it, he would find "health and fruitful occupation."

THE PRINCE OF WALES, having intimated his willingness to accept the Honorary Fellowship of the Royal Society of Medicine previously held by his father, was duly nominated and has been unanimously elected.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Committee of Medical Members.

THE medical members of the House of Commons inaugurated their team work in the new Parliament by a dinner in the House on Monday evening last. The members surviving from the last Parliament—Lord Dawson, Sir W. Whitla, Dr. F. E. Fremantle, Dr. Molson, and Dr. Elliot—were the hosts, although Lord Dawson at the last moment was unable to be present. Six other members completed the party—Dr. Chapple, who sat in the House from 1910 to 1918, Sir George Berry, Sir Sydney Russell-Wells, Sir John Collie, Dr. Watts and Dr. Salter. The three members absent were Dr. Molloy, Mr. Harvey-Dixon, and Dr. J. H. Williams. Dr. Fremantle was in the chair, and, in proposing the health of the guests, gave an account of the work of the Medical Committee in the late Parliament, referring with regret to their loss of Sir Wm. Watson Cheyne, Dr. Nathan Raw, Dr. Farquharson, Dr. Addison, Sir Robert Woods, and Dr. Macdonald. He sketched the work open to the new Committee in the present Parliament, the lines on which the members might co-operate, and the methods of making their procedure effective and comprehensive. He was supported by his fellow hosts, Dr. Elliot ending with a moving reference to the over-

[1] *Saint Bartholomew's Hospital Reports*. Vol. lv. London: John Murray. 1922. (Cr. 4to. pp. 180; 2 portraits.)

whelming responsibility of a member to his constituents for a share in the government of the whole State. All the guests replied in turn, each adding some original contribution and foreshadowing the divergence of view from Labour, Liberal, National Liberal, Ulster, and Unionist benches. The first meeting of the Committee will be held next Monday, when a chairman and honorary secretary will be elected. One matter of urgency was, however, raised: this was the proposed new regulation of the Nurses Council, whereby nurses or nursing home staffs would be precluded from registration, except such as had had at least one year's hospital training. It was thought this would act harshly, being against the spirit of the scheme under which a first register is made. Dr. Fremantle, Dr. Elliot (who is acting as secretary of the group), Sir John Collie, Dr. Salter, and Dr. Chapple were appointed a Committee to make representations to the Minister of Health.

MEDICAL NOTES IN PARLIAMENT.

The Work of the Pensions Ministry.

The cases of some 700 ex-service men whose insanity is held by the Ministry of Pensions to be in no way due to the war, and who are therefore being transferred to the charge of boards of guardians, were, on November 29th, again brought before the attention of the House of Commons by Mr. Lawson. The argument was put forward that, according to the finding of the Departmental Committee on Shell Shock, normal men were subject to neurasthenia and hysteria from the very fact that they were taken into the army, and that therefore these men should be treated liberally. Mr. Lawson submitted that medical boards were placed in a false position in being called upon to say whether the mental affliction of ex-service men was or was not due to the war.

Major Tryon (the new Minister of Pensions) welcomed the opportunity of making a fuller statement than was possible in the exchanges of question and answer across the floor. He reminded the House that he was bound by the warrant brought in by a previous Government a good way back not to grant pensions for more than a year after the termination of the war to men whose disability was in no way attributable to the war. The Government could not, without fresh legislation, give compensation longer to men whose disablement was neither caused by nor aggravated by the war. Most of the 700 men had not been overseas at all, and the cases which had been put before him by Mr. Lawson were cases of men who had not been in the army in England more than two or three weeks. Some of these recruits, it was discovered, had been in asylums once or twice before. Major Tryon added, however, that he was going through every one of the cases himself, and was considering the whole question to see if any way out could be found in view of the general feeling in the House. But without legislation it was not in his power to grant pensions to anybody when the disability was not due to the war. Major Tryon cleared up one other point. Not only was aggravation of disability already existing recognized, but when the aggravation was found the State accepted the whole liability, though only a portion, strictly speaking, appertained to it.

The Minister next came to the larger cares of the Department, referring to the 6,000 men provided for in the hospitals by the Ministry. Of all the cases that had to be attended to none, he said, caused more anxiety than those presenting mental instability and neurological disorders. The Department had obtained the services of a large number of medical men to deal with the difficult cases of ex-service men who had lost their will power. The policy of the Department was to hold on to these men to the very last possible moment; it was not for him to say that the Ministry had broken the law, but it had gone to its utmost limit in order to keep these men out of asylums. When such patients were certified under the law they could no longer be kept in the hospitals of the Ministry and had to be passed into asylums. But they were treated as private patients like those who were paid for by their friends. That was the case with about 1,000 men in the asylums; they were men whom it would not be safe for their relatives to take out. In those cases in which relatives could be allowed to take out patients the same allowance was given as for disabled men. He thanked the representative of every party in the House who had served on the Departmental Committee which dealt with this question; also the ex-service men who had been members of the Committee. The Departmental Committee recommended that the Ministry should set apart a separate wing in each asylum for ex-service men, but as gradings were needed this would, Major Tryon explained, mean practically the provision of a miniature asylum in the wing if the ordinary practice was to be followed. The Government was prepared to go into the question whether one or two special hospitals should be established for ex-service men. Such hospitals would have to serve large areas, and there was the difficulty that relatives might prefer to keep their sick within easy reach of them.

Major Tryon stated in reply to a question that the approximate number of beneficiaries under the Royal Warrants for war pensions on October 31st last, was 2,620,000 as compared with 3,135,000 twelve months previously. The total estimate of the expenditure of the department for the current financial year was £89,991,000 as compared with an approximate expenditure of £95,545,000 for the year ended March 31st, 1922.

Taking up further questions from December 4th, Major Tryon said that it was not practicable at the present date to give detailed information as to the membership of the Medical Board who examined men on enlistment. It would be remembered that in the earlier stages of the war men were examined by a single civil practitioner.

Mr. Pielou asked, on December 4th, if the Minister of Pensions would arrange that all doctors on tribunals should be independent, and not doctors transferred from the Ministry of Pensions. The Attorney-General (Sir Douglas Hogg) replied that all members of the Pension Appeal Tribunals, including medical members, were appointed by the Lord Chancellor and were quite independent of the Ministry of Pensions. To make service in the past under the Ministry of Pensions a disqualification for appointment would be to deprive the tribunals of some of the best available medical talent.

The Outbreak of Small-pox.—Major Boyd-Carpenter for the Minister of Health on November 29th stated, on inquiry by Mr. Gilbert, that cases of small-pox had occurred during the year in fifty-six districts outside London and in seven metropolitan boroughs. The number of cases discovered was 893, and the number of deaths 26. Of the cases discovered 278 had been vaccinated and 608 were either unvaccinated or showed no evidence of vaccination; in 7 cases there was no information as to vaccination. Medical officers of the Ministry had visited the districts in which cases had occurred in order to advise the medical officers of health. In reply to Mr. Frederick Roberts, on November 29th, Major Boyd-Carpenter said that the Ministry of Health had not issued any instructions or advice in favour of pressure being brought to bear upon persons to submit to vaccination. On November 30th he stated that in the London outbreak five unvaccinated children under 12 years of age had contracted the disease, and that three of them had died.

Unemployment and the Public Health.—In answer to Sir W. de Frece, on November 29th, Major Boyd-Carpenter, on behalf of the Minister of Health, said that some indication of the amount of sickness of all kind amongst the employed population of this country was furnished by the returns of expenditure by approved societies on sickness benefit under the Insurance Act. The increase in the number of weeks for which benefit was paid in 1921 as compared with the previous year was 1.4 per cent. in the case of men, and 8.4 per cent. in the case of women. Many factors must be borne in mind in making a comparison between the figures for the two years and, in particular, the serious epidemic of influenza about the end of the year 1921. The material in the possession of the Ministry did not make it possible to state to what extent the increase might be attributable to unemployment and reduced wages, nor to give comparative figures for different parts of the country.

Administration of Insurance Acts.—Mr. Gould asked, on November 29th, whether the Minister of Health would set up a committee to inquire into the administration of the Insurance Acts, particularly with reference to the panel system. Mr. Gould sought "an exhaustive inquiry with the object of obtaining such recommendations as would confer the greatest benefit for those for whom the scheme had been designed." Major Boyd-Carpenter gave assurance that the Minister of Health would consider the matter.

Certifying Factory Surgeons.—Mr. Robert Young asked, on December 5th, whether to ensure confidence in a doctor acting as certifying factory surgeon steps would be taken to prevent such doctor acting also at the same time in the capacity of compensation doctor for firms in the same area. Mr. Bridgeman said it would not be possible to lay down any general rule on the subject, because in industrial districts it was often difficult to find a well-qualified man who did not hold some appointment in connexion with employers or associations of workpeople. The consideration was, however, borne in mind in making appointments, and the Department was always prepared to inquire into any case of grievances that might be brought to its notice. An appeal could be made from decisions of a certifying surgeon under the Workmen's Compensation Act to the medical referees appointed under the Act.

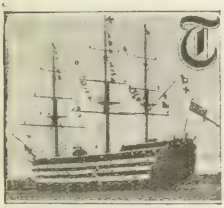
Voluntary Boarders in Mental Hospitals.—Mr. R. Richardson asked, on November 30th, if the Board of Control had addressed a circular to the medical superintendent of registered hospitals stating that voluntary boarders might leave after giving twenty-four hours' notice in writing; and if, seeing that according to the statute the hospital superintendent had no right to demand any notice from any voluntary boarder, the statement would be at once corrected. Major Boyd-Carpenter said that the circular was addressed to the resident licensees of licensed houses as well as to the medical superintendents of registered hospitals. Section 229(6) of the Lunacy Act, 1890, provided for twenty-four hours' notice in the case of licensed houses, and, although the Act was silent as to the notice to be given in the case of registered hospitals, it was, in the opinion of the Board of Control, reasonable to require the same notice. The circular suggested that the terms should be made clear to voluntary boarders on admission.

Defective School Children.—In reply to Mr. Groves, on December 4th, Mr. Wood said that Circular 1245, issued in January, 1922, conveyed a warning that restriction might have to be imposed during 1922-23 on expenditure on special schools; in Circular 1269, however, issued on July 5th, the Education Board intimated that existing schools for blind and deaf children could be used to the full extent of their accommodation, and that no restrictions need be placed on the number of children sent to these schools by individual authorities. The same arrangement applied to schools for crippled children, to open-air schools, and to schools for mentally defective and epileptic children.



The Municipal College, Portsmouth.

NINETY-FIRST ANNUAL MEETING
of the
British Medical Association,
PORTSMOUTH, 1923.



H.M.S. *Victory* at her old moorings.

THE ninety-first Annual Meeting of the British Medical Association will be held at Portsmouth next summer under the Presidency of Mr. Charles P. Childe, F.R.C.S., Senior Surgeon to the Royal Portsmouth Hospital, who will deliver his Address on the evening of Tuesday, July 24th. The sectional meetings for scientific and clinical work will be held, as usual, on the three following days; the mornings will be given up to discussions and the reading of papers, and it is hoped to follow again the plan found so successful in recent years of arranging afternoon demonstrations in connexion with the work of each Section. The provisional programme for the work of the Sections is being drawn up by an Arrangements Committee, consisting partly of Portsmouth and Southsea representatives and partly of members elected by the Council. The Annual Representative Meeting will begin on the previous Friday, July 20th. The last day of the meeting—Saturday, July 28th—in accordance with custom, will probably be set apart for excursions to places of interest in the neighbourhood. The preliminary note published below is the first of a series of descriptive and historical articles on Portsmouth and its surroundings which it is hoped will prove of interest to members of the Association. The Association last met in Portsmouth in 1899, under the Presidency of the late Dr. John Ward Cousins.

SOUTHSEA: PORTSMOUTH.

The last three Annual Meetings of the Association have been held in university cities, each of them having its own medical school. Portsmouth and Southsea cannot offer the learned and scientific attractions of these great *almae matres*.

Southsea has not a medical school, but it is proud of its hospital, and it is proud of its municipal college. It also is proud in that it has been described as "the ideal South Coast health and holiday resort." The members of the Portsmouth Division are also proud that the Annual Meeting is to be held here and they offer a very sincere and hearty welcome to all their professional colleagues who can and will visit them in the latter part of July next. Southsea is one of the few British seaside towns that boasts of a perennial season, and it is unrivalled as a centre for land and sea excursions, and from



CLARENCE ESPLANADE, SOUTHSEA: THE JAPANESE GUN.

day to day it presents an unending variety of things to do and things to be seen. There are many fine and well-kept open spaces where outdoor games can always be had; there is golfing and fishing, swimming, yachting and boating in plenty. The climate is exceptionally even, mild, and bracing; extremes of temperature seldom occur; there is a maximum of sunshine, and the rainfall is not great, although there is a prevalence of westerly winds. There are splendid shops, good hotels and boarding houses, well equipped and up to date, well-appointed tea rooms and restaurants, theatres, music halls and cinemas innumerable.

Old Portsmouth and the dockyard have many historical and antiquarian relics to show, and relaxation after the scientific meetings can be found in many excursions to neighbouring spots of beauty and interest. The Isle of Wight with its charming hills, valleys, and villages is close at hand and easily accessible. Three cathedral cities can be visited—Winchester, Salisbury, and Chichester—as well as the grand old Abbey of Romsey, beautiful in its perfect proportions, "harmony and music in stone." The New Forest also claims a visit to its stretching heaths of furze and heather, its grassy banks and bracken glades, its fine and varied wooded parks with grand old timber trees, oaks of every size, great beeches, silver-clad birches, ashes, hollies, yews, and hosts of other smaller shrubs and trees with endless varieties of coloured flowers and mosses, countless swarms of bright and dull coloured insects, birds and beasts. From this forest came the oak that was used at Portsmouth to build the old ships of the "Royale Navie," the wooden walls of old England.

Portsmouth: Old and New.

Portsmouth town began its career at the south-west corner of Portsea Island, and has grown from a collection of a few wattled huts to a borough of a quarter of a million inhabitants. On the Isle of Portsea were at least three manors and several hamlets—namely, Portsmouth, Portsea, Landport, Southsea, Eastney, Fratton, Buckland, Copnor, Kingston, Milton, Great Salterns, and Hilsea. These have so developed and grown that they are now contiguous. Of this large and numerous family Southsea, though not the oldest, is by far the largest child.

Portsmouth was incorporated and made a borough by Henry I. The earliest charter in possession of the corporation is that granted by Richard I. and dated May 2nd, 1194. It begins "Richard, by the grace of God, King of England, Duke of Normandy and Aquitaine, Earl of Anjou, to the Archbishops, Bishops, Abbotts, Earls, Barons, Sheriffs, Bailiffs, Ministers, and all faithful people of his realms,—Greeting: Know ye that we have received into our hand our Burgh of Portsmouth." The charter further gives permission to hold a fair each year lasting for fifteen days, beginning on August 1st, to which all the King's subjects could come. Another privilege granted by this charter was the holding of a market every Thursday. For this charter the Burgesses had to pay yearly to the King's exchequer the sum of £18. King John also granted another charter, as also did King Henry III. Other privileges were granted in 1600, and again in 1627.

By the Local Government Act of 1888 Portsmouth was declared a county borough in the Isle of Portsea. On November 9th, 1904, Hilsea, formerly in the civil parish of Cosham, was added to the Portsmouth County Borough, thus bringing the whole of the Isle of Portsea under one administrative body. And by the Portsmouth Corporation Act of 1920 the whole of the civil parish of Cosham, situated on the mainland, was added to the Portsmouth County Borough. The total area of the borough is now 8,035 acres of land, and its population totals just over a quarter of a million.

Portsmouth has a court of Quarter Sessions, recorder, and coroner, and Petty Sessions are held daily at the Town Hall. The borough was represented in Parliament in 1295. Now under the Representation of the People Act, 1918, the parliamentary borough, which has the same boundaries as the county borough, is divided into three divisions, known as the North, Central, and South, each division sending one representative to Westminster.

Means of Approach.

The train service to and from Portsmouth is good—much better than it was—but there is still much that might be improved. The London Brighton and South Coast Railway and the London and South-Western Railway run frequent trains direct from their London termini to their conjoint stations in Portsmouth. There are three stations on Portsea Island. The first after leaving Cosham on the mainland is Fratton, and here most of the passengers for East Southsea alight. The second or central is Portsmouth Town Station, and is situated in Commercial Road. This is the terminus for many trains, but some pass on by the high-level line to Portsmouth Harbour Station, facing the Hard at Portsea. From here the Isle of Wight is reached by the Conjoint Railways' Boat Service.

On other lines, through carriages are run from the Midlands via Basingstoke, from Cardiff via Bristol and Salisbury, and from Plymouth via Exeter and Salisbury. Brighton and Bournemouth are also directly connected by rail.

There are also good road approaches for motorists. The old London and Portsmouth road, through Guildford by Hindhead and Petersfield, is generally in very good condition. This road was well known to Charles Dickens, who was born in Portsmouth. Nicholas Nickleby and Smike tramped the old Portsmouth road and entered Portsmouth by the old Landport Gate.

Naval Dockyard and Harbour: H.M.S. Victory.

Portsmouth possesses the largest naval dockyard in the world, and its harbour is the home of the British fleet. To write a history of Portsmouth would be to write a history of the British Navy, and to write the history of the British Navy would be practically to write the history of the British Empire. For many years the most conspicuous object to be seen in the harbour was H.M.S. *Victory*, Nelson's famous flagship at the battle of Trafalgar, October 21st, 1805. She used to ride at her moorings in mid-stream, a thing of beauty and a joy, a revered relic of the old wooden line of battleships which gained for Britain the glorious victories of the last century. Alas! owing to the decay of her keel, ribs, and timbers below water-line she has had to be docked. She has been thoroughly surveyed and overhauled and placed in dry dock by the Admiralty. Here, propped up in her iron cage, she may yet be visited and a holy pilgrimage made to "the spot where Nelson fell"; to restore her, large free-will offerings will be required from those who treasure her great traditions. The harbour and the Solent are always alive with craft. Super-dreadnoughts, torpedo boats, and submarines are constantly passing to and fro, always ready to obey the slightest call of Empire's duty.

Amenities of Southsea.

The large residential part of Portsmouth known as Southsea has a long sea front facing the silvery Solent, which separates it from the Isle of Wight, and between the terraces of houses and the Parade is a large open common, where there are plenty of sea breezes and a maximum of sunshine, which has justly earned for Southsea the title "sunny"; 2,065 hours of sunshine were registered by the Campbell-Stokes recorder for the year 1921. The greatest amount registered in one day was 15 hours 20 minutes on June 28th.

The common provides a glorious playground a mile and a half long between the two piers, and practically, except in name, there is a continuation of this open space for another three miles on past Eastney to Hayling Ferry. Between the common and the sea is a good road and a fine promenade four miles long, and along it in different sections can be found something to appeal to every phase of holiday mood.

At the west end of the promenade is the Clarence Pier, a place of call for the railway company's boats when crossing to the Isle of Wight, and a centre for steamboat traffic to Southampton and Bournemouth. On the pier is a concert hall capable of seating over 2,000 persons. The stretch of beach from here to Southsea Castle is always full of life—hundreds of visitors and children, boaters, bathers, and paddlers, Punch and Judy, concert parties, conjurers, photographers, and the old veteran with his telescope, all help to make an animated and ever-moving picture. On the esplanade near the Clarence Pier will be found the old anchor of the *Victory*, and many other objects reminiscent of past wars. Well to the east, about halfway along the promenade, is the South Parade Pier, the property of the corporation. It was opened in 1909 and replaces an older structure destroyed by fire in 1904. The pier is 600 feet long, exclusive of the landing-stage. It has a large pavilion with a stage for concerts and theatrical plays, a minor hall, and an out-of-doors bandstand. Here are often heard the finest military bands. Amusement is always to be found on the pier and on the beach by its side. On the pier concert parties, theatrical parties, and other entertainment parties are always in evidence. Steamboats start from the landing-stage for Ryde, Cowes, Sandown, Shanklin, Ventnor, Sea View, and Bembridge. Beaulieu may also be visited from here, and sometimes Brighton, Bournemouth, Weymouth, and Cherbourg. Close by the pier is the canoe lake and garden, where tennis, croquet, and bowls can be enjoyed.

The View from the Castle.

Between the two piers stands Southsea Castle, originally built by Henry VIII, but strengthened and enlarged in the reign of Charles II. It is from this castle, situated to the south of Portsmouth on the sea, that Southsea is supposed to have taken its name. It is a place of considerable importance, because any vessel wishing to enter Portsmouth harbour has to approach close to the coast at this point—if friend the castle lighthouse will be its guide, if enemy the castle's heavy guns would speak with no uncertain sound.

In front of the castle is a magnificent view. Gigantic liners, battleships and cruisers, fussy torpedo boats, submarines, waterplanes, motor boats, barges, and sailing yachts are constantly passing to and fro, and four miles away across the silvery Solent lies the Isle of Wight with its beautifully wooded shores rising from a silvery sea, running upwards and backwards towards the great down. Seldom does a town look prettier than Ryde as we see it from the sea: Sir Gilbert Scott's spire of All Saints' Church crowns the hill in the background; all the other buildings are unobtrusive, and the splendid woodlands on either side blend with and fade into the town itself, making a charming picture. Looking towards the east we see Sea View and Bembridge, with its Ledge and lightship, and farther on out at sea one of the mystery towers. Towards the west the towers of Osborne are often visible.

From our vantage ground in front of the castle we are looking on the world-famous anchorage, Spithead, where Britain's fleets have anchored for centuries. From here they have sailed to fight the glorious battles that have helped to make the British Empire what it is. From this very beach Nelson embarked when he sailed on the *Victory* to fight at Trafalgar, and from Spithead the Grand Fleet sailed away in August, 1914, to its unknown destination.

For the loan of the two larger blocks we are indebted to the courtesy of Messrs. Charpentier, Ltd., Portsmouth.

INSULIN AND DIABETES.

ADDRESS BY SIR CHARLES SHERRINGTON, G.B.E., PRESIDENT OF THE ROYAL SOCIETY.

SIR CHARLES SHERRINGTON, in his presidential address at the anniversary meeting of the Royal Society on St. Andrew's Day (November 30th), made the following references to the action of insulin and its possible use as a therapeutic agent in diabetes mellitus:

"In the Physiological Laboratory of Toronto University has been prepared a pancreatic extract possessing striking power over the carbohydate metabolism of the body.* Potent as it is, experience with it is still limited. Work of urgency is required with what may prove to be a desired remedy; the first programme is further investigation of the extract's full properties, with caution as to raising hopes which practice may but partly fulfil. Such are the considerations which weigh with the Canadian—and the discovery is Canadian—university to whom the discovery is due. In this country the Medical Research Council has undertaken public-spirited direction of the extract's preparation and of further determination of its properties.

"The physiological steps of the discovery may be briefly outlined thus:

"Destruction of the pancreas is well known to produce in the dog a diabetes-like condition, rapidly fatal. The liver's store of glycogen is lost, and cannot be renewed by even liberal supply of its normal source, carbohydrate food. Sugar formation from proteins ensues, with rapid wasting of the tissues; at the same time the blood is surcharged with sugar, and the tissues are unable to make use of sugar. In a normal animal, glucose put into the circulation raises the ratio of CO_2 expired to oxygen absorbed, because the tissues consume the sugar. But glucose similarly introduced into the depancreated diabetic animal does not raise the respiratory quotient; the tissues no longer consume the sugar.

"The inference has long been that the pancreas produces some substance enabling the body to make use of sugar—some substance that in fact should control certain forms of diabetes. At Toronto there seems to have been secured the extraction of that substance.

"The pancreas consists of two structures intimately commingled: the one, secreting cells set round ducts into which they pour the pancreatic juice, potently digestive; the other, scattered in tiny islets seemingly unrelated to the ducts though closely related to the blood channels. The want of success of pancreatic extracts in mitigating a diabetic condition might be due to digestive powers of the juice cells destroying an antidiabetic substance of the islet cells. Dr. F. G. Banting determined to avoid this possibility by preparing extracts made from the pancreas after its trypsin-yielding cells had been selectively brought to atrophy by ligation of the gland ducts.

"He and Mr. Best, a collaborator who joined him, overcoming formidable difficulties of technique, succeeded in preparing the required material, and in examining the effect of

* A paper by Professor Macleod of Toronto on Insulin and Diabetes, containing a general statement of the physiological and therapeutic effects of insulin, was published in this JOURNAL on November 4th, 1922, p. 835.

extract upon diabetic depancreated dogs. They found the sugar fall both in the blood and urine, and that the animals, instead of dying in three weeks, remained, while treated, in excellent condition. The further prosecution of the work subsequently engaged other collaborators; to mention them in alphabetical order, Collip, Hepburn, Latchford, Macleod, and Noble; of these Professor Macleod, himself Director of the Toronto Physiological Laboratory, is well known as a skilled authority in experiments on carbohydrate metabolism, and Dr. Collip is Professor of Bio-Chemistry in the University of Alberta, though temporarily working at Toronto. With team work advance has proceeded relatively quickly, and successful extracts are now obtained from ordinary ox, sheep, and swine pancreas.

"Of much physiological interest is the fact that the active principle in the extract seems one *normally* controlling the blood sugar in health; its injection rapidly lessens the blood sugar in normal animals. The extract, added to a simple perfusion fluid containing a little glucose and streamed through the isolated rabbit heart, increases three- or four-fold the heart's uptake of sugar from the fluid. The extract sometimes evokes serious nervous disturbances seemingly associated with extreme fall in the amount of the blood sugar. Administered to diabetic depancreated animals, the extract brings reappearance of the liver's glycogen store, while bringing down the sugar excess in the blood and the excretion of sugar and acetone in the urine; and it enables the diabetic organism to consume sugar. It also lessens or prevents hyperglycaemia produced in animals in several other ways. Gratifying success has already attended the use of this extract in the relief of diabetic patients; much further research is, however, yet needed for development of the methods of extraction and of the routine use of the active principle.

"The important physiological advance thus just reached comes as a fit reward to those who have achieved it. It is, of course, the striking crowning of steady work pursued by many various workers through many earlier years. Such work, we may remember, lay often open to charge by the unenlightened of being merely academic and fruitless, its reward being at the time simply the intrinsic scientific interest of the facts obtained. The Toronto investigators, we may be sure, would say with Pasteur, 'To have the fruit there must have been cultivation of the tree.' Part of the merit of the recent successful investigation has been its appreciation of possibilities indicated by previous work. But that merit is after all only a preliminary to the main achievement. The actual achievement is the deserved success of a bold attack conducted with conviction and determination, and carried through in the face of formidable experimental difficulties. High praise is due to Dr. Banting and Mr. Best and to their collaborators."

Paris.

[FROM OUR CORRESPONDENT.]

Statistics of Students in Paris.

THE University of Paris has just published the comparative statistics of students who were matriculated on July 31st, 1921, and on July 31st, 1922. In 1921 they reached a total of 21,185, of whom 17,993 were men and 3,192 women. In 1922 the total rose to 21,612, of whom 18,066 were men and 3,546 women; taking both sexes together there was an increase of 427. In the Faculty of Medicine the roll of male students has diminished by 302, but that of women has increased by 55. At present there are 4,639 medical students, of whom 738 are women. Of the total, 811 are foreigners, 115 less than in the previous year. This appreciable diminution is due to the conditions of exchange which affect Central Europe. Countries with a high exchange only exceptionally send us matriculated students who follow our regular course of study. It is unnecessary to look beyond the explanation of the fact mentioned in my last communication in this JOURNAL (November 4th, 1922, p. 891) to understand how it is so few English medical practitioners have a legal right to practise in France.

Dr. Alfred Martinet.

The death is announced of Dr. Alfred Martinet. He was a unique figure, a man so great that it can truly be said that his fame extended far beyond the frontiers of his own country. He was born in Paris in 1868, of a family in less than modest circumstances, and was reared in the stern school of poverty. He began life as a clerk, and was afterwards a teacher. His leisure was devoted to the study first of mathematics, then of medicine, which had an irresistible attraction for him. He began his medical studies at an age when his contemporaries were finishing them, but his inflexible will surmounted all obstacles, and it was in teaching others what he himself had just learned that he gained enough to make it possible to start practice in a northern district of Paris. There for some twelve years he worked in obscurity—his only recreation to bring his observations to a definite point and to drawing conclusions from them that he could summarize in plain terms. The publications in which he placed them before his colleagues were clearly written and as full of common sense as of science; such were his books on drugs in common use, common diets, arterial pressure, and the viscosity of the blood. What characterized Martinet was, on the one hand, his system—a veritable Taylorization of medicine—and, on the other, his ambition himself to play the part of the specialist in his own consulting room, whether the question were one of chemistry, radiology, bacteriology, or the examination of the heart. His system and its results are set forth in his principal works, *Les Eléments de Biométrie*, his treatises on clinical therapeutics, and above all, that on clinical diagnosis, which was translated into English (in America) and into Spanish. One day Martinet awoke to find himself famous; the Faculty of Medicine gave him the opportunity of conducting an open course of lectures, and students and practitioners struggled for places. At the same time his private practice increased enormously, and the consulting room of a suburban practitioner became as that of the leading consultant in Paris. Patients flocked to him from all over the world, until Martinet was unable to cope with their number. He remained perfectly unassuming, caring neither for honours nor for money. His whole life was in his art. He can be reproached for one thing only, that he did not apply his own system to himself and did not recognize the limit of his strength. He is dead, stricken down in the midst of his work, his death due to the greatness of his exertions. A great brain has ceased to function, and the work that he leaves us as a legacy yields place only to the example that he gave us.

The Academy of Medicine.

Why have you not an academy of medicine in London? These *compagnies* have an indefinable charm; tradition finds in them a last refuge, and memories of the masters who are no more give to the discussions of the present day a sense of permanency that helps us to understand that art is long and life is short.

At its last meeting the Académie de Médecine returned to a question which has been under discussion since 1849—the relation of tuberculosis to pregnancy. Professor Bar asked whether it was justifiable to interrupt pregnancy when the woman was suffering from pulmonary tuberculosis. After a methodical examination of the problem he came to the following conclusion as a guide in practice: "If I find in a patient not far advanced in pregnancy only a slight cutaneous reaction to tuberculosis, while the state of the tuberculous lesions is such as should leave her strong enough, my inclination is towards intervention." Let it be noted that M. Bar is a professor of obstetrics, and that we are not accustomed to find the obstetric wind blowing from that quarter. Let us also listen to Pinard! There he is on the platform! A fine young old man is honorary professor Pinard, who has just carried from his professorial chair to the tribune of the Chamber of Deputies the enthusiasm which has made him the apostle of Life. "No," he says, "do not sacrifice to-morrow's seed. Take care of the tuberculosis and watch the pregnancy." And as Professor Sergent had declared, "My conscience does not allow me to sacrifice the mother to save what is still only a foetus. . . ." Pinard finds in his heart an eloquent apostrophe: "It is still only a foetus! Such language cannot be listened to without protest, for in these precincts the child, from the moment it is formed, has a right to the respect we owe to every human being. It is defenceless, small, and feeble, and on that very account ought more than any other being to be protected. It is only a foetus! How many times have I heard that horrible phrase!" And Pinard went on to point out that similar assertions will soon be found in the briefs and in the pleadings of barristers defending abortionists before a jury. "As for myself," he said, "I have never committed foeticide." Noble and beloved

master, your voice rose there to the height of your convictions! The question is serious. The public hears an echo of it in the daily press. It will go on so long as there are academies of medicine, for mixed up with the clinical problem is a question of conscience.

The Medical Society of the Hospitals.

At a few paces from the Academy is the little hall where the Société Médicale des Hôpitaux meets. The atmosphere here is quite different. Eloquence is not in fashion. To this society facts are brought, and the meeting consists solely of clinicians, the physicians and surgeons of our Paris hospitals. A curious discussion is here being thrashed out between Netter and Comby, two of the best known specialists in diseases of children. Netter defends the opinion of Bokay (1892) that chicken-pox and certain forms of herpes zoster are identical; Comby exclaims against an opinion he qualifies as *incroyable*. Netter relates instances of herpes following chicken-pox, other cases of chicken-pox following herpes, the latter observed in patients in bed and under observation, or in hospital in isolation wards; others again of nurses attacked by herpes, who transmitted chicken-pox to their nurslings, and one instance in which generalized chicken-pox developed in a patient on the fourth day of an attack of occipital herpes. Netter quoted the precise observations published by Dr. Elliott in the *Glasgow Medical Journal* in May, 1922. "Mere coincidences," replied Comby. But the eloquence of positive facts (not experimental, it is true) swept away negative arguments and recalled the epigram of a prisoner: "You bring here two witnesses who saw me; I can bring 2,000 who did not see me!"

Canada.

McGILL UNIVERSITY, MONTREAL.

THE new biological building, the erection of which was made possible by a gift of the Rockefeller Foundation, was formally opened on Thursday, October 5th, when Sir Charles Sherrington, M.D., F.R.S., Waynflete Professor of Physiology at Oxford and President of the Royal Society, was the chief speaker. Addresses were given also by Dr. Harvey Cushing, Dr. H. J. Hamburger (Groningen), and Dr. J. N. Coulter (Chicago). Representatives from other universities included Dr. Mendel and Dr. R. H. Chittenden of Yale, Professor J. J. R. Macleod of Toronto, and Dr. Simon Flexner, director of laboratories, Rockefeller Institute, New York. The degree of LL.D. was conferred upon Sir Charles Sherrington at the special Founder's Day Convocation.

War Memorial.—The memorial window given by the members of the teaching staff of the Medical Faculty in honour of three members of the staff who gave their lives in the war was dedicated on October 5th. It commemorates the life and work of John McCrae, Roland Playfair Campbell, and Henry Bridges Yates.

Medical Faculty.—Dr. George F. Armstrong, C.M.G., Professor of Surgery and Clinical Surgery, has been elected Dean of the Faculty of Medicine for 1922–23. The number of students enrolled in the Faculty for 1922–23 is 719.

Dental Faculty.—With the reorganization of the dental clinic at the Montreal General Hospital, McGill becomes one of the chief dental centres on this continent, with a clinic following in closer relation to hospital work than almost any other. The number of dental students registered for 1922–23 is 130.

Pathological Institute.—Ground has been broken for the Pathological Institute, which will be affiliated with the Departments of Bacteriology and Medical Jurisprudence. The building will be constructed of stone and will have three stories and a basement. There will be adequate laboratory equipment and facilities for all these three branches of medicine.

First Women Graduates.—The first five women to graduate in medicine from McGill received their degrees in June, 1922. Two out of the five competitive prizes offered were won by them: one, the Wood gold medal for clinical subjects, by Miss Jessie Boyd, and the other, the First Senior Prize offered by the Undergraduate Medical Society, by Miss Winifred Blampin for a paper on thrombosis. All have been given hospital posts, Miss Eleanor Percival and Miss Mary Childs going to the Montreal General Hospital, Miss Jessie Boyd and Miss Lillian Irwin to the Royal Victoria Hospital, Montreal, and Miss Winifred Blampin to the Women's Hospital, Philadelphia.

Scotland.

EDINBURGH ROYAL INFIRMARY.

THE annual general meeting of the League of Subscribers to the Edinburgh Royal Infirmary was held on November 30th. Mr. James Campbell, who was in the chair, said that it was to the credit of everyone concerned that the league had made such great progress during so difficult a period. The organizing secretary, in submitting the fourth annual report, said that £18,333 had been collected from the various groups of subscribers, comprising employees engaged in public works and business establishments, together with the staffs of schools and Government offices. Compared with last year's figures the contributions from Edinburgh and Leith showed a decrease of £116, but the country subscriptions had increased by £641. Unemployment and short-time working had had an adverse effect on voluntary contributions; nevertheless the individual membership of the league now stood at 67,000 for Greater Edinburgh and 18,000 for the country districts. It was hoped that in more prosperous times the annual offering to the Royal Infirmary might be not less than £20,000; to this would fall to be added the voluntary fund raised in a similar fashion by the miners and oil workers in the coal and shale areas of the district. Sheriff Crole said that the number of patients in the infirmary last year was 14,156, as against 13,600 in the previous year; the daily average was 876, and the highest number for any one day was 914. In the out-patient department 42,342 people had been treated—about 1,000 more than the previous year. Property had been bought in Grange Loan for the purposes of the new convalescent home, and upon one portion, of which possession had already been obtained, a department for female convalescents was being prepared. This was part of the scheme to which the money left by the late Mr. Ainslie for a convalescent home was being devoted; the interest on this estate had been accumulating for some years, and it now reached the figure of £600,000. This year the infirmary's finances would have a substantial balance to the good; it was estimated that from the workers alone £34,294 had been received in voluntary contributions. This year the expenditure amounted to £119,000; last year it was £133,000, so that there was a decrease of £13,500.

CHRISTIAN SCIENCE.

Dr. W. L. Reid presided at the meeting of the Glasgow Medical Lunch Club on November 30th, when the Rev. A. Boyd Scott, M.C., B.D., was the guest of honour. In addressing the members Mr. Scott referred at the outset to the close relationship between the minister and the medical practitioner, and said that in these days both were threatened and assailed as never before by common assailants. Several of these came under review, but in particular the lecturer dealt with the cult of M. Coué and his disciples and with the Christian Scientists. He gave a very complete and interesting exposition of the fundamentals of these two schools, which he regarded as foes alike of the minister and doctor, each of whom had enough to do in their daily round without the constant irritation occasioned by the insidious teaching and doctrine of such opponents. He pleaded for a closer bond between priest and practitioner in resisting the spread of these pernicious influences, and for a revival in the Church and the world of sane faith, and a more wholesome appreciation of the divine splendour of medical science. Dr. F. W. Martin expressed the pleasure and thanks of the members for the very able and interesting address.

GLASGOW VICTORIA INFIRMARY.

The report presented to the annual meeting of the court of contributors to the Glasgow Victoria Infirmary on December 7th pointed out that there was a deficit of £2,968 in the accounts as between ordinary income and ordinary expenditure. The ordinary income for the year was £41,754, and the ordinary expenditure £44,722, while the extraordinary income (legacies, special donations, etc.) was £41,855. The number of patients treated in the wards was 4,230, as against 4,348 in the previous year—a decrease of 118. The contributions received during the year from patients amounted to £770, as compared with £1,139 in the previous year—a decrease of £369. The Bellahouston Dispensary continued to render splendid service on the south side of the city, and at the convalescent home at Largs 556 patients were treated during the year.

Ireland.

PUBLIC HEALTH LEGISLATION NEEDED.

ON the motion for adjournment of the Provisional Parliament Sir James Craig, M.D., President of the Royal College of Physicians of Ireland, received permission to raise a matter of importance dealing with public health.

Sir James Craig's Speech.

Public health conditions in Ireland, he said, were not all that they ought to be. Prevention was a great deal better than cure. Sanitation had already done wonders for the country within the last thirty years in preventing disease. There was now virtually no typhus fever in the country, and typhoid fever was also becoming extremely rare. Diphtheria had been robbed of nearly all its terrors, but an invasion of small-pox threatened. He congratulated the Local Government Board and its medical department on the efforts already made to secure vaccination at the seaports. He was not going to raise the question of the usefulness or otherwise of vaccination, but he would consider himself a criminal if he attempted to treat a small pox patient without being himself vaccinated, or if he allowed a nurse to care for such a case without being vaccinated.

Under the Ministry of Health Act passed in England in 1919 an Irish council was formed with power to take such evidence as it wished from people interested in public health and to draft a bill. That council, which was a representative one, found that there were five or six bodies dealing with public health in Ireland, and its first recommendation was that some attempt should be made to co-ordinate these bodies. The Irish Health Council recommended that there should be centralization, and that it should take the form of a Ministry of Health. He would not press that at the moment, but would be content for the present with the centralization of the public health work under one ministry; he had no objection to the Local Government Board being in charge of all these services. The council recommended the unification of local systems. It suggested that the county should be the local unit, and should be made responsible for all the sanitary work in the area. The council had pressed for the appointment of a superintendent medical officer of health for the county, or group of counties, who should be absolutely independent of private practice, and for assistants who would do the minor work. Another recommendation was that the present dispensary doctors who were working under boards of guardians should be entirely detached from the workhouse system. There should be a district hospital or home in every district worked by those who represented the present dispensary doctors, and there should be district nurses who would assist in tuberculosis work, child welfare, and, perhaps to a certain extent, in school inspection work. It was felt that there should be a county hospital, with a first-class surgeon; this would necessitate the establishment of an Irish medical service, entrance to which would be gained by open competition. It would be necessary that the men in this service should be paid not only a decent salary but that there should be a chance of promotion. An effort should be made to secure proper attention for the insured, who up to the present had not been getting the attention they deserved. He hoped that in any future legislation the Local Government Board would continue to encourage the appointment of a local ladies' committee to employ and take an interest in the nurses in the district, and that they would get a subsidy from the funds of the Government to keep the work going. He hoped, also, that the Government would make use in the future of the institutions already existing for the training of nurses.

In conclusion, Sir James Craig asked whether the Irish Health Council was going to be continued or not, or whether the Minister for Local Government had in view the formation of a council on some such lines as those set out in its report. Was it, as a matter of fact, functioning at present, or had it been dissolved, or would an advisory Council be provided for in any future legislation? He had heard that a bill was being prepared, and he would like to ask whether that were so or not, and whether the bill was being formulated on the lines recommended by the council. He desired to ask the Minister whether it would not have been better to take a line from what had been done in other departments—namely, to form a committee or commission to bring this report up to date before he began to legislate. It would have been well had the Minister appointed a commission to give him advice as to the proper legislation required. Finally, if this bill was in process of preparation, he desired to ask the Minister, when it was prepared, whether he would give those interested in public health an opportunity of discussing it before it came before the Dail for consideration.

Other members having spoken of the urgent necessity for medical inspection of school children, the Minister for Local Government, in his reply, intimated that a beginning had been made to do some of the things which Sir James Craig wanted done. Something had been done in the way of centralization, as three of the four officers concerned with public health were now included in the Ministry of Local Government. The abolition of the workhouses had separated the dispensary system from the workhouses. The question of State medical services would have to be further considered. The Public Health Council was in a state of suspended animation, but it was intended to have an advisory body of that kind. The bill which was at present being prepared would legalize formally the work of Poor Law reform carried through during the past couple of years. When it was passed the permanent legislation necessary for the reform of local administration generally, including other services as well as public health, would be considered. The question of the medical inspection of school children was under consideration. The inspection of barracks was a matter for the Minister of Defence; but if he were that Minister he would not allow the local sanitary officer to go near them. The army had its own doctors, who were just as anxious for the public health and for that of the army as any local doctor.

Correspondence.

THE TEACHING OF PSYCHOLOGY AND PSYCHO-THERAPY TO MEDICAL STUDENTS.

SIR,—In your issue of August 19th, Dr. R. Macdonald Ladell states, "I am rejoiced to read that at the recent meeting of the British Medical Association in Glasgow a resolution was passed by the Section of Neurology and Psychological Medicine advocating the addition of psychology to the student's curriculum. This marks a big advance in the right direction." There is, however, much to be said against it, and I regret that, as a university teacher of many years' standing, and one who has all his life been a close student of the nervous system, it has become my duty, in default of abler protest, to sound a warning note.

Before any such introduction is made into an already overburdened medical curriculum, university authorities should satisfy themselves on three points: first, what is it exactly that is going to be taught; secondly, what knowledge has the proposed lecturer of the histology, physiology, and diseases of the nervous system; and thirdly, who is going to teach it.

As regards the first point I do not think the members of my profession realize the amount of rubbish that is now disseminated as psychology. Let the following example suffice.

From the 367 pages of Varendonck's *The Psychology of Day-Dreams* the following is selected, simply because it appears in the index as "Day-dreams, definition of." On turning this up we read:

> "Day dreaming as a process is a manifestation of the universal energy. If we now examine the day-dream as a product of affective thinking on the fore-conscious level we cannot deny it a teleological character. Like nocturnal dreams, day-dreams betray preoccupations with unsolved problems, harassing cares, or overwhelming impressions which require accommodation, only their language is not sibylline as that of their unconscious correspondents. Moreover, their end-representation is oftener of a more immediate and topical character. But they all strive toward the future; they all seem to prepare some accommodation, to obtain some prospective advantage of the ego; in fine, they are attempts at adaptation; such is their biological meaning."

It is a relief to know that there is a meaning. Personally I had not suspected it.

On page 173 of Lay's *Man's Unconscious Conflict* we read:

> "Not satisfied with the materialistic interpretations put upon dreams by Freud, Jung thinks that they have not merely a retrospective meaning, but have a meaning for the present and a value for the future. Freud is criticized by Jung for tracing too much of the dream back to the period of infancy, and to exclusively sexual causes. . . . Jung therefore sees in the dream not only a psychic product absolutely determined by preceding causes in the strictly scientific sense of to-day, but regards the dream as an aspiration toward a higher form of intellectual and spiritual life."

It seems almost too brutal to point out that many dreams are aroused in a brain from which sleep has removed the control of the outer cell lamina, as the result of enterogenous impulses coming in from a distended stomach or seminal vesicle, or proprioceptive impulses from the pressure of the bedclothes.

Aural Kolnai gives the case away on page 45 of his *Psycho-analysis and Sociology*, when he says quite bluntly that psycho-analysts refuse to commit themselves to any physiological interpretation of the phenomena they investigate. He is also, apparently, an upholder of the ridiculous and indecent Œdipus complex, which he defines as "the (usually

unconscious) desire of a son to kill his father and possess his mother."

As regards psycho-analysis the following extract will make it clear that the days of its utility to the medical profession are numbered. Baudouin says on page 187 of his *Suggestion and Auto-suggestion*:

"Everyone can verify the efficacy of the method" [that is, auto-suggestion] "for himself by applying it in minor troubles, thus ascertaining if he has grasped the correct procedure. You wish to stop a haemorrhage, nose-bleeding for instance? If this nose-bleeding ordinarily lasts a quarter of an hour, with intermissions, you should readily be able to secure the formation of a good clot and the arrest of the haemorrhage within two or three minutes. Attain collectedness, and make use of some form of special suggestion. You can place a watch in front of you and keep your eyes on the second-hand, having fixed a time in your mind when the bleeding is to stop. You *ought* to be successful; and if you fail, it will be because your method is still faulty, because you have overlooked some detail. In like manner, if you are subject to colds in the head which usually last a week, suggest to yourself that the trouble will pass over in four days. At a later stage you can forbid the catarrh to develop at all. You can dictate to an abscess the moment when it is to burst. *Without any other treatment than* auto-suggestion, you can cure pimples, warts, varicose ulcers, eczema."

And yet in the Middle Ages men were burnt at the stake for telling the truth.

It may be objected that the examples cited are from the writings—perhaps "wanderings" would be a better word—of lay people. This is readily admitted, but it shows the extraordinary fantasies to which psychology may lead, and, what is worse, there are signs that this "sloppy thinking" is permeating the medical profession, and the time has come to ask the reasonable members of that profession to get back to nature. Get back to the natural facts of the nervous system. Let medical men who psycho-analyse dreams read their physiology first, and remember that dreams are merely afferent impulses from enteroceptive, proprioceptive, and exteroceptive sources running riot amongst the cells of a brain where control has been removed by sleep, and that beyond the fact that a dream is a jumbled-up and disorderly manifestation of previously acquired afferent impulses, stored up in granular and short association cortical cells, it has no psychological significance whatsoever.

To the scientific study of the phenomena of mind there can be no possible objection, always provided it is based on a thoroughly sound knowledge of the nervous system, not only of man, but of vertebrate animals also, and this knowledge, this modern knowledge, the lay psychologist has not, nor does it appear that some of his colleagues in the medical profession are much better off in this respect.

From the luxuriant mass of verbiage in which the psychologist delights there occasionally emerge a few facts worthy of investigation. My experience has been that neurology can explain these facts better than can psychological speculation, and, as a university teacher, it is my duty to insist that those who are to teach psychology to medical students shall at least have an adequate knowledge of the functions and diseases of the nervous system, and that their theories shall accord with known facts.—I am, etc.,

RICHARD J. A. BERRY, M.D.

University of Melbourne, Sept. 29th.

PSYCHO-ANALYSIS.

SIR,—Dr. Steen's letter in your issue of November 18th (p. 998), in regard to cases of morbid fear, etc., is of great interest to me as I have treated many successfully by convincing their reason that their fear was unfounded and teaching them how to overcome it. This, of course, necessitates the consideration of the plan to be adopted in each case. For example, a young girl was brought to me at the out-patient department of St. Thomas's Hospital who had been unable to leave the house alone for some months. She was directed to go down the steps of the house into the street and return; she would, of course, see that nothing had happened; then to go five steps along the street and return, then ten, and so on. She came alone from Stoke Newington in a fortnight.

A patient, having a fear of contagion from contact with people in buses, etc., which was causing much depression and danger of losing occupation, after one interview remained quite well, riding in public conveyances quite freely.

I could, if space permitted, give many examples of very many forms of fear thus overcome, as well as examples of blasphemous thoughts, of illusions of hearing, etc., and should be very pleased to try what I could do for the cases mentioned by Dr. Steen, if he would send them to me or allow me to see them.

It is of course necessary to keep at the case until you are quite sure that the patient is convinced, and it is necessary to know when this has been done; this requires much time at the first sitting. Cases of long standing, or of associated disease, or which are the prodromata of serious mental disorder, are in a different category. Simple uncomplicated forms of fear should not require so complicated and protracted a method of treatment as psycho-analysis or so questionable a procedure as the inducing of stupor.—I am, etc.,

Hampstead, Nov. 21st. HENRY BAYNER.

SIR,—It is evident that so long as the protagonists of the "New Psychology" decline to discuss it in terms of physiology and logic they cannot be compelled to do so. At most the weakness of their position can be demonstrated and emphasized.

I have no desire to be discourteous, but must confess that it is rather difficult for me to accept Dr. Steen's explanation in your issue of November 25th. It seems extraordinary to attempt to discuss a biological problem with the proviso that we are not to use physiological terms. Dr. Hart's "little book" is merely an epitome of psycho-analysis, and when reading it the passage which Dr. Steen quotes struck me as giving the whole position away, if indeed the author aims at anything approaching a scientific position. Dr. Steen and I evidently differ as to interpretation of language and accuracy of statement, and in order to show my reasons for this assertion I quote in parallel columns from his two letters to you:

Letter from Dr. Steen, BRITISH MEDICAL JOURNAL, *Nov. 4th.*

"Asks how the intelligent student is 'to reconcile the theory of the unconscious with known physiology.' This same wonderful fellow, according to Dr. McBride, visualizes ideas as nerve cells and so on. No one will object to the vision if it does him or anyone else any good, but as he has no facts to support this figment of his imagination, he is theorizing in a demoralizing manner."

Letter from Dr. Steen, BRITISH MEDICAL JOURNAL, *Nov. 25th.*

"I am bound to reply, as I have to enter the protest that I have been misrepresented. The offending passage is: 'He [Dr. Steen] apparently believes that thought can occur without physiological nerve and brain activity.' I can assure your readers that I believe nothing of the sort, and furthermore I did not say so. I do not accuse Dr. McBride of wilfully misquoting me, and I fancy I understand how he made the mistake."

Courtesy prevents my doing more than propounding to your readers the following questions: (1) What does your correspondent seem to believe and to have said? (2) Where is my mistake?

I hardly think that Dr. Steen's championship of psycho-analysis will have gone far towards establishing its claim to be scientific, and in this correspondence no one else has even attempted to do so. Perhaps your readers will draw their own conclusions. *Verbum sat sapienti.*—I am, etc.,

Harrogate, Nov. 25th. P. MCBRIDE.

INSULIN AND DIABETES.

SIR,—In his letter (November 18th, p. 997) Dr. Cammidge states that, since his experience has suggested that insufficiency of the internal secretion of the pancreas is the dominant factor in less than half the cases of glycosuria met with in England, one would expect that "insulin" would be useful in some such proportion of diabetics; it appears as if by this he would also incidentally mean that one would not expect that insulin may be useful in the rest of the cases. Even granting that Dr. Cammidge might be right in his opinion that pancreatic insufficiency is not the dominant factor in more than half the cases of glycosuria met with in England, I think that there is no strong reason why one may not expect that insulin, when properly administered, will be useful in any case of what is generally understood by "diabetes mellitus."

The published results of experiments[1] by the Toronto team of workers on insulin show that the injection of a certain amount of this product to normal animals is capable of lowering their normal blood sugar content, and even of preventing the hyperglycaemia that, without the previous injection of insulin, would be elicited by different experimental agencies, such as Bernard's puncture of the floor of the fourth ventricle, injection of adrenaline, inhalation of

[1] *Trans. Roy. Soc. Canada*. 1922. vol. xvi, Ser. V.

ether, etc.—that is, these experiments show that insulin is capable of causing a certain amount of sugar to disappear from the blood, or of preventing an increase of the existing blood sugar in cases in which neither the presence in the blood of the sugar that will be caused to disappear by insulin, nor the increase of blood sugar that would take place without the action of that product, have anything to do with an insufficiency of the pancreas.

Following the principles described by Collip to the extent allowed by the degree of correctness of my interpretation of them, and by the efficiency of the technical means at our disposal, small amounts of pancreatic extracts containing insulin were obtained at the Institut de Fisiologia de la Mancomunitat de Catalunya and its action was studied in one extremely severe case of human diabetes, in one experimentally diabetic dog, and in some normal dogs and rabbits. So far as the result of our experiments go, and in the light of some of the Toronto experiments suggesting that the sugar disposed of by the action of insulin is either stored as glycogen or katabolized by the tissues, producing an increase of the respiratory quotient, or both, one would say that it seems as if in all circumstances a given dose of insulin causes, within a certain period of time after its injection, a certain amount of blood sugar to be metabolized in some way or ways closely resembling, if not identical with, those of normal carbohydrate metabolism.

If we look at insulin as a pharmacological agent, possessing such a pharmacological action, and not as an extract of an organ that may have or may not have a causal relationship with a given pathological disturbance, it will be clear that we are justified in at least expecting as a possible thing that insulin may be useful in every case in which it may be desirable to lower the blood sugar content at a given moment, or to prevent its increase which would be produced by the ingestion of a given amount of certain foods, or to make a certain amount of carbohydrate, that would otherwise be wasted, follow the normal way of metabolism—that is, that insulin may be useful in every case of diabetes mellitus. It is clear enough that to *expect* is not the same thing as to foretell with assurance, and that to say that a remedy may be *useful* is not the same thing as saying that it will be almighty, nor even that its action is of a curative nature.

The fact that, as Dr. Macleod has said and is recalled by Dr. Cammidge, insulin will be chiefly of value in tiding patients over those crises which are frequently uncontrollable by other means, does not mean that, if sufficient amounts of the product are available, it cannot be also of great use in other cases, as an agent to be used in combination with a proper dietary regulation. I would point, as very important, to the possible employment of insulin for the preparation of previously untreated or insufficiently treated diabetic patients for peremptory surgical interventions; and, as very interesting, to the possibilities opened in the dietetic treatment of diabetes by the fact that we may have at hand a remedy the occasional employment of which may enable us safely to administer in a given moment a certain amount of carbohydrate in addition to that which would be spontaneously tolerated by the patient at that particular moment.

On the other hand it must be recognized that, whereas it can be expected that insulin will make the dietetic treatment of diabetes a lighter burden to the patient and a more pleasant task to the physician, it will not eliminate the necessity of dietary regulation, and, very likely, will not even make it an easier task.

Dr. Cammidge is no doubt right in claiming against excessive optimism, such as that of those who speak of a curative action of insulin; but I think that it is not quite out of place to claim also against excessive pessimism, and to insist upon what reasonably can be expected of this new discovery, which, as many of the epoch-making points in the history of diabetes, is due to the genius and the labour of English-speaking practitioners and men of science.—I am, etc.,

R. CARRASCO FORMIGUERA,
Assistant at the "Institut de Fisiologia de la Mancomunitat de Catalunya."

Barcelona, Catalonia, Nov. 27th.

SOME ARMCHAIR REFLECTIONS UPON INSULIN.

SIR,—The successful treatment of diabetes mellitus opens up new avenues for exploration. Some people are in the unfortunate position of being able to explore only one, but may gaze down others and say what they see. Some of the visions may be mirage.

The cost of insulin as prepared at present will prove prohibitive if made in London, unless wealthy diabetics are prepared to pay for the needy. How can insulin be reduced in cost? At present a dose needs half a pancreas of an ox and about three quarts of alcohol. It is true that much of the alcohol can be regained.

1. Insulin must be prepared in places where alcohol is very cheap and the pancreases of oxen do not demand high prices. I am told that in Durban alcohol is ninepence a gallon, whilst the pancreas of an ox can be bought for less than a shilling.

2. Improvement in the methods of extraction: (*a*) to extract more insulin from the raw material; (*b*) to reduce the cost of the extracting substances.

Before attempting to extract more insulin from the pancreases of oxen it would be wise to be certain that the yield by the patented method of extraction is not more than 80 per cent. of that present.

Some idea might be formed of the quantity of insulin made by the pancreas of an ox by estimating its blood sugar and then injecting intravenously a solution of dextrose in sufficient quantity to raise its blood sugar to half as much again and noting the rate of fall of the percentage of sugar in its blood. It is true that this method might lead to a conclusion that there was more available than it was possible to extract, because it seems likely that dextrose is the activator of the cells of the islands of Langerhans. No doubt experiments are being conducted to determine whether a better yield of insulin is obtainable from the pancreas of fasting or recently fed animals. Deducing from observations upon diabetics one would expect the best yield from an animal which had been fasted at least twenty-four hours, then fed with carbohydrate, and slain one hour later. If a recently fed animal proves to give a greater yield it will be necessary to attempt to estimate the increase, and determine whether that increase would compensate for the cost of the food.

One would not anticipate a large production by the pancreas of an ox, because oxen feed on grass, and therefore must obtain a very large percentage of their energy from cellulose. Cellulose is converted into an absorbable carbohydrate comparatively slowly, and therefore absorption is very prolonged. For this reason no large quantity of insulin is required at any moment. The pig which eats roots and nuts is more likely to possess a pancreas rich in insulin.

The fact that insulin prepared from an ox will act in man and dog makes it unlikely that it is essential for the action of the cells of the animal, but that it is a ferment which has as its function an action upon dextrose: it changes dextrose so that it can be stored or burnt. This leads one to hope that some other ferment much more easily prepared may be found to possess a similar property. Preparations are being made to test the zymase group in the laboratories of the London Hospital Medical College.—I am, etc.,

Portland Place, W.1, Nov. 27th. O. LEYTON.

PERSISTENT EOSINOPHILIA WITH SPLENOMEGALY.

SIR,—I have been very much interested in the case published under the above title by Drs. Stuart McDonald and A. F. Bernard Shaw (November 18th, p. 966). With many other haematologists, I hope they will accept my compliments and thanks. They discuss certain comparable cases in the literature, but not all, and that is my reason for adverting to the subject. May I direct the attention of those interested to the case recorded in the *Lancet* of September 15th, 1894 (p. 627)?

The patient was a woman, aged 30. On December 25th, 1893, she was suddenly seized with acute abdominal pain. On January 2nd, 1894, an enlarged rotated spleen was removed. Her blood was examined two days later and the leucocytes found to be 10,000 per c.mm. From this date on until May 23rd, when she left hospital, the white cells continually increased. On the latter date they were 50,000 per c.mm. In a private communication the late Sir Edward Malins, who published the case, informed me that he last heard of her seven years after the operation and that she was then in good health.

In those days blood examinations were less detailed than they now are, but it is stated that there was nothing special to be noted about the white cells, other than their number, except on one occasion. On this occasion (more than three months after operation) "the most remarkable point was the presence in the blood of fairly considerable numbers of large white nucleated corpuscles, varying in diameter from 30 to 50 μ, in which were contained several red cells, in some twenty or more."

It was the remarkable avidity of the eosinophiles in the recently reported case which recalled the case of Malins to my mind. Although it may be more nearly related to that of Tuohy, it is at least a case of splenomegaly with leucocytosis

which presents analogies to those already mentioned, and to the cases of Stillman, Giffen, and Aubertin and Giroux. Moreover the case of Malins leads naturally to the mention of two other remarkable cases of splenomegaly and leucocytosis.

The first of these is that of van Nuys. The patient was an adult suffering from aortic regurgitation and massive splenomegaly. The leucocytes reached 100,000, but during an attack of erysipelas fell almost to normal. In this case the peculiar cells noted by Malins were a constant finding, but they did not usually ingest red cells, apparently preferring leucocytes.

The second case is that of Bartlett, later reported very fully by Rowley. It was again the case of an adult male with heart failure and splenomegaly. The white cells reached 700,000, and not only were the cells described by Malins present, but all the white cells became at a later stage phagocytic for red cells and for each other. Moreover the diluted blood injected subcutaneously into a guinea-pig caused its white cells to go mad and eat each other, but the effect was not lasting and the animal recovered.

I have always regarded this as one of the most remarkable cases ever recorded, almost too strange for belief, but the authority of Malins and Mary Rowley is undoubted, nor can one question that of van Nuys or Bartlett. Those who will be so good as to refer to the *Proceedings* of the Royal Society of Medicine, 1919 (Medical Section), xiii, pp. 1-21, will see that the analogies may be further expanded until one meets with the cases of Herrick, Washburn, Cooke, and Meyer, in which the spleen is not enlarged, and there are other interesting and characteristic features, but there is a constant leucocytosis with 5 to 7 per cent. eosinophiles.

It may perhaps appear that we have travelled far from the case of McDonald and Shaw, but yet there is undeniably a series of connecting links which suggest that an explanation of the essential pathology of these cases is to be found in the direction of the acholuric jaundice group rather than in that of leukaemia. It would be extremely interesting to know whether the plasma of McDonald and Shaw's case would produce any effect when injected into the blood of a guinea-pig. One feels that the eosinophiles in that case are doing their best to meet some demand. The fact that they are, *inter alia*, devouring red cells (a most improper activity for the eosinophile) suggests that their potentialities are increased rather than diminished as is usual in the indifferently finished cells of leukaemia. The further fact that in Herrick's case the red cells were (1) abnormal owing to a plasma defect which rendered even the cells of other persons similarly abnormal, (2) occasionally undergoing phagocytosis in the peripheral circulation, and (3) associated with a leucocytosis in which eosinophiles had a prominent part, would possibly suggest that further investigation of the serum in McDonald and Shaw's case might be well worth undertaking.

On the other hand, we must admit that if these cases are regarded as leukaemic in nature the literature again provides certain intermediate cases, or cases which might be considered intermediate. There is, for instance, the case of Simon, in which a fractured tibia that had become septic was associated with splenomegaly, 50,000 leucocytes, and 17 per cent. of mast cells. There is also a suggestive case reported by Coles in which eosinophiles very largely dominated the blood picture in a case which progressed to a typical myeloid leukaemia. But, generally speaking, the cases which might connect those of Giffen, Tuohy, etc., with leukaemia are of an acute transient character and are characterized by their symptomatic nature, while those which connect (at the end of the line) with haemolytic jaundice have far more the appearance of clinical entities. It is a peculiar fact that so many of them have been complicated with heart failure when first seen.

Should Drs. McDonald and Shaw care to follow out the train of thought I have suggested, I shall be glad to lend them (under bond and heavy penalties if not returned) copies of most of the papers herein mentioned. This will save them much wearisome search of the literature.—I am, etc.,

Sevenoaks, Nov. 28th. GORDON WARD.

P.S.—References will be found in the paper in the *Proceedings* of the Royal Society of Medicine referred to above.

NON-MALIGNANT AFFECTIONS OF THE COLON (INTESTINAL STASIS).

SIR,—Is it not surprising that in the year of grace 1922 the colon should still be considered as maintained in position much in the same way as a pair of "shorts" pegged to a clothes-line, and that it should be supposed that its contents have to be pushed up one limb against gravity, presumably falling down the other by their weight? Such is the impression I get from the report on the discussion on the above subject in your issue of November 25th. Thus, Sir Henry Gray states that the right and left borders of the omentum "tack" the hepatic and splenic flexures "to the abdominal wall or adjacent viscera." And Mr. Waugh says: "The exposure of the alimentary tract to the influence of gravity as the result of man's upright position has imposed upon it a strain unique in the animal world."

But is this tenable? I wonder how often the distinguished surgeons who participated in the above discussion have incised the abdominal wall outside the rectus in well-developed individuals, and how often they have noticed the thickness of the flank muscles in such individuals. I venture to ask them, What interpretation is to be put on the presence of these massive muscular sheets? Are the transversales abdominis—which collectively would be better called the *constrictor transversus abdominis*—with the individual in the erect posture, doing nothing? And is the thoracic diaphragm, a veritable *epigastric depressor* simply of respiratory significance?

Transverse sections through the trunk in the frozen dead reveal the abdominal cavity all packed closely with viscera and visceral parts. In the living healthy individual, in virtue of the tonic and other contractions of the constrictor transversus abdominis and other muscles, these viscera are maintained closely pressed against each other even in the erect posture, in which, indeed (for circulatory reasons), the compression is greater than in the dorsal decubitus. The ascending colon is thus supported by the pressure of surrounding parts, and the hepatic and splenic flexures squeezed high into the lateral epigastric recesses. The compression resulting from the muscular walls of the container, in which is located the visceral mass, puts gravity out of court. During evolution, with the production of an equilibrium, the strain resulting from the erect posture is thus not on the gut, but on the walls of the container (the abdomino-pelvic cavity). Comparative anatomy shows how these musculatures have developed step by step with the increasing activity of the vertebrate, the most pronounced changes being found with the transition from the pronograde to the orthograde form. So also we see that when the well-developed adult stands up the lower abdomen does not pouch.

Intestinal stasis seems to me so buttressed up with unanatomical, unphysiological, and unpathological reasonings that it is not easy to discuss. What will happen to it when these props are removed I do not know. That the whole structure of man is not considered I have shown. That unphysiological reasoning abounds seems to me indicated by the picture of the greatly elongated pelvic colon "puddling" in the pelvis, with many angles, offering "a great obstacle to the passage of solid material through it, since the more the individual strains to expel the bowel contents the farther is the flaccid gut driven into the lower limit of the pelvis" (Lane). Has the distinguished author forgotten that defaecation depends on peristalsis (which can smooth out angles even in the abnormal), and that in the absence of peristalsis, in health, faecal masses can only be expelled if located in the ampulla of the rectum, and even then only with the greatest difficulty?

That an unpathological element is present seems to me evident from the suggestion that morbid processes occurring in the colon arise irrespective of vital processes elsewhere. The relation of the visceral activity (which includes that of the excretory organs) to the tonic and other contractions of the musculatures enclosing the visceral mass and the rise of abnormal intestinal processes and the effect they have (directly or indirectly) on the enclosing musculatures are all unconsidered. But these perhaps are extremely important.

In the absence of definite intestinal obstruction, caused by organic kinks (due to adhesions), narrowing of the lumen (strictures), foreign bodies (intestinal gall stones), and of ulcers, etc., the yielding of the abdominal wall, as evidenced by its flaccidity palpable in the dorsal decubitus, and by a marked bulging of the lower abdomen when the individual stands, dominates, in my opinion, the pathological process. How such can be remedied by partial colectomy, colonic exclusion, or the other numerous procedures mentioned, seems to me inexplicable. I have seen only one patient who suffered a partial colectomy; and her opinion was that she wished she were dead.—I am, etc.,

R. H. PARAMORE, F.R.C.S.Eng.

London, W., Nov 26th.

RED FATIGUE.

SIR,—Recently I read your editorial (of September 10th, 1921, p. 413) concerning Dr. Edridge-Green's important experiment on the white equation or the amount of pure spectral red, green, and violet required to match simple white. He finds that after red fatigue of 5 seconds only about half as much green is then required. If a myoid or muscular nature is assigned to the rods and cones his results are explained as due to residual tetanus or tone, an after-image effect of slight fatigue. The tone for red is prolonged and co-operates with the green to balance the violet and give the tone for white. To my mind it is ridiculous to regard the rods and cones as nerve elements; for their constant lengthening and shortening—or contracting and relaxing—would be grotesque and unheard-of behaviour on the part of nerve cells, though quite proper for muscle cells. With longer red fatigue the after-image would be complementary and this explains his other results. These solutions depend upon the myoid theory of vision formulated by me in 1919 in *Mental Biology*, Part IV (and published by F. W. Talbot, Cambridge). Dr. Edridge-Green rightly taxes the theories of Young, Hering, etc., for failing to explain his results.—I am, etc.,

Kandavu, Fiji, Aug. 30th. WALTER M. COLEMAN.

CANCER OF THE SCROTUM.

SIR,—I read with interest the observations of Dr. Archibald Leitch (November 25th, p. 1047), with regard to the production of malignant disease in mice, by means of crude mineral oil products. I noted clinically the association of the disease with mule-spinners as far back as 1906–7, whilst house-surgeon for the late Mr. G. A. Wright. It may interest Dr. Leitch to know that some of our sections showed very little chronic inflammatory change, but marked proliferative changes in the deeper layers of the epithelium, suggestive of the action of some auxetic substance.

As regards the frequency of the disease, it would appear to be relatively common in South Lancashire, for since publication I have had communications from surgeons in other South Lancashire towns confirming the observations. It appears, however, to be a very rare disease in chimney-sweeps in this district.—I am, etc.,

Manchester, Nov. 27th. S. R. WILSON.

LILLIPUTIAN HALLUCINATIONS.

SIR,—I was interested in Dr. F. M. Rowland's letter (November 18th, p. 999) on Lilliputian hallucinations, for quite recently this rarely described syndrome came under my notice during the early stages of a severe case of scarlet fever.

The patient was a young adult. On the second day of the fever he became delirious and continued so for four days. Prominent amongst the mental symptoms were hallucinations of the type described by your correspondent. The patient pictured vivid scenes, in which hosts of small people—men, women, and children in gaily coloured clothing—were the chief actors. Their many and varied activities appeared to be vastly entertaining. The most up-to-date mechanical appliances (all proportionally small in size) were used in their multiple undertakings. They worked noiselessly and were never heard to speak. Animals did not figure in the pictures. These hallucinations did not excite fear in the patient. For the most part he seemed interested and amused, always preserving a normal conception of persons and surrounding objects.

Occasionally giant types were described.

The patient made a good recovery and still retains pleasant memories of his sojourn amongst the Little People.—I am, etc.,

Caxton, near Cambridge, Nov. 20th. J. C. HALL.

Dr. J. W. Duncan (Hockley, Birmingham) sends us a note in which he mentions the case of a lady over 70 years of age, who recently complained to him of feeling giddy and of seeing little stars, like fire, all moving about.

DYSTOCIA DUE TO GIGANTIC FOETUS.

SIR,—The case of gigantic foetus reported by Dr. E. L. Moss on October 7th, 1922 (p. 643), is interesting, not only because of its rarity and the difficulty of diagnosis and treatment, but as a case helpful in throwing some light on the etiology of this condition generally, and also on the causation of "progressive enlargement of foetus."

As general physiological growth of the body is stimulated by a hormone from the pituitary, and pathological overgrowth, such as gigantism and acromegaly, is due to an *excess* of this endocrine, it seems reasonable to assume that in the foetus also both conditions—growth and overgrowth—are likewise brought about by analogous causes—namely, in the former by normal, and in the latter by an excessive, amount of pituitary hormone in the *mother*.

In support of this view let me quote from among others the case of Mrs. L., reported by me in the *South Africa Medical Record* (April 8th, 1922). I have attended her with babies weighing 12, 14, and 16½ lb. respectively; in her last pregnancy she developed the typical appearance of acromegaly, with glycosuria; the latter condition persisted.

In Dr. Moss's case we have also similar evidence of hypopituitarism: (1) in the marked overgrowth of the foetus; (2) in the greater degree of ossification of the bones (due to pituitary Ca retention); (3) in the manifestations of pre-eclamptic symptoms; of high blood pressure (160 mm. Hg), renal disturbance, and in the finding of traces of acetone and diacetic acid, all of which can be traced to hyperpituitarism (Kark, "Eclampsia: Evolution as a causative factor," BRITISH MEDICAL JOURNAL, June 10th, 1922).—I am, etc.,

Cape Town. S. E. KARK, M.B., Ch.B.

THE SMALL-POX OUTBREAK AT POPLAR.

SIR,—My letter in your issue of November 25th was an invitation to Dr. Killick Millard to come out into the open. His attitude, however, is still not quite explicit. His letter in your issue of December 2nd (p. 1097) is an ingenious attempt to run with the hare of vaccination and to hunt with the hounds of Leicester and the Anti-Vaccination League. While admitting that small-pox can be effectually prevented by vaccination, he implicitly condemns the latter because it "masks" small-pox by modifying it. He appears to regard with complacency the possible epidemic prevalence of mild small-pox (among the unvaccinated) because it "tends to" breed true and does not give rise to a virulent form of the disease. It may be admitted that there have been outbreaks of small-pox in which most of the cases were mild (as in the United States a few years ago), but it by no means follows that naturally mild cases are not dangerous. The idea that mild small-pox can be relied on to breed true is opposed to analogy in other diseases and contrary to experience in small-pox. I have only a small experience of the disease—limited to two outbreaks in Reading during the last thirty years, in both of which I saw nearly every case, but, though there were few deaths, there was every gradation of type from the mildest to the most severe form, and neither the mild nor the severe cases were all in vaccinated persons.

Another point of Dr. Millard's is the old antivaccinist wheeze that "most of the deaths are in vaccinated persons." I fear this fact, when it is a fact, may be, at least partly, the fault of certain black sheep in the profession who, for a consideration, have vaccinated inefficiently. I once knew a medical man who built up a large practice (of a kind) by vaccinating in one small spot only and then signing a certificate of "successful vaccination." (This was, of course, before "conscientious" objection provided such an easy and convenient means of escape.) Another medical man once told me that he vaccinated just as much or as little as people asked for, apparently regarding the question as simply a matter of supply and demand like the sale of potatoes.

I agree with Dr. Millard that saturation of the population with vaccination is probably unattainable in this country. If the people prefer small-pox to vaccination they must have it, but we of the medical profession need not back them up in their preference. On the contrary, I would proclaim constantly that no individual need have small-pox *at all* unless he or she wishes it, however much the epidemic may rage in others, and that *every* death from small-pox is a case of either suicide or murder, and should be stigmatized as such.—I am, etc.,

Reading, Dec. 4th. F. W. STANSFIELD.

OUTBREAK OF SMALL-POX IN POPLAR WORKHOUSE.

A Correction.

SIR,—In the concluding paragraph of my letter appearing in your issue for December 2nd I stated, "It is interesting to learn that all of the 22 fatal cases in the present outbreak had been vaccinated, presumably in infancy." I mentioned this on the strength of a statement appearing in the daily press. I now learn that the statement is incorrect. I understand

that several of the cases (I do not know how many) were unvaccinated, and I hasten to express my regret that I had not first verified the statement. Fortunately, the statement was quite immaterial to my main argument, which was the danger arising from unrecognized cases in once vaccinated persons.—I am, etc.,

Le cester, Dec. 4th. C. KILLICK MILLARD.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on December 2nd approval was given for the appointment of a University Lecturer in Embryology for a period not exceeding five years, with an annual stipend of £250, one of the lecturer's duties being to give instruction in the embryology of the vertebrata.

The following medical degrees were conferred:

M.D. (by incorporation).—H. R. Dean, D.M.Oxon., Professor of Pathology.
M.D.—C. C. Kerby.
M.B., B.CH.—E. M. Barrell, E. A. Fiddian.

The number of medical students pursuing their studies this term in the University is 476. This total is made up as follows: Freshmen, 145; second year, 143; third year, 131; medical students of higher years in residence, 57.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on November 15th.

Mr. G. T. Mullally, M.S., was recognized as a teacher of surgery at Westminster Hospital Medical School.

The annual report of the Graham Legacy Committee, which was presented to the Senate, gave particulars of the general progress of the laboratory, the researches which had been carried out, and the amount of the grants made to workers. The Committee also reported the gift by Dr. Charles Bolton, F.R.S., of £100, being a moiety of the Mickle Fellowship awarded to him by the University in 1921. Professor A. E. Boycott, F.R.S., was reappointed director of the laboratory for one year from January 1st, 1923.

The resolution regarding the issue of certificates for examination in the Faculty of Medicine for internal students passed by the Senate on October 20th, 1920, was rescinded, and it was resolved that the regulations for internal students in the Faculty of Medicine be amended so as to provide that certificates of having passed the first and second examinations for medical degrees be issued to all students qualified to receive such certi cates.

Dr. E. Graham Little and Sir Wilmot Herringham, K.C.M.G., C.B., have been appointed chairmen for 1922–23 of the Council for External Students and of the Graham Legacy Committee respectively.

Applications for the University Chair of Anatomy tenable at St. Bartholomew's Hospital Medical College, salary £1,000, must be received by the Academic Registrar at the University not later than the first post on April 16th, 1923, from whom further particulars may be obtained.

The William Julius Mickle Fellowship for 1923 has been awarded to Mr. F. James Fitzmaurice Barrington in respect of the work carried out during the past five years on the nervous mechanism of micturition.

Applications for the Graham Scholarship in Pathology of the value of £300 per annum for two years must be received by the Principal Officer at the University not later than the first post on Monday, January 1st, 1923. The scholarship was founded under the will of the late Dr. Charles Graham to enable "a young man to continue his pathological researches and at the same time to secure his services to the School of Advanced Medical Studies connected with University College Hospital as a teacher under the direction of the Professor of Pathology." It is in no way restricted to students either of University College Hospital Medical School or any other medical school of the University of London.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—M. S. Abaza, S. C. Alcock, Isabella H. Allan, W. Anderson, Jean Y. Andrew, Margaret S. R. Armstrong, M. P. Atkinson, C. J. Austin, L. C. L. Averill, F. J. Badenhorst, J. B. S. Baxter, Lilias F. E. Begg, Margaret I. Bower, J. Brown, Eleanor M. Cadman, A. H. Campbell, J. M'P. Campbell, Mary J. Cheng, D. S. Cherry, Irene V. E. Chrisikson, J. J. Counihard, R. T. Deas, R. S. Dick, J. L. N. Dinwiddie, Grace M. F. Dover, Grace W. W. Eason, E. C. Ellis, D. L. Ferguson, N. Fram, J. Glover, R. T. F. Grace, Annie C. S. Haddow, H. R. Haigh, Margaret M. R. Hamilton, H. Hastings, H. D. Hayes, Flora M. H gg, C. F. W. Illingworth, A. K. James, L. B. Jones, Margaret W. Kemp, G. G. King, B. Leader, R. C. Little, Elizabeth T. Lorain, D. B. M'C. Lothian, D. T. M'Ainsh, I. H. M'Clure, F. N. M'Farlane, Annabella M'Garrity, J. C. Macgown, Elizabeth M. Mackay, A. W. Mackie, W. M'Kie, Marjorie C. Mackintosh, I. F. Macleod, R. A. C. Macnair, J. M. Manson, Grace J. Marshall, K. A. T. Martin, F. G. J. Mulder, C. L. L. Murray, S. Petkoon, John na V. Pieterse n, Elsie Porter, Jean S. Risch, T. Ritchie, S. J. Roux, Isabel S. Rutherford, R. M'G. Saunders, Annie B. A. Scott, R. Selby, D. Slight, Flora M. Stewart, D. Summerville, B. G. Thompson, Charlotte E. W. Thompson, Elizabeth N. Thompson, H. V. Thwaites, J. Todd, Isabel a du Toit, H. R. Vernon, H. L. Wallace, R. W. R. Watson, Hazel H. F. Watt, J. Williams, Margaret S. Williamson, R. P. Wilson, M. Witkin, W. S. Woodburn.

* With distinction.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in:

SURGERY.—E. Downing, A. Gullertein, *H. D. L. Jones, W. A. Jones, M. Newfield, G. Shwartzman, A. W. L. Smith.
MEDICINE.—E. Downing, J. Mitchell, M. Newfield, R. F. A. Philpott, A. W. L. Smith.
FORENSIC MEDICINE.—E. M. Chidson, E. Downing, D. J. Dubash, M. Newfield, R. F. A. Philpott, P. D. Richards, A. W. L. Smith.
MIDWIFERY.—E. M. Chidson, E. Downing, A. Gullertein, R. F. A. Philpott, P. D. Richards, A. W. L. Smith.

* Section II.

The Diploma of the Society was granted to Messrs. E. Downing, H. D. L. Jones, W. A. Jones, J. Mitchell, M. Newfield, and A. W. L. Smith.

The Services.

WAR EMERGENCY FUND.

AT the last meeting of the War Emergency Fund Committee 29 cases were considered. The sum of £573 was granted for personal service and £563 6s. for education. It was reported that two cases had not reapplied for renewal of the education grant. Under the education scheme the committee agreed in two cases to sanction the change of schools. The War Emergency Fund is now educating 47 sons and daughters of medical men at a cost of £3,420 per annum.

DEATHS IN THE SERVICES.

Surgeon General Sir Francis Wollaston Trevor, K.C.S.I., C.B., Army Medical Staff (retired), died at his residence, Oerley Hall, Shropshire, on November 16th, aged 70. He was the son of the late E. S. R. Trevor, of Trowscoed, Welshpool, and was educated at Guy's Hospital and at Aberdeen University, where he graduated M.B. and C.M. in 1874; he took the M.R.C.S. in the same year. He entered the army as surgeon on September 30th, 1874, attained the rank of colonel on January 14th, 1903, and that of surgeon general on June 29th, 1906. He retired on January 1st, 1912. He served in the Afghan war in 1878–80, in the Kandahar Field Force, at the action of Ahmad Khel, and in Roberts's march from Kabul to Kandahar, the relief of Kandahar, and battle of Kandahar on September 1st, receiving the medal with two clasps, and the Kabul-Kandahar bronze star; in the Sudan campaign of 1884–85, with the Nile column, medal with clasp, and Khedive's bronze star; and in the South African war in 1901–2, as P.M.O. of a division, operations in the Transvaal, Orange River Colony, Zululand, and Cape Colony, mentioned in dispatches in the *London Gazette* of July 29th, 1902, Queen's medal with five clasps. From 1908 to 1911 he was Director of Medical Services in India. He received the C.B. in 1907, the K.C.S.I. in 1911, and in 1910 was appointed Honorary Surgeon to the King. He married Mary Mytton, daughter of R. H. Mytton of Garth, Welshpool, and leaves two sons and one daughter. Colonel H. O. Trevor, Army Medical Staff (retired), is his younger brother.

Lieut.-Colonel Terence Humphrys Sweeney, C.M.G., Bengal Medical Service (retired), died suddenly at Cheltenham on November 15th. He was born on July 15th, 1856, at Castlerea, Roscommon, and educated at St. Vincent's Hospital, Dublin, taking the L.R.C.S.I. in 1877, the L.K.Q.C.P. in 1878, and the F.R.C.S.I. in 1879. Entering the I.M.S. as surgeon on September 30th, 1878, passing first into the service, he became lieutenant-colonel after twenty years' service, and retired, with an extra compensation pension, on March 1st, 1909. Most of his service was passed in civil employ in the North-West, now the United, Provinces, where he was appointed civil surgeon of Mirzapur in 1886, and of the important city and district of Benares in 1890. He served in the Afghan war of 1878–80, taking part in the operations at and round Kabul, and in the defence of Sherpur, and received the medal with a clasp. He rejoined for service in the recent war, and was in command of York Place Indian Hospital, Brighton, from its opening on December 1st, 1914, to its closing on December 31st, 1915, for which he received the C.M.G. on June 4th, 1917. His wife died shortly before he retired from the service. He leaves one son—a lieutenant in the Royal Engineers—and two daughters.

Brigade Surgeon Lieutenant-Colonel George Gilbert MacLaren, Bengal Medical Service (retired), died at Blairgowrie, Perthshire, on November 17th, aged 77. He was the son of the late John MacLaren, of Dalnalreck, Kirkmichael, Perthshire, and educated at Edinburgh, where he graduated M.B. and C.M. in 1866. He entered the I.M.S. as assistant surgeon on April 1st, 1868, became brevet lieutenant-colonel on May 1st, 1893, and retired on June 27th, 1893. Almost the whole of his service was spent in civil employ in the North-West, now the United, Provinces, and most of it in the station of Dehra Dun, in the lower Himalayas. He founded the MacLaren Leper Asylum in that station.

Major Arthur Cameron Duffey, R.A.M.C., died of pneumonia in London on November 12th, aged 47. He was educated at Trinity College, Dublin, where he graduated B.A. in 1894, M.B., B.Ch., and B.A.O. in 1896, and M.D. in 1897, in which year he took the L.R.C.P. also. After filling the post of medical officer of the City of Dublin Hospital for two years, he went out to the South African war as a civil surgeon, subsequently entering the R.A.M.C. as lieutenant from November 29th, 1900. He became major on August 29th, 1912, and was placed on half-pay on November 10th, 1920. He served in the South African war, in operations in Cape Colony and in the Transvaal, receiving the Queen's medal with four clasps. In 1899 he went to the United States as special commissioner of the Cancer Society, and was the author of a work, *Conditions and Treatment of Cancer in the United States.*

Obituary.

SIR NORMAN MOORE, BT., M.D., LL.D.,

Late President of the Royal College of Physicians of London; Consulting Physician to St. Bartholomew's Hospital.

[*With Portrait on Special Plate.*]

By the death of Sir Norman Moore, which occurred on November 30th at his house, Hancox, near Battle, the medical profession has lost a distinguished physician and one of its brightest ornaments. Born in 1847 at Higher Broughton, in Lancashire, he was the only son of Robert Ross Rowan Moore, a graduate of Trinity College, Dublin, and a barrister by profession. Robert Moore was descended from an Ulster family, and he contributed in no small degree to the success of the anti-Corn Law agitation by his ability as a public speaker, and his earnestness in the cause he was advocating. He toured the country in co-operation with Bright, Cobden, and Fox, and a share of the success of that movement was certainly due to his power of lucid exposition.

Norman Moore began his education by entering Owens College in 1863, and while there he showed considerable aptitude in the subjects of history and biography. From Owens College he proceeded to St. Catherine's College, Cambridge, and in 1868 obtained the second place in the second class of the Natural Science Tripos. The following year he took the degree of B.A., in 1872 the degrees of M.A. and M.B., and four years later he graduated M.D. While at Cambridge, although engaged in the study of medicine and science, his interest lay chiefly in the direction of literature, and much of his spare time was spent in association with men engaged in the study of the arts rather than with those engaged in acquiring a knowledge of science. Indeed, apart from a keen interest in natural history and comparative anatomy, it cannot be said that he evinced any deep regard for natural science. It was at Cambridge that he laid the foundation of that wide acquaintance with literature on which his lasting fame will rest. Among others he was brought into contact at Cambridge with Henry Bradshaw the famous University Librarian, and this acquaintance was largely responsible for the deep knowledge shown by Moore in mediaeval history. Through the influence of Bradshaw he became interested in the study of palaeography, a subject in which he acquired great skill.

On leaving Cambridge Norman Moore proceeded to St. Bartholomew's Hospital in order to finish his medical curriculum, and with this hospital his name was closely identified for the remainder of his life. After taking the M.B. in 1872 he filled successively the posts of house physician from 1872 to 1874; casualty physician from 1875 to 1877; assistant-physician from 1883 to 1902, and physician from 1902 to 1911. For a period of eleven years, from 1874 to 1885, he was a lecturer on comparative anatomy to the hospital, and he occupied the post of warden for no less than seventeen years. Throughout the whole of the period, extending over thirty-seven years, that Norman Moore was connected with St. Bartholomew's Hospital, he was devoted to its welfare. His activities were incessant, and whether he was teaching in the wards, or engaged in committee work connected with the school, he was always alert and ready with suggestions, conveyed often with humour, and always with clearness and precision. He had great moral courage, and was fearless of the opinions of others. For many years he was responsible for teaching pathology at the hospital, and in this subject he took a great interest. Later in his career he was appointed Lecturer on Medicine, a post he held from 1893 to 1911. Here his ability as a ready and fluent speaker made his lectures popular. His method of teaching was based upon the principle of insisting on cardinal facts, and these were illustrated with many apt references drawn from his vast store of knowledge obtained from books. The result of his medical work in connexion with his long association with St. Bartholomew's Hospital found expression in many published works, of which the following may be regarded as representative. His first medical work was *Observations on the Shape of the Chest in Cases of Hypertrophy of the Heart*, published in 1873. This was followed by *Observations on the Morbid Anatomy of Gout* in 1887; The Distribution and Duration of Visceral New Growths, which formed the subject of the Bradshaw lecture delivered in 1889; *Pathological Anatomy of Diseases*, 1893; *Principles and Practice of Medicine*, 1893; *Pleurisy: Its Pathology and Treatment*, 1905; and as the subject of the Lumleian lecture in 1909 he chose Rheumatic Fever and Valvular Disease. Besides these works he contributed many papers to the St. Bartholomew's Hospital *Journal* and other medical journals. Clear and easy exposition was the main feature of his medical writings, and they all bore the stamp of great literary skill. He was also an active member of the various medical societies, and took especial interest in the work of the Pathological Society.

It might be supposed that the narration given above of the medical activities of Norman Moore would account for the whole of his busy professional life, but that is far from being the case. Throughout his life he was devoted to the interests of St. Bartholomew's Hospital, but that devotion was in equal measure shared by the College of Physicians, for which he had a deep and abiding love; in its service were spent his happiest hours. Here he was in an atmosphere congenial to his spirit, surrounded by the books and manuscripts he loved and knew so well, gazing on the portraits of the great physicians whose biographies he had written with such skill, and taking his seat at the Comitia where Freind, Mead, and Sloane—his ideals of the cultured physician—had sat: here he was truly in his element. The work he accomplished for the College must ever remain as the brightest memorial of his active and valuable service. He saw in the College an ancient institution containing so much of value in its composition that it had been able to survive the wreck of time. With his veneration for antiquity he applied himself wholeheartedly to the task of preserving and perpetuating the sound principles on which the College is founded, and he watched with unremitting care lest innovations, introduced in conformity with modern requirements, should weaken the main structures of the foundation. But he was no reactionary; he was merely conservative, and when once he was persuaded that a change was for the good of the College he adopted it without reserve or qualification.

He was admitted a Member of the College in 1873, and four years later was elected a Fellow. From that time he was a constant attendant at all the meetings, and held at various times all the offices connected with the College with the exceptions of Treasurer and Registrar. He was a member of the Council from 1896 to 1898; censor in 1904 and 1905, and senior censor in 1908. In 1910 he was elected Harveian librarian in the place of Dr. Payne, and this post he held until 1918. From 1901 to November of the present year he was the representative of the College on the General Medical Council, and in that capacity supported with great energy the claims of the College. He gave the Bradshaw lecture in 1889, the Harveian oration in 1901, the FitzPatrick lectures in 1905 and 1906, and the Lumleian lectures in 1909. In 1918 he was elected President, a fitting honour to one who had served the College so well, and this office he held until the present year with great ability and distinction. When the annual meeting of the British Medical Association was held at Cambridge in 1920 the portrait painted by Sir William Orpen was presented to Sir Clifford Allbutt by Sir Norman Moore on behalf of the subscribers. At that time he received from the University of Cambridge the honorary degree of LL.D.

Hitherto we have dealt with the career of Norman Moore as a physician engaged in the active practice of his profession. We have now to give an account of him as a man of letters. It is true that he occupied a distinguished position as a physician, but it is probable that his fame will rest on the literary work he accomplished. From his youngest days he was gifted with a love of books and a keen literary sense. His heart was always in his study, and the amount of knowledge he absorbed from reading was truly marvellous. He had a most retentive memory and the capacity for detecting with celerity the salient parts of a book. Some members of our profession may have possessed a more profound knowledge of certain special branches of the learning contained in books; few have been so widely read as the subject of this memoir. But Norman Moore was no mere bookworm steeped in book learning with no power to apply it to his environment. His vast knowledge was made subservient to the daily work, and whether he was attending a committee, instructing his clinical clerks in the wards, addressing a meeting, or engaged in familiar intercourse, he drew freely upon these rich stores to enforce an argument, "to point a moral, or adorn a tale." In his travels over all branches of literature, for some he evinced a special affection; history and biography had for him a great attraction, and in this field he passed the greater part of his literary career. For the *Dictionary of National*

THE BRITISH MEDICAL JOURNAL

1148



SIR NORMAN MOORE, BT., M.D.

(After the portrait by R. G. Eves.)

Biography he wrote no less than 459 biographies, chiefly of medical men, and a perusal of those lives will show that he possessed a literary skill equal to Aikin, and an accuracy on a level with Munk. He once stated that he had never written a biography without first reading everything that the subject had written, and the condensed knowledge contained in these biographies readily attests the accuracy of the statement.

For years, when the subject was scarcely thought worthy of attention, Norman Moore was urging the importance of a study of the history of medicine, and he is entitled to be regarded as one of the founders of that branch of study in this country. Through his influence the FitzPatrick lectures in the History of Medicine were established at the College of Physicians, and in 1905 and 1906 he delivered the lectures, taking for his subjects "John Mirfield and Edward Browne in connexion with the education of physicians" and "The history of the study of clinical medicine in the British Isles." As Linacre lecturer in 1913 at Cambridge he chose as his subject "The physician in English history," and when called upon to deliver the Rede lecture in 1915 his subject was "St. Bartholomew's Hospital in peace and war." He was chosen President of the Section for the History of Medicine at the International Congress of Medicine in 1913, and at the Congress this year in London devoted to the history of medicine he was unanimously elected President of Honour. His pen was constantly employed in writing papers connected with the history of medicine, and among these may be mentioned *The History of Medicine in Ireland*, in 1910, and in conjunction with Mr. Stephen Paget, a history of the Royal Medico-Chirurgical Society in 1905. He was also a trustee of the British Museum, and had conferred upon him the distinction of being elected an Honorary Fellow of St. Catherine's College, Cambridge.

Norman Moore's type of mind naturally attracted him to mediaeval history, and in the centuries belonging to that epoch he was thoroughly at home. Perhaps his interest flagged when the seventeenth century was passed, but his knowledge even of modern literature would excite admiration in any circle. As evidence of his ability as a writer of archaeological and mediaeval history, towards the end of his life (in 1919) his *History of St. Bartholomew's Hospital* appeared. This book, containing a complete and exhaustive history of the hospital to which he was devoted, had occupied his leisure for more than thirty years, and is a fitting monument to his learning, research, and literary skill. Indeed, it is doubtful if the history of any institution has ever been written with such a wealth of detail. It was his last great effort, and worthily closes a brilliant literary career.

Quite early in his life (1871) he contributed an excellent memoir of Waterton as a preface to the collected Essays of that naturalist. He also translated the concise Irish grammar of Windish in 1882, and the following year he published a translation of the Irish text of the "Loss of the Crown of Loegaire Luc."

Norman Moore was twice married, first in 1880 to Amy Leigh Smith, daughter of William Leigh Smith of Crowham, Sussex, and secondly in 1903 to Millicent, daughter of Major-General John Ludlow. By his first wife he had two sons and a daughter. A son was killed in the war, and he is succeeded in the title by his son Alan Hilary.

His personal characteristics are almost too well known to require description. A man of intense convictions and great moral courage, regardless of the opinions of others in pursuing the course he believed to be right. Quick to see the central pivot in debate, he did not "suffer fools gladly," but was always ready to listen to opinions formed on serious grounds. As President of the College he ruled with prudence and dignity, and in all his actions in that capacity he adopted the position of a strictly constitutional ruler. He was the highest expression of that fast diminishing class of physicians who counted wide intellectual attainments the most important asset of the doctor, and the profession is infinitely poorer by his loss. Other men deeply versed in various branches of learning will arise in our profession, but it is doubtful if we shall see again a man endowed so bountifully with varied learning as Sir Norman Moore. It is not the purpose of this memoir to enter into personal and intimate details, but we may perhaps be permitted to say how much we have in mind to-day his unfailing kindness during a period of thirty-five years, and how valuable to us his high example has been. In the annals of the College he will take his place beside Freind, Mead, Sloane, and Askew. He himself would not have desired a higher honour. ARNOLD CHAPLIN.

Sir HUMPHRY ROLLESTON, President of the Royal College of Physicians of London, writes:

Numerous recollections and memories of kindnesses from Sir Norman Moore since 1881, when as warden of the college he admitted me as a medical student at St. Bartholomew's Hospital, are recalled by the death of this striking personality. He was a clear and emphatic teacher successively of comparative anatomy, pathology, and medicine, and often emphasized his remarks by historical instances. His literary and historical distinction has thrown into the shade the large amount of work he did in his earlier days in morbid anatomy; on this subject he wrote a textbook, gave the Bradshaw lecture (1889) at the College of Physicians, and was very active at the old Pathological Society of London, serving for eleven years on the Morbid Growths Committee. An outstanding characteristic was his affection for the old, whether men, manners, institutions, or books. While at Cambridge he was the disciple of Charles Waterton (1782–1865) the naturalist, whose life he wrote in 1871, and of Sir George Paget, the regius professor of physic; his acquaintance with men of learning is also shown by a letter of Professor John Richard Green (1837–83) referring in 1877 to "Norman Moore, one of the surgeons at St. Bartholomew's, but a man of marvellous knowledge in all Irish matters old and new. . . . Indeed, he is the only Irish person from whom I ever learned anything about Ireland." His devotion to the ancient foundation of Rahere is perpetuated in his splendid *History of St. Bartholomew's Hospital*, on which he was engaged for thirty years. This labour of love illustrates his gift for conveying in an attractive form the results of wide research, which in less able hands might easily have appeared dry-as-dust and uninspiring. As a medical biographer he was in the first flight, and was among the seven who contributed to all the original sixty-three volumes of the *Dictionary of National Biography*, and it is known that in constructing these 459 lives he followed the admirable rule of first reading all the published works of the man whose notice he was engaged on. Not only was his reading remarkably extensive and his memory wonderfully alert, but he had the power of aptly applying his stores of quaint knowledge and anecdote with a humour and manner particularly his own; he was thus for years pre-eminent as an after-dinner speaker in the medical world of London, and delighted his audience, especially when proposing the toast of the guests, by unexpected analogies and contrasts. Together with his pupil, Stephen Paget, he compiled the centenary volume (1805–1905) of the Royal Medico-Chirurgical Society, and thus performed for the premier medical society the same service, though infinitely less exacting, that he did for the oldest hospital of this city. At this society and its continuation the Royal Society of Medicine he was almost constantly in office, and from 1899 to 1918 was honorary librarian, only resigning when elected president of the Royal College of Physicians of London. This indeed would appear to have long been his ambition, and it may well be doubted if this high honour has ever been more deservedly won by long and unremitting devotion. From the onset he was a member of the important committee of management of the two colleges and thus was much concerned with the Conjoint Board examinations; for twenty-one years he was the representative of the College on the General Medical Council, and for seven years Harveian Librarian; further, he was instrumental in obtaining for the College the endowment of the FitzPatrick Lectures in the History of Medicine—a subject for which he did so much in this country, his position being clearly recognized by his selection as President of Honour of the recent International Congress of the History of Medicine in London. Though intensely interested in the traditions of the past, he had his finger on the pulse of present movements, and was an influential and efficient member of committees. For the honour and position of the College he was ever on the watch and never spared himself; in fact, it is not improbable that his self-sacrifice was instrumental in the rapid failure of his health that became apparent during his last year of office. The College loses a loyal friend, the like of whom it will not see again, and British medicine mourns a scholarly representative recalling the learned physicians of Linacre's ideal.

One of Sir Norman Moore's house-physicians writes:

The Editor has allowed me to see the admirable memoir written by Sir Norman Moore's successor in the office of Harveian Librarian, and the discerning tribute by his successor in Harvey's chair. It is most fitting that his life and work should be recorded in the BRITISH MEDICAL JOURNAL by

distinguished physicians who followed in his path, from Cambridge, through St. Bartholomew's, to high office in the Royal College of Physicians. As a younger son of these three great and ancient foundations, which were always in his thoughts, may I add a word from a rather different aspect? Dr. Norman Moore (to use the familiar name) was a good friend to young men, and showed his interest in practical ways. No pupil was ever forgotten. Those who earned his friendship kept it, and it went on from father to son. Little escaped that observant and critical eye; one quick look would sum up a new student's possibilities, or the fulfilment of early promise in an old student now shaping a career in practice. Dr. Norman Moore's clinical teaching was individual and personal, it had no direct relation to the passing of examinations; but his sayings stuck in the mind, and the drilling in accurate observation was of life-long value. The three chief things he taught at the bedside were consideration for the patient, careful study of the signs of disease, and precise statement of the facts observed. He praised a clear case-note, but paid no attention to the clinical clerk who tried to impress him with textbook knowledge; indeed, no learned man ever seemed to care less for pedantry. He was quick to note ability, but one of the most charming sides of his remarkable nature was his liking and respect for the unbookish man of action—the kind of student who after many disappointments at the examination hall wins success in the rough-and-tumble of practice. His afternoon visits to the wards had a civilizing effect on the rawest student, and his informal teaching communicated a point of view in clinical medicine which might colour a whole career. His racy allusion to old books and authors seldom fell on stony ground, because he would often add: "I do not want you to read these books because they are old but because they are good." Many such sayings stand out in the memory of his pupils. We remember, too, the unfailing loyalty and kindness to his house-physicians.

The funeral took place on the afternoon of Tuesday, December 5th, at Sedlescombe Churchyard, Sussex. Among those present at the graveside, with Lady Moore, Sir Alan Moore, Mrs. Marlborough Pryor, and other members of the family, were Sir Humphry Rolleston, President, and Dr. J. A. Ormerod, Registrar, of the Royal College of Physicians; Sir William Lawrence, Bt., Senior Almoner, and Dr. H. Morley Fletcher, Senior Physician, representing St. Bartholomew's Hospital; Mr. F. M. Rushmore, President and Tutor of St. Catherine's College, Cambridge; and Dr. N. G. Horner (BRITISH MEDICAL JOURNAL). A solemn Requiem Mass will be sung at St. James's, Spanish Place, to-day, December 9th, at 11 a.m.

SIR ISAAC BAYLEY BALFOUR, K.B.E., M.D., D.Sc., LL.D., F.R.S.,

Emeritus Professor of Botany in the University of Edinburgh.

ALTHOUGH Sir Isaac Bayley Balfour never practised medicine his was for many years (from 1838 to 1922) the first professor's voice heard by every Edinburgh medical student commencing his curriculum in the University; so he took his place in the great system of the teaching of the healing art, it not in the active prosecution of it. Although he was not appointed to the professorship (in succession to Professor Alexander Dickson) till 1888, he had already taught the class in 1876 and 1878; in the summer session of the latter year Sir Isaac's father, Professor John Hutton Balfour (affectionately known to that generation of students as "Woody Fibre"), began the lectures, but being immediately laid aside by illness his work was taken up and carried on till the end of the session by his son, then a brilliant young botanist of 25. The writer, who was a member of the class that summer well remembers the changed outlook upon botany which was revealed to the undergraduates when Dr. Isaac took his place at his father's lecturing desk. John Hutton Balfour was the author of a memorable textbook in two volumes; his teaching flowed smoothly along in the wake of that work, and there was no great danger (from the examination point of view) if a lecture or two were missed; Dr. Isaac Bayley Balfour put before the class the newer botany from Germany with its emphasis on histology, on embryology, and on the lowest and simplest forms of plant (or was it animal?) life; at once interest was aroused and enthusiasm excited, and the benches in the classroom in the Royal Botanic Garden were packed even before 8 a.m., the hour of lecture. The Saturday excursions, too, with an active young teacher eager to impart knowledge, leading the way over hill and dale, gained in popularity.

Dr. Bayley Balfour was born in Edinburgh in 1853, and received his education at the Edinburgh Academy and the University, graduating (with honours) M.B., C.M. in 1877, and gaining a gold medal for his M.D. thesis (botany of Socotra) in 1883. He had already taken part in the transit of Venus expedition to Rodriguez in 1874, and he published three years later his *Botany of Rodriguez*. Had a botanist accompanied the *Challenger* in its scientific voyage, it is more than likely that Dr. Balfour would have been the man. At this time he was an M.A. and B.Sc., and was taking out medical classes, acting also as assistant to Huxley, who was doing professorial duty in Edinburgh in 1875–6, and as dresser to Lister in 1876. In the year of his graduation as M.B. and C.M. he acted as assistant to Sir Wyville Thomson, the Professor of Zoology fresh home from the *Challenger* expedition. Later he worked with De Bary at Strasburg and also at Würzburg. As has already been stated, he lectured for his father in 1878, and in the following year he was appointed to the chair of botany in the University of Glasgow in place of Dickson, who had succeeded to the Edinburgh chair. In 1879 also, after the close of the classes, he explored the island of Socotra, making researches which he afterwards (1883) embodied in his gold medal thesis. In 1884 he was appointed Sherardian Professor of Botany in the University of Oxford and was elected a Fellow of the Royal Society. Three years later Balfour published his work of the *Botany of Socotra*, and then in 1888 he returned to his native city and his Alma Mater, having been appointed Regius Professor in the University of Edinburgh and Regius Keeper of the Botanic Garden there.

John Hutton Balfour held the chair of botany for thirty-four years (1845–1879), and so did his son, Isaac Bayley Balfour (1888–1922). The son gave his time and energy pretty evenly between the teaching work of his chair and the care and improvement of the great Botanic Garden of which he was keeper. His work in both spheres was of the highest order. His lectures were always clear and intensely interesting, and his personal touch with his pupils was close and helpful to them. His reputation as a botanist was shown in various ways, more particularly perhaps by the fact that he was one of the first sixty botanists to receive from the Royal Horticultural Society the Victoria Medal of Honour. In time many other honours came to him, a knighthood in 1920, and the honorary LL.D. from Edinburgh University as recently as last July. He retired from the active work of his chair in April last. He has not been long spared to enjoy the rest and freedom from teaching responsibilities which his retirement promised, for he died on St. Andrew's Day (November 30th) at Courts Hill, Haslemere, the residence to which he had removed in the south. He married a daughter of the late Mr. Robert Balloch of Glasgow, by whom he had one daughter. Sir Isaac worthily maintained the high reputation which had become attached to the chair of botany in the university, and he and his father between them held the professorship for the long period of sixty-eight years. The newly equipped and extended Botanic Garden remains as a memorial in large part of the Balfour occupancy of the Regius professorship.

Dr. GRATTAN ROBERT CRONYN, who died on November 23rd, was the son of the late Dr. John Cronyn of Dublin. He was born at Kingstown, near Dublin, in 1864, and was educated at Foyle College, Londonderry. He served with the King's Liverpool Regiment for seven years in India, and on his return finished his medical training in Dublin at the Meath Hospital and the Rotunda. He took the diplomas of L.R.C.S.I., L.R.C.P.I., L.M. in 1896. For three years he acted as assistant to Dr. Pim of Barrowford, Lancashire, and then served as Civil Surgeon during the Boer war, in the Military Hospital, Dublin. For three years he examined recruits for the army at Liverpool, and then returned to Barrowford and assisted Dr. Pim for another two years. He went to Maidenhead in 1907 to take over the appointment of medical officer to the Union Infirmary and district. He held this appointment to the time of his death, and also worked up a large private practice. For ten years he had been on the honorary staff of the Maidenhead Hospital.

THE celebrated comparative anatomist and biologist, OSCAR HERTWIG, has recently died in Berlin at the age of 73.

Medical News.

A TROPICAL Diseases Committee has been appointed in connexion with the British Empire Exhibition to be held at Wembley in 1924. The chairman of the committee is Sir Humphry Rolleston, K.C.B., M.D., and the deputy chairman Major-General Sir W. B. Leishman, K.C.M.G., F.R.S. (War Office). The committee includes representatives of the Tropical Schools, the Natural History Museum, the Royal Navy, the Royal Colleges of Physicians and Surgeons in London, veterinary medicine, and also the India Office and the Colonial Office. The joint secretaries are Lieut.-Colonel W. W. Clemesha, C.I.E., M.D. (70, Victoria Street London, S.W.1), and Dr. S. H. Daukes, O.B.E. (Wellcome Bureau of Scientific Research, 25–27, Endsleigh Gardens, London, N.W.1). The chairman of the executive subcommittee is Dr. Andrew Balfour, C.B., C.M.G.

AT the social evening of the Royal Society of Medicine, to be held at 1, Wimpole Street, W.1, on Wednesday next, December 13th, Messrs. Marconi have arranged to install one of their newest models and a Magnavox loud speaker, which will enable the audience in the Robert Barnes Hall to enjoy a wireless concert without the necessity of using individual earpieces. It will begin at 8.20 p.m.; after the concert news too late for the evening papers, latest weather reports, and so on, will be delivered.

AT a general meeting of the members of the Royal Institution held on December 4th, when Sir James Crichton-Browne was in the chair, Sir Arthur Keith was elected secretary in succession to the late Colonel E. H. Grove-Hills. Professors Urbain (Paris), Ehrenfest (Leyden), Knudsen (Copenhagen), Bjerknes (Christiania), and Dr. Irving Langmuir were elected honorary members.

THE annual dinner of the London School of Medicine for Women (Royal Free Hospital) was held on Friday, December 1st, at the Holborn Restaurant, with Dr. Ethel Vaughan-Sawyer in the chair; 282 graduates, students, and their friends were present. The chairman, in proposing the toast of the school and hospital, referred to the loss sustained by the resignations of Dr. J. Walter Carr, senior physician, and of Miss Cox-Davies, the matron. The greatest need of the school at the moment was a suitable recreation ground for the students; there were 480 students with only one tennis court amongst them all. Mr. J. Gay French proposed the health of the guests in a felicitous speech, and Lord Riddell made a witty response. Several songs delightfully rendered by Madame Teresa del Riego added greatly to the pleasure of the evening.

AT the meeting of the Manchester Surgical Society, to be held in the library and reading room of the Manchester Medical Society, Medical School, Coupland Street, on Tuesday next, December 12th, at 8 p.m., papers will be read by Mr. M. Mamourian on massive excision of diseased bone followed by immediate or early bone-grafting, and by Mr. Garnett Wright on after-results of gastrectomy for ulcer. The discussions on the papers will be opened by Mr. Harry Platt and Mr. H. H. Rayner respectively.

A THREE months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Hampstead, by Dr. E. W. Goodall, medical superintendent, on Mondays and Thursdays, at 5.15 p.m., beginning Monday, January 8th, 1923. The fee for the course is £3 3s.

AN extension of the nurses' home of the London Fever Hospital was recently opened by Lord Muir-Mackenzie. The building is four stories high, and the ground floor contains class and sitting rooms for 100 nurses. The other stories each provide seven bedrooms, and each has a sanitary wing.

THE *Times* correspondent in Berlin reports that malaria is prevalent in the centre of Russia and in the city of Moscow. Until the beginning of this year the area affected was restricted to the south-eastern regions—the marshy district of the Dnieper, the Don, Kuban, the Black Sea border of the Caucasus, and Transcaucasia. But from January to September, 1922, the number of cases registered in the government of Moscow alone was 25,280, and of these 2,223 occurred in the city. Similar or worse conditions prevail in the governments of Tver, Vladimir, Riazan, and in the Volga regions. It is reported that of the total number of persons affected 25 per cent. have died. It is added that adequate medical organization and supplies are wanting.

THE State Medical Officer of Texas recently announced that 500,000 cases of dengue had been reported in the State within a few weeks, but that the disease is not of a serious character. It was expected that the coming of cold weather, causing the death of the mosquitos, would end the epidemic.

THE forty-fourth autumn meeting of the Irish Medical Schools' and Graduates' Association was held at Pagani's Restaurant on November 30th, with the president, Dr. J. A. Macdonald, in the chair. There was a large attendance, including several members resident in Dublin. A letter of condolence was sent to the widow of Sir Charles Ryall. The members and their friends, to the number of 101, subsequently dined together, the guest of the evening being Professor Andrew S. Dixon. After the loyal toasts had been honoured, Dr. William Douglas proposed "Our Defenders," and Colonel George A. Moore replied. In proposing the health of the guests Dr. Gubbins Fitzgerald said that Trinity College, Dublin, of which Professor Dixon was such an ornament, had the reputation of welcoming to its halls men and women of every creed and every shade of politics; nothing contentious was allowed to interfere with the prosecution of studies. "Prosperity to the Association" was proposed by Sir Jenner Verrall, who congratulated the members on their good fortune in having as their president Dr. Macdonald, a man in whom were combined much wisdom, quick perception of points requiring proper consideration, and the courage to state his convictions without giving offence to those differing from him. The president, in reply, briefly narrated the origin of the Association. The idea occurred to an old Portora boy, who had had long service abroad as an army surgeon, and he broached this in 1878 to a schoolfellow who had been serving abroad as a naval surgeon. The association now numbered nearly 700 members, whose homes were in every part of the world. Its success was due to the camaraderie it fostered and the exclusion from its meetings of everything connected, even remotely, with politics or polemics.

A MEETING of the Royal Benevolent Fund Guild was held at the house of the Medical Society of London on November 26th, when Lady Bradford, the president, introduced Mrs. Kendal, who took the chair. Mrs. Scharlieb, M.D., described the work of the Guild. Lady Fripp said that it was proposed to hold a dinner after Christmas, and many members present agreed to act as stewards, undertaking to collect £10 before January 30th or to bring eight or ten guests. Tickets can be obtained from Miss Swinford Edwards (68, Grosvenor Street, W.1) or Miss Fletcher (98, Harley Street, W.1). Under the auspices of the Ladies' Medical Golfing Society a bogey competition, open to all lady golfers, is to be held between January 1st and September 30th, 1923, for the benefit of the Guild. Play may be on any course, but the card must bear the special stamp (price 6d.) issued by the Guild, and be certified by a member of a recognized golf club. The lady who returns the best aggregate of five scores will win a silver cup. Further particulars and sheets of twenty stamps may be obtained from Lady Rigby (24, Queen Anne Street, W.1).

IN 1919 an Act was passed by Parliament providing for the registration of nurses for the sick. Under that Act a General Nursing Council was established, one of whose duties was the formation of the Register of Nurses. Work on its preparation has been going on steadily since that time, and the Minister of Health has given notice, as required by Statute, that the Register has now been compiled. The effect of this notice will be that after three months from December 5th (the date of the notice) the unauthorized use of the title "registered nurse" will render a person liable to a fine not exceeding £10 for a first offence and £50 for any subsequent offence. The first Register is now being printed, and will be published by the General Nursing Council, 12, York Gate, Regent's Park, N.W.1.

DR. WILLIAM BROWN, Wilde Reader in Mental Philosophy in the University of Oxford, has been added to the consulting staff of Bethlem Royal Hospital as honorary consulting psychologist.

A NATIONAL congress of medical practitioners was held at Rio de Janeiro in October, with Dr. C. Sampaio as president. Professor F. Mahalhaes delivered the opening address, on the thesis that "democracies succeed only when the authorities take as their guide the principles of social medicine." The meetings were organized by the Medical and Surgical Society of Rio, and lasted for a week; it was decided to form a Brazil Medical Association.

A CONVENTION of the Federation of the Experimental Biological Sciences will be held in the Faculty of Medicine of the University of Toronto on December 27th, 28th, and 29th.

A CANCER institute has just been opened at Madrid. Professor Goyanes, the director, supervised the building and equipment after visiting similar institutions in other European countries.

A NUMBER of cases of tropical malaria have recently been reported, according to the *Münchener medizinische Wochenschrift*, among persons who have never lived away from Berlin; none of them had any suspicion of the disease until it flared up under a course of salvarsan treatment.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

QUALIFICATION FOR M.O.H.

"K."—The Sanitary Officers Order, 1922, made by the Minister of Health, requires that a person who is appointed medical officer of health of a district shall be registered in the *Medical Register* as the holder of a diploma in sanitary science, public health, or state medicine, or shall have had not less than three years' previous experience of the duties of a medical officer of health. These requirements may be dispensed with by the Minister of Health if it appears to him desirable to do so. As our correspondent lives so near to a town in which there is a medical school he should have no difficulty in attending the necessary courses of training for the D.P.H. He will be able to obtain full information from the authorities of the school.

SAMWAYS'S ANCHOR TOURNIQUET.

DR. D. W. SAMWAYS (Mentone) writes: I found during the war that many of the anchors, on the anchor tourniquet wh ch I designed many years ago, were not correctly made. The flukes of the anchor were too near the ring for the rubber tube to pass easily, the makers evidently thinking that some jamming action between the ring and flukes was necessary. None is necessary. The rubber tube jams itself by passing under the flukes and over the shank, and the pull o the rubber on the shank presses the flukes on the tube passing beneath them. The twists in the tube, and the compressions on it, hold it firmly. The shank of the anchor should always be made long enough for the rubber tube to pass on easily; otherwise skill or trouble, neither of which should be necessary, will be required to fix the tourniquet.

INCOME TAX.

"A" inquires as to what adjustment should be made between partners in the following circumstance: "A" and "B" were in partnership until "B" bought up "A's" two thirds share and the "practice house" as from June 30th, 1922.

*** The first and second instalment of income tax 1921–22 relate, of course, to the year ended April 5th, 1922, and should be paid and borne by "A" and "B" as if the subsequent change had not taken place. The income tax assessment Schedule D for 1922 23—for which the first instalment is payable in January, 1923—should be made or adjusted on the basis that "A" has one-fourth of two-thirds—that is, one-sixth of the profits and he should bear his share of the tax accordingly. The rates and income tax Schedule A payable on the house should be apportioned for example, on the basis of half and half as regards the half-year to October, 1922, and the first income tax instalment 1922–23—between "A" and "B" unless there was some specific arrangement or allowance made in that connexion on the contract for sale.

LETTERS, NOTES, ETC.

INTRAUTERINE DECAPITATION.

DR. H. W. OGLE-SKAN (Hendon) writes: Dr. Pole's letter on this subject (November 25th, p. 1054) reminds me of the following incidents, which may be of interest. Mrs. "A." sent for me on a Friday afternoon a few weeks ago as she was three months pregnant and was having slight pains and some haemorrhage. Abortion appeared not inevitable, so I gave opium and told her to stop in bed. I was called urgently late on the Saturday evening to find that, not regarding the situation as serious, she had invited her friend, Mrs. "B.," round for the afternoon and evening while their husbands went to watch a cup tie. About 9 p.m. they thought they would go out to the nearest public-house and get some beer for their husbands on their return. While in the public-house Mrs. "A." felt very queer and had a glass of brandy and proceeded to walk home. While going along a dark lane Mrs. "A." was violently sick and felt something come from her. Mrs. "B." groped around in the dark and felt the "something," which she picked up and put in the basket of eggs she was carrying; on arriving home she found the "something" was a foetus without a head. She went for a nurse and telephoned me. On arrival I was shown the foetus minus a head, and on examination found the head in the vagina. I anaesthetized and removed the head and extracted the placenta from the uterus. On the Monday I was called to Mrs. "B." (who opened the door to me), and she showed me a pail in which was a foetus *she* had expelled early that morning. This one had a head all right! As no placenta was forthcoming next day I anaesthetized and removed a very adherent placenta piecemeal through an os which would not dilate more than enough to admit one finger. Mrs. "B.'s" foetus was also about three months. The coincidence was rather remarkable. Both women made an uneventful recovery.

THE SMALL-POX OUTBREAK AT POPLAR WORKHOUSE.

DR. H. LAIRD PEARSON (Birkenhead) writes: Dr. C. Killick Millard, writing on this subject, says: "It is interesting to learn that all of the 22 fatal cases in the present outbreak had been vaccinated." Now to substantiate his argument one needs to know if those fatal cases had been *efficiently* vaccinated. In last week's issue of the *Medical Officer* I have recorded a case (a contact) of a child aged 2 years with one "mark," who upon revaccination produced four perfect vesicles.

STRYCHNINE AND THE HEART.

DR. CHARLES J. HILL AITKEN (Kilnhurst, nr. Rotherham) writes: In the BRITISH MEDICAL JOURNAL of November 11th, 1922, Dr. John Hay, in his interesting article on cardiac failure, states that "strychnine has a wide and unwarranted reputation as a cardiac stimulant in Great Britain." Yet in the *Practitioner* for June, 1905, the late Sir Thomas Lauder Brunton wrote the following words: "In the *Medical Record* of 1874, p. 293, I abstracted a paper on the action of strychnine on the respiratory centres, and in a conjoint paper with Profe sor Cash (*St. Bartholomew's Hospital Reports*, vol. xvi, p. 229) I showed its powerful action as a cardiac stimulant. In my lectures on therapeutics for thirty years I have insisted upon the facts." Rather different statements which are an interesting contrast.

A DISCLAIMER.

DR. MACKENZIE STEEDMAN (Hounslow) writes: It has been brought to my notice that a paragraph appeared in the *Middlesex Chronicle* of December 2nd, giving prominence to my name and that of my assistant as being responsible for a blood transfusion. As this paragraph has, naturally, caused me some annoyance, and may lay me open to criticism from members of the medical profession, I shall be glad if you will give me this opportunity of disclaiming any knowledge whatever of the paragraph in question until my attention was called to it subsequent to publication.

FIRST AID IN COAL MINES.

IN reply to an inquiry published last week the Chief Secretary of the St. John Ambulance Association writes to call attention to the pamphlet *First Aid in Coal mines*, which can be obtained (price 6d., by post 7d.) from the St. John Ambulance Association, St. John's Gate, Clerkenwell, E.C.1. We understand also that a useful book is *First Aid in Mining* by Louis G. Irvine (price 8s. 6d. net) published by the Book Department of the *Mining Magazine*, 724, Salisbury House, London, E.C.2. Messrs. John Bale, Sons, and Danielsson publish a card *First Aid in Few Words* by Dr. J. M. Garvell which we are informed is in use by many factories, collieries, and railways.

MESSRS. GRAFTON AND CO., publishers (Coptic House, Coptic Street, London, W.C.1, write: Will you allow us space in your columns to say that we have no connexion whatever with the firm calling themselves the Grafton Publishing Company and circularizing a publication entitled "London Doctors and Dentists"? Their circulars do not appear to bear sufficient address, and correspondence has been sent to this address.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 55, 58, 59, and 60 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 56 and 57.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 213.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF OPHTHALMOLOGY.
A. S. PERCIVAL, M.B., B.Ch.Camb., President.

PRESIDENT'S INTRODUCTORY REMARKS.

THE PRESIDENT of the Section, in opening the proceedings, said that he felt very deeply the high honour that had been conferred upon him in his selection for this office, especially when there were so many ophthalmic surgeons in this city of Glasgow of such outstanding merit for the office. The programme the Committee had prepared was excellent, and he looked for a free scientific discussion of the papers that would be read, so that the proceedings of this Section might not be unworthy of this great city and of the Association. Even if few conclusions could be drawn from the interchange of opinion, let them console themselves with the words of Joubert: "Il vaut mieux remuer une question sans la décider, que la décider sans la remuer."

DISCUSSION ON THE ETIOLOGY OF OPTIC NERVE ATROPHY.

OPENING PAPERS.

I.—C. O. HAWTHORNE, M.D.Glasg., F.R.C.P.Lond.,
Consulting Physician, Central London Ophthalmic Hospital.

IN an endeavour to discharge the duty of opening this discussion I propose to present the causes of optic nerve atrophy in a series of groups. In some of these the harmful agency is open, manifest, and direct; and the interest is mainly topical and surgical. Others form part of the larger and more obscure problems of disease as this occurs in the nervous and cardio-vascular systems; and the appeal is specially to the physician. But no rigid dividing line can be drawn or ought to be drawn, for the processes of pathology do not accommodate themselves to an imposed scheme of professional titular distinctions.

Trauma.

Here the causes of optic nerve atrophy usually lie upon the surface. Wounds penetrating into the orbit, tumours of the optic nerve trunk, and intraorbital cellulitis, periostitis, and morbid growths, are conditions each one of which, obviously, may inflict damage either on the optic nerve or on its blood supply, and may thus directly or indirectly be the starting point of a process of atrophic degeneration. As exceptional experiences, lightning, electric flashes, eclipse blindness, and exposure to an arc lamp have, in turn, been held responsible for optic nerve atrophy. These fashions of immediate injury I leave hopefully to my surgical colleagues. From the same source, too, I hope we may hear something of indirect violence as a cause of changes in the optic nerve and in the function of vision. Fractures of the base of the skull in the anterior fossa may, as is well known, damage the optic nerve. Here, however, the violence, relative to the nerve at all events, is direct and the loss of sight immediate, though ophthalmoscopic evidence of the nerve atrophy may be postponed. The reference I wish to make is to violence which either does not implicate the skull at all, or, if it is applied to the skull, does not cause fracture of the base in the anterior fossa. I suggest that in such cases mischief leading to optic atrophy may occur, and that, as the failure of vision is apt to be delayed, a difference of opinion relative to the responsibility of the accident may arise and an acute legal issue may be raised. I quote briefly two records.

One, that of a middle-aged woman who, two months after being thrown into a ditch from a motor car, complained of defective sight of the right eye; visual acuity was reduced to 6/18 and the optic disc was unduly white. Fortunately in this instance an ophthalmoscopic examination had been made and the presence of retinal haemorrhages noted shortly after the accident; it was therefore an easy thing to say that the accident was responsible.

In the second record such a conclusion, at least for a time, was not so obvious. The patient, a man of 43 years, was admitted to hospital as a possible case of intracranial tumour, there being exudation and haemorrhages at each optic disc. Two months previously he had fallen from a lorry, and after being examined at a hospital had become unconscious on reaching home. After three weeks in an infirmary he appeared to be quite well. Later his sight became dim and a bilateral optic neuritis with haemorrhages was recognized. In all other respects, examination, including a skiagram of the skull, investigation of the nasal fossae, and the application of the Wassermann test to the blood serum and the cerebro-spinal fluid, was negative. Gradually the swelling of the optic discs subsided and the patient left the hospital perfectly well and with only a slight reduction of his visual acuity; and four and a half years later the conditions were unchanged.

Are such cases examples of haemorrhage into the sheath of the optic nerve? Whatever be their pathology, they certainly have considerable medico-legal importance, and I propose them as worthy of the attention of the Section.

Poisons.

There are various poisons that are well recognized as competent to produce optic nerve atrophies. Here again I shall leave the ground mainly to my colleagues. But I will ask two or three questions. Some few years ago certain organic preparations of arsenic acquired an evil reputation as provokers of optic atrophy. Are the more modern preparations quite safe in this respect? Again, is arsenic in an inorganic form entirely free from risk? At one time it was the fashion to give Fowler's solution in large doses to children suffering from chorea, and in occasional instances the medicine, by inadvertence, was continued until it produced peripheral neuritis. But neither in such cases nor in any other have I personally seen any reason to believe that there was peril of optic nerve atrophy; and in none of the recent notorious cases of poisoning by arsenious oxide do we seem to have heard of any recognized visual defect. Yet a few cases of central scotoma following inorganic arsenates have been recorded.

A second question is, Are patients with a bilateral central scotoma always regarded as possible examples of disseminated sclerosis or of tabes dorsalis? Tobacco, no doubt, is a ready explanation and often a correct one, but such a conclusion, I suggest, is not secure until it is supported by the negative results of a complete examination of the nervous system.

Lead, quinine, sodium salicylate, methyl alcohol, and carbon bisulphide are other agents, each of which in turn has been found guilty of a toxic influence on the optic nerves. Glycosuria, I should say, does occasionally come into the same category, but the case against ordinary alcoholic beverages appears to be "not proven." The combination of excess of alcohol and excess of tobacco is regarded generally as a bad one, yet Sir Jonathan Hutchinson used to teach that alcohol, far from aiding the poisonous action of tobacco, afforded some protection against this disaster.

Syphilis.

Syphilis admittedly exercises a wide range of influence in the production of optic nerve atrophy. In the hereditary form of the disease the atrophy may be a part of a widespread choroido-retinal ruin; or it may be associated with an ordinary disseminated choroiditis; or, but for the atrophic discs, the fundus may appear normal, with, perhaps, choroido-retinal mischiefs or other signs of the infection in other members of the family. There is here a group of cases (far from frequent) that invite discussion—namely, cases of juvenile tabes dorsalis; and the point I wish to raise is the maximum age limit at which this form of disease may manifest itself. I have notes of cases in which optic atrophy, as part of a tabes dorsalis, was first observed at 17, 24, and 28 years respectively, and though at these ages the absolute exclusion of the acquired disease is difficult, it must be admitted that in patients under 30 years the development of tabes dorsalis apart from hereditary specific disease is most exceptional. Moreover, it will be allowed that some of the exhibitions of hereditary syphilis—interstitial keratitis, for example—may be postponed to the twenties or even to the thirties, so that there is no antecedent improbability that optic atrophy and tabes dorsalis may share in this delay. I suggest that the experience of members of the Section on this point would be valuable.

In acquired syphilis both post-neuritic optic atrophy and primary atrophy occur. The neuritis responsible for the first of these is, I should say, a very exceptional event in the early stage of the disease; I have once seen it as early as four months after infection, and I suppose it must here be regarded

as due to the direct action of the poison on the optic nerves. In the later stages, and when it is accompanied by headache, more or less severe, the presumption is in favour of intracranial gumma or syphilitic meningitis.

Primary optic atrophy due to syphilis is, of course, a familiar experience in tabes dorsalis and to a less extent in general paralysis of the insane. Though there is little if anything new to say, I venture a remark or two on some of its well-known features. Its distribution is invariably bilateral, though the two eyes are at an early date often found unequally affected. It moves, invariably I think, to complete blindness. The onset is announced by peripheral contraction of the visual fields, either for white or colours or for both, yet with this, central visual acuity may remain good for a relatively considerable period; occasionally a central scotoma is observed. Personally I have never seen hemianopsia, but instances of this defect have been recorded. The discs are usually characteristic, though the apparent changes are not always equal to the visual defect. The optic atrophy may precede ataxia by many years, or spinal symptoms may follow at a comparatively early date; sometimes optic atrophy develops after ataxia has been definitely established, and in some of these last-mentioned cases the loss of sight is associated with relief of the spinal symptoms.

Two questions may be presented for discussion. First, is optic atrophy, as one of the peripheral nerve degenerations of tabes dorsalis, frequently accompanied by other peripheral defects such as cutaneous anaesthesia and nerve deafness? Of cutaneous anaesthesia I have collected some observations, but I have not found any reason to believe that this symptom is more frequent with optic atrophy than it is in cases from which optic atrophy is absent. Nerve deafness in tabes I can remember only in two patients, and while one of these was blind the other had normal vision.

A second question is, Do all cases of bilateral primary optic atrophy, not otherwise explained, belong to the tabes dorsalis group? It is admitted that optic atrophy may by many years precede an ataxic gait, but it is said also that it never precedes loss of the knee-jerks or lightning pains in the lower limbs. If this latter statement is correct a primary optic atrophy existing as an isolated event cannot be named tabetic atrophy. For my own part I will venture to say the statement is not strictly correct, for now and again—rarely, I admit—evidences of optic atrophy are found with normal knee-jerks, and these at a later date disappear. But, again, cases of primary optic atrophy, with undisturbed tendon jerks, in patients giving a positive Wassermann reaction, are not very uncommon, and in some of these the atrophy is accompanied by a defective pupillary light response or by an ocular paralysis. No one, I take it, will say that the Argyll Robertson pupil or an ocular palsy in a syphilitic patient, even though the knee jerks are present, means anything different from what is involved in the association of one or other of these events with absence of the knee-jerks. Why, then, should an optic nerve atrophy in a syphilitic patient with evident knee-jerks be placed in a different category from optic nerve atrophy in a similar patient with absent knee-jerks? The principle here advocated has its parallel in tabetic neuralgia, which sometimes is associated with retention of the knee-jerks and sometimes with their loss; yet no one will propose the separation of the two groups. And if I dared to venture on a decidedly speculative argument I would remind members that occasional instances of return of the knee-jerks in tabes dorsalis have been noted. Suppose that this happened in a case of optic atrophy: is the earlier phase to be named tabetic atrophy and the later phase to be denied this title? Hence my submission would be that optic atrophy, the Argyll Robertson pupil, and an ocular paralysis are three events any one of which may be the first announcement of parasyphilitic degeneration in the nervous system; that each may be associated sooner or later with evidences of parallel changes in the spinal cord; and that each may persist for a prolonged period, and perhaps indefinitely, without the development of spinal symptoms. In a word, I suggest that primary optic nerve atrophy, accompanied by evidences of specific infection, has one and the same clinical position and one and the same clinical prospect whether the knee-jerks be present or absent. This is not to say that optic atrophy as an isolated event, either in the post-neuritic or in the primary form, invariably means specific infection. Indeed, there are instances where such infection can be confidently excluded, and we are thus driven to admit occasional cases of optic atrophy, as of optic neuritis, for which we are unable to define any confident causation. I remember that some years ago Dr. Leslie Buchanan of this university described a series of such cases, and the gratifying feature of the record was that under the persevering use of potassium iodide and strychnine in liberal doses the patients recovered a full measure of vision. If we can hear further of these cases to-day it will be a welcome contribution to our discussion.

Intracranial Tumours.

The primary optic atrophy, accompanied by bitemporal hemianopsia, that may be traced to the pressure of a pituitary tumour, is a well-recognized experience. The most interesting aspect of it in recent years is the improvement that can be effected by intracranial operation. I propose to say nothing more on the subject of pituitary tumours except to remind members of Mr. Herbert Fisher's ably argued thesis that on pituitary enlargements there probably depends the so called hereditary or family optic atrophy (Leber's disease); it offers a considerable opportunity for discussion. There are also other issues that I wish to raise. First, I ask whether intracranial tumours other than pituitary growths ever cause primary optic atrophy.

My attention was particularly directed to this point by the case of a boy who suffered from recurrent attacks of headache and vomiting relieved by repeated lumbar puncture. The optic discs were always noted as "white," but the boy appeared to see perfectly well until one morning he suddenly told the ward sister that he was blind. At no time, the observations being repeated over many months, was there any suggestion of swelling of the discs, and the case was clearly one of primary optic atrophy. Necessarily this raised the question of a pituitary growth and a possible operation. But as there was a bilateral extensor response, and as a skiagram did not show any enlargement of the sella turcica, operation was not advised. The decision was a fortunate one, for the *post-mortem* examination showed the existence of several intracranial tumours, and while one of these from its relation to the floor of the third ventricle might have pressed on the optic commissure, there was no enlargement or peculiarity of the pituitary body.

Since this experience I have noted a case, described by Arnold Knapp, in which primary optic atrophy was found in a man of 36 years, proved on *post-mortem* examination to be the subject of a tumour of the frontal lobe. The tumour had led to a sacculated distension of the third ventricle, and here, presumably, was the agency responsible for the bilateral optic atrophy. Now that the pituitary body is so readily within the reach of surgery, there is need carefully to consider how far tumours outside the sella turcica are capable of producing primary bilateral optic atrophy.

A further topic relative to brain tumours and optic nerve atrophy is provided by the following facts. Bilateral optic atrophy, plainly post-neuritic for the most part, and accompanied by blindness, is found in a group of patients, mostly adolescents or young adults, who give a history in their earlier years of an illness characterized by headache, vomiting, and other symptoms suggestive of a serious intracranial lesion. From these symptoms, with the exception of the blindness, they have made a good recovery. What was the nature of the original illness? My suggestion is that these are cases of intracranial tumour, that the tumour has become quiescent, and that the post neuritic atrophy is the one persisting effect of its existence.

In connexion with brain tumours and optic atrophy, Mr. Fisher's doctrine is perhaps the most inviting issue, but the relation of brain tumour to primary optic atrophy and the problem presented by the group of cases I have just defined seem to me topics well worthy of the attention of the Section. A minor and perhaps purely academic debate is whether a second attack of papillitis is possible in a disc rendered atrophic by a previous optic neuritis. Admittedly such a development is exceptional. I have notes of a case in which the second papillitis appeared three years after the original illness, the boy having been quite blind during the interval; and an occasional even longer period has been recorded.

Again, we may hope that members who are particularly interested in the relations between nasal disease and ocular disturbances may have something to say on optic atrophy due to sphenoidal sinus suppuration and on the atrophy associated with cerebro-spinal rhinorrhoea.

Meningitis.

Meningitis in its various forms is for the most part so acute and so fatal a disease that while optic neuritis may be a feature of it, optic atrophy, if it occurs at all, must be very exceptional. Now and again, however, atrophy is seen in a patient in whom there is a history of "convulsions" in

early life, but whether meningitis or encephalitis or hydrocephalus or some other agency is responsible I cannot pretend to say. Another issue which is perhaps relevant to the present discussion is, What is the cause of the temporary blindness occurring without obvious ophthalmoscopic changes in children suffering from posterior basic meningitis?

A further debate is possible on the development of optic atrophy in the primary spastic paraplegia of early life. There is here no question of specific disease, and it will be remembered that Sir William Gowers quoted these cases as examples of what he called abiotic wasting—premature tissue failure the consequence of a defective vital equipment. Can an alternative hypothesis be advanced?

Cardio-vascular Diseases.

The most obvious cases of optic atrophy resulting from vascular disease—they are not frequent—are those in which the central artery of the retina is the site of thrombosis. There may be some degree of papillitis and oedema of the retina and a few retinal haemorrhages, but the most conspicuous ophthalmoscopic fact is the fairly rapidly developed pallor of the optic disc with narrowed retinal arteries. The patients for the most part are elderly with general evidences of cardio-vascular degeneration. There is not always a high sphygmomanometer reading, but the absence of this, of course, does not exclude arterial change. The retinal thrombosis may exist as an isolated event, or it may be associated with other disturbances. In one of my records the patient—a woman of 70 years—suffered from paralysis of the left external rectus muscle for some months and then became blind in the left eye. In another—a man of 45 years—there had been two attacks of hemiplegia; the sphygmomanometer reading did not exceed 140, and neither the blood serum nor the cerebro-spinal fluid gave a positive Wassermann reaction. Once—the patient a woman of 75 years—I have known thrombosis in one retinal artery repeated in the course of a few days in the artery of the opposite side.

Belonging to the same order are the occasional cases of unilateral optic atrophy with hemiplegia on the opposite side of the body. Here the presumption is that thrombosis has occurred in the cavernous portion of the internal carotid artery and that, either by extension of the thrombosis or by embolism, the ophthalmic branch of the artery or its subdivision, the central artery of the retina, is occluded.

Another fashion in which optic atrophy may result from vascular disease is when optic neuritis is associated with retinal haemorrhages and retinitis resulting from arterial degeneration; the haemorrhages and exudates may be absorbed, and the ophthalmoscopic picture may display little more than post-neuritic optic atrophy; and with this the patient is in greater or less measure blind.

Next, I must mention embolism of the retinal artery. The diagnosis appears to present no difficulty when the patient is the subject of cardiac valvular disease, but when there is no such disease the absence of any obvious source from which an embolus can take origin is a difficulty. Hence it is alleged that not a few cases named "retinal embolism" are really examples either of local arterial disease with thrombosis *in situ* or of arterial spasm. The suggestion of thrombosis *in situ* may be readily allowed in patients carrying obvious signs of degenerate arteries, and there are records that go to show that in such patients, too, spasm is at least a possibility. But in young adults free from signs of arterial disease thrombosis *in situ* can hardly be applied. Is, then, arterial spasm the inevitable explanation? It is not without weighty sponsors. The term "retinal epilepsy" was invented, I believe, by Hughlings Jackson, and under this title a number of cases were recorded by no less an authority than Jonathan Hutchinson. He believed the condition to be particularly associated with what he called "liver disturbance and sick headaches"; some of his patients were young women, and in more than one instance the affected eye became blind and the nerve atrophic. But with great respect I venture to point out that quasi-retinal embolism occurs in patients free from migrainous seizures, and, indeed, from all symptoms other than those due to anaemia; also that it occurs without any previous attacks of temporary failure of sight. On the contrary, it arrives with characteristic suddenness, and is promptly followed by optic nerve atrophy. My proposal is that these are examples of true embolism and that the obstructing clot is provided by intracardiac thrombosis—an event which, in patients with chlorosis, must be admitted as at least a possibility. It may be objected that were this true, embolism would probably appear in other organs. Are we quite sure they do not? Embolism of the spleen and even of the kidney may be silent happenings, as is manifest in *post-mortem* examinations in cases of mitral disease; and they may therefore be equally undemonstrative in intracardiac thrombosis. Further, is it likely that in a patient structurally sound, though the subject of anaemia, a healthy retinal artery will at one swoop, as it were, be thrown into such a severe and sustained spasm as to produce complete atrophy of the optic nerve? And if spasm, why should it be unilateral? It may perhaps be said that the spasm leads to thrombosis. But this is surely improbable unless the spasm is so extreme as completely to occlude the vessel. Some narrowing of the vessel would hinder the circulation but would not suspend it, and a sustained spasmodic and complete closure of the artery, if not a contradiction in terms, is not easy to imagine. On the whole, arterial spasm may be deemed insufficient to account for the optic atrophy that follows a sudden and final closure of the retinal artery in patients free from evidences of cardiac valvular disease and from signs of arterial degeneration. If the obstructing agent is not produced on the spot it must be carried from a distance—that is, it must be an embolus—and a possible source of such embolus may be found, I submit, in an intracardiac thrombosis.

I have notes of two cases of retinal embolism in which central vision was preserved, obviously by the agency of a cilio-retinal artery; each patient was the subject of mitral disease, and in one vision has remained unchanged over a period of three years, and in the other for more than fourteen years.

I allude, in a word only, to the optic atrophy that occasionally follows loss of blood. Personally, I have seen a few instances after gastro-intestinal and uterine haemorrhages, but some cases are recorded as following traumatic bleeding. There is obvious room for speculation both as to the fashion in which haemorrhage produces the blindness, sometimes promptly and sometimes after an interval of days; and again, how it comes about that while loss of blood is a frequent experience, optic atrophy, though it sometimes follows the loss, does so only in a very small minority of cases.

Retrobulbar Neuritis.

Occurring as a more or less acute condition, and affecting one or both eyes, retrobulbar neuritis may proceed to partial or complete optic atrophy; or it may, on the other hand, undergo resolution with restoration of a full standard of vision. It may appear as an isolated event, or it may be manifestly one of a series of pathological disturbances spread widely through the nervous system. The most conspicuous example of the latter possibility is seen in the rare cases named acute myelitis with optic neuritis. Here, as the patient's life is in manifest danger, the optic neuritis seems relatively an unimportant feature. But two points are worthy of notice. One, that what appears at the time nothing more than a unilateral retrobulbar neuritis may, in the course of a few days, be followed by severe and widespread paralytic phenomena; and the other, that even in an extreme case complete recovery, including a full measure of vision, with or without obvious whitening of the optic discs, is possible.

A second disease in which retrobulbar neuritis is plainly part of a widespread nervous disorder is disseminated sclerosis. Here again failure of sight may be one of the first evidences of the disease; and the failure may be due either to a slowly increasing optic nerve atrophy, or to a more or less acute retrobulbar neuritis, with such chance of atrophy as this involves. Still more, either the one or the other of these ophthalmological complications may appear after the spinal symptoms of the disease are well established. I have never seen a gradual bilateral optic nerve atrophy proceed to complete blindness in disseminated sclerosis, though atrophy after a retrobulbar neuritis may reduce, and even permanently reduce, visual acuity to a short remove from complete blindness. For the most part, however, loss of sight due to retrobulbar neuritis, whether this occurs as an isolated event or as a member of the series we call disseminated sclerosis, begins to improve in the course of a few weeks, and vision may well reach a normal standard even though pallor of the disc remains as an obvious ophthalmoscopic fact; there is, however, some risk of recurrence either in the same or in the opposite eye. To recognize retrobulbar neuritis as part of a disseminated sclerosis when it is associated with spinal symptoms of the disease is a simple undertaking. Apart from the immediate or close association of the one with the other

in the order of time, the suddenness of the visual loss, the subsequent rapid improvement, and the occasional recurrences, are experiences that exactly correspond to other clinical exhibitions of the pathological process. Nor is there much difficulty in the not uncommon cases where with pronounced evidences of spinal sclerosis the patient affirms that in an earlier day there had been a unilateral or a bilateral failure of sight; and some confirmation of this is found in the ophthalmoscopic appearances of one or both optic discs. It is necessary to advance another step, for, as a matter of fact, whatever be the explanation, retrobulbar neuritis unaccompanied by any other clinical evidence of disease may yet, after some years of apparently good health, be followed by quite unchallenged disseminated sclerosis. Can such an experience be dismissed as a mere coincidence? In view of all the facts this seems most unlikely. I have known the interval extend to eight, ten, and even to twelve years, and hence it seems necessary to conclude that a retrobulbar neuritis, unless otherwise explained, involves a risk of the development of disseminated sclerosis, and that this risk is not exhausted until a considerable period of years has been counted.

There therefore arises the question whether retrobulbar neuritis beginning as an isolated clinical event does ever remain permanently in isolation and free from later developments in the shape of nervous disease. To state a confident affirmative answer must in the circumstances be difficult, as in each individual case years must elapse before the answer has a sure foundation. The longest continuous record that I possess runs from 1909 to 1922, and though the patient's left eye has remained almost blind (optic atrophy) he has been and still is in other respects perfectly well. Another observation suggesting that retrobulbar neuritis does sometimes fall outside the series we call disseminated sclerosis is the fact that it occasionally occurs at an age when disseminated sclerosis is no longer probable. I have notes of two patients (women at 50 years and one (a man) at 43 years. It is very difficult to imagine the exact pathology of these cases of uncomplicated retrobulbar neuritis. Clearly the lesion must be within the orbit and must involve the trunk of the optic nerve. I have on two occasions seen an ocular paralysis associated with retrobulbar neuritis, so that the lesion is not always limited to the optic nerve; nor even when so limited is it purely the papillo-macular bundle that is involved, for the scotoma, while usually central, does sometimes extend so as to include a complete sector of the visual field. The association of uterine and menstrual disturbances with retrobulbar neuritis has sometimes been regarded as significant, but manifestly this does not cover the field, for men as well as women are among the victims.

There is a further group of cases in which the evidences of retrobulbar neuritis in one or both eyes (central scotoma, loss of colour vision, and even complete blindness) are found with conspicuous exudation at one or both optic discs. The most extreme examples of this combination I have seen have been in young girls, and one of the most impressive facts in the record has been the rapidity (a few weeks or months) with which sight is restored and the exudation removed. I have been able to observe some of these cases for a year or more (one over seven years) without any new disturbance either in the visual function or elsewhere. Yet there are instances in which permanent atrophic changes are established in one or both optic discs.

The group of cases last mentioned leads naturally to the papillitis occasionally noted in the subjects of chlorosis. In most of these cases resolution is complete, but I have occasionally seen permanent prejudice to vision from optic nerve atrophy. Some years ago I attempted to argue that the cause of optic neuritis in chlorosis is thrombosis of the intracranial veins or sinuses; also that retrobulbar neuritis may be due to peripheral venous thrombosis. I will not repeat the reasons for this suggestion, but if any members of the Section can throw any light on the topic I am sure their aid will be welcomed.

What I do propose as significant is the relations of retrobulbar neuritis (with its risk of nerve atrophy) as I have here endeavoured to sketch them. First, we have the neuritis associated with an acute inflammatory process affecting widely the nervous system (myelitis), and hardly to be explained apart from the presence of some toxic agency; next, with a less acute but equally widespread disease (disseminated sclerosis) that must own a not dissimilar influence; in a third group we find retrobulbar neuritis either alone or combined with obvious exudation at the optic discs; and, last of all, are cases of exudation at the optic discs, as in chlorosis, without any suggestion of a retrobulbar lesion. If in the first two groups we cannot doubt inflammatory changes (thrombosis with cellular and fluid exudations) due to a toxic agent, is it not probable that similar causes are responsible for the instances in which the mischief is confined to the visual tract? Certainly retrobulbar neuritis, in view of its several associations, is one of the most interesting of the causes that may lead to permanent visual defect by the establishment of a condition of atrophy in one or both optic nerves.

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ATROPHY OF THE OPTIC NERVE FOLLOWING DIFFUSED VIOLENCE TO THE SKULL.

THE theory most generally held at the present time regarding the mode of causation of monocular blindness arising from diffused violence applied to the skull is that it results from direct injury to the optic nerve, be it compression, a cutting, or tearing of its fibres at the foramen opticum in consequence of fractures of the bone involving the foramen or the bone in its immediate neighbourhood.

Another but much less accepted theory is that the blindness is due to compression of the nerve by blood effused into the nerve sheath formed by the prolongation of dura mater from the cranial cavity.

The theory of direct injury to the nerve owes its inception to Berlin (Graefe and Saemisch, *Handbuch*, vol. vi), who based his thesis on the *post-mortem* findings of his associate Hölder, who, on experience gained by *post-mortem* examination of 126 cases of fracture of the skull, found a fracture of the base in 88 of the subjects; in 80 of these the fracture involved the roof of the orbit, and in 54 of them it involved the optic foramen. It is to be noted, however, that of these 54 cases, 42 were the result of gunshot injury, of which, he said, "34 were more or less directly caused by shots into the mouth." Now with the great disruption of the base of the skull that follows upon gunshot wounds of this nature, it is not surprising that he found fissures of the optic foramen so often or that the optic nerves were "often" torn across—he once saw it torn completely across, but—and this is a rather remarkable statement—he "never found haemorrhage into the optic nerve sheath without a fracture of the foramen."

Berlin, and nearly every writer since his time, has accepted the findings of these fissures as the explanation of the blindness that was known to occur after blows upon the skull, and although many writers have mentioned the occurrence of haemorrhage into the sheath, it has received very little attention. Yet no one, as far as I can find out, has brought forward proof that a nerve lesion caused by bone injury existed in any patient who has been the subject of this monocular blindness following upon diffuse violence to the skull. If there is anyone here to-day who can, I hope he will do so.

My own belief is that this form of blindness results from the haemorrhage into the nerve sheath in the *majority* of cases. I admit the possibility of direct nerve injury by bone lesions, but I believe this must be a rare occurrence, and for the following reasons which I will endeavour to put before the meeting.

At the Royal Infirmary here a great many cases of head injury of all varieties except gunshot wounds are admitted. I have personally been responsible for the treatment of 395 cases of undoubted fracture of the skull, and at least an equal number of patients in whom there was no fracture or in whom its existence was uncertain, and of this latter class not one patient suffered from this form of blindness. Of the certain 395 fractures of the skull 186 patients recovered, and only one of them had loss of vision (in his left eye) after the accident; this man was trephined in 1902 for an open (compound) depressed fracture. At first he had no perception of light in his left eye; some weeks later his visual acuity had risen to 3/60 left eye, and it remains the same at the present time. He was seen a few weeks ago.

Of my 209 patients who died after a fracture of the skull, *post-mortem* examination was made in 174, and only 13 of these showed a fracture involving the optic foramen (both foramina in 3, the right in 8, and the left in 2 cases). Two of these are interesting, because both of them had the upper margin

of the foramen fractured, one with and the other without displacement of the small fragment, but in neither case was there any injury to the nerve nor any haemorrhage into the sheath.

It has been stated that the anterior clinoid process may be displaced as result of fracture and compress the nerve, but I do not believe this can be a frequent occurrence, for the process was found fractured in only 6 of the subjects, in only one of which was the optic foramen involved, and the nerve was not compressed, nor was there any haemorrhage into the sheath in any one of these 6 cases.

But regarding the occurrence of haemorrhage into the sheath of the optic nerve, it was found to be present in 16 cases (in 10 in both nerves, in 5 in the right, and only in one case in the left nerve). In one case both sheaths were distended with blood and there was also a haemorrhage into the substance of the right nerve as well, but there was no fracture near the orbits or the optic foramina. As none of these patients were conscious during any part of the time they were under observation, it is not possible to say whether the vision of any was affected or not.

Source of the Haemorrhage.

The haemorrhage may possibly be derived from one of three sources: (1) from the subdural cranial space; (2) from rupture of vessels passing between the nerve and its covering; (3) from the central vessels of the retina which run a short distance inside the dural sheath before they enter the substance of the nerve.

In 8 of these 16 cases with intravaginal haemorrhage the haemorrhage was seen in the sheath or the cut surface of the nerve as it presents after the brain is removed from the cranium, and in all there was blood in the subdural space in the middle fossa of the skull, but in 7 cases no blood showed on the cut surface of the nerve. The blood in these cases was only present in the orbital portion of the nerve, and in them it is certain the blood was effused into the nerve sheath in the orbital or distal side of the foramen. It seems certain from specimens that I have that the haemorrhage *begins* at the distal extremity of the nerve close to its entrance to the eye.

Further, in 2 of these cases there was no fracture of the orbital roof or of the optic foramen on either side, and I hold they prove that a haemorrhage into the optic nerve sheath may arise from rupture of blood vessels within the sheath as a result of the varying tensions produced in the tissues in the orbit by the violence. This being so, there is no reason to doubt that an intravaginal haemorrhage can result from violence applied to the head even though a fracture of the skull is not produced, and it seems quite certain that in many of the cases recorded no fracture of the skull was present.

Now the blindness that results in the type of case we are considering is due either to (1) blood effused, (2) depressed bone compressing the nerve, or (3) direct injury to the nerve. Putting aside gunshot wounds—and practically every case recorded has resulted from diffuse violence—is it not remarkable that in my series of *post-mortem* examinations on cases met with in civilian practice there should have been so few instances of fracture of the optic foramen, none of which showed any direct injury to the nerve, and that only 3 of the 13 cases where a fracture of the foramen was found showed haemorrhage into the sheath, and that of the 6 cases of fracture of the anterior clinoid processes neither injury of the nerve nor haemorrhage into its sheath was present? If this is the case where gross violence has been inflicted on the skull, it seems most improbable that direct injury to the nerve should have occurred in the comparatively slight injuries that have characterized most of the cases recorded of monocular blindness of this type.

Believing that this variety of blindness is due to haemorrhage I have operated in three typical cases (in one of which I feel convinced there had never been any fracture of the skull, and I am very dubious of its existence in the other two), and in each of them blood under tension was found in the optic nerve sheath. Can this blood in the sheath exert sufficient tension to compress the nerve? The sheath is strong and non-elastic, and if the drawings (life size) by Mr. Maxwell are looked at it will be seen on comparing them with a drawing of a normal eye from a fracture of skull case that there is very marked diminution of its diameter, which can only have resulted from the compression by the retained blood. The ophthalmoscopic appearance presented by the optic disc of the affected eye is that of a primary atrophy.

It is of some practical importance that the actual cause of the blindness should be determined, for while some patients appear to have partially recovered their vision after an interval of time, it is evident from the reports of cases that in a large number the loss of vision has been considerable in degree and permanent. If the blindness be the result of actual injury of the nerve it is very improbable that any lesion such as division or partial laceration of its fibres could be repaired or that any good result would follow upon it could this be effected, for "time" is of the utmost importance in these cases. On the other hand, if this blindness be caused by an intravaginal haemorrhage, there is a possibility that vision would be improved, if not absolutely restored, provided the blood could be evacuated at an early date.

The three patients for whom I operated all came late for treatment (two weeks, four weeks, and three weeks respectively). Although in each of them blood was found under tension in the sheath, none of them recovered vision while under observation. It is known that brain cells have a very short life if deprived of their blood supply, and possibly the retinal cells resemble them in this respect. One patient, who received a blow over the left orbit at football, was dazed for a few minutes, but noticed no visual defect until the following morning, when he found the visual acuity of the left eye failing, and by night he could not see at all with his left eye. Four days later, when seen, his left pupil was medium, did not react directly to light but did consensually, and he could not distinguish between light and dark with the left eye. There was no evidence of fracture of skull. He declined operation, but two months later his visual acuity in the left eye was 6/24. In this case the sequel of events could only have been caused by some effusion of blood or other exudate (and blood is the most probable).

Unfortunately at the present time I cannot yet produce evidence of any patient recovering vision after evacuation of blood from the sheath, but the history given above of the patient injured at football is sufficiently encouraging to permit one to think that an early relief of tension might be followed by great benefit to the patients.

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THE CLINICAL DIFFERENTIATION OF THE VARIOUS FORMS OF OPTIC ATROPHY.

IN its main features, which are essentially only two—pallor of the disc and visual failure—the clinical picture of optic atrophy is for the most part both simple and familiar. When, however, we direct our attention towards the identification of the underlying causal factor we encounter a problem which, though often comparatively easy, is not seldom extremely difficult, and, in some cases, in the present state of our knowledge, may admit of only a presumptive solution.

It would be impossible as well as unprofitable to attempt to deal fully with this question in a short paper, and I propose to confine my contribution to a somewhat limited consideration of the practical clinical aspect of the subject, referring only in the shortest way to anatomical and pathological details. At the same time, the study of these factors and their correlation with the symptoms must be regarded as of supreme importance in connexion with the problem of differential diagnosis. It will be useful, however, to remember that the visual path, like other sensory paths, consists of neurones of the first, second, and third orders, and that the so-called optic nerve is really a tract connecting nerve centres, and consists of the axones of the neurones of the second order, whose ganglion cells lie in the retina, and whose terminal arborizations are, as far as concerns the visual fibres, in the external geniculate body. Any lesion or defect of nutrition affecting the ganglion cells or their axones at any point produces functional impairment, and, if sufficiently severe or prolonged, optic atrophy, which spreads both upwards and downwards along the neurone. Thus we can understand how it is that in cases of interruption of conduction the visual failure precedes the visible pallor of the disc

by an interval the length of which depends on the site and nature of the lesion. It seems probable that these lesions are of two kinds:

(1) Toxic or other injurious influences acting on the ganglion cells or their dendrons in the retina and producing ascending atrophy following the death of the cells.

(2) Nutritional impairment of the nerve fibres, producing both ascending and descending atrophy. This nutritional impairment depends chiefly on inhibited blood supply which may be caused in many ways, by processes which are essentially of inflammatory nature, by vascular disease, pressure, or injury.

The symptoms of conduction interference, however caused, are fundamentally the same, though differing in mode of onset, course, intensity, and extent, and it is by studying these variations and correlating them with the normal and morbid anatomy of the visual nerve path that we may hope to identify the various forms of optic atrophy which are met with clinically.

In dealing with a case of obvious or suspected optic atrophy several methods of investigation are available.

I. The study of the patient as a whole. (1) The family and personal history in its widest aspect. (2) The presence of signs of general disease or abnormality, especially indications of syphilis, nervous, vascular, or pituitary disease, mental or sexual deficiency, or of some form of intoxication.

II. The study of the local condition. (1) The symptoms described by the patient, their mode of onset, duration, and course. (2) The state of the orbit, nose, and teeth. (3) Radiological study of the sella turcica, optic canal, and nasal sinuses. (4) The examination of the pupillary reflexes. (5) Ophthalmoscopic examination. (6) The vision: central visual acuity, the visual field, and the light sense (light difference).

Every case of optic atrophy should be approached from the point of view that this condition is always a manifestation of some general disease or local lesion apart from the nerve itself, and while in any individual case an exhaustive application of all possible methods of investigation will not be necessary, the causes of optic atrophy are so numerous and so widespread that even a short series of cases will be found to require the employment of most of them. While the ophthalmologist must be able to discern what line of investigation is particularly indicated in a given case and to appreciate the use and significance of all methods, so that he may both guide and profit by the co-operation of his colleagues, he is particularly concerned with the study of the eye and the visual pathway—that is to say, with the fundus oculi, the vision, and the pupils—and it is to the visual symptoms that I propose more especially to refer.

The usual classification of optic atrophy, based on the appearance of the optic disc, recognizes two chief varieties—simple, primary, or so-called grey atrophy; and secondary, post-neuritic, or white atrophy. The term "consecutive" is sometimes used to designate atrophy following a primarily choroidal or retinal lesion such as retinitis pigmentosa. It is unnecessary to discuss the ophthalmoscopic appearances, with which everyone is well acquainted. The ophthalmoscope enables us to detect the presence of atrophy and affords valuable help and guidance in regard to its causation, but ophthalmoscopic evidence alone is insufficient to lead to a conclusion. While simple atrophy is typically associated with tabes and secondary atrophy with the result of increased intracranial pressure, and differentiation is easy in characteristic cases, confusion may occur in others in which the features are less pronounced. The appearance of post-neuritic atrophy tells us no more than that there has been a considerable swelling of the nerve head of some duration, while the appearance of simple atrophy is even less informative as it may follow even well-marked swelling if it has not lasted long and if sufficient time has elapsed for resolution. It may, moreover, be difficult to decide whether an apparently pale disc is really pathological and also whether atrophy is unilateral or bilateral—a point of great importance. In the end the decision as to whether a disc is normal or not rests on the clinical experience of the individual observer. The visual impairment is often roughly proportional to the degree of pallor, but by no means always, and the relation between the two depends on the stage at which the patient is seen and on the nature of the lesion. For example, in a commencing descending atrophy from pressure or in multiple sclerosis when the focus is not near the eye the visual loss may far exceed the pallor, while in an early tabetic atrophy or in a retrobulbar neuritis which has recovered the conditions may be reversed.

The condition of the vessels is important, but, like the appearance of the disc, may be somewhat inconstant, and I have personally found it of even more value in differentiating between certain forms of simple atrophy than in deciding whether a doubtful case is of primary or secondary type. Lastly, one need hardly refer to the significance of signs of choroidal, retinal, or vascular disease in the fundus, apart from the optic nerve itself.

The examination of the field of vision, of which central vision should be regarded as a part, provides information which is unobtainable in any other way, and is a method whose possibilities have not yet been fully explored. By this means the conductivity of the nerve fibres and, to some extent, the site of interference may be investigated, and from the results obtained inferences may be drawn as to the nature of the lesion and its rate of progress.

Perimetry has two aspects—the technical and the interpretative.

In regard to the first it is important to adopt the quantitative principle and to employ a wide range of test objects graduated as to size, a method analogous to Snellen's test for central vision. In addition to white, one colour, red, also serially graduated, is required. It is not sufficient merely to chart one field with a single test object, but, as far as time will allow, a perimetric study should be made of each case. The correct interpretation of the perimetric evidence is based upon our knowledge of the anatomy, in the widest sense of the word, both normal and morbid, of the subgeniculate visual nerve path, and the more accurate our information in this connexion the better are we enabled to understand the significance of changes in the visual fields and to estimate the site of the causal lesion, its nature and its mode of action.

Only the most important anatomical features can here be briefly surveyed.

In the retina the nerve fibres are arranged radially on the nasal side of the optic disc and on the temporal side in an arching formation around the macula, those of the upper retinal quadrant being separated from those of the lower by a horizontal raphé which extends from the macula to the temporal periphery. A vertical line passing through the fovea divides the fibres into crossed and uncrossed, the former being partly radiating and partly arched, the latter entirely arched. In the nerve the peripheral retinal fibres lie peripherally and those from the central part centrally, except at its commencement. The crossed fibres lie mesially in the nerve; in the chiasma they spread widely out and lie mesially again in the tract. The uncrossed fibres lie laterally in nerve and tract and also in the chiasma, where they spread out, though not so widely as the crossed bundles. The macular fibres are similarly arranged and approximately centrally situated, except in the anterior part of the nerve, where they are superficial and lateral. The blood supply is from end arteries which do not anastomose; in the retina it is central, in the nerve both central and peripheral from the pial sheath, and in the intracranial part of the nerve, in the chiasma and tract, pial only. We must also bear in mind the relationship of the nerve fibres to the post-nasal sinuses, to the sharp upper margin of the intracranial end of the optic foramen, to the carotid and ophthalmic arteries and the frontal lobe, to the circle of Willis, pituitary body, and infundibulum; and, lastly, the relationship of the tract and external geniculate body to the temporal lobe, adjoining cranial nerves, internal capsule, and other neighbouring structures.

By making use of serially graduated test objects information is obtained not only as to the existence of impaired conduction but as to its amount and distribution over the cross-section of the nerve, and by correlating the field picture obtained with what is known of the course of the fibres we may to some extent locate the site of interference. Since certain morbid processes or lesions characteristically affect certain parts of the subgeniculate pathway, the location of the site, in conjunction with the other symptoms, gives valuable guidance in diagnosis. Further, by making examinations at intervals and comparing the results, the behaviour of the lesion may be studied, and from this deductions may be drawn as to its nature and probable future course.

The field changes with which we are concerned may be regarded as falling into two main classes—peripheral or concentric contraction, and changes corresponding to groups of nerve fibres, or nerve fibre bundle defects, including scotomata. The term "peripheral contraction" is commonly used as if the field were impaired peripherally only and unchanged centrally, whereas quantitative testing shows that the central area is usually also affected. If a graphic representation of the field is drawn out it will be seen to resemble the elevation of a mountain with a high central peak, and a sloping plateau, surrounded by a precipitous edge, perpendicular on the nasal and steeply sloping on the temporal side. If this outline becomes depressed without other alteration it is evident that its circumference at the previous altitude is reduced or contracted. "Depression" is, however, in most cases a more accurate term, and more explanatory of the state of the nerve. The first signs of this process will, it is evident, not be

detected either at the central peak or at the peripheral steep edge, but in the intermediate sloping zone. Thus commencing atrophy may be present in association with good central vision *for Snellen's types* and apparently normal field boundaries, or central vision for Snellen's test may be somewhat reduced while the periphery is normal in extent for a moderately large test object. By considering the field as a whole we recognize that reduced central vision with an apparently normal field boundary is not the same thing as reduced vision with a normal field which, *caeteris paribus*, is a contradiction in terms.

Nerve fibre bundle defects are the reflection in the field of the retinal distribution of the fibres. The raphé gives rise to the nasal step and the arching bundles to the curved or comet shaped scotomata which, in their fully developed form, extend from the blind spot to the periphery or to the raphé. These defects are common in optic nerve conditions and are, as is well known, most pronounced in glaucoma. Their presence indicates a process affecting the nerve fibres as against the ganglion cells, and they have never been described in toxic atrophies. In nerve lesions they cross the vertical meridian of the field, but in chiasmal or tract conditions they are limited by it. The constant relationship to each other of the crossed and uncrossed bundles in the nerve enables the affected quadrant of the nerve to be deduced from the position of the field changes, and peripheral field defects correspond generally with lesions of the outer layers of fibres in the nerve, allowance being made for the position of the macular fibres near the eyeball. Near the chiasma the separation of the bundles makes it possible for a localized lesion to produce a clearly defined quadrantic or hemianopic defect in one field. The interlacing of the fibres in the chiasma itself makes lesions here, as far as is known, always productive of bilateral defects, though, to begin with, the lesion on one side may be very slight. In the tract, especially near its commencement, the fasciculi are separate again and a tract lesion may produce unequal bilateral hemianopic field defects or, if localized, even a unilateral defect.

In many cases in which one eye appears normal, by the test card and by the ophthalmoscope, it is desirable to test the field on the presumed normal side carefully for slight degrees of alteration. This can be quickly done with small test objects on the principle already mentioned, examining especially those parts of the field where slight defects are most easily demonstrable. The progressive or stationary nature of the condition may be demonstrated by comparing the fields for colour with those for white; if the colour fields preserve an approximately normal relationship to the white fields the atrophy is stationary or only very slowly progressing; should the colour fields be relatively much more depressed or contracted then the condition is advancing. This feature has been called by Roenne "proportionality" and "disproportionality." Lastly, by repeating the examination alterations can be observed and the progress of the lesion watched.

We are now in a position, in all but exceptional cases, to say whether one or both nerves are affected or whether the lesion is above the nerves, and we know something about its site and its behaviour, knowledge which, considered together with the history, the evidence provided by general medical examination, and the other ocular signs, is of the greatest value in our search for the causal factor.

In making a differential diagnosis the history is of very great importance, as is also the stage at which the patient is first seen. When a good history is not obtainable it may be impossible by any means of examination to be sure of the cause of an old atrophy.

Let us now briefly discuss the application of these principles to some of the forms of atrophy most commonly met with. For our purpose we may take the cases as they present themselves in clinical practice and place them in groups, which, however, will not be mutually exclusive.

I. Both discs show simple atrophy: visual failure bilateral.
II. One disc shows simple atrophy, the other being normal: visual failure bilateral.
III. One disc shows simple atrophy, the other being normal: visual failure unilateral.
IV. One disc shows simple atrophy, the other papilloedema: visual failure on the side of the simple atrophy or on both sides.
V. Both discs show post-neuritic atrophy, or one simple and one post-neuritic: visual failure bilateral.
VI. One disc shows post-neuritic atrophy, the other being normal: visual failure unilateral.

It is, of course, understood that the visual failure is not due to any peripheral cause, and the consideration of atrophy due to choroidal or retinal disease and glaucoma is omitted.

I. *Both discs show simple atrophy: visual failure bilateral.*

Group I is large and important and contains atrophies due to causes which act bilaterally. It includes the simple atrophy of tabes, atrophy following bilateral optic nerve lesions of the type usually classed together as retrobulbar neuritis whether of general or of local origin, atrophy following intoxications such as quinine or atoxyl, cases due to chiasmal or tract lesions, and some other varieties.

In this group tabetic atrophy is the most important form. Owing to the fact that peripheral field defects are often not appreciated by patients the condition is frequently well advanced before the visual failure is noticed and pallor of the disc is already present. As a rule the entire cross-section of the nerve is affected, producing a depression of the whole field—as shown by testing with serial test objects—which appears as a peripheral more or less concentric contraction if only one fairly large object is used. In advancing cases vision for red and green is relatively much more impaired than for white; in more slowly progressive cases colour vision fails proportionately with that for white. Less commonly large sector defects occur with fairly well preserved vision in the remaining portions, and in a rarer type great concentric contraction is associated with good central vision. Nerve fibre bundle defects, which are of a wider and grosser nature than those usual in moderately advanced glaucoma, are not uncommon and probably form the basis of the sector defects. Central scotoma is rare and, as in the case of hemianopic changes, such as bitemporal hemianopsia, suggests a complicating factor.

Apart from the history, the general condition of the patient, the reflexes, and the pupils, which usually suffice to settle the diagnosis, the well developed pallor of the disc at the time when the patient first complains of visual failure is a valuable and characteristic sign. The arteries are of normal size, and the lamina cribrosa distinct, the amount of cupping depending on the type of disc previously present.

In cases of interference with the nerve path by pressure, injury, or inflammation the failure of vision occurs some time before the pallor, showing that the atrophic process is not the precursor but a sequel of the impairment of conduction. It is characteristic of the tabetic type of atrophy that this interval is extremely short, so that, unless occasionally in the second eye, the pre-ophthalmoscopic stage is infrequently met with clinically—a feature which characterizes only one other chronic progressive atrophy, that of glaucoma simplex.

The absence of hemianopic signs in the fields excludes chiasmal and tract lesions and limits the investigation to conditions of the nerves. In all cases of optic atrophy of any variety in which there is any uncertainty as to the diagnosis the Wassermann reaction should be tested. The chief diagnostic difficulty consists in the separation of cases of tabetic atrophy in which no other signs are present from other forms of bilateral simple atrophy in which a positive Wassermann reaction has been obtained either in the blood or in the cerebro-spinal fluid. Although in tabes the atrophy is usually more advanced on one side than on the other, unilateral cases are so exceptional that the risk of confusion with a true unilateral atrophy need hardly be considered, especially if the visual function on the apparently normal side is thoroughly examined by adequate methods. The great rarity of central scotoma enables most cases of bilateral retrobulbar neuritis or interference atrophy to be excluded; it is for the most part only in some old cases of this type that pale discs are found with little or no trace of central scotoma, but in such cases the atrophy is not progressive. Descending atrophy from basal meningeal syphilis may simulate tabetic atrophy, but often partakes more of the nature of a retrobulbar neuritis, being associated with early and severe loss of vision and optic neuritis. In some cases of disseminated sclerosis atrophy simulating the tabetic type but not so pronounced has been described, but the steady visual loss of tabes progressing to blindness is absent, and this condition is practically excluded by a confirmed negative Wassermann test. Progressive simple atrophy with peripherally contracted fields is rarely of toxic origin, but cases have been described in connexion with lead and arsenic compounds. Only in the most aggravated cases of tobacco poisoning is partial pallor of the optic discs present and paracentral scotoma is the most prominent field change.

A subdivision of this group contains cases in which the field examination shows signs of hemianopsia, either homonymous or bitemporal. The lesion is situated at or above the

level of the chiasma, and as the atrophy takes some time to descend visual failure is noticed before ophthalmoscopic signs become evident. Thus most of these cases appear in ophthalmic clinics before the stage of visible atrophy in one or both discs.

Bitemporal hemianopsia in typical cases appears first as a defect in the upper outer quadrant of the field, soon invading the lower outer, and then, often after an interval, the lower inner quadrant. The upper nasal quadrant is last involved. In progressive cases a scotoma is present in the central area which develops in the same way, so that the central field behaves like a small field within the field. The defects progress clockwise in the right field and counter-clockwise in the left, and are always more advanced in one field than in the other. Sometimes by using graduated test objects the whole series of changes may be demonstrated at one sitting. Atypical cases are not uncommon in which a different sequence of the defects occurs, but the quadrant type is always present. When a tract is affected the hemianopsia is similar in type but homonymous, two corresponding upper quadrants being usually first involved. The most important causes are pituitary tumours and basal syphilis, and therefore it is essential to have an *x*-ray examination and a Wassermann test. Most of the tumours are intrasellar, and by the time the field is affected, and still more when visible atrophy is produced, the sella is definitely altered. Suprasellar tumours of infundibular origin may produce no sellar alteration until large. As a rule when the sella is normal the tumour is probably growing from the olivary eminence or its neighbourhood, or the cause is most likely syphilis. The syphilitic cases are characterized by more rapid and intense field changes of the same general type, and when first seen the atrophy may not be pronounced or may be absent. In tract interference the atrophy is, of course, partial, and the contralateral disc is said to be the paler since the majority of the fibres cross. This one would only expect to find in a complete and uncomplicated interruption of one tract.

Other causes of atrophy operating in this region which have been described are compression of the nerves against the upper edge of the optic foramen, producing horizontal hemianopsia with inferior field defects, and indentation of the nerves by hardened and thickened adjacent arterial trunks, giving rise to binasal hemianopsia. Softenings and nutritional failure owing to arterial disease may occur at any part of the subgeniculate path, and doubtless account for some cases in which the cause is difficult to ascertain.

The causation of bilateral simple atrophy following those conditions usually classed together as retrobulbar neuritis is often difficult to ascertain, especially when the case is seen some time after the active stage. There may have been no swelling or considerable swelling of the nerve head, and yet the final ophthalmoscopic picture is that of simple atrophy. The fields are characterized by central scotoma, sometimes with sector defects extending to the periphery, and arching nerve fibre bundle defects may be present. After the lapse of time bilateral pallor of the discs, with more or less visual impairment, with or without a definite central scotoma, remains. In other cases field changes may be extremely difficult to demonstrate, and central vision may be good. If first seen in the stage of stationary atrophy it may be very difficult to assign a cause to cases of this kind. This question sometimes arises in connexion with children, pensioners, or compensation cases. Bilateral retrobulbar neuritis is relatively rare; it may occur after infections such as influenza or measles, in syphilis, myelitis, disseminated sclerosis, inflammation of the nasal sinuses, and other conditions, and is of unknown origin in Leber's disease. Amongst toxic conditions the atrophy following quinine is characterized by narrowed arteries and peripheral field constriction; most other agents, except arsenic compounds, cause central scotoma. As most of these conditions are essentially retinal, nerve fibre bundle defects are absent in the fields.

II. *One disc shows simple atrophy, the other being normal: visual failure bilateral.*

These cases really belong to Group I, but only one disc shows pallor at the time when the case is seen. The other disc usually becomes pale sooner or later. Chiasmal interference is the most common cause. A careful examination of both fields will enable cases of this kind to be placed in their proper position in Group I.

III. *One disc shows simple atrophy, the other being normal: visual failure unilateral.*

In this group is included the numerous class of unilateral atrophies. Most of these are due to retrobulbar neuritis, injury, vascular obstruction, or some other cause acting unilaterally. The apparently normal side should be very carefully examined to make sure that the case does not really belong to the second group. The field characters already discussed and the history help to identify the majority of such cases. The thread-like vessels and the retention of a patch of vision around the blind spot, pointed out by Coats, is characteristic of obstruction of the central artery. In obstruction of a branch the field defect corresponds to the distribution area of the vessel concerned.

Progressive cases belonging to this group are rare. Signs of the separate involvement of the crossed bundle point to interference at the inner side of the nerve near its junction with the chiasma and indicate examination of the opposite field at intervals. The following case is an example.

Miss A. B., aged 40, seen May, 1921. Sudden partial loss of sight of right eye six months previously. Orbital pain at the time. Skiagrams of teeth and sella normal. L.V. 6/6 part, disc normal. R.V. 6/60, disc very slightly paler than left. Patient neurotic and difficult to test completely satisfactorily, but the left field was normal, the right showed a small temporal hemianopic scotoma with relative defect of the temporal field, especially in the upper quadrant. Diagnosis: Interference at inner side of termination of right optic nerve, probably by a growth from the dura over the olivary eminence. Two months later the right disc was definitely pale. The temporal defect was increasing and the visual impairment spreading across the vertical meridian into the nasal field. V=6/60 barely. L.V.=6/6 part, disc and field normal. Evidently the crossed fibres of the nerve were now becoming involved. Three months later the condition was much the same but with more involvement of the crossed fibres. Patient went abroad; her eyesight began to get worse in two months, and when last heard of two months later, or fourteen months from the appearance of the first symptoms, the left vision was 6/12 with a temporal field defect.

This case was therefore for a year in Group III. is now probably in Group II, and will eventually enter Group I.

IV. *One disc shows simple atrophy, the other papilloedema: visual failure on the side of the simple atrophy or on both sides.*

In this small group of cases, to which attention has been drawn by Foster Kennedy and Uhthoff, an intracranial tumour or abscess, so situated as to compress the intracranial portion of one optic nerve and prevent the access of fluid to its sheath—for example, in the frontal lobe—produces oedema of the other in the usual way. The field on the side with simple atrophy shows a central or paracentral scotoma, while the vision of the other eye may be unimpaired or may show commencing failure with contraction of the field. At the stage when these cases come under observation there is usually papilloedema on one side and commencing atrophy or a normal disc on the other. Presumably in time post-neuritic atrophy would supervene upon the papilloedema, with the corresponding visual changes.

V. *Both discs show post-neuritic atrophy, or one simple and one post-neuritic: visual failure bilateral.*

The majority of bilateral post-neuritic atrophies are due to increased intracranial pressure from causes such as cerebral tumour, hydrocephalus, or tower-skull. This subgroup is characterized by slow visual failure and concentric contraction of the field, or concentric contraction *plus* hemianopsia when the visual path is directly involved. The last part of the field to disappear is often in the neighbourhood of the blind spot, so that a resemblance to a binasal hemianopsia is produced. Should central scotoma be present direct interference with the intracranial portion of the optic nerve may be presumed.

A second subgroup contains those cases in which direct interference with the nerves forms the main feature of the condition. Here the visual loss is usually rapid and intense, showing as a large central scotoma with wide sector defects, while subsequent improvement is the general rule. Syphilitic disease around the terminations of the nerves and the chiasma is the usual cause. Since the original swelling of the disc may be much greater on one side than on the other, one disc may finally show the appearance of simple atrophy, and it may be difficult to demonstrate the remains of a scotoma in the field if the case is seen for the first time in a late stage. In most cases of this group the question of diagnosis arises in the pre-atrophic stage.

VI. *One disc shows post-neuritic atrophy, the other being normal: visual failure unilateral.*

In the last group are found cases of unilateral post-neuritic atrophy with a normal disc and unimpaired vision on the opposite side. Such cases are necessarily due to some local condition affecting one nerve which causes a swelling of the optic disc sufficient in degree and duration to produce the appearances of post-neuritic atrophy, and are not common.

Of two cases seen personally, in one a large central scotoma was present, indicating a local nerve condition. Vascular obstruction in the nerve was diagnosed during the stage of gross visible swelling; the patient had cardio-vascular disease. Had the case been seen first in the stage of atrophy the diagnosis could only have been presumptive. In the other example proptosis was present and the field showed interference with the crossed fibres. X ray negative. A tumour, probably of the nerve sheath on the inner side near the apex of the orbit, was diagnosed. At operation a swelling of the ethmoid, just in front of the mesial lip of the optic foramen, was found.

I am fully aware that this presentation of the subject is by no means exhaustive. Much that is of interest has necessarily been omitted or curtailed, and if attention has been somewhat concentrated on one method of examination in connexion with the clinical aspect of optic atrophy it is with full appreciation of the value of others, all of which are of importance in varying degrees in individual cases. That the problem of causation will not be solved in every instance must be admitted, but we may be confident that by painstaking investigation the proportion of unexplained cases will gradually be reduced.

DISCUSSION.

Mr. A. F. MACCALLAN, C.B.E. (Director, Egyptian Ophthalmic Hospitals), said: For many years we, at the Egyptian Ophthalmic Hospitals, have noted that there were a large number of cases of optic atrophy, but it is only during the last few years that a classification has been adopted which enables the origin of the condition to be understood. We divide the causes of optic atrophy into: (1) primary, as in spinal disease and arterio-sclerosis, (2) the result of retrobulbar neuritis; (3) post-neuritic atrophy; (4) the result of disease of the retina and choroid; (5) after compression or injury of the nerve; and (6) unknown causes. Among the interesting cases reported during 1921 were 114 cases of optic atrophy. By far the larger number of these were of the post-neuritic type, 46 in all. Primary atrophy was met with 19 times, in 16 of which the cause was stated to be unknown; in one case the patient had disseminated sclerosis, in another chronic myelitis, in a third spastic paraplegia. Retrobulbar neuritis was met with in 24 cases, 23 of which were patients who had recently suffered from an acute infectious disease, generally typhus; 11 cases were secondary to various forms of retinal disease; 3 were the result of compression or injury of the optic nerve. Finally, all cases were not sufficiently defined in their appearance to enable an accurate diagnosis to be made, but approximated in type to the primary form of atrophy. During the present year the increased interest in this condition will lead, it is hoped, to the reduction of the unknown forms in our statistics by increased pertinacity in obtaining the patient's history, and in the examination of his general condition.

Dr. PERCIVAL J. HAY (Sheffield) mentioned a case of optic atrophy occurring in a child about 18 months old after an attack of acute meningitis. The child was first seen soon after the attack, when the optic discs appeared to be normal. Three months afterwards they were quite white, the child being otherwise quite well.

Dr. L. WEBSTER FOX (Philadelphia, U.S.A.) said that he was particularly interested in the history and the causes of optic atrophy. There was one condition and source which had not been mentioned, and that was wood alcohol. The optic nerve showed a pallor of the head of the nerve which was even whiter than a post-neuritic atrophy. He had seen a patient of this character where the poison was only imbibed twenty-four to thirty-six hours previously. Why injury of the visual centres should take such a long period of time before ophthalmoscopic evidence showed—although blindness had been present for months—and wood alcohol such a short time was a question which their pathologists had yet before them to decide.

Mr. N. BISHOP HARMAN (London) said: The subject under discussion covers so much clinical ground that it is difficult to handle. There is scarcely a case of uveitis of any severity which does not cause some optic atrophy, there is no congenital defect causing partial blindness which is not associated with some atrophy, and even a case of ophthalmia neonatorum may be held accountable for the same atrophy, for in after years we find those who have suffered from this disease without consequent corneal injury have poor vision with defective fixation and nystagmus, as a result of the lack of development of the macular elements owing to the closure of the eyes during the early weeks of life. Strictly speaking, all these cases should come into the category of optic atrophy, but no doubt we are to limit this discussion to cases where the atrophy is manifest to the eye of the observer by means of the ophthalmoscope or by other appropriate tests.

Last year I gave to this Section a report on some 4,000 cases of blindness. I have picked out from this collection the cases of optic atrophy. The cases fall into three groups: (1) babies, (2) school children, (3) all ages.

1. Amongst 63 blind babies there were 7 cases of optic atrophy, or 11 per cent. Of these, 2 were due to irido-cyclitis of great severity arising from cerebro-spinal meningitis; 5 were uncomplicated optic atrophy—2 from meningitis, 2 combined with undoubted cerebral defect, and of one the cause could not be ascertained.

2. Amongst the 1,855 blind school children there were 355 cases of optic atrophy, or 19.2 per cent. Macular defects, albinism, congenital nystagmus, and sympathetic ophthalmitis are excluded from the count. The greater number of cases (210) were associated with disseminated choroiditis and definitely due to syphilis, and a further 19 were probably due to the same cause; 39 were uncomplicated cases of atrophy the cause of which could not be ascertained, 16 were post-febrile (scarlet fever, diphtheria, influenza, one each, and 12 unknown), 20 meningitis, 6 cerebro-spinal meningitis, 4 from head injuries, 7 familial atrophy, 4 familial choroiditis with partial atrophy, 39 retinitis pigmentosa, and 17 buphthalmia. Of the 355 cases of optic atrophy, no less than 230 were due to congenital syphilis, or 65 per cent.

3. Amongst the group included under all ages, in which, naturally, adults predominate, there were 270 cases of optic atrophy in 925 blind and partially blind persons, or 28 per cent. Forty-eight were uncomplicated atrophy: 25 of these were primary (of which 6 were definitely syphilitic), 2 Leber's disease, 11 tabes dorsalis, 5 pituitary disease, 5 hemianopsia. Vascular disease accounted for 53: of these 8 were embolism or thrombosis of retinal vessels, 25 renal retinitis, 13 diabetic retinitis, and 7 retinitis pigmentosa. Glaucoma accounted for 67: with buphthalmia 6, chronic 43, and acute 18. There were 102 cases of atrophy with choroiditis: with gross macular disease 26, central senile choroiditis 45, syphilitic disseminated choroiditis 19, and 12 with disseminated choroiditis from other causes. Among this all-ages group 36 cases were definitely due to syphilis, or 14 per cent.; but how many of the vascular and senile atrophies were due to degenerative processes primarily set up by this disease we can only speculate. Vascular diseases account for the highest total of atrophy, for we must include with these not only those definitely assigned to vascular disease, but also those degenerative changes in which there is a senile or pre-senile wasting of essential portions of the nerve. It is noteworthy that there were no cases of toxic atrophy. It is true that there were 7 cases of tobacco amblyopia, but since there was reason to believe that they recovered these do not come into the count. No cases of lead or wood alcohol poisoning or other similar toxic blindness were recorded.

The special point that arises from these figures on the etiology of optic atrophy is the increase of the incidence as age advances, from 11 to 28 per cent., and the predominance of different factors at different ages: in infants, meningitis; in school children, congenital syphilis; in all ages, syphilis and vascular diseases. The disastrous effects of congenital syphilis are such that no efforts should be spared that will ensure the effective treatment of syphilis before parenthood is undertaken.

Mr. J. GRAY CLEGG (Manchester) said that he had looked up all his private notes and found 160 cases in which atrophy of the optic nerve was the chief lesion. They could be grouped as follows: primary atrophy 78, of which 49 were bilateral and 29 monolateral; post-neuritic 51; consecutive 10; toxic 2; traumatic 19, of which 17 were monolateral and 2 bilateral. In reply to one of Dr. Hawthorne's queries he said that personally he had never seen an atrophy of the optic nerve that could be attributed to the use of arsenical

preparations. In tobacco amblyopia there was frequently some pallor of the discs, but it was most advisable never to omit examination for glycosuria in cases apparently due to that cause. Mr. Pringle's explanation of sudden blindness in cases of comparatively slight blows on the skull was interesting because he had felt for some time that fracture through the optic foramen was often a mere assumption. Radiograms would help in settling the question as to the frequency of fracture. He had been struck, in looking over his private notes, by finding as many as 19 cases of traumatic blindness due to skull injury, of which two were bilateral.

Haemorrhage into the sheath of the optic nerve could not be the only cause of the sudden loss of sight, for in two cases he had come across altitudinal hemianopsia from a slight concussion. One resulted from a fall in a boy, and the upper half of the field was lost. The other occurred in a woman against whose nose a door banged. No local bruise appeared, but an inferior altitudinal hemianopsia resulted in the opposite eye, and blood was seen extending from the disc margin into the retina. In both cases the corresponding half of the disc eventually atrophied. It might be assumed that were the explanation merely haemorrhage into the optic nerve sheath the limitation of damage would not be so definite.

Mr. INGLIS POLLOCK (Glasgow) mentioned the case of a girl, 10 years of age, with a dermoid of the pituitary fossa, in which the only symptoms were double optic nerve atrophy and possibly, on *x*-ray examination, slight enlargement of the pituitary fossa. The dermoid was found by Mr. Pringle on operation to be of the size of a large walnut. There was no sign of intracranial increased pressure found at the operation. Mr. Pollock stated that he had seen one case of optic atrophy due to salvarsan, but he had also seen cases of syphilitic optic neuritis recover after a course of salvarsan or neosalvarsan. He had also sent one of the traumatic cases to Mr. Pringle, who found, four weeks after, blood clot compressing the optic nerve.

Dr. J. C. DOUGLAS (Newcastle, New South Wales) desired to discuss two points in connexion with the papers which had been read. The first was the classification of optic atrophy. He had been very much struck with the confusion which seemed to exist in the minds of many ophthalmic surgeons, and still more in the minds of students, as to the different forms and types of atrophy. Some talked of primary and secondary, others of simple and post-neuritic, others again of tertiary atrophy, or consecutive atrophy, or primary atrophy of retrobulbar type. One well-known London ophthalmologist classified them as atrophy of retinal origin, of disc origin, and of retrobulbar origin. That was good so far as it went, but when they came to details it was found that in those of retinal origin he placed retinitis pigmentosa —a form which, according to the textbooks, was supposed to commence in the choroid and not in the retina at all. When an ophthalmic surgeon found optic atrophy in the course of a routine examination he might ask himself to what type did the case conform, and might seek to draw conclusions therefrom as to the possible cause. It was there that most students found great difficulty.

The speaker recognized three distinct types of atrophy which, when they were well marked, bore very little resemblance to each other. Type 1 was the grey atrophy of tabes, which might have a bluish or greenish tinge according to whether the patient was fair or dark, the vessels were not reduced, and there was no pigmentary disturbance in the fundus and no white lines along the vessels. Type 2 was inflammatory atrophy. The disc was very white in colour, the edges ill defined and irregular, connective tissue filling the cup and along the vessels, and the vessels were distinctly reduced in size. Type 3 was vascular atrophy. The disc was waxy and yellow, the vessels were extremely reduced in calibre, and there was much pigmentary disturbance in the periphery or great pallor of the whole fundus. Such a classification as that suggested would be, in his opinion, an improvement on the existing forms, and at the same time would be more complete, and the names "primary" and "secondary" could be abolished altogether. He suggested that some cases of atrophy following injury to the skull were due to simple pressure either by displaced bone or by blood clot or traumatic periosteal swelling—a condition which might be temporary and capable of cure by surgical interference. It was, in fact, a condition of "physiological block," such as Cushing had described as occurring frequently in pituitary tumours, and which he had found to recover when the tumour had been removed or a pituitary cyst had ruptured spontaneously. Such a case of semi-temporary optic atrophy with recovery, following upon an injury to the head, was reported in a recent number of the *Australian Medical Journal*.

Dr. JAMES ALEXANDER WILSON, O.B.E. (Cambuslang), said that the optic nerve emerged from a rigid bony ring into a space where there was provision for mobility, and he understood the suggestion of Mr. Pringle to be that the jolt from a fall or blow on the head caused laceration of blood vessels at that locality. He had notes of three cases of head injury from falling in which there was no evidence of fracture. In one of these defective vision was noticed within a few days and in the other two only after several months. All finally presented monocular optic atrophy. He had seen other cases of monocular and binocular optic atrophy for which he could not find any cause. Mr. Pringle by his persistent investigations had been able to give some valuable information about the cause and possible treatment in the traumatic group. Dr. Hawthorne had approached the subject from the wider outlook of the physician, and incidentally had demonstrated the value of the ophthalmic physician. With Dr. Traquair working backward through eye manifestations and all converging on one cause of blindness they had exhibited the success that could be obtained by co-operation or team work. Last year we had an interesting paper on the causes and prevention of blindness by Mr. Bishop Harman, and to-day that investigation was being continued. Many questions remained unanswered, and he wished he could persuade the Glasgow ophthalmic surgeons to continue this investigation and present a report on it to the next Annual Meeting. An end-result was being considered and it was necessary to get back to early stages and so on to causes. All roads ultimately led to prevention. The more important work of the ophthalmic specialist of the future would involve knowledge and skill in the art of preventing disease, or of preserving the eyes in a condition of health and efficiency. All thanks to those who were helping towards that goal.

Mr. THOMAS H. BICKERTON (Liverpool) remarked that in forty-one years of practice he had seen many cases of complete monocular blindness. In those cases of traumatic origin, the character of injury clearly indicated in many cases damage to the optic nerve by fracture of skull or haemorrhage. In other cases, while there was definite history of injury to the head—usually to the brow or the back of the head—it had been of so trivial a character that it would require an elastic imagination to attribute the condition either to fracture or haemorrhage. In other cases, again, no history of injury could be obtained, even after the most careful inquiry. Absence of history of injury did not necessarily exclude injury. He had recently seen a girl of 13 who had "gone blind suddenly"—a case of white atrophy of the right eye. Careful inquiry elicited no history of injury. A few days later her mother called to say that on making inquiries in the family the child's grandmother remembered that three years previously the child when staying with her returned one Sunday with the story that a girl companion had pushed her and she fell, striking her head. Her head ached and she lay down for two hours, went to Sunday school that afternoon, and next day to school as usual. Whether in this class of case there had been injury or not, his knowledge of the intimate cause of blindness at present belonged to Mr. Bishop Harman's classification, "cause unknown." The practical importance to be borne in mind in this class of case was: (1) Individuals holding accident insurance policies would be wise to report to the insurance company any accident that occurred to the head, however slight. (2) Medical men might wisely warn patients coming to them with head injury, however slight, not to settle with insurance companies until six months had elapsed.

Mr. J. HOGARTH PRINGLE, in reply, said: The idea is that the haemorrhage is due to altered tensions in the orbital cavity the result of the violence. The slight cases showed a full ampulla, and from that one finds all states up to an absolutely full optic nerve sheath. Whether the intravaginal haemorrhage is the cause of the blindness or not I do not know, but it is certain that in this type of case the optic nerve is compressed by blood within its sheath.

SECTION OF PATHOLOGY (HUMAN AND COMPARATIVE).

Professor ROBERT MUIR, M.D., F.R.C.P.Edin., F.R.S.,
President.

BOVINE ACTINOMYCOSIS, ITS PATHOGENESIS AND TREATMENT BY VACCINES.

BY
W. M. SCOTT, F.R.C.V.S.,
Bridgwater.

THE life history of the organism of actinomycosis, to those who admit its saprophytic existence, is practically unknown. Medical opinion appears to incline to the view that it leads a saprophytic existence upon the alimentary mucosa, its parasitic propensities developing with an abrasion of that membrane. When it is remembered, however, that cases of pyorrhoea and dental caries in man are legion, one would think that in these circumstances more cases of actinomycosis of the jaw would be seen. The practitioner of veterinary medicine inclines strongly to the belief that the organism leads an active existence on vegetable matter, and one is almost tempted from practical experience to go so far as to conclude that the vegetable kingdom is the natural habitat of the fungus, and animal tissue its accidental home. Certain it is that some farms are more predisposed to the disease than others, and further that some fields on these farms produce a larger number of cases. Moreover, climatic conditions appear to exercise a considerable controlling influence on the growth of the fungus, as the number of cases is largely seasonal. Thus, the dry summer of 1921 and the abnormally dry succeeding winter reduced my springtime cases by 75 per cent., while the very wet summer of 1917 gave an abnormal increase. In that year lingual actinomycosis was particularly rife, and I attributed this fact partly to the wet season and in part to the excessive growth of thistles, the prickles of which acted as an excellent "inoculant." On this point it may be interesting to note that lingual actinomycosis is very common in oxen. These animals prehend their food with their tongue, consequently if there is any hard fibrous or prickly element in the fodder that organ becomes an easy victim to inoculation. Equines, on the other hand, scissor their food with their incisors, and in these animals the tongue is very seldom seen infected. Further, permanent pasture land is a more prolific source of infection than land which is under cultivation, pointing again to the possible fact that reproduction of the parasite outside the animal body does take place under unmolested conditions, and, speaking from my own experience, where I see one case on cultivated farms, I see ten to fifteen cases on permanent pastures.

The region of the head and neck in cattle being the most common seat of the disease strongly suggests that the active germ is ingested with the food. A perfectly healthy and unabraded mucous membrane conceivably offers in itself sufficient resistance to mycelial infection. Greater facilities of infection, however, occur in those cases where the mucous membrane is abraded, as, for example, in the eruptive phases during dentition. Hence it is that young cattle are more predisposed to the disease than older animals. The most common seats of infection, as far as my own records go, work out at the following ratio: tongue 35 per cent., jaws 33 per cent., lips 3 per cent., submaxillary 7 per cent., subparotideal 15 per cent., pharyngeal and retropharyngeal 7 per cent. Primary infection of the skin is very rare indeed, but secondary contamination is not at all uncommon. I have encountered several infections of the mamma in pigs, probably a dozen in all, six in the cow, and two in the goat, the channel of infection in these cases pointing to the milk duct. The internal organs are also occasionally infected, although seldom diagnosed during life. Observers in charge of abattoirs have detected the disease in the alimentary and respiratory systems, the liver, spleen, kidneys, testicles, uterus, and brain.

Pathogenesis.

No sooner does the organism invade the tissues than a rapid development of the cellular elements takes place as the result of the inflammatory reaction. Some of the filamentous fragments and coccus-like bodies are taken up by the phagocytes and carried into the healthy adjacent tissues, and always with the possible result that where the organism is not destroyed fresh infective foci are established. Where the tongue is the seat of infection consequent upon bacterial stimulation, that organ undergoes rapid fibrosis, attains an enormous size, often protrudes from the mouth, and, losing its contractile power, unless relief is obtained, the animal dies from inanition. The dorsal surface and sides of the tongue present an irregular appearance as the result of nodular elevations. These nodules are firm in consistence, and of a greyish-yellow colour. When the tongue is cut into the parenchyma is hard and fibrous, showing numerous circumscribed projecting centres varying in size from a milletseed to a pea, or even larger. Some of these areas present advanced degenerative changes. In the larger and older nodules the substance may be cheese-like. Surrounding these areas are dense masses of newly formed connective tissue cells, penetrating between which one may detect under the microscope mycelial elements.

Occasionally the deep lingual lymphatic glands are affected. This added infection seriously hampers therapeutical measures, a fact that has struck me on many occasions. In advanced and very aggressive cases ulcerative changes take place on the mucous membrane, and extension to the buccal mucosae by contiguity is not uncommon. If these ulcers are carefully examined they will be found studded with angry bluish-red granulations between which are small yellow or greyish-yellow nodules. The edges of the ulcers are usually well defined. Where the jaw-bone is involved the first step is an acute ulcerative inflammation of the mucosa in the vicinity of the teeth at the seat of inoculation, followed by an acute alveolar periostitis, which extends and enlarges the bone. In the meantime the medullary elements become invaded, giving rise to a rarefied granular osteitis with the formation of cavities packed with infective elements. As the disease advances the teeth may loosen and fall from their sockets, or infection may spread towards the cutaneous structures, which in due course become involved, break down, and from the sinus infective pus discharges, an angry-looking cauliflower-like growth developing on the bone at the point of exit.

In the pharyngeal region the disease manifests itself as an infective granuloma varying in size from a hazel-nut to a cricket ball, or even larger. These may eventually become distended by purulent accumulations, or they may remain hard and fibrous throughout and tending to increase and to embarrass respiration and deglutition. In the submaxillary and parotid regions the neoplasm takes on a round or oval shape, the salivary glands seldom escaping infection. At first it is surrounded by an oedematous effusion, giving an irregular contour to the growth. In due course this becomes absorbed, leaving the growth, which at this stage is hard and fibrous, sharply defined. In time it tends to soften in the centre and discharges an infective pus. In the lungs the disease may simulate the miliary form of tuberculosis, the nodules being of a greyish-yellow colour, or large purulent cavities may develop in the parenchyma. In the mammary gland one or more soft degenerate infective centres develop surrounded by dense fibrous elements.

Pus, in the truest types of actinomycosis, is a somewhat rare quantum, and in some cases is not present at all, especially in the early stages. It would appear in this slow-growing disease that a rapid and hyperactive fibrosis, commencing almost at the outset, thwarts the suppurative processes. This may be due to a rapidly developed antitryptic content on the part of the host's blood or a low tryptic power of the pus itself, or both of these factors may be acting in unison. In this the disease closely resembles discomycosis equi. In old-standing cases where pus is much in evidence it would appear that the usual pus-producing organisms are the primary factors. In a typical case the pus is usually thin, watery, and sometimes sanious, suggesting a lack of leucocytosis, but occasionally one comes across a case where the pus may be defined as "laudable." These latter, in my experience, are the most amenable to treatment. On the other hand, the worst cases are those where the pus is thin, ichorous, and emits a sickly penetrating smell. If a close search is made in such a case a foreign body will invariably be found, such as a blade of grass, straw fibre, barley or rye, grass awns, etc.

Biological Therapy.

With regard to treatment by vaccines a very common fallacy exists in the minds of some practitioners who look upon vaccine therapy as the alpha and omega of all treatment and are content to ignore collateral measures which go to facilitate recovery. To inject a vaccine into an animal

with active mycelial foci surrounded by and maybe almost cut off from adjacent healthy tissues and expect immune bodies activated by the antigen to reach the bacterial zone is really asking for the impossible, and in like manner to anticipate a large fibrous growth, surrounded by a dense matrix in the centre of which is a cavity distended with pus, to disappear is also unreasonable. In the case of lingual involvement, where the animal is seen early, fibrosis being present only in a moderate degree, and where the lymphatic glands are quite healthy and active, vaccines alone have given me satisfactory results, but I am of opinion that even here additional treatment with iodine expedites recovery.

After an experience of 43 cases treated by vaccines, I consider the treatment has a high therapeutical value. I always use autogenous vaccines, and where secondary infections are in evidence, those bacteria are also embodied in the antigen. The initial three or four doses are sterile, the succeeding half-dozen attenuated, while the subsequent doses are virulent. In injecting virulent cultures, after a degree of immunity has been established, I have never seen any untoward results of importance, while as therapeutical agents they are far ahead of sterile vaccines. It may be of interest to note that the cases which made the best recoveries were those where the organism grew best under aerobic conditions, and, *per contra*, those which preferred anaerobic methods proved the most obstinate.

Tabular analysis of the cases treated by vaccines works out as follows. Some of these were taken in the early stages, and responded well to treatment, some were moderately advanced but made good responses, the remainder were old-standing neglected cases requiring very prolonged and persistent measures.

Tissues Affected.	No. of Cases.	Recoveries.		Failures.
		Complete	Partial.	
Tongue	16	15	—	1
Jaw	15	11	1	3
Parotid	6	4	1	1
Pharyngeal	3	2	—	1
Jaw and parotid ...	3	1	1	1

Summary and Conclusions.

1. The bacteriology of the group actinomyces is most complicated and unsatisfactory, giving ample scope for the joint action of human, comparative, and plant pathologists.

2. If the parasite does lead a separate existence outside the animal tissues its haunts and habits should be investigated, for until this point is cleared up preventive measures must ever be empirical.

3. How the salts of iodine act therapeutically in cases of actinomycosis is an interesting field for speculation, and possibly by investigations carried out along these lines other side-tracks in the large field of chemical therapy might also be discovered.

4. Although the clinical data of actinomycosis are generally based upon an even and more or less regular plane, the same observation cannot be applied to the *causa causans*, this latter being most diverse and confusing. It must be confessed, however, that cases are seen in practice occasionally which simulate actinomycosis and are not so save in macroscopical appearances only.

5. Vaccine therapy is a valuable adjuvant in the therapeutics, virulent antigens giving by far the best and most uniform responses.

THE HEALING OF GASTRIC ULCER.

BY

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THE spontaneous healing of gastric ulcer in man is a problem about which very diverse views have been expressed. In general, it may be said that most physicians believe that gastric ulcer frequently heals spontaneously, most surgeons that such an occurrence, especially in the case of chronic ulcer, is exceptional, and that even when healing does take place there is a great tendency for the scar to break down later.

For the past eighteen months, in the *post-mortem* room, I have been carefully examining the stomach and duodenum for evidence of scarring, while noting at the same time the incidence of ulceration in these viscera. As might be expected, scars have been found with much greater frequency during this period than in previous years, in fact more scars were found during 1921 than in any three of the eleven years immediately preceding. There can be no doubt that this is due to failure to find scars which were present, and the figures for the eleven-year period 1910–20 must be regarded as quite unreliable.

The routine method of examination adopted is to distend the stomach with water to a moderate extent, and then to lay it open with scissors along the line of the greater curvature. The scissors cut is continued through the pylorus along the concavity of the duodenum. By this method the great majority of gastric and duodenal ulcers and scars escape injury. The mucosal aspect of the stomach is then washed completely free from food débris, and if there is any adherent mucus this is gently removed, either by a stream of water, or, if that fails, by wiping with pledgets of wet cotton-wool.

When looked for in this way, most scars are easily made out. In the stomach they usually present an almost perfectly smooth surface, but are conspicuous by reason of their whiter colour and the presence of numerous radiating whitish streaks round about. Almost invariably there is a localized area of fibrosis, with similar radiations, on the peritoneal aspect of the scar, with or without a band of adhesions to some adjacent structure. On section, the scarred area is thinner and tougher than normal, and is of a dead white or yellowish-white colour, instead of the normal grey of the stomach wall. Most of the scars found in this way have been submitted to microscopical examination, with verification of their presence in every instance. In the duodenum also the fact of scarring is easily determined in most cases, but a larger proportion of doubtful scars is met with.

Histology of Scar Formation in Stomach and Duodenum.

In each case either the whole stomach, or a considerable portion of it including the lesion, has been pinned out flat on a board, which has then been floated, specimen downwards, in a large tank of Kaiserling solution No. 1. After three or four days' fixation fairly large blocks of tissue have been taken through the scarred area, including, wherever possible, a margin of healthy stomach at either end. These have then been embedded in paraffin.

The presence of scarring is indicated microscopically by fibrosis of the muscular coat. In most of the scars included in this series the fibrosis involves the whole thickness of the muscularis, clearly indicating, I think, that this coat had been completely perforated by the ulcer. In most cases the centre of the scar consists of fibrous tissue only; in others a few thinned and atrophied strands of muscle are also present, embedded in the fibrous mass. Blood vessels are few in number in the central area, and those present are little more than endothelial tubes. They are clearly a new formation and not a relic of the former vascular arrangements of the part. At the margin the fibrous tissue merges gradually into the surrounding muscle. Fibrous thickening of the peritoneal coat is also present in many cases. For the demonstration of these scars Mallory's connective-tissue stain (acid fuchsin, aniline blue, orange G) has proved most satisfactory. The dense fibrous tissue of the scar is stained bright blue, the muscular tissue red, and any elastic tissue which may be present yellow.

In the duodenum the muscular wall is normally much thinner than in the stomach, and the microscopic evidences of scarring are therefore the less conspicuous. Many duodenal scars, especially those of the posterior wall, are firmly adherent to the pancreas, and this organ may show considerable fibrosis in consequence. In the floor of chronic gastric and duodenal ulcers, as well as in the resulting scars, one often sees blood vessels which are the seat of a chronic obliterating endarteritis and endophlebitis, while a striking feature of many is the way in which large numbers of nerves become implicated in the fibrotic process.

Incidence of Gastric and Duodenal Scars.

In the following table the *post-mortem* findings are analysed, as regards both ulceration and scarring, during the year 1921. These figures are admittedly too few to satisfy statistical requirements, but they afford sufficient evidence to show that healing of gastric and duodenal ulcers is a common event.

TABLE I.—*Analysis of 602 Post-mortem Examinations at the Leeds General Infirmary, 1921.*

	Cases.	Per Cent.
Gastric ulcers (18 cases):		
Chronic	8 ...	1.3
Acute (multiple 7)	10 ...	1.7
Duodenal ulcers (31 cases):		
Chronic (multiple 7)	28 ...	4.7
Acute (multiple 1)	3 ...	0.5
Gastric scars (multiple 4)	14 ...	2.3
Duodenal scars (multiple 1) ...	10 ...	1.7

Table II shows, for comparison, the *post-mortem* statistics of the Leeds General Infirmary during the twelve years 1910 to 1921 inclusive. As already stated, the figures for gastric and duodenal scars here given cannot be accepted as a true criterion of the frequency of these lesions, but they probably afford evidence of value as to the relative frequency of single and multiple scars in the viscera concerned. This is of importance when one attempts to determine the possibilities for healing of chronic as distinguished from acute ulcers.

TABLE II.—*Twelve Years' Post-mortem Statistics, Leeds General Infirmary, 1910–21 inclusive.*

	Cases.	Per Cent.
Post-mortem examinations	5,900	
Cases of gastric and duodenal ulceration	337 ...	5.7
Gastric ulcer cases	170 ...	2.9
Duodenal ulcer cases	179 ...	3.0
Chronic gastric ulcer	137 ...	2.3
Chronic duodenal ulcer...	171 ...	2.9
Acute gastric ulcer	35 ...	0.6
Acute duodenal ulcer	12 ...	0.2
Gastric scars (50):		
Single	40	
Multiple	10	
Duodenal scars (34):		
Single	32	
Multiple	2	

It is concluded from the figures given in Table III that in 5 out of 6 cases acute ulcers of the stomach are multiple, while chronic ulcers are almost invariably single. In the duodenum the same general rule holds good except that in the chronic lesion a double ulcer is present in no fewer than 1 case in 7.

TABLE III.—*Acute and Chronic,* Single and Multiple Ulcers.*

	No.	Single.	Multiple.
Gastric ulcer:			
Acute ...	35 ...	6 ...	29
Chronic ...	137 ...	135 ...	2 (2 ulcers)
Duodenal ulcer:			
Acute ...	12 ...	2 ...	10
Chronic ...	171 ...	145 ...	26 (2 ulcers)

An interesting comparison may be made between the ratio of chronic and acute ulcers and that of single and multiple scars. In the stomach chronic ulcer is four times more common than acute, single scars are four times more common than multiple. Similarly, in the duodenum chronic ulcer is fourteen times more common than acute, single scars are sixteen times more common than multiple. From a consideration of these various figures it is suggested that chronic ulcers have as good a chance of healing as acute ones.

In 12 out of the 50 cases of gastric scarring mentioned in Table II there was a quite separate and independent chronic ulcer in another part of the stomach, which suggests that the well-known recurrent nature of this lesion may be due in many cases to fresh ulceration, and not to breaking down of the old scar as is commonly supposed.

Sex Incidence.

The chief point of interest emerging from this part of the investigation is that whereas chronic gastric ulcer is somewhat commoner in men than women (60 to 40), the reverse is the case with regard to scars (46 to 54).

Hour-glass Stomach and Stenosis of the Pylorus and Duodenum.

These are some of the less common but still very serious complications of gastric and duodenal ulcer, and all are directly attributable to the healing process of cicatrization. In the present series of 5,900 *post-mortem* examinations there are 19 cases of pathological hour-glass contraction of the stomach due to ulcer, and 11 cases of simple pyloric stenosis. In two of the cases both lesions are present, giving a total of 38 cases in all. In addition, there are two cases of simple duodenal stenosis, the result of extensive old scarring. Nine of the cases of hour-glass stomach had scarred completely; 10 were still the seat of active ulceration. The condition would appear to depend on the size and position of the ulcerated area rather than on the chronicity of the pathological process. All the cases in this series were situated somewhere in the middle third of the stomach, usually nearer the pyloric than the cardiac end, and the appearances suggested that the causative factor in most was cicatrization of a large saddle-shaped ulcer of the lesser curvature. In this series the number of cases of chronic gastric ulcer and scarring taken together is 175, which gives an incidence rate for hour-glass stomach of 11 per cent. Inasmuch, however, as the figures for gastric scarring are clearly very far short of the truth, it is suggested that the real incidence of hour-glass stomach is probably a good deal less than this—say in the neighbourhood of 6 per cent. of all cases of gastric ulceration. If the incidence of gastric scars shown in the figures for 1921 be taken (Table I), then the incidence of hour-glass stomach in all cases of scarring works out at 6.5 per cent. This in turn gives an incidence of about 8 per cent. in healed chronic ulcer. The sex incidence of hour-glass stomach shows a marked preponderance for females—namely, 13 to 6.

Of the 11 cases of pyloric stenosis, 6 were due to old scarring in the stomach, 3 to still active gastric ulceration, and 2 to scarring in the duodenum. The two cases of duodenal stenosis were associated with extensive cicatrization, about three-quarters of an inch beyond the pylorus. In both there was great hypertrophy and dilatation of the stomach.

Relation of Scarring to Carcinoma.

The relation of gastric ulcer to carcinoma has been much debated in recent years, and the tendency has been to attribute increasing importance to the chronic inflammatory lesion as a cause of the malignancy. Wilson and McCarty of the Mayo Clinic have gone so far as to say that in 71 per cent. of the cases the malignant process is engrafted on a simple one, that cancer is really due to a secondary change which starts in the edge of an ulcer of long standing. It is not my intention to discuss this problem now, as it does not properly come within the scope of the present paper; but it may be stated that in a series of 98 stomach specimens received from the operating theatre and submitted to microscopic examination the incidence rate of cancer in cases of simple chronic ulcer was 11.5 per cent.

The relation of gastric scarring to cancer is even less clear. The most painstaking naked-eye examination of a large number of stomachs removed by the surgeon for cancer would be necessary to establish such relationship, as well as the most extensive and detailed histological study of each specimen. One small piece of evidence against any such relationship emerges from the present work. In none of the 19 cases of hour-glass stomach with extensive scarring included in the present series was there any evidence of the development of carcinoma.

Conclusions.

1. Healing of gastric and duodenal ulcer is a common event. Statistics are given to show that, in the *post-mortem* room, scarring is met with almost as frequently as gastric ulceration, while duodenal scars occur with about half the frequency of duodenal ulcers. This difference may be partly accounted for by the greater liability of duodenal ulcers to perforate.

2. Single and multiple gastric scars are met with in the ratio of 4 to 1, which is exactly the same as the ratio of chronic to acute ulcers. It is suggested from this that acute and chronic ulcers have an equally good chance of healing.

3. Hour-glass contraction of the stomach is met with in about 6.5 per cent. of all cases of completely healed gastric ulcer—that is to say, in about 8 per cent. of cases of healed chronic ulcer. The incidence of pyloric stenosis is little more than half this.

4. There is no evidence from the present observations that carcinoma arises in connexion with gastric scars, whereas in a series of 98 stomach specimens received from the operating theatre and submitted to microscopic examination the

* The differentiation of acute and chronic ulcer was made on anatomical grounds, both naked-eye and microscopical. In the stomach there is usually little doubt as to the category to which a given ulcer belongs; acute ulcers clean-cut, punched out, often with portions of slough or altered blood clot adherent to the floor, and showing little or no evidence of chronic reactive inflammation; chronic ulcers with thickened, rounded, often raised margins, and showing abundant deposition of fibrous tissue, both in the base and in the walls. In most cases, including all doubtful ones, the specimen was submitted to microscopic examination, when the chief criterion of chronicity taken was the amount and density of the fibrous tissue reaction around and in the base of the ulcer. In the duodenum it is much more difficult to determine whether a given ulcer is acute or chronic, but in the stomach the percentage of error is probably quite small.

incidence of carcinoma in cases of simple chronic ulcer was 11.5 per cent.

5. Gastric scars are not always conspicuous, and must be carefully looked for after gently wiping away adherent mucus or food materials. The presence of adhesions or of fibrous thickening on the peritoneal coat is confirmatory, as, on section, is replacement of the soft greyish muscular wall by dense white fibrous tissue.

6. Conclusive histological evidence of scarring is afforded by the presence of fibrosis of the muscular coat. This can be most conveniently demonstrated by means of Mallory's connective-tissue stain (acid fuchsin, anilin blue, orange G), which is especially suitable for naked-eye and low-power work.

7. It follows from 5 and 6 that only ulcers which have definitely involved the muscular coat leave a permanent scar, and one which can be unmistakably recognized both by naked-eye inspection and by microscopical examination. The most striking scars are, of course, those of ulcers which have completely perforated the muscular coat.

8. When an ulcer heals the continuity of the mucosa is completely restored, but it is usually thinner than normal, and less well supplied with glands. There is no evidence as to whether or not a gastric or duodenal scar readily re-ulcerates, although it is perhaps a legitimate assumption that the thinner mucosa together with the less vascular fibrous tissue underneath will be more vulnerable than the normal mucous membrane. It is possible, on the other hand, that certain ulcer-producing factors may have disappeared as a result of this cicatrization, and there is evidence to show that the well-known recurrent character of the lesion may be dependent rather on the formation of a new ulcer or ulcers than on a breaking down of the old.

INTRA-VITAM STAINING: ITS APPLICATION TO PATHOLOGICAL INVESTIGATION.*

BY

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INTRA-VITAM STAINING may be defined as the process of staining selectively certain groups of cells in the living animal, while the other tissues remain free from the dye. This end may be attained by the use of certain dyes of the benzidine group (for example, trypan blue), the triphenylmethane group (for example, isamine blue and pyrrhol blue), and by the use of certain other agents such as lithium carmine. When these substances are administered to the animal by subcutaneous, intraperitoneal, or intravenous injection, they appear in the vitally stained cells in the form of granules. These granules accumulate in the cytoplasm until the cell may be crowded with them, but the nucleus remains unaffected. When, however, death of the cell has taken place the cell stains diffusely throughout both cytoplasm and nucleus.

Intra-vitam staining appears in certain groups of cells, and, while these cells are of diverse morphology and have received many different names, it is proposed to follow the nomenclature adopted by Evans, and designate them "macrophages," thus uniting the whole group of cells by their common property of response to the acid colloidal dyes. The fundamental meaning of vital staining is not yet clear. Goldmann, the pioneer in this branch of biological investigation, thought that the granules were composed of internal or external secretion which stained specifically by a chemical union with the dyes. More recently Evans and his co-workers have sought to identify the property of vital staining with that of phagocytosis. These workers base their contention on the similarity between the reaction of the vitally staining cells to such different agents as the following:

(*a*) The acid colloidal dyes.
(*b*) The ultramicroscopic particles of the colloidal metals.
(*c*) Particulate matter at the limit of visibility—for example, indian ink.
(*d*) Coarser particulate matter, as in carbon suspensions, bacteria, etc.

The macrophages consist of five main groups of cells:

1. Macrophages of connective tissue, variously known as clasmatocytes, wandering connective tissue cells, rhagiocrine cells.

2. Endothelial macrophages, lining the blood channels of the liver, spleen, bone marrow, and haemolymph glands, and the lymph sinuses of lymphatic glands. It is noteworthy that the endothelium of blood vessels in other situations does not take up the dyes, at least not to any notable extent.

3. Probably closely related to the above group 2 are the reticulum cells of bone marrow, lymphatic and haemolymph glands, and of the spleen, together with the phagocytic cells of the spleen pulp.

4. The cells between the mesothelial layers of the mesentery and omentum, including the cellular collections known as the "*taches laiteuses*."

5. The large free wandering cells of the serous cavities, which are probably derived from group 4.

In addition to the cells mentioned above, the following cells take up certain of the vital stains, but remain unaffected by others. These are:

(*a*) The cells lining the convoluted tubules of the kidney.
(*b*) The interstitial cells of Leydig in the testis.
(*c*) The theca cells of the maturing Graafian follicles in the ovary.

In striking contrast to these vitally staining cells, the leucocytes of normal blood (including all types) do not take up granules of the acid colloidal dyes used as vital stains.

Thus intra-vitam staining appears capable of yielding a criterion by which, in the tissues, cells of connective tissue and endothelial origin may be distinguished from those which have migrated from the blood.

PRIMARY CHRONIC INTERSTITIAL NEPHRITIS AND ARTERIO-SCLEROTIC KIDNEY.

BY

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THE problem of classification of contracted granular kidneys is recognized to be one of great difficulty, and until the etiology of these conditions is made more clear this difficulty in the definition and delimitation of groups must to some extent remain. At the same time it appears to the writer that a greater amount of confusion has arisen in relation to two important groups of contracted kidneys than is warranted by the available information, and that a reconsideration of certain views may not be without value.

For the purpose of this paper it is sufficient to formulate provisionally three main groups of contracted kidney, of which two are specially to be dealt with:

A. Secondarily contracted kidney.
B. So-called "primary chronic interstitial nephritis."
C. Arterio-sclerotic contracted kidney.

The first of these will not be considered at length, but it is necessary to mention it shortly for the sake of clearness.

Secondarily Contracted Kidney.

The definition of this group does not appear to present very great difficulty, and the following summary will probably be generally agreed to. When such cases are finally summed up it is common to find that there has been a history of antecedent nephritis of a more or less acute type, or that there has been a prolonged history of fairly definite renal symptoms. Death commonly occurs from uraemia or from intercurrent infection, but may result from high blood pressure and cerebral haemorrhage.

On *post-mortem* examination the kidneys are contracted and granular, and the cortex is much narrowed and deformed. The colour of the organ varies; it may be pale and yellowish if there is much fatty degeneration, but frequently it is reddish or distinctly red owing to congestion of vessels in the overgrown fibrous tissue. Histological examination reveals changes in the glomeruli of a definitely inflammatory nature; usually every tuft is affected, but the degree of involvement varies in different tufts. There is much total destruction of tubules, and the tubules which persist are highly abnormal; their epithelium is of a low type and shows much fatty degeneration and catarrh. Some segments may have higher epithelium, but this is usually abnormal, being oedematous, or laden with lipoids or with hyaline droplets. The interstitial tissue of the cortex is universally but not uniformly thickened, being least so where the tubules are least atrophied. The extent to which the arteries of the kidney are affected varies in different cases, but it is common to find endarteritis

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obliterans, especially in vessels of medium size; atheroma, or degenerative thickening of the intima, may also occur, however, in similar and in larger arteries. In these cases in general there is abundant evidence, especially in the glomeruli, that the late fibrotic lesions have arisen from earlier acute inflammatory phenomena.

When the second and third groups, B and C, come to be considered it appears to the writer that very different views are entertained by various authorities regarding their scope, the relation of one to the other, and even the possibility of distinguishing one from the other. These differences of view are not merely dependent on the use of different terminology, but are fundamental and have regard to the very nature of the diseases; they are dependent on differing interpretations of the criteria which are available in the identification of types. It is recognized that this statement forms a criticism of a serious character, and that it refers to a matter of the greatest practical importance, so that it is essential that it should be fully and clearly justified. The position as it appears to the writer may be stated as follows:

"*Primary Chronic Interstitial Nephritis.*"

This expression, in this country at any rate, has been applied to a type of case which is fairly readily definable, both clinically and pathologically. Regarded from the clinical aspect these cases are most frequently characterized by the comparatively rapid or even sudden onset of serious symptoms, due to a chronic renal lesion, in an individual who has previously been apparently healthy and who is not known to have had renal disease. There is usually no oedema, while common features are polyuria, difficulties in vision, high blood pressure and cardiac enlargement, and uraemia. Death commonly results from uraemia or cerebral haemorrhage, but it may be from pericarditis or an intercurrent infection. At the *post-mortem* examination the kidneys are small, with adherent capsules and harshly granular surfaces; they are firm and fibrous in consistence and are often red in colour, but may be mottled red and grey. On histological examination they present much fibrosis, which is very uneven in distribution: severely fibrosed areas, in which the glomeruli and tubules are much diseased and atrophied, alternate with areas in which the interstitial tissue is less increased or may appear normal, while the renal elements are better preserved and are usually hypertrophied. There is a marked contrast between the advanced degeneration of glomeruli in the fibrosed areas and the hypertrophy of those in the more normal areas, while intermediate stages of damage of these structures appear to be scanty or even absent. The non-atrophic tubules may appear to show little abnormality apart from hypertrophy and dilatation, but their cells may exhibit deposits of fat and cholesterin ester. The arteries, including the afferent arterioles, show extreme degrees of thickening of their intima, mostly of degenerative type, and they form a conspicuous feature in the general picture.

This type of condition has long been recognized as differing from secondarily contracted kidney, both on clinical and pathological grounds, the main distinctive clinical features here being the more stealthy development of the symptoms, the absence of renal oedema, and the predominance of symptoms referable to high blood pressure and to uraemia. Pathologically it is distinguished by the more patchy fibrosis, the apparent absence of definite evidence of old glomerulitis in those tufts which remain recognizable, and the more obvious and widespread thickening of arterial walls with narrowing of lumina. It has been variously named "primary chronic interstitial nephritis," "granular kidney" proper, "renal cirrhosis," and, by the Germans, "genuine *Schrümpfniere*." Various suggestions have been made regarding its etiology, and one common assumption is that it is due to some slow poisoning occurring over a long period of years.

Arterio-sclerotic Kidney.

As this expression probably conveys different ideas to different observers, an attempt to define it will be made in the first place only from the pathological aspect. It is universally agreed that a contracted shrunken kidney with an uneven surface is frequently the result of narrowing or gradual closure of arterioles owing to degenerative thickening of their walls, apart from the occurrence of inflammation in the organ in any ordinary sense. It is further recognized that if fairly large branches of the renal arteries are irregularly affected the result is the appearance of fairly large and well-defined areas of chronic infarction or atrophy—a picture which is macroscopically very readily recognizable. The latter type of lesion is described by some, especially German writers, as the arterio-sclerotic kidney proper. On the other hand, where only minute arterioles, the afferents of the glomeruli, are much involved by narrowing the result is a fairly uniform and it may be a fine granularity of the surface of the kidney corresponding microscopically to the occurrence of multiple minute areas of atrophy of tufts and tubules. This type of lesion might be described, as it is by the Germans, as "arteriolo-sclerotic kidney"—nephro-cirrhosis arteriolo sclerotica.

It is obvious that if such a process as has been described were to reach a severe degree of development the result would be such an atrophy and irregularity of the kidney as might simulate to some extent the condition described under B—"primary chronic interstitial nephritis."

The question that now arises is essentially this: Are B and C entirely distinct entities, or is B to be regarded merely as the maximal development of the process of arteriolo-sclerotic atrophy? To this question it would appear that different authorities would give different answers. Reference will be made to the views expressed by several, beginning with two textbooks of pathology which are widely used in this country.

Hewlett[7] describes chronic interstitial nephritis as either (1) secondary, the result of past acute or subacute nephritis (corresponding to A above), or (2) primary (corresponding to B above), a condition of obscure origin but probably due to a mild irritant acting for a long period. Under "arterio-sclerotic kidney" he describes changes attributed to narrowing of arterioles, but very similar in nature to those mentioned as characteristic of primary interstitial nephritis. The two conditions are regarded as etiologically different, but it is not clear how they are to be differentiated.

Beattie and Dickson[2] classify chronic nephritis as:

1. Small red granular contracted, or arterio-sclerotic kidney.
2. Large pale granular contracting.
3. Small pale granular contracted.

It is clear that of these 2 and 3 are to be regarded as corresponding to stages of A—secondarily contracted kidney, as described in this paper. From the description of 1, coupled with the fact that no separate mention is anywhere made of "chronic interstitial nephritis," it would appear that these authors regard the latter as a severe form of their arterio-sclerotic kidney.

Aschoff,[1] who gives a very clear and comprehensive account of the various forms of contracted kidney, with appropriate reference to the accompanying clinical phenomena, places the arteriogenic forms of damage quite apart from chronic nephritis of inflammatory origin. Under the latter heading he describes only what would correspond to A—secondarily contracted kidney. On the other hand, in his description of "nephro cirrhosis arteriolo-sclerotica," he includes kidneys which show a maximal degree of damage due to miliary atrophy, as the "genuine *Schrümpfniere*," or granular atrophy of the kidneys; these show severe patchy destruction of renal tissue with fibrosis, while intervening areas show hypertrophy of elements. As uraemia is mentioned as a common cause of death in these cases, "when the stage of renal insufficiency is reached," it is quite clear that Aschoff is here referring to cases which would correspond to our "primary chronic interstitial nephritis."

Kaufmann,[6] on the other hand, describes "genuine *Schrümpfniere*" in terms similar to our account of "primary chronic interstitial nephritis" and separates it both from "late stage of glomerulo-nephritis" and from arterio-sclerotic atrophy. Further, he states that it may possibly be the late stage of an unrecognized acute nephritis occurring at a much earlier date.

Macallum's account[11] is essentially in agreement with Aschoff's. He describes as the late result of glomerulo-nephritis what has been referred to above as "secondarily contracted kidney," and he makes no separate mention of chronic interstitial nephritis. On the other hand, under "arterio-sclerotic kidney" he describes conditions due purely to narrowing of arterioles, and includes in these one type with diffuse sclerosis of small arterioles, which results in a small hard kidney with thickened adherent capsule and mottled surface with yellow-grey or pinkish granules separated by red scar tissue. His reference goes on: "the gross appearances of such a kidney differs in no way, therefore, from the end-result in a protracted glomerulo nephritis" and "except

through the presence of strikingly thickened blood vessels it is difficult if not impossible to distinguish macroscopically the types of ultimate contracted kidney." The microscopic appearances which he attributes to this type of "arterio-sclerotic kidney" comprise severe damage of glomeruli, much patchy fibrosis with atrophy of renal structures, hypertrophy of less affected areas, degenerative changes in remaining renal epithelium with appearance of fat and hyaline droplets. Illustrations are given of a kidney of this variety and of the microscopic appearances in the same organ (Figs. 133 and 136), and these, added to the written description, leave no doubt that what he refers to is the type of lesion described above as "primary chronic interstitial nephritis."

Lorrain Smith,[3] on the other hand, draws a clear distinction between chronic interstitial nephritis and arterio-sclerotic kidney, and regards the latter as purely an atrophic effect and not a nephritis in any form.

Fahr[4] also takes up a different attitude from Aschoff, Maccallum, and Beattie and Dickson. He divides granular kidneys into three categories:

1. Secondary to true inflammatory nephritis.
2. Arterial in origin, characterized by the appearance of fairly large separate areas of atrophy.
3. "Combined inflammatory and vascular."

In the last he includes the "genuine *Schrümpfniere*," which he has also described as the "malignant" form of renal sclerosis, in that the renal function is so much impaired that death is liable to result from uraemia. This is in contrast to his "benign" form, which is latent and but slowly progressive, and usually ends up from cerebral haemorrhage or from cardiac failure. The important fact in Fahr's contribution is that he finds it necessary to divide off a certain group, characterized by liability to uraemia, and by very severe destruction of renal tissue, from other certainly arteriogenic lesions, and that he believes that it is the super-addition of an inflammatory element which gives these cases their specially severe clinical characters. In his opinion the arterio-sclerotic element in the "genuine *Schrümpfniere*" is the primary one, and the inflammatory process supervenes secondarily. In any case he does not assume the development of what we might call a primary chronic interstitial nephritis from arteriolar closure alone.

It would doubtless be possible to reveal an even greater discrepancy of opinion on this matter by reference to further works, but for the purposes of this communication those given are sufficient to substantiate the main claim. It is not, therefore, to be wondered at if the student of medicine or the clinician seeking information from pathology has difficulty in ascertaining the current standard doctrine regarding chronic renal lesions.

The few original observations which are next to be related may best be introduced by stating that for some years the writer, being cognizant of the view expressed by Aschoff that the typical "granular kidney" or "genuine *Schrümpfniere*" was dependent on arteriolar disease and not a true nephritis, had frequently sought to find a typical case of this condition in which there could be no doubt that the advanced atrophy and destruction of the renal cortex was due solely to arteriolar narrowing and not to old inflammation of glomeruli. From time to time a case came to hand which seemed to promise correspondence to this type, but full examination always revealed some evidence of old inflammatory damage of tufts, so that it became difficult on histological grounds alone to separate the cases from those of secondarily contracted kidney. Finally, a definite inquiry has been made into all the available cases of chronic nephritis and arterio-sclerosis with high blood pressure coming under observation in the course of 1,000 autopsies. The cases selected for examination were chosen as follows:

1. All cases diagnosed as chronic nephritis clinically or recognized as such pathologically in which there was high blood pressure or hypertrophy of the heart or both.

2. All cases, in addition to the above, with high blood pressure, or with definite hypertrophy of the left ventricle of the heart not accounted for by valvular disease or other obvious cause.

In all 38 cases will be referred to, 27 being cases of "arterio-sclerosis" and 11 cases which are regarded as chronic nephritis. Four other cases of chronic nephritis satisfying the conditions have been omitted as the ages of the patients were 20 years or less and these did not seem likely to bear upon the main point of the inquiry. The main facts regarding the cases described as chronic nephritis are detailed in Table I.

TABLE I.

No.	Sex.	Age.	B.P. mm. Hg.	Cause of Death.	Kidneys.		
					Weight (gms.).	Arterio-sclerosis of Afferents.	Glomerulitis.
1	M.	31	190	Uraemia	—	None	Much.
2	F.	33	180	Pneumonia	190	None	Much.
3	M.	36	—	Pericarditis	107	None	Scanty.
4	M.	42	220	Cardiac failure	275	None	Much.
5	M.	46	—	Uraemia	210	Some	Much.
6	M.	46	200	Uraemia	280	Some	Some (amyloid).
7	M.	48	180	Uraemia	150	Slight	Much.
8	M.	54	250	Cerebral haemorrhage	230	—	—
9	M.	59	210	Cardiac failure and uraemia	185	Slight	Some.
10	M.	52	180	Uraemia	200	Much	Scanty.
11	M.	55	170	Cerebral softening	140	Very much	Scanty.

The kidneys in this list of eleven cases (Table I) were obtained from patients of very varied ages, and while they showed considerable differences in degree of atrophy and in details of appearance, all had this much in common, that they presented well-marked prima facie evidence of chronic nephritis. The capsules were adherent, though usually detachable, the organs were firm and of fibrous consistence, the surfaces markedly granular, the cortex thinned, and the cortical markings obscured and irregular. The naked-eye appearance of the arteries varied, but usually these were thick-walled and prominent. In no case was there any room for doubt that a serious and advanced renal disease was present. Much importance is laid on this point, for it will be shown that in purely arterial cases the same did not hold good. The further analysis of the cases was directed towards the separation of those which might be regarded as "primary chronic interstitial nephritis" from others which were clearly "secondarily contracted kidneys." The result of this analysis was at once to place the majority in the latter category. In some instances the clinical history gave clear evidence on this point, but reliance was placed chiefly on the histological appearances of the glomeruli on the one hand and of the afferent arterioles on the other: the results are stated briefly in columns in the table. In seven cases old inflammatory lesions were readily recognizable in the tufts; in three of these the afferent arterioles showed no degenerative intimal thickening; in the other four this was present to some extent but not marked. In one other case, No. 3, with scanty glomerulitis, there was no arterio-sclerosis. All of these eight were regarded as certainly the result of antecedent acute inflammatory lesions. Unfortunately in one case (No. 8) no accurate histological examination was available, but there was a history of old-standing renal disease, and the assumption was in favour of a late inflammatory lesion.

There remained only two cases, Nos. 10 and 11, in which the histological features in the kidneys would correspond closely to the account given above of "primary chronic interstitial nephritis," and in which the clinical history did not reveal some evidence of an antecedent renal lesion. This number, two out of eleven, was unexpectedly small, and it is quite probable that it does not represent a fair average of the rate of occurrence of such cases. As these two are of the very type about which the difficulties in classification arise they must be described more fully. In both there was very severe fibrosis, but this occurred mainly in definite bands or areas extending right through the cortex from boundary zone to surface. In the fibrous areas the renal tubules and glomeruli were almost abolished or very atrophic. In the intervening areas the interstitial tissue was only slightly thickened, but it was not quite normal. In these freer areas the tubules were hypertrophied, and the glomeruli were enlarged and at first sight appeared free from inflammation. It was only on close examination, and especially when fat stains were employed, that stigmata of old inflammation were found here and there. These traces, however, were of definite significance; they comprised small adhesions of tufts to capsules, patchy fibrosis in the tufts, and fatty degeneration in capillary endothelium, or in the epithelial layer.

All of these changes were in small degree and it would seem meticulous to take note of them if it were not that such changes were so conspicuously absent in the purely arterial atrophies which will be described later. The scantiness of these changes distinguished the two cases, however, from the others in this table, all of which showed more severe and more frequent lesions even in the better preserved tufts. There was another feature regarding the glomeruli in the two cases under discussion which is considered of great significance: examination of a large section always showed that many tufts had disappeared entirely leaving no recognizable trace: this was especially true, of course, in the more fibrous areas. The significance of this point will be more fully discussed in contrast with the condition in pure arterial cases. The other important and more or less distinctive fact

about these two cases was the prominence of arteriolar degeneration. Many of the afferent arterioles exhibited characteristic hyaline thickening and when suitably stained showed much fatty degeneration. As will be seen this was a very striking feature also in the purely arterial cases, but on the other hand it was not entirely absent in some of the other cases in Table I which were decided to be "secondary" in type.

TABLE II.—*Kidneys in Arterio-sclerosis with High Blood Pressure.*

No.	P.M.	Sex.	Age.	B.P.	Cause of Death.	Heart (grams).	Kidneys (grams).
1	879	M.	52	130	Cardiac failure	700*	490
2	403	M.	57	—	C.H.	500	450
3	345	M.	59	200	Cardiac failure	750*	440
4	738	M.	64	—	Cardiac failure	520	400
5	612	M.	66	—	Carcinoma (prostate)	500	360
6	133	F.	68	—	Carcinoma (bladder)	500	350
7	301	M.	60	170	C.H.	770*	340
8	935	M.	21	196	C.H. (aneurysm)	425	320 (one)
9	447	M.	47	260	Cardiac failure	580	300
10	285	F.	62	—	C.H.	475	300
11	205	M.	66	—	Cardiac failure	600*	300
12	729	M.	58	180	"Cerebral"?	500	300
13	444	F.	64	—	Strangulated hernia	525	280
14	620	F.	56	175	C.H. (meningeal)	320	280
15	459	M.	45	—	C.H.	430	250
16	310	M.	51	265	C.H.	470	250
17	413	M.	53	200	C.H.	600	250
18	536	M.	55	150	C.H.	450	250
19	309	M.	61	210	Cardiac failure	610*	250
20	315	M.	66	180	C.H.	500	250
21	681	M.	?	270	C.H.	450	245
22	630	M.	63	220	Cerebral softenings	340	230
23	438	F.	62	300	C.H.	450	220
24	638	M.	72	280	C.H.	590	220
25	523	M.	55	—	C.H.	450	220
26	335	M.	62	240	C.H.	360	200
27	432	M.	70	—	C.H.	350	170

*Heart dilated. C.H.=Cerebral haemorrhage.

In Table II there is given a list of 27 cases where there was evidence of high blood pressure, either from actual measurement during life, or from the enlargement of the left ventricle, or in many instances from both. These cases have been arranged in order according to the weights of the kidneys and it is seen at once that in 12 out of the 27 the kidneys weighed 300 grams or over—that is, they were at least of the normal weight, so that they do not necessarily come into a discussion which refers to contracted kidneys. In the remaining 15 cases the following would be a fair description of the kidneys. The capsules generally stripped fairly readily and without tearing of the renal substance; the organs were of almost normal consistence, sometimes rather firmer, but never of the dense fibrous texture described in chronic nephritis. The surfaces were always uneven — usually finely and almost uniformly but rather faintly granular, not rough and harsh. In some the granularity was coarser and more uneven, and in one there were large sunken atrophic areas in addition. On section the cortex was narrower than normal. Usually where the superficial cortex was much thinned the interpyramidal cortex was hardly affected. The cortical markings were frequently fairly distinct in most areas and did not give the impression of distortion which is characteristic of chronic nephritis. On the whole, apart from the diminution in size, which was fairly marked—250 grams or less in 13—the naked-eye changes in the kidneys were not of a striking character and were very definitely in contrast with those described in Table I.

The histological appearances in these 15 kidneys were very markedly in agreement one with another, and one description will suffice for most. The first impression in all was that the renal changes were even less than might have been expected from the appearance of the surfaces to the naked eye. The bulk of the renal substance was of normal aspect, and this was interrupted only by the occurrence of small areas of atrophy, especially towards the surface of the cortex. The atrophic areas showed almost total atrophy of the tubules, and the glomeruli were represented by round sharply defined nodes of dense hyaline fibrous substance with very few cells. These hyaline nodes were drawn together owing to the collapse of the normally intervening tubules. The fibrous tissue in these atrophic areas was condensed, but was seldom much increased in amount. The impression was always obtained that while a certain number of tufts had become functionless and sclerosed, none of them had been totally abolished so as to leave no trace. It will be recollected that in the cases described as primary chronic interstitial nephritis the total disappearance of all trace of many of the tufts was one of the most characteristic features. The further important features of the group of kidneys in Table II were best seen in frozen sections stained for fat by Sudan III. This revealed the fact that there was widespread hyaline thickening with fatty degeneration in the walls of afferent arterioles, especially those in the atrophic areas. On the other hand, the tubular epithelium was usually free from any trace of degeneration, so that the affected arterioles stood out with startling clearness. The larger arteries showed less constant changes, but hypertrophic thickening of media and intima was common and atheromatous degeneration fairly frequent. Only in one case was the atheroma in large vessels a marked feature, and in that case the surface of the kidney showed large atrophic foci in addition to a finer and fairly even granularity (No. 13).

From this description it is clear that the shrunken kidneys in Table II would not be liable to be mistaken for any form of chronic nephritis and that there was a very considerable difference in the characters and extent of the changes from those described in the two "primary chronic interstitial nephritis" in Table I. In the cases in this table the histological picture was quite in agreement with the view that the renal damage was purely the result of arteriolar narrowing and these, if any cases, might well be named "nephro-cirrhosis arteriolo-sclerotica." And now it becomes of the first importance to note the clinical aspect of the cases with shrunken kidneys in Table II. In all the heart showed hypertrophy of the left ventricle; in all except two the weight of the heart showed a well-marked increase, which is probably a more reliable evidence of the existence of the high pressure during life than is a single examination of the blood pressure shortly before death. Further, none of these 15 cases gave any history of nephritic symptoms of any kind, and in 12 out of the 15 death occurred from cerebral haemorrhage.

Regarding the 12 cases (1–12) in Table II in which the kidneys were of normal size or actually enlarged, it need only be said that histological examination in all of these showed more or less degenerative sclerosis of the afferent arterioles and that in the majority there were numerous minute atrophic foci, but atrophic changes were naturally less than in the shrunken organs. There was in all an absence of old glomerulitis and of serious alterations in the renal tubules. One important point as to the clinical characters of these 12 as compared with the other 15 is that in 5 death resulted from failure of the heart with venous congestion and oedema, whereas this termination resulted only in one out of the 15 cases with diminished kidneys.

Conclusions.

The evidence which is brought forward in these two tables is neither extensive in amount nor complete in detail, but it is in general agreement with impressions which have been gathered from previous examinations of many chronically damaged kidneys, and is very suggestive in certain directions.

It would appear that while arteriolar sclerosis and narrowing is a frequent cause of shrinkage of the renal cortex, it does not by itself produce a condition which is likely to be mistaken for chronic nephritis, either macroscopically or microscopically. Further, it is doubtful if the loss of renal substance occasioned in this way is ever sufficient to cause uraemia; death almost invariably results from cerebral haemorrhage. It is possible that the very common occurrence of this type of lesion in the kidneys is to some extent overlooked because the macroscopic changes are so comparatively insignificant; they do not usually make good museum specimens.

On the other hand, the condition which has been referred to as "primary chronic interstitial nephritis," or renal cirrhosis, which is regarded by some authors as the maximal development of arterio-sclerotic atrophy of the kidney, is quite a distinct condition; it is often characterized clinically by a tendency to failure of renal function in its later stages, and pathologically it is distinguishable by the greater degree of derangement of the renal architecture. There is a greater, often a severe, fibrosis of the cortex; the amount of renal substance lost is greater, necessitating hypertrophy of that which remains; there is usually, if not always, evidence of old glomerulitis in the tufts which remain recognizable, and it is suggested that the total destruction and disappearance of many tufts is also due to an earlier inflammatory process. As has been pointed out, where glomeruli are damaged by arterial closure alone they become sclerosed, but remain visible as hyaline nodules, often in considerable numbers. In many ways renal cirrhosis is more difficult to separate both clinically and pathologically from secondarily contracted kidney, and it is probable that the differences here are more apparent than real. Lorrain Smith has regarded them as essentially similar in nature but distinguished by the lesions being diffuse in secondarily contracted kidney and focal in renal cirrhosis; in the former the renal function

suffers at an earlier stage in the disease; in the latter the renal function is carried on successfully for a prolonged period by undamaged areas of cortex which hypertrophy. With this view the writer is entirely in agreement and would regard the so-called "primary chronic interstitial nephritis" as a latent chronic nephritis derived from an acute glomerulo-nephritis of focal distribution.

The fact that in these cases there is no history of an antecedent acute attack is not against this view, for in recent years it has been abundantly shown (Herxheimer,[6] Dunn and Thompson,[4] Bell and Hartzell[5]) that the lesions of acute glomerulo-nephritis are of frequent occurrence in cases of septic infection, but it is only comparatively seldom that they are sufficiently extensive and diffuse to occasion a failure of renal function at that stage. Where recovery takes place from acute lesions of this kind the healed cicatricial stage may well appear years afterwards in the form of renal cirrhosis.

According to this view the arterio-sclerosis of minute and other arteries which is so prominent in so called primary interstitial nephritis must be secondary in development. There is nothing very improbable in this, considering the frequency of arterio-sclerosis in kidneys without nephritis. Further, it is found that arterio-sclerosis appears to some extent in secondarily contracted kidneys. It is possibly not without significance that this feature was observed only in the older of the cases in Table I.

I have much pleasure in acknowledging my indebtedness to my colleagues at the Birmingham General Hospital for the use of the clinical notes of cases in the preparation of this paper.

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THE RELATION BETWEEN OXYURIS VERMICULARIS, APPENDICITIS, AND LOCAL EOSINOPHILIA OF THE APPENDIX WALL.

BY

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[*Abstract.*]

DURING the last twenty-five years many writers have produced evidence either for or against the thesis that *Oxyuris vermicularis* is directly or indirectly a cause of appendicitis. The arguments implicating oxyuris are mainly two: (1) that the worms are more frequently present in the inflamed appendix than in the normal; and (2) that they are capable of burrowing into the mucous membrane, and so forming a track along which infecting organisms can pass. On the other hand, many authorities have found oxyuris in approximately the same proportion of normal and diseased appendices, and have been unable to find any evidence of the aforesaid oxyuris burrows apart from fissures which can be explained on the ground of artefacts produced in section cutting.

No writers, as far as I can ascertain, have investigated the eosinophilia found in the appendix wall with relation to the presence of oxyuris in the lumen, although it is reasonable to suppose, on analogy with the local eosinophilia produced by *Trichina spiralis*, that oxyuris, if sufficiently pathogenic to produce burrows, might cause a local eosinophilia.

Altogether 73 appendices removed at operation from cases of definite appendicitis and 50 normal appendices from the *post-mortem* room were examined in this series. Of the former group oxyuris was found in 19.2 per cent. and of the latter in 28 per cent.—that is to say, if anything, somewhat more frequently in the controls. They were found much more frequently in the cases of both series under 15 years old, and no evidence of burrows was seen.

The histological investigation was directed chiefly to local eosinophilia, and cell counts were made on sections of both the normal and diseased appendices. Eosinophils were found almost constantly in the appendices of both groups, usually immediately beneath the epithelium, and although they were considerably increased in numbers in the cases of appendicitis, this increase was entirely independent of whether the appendices carried oxyuris or not. The one striking point was the relation of the numbers of eosinophils to the stage of the inflammatory process as indicated by the number of days after the onset of attack.

The eosinophils were found to be above normal even twenty-four hours after the onset and then to rise fairly rapidly to a maximum in eight to twelve days, subsequently showing a gradual decrease but remaining well above normal even in the third or fourth week. The neutrophil polymorphonuclears showed the usual steep rise in the first twenty-four to forty-eight hours and then an almost equally steep fall very nearly to normal in six to seven days; and the lymphocytes, after a preliminary rather inexplicable drop in the first twenty-four hours, showed a rise to slightly above normal, thereafter remaining more or less constant. This local eosinophilia of the appendix seems to correspond with the eosinophilia found in haemothorax and certain infections of the peritoneum in guinea-pigs (possibly also in lymphadenoma and the convalescence from acute infectious fevers) where eosinophils appear to be at their maximum at the time when resolution or fibrosis is occurring.

Some points noted from the cell counts of the normal appendices were that the lymphoid tissue as estimated by enumeration of the small mononuclear cells showed an increase up to the tenth year of life, thereafter retrogressing with age; that the thickness of the muscular coat showed a gradual and regular increase up to the age of 60 years; and that the numbers of eosinophils bore no relation to any particular disease or any special age.

Pigmentation of the appendix wall was fairly frequently noted both in the diseased and normal appendices, and did not appear to be related to appendicitis, as it was just as common in the normal appendix. In no case did it give the prussian-blue reaction for iron. It was usually associated, as other writers have pointed out, with chronic intestinal stasis.

THE CHOLESTEROL CONTENT OF THE BLOOD IN ANAEMIA, AND ITS RELATION TO SPLENIC FUNCTION.

BY

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AND

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[*Abstract.*[1]]

IN anaemias of all kinds we have found that the cholesterol content of the blood plasma is diminished, although often the decrease is not striking until the red cell count is less than 50 per cent. of the normal. There is no noteworthy difference between the cholesterol findings in cases of secondary and of idiopathic anaemia. The cholesterol of the red cells also shows a slight decrease, but the corpuscular content is much less subject to variations than is that of plasma.

The spleen is generally regarded as the organ in which the red blood cells are destroyed. Experimental splenectomy in dogs has been found by King to produce in the blood an increased amount of cholesterol, which is well recognized as an antihaemolytic agent against certain substances. Through the courtesy of Sir Berkeley Moynihan we have been enabled to investigate this relationship from the clinical standpoint by following up the changes in the cholesterol content of the blood resulting from removal of the spleen in three cases of acholuric familial jaundice and one case of splenic anaemia.

In the cases of haemolytic jaundice the cholesterol rose from approximately half the normal content (the average normal is 0.160 gram per 100 c.cm. blood plasma) to values of 0.160, 0.234, and 0.259 gram per cent. respectively, while in the case of splenic anaemia a value of 0.308 gram per cent. was obtained. There is little deviation from normal (0.110 gram) in the cholesterol of the corpuscles before and after operation. The red cells increased by 25 per cent. on the average, there having been usually some degree of anaemia present.

In the cases of haemolytic jaundice the fragility of the red cells persisted even five months after splenectomy. The

[1] The complete paper will be published in the forthcoming number of the *Quarterly Journal of Medicine*.

icterus and urobilinuria usually disappeared within ten days of operation.

It appears, then, that in acholuric jaundice, as also in splenic anaemia, splenectomy is followed by a marked increase in the cholesterol of the blood plasma, while at the same time the signs of abnormal haemolytic activity disappear. But we do not know in what way and to what extent this hypercholesterolaemia is related to the cessation of splenic function. Certain workers have attempted to associate the haemolysis with an excess of unsaturated fatty acids in the blood plasma. Their experimental data, especially in relation to the effects of splenectomy, are, however, not convincing.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DEGENERATIVE DISEASES OF THE LIVER.

IN the discussion at the last Annual Meeting of the British Medical Association on degenerative diseases of the liver (BRITISH MEDICAL JOURNAL, December 2nd, p. 1055 et seq.), I found no mention of a condition I recently came across.

A woman, aged 57, was sent to me complaining of pain in the back for the preceding few months, with loss of energy and a gradual enlargement of the abdomen. She had a large, ill-defined, somewhat tender tumour in the right hypochondriac and lumbar regions. It felt slightly elastic, and a provisional diagnosis of hydatid of the liver or retro-peritoneal growth was made. I did an exploratory laparotomy, and found the liver extremely enlarged owing to the presence of countless cysts, two of which were very large and occupied about half the liver, one being in the dome of the right lobe. The more superficial one was incised and the deeper one tapped through this, a large drainage tube being inserted. The contents were clear watery fluid, and there was no sign of any hydatid membrane or daughter cysts. The patient died a few days later. At the *post-mortem* examination the liver was found to consist of a mass of cysts of varying size; there were some present also in the spleen. The lungs showed evidence of old tubercle. Sections of the liver were cut by Dr. Mackarell, who reported that the cysts appeared to be dilatations of the bile ducts and were lined by columnar epithelium.

I have never come across a similar case, and can find very little about the condition in the literature on the liver.

Leicester. F. BOLTON CARTER, M.S., F.R.C.S.

HYSTERICAL SIMULATION OF FRACTURE.

THE following case is perhaps worth recording. The patient, a girl of 22, came to see us one afternoon with the following history. She had been running to catch a train the previous evening when she slipped and fell heavily with her left arm under her. She got up and continued her journey. The pain was so severe when she got into the train that she fainted; the train was stopped and she was taken back to the house where she was living, and she remained there for the night. We have seen her on several previous occasions, but have never looked on her as hysterical. We found the left arm in a position of extreme rotation inwards, the elbow-joint extended, and the forearm supinated, the palm of the hand facing forwards, with the thumb pointing directly outwards. The region of the elbow was swollen and the hand and distal part of her forearm very blue. The elbow-joint could not be flexed at all, either voluntarily, or by the exercise of slight force, an attempt causing great pain. The bony parts of the elbow were obscured. We wasted no time on further examination, but sent her straight to hospital, as it appeared to be a bad fracture dislocation of some sort.

At the hospital she was seen by the house-surgeon and two members of the staff, who decided as we had, and anaesthetized her before attempting to make an exact diagnosis. As soon as she was under the anaesthetic they found the joint to be freely movable, and, except for the swelling, quite uninjured. We have seen the patient once or twice since, and find that both her elbow-joints are capable of hyperextension, which condition naturally increased the appearance of deformity; also her knee-joints became slightly subluxated on extreme extension, and her wrists and finger-joints are capable of more than normal extension.

H. C. WOODHOUSE, M.B., Ch.B.
F. CARLTON JONES, M.B., Ch.B.

Dawley, Salop.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

NORTH LANCS AND SOUTH WESTMORLAND BRANCH.

Mental Deficiency.

A HIGHLY successful meeting of the North Lancs and South Westmorland Branch of the British Medical Association was held at Lancaster on November 29th, when thirty members of the Branch were present. The members were entertained by Mr. WELCH, vice-chairman, and Dr. W. H. COUPLAND, medical superintendent of the Royal Albert Institution for Feeble-minded Children, and were shown round the work-rooms and saw the various grades of intellects being trained to useful occupation.

Dr. COUPLAND, in an interesting paper on certification under the Mental Deficiency Act (England), 1913, dealt with the procedure necessary to be followed in sending a mentally defective individual into such an institution, and showed the difficulties in the way and pitfalls to be avoided. He explained the technical meaning of such terms as idiot, imbecile, moron (higher grade feeble-minded), moral imbecile, etc., and showed how the "mental age" of each was ascertained by the Binet-Simon tests. Examples of the following types of cases were exhibited: Mongolian, cretin, hydrocephalic, microcephalic, paralytic types, a case of epilepsy with craniectomy, illustrating congenital deformities, scaphocephaly, brevicollis, Madelung's deformity, etc. Dr. Coupland said that it was very important that cases of adolescent insanity should not be certified under the Mental Deficiency Act. Defectives might, however, become insane and thus pass under the Lunacy Act, having then to be certified according to its procedure. Cases of simple stupor, or mild dementia praecox, might be tried first under the Mental Deficiency Act, remembering, however, the provision "from birth or an early age." Children who had taken a good position in school and gained prizes, but who mentally changed at 14 to 16 years, becoming untidy, unsociable, and stuporose, etc., were probably not mentally defective at all. Carried to an extreme the psychology of Freud was dangerous. Freud's ideas explained much of the conduct of the abnormal child and the mental stresses of puberty. He showed forcibly that the "unconscious" was a dynamic force in our mentality, and was not merely a quiescent receptacle for impressions stored in the unconscious region of the brain. A practical difficulty in dealing legally with abnormal children occurred in cases of mental disturbance following encephalitis lethargica. Those and similar cases required institutional treatment, but legally could not be properly certified as mentally defective, nor should they be dealt with under the Lunacy Act as of "unsound mind." Such stigma should, in his opinion, be avoided whenever possible.

After the reading of the paper, Dr. CROSS proposed and Dr. COCHRANE seconded a vote of thanks to Mr. Welch, Dr. Coupland, and Dr. Henderson, and Mr. WELCH briefly replied.

NORTH GLAMORGAN AND BRECKNOCK DIVISION.

Miners' Nystagmus.

AT a large and representative meeting of the North Glamorgan and Brecknock Division held at Pontypridd on November 30th, Dr. FREDERICK ROBSON of Penarth gave an address upon miners' nystagmus. He dealt with the influence of the metamorphosis of coal, chiefly in its volatile characteristics, upon the incidence of nystagmus, and gave detailed evidence of the change in volatile percentages in the coals of the South Wales coalfield, illustrated by graphs and charts. He showed that as the seams passed across the coalfield from east to west and south to north debituminization occurred. He also pointed out that the volatile content of coals in other parts of the kingdom, having characteristics similar to those of South Wales and Monmouthshire, gave rise to a high percentage of nystagmus in mines with coals of the highest volatile content. The same principle appeared, therefore, to run through all the coalfields—namely, that a coal of high volatile content appeared to give rise to an increase in the incidence of nystagmus *per se*, and when computed in number of men employed. The variations as found statistically in the topographical distribution were reflected also in the

stratigraphical relationship of the seams to nystagmus as found in pits examined. Anthracitation of coal seams took place perpendicularly from upper to lower measures, at least in a large number of pits examined (Drs. Strahan and Pollard), and Dr. Robson found that nystagmus incidence had some correlation with the coals passed through from the upper to the lowest seams, and that increase of depth, with corresponding increase of temperature and pressure, had activating influences upon the etiology of the ailment. It was found that hard coals, with least volatility at greatest depth, gave a high percentage of nystagmus and higher than coals of greater percentage of volatility at more superficial levels—in other words, in hard coals temperature, depth, and pressure appeared to balance coals of softer composition with lower temperature and more volatility in the genesis of nystagmus. Dr. Robson said that volatile matter in a coal was not *per se* the actual cause of nystagmus, but that it was the index of the kinds of coal which appeared to give rise to the highest percentage of this ailment. It was found that, both in a linear or horizontal direction and stratigraphically, coal seam analytical variations were correlated with the incidence of nystagmus, soft coal measures giving rise to most cases and hard coal to least, except in so far that temperature and depth become provocative agents in nystagmus etiology. Dr. Robson next considered lamps and illumination, and gave detailed particulars of the rise and fall of nystagmus during the years 1909 to 1919. He showed that the portable electric lamps had not had any appreciable influence on the reduction of the ailment, but, *per contra*, nystagmus in those eleven years had increased by a very high percentage. He then discussed the possible toxic factors in the causation of nystagmus which was possibly due to mine gases, and his opinion was that the ailment was the result of a toxaemia or anoxaemia, or both. The toxicity was mostly evident in the bituminous coals, with high volatility, and was least in the anthracite coals.

Dr. MORGAN REES showed a case of nystagmus with exaggerated signs and symptoms, the head movements involving large excursions, which communicated themselves to the trunk and arms. Speech was hesitant, gait uncertain; words were slurred over and indistinct.

Dr. ROBSON said that this was one of the most pronounced cases that he had seen, and appeared to support the claim that nystagmus was a defect in the central nervous system.

BRIGHTON DIVISION.

AT a clinical meeting held at the Royal Alexandra Hospital for Children, Brighton, under the auspices of the Brighton Division of the British Medical Association, the following cases were shown by the honorary medical and surgical staff:

Clinical Cases.

Mr. L. A. PARRY showed a case of hypertrophy of the right upper extremity, the enlargement being, as usual, most marked at the distal end of the arm. Mr. Parry also showed a case of tuberculosis of the knee. The patient was shown as a text for advocating the "sun cure" treatment as carried out at Leysin and Alton. Mr. Parry said that he had applied to the town council for the use of a certain number of beds at the sanatorium for the purpose of treating children suffering from tuberculosis, rickets, malnutrition, etc. It was pointed out that the cure could probably never be carried out quite as thoroughly and satisfactorily in this country as in the mountains of Switzerland, but the results obtained at Alton, in Hampshire, were so good that there was no reason they should not have a thorough trial at other suitable places.

Dr. WALTER BROADBENT showed a boy suffering from tuberculous meningitis, whom he had shown six months ago with tuberculous pericarditis; the cerebro-spinal fluid contained 85 per cent. lymphocytes. He also showed a boy, aged 3, who had been twice in hospital comatose for some days with all the signs of meningitis, but had recovered with the aid of lumbar punctures and urotropin. In this case the cerebro-spinal fluid was under great pressure during the attacks but contained no abnormal cells. A third case was that of a boy with severe aortic regurgitation, who had a well-marked presystolic murmur and thrill—Dr. Flint's murmur, which did not signify any mitral stenosis at all. He had well-marked systolic and diastolic murmurs at the base of the heart and a water-hammer pulse.

Other cases shown included the following: A girl, aged 16, who had a large soft symmetrically enlarged thyroid gland associated with a pulse rate varying between 108 and 144 beats a minute. She was free from exophthalmos, tremors, vasomotor disturbances, or gastro-intestinal symptoms; catamenia had recently become established and was regular.

A case of extensive paralysis of both legs in a girl aged 10, following acute anterior poliomyelitis in infancy. The case had been shown six months previously with, in the left leg, a flail-ankle and paralysis of the gluteus maximus and, in the right leg, paralysis of the quadriceps extensor cruris. Since then the left foot had been stabilized by an arthrodesis of the subastragaloid joints after removal of the scaphoid, and the right knee had been treated by transplantation of the biceps into the patella. The patient could now walk well without apparatus, except a high boot on the left foot; there was a considerable limp due to the gluteal paralysis, but the left foot was strong and stable and the right knee balanced and steady in walking, though the transplanted biceps was not yet strong enough to extend the leg against gravity.

A case of acute anterior poliomyelitis in a child aged 8, dating from infancy. When first seen there was severe equino-valgus deformity of the foot and complete paralysis of the tibialis anticus on the right, with 1 and 1⅛ in. shortening. The case was treated by lengthening the tendo Achillis and transplanting the peroneus brevis into the internal cuneiform bone. The foot could now be inverted voluntarily, and the child walked well with a high boot, but no other apparatus.

A case of equinus and pes cavus, with slight eversion of the foot, in a boy, aged 9, due to the shortening of the limb from old infantile paralysis. The condition was treated by lengthening of the tendo Achillis, tenotomy of the plantar fascia, and transplantation of the extensor proprius hallucis into the neck of the first metatarsal bone, and arthrodesis of the interphalangeal joint of the great toe. The boy walked almost without a limp with a boot raised to correct the shortening.

A case of intussusception in a boy, aged 6, with some unusual features. There was a history of an attack of acute appendicitis six months previously, in which operation had been advised and refused. Twenty-seven hours before he was seen there was an onset of acute abdominal pain and constant vomiting, with absolute constipation. When seen on November 6th the child looked ill, with temperature 98°, pulse rate 116; in the right iliac fossa was a firm and tender mass in the region of the caecum. An immediate laparotomy was done on a diagnosis of appendicitis. On opening the abdomen the appendix was found adherent, but not inflamed, and the mass was in the caecum above it; it proved to be an ileal intussusception, passing through the ileo-caecal valve and reaching to just beyond the hepatic flexure. This was reduced with some difficulty; the last portion to reduce was an invaginated Meckel's diverticulum, which had formed the apex of the intussusception. As the patient's condition was not very good the abdomen was closed and the removal of the appendix and the diverticulum left to a future operation. His recovery was uneventful. (The Meckel's diverticulum and the appendix—which was adherent to the caecal wall—were removed on November 21st. The parts of the small intestine involved in the intussusception showed no pathological changes.)

Reports of Societies.

THE USE OF ERGOT IN OBSTETRIC AND GYNAECOLOGICAL PRACTICE.

AT a joint meeting of the Sections of Obstetrics and Gynaecology and of Therapeutics and Pharmacology of the Royal Society of Medicine on December 7th, Dr. T. W. EDEN presiding, a discussion took place on the use of ergot in obstetric and gynaecological practice, with special reference to the position of ergot in the *Pharmacopoeia*.

Dr. H. H. DALE, in introducing the subject, said that such a discussion ought to promote a closer co operation between the pharmacological laboratory and the practice of medicine. There had been too great a tendency for the laboratory worker to shut himself off in the pride of the more exact methods of measurement which he could use and the stricter experimental controls which he could apply; and, on the other hand, for the clinical observer to form the opinion that the laboratory investigator was an unpractical pedant whose results had small relation to practice at the bedside. Such a problem as was suggested by that evening's discussion was one that could never be settled unless the laboratory experimenter and the clinical observer joined forces in some kind of agreement. Experimental work, say on living animals or on isolated organs and tissues, although it had great advantages in that its results could be recorded mechanically and measured exactly, could lead only a very little way when the matter at issue was the influence which drugs had upon the function of the parturient uterus in the human being, and could lead hardly at all when it was a question of readjusting an abnormal menstrual function. His own duty in that discussion was to put forward the position which could be reached by the methods of experimental pharmacology, but in the ultimate those methods were bound to fail, and the final decision must in any case be left to the practising physician.

The position of ergot in pharmacology and therapeutics was anomalous. It owed its introduction into therapeutics originally to the purely empirical observation of its effects on the human being, and while no definite knowledge existed as to the nature of the active principles of ergot, the methods adopted for preparing extracts from it for therapeutic use

were similarly settled largely by tradition, partly by experience, but by experience at best very vaguely and imperfectly recorded. About the middle of last century two types of preparation came into vogue, to each of which was given the name "ergotine"—an unsuitable name because it suggested something in the nature of a pure active principle. The preparations were made according to the fancy of individuals, and were merely crude extracts. In one of them the extraction began with water, and a certain amount of alcohol was afterwards added; in the other the preparation started the other way about. These were the extracts, in the present edition of the *Pharmacopoeia*, which had had the greatest vogue. They were very much alike, and he did not think that either of them contained much of the essential active principles of ergot. There was another preparation in the *Pharmacopoeia*—namely, ammoniated tincture of ergot, which from the scientific point of view ought to be much better than either of the others, but he believed it had been much less used in general therapeutics. The first substance obtained from ergot in a pure condition was ergotinin, a beautiful crystalline alkaloid, obtained as long ago as 1875. This was associated with a quantity of material which appeared to its extractor, Tanret, to have an identical chemical composition, but which differed from the crystalline substance in that he was unable to crystallize it in any way. Tanret's conclusion that the amorphous ergotinin was identical with the crystalline rather put back the clock for some time, because investigators took the crystalline in preference to the other; and it was not until Barger and Carr, fifteen years ago, worked out the matter that the so-called amorphous ergotinin was found to be really a different substance, of an intense activity, as he (Dr. Dale) was able to show by physiological experiment. This substance, now called ergotoxin, might reasonably have been regarded, so far as laboratory experiments were concerned, as the principle responsible for the therapeutic action of ergot, and it had a stimulant action on plain muscle, conspicuously on the plain muscle of the uterus. But such experiments as were made clinically did not seem to arouse any enthusiasm for its therapeutic properties, and among other contrary factors was the consideration—and he did not take so purely a laboratory view of pharmacology as not to admit that there was cogency in the argument—that the majority of practitioners were already using the liquid and the other extract given in the *Pharmacopoeia*.

During the last few years a new point had arisen which for him had rather revived the interest of the question. A very able chemist, Dr. Stoll, who since the war had entered the service of a pharmaceutical firm in Basle, had extracted from ergot as a new alkaloid what was described as being at last the long-sought-after active principle of ergot—a substance producing all the action of good ergot and free from all the undesirable associated effects which the crude ergot might produce. On the face of it, it was evident that the new alkaloid, to which the name "ergotamin" was given, was very closely related to the old ergotoxin. It seemed quite possible that what Stoll had obtained was something which differed from ergotoxin only slightly in chemical composition. On the other hand, certain preliminary physiological experiments on the substance, published by Professor Spiro, professor of biochemistry at Basle, conveyed the suggestion that here was something on a different footing from anything previously described. He got into correspondence with the professor and arranged for an exchange of specimens—his own ergotoxin for the other's ergotamin—and in the result both of them agreed that the substances were absolutely identical, quantitatively as well as qualitatively. He showed tracings illustrating the similar action of both substances on the uterus of the cat and of the guinea-pig. Whatever might be the truth about the chemical relationship, practically the two were identical.

The question to be answered was whether the specific alkaloids of ergot—of which ergotinin citrate was one preparation, and ergotoxin and its salts another—alone give the therapeutical results. If so, then ergot must be included in the *Pharmacopoeia*. It was clear also that if ergot was retained in the *Pharmacopoeia* on account of its specific alkaloids, the old methods of preparing the official extracts ought to be revised so as to ensure that the alkaloids were present in the finished product, and not for the most part thrown away as they were now. On the other hand, if the non-specific putrefactive alkaloids, like tyramin, embodied in the modified formula of extra-pharmacopoeial preparations, produced all the effects claimed for ergot, then it was equally clear that ergot had no place in the *Pharmacopoeia*, because these others could be more easily and economically obtained. He hoped that the discussion might do something to clear up these points, for he felt that the present position of this problem was not quite worthy of scientific medicine.

The Chairman, Dr. EDEN, said that Dr. Dale had been very modest about his own share in these researches, but they would understand how important his work had been in elucidating the action of this drug. The fashion in obstetrics had altered in recent years, and there was a tendency for pituitary extract to replace ergot. But ergot could not really be superseded, because 50 per cent. of the confinements which occurred in the country were attended by midwives, into whose hands pituitary extract must not be given for free use, so that a uterine stimulant was wanted which did not possess any markedly toxic effects. It was difficult to form an opinion as to the clinical value of this or any drug. Some observers of a sanguine temperament appeared to get good results every time; others were unable to form any decided opinion. Yet the action of ergot on the uterus was so simple and specific that one would think there could not be much room for mistake in the clinical impressions formed. He had often wondered whether pharmacologists could not assist in the scientific record of the action of ergot on the parturient uterus. He himself had formed a very strong opinion as to the value of ergot as a uterine stimulant during and after labour, but in recent years there had been difficulty in getting suitable preparations. He was doubtful about the action of ergot in gynaecology, and would speak on that only with great reservation. He did not know that ergot had much effect on the quiet uterus. He urged that the editors of the *British Pharmacopoeia* should endeavour to move the Government to furnish a grant of money, so that, at any rate, the more important drugs in the *Pharmacopoeia* might be properly tested.

SIR NESTOR TIRARD (senior editor, *British Pharmacopoeia*) said that he did not know whether he was expected to take the position of defending counsel or of the defendant himself, but he wanted to give the meeting some idea of the trouble that was taken in producing the current *Pharmacopoeia*. It was not quite the fact that the compilers had gone on from one issue to another, following some hallowed tradition. They were not quite so blind as that. They had endeavoured to act on information received. They had taken a great deal of trouble to ascertain the wishes of the medical profession. They had sent round to nineteen licensing bodies a form of inquiry for any additions, alterations, or omissions which might be suggested, and the authorities in most cases, though not in all, were good enough to make some suggestions. Not one of the nineteen bodies, however, suggested the omission of either of the extracts of ergot. One body—he believed it was the University of Manchester—suggested that the preparation might be improved, but that was a pious opinion which might be held with regard to every pharmacopoeial substance. Another suggested that only the active principle should be employed, and another that it should be standardized physiologically. Here was the crux of the matter, for the compilers of the last *Pharmacopoeia* had no power to standardize anything physiologically. The Germans and Americans, who had Government institutions which controlled physiological experiments, were in a different position, but there was nothing of the kind in this country at present, though it was hoped that in the future some Government standardizing authority might be set up. It appeared from a recent report that Dr. Dale had found that the preparations of pituitary extract stood in need of as much revision and control as those of ergot. It was no indication that a drug was not used to find that it was not present in a large number of prescriptions. The compilers of the *Pharmacop eia* had asked a large number of chemists to analyse some 48,000 prescriptions, and in not one of these did any official preparation of ergot appear. It might be concluded from this that it was not wanted, and could be deleted; nevertheless, it was known to be used largely when required, though happily it was not the practice to give patients prescriptions containing what must be regarded as a dangerous drug if improperly used. The compilers of the *Pharmacopoeia* wanted to know the wishes of the profession. If the profession generally employed any drug—not in an ephemeral way, because it had become a fashion—so largely that it was desirable that its composition should be controlled, it should make its wishes known through the licensing bodies so that such wishes might be conveyed to the Pharmacopoeia

Committee of the General Medical Council, where they would receive adequate attention, and if the Government set up a State laboratory where experimental work could be controlled and standards laid down, the information received could be referred to such a laboratory.

Professor W. E. DIXON said that one of the most remarkable facts which had come to light in medicine during the last twenty years was the fact that the body worked by means of substances not very far removed from the crystalline alkaloids of pharmacology (he referred to such things as adrenaline). It was of interest that some of the crystalline substances found in ergot were also manufactured in the alimentary canal as a matter of course, and as these substances were readily absorbed they were no doubt responsible for the signs of alimentary toxaemia which he supposed everyone suffered from to a greater or less degree. The normal stimulus to the uterus, especially under certain conditions, was excretion of pituitary, and it was interesting to find that gynaecologists had discovered that fact for themselves and preferred pituitary, which they knew produced a definite effect, to ergot, which might or might not produce a certain effect. In 1915 in Germany a number of experiments were performed on parturient women in which the movements of the uterus were recorded in a manner similar to that in which pharmacologists recorded the uterine movements in animals. The results were published in the *Münchener medicinische Wochenschrift* in six or eight papers. These showed that when pituitary extract was injected into the patient the pains became quicker, but there was comparatively little increase in tone; with certain samples of ergot, on the contrary, the pains were increased five or ten minutes after injection, but the tone of the uterus was also considerably increased. With regard to the preparations given in the *Pharmacopoeia*, pharmacologists were perfectly clear that the American liquid extract was infinitely superior to the British liquid extract, the latter being frequently without action at all. He understood that the compilers of the *Pharmacopoeia* took the position that it was not their business to suggest useful substances, but to accept suggestions; they followed in the wake, they did not lead the profession. It was a little difficult to see where any advance was to be made along those lines.

Dr. HERBERT SPENCER said that for the last thirty years he had never prescribed in private any other preparation of ergot than the ammoniated tincture; he had found this from experience to be by far the most potent, much more so than the liquid and the other extract. He emphasized the importance of the association of pharmacological laboratories with clinical work. Professor HENRY BRIGGS said that for his part he had not used ergot for quite twenty-five years, and had never felt the lack of it. He emphasized the need for close contact between laboratory and bedside. Mr. ALECK BOURNE said that during the last few weeks there had been established at Queen Charlotte's Hospital a means of measuring alterations of intrauterine pressure. The work had been done in connexion with the committee appointed by the Obstetrical and Gynaecological Section to investigate the action of pituitary extract. Very little had as yet been done, but the results would be communicated at the proper time. It was impossible for those who worked clinically to give impressions of any value as to the action of drugs. There were too many variables; the patient, the disease, and the drug were all variables. He suggested that another committee should be appointed *ad hoc* to thrash out the matter in connexion with ergot and its derivatives.

Dr. DALE said that Sir Nestor Tirard had put forward a position which, of course, was quite understandable. The function of the Pharmacopoeia Committee was not to lead the profession but to follow it. If the committee waited for some indication of dissatisfaction from the profession before it moved the position was rather hopeless, for the profession was apt to regard the *Pharmacopoeia* as an authority, setting up a standard, not only of what was actually prevalent, but of something which had at any rate a reasonable theoretical basis. He noticed that in the last edition of the *Pharmacopoeia* (1914) there was a slight change in the process given with regard to extract of ergot, and he wondered whether that was made in response to any widely expressed desire.

Sir NESTOR TIRARD said that the compilers were controlled, not only by the wishes of the profession in this country, but by an international agreement, and Dr. Dale would have to educate not only obstetricians in this country but obstetricians in all the signatory countries.

Dr. DALE remarked that in 1885, instead of the present ammoniated tincture of ergot, there was a plain tincture. For some reason that was altered, and he was not sure that it was an improvement. Mr. Bourne was rather pessimistic about the possibility of clinicians collecting any useful evidence, and Dr. Dale agreed that if the Obstetric Section could appoint a committee to thrash out the ergot question in the same way as the pituitary question was being thrashed out it would be the best way of furthering the matter.

The CHAIRMAN said that the Section of Obstetrics and Gynaecology would do its part in the formation of such a committee, but the committee ought to be a joint one, in which the Section of Therapeutics and Pharmacology would participate.

PRE-NATAL CARE.

AT a meeting of the Liverpool Medical Institution held on November 30th, with the President, Professor J. HILL ABRAM, in the chair, Mr. A. LEYLAND ROBINSON read a note on pre-natal work and puerperal mortality. He said that an analysis of 222 fatal cases showed that the causes of deaths in childbirth could be divided into four big groups: (1) Haemorrhages and obstetric accidents; (2) the toxaemias of pregnancy; (3) sepsis; (4) pre-existing or intercurrent disease. In general hospitals pre-existing or intercurrent disease was the most important; in maternity hospitals the haemorrhages and accidents of labour; sepsis was insignificant in both and must therefore arise chiefly among patients delivered in their own houses. Only a small proportion of the cases described had received any treatment during pregnancy, although preventive measures might have saved many lives. He considered that pre-natal care was especially valuable in the prevention of convulsive eclampsia and the accidents of labour; its relation to the haemorrhages (accidental and placenta praevia) and to many general diseases required further investigation but offered a wide field for research. Routine examination during pregnancy would enable the practitioner to diagnose and correct many abnormalities before the onset of labour—this would undoubtedly reduce the number of emergency operations now performed under unfavourable conditions in patients' homes and therefore reduce sepsis, which most commonly follows this type of case. In conclusion Mr. Leyland Robinson urged that the training of medical students and midwives be amplified, and that the general public should be made to realize that pre-natal supervision is essential to the welfare of all expectant mothers.

Professor BRIGGS maintained that the sources were as important as the figures in statistics. The strength of an official midwifery service depended on fully equipped maternity wards and their influence on the home district practice. This had been repeatedly and fully illustrated and never more effectively than in Liverpool by the paper read that night by Mr. Leyland Robinson.

Dr. JOHN HAY emphasized the value of ante-natal supervision and treatment in all pregnant women suffering from valvular disease of the heart. During the last twelve months he had had under observation at a rest home 14 such cases, 4 of them being advanced valvular disease of the heart of the mitral type in whom fibrillation was present; 10 cases were non-fibrillating, and 9 of the 10 suffered from mitral stenosis, and the other one being an aortic regurgitation. In pregnant women suffering from valvular disease the patient must be treated as a cardiac case. Dr. Hay thought that the advantage of supervision in such cases was that an opportunity was afforded for materially improving the reserve power of the heart in preparation for the strain of labour. In fibrillating cases the response to digitalis could be estimated, and in the graver degrees of cardiac embarrassment an opportunity was afforded for considering the question of operative interference.

Dr. FRANCES IVENS considered that ante-natal care was a very important factor in the lessening not only of puerperal mortality but of puerperal morbidity. It diminished the necessity for instrumental interference with its added risk of maternal injury and infection. In a series of 305 consecutive maternity cases in which she had made a careful examination during pregnancy forceps had only been required in less than 3 per cent.

Mr. FRANK JEANS read a note on a modification of technique in intestinal obstruction, which he had practised in removing growths from the large gut. It consisted of Paul's method with immediate destruction of the "spur" by scissors and

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suture and the use of a large Paul's tube for the double-bore exit. It combined the safety of Paul's method with a shortening of the convalescence and was more rapid than anastomosis with drainage.

Mr. K. W. MONSARRAT considered that Mr. Jeans's suggestion was a valuable point in technique when the type of operation to which Mr. Jeans referred was chosen. In the presence of acute obstruction, however, he was in the habit of performing a caecostomy in most cases to be followed by resection of the growth and anastomosis. Even in cases without acute obstruction he believed this or some similar proceeding to be preferable to leaving a temporary anus at the site of the resection.

Mr. T. H. BICKERTON read the original *Memoir of Dr. John Rutter*, Founder of the Institution. The memoir was written by Dr. Rutter's nephew, Mr. John Rutter Chorley, in 1839. Mr. Bickerton eulogized Dr. Rutter's services to the medical profession and the city of Liverpool.

RELAPSING PYREXIAS OF LYMPHADENOMA.

A MEETING of the Sheffield Medico-Chirurgical Society was held on November 23rd in the Medical Library of Sheffield University, with the President, Dr. RUPERT HALLAM, in the chair, when Professor ARTHUR J. HALL read a paper on the relapsing pyrexias of lymphadenoma.

Professor HALL began by drawing attention to the fact that the disease occurred in two forms—a "macroscopic" form, in which there were obvious glandular swellings, and an "occult" form, in which glandular enlargement was absent and in which the diagnosis was always difficult. Further, in this occult form there was one subclass of case in which the diagnosis was definitely considered, but there was also another subclass in which it was never even thought of until autopsy declared it. He then proceeded to discuss that type of lymphadenoma originally described by Pel and Epstein, in which there was a recurrent pyrexia over a long period of time. Although admittedly a rare type of the disease, some of its apparent rarity might be due, he said, to difficulty of prolonged observation, in that patients might not be seen by the same medical man in successive attacks, and owing to the intervals of comparative good health the subjects of this disease were averse to prolonged hospital residence. One of the chief difficulties in getting a clear mental picture of the condition, at any rate so far as the pyrexia was concerned, lay in the very cumbersome temperature charts which must be scrutinized if a case was completely recorded, and in order to overcome this difficulty Professor Hall had devised a standardized type of chart whereon in a very short space could be expressed the morning and evening temperatures over a very long period. A series of those charts were thrown on the screen, showing the pyrexia in such conditions as pneumonia, empyema, tuberculosis, etc., for comparison with which the standardized charts of all the published cases of the Pel-Epstein type of lymphadenoma were also shown. In a study of those cases, and also of two of his own, Professor Hall demonstrated the extraordinary regularity of the recurrent fever. The period of recurrence varied in different cases, although the average seemed to be about twenty days, but was constant for any individual case. So regular was this periodicity that in one of the published cases, before its completion, the time of the return of the pyrexial wave was accurately predicted merely from a careful examination of the previous pyrexial periods, a prediction which was later verified. So striking was this recurrent type of fever that the possibility of some protozoal infection was very strongly suggested, and the lecturer related one case of lymphadenoma of that type which was for some time treated as a case of malaria. At the same time he pointed out the criticism that in all the diseases where protozoa were responsible for recurrent pyrexia, rat bite fever, malaria, etc., the apyrexial periods were short, and the twenty days' interval of lymphadenoma was unusual; but at the same time some of the cases showed a short apyrexial period, as in one published by McNalty.

Dr. R. HALLAM, Dr. A. E. NAISH, Dr. T. ROBERTSON, and Dr. A. E. BARNES took part in the discussion which followed the address.

X-Ray Treatment of Malignant Disease.

Mr. REGINALD A. MORRELL read a paper entitled "The application of modern x-ray apparatus to the treatment of malignant conditions." In his preliminary remarks Mr. Morrell pointed out that the problem which had engaged the attention of the radiotherapists in the past—namely, that of conveying a sufficient dosage to a sufficient depth—was on the way to being solved by the latest apparatus and technique evolved in Germany. Moreover, great advances had been rendered possible as regards standardization and measurement of dosage, and by these means we were getting within measurable distance of the point when radiotherapy might be considered an exact science. While admitting that the newer apparatus and methods of the German schools constituted a great advance, Mr. Morrell maintained, however, that the present claim of the Erlangen school to treat primary malignant disease by radiotherapy in preference to surgery was indefensible, as it was based on a fallacy—namely, the minimum lethal dose, the very existence of which was disputed in many quarters and could not be substantiated in practice. Moreover, this system of massive dosage did not take into account the danger of diminishing the patient's resistive powers. Other reasons were advanced to show that we were very far from any universal cure, even in those cases which were most favourably situated. On the other hand, those newer methods were likely to be of the greatest service in treating inoperable cases, and where from the very nature of things greater risks were justifiable. Mr. Morrell concluded with a reference to the various methods, still in their experimental stages, by which malignant growths might be rendered more sensitive to radiotherapy. In the event of these being successful many of the objections which had been raised would be negatived and the use of the apparatus would be firmly established. In any event, the treatment was essentially one for an institution, as it demanded the services of a properly qualified whole-time medical officer and the co-operation of the surgeon and the pathologist.

AFTER-EFFECTS OF LETHARGIC ENCEPHALITIS.

A MEETING of the Royal Medico-Chirurgical Society of Glasgow was held on November 17th, when Dr. GRACE ANDERSON read a communication on the sequelae of lethargic encephalitis in the child. Her observations were made on 33 cases that recovered from the primary attack. These children had suffered from disturbances so similar and so typical that those disturbances had become regarded as conclusive evidence of a previous attack of encephalitis lethargica. In many cases the sequelae had proved the nature of the primary attack. The sequelae in the order in which they appeared were: (1) nocturnal wakefulness and excitability, and (2) psychical disturbances, which included changes in disposition, mental impairment, and habit peculiarities. The nocturnal wakefulness was characterized by persistent insomnia with extreme motor unrest and excitement during the night, followed by more or less marked lethargy during the day. The prognosis as regards complete recovery was bad. Of the psychical disturbances, which in most cases had followed a long period of nocturnal insomnia, change of disposition was the most important. Disobedience, bad temper, cruelty, even kleptomania, had appeared in previously good children. Mental impairment or interference with memory was absent, but the children were unable to check the impulse to do wrong. In 10 cases there was definite mental impairment without much change of disposition. The habit peculiarities most frequently met with were spitting and hysterical dyspnoea. These Dr. Anderson considered to be late sequelae, because they persisted long after the normal sleep sequence had been regained. The former was not a true sialorrhoea, as the habit could be controlled for a long period without accumulation of saliva. Hysterical dyspnoea was characterized by paroxysmal attacks of "panting like a dog."

Professor EDWIN BRAMWELL (Edinburgh) communicated a paper entitled "Remarks upon lethargic encephalitis, with special reference to the late symptomatology and persistent after-effects of the disease." Professor Bramwell explained that the official figures of mortality were apt to give an exaggerated impression as to the fatality of the disease. This was due to the fact that mortality figures were based upon notified cases. Among 56 cases observed up to 1919 only 9 died, and from a larger number of cases seen a mortality of not more than 20 per cent. occurred. This corresponded with the conclusions arrived at by the Committee of the American Association for Research in Nervous and Mental Disease appointed to study the subject. Of the deaths probably four-fifths occurred within the first month,

and thus the risk of a fatal issue was small after the first four or five weeks. The speaker's opinion was that complete recovery was exceptional. The effects of the disease tended gradually to improve, although relapses tended to occur even one to two years after the primary attack. Dr. Bramwell considered that some of the so-called sequelae should be regarded as a disease progressive for the time being rather than the consequence of a pathological process which was no longer active. The most common after-effect was probably a general lack of physical and mental energy. Initiative, discrimination, and judgement appeared to be impaired, as also were memory, concentration, decision, and many other individual characteristics. Some of these symptoms probably were directly dependent upon the pathological process, and some might be accounted for by a superimposed neurosis consequent upon the patient's mental attitude towards his case. The mental phenomena observed in the child often differed materially from those observed in the adult, because in one case it was the developing and in the other the developed brain that was attacked. Various pareses or paralyses of more or less sudden onset were not infrequently caused by encephalitis lethargica, and even the Argyll Robertson pupil might be a result. Diagnosis from brain tumour might be very difficult when an encephalitis manifested its presence by producing a progressive hemiplegia. In some cases abnormal movements recognized months after the acute attack might appear when the patient was well on the way to recovery. Coarse tremor, general motor restlessness of choreic type, twitching of the face, pouting and puckering of the lips, irregular movements of the diaphragm, purposeless movements of one or more limbs were among the phenomena observed. One patient increased greatly in weight, an observation which was not unique. The Parkinson syndrome was not uncommon, and again and again the physiognomy gave the clue to a diagnosis of lethargic encephalitis, although the certain diagnosis from true paralysis agitans might not always be easy in the absence of a history of an acute illness with febrile disturbance and, it might be, diplopia. The Parkinson syndrome was met with in children as well as adults, whereas paralysis agitans was essentially a disease of later life, and was extremely rare under 30 years of age. Tumour of the brain and lethargic encephalitis were not always readily diagnosed differentially.

Dr. HENRY J. WATT reported the results of his application of the Binet (Burt) tests to a score of children who had had lethargic encephalitis. The mental ratio was found to be, on the average, $68 + 8$. This figure might be compared with the average mental ratio of 114 children in the Royal Hospital for Sick Children, Glasgow—namely, $88 + 16$. The difference seemed significant. The intelligence of the child was apparently distinctly impaired by the disease. The number of cases examined by the method did not yet, however, warrant very definite statements.

Dr. JOHN THOMSON (Edinburgh) thought that it was interesting, though probably not of any great importance, to notice how many resemblances there were between the clinical symptoms in some of the slighter cases of epidemic encephalitis in children and those often seen in severe chorea. For example, in both conditions there was a mask-like facies, irregular, imperfectly controlled muscular movements, irregular, imperfectly controlled emotional disturbances, also a striking change in the child's character, and obstinate insomnia. There was, of course, no question of the two diseases being due to a common cause, but the local lesions set up in the brain were not dissimilar. The recent work of Poynton and Holmes, of Greenfield and Wolfsohn, and of various Continental pathologists seemed to show that the essential lesions in chorea consisted in a slight diffuse or disseminated encephalitis, which was not very unlike that in lethargic encephalitis either in its appearances or its distribution. Dr. Thomson also spoke of the great frequency and importance of noisy hyperpnoea as a symptom of epidemic encephalitis in children, although it was a comparatively rare manifestation of the disease in adults. This sort of "heavy breathing" or "panting" was a very noticeable feature from the first in the youngest case he had seen—that of a girl baby whose earliest symptoms occurred on the twenty-first day of life. It was also noticed early in the oldest case of the kind he had had in a child—a girl between 14 and 15. In his experience it was a prominent symptom in a large majority of the cases seen in children, and, as Dr. R. D. Clarkson had pointed out to him, it probably helped more than any other of the symptoms in coming to a diagnosis, when the other manifestations of encephalitis lethargica were indefinite and no proper history was available.

Professor MONRO, after referring to the now well-known syndrome in the adult group, spoke of the symptoms in children and of the intermediate cases. He suggested that the so-called sequelae were possibly due to a lighting up of an old lesion—that the disease was still active after a year or two. The late symptoms were a Parkinsonian condition, weakness of muscles, and fixity of features, often without tremor. He was not familiar with severe mental derangements.

Dr. D. K. HENDERSON spoke of the condition from the point of view of the psychiatrist. In institutions a fairly acute type of organic reaction was what was generally met with. There was not so much a defect in memory, etc., but a defect along the line of emotional life. The end-result seemed to be more a state of emotional dulling or stupor with retention of memory and intelligence. Dr. Henderson questioned the value of Dr. Watt's tests.

Dr. IVY MACKENZIE also doubted the value of Dr. Watt's tests. He stated that in over 100 cases he had not seen one case of complete recovery nor one of genuine alienation. Many cases were able to return to work. He had seen many children whom he would send to an asylum, but principally because they could not be looked after at home. He expressed doubt as to the probability of recurrence of infection.

Dr. LEONARD FINDLAY referred to the difficulty of diagnosis in many early cases, and stated that it was possible in many cases only after long observation. Like Dr. Mackenzie, he considered that there was no complete recovery in most cases. Many cases were only diagnosed from the sequelae. It was uncertain whether the late symptoms were due to a fresh outbreak or to the results of cicatricial contraction. There was never febrile disturbance. He considered Dr. Watt's tests good and as proving that the children tested were inferior to the age at which the disease developed.

SOME MEDICAL RARITIES.

A MEETING of the Medical Section of the Royal Academy of Medicine in Ireland was held at the Royal College of Physicians, Dublin, on November 24th, with the President, Dr. T. G. MOORHEAD, in the chair. The President welcomed the Fellows and Members to the first meeting of the session and then delivered a short address on the principles of therapeutics.

Sir JOHN W. MOORE read two papers, one on xanthoma diabeticorum, and the other on myelogenous leukaemia.

Xanthoma Diabeticorum.

The first case was an example of intractable diabetes mellitus in a girl of 14 years. The disease had lasted nine months when she came under observation on February 20th, 1922. Occasional attacks of acidosis occurred, but yielded to treatment. A persistently low body temperature was a marked feature. It was not, however, until August, 1922, that the condition which lent unusual interest to the case supervened. On August 12th the girl's mother reported that a "rash" had broken out on her daughter's elbows and knees. This consisted of crops of papules on the extensor aspect of the elbows and knees, and some of the papules showed a yellow coloration. A diagnosis of xanthoma diabeticorum was made. A photograph taken at the time showed the distribution of the "rash" and also the extreme emaciation of the patient. Subsequently, similar papules developed in other regions of the arms and legs. Many of them became unhealthy—ulcerating and crusting in such a way as to suggest degeneration of some secondary infection. Death ensued on October 8th.

Myelogenous Leukaemia.

The second case was one of myelogenous leukaemia in a boy aged 11 years, who was exhibited at the meeting. His illness began about two months before admission, but acute symptoms, such as violent pain in the front and the left side of the abdomen and transitory feverishness, set in only a fortnight before he came into hospital. Extreme prominence of the abdomen and lower part of the left chest proved to be caused by an immense spleen, smooth and firm. The differential blood count, on October 9th, showed red cells 3,200,000, haemoglobin 50 per cent., white cells 400,000 per c.mm., and myelocytes, large lymphoid cells, polymorphs, mast cells, and normoblasts were also present. The treatment consisted of the internal administration of liq. arsenicalis in 3-minim doses, at first twice and later thrice daily, with galvanism to the abdomen and afterwards *x*-ray exposures. On November 3rd the leucocyte count had fallen to 300,000 per c.mm. and the spleen had shrunk considerably; this was before the first *x*-ray sitting, which took place on November 13th. On November 23rd the blood count showed that the white cells had fallen to 185,000, a diminution of about 38 per cent.

Dr. CROFTON said that in regard to Sir John Moore's remarks on insulin he had brought before the Academy in

1910 an extract very similar to that referred to. He was of opinion that the Allen diet did harm, caused distress to the patient, and was a most illogical proceeding.

Sarcoma of the Kidney.

Dr. HARVEY described a case of tumour of the kidney, with precocious sexual development, which had recently been under his care in the Adelaide Hospital.

On admission, the patient, a girl of 2½ years, had been having regular menstrual periods for some nine months. She was a small, thin child of apparently normal mental development for her age, but having well-developed breast, a tense and swollen abdomen, a coarse growth of dark hair on the pubes, and external genitalia of a markedly adult type. The abdominal swelling was due to a large tumour on the left side involving the kidney and suprarenal, and extending across the abdomen. The temperature was subnormal, the pulse rate 100 to 120, the bowels confined, and the urine normal. The systolic blood pressure was 130, the diastolic 85. The red blood corpuscles numbered 6,000,000, the white corpuscles 5,000 per c.mm.; haemoglobin was 75 per cent.; colour index 0.7; Wassermann reaction negative. The family history was healthy and the patient herself was a full-term child, but weakly from birth. X-ray examination showed no abnormality in the bony development. Mr. Gunn and Dr. Madill operated, but found the tumour incapable of resection. The child lived for some five weeks more, and died on October 17th, having wasted to a mere skeleton. She did not seem to have been in pain and her only symptom was a persistent craving for fluid.

Professor O'Sullivan made the *post-mortem* examination. The body and limbs were wasted to the last degree. The abdomen was greatly distended. Breasts measured 1⅞ inches in diameter and were elevated above the surface. The nipples were 9/16 inch in diameter. The tumour occupied the greater part of the abdominal space, and weighed 6 lb. 1 oz. It was 10½ inches in length by 6 inches in breadth; on the lower side was a cystic lobule 5½ by 3½ inches. On section it was found to be composed of a brain-like substance, white in colour, with patches of canary yellow and streaks of green. It was loosely divided into lobules, and was very vascular. The attached lobule was a cavity filled with a clear fluid mixed with blood. The smooth and shiny walls were partly tumour and partly connective tissue. In places in the brain-like mass kidney substance could be recognized. The thymus was practically non-existent, and the left ovary was cystic, while the right kidney was hypertrophied. Other organs appeared normal, but were reserved for further examination, microscopic and otherwise. A preliminary microscopic examination of the tumour showed it to be a very cellular and vascular sarcoma.

Dr. Harvey exhibited photographs, lantern slides, *post-mortem* specimens, and a microscopic slide of the tumour. He stated that the further pathological examination of the case was proceeding.

The PRESIDENT recalled that Dr. Gordon Holmes had reported a case of a girl who up to the age of 16 was not abnormal; at 17 a tumour developed in the abdomen; coincident with this, male secondary sexual characteristics appeared. The tumour was removed, the male characteristics disappeared, and the female ones again appeared.

Professor PRINGLE, Dr. CROFTON, and Dr. G. E. NESBITT also spoke, and Dr. HARVEY replied.

ARTHRITIS.

AT a clinical meeting of the Devonshire Hospital Research Society, Buxton, held on December 1st, the following cases were exhibited and discussed:

1. A case of septic (non-purulent) arthritis of the knee following a pedicure wound. The joint had been quite stiff but was gradually recovering movement.

2. A case of generalized infective arthritis commencing at the age of 12 and now at 18 years of age showing a considerable degree of recovery. No cause had been discovered, but a tonsillar infection was suggested.

3. A case of spondylitis deformans affecting the dorsal region in a young woman. The disease appeared to be quiescent and the question of exercises or immobilization as a line of treatment was submitted for discussion. The general opinion was in favour of exercises of a suitable character.

4. A case of multiple symmetrical arthritis probably of the nature of a periarticular fibrositis of twenty years' duration. Recently small painful swellings had appeared round the joints lasting two or three days and disappearing suddenly.

5. A group of cases of multiple arthritis affecting the larger joints with much swelling and little pain and free movement. Skiagrams showed marked erosion of the bones and no hypertrophic changes. One was of twenty years' duration affecting elbows, knees, and wrists. The patient, a weaver, worked at his trade until quite recently. Another of five years' duration worked as a craftsman in the army and subsequently at his trade in spite of his arthritis. The possibility that cases of this type (differing in many ways from the more common type of infective arthritis) might be due to some specific organism was suggested, but venereal infections were excluded.

6. A case of solid oedema of one leg extending to the knee of seventeen years' duration. A scar above the knee marked the site of an abscess which had developed six years subsequent to the onset of the oedema. No cause could be elicited in the history or by clinical examination.

7. A case sent in as sciatica which proved to be acute tuberculous disease of the hip. The man was 30 years of age and had a similar attack at 18 but no trouble in the interval. He was treated by extension, dry cupping, and tuberculin. In the course of six weeks all pain disappeared, the temperature became normal and he was now about to be discharged on a Thomas's splint. A skiagram showed that extensive absorption of the head of the femur had taken place.

8. A case sent in on account of polyarticular gout of many years' standing. Three years ago the patient began to stammer and now had hesitating speech, coarse tremors of hands and tongue; he walked stiffly and had an aspect suggestive of Parkinson's disease. Although the case was not typical this was regarded as the probable diagnosis. The reflexes were normal.

9. A man of 35 who has had pains in his calves for ten years with gradual wasting. There were no sensory symptoms beyond the pain, no Babinski sign, and the knee and Achilles jerks were normal. He walked in a leaning forward position. No definite diagnosis was arrived at.

10. A man of 25, admitted as a convalescent after rheumatic fever. He had mitral and aortic regurgitation and was shown on account of his blood pressure, which was 160 systolic and 0 diastolic. The cardiac sounds could be clearly heard over the radial artery, the sphygmomanometer marking zero.

A general discussion took place on the cases.

AT a meeting of the Bath Clinical Society held at the Royal United Hospital on December 1st, with the President, Mr. W. G. MUMFORD, in the chair, Dr. D. A. MITCHELL showed a case of chronic osteomyelitis and one of chronic bursitis, Dr. V. M. COATES showed a case of cysticercus cellulosa, and Dr. J. S. LEVIS two cases of mother and daughter with fatty tumours in the arm. Mr. A. L. FULLER exhibited a gall stone which had caused acute intestinal obstruction, also several renal calculi and a large vesical calculus removed from the same patient. The PRESIDENT showed two specimens of kidneys removed for pyonephrosis. Dr. W. H. DUNCAN, in a paper entitled "Notes on some common ailments," dealt with migraine and spasmodic asthma, and gave his experiences with regard to treatment. The paper was discussed by various members.

A MEETING of the Aberdeen Medico-Chirurgical Society was held in the society's hall on December 7th. The meeting took the form of a clinical evening, and a number of interesting cases were shown and discussed. Dr. GEDDIE showed a child, aged 15½ months, with osteogenesis imperfecta. Mr. MITCHELL showed two cases of regeneration of the lower half of the femur after subperiosteal resection for acute septic osteomyelitis. He also showed a case of congenital club-foot corrected by manipulation, the position being maintained by insertion of a silk ligature from the fifth metatarsal to the anterior border of the tibia. Professor ASHLEY MACKINTOSH exhibited a woman, aged 53, with the appearance of myxoedema; she had some interesting vascular and arthritic features, probably luetic in origin. Dr. A. GREIG ANDERSON showed a case, aged 22, of Milroy's disease; the onset was at the age of 8, in the left leg, after an operation in the groin; the right leg became swollen at the age of 14. Mr. Greig Anderson also showed a case of lipo-dystrophia progressiva, with extreme wasting of the fat of the face and the upper part of the body down to the pubes; the legs and buttocks were normally developed. Mr. WILLIAM ANDERSON showed a case of subcutaneous rupture of the extensor communis digitorum. Sir H. M. W. GRAY showed a case of tumour of right thigh for diagnosis; in his opinion it was probably a lipoma. He also exhibited a case of arteriovenous aneurysm of the femoral artery and vein. Mr. F. K. SMITH showed a case, aged 27, where a tibial bone graft was used to replace the upper half of a humerus, lost over a year previously through osteomyelitis; x-ray photographs of various stages were shown, and the result was very satisfactory. He also showed a case of syphilitic ulceration of a breast in a woman, aged 65. Mr. COLT showed two cases for Professor MARNOCH: (1) Myositis ossificans of the left elbow in a male of 47 who had dislocated the joint eleven weeks previously; (2) sero-cystic disease of the left breast of five years' duration in a woman of 44, who twenty-five years before had been confined, but had no subsequent pregnancy and no dysmenorrhoea; three of the cysts had ruptured during the last five years, discharging serous fluid, latterly blood-stained. Dr. SANDEMAN showed a case of a young girl with calcinosis. Dr. CROLL showed a case of mediastino-pericarditis, and discussed the value of the various signs thought to indicate this condition. Dr. INNES showed two cases of dextrocardia, with transposition of viscera; three members of the family—two brothers and one sister—had the same condition. Skiagrams illustrating the condition were exhibited.

Reviews.

FLETCHER MOULTON.

JOHN FLETCHER MOULTON was born in 1845; he left school in 1861, taking a scholarship at the matriculation examination of the University of London; after that for three years and a half he was a schoolmaster; in 1864 he graduated B.A. London and went up to St. John's College, Cambridge, with a scholarship; in 1868 he was Senior Wrangler and first Smith's Prizeman, and was elected Fellow of Christ's College. All this before he was 23. In 1873 he was called to the Bar: in 1885 he took silk; and for the next twenty-one years he was acknowledged supreme in the line of practice to which he had devoted himself. In 1906 he was made a Lord Justice; in 1912 a Lord of Appeal. He began his war work in September, 1914, and soon after it was finished died, in his sleep, on March 8th, 1921.

Here is a brilliant career, but one which might be paralleled by the lives of many successful lawyers. The reason why he was asked to undertake certain war work is the reason why his biography,[1] written by his son, is of much interest to us of the medical profession. Moulton was not merely a quick-witted advocate who crammed up a scrap of science to conduct a case; he was himself a man of science, imbued with its spirit and understanding its methods. He got into big practice just at the time when science was becoming of first-rate importance to industry. Patent law and practice were cumbrous and antiquated; Moulton did very much to put them on a rational basis. His biographer writes of the difficulty he had in addressing judges "wholly without scientific knowledge," who "often seemed to have neither the desire nor the capacity for appreciating scientific matters." We would not care to go quite so far, and would prefer the more charitable explanation, at which the biographer hints, that their inability to understand was due to the defective education then given in the public schools. Nor would we agree that the evil has altogether passed away, or is wholly confined to judges. Mr. Fletcher Moulton was concerned in the inquiry which followed the establishment of the fact that beer from a certain brewery, the drinking of which had on medical grounds been shown to be associated with a set of cases of illness observed in Manchester hospitals, contained arsenic. This is how the biographer puts it: "The natural curiosity of the doctors and students led to a number of questions being put to the victims, including queries as to whether [*sic*] and what they drank, and it was found that they all drank beer and patronized certain public-houses, which were all found to draw their supplies from the same brewery." We would like to have heard Lord Moulton on this, but we must not too severely blame his biographer when we find a writer in the chief literary review of the day, evidently learned and clearly desirous of being open-minded, speaking of science "in its broadest sense of the investigation and interpretation of the experiences of human life and its environment, not only by our sense-observation, but also by our mental powers." It is an odd platitude to find in such a place.

Lord Moulton in the evidence he gave to the Royal Commission on experiments on animals (1906) rendered a great service to medicine by his masterly explanation of the value of the experimental method with special reference to its application in physiology and pathology. He argued on the broadest lines, those applicable to every department of science, and incidentally exposed the cruelty and inhumanity of the people who call themselves antivivisectionists. Experiment, he said, was observation made under defined, limited, and exact conditions, and illustrated his point by a simile drawn from his own profession:

> "Experiment is like cross-examination; you can put the question you want, and Nature always answers it. She does not answer the question you meant to put, she answers the question you did put. . . . She does not care in the least what you meant to ask, but she does care what you asked, and she answers it with perfect truthfulness. And the consequence is that when you adopt experiment the great experimenter can put a question the answer to which lets the whole secret out."

Lord Moulton again did valuable and valued service for medicine as chairman of what is now the Medical Research Council from its institution in 1912 until 1916, when the pressure of his war work compelled him to resign. In a notice on Lord Moulton's life published in our columns shortly after his death it was said that he brought to the work of the Medical Research Committee in its first critical year not only the general authority and support expected from an eminent man set to preside over a committee of experts, but that "his familiarity not only with the content of scientific knowledge, but also with the daily realities of the laboratory and of the ward, greatly enriched and steadily guided his influence. . . . Individual members of the profession and many scientific workers drew encouragement and inspiration from the subtle play of his critical insight, given freely in private talk or emerging with easy opulence among the catholic charms of his remarkable conversational powers."

[1] *The Life of Lord Moulton.* By H. Fletcher Moulton. London: Nisbet and Co., Ltd. (Demy 8vo, pp. 287; 8 illustrations. 15s. net.)

THE DIAGNOSIS OF SOME RESPIRATORY DISEASES.

PROFESSOR ÉMILE SERGENT'S book on diseases of the respiratory system[2] does not aspire to be a comprehensive treatise on pulmonary ailments, but is a series of monographs—the majority of which have already been published in the journals—dealing with various affections of the lungs, pleura, and mediastinum. It is a book by an eminent clinician written pre-eminently for clinicians. The first part opens with a study of the value of pupiliary inequalities in the diagnosis of pulmonary tuberculosis. Such inequalities, we are told, may be either apparent or latent; in the latter case they may be provoked by the instillation of atropine. In the majority of early cases of tubercle—especially those affecting the pleuro-pulmonary dome—a mydriasis occurs on the affected side, whereas in chronic cases, owing to the destruction of the dilatory sympathetic fibres, it tends to be replaced by a myosis. The test is fully described and a warning given of several possible fallacies that may be encountered. A considerable amount of space is devoted to syphilitic affections of the respiratory tract. There is a long discussion on the differential diagnosis between tubercle and syphilis, and the author shows how difficult it may be, since they are frequently associated in the same subject, to apportion the exact quantum of blame to each. There follows a section on the sequelae of chest wounds, in which it is said that it is uncommon for tuberculosis to follow on traumatism; the few cases in which this does occur are attributed more to prolonged hospitalization in a confined atmosphere with its associated loss of appetite than to the wound itself. Similarly with gas poisoning, tubercle seems to be quite an unusual complication; the ordinary sequence in severe cases is emphysema and broncho pulmonary sclerosis. Finally, the question of intratracheal injection is considered, and its possible value in combating pneumonia and phthisis suggested.

The second part of the book deals entirely with radiography. It is designed to instruct those who have been unable to study this branch of investigation, in the uses to which it may be put in the diagnosis of chest diseases. There is no question of technique; he writes not as a radiographer, but as a clinician. What can be learnt from screen examination, what from plate photography, and what from the two taken in conjunction is fully considered. Particular stress is laid on interpretation. Fallacies are exposed in which too much has been expected, especially with regard to the nature of certain lesions. Cases are quoted in which a clear space, diagnosed by *x* rays as a hydatid cyst, turned out to be a neuro-fibroma, and in which "bullets" removed from the chest by the surgeon proved to be calcified nodes. The various portions of the chest, from the thoracic wall to the mediastinum, are dealt with in turn, the text being illustrated with photographs. The whole burden of this part is to show just how much is to be expected from *x* rays. They are to be used as aids in diagnosis; they cannot be permitted to take away the responsibility of the clinician himself. It is he who is the supreme factor, and he must use them—just as he uses the findings of the pathologist and the bacteriologist—as means wherewith to elucidate the problem before him. It is for him to interpret, and it is for him to correlate the results received. The book is written with all the freshness of one who is speaking from personal experience. Nothing is glozed over, and, even at the risk of banality, the fundamentals of every argument are laid down, with the result that his clarity of expression is only exceeded by the interest of his subject.

[2] *Études Cliniques et Radiologiques sur les Maladies de l'Appareil Respiratoire.* By Emile Sergent. Paris: A. Maloine et Fils. 1922. (Imp. 16mo, pp. 523; 47 figures. Fr. 25.)

UROLOGICAL METHODS.

DR. WIENER'S *Propédeutique et Technique Urologiques*[3] is intended for students and medical practitioners wishing to familiarize themselves with the very exact methods of examination and treatment that the advances of the last ten years have placed at the disposal of the urologist. A very brief inspection of the book is sufficient to show that the author has a real appreciation of the particular difficulties that the uninitiated are likely to encounter during their course of apprenticeship; this appreciation has enabled him to produce a work which is eminently practical. Although the subject is treated with considerable fullness the book is not a work of reference, for it contains no bibliography, and is but little concerned with theory or pathology.

In the first chapters methods of examination of the urine and of the various genital secretions are described. Then follows a description of instruments employed in the examination of the genito-urinary system and how they are used. An account is given also of special methods of anaesthesia applicable to urinary surgery. Dr. Wiener is a partisan of epidural anaesthesia according to the method described by Cathelin. A good description of the technique of this somewhat difficult proceeding is furnished, as well as that of high epidural anaesthesia according to the method of Schlimpert and Kehrer. Dr. Wiener recommends Cathelin's method in such operations as incision of a prostatic abscess or perineal prostatectomy, in all operations on the penis and urethra, or in such proceedings as the closing of a perineal fistula, intravesical operations, and lithotrity. He also has found it of great use in the cystoscopic examination of irritable bladders—for example, those affected with tuberculous cystitis.

The description of methods of examination and of treatment includes a discussion on renal function tests applicable to the investigation of surgical lesions, as well as to the so-called medical affections of the kidney. The author has indeed treated this subject in great detail, and may possibly be accused of having provided for his readers a meal that will prove too heavy for their digestion. Although our knowledge of renal function has certainly advanced in the last decade, it is not yet sufficient to permit of the use of exact mathematical formulae in estimating the worth of a kidney. The employment of such constants as those of Ambard and Bromberg is, in our opinion, premature, although there is every hope that some day the activity of a kidney may be stated in figures. For this reason the chapter on renal function tests will be of interest to experts rather than to those seeking for a practical guide to urology.

The final chapters of the book are concerned with the general symptomatology of urinary diseases, and are extremely valuable. To the section on haematuria has been appended a synopsis which furnishes the reader with numerous causes of bleeding in the urinary tract, and the methods by which they may be diagnosed.

Dr. Wiener's work is illustrated by diagrams and line drawings, and only where it is absolutely necessary have plates been introduced. The illustrations have been well chosen, and are a much better aid to an understanding of the text than the expensive plates and photographs with which some modern textbooks abound.

In his preface the author expresses the hope that his work may assist medical men making use of methods which, except by specialists, are as yet little practised. Although the standard that Dr. Wiener sets is perhaps too high, and some of the chapters in his book beyond the reach of those not making a specialty of this subject, his book is one of the best guides to the technique of urology that has yet appeared.

THE PHYSIOLOGY OF MIND.

DR. FRANCIS X. DERCUM has written *An Essay on the Physiology of Mind*[4] in which he endeavours to account for the psycho-physical organism on a mechanistic basis. The argument of the book is directed against a "dual" conception of human existence, and the author's theory of life and mind is developed at length by bringing together a large number of interesting and significant biological and other data which serve to support it. Dr. Dercum regards the phenomena embraced under the term "mind" as in their essence physical, and he criticizes the tendency to view these phenomena as if they were altogether peculiar in character—as though a difference essential and intrinsic separated them by a wide and hopeless gap from all other phenomena of nature. For him the problem of life is merely one of chemistry and physics; and at the conclusion of the essay he expresses the view that the modern study of the atom, which reveals it to be but an expression of energy, indestructible, persistent, and unknowable, has caused the difference between the old conceptions of "material" and "immaterial" to become obliterated.

The author's views are well and clearly expressed; they are based upon many years' thought, a wide knowledge, and much original investigation as a neurologist. At the same time it may be suggested that he tends to take a mechanistic explanation of life rather too much for granted. After all the view that the behaviour of living organisms is explicable on a purely physico-chemical basis is no more than an hypothesis, and one which some physiologists have found inadequate to account for the facts of life.

NOTES ON BOOKS.

WHAT one does not know after reading Dr. ATKINSON'S book entitled *Lessons on Tuberculosis and Consumption*[5] simply is not worth knowing. It is wonderful what he has succeeded in introducing. Written in a popular style for the average man, it deals with the problem of tuberculosis in a purely egocentric manner. The patient regards himself as the centre of the universe; he is taught to be entirely self-dependent; he is told everything: how to diagnose his disease in the first place; how to select his physician; how to treat himself without one; how to arrange his cure; how to raise the foot of his bed when he has a haemorrhage; how to get over the blues; how to feel up when he is down, and how not to feel down when he is up—everything, in fact, except perhaps how to prevent himself being thoroughly dangerous to others. Possibly the author is dealing with an exceptional audience—one strangely gifted with the sense of discernment—and for this he has spared no pains in inculcating the lesson of self-efficiency. Undoubtedly his intentions are excellent. But, as Mark Sabre might have said after much wrinkling and contraction of his funny little nut: "Oh, you sickening fool! I didn't say I was sticking up for him; but I think I see what he *means*."

The first edition of *A Key to Health and Long Life* (*The Secret of Healthy Nutrition*)[6] appeared in 1914, when the author, Mr. F. W. D. MITCHELL, was in his seventieth year and a quarter of a century after he had gone through the five years' course for the qualification of the Conjoint Examining Board in England, the final examinations for which he was prevented from taking by the demands of other work. To the second edition little has been added, but in the preface attention is drawn to the suggestions for the detection and prevention of failures of gastric digestion, and it is stated that the author was the first definitely to trace auto-intoxication to the miscarriage of the stomach's functions. The thesis of this pleasantly written book is that indigestion is the root of all, or nearly all, the diseases which are not due to infection, and that an unwise diet is responsible for the dyspepsia. Too much emphasis is laid on a uratic deposit in the urine as proof of indigestion otherwise latent. Mr. Mitchell's conclusions are better than his arguments, which are not always convincing to the medical reader, though they are fortified by a catholic use of quotations from various authorities; but if the public for whom it is more suited read and follow its directions the result will be all to the good.

DR. WILLIAM BROWN has made a few minor alterations and additions in the second edition of his volume on *Suggestion and Mental Analysis*.[7] In a short concluding chapter he emphasizes the importance of a sound knowledge of general medicine, and especially of neurology and psychiatry, if the psychotherapeutist is to be a reliable help to persons in mental difficulty. He points out that psychiatric experience is most desirable if mistakes are to be avoided, as the incipient stages of the psychoses are apt to show features

[3] *Propédeutique et Technique Urologiques*. By Dr. G. Wiener. Bruxelles: Goemaere; Paris: Masson et Cie. 1922. (Roy. 8vo, pp. 4.2; 153 figures, Fr. 40.)

[4] *An Essay on the Physiology of Mind; An Interpretation Based on Biological, Morphological, Physical, and Chemical Considerations*. By Francis X. Dercum, A.M., M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College. Philadelphia and London: W. B. Saunders Company. 1922. (Post 8vo, pp. 150. 8s. 6d. net.)

[5] *Lessons on Tuberculosis and Consumption*. By Charles E. Atkinson, M.D. New York and London: Funk and Wagnalls Company. 1922. (Cr. 8vo, pp. x + 170; 21 illustrations. 2.50 dollars.)

[6] *A Key to Health and Long Life* (*The Secret of Healthy Nutrition*). By F. W. D. Mitchell, I.S.O. Second revised and enlarged edition. London: C. W. Daniel Ltd. 1922. (Cr. 8vo, pp. 192. 6s. net.)

[7] *Suggestion and Mental Analysis: An Outline of the Theory and Practice of Mind Cure*. By William Brown, M.A., M.D.Oxon., D.Sc., M.R.C.P.Lond. Second edition. London: University of London Press, Ltd. 1922. (Cr. 8vo, pp. 172. 3s. 6d. net.)

in common with "nervous breakdown." The first edition contained a passage in which it was implied that the subjects of melancholia were susceptible to therapeutic suggestion. As such a view does not harmonize with the experience of most psychiatrists, we feel that Dr. Brown has wisely substituted the more indefinite term "depression" for "melancholia" in the present volume (p. 111). We observe an additional sentence on page 104 in which the author expresses the view that the increased suggestibility of light hypnoidal conditions may be utilized for the treatment of backward children. Since the treatment and diagnosis of these cases present problems of considerable difficulty, it might be well that in his next edition Dr. Brown should give some details of cases treated by suggestion, with a record of the progress made.

Our Unconscious Mind and How to Use It,[8] by Mr. FREDERICK PIERCE, provides a popular account of the principles of the "new psychology." The aims of the writer are practical, and a chapter on advertising and selling introduces a somewhat new feature. The author describes good advertising as "the active association of one's goods with an acquisitive complex already existing at the unconscious level; and a definite avoidance of all associations which can entail resistance." The chapter contains some sound common sense, but the thought of a psychologist-salesman is somewhat alarming.

Messrs. T. J. and J. SMITH are well-known makers of diaries of many different kinds. Among some samples the firm has sent us the largest is rather over a foot long, 8 inches wide, and an inch thick; the smallest is 3¼ inches long, 2½ inches wide, and a quarter of an inch thick. We are glad to see that the firm is developing what we believe to be a very convenient feature—namely, to give a separate page to every day; this is accomplished in some of the smaller pocket diaries as well as in an octavo volume for the desk called the Official Diary. The prices of such pocket diaries vary from 1s. 6d. to 6s. 6d., the latter being for a pocket diary in four quarterly parts. Loose-leaf pocket diaries are also supplied. Another desk diary (No. 23) is a quarto volume, three days on a page, arranged for half-hourly appointments from 9 a.m. to 7.30 p.m. The paper used in all is good. The bindings are of various types. Finally, we may mention *Smith's Medical Visiting List*,[9] which has many points to recommend it to the medical man. Its main section is devoted to a well-arranged visiting list (for 25, 50, 75, or more patients, in different editions of the volume) and a journal, with adequate space for obstetric engagements, addresses of patients and nurses, and for notes of books, instruments, and other things lent. There is a table for calculating the period of utero-gestation, a list of the principal poisons and their antidotes, a compendium of the doses of many drugs in common use, and some useful notes on professional fees, including the fees legally claimable by medical men in courts of law.

[8] *Our Unconscious Mind and How to Use It.* By Frederick Pierce. London: Kegan Paul, Trench, Trübner, and Co. 1922. (Demy 8vo, pp. 323; 8 figures. 10s. 6d. net.)

[9] *Smith's Physicians' and Surgeons' Visiting List, Diary, Almanac, and Book of Engagements for 1923.* Seventy-seventh year. London: Hazell, Watson, and Viney, Ltd. 1923. (No. 2A, cloth, 8s.; morocco, 11s.)

THE STANDARDIZATION OF SERUMS.

A YEAR ago a conference was held in London, at the instance of the League of Nations Health Committee, to discuss the standardization of serums and serological tests. An account of the work it did was published in our issue of December 24th, 1921 (p. 1080). The subject is of considerable practical interest, but the details of the laboratory methods of standardizing the serums and tests are highly technical. For this very reason it is important that standardizations should be fixed by international agreement, so that a practitioner when using a serum may be confident that it is of the strength of previous specimens he has been in the habit of using. When the conference came to an end last year it was decided to hold another, and this took place from November 20th to 25th at the Pasteur Institute, Paris. Taking the subjects in the order in which they were dealt with last year, we give the text of the resolutions adopted in Paris.

DIPHTHERIA.

The Committee accepted the proposal contained in Dr. Madsen's report on the Geneva Conference that the Ehrlich standard unit should be finally considered as the international standard for the measurement of the diphtheria antitoxin, and that, in order to ensure that the serums used as standards by the various States have identical titre, the Sero-therapeutic State Institute of Denmark should arrange for comparative studies of such serums to be carried out every year.

The present conference adopted the following resolutions:

1. The Ehrlich unit having once been adopted as the international unit, it would be very desirable to induce firms in all countries to supply phials containing uniform quantities of antitoxic units for preventive and therapeutic injections.

2. An inquiry should be made with a view to ascertaining the quantities of antitoxic units at present contained in the phials offered for sale.

The Health Committee of the League of Nations will ask the various Institutes and firms for samples and will report on the inquiry at a later session.

TETANUS.

The last paragraph of Section 3 (tetanus) of the Geneva Conference resolution was modified to read as follows:

> The decision of the Geneva Conference implies the necessity of further experiments in order to define in detail the technique to be used for the titration of antitetanic serum with the new standard.

The decision referred to was the adoption in principle of a new international unit. As a preliminary step the ratios of the units now employed in America, Germany (new), and France were determined as 50, 100, and 2,500 respectively.

ANTIMENINGOCOCCUS SERUM.

In order to secure a uniform international classification and nomenclature of meningococci, it was resolved:

1. That an interchange of meningococcus cultures and monovalent antimeningococcus serums be made between the different laboratories. Cultures representative of the different types will be selected by the different laboratories, and monovalent serum prepared in animals from each of these cultures.

2. That the classification of meningococci should be based as far as possible (1) upon a primary division into groups to be designated by numerals—for example, I, II (according to the present classification of Gordon)—and without prejudice to other groups which may be recognized later; (2) upon a subdivision of the main groups into subgroups or types to be designated by letters, and the numeral of the main group under which they are to be classified—for example, *Ia*, *IIb*, etc.

The primary division into groups is to be based upon agglutination alone. The groups comprise cultures which are agglutinated similarly in high dilution of monovalent serums which are relatively free from from heterologous agglutination. The secondary division into types is to be based upon distinctive characters as determined by the results of both the agglutination and absorption tests with monovalent serum. Cultures which cannot be accurately identified should be classed under Group X.

It was further resolved that for the study of the standardization of therapeutic serum—

1. A new series of tests shall be made with monovalent and polyvalent serums, with respect to their comparative content in agglutinins, amboceptors, opsonins, and antitoxins. The serum used shall be collected at different intervals after the last injection. The serum must be obtained from the *horse* and must not be heated. Precise information must be given regarding the method of preparation, the date of bleeding and the presence of antiseptic and, if possible, of the therapeutic action of the same serum on human cases of meningitis. So far as possible the same culture shall be used for immunizing the horses and for testing the serum. Only meningococci obtained from the cerebro-spinal fluid of cases of meningitis shall be used for this study.

2. Studies be made of the effect of heat, especially tyndallization (56° C. for one hour during three successive days), on the properties of the serum.

3. Careful studies should be made of the immunological reactions with the meningococci recently isolated from cases of meningitis in which the serum has not been effective.

4. The exchange of cultures and serums should be made through the medium of the Central Institute at Copenhagen.

ANTIPNEUMOCOCCUS SERUM.

1. The classification of pneumococci into different serological types is fundamental for all further researches on serum therapy, vaccination, and epidemiology, and the three chief types—I, II, and III—defined by the workers of the Rockefeller Institute as standard types for international purposes were accepted; strains not conforming to any of the above three types should be classified provisionally in a group "X." As pneumococci in certain circumstances may undergo change in their immunological characters, the classification of the types for epidemiological purposes should be based upon the agglutination reactions with freshly isolated strains, or preferably upon the results of the test with the peritoneal exudate of a mouse injected with sputum or other material taken directly from the patient.

2. With regard to the distribution of the types of pneumococci in different parts of the world the wish is expressed that, in addition to further researches in Europe and the United States, investigations along the same lines should be undertaken in tropical and other countries where the climatic and social conditions differ widely. Primarily, cases of lobar pneumonia should be studied, but observations on other forms of pneumococcal infection should also be recorded.

3. A study of the therapeutic action in the treatment of early cases of pneumonia should be made with antipneumococcus serum which has been carefully titrated and found to be highly protective for mice. The investigation should be made only in institutions fully equipped for such a purpose.

4. Without expressing an opinion in regard to the therapeutic value of the serum in the treatment of pneumonia, the test by titrage in the mouse, when controlled by a standard serum, affords a basis for the international standardization of the serum. Therapeutic serum may be titrated in mice either by injecting intraperitoneally a fixed quantity (0.2 c.cm.) of serum mixed with a highly virulent broth culture in doses ranging from 0.1 c.cm. to 0.4 c.cm. or more; or by injecting smaller and varying quantities (0.001 or 0.0001 c.cm.) of serum intraperitoneally, and three hours later a moderate dose of culture—for example, 0.0001 c.cm. The virulence of the culture should be such as to kill mice in doses of at least 0.0000001 c.cm. within forty eight hours. For every titration a standard serum must be used.

5. Further research should be made into the mechanism of recovery from pneumonia and into the mode of action of anti-pneumococcus serum.

6. A study of antistreptococcus serum is desirable.

7. Standard cultures agglutinating and standard therapeutic serums are to be supplied by the Central Institute of Copenhagen.

DYSENTERY.

The following resolutions were adopted:

1. It is necessary to continue the experiments in order to determine the choice of the animal to be used for standardization of antidysentery serum. These tests should be carried out comparatively on rabbits weighing 1,500 to 1,600 grams and on white mice weighing 15 to 16 grams.

2. The substances to be compared are liquid toxin, solid toxin (Wellcome), and microbes killed by heat. (*a*) Liquid toxin will be prepared by each laboratory with a culture of toxic Shiga which will be supplied by the Pasteur Institute—namely, the filtrate of a twenty days' old culture on peptone broth (Chapoptant's peptone) grown in litre flasks containing 500 c.cm. of liquid with an alkalinity P_H 7.4. (*b*) The solid English toxin will be supplied by the Wellcome Laboratories. (*c*) The microbes killed by heating at 56° for one hour and dried in vacuum will be supplied by the Pasteur Institute (agar culture emulsified in physiological salt solution). The effect of subcutaneous, intraperitoneal, and intravenous injections will be compared.

3. It is not necessary in making the tests to discriminate between the anti-neurotoxic and the anti-enterotoxic power of the serum.

4. The titration of serums will be carried out by a mixture of toxin and serum, after thirty minutes' contact at laboratory temperature.

5. It is not necessary to seek to give the serum an anti-infectious power as distinct from its antitoxic power.

6. It would be of interest to test on man the power of monovalent serums (anti-Flexner, anti-His, etc.) against homologous strains of dysenteric organisms.

NOTES ON SMALL-POX.

BY

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Outlook.

AT the time of writing (December 8th) small-pox in London appears, generally speaking, to be checked. The total cases to date are 62 with 20 deaths. No further cases have been reported from Lambeth, Bermondsey, or Poplar, and the rest of London is apparently free.

There is thus a welcome lull, due mainly to effective medical team work in countering the disease, so that it finds more difficulty in gaining headway than formerly was the case. That is the true explanation of the phenomenon which at first may seem puzzling—namely, that small-pox appears not to be able to "get going" in London; and it is also the reason why no cases were reported during the last fortnight in spite of the previous sharp outburst. It is not the case that small-pox is a feeble thing which dies out of its own accord; the fact is that at present it is a formidable menace; but so far the counter-work has been too good for it. Only so far—the effort needs to be kept up, if only because of the disquieting fact that five of the recent foci have their origins unaccounted for; and the infection which started them may have started other foci still latent and shortly to burst out. Danger, therefore, is far from being past.

The Poplar Outbreak.

The suggestion that the recent Poplar outbreak consisted of a few dropping cases or an insignificant group in an area remote from and unconcerned with the rest of London, and that therefore the whole occurrence was trivial, is not in accordance with the facts. It is correct to say that there was a compact institution of about 1,000 souls, in which nearly all concerned were in the freest communication with the surrounding neighbourhood and were susceptible to small-pox; the institution actually overlooks the docks, the part of Poplar in which it is situated being essentially a seaport town. In surveying the position beforehand this was regarded as a notable danger-spot for the rest of London, and in the event of an outbreak there was strong reason to expect very little assistance from vaccination, owing to the fact that the local authorities and many of the inhabitants were strongly opposed to that prophylactic. The general position may be gauged from the fact that in respect of about 4,500 children born in that borough in 1921 returns of successful vaccination had been received for about 1,000 only. Such were the admitted facts of the position.

This being the case, in this institution on October 13th a man fell ill of small-pox; he had the rash on October 15th; it was not recognized. This was the earliest case that eventually could be heard of; it is possible there was in the vicinity of the institution another undetected case with whom some of the inmates came in contact on and after October 10th. Be that as it may, till then the institution had a clean bill as regards small-pox. The above-mentioned man moved freely about the institution between October 15th and 28th, with such effect that, so far from the infection being the feeble thing which it has been represented to be, during the week-end October 28th to 30th the institution and immediate neighbourhood was found to be variolously ablaze, with 25 cases of small-pox.

London and its neighbourhood were most gravely menaced, if only from the fact that there had been discharged from the institution, since the first case had begun to infect those around him, a large number of the inmates; and from the fact that the various contacts comprised the following different classes of people:

(1) Other inmates remaining in the institution; (2) recently discharged inmates; (3) visitors to the inmates; (4) persons outside who had been visited by them; (5) medical and nursing staff; (6) scrubbers and other attendants; (7) porters and other male ward staff; (8) occasional visitors to the wards, such as guardians and chaplains; (9) other staff, such as engineers, laundry hands, and others. Many of these persons had their homes within a mile or two of the institution, and there was the best reason to consider the whole of that area as potentially dangerous.

When the first five cases were discovered, on the morning of Saturday, October 28th, and it suddenly became apparent that the institution was already plentifully sown with infection; when all preventive measures had suddenly to be planned and started between 11 a.m. and 12.30 p.m. on a Saturday, when normal departmental activity ceases till the following Monday, though fire and small-pox do not: it is in strict accord with the fact to say that London at that moment was threatened with a catastrophe of appalling and almost unexampled gravity, likely to rival some of the worst epidemics of the past in expenditure of human life and treasure.

No one who was present is likely to forget the scene of consternation when the actual position was realized; nor the manner in which the emergency was faced and tackled, until in the end, after twenty-four hours of intensely strenuous work, it was completely mastered; so that then it was definitely said that, in spite of a score of cases scattered throughout that crowded and susceptible community, and in spite of large numbers of that community having been intimately exposed to infection, no further cases would occur in the institution after Wednesday, November 8th—that is, the short period of eleven days after the first discovery of the small-pox cases. Such in fact was the actual result, due of course to the preventive measures which had been taken. These were effected with remarkable promptitude—a triumph of combined team work on the part of all concerned; of which, while everyone did his utmost and no one seemed to lead, it should be said that the actual orders were given by the chairman of the House Committee, who was constantly on the spot—an English working man, formerly a stevedore, whose sagacity and courage, guided and fortified by medical advice and support, were primarily responsible for retrieving a desperate situation. Formerly a convinced antivaccinator, he now took fairly into account phenomena of which he had had no previous experience; he witnessed the condition of the small-pox patients both at the institution and at the Small-pox Hospital, where he specially visited them; as a result he himself was vaccinated and influenced many others to adopt the same remedy. Like other antivaccinators whom the true facts have never reached, he honestly revised his attitude in regard to this question as soon as the facts came home to him.

These are some of the reasons why, to the surprise of many good judges, the Poplar outbreak "fizzled out." Why was it possible to achieve this result? The answer is, because the position had been well studied beforehand; because the previous quiet period had been fully and unceasingly occupied with advance preparation to meet any such emergency as did in fact arise. When, therefore, the crisis came, it was possible promptly and decisively to meet it.

British Medical Journal.

SATURDAY, DECEMBER 16TH, 1922.

THE PROGRESS OF PSYCHIATRY.

WE are glad to be able to report another piece of evidence showing the progress which is being made in the study of psychiatry and in its teaching. Sir Frederick Mott, M.D., F.R.S., has been appointed Honorary Director of the Pathological Laboratories of the Birmingham City Mental Hospitals, and lecturer in the University of Birmingham on morbid psychology. Sir Frederick Mott has undertaken to pay frequent visits to Birmingham in order to superintend the work of the laboratories and to give the necessary lectures. A whole-time assistant director will be appointed, and the necessary laboratory attendants will be provided. The laboratories will at first be at Hollymoor, one of the city mental hospitals, but it is anticipated that eventually the University will be able to find space for them in the university buildings. This is considered very desirable, in order that the staff of the psychiatric laboratory shall have the advantage of working side by side with other pathologists. It is hoped to associate with the scheme in Birmingham the various mental hospitals in the Midlands, and thus to establish scientific investigation of mental disorders on a firm basis in that important part of England. The University, we understand, contemplates the establishment of a diploma in psychology which it will be open to medical members of the staffs of the mental hospitals in the Midlands to take. The Birmingham scheme will be managed by a board consisting of five representatives of the University, five persons nominated by the committees of the mental hospitals (two medical superintendents and three lay members), with Sir Gilbert Barling, Vice-Chancellor of the University of Birmingham, as chairman.

In a recent essay[1] Dr. Damaye, a French physician, has suggested that the ideal to be aimed at is to bring every mental hospital into close relation with a general hospital. Fortunately, in this country several schemes, besides that at Birmingham, have been framed to attain the ideal. So recently as November 18th (p. 995) we were able to describe a scheme for a co-operative clinic in connexion with the Middlesex Hospital and St. Luke's Hospital. Under it two new wards, for male and female patients, will be provided at the Middlesex Hospital, and the cases will be treated by the members of the medical staff of St. Luke's Hospital and nursed by its trained mental nurses. In addition, there will be a special out-patient clinic dealing with borderland cases. Such a scheme as this, when in full working order, should exert a far-reaching influence and do much to further the study of psychiatry.

Of late a great deal of progress has actually been made, especially in regard to the teaching of psychiatry. A few years ago, save at a small number of asylums, the medical officers received no instruction and received no encouragement to take a scientific interest in their cases. At the present time, however, there are a number of centres where instruction in psychiatry and allied subjects can be obtained, and the majority of universities grant diplomas in psychological medicine. A teaching centre such as has been established at Birmingham acts as a constant stimulus to the group of asylums with which it is connected, and will have the effect of preventing that lack of life and vigour liable to be observed in an institution deprived of external sources of inspiration. It will send out medical officers thoroughly equipped with specialized knowledge, and alive to the medical interest of the work they will undertake; it will organize and encourage research work; and it will enable the medical staffs of the asylums to keep in constant touch with the latest developments in psychiatry. In these ways an atmosphere of enthusiasm will be maintained, and the strictly medical aspects of asylum work will be kept constantly in the foreground. Those teaching centres which are now in existence have already exerted a perceptible influence, but more are necessary, and at the very least there should be one in every university town in the country.

Psychiatrists of all countries are faced with similar problems and difficulties to those which exist in our own, and in some cases the facilities abroad for the treatment of mental disorder are less favourable than those found at home. Dr. Henri Damaye, who is an asylum physician, sets forth in his frank essay the state of psychiatry in France and the actual provision made for the treatment of mental disorder. The author writes as a psychiatrist and addresses the medical profession as a whole, because he feels that the latter should be aware of the defects which exist in the asylum system. He considers that psychiatry is in its infancy, that it is scarcely recognized as a specialty, and has little to offer its disciples but a career in asylums which are badly adapted for scientific research, and do not provide the intellectual stimulus which a doctor requires to prevent stagnation and inertia. He feels that a common effort is necessary to remedy the defects which exist and to procure the facilities for treatment and teaching which are at present lacking. A somewhat depressing picture of the asylum world is drawn, and we gain the impression that psychiatry in France is almost completely isolated from other branches of medicine. There is, of course, a strong impulse in the direction of reform, just as in this country, which has found expression in the formation of La Ligue d'hygiène mentale, and, no doubt, much that Dr. Damaye at present deplores will soon be remedied. His essay will probably be a factor in hastening reform, and with his main thesis we are in complete agreement.

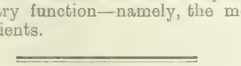
Dr. Damaye insists that the reason why psychiatry is in a backward and stagnant state is that it is too isolated. It should not be the exclusive domain of asylum doctors, for the whole body of medical knowledge needs to be applied to mental disorder. In support of this view the author quotes the dictum of Séglas, "que de tous les spécialistes le psychiatre est celui qui doit être le moins spécialisé." At present he finds psychiatry almost entirely divorced from contact with medicine as a whole, and he makes some constructive suggestions for bringing it into organic union with general medicine and its biological methods of investigation. The views of most psychiatrists would be in harmony with this doctrine, though they realize, perhaps better than others, that much has yet to be done before the ideal can be reached. In particular they will, we believe, as a body accept the view that special arrangements should be made for the treatment of cases of mental disorder in their earliest stages. Sir Frederick Mott has suggested that a mental hospital should have outside its precincts a separate house or villa where patients could be treated on ordinary hospital lines without certification, and where the physicians would have the advantage of adequate laboratory assistance. The scheme would also include a convalescent home somewhere else, to which patients could go when approaching recovery.

[1] *Le Médecin-Asile: l'Assistance et l'Enseignement psychiatriques.* By Henri Damaye. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. 123. Fr. 5.)

Although much remains to be done, it may, we think, be said that on the whole definite progress is being made in this country on thoroughly sound lines. The isolation of psychiatry from medicine, of which Dr. Damaye complains, is gradually becoming a thing of the past, and the career of the young psychiatrist should in the future afford him much greater opportunities for definite medical work than it has in the past. He will tend to become far less of an "officer" and much more of a doctor. As Dr. Damaye observes, however important administrative functions may be, nothing should be allowed to deflect the interest of the asylum physician from his primary function—namely, the medical treatment of his patients.

TREATMENT OF TRYPANOSOMIASIS.

A SERIES of papers have been published during the last few years in the *Journal of Experimental Medicine*[1] describing a search for an efficient chemotherapeutic agent for the treatment of sleeping sickness. The inquiry, begun in the laboratory, was afterwards applied, with encouraging results, in the treatment of patients. The first paper to which we refer was that by Jacobs and Heidelberger, published in 1919; in it they described a new trypanocidal remedy, N-phenylglycinamide-p-arsonic acid—



This substance, which is a pentavalent arsenic compound and a derivative of atoxyl, has been termed for convenience "tryparsamide." Its toxic and trypanocidal actions were investigated by Brown and Pearce in laboratory animals. They found that it had a very low toxicity for animals; for example, the minimal lethal dose for mice on intravenous injection was over 2 grams per kilo, which is about one-twentieth the toxicity of salvarsan. Toxic symptoms occurred only when doses near to the minimal lethal dose were given; the recovery of animals from sublethal doses was rapid and complete, and repeated administration produced little cumulative action. Tryparsamide proved to be only slightly irritant and could be given intravenously, intramuscularly, intraperitoneally, or subcutaneously.

It was found to have a satisfactory trypanocidal action—for example, the minimal curative dose given intravenously to mice infected with *Trypanosoma brucei* was 0.2 gram per kilo, which gives a ratio between curative and lethal doses of 1 to 10. This ratio compares favourably with that of atoxyl, where a ratio of 1 to 4 has been obtained (with *T. equiperdum* in rats). On the other hand, salvarsan (also with *T. equiperdum* in rats) gives a ratio as high as 1 to 37.

The action of tryparsamide in causing the death of various trypanosomes in mice, rats, rabbits, guinea-pigs, and monkeys was determined; favourable results were obtained; the drug was found to have a strong curative effect upon infections of *T. gambiense* (the sleeping sickness parasite) in rabbits. Less favourable results were obtained with *T. rhodesiense* (the parasite of Rhodesian sleeping sickness). Tryparsamide had no very marked curative effect upon spirochaetal infections in rabbits.

These experimental results suggested that the drug would be a valuable remedy for sleeping sickness, and Dr. Louise Pearce continued the research in Leopoldville, Central Africa. Ninety cases of sleeping sickness were treated with tryparsamide—55 were early cases, with no involvement of the central nervous system, and 35 were late cases in which the central nervous system was involved. About 2 grams of tryparsamide were found to be an efficient and safe intravenous dose, although doses as high as 7 grams (0.112 gram per kilo) were given without ill effects. A single dose caused the trypanosomes to disappear from the glands and from the blood stream within twenty-four hours in every case. Twenty-one cases were followed up: 12 of these were found to relapse within fifty-eight days; in one case, however, no relapse occurred during as long a period as 111 days. These results were considered to show that the drug had a powerful curative action upon early cases of trypanosomiasis, but that repeated doses of the drug were necessary to prevent relapses. In advanced cases treatment with repeated injections of tryparsamide caused a rapid diminution in the number of cells in the cerebro-spinal fluid, and this was accompanied by marked mental and physical improvement. In seven out of ten advanced cases, previously treated unsuccessfully with atoxyl and tartar emetic, there was marked improvement.

The investigations are too recent to permit any prediction to be made as to the ultimate therapeutic value of tryparsamide, but the results recorded suggest that the drug is an advance in the treatment of sleeping sickness, and may prove useful. Tryparsamide injections caused no untoward effects in the early cases of sleeping sickness; in nine of the advanced cases, however, the injections were followed by marked impairment of vision, but in six of these the effect was only temporary.

The strong trypanocidal action of tryparsamide is interesting, since the pentavalent arsenic compounds were the first organic arsenicals to be used as trypanocidal agents. Ehrlich's search for an agent to produce therapia sterilisans magna led to the pentavalent compounds being neglected in favour of the more potent trivalent arsenic compounds; it now appears very doubtful whether therapia sterilisans magna is a possible ideal, and it is well that the effects of the less active pentavalent compounds should be once more explored. The whole series of papers form a record of a finely conceived and organized research, commencing in a chemical laboratory in New York and carried right through to the final clinical tests in Central Africa. The execution of such a series of investigations has only been made possible by the support of the Rockefeller Institute.

The trypanocidal dye, Bayer 205, was recently mentioned in these columns, and it will be interesting to see whether Bayer 205 or tryparsamide will prove the more efficient agent for combating sleeping sickness. It is a curious accident, shall we say, that the two most important recent trypanocidal agents should come, one from Germany and the other from the United States, though neither possesses African colonies. Yet such remedies are of vital importance to countries with African possessions.

[1] Jacobs and Heidelberger, vol. 30 (1919), p. 411. Brown and Pearce, vol. 30 1919, pp. 447, 457, 455, 483; and vol. 33 (1921), p. 193. Pearce, vol. 34 (1921), Supplement No. 1.

EPIDEMIC MALARIA.

THE epidemic of malarial fever in central and southern Russia, to which brief reference was made last week, should be cleared of one fallacy at least: the present Bolshevik administration of the country cannot be held responsible for its outbreak or its spreading, for exactly the same phenomena occurred in the same Russian provinces in 1897, and accounts were telegraphed to the same newspapers in almost the same words. Great epidemics and pandemics of malaria are indeed a large part of its history, and have furnished most of the experiences of the profession on intermittents in general. For example, all Sydenham's cases came from the London epidemics, which occurred as episodes in his practice at intervals of as long as a dozen years; and Talbor, the great ague curer of the time, candidly admits that he studied the disease at a village in the Essex marshes, and came to London to practise on it in Chancery Lane. Perhaps the best of many

good chapters in Hirsch's great work is the hundred or more pages on malaria. Hirsch delighted in a complex problem, with ever so many factors in it, which he was in duty bound to set forth with scrupulous fairness, with something of the large tolerance of his celebrated co-religionist, Nathan the Wise. Those who possess the New Sydenham Society's edition of the handbook, in the fluent English of Dr. Creighton, will be surprised, on turning to the malaria chapter, at the enormous mass of well-authenticated facts which Hirsch has brought together from his vast library of 30,000 volumes, at his power of marshalling his authorities and of bringing them to bear upon the several points, and at his systematic digest of so various data. On the great epidemics and pandemics his conclusion is, "They correspond always in time with a considerable increase in the amount of sickness at the endemic malarious foci, whether near or distant." But the assumed endemic increase cannot, of course, be proved by figures, and it is not easy to imagine how its momentum is transformed into an epidemic wave. There was a remarkable instance in India in 1902 in the United Provinces. In that year bubo-plague was almost in abeyance, but the mortality from intermittent fevers more than filled the gap; when the figures were examined it was found that the weekly tales of deaths came from the very same villages as the plague deaths in the years before. The diagnosis was accepted as correct by the authorities at Lucknow, and the Governor, Sir John Prescott Hewitt, drew attention to it in his annual review of the public health. The fevers in Agra and Oudh that year caused the enormous total of over a million deaths, so that they were truly epidemic in all places, without anything to account for them, so far as appears, save the correlation with plague. The endemic malarious foci were, of course, there; and they had become steadily worse. At a village not far from Agra there is a small pond; near it is a hut in which is kept a notebook, with pen and ink, for remarks; the Sanitary Commissioner, at a recent visit, had written in it: "Mosquitos do not seem to breed on the surface of this pond." Meanwhile the level of the water had risen several feet, owing to the too liberal libations on the ground from the irrigation canals of half a century before. Some forty or fifty years ago the progressive water-logging of the soil, with the corresponding increase of malarial disease, was a common subject of complaint in the reports of sanitary inspectors. Now, the United Provinces seem to have got used to it, but open trenches have been cut for surface drainage through the rush-grown flats. In this country there have been several great epidemics of intermittent fever at long intervals. One of these, which lasted two years, 1557–58, has left many traces in history which are perfectly definite and authentic. Another, exactly a century after, 1658–59, is equally well authenticated. Among its victims was the Lord Protector, Cromwell, at Hampton Court; Dr. Richard Morton, who was ill with the fever for three months, says the whole of England was "one vast hospital." At another interval of more than a century, the epidemic agues came again, in 1780–82, and were described by so cool and dispassionate a hand as Sir George Baker. Hirsch gives great epidemics of intermittents in other parts of Europe on several occasions down to 1866–72. For information as to these we may refer readers to the replete pages of Hirsch; and as this is the second week in Advent, let us by all means have the collect for the day: "That we may in such wise hear them, read, mark, learn, and inwardly digest them, that by patience we may embrace, and ever hold fast," the great treasure of observations which hundreds of competent authors have left.

ELECTROCARDIOGRAPHIC INTERPRETATIONS.

IN the seventh Mellon lecture, delivered at the University of Pittsburgh in May last under the auspices of the Society for Biological Research, Sir Thomas Lewis set himself the task of clearing up some misunderstandings and of putting on a more definite basis his views with regard to his theory of "limited potential differences" in its relation to the interpretation of the initial phases of the electrocardiogram. The statement of the case is more fully discussed and the hypothesis more clearly stated than when it first appeared in *The Mechanism and Graphic Registration of the Heart Beat*, published in 1920. The main argument with which the lecture deals is really between two views on the relationship of the active part of cardiac muscle to the cardiographic deflections. According to one hypothesis, called by the lecturer that of "distributed potential differences," the active part of the muscle is considered to be relatively negative to the remainder of the muscle mass; in the other, that of "limited potential differences," the active part is considered to be relatively negative to the inactive muscle in union with it or in its immediate vicinity. In the former case the direction of flow of the excitation wave is considered to be in the direction of the line joining the centre of the active mass to the centre of the remaining and inactive mass; in the latter case it is considered to be from the active muscle to the part that is next becoming active. The point at issue can be better understood if we imagine a part of the ventricular muscle, say one inch from the base, first becoming active and then a part still nearer the base. In a lead from the right arm and left leg, according to the former view, the arm would show negativity relative to the leg, because the active part is near the base and the large mass of inactive muscle is in the direction of the apex. According to the theory of "limited potential differences," the current will set in the direction in which the excitation wave is travelling—in this supposed case toward the base—and consequently the lead nearer the active part, and incidentally in this case nearer the apex, will show relative negativity. In other words, the position of the active part near the base does not in itself determine the direction of the deflection, but it is associated rather with the direction that the excitation wave will take in passing from active to inactive muscle in the immediate vicinity. The author is convinced that this latter theory is the only one which can explain in this connexion all the present observations on heart muscle, though he is not committed to it as a full and final explanation. In his lecture the argument begins with a reference to actual and hypothetical experiments to illustrate the principles, and then passes to actual findings in the hearts of the toad and the dog. The deflections in the electrocardiogram from the toad are shown to be in accordance with this theory, while the downward deflection corresponding to activation of the bulbus arteriosus and indicating relative negativity of the apical contact can only be explained on this view. While the bulbus lies nearer the base than the apex of the ventricle, the excitation wave begins at the base of the bulbus—that is, the part nearest the apex—and travels to the part above it—that is, nearer the basal contact; hence the apical contact shows relative negativity. Again, in experimental stimulation of the endocardial and epicardial surfaces of the ventricle of the dog the electrocardiograms differ in a way that is only to be explained on this hypothesis. In the human electrocardiogram, while R represents negativity of the basal contact and S negativity of the apical contact, it can readily be seen that we are not therefore justified in concluding that R is essentially a basal effect and S an apical effect. The arguments throughout seem conclusive, and the hypothesis of "limited potential differences" must be accepted as the best that offers in the present state of knowledge.

THE GOVERNMENT AND THE OPIUM CONVENTION.

THE Home Office has issued a ten-page pamphlet relating to the action taken by the British Government towards putting into force the International Opium Convention signed at the Hague in 1912. Readers of the BRITISH MEDICAL JOURNAL have been advised from time to time of the steps taken, first by the Dutch Foreign Office and later by the League of Nations, to secure ratification and effectuation of the Convention by all the Powers, and the need for such general co-operation has been emphasized in these columns ever

since the Convention was drafted. The Home Office pamphlet cites the action taken before, during, and after the war to deal with the traffic in dangerous drugs. Prior to the war there was little or no check beyond the not very stringent provisions of the Poisons and Pharmacy Acts, while export and import trade and the manufacture of these drugs were uncontrolled. During the war the spread of the cocaine habit among soldiers and of opium smuggling led to a licensing system under D.O.R.A. in respect of those drugs. Attention was called in 1916–17 to the "large quantities of morphia exported to Japan and that there were grounds for believing that much of this British-made morphia was being smuggled from Japan into China," from which Indian opium was being excluded. Japanese authorities were then required to certify that such imports of British morphine were for medicinal purposes and Japanese consumption only. It is claimed that this system resulted in a gratifying reduction of British exports of morphine to Japan from 550,000 oz. in 1917 to 6½ oz. in 1920. The figures obtained by the Advisory Committee on opium at Geneva have, however, directed attention to the "serious discrepancies between the export of drugs from Great Britain to Japan as shown in the British returns and the imports to Japan from Great Britain as shown in the Japanese returns." Thus while the figures for exports of morphine and heroin from Great Britain to Japan, as given in the British returns, were, for the years 1917 to 1920, 1,825 lb., 0, 0, and 1 lb. respectively, the total imports of morphine and heroin from England to Japan, as given in the Japanese returns, were for the same years 41,509 lb., 7,749 lb., 2,715 lb., and 11,714 lb. respectively. In 1918 and 1919 significant increases in the export of British morphine to the United States occurred, also to Switzerland and other countries. Attempts have accordingly been made, with limited and tardy success, to extend the system of import certification. It would appear that the system has not as yet been adopted by more than half of the States which are members of the League of Nations. An effort has also been made, with the assistance of the provisional Health Committee of the League, to arrive at an estimate of the amount of the drugs in question which can be regarded as the medical or legitimate requirements of each country. A rough and ready "rationing," in the case of morphine, on the basis of 1/4 grain per head per annum, has been suggested until a more accurate determination is arrived at. By Chapter II of the Opium Convention the signatories bind themselves to take measures for the gradual and effective suppression of the manufacture, internal trade in, and use of opium "prepared" for smoking, and to prohibit its import or export either "immediately" or "as soon as possible." "Opium smoking," according to *The Truth about Indian Opium*, recently issued officially, "is essentially a social vice," and the Home Office pamphlet vouchsafes some explanation why opium smoking still continues in British Colonies. Complete suppression is said to be impracticable so long as production of opium goes on unchecked in neighbouring countries. This conclusion serves once again to enforce the policy, advocated by this JOURNAL for the last decade, and now reproduced in the resolution passed at the recent meeting of the third assembly of the League of Nations, in these words—namely, "the control of production, so as to limit it to the amount required for medical and legitimate purposes, is the most effective method of putting a stop to the illicit traffic."

SURGEONS IN CAMERA.

WHEN the Council of the Surgical Section of the Royal Society of Medicine suggested that an evening should be devoted to a recital of "Surgical mistakes and the lessons to be learned from them," and explained that arrangements had been made to exclude press, public, and coroner's officers, volunteers for the confessional sent in their names in surprising abundance, and on Wednesday, December 6th, in the presence of a large and sympathetic audience, related their experiences. The rule of the evening was "one surgeon —one mistake," and no questions to be asked by any of the other surgeons in the room who had made no mistakes, or, at any rate, none suitable for publication. A chairman of conspicuous fairness and ability presided over the meeting and he had very little difficulty in controlling those enthusiasts who attempted to unbosom themselves of all or nearly all their mistakes. To those who came expecting thrills the opening rounds must have seemed tame indeed—mere venial errors of diagnosis from which an elastic conscience might recover in a night. However, it proved that these earlier mistakes were mere affairs of outposts, for as the more ordinary misdeeds became exhausted and the spirit of emulation manifested itself, our flesh really did begin to creep as we listened to the real thing—surgical adventures worthy of Lewis Carroll or Heath Robinson. They all occurred some years ago, of course, and in several instances there were extenuating circumstances (or should we say co-defendants?) in the shape of physicians or radiographers upon the strength of whose diagnosis the operation in question had been carried out. It is interesting to speculate on this aspect of the matter a little further. If an eminent physician says, "This patient has a cokernut which ought to be removed," and an equally eminent surgeon proceeds to remove what in fact turns out to be a lemon, is this a surgical mistake? and, if so, is it a valid defence for the surgeon to say that he cut without looking, as the physician in the case was the dominant partner and he merely the guileless guinea-pig? Perhaps, if the Medical Section ever has its own evening of self-exposure, we may hear more upon these interesting problems; in the meantime we await with the greatest interest the suggested discussion at the Section of Radiography on the twin subjects, "What happens when the surgeon interprets his own plates?" and "When is a stone not a calculus?"

MEDICAL RESEARCH IN SOUTH AFRICA.

IN his report for 1921 of the South African Institute for Medical Research, Johannesburg, Dr. W. Watkins-Pitchford, the director, shows that excellent work continues to be done in research, and that in addition an increasing number of routine investigations are carried out and a large amount of vaccines and serums prepared. The initial cost of the buildings and equipment of the Institute, amounting to over £41,000, was provided by the Witwatersrand Native Labour Association, and the land on which the Institute was built was set aside for the use of the Institute by the Government of the Union of South Africa. The work of the Institute is divided into a research division and a routine division, and the income of the research division, to the amount of £10,000 a year, is derived in equal proportions from the Native Labour Association and the Government. During the past financial year the cost of maintenance of the Institute as a whole was £28,038; of this total the cost of the research division accounted for £11,993, and the balance of £16,045 represented the cost of the routine division. The revenue of the routine division, earned from services rendered for payment, amounted to £17,450, showing a surplus over expenditure of £1,405. Dr. Watkins-Pitchford states that there is need for increased laboratory accommodation and greater financial support for research work; the question of appointing additional workers on the research side of the Institute has again had to be held over for financial reasons. The subjects upon which experimental investigations have been carried out during the year include scurvy, tuberculosis, the Weil-Felix reaction, cerebro-spinal meningitis, pneumococcal meningitis, influenzal pneumonia and lobar pneumonia, tropical ulcer, bilharzial diseases, and infective silicosis. In regard to tuberculosis, the value of sodium morrhuate was investigated, and 47 cases of pulmonary tuberculosis were treated; in 19 cases the disease was apparently arrested and a definite resistance established, and in 7 there was what might be termed "remarkable improvement," but no very definite opinion could yet be expressed upon the value of this drug. In the routine division of the Institute, of which Dr. J. H. Harvey Pirie is superintendent, the total number of investigations carried out during the year was 23,192, an increase of 4,845; much of the increase is stated to have been

due to greater use having been made of the facilities offered to medical practitioners for having laboratory examinations carried out. Autogenous vaccines to the number of 698 were prepared, nearly half of them for the treatment of respiratory affections; 591,119 c.cm. of stock vaccines were issued to store, nearly four-fifths of this quantity being Lister's pneumococcal vaccine. The quantity of serums prepared during the year, chiefly antimeningococcic serum, was 24,625 c.cm.

SMALL-POX IN SOME NEWSPAPERS.

DR. WANKLYN, whose services are retained by the Medical Department of the London County Council to advise as to the diagnosis of suspected cases of small-pox, is able elsewhere in this issue (p. 1181) to say that the outbreak in London appears to have been checked. The possibility of undiscovered cases cannot be excluded, so that there should be no relaxation of vigilance on the part either of local health authorities or of the medical profession in their duty of intimating the occurrence of vesicular or pustular eruptions in any way suspicious of variola. It would be interesting to know approximately what has been the effect of the outbreak in leading the public to resort to vaccination or revaccination as a protection against infection. The effect has not been confined to London and its neighbourhood. Paragraphs in newspapers show that the need for protection has been appreciated by the public in many parts of the country. Most of the guidance given by the newspapers has been thoroughly sound. There has been the usual propaganda by antivaccinationists, but their sophistries have little effect in presence of threatened small-pox. A Richmond newspaper contains the unusual statement that a medical man was in the chair at an antivivisection and antivaccination meeting there; he is reported to have said that students and medical men were never instructed on the subject as on other medical matters, that lectures were not given them, and that "all they had to do was to learn what came within the subjects on which they obtained their degrees, and vaccination was not one of these subjects." Whether the report is correct we do not know, but if it is, why then the profession is wide enough to include eccentrics and eccentricities. The lay lecturer told his audience of the huge salaries paid to vivisectors; one at New York, he alleged, received £15,000 a year. It was matter of complaint by this lecturer that Jenner himself received a gift of £30,000. He alleged that "many firms were engaged in the manufacture of lymph and scrums, and there were statistics to show that an old horse, not worth more than £5, had been treated and made to produce typhoid or diphtheria serum worth £800." He said also that the public were "being vaccinated with a lymph that had not got the culture of small-pox." Indeed, "they had proof that cow-pox was not only not allied to small-pox, but that it had also the possibilities of another unpleasant and dangerous and distasteful disease." After this "At Home" lecture, tea was served and music rendered. A Nottingham newspaper recently published an article on some alternatives to vaccination. It is said to have been written by a London physician. In this article it was asserted that vaccination is dangerous and often harmful, even it may be "for the remainder of the life time," but fortunately "these bad effects can be antidoted even after the lapse of years." One of the most efficacious of these alleged antidotes is *Thuja occidentalis*, which is used in dilution, "the strength known as 30 being one of the best-acting"; it is, the writer states, to be obtained from most homœopathic chemists and is both preventive and curative of small-pox. Another remedy with similar claims is *Hydrastis canadensis*. Further, the North American Indians discovered that *Sarracenia purpurea* is a remedy for small-pox, and its value both for prevention and treatment has been confirmed "by doctors in America"; but of all the "remedies" mentioned probably the most satisfactory for general use is thuja, though the London physician has recently heard "that the production on the arm by Spanish fly cantharides) of blisters of the same number and area as in vaccination is used in America as preventive of small-pox." The writer concludes by averring that in the article "enough has been said to show that for prevention of small-pox there are other measures that are more sure and infinitely safer" than vaccination. We trust our readers feel indebted to us for passing on to them this notice of the remedies.

THE PHYSICAL TRAINING OF THE SOLDIER.

THE physical training of the soldier was the subject of an address by Colonel R. B. Campbell, D.S.O., inspector of physical training in the army, at a largely attended meeting of the War Section of the Royal Society of Medicine on December 11th. Colonel Campbell made it plain that physical training, which consists of certain exercises, games, and tests, has but a modest place in the education of the recruit; it occupies only five hours of the week, whereas ordinary drill, bombing exercises, and the like occupy many hours a day. He said that physical training was of value, because it helped to build up the physical efficiency of the recruit, and it enabled him to be graded for the position which he might be called upon to occupy in the battlefield. The art of war required many kinds of mental ability and temperament; a good infantryman, "full of devil," would be wasted as an artillery-man, and a cool, self-possessed gunner might be a poor bayonet fighter. Physical training brought out not only the physical qualities, but the qualities of character, which enabled each man to be assigned his place. The exercises chosen were such as would enable a man better to play his part with whatever technical weapon might be entrusted to him, and the battlefield had to be associated constantly with the form of exercise chosen, just as the circumstances of the ring had to be related to the exercises of the boxer. In the first physical exercises of the raw recruit it was customary for the squad instructor to test by simple and natural movements for nerve, agility, physical strength, and quickness of mental apprehension. The most useful forms of exercise were found to be boxing, swimming, obstacle racing, gymnastics, and some kind of game, such as basket ball. Gymnastics inculcated daring and pluck, while the game quickened the team spirit. He showed a number of curves representing the results obtained over a certain period of weeks, with daily tests on recent recruits. These tests were for speed (the 100-yards race), endurance (the three-mile run), agility (the high jump), dash (leaping over a horse or other quick movement), nerve (balancing exercises), and strength (heaving exercises). For some weeks there was in each of these cases a continuous upward curve denoting improvement in efficiency, but in very many cases a downward drop took place at the end of a certain number of weeks, possibly indicating a reaction period, or some fault in the training, though the error might lie in the ordinary drill which the recruit was receiving at the same time. Colonel Campbell concluded with a description of the organization of the physical training staff in the army. He mentioned that the army was about to adopt the Board of Education's terminology with regard to physical training, and he pleaded for the adoption of a system of universal physical training with better co-ordination between the civil schools and the services. One or two officers of the Royal Navy joined in the discussion, pointing out that naval conditions required some modifications of the army programme, or a difference in emphasis; while a member of the Royal Air Force said that that service also required some special tests, and that the military system of developing the respiratory organs was not at all suitable for the flying man. An interesting point brought out in the discussion was the relation of physical training to convalescence. In answer to one speaker who had remarked that at a convalescent dépôt in France he found it difficult to get the physical training instructors to take sufficient interest in debilitated men, Colonel Campbell remarked that he did not like his instructors to take part in remedial or orthopædic work, which properly belonged to medical

officers or to a special staff trained under them. The instructor in physical training was better fitted to deal with the healthy individual, and it would be as fatal to relate physical training to the hospital as to relate it to the cemetery. Sir John Goodwin, who presided over the meeting, heartily endorsed the suggestion that medical officers and the physical training staff should be more closely interlinked.

SILICOSIS AND MINERS' PHTHISIS.

VARIOUS theories have been advanced at different times to explain why those who work habitually in atmospheres which are laden with silica dust become so sensitive to tuberculosis. The silica inspired induces a fibrosis of the lungs; there is a general increase in bulk of the connective tissue trabeculae, and nodules of dense fibrous tissue often surround visible particles of silica. It was thought at one time that this fibrosis was dependent on the physical properties of silica—its gritty character, its hardness and insolubility; but more recent work seems to have established that this proliferation of fibrous tissue must be attributed to the chemical action of colloidal silica on the tissues. Why this silicotic fibrosis aids the establishment of tuberculosis has never been explained in a completely satisfactory fashion. Dr. W. E. Gye and Dr. W. J. Purdy[1] have lately brought forward convincing proof that colloidal silica is a toxic substance, and, armed with this knowledge, Dr. Gye and Dr. E. H. Kettle[2] have, with the help of a grant from the Medical Research Council, examined by the experimental method the effect of silica on the development of tubercle bacilli in living tissues. Their observations may throw light upon the problem of why individuals who are resistant to tuberculosis become susceptible after the development of silicotic fibrosis. The injection of 2 mg. of silica into the subcutaneous tissue of a mouse produces a granular coagulation necrosis, which at first does not affect the cells except at the periphery; later the coagulum gradually shrinks, becomes invaded by large mononuclear cells, and active proliferation of connective tissue with the formation of numerous capillaries occurs. The tubercle bacillus is only very slightly pathogenic for the mouse; when injected subcutaneously the organisms survive and proliferate in the tissues, but cause very little reaction; no cell necrosis or tissue destruction results, and, though the bacilli may be transported by phagocytes to lymphatic glands and the viscera, in these secondary foci very little tissue reaction is seen. On the other hand, Gye and Kettle found that "an injection of tubercle bacilli accompanied by silica into the subcutaneous tissues gives rise to a much greater local reaction than an injection of tubercle bacilli alone, and, further, that general dissemination is earlier and more active." The bacilli multiply in the central coagulum caused by the silica and here form large colonies of organisms which are subsequently taken up by phagocytes during the resolution of the silica lesion. One important effect of the simultaneous injection of silica with the tubercle bacilli is therefore that the organisms can proliferate abundantly in the coagulum, temporarily protected from the cellular defences of the body, so that a small dose of bacilli becomes equal to a dose of considerable magnitude. This multiplication of the bacteria provides an explanation of the effects observed by the authors of the action of silica on mice. How far, it may be asked, does this help us to understand the connexion between silicosis and miners' phthisis? The silica when introduced into the lungs acts as a cell poison, but with its gradual removal by phagocytes and tissue fluids the normal processes of repair ensue, and finally nothing remains but a dense scar. Such fibrotic lungs may be peculiarly liable to tuberculosis, either because the scar tissue itself is actually less resistant and therefore more vulnerable than normal tissues, or because the successful invasion of the tubercle bacillus depends on the disorganization of the circulation of the tissue fluids brought about by lymphatic obstruction. Further experiments are to be made to determine which of these factors is responsible for the development of tuberculosis secondary to pulmonary silicosis.

[1] *Brit. Journ. Exper. Path.*, 1922, iii, 75.
[2] Ibid., 141.

BACTERIOLYTIC PROPERTIES OF TISSUES.

THE capacity of inducing the disintegration of bacteria, technically referred to as bacteriolysis, would seem to be a much commoner property of organic substances than was formerly believed. The remarkable phenomena described by Twort and d'Herelle have stimulated research in this branch of bacterial ecology, so that new manifestations of bacteriolysis are constantly being described. Dr. Fleming and Dr. Allison, who have been studying the bacteriolytic properties of different tissues and secretions, find that they vary in their capacity to dissolve different bacteria; certain well-known pathogenic bacteria are, however, easily disintegrated by some tissue extracts. Dr. Fleming has previously described a coccus which is singularly susceptible to the bacteriolytic properties of animal tissues, and this has been named *Micrococcus lysodeikticus*. In a communication to the Royal Society on November 9th Fleming and Allison describe how by various means strains of this coccus resistant to the lytic action of the tissues can readily be developed. Strains made resistant to one tissue or secretion are equally resistant to all tissues, whether derived from man, the lower animals, or from vegetables. The resistance of these specially prepared strains is therefore not specific. After a culture of *M. lysodeikticus* has been dissolved by some lytic agent the power of the fluid to induce this change in other cultures is found to be greater than that of the original tissue extract or secretion, and this increase affects wholly or mainly the homologous organism.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Committee of Medical Members.

DR. F. E. FREMANTLE has been elected chairman, and Dr. Elliot secretary, of the group of medical members of Parliament. At the meeting on Monday further consideration was given to the new regulation proposed by the Nurses Council under which nurses on nursing home staffs would be precluded from registration, except such as had had one year's hospital training. The framing of regulations for the operation of the charter rests with the Nurses Council; the Minister of Health therefore has not direct authority in the matter. Draft orders, however, have to be laid on the table, and must be approved by both Houses. The committee felt that the rule would cause hardship in a number of cases. Notice of objection to it has been given in the House of Commons, so that its progress has for a time been stayed.

Small-pox and Vaccination.

On inquiry by Mr. Gilbert as to the cost of vaccination and how it was met and as to the services of public vaccinators, Major Boyd-Carpenter said that the latest year for which complete figures were available was that ended March 31st, 1921. In that year the total expenditure on public vaccination was £183,423, of which £174,000 was paid by boards of guardians out of rates and £8,473 was defrayed out of money voted by Parliament. Public vaccinators were employed by boards of guardians under contract which might be terminated by either party giving twenty-eight days' notice. As a general rule the method of payment was by fees, the amounts of which were specified in the contract, but in a few cases an annual salary was paid. The fee for vaccination at home was invariably higher than for vaccination elsewhere. No payment was made from public funds for the vaccination by private doctors of their own patients. In answer to Mr. R. Young, Major Boyd-Carpenter said he was advised that the high rate of mortality amongst the recent London small pox cases was probably due to the importations from Eastern Europe of a particular virulent type of infection.

Dr. Watts asked, on December 6th, if, in view of the serious epidemic of small-pox, the Minister of Health would take steps to enforce the provision of the Vaccination Acts; and having regard to the fact that there are upwards of three million unvaccinated children in the country, would he consider the advisability of repealing the conscientious objection brought into that Act. Major Boyd-Carpenter replied that the Minister of Health was keeping continuously before him the question of the necessity or otherwise of amending the Vaccination Acts, but he was not prepared at this stage of the outbreak to introduce legislation.

In reply to Mr. Scrymgeour, who asked for statistics about Dundee, Major Boyd-Carpenter said that three unvaccinated children in the borough had recently contracted small-pox and two of them had died. The total number of cases of small-pox

reported to the Ministry during the first eleven months of this year was 902, and of these 27 had proved fatal. Included in the total were certain cases discovered by medical officers of health, or by medical officers of the Ministry, and therefore unnotified; some other cases proved to have been incorrectly diagnosed were excluded.

Magistrates and Vaccination Exemption Certificates.—Mr. Broad asked, on December 7th, whether the Home Secretary was aware that the magistrates sitting at Brentford had refused to witness declarations under the Vaccination Act, 1907; whether the Minister would inform them that their action was illegal; and whether any letter of instruction or advice had been sent to magistrates to cause them to refuse to witness such declarations. Mr. Bridgman replied that he had communicated with the Chairman of the Bench, who informed him that the Justices had not refused to witness any such declarations. The second part of the question, therefore, did not arise. The answer to the third was in the negative. Major Boyd-Carpenter stated that no such circular had been issued by the Ministry of Health.

Vaccination in the Army.—Mr. Snowden asked, on December 7th, if the attention of the Under Secretary for War had been called to the fact that the circular letter 27/8026 (A.G. 6B) issued by the Director of Organization to all the General Officers Commanding, directing that refusal to be vaccinated be considered misconduct within the meaning of Article 958 (*g*) was contrary to the decision of the War Minister given in April, 1918, that refusal to be vaccinated was not to be regarded as misconduct and would steps be taken to withdraw the circular. Lieutenant-Colonel Guinness replied that the circular letter was not contrary to the reply given by the Under Secretary for War on April 23rd, 1918. It was then stated that refusal by a soldier to be vaccinated was not an offence punishable under the Army Act. He was advised, however, that if a recruit, after signing the attestation paper in which he stated that he was willing to be vaccinated, then refused to be vaccinated, such conduct might properly be regarded as affording ground for discharge for misconduct within the terms of Article 958 (*g*) of the Royal Warrant for Pay and Promotion, and this was the intention of the circular letter referred to by Mr. Snowden. The wording of the circular letter was, however, open to some misconstruction, inasmuch as it was not made sufficiently clear that the offence of misconduct was not misconduct under the Army Act, but misconduct under the Royal Warrant. An amended letter would be issued to make it clear that it was only recruits who refused to be vaccinated after having signed an agreement to be vaccinated who were to be discharged, and that the deprivation of their gratuity was not due to their having committed any offence under the Army Act, although they had been guilty of misconduct within the meaning of the Royal Warrant.

Infectious Disease Notification.—At the instance of Mr. Cecil Wilson, Major Boyd-Carpenter, on December 6th, gave the following statistics of notifications and deaths of three infectious diseases in the decennium 1911–1920:

	London.			Remainder of England and Wales.		
	Cases Notified.	Deaths.	Deaths per 1,000 cases.	Cases Notified.	Deaths.	Deaths per 1,000 cases.
Scarlet fever ...	138,744	1,878	14	870,169	14,959	17
Enteric fever..	5,851	1,008	172	60,486	11,419	189
Small-pox ...	170	23	135	1,293	111	86

Figures for port sanitary districts were included in the above table, but those for non-civilians were excluded from 1915 onwards, as they could be given only for England and Wales as a whole.

The Discharge of Asylum Patients.—Mr. Robert Richardson, on December 6th, in a question to the Prime Minister alleged that obstacles were placed in the way of the discharge of ex-service patients in asylums, and suggested that an appeal court should be established independent of the Pensions and Health Ministries, to hear applications for such discharge. Major Boyd-Carpenter replying denied that any obstacle was placed in the way by departments. Ex-service patients who had been accepted by the Ministry of Pensions were on a footing of private patients and could be discharged under the provisions of Section 72 of the Lunacy Act unless a certificate were given by the medical officer of the institution that the patient was dangerous. Other patients could be discharged only by the visiting committee in whose discretion the matter rested. All asylum authorities have been requested to set out the effect of Section 79 of the Lunacy Act 1890 (powers for making application for discharge) in the regulations as to visitation sent to friends of patients.

Dietary in Asylums.—Major Tryon informed Mr. A. T. Davies, on December 6th, that since the reports of the Pensions Departmental Committee on administration, there had been, he understood, a very satisfactory improvement in the quality of the food supplied to patients in the asylums. The report had said that the diet did not compare favourably with what was given in the Pensions hospitals.

Pension Medical Service.—It was stated on December 12th that there are now 549 medical officers in the whole-time service of the Ministry of Pensions; 255 are occupied locally in giving medical treatment at Ministry hospitals and clinics; the remainder are engaged on medical duties connected with the boarding and treatment of pensioners. The average rate of remuneration is £840 a year. These officers give the whole of their working day of eight hours to their duties, and in addition to the control exercised by their immediate superiors, their work is constantly reviewed and supervised by special inspectors from headquarters. During the last three months 137,000 disablement pensions have been reviewed, of which approximately 66,000 were renewed at the former rates, and 58,000 were reduced. The average decrease in assessment is now about 4 points in the percentage scale. The average number of conditional or temporary awards coming up for renewal each month is now about 45,000. By the end of the present year some 200,000 final awards will have been made, leaving about 530,000 men in receipt of pensions in the temporary scale. Steps are being taken to deal with such of the latter cases as are suitable for final award as rapidly as possible.

Occupational Mortality.—Major Boyd-Carpenter informed Sir J. Collie, on December 6th, that the preparation of the volume giving statistics of occupational mortality for 1910, 1911, and 1912 in continuation of corresponding earlier reports was originally interrupted by war conditions, but in view of the demand for these statistics it had recently been decided to complete and issue the volume in an abbreviated form. It would appear in the course of a few weeks.

Provision of Meals for Children.—The President of the Board of Education (Mr. Edward Wood) stated, on November 27th, in answer to Mr. Trevelyan Thomson that the total number of public elementary school children in receipt of school meals under the Education Act 1921, at the end of October was 52,921 as compared with 100,266 at the end of October, 1921. To a certain extent it was true that a reduction in the number of children thus fed was due to the amount paid for the feeding being placed against the amount of out-relief paid to the parents.

Insurance Medical Services.—In answer to Mr. Rhys Davies, on December 6th, Major Boyd-Carpenter said that insurance committees were required to investigate all specific complaints of failure on the part of insurance practitioners to carry out their obligations. Reports of all these investigations were forwarded to the Ministry of Health, and, where necessary, disciplinary action was taken. The question how far the service could be improved without unduly increasing the cost was under consideration in connexion with the revision of the present agreement as to the capitation fee which would expire at the end of next year. In reply to a further question it was stated that the number of whole-time medical officers, who in addition to their own duties are employed as medical referees, is thirty-five. The number of insured persons referred to them during the financial year 1921–1922, when the sphere of their operations was limited, was 81,762, of whom 47,404 attended for examinations. Since the referee service was extended, during the present financial year, to cover the whole country, the number of references has increased to such an extent as to necessitate the employment of a certain number of part-time referees in addition.

The Minister of Health.—Mr. Bonar Law, on question on December 7th, said he quite realized the disadvantage of the absence of the Minister of Health from the House of Commons, and hoped that it would not be of long duration. Any statement that Sir A. Griffith-Boscawen had resigned the office was untrue.

Answers in Brief.

The Ministry of Labour states that the total number of workpeople covered by the health insurance scheme is above fifteen millions, and the corresponding figure for unemployment insurance is about eleven and a half millions.

It appears from figures supplied to the House of Commons on November 29th that the weekly cost of relief in general Poor Law institutions, as calculated by a head of the inmates (children and adults), in the year 1920–21 averaged 30s. 2½d. The comparable amount for children in separate institutions was 28s. 4½d. These sums included the cost of accommodation, food, clothing, nursing, education, and the salaries, etc., of officers and attendants. Exactly comparable averages for 1913–14 were not available. The average weekly cost of out-relief, as calculated per head of all persons (children and adults) in receipt of it, was, in 1913, 3s. 0¼d., and in 1920–21, 7s. 4½d. These averages included certain costs of administration.

Excluding the staff of Ministry hospitals and other institutions, the total staff paid by the Ministry of Pensions, including the staffs of local committees, at the end of the June quarter, 1921, was 23,329, and at the end of the September quarter, 1922, 19,509, a reduction of 3,820. The average monthly cost at the same periods was £476,000 and £346,000 respectively. The number of beneficiaries at those dates was 3,320,000 and 2,620,000 respectively.

The number of claims for repayment of income tax received in Great Britain in the twelve months ended March 31st, 1922, was 1,525,413. No record is available as to the proportion of these claims that relate to income tax deducted at the source, nor is it possible to isolate the cost of dealing with such claims from those incurred in the other duties of the Inland Revenue Department.

The total number of regular officers, R.A.M.C., now serving in Great Britain is 413. Of these 13 are with Territorial Army units and 31 are quartermasters. By an arrangement between the Ministry of Pensions and the War Office, under which the Ministry treats soldiers in its hospitals where no military hospital is available and pensioners are treated in military hospitals where no pensions hospitals are available, 51 pensioners are being treated in military hospitals in Great Britain and 14 receiving outdoor treatment; 8 soldiers are being treated in pensions hospitals.

England and Wales.

LIVERPOOL MEDICAL INSTITUTION: DR. HENRY HARVEY'S JUBILEE.

A special general meeting of the Liverpool Medical Institution was held on December 6th to tender the congratulations of the members to Dr. Henry Harvey, who has completed his fiftieth year of membership. Ladies were invited, and the President, Dr. Abram, and his sister Miss Abram, received the members and visitors. After tea the President took the chair and read the resolution of the Council and letters of apology for absence from Drs. E. W. Hope and T. Stack. Dr. Caton, past president of the institution, proposed the resolution of congratulation in terms of high praise of the jubilee member. He recorded his first meeting with Dr. Henry Harvey as a fellow student at the University of Edinburgh. Dr. Caton was two and a half years his senior, but both lived through those spacious times distinguished by men who held a European reputation in medicine—Sir James Simpson, Symes, Goodyear, Matthews Duncan. It was a so th n that Lister was elaborating his antiseptic method amid considerable opposition. Dr. Harvey as a student impressed Dr. Caton by his ardour in his studies and his literary attainments; not only was he well informed in the classics, but as a result of his education abroad was versed in European languages. After graduating Dr. Harvey was appointed resident surgeon at the Hospital and Dispensary, Darlington, and two years later out of fifty candidates obtained the post of senior house-surgeon at the Royal Southern Hospital, Liverpool. In 1872 he became a member of the Medical Institution, and in 1873 settled down in private practice in Wavertree, then a rural township on the outskirts of Liverpool. His ability was soon recognized in his being appointed as M.O.H. Wavertree, which post he relinquished on the absorption of Wavertree by Liverpool. The accuracy and trustworthiness of his reports was especially emphasized in the letter of regret Dr. Hope had written. Dr. Caton touched upon the importance of a medical man having a hobby: Dr. Harvey recreated his mind by gardening and literature; he was an ardent student of Dante, and a member of the Liverpool Literary and Philosophical Society. Dr. Caton concluded his remarks by graceful allusion to the sterling character, the courteous disposition, and the human interest that were typical of Dr. Henry Harvey, whom they all delighted to honour on this occasion. Mr. Charles Larkin, in seconding the resolution, alluded to the high esteem in which Dr. Harvey was held by the members of the British Medical Association; so secure was their confidence in him that he had always been a member of the Ethical Committee of the Liverpool Division. Dr. Harvey had filled various offices in the Medical Institution, and was a most regular attendant at its meetings. Mr. Rushton Parker followed, and the President, Dr. Abram, in putting the resolution to the meeting, endorsed all that the proposer and seconder had expressed in such felicitous phrases, and referred to Dr. Harvey's youthfulness and activity. Dr. Murray Cairns said in order to show how highly the Edinburgh graduates in medicine esteemed him, those in practice in Liverpool and surroundings had unanimously elected Dr. Harvey as president of the local Medical Branch of the Edinburgh University Club.

The resolution was carried by acclamation, which was intensified when Dr. Harvey rose to respond. He disclaimed all the kind phrases that had been used to describe his personality, but expressed the great satisfaction he felt in receiving their congratulations, and thanked them from the bottom of his heart. He then rapidly surveyed the great changes that had taken place in the Medical Institution during the past fifty years. He mentioned an amusing discussion about diagnosis. Some 80 per cent. of children in some national schools were afflicted with a skin trouble which was at first thought to be purpura haemorrhagica but afterwards turned out to be due to flea bites. Dr. Harvey thought the mental atmosphere of the Medical Institution was in itself a great tonic; the informal conversations that took place between members before the meetings were of inestimable benefit. They kept a man young, and as new members came in the sympathy of the older ones was quickened. In conclusion, Dr. Harvey said he hoped that when others were celebrating their jubilee year of membership they would have as much pleasure in looking back upon their fifty years of membership as he had.

GRADUATE DEMONSTRATIONS AT BATH.

A series of post-graduate demonstrations have been held recently at the Royal United Hospital, Bath. They began at 2.30 p.m. on six successive Saturdays, tea being provided at the conclusion of each. They comprised demonstrations of clinical cases, lantern slides, pathological tests, and short operations bearing on the special subjects chosen for each afternoon, so that all aspects of the subject might be illustrated. The first demonstration was on common diseases of the blood, and this was followed by demonstrations dealing with chronic dyspepsia, renal incompetence and infection, cardiac affections, common nervous diseases, and finally orthopaedic principles. The attendance was well maintained, and varied between twenty-six and thirty-four practitioners not on the staff of the hospital. To show their appreciation of the teaching, which was given without fee, the class entertained those who had given the demonstrations to a lunch on the last Saturday, and afterwards presented them with a cheque for £50 towards the museum fund of the hospital. The additions to the museum which such a generous gift will make possible are sure to enhance the value of future courses, which it is hoped will be held annually.

THE STATE AND MEDICAL SCIENCE.

On November 29th Sir Alfred Mond, Bt., M.P., lectured to the Cambridge University Medical Society on the relation of the State to medical science. He began by pointing out that from very early times evidence might be found of State interest in and partial control of the health of the race; as examples he mentioned the Mosaic laws and Greek legislation. Nowadays great importance was attached to public hygiene. Bad environment and conditions of living led to low racial vitality and decreased resistance to disease; a very striking example of the result of such conditions was afforded by Russia since the revolution; so great an epidemic flood was started that at one time it threatened to overwhelm all Europe. Had not the science of hygiene made such great advances the armies in the great war would have been destroyed by the devastating effects of epidemics, which down to comparatively modern times took a far greater toll of lives, in war, than the fighting itself. Great Britain in some ways was protected by the fact that it was an island, but nevertheless there was a vast amount of work to be done in improving national health and hygiene. The Ministry of Health was doing a great service, but the only too prevalent lack of scientific knowledge was a great drawback to its activities. When it was realized that money spent on research was money saved, while that spent on treating patients was money spent once and for all, a great step would have been taken towards the best possible conditions of national health.

Scotland.

DR. BYROM BRAMWELL.

Some of the many friends and admirers of Dr. Byrom Bramwell are arranging to celebrate his 75th birthday by presenting to him some mark of the high esteem, respect, and admiration in which he is held by so many members of the medical profession, and particularly his old house-physicians, clerks, and students. It is thought that a portrait painted by some well-known artist would be the most suitable form the presentation could take, but nothing has yet been decided. A provisional committee has been formed, which includes Sir Clifford Allbutt, Sir Thomas Barlow, Sir James Crichton-Browne, Sir Dyce Duckworth, Sir Frederick Mott, Sir Robert Philip, Professor David Drummond, Professor Lovell Gulland, and Dr. Robert Hutchison. The subscriptions, which are limited to a maximum of £5, may be sent to Dr. F. N. Kay Menzies, 37, Egerton Gardens, London, S.W.3, who is acting as honorary secretary and treasurer.

GLASGOW UNIVERSITY IN THE SIXTIES.

Dr. W. L. Reid presided over a well-attended meeting of the Glasgow Medical Lunch Club which was held on December 7th, when Sir Hector C. Cameron, C.B.E., M.D., LL.D., was present as the guest of honour. Sir Hector Cameron's address took the form of reminiscences of his student days in Glasgow University, 1862–66, and of his various teachers and their characteristics. In the course of his remarks he

made interesting comparison of the medical curriculum and teaching of his day with that of to-day. Later he made special reference to the early work of Lister in the Glasgow Royal Infirmary, where he developed his antiseptic system of surgery. The address was richly interspersed with humorous anecdote, and was greatly enjoyed. Dr. R. M. Buchanan, Bacteriologist to Glasgow Corporation, expressed the thanks of the members to Sir Hector Cameron for his very interesting address.

CENSUS OF DUMFRIESSHIRE, 1921.

The border county of Dumfries,[1] the southern boundary of which marches with Cumberland towards the east, and which lies along the Solway Firth towards the west, had a census population of 75,370, being an intercensal increase of 3.5 per cent. In 1801 the population was 54,957, in 1831 it was 73,770, and since then there has been little change. The urban population at the Census was 39.5 per cent. of the total, the largest of seven burghs being the county town of Dumfries with 15,728 inhabitants, and the smallest Lochmaben with 989. Moffat and Sanquhar have increased in population; the others have rather decreased. The increase of Moffat (a holiday resort) may be partly due to the Census being in June. There are in the county 110.4 females to every 100 males. The average male age is 30, and female 32.3; of 21,400 children under 15, 1,553 have lost their father, 819 their mother, and 151 both parents. Of the male population aged 15 and upwards, 42.9 per cent. were unmarried, 51.3 married, and 5.7 widowers or divorced; the corresponding figures for females were 44.2, 44 5, and 11.3. Gaelic speakers numbered 160, all bilingual. The number of persons per occupied house was 4.4, and every 100 windowed rooms had 107 occupants, against 164 in 1861, since when there has been a steady improvement. Of the total population, 2.4 per cent. lived in one-roomed, 27.3 in two-roomed, 21.7 in three-roomed, and 14.7 in four-roomed houses. Of the total population aged 12 and upwards, 57.4 per cent. have remunerative occupation, and of the total persons so occupied, 24.5 per cent. are engaged in agriculture, 12.6 in personal service, 8.3 in commerce, 7.8 in transport and communication, and 6 in textiles.

Ireland.

HOSPITALS AS SANCTUARIES.

ARISING out of an attempt by members of the rebel forces to rescue one of their body who was undergoing treatment at Mercer's Hospital, Dublin, when the military policeman in charge was shot, Surgeon McArdle, St. Vincent's Hospital, has sent a protest to the press. He writes:

"The occurrence at Mercer's Hospital to-day has obsessed me. The Irish people have the credit the world over of being a sporting lot. Everyone who has taken part in big-game shooting or in the minor shooting of these countries recognizes that there is a haven of refuge for game which is sacred. Until now we surgeons thought our hospitals were refuges sacred from interference.

"During the Black and Tan régime Irish surgeons were commanded, under serious penalties, to notify the authorities of the reception of the wounded who came under their care, the conditions under which they were injured, and the locality from which they were brought. I am happy to say Irish surgeons accepted the responsibility and gave no report. During all this time there was no instance of an attack made in hospitals by any member of the army of occupation. It is with extreme regret I learned this morning that an unprecedented occurrence at Mercer's Hospital demonstrated that parties, unthinking of the well-being of Ireland, discredited one of the sanctuaries of the people of Ireland by an attempted murder. In the long and weary and strenuous times when the Black and Tans provided us with many grave and complicated cases the sanctuaries represented by the great hospitals were never invaded. I desire to enter a protest against the invasion of these sanctuaries, which have always afforded a willing, beneficent, and unselfish devotion to all, regardless of status, who required their aid."

THE ULSTER BRANCH.

At the last meeting of the Ulster Branch of the British Medical Association an opening address was given by the President, Mr. Andrew Fullerton, surgeon to the Royal Victoria Hospital, Belfast, on "Aches and pains of renal origin." We hope to publish the address in an early issue. At the conclusion of the address Mr. Mitchell, in proposing a vote of thanks, said that Mr. Fullerton had specialized in the surgical treatment of renal affections and that his experience and technical skill were always at the service of his professional brethren, who were deeply indebted to him. Dr. R. Reid, ex-president of the Branch, in seconding the motion, referred to cases lately under his care which had been explained by Mr. Fullerton's paper. The resolution was passed with acclamation and Mr. Fullerton made a suitable reply.

[1] A full report of Census of Scotland 1921. Part II. General Report. (3s. net.) H.M. Stationery Office, London, 28, Abingdon Street, Edinburgh.

ULSTER MEDICAL SOCIETY.

The annual dinner of the Ulster Medical Society was held on December 8th in the Medical Institute, Belfast, and about one hundred guests, Fellows, and Members were present. After dinner the President, Professor R. J. Johnstone, M.P., who occupied the chair, gave the toast of "The King," which was duly honoured, and then that of "Prosperity to Ireland," to which the Marquess of Dufferin and Ava, D.S.O., Speaker of the Senate of Northern Ireland, and Major the Right Hon. Hugh O'Neill, D.L., M.P., Speaker of the House of Commons of Northern Ireland, responded. The toast of "The Legal Profession," proposed by Professor Lowry, was acknowledged by the Right Hon. Lord Justice Moore, by the Right Hon. Lord Justice Andrews, and by Mr. S. R. Crymble, LL.B., President of the Incorporated Law Society of Northern Ireland. The health of "The Guests" was given by Dr. Morrow; Mr. A. G. Walby, President of the Association of Dentists of Ireland, and Mr. Fullerton, C.B., C.M.G., President of the Ulster Branch of the British Medical Association, responded. The President then, on behalf of the Society, presented Mr. Fullerton with a copy of the resolution of congratulation on his election to the honorary fellowship of the American College of Surgeons, which had been passed at the previous meeting, engrossed on vellum, with water-colour paintings of the Medical Institute, of the Belfast University, and of the shields of the U.S.A. and of Ulster. Professor Symmers gave the health of "The President," who replied, and then proposed a toast to the Honorary Secretary, to whom, he said, was due the success of the dinner, in arranging which he had taken infinite trouble. Dr. Marshall replied.

Correspondence.

THE TREATMENT OF NON-MALIGNANT AFFECTIONS OF THE COLON.

SIR,—In one of the opening papers on this subject reported in the JOURNAL of November 25th Sir Arbuthnot Lane divides intestinal stagnation into two groups: (1) those characterized by the formation of bands; (2) those characterized by the absence of bands. He goes on to say that in the first group the band not only kinks the colon, but rotates it on its long axis, and causes obstruction of such a degree that it places the life of the patient in serious peril. In the second group there is also obstruction, in this instance by abrupt angles, etc. The paper is dealing with *chronic* intestinal stasis.

Now it is a well-established pathological fact that chronic obstruction to a muscle causes hypertrophy, so one would expect hypertrophy in chronic intestinal stasis if these views were correct. But this is just what is not found; on the contrary, there is invariably atrophy of the colonic muscle. Any thickening of the wall which may appear will be found to be inflammatory—a colitis, which is not at all uncommon in the proximal half of the colon in these cases.

Waugh, in his paper, evidently anticipates that this may be raised as an objection to his view of stasis—namely, a colon with loose supports trying to raise its load against gravity—for he says:

"That atony and atrophy of its fatigued musculature should ensue over the areas where the strain is greatest is no matter for surprise in accordance with the physiological law of the effect of continuous stimulation. Not only would hypertrophy be utterly impossible under these conditions, but its occurrence would be so inexplicable as to need revision of these laws."

Yet, surely, one would expect hypertrophy in the first place even under these conditions; but is he justified in speaking of continuous stimulation in this connexion? The colon is not lifting against gravity when the individual is recumbent even though its attachments may be loose, and at least eight hours of the twenty-four are normally spent in the reclining attitude.

Moreover, I think he is wrong in assuming that a loose ascending colon is an abnormality. According to my own observations it is the rule to find a considerable degree of mobility in this part of the colon, sufficient, at any rate, to bring it well up into the abdominal wound—with the exception of the hepatic flexure; and even this part never

receives the ligamentous attachment which one finds at the splenic flexure, as one would expect were it necessary for the ascending colon to pull against something for the efficient discharge of its function. And why, arguing from his hypothesis, should the splenic flexure be so fixed, since it is propelling downhill?

As regards treatment—undoubtedly both hemi colectomy and colopexy give a percentage of good results, especially colectomy in that soggy type of caecum, which is the stasis case *plus* colitis. I venture to say, however, that most surgeons will agree that the majority of cases give poor or indifferent results with either method of treatment, and for this reason, that stasis is primarily a muscular weakness due to some medical as opposed to a mechanical cause.

It would be interesting to know for how long a fixed colon remains as fixed as it is made at operation. Judging by the frequency of recurrence after other forms of "pexy" operations one would be prepared to find much the same thing happen here. For after all a colopexy is the establishment of artificial adhesions, and all adhesions (even inflammatory, though these are the toughest) stretch under tension.—I am, etc.,

Leeds, Dec. 4th. E. R. FLINT.

SIR,—In the BRITISH MEDICAL JOURNAL of November 25th is published the paper read at the Annual Meeting of the Association at Glasgow by Sir Arbuthnot Lane. He refers to Colonel McCarrison's experience in the Himalayas, and states that in nine years Colonel McCarrison did not see one case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis, or of cancer, and further states that he has obtained similar evidence from other medical men who have been engaged in practice for many years amongst the primitive races.

I am not in a position to express any opinion on the presence or absence of such diseases amongst the people of the extreme north of India, but venture to record my experience in Burma, lest it be assumed that freedom from these diseases is common to all Eastern races, some of which, by the way, I do not regard as "primitive."

My experience has been gained as a civil surgeon in various parts of Burma, and for the last two years before coming home on leave in the General Hospital, Rangoon, where about two hundred laparotomies are done every year by the various members of the staff. The patients of Eastern races treated in that hospital are Burmese, Indians, and Chinese, and the Indians, who are much more numerous than the Burmese, come from all parts of India.

My opinion is that gastric and duodenal ulcer and all the other diseases mentioned by Sir Arbuthnot Lane in the quotation given above are not at all uncommon amongst the patients we see. One very frequently sees cases of chronic dyspepsia which have lasted for years, and in which the history is typically that associated with a gastric or duodenal ulcer. One also sees in some of these cases well-marked evidence of pyloric obstruction.

Cases of this sort would generally submit to operation at home, and the presence of such pathological conditions would be revealed by operation. But it is not easy to induce such patients in the East to submit to operation. In a considerable number, however, coming within my own experience, and operated upon by my colleagues or myself, diseased appendices, gastric and duodenal ulcers, and malignant disease of the intestinal tract have been definitely proved to exist in Burmese and Indian patients.

Further, many cases of general peritonitis, admitted to the Rangoon General Hospital during the two years that come within my own knowledge, have been proved at operation to be due to acute appendicitis or to perforation of a duodenal ulcer.

I am not sure whether Sir Arbuthnot Lane, in mentioning "cancer" in the quotation given above, is referring only to cancer of the digestive tract or is speaking of cancer generally. I can personally recall very many cases of cancer in Burmese and Indian patients, in practically all parts of the body—tongue, floor of mouth, fauces, breast, liver, intestinal tract, rectum, and uterus. Indeed, malignant disease, in these races, is not at all uncommon, and I believe that, if more of the patients with very chronic dyspepsia that one meets with were willing to submit to operation, we should find that the pathological conditions revealed would be very like those met with at home.

I should not like to say that such conditions are as common amongst Eastern races as among European: I do not think that they are; but I am convinced that they are very much commoner than is generally supposed, and that this opinion would be supported by medical men with experience in large hospitals in the East.—I am, etc.,

London, Dec. 5th. R. KELSALL, Major I.M.S.

PENAL DISCIPLINE.

SIR,—Your review of Dr. Mary Gordon's *Penal Discipline*, at page 929 (November 11th), refers to a statement made by her that one in every eight of the girls at the Borstal Institution at Aylesbury had to be put in irons. This statement, unless qualified, is likely to mislead the general reader.

There were indeed thirty-three occasions in the year 1920–21 on which a leather belt with swivel handcuffs (not irons) was used to prevent an inmate from injuring herself or others during a period of excitement; but of these thirty-three occasions one inmate (who afterwards committed suicide at Rampton) accounted for eight, and seven others accounted for fifteen, the remaining ten occasions being spread over ten inmates.

The eight inmates who accounted for twenty-three of the thirty-three occasions were all certified mentally deficient while at Aylesbury, and subsequently removed to Rampton as being of dangerous or violent propensities; and the number of restraints found necessary in their cases was partly due to the fact that some time elapsed after their certification before they could be removed. Thus only eighteen inmates in all were restrained out of the 269 girls who were inmates of the institution during the year. When it is remembered that all but a few of the inmates of this institution have led irregular lives and are frequently in a highly excitable condition, the necessity for these restraints is hardly remarkable.

Whilst no one will champion repression for its own sake, it must be admitted that unless these girls learn at Aylesbury to repress what are to them "normal instincts," on occasion, they are very unlikely to succeed when, on discharge, they have again to try to live at peace with the rest of us.—I am, etc.,

The Borstal Association, 15, Buckingham Street, Strand, W.C.2, Dec. 5th. WEMYSS GRANT-WILSON.

PSYCHO-ANALYSIS.

SIR,—In the JOURNAL of December 9th Dr. P. McBride virtually asks your readers, with reference to his recent correspondence with Dr. Steen, for replies to the questions: (1) What does Dr. Steen seem to believe and to have said? (2) Where is Dr. McBride's mistake? As a reply to (1), I suggest that Dr. Steen seems to believe devoutly and steadfastly in the doctrines of psycho-analysis, which, as expressed in his own words (JOURNAL, November 25th), "concerns itself only with mental processes," and, when formulating laws, employs "psychological terms only." He also "seems to believe" that the conception of mental activity being accompanied by corresponding nervous changes is an assumption of no value in psychological study, and to imply that this physiological conception is demoralizing. As to question (2), I do not find that Dr. McBride has made any material mistake in the course of this correspondence. Further, it seems that Dr. Steen is not striving to establish any claim for psycho-analysis to be "scientific," and is desirous of retiring from the controversy by declaring that "wild horses will not drag him into a discussion of the relationship between mind and matter."

In your issue of December 9th there is a very valuable letter from Professor R. J. A. Berry of Melbourne University, which strongly supports Dr. McBride's views, and another from Dr. Henry Rayner, which is greatly to the point in this discussion.

May I refer Dr. McBride to the review by myself of a recent work on *The Psychology of the Criminal*, which was published in the JOURNAL of December 2nd, and deals to some extent with the matter of the principles and practice of psycho-analysis? I may add to these remarks that I agree with Dr. Steen in recommending such as may be interested in Freud's theories to read Freud's *Introductory Lectures on Psycho-analysis*, of which an English translation was published last year. A careful perusal of the first part only (63 pages) on "The psychology of errors" may throw much light on the mental trend and dialectical method of the psycho-analyst.—I am, etc.,

December 10th. H. BRYAN DONKIN.

SIR,—The quotation from Hart in Dr. Steen's letter of November 25th is a good example of what I referred to in my previous letter. I there tried to show that in order to put psycho-analysis on a true scientific basis it was necessary to ascertain the physiological activities on which the methods depend, and now we have Dr. Steen apparently supporting the directly opposite view that the physiological conception of mental disorders should be kept quite apart from the psychological conception. In the words of the quotation, "Nothing but hopeless confusion can result from the mixture of 'brain cells' and 'ideas.'"

Whilst admitting that the word "mixture" is hardly a well-chosen one in this connexion, we all can form an idea of what is meant, and it is not surprising that we have hopeless confusion when we have advocates of psycho-analytical methods endeavouring to support the contention that physiology and psychology can be kept in two watertight compartments as far as one's conception of them is concerned.

I have difficulty in making out exactly what conception Dr. Steen has of mental processes and disorders. In one of his previous letters he seemed to imply that mind can show itself without physiological nerve and brain activity; now he assures your readers that he believes nothing of the sort. I am afraid that nothing but hopeless confusion can arise unless students of disorders of mind keep clearly before them the fact that there is a physiological basis for all the psychological terms they use, and until psycho-analysts recognize this, and are able to produce a feasible working hypothesis based on it, they will fail to put their practice on a sure scientific basis.

Believing as I do in the limited use of psycho-analysis as a method of treatment, as apart from many of the theories, etc., on which it is based, I believe this is not impossible. To study the subject on the principle of the sentence from Hart is as if one went to investigate the products of a factory where defects in the articles produced had been discovered and left outside the scope of the investigation the machinery through which the articles passed from the raw material to the finished product.

The whole argument can be shortly put thus: Can mental disorders exist without disease of or irregularities or alterations or modifications of the normal physiological action of nerve and brain cells? If not, then, instead of keeping "brain cells and ideas" in two watertight compartments it is more scientific, and would be more fruitful of results, if the relationships of the one to the other were never lost sight of in the study and discussion of all neurological and psychological questions. We would then see much fewer purely metaphysical terms used in the discussions on psycho-analysis, suggestion and auto-suggestion, hypnosis, and faith healing. Dr. McBride has given a quotation from Stewart Paton; let me quote to the same effect from Ferrier, who has done so much to place the study of cerebral action on a scientific basis:

"We have no proof of subjectivity or modifications of consciousness apart from the action of the cerebral hemispheres, but we have no reason to believe that anything is superadded, or that the action of the cortical centres is of a different order from that of the most simple nervous apparatus, but rather that between the simplest reflex action and the most complex cerebral process there is a continuous unbroken gradation."

—I am, etc.,

Leith, Dec. 3rd. WILLIAM ELDER, M.D., F.R.C.P.E.

PSYCHIATRIC CLINICS.

SIR,—Having had experience of the great value of out-patient treatment of the neuroses, psychoneuroses, and early psychoses, I desire to support very strongly the appeal which Dr. R. H. Steen makes so forcibly in your issue of November 18th for the establishment of a special institution for psychotherapy. That there is need for such an institution for the civilian population is only too clear, and the present position of almost complete inaction is probably only the expression of a feeling of despair at the magnitude of the task to be undertaken. Nevertheless, the time has certainly arrived when something should be done in this matter, and there can be little doubt that never has the opportunity for pressing the need for such treatment been so favourable as now, when so large a proportion of the general public are evincing such unmistakable interest in psychological problems.

It will hardly be denied that the patient suffering from a minor mental disorder (generally erroneously called a "functional nervous disease") is the bugbear of the practitioner who has no knowledge of modern psychological methods, and who neither knows how to deal with the case personally nor how to obtain the treatment which he knows is required, unless indeed the patient is in a position to pay substantial fees to a specialist in psychological medicine. The result is disastrous. The huge majority of cases receive no treatment worth the name, and therefore go from bad to worse, and this only because they cannot obtain the help which ought to be placed within their reach, and which indeed is now at hand.

Experience goes to show that in the vast majority of instances the ideal method of treatment is at an out-patient clinic, for it is eminently desirable that wherever possible the patient shall continue his employment and remain in his ordinary environment while under treatment. Only in those cases where the home conditions are insupportable, or close observation is necessary, or where out-patient treatment cannot be provided within a reasonable distance from the patient's home, is in-patient treatment in a hospital either necessary or desirable. Indeed there is a positive danger in many cases that admission to hospital may produce the condition of "hospitalization" and make the patient unwilling to face the ordinary cares of life. Nevertheless, a clinic should be linked up with a hospital where selected cases may be admitted, and preferably both should be staffed by the same personnel.

The staff, as Dr. Steen suggests, should be comparatively numerous, to permit of wide choice of physician for individual cases, and to allow also for transfer from one physician to another when the element of personality, either in the physician or the patient, is interfering with progress. The staff should also include specialists in the treatment of speech defects, as stammering is so common in the cases requiring treatment, and a gymnasium for re-educational exercises is definitely of benefit in those cases where there is a want of muscular co-ordination and in cases of functional paralyses and pareses. For those who are unemployed or whose form of employment is unsuitable it is well to provide workshops where occupational therapy can be carried out, and the patients trained either in the habit of working, which many have lost, or in new spheres of greater usefulness.

It is, of course, only in the larger centres of population that such a scheme could be carried out fully; but even in the smallest town something in the nature of a psycho-therapeutic clinic could readily be provided with inestimable advantages to the community as a whole, and there is no doubt that this would be welcomed by the civilian population. In these days of high taxation and of high rates it is unlikely that public bodies will be able to afford financial assistance for the establishment of an institution for psychotherapy. It is therefore earnestly to be hoped that some open-handed philanthropist of broad outlook will make the same provision for patients needing out-patient treatment as did the late Sir Ernest Cassel, shortly before his recent death, for those requiring in-patient treatment.—I am, etc.,

London, N.W., Dec. 9th. H. E. DAVISON, M.D.

"THE DAWN OF THE HEALTH AGE."

SIR,—The late Professor Benjamin Moore of Oxford in his book, *The Dawn of the Health Age*, wrote:

"At the present moment we possess sufficient knowledge of medical science to enable us to save at least three hundred thousand lives every year in this country alone. Anything more futile, less scientific, more hopelessly absurd than the present method of dealing with disease can scarcely be conceived."

I think most of us will agree with these statements. At present prevention is left mainly to medical officers of health, a small minority of the profession, whose sphere is narrow, who are burdened with ancient statutes and hindered by the trammels of present conditions. When we turn our general practitioners on to prevention, when we give to each, let us say, three hundred families to keep well, then we may hope for progress. Already we have medical inspection of school children, and therefore men who have gained experience in this new and promising field. Why not extend this system to the whole population?

The record cards of the school children would be handed to the medical men, whose business it would be to continue the inspection and the records, right through life. Some day these records, when tabulated and correlated, would add immensely to our knowledge of the causes of disease and to our ability to prevent disease. General medical inspection would make us familiar with the early stages of disease, and also with the still earlier departures from strict health, before

these become manifest to the ordinary observer. Medical services of to-day are largely a thing of patches and inequalities, calling for unification under the Ministry of Health.

The subject is a wide one, and I do not wish to wander far afield. As a nation we may not be quite ready financially and otherwise to embark on this undertaking, but I wish to suggest that the subject should receive attention, as it may soon come within the range of practical politics.—I am, etc.,

Cambuslang, near Glasgow, Nov. 2nd. J. A. WILSON.

POSITION OF INSANITY IN CRIMINAL LAW.

SIR,—I had the good fortune to be present at the recent meeting of the Hunterian Society when the psychological aspect of crime was discussed by alienists and legal luminaries. As an onlooker may I venture to say what the discussion appeared to me to indicate?

The medical standpoint is the aspect of crime as seen by the psychological expert. That of the eminent barristers present is the inability of a jury to grasp psychological issues. The jury has to accept the judge's ruling on legal points; it should similarly accept ruling on far more difficult psychological questions.

Medical experts are not satisfied that the rulings on psychological issues are in accordance with modern medical knowledge. A gap occurs between the alienists' knowledge and its reception by the jury. In the Admiralty Court, in certain cases, the judge is assisted by expert assessors. Might not the gap between the intelligence of the jury and the knowledge of the expert alienist witnesses be similarly bridged over? As an alternative might not a small jury of alienists take the place in such cases of the decadent grand jury? The whole issue is that there is a gap, and that this is against a fair and proper hearing. Incidentally, may I note that the protection of a convicted person by the existing safeguards seems to lead to an ignoring of the penal effect of the conviction.

I should like to be informed whether psychology is one of the compulsory subjects taken by students preparing for the Bar? And how far the study of this subject is carried before and after being called?—I am, etc.,

Winchester, Nov. 28th. F. R. HUMPHREYS.

INSULIN.

SIR,—So much prominence has been given to the "insulin" treatment of diabetes that it is perhaps not out of place to review the steps which have led up to the production of this new remedy.

Although diminution in the blood sugar of depancreatized dogs on administration of pancreatic extract had frequently been observed, notably by Mudin, Kleiner, and Paulesco, yet no results of any value had been obtained by this method in the treatment of human diabetes. On the contrary, it has been said that the administration of such extracts to human beings is not unattended with danger.

It occurred to Drs. Banting and Best that the cause of this failure probably lay in the fact that in the course of preparation of the extract the hormone supplied by the islets was destroyed by the proteolytic enzyme liberated from the acini. They therefore set about to find a method by which the pancreas could be obtained relatively free from active acinous tissue. Now it is one of the best established facts in physiology that the proteolytic enzyme exists in the pancreas in an inactive form—trypsinogen—which is activated normally only on contact with another ferment, enterokinase, secreted by the small intestine. It is indeed activated on autolysis of the pancreas whole or macerated at body temperature, but only slowly. If this is true rapid maceration in a half-frozen condition is hardly likely to cause any appreciable activation. On the other hand the establishment of the thesis of Banting and Best carries with it implicitly a proof that trypsin is active even when in the pancreas. This question, therefore, is important to the subject of digestion as well as to that of diabetes. Moreover, it is clear from reading the recent correspondence on the subject that many who have engaged in it are under the impression that Banting and Best have completely established this important point.

At first Banting and Best[1] caused the acinous tissue to atrophy by ligaturing the ducts. Ten weeks later extracts were made from the degenerated gland by rapid maceration in a partially frozen condition and given to depancreatized dogs. In the first experiment, which is described as "not conclusive," the dog was abnormal in that practically no sugar was excreted except when sugar was orally given. Administration of 25 grams of sugar raised the blood sugar from 0.18 to 0.33, and 15.88 grams were recovered from the urine in five hours. Three days later, the blood sugar being 0.20 and the urinary sugar *nil*, degenerated pancreas was given. (The dose is not clear, for the text says 4 c.cm. but the chart 5 c.cm.) Blood sugar fell to 0.12. Two further injections were given, the blood sugar being 0.11 per cent. 20 grams of sugar were then given—the text says at 12 a.m., the chart says at 2 p.m. The discrepancy here is important, for if the chart is correct the sugar had begun to return to its previous level before the sugar was given; if the text is correct the rise in blood sugar is at least partly due to the sugar given. With three subsequent injections of degenerated pancreas the blood sugar remained at about 0.20. Of the 20 grams injected only 0.21 was recovered in the urine. But there was practically no urine and the animal was dead next day. Truly, as the authors admit, no conclusions can be drawn from a moribund animal. The experiment only indicates that the degenerated pancreas lowered the blood sugar temporarily.

The second experiment was conducted on similar lines. The first fact which strikes one is that on August 12th, although six doses were given, amounting in all to 46 c.cm., the blood sugar actually rose until the last dose was given, when it began to fall. On the next day, under the influence of huge doses (72 c.cm. in all), blood sugar was reduced to a normal level. On August 14th 30 c.cm. of extract drove the blood sugar from 0.18 to 0.06, with, however, recovery in five hours. So far, then, this experiment shows that with very large and frequent doses blood sugar falls temporarily, but that with moderately large doses the blood sugar is not reduced.

The authors then attempt to show the superiority of the degenerated over the normal gland. The following table, taken from their chart, shows the result.

Date.	Extract.	Blood Sugar. Before.	Blood Sugar. After.	Duration of Suppressed Blood Sugar.*
Aug. 15 ...	10 c.cm. degenerated gland with HCl	0.30	0.17	Six hours approximately.
Aug. 15 ...	10 c.cm. degenerated gland with NaOH	0.28	0.24	One hour.
Aug. 16 ...	10 c.cm. degenerated gland, neutral	0.30	0.18	Two and a half hours.
Aug. 17 ...	10 c.cm. whole gland, fresh, cold	0.30	0.16	More than 7 hours, but prevented by next injection.
Aug. 17 ...	10 c.cm. whole gland with HCl	0.21	0.15	More than 6 hours, but prevented by next injection.
Aug. 18 ...	10 c.cm. whole gland with NaOH	0.16	0.14	Ten hours.

* That is, time taken to return to about 0.30.

From these facts the authors draw the astonishing conclusion that the whole gland is much weaker than the degenerated. But a glance at the chart is sufficient to convince anyone that the only reasonable conclusions that can be drawn are:

1. That the whole gland extract is more effective than the degenerated.
2. That the extract from the whole gland causes a much more *lasting* effect than does that from the degenerated gland. Had the two injections on August 17th been given a fair chance the superiority of the normal would doubtless have been still more striking.

We may now pass to the third part of the experiment. This is intended to show that instead of tying the ducts the acini can be exhausted by continued injections of secretin and prolonged stimulation of the vagus. Now it is well known that all attempts to show histological changes in the pancreas indicative of exhaustion have failed. The authors' criterion of exhaustion—namely, the large amount already secreted—is therefore quite unjustified. To establish their point Banting and Best have to show that the gland which they say is exhausted really is exhausted. This can only be done by demonstrating the absence of the three ferments by the ordinary methods. This they have neglected to do.

They found that the "exhausted" gland incubated with saline was still potent. This fact they quite unjustifiably

[1] Banting and Best: *Journ. Lab. Clin. Med.*, vol. vii, 1922, No. 5, p. 1.

take to show that there is no proteolytic ferment left. But in the absence of direct proof of exhaustion this experiment shows clearly that the hormone is not destroyed by anything in the acini on two hours' autolysis. Thus their main contention falls to pieces.

On August 20th 24 c.cm. of the "exhausted" gland lowered blood sugar from 0.33 to 0.071, and with subsequent injections it was maintained at this level. On the following day 10 c.cm. "exhausted" extract incubated two hours with pancreatic juice were injected. The effect was trifling. The conclusion which they draw is that the active principle had been destroyed by the ferment. It may be remarked, however, first, that this last dose was much smaller than the first; and secondly, we are not told whether the pancreatic juice was active or not. Presumably it was active, for "active" pancreatic juice is mentioned in a similar experiment performed later.

The third experiment shows that large doses of degenerated pancreas lower the blood sugar for a time, and that the active principle is destroyed on boiling. The experiment was performed on an animal dying of a "widespread abdominal infection."

The fourth experiment deals again and in a similar manner with an "exhausted gland." The criticisms made above apply here. *The authors have neglected to perform the one crucial experiment. They have not shown that the active principle in the normal active gland is destroyed on self-incubation—that is, in the absence of activated pancreatic juice.*

Finally, in this experiment, an extract from the "partially" exhausted gland of the cat was given. It provoked a general reaction. From this the remarkable conclusion is drawn that extracts from "more or less exhausted glands" produce symptoms of toxicity.

The fifth experiment is apparently to show that a part of the pancreas in which degeneration has occurred is more effective than the processus uncinatus, which is not degenerated. On referring to the chart, however, it appears that the first dose (10 c.cm.) from the undegenerated part is more effective than the first dose (20 c.cm.) from the degenerated part. True the second dose from the normal part failed, but then it took four strong doses from the degenerated part to push the blood sugar down to its normal level.

The facts which may therefore be learnt from these experiments are:

1. That both the normal and degenerated glands cause a temporary fall in blood-sugar.
2. That the normal gland is actually superior to the degenerated gland.
3. That the active principle is destroyed *in vitro* by *active* pancreatic juice.

On the other hand the experiments do *not* prove—

1. That the degenerated is superior to the normal gland.
2. That the active principle is destroyed by *unactivated* pancreatic juice.
3. That the acini can be exhausted by prolonged secretion.

Two things are to be regretted: first, the inequality of the dose—frequently a larger dose was given for the test than for the control; secondly, the absence of any record of the fluctuations in blood sugar after removal of the pancreas but before administration of the extract.

Having therefore failed to establish their main thesis, but encouraged by a complete misreading of their results (I challenge any unbiased person to read the paper carefully and come to any other conclusion), Banting and Best[2] then proceeded to investigate further methods of preparing a hormone free from the destructive action of ferments. They tried foetal pancreas, in which, according to Ibrahim, the acinous tissue is not developed. The first experiment is illustrated by a chart which is difficult to follow, inasmuch as the blood was withdrawn for sugar determination usually at the same time as the injections were given. It appears, however, that injection of foetal extract in several doses on November 17th and 18th reduced the blood sugar from 0.30 to 0.08, but that injections from November 20th to 22nd had no effect. Later injections caused toxic symptoms which proved fatal. The second experiment shows that foetal pancreas is as potent as the degenerated. It is important to observe that no comparison has been made between foetal and normal adult pancreas.

At this stage in the proceedings Banting and Best completely change their method, for they now make an alcoholic extract after the manner first adopted by E. L. Scott: an alcoholic extract first of foetal then of normal adult pancreas. Reduction of blood sugar again occurs, but here again there is no comparison made between the effects of the alcoholic and those of a watery extract in the same animal. The superiority of the alcoholic extract therefore remains unproved. Still with an alcoholic extract the danger of producing toxic symptoms is present, so that clearly the problem is not a question of removing the proteolytic enzyme.

From this point the research takes on quite a different aspect, the problem being to produce a non-toxic rather than a not inactive substance. As Collip, one of the collaborators, remarks:

"The problem was to remove most of the protein and salts and all of the lipoid material from the extracts without destroying the active principle."

At the moment a modification of Scott's method seems to be used: extraction with 80 per cent. alcohol and subsequent purification. What Banting and Best have failed to realize is that in so radically changing their method they have abandoned the principle from which they started and which they never proved.

The conclusion we come to, therefore, is this: the production of insulin originated in a wrongly conceived, wrongly conducted, and wrongly interpreted series of experiments. Through gross misreading of these experiments interest in the pancreatic carbohydrate function has been revived, with the result that apparently beneficial results have been obtained in certain cases of human diabetes. Whether insulin will fulfil its promise time alone will show; but I venture to believe that whatever success the remedy will have will be found to be due to the fact that the hormone has been obtained free from anaphylaxis-producing and other toxic substances. The experiments of Banting and Best show conclusively that trypsin *qua* ferment has nothing whatever to do with it.—I am, etc.,

FF. ROBERTS, M.D., M.R.C.P.

Physiological Laboratory, Cambridge,
Nov. 5th.

[2] Banting and Best: Ibid., vol. vii, 1922, No. 8, p. 5.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND: MEMBERS AND THE COUNCIL.

SIR,—Will you favour me with space in your JOURNAL to refer to the recent proceedings at the annual meeting of the Royal College of Surgeons of England, and particularly to the President's remarks at its close?

For over twenty years a claim has been advanced by Members, frequently supported by distinguished Fellows, for representation by Members of their point of view, as general practitioners, at the Council board. The position in our College is unique. The Members originally constituted the College. A "new order of Members," called "Fellows," were self-elected (without examination) in 1848, and became the functioning authority, and obtained a Charter which decreed that only Fellows should vote for the election of the Council. That is to say, a graft of 1,700 Fellows alone have the franchise and power in the parent body of 18,000 Members. This obvious injustice has never been defended. So strongly did the late Timothy Holmes feel on this matter that when Vice-President he declined the President's chair, being unwilling to preside over a Council of whose mode of election he did not approve. Last year no annual meeting took place, as the President declared there was not the necessary quorum of thirty, although there were in the theatre twenty-nine male Members and one female Member, and in the adjoining room many members of Council, whom the President admitted were there but did not attend so that a quorum could not be formed. To increase the difficulty of forming a quorum in future a new by-law has been introduced—contrary to all precedent in similar bodies—declaring that the Council and President shall not count towards a quorum. This attempt to deprive Fellows and Members of their one and only opportunity in the year for expressing their views is not worthy of the President and Council of this great College. At the end of the meeting, when no reply was allowed, the President advanced for the first time in this controversy, without alluding even remotely to the merits of the question, the Council's reasons for refusing the claim of the Members under three heads.

The first declares

"that the present electorate of 1,700 Fellows is a thoroughly representative one, that a very large number of the Fellows are in general practice, and that it was wrong to assume that the Fellows were all engaged in work as consulting surgeons."

In reply I would point out that this electorate is less than a tenth of the total constituency of the College; that it has never been asserted that all the Fellows are consulting surgeons, but it is true that all the Council are. There never has been a general practitioner, Fellow or Member, on the Council, and it is not likely that there ever will be, on the present franchise, as the majority of the Fellows are consultants. So, most certainly, the Council cannot be said to be a representative one, when, of 18,000 Members 16,000 have no direct representation at the Council.

The second point states

"that the Council are not prepared to advocate measures in opposition to the opinions of a large number of the present electorate."

That is to say, the Council entrenches itself behind its own privileges, and refuses to surrender any of them in the interest of fair and just representation, which undoubtedly would improve the relations existing between the Members and the Council and be for the mutual advantage of Fellows and Members. Moreover, the President ignores the fact that some years ago the Association of Fellows passed a resolution in favour of the Council granting Members a share in the management of College affairs.

The third point was

"that there was no evidence before the Council of a widespread demand by the Members for an amended charter, and very few Members came to the meeting to support the motions of the Society of Members of the College."

For a quarter of a century Members have argued hard, and fought hard, for this change, and with marvellous patience and perseverance, at each annual meeting—their only opportunity. Rarely was there a single Member present who was out of sympathy with this request. The Members may well reply that all the evidence is in the reverse direction. At no time during this agitation has there been any indication that the main body of Members are not desirous of the reform asked for in their name.—I am, etc.,

REDMOND ROCHE,
President of the Society of Members of the College of Surgeons of England.

1, Eccleston Square, S.W.,
Dec. 9th.

INDIRECT ADVERTISING.

SIR,—On reading the account of the discussion on the above topic at the meeting of the General Medical Council on December 1st I was astonished to find a total ignorance of the part played by the ordinary journalist writing in the lay press. It seems to be supposed that every paragraph complained of is inspired by, and even sometimes paid for by, the medical man named. I venture to say, both as a journalist and as a medical man, that such is certainly not the case. The public interest in medicine and in medical men is so great nowadays that the "news" editor of the daily press seeks such paragraphs as being of public interest. If a prominent man is operated upon the man in the street likes to know who did it, and the wise journalist tells him. If the big politician consults Sir X. Y. about his health he does not always conceal the fact from his friends, and the astute paragraph writer does not miss the item for his column in the "Daily Inkpot." The press has a right to record the work and doings of all public men—irrespective of their wishes—and prominent medical men are interesting public men. This of course has nothing to do with the obviously paid paragraphs of "moves" and "addresses." The public do not care for such items of news, but the public do care to know who cut off Lady So-and-so's leg or the name of the "famous surgeon" who is attending a popular actress for appendicitis. No reporter worth his salt would fail to find out such information. And are the surgeons in question to be put in Dr. Bolam's pillory because the penny-a-liner has earned his pennies? What have they had to do with it? Again, a prominent doctor reads a paper at a popular congress. It is widely discussed. His remarks are of public interest, and being so constitute a big advertisement for the doctor. Why not? The answer is, Because some unknown members of the profession never get the same chance. The idea is contemptible. It springs from the lowest form of emotion—jealousy. It has no other basis, and it constitutes a very common failing in our profession. One sees it constantly in medical life—"my opponent," "the opposition," applied to those who should be regarded as colleagues in the noblest of all professions. One could multiply instances of professional irritation at success in others, but it hardly seems worth while. The point I wish to emphasize is, that whatever rules and regulations may emanate from Dr. Bolam as a sort of medical sin-smeller, are likely to be utterly disregarded by those who uphold the liberty of the press and the right of the public to be informed about men and matters, medical or otherwise. I have no personal interest in this matter of advertisement as a doctor.—I am, etc.,

December 11th. A JOURNALIST AND DOCTOR.

THE SMALL-POX OUTBREAK AT POPLAR WORKHOUSE.

SIR,—The following note regarding an outbreak of small-pox that occurred in the burgh of Kirkintilloch in November, 1920, may not be without interest. There were 33 cases, 32 of which were infected directly or indirectly by the first case; this was a child, 12 years of age, unvaccinated, whose symptoms were comparatively mild, and whose illness was diagnosed as chicken-pox (this occurred before chicken-pox was compulsorily notifiable); after a few days in bed she was able to be up and about; she infected in the first place her five brothers and sisters (all unvaccinated) and her parents (vaccinated in infancy only); these first 8 cases of the outbreak all made complete recoveries; of the succeeding 25 cases 11 died. In all, 19 cases were unvaccinated, of whom 7 died, a mortality of 37 per cent.; but if we exclude the comparatively mild cases occurring in the 6 unvaccinated children of the family where the outbreak originated, there remain 13 cases (of whom, as stated above, 7 died) with the high mortality of 54 per cent.; it should be further added that the ages at death were from 5 to 11 years, a period of life when mortality is fairly low and resistance to disease good.

The numbers involved in this epidemic are of course too small to permit the making of any general inference; but they show that at least one outbreak originated in a mild case where the symptoms were not masked by vaccination, and though commencing with a mild type of the disease (among the unvaccinated) it rapidly became virulent.—I am, etc.,

Bishopbriggs, Dec. 10th. JAS. B. MILLER.

SIR,—Dr. Millard will not admit that an unmodified case of small-pox can walk about, but states that the man would be too ill and would send for his doctor. In the Milroy lectures for 1919 Dr. McVail mentions the case of a man with a fully developed and abundant eruption who was discovered seated in a place of public resort (George Square) in Glasgow. In the BRITISH MEDICAL JOURNAL for April 19th, 1919, Dr. Millard said that—

"Infantile vaccination as a State institution aiming at the universal vaccination of infants has been living on a reputation largely based on prophecies now proved to have been erroneous; it is already discredited by the large masses of the population, and is rapidly becoming obsolete. I submit that the time is ripe for a reconsideration of the question whether it is any longer really necessary."

If Dr. Millard's suggestion were followed, then we would witness a repetition of the Gloucester disaster wherever small-pox commenced. Gloucester, like Leicester, neglected vaccination. As Dr. McVail said, "Its representatives told the Royal Commission about the cleanliness of their fine old city, and called attention to the freedom from small-pox"—and then the deluge in 1895–96. The type of infection was severe, and the 48 beds grew to 318. Vaccination and re-vaccination became the rage, and Gloucester became the best vaccinated town in the British Empire. As I write, I have before me a photograph of a portion of the Gloucester cemetery showing the graves of 279 unvaccinated children under 10 years of age who died in the 1895–96 epidemic, together with *one* child out of more than 8,000 who were vaccinated before or during the epidemic. And Dr. Millard's reply to the weeping mothers is that "the premium to be paid (in the form of so much vaccination) is out of all proportion to the risk to be insured against."

Unvaccinated children, attacked by small-pox, tend to die. What a price to pay for a theory! We have no guarantee that the first case of unmodified small-pox occurring in Dr. Millard's unvaccinated city in the clouds would be diagnosed in time. Very many doctors have not seen a case of small-pox.

Though surely unlikely nowadays, there is, too, the point mentioned by Dr. Spencer Low in his report on the Dewsbury epidemic of 1904—"Non-notification of cases in many instances meant concealment of cases." What about tramps? A sick tramp, with the amelioration of symptoms not unknown when the rash appears, might wend his way to a lodging-house. Dr. Wanklyn mentions a case where a sanitary inspector recognized the disease through observing the soles of a tramp's feet projecting from the end of the bed.

Will Dr. Millard, who is one of the most respected and hard-working medical officers of health in England, kindly answer a question? Suppose that small-pox came to Leicester and killed some unvaccinated children of 7 years of age, and the fathers came to Dr. Millard's office and said: "We are but labourers; we took your advice that vaccination in infancy was 'discredited' and 'obsolete,' so we did not vaccinate our children. The disease has killed our bairns, but the vaccinated children are alive. What is your reason for your belief?" What would Dr. Millard say to those bereaved parents?

Dr. Millard's way is the easy way, the popular way, until the day of reckoning comes. My way—vaccination, revaccination, and a third course—is the hard way, the unpopular way, made more hard and unpopular by the propagation of a theory not held by one doctor in a thousand.—I am, etc.,

CHARLES S. THOMSON,
Medical Officer of Health.

Town Hall, Deptford, S.E.14, Dec. 5th.

THE RADICAL PREVENTION OF VENEREAL DISEASE.

SIR,—The purpose of my letter of October 7th was to call attention to the historical fact that the highest ideals are in reality the most practical and fruitful of results in the long run.

In reply, correspondents have reiterated the familiar statements that "high moral ideals are impracticable," that there is "too much human nature about humanity" for their success. One correspondent seems to say we have made no advance on Moses' system. Consistently with this view, he argues that a morality of selfish discretion, based on fear as a motive, is the only practical one available for us. Do those who make these statements realize their position? It implies reverting to the moral system of 1,900 years ago. It is simply relinquishing the moral gain of the Christian era.

As evolutionists—to take no higher ground—we are bound, surely, to protest against this attitude. The history of the Christian era has exposed the fallacy of the statement that "high moral ideals are impracticable." It is made so commonly as to be almost regarded as an axiom, instead of the fallacy that it is. It is an atavistic, degenerate, retrograde statement! It reveals the deserter from the cause of evolution and progress. It is unchristian—obviously. It is the first step on the slippery slope of Bolshevist morality. —I am, etc.,

Sheffield, Dec. 6th. HERBERT CAIGER.

SIR,—The periodical discussions on this subject have become very wearisome. We are continually reminded by the same disputants of their specific prophylactic measures supported by the same stereotyped "arguments." But what does it all amount to? Nothing. At the beginning of the war, when venereal diseases were raging in Egypt, I was requested to superintend the European Lock Hospital, and did so for some time. The conditions existing in the "hospital" were found to be appalling; as instances, specula were never sterilized after use in each individual case, after inspection or treatment; douche nozzles the same; and, most incredible of all, the matron and staff were compelled (there was no other alternative) to use the same lavatories and baths as diseased patients.

Notwithstanding the faulty system of administration, etc., after considerable experience the conclusion is irresistible that there is but one way of dealing with such diseases, and that is by isolation in conjunction with segregation. Treat the victims as if they were suffering from small-pox or other contagious diseases, and we will be spared the reiteration of shibboleths and moral platitudes. Although such a system—which according to the moralists "legalizes vice"—has been tried in various countries it cannot be admitted that it has been attended with any great measure of success, but this because, except in some parts of Germany, it has never been properly carried out. Take, for instance, the conditions briefly outlined as existing in Cairo: is it fair to condemn a system of prophylaxis carried out under such ghastly circumstances, more calculated to spread disease than to prevent it?

The fact is that this peculiar branch of medical practice has never been divorced—as it should be—from its moral aspects, and appears to be only too frequently associated with incompetence and callousness and to rest on a corrupt basis. Perhaps not the least regrettable fact in connexion with this unsavoury controversy is the prominent part taken in it by women. It may be that they are overtaxed by our social system of to-day; if such is the case the standard of civilization which exacts so much from their biological requirements cannot survive indefinitely.—I am, etc.,

Cairo, Nov. 23rd. T. GERALD GARRY.

HOSPITAL POLICY: THE REPORT OF THE COUNCIL.

SIR,—As the Council have not accepted the amendment of Dr. Brackenbury, although it gained a majority of votes at Glasgow, and undoubtedly reflects lay opinion, I would review their policy once again. It had origin in a few hospitals of great industrial centres, whose staffs, during the early post-war boom in trade and wages, had been grievously exploited by well-paid workmen, who declined any inquiry into their financial state. For such areas the Leicester motion is entirely suitable, but they are a small minority. Nevertheless certain of the Council and Hospitals Committee, with all the ardour of proselytes, initiated a campaign to enforce this policy upon all. On December 18th, 1920, an immense agenda list, whereon the Leicester was but No. 26 of twenty-eight motions, was posted for a meeting actually to be held within two days of its receipt. Although by far the most important and contentious motion, its discussion was postponed to the last hour, and we were strongly urged to pass it *nem. con.* as another meeting was due shortly in the same room. Of course the promoters of this motion and their converts held the field. Moreover, Mr. Eccles succeeded in conveying the impression, which exerted great influence, that the staff of St. Bartholomew's Hospital favoured this policy, which they have since condemned. This was what Mr. Harman described afterwards as a "keen debate"! Scarcely more valuable was the vote at Newcastle. The all-important motion occupied nine lines in fifty-four double-column pages of the report of the Council; it was never alluded to again, and was absent from the agenda. Naturally few Divisions had given it a thought, and once more the full weight of Council and Committee was brought to bear on an audience mostly unprepared. Mr. Harman, indeed, stigmatized sound amendments as "weakly, sickly, and sentimental," having himself in December put forward sentiment as the main excuse for the survival of that voluntary system for which, as so "lovable," he pleaded with much eloquence. Moreover, while vigorously exploiting that hasty vote of December, the value of which I have indicated, he ignored entirely that in February of Scottish staffs, who, after two months for consideration, had condemned his policy—a graceful compliment to the President-elect. Dr. Brackenbury's amendment, if thereto be added the rider of Dr. Fothergill, entirely meets the case, for "maintenance and accommodation," as distinct from treatment, are lay functions, and have not, like the latter, greatly increased in cost, nor is there difficulty in providing them at home. The cost of maintenance, excluding all treatment and nursing, is, in our hospital, but 30s. a week, and should not greatly exceed this sum elsewhere. Those patients who can be certified by a hospital official as able to pay only 2s. 6d. to 30s. weekly are the thrifty poor, and none other. It will be an ill day for our reputation, and a deadly blow to the voluntary system, when the "honorary" staffs of "voluntary" hospitals, while retaining their title and prestige, and all those indirect emoluments well known to laymen, attempt, quite certainly in vain, under any species of camouflage by the use of titles such as "peppercorn" and the like, to deny their free service in these institutions to the thrifty poor. As for the risk of "manipulation," let us invite representatives of approved societies to a conference, and come to some agreement with them, as has already been done with county councils and other bodies, and this transparent bogy will for ever disappear. Again, if some day a Labour Government abolishes "charity" for the poor, surely it were infinitely better to start the new régime unhampered by the precedent of a quite inadequate payment for this class.

The policy of the Council can be accepted only on the lines of the amendment of Dr. Brackenbury and Dr. Fothergill, which is practically the West Sussex amendment of Section VI, para. 19 at the second Hospital Conference in London, and at Glasgow. This policy was provisionally accepted, at my suggestion, by the lay board of our hospital before that Conference. Rather than accept the full policy they, and I believe the vast majority of lay boards, would reject the staff fund altogether. I have yet to learn that any member of the Council or Hospitals Committee, with the exception of Dr. Clarke, has so far dared even to approach his own board with a policy more advanced than this. If they have, let them say so, and state the result, and we shall know how we stand.—I am, etc.,

Chichester, Dec. 2nd. G. C. GARRATT.

TREATMENT OF GENERAL PARALYSIS BY MALARIA.

SIR,—The omission of a few sentences in your account of my paper on this subject before the Medico-Psychological Association may cause a misapprehension. The full statement is that of the last 116 cases treated, 42 were completely cured, 22 so nearly completely cured that signs could be detected only by careful examination, 14 partially cured and at work, and, finally, 38 in which no improvement was found. Professor Wagner-Jauregg believes that all early cases can be completely cured.—I am, etc.,

London, W., Dec. 8th. E. W. SCRIPTURE.

Obituary.

W. B. RUSSELL, B.A., LL.B., M.B.,
Colwyn Bay.

THE death of Dr. W. B. Russell occurred on December 4th at his residence in Colwyn Bay. William Barker Russell was born on July 28th, 1858, at Southolme, near Scarborough. He was educated at Old Malton Grammar School, and Trinity Hall, Cambridge, where he graduated B.A. and LL.B. At the close of a brilliant career at Cambridge he won a scholarship of £100 per annum for three years to enable him to pursue further his legal studies; but after a period of experience with a well-known firm of solicitors in Leeds he resigned the last year of his Cambridge scholarship and turned to the study of medicine. At Leeds University he was a fellow student with Sir Berkeley Moynihan, and after passing the M.B. examination he spent two years at Scarborough Hospital as house-surgeon. This was followed by a further two years at Malton, in Yorkshire. In 1892 he went to Colwyn Bay, where he spent the most important years of his life. Colwyn Bay and its surroundings made an excellent centre for his studies in birds and flowers; and during his early years much of his spare time was spent in acquiring an extensive knowledge of the flora of North Wales. His knowledge of birds—their habits and calls—was very intimate, and the keenest pleasure of his life was to study these in their native haunts. He would wax enthusiastic over the presence of a flying beetle, at an unusual time of the year, and even in the last few days of his life he would constantly talk of the sounds of the birds as he heard them in the confinement of his room. The hooting of owls at night was to him a source of pleasure. He was a recognized authority on nature study, and contributed articles on bird and flower life to a book which was published on the history of Colwyn Bay some years ago. He was extremely fond of animals, and for nearly ten years was constantly accompanied by his little dog, both on professional visits and on his long country tramps. Dr. Russell was a great walker, and would never ride to any patients if he could walk; he was also a keen fisherman, and until a few years ago a very regular sea bather. During the war he was a keen volunteer, and took his place as medical officer to the Colwyn Bay Company. He was one of the initiators of the Colwyn Bay and District Cottage Hospital, and served for many years as honorary physician. His practice included patients of every class, and he was able to inspire in rich and poor alike affection and esteem.

"A. N. L." writes: Dr. Russell was greatly beloved by the poor, and to a class of people who have been recently described as the "new poor" he was most generous in giving his services. While his kind thoughtfulness for others was a predominating feature, his knowledge of the art of medicine and skill in diagnosis were much respected by his colleagues in the profession. Only his intimates knew what a fine nature was hidden by an armour of reserve. His main characteristic was that he would take the greatest pains to avoid giving others a small amount of trouble. He carried out in actual life what most others are content to talk about. Another side to his character was his determination, and his final illness was faced with a calm serenity which had its reward in a quiet and peaceful end.

Dr. S. L. BUTTERWORTH WILKS writes: The outstanding features of his character were sincerity and generosity. He was a scholar, a gentleman, and a Christian in the best sense of all three. His knowledge and culture were well digested and wide, yet he was diffident and self-depreciatory. His courtesy was charming. His religion was unobtrusive and humble. His generosity was as secret as he could make it, and it was not a mere easy pecuniary generosity—it was a real generosity of soul. He would eagerly push credit on to another rather than take it himself. A sensitive man, he was almost morbidly fearful of hurting the feelings of others; but he could form a severe opinion and express it, on anything that struck him as unfair or unkind. He was diligent to avoid the giving of trouble or any cause of annoyance, and he was unstinting in his devotion to his patients, rich or poor.

THE LATE SIR NORMAN MOORE.

A REQUIEM MASS for Sir Norman Moore was sung on December 9th at St. James's, Spanish Place. In the large congregation were many members of the medical profession, including Sir Humphry Rolleston, President of the Royal College of Physicians, Dr. Raymond Crawfurd, Dr. H. G. Turney, and Dr. H. Morley Fletcher (Censors), Dr. J. A. Ormerod (Registrar), Dr. Arnold Chaplin (Harveian Librarian), and two former Presidents, Sir William Church and Sir R. Douglas Powell; Sir Anthony Bowlby, President of the Royal College of Surgeons, Sir D'Arcy Power, Vice-President, and Sir Henry Morris and Sir George Makins, former Presidents; Sir William Hale-White, President of the Royal Society of Medicine; Sir Dyce Duckworth, representing the Order of St. John of Jerusalem; Mr. E. J. Layton, representing the Governors of St. Bartholomew's Hospital; Sir Archibald Garrod, Regius Professor of Medicine at Oxford; Mr. H. J. Waring, Vice-Chancellor of the University of London; Sir Dawson Williams, Editor of the BRITISH MEDICAL JOURNAL; Sir StClair Thomson, Sir Percival Hartley, Sir George D. Thane, Dr. F. J. Waldo, Sir Henry Gauvain; and Mr. Reginald Vick, Warden of the College, and representatives of the resident medical staff and nurses of St. Bartholomew's Hospital.

DR. EDWIN GEORGE BULL died at Weatheroak House, Sparkhill, Birmingham, on November 29th. He was born in London in 1857 and received his early education at Warminster, Edgbaston, and George Watson's School, Edinburgh. Proceeding to the University of Edinburgh he graduated M.B., C.M. in 1878 and obtained also the diploma of M.R.C.S.Eng. Though not physically strong he took throughout his life a keen interest in sport of all kinds, and while at the university became a member of the University Company at that time attached to the Black Watch. His university career was followed by a period of post-graduate work at Paris and Vienna, whence he returned to England and ultimately settled in Birmingham as a general practitioner. In addition to his medical practice he found time to devote himself to the public life and interests of the district in which he lived. He was for many years chairman of the Yardley School Board, a position for which he was entirely fitted by his literary, linguistic, and artistic talents, of which the latter alone would have secured as wide a recognition as he obtained in the profession of his choice. Dr. Bull was a member of the Central Division of the Birmingham Branch of the British Medical Association. His health, never very good, had prevented the full development of his powers, and he was of late years entirely confined to his house. He was greatly esteemed alike by his patients and fellow practitioners, whose visits were always welcome even within a fortnight of his death. The interment took place at Witton, near Birmingham, on Saturday, December 2nd.

WE regret to record the death, on September 16th, of Dr. ALEXANDER LEWERS, who was one of the best known physicians in Melbourne. Dr. Lewers was born at Creswick, Victoria,

and received his medical education at Charing Cross Hospital, London; he took the diplomas of M.R.C.S.Eng. and L.R.C.P. Lond. in 1890, and on his return to Australia went into practice at Creswick. In 1898 he again visited London for post-graduate study, and worked chiefly under Sir James Galloway at Charing Cross Hospital; he took the D.P.H. in 1899. In 1903 he was appointed physician to out-patients at St. Vincent's Hospital, Melbourne, and at the time of his death was senior physician to the hospital. When a clinical school was established at St. Vincent's Hospital in 1910, he was appointed a lecturer, and soon afterwards became an examiner in clinical medicine at the University of Melbourne. Dr. Lewers was for many years a member of Council of the Victorian Branch of the British Medical Association. He was a voluminous writer on medical and other subjects, and from 1903 to 1914 was editor of the *Australian Medical Journal*, formerly the official organ of the Victorian Branch of the British Medical Association; it ceased to exist on the foundation of the *Medical Journal of Australia*. Among his published works is a volume of essays entitled *Medicine and Meditation*.

Dr. PERCY ROBERTS ASH, whose death took place at Hessle, Yorkshire, after a long illness traceable to his active service in France, was formerly engaged in general practice in Hull, and was at one time visiting surgeon to the Hull and Sculcoates Dispensary. He received his medical education at Leeds, and took the diplomas of M.R.C.S.Eng. and L.R.C.P. Lond. in 1895. Dr. Ash had a distinguished career in the Territorial Army and its predecessors. He first obtained a commission as lieutenant R.A.M.C. (Vol.) in the Brigade Bearer Company of the 1st Volunteer Battalion East Yorks Regiment, and on the organization of the Territorial Force was transferred to the 3rd Northumbrian Field Ambulance R.A.M.C.T., with which unit he served until he was invalided home from France. He commanded that field ambulance in France, with the rank of lieutenant-colonel, and was mentioned in dispatches. On the formation of the Territorial Army he was responsible for the organization and recruiting of the 151st (3rd Northumbrian) Field Ambulance. His funeral took place with full military honours at Hessle, the officers who had served under him acting as pall-bearers. He is survived by his widow, with whom much sympathy has been widely expressed.

We regret to record the death of Dr. CHRISTOPHER WESLEY NARBETH, which took place on September 17th, at Grenoble, France, after a delayed operation for appendicitis, at the early age of 24. Dr. Narbeth was educated at Christ's Hospital and St. Bartholomew's Hospital, and took the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond., and the degrees of M.B., B.S.Lond., in 1920. He had held the appointments of house-physician to Sir Percival Hartley, and house-surgeon to the skin and venereal disease department at St. Bartholomew's. During the war he served as surgeon sublieutenant in H.M.S. *Saracen*. While holding his house appointments he took the D.P.H., and had recently been appointed assistant medical officer of health for Surrey. The ability which Dr. Narbeth had already shown, and his pleasant and unassuming manner augured a successful career in public health, and his untimely death on holiday abroad is lamented by all who knew him.

Dr. ALFRED YALE MASSEY, who died on August 22nd at Ireba, Coquilhatville, Belgian Congo, was born at Hastings, Canada, in 1871, and graduated B.A. and M.D., C.M. at Toronto University; at a later period he studied at University College Hospital, London, and took the diploma of L.M.S.S.A.Lond. in 1913. After being engaged in medical work for a short time in Labrador, Dr. Massey went to Angola, South Africa, where he spent three years as a medical missionary, resigning in order to pursue research work in tropical diseases. He spent some years in Katanga, South Africa, and at Tanganyika, and eventually joined the Belgian Congo Medical Service; at the time of his death he was chief medical officer at Coquilhatville. Dr. Massey made valuable investigations in different tropical diseases, especially in sleeping sickness, and was a contributor to the *Transactions* of the Royal Society of Tropical Medicine and Hygiene. He received the honour of Chevalier de l'Ordre Royal du Lion from the King of the Belgians.

Dr. ST. GEORGE GRAY, late of the Colonial Medical Service, died in London on December 2nd, aged 59. He was educated at Trinity College, Dublin, where he graduated M.B. and B.Ch. in 1887, and M.D. in 1910. He served as assistant medical officer of St. Lucia, in the West Indies, where he was in charge of the Yaws Hospital. He was afterwards house-physician of the San Francisco Polyclinic, and subsequently in the West African Medical Staff, where he rose to be a senior medical officer. During the war he served in the Southwark Military Hospital.

Universities and Colleges.

UNIVERSITY OF OXFORD.

DR. ALEXANDER G. GIBSON has been reappointed University Lecturer in Morbid Anatomy for a period of three years.

Examiners in Medicine.—The following have been appointed Examiners for the B.M. Examinations: In Organic Chemistry, F. D. Chattaway, M.A., F.R.S.; in Human Anatomy, F. G. Parsons, F.R.C.S.; in Human Physiology, J. G. Priestley, D.M.; in Materia Medica and Pharmacology, W. E. Dixon, M.D.Lond., F.R.S.; in Pathology, G. Dreyer, M.A., F.R.S.; in Forensic Medicine and Public Health, B. H. Spilsbury, B.M., M.A.; in Medicine, A. G. Gibson, D.M., F.R.C.P.; in Surgery, H. S. Souttar, B.M., M.A., M.Ch., F.R.C.S.; in Obstetrics, A. Donald, M.D.Edin.

Francis Gotch Memorial Prize.—The prize for 1922 has been awarded after examination to Murray McCheyne Baird, B.A., New College and Guy's Hospital.

Board of Electors to the Professorship of Pathology.—The Board of the Faculty of Medicine has re-elected to this Board Professor R. Muir (M.D.Edin.) for five years, as from the first day of Michaelmas term, 1922.

Board of the Faculty of Medicine.—The Board has co-opted A. P. Dodds-Parker, B.M., M.A., F.R.C.S., a member of the Board for the statutory period of two years, as from the first day of Michaelmas term, 1922; and Sir F. W. Keeble, M.A., B. Lambert, M.A., E. Hope, M.A., have been nominated to it for the same period by the Board of the Faculty of Natural Science.

Radcliffe Travelling Fellowship, 1923.—An examination for a Fellowship of the annual value of £300, and tenable for two years, will be held during Hilary term, 1923, commencing on Tuesday, February 20th, at 10 a.m. All intending candidates should send their names, addresses, and qualifications, etc., to the Regius Professor of Medicine, University Museum, on or before Wednesday, February 7th. Candidates, who must have passed all the examinations for the degrees of B.A. and B.M.Oxon., can obtain further particulars by applying to the Dean, Department of Medicine, Museum, Oxford.

Degree Days.—The degree days in next term are the following: Thursday, January 25th; Saturday, February 17th; Thursday, March 8th; Saturday, March 24th.

UNIVERSITY OF CAMBRIDGE.

THE General Board of Studies will shortly appoint a University Lecturer in Embryology; applications must reach the Registrary on or before December 19th. The Raymond Horton-Smith prize has been awarded to A. B. Appleton and H. W. C. Vines, adjudged equal for theses for the degree of Doctor of Medicine. The Board of Archaeology and Anthropological Studies has elected K. P. Chatterji to the Anthony Wilkin studentship in ethnology and archaeology. The Gordon Wigan prize in Chemistry has been awarded to R. G. W. Norrish.

The following candidates have passed both parts of the examination for the Diploma in Psychological Medicine and are entitled to receive the diploma: P. C. P. Cloake, G. H. FitzGerald, D. N. Hardcastle, T. D. Power.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

AT the annual meeting of the Royal College of Physicians of Edinburgh, held on November 30th, Sir Robert Philip, M.D., was re-elected President. The following were elected as the Council for the ensuing year: Dr. J. W. Ballantyne, Dr. G. Lovell Gulland, C.M.G., Dr. J. C. Dunlop, Dr. G. M. Robertson, Dr. Robert Thin, and Dr. J. Lamond Lackie. The other office-bearers are as follows: —*Vice-President*: Dr. G. Lovell Gulland, C.M.G. *Treasurer*: Dr. Norman Walker. *Secretary*: Dr. J. S. Fowler. *Honorary Librarian*: Dr. J. W. Ballantyne. *Curator of the Laboratory*: Dr. J. J. Graham Brown. The Council appointed Dr. W. T. Ritchie as the Gibson Memorial Lecturer for 1923.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the monthly business meeting of the President and Fellows, held on December 1st, 1922, the following, having passed the Final Conjoint Examination of the Irish Royal Colleges, were duly admitted Licentiates in Medicine and Midwifery of the College:

Miss Enid Baile, V. V. Brown, C. Cohen, M. Coleman, J. J. Cosgrove, W. J. Crawford, D. Eppel, A. T. Gallagher, H. J. Gillen, A. Goldfoot, T. J. McCarthy, J. J. Mackey, M. J. Mallon, C. J. O'Connell, M. D. O'Connor, P. W. O'Connor, M. Price, I. Richmond, M. A. Walsh.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

AT the monthly meeting of the Faculty, held on December 4th, the following were admitted (after examination) as Fellows: I. J. Block, D. Cameron, J. N. Ghosh, P. Gupta, R. F. Jarrett, D. M. Lindsay, F. C. Logan, A. M. McCutcheon, C. M. Mehta.

Medical News.

THE Registrar of the Dental Board of the United Kingdom desires to remind those persons who are liable to pay the fee for the retention of their names on the *Dentists Register*, and have not yet done so, that, unless the remittance is received on or before December 31st, their names will not appear in the *Dentists Register* for 1923, and that, if they practise after December 31st, they will render themselves liable to prosecution, and, on conviction, to a heavy fine.

THE annual livery dinner of the Society of Apothecaries of London was held in the hall of the Society at Blackfriars on Tuesday, December 12th. The Master, Surgeon General W. B. Slaughter, presided over a large and distinguished company. After the King's health had been honoured the Master proposed the toast of the Navy, Army, and Air Force, and Vice-Admiral Sir Robert Hill, Medical Director, R.N., responded. The toast of the Royal Colleges and the Universities was proposed by the Senior Warden, Dr. Thomas Wakefield, and was replied to by Sir Anthony Bowlby, President of the Royal College of Surgeons of England, and Mr. H. J. Waring, F.R.C.S., Vice-Chancellor of the University of London. In proposing prosperity to the Society of Apothecaries of London, Sir Sydney Russell-Wells, M.D., M.P., gave a brief historical sketch of the various qualifying bodies in England, in the course of which he paid several compliments to his hosts and their predecessors. Dr. F. Gordon Brown, Senior Past Master of the Society, made an appreciative reply. The health of the guests was proposed by Dr. A. D. Brenchley, Junior Warden, and acknowledged by Mr. James Berry, F.R.C.S., President of the Medical Society of London. Between the speeches a charming programme of music was rendered, and at their close the company adjourned for coffee and conversation.

AT the beginning of the war the German professors were mobilized to justify the German aggression. They now appear to be organizing with the object of appealing to foreign nations as well as to their own countrymen to recognize that, owing to the recent economic catastrophe, the strain on the German people is reaching breaking point. A meeting was to be held on Friday, December 15th, in the hall of the University of Berlin, under the presidency of Professor Rubner, at which addresses were to be given by Professor W. His on the decline in the standard of life among the German people; by Dr. Dippe, chairman of a German practitioners' union, on the German doctor at the sick bed of the German people; and by Professor Krautwig of Cologne, on the German child in danger.

THE chairman's bell, offered under circumstances already related to the Massachusetts General Hospital by Dr. F. William Cock, who has given a similar bell to University College Hospital, was formally presented at a dinner of the alumni of the hospital on Ether Day by Dr. Washburn, director. The president of the Alumni Association, Dr. H. F. Vickery, expressed the hope that the bell might be rung from year to year at the gatherings of the alumni, and that it might always cause the members to think of the great, friendly country across the seas, the distant mother of most of them, whose ideals for the progress of medicine and world happiness were the same as their own.

A BRONZE statue of the Prince of Wales in his robes as Chancellor of the University of Wales was unveiled on December 7th by Sir John Williams. It is the gift of Mr. T. D. Jenkins of Aberystwyth, and has been placed in front of the University College of Wales, Aberystwyth.

THE inaugural dinner in connexion with the Edinburgh Medical Schools' and Graduates' Club took place at the Grand Hotel, Bournemouth, on December 5th, the President, Dr. Hyla Greves, in the chair. The members of the club reside within a radius of twenty-five miles of Bournemouth. Over fifty members and their friends attended; amongst the latter were the Mayor of Bournemouth, Sir Daniel Morris, and General Sir Harry Brooking. The usual loyal toasts and that of Alma Mater were duly honoured, a very successful musical evening followed, and the first meeting of the club came to an end before midnight, after a very hearty vote of thanks to the chairman for presiding.

THE Friday evening discourse before the Royal Institution on January 26th, 1923, will be given by Sir Almroth Wright on the machinery of antibacterial defence.

THE house and library of the Royal Society of Medicine, 1, Wimpole Street, W., will be closed from Saturday, December 23rd, to Wednesday, December 27th, both days inclusive.

WE are informed that the Executive Committee of the National Baby Week Council has recently sent a resolution to the Ministry of Health to the effect "that the matter of vaccination in relation to infant welfare is sufficiently urgent to merit the careful attention of the Ministry of Health, and that the Ministry should take all possible steps to promote more universal vaccination of children."

AS was announced in our issue of December 2nd (p. 1089), the out-patient department of the Maudsley Hospital is now open to receive cases of nervous and mental disorder; patients with neuroses or early and recoverable types of psychosis who are desirous of treatment will be specially suitable. All forms of treatment necessary for both their bodily and mental disorders will be available to them. Medical practitioners having cases of this kind may communicate with the Medical Superintendent, Dr. Edward Mapother, at the Maudsley Hospital, Denmark Hill, S.E.5. Men patients attend on Mondays and Thursdays, and women on Tuesdays and Fridays, at 2 p.m. on each day.

AT the annual meeting of the Royal Surgical Aid Society, held at the Mansion House on December 8th, it was stated that the society was now celebrating its diamond jubilee, and that since its commencement more than 1,110,800 surgical appliances had been supplied. The treasurer announced that the society spent over £50,000 a year in supplying and fitting these appliances.

DR. F. E. FREMANTLE, M.P., has been appointed a member of the Rent Act Committee which is instructed to advise on the future of the Rent Restriction Act.

THE Board of Control has added to the committee which is inquiring into the dietaries in mental hospitals Dr. P. T. Hughes, medical superintendent of the Worcester County Mental Hospital, Barnsley Hall, near Bromsgrove, and Mr. W. J. Gibbs, clerk and steward of the Tooting Bec Mental Hospital.

SINCE 1893 Livingstone College, Leyton, has given medical courses, varying in length from nine months to one, to missionaries going abroad; it has as its object to train in medicine and surgery and tropical hygiene the missionaries of the churches before they go to the foreign field. It clearly disclaims any suggestion that the persons so trained go out as "medical missionaries"; of the 698 students who have passed through its courses many have testified to the advantage such training has given them, situated as many of them came to be in outlying spots where anything approaching medical advice, treatment, or care (as these things are understood with us) is lacking. If any further credential is needed it is furnished by the fact that the late Sir Patrick Manson was a friend to the college and a lecturer within it, and by the names well known in the medical profession which appear in the list of the teachers.

A COMMUNICATION from the Secretariat du docteur Nansen pour le secours à la Russie, dated Geneva, November, 1922, states that Dr. Haigh, a member of the Epidemics Commission of the League of Nations, who visited the provinces of Nikolaieff, Kherson, and Odessa in September, describes the serious situation of the medical and health institutions in a report addressed to Dr. Nansen. The hospitals lack everything for their good working. Drugs, linen, soap, and disinfectants are all wanting; even clinical thermometers are very scarce. Dr. Haigh fears that the lack of preventive equipment will result in a grave extension of the epidemics of typhoid, typhus, and relapsing fever during the coming winter. The medical staff, badly equipped, and even suffering from hunger, is making a desperate struggle with the situation.

ARTICLE 15 of the Dangerous Drugs Regulations authorizes the master of a ship not carrying a duly qualified medical practitioner to obtain supplies of the drugs required by the Merchant Shipping Acts. This provision does not apply to foreign ships. It is now suggested that port medical officers of health should be authorized by the Secretary of State to grant certificates for the supply to foreign ships of a quantity of the drugs sufficient for the period of the voyage to the home port. The Minister of Health has addressed to port sanitary authorities a circular (357 of December 1st, 1922) inquiring whether they would be willing to allow their medical officers to give the necessary certificates.

A COURSE on "orthopaedics indispensable to all practitioners" will be given by Dr. Calot at 59, Quai d'Orsay, Paris, from January 22nd to 28th, 1923. The demonstrations, which will be accompanied by English explanations, will begin at 2 and terminate at 7 p.m. each day.

THE University of Paris has recently conferred honorary degrees on Professor Bordet of Brussels and Professor Ehlers of Copenhagen.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London:* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

HORSLEY'S WAX.

"C." asks (1) whether Horsley's wax is used hot for surgical purposes, (2) how it is sterilized before use, and (3) what means are used for keeping it soft in the operation room.

*** We are indebted to Mr. Percy Sargent for the following replies to these questions: (1) It is used warm, at such a temperature that its consistence is just sufficiently soft for easy manipulation. (2) It is heated in a suitable vessel at the temperature of boiling water for five minutes, and then poured into saline or weak mercury perchloride solution at 105° F., from which (3) it is used as required during the operation.

INCOME TAX.

"T. M. H." had "dry rot" in his premises—used solely for professional purposes—and had to expend £180 on repairs. The inspector of taxes has allowed a deduction of one-half only.

*** Our correspondent does not quote the inspector's ground of objection to the full allowance. The only objection to allowance of the whole which occurs to us as having some validity is that if there was "dry rot" in the premises when "T. M. H." acquired them a portion of the total cost may have to be regarded as part of the capital expenditure necessary to obtain the premises in a proper condition for use. Prima facie the whole amount would seem to be allowable.

"H." bought a car in 1915 for £200 and sold it in 1922 for £130, buying a high powered car for £495; a car of the same make and power would then have cost £350.

*** The amount of allowable renewal cost is £350 − £130 = £220; we assume that the original car was not purchased at second hand.

LETTERS, NOTES, ETC.

PREVENTION OF PUERPERAL INFECTION.

DR. EDGAR R. IVATTS writes: I think the fact that the death rate from puerperal fever is "higher" in the county of Lancashire than other English counties admits of a fairly simple explanation. It is due to the uncleanly habits, more particularly in the rural districts. The folded counterpane or old sacking placed under the woman's hips, which only partly protects the bed, is as often as not under the sheet and not infrequently is placed between the bed and the mattress, so that the woman is left lying in a circle of soaked soiled bedding until it dries underneath her. In some houses old clothes and dirty rags are thought quite good enough to absorb the after-secretions, and often these are not very frequently changed. Further, it is, or used to be, a very prevalent notion that a woman should not have any of her personal clothing changed until a day or two after parturition or else she will "catch her death i cold"; cold, it is supposed, being the cause of most of the mishaps occurring after child-birth. I have myself more than once changed a woman's soiled clothes on visiting her again, as I knew it would not be done otherwise. I am not a pathologist but would imagine that soiled bedding, soiled night-shirt, and possibly dirty clothes on vulva, *plus* warmth and moisture under the bedclothes, would encourage the growth of pathogenic organisms in a comparatively short time. The apparent transmission of the complaint from one to another is probably due to the same causes operating among people of the same habits. The comparative absence of puerperal sepsis in lying-in hospitals I should attribute to the wholesome surroundings and the scrupulous cleanliness observed in such places.

LEFT-HANDEDNESS AND STAMMERING.

THE inquiry by Dr. C. L. Lapper (November 18th, p. 1004) has led Dr. J. A. FRETTON (Chacewater, Cornwall) to send the following note: A girl aged about 6 years was left-handed from birth; her mother had been taught by her mother that if a child who was left-handed from birth and had been taught to write with the left hand was changed over and taught to write with the right hand that child would stammer. She had sent her own little girl to school and the child then wrote with the left hand. She gave instructions at the school that no attempt was to be made to get the child to write with her right hand. The teacher thinking, however, that she knew better, insisted on changing the bad habit, and during the mother's absence from home actually taught the child, successfully, to write with her right hand. The child soon developed a distinct stammer in speech. On the mother's return she at once had the child put back to the old habit to use the left hand when writing, and the stammering soon after disappeared. When seen by me the child at the mother's request wrote her name first with the left hand and then with the right. The stammering is now gone.

DR. W. INMAN (Portsmouth) has also sent some notes, founded on an investigation in connexion with the relation of left-handedness to squint and stammering in many hundreds of left-handed persons. He considers that compulsion should not be used, having observed that stammering and squint, among other nervous symptoms, may result from it. "The left-handed child," he says, "is a rebel. The chief difficulty in the study of his characteristics lies in determining whether he is a rebel because he resents interference with his inborn aptitude and right to use his left hand, or whether his left-handedness is intended to be a clear sign to the parent that something has gone wrong with the emotional life of the child. The evidence is in favour of the latter. . . . The time to interfere will arise when it has been proved that a left-hander is not as efficient and useful a member of society as the right-hander. Even then the proper course to pursue will be to find and deal with the cause of the habit. . . . If Dr. Lapper cares to refer to my letter on alopecia and squint in the JOURNAL of November 4th (p. 893), he will see that there are other associations of interest in connexion with left-handed activities."

UNSUSPECTED PREGNANCY.

DR. R. BROOM (Douglas, South Africa) sends us the following note to add to the cases published recently in our columns: About twenty years ago I was called to see a lady who had just given birth to a child. It was her second child, and I had attended her first confinement. She lived about one hundred yards from my own house, and I must have seen her at least every month, though not professionally, as she was exceptionally healthy. She was a large, fat Jewess, and she explained to me that she had never once suspected that she was pregnant. Menstruation had occurred every month, and on this occasion, having a little more pain than usual, she lay down and her husband gave her two glasses of brandy. Presently, before anyone could be called, the baby was born—quite an average-sized child. I have not the least doubt that the mother never suspected her condition. Her husband was a well-to-do man and would have grudged his wife nothing. Yet she had not a stitch of clothing in readiness for the arrival.

TINNED FOOD.

A CORRESPONDENT in Kashmir, after stating that in the bazaars there tins are sold which have changed hands many times, and must be from eight to ten years old, expresses the opinion that if tins were stamped and labelled, certifying the date of tinning, some protection would be afforded. The suggestion is not new, but we believe it to be quite sound. The jury at the inquest on the Loch Maree victims added a rider to their verdict to the effect that every vessel containing preserved meat, fish, fruit, or vegetables intended for human consumption should bear a distinctive mark by which, if necessary, details of manufacture might be traced.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 30, 31, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 220.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
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Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

Remarks
ON
HODGKIN'S DISEASE.*

BY
THE LATE SIR JAMES GALLOWAY, K.B.E., C.B., M.D.,
CONSULTING PHYSICIAN TO CHARING CROSS HOSPITAL.

[*With Special Plate.*]

ENLARGEMENT of visible lymphatic glands is a sign of disease quickly noticed by the sufferer and usually a cause of anxiety to him. In many cases it is also a cause of anxiety to the physician. It is true we are often able to reassure the patient—for instance, when it is recognized that the enlargement is due to septic infection within the lymphatic drainage system of the affected glands. Unless too far advanced, the cure of the original infective focus will cause the enlargement of the glands to disappear. In other cases we may be able to discover that the enlargement is due to a chronic infective process, such as tuberculosis, or to the occurrence of new growth, either primary or secondary in character. In such cases there is sufficient cause for alarm, but we have the advantage of understanding something of the nature of these enlargements and the satisfaction of knowing how much can be done and what should be avoided. But there are still other instances in which we are quite ignorant of the cause of the enlargement, but we do know the progressive nature of the disease. The most important example of this class is Hodgkin's disease. A recent writer has stated that this disease "presents the most hopeless condition in the whole domain of medicine." It cannot be denied that there is much truth in such a statement; it may, we trust, prove to be too emphatic. In this lecture I propose to draw your attention to certain manifestations of this disease in the hope of stimulating interest and investigation.

It is clear that the serious nature of the malady and the mystery of its occurrence must have made an impression on the mind of Dr. Thomas Hodgkin when he wrote his paper on "Some morbid appearances of the absorbent glands and spleen"[1] in the year 1832. In the series of cases he describes he saw and noted the association of prolonged illness with enlargement of the lymphatic glands and the formation of new tissue resembling the lymphatic glands in the spleen. It cannot be said that his observations are presented in a very attractive form. Hodgkin apparently did not proceed with his investigation of the subject, and the record of his discovery appears to have been almost forgotten. Dr. Richard Bright[2] referred to Hodgkin's cases in his description of certain abdominal tumours, but with this exception Hodgkin's observation seems to have been lost sight of until Sir Samuel Wilks[3] once more drew attention to the subject of "Enlargement of the lymphatic glands combined with a peculiar disease of the spleen" in 1856, and, recognizing the priority in discovery, spoke of "Hodgkin's disease." Wilks strangely had been in ignorance of Hodgkin's description during his earliest work on this subject, but at the end of his paper he writes: "It is only to be lamented that Dr. Hodgkin did not affix a distinct name to the disease, for by so doing I should not have experienced so long an ignorance—which I believe I share with many others—of a very remarkable class of cases, the recognition of which would have guided both myself and others to an explanation of some more recent cases coming under our notice." If Sir Samuel Wilks could now look back on the record of descriptions and investigations of this disease he would sympathize with the difficulty of affixing a "distinct name to the disease."

Since those days the disease has been carefully studied, using all the means at the disposal of modern investigation; its possible association with tuberculosis has been discussed—many have held that it is in reality an unusual manifestation of tuberculosis infection, an opinion probably now held by but few; the peculiar fever associated with the disease has been noted and looked upon as evidence that the disease is an unrecognized form of relapsing fever. Its relations to disorders of the blood, especially the varieties of leukaemia, have been investigated, and still we are unaware of the cause of the disease or its exact morbid relationships. The various synonyms which have been suggested are in some cases useful in laying stress on features of the malady; but it appears to me best still to adhere to the name of "Hodgkin's disease," especially as new "distinct names" do not take into account sufficiently the fact which becomes more evident—that we are dealing with a general specific disease associated with progressive infection of susceptible structures.

A very interesting chapter of medical bibliography could be written respecting Hodgkin's disease, especially if note were made of some of the distinguished writers.

The disease is so widely distributed, and its main features are now so well given in many textbooks, that it is unnecessary as well as inopportune for me to describe them in this place. I propose to illustrate points in its symptomatology, using for this purpose cases recently under my own observation. I think that the cases will support the conception of the malady which I have stated.

THE OCCURRENCE OF UNUSUAL PROTEIN IN THE URINE.

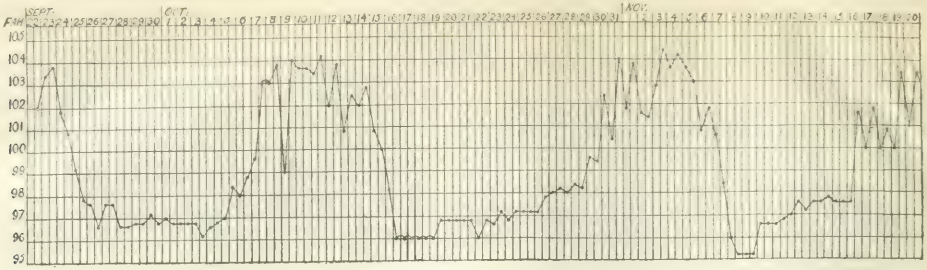
Apart from the complication produced by true nephritis, I believe that the occasional or temporary occurrence of albumin in the urine in small quantity is not uncommon in Hodgkin's disease, just as in many other chronic maladies, and is probably not of special significance; but the incident I am about to relate is in a different category. I have had recently under close observation, until the time of his death in Charing Cross Hospital, a case of the disease in a man. Early indications of the disease, such as enlargement of the cervical and inguinal glands, appear to have been noticed in the early part of 1919. He came under my close observation in 1920, and was then in fair health, although the nature of his malady was clear. In July, 1920, I examined his urine carefully; it had a specific gravity of 1.016, and contained no albumin and no sugar. I again saw him in the early part of 1921, when he told me that something unusual had happened; at night-time, he said, he was troubled by having to pass urine in large quantities, although during the daytime he was little disturbed in this way. On examining his urine on this occasion I found the specific gravity to be 1.014. On proceeding I saw the faintest possible cloud after acidulating the urine and heating. To my surprise this cloud disappeared on heating still further, and showed itself again on cooling. Treating the urine with picric acid saline I obtained a heavy flocculent precipitate estimated in an Esbach's tube to be about 14 parts per 1,000. It was now quite clear that the urine contained a protein of unusual character, and I suspected that it might be an example of "Bence-Jones albumin." Careful and repeated examinations showed that this peculiar protein was constantly present. It occurred in large quantities, varying from 1 to 2 up to 10 to 15 parts per 1,000 by Esbach's method. This peculiar protein remained present during the rest of his life; the symptom of polyuria gradually diminished, and in the later stages the amount of this protein present was considerably less than when first observed. Fortunately, when the patient had to be admitted to hospital I had the co-operation of my colleague Mr. Sydney W. Cole. The characters of the precipitate have been carefully investigated, both at Charing Cross Hospital and in the Biochemical Laboratory, Cambridge. I hope that Mr. Cole will publish shortly a full description of this unusual substance. In the meantime, by way of identification, I can give the following description sent to me by Mr. Cole:

The protein is similar to the "Bence-Jones albumin" in that it is coagulated on heating, redissolves on further heating, and reappears on cooling. It differs in several respects:

Bence-Jones Protein.	*New Protein.*
Coagulates at temperatures under 55° C.	Under the most favourable conditions it does not coagulate under 75° C. Full coagulation at 79° to 82° C.
Coagulates at 55° C. in the presence of a minimum amount of salt and acid.	Only coagulates in the presence of a considerable amount of acids, and salts like sodium chloride or ammonium sulphate.
Difficult to coagulate.	Becomes quite insoluble if kept at 80° C. (in the presence of acid and salt) for some minutes.
Even when highly diluted exhibits a white ring of precipitate when poured upon strong HCl (Bradshaw's test).	Not precipitated by HCl under any conditions.

The new protein is best detected by noting the precipitate in the cold with sulpho-salicylic acid—the urine itself failing to give a

* Sir James Galloway, whose death on October 18th has been so great a loss to clinical medicine, left behind him notes he had prepared for a post-graduate lecture he was to have delivered before the Fellowship of Medicine and Post-graduate Medical Association on October 11th. They have been put in order by Sir William Hale-White and are here published. It is probable that Sir James Galloway would have made the lecture longer had he survived.



TEMPERATURE CHART.

heat coagulum under optimum conditions of reaction (that is, just acid to brom-cresol-purple). The new protein often separated in flocculi as the urine cooled.

Microscopic and other investigations of the urine were frequently carried out, and gave no evidence of true nephritis. The autopsy completely confirmed the diagnosis of the case. The kidneys were unusually affected; the capsules were greatly thickened, but stripped off easily. There were cysts in both kidneys; microscopical examination showed that the cortices of the kidneys contained small areas of the characteristic overgrowth of the disease.

THE FEVER OF HODGKIN'S DISEASE.

In all cases of this disease the body temperature is raised at some time. On looking over many temperature charts the occurrence of fever seems often to be irregular and comparatively mild in degree. But in a few cases the course of the temperature is extraordinarily regular, both in its exaggerations and in its relapses. In a characteristic case the chart is one of the most remarkable within medical knowledge.

The temperature of other cases, which appears at first sight to be irregular, on closer examination gives evidence of a definitely periodic course. The peculiar character of the temperature has attracted the attention of many observers; its occurrence was emphasized by Pel[4] of Amsterdam, and by Ebstein[5] of Göttingen, who described such cases as examples of an unusual type of relapsing fever.

I have recently had under my observation a patient whose temperature was a very perfect example of this relapsing type. I have a complete record of his body temperature during a period of five months preceding his death. After being nursed at home, and later in a private nursing home, he was admitted to Charing Cross Hospital under the care of my colleague Mr. Peter Daniel. I had therefore frequent opportunities of seeing the patient during the last two months of his life.

On examination little could be made out in the way of physical signs. None of the easily palpable lymphatic glands were enlarged, although I suspected that the retroperitoneal lymph glands might be. These, however, were not easily palpable. After death the glands extending along the whole of the left side of the lumbar vertebrae formed a large mass, the glands in the groin were also enlarged, and there were white nodules in the spleen.

During the relapses of the fever he was deeply unconscious, with low delirium, and resembled a severe case of typhoid fever about the third or fourth week. When the temperature remitted he recovered consciousness to a very marked degree and improved greatly in general appearance. But even in the afebrile periods the patient was obviously seriously ill.

On studying the temperature chart we observe that the fever is markedly relapsing in type; there are febrile periods of from five to eleven days in duration, succeeded by periods of pyrexia usually longer than the periods without fever. The pyrexial period in what may be regarded as atypical outbursts lasts for about twelve days; the cycle of the disease, reckoning from the commencement of the afebrile period to the end of the period of pyrexia, appears to be on the average about twenty days.

The rise of the body temperature is rapid, reaching an elevation from subnormal or normal to 104° or 105° in the course of forty-eight to sixty hours. This rapid rise was associated with a certain amount of shivering and other evidences of a febrile attack, especially with rapidly increasing and severe toxaemia. During the period of raised temperature the patient was almost unconscious, as if severely poisoned; he could, however, be roused to answer simple questions, but with great difficulty.

After the period of eleven or twelve days the fall of temperature took place, usually more rapidly than the rise. Thus a fall from 104° or 105° to subnormal ranges of 96° and 97° would occur within forty-eight hours. After four or five days of subnormal temperature the curve would again rise slowly towards the normal, then suddenly the upward curve would show itself, indicating the commencement of the period of relapse.

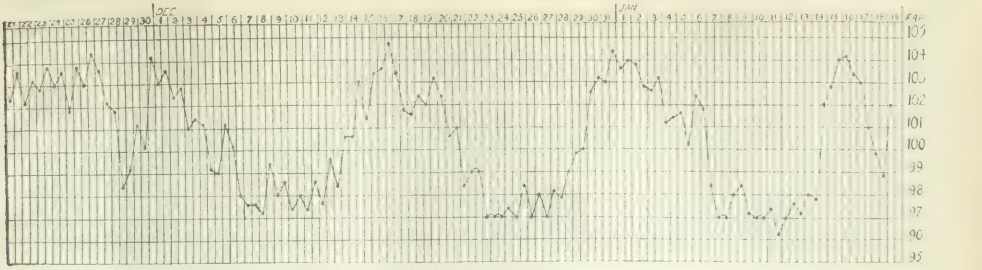
This temperature chart also suggests that two attacks of fever might succeed each other rapidly, so that there would be an unusually long pyrexial period of about twenty-one days, but during such a prolonged febrile attack definite remission of fever occurs, indicating the usual limit of a febrile period, succeeded immediately by a new access of fever. It was remarkable how rapidly the patient recovered consciousness when the temperature fell.

I have had this prolonged record of fever reduced from the four-hourly charts to a small scale of one-tenth of an inch to each observation (see Chart). As nearly as possible I have taken the temperature record of 8 o'clock in the morning and 8 o'clock in the evening as indicating the course of the fever. The reduction has brought about the appearance of exaggeration of the variations of temperature relatively to the time. Bearing this in mind the reduced chart demonstrates very well the peculiar relapsing nature and the severity of the fever. I owe to my friend Professor Arthur J. Hall[6] of Sheffield the suggestion of arranging such prolonged temperature curves in the way described. Professor Hall showed me a chart arranged in this manner in a similar case of prolonged Hodgkin's fever.

On examining such a temperature curve we get a strong impression that the disease characterized by this fever is caused by a specific poisoning; also that this poisoning is of infective and in all probability of parasitic nature; and further, that the periodicity of the temperature depends on some such event as the life cycle of a parasite. It is a facile suggestion to make—that the infective agent may be a protozoon. Unfortunately, as yet we have no definite evidence that a parasite is the cause of Hodgkin's disease.

THE CUTANEOUS SIGNS OF HODGKIN'S DISEASE.

Probably in all infections certain tissues are more susceptible to the morbid influence than others. This is very clearly the case in Hodgkin's disease. The lymphs glands and allied structures are peculiarly susceptible. It might at first be thought that as the skin does not contain obvious lymphoid structures, with the exception of the all-pervading lymphatic channels, it would not usually show signs of the malady, but the observation of patients teaches that the skin not unusually gives evidence of the disease. These manifestations fall into two categories. By far the most important is the appearance of small erythematous points or macules on the skin of the body and the extremities. Sometimes these become distinctly papular, raised a little above the surface; usually they disappear, leaving a faint staining of the skin. Very rarely these papular lesions become slightly vascular. In association with the enlargement of the lymphatic glands, the cutaneous condition closely resembles the severer forms of prurigo. As the result of these lesions, aggravated by friction and scratching, wide areas of the skin may become thickened and swollen, producing an exaggeration of the natural texture of the skin, emphasizing the folds and wrinkles, and



CONTINUATION OF TEMPERATURE CHART.

giving an elephantoid appearance. This condition of the skin closely corresponds in appearance with what has been named lymphodermia. Coexisting with the above state the surface of the skin may be dry in some cases, desquamating in fine scales, and very often showing widespread pigmentation of a pale yellow-brown colour. But the most important of all the cutaneous symptoms is pruritus. I believe that the misery experienced by the itching in some cases of Hodgkin's disease is unexampled in other maladies. It seems to occur very commonly in mild degree, but in those cases in which the papular lesions develop the itching is intense and most exhausting. Nothing seems to be able to control the desire to scratch and rub the affected skin. The patients scratch open the papules, and only then will they admit that they have a certain amount of relief. Anyone who has to deal with a severe case of Hodgkin's pruritus will not fail to remember the misery of the patient and the difficulties experienced in advising treatment.

The histological examination of the skin in such cases shows two sets of lesions. In the first there are the usual changes occurring in severe non-pyogenic dermatitis. Such changes might arise from the specific poison of the disease itself or as the result of absorption from the newly formed tissues of the disease. Secondly, in some cases the formation of new cells in the neighbourhood of the blood vessels and lymphatic channels seems to be of a special character and to resemble the characteristic overgrowth of the disease.

In addition to these generalized cutaneous conditions, which are not very uncommon, there occurs much more rarely the formation of small tumours and nodules in the skin. They are often numerous, small, up to the size of a broad bean, flattened rather than definitely raised from the surface, and pale pink or brownish in colour. The histological examination of these nodules shows that they are composed of the characteristic Hodgkin's "granuloma." These nodules may occur apart from the other indications which I have mentioned.

These cutaneous lesions are not only important in themselves, but they have a close resemblance to the skin manifestations of other diseases. The most striking of these is the distressing malady known as mycosis fungoides. Just as in Hodgkin's disease, mycosis fungoides seems to be caused by a general infection of the body. The cutaneous manifestations fall into two groups: a widespread inflammatory change in the skin, and the formation of tumours. The histology of the tumours closely resembles the histology of the granuloma in Hodgkin's disease, so much so that certain very competent observers have come to the conclusion that mycosis fungoides is but a special manifestation of Hodgkin's disease, affecting mainly the skin. It is very important as well as interesting to note that the cutaneous manifestations in the varieties of leukaemia also resemble in many of their features the conditions mentioned. There may occur a widespread pruriginous dermatitis on the one hand, and the formation of nodules composed of characteristic cellular elements on the other.

TREATMENT.

As we are yet ignorant of the cause of this disease, its treatment is unsatisfactory. There is still too much truth in the opinion that there is no recorded case of cure or recovery. There are, however, methods of alleviation.

Arsenic seems to be the only drug which has any beneficial influence. A considerable amount of evidence shows that the drug is of value, at any rate in certain cases. It has been used in various ways—by the mouth, subcutaneously, and, since the introduction of the salvarsan group of preparations, by intravenous injection. I have used the drug in a considerable series of cases, and have come to the conclusion that benefit is most conveniently obtained by its administration in the form of sodium cacodylate. The plan I usually follow is to prescribe the cacodylate in quarter-grain doses by the mouth, repeated during the day till as much as a grain or a grain and a half is administered daily. The patients bear this preparation well, with little intestinal discomfort. It is usually an indication to stop administering the drug, temporarily, when the characteristic garlic-like odour can be appreciated on approaching the patient closely. As a result of the administration of the drug, I believe that I have seen the glands diminish in size and the patients become more comfortable. A point of some interest has to be borne in mind. It appears that in some of the cases who have developed the characteristic pruritus of the disease, arsenic, at any rate after a time, seems to increase the pruritus. On stopping the drug I have known the pruritus diminish in degree.

A second method of treatment of undoubted value in certain cases of the disease is the use of x rays. The most distressing and dangerous complications of the disease occur when the glands within the thorax are affected. They may increase in size, producing at first discomfort, then symptoms of serious dyspnoea with stridor, owing to the pressure of the tumours on the trachea, bronchi, and other structures. A good many cases are now on record showing that the careful use of x rays in such cases of mediastinal Hodgkin's disease has brought about a great improvement in the symptoms and much comfort to the patient. Not only so, but repeated x-ray examination of the chest in these cases shows very clearly that, at any rate, the shadow produced by the tumour is greatly shrunken, no doubt owing to diminution in size of the glandular masses.

I have under observation at the present time a lady who was brought to me with clear evidences of Hodgkin's disease. There were enlarged glands in the axilla and in other parts of the body, but the main seat of the disease seemed to be those in the right side in the mediastinum. The patient suffered from dyspnoea with severe exacerbations and much stridor, so that her life was in immediate danger. She was treated by my late colleague Dr. Ironside Bruce, more than two years ago, with very satisfactory results. The patient improved, the dyspnoea and other discomforts almost disappeared, and she was able again to undertake her duties in her house. More than a year after a recurrence of the symptoms took place and she was once more treated by Mr. Stanley Melville. The favourable results, with relief of the symptoms, once more occurred. The patient after two and a half years still remains free of her symptoms and is able to carry on her duties. (See Figs. 1 and 2.)

In this case an enlarged gland was removed from the right axilla and shows the characteristic histological structure of the disease. I am glad to be able to demonstrate the x-ray photographs in this case, before and after treatment, and I have also had the advantage of comparing with these the x-ray photographs in a very similar case with similar results treated by my colleague Dr. Russell Reynolds.

There is one observation I should like to make with respect to x-ray treatment of this disease—the lesson was strongly impressed upon me when treating some cases with the help of my late colleague Dr. Ironside Bruce. It seems to be possible in certain cases, and apparently when too rapid resolution of the lymphoid masses takes place under x rays,

that very severe reactions with serious rise of temperature and other untoward results may follow the *x*-ray exposures. This phenomenon suggests that alien protein poisoning occurs as the result of the breaking down and absorption of the newly formed cells. It must, however, be stated that the tumours of Hodgkin's disease do not always diminish under *x* rays. In some cases the application has little or no beneficial effect; it is possible that in these cases much fibrous change has taken place in the glands, so that little beneficial effect from *x* rays can be expected.

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NINETIETH ANNUAL MEETING

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SECTION OF SURGERY.

Professor H. ALEXIS THOMSON, C.M.G., M.D.Edin., F.R.C.S., President.

DISCUSSION ON SURGICAL TREATMENT OF NON-TRAUMATIC AFFECTIONS OF THE SPLEEN.

OPENING PAPERS.

I.—JAMES CARSLAW, M.A., M.B.,

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IT has long been known that the spleen is not essential to life. Even in the sixteenth and seventeenth centuries there were cases of successful removal of spleens that protruded through wounds of the left side, and by the end of the seventeenth century experiments on the spleen began to be done on animals. It was gradually established that the spleen could be done without, and that after its removal certain compensatory changes occurred in the lymph tissue of the liver and in the lymphatic glands. Thus the way was paved for the deliberate removal of the spleen in man in conditions in which it was enlarged by disease. However, it has been only in the last few years that any clear indications for this operation have been established, great assistance in this matter being got from the systematic examination of the blood. At first unsuitable cases were chosen—notably some advanced cases of leukaemia—and the mortality was so alarming that the operation was reserved almost entirely for cases of injury. But the technique of splenectomy now presents no serious difficulty and in such suitable conditions as splenic anaemia and acholuric jaundice the mortality, according to recent statistics like those of the Mayo Clinic, is less than 10 per cent., and in a large proportion of the successful cases the patients may be considered as cured.

In considering this subject generally one is straight away confronted with one's ignorance as to what the real functions of the spleen are. A large literature has grown up on this subject, and much experimental work has been done, an excellent summary and discussion of which will be found in Sir Berkeley Moynihan's book on the spleen,[1] which has a very full bibliography. This will be my excuse for making but few detailed references to the literature. A difficulty that meets one in studying all this work is the difficulty of reconciling the results of many of the experiments on animals with the clinical findings in the human subject. I shall therefore only mention some of the more outstanding and agreed upon conclusions. The spleen has no doubt *some* relation both to the formation and the destruction of blood cells. Blood cells are probably not formed by the spleen except in embryonic life. But it may be that some internal secretion of the spleen influences the bone marrow, which is *the* blood-forming tissue of the body, stimulating the formation of red cells and perhaps inhibiting that of the white cells. On the other hand, the evidence of blood destruction in the spleen is quite strong, and no doubt it is this organ which is most concerned in the destruction of the used-up red cells and in passing on the products of these cells to the liver for the formation of bilirubin, etc. To a lesser extent the liver in health shares in this work. In certain diseased conditions this haemolysis is exaggerated, and this is what mainly explains the anaemia and in some cases the jaundice that occur. It is the removal of this destructive process that is in most cases the principal indication for splenectomy. When the spleen has been removed by operation no doubt the liver and perhaps also the lymphatic glands take over its former duties.

There is little doubt also that the spleen exercises important phagocytic functions in regard to the micro-organisms of many infectious diseases. This has something to do with the enlargement of spleen that occurs in most of the infections and in septicaemic conditions generally, also in such diseases as malaria, kala-azar, and syphilis. In this connexion the experiments of Morris and Bullock[2] on rats are especially interesting, showing that splenectomized rats are less resistant to various infections than the normal controls, but I do not think this has been confirmed in the human subject.

There are many diseases in which splenomegaly occurs. It is a feature in varying degrees, often of diagnostic importance, of the infective fevers and septicaemia, and also in the protozoal infections, in all of which one may say no call for surgical measures need arise. Then there are a number of blood diseases of great interest, in which the cause, probably an infective one, is not known. In some of these the splenic enlargement may be taken to be a part only of a general condition arising elsewhere, and in such cases any operation on the spleen is uncalled for or at least is a doubtful question. Pernicious anaemia may here be mentioned, and although many advocate splenectomy in this disease, even without splenic enlargement, and large numbers of successful splenectomies have been performed, it is generally agreed even by surgeons that the illness goes on and that the ultimate result is no more satisfactory than that attained by medicinal remedies.

Another obscure disease which in chronic cases gives rise often to very large spleens is leukaemia, and in spite of the advocacy of the Mayo Clinic I cannot agree that the spleen should be excised in such cases. This disease is principally one of the bone marrow, some infective agent causing great overaction of the white cell producing marrow and throwing into the circulation hosts of actively proliferating cells, which multiply in the lymph structures of the body generally and particularly in the spleen. Removal of the spleen in such cases is only dealing with a small part of the trouble, and that not causal. Erythraemia or Vaquez's disease is somewhat analogous, being the result of an overactivity of the red cell producing marrow, and although the spleen does enlarge in this disease this is probably the result of overwork of the spleen in red cell destruction and of the nature of a compensatory hypertrophy. The inference to be drawn from this would be that in Vaquez's disease the last thing to do would be to remove the spleen. I might also mention Hodgkin's disease here as one in which the enlargement of the spleen is only a part of a general hypertrophy of lymphoid tissues, usually most marked in groups of lymphatic glands.

But there are two groups of cases where the disease, probably a toxic agent of some kind, seems to be centred in the spleen, and it is in these that the successes of splenectomy are got. There are the splenic anaemias and certain cases of acholuric jaundice (some hereditary and some acquired) that have been classified during the last twenty years or so. I may here suggest that splenic anaemia (and I would use the term "Banti's disease" as synonymous) is probably not an entity. Cases usually become grouped under that heading by a process of exclusion and are found by the pathologists to present quite a variety of changes. There is still much work, clinical and pathological, to be done before the splenomegalies of this group are satisfactorily classified.

I would like to refer to some cases which have been treated in some of the wards of the Western Infirmary, Glasgow, in the last few years and to make some observations based on these cases.

CASE I.

S. R., a young girl of 8, was admitted to the Western Infirmary on July 26th, 1912, under the care of Dr. John S. McKendrick, and an account of this case was published in the *Practitioner* (November, 1914).[3] She gave a history of ill health for four years with increasing anaemia, and latterly haemorrhages into skin and retinae. There

was nothing of note in the family history. There was no enlargement of lymphatic glands, slight enlargement of liver, and the spleen reached nearly to the umbilicus. Wassermann test was negative. Examination of the blood gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
July 27th, 1912	2,550,000	7,800	25%	0.5
August 5th, 1912	2,700,000	11,400	25%	0.46
August 28th, 1912	Splenectomy			
August 29th, 1912	4,650,000	34,800	35%	0.38
September 4th, 1912 ...	4,170,000	12,500	35%	0.4
November 12th, 1912 ...	4,890,000	12,000	70%	0.7

Blood films before operation showed more small lymphocytes than usual, but immediately after operation there was a very marked polymorphonuclear leucocytosis. As medicinal treatment was disappointing her spleen was removed by Dr. Alexander MacLennan on August 28th, the patient making an uninterrupted recovery. A small portion of a rib had been previously excised and found to be hyperplastic.

The pathological report by Dr. (now Professor) Shaw Dunn described the spleen, which weighed 4½ oz. (about twice the normal for patient's age), as of firm consistence and congested, with enlargement of the lymph nodes. The main departure from the normal in films from the spleen was the presence of normoblasts and myelocytes and an unusual number of polymorphs and eosinophile leucocytes.

The patient left hospital well in November, 1912, and I am able to report that she is still alive and well. I had a letter from her mother this month in which she says that the girl, who is now a tall young woman of 18, has had no serious illness since her operation. She has, however, always been rather pale and has not yet begun to menstruate. This appears to be a case of splenic anaemia and resembles Case VI in many respects.

CASE II.

E. S., a poorly developed youth of 17, was admitted to the Western Infirmary on March 13th, 1915, complaining of swelling of the abdomen of three or four months' duration, and later also of swelling of the feet. He was under the care of Professor T. K. Monro, who has asked me to record this case and also Case IV. The patient was anaemic-looking, and his gums were soft and bled easily. He had slight enlargement of glands on both sides of his neck. The hepatic dullness was small, but the spleen was much enlarged and reached to 2½ inches below the level of the umbilicus. The Wassermann test was negative. Examination of the blood gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
March 19th, 1915	4,440,000	3,000	62%	0.7
April 25th, 1915	4,696,000	4,200	70%	0.7
April 27th, 1915	Splenectomy			
May 2nd, 1915	5,235,000	10,600	85%	0.8
June 25th, 1915	4,310,000	7,800	80%	0.9

Blood films showed nothing abnormal. The fragility of the red cells was normal, but the coagulation time was a little slow (7 minutes). As medical treatment was disappointing, splenectomy was performed by Sir Kennedy Dalziel on April 27th. The spleen had extensive adhesions from perisplenitis, and at the operation some cystic condition of the liver was noticed, but the kidneys appeared to be normal. He recovered well from the operation and left hospital at the end of May, apparently improved. But the tendency to haemorrhage continued, and a year later, in June, 1916, he died after three days' serious illness, having apparently had an intracranial haemorrhage.

What the nature of this case was it would be difficult to say precisely. I have not been able to trace a pathological report on his spleen. Another point of interest is that although the surgeon might consider this a successful case from the operation point of view, the ultimate result was unsatisfactory. It illustrates the fallacy attached to the statistics of recovery in these cases, but I may say it is so far the only failure among the cases to which I am referring.

CASE III.

Mrs. S., aged 33, was admitted to the Western Infirmary, to Dr. Wm. MacLennan's wards, on November 26th, 1914. She had had a cystic ovary removed in January, 1913, and was noticed then to have an enlarged spleen. In 1914 she had two miscarriages. She was a sister of Case IV, but otherwise the family history was negative. The patient was thin and pale but slightly jaundiced, though no bile was present in her urine. There was no enlargement of glands or liver, but spleen reached 2½ inches across the middle line and 3½ inches below the level of the umbilicus. Wassermann test was negative. Examination of the blood gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
February 2nd, 1915 ...	2,500,000	6,000	40%	0.8
February 10th, 1915 ...	Splenectomy			
March 2nd, 1915	4,600,000	9,800	62%	0.6
May 19th, 1915	5,435,000	10,400	75%	0.5

Blood films showed nothing abnormal about the white cells, but increased fragility of red cells was demonstrated, beginning in her case with 0.6 per cent. salt solution. The spleen was removed by Dr. Cuthbert on February 10th, and she made a rapid recovery, leaving hospital on March 19th very well. I heard of her whom the last few days and am able to say that she has enjoyed excellent health since her operation and has a child 2 or 3 years of age.

Dr. Haswell Wilson's report on the spleen is as follows: "The pulp shows general hyperplasia with great congestion of sinuses. No phagocytosis of red cells is seen, nor is there any other particular change. Some of the Malpighian bodies are rather fibrous and atrophied."

This case and that of her sister (Case IV) were clearly acholuric jaundice. Both of them had large spleens, were jaundiced, showed fragility of red cells, and in both the symptoms developed in adult life.

CASE IV.

Mrs. N., aged 36, was admitted to the Western Infirmary, under Professor T. K. Monro, on November 19th, 1914, complaining of weakness, fullness of the left side, and recurring attacks of jaundice, all of one year's duration. There was a story of biliary colic, but she had had some attacks of severe pain in the left side—presumably perisplenitis. She had no children, and the family history was negative except for the illness of her sister (Case III). The patient was slightly jaundiced, though no bile was found in the urine. There were no enlarged glands and no enlargement of the liver, but spleen was easily felt reaching to the middle line and half an inch below the level of the umbilicus. Wassermann test was negative. Some of the blood counts are given here:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
November 20th, 1914 ...	4,255,000	19,600	60%	0.7
January 9th, 1915	2,700,000		38%	0.8
November 2nd, 1915 ...	4,000,000	18,000	62%	0.7
November 3rd, 1915 ...	Splenectomy			
November 8th, 1915 ...	4,250,000	14,000	68%	0.8
November 27th, 1915 ...	3,910,000	11,400	74%	0.9
October 11th, 1916	3,800,000	10,937	72%	0.9

The fragility of the red cells was markedly increased, beginning in her case with 0.7 per cent. salt solution, but nothing abnormal was found in regard to the white cells. She was at first in hospital for seven weeks, getting arsenic and iron medicines, but seemed to get worse, and went home at her own request on January 12th. However, she returned to the same ward in October, 1915, with her blood a good deal better, but jaundice and spleen as before. She now demanded to have her spleen removed, because of the great success of her sister's operation. Sir Kennedy Dalziel operated on November 3rd, the spleen being found to be much enlarged and having many adhesions to stomach, liver, and abdominal wall. The appendix was normal, but gall stones were noticed in her gall bladder. There were signs of chronic peritonitis. She made an excellent recovery from her operation, and went home at the end of November, being reported in January, 1916, to be wonderfully better, and quite free from jaundice.

Mrs. N.'s after-history is interesting, especially in connexion with the suggestion that removal of spleen may leave the patient less resistant to other illnesses. In September, 1916, she began to complain of swelling of the abdomen, and was readmitted to the Western Infirmary in October, 1916, with ascites. On November 14th Sir Kennedy Dalziel opened her abdomen and drained the ascites, which was demonstrated to be due to tuberculous peritonitis. From this she made an excellent recovery, but her troubles were not over. In 1917 she began to have great pain, and menstruation with excessive discharge, and ultimately this was found to be due to a submucous fibroid of the uterus. In the spring of 1918 this was removed by Dr. S. G. Cameron by the vaginal route, and in 1919 a second similar fibroid had to be removed. After that she returned to good health, and is now really very well, though not quite so robust as her sister.

CASE V.

C. P., a female school teacher of 26, was admitted to the Western Infirmary, to Dr. William MacLennan's wards, on October 1st, 1918, complaining of enlargement of spleen, which had been first

noticed two months before. The family history was negative. She was sallow and anaemic and had a short dry cough, though nothing abnormal was detected in her lungs at this time. There were no enlarged glands and no enlargement of liver, but spleen was easily palpated, reaching 1 inch to the right and 2 inches below the umbilicus. Wassermann test was negative. She improved greatly under treatment with arsenic and intramuscular injections of galyl and left hospital in January, 1919. However, she was readmitted under my care in August, 1919, with the same symptoms, the spleen still reaching to the umbilicus. She again improved greatly under arsenic and galyl, though spleen remained as before, and was giving so much discomfort by its weight and interfering so much with her stomach that on dismissal in December she was recommended to wear an abdominal support. As in spite of a good holiday she was feeling quite unfit for work she returned to hospital on February 5th, 1920, and in connexion with a troublesome cough, which she still had, I detected something wrong with the apex of her right lung, although she had no spit. After a time she consented to have her spleen removed, and Sir Kennedy Dalziel operated on April 28th, 1920; there was some difficulty in the operation owing to the size of the spleen and the presence of adhesions. There was no sign of tuberculous peritonitis. However, she lost practically no blood, and made an excellent recovery from the operation, while the ultimate result has been very good. She resumed her full work as a teacher in August, 1921. Menstruation, which had been absent for a long time, returned, and when seen by me in March last she looked perfectly well.

Some of her blood counts are as follows:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
October 2nd, 1918	2,400,000	4,800	45%	0.9
October 19th, 1919... ...	3,576,000	4,200	60%	0.8
April 20th, 1920	3,400,000	3,400	55%	0.8
April 28th, 1920	Splenectomy			
June 8th, 1920	4,560,000	5,000	60%	0.6
March 11th, 1922	4,200,000	9,600	80%	0.9

Blood films in this case never gave nucleated red cells, but a leucopenia with slight excess of lymphocytes.

Professor Muir's report on this spleen is as follows: "The spleen is enormously enlarged, the weight being 5 lb. The surface shows numerous slight elevations, and through the capsule small irregular pale patches can be seen. The form of the organ is maintained and its consistence is firm. On section the whole organ is seen to be studded with numerous tubercle-like nodules, which stand out against a congested background. The nodules are of about the size of a large pin's head, of greyish colour, and arranged in closely packed clusters, in many places confluent. They are, on the whole, remarkably uniform in size throughout the organ, though one or two larger nodules are present. On microscopic examination the nodules have all the characters of somewhat chronic tubercle nodules. Caseation is present in the central parts and there are numerous giant cells of usual appearance. There is also a considerable amount of interstitial fibrosis. In spite of very prolonged search no tubercle bacilli could be found."

This appears to be a case of tuberculosis of the spleen, and it seems to be most remarkable that such a condition should be possible in a vascular organ like the spleen without general tuberculosis resulting. Splenectomy seems to have resulted in complete cure, and a very similar successful case is reported by R. Z. Giffen.[4] One of the cases reported in the *Journal of Pathology and Bacteriology* by Dr. Kettle is of the same nature.[5]

CASE VI.

S. W., a young girl of 17, was admitted to my wards in the Western Infirmary on February 1st, 1922, complaining of general weakness of at least ten years' duration, with enlargement of the spleen. She had been under Dr. Frank Charteris as an outdoor patient at the Western Infirmary Dispensary in 1916, and as she did not improve on ordinary blood tonics she was admitted to hospital, to Professor Stockman's wards, in September of that year. She was treated intravenously with tartar emetic, and seemed to improve, but the improvement was not lasting, and she continued in the same anaemic and enfeebled condition until she came back to hospital this spring. She was not only anaemic-looking, but was poorly developed for her age, and had not yet begun to menstruate. The family history was negative. There was no enlargement of glands or of liver, and spleen was moderately enlarged, reaching half-way to the umbilicus. Examination of the blood gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
February 16th, 1922 ...	2,200,000	5,600	50%	0.9
March 1st, 1922 ...	Splenectomy			
March 10th, 1922	3,000,000	9,400	50%	0.8
April 13th, 1922	4,760,000	8,600	70%	0.7
May 18th, 1922 ...	4,950,000	7,500	90%	0.9

A blood film showed "marked variation in size and shape of the red cells, some being of megalocytic type. Polychromatophilia and punctate basophilia were well marked, more especially the former. One normoblast was seen during the whole examination. No characteristic abnormality was noted in the leucocytes."

As she was making no improvement on medicinal treatment and seemed to be in danger of becoming a chronic invalid and to be likely to be exposed to the danger of serious haemorrhage, which is common in such cases and often fatal, splenectomy was recommended, and Sir Kennedy Dalziel operated on March 1st. There were no adhesions and the operation presented no difficulties, the patient making a rapid recovery. It was interesting to watch the rapid improvement in the girl's appearance within a few days of operation. When she went home in May after a few weeks at the convalescent home she looked the picture of health. I may mention that intentionally after the operation she was given no arsenic or iron, and that makes the remarkable improvement in her blood counts all the more striking.

Professor Muir's report: "The spleen is uniformly enlarged and its surface smooth; weight 2 lb. 2 oz. Its consistence is moderately firm and on section the pulp shows a uniform dark red colour due to engorgement of blood. The Malpighian bodies are somewhat enlarged and stand out very distinctly against the congested background. Films were made from scrapings of the pulp and stained in various ways. The cells, relatively scanty in proportion to the blood, are chiefly lymphocytes and mononuclears, with a few polymorphs. No abnormal cells, no evidence of phagocytosis, and no accumulation of pigment are found. Sections show a general increase of the lymphoid tissue; the Malpighian bodies are large and the germ centres very distinct. There is marked congestion of the pulp and there is some evidence of thickening of the stroma at places, but this is at quite an early stage. Scarcely any blood pigment can be found, only a few granules of haemosiderin in the pulp on treating with HCl and potassium ferrocyanide."

Clinically and pathologically this case is very like Case I, and the result seems to be equally promising. In contrast I might mention the case of a young soldier of 20 whom I had as a patient in Stobhill (the 3rd Scottish General Hospital) in 1917. He was admitted as a gastric ulcer with haematemesis but was really splenic anaemia. He had had a serious haemorrhage from stomach at the age of 15 and he died from gastric haemorrhage seven months after my invaliding him out of the army. I have no doubt his life might have been saved if he had been operated on.

CASE VII.

Mrs. A., aged 35, was admitted to the Western Infirmary under my care on February 28th, 1922, complaining of weakness. This condition of ill health commenced about seven years ago and she had also suffered from cough and spit. In October last she got much worse and was actually admitted to the Tuberculosis Department of Ruchill Fever Hospital as a case of phthisis. Repeated examinations of sputum for tubercle bacilli, however, gave negative results, and she was found to have anaemia with splenic enlargement and was treated with arsenic. Ultimately she was discharged as non-tuberculous and came to the Western. Her family history was negative. She had had one pregnancy, the child being stillborn. The Wassermann test was negative. The patient was anaemic. There were no enlarged glands. The liver was palpable and the spleen moderately enlarged. She had a cough and mucopurulent spit with some pulmonary changes not specially suggestive of tubercle. Blood examination gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
March 15th, 1922	2,300,000	3,840	55%	1.2
April 4th, 1922	2,160,000	4,875	58%	1.3
April 21st, 1922	2,330,000	4,000	58%	1.2
May 5th, 1922	Splenectomy			
May 8th, 1922	2,200,000	16,000	58%	1.3
May 24th, 1922	3,100,000	4,600	65%	1.0
June 15th, 1922	3,400,000	7,200	68%	1.0
July 5th, 1922	3,040,000	6,600	65%	1.0

The pathologist's report on blood films was: "The red blood cells show marked variation in size and shape, and megalocytic forms are numerous, nucleated reds, several of which are megaloblasts, are found. The red cells are deeply coloured and polydermatophilic and punctate basophilia are common. No characteristic abnormality of white cells is present. The blood picture is that of an anaemia of the pernicious type."

As her progress under arsenic was rather disappointing, and the outlook far from promising, I recommended that her spleen should be excised while her general condition was still comparatively good. The operation was performed on May 5th by Sir Kennedy Dalziel, and no peritonitis was found. She was very little upset by the operation. From the date of operation for two months she was given no arsenic or iron, and in spite of this there was a steady improvement in the blood counts. Thus the red cells improved from a little over 2,000,000 to over 3,500,000, and the haemoglobin from about 50 to 65 per cent. The colour index was always high, and after operation as before films showed characteristic alterations in the red cells. The blood chart in this case, as in some of the others, shows a marked post-operative

leucocytosis, the significance of which is doubtful. I am inclined to think that it is not more than one might expect after any operative interference of comparable magnitude. She has recently been put on arsenic and iron medicines, and is still under treatment in my wards.

Professor Muir's report on this patient's spleen is as follows: "The spleen is moderately enlarged; the weight is 14 oz. It is smooth on the surface with the exception of a few adhesions. It is of moderate consistence, contains much blood, and has a uniform appearance on section. The Malpighian bodies are not enlarged. The general appearance is that of a congested spleen. In films made directly from the pulp most of the cells are lymphocytes, small and large, but there are also a fair proportion of neutrophil myelocytes and polymorphs, also a considerable number of eosinophils, some being of the myelocyte type. Nucleated red corpuscles also are present, some of which are megaloblasts. No large phagocytic cells and no blood pigment were found. In sections there is little of an abnormal nature to be made out. The pulp is congested, but the proportion of cells of the leucocyte class is greater than in the previous case (Case VI.). The Malpighian bodies are distinct but not abnormal in size. There is practically no fibrosis, and there are no signs of blood destruction; practically no haemosiderin is present."

It will be interesting to watch the progress of this case. She has stood the operation very well and has much improved both in general condition and in regard to her chest condition. Instead of any deterioration of blood after operation such as is described in the case of animals there has been a fair and steady improvement even without medicines. Whether that improvement will be maintained and whether any more permanent good will result in her case than would have come with medicinal measures alone is the question. Certainly the operation does not seem to have done her any harm, but I must say I would not have recommended it unless the spleen had been enlarged. The great variation that occurs in the size of the spleen in this disease, and the acknowledged fact that splenectomy may relieve but does not cure it, show that the cause of the disease depends only in part on excessive haemolysis of red cells by the spleen. Professor Muir's report is interesting from that point of view, no definite signs of blood destruction being found in the spleen.

CASE VIII.

J. C., a tailor, aged 36, was admitted to my wards in the Western Infirmary on June 21st, 1921, with swelling of the abdomen and general weakness. These symptoms were said to have started only six weeks before, and at that time enlargement of the spleen was detected. His previous health has been good except that he had had his left lower limb amputated high in the thigh at the age of 13 for osteomyelitis. The patient looked very anaemic. The spleen reached nearly to the umbilicus and ascites was present. The liver was not palpable and there were no enlarged glands. Wassermann test was negative. His blood examination last summer gave the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
June 21st, 1921	3,600,000	10,800	36%	0.5
July 4th, 1921	3,784,000	8,400	43%	0.56
July 16th, 1921	3,312,000	6,250	36%	0.5
August 2 st, 1921	4,420,000	5,650	52%	0.6

Blood films showed nothing abnormal. He was treated with arsenic and iron and his abdomen was tapped on July 22nd. He improved so much after the paracentesis that he refused operation at this time and went home, with his spleen, however, much the same. He was able to return to work after a time and kept fairly well till the end of April, when he had an attack of diarrhoea and with this the ascites returned badly. He was readmitted to hospital on June 28th, 1922, into the same ward. On readmission his anaemia was much worse than the previous summer and the ascites was very marked. On July 10th I drew off eleven pints of fluid, but it has rapidly returned. The spleen is no bigger than before, but after the paracentesis the liver was palpable at the left costal margin, the upper border of hepatic dullness being at the fifth rib. Blood examination on present admission gives the following result:

Blood Examination.

Date.	R.B.C.	W.B.C.	Hb.	C.I.
June 29th, 1922	1,635,000	8,600	28%	0.8
July 9th, 1922	2,300,000	4,600	30%	0.6
July 13th, 1922	2,848,000	15,700	30%	0.5
July 21st, 1922	2,580,000	4,200	30%	0.6

An interesting point about this patient's blood is that the fragility of his red cells is increased, commencing at 0.55 per cent. saline solution. This test was kindly done for me by Dr. Adam Patrick. It is usually stated that such fragility is a sign of acholuric jaundice and is never got in splenic anaemia (Banti's disease). But on neither of his residences in hospital has this patient had jaundice, and his blood serum was tested by me for bilirubin by van den Bergh's method and found to be free. That suggests that the fragility test is not pathognomonic.

I regard this case as an advanced one of splenic anaemia, in which some cirrhosis of the liver has supervened, and we are at present treating the patient with arsenic and iron to improve his blood condition before submitting him to splenectomy. The patient is willing to have that operation, and Sir Kennedy Dalziel has agreed to undertake it.* A considerable number of successful cases have now been reported of splenectomy even in this advanced condition. H. B. Sweetser[6] has reported a remarkable case, and W. J. Mayo[7] has described a number of cases of splenic anaemia complicated by cirrhosis of the liver in which he operated, in five of which ascites completely disappeared after splenectomy.

These cases illustrate a considerable variety of pathological conditions. The mere finding of splenomegaly is not an excuse for operation. I would rule out interference in such diseases as malaria and syphilis, although trauma of the spleen in the subject of malaria may necessitate operation, and such a spleen has been repeatedly removed with success. I would discourage operation also in leukaemia and in Hodgkin's disease. In pernicious anaemia I am not convinced that operation is called for; certainly not if the spleen is small. It may be that there are various types of pernicious anaemia and that some of them are more suitable for operation than others. But in splenic anaemia, if the patient's health and development are chronically poor, if repeated attacks of splenic pain occur, if from its size the spleen is distressing, and above all if the danger of haemorrhage seems to have supervened, I have no doubt the spleen should be removed, and that without waiting too long. For if the disease is allowed to advance to the later stage when cirrhosis of liver and perhaps ascites have developed not only is the operation more difficult but the chances of ultimate success are lessened owing to the changes in the liver. The greatest successes of splenectomy seem to have been achieved in cases of acholuric jaundice, like Cases III and IV of my series. There are, however, mild cases of this disease which may not require operation. But if haemolysis is extreme and the patient's condition deteriorating the operation should be recommended, and splenectomy has been found to bring about complete and permanent cure. In all cases one must be prepared for unexpected results from the pathological examination of the spleens after operation and my most striking example of that is the case of tuberculous spleen (Case V).

I would like to thank Sir Kennedy Dalziel for his keen interest in and skilful surgical treatment of my personal cases, and Professor Muir for the trouble he has taken in reporting on the pathological findings.

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II.—E. H. KETTLE, M.D.,

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SPLENOMEGALY is a comparatively common condition, and is a more or less prominent feature in the pathology of a variety of diseases. Often it is merely incidental and of quite secondary importance. In typhoid fever, for example, or in infective endocarditis, the enlargement of the spleen rarely calls for any special notice; and even in such conditions as spleno-medullary leukaemia, when the massive spleen forms an integral part of the pathological picture, it still remains only a part. But when all such forms of splenomegaly are excluded there remains a residue of cases in which enlargement of the spleen is the prominent clinical and pathological feature.

In recent years the tendency to treat these forms of splenomegaly by splenectomy has become more and more pronounced, but it must be recognized that this treatment is purely empirical. Now, while no one will demand that medical and surgical treatment must always wait upon an exact knowledge of pathology—for this would almost reduce us to therapeutic impotence—and while no one will deny the triumphs of empiricism in clinical practice, yet when surgical interference implies, as it does in these cases, the removal of an organ, it is not too much to ask that we

* Sir Kennedy Dalziel performed splenectomy on this patient on August 3rd. Unfortunately, as the result of giving way of stitches, a mild peritonitis supervened and caused death six weeks later.

should at least consider what we are removing, even if we are undecided upon the justification for this course of action.

The Physiology of the Spleen.

Our first difficulty in attempting to understand the pathology of the various types of splenomegaly is our ignorance of the normal physiology of the spleen. Physiologically the spleen is a mysterious organ, and we know little of the part it plays in normal life; but one thing, at least, is certain: neither functionally nor anatomically is the spleen an entity in the sense that organs such as the liver and the kidney are, but structurally and physiologically it must be regarded as a constituent of a system or systems. Attempts have been made to link the spleen physiologically with the ductless glands and the sympathetic nervous system, and also with the alimentary canal, but the evidence in support of these views is as yet scarcely conclusive. But the place of the spleen in both the haemopoietic system and the reticulo-endothelial system is well established.

As a constituent of the haemopoietic system the spleen is chiefly active in foetal life; after birth it ceases to form red or white cells, except in pathological conditions, when the pulp may undergo a myeloid metaplasia. A moderate degree of this may sometimes be seen in pernicious anaemia and even in acholuric jaundice. I have seen it very pronounced in polycythaemia rubra, and it is, of course, a commonplace of myelogenous leukaemia. But it must be remembered that any abnormal cells present in large numbers in the circulation will tend to accumulate in the meshes of the pulp, and give the appearance of a local origin. However, though it is not normally active as an organ of haemopoiesis, the spleen is active throughout life in removing senile or imperfect red corpuscles from the circulation. This is effected by phagocytosis carried out by the endothelial and reticular cells of the pulp and not by any extracellular process of haemolysis; an important fact which must be borne in mind when considering the possible influence of the spleen in the anaemias.

Probably the most important rôle of the spleen is that which it performs by virtue of the membership of the reticulo-endothelial system which it shares with the bone marrow, the lymph nodes, and the liver. In this capacity it acts as one of the great phagocytic organs of the body, and is intimately concerned in processes of infection and immunity. Organisms reaching the spleen, either in the bodies of mobile phagocytes or in the blood stream, are engulfed by the endothelial and reticular cells, and if not destroyed may remain latent for a considerable period of time; in these circumstances they are obviously dangerous as a possible source of general infection. Such a condition is commonly seen in the splenomegaly of malaria, and a similar process of phagocytosis, with incomplete destruction of the microbes concerned by the corresponding cells of the bone marrow, is an important factor in the incidence of acute osteomyelitis and tuberculosis of bone. There is also a good deal of evidence to show that the production of immune bodies takes place in the spleen and bone marrow, for in guinea-pigs infected with cholera vibrios or typhoid bacilli extracts of the spleen and marrow are found to be far richer in these substances than extracts of other organs. Further, it has been shown that splenectomized rats are more liable to infection than normal animals.

Experimental Work.

An enormous amount of experimental work has been done in the attempt to discover what part the spleen plays in normal life. R. M. Pearce and his co-workers have been pre-eminent in this field, and in their various publications, particularly in their book on *The Spleen and Anaemia*, the literature of the subject is well surveyed. Two main lines of investigation have been pursued—the excision of the spleen, and the administration in various ways of splenic extracts. On the whole, the results have been disappointing, and there is a considerable discrepancy between those obtained by different workers. The administration of splenic extracts has given little or no information, and in any case such a line of research must always be scrutinized with care. Reasoning from the analogy of the action of thyroid and other extracts of the ductless glands, it has almost come to be accepted that the action of an extract of an organ is invariably the same as the action of the whole organ in the body. But this is not always so. The red blood corpuscle is essential to life, but the haemoglobin extracted from it is not only useless but actually poisonous when present free in the circulating plasma.

Excision of the spleen has given rather more definite results. It has long been known, of course, that the spleen is not essential to life; and careful experiments, carried out chiefly on dogs, have shown the immediate and remote results of splenectomy. Briefly these are as follows: An anaemia of the secondary type develops immediately and becomes progressively worse for about a month, when it begins to improve, a normal condition of the blood being found in about two and a half to three months. Sometimes the whole reaction may be delayed, and occasionally the final blood count is higher than before the splenectomy. The change affects the haemoglobin content as well as the number of corpuscles. There is, on the other hand, an immediate increase in the number of leucocytes, due entirely to a polymorphonuclear leucocytosis, and usually amounting to three or four times the normal. This falls rapidly to about double the normal, and then more gradually till in from one to four months the count becomes the same as before the splenectomy, though some observers state that there is a relative lymphocytosis.

A more important result, however, is seen in the increased resistance of the erythrocytes which rapidly follows splenectomy and lasts for a long period—months or even years. This increased resistance may be studied *in vitro* by exposing the corpuscles to haemolytic serum, to haemolytic agents such as saponin, or to hypotonic solutions of sodium chloride. Similarly, it may be demonstrated *in vivo*, for jaundice and haemoglobinuria can only be produced in splenectomized animals by the administration of two or three times the dose of a haemolytic poison which is required to produce a similar result in normal animals. How these results are brought about is quite unknown. The increased resistance of the red cells does not depend upon the presence of immature and possibly more hardy forms in the circulation, for these cannot be demonstrated in any numbers. But it is apparently definitely associated with the anaemia, because it is often present in non-splenectomized animals rendered anaemic by bleeding or other procedures. The lessened tendency to jaundice in anaemic animals may possibly be due to the fact that in these conditions the normal destruction of red cells is diminished, and there is less accumulation of haemoglobin and its derivatives in the liver. It is presumed that the liver has a normal saturation point of haemoglobin; if this is exceeded it is no longer possible for it to deal with the pigment and secrete it in the bile in the normal way, and jaundice ensues. In the anaemic animal the liver is hyposaturated with haemoglobin and can tolerate the amount of pigment brought to it as the result of the action of haemolytic agents, so jaundice does not occur. For the splenectomized animals a somewhat similar explanation has been brought forward. Whereas the spleen under normal conditions is the chief site of blood destruction, and rapidly passes on the haemoglobin derivatives to the liver, in splenectomized animals the blood destruction is carried out in lymphatic glands and in the bone marrow. From these widespread foci the haemoglobin derivatives reach the liver gradually and slowly; the liver is not suddenly overwhelmed by these products, but has time to assimilate and secrete them in the normal way. These explanations, however, are purely theoretical.

Later results of splenectomy are seen in the bone marrow and the lymph nodes. In the bone the fatty marrow is transformed into red marrow. This change, again, is obscure, but it possibly represents the assumption by the marrow of the function normally exercised by the spleen, of the storage of iron for utilization in the formation of fresh red corpuscles. In the lymph nodes there is hyperplasia of the endothelial cells, which become actively phagocytic of red cells and haemoglobin in conditions of artificial blood destruction. The lymph nodes therefore take over the functions usually exercised by the spleen.

These observations have all been made on experimental animals. Splenectomy, except for rupture of the organ, is rare in the healthy man or woman, and the difficulty of obtaining data from the normal human subject is very great. Such cases as are recorded, however, seem to show that the blood counts show the same variations in man after splenectomy as are seen in experimental animals.

The Pathology of the Spleen.

If the physiology of the spleen is obscure, the pathology is even more difficult. The two conditions in which it is claimed that splenectomy is of real value are Banti's disease, or splenic anaemia, and acholuric jaundice. In the primary blood diseases, pernicious anaemia and the leukaemias, there is no



FIG. 1.—Fracture of lower jaw. Showing how complete fixation was secured by a single brass wire. No splint was used externally.



FIG. 2.—Fracture of upper end of humerus; adult woman. Note gross displacement of distal fragment into axilla.



FIG. 2A.—Fracture of upper end of humerus; same as in Fig. 2. Fixed by long pin passed from upper fragment down into shaft. (Dr. A. J. Hutton.)



FIG. 3.



FIG. 3A.

FIG. 3.—Fracture of both bones of forearm, with impaction of radial fragments, and radial displacement of distal ulnar fragment, after fixation by open operation. Radial fragments corrected under anaesthetic, but not directly fixed. Ulnar fragments fixed by single fine "sprig."

FIG. 3A.—View of same, lateral aspect.



FIG. 4.—Fracture of lower end of humerus. Young adult male. Fracture T-shaped into elbow-joint.



FIG. 4A.—Same as Fig. 4 after pinning and plating. Antero-posterior view.



FIG. 4B.—Same as Figs. 4 and 4A. View in profile.

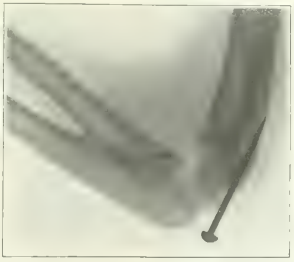


FIG. 5.—Fracture-separation, lower end of humerus; boy, aged 13. After direct fixation by two pins, one of larger type and the other a fine "sprig." This skiagram shows both still in place.



FIG. 6.—This skiagram was taken after removal of the larger pin.

YOUNG: ROUTINE TREATMENT OF FRACTURES BY OPERATIVE METHODS.



FIG. 7.—Fracture-separation of epiphysis at lower end of humerus in a boy of 7 years. The capitellar epiphysis was grossly tilted outwards.



FIG. 8.—Same as Figs. 7 and 9. Antero-posterior view.



FIG. 9.—Same as Figs. 7 and 8, after fixation of replaced epiphysis by single fine "sprig." View in profile.



FIG. 10.—Showing method of fixation by long steel pin. Fracture of outer end of clavicle; an adult male (outer fragment was impossible of correction—grossly displaced).



FIG. 11.—Fracture of clavicle, with separation, and tilting downward, of a central fragment.

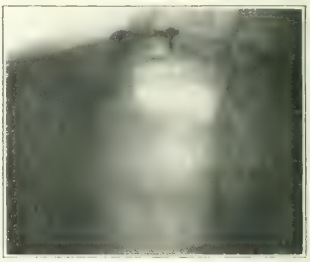


FIG. 11A.—Same as Fig. 11, after treatment by open operation, and direct fixation by small plate and encircling wires.

THE LATE SIR JAMES GALLOWAY: HODGKIN'S DISEASE.



FIG. 1.—Photograph of chest on November 30th, 1921, showing the mass in the mediastinum before treatment by x-rays.



FIG. 2.—Photograph of chest, January 11th, 1922, showing diminution of the mass under x-ray treatment carried out since November 30th, 1921.

theoretical justification for the operation. In malaria the enlarged spleen may be a source of reinfection, and in this, as in other tyes of splenomegaly, the enlarged organ may cause considerable discomfort. Further, it is liable to rupture spontaneously, or from slight trauma. For these reasons splenectomy may be justified, not only in malaria but in other splenomegalies, although the primary cause of the lesion is not influenced by the operation. But in acholuric jaundice and Banti's disease it is claimed that the spleen is the primary focus of the disease, and its removal is justified on these grounds.

In acholuric jaundice, although the spleen shows no specific change in structure, the results of splenectomy appear to be really very good, and the experimental observation that the fragility of the red blood corpuscle is diminished after splenectomy is a strong argument in support of this treatment; for increased fragility of the red cells is the characteristic feature of the disease. But in a considerable number of cases the fragility of the red cells has not altered after splenectomy, though clinically the patients have been cured by the operation. Further, all our information goes to show that the spleen is not an entity, but that its normal functions are taken over, if it is removed, by other tissues. Is it not reasonable to assume that its hypothetically evil influences may likewise be exhibited vicariously?

Splenic anaemia, or Banti's disease, presents an even more difficult problem. The terms are frequently employed synonymously, though of recent years the tendency has been to drop the name "splenic anaemia," since it is recognized that it may include a variety of conditions besides the disease described by Banti. In a small series of cases of clinical splenic anaemia (*Journal of Pathology and Bacteriology*, vol. xxiii, 1920, p. 413) I found examples of Gaucher's and Stengel's splenomegaly, as well as Banti's disease.

Banti's disease possesses the following characteristics: It occurs in young, healthy adults and runs a very chronic course. The first stage may last for twelve years, and in it the patient exhibits a gradually increasing weakness and pallor with digestive disturbances, progressive enlargement of the spleen, and a moderate anaemia. The second stage is short, being measured in months, and presents attacks of dyspepsia and diarrhoea, an excess of urobilin in the urine and slight increase in the size of the liver. The third stage is practically that of an increasing cirrhosis of the liver. On examination, the spleen in Banti's disease shows little beyond a general fibrosis. In some cases I have found increased phagocytosis of red cells, with proliferation of endothelial cells and the presence of megakaryocytes, but the changes are far from specific. Further, the clinical entity of a chronic disease lasting for so long and with such indefinite symptoms is open to question. It may well be that Banti's disease covers a variety of conditions; in any case I cannot regard it as proved that the spleen is the primary focus. It may reasonably be hoped that careful study of a larger number of cases, combined with further experimental observations, may clear up the obscurity which at present surrounds the condition of splenomegaly. But in our present state of ignorance surgical treatment must be regarded as in the experimental stage.

III.—SIR KENNEDY DALZIEL, M.B., C.M., F.R.F.P.S.,
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[*Abstract.*]

SIR KENNEDY DALZIEL congratulated the previous speakers on the important aid they had given to splenectomy. The subject was one of enormous importance and required all the elucidation that the physiologists, pathologists, and clinical workers could give in determining the functions of the organ and so clarifying the field for surgical interference.

Already it was obvious that haemolytic jaundice and splenic anaemia were materially benefited by removal of the spleen. Tumours, tuberculous disease, and possibly malarial spleen required removal. Splenomegaly by its discomfort ought to be treated by removal of the spleen.

The operation presented no great surgical difficulty, and was not attended by a greater mortality than was to be expected in operations on asthenic patients. The post-operative diminution of the red cells had not been found to decrease, nor increase of the white cells more than was to be expected after a major operation. Little shock had been noted and the mortality up to date had been *nil*. No doubt haemorrhage was to be feared, and the distended veins in the gastro-splenic omentum might well cause alarm. A free incision along the inner border of the rectus would generally be found sufficient; in a large spleen a second lateral incision along the course of the tenth nerve enabled the organ to be fully exposed, and after dividing the costo colic membrane which supports the spleen the vessels could be controlled by a long clamp applied close to the tail of the pancreas. A second clamp close up to the spleen enabled the organ to be removed without soiling the peritoneum. Thereafter the vessels in the stump were ligated separately. Adhesions were apt to be troublesome in cases of splenic anaemia, but if the splenic arteries had been ligated these could be separated with the loss of very little blood if tampons were used as the separation progressed. The spleen was not essential to life. Disorder of it might threaten life, and it could be removed with a great measure of safety.

A FIVE YEARS' SURVEY OF THE ROUTINE TREATMENT OF FRACTURES BY OPERATIVE METHODS;

WITH SPECIAL REFERENCE TO CERTAIN PRACTICAL DETAILS AND MODIFICATIONS IN THE USUAL PROCEDURES OF DIRECT FIXATION.

BY

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[*With Special Plate.*]

THE title of this paper is perhaps somewhat misleading in that it is hardly my intention to deal exhaustively or comprehensively with all the material that the five years have brought under our observation, nor, indeed, do I propose to take up, in detail, or in more than a casual way, the more or less technical points which a full consideration of the large series of cases might suggest. Nor, indeed, would the time allowed to me permit of it.

I propose to deal shortly with some of the conclusions that seem to be suggested by the figures I am able to submit, and thereafter to draw attention to certain special points in technique, and to the particular applicability of certain fixation procedures to certain types of fractures or fracture-separations, which our experience, more particularly in the five-year period in review, has led me to deal with more freely than I had formerly done, and perhaps in a manner somewhat novel. I shall express my views and give my reasons for the faith that is in me at the appropriate stage.

First of all, may I refer briefly to a contribution I had the opportunity of submitting to the Surgical Section, at the discussion on the operative treatment of simple fractures, when the Association met in London in 1910? The reference that I wish to make here is to the tendency to limit the term "operative" in such a way as to include only such methods as require open incision. As I said then, I am of opinion that such a limitation is unwarranted. The term "operative treatment" should not necessarily imply open operation. Any form of manipulation, especially if under a general anaesthetic, is an operative procedure. So much being said, I may proceed to admit that the chief purpose of this paper is concerned with the more limited field of open operation, and specially with the methods by which direct fixation of bone fragments can best be achieved.

It will be well, perhaps, if I plunge at once *in medias res*, and lay before the Section the facts and figures which emerge from our survey of the five years referred to in the title of the paper.

The period taken is from May 1st, 1917, to May 1st, 1922. The cases included were all confined to my own surgical unit in the Western Infirmary, Glasgow, during that period. No cases have been included from my private practice, nor from any other clinic, nor have there been included any cases from other surgeons. A small number, though dealt with in my wards, were not treated by myself; but these were in the hands of my junior colleagues—my assistants—whose procedure and methods are, I know, not antagonistic to mine. It is not that my interest in open operative procedures, and in the modern methods of fixation by open operation, in

fractures of the most varied kinds, is a thing of recent birth; nor is it that I cannot look back upon, and even produce figures from records of, now a good many years. Far from that, I expressed my faith and indicated the general principles that guided me in the open operative treatment of fractures at the discussion on the subject in 1910. I had been operating on many fractures before that time. I have continued to do so since, and on an increasing scale.

My reason for taking this period of five years is that it represents a well-defined period of time, within recent view, for which I have full records, in a single surgical unit over which I have had, throughout the period mentioned, practically complete control. For the figures, the reports of my colleagues who have assisted me throughout, and my own reports, are able to vouch fully. I shall take the opportunity of contrasting the figures of this period with the figures, on certain points, from the records of the Broadstone Jubilee Hospital, Port Glasgow, for the nine years (1908–16) during which I had charge there.

The total number of cases of fractures of all kinds—skull, trunk, and limbs—in my wards in the Western Infirmary, during the five years, May 1st, 1917, to May 1st, 1922, amounted to 693. In the treatment of these, a general anaesthetic was administered in 459—usually chloroform—in some cases several times. The total number of administrations in the treatment of the whole series of fractures was 638. Out of the 693 cases, open operation was carried out in 272. In the remaining 421 there was no open operation. Of the 272 cases submitted to open operation the immobilization of the fragments was secured by some method of direct fixation in 103.

It emerges, therefore, that (1) open operation was carried out in 39.25 per cent. of the series; (2) direct fixation was carried out in 14.86 per cent. of the series; (3) direct fixation was carried out in 37.86 per cent. of the cases of open operation.

In the table which follows (Table I) I have presented the corresponding figures for each year. In the first column are shown the total numbers of fractures treated indoors in each year. In the second column are the numbers of cases submitted to open operation each year. Column three gives the numbers of cases in which direct fixation of fragments was carried out. The fourth column shows the percentage, in each year, of the whole series, of those submitted to methods of direct fixation. The fifth column gives the percentage, in each year, of cases submitted to open operation, in which methods of direct fixation were resorted to.

TABLE I.—*Number of Cases of Fracture of all Kinds, Treated in the Wards of Mr. Archibald Young, in Each of the Five Years, May, 1917, to May, 1922, along with the Number of Cases submitted to Open Operation and the Number Treated by Direct Fixation; with Relative Percentages for Each Year.*

Year.	Total Fractures.	Open Operation.	Direct Fixation.	Percentage of Total.	Percentage of Open Operation.
1917–18 ...	127	42	9	7.85	21.4
1918–19 ...	135	49	11	8.14	22.4
1919–20 ...	161	62	28	17.39	45.16
1920–21 ...	152	58	19	12.50	32.76
1921–22 ...	118	61	36	30.50	59.0

For comparison is shown the following table from the records of the Broadstone Hospital, Port Glasgow, while under Mr. Young's care, 1907 to 1916.

TABLE II.

	1908	1909	1910	1911	1912	1913	1914	1915	1916	Total for 9 yrs.
Total fractures ...	40	54	74	84	90	101	68	82	74	667
Treated by direct fixation	1	2	6	5	8	1	8	6	3	40
Percentages	2.5	3.7	8.1	5.9	8.8	1.0	11.7	7.3	4.05	6%

It will be seen from Table I that (1) the percentage of all fractures in which direct fixation was employed has mounted up from 7.86 in the first year (1917–18) to 30.50 in the fifth year (1921–22); (2) the percentage of all cases of open operation in which direct fixation methods were employed rose, in the same period, from 21.4 to 59. This is, I believe, a very striking fact. It becomes more striking still when taken in contrast with the figures which I give, from the Broadstone Jubilee Hospital, Port Glasgow, showing, for each of the nine years 1908 to 1916 inclusive, the number of cases of fracture, with the number submitted to direct fixation by open operation, and the relative percentages. (See Table II.) Contrast the highest percentage in this series (that for 1914—namely, 11.7) with the lowest in the present series—namely, 21.4; and again with the percentage of last year—namely, 59.

I feel that I am entitled to advance here, on these figures, the claim that direct fixation of fragments by open operation in an increasing proportion of fractures has been well established. The mere fact that year by year we resort to an ever-increasing number of direct fixations by open operation of itself proves our faith in its efficacy and our belief in its value compared with the older methods. It is not that other modes of comparison are wanting, nor that such other comparisons have not been made. Indeed, following more particularly upon the discussion in 1910, the special methods advocated with so much enthusiasm by Sir Arbuthnot Lane, and their results, were investigated by a committee of the Association, and the report drawn up by that committee will be within the memory of members of the Section. I do not know that the report in question gave much satisfaction to anyone, nor do I think that anyone was really convinced that it proved the case for either side—either the non-operative or the operative. After all, it is well recognized that figures may be made to prove almost anything, provided that one looks at them from the proper angle. Results, too, are apt to be construed differently by different observers, some desirous to be severely impartial—but perhaps not too sanguine or very sympathetic—others disinclined to admit that their own technique or their operative dexterity is in any respect faulty or in any way defective.

The figures of these five years, on the other hand, show that we, for our part—for our part, I say, in that I am desirous to include, in this expression of faith, my various colleague assistants, who have helped me all throughout—that we have not only not lost faith in the methods, but have, indeed, been increasingly confirmed in our confidence in their advantage over the methods previously employed. After all, it is not merely a case of "another scalp to my belt." Anyone who has witnessed many open operations for direct fixation of fractures, anyone who has ever taken part, either as assistant or as principal, in many such operations, will admit readily, I am sure, that it is too often the case that the physical energy and the endurance of all concerned are taxed to the uttermost in their execution; that, in fact, all concerned directly in the operation have very commonly to "sweat over it"—in a very real and literal sense. Speaking for myself, I am bound to say that my own physical strength has too often been stretched to the uttermost in such operations to encourage me to continue to resort to them, were it not that I am more and more convinced of their efficacy, and, indeed, of their unchallengeable superiority, in a very large proportion of cases. Under such circumstances, our continuance—nay, our increasing employment—of direct fixation by open operation would seem to me to be a very powerful argument in its favour.

I shall proceed now to give details of the different fractures dealt with in the series in which direct fixation was carried out. In Table III there is presented a list of all the bones affected, with a note, in succeeding columns, of the actual procedure adopted. The methods included wiring, fixation by different kinds of pins or nails, screws, plates and screws, and by combinations of pin and plate; also, in only one case, by ring plates (Adams).

Wiring was resorted to in 21 cases, pinning or nailing was employed in 29, plating was used in 48, fixation by screws in 2, pin and plate were used together in 2, and ring plates were used in 1. The bones dealt with included lower jaw, clavicle, humerus, olecranon, radius and ulna, metacarpal, phalanges of fingers, femur, patella, tibia, and metatarsus. It will be seen from the table that a considerable number of epiphyseal fracture-separations were treated by this method, including upper and lower epiphyses of the humerus and upper epiphysis of the femur. A few words have to be said of the different types of procedure, as well as of certain special groups of fractures and fracture-separations.

TABLE III.—*Showing the Numbers of the Fractured Bones Submitted to the Different Methods of Fixation in the Five Years' Series.*

	Wiring.	Pinning.	Plating.	Screwing.	Pin and Plate.	Ring Plate.	Total.
Lower jaw	7*	...	...	...		...	7
Clavicle	1	...	3	...	...		4
,, outer end	...	1	...	...	...	...	1
Humerus, upper end ...	...	4†	1	...	...	...	5
,, shaft ...	...	...	6	...	...	...	6
,, lower end (T) ...	...	...	...	...	2	...	2
,, lower epiphysis ...	16	...	...	...		...	16
Olecranon	5	...	...	...	...	...	5
Ulna	3	...	...	...	...	...	3
Radius	...	2	...	...	...	...	2
Radius and ulna	...	2	...	...	...	...	2
Metacarpal	1	...	...	...	...	...	1
Phalanx, finger	1	1	...	...	...	...	2
Femur, upper end	2‡	...	...	...	...	...	2
Femur, shaft	...	...	12	2	...	1	15
Patella	4	...	...	...	...	...	4
Tibia	3	...	22	...	...	...	25
Metatarsus	...	1	...	...	...	...	1
Totals	21	29	43	2	2	1	103

* In 4, the jaw was wired direct; in 2, the teeth were wired; in 1, the jaw was wired, and the teeth also.
† One of these was an upper epiphyseal separation.
‡ One of these was a separation of the upper femoral epiphysis.

METHODS AND MATERIAL.

1. *Wiring.*

The use of wire in the fixation of fractures has fallen to some extent out of fashion. The chief reason for this is, I think, not far to seek. The material used was, for long, silver wire, and this has not the necessary strength to allow of fragments being fixed at all firmly by its use, unless very thick wire is used. Over and over again it must have happened to most surgeons employing silver wire that, just at the point of securing something like the desired degree of fixation by its use, the wire has snapped short at the twist point, and no end of trouble has followed in the effort to retrieve the calamity. Often, indeed, its use was completely unsatisfactory by reason of this recurring difficulty. Thick wire, too, is always a disadvantage. The finer the wire it is necessary to introduce into the tissues to bury in the bone or to leave embedded in the soft tissues the better. But, after all, the prime necessity is that the wire so introduced shall efficiently serve the purpose for which it is employed. A wire that is not capable of standing the strain that may be required if it is to be made really taut—for, short of that, it is not of real value as a fixation material—is so unreliable as to be hardly worthy of use.

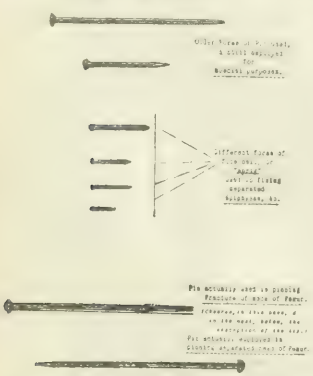


FIG. A.—Showing different kinds of pins, also "sprigs," used. At the lower part of the figure are seen two long steel pins, actually used in fixing fractures of femoral neck, showing absorption of tip.

For some time now I have been in the habit of making use of a brass wire of very much less thickness than I should ever have dreamed of using, or of attempting to use, had it been of silver. I used it first of all with some little doubt as to its effects on the tissues, and as to the effects of the tissues on it. Experience, however, has shown that it has no obvious harmful effects on the bone or on the soft tissues; nor have the tissues any harmful effect on it. One cannot say, of course, that the tissues will not produce in time some effect on it. Indeed, from what one has observed even in the case of steel pins long embedded in bone one must have it in mind that, sooner or later, the tissues will exert some resolvent effect. We have observed on several occasions how the sharp point of a long steel pin has been eroded by the tissues, even in a short period of four to six weeks (see Fig. A). But, in any case, it will be found, I believe, that even the thinnest grade of brass wire that we have employed will resist the action of the tissues for a much longer time than the period required of it.

I am able to show to the Section samples of this brass wire in different grades—most of them, as will be seen, of comparative thinness—which I have been able to obtain from the original source where I got my first supply. Each grade is marked with its appropriate number according to the wire workers' gauge. The samples of wire shown have the following numbers, and I am able to give, with the numbers, the thickness according to gauge, thus:

Brass wire—	
No. 21	.032 gauge.
22	.028 ,,
23	.024 ,,
24	.022 ,,
25	.020 ,,
26	.0184 ,,
27	.0164 ,,
28	.0148 ,,
29	.0136 ,,
30	.0124 ,,
Sample of nickel wire—	
No. 28	.0148 gauge.
Sample of monel wire—	
No. 30	.0124 gauge.

From the same source I have obtained recently samples of two other kinds of wire, which may prove to have certain advantages. The one is of pure nickel, the other is of a comparatively new metal, named monel metal. It is, I believe, an alloy of copper and nickel (copper 67 per cent., nickel 33 per cent.), is very pliable, and my friend claims for it that it is of greater tensile strength than either brass or nickel wire of the same thickness. I have not tried it yet.

The point of importance, however, is that one is not restricted to the use of silver wire; indeed, silver wire is, in my opinion, quite unsuitable, for the reason stated above. Possessing, however, in brass wire, or in one or other of the wires mentioned later, a really efficient and reliable substitute for the older silver wire, I find, once more, a considerable field for the operation of wiring. It may be said, here, that it is my practice to pass the wire through the flame of a spirit lamp immediately before introducing it. It has been sterilized in the usual way beforehand, of course. This final heating has the effect not only of "making siccar" the sterilization, but it makes the wire much more pliable, even if it does take away—perhaps because it does—its temper.

By using brass wire we can obtain a very high degree of stabilization. Repeatedly I have been able to tighten a wired junction so completely as to fix it by even a single wire. In one case of fracture of the lower jaw, for example—the case is shown in Fig. 1—it will be seen that there is only one small wire used. Yet the fixation was absolute, and the result was never in doubt. It was as nearly as possible perfect.

In the series under consideration wiring was employed twenty-one times as a sole fixation agent—for fractures of the jaw, olecranon, patella, clavicle, tibia, and in one case of fracture of a phalanx. The results were in all cases good. It may be said, in passing, that in fractures of the lower jaw we may combine—and often do—direct wiring of the bone with indirect fixation of fragments by wiring of the teeth. Brass wire serves admirably for this purpose also, and it will be obvious to anyone who has ever made the attempt to wire the teeth in such circumstances what a great advantage it is to be able to employ a wire of such fineness, and which can be slipped so easily between the often very closely set teeth. A thicker wire would be quite useless for the purpose. The thin wire, too, can be wound several times round the teeth it is intended to secure.

2. Pinning or Nailing.

It will have been observed that the group of cases treated by this method is a relatively large one—29 cases in all. Using, at first, different sizes of the old steel plated pins, such as have been in use for many years for such purposes as fixation after resection of the knee, we have, for certain special purposes, resorted to much finer agents. Here we are following, to some extent, the same idea as justifies our use of a finer wire. Obviously, the less bulky the pin or nail, so long as it is of sufficient strength to fulfil its paramount purpose, the better it must be; the less likely will it be for bone fragments to be split in its introduction; the less drilling will be necessary; the less bone dust will be scattered about the tissues; the less disturbance of the parts generally will be required (see Fig. A).

For certain purposes, of course, such as fixation of the upper femoral epiphysis, or of fractures of the femoral neck, by a nail driven along the femoral neck into the head, a very long nail is required. A nail of such a length must be thick and strong. So also in fixation of fractures of the upper end of the humerus, where a long nail is employed—whether it be passed from the epiphysis down into the diaphysis, or in the reverse direction. A thin, light nail will not serve in any of these cases (see Figs. 2 and 2A).

In another class of fracture, or fracture-separation—namely, fracture-separations of the lower epiphysis, or epiphyses, of the humerus—a much smaller, much finer nail or pin is much more suitable. We used to employ at first nails of the ordinary type as referred to above, but of course of much shorter size. I very soon came to the conclusion that a much finer agent must be obtained. Accordingly I began to use very fine pins, or "sprigs"—you may perhaps know them by different names. I think the carpenter calls them "sprigs" or "fine wire nails." The first I used I took from a small store kept in my house for the purpose of fixing photographs to the wall. Those were slightly flattened in section, head as well as nail length. Those we have been using for a long time now are of the rounded type, and we procure them as we require them from the infirmary carpenter. Their cost is practically *nil*. We do not worry about plating them. Even if we do not in time remove them, though they may erode in due course, they do no harm in the tissues or in the bone.

I have used them now in a considerable number of cases, both alone and also in combination with other agents. It is not only in the case of fracture-separations that they find their field of usefulness. I have used them in fractures of forearm bones (Figs. 3 and 3A) and elsewhere. In the more recent months I have been employing them in certain badly displaced fractures of the phalanges of the fingers, and in similarly badly displaced fractures of metacarpals. The pin is passed from one fragment—usually the smaller—into and along the other, being left as a permanent central axis in the corrected phalanx. It does no harm in its new bed.

One advantage in the use of these fine pins or nails is that they are so easily driven home, and that they do not split the often very fragile fragments. Likewise, they do the very minimum of damage to epiphyseal cartilage or growth centres. In a young person it is often possible to drive the fine pin well home without any preliminary drilling, without any great force being called for. Occasionally a few light taps with the heavy end of a periosteal elevator may be required, but that is all.

3. Plating.

So much has been written regarding plating that it is not necessary to say much more here. Besides, we have had to-day, from another surgeon, already a paper on the subject. Suffice it to say that we have employed, during the five-year period, the method of fixation by plate and screws in 48 cases, and certainly with satisfaction. We have applied it to the clavicle (Figs. 11 and 11A), forearm bones, humerus, femur, and tibia. Properly employed, it gives satisfactory fixation, and does not retard union. Whether the plate and screws require to be removed later on does not greatly matter, so long as they serve their immediate purpose. I am of opinion, however, that more and more the field for application of plating will tend to become narrowed down to shaft of humerus, shaft of femur, and to tibia. In other situations, it seems likely that wiring or pinning will become the operation of choice.

As in wiring and in pinning, we always pass the plates and screws through the spirit lamp flame prior to introducing them.

4. Screwing.

In certain fractures of the shaft of the femur, or of others of the longer bones, it will occasionally happen that the introduction of a plate may be undesirable or difficult. In two cases of the kind in this series we fixed the fragments quite satisfactorily by screws alone. One, by my colleague Dr. A. J. Hutton, was fixed by one screw. The other, by myself, was fixed by two screws. Both did well. It is probable, however, that this method will have only a limited application.

5. Pinning and Plating.

In the series are included two cases of very severe fracture of the lower end of the humerus, T-shaped, into the elbow-joint. Every surgeon knows how difficult these fractures are to deal with by any other method than open operation. Any surgeon who has tried will know also how difficult they are to deal with, even by open operation. The chief difficulty lies not in the freedom of access to the fragments, but in the great difficulty there is in keeping the lower fragments in apposition while they are fixed to each other, and while they are being fixed to the shaft fragment. We have found, as Figs. 4, 4A, and 4B show, how great is the tendency for the two lower fragments to rotate on their long axes, by the action, no doubt, of the group of flexor-pronator and extensor muscles respectively, arising, as they do, from the epicondyles and epicondylar ridges. We have adopted the expedient of first fixing the two lower fragments by the introduction of a long steel pin, passed from side to side, right through both, and thereafter applying the Y-shaped plate and screws. The *x* ray illustrations, which I am able to show, will abundantly illustrate the difficulty referred to and the result of the method as described.

I may say that in both of the two cases referred to the result as regards union, outline, and function has been most gratifying.

6. Ring Plates.

The use of Adams's ring plates may be dismissed in a very few words. We have used them only once, and they did not give satisfaction. The plates were not difficult to apply, but they shifted somewhat, and allowed of the fragments—of the femur—assuming an acute angular bend, which did not leave a good effect, aesthetically; nor was function easily restored. I do not think that we are at all likely to employ them again.

One more word, with reference to methods and material, may be permitted here. It may be assumed that the simpler the methods, and the simpler the materials, the greater will be the field of application of the direct fixation procedure in the open operative treatment of fractures. Complicated apparatus, complicated instruments, heavy nails, screws, and plates will always be undesirable if simpler appliances and materials are available. I ventured to say, in my contribution to the discussion in 1910, that I had no use for certain of the complicated instruments advocated by some surgeons. I am of the same opinion still.

The most important requirement of all is a competent assistant (preferably a plurality of competent assistants), and such I have had the great good fortune to possess all along. I am also indebted more than I can say to the willing help of my nursing staff. And I desire here to make acknowledgement of this.

In what remains of this paper I wish to refer to the open operative treatment of three types of injury in which we have been doing, for some time now, a considerable amount of direct fixation. These are:

1. Epiphyseal fracture-separations.
2. Certain fractures of the phalanges and metacarpals.
3. Fractures of the outer end of the clavicle and, incidentally, that troublesome injury, so difficult to treat satisfactorily in any other way—namely, dislocation or fracture-dislocation of the outer end of the clavicle, with displacement upwards of the outer, or acromial, end of the clavicle.

FRACTURE-SEPARATIONS OF EPIPHYSES.

Many of these, of course, call for no open operative interference. There is often no displacement at all, and the fragments are often capable of easy maintenance in their proper relation with the diaphysis; perhaps by a simple splint, often without splint altogether: nothing more than a firm bandage

may be necessary. This applies to most fracture-separations at the lower end of the forearm bones, and to others such as the lower epiphyses of the tibia and fibula. Even in these, however, the correctness of apposition should be made certain by manipulation under a general anaesthetic, and where possible checked by *x* rays subsequently.

This is, unfortunately, not always, or indeed usually, the case with the fracture-separations at the lower end of the humerus. If in such injuries displacement should happen to be slight, or *nil*, we consider the fact a fortunate one, both for the patient and for the surgeon. It means, as a rule, little trouble and a favourable result, as regards appearance, function, and later growth. Where, however, displacement is, as so often happens, more or less marked—often extremely marked—open operation with direct fixation is in my opinion imperative. I used to think that many such injuries, even with considerable displacement, could be effectively treated by non-operative means, but that idea I have given up completely. I here admit unhesitatingly a change of view on the matter.

I remember that Sir Arbuthnot Lane, in 1910, said in this connexion, "an epiphysis if separated rarely requires to be retained in position by a plate and screws; but should it be necessary to employ such means the plate should be removed as soon as union has taken place, to avoid any interference with the growth of bone at the epiphyseal line." I wonder if he is still of the same opinion as to the necessity for direct fixation in these cases. I, at any rate, cannot subscribe to this view. In any case plate and screws are not at all suitable for the treatment of such injuries, where one has to deal with the small fragile bones of young people, and with small, delicate epiphyseal fragments, which ought to be damaged as little as possible. The employment of fine pins, or "sprigs" such as I have referred to already, is a much more easy, more effective proceeding, and I think their use gives the very minimum of injury to the delicate growth areas.

If it be said, as said it is by some, that even without operative means—open operation—it is possible to get union, in many cases, with quite good function as a result, I still urge that open operation affords the best prospect of avoiding such interference with growth later—in virtue of disturbed epiphyseal centres—as every surgeon knows to be a very real and serious possibility.

It is certainly the case that there are many such injuries where, even with open operation, it is not always easy to accomplish accurate readjustment of a separated epiphyseal segment. How much more, then, must be the difficulty if no open operation is done!

Now, it is just this accurate readjustment of separated epiphyseal centres that, in my opinion, makes all the difference between practically normal continuance of growth of the bone, and the failure, or defect, or irregularity of growth which is so likely to follow if non-operative treatment is adopted, and displaced epiphyseal centres are not brought back into their proper relations. If they are brought back to their proper positions, with reference to the diaphysis and to each other, my opinion is that normal, or almost normal, growth is likely to occur. We shall not have to regret, then, the ugly "gun stock" deformity, and other deformities that we have all had occasion to warn parents of for the future of their child.

I had a very instructive lesson in this respect a year or so since, when in the course of a resection of the knee for tuberculous disease I had the misfortune to completely disengage the whole lower epiphysis of the femur from the diaphysis. I fixed it in position again, but feared the worst in the way of suspended growth. To my surprise such suspension of growth did not result, as shown by continued increase in length of the limb, and as demonstrated beyond doubt by *x* rays many months afterwards.

I believe that if accurate reapposition of epiphyseal centres be not brought about the failure to do so is the very factor that will lead to the growing parts being smothered up in callus and crushed in new, irregular bone, which will effectually lead to suspension of the normal growth at the epiphyseal lines.

That nothing short of full exposure of the fracture-separation area will suffice, if accurate readjustment is to be accomplished, my now considerable experience of these cases has proved to completeness. I have found the whole lower epiphysis of the humerus so completely displaced as to be tilted in almost unbelievable fashion; I have, on quite a number of occasions, found it almost completely inverted, articular surface looking upwards, and epiphyseal cartilage downwards. I have found a fragment, including the capitellum, part of trochlea, and the external epicondyle, so completely tilted on its axis that the articular surface of capitellum looked directly outwards, while the fractured surface rested against the head of the radius. We have had several instances of this. Then separation of the centre for the internal epicondyle, especially if the muscular attachments to it and above it are torn away, means so considerable longitudinal displacement that nothing short of open operation and direct pinning of the fragment in its proper relation can possibly suffice.

In short, the argument in favour of operative treatment of these lower humeral epiphyseal fracture-separations—open operation, accurate readjustment, and direct fixation—seems to me sound beyond dispute.

As to the method of procedure little is necessary to be said. In almost any type of epiphyseal displacement at the elbow, whether of the whole lower epiphysis or of one or more of the separate centres there, I have found the best incision one made just behind the radio-humeral joint, and extending a little way upwards. The joint named is first opened, and usually from this opening it is possible to accomplish all that is desired. The fragment or fragments, once adjusted, are readily fixed by one or two—generally one is sufficient—of the fine sprigs I have described and shown here. The pin is pushed easily home, and the wound is completely closed without drainage. I generally put the limb up flexed. It is usually placed for a few days on a simple splint, and may be put in a light plaster-of-Paris sheath for at most two or three weeks. From that time the child is given almost complete freedom in movement. (Figs. 5, 6, 7, 8, 9.)

CERTAIN FRACTURES OF PHALANGES AND METACARPALS.

It may be conceded quite readily that most simple fractures of the phalanges of the fingers admit of satisfactory treatment without open operative means, and probably even most compound fractures are capable of adequate adjustment without direct fixation of fragments, but we have had recently several examples of such fractures—rather neglected at the time of their reception—in which there had resulted such tilting of fragments that correction of displacement without some method of direct fixation by open operative means was quite impossible. It has happened, too, in several cases, that a single *x*-ray view failed to display adequately, or at all, the considerable palmar displacement which was in the main responsible for the annulment or limitation of function. It is obvious that serious disability must result in such cases from the sharply tilted fragments interfering with the flexor tendons. In several cases, examination of a simple antero-posterior *x*-ray picture gave the impression that the fragments were not much, if at all, out of place, and yet the other view completely altered the picture, and showed how necessary it was to carry out open operative treatment. Such interference of an open operative nature is desirable, also, in not a few fractures of metacarpals where the break has taken place so close to the end of the bone that no non-operative method could possibly ensure proper control of the very short fragment.

Our method in such cases is the same as in the fractures of the phalanges to which I have just referred. The fracture area is exposed usually by a lateral incision, slightly to the dorsal aspect of the finger. The extensor tendon is avoided, or drawn out of the way, and the fragments are disengaged by the simplest means. The ends are then freshened and brought into as good alignment as possible. A single fine sprig is then driven home, usually from the smaller fragment, along the central canal or soft central bone of the larger fragment, the length of sprig being so chosen as to measure about two-thirds of the length of the reunited phalanx, and the head of the sprig is either nipped off with bone forceps, or buried in the substance of the smaller fragment. It is remarkable how easy is the whole proceeding, and how effective the adjustment. The wound is closed without drainage. A simple splint may or may not be used, according as the operator has confidence in the fixation or not. In any case, it should be dispensed with as soon as possible.

We have been pleased with the results in the cases we have tried the method upon. Bony union has been good, alignment has been well maintained, deformity has been almost *nil*, and the functional result has been gratifying.

FRACTURE OF OUTER END OF CLAVICLE AND DISLOCATIONS OR FRACTURE-DISLOCATIONS AT OUTER (ACROMIO-CLAVICULAR) END OF CLAVICLE.

The treatment of fractures of the outer end of the clavicle has been recognized for long as difficult and unsatisfactory. Further, the outer fragment is often so small that application of a plate and screws is often quite impracticable.

Recently we had a very striking example of the condition in which the small outer fragment was displaced forward and so tilted as to rest on the front of the inner fragment in a direction almost directly forward. It was quite impossible to control it in any other way than by operative means. The method adopted for its treatment was simple, but completely effective. The fracture area was exposed, the small fragment was fixed temporarily, and a long resection pin was passed from a puncture wound made externally right through the fragment and on into the shaft of the bone. This effectively immobilized the fragments. The main wound was closed and the arm was fixed up across the chest in a light plaster-of-Paris sheath, which was worn for three weeks. Thereafter it and the long steel pin were withdrawn. Union, position, and function were in every way satisfactory. (See Fig. 10.)

I interpolate here, though it is not quite in the ordinary purview of this paper's purpose, reference to the use of a similar expedient which I have employed several times in the treatment of the troublesome upward displacement of the clavicle at its outer (acromial) end, in the not uncommon dislocation at the acromio-clavicular joint. I know of no other way of controlling the upward rising acromial end of the clavicle than by fixing it by plate and screws, or by pinning. Wiring is of no real use. The introduction of a simple long steel pin in this way I have found easy, effective, and satisfactory. Further, the result as regards function, movement in every direction at the shoulder, and strength of limb, has left, in the cases in which we have employed the method, little to be desired.

CONCLUSION.

It but remains for me to mention—it should not be necessary to do more than mention—that, in all such procedures as are involved in the open operative fixation of fractures, such as are dealt with in this paper, asepsis is assumed. I mention this but to pass from it. In none of the cases in this series did any trouble arise from the introduction of sepsis. All pursued an aseptic course.

THE TEMPORARY PLATING OF FRACTURES OF THE LONG BONES.

BY

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THE deliberate operative treatment of recent simple fracture may be said to have commenced in 1877 when Lister wired a fractured patella.[1] The way to this had been prepared by similar operations on ununited fracture of the olecranon (Lister, 1873) and of the patella (Hector Cameron, 1877). In the same paper, originally published in 1883, in which the above facts are set down, Lister strongly commends the practice of wiring in ununited fractures of the shafts of the long bones, and he gives details of its employment in a case of malunited fracture of the femur about the junction between the middle and upper thirds. It must not be forgotten that these operations were rendered possible by the antiseptic method of treatment, and in the paper in question Lister emphasizes what he believed to be "the truth, that by antiseptic means we can do, and are bound to do, operations of the greatest importance for our patients' advantage, which, without strict antiseptic means, the best surgeon would not be justified in recommending. . . . That which justified me in operating . . . was simply the knowledge that strict antiseptic treatment would convert serious risk into complete safety" (loc. cit., p. 469).

In the case of the olecranon and of the patella accurate apposition of the fragments is required if crippling is to be avoided; and the need of such apposition is much more clamant in them than in the case of the long bones. That circumstance may explain why surgeons were slow in systematically applying operative treatment to the latter. The impetus was not given, in this country at any rate, till the appearance, in 1905, of Arbuthnot Lane's monograph[2]; but since then there has been an increasing number of surgeons addressing themselves to treatment by open operation. Lane's teaching focused the attention of many on the results of non-operative methods, and stimulated efforts towards the improvement of the same. But Hey Groves[3] is correct in saying that it has also served as a stimulus to workers to improve operative methods. To-day it may truly be said that the operative treatment of fractures has come to be recognized as a method of wide applicability. It seems to me that it is to be recommended in all cases where the anatomical form of the bone has been altered sufficiently to impair the function of the part, and where restitution of that form cannot be obtained by non-operative methods. This recommendation is subject, however, to the proviso that the operation be performed only in suitable surroundings.

It is admitted that incomplete anatomical restitution may be compatible with a good functional result. This is especially the case in fractures of the upper limb; but it obtains also in other fractures in children in whom the education of the parts is proceeding; and in slightly older patients in whom re-education of the limb is comparatively easy. In adults, and still more in middle-aged and elderly subjects' such re-education of the muscles and readjustment of the joint surfaces is more difficult. It may easily be incomplete, and a weakened or painful limb may result, a matter of special importance when the fracture involves the lower limb. In any case re-education takes time and delays the recovery of the part. It is to obviate or minimize the need for such re-education, and consequently to expedite restoration of function, that open operation is employed. By operative treatment the surgeon is enabled not only to place the fragments in good alignment, but also to coapt the broken surfaces without muscle or fibrous tissue intervening, and at the same time to employ, if required, some form of retaining apparatus. In this way an almost complete restitution of the form of the bone may be obtained, and the way presumably opened to a speedy firm bony union. I say "presumably" of set purpose; because, as I shall have later to mention, such union does not always follow.

Of the various forms of retaining apparatus at present in use I wish at present to confine myself to the consideration of steel plates and screws, and to record conclusions based upon observations extending over the last dozen years or so.

Bones.

The fractures which most commonly require plating are those of the tibia, the femur, and, less frequently, the humerus. Still less frequently is it required in the case of the fibula, the forearm bones, and the clavicle.

Exposure of Seat of Fracture.

The skin having been purified by a watery solution of phenol, the fracture is exposed through either a linear or a curved incision, which latter allows of a flap being raised. The linear incision is employed where the bone has a good covering of muscle—for example, the shafts of the humerus and femur, and the antero-lateral surface of the tibia. In these situations, as the retractors are removed the muscles fall together and separate the seat of fracture from the skin wound. The curved incision is found more suitable when the plate is to be applied to a subcutaneous area of bone—for example, the medial aspect of the tibia. In this situation a flap is desirable, and its replacement buries the fracture and the metal appliance away from the skin wound. In the case of the leg this incision lies for the most part over the soft tissues behind the inner border of the tibia: the horns alone extend forwards over the subcutaneous bony surface.

When Operation should be Performed.

It is advisable in simple fractures to operate as soon as possible after the skiagram has been obtained. If the operation be done early not only will the skin be free from possible vesication or ulceration, but the adjustment of the fragments will be comparatively easy. If interference be delayed the skin may have in the interval become septic, while the muscles will have become fixed, and their extensibility impaired by infiltration with exudate. When this has happened the adjustment of fragments may be fraught with great difficulty, and may require very forcible handling, either by an elevator or the more powerful Murphy's lever: in some cases—for example, the femur—overlapping fragments may be angled on one another and the bone then

straightened by manipulation. After coaptation the fragments may be held in position by Lane's forceps or Lowman's clamp till the plate is adjusted and screwed on.

In the case of a compound fracture one must play for safety, and in such I purposely delay plating till after the lapse of a few days, when it may be ascertained that asepsis has been secured.

Periosteum.

The periosteum should be incised and stripped off the area of the bone to which the plate is to be applied. This stripping not only removes the periosteum from hurtful pressure, but it allows the formation of more callus than would be likely if the plate were fixed down on the top of the periosteum. In fractures which have been plated there is a tendency to lessened formation of callus. This tendency is probably due to close coaptation and immobilization of fragments, and is a factor in the production of delayed or of non-union, when such occurs.

Plates and Screws.

The pattern which I have found most convenient is Lane's simple flat plate with straight parallel edges. As a rule I employ one with four holes: in some cases a three-hole plate suffices. The plate should be sufficiently pliable to allow of adjustment to a curve or angle in the long axis of the bone. I always use Lane's screws. It is said by some that the sharp thread of these screws does not give a secure hold on the bone, and Hey Groves (loc. cit., p. 177) gives it as his opinion that a screw used for dense bone ought to be of the engineer's variety. This opinion would seem to be based on the fact that this author expects that a plating operation should render the patient independent of external splints.

Splints.

I make it a rule to secure immobilization, so far as that is possible, by the use of external splints. My object in plating is merely to keep the fragments in accurate coaptation till the chance of displacement is over, after which I remove the plate and screws. Before going into the details of the removal of plates, I would just mention that in applying splints care should be taken that the limb be kept in such a position as will facilitate restoration of function after the fracture is healed. It seems almost superfluous to mention this; but I have, both in the army and in civil practice, frequently come across cases in the lower limb where insufficient attention to the position of the foot had led to crippling of an obstinate nature. When the time had come to discard the splints it was often found that the ankle had stiffened with the foot in the pointed position. Passive movement under an anaesthetic had frequently to be resorted to, and in some cases operative lengthening of the tendo Achillis was required before the foot could be restored to the position at right angles to the leg—a position which is essential to the patient who is beginning to walk again.

Removal of the Plate.

This is carried out as a routine, with the object of avoiding possible trouble in the future. I refer to pain in the bone, swelling of the bone and neighbouring soft parts, loosening of the screws, sometimes sinus formation, and occasionally even refracture. I am aware that some surgeons hold the opinion that if the operation has been aseptically performed such trouble is unlikely, if indeed it ever occurs. I regret that I cannot agree with such opinions; and I remove the plate when it has fulfilled its function as an internal splint—that is to say, during the third or fourth week. During the operation of removal I am accustomed[4] to find in the wound a great or lesser quantity of thick muddy fluid of dull greyish-yellow, sometimes greenish-yellow, colour. This fluid is usually struck between the bone and the plate, and if unassociated with a sinus or communication with the skin surface it has always been proved sterile on attempts at culture. It is also unassociated with any necrosis of the bone, and does not prevent aseptic healing of the reopened wound in the soft tissues.

At the operation of removal the screw nails may be found holding as firmly as when first introduced, or they may be loose enough to be picked out with dissecting forceps. The difference depends on the reaction of the bone to the presence of the foreign body. When they are loose I find as a rule that union of the fracture is proceeding satisfactorily. On the other hand, it seems to me that when they are holding firmly there is a deficiency or want of reaction on the part of the bone—in other words, that the bone is sluggish; and I am not surprised when in such cases I find delayed union. Of course it may be that loosely holding screws permit some movement of the fragments, with consequent increase of callus production; but such a view does not explain the loosening of the nails.

After-Treatment.

Splints are discarded about the end of the sixth week; and, in the case of the lower limb, a plaster-of-Paris support is applied and kept on for four to six weeks. Should it be found, in the case of the leg, that when splints are left off the union is not firm, my practice is to encase the limb from the toes to mid-thigh in plaster-of-Paris, with reinforcing wooden strips on inner and outer sides. The patient is then made to walk about with stiff knee. This ensures mild traumatism of the ends of the fragments, by no means a new device in the treatment of delayed union,[5] and usually succeeds in bringing about firm union. If, as rarely happens, this manœuvre be unsuccessful, comminution at seat of fracture is practised. For this purpose a chisel or osteotome is carried in long axis of the bone from the upper fragment through the weak union into the lower fragment.

Comminution for non-union has recently been recommended by Waring and Milligan.[6] These authors freshen the ends of the bone and expose the medullary canal before comminuting the bone. In the few occasions on which I have had to employ comminution I have simply used the chisel or osteotome as above described, and have found the procedure to give very certain and satisfactory results.

Conclusions.

1. Operative treatment should not be a routine, but properly reserved for cases where non-operative measures fail to secure restitution of fragments.
2. Temporary plating is in the case of the tibia, femur, and humerus a reliable form of internal splinting.
3. Skin incision should be placed so as not to be in immediate contact with the fracture.
4. With the object of encouraging the formation of callus, the periosteum should be reflected from the area to which the plate is to be applied.
5. Flat four-hole plates, bent if necessary to fit, and fixed with Lane's screws, give satisfactory results.
6. External splint support is necessary.
7. Plates and screws are removed in from three to four weeks.
8. Looseness or fixity of screws at time of removal is in proportion to reaction or sluggishness of the bone, and would seem to be an index to the progress of repair.
9. Plating does not prevent delayed or non-union.

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TREATMENT OF UNUNITED FRACTURES BY BRIDGE GRAFTS.

BY

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ANY discussion on the treatment of fractures is incomplete without reference being made to a class of fracture which has been brought to our notice by the late war, and to which the usual methods of treatment of recent fractures do not apply. I refer to those cases where there has been considerable loss of bone in addition to violent sepsis at the seat of fracture. In some of them as much as three or four inches of a gap has been made in the continuity of the bone, and the problem we have to face is the bridging of the gap. Most of these cases have been extensively involved in a septic process and not only the bone but the soft parts around are converted into scar tissue which encapsules micro-organisms. If a sufficient, and indeed a generous, length of time has not elapsed since the final healing of the soft parts, sepsis will flare up almost inevitably if operative procedures are attempted. I have had the opportunity of treating over

sixty of these cases, and I have learned some lessons which I desire to bring before the notice of the Section.

General Considerations.

In the first place these cases must have efficient and sometimes prolonged preliminary treatment of the scar tissue; and as far as possible deformities which have resulted from contracting scars must be corrected by suitable mechanical means.

I have had good results from complete excision of the scar and the use of pedicle or tubed skin grafts to fill in the area thus excised. This method serves two purposes: First, it shows whether latent sepsis is present in the tissues before operating on the bone gap; because if no flare-up occurs the gap can be dealt with as soon as the skin graft has healed. Secondly, it provides healthy skin through which to make the incision when the bone gap is bridged. I have used the tubed pedicle graft for shoulder cases and legs. Small scars are given a course of deep massage and ionization of two or three weeks' duration as a test for the presence of latent sepsis.

The operation for the bridging of the bone gap must be carried out with the most scrupulous care as regards asepsis. The bone scar tissue, if this has not been already removed when excising scar tissue in the soft parts, must be cut away widely until healthy bone is encountered, and if it can safely be attempted the removal of all scar tissue—soft parts and bone—should be done in one piece by block dissection. Ligatures should be handled and tied with forceps, and stitching of the soft parts also carried out with needle holder and forceps only—in fact, the gloves at the end of the operation should be free from blood stains, thus showing that they have not come into contact with any part of the wound edge.

I have tried the various methods recommended from time to time, all of which have had their advocates—namely, wedge, intramedullary, inlay, combined inlay and intramedullary, also stepping and comminution of the bone ends. My experience with these various methods is that I find, while success may attend the use in certain cases of any one of them, the greatest success has been with the inlay method or its modification the combined inlay and intramedullary method.

The Graft: Essentials for Success.

There are some essential points that emerge in connexion with the graft itself if success is to be attained. It must be long enough to overlap the gap by a wide margin at either end; the greater the overlap the better the contact with the host bone, and better blood supply is secured by the graft while union is being established. It must be thick enough to stand the strain of the natural pull of the muscles in the long axis of the bone; a cross strain favours non-union. While a graft denuded of periosteum will unite and grow it is better if the periosteum is not removed, as that membrane ensures a better blood supply to the graft through its capillaries linking up with the capillaries of the soft parts around. The periosteum also acts as a limiting membrane, preventing small outgrowths of bone from penetrating the surrounding parts; these outgrowths are not uncommonly seen in x-ray plates of grafts where the periosteum has been removed or has become stripped up during the grafting operation.

The contact with the host bone should be secure and as rigid as possible. While it is possible to secure rigidity by the use of absorbable suture material such as kangaroo tendon, this suture tends to soften too soon. I have not been able to satisfy myself of harm being done by metal suture, such as phosphor-bronze wire, which gives the necessary firm contact and retains its grip until union has taken place. It has been stated that wire interferes with the blood supply of the bone, but that is an unproved assertion, and if the graft be thick enough the wire cannot be tightened so as to strangle the whole thickness of the bone; in any case it need not be tightened more than sufficient to ensure contact.

Various Types of Graft.

The wedge-shaped graft is unsatisfactory because it is impossible to obtain sufficient contact with the host bone without splitting the host for a considerable distance; and also, if the wedge is to be thick enough, the spreading of the host bone at the base of the wedge makes a clumsy thickened boss of bone when union has taken place.

The inlay graft satisfies the requirements stated above in an efficient manner; it can be cut the required size so as to secure the proper thickness and length for the overlap. It can be neatly mortised into the host bone, and can be fixed with the rigidity necessary.

The intramedullary graft is easy to insert into one end of the host but a difficult matter at the other, and while one can get good contact with the first inserted end the second is not possible, and here non-union frequently results. The medullary cavity is often unhealthy, although the compact bone may appear fairly normal. In some cases I have seen, the compact tissue has been a mere shell enclosing soft semi-diffluent marrow, and the bone has frequently to be cut away for a considerable distance before tissue healthy enough to receive the graft can be found.

The thrust graft modification of the inlay is a risky method to employ unless one is sure that sepsis will not flare up. If the case becomes septic then the pus may track up the whole length of the shaft of the two fragments.

I have given up the use of the purely intramedullary graft. The combined inlay and intramedullary is a very useful method, especially in the heavier bones where one wants thickness of graft. Where there is much deviation of the fragments from one another laterally, the fragment most out of alignment should be selected for the insertion of the intramedullary portion of the graft; the other end can then be contracted with the host bone by a long overlapping inlay.

Stepping is a method for use under certain circumstances. In the humerus it gives good results, but it necessarily shortens the arm, and if the gap is large the shortening may be very considerable. The other methods give quite as good results as regards union, without the disability of a short arm.

In flail-shoulder I have used a double graft between the glenoid and the humerus; this has given the requisite strength, and kept the arm of normal length, the patient being able to abduct the arm to a right angle by scapular action.

In the ulna non-union frequently occurs after grafting, and this probably happens in the majority of cases where there is a large gap near the upper end of the bone, and where the bone has not been kept as rigid as possible by apparatus during the healing of the septic wound.

Normally the radius in pronation and supination rotates through an arc, the centre of which is the line joining the upper and lower radio-ulnar joints—the so-called "bucket handle" action. When, however, the ulna is fractured in its upper third, especially if there is a gap between the fragments, the radius is drawn toward the upper fragment of the ulna by the contracture on the pronator radii teres and the flexor group of forearm muscles. The radius then rotates through its own long axis and the lower fragment of the ulna is carried to and fro with it; a joint is thus easily formed at the junction of the upper fragment of the ulna and the graft—at least the upper end of the graft is subjected to a lateral strain during healing instead of a longitudinal one. In these cases, when the graft has consolidated at the lower end and thickened throughout, a fairly useful arm results even although a joint remains at the upper end of the graft. When a case has reached this stage further operation should not be recommended.

In gap fractures of the tibia the sliding inlay or ordinary inlay graft gives good results. In some cases a portion of the fibula may be cut out and used as a strut, placed in the gap in the tibia.

After-Treatment.

The after-treatment of these cases is very important. The limb should be encased in plaster at the operation, in the best position as regards longitudinal strain on the grafted bone. A window should be cut in the plaster over the wound on the next day, for relief of pressure on the wound area and for future dressing if necessary; the window is filled in with plaster again as soon as the skin is healed. The plaster must remain undisturbed for at least two months or longer if necessary.

After the plaster has been removed the limb should be supported in a light apparatus, poroplastic or other mould, and muscle movements carried out, at first by massage and later actively, so that growth in the graft may be stimulated in accordance with Wolff's law. Sometimes union appears to be delayed for no obvious reason; in these cases a further period of rest in plaster and massage sometimes results in firm union without any further active operative procedure.

EXTRAPLEURAL THORACOPLASTY IN THE TREATMENT OF PULMONARY TUBERCULOSIS:

EXPERIENCES FROM 75 OPERATIVE CASES.

BY

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SINCE to-day, for the first time, I have the honour of reading a paper to the British Medical Association I am especially glad that it is possible for me to do so at Glasgow, for, as we all know, Glasgow was the cradle of modern surgery—it was here that Lord Lister began his famous experiments with carbolic acid in the treatment of wounds. His work finally led to such brilliant results that no surgeon in any country or in any period of history has rendered such great services to mankind. There is, however, another reason why it is specially gratifying for me to read a paper dealing with a branch of pulmonary surgery at Glasgow, and that is because in this city there lives Sir William Macewen, who performed daring operations on the lungs before the majority of other surgeons. If I might be permitted to express myself in this country in a German expression, I would say that Sir William is *der Altmeister* of all pulmonary surgeons.

In electing to speak of the importance of extrapleural thoracoplasty in the treatment of pulmonary tuberculosis, I do so because I suppose that I have, so far as I know, a greater experience in this domain than any British surgeon, for since 1914 I have operated upon 75 patients suffering from pulmonary tuberculosis. I cannot enter here into all the details connected with this subject, but I should like to draw attention to my paper in the *Lancet* of October 16th, 1920, and to-day I shall give you a short general review of the indications, the technique of the operation, the after-treatment, and my results. To supplement this review I shall show a number of lantern slides, and I shall also demonstrate three patients who were operated upon with success three to four years ago, and who have crossed the sea with me to be shown to this meeting. It must be stated, however, that the operation in its present state of development was first planned by Brauer, at that time professor of internal medicine at Marburg, and that the technical development of the operation is mainly due to Friedrich and Sauerbruch. The operation was first performed by Friedrich in December, 1907.

Indications.

Extrapleural thoracoplasty belongs to the same category in the treatment of pulmonary tuberculosis as artificial pneumothorax; both aim at a collapse of the lung with resulting retraction on account of the increased development of connective tissue, and thereby healing. As, however, artificial pneumothorax is less risky than thoracoplasty, I demand as a rule that inflation shall have been employed either without result, or unsuccessfully on account of extensive adhesions, before the patient is advised to have thoracoplasty. On the whole it may be said that the indications for thoracoplasty coincide with the indications for artificial pneumothorax, and that the former should be employed when the latter cannot be used.

As regards the so-called "healthy" lung, it should be required that there are not, nor have been, demonstrable clinical symptoms in that lung, or that such symptoms in any case have quite disappeared, or, during a long period of expert observation, that they have remained stationary and of slight extent. Even though there may be little or nothing to find clinically in the "healthy" lung, it happens not infrequently that in the *x*-ray photograph we can find such extensive changes that an intended operation has to be abandoned. An *x*-ray examination of both lungs is therefore absolutely essential.

It must be strongly emphasized that this branch of surgery demands intimate co-operation between the surgeon and the physician in charge of the case. Best of all, the patient should be observed and treated at a special sanatorium before the operation. In the case of the sanatorium physician, who may be assumed by daily observations to know the patient thoroughly, there appear two difficult problems for solution: (1) Can it be decided whether any existing physical alterations in the "healthy" lung are due to a healed-up, a stationary, or a progressive process? (2) He must ascertain at an early stage the moment when he considers continued expectant treatment, including artificial pneumothorax, to be of any value for the patient's health. It is an easy matter to wait too long, so that when at last the patient is sent for operation large cavities have already developed in the lungs. Even if I have patients who, in spite of cavities as large as a hen's egg, or even larger, are still healthy from one to five years after the operation, there is no doubt that cavernous unilateral pulmonary tuberculosis gives a much more unfavourable prognosis as regards permanent cure after thoracoplasty than the infiltrating shrunken forms. Repeated haemoptyses should, in cases of doubt, hasten the decision to undertake thoracoplasty.

A slight tuberculosis of the larynx is not a contraindication of operation, as it may well be assumed that any further improvement in pulmonary tuberculosis, with diminished cough and expectoration, will have a favourable influence upon the laryngeal tuberculosis, in analogy with the improvement in a tuberculosis of the bladder after removal of a diseased kidney. Neither does tuberculosis in one kidney constitute an absolute contraindication; in the autumn of 1921 I removed the left kidney, and at the same time performed thoracoplasty on the same patient, who at the present time is doing very well. Absolute contraindications are found in an advanced stage of tuberculosis in the other lung, and the general contraindications which militate against any serious operation.

Technique.

The patient is placed upon the healthy side, with a large sandbag beneath, in order to press forward the diseased side. I have always performed the operation by the aid of the hook-shaped Sauerbruch incision. The arm is drawn outwards and the skin and muscles are cut down to the lumbo-dorsal fascia. The scapula with the covering soft parts can then without difficulty be lifted out from the thoracic wall, and it is then possible to remove as large portions of the ribs as may be desirable. The question is now, which ribs to remove and how much of them. As the object of extrapleural thoracoplasty is not only to get the lung to collapse, but also to put the diseased lung out of function, the resection must include many ribs. Even if the infection of the lung is limited, the resection of the ribs should proceed far beyond the diseased part of the lung; indeed, it may well be said that extrapleural thoracoplasty has developed into a typical operation, in which resection is always made from the tenth to the eleventh, up to and including the first rib.

It is sufficient to resect 6 to 7 cm. of the eleventh rib, 12 cm. of the tenth and ninth, and 15 cm. of the following ribs up to and including the fourth; of the three uppermost as much as possible is taken, which in general will be 12 cm. for the third, 10 cm. for the second, and 2 to 3 cm. for the first rib. The total amount of the resected ribs thus amounts to about 120 cm., varying from 90 to 180 cm. I have resected about a hundred yards of ribs from my 75 patients.

An extremely important point in costal resection is that the ribs ought to be resected as far back as possible—that is to say, far beyond the costal angle, right up to the costal tubercle, and the point of the transverse process. It is almost thirty years since the Frenchmen Boiffin and Gourdet emphasized how important it is in the treatment of chronic empyema to remove the posterior parts, which are the stiffest and most curved part of the ribs; if we remove only the posterior part, the anterior part of the ribs, on account of the flexible costal cartilage, will easily be pressed inwards towards the thoracic cavity and the costo-vertebral angle will to a large extent be effaced. It is this principle in costal resection which has now been transferred to extrapleural thoracoplasty.

When, after having resected the ribs lying below, I reach the fourth or the third rib, I always perform apicolysis—that is to say, after resection of the fourth or third rib I make an incision through the periosteum and the endothoracic fascia; you can now with the finger, without difficulty, loosen the top of the lung from the thoracic wall, so that between the lung and thoracic wall there arises an extrapleural cavity larger than a hen's egg. If there are then cavities in the apex, we may sometimes both see and feel how they collapse. If apicolysis has been performed, resection of the two upper ribs, the most difficult part, from a technical point of view, of the operation, will proceed more easily since it is then unnecessary to entertain any fear of injuring the lung. In order as far as possible to avoid the contents of the cavity being forced into the bronchi, it is necessary for the patient on the morning of the day of operation to cough up as well as he can all the contents of the diseased lung.

Resection of the first rib may be somewhat troublesome. In order to facilitate this I have modified the usual Doyen's costal raspiratory, so that the effective part of the instrument does not cut vertically in relation to the handle, but coincides with the axis of the latter.

The muscles and skin are each sewn up separately. A large glass drainage tube is placed in the lower posterior angle of the wound, although I have sometimes entirely closed the wound without any disadvantage. The bandage must be supported by three broad strips of plaster, running horizontally, so that the thoracic wall, which has been mobilized by the operation, may not give way too much to the shock of coughing during the first few days after the operation.

It may be difficult to get cavities in the apex to collapse by thoracoplasty alone. I have on twelve occasions performed (by the method of Tuffier) free transplantations of subcutaneous fat, first resecting the third or preferably the fourth rib in the axilla, and then performing apicolysis from the place of resection. In the extrapleural space, larger than a hen's egg, thereby created, there is then placed a large piece of fat taken from the anterior abdominal wall. In one case I used with good results half of the right breast instead of fat; in another case recently operated upon, after resection of the anterior parts of first to the fourth ribs, I loosened the lung from the thoracic wall and pushed the pectoralis major and minor muscles into the cavity, after having severed their attachment to the humerus and the coracoid process respectively.

The next important question is: Should the operation be performed in one or two stages? I have tried both ways, and my experience shows that two stages are less risky than one. In 54 cases I planned to complete the operation in two stages. It happened on two occasions that the second stage of the operation was not performed, because the patient's general condition was too bad. Two patients died after the first stage of the operation, but 50 survived both stages—a mortality of about only 4 per cent. Of 21 patients where the operation was performed in one stage, 6 died—a mortality of about 30 per cent. I must therefore advise those who desire to try these operations to perform the first of them at any rate in two stages.

In performing the operation in two stages, the cut in the second stage is much higher up than in the first and proceeds downwards to about angulus scapulae and from thence farther forward. In the operation in two stages I resect ribs eleven to six or five costal in the first stage, and five or four to one in the second stage. As a rule from two to three weeks should elapse between each stage of the operation. On the other hand, I have sometimes obtained good final results when I have been obliged to postpone the second stage of the operation for many weeks, because the general condition of the patient did not permit the operation to be performed before.

Should general or local anaesthesia be employed? Most of my patients have been operated under local anaesthesia, but by degrees I have more and more resorted to general anaesthesia and I am astonished to find how well on the whole my patients stand this.

Course of the Disease and After-Treatment.

During the operation the pulse rate often rises to 120 or 130 or even more, and the respiration rate to 40. When the patient has been put to bed again, the pulse and respiration usually improve quickly. In some cases the pulse does not rise to more than 80 or 90, the respiration to more than 26 or 28. Some patients vomit during the operation.

Immediately after the operation we observe a marked collapse of the thoracic wall with paradoxical respiration, the mobilized part of the thoracic wall being drawn inwards during inspiration and pushed outwards during expiration. Dyspnoea, troublesome expectoration, and pains in the chest, radiating to the shoulder and upper arm, especially trouble the patient during the first days after the operation. The dyspnoea is partly due to "mediastinal flutter," partly to the laboured action of the heart on account of the displacement. The heart has to grow accustomed to the latter before it can act normally.

Expectoration must be relieved. This is done in various ways. An extra nurse remains with the patient day and night in order to support the operated side during attacks of coughing, and in order to encourage him to expectorate. A good compressing bandage is of importance both as regards the cough and in order to produce collapse of the operated side. But above all it is important to give the patient sufficient narcotics, morphine or omnopon, in order to relieve pain and thereby facilitate expectoration, and moreover narcotics have a beneficial influence upon an eventual "mediastinal flutter."

The amount of sputum diminishes often while the patient is still in hospital, and in a number of cases it diminished in the course of a few weeks from 150 grams in twenty-four hours to 30 or 25 grams or even to zero. As a rule a rapid diminution in the amount of sputum is a good but not completely reliable prognostic sign. At the same time that the amount of sputum diminishes the number of tubercle bacilli also diminish. Frequently on a patient's discharge from hospital we may find only a few or even none, even if on his arrival at the hospital his sputum swarmed with tubercle bacilli.

The temperature often remains high and the pulse frequent for four or five days, but in cases progressing favourably it then falls to about normal; at the same time the pain also diminishes considerably. The patient soon begins to feel better, and is especially gratified because the cough is so much less troublesome. The large wound almost always heals by first intention, and the patient, even two or three weeks after the operation, can begin to sit up, or if the operation has been performed in two stages five or six weeks after the first operation.

The operated side of the thorax falls in considerably, so that the anterior margin of the scapula can be seen from the front. With the cystometer we can measure a diminution of the operated side amounting to 5 or 6 cm., or up to 10 cm. We can feel distinctly how the anterior ends of the resected ribs approach the posterior ones, so that the distance between them decreases from 12 to 15 cm. to 5 or 6 cm., 3 or 4 cm., or even less. At the same time the anterior ends move downwards, so that, for instance, the anterior end of the seventh rib rests opposite the posterior end of the eighth rib.

There develops scoliosis of the spinal column with the convexity towards the diseased side—the reverse of the post-empyemic scoliosis—presumably because at the operation we cut or paralyse a larger or smaller part of the long back muscles; the muscles on the healthy side therefore gain the supremacy so that the spinal column is bent convexly towards the operated side. The mobility of the arm is at first greatly restricted on account of pain, but by degrees it returns, except where the scapula has been entirely fixed. On the whole it may be said that the permanent inconveniences of the operation *per se* are slight.

After-Treatment.

When the patient is discharged from hospital he is sent back to the sanatorium in order to undergo the necessary after-cure for at least three or preferably six months. In favourable cases improvement continues there, evincing itself by a constantly diminishing amount of sputum, the fall of the temperature right down to normal (if it has not done so before), improved appetite, increase in weight, and better spirits. In order to judge whether the patient has derived any benefit from the operation we must lay some stress upon whether the amount of expectoration diminishes, whether the tubercle bacilli disappear, or see whether the temperature remains normal or increased, and last, but not least, we must pay regard to the patient's general condition. On the other hand, the physical conditions of the operated lung are so difficult to determine after the operation that very frequently they cannot be given any appreciable importance. If prior to the operation there were marked symptoms of cavity formation, we may, in favourable cases, be able to find that the metallic and amphoric breathing are replaced by crepitations, with or without bronchial breathing. But all abnormal sounds do not disappear; weak amphoric breathing may be found even though it was lacking before, and is due to the large bronchi, which pass through a stiff, retracted pulmonary tissue. Even in the very best cases we never achieve normal physical conditions in the operated lung. The percussion sound continues to be subdued, in some places very faintly tympanitic, at others quite dull. Abnormal respiratory sounds may be heard, because both lung and thoracic wall have lost their elasticity, so that it is difficult for the lung to get rid of expectoration. Therefore a slight cough and meagre expectoration without tubercle bacilli, in connexion with the above physical changes, cannot be taken to be bad signs, provided that the general condition, temperature, and pulse of the patient are satisfactory.

CONCLUSIONS.

Between May 1st, 1914, and June 1st, 1922, I performed 75 extrapleural thoracoplastic operations for pulmonary tuberculosis. Of those operated upon 37 were men and 38 women. The operation was performed 46 times on the left side and 29 times on the right side. With regard to men the operation was performed 20 times on the left side and 17 times on the right side. With regard to women the corresponding figures are 26 and 12. Of these, 8 (3 women and 5 men) died from the operation; 7 when the disease was in the right lung, 1 when in the left. Thus I have had, out of 46 cases of left-sided pulmonary tuberculosis, 1 death from operation, and out of 29 right-sided cases 7 deaths.

Results of 75 Extrapleural Thoracoplasties.

Year.	Number.		Dead, 29.			Still Alive, 46.		
	Men.	Women.	From Operation.	From Tuberculosis.	From Other Causes.	Symptomless and Able to Work.	Tuberculous	Result not yet Fixed.
1914	1	4		3		2		
1915	2	2	2	2				
1916	1	3	1	3				
1917	3	11	1	7	1	4	1	
1918	4	2		1		3		2
1919	6	6	1	1		7	2	1
1920	5	5		3		2	4	1
1921	10	4	1			7	2	4
1922	5	1	2					4
	37	38	8	20	1	25	9	12
	75							

Several of the deaths took place with the same clinical appearances; one or two days after the operation the temperature rose to 102.2° or 104°, the pulse rate to 120 or 140 or more, and remained so until death, after the lapse of four to eight days. In one case a patient died the following morning, with a temperature of 106°. These patients had usually no dyspnoea, and the tongue remained moist. At the *post-mortem* examination there were found small submucous haemorrhages in the stomach and duodenum, and flabby cardiac muscles, but otherwise nothing to explain the cause of death. This is regrettable, for it has happened several times that precisely in these fatal cases the operation passed off particularly well, the patient has not been visibly affected, and we considered ourselves justified in entertaining the highest expectations; then fate suddenly delivered one of those unexpected blows which to a special degree it seems to have reserved for us surgeons. If, therefore, we could find a method which could tell us in advance which patients it would be dangerous to operate upon—a test, for instance, of the same value as the determination of the quantity of urea in the blood of kidney patients—much would be gained. We could then hope to take away much of the ominous character which still surrounds thoracoplasty. It is in that direction that we are at present carrying on investigations at my clinic in Christiania, although I am unable to say as yet whether we shall succeed in obtaining any useful results.

What is the fate of those patients who survive the operation? To judge of this it is necessary, in any case, to wait at least until one year after the operation, and it is preferable, as in the case of cancer, to wait for three years. Sixty-four of my patients have been under observation for more than one year, up to eight years, after operation. Thirty-eight (59 per cent.) are still alive, 26 are dead. Twenty five (39 per cent.) are alive and have no symptoms and are more or less able to work; 9 are tuberculous; and in the case of 4 the result is not decided. Of the 26 deaths 5 were due to the operation, 20 to tuberculosis, and 1 to influenza. Thirty-seven patients have been observed for more than three years, up to eight years, after operation; 16 (43.2 per cent.) are alive, of whom 12 (32.4 per cent.) have no symptoms and are more or less able to work; 1 has tuberculosis, and in the case of the other 3 the results remain to be seen; 21 died, 4 through the operation, 16 of tuberculosis and 1 of influenza.

These results show that the danger to the patients lies in a new outbreak of tuberculosis in the other lung, and, further, they agree to a considerable extent with the results of our operations for cancer, resembling especially, as far as my own cases are concerned, the statistics of the operative results of cancer of the rectum. The immediate mortality resulting from the operation is 10 per cent. and the number of cures after three years' observation amounts to one-third. As the years pass more and more of the patients die of the original disease: cancer patients of recurrence or metastases, phthisis patients of tuberculosis in the lungs or elsewhere. Just as unexpected cases of recurrence or metastases can be met with in cancer patients several years after the operation, I have, after thoracoplasty, met individual cases where patients can be for three to four years without cough or tubercle bacilli until one day they die on account of a new outbreak of tuberculosis in the other lung.

Discouraged by the results of our cancer operations, we make a point of impressing upon practitioners that the diagnosis must be made earlier so that patients may come up sooner for the operation. An improvement of the results of extrapleural thoracoplasty is, on the other hand, not a question of early diagnosis, but, as mentioned before, a question of early correct prognosis. Just as an early diagnosis cannot save all cancer patients, no more can an early correct prognosis save every case of unilateral pulmonary tuberculosis. As long as we have no specific against cancer and tuberculosis there will always be, in spite of our best efforts, a number of patients for whom our science can do nothing. We must not give in, however; the more doctors who work in the same direction, the greater are the prospects of obtaining better results from all operations, including thoracoplasty.

Since I commenced to perform these operations in Norway eight years ago several of my colleagues have followed suit. In all 67 thoracoplastic operations have been performed in Norway by other surgeons, with only 6 deaths following the operations; in other words, rather better results than I can show. I have come over here on purpose to interest my British colleagues in this work, and I do not doubt that with their well-known energy and fund of common sense they will make valuable contributions to this branch of medical science.

The concluding points which I wish to make are as follows:

1. In unilateral or mainly unilateral pulmonary tuberculosis which is not cured by rational expectant treatment or pneumothorax, good results can be achieved by means of extrapleural thoracoplasty.

2. The operation should only be performed after an exhaustive conference with the physician treating the patient, who must have been enabled, by observation during a considerable period, to form a considered opinion of the prognosis with continued expectant treatment.

3. Resection of the ribs should be carried out, under local or general anaesthesia, through a paravertebral incision so that the posterior part of the ribs from the eleventh, or in any case from the tenth, to the first inclusive can be removed.

4. If a cavity remains, it can be brought to collapse by means of intrathoracic transplantation of fat.

5. It is necessary that medical practitioners should acquire knowledge of the indication and results of extrapleural thoracoplasty. As one can rely upon saving one-third of the patients who, without the operation, would be doomed no doctor has now the right to withhold the chance of operation from suitable patients.

CHRONIC DUODENAL ILEUS.

BY

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THE duodenum may without doubt be regarded as the most vitally important segment of the gut. We know that a duodenal fistula is associated with rapid wasting and tends to be fatal if not promptly dealt with. A complete obstruction of the duodenum, such as occurs in the condition generally known as acute gastro-mesenteric ileus, is followed by very striking symptoms of shock and collapse, and, if unrelieved, quickly ends in death.

Anatomically the duodenum occupies in the greater part of its course a secluded retroperitoneal position, owing to the rotation of the gut in foetal life. This rotation of the gut

has the effect of bringing the superior mesenteric vessels to lie athwart the terminal part of the duodenum, so that the latter passes, as it were, under a bridge, the arch of which is subject to variation of level according to the tension on the mesentery of the small intestine and proximal colon. If the rotation of the gut were constant in its manner and degree, and if the support of the viscera by the tone of the abdominal wall were a constant and standard factor, then this retromesenteric course of the duodenum would present no peculiar difficulties or abnormalities. It is common knowledge, however, that the rotation of the gut is subject to frequent abnormalities, that the fixation of the proximal part of the colon is likewise subject to great variation, and that the support of the abdominal viscera is a factor prone to the greatest variation of all. Consequently it is no matter for surprise that the duodenum should under certain circumstances be exposed to compression and obstruction where it courses behind the root of the mesentery. Does such compression, short of the acute, complete, and fatal form, give rise to any recognizable symptoms? Is there, in fact, such a clinical entity as chronic duodenal ileus, and if so is it susceptible to surgical treatment? These are the primary questions with which I propose to deal.

The appreciation of any pathological condition almost necessarily begins with a recognition of its grosser forms. These once established, we are in a position to appreciate the lesser degrees of the same process.

My experience of this condition dates from the case of a woman, aged 54, operated on by me in the wards of our President (Professor Alexis Thomson) in the Royal Infirmary, Edinburgh, in which acute and fatal duodenal ileus from compression of the third part of the duodenum by the superior mesenteric vessels followed on symptoms of flatulent dyspepsia and vomiting. Since then I have had a second fatal case in a young man in whom repeated attacks of bilious vomiting culminated in a final and fatal attack. The patient was seen when in a practically moribund condition, and he died on the table as the abdomen was being opened. An opportunity was thus given to fix *in situ* the striking pathological appearances, and these are well brought out in the drawing made at the subsequent *post-mortem* examination. (Fig. 1.)

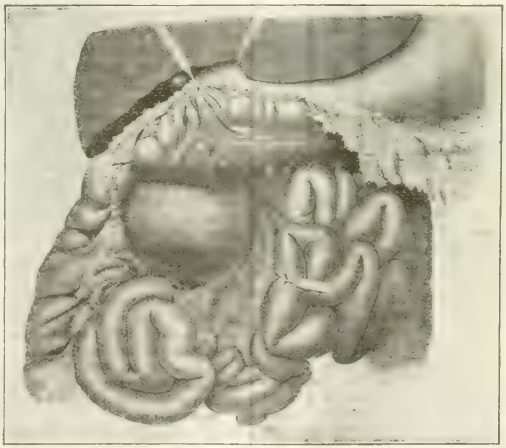


FIG. 1.—*Post-mortem* appearances in fatal case of chronic duodenal ileus. Transverse colon pulled up, showing greatly dilated third part of duodenum.

Apart from these two fatal cases I have now encountered 27 cases in which this condition gave rise to symptoms which had persisted in spite of medical treatment and were sufficiently pronounced to call for surgical interference. Before entering into any analysis of these cases it will be well to look at the clinical picture in this condition.

Symptomatology.

The patient is usually a female who complains of flatulent dyspepsia—for example, of pain or discomfort in the epigastric region coming on from one half to two hours after meals, associated with a feeling of distension. The latter may be so pronounced that she may have to loosen her clothes to get ease. She further complains of headaches, nausea, loss of appetite, and constipation. She will usually state that for years she has been subject to bilious attacks lasting for one or two days and characterized by headache, nausea, and bilious vomiting. Such attacks usually give a temporary relief from the other symptoms.

According to the age of the patient—and she may be of any age—she will date back her trouble for many years, usually to school days, although there may have been intervals, sometimes amounting to years, of relative freedom. The acute crises or bilious attacks may be altogether absent, and the patient's complaint is merely of chronic epigastric discomfort and distension after meals with possibly loss of weight. Occasionally pain is a prominent feature, and the explanation given by Leveuf that in such cases a tonic pylorus resists regurgitation into the stomach is probably correct. When the pylorus relaxes the pain ceases, vomiting follows, and relief is obtained.

Sometimes the picture may be somewhat obscured by secondary developments—for example, by symptoms of duodenal or gastric ulcer or those of gall stones, conditions which tend to complicate chronic duodenal ileus. In pronounced cases the great loss of weight and almost cachectic appearance of the patient may suggest gastric carcinoma.

The neurasthenic state which is apt to supervene in long-standing cases may make the assessment of symptoms a matter of considerable difficulty. The long-standing history is, however, always suggestive, and if the patient volunteers, as several of mine have done, that the only way to obtain relief from this discomfort is by lying on the face or adopting the genu-pectoral position, then a strong suspicion of duodenal ileus is warranted.

When an acute crisis supervenes the patient may rapidly pass into a critical condition, characterized by sunken eyes, rapid pulse, and distension of the upper part of the abdomen. The prompt recognition of this is of the utmost importance, as the extreme dilatation of the stomach may lead to paresis of its musculature, vomiting may cease, and death ensue.

Physical Examination.

This may be entirely negative, but may reveal obvious epigastric distension or a large splashing stomach. In two cases I have elicited splashing in the duodenum to the right of the umbilicus, but this is exceptional. Some tenderness will usually be found just above and to the right, and also in some cases just above and to the left of the umbilicus. Evidence of a general visceroptosis or of a low ballooned and gurgling caecum will frequently be present.

X-ray examination will offer the most convincing proof of the presence of duodenal obstruction. To be of value, however, the examinations must be made at repeated short intervals after the bismuth meal, and in various attitudes. If made when the patient is complaining of symptoms, the radioscopic findings will not fail to be of value; made during a period of freedom from symptoms, they may be altogether negative. As a rule, the stomach is seen to be low and dilated, the duodenal cap greatly enlarged and showing a soup-plate retention. The second part of the duodenum throws an abnormally dense shadow, is enlarged, and frequently shows evidence of antiperistalsis. In the milder cases the third part of the duodenum may not show clearly; in the more severe cases it is a striking feature. There may be, in addition, definite signs of the presence of a gastric or duodenal ulcer, or of the entry of bismuth into a dilated common bile duct.

Complications of Chronic Duodenal Ileus.

Sufficient has been said already to indicate what these are. Chronic stasis in the duodenum must be regarded as a factor predisposing to duodenal ulcer. By this I do not mean that in the majority of cases of duodenal ulcer a duodenal ileus is present, for it is not. What I have found, however, is that in quite a fair proportion of patients suffering for many years from symptoms of duodenal obstruction a duodenal ulcer eventually develops with its own typical symptoms. In six cases I have found this combination; in one of these a gastro-enterostomy relieved all symptoms. In two no relief followed

Synopsis of 21 Cases of Chronic Duodenal Ileus Treated by Duodeno-jejunostomy.

No.	Sex.	Age.	Duration of Symptoms.	Pain.	Vomiting.	Bilious Attacks.	Loss of Weight.	Previous Operations.	Operative Findings.		Result of Operation.	Remarks.
									Dilatation of Duodenum.	Other Conditions.		
1	F	38	Yrs. 20	+	+	+	2 st.	—	+++	—	Immediate relief	One year after some pain under the costal margin.
2	F	44	7	—	++	+	—	—	++	Cholecystitis and gall stones	Cure	No vomiting since operation.
3	F	35	21	+	+++	+	14 lb.	Two gastro-ente ostomies, Roux's Y	++	Two old gastro-ent. blin l loop com. with stomach	Greatly improved	Case much complicated by previous operations.
4	F	54	35	++	+++	+	36 lb.	—	++++	Gastric ulcer	Complete relief	Gained over 2 st.; can eat anything.
5	F	55	15	+	+++	+	14 lb.	—	+++	—	Relieved	Some acidity for 6 months, then rapid improvement.
6	F	39	8	+	++	—	slight	Ventral fixation, oöphorectomy, appendec. colo-pexy	++	—	Greatly improved	Vomiting ceased, and put on weight.
7	F	26	14	+	+++	—	*Nil*	—	++	—	Greatly improved	No more vomiting, seen 10 months after operation, in very good health.
8	F	36	8	+	+++	+	14 lb.	Cholecystectomy, appendectomy	++	Cholangitis, stenosis of common duct	Greatly improved	Cholangitis not completely relieved, required further operation on common duct.
9	F	61	40	+	+++	+	28 lb.	—	+++	—	Complete relief	Steady gain in weight after operation.
10	M	32	12	—	+++	—	30 lb.	Gastro-ent., adhesions, g.e. enlarged	+++	Old duodenal ulcer	Partial relief	Symptoms persisted; jejunal ulcer at gastro-enterostomy later resected.
11	F	40	22	+	+++	+	—	—	++	—	Complete relief	
12	F	25	8	+	+++	+	3½ st.	Appendectomy	++++	Great dilatation of stomach	Great relief	The most pronounced case met with.
13	F	23	9	+	+++	+	1 st.	—	+++	Gall stones in gall bladder and common duct	Immediate and complete relief	Rapid and complete recovery.
14	F	61	22	+	+	+	2 st.	—	+++	—	Complete relief	A very poor emaciated subject.
15	M	42	5	+	+	—	2 st.	—	++	Duodenal ulcer with stenosis	Cure	Rapid gain in weight.
16	F	32	8	++	+++	—	7 lb.	—	++	Appendix	Entirely relieved	
17	M	49	2 mths.	—	++	—	2 st.	—	+++	Carcinoma of stomach, infiltration of mesentery	Greatly improved	Previous to operation 48 hours' gastric retention; after operation empty in 6 hours.
18	M	29	3	++	++	+	20 lb.	—	++	Duodenal ulcer with stenosis	Complete relief	Gained weight very rapidly after operation.
19	M	35	13	+	++	+	12 lb.	—	+++	—	Complete relief	The hypertrophy of the duodenal wall was noteworthy.
20	F	49	33	+	++	—	2 st.	—	++	—	Complete relief	Immediate improvement in general condition after operation.
21	M	44	15	—	—	—	7 lb.	—	++	Hepato-colic lig.	Striking improvement	Dilatation of stomach and flatulence the prominent symptoms.

Note.—In addition to the duodeno-jejunostomy other operative procedures were necessary in some cases—for example: Case 2, cholecystectomy; Case 3, removal of old gastro-enterostomies; Case 8, choledochostomy; Case 13, cholecystostomy and choledochostomy; Cases 15 and 18, posterior gastro-enterostomy; Case 16, appendicectomy; Case 21, division of hepato-colic ligament.

a gastro-enterostomy, and in one of these a subsequent duodeno-jejunostomy effected a cure. In two cases complete freedom from all symptoms followed the combined operations of gastro-enterostomy and duodeno-jejunostomy.

In one case the patient died with unusual rapidity after the perforation of the ulcer. In one case of very pronounced and old-standing duodenal ileus in which the patient was wasted and cachectic and had latterly suffered from constant severe boring pain in the back there was found at operation, in addition to an enormously dilated duodenum, a chronic ulcer of the lesser curvature of the stomach. Using this as a test case the ulcer was left untouched and merely a duodeno-jejunostomy performed. The patient was immediately relieved of all pain as well as her distension and flatulence, rapidly gained 2 st. in weight, and from being a chronic invalid is now in good health fifteen months after the operation. As might be expected, chronic stasis in the duodenum with recurring catarrhal and obstructive attacks which so often accompany it is not infrequently associated with trouble in the biliary passages. The relative frequency with which post-operative acute gastro-mesenteric ileus followed on operations on the biliary tract suggested the possibility of a preceding chronic duodenal obstruction. The coincident occurrence of vomiting and escape of duodenal content through the opening in the common bile duct after an operation for the removal of a stone from that duct, a condition of which there are several cases on record and of which I have personally encountered one case, points again to the presence of duodenal obstruction.

The similarity in the symptomatology of the two conditions makes it frequently a matter of great difficulty to say whether a case is one of gall stones, of duodenal ileus, or of both. I have had to deal with three cases where the two conditions were combined in such obvious degree that the adequate handling of the case appeared to demand the treatment of both. In one case duodeno-jejunostomy was combined with removal of gall stones and cholecystostomy, in the second with removal of bile sand from and drainage of the common duct, in the third with cholecystostomy and with choledochostomy, stones being present in both gall bladder and common duct.

In none of these cases did the simultaneous performance of a duodeno-jejunostomy appear to add appreciably to the risk of the operation, and the convalescence in all was unusually smooth and rapid. In the case where stones were present in a dilated common duct it was of interest to note that a large gall-stone scoop and even the tip of the index finger could be passed readily through the common duct into the greatly dilated duodenum. The resemblance to a dilated ureter opening into a chronically dilated bladder was noteworthy.

A complication which must be mentioned is the presence of a previously performed gastro-enterostomy with symptoms suggestive of vicious circle. I have dealt with two such cases, and in both after removing the gastro-enterostomy performed a duodeno-jejunostomy.

Treatment.

For the milder cases treatment on medical lines may suffice. As visceroptosis is so frequently associated with the condition treatment directed to support the abdominal viscera, tone up the abdominal wall, and obviate constipation, is indicated. Most cases, however, are not diagnosed until the condition is so pronounced that treatment on the above lines would prove ineffective.

Surgical measures will aim at relieving the obstruction either by removing it or short-circuiting it.

If the obstruction be due to a drag on the mesenteric vessels from a mobile and prolapsed proximal colon, it may be relieved by fixing up the caecum and ascending colon. In two cases in which this seemed to be the factor operative, I obtained satisfactory results by colopexy. In the majority of cases, however, the colon is not mainly at fault but the tension on the mesentery appears to be due to the prolapse of the small intestine. The typical appearance in these cases is to see all the small intestines lying below the sacral promontory. Only with difficulty can they be dislodged, and they come out of the pelvis with a dull pop.

For such cases and for those in which the obstruction is due to a thickening and infiltration of the root of the mesentery either by chronic inflammatory, tuberculous, or malignant disease, much the simplest and surest treatment is to short-circuit the obstruction by performing a duodeno-jejunostomy—that is to say, by anastomosing the third part of the duodenum just proximal to the obstruction to the first coil of jejunum just beyond it. This operation is by no means difficult to perform in the type of case requiring it, involves little risk, has a surprisingly smooth after-course, and gives the most gratifying results. In order to demonstrate the condition at operation a stomach tube may be passed and the stomach inflated. The degree of duodenal dilatation and obstruction will then be evident.

I have now performed the operation in 21 cases with uniform success, and have been struck repeatedly by the immediate relief which it gives. Within twenty-four hours of the operation the patients express themselves as feeling relieved of symptoms which they have suffered from for years, and their progress is usually uninterrupted.

It would be out of place here to enter into technical details of the operation. It will suffice to say that efficient mobilization of the third and the lower end of the second parts of the duodenum is the secret of easy anastomosis. Although not covered by peritoneum the duodenum unites without difficulty, and I now use only the finest catgut for the anastomosis. The use of a special angled clamp simplifies the operation, but is by no means essential. When the operation is combined with a posterior gastro-enterostomy in cases of stenosing duodenal ulcer along with duodenal ileus, the duodeno-jejunal anastomosis should be planted on the jejunum about six inches beyond the gastro-enterostomy. Where an operation on the biliary tract is necessary the duodeno-jejunostomy should be done first to avoid the possibility of contaminating the subcolic area. The immediate results of this operation have in my experience been most encouraging. Apart from rupture of the abdominal wound owing to taking out through-and-through stitches too early, I have seen no post-operative complication and I know no other major abdominal operation followed by so smooth a course.

It is perhaps too early to speak of ultimate results, but in some of the most severe cases the results have been remarkable, the patients rapidly putting on two stones or more in weight, losing all nausea and flatulence and enjoying health such as they could not remember ever having had before.

In all cases improvement has followed, and so far I have encountered no complication peculiar to the operation comparable to jejunal ulcer following gastro-enterostomy.

The table (p. 1221) gives a synopsis of the 21 cases treated by duodeno-jejunostomy.

The operation of duodeno-jejunostomy was first suggested by Barker in 1906 and was first performed by Stavely[1] in 1908. Within the past two years numerous cases have been recorded and important papers on the subject have been published by Kellogg,[2] Leveuf,[3] and Duval and Gatellier.[4]

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[1] Stavely, *Surg., Gyn., and Obstet.*, xi, p. 288. [2] Kellogg, *Ann. of Surg.*, May, 1921, p. 578. [3] Leveuf, *Rev. de Chir.*, 1920, No. 11, p. 616. [4] Duval and Gatellier, *Arch. des Mal. de l'Appareil dig. et de la Nutrition*, 1921, tome xi, 145.

DISCUSSION.

Mr. L. A. DINGLEY (Wednesbury) said how grateful he was to Mr. Wilkie for his publication of the paper on chronic gastro-duodenal ileus in the *British Journal of Surgery* in October, 1921. Up to that time he had not been aware of this condition except in so far as it occurred following surgical operations, and then in the acute variety. Since the appearance of this paper he had seen three cases, one following a miscarriage, the other two occurring in patients without any immediate cause. He stated that the three cases gave the typical history as given by Mr. Wilkie, a history of flatulent dyspepsia for many years with the sudden onset of signs and symptoms of acute obstruction high up in the alimentary tract. Two of the cases certainly, and one probably, had suffered from previous acute attacks. The physical signs were as follows: The patient was usually a woman with rapid pulse, normal or subnormal temperature, vomiting, either bilious or faecal in character, with absolute obstruction. The abdomen was greatly distended in its upper half, resonant, and giving a stomach splash, whereas there was no distension on the flanks or lower part of the abdomen. On auscultation and percussion there was a resonant band occupying the whole of the upper half of the abdomen, which on the right side often took an acute bend in a downward direction for two or three inches. Peristalsis could frequently be seen from left to right, and one case showed a contraction giving the appearance of an hour-glass stomach. Mr. Dingley especially wished to draw the attention of all medical men, especially general practitioners, to that little known condition because by immediate treatment by the medical man who first saw the patients many lives might be saved. The treatment was very simple and was usually effective if carried out early. It consisted in placing the patient in the left lateral or knee-elbow position for several hours after drawing off the stomach contents with a stomach tube. After the acute attack had subsided the question of operation as suggested by Mr. Wilkie should be discussed.

Sir KENNEDY DALZIEL (Glasgow) described a case seen in consultation with the late Professor Samson Gemmell of Glasgow sixteen years ago, in which he recognized ballooning of the duodenum; the patient had been vomiting bile for ten days and was beyond operative help when seen by him. From that time he had been aware of the condition described by Mr. Wilkie. He had never dreaded it where there was no pathological change, but he agreed with Mr. Wilkie that sometimes they found old tuberculous glands which so thickened the mesentery that a by-pass had to be made. Mere pressure of small intestine would turn the scale against peristaltic action of the duodenum and acute dilatation. This condition of acute dilatation of the duodenum occurred sometimes and no operation was necessary; if there was no organic change in the mesentery he questioned if the formation of a by-pass was required. A Curtis belt often relieved, not so much because it pushed up the stomach, but because it aided and supported the whole intestine and prevented traction in the duodenum.

Mr. WILKIE, in reply, said that the point of greatest interest was that of vomiting after abdominal operations as an aggravation of the tendency to duodenal obstruction. It was thought by some to be paralytic, but the treatment, by passing a stomach tube and turning the patient on his face, made it evident that pressure was occurring on the duodenum. In several cases where the common bile duct had been opened and where vomiting had followed, duodenal contents had come out through the fistula by route of the common duct. In one case the dilatation of the common duct and ampulla of Vater was so wide that the finger could pass into the duodenum, so that it was not surprising that the duodenal contents passed back into the fistula. The prompt treatment was by turning the patient on his side, passing the stomach tube, and raising the foot of the bed.

AT a meeting of the Royal Statistical Society on December 19th Mr. T. T. S. de Jastrzebski read a paper on "Changes in the birth rate and in legitimate fertility in London boroughs, 1911 and 1921." In the administrative county of London in the nine months following the census of 1921 there was a fall of 9.4 per cent. from the same period of 1911, although the proportion of married women under 45 years of age in the population should have given an increase of 1.7 per cent. The decline in infant mortality, however, reduced the fall in the effective birth rate—that is, the rate obtained by deducting the deaths under 1 year of age from the births—to 4.2 per cent. Legitimate fertility showed a decline of 12.8 per cent., or when standardized for variation in the ages of the married women under 45, of 11.7 per cent. The gap between the boroughs with better economic conditions and those with a poorer population had diminished sensibly. The natural increase by excess of births over deaths in 1921 was 390,335 as against 354,328 in 1911, and this gain was at the first period of life. There was no reason to consider an infant mortality of between 50 and 60 per 1,000 births as beyond the scope of legitimate expectation. The general conclusions were that the reproductive forces at work in the nation are greater than the destructive, and that the problem of the immediate future is one of over- rather than of under-population.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

INFECTION BY BACILLUS PYOCYANEUS SIMULATING LEPROSY.

A MAN aged 35 had been suffering from perforating ulcers of the foot for a year before he came to me. He then had two perforating ulcers on the right foot—one on the heel about one and a half inches in depth, and the other on the second toe about half an inch in depth. He had also white discoloured patches over the left cheek, on the outer surface of the left arm, on the outer side of the left leg, and on the dorsal surface of the left foot. These patches were not anaesthetic. Besides these he suffered from burning and tingling sensation in both feet. These symptoms resembled those of leprosy, and in fact he was treated for this disease, before I saw him, with sodium gynocardate and sodium morrhuate, without much benefit. He had no nodules on the face, and the ears were not thickened. The ulnar nerve on the left side, however, seemed somewhat thickened. On examining the scrapings from the ulcer I was not able to find lepra bacilli, but I found a large number of slender bacilli with rounded ends, which on cultivation proved to be *B. pyocyaneus*. I prepared an autovaccine of *B. pyocyaneus* containing 100 millions of organisms in each cubic centimetre. This was given subcutaneously every week. The ulcers completely healed after eight injections. The discoloured patches were due to *Microsporon furfur*, and they cleared completely when treated with sodium hyposulphite. The burning and tingling sensation of the feet also disappeared under vaccine treatment, and the left ulnar nerve seems normal.

Hyderabad, Deccan, India. S. MALLANNAH, M.D.

HEREDITARY DEFORMITIES.

ON December 4th I attended MRS. W., who was delivered of a premature female child with a marked deformity of the left forearm and hand. The radius and ulna were shortened and the hand was inverted and at right angles to the forearm. The family history is as follows:

1. The woman had eight brothers, all born with talipes of the feet; six died in infancy; the two survivors grew up and had several operations performed.
2. A sister had a child with both arms deformed.
3. A cousin on her father's side had a child born with talipes and cleft palate and absence of the rectum necessitating colotomy.
4. On the other hand, the paternal grandmother had eighteen and the maternal grandmother sixteen normal children.

Wivenhoe, Essex. G. TRAVERS KEVERN, M.R.C.S., L.R.C.P.

VAGINA INFRA SEPTA, SUPRA SIMPLEX.

ON November 2nd I attended an East Indian woman at her fourth miscarriage. An East Indian woman friend had been called in to assist, and she felt unable to deliver the foetus. On examination I found a foetus of about 3½ months lying between the thighs and still attached to the cord. By its side was a mass like a blanched after-birth, also attached to what appeared to be a cord. What seemed strange was that the centre portion of the cord remained in the vagina into which the two parts disappeared. To my surprise, on pulling the foetus the placenta was drawn up to the vulva; and on pulling on the placenta the foetus approached the vulva. This was somewhat unusual. Passing two fingers into the vagina, I felt the cervix and the os, which appeared to be single. I could feel nothing to explain what had occurred. But by tracing the cord with the finger in the vagina it was found to disappear. By pressing firmly with the bent finger against the vaginal wall, I at length found the finger was hooked over a partition, and finally it reappeared at the vulvar orifice. It was evidently a case of partially septate vagina—infra septa, supra simplex.

What led to the discovery of the malformation was the accident of the foetus passing on one side of the septum, and the placenta on the other, each appearing by a separate vulvar orifice. This was proved by severing the cord. A fortnight later I made a more careful examination. The two vaginal openings were distinct and equal in size. Two fingers introduced into the vagina—one through each opening—met above the septum, which reached to about two-thirds the length of the index finger. I could discover no other abnormality.

Port of Spain, Trinidad, B.W.I. STEPHEN M. LAWRENCE.

Reports of Societies.

MYOCARDIAL DISEASE.

A PATHOLOGICAL meeting of the Liverpool Medical Institution was held on December 7th, with the President, Professor J. HILL ABRAM, in the chair, when there was a large attendance of members and associates. A number of interesting pathological specimens were shown, and a short discussion followed.

Dr. JOHN HAY then read a paper on myocardial disease as observed in five hearts, in each of which there were present abnormal electrocardiograms indicating inco-ordination in the manner of ventricular systole. Microscopical examination revealed some degree of pathological change in and around the junctional tissues in all except one, which was a case of Stokes-Adams disease; no explanation was offered to account for the complete block or the periods of ventricular stoppage, and this block was not modified by a hypodermic injection of atropine. After investigating these cases and considering the literature it might be said that it did not appear possible to estimate from an electrocardiogram the degree of the pathological change; but an abnormal electrocardiogram of the nature described justified the assumption of some myocardial damage. As a matter of clinical experience there appeared to be little doubt that electrocardiograms conforming to this type materially added to the gravity of the prognosis.

CASES.

Case 1.—Female aged 20; rheumatic myocarditis; mitral stenosis. Clinically there was a moderate degree of heart-block, made complete by digitalis, relieved by atropine.

Case 2.—Male aged 68; Stokes-Adams disease causing death. Clinically there was complete block.

Case 3.—Male aged 55; angina pectoris. Electrocardiograph indicated right bundle lesion.

Case 4.—Male aged 55; auricular fibrillation; chronic renal; adherent pericardium. The electrocardiograph was bizarre.

Case 5.—Male aged 47; syphilitic myocarditis with varying degree of heart-block. Electrocardiograph indicated involvement of the bundle.

Dr. PHŒBE INCE, describing her technique in the foregoing cases, said that a block of tissue was cut from the heart to contain the auriculo-ventricular node, the main bundle, and the upper part of the right and left branches. Serial sections were cut, one block being cut in the horizontal and the other four in the longitudinal plane. The sections were stained by van Gieson's stain, a few in each case being also stained by Verhoeff's elastic tissue stain. Disease of the arteries was demonstrated in Case 4. In Case 3, although there was marked atheroma of the coronary arteries, the artery to the node was unaffected. In the case of syphilitic myocarditis the arteries were apparently unaffected. In the rheumatic heart, Case 1, the main bundle had become involved through the extension of the inflammatory reaction at the base of the tricuspid valve. In Cases 2, 3, and 4 the bundle had suffered in varying degree from chronic fibrosis spreading inwards from the fibrous septum. In Case 5 the damage was most marked in the auriculo-ventricular node, where the nodal elements were almost entirely replaced by vascular tissue. The main bundle showed lymphocytic infiltration and fibrosis, becoming less severe as the bundle was traced to its branches. The left ventricle showed a patchy syphilitic myocarditis.

Professor ERNEST GLYNN spoke of the possibility of lesions occurring in the nervous mechanism of the heart as well as in the myocardium, in such cases.

Dr. I. HARRIS thought that heart-block due to disease of the auriculo-ventricular bundle alone would never give the Stokes-Adams syndrome. As long as the ventricles were normal they would develop a rhythm of their own, which, although at a slower rate, would be quite regular. Asystole for a long period would not take place. In cases where the syndrome appeared the long period of asystole suggested that there was something wrong in the part of the heart below the auriculo-ventricular bundle. Either the ventricle under certain circumstances was unable to develop stimuli of its own or it was unable to respond to stimuli, owing to the fact that its refractory period was longer than normal. It was

therefore possible that the Stokes-Adams syndrome might appear in cases where the auriculo-ventricular bundle was normal. The Q.R.S. complex was usually abnormal in such cases.

THE SCOPE OF DIATHERMY.

A MEETING of the Midland Medical Society was held in the Birmingham Medical Institute on December 6th, with the President, Dr. PURSLOW, in the chair, when about seventy members were present. The evening was devoted to a discussion of the scope of diathermy.

Dr. C. G. TEALL introduced the subject by outlining the physiological principles underlying the method, and gave a brief historical sketch of its development.

Dr. A. E. MILNER of Derby read a paper on the treatment of lupus by diathermy, in which he described in detail the operative procedure necessary, and gave a summary of his results. To illustrate his paper Dr. Milner showed twelve cases treated by this method; considerable periods had elapsed since cessation of treatment. Many of the cases had previously proved resistant to other methods of treatment, and the results were undoubtedly good.

Mr. MUSGRAVE WOODMAN spoke of the value of diathermy in the treatment of malignant diseases of the mouth and throat. He pointed out that although the primary seat of the growth might be totally destroyed by diathermy, it was impossible to deal with the lymphatic glands by this method, and that consequently the method had to be employed in conjunction with surgery. Mr. Woodman also touched on certain dangers connected with the method, and emphasized particularly that of secondary haemorrhage. He was of the opinion, however, that with improved technique these dangers would be considerably reduced. Subsequently Mr. Woodman and Dr. Teall demonstrated the technique of diathermy on pieces of meat.

Dr. E. P. CUMBERBATCH, of St. Bartholomew's Hospital, acknowledged the excellence of Dr. Milner's results, but pointed out that actually they had not been obtained by the use of diathermy properly so called—Dr. Milner's treatment by sparking the patches of lupus was not true diathermy. He then gave a review of the work that had been done lately at St. Bartholomew's Hospital by this method, emphasizing the fact that it had been possible to reduce an inoperable carcinoma to a state which had rendered operation possible.

Mr. B. J. WARD drew attention to the value of diathermy in the treatment of papillomatous tumour of the bladder, and showed several beautiful pictures made at the time of operation.

The PRESIDENT expressed the thanks of the Society to the speakers, and particularly to Dr. Milner and Dr. Cumberbatch, coming from so long a distance. He invited Sir Gilbert Barling to review the communications in the light of his long experience.

Sir GILBERT BARLING said that he was satisfied that diathermy was a method of value in well-chosen cases. He congratulated Dr. Milner on his results, but said that in some of them he thought as good, or even better, results might have been obtained by simple surgical operations. He thought that in the treatment of papillomata of the bladder it undoubtedly constituted a great advance, and also in nose and throat diseases. He believed, however, that wherever it was possible for an operating surgeon to excise a growth complete with its lymphatic drainage diathermy was unnecessary.

SENSORY DISTURBANCES IN RELATION TO DIAGNOSIS.

AT the seven hundred and first meeting of the Brighton and Sussex Medico-Chirurgical Society Dr. E. FARQUHAR BUZZARD gave an address on the subject of "Pain and other sensory disturbances in relation to diagnosis." He emphasized the extreme importance of a correct understanding and interpretation of subjective symptoms and expressed the opinion that without this the early diagnosis of many morbid conditions could not be obtained. Accuracy in obtaining a detailed history from any patient was the chief guide towards determining the nature of a lesion however effectively physical signs pointed to its localization. The difficulties connected with obtaining a satisfactory description of symptoms, such as pain, were very great, and the medical man needed as much patience and skill in cross-examination as did a barrister. He was always handicapped by the lack of education in all classes of patients, who had rarely been taught to think clearly or to be conversant with the use or meaning of the language they spoke. Dr. Buzzard illustrated the importance of accurate descriptions in relation to the various forms of headache, and discussed the possible causes which determined the time and incidence of pain in connexion with the headache due to gross organic disease as well as that due to anxiety states. He pointed out that while the lay mind might be most impressed by the constancy and persistency of headache, the trained medical mind should really pay perhaps more attention to those forms of headache which were transient and paroxysmal. The importance of other sensory disturbances in relation to diagnosis was illustrated especially by reference to the sensory disorders resulting from early patches of disseminated sclerosis, and emphasis was laid on the fact that slight sensory abnormalities unassociated with any disability or gross objective disturbances of function were always of organic origin and not hysterical. Such symptoms were often of great diagnostic importance and might lead to diagnosis of disease when treatment was most likely to be beneficial. In conclusion, the speaker referred to the various sensory symptoms characteristic of early stages of tabes dorsalis, and pointed out how diagnosis of that disease could be made when the lightning pains were present even in the absence of Argyll Robertson pupils and other well-known features of locomotor ataxy.

The PRESIDENT (Mr. A. J. Hutchison) congratulated Dr. Buzzard on his choice of subject and asked him if he could explain intracranial pressure. How was it, for instance, that a tumour the size of a pea could cause intense headache, and how was periodicity of headache to be explained? Mr. ROBERT SANDERSON thought that the lessening of the neurasthenic headache as the day went on was caused, not, as Dr. Buzzard had suggested, by the feeling of relief that the cares of another day were over, but by the strengthening influence of food. Mr. GEORGE MORGAN quoted the late Sir Lauder Brunton's observations of his own trigeminal neuralgia and his theory of an acid wave. Dr. HOBHOUSE spoke of the early morning headache associated with increased arterial tension. In neurasthenics the headache might be greater in the early morning because at that time they had nothing but their symptoms to think of. It was remarkable how often neurasthenics, re-examined after an interval of six months gave a different localization to their headaches. He had had a patient, aged 47, in whom the pressure of a cerebral tumour had forced open the frontal suture.

Dr. HELEN BOYLE thought it remarkable that very high blood pressure was associated so frequently with absence of headache. In neurasthenics the pressure usually was low, and she thought the lessening of headache during the day was caused by the circulation brisking up, hence the benefit of Weir Mitchell's prescription of early morning black coffee. Dr. GORDON DILL spoke of the type of intense frontal headache, with vomiting, which he attributed to auto-intoxication dependent upon failure of the filtering action of the liver. Dr. A. ORLEBAR asked for information as to the etiology of disseminated sclerosis.

Dr. BUZZARD, in reply, said that he thought Dr. Hobhouse's case most remarkable; it was unique in his experience. Dr. Dill's cases he took to be migraine. In disseminated sclerosis it was practically certain the cause was a spirochaete, and the most likely treatment to be successful was by arsenic on the same lines as in syphilis.

On the motion of Dr. GORDON DILL, seconded by Dr. WALTER BROADBENT, a hearty vote of thanks was accorded to Dr. Buzzard for his interesting address.

GYNAECOLOGICAL EXPERIENCES.

THE Obstetrical Section of the Royal Academy of Medicine in Ireland met on December 1st, with the President, Dr. BETHEL SOLOMONS, in the chair, when Dr. GIBBON FITZGIBBON showed two specimens of adenomyositis of the uterus.

The first was from a woman aged 37, who had had four children, the last one born three years before she consulted Dr. Fitzgibbon. She had been curetted twice, and examination of the curetting showed nothing of note. When she consulted him she complained of constant bleeding, and he took out the uterus to stop this. Except that it was slightly enlarged and soft there was nothing unusual in any part of it. The pathological report he received, however, was that the condition was adenomyositis of the uterus.

The second specimen was from a woman aged 50, who had had haemorrhage for three or four months, lasting from ten days to three weeks. He removed the uterus, and the pathological report was again adenomyositis of the uterus.

The PRESIDENT said that the differential diagnosis of fibrosis and adenomyositis uteri was impossible until the examination of the curettings or of the specimen had been concluded. He felt that the correct and safest treatment for "bleeding uterus" about the menopause was hysterectomy.

Dr. DOMINICK CANNON said that in his opinion treatment by *x* rays in cases of adenomyositis was useless.

Dr. STEVENSON thought that *x*-ray treatment had been proved to be of benefit in these cases, and that they were also amenable to treatment by radium; the structure of the uterine mucous membrane could be altered to a greater or less extent by radium.

Dr. ROWLETTE said that the first case resembled what was found in cases of fibrosis uteri, as it showed one very big dilated gland; the history of the case also was similar to cases of fibrosis uteri.

Dr. FITZGIBBON, in reply, said that both the specimens showed a well-defined tumour in the uterus. He had taken out a good many uteri which he would classify as fibrosis uteri, but if examined it would probably be found that a great many of them showed adenomyositis. In his opinion adenomyositis was not cured by radium.

The President, Dr. BETHEL SOLOMONS, showed a uterus with a large cervical myoma.

The patient was aged 35, and first consulted him in 1918 because of sterility. She had been married for eleven years to her husband, whose age was 54. The uterus had been curetted twice by different gynaecologists; a third gynaecologist had curetted and divided the cervix and later had opened the abdomen to dilate the Fallopian tubes. Dr. Solomons, having examined her and found everything normal except a discharging scar from the divided cervix, informed her that he could advise nothing further without examination of the husband; this was refused. In 1920 she consulted him again, and as there was no difference in symptoms or signs, nothing further could be recommended. In October, 1922, irregular menstruation started, with the passage of clots; she felt ill, and examination revealed a fibroid condition of the uterus. At laparotomy total hysterectomy was performed, with removal of one ovary which was cystic. The specimen revealed a fibromyoma springing from the anterior cervical wall; its weight was 15 oz.; microscopically it was a simple fibromyoma with hyaline degeneration. The cervix revealed an unhealed discharging wound from the divided cervix. The specimen called forth several interesting points, and was a comparatively rare specimen. In operating the ureters were isolated, an important and necessary procedure in these cases. The scar in the cervix revealed once more that the operation of posterior division, instead of helping sterility, usually caused it. Dr. Solomons considered that although cases might occasionally become pregnant despite this operation, its malperformance made it a danger in the hands of most operators.

Thereafter Dr. L. CASSIDY read a paper entitled "Recen experiences in Vienna," and Dr. DOMINICK CANNON a paper on treatment of malignant disease by radium.

The PRESIDENT said that there were many questions for discussion in the paper of Dr. Cassidy. Why did the Viennese school give chloroform in eclampsia? In Dublin it had been found disastrous. Why was hysterectomy done in addition to Caesarean section in concealed accidental haemorrhage? Many successful cases had been reported without hysterectomy. He regretted that plugging the vagina was not adopted as the treatment for revealed accidental haemorrhage; probably it had been tried and given up because of ignorance of the exact technique. He was surprised to hear that vaginal hysterectomy was still practised for cancer of the cervix; when in Vienna he had been impressed by the number of occasions when the ureter had been cut during the course of this operation. Interposition was advocated in the treatment of prolapse of the uterus; he believed that nearly all these cases could be cured by careful and thorough plastic work on the vagina. In conclusion, he hoped that the fact that for many years operations in Vienna had been started at 7.30 a.m. would make the people in this country start work earlier; in his opinion, work either in hospitals or in private should not be started later than 8.30 a.m.

Radium, continued Dr. Solomons, had become such a popular method of treatment that the time had come when the status of the radiologist and the gynaecologist must be defined. He believed that the latter should decide when a case required radium treatment, and that the former should carry it out and should send the patient to the gynaecologist from time to time for observation; the gynaecologist should not attempt radium treatment without the assistance of the radiologist.

Dr. ELLA WEBB said that she had taken a course in obstetrics in Vienna, and in her opinion there was no comparison between the teaching of obstetrics in Dublin and in Vienna. Dr. MACFETRIDGE said that he went to Vienna with great expectations, which in a great many respects were not realized. He went to the ophthalmic clinic, and the material there was very disappointing and scanty; on several mornings no operations at all were performed. The nursing there did not seem to him to be as good as it was in Dublin, but in many points they were far ahead, especially in research work and in pathology.

Reviews.

WOMEN IN THE FACTORY.

DAME ADELAIDE M. ANDERSON, late Principal Lady Inspector of Factories, has employed some of her leisure since her retirement in writing a book, *Women in the Factory*.[1] As Viscount Cave says in a brief preface, it tells the story of the women inspectorate from its beginning in 1893 until 1921, and a wonderful story it is of early opposition and obstruction patiently overcome, by conciliation and persuasion where possible, but when necessary by invocation of all the somewhat limited powers of the Factory Acts. In legal contests with persistently defiant employers the women inspectors had to fight their own battles in the courts, without solicitors to represent them, and in opposition to the expert pleaders whom the other side could engage. Nevertheless, the stone of David was often effective against the armour of Goliath, and intimate practical acquaintance with the statutes served frequently to counter the forensic art of the defence. Much better was it, however, when Miss Anderson and her staff could by friendly representation of plain facts bring over the employers to their side, as they often did, and persuade them not merely of the humanity or the decency of the proposals for amelioration, but of the actual profit which would result from reform. The authoress writes with great restraint throughout, even where the rhetoric of indignation might have been excused; but reading between the lines it is easy to understand how keenly she has felt during her quarter of a century's crusade for a better life for women workers. The reader will wonder how the conditions of labour, now in great measure remedied, ever came into existence or were for so long allowed to continue, but it is good to think that the women inspectorate has done so much to enlighten employers and the public and Parliament. The work, of course, is by no means finished.

While Dame Anderson is careful to avoid criticism of the administrative changes of 1921, which largely abolished the differences in the sphere of work of the men and women inspectors, the reader is led to suspect that she doubts or disbelieves in the wisdom of the change. That, however, is a question for experts intimately acquainted with factory work, and "fusion was the line of development chosen by the Home Office." We take it also that the authoress says a good deal less than she thinks when she refers (p. 236) to the Home Office memorandum of 1919 on Substitution of Women, which declared that "there were good prospects for women in this industry," whilst, on the other hand, early in 1920 it was reported that "the steady withdrawal of women from employment in men's industries that began after the armistice was almost completed," so that Miss Anderson herself concluded at the end of the year that there was "as yet no fulfilment of the expectations that after the war a body of industries and operations offering a hopeful field of fresh employment would be open to women where their war experience would be turned to account. On the contrary, an automatically operating force has closed all these expected new avenues."

In the course of the eight chapters which the book contains many other subjects are discussed, such as excessive hours, wages and the Truck Acts, dangerous and injurious trades, accidents and safety, employment of mothers, child labour, labour saving, fatigue, food and efficiency, workers' committees, and welfare management. Every chapter is well worth reading, and the reader will conclude that, whatever philosophers say, life in Dame Adelaide Anderson's case has not been a failure.

[1] *Women in the Factory*. An Administrative Adventure. 1893 to 1921. By Adelaide Mary Anderson, D.B.E., M.A. London: John Murray. 1922. (Cr. 8vo, pp. 316. 7s. 6d. net.)

DISEASES OF THE HEART.

SINCE Dr. John Cowan's *Diseases of the Heart*, with chapters on the electrocardiograph by Dr. W. T. Ritchie, and on the ocular manifestations in arterio-sclerosis by Dr. A. J. Ballantyne, appeared in 1914 and was reviewed in our columns (BRITISH MEDICAL JOURNAL, 1914, i, 1356), opinions have been much tested and in some respects modified by research and by the practical experience furnished by the great war. Accordingly, though nominally a second edition, the volume now put forth by Drs. COWAN and RITCHIE[2]—for the latter now appears as joint author on the title-page—is really a new book, and instead of being dedicated to Dr. Cowan's ancestral tree is inscribed to those roots of knowledge—the Royal Infirmaries of Edinburgh and Glasgow.

The first two chapters give a condensed but clear account of the anatomy and physiology of the heart, and contain useful illustrations of the conduction system. The chapter on morbid changes in the myocardium contains a number of well-executed figures, especially one of infarct and rupture of a musculus papillaris from disease of the coronary arteries. The section on examination of the heart begins with an account of polygraph curves and then describes the electrocardiograph. The next chapter on stimulus production deals with sinus tachycardia, bradycardia, and irregularity, while the chapter on excitability is devoted to extra-systoles of various kinds, which, with the except on of sinus arrhythmia, are the commonest of all forms of cardiac irregularity; thus, to quote the authors, "hardly a day passes but we observe them, whereas auricular fibrillation is seen once or twice a week, auricular flutter once a month, and heart-block once or twice a year." Ventricular extra-systoles, which constitute 70 per cent. of all extra-systoles, are copiously illustrated by electrocardiograms; a ventricular extra systole recurring regularly after each physiological beat is the most frequent form of coupled rhythm or pulsus bigeminus, is a sign of cardiac weakness, and when digitalis or strophanthus has been taken an indication for their cessation or diminution.

Under the heading of conductivity the various forms of heart-block are considered, and it is clearly pointed out that heart block and the Adams-Stokes syndrome, though frequently associated, are not synonymous, for many cases of complete auriculo-ventricular block without the syndrome are on record, and the syndrome may occur without heart-block. The account of auricular flutter (in the recognition of which Dr. Ritchie played an important part) is clear and gives full attention to the observations of other workers; that it is comparatively rare is shown by the occurrence of only one case among 2,500 soldiers admitted to a heart hospital during two years. The features of auricular fibrillation are well portrayed, attention being drawn to the more favourable prognosis in cases with mitral stenosis as contrasted with those due to other causes and to the ominous significance of extra-systoles. The drawbacks and dangers of quinidine sulphate, such as sweating, diarrhœa, abdominal pain, embolism, and fibrillation of the ventricles, are mentioned, and the conclusion is reached that on the whole this new drug appears to have little therapeutic value.

Under the heading of nodal rhythm are described three groups of cases, all showing synchronous contraction of the auricles and ventricles in response to stimuli arising in the auriculo-ventricular node; in order to avoid any confusion which might be engendered by Sir James Mackenzie's use of the term "nodal rhythm" for what is now known as auricular fibrillation it might be more convenient to speak of this condition as auriculo-ventricular rhythm. These three groups are (1) nodal rhythm without tachycardia, (2) continuous nodal tachycardia, and (3) paroxysmal nodal tachycardia. Many of the cases commonly spoken of as paroxysmal tachycardia belong to the last group, but others are examples of auricular flutter, paroxysmal auricular fibrillation, or of the rare form paroxysmal ventricular tachycardia.

In speaking of the treatment of malignant endocarditis the poor results from vaccine therapy—four cures—are emphasized, and the authors consider that the most important factor is probably a good digestion, whereby the patient's nutrition is maintained in a satisfactory state. After accounts of chronic valvular disease and myocardial failure angina pectoris is described as a symptom arising from many causes, about which if there is anything certain it is its uncertainty as regards its occurrence and significance. In some cases the blood pressure is raised during the attacks, and in these amyl nitrite almost invariably gives instantaneous relief, whereas patients whose blood pressure is not elevated during the attacks are seldom helped by inhalation of this drug. In general the outlook is better in cases with high blood pressure than in those with cardiac weakness, but whatever the cause, the heart or the aorta are always exposed to stress and strain. Bromides given between the attacks are useful in nearly all cases, and particularly in hypersensitive patients who sleep badly. Disordered action of the heart, acute pericarditis, adherent pericardium, pneumopericardium, and congenital heart disease are passed in review, and finally arterial disease and aneurysm are summarized, with the inclusion of Dr. A. J. Ballantyne's description of the ocular manifestations in arterial disease, illustrated by a coloured plate of the fundus in chronic nephritis.

This well-written work is so admirably balanced that it is well fitted for students and practitioners; it gives due prominence both to the well-established principles and to the recent advances of cardiology, criticizes them out of the fullness of long personal experience, and is often refreshing in its diction—for example, in the reference to the case of "a man of forty-seven years, a stone breaker by occupation and an alcoholic by choice." The authors may be confidently congratulated on their success in providing a handbook that deserves popularity.

[2] *Diseases of the Heart.* By John Cowan, D.Sc., M.D., F.R.F.P.S., and W. T. Ritchie, O.B.E., M.D., F.R.C.P.E. With a chapter on the Ocular Manifestations of Arterial Disease, by Arthur J. Ballantyne, M.D., F.R.C.S. Second edition. London: Edward Arnold. 1922. (Demy 8vo, pp. xvi + 655; 321 figures, 3 coloured plates, 3 folding plates. 30s.)

A FRENCH TEXTBOOK OF THE EAR, NOSE, AND THROAT.

IT is just over two years since a review of the first edition in English of Dr. GEORGES LAURENS'S *Oto-Rhino-Laryngology*[3] was published in this JOURNAL. The appearance of a second edition after so short an interval is sufficient evidence of the favourable reception accorded to the work in this country. It is significant, too, that the present volume is a translation of the fourth French edition, and that the book has also been translated into Spanish. The general style and purpose of the book remain unchanged; neither is there any alteration nor addition of outstanding importance to note in matters of detail; but it is satisfactory to observe that the translation has been improved and some mistranslations of French idioms have been remedied. The text has been brought well up to date. As before, descriptions of the great operations are properly regarded as beyond the scope of the work, but the minuteness of detail and the wealth of illustrations should prove of great value to the practitioner in the examination and management of patients. It is, however, right to repeat that the teaching is by no means a mirror of the practice of otology and laryngology in this country. The descriptions of the methods of removing tonsils and of treating malignant disease are examples of this difference, of which other instances are frequent. The book is, on the other hand, an accurate and detailed exposition of the methods generally accepted and practised in France. With this reservation the second edition may be commended as heartily as was the first to all interested in the subject.

[3] *Oto-Rhino-Laryngology for the Student and Practitioner.* By Dr. Georges Laurens. Authorized English translation by H. Clayton Fox, F.R.C.S. Irel. Second English edition. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1922. (Demy 8vo, pp. xii + 350; 589 figures. 17s. 6d. net.)

SOCIOLOGY AND PSYCHOLOGY.

WE take two books, Mr. ROPER'S *The Individual and the Community*[4] and Dr. ARTHUR LYNCH'S *Ethics*,[5] together because both the authors aim at establishing new principles in human conduct, and both seek a basis for speculations which are not scientific or scientific fact. Both Dr. Lynch and Mr. Roper may be credited with the desire to improve human conditions; and though the results of their speculations may differ little from the Utopias of the past, they may be useful in stimulating thought.

Mr. Roper is one of those who speak with contempt of all present and past statesmanship as "old men's games," modelled on the ruins of past empires. He says quite truly—or platitudinously—that the laws which govern human nature may be found in the daily lives of men, women, and children; he then builds up a system for which the only suitable name would seem to be individualistic communism—

[4] *The Individual and the Community.* By R. E. Roper, M.A., M.B.I. London: George Allen and Unwin, Ltd. (Demy 8vo, pp. 224. 8s. 6d. net.)

[5] *Ethics: An Exposition of Principles.* By Arthur Lynch. London, New York, Toronto, and Melbourne: Cassell and Co., Ltd. 1922. (Post 8vo, pp. xii + 324. 7s. 6d. net.)

a contradiction in terms. Community of effort, he says, does not depend upon authority, but on natural control evolved by daily life, such as common sense, sympathy, tact, self-reliance, creative work, voluntary association, and the like. Therefore Mr. Roper objects to discipline and punishment, and regards the gospel of duty as a means devised by the wicked rich for holding the poor in control. According to this view, an obedient democracy is provided for the maintenance of the present form of community by those who mishandle our destinies under the pretence of statesmanship. The whole of this argument is somehow based on "Brownian movement." Thus, Mr. Roper says that the whole solar system is permeated by vibrations. Vibration and movement are characteristic of the material in which man's physical nature is manifested. In order to receive and to generate vibrations man must evolve within himself an internal harmony between his own vibrations. Internal harmony and self-control are identical in their nature, and the attempt to substitute external authority for either is in the end disastrous. In this way does Mr. Roper misuse the scientific observation of Brownian movement for his own ends, and for the enunciation of such excellent exclamations as "We need a community where none go hungry and none are slaves." It is not surprising that the Master of Peterhouse, in a letter about Mr. Roper's book, quoted in the preface, seems to display some effort in being complimentary.

Dr. Lynch set forth "to see the drift of things in an ethical sense, to throw a beam of light upon the sources and the goal of our acts." He found very little guidance in the work of thinkers who had gone before. None of the systems of ethics appeared to him to rest on a deep base, rising by reasonings, cogent and consecutive, to the conclusions it expressed; so that some systems, and those not the least authoritative, seemed to dwindle into sheer absurdity. Dr. Lynch examines the philosophies of many writers, including Aristotle, Kant, and Herbert Spencer. He rejects them all as unsatisfying, though he has some good words to say for Aristotle. He states the central problem as follows:

"Standing in the universe, regarding all its phenomena and in face of all the world of thought, to endeavour to find by the force of reason alone, if not the goal or purpose of our lives, at least great cardinal lines of guidance towards higher development, and to exhibit these as derived from a fundamental base by clear and consecutive arguments."

No doubt Dr. Lynch is right in saying that in order to form correct notions of man's place in the cosmos it is necessary to gain some true conception of the cosmos itself. Consequently the study of ethics demands the subsidiary study of the physical, biological, and mental sciences. He set himself to find in the conditions of nature the sanctions of an ethical system; he considers that he has discovered these sanctions, and that his system of ethics has "reality of life." His fundamental principles are truth, energy, and sympathy. The principle of truth becomes extended into the development of science; the principle of energy gives rise to the standard of efficiency; the principle of sympathy implicates that of co-operation, and at length that of justice. So far these principles do not seem to differ much from the principles of many ancient systems. But having started with science Dr. Lynch proceeds to deal with the problem of the immortality of the soul, which he says is vital to ethics. The arguments of the religious, those of Plato, of Paul, of Berkeley and others of the idealist school, are all faulty, says Dr. Lynch, and it is possible to show that science is not inconsistent with the doctrine of immortality. "The verdict is for the immortality of the soul." "Over all our lives looms a great purpose"; but we cannot find any very definite statement as to what that purpose is. The fourth and last part of Dr. Lynch's book deals with his notion of government; the elimination of war; the definition of some favourite ethical qualities in a pleasantly cynical manner; the statement that the motive force in ethics is not pleasure but the "natural satisfaction of needs that correspond to development."

Dr. Lynch's "purpose" is far too intangible. The impartial observer might come to the conclusion that in the present state of our knowledge the Christian system of ethics may possibly be more satisfying than the hazy system of Dr. Lynch. If Dr. Lynch desires to investigate scientifically human conduct he would probably find that the best method would be to begin with the individual and find out in a detached manner exactly what his motives are or have been. Thence he could proceed to the ethics of communities, and so to generalizations, which must still be tested against the solid fact of the individual.

NOTES ON BOOKS.

AMONG the books which are really difficult to write are those on medicine for non-medical persons. It is an everyday experience to discover how dangerously little the ordinary patient understands of the instructions given him or her about the prescription or bottle handed over as part of the treatment. The writers of most books on domestic medicine are wise in counselling resort to the medical man. Missionaries, however, are in a specially difficult position: they may be far from professional assistance or within reach only of the nostrums of native quacks; at all events they are going to live in places very different from the home countries and with risks of novel illnesses and unsuspected morbid causes in alarming numbers. The Association of Medical Officers of Missionary Societies, London, is, therefore, rendering a useful service in sending out a third edition of *Health Instructions for Missionaries in the Tropics*.[6] Good advice is given on prevention of illness (with special reference to mosquitos, flies, and food) and regarding dress and habits (exercise, bathing, sleep, and alcohol). There is a section, too, on the emergency treatment of malaria, blackwater fever, dysentery, and cholera by Dr. Basil Price and Sir Leonard Rogers, which may save lives and probably has already done so. It is, perhaps, rather a high compliment to the intelligence of the ordinary missionary that he should be advised to make blood films before he administers quinine in malaria, but one remembers how in some parts of the world (as in Central Africa) the missionary must be, as Horace calls him, *centum puer artium*, or, as we say, jack of all trades.

It is proposed to issue a series of psychological reprints and translations with Professor KNIGHT DUNLAP of Johns Hopkins University as editor. The first volume of these "Psychology Classics" has been published under the heading of *The Emotions*.[7] It contains a new translation of Lange's *Ueber Gemütsbewegungen*, made by Miss Istar A. Haupt from Kurella's German version; together with a reprint of James's *What is an Emotion?* and his chapter on "The Emotions" from the *Principles of Psychology*. The James-Lange theory has exerted a profound influence upon the development of psychology, and in making these contributions readily accessible to students of psychology, philosophy, and physiology a real need has been met. Further volumes will be awaited with interest.

The new number of *Brain*,[8] which is now edited by Dr. GORDON HOLMES, contains a series of papers mostly of a special character. The first is an article by Dr. J. Babinski on "Réflexes de défense"; Drs. Bazett and Penfold follow with a study of the Sherrington decerebrate animal. There is a paper by Drs. A. F. Hurst and J. R. Bell on the pathogenesis of subacute combined degeneration of the spinal cord, and another by Professor Harvey Cushing on the meningiomas.

The handy little pocket commentary entitled *Common Errors in First Aid*,[9] in which Dr. N. CORBET FLETCHER indicates various mistakes frequently made by ambulance students, should be read in conjunction with one of the recognized manuals, as where the official instructions leave any loophole for doing a thing the wrong way Dr. Corbet Fletcher clearly points out the correct procedure and the reasons for it. The author's long experience as teacher and examiner has given him an unrivalled opportunity of discovering where first aiders may go wrong, and readers of this little book should reap the benefit of this wide knowledge.

We owe to a feeling of admiration for any medical man who undertakes the writing of a full length novel and brings his self-imposed task to a successful conclusion. Dr. HERBERT HARRISON has occupied his leisure in this way, and the result is *The Bragança Necklace*,[10] described in the subtitle as "an account of the strange adventures in the early life of Sir John Swayne, M.D., physician to the Court of His Majesty King George the Third." This kind of romantic tale is beyond the sphere of our criticism; but Christmas books are now in season and we wish Dr. Harrison's volume, with its wealth of stirring incident, all the prosperity it deserves.

[6] *Health Instructions for Missionaries in the Tropics*. Edited and published by the Association of Medical Officers of Missionary Societies, 1, Farnley Road, London, S.4. 1923. (Cr. 8vo, pp. 16. For further particulars application should be made to the Honorary Secretary.)

[7] *The Emotions*. Volume I of Psychology Classics. By Carl Georg Lange and William James. Baltimore: Williams and Wilkins Company. 1922. (Med. 8vo, pp. 135. 4 dollars for foreign countries.)

[8] Vol. xlv, Part II. London: Macmillan and Co.; New York: The Macmillan Company. (Price per part, 6s. net; yearly subscription, 24s. net.)

[9] *Common Errors in First Aid*. By N. Corbet Fletcher, M.B., B.Ch., M.R.C.S., L.R.C.P. London: John Bale, Sons and Danielsson, Ltd. 1922. (Demy 16mo, pp. 72. 1s. net.)

[10] *The Bragança Necklace*. By Dr. Herbert Harrison. London: Sampson Low, Marston and Co., Ltd. 1922. (Cr. 8vo, pp. 280. 6s. net.)

THE PLIGHT OF THE RUSSIAN DOCTORS.

A Christmas Appeal to the British Medical Profession.

IN June last the Council of the British Medical Association made an appeal for the starving doctors of Russia. In order that the response should be as widespread as possible the subscription was limited to 5s. Within the next few weeks the sum of £1,610 was received and was paid over to the American Relief Administration, which promptly dispatched food parcels to those doctors and members of deceased doctors' families whose names had been supplied by an organization of Russian doctors in this country. The Association has had a signed receipt from Russia for every parcel delivered.

Since the appeal many letters have been received from individual doctors and from bodies of doctors in Russia, testifying in the most touching way the gratitude of the recipients of the food parcels, not only for the gift but for the evidence that the doctors in Russia had not been forgotten by their more fortunate colleagues in other parts of the world.

A typical individual letter is one recently received from a woman doctor in Russia who is working at a clinic for mental diseases. She gives full particulars about herself and her professional status and goes on to say:

"My family, which lives solely on my earnings, consists of my aged mother of 70, two brothers (both war invalids from 1914–15: one, 45 years old, was wounded in arm and leg and is almost totally disabled; the other, 47 years old, was wounded in the head and is mentally deranged), and a sister who recently underwent a serious operation—half her stomach was removed. I ask you to help these four persons who are unable to do any work, be it only by sending them *one* food parcel."

The following acknowledgement from Petrograd is typical of many received from collective medical bodies:

"The section of the American Relief Administration in Petrograd has in the name of the British Medical Association transmitted to the Academy of Medicine for the professors and assistants 44 boxes containing in all 132 poods of different nutritive substances. The professors and assistants of the Academy of Medicine are glad to see in that gift a token of the unity of the whole scientific world and wish to express their deep gratitude to the representatives of the British Medical Association." (This was signed by the vice-president of the Academy and eleven other representatives.)

It is only too clear that what has been done is a mere scratching of the surface, below which is a dreadful mass of want and misery. The situation is perhaps best described in the words of Mr. W. E. Haigh, F.R.C.S., a British doctor who is attached to the Nansen High Commission. In a letter addressed to the Association, dated "Moscow, September 24th," in which he expressed his satisfaction with what the Association had already done, he went on to say:

"The position of our colleagues becomes steadily worse. . . . The depreciation of the rouble and soaring prices make it impossible for them to provide food for their families, even were such obtainable in plenty. The salaries paid are fantastic, being much less than those of workers; for example, I pay my chauffeur one hundred millions a month and food packets; doctors working in the cholera blocks of the Odessa City hospitals receive 27 millions and, happily, have gifts of maize from the American Relief Administration . . . but pay is always in arrears. There are doctors in the country who have had no pay this year, and depend on small gifts from the peasants, but this in famine-stricken areas cannot be much. The doctors in Cherson on the Black Sea have had no pay for six months, and their lot is desperate. That city, once of 80,000 inhabitants, passed through all the horrors of famine last winter, combined with epidemics of typhus and relapsing fever, followed by a severe epidemic of cholera in the summer. Hospitals, unheated, without soap, appliances, drugs, provided with a ration for all of 600 calories a day, often mixed with surrogates, conditions have been such as require the pen of Dante to describe. . . . The sole means of keeping doctors and nurses alive was the American maize. . . . I know those (doctors) who have had their children at home with oedema, living on surrogates, those who have eaten linseed cattle cake instead of bread, or the pressed mass after the extraction of oil from sunflower seeds; some have died on duty, and typhus has taken fresh toll, and for their wives and children there is nothing. The best off financially are poor and their means are often the sale of books, silver, the furs, clothing, and jewellery of their wives, and these reserves are now exhausted. . . . Surgeons of repute may have no stockings, medical women no fires in their room in winter, yet they will entertain one if they can, and it is pathetic to see their enthusiasm to talk 'shop' . . . and their joy at having a colleague from abroad even for half a day. The needs of the professors are great . . . but the rankers are in worse straits, and I wish to point out that all forms of help can now be administered best through the local medical societies; if we find the food they know the needs best. . . . Wood for firing costs to-day in Odessa 40,000 roubles a pound, petroleum is 8 millions a pood, butter 1,800,000 a pound, and with such a market the doctor's wife has to sell necessary clothes, not to buy."

Dr. Haigh's evidence is borne out by many pathetic letters the Association has received, and the Council at its meeting on December 13th resolved to make a Christmas appeal to the medical profession in this country to do something more to alleviate the terrible conditions in which our colleagues in Russia, through no fault of theirs, are living—and dying.

The results of the present appeal will be divided between the American Relief Administration and the All-British Appeal of the Nansen High Commission. There is plenty of room for both bodies, and each in its own way can be depended upon to see that money subscribed by the British medical profession is spent in providing the necessities of life to Russian doctors and their families.

Clothing is almost as badly needed as food. The American Relief Administration in its latest report (December, 1922) says: "While the need of foodstuffs in Russia continues a grave problem, the needs of the population for warm clothing are equally grave." The American Relief Administration has entered into an agreement with the Soviet Government to allow clothing remittances to be made for individuals. This arrangement will be utilized to send clothing where we are advised that clothing is more urgently needed than food.

Subscriptions of *5s., or multiples of 5s.*, should be made payable to the Russian Doctors Relief Fund and sent to Mr. L. Ferris Scott, the Financial Secretary of the Association, 429, Strand, London, W.C.2, who will acknowledge their receipt. The amount collected will be acknowledged week by week in the BRITISH MEDICAL JOURNAL, but not the names of individual subscribers.

We ask each of our readers who is looking forward to a happy Christmas to send something to help to keep alive medical men and women in Russia, who are striving to carry on their work under almost impossible conditions and in a spirit of devotion and self-sacrifice which is an inspiration to the profession the world over.

WILLIAM MACEWEN,
President.
R. WALLACE HENRY,
Chairman of Representative Body.
R. A. BOLAM,
Chairman of Council.
G. E. HASLIP,
Treasurer.

NOTES ON SMALL-POX.

BY
W. McCONNEL WANKLYN, B.A.CANTAB.,
M.R.C.S., L.R.C.P., D.P.H.

Differential Diagnosis between Small-pox and Chicken-pox.

THERE is no royal road to certainty in this subject, nor any rule of thumb upon which exclusive reliance can be placed; it is no more possible to recognize every case of chicken-pox by rule than that of any other disorder, the pathological manifestations in any given case being the result of the combination and reaction of various types of disease, skin, age, and occupation in varying degree and proportion. Experience must necessarily play a large part in the formation of an accurate diagnosis of the more difficult cases. Nevertheless, it is possible, and very material, for less expert observers to select, cultivate, and stress those points upon which sound experience may gradually be built up; to assist in that is the main purpose of this article.

In order to produce a clear impression at the beginning, a certain class of case which well illustrates certain leading features will be discussed. Allusion is made to those adult cases—often at first sight appearing formidable, though in reality they are not so—in which the diagnosis certainly rests between small-pox and chicken-pox. Long experience shows that in a majority—not all—of these cases their true nature can be demonstrated by the simple means of an actual count of parts of the rash. It is better known now than it used to be how in such cases the rash is frankly centripetal—that is, how it shuns the distal parts of the extremities and accumulates on their central parts and on the trunk; but it is not so well known how frequently this can be demon-

strated by a precise count; and this simple and most helpful factor it has long been my object to lay before my colleagues for their comfort and convenience. It is submitted that these facts should be known to every member of the profession, as no doubt in due course they will be, and included in all the medical textbooks.

An example or two will clear my meaning; the following have been taken at random from notes of some five hundred cases of varicella in which there was difficulty in differentiation from variola.

VARICELLA: COUNT OF SPOTS.

Case A.

Right hand 4		Left hand	4
Right forearm ... 28		Left forearm ...	20
Right arm 97		Left arm	84
Face ... ... (about) 130			
Front of trunk ... ... (about) 350			

Case B.

Right hand 0		Left hand	0
Right forearm ... 2		Left forearm ...	2
Right arm 11		Left arm	5
Face 59			
Front of trunk 23			

Case C.

Right hand 0		Left hand	2
Right forearm ... 7		Left forearm ...	6
Right arm 13		Left arm	16
Face 54			
Front of trunk 49			

In the above the face means the mask of the face; and the front of the trunk is that space included between the lines of the clavicles and umbilicus and the anterior axillary lines. Such a count can usually be made in about five minutes; and not infrequently the patient or friends will check it.

It will be seen that the *relative* distribution is the same in each case; and in the majority of cases denotes the correct diagnosis to a certainty. Forty or fifty more such cases could be quoted did space permit.

When this relative distribution of the spots has been thus established, it is necessary to confirm or refute the evidence thus offered; for this purpose it is wise to refer to some tender and protected area of the skin, typically the flank, arm-pit, or chest. For this purpose the extremities should be avoided, and especially the face, a site on which the rash is more difficult to distinguish from that of variola than elsewhere.

In the flank or similar region will be found the most typical lesions of varicella; and there may be noted their superficial character, as estimated by rolling the lesions between the finger and thumb, the fact that the long axis lies parallel to the natural folds of the skin, the wrinkled outline and flaccid nature of the lesion.

When these two main features have been established—namely, the distribution and the character of the individual lesions—reference should be made to the condition of the patient just before the rash came out, great care being taken to arrive at the real facts. In one case lately the patient was able to show that she had attended a Girl Guides' function just as a copious rash was appearing; and in another the correct diagnosis was made for me by two bream which were swimming in a basin in the patient's scullery and had been caught by the patient during the stage of invasion of the illness; variola seldom permits of such diversions in the stage of invasion; varicella seldom forbids them.

If by this time the diagnosis still remains in doubt and there is no further opinion to consult, the development of the rash should be watched and noted from day to day; that usually is widely different in the two diseases, and as a rule points clearly to the true nature of the case.

Two more points perhaps once again may be mentioned. The best possible light must be insisted on; and the patient should be uncovered to the waist save for a shawl or other appropriate wrap.

These hints are the result of many years' experience, and have been found to be of the highest practical value. The method combines reliability with saving of time. For these reasons it is now offered to my colleagues as being, in this class of case, the most useful they can have.

Additional illustrative cases are as follow:

Case D: Chicken-pox.

Right hand 0		Left hand	0
Right forearm ... 16		Left forearm ...	30
Right arm 46		Left arm	48
Face 106			
Front of trunk 108			

Case E: Chicken-pox.

Right hand 0		Left hand	1
Right forearm ... 6		Left forearm ...	8
Right arm 15		Left arm	14
Face 20			
Front of trunk 30			

Case F: Chicken-pox.

Right hand 2		Left hand	1
Right forearm ... 17		Left forearm ...	14
Right arm 34		Left arm	15
Face 40			
Front of trunk 35			

Case G: Small-pox.

Right hand 42		Left hand	48
Right forearm ... 30		Left forearm ...	20
Right arm 25		Left arm	22
Face... 150			
Front of trunk 7			

I should be glad of any similar notes of cases to add to my collection.

INTERNATIONAL HYGIENE.

WE have received from the Director of the Office International d'Hygiène Publique a summary of the proceedings of the last session of that Office in Paris, which has been prepared and circulated to delegates with the object of its publication in the medical or technical journals of the different countries. The Office International works in liaison with the Health Committee of the League of Nations. Since it came into existence in 1907 it has published a number of communications in its monthly *Bulletin*, where they appear together with the statements of sanitary laws, conventions, epidemic disease statistics, etc., which form the staple material of that publication. This is the first time, however, that it has made any public communication of the proceedings of a session.

This year's session of the Permanent Committee of the Office International d'Hygiène Publique was held from October 23rd to November 1st, under the presidency of M. Velghe (Belgium). The British delegate was Sir George Buchanan, and the other countries represented were: Chili, France, Norway, United States, Roumania, Switzerland, Poland, French West Africa, French Indo-China, Egypt, Persia, Netherlands, Portugal, Italy, Tunis, Australia, Morocco, British India, Kingdom of Serbs, Croats, and Slovenes, Algeria, Monaco, Union of South Africa, and Madagascar.

Revision of the International Sanitary Convention of Paris, 1912.

The Committee concluded its examination of the revised draft of the International Sanitary Convention of Paris of 1912. At its preceding sessions the Committee had already agreed upon its proposals regarding Chapter I of the Convention, which contains all the regulations concerning the measures required for prophylaxis of plague, cholera, and yellow fever. At the present session Chapters II and III came under consideration. These chapters (II, Special Provisions for Countries in the East and Far East, and III, Special Provisions for Pilgrimages) bear on the carrying out in Egypt of the regulations laid down in Chapter I, the sanitary regulations for shipping in the Near East, Red Sea, and the Persian Gulf, and the supervision of the pilgrimage to Mecca. It was not proposed that Chapters IV (Supervision and Practical Application) and V (Adhesions and Ratifications) should be subjected to any revision. In connexion with Chapters II and III it is pointed out that at the beginning of 1922 the Health Committee of the League of Nations sent a mission to study on the spot the organization of measures against epidemic disease in the Near East. This mission, in collaboration with the Sanitary Maritime and Quarantine Board of Egypt, prepared a scheme which was taken as the basis for the work of the Committee of the Office. The revised text of Chapters II and III will be transmitted to the French Government, as has already been done in the case of the revised text of Chapter I, in order that it may be communicated to the various Governments concerned with a view to the assembly of the next International Sanitary Conference, at which these proposals will be decided upon.

International Nomenclature of Diseases.

The nomenclature of diseases, as defined by an International Conference in 1900 for use in the compilation of nosological statistics, was revised in 1909, and in 1920, on the initiative of the League of Red Cross Societies, the French Government convened another International Conference with a view to a further revision. The international nomenclature, as laid

down in the Conference of 1920, was circulated to the members of the Committee in the course of the session. The delegates were satisfied that most of the defects in the 1909 list had been corrected, and agreed to recommend the adoption of the 1920 nomenclature to their respective Governments. In this connexion, however, a special difficulty had arisen. M. Bertillon, the devoted secretary and moving spirit of the various conferences, died while the publication of the proceedings of the Conference of 1920 were still in preparation, and some delay and confusion was thus caused. Several members of the Committee who had also been members of the Conference represented that the text submitted did not always reproduce exactly the decision actually reached by the Conference. Negotiations are now in progress for the correction of these errors.

Therapeutic Serums and Derivatives of Arsenobenzol.

The Committee had on its agenda two questions, one concerning the derivatives of arsenobenzol—their toxic effects, the regulations governing the manufacture and importation of these products in different countries, and the possibility of their eventual international regulation; the other, therapeutic serums—the regulations governing their production and sale in different countries and the possibility of standardizing them internationally. In connexion with the first point, the Office had obtained a considerable amount of material, partly by answers to questionnaires addressed to the members of the Committee, and partly by its own investigations. The subject appears to be very complicated, and, in certain respects, incompletely elucidated. The unanimous opinion was that it would be better not to draw any immediate conclusions but to carry on the investigations already in hand. A report will be prepared to be discussed at the spring session, 1923.

With regard to the laws and regulations of different countries regarding therapeutic serums the inquiry has so far been limited to antidiphtheritic serum, on which a special report prepared by the permanent staff of the Office was presented to the Committee. This report was revised and completed as a result of suggestions by the different delegates, and in this form has been published in the November number of the *Bulletin* of the Office International. Certain conclusions of the report, particularly in regard to the preparation of a draft international regulation for the strength of diphtheria antitoxin, have still to be considered. The Committee decided not to undertake this at the moment in view of information which is now being obtained from the conferences on standards for therapeutic serums which are being held under the authority of the Health Committee of the League of Nations. One of these conferences has since taken place in Paris, and, at the invitation of the Health Committee of the League, the Office International d'Hygiène Publique was there represented.

Bills of Health and Sanitary Log Book of Ships.

During its preceding session the Committee had studied a series of questions concerning bills of health and the institution of a sanitary log book on ships. The report before us contains a closely reasoned summary by the President of the chief aspects of these complicated questions; in the course of this he stated that the staff of the office had collected a considerable amount of information concerning the form of bills of health actually in use and, as instructed, had prepared two schemes. The Committee reserved for further consideration these schemes drawn up by the Office, together with two others suggested by the sanitary administrations of Italy and Algeria. All these will be printed and circulated and a decision will be arrived at during the spring session of 1923.

Another matter discussed was the signals by means of which ships may make known, on arrival, the sanitary condition on board. The International Code of Signals in force since 1901 comprises a certain number of conventional signs (the yellow flag, representing the letter Q, and others) relating to the sanitary condition of ships. The Committee considered that it would be well to have a wider range of signals than those represented by the two letters Q and L. The signals required should be simple; they would enable the ships to give the sanitary authority certain information concerning the conditions this authority would find on board and would thus, by avoiding comings and goings, make the duties of this authority easier of execution. The following resolution was therefore passed:

"The Committee of the Office International d'Hygiène Publique recommends that the Powers should consider as soon as possible whether it would be desirable to complete the International Code of Signals by the introduction of special signals in the form of a flag by day and by lights at night to show:

(1) That the ship is free from all diseases and asks for free pratique, or

(2) That the ship is suspect—that is to say, that cases of infectious diseases or suspected cases of these diseases have occurred on board more than five days previously or that an unusual mortality among rats has occurred, or

(3) That the ship is infected—that is to say, that cases of infectious diseases or suspected cases of these diseases have occurred within less than five days.

The Committee also draws the attention of maritime powers, which have accepted the International Code of Signals and issue regulations for flags and lights which apply to ships entering their territorial waters, to the importance of securing that particular signals used for the suggested sanitary code are not utilized for any other purpose.

Measures against Abuse of Narcotics and Alcohol.

The Italian delegate communicated the draft of Italian legislation dealing with the illegal traffic in narcotics. The delegates from France, Holland, the United States, Denmark, and Tunis gave an account of the legislation in force or about to be introduced in regard to opium, cocaine, etc., in their respective countries. The greater part of the morphine and cocaine consumed in Europe comes from Germany. It was considered that the only way to put a stop to the international smuggling, which takes place in spite of all supervision, would probably be to have strict supervision in factories and to require, for instance, that an official representative should prevent the exportation of any quantity of these drugs to a destination which is not guaranteed. A note from the delegate for India drew attention to the consideration that a moderate use of opium as practised among the natives in India does not necessarily entail danger to the population, and that there is no need for the authorities to take repressive measures in regard to such use. The Polish delegate read a memorandum concerning the favourable effect of the prohibition of alcohol (spirits, etc.) during the war on the number and the development of psychic diseases in Poland. This memorandum will be published in the *Bulletin*. It was stated also that in Belgium mental specialists are agreed that the number of cases in asylums has diminished owing to the new legislation relating to spirituous liquors.

Epidemiological Data.

Communications were received and considered on the following subjects: the sanitary conditions of Poland, the sanitary state of Roumania, small-pox in Switzerland, the measures taken against trachoma in Indo-China, the prevalence of yellow fever on the West Coast of Africa, plague in Madagascar, and international statistics concerning cancer. In regard to plague in Madagascar, attention was drawn to the occurrence of septicæmic cases extremely rapid in their development and sometimes causing death in less than forty-eight hours. In these cases no pulmonary symptoms occurred and the evidence pointed to the transmission of infection from case to case by means of fleas without the intermediary of rats. Cases in which plague appears to have been carried in this way were also brought forward by the delegate for Algeria. This method of plague propagation would appear to be more dangerous, at least under certain conditions of housing and living, than has hitherto usually been admitted.

The Swiss delegate mentioned that in 1921 there were cases of small-pox in the cantons of Bâle and Zurich, where it had for many years been practically unknown, although vaccination is not compulsory in these cantons. The disease manifested itself in two different types: at Bâle the usual serious symptoms were present; elsewhere the disease was entirely benign, and not a single death occurred among many hundreds of cases. In many instances the general feeling of indisposition and discomfort which resulted from small-pox was less than that which resulted from vaccination. This form of the disease nevertheless is clearly only a mild manifestation of the serious type, of which all the characteristics are present, though in an attenuated form. The Swiss sanitary authorities are of opinion that in this second instance the outbreak was definitely an outbreak of modified small-pox. The discussion showed that this benign small-pox is present in other countries under various names—"white-pox" in the United States, "mild small pox" in England, "milk-pox" in Gaboon.

The British delegate drew attention to the occurrence in August, 1922, of the first cases of botulism, at Loch Maree, which had been reported in Great Britain. A statement by the delegate for British India showed that Colonel W. Glen Liston's apparatus for the clearing of rats from ships by means of hydrocyanic acid gas gave excellent results in Bombay, and that the use of this apparatus, of which a complete description is given in the *Journal of Hygiene* of October, 1922, may possibly be extended to other ports of India.

British Medical Journal.

SATURDAY, DECEMBER 23RD, 1922.

ENVIRONMENT AND DIET IN THE CAUSATION OF RICKETS.

SEVERAL circumstances have recently combined to increase the interest in the vexed question of the etiology of rickets. There have been, in the first place, the striking results of the experiments on the effect of the absence of vitamin A (sometimes called the growth factor) from the diet. In the second place we have the results of what may be called the Glasgow investigations, which point to the importance of bad housing and want of exercise. Thirdly, recent views as to the therapeutic value of calcium salts and phosphates have to be taken into consideration; and, finally, we have the observations—some of them very astonishing—on the effect of light in preventing and curing rickets. The matter has been taken up by the Medical Research Council, which has recently published two reports, the one by Dr. Corry Mann, physician to the Evelina Hospital for Children, on the relative importance of environment and diet,[1] and the other by Professor Korenchevsky, on the etiology and pathology of rickets from the experimental point of view.

The first report is a valuable contribution to the very vexed but highly important problem of the nature of the factors causing rickets. Animal experiments have shown that in young animals a large number of factors are capable of causing bony changes, which are apparently identical with clinical rickets. Mellanby's work emphasized the importance of vitamin A deficiency in the causation of rickets in puppies,[2] but in a more recent report[3] he has stated that attention must also be given to other factors, such as an excess of carbohydrate in the diet, in the causation of the disease. American workers have shown that deficiency of calcium and of phosphates may cause rickets in experimental animals, and observations on children have made it plain that the problem of the causation of rickets by dietary deficiencies is complex. The general opinion is that rickets cannot be attributed solely to lack of vitamin A, but any theory of its etiology must take cognizance of the fact that cod-liver oil has a remarkable preventive and curative effect. Paton and his co-workers have throughout maintained that the chief causes of rickets are deficient exercise and bad housing conditions, and this view was supported by investigations upon Glasgow children,[4] which showed a relation between bad housing and the incidence of the disease. The view that rickets may be produced in this way has received powerful support from recent American work, which has shown that both sunlight and ultra-violet light prevent or cure rickets in animals. Similar conclusions were reached independently by Miss Chick and her co-workers, who made extensive observations on rickety children in Vienna.

Scientific investigations have therefore revealed the fact that an embarrassingly large number of factors are involved in the production of rickets. Rickets, however, is one of the most widely spread diseases of infancy. Hess, indeed, has stated that 75 per cent. of children living in the temperate zone are affected. This may, we hope, be an exaggeration, at any rate for Europe; but it must be admitted that the slighter forms of rickets, which do not produce obvious deformity and can only be diagnosed with certainty by *x*-ray examination, are important causes of ill health. The severer forms which produce obvious deformity may fairly be described as a grave social menace on account of the lifelong impairment of efficiency they cause, and in the female sex of the pelvic distortion that they may produce. Obviously it is of vital importance to know what is the cause of the prevalence of the severer types in England and Scotland, and particularly whether the most important factor is to be found in errors in infant feeding or in bad housing, as suggested by Professor Paton and his co-workers. This is the practical problem which Dr. Corry Mann has investigated.

The children observed were attending the out-patient departments of the Evelina Hospital or of Guy's Hospital, or certain infant welfare centres in London. The cases of rickets numbered 533, and of these 449 showed slight or severe deformity. As a control 428 normal children were examined; of these, 242 belonged to families free from rickets, and 186 were members of families in which a case of rickets had occurred. The cases were followed for periods extending to a year or eighteen months; clinical examinations were made and careful investigations as to the home conditions in which the children lived were conducted by trained lady health visitors. The chief points studied were the income of the parents, the housing conditions, and the diet. The results, which are fully set forth in a series of well-arranged tables, point to certain very definite conclusions. There was no evidence that bad housing, overcrowding, or deficient air space, were responsible for the occurrence of rickets. The control cases and the rickety children appeared to be living under exactly similar conditions. On the other hand, clear evidence was obtained that certain errors in diet conduced to the development of rickets. Of the 242 cases of non-rachitic children in families free from rickets 77 per cent. were fed either by breast, or on fresh or dried milk, or on a combination of breast and fresh or dried milk, while only 11.4 per cent. were fed partly or entirely on condensed milks. Of the 533 cases of rickets, however, only 28 per cent. were fed either by breast or on fresh or dried milk, or on a combination of breast and fresh or dried milk, while 30.3 per cent. were fed partly or entirely on condensed milk.

The most important conclusion of the author is that "if a wide survey is taken of the conditions which predispose to the occurrence of rachitic deformities in children under the age of 2 years, the continual use of an unbalanced diet, characterized by deficiency of fat and excess of carbohydrate, will be found to have antedated the appearance of symptoms in about 45 per cent. of the total cases." This conclusion is of great practical importance, for it indicates clearly that, of the possible factors which can cause rickets, the most important factor actually producing the disease in the poorer quarters of London is improper infant feeding.

There is no doubt that lack of sunlight and of fresh air dispose to rickets, and that exposure to sunlight can cure rickets. The work of Paton and his co-workers definitely suggested that these hygienic factors were chiefly responsible for the incidence of rickets in Glasgow. The work of Dr. Corry Mann shows equally clearly that in South-East London rickets is chiefly caused by improper diet. Possibly the reason for this difference is that in London the housing conditions are not as bad as in Glasgow; indeed, it is specifically mentioned that in

[1] *Rickets: The Relative Importance of Environment and Diet as Factors of Causation.* An investigation in London by H. Corry Mann, O.B.E., M.D. Medical Research Council, Special Report Series, No. 68. 1922. (Pp. 99. 2s. 6d.)

[2] *Report on the Present State of Knowledge Concerning Accessory Food Factors (Vitamins).* Medical Research Council, Special Report, No. 38. 1919.

[3] *Experimental Rickets.* By E. Mellanby. Medical Research Council. Special Report, No. 61. 1922.

[4] *A Study of Social and Economic Factors in the Causation of Rickets, with an Introductory Historical Survey.* By L. Findlay and Margaret Ferguson. Medical Research Council, Special Report, No. 20. 1919.

the London report very few evidences of overcrowding, lack of cleanliness, and want of ventilation were observed. The poverty of the district investigated is, however, notorious, and the combination of moderate housing conditions with great poverty must tend to bring the dietary factor into prominence. The conclusion that in London rickets is due chiefly to improper diet is encouraging, for dietary defects can be remedied much more easily than can bad housing.

Professor Korenchevsky's experiments, to which we hope to recur on some future occasion, lead him to attach considerable importance to the existence of an hereditary factor. It is, he says, impossible to deny the existence of a congenital disease of the skeleton, if not of a rachitic character, at any rate predisposing to rickets. He considers that the most important factors for the prevention of rickets are an adequate amount, in the mother's diet, of an anti-rachitic factor, calcium, and phosphates during pregnancy, especially during lactation, and also the presence of the same substances in the infant's diet, combined with abundant light, fresh air, and muscular exercise. He also thinks that the presence of the substances mentioned in the father's diet may be of consequence.

Dr. Corry Mann's report contains some interesting information regarding the results of the work done at infant welfare centres. He states that during the two years April, 1919, to April, 1921, there was a rapid diminution in the number of cases of rickets, and that severe cases of deformity have become rare. "Rickets," he continues, "is not only becoming much less frequent, but such incipient cases of rickets as occur are almost invariably checked in the pre-rachitic stages by coming into touch with a welfare centre. The evidence obtained by this investigation suggests plainly that in ten years' time, so far as London is concerned, rickets will be relatively uncommon. No more conclusive proof can be given of the valuable work which the welfare centres are doing than these records, which indicate that where in a family the earlier children have been rickety, the later children, who alone have been under supervision of a welfare centre, and fed under the assistance of that agency, are free from rickets. This successful control has been noticed repeatedly." These are very encouraging words, and it is gratifying to learn that the labour and money that have been devoted to the development of the infant welfare centres are yielding such valuable results.

SOME FEATURES OF MYOTONIA.

THE rapid progress which medical science has made in the last fifty years has left untouched many forms of disease, some in spite of their ubiquity, others because of their rarity. Among the latter are many of the hereditary disorders which affect the neuro-muscular mechanism, of which we know little beyond the clinical manifestations and the gross pathological changes. The *causa causans* and the means whereby it effects the morbid results seem to remain as far as ever from our grasp. Among such hereditary diseases is myotonia congenita, which was so intimately described by Thomsen in 1876. Its essential nature has so far completely baffled neurological investigations, and we are therefore still content to compile clinical observations in the hope that they may throw new light on the disease. For that reason we welcome the interesting paper by Rosett in the first number of the new volume of *Brain*. He describes an American family in which eight cases of the disease occurred in three generations. This family presents several points of interest. The grandparents were English. The husband, a big, powerful, and fair man, was healthy in every respect. The wife, a brunette of medium size, was of a nervous disposition, and also became affected in middle life with myotonia; this was most troublesome during the last ten or twelve years of her life. They had six surviving children, three of whom took after their father, while three resembled their mother. Those who resembled the father, and inherited his large muscles, inherited also their mother's myotonia. The others inherited their mother's nervous disposition and were liable to attacks of depression. In the third generation again those who resembled the big fair Englishman were affected with myotonia, while the others were normal. It seems as though this type of build and musculature were a soil on which the sensitive plant of myotonia, which appeared late and in a mild form in the grandmother, could flourish and develop into full maturity.

The hypothesis that some familial and hereditary diseases require the blending of two different strains has been suggested recently by Hall of Copenhagen in his study of hepato-lenticular degeneration. The way in which the cases occurred in the family he investigated suggested that the germ, A, of the disease is transmitted to several members of a family, possibly to every member, but only develops in the individual when another factor, B, is also transmitted. This factor B is much more common than A, but still sufficiently uncommon to allow only a small proportion of those affected with A developing the disease. Similarly in Rosett's family of myotonia we have on one side the germ of myotonia; on the other the much more common factor of big musculature, and an inheritance of both is necessary before the individual becomes myotonic.

The description of the cases of myotonia also brings out some interesting observations. One case, a woman in the second generation, was not affected until the age of 23, near the end of her second pregnancy. At that time and since then sudden attacks of myotonic spasms were induced by sudden emotion, such as fright, and affected all those muscles of the body which were in use at the time. Thus when standing she fell to the floor "like a log of wood," but when sitting only the muscles above the waist were affected. Except for these attacks she noticed none of the symptoms of myotonia, although the muscles gave a modified myotonic response on direct percussion. Four of her children who resembled her and their grandfather also showed myotonic phenomena in greater or less degree. Two girls were typical cases of the affection. The other two, a boy of 10 and a girl of 3½, showed no myotonic symptoms, but their muscles responded on testing with the myotonic reaction.

The relationship of myotonia with voluntary nervous control and with the autonomic and endocrine systems has within recent years been the subject of much speculation and some experimental observations. It has long been known that the myotonic reaction is only elicited by certain types of stimulus. Thus direct tapping of the muscle usually results in slow relaxation, but when the patellar and Achilles tendons are tapped in testing the knee and ankle jerks the muscles relax normally and rapidly from their contractions. Again, weak and short electrical stimuli produce a normal flicker in the muscle, whereas stronger or longer faradization gives a contraction which persists long after the stimulus ceases. Electromyograms of voluntary contractions show that the nervous impulses recorded by the string galvanometer only continue so long as the patient wills the contraction; but long after the string has ceased to vibrate the muscle remains in the same state of contraction as before. Clearly, therefore, the myotonic phenomenon is not under the control of the central nervous system.

But some measure of control by the sympathetic and endocrine systems is suggested by several observations. Thus, in the case recorded by Rosett emotional disturbance very rapidly brought on a severe attack of

myotonia, which persisted for nearly five minutes. Griffith, in 1912, recorded an interesting family in which a mother, son, and daughter were affected. The mother suffered from myotonia in a typical form, but only for a very short period—namely, during the last few weeks before the birth of her boy, who was her second child. Up till then, and from her confinement onwards, she had no symptoms of the disease. The boy was a typical case, and up till manhood, when he was observed, suffered from no remission in the severity of the symptoms. His elder sister suffered from myotonia from childhood, but not so severely as her brother. She married and had several children, and she noticed that, although during her pregnancies her symptoms were considerably worse, after her confinements they improved to such a degree that each successive pregnancy left her less affected than before, so that at the time of examination the disability had almost completely left her. Other writers have noted the bad influence of pregnancy on the symptoms of myotonia, but this mother and daughter appear to be unique in experiencing the curative effects of the confinement.

Work on the metabolic aspects of the disease has been scanty and inconclusive. Cases are rare, and the patients seldom wish to be the subjects of thorough investigation, and it must be confessed that up to the present no satisfactory method of studying the metabolic exchanges in a living muscle has been devised. Still it is likely that before long progress will be made in this direction which may lead to a fuller knowledge of the conditions governing muscular contraction and relaxation, and to a rational method of treatment for sufferers from myotonia.

HODGKIN'S DISEASE.

A SAD interest attaches to the article on Hodgkin's disease published this week (p. 1201). Sir James Galloway was preparing a post-graduate lecture on the subject at the time when he was taken ill, and it was in his mind at the last. The notes he left have, as an act of piety to his friend, been put together by Sir William Hale-White, who has little doubt that the lamented author had intended perhaps to expand the lecture and almost certainly to complete it by some further discussion of the observations and theories he recorded. Even as it stands now it well illustrates Galloway's qualities as a physician and his attitude towards the more modern methods of studying disease. While he put first clinical observation, coupled in any particular case before him with a consideration of the individual patient, he always had in mind the institutes of medicine, and was ever ready to study the suggestions continually flowing from physiology and pathology into the broad stream of medicine. The lecture affords more than one illustration of this. The discovery that the urine in the first case he relates contained a peculiar protein at once aroused his attention. He recognized that it resembled Bence-Jones's albumin, and sought the expert help of Mr. Sydney W. Cole, who established the fact that the substance was a new protein, differing from Bence-Jones's albumin in the respects briefly stated in the lecture. We may express the hope that Mr. Cole may shortly publish a fuller account of it, and that other physicians will look out for it in similar cases. Early in his career Galloway had given special attention to diseases of the skin, and the descriptions in this lecture of the cutaneous manifestations to be observed in Hodgkin's disease are of great value; commonly these manifestations are mentioned only briefly in textbooks, and yet they may be of very considerable importance. That the pruritus occasionally observed may be so intense as gravely to affect the patient's general condition is a valuable observation. The further statement that arsenic, a favourite remedy in the disease, may increase the pruritus, is a useful clinical point. The etiology of Hodgkin's disease is still obscure; Galloway, in pointing out that it is a general specific disease associated with progressive infection of susceptible structures, ranged himself with those who hold that the poisoning is of an infective and, in all probability, a parasitic nature. This view is supported by the occurrence of pyrexia, of which a very good example is given, the temperature being plotted in the way recently suggested by Dr. Arthur Hall in the *Quarterly Journal of Medicine*. The periodicity of the temperature may depend on the life cycle of the hypothetical parasite. Finally the observations on the value of *x*-ray treatment are worthy of note: others also have seen the treatment do great good, and it seems clear that its application to the glands of the chest may relieve urgent symptoms.

THE PREPARATION OF INSULIN.

THE success of Banting and Best in obtaining, under laboratory conditions, an extract of the islands of Langerhans, and the effect of the injection of this extract on the blood sugar, has naturally attracted a great deal of attention. The account given in our columns by Professor Macleod (November 4th, p. 833), under whose superintendence the researches have been carried out in the Physiological Laboratory of the University of Toronto, has been, of course, very carefully studied by physicians and physiologists. It has also, naturally enough, aroused the interest of the general press, and in some cases the motive of the University of Toronto and of the Medical Research Council in taking steps to protect the method of manufacture, so that its commercial production should be carried out in a proper manner and with proper safeguards, has been misunderstood. The fact is that the preparation of insulin, even on the laboratory scale, is not free from difficulties and risks, and these become greater when its production on a large scale is attempted. Interest in the subject has also been displayed in the House of Commons, where a question was asked last week, the member who put it being under the impression that the preparation of insulin had passed beyond the experimental stage, and that there was an attempt to make it a Government monopoly. The Minister who replied said that everything had been done by the Medical Research Council to accelerate the production of insulin and that there was no thought of any Government monopoly. This, we believe, is quite well understood by the commercial firms engaged in the production of organic extracts; while ready to undertake the manufacture of insulin, they are properly averse from embarking on the project until a suitable method of manufacture on a large scale has been elaborated by the scientific experts. The reports published by Banting and Best of their original method of preparing insulin, and of its modification and improvement, have been closely examined by physiologists in this country, and a certain number of criticisms have been heard. One expression of them is to be found in the letter from Dr. Ffrangcon Roberts published in our issue last week (p. 1193). The points made by Dr. Roberts are of a technical kind, and the terms in which they were expressed, it must be admitted, were wanting in urbanity. Dr. H. H. Dale, who visited Toronto this autumn, has dealt with this aspect of the matter in a letter published elsewhere (p. 1241). While inviting Dr. Roberts to put his theories to the test, Dr. Dale states that no one can deny that a discovery of first-rate importance has been made. That this opinion is widely held is shown not only by the interest excited in this country and in America, but by the letter from Dr. Carrasco-Formiguera, of the Catalonia Institute of Physiology, Barcelona, published in our issue of December 9th. In the same issue were printed some "armchair reflections" by Dr. Otto Leyton, who showed anxiety lest the cost of insulin as prepared at present should prove prohibitive if made in London; he also expressed the hope that some other ferment, much more easily prepared, might be found to possess a similar property. He concluded by stating that preparations were being made to test the zymase group in the laboratories of the London Hospital Medical College. This is, of course, as it should be, and we may hope that the impetus given to the study of the functions of the pancreas by the Toronto experiments will not soon be lost. Lord Knutsford has never been backward in making an appeal to the benevolent in the interests of

humanity or of the great hospital of which he is chairman. We should, therefore, not have been surprised to read an appeal from him for funds to carry out the suggested experiments in the laboratories of the London Hospital Medical College. So far as we are aware he has not made any such appeal. There has, however, appeared in the *Daily Telegraph*, and at least one other London newspaper, a long letter signed "Physician to a London Hospital," stating that since the cost of each dose of insulin must be great, and since it is probable that improvements in the method of production will shortly be made—so that it would not be a reasonable financial proposition for any manufacturing chemists to embark on the preparation of insulin—the work should be undertaken on a voluntary basis and the cost defrayed by subscriptions from the benevolent. The writer thinks that if we are to wait until the method of production of insulin improves we must wait indefinitely. There is some reason to hope that he may prove to be mistaken in this; in any case, it seems to us that on his own showing it is premature to make an appeal for £30,000 to put up a factory to make 400 doses a day, although this is, in his opinion, the largest amount that could be made in London. The writer goes on to suggest that as it will be impossible to make all the insulin required it will be "only fair that those who subscribe substantial sums to the fund should have the right to nominate individuals to whom some of the pancreatic extract should be supplied." It falls to him, he says, to make the appeal, because his responsibility for cases of severe diabetes mellitus is heavier than that of anybody else. Exactly what this statement means we do not pretend to say, but no doubt the writer is strongly impressed with the necessity for immediate action, for he appeals for subscriptions to be sent to "G. Jodrell, 92, Portland Place, W.1," which is the same address as that from which Dr. Otto Leyton sent us the letter published on December 9th. We have no doubt—we may perhaps go so far as to say we know—that the Medical Research Council is losing no time. The method by which insulin may best be prepared is the subject of intensive investigation, and the Council is anxious to place the perfected method in the hands of responsible commercial firms at the earliest possible date. In these circumstances we are inclined to think that the benevolent would be better advised to send their contributions to the Treasurer of the Medical Research Council, the Right Hon. F. B. Mildmay, 15, York Buildings, Adelphi, W.C.2.

EXPERT WITNESSES.

In our issue of September 16th (p. 531) Mr. C. H. Fagge wrote a letter criticizing the method in which medical evidence is called both for the plaintiff and for the defendant in the courts. This was followed a fortnight later (p. 614) by a letter from Sir John Lynn-Thomas describing the course of action he had come to adopt when asked to give expert evidence. The publication of this induced Sir Clifford Allbutt to address a letter to Sir John Lynn-Thomas, which, with the writer's permission, is published in this issue (p. 1244). We are very glad to be able to do so, for Sir Clifford Allbutt's description of the plan adopted at Leeds to secure preliminary consultation between medical practitioners called to give expert evidence on either side in cases before the courts is of more than passing interest. Conditions have changed in many respects since the plan was devised, but the need for a more scientific basis for the trial of these cases has increased rather than diminished with the progress of specialization. The present practice, as Mr. C. H. Fagge pointed out, "scarcely advances medical prestige or makes for equity." This being so, it is difficult to account for the general failure to adopt the procedure followed with such signal and deserved success at Leeds, the more so because the attention of the profession has already been directed both to the importance of the principles involved and to this demonstration of their practicability. The question of providing for preliminary consultation between medical witnesses was raised by the Scottish Committee of the British Medical Association in 1903 and was referred to the Divisions. A detailed memorandum on the subject was circulated and a substantial majority of those Divisions which replied expressed themselves in favour of the principle of consultation. A report made by the Medico-Political Committee to the Representative Body at Leicester in 1905 was to the effect that opposition to the scheme arose, in the main, from a fear that the suggested consultations might, in the eye of the law, constitute "collusion" between witnesses, or that it would not prove acceptable to parties to the cases or their legal advisers. On these points the opinion expressed by the Committee appears equally applicable to day. After calling attention to the practical success of the Leeds experiment the Committee observed that the term "collusion" is inapplicable to a consultation for the purpose of securing a joint conclusion as to facts, and expressed the belief that "as soon as the more ethical procedure herein indicated has become the recognized practice of the medical profession, any objection which lawyers or their clients might entertain to consultation between their medical witnesses would tend to be regarded as an indication that there was some element in the case which would not bear unbiased examination. Consequently the practice of raising such objections would prejudice the case of the party objecting, and in a short time would cease."

MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held on Thursday, December 14th, 1922, at the offices, 429, Strand. Dr. G. E. Haslip, the Chairman of the Committee, presided, and the members present were Sir Squire Sprigge, Sir Dawson Williams, Dr. E. Weaver Adams, Dr. H. A. Des Vœux, Dr. R. A. Gibbons, Dr. Langdon-Down, Dr. Alfred Cox, and Mr. W. E. Warne. The Chairman presented an interim report from which it appears that the Agency continues to progress and to flourish. That those who have taken policies of assurance and insurance through the medium of the Agency are well satisfied is amply demonstrated by the renewals no less than by the expansion of the business, largely through recommendations. During the nine months ending September 30th, 1922, new life contracts to the number of 114, representing £94,023, were negotiated, bringing the total of life assurances effected through the Agency to over £600,000. The renewals of motor car insurances also have been well maintained; during the period under review there was an increase of 80 new policies. It is hoped that the advantages to be derived from utilizing the services of the Agency will be even more effectively placed before the profession in 1923. Other branches of insurance show an equally satisfactory state of affairs. The subcommittee which was appointed in June last to consider the means whereby such funds as might be made available could be best applied to the educational benefit of the children of medical practitioners presented a report showing that consideration had been given to the position of the daughters of deceased or disabled medical men. Dr. Louisa Martindale had consented to assist, and her special knowledge and sympathetic understanding of the problems of female education had been of great assistance. After full consideration the Committee came to the conclusion that the best thing to do at the present stage was to select girls of about 12 to 14 years of age and to defray the cost of their education and, where necessary, their maintenance at school until about the age of 18 years; the subcommittee was invited to submit a detailed scheme to the next meeting. The Secretary (Mr. Ferris-Scott) announced that the sum of £965 was available for distribution to the medical charities, and it was resolved to allot £400 to the Royal Medical Benevolent Fund Guild, £210 to the Royal Medical Benevolent Fund, £105 to the Epsom College Benevolent Fund, and to reserve £250 for the proposed educational grants to girls. At its last meeting the Committee allotted 200 guineas to each of the first three charities mentioned. As the result of the distribution now to be made the total sum subscribed to medical charities by the Medical Insurance Agency since 1910 exceeds £10,000.

LIFE AT HIGH ALTITUDES.

MOUNTAINEERS and airmen combined in a discussion on the medical aspects of life at high altitudes at the meeting of the Section of Medicine of the Royal Society of Medicine on December 15th. Dr. T. G. Longstaff, a member of the most recent expedition whose object was to reach the summit of Everest, gave an interesting account of the experiences of himself and his colleagues, and showed some striking photographs. One of the greatest difficulties encountered by the party was, he said, excessive thirst, for at very high altitudes snow and ice did not melt into water, but went straight into watery vapour. Oxygen was, he believed, the best protection against frostbite. Of two parties ascending Everest one used oxygen and the other did not; in the first frostbite was only very superficial, whereas the other suffered severely. The party using oxygen ascended more quickly than the other, but was slower in the descent. Remarkable personal variations were observed; one member of the party became so acclimatized that he was able to spend three nights and four days consecutively and comfortably at a height of 23,000 feet. Mr. T. H. Somervell, another member of the Everest expedition, stated that for several successive evenings, at 16,500 feet, he had Cheyne-Stokes breathing when lying down to sleep, but it passed off. At 27,000 feet his breathing was much deeper than at sea-level, and the rate was 55 to 60; during the climb his pulse rate varied between 180 and 200. Mr. J. Barcroft, speaking of the experiences of the recent expedition to the high Andes, said that the response to high altitudes included vomiting, headache, occasionally epistaxis, and some difficulty with vision and hearing; also among various people irritability of temper, trouble with the appetite, and some difficulty about doing work. The normal saturation of arterial blood with oxygen was at sea-level 96 per cent. of the possible; at high altitudes it ranged between 82 and 91 per cent., and the arterial blood was practically as dark as the normal venous blood. The oxygen pressure in the blood was also deficient in these cases, being 60 mm. only, as against the normal 100 at sea-level. Yet there was more oxygen in each cubic centimetre of blood at high altitudes than at sea-level, the reason being that there so much more haemoglobin was present. The climatic conditions were found to produce hypertrophy of the bone marrow. The blood of each member of the Andes party was so altered in its chemical properties that at any given oxygen pressure it combined with more oxygen than it had done at sea-level. Professor J. C. Meakins, who was also a member of the Andes expedition, said that to him the striking feature resulting from the stay of the party in the high Andes was the development of cyanosis; it resembled that seen usually in a bad case of pneumonia, and the violet hue persisted during the whole time. Among the natives of these Peruvian mountains club-fingers were common, quite apart from cardiac or pulmonary lesions. Among them also there was a distinct increase in the width of the chest in comparison with its height. After the eighth day of residence an examination of the party showed that the heart had become smaller, but this was less noticeable in those who did not stand the altitude well. Wing Commander Martin Flack, Director of Medical Research, R.A.F., said that in the case of the airman the change of altitude was very sudden, and his stay in the high altitudes brief; there was no increase in haemoglobin, and no increase of corpuscles even with diminished haemoglobin content. There might be a certain amount of acclimatization of the lung epithelium, by which, after a time, the aviator was able to get an extra amount of oxygen into his blood. It was to be remembered that the aviator sat in his machine, whereas the mountain climber trudged up steep inclines. The first effect of high flying was deepened breathing, and in some cases this amounted to real distress. The pulse rate usually rose, and the blood pressure also in a high flight, though if the blood pressure subsequently fell it never, in the fit man, sank below the normal unless the altitude flight was very prolonged. Muscular weakness was pronounced; even the working of the camera shutter seemed to call for enormous effort. Judgement and perception also were impaired, and in a prolonged flight the respiratory capacity became lessened. Oxygen tended to abolish the effects due to defective circulation and nervous instability. Flight Lieutenant W. D. Faringdon said that at 18,000 feet an appreciable effort was needed even to pick up a map from the cockpit of the machine. At that height the impairment of judgement was apt to be marked, and special care had to be taken over the movements, otherwise almost automatic, involved in taking a photograph. When a height of 18,000 feet was rapidly attained the distress was at first very great, but it passed off in fifteen minutes; it was less pronounced if from two to two and a half hours were occupied in reaching this altitude. Mr. Malcolm Hepburn, F.R.C.S., a member of the Alpine Club, considered acclimatization to be a question of the oxygen-carrying capacity of the blood. If the persons doing such a great climb as that of Mount Everest could accustom themselves to doing with a smaller supply of oxygen than the normal they need not despair of being able to accomplish this supreme feat. But definite training should be undertaken, suitable food supplied, and the ascent should be slow. Dr. J. S. Haldane said that his experience confirmed nearly all the statements other speakers had made as to the effects of high altitudes. He still adhered to the conclusions he arrived at as a result of the Pike's Peak experience. The pressure of oxygen in the arterial blood was not normally in equilibrium with the pressure of the oxygen in the alveolar air, and by all sorts of modifications in the breathing it was rendered far from equal. The account of the experiences on Everest given by Dr. Longstaff was made more vivid by some remarkable photographs, which were shown to the Section.

AN OUTBREAK OF DYSENTERY IN WALES.

DR. T. W. WADE'S report to the Welsh Board of Health on the occurrence of bacillary dysentery in the Ogmore and Garw Urban District, in the county of Glamorgan, has been issued by the Ministry of Health, with a prefatory note by Sir George Newman.[1] It is the record of a very thorough investigation. Ogmore, a district in the South Wales coal-field, is a narrow valley running north and south; flat-topped hills on either side prevent much lateral communication, and the only outlet is at the southern end. The outbreak began suddenly about May 11th, 1921, with explosive intensity and without the occurrence of previous cases to give warning. On May 18th Dr. Anderson, who is in practice in the valley, reported a serious prevalence of diarrhoea, with fever, tenesmus, and blood-stained and slimy evacuations, among the children in one district in this valley. The medical officer of health, Dr. Murphy, found that, besides young children, older children and adults were suffering in the same way. All the signs pointed to a water-borne infection. During the outbreak, which lasted until the end of August, the total number of deaths was 12; the infection was thus comparatively mild. The cases seen by doctors numbered 548 (a case mortality of 22 per cent.); but from house-to-house inquiry it appeared that the total number of diarrhoea cases had been somewhere about 1,100. The causative organism of the disease was proved to be *B. dysentericus* Flexner (strain W). The outbreak was limited at first to a defined area supplied by water from a particular main, and the houses nearest the source of supply were those most seriously affected. A group of houses supplied with water from a private source, though situated near the middle of the invaded district, escaped almost wholly. Exhaustive inquiry failed to show how the water became contaminated by the specific organism. The Fronwen brook (which fed the contaminated area) was supplementary to the main water supply of the district. While the Fronwen gathering ground was good, and its water chemically and bacteriologically fairly good, yet in its course to the main it was open to contamination by wayfarers. No rain fell from the 1st to the 7th of May.

[1] *Reports on Public Health and Medical Subjects.* No. 14. H.M. Stationery Office. 1922. (Price, post free, 1s. 1d.)

On May 7th there was 0.86 inch of rain; on May 8th 0.51 inch, and slight rain fell on May 9th, 10th, and 11th. The epidemic first noted on May 11th was at its height on May 13th. The inference that the dejecta of a dysentery carrier was washed into the Fronwen brook and that this caused the epidemic seems reasonable. That the carrier may have acquired his organism in the trenches of the western front is an attractive speculation, based on the fact that very many of the 38th Welsh Division now live in the district and bacillary dysentery was prevalent in their part of the line. Three ex-soldiers, discharged from the army with dysentery, were found, but although two of these lived near the source of this water supply no connexion could be traced between them and the outbreak. Dr. Wade remarks, however, that this organism may probably be a commoner inhabitant of the human intestine in this country than is generally supposed. The epidemic, having started from the definite water source, spread later by case-to-case infection, but not to any great extent. The measures taken were as follows: the water in the main has been chlorinated, and the Fronwen water is now piped for such a distance that casual contamination is unlikely.

SOCIÉTÉ INTERNATIONALE DE CHIRURGIE.

THE sixth triennial Congress of this society will be held in London from July 17th to 20th, 1923, under the patronage of His Majesty the King and the presidency of Sir William Macewen, C.B., F.R.S. The meetings will be held at the Royal Society of Medicine, 1, Wimpole Street, W.1. The subjects chosen for discussion are: (1) The surgery of the endocrine glands with the exception of the thyroid; (2) Arthroplasty; (3) The late results of surgical intervention in traumatic lesions of the peripheral nerves; (4) Serum and vaccine therapy of surgical infection with the exception of tetanus; (5) Operative shock. According to the provisional programme the inaugural meeting will take place on Tuesday, July 17th, at 11 a.m., when H.R.H. the Prince of Wales has graciously consented to open the Congress. Scientific sessions will be held on Tuesday afternoon and on Wednesday, Thursday, and Friday mornings. Operations and demonstrations will be arranged at the various hospitals on the last three days of the Congress. A collection of pathological specimens illustrating diseases of the endocrine glands will be on view at the Royal Society of Medicine. Hospitality will be extended to members of the Congress by His Majesty's Government, the Lord Mayor of London, the Royal College of Surgeons, the University of London, and the Barbers' Company. The organizing secretaries are Sir D'Arcy Power, K.B.E., and Mr. J. E. H. Roberts, O.B.E. The British secretariat is at 26, Harley Street, W.

MEDICAL GOLFING SOCIETY.

THE second annual dinner of the Medical Golfing Society was held at the Grand Hotel, London, on December 14th, and was followed by the annual general meeting. The President, Dr. Rolf Creasy, occupied the chair. The rules of the Society were revised so as to provide for the annual election of the officers, and for the continuance in office of the committee for three years, a third of their number to retire annually. A general discussion of the Society's business took place and the following officers and committee were elected for the ensuing year: President, Dr. Percy Kidd; Past-President, Dr. Rolf Creasy; Captain, Mr. H. D. Gillies; Match Secretary, Dr. H. Gardiner Hill; Secretary and Treasurer, Dr. Rolf Creasy, jun.; Committee: Dr. J. Clarke, Dr. R. Creasy, Mr. G. Dawson, Sir K. Goadby, Dr. G. E. Haslip, Mr. T. P. Kolesar, Dr. G. Norman, Sir M. Rees, Mr. J. Swan. Two successful golfing meetings have been held during the past year. The summer meeting took place at Stoke Poges, and the autumn meeting at Littlestone; the results of the various competitions were briefly reported in our columns. Owing to the reconstitution of the Club it was not possible to hold many matches in 1922, but the Captain, Sir Milsom Rees, was able to arrange matches against Royal Wimbledon, Sidcup, and the Stage Golfing Society, the two former being lost and the latter won. It was decided that the subscription should remain at 10s. The interest taken in golf by members of the medical profession is at least as great as that of any other calling, and the Medical Golfing Society may well look forward to a future of increasing prosperity.

THE FIRST WOMAN VETERINARY SURGEON.

THE Royal College of Veterinary Surgeons, which is the only body empowered to grant a diploma in veterinary medicine and surgery, has hitherto refused to admit women. The Sex Disqualification (Removal) Act has settled the question of the admission of women to the professions, and on Wednesday last Miss Aleen Cust was admitted a Member of the Royal College of Veterinary Surgeons. She is the first woman to obtain the diploma. Miss Cust, who is the daughter of the late Sir Leopold Cust, Bt., and the sister of Sir Charles Cust, equerry to the King, decided while still a girl to devote herself to veterinary work. She passed through the full curriculum of four years at the Edinburgh Veterinary College with distinction. Although the Royal College of Veterinary Surgeons refused, on the ground of sex, to grant her its diploma, Miss Cust determined to follow her vocation; she established an extensive veterinary practice in the West of Ireland, and was for ten years veterinary inspector under the Galway County Council and the Department of Agriculture in Ireland. During the war she volunteered for service overseas and was appointed by the War Office to a responsible position in the bacteriological laboratory of a veterinary hospital in France. So far as we are aware there are very few, if any, women veterinary surgeons in other countries; we are told that some twenty-five years ago two Russian women attended the Alfort (Paris) Veterinary School, and were subsequently admitted to the Russian State Veterinary Service. Since the Sex Disqualification (Removal) Act was passed the possibilities of the veterinary profession as a calling for women have been perceived by a few, and at the present time there are, we believe, two women students attending the veterinary department of the University of Liverpool, two at the Veterinary College of Ireland (Dublin), and one in Edinburgh. The veterinary profession has been rather a long time following the example of the medical profession in admitting women, but we have no doubt that there is a considerable opening for them, both in practice and in research. The importance of the scientific investigation of diseases of animals, and the light that the study of disease in animals can throw on pathology in general, are now far more fully appreciated than ever before.

DOCTORS IN RUSSIA: A CHRISTMAS APPEAL.

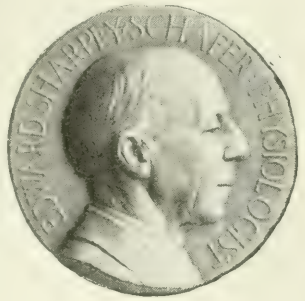
WE commend to the sympathetic notice of every reader of the BRITISH MEDICAL JOURNAL the appeal, signed by the four officers of the Association and printed at p. 1228, on behalf of the starving doctors and their families in Russia. At this season the claims upon the generosity of a generous profession are many. But this second appeal for help for our Russian colleagues in distress is one that will surely find a response. What better relish for a Christmas dinner could be imagined than the knowledge that a gift has been willingly made towards the sending of a food parcel to some famine-stricken medical household in Russia? Subscriptions of 5s. or multiples of 5s. should be sent to Mr. L. Ferris-Scott, Financial Secretary of the British Medical Association, 429, Strand, W.C.2.

A GIFT of two sums of 100,000 francs has been made to the University of Paris by Madame Edouard Nathan. The first of these is intended by the donor to be applied to the improvement of the scientific laboratories of the University, and to the promotion of research work. The second is to be set apart for the purpose of making loans to impecunious students of the University to enable them to continue their studies.

SIR EDWARD SHARPEY SCHAFER, F.R.S.

SOME time ago the suggestion was made that the meeting of the British Association in Edinburgh in 1921 would form a fitting occasion for the presentation to Sir Edward Sharpey Schafer of some token of their esteem from his present and past demonstrators and fellow research workers first in London and afterwards in Edinburgh.

As so many of those who had been trained under him now occupy posts in distant lands it was found impossible to make the necessary arrangements for the presentation at that early date, but Professor Halliburton made a statement at one of the largely attended meetings of the Physiology Section, expressing the desire of all who had been associated with their old master in the prosecution of physiological research to present him with some mark of their esteem and affection, and indicating the form it would probably take. It was appropriate that the announcement should be made in Edinburgh, for Sir Edward Sharpey Schafer has been Professor of Physiology there since 1899.





It was decided that the presentation should consist of a life-size portrait plaque, and that a medal reproducing the portrait and inscription should be offered to each of the many subscribers. The plaque and the medal are the work of Mr. C. d'O. Pilkington Jackson, A.R.B.A., and the portrait is excellent. From the photograph of the medal here reproduced it will be seen that the obverse bears in bold relief the bust of Sir Edward Sharpey Schafer and that the reverse contains a dedicatory inscription. The plaque itself is of bronze and has been mounted on stone with the inscription shown on the reverse of the medal underneath it. At Sir Edward Sharpey Schafer's desire it will eventually be placed within the University of Edinburgh, but at present it remains in the sculptor's studio, as he wishes to exhibit it at the Royal Scottish Academy.

The long list of subscribers includes many of the leaders in physiology and other branches of medical science in this and other lands: a few of them may be named—Bayliss, Rose Bradford, Halliburton, L. Hill, MacWilliam, Mott, Starling, in this country; and Hunter and Tait (Canada), Jolly (S. Africa), Malcolm and Mackenzie (New Zealand), Add's and S. Simpson (U.S.A.), Row (India), Itagaki and others (Japan). Among the original subscribers were two of great distinction who have unfortunately passed away—Augustus Waller and Benjamin Moore.

The profession will join in congratulating Sir Edward Sharpey Schafer on this spontaneous tribute from his old pupils and fellow workers to his eminence as a physiologist, and to the inspiration of his teaching, and also in the hope that he still has before him many years of successful work.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Prorogation.

PARLIAMENT was prorogued by Royal Commission on Friday, December 15th, after the Royal assent had been given to several measures, including the Importation of Cattle Bill. The new Session will open on Tuesday, February 13th.

Insulin for Diabetes.—Sir William Bull asked, on December 13th, whether the Medical Research Council was throwing obstacles in the way of the general production of insulin as a remedy for diabetes; if, as knowledge of the remedy had passed the experimental stage, the Minister of Health could arrange that the manufacture should be left to private enterprise; and whether the system of licences granted by the Medical Research Council to authorized persons would afford ample protection to the public and make the remedy available much sooner than by keeping it a Government monopoly. Sir M. Barlow said that the Medical Research Council was doing everything in its power to accelerate the production and use of insulin. The assertion that the remedy had passed the experimental stage was not in accord with the experience of other countries or the best scientific opinion here. There was no question of any Government monopoly and the suggestion as to manufacture was on the line which the Council had been diligently pursuing for some time past.

Medical Department, Ministry of Pensions.—Major Tryon has stated that local practitioners serving on medical boards received the following fees: Chairman, £1 11s. 6d. (for a session of 2½ hours); specialists, £2 2s.; ordinary members or assessors, £1 6s. 3d. Considerable assistance is now given by full-time medical officers of the Ministry, of whom some 200 are liable for this service. The average salaries of these officers is approximately £924 per annum. The total expenditure on payment to sessional members of the boards was, in 1921, £627,795. The corresponding figure for the current year will be more than one-third less, owing to a reduction of the sessional fees payable, and of the number of members of ordinary boards from three to two. Major Tryon has also explained that when whole-time medical officers of the Ministry were not available local practitioners were employed to examine and make detailed reports on pensioners accommodated in institutions not under the control of the Ministry. These medical men received a fee of £1 1s. for one case, and £1 11s. 6d. for two or more cases. No higher fee than £1 11s. 6d. was paid for a visit to any one institution whatever the number of pensioners examined and reported upon.

Vaccine Lymph.—Captain Bowyer asked, on December 14th, why it was that private practitioners were unable to obtain Government lymph. Sir M. Barlow said that the obligations of the Government were limited to the supply of lymph for public vaccination and at present it was not practicable to extend the supply to private practitioners.

Small-pox.—In reply to Mr. T. Thomson, Sir M. Barlow said that the total number of deaths from small-pox in the first eleven months of this year was 27. Twelve of these cases had been vaccinated, 11 were unvaccinated, 3 showed no evidence of vaccination, and one was vaccinated during the incubation period of small-pox. The total number of cases of small-pox occurring in vaccinated persons during the eleven months was 271, and the percentage rate of deaths to cases in this class, irrespective of age, was 4.4. The total number of unvaccinated cases, including those which showed no evidence of vaccination, or were vaccinated only during the incubation period of small-pox, was 625, and the percentage rate of deaths to cases in this class, irrespective of age, was 2.4. In 6 cases no information was available as to vaccination. There were no fatal cases among vaccinated persons under 35 years of age.

Insurance Medical Services.—Sir Montague Barlow informed Mr. Gould, on December 13th, that no medical practitioner working single-handed under national insurance might have more than 3,000 persons on his list, and in a considerable number of areas a lower maximum of 2,500 or 2,000 had been fixed. Taking the country as a whole the average number of insured persons per doctor was approximately 1,000, and the corresponding remuneration, including milage payment, would be slightly less than £500 a year. On a question as to the procedure, if an insured person desired attention from his own private doctor, Sir Montague said that an insured person wishing to be treated by a practitioner not under an agreement with an Insurance Committee might apply to the local committee for permission to make his own arrangements. If it were granted a contribution would be given by the committee towards the cost of the treatment. The committee had full discretion in considering applications of this nature. There was no provision in the Acts for any reduction in the contribution on the ground that the insured person did not take up the benefits of the Act.

Surplus of Approved Societies.—At the instance of Viscount Ednam, on December 13th, Sir M. Barlow stated that the total disposable surplus of approved societies and branches in England on the first valuation was about £8,000,000, the major portion of which the members elected to take in the form of an increase of the ordinary cash benefits. Of the balance a sum of £950,000 had been allocated by certain societies for payment to hospital and convalescent homes during the period from July, 1921, to July, 1926.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the President and General Council of King Edward's Hospital Fund for London, for the purpose of awarding grants to the hospitals and convalescent homes for the present year, was held on December 13th, with H.R.H. the Prince of Wales in the chair. A resolution was passed expressing deep regret at the death of Mr. John G. Griffiths, who since 1902 had rendered invaluable service to the Fund and to the hospitals.

Financial Statement.

Lord REVELSTOKE (honorary treasurer) said that the sum to be distributed would be £220,000, the same amount as last year. The net income for 1922 was almost exactly £220,000. This estimated total included an anonymous donation of £10,000 given to the Combined Appeal, but earmarked by the donor for the King's Fund, and a sum of about £13,000, representing one-fourth of a full year's interest from the legacies of Lord Mount Stephen and Sir Thomas Sutherland; a full year's interest on these bequests would probably approach £50,000. It had always been realized that the special distributions of the last few years—the National Relief Fund, the King's Fund Emergency Distribution, the Government grants administered by the Voluntary Hospitals Commission, and the Combined Appeal—had been only temporary expedients to tide over a particular crisis and to allow time for developing permanent increases in income. Now that the time had come for concentrating on permanent remedies he submitted that the policy should be to endeavour to increase the annual distribution and therefore the power to encourage and assist the hospitals to develop new sources of income and new methods of controlling expenditure.

Sir WILLIAM COLLINS, in making the annual statement on behalf of the League of Mercy, said that it was practically certain that the League would give not less than the £15,000 given last year to the King's Fund; he hoped it would be more. The total which the League had contributed to the King's Fund would then amount to £339,000, besides £49,065 to extra-metropolitan hospitals.

Grants to Hospitals.

Sir COOPER PERRY presented the report of the Distribution Committee. This stated that the amount now for allocation amongst hospitals was £215,000. The Committee had been concerned again this year, not only with the ordinary distribution, but also with special distributions, to assist the hospitals to tide over the period needed for reorganization of their finances after the war. In March, July, and November of the present year the Committee made recommendations to the Voluntary Hospitals Commission covering in all a total of £147,100, the balance of the sum of £225,000 provisionally allocated to London out of the total of £500,000 voted by Parliament for the whole of Great Britain. In August and October the Committee carried out two distributions on account of the proceeds of the Hospitals of London Combined Appeal—£150,000 in August and £100,000 in October. These were not made on the same basis as the ordinary distributions of the King's Fund, but on a basis announced to the participating hospitals when they were invited to suspend their own special appeals in order to co-operate. The number of hospitals applying for grants out of the ordinary distribution was 112, as against 110 in 1921. In view of the urgent need of maintenance grants, the Distribution Committee had again adopted the principle that grants in aid of schemes of capital expenditure should be limited to cases where the work was particularly urgent and was within a reasonable distance of being carried out. The number of schemes which had reached this stage was larger than last year, and consequently the total amount of the grants recommended in aid of schemes of capital expenditure was larger.

Grants to Convalescent Homes.

Sir ALAN ANDERSON (honorary secretary) presented the schedule of awards to convalescent homes. This year the sum fixed for distribution amongst convalescent homes was £5,000; the amount in 1921 was £3,930, besides £6,070 to consumption sanatoriums; but for reasons set out in last year's report grants were now no longer made to sanatoriums. In distributing the increased amount available for convalescent homes, the Committee gave preference to institutions directly connected with London hospitals, and in dealing with the applications it gave special attention to the question of comparative urgency of need, as shown by audited accounts and balance sheets.

The Hospitals' Combined Appeal.

In regard to the present position of the Combined Appeal, Sir ALAN ANDERSON said that no precise figure of results to date could be given, because a good deal of the moneys collected had not yet been paid over, but the grand total of the Appeal Fund was estimated at £435,000. The intention was to close down the general appeal by December 31st, and to leave in activity only one or two specific appeals which would not be concluded by then. They were now devoting thought to permanent methods of increasing the income of hospitals; one of these was the obtaining of increased support from domestic workers, and the other direction was that of the organization of contributions from wage-earners generally.

Growth of the King's Fund.

The PRINCE OF WALES said that it was exactly twenty-five years since the King's Fund made its first distribution. On December 14th, 1897, the Executive Committee met under the chairmanship of Lord Lister to settle the first distribution report to the Council. The amount distributed in 1897 was £34,000 from the special efforts of the first year, and £22,000 from the estimated annual income. This year £250,000 had already been distributed from the special Combined Appeal, and the amount now being distributed out of ordinary income was £220,000.

Financial Problems of the Hospitals.

The financial problem facing the hospitals and the Fund had enormously increased. The King's Fund was founded to meet a crisis; the hospitals of London had then a deficit of £70,000 on a turnover of £700,000. The King's Fund now distributed £220,000 a year, and yet there was a deficit of £210,000. Had the income of the hospitals fallen off? Were voluntary contributions dying out? Quite the contrary. Hospital income was more than three times what it was. Voluntary contributions continued to increase, and were 50 per cent. more than before the war. The present difficulties were due to the fact that hospital expenditure had increased since 1897 nearly fourfold. There were three causes for this: the increased number of patients, needing more hospitals and bigger hospitals; the developments of medical and surgical science, all costing money; and the rise in the price of everything since the war. The result was that, in spite of the great increase in the King's Fund distribution, there was still a deficit of £210,000. The hospital problem was thus much bigger than it was twenty-five years ago, but, fortunately, the means of dealing with it had also grown. They had, in the report of Lord Cave's Committee, a programme based largely on two things: one was the success of many of the provincial hospitals in organizing workshop contributions; the other was the growth of the King's Fund from a mere collecting and distributing agency into a central administrative body, which, being itself voluntary, respected the independence of the voluntary hospitals. The King's Fund had become the local committee for London, and local voluntary committees had been set up all over the country to do the same kind of work. Moreover (His Royal Highness concluded) the Order of St. John and the British Red Cross Society, through their Joint Council, were now assisting in the solution of voluntary hospital problems.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on November 11th, 1922, 24 cases were considered and £389 10s. voted to 23 applicants. The following is a summary of some of the cases relieved:

M.R.C.S.Eng. (1851), L.S.A. (1864), aged 85. Widower, with two unmarried daughters, aged 52 and 53 respectively, who look after the applicant. His total income from investments is £120 and he receives £80 from married daughters. He was in practice in a country district from 1866 to 1912. Owing to the cost of living applicant finds it hard to make ends meet, the income being inadequate for three people after rent and taxes have been paid, which amount to £55. Voted £26 in twelve instalments.

Widow, aged 45, of M.R.C.S.Eng. and L.R.C.P.Edin. 1892) who died in a sanatorium in May, 1922. Fellow practitioners collected £40 towards the funeral expenses and debts. Owing to enforced removals on account of ill health applicant's late husband was unable to make any provision for his wife and daughter, aged 11. Applicant received £9 from friends and hopes to make about £10 12s. from stocking knitting. Voted £15.

Daughters, aged 58 and 50, of L.S.A Lond. who died in 1903. Owing to chronic ill health they find it extremely difficult to manage on a joint income of £101; the rent amounts to £34. Relieved fourteen times £189. On the recommendation of the Fund's visitor the grant of £18 was raised to £26 in twelve instalments.

Widow, aged 80, of L.R.C.P.Edin., L.S.A.Lond. who died in 1889. She is now left with a total income of £45, out of which she has to pay rent and buy food. The Guild sent her an emergency grant of £3 and £1 for coal, and the Fund voted £18 in twelve instalments, and a special grant of £7 10s.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., M.S., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

England and Wales.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.

THE annual address of the Society was delivered on December 7th by Sir Humphry Rolleston, President of the Royal College of Physicians of London. The President, Professor Stuart McDonald, occupied the chair. An audience of over two hundred listened with the greatest interest to Sir Humphry's "Reflections on high arterial blood pressure." The lecturer outlined the history of observations on blood pressure from the earliest records to the present time, and then passed on to a critical analysis of the causes and treatment of raised blood pressure. The address will be published in full in the journal of the Society. Professor Drummond proposed a hearty vote of thanks to Sir Humphry Rolleston, which was seconded by Dr. Andrew Smith and carried with acclamation. In the evening the annual dinner took place, at which Sir Humphry Rolleston was the principal guest; 130 members and guests were present. The health of "The Guest" was proposed by Professor T. Beattie, and Sir Humphry Rolleston replied. In his speech he referred to several famous medical men who had originated in the Newcastle district, including Akenside, Addison, and Snow. "The Society" was proposed by Professor Arthur Robinson, Vice-Chancellor of Durham University, and responded to by the President. Dr. R. A. Bolam proposed the health of the other guests of the Society—namely, Professor Drummond, Admiral Slayter, and Mr. S. Dunstan. Admiral Slayter replied.

THE GRADING OF MILK.

The Minister of Health has made an order entitled the Milk (Special Designations) Order, 1922, prescribing the conditions subject to which licences may be granted for the sale of milk as "Certified," "Grade A (tuberculin tested)," "Grade A," or "Pasteurized." The order comes into operation on January 1st, 1923, and copies may be obtained from the Stationery Office either directly or through any bookseller. The principal conditions laid down in the Order are as follows:

Certified milk must be produced from healthy cows which have passed the tuberculin test. It must be bottled on the farm, and must satisfy a somewhat severe bacteriological test.

Grade A (tuberculin tested) milk must be produced from healthy cows which have passed the tuberculin test. It must be bottled before distribution, and must satisfy a bacteriological test less severe than that required for certified milk.

Grade A milk must satisfy the same conditions as Grade A (tuberculin tested) milk, with the exception of the tuberculin test.

Pasteurized milk must have been held at a temperature of 145° to 150° F. for at least half an hour, and then cooled to 55°, and it must satisfy a prescribed bacteriological test.

The Order prescribes the fees payable for licences; these have been fixed at such amounts as are estimated to recoup the licensing authorities for their expenditure under the scheme, but the fees are open to revision in the light of experience. An amending Order, dated December 18th, has since been issued, relaxing for a period of six months so much of the principal Order as limits the use of the designation "Pasteurized" to milk which has been treated by the process specified in paragraph (1) of Part IV of the third schedule to that Order.

SMALL POX IN LONDON AND THE PROVINCES.

Confidence that the outbreak of small-pox in London had been overcome has been shaken by the occurrence of two fresh cases in Southwark on December 20th. At the beginning of the present week only 15 cases remained in hospital, and there had been no fresh admissions since November 24th. In an interesting report Dr. F. W. Alexander, M.O.H. Poplar, gives an account of the action taken in that borough. The outstanding fact is the vigour and concentration of effort devoted to the stamping out of the infection. The danger of the position was at once realized, and a wholesale immunization by vaccination of the inmates and staff of the Poplar workhouse was undertaken and overtaken without delay, so that only those who were already infected or whose infection was too far advanced to be forestalled by vaccination developed the disease. At the same time search for and surveillance of contacts was carried out. The Ministry of Health, the County Council, the borough health authority, and the guardians all shared in the crusade, and all have to be congratulated on the action taken. In the provinces the position is more doubtful. Cases are reported from Nottinghamshire and Jarrow, and also from South Wales. It will be important to know whether these cases are of the mild or American type which has been the general character of variola in recent years, and also in the present year, or whether the disease in any of the affected areas is of the severe strain, with its 30 per cent. of fatality which has been experienced in London. It is too soon to go into details of the Asylums Board's cases, but a provisional report by the Chairman of the Infectious Hospitals Committee states that from July 25th to December 6th 69 cases of small-pox were admitted. Of these, 23 had died and 15 remained under treatment. Of the cases admitted none showed evidence of vaccination or revaccination within the preceding seventeen years; 12 of the 21 cases with no evidence of vaccination at any period had died; whilst of 48 cases that had been vaccinated in infancy but not since only 11 had died.

Scotland.

CHAIR OF PUBLIC HEALTH IN GLASGOW.

MR. HENRY MECHAN, one of the leaders in industry in Glasgow, has presented a sum of £25,000 to the University of Glasgow, for the establishment and equipment of a chair of public health. Hitherto the two departments of forensic medicine and public health have been combined, but Dr. Glaister, the Regius Professor of these subjects, recently reported to the University Court that there had been an enormous increase in the work of the two departments. At the examination last September there were no fewer than 295 candidates. Professor Glaister went on to represent that the time had come when, in the interests of the University, the two subjects should be separated and that an appointment should be made exclusively to the department of public health, leaving him to devote himself to forensic medicine. It was no doubt in consequence of this representation that Mr. Mechan has made his munificent donation. He has left all the details to be settled by the University authorities. The Principal, Sir Donald MacAlister, in making the announcement to the University Court on December 14th, said that the necessary steps to obtain a new ordinance establishing the professorship would be taken immediately. At the same meeting of the Court it was announced that the sum of £20,000 bequeathed by Mr. William Gemmell for the foundation of a chair in the faculty of medicine or of science, in memory of his brother, the late Dr. Samson Gemmell, Regius Professor of the Practice of Medicine in the University, had been received. The Principal remarked that these two chairs raised the number founded in the past fifteen years to seventeen. Even during the last few months four chairs have been founded: physiological chemistry, bacteriology, organic chemistry, and applied physics. The *Glasgow Herald*, in commenting on the most recent gifts, says, speaking of Sir Donald MacAlister, "We shall not go wrong in assuming that his striking personality and high service to the University have some relation to these munificent gifts by the grateful and far-seeing sons of the city."

ST. ANDREWS UNIVERSITY AND DUNDEE ROYAL INFIRMARY.

At a meeting of the governors of Dundee Royal Infirmary on December 11th the announcement was made that a joint committee of the University Court of St. Andrews and of the Royal Infirmary governors had recommended, among other things, that in the event of a vacancy occurring in one of the professorships of medicine, surgery, pathology, or obstetrics the joint committee should recommend to the University Court one or more persons in order that the Court might appoint one of these to the vacant professorship, and the person so appointed should thereafter be elected to the staff of the Infirmary by the directors. It was also recommended that the joint committee should be retained as a standing committee, with the function of harmonizing the activities of the University and the Infirmary in matters common to both organizations. These recommendations had been approved by the directors and sanctioned by the University Court.

TREATMENT OF CRIMINALS.

The last meeting of the Glasgow Medical Lunch Club for the present year was held on December 14th. Dr. John Henderson occupied the chair, and Dr. James Devon, Prison Commissioner for Scotland, was present as the guest of the Club.

After lunch Dr. Devon addressed the members on the treatment of criminals. He began by stating that from the purely medical standpoint the first consideration is the welfare of the patient, that the primary duty is the saving of life, without regard to the possible value of the life saved. In the treatment of criminals this principle could not be carried out, as the safety of the public must be considered, and to ensure this a suitable line of action must be adopted towards the offender. The proper care of the criminal was a considerable expense to the country, appreciably greater in England than in Scotland, and any scheme of reform seemed only to result in increased financial outlay, without any corresponding certainty as to improvement. Dr. Devon quoted figures illustrative of the annual cost of upkeep for each inmate in a Borstal institution and in prison. He emphasized the fact that the first consideration should not be the comfort of the offender, but the safety and comfort of other people. The world could not be altered to suit the criminal, but the offender must be made to realize that, to remain a member of a community, he or she must conform to its rules. Various classes of offender were cited, and the lecturer emphasized the point that often the so-called political offender was a greater nuisance and danger to the community than those who commit crime under the influence of passion. The latter, after a term of punishment, were not likely to repeat the offence, but the former could not be trusted to refrain. He or she would not obey the laws of a community, whose constitution they were determined to alter by any means, regular or irregular. With regard to the education of the criminal while under restraint, the lecturer expressed his conviction that this should be directed along some line by which on his release the offender might be able to earn a living honestly. The sort of higher education which was attempted in some quarters was unnecessary, and in most cases futile. The address was much enjoyed by the large attendance of members present, whose thanks were expressed by Dr. D. McKail.

Central Midwives Board for Scotland.

At a special meeting of the Central Midwives Board for Scotland for the hearing of penal cases, when Dr. James Haig Ferguson was in the chair, the certificates of two midwives were directed to be cancelled and their names removed from the roll. In one instance judgement had been deferred for further reports from the local supervising authority; these were unfavourable. In the other case charges with regard to failure to take and record pulse and temperature, to keep a register of cases, to send for medical assistance in a case of emergency, and of being generally incapable of carrying out the rules were found to be proved. This woman was further prohibited from attending women in childbirth in any other capacity.

Ireland.

Belfast Teachers in America.

At a meeting of the Ulster Medical Society held in the Medical Institute, Belfast, on December 7th, with the President, Mr. R. J. Johnstone, in the chair, Mr. Andrew Fullerton read "Notes on a visit to hospitals in Canada and in the United States." His visit embraced Montreal, Toronto, Chicago, the Mayo Clinic of Rochester, Baltimore, New York, Boston, and Harvard University. Mr. Fullerton described the warm hospitality of both the Canadian and the United States surgeons, and the most pleasant reunions with those with whom he had worked in France. The essential points of difference between the American hospitals and those at home were the endless wealth that was showered by the rich in the former continent on their institutions; the readiness of both medical men and laymen to pick up, test, and, if found useful, adopt new ideas and suggestions, no matter from what source; the employment of large staffs of young ladies to keep indexes, records, and generally to facilitate looking up past histories and making references; the administration of anaesthetics by specially trained nurses instead of by medical men; the wonderful and very complete general organization; the provision of special pavilions for the middle classes in connexion with the general hospital, so that many surgeons practically spent their whole day at the institution, and the patient might have his own medical attendant, these patients having thus all the benefits at present conferred only on the poor or on the very rich in this country; the large amount of radium; and the sizes and completeness of the dental clinics. Mr. Fullerton gave very vivid and often humorous details of his interviews and adventures, and described the impressive ceremony of his admission as Honorary Fellow of the American College of Surgeons. He said, once more, that nothing could exceed the kindness and thoughtfulness of those whom he met, some of them complete strangers. The President proposed, and Professor Sinclair seconded, the following resolution, which was carried with acclamation:

"That the Ulster Medical Society congratulates Colonel A. Fullerton, C.B., C.M.G., on his election as an Honorary Fellow of the American College of Surgeons. Not only is this distinction a fitting recognition of Colonel Fullerton's eminence as a surgeon and of his wide fame as an urologist, but it reflects honour on the Belfast School of Surgery, of which he is so distinguished a member."

Professor MacIlwaine followed with his account of a "Holiday visit to Montreal, Toronto, and the Mayo Clinic." He described the charming site of the university at each of these Canadian cities, and spoke of the wealth at the disposal of American institutions. His chief interest lay in the pharmacological teaching of the student and in the research, and every step and all equipment were most kindly explained to him. The metabolic clinic with its special little hospital and its special kitchen was a great advance and its study very instructive. The various clinics at Rochester were described and his experiences in each. Everywhere he was struck with the immense amount of trouble taken and the immense amount of work. The indexing and reference staff of young ladies was most complete; in no other way could so much be got through. The kindness of everyone and the amount of trouble taken to show the visitor everything were beyond all praise. Dr. Dempsey and Dr. Gardner Robb spoke of their experiences in America; the latter said that the Rockefeller Institute sent him the anticerebrospinal serum free for the town. The President conveyed to both the readers the very hearty thanks of the meeting for their most interesting and instructive papers.

Typhus in County Mayo.

The typhus outbreak in the Barony of Erres on the West Mayo coast, about which alarming reports were circulated, is now well under control. When the first outbreak occurred in June the Public Health Department of the Irish Free State Government sent medical and nursing staffs with full equipment to the area. Since then there have been sporadic cases, but with the measures taken by the Public Health Department the serious danger which threatened the inhabitants is practically at an end; the number of deaths recorded is three. The two local medical officers were so unremitting in their attention to the patients that both were prostrated with fatigue and overwork, but neither contracted the fever. One of them has already resumed duty. Dr. McHale, the other medical officer, who was recuperating in Dublin, has returned to Belmullet, and it is expected that he will resume his duties in a few days.

Mr. Blythe, Minister of Local Government, in reply to a question, at a recent sitting of Dail Eireann, stated that in the middle of June cases of typhus fever were reported to the Minister of Local Government by the medical officers of health in Belmullet, and had continued at intervals over the intervening period. In all about 20 cases had come under notice, including the sanitary suboffiicer, who contracted the infection in the discharge of his duties, and one of the nursing sisters of the local hospital. The disease had been attributed to crowding in a disused coastguard station in which families who had deserted their homes took up their abode. Belmullet had long been recognized as a district in which typhus fever might be said to be endemic. The population was very poor, living in small and congested homes, with primitive habits, and the practice of housing animals in dwellings still existed. The normal disadvantages of the district had been aggravated by the unsettled conditions, and the sanitary administration was being carried out in the area under the gravest disadvantages. An inspector of the Ministry had reported on the immediate needs of the situation. A medical inspector had since been sent to the district and other action taken. The most recent information received by the Ministry was that there were no fever cases at present in the district, excepting two contacts in hospital under observation.

India.

RESEARCH IN MALARIA.

THE Indian Research Fund Association is instituting an investigation into the treatment of malaria, with the object of finding improved methods of coping with that disease. Major J. A. Sinton, V.C., I.M.S., has been placed on special duty for the purpose, and is to carry out his inquiries at Nagpur and Lahore.

AN IMPERIAL RESEARCH INSTITUTE FOR INDIA.

The Indian Legislative Assembly has approved of the proposal of the governing body of the Indian Research Fund Association to devote the capital fund at disposal to the erection of an Imperial Research Institute, and of the proposal of the governing body to devote two and a half lakhs of rupees to the purpose of the institute so long as they receive a sum of five lakhs from the Government. The offer of anonymous contributions, amounting to one and a half lakhs of rupees yearly for ten years, has been accepted towards the maintenance of a clinical unit based on the institute, provided that the Government of India, as funds permitted, would bring the total income of the institute up to five lakhs. The scheme has been promoted on the basis of a report by Professor Starling, and has been accepted by the finance committee. It is stated that the new institute is to be established in Delhi.

HOOKWORM INVESTIGATIONS IN INDIA.

Investigations into hookworm disease have been carried out by the Indian Research Fund Association in two selected tea gardens in Southern India by Dr. Mhaskar and Dr. J. F. Kendrick, the services of the latter being lent by the Rockefeller Foundation. It is stated that on an average 92.9 worms were found in each of the coolies examined on tea plantations. Thymol and beta-naphthol were employed in treating the disease, the latter being found to be the more effective as well as the cheaper. It is reported that while before the treatment was applied deaths on one of the estates from various forms of disease, including pneumonia, were very frequent—the effect of hookworm infestation being to set up a low standard of resistance to disease—after treatment an unprecedentedly clean bill of health was shown, attributable to the marked decrease in morbidity brought about by the elimination of the hookworm.

MATERNAL MORTALITY IN INDIA.

A discussion took place in the Indian Legislative Assembly on September 25th, on the proposal by Mr. Bakshi Sohan Lal, to refer to a select committee his bill for raising the age of consent in India to 14. Mr. B. C. Allen, a member from Assam, supported the bill strongly as a measure of social reform. He quoted Indian medical opinion as proof of the fact that the early marriage of Indian women was responsible for an appalling amount of infant mortality, maternal mortality, and female suffering. It was stated that the mortality of Indian mothers, so far as the imperfect statistics allowed an estimate to be made, was anything from 16 to 60 per thousand, which meant that in one generation three millions of mothers died in giving birth to children. The proposal to refer the bill to a select committee was rejected.

UNIVERSITY OF LUCKNOW.

The first Convocation of the University of Lucknow was held on October 30th, in the grounds of King George's Medical College. Among the graduates who were presented fourteen received the degrees of M.B., B.S., and five the Diploma in Public Health. Sir Harcourt Butler, Chancellor of the University, received the honorary degree of D.Litt., and, in addressing the assembly, congratulated the university authorities on the progress made since the foundation stone of the university was laid little more than eighteen months before. The university buildings, designed by Sir Edwin Lutyens, would, he believed, outshine all such buildings in India.

SCHOLARSHIPS FOR INDIAN MEDICAL WOMEN.

The Council of the Countess of Dufferin's Fund has decided to offer to Indian medical women scholarships for further study in the United Kingdom to the value of £200 per annum each. Applicants must satisfy the Council that they possess sufficient means to meet the passage money and additional expenses, which will amount at least to £150 per annum. All applicants must have had some general or hospital experience since qualifying. The present honorary secretary of the Countess of Dufferin's Fund is Lieut.-Colonel T. J. Carey Evans, I.M.S., Simla.

Correspondence.

INSULIN.

SIR,—Dr. Ff. Roberts introduces his letter on insulin, published in your issue of December 16th (p. 1193), by the statement that it is "perhaps not out of place to review the steps which have led up to the production of this new remedy." Dr. Roberts's "review" takes the form of a destructive and somewhat censorious criticism, and its publication by him appears to me to be "out of place" for more than one reason. It is, of course, the right and the duty of every scientific worker to sift the evidence presented to him on any subject, and to accept only conclusions which he finds well founded. So far as the public exercise of our critical function is concerned, most of us find ample scope for its activity in dealing with the work of others in the field of our own investigations, where destruction may be necessary to clear the ground for our own building. Armchair criticism is, I believe, in general "out of place." It seldom leads to anything but verbal controversy. The proper antidote to bad evidence is good evidence, and not judicial censure. I doubt the right, and cannot understand the desire, of anyone to assume the rôle of independent critic, unless he has private knowledge of facts, which convince him that the scientific world is being misled by fraud, or the innocent public by pretentious humbug.

Now Dr. Roberts's letter is not aimed at anything of that kind. He takes the simple, honest record of experiments, which are doubtless not free from defects, and denounces them as "wrongly conceived, wrongly conducted, and wrongly interpreted." Dr. Roberts has no knowledge of the circumstances in which the work was done, though he could easily have obtained such knowledge. If he had done so, his letter would probably not have been written. He did not know that the work he attacks was the first, unaided attempt at research by two young enthusiasts; that one spent half the war as a combatant, and the rest, after being seriously wounded, as a medical officer in England, while the other has not even yet completed his student course. He had no conception of the personal sacrifice and the heroic labour in which their enterprise involved them. Working thus on their own initiative, without the invaluable help and co-operation, given later by the head of the laboratory, who happened to be in Europe when the earlier work was done, they may have wandered along a wrong trail for a time, though this has yet to be proved. It may be that they made an unnecessary détour, before finding themselves at the point where E. L. Scott had stopped. The important point is that Scott did stop, and that Dr. Roberts would not be writing about his work now if Banting and Best and the other Toronto workers had not gone much further. I know that Dr. Scott would be the first to recognize this. It may be that the enthusiasm, which carried them further, was fired by an imperfect interpretation of their earlier results. If so, the mistake will be cleared up in time by others working more calmly and with more experience, and the truth will emerge.

There is nothing to prevent Dr. Roberts from putting his own theories to the test of experiment. Nobody can deny that a discovery of first-rate importance has been made, and, if it proves to have resulted from a stumble into the right road, where it crossed the course laid down by a faulty conception, surely the case is not unique in the history of science. The world could afford to exchange a whole library of criticism for one such productive blunder, and it is a poor thing to attempt belittlement of a great achievement by scornful exposure of errors in its inception.—I am, etc.,

H. H. DALE.

National Institute for Medical Research,
London, N.W., Dec. 18th.

TREATMENT OF FEVER.

SIR,—May I thank Surgeon Commander Bastian, Captain Gelston Atkins, and Dr. Buchanan for their letters?[1] With other medical men I am making immense claims for a line of treatment and research which is founded on a theory of recovery and immunity other than that generally accepted.

[1] BRITISH MEDICAL JOURNAL, December 2nd, p. 1097.

Very naturally and properly, medical men, with their unhappy experience of mare's nests, tend to be sceptical. With this difficulty in view, I appealed in my original communication[2] for independent evidence. The truth of a hypothesis is best demonstrated when it confers powers of prediction. We prophesied[3] that it is possible to reduce the severity of small-pox. Captain Gelston Atkins supplies unexpected and very welcome confirmation, though unfortunately in only one case. May we renew our appeal to such of our readers as have opportunities of treating this disease? Personally I am confident that it may be rendered little more dangerous than measles, or even chicken-pox.

That the treatment we suggest is not merely palliative is sufficiently demonstrated by the numerous febrile cases of unknown origin—disease aborted before recognizable—which are met when it is employed. The curious ring of retreating and diminishing inflammation seen in erysipelas is even more decisive. May I quote an instructive case?

A boy was admitted to hospital with cellulitis and apparently periostitis of the leg. Immediate operation was considered necessary; there was, however, unavoidable delay, so he was put under treatment with "triple powder" as a palliative measure, and the leg was prepared for operation. He was anaesthetized ten hours later and laid on the table. When the dressings were removed the surgeon declared that the wrong leg had been prepared. The other leg was normal. Complete recovery.

In this hospital one of the house-surgeons, founding his opinion on the fall of temperature, declared that the treatment produced great shock. I took him to see various persons who, delighted with repeated shocks, were doing very well. A mile or so distant is another hospital where the treatment had "no effect," which I daresay was true in a sense. Two miles distant was yet another where the treatment has had so much effect that it has become the routine.

The treatment is not empirical. As indicated by Commander Bastian, it is founded on the belief that the human being, physically and mentally the educable animal, may be trained to tolerate many (not all) poisons; that recovery and immunity from acute disease imply this habituation; that habituation is more easily and safely attained by a succession of small doses than by the huge continuous dose which is experienced in disease; that toxins are eliminated in the sweat (hence the improvement in the crisis of pneumonia, the cool stage of malaria, and the moist skin which commonly accompanies recovery from most fevers); that toxins tend to paralyse the sweat centre, and so, by bottling themselves up, to place the intrusive bacteria in a position of advantage; that it is possible by means of this treatment to restore the centre to action, and thus produce a series of artificial crises which enables the sufferer to experience a number of small doses with intervals between, whereby opportunity is afforded for his cells to attack and destroy the bacteria and attenuate their toxins. A scale of toxins, attenuated in varying degrees, is thus produced, and recovery and immunity are achieved by reacting up this scale. In vaccination against small-pox attenuated toxin is provided by passing the virus through the calf; in rabies by drying the cords of infected rabbits; in diphtheria by digestion in the tissues of the horse; in snake poisoning by gastric digestion antecedent to snake bite, and so on. Presumably an antitoxic serum provides attenuated toxins together with the enzymes which digested them. Vaccination provides bacteria which themselves provide attenuated toxins. Presumably, also, the enzymes are the same in all diseases, but the toxins and therefore the habituations to them are specific.

This theory of habituation, though published as long ago as 1897,[4] has never achieved popularity among medical men, who have preferred to believe in specific antitoxins and antibodies—complex chemical substances which in some way neutralize those other complex chemicals, the toxins. Probably there are some thousands of animal and vegetable poisons (including the bacterial toxins) against each of which may be acquired powers of resistance that do not avail against any other poison. In other words, the human body is supposed to be a sort of magic bottle which is able, at short notice, to produce any one of an endless number of chemicals which counteract other chemicals of which, in many cases, the race has had no antecedent experience. Biologically speaking, we have here a supposition founded not on solid science but on miracle. We know that the human being is educable. By means of his educability we can explain much —for example, increased powers of resisting fatigue, poisons, and the like. The theory of neutralization goes farther—it explains educability on what seems to me an impossible chemical basis. However, this by the way; habituation there is, no matter what the machinery. Meanwhile, may I remind your readers that we cannot hope to establish the truth about this treatment unless there be publication of results? May I also suggest its trial in the case of snake bites, insect stings, and perhaps other forms of poisoning?—I am, etc.,

Southsea, Dec. 6th. G. ARCHDALL REID.

SIR,—I notice with much interest that several medical men have recently made the discovery that diaphoretics are of great service in the early stages of febrile disorders; the further interesting observation that a purge, such as calomel gr. iv, may also be usefully employed is, if possible, even more epoch-making.

It seems strange that our predecessors never thought of these measures, but they of course had not the exact and intimate knowledge of toxins and their nature and composition that we have, though they did have, I believe, some vague notion of purifying the blood.—I am, etc.,

December 3rd. W. B.

X RAYS IN HYPERTRICHOSIS OF THE FACE.

SIR,—I have read Dr. Semon's courteous rejoinder to my criticism of his previous letter. I have unfortunately had a long and close contact with the dangerous side of *x* ray therapy, and have seen every class of case from an *x* ray burn to a chronic *x* ray dermatitis. (His case was the latter, not the former.) It is therefore with a full sense of responsibility that I express the opinion that the matter is still one for careful research and careful feeling of the way. We all, of course, know that developmentally and anatomically the root bulb of a hair follicle and the rete Malpighii are closely related and pass insensibly one into the other. But is it not begging the question to assume that they are therefore equally sensitive to irradiation? Many different tissues in the body are of epiblastic origin, and yet vary largely in their reaction to *x* rays. Do we not get frequent illustrations of the greater susceptibility of the Malpighian contents of the hair follicles than of the rete Malpighii itself? In alopecia Celsi we have at times complete atrophy of the hair follicles with comparatively few changes in the skin itself. I have under my care at the present moment a girl of about 14 suffering from universal alopecia of eight years' standing but with no apparent atrophy of the epidermis itself. In symptomatic and senile alopecia have we not evidence of the great sensitiveness of the hair follicles? Dr. Semon "finds it particularly hard to give credence" to some of *my* statements. Dr. Thurstan Holland (*Archives of Radiology and Electro-therapy*, p. 203, December, 1920) records a case of hypertrichosis treated by *x* rays, which was a tremendous and complete success. The hairs fell out and did not grow again; no unfortunate after-effects occurred. As I stated before, Dr. Holland now refuses to treat such cases. But the fact remains that he had *one* success. If possible *once* it must be possible again. I know it is taking great risks, but to progress risks must be taken. A suitable technique may yet be found. Do not other medical men take risks? How many surgical methods have begun in disaster and ended in success? It is unfortunately the fact that when a radiologist makes an error of judgement all the world can see it and recognize it. It is not always so in other walks of medical science. Dr. Semon accuses me of "discrepancy" and "inconsistency." I am sure if he will read my letter again he will find neither.—I am, etc.,

Bradford, Dec. 10th. WILLIAM MITCHELL.

SMALL-POX AND VACCINATION.

SIR,—Of course I agree with Dr. C. S. Thomson that cases of unmodified small-pox may walk about—for a time. I can match the case he quotes from Dr. McVail by one which occurred in my own experience in Leicester. A tramp dangerously ill and with the eruption out visited a public-house three days before he died. His condition at once aroused suspicion, we were communicated with, and fortunately no further cases arose. Another case was "spotted" walking down one of our main thoroughfares, "rounded up," and brought to the Health Department. In my experience cases of this description which are soon recognized are less potent

[2] BRITISH MEDICAL JOURNAL, June 4th, 1921.
[3] Ibid., November 18th, 1922, p. 1000.
[4] *Lancet*, September 11th.

for mischief than modified cases which are entirely overlooked until secondary cases occur.

Dr. Thomson goes on to say: "If Dr. Millard's suggestion were followed [that is, the abandonment of compulsory infantile vaccination], then we would witness a repetition of the Gloucester disaster wherever small-pox commenced." This is begging the whole question. It is just because I think there is insufficient justification for this assertion that I have ventured to challenge the orthodox teaching about infant vaccination. (I can assure Dr. Thomson that to do this is not the "easy" or "popular" thing which he suggests, though possibly it is less difficult for me than for most health officers. Of all medical heresies, heresy on the subject of vaccination is surely the most heinous!) Anyone who studies the Gloucester epidemic in an unbiased spirit must admit that there were ample reasons, apart altogether from the neglect of infant vaccination, to account for the débâcle which there ensued. The whole handling of the epidemic, from an administrative point of view (I am not blaming the unfortunate officials) was a glaring example of how not to control small-pox. Such an occurrence ought not to happen again, and, as a matter of fact, has never happened since, although a quarter of a century has elapsed. During this time our methods of controlling small-pox have greatly improved, and, although the disease has been repeatedly introduced into the country, it appears to be finding increasing difficulty in gaining a foothold, in spite of the fact that infant vaccination is falling more and more into disuse. Small-pox has now become one of the rarest of our zymotic diseases, and for the past decade the mortality caused by it has been almost negligible, in spite of the large proportion of children which is unvaccinated.

Moreover, as a set-off against Gloucester, we must remember that even the best vaccinated towns, such as Warrington and Middlesbrough, have had very serious and very fatal epidemics, though it is not the fashion to talk much about them. In Middlesbrough, in 1897 where the M.O.H. estimated the proportion of unvaccinated at only 2 per cent., over 1,400 cases occurred, and 108 vaccinated persons lost their lives. Of course, in every epidemic the case mortality is higher amongst the unvaccinated, but this is no evidence of the efficacy of infant vaccination in keeping small-pox at bay, though many people argue as if it were so.

Dr. Thomson asks what I should answer to bereaved Leicester fathers whose children might lose their lives "through taking my advice," should the long prophesied conflagration occur. I do not wish to seem to disclaim responsibility, but let me say that I have never advised parents not to have their children vaccinated. I quite admit, however, that I have not attempted to tell them that they are exposing their children to grave risk by not having them vaccinated, because I do not believe that they are. Let me say further that if the people of Leicester follow my advice, should the need for vaccination ever really arise, there need never be a serious conflagration in Leicester at all comparable with what happened in Gloucester or Middlesbrough. I quite recognize that it is conceivable that the time may arise when I shall find it my duty to advise universal vaccination of the entire population. The only real difficulty in the way of such a step is the unfortunate prejudice against vaccination (largely engendered by compulsory infant vaccination), and I contend that I have done more to allay this prejudice by my moderate attitude towards vaccination than if I had been an ardent provaccinist like Dr. Thomson. Moreover, I flatter myself that should a real need for universal vaccination ever arise the people of Leicester will be all the more ready to follow my advice just because I have never cried "wolf" when there has been no wolf. The people of Leicester know full well not only that I am not an antivaccinist but that I have a profound faith in the efficacy of recent vaccination. I gave them tangible proof of this by taking my wife and young family, recently vaccinated, to visit the patients in our small-pox hospital and photographing them by the bedside.

Dr. Thomson says that not one medical man in a thousand shares my views. It may be so; I cannot say; though I would suggest the possibility of there being more prophets in Israel than he suspects. I can say, however, that in 1915 the State of New York, acting on the advice of their health officer, Dr. Herman Biggs, virtually abolished compulsory vaccination by repealing the regulation under which all children had to produce evidence of vaccination before being admitted to school. Dr. Herman Biggs, who is one of the most experienced and distinguished members of the Public Health Service in the States, gave this advice, I understand, because he had come to believe that the disadvantages, in the way of injury to health caused by child vaccination, more than outweighed the advantages to be gained by immunization against a rare disease like small-pox.—I am, etc.,

Leicester, Dec. 16th. C. KILLICK MILLARD.

PSYCHO-ANALYSIS.

SIR,—I note that there are still some in our profession who remain out of sympathy with the psychological theory of mental disorder. Further, these gentlemen attempt by argument in your pages to overcome what they consider the foolishness of the adherents of this theory. But what, put into plain English, is the great psychological discovery of our day? Simply that most cases of mental disorder are cases of extreme foolishness. Adherents of the physiological theory of mind are, then, themselves psychotherapists without knowing it. They do not attempt to prove their point by the application of physiological or anatomical methods to their opponents' skulls—experience proves that there is a better way, namely, by argument, rhetoric, and so forth. Well, so also with the extremer degrees of mental perturbation which are known as insanity. Whether or not this method be "scientific" depends on the meaning we attach to such words. The main point is, it works.—I am, etc.,

Edinburgh, Dec. 16th. A. J. BROCK.

SIR,—The correspondence upon this topic has at last focused upon a definite issue. Does the psychological interpretation of mental disease involve the denial of its physical basis? Sir Clifford Allbutt (to whose address to St. George's Hospital this narrowing of issues, I think, is due) has assumed that it does, and along with his followers has concluded that scientific psychiatry must be "physiological." On both points they are wrong.

In its most general statement the method of psychopathology is to seek the explanation of certain behaviour (abnormal) in the special circumstances of the patient's life history. It aims at a direct correlation between types of upbringing and types of reaction. Of course "cerebral dispositions" are the link between the two; psychology does not, and has no need to, question their existence. But it holds:

1. That these abnormalities are not necessarily determined by toxins, lesions, or germinal variations affecting (directly or "externally") the integrity of the nerve tissue, but may be due to unusual patterns, sequences, intensities, etc., of the afferent (formative) stimuli. If this should be so, the methods of general pathology are inapplicable.

2. That in any case a physico-chemical formulation of the neural substrate of thought is at present unattainable. Wild conjectures such as Dr. Berry mistakes for facts ("remember that dreams are merely impulses," etc.) are, from the psychological as from the practical point of view, worse than worthless.

Dealing with this second point first, it is surely obvious that the "engrams," "dispositions," etc., are known wholly through the behaviour, memories, etc., they occasion. We do not increase or improve this knowledge by adulterating it with physiological imagery. On this point the physiological school of psychiatry is at variance with behaviourists and psychologists alike. These latter schools differ as to the necesssity of "subjective interpretations," but this is a different question and cannot be discussed here. Both agree in correlating conduct and speech-reaction (memory) with each other and directly with the life history of the organism, without interpolating detailed physiological hypotheses. In thus dispensing with physiological explanations, it must be noticed that it is their adequacy and not their possibility that is challenged, and moreover that we are not forced back upon "subjective interpretations" as the sole alternative. Sir Clifford Allbutt and his followers are wrong, therefore, in supposing that psychopathology implies an animistic denial of the physical basis of thought, and also in claiming for physiological psychiatry the monopoly of objective method.

Space does not permit me to "counter-attack" the neuropathologists' position or to show how so gross and widespread a misunderstanding arose. Apart however, from all their positive errors, they have confused the animist, psychological, and behaviourist positions, and the issues that divide these schools—so much for their knowledge of what they criticize! They have assumed that the denial of a pathological basis is tantamount to a denial of the existence of a physical basis—so much for their logic and "thoroughness." They quote

extensively (at least Dr. Berry does) from popular drivel. This reflects either upon their sincerity or upon their learning.—I am, etc.,

Perth, Dec. 12th. IAN D. SUTTIE.

SIR,—Would it not be as well to ask ourselves what the word "psychology" means? If it has a meaning it would appear to be "the study of the psyche," and we can amuse ourselves finding varying translations for the Greek ψυχή. One fact would seem fairly clear, that it cannot by hook or crook be adequately translated by any physiological term. This being the case, I suppose a psychologist, being a person who studies the psyche, has no part in medicine, which studies physiology. "If we believe the dictum of Cabanis that 'nerves make the man,' we have no real necessity of making the vastly difficult postulate that a human psychology exists," writes Dr. Maurice Nicoll. Further, if we do hold this theory we should obviously not call ourselves psychologists nor profess the study of a subject we consider a myth. Further still, we had better hold aloof altogether from the "wanderings" of those deluded unfortunates who believe in such a phantom.

But surely the proof of the pudding is still in the eating? I have not yet found it any help to a psychopath haunted by nocturnal dream terrors to know that "dreams are merely afferent impulses from enteroceptive, proprioceptive, and exteroceptive sources running riot amongst the cells of a brain where control has been removed by sleep . . . ," but I have found amazing and speedy relief follow treatment based on the belief in a hypothetical psyche.

As a matter of fact, the neurological pronouncement I have quoted is just as hypothetical; no one has seen it happen, and neurologists are by no means in accord on the matter. It seems possible, in view of the experimental data, is about the best we can say. It is merely the present neurological theory, which, like all theories, is, in its day, the only correct one. I would not be understood to represent the psychological theory as correct; it probably is not. But it works, and when I can find another to work better I will gladly give it up. I am prepared to believe that neurology can tell us how we dream, by what mechanism the effect is produced, but to the "Why?" neurology gives no satisfactory answer. If Dr. R. J. A. Berry had not "suspected" a meaning in day-dreams, though doubtless understanding their mechanism, one would expect him to rejoice at hearing a theory which offered an explanation of what must have been an otherwise irritatingly meaningless phenomenon.

However, I quote Nicoll again: "By insisting on a human neurology we can thus, at first sight, prevent the existence of a human psychology. This is the attitude of many physicians at the moment." And, it would seem, *mirabile dictu*, of not a few professors and teachers of psychology.—I am, etc.,

Netley, Dec. 16th. JOHN A. TIPPET, M.R.C.S.

HOSPITAL POLICY: THE REPORT OF THE COUNCIL.

SIR,—The letter of Dr. Garratt, dated December 2nd (p. 1196), shows a great advance upon the previous attitude taken up by him. At last he declares freely and frankly that the Leicester resolution is "entirely suitable" for hospitals in the great industrial areas. That is an immense concession on his part. Once controversialists can see the other side there is reasonable hope of an acceptable accommodation.

Dr. Garratt's reading of the history of the Leicester resolution is less happy. That resolution was fairly and fully discussed at hospital staff conferences, at Divisional meetings, and at the Annual Representative Meeting, 1921. The case presented by the hospital staffs from the industrial areas was so strong that it carried conviction and secured the acceptance of that resolution. Later those whose lines are fallen to them in pleasant places began to reflect on the possible reaction of the resolution on their own practice, and the reaction of their fears was seen in the Annual Representative Meeting at Glasgow. They secured the rejection of an amendment to the Leicester resolution, but dared not push the attack to the length of attempting its repeal. Following Glasgow, the Council has considered the situation in all its bearings, and has put forward an amendment to the Leicester resolution which forms a bridge that can be used with comfort and safety by both parties, and I am hopeful the amendment will receive the blessing and whole-hearted support of Dr. Garratt.

I would urge all interested in hospital work to read the report of the Council which was published in the SUPPLEMENT of November 18th, 1922 (p. *186*); it gives the terms of the new resolution and a short explanatory statement. So far as I can hear, the report is being received with a remarkable degree of unanimity.—I am, etc.,

London, W., Dec. 16th. N. BISHOP HARMAN.

DIPHTHERIA PROPHYLACTIC AND IMMUNITY.

SIR,—Nurse H. is one of two nurses among those on duty in the diphtheria wards of Tolworth Isolation Hospital who were positive to the Schick test in June, 1922. She was given three doses, 1 c.cm. in each, of diphtheria prophylactic (toxin-antitoxin mixture), the last of the three on July 11th. On November 18th she complained of sore throat and had a temperature of 101° F.; the left tonsil was enlarged and capped by a patch of white exudation about the size of a threepenny piece which was easily wiped off; a swab from the throat, on culture showed a growth of Klebs-Loeffler bacilli and micrococci. On November 21st she felt quite well and on November 23rd the tonsil was clean; cultures from the throat continued positive on November 23rd and 26th but were negative on December 1st.

If this attack was diphtheria it would tend to awaken some distrust of the efficacy of prophylactic inoculations, for the patient was one of two nurses who had received the inoculations four months previously; in other words, 50 per cent. failure, a very different result to that shown by some American figures, according to which 95 per cent. of 201 children who had had three prophylactic inoculations were immune three months afterwards. I think, however, that there is another possible explanation of her attack.

She may have been a "carrier" (so far as I know prophylactic inoculations do not prevent this); nurses in the diphtheria wards have not infrequently been found to be "carriers" when, prior to any one of them being transferred to the scarlet fever wards, a swab from the throat has been examined; and while being a "carrier" she may have contracted a mild sore throat with a follicular exudation due to some other organism. This was the view I took; but if she had not previously had the prophylactic inoculations I should certainly have labelled her attack mild diphtheria.—I am, etc.,

Surbiton, Dec. 5th. HARRY COOPER, M.D.OXON.

EXPERT WITNESSES: SURGICAL AND MEDICAL.

[IN our issue of September 16th (p. 531) we published a letter from Mr. C. H. Fagge, in the course of which he criticized the method in which, in the courts, medical evidence is called for the plaintiff *and* for the defendant, and urged that it should be discontinued. This drew from Sir John Lynn-Thomas a letter, published on September 30th (p. 614), in which he described the course of action he came to adopt when asked to give expert evidence. He consented to see the patient, took full notes of the case, and when his examination was finished said: "I will send a copy of the notes I have taken to your doctor, and will ask him to come and discuss your case with me, so that I shall have full inside knowledge before deciding whether I can support your claim." From the next sentence of his letter we gather that after he took this course he was not very frequently invited to act as a medical expert witness. Shortly afterwards Sir Clifford Allbutt addressed a letter to Sir John Lynn-Thomas, and has now been kind enough to consent to its publication. It is as follows:]

St. Radegund's, Cambridge,
November 24th, 1922.

DEAR SIR JOHN,

In my early days in Leeds these cases were very many; then there were few of the modern developments for the security of railway passengers; also more sources of lead poisoning, etc., etc. In Leeds the profession was not infected by any spirit of jealousy; we were all brothers—and I think, there, things are still on this co-operative footing. Due to the concentration of hospital work all in one large institution? So we soon gained a reputation for fairness as medical witnesses. But you ask for more than this:—We soon felt a grave objection to setting medical men as fighting-cocks one against another; it led to some partisanship if not direct advocacy; and to unbecoming differences of statement—even as to facts. So we held a meeting, and decided that we would combine to refuse to give evidence in legal cases unless a consultation of both sides were arranged before the case came on in court; even if this were—as often it was—very shortly before. Many witnesses came from a distance, and

so on. I do not say that these consultations put an end to all differences between experts on the two sides, but many of these were apparent rather than real, and mostly cleared up by consultation. In the witness-box we often differed in opinion, but not much on the facts. Moreover, our differences were clean cut and intelligible to the court.

We met at first with bitter opposition from the lawyers—open from the solicitors, covert from the Bar, because it tended to cut down fees, or to show less for them! Moreover, they naturally feared our making pies of our own—that we might be too compromising, etc. But some of the larger legal firms approved our ruling, and even applauded it; so did gradually the leading counsel. The amendment became apparent to all, and ere long we had all cordially with us. The evidence was immensely improved in both quality and consistency; new facts or new interpretations came out; and doctors of less experience were not sorry to accept a more adequate diagnosis, or partial modifications. I will give an instance: A consultation was arranged between two of us and a doctor from a distance in a case of railway injury—the top of shoulder bruise which you know so well. Unfortunately the patient's doctor missed his train and didn't appear at the consultation. He was a very honest fellow, and had assured the patient that his complaints were due to transitory if not imaginary causes. We "experts" examined him just before the court sat—and found under some fat layers (electric tests, etc.) decided atrophy of the right shoulder girdle. With us was an expert for the patient, and he quite agreed. The case proceeded, and the patient's doctor came in, hot from his journey, and rather gave his patient away of course. Then the counsel for the railway company arose and explained to the judge that, on the contrary, the railway company was prepared to accept the patient's story, and to give referee's damages. Then said the judge: During the lunch interval I walked to the window of my room with a sandwich and glass of sherry and saw the plaintiff walk out with his wife, also to lunch. I saw him put up his umbrella under his right arm; it fell to the ground. He picked it up again, and again it fell to the ground. Then his wife picked it up, and he put it under the other arm, successfully. Now if the case had gone forward I intended to set this evidence of mine against the "transitory neurosis," and I should have summed up against you. He then complimented the railway people on their correct attitude.

Well, in this sort of way we got credit, so that from the vulgar point of view we made even more fees; people trusted us, and cases came (when possible) to the Leeds Assizes. It was before this little story that Fitzjames Stephen had paid a formal compliment to the Leeds medical evidence. He said from the Bench how different was the Leeds evidence to that of too many other places, and he could not speak too highly of the temper and consistency of the Leeds evidence. He had attended the Leeds Assizes rather frequently. I may add that the official medical officers of the railway company were included in our *both sides* consultation rule always, and although one or two of them were disposed to take very sceptical views of all their cases, yet they took a loyal part in the discussions.

Very sincerely yours,
(Signed) CLIFFORD ALLBUTT.

[The observations by Mr. Justice Stephen to which Sir Clifford Allbutt refers were noticed in a paragraph published in our issue of August 28th, 1880 (p. 354), as follows:

MR. JUSTICE STEPHEN AND THE LEADERS OF THE MEDICAL PROFESSION IN LEEDS.

DR. CLIFFORD ALLBUTT (Leeds) and Mr. W. A. Statter (Wakefield) gave evidence, at Leeds Assizes, before Mr. Justice Stephen, relative to the injuries which a young lady had received in a railway accident on the Lancashire and Yorkshire Railway. At the close of the case, says the *Yorkshire Post*, his lordship paid a very high compliment to those gentlemen, and to the leaders of the medical profession in Leeds generally. He said the medical evidence by Mr. Statter and Dr. Clifford Allbutt was a pattern of what such evidence should be. He was in the habit of hearing medical evidence in all parts of the country, and Leeds was the only town where he never heard those unseemly disputes between the legal and medical professions which occurred at other places. Here there was a certain number of gentlemen, the leaders of the medical profession in the great School of Medicine in Leeds, who had set an admirable example for many years past of truth and candour and straightforwardness in the witness-box, and he was happy to see that their example was being followed by the younger members of the profession. When a man really tried to tell the truth, the whole truth, and nothing but the truth, in plain and simple language, notwithstanding what consequences might be drawn from it, and whether he was called on the one side or the other, bullying in court and things of that kind ceased at once. Alluding to Mr. C. G. Wheelhouse, surgeon, of Leeds, who had seen the plaintiff on behalf of the company, his lordship said that although there was another eminent gentleman present to give evidence, the defendants had not found it necessary to call him. He hope that such a state of things might long continue in Leeds, and be imitated in other towns.]

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following candidates have been approved at the final examinations for medical degrees:

Forensic Medicine and Public Health: R. V. Facey, R. F. Johnstone, T. L. Ormerod, J. P. Shaw, A. L. B. Stevens, E. H. Watkins, A. Q. Wells, Norah E. Bodkin, Dorothy D. Crook, Sibyl R. Eastwood, Katharine M. Hodgkinson. *Medicine, Surgery, and Midwifery:* W. R. Brain, E. Chapman, D. S. Davies, H. A. Gilkes, J. G. Johnstone, C. R. Lane, Dorothy J. Collier, Katharine M. Hodgkinson, Constance M. Ottley. *Materia Medica and Pharmacology:* C. E. Beveridge, W. B. Boon, C. W. Carter, D. R. Gawler, L. N. Jackson, T. L. Ormerod, H. A. Robertson, B. E. Thompson, G. I. Wilson, G. P. Wright, Olive Buckley, Matilda Bergnion, Ella Cockman, Cicely Williams. *Pathology:* D. T. Barnes, A. M. Cooke, H. N. Elphick, P. H. Mertin, G. F. Mitcheson, A. A. F. Peel, H. A. Robertson, A. W. L. Row, T. E. Ryves, B. G. Schofield, A. L. B. Stevens, E. B. Strauss, T. S. Townsend, H. F. Turney, W. R. Wood, Alice E. Harding, Cicely Williams.

At a congregation held on December 16th the following medical degrees were conferred:

D.M.—W. Burridge.
B.M.—H. A. Gilkes, R. F. Johnstone, W. R. Brain, C. W. C. Bain, J. G. Johnstone *Women:* D. W. Crook, K. M. Hodgkinson, D. J. Collier, C. M. Ottley.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part I:* B. E. Acland, Grace A. Au tin, †C. B. Bamford, R. V. Berrington, C. H. Bradley, R. S. Brock, Helen S. H. Brown, Alison M. Brummitt, M. Byala, A. Cooke, J. W. Cohen, J. D. Craig, M. M. Datnow, Edwina M. Davies, Eileen N. Deane, W. T. Donovan, J. C. Drummond, H. Duff, H. W. Fell, H. R. Fisher, G. A. Fu ton, J. Gauchan, Clara M. V. Gleave, H. Gobie, T. A. Griffiths, D. C. G. Hanlon, Dorothy M. Hanson, Fannie S. Holt, J. E. Howie, G. P. Huws, C. P. Jones, R. Jones, A. L. Kerr, G. F. Kinder, J. Leg te, W. E. Lishman, J. H. M. Little, G. Lowe, G. Macdonald, Margaret S. Macdonald, D. D. O. McLoughlin, G. A. Moulden, A. Newton, J. R. R. Nicholson, W. E. Pennington, A. Pool, R. J. Prydderch, Gwendolen ff. Roberts, J. T. C. Roberts, E. Rowlands, R. Scott, C. Sharp, G. V. L. Taylor, Marjorie A. Unsworth, N. Weinberr, H. S. Welton, T. W. White, Gwennie Williams. *Part II:* Mary G. B. Allen, W. J. B. Chidlow, A. Cooke, L. Eaves, Kathleen Edgecombe, W. R. H. Ellis, E. J. Fidley, N. D. Fraser, S. C. Goldstone, H. Graf, W. J. Griffiths, A. J. Hawe, D. Kippax, D. D. O. McLoughlin, Phyllis Marsh, Margaret D. T. Mills, Dorothea W. Rogers, P. J. Rocer, J. F. D. Shrewsbury, Helen Stanbring, Mabel J. Watterson. *Part III:* Eleanor E. Briant, D. Brown, G. Clark, Marie B. Clarke, H. M. Cohen, R. L. Corlett, R. W. Cowie, *W. H. A. Dodd, J. Elsohn, W. C. Evans, F. S. Fowweather, H. S. Gordon, S. B. Hall, G. M. Hughes, Hilda F. Jefferson, I. Lloyd, Vera M. Mitchell, Annie R. Niven, Mary E. Nosworthy, J. R. Parry, G. F. G. Prideaux, C. C. L. Spurring, V. T. Thierens, Mary A. Thomas, L. F. Unsworth, A. Weisberg, D. A. Wolfenden.

D.T.M.—M. J. Cohen, A. C. Crawford, C. M. Gracias, W. A. Lethem, M.C., S. D. Rieley.

* Distinction in Surgery. † Distinction in Pathology.

UNIVERSITY OF EDINBURGH.

A GRADUATION ceremony was held on December 15th in the McEwan Hall, Edinburgh, under the presidency of the Principal, Sir Alfred Ewing. The following were among the degrees conferred:

M.D.—D. Aiken, J. Brander, *De Puy Casalis, ‖J. H. Crawford, *B. V. Dunn, J. D. Ingram, J. Mackenzie, †D. M. Morison, T. C. St. C. Morton, H. J. Parish, *G. S. Sowden, *J. Walker, L. H. Werden.

M.B., CH.B.—M. S. Abaza, S. C. Alcock, Isabella H. Allan, W. Anderson, Jean Y. Andrew, Margaret S. R. Armstrong, M. P. Atkinson, C. J. Austin, L. C. L. Averill, P. J. Badenhorst, J. B. S. Baxter, Lilias F. E. Begg, Margaret I. Bower, J. Brown, Eleanor M. Cadman, A. H. Campbell, J. M'P. Campbell, Mary J. Chene, ‖D. S. Cherry, Irene V. E. Christison, J. J. Coulthard, R. T. Deas, K. S. Dick, ‖J. L. N. Dinwiddie, Grace M. F. Dover, Grace W. W. Eason, E. C. Ellis, D. L. Ferguson, N. Fram, J. Glover, R. T. F. Grace, Annie C. S. Haddow, H. R. Haigh, Margaret M. R. Hamilton, H. Hastings, ‖H. D. Hayes, Flora M. Hogg, C. F. W. Illingworth, A. K. James, L. B. Jones, Margaret W. Kemp, G. G. King, B. Leader, R. C. Little, Elizabeth T. Logan, D. B. M'C Lothian, D. T. M'Ainsh, ‖I. H. M'Clure, *F. N. M'Farlane, Annabella M'Garrity, J. C. Macgown, Elizabeth M. Mackay, A. W. Mackie, W. M'Kie, Marjorie C. Mackintosh, I. R. Macleod, R. A. C. Macnair, J. M. Manson, Grace J. Marshall, K. A. T. Martin, F. G. J. Mu der, C. L. L. Murray, S. Petkoon, Johanna V. Pietersen, Elsie Porter, Jean S. Riach, T. Ritchie, S. J. Rom, Isobel S. Rutherford, R. M'G. Saunders, Annie B. A. Scott, R. Selby, D. Slight, Flora M. Stewart, D. Summerville, B. G. Thompson, Charlotte E. W. Thompson, Elizabeth N. Thompson, H. V. Thwaites, ‖J. Todd, Isabella du Toit, H. R. Vernon, R. L. Wallace, R. W. R. Watson, Hazel H. F. Watt, J. Williams, Margaret S. Williamson, R. P. Wilson, M. Witkin, W. S. Woodburn.

The Freeland Barbour Fellowship has been awarded to Jessie Eeles, M.B., Ch.B.

* Commended for Thesis.
† Highly commended for Thesis.
‡ Awarded Gold Medal for Thesis.
‖ With Second Class Honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on December 14th, when Sir Anthony Bowlby, President, was in the chair.

Diplomas of Fellowship were granted to the following twenty-three candidates found qualified at the recent examination:

A. Goodwin, N. P. L. Lumb, C. L. Gimblett, J. L. Davies, J. F. H. Stallman, A. C. Ainsley, S. D. Lodge, R. S. Woods, A. C. Halliwell, C. O. Davies, L. C. E. Lindon, V. Wilkinson, H. L. Sackett, *Mildred Warde, A. D. Wright, R. B. Chandrachud, R. A. H. Fu ton, J. B. Jose, N. J. Judah, G. C. Wellish, J. G. Whitaker, H. P. W. White, D. Whyte.

* Under the Medical Act, 1876

A further candidate was found qualified, but has not yet complied with the regulations.

Dental Surgery.—Diplomas in Dental Surgery have been granted to eighty-four candidates found qualified at the recent examination.

A report from the examiners in dental surgery was received. Certain new regulations were adopted, which apply to all candidates who pass the preliminary examination in general education on or after January 1st, 1923. Information may be obtained from Mr. F. G. Hallett, O.B.E., Examination Hall, Queen Square, Bloomsbury, London, W.C.1.

Delivery of Lectures.—Owing to Sir Arthur Keith's illness, his lectures, arranged for January, 1923, have been postponed to March or later.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following students have passed the examination of this school held at the termination of the seventieth session (September to December, 1922):

*†Major T. L. Bomford (I.M.S.), *Dr. W. T. Benson, *Captain G. Covell (I.M.S.), *Lieut.-Co'o el W. H. Hamilton (I.M.S.), Miss B. Richardson, Miss H. Gregory, C. J. H. Sharp, Squadron Leader H. A. Hewat (R.A.F.), C. J. Pandit, Captain H. Chand (I.M.S.), W. G. Karandikar, K. Nain, F. W. O'Connor, W. P. H. Lightbody, Major M. J. Holgate (I.M.S.), Captain P. R. Vakil (I.M.S.), B. C. Dasgupta, C. A. Calder, H. T. Le Vieux, J. Cauchi, J. M. Surveyor, Captain R. A. Warters (I.M.S.), R. D. Whitelaw, P. W. Lamb, C. T. Nam, A. S. Mackie, B. C. D. S. Rupasingha, Captain H. E. Murray (I.M.S.), R. J. J. Garrod, H. E. Variava, O. T. Brosius, J. M. Somasundrum, Captain W. J. S. Ingram (I.M.S.), A. C. A. Fernando, D. Bulos.

* With distinction.

† Awarded the Duncan Medal.

Obituary.

KENNETH MACLEOD, M.D.EDIN., F.R.C.S.ENG., LL.D.ABERD.,

Colonel I.M.S. (ret.); Honorary Physician to the King.

WE regret to announce the death, on December 17th, at Southampton, of Colonel Kenneth Macleod, I.M.S. (ret.). He was born in Trumisgarry manse, in the island of North Uist, one of the Outer Hebrides, in the county of Inverness, on July 23rd, 1840, the eldest son of the Rev. Norman Macleod, minister of that parish. At the early age of 3 he played an involuntary part in a striking episode of Scottish history, for his father was one of the ministers who seceded from the Church of Scotland over the question of patronage, and "went out" in the Disruption of 1843. His father remained in North Uist as minister of the new body, the Free Church. Kenneth was sent to Marischal College, Aberdeen, in 1853, at the age of 13, and graduated there as M.A. in 1857. In the same year he entered on the study of medicine in Edinburgh University, and, after taking first prizes in surgery, medicine, midwifery, and medical jurisprudence, graduated as M.D., with honours, in 1861. For the next three and a half years he served as assistant medical officer in the Durham County Asylum, taking the L.R.C.S.Edin. in 1864; and in February, 1865, when competition for the Indian Medical Service was reopened, after being closed for four and a half years, he passed first for that service, being commissioned as assistant surgeon from April 1st, 1865. Three future directors-general went through the Netley course in the same term: James Cleghorn was second, and Robert Harvey third, for the I.M.S., while Sir William Taylor was among the M.D. men of the term.

His first appointment in India was that of civil surgeon of Jessore, in Bengal, where he served for two years. In October, 1868, he became medical officer of the 6th Bengal Infantry at Jalpaiguri, and in December, 1869, was appointed a member of the Cattle Plague Commission. He had thus had less than four years of the ordinary routine work of officers of the I.M.S., that of regimental medical officer or civil surgeon of a district, and never again served in such posts. In January, 1871, he was appointed secretary to the Inspector-General of Hospitals, I.M.S. (The title of this appointment was changed to surgeon-general in 1873, and to director-general in 1895.) This post he held for eight years, with an interval of fifteen months in 1874–75, when he acted as professor of anatomy in the Calcutta Medical College and second surgeon to the college hospital. He was appointed substantively to this professorship in April, 1879, but on December 31st of the same year was promoted professor of surgery and first surgeon. These posts he retained till he retired on April 15th, 1892. He had reached the rank of brigade surgeon on June 26th, 1888.

After his retirement from the service he was appointed a member of the Medical Board of the India Office, and served in that capacity first under Sir Joseph Fayrer, then under Sir William Hooper, till he was appointed professor of military medicine at the Army Medical School, Netley, on May 29th, 1897. This post he held until the Netley school was closed in 1905, when it was transferred to Millbank. In 1880 he was elected F.R.C.S.Edin.; in 1892 Aberdeen University conferred upon him the honorary degree of LL.D.; in 1900 he was made an honorary F.R.C.S.Eng.; and on May 2nd, 1906, was appointed honorary physician to the King, with the rank of colonel.

In addition to his professional duties, Colonel Macleod found time for a large amount of public work. His service on the Cattle Plague Commission in 1870 has already been mentioned. In 1879 he was appointed consulting health officer of Calcutta, and, after resigning this post in 1884, was in 1885 elected a municipal commissioner for Park Street Ward, the chief European ward of Calcutta. In January, 1880, he founded the Calcutta Medical Society, of which he was afterwards president. He was also at different times president of the Calcutta Public Health Society, vice-president of the Bengal Social Science Association, vice-president of the National Indian Association, Bengal Branch, president of a committee to consider the establishment of a veterinary school in Calcutta, and secretary and medical officer of the Martinière schools in Calcutta. After retirement he succeeded Sir Joseph Fayrer as president of the Sanitary Assurance Association in 1894, and was a vice-president of the Medical Graduates' College and Polyclinic.

He took much interest in the affairs of the British Medical Association. He was President of the Section of Tropical Diseases at the Annual Meeting at Ipswich in 1900, and Vice-President of the Southern Branch.

His chief works were: *Manual of Diseases of Cattle*, 1869; *Sanitary Treatment of Epizootics*, 1869; *Report on Medico-Legal Returns of 1868 and 1869*, 1870, expanded into *Medico-Legal Experiences in the Bengal Presidency*, 1875; *History of the Medical Schools of the Bengal Presidency*, 1872; *Report on Establishment of a Veterinary School in Bengal*, 1883; *Operative Surgery in the Calcutta Medical College Hospital*, 1885; articles on Delhi boil and Scrotal elephantiasis in Heath's *Dictionary of Surgery*, 1886; articles on Cholera and Epidemic dropsy in Allbutt's *System of Medicine*, 1896–99; articles on Cholera, Choleraic diarrhœa, Sunstroke, and Epidemic dropsy in *Quain's Dictionary of Medicine* (third edition), 1902; and *Indian Medical Memories*, 1909, originally contributed to the *Caledonian Medical Journal*. He edited the *Indian Medical Gazette* for twenty years, 1871–91, and after his return to this country was a frequent contributor to our columns.

Colonel Macleod was twice married, first in 1865 to Jamima Isabella MacDonald, who died in 1874. She had two sons, both of whom died in infancy, and three daughters. In 1877 he married Jane Christie Aitken, who had three daughters and four sons. One son served in Paget's Horse in the South African war, and three in the war of 1914–18: Commander Kenneth Macleod, R.N., Major Torquil Macleod, R.A., and Lieutenant Alastair Macleod, 1/5 Hampshire Regiment. Major Macleod was severely wounded at Contalmaison in July, 1916, and on rejoining duty, after a long stay in hospital, was sent to Palestine, and on the way out was twice torpedoed in one day, near Alexandria. A grandson, Lieutenant Kenneth Carnduff, R.E., was killed in France on January 12th, 1916.

Colonel Macleod was a man of fine stature and physique. Only a man of perfect physical health and strong constitution could have got through the immense amount of work, professional and public, which he did for twenty years in Calcutta. He was a bold and skilful surgeon, and for many years had a large private practice in Calcutta in addition to his work in the medical college hospital and the duties of his chair. He was somewhat brusque in manner, and did not suffer fools gladly. But he was a good friend, officially and privately, to junior officers who served under him, and in all respects was an excellent representative of the great service in which he served so long.

R. J. RYLE, M.A., M.D.OXON.

DR. REGINALD JOHN RYLE, who died on December 4th, aged 68, was the son of the late Bishop of Liverpool and a brother of Bishop Ryle, Dean of Westminster. He was educated at Repton School and Trinity College, Oxford, and received his medical training at Guy's Hospital Medical School. He graduated B.A.Oxon. in 1877, M.A., M.B. in 1884, and M.D. in 1894, and took the diploma of M.R.C.S. in 1883. After practising at Barnet for some ten years he removed to Brighton, where he continued to practise until recently, when he retired and went to live near Pangbourne. Dr. Ryle took great interest in local public affairs and social service. He served for two years as the representative of the Pier Ward on the Brighton Town Council; he felt compelled to resign his seat owing to his inability to give to the work the time and attention which he considered it should receive. He was a justice of the peace for the county borough of Brighton, and his professional knowledge was of great assistance to the Bench. He married in 1885 the daughter of Mr. S. K. Scott, surgeon, of Brighton, and a member of a well-known medical family. He leaves five sons, one of whom is now assistant physician at Guy's Hospital, and five daughters.

Dr. Ryle's interest in social medicine was shown in many ways. He had, for example, studied closely the question of feeble-mindedness, and to the conference held at Brighton in 1911 under the auspices of the Association for the Feeble-minded he read a paper on the origin of feeble-mindedness, an abstract of which was published in our columns at the time; subsequently the full text appeared in the report of the Conference. At the Annual Meeting of the British Medical Association in Brighton in 1913 he was President of the Section of Medical Sociology. In a brief address he adopted the definition of sociology that it is "the scientific study of society and of all the phenomena it exhibits, including the various forces and processes at work within and upon it."

We are indebted to Dr. L. A. PARRY of Brighton for the following brief tribute: The profession has sustained a great loss by the death of Dr. R. J. Ryle. We in Brighton, where he practised for so many years, especially feel this, for we knew him well as a man absolutely upright and straightforward, one who always thought of the good of others rather than of his own. His professional, scientific, public, and social work were all of the highest character. Whatever he did, he did well, and with the sole object of doing his best for others. We have lost a good man and a good friend. We could always rely on his advice and assistance in any matter, and we knew it would be freely and willingly given.

JOHN MAGEE FINNY, M.D.,

Consulting Physician, Sir Patrick Dun's Hospital, Dublin.

DR. JOHN MAGEE FINNY, formerly of 36, Merrion Square, Dublin, passed away at his residence, Erith Lodge, Sandymount, on December 7th, at the age of 81, and was interred at Mount Jerome Cemetery, Dublin, after a service in Christ Church, Leeson Park, where he had been a member of the congregation for over fifty years.

Dr. Finny was a distinguished scholar of Dublin University; in 1864 he obtained the medical scholarship and became the senior exhibitioner, and also took the M.B. degree. In 1868 he became a Fellow of the Royal College of Physicians of Ireland, of which he was elected President, 1890 to 1892. In 1882 he was appointed King's Professor of Medicine in Trinity College, Dublin, and physician to Sir Patrick Dun's Hospital, where his teaching of medicine attracted large numbers of pupils to his lectures and his clinics. He was chairman of the Academy of Medicine, consulting physician to Mercer's Hospital, Dublin, member of the Senate of Trinity College, Dublin, and a member of the Board of Superintendence of the Dublin Hospitals, and H.M. Visitor in Lunacy. He was also for a considerable time an examiner in medicine at the army medical examinations in London.

Dr. Finny was a son of Rev. Thomas Henry Cotter Finny of Cork, by his second wife, Frances, daughter of William Magee, D.D., Archbishop of Dublin, and grandson of William Finny, Commissary General for Ireland. He leaves a widow and four sons, two of whom are members of the medical profession.

THE late Professor J. K. A. Wertheim Salomonson has bequeathed his instruments and books on medical electricity and roentgenology to the University of Amsterdam.

Medical News.

THE annual dinner of the Royal College of Physicians of Edinburgh will be held in the Hall of the College on January 26th, 1923.

THE first two ceremonies in honour of Pasteur's centenary will be held in Paris on December 26th at the Académie de Médecine, and on December 27th at the Institut Pasteur, when there will be an exhibition of the instruments and apparatus used by Pasteur. The French Government has decided to issue an international stamp bearing a portrait of Pasteur.

THE annual dinner of the Epsomian Club was held at the Trocadero Restaurant, London, on December 14th, with Dr. H. F. Ealand in the chair. In proposing the toast of "Floreat Epsomia," Dr. Ealand, in the course of a witty speech, remarked that to his mind the disadvantage of Epsom was that it had been a "class" school, in that most of the boys—in his time, at least—were sons of doctors. He hoped that in future this would not be so, and that the boys would come from every walk in life. After the school song had been sung with much enthusiasm, Mr. Powell, the new headmaster, gave a brief review of the school's activities. A new chemical laboratory was in course of preparation, and work upon the chapel—the war memorial—was to begin as soon as possible. The school had had eleven successes in the first medical professional examination, and the sports successes had also been notable. Mr. Powell emphasized the place in the body corporate that the old boys held, and invited them to make more use of the playing fields. The toast of "The Visitors" was proposed by Mr. Mackay, and Lord Dawson of Penn, in responding, made a plea for the broadening of interests at Epsom. The medical profession, he said, had not had that influence upon the general culture that it ought to have had. The health of the new headmaster was proposed by Dr. Stillwell, and that of the chairman by Mr. Maynard Smith.

AT the social evening of the Royal Society of Medicine on December 13th a wireless concert was given. It was arranged by the Electric Light Insurance and Maintenance Company and the society's electricians, in conjunction with the Marconi Company. The President, Sir William Hale-White, in addressing the large company which had assembled in the Robert Barnes Hall, said that the music would be received from the London broadcasting station in the Strand a mile away. The music was quite clearly heard, and the demonstration was much appreciated. A vote of thanks to those who had taken the pains to arrange the concert and to the Marconi operator was passed by acclamation. Afterwards Dr. Arnold Chaplin gave a short lecture on engraved portraits of medical men, a subject upon which he is one of the chief living authorities in this country.

A COURSE of twelve lectures on the management and feeding of infants and young children will be given by Dr. Eric Pritchard (medical director of the hospital) to qualified practitioners, at the Infants' Hospital, Vincent Square, S.W., at 6 o'clock on Mondays and Thursdays from January 15th to February 22nd, 1923. Further information may be had from the secretary of the hospital.

THE Women Sanitary Inspectors' and Health Visitors' Association is holding its second winter school for health visitors and school nurses at King's College, Strand, W.C., from December 28th to January 11th, when a course of lectures will be given by Lady Barrett, Dr. Eric Pritchard, Dr. A. F. Tredgold, and others. The full programme of lectures may be obtained from the secretary of the Association, 5, York Buildings, Adelphi, W.C.2.

THE annual report of the Officers' Families' Fund shows that valuable work continues to be done by this organization, particularly in connexion with education. During the past year the committee dealt with 3,338 new applications and 2,516 renewed applications for assistance, and over £17,800 was distributed in grants and loans.

A SPECIAL intensive post-graduate course in cardiology will be given at the National Hospital for Diseases of the Heart, Westmoreland Street, W.1. from January 8th to January 20th, 1923, inclusive. The fee for the course is £7 7s. Inquiries should be addressed to the Dean at the hospital. Further particulars will be found in our advertisement pages.

THE Walker-Gordon Laboratories were established twenty-seven years ago chiefly for the purpose of preparing modified milk on prescription, and the supply of unpasteurized cream of any desired percentage of butter fat. The company ceased its operations during the war (1916); it has now re-established its farm, and its offices at 54, Weymouth Street, London, W.1.

THE French medical journal, *Progrès médical*, founded by Dr. Bourneville, has recently celebrated its fiftieth anniversary.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocre, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 5, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"P." pays £95 a year interest on money borrowed to buy a practice.

*** If the interest is paid to a bank the amount can be deducted as a professional expense, otherwise "P." is entitled to deduct tax at the standard rate from the interest as and when he pays it, and must include the interest in the profits on which he pays tax.

"S. J. H." replaced a second-hand Ford car by a new car costing £445. The inspector has allowed £150, the estimated cost of replacing the Ford car by a similar one, less £30 deducted therefrom for private use of the car.

*** So far as the £150 is concerned the inspector seems to be right; the additional expenditure was incurred in the improvement of the professional equipment and not in its mere maintenance. If the private use of the car shortened its working life so far as "S. J. H." was concerned, or reduced the amount allowed to him when he sold it, some deduction is reasonable, but unless it has been used in that way more than is ordinarily the case we doubt whether that use would have increased at all the expense incurred in replacing it, and in that case the full £150 should be allowed. Our correspondent has a right of appeal to the District Commissioners or to the Commissioners for Special Purposes from the inspector's decision.

"X. Y." purchased in 1914 a Wolseley landaulette for £600, supplementing it in 1916 with an 8-h.p. Renault costing £300. In 1922 the former was sold for £280 and the latter for £150, and a 11.9-h.p. Calcott coupé purchased for £595.

*** We advise our correspondent to regard the Calcott car as a replacement of the Wolseley and to claim £595 – £280 = £315 as a professional expense of the year 1922. When he purchases a second car he will have a valid claim to the allowance of the cost thereof up to a maximum of £300 – £150 = £150 as a replacement of the Renault.

LETTERS, NOTES, ETC.

THE PAST, PRESENT AND FUTURE OF MIDWIFERY.

DR. C. LUNDIE (Thaba 'Nchu, O.F.S., South Africa) writes: After reading Professor Watson's excellent inaugural address at Edinburgh University (BRITISH MEDICAL JOURNAL, October 21st, p. 712), it occurs to me that in order to attain to his very lofty and praiseworthy ideals in midwifery a very drastic change in the present methods is necessary, the chief thing to be done being intensive organization and team work among members of the profession. The various branches of the profession have become such wide subjects in themselves that specialization is essential, yet few who can afford an ordinary medical curriculum can afford the further expense and delay in earning power involved in a specialist's course after taking the ordinary medical degree. Hence there are not enough specialists to go round if every one is to have their aid within their means, yet there is an immense superfluity of general practitioners, many of whom find it difficult to make a living.

The only reasonable hope of providing efficient service to all, rich and poor, and at the same time using all the qualified men to the full seems to be a modified form of state medical service, which it should not be beyond the genius of man to evolve free from the numerous objections to it that have been pointed out at different times. The newly qualified men would have to serve a sort of apprenticeship in the hospitals and later in general practice under supervision of older and more experienced men. Patients would be allowed to choose their doctors, and fees according to the means of the patients would be collected by the State and salaries proportionate to the amount and nature of the work done paid to the doctor, who would be promoted for efficiency to higher grades of work and so to higher rates of fees. There would thus be no resting on one's oars when one got to a high rank because the salary would depend on the amount of work done as well as on the rank attained—specialist general practitioner or professor. Only by some such scheme, which would have to be introduced gradually, can proper team work be organized in the profession. Facilities for specialization and further study would be provided for the keen and ambitious.

RADICAL PREVENTION OF VENEREAL DISEASE.

MISS ETTIE ROUT (London, W.), in the course of a letter on this subject, writes: Dr. Gerald Garry's letter from Cairo regarding the outbreaks of venereal disease there in the early days of the war should be read in conjunction with the opinions expressed by Colonel Sir James Barrett, the first A.D.M.S. of the Australian Forces in Egypt then (1915), and later on his return to Egypt after sick leave (1916-1917-1918). Dr. Garry says "there is but one way of dealing with such diseases"—isolation and segregation. These measures are necessary but in themselves of proved insufficiency, even when properly administered. The evil of venereal disease cannot be greatly lessened until all the factors of reduction are brought into play—ethical, social, legal, and medical; to argue in favour of a cure all is not medicine but quackery. Nor can any headway be made with any sex problem till both men and women turn their minds upon it cleanly and strongly. To state, as Dr. Garry does, that moral platitudes should be ruled out of medical practice is clean and logical; to say immediately afterwards that "Perhaps not the least regrettable fact in connexion with this unsavoury controversy is the prominent part taken in it by women," is unclean and illogical. The fact is that women must step out of their almost incredible ignorance and prejudice, and men must learn to de-Orientalize and dis-Turk their minds. . . . Those who have studied the venereal problem most carefully—historically and personally—know that a prime factor in its solution is the engagement of women's minds and hearts in this very dreadful affliction of modern society—for which women as well as men are responsible. A day will come when all women of courage and sympathy will freely give their services in the great cause of sexual health, but that day will not be hastened by snubbing their early endeavours to gain the knowledge and experience necessary to qualify them as efficient social health workers.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

DR. F. W. COLLINGWOOD (London) writes: It seems strange that the Council and Fellows of the Royal College of Surgeons of England should wish to retain rights under a charter granted in 1843, which at the present time are utterly inconsistent with the spirit of the age in which we live. After the annual meeting a member of the press was surprised and could not realize the attitude of the Council towards the request of the Members to participate in the administration of the College. I do trust that the British Medical Association will show sympathy and take steps to induce the Privy Council to amend the charter of the College and bring its constitution into keeping with the atmosphere of the present day.

A NEW SUBSTITUTE FOR SALVARSAN.

BOOTS PURE DRUG CO., LTD., of Nottingham, inform us that the Ministry of Health has approved of their preparation "Stabilarsan" being placed upon the list of approved substitutes for salvarsan. "Stabilarsan" is stated to be a chemical compound of salvarsan—the original diaminodihydroxyarsenobenzene, not neo-salvarsan—and glucose. It is prepared in solution ready for immediate use, and can be given either intravenously or intramuscularly.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 33, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 239.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
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Whole single column (three columns to page) ...	7	10	0
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An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *post restante* letters addressed either in initials or numbers.

British Medical Journal.

DECEMBER 30TH, 1922.

CONTENTS.

ANNUAL MEETING AT GLASGOW.
Proceedings of Sections.

SECTION OF OPHTHALMOLOGY.

DISCUSSION on the Clinical Significance and Treatment of Heterophoria. Opening Papers by ARCHIBALD S. PERCIVAL, M.B., B.Ch.; and L. WEBSTER FOX, M.D., LL.D....1249

A Case of Ophthalmic Migraine with Unusual Symptoms. By A. R. MOODIE, M.D., F.R.C.S.Edin.....1256

Education of Partially Blind Children in Myope Classes. By H. WRIGHT THOMSON, D.S.O., M.D.....1257

The Relation of the Optic Nerve to the Sphenoidal and Posterior Ethmoidal Sinuses. By GAVIN YOUNG, M.C., M.B., Ch.B.....1258

Ophthalmic Progress in Egypt. By A. F. MACCALLAN, C.B.E., F.R.C.S....1259

The Cerebro-spinal Fluid in Disease of the Fundus. By W. J. WELLWOOD FERGUSON, M.B., Ch.B.....1259

Monocular and Binocular Vision. By T. STEWART BARDIE, M.B. (With Diagrams).....1260

The "Open" Treatment in Eye Operations. By W. B. INGLIS POLLOCK, F.R.F.P.S.G.....12.2

A Review of the Work of the Venereal Diseases Centre of the Glasgow Eye Infirmary. By E. J. PELMROSE, M.D., B.Sc.....1263

Conjunctivitis Artefacta. By HERBERT CAIGER, M.B., F.R.C.S.....1 64

CLINICAL MEETING.....1265

MEMORANDA.

Oral Administration of Antitoxin. By LOUIS COBBETT, M.D., F.R.C.S., and W. HENWOOD HARVEY, M.D.....1265

SCIENTIFIC PROCEEDINGS.

BIRMINGHAM BRANCH.....1266

REVIEWS.

The Apothecaries' Physic Garden.....1269
Guillain's Neurological Studies.....1 69
Clinical Laboratory Methods.....1270
Radiology.....12/0
Physics and Chemistry.....1271
Notes on Books.....1271

THE SERVICES.

Commissions in the R.A.M.C.....1233
Decorations.....1285
Deaths in the Services.....1283

LEADING ARTICLES.

THE SECTION OF OPHTHALMOLOGY.....1272
THE AFTER-CARE OF TUBERCULOUS PATIENTS.....1272

THE WEEK.

Pasteur.....1273
Arsenic in Cocoa.....1273
Small-pox in the Past.....1274
Scientific Researches on Food Preservation.....1274
Medicine's Debt to the Fine Arts.....1275
Research in Animal Diseases.....1275
The Cause of a Common Cold.....1275
Milk and Dairies Order.....1276
The Prevention and Cure of Scurvy.....127o
The International Congress of Ophthalmology, 1925.....1276

GENERAL ARTICLES AND NEWS.

Nova et Vetera: WITCHCRAFT.....1277
MEDICAL NEWS.....1285

REPORTS OF SOCIETIES.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY:
House Infection in Cholera and Cancer.....1266
MANCHESTER MEDICAL SOCIETY:
Asthma in Children.....1267
CARDIFF MEDICAL SOCIETY:
Foetal Syphilis.....1267
ROYAL ACADEMY OF MEDICINE IN IRELAND:
Pathological Demonstrations.....1268
ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW:
Treatment of Fractures.....1269
NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY:
Treatment of Tuberculous Conditions by Inflation with Oxygen.....1259

UNIVERSITIES AND COLLEGES.

University of Cambridge.....1282
University of London.....1282
University of Sheffield.....12.2
Victoria University of Manchester.....1283
University of Durham.....1283
University of Leeds.....1283
University of Dublin.....1283
Royal College of Surgeons in Ireland....1283
Royal College of Surgeons of England.1283
Royal College of Surgeons of Edinburgh1233
Conjoint Board in Ireland.....1285

LOCAL NEWS.

SCOTLAND—
Presentation to Colonel Mackintosh.1278
Glasgow Western Infirmary.....1278
Glasgow Victoria Infirmary.....1278
Lister Memorial in Glasgow.....1278
The Census of Scotland, 1921.....1279
IRELAND—
City Hospital for Diseases of the Skin and Cancer, Dublin.....1279

CORRESPONDENCE.

Cancer Developing after Cessation of Irritant. By Alexander Scott, M.D....1279
The Cancer Problem. By John T. Maclachan, M.D.; and A. T. Brand, M.D., C.M.....1280
Internal Use of Liquid Paraffin. By Montague Dixon, M.D.....1280
Professional Secrecy. By A. C. Gemmell, M.B.....1280
Heliotherapy. By T. M. Allison, M.D...1281
Psychiatric Clinics. By G. Laughton Scott, M.R.C.S., L.R.C.P.....1281
Psycho-analysis. By Chas. F. Harford, M.D.....1281
Hospital Policy. By E. Rowland Fothergill, M.B.....1282

OBITUARY.

T. H. Kellock, M.D., M.Ch., F.R.C.S....1234
Herbert Lucas, M.R.C.S., L.S.A.....1234
Ernest Williams Jones, M.D.....1284
Robert Garner Lynam, M.B.....1234
William Doig, M.D.....1285
Fleet Surgeon W. H. Putsey, R.N.....1285

LETTERS AND ANSWERS.

X Rays in Hypertrichosis of Face.....1286
Painful Varicose Ulcer.....1286
Income Tax.....1286
Unsuspected Pregnancy.....1286
The Physical Training of the Soldier ...1286

VACANCIES.....1285

(See also page 235 of Supplement.)

The SUPPLEMENT contains:—

The Plight of the Russian Doctors: An Appeal to the Profession.

CURRENT NOTES: The Scottish Board of Health and Medical Salaries.—The Half-yearly Indexes.

Dental Board of the United Kingdom.

Association Notices; Vacancies and Appointments; Diary.

AN EPITOME OF CURRENT MEDICAL LITERATURE will be found at the end of the JOURNAL.

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INDEX TO ADVERTISEMENTS.

Advertisements are classified so far as date of receipt and printing conditions make possible. Advertisements of the following classes will for the most part be found on the pages indicated.

COVER.

PUBLISHERS.

Bailliere, Tindall & Cox.
Gras & Bland-Sutton—Dis. of Women .. i
" Gynæcological Diagnosis i
" After Results of Abdominal Operations i
Harris, I.—Diseases of the Heart i
Thorne, L. T.—Nauheim Treatment i

Churchill, J. & A.
Medical Directory, 1923 i

Frowde, H., Hodder & Stoughton
Giles, A. E.—Sterility in Women i

Lewis, H. K. & Co. Ltd.
Nesfield, V.—Ophthalmic Surgery i

Macmillan & Co., Ltd.
Tubby, A. H.—Deformities .....

Nisbet & Co.
Paterson, H. J.—Surgery of the Stomach i

Oxford Medical Publications.
Price, F. W.—Practice of Medicine i

Sherratt & Hughes.
Wilson, W.—Aural Surgery i

CHEMISTS, &c.—
Armour & Co., Ltd.—Laborat. Products. iii
Benger's Food, Ltd.—
Peptonised Beef & Chicken Jellies .. ii
Sandoz Chemical Co., Ltd.—Ipecopan.... iii

MOTOR CARS, TYRES, &c.—
Dodge Brothers—Motor iv

PUBLISHERS.

Frowde, H., Hodder & Stoughton
Davis, H.—Skin Diseases 3

Lewis, H. K. & Co., Ltd.
The Clinical Journal 3

Minerva Co.
Medical & Psychological Publications.... 3

Behnke, E.—Stammering..... 20

ASSURANCE COMPANIES—
Medical Insurance Agency 1
Prudential Assurance Company 21

BOOTMAKERS, &c.—
Salmon, Ody & Co.—Arch Support 21
Scholl Mfg. Co., Ltd.—Foot Appliances.. 21

BRASS NAME PLATES, &c.—
Cooke's Brass Name Plates 3
Osborne & Co.—Brass Name Plates..... 3

TYPEWRITERS, PENCILS, &c.—
Newbold, Miss A.—Translations, &c..... 3
Taylor's Typewriter Co., Ltd. 6

DISPENSING BOTTLES, &c.—
Jessop, H.—Dispensing Bottles 3

CHEMISTS, &c.—
Angier Chemical Co.—Angier Emulsion.. 11
Antiphlogistine—Denver Chemical Co... 16
Astier Laboratories—Arheol 6
Bengue & Co.—Balsam & Ethyl Chloride 10
Boots Pure Drug Co.—Stabilarsan 14
Burroughs, Wellcome & Co.—
"Wellcome" Coryza Vaccine 13
"Tabloid" Empirin Compound 13
Christy & Co.—Musterole 7
Colman's D.S.F. Mustard 6
Crookes Laboratories—Collosol Preps.... 8
Kerol Ltd.—Kerol Capsules 6
Kolynos Incorp.—Dental Cream 6
Macfarlan & Co.—Opodine 7
Martindale, W.—Parafflagar 10
Oppenheimer, Son & Co.—Bi-Palatinoids 10
Pepsodent Co.—Pepsodent 3

FOOD PREPARATIONS—
Allen & Hanburys, Ltd.—Bynotone 15
Mead Johnson & Co.—Infant Foods 9
Oppenheimer, Son & Co.—Roboleine 3
Valentine Meat Juice Co.—Meat Juice .. 8

MOTOR CARS, TYRES, &c.—
Calcott Bros., Ltd.—Motor Cars 5
Evans' Power Cycles 18
Gamage, A. W.—Motor Accessories .. 20
Hillman Motor Car Co.—Motor Cars 20
Offord & Sons, Ltd.—Motor Cars 5
Renault, Ltd.—Renault Cars 18
Rover Co., Ltd.—Motor Cars 18
Saunders' Motor Garage 18
Secondhand Motors for Sale 20
Standard Motor Co.—Motor Cars 18
Sterns, Ltd.—Sternol Motor Oil 19
Turner Motor Co., Ltd.—Motor Cars.... 5
Wolseley Motors Ltd.—Motor Cars 17

SURGICAL APPLIANCES—
"Auroroscope" Co., Ltd.—Auroroscope... 21
Fundus Attachment 3
Bailey & Sons—Elastic Stockings 5
City Sale & Exchange—Microscopes, &c.. 23
Clarkson's Secondhand Microscopes .....
Domen Belts Co.—Corsets, &c. 21
Grout & Co., Ltd.—Crepe Bandages 10
Salt & Son, Ltd.—Gastroptosis Belt 4
Siebe, Gorman & Co.—Douglas Apparatus 3
Surgical Manufacturing Co.—
"Barton" Sphygmomanometer..... 21

X-RAY & ELECTRO-MEDICAL APPARATUS—
Medical Supply Association Ltd.—
Electricity in Medical Practice 4

TAILORING & UNDERCLOTHING—
Burberrys Waterproofs, &c. 3
Hall, H.—Medical Service Dress 20
Invisible Repair Co.—Tailoring 3
Jaeger Pure Wool Underwear 6

VACCINES & CULTURE MEDIA—
Laboratories of Pathology & Pub. Health 21

BATHS, SPAS, &c.—
Droitwich Brine Baths 25

HYROS—
Bournemouth Hydro 25
Smedley's Hydro., Matlock 25

HOMES AND ASYLUMS—
Barnwood House, Glos. 22
Beckside, Thornton-le-dale 22
Bishopstone House, Bedford 22
Bootham Park, York 23
Boreatton Park Asylum 22
Brunton House, Lancaster 21
Brompton Hospital for Consumption ... 24
Camberwell House, Peckham 23
City of London Mental Hospital 26
Coppice, Nottingham 22
Dail House, Bandf, N.B. 23
Fenstanton, Streatham Hill 22
Grove House, All Stretton 25
Haydock Lodge Asylum, Lancashire.... 23
Littleton Hall, Brentwood 21
London Fever Hospital 23
Middleton Hall, Darlington 22
Northwoods House, Winterbourne 23
Old Manor, Salisbury 22
Resident Patients 25
Royal National Hosp. for Consumption.. 23
Shaftesbury House, Lancashire 22
Shropshire Orthopædic Hospital 24
Springfield House Asylum, Bedford..... 22
St. Andrew's Hospital, Northampton ... 22
St. Chad's Hospital, Birmingham 21
St. Michael's, Broadstairs 21
Stour Valley Nursing Home 21
Stretton House, Church Stretton..... 21
The Grange, near Rotherham 22
The Grove, Old Catton 22
Vale of Belvoir Nursing Home 22
Wye House, Buxton 25

INEBRIETY—
Dalrymple House, Rickmansworth..... 22
Essex House, Barnes 22

SANATORIA—
Frimley Sanatorium 24
Grampian Sanatorium 24
Mendip Hills Sanatorium 24
Palace Sanatorium, Montana-sur-Sierre. 24
The Deeside Sanatoria in Scotland..... 24

MEDICAL SCHOOLS, &c.—
Glasgow Post-Graduate Medical Assoc.. 26
Liverpool School of Tropical Medicine... 26
London Hospital Medical College 26
London School of Tropical Medicine.... 26
Middlesex Hospital Medical School 26
National Hospital for Dis. of the Heart. 26
North-East London Post-Grad. Coll 25
St. Mary's Medical School 26
University of London—University Coll .. 25
W. London Hosp. Post-Graduate College. 27

EDUCATIONAL VACANCIES—
Indian Medical Service 30
N. Ireland Joint Nursing &c. Council .. 28
Royal College of Physicians of London... 28
University of Cape Town 27

SCHOOLS, &c.—
Anstey College, Erdington, Birmingham 28
British & Foreign Schools Agency 28
Marlborough College, Cheshire 28
Schools for Boys & Girls—J. & J. Paton . 28
Scholastic, Clerical & Med. Association.. 28
St. Paul's House, St. Leonards-on-Sea .. 28

TUTORS AND LECTURERS—
Examinations—Med. Corresp. College. .. 23
Stammering—Miss E. Behnke..... 24
University Exam. Postal Institution.... 23

CONTRACT PRACTICE & OTHER APPOINTMENTS.
IMPORTANT NOTICE—RE APPOINTMENTS..... 31

HOSPITAL, &c., VACANCIES—
IMPORTANT NOTICE—RE APPOINTMENTS..... 31
Addenbrooke's Hospital, Cambridge.... 27
Ancoats Hospital, Manchester..... 29
Birmingham, City of 31
Birmingham City Education Committee 27
City of London Hosp. for Chest Diseases 29
City of London Mental Hospital 27
Derbyshire Sanatorium 27
East Lancashire Tuberculosis Colony.... 29
Essex County Council 27
Heatherwood Hospit. I. Ascot 31
Hospital for Consumption, Brompton ... 27
Ingham Infirmary 29
London Administrative County of..... 31
National Hospital for Paralysed, &c.. .. 27
Parishes of Boleskine and Dores 31
Royal Dental Hospital of London 29
Royal Free Hospital, Gray's Inn Rd. 27
Royal London Ophthalmic Hospital..... 29
Salford Union Infirmary 27
Samaritan Hospital for Women..... 31
South Devon & East Cornwall Hospital.. 27
St. Helen's County Borough 29
Victoria Hospital for Children, Chelsea.. 29
West Ham Union 27
Whittingham County Mental Hospital.. 27

ASSISTANTS, PRACTICES, &c.—
Assistancies Wanted and Vacant 28
Dispensers, etc. 28
Practices Wanted and for Disposal .. 28, 29

NURSING INSTITUTES—
Cavendish Temperance Nurses Corporat. 32
Hale Nurses (Temperance) Co-operation.. 32
St. John's & St. Thomas's House 32
St. Luke's Hospital 33
The Nurses' Association 33
York Road General Lying-In Hospital... 33

HOUSE AGENTS—
Bedford & Co. 29

TRANSFER AGENTS—
Blundell & Co. 33
Fieldhall, Ltd. 33
General Medical Agency, Ltd. 33
John Bell & Croyden, Ltd. 32
Lee & Martin 33
Manchester Med. & Schol. Association... 33
Medical and General Business Agents... 31
M.P.U. Agency, Limited 33
Needes, H. 33
Needes, J. C. 33
Pescock & Hadley 33
Scholastic, Clerical & Med. Association.. 24
The Medical Agency 33
Turner, P.... ..... 28, 33

MISCELLANEOUS—
Anderson & son—Doctors' Acct. Forms.. 29
Consulting Rooms, etc., to Let 29
Hamilton—Bottle Wrappers, Labels, &c. 4
Income Tax Specialists—Hardy & Hardy 29
Miscellaneous Sales, etc 29

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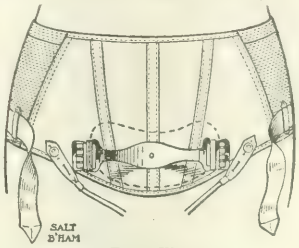
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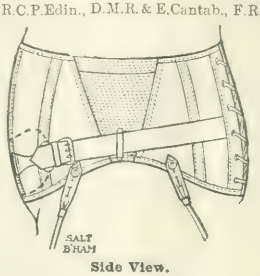
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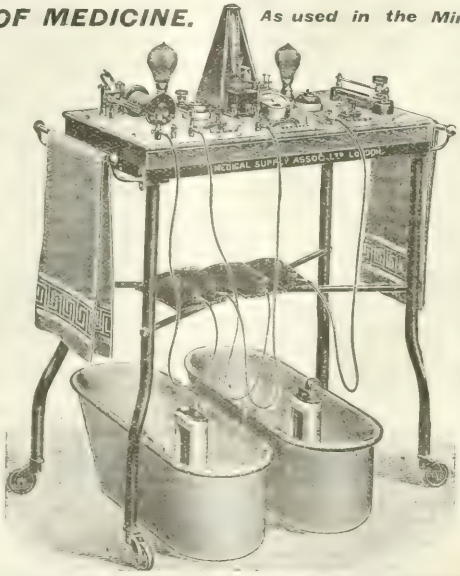
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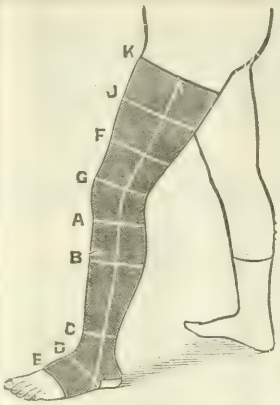
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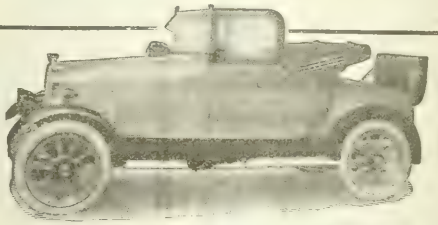
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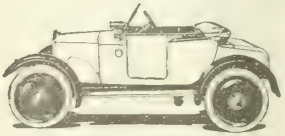
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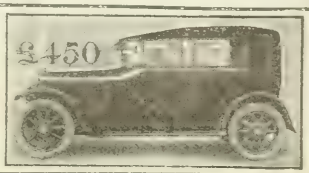


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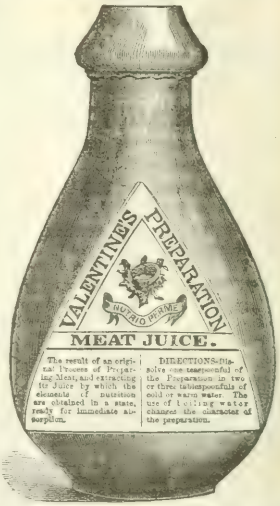
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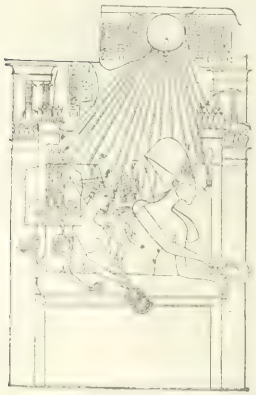
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HEAD OF KING AKENATEN, THE IDEALIST, WHOSE REIGN WAS A LANDMARK OF GREAT INTELLECTUAL DEVELOPMENT.—It is not very easy to extract the new element of belief taught by Akenaten from out the doctrine relating to the very old worship of the sun-god Ra. Even the name Aten was not new; it originated at Heliopolis, the ancient centre of sun-worship. But whereas Egyptians formerly worshipped the visible image of their gods, Akenaten did not venerate the sun-disk itself, but taught the worship of an unknown and invisible god who manifested himself through the sun's action. This was a rational religion and, as such, differentiated itself from the unreasoned mass of superstition which made up the Egyptian traditional belief. From this tradition Akenaten withdrew and endeavoured to look upon things afresh with an open mind; this led to his break with "authority." In his city, which he described as "the seat of Truth," he introduced also new canons of art, the underlying principle of which was to depict things as they really are and not as age-long convention ruled. The new spirit of naturalness was revealed also in another innovation: Akenaten is nearly always represented with his queen and children in happy family life and not as the conventional, and in many ways unreal, Pharaoh. Along with much beautiful art, gaining by application of the new canons, it is painful to note a number of examples of exaggerated and decadent style in which physical characteristics or peculiarities are developed into actual deformity. Some authorities consider this an indication among others, that the young king became degenerate and perhaps insane. Akenaten is to some, who cannot forget or forgive his loss of the Empire, "an intolerant religious fanatic," while to others he is "the first individual in history." His ideals were too high for his day.



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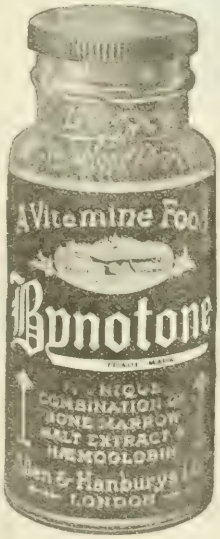
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NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
Held at Glasgow, July, 1922.

PROCEEDINGS OF SECTIONS.

SECTION OF OPHTHALMOLOGY.
A. S. PERCIVAL, M.B., B.Ch.Camb., President.

DISCUSSION ON THE CLINICAL SIGNIFICANCE AND TREATMENT OF HETEROPHORIA.

OPENING PAPERS.

I.—ARCHIBALD S. PERCIVAL, M.B., B.Ch.Camb.,
Senior Surgeon, Northumberland and Durham Eye Infirmary.

THE name "heterophoria" and the classification of its varieties we owe to George Stevens of New York. Latent deviations differ from manifest deviations or squints in being small enough to be overcome by the superior influence of the higher centres in the effort to maintain single vision. This effort will very probably entail asthenopia, and possibly some other curious symptoms to which I shall cursorily refer later.

In every case of heterophoria the first point is to distinguish between those that are *comitant* and those that are *non-comitant*. Suppose we find with the Maddox rods before the right eye and a green glass before the left eye, when a pea lamp at 6 metres' distance is viewed with the eyes in the primary position, that the red line is seen by the patient 4 centrads to the right of the light, the total esophoria in the primary position is 4 centrads. Now turn the patient's head to the right, so that he has to assume the "eyes left" position in order to view the light. If now the deviation appears to be 8 centrads, the deviation is non-comitant and there is a paresis of the left external rectus. Now turn the patient's head to the left, so that he assumes the "eyes right" position; if the deviation of the red line be more than 4 centrads he must have a paresis of the right external rectus. There is no excuse for our following the lead of some of our confrères in mispronouncing this word as parēsis, when we all know it is the Greek παρεσις, and the instinct of our language is to throw the accent back; but this is by the way. It is only in such non-comitant deviations as the above that one can justly use such terms as "insufficiency of the externi or of the interni."

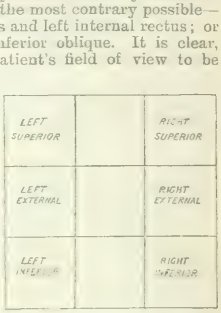
Esophoria or exophoria is only comitant when the deviation in the "eyes right" and in the "eyes left" position is the same as that in the primary position. Comitant heterophoria is due to some supranuclear lesion; non-comitant heterophoria is due to some lesion in the muscles, nerves, or terminal motor nuclei. As Maddox has well pointed out, it is a most important clinical distiuction that all affections of the final common paths are non-comitant, while all those of higher structures are comitant. Non-comitant or lower hyperphoria is often overlooked, as many are in the habit of limiting their examination to the heterophoria in the primary position. The diagnosis of paretic muscles is made on the same principle as for paralysis, but in most of the textbooks the diagnosis is a most complicated and difficult affair. Perhaps I may be excused for repeating the extremely simple and accurate method first published by Maddox and which I have been demonstrating at the Newcastle Eye Infirmary for the last sixteen years or so.

Diagnosis of the Paralysed Muscle.

The twelve muscles of the eyes may be divided into three groups of four each, four moving the eyes laterally, four upwards, and four downwards. Each group is divided into two pairs, one muscle of each pair being in the right eye and one in the left eye.

1. *Lateral.*
   (*a*) Right turners: Right external rectus and left internal rectus.
   (*b*) Left turners: Left external rectus and right internal rectus.
2. *Elevators.*
   (*a*) Eyes right: Right superior rectus and left inferior oblique.
   (*b*) Eyes left: Left superior rectus and right inferior oblique.
3. *Depressors.*
   (*a*) Eyes right: Right inferior rectus and left superior oblique.
   (*b*) Eyes left: Left inferior rectus and right superior oblique.

Each of these six pairs of muscles consists of Graefe's "true associates," and are easily remembered by Maddox's mnemonic that their names are the most contrary possible—for example, right external rectus and left internal rectus; or right superior rectus and left inferior oblique. It is clear, then, that if we consider the patient's field of view to be divided into right superior, external and inferior areas, and left superior, external and inferior areas, and if we find the area in which the greatest cardinal diplopia occurs, the condition must be due to the same named muscle, or to the most contrary named muscle. By the term "cardinal diplopia" I mean simply either a vertical diplopia (in the superior or inferior areas) or a lateral diplopia (in the external areas). Thus if the maximum vertical diplopia occurs in the right inferior area, the patient must have a paralysis of either the same named muscle (the right inferior rectus) or the most contrary named muscle (the left superior oblique). It only remains to distinguish which eye is affected: cover one eye, and note which image disappears; if the farthest image from the mid-line (in vertical diplopias the horizontal mid-line) disappears, the covered eye is the paralysed eye, and vice versa. In a lateral diplopia the farthest image from the vertical mid-line will be that formed by the paralysed eye. If the diplopia is increased in more than one of the cardinal directions an affection of more than one muscle is indicated.



It will be noticed that no attention whatever is paid to the torsion of the image, or whether the diplopia is homonymous or heteronymous in the diagnosis of an ocular paralysis by this method; these are refinements which may only lead to trouble. For instance, in fourth nerve paralysis the diplopia is usually homonymous, but it may be heteronymous, if any exophoria be present, and the torsion may not be what one would expect owing to an unrecognized cyclophoria, or periphoria as I prefer to call it. It will be found that by this method all difficulties in recognizing an ocular paralysis disappear. Similarly, if both eyes see well, an ocular paresis, however slight, can be discovered with the Maddox rods before one eye and turning the head in the required position, so that the displacement of the red line can be investigated in each of the named areas.

The objection to the Maddox rods is that the test is entirely subjective, and sometimes one may doubt the reliability of a patient's statements, so that it may be necessary to use objective tests. This will be always necessary if there be no diplopia from blindness of one eye, and, if the paretic eye be used for fixing, a difficulty may be introduced. On examining the movements of each eye when the attention is directed to each of the six named areas any gross loss of movement can be easily recognized, and the paretic muscle can be at once named. If, however, the paretic eye fixes, the associate in the other eye will undergo a marked secondary deviation. For instance, last year I had a case of left sixth nerve paralysis; there was marked diplopia in the left external area, at the same time the right eye was seen to turn strongly in. Clearly the left eye was fixing, and I subsequently found an old macular haemorrhage in the right eye. An intelligent student at the time diagnosed the case wrongly as spasm of the right internal rectus. There is another excellent objective test very largely used by the experts in America, but with which I personally am not so familiar—the *screen test.*

The test object should be a small electric light, such as that on the tangent scales; the patient is placed at a distance of 6 metres, with his head erect and his eyes looking straight forwards. The surgeon now suddenly covers the right eye with a card and notices whether this right eye moves in any direction when covered. If the right eye alone moves when covered, while the left eye remains fixed on the test object, *heterophoria* is present. If the right eye moves outwards there is *exophoria*: if inwards, *esophoria*; if

upwards, *right hyperphoria*; if downwards, *left hyperphoria*. If both eyes move when the right eye is covered, the left eye is squinting, or *heterotropia* is present.

If neither eye moves, either *orthophoria* is present or the right eye is squinting; in the latter case the deviation is easily seen on covering the left eye.

Now, after holding the screen over the right eye for at least a minute, suddenly remove it, when a corrective movement in the opposite direction will be seen. This movement of "redress" is usually more noticeable than the movement of deviation just described.

Duane has added a refinement to this test by finding the prism which, when held before the right eye in the appropriate position, will prevent the movement taking place.

Finally test for comitancy by repeating the test with the patient's head in different positions.

Symptoms.

The most characteristic symptom (although it is frequently absent) of heterophoria is occasional diplopia. The effort to overcome a heterophoria in the interests of single vision may occasion asthenopia, headache, giddiness, and all the symptoms of depression one finds in neurasthenia. In several cases for which I have ordered prisms I have been told that there has been a remarkable change of disposition; previous ill temper, moroseness, and pessimism have been replaced by geniality and optimism, but I need not say I cannot lay claim to any results as amazing as those related by Dr. Gould.

When the tired nervous centres give up the effort to maintain single vision, diplopia ensues, and possibly a visible squint, which, however, only lasts a short time, and then single vision is re-established. Patients will often acquire the habit of temporarily closing one eye; indeed, the facial muscles of one side of the face are sometimes affected with nervous twitching movements that are entirely cured by an appropriate prismatic correction. The giddiness due to heterophoria may be at once recognized by this peculiarity—that it ceases as soon as one eye is closed.

In hyperphoria I have often noticed a peculiar symptom—the inability to read near type (J. 1) with both eyes, though each eye separately can read J. 1 quite easily. It is probably due to the vertical diplopia which frequently recurs; as the angle of separation is so small, the images of the printed letters overlap when close to the eyes, and hence cause great confusion. In reading test types at a distance the vertical separation will be greater, so that less inconvenience will be occasioned, or one image may be suppressed. There is also often a tendency to convergence at a distance, but a tendency to divergence at reading distance. This diminution of the range of convergence entirely disappears on correction of the hyperphoria.

With regard to periphoria, I have noticed one curious symptom which was present in the first case I ever recognized some thirty years ago, and tentatively suggested this name for the affection. It is now recognized under the extraordinary name "cyclophoria," though what the tendency to a circle can mean passes the wit of man; still worse are the bastard terms "excyclophoria" and "incyclophoria," which I would replace by the terms "ekperiphoria" and "enperiphoria," which, at any rate, are of legal Greek parentage; however, this is by the way, and those who know most about the subject have given their sanction to the term "cyclophoria." Anyhow, in science technical terms are names arbitrarily assigned, like Christian names to children, on the principle clearly enunciated in Wonderland to Alice by Humpty Dumpty, when he told her apropos of his use of words: "I pay them extra and make them mean what I like" (Whitehead).

In periphoria, or cyclophoria, I have often noticed that patients complain when going into the street that the houses on either side seem to be falling upon them. I should be interested to hear if others have met with this symptom.

Treatment.

In all comitant cases of heterophoria (but not in periphoria), if not of too high a degree, prisms are the ideal treatment, for the deviation produced by a prism is almost the same in whichever direction the eyes range. I think that probably the best way to promote a lively discussion is to state my personal experience, which will no doubt give rise to controversy from which we shall all profit.

In paretic non-comitant heterophoria the authorities on the subject urge exercise of the weak muscles by ordering appropriate prisms for occasional use. I have met with no success by adopting this method. It very possibly may be that I have not had sufficient influence over my patients to get them to persevere with the exercise, but practically I have abandoned the method altogether. At first I always feared that ordering prisms which would relieve all or nearly all the error would be followed by the error becoming greater and greater, necessitating stronger and stronger prisms. To my surprise and delight I have found that the heterophoria has rather tended to become less. It may be owing to the rest or rather relief from constant effort of the opposing muscle, for whatever prism is worn the muscle is still frequently used.

There are two rules from which I never depart: (1) I never correct any heterophoria, however great it may be, unless it is attended with symptoms. (2) I always let my patients wear trial prismatic corrections for at least half an hour in my waiting room, to judge their effect, before ordering the spectacles for constant use. For comitant hyperphoria I do not hesitate to order the full correction that will relieve the manifest hyperphoria as revealed by the Maddox rods at a distance; this will be a little under the manifest error for near work.

I would here point out that non-comitant hyperphoria is far from uncommon, and may be due to a paresis of a depressor on one side, or to a paresis of an elevator on the other side. It will be found that a paresis of a depressor (the inferior rectus or the superior oblique, and which is most manifest when the patient looks down) is far more annoying than a paresis of an elevator. Even for these cases I have so far only ordered a prism base down before the paretic eye, and base up before the sound eye. If this were not successful, I should consider the advisability of operating—an advancement of the inferior rectus if that were at fault and possibly a tenotomy of the inferior rectus in the other eye if the superior oblique were at fault. But I confess that I should do such operations with fear; the inferior rectus is a particularly tricky muscle to interfere with, and the result in my hands has not been what I had hoped for. At first sight it would appear that in a permanent paresis of the superior oblique, as its insertion cannot be reached without seriously damaging other muscles, the most hopeful thing to do would be to induce a similar paresis in its true associate, the inferior rectus of the other eye. This should correct the hyperphoria for distance, but I cannot see that it would be any help when convergence is called into play for reading when the eyes are to a great extent depressed by both superior obliques. I gather that Duane has had extraordinarily good results in paralysis of the superior oblique with secondary deviation of the inferior oblique in the same eye, by a tenotomy of this inferior oblique. The effect will be to diminish the hypertropia and the extorsion at the cost of inducing a diplopia in a superior region which is of far less consequence.

If there is any hyperphoria I always correct it first with prisms, before examining any lateral defect there may be, as frequently, when the hyperphoria is corrected, the lateral defect disappears. I am never afraid of ordering strong prisms for hyperphoria if they are really called for, provided that the patient obtains relief after wearing them for half an hour on trial in my waiting room.

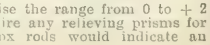
Comitant Horizontal Deviations: Esophoria and Exophoria.

In these cases, as there is such a wide range of relative convergence at each distance viewed, there must now be a "region of comfort," and so I make no use of the Maddox rods except for hurried hospital work, or as a rough indication whether further examination is required. The principles on which I work were published thirty years ago at the annual meeting of this Section, held at Nottingham. I have never seen any reason to alter my views as expressed then, though I now feel justified in speaking more dogmatically on the subject, and I think I can express my views a little more clearly:

1. Correct accurately all refractive errors for distance, and direct the patient's attention all the time to the smallest type he can read.

2. Find his *relative range of convergence* (R_c) while he is still keeping his accommodation relaxed—that is, while he can still read the smallest type without its doubling.

Suppose that $-2\ \nabla$ before each eye is the amount of divergence that the patient can just overcome, and that $+4\ \nabla$ is the amount of convergence he can just overcome, his R_c is $\nabla 6$ for each eye for distance. Then as I find that practically every patient can continuously exercise only the middle third of his relative range without fatigue, he will be able to exercise the range from 0 to + 2 with comfort, and he will not require any relieving prisms for distance. In this case the Maddox rods would indicate an esophoria of about $2\ \nabla$, or $1\ \nabla$ for each eye.



Now most patients have a considerable power of adapting themselves to the new conditions caused by a correction of their errors, so that even if the patient's R_c were from 0 to + 6 (especially if he were hypermetropic), I should order no relieving prisms, although the vertical line through 0, denoting parallelism of the fixation lines, would then be to the left of the region of comfort. If such a patient still had discomfort after wearing the glasses for three weeks, I would again test his relative range R_c, which would almost certainly now show some power of overcoming divergence, and I would order such prisms or decentration as would shift the region of comfort to the left, so as to overlap the point 0. It is, of course, quite unnecessary to make a diagram.

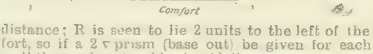
Suppose R_c were from -1∇ to $+5\nabla$ for each eye, or 6∇, when there is *Esophoria* it is only necessary to add (algebraically) the minimum to one third of R_c, and the prism for each eye is given at once.

$$\text{Min.} + \tfrac{1}{3}\,R_c = -1 + \tfrac{1}{3}6 = -1 + 2 = +1.$$

So that 1∇ prism (base out) is required for each eye in order to give relief from discomfort.

Just the same principle is used when there is discomfort in reading, the only difference being that the relative range at reading distance is found when the appropriate correction is worn.

Suppose that the R_c at $\frac{1}{3}$ m. were 12 for each eye, ranging from -2 to $+10$. The point R indicates the convergence required



at this distance; R is seen to lie 2 units to the left of the region of comfort, so if a 2∇ prism (base out) be given for each eye in addition all the reading trouble should disappear.

It will be noticed that the formula given above gives the required prism at once:

$$\text{Min.} + \tfrac{1}{3}\,R_c = -2 + \tfrac{1}{3}12 = -2 + 4 = +2.$$

I may state that this case had been to many experts all over the country, and though her refractive errors had been accurately corrected by most of them they had all failed to give her relief. Her relative range was excellent, but it was in the wrong place. I may point out that esophoria for reading usually gives rise to much more trouble than exophoria, which would appear to be exceedingly common as tested by Maddox's ingenious instrument, and usually gives rise to no symptoms of discomfort.

Exophoria.

In this condition the position of parallelism for distance, and of convergence for reading, lies to the right of the region of comfort, and all that is necessary is to shift the region of comfort so that its right edge just touches the point 0 or R as the case may be.

Suppose that R_c for distance when the correction is worn is 6, ranging from -6 to 0, his region of comfort must range from -4 to -2, hence he must have a -2∇ prism (base in) before each eye to ensure comfort for distance.

Suppose that when the appropriate correction is worn his R_c at reading distance is 12, ranging from $-9\frac{1}{2}$ to $+2\frac{1}{2}$, the weakest prism that will ensure comfort is $-1\frac{1}{2}\nabla$ (base in) before each eye.

My formula for all cases of *exophoria* is Max. $-\frac{1}{3}\,R_c$; in this case:

$$\text{Max.} -\tfrac{1}{3}\,R_c = 2\tfrac{1}{2} - \tfrac{1}{3}\,12 = 2\tfrac{1}{2} - 4 = -1\tfrac{1}{2};$$

for all cases of *esophoria* is Min. $+\frac{1}{3}\,R_c$.

I should not hesitate to operate in any case that required a high prismatic correction for symptoms of exophoria or esophoria. It is necessary in all cases for operation to distinguish between an overaction of the externi or interni, and a weakness of their opponents; the distinction is easy, as will be seen from the following table:

	At a Distance.	Near.
Exophoria—		
Diverging power in excess	Great	Slight
Converging power weak	Slight	Great
Esophoria—		
Converging power in excess ..	Slight	Great
Diverging power weak	Great	Slight

If in exophoria the diverging power is in excess, the exophoria will be greater at a distance than near, and so on. In cases of excessive diverging or converging power I should recommend a tenotomy of the externi or interni as the case may be; but in weakness of these muscles I should recommend their advancement if really necessary. At the same time I must admit that as a rule I am not satisfied with a simple advancement. If the advanced muscle is left stretched it always eventually atrophies, I think.

Periphoria.

I have had no success with exercises by the use of two rotating Maddox rods; the only successes I can claim are those obtained in oblique astigmatism by slightly rotating the axes of the cylinders to a wrong position, and this is not a scientific way of dealing with the condition. Possibly a marginal tenotomy on a superior or inferior rectus might do good, but I should like to see the after-results of others who have operated for this condition before attempting to operate myself. Any suggestions for this rare and troublesome condition would be most helpful. It is most important to remember that most people have a small amount of periphoria when converging and looking down without any discomfort arising.

It is far the simplest way to discover what prisms are required when the patient is wearing his refractive correction, in all horizontal deviations at any rate; the frames I use are 60 mm. from centre to centre; knowing this there is no necessity to waste any time in centring the glasses or in calculating the correction that must be made when the prisms are combined with lenses. As I always when possible order decentred lenses rather than prisms, on finding the decentration required that will be equivalent to the prism, I have only to add this to 30 and I get at once the distance of the optical centre of each glass from the mid-nasal line.

Decentration.

If L denote the decentration in millimetres, and N the number of centrads required, and D with its appropriate sign the dioptric strength of the lens,

$$L = \frac{10\,N}{D}.$$

When D is positive, L is positive, and the direction of decentration is that of the base of the relieving prism. When D is negative, L is negative, which reminds one that the direction of decentration is opposite to that of the base of the relieving prism. For instance, for esophoria the relieving prism is base out, and when L is positive the decentration is outwards, when L is negative the decentration is inwards.

Sphero-cylinders present some difficulty, which is easily surmounted when it is remembered that an oblique cylinder C with its plane axis at an angle θ with the horizontal in the horizontal meridian acts as a spherical lens of power $C \sin^2\theta$, while in the vertical meridian it acts as a spherical lens of power $C \cos^2\theta$.

$$\text{As } C\sin^2\theta = \frac{C}{2}(1 - \cos 2\theta), \text{ and } C\cos^2\theta = \frac{C}{2}(1 + \cos 2\theta).$$

This is an easy form to read off from the tables. For instance, suppose we have a sphero-cylinder -5 D -4 D cyl. ax. 15°:

Horizontally, -4 cyl. ax. 15° acts as $-4 \sin^2 15° = -2\,(1 - \cos 30°)$
$= -2\,(1 - 0.866) = -0.268$;

Vertically the cylinder acts as $-4 \cos^2 15° = -2\,(1 + \cos 30°)$
$= -2\,(1 + 0.866) = -3.732$;

so that the sphero-cylinder acts horizontally as -5.268 D lens, and vertically as -8.732 D lens.[1]

REFERENCE.

[1] Decentration and Oblique Cylinders, *Brit. Journ. Ophth.*, October, 1921.

II.—L. WEBSTER FOX, M.D., LL.D.,

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WHEN the array of phenomena incidental to inco-ordination of the extraocular muscles was presented to the medical profession under the term "heterophoria," there was opened up a field for discussion and speculation the limit to which seems nowhere in sight. Like Mark Twain's remark concerning the weather—"a lot has been said, but nothing done about it!" As we all know, it is to the late Dr. George Stevens of New York City that we owe a debt of gratitude for this term and the others of the phoria group, for it is by reason of this nomenclature that a proper appreciation of these functional disturbances was obtained. The previously existing chaos of terms naturally led to a chaos of understanding. Unquestionably the condition had been recognized and treated successfully in individual cases, but the problem of disseminating this information was complicated by the fact that no one observer knew what the other one was talking about.

To the physiologist the problem of the two images seen by the two eyes appears to be settled. It may be, as Hering long ago said, the eyes are a single organ with two limbs, and also that the duality of the eyes is necessary for stereoscopic vision.

but at the same time the philosophic sceptic marvels at the absence of double vision and stereoscopic vision when the extraocular muscle balance is disturbed in any given patient. The patient suffers instead from dizziness, nausea, and vomiting. Binocular single vision in the presence of orthophoria is difficult enough to explain properly, but binocular single vision in the presence of heterophoria requires all the attention of the physiopsychologist to elucidate. The creation of these reflex symptoms, already referred to, in the presence of heterophoria argues for a closer association of the extraocular muscles system with the entire physiology than is generally admitted even among the most zealous exponents of this relationship. It is conceded that the nervous system, and especially the sympathetic, is directly involved, but from then on the relationship of heterophoria to the general human physiology is left to take its own course.

The unlimited variety of terms coined in connexion with the transitory impairment of function of the extraocular muscles, and the muscle inco-ordination that accompanies such changes, and the still greater—if such were possible—explanations of the phenomena brought out by the countless precision tests in this connexion, leave the poor searcher after truth in a bewildering maze—and still heterophoria continues to develop, and even persist in the patients that have been the subject of these tests and observations.

In the Oxford Ophthalmological Congress of 1921, Ernest E. Maddox in the course of the Doyne Memorial Lecture elucidates the condition, in the manner of the master that he is, and doubtless will be unconsciously quoted from time to time in this paper. Buried in a maze of physiological data, he casually mentions the fact that the link between convergence and accommodation enables us to influence its slackness (called "exophoria") by spherical lenses, a treatment that next to constitutional measures is the best. For esophoria he uses full correction of hypermetropia; for exophoria, partial correction; but not always, for in neurasthenia a full correction may be the best. For many years he has treated exophoria in healthy young people by concave lenses so as to stimulate accommodation and create better convergence.

Herein lies the entire subject of heterophoria. The diagnosis is fairly well worked out—the explanation never will be (there are too many explainers)—but the treatment can be, as the very complexity of the condition speaks for its close relationship to the general health. It may be regarded as a form of neurasthenia.

One cannot help being impressed by the statement that however great the postural defect may be, if compensatory hypertrophy has made the fusion reflex great enough to overcome it easily, the heterophoria may be regarded rather as a harmless anomaly than as a pathological symptom. The trouble begins when compensation fails to be completely obtained. There are many psychic factors that effect fusion. Sir James W. Barrett[1] reports a case in which there was voluntary control of fusion. The patient could move either eye outwards separately or together, but he could not effect vertical disassociation. W. Rumbaur[2] reports a girl who could squint voluntarily. She could adduct each eye separately, and again she could fix one eye in adduction and then turn the other horizontally. With this remarkable accomplishment she showed two degrees of exophoria compensated for by glasses. Why should she have had any? This case points not to an abnormally strong innervation impulse, but rather to a voluntary inhibition of normally associated innervation. Another example may be mentioned of the popular moving picture actor, Ben Turpin, who has capitalized his ability to rotate one of his eyes at will while the other remains fixed.

Coming back to the original thought, when the images seen by each eye are alike in shape fusion is facilitated, but with the Maddox rod, for instance, diplopia will be developed that probably did not exist for practical visual purposes. Again, with the Maddox rod in the horizontal position the line of light will not only be to one side of the light but may be above or below the light, yet when the rod is turned so that the streak is in the horizontal plane, it will be found to be in the same plane as the light. Also, in the measurement of the strength of the muscles with prisms before one eye, it will be repeatedly found the muscles will overcome a stronger prism base down before the right eye than base up before the left eye, and that nearly always the left eye will overcome a stronger prism base down than base up, yet orthophoria will be found with the Maddox rod in a whole group of cases showing varying peculiarities of this character. Doubtless many explanations can be advanced for these phenomena, nearly all of which will be correct depending upon how far we go into the subject. The shorter the distance we go, the better able are we to grasp the big comprehending truth that the compensation is effected by a host of factors embracing the whole domain of human physiology, and that it is never constant or static.

Maddox very nicely sums up the treatment of heterophoria. He advises first discovery of the cause and its removal. Then examination of the refraction and the correction of ametropia. If lateral and vertical deviation exist together, which they frequently do, he corrects the vertical and ignores the lateral. Next he prescribes muscle training and prism exercise, and last of all muscle operation (graduated tenotomies).

Since heterophoria is, after all, only the latent disturbance of the extraocular muscle co-ordination it is well to refer to the work done in recording the movements of the eye in the discharge of their normal function of reading. C. Sheard, in the *American Journal of Physiological Optics* (April, 1921), reviews the work in this phase of muscle physiology, and it is well worth a pause to relate some of the facts that he has brought together. Thus the fact—first brought to the attention of ophthalmologists by Javal about 1879, that eye movement, as in the act of reading, is not continuous but rather discontinuous. While many of his inferences drawn from his experiments to prove the above have since been shown to lack substantiation, the principal point, that the eyes steady themselves for each completely focused picture, remains accepted. Landolt concluded after working on this basis that 1.5 words on the average were read at each fixation. Delabarre, of Brown University, in 1898, attached a recording apparatus to the cornea and secured tracings of the ocular movements. Later Huey, of Clark University, attached a very light plaster-of-Paris cup directly to the cornea and recorded the eye movements by a system of light beams which were so arranged in conjunction with suitable electrical devices as to provide a measurement, in very small fractions of a second, of the time used up by an eye in the movements of reading. Quoting Sheard's abstract of this work, the results obtained by Huey showed: (1) In reading relatively long lines of magazines, the average number of fixations is about 4.5 a line. (2) Doubling the distance from the eye to the page does not affect the number of fixations. (3) Minor modifications in the size of type do not affect the number of fixations. (4) The duration of the reading pauses, although extremely variable, averages about 0.19 second. (5) Fast reading entails fewer and shorter stops or pauses but not faster movements. (6) A short line—for example, about 60 mm.—makes possible fewer pauses relatively, so that more is read with a single pause. (7) The movements forward—that is, from left to right—are quite constant at 0.042 to 0.048 second. (8) The movements of return—that is, from the right end of the line to the left end of the next line—are quite constant at 0.051 to 0.058 second. Sheard adds the comment that these generalizations are incorrect in that they are too low. Our comment would be that they seem to indicate that accommodation has little or nothing to do with binocular fixation and binocular fusion.

Erdman and Dodge in 1908 added some observations on this subject and among their conclusions is the statement that of the entire time spent in reading, from 12 13 to 23 24 is devoted to pauses and the remainder to reading, and that during the pauses it is extremely doubtful if anything is perceived.

Dodge in 1900, at Wesleyan University, had perfected a method of recording the eye movements by which he showed that the speed of the forward movements averaged about 1,25000 of a second, while the speed of the return movements was of the order of 1,40000.

Dearborn, using Dodge's method at the Columbia University in 1906, further substantiates his observations and adds some of his own which constitute perhaps the latest information on the subject. It is of interest to know that the duration of the fixation pause is, roughly speaking, one-fifth of a second; thus, in reading a newspaper column, four readers averaged 161, 216, 255, and 402 thousandths of a second, respectively. The duration is therefore different with different readers, as would naturally be expected. Again, fixation is not absolute and constant, but only approximate—in other words, the eye often makes slow

changes of position during a fixation. If these physicists are correct, then heterophoria is more or less constant in every individual during reading, although its quantity is extremely variable within short ranges of time. Again, its degree must vary with each of these fixation pauses, yet our means of determination and expressing heterophoria have to do with the eye in repose and fixed at a distant point of no practical importance or occasionally at some definite target at a definite close point, in neither case approaching the practical conditions under which the eyes are used day in and day out. It is most remarkable in the circumstances that we do as well as we do in the handling of the treatment of heterophoria.

These observations of Dearborn, ably interpreted by Whipple of Cornell University, prove conclusively that we have far to go in the subject of heterophoria before we can reduce the phenomena to hard and fast rules of practice. Fixation pauses were shown, for instance, to be more frequent than is needed for clear seeing of the stretches read, as is shown by the fact that they remain the same in number when the print is removed to a double distance from the eye. This would seem to belittle our time-hallowed belief in the accommodation-convergence relationship. Fatigue, Dearborn insists, causes a slower rate of reading and a gradual decrease in the velocity of the eye movements. We venture the inquiry as to whether the multiplicity of the steps and the readjustments is not the cause of the fatigue, not the prolonged accommodative effort.

If fixation is so frequent, then must our observation be made with greater frequency in order to determine what the normal average variation is for each patient. Many careful examiners now do, and all should, measure the so-called muscle balance of every patient at each examination of the refraction, retaining such records for such time when symptoms of muscle asthenopia appear. In passing, comment is made of the term "extraocular muscle balance"; there is no such isolated condition—the intraocular and extraocular muscles at all times have an interlocking relationship.

The recitation of these points may impose on the good nature and patience of the members, but they are mentioned in order to prepare you for the reception of the writer's own views a trifle later on.

Now in order further to confuse our knowledge of ocular movements, E. Ruggeri[1] gives us tracings showing the marked effect under certain conditions of extreme convergence. The reclining patient is made to gaze at the forefinger held 1 cm. from the tip of the nose, and then tracings of the pulse are taken. In the numerous normal subjects it was not disturbed, as would naturally be expected. In multiple neuritis, from malaria, diphtheria, or influenza, the pulse ran up at once from 20 to 30 beats; in thyroid disfunction from 25 to 30. In other cases it was negative. By strange coincidence it is in these later groups of patients who have recently had these conditions that our heterophoria patients occur.

The great criticism that obtains in all our work is the scarcity of observations made upon healthy normal individuals without symptoms. The late war afforded much material for such valuable observation. James N. Buchanan of Freeport, Illinois,[2] while working in the Medical Research Laboratory, Hazelhurst Field, Mineola, Long Island, N.Y., made a detailed study of the examination of the extraocular muscles in fifty-one air pilots and observers, and three non-fliers who had served successfully as airmen overseas. Seven of these subjects, of whom five were fliers, were found to have qualifying heterophoria. The tabulation of these results and the method of examination is worth reading. One of his observations is notable—that with two exceptions every determination of convergence, divergence, and sursumduction by the descending method of using prisms is less then the corresponding one taken by the ascending method. This is to be expected, as the individual has been accustomed to fusion since childhood and tends to retain it as long as possible in the ascending method. On the other hand diplopia is produced early, and in the absence of encouragement it is more difficult to regain fusion.

A pertinent inquiry arises as to whether the heterophoria is to be accounted for before or after these well-known phenomena are produced. There is certainly a marked variation in the degree present before diplopia has been artificially produced, and after the same has taken place.

The conclusion to be drawn from these apparently disconnected observations is that heterophoria is a constant accompaniment of binocular single vision, although not always symptom producing, and that even though constantly present varies considerably in each individual patient and is extremely fluctuating in amount.

The question naturally arises as to what factors are necessary to cause the more or less constant heterophoria to assume a pathological significance, or, in other words, When is it symptom producing? We may quote from many authorities or fall back on our own experience for the answer, and state that such conditions as devitalize the muscles and nerves in general are responsible, and then under this head fatigue and exhaustion in general; and then fatigue and exhaustion of the eye muscles from overwork in the presence of an insufficiently corrected ametropia—anaemia, nervous prostration, malaria, influenza, diphtheria, typhoid fever, nephritis, diabetes, and similar disturbances. All these will assist materially in expressing a pathological heterophoria. Faulty attachment of the muscles and congenitally weak muscles may cause heterophoria, but it is doubtful—heterotropia results therefrom as soon as the eyes are used to any extent in efforts at binocular single vision. In point of fact heterophoria, being latent, is always overcome; therefore congenitally weak muscles, being present from the very beginning, are compensated for at the start, if at all, and the patient is adapted to the change from the very start of binocular single vision in infancy. Consequently we cannot accept such causes as refer to anatomical distribution, disturbance of innervation, spasm or paresis of the muscles. If these causes have failed to produce heterotropia, they are of no moment. It is, rather, an effort to maintain a physiological process in the presence of exhaustion of the parts concerned that induces the symptoms.

These symptoms are never constant and continuous; they are always periodic, depending upon the patient and the circumstances of his or her work. Therefore we cannot help but assume that the cause is likewise of a periodic character.

To Stevens and to Maddox and Duane we are indebted for most of the tests and determination of the varieties of the condition, and these are well known to every practising ophthalmologist. The symptoms given in the books are correctly stated, and when in the course of routine examination of the refraction we discover heterophoria its treatment should be considered, but not necessarily by the use of prisms and graduated tenotomics.

In a recent number of the *American Journal of Physiological Optics* (April, 1922) it is refreshing to read the views of a veteran in the matter of prisms and their uses. Charles F. Prentice, in an article in this number on the "Lateral adaptability of the extrinsic muscles in ametropia," gives us considerable practical advice as the results of his long experience in the use of prisms in heterophoria. One of his conclusions was that most persons for whom lateral prisms had been prescribed did not usually revisit him, whereas those patients who had been given vertical prisms did return for subsequent examinations and commonly expressed great satisfaction respecting the comfort they had derived from them. It is therefore his opinion, on an experience of forty years' practice, that the use of prisms for the attempted correction of lateral muscle imbalances only retards recovery. This, it will be noticed, corresponds in large part to the statement of Maddox, quoted again in this article: "If lateral deviations are complicated by hyperphoria, correct the vertical deviation first and the lateral will very likely correct itself."

Returning to the symptomatology of heterophoria, one of the greatest symptoms of the condition is a failure of the patient to obtain perfect comfort and relief from glasses recently prescribed for asthenopic phenomena, that are to all intents and purposes correctly prescribed. The great cause of uncomfortable glasses is an uncorrected heterophoria, usually a hyperphoria, or an artificially created heterophoria as the result of imperfectly centred lenses or overcorrection. This is more especially true when bifocal lenses have been ordered. Many older people have corrected their own heterophoria by grotesque twistings of their reading glasses, causing much mirth and merriment to the onlookers, and evoking pity that they should be ruining their eyes in this manner. Such persons have greater difficulty in wearing the correcting lenses properly centred if the heterophoria correction is not incorporated in them.

De Schweinitz and others have emphasized the point, with which I agree, that the measurement of the relative weakness should be made after the correction of the refractive error has

been made, and that the muscles should be tested through correcting lenses; and again that the examination of the muscles should be made for 6 metres and 30 centimetres.

The treatment I prescribe is orthodox. Rest of the eyes and rest of the whole body is essential and desirable, and consideration of its great value should render it practicable, although frequently regarded as impracticable and impossible.

It is presumed that the careful ophthalmologist always makes complete tests of the condition of the extraocular muscle balance in the course of routine examination of the refraction, but it is to be regretted that this presumption fails of realization; or else it is a failure to interpret the findings obtained, since patients go from one office to another with distressing symptoms, essentially eye symptoms, that can be accounted for only by muscle trouble and relieved by treatment directed thereto.

S. Weir Mitchell years ago demonstrated in connexion with headache and eyestrain that it was the minor errors, capable of being overcome by muscular effort, that caused the more severe headaches and nervous symptoms: those that could not be overcome caused only one symptom—defective vision. So it is with heterophoria, the minor degrees are the trouble makers.

In commenting on the importance of heterophoria tests in routine refraction, H. H. Briggs of Asheville, N.C.,[5] gives a good description of the series of tests he employs, including tests for accommodation, absolute and relative, tonicity of the muscles, cover test, convergence, accommodative convergence and fusional convergence, amplitude of convergence duction, version, cyclophoria, and field of fixation. With the necessity of these desirable findings in mind, one may avail himself of a host of tests that will determine for him the exact status of the muscle system of the eye. The great fault usually is that the examiner does not know exactly just what information he should have, and if not wide awake goes through a number of tests in a perfunctory manner, and to him as meaningless as to the patient.

Latent hyperphoria (a variety of heterophoria) will often produce a persistent accommodative spasm, as is well shown in a paper by F. W. Marlow of Syracuse, N.Y.,[6] which, among other things, explains why some patients will not take their full ametropic correction. He sums this up in one sentence, to wit: "Any excessive muscular effort necessary to bring the visual axis into parallelism may induce accommodative effort in excess of that necessary to maintain clear vision." He has observed, as have many others, more than one case in which at the post-cycloplegic examination the patient would not accept the full correction, that the placing of prisms in the trial frame to correct wholly or in part the manifest heterophoria will at once raise the vision or permit the acceptance of a stronger lens. Many others have had similar experiences, and have profited by their interpretation of this phenomenon.

The treatment of heterophoria is always individual—it is most difficult to group the cases for this purpose. In a recent editorial by Edward Jackson of Denver, Colorado,[7] concerning orthoptic training, the statement is made:

> "The mechanism of our ocular movements does not enter our consciousness. We are conscious of results attained and a sense of effort to attain them. The changes that intervene and bring about these results are subconscious. But the effort must be made; and the *movements guided by their effect on vision*. All forms of orthoptic apparatus (and training) depend for their usefulness on the presence of a fusion sense. But whether this sense is strong or feeble, real exercise is possible only by the patient making an effort."

Those of us who have struggled to attain binocular single vision in any case of anisometropia, after bringing the almost amblyopic (from disuse) eye to normal vision can well appreciate the force of Jackson's remarks. Here we have a pure case of heterophoria, yet, if the patient be an adult, we all know the great difficulty the patient will have in wearing the lens prescribed.

In a marked case of heterophoria with severe symptoms a long period of atropine cycloplegic will go far towards effecting a cure. Unfortunately, we are so frequently compelled to rely on drugs whose period of cycloplegic is of short duration. Electricity has been highly recommended by some observers, but it should be remembered that the commonplace treatment of "rest" is the one thing that restores all overworked muscles, no matter what their situation; and also it should be remembered in this same connexion that only overworked and exhausted muscles go into cramp and spasm. After all, that is all that rigor mortis is!

In prescribing glasses the point made by De Schweinitz should be borne in mind, and the correction so calculated that the muscle balance is perfect at the distant and near point most practicable for the individual's particular use. The esophoria or hyperphoria should be eliminated for these points whether accomplished by decentring the lens or incorporating prisms. Often a six or seven degree prism, base down or up, when correcting lenses are used and a reading card or astigmatic dial employed in obtaining the correction, simmers down to a one, two, or three degree prism and comfort follows its use; whereas discomfort follows the higher numbered prism obtained by other apparently more precise tests. I correct as low as one degree hyperphoria and three degrees esophoria when determined in this manner.

Prism exercises have the stamp of authority for their recommendation, but patients are reluctant to stick to them, and their results are correspondingly good or bad, for the reasons shown in Jackson's editorial.

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DISCUSSION.

Dr. JAMES ALEXANDER WILSON (Cambuslang) said:

It should be helpful to remember that comitant heterophoria is due to a supranuclear lesion, and that non-comitant heterophoria is due to a peripheral lesion, or to remember the physiological maxim that "movements rather than muscles are cortically represented." I think it is not always easy to draw a dividing line between the two varieties. To obtain some relative values I have taken 100 consecutive cases of heterophoria and tabulated them. In this series 84 per cent. were females, and the ages of greatest prevalence were the years from 15 to 30. The complaints in 80 per cent. were headaches and asthenopia. Only 8 per cent. complained of occasional diplopia or inclination to squint. The vision of 73 per cent. was 6/6 or 6/9, and the refractive condition in 65 per cent. was emmetropia or low hypermetropia, in 28 per cent. hypermetropia or hypermetropic astigmatism, and in 7 per cent. myopia or myopic astigmatism. Of exophoria there was 48 per cent. and of esophoria 36 per cent. Exophoria was more prevalent in the non-hypermetropic group, and esophoria in the hypermetropic group. Excessive accommodation has something to do with determining the variety of imbalance. Looking at different objects through biconcave lenses produces temporary esophoria and through biconvex lenses the reverse of this, though to a much less extent, except perhaps at reading distance. Many of the people in my list gave histories of illnesses such as influenza or typhoid fever, or were nervous or in poor general health. The neuro-optical apparatus, highly endowed with many "balanced reflexes," is liable to be disordered—especially so in females between 15 and 30 years of age—by exhaustive, convulsive, or emotional conditions, and probably by toxins.

Dr. CHARLES F. HARFORD (London) said:

Muscular imbalance, which is the prominent feature in heterophoria, has been regarded by different writers as the cause of a large catalogue of human ills. These may be roughly summarized under the headings of pain, discomfort, confusion, and inco-ordination. Every one of these has its psychological significance, or, to put it in other words, the mind factor is that which is the ultimate difficulty. Distress of some kind is the reason which attracts to us most of our patients and that can only be experienced through the mind, and however successful we may be in the correction of physical deformities until we can remove the distress we have not "cured" our patient. So far we shall be on common ground, but if this is true the converse follows that the mind influences profoundly the functions of the body and none more strikingly than the muscular system. But we may go farther and say that the muscles which are most likely to be affected are those which are most delicate and therefore in particular the muscles of the eye.

Inman, who may be regarded as the pioneer in this line of inquiry, has demonstrated by means of a considerable number of cases the relation of emotional disturbances to ocular defects, particularly with reference to strabismus, but

he also includes in his series of cases those of heterophoria, and there can be no clear line of demarcation between the two. He has found a connexion between these cases and a personal and family history of left handedness, and so far as definite cases of strabismus are concerned I can confirm these observations. Inman has now collected 700 cases and he is not only able to point to an arbitrary connexion between two symptoms which have no relation to one another, but he has been able to show that both of these conditions are associated with emotional conflicts and particularly with some form of parental complex. Another writer on psychology in its relation to visual abnormalities is Dr. Freeland Fergus, whose absence on account of illness we regret. He has given much attention to the subject of binocular vision and the mechanism by which this is secured, and the muscular co-ordination with which we are dealing is a part of this and should always be considered in this connexion. If heterophoria is present when tested by Maddox rods one of three conditions must result. Either there must be diplopia, or the heterophoria must be corrected by muscular effort, or the image of one eye must be suppressed. Probably the second of these alternatives is the most common. This would probably involve some muscular stress with corresponding symptoms of discomfort. It is, however, possible that the mental distress may be the cause of the heterophoria.

I have recently learnt that in the Royal Air Force the existence of heterophoria is usually found when pilots have made bad landings. I would suggest that the muscular imbalance is due to some condition of fear, and that in most cases mind training is more important than muscle training. Nothing could be worse than to call attention to the condition. This condition is so similar to the visual judgement which is necessary in athletics that I would suggest that good training in cricket or tennis, or similar exercises involving the training of the judgement, would be the best safeguard against crashing in flying. Auto-suggestion might be of great benefit in these cases, and might be tried. I have only recently begun to experiment in this direction, but I may say that the basis of the system on which I am working rests on the following beliefs: (1) That the controlling influence of the mind which regulates all our vital processes, including complicated muscular actions, is adapted for normal use. (2) That it is our phobias and minor mental conflicts which upset this normal action. (3) That auto-suggestion based on these principles has in it possibilities of the utmost interest.

Mr. INGLIS POLLOCK (Glasgow) stated that he found many cases improved by the use of prism exercises in paretic non-comitant heterophoria. It was a condition which was not often understood by the patients' doctors, and many of them did not seem to realize the necessity for continuous treatment. The important thing was to persevere with the treatment, backed up by rest, as many of the patients had been overworked or run down by some intercurrent trouble. If they did not improve with the prism exercises then he advised operation, and it should always be advancement, and not tenotomy. The operation was not so difficult as had been suggested, but care should be taken to make sure that the stitches were inserted into the sclera, and not to put too great a strain upon the sutures, otherwise they were liable to cut out, and the muscle slipped back and was worse than before. Mr. Inglis Pollock also stated that there was no doubt that there was a psychological element in every case, and every means of treatment should be employed in each individual case to make sure of a good result.

Mr. N. BISHOP HARMAN (London) thought that there was no more complex subject in the whole range of medicine than defects of muscle balance, nor was there any matter in which rule of thumb methods of treatment were more unreliable. Since his own apprenticeship was served in anatomy, it was natural that he should look to defects in the anatomical arrangements of the tendons as the primary cause of defect of balance in action. The variation in tendon insertions was very striking when the eyes of fishes were examined. The insertions of superior rectus and obliquus in fishes were usually symmetrically disposed as a complete V, but the limbs might be slightly separated or actually crossed; so also with the inferior pair. The internal and external rectus might vary: the internal might fail to reach round the globe, and be inserted close to the optic nerve, as in the common herring and some salmon; and the external rectus might be much diminished in size, as in most pleuronectids or flat-fish. In these flat-fish, as it were at one bound, and in the life of one fish, a very complex superior oblique capable of producing rotation of the eye was developed, and the degree of this development differed in different species; it was highest in the flounder and least in the halibut.

Those anatomical facts in fishes (Mr. Harman continued) led him to think that there might be similar differences in man, though of lesser degree, and indeed gross cases of muscle defect were known which were hereditary for several generations. A defect bad enough to cause constant squint caused no trouble other than loss of binocular vision and loss of good appearance. A small defect might make life a burden, yet many patients showed defects with no certain symptoms. Diagnosis was full of pitfalls. For himself he was not content unless he got conformable results by three tests—in distance with the Maddox rod, in a near vision test, and, finally, by the actual observation of the resultant alternation of distance fixation when one or other eye was covered and uncovered. The last test he considered absolutely necessary.

In correction by prisms he was an unblushing opportunist. Attempts at precision—so much deviation, therefore so much correction—were, in his experience, generally failures. A little correction, with the promise of more at a later date, and a full explanation to the patient, was better practice than precision. With a gradual adjustment of the correction it was surprising what success could be obtained in the relief of symptoms. Operation was needed in high degrees of defect where prisms did not give sufficient relief or would not be worn. He had had some gratifying successes with his subconjunctival reefing operations, both in his own cases and in cases operated upon at the request of other surgeons. The value of the method lay in the ease of gradation of the adjustment of the tendon and in the comparative absence of risk of making conditions worse than before operation—which was no small matter.

Dr. J. GRAY CLEGG (Manchester) said that in regard to the voluntary control of the extrinsic muscles he would mention the case of a man seen a week ago who could at will bring on a most marked nystagmus of the circumductory type. It was undoubtedly important in every case to estimate the phoria for distance and near. In a series of cases the percentage of heterophoria was about 40, but very few required any treatment. The degree of exophoria varied in the same patient at different distances and was not necessarily increased on convergence; indeed, it might be less. Esophoria was usually of less degree for near, but in some cases it was increased. Insufficient convergence even up to 12 centrads did not necessarily require any treatment. Concave or weaker convex lenses than the refraction required were sometimes useful in stimulating convergence. Undoubtedly prism exercises practised at home by the patient were of distinct service, the discomfort disappearing even though the measurement of the degree of heterophoria remained the same. If overaction of any particular muscle was found, tinctura belladonnae tended to relieve the spasm; on the other hand, tinctura nucis vomicae helped to stimulate muscles which showed atony. In a few cases relief was obtained by the use of drops of 1·2 per cent. solution of homatropin hydrobromide, instilled the last thing at night for some days or weeks. By this method the activities of the patient were not interfered with, as would be the case with atropine.

Dr. HERBERT CAIGER (Sheffield), speaking from personal experience of hyperphoria in his own case, emphasized that hyperphoria certainly was capable of causing mental distress—depression without any apparent cause and a sense of fatigue—in the complete absence of headache. He called attention to "latent hyperphoria"—a term used by the late Dr. Wendell Reber in 1914 at Oxford, and also by Dr. Webster Fox in his opening paper here. Cases occurred in which the Maddox rod test showed little or no error, while fusion tests with prisms showed marked difference in hypervergence in the two eyes. He raised the question of the connexion between hyperphoria and astigmatism: Did astigmatism ever lead to hyperphoria or vice versa? The point deserved investigation.

Mr. J. J. HEALY (Llanelly) emphasized the occurrence of latent exophoria in cases of low myopia of — 0.25 sph. to — 1.00 sph. These cases came complaining of headache on doing close work, and not for distance. The sufferers were usually young adolescents or adults, school children or clerks.

No exophoria or other phoria could be demonstrated by the usual tests, but correction of their simple spherical myopic error for use when doing close work relieved their symptoms. This was contrary to the usual textbook teaching, therefore he wished to emphasize it.

DR. G. M. HARSTON (Hong-Kong) said that there seemed to be a general consensus of opinion that muscle tone must necessarily be a predominant factor in muscular imbalance. Situated as he was in his practice, geographically midway between the American and British schools of thought in ophthalmology, he saw the results of both, and he paid the greatest tribute of admiration to the former. He specially wished, however, to emphasize the point that any correction prescribed should be accompanied by the advice that in the case of any patient proceeding to a tropical or subtropical region that patient should place him or herself under the care of a competent ophthalmologist so that any loss of tone following upon malaria or prolonged residence in the tropics might be suitably corrected.

DR. T. STEWART BARRIE (Glasgow) said that it was most important that the glasses supplied to the patient should be exactly according to the ophthalmic surgeon's prescription, especially when prisms were necessary. This meant that the ophthalmic surgeon should specify the pupillary distance when prescribing prisms, otherwise the lenses supplied in the spectacle frame might have their prismatic effect neutralized, if not actually reversed, by decentration outwards or inwards. He followed the practice of stating essential facts concisely and checking the glasses supplied to the patient. Cases could be cited in which considerable errors were present; this was hardly avoidable at times, for something must always be left to the optician, such as the width of bridge, etc., and he deserved credit for the manner in which he interpreted ophthalmic prescriptions.

DR. LINDSAY REA (London) said that in every case he put down the result of his tests for distance and for near vision. In 90 per cent. of his cases there was exophoria when tested with the Maddox ring test. In such cases he usually found that the glasses which had been worn for proximal vision had been too weak, so that an effort of accommodation had been produced. This in turn produced the exophoria at the near test. These heterophorias cleared up by the accurate correction of their refractions. The full correction for minute amounts of astigmatism would do more than prisms would do. He had found this by removing prisms which had been prescribed, correcting the refraction most carefully, and in no case had he been disappointed. The surgeon should see the result of his prescribing by examining the spectacles made, if possible on the patient's face.

DR. JOHN ROWAN (Glasgow) wished to emphasize the importance of the insertion and the size of the muscles; this was found when cases came to operation, for it was never known what a muscle would be until it was seen. He was glad that all were agreed that treatment was only necessary when there were symptoms.

MR. PERCIVAL, in reply, thanked Mr. Bishop Harman for his very interesting account of the ocular muscles in flat-fishes of various kinds. Mr. Harman considered that anatomical peculiarities were the cause of practically all cases of heterophoria. Mr. Percival had only rarely found anomalous insertions of the ocular muscles, even in the cases of squint on which he had operated. He was quite unable to answer Mr. Caiger's question about the relation between hyperphoria and astigmatism.

DR. WEBSTER FOX, in reply, said that with regard to the questions, he would answer them in brief by giving his method of treatment of heterophoria patients:

(1) Distant vision was recorded, adduction and abduction of each eye. Muscle imbalance was tested, and if right or left hyperphoria was present this was recorded and corrected by prism or partial tenotomy. Full correction of ametropia was made according to age.

(2) After a few weeks' trial with glasses as prescribed and found unsatisfactory a re-examination was made, and if hyperphoria still existed a partial tenotomy of the offending muscle was made. In this way muscle balance was attained.

A CASE OF OPHTHALMIC MIGRAINE WITH UNUSUAL SYMPTOMS.

BY

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THE following case of ophthalmic migraine seems worthy of record because of the unusual symptoms.

The patient was seen by me in private on August 16th, 1921. He was a business man, 52 years of age, and complained that during the previous week he had been troubled with frequent attacks of headache and with flashes of light in front of his eyes, which interfered with his sight. In 1915 he had had a serious illness, which, among other symptoms, exhibited hemiparesis, hemianopia, and fits. He was still taking luminal to control the fits. By the courtesy of Dr. J. Mackie Whyte, his family physician, I am able to submit the following notes of the clinical condition during this illness.

On July 15th the patient complained of headache. The eyes were said to be inflamed. Next day, after golf, he was very tired and yawned a great deal. During the night he was delirious. Two days later there was headache and vomiting. The temperature was 100°. On July 5th pain was complained of at the back of the head. There was complete motor paralysis of the right arm and leg, with impaired sensation over the same area. The temperature was normal and the pulse 60. The pupils reacted to light. On the following day paralysis of the lower part of the right side of the face was noticed, and thickening of the arteries was recorded.

On July 12th sensibility had returned. Right hemianopia was discovered, and the patient wandered in his speech a little. Two days later there was another delirious interval. Thereafter the patient mended, for on August 2nd, one month after the onset of the illness, he began to move his fingers, and it was noted that he had been mentally clear for a fortnight. On August 20th there was an epileptic fit. Later he came to know when a fit was imminent, because he felt himself unable to express what he wanted to say and got confused. At this date pus and blood appeared in the urine.

On August 27th the hemianopia was still present. The hearing was poor on both sides. The glycosuria persisted till the middle of the following year, and the hemianopia was absent in December, 1916. In February, 1916, there was a second fit, and others occurred at intervals. The last fit occurred in September, 1920, when he was put on luminal.

In September, 1917, the systolic blood pressure was 150 mm. of mercury. The patient had returned to work, but his memory was still poor for recent events. He informed me that this illness followed on several years of great worry in business.

When seen in August, 1921, he said he had again been subject to worry, and gave a description of his symptoms. He had gone to St. Andrews on holiday, and had again been playing much golf. After a game on August 8th he noticed a coloured light in front of the eyes. It began as a spot of light a little to his right side. The circle enlarged and "took on all the colours of the rainbow." No headache followed the first attack. The flashes of light recurred at frequent intervals—"every five or ten minutes"—and these recurrences were followed by headache. They left him "not seeing properly." The headache began over the left eye, and involved the left side of the head. Thinking the trouble would soon pass off, he continued to play golf, and he found that the balls "tended to go to the right." He was unable to judge distances on his right side. "People seemed to be sometimes nearer, and sometimes farther away."

There was no family history bearing on the condition. He seemed to be of a highly strung disposition. The expression was anxious, and he apparently dreaded a return of his 1915 illness. On examination there was some photophobia. Vision in both eyes was 6/6 partly. There was one diopter of hypermetropia. The conjunctivae were not injected. The pupils were small and equal; they reacted to light. Nothing abnormal was seen in the media or fundi. There was no ophthalmoplegia.

The fields were taken with a McHardy's perimeter with a 5 mm. white object, and showed a partial right hemianopia. The scotoma was complete in the right lower quadrant, and involved the right upper quadrant, peripheral to the 40 circle. It appeared to extend right up to the fixation point. The outline of the field was slightly irregular but convex in general contour. Pilocarpine drops were prescribed, and also aspirin internally.

There was another attack that day, and one on the following day of a slighter nature. Since then the attacks have ceased. About two months later, perimetry showed that the fields were normal. The Wassermann test with blood serum was reported by Professor Tulloch as definitely negative.

This description is unfortunately not so complete as one would have wished. The tension was not measured. The fields for colours were not taken. A more exact picture might have been obtained by the use of a Bjerrum screen, and it would have been interesting to have observed the date when the scotoma disappeared. These things were precluded by the condition of the patient and the circumstances.

The case is apparently one of the ophthalmic type of migraine, with scintillating scotoma. The association with

epileptic fits is uncommon. Dr. Mackie Whyte and Professor Ashley MacIntosh, who saw the case in May, 1916, were of opinion that the illness at that time was most probably due to a thrombotic lesion affecting the left cortex. If this were the case, it does not seem unreasonable to assume that some permanent damage of the cortex took place, which provided the focus of irritation for the epileptic fits. The recent migrainous attack would seem to have been due also to vascular disturbance in the left cortex, but of milder degree and more limited distribution. It would therefore seem that the association with the migraine of epileptic fits in this case is based on a pathological relationship.

The conclusions reached by Gordon Holmes and Sir William Lister,[1] as the result of their investigations in cases of war injuries involving the occipital lobes, indicate that the visual cortex can be mapped out according to the retinal areas with which it is connected. The hemianopia here would be traceable to temporary interruption of the branches of the left posterior cerebral artery which supply the upper lip of the calcarine fissure and the anterior part of the lower lip.

Regarding the etiology, there is a distinct record of worry having preceded each attack. The arteries were thickened, but the blood pressure was not raised, and the Wassermann reaction was negative.

REFERENCE.

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EDUCATION OF PARTIALLY BLIND CHILDREN IN MYOPE CLASSES.

BY

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It has been suggested to me that it might be of interest to this Section to hear something of the myope classes in the schools in Glasgow. I do not propose to submit to you any details of an administrative nature, nor do I wish to discuss the question of the degree or kind of myopia which warrants admission to such special classes, but I should like to say something concerning children who are visually defective from causes other than myopia and who are being educated in myope classes.

Prior to the establishment of such classes children of low visual acuteness had either to attend ordinary classes, severely handicapped and learning next to nothing, or be relegated to the Braille class among the blind; but with the advent of the myope class, which, I think, would be much better named the sight-saving class, we have been provided with a form of schooling which we as ophthalmologists can recommend in many such cases.

The essence of the myope class is that all print to be read, writing to be done, and illustrations to be seen are on such a large scale as to require only a low visual acuteness, and to obviate the necessity for a high degree of convergence. Under such conditions it is easy for the child with, say, visual acuteness 6/60 and J. 10 or 12 to take a good place in the class and yet be doing nothing to the detriment of his eyes. Further, he is free of the stigma of having been at a blind school, and he enjoys the educative advantage of being constantly associated in play hours and in certain class work with normal children. It is true that his future sphere of usefulness in the industrial world is somewhat limited, but experience has taught that, given a moderate amount of will power and intelligence, the prospect of earning a living for a person with very defective sight is much greater if he has cultivated the methods of the seeing than if he is dependent on, and limited by, the acquired attributes of the blind.

In 1907 I published a paper on "The eyesight of the poorer city children,"[1] in which I was able to demonstrate the visual superiority for distant objects of country children over city children, and how the inferiority of the city children was greater in the central closely built regions than in the outskirts. Errors of refraction and disease or abnormality were, of course, excluded, and the explanation seemed to be found in the greater or less development of the power of interpretation by the higher brain centres of the images formed on the retina. Such development was the greater the more spacious the child's habitual surroundings.

It is this same power of interpreting what his eyes see that is of so much importance to the partially blind child. The degree to which he possesses it is a weighty factor in the decision as to whether he shall be educated in a myope or a Braille class. In illustration let me quote a case.

A boy, aged 7, had had ophthalmia neonatorum. There was a leucoma adherens, right, with a cataractous lens. The left eye had corneal nebulæ, anterior polar cataract, and 4 D. of irregular myopia. Vision < 6/60 and J. 8. He was sent for trial to a myope class on January 26th, 1920, and on June 8th, 1920, the headmaster of the school reported: "His progress has been most satisfactory. His writing is as good as that of the average infant, and in reading he has gone over the *First Infant Reader*. So far as can be seen he seems to have no difficulty whatever in doing any work required of him in the myope class; indeed, he seems to do it with the greatest ease and without straining his eyes."

That boy would be practically unteachable as one of an ordinary large class, and I think it may be claimed that his progress in the myope class fully justifies the continuance of his education as a seeing child.

When examining a child for the purpose of advising as to how he can best be educated it is not enough, especially in young children, to register the vision in the usual way by the reading of letters or the recognition of objects. One must also make an estimate of his intelligence, both from personal observation and from the accounts of his parents or guardians. Then, of course, the prognosis as regards the condition of the eyes is of very great importance. It is manifestly necessary to feel assured that the vision is not likely to become worse in the future. Also, one must bear in mind the time of onset of the visual difficulty. If it was congenital or nearly so the faculty of cerebral vision must, from the lack of the normal amount of exercise, be below the average standard. I am quite satisfied that this faculty is capable of great improvement under the encouraging stimulus of constant practice in looking at enlarged objects, and this improvement, moreover, not infrequently expresses itself in an increase in visual acuteness, as tested by Snellen's types.

Coming now to the cases on the experience of which these remarks are based, they may be conveniently arranged in two groups. Group I includes (*a*) the cases in which the cause of the visual defect was congenital, and (*b*) those in which it was the result of ophthalmia neonatorum. Group II is made up of those whose defect is due to disease acquired some time after birth.

There are 13 cases which I have not included in the list because their presence in the myope classes is due partly to myopia and partly to conditions "other than myopia." Four of them are myopic albinos, and nine are myopes with extensive corneal opacities, which have resulted from strumous ophthalmia. These latter are liable to recurrences of their corneal ulceration, and consequent further deterioration of vision, if they are sent to an ordinary sighted school. Their circumstances are such that they cannot be sent to live in the country, and I find that they do well under the curriculum of the myope class, which includes supervision by the teachers of the hygiene not only of the eyes but also of the body generally.

GROUP I.—*Congenital Defects, including the Effects of Ophthalmia Neonatorum.*

This group comprises 48 cases, and it is, perhaps, to them specially that my introductory remarks may be applied. In many cases their age or lack of training precluded any exact register of their visual acuteness, and one's judgement was influenced by considerations along the lines which I have indicated. They may be tabulated thus:

Congenital cataract	15
Nystagmus, apart from albinism, and with no history of ophthalmia neonatorum	9
Albinism, with hypermetropia	2
Coloboma of iris and choroid	5
Ectopia lentis	2
Aniridia	3
Microphthalmos	1
High hypermetropia (vision 6/36 and J. 10) ...	1
Ophthalmia neonatorum (after-effects of) ...	10

The cases of congenital cataract include some whose surgical treatment is not yet complete in both eyes and who are likely to finish their education in ordinary classes. Most of the others have good surgical results (aphakia or optical coloboma iridis) but low visual acuteness. The ophthalmia neonatorum cases have all got corneal opacities and most of them have nystagmus and anterior polar cataract.

GROUP II.—*Acquired Defects.*

This group comprises 18 cases, as follows:

Choroiditis and choroido-iritis	5
Sympathetic ophthalmia	1
Corneal opacities from interstitial keratitis ...	8
Partial optic atrophy	1
Choroido-retinitis	2
Disseminated choroiditis	1

The interstitial keratitis cases are all of long standing, and in some instances are still receiving treatment in the hope of further clearing of the cornea. All the other cases have been judged to be beyond the stage of active disease and not likely to suffer further depreciation of vision.

These two lists show the cases which are at present in actual attendance in myope classes and they are of all school ages. They are examined at regular intervals, and, according as improvement justifies or necessity demands, they may be transferred to ordinary or Braille classes. In doubtful cases the teacher's report is of great value. For the reasons which I have already referred to it is not advisable to lay down a definite standard of visual acuteness, but almost none of the cases at present under review has less than 6/60, and all can read smaller print than J. 14.

This work may be said to be still in the experimental stage, but it has already two very encouraging features. The one is its ready approval by the parents of partially blind children, in contrast to their horror of any suggestion of a "blind school." The other is the enthusiasm of the teachers for its educational results.

REFERENCE.

[1] BRITISH MEDICAL JOURNAL, September 14th, 1907.

DISCUSSION.

Mr. BISHOP HARMAN (London) said that he was greatly interested in the experiences of Glasgow in the working of these myope classes for children with defective vision. In London they had now 36 classes, accommodating over 600 children. They were an undeniable success, both at home and abroad. These classes saved many children from attending blind schools on the one hand, and from attending an ordinary day school with much suffering and ineffective attempts at education on the other. He thought that Dr. Thomson put an undue strain on the teachers by admitting children with so low a standard of vision as 6/60, unless he anticipated early improvement of vision. Everything in these classes depended on the enthusiasm of the teaching staff, so that care should be taken to make conditions reasonable for them. In rural districts myope classes were impossible since there were not sufficient children to fill a class. Nevertheless it was quite possible to arrange for the few individual children who had defective vision to carry on the ordinary class work in the small country schools, doing such writing as was necessary upon the blackboard, and reading from large charts instead of from books. This had been done successfully in some of the larger public schools, for it was found that class arrangements could be made sufficiently elastic to meet the needs of children whose defect was not great. He had only had one refusal to make such arrangements from a public school headmaster.

Dr. JOHN ROWAN (Glasgow) congratulated the Glasgow School Board on having an enthusiast at the head of their eye department. They appreciated the work and enthusiasm of the teachers, without which the work would not progress, but the encouragement they got from the ophthalmic surgeon was a great stimulus. The work was being done in a quiet and unobtrusive way, and he was pleased to hear a paper giving information about what was being done, especially to prevent children having the stigma of having been in a blind school.

THE RELATION OF THE OPTIC NERVE TO THE SPHENOIDAL AND POSTERIOR ETHMOIDAL SINUSES.

BY

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Glasgow.

THIS investigation was undertaken in order to demonstrate the varying relations of the optic nerve to the sphenoidal and posterior ethmoidal cells, in view of cases of optic neuritis which had been referred to me by members of the staff of the Glasgow Eye Infirmary for nasal examination.

I have examined by dissection the sphenoidal sinuses in thirty subjects in the *post-mortem* room of the Western Infirmary, thanks to the kindness of Professor Muir. The specimens were obtained, after removal of the skull-cap and brain, by chiselling out a block of tissue from the anterior boundary of the foramen magnum to the crista galli of the ethmoid. The cases were not specially chosen, the material being provided by whatever bodies happened to be subjected to *post-mortem* examination. The cause of death and the age of the patient are not important for the purpose of this paper, although it is worthy of note that the only two patients under adult age—boys of 12 and 16 respectively—showed sinuses far from full development, those in the former subject being indeed mere pits in the body of the sphenoid. I might also record here the fact that 56 per cent. of the subjects showed pus in one or both of their sphenoidal sinuses. Whether this is to be taken that 56 per cent. of the population of the West of Scotland suffer from sphenoidal disease is a controversial point unnecessary to be raised at this time.

The normal relation of the posterior ethmoidal cell to the sphenoidal sinus is that the posterior wall of the ethmoid cell lies on the antero-lateral aspect of the sphenoidal sinus. The relation, however, varies in accordance with the amount of bone absorption that has taken place to form the cells. In the sclerotic type the posterior ethmoid cell lies quite laterally to the sphenoidal sinus. As the walls of both cells become absorbed and the cells enlarge, the sphenoidal sinus becomes larger at the expense of the lateral wall, while the ethmoid creeps inwards towards the middle line. Varieties of this rule are found, however, in a considerable number of cases, but these abnormalities are not important to this paper.

It is necessary to remind you of these facts, on account of the relation of the canal containing the optic nerve to the sinuses. This structure is in close relation to the postero-lateral angle of the post-nasal sinuses, near the roof, at the posterior end of the orbit. It will be noted, then, that in the sclerotic type the nerve is related, not to the sphenoidal sinus at all, but to the posterior ethmoid cell, which lies laterally to the sphenoidal cell. This relation is changed by degrees through the various types, according to the amount of absorption which has taken place, until in the thin-walled sinuses the canal of the nerve is in relation to the sphenoidal sinus posteriorly to the ethmoidal cell.

It is a commonplace that the optic nerve is in close relation to the sphenoidal sinus. How close this relation is may not be appreciated by all. As a practical demonstration of the relation I have passed a horsehair suture round the sinuses, following the course of the canal back to the position of the chiasma. In 27 cases (90 per cent. of the specimens) the bone between the nerve and the sinus is so thin, in at least part of its course, that the suture is easily apparent through it. The wall is practically transparent. In four specimens (13 per cent.) there is actually a hiatus in the bone covering the nerve, while in one of these specimens it is no exaggeration to say that there is more hiatus than bone in the postero-superior and lateral walls of the sinus, so much absorption had taken place. With regard to the relative size of the sphenoidal sinuses, the intersinus septum was markedly deflected in many cases, making one sinus much larger than the other. This difference in size was sometimes so great that the larger sinus was found to be in relation to the heterolateral optic nerve or cavernous sinus, or both. The actual figures were that in 13 cases (46 per cent.) the sphenoidal sinus of one side was in relation to the heterolateral cavernous sinus, and in 9 cases (30 per cent.) the sphenoidal sinus was in relation to the heterolateral optic nerve. The sclerotic type of sinus was in a very small minority, 10 per cent. of cases being in this category, the walls of the remaining 27 being very thin. Ostia in the bone were very commonly found in the lateral wall of the sphenoidal and ethmoidal masses, the boundary between the nose and the orbit. These led into the sinuses, giving passage to numerous blood vessels. They varied greatly in size and position, although one fair-sized one was constantly found in the neighbourhood of the spheno-ethmoidal partition. Numerous blood vessels were noted occupying these ostia as the lining membrane was stripped from the nasal wall of the orbit.

These facts may be applied to support the clinical evidence that optic neuritis may arise from diseased post-nasal sinuses. It is quite apparent how this spread of infection takes place. A virulent infection might easily spread through bone of the thinness of the majority of these specimens. If this be disputed it will be remembered that there are actually

hiatuses in the bony walls in a percentage of these specimens, and in addition to this the numerous blood vessels connecting the orbit with the sinuses must constitute a considerable danger.

OPHTHALMIC PROGRESS IN EGYPT.

BY

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Director of the Egyptian Government Ophthalmic Hospitals.

THE last occasion on which I had the honour of addressing the Ophthalmic Section of the British Medical Association on ophthalmic progress in Egypt was at the Aberdeen meeting. By that year, 1914, I had been engaged for ten years in the post-graduate teaching of ophthalmology and in ophthalmic organization, so that when war broke out the routine work of the hospitals was maintained in spite of reduction of British personnel. Among the more important war work carried out by the ophthalmic staff may be mentioned the organization of two clearing hospitals for Turkish wounded during the attack on the Suez Canal in January, 1915, a hospital for 150 Senegalese troops at Zagazig, and a 650-bed general hospital under canvas at Alexandria in May, 1915 (which was removed to Giza in 1916). This latter hospital was referred to officially by the Director of Medical Service, Egypt Command, as "the model of what a war hospital under canvas should be."

One of the results of the war has been to take away from my staff all British inspecting surgeons. Their work was invaluable during the period of organization; but their places have now been taken by Egyptian senior medical officers who have studied under me for many years, and who carry out their duties with keenness and intelligence.

The Egyptian system has some claim to distinction in the fact that twenty special ophthalmic hospitals are grouped together under one direction. This not only enables a large amount of clinical work to be done, but also facilitates the systematic trial of various methods of operation and of treatment. The system was inaugurated in 1903, when the late Sir Ernest Cassel created a trust fund of £41,000 for the purpose of teaching ophthalmology to qualified Egyptian medical men. In that year I was one of the senior clinical assistants at the Royal London Ophthalmic Hospital, having previously been house-surgeon there for three years, and I had the good fortune to be invited to organize and direct the movement. We started with one travelling hospital in tents and one Egyptian medical officer, at a place a hundred miles from any sort of civilization. A few years later on my recommendation the Egyptian Government took over the organization, and undertook to maintain permanent hospitals in each of the fourteen provinces, if we were able to raise a sufficient sum to build and equip each hospital from local sources. We have succeeded in raising a sum of about £100,000 since then, and have built or are building a permanent hospital for each province. There is one exception and that is in the province of Aswan, where one of the original travelling hospitals has been allocated to the long and narrow stretch of country which intervenes between Aswan town in the south and Luxor in the north. Besides the permanent hospitals in the capital of each province several of the provincial or county councils are maintaining hospitals under my direction.

A small central laboratory for clinical investigations in temporary premises in the vicinity of Cairo is about to be replaced by an adequate building adjacent to the new hospital at Giza. This, being within a quarter of an hour's drive of the centre of Cairo, will be very convenient both for teaching and research. The money for this has been given by the Imperial War Graves Commission. Besides the actual hospital work I have instituted a carefully organized ophthalmic inspection and treatment in the Government primary schools, which has been in force since 1908 by means of the ophthalmic staff.

I submit, gentlemen, that I have said enough to show that in Egypt we have succeeded in organizing a useful system of special hospitals and a very live school of ophthalmology.

DISCUSSION.

DR. M. A. EL KATTAN (Cairo) said: As an Egyptian I have to thank Dr. MacCallan for the good work he is doing for the Egyptian people. In regard to research work on trachoma, I have to say a few words. We know now that the organisms causing acute conjunctivitis disappear mostly on the fourth or fifth day from the beginning of the attack. We can deduce from this that any research work for the investigation of the trachoma virus in an established late case of trachoma is likely to turn out fruitless. To get hold of an early case it is well to investigate animals inoculated with trachoma. It is fortunate, from the point of view of the research worker, that whereas organisms causing acute conjunctivitis fail to cause an infection in animals, trachoma does occur in the monkey and the rabbit. I think, therefore, that the research workers of the Institut Pasteur of Tunis, who are following up this line, are on the right track.

The PRESIDENT said that he thought that Mr. MacCallan's statement of the progress of ophthalmic work in Egypt was most satisfactory, and reflected great credit on the responsible authorities.

THE CEREBRO-SPINAL FLUID IN DISEASE OF THE FUNDUS.

BY

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IN the series of cases about to be detailed the cerebro-spinal fluid was examined by the following methods: (1) The Wassermann reaction of the blood and cerebro-spinal fluid was determined in all cases; these were carried out in Professor C. H. Browning's laboratory in Glasgow University by his assistant, Dr. E. M. Dunlop. (2) Test for protein content by the Ross-Jones method. (3) Lange's colloidal gold reaction. Without going into details of technique, this test depends on the fact that the normal cerebro-spinal fluid when diluted with 0.04 per cent. solution of sodium chloride has no effect on the solution of colloidal gold while in certain diseases of the central nervous system characteristic changes are often produced. There are three groups of reactions—paretic, luetic, and meningitic. It has been found that in neuro-syphilis a luetic or paretic reaction is obtained, the Wassermann reaction being positive. In disseminated sclerosis the Lange reaction gives a paretic or luetic curve and the Wassermann reaction is negative. In functional nervous disease, as far as the present state of knowledge goes, it is invariably negative. The technique adopted was that of Cruickshank.[1 2] (4) In a certain number of cases a cell count was carried out, using a Fuchs-Rosenthal chamber.

The work which has recently been done on the colloidal gold reaction in the cerebro-spinal fluid suggested that there might be a useful field for this investigation in the cases seen at an eye hospital. In particular the work of Adams[3] on this reaction in disseminated sclerosis suggested that a number of cases of this disease are first seen at an ophthalmic clinic and may be unrecognized in their early stages. Accordingly, in conjunction with Drs. Marshall and White, a number of suitable cases were investigated

In all the cases examined the condition of the nervous system was thoroughly gone into, the following points being specially noted: pupillary reactions to light and accommodation; nystagmus; abdominal and epigastric reflexes; knee-jerks; plantar reflexes; patellar and ankle clonus. The results fall into three distinct groups:

Group 1.

Cases with a positive Wassermann reaction in the cerebro-spinal fluid, together with a paretic or luetic reaction to colloidal gold: 6 cases. Of these, 4 were cases of bilateral optic atrophy associated with definite signs which made the diagnosis of tabes obvious. One was a case of neuro-retinitis of the left eye associated with slight ankle clonus on the left side, increased knee-jerks and absent abdominal and epigastric reflexes. The sixth was a case of paresis of the right third nerve, with the exception of the pupillary fibres. This case is of interest in that there was a history of specific disease twenty years ago, treated by mercury and iodides. His blood was examined on two occasions during the war, and the Wassermann reaction found to be negative; it was still negative when seen. His cerebro-spinal fluid, however, was strongly positive to the Wassermann and colloidal gold reactions. Under treatment by salvarsan his condition has cleared up, but the Wassermann reaction of the cerebro-spinal fluid remains positive.

Group 2.

In this group the Wassermann reaction of the cerebro-spinal fluid is negative, while the Lange reaction gives a paretic or

luetic curve. Of these cases several are of interest, and may be detailed:

Case 1.—M. W., aged 25. Optic atrophy right and left. Visual acuity: right, counts fingers at three feet; left, 6/18. The nervous system appeared quite normal. Colloidal gold reaction luetic; Wassermann reaction of blood and cerebro-spinal fluid negative; Ross-Jones test negative. Cell count 3. This case gives the identical picture in the cerebro-spinal fluid as that seen in disseminated sclerosis, but all signs of this disease, except optic atrophy, are absent.

Case 2.—S. B., aged 39. Optic atrophy right and left, associated with the loss of the light reflex and absence of the knee-jerks. Visual acuity: right, 6/18; left, 6/36. There was a history of specific disease two years previously. The Wassermann reaction in both blood and cerebro-spinal fluid was, however, negative, while the colloidal gold test gave a luetic reaction.

Case 3.—A. N., aged 22. Complained of diplopia, with staggering gait, of nine months' duration. There were slight lateral nystagmiform movements in the right eye, with paresis of the left internal rectus. Nervous system otherwise normal. Fundi normal. Wassermann reaction, blood and cerebro-spinal fluid, negative. The colloidal gold reaction gave a luetic curve.

Case 4.—G. O'N., aged 30. Had complained of diplopia for a year, the left superior oblique being at fault. Nervous system otherwise normal. Fundi normal. Wassermann reaction, blood and cerebro-spinal fluid, negative. Colloidal gold gave a luetic curve.

Case 5.—J. Y., aged 31. When seen had diplopia of a week's duration. Seven or eight years ago had a similar attack which passed off in three months. This was followed six months later by another attack which passed off in a few weeks. At that time she had no other complaint. A year ago, she states, she had optic neuritis and paralysis of the left side of the face. Nine months ago she had neuritis of the left arm. The fundi showed optic atrophy right and left, and there was nystagmus. The nervous system was otherwise normal. The Wassermann reaction in both blood and cerebro-spinal fluid was negative, while the colloidal gold test gave a luetic curve. The Ross-Jones test was negative.

The remaining cases of this group showed nystagmus with exaggerated knee-jerks and unsteadiness of gait. They all had similar reactions in the blood and cerebro-spinal fluid.

Group 3.

In this group the Wassermann reaction of the blood and cerebro-spinal fluid was negative, the colloidal gold test being also negative. This group included one case of primary optic atrophy with no signs of general nervous disease, one case of retinitis pigmentosa with advanced optic atrophy, and several cases of choroiditis and iridocyclitis.

From the results of this work it would seem that the condition of the cerebro-spinal fluid would be worthy of investigation in a large group of cases, in particular those of young adults suffering from diplopia, optic atrophy, or retrobulbar neuritis. The colloidal gold reaction is, I think, considered of undoubted value as indicating the first definite sign of organic disease of the central nervous system,[1] and as some cases of the types mentioned are known to develop later into frank disseminated sclerosis or neuro-syphilis its value in early diagnosis, especially with a view to prognosis and treatment, is considerable. Additionally it may enable one to say whether a transient diplopia is or is not purely functional, and may help to differentiate cases of retrobulbar neuritis and optic atrophy, indicating those in which the condition is part of a more general nervous disorder, and more especially those which may be followed after a considerable period by disseminated sclerosis.

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[2] Adams and Scott: *Journ. Pathol. and Bact.*, vol. xxv, 1922, pp. 142, 143.
[3] Adams, D. K.: *Lancet*, 1921, i, 420. [4] Miller, Brush, Hammers, and Felton: *Bull. Johns Hopkins Hosp.*, 1915, xxvi, 391.

MONOCULAR AND BINOCULAR VISION.

BY

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THE subject of monocular and binocular vision is one which has engaged the attention of scientists and philosophers from the earliest times, and many of its problems are still unsolved. The empirical theory of Berkeley and the nativistic theory with its conception of the specific energy of the nerve cell have had their day, and the discussions thereupon have contributed much to our knowledge of the nature of vision. With the passage of the years a new orientation has been given by psychologists to our conceptions of the nature of vision, and their views are gaining ground. "Vision is a sensation and one of the elements of sensory experience." The one-eyed man looks out upon a landscape and sees fields, trees, hills, and valleys with streams of running water; he can localize the position of the trees, the depth of the valley, and the glint of the running water, while he can differentiate the various greens of trees and herbs and the colour and hues of natural objects. At least six attributes of visual sensation can be separated from this observation: the colours and hues of green illustrate the attributes of quality and intensity, the gleams of running water illustrate time and duration, while the fields and the trees exemplify extensity and position. These six attributes of visual sensation are not in the objects themselves, for the observer can shut his eyes and mentally picture the view that lies before him; in fact, he projects it outwards, and the physical reality is of less importance than the psychical impression. The man who is suddenly rendered blind suffers great mental distress until he realizes that sight is only one of the gateways of experience—that touch, passive and active, joint sensations, hearing, and even smelling, all contribute their quota to our knowledge of our surroundings. The splendid work of the late Sir Arthur Pearson was based on this conception. "We who cannot see in the ordinarily accepted meaning of the word still see in our own fashion with those portions of our brains which respond to impulses given by other senses." "To visualize a room in which you are sitting or a scene through which you are passing is to increase your enjoyment, and often to make more easy your movements."

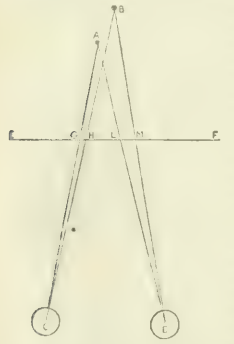
A great deal of confusion has arisen in the minds of medical men and others by a sort of tacit understanding that vision is comparable to a photograph. I agree that the image formed of an object on the retina of the eye is practically identical with the image formed on the focusing screen of a camera, but the formation of an image is merely the first step towards the recognition of an object and the realization of what it actually is. From the image on the retina we deduce the three dimensions—width, height, and depth. The first two can be represented graphically in a vertical plane, but the third requires the horizontal plane for its demonstration. The perspective of the image gives an indication of depth, but in the living eye, as it is never at rest, many images are formed per second and therefore vision is largely cinematographic. When one looks with one eye closed at the photograph of a landscape, the three dimensions are easily recognized and the scene stands out in moderate relief, an effect which is intensified by the use of a lens; on looking at a film of the same landscape taken by a cinematographic machine carried directly forwards, depth becomes exceedingly well marked. The cinematographic camera represents one eye. One can hazard the opinion that in the human subject a similar result follows the continuous movements of the eyes and the forward movement of the body. Of course this is merely a form of parallax, with a difference that the sensation, rather than the knowledge, of space is emphasized. Guilloz alternately stimulated each eye by the alternating halves of stereoscopic pictures and produced vision in solidity, though the interval extended to one second and successive fusion took place. It is difficult to realize that there can be appreciation of depth without the extraneous aids of perspective, "atmosphere," light and shade, etc., but in a perfectly dark room two faintly red luminous points can be localized at different distances monocularly and binocularly if they are deliberately moved by another experimenter.

Memory plays a very important part in vision, and we endeavour to bring our present visual experiences into relationship with those which have gone before. In most cases this is of immense advantage, but occasionally, as will be shown later, it allows us to see things which have no existence. The fact that vision is psychical and that we mentally project outwards what we see explains certain abnormalities of vision—for example, a person whom you see crossing a room does not become appreciably smaller as he goes from you, but retains his apparent size, though according to the laws of perspective he should rapidly diminish in size. In the same way accurate localization of an object is obtained monocularly (by those who have at an early period in life lost the sight of one eye), partly as an innate property of visual sensation and partly through the cinematographic effect already referred to.

Binocular vision, or vision with two eyes, has certain peculiarities. Under ordinary circumstances there is no diplopia, but once the attention has been drawn to the fact that it can be elicited easily diplopia is found to be the rule

and not the exception; in fact, the only object seen singly is the object directly under observation, all others being double. This is the well-known physiological diplopia, and it can be shown to be present wherever the fields of vision of the eyes overlap. A suggestion has been made and commonly accepted that the non-occurrence of diplopia under ordinary circumstances is due to "suppression of one of the images," but the ease with which diplopia can be elicited would point to another explanation.

Using the dot test (a card with two groups of two dots upon it in a horizontal line, the groups being 56 mm. apart and the members of each group being 3 and 3.5 mm. apart respectively), and examining it by means of a stereoscope, we observe the following: (1) that the two groups are brought near to each other with partial overlapping; (2) when binocular vision is present there is fusion of the four dots to form two, one considerably behind the other. This simple experiment does not show the development of a new faculty, for the arrangement of dots is really a projection on a vertical plane of two dot-like objects at different distances from the place of observation and as seen by each eye separately. When the dots have been brought by the stereoscope into the correct position to allow of projection forward, each eye separately and together, the immediate impression is of two dots only. This is not a physical fusion of the dots, but a psychical fusion; in brief, a new interpretation has been given to the picture received by each eye. In fact, it can be regarded as simultaneous parallax as distinguished from consecutive parallax. If one of the sets of dots be coloured red, fusion results as before, but is associated with a flicker, the psychical dots appearing alternately red and black, as if there were a strife between the visual impressions received from each eye for predominance.

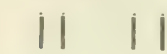


The accompanying diagram shows what is meant by projection in a vertical plane. Let A and B be two pin-heads projecting slightly from the plane of the paper and let C and D be the nodal points of the corresponding eyes; the lines A D, B D, and A C, B C, represent rays of light passing from A and B to the nodal points D and C respectively. Let E F be a vertical plane (a card); then where the four rays cut this plane (or card) we have four points G, H, and L, M, which are the projection on a plane surface of the two pin heads A and B.

In the experiment of the four dots we have a card with two sets of dots, the positions of which correspond to G, H, and L, M, and the two sets are separated by a space equal to the interpupillary distance. In the simplest form of stereoscope we suspend accommodation and bring convergence into play, and thus obtain the so-called stereoscopic effect or fusion of the dots with the production of the sensation of distance or nearness.

Based on this principle of projection on a vertical plane innumerable stereoscopic pictures can be made, of which the following are examples.

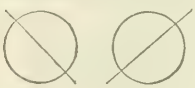
1. The four lines:



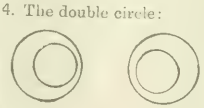
2. The crossed lines:



3. The oblique line and circle:



4. The double circle:



These figures are all simple and give good stereoscopic results. They show flickering when variously coloured pigments are used. If complicated figures not true to the conditions indicated are used there is no fusion (or at most it is partial and gives unexpected results), overlapping can and does take place, but there is no permanent equilibrium and the figures appear to swing to and fro.

The alternation of impressions from each eye suggests that binocular vision is essentially alternating in character, and pushing the argument still farther we come to the conclusion that physiological diplopia is due to the effort to make simultaneous an action actually consecutive and therefore the exception rather than the rule. Other evidence of this alternative character is seen when we look at a bright scene through spectacles glazed with lenses made of red glass for one eye and blue glass for the other. There is no permanent fusion of the colours, but objects are seen alternately red and blue, often described as due to "strife of the fields." Sherrington's binocular flicker experiments lead to the same conclusion. Alternation is most marked in macular vision and gives rise to the condition known as psychical suppression of part of the retina of one eye.

In one of the series of cards published by Messrs. Dixey and Son, London, for use in the stereoscope, the subject is a dog jumping through a hoop. As a test it is merely one for orthophoria or its production, but one can obtain a modified stereoscopic effect with it. The point of interest is that when the dog is passing through the hoop you either see the whole of the dog with part or the whole of the hoop missing, or, vice versa, the whole of the hoop with part or whole of the dog missing.

The experiment of the transparent finger is another example of the same nature. The finger is held at a short distance in front of the face and if you look at any object with the finger in a certain position you will see the object apparently through the finger. Though the position of objects appears the same in space, relative to the position of your own body they have moved, as you can easily determine if you rearranged matters so that the object seen is a sharp point or you try to touch it. The vision for the time is monocular and localization is as if one eye were closed. Recovery of correct orientation occurs simultaneously with the removal of the finger. From these two series of observations one deduces that from each eye there is developed a definite sensual image. These normally appear as one, but the true character of the sensation is appreciated when these cannot be combined into a single image, for there is alternation of the two images or actual suppression of one over the area where confusion would normally result. This is one of the advantages of binocular vision; one eye may be more or less obstructed in its vision by obstacles of various kinds—trees, pillars, etc.—yet unless our attention is directed to these they pass unnoticed.

In binocular vision the mental impressions or projections derived from the two eyes are similar, and the two alternate with such rapidity that they appear as one. When, on the other hand, the impressions received are on the whole incapable of being understood and projected, it sometimes happens that a portion can be considered as a consistent figure. This can be seen by taking a number of stereoscopic slides and remounting them after separating the two halves, turning them upside down, and lastly reversing them. Some of the pictures treated in this way will appear as inverted views when seen by the stereoscope, with the sense of solidity and distance absent, but others will show an extraordinary appearance, for a portion will stand out in relief while the remainder of the two pictures not necessary for this effect will form a screen at some distance in front.

In conclusion, vision is a sensation; in monocular vision the appreciation of depth is inherent in the sensation of vision and is accentuated by the consecutive stimuli resulting from the formation of retinal images; binocular vision is essentially monocular vision but simultaneous stimuli from the formation of two retinal images is the rule—though apparently a single sensation, it is in reality alternating monocular vision. The practical importance of this conception of vision is that in ordinary circumstances the man amblyopic in one eye from infancy is at no disadvantage compared with the person with two normal eyes.

DISCUSSION.

Mr. BISHOP HARMAN (London) said that the subject and the paper were of the greatest interest both academically and practically. He was prepared to maintain the superiority of binocular over monocular vision, and he thought that any dubiety on the point could only arise where binocular vision was imperfect or absent. Parallax was insufficient to give that sense of position, distance, and solidity which was so wonderfully realized in perfect binocular vision, and he did

not think that anyone could convey what this possession meant to a luckless possessor of mere monocular vision. The phenomenon of "the struggle of the retina" was not evidence of alternate monocular vision, it was really cerebral. The brain was accustomed to register more or less coincident images, and if diverse images were presented through each eye the brain did not know which to register. If to one eye were presented a St. Andrew's Cross and to the other a St. George's Cross, constant fusion could not be obtained, only alternation of images; if one cross were slowly rotated, at a point where both nearly coincided fusion was obtained with a wonderful sense of solidity. Industrially, binocular vision was of the utmost importance, and it should not go out from this Section that monocular vision was as good or nearly as good. From his experience in observing the efforts of students in removing foreign bodies from the cornea, he would say that no monocular person could become a first-rate ophthalmic surgeon, though he might be a good ophthalmic physician.

DR. PERCIVAL HAY (Sheffield) mentioned, as illustrating the superiority of binocular vision over the uniocular form, that on one occasion a friend and himself were looking over some old unmounted stereoscopic landscape photographs, and could not recognize one of them, but on placing it in the stereoscope they recognized it at once.

MR. JOHN ROWAN (Glasgow) said that he quite agreed with Mr. Bishop Harman that binocular vision was of the greatest importance, and that the individual who had only monocular vision was very seriously handicapped. This applied very specially to ophthalmic surgeons. For example, they all knew that a man who had lost one eye could not at first drive a cab, although he might gradually acquire the power, no doubt running risks while doing so, but a person who had never had binocular vision could drive quite well. He had a patient with 6/6 and J.1 in each eye, but unfortunately a squint which his parents would not have operated on; in later life the patient wanted the squint removed, and he operated with a most satisfactory result as far as appearance was concerned, but of course with no binocular vision. As this patient took an interest in a number of scientific subjects, and was very keen about photography, he quite realized what binocular vision meant. He tried to get it in different ways, but of course was never able to develop it. He quite realized the handicap he was labouring under.

DR. STEWART BARRIE, in reply, said that there had been perhaps some misunderstanding of the nature and scope of his contribution. Binocular vision meant nothing more than vision with two eyes. Stereoscopic vision was a totally different thing, and was possessed by people with one eye only as well as by those who had two. Each half of a stereoscopic picture was a projection on a plane surface of something beyond in exactly the same way as each half of the "four dot" card. No wonder, therefore, that the person with one seeing eye failed to receive the same impression as the normal individual from these pictures. They were, in brief, tests for a variety of stereoscopic vision—namely, binocular—and nothing more. On innumerable occasions he had tested one-eyed men as to their appreciation of depth, both at great distances and at a distance of one metre, the latter by means of three pins stuck into a table at different distances from the observer and in approximately the same plane as his eye. Taking them all over, their judgements of position were as accurate as his own (with binocular vision). The fact that a one-eyed man could drive a motor car (or horse vehicle) through a crowded street with safety was known to all, and was a practical example of accurate judgement of distances. Needless to say, there were limitations to his argument; aviators, for example, should have binocular stereoscopic vision, both for their own safety and for that of others.

THE "OPEN" TREATMENT IN EYE OPERATIONS.

BY

W. B. INGLIS POLLOCK, F.R.F.P.S.G.,

Surgeon, Glasgow Eye Infirmary.

DURING the last seven or eight years I have been using the "open" method of treatment, after cataract, glaucoma, and other eye operations. The chief reason which led me to undertake this method is that it is impossible to sterilize the eyelids and the conjunctiva completely in a number of hospital and other patients. Cultures of the conjunctival sac are taken in all intraocular operations by most ophthalmic surgeons, having been first advised, so far as I am aware, by Mr. Fergus of Glasgow. While these cultures are often clear, there are a number with *Staphylococcus albus* and *Bacillus xerosis* present, which are usually regarded as non-pathogenic for the intraocular tissues. These cultures, however, do not show how many germs are lurking around the edges of the eyelashes and the skin immediately adjoining them. A number of our operation cases are found, on the first dressing, to have the eyelids adherent with a mucopurulent discharge of greater or less amount in different patients. This condition is not always present, but it is fairly frequent, and occurs when there is no sign of dacryocystitis.

These septic lids, which appear clean to culture, are always to me a danger in operating upon the eyeball, or immediately in the neighbourhood of the edge of the eyelids. By this I do not mean the ordinary dirty eyelids which one sees so often in hospital patients, but rather those which are clean at the beginning and appear septic after the bandage has been applied. The mere bandaging of the eyes seems to be the cause for the collection of matter around the edge of the eyelids. In the pre-culture stage a bandage was often applied one night before the operation, and if there was matter around the eyelids the operation was delayed. But this may be done, and is done regularly, and yet it is found that after the operation, after the first or the second dressing, there is sometimes matter along the edge of the lids. The longer the bandage is worn the worse the condition is liable to become, with all the conditions favourable for microbic life—namely, moisture, heat, etc.

I have used zinc sulphate 1 and 2 per cent., argyrol 5, 10, and 25 per cent., and collosol argentum at different times, and yet, on one or two occasions in the last twenty years I have had an eye operated on for cataract lost by suppuration. Since abandoning a bandage, however, I can only recall a single case lost by suppuration.

The eye guards were first used for private patients in nursing homes before beginning to use them for hospital patients, and now I use them for nearly all cases, both hospital and private. The chief advantage of the guard is that it allows the discharge to get away by the natural lavage of the eye with the tears, and if there is any conjunctival irritation, tears will wash away the deleterious object, whereas under a bandage it could not be removed until the bandage is taken off by the surgeon.

One must always warn the patients, however, to open the eye now and again under the eye guard. I have seen patients keep the eye tightly closed, and the result has been the same as though a bandage had been applied, and you find them in the morning with the eyelids closed and the two lids stuck together with discharge.

A further advantage which has been claimed for the guards is that they allow the eye to be bathed out three times a day, or oftener if necessary. In cases of septic eyelids this is very useful, and it does not mean disturbing the patient's head so much as it would in taking off a bandage. It is well known that the closed lids with the discharge lurking around them form a good terrain for the development of pathological organisms, and it is therefore necessary that all discharge should be removed as quickly and completely as it is formed.

Another advantage is that the bandage is often uncomfortable and causes smarting and pain, and it has also been said that the bandage causes a rise in temperature in the eyeball and in its neighbourhood, from 35.5° to 37.5° C., and that favours the growth of micro-organisms. This is more important because the eye should be under the same conditions of temperature as in everyday life.

It has also been claimed for the guard that it does away with the mental depression which accompanies the double bandage of cataract patients. I have only once seen a patient become mentally deranged with a guard on, and on that occasion she took it off to hit her eye with, while she declaimed against the nurses and all around her.

Before I began using the guard I had given up the double bandage in cataract patients, and only covered the one eye, sometimes, however, letting a fold of the bandage cover the unoperated eye, but without cotton-wool under it, and it helped the patient to keep the eye closed. On the other hand, when the guard does not fit and the patient has a very sensitive skin, it may be difficult to persuade him to wear the guard without having cotton wool placed below it, where it touches the forehead and the cheek.

The eye guard which I use is Bronner's, and it is much better than the original guard of Fuchs, which is very heavy and lies flat on the cheek, whereas the Bronner's is very light and has a large bulge opposite each eyeball. The guards which have been sent to me since the war have had the ends of wire sticking through the linen binding the edge, and I have had to have them all covered with white felt and fitted with new tapes before using them. For children I use the original Pagenstecher's guards; they are small, and although they fit some adults they are very good for children. They are sent out by the firm of Weiss, bound with white felt.

The disadvantages of a guard are where one is suspicious of retinal haemorrhage or expulsive choroidal haemorrhage within the eyeball, in which case one must apply a bandage firmly, but not too firmly. In all cataract operations this is one of the dangers which may occur with any patient; but it occurs so seldom, and I have never seen it occur in a case where a patient was wearing a guard, that I cannot say if the liability is increased by wearing a guard.

On the other hand, with restless patients and younger cataract patients, between the ages of 40 and 60, it is wise to put a bandage on for the first night until they are aware of the importance of lying still. With my private patients I generally tie their hands to prevent their touching the guard. The tied hands enable the patients to reach the chin but not the eyes. They are only tied at night, and I always explain to the patients that the object is not to prevent them from touching the eye but to waken them in time before they have touched the eye. Some surgeons apply a pad of cotton-wool under the guard, but that seems to me to be simply going back to the disadvantages of a bandage without the advantages of it when you wish a moderately firm pressure.

The eye guards I use for all my glaucoma cases, both trephining and sclerecto iridectomy, unless there is any danger of haemorrhage, and if any glaucoma patient has had retinal haemorrhage before the operation it always makes one go extremely cautiously with the guards. Recently one glaucoma patient had a subretinal bleeding with prolapse of the vitreous.

I have also been using the guard for excision of the lacrymal sac and other operations around the eyelid. If all the bleeding has stopped at the end of the operation then the guard may be applied immediately before sending the patient back to bed; otherwise it may be deferred until after the first or second dressing, until the danger of haemorrhage is past.

While speaking on the subject of operations I would like to urge that each ophthalmic surgeon should wear a face mask reaching from the nose to the chin, so that when bending over the eye of the patient he does not breathe on the operating area. So many general surgeons are using them now that it shows that the ophthalmic surgeon must not lag behind in knowledge of the most modern aseptic methods. In most of my operations, especially in private cases, I wear rubber gloves for operating in. It is impossible to make one's hands absolutely sterile, and therefore when any mistake is made it is better to make sure that the sepsis does not come from the hand of the surgeon.

A REVIEW OF THE WORK OF THE VENEREAL DISEASES CENTRE OF THE GLASGOW EYE INFIRMARY.

BY

E. J. PRIMROSE, M.A., B.Sc., M.D.,

Assistant Surgeon, Glasgow Eye Infirmary.

On January 17th, 1921, the Glasgow Eye Infirmary, in conjunction with the Public Health Department of the City and with the approval of the Scottish Board of Health, opened a centre for the treatment of venereal diseases affecting the eye. A staff of two was appointed, one medical officer and one assistant medical officer, with lay assistance. It was not intended to deal with venereal affections of other organs than the eye, nor with ophthalmia neonatorum, for which already other provision was made.

The cases seen have been practically all syphilitic, and almost without exception have been in the secondary and later stages of the disease. Most of them have attended as outdoor cases at the venereal diseases centre in Charlotte Street; a proportion, not amounting to 10 per cent., have been for a part of their time at least treated in the wards as in patients at Berkeley Street. The patients come, referred to us by the ophthalmic surgeons of the ordinary hospital clinics, and bring a note from their surgeon with any remarks he has to make, the result of his clinical examination, and in many cases the Wassermann report on the blood. In this way the centre is saved the ophthalmoscopic or other tedious examinations and tests, and overlapping of work is avoided. This is also avoided in the further progress of the cases, by their being referred to their surgeon from time to time, with a note of what has been done and in order that definite examination may be made of their progress, and for suggestions.

There is a temptation to which the surgeon at the ordinary clinic is liable when the Wassermann reaction obtained by him is negative to regard this as a final test in this line of research. The work done at the venereal diseases clinic shows that this is not a safe conclusion to make. Cases have been found whose blood had a negative Wassermann and whose cerebro-spinal fluid gave positive results either to the Wassermann or to the Lange and Ross-Jones tests. In some of these cases the Wassermann test of the cerebro-spinal fluid was negative, though the other tests of the fluid were positive.

In other cases in which the blood at first gave negative results it was found to give positive results after a few doses of salvarsan substitutes had been administered. It would seem advisable, therefore, where a presumption of syphilis is at all tenable, that when the blood gives a negative Wassermann there should be an examination of the cerebro-spinal fluid and further trial of the blood after a few doses of salvarsan have been used as provocative agents.

When a new patient arrives at the centre his history is inquired into and recorded along with the surgeon's notes, and if not already done the blood is sampled. This Wassermann test is made for us by the City Bacteriological Department.

In very small children or in cases of difficulty, and where the diagnosis of syphilis is hardly in doubt, this blood sampling is sometimes dispensed with at this stage, as it has been found that in a few cases the pain and fright associated with the taking of the blood have deterred the patient from coming back. It is much less upsetting to have the injection made than the blood drawn off, and in any case, as the painful eye affection is usually immediately relieved, there is at once an inducement to return and brave the discomfort of subsequent injections.

The salvarsan substitutes used have been novarsenobillon, sulfarsenol, and neo salvarsan; kharsivan was tried on a few occasions at first, but was discarded because the others dissolved up so much more rapidly. For rapidity of solution there is little to choose between these three, the sulfarsenol being slightly slower. The water used to dissolve them is the Glasgow tap water, sterilized by boiling in a large Winchester quart bottle, and allowed to settle and cool sufficiently. The uppermost portions of this are used. The sterilization of needles and syringes is done with methylated spirits and absolute alcohol, after a thorough washing with hot tap water between all injections. The patients' right and left arms are injected alternately. The skin is prepared by the use of methylated spirits, with the previous use of soap or turpentine as seems desirable. After the injection a touch with collodion is made, and a pad and bandage is applied when there is bleeding.

The doses are administered usually at weekly intervals, sometimes less seldom, but no iron-fast routine is followed, as modifying factors are looked out for and given due weight. A course of injections varies, according to the progress of the case, from eight to ten, eighteen, twenty, or more injections, usually with a considerable interval after ten injections have been given—that is to say, from six to eight or twelve weeks' interval. Concurrently with these injections mercury, potassium iodide, and iron, or other tonics, such as thyroid extract or cod-liver oil, may be ordered, and one or more continued in the intervals above mentioned.

Serious after-results seldom occur. The most annoying to the patient is pain and swelling at the site of the injection. This may be severe and may last long, but usually has not been very bad and passed quickly off. Suppuration practically never occurs, though once at first a little necrosis did take place. More alarming has been faintness or sickness, occurring in a few hours or on the next or the second day after. This, again, has seldom deterred the patient from persevering with the treatment. In a few cases there has been diarrhoea, in one case black stools were reported; one case had slight jaundice.

On the whole there have been few complications reported to us. It may be, however, that cases of serious illness have actually occurred, and neither the patient nor anyone else has returned to report to us.

Nearly every kind of eye affection has occurred showing a syphilitic basis, or having such as a complicating factor; and injuries to the eye seem to cause a seat of election for the subsequent development of the poison which until then had been only latent.

In the great majority of cases the exhibition of the salvarsan substitute has rapidly been followed by amelioration, often after the first dose, and the improvement has gone on without interruption. In a few cases, however, there have been many doses given ere any response in the way of improvement has taken place, and in yet a few others no improvement, and even the reverse. The rapidly improving cases include the most of the congenital keratites, the choroidites, irites, and the third nerve paralyses, and many of the optic atrophies.

In many cases in the course of their treatment a point seems to be reached beyond which the improvement seems to decline to move any farther forward. After an interval of rest, the improvement sometimes goes on of itself—perhaps aided by the other measures, and a further course of an arsenical compound later on sometimes seems to enhance this; sometimes a change to another compound seems to act better.

It has been observed in cases of interstitial keratitis, in which observation is easy and open to all, that where one eye has at first been alone affected, and the treatment begun, and the eye has begun to improve, the other eye suddenly shows redness and tenderness, and threatens to become involved. With perseverance with the treatment this is seen to pass off fairly rapidly. Apparently this phase may occur where the affection is more deeply seated and withdrawn from our immediate observation, as we have records of cases where an eye not previously complained of has become dim, while the other has been improving, and with the continuance of treatment, sometimes with a slightly longer interval, and perhaps modifying the dose, it has come all right again.

In some cases, again taking the easily observed cases of interstitial keratitis, the eye has not improved, or after improving has relapsed, and refuses to respond to further antisyphilitic treatment. The Wassermann reaction may even have become negative. In some of these cases it has been found that tuberculin in minute doses administered regularly has acted like a charm, doses of 1/20,000 mg. being used. No doubt where at first one finds all the typical signs of congenital syphilis, accompanying a keratitis and improving under antisyphilitic treatment, one is tempted to overlook a tuberculous element in the case. This may be glandular, or affecting the bones. It is possible that, like syphilis following an injury to the eye, tubercle searches out the eye damaged by syphilis, and thus causes what appears to be a relapse or recrudescence of the original affection.

In certain cases of corneal opacities, where the eye has been apparently quiet and in a stationary condition, with the Wassermann reaction positive, the exhibition of one of the new arsenical preparations, along with or following the use of the other drugs and local eye measures, has brought about much clearing up of the cornea. It is interesting to note that a transitory reddening of the eye occurred in these cases, followed by the improvement.

In conclusion I wish to express my indebtedness to my colleague Dr. Conway for his valuable assistance in the work, and to Drs. Marshall and Ferguson for work done at our own laboratory.

DISCUSSION.

Dr. A. J. BALLANTYNE (Glasgow) said that to him the most interesting aspect of this work was that bearing on cases of interstitial keratitis. The point had been much debated as to whether the institution of treatment, with the newer arsenical preparations, did or did not retard or prevent the occurrence of the disease in the second eye. Dr. Primrose's experience seemed to show that it did, and although a large mass of cases was necessary to justify conclusion on this question his own impression from the cases treated for him by Dr. Primrose was that there was a definite improvement in this respect. Another point which interested him was the reference to the benefit of tuberculin in certain cases in which the limits of benefit from salvarsan had been reached. He was much impressed in his student days by his old teacher Dr. Reid with the existence of cases presenting the combined taints of syphilis and tuberculosis and he believed that many cases of this nature were still seen.

Mr. DAVID WILSON (Huddersfield) said that in Huddersfield the experience of treatment of interstitial keratitis in the venereal diseases clinic was that excellent results were obtained by salvarsan substitutes in children up to the age of puberty, but that in young adults the results were not so satisfactory.

CONJUNCTIVITIS ARTEFACTA.

BY

HERBERT CAIGER, M.B., F.R.C.S., D.O.OXON.,

Sheffield.

SINCE 1914 a number of articles on conjunctivitis, deliberately provoked, have appeared in ophthalmic journals, especially in France. There are still, however, cases occurring, which have succeeded, time after time, in passing the ordeal of expert examination. It seems desirable again to call attention to the subject, because pensions are now being fixed by a final permanent award in as many cases as possible.

The conditions of ophthalmic work on pensions boards are not always favourable. Time is limited, and the number of cases to be dealt with may prevent exhaustive investigation of a difficult case. Microscopical examination of secretion for foreign particles and micro-organisms is likely to involve postponement of a decision, which is undesirable for various reasons. Owing to these circumstances, some cases escape detection or are given the benefit of the doubt.

The following is a case in point. It occurred within the last few months.

A pensioner who had been receiving a pension of 60 per cent. for the last three years for chronic conjunctivitis in both eyes came up for the usual periodical examination. His history was that he had been slightly wounded at the front in 1916, sent to hospital in England, developed conjunctivitis while in hospital, which persisted in spite of treatment until he was discharged from the army in 1919, with a 100 per cent. pension for chronic conjunctivitis; this was reduced to 60 per cent. after a few months and kept at 60 per cent. for three years. Since his discharge he had been examined on at least four occasions by different ophthalmic surgeons. When examined in 1922 his record aroused suspicion. The eyes showed acute redness with profuse watering, suggesting recent irritation rather than a chronic conjunctivitis. Homatropine discs were put in, and he was kept waiting for more than an hour where he could be observed. It was found that the redness and watering of the eyes diminished considerably. He was then taken into the dark room, and purposely left alone there for a minute. An "acute exacerbation" resulted. The redness of the eyes was found to have increased again, and tears were running down his cheeks, just as when first seen more than an hour before. A previous search for any foreign material had been unsuccessful; but now under focal illumination, after a little manipulation of the lids, some very fine foreign particles were detected loose on the cornea, showing up against the black dilated pupil. Another examination a few minutes later failed to detect them, as they had by that time probably been washed out of the eye by the very copious lacrymal secretion. Their colour and size suggested very finely ground pepper.

In another somewhat similar case, seen in 1920, on everting the upper lid a lump of grey foreign matter escaped, as big as a small shirt button. It crumbled on pressure and resembled Fuller's earth. This pensioner's history was much like that of the last case. He had been in hospital with an intractable conjunctivitis during the last six months of the war, and had been in receipt of a pension for more than a year since, although examined by different ophthalmic surgeons. I had myself seen him and recommended a 30 per cent. pension a year previously. In a third case, already reported, deliberately produced corneal abrasions complicated the diagnosis.

The moral of these cases is obvious. Every case of chronic conjunctivitis in receipt of a pension should be thoroughly examined. At the periodical boards diagnosis may sometimes be facilitated by the procedures described above—namely, by keeping the patient waiting under observation for an hour or more, and noting whether the signs of irritation diminish; by leaving him in a room by himself for a minute, and noting whether an "exacerbation" occurs; and examining carefully for fine loose particles on the cornea, best seen by focal illumination in the dark room against the dark background of the dilated pupil.

If the least doubt remains, before a pension is recommended for a case of chronic conjunctivitis, the patient should be admitted to hospital. The conjunctival secretions should be examined microscopically for foreign particles (for example,

ipecacuanha, tobacco, pepper) and also for micro-organisms (for example, diplobacillus Koch-Weeks bacillus). If the diagnosis still remains doubtful, a collodion bandage should be applied for three days and its effect noted. An ordinary pad and bandage is useless for diagnostic purposes.

Obviously no final award of pension for a case of chronic conjunctivitis should be made unless conjunctivitis artefacta can be definitely excluded.

DISCUSSION.

Dr. THOMAS H. BICKERTON (Liverpool) said: Devices to escape work, school, or labour, to gain or retain pensions, or to secure compensation, are common; but they are not confined to that class. There is a class which utilizes them apparently for the purpose of exacting the attention of the family circle, or of exciting the sympathy of friends, or for no known reason. Of the latter class he had seen a young lady of good family, surrounded with affection and comfort, who had lain in bed for months, to the distress of her parents and the perplexity of the doctor, and she was attended by a nurse. One eye was chronically inflamed, with lacrymation and lid swelling, sometimes better, sometimes worse. The patient took great interest in her case, and discussed intelligently the various treatments which had been adopted. The eye was inflamed, but the inflammation was confined to the lower half. The doctor had begun to suspect that she was artificially creating the condition, which turned out to be the case, the foreign body used being lentils.

Dr. PETER MACDONALD (York) instanced the case of a boy, 17 years of age, who had been in the York County Hospital for a very long time, where, among other things, he had been operated on for congenital cataract. He came up some months later with his conjunctival sacs filled with foreign bodies, evidently ashes; some of the foreign bodies were of the size of a small pea, and under the upper lids were pieces the size of a lentil.

Dr. A. R. MOODIE (Dundee) said that they must be very sure of their ground before declaring a pensioner a malingerer. He cited a case of conjunctivitis artefacta, probably due to tobacco, which was unmasked by causing the man to wear a Buller's shield.

CLINICAL MEETING.

A CLINICAL meeting of the Ophthalmological Section was held at the Glasgow Eye Infirmary on July 28th, with Dr. A. J. Ballantyne, Vice-President, in the chair.

A series of demonstrations had been arranged by the officers of the Section, including a demonstration of the Sheringham artificial daylight; stereoscopic photographs by the Lumière process to show natural colouring, by Mr. John Rowan; a series of drawings showing abnormal conditions of the retinal vessels, by Dr. A. J. Ballantyne; a test for light sense, by Mr. A. S. Percival; and a demonstration of a motor trephine, by Dr. George Mackay. A number of books, pamphlets, photographs, and instruments connected with the Glasgow School of Ophthalmology were also shown, and pathological specimens, both microscopical and preserved.

Clinical Cases.

The following clinical cases were shown: Mr. John Rowan, cases of optic atrophy; and of congenital defect of cornea and lens. Dr. H. Wright Thomson, a case of glaucoma in a child. Dr. Garrow, cases of microphthalmos; and of proptosis. Dr. A. J. Ballantyne, a case of unusual ulceration of the cornea; and of chronic oedema of the eyelids. Dr. H. L. G. Leask, a case of birth injury of the cornea. Dr. Hislop Manson, a case of recent injury to the eyeball with paralysis of the superior rectus, but with little external evidence of the injury; also a case of spinal meiosis with optic atrophy. Mr. Inglis Pollock, a case of double traumatic dislocation of the lenses; a case of glaucoma with Lagrange's operation; and a case showing excess of the membrane of Bruch. Dr. Barbour Stewart, cases of enlargement of the socket by studs: of pigmented tumour of the conjunctiva with microscopic sections; and of excenteration of the eyeball. Dr. E. J. Primrose, cases illustrating the treatment of syphilis at the venereal diseases clinic at the Glasgow Eye Infirmary.

The meeting concluded with a vote of thanks to the officers of the Section for their excellent arrangements.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ORAL ADMINISTRATION OF ANTITOXIN.

IT has seemed to us that the recent correspondence in this JOURNAL on the oral administration of antitoxin and vaccines may possibly lead some of your readers to believe that this method of administering the specific antitoxin in cases of diphtheria is permissible. With the alleged non-specific action of antitoxic serums, when given orally or otherwise, we are not now concerned, but we think it cannot be stated too clearly that to give the antitoxin orally in a case of diphtheria is to throw away a valuable remedy upon the correct administration of which life may depend.

It has been shown long ago by careful experiments, both in animals and in human beings, that antitoxin is not absorbed to any practical extent from the alimentary canal. Theoretically, perhaps, an exception must be made in the case of sucking animals; but this point has not been made quite clear; and it has been suggested that only the autogenous antitoxin in the milk of the mother is absorbed from the alimentary tract of the infant. The question is succinctly treated by G. Dean in Nuttall and Graham Smith's *Bacteriology of Diphtheria* (1908, p. 567), to which we would refer the reader for further details.

Though not questioning the correctness of the orthodox opinion on the matter, we nevertheless felt curious enough about it to do some experiments for ourselves. In view of the interest taken in the subject at the present moment, we venture to submit the results, though they contain no element of novelty.

The experiments consisted in causing guinea-pigs to swallow diphtheria antitoxin of high potency, and, after an interval of three or six hours, injecting a small dose of the toxin subcutaneously. As a control two guinea-pigs were given a very much smaller quantity of antitoxin by intraperitoneal injection, and, after similar intervals, toxin was injected as in the other animals.

The antitoxin given by the mouth was well taken. Intraperitoneal injection was chosen for administering the antitoxin to the control animals in order to avoid any possibility of the toxin and antitoxin getting mixed together; but there is no reason to think that it is more effective when given this way than when injected subcutaneously. Very young animals were chosen deliberately; the three last were only three days old when they were employed, and were kept all the time with their mother.

Weight of Guinea-pig in grams.	Antidiphtheral Serum.		Interval in hours.	Filtered Broth Culture of B. diphtheriae.	Result.
	By Mouth.	By Intraperitoneal Injection.			
230	1,200 units (1 c.cm.)		3	1 Lo dose*	Dead in 30 hrs.
230	2,400 units (2 c.cm.)		3	0.1 Lo dose	Dead in 66 hrs.
200 (control)		50 units (0.04 c.cm.)	3	1 Lo dose	Remained well.
95	1,500 units (1.25 c.cm.)		6	1 Lo dose	Dead within 48 hrs.
65	3,000 units (2.5 c.cm.)		6	0.1 Lo dose	Dead within 48 hrs.
65 (control)		10 units (0.08 c.cm.)	6	1 Lo dose	Remained well.

*The Lo dose of toxin is that quantity of filtered diphtheria broth culture which is exactly neutralized by one unit of antitoxin.

It will be seen from the table that in one of the control animals (No. 6) ten units of antitoxin injected protected against one Lo dose of toxin, while in another animal (No. 5) 3,000 units, given by the mouth, failed to protect against a quantity of toxin only one-tenth as large as that injected with safety into the control. Thus antitoxin failed when administered by the mouth, even though 3,000 times as much was given as would have sufficed had it been injected.

LOUIS COBBETT, M.D., F.R.C.S.
W. HENWOOD HARVEY, M.D.
Pathological Laboratory, Cambridge.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

BIRMINGHAM BRANCH.

THE first meeting of the clinical and pathological section of the Birmingham Branch, for the session 1922–23, was held at the Medical Institute, Birmingham, on October 27th, when Professor J. W. RUSSELL was elected chairman in succession to Mr. W. Billington, and Dr. L. BALL and Mr. G. P. MILLS were appointed secretaries.

Mr. FERNARD GOODWIN showed a male patient, 17 years of age, who since December, 1919, had complained of pain in the right shoulder radiating into the fingers. No physical or radiographic signs of bone disease were discovered, and the shoulder was fixed by splints. In September, 1921, further radiograms were taken, and these showed appearances suggesting osteomyelitis fibrosa. The patient again came under observation in April, 1922, and had then swelling of the head of the humerus, while definite signs of endosteal tumour were present in radiograms. Five inches of the upper end of the humerus were removed through an external incision, and replaced by a piece of the patient's fibula, which was driven two inches into the medulla of the divided humerus. The graft united firmly, but about six weeks ago the patient met with an accident which caused a fracture of the graft at its centre; the break united well with a large amount of callus. At present, movement at the shoulder was only fair, but promised to improve; the patient had full use of the forearm and hand. The resected portion of the humerus was expanded by a central myeloma which had perforated the bone at one point.

Dr. K. D. WILKINSON showed the case of a woman with sclerodermia affecting the hands and face. The pathology of the condition was discussed, importance being attached to the neurotrophic theory because of the frequent association of atrophic changes in deeper tissues.

Dr. BALL described the case of a man who developed signs of acromegaly after an injury to the skull, with probable fracture of the base. Radiograms showed characteristic changes in the skull and jaw, and bitemporal hemianopsia and glycosuria were present. Hyperpituitarism was almost unknown as a sequel of injury to the head, though a number of cases of diabetes insipidus, of adiposity, and of hemianopsia were recorded in this connexion.

Dr. R. G. ABRAHAMS showed specimens from cases of eclampsia and of uraemia in the course of pregnancy, contrasting the morbid changes present in the two groups.

The second meeting of the session was held on November 24th, Dr. W. H. WYNN occupying the chair in the absence of Professor Russell.

Mr. A. W. NUTHALL and Mr. BERTRAM LLOYD showed two cases of ectopia vesicae after transplantation of the ureters into the bowel. The method consisted in dividing the ureters close to the bladder mucous membrane, and transplanting the right ureter into the caecum and the left into the sigmoid, an interval of a few weeks being allowed to elapse between the operation on the right side and that on the left. Both the patients were children.

The first patient was now in good general condition, passing urine from the bowel two or three times a day and only excessively at night. In the second case the patient at present passed urine from the bowel about every four hours and was apparently in good condition.

Mr. GAMGEE showed a woman, 42 years old, who had had a swelling of the thyroid gland for sixteen years. For the last five months she had presented a pulsating tumour of the manubrium sterni. The thyroid swelling was hard and fixed, though the patient denied that any recent change had occurred in it. In cases of pulsating tumours of bone secondary to thyroid tumours histological examination did not always show a tumour of typically malignant character. In discussing the case, Dr. PINEY referred to the frequency with which he had found thyroid tissue or tissue of exactly similar structure in the marrow of normal bones, and suggested that the sternal tumour in this case might be a hyperplasia of such tissue in the marrow of the sternum, arising as a compensatory result of calcification of the thyroid gland, and not a deposit secondary to a malignant tumour of the thyroid.

Dr. EMANUEL showed a heart in which the left auricle had undergone extreme dilatation, for the most part in a horizontal direction, so that during life the dilated auricle presented in the right axilla, where it was tapped under the belief that it was a pleural effusion. The specimen was from a married woman who died at the age of 48. For the last ten years of her life she suffered from shortness of breath on exertion, cyanosis and oedema of the feet, all the symptoms being of gradual onset and of gradually increasing severity. There was a well-marked cardiac impulse in the eighth left space in the mid-axillary line four inches external to the left nipple line and eight inches from the mid-sternal line. The right border of the heart extended beyond the right mamma as far as the right anterior axillary line. The cardiac dullness did not extend upwards higher than the level of the fourth costal cartilages. At the apex beat there was a systolic thrill, and this thrill was palpable also outside the right mamma. At the apex beat a rough systolic murmur and a long rumbling diastolic murmur was audible. Radiography showed that the heart extended from the right to the left lateral border of the thorax. After death the left auricle after fixation in formalin was found to hold forty ounces and the right twenty ounces of water; the mitral valve was stenosed, the tricuspid and pulmonary valves were unaffected, and dense pericardial adhesions were present over part of the left auricle.

Dr. K. M. TILLYARD showed the heart and lungs of a woman, aged 42, who was admitted to the maternity hospital on November 6th with haemorrhage due to placenta praevia. An embolism occurred a week after delivery, with rise of temperature, cough, haemoptysis, and pleural friction. Recovery from this took place, but a second embolism occurred in the fourth week, which led to death in ten minutes. The embolus was shown *in situ* in the pulmonary artery. No large thrombi had been found in the pelvic veins at autopsy, but the small veins of the broad ligament were thrombosed.

Reports of Societies.

HOUSE INFECTION IN CHOLERA AND CANCER.

AT a meeting of the Edinburgh Medico-Chirurgical Society held on December 6th, with the President, Sir ROBERT PHILIP, in the chair, Lieut.-Colonel A. G. MCKENDRICK read a communication on house infection in cholera and cancer. He said that the sciences of medicine and physiology, in that they dealt with affections of a community of cells, were in his opinion essentially statistical in nature. The law of chance must be operative in all medical phenomena, and anomalies of behaviour could never be ascribed to external agencies until the possibility had been excluded that they were not merely the rare cases which occurred in the normal operations of the laws of chance. The so-called exact sciences dealt as a rule with the average individual in whose behaviour the underlying law found true expression; but by the very nature of medical problems one was often forced to consider the behaviour not of the average but of the extremely exceptional individual. The speaker proceeded to describe a statistical method which he had evolved and which was very general in application, an example of its value being shown in the case of house infection in cholera and in cancer. He described how this method had been helpful in the investigation of outbreaks of cholera in India; in particular it was shown how minimal contaminations of water might in certain cases be detected by the methods of statistical mathematics. This was achieved by the comparison of figures showing the house and individual incidence with an "average" figure. A concrete example of the investigation by this method of an outbreak of cholera in India was given, which was chosen to illustrate how medical science was so frequently concerned with facts which were unrepresentative. The statistical outlook recognized these difficulties and to some extent overcame them. The method had been applied with success to many medical problems, such as phagocytosis, agglutination, the measurement of conferred immunity, and the epidemicity of disease.

The communication was discussed by Professor RUSSELL, who pointed out that statistics were often misleading and the law of averages open to grave misinterpretation.

Artificial Pneumothorax.

Dr. J. S. STEWART then read a communication on artificial pneumothorax in the treatment of pulmonary tuberculosis. While strictly unilateral disease was the ideal case for this treatment, the usefulness of the method would be limited if so confined. Disease of the opposite lung, provided it were limited to the upper lobe without either intense consolidation or excavation, was not a contraindication, nor was tuberculous laryngitis. Recurrent dry pleurisy and pleurisy with effusion were indications, as was also haemoptysis if one could be sure of the source of bleeding. The method was unsuitable for early cases which would recover under general treatment; marked cardiac disease was a strong contraindication. The apparatus and technique were fully described; a preliminary injection of morphine and atropine, and local anaesthetization of the skin and pleura was stated to lessen the risk of pleural shock. The patient was supported on pillows on his sound side, and, under a negative pressure of 10 mm. Hg, 200 to 300 c.cm. of oxygen were slowly introduced. With oxygen there was, he believed, less risk of air embolism, and a definite sedative effect on the inflamed pleura was produced. Frequently repeated small injections had the advantage that an opportunity of accommodation was given to the opposite lung. The intervals of subsequent injections were gradually increased, until at the end of the third month injections were made every three or four weeks. Frequent

x-ray examinations were essential both before and after refills. Pleural adhesions complicated the operation, and were shown by a rapid rise of pressure on the manometer from negative to positive after a small injection. In all cases of bilateral disease the opposite lung had to be watched carefully, and where pleuritic effusion developed aspiration should be carried out at once. Illustrative cases were described and numerous lantern slides shown.

The paper was discussed at length by Sir ROBERT PHILIP, Professor LOVELL GULLAND, Professor J. C. MEAKINS, Dr. DAVIES, Mr. GUY, Dr. STEVENS, and others.

ASTHMA IN CHILDREN.

A MEETING of the Manchester Medical Society was held in the University of Manchester on December 6th, with Sir WILLIAM MILLIGAN in the chair.

Dr. C. P. LAPAGE read a paper entitled "Asthma in children—the part played by local lesions of the chest." He said that asthma was often divided into true nerve-storm asthma and bronchial asthma, the latter being due to enlarged bronchial glands and other troubles in the chest; but in both cases there was an element of spasm which was probably of reflex origin. A study of the factors determining asthma showed that they could be put under three headings: (1) The case of the individual who might be of exudative type or might have become sensitized. (2) Cases due to external irritants, which might be (*a*) foreign proteins—from animals, pollens, eggs, milk, or bacteria, (*b*) metabolic excess, (*c*) climatic. (3) Cases due to internal irritants—local lesions—in (*a*) nose and throat, (*b*) lungs and bronchi, (*c*) intrathoracic glands, (*d*) from adhesions and fibrosis. The paper was intended to show that the internal irritants often played an important part in the determination of attacks of asthma and perhaps in the sensitization of the individual. An analysis of cases of asthma in children showed that in a large proportion there was a family history of the exudative diathesis, and in many there was also a personal history of manifestations other than asthma in the case under observation. The common manifestations of the exudative diathesis in childhood were: (1) curd dyspepsia, (2) urticaria, (3) eczema, (4) asthma, (5) hay fever (periodic nasal catarrh), (6) angio-neurotic oedema. Coming to the question of local lesions, in 75 cases of asthma in children which were quoted it was shown by a correlation of the clinical examination and the *x* ray examination that 73 per cent. of them had definite chest lesions pointing to tuberculosis. The estimation of tuberculosis was made first on the clinical examination, supplemented by the evidence from the *x*-ray screen. It was noticed also that in many cases attacks of asthma tended to increase in frequency and severity with the onset of the illness and debility accompanying the chest lesion, and to subside when the child was treated on antituberculosis lines. Slides were shown demonstrating the changes found, which were as follows: bronchial glands 31, mediastinal 6, cervical 5, fibrosis (roots) 18, adhesions 5, chronic bronchitis 11. Many of the cases showing the changes had a personal history of the exudative diathesis. The conclusion drawn therefore was that the subjects of asthma in children were of the exudative diathesis and that the exhibition of asthma often depended on the presence of the local lesions of the chest, which in most cases were of a tuberculous nature, and that the asthma attacks might culminate and subside concurrently with the culmination and subsidence of those lesions.

Pernicious Anaemia.

Dr. E. M. BROCKBANK read a paper on some aspects of pernicious anaemia. He said that he agreed with the opinion that blood plates came from red corpuscles; their behaviour to solvents and peptic digestion, which was like that of nuclein, supported the view that they were the remains of the nuclei of the erythroblasts. Blood plates were therefore an indication of the activity of the marrow. There were many more blood plates in secondary anaemia than in normal blood and there was increased activity of the marrow in that condition. He mentioned evidence showing that the average age of the normal red cell was about ten days and that in secondary anaemia when there were four times as many blood plates as normally, it was about one-fourth of the age of the normal red cell. In pernicious anaemia very few blood plates were seen. This suggested that in pernicious anaemia the red corpuscles were older than normal and that they resisted the usual destruction of the red cells, and that there was evidence of erythroblastic inactivity.

Surgery of Meckel's Diverticulum.

Mr. J. P. BUCKLEY read a paper on Meckel's diverticulum and its urgent complications as illustrated by two rare cases. He drew attention to the fact that Meckel's diverticulum was probably more common than was suggested by Sir Norman Moore's note in the *Transactions* of the Pathological Society, in 1884, where he stated that only thirteen were found in the *post-mortem* records of St. Bartholomew's Hospital over a period of sixteen years. He raised the question of which was the more likely method by which the vitello-intestinal duct disappeared normally, whether—as stated by Keith—it became occluded and shrivelled up, or—as stated by Marshall—it separated from the intestine. He went on to describe two cases upon which he had operated—namely, a case of Littré's hernia in a woman aged 49, and a case of acute intestinal obstruction in a boy aged 14, due to volvulus of a Meckel's diverticulum. He summed up the rarity of Littré's hernia by saying that if that rare individual who possessed a Meckel's diverticulum and a congenital sac did develop a hernia it must be very long odds against the particular inch of gut which carried the diverticulum being the intestinal site of the hernia. He raised again the question, previously raised by Macready, of whether the name of Ruysch rather than that of Littré should not have been attached to the hernia of the diverticulum. Mr. Buckley insisted that a true Littré's hernia was one containing only the diverticulum, with no small intestine in addition. He pointed out that Littré's hernia rarely occurred other than on the right side, and that it was seldom recorded other than in the complicated state. He was sure that the complication of the hernia should be described as inflammation rather than strangulation. The signs, symptoms, and pathology were rather those of inflammation than of obstruction. Differential diagnosis would have to be made between inflammation of an appendix in a hernial sac, inflammation of a Littré's hernia, and acute suppurative funiculitis. He pointed out that an inflamed Littré's hernia was a much less dangerous condition than a Richter's hernia. Regarding the case of volvulus of a Meckel's diverticulum, he pointed out that it was rare, because for that condition to occur the diverticulum should have a fair bulk and a narrow attachment to the bowel; such diverticula were uncommon. He called attention to the fact that during the last nine months the diverticulum in his case had been causing occasional attacks of "stomach ache." On this point he said that the progress of the pathological changes leading up to many forms of acute intestinal obstruction was insidious. How often were abdomens opened for acute intestinal obstruction and a condition found which had been going on for a considerable time, gradually narrowing the lumen of the small intestine? The lumen had to get very narrow before absolute obstruction to the fluid contents of the small intestine was produced. If they went into the past history of such cases it could usually be found that the patients had had occasional attacks of "colicky" pain. More importance ought, he considered, to be attached to such premonitory attacks.

FOETAL SYPHILIS.

A CLINICAL meeting of the Cardiff Medical Society was held on December 12th, when, in the absence of the President, Professor EWEN MACLEAN, the chair was taken by Dr. F. BUCKHAM.

Dr. G. I. STRACHAN gave a demonstration of foetal syphilis, pointing out that in the course of his investigations on foetal death he had found much that was new to him in that aspect of the subject. As a cause of foetal death syphilis had previously been ranked too high, and it was safe to say that not more than about 15 per cent. of stillbirths could be attributed to this cause. The typical maternal history of several previous stillbirths was not always present and, of course, in a primipara was not available. Some of the mothers presented specific lesions, but the majority either showed no lesions or these were present in a slight degree only and were easily missed. While in the majority the Wassermann reaction was positive, that was not always so; he had examined cases where the reaction of the maternal blood was negative but in which spirochaetes had been demonstrated in the foetal tissues. In the examination of the foetus the main naked-eye

change found was enlargement of the spleen; liver enlargement was usually also present, but was not so constant or so reliable a sign as splenic enlargement. The lungs were mostly of a firmer consistence than normal, but typical pneumonia alba was found in only two cases. Some irregularity of the osteo-chondral junction in the long bones was usual, but well-marked osteo-chondritis, as shown by a broad irregular area of defective calcification extending from the epiphyseal line, was found in only one case.

A number of microphotographic lantern slides illustrated the microscopic lesions found in the various organs. These were in the nature of cirrhoses, and the difference between the open texture of a normal foetal organ and the firm thick texture of a syphilitic organ was well brought out. Sections of the lung, liver, spleen, pancreas, and placenta were shown, also a plate showing the differences between normal, syphilitic, and macerated bones. Regarding the placenta the main changes found consisted in relative and absolute enlargement with pallor and a firmer consistence than normal; haemorrhage and infarction formation had not been observed.

CASES AND SPECIMENS.

A case of miliary disseminated tuberculous iritis was shown by DR. J. W. TUDOR THOMAS.

The patient was a girl aged 5, whose left eye had become inflamed four months previously. At that time there was some ciliary injection and very little pain. The iris was covered with yellow tubercles, mainly at the periphery, some at the pupillary margin. A few posterior synechiae were present, and deposits of keratitis punctata on the posterior surface of the cornea. There was no evidence of tubercle in the lungs. The treatment had consisted in injections of tuberculin, syrup. ferri iodidi internally, and atropine ointment locally. The condition was now very much better, the injection having disappeared and only one patch of deposit remaining on the posterior surface of the cornea. The tubercles were smaller, and some had disappeared. The other eye appeared to be quite healthy, and the general health of the patient had improved considerably.

DR. ABEL EVANS showed a case of myatonia congenita (Oppenheim's disease).

The patient, a boy 3 years of age, could not sit up, stand, or walk. He lay in any position in which he was placed and, although there was no absolute paralysis, there was great muscular weakness: all voluntary movements were devoid of vigour. His muscles were small and soft, but showed no wasting; it was almost impossible to distinguish them by palpation from subcutaneous tissue. The facial and sphincter muscles were unaffected. Passive movements at all the joints were unusually free in every direction. Electrical excitability was diminished to faradism and galvanism; he could bear strong faradic stimulation without distress. The deep reflexes were absent, but the cutaneous and organic reflexes were normal. His general health had always been good. Little was known of his family history except that his mother died of eclampsia at his birth.

Dr. Evans further related a case of myotonia congenita (Thomsen's disease) occurring in a man 40 years of age, who had pronounced spasm of the laryngeal muscles and also of the muscles of the arms and hands on performing voluntary movements. The man was well nourished, free from any abnormality of the nervous system, and muscular, but there was no hypertrophy of the affected muscles as was sometimes met with in that type of case. The symptoms were first noticed when he was about 8 years old. His father had been similarly affected. The patient had ten children, all girls, who were normal. The disease appeared to occur less frequently in females than in males.

MR. D. J. HARRIES showed a lobulated fibro-lipo-myxoma, weighing 9 lb., removed from the calf of a woman 40 years of age. The tumour had been present for several years, steadily increasing in size, but giving rise to no symptoms beyond those referable to its weight and dimensions. Although underlying the gastrocnemius and soleus, and producing considerable atrophy of these muscles, there was no interference with the movements of the foot. The tumour mass was undergoing early degenerative changes; there were small areas of blood extravasation and some calcareous deposit in the lipomatous portion. Professor A. W. SHEEN showed an encapsulated tumour, weighing 1 lb., removed from the inner side of and behind the knee-joint of a man, where it had existed for eight years, producing some slight inconvenience only. It proved to be a pure myxoma with large numbers of small blood vessels forming a network in the substance of the growth. Professor EMRYS-ROBERTS commented on the comparative rarity of a pure myxoma, most tumours of that character resembling the specimen shown by Mr. Harries. The latter had, in all probability, started as a lipoma, with subsequent fibroblastic proliferation of the accompanying stroma and a conversion of a certain proportion of fibroblasts into myxoblasts, with a corresponding production of mucin.

MR. ALWYN SMITH exhibited a child, 4 months old, suffering from Hirschsprung's disease. He had seen the infant when it was 12 days old; it then presented a large hypertrophied colon, with stretched rectus abdominis and diaphragmatic ligaments, a high barrelled chest, incurved rib cartilages and right torticollis, due to posture *in utero*; the liver and spleen were easily felt, and the thickened colon felt like leather between the fingers. He gave a poor prognosis, forecasting permanent constipation; the child, however, had had daily movement of the bowels. Dr. OWEN RHYS showed radiographs of fourteen cases of various types of hour-glass stomachs. Two of these showed a double constriction, persistent at operation. A case of pseudo-hour-glass was found to be due to extrinsic causes—namely, to six calculi in the gall bladder, so opaque that they could be counted on the *x*-ray film.

Professor EMRYS-ROBERTS and Dr. H. A. HAIG showed a number of pathological slides and specimens.

(1) A blood film and a section of a chloroma of the lower jaw occurring in a boy. The blood showed very large numbers of myeloblasts, and the tumour similar cells infiltrating the alveolus. (2) A section of an endothelioma of the orbit. There was a characteristic whorled arrangement of the tumour cells, bearing a superficial resemblance to the cell nests of an epithelioma; the central areas, however, were composed of degenerated cells, and, at times, contained a calcareous deposit. (3) A section of a metastatic deposit on the surface of the liver from a case of diffuse combined carcinomatosis and sarcomatosis of the peritoneal cavity, of untraceable primary origin. The secondary mass showed a high degree of fibroblastic proliferation; the carcinomatous elements, in the form of acini, had undergone considerable degeneration, and were the seat of much calcareous deposit. The mass had formed a hemispherical bed for itself in the liver by pressure atrophy and destruction of the subjacent liver cells, from which it was separated by a fibrous band continuous with the capsule. The great omentum was converted into a solid mass weighing 1¾ lb. Here the fibroblastic proliferation had proceeded to such a degree that a condition of fibro-sarcoma had evolved, the carcinomatous elements being discernible with the greatest difficulty. (4) A brain from the case of a woman, aged 52 years, who for some time past had shown symptoms of mental irritability. A sudden attack of vomiting was followed by right-sided hemiplegia, aphasia, and semi-consciousness; she lingered over a month without any alteration of the symptoms. Examination of the brain disclosed a large gliosarcoma in the left temporo-sphenoidal lobe, into which extensive haemorrhage had occurred, and this in its turn had produced pressure on the fibres of the internal capsule.

PATHOLOGICAL DEMONSTRATIONS.

A MEETING of the Pathological Section of the Royal Academy of Medicine in Ireland was held in the Royal College of Surgeons on December 8th, with the President, Dr. W. D. O'KELLY, in the chair. In the absence of Sir WILLIAM WHEELER, Dr. MILNE HENRY read a paper on rhabdomyosarcoma of the kidney, after which Professor O'SULLIVAN demonstrated the specimen, and a discussion followed.

Dr. MOORHEAD showed three specimens of hearts. The first was an example of the rare congenital abnormality consisting of an abnormal opening between the aorta and the pulmonary artery, immediately above the sigmoid valves; in addition, there was an aneurysmal dilatation of the beginning of the aorta, a well-marked stricture of the aorta above the opening, while the wall of the aorta and pulmonary artery were not separated, but consisted of a single partition. During life the symptoms were those of aortic regurgitation. The second specimen was an example of extreme fibrosis, the wall of the left ventricle being as thin as tissue paper; the third specimen was an example of combined mitral and tricuspid stenosis.

Dr. ABRAHAMSON remarked on the coexistence of stenosis and patency in the congenital case. It was hard to know, he said, how the stenosis was formed, and it would be interesting to work up the mechanism of the whole case. Professor O'SULLIVAN said that when sections of the aorta and pulmonary artery were cut the appearance was as if it was a single artery, divided by a partition instead of being two independent vessels. Dr. O'FARRELL said that in regard to the second specimen, he would like to know what the condition of the coronary artery was; in cases of this sort which he had experienced death had been due to thrombosis locally. He wondered whether, when the coronary artery was cut, thrombosis was found. Dr. E. C. SMITH, who demonstrated the specimen, said, in reply, that in this case no local thrombosis was found.

Dr. SYNGE read a paper on Banti's disease, and showed specimens from a case which had been under his care. He

said that no operation was performed, because when the case was in hospital the amount of anaemia was very slight. The red cells were found to be normal. There was no thrombosis of the splenic vein, although it was big, and, so far as he could make out, there was no thrombosis in any of the veins.

A discussion followed.

TREATMENT OF FRACTURES.

A GENERAL discussion on the present-day treatment of fractures was held at the meetings of the Royal Medico-Chirurgical Society of Glasgow on December 1st and 13th. The discussion was opened by Mr. J. W. DOWDEN (Edinburgh), who spoke particularly of fractures of the upper extremity as capable of treatment by the general practitioner. The use of a sling and active movements were the important factors in the treatment suggested by him, but for the first two or three nights not only must a sedative be given but possibly a splint to prevent the undue displacement of parts while asleep. The chief onus of the treatment lay on the patient himself and he should be frequently seen and encouraged to carry out progressive active movements, which should go farther and farther each time so long as severe pain was not induced. Mr. ARCHIBALD YOUNG (Glasgow) referred to the unsatisfactory position to-day of the treatment of fractures so far as the general practitioner was concerned, and in the out-patient departments of the larger general hospitals. His general contention was that open operation with direct fixation was the correct treatment in a large number of fractures. Mr. Young showed a large number of *x*-ray photographs supporting his thesis. Dr. J. N. MARSHALL (Rothesay) presented the case from the point of view of the general practitioner, with special reference to the value of the *x* rays in diagnosis. Mr. HENRY RUTHERFURD (Glasgow) was not enthusiastically in favour of Mr. Dowden's methods; he referred to the influence of the Workmen's Compensation Act in stimulating interest in the treatment of fractures.

At the second meeting several speakers referred to points connected with variations in the methods of treatment, and Dr. W. B. MOIR considered the matter particularly with regard to accident insurance.

TREATMENT OF TUBERCULOUS CONDITIONS BY INFLATION WITH OXYGEN.

AT a meeting of the Nottingham Medico-Chirurgical Society, held at the society's rooms, 64, St. James Street, Mr. ROBERT PURVES (Lincoln) read a paper on the treatment of tuberculous affections by inflation with oxygen. He detailed notes of fourteen cases, including tuberculous plastic peritonitis, and psoas and other abscesses, which had been traced and examined recently. After reference to the articles on the subject by Lieut.-Colonel Rost, I.M.S., he reviewed the method, technique, and apparatus required. He recommended the use of a large trocar and cannula for evacuation of the abscess after a preliminary "nick" in the skin, or, in deep-seated abscesses, an incision. Introduction of the gas might be effected through the evacuating cannula, or by an aspirating needle introduced beside the incision, prior to its closure. Special caution should be observed in tuberculous peritonitis with adhesions. Closure of the puncture was best effected by one or two Michel's clips. Cases with mixed infection or any reddening of the skin were unsuitable. Results showed that 50 per cent. of all cases, without selection, had remained well. The virtue of the oxygen, which was passed through a wash bottle containing H_2O_2 prior to introduction, was considered by Rost to be due to its acquisition of a nascent character. Mr. Purves suggested an alternative explanation as more probable—that in the presence of excess of oxygen an inhibitory substance was developed which was deleterious to the bacterium. He pointed out that it had been demonstrated by Macleod and Gordon that the pneumococcus and some other cocci, when grown in excess of oxygen, developed H_2O_2, which led to their early death; also that Pasteur utilized oxygen to attenuate anthrax and other cultures. This had a possible bearing upon the open-air methods of treating pulmonary and other forms of tuberculosis. He suggested that the simplicity of the inflation method, which might frequently be carried out under local anaesthesia, and the ease of the after-treatment, commended it as a useful alternative method which might well be given an extended trial.

Reviews.

THE APOTHECARIES' PHYSIC GARDEN.

IN a charmingly written and attractively illustrated book, all too short, but full of anecdote and historical lore, Dr. DAWTREY DREWITT has presented *The Romance of the Apothecaries' Garden at Chelsea*,[1] which, in spite of the fact that it registers 3,000 students' attendances a year, is not nearly so well known as it deserves. The London Society of Apothecaries broke off in 1617 from the great Grocers' Company, which, like Pharaoh of old, was loath to let them go, but was constrained by King James I to hold its peace. Soon afterwards the Apothecaries' Society gained possession of Cobham House on the bank of the Thames, "where the little Fleet joined it at Blackfriars"; but although the times were troublous and its Hall was destroyed in the Great Fire in 1666, the Society was able in 1673 to take a lease of three and a half acres in the then pleasant riverside village of Chelsea as a garden for the cultivation of rare plants. The official title "Physic Garden" is a little misleading, for the word originally meant "concerning physical"—that is, natural—science, and the Botanic Gardens at Oxford and Kew formerly shared this label, which, however, naturally stuck to that of the Apothecaries' Society. Maintenance expenses weighed so heavily on the Society that the garden would probably have been sold had not Sir Hans Sloane in 1722 practically made the Society a gift of the site. As the present existence of the Physic Garden is largely the result of his generosity it is most appropriate that an account of Sloane's life should find a place in this record, and Dr. Drewitt happily remarks how well the present Sloane Street represents the life of Sir Hans, for do not "those who walk all the way down it know that it is very *long*, obviously *prosperous*, and very *straight*." He observes too that, like Thomas Wheeler, for forty-two years demonstrator of botany at the Garden, Sloane died at the age of 93, which may therefore be regarded as a fatal year in the life of botanists.

In the description of the surroundings of the Physic Garden many interesting points are brought out. Thus in discussing Paradise Row (now Royal Hospital Road) the use of the word "paradise" as the equivalent of park makes it probable that Paradise Row led to the great Paradise made in the sixteenth century by Sir Thomas More, now the Elm Park Estate; reference is made also to the translation of his own name by John Parkinson, Apothecary to Charles I, into Paradisus-in-sole (Park-in-sun). Again, there is a fascinating sketch of Sir Joseph Banks, who as a boy lived in a large house close to the Physic Garden, and in later life did much for it. In 1893 the Apothecaries' Society handed over its charge to the Charity Commissioners, and a committee now superintends its management; it is, indeed, fortunate that Dr. Drewitt was made one of this committee, for thus was he stimulated to write a book that everyone will read with pleasure.

GUILLAIN'S NEUROLOGICAL STUDIES.

BRITISH readers are familiar with the writings of Dr. GUILLAIN on various aspects of the neurology of war, and it will be a pleasure to many to have the works of an author who has achieved a very distinguished position among contemporary French neurologists collected in a single volume.[2] It is divided into nine sections, each of which again consists of a number of chapters dealing with different aspects of the same larger problem.

The first subject, that of the fixation of poisons in the nervous system, is of particular interest to the neuropathologist. The opinions expressed on the pathology of diphtherial neuritis are very interesting when we recall the recent work of Walshe in this country, who has independently reached very similar conclusions. Other aspects of the subject are illustrated, and Dr. Guillain's views should be studied by all neurologists. The second section, on the pathology of the brain, contains detailed accounts of some cases of particular interest and a study of the important changes found in the cerebro-spinal fluid in certain examples of cerebral tumour. An especially interesting and careful account of a case of a

[1] *The Romance of the Apothecaries' Garden at Chelsea.* By F. Dawtrey Drewitt, M.A., M.D., F.R.C.P. London and Sydney: Chapman and Dodd, Ltd. 1922. (Cr. 8vo, pp. xii+106; 11 plates. 7s. 6d.)

[2] *Étude Neurologiques.* By Georges Guillain, Professor in the Faculty of Medicine in Paris. Paris: Masson et Cie. 1922. (Med. 8vo, pp. viii + 469; 18 figures. Fr. 25 net.)

lesion of the mid-brain from a revolver bullet is given also, and forms a valuable exercise in the applied anatomy of the nervous system.

The chapters dealing with diseases of the spinal cord contain careful descriptions of cases of trypanosomiasis, disseminated sclerosis, syringomyelia, Landry's paralysis, and other conditions, in all of which the lucid style of the writer and the way in which he marshals his facts combine to render their perusal both pleasant and profitable. In the section on syphilis of the nervous system the author is concerned chiefly with tabes, which is considered from both its clinical and pathological aspects. It is interesting to note that the views Dr. Guillain enunciated in 1903, which were in agreement with those expressed by Nageotte in the previous year, on the essential and earliest lesions of tabes dorsalis have recently received striking confirmation from Richter.

A section on the pathology of the cranial and spinal nerves follows; it is evident that the author is a believer in the theories of ascending neuritis, and he describes at considerable length a case which he attributes to infection from the appendix. In an interesting discussion on the significance of the Argyll Robertson pupil we are glad to see that he does not confine this symptom to cases of syphilis only.

In the chapters on the cerebro-spinal fluid, lumbar puncture, and various states of meningitis there are many points of great clinical interest, and here, as elsewhere, we must congratulate the author on the excellence of his clinical descriptions. Different aspects of the important subject of epidemic encephalitis are fully discussed in several chapters; one of the most novel and striking contains an account of a case in which contagion was observed, an event so rare as to deserve record.

Although this is not a book for the junior student, the senior student and the neurologist will find much profit in its pages; unlike many, it represents the personal views of the writer, whose experience and skill are both made evident.

CLINICAL LABORATORY METHODS.

DR. CUMMER'S *Manual of Clinical Laboratory Methods*[3] describes the chemical and bacteriological methods which are employed in the laboratory for diagnosing disease. The blood, urine, gastro-intestinal contents, faeces, sputum, and body fluids and exudates are each considered in separate chapters. In most chapters a definite plan is followed: first, an outline for the routine examination is given, then a description of the simpler qualitative methods which are frequently employed, then an account of quantitative methods and those of intricate technique, and finally a discussion of what is found in various morbid conditions. It sometimes happens that in books of this sort the student is left bewildered by the multitude of different methods described for the performance of any laboratory test; this is not likely to happen with the present volume, for the author discriminates between reliable and indifferent, and does not hesitate to indicate the method which his experience has led him to prefer. Another good point is that elaborate quantitative tests, from the performance of which no useful knowledge can be derived, are omitted; such tests have their place in books of quantitative chemical analysis, but would be an encumbrance to such a manual as this. Nearly half the book is concerned with the examination of the blood, which is dealt with in a very comprehensive manner; the author has embodied an account of much of the recent work on the chemistry of the blood. The estimation of blood sugar, diastatic activity, blood urea, and the acid intoxication tests are all well described.

In face of so much that is accurate and helpful it is somewhat startling to read the statement which appears on page 321: "The typhoid bacillus forms acid with lactose and causes no change with glucose, while the organisms of the colon group form acid and gas with both glucose and lactose." Reading a little farther we find that in describing *Taenia echinococcus* (p. 335) the author writes that the "diagnosis is usually made only by finding the cysts on the operating table or at *post-mortem*." In connexion with the diagnosis of *Entamoeba histolytica* it is said (p. 325) that "a diagnosis is not possible without demonstration of amoeboid movement." These are possibly only errors of expression, overlooked in compiling such a large book, but there are many branches of laboratory work, more particularly those concerned with bacteriological diagnosis, in which the author has passed over important points. The book will be useful for the chemical tests it describes; when dealing with bacteria and protozoa it should be read with caution.

[3] *A Manual of Clinical Laboratory Methods.* By C. L. Cummer, Ph.B., M.D. London: H. Kimpton. 1922. Med. 8vo, pp. viii + 484; 136 illustrations. (Price 28s. net.)

RADIOLOGY.

THE third edition of *Electrologie et Radiologie*[4] by Dr. GUILLEMINOT, is a large, well-illustrated volume which aims at being a complete treatise on medical electricity, including radiology. The first edition appeared in 1905, was translated into English, and obtained recognition in France from the Academy of Medicine. The present edition has been brought thoroughly up to date and is very comprehensive. In its present form it consists of three main parts. The first (318 pages) is given up entirely to the study of physics and of electrical technique. The second (93 pages) deals with the physiological effects, electrobiology, and radiobiology. The third (313 pages) is entirely medical. Those who are interested in the subject, and who read French, will find it an admirable textbook although it is arranged and written on somewhat conventional and stereotyped lines. The index is comprehensive and should add to its value as a book of reference.

Dr. REGINALD MORTON has edited an English edition of *Dosage Tables for Deep Therapy*[5] as compiled and published by Professor Friedrich Voltz. The book should be of considerable value to those who are working upon the newer deep-therapy treatment and who do not understand the German language. Whilst the major portion of the book consists of the dosage tables themselves, there are preceding chapters which explain in detail the principles on which the tables are based, and the formulae by which the various calculations are made. In his preface Professor Voltz states that the tables, which are the result of a large number of exact measurements and calculations, should enable anyone to ascertain correct dosage in practical *x*-ray work without making arduous and time-wasting repetitions of measurements and calculations. The introductory chapters are arranged in three divisions. The first discusses the three conditions which determine the radiation dose—(1) dispersion, (2) absorption, and (3), scattering of radiations—and the essential rules are laid down and illustrated by diagrams. The second chapter takes into consideration six factors of paramount importance in *x*-ray therapy. These are the physical dose, the biological dose, the dosage quotient, the percentage of the depth dose, the effective dose, and the appropriate dose for specified conditions. The third is devoted to a consideration of three methods of measurement—the iontoqualimeter, Kienböck's strips, and the selenium cell; and of these the first is considered to be the most reliable. Following the tables a concluding chapter deals with the management of the *x*-ray apparatus and the *x*-ray tubes, and in this the editor has included certain material which is the result of his own experience. In his preface Dr. Morton points out shortly the difficulties which have to be met in carrying out this new departure in *x*-ray therapy in a satisfactory manner, and we are in entire agreement with him when he states that the best results will be obtained only by those who devote themselves to this class of work to the exclusion of everything else. We recommend this book, which is quite a small one, to every radiologist whether he practises deep therapy or not; if he does practise deep therapy then it should be indispensable and it will save many mathematical calculations and much time. The printing is admirable, and for a somewhat difficult subject the explanations are easy to follow; the diagrams are good, and the general arrangement of the text satisfactory.

La Roentgenthérapie des Tumeurs Malignes en Oto-Rhino-Laryngologie[6] is the title of a treatise by Drs. PORTMANN and LACHAPÈLE of Bordeaux. It begins with an historical review

[4] *Electricité Médicale: Electrologie et Radiologie.* By Dr. H. Guilleminot. Third edition. Paris: Masson et Cie. 1922. (Roy. 8vo, pp. xxvi + 642; 270 figures. Fr. 40.)

[5] *Dosage Tables for Deep Therapy.* By Professor F. Voltz. English translation edited by Reginald Morton, M.D. London: William Heinemann, Ltd. 1922. (Cr. 8vo, pp. x + 98; 16 figures. 10s. 6d. net.)

[6] *La Roentgenthérapie des Tumeurs Malignes en Oto-Rhino-Laryngologie.* By Drs. G. Portmann and A. P. Lachapèle. Paris: A. Maloine et Fils. 1922. (Demy 8vo, pp. 106; 7 figures. Fr. 5.)

of the many communications on the subject which have been published since 1896, when, within twelve months of the discovery of *x* rays, Despeignes reported a case of cancer of the tongue which had improved under *x*-ray treatment. A short account of the technique adopted is followed by a consideration of the 84 cases treated by the authors, and a large part of the book is taken up with reproductions of the case sheets in which all the details of each case are given in full and with meticulous care. These cases include such conditions as malignant disease affecting the tonsils (sarcoma, lymphosarcoma, etc.); epitheliomas of the soft palate, of the tongue, and the larynx; epitheliomas and sarcomas affecting the superior maxilla; fibrosarcoma of the ethmoids; and lymphosarcoma of the nasopharynx. This portion is illustrated by a few photographs of cases before and after treatment. In a comparatively short chapter the authors discuss the different kinds of growth affecting each region and indicate the treatment—*x* rays or surgical interference—which in their opinion should be recommended. In a concluding chapter the present position of deep therapy, and what results can be expected from it, is shortly reviewed. To those interested in the subject, especially laryngologists and radiotherapeutists, this book, dealing mainly with the personal experiences of the authors, should prove of distinct value.

PHYSICS AND CHEMISTRY.

THE progress of the physical and chemical sciences causes them to cover an ever-widening area, and thus tends to produce separate territories of work and interest; the isolation of these from each other acts disadvantageously when, as not infrequently happens, developments in one branch of study have important bearings on problems which are the peculiar study of another branch. There is generally little literature bridging the gulfs that separate divergent lines of work; textbooks fail to keep pace with discovery, and to understand even decisive original papers necessitates a preliminary perusal of previous researches on the subject.

We welcome therefore the appearance of a volume entitled *Some Physico-Chemical Themes*,[7] by A. W. STEWART, which aims directly at breaking down the barriers. Its twenty chapters deal with as many subjects of characters so diverse that they appear at first sight arbitrarily chosen; they are, however, connected by the author's manner of treatment into a scheme by which they illuminate each other. Explanations introductory to each subject suffice to qualify the reader to understand the matters under discussion. A description of the oceanic salt deposits is founded on an account of the properties of double salts, in the formation of which the effects of residual affinity are illustrated. An account of the characters of the pseudo-acids leads to an excellent discussion of the theory of indicators. One chapter deals with non-aqueous ionizing media. A study of the properties of colloids leads on to an account of methods of computing the number of molecules in a given volume (Avogadro's constant), and so to the determination of the real dimensions of molecules; connected with these ideas are the subjects of absorption and catalysis. Dr. Stewart's volume concludes with a critical survey of the periodic properties of the elements in which the imperfections of Mendeléef's arrangement are brought under review.

In any criticism of such a book as this it is necessary to recognize the difficulty of deciding what explanations are superfluous for the average reader, a difficulty which is not lessened by the author's own high attainments. In the main, however, the error, if any there be, has been in explaining more than was necessary. The chapter on the theory of indicators deserves special mention for its excellence. Very good judgement is shown in the weighing and handling of evidence; from a study of the author's methods the reader may acquire skill in these important respects. The book is easy to read; it deals with many of the subjects most interesting to the majority of students and will be welcome to all whose interests are broader than can be gratified with the time at their disposal for reading original papers. There is room for more books that will do for other sections of science what Dr. Stewart has done for the sections treated in this volume.

[7] *Some Physico-Chemical Themes.* By A. W. Stewart, D.Sc. London and New York: Longmans, Green and Co. 1922. (Demy 8vo, pp. xii + 419; 3 plates, 38 figures. 21s. net.)

NOTES ON BOOKS.

IN *First Aid in Childbirth and during Infancy*[8] Dr. GERTRUDE CAMPBELL has published a series of lectures addressed to European and native ladies in India, where the almost complete absence of trained midwives and the shortage of properly qualified doctors may make knowledge of such matters of extreme value to women in every walk of life. By spreading such knowledge as widely as possible it is hoped that a demand may be created for a higher general standard of midwifery practice throughout the country. Dr. Campbell has tackled a difficult subject with conspicuous success, and much that she has written about the care of the expectant mother and the newborn infant might be read with advantage in Europe, where, in spite of attempts to educate the rising generation of mothers by means of ante-natal clinics and so on, ignorance, even among the better educated classes, is still profound.

In a book with the title, *Hay Fever and Asthma*,[9] Dr. WILLIAM SCHEPPEGRELL relates the history of the growth of knowledge of hay fever and of its relation to pollens and grasses. For over a hundred years hay fever has been everywhere recognized as a definite disorder. The early investigations, which removed the disease from the category of mysterious conditions to one for which more or less specific causes could be assigned, were made in England, and recent researches have brought out its relation to asthmatic conditions; in fact, the two conditions are now often regarded as in their main essentials of the same nature. The author of this book is President of the American Hay Fever Prevention Association and chief of the Hay Fever Clinic at New Orleans, and is therefore probably in as good a position as anyone to speak with authority on the various grasses and pollens responsible, a subject on which knowledge is somewhat vague. He deals in succession with the nature of pollen and its relation to flowers in general, with the chemical composition of pollen, and with the chief characteristics of hay fever plants in the different states of America, though the common hay fever plants in other parts of the world are also mentioned. There is a chapter also on plants not responsible for hay fever. For those who are desirous of becoming more familiar with the actual botanical characters of the many grasses held to be responsible for hay fever this book may with confidence be recommended.

A revised edition of Mr. CLIFFORD WHITTINGHAM BEERS'S well-known book, *A Mind that Found Itself*,[10] has been published. The book, first published in 1908, contains a record of the writer's experiences during the three years he was confined in various asylums in America. Apart from its literary merit and human interest, this record has a special importance to the psychiatrist because of the insight it gives into the workings of a disordered mind, and Mr. Beers has given a particularly vivid description of his distorted mental processes during his illness. The book has been a most effective instrument in bringing about an altogether changed social attitude towards the insane. Upon his recovery in 1903, Mr. Beers determined to devote his energies and influence to the remedy of those abuses and defects in the treatment of the insane which he had observed—and himself experienced—while confined in asylums. The history of his work is described in the second part of the present edition of his book. He has been largely responsible for the organization of the National Committee for Mental Hygiene in America, and the outline here given of the growth of this new health movement is of the greatest interest. The National Committee has already done much to arouse public interest in the problem of mental disorder, and its influence is becoming increasingly felt.

The "Nem" system of feeding, devised by Dr. CLEMENS PIRQUET, professor of pediatrics in the University of Vienna, has been much used in that city. An account of the system was given in our columns in the review, published on October 30th, 1920 (p. 666), of a large book by Professor Pirquet. Last winter he gave the Silliman lectures at Yale University; they dealt with pediatrics, and some of them with this particular plan of feeding. He has now written a small book entitled *An Outline of the Pirquet System of Nutrition*;[11] it contains a practical account of the system, and will be found useful by any practitioner who may wish to adopt it.

[8] *First Aid in Childbirth and during Infancy.* By G. J. Campbell, M.D., Ch.B. Calcutta and London: Butterworth and Co. 1922. (Cr. 8vo, pp. xiv + 245. 5s. net.)

[9] *Hay Fever and Asthma: Care, Prevention, and Treatment.* By William Scheppegrell, A.M., M.D. New York and Philadelphia: Lea and Febiger. 1922. (Demy 8vo, pp. x + 274; 1 plate, 107 figures. 2.75 dollars.)

[10] *A Mind that Found Itself: An Autobiography.* By C. W. Beers. Fifth edition. New York and London: Longmans, Green and Co. 1922. (Cr. 8vo, pp. 364. 7s. 6d. net.)

[11] Philadelphia and London: W. B. Saunders Company. 1922. (Fcap. 8vo, pp. 96. 10s. net.)

British Medical Journal.

SATURDAY, DECEMBER 30TH, 1922.

THE SECTION OF OPHTHALMOLOGY.

IN this, the last issue of the year, we complete the full report of the clinical and scientific proceedings of the ninetieth annual meeting of the British Medical Association, held in Glasgow during the last week of July. The scientific sections this year numbered nineteen, and held, in all, forty-one sessions, exclusive of the many clinical and laboratory demonstrations which took place in the afternoons. To record all these transactions—first in brief outline and later at full length—has been no small undertaking, and it will, we hope, be a source of satisfaction to our readers that this task has been brought to a conclusion by the close of the year.

The final instalment of the full report, printed at p. 1249, covers the second part of the proceedings in the Section of Ophthalmology, the first part having been reported in our issue of December 16th, at p. 1153. The occasion may perhaps be turned to advantage by reviewing very shortly the work and organization of this Section. The practice of ophthalmology touches both medicine and surgery, and in its scientific aspects it makes close contact at several points with pure science. Ophthalmology is therefore a subject of particular interest both for the specialist and for the general reader. The programme of business in this Section at Glasgow was clear-cut, according to the simple pattern favoured by many other sections in recent years. The first two mornings were each given to the general discussion of a particular topic, followed by the reading of short papers on unrelated matters of current interest. The third morning was set apart for a clinical meeting at the Glasgow Eye Infirmary, where a large series of demonstrations had been arranged by officers of the Section, and clinical cases were shown by the staff of the hospital.

The first of the set discussions, on the etiology of optic atrophy, was opened by a paper on the clinical side by a physician, Dr. C. O. Hawthorne; the more surgical aspects of causation were discussed by Mr. Hogarth Pringle, who gave his experience of atrophy following diffused violence to the skull; and Dr. Traquair dealt in particular with the finer points of diagnosis by the aid of perimetry. In the course of the debate on these papers Dr. James Alex. Wilson remarked on the value of this presentation of the subject by workers whose studies had proceeded along separate but convergent lines; he made the further point that close consideration of optic atrophy—an end-result—led necessarily backwards to early stages and so to underlying causes, and thence directly to the problem of prevention of eye disease, a subject opened up in that Section by Mr. Bishop Harman in 1921. The discussion as a whole may be confidently accepted as an adequate presentation of what is known of optic nerve atrophy as a clinical and pathological fact, and here it is impressive to note how wide and various are the relations of optic atrophy and how obscure in not a few instances are the ties which unite cause with effect. Even in such a conspicuous condition as violence applied to the skull the traditional view that a resulting optic atrophy must be the consequence of nerve injury due to fracture at the optic foramen is now challenged, and haemorrhage into the nerve sheath appears as a rival explanation. This latter suggestion has the chance of surgical verification, and it may be hoped that opportunities of putting it to the proof will not be lost. If in an issue relatively direct and simple there is room for doubt, it can hardly be a matter for wonder that optic atrophies appearing in the course of various diseased states of the nervous and cardio-vascular systems offer many difficult and puzzling problems. In the first of the opening papers these atrophies were presented by Dr. Hawthorne as facts gathered from clinical experience, and some more or less hypothetical interpretations were proposed. Not on every point did subsequent speakers seize the chance either for controversy or for confirmation, and this is the more remarkable as the circulation in advance of the leading addresses gave intending speakers the opportunity to come fully armed for the fray. We should like, for example, to have heard opinions on the suggestion that some cases of sudden unilateral loss of vision, with subsequent nerve atrophy, may be due to embolism secondary to intracardiac thrombosis occurring apart from valvular disease; and on the argument that certain instances of post-neuritic optic atrophy associated with recovery from severe cerebral symptoms mean intracranial tumour. A third point worthy of debate is the possibility of primary bilateral atrophy as a consequence of intracranial tumours other than enlargements of the pituitary body.

On future occasions it might, perhaps, be possible to arrange beforehand to secure speakers who would undertake to address themselves to particular points raised in the opening papers, and such a plan need not necessarily interfere in any way with the full freedom of debate. In the paper dealing with the refinements of perimetry the appeal is mainly to the technical expert, but seeing the bearing of the observations on the early diagnosis of certain forms of nervous disease, the subject cannot safely be neglected by the physician. The general discussion produced many interesting records of personal experience and much valuable comment. There was universal acknowledgement of the medical as well as of the surgical aspect of clinical ophthalmology, and one of the speakers favoured the recognition of the "ophthalmic physician." Whether this would be accepted may be doubted, for anyone with the status of physician would hardly welcome a term implying limitation, even as Mr. Gladstone denied that he was a *Gladstonian* Liberal. Altogether the first day's discussion in the Section of Ophthalmology was worthy of the efforts of the officers to make it a success.

The second day's discussion, on the clinical significance and treatment of heterophoria, was opened by the President, Mr. A. S. Percival, who purposely made his introductory remarks brief in order that the guest of the section, Professor Webster Fox of Philadelphia, might be able to develop his thesis at greater length. Heterophoria, or the tendency of one eye to deviate in one direction or another owing to imperfect balance of the ocular muscles, is a subject of great interest to ophthalmologists. This motor anomaly of the external muscles of the eye will always be associated with the name of the late George Stevens of New York, who introduced the term "heterophoria" and classified the various forms of latent squint. To the general practitioner this condition is chiefly important as a cause of asthenopia and of diplopia; to the physiologist and the comparative anatomist it presents an interesting example of a defect of muscle balance; its attraction for the practising ophthalmologist can be perceived in the brisk debate which followed the opening papers at Glasgow.

THE AFTER-CARE OF TUBERCULOUS PATIENTS.

WHAT is to be done with the tuberculous patient who has passed through a sanatorium, who has made considerable progress towards recovery, and who yet, if he returns to his old conditions of life and work, will incur a serious risk of breaking down again? To this question there is no definite answer. The disease with which one

is dealing is so protean in its manifestations, so insidious in its reappearances, and so inconsistent in its response to treatment, that it is too much to hope for any ideal solution of such a problem.

With regard to the present somewhat tentative measures which are being employed in the after-care of tuberculous patients we have received from Dr. W. H. Dickinson, Tuberculosis Officer of the Dispensary, and Dr. Cecil G. R. Goodwin, Medical Superintendent, Barrasford Sanatorium, an admirably summarized report to the Human Tuberculosis Subcommittee of Newcastle-on-Tyne. During the month of September the authors paid a visit to the Cambridgeshire Tuberculosis Colony, Papworth, to the Industrial Settlements, Preston Hall, Kent, to Nayland Sanatorium, Essex, to Burrow Hill Colony, Frimley, and to West Heath Training Colony, Birmingham, in order to gain first-hand information of the schemes which have been inaugurated in these places. At Papworth—visited by many members of the British Medical Association during the Annual Meeting at Cambridge two years ago—there is accommodation for 210 men, besides 50 cottages available for married patients and their families. Instruction is provided in various suitable trades, such as carpentry, boot-making, tailoring, printing, hand-made jewellery, etc., and the men are so trained that after a time they are capable of earning sufficient to render themselves self-supporting. The settlement is permanent, a home is provided for the settlers for life, and it is the business of the colony to find a market for their products. This scheme is ambitious and comprehensive; it has met with considerable success, but, on account of the heavy initial outlay, to apply it generally would obviously be very expensive.

The other institutions, with the partial exception of Preston Hall, provide only for the training of the patients, and not for their permanent settlement. With the assistance of the Government a year or eighteen months is spent in teaching them a trade, in the hope that after the completion of their course they will be able to maintain themselves independently. The great objection to this method is that it is very difficult for men with handicapped lives to compete in the open market with others whose working ability is unimpaired. The usual sequence in these cases seems to be either that they fail to find employment at all or they are unable to earn sufficient for a livelihood without working so hard as to imperil their health. If they are so exceptionally placed as to set up a business on their own account, they find considerable difficulty in obtaining a market for their goods. Failing all along the line, they either return to their own work or apply for a training in another branch.

In their report the authors condemn the second scheme, largely because of its incompleteness. With the first they are obviously impressed, but they foresee, in the case of Newcastle, too many economic difficulties to recommend its general application. In the House of Commons recently the Minister of Pensions mentioned, apparently with approval, the fact that the late Government had decided that in the present financial circumstances it would not be justifiable to incur large expenditure in respect of such settlements. Whatever measures may be taken to solve the problem as it applies to the general population it will always be necessary to consider the permanent rather than the immediate effects which may be hoped for. However laudable it may be to build ideal cottages for persons who have developed tuberculosis, it is still more important to clear the slum areas and erect sanitary dwellings for those who are in danger of contracting it. It is in the prophylaxis of the disease that money and energy will best be spent, and it is in the prophylaxis of the disease that the ultimate benefit to humanity will be most evident.

PASTEUR.

THE one hundredth anniversary of the birth of Pasteur was celebrated in Paris at a meeting at the Pasteur Institute on Wednesday, at which eulogies on Pasteur were spoken. On the previous day a meeting of the Académie de Médecine had been held, when M. Béhal presided over a large assembly, and speeches in praise of Pasteur were delivered by Professor Widal and others. A national celebration is to take place at Strasbourg in the spring, probably on May 1st, when a monument to Pasteur, consisting of an obelisk bearing a portrait medallion, will be unveiled within the university, where Pasteur was a lecturer on chemistry for six years (1849-1854). The cost of the monument has been defrayed by international subscription, to which a committee under the presidency of Sir Charles Sherrington, President of the Royal Society, has been able to forward a substantial contribution. An exhibit illustrating the results of Pasteur's discoveries and their influence on the development of the fermentation industries and of medicine will be open in Strasbourg from May to October, and it is hoped to retain many of the exhibits to form the nucleus of a permanent museum of hygiene. The best monuments to Pasteur are the Institut in Paris, and its analogues in other countries, among them our own Institute, bearing appropriately the name of Lister, in whom Pasteur recognized a kindred spirit and the greatest of his disciples. The Institut Pasteur was erected by the Académie des Sciences with money subscribed by all classes in all countries of the world. It was opened in 1883, but the life work of Pasteur, *vaincu du temps* as he said himself, was almost done. For a few years he followed the work of those who, in the words of his pupil and successor Roux, "were doing the best that was in them that the Institute should not be unworthy of him whose name it bore." Pasteur's character, his perseverence under difficulties, and the greatness of his achievements have made a strong appeal to the sentiment of the French people. He was born early in the morning of December 27th, and it was arranged that the bells of Dôle should ring for two minutes before 5 a.m., and that those of all the churches in Franche-Comté from the Jura mountains to the plain of the Saône should ring in response.

ARSENIC IN COCOA.

THE occurrence of arsenic in cocoa must rank among the most unexpected events. A summons was heard at Richmond on December 18th against the Home and Colonial Stores for selling cocoa containing one-fortieth of a grain of arsenious oxide per pound. Messrs. Rowntree and Co., Ltd., of York, were also summoned for aiding and abetting in the alleged offence. Both defendants formally pleaded guilty. Evidence was given which showed that the seller had blended seven different cocoas, one of which, supplied by Messrs. Rowntree, was found to contain arsenic to the amount of one-tenth of a grain per pound. The arsenic was traced to a quantity of potassium carbonate, used by the manufacturers to render the cocoa soluble. Nothing was stated as to the source of the potassium carbonate or the origin of the arsenic it contained. Formerly arsenic as an impurity of potassium carbonate was so unlikely as to receive no consideration. Such proportions as a hundredth of a grain per pound might have been found, but that proportion is a commonplace in manufactured chemicals. The *British Pharmacopoeia* permits two parts of arsenic per million, or one-seventieth of a grain per pound, in potassium carbonate. Shortly before the war there came on the market for the first time a sort of potassium carbonate which contained arsenic in a proportion of about one grain per pound. No one seemed to know where this stuff came from, but there is little doubt that it was of German manufacture, and had been produced by some unusual process. On the outbreak of war a scarcity of potash salts arose, and this particular supply disappeared. Now apparently it has come back on the market more vitiated than ever. What must have been the proportion of arsenic in a sample of potassium carbonate which, being added

to cocoa in quite small amount, produced a mixture containing one-tenth of a grain of arsenic per pound? The statement made to the court on behalf of Messrs. Rowntree showed that the firm had taken precautions to ensure the purity of the materials they used in the manufacture of cocoa. In July they were informed that some of the loose cocoa they supplied contained traces of arsenic. The chemists employed by Messrs. Rowntree immediately instituted a searching analytical examination, and it was ascertained that the potassium carbonate used for the purpose already mentioned contained a substantial quantity of arsenic. Inquiries were addressed to the manufacturers of this lot of potash, but no explanation had been obtained. Messrs. Rowntree sacrificed the whole of the cocoa—some 300 tons, varying in value from £100 to £250. The period during which the impure cocoa was sent out was about two months, and since August 1st the firm was confident that all the cocoa issued from its works was made from ingredients absolutely free from arsenic. A witness for the Home and Colonial Stores stated that that company, as soon as it heard of the discovery, had withdrawn 65 tons from its shops and 20 tons from its warehouses. How it came about that arsenic was present in the common potassium carbonate supplied to Messrs. Rowntree has therefore not been satisfactorily established, but it is certainly to be hoped that it will be ascertained, in the interest of food manufacturers as well as for the safety of the public. It is impossible to examine everything for arsenic regardless of whether it is a likely or unlikely impurity, but it seems evident that more extensive analytical scrutiny will be needed in future.

SMALL-POX IN THE PAST.

BEN JONSON began his Epigram to the Small-pox with the apostrophe:

> "Envious and foul disease, could there not be
> One beauty in an age and free from thee?"

and the literature of the next two centuries contains many expressions of the repulsion with which small-pox was regarded. Many of these were collected by Dr. J. C. McVail in an article he wrote in 1893. The evidence is conclusive and all goes the one way. Coming down to the nineteenth century, we may recall how Mr. Holman Hunt related in the *Times* a conversation he had had with Dr. Stephen Lushington, the famous lawyer whose portrait he had painted. Lushington was born in 1782 and lived until 1873. His name is now, perhaps, best remembered for his share in the separation of Lord and Lady Byron in 1817. He was not only a very distinguished lawyer, who became Judge of the High Court of Admiralty, but one who in his time had mixed much in society, both political and aristocratic. Holman Hunt asked him for his opinion as to the good looks of the women at the beginning of the nineteenth century as compared with those of the women of the period in which the conversation took place. Lushington began his reply by saying that it was difficult to make any comparison, because in his early days it was very rare to see a young woman who had not a pock-marked face, so common was small-pox. Another instance of the way in which vaccination was regarded early in that century is afforded by what Joseph Farington—extracts from whose diary of the period between 1793 and 1821 are being published in the *Morning Post*—had to say upon the subject of the opposition to vaccination in 1806. Farington, who has already been mentioned in our columns with reference to his acquaintanceship with John Hunter and Edward Jenner (March 25th, 1922, p. 490), was a landscape painter of considerable repute, a member of the Royal Academy, who lived from 1747 to 1821. In his diary under date June 27th, 1806, he wrote: "The opposition to Vaccine Innoculation was spoken of & its destructive effects & the necessity of doing something to prevent it. Wilberforce [William Wilberforce, of anti-slavery fame] had said in the House, when the difficulty of discouraging the natural small-pox was under discussion, 'Should the plague appear in the Country wd. you not consider it necessary to stop its progress, & why not this fatal disorder.' Barnard much approved this. Dr. Jenner's disinterestedness was [already] mentioned. Before He published an acct. of his discovery, Sir Walter Farquhar sd. to Him that if He chose to preserve it a secret He might make £100,000 by it. It wd. be easy for Him to prove its value to Medical men of Character, who wd. recommend & warrant its efficacy, which wd. enable Him to get £10,000 a year by it; but Dr. Jenner determined to give it at once to the world.—Wilberforce sd. The obstinacy of the people in refusing to avail themselves of it seemed to rise out of their Characteristic disposition; they would be at liberty, & sulkily say, They wd. do what they pleased with their own. 'I will,' continued He pleasantly, 'have a right of choice,—if I have a mind to beat my wife who shall hinder me.'—But, He added, though people cannot be forced to use *Vaccine innoculation*, some innoculation might be enforced of necessity.—He said the vaccine innoculation has spread more considerably in other Countries than in England; Even in remote Countries, and even in China, a country in which innovation is jealously opposed, it has been admitted.—In India it is used." Glancing over some of the periodicals antivaccinists issue to-day, a note like the following (*The Vaccination Inquirer*, August 1st, 1922, p. 98) strikes the eye: "The chairman [at Taunton] 'was afraid some people needed an epidemic to teach them the need of vaccination,' and we ourselves fear another epidemic may be needed to fully reveal to them its [that is, vaccination's] murderous folly!" Surely a person who thinks in that strain must have a mind which responds merely by opposing what everybody else affirms. It may partly be the fault, as Wilberforce suggested, of the traditional British "bull-dog" obstinacy in claiming to "do what they pleased with their own."

SCIENTIFIC RESEARCHES ON FOOD PRESERVATION.

THE Department of Scientific and Industrial Research has issued the report[1] of the Food Investigation Board for 1921. It is a record of scientific investigation both valuable and interesting; the problems the Board seeks to solve are primarily industrial, and in some of them only is there matter of direct hygienic interest. The report opens with a general account of the very complete low temperature station for research in biochemistry and biophysics at Cambridge, which has just been erected, and of which several illustrations are given. An original feature of this is that on the roof of the building there is a greenhouse having a plain glass roof, but insulated walls and floor, together with refrigerating pipes, so that while exposed to the sun plants can be kept at any selected temperature and their rate of growth under varying conditions noted. The work of the Board is carried out under the direction of a number of committees, including the Fish Preservation Committee, the Meat Committee, the Engineering Committee, the Fruit and Vegetables Committee, the Oils and Fats Committee, and the Canned Foods Committee. For the Fish Preservation Committee Dr. Clarke, working on "pink," a condition observed in dried salted fish, found one type to be due to a coccus (*Rhodococcus*) which grows not only on the fish, but also on the salt incrustations of storing sheds. In the endeavour to preserve herrings fresh it was found that some stored at 20° F. became soft in a few weeks; this was apparently due not to bacterial growth but to certain autolytic ferments in the liver of the fish, active even at that low temperature. One-third of the report is devoted to the work of the Fruit and Vegetables Committee, which has concentrated its attention mainly on apples, their preservation in cold and gas storage, the chemistry of their ripening, and their diseases when stored. Large scale "gas" storage tests have been continued; gas storage means a reduction of the oxygen in the atmosphere to between 5 and 8 per cent., as compared with 21 per cent. in normal air, while the CO_2 is increased to between 12 and 15 per cent., as compared with minute traces normally. Since in gas storage the

[1] *Report of the Food Investigation Board for the Year 1921.* London: His Majesty's Stationery Office. 1922. Price 2s. net.

atmosphere is dependent on the respiration of the particular variety of apple, the rate of that respiration and factors affecting it have to be determined, and are being studied. For the Oils and Fats Committee Dr. Ida Smedley Maclean has made some interesting researches on the formation of fat by yeast. She has found that the amount of fat obtainable from yeast depends largely on the method of extraction, and that a large part of the fat seems to be held in combination in the cell and built up into some complex which is broken down by a method of acid hydrolysis she has devised; yeast incubated for forty hours in glucose is found to gain most if not all of its fat from the carbohydrate, for the weight of protein lost from the yeast is considerably less than the weight of fat formed. The Canned Foods Committee reports at some length upon an investigation of the changes occurring in the canning of herrings; the bacteriological results were inconclusive, and further experiments are to be carried out. The constituents of the herring by itself were found to exercise some solvent action on tin, and the amount of tin dissolved under conditions similar to canning was found to be proportional to the free acid present. A special report by this Committee on the bacteriology of tinned meat and fish was published recently under the auspices of the Food Investigation Board, and has already been reviewed in our columns (October 14th, 1922, p. 700).

MEDICINE'S DEBT TO THE FINE ARTS.

THAT medicine and surgery owe much to the ancillary sciences of biology, chemistry, and physics is an obvious truism, but the help and inspiration that the profession of healing has received from pictorial and sculptural arts have not been so freely acknowledged. In examining ancient descriptions of patients and morbid conditions, the reader often looks anxiously, and too often in vain, for an illustration to clear away the mist of doubt left by the account in the text; for it is easy to recognize in old pictures examples of disease, such as achondroplasia, only within comparatively recent times awarded a place in our nosological lists. But the value of art to medicine is by no means confined to illustration, great as that help may be, especially in anatomy, and in a thought-exciting paper on "The debt of medicine to the fine arts," read before the History of Medicine Section of the Royal Society of Medicine on December 20th, Dr. J. A. Nixon of Bristol rightly laid stress on the intellectual stimulus that the fine arts have conferred on the followers of Aesculapius. He remarked that all the real progress in medicine has been won by those who, like artists, being by nature richly endowed with keen gifts of perception, have retained those gifts unimpaired, together with the Hippocratic secret of vivid mental imagery. Artists and medical men have different ways of looking at things; scientific and medical training often dulls the power of mental imagery that gives accuracy to our perceptions and justness to our generalizations, and, as Dr. Nixon points out, the acuity of observation shown in the masterpieces of Praxiteles and Pheidias finds expression in the clinical descriptions of Hippocrates, who saw with the eye of an artist. Harvey's genius lay in his powers of artistic perception, not employed for creative art or merely for illustration, though he was a keen student and critic of the fine arts but applied to accurate observation; further, his power of imagination enabled him to construct hypotheses which he tested by way of experiment. Christopher Wren, the greatest draughtsman of his age, had much to do with the invention of intravenous transfusion, and Leopold Auenbrugger, "a great friend of music and the arts in general," and the composer of an opera (*The Chimney-Sweeps*), laid the foundation of our whole method of physical examination of the chest by his *inventum novum* of percussion. Sir Charles Bell, who wrote of his discovery of the functions of the anterior and posterior nerve roots—"I know this will put me beside Harvey"—Louis Pasteur, J. M. Charcot, Sir James Paget, and others, such as Sir Prescott Hewett, though not so outstanding, had much artistic talent. Dr. Nixon's paper, though pleasantly expressed and without a trace of the odour of the midnight oil, must have been based on much research, as is shown by the excellent examples he brought forward to support his thesis that the best work in medicine has been done by those who have the qualities of an artist.

RESEARCH IN ANIMAL DISEASES.

THE discussion on the importance of comparative pathology which took place at the Annual Meeting of the British Medical Association at Glasgow emphasized the fact that the problems of disease and of health, whether in man, animals, or plants, are nearly related, and the medical profession has therefore a close interest in the steps which are being taken to promote research in animal diseases. This is one of the many varied activities which the Development Commission sets out to encourage, and in its twelfth report considerable prominence is given to this subject. An advisory committee, consisting chiefly of representatives of the medical and veterinary sciences, which was appointed to report on the facilities available for the scientific study of the diseases of animals, came to the conclusion that the present state of affairs constitutes what the committee characterizes as "a national disgrace." Such a verdict was not unexpected; the apathy shown by the public at large towards the progress of scientific investigation has prevented the undertaking of any of the broadly conceived schemes of research known to be vitally important to public health. The committee considers that, in view of the great wastage caused by the diseases of animals, it would be unwise to neglect measures likely to increase the food supply and at the same time to lessen the cost to the taxpayer of the compensation payable in checking outbreaks of disease. The committee points out also that whereas in human medicine there has been an organized attempt to secure the benefits of new knowledge and new methods, in veterinary medicine the effort has been slight. Benefactions for the study of disease in animals have been, as the committee states, "surprisingly few." Moreover, students of diseases of animals have received relatively small support from State funds in comparison with those engaged in other branches of study. The appeal for support must be based on the benefits likely to accrue to human medicine from ancillary studies in animal pathology; on the saving which the consumer would effect if the waste caused by diseases in British flocks and herds could be reduced; and on the gain to trade within the Empire which would follow if more attention were given to the investigation of the many diseases which hinder the prosperity of the Dominions and Colonies.

THE CAUSE OF A COMMON COLD.

IN the course of a public lecture given recently by a well-known member of the medical profession, he is reported to have said that colds were not caused by draughts. The speaker had plenty of precedents for making this statement; indeed, it has become almost an accepted doctrine of preventive medicine. Yet its truth is, we venture to say, very doubtful. It has certainly never been established with any scientific precision by a full series of observations. Without doubt it is contrary to the experience of many, who are satisfied that in their own persons a chill may be followed by a "common cold" or coryza. The chill may be produced by sitting in a draught, especially if exercise has previously produced a slight perspiration, or even by spending some time in a cold room. The belief that a chill may be the affective cause of a common cold is quite in accord with the trend of modern views of the etiology and pathology of infections. The modern explanation would be that persons who are disposed to develop coryza after a chill are carrying about in the throat or nose one or more of the organisms capable of producing catarrh; it may be the pneumococcus or the *Micrococcus catarrhalis* or some other. The reaction following the chill seems to produce conditions favourable to the growth of the organism and the development of its pathogenic properties. Pasteur made an

observation which is very much to the point: the domestic fowl is refractory to anthrax under ordinary conditions, but he found that if he inoculated a cock with a virulent anthrax culture and then kept the bird's legs in cold water for some time, so that its body temperature, which in health is 42°C., fell to 39° C., it suffered from a generalized attack of anthrax. We do not, of course, call into question the belief, which is held alike by the public and the medical profession, that a cold can be caught from another sufferer; but we desire to make the point that a common cold or coryza may be due to an autogenous infection. We recognize equally that the chilly sensation which marks the actual onset of acute coryza may be mistaken for its cause.

MILK AND DAIRIES ORDER.

In a circular (335) dated August 28th, 1922, the Minister of Health drew the attention of county councils and sanitary authorities to the provisions of the Milk and Dairies (Amendment) Act, 1922, which came into force on September 1st, 1922, with the exception of Section 3, which relates to milk sold under special designations, such as "certified," "Grade A (tuberculin tested)," "Grade A," and "pasteurized," and which comes into force on January 1st, 1923. Hitherto the conditions relating to this specially designated milk were laid down in Orders made originally by the Food Controller, but in Circular 335 the Minister of Health said that he proposed modifying those conditions in a new Order. This Order (as we announced recently) was made on December 9th, 1922, and is called the Milk (Special Designations) Order, 1922. Under its provisions a county council or a county borough council is given power to grant licences to producers to sell milk as Grade A, but if a county council is unwilling or does not propose to exercise this power it may be conferred by the Minister on a district council, which is independently authorized to grant licences to those who are not producers to sell milk as "certified," "Grade A (tuberculin tested)," "Grade A," and "pasteurized." Licences may be suspended or revoked, but aggrieved persons may appeal to the Minister of Health against decisions to suspend or revoke. Schedules to the Order set out the conditions subject to which licences may be granted. Those relating to pasteurized milk differ materially from the conditions at present in force. The first two are: The milk shall be pasteurized—that is to say, retained at a temperature of not less than 145° and not more than 150° F. for at least half an hour, and be immediately cooled to a temperature of not more than 55° F. The milk shall not be so heated more than once and shall not be otherwise treated by heat. In Circular 335, to which we have already referred, the Minister of Health stated that before he issued the new Order he would consult representatives of local authorities and of the milk trade. This consultation does not appear to have been very effective, for on December 18th he found it necessary to make an amending Order, and in a circular (362) gives as a reason that he now finds it will be impossible for the necessary apparatus to be installed by January 1st, 1923, to ensure compliance with the terms of the original Order as regards pasteurized milk. The amending Order therefore defines such milk until July 1st, 1923, as that which "is treated not more than once by a suitable heating process and immediately cooled to a temperature of not more than 55° F." The Minister of Health has been singularly unlucky in the orders and circulars he has issued relating to milk. The well-known army phrase "Order, counter-order, disorder" is quite as applicable to civilian as it is to military instructions.

THE PREVENTION AND CURE OF SCURVY.

Miss E. Marion Delf, D.Sc., has recently carried out an investigation into the antiscorbutic value of South African food substances for the South African Institute of Medical Research.[1] The work was undertaken to discover the best method of preventing scurvy amongst the native labourers in the Rand mine compounds. The commoner South African fruits and vegetables were tested in guinea-pigs, and, in a few cases, in monkeys also. Oranges were found to have a higher antiscorbutic value than peaches or pineapples, and the navel orange was superior to the naartje. The pawpaw was found to be nearly as potent as the orange; this result is of importance because fresh pawpaws are obtainable in South Africa for eleven months of the year. Sweet potatoes and green mealies were found to be the strongest antiscorbutics amongst the common South African vegetables; pumpkins, sugar-cane, and dry Kaffir corn were of very little value; Kaffir beer was found to have the same antiscorbutic value as fresh milk. South Africa is well known to be one of the chief citrus-growing countries of the world, and it is surprising to learn that scurvy amongst the mine labourers is sometimes a serious economic problem. The reason for this is that during a drought fresh vegetables are very difficult to obtain. Dr. Delf's results show how necessary it is to have accurate knowledge when planning antiscorbutic measures, for pumpkin, sugar-cane, and Kaffir beer are cheap, easily obtained, and liked by the natives, hence they would be the natural first choice if fresh vegetable foods were not available as antiscorbutics; the results recorded show that they are nearly useless for the purpose. Miss Delf recommends sweet potatoes as antiscorbutics, and failing these a supply of fruit. Experiments were made to compare the total quantity of antiscorbutic required to prevent scurvy and the quantity required to cure the disease, and it was found that at least five times as much was required to cure as to prevent. A few experiments were made to test certain dried products to ascertain whether there was any potent antiscorbutic available in a dried form. Sun dried orange cake was found to be almost inactive, although an orange marmalade prepared without boiling the orange juice had a moderate antiscorbutic action.

[1] Publications of the South African Institute of Medical Research. No. xiv. Johannesburg. 1921. (Imp. 8vo, pp. 105; 12 figures. 5s.)

THE INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, 1925.

At the International Congress of Ophthalmology held in Washington in April, 1922, Mr. Treacher Collins presented an invitation on behalf of all the ophthalmological societies of Great Britain and Ireland to hold the next congress in London in the year 1925. The invitation was accepted on the motion of Professor Gullstrand, of Upsala, Sweden, seconded by Dr. Lucien Howe, of Buffalo, New York. A general committee consisting of representatives of the inviting societies has since met and has formed an executive committee, empowered to make arrangements for the 1925 Congress. It is to be held in London during the four days Tuesday, July 21st, to Friday, July 24th, 1925. The three official languages are to be English, French, and German. The subscription for membership has been fixed at £2. Invitations will be sent to the principal ophthalmological societies or other representative bodies in every nation, asking them each to nominate a delegate to the Congress who would be responsible for promoting its interests in the country which he represents, so as to endeavour to make it a great reunion of all those interested in ophthalmology throughout the world. The Executive Committee is composed of the following members: Mr. E. Treacher Collins (chairman); Mr. J. Herbert Fisher (vice-chairman); Mr. Ernest Clarke, (treasurer); Mr. Leslie Paton, 29, Harley Street, London, W., and Mr. R. R. James, 46, Wimpole Street, London, W. (secretaries); Mr. A. B. Cridland, Mr. J. B. Lawford, Mr. Humphrey Neame, Sir John H. Parsons, F.R.S., Mr. A. H. H. Sinclair.

At a meeting of the Society for the Study of Inebriety to be held in the rooms of the Medical Society of London (11, Chandos Street, Cavendish Square, W.) on Tuesday, January 9th, at 4 p.m., Dr. Harry Campbell will open a discussion on "The pathology and treatment of morphia addiction."

Nova et Vetera.

WITCHCRAFT.

MEDICAL men who deal with the ignorant and backward—a class by no means confined to the lowest social stratum or to the least accessible districts—not infrequently find themselves in contact with beliefs and practices that come under the heading of "magic." Such magical ideas and customs were long disregarded, save by a very small group of antiquaries, as beneath contempt and unworthy of notice. During the last generation, however, largely under the stimulus of the writings of Sir J. G. Frazer, these phenomena have attracted the attention of scientific investigators in several fields, and it has become apparent that such customs represent a survival of an earlier and pre-scientific attitude towards Nature. The general character of the beliefs, if beliefs they can be called, that underlay these practices and this attitude can now be reconstructed, in outline at least. This attitude, which we may call "magical," was not peculiar to one race or people but was the common inheritance of mankind. Moreover, the survival of such beliefs is in itself an important psychological phenomenon and as such of high interest to medical men.

Magic and Superstition.

It has become increasingly evident as a result of recent psychological investigation that man is even less a creature of reason than we had thought: that in many or most matters of life our opinions are formed first and the logical justification for them is the result of a later process. This fits in well with the general conclusion of anthropology that, in an early stage in man's development, feelings and impressions give rise to actions which seem contradictory to the rationalizing mind since they are not linked together by any clear body of belief. Such practices, especially when they are considered to be of a "religious" character, have therefore often been gravely misunderstood by investigators. These have often had the models of the higher religions before their eyes, and have regarded ritual as something based on a definite *faith*. It is, however, only in a later stage of his development that the underlying vague and inconsistent attitude toward the world around him becomes elevated by man into anything that can be called a consistent religion or body of belief. A yet later stage shows man giving reasons for the faith that is in him, when religions begin at last to seek to justify themselves and to explain their origin and nature. They now develop beyond a ritual into a rigid legal system and a fixed sacred tradition. All the great religions have done this, and all have sought to provide their followers with a complete explanation of the world in which they live. Then comes another stage in man's mental development. He finds that his world is not only subject to laws but that those laws are further and further discoverable. By accumulating experience and by investigating these natural laws he finds at last that even his own opinions and thoughts are subject also to laws, and he seeks to know something further of them too. Without this knowledge he cannot understand himself, for to do that he must first seek to learn how he came to be what he is. This last stage has proceeded but a very little way and cannot at present be traced back beyond the Ionian Greeks of the sixth century B.C.

Every modern society exhibits each of these stages of man's mental development. Even the most scientific and highly rationalized individuals show in the various departments of their thoughts all the several stages through which our species has passed. Moreover, in the process of development our minds like our bodies recapitulate in some sense the history of our kind. That recapitulation needs very careful and knowledgeable interpretation, but the general principle of its existence is, we think, fairly established. The child is, after all, not only the father but also the remote ancestor of the man. It is strange, too, how very persistent are some even of the very lowest of all folk beliefs. Under the stress of war with all the uncertainty of life and disturbance of society that it brought, have we not seen a marvellous recrudescence of the very lowest and simplest form of magic known to us—the imbecile "mascot"? The accidental association of success or good fortune with some trivial object—a common phenomenon among the least elevated races, and frequently encountered among the most degraded members of civilized society—spread itself through all classes under the disintegrative influence of war. It is one of innumerable instances that reveal how much of the savage there is still in our mental make-up. With such facts before us a systematic study of the beliefs of the lower culture must perforce be of interest to our profession.

The Witch-Cult in Western Europe.

Miss Margaret Murray, who is best known as an eminent Egyptologist and an associate of Professor Flinders Petrie in much of his work, has recently produced an important and revolutionary book on the subject of witchcraft,[1] a particular department of magic. About the learning and labour involved in preparing this collection there can, we think, be no two opinions. As the result of many years of work Miss Murray has brought together in very convenient form a vast mass of evidence concerning the practice of witchcraft in our own and other Western countries. All medical folklorists and anthropologists, as well as all students of the "backward" human mind, will be grateful to her for this well arranged and documented record. For all these classes Miss Murray has rendered a literary service of no mean value. Concerning her interpretation of the facts that she has so skilfully collected opinions will naturally differ.

There can be no doubt that, given a belief in the effectiveness of witchcraft, human nature is so constructed that a certain proportion of mankind will seek to avail itself of the advantage over enemies and the help to friends which is held out to it. No anathema by a church or forbiddance by a law could wholly prevent this. Witchcraft was and is a reality in the sense that, like the wearing of the mascot, it always has been and still is practised by some minds on a certain level. Scientifically trained men have adequate tests of the effectual working of the measures they employ and the educated but unscientific community is partly, at least, under their influence. There are, however, strata of society that are not under this influence, and among them magical beliefs are common, and the practice of witchcraft is even nowadays by no means unknown. Farther back in history, in the seventeenth century and earlier, the belief in the power of magic was practically universal throughout the whole community, and the control by the scientifically minded hardly existed. What wonder, then, that witchcraft was much commoner than it is now?

Miss Murray has traced in great detail the actual practices of these earlier witches. She finds much in common in their practices throughout Western countries; she finds some traces of a common ritual, of a common form of government, and of a common form of initiation. In all this we can follow her and see the interest of her findings. She sees, too, in many of these practices the evidence of an earlier "religion" long antecedent to Christianity. Here, too, the great majority of anthropologists will share her views, save that probably most of them would like to substitute for the word "religion" some such phrase as "point of view," "mode of approach," or "attitude." There can be little doubt, we think, that in any community or group that believes in magical influence an extensive magical tradition will be handed down from generation to generation more or less unconsciously. Thus the foolish notion of the unluckiness of sitting thirteen at table or passing under a ladder permeates even intelligent society, though none can say how the belief reached him. Among unintelligent, uneducated, and unscientific people, and above all among those with idle hands and empty heads, much more elaborate ideas and even practices and rituals are passed on by some imperceptible and little understood process, the investigation of which is a part of the task of the new science of social psychology.

Witchcraft and Religion.

But Miss Murray goes beyond this, and it is here that we feel we must part company with her. She adduces these rituals and practices as evidence of the existence and conscious and separate persistence of a peculiar "witch religion." This body of belief, in her view, is or was professed by a group of men and women in communion with one another, conscious of a common cause and a common faith, and united in opposition to the prevalent religion of Western Europe. Here, we think, she not only misinterprets the facts, but misinterprets also the nature of the early beliefs that these witch phenomena have preserved for us. The ancient attitude of man to supernatural powers, the attitude that preceded the world religions, was perforce a tolerant attitude. It was not, and did not profess to be, consistent with itself. The savage magic worker is fully prepared to admit the existence of

[1] *The Witch-Cult in Western Europe: A Study in Anthropology.* By Margaret Alice Murray. Oxford: Clarendon Press. 1921. (Med. 8vo, pp. 303. 16s. net.)

other magic workers who do their deeds of darkness or of light by quite different methods from his own. Why should he not? He professes no monopoly of truth; still less has he any clear idea of natural law. Intolerance can only begin after man thinks that he has a consistent view of the world, and when it further dawns on him that his is the *only* consistent view. Witchcraft of its very nature can take no such attitude.

Now, the great majority of trials for witchcraft in Western Europe were conducted by judges who were most deeply convinced that Christian doctrine gave the sole clue to the world's meaning. In their interpretation of the alleged facts of witchcraft the witch is almost invariably a blasphemous being who renounced God and consciously and formally rejected the Christian faith. That many of the poor wretches they condemned had indeed, in their ignorance and folly, attempted works of magic we most readily believe; that some of them in their despair, madness, or natural revolt did formally abjure religion we need not deny; that some in misery, fear, and bewilderment blasphemed and confessed all manner of foolish belief that had been handed down to them by others as ignorant and foolish as themselves, the evidence confirms. But the evidence proves too much. The very formality of the rejection of the hope of Christianity of which the poor witches were accused shows that in the more elaborate of these cases we have to do with something more than the primitive magical attitude. It shows that the intolerance of the age, the prevalent faith, and inflamed minds worked upon by a popular obsession, were producing the very evil that they sought to destroy. In the outbreak of the witch mania we can see, therefore, no evidence for the good organization of the ancient and basic attitude to the world—the magic and Nature worship—of which we may still discern large traces in our population and of which times of social disintegration reveal yet ampler reservoirs. We see only a deterioration of the popular judgement which is as much a subject for the student of social psychology as is the witchcraft which it sought to overcome. While the general character of these witch phenomena was undoubtedly suggested by that age old attitude to Nature that is summarized by the word "magic," most of the details which Miss Murray adduces are of far different origin. The use of the number 13, the statement of a rejection of the prevailing religion, the formal adherence to the "devil," the general character of the "worship" and of the "Sabbath," and of the "Mass," even the very names of the demons invoked, and the recitation of the Lord's Prayer backward, suggest nothing more than an inversion of Christianity. It is a very likely interpretation of the acts of suspected and heretical individuals on the part of an ignorant and fanatical population. The Albigenses, Cathari, and other heretics were accused of similar practices; and even if the actual occurrences of such practices were proved—and Miss Murray, we admit, goes some way in this direction—we should still consider that in the circumstances of the time such ceremonies might well be expected from souls in revolt. While many medical men will be greatly interested in Miss Murray's general thesis, and some will be stimulated perhaps to collect material from their own experience, there will therefore be very few, we believe, who will follow her to her main conclusion.

THE fifth Italian Congress of Medical Radiology will be held at Palermo in the last week of September, 1923, when the following subjects will be discussed: Pneumo-radiography, introduced by Professor Gortan of Trieste; Roentgentherapy of cutaneous diseases, introduced by Professor Rossi of Parma; Radio-diagnosis of the urinary system, introduced by Professor Boidi-Trotti of Turin.

AT the one hundredth anniversary meeting of the Kings County Medical Society in Brooklyn, U.S.A., a resolution was unanimously adopted approving the establishment of a school of medicine to give free post-graduate instruction to medical practitioners in the county. It was announced that the use of all the city hospitals would be given for the course, and co-operation was contemplated in medical extension education between the Long Island Medical College and the welfare department of the city.

THE next congress of French-speaking alienists and neurologists will be held at Besançon in August, 1923, under the presidency of Dr. H. Colin. The following subjects will be discussed: psycho-analysis, introduced by Dr. Hesnard of Bordeaux; nervous diseases due to supernumerary ribs, introduced by Dr. André-Thomas of Paris; criminality in toxic psychoses, excluding alcoholism, introduced by Dr. Legrain of Paris.

Scotland.

PRESENTATION TO COLONEL MACKINTOSH, C.B., M.V.O., M.B., LL.D.

AT the Christmas meeting of the Glasgow Western Infirmary opportunity was taken to recognize the service of Colonel D. J. Mackintosh as medical superintendent of the institution for the past thirty years. The chairman of the board of managers, Colonel Roxburgh, referred to the position Colonel Mackintosh held as an acknowledged expert on hospital planning and administration, a reputation which extended far beyond the bounds of Glasgow and the West of Scotland, for not long ago he went to South Africa at the request of the Cape Hospital Board to lay out a large new hospital, which is to be utilized as a teaching school for the University at Cape Town. A man of enormous capacity for work, his hospital duties have never sufficed to exhaust his energy. For many years an officer in the Royal Army Medical Corps (Volunteer and Territorial Forces), during the South African war he equipped the Scottish National Red Cross Hospital, and for his help in this connexion he received the M.V.O. At the beginning of the great war he was A.D.M.S. of the Lowland Division (T.F.), and to him fell the duty of mobilizing the medical department of that division, and he had the responsibility of the health and sanitation of the division over a wide area. In addition, he was appointed to supervise the whole of the military, war, and territorial general hospitals in the Glasgow area. For his work in the great war he received the Military C.B. He has been a prominent member of the British Hospitals Association since its commencement, and was at one time chairman of its council. He is chairman of the Saint Andrew's Ambulance Association, and was for some years chairman of Branch and a member of Council of the British Medical Association. He has taken a keen interest in the nursing profession, and has been of considerable service in connexion with the formation of the College of Nursing and in all the negotiations which led up to the State registration of nurses. The presentation took the form of an antique salver in silver, for which Colonel Mackintosh made suitable acknowledgement.

GLASGOW WESTERN INFIRMARY.

The annual meeting of this institution was held on December 22nd, and Colonel Roxburgh, chairman of the board of managers, presided over a large and representative gathering. In reviewing the year's work the Chairman reported an increase of work in all departments. The financial position was more favourable than for some years past, and this was due to the large number and amount of legacies during the year, and also to a very substantial reduction in running costs. In all the managers were enabled to carry to capital account £19,294. Legacies and donations reached the high figure of £39,879. Ordinary sources of income showed a decrease of £5,893. Ordinary income reached £70,456 and expenditure £83,425 (a reduction on last year of £19,291). This deficit on ordinary working is the smallest since 1906. Intimation was made of a very handsome legacy of £50,000 for special purposes from the trustees of the late Mr. Alexander Elder, Liverpool. This money was to be devoted to an extension of the Nurses' Home, which was urgently required, and to the erection of a memorial chapel, both of which would bear the name of Mr. Elder.

GLASGOW VICTORIA INFIRMARY.

The report of the year's working was presented to the qualified contributors to this institution at their annual meeting on December 7th. The chairman (Sir John Stirling Maxwell, Bt.) announced that there was a deficit of £2,968 between ordinary income and expenditure, but that the yield from legacies over the year was unusually high, and the Governors were thus enabled to carry to capital account the very substantial sum of £25,557. Contributions from patients or patients' friends amounted to £770, as compared with £1,139 during the previous year.

LISTER MEMORIAL IN GLASGOW.

At a meeting, on December 20th, of the Executive Committee of the Lord Lister Memorial Fund, held in the City Chambers, Glasgow, the design submitted by Mr. G. H.

Paulin, A.R.S.A., for the statue in Kelvingrove Park, was unanimously accepted. Among those present at the meeting were the Lord Provost, Sir Donald MacAlister, Sir Hector Cameron, Professors R. Kennedy and J. H. Teacher, and Dr. R. M. Buchanan. Mr. Paulin's model shows Lord Lister seated and wearing academic robes. The Glasgow Corporation will be asked to provide for the statue a site adjoining that of Lord Kelvin. Professor Teacher informed the Committee of the arrangements made by him for the exhibition in the Pathological Institute of the Royal Infirmary of objects of interest and other personal relics relating to the life and times of Lister.

THE CENSUS OF SCOTLAND, 1921.

County of East Lothian.[2]

East Lothian, or Haddington, had a population of 47,487, being an intercensal increase of 9.8 per cent., probably due in part to June holiday-makers, especially in the golfing town of North Berwick, where the increase was 39.4 per cent. The urban population is 48 per cent. of the total, including Tranent, North Berwick, Haddington, and Dunbar. In 1801 the county population was 29,986 and it has grown irregularly to its present maximum, the growth being most observable in summer resorts and in the coalfield. The proportion of females to 100 males is 106.8, against 101.5 in 1911—summer visitors being again in question. The average male age is 28.9, and the female 30.5. Of children under 15, 6.7 per cent. had lost their father, 3.5 their mother, and 1.0 per cent. both parents. There were 4.9 persons per occupied house, and 123 occupants per 100 windowed rooms. This is higher than at the last three censuses, but lower than at the three previous to that. In one-roomed houses there lived 2.8 per cent. of the people, in two-roomed 34.7 per cent., in three-roomed 20.3, and in four-roomed 13.6. There were 264 Gaelic speakers, all bilingual. Of occupied persons aged 15 and upwards, 25.6 per cent. were in agriculture, 16.4 in mines and quarries, and 12.6 in personal service.

County of Fife.

This important county,[3] lying between the Firth of Tay and the Firth of Forth, had a census population of 292,925, being an intercensal increase of 9.4 per cent., to which summer visitors to St. Andrews and other coast towns could have contributed comparatively little. At the 1911 Census the decennial increase was found to be 22.3 per cent., and ten years earlier 16.8 per cent. In 1801 the population was 93,743, or less than a third of its present total, and every decade has shown an increase. Fifeshire is notable for the number of its burghs, of which there are no fewer than 28, ranging in population from 508 in the ancient village of Culross to 39,899 in Dunfermline and 39,591 in Kirkcaldy. The University city of St. Andrews had 9,336 inhabitants, an increase of 18.4 per cent., but the largest increase was 36.6 per cent. in Dunfermline, which now includes the naval station of Rosyth. The total urban population in the county is 182,867, or 62.4 per cent. of the whole; the female population in the proportion of 104.7 to 100 males. The average age of males was 28.4 years, and of females 29.9. Of children under 15, 6.2 per cent. had lost their father, 2.9 their mother, and 0.5 both parents. Of males aged 15 and upwards, 39.7 per cent. were single, 55.1 per cent. married, and 5.2 widowed or divorced; for females the corresponding figures were 38.5, 51.3, and 10.1 per cent. Gaelic speakers numbered 893, all bilingual. In regard to housing, the average number of persons per 100 windowed rooms was 143, a figure differing little from that of the last four censuses, though less than in 1861, 1871, and 1881. The urban average of persons per 100 rooms was high in the coalmining and industrial areas, being 226 in Cowdenbeath and Lochgelly, 197 in Buckhaven, Methil and Innerleven, and 158 in Dysart. There were 3,858 one-roomed houses in the county, of which 2,460 were in the burghs. In Cowdenbeath 14.6 per cent. of the houses consisted of a single room. Of males aged 12 and upwards, 90.6 per cent. were in remunerative occupations, and 28 per cent. of females. Of the total occupied population, 22.9 per cent. were in mines and quarries 8.2 in commerce (excluding clerks), 7.6 in personal service, 7.3 in agriculture, 6.6 in metals, 6.3 in transport and communication, and 6.0 in textiles. In coalmining 28,140 males are engaged. Female occupations include 8,185 in personal service and 5,936 in textiles.

[2] Vol. i, part 15 of Census. H.M. Stationery Office, London, or 23, Forth Street, Edinburgh. 5s. 2d. post free.
[3] Census, vol. i, part 16. Price 14s. 3d. post free, obtainable as above.

Ireland.

CITY HOSPITAL FOR DISEASES OF THE SKIN AND CANCER, DUBLIN.

At a recent meeting of the City Hospital for Diseases of the Skin and Cancer, Dublin, Dr. C. M. O'Brien read a report, which stated that the number of attendances registered from September 30th, 1921, to September 30th, 1922, was 9,529 (2,799 at the Finsen Light Department, 6,730 at the dispensaries). Patients were admitted on the recommendation of the various general hospitals (military and civil), including some on the recommendation of Poor Law boards, county councils, and certain charitable institutions. The number of in-patients was 182, and of this number 47 had cancer in various stages of development. Of these 47 cases 17 were discharged cured, 13 cured sufficiently to allow of their resuming work, 11 had their cancer controlled and their pain considerably relieved, one died, and 5 are still under treatment. Of the remaining 136 patients suffering from acute skin diseases, such as lupus, psoriasis, eczema, ringworm, etc., 115 were discharged cured, 9 relieved, and 11 were incurable. The report continued:

"This year we accepted invitations to Paris and Berlin. At these scientific congresses we had the privilege of examining the work and estimating the success and failures of men of all nations and so contrasting them with our success and failures. We now unhesitatingly repeat what we have already said fourteen years ago. This was that cancer in certain stages of development and in certain situations of the human body is curable by radium, and without egotism we claim the credit of being amongst the very first in Europe to proclaim to the world these joyous tidings, and to exhibit to our professional brethren undoubted cases of cancer perfectly and permanently cured.

"When cancer is internal or has already attacked the bones and cartilages or glands there is at present no known cure, and the fight between man and this fell disease never for one moment leaves the ultimate issue in doubt. Here again we in this hospital claim to be amongst the very first in Europe who have had the courage of making known this most tragic fact.

"We disclaim any connexion with sensational announcements or nauseating literature as to the causation or cure of cancer. The widespread distribution of such literature, we believe, to be the bane of true scientific research. We are conscious of the painful fact that to-day there is nothing really known as to the cause of cancer that was not known to the physician of old."

Correspondence.

CANCER DEVELOPING AFTER CESSATION OF IRRITANT.

SIR,—Having read Dr. Archibald Leitch's important contribution on the above subject (p. 1101) with great interest, I desire to place on record the fact that the results obtained experimentally are in conformity with, and substantiated by, clinical experience, as far as the dermatoses of the paraffin workers of the Scottish shale oil industry are concerned.

I have had frequent opportunities of verifying the fact that epithelial hyperplasias continue, and that cancers may develop long after workmen have ceased work in the paraffin departments, such opportunities arising through (1) permanent incapacity for work the result of illness or injury, (2) prolonged periods of unemployment, and (3) the subsequent progress of workmen affected after their removal from contact with crude or semi-refined paraffin on account of extensive dermatitis or conditions suggestive of future malignancy. A few instances may be given to illustrate the point:

1. A stillman (oil-boiler man) was permanently incapacitated by injury some fifteen years ago. Prior to his disablement he had a chronic dermatitis of the face due to paraffin. This has persisted since his injury up till the present time, and on three occasions since ceasing work epitheliomata have been removed from his face, the first occurring several years after his incapacity began, the last about one year ago; several years have elapsed between each occurrence. This man is now about 75 years of age.

2. Paraffin worker, aged 69 years, twenty-four years of service in paraffin departments, has had chronic indurated dermatitis, with epithelial hyperplasias and wartiness of hands and arms for many years. Nothing suggestive of malignancy was apparent at the date of his ceasing work about two years ago. Since then he has developed an epithelioma of the forearm (one year ago), and an epithelioma of the scrotum within the last few months. Both growths were verified microscopically.

3. Paraffin worker, 74 years of age, removed from paraffin departments after excision of epithelioma of the face about ten

years ago, following a chronic dermatitis. The dermatitis and wartiness of the face have remained since then, an epithelioma was removed from the face, about four years ago, and within the last year a similar condition developed on one foot.

In none of these instances were the subsequent growths metastatic conditions, each being primary, as far as clinical investigation indicated. The cases given are illustrative of the tendency for hyperplasias to persist, and show the possibility of cancers developing after removal from contact with paraffin in its crude or semi-refined state. In view of this feature it has been my custom for some years to keep under observation at regular intervals men who have been removed from contact with these materials on account of extensive dermatitis or conditions suggestive of possible future malignancy.

It would be most useful if similar cases were recorded by others who may have had experience of them.—I am, etc.,

Broxburn, Linlithgowshire. ALEXANDER SCOTT, M.D.

THE CANCER PROBLEM.

SIR,—In the issue of the BRITISH MEDICAL JOURNAL of December 9th there is much food for thought on the subject of cancer. I have already this year in the JOURNAL referred to the subject of cancer in connexion with the lymphoid diathesis—that is, a class of patients liable to disease of the lymphoid tissue, such as tonsillitis, appendicitis, and enteric fever. I pointed out as the result of years of clinical observation that in these patients, if they contract malignant disease, it takes the form of sarcoma. And I might go further and state that the incidence of sarcoma is the incidence of tuberculosis. There is, perhaps, one exception to this rule. People who have had chronic bronchitis for fifteen to twenty years, die as a rule of tuberculosis; and unless the sputum is examined the death certificate will be chronic bronchitis. I have proved the soundness of that view over and over again. Patients of the lymphoid type are practically immune to carcinoma. And in this connexion the immunity of the spleen should be kept in mind.

Dr. Murray, Dr. Leitch, Mr. Rowntree, and Dr. Scott deserve the thanks of the profession for their illuminating researches. I step in to make a few suggestions to these distinguished investigators, with reference to the possibility of the cure of malignant disease.

If the leucocytosis of the blood in the experimented animals could be raised three times the normal, I would hazard the opinion cancer injections would be nullified. In a normal man the leucocytosis is put down as 7,000 per c.mm. of blood. In favourable cases of pneumonia the leucocytosis may reach 20,000 or even 30,000 per c.mm of blood. In erysipelas the leucocytosis is most marked. So, here we have two diseases, the germs of which (under proper precautions) could raise the leucocytosis in the animals experimented on and perhaps prove one means of cure and prevention.

Of course it might be necessary to attenuate the microbes of pneumonia and erysipelas; but that should not prove an insuperable difficulty. Until the parasite of cancer is discovered, I believe that on the lines I have laid down (that is, artificially raising the leucocytosis) lies our most promising hope of combating this fell disease.—I am, etc.,

Glasgow, Dec. 9th. JOHN T. MACLACHLAN.

SIR,—The rôle played by continued irritation in the production of malignant tumours has long been recognized, and periodically emphasized, as, for example, in the JOURNAL of December 9th, where cases of various forms, alleged to be caused by paraffin, arsenic, soot, and x rays, are adverted to. Another form might be added—namely, "kangri-burn," a squamous epithelioma of the skin of the abdomen and thighs of natives of Kashmir, alleged to be caused by charcoal heaters worn beneath the clothing in cold weather.

As, however, cancer is prevalent in all places, and in all classes of the community, it is obvious that none of these irritants can possibly be other than a contributory factor in its production. The true proximal cause of cancer must of necessity be of universal applicability.

However caused, cancer is a typically specific disease, and it is impossible for such a disease to arise without a definite specific cause. Like syphilis and tuberculosis, cancer is an auto-infective disease, and in most cases the point of origin is known, generally too late, owing to its insidious and unsuspected onset. There is every reason to believe that the healthy body is immune from the "x" cause of cancer, and that it is only when vulnerability has been established that the disease can arise. This vulnerability I have elsewhere defined as the "condition precedent," and it is induced by degeneration of tissue from any cause, more especially from obsolescence of organs, senescence, senility, chronic disease, continued irritation from whatever source, traumatism, and congenital susceptibility. Once this "condition precedent" has been established the individual is at the mercy of the x agent responsible for this characteristically specific disease, just as a predisposing condition favours and permits the attack of the pneumococcus. It is impossible to discuss this subject satisfactorily in a short communication, but in a book I have just published* I have sought to establish its etiology and exogenesis.

It is often asked, "Is cancer increasing?" Unquestionably it is, numerically. It continues, and will continue, to increase, *pari passu* with the increase of population. When the population of any place becomes doubled, then, at the end of this period of growth, there will be twice as many cases of death from cancer as there were at the beginning; but, when the population remains stationary, so also does the mortality from cancer, since the percentage ratio remains the same—practically a uniform 10 per cent. of all deaths. The annual return of the Registrar-General for England and Wales for 1920 states that the total number of deaths from all causes for that year was 466,130, of which 43,787 were attributed to cancer, and 42,500 to tuberculosis, each accounting for about 10 per cent. of all deaths. This is a very interesting and most significant fact.

It does not follow that, because more deaths are reported as due to cancer than to tuberculosis, the former disease is more prevalent than the latter, for many people who live to mature age and die from other causes have been at one time the subjects of tubercle, as proved by many cured tuberculous lesions found *post mortem*; whereas it is more than doubtful if any case of well established and undoubted cancer has ever been cured. Cancer may remain quiescent after operation for an indefinite period, only to light up into fatal activity later on, and had the victim died during the interval from intercurrent disease—for example, pneumonia, he would have been declared cured by operation of his original cancerous disease.

Of the total of 1,256 deaths during 19 years in my own practice in a town whose population remains practically constant, 136 were due to cancer, giving the percentage of 10.82, which is somewhat greater than that of the Registrar-General, namely, 9.39, but it goes to show that the percentage of cancer is not increasing.

Driffield, E. Yorks, Dec. 10th. A. T. BRAND, M.D., C.M.

INTERNAL USE OF LIQUID PARAFFIN.

SIR,—For a considerable time I have been warning my patients against taking paraffin internally for constipation, as I felt that it might be leading to the development of cancer. I formed this opinion on two grounds: (1) the production of cancer by soot and hydrocarbons, and (2) the fact that the taking of a mineral substance was such a profound departure from the normal, a device of, one may say, supercivilization; and as our civilization expands, and we depart farther from natural living, we seem to suffer more from this dread scourge of our race.

The articles published in your issues of November 18th and December 9th confirm my forebodings. The occupational cancer seems to need ten years of the irritation of the paraffin ere it develops. We are now at more than that interval of time since this treatment of constipation was started; shall we soon see cases showing themselves?

I use as a substitute agar-agar. This can be purchased quite cheaply, in the form of sticks, and cut up with scissors and stored in a tin. A tablespoonful once or twice a day has an excellent effect.—I am, etc.,

MONTAGUE DIXON, M.D., B.Sc.Lond.

Melton Mowbray, Dec. 13th.

PROFESSIONAL SECRECY.

SIR,—The question of medical secrecy has been agitating our ranks for some time. It has been proposed that information given to doctors in the exercise of their profession shall be privileged in courts of law, either absolutely or to a modified degree, varying with the opinions of the proposer:

* *Cancer: Its Cause, Treatment, and Prevention.*

but in each case it is claimed that the doctor shall be on a different footing from the ordinary witness.

Two classes of person at present have this special privilege—the lawyer, because without it the courts of law could not function; and the priest, because the Church was strong enough to take it. It has been proposed that a similar privilege shall be granted by Act of Parliament in the case of medical witnesses.

On the other hand, we are advised by lawyers that such an Act of Parliament would be difficult to obtain and would probably not give us what we want. We are further advised to take our stand when the occasion arises and put it to the judge that we do not claim privilege as doctors but that the particular communication in question was made to us in confidence and that we cannot, as honourable men, disclose it. We are at the same time assured that a judge has as acute a perception of honour as a doctor, and that we shall not be forced to violate our honour. We should have more confidence in this were it not for certain recent cases, such as Needham *v.* Needham, where the doctor has been forced into revealing to the court what he desired, on a point of honour, to keep secret. But I think that, if the medical witness had stood firm, he would have prevailed: and that, in my opinion, is the essence of the matter.

On weighing the whole question it seems probable that we should be better advised not to press for an Act of Parliament. But I do hold most strongly that information gained in the exercise of his profession should be as sacred to the doctor as to the priest.

After all, what is the basis of all medical work? Surely, trust and confidence in the doctor. No doctor should reveal the confidence of his patient without the consent of that patient except where enjoined by statute law. Such a breach of trust is dishonourable and inexcusable. The right to keep inviolate the confidences of our patients will have to be won by us in exactly the same way as it was by the Church—that is to say, it will have to be fought for. A priest has no privilege by law, but all courts of law recognize that by no threat or compulsion can a priest be forced to disclose what he considers himself bound in honour to conceal; and I submit that it is by a similar refusal that the medical profession will gain an equal immunity.

We can expect no help from the legal profession: their work is to carry out the administration of the law, and they are naturally opposed to anything which makes that more difficult. When I say they are opposed I mean as lawyers; as private persons, or rather as sick persons confiding in their doctors, they will, I think, agree with me.

It may be asked, what part has the British Medical Association in all this. The answer is that if and when such a refusal by a doctor to give evidence leads, as is not unlikely, to his committal for contempt of court, surely his position is greatly strengthened if he has at his back the official body of his profession. The British Medical Association can inform the general public by means of the Press and Parliament; and I am sure that if such a case be put squarely to the people there can be only one answer.—I am, etc.,

Brighton, Dec. 9th. A. C. GEMMELL, M.B.

HELIOTHERAPY.

SIR,—In your issue of October 14th Dr. A. Rollier of Leysin, Switzerland, in his address on "The share of the sun in the prevention and treatment of tuberculosis," states: "One must not take air and sun baths during meridian hours." And again: "It is also essential, as we have always said, that the heat of the midday hours should be avoided . . . and one should have recourse to the earliest morning sun."

Some years ago I pointed out that sanatorium treatment is a reversion to the wild—that the midday heat in England is baking and depressing—and that sanatorium patients in this respect should be treated as the inhabitants of the fields. One seldom sees the fox, hare, or rabbit abroad in the midday heat; they are then in the shade, and they feed in the bracing air and tonic sunshine of early morn and dewy eve. Heliotherapy should, I think, be administered on east and west balconies on similar lines—as it is the morning and evening sun which is tonic—and midday heat should be avoided.

A little time ago, during some sanatorium extensions, I tried to introduce the north and south position of the wards, but unfortunately without success, as I believe there is a Ministerial ruling against it. But emboldened by Dr. Rollier's experience, I would point out that the idea of hospitals and sanatoriums facing south is wrong. The administration block should face south, but the wards should run north and south, and have east and west balconies. Then the morning and evening sunlight can be secured and administered, whilst the two balconies allow of air bathing in almost any weather. Shelters from the midday heat is also secured, as the sun beats down on the roof and gable end, and the patients can rest within the wards.

If a balcony faces south heliotherapy can only be carried on with difficulty; children do worse in summer than in the frosty days of early winter, when the air is bracing, and the sun's rays most temperate.

My friend Aderman Norman of Morpeth informs me that plant life under glass does better in a north and south glass-house than in one running east and west. And I venture to think that what is good for the animal and the plant is good also for man.

In the building of sanatoriums and hospitals this aspect of the question should, I think, be kept in view. I have had some considerable experience in the building of sanatoriums, and in my opinion they should be in the shape of the letter H, the lower half of the legs being wards. And these wards in my opinion should run north and south to give the sun its proper share in the treatment of tuberculosis.—I am, etc.,

T. M. ALLISON, M.D.,
Hon. Physician to the Wingrove Hospital, Newcastle-upon-Tyne; Visiting Medical Superintendent of the Children's Sanatorium, Stannington.

Newcastle-upon-Tyne, Dec. 9th.

PSYCHIATRIC CLINICS.

SIR,—While agreeing with Dr. Davison as to the enormous possibilities of an out-patient clinic of psychotherapy, I fear lest his appeal for an "open-handed philanthropist" to start the scheme may scare that rare bird unnecessarily. I cannot believe that such an institution would prove at all a costly business compared with the in-patient home set up by the munificence of the late Sir Ernest Cassel.

Psychotherapists will agree with me that it is essential for the sake of treatment that each patient should pay a fee commensurate with his means. This would often amount to very little, but the institute would receive among its patients people of the large class which, though unable to find the usual fee for a course of psychotherapy, would gladly contribute up to half a guinea a session towards the funds. Thus the income from fees might amount to a not inconsiderable sum; and, on the other hand, it would not be necessary to provide expensive instruments of diagnosis and treatment, or elaborate electrical apparatus of proven uselessness. The institute should have little to face in the way of running expenses beyond rates and taxes, light and heating, and the maintenance of a small clerical staff.

It seems to me that the philanthropist would not need to guarantee more than £1,500 a year for three years, to secure the financial safety of such a scheme even if it were started in a fairly large way. If it succeeded, the institute would become self-supporting before very long, and soon self-propagating throughout the country so soon as its usefulness were evident.—I am, etc.,

London, W., Dec. 19th. G. LAUGHTON SCOTT.

PSYCHO-ANALYSIS.

SIR,—The discussion which has been proceeding in your columns is one of much wider significance than the title implies. In particular the question as to the exact relations of physiology and psychology has come under consideration. So far as I have understood Dr. Steen he merely wishes to point out that as he writes as a psychologist he must do so from the psychological point of view and use psychological terms, and that if he were to use physiological terms in describing his researches in "behaviour" there would arise inextricable confusion. In this I agree most heartily with him.

In the department which we call for convenience tropical medicine there are a large number of sections. We have protozoologists, bacteriologists, entomologists, helminthologists, chemists, physicists, not to speak of clinicians of every variety. Every one of these is approaching a common problem by different methods of research. Suppose we take as an instance the etiology of beri-beri which has brought into the field a whole army of workers. No doubt all the first four groups of biologists have been engaged in this quest, but in addition the food deficiency theory has engaged the attention of expert chemists and it is in connexion with this

disease that early interest was awakened in medical circles in the importance of so-called vitamins. All the specialists have dealt with the subject from their own standpoint, and often the terms and methods are strange to one another, yet we accept their conclusions, so far as they go, as honest though often conflicting, but in the end we seek to reconcile one with another. If, however, we started with the idea that there must be agreement at the outset there would be no progress in science.

We who are students of psychology are investigating the phenomena of mind, and because we cannot fully explain these in terms of physiology we find it best not to speak of "ideas" in terms of "brain cells" when we do not know the precise connexion between them. The President of the British Association in his address sketched in most happy and graphic language the scope of physiology, but showed quite clearly that the physiologist could not explain mind, which he said was the special domain of the psychologist. The President intimated that the choice of his subject had been influenced by that eminent scientist, Dr. Rivers, whose death has left a great blank in medical research. Rivers was first a physiologist and then a psychologist, and perhaps some of the most convincing statements as to the relation of the two sciences may be found in his writings. I would venture to refer your readers to them.—I am, etc.,

London, Dec. 15th. CHARLES F. HARFORD.

HOSPITAL POLICY.

SIR,—In your issue for December 16th Dr. Garratt, in returning to the fray in defence of a principle, supports a resolution I proposed at Glasgow in July last. That resolution was to urge the principle that when small payments are received by a hospital from individual patients, and are not recoverable from a third party, no contribution to the staff fund should be made from such payments until they exceed the cost of accommodation and maintenance. To ask even for "a peppercorn" deduction as now suggested would vitiate this principle. The Council, however, considers otherwise. The laity cannot appreciate the nicety of their contrary proposal, and term the request grasping, mean, and derogatory.

It must be exceedingly difficult for many members of hospital staffs to criticize adequately the lengthy resolution now submitted by the Council which appears on page 187 of the SUPPLEMENT for November 18th, seeing it involves principles referring to at least ten contingencies, and has to be explained by cross references to other parts of the hospital policy of the British Medical Association. They leave it in despair, if they have seen it, which is very doubtful; and yet it is they who will be looked to at no distant date to put their foot down to prevent the further exploitation of our profession.

I would venture therefore to urge Branch and Division secretaries to assist the staffs in their area in this matter by asking each member to reply—preferably at a meeting and after a discussion—to certain questions. Having the answers it will be possible to estimate exactly where they stand, and to report to the other members at their Branch or Division meeting, and eventually place their Representative in a position to vote at the Annual Meeting at Portsmouth in July next. It will be deplorable if the profession continues any longer in a state of uncertainty as to the best policy to adopt in present circumstances, principally because certain members of our profession are urging staffs to accept an ideal which is repugnant to them and which may be found eventually to have become unnecessary.

The following questions will probably be found to cover the ground:

Do you consider that you should be paid for your services out of—

(*a*) Gratuitous contributions, existing hospital assets, endowments funds, and the like?

(*b*) Payments made to hospitals by private patients, provided you are allowed to charge fees?

(*c*) Small payments made by individual patients, and which are not recoverable by that patient from a third party, and which are *less* than the cost of accommodation and maintenance?

(*d*) Similar payments which are *more* than the cost of accommodation and maintenance?

(*e*) Payments made to hospitals by the State (for example, Ministries of Pensions, War, Admiralty, Education, and Health), municipal authorities, employers of labour, approved societies, insurance companies, or any body which has entered into a financial arrangement with the hospital?

(*f*) A contributory scheme under which there is a stated or implied return required from the hospital on behalf of the members of the scheme?

It is quite conceivable that the senior members of many staffs would answer all six questions in the negative. But as the future is with their junior colleagues, who are beginning to appreciate the present tendency to use the services of voluntary hospitals on a strictly business footing, is it too much to ask them to be willing to stand by those junior colleagues who find it necessary to reply to questions (*e*) and (*f*) in the affirmative and then to assist them in coming to a conclusion on questions (*c*) and (*d*), which are the burning questions at the moment and those on which Dr. Garratt has written? Probably all will agree to answer questions (*a*) and (*b*) in the negative.

If the replies to questions (*a*), (*b*), and (*c*) are in the negative, whereas replies to (*d*), (*e*), and (*f*) are in the affirmative, I would venture to submit the following resolution as being one likely to prove more acceptable to a Division than the Council's proposal, and on which the profession could be asked to unite:

> Income derived by a hospital from payments made by private patients, as well as from gratuitous contributions, existing assets, endowment funds and the like, as also from small payments of individual patients not recoverable from third parties which are insufficient to pay more than the whole of the cost of accommodation and maintenance, is not liable to assessment for the Medical Staff Fund purposes. But all other payments made for hospital benefit are in fact payments toward all the services of the hospital, whether medical or ancillary, and therefore a percentage of such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital.

I believe I am correct in saying that Dr. Garratt would support this resolution as covering the amendments submitted to the Annual Representative Meeting at Glasgow last July.—I am, etc.,

Hove, Dec. 19th. E. ROWLAND FOTHERGILL.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on December 19th authorization was given to the General Board of Studies to appoint a Reader in Bio-Chemistry on Sir William Dunn's foundation, with a stipend not exceeding £850 per annum.

The following medical degrees were conferred:

M.D.—*F. W. Sumner, H. Morrison, H. L. Cronk.
M.B., B.Ch.—R. R. Traill.
M.B.—A. A. Gemmell, S. Gordon, R. Hilton.
B.Ch.—*C. F. McLean, *J. C. N. Harris.
* Admitted by proxy.

The following candidates have been approved at the examinations indicated:

THIRD M.B., B.CH.—*Part I: Surgery, Midwifery, and Gynaecology*: H. S. Allen, G. H. Calder, G. K. Cooper, . C. Davies, W. Edwards, R. H. Emmett, H. H. Fisher, F. E. Graham-Connahe, J. R. Harris, F. D. Howitt, H. W. H. Holmes, . K. Maclachlan, O. G. Misquith, E. S. Page, J. A. W. Robertson, J. M. Scott, R. P. A. Stakie, C. Storton, G. B. Tait, . W. Taylor, T. R. Thomson, P. Ver on, M. D. Vinh, A. S. H. Walford, R. H. White. *Part II, Medicine, Pathology, and Pharmacology*: W. F. T. Adams, E. V. Beale, T. A. Butcher, W. H. W. Cheyne, L. B olo, A. L. Crockford, E. C. Curwen, J. G. Drew, C. B. S. Fuller, B. Graves, J. B. S. Lewis, G. S. Lund, C. P. Oliver, C. L. Pasricha, C. V. Patrick, U. E. K. Reynolds, J. A. Struthers, F. B. Sudbury, T. M. Thomas, J. P. Wells.
* Surgery only Grace 16 of October 13th, 1922.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

M.D.—BRANCH I (*Medicine*): *C. H. Andrewes, G. T. Burke, M. Colburn, P. C. Conran, H. L. Heimann, N. H. Hill, . O. Thomas. BRANCH II (*Pathology*): V. R. Khanolkar. BRANCH III (*Psychological Medicine*): H. S. Le Maguand. BRANCH IV (*Midwifery and Diseases of Women*): E. D. Granger, Alice M. Griffiths, Edith M. Hall, Dorothy P. Priestley, J. E. Stacey. BRANCH V (*State Medicine*): *Marjorie Back, H. G. Smith.
M.S.—BRANCH I (*Surgery*): Hetty E. Claremont, G. P. B. Huddy, A. B. K. Watkins, . H. W. Williams.
University Medal.

LONDON HOSPITAL MEDICAL COLLEGE.

Essays for the Liddle Triennial Prize, 1922–25, value £120, should be sent to the Dean of the London Hospital Medical College not later than June 30th, 1923, from whom further particulars can be obtained. The subject selected is, "Rheumatic Fever, its Cause and Prevention." The object of the prize is to encourage original observation and investigation. No award will be made if in the opinion of the examiners the essays have not attained a sufficiently high standard of excellence.

UNIVERSITY OF SHEFFIELD.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—Irene M. Holoran, J. B. McKay.
D.P.H.—T. L. Ashforth, R. M. Fenn.

VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

FINAL M.B. AND CH.B. (Old Regulations).—Mary W. Atkinson, Elsie C. Beg, Kathleen M. Eastwood, F. W. W. Fox, R. Handley, Doris M. Hardman, E. L. Jones, J. L. Kelly, Mary Kent, C. B. Kirkbride, G. B. Lord, G. L. Meachin, Nora Mills, Winifred H. Mitchell, A. C. Newman, Eleanor P. Smith, Leo Unsworth, Emmeline Wade, Margaret J. Warburton, J. Yates. *Medicine:* B. Broman, Greta Lowe, L. Morgenstern. *Obstetrics:* Greta Lowe, L. Morgenstern, C. B. Stenhouse. *Forensic Medicine:* L. Morris.

Final M.B. and Ch.B. (New Regulations).—*Part I, Obstetrics and Surgery:* W. B. Bacon, *A. Barlow, C. E. W. Bower, B. Bowman, A. Coleman, G. Crompton, N. L. Edwards, W. E. Fildes, W. A. J. Fleming, E. J. Foulds, A. Glenn, Marjorie A. Grant, Evelyn M. Holmes, K. H. Jackson, M. Parkes, D. Ramage, G. C. Sharp, Margaret Simcock, W. Smith, W. G. Southern, *†L. J. Witts. *Obstetrics:* J. F. Bromley, A. J. E. Cave, A. M. Jones.

* Recommended for distinction in Obstetrics.
† Recommended for distinction in Surgery.

UNIVERSITY OF DURHAM.

THE following candidates have been approved at the examinations indicated:

THIRD M.B., B.S.—*Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology:* Alfreda M. Beadle, W. N. Booth, W. A. Carruthers, S. Curry, Mary W. Dewell, A. L. Fairlie, C. F. Fairlie, J. Hamilton, Pertha Flintoff, D. R. C. Grey, J. B. S. Guy, J. C. Hall, C. V. Harrison, R. E. Holme, G. E. Hyden, H. V. Ingram, J. M. Johnson, J. F. van Wyk Krige, H. Levy, C. McCulloch, L. V. McNabb, W. Meikle, R. G. Melrose, K. V. Milburn, T. D. Miller, W. C. Murray, M. Myers, J. J. D. Naismith, H. C. Reed, J. W. Ridley, A. B. W. Smart, G. F. Smith, J. Stokoe, T. Strother, G. W. Wige, N. Wren.

UNIVERSITY OF LEEDS.

AT the congregation held on December 20th the Hey memorial medals were conferred upon the following: Humphrey Hart Gleave, George Armitage, and Digby Chamberlain.

Sir Berkeley Moynihan, who has established medals in memory of William Hey, the founder of the Leeds Infirmary, made the first presentation. He recalled the chief facts in the history of William Hey, and said that the students and staff of the present day had come into a great inheritance by intellectual and spiritual descent, and by the solemn adoption of the men who had made the school famous. "To embody this spiritual heritage in material form," concluded Sir Berkeley, "the Council of the University have permitted me to endow the William Hey Memorial Medal. It is a matter of pride to me that those who to-day are to receive the medal for the first time have proved themselves worthy of their association with the name of our immortal founder, William Hey."

The following degrees were conferred:

M.D.—G. H. Hustler.

M.B., CH.B.—J. Bernstien (second class honours), E. Baron, I. H. Cohen, Edith Ghosh, A. Goodman, Christine M. B. Hare, Margarita Kitson, J. R. Oddie, Violet M. Redman King, Jessie Sheard, and M. Sourasky.

UNIVERSITY OF DUBLIN.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

THE following candidates have been approved at the examinations indicated:

FINAL EXAMINATIONS, PART II.—*Medicine (M.B.):* R. Hegy, R. H. Micks, J. O'N. McKenna, L. J. Coetzee, B. Gluck, C. G. S. van Heyningen, A. Asherson, N. E. H. P. Williams, D. M. Vellema, T. G. Wilson, A. Darlington, C. W. R. McCa'din, F. B. D'Arcy, J. C. Earl, E. M. Landau, C. A. V. Orendale, W. E. Holmes, Florine I. Irwin, J. H. Hodgman, P. F. H. Wagner, L. Heyman, A. Bernstein, S. D. Gabbe, R. Lipschitz, H. Renton, H. L. C. Fisher, C. Gordon, P. Samolsky, L. Harris, D. S. Spence, H. R. Brady, H. L. Hanna, J. R. Wills, R. L. Hill, J. Kalmanson, M. Schwartzberg, J. E. Deane, F. W. G. Smith, J. F. van Staden, A. E. O'Donnell, N. J. V. van Druten, Alice E. Dockrell, T. Freedman, B. Vivier. *Surgery (B.A.O.):* *B. Gluck, D. J. Nolan, J. O'N. McKenna, I. P. Myers, L. J. Coetzee, D. M. Vellema, M. G. J. Powell, R. H. Baker, Ruth Lemon, P. Samolsky, C. E. Brunton, J. B. Horan, Charlotte A. Stuart, C. G. S. van Heyningen, M. Wulfsohn, W. E. Callanan, W. E. Holmes, H. C. Dundon, P. J. Grobler, R. A. O'Meara, S. M. Geffen, Mary H. Harcourt, A. E. O'Donnell, R. R. J. Brandt, V. Robinson, M. Schwartzberg, M. Gallivan, J. Kalmanson, J. D. Wicht, A. W. Eksteen. *Midwifery (B.A.O.):* *J. M. Mounsey, *P. J. Grobler, *R. R. J. Brandt, *E. G. Copeland, W. R. Fearon, B. W. D. Fayle, F. J. O'Meara, E. R. Hafner, H. W. L. Dale, F. C. B. L. B. Crawford, W. E. C. Wynne, W. S. Dixon, R. A. Deech, A. Darlington, H. M. Martin, A. V. Foster, J. A. Gayner, E. Lewin, Agnes McLaughlin, J. Morris, R. A. D. Pope, H. Renton, G. F. T. Saunders, Margaret L. Cowan, Anne D. Dockrell, H. J. Hugo, R. T. Jackson, J. A. Levett, C. A. V. Ovendale, S. W. Jamison, V. O. McCormick, W. B. E. McCrea, Marjorie F. Sibthorpe, C. T. MacCarthy, H. S. Roseman, H. R. Brady, Eileen A. Boyd, W. E. Hutchinson.

* Passed on high marks.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE following candidates have been approved at the examination indicated:

FINAL FELLOWSHIP.—S. O'Neill, C. T. de M. Villet, D. R. Wheeler.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE following candidates were approved at the primary examination for the Fellowship which concluded on December 15th. Of the 152 candidates who presented themselves, 56 were approved and 96 were rejected.

C. B. Andreae, I. C. P. Beauchamp, L. A. Bennett, H. J. Bhatia, B. Bourke, G. J. Bowen, J. Brunwell, J. D. M. Cardell, H. K. Christie, C. C. Cogblan, W. M. Cotter, W. I. Daggett, R. K. Debenham, A. M. Deif, J. D. Dhruv, T. A. J. M. Dodd, K. M. K. Duff, F. J. T. Foenander, D. Fros', J. A. Gallet'y, H. H. Gellert, A. S. Gough, Agnes H. S. Gray, C. M. Greenslade, E. J. Greenwood, A. L. Gregg, Dorothy W. Hall, R. J. B. Hall, A. J. C. Hamilton, R. W. Jones, S. Kadinsky, F. H. King, D. Lurie, G. E. Mackay, D. H. Macleod, A. McMillan, Alice M. C. Macpherson, D. P. Marks, D. V. Murphy, A. E. Park, H. L. Peake, Annie Pichaimuthu, G. H. Pitt, W. A. Richards, E. W. Riches, C. R. Sandiford, C. Satya Raju, T. Seshachalam, R. C. Shaw, G. S. Sinnatamby, N. R. Smith, G. H. Steele, H. G. Taylor, S. P. Taylor, C. H. Thomas, A. H. Whyte.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE following, having passed the requisite examinations between October 2nd and 9th, have been admitted Fellows:

A. J. Abreu, W. R. Beavis, L. van R. Becker, D. P. Bhargava, E. C. Braithwaite, R. V. Hennessy, J. E. Hurworth, C. G. Irwin, W. E. Johnston, G. D. Lindsay, E. H. M. Luke, S. B. MacMillan, S. A. S. Malkin, B. G. von B. Melle, C. E. W. Mendis, B. Morri-on, P. N. Pedersen, J. M. Robb, G. F. Stones, J. Thompson, M.C., H. C. Todd, C. S. Wood.

Mr. C. W. Cathcart, C.B.E., and Sir James Hodsdon have been appointed representatives on the board of the Edinburgh Royal Infirmary for the ensuing year.

CONJOINT BOARD IN IRELAND.

THE following candidates have been approved at the examination indicated:

FINAL PROFESSIONAL.—Enid Baile, V. V. Brown, C. Cohen, M. Coleman, J. J. Cosgrove, W. J. Crawford, D. Epsel, A. T. Gallagher, H. J. Gillen, A. Goldfoot, J. J. Mackey, M. J. Mallon, C. C. J. O'Connell, M. D. O'Connor, P. W. O'Connor, M. Price, I. Richmond, M. A. Walsh.

D.P.H.—He en M. Murnane.

The Services.

COMMISSIONS IN THE ROYAL army MEDICAL CORPS.

AN examination for not less than fifteen commissions in the Royal Army Medical Corps will be held on January 31st, 1923. The presence of candidates will be required in London from January 29th. Intending candidates can obtain a full statement of the duties and emoluments of the service on written application to the Secretary (A.M.D.1), War Office, Whitehall, S.W.1, and applications to compete should be made to the Secretary not later than January 21st.

DECORATIONS.

THE following are among the decorations conferred for valuable services rendered in the field with the Waziristan Force, 1920–21:

O.B.E. (*Military*).—Captain (temporary Major) William Moore Cameron, R.A.M.C.

M.B.E. (*Military*).—Temporary Captain Daulat Ram Bhalla, I.M.S., Senior Subassistant Surgeon (2nd Class) Sundar Singh, I.M.D.

Foreign Decorations.

The following decorations have been awarded by the Allied Powers for service rendered during the war of 1914–19:

President of the French Republic.—Médaille des Epidemies en Bronze: Temporary Captain Thomas B. Hincks, R.A.M.C.

The late King of Hellenes.—Order of Redeemer—Officer: Lieut.-Colonel Nathaniel J. C. Rutherford, D.S.O., R.A.M.C. Order of King George I—Officer: Captain Hugh G. Hobson, O.B.E., M.C., R.A.M.C.

Surgeon Captains William G. K. Barnes, M.D., and Edward J. Biden have been awarded Greenwich Hospital Pensions of £50 a year in the vacancies created by the deaths of Fleet Surgeon J. H. Whelan and Deputy Inspector-General F. Y. Toms.

Captain W. Hunt, O.B.E., M.C., R.A.M.C. (attached Egyptian Army), has been promoted to Brevet Major for distinguished service in connexion with the military operations in Southern and Western Darfur.

DEATHS IN THE SERVICES.

Fleet Surgeon William Bainbrigge Fletcher, R.N. (retired), died at Wimbledon on December 5th. He was educated at St. Thomas's, and after taking the M.R.C.S. in 1862, entered the navy, attaining the rank of fleet surgeon on August 1st, 1883.

Brigade Surgeon Lieut.-Colonel Andrew Deane, Bengal Medical Service (ret.), died at Westcliff-on-Sea on November 29th, aged 75. He was the son of the late George Deane of Drumsola, co. Cavan, and was educated at the Ledwich School, Dublin. He took the L.A.H. in 1866, the L.R.C.S.I. in 1869, and the F.R.C.S.I. and the M.D. Durh. in 1882. Entering the I.M.S. as assistant surgeon on October 1st, 1869, he became brigade surgeon lieutenant-colonel on December 4th, 1895, and retired, with an extra compensation pension, on April 1st, 1900. Most of his service was spent in civil

employ in the North-West, near the United Provinces, but for the last few months of his service he acted as inspector-general of civil hospitals in the Punjab. After his retirement he was appointed superintendent of the Royal Victoria Hospital, Belfast, and held that post for nearly twenty years, till October, 1920. His younger brother, Surgeon William Deane, also served in the I.M.S., and also in the North-West Provinces, where he died, at Naini Tal, in May, 1895.

Major Frank Blair Robson, R.A.M.C., T.F., died at York on November 20th, aged 34. He was educated at Durham University, where he graduated as M.B. and B.S. in 1915, after which he took a commission in the R.A.M.C., T.F., becoming captain on January 7th, 1916, and major on January 4th, 1918.

Obituary.

T. H. KELLOCK, M.A., M.D., M.Ch., F.R.C.S.,
Surgeon, Middlesex Hospital; Consulting Surgeon, the Hospital for Sick Children.

THE death on December 19th, after a short illness, of Mr. T. H. Kellock, surgeon to the Middlesex Hospital, removes a well-known figure in the surgical world of London at the height of a successful career.

Thomas Herbert Kellock was born at Totnes, Devon, in 1863. He was educated at Totnes Grammar School, at Emmanuel College, Cambridge, where he was a mathematical exhibitioner, and at St. Thomas's Hospital, where he won the Cheselden Medal. He took the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond. in 1891, and soon afterwards obtained the F.R.C.S.Eng. He graduated M.A., M.B., B.Ch.Cantab. in 1891, M.D. in 1894, and M.Ch. in 1904. After serving for three years as medical superintendent of the Hospital for Sick Children, Great Ormond Street, he became surgical tutor, surgical registrar, and later assistant surgeon at the Middlesex Hospital. He was promoted in due course full surgeon to the Middlesex Hospital and lecturer in surgery, and was one of the examiners in surgery at his own university. On his retirement from the active surgical staff of the Hospital for Sick Children he was appointed consulting surgeon. He was also on the consulting staff of the Yarrow Convalescent Home, Broadstairs, and the Treloar Hospital for Crippled Children at Alton, and was surgical consultant to the London and South-Western Railway. During the war Mr. Kellock held a commission as Captain R.A.M.C.(T.F.), serving on the *à la suite* staff of the 3rd London Territorial General Hospital. He was a former president of the Section for the Study of Diseases in Children of the Royal Society of Medicine, and had been one of the honorary secretaries of the Medical Society of London. He was the author of many contributions to surgical literature, one of his last publications being a paper, written in collaboration with Professor Sidney Russ, on an attempt to procure immunity in malignant disease. This was characteristic of his inquiring and alert habit of mind which led him to try, often with success, new methods in operative technique.

Mr. Kellock will be remembered with affection by a large circle of friends, and by many patients who have reason to be grateful to him for his devoted attention. He had a manner which attracted children very much and made them amenable to him. His work at Great Ormond Street was some of the most important of his life, and it was a matter of deep regret to him that it was necessary for him to resign the post of surgeon to that hospital. He was essentially a general surgeon, and his teaching was on very sound lines. He was assiduous in his attention to those classes of surgical cases which are very exacting in their demands on the surgeon's patience and industry—namely, the deformities of children and chronic disease of bone and joints. He was a most loyal colleague and always delighted in carrying out investigations in collaboration with others. His work in conjunction with the late Cecil Lyster probably first drew his attention to the importance of co-operation between the surgeon and radiologist in the treatment of malignant disease; and in later years he kept in the closest touch with the researches being carried out by Professor Russ in the Cancer Research Laboratories at the Middlesex Hospital. The fruits of that work are yet to be seen, but Kellock may be ranked with those who have devoted a large part of their lives to the study of the cancer problem.

Mr. Kellock was extremely fond of country life, and in conversation delighted to recall happy memories of times he had spent in his native county of Devon. It was only his keenness to do good surgical work which prevented him from leaving London and living in the country. His work at the 3rd London General Hospital was a great strain on his strength, and during the most strenuous part of the war he suffered from serious symptoms which gave him grave warning that he was attempting too much. He still stuck to his work, however, though his friends noticed a great change in his appearance and realized what a serious sacrifice he was making in order to do his full share of war work. On committee Mr. Kellock was always a most useful member, and his knowledge of hospital affairs made him a valuable adviser in all cases of difficulty in organization or administration.

He married in 1915, and is survived by his widow and one son.

The funeral took place on December 22nd. The first part of the service, held at Holy Trinity Church, Marylebone, was attended by many past and present colleagues at the Middlesex Hospital, and by Mr. James Berry (President), representing the Medical Society of London. The interment took place at Highgate Cemetery.

THE death took place on December 10th of Mr. HERBERT LUCAS, of Huntingdon, at the age of 80. He was educated at Guy's Hospital, and took the diplomas of M.R.C.S.Eng. and L.S.A. in 1865. In 1868 he went into partnership with Mr. Foster at Huntingdon. For the previous six or seven years Mr. Foster had been assisted by his son Michael, who in 1867 was invited by Sharpey to become demonstrator of physiology in University College, and lived to be professor of physiology at that college and at Cambridge. The place thus left vacant by the future Sir Michael Foster was taken by Mr. Lucas, who, until his retirement in 1921, continued to practise at Huntingdon. In addition to the work of a large practice Mr. Lucas held practically all the local medical appointments, and was for forty years surgeon to the Hunts County Hospital. He was a member of the British Medical Association, and was president of the Cambridge and Huntingdon Branch in 1900-1. In his younger days Mr. Lucas was a keen cricketer and sportsman, and was at one time secretary to the Cambridgeshire Hounds. He leaves a widow, one daughter, and three sons.

DR. ERNEST WILLIAMS JONES, of Aldridge, Staffs, who died from pneumonia on December 14th, at the age of 45, received his medical education at Birmingham, took the diplomas of M.R.C.S., L.R.C.P.Lond., in 1901, and graduated M.B.Lond. in 1904, and M.D. in 1911. By his premature death the medical profession is robbed of an attractive personality and an unusual type of practitioner. Settling in Aldridge, a village partly agricultural and partly mining, twenty years ago, Dr. Jones speedily built up a flourishing practice, but he was not content merely to live the life of the average country general practitioner—he had aspirations. For a time he was satisfied to concentrate on the bacteriology and clinical chemistry of his patients, and in those days his consulting room was littered with every variety of clinical machine. Latterly he was inclined to forsake the more material side of his work and he had become an enthusiastic psycho-analyst. Day after day (writes a colleague) he went to Birmingham, where, as a Ministry of Pensions neurologist, he bore complexes to the surface and tore himself to tatters. He gave himself no rest, and was always obsessed by his patients and their troubles, even when on holiday. Always delicate, he died a victim to the profession he loved and served so faithfully. Dr. Jones was a man of many interests, and in his time had followed the lure of many different hobbies, but his chief love was for Oriental art. In his house were many specimens of the craftsmanship of the Far East which he cherished and delighted to exhibit to his friends. Dr. Jones leaves a widow and four young sons, to whom our sympathy goes out. He was a young man when he died and had had little time to make adequate provision for those he has left behind.

WE regret to record the death from pneumonia, on December 8th, of DR. ROBERT GARNER LYNAM of Oxford, at the age of 63. He was born at Stoke-on-Trent, and was educated at King William's College, Isle of Man, and King's College, London, where he gained in 1880 the Warneford scholarship. In 1882 he obtained the diploma of M.R.C.S.Eng. and the L.S.A., and in 1884 the M.B. degree of the University of London. He held the posts of house-physician and house-surgeon at King's College Hospital, and also at the North Staffordshire Infirmary, and in 1890 he joined Dr. W. T. Brooks in practice at Oxford. In 1896 he graduated M.A.Oxon. as a member of Hertford College. During the war he held a commission as

Captain R.A.M.C. (T.), and was attached to the 3rd Southern General Hospital, Oxford. He was also anaesthetist to the Ministry of Pensions orthopaedic hospital at Headington. During the thirty-two years of his life in Oxford Dr. Lynam's varied talents and wide sympathies won him many friends. He was president of the Oxford University Chess Club, and had played against Cambridge and the American universities, and he was an active member of the University Lawn Tennis and Skating Clubs. He contributed many papers, particularly on literary and artistic subjects, to the Oxford Medical Society, and comparatively late in life he took up water-colour drawing, in which he attained considerable success.

Dr. WILLIAM DOIG, who was the oldest medical practitioner in Galashiels, died there on December 3rd. He received his medical education at the University of Edinburgh, graduating M.B., C.M. in 1881, and M.D. in 1892; he subsequently took the D.P.H. in 1918. After a few years as assistant with the late Dr. Thomas of Selkirk Dr. Doig started practice in Galashiels, where he soon became well known and highly respected. In 1899 he became surgeon lieutenant in the Galashiels detachment of the Border Rifle Volunteers, and on the organization of the Territorial Force he transferred to the 4th or Border Battalion (T.F.) of the King's Own Scottish Borderers, and attained the rank of major in 1912; he received the Territorial Decoration. During the war he served in several military hospitals in Edinburgh, Berwick-on-Tweed, and elsewhere in the east of Scotland.

Fleet Surgeon WILLIAM HENRY PUTSEY, R.N. (retired), died at Bournemouth on December 7th, aged 79. He was educated at the London Hospital, and took the M.R.C.S. and L.S.A. in 1868. He then entered the navy, attaining the rank of fleet surgeon in 1888, retiring soon afterwards; he graduated M.D.Durham in 1892. As a student he worked in the London Hospital during the cholera epidemic in the sixties, the last serious outbreak of cholera in London. He served as staff surgeon of H.M.S. *Condor*, then commanded by the late Lord Charles Beresford, in the Egyptian war of 1882, and was present at the bombardment of Alexandria, receiving the medal with a clasp, and the Khedive's bronze star. Admiral Sir Doveton Sturdee was under his care for malaria when serving as a midshipman in H.M.S. *Undaunted* at Bombay. After his retirement he practised for some time at Bournemouth, with Dr. Cory. He was a member of the British Medical Association, and took part in the first Annual Meeting of the Association there. He was unmarried. He was buried in the churchyard of St. John the Baptist's Church, Moordown, Bournemouth.

Medical News.

THE second part of the fifth course of lectures for the diploma in psychological medicine at the Maudsley Hospital will begin on Monday, January 8th, when Sir Frederick Mott will give the first of six lectures on the pathology of mental diseases, including brain syphilis, its symptomatology and treatment. On the following day Dr. Mapother, the medical superintendent, will begin a course of eight lectures on morbid psychology, illustrated by demonstrations. On January 16th Dr. Shrubsall will begin his course on the practical aspects of mental deficiency, and Dr. W. S. Sullivan, medical superintendent of Broadmoor Asylum, his course on crime and insanity. On Monday, February 5th, Dr. Bernard Hart will begin a course on the psychoneuroses, and later on Dr. Hubert Bond his lectures on the legal relationships of insanity and treatment. Demonstrations will be given by Sir Frederick Mott and Dr. Golla, beginning on January 11th. The inclusive fee for all the lectures is 10 guineas; for a single course 2 guineas. The lectures and demonstrations will be given at various hours in the afternoon, mostly at 2.30 p.m. Applications should be made to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.5, or to the Fellowship of Medicine, 1, Wimpole Street, London, W.1.

AT a meeting of the Röntgen Society on Tuesday next (January 2nd, 1923) at 8.15 p.m., at the Institution of Electrical Engineers, Dr. A. E. Barclay will read a paper on the organization and equipment of a modern *x*-ray department, with special reference to the new department at the Manchester Royal Infirmary.

THE address of the London and Counties Medical Protection Society has been changed to Victory House, Leicester Square, London, W.C.2.

GUY'S HOSPITAL is one of the institutions at which combined research on insulin is being undertaken under the auspices of the Medical Research Council. In order to help in this work the directors of Ashton and Parsons, Ltd., have arranged to pay £400 a year for six years and a half to the President and Governors of Guy's Hospital as a contribution to the cost of research on diabetes mellitus and other related diseases of metabolism to be carried on at Guy's Hospital Medical School. It is intended to use the money to establish a Parsons Fellowship.

THE first annual dinner of the Association of County Medical Officers of Health for England and Wales was held on December 15th at Pagani's Rooms, London, with Dr. G. Reid (Staffs) in the chair, when the guest of the evening was Sir George Newman. The president, in proposing the toast of "The Guest," briefly surveyed the evolution of the Association and its relation to the Government public health departments, the British Medical Association, and the County Councils Association. Dr. Bostock Hill, who supported the President, eulogized the work of Sir George Newman as a friend, adviser, and colleague. Sir George Newman, in reply, reviewed his work and relationship to the public health branch of the medical profession. He felt amply rewarded, he said, by the friendship returned by the county medical officers of health. He pinned his faith to the coming cause of preventive health services.

THE Far Eastern Conference of representatives of Red Cross Societies was held at Bangkok, Siam, from November 29th to December 7th, and was attended by delegates from Siam, India, China, Japan, the Philippine Islands, the East Indies, the Federated Malay States, French Indo-China, Australia, and New Zealand. The chief purpose of the Conference was to lay before the organizations in the East the peace programme of the Red Cross as adopted by the General Council of the League last March, and discussion ranged round the best methods of preventing disease through popular health instruction.

THE referee under the Safeguarding of Industries Act has decided that oxalic acid is properly included in the list of articles chargeable with duty under Part I of the Act.

AN interallied congress on cancer will be held at Strasbourg next spring, when the following subjects will be discussed: experimental production of cancer; spontaneous and provoked defensive reaction of the organism against cancer; irradiation treatment of mammary cancer.

THE number of schools for physically defective children certified in this country since April 1st, 1914, is 108. The total number is now 199.

THE number of lepers in the United States, which twenty years ago was estimated at 278, is now between 1,000 and 1,500.

A PAMPHLET, entitled *Shall the State throw away the Keys?* has been published by the Association of British Chemical Manufacturers with the object of showing how wide are the ramifications of the fine chemical industry, and how much it means to the nation. Sir W. J. Pope, professor of chemistry at Cambridge, contributes a plea for national support for a young enterprise. Exactly what kind of support is expected is not stated there or elsewhere in the pamphlet, but the reader is left to draw his own conclusions from the remarks made about German competition; it is hinted that the good-will felt towards a young enterprise should be coupled with a willingness to submit for a time to some inconvenience. Sir William Pope makes a reference to the trypanocidal drug "Bayer 205," the constitution and uses of which were described in our columns of September 23rd last (p. 569). Upon this drug the Germans found pretensions for the restoration of their tropical colonies. In our issue of December 16th (p. 1183) we referred to another drug obtained in America, and named "tryparsamide," having similar properties. Sir William Pope affirms that a well organized fine chemical industry in this country could undertake a scheme of work, routine-like in its simplicity, which would almost infallibly result in the discovery of a cure for sleeping sickness. The pamphlet deals briefly with fine chemicals as therapeutic agents in the treatment of tropical diseases, and as adjuncts to surgery and first aid. It then passes on to describe the various uses of fine chemicals in photography, in the making of solvents and varnishes, in the preparation of synthetic perfumes and flavouring agents, and as analytical reagents in various industries. Thousands of different chemicals are now available as the result of the recent development of the fine chemical industry in this country, and the British chemist, academic or industrial, has proved himself in no way behind the chemist of any other nation; the argument of the pamphlet is, however, that without national assistance the enterprise will have to be abandoned because it cannot quickly become self-supporting. Copies of the pamphlet may be obtained on application from the Association of British Chemical Manufacturers (166, Piccadilly, W.1).

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 5, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

X RAYS IN HYPERTRICHOSIS OF FACE.

DR. LEO. A. ROWDEN (Leeds) writes: I have taught for many years that the *x*-ray treatment of this condition is not justifiable.

PAINFUL VARICOSE ULCER.

"H." writes: I have a patient, a lady 73 years of age, with an old chronic varicose ulcer on the dorsum of the foot. The most troub esome symptom is very acute nocturnal pain, exteuding as far as the knee. The local condition is excessively tender, and this, combined with the pain, causes continued sleeplessness. I would be grateful for any suggestions as to treatment. All the better known remedies have been tried to alleviate the pain, including bromide, barbitone, aspirin, phenacetin, phenalgin, etc. Opium, or any of its alkaloids, are contraindicated, as even in minute doses they cause an eczematous rash. The local condition has been treated with various ointments and pastes, without any permanent effect. Complete rest for a period of months had no favourable effect on the pain complained of.

INCOME TAX.

"J. F. D. W.'s" car transactions have been as follows:

1917 bought 10 h.p. Austin for	... ...	£295
1920 sold " "	... ...	£350
bought 8-h.p. Morgan for	... ...	£234
sold " "	... ...	£195
bought 10 h.p. Riley for	... ...	£630

When the Riley was purchased a 10-h.p. Austin was not obtainable; these cars are considered to be of similar grade.

*** The total cost of replacement allowable as an expense of 1920 appears to be:

Cost of replacing 10 h.p. Austin, £234 − £350 ...	...	= −£116
Cost of replacing 8 h.p. Morgan, £630 − £195 ...	...	= £435
Net total cost	...	£319

Or the allowance can be calculated as follows: Assuming the 10-h.p. Riley to be the equivalent of the 10-h.p. Austin, "J. F. D. W." has not improved his equipment, but to maintain it has spent £234 + £630 = £864, less his rece pts of £3.0 + £195 = £545—that is, a net expenditure of £864 − £545 = £319.

"J. C. C." holds a public appointment from September, 1921, at £170 per annum, rising by £10 yearly.

*** The liability for the year ending April 5th, 1923, is £175, the amount receivable for the year of assessment, less any expenses incurred wholly, exclusively, and necessarily in the performance of the duties. If there are any such expenses we recommend our correspondent to make an estimated statement now and lodge a definite statement after April 5th, 1923, and before the July instalment of tax becomes due.

"R. C." bought in 1913 a new Rover landaulette, 12-h.p., for £500. In 1922 he bought a Wolseley landaulette, 15-h.p., for £900, less £100 allowed for the old car. The Rover Company do not now make a landaulette, the 12-h.p. saloon being priced at £775.

*** We consider "R. C." to be entitled to treat £775 − £100 = £675 as a professional expense of the year 1922.

"R. L." bought a second-hand Ford coupé in 1921 for £220; in 1922 he sold it for £85, and bought a second-hand Maxwell for £225.

*** The amount allowable as an expense is £220 − £85 = £135.

LETTERS, NOTES, ETC.

UNSUSPECTED PREGNANCY.

DR. W. B. HUNTER (Londonderry) writes: The following case may come under the above designation. A widow over 40 years of age had never been pregnant during her married life. One morning some fifty years ago I was called to visit her, and when asking her sisters, who were present, what was wrong, they told me she was passing some blood and thought she must be suffering from piles. I asked the patient to lie down on the bed. The abdomen then seemed to be rather prominent, and I examined her by the vagina and found a baby's head presenting. I then told the sisters that she was going to have a baby. That assertion was met with contemptuous and loud hysterical screams of unbelief—and "hoots man hoots, a baby, a baby. We sometimes thought you were a wee bit daft, but now we know you're daft athegither." So using a phrase that has become an every-day one now, "we shall wait and see," I went home for breakfast. In the meantime a somewhat exciting drama was being enacted before a few spectators. The brother of the patient had been consulting on the illness with a widower 60 years of age who was in the employment of this brother as a gardener, horse tender, and other odds and ends. The widower said, having been a married man once he knew more about women in consequence than the brother who was a bachelor, diagnosed the case as "a change in her courses." When my diagnosis at that moment was mentioned to them the brother immediately "went for" the widower, declaring he would change the courses for him and drown him in the adjacent mill lade (stream). The old boy bolted at once, and a most spirited sprint was seen down the bank of the mill lade. The pursuer being stiff with rheumatism was not able to catch up the pursued, who found safety after crossing a narrow plank placed over the lade, in the adjoining meadows. Early in the afternoon I returned to my patient, taking with me a pair of Simpson's forceps. I considered these would be necessary owing to the age of my patient and the fact that she was a primipara. When the baby came, squalling very vociferously, into the world, the sisters thought I was not quite so daft after all, but the mother completely denied the ownership of the baby, and told us all that I brought it with me rolled in a cloth, and placed it amongst the blankets. This declaration she persisted in for a long time; whether she ever gave it up I don't know. Though she kept her brother's house, and was visited daily or seen by her sisters, she was never suspected of being pregnant. The preceding drama occurred over fifty years ago.

THE PHYSICAL TRAINING OF THE SOLDIER.

DR. E. CLAUDE TAYLOR writes: It is of great interest and importance to note the growing emphasis laid by army instructors—for example, Colonel Campbell (December 16th, p. 1186)—on physical training of the non-combative order for the development of the recruit. All the qualities that one would desire for the civilian citizen, he declares, are evolved by exercises of the gymnastic and "Swedish" type, by games such as net ball and running. He also states that the upward curve is sometimes spoilt by the military drill.

It is impossible to attach too much significance to this in view of the constant statement that military drill is required for the physical development of boys and lads while at school or college. If people want their sons to become efficiently destructive so as to exterminate any they may be set against, let them. But it ought not any longer to be possible for medical men to back them up by the argument that such teaching will best make them physically and vitally efficient. According to Colonel Campbell (and others) it simply is not true. Even "daring and pluck" were inculcated by gymnastics; and "the game quickened the team spirit." Surely nowadays it is a world-wide team spirit that we are needing,

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 26, 27, 29, and 31 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *236*.

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	£	s.	d.
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Whole single column (three columns to page) ...	7	10	0
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Whole page	20	0	0

An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *post restante* letters addressed either in initials or numbers.

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THE graceful lines, exquisite finish and luxurious upholstery of the Wolseley covered carriages, render them particularly attractive to those to whom motoring refinement appeals.

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"FIFTEEN" SALOON.



"FIFTEEN" FOUR-SEATER COUPE.



"FIFTEEN" SINGLE LANDAULETTE.

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The Wolseley TEN.	
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Single Landaulette	£895
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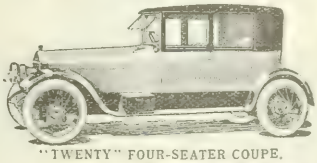
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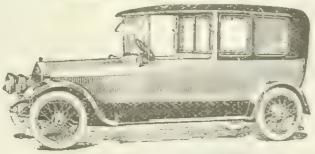
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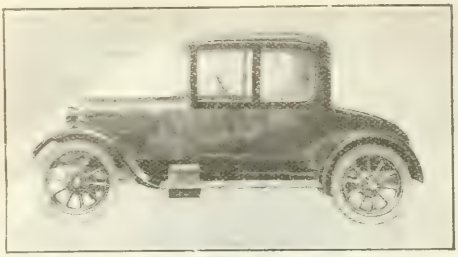
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"TWENTY" LANDAULETTE.



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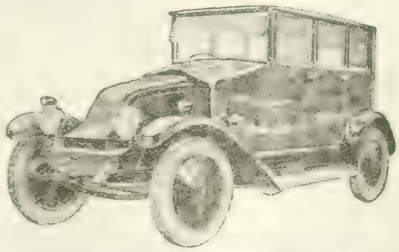
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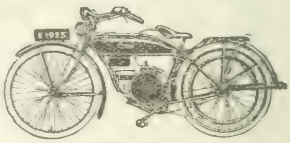


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Complete with Electric Head Lamp, Horn, Carrier, Pump, and Tools,

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The New Hillman
Standard
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The 11 h.p. Hillman All-Weather Two Seater £450

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¶ Extract from THE MOTOR, 31st October, 1922.—"The 1923 Hillmans represent the last word in medium size car coachwork, and in the ingenuity of the practical refinements provided. Both models can quickly be converted from fully open to fully closed, the four seater occupying only two minutes whilst the two seater takes still less time. Apart from the variety of the possible combinations of the side panels there are many ingenious refinements on the car. For instance a support is provided for each side of the bonnet on the inner and upper face of the radiator, the toolbox is housed in the scuttle, with its doors opening inwards under the bonnet and accommodating all tools save the oil can and jack handle which are clipped to the inner side of the dash."

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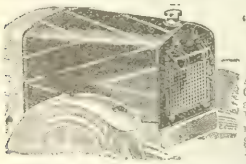
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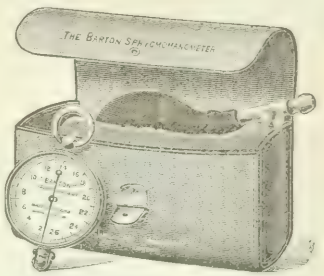
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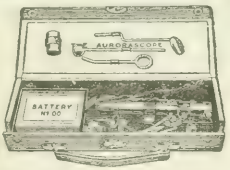
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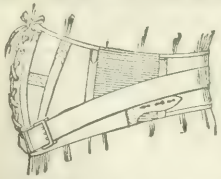
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Assistant—M. E. DELAFIELD, M.B., L.R.C.P., D.P.H.
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Special 14 day's Intensive Course in Cardiology, 8th January to 20th January, 1923.

FIRST WEEK. MORNING.

Date.	10.0—11.0 a.m.	11.15—12.30. LECTURES.
Mon. 8th Jan.	Dr. J. STRICKLAND GODDALL X-Ray Examination of the Heart	Dr. PARSONS-SMITH The Anatomy of the Heart
Tues. 9th Jan.	Sir S. RUSSELL-WELLS Sphygmomanometers & Arterio-meters	Dr. HAMILL The Physiology of the Circu-lation
Wed. 10th Jan.	Dr. JOHN PARKINSON The Polygraph	Dr. F. W. PRICE Mitral Disease
Thur. 11th Jan.	Dr. JOHN PARKINSON The Polygraph	Sir S. RUSSELL-WELLS Diseases of the Pericardium
Fri. 12th Jan.	Dr. PARSONS-SMITH The Electrocardiograph	Dr. R. O. MOON Prognosis in Heart Disease
Sat. 13th Jan.	Ward Demonstration Dr. P. HAMILL	

FIRST WEEK. AFTERNOON.

Date.	2.0—3.0 p.m.	3.0—4.30 p.m.
Mon. 8th Jan.	Ward Demonstration Dr. R. O. MOON	Out Patients Dr. J. STRICKLAND GODDALL
Tues. 9th Jan.	Ward Demonstration Dr. F. W. PRICE	Out-Patients Sir S. RUSSELL-WELLS
Wed. 10th Jan.	Pathological Demonstration Dr. H. B. WEIR	Out Patients Dr. R. O. MOON
Thur. 11th Jan.	Ward Demonstration Dr J. STRICKLAND GODDALL	Out-Patients Dr. F. W. PRICE
Fri. 12th Jan.	Ward Demonstration Dr. JOHN PARKINSON	Out-Patients Dr. JOHN PARKINSON

SECOND WEEK. MORNING.

Date.	10.0—11.0 a.m.	11.15—12.30. LECTURES.
Mon. 15th Jan.	Dr. PARSONS SMITH The Electrocardiograph	Dr. F. W. PRICE Angina Pectoris
Tues. 16th Jan.	Dr. F. W. PRICE Diseases of the Myocardium	Dr. J. STRICKLAND GODDALL Aortic Disease
Wed. 17th Jan.	Dr. PARSONS-SMITH Heart Block	Dr. P. HAMILL Congenital Heart Disease
Thur. 18th Jan.	Dr. R. O. MOON Cardiac Arrhythmias	Dr. F. W. PRICE Diseases of the Arteries
Fri. 19th Jan.	Dr. J. STRICKLAND GODDALL Tachycardia	Dr. JOHN PARKINSON Treatment of Heart Failure
Sat. 20th Jan.	Ward Demonstration Dr. P. HAMILL	

SECOND WEEK. AFTERNOON.

Date.	2.0—3.0 p.m.	3.0—4.30 p.m.
Mon. 15th Jan.	Ward Demonstration Dr. R. O. MOON	Out-Patients Dr. J. STRICKLAND GODDALL
Tues. 16th Jan.	Ward Demonstration Dr. F. W. PRICE	Out-Patients Sir S. RUSSELL-WELLS.
Wed. 17th Jan.	Pathological Demonstration Dr. H. B. WEIR	Out-Patients Dr. R. O. MOON
Thur. 18th Jan.	Ward Demonstration Dr. PARSONS-SMITH	Out-Patients Dr. F. W. PRICE
Fri. 19th Jan.	Ward Demonstration Sir S. RUSSELL-WELLS	Out-Patients Dr. JOHN PARKINSON

A selection of Museum Specimens, Slides, etc., will be arranged in the Laboratory and changed daily throughout the Course.

Fees: **The Fee for the Course is £7 7 0. Admission thereto will be by special Ticket only.**

All enquiries should be addressed to the Dean, Dr. B. T. PARSONS-SMITH, and cheques made payable to the Secretary at the Hospital.

THE SCHOLASTIC, CLERICAL AND MEDICAL ASSOCIATION, LIMITED.

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This Department of the Association is in a position to supply free of charge to Medical Men full and precise details regarding Educational Establishments of all kinds both for Boys and Girls. Tutors and Governesses also recommended.

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THE LIDDLE TRIENNIAL PRIZE.

Under the will of the late Dr. JOHN LIDDLE, the College Board of the London Hospital offer a Prize of the value of £120 for the best Essay on

"RHEUMATIC FEVER: ITS CAUSE AND PREVENTION."

Essays should be sent to the Dean (from whom further particulars may be obtained) on or before 30th June, 1923.

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PADDINGTON, W. 2.
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The SECOND TERM of the WINTER SESSION will begin on Jan. 4th 1923, when students can join classes in Preliminary, Intermediate, or Final Subjects.

Special features of this Medical School are:—
Healthy West-End situation.
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Research Scholarships amounting to £200 per annum.
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Illustrated Prospectus and full particulars may be obtained from the Secretary.

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Seamen's Hospital Society.

LONDON SCHOOL of TROPICAL MEDICINE

Endsleigh Gardens, N.W.1.

Sessions will commence 8th January and 23rd April, 1923, approximately.

For Prospectus and further particulars apply to The Secretary, London School of Tropical Medicine, Endsleigh Gardens, N.W., or to the Head Office, Seamen's Hospital, Greenwich, London, S.E.

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During the winter months (from November till May inclusive) Post-Graduate Teaching has been arranged for qualified medical practitioners. This will consist of:—

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(c) CLINICAL ASSISTANTSHIPS—Whole time and Part-time.

For Syllabus, application should be made to the Secretary, Post-Graduate Medical Association, The University, Glasgow.

The Milroy Lectures on State MEDICINE AND PUBLIC HEALTH.

The Council of the Royal College of Physicians are prepared to receive applications for the office of MILROY LECTURER for 1924.

Applications must be addressed to the Registrar, Royal College of Physicians, Pall Mall East, on or before January 8th, and should contain a statement of the division of the subject selected by the candidate.

The course must comprise not less than "three" nor more than "six" Lectures.

The Lectures are to be given on Tuesdays and Thursdays in February or March, 1924.

A copy of Dr. Milroy's "Suggestions" on the subject of his bequest, and information as to the emolument, may be obtained from

Dec., 1922. J. A. ORMEROD, M.D., Registrar.

Liverpool School of Tropical MEDICINE.

COURSES OF INSTRUCTION (lasting three months) for the Diploma, and also in Veterinary Parasitology, commence about SEPTEMBER 15th and JANUARY 7th.—Prospectus from the Hon. DEAN, School of Tropical Medicine, University of Liverpool.

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WEST LONDON HOSPITAL.

New Session Post-Graduate College opens January 8th, 1923.

Clinical Work in all Departments continued between Sessions.

F.R.C.S. (final) Class.—Clinical Pathology.

For further particulars apply to Dr. ARTHUR SAUNDERS, Dean, West London Hospital, Hammersmith, W. 6.

Salford Union, Infirmary.
Hope, Pendleton, near Manchester

THIRD RESIDENT ASSISTANT MEDICAL OFFICER.

The Guardians of the Salford Union are prepared to receive applications for the above appointment.

Candidates to be eligible must be unmarried, registered under the Medical Acts and possess a Medical and a Surgical qualification. Preference will be given to candidates with experience of Poor Law, or general Infirmaries.

Salary £300 per annum with furnished apartments, attendance and rations at the Infirmary.

The appointment will be made subject to the approval of the Minister of Health and will be made, in the first instance, for six months. The person appointed will be required to devote whole time to duties, and will also be required to act as may be directed by the Medical Superintendent as respects the Union Infirmary and other Institutions of the Union.

Applications, stating age, qualifications and experience, and accompanied by copies of not more than three recent testimonials (which will not be returned) should reach me as early as possible but not later than Monday, the 8th January, 1923, endorsed "Third Medical Officer."

Canvassing, the Guardians will disqualify.

By order, E. H. INCHLEY,
Poor Law Offices, Clerk to the Guardians.
Eccles New Road, Salford.
19th December, 1922.

County Mental Hospital,
Whittingham nr. Preston, Lancs.

Applications wanted for post of PATHOLOGIST AND ASSISTANT MEDICAL OFFICER. Salary, including War Bonus (which varies with the cost of living), £449 13s., with board, furnished apartments, attendance and laundry, valued at £130 per annum. The appointment is subject to the provisions of the Asylums Officer's Superannuation Act, 1909. Well equipped laboratory, with facilities for research work. Candidates must be unmarried and duly registered under the Medical Act.

Applications, stating age, experience and qualifications, accompanied by copies of recent testimonials, to be sent to the Medical Superintendent.

County Mental Hospital,
Whittingham, nr. Preston, Lancs.

ASSISTANT MEDICAL OFFICER required. Salary, including War Bonus (which varies with the cost of living), £449 13s., with board, furnished apartments, attendance and laundry, valued at £130 per annum. The appointment is subject to the provisions of the Asylums Officer's Superannuation Act, 1909. One holding D.P.M. preferred. Candidates must be unmarried, and duly registered under the Medical Act.

Applications, stating age, experience and qualifications, accompanied by copies of recent testimonials, to be sent to the Medical Superintendent.

Addenbrooke's Hospital,
Cambridge.

JOHN BONNETT CLINICAL LABORATORY.

The General Committee invite applications for the appointment of CLINICAL PATHOLOGIST, who will be required to work under the direction of the Honorary Clinical Pathologist. Salary £500 per annum, with permission to undertake private pathological work.

Further particulars of the appointment may be obtained from the undersigned, to whom applications should be forwarded, to reach him on or before Wednesday, January 31st, 1923.

W. H. HEAD, Secretary-Superintendent.

Derbyshire Sanatorium,
Walton Lane, Nr. Chesterfield.

Applications are invited for the position of ASSISTANT MEDICAL OFFICER at the Derbyshire Sanatorium for Tuberculosis. The appointment is a resident one and candidates must be single. Salary £300 per annum, together with board, laundry, etc.

Application forms may be obtained from the undersigned, to whom they must be returned, together with copies of three recent testimonials, on or before Monday, January 15th, 1923.

County Offices, SIDNEY BARWISE,
Derby. County Medical Officer of Health.
December 19th, 1922.

University of Cape Town.
SENIOR LECTURESHIP IN PHYSIOLOGY.

The University invites applications for the post of Senior Lecturer in the Department of Physiology at a salary of £450 per annum, rising by annual increments of £25 to a maximum of £650 per annum. (The successful applicant, if a qualified medical practitioner) will be allowed a salary of £500 for the first three years of his appointment).

An allowance of £40 will be made for passage money.

The Lecturer must become a Member of the University Teachers' Superannuation Fund.

The successful applicant will be expected to assume duty on the 12th March 1923, or as soon thereafter as possible. Salary commences from date of assumption of duty.

Applications and copies of testimonials, all in duplicate, must reach the Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C. (from whom forms of application and further particulars may be obtained), not later than 31st January, 1923.

Hospital for Consumption and
DISEASES OF THE CHEST, Brompton, S.W.

The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are two vacancies). The duties include work in the Out-patient Department as well as in the Wards.

Further particulars may be obtained from the undersigned, to whom applications, with testimonials, should be addressed not later than 17th January, 1923.

Candidates will be required to attend the meeting of the Medical Committee on Wednesday, January 24th, at 4.30 p.m.

The appointment is for six months, with an honorarium of £50.

FREDERICK WOOD, Secretary.

Hospital for Consumption and
DISEASES OF THE CHEST, Brompton, S.W.

The Committee of Management invite applications for the post of ASSISTANT RESIDENT MEDICAL OFFICER. Candidates must be registered Practitioners, and must have held a Resident Hospital Appointment for six months. Salary £150 per annum, with board and residence.

Applications with testimonials, to be sent in on or before 17th January, 1923. Candidates will be required to attend the meeting of the Medical Committee on Wednesday, January, 24th at 4.30 p.m.

FREDERICK WOOD, Secretary.
Brompton, December, 1922.

Hospital for Consumption and
DISEASES OF THE CHEST, Brompton, S.W.

A vacancy having occurred in the office of ASSISTANT PHYSICIAN, the Committee of Management invite applications for the post. Candidates are requested to send in applications and testimonials not later than Thursday, January 11th, 1923. They must be Doctors or Bachelors of Medicine, and Fellows or Members of the Royal College of Physicians of London.

FREDERICK WOOD,
Brompton, December, 1922. Secretary.

National Hospital for the
PARALYSED AND EPILEPTIC,
Queen Square, London, W.C.1.

SENIOR HOUSE PHYSICIAN.

A vacancy will shortly occur for a Senior House Physician. The salary is £150 per annum, with board and lodging. Applications accompanied by copies of three recent testimonials should be sent on or before Monday, January 8th, addressed to the undersigned. Applicants should state if they are willing to accept the post of Junior House Physician. (Salary £150.)

GODFREY H. HAMILTON, Secretary.

City of London Mental
HOSPITAL, near Dartford, Kent.

SECOND ASSISTANT MEDICAL OFFICER required. Salary £350 per annum, rising by annual increments of £25 to £400, with board, rooms, and laundry attendance. Deductions according to Superannuation Act, 1909.

Applicants must be male, single, and fully qualified. A previous Resident Appointment in a General Hospital is desirable.

Apply by letter only, with three copies of testimonials, to the Medical Superintendent.

Royal Free Hospital,
Gray's Inn Road, W.C. 1.

Applications are invited from duly qualified and registered Medical Men or Women for the post of HOUSE PHYSICIAN, vacant on February 1st, 1923. Intending candidates should submit applications, stating age and accompanied by copies of three recent testimonials to the undersigned on or before 12th January, 1923.

REGINALD R. GARRATT, Secretary.

Essex County Council and
LEXDEN AND WINSTREE RURAL DISTRICT COUNCIL.

ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND MEDICAL OFFICER OF HEALTH FOR THE RURAL DISTRICT.

Applications are invited for the following appointments:—

(*a*) Assistant County Medical Officer of Health for the area of the Lexden and Winstree Rural District Council. Salary per annum £350.

(*b*) Medical Officer of Health for the same District. Salary per annum £350.

An allowance of £50 per annum in respect of travelling and other expenses will be made in respect of each appointment, and an office will be provided in Colchester.

The appointments are subject to the approval of the Ministry of Health and to the conditions set out on the front page of the form of application. Applicants will be required to devote their whole time to the duties of the offices.

Applicants must be duly qualified medical men, holding a diploma of Public Health, or have had three years' experience as a Medical Officer of Health, and should not be over 45 years of age. Preference will be given to candidates possessing the necessary qualifications who served in the Forces during the War.

Applications on the prescribed form (which may be obtained from the undersigned JOHN H. GOOLD) accompanied by copies of not more than three recent testimonials, which will not be returned, should be addressed to the said JOHN H. GOOLD, and delivered at the Shire Hall, Chelmsford, not later than Monday, the 15th January, 1923.

Canvassing of Members of the Councils by or on behalf of a candidate is forbidden.

JOHN H. GOOLD,
Clerk of the County Council.
GEORG E. TOMPSON,
Clerk to the Lexden and Winstree
Shire Hall, Rural District Council.
Chelmsford, 28th December, 1922.

City of Birmingham Education
COMMITTEE.

ASSISTANT SCHOOL MEDICAL OFFICER.

Applications are invited for the appointment of Assistant School Medical Officer. Provided the successful candidate has not less than two years' suitable experience, the commencing salary will be £500 per annum, rising, subject to satisfactory service, to £600 per annum by annual increments of £25. There is no war allowance.

Forms of application, which should be returned not later than first post on Monday, January 8th, 1923, together with further information, may be obtained from the undersigned. Communications respecting this appointment should be endorsed "Assistant School Medical Officer."

Canvassing, in any form, oral or written, direct or indirect, will be regarded as a disqualification, and applications and testimonials, or copies thereof, are not to be sent to members of the Committee or of the Council.

Education Office, P. D. INNES,
Council House, Chief Education Officer.
Margaret Street, Birmingham.

West Ham Union.
TEMPORARY DISTRICT MEDICAL OFFICER. (Part-time).

The Guardians invite applications for the appointment of a Temporary District Medical Officer (Part-time) for the No. 6 RELIEF DISTRICT (Tidal Basin), at a salary of £130 per ann., rising by £10 biennially to a maximum of £180 per annum, with a bonus at present of £49 10s. Od. per annum, together with the extra Medical Fees allowed by the Orders of the Local Government Board.

Candidates must possess the qualifications prescribed in the said Orders, and the gentleman appointed will be required to reside as near the centre of the district as practicable.

Forms, upon which application must be made, can be obtained at my Office, or will be forwarded upon receipt of a stamped address, foolscap envelope, and must be returned not later than 10 a.m. on Tuesday, the 2nd January, 1923.

Canvassing, in any form, either directly or indirectly is prohibited and will disqualify.

By Order of the Board,
Board Room, Union Road, THOMAS SMITH,
Leytonstone, E. 11. Clerk.
19th December, 1922.

South Devon & East Cornwall
HOSPITAL, Plymouth. (176 Beds).

The Committee invite applications for the appointment of a qualified HOUSE PHYSICIAN to commence duties on the 16th January, 1923. The duties comprise medical, surgical and anæsthetic work. Salary £120 with board, residence and washing.

Candidates should send copies of not more than three testimonials.

Plymouth, P. J. LANGDON,
16th December, 1922. Secretary.

Wanted, early in January, male OUTDOOR ASSISTANT, of English or Scotch nationality. University Graduate preferred, to take entire charge of branch private and panel practice in small industrial town in South-West Yorkshire. Permanency and ultimate partnership offered to keen, reliable man. Very little midwifery; scope for surgery; use of car. Unfurnished house available from end of January. Commencing salary £450 per annum. Usual bond.—Address, giving full particulars of qualifications, age, experience, &c., No. 5949, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Wanted.—Single, outdoor ASSISTANT in January, to resident Branch Surgery for industrial Practice in West Riding. English or Scotch. Cyclist. Usual bond. Salary £350 with furnished rooms and attendance.—Reply stating age qualifications, experience and references to No. 5919, BRIT. MED JOUR. Office, 428, Strand.

Wanted.—An indoor Assistant in a mining Practice in Glamorganshire. No dispensing. Terms £300 per annum. Usual bond.—Address, stating age, reference, etc., No. 5910, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Wanted, Assistant for colliery and panel practice, Monmouthshire; young, unmarried, with some colliery experience. Salary £400, apartments, attendance, fuel and light. — Address, No. 5928, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Wanted, qualified indoor ASSISTANT, single, English or Scotch, age 30–35, for mixed practice, pleasant town Midlands. Very comfortable home for suitable gentleman. — Address, No. 6013, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Wanted by M.D., young, unmarried, and reliable, an ASSISTANTSHIP or PARTNERSHIP, ex H.S. and H.P. Experienced in G.P. Well-up in eye work.—Address, No. 6015, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Assistant (outdoor), wanted immediately for town and country Practice. Private panel and appointments. Single, and wly qualified would suit. Prospects good. Salary commencing £400. Edin. man preferred.—Add. No. 6014, BRIT. MED. JOUR. Office, 429, Strand.

Gentleman Wanted immediately as OUTDOOR ASSISTANT for country practice 30 miles London. Young, energetic, well received. Church of England. Usual bond.—Address, giving age, references, &c. No. 6011, BRIT. MED. JOUR. Office, 429, Strand, W.C. 2.

Advertiser, M.R.C.S., L.R.C.P., young, ex-H.S., experienced private and panel practice, well received by all classes, is willing to UNDERTAKE EVENING SURGERIES in S.E. London.—Address, No. 6002, BRITISH MED. JOURNAL Office, 429, Strand, W.C. 2.

Part-time Assistantship wanted (Mornings and Evenings), in or near Liverpool, by young doctor (30). M.B., Ch.B., M.Sc.—Apply, "F. S. F.," 61, Sunningdale Road, Wavertree Liverpool.

Infant Welfare Society, desiring to economise, offers part-time services of fully trained and very efficient SECRETARY.—X. Y. Z., The Club House, 33, Cartwright Gardens, London, W.C.1.

Practical Anæsthetics. Graduate requires instruction in same. London.—Address, No. 6018, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Young lady, well educated, refined, excellent testimonials, holding Diploma of recognized Physical Training College and Local Oxford Senior Certificate, desires post as COMPANION to delicate Child needing massage and remedial exercises.—Address, No. 5904, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Doctor for Literary Work, suit service disabled, state age, experience particulars.—Box 653 ROBERTSON & SCOTT, Advertising Agents, Edinburgh.

Dispenser-Book-keeper DESIRES POST with doctor; 5½ years' experience. Excellent testimonials. Disengaged.—Address, No. 6005, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Disengaged. — Dispenser, qualified (male) dresser. State terms offered.—Address, No. 6008, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Lady Dispensers supplied, qualified, experienced, and trained in Bacteriological Laboratories at the LONDON COLLEGE OF PHARMACY FOR LADIES (conducted by Medical Men for the supplying of Hospitals and the Profession with Dispensers). Preparations for Examinations.—7, Westbourne Park Road, W.

Lady Dispenser-Book-keeper (Hall) seeks POST with Doctor. Experienced, thorough knowledge of panel records, dressings, etc. Doctor's daughter, excellent testimonials South preferred.—Miss M. WORGER, 33, Market Street, Lichfield, Staffs.

Lady Dispenser, experienced (Hall), requires POST with doctor or institution. Good testimonials.—Address, No. 6016, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Lady Dispenser, Book-keeper (Hall Certificate), desires RE-ENGAGEMENT. Seven years' continuous experience, private panel and clubs, also minor dressings.—"Dispenser," 5, Cunliffe Street, Wrexham.

Lady Dispenser, experienced (Hall). Disengaged shortly.—Address, No. 6007. BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Nurse - Dispenser - Secretary requires POST with doctor. Full Hospital training, C.M.B. and Hall Certificate. Can keep books and record cards. Good testimonials, Cyclist.—Miss G. M. PICKEN, St. John's Vicarage, Upper Norwood, S.E. 19.

Locum Tenency desired by an experienced Doctor, had own practice (5 gns. p.w.), London preferred, not essential, or would give services to a Practitioner for Hospitality and 3 gns. p.w. for six weeks. Good refs. recent L.camus.—Add., "MEDICUS," 61 Ledbury Road Bayswater, W.

Locum Tenens, disengaged. Experienced in taking sole charge of practices, with appointments. Abstainer. Reliable. Testimonials. Address, "Locum," 7, Westbourne Road, Walsall, Staffs.

Locum Tenens wanted, January 20th, N.E. London. Easily worked. Suit man residing for examination.—Address, No. 6001, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

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Wanted.—Cash and Panel PRACTICE in any part of London. Purchaser can if necessary invest up to £3,000.—Further particulars &c., received in confidence by PEACOCK & HADLEY, 19, Craven Street, Strand, W.C. (No charge unless sale effected).

Wanted.—A general Practice in North Wales with educational facilities. Full particulars and terms in strict confidence to No. 5911, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Canada.—Urgent Sale. About £1,200 a year, in residential town, with every convenience. No dispensing. Easily worked. Visits from 15/-. All sport. No opposition. Premium only £ 00 cash to immediate purchaser.—Apply, No. 7258, Mr. PERCIVAL TURNER, 4, Adam Street, W.C.

Wanted by M.B., aged 37, a PRACTICE with good panel in London or suburb. Income about £1,500. Now free and can pay cash.—Apply, BLUNDELL & Co., 22, Craven Street, Strand, W.C. 2.

Death Vacancy.—Staffs. £2,000 a year. Mixed PRACTICE. Panel 800. Semi-country district. Good house on lease. Every investigation.—For further details apply No. 7257, Mr. PERCIVAL TURNER, 4, Adam St., Strand, W.C. 2.

London, S.E.—Within short distance of the City, private and panel PRACTICE. Receipts £2,000 p.a., including £1,200 from panel and appointments. Ten-roomed house in main thoroughfare. Ten years' lease. Premium £3,000.—Apply, PEACOCK & HADLEY, 19, Craven Street, Strand, W.C.2.

Death Vacancy. — London, S.W. suburb NUCLEUS for immediate disposal. About £150 a year. Visits from 3/6. Panel of 100. Small house to let.—Apply, No. 7248, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

Durham. — £1,100 a year. Panel £400, several appointments. Owner retiring. Easy terms.—Address, No. 5950, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

For Disposal.—A good Practice is not always to be had directly, but Mr. PERCIVAL TURNER can generally offer applicants something suitable. Nearly all the best Practices are sold by him without being advertised.—Full information free on application to 4, Adam St., W.C.2.

North Wales.—For immediate Disposal, a sound well-established PRACTICE in a mining and agricultural district. Averaging £1,400 per annum. Can be increased. Transferable appointments over £300 per annum. Panel over 1,000. Detached medium-sized house, separate surgery entrance, garage, lawn, &c. Premium £2,000, £1,000 down, and balance as arranged.—Further particulars address No. 6012, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

N. Wales. £650 a year. Urgent; unopposed; all sport. Panel £250 a year; other appts £230. Rent £34. Good garden. Price £800. — Apply, No. 7154, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

London, E.C.—Death Vacancy. Private and panel PRACTICE yielding about £1,500 a year, including £650 from panel. Non-resident. Rent £100. Attendance few hours daily. Premium £2,000. — Apply, PEACOCK & HADLEY, 19, Craven Street, Strand, W.C. 2.

Eastern County. — Death Vacancy. Average over £4,000 a year. Very old-established PRACTICE in good market town. Same hands about 40 years. Panel over £1,600. Good house available and large garden on lease. Present partner will remain assisting and their sport. Personally known.—Apply, No. 7260, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

Ophthalmic and Aural PRACTICE of £1,500 per annum for Sale. 1½ years' purchase.—Address, No. 5918, BRITISH MEDICAL JOURNAL Office 429, Strand, W.C. 2.

Derbyshire. — Over £800 a year. Good agricultural and residential PRACTICE, on rail. Nearest opposition 2½ miles. Small panel and appts. Small house, 3 bedrooms, 2 receptions, &c. Separate surgery and garage. Small garden which can be extended. Rent about £40, on lease.—Apply, No. 7249 Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

Midland Town. Centrally situated middle and better working-class PRACTICE. Receipts £2,000 a year panel and appointments about £1,100. Good family residence, large garden, garage, &c. Lease 8 years to run. Premium £3,000.—Apply, PEACOCK & HADLEY, 19, Craven Street, Strand, W.C. 2.

South West of England. — Seaside town. £1,300 a year. Very old-estab. Good family PRACTICE. Easily worked. Very little midwifery. Panel under 500. Scope for surgery. Up to ⅔ share can be purchased or possibly the whole — Apply, No. 7224, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

South Africa.—In one of the best parts of Cape Colony, an unopposed country PRACTICE obtainable at £ 00, work very light, very little midwifery or night work, nearest opposition 22 miles, Dutch not necessary. There is a large commodious house with good garden. Climate excellent. Would suit man with early lung trouble. Premium for house and Practice £1,350 — Apply Dr. CLAIWORTHY, 145, Denmark Hill, London, S.E.

South Wales.—Urgent Sale. £1,500 a year. Country PRACTICE. Old-established. On rail. Good fee's, panel worth nearly £500. Large house and garden. Good fishing and other sport. Price only £1,500. Apply, No. 7180, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C. 2.

Small Practice required in Country Town or Country.—Address, No. 6004, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C. 2.

Surgeon Dentist's Practice for sale, an old-established first-class Practice as Surgeon Dentist, in one of the best districts in Glasgow. For particulars apply to Messrs. TURNBULL & FINDLAY, Solicitors, 125, St. Vincent Street, Glasgow.

To Purchasers.—Do not Buy without expert assistance. With 40 years' experience Mr. PERCIVAL TURNER can advise in all cases. Terms free on application to 4, Adam Street, Strand, W.C.2. Telephone: Gerrard 309. Telegrams: "Ensomiam London."

Unopposed Practice in country town (pop. 2,500), making £850. Panel 700. Good house and garden. Rent £40. No mot r required. Premium 1½ years' purchase. —Address, No. 6010, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Urgent Sale.—N. Wales. Near sea. About £700 a year. Panel over 600. Old-established; unopposed; easily worked. Good house, large garden. Low rent. Premium £850 half-down.—Apply, No. 7197, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C.2.

Wanted by M.R.C.P., a PARTNERSHIP in nice suburb of London or good town in South of England. Income £800 up.—Apply, BLUNDELL & Co., 22, Craven Street, Strand, W.C.2.

Wanted.—A half-share PARTNER in a practice in the Midlands. Average annual receipts last three years about £2,000.—Address, No. 6009, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Partnership.—N. Wales. Near sea. £2,000 a year. Old-established; not much opposition. 2,000 panel. Good sport in district. Rooms available at present. Half-share for sale.—Apply, No. 7250, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C.2.

Third Partner wanted for large Industrial Practice in N. Wales, not far from Chester. Receipts £3,000, practically guaranteed, includes over 3,000 panel and £1,000 appts. Little midwifery. Nice detached house with garden, available at low rental. Wash-out necessary. Premium £1,500 for third share.—Address, No. 5903, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Partnership.—Home Counties. Over £2,000 a year. Partner wanted in very old-established unopposed Practice in pleasant residential district. Applicant should be between 30 and 40, fond of country life and active. One-third share for disposal at 1½ years' purchase.—Apply to sole agent, No. 7232, Mr. PERCIVAL TURNER, 4, Adam Street, Strand, W.C.2.

Junior Partner wanted, Country Practice, home counties. Single. Share about £700 a year. Age under 32. Church of England. Easy terms to good worker.—A.B., 82, Beaconsfield Road, Brighton.

Third Partner wanted. Junior retiring. Small S.W. Country Hospital Town. Scope for surgery. £4,500 p.a. Good house.—Address, No. 5102, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

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Koristka Model D. Da. new, latest model, listed £31 5s. 0d., take £21 5s. 0d. (Reference No. 75A). Deferred payment terms £4 down, balance in twelve instalments of £1 11s. 8d. Approval. Money back if unsatisfactory.

Specification.—Koristka D. Da Microscope, square stage, well constructed stand on solid foot, inclinable to any angle and well balanced, diagonal rack and pinion focussing, Micrometer screw fine adjustment, draw tube graduated in millimetres, dust proof triple nose-piece, Abbe swing-out condenser in focussing sub-stage, iris diaphragm, plain and concave mirrors, two Koristka dry objectives, 2 rd., 1/6th, and a 1/12th oil immersion, N.A. 1.30, three eye-pieces, in lock-up case. Magnifications 60-1,000.—*Further particulars post free.*

Extra for adjustable Mechanical Stage, £3 3s. (List £5 16s.). If supplied without Oil Immersion objective, deduct £5 10s.—THE CITY SALE AND EXCHANGE, 81, Aldersgate Street, E.C.1.

Examination Couch and some other SURGERY FURNITURE wanted.—Particulars to SUNDERLAND, 64, Victoria Street, S.W.1.

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Turned and Re-Tailored as NEW. Overcoats from 35/-; Suits 45/-; Cos. umes 47/6. Invisible Mending, Alterations, Repairs. Best work only.—DOUGLAS MILLARD & Co., 221A, Kensington High Street, London, W.8.

D.P.H. Course. Public HEALTH TEXT-BOOKS & REPORTS, recent Editions, for Sale.—Address, No. 6017, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

London, S.E., Camberwell.— Best part main road. Good opening medical practice. FURNISHED FLAT, ground floor; 6 rooms, large hall, self contained; good approach; garden; electric light; every convenience. Three guineas p.w. Freehold can be bought.—"M.R.C.S.," 43, Welbeck Street, W.1.

Harley Street corner.—Large CONSULTING ROOM on First Floor, available at Christmas. Rent £200. Gas fire, electric lighting, and name plate. Good service.—Address, No. 5611, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Harley Street neighbourhood. —PATHOLOGICAL LABORATORY, well fitted. Rent £250. Use of Consulting Room if required—doctor's house; also Bed-sitting Room available if desired.—Address, No. 5612 BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

To Let.—Wimpole Street, in Physician's recently re-decorated House, 2 large CONSULTING ROOMS on Ground and 2 on First Floors available now, use of Waiting Room. Telephone, maid-servant, name plate.—Rent and particulars of S.W.M., 4, Upper Wimpole St., W.1.

Welbeck Street (just out of) Large and lofty CONSULTING ROOM TO BE LET on ground floor, suitable for Radiologist. It contains a fully equipped X-Ray installation in working order which would be sold if required.—ELLIOTT, SON & BOYTON, 6, Vere Street, W.1.

Consulting Rooms to Let in good position. Electric light, telephone, hot and cold water. Good attendance. Rent £150. Apply, Miss FRY, 36, Devonshire Street, Portland Place, W.1. Telephone No. is Mayfair 4499.

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Doctors' A/c Forms printed in best style—250, 10s., 500, 14s., 1000, 20s. Letter heads, Post Card heads, Calling Cards, &c., at equally moderate rates. Samples sent.
R. ANDERSON & SON,
Printers, 1, HILL PLACE, EDINBURGH.

City of London Hospital for DISEASE OF THE CHEST, Victoria Park, E.2. (Bus, tram and rail; Cambridge Heath).

Applications for the post of HOUSE PHYSICIAN, with copies of recent testimonials, are invited to be sent promptly to the undersigned. Salary at the rate of £125 per annum, with board, residence and laundry provided.
GEORGE WATTS, Secretary.

County Borough of St. Helens.
ASSISTANT MEDICAL OFFICER OF HEALTH.

Applications are invited for the position of Assistant Medical Officer of Health. Candidates must be able to show special experience in the diagnosis and treatment of tuberculosis, and should hold a Diploma in Public Health. The duties will include those of Resident Medical Officer at the Corporation Sanatorium and other Public Health work. Salary £450 per annum with board, residence. Thereis a uniform.

Applications should be sent to the Medical Officer of Health, so as to reach him not later than Saturday January 13th, 1923.
Town Hall, W. H. ANDREW,
St. Helens. Town Clerk.

Royal London Ophthalmic HOSPITAL (Moorfields: Eye Hospital), City Road, E.C.1.
REFRACTION ASSISTANT.

Applications are invited for the office of Refraction Assistant on Wednesday and Saturday mornings. Candidates must be registered medical practitioners. Salary at the rate of £100 per year for two mornings a week. Hours of attendance from 9 a.m. until 1 p.m. The Refraction Assistant will be appointed for a period of one year, and will be eligible for re-appointment.

Applications, stating age and qualifications, must be received not later than 6th January, 1923, by ROBERT J. BLAND, Secretary-Supt.

Ancoats Hospital, Manchester.

HONORARY PHYSICIAN required. Applicants, who must be Members of the Royal College of Physicians, London, are requested to forward their applications on or before 5th January, 1923, stating age, qualifications, and experience.

HONORARY RADIOLOGIST required. Applications are invited from qualified medical gentlemen, who are requested to state their age, experience and qualifications, etc., and to send such applications on or before 5th January, 1923.
(By Order) HERBERT J. DAFFORNE,
Secretary.

The Victoria Hospital for CHILDREN, Tite Street, Chelsea, S.W.3. (116 Beds).

The Committee of Management invite applications for the posts of HOUSE PHYSICIAN and HOUSE SURGEON (both vacant 1st February, 1923). The appointments are for six months.

Salaries at the rate of £100 per annum, with board, lodging and washing. Candidates must hold Medical and Surgical qualifications and be registered under the Medical Act.

Applications with copies of three recent testimonials, should be sent to the Secretary not later than 9th January, 1923.

The Royal Dental Hospital OF LONDON, Leicester Square, W.C. 2.

The post of ASSISTANT DENTAL SURGEON to the above Institution is vacant. Candidates for the same, who must be licentiates of Dental Surgery of one of the licensing bodies recognised by the General Medical Council of the United Kingdom, are requested to send in their applications, accompanied by three testimonials, to the undersigned from whom further particulars may be obtained on or before Monday, 8th January, 1923.
W. J. WADHAM, Secretary.

Ingham Infirmary, South SHIELDS.

Wanted, SENIOR and JUNIOR HOUSE SURGEONS (Male). Salaries £200 and £150 respectively, with residence, board and washing. No out-visiting. Candidates must hold registered qualifications in medicine and surgery. The appointment will be terminable by one month's notice. Applications, stating age, and accompanied by copies (which will not be returned) of recent testimonials, to be sent to the undersigned, from whom further particulars may be obtained.
JOHN POTTER, Secretary.

East Lancashire Tuberculosis COLONY, Barrowmore Hall, Chester.
ASSISTANT MEDICAL OFFICER.

Applications are invited for the post of Assistant Medical Officer at the above colony. Applicant must be male, single, under 40 years of age. Previous experience of tuberculosis work preferred. Salary will be at the rate of £350 a year with board and residence.—Apply to Medical Superintendent, Barrowmore Hall, Chester.

INDIAN MEDICAL SERVICE.

SPECIAL RECRUITMENT, 1922-3.

For not more than 30 European Officers to be appointed in the immediate future, special terms are offered, including gratuities of £1,000 after 5 years' service, together with free return passages for those who no longer desire to remain in the service. Otherwise the terms will be as detailed below:—

APPOINTMENT.

The Secretary of State for India announces that vacancies in the Indian Medical Service continue to be filled by direct appointment.

Candidates must be under 32 years of age at the time of application, and must possess qualifications registrable in Great Britain and Ireland under the Medica Acts now in force.

CAREERS.

The I.M.S. offers a variety of service to suit every taste. At the beginning of his career an officer is employed on the military side, which has medical charge of the Indian Army. He may, if he chooses, remain in military employ for the whole of his career; he will in that case hold a post on the staff of a Station Hospital, or a specialist post, or a post on the administrative staff of the Army. Promotion is on a time scale up to the rank of Lieutenant-Colonel, and by selection to the ranks of Colonel and Major-General. Or he may apply after 2 years' Indian service for transfer to the civil side from which appointments are made to Civil Surgeoncies, established at the principal civil centres to provide for the medical needs of civil officials and for general medical administrative purposes, to specialist (*e.g.*, sanitary and bacteriological) services, to research posts, and to professorships at the Medical Schools.

PAY.

The rates of pay for European officers in the service have been considerably enhanced, and are as follows:—

	Rs. per mensem (Consolidated).
Lieutenants ...	650.
Captains	800 for 3 years. 950 „ 3 years. 1,050 „ 3 years, or until promotion to the rank of major.
Majors	1,200 for 3 years. 1,350 „ 3 years. 1,500 „ 2 years, or until promotion to Lt.-Col.
Lieut.-Colonels ...	1,750 for 3 years. 1,850 in 24th and 25th years of service. 1,950 from 26th year of service. 2,100 when selected for increased pay.

The above rates include an overseas allowance of Rs. 150 per mensem for the first 6 years. Rs. 200 per mensem for the next six years, and thereafter Rs. 250 per mensem, which will be admissible to officers of non-Indian domicile only.

EXTRAS.

In addition to the above rates, officers in military employment, when in charge of Station Hospitals, draw a special allowance. On the civil side there are professional, bacteriological, and sanitary appointments carrying special enhanced rates. Special high rates of pay are attached to the numerous administrative appointments open to officers in both branches of the service.

PRIVATE PRACTICE.

Except in the administrative grades on the military side, and in certain special appointments on the civil side, officers may take private practice so long as it does not interfere with the proper discharge of their Government duties.

WAR SERVICE.

Service during the war as a medical or combatant officer, or in a position usually filled by an officer counts towards promotion and pension so long as the rights of officers who have entered by competition are not interfered with.

PENSIONS.

The rates of pensions have been improved and are as follows:—

Service.	Rate per Annum.
After 17 years	£400
„ 18 „	£430
„ 19 „	£460
„ 20 „	£500
„ 21 „	£540
„ 22 „	£580
„ 23 „	£620
„ 24 „	£660
„ 25 „	£700
„ 26 „	£750
„ 27 „	£800

There are additional Pensions ranging from £125-350 per annum for officers who have held high administrative appointments.

PASSAGES.

Officers on appointment are, when possible, provided with passage to India by transport, when such accommodation is not available, passage at the public expense is provided by private steamer or passage allowance is granted if preferred. The wives and families of officers who are married prior to the date of the officers appointment to the Indian Medical Service will also be provided with passage to India at the public expense under the same conditions as those applicable to the officers themselves.

During the course of their service officers of the Indian Medical Service in military employ are entitled to passage from India to the United Kingdom and back whenever they are granted sick leave by a medical board in India. If married, their wives and families will also be granted passages to accompany them.

INCREASED CADRE.

Formerly the allowance for furlough was 20%. This has now been increased to 25%. Previously there was no allowance for study leave; now the cadre has been increased 2½% for study leave. Whilst on study leave there are special allowances.

INCREASED OPPORTUNITIES FOR RESEARCH.

There is a Special School of Tropical Medicine in Calcutta and the founding of a Research Institute in Delhi is in progress.

Further particulars can be obtained on application to the Secretary, Military Department, India Office, Whitehall, London, S.W.1. Letters should be marked "Recruitment for I.M.S."

APPOINTMENTS—Important Notice.

(a) British Islands.

Medical Practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C. 2.

Town or District.	Town or District.	Town or District.
CONTRACT PRACTICE.		**PUBLIC HEALTH.**
ENGLAND.	**WALES** (*continued.*)	
CHESTERFIELD. (*Colliery Field Clubs.*)	GILFACH GOCH, GLAMORGAN. (*Workmen's Medical Scheme.*)	CHESHIRE COUNTY COUNCIL. (*Whole-time District Tuberculosis Officer.*)
MIDDLESBOROUGH, SOUTH BANK, & ESTON. (*Medical Aid Associations or Workmen's Clubs.*)	LLWYNYPIA, CLYDACH VALE, PENYGRAIG, GLAMORGAN. (*Workmen's Medical Scheme.*)	CROYDON COUNTY BOROUGH. (*Medical Officer of Health.*)
NEWBOTTLE COLLIERY. (*Workmens Medical Association.*) *Fence Houses, Durham.*	MARDY, GLAMORGAN. (*Workmen's Medical Scheme.*)	DUNDEE EDUCATION AUTHORITY. (*Assistant School Medical Officer.*)
NOTTINGHAM. (*Colliery Field Clubs.*)	OAKDALE, MON. (*Medical Officer for Model Village and Cottage Hospital.*)	PLYMOUTH EDUCATION AUTHORITY. (*Assistant School Medical Officer* [*Lady*].)
HORDEN COLLIERY LODGE, DURHAM. (*Workmen's Medical Association.*)	OGMORE VALLEY, GLAMORGAN. (*Wyndham Colliery Medical Aid Society.*) (*Workmen's Medical Scheme.*)	COUNTY BOROUGH OF SOUTHAMPTON. (*Assistant School Medical Officer.*)
WALES.	TONDU and ABERKENFIG, GLAMORGAN. (*Workmen's Medical Scheme.*)	
ABERTRIDWR, GLAMORGAN. *Windsor Colliery.* (*Medical Scheme.*)	TREORCHY, PARK & DARE (GLAMORGAN). (*Workmen's Medical Scheme.*)	
EBBW VALE, MON. (*Workmen's Medical Society.*)		
GARW VALLEY, GLAMORGAN. (*Workmen's Medical Scheme.*)		

(b) South Africa.

Town or District	
NATAL PROVINCIAL ADMINISTRATION. GOVERNMENT HOSPITAL, DURBAN. (*Senior Resident Physician.*) (*Senior Resident Surgeon.*)	

(c) Other Colonial Appointments.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Division or Branch named in the second column or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C. 2.

Town or District.	Hon. Sec. of Division or Branch.	Town or District.	Hon. Sec. of Division or Branch.	Town or District.	Hon. Sec. of Division or Branch.
NEW SOUTH WALES. (*All Friendly Society Appointments.*)	Dr. R. H. TODD (Hon. Sec., New South Wales Branch), B. M. A. Building, 30–34, Elizabeth Street, Sydney, N.S.W.	QUEENSLAND. (*Brisbane Associated Friendly Societies' Institute.*)	Dr. R. MARSHALL ALLAN (Hon. Sec., Queensland Branch), Adelaide Street, Brisbane.	VICTORIA. (*All Institute or Medical Dispensaries; Manchester Unity Independent Order of Oddfellows.*)	Dr. FRANK DAVIES (Hon. Sec., Victorian Branch), Medical Society Hall, 8, Melbourne, Victoria.
				WESTERN AUSTRALIA. (*Contract and Lodge Practices.*)	Hon. Sec., Western Australian Branch, No. 6, Bank of New South Wales Chambers, St. George's Terrace, Perth.

Address: 429, Strand, W.C. 2.
December 25th, 1922.

By order of the Council of the British Medical Association.
ALFRED COX, Medical Secretary.

Parishes of Boleskine and DORES.

Wanted, jointly, by the Parish Councils of Boleskine and Dores, MEDICAL OFFICER and VACCINATOR for the Boleskine Division of the Parish of Boleskine, and for the Strathenrick Division of the Parish of Dores; and by the British Aluminium Company, Ltd., for the Foyers Factory Appointment; to enter upon duty as soon as possible. Emoluments: From the said Parish Councils at the rate of £70 10s. per annum; from the British Aluminium Company, Ltd., at the rate of £60 per annum; from other available Public Appointments (including N.H. Insurance and Highlands and Islands Medical Service Grants), about £260 per annum—the latter on condition of approval by, and agreement with, the Board.

Extensive private practice among a population of about 1,500, of whom about 600 are resident in Foyers. A good house, with electric fittings and garage, provided at Foyers; rent £55.

Three copies of applications, with testimonials, to be lodged with ANDREW URQUHART, Clerk of the Parish Councils, Errogie, Inverness, up to 15th January, 1923.

Heatherwood Hospital

(UNITED SERVICES FUND)
FOR ORTHOPÆDIC CHILDREN, Ascot. 150 Beds.

The post of RESIDENT MEDICAL SUPERINTENDENT will shortly be vacant. Salary £850 per annum, with furnished house, rates, laundry, etc.

Applications, with copies of three testimonials, should be addressed, on or before 1st January, 1923, to the Organising Secretary, United Services Fund, 20, Cromwell Road, S.W. 7, from whom further particulars can be obtained.

Administrative County of LONDON.

The London County Council invites applications for the appointment of 7th ASSISTANT MEDICAL OFFICER in the London County Mental Hospital service. Candidates must not be more than 35 years of age, and must be registered to practice both in medicine and surgery in England.

Candidates appointed will be pensionable under the Asylums Officers' Superannuation Act, 1909. Preference will be given to those who served or offered to serve with H.M. Forces during the late war.

The salary will be £300 a year, rising by annual increments of £5 to £400 a year, without emolument, plus temporary fluctuating additions at present amounting to £149 a year. Charges are made for board, lodging, etc. (at present £2 10s. weekly).

Full particulars and conditions of appointment are given on the form of application (on which alone application can be made), obtainable from the Chief Officer, Mental Hospitals Department, London County Council, County Hall, Westminster Bridge, S.E. 1. Canvassing disqualifies.

JAMES BIRD,
Clerk of the London County Council.

Joint Nursing and Midwives

COUNCIL FOR NORTHERN IRELAND.

EXAMINERS OF MIDWIVES.

The above Council, being about to form a list of Examiners, invite applications from Registered Medical Practitioners willing to act, which must reach this office on or before Thursday, 4th January, 1923. Particulars on application to the REGISTRAR, 118, Great Victoria Street, Belfast.

Samaritan Hospital for WOMEN, Liverpool.

Committee invite applications to fill VACANCY on the HONORARY SENIOR SURGICAL STAFF. Candidates must be F.R.C.S. Eng., Edin., or Ireland.

Alternatively the Committee invite, in the event of appointment to the senior post of an Assistant Surgeon on the present staff, application for HONORARY ASSISTANT SURGEON.

In the event of candidates for the post of Assistant Surgeon not having the Fellowship, an undertaking must be given that the qualification will be obtained within a reasonable period.

Applications should be forwarded by January 8th, 1923, to the undersigned.

5, Cook Street, Liverpool. F. J. KIRBY, Hon. Secretary.

City of Birmingham.

SENIOR ASSISTANT MEDICAL OFFICER, male, unmarried, required at the CITY HOSPITAL, Little Bromwich. Previous resident appointment in a large Fever Hospital essential.

Candidates must have a sound knowledge of Bacteriology (possession of D.P.H. desirable).

Whole time must be given to the duties of the post.

Salary commencing at £350, rising to £500 per annum, together with board, residence, and washing.

Applications stating age, qualifications, and full details of previous appointments, with copies of three recent testimonials, should be sent to the Medical Superintendent at the Hospital, to reach him before January 10th, 1923.

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EAST COAST.—Panel and private PRACTICE for Sale. Income £800. Number on panel 300. Good house, 8 bedrooms, 3 reception rooms, consulting and waiting rooms. Rent £180. Prem. 1½ years' purchase.

YORKS.—Panel and Private PRACTICE for Sale. Income £900. Number on panel 650. Fees 2/6 up. Rent £30 per annum. Premium £800.

YORKS.—Panel and Private PRACTICE for Sale. Income £5,000. Number on panel 1,850. Fees 3/6 up. Large private house, rent £ 8 Separate surgery, rent £44. Premium £3,500.

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INDEX TO SUPPLEMENT FOR VOLUME II, 1922.

A.

Action for alleged breach of covenant (Pell v. Noble) 179
ADAMSON, Dr.: Some contents of the unconscious, 227
Advertisements of medical appointments in newspapers, 1
Advertising, indirect, by medical practitioners, 207
Air Force Medical Service, The Royal, 7, 19, 27, 39, 91, 100, 107, 112, 123, 127, 139, 147, 167, 171, 199, 213, 230
ALLBUTT, Right Hon. Sir T. Clifford, presentation of Association's gold medal to, 63
Animals, humane slaughtering of, 19
Another aspect of the economy question. *See* Economy
Approved societies. *See* Insurance
Army, British, 7, 19, 27, 39, 84, 91, 96, 100, 107, 123, 127, 139, 147, 167, 171, 183, 191, 199, 213, 219, 232, 236
Army, British: Militia, 20, 40, 91, 124, 167, 191, 213, 232
Army, British: Regular Reserve of Officers, 123, 147, 191, 213, 232
Army, British: Royal Army Medical Service, 7, 19, 27, 39, 91, 96, 100, 107, 111, 123, 127, 139, 147, 167, 171, 183, 191, 199, 213, 219, 232, 236
Army, British: Royal Horse Guards, 96
Army, British: Special Reserve of Officers, 7, 91
Army, British: Territorial Force, 1, 27, 39, 91, 108, 111, 123, 127, 139, 147, 167, 171, 183, 191, 199, 213, 219, 232, 236—D.A.Ds.M.S., 1—Royal Army Medical Corps, 7, 27, 39, 84, 91, 108, 111, 123, 127, 139, 147, 167, 171, 183, 191, 199, 213, 232, 236—Territorial Force Reserve, 7, 40, 124, 139, 171, 183, 191, 220, 232
Assistant school medical officers. *See* School
Association, British Medical: Aims and methods, 205
Association, British Medical: Annual Exhibition, 21, 82, 89, 97, 102
Association, British Medical: Annual Meeting, Glasgow (1922), 5, 9, 29, 63, 65—Visit to the Lister Ward, 21—Induction of President, 63, 65—Introduction for foreign guests and delegates from Overseas Dominions, 63—Presentation of medal of Association to Lieut.-Col. Martin Leake, V.C., F.R.C.S., 63—Presentation of the Association's gold medal to the Right Hon. Sir T. Clifford Allbutt, 63—Presentation of Stewart prize to Dr. J. C. McVail, 64, 83—President's Address, 64, 66—Appointment of auditors, 65—President-elect, 65—Votes of thanks, 66—Annual dinner, 78—Ulster Golf Cup, 79—Honorary degrees conferred, 81—Exhibitions at Kelvin Hall, 82—Public Health Exhibition of the Glasgow Corporation, 82—Annual exhibition smoking concert, 83—Section of Medical Sociology, 85—Conference of Honorary Secretaries of Branches and Divisions, 87
Association, British Medical, Annual Meeting, Portsmouth (1923), 173

ASSOCIATION, BRITISH MEDICAL, ANNUAL REPRESENTATIVE MEETING, 18, 41
Notices of motion, 18
Standing Orders, 41
Agenda of the meeting, 41
Reports of Council, 42
President (1923-24), 42
Annual Meeting (1924), 42
Election of Sir Alexander Ogston as Vice-President, 42
Position of Branch Council in area of Annual Meeting, 42
The President-elect, 43
Organization: Constitution and machinery of Association, 42, 44—Facilities for incorporation of overseas Branches, 42—The organization of the medical profession in South Africa, 43—Medical Benevolent Fund, 44—Association subscriptions, 44—Which members of Council shall be members *ex officio* of Branch Councils, 44—Issue of annual report, 44—Postal vote, 45—Composition of Council, 45—Composition and reference of Science Committee, 45—Composition of Insurance Acts Committee, 45

ASSOCIATION, BRITISH MEDICAL, ANNUAL REPRESENTATIVE MEETING (*continued*):
Report of Post Graduate Committee, 46, 49
Welcome from the University of Glasgow, 46
Professional secrecy, 46—The suggested Government inquiry, 49
The remainder of annual report under "Medical Ethics," 49
Office Committee, 50
Hospital policy of the Association, 51, 56, 60, 133—Introduction, 53—Remuneration for hospital service, 53—Formation of staff funds, 54—Introductory paragraphs of the hospital report, 57—Definition of the voluntary hospital, 57—Contributory schemes, 59, 72—Suitability of patients for hospital treatment, 59—Categories of in-patients, 59—Free (indigent) in-patients, 59—Tariff in-patients, 60—Private patients in nursing homes attached to hospitals, 60—Private in-patients in hospital, 62—Out-patients, 62—Medical staffs of voluntary hospitals, 71—The Medical Staff Fund, 71—Recognition of Local Advisory Medical Committee, 71—Representation on boards of management, 72—Contributory schemes and additional services, 72—Cottage hospitals, 72—Admission of cases in receipt of maternity benefit, 72—Adoption of report on hospital policy, 72—Utilization of municipal hospitals for civil needs, 73—Subsidizing by Government of hospitals in financial difficulties, 74—Policy of the Association as approved by the Annual Representative Meeting, 1922, 133
National Insurance, 50, 74—Approved societies and control of medical benefit, 50—The continuance of the Insurance Acts system, 50—Improvement of medical services under the Insurance Acts, 74—The Non-Panel Committee, 74
Election of chairman and deputy chairman, 56, 133
Election of treasurer, 60, 133
Science Committee, 75
The JOURNAL, 75
Public health and Poor-law, 75—Superannuation of public health officers, 75—The Manchester appointment, 75
Naval and Military, 76—Representation of the Medical Department of the Royal Navy, 75—The position of Senior Surgeon Commanders, 76
Elections, 56, 60, 62, 133
Finance of the Association, 67—Establishment of a reserve fund, 68
Medico-political matters, 68—Salaries of teaching staffs, 68—Association's Public Medical Service schemes, 68—Minimum remuneration for minor ailment clinics, 69—Remainder of report, 69—Dismissal of married medical women, 69—Motor taxation and other matters, 70—Fees for practitioners called in by midwives, 70—Use of opium and pituitary extract by midwives, 70—Nurses' registration, 71
Parliamentary Elections Committee, 77
Welsh Committee, 77
Scotland, 77
Ireland, 77
Overseas Branches, 77
Help for starving Russian doctors, 78
Votes of thanks, 78
Representatives' dinner, 81, 86—A correction, 86
Synopsis of proceedings, 130

Association, British Medical: Calendar, 209
Association, British Medical: Council and committees for 1922-23, 94
Association, British Medical: Council election, 141, 205
Association, British Medical: Council proceedings, 86, 174, 222
Association, British Medical: Dinner, 125, 129, 141, 145, 169
Association, British Medical: Division and Branch membership, 126
Association, British Medical: Extraordinary General Meeting, 17, 25, 49
Association, British Medical, Handbook, 174
Association, British Medical, membership of, 21, 86, 113
Association, British Medical, new graduates and, 17, 145
Association, British Medical: Prizes for essays by medical students, 169, 185
Association, British Medical: Representative Body, election of, 185, 189
Association, British Medical: School medical officers (assistant), minimum for, 21
Association, British Medical, and South Africa, 194
Association of Medical Women, International, 111
Atlantic Assurance Company and its fees, 221
Ayrshire Division: Address by Scottish secretary, 188

B.

Backache in women (J. S. Fairbairn), 299
BAILEY, Ridley: Medical practitioners and approved societies, 143
BASKETT, B.: The Annual Representative Meeting and the Insurance Act, 167
Bath Division: Annual meeting, 25—Election of officers, 25—Reports of Executive Committee and Central Council, 25—Tea, 25
Bedford Division: Annual meeting, 6—Election of officers, 6—Treatment of febrile cases of pulmonary tuberculosis which do not yield to to ordinary sanatorium treatment (Arthur Latham), 6—Matters referred to Divisions, 7
Birmingham and its assistant school medical officers, 21
Birmingham Branch: annual report, 164
Birth control (Dr. Chapman), 25
BLACKLOCK, Professor: Problems in tropical medicine, 37
Blood pressure (George W. Watson), 235
BOLAM, Robert Alfred, Hon. LL.D. Glasgow conferred upon, 80—Indirect advertising by medical practitioners, 207
Border Counties Branch: Annual meeting, 90—Tea, 90—Financial statement, 90—Election of officers, 90—Presidential address on impressions of a short stay in Central Africa, 90—Exhibition of cases, 170
BOURNE, Aleck W.: Pelvic pain in the absence of physical signs, 19
BOURNE, Geoffrey: Significance and treatment of some common heart irregularities, 197
Bournemouth Division: British Medical Association lecture on the investigations of dyspeptics, 164
BRANSON, W. M.: Medical practitioners and approved societies, 171
Brighton Division: Hospital policy of the Association, 227—Venereal disease notification, 227
British Guiana Branch: Exhibition of clinical cases, 25, 122, 137—Steinach's rejuvenation experiment, 25—Presidential address: Our health and medical problems, 25—Venereal clinic, 25, 137—Admission of civil service candidates showing enlarged groin glands, 25—Fatal cases of tetanus following intramuscular injection of quinine, 122—Acute tetanus treated with serum, 122—Corrosive sublimate poisoning, 122—Severe lobular pneumonia, 122—Pulmonary tuberculosis with a swinging temperature treated with sodium morrhuate injections, 122—Diarrhoea due to syphilitic ulceration of intestine, 122—Malarial fever with a continuous temperature, 122—Intolerance to atropine, 122—Child with anæmia and a psoriasis-like rash on posterior surfaces of the limbs, 122—Rheumatic fever and morbus cordis, 122—Arsenical dermatitis, 122—Neuro-syphilis, 122—Aneurysm of the arch of the aorta, 122—X-ray photographs illustrating tuberculosis of the lungs, 122—Rodent ulcer treated with zinc ionization, 137—General œdema with albumin in urine treated with thyroid extract, 137—Cases of neuro-syphilis, 137—Severe vomiting of pregnancy, 137—Treatment of eclampsia, 137—Condition of the Colonial Medical Services, 137—Some anthropological notes from North Queensland, 188—Vomiting of pregnancy treated by suggestion, 188—Parovarian tumour

showing rapid growth, 188—Acute gonorrhœa treated with collosol manganese, 188—Liver abscess treated by aspiration and emetine, 188—Mental symptoms due to ascaris, 188—Severe case of osteomyelitis of humerus, 188—Two cases for diagnosis, 188—X-ray pictures illustrating pulmonary tuberculosis, 188
British Medical Association. *See* Association
Bromley Division: Annual golf match, 37—Report of the recent meeting in Glasgow, 171—Demonstration of intranasal anatomy and diseases, 171
Bromsgrove and Dudley Divisions: Joint meeting, 218—Mental hygiene, 218—Vote of thanks, 218
Buckinghamshire Division: Annual meeting, 26—Election of officers, 26—Annual report, 26
BURTON, Dr.: Child with marked anæmia and a psoriasis-like rash on posterior surfaces of the limbs, 122

C.

CALDECOTT, Charles: Behaviour in relation to developments and deficiencies of mind, 91
Camberwell Division: Backache in women, 209
Cambridge and Huntingdon Branch: Annual meeting, 37—Election of officers, 37—President's address, 37—Lunch, 37
CAMPBELL, D.: Range of medical benefit, 182—Questions for parliamentary candidates, 190
CAMPS, Dr: Sciatica, 210
Cancer of the stomach, diagnosis and treatment (H. W. Carson), 235
Cardiac disease, some points in the prognosis of (R. A. Veale), 165
CARSON, H. W.: Cancer of the stomach, diagnosis and treatment, 235
CHAPMAN, Dr.: Birth control, 25
CHARLES, J.: The medical profession and approved societies, 213
Chauffeurs, doctors', and Unemployment Insurance Act, 193
Chelsea Division: Organotherapy, 25
Cheshire Insurance Committee: Address by Chairman, 191
City Division: Annual meeting, 5—Election of officers, 5—Vote of thanks, 5—Calendar 209—Annual dinner, 218—Clinical meeting, 226—Swelling of lower third of the right thigh, 226—Bilateral acute epididymitis, 226—Boy with severe epilepsy, 226—Torticollis, 226—Perforation of the palate, 226—Gumma of the tip of the tongue, 226—Bilateral spermatocele, 226—Epithelioma, 226—Lupus vulgaris, 226—Syphilis of the skull, 226—Vote of thanks, 226
CLARK, Alexander: Medical benefit, 138
CLARK, R. V., appointed M.O.H. for Manchester, 169
Cleveland Division: Hospital policy of the Association, 226—Venereal diseases notification, 226
COLLIER, W.: The ebb and flow of disease, 38
Colonial Medical Services, condition of in the West Indies and British Guiana, 137
Concerted action, 1
Conference of Honorary Secretaries of Branches and Divisions, 87—Dinner,
Connaught Branch: Annual meeting, 90—Election of officers, 90—Scheme for organizing "a vocational council," 90—Inequalities of increases of salaries of medical men as compared with other increases, 90—Omission of medical men from the County Insurance Committee, 90—Election of Member of Council, 90
Consett Division: The recognition and treatment of heart irregularities, 227
COOK, A. R.: Syphilis in natives, 7
COOKE, Arthur: Surgical wanderings, 37
Cornwall, West, Division: Annual meeting, 26—Election of officers, 26—Vote of thanks, 26—"Indigestion," 26
Coroners' law, 101
Corrections, 64, 86, 217

COUNCIL, GENERAL MEDICAL:
Appointments, 201
Dental Education and Examination Committee, 228
Dental warning notices, 228
Diploma in Public Health, 219
Disciplinary cases, 212, 229
Education and students' registration, 219
Elections, 219
Final midwifery examinations, 219
Indirect advertising by medical practitioners, 207
Moore, the late Sir Norman, 212
President's address, 201
Qualifications resigned, 229
Restorations to registers, 212

Council, London County, approves a revised scheme for the treatment of tuberculosis in London, 165
Coventry Division: Annual dinner, 143—Medical practitioners and approved societies, 143
Criminal law, position of insanity in, discussion on, 197
Croydon Division: Vacancy for M.O.H., 138
Croydon medical officer of health, 174

Current Notes:
Advertisements of medical appointments in newspapers, 1
Alteration in the terms of service of insurance practitioners, 93, 97
Annual Exhibition, 21
Annual Meeting, Portsmouth (1923), 173
Another aspect of the economy question *See* Economy
Approved societies: Administration allowance, 169
Assistant medical officer for Wallasey, 109, 125
Association Handbook, 174
Association's minimum for assistant school medical officers 21
Association's prizes for essays by medical students, 169, 185
Atlantic Assurance Company and its fees, 221
British Medical Association Calendar, 209
British Medical Association dinner. *See* Council dinner
Concerted action, 1
Coroner's law, 101
Council dinner, 125, 129, 141, 145, 169
Council election, 141
D.A.D.s M.S. Territorial Army, 1
Dangerous Drugs Act, 1920, 141
Dangerous drugs prescriptions, 129
Dangerous drugs regulations 85
Directories, classified, 193, 201, 209, 221
Division and Branch membership, 126
Doctors and the administration of the Insurance Act, 201
Ebbw Vale, 21
Economy question, another aspect of, 126
Elections of the representative Body, 185
Expenditure and income statistics, 102, 162
Fees for examination of emigrants, 86
Fife school medical officers' salaries, 113. *See also* Economy question
Fund for Russian doctors, 85, 141
Hindley Urban District Council, appointment of M.O.H. and school medical officer, 217
Impudent suggestion, 109
Indexes, half-yearly, 86, 234
Indian Medical Service, future prospects in, 101
Insurance Acts Committee: Election of Direct Representatives, 113
Insurance, National: The Bill in Grand Committee, 16—Alteration in terms of service of insurance practitioners by "order of the Minister," 93, 97—Insurance work statistics, 162 - Canvassing, 221—A new inquisition for insurance practitioners, 221—Prescribing of thyroid extract by insurance practitioners, 221
Isle of Wight County M.O.H., 125, 129
Lister Ward at Glasgow, 21
Local government at St. Helens, 217
Medical candidates for Parliament, 173
"Medical insurance practice," 186
Medical officer of health for Manchester, the new, 109—For the Isle of Wight, 125, 129 - For Croydon, 174
Medical Secretary's circular: a correction, 217
Membership of the Association, 21, 85, 113
Midwifery engagements, 97
Monmouthshire County Council and its medical officers, 109
New graduates and the Association, 17, 145
Newly qualified practitioners and the British Medical Association, 145
Panel Conference, 125
Parliamentary candidates, 169, 173
Pensioned Board medical officers, 16
Post-graduate courses at Plymouth, 161
Post-graduate demonstrations at Hereford, 125
Press and the panel doctor, 194
Professional Classes Aid Council, 162
Professional secrecy, 16
Representatives' dinner: a correction, 86
Salaried appointments in the colliery areas of South Wales, 113
Scottish Association of Insurance Committees, 123
Scottish Board of Health and salaries for public appointments, 174, 234
Seamen's National Insurance Society, 21
Section of Medical Sociology, 85
Socialization of hospitals: resolution of the Social Democratic Federation, 93
Somerset County Council and its assistant medical officers, 102
Students and the Association, 1
Telephone directories, classified, 145
Tuberculosis officers' remuneration, 114
"Two voices" on National Health Insurance, 145, 201
Unemployment Insurance Act and doctors' chauffeurs, 193
"Unorganized and inactive," 113
Vaccination of insurance persons, 193
Varied programme, 129
Vis unita fortior, 185
Warble-fly, 161
Willesden health policy, 113
Willesden Medical Advisory Committee, 22

CURTIS, M.: Case of bilateral spermatocele, 226—Epithelioma, 226

D.

D.A.Ds.M.S., Territorial Army. *See* Army, British, Territorial Force
DALDY, A. M., presentation to, 26
Dangerous drugs. *See* Drugs
DANIEL, Mr.: Case of syphilis of the skull, 226
Darlington Division: Report of Representative, 122—Forthcoming lectures, 122—Annual meeting, 179—Election of officers, 179—Clinical meeting, 210—Election of Representative, 227—Hospital policy of the Association, 227—Venereal diseases notification, 227—Re-appointment of a representative to the Darlington Hospital Committee, 227
DAVIS, Acton: Boy with severe epilepsy, 226—Case of torticollis, 226
DELGADO, Dr.: Exhibits a case illustrating Steinach's rejuvenation experiment, 25—Corrosive sublimate poisoning, 122—Severe lobular pneumonia, 122—Pulmonary tuberculosis with a swinging temperature, 122—Diarrhœa due to syphilitic ulceration of intestine, 122—Arsenical dermatitis, 122—Neuro-syphilis, 122—Aneurysm of the arch of the aorta, 122
Denbigh and Flint Division: Visit to the North Wales Sanatorium, Denbigh, 123
Dental Board of the United Kingdom: Winter session, 235 - Numbers admitted, 235 - Grants by the Board, 235—Unprofessional advertising, 235—Disciplinary action, 235—Minor dental work, 235—Employment of dentists by co-operative societies, 235—Other reports, 235—Course of lectures, 235
Dental examinations, 123
Dentists Act, 1921, examinations under, 99
Directories, classified, 193, 201, 209, 221
Diseases communicable from animals to man (F. Hobday), 1
Doctors and the administration of the Insurance Act, 201. *See also* Insurance
Dorset and West Hants Branch: Autumn meeting, 164—Annual Meeting of the Association at Bournemouth, 164—Election of officers, 164—"Some criticisms and suggestions in regard to our professional modes and manners," 164—Spinal anæsthesia, 164
Dorset, West, Division: Annual meeting, 19—Election of officers, 19—Resignation of Lieut.-Col. Decimus Curme, 19—Congenital hypertrophic stenosis of the pylorus, 226
Drugs Act, Dangerous: Amendments to the Regulations (1921), 85—Notice from Home Office *re* withdrawal of authorization to Sidney Robert Walker, 107 — Prescriptions (practitioners omit to sign their full names), 129—Announcement from the Home Office, 141
DRUMMOND David, honorary LL.D. Glasgow conferred upon, 80
DUNCAN, Dr.: Some of the difficulties in the administration of the Insurance Act, 218

E.

Ebbw Vale and its doctors, 21
Economy question, another aspect of, 126. *See also* Fife school medical officers
Edinburgh Branch: Annual meeting, 99—Branch golf club to be instituted, 99—Organization rules, 99—Local Voluntary Hospitals Committee, 99—Annual report, 99—Election of officers, 99—President's address, 99
Epilepsy (Alan McDougall), 234
Essex Branch: Annual meeting, 37—Election of officers, 37—Milk and tuberculosis, 37—Minor traumatic disabilities, 37
Essex, North-East, Division: Annual report, 25—Election of officers, 25
EURICH, Dr.: Two unusual cases of vertigo, 165
Exhibition, the Annual. *See* Association, British Medical, Annual Exhibition
Expenditure and income statistics. *See* Insurance

F.

FAIRBAIRN, J. S.: Backache in women, 209
FARMAN, Robt. J.: Proposed dinner to the Insurance Acts Committee, 111
FAWCETT, William Herbert, name to be restored to the *Medical Register*, 212
Fees of the Atlantic Assurance Company, 221
Fees for doctors called in by midwives, 197
Fees for examination of emigrants, 86
Fees, medical (Dr. Scott), 210
Fife school medical officers' salaries, 113
FIRTH, Sydney, disciplinary case of, 212
FLEMMING, Chas. E. S.: Insurance medical service, 182
FLETCHER, Morley: Renal disease, 38
FOSTER, W. J.: The opaque meal, 38
FOX, Fortescue: Position of insanity in criminal law, 197

FRASER, Charles: What is the matter with the panel doctor? 166
Fund for Russian doctors, 26, 85, 141, 233—New Year appeal for, 213
Furness Division: Annual meeting, 6—Election of officers, 6—Report of Executive Committee re the appointment of tuberculosis medical officer, 6

G.

GARRATT, G. C.: Report of Insurance Acts Committee, 127—Organization of the profession (Document No. 10), 147—The annual meeting of the Association of Insurance Committees, 183
GARROD, Sir Archibald, Hon. LL.D.Glasgow conferred upon, 81
GAUVAIN, Sir Henry: Modern methods of the conservative treatment of surgical tuberculosis, 188, 226
General Medical Council. *See* Council
General practitioner as an asset to the community (Gilbert E. Orme), 37
GIRLING, C. J.: Some criticisms and suggestions in regard to our professional modes and manners, 164
Glamorgan, North, and Brecknock Division: Annual meeting, 38—Election of officers, 38—Renal disease, 38—Dinner, 38
Glasgow, Central Division: Election of officers, 5
Glasgow, Eastern Division: Quarterly meeting, 19—Letter from Medical Secretary, 19—Annual report of council, 19—Proposed merging of Glasgow Divisions, 19—Nomination to Scottish Committee, 19
Glasgow, Meeting of the Association at. *See* Association
GLYN-JONES, W. S.: Medical practitioners and approved societies, 146
GODWIN, H. J.: Nephritis treated by decapsulation of the kidney, 197
Golf cup, the Ulster, 79
GRAHAM, D. C.: The acute abdomen, 164
GRIEVE, John: Address as President of Scottish Insurance Committees, 138

H.

Haematuria (Kenneth Walker), 188
HARCOURT, Averyl, disciplinary case of, 212
HARDWICKE, W. W.: The London Panel Committee, 91
HARMAN, N. Bishop: London, the triumph of medicine, 2
HARRIS, R. W.: Removal of names of insured persons from doctors' lists, 213
Harrogate Division: Visit to Fountains Abbey, 104—British Medical Association lecture on some of the clinical manifestation of tabes, 171—Special meeting, 227—Hospital policy of the Association, 227—Venereal diseases notification, 227—Reply of the Member of Parliament, 227
Hartlepools Division: Annual dinner, 197—Presentation of annual golf competition cup, 197—Scientific meeting, 227—Modern orthopaedics, 227
Hastings Division: Present system of treatment at the school clinics of the borough, 26—Newspaper insurances and fees for medical certificates, 26—Fees for gas administration, 26—Fees for examination of emigrants, 26—Instructions to Representative, 26—Handicap golf tournament, 26—Russian doctors' appeal, 26
HATHAWAY, F. J.: The immediate closure of empyemata, 38
Health Ministry: Conduct of practitioners, inquiries into, 38
HEWETT, Mr.: Case of perforation of the palate of twelve years' standing, 226—Condition probably gumma of the tip of the tongue, 226
Hereford, post-graduate demonstrations at, 125
Hertfordshire, East Division: Report on Annual Representative Meeting, 197—Transference of Division, 197—Significance and treatment of some common heart irregularities, 197—Vote of thanks, 197—Tea, 197—Visit to the new hospital, 197—Hospital policy of the Association, 235—Notification of venereal diseases, 235—Cancer of the stomach, diagnosis and treatment, 235
HIGHET, Dr.: Some common forms of eye disease found in general practice, 197
Hindley Urban District Council: Appointment of M.O.H. and school medical officer, 217
HOBDAY, F.: Diseases communicable from animals to man, 6
HOLBECHE, Dr.: Some past and present experiences in medicine and surgery, 26
HOLMES, Gordon: Some of the clinical manifestations of tabes, 171
Horsham Division: Scarlet fever, 210—The laxity in regard to vaccination, 210—Dinner, 210
Hospital management, 22—Suggestions from the Voluntary Hospitals Commission, 22
Hospital policy of the Association as approved by the Annual Representative Meeting (1922), 133, 185
Hospitals, socialization of: Resolution of the Social Democratic Federation, 93
Hospitals, voluntary, conference of staffs of in London, 211
Huddersfield Division: Hospital policy of the Association, 227—Venereal diseases notification, 227
HUME, W. E.: The recognition and treatment of heart irregularities, 227
HYSLOP, T. B.: The position of insanity in the criminal law, 198

I.

Immunity, applied (Dr. Perodeau), 210
Impudent suggestion, 109
Indexes, half-yearly, 85, 234
Indian Medical Service, 19, 27, 39, 96, 107, 123, 147, 167, 171, 191, 236—Future prospects in, 101
Indigestion (L. C. Panting), 26
Indirect advertising. *See* Advertising
Insanity, position of, in criminal law, discussion on, 197

Insurance, National:
Approved societies, administration allowance, 169
The Bill in Grand Committee, 16
Canvassing, 221
Conduct of practitioners, inquiry into, 38
Dental benefit, 107
Doctors and the administration of the Act, 201
Drugs for insurance patients, supply of, 107
Expenditure and income statistics, 39, 102, 162
Medical benefit, scope of, 104
"Medical insurance practice," 186
Medical practitioners and approved societies, 143, 221
New inquisition for insurance practitioners, 221
Panel Conference, 125, 149
Practitioners' accounts, 166
Present position of National Insurance (Sir Kingsley Wood), 114
Press and the panel doctor, 194
Statistics of insurance work, 38, 162
Terms of service of insurance practitioners, alteration in, by "Order of the Minister," 35, 97
Thyroid extract, prescribing of, by insurance practitioners, 221
Transfer of an insurance practice, action for alleged breach of covenant (Pell *v.* Noble), 179
"The Two Voices" on, 145, 201
Unemployment Insurance Act and doctors' chauffeurs, 193
Vaccination of insured persons, 193

CORRESPONDENCE:
Annual meeting of the Association of Insurance Committees, 183
Annual Representative Meeting and the Insurance Act, 167
Domiciliary nursing of insured persons, 138
Insurance Acts Committee, reports of, 127
Insurance medical practice, 166
Insurance medical service, 182
London Panel Committee, 91
Medical practitioners and approved societies, 146, 171
Medical profession and approved societies, 190, 213
Organization of the profession (Document M. 10), 127, 147
Professional etiquette, 190
Professional unity, 229
Questions for parliamentary candidates, 190
Range for medical benefit, 182
Removal of names of insured persons from doctors' lists, 213
St. Helens Insurance Committee, 190
What is the matter with the panel doctor? 166

Insurance Acts Committee: Proposed dinner to, 111—Election of Direct Representatives on, 113, 179—Report of Committee (1921-22), 115—The dinner, 161—Public Medical Service scheme, 230—Composition of Representatives of bodies interested in the National Insurance Acts, 230—Deputation to Ministry of Health, 23:—Co-operation with Medical Practioners' Union, 230—Transfer of practices, 230—Rural practitioners and mileage, 230—List of specially expensive drugs, 230—Organization of insurance practitioners, 230—Visiting of insured persons: allocation of moneys, 230—Inquiry into working of Insurance Acts, 230—Vaccination of insured persons, 230
Insurance Acts Committee and Scottish Subcommittee, 179
Insurance Committees, National Association of: annual meeting, 145
Intestinal obstruction (R. P. Rowlands), 137—(J. W. Thomson), 165
Isle of Wight County M.O.H., 125, 129

J.

JAGGER, Dr.: Some uses of the *x* rays for the general practitioner, 197
JONES, George Horatio, name of to be restored to the *Dentists Register*, 212

K.

Kensington Division: Annual meeting, 19—Election of officers, 19—Professional secrecy, 19—Resolution re the Association and scientific research, 19
Kent Branch: Discussion on maternity and child welfare, 137
Kent Medical Advisory Council, formation of, 39
KOLSA-WALLA, Nariman Bejanji, disciplinary case of, 212

L.

Lambeth Division: Treatment of diabetes, 226
Lancashire and Cheshire Branch: Annual meeting, 37—The general practitioner as an asset to the community, 37—Votes of thanks, 37—Election of officers, 37—Tea, 38—Visits to various places, 38
Lancashire, North, and South Westmorland Branch: Annual meeting, 25—Election of officers, 25—President's address on birth control, 25—Orthopaedic methods, 26—Tea, 26
LATHAM, Arthur: The treatment of febrile cases of pulmonary tuberculosis which do not yield to ordinary sanatorium treatment, 6
LAW, James, disciplinary case of, 229
LEES, David: Venereal disease, 226
Leicestershire Insurance Committee: Annual report, 231
Leicester and Rutland Division: Election of Representatives, 210—Notification of venereal disease, 210
Lewisham Division: Diseases communicable from animals to man, 6—Operation for undescended testicle, 164—Some observations connected with tuberculosis in children, 210
Lister ward at Glasgow, 21
Liverpool Division: Model rules of organization, 38—Senior surgeon commanders, 38—Annual report of council, 38
London, revised tuberculosis scheme in, 165
London Insurance Committee: Employment of assistants, 7—Alleged canvassing for patients, 7—Services within the scope of medical benefit, 167—The practitioner's list, 107, 138—Limitation of practitioners' lists, 138—Range of medical service, 138—Half-yearly transfers, 138—Conduct of practitioners, 138—Change of doctor, 181—Postage of medical records, 181—Refusal to furnish certificate, 181—Cases of excessive prescribing, 231—Frivolous remarks on certificates, 231—Refusal to attend at patient's house, 231
London Panel Committee: Presentation to Dr. Lauriston Shaw, 7—Agenda for Conference of Local Medical and Panel Committees, 26—Capitation fee for drugs supplied by practitioners, 26—The Medical Service subcommittee, 27—Pensions certificates, 27—Whole-time executive, 39—Correspondence on, 91—Supply of drugs, etc., for insurance patients, 107—Post-graduate courses, 107—Terms of service, 181—Excessive prescribing, 181—London and the Defence Trust Fund, 231—Vaccination of insured persons, 231—Valuation of medical and sickness benefit funds, 231
London: The triumph of medicine (N. Bishop Harman), 2

M.

MACALISTER, G. H.: Renal efficiency tests, 164
MCCOMBE, Rowan: Maternity and child welfare, 137
MCDOUGALL, Alan: Epilepsy, 234
MACLAY, Dr.: Common diseases of the ear and their treatment, 165
MCVAIL, J. C., presentation of Stewart prize to, 64, 85
MAIN, W. Arch: Spinal anaesthesia, 164
Malaya Branch: Far Eastern Association of Tropical Medicine, 164—Renal efficiency tests, 164
Manchester, new medical officer of health for, 109
MARTIN-LEAKE, Lieut. Col. Arthur, presentation of medal of Association to, 63
Maternity and child welfare (Rowan McCombe), 137—Discussion on, 137

Matters referred to Divisions: Hospital policy of the Association, 186—Report by the Council on the notification of venereal diseases, 187
Meat inspection, 19
Medical candidates for Parliament, 173
"Medical insurance practice," 186
Medical practitioners and approved societies, 143. *See also* Insurance
Medical Register, untraceable practitioners, 105
Medical salaries, the Scottish Board of Health and, 174, 234
Medical Secretary's circular: a correction, 217
Medical Women, International Association of, 111
Medical Women's Federation: Half-yearly meeting, 165—Discussion *re* joining the International Association, 165
Medicine and surgery: some past and present experiences in (Dr. Holbeche), 26
MELVIN, Dr., presentation to, 2 8
Metropolitan Counties Branch: Presidential address—London: the triumph of medicine, 2, 25—Annual meeting, 25—Election of officers, 25—Report of Branch Council and financial statement, 25—Report of representatives on Central Council, 25
Middlesex, South, Division: Model organization rules, 164—Communications, 164—Draft letter to local authorities *re* medical matters outside the scope of the Insurance Act, 88—Election to vacancy, 188—Haematuria, 188—Vote of thanks, 188—Applied immunity, 210—Sciatica, 2.0—Medical fees, 210
Midwifery engagements, 97
Milk and Dairies (Amendment) Act, 1922, 104, 123
Monmouthshire County Council and its medical officers, 109
MORGAN, George: Swellings and sinuses in the necks of children, 26
MORISON, A. E.: Modern orthopaedics, 227
MOTT, Sir Frederick: Mental hygiene, 218
MUIR, Sir Richard: Position of insanity in the criminal law, 198

N.

Naval Medical Service, the Royal, 7, 19, 27, 39, 84, 91, 95 100, 107, 111, 123, 127, 139, 147, 167, 171 183, 191, 199, 213 219, 232, 235
Navy, Royal: Royal Naval Volunteer Reserve, 19, 84, 91, 183, 199, 232
NEWBOLT, Sir Francis: Position of insanity in the criminal law, 198
Newcastle doctors' holiday scheme, 229
Newcastle-on-Tyne Division: Address by Dr. R. W. Simpson, a Parliamentary candidate, 188—Vote of thanks, 188
Newly qualified practitioners and the Association. *See* Association
Norfolk Branch: Annual meeting, 104—Report of Branch council, 104—Election of officers, 104 Fyelitis, 104—Tea, 104—Conservative methods in the treatment of surgical tuberculosis, 226—Vote of thanks, 226
Norfolk, East, Division: Election of associate member, 25—Election of officers, 25—Report of Central Council, 25—*Re* reduction of capitation fee, 226—Minimum fee for contract practice, 226
North of England Branch: Annual meeting, 38—Election of officers, 38—Golf match, 38
North Lancashire and South Westmoreland Branch. *See* Lancashire, North
North Wales. *See* Wales
Northern Counties of Scotland Branch: Annual meeting, 25—Election of officers, 25—Instructions to representative, 25—Address by Scottish Medical Secretary, 25—Visit to Strathpeffer Spa, 25
Northumberland, North, Division: Annual dinner, 164—Fees for lunacy certificate, 165—Discase of the ear and their treatment, 165—Annual dinner, 210
Norwich Division: Hospital policy of the Association 210—Notification of venereal diseases, 210
Nuneaton and Tamworth Division: Annual meeting, 19—Election of officers, 19—Instructions to representative, 19—Support of the M.O.H., 19—Hospital policy of the Association, 234—Notification of venereal disease, 234

O

O'MALLEY, John F.: Intranasal anatomy and diseases, 171
Organotherapy (A. S. Woodwark), 25
ORME, Gilbert E.: The general practitioner as an asset to the community, 37
Orthopaedic methods (Dr. Somervell), 26
Oxford and Reading Branch: Annual meeting, 38—Election of officers, 38—Presentation of a gold cup, 38—Treatment of diathermy, 38—Immediate closure of empyaemata, 38—The opaque meal, 38—The ebb and flow of disease, 38—Dinner, 38
OZZARD, A. T.: Our medical and health problems, 25—Fatal cases of tetanus following intramuscular injection of quinine, 122—Malarial fever with a continuous temperature for twelve days, 122—Intolerance to atropine, 122

P.

Panel Conference, 125, 149—Procedure: Standing Orders, 149—Co-operation with Medical Practitioners' Union, 150—Constitution of Insurance Acts Committee, 151—The secretariat of the Insurance Acts Committee, 152 Insurance Committees, 152—Collective bargaining, 152—National Insurance Defence Trust, 153—The organization of insurance practitioners, 153—The two policies, 154—The funds available for medical benefit, 154—Alternative medical services, 155—The collection of practitioners' statistics, 156—Conferences with representatives of interested bodies, 156—The Chairmanship of the Conference, 156—Additional benefits and specialists' services, 156—Transfer of practices, 157—Record cards, 157—Notice of alteration in terms of service. 158—Change of doctor, 158—Title of insured persons to benefit, 158—Payment for drugs administered by practitioners, 159—Certification, 159—Prescription forms, 159—Powers of Local Medical Committees, 159—Pension scheme for insurance practitioners, 159—Excessive prescribing, 159—The capitation fee, 160—Miscellaneous business, 160—Mileage, 160—Admission to medical list, 160—Conducting proceedings, 161
Parliamentary candidates, 169, 173
Parliamentary general election, 173
PEARCE, David Arnold Chaning, disciplinary case of, 229
PEDSTONE, V. B.: Ancient sites of Bury St. Edmunds, 38
Pell *v.* Noble, 179
Pelvic pain in the absence of physical signs (Aleck W. Bourne), 19
Pensions Boards medical officers, 16
PERODEAU, Dr.: Applied immunity, 210
Perth Branch: New members, 146—Arbitrators under the Insurance Act, 146—Election of officers, 146
PHILLIPS, Porter: The position of insanity in criminal law, 197
Plymouth, post-graduate course at, 161
Plymouth tuberculosis officers' salary, 114
Post-graduate: Demonstrations at Hereford, 125—Course at Plymouth, 161
POULTON, E. P.: Treatment of diabetes, 226
Presentations, 7, 26, 218
Press and the panel doctor, 194
PRING, C. H.: Professional etiquette, 190
Prizes for essays by medical students, 169, 185
Professional Classes Aid Council, 162
Professional secrecy, 16
Propaganda Subcommittee: Division and Branch membership, 126
Public appointments, Scottish Board of Health and salaries for, 174, 234
Public Health Exhibition of the Glasgow Corporation, 82

R.

RAMSAY, Mr.: Case of swelling of the lower third of the right thigh, 226—Case of bilateral acute epididymitis, 226
Reading Division: Annual golf meeting, 146
REDSTONE, Mr.: Ancient sites of Bury St. Edmunds, 64
REED, Dr.: Rheumatic fever and morbus cordis, 122
REIDY, James, discip'inary case of, 229
Renal efficiency tests (G. H. MacAlister), 164
Representative Body, election of, 185. *See also* Association, British Medical
RICHARDSON, George: Operation for undescended testicle, 164
ROBSON, R. G.: Professional unity, 29
Rochdale Division: Joint meeting with Rochdale and District Medical Society, 218—Presentation to Dr. Melvin, 218 Some of the difficulties in the administration of the Insurance Act, 218—Vote of thanks, 2 8, 234—Address on epilepsy, 234
ROLLESTON Sir Humphry Davy, Hon. LL.D. Glasg. conferred upon, 81
ROSE, Dr.: Aerial photographs illustrating tuberculosis of the lungs, 122
ROTH, W. E.: Some anthropological notes from North Queensland, 188
ROWLANDS, R. P.: Intestinal obstruction, 137
Royal Air Force. *See* Air
Russian doctors' appeal. *See* Fund
RYLE, J. A.: The investigation of dyspeptics, 164

S.

St. Helens, local government at, 217
Salisbury Division: Annual meeting, 26—Election of officers, 26—Votes of thanks, 26—Matters referred to Divisions, 26
Scarborough Division: Annual meeting, 227—Election of officers, 227
School medical officers, assistant, the Association's minimum for, 21
Sciatica (Dr. Camps), 210
SCOTT, Dr.: Medical fees 210
SCOTT, S. Noy: Organization of the profession, 127
SCOTT, W.: Impressions of a short stay in Central Africa, 90
Scottish Association of Insurance Committees, annual conference, 129, 138
Scottish Board of Health and salaries for public appointments, 174, 234
Scottish Committee: Officers and membership, 162—Subcommittee, 162—Minimum salaries for public appointments, 62—Fees to practitioners called in by midwives, 162
Seamen's National Insurance Society, 21
SHAW, Lauriston, presentation to, 7
SHAW, Wm.: St. Helens Insurance Committee, 190
SHERREN, Mr.: The indications for, and limitations of, surgery in chronic abdominal disease, 64
Shropshire and Mid-Wales Branch: Spring meeting, 6—Election of officers, 6—Election of Branch representative on the Court of Governors of the University College of Wales, Aberystwyth, 6—Fees for life insurance examinations, 6
Sierra Leone Branch: First scientific meeting, 37—Problems in tropical medicine, 37
Socialization of hospitals. *See* Hospitals
Society, Hunterian: Discussion on the position of insanity in criminal law, 197. *See also* Journal Index
Society, Seamen's National Insurance, 21
Somerset County Council and its assistant school medical officers, 102
SOMERVELL, Dr.: Or hopaedic methods, 26
South Africa and the British Medical Association, 194
South African Committee: Central Benevolent Fund, 4—Customs duties on scientific apparatus, 4—Constitution, 4—Honorary secretaryship, 4—Proposed Imperial Medical Congress, 4—Referendum of the South African profession, 195—Medical ethics, 196—War memorial, 196—Business of the South African Medical Congress, 196
South Eastern Counties Division: Medical attendance on police, 164—Co option of members of Medical Practitioners' Union with Insurance Acts Committee, 164—The acute abdomen, 164—Hospital policy of the Association, 226—Venereal diseases notification, 226—Vote of thanks, 226
South Eastern of Ireland Branch: Annual meeting, 6—Election of officers, 6—Representative of the Branch on the Irish Committee, 6
Southern Branch: Annual meeting, 6—Dinner, 6—Visits to various places of interest, 6—Tea, 6—Intestinal obstruction, 137
Southport Division: Hospital policy of the Association, 234—Venereal disease notification, 235
South Wales *See* Wales
Southwark Guardians and the salaries of its medical officers, 194
South-Western Branch: Address on medical defence work, 210
SPRINGTHORPE, John William: Qualification resigned, 229
Steinach's rejuvenation experiment (Dr. Delmar), 25
STEVEN, J.: The indications for, and limitations of, surgery in chronic and abdominal disease, 38
STEWART, Thomas William Frederick, name of, to be restored to the *Dentists' Register*, 212
SZILL, G. F.: Congenital hypertrophic stenosis of the pylorus, 226
Stratford Division: Discussion on bronchitis and asthma, 179—Vote of thanks, 179
Students and the Association, 1
Suffolk Branch: Election of officers, 38—Ancient sites of Bury St. Edmunds, 38, 64—The indications for, and limitations of, surgery in chronic and abdominal disease, 38, 64—Protein hypersensitiveness and its relation to asthma and allied diseases, 38—Correction, 64—Autumnal meeting, 188—Modern methods of the conservative treatment of surgical tuberculosis, 188—Address by Deputy Medical Secretary, 188
Suffolk, North, Division: Report of representative, 197—The functional element in organic disease, 197—Replies of parliamentary candidates, 197
Suffolk, West, Division: Correspondence *re* county medical officer of health and attendance at an orthopaedic clinic of a baby with hare-lip, 83—Supplementary report of Council, 83—Armistice Day dinner, 197—Hospital policy of the Association, 227—Venereal diseases notification 227
SULLIVAN, W. C.: The position of insanity in the criminal law, 199
Surgical wanderings (Arthur Cooke), 37

Surrey Branch: Annual meeting, 90—Election of officers, 91—Report and financial statement, 91—Presidential address on "Behaviour in relation to developments and deficiencies of mind," 91
Sussex Branch: Annual meeting, 26—Election of officers, 26—Annual report and financial statement, 26—Swellings and sinuses in the necks of children, 26—History of the Royal Pavilion, 26—Presentation, 26
Sussex, East, Insurance Committee: Practitioners' accounts, 166
Swansea Division: Annual dinner, 170
Swellings and sinuses in the necks of children (George Morgan), 26
SYMES, J. O.: Newly qualified practitioners and the British Medical Association, 145
SYMNS, Dr.: The functional element in organic disease, 197
Syphilis in natives (A. R. Cook), 7
SZPIGNER, Samuel Leon, disciplinary case of, 212

T.

Telephone directories, classified, 145
Testicle, undescended, operation for (George Richardson), 164
THOMSON, J. W.: Some observations on intestinal obstruction, 165
Thyroid gland, prescribing of by insurance practitioners, official preparations, 22
TODD-WHITE, Arthur T.: Insurance medical practice, 167
Tropical medicine, problems in (Professor Blacklock), 37
Tuberculosis in children (Jane Walker), 210
Tuberculosis officers' remuneration (Plymouth), 118. *See also* Plymouth
Tuberculosis, pulmonary, treatment of febrile cases of which do not yield to ordinary sanatorium treatment (Arthur Latham), 6
Tuberculosis treatment, a revised scheme for London, 165
TURNER, G. Grey: Application of surgical principles to some problems of general practice, 210
TURRELL, W. J.: Treatment by diathermy, 38

U.

Uganda Branch: Annual meeting, 7—Letter of regret, 7—Election of officers, 7—Vote of thanks, 7—Syphilis in natives (A. R. Cook), 7
Ulster golf cup, 79
Unemployment insurance. *See* Insurance
"Unorganized and inactive," 113

V.

Vaccination of insured persons, 193
Varied programme, 129
VEALE, R. A.: Some points in the prognosis of cardiac disease, 165
Venereal diseases notification, report by the Council on, 187
Vertigo, two unusual cases of (Dr. Eurich), 165
Veterinary profession, appeal to, not to rush for inadequately paid posts, 185
Vis unita fortior, 185

W.

Wakefield, Pontefract, and Castleford Division: Report of Representatives' expenses, 235—Wakefield Book Club and the Wakefield Division, 235—Address on blood pressure, 235—Vote of thanks, 235
Wales, North, Branch: Spring meeting, 19—Resolution *re* meat inspection and the humane slaughter of animals, 19—Report of Branch Council, 99—Model rules, 99—President's address, 99—Votes of thanks, 99—British Medical Association lecture on cardiac failure, 99—Leaflet containing the names of all the presidents and officials of the Branch from 1849 to the present time, 99
Wales, South, salaried appointments in the colliery areas of, 113
Wales, South-West, Division: Annual meeting, 123—Report of representative, 123—"After fifteen years," 123—Election of officers, 123
WALKER, Jane: Tuberculosis in children, 210
WALKER, Sir John Thomson: Pyelitis, 104
WALKER, Kenneth: Haematuria, 188
WALL, Cecil: Bronchitis and asthma, 179
Wallasey, assistant medical officer for, 110, 125
WALLIS, Mackenzie: Protein hypersensitiveness and its relation to asthma and allied diseases, 38
Walsall and Lichfield Division: First meeting of session, 165—Some contents of the unconscious, 227
Warble-fly, 161
Warwickshire Panel and Local Medical Committee: *Group F Formulary*, 111—Remuneration for treatment of abortion and miscarriage, 111—Scrutiny of prescribing, 111
WATSON, George W.: Address on blood pressure, 235
WEST, F. T.: Domiciliary nursing of insured persons, 138
West Bromwich Division: Hospital policy of the Association, 226—Notification of venereal diseases, 226
West Indies, conditions of medical service in, 22, 137
Willesden Division: Correspondence with the Ministry of Health, 19—Pelvic pain in the absence of physical signs (Aleck W. Bourne), 19
Willesden health policy, 113
Willesden Medical Advisory Committee, 22
WILLIAMS, Sir Dawson, Hon. LL.D.Glasg. conferred upon, 81
WILLIAMS, Trevor Owen, disciplinary case of, 229
Wiltshire Branch: Annual meeting, 104—Election of officers, 104—Fees for attendance on police, 104—Wood-Hill fund, 104—Mileage for attendance at inquests, 104
Winchester Division: Annual meeting, 6—Election of officers, 6—Address by Deputy Medical Secretary, 6—Tea, 6—Clinical meeting, 197—Fees for doctors called in by midwives, 197—Nephritis treated by decapsulation of the kidney, 197—Uses of *x* rays for the general practitioner, 197—Epidemic jaundice, 197—Some common forms of eye disease in general practice, 197—Tea, 197—Vote *re* President of Branch, 197
WOOD, Sir Kingsley: The present position of National Insurance, 114
WOODWARE, A. S.: Organotherapy, 25
Worcester City Insurance Committee: The scope of medical benefit, 104
Worcestershire and Herefordshire Branch: Annual meeting, 26—Russian doctors' appeal, 26—Some past and present experiences in medicine and surgery, 26—Vote of thanks, 26—Tea, 26

Y.

Yorkshire Branch: Demonstrations of specimens, 165—Some points in the demonstration of cardiac disease (R. A. Veale), 165—Some observations on intestinal obstruction (J. W. Thomson), 165—Two unusual cases of vertigo (Dr. Eurich), 165—Votes of thanks, 165
YOUNG, Bruce: Epidemic jaundice, 197
YOUNG, Dr.: Case of lupus vulgaris of face, 226
YOUNG, William disciplinary case of, 212

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CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

CURRENT NOTES:
- Advertisements of Medical Appointments in Newspapers ... 1
- D.A.Ds.M.S. Territorial Army ... 1
- Students and the Association ... 1
- Concerted Action ... 1

LONDON: THE TRIUMPH OF MEDICINE. Address by N. Bishop Harman, M.B., F.R.C.S. ... 2

SOUTH AFRICAN COMMITTEE ... 4

ASSOCIATION NOTICES:
- Table of Dates ... 4
- Notices of Motion at Annual Representative Meeting ... 5
- Branch and Division Meetings to be held ... 5

ANNUAL MEETING AT GLASGOW: Railway Travelling to Glasgow ... 5

MEETINGS OF BRANCHES AND DIVISIONS ... 5

INSURANCE NOTES:
- London Insurance and Panel Committees ... 7

NAVAL AND MILITARY APPOINTMENTS ... 7

VACANCIES ... 8

APPOINTMENTS ... 8

DIARY OF SOCIETIES AND LECTURES ... 8

ASSOCIATION INTELLIGENCE AND DIARY ... 8

BIRTHS, MARRIAGES, AND DEATHS ... 8

British Medical Association.

CURRENT NOTES.

Advertisements of Medical Appointments in Newspapers.

It is particularly necessary at the present time that members of the profession should remember that advertisements of medical appointments which appear only in lay newspapers are to be regarded as at least questionable. No exception can, of course, be taken to the advertisement of medical appointments in both lay and medical papers, but when an advertisement appears only in the former in most cases it is because the medical journals have refused the advertisement on the ground that the conditions attaching to it do not come up to the standard approved by the profession. Practitioners are strongly urged, before applying for any post which is advertised in a lay newspaper but not in the medical press, to see if the post is mentioned among the "Important Notices" regarding medical appointments. Such notices will be found weekly in the advertisement pages of the BRITISH MEDICAL JOURNAL.

D.A.Ds.M.S. Territorial Army.

In answer to a question asked last week by Colonel F. E. Fremantle in the House of Commons, Sir R. Sanders (Under Secretary, War Office) informed him that the Territorial Medical officers whose appointments as Deputy Assistant Director of Medical Services had been prematurely terminated would be given as compensation for the professional loss involved a sum representing one-third of what they would have received in pay and allowances if they had been allowed to complete their term of appointment. The British Medical Association took this matter up vigorously from its commencement, and it is satisfactory to know that its efforts have been crowned with such a measure of success, thanks very largely to the willing assistance of Colonel Fremantle. The compensation to these medical officers for loss of office, although by no means generous, will, it is hoped, relieve the acute financial straits in which some of them found themselves through no fault of their own. It is satisfactory to be able to announce an act of simple justice at a time when the plea of economy seems to be sufficient to excuse the infliction of almost any kind of hardship. A reference to the matter will be found among Parliamentary Notes in this week's JOURNAL.

Students and the Association.

Under the auspices of the Glasgow University Medico-Chirurgical Society, a meeting was held on June 23rd, in the Debating Hall of the University Union, when Dr. James R. Drever, Scottish Medical Secretary, delivered an address on the advantages to young graduates of joining the British Medical Association. Professor Ralph Stockman occupied the chair, and was supported on the platform by Mr. Edgecombe, President, and Mr. Wilson, Secretary of the University Medico-Chirurgical Society; Dr. William Snodgrass, Chairman of the Scottish Committee; Mr. James Russell, Local Branch Secretary; and Dr. Geo. A. Allan, Local General Secretary for the Annual Meeting. About 150 students attended. The Chairman, in his opening remarks, referred to the necessity for co-operation among the various branches of the profession; he regarded it as unfortunate that the teaching bodies in most cases left the young graduate without any advice as to how he was to face the many pitfalls of the qualified man. Dr. Drever explained some of the more important benefits which had accrued to the profession in general through the direct action of the British Medical Association, and pointed out the more definite benefits that the young practitioner would derive from being a member. A vote of thanks to the speaker was moved from the chair, and seconded by the President of the society. A large number of the students who were present had already volunteered to assist the local committee with the work at the forthcoming Glasgow Annual Meeting, and expressed their desire to attend the scientific sections.

Concerted Action.

The following letter, published in the current issue of the *Electrical Review*, and headed "Concerted Action," will be of interest to members who have watched the dispute regarding the salary of the M.O.H. to Manchester:

"I would like to draw the attention of technical engineers to the notable victory just gained by the strongest and closest union in the world—namely, the British Medical Association. I claim that in forcing the Manchester City Council to recommend the payment of £1,700 £2,000 per annum to its health officer this Association has given a wonderful lead to other unions of technical men. It is noteworthy that there have been no fireworks—no processions—very little newspaper publicity—simply a dignified protest at the low figure offered (£1,500 per annum), and then the ban. I would like you to ask yourselves what would happen if a similar situation arose in the appointment of an engineer. Just an undignified rush for the position without any reference to any representative body, and with very little consideration whether the position was worth more or not. And why? Bad times. Nonsense! In times of full shops and plenty there would still be the same rush for any position offering £1,500 per annum—yet engineers are quite as necessary as, perhaps more necessary to the common good than, the doctors. The reason is simple. There is no representative body to apply to. We, as technical engineers, are not strong enough to protest against low salaries—disgracefully low in many cases. The moulders are; members of the railway unions are; and yet we consider ourselves intelligent men. Yea, even the salt of the earth—some of us. Surely the one instance I have cited shows the necessity of getting together and giving our society the power to assert itself and to exert its power in its members' interest, as was done by the British Medical Association. The only way this can be done is by whole-hearted co-operation among technical engineers—through the medium of a society such as the Society of Technical Engineers."

LONDON: THE TRIUMPH OF MEDICINE.

PRESIDENTIAL ADDRESS DELIVERED BEFORE THE METROPOLITAN COUNTIES BRANCH,

BY

N. BISHOP HARMAN, M.A., M.B.CANTAB., F.R.C.S.ENG.,
PRESIDENT OF THE BRANCH.

THE air is full of criticism, and much of it bitter. There are few spheres of life which are not subject to some form of condemnation. Indeed the whole of our Western civilization is condemned by some who deem themselves thinkers and who would pose as the prophets of a new and better age. Daily newspapers and quarterlies alike add their quota to the tale of foreboding. In the face of all these indications of unrest one may fairly ask, Are these the signs of disappointed hopes, of hopes that were extravagant and bound to be disappointed, or are they genuine signs of abounding evils which from their volume and magnitude must condemn our Western civilization? Amid the publication of all these criticisms there has passed almost unnoticed what is to my mind the most striking commentary upon them. I refer to the census return of last year. We learned from this that there were in these small islands no less than 47,000,000 of people, and in this Greater London of ours so vast a multitude as 7,000,000. These islands, in the good old times—in the piping days of good Queen Bess, which are regarded by some, and no less an authority than Dean Inge, as the halcyon days of England—contained at most 5,000,000 inhabitants; they now carry nine times the number, and sustain them in a fashion that would have amazed our forefathers. I dare venture to affirm there has never been so great a volume of individual and collective comfort and well-being, such good health, and such a high level of life, as is now enjoyed by the peoples of these lands of ours. The cottage of to-day will put to shame the Tudor castle by its sweetness and cleanliness, and the clothing of the girls of the humblest class is of finer texture than that which graced the persons of princesses in olden days; whilst as to personal cleanliness those treasured relics of our museums, the bejewelled back-scratchers, furnish a commentary upon a conception of cleanliness and comfort which is as wide as the poles from that which we hold now.

We are apt to form our judgement of the past by the impressions made by the remnants of those times that are left for our observation. When, therefore, we see the beauty of the old buildings that grace Holborn Bars we are certain to think what a place of beauty London must have been before the fire swept it into dust and ashes. But that thought would give no true picture of London in those days, for the parts that are left to us were gems even then, gems of architecture like plums in a very large amount of sorry duff. Writers of the period are for the most part reticent on the conditions of city life, probably because all of it was so much a matter of course that it did not occur to them to record their impressions. Even members of our profession, writing on subjects that should have called for the most detailed particularization of sanitary conditions, are dumb. Nathaniel Hodges, the author of *An Account of the Present Pest*, published in London in 1665, has not a word to say on the subject, though much else about the plague; and his work appears to have been popular, for several editions were issued. Most of our information is only gained incidentally, but what there is of it is lurid.

Picture to yourself, a walled city, overfull of houses, and a maze of narrow, crooked streets and alleys; the main streets sixteen feet wide, overshadowed by projecting buildings, with the lesser streets no more than six feet wide and nearly dark at noonday; abounding in obstructions and traps for the unwary; footways that are no more than stepping-stones above the filth that flows down the kennel, turning the ways into open sewers; dangers below and dangers above, for the common shoot for house refuse is through the window; cattle kept in or about the houses, and no scavengers but the pigs, which as late as 1795 still had the liberty of the streets. Strange tales are told of the hazards of wayfaring. There is the story of the Tewkesbury Jew who fell into an open privy on his Sabbath; being strict in his principles he waited for rescue until the next day, but that being Sunday and the governor's rest day, he was not pulled out, and by the Monday the poor Jew was beyond rescue. A similar fate befell the Chancellor of the Electorate of Mainz in his own city. Can you wonder that London smelt so bad that a writer likened its stench to that of an African village that could be smelled leagues out to sea; or that Peter Heylyn said of Paris the perpetuated constancy of the stinks was such that anyone with a chymical nose could find his way about by smell? Erasmus had somewhat to say about the inside of our homes, and it was not complimentary. The doctors of London and elsewhere chewed garlic, snuffed rue, put balsams in their ears, and wore chest-protectors to ward off the bad air. What must a July day have been in a drought such as we had last year!

Defoe's *Journal of the Plague*, though fictitious, is realistic; but the familiar third chapter of Macaulay's *History* seems all too restrained; even so it shows that mediaeval London was a remarkably unsavoury place. If after reading these any doubt remains in your mind I would commend you to Captain John Graunt, F.R.S., whose *Natural and Political Observations made upon the Bills of Mortality*, published in London in 1662, laid the foundations of vital statistics. He writes:

> "That the opener and freer *Airs* are most subject both to the good and bad Impressions and that the *Fumes*, *Steams* and *Stenches* of *London* do so medicate and impregnate the *Air* about it, that it becomes capable of little more, as if the said *Fumes* rising out of *London* met with opposed and justled backwards the Influences falling from above, or resisted the Incursions of the Country *Airs*."

The apocalyptic writer would have put it more tersely—

> "The smoke of their torment ascendeth for ever."

But that speculation of Graunt's is the least part of his book. His main work was the consideration of facts relating to the life of Londoners, and his conclusion is this:

> "I consider, whether a City, as it becomes more *populous*, doth not, for that very cause, become more *unhealthful*: and inclined to believe, that *London* now is more *unhealthful* than hitherto."

When we look upon the picture of London in those good old times, remember the huddled darkness of its houses and streets, the appalling death rate of its infant life, the endemic and epidemic diseases which made a man of fifty years a patriarch, and the plagues that at intervals decimated its long-suffering citizens, we are not amazed that John Bunyan conceived the idea of the city as the City of Destruction from which he who would live must flee; and I dare venture to think that if that immortal writer could revisit these scenes he would believe that he had indeed arrived at a celestial city, so great are its proportions, so multitudinous its citizens, so vigorous its activities, and so kindly its manners.

I do not doubt that in the London of former days, when half a million inhabitants made it a prodigy of size and danger, there was happiness and probably much more than we might suppose; but to-day when London's numbers are magnified twice seven times I am certain the happiness it contains is seventy times seven fold greater. If you doubt this, go into the homes of the people, into cottages and rooms, look into the schools, walk the streets, visit the parks, and see the markets and workshops; observe the faces of man, woman, and child, and see what is written there. Even the places where congregate the sick of soul and body show the change, for there is a humanity abroad which seeks to assuage even sorrow itself. Blemishes there still are, and doubtless ever will be as our ideas of what is fitting change. Critics we shall have always with us, and we could not safely do without them; we may with advantage extract the best from their criticisms, always adding a due modicum of salt. But some of these critics emit so pungent and unwholesome an effluvium that they might well be salted themselves, and so attain a state of freshness beneficial to themselves and agreeable to others.

It is of no purpose to rail at the development of great cities, even of monstrous London. There is something in the make up of our Anglo-Saxon nature that makes us desire to be near each other. We may not wish or be able to talk sociably, but nearness is essential. The same is found in the newer Britains. Bryce in his *Modern Democracies* notes:

> "Australia shows two very large and two somewhat smaller cities, which together include about 40 per cent. of the whole population of the continent."

And again:

> "New York, Chicago, and Philadelphia contained in 1920 10,145,000 persons, nearly one-tenth of the whole population of the United States, and there are now six other cities with populations exceeding one million."

No doubt there are many factors contributing to the production of these phenomenal agglomerations of population—shipping, trade, and industry; nevertheless great cities are

as much a feature of the psychology of our race as monumental efforts in stone were of the old Mediterranean race. Whether our cities will be as permanent as the pyramids or Stonehenge who can say? But it is certain that a greater breadth of imagination and more patient skill have gone to our achievement than even the engineering of the Great Pyramid called for; whereas the difference in the sum of human happiness involved is incalculable.

But the point of the contrast between London past and London present is that therein is the greatest triumph of medicine that has ever been recorded. In the old days great collections of people were centres of disease and death; and I make no doubt that the proverbial statement of the extinction of families after a few generations in London was a right true deduction from these conditions. The observations of John Graunt are conclusive of the danger to health that the city constituted. Yet to-day the vast aggregation of Greater London presents but little difference in death rate from that of the country as a whole. We have learned so to live as not to poison our neighbours or ourselves. Yet the risks of London to-day are greater than ever: the great collections of children in our day schools, the huge movements of the people for work and play, the constant movements of shipping between home and foreign ports, all constitute risks of introduction and spread of infection such as has never before been known. Despite all these risks the health of London improves with a steady improvement that is wonderful. I do not know of any more impressive testimony to the value of medicine than that. We record our advances in this or that branch of therapeutics or surgery, we strive for the mastery of this or that problem; but there is no greater art than the art of living, and the possibility of sustaining life in the magnitude found in these islands, and particularly in London, is the greatest example of that art. In this attainment every practising member of our profession takes a share, whether he works in the laboratory or in the homes of the people. Credit is due to those who engage in what is known as public health and sanitary medicine, and to the private practitioner in the most limited sphere; indeed it is possible that his share is the greater if less spectacular, for the success of the missionary in his work is not to be attained from an office but by constant and close contact with those whom he seeks to influence. The price of this triumph is unremitting vigilance, daily and hourly; there is no bank holiday in such affairs as these.

The triumph is not the triumph alone of our profession. Every man, woman, and child who forms part of this vast aggregation plays a part in welding its units into a social unity—thinking, acting, and striving as a great living force. The very fact that seven millions of intelligent human beings can and do live and move and have their being in so vast a social unity, with so large a measure of health, happiness, and contentment, is a most challenging reply to the disgruntled extremists who see nothing of good but everything of evil in our modern civilization. It is convincing proof that with all its human imperfections our race can and does achieve success; and it is conclusive that the removal of imperfections and anomalies is not to be sought and found in violent disruption aimed at the destruction of the existing order so that it may be replaced by we know not what.

Blemishes I admit. We have done little to banish the smoke nuisance, which for an imperial city is a disgrace. The noise of our streets increases. We are awakened from our first sleep by the cacophony of motor horns, whilst our last doze is cut short by the screams of half a dozen factory sirens or the roar and earthquake of the five-ton lorry. Penetrate we never so deeply into the heart of our spacious parks yet we can never escape from the incessant roar of London. These two—smoke and noise—must tell heavily upon infant life: the constant and unnatural stimulation of mucous membranes and auditory nerves cannot be good. Dr. A. Williams, of the London school medical service, tells me that in the course of work in Woolwich schools it appeared to him that there were many more children of neurotic type or actually suffering from neuroses than in other parts of London; and he was inclined to relate this with the constant sound of explosions in Woolwich, which personally he felt very disturbing. The timidity of blind children may be contrasted with the fearlessness of the deaf. Even the grown-up suffer. The constant noise may be responsible for the excessive stimulus which city life induces, a stimulus that aggravates the craving for yet more, and more deadly, stimulation.

Our streets are little respected. Nuisances are not permitted, but the dustman empties the ashbins just as the milk is poured from the milk-cans. Litter and dirt abound; trade litter, paper, scraps of all sorts, horse-droppings and dog foulings are to be seen in even our best streets. The horse will soon be banished to the country, and it is to be hoped the dog will go with him. I would like to see good citizenship in this respect taught in the schools; there should be a new commandment: Thou shalt not spit, or cast refuse upon, or in any way defile a public place; for he that defileth the city, the habitation of his brethren, shall not go unpunished.

These little things have their reflex upon health. Put a man in a clean place and he will live cleanly, put him in a pigsty and he will live like a pig. For the correction of these and other blemishes we must look not only to the sanitary authority, the schoolmaster, and the law: we must play our part also.

A worse blemish, and perhaps the one that generates most of our critics, is the thrusting of round pegs into square holes. Life of the magnitude of our city demands an ever-increasing supply of food and clothing. To that end there is much striving after industrial efficiency. The scientific agriculturist aims to make two ears of corn grow where formerly but one grew; and our laboratory workers are turning the waste products of yesterday into the raw material of to-day. New methods and new tools demand efficient workers. The whole of our industrial efficiency pivots upon the worker, and first and foremost in getting the right man into the right job. This is not always done. How is it to be done?

Good workers are not made wholesale, they are not the product of general medical, economic, and ethical activities; they are the result of detailed operations, whilst the finding for a man his own job is a very personal matter. In these things the private practitioner plays an increasingly large part; he is the modern father confessor both of family and of individual, and it is no exaggeration to say that much of the happiness of the community is in his hands, for individual happiness makes up the sum of social content, and a misplaced and unhappy individual may do much to disturb that social content. To the Western mind work is the pivot of life. To be engaged in congenial work brings more happiness and contentment than much luxury, leisure, or pleasure. It is therefore imperative that we should secure, so far as is possible, that each individual should be placed in that sphere of life to which it has pleased God to call him. To be able to attempt such a piece of work the private practitioner should be, as indeed he often is, one of the best informed men in his district. He should know all the types of work that are carried on, the difficulties and dangers of it, the special human faculties which make the most successful workers in those lines of work, and to do this he should be on good terms with employers of labour in his district, so that they will welcome visits from him in which he would be allowed freely to inform himself on the character of the work done in that employ.

Between the schoolmaster and the doctor lies the life happiness of many individuals. The schoolmaster knows, or should know, the aptitudes of the rising youth in his school. The doctor knows his physical capabilities, the school doctor has a record of these gathered through many years, and I see no reason why these records should not be available for the private practitioner. I should like to see a school-leaving record of each child handed to the parent or guardian of the child, with an added note that detailed information upon any point of the record may be obtained from the school doctor by the private practitioner authorized by the parent of the child. If this were done it would become the habit of parents to consider seriously the type of work for which their children are best adapted, and they would be warned off work that would be detrimental or which would endanger a breakdown and therefore unhappiness in early adult life.

I will give you a concrete example of what I mean. We have in London every industry, mining excepted, but there is no straight run of similar work to give a character to our industrial disease except in one condition. A visit to any railway terminus between 9 and 10 a.m. on a week-day will prove that thousands of our London citizens are engaged in close work all day. I recently essayed to discover what risks continuous close work presented to the eyes. We are in agreement that myopia is a disease of the eye which renders it more fragile than a normal eye. It might be possible to find out if myopes were more liable to breakdowns on

continuous close work than myopes not so engaged. A series of histories were gathered of myopes of over 3 dioptres between the working ages of 20 to 60 years, and classified according as they were engaged in close work all day or in manners of life which did not entail continuous close work. There were 480 cases, quite a sufficient volume of material to allow of reasonable inferences. Of these, 183 were engaged in continuous close work, and 297 in occupations not entailing continuous close work. Of the close workers no less than 95, or 53 per cent., came to a time when there was an unmistakable failure of ability to carry on because of serious eyestrain; some changed their occupation to work that did not entail close eye work; most could not do this, and had to "ca' canny" for the sake of their eyes, and of the total, 27, or 15 per cent., lost one or both eyes from serious degenerative processes. Compare this with the results of myopes of the same types and ages who were not engaged in close work; they numbered 297; of these only 28, or 9.4 per cent., experienced a critical failure of capacity owing to eyestrain or disease. We have in these figures a sufficient contrast to draw the inference that myopes of more than a low degree should not be allowed to take up occupations which entail continuous close work. The warning is the more necessary because short-sighted children are so circumscribed by the physical disability of their eyesight that they naturally gravitate to books and quiet corners instead of taking a share in the more robust games of their fellows. They become in common parlance "smugs," and accordingly show a precocity in literary capabilities which leads the uncritical to suppose that they are gifted for these forms of work. When it is recognized that their precocity is an unnatural lopsidedness, and that the fostering of it by drafting them into such forms of work for a livelihood is a doubly short-sighted policy, entailing risk to sight, to success, and therefore to happiness, we understand how essential it is that these short-sighted children should be warned off sedentary occupations, and encouraged to take up work of a nature that is more healthy for them.

That is a fair illustration of industrial preventive medicine. The modern doctor needs such a knowledge of modern industry and of the young people entering into it, that he will be able to advise them, to the end that these premature and avoidable breakdowns should not occur; and by so much he will prevent unhappiness, and foster happy and congenial work. If he does this he will surely be a benefactor of the community and deserve well of his fellow citizens. We private practitioners have known for a long time that we had a place of no small value in the scheme of preventive medicine, and that the public health administration, as exhibited by the municipal or sanitary authority, did not set bounds to that work. There have been endeavours time and again to stake out the claim of the private practitioner in this respect, but so far with scant recognition of how it could be done. Here is one large piece of territory which is open to our occupation; we have done some of this work in the past; there is more of it to be done in the future, and we should make sure that it is done by the private doctor, whose advice will be more welcome to the persons concerned than the direction of the best of medical services, whether they be school or industrial. The work has endless possibilities of advantage in it, though it will not show greatly in tabular returns or statistics; but good work for the community is not necessarily limited to that form of citation.

Let me end on this note—the note of service. There is a saying of the Master of our Western thought: "Whosoever will be chief among you, let him be your servant." I think there is no sphere of work in which that saying is more strikingly exemplified than in our profession. Our fathers have wrested medicine from the mystery of priestcraft and sorcery. By patient continuance in well-doing they have raised its ministers from the level of the scullion to a position of honour and influence that is unequalled. And we, their successors, if we maintain the traditions of our craft which they have handed on to us, will receive no less honour than they; and to successful service there will be added all those things which the worker desires as the guerdon of his service, and for which he may legitimately look.

It is good sometimes to look upon work done and to be able to say that it is good. There is no more heartening experience and no greater promise for the future.

"Say to thyself: It is good—yet there is better than it.
This that I see is not all, and this that I do is but little;
Nevertheless it is good, though there is better than it."

SOUTH AFRICAN COMMITTEE.

A MEETING of the South African Committee of the British Medical Association was held in Johannesburg on May 8th, with the President, Dr. W. Watkins-Pitchford, in the chair.

The minutes of the last meetings, held on October 10th and 15th, 1921, at Capetown, were formally confirmed and signed, and the interim balance sheet, signed by Dr. J. Barcroft Anderson, the Honorary Treasurer, and covering the period from October 5th, 1921, to May 5th, 1922, was adopted.

Central Benevolent Fund.—The President reported that since the last meeting this fund had received a donation of £175 from the Organizing Committee of the 1921 South African Medical Congress, per Dr. Hugh Smith. The sum of £6 had also been received from Dr. Darley-Hartley, being the residue of the Colonel Van Zyl Memorial Fund. The President also stated that Dr. A. Bloom was giving £15 12s.—due to him for travelling expenses—to the fund, and that this would bring the total amount standing to the credit of the fund up to £302 15s. The appreciation of the Committee was accorded to Dr. Bloom for his generous action.

Customs Dues on Scientific Apparatus.—The President, in reporting correspondence with the Commissioner of Customs and Excise, said he had learnt, unofficially, that favourable consideration was being given to the Committee's representations. The concessions which it was hoped might be obtained would apply to laboratory apparatus and instruments employed for medical diagnosis.

Constitution.—The President reported that the resolution of Congress on the result of the referendum, and the proposed change in the parent Association in order to permit of affiliation, had been forwarded to the Medical Secretary, London, on October 22nd, 1921, together with a letter pointing out the urgency of the question at issue. A considered reply, dated December 28th, 1921, was sent by Dr. Cox on behalf of the Organization Committee and Council, and copies of this reply had also been furnished to all the South African Branches. It appeared from this that the parent body was prepared to grant financial independence, but found it impossible to give the fuller powers asked for. A letter from the Honorary Secretary, Witwatersrand Branch, conveying the views of that Branch as to the form the answer should take, was read and discussed. It was resolved that the cable mentioned in Proceedings of Council last week (SUPPLEMENT, p. 243) should be sent to London.

Honorary Secretaryship.—Dr. Bloom's resignation from the secretaryship was intimated by the Chairman and was accepted, with thanks for his services. Dr. F. R. Martin was appointed Honorary Secretary for the remainder of the term of office of this Committee.

Proposed Imperial Medical Congress.—Correspondence with respect to a proposal to hold an "Imperial Medical Congress" simultaneously with the forthcoming British Empire Exhibition in 1924 was submitted by the Chairman. In this he had expressed the opinion that it would be inadvisable to attempt to hold an Imperial Medical Congress, as distinct from the Annual Meeting of the British Medical Association held in England during the same year. The President's opinion was endorsed by the meeting.

Consideration was given to a complaint from a district surgeon in the South-West Protectorate and a complaint from a health officer in regard to the reduction of salary below the minimum considered necessary by this Committee.

Lastly, it was decided that the next meeting of the South African Committee should be held in Johannesburg during the forthcoming South African Medical Congress.

Association Notices.

TABLE OF DATES.

June 30, Fri.	Last day for receipt at Head Office of notification of election of Representatives and Deputy Representatives.
July 7, Fri.	Last day for receipt at Head Office of Amendments and Riders for Annual Representative Meeting Agenda.
July 21, Fri.	Annual Representative Meeting, Glasgow, 10 a.m. Nominations for election of 12 Members of Council by grouped Representatives to be received (at A.R.M., Glasgow) by 11 a.m. on this date. An Extraordinary General Meeting will be held in Bute Hall, The University, Glasgow, *re* alteration of Articles of Association, 4.45 p.m.
July 25, Tues.	The Annual General Meeting will be held in the Bute Hall, The University, Glasgow, at 2 p.m. Business: (1) Minutes of last meeting; (2) appointment of auditors; (3) report of election of President for year 1923-24.

ALFRED COX, *Medical Secretary.*

NOTICES OF MOTION BY DIVISIONS FOR THE ANNUAL REPRESENTATIVE MEETING, GLASGOW, 1922.

Hospital Policy.

By EAST HERTFORDSHIRE:

That it is not wise at the present moment to adopt the policy suggested, as it will alter the present status of the medical staff of a voluntary hospital in a manner detrimental to the interests of the profession.

By BRISTOL:

1. That para. 24 be deleted and the following substituted therefor:

The use of the out-patient department for consultations should be encouraged.

2. That para. 25 be deleted.

Expenses of Representatives and Members of Council.

By WORCESTER:

That in the opinion of this meeting the time has now come for the funds of the British Medical Association to bear the out-of-pocket expenses of Representatives of Divisions and Branches and of Members of Council attending meetings on behalf of their constituents.

Professional Secrecy.

By KENSINGTON:

That, in the opinion of this meeting, it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned.

Expenditure of Association in Scientific Research.

By KENSINGTON:

That the sum spent in scientific research is quite unworthy of the magnitude of the Association and the position which it ought to occupy in the scientific world.

BRANCH AND DIVISION MEETINGS TO BE HELD.

EAST YORK AND NORTH LINCOLN BRANCH.—The sixty-sixth annual meeting of the East York and North Lincoln Branch will be held at Withernsea on Friday, July 14th. Business: Financial statement and annual report, election of officers, presidential address. Further details later. Nominations must be in the hands of the secretary on or before July 1st.

ESSEX BRANCH.—The annual meeting of the Essex Branch will be held at 2.30 p.m. at the Palace Hotel, Southend-on-Sea, on July 14th; lunch at 1.30 p.m. Dr. Charles Forsyth, President of the Branch, will read a paper on "Some remarks on tuberculosis and milk," and Mr. P. Jenner Verrall, F.R.C.S., will give an address on "Minor traumatic disabilities of the upper limb." By the kind invitation of the President members are invited to tea after the meeting. The Branch Council will meet before the lunch.

NORTH OF ENGLAND BRANCH.—The annual meeting of the North of England Branch will be held at the King's Arms Hotel, Berwick-on-Tweed, on Thursday, July 6th, at 11.30 a.m. The Branch Council will meet immediately before the general meeting. Business: To receive the Annual Report of Council and Financial Statement; to elect officers for the ensuing year; President's address. Luncheon will be provided for members attending the meeting, at 1 o'clock (3s. 6d. each). Those who intend to be present are requested to notify the honorary secretary, Dr. James Dou, 7, Windsor Terrace, Newcastle upon-Tyne, not later than July 4th. Only those who reply will be catered for. After lunch a golf match between North and South will be played on the Goswick Golf Course, kindly lent for the occasion. All players are invited to participate in this event, and those intending to do so are asked to notify the honorary secretary before July 4th. Tea will be provided at the course. Time-table: Leave Newcastle 9.15, arrive Berwick 11.6; Annual General Meeting, 11.30; luncheon, 1 o'clock; golf match and tea. Leave Berwick 6.32, arrive Newcastle 7.54; or leave 8.55, arrive 10.43.

NORTH WALES BRANCH: NORTH CARNARVON AND ANGLESEY DIVISION.—A meeting of the North Carnarvon and Anglesey Division will be held at Bangor on Friday, July 14th, when Dr. John Hay (Liverpool) will deliver a British Medical Association Lecture.

NORTH WALES BRANCH: SOUTH CARNARVON AND MERIONETH DIVISION.—A meeting of the South Carnarvon and Merioneth Division will be held at the George Hotel, Criccieth, on Tuesday, July 4th.

OXFORD AND READING BRANCH.—The annual meeting and dinner of the Oxford and Reading Branch will be held in Reading on Thursday, July 13th. Members wishing to read papers or show cases should communicate at once with the secretary, 223, King's Road, Reading. It might be possible to arrange a golf match in the morning if a sufficient number of members could assemble about 10 o'clock at the main G.W.R. station. Maidenhead, Newbury, and Oxford members are asked to note this, and write to the secretary if they wish golf to be arranged.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—The annual meeting of the Buckinghamshire Division will be held at the Crown Hotel, Aylesbury, on Friday, June 30th.

SURREY BRANCH: CROYDON DIVISION.—A general meeting of the Croydon Division will be held at the Croydon General Hospital on Tuesday, July 4th, at 4 p.m. Chairman, Dr. G. G. Gence. Agenda: Supplementary Report of Council and Instruction to Direct Representative. Members are asked to take to the meeting the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of June 24th, 1922.

SUSSEX BRANCH.—The annual meeting of the Sussex Branch will be held at the Royal Pavilion, Brighton, on Wednesday, July 5th, at 2 p.m. Mr. George Morgan, F.R.C.S., the President-elect, will give an address on "Swellings and sinuses in the necks of children."

Annual Meeting, Glasgow, 1922.

RAILWAY TRAVELLING TO GLASGOW.

THE British Medical Association has applied to the Railway Clearing House for a renewal of the concessions in regard to members travelling to the Annual Meeting which were customarily granted before the war. We regret to state that the Clearing House does not see its way to permit the issue of tickets at reduced rates to medical practitioners proposing to attend the forthcoming Annual Meeting at Glasgow. Any member of the Association travelling to Glasgow can therefore purchase his ticket individually on the same terms as though it were booked for him through the Central Office. Should any member, however, desire the Central Office to take tickets, or book seats, it is requested that an early note may be sent to the Financial Secretary, stating the day on which he intends to travel and the time and place of departure.

LADIES' GOLF COMPETITION.

A LADIES' Golf Competition will take place on Wednesday morning, July 26th. A prize has been offered for the best score (Union handicap) over eighteen holes, at Douglas Park Golf Course, Hillfoot. A special prize, in connexion with the same competition, will be given for the best scratch score for six "hidden holes."

The train leaves Charing Cross Station for Hillfoot at 9.23 a.m., returning 1.40 p.m.; return ticket 2s. 0½d. Luncheon will be provided at the Club House.

Those wishing to take part in the competition should send their names and handicap to Mrs. Mouro, 12, Somerset Place, Glasgow, as soon as possible.

Facilities for Golf, Tennis, and Bowling will be available for the forenoons of Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. Arrangements will be made each morning at Burlington House, 183, Bath Street.

Meetings of Branches and Divisions.

GLASGOW AND WEST OF SCOTLAND BRANCH: GLASGOW CENTRAL DIVISION.

AT a meeting of Glasgow Central Division the following office-bearers were elected:

Chairman: Dr. R. K. Currie. *Vice-Chairman:* Dr. W. S. Syme. *Secretary and Treasurer:* Dr. Arthur Innes. *Representative on Representative Body:* Dr. Arthur Innes. *Representative to Branch Council:* Dr. E. L. Middleton.

A proposal submitted from Dr. McKail (Eastern Division) suggesting that Glasgow should be one Division was not adopted. It was considered unwise to have such a large city as Glasgow, with its diverse interests, limited to one Division. It was, however, thought that it might be advantageous if the Central and North-Western Divisions were united.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.

THE annual general meeting of the City Division was held at the Metropolitan Hospital on June 16th, when Dr. C. EVANS was in the chair. A motion to increase the number of members of the Executive Committee to 21 was carried unanimously. The following officers were elected for 1922–23:

Chairman: Dr. H. L. Eands. *Vice-Chairman:* Dr. Wm. Brander. *Honorary Secretary and Treasurer:* Dr. Worley. *Representatives on Representative Body:* Dr. E. F. Thomas, Dr. D. Ross, Dr. Worley. *Deputy Representatives:* Dr. Clark Trotter, Dr. Feldman. *Auditors:* Mr. John Adams, F.R.C.S., and Dr. T. Rushbrook.

The financial statement, which showed a balance on the entertainments of £1 odd, was submitted and passed. The programme for

1922–23 was discussed, and it was decided to change the date of the meetings from a Friday to the second Tuesday in the month.

It was announced that several eminent specialists had promised to read papers, some illustrated with lantern slides, to the Division, during the next session. It was decided to hold a further meeting at the Queen Alexandra Children's Hospital during the coming session. As regards the entertainments, in addition to the annual dinner it was unanimously decided to hold three dances. It was decided that those outside the Division who had so kindly given their services and read papers, etc., to the Division during the past session should be invited to be the guests of the Division at the annual dinner in November. It was also agreed that a golf afternoon should be held during the next session.

The meeting terminated with a very warm vote of thanks to the retiring Chairman, Dr. C. F. Evans, for the whole-hearted and enthusiastic manner in which he had steered the Division through a long and busy session. A vote of thanks to the Hon. Secretary was passed with many kindly remarks.

Metropolitan Counties Branch: Lewisham Division.

A meeting of the Lewisham Division was held on June 20th at St. George's Parish Hall, Forest Hill, S.E.23, when Dr. T. E. White occupied the chair. Professor F. Hobday, C.M.G., F.R.C.V.S., F.R.S.E., delivered an address on diseases communicable from animals to man, with special reference to glanders, rabies, and tuberculosis. The mallein test gave a quick diagnosis of glanders in animals, a swelling being produced in the eyelids. Glanders in man meant certain death, for there is only one recovery on record, the case of a professor of the Veterinary College of Glasgow, who had lost an arm and some fingers before the disease was arrested. Glanders had been stamped out by killing the infected animals. The Russian Government had recently killed 1,700 children in the famine area to prevent the spread of the disease. Rabies had disappeared when the quarantine regulations were strictly enforced. Fresh cases came from abroad. Bovine tuberculosis was estimated to cause 10,000 deaths annually. This disease appeared in the glands, bones, brain, and bowels. One million cows were suffering from tuberculosis, and it would cost the Government 30 million pounds to have these animals destroyed. Samples of milk collected in London showed 25 per cent. to be tuberculous. The tuberculin test showed whether animals were suffering from tuberculosis, but it was not possible clinically to tell whether there were tubercle bacilli in the milk.

Major-General Sir Layton Blenkinsop, late Director of Army Veterinary Services, opened the discussion. He remarked that the hygienic conditions under which animals were kept had helped to stamp glanders out of the army. Dr. Nathan Raw, M.P., said that two doses of his vaccine should make calves immune to tuberculosis, and in ten to twelve years tuberculosis would be eliminated. Bovine tuberculosis made children immune to human tuberculosis, but this fact would not prevent the stamping out of bovine tuberculosis.

Dr. Summerskill mentioned that he visited Spalinger in Switzerland and his cases seemed to do well; he was unable to obtain any serum here.

Drs. Charsley, Chase, Gladstone, and Robertson also spoke.

The following resolution, on the motion of Professor Hobday, seconded by Dr. Summerskill, was carried unanimously and directed to be sent to the Ministry of Health:

> That, owing to the enormous prevalence of tuberculosis in dairy cattle and the present dirty and diseased condition of a large quantity of the milk sold for human consumption, the meeting strongly emphasizes the necessity for the introduction of strict measures to prevent the sale of tuberculous milk.

North Lancashire and South Westmorland Branch: Furness Division.

The annual meeting of the Furness Division was held on June 15th, when Dr. W. A. Johnston was in the chair.

Dr. T. F. Forster was elected chairman for the ensuing year and took the chair; Dr. A. E. Thompson was appointed vice-chairman in recognition of his services as honorary secretary; Dr. L. A. Wilson honorary secretary; and Dr. R. Fawcitt Representative in the Representative Body.

The report of the Executive Committee regarding the appointment of Tuberculosis Medical Officer for the borough of Furness was approved and the following resolution adopted:

> That in the opinion of the Furness Division no medical practitioner within the area of the Division should accept the appointment of assistant medical officer of health and clinical tuberculosis officer at a lower rate of remuneration than £700 per annum, exclusive of travelling and other official expenses.

The feeling of the meeting was very distinct on the point that the appointment of so many doctors at the Town Hall was not necessary, but if the Town Council must appoint the whole-time men it should pay them a whole-time salary.

The Executive Committee reported that it had dealt with the annual report of the Central Council. It was decided that paragraph 151, relating to the notification of congenital syphilis, miscarriages, and stillbirths, should be strongly opposed. Paragraph 217, relating to the recent dismissal of the D.A.Ds.M.S. of the Territorial Army, was felt to be a breach of faith on the part of the Government which should be utterly condemned.

On the motion of Dr. Livingston, seconded by Dr. Fawcitt, votes of thanks were unanimously accorded to the retiring officers.

Shropshire and Mid-Wales Branch.

The forty-seventh spring meeting of the Shropshire and Mid-Wales Branch was held on June 20th at the Royal Salop Infirmary. The following officers were elected for 1922–23:

President: Dr. J. G. Glynn Pigott, O.B.E. *Vice-President:* Dr. G. W. C. Hodges. *Chairman of the Clinical and Pathological Section:* Dr. R. H. Urwick. *Representative in Representative Body:* Dr. George Mackie. *Honorary Secretary:* Dr. F. A. Anderson (re-elected). *Assistant Honorary Secretary:* Dr. A. D. Haydon (re-elected).

Dr. J. Murray (Llandrindod Wells) was elected the Branch representative on the Court of Governors of the University College of Wales, Aberystwyth.

The following resolution was adopted:

> That, in addition to the ordinary fee for life insurance examinations, the mileage fee of the district be paid in all cases where the medical referee is requested by the agent to visit the proposer for the purpose of examination.

Southern Branch: Winchester Division.

The annual meeting of the Winchester Division was held at Winchester on June 8th, when Mr. H. J. Godwin, O.B.E., took the chair.

The following were elected officers for the following year:

Chairman: Dr. J. L. Livingston (Hursley). *Vice-Chairman:* Mr. H. J. Godwin, (Winchester). *Honorary Secretary and Treasurer:* Dr. Gerald Smythe (Winchester). *Representative in Representative Body:* Dr. Livingston.

Dr. G. C. Anderson, Deputy Medical Secretary, gave a most instructive address on "Some of the advantages of the British Medical Association." He raised many points of much interest and his address was greatly appreciated by all present. Dr. Anderson subsequently answered several questions put to him by members. On the motion of the Chairman a cordial vote of thanks was accorded to Dr. Anderson for his address.

An invitation to the meeting had been sent to all non-members of the Association in the area. Tea concluded a successful meeting.

South-Eastern of Ireland Branch.

The annual meeting of the South-Eastern of Ireland Branch was held in the Town Hall, Clonmel, on May 31st. In the absence of the President, Dr. R. R. O'Brien occupied the chair.

The following officers were appointed:

President: Dr. P. J. Phelan. *President-elect:* Dr. J. F. S. Magner. *Honorary Secretary:* Dr. P. Grace. *Treasurer:* Dr. J. W. H. Jellett. *Representative in Representative Body:* Dr. P. J. Phelan. *Deputy Representative:* Dr. A. B. Stephenson.

Dr. A. B. Stephenson was re-elected representative of the Branch upon the Irish Committee, and Dr. D. Walshe was nominated as representative upon the Central Council of Association. The members of the Branch Council were appointed, and the annual report of the Council was unanimously adopted. The meeting then adjourned. It was followed by a meeting of the Branch Council.

Southern Branch.

The forty-ninth annual meeting of the Southern Branch was held at the Old Government House Hotel, Guernsey, Channel Islands, on June 22nd. After the usual business had been transacted the President, Dr. A. Bosworth Wright, vacated the chair in favour of the President-elect, Lieut.-Colonel A. C. Stamberg, O.B.E., D.C.M.S., Channel Islands Area, Ministry of Pensions, who delivered an address on "The pensioner—a clinical study," which was very highly appreciated by those present. A discussion followed.

In the evening the visitors from the mainland were entertained at dinner by the President and his fellow members of the Channel Islands Division; the lavish hospitality provided gave the greatest possible pleasure to the guests. It was agreed that meetings of the Branch Council and Branch during Lieut.-Colonel Stamberg's year of office should be held at Southampton on September 28th and December 14th, 1922, and March 22nd, 1923.

On the following day, through the kind arrangements and personal guidance of Dr. R. Ardenne Wilson of Guernsey, the visitors were taken in the morning to the cigarette factory of Messrs. Bucktrout, and in the afternoon to the principal depôts of the fruit-growing industries of Guernsey—grape growing (Mr. Gallienne); fig growing (Mr. Ogier); and melon growing. The Misses Ogier entertained visitors to tea.

South Midland Branch: Bedford Division.

The annual meeting of the Bedford Division took place on June 20th at the Bridge Hotel, Bedford. Previous to the meeting the members enjoyed the hospitality at luncheon of the chairman, Mr. W. A. Sharpin, and tea was partaken of in the beautiful grounds of Castle Close, by kind invitation of Dr. Colby Sharpin.

The following officers were elected for the ensuing year:

Chairman: Dr. C. I. Harman. *Vice-Chairman:* Dr. W. K. Parbury. *Honorary Secretary and Treasurer:* Dr. E. R. Fasnacht. *Representatives on Branch Council:* Drs. A. F. Street, B. D. Pollard, and W. L. Garner. *Executive Committee:* Drs. G. T. Birks, E. C. Roberts, H. N. Little, and J. M. O'Meara.

Dr. Arthur Latham, Physician to St. George's Hospital, gave an instructive address on "The treatment of febrile cases of pulmonary tuberculosis which do not yield to ordinary sanatorium treatment," with special reference to artificial pneumothorax and thoracoplasty.

The meeting subsequently considered matters referred to Divisions—Proceedings of Council—and instructed their Representative to support Motion 19 by Leicestershire and Rutland to rescind Motion 22 of November, 1912, *re* the Insurance Act.

UGANDA BRANCH.

THE annual general meeting of the Uganda Branch was held at Mengo Hospital, Kampala, on January 21st, when Major C. A. WIGGINS was in the chair.

A letter was read from Dr. A. H. Macdonald expressing his regret at being unable to attend the meeting by reason of sickness, and also at not having been able to complete his paper on syphilis in time to be read at the meeting. Major Wiggins then vacated the chair, and in the absence of Dr. Macdonald as president-elect, Dr. A. R. Cook was unanimously voted to the chair.

The following officers were elected unanimously :

President: Dr. A. H. Macdonald. *President-elect:* Dr. J. H. Reford. *Vice-President:* Major G. J. Keane, D.S.O. *Honorary Secretary and Treasurer:* Dr. J. M. Collyns agreed to carry on for the present with Dr. Taylor as his probable successor. *Representative in Representative Body:* Dr. R. A. L. Van Someren.

The statement of accounts showing a balance in hand was read and passed. On the motion of Dr. ALBERT COOK, seconded by Major KEANE, votes of thanks were unanimously accorded to the retiring president and the honorary secretary and treasurer.

Syphilis in Natives.—Dr. A. R. COOK opened a discussion on the treatment of syphilis in natives, after which Dr. W. L. WEBB read a paper giving the results for the year of the treatment adopted at Mulago, from which it appeared that the percentage of cures was very small, as tested both by the Wassermann reaction and by the persistence or return of clinical signs. Major KEANE outlined a longer and more intensive scheme of treatment which he proposed to start during the present year, provided funds were available, his idea being to provide treatment, salvarsan, or substitute free, the treatment to extend over three months with both salvarsan and mercury. The details of the scheme with approximate cost per patient will be given in his annual report for presentation to Major Wiggins, P.M.O. Major Keane again directed attention to the danger of giving doses of mercury (easily stood by Europeans) to natives owing to their extreme susceptibility to the drug, and instanced cases of poisoning by quite small doses. The discussion was continued by Major WIGGINS, Drs. HUNTER, HAILSTONE, E. N. COOK, and others, after which the proceedings terminated.

Insurance.

LONDON INSURANCE COMMITTEE.

Employment of Assistants.—The London Insurance Committee at its meeting on June 22nd discussed the question of the employment of assistants. Originally the Committee had decided that the period for which permission to employ an assistant should be granted must not exceed twelve months. Those practitioners who had had such permission for twelve months were communicated with, and it was found that although in some cases the practitioner concerned had ceased to employ an assistant, in the others the conditions obtaining at the time the permission was granted still continued. To these practitioners—twenty-seven in number—the Committee decided to extend the permission to employ an assistant for a further period of twelve months. The first application of its kind, for a practitioner to employ a second permanent assistant, was also considered. The practitioner, who had more than 4,000 persons on his list in April last, had already been given permission to employ one assistant, and the Panel Committee, after interviewing the practitioner, was of opinion that he should be given permission to employ a second. After careful consideration, however, the Medical Benefit Subcommittee recommended that the application should not be acceded to, and this view was upheld by the main body.

Alleged Canvassing for Patients.—It was reported to the Committee that the Local Medical Committee had made representations to the Minister of Health that the continuance of a certain insurance practitioner on the medical list was prejudicial to the medical service of the insured; this followed an inquiry into an allegation against the practitioner in question that he had canvassed patients on the list of a practitioner for whom he had acted as deputy. There were certain exceptional circumstances in the case, and the Minister of Health decided that the findings of the inquiry committee did not justify the conclusion that the continuance of the practitioner on the medical list was prejudicial, but he considered that the conduct of the practitioner was open to serious censure, and that the Local Medical Committee was fully justified in making its representation; he also directed that the costs of the inquiry should be borne by the practitioner concerned.

LONDON PANEL COMMITTEE.

Presentation to Dr. Lauriston Shaw.

A luncheon was given by past and present members of the Panel Committee for the County of London on June 23rd to Dr. Lauriston E. Shaw, who has been treasurer of the Panel Committee since its inception in 1913. Some fifty past and present members of the Panel Committee were present, and Dr. Cardale occupied the chair.

In proposing the health of Dr. Lauriston Shaw Dr. Cardale said that he wished to give expression in a small degree to the feeling of gratitude which they entertained for Dr. Lauriston Shaw for all that he had done for the medical profession not only in panel practice but at large. He thought a great deal of what was good in the Insurance Act was owing to Dr. Shaw's energy and foresight, and to the influence which he was able to bring to bear upon those who were framing the Act. Dr. Shaw had done yeoman service in the capacity of treasurer to the Panel Committee, and had also represented the Panel Committee on various other bodies. The value of his services to the London Insurance Committee was beyond all estimate, particularly as he did not directly represent the Panel Committee on that Committee, but was appointed by the Minister of Health. Dr. Shaw's advocacy for panel practitioners had always been more valuable in that he was not a panel practitioner or a general practitioner but was a distinguished consultant. Dr. Claude Taylor said that Dr. Shaw had a wonderful way with committees when they were at loggerheads which brought them to a unanimous decision. Dr. Cardale then presented Dr. and Mrs. Lauriston Shaw with an oak cabinet, a gramophone, and the *Encyclopaedia Britannica*.

In returning thanks Dr. Lauriston Shaw said that he disagreed with the attitude which was taken that medical politics were derogatory, and that there was something less valuable in medico-political work than in other forms of medical work. In regard to the usefulness of medical work he put first discovery, research, and he believed it was possible for all of them to render some service in that direction; but next he put medico-political work, which enabled these researches to be made available for the whole community; while last of all there was the duty of applying these benefits to individual patients. A great principle that came to him when he entered consultant practice was that no system of medical service could be successful unless it was based on the idea that the general practitioner was to be the first line of defence, and that additional services in the way of consultations or specialties must be added to, and in co-operation with, that service, but not substituted for it. Mrs. Lauriston Shaw also returned thanks for the gifts.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty:—Surgeon Commanders: G. Nunn, O.B.E., to the *Centurion*, on recommissioning; W. H. Pope, O.B.E., to R.N. Hospital, Chatham; Surgeon Lieut.-Commander G. D. G. Fergusson to R.N. Hospital, Chatham.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel W. J. P. Adye-Curran, O.B.E., retires on retired pay.

Major D. G. Carmichael to be acting Lieutenant-Colonel from May 7th to December 15th, 1919.

To be acting Majors:—Captains: E. L. F. Nash, M.C., from November 6th to December 9th, 1919; W. J. A. Laird, from December 20th, 1919, to September 20th, 1920; E. B. Marsh, M.C., from December 24th, 1919, to November 9th, 1920; R. J. Sullivan, M.C., from October 31st, 1920, to May 4th, 1921; G. G. Drummond, from November 24th, 1920, to January 26th, 1921; D. W. John, M.C., June 19th, 1921. Lieutenant (temporary Captain) L. C. Goument, from May 28th to June 4th, 1921.

Captain W. E. Hodgkins is seconded for service with the R.A.F.

Captain C. Popham to be acting Lieutenant-Colonel, May 1st, 1921.

The following relinquish their commissions: Temporary Major and Brevet Lieut.-Colonel G. P. Humphrey, and retains the brevet rank of Lieutenant-Colonel; temporary Major T. Walcot, and retains the rank of Major; temporary Captain J. Graham, and is granted the rank of Major; temporary Captain O. S. Maunsell, O.B.E., and retains the rank of Captain.

ROYAL AIR FORCE MEDICAL SERVICE.

The following are granted short service commissions in the ranks stated, with effect from and seniority of the dates indicated:—Flight Lieutenants: Arthur J. Brown, D.S.O., June 1st; Percival T. Rutherford, O.B.E., June 8th. Flying Officer (Honorary Flight Lieutenant): Harold W. Street, June 6th.

H. C. Perkins is granted a temporary commission as a Flight Lieutenant, with effect from and with seniority of June 6th.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Colonel A. B. Soltau, C.M.G., C.B.E., T.D., to be Assistant Director of Medical Services, 43rd (Wessex) Division, vice Colonel R. Pickard, C.B., C.M.G., T.D., resigned.

Major J. H. Hunter, M.C., to be Lieutenant-Colonel and to command the 1st Scottish Casualty Clearing Station.

Captains D. D. Brown and H. W. Shadwell having attained the age limit are retired, and retain the rank of Captain.

The following officers relinquish their commissions: Major T. H. C. Derham, and retains the rank of Major; Captain A. G. Buchanan, and retains the rank of Captain; Captain A. E. Ironside, M.C., and is granted the rank of Major.

The following officers resign their commissions and retain their rank except where otherwise stated: Lieut.-Colonels J. M. G. Bremner, O.B.E., and J. F. MacIntosh, T.D., with permission to wear the prescribed uniform; Lieut.-Colonel D. Rorie, D.S.O., and is granted the rank of Colonel with permission to wear the prescribed uniform; Major W. G. Paget, T.D., with permission to wear the prescribed uniform; Mr. A. H. Pinder, Captain A. W. A. Davies.

Captain S. F. Linton to be Major.

Captain D. R. Jones (late R.A.M.C.S.R.) to be Captain with precedence as from June 21st, 1916.

Supernumerary for Service with O.T.C.—Major H. B. Roderick, O.B.E., T.D., resigns his commission and is granted the rank of Lieutenant-Colonel.

General Hospitals.—Captain W. E. Alderson relinquishes his commission and retains the rank of Captain.

SPECIAL RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Captain R. G. Simpson to be Acting Major from October 31st to December 5th, 1919.

TERRITORIAL FORCE RESERVE.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels from General List to be Lieutenant-Colonels: H. G. G. Mackenzie, D.S.O., M. A. Cooke, O.B.E., T.D., H. F. Everett.

To be Majors: Majors J. L. Menzies and J. H. Thompson, and Captain W. L. Cockcroft and C. S. Wink, from General List.

Major J. H. H. Pirie relinquishes his commission and retains the rank of Major.

VACANCIES.

BATH: ROYAL UNITED HOSPITAL.—(1) House-Physician; (2) Junior House-Surgeon (males). Salaries, £180 and £150 per annum respectively.

BIRMINGHAM UNION.—Assistant Medical Officer of the Erdington House and Children's Homes. Salary, £350 to £400 per annum.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11.—House-Surgeon. Salary at the rate of £120 per annum.

BRADFORD: ROYAL EYE AND EAR HOSPITAL.—(1) Honorary Aural Surgeon; (2) Honorary Assistant Ophthalmic Surgeon.

BRISTOL GENERAL HOSPITAL.—Honorary Dental Surgeon.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Surgeon (male). Salary at the rate of £130 per annum.

CANCER HOSPITAL, Fulham Road, S.W.—Assistant to the Electrical and Radio-Therapeutic Department.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Assistant Medical Officer in the Out-patient Department. Salary, £100 per annum.

COUNTESS OF DUFFERIN FUND.—Professor in Pathology in the Lady Hardinge Memorial College and Pathologist to the Hospital. Salary, Rs. 750 per mensem.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

DUNDEE DISTRICT ASYLUM.—Assistant Medical Officer (male). Salary, £295 per annum.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.1.—House-Surgeon (male). Salary, £125 per annum.

FREEMASON'S HOSPITAL AND NURSING HOME.—Resident Medical Officer. Salary, £150 per annum.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon (male). Salary, £150 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Two House-Physicians. Honorarium, £50 for six months.

MACCLESFIELD GENERAL INFIRMARY.—Senior House-Surgeon (male). Salary, £200 per annum.

MANCHESTER CITY.—Medical Officer of Health. Salary, £1,700 per annum, rising to £2,000.

MANCHESTER UNION.—Resident Assistant Medical Officer of the Crumpsall Institution and Infirmary. Salary, £225 per annum.

MINISTRY OF PENSIONS.—Two Junior Medical Officers (surgeons), at the Highbury Group of Hospitals, Moseley, Birmingham. Salary, £350 per annum each.

NEWCASTLE-UPON-TYNE DISPENSARY.—Resident Medical Officer. Salary, £150 per annum, rising to £400.

NORFOLK EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary, £500 per annum, rising to £600.

PETERBOROUGH INFIRMARY.—House-Surgeon (male). Remuneration, £200 per annum.

PLYMOUTH GUARDIANS.—Resident Medical Officer for the Workhouse and Infirmary. Salary, £100 per annum, rising to £350.

RHONDDA URBAN DISTRICT COUNCIL.—Dental Surgeon. Salary, £500 per annum.

RICHMOND (SURREY): ROYAL HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

ROCHDALE COUNTY BOROUGH.—Assistant Medical Officer of Health and School Medical Officer. Salary, £550 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—House-Physician. Salary, £50 per annum.

ROYAL NORTHERN HOSPITAL, Holloway Road, N.—Resident Medical Officer. Salary, £250 per annum.

SHEFFIELD ROYAL INFIRMARY.—Ophthalmic House-Surgeon. Salary, £150 per annum.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House-Physician. Salary, £150 per annum.

SOUTHEND VICTORIA HOSPITAL.—House-Surgeon. Salary, £200 per annum.

SOUTH SHIELDS: INGHAM INFIRMARY.—Senior and Junior House-Surgeons (male). Salaries, £200 and £150 per annum respectively.

VICTORIA HOSPITAL FOR CHILDREN, Tite Street, S.W.3.—(1) House-Physician; (2) House-Surgeon. Salaries at the rate of £100 per annum.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House-Surgeon. Salary, £250 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

WEST LONDON HOSPITAL, Hammersmith Road, W.—Honorary Medical Radiographer.

WESTMINSTER HOSPITAL, S.W.—(1) Assistant House-Physician; (2) Assistant House-Surgeon. Honorarium at the rate of £52 per annum each.

WILTS COUNTY ASYLUM, Devizes.—Assistant Medical Officer (male). Salary, £350 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

ALLAN, J., M.D.Edin., D.P.H., Medical Officer to Charlton Post Office.

CAIGER, Herbert, M.B., F.R.C.S., to be additional Specialist Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 15 (for ophthalmic cases).

DIARY OF SOCIETIES AND LECTURES.

MEDICO-LEGAL SOCIETY, 11, Chandos Street, W.1.—Tues., 8 p.m., Council; 8.30 p.m., Annual General Meeting, followed by ordinary meeting. Paper by Sir William Willcox: Acute Arsenical Poisoning.

ROYAL SOCIETY OF MEDICINE.—Annual General Meeting of Fellows, Thurs., 5 p.m.; 7.30 for 8 p.m., Annual Dinner at the Hotel Victoria, Northumberland Avenue, W.C.2 (tickets 12s. 6d. each, exclusive of wine). Fellows may bring guests. The Jenner Medal of the Society will be awarded to Dr. John C. McVail, LL.D., and will be presented to him at the annual dinner. Occasional Lecture.—Fri., 5 p.m., Dr. Alfred F. Hess: York. The Effects of Light in the Prevention and Control of Rickets.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Mon., 5 p.m., Dr. J. S. Goodall: So-called Functional Diseases of the Heart.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Dr. Still: Pupuras of Childhood.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.—Daily, 2.30 p.m., In- and Out-patient Clinics, Operations, etc. Lectures: 4.30 p.m., Mon., Dr. J. B. Alexander: Clinical Significance of Pulmonary Symptoms—Cough. Tues., Mr. C. H. Hayton: Acute Inflammatory Diseases of the Middle Ear. Wed., 4.30 p.m., Mr. N. B. B. Fleming: Ophthalmoscopic Work.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, Balham, S.W.—Thurs., 4 p.m., Mr. Z. Cope: Common Errors in regard to Diagnosis in regard to the Abdomen.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Daily, 10 a.m., Morning Work; 2 p.m., Operations, In-patients, Out-patients, Special Departments. Lectures, 5 p.m., Mon., Dr. Saunders: Gastric Ulcer and its Treatment. Wed., Dr. Simson: Modern Developments in the Management of Labour. Thurs., Sir Cuthbert Wallace: Early Indications for Prostatectomy. Fri., Mr. Sinclair: Lumps in the Breast.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediocrere, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Bacillus, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

JULY.

4 Tues. South Carnarvon and Merioneth Division, George Hotel, Criccieth.
Croydon Division: Croydon General Hospital, 4 p.m.

5 Wed. Sussex Branch, Royal Pavilion, Brighton, 2 p.m.

6 Thurs. London: Insurance Acts Committee, 2.30 p.m.
North of England Branch, Annual Meeting, King's Arms Hotel, Berwick-on-Tweed, 11.30 a.m. Luncheon, 1 p.m.

7 Fri. London: Annual Representative Meeting Agenda Committee, 2.30 p.m.

11 Tues. London: Science Committee, 2.30 p.m.

13 Thurs. Oxford and Reading Branch, Annual Meeting and Dinner, Reading.

14 Fri. East York and North Lincoln Branch, Annual Meeting, Withernsea.
Essex Branch, Annual Meeting, Palace Hotel, Southend-on-Sea, 2.30 p.m.: Lunch, 1.30 p.m.
North Carnarvon and Anglesey Division, Bangor: B.M.A. Lecture by Dr. John Hay (Liverpool).

21 Fri. Annual Representative Meeting, Bute Hall, Glasgow University, 10 a.m.

22 Sat. Annual Representative Meeting, Bute Hall, Glasgow University, 9.30 a.m.

24 Mon. Council Meeting, Randolph Hall, Glasgow University, 9 a.m.
Annual Representative Meeting Bute Hall, Glasgow University, 9.30 a.m.

25 Tues. Annual Representative Meeting, Bute Hall, Glasgow University, 9.30 a.m.

26 Wed. Council Meeting, Randolph Hall, Glasgow University, 9 a.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0*s.*, *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

BULMAN.—At 15, Baggallay Street, Hereford, on Sunday, the 25th June, to Dr. and Mrs. J. R. Bulman—a son.

DUKES.—On June 21st, to Dr. Ethel Dukes, the wife of Dr. Cuthbert Dukes, of 18, Gordon Square, W.C.—a son ("Marcus").

SHATTOCK.—On June 22nd, at 38, Mecklenburgh Square, W.C., to Mrs. Shattock (F. Mackenzie, M.B., B.S.) and Clement E. Shattock, M.S., F.R.C.S.—a son.

WOOLER.—On June 24th, the wife of E. W. Nowell Wooler, M.B., Ch.B.Edin., of St. Johns House, Cleckheaton, Yorkshire, of a son.

MARRIAGE.

IMPEY—HAGGART.—On the 13th June, at St. Brycesdale Church, Kirkcaldy, Robert Lance Impey, M.C., M.D., F.R.C.S.E., second son of Mr. and Mrs. R. H. Impey of Queenstown, South Africa, to Adele Haggart, M.B., Ch.B., third daughter of Mr. and Mrs. John Haggart of West Fergus Place, Kirkcaldy.

DEATHS.

FREAN.—On the 18th June, at "Cranicombe," Bournemouth, Henry George Frean, M.A., M.B., B.C.Cantab., F.R.C.S., L.R.C.P.Lond., D.O.Oxon., late of Beaumont Street, Oxford, only son of the late George M. and Mrs. Frean, aged 38 years.

LENEY.—On Monday, June 21st, Edward Morris Leney, the dearly loved brother of Dr. Lydia Leney.

Published and printed for the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 8TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Annual Meeting at Glasgow:
- Programme of Business ... 9
- The Sections ... 9
- Provisional Programme and Time-Table ... 12
- Pathological Museum ... 13
- Accommodation in Glasgow and Vicinity ... 14
- Excursions; Sports ... 14
- Arrangements for Ladies ... 15
- Golf: The Ulster Cup ... 15

CURRENT NOTES:
- Professional Secrecy ... 16
- The National Insurance Bill in Grand Committee ... 16
- Pensions Boards Medical Officers ... 19
- New Graduates and the Association ... 17

Notice of Extraordinary General Meetings ... 17

ASSOCIATION NOTICES:
- Table of Dates ... 17
- Notices of Motion for the Annual Representative Meeting 18
- Branch and Division Meetings to be held ... 18

MEETINGS OF BRANCHES AND DIVISIONS ... 19

NAVAL AND MILITARY APPOINTMENTS ... 19

VACANCIES ... 20

APPOINTMENTS ... 20

ASSOCIATION INTELLIGENCE AND DIARY ... 20

DIARY OF SOCIETIES AND LECTURES ... 20

BIRTHS, MARRIAGES, AND DEATHS ... 20

British Medical Association.

NINETIETH ANNUAL MEETING, GLASGOW, JULY 25th, 26th, 27th, & 28th, 1922.

Patron: His Majesty the King.

President: David Drummond, C.B.E., M.A., M.D., D.C.L., Vice-Chancellor and Professor of the Principles and Practice of Medicine, University of Durham.

President-Elect: Sir William Macewen, C.B., D.Sc., D.C.L., M.D., F.R.S., Regius Professor of Surgery, University of Glasgow, one of the Honorary Surgeons to H.M. the King in Scotland.

Chairman of Representative Meetings: R. Wallace Henry, B.A., M.D.

Chairman of Council: Robert Alfred Bolam, M.D., F.R.C.P.

Treasurer: George Ernest Haslip, M.D.

PROGRAMME.



Glasgow Cathedral.

THE Annual Meeting of the Representative Body will begin on Friday, July 21st, at 10 a.m., in the Bute Hall of the University, and be continued on the following three week-days.

The Representatives' Dinner will be held on Friday, July 21st, at 7.15 p.m.

The Statutory Annual General Meeting will be held in the Bute Hall of the University, on Tuesday, July 25th, at 2 p.m., and the Adjourned General Meeting at 8 p.m., when the oversea delegates and foreign guests will be received, and the President, Sir William Macewen, C.B., will deliver his address.

The official Religious Service will be held in Glasgow Cathedral on the same day at 5 p.m.

The Conference of Secretaries will be held in the University Union on Wednesday, July 26th, at 2 p.m., and the Secretaries' Dinner will take place on the same evening.

The Annual Dinner of the Association will be held in St. Andrew's Hall on Thursday, July 27th, at 7 p.m.

The Popular Lecture will be delivered by Professor Graham Kerr, F.R.S., on Friday, July 28th, at 8 p.m.; subject: "The Physician—Naturalist, Teacher, Benefactor."

THE SECTIONS.

The Scientific Sections will meet in the classrooms of the University for papers and discussions from 10 a.m. to 1 p.m. on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. Laboratory and clinical demonstrations in connexion with the work of the Sections will be given at other hours on the same days either in the University or in some of the hospitals.

Speakers desiring to take part in any of the discussions or to make any communications should get in touch with the secretary of the Section concerned. The Director of Demonstrations is Mr. R. H. Parry, 25, Blythswood Square, Glasgow.

The following Sections meet on three days—Wednesday, Thursday, and Friday, July 26, 27, and 28.

MEDICINE.

President: Professor Thomas Kirkpatrick Monro, M.D., F.R.F.P.S.

Vice-Presidents: John M. Cowan, M.D., F.R.F.P.S., D.Sc.; Sir Archibald E. Garrod, K.C.M.G., M.D., F.R.C.P., F.R.S.; George Hall, C.M.G., M.D., M.R.C.P.; C. O. Hawthorne, M.D., F.R.C.P.; John Hay, M.D., F.R.C.P.

Honorary Secretaries: Adam Patrick, M.D., F.R.F.P.S., 16, Buckingham Terrace, Glasgow; H. Letheby Tidy, M.D., F.R.C.P., 39, Devonshire Place, London, W.1.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Prognosis and Treatment of Chronic Renal Disease. To be opened by Professor Hugh Maclean, D.Sc., M.D.; followed by Dr. J. D. Comrie, Professor

J. SHAW DUNN, Dr. GEORGE GRAHAM, Dr. I. JONES, Dr. KATHARINE ROBERTSON, Dr. BATTY SHAW, Dr. J. O. SYMES, Dr. O. L. V. S. DE WESSELOW.

July 27th (10 a.m.).—Discussion: Exophthalmic Goitre. To be opened by Professor GEORGE R. MURRAY, M.D., F.R.C.P. (Manchester); followed by Mr. JAMES BERRY, Dr. J. R. RIDDELL and Dr. C. M. WILSON.

July 28th (10 a.m.).—Discussion: Degenerative Diseases of the Liver. To be opened by Sir HUMPHRY D. ROLLESTON, K.C.B., M.D., F.R.C.P.; followed by Professor HUGH MACLEAN, Dr. J. W. MCNEE, Professor R. MUIR, Dr. J. C. SPENCE, Professor M. J. STEWART, Dr. C. M. WILSON, and Sir W. H. WILLCOX.

MICROBIOLOGY (INCLUDING BACTERIOLOGY).

President: ROBERT MACNEIL BUCHANAN, M.B., F.R.F.P.S.

Vice-Presidents: JOHN ANDERSON, M.A., B.Sc.; Professor HY. ROY DEAN, M.D., F.R.C.P.; Sir WM. B. LEISHMAN, K.C.M.G., C.B., F.R.S.

Honorary Secretaries: S. PHILLIPS BEDSON, M.D., Lister Institute, Chelsea, London, S.W.; J. L. BROWNLIE, M.D., D.P.H., 12, St. James Terrace, Glasgow.

The following provisional programme has been arranged:

July 26th.—Discussion:

Dr. F. D'HERELLE (Pasteur Institute, Paris) and Dr. F. W. TWORT: The Bacteriophage (Bacteriolysin); followed by Drs. ANDRÉ GRATIA, LEDINGHAM MCLEOD, FLEMING, and ELLIS.

Paper:

Dr. W. R. WISEMAN (Glasgow): An Outbreak of Food Poisoning by Milk, caused by *B. aertrycke.*

July 27th.—Discussion:

Dr. MERVYN H. GORDON, C.M.G., C.B.E.: The Bacteriology of Influenza; followed by Drs. MCINTOSH and DIBLE.

Papers:

Dr. R. CECIL ROBERTSON, M.C. (Glasgow): On the Toxins of *B. dysenteriae* (Shiga).

Dr. ANDREW CONNAL (Director, Medical Research Institute, Lagos): The Development of *Loa loa* in Chrysops (with demonstration).

July 28th.—Discussions:

Professor V. H. BLACKMAN, F.R.S.: Some Similarities and Dissimilarities in the Microbiology of Plant and Animal Diseases, with special reference to Immunity and "Virus" Diseases; followed by Dr. E. J. BUTLER, C.I.E., Dr. W. B. BRIERLEY, Mr. J. RAMSBOTTOM, F.L.S., F. H. GAIGER, F.R.C.V.S., and Professor C. H. BROWNING.

W. B. BRIERLEY, D.Sc.: Mutation of Species; followed by Dr. S. G. PAINE and Professor DAVID ELLIS, D.Sc. (Glasgow).

Paper:

Professor DAVID ELLIS: The Intimate Structure of the Bacterial Cell.

Demonstrations in the Laboratory adjoining the Section room:

Professor GRAHAM KERR and J. S. DUNKERLEY, B.Sc., Ph.D.: Protozoal Parasites.

Sir WILLIAM LEISHMAN: Leishmaniasis; Spirochaetosis of Tick Fever.

Dr. ANDREW CONNAL: The Development of *Loa loa* in Chrysops.

Dr. R. ST. JOHN BROOKS: Cultures of Organisms Pathogenic for Man, Animals, and Plants.

Professor DAVID ELLIS: Iron Bacteria; Sulphur Bacteria; Fossil Iron-moulds.

Dr. R. CECIL ROBERTSON, M.C.: Culture Media for the Isolation of Bacilli of the Enterica and Dysentery Groups.

NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

President: Professor GEORGE M. ROBERTSON, M.D., F.R.C.P.Edin.

Vice-Presidents: A. STANLEY BARNES, M.D., F.R.C.P.; C. C. EASTERBROOK, M.D., F.R.C.P.Edin.; J. H. MACDONALD, M.B., F.R.F.P.S.; Sir JAMES PURVES STEWART, K.C.M.G., C.B., M.D., F.R.C.P.

Honorary Secretaries: HILDRED CARLILL, M.D., M.R.C.P., 146, Harley Street, London, W.1; D. K. HENDERSON, M.D., F.R.F.P.S., 17, Whittinghame Drive, Glasgow.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: Psychotherapy. To be opened by Dr. T. W. MITCHELL, on Psycho-therapeutics and Psycho-pathology; followed by J. A. HADFIELD, on the Making of a Neurotic; Dr. JANE SUTTIE, on Mental Stresses of Adjustment in Women; and by Dr. CRICHTON MILLER, on the Psychic and Endocrine Factors in Functional Disorders.

July 27th (10 a.m.).—Discussion: The Treatment of Neuro-syphilis. To be opened by Sir JAMES PURVES STEWART; followed by Dr. KINNIER WILSON, on Observations on the Treatment of Neuro-syphilis; Dr. DOUGLAS K. ADAMS, on the Treatment of Neuro-syphilis, with Special Reference to the Changes in the Cerebro-Spinal Fluid; and Dr. ERNEST M. DUNLOP, on the Bearing of the Wassermann Reaction on Diagnosis and Control of Treatment of Nervous Syphilis. The following will take part in the discussion: Dr. ALDREN TURNER (General Results of the Modern Methods of Treatment), Dr. DAVID LEES, Dr. EDWIN BRAMWELL, Professor CARL BROWNING, and Dr. HENRY J. MACBRIDE.

July 28th (10 a.m.).—Papers:

Dr. J. H. MACDONALD: The Elements of Contrast in the Psychic Mechanism.

Dr. DONALD CORE: Spreading Subdural Haemorrhage.

Dr. ALDREN TURNER: Epilepsy and Gunshot Wounds of the Head.

OBSTETRICS AND GYNAECOLOGY.

President: Professor EWEN J. MACLEAN, M.D., F.R.C.P., F.R.S.E.

Vice-Presidents: H. RUSSELL ANDREWS, M.D., F.R.C.P.; Professor J. M. MUNRO KERR, M.D., F.R.F.P.S.; Professor LOUISE MCILROY, M.D., D.Sc.; E. FARQUHAR MURRAY, M.D., F.R.C.S.

Honorary Secretaries: S. J. CAMERON, M.B., F.R.F.P.S., 30, Lynedoch Street, Charing Cross, Glasgow; W. D. MACFARLANE, M.B., F.R.F.P.S., 17, Woodside Crescent, Glasgow; H. G. TAYLOR, M.B., 15, Cavendish Place, London, W.1.

The following provisional programme has been arranged:

July 26th (Morning Session).—Discussion: Stillbirths and Neo-natal Deaths. Speakers: Dr. J. W. BALLANTYNE: Ante-natal, Intra-natal, and Neo-natal Death; Causes, Pathology, and Prevention, with special reference to Ante-natal Death. Dr. EARDLEY HOLLAND: Intra-natal Death. Professor A. M. KENNEDY and Dr. F. J. BROWNE: Neo-natal Death. Professor LOUISE MCILROY: Ante-natal Death due to Toxaemia of Pregnancy. Dr. J. N. CRUICKSHANK and Dr. GILBERT STRACHAN.

In the afternoon there will be a demonstration of Professor A. M. Kennedy's specimens in the museum.

July 27th (Morning Session).—Papers

Dr. T. W. EDEN: Treatment of Eclampsia.

Dr. W. OSBORNE GREENWOOD: Anaesthetics and Analgesics in Labour.

July 28th.—Papers:

Dr. ROBERT KNOX: Use of Radium and *X* Rays in Relation to Gynaecology.

Dr. JOHN CAMPBELL (Belfast): Treatment of Salpingo-oöphoritis.

Dr. ARCHIBALD LEITCH: Vaginal Involvement in Cancer of the Cervix.

OPHTHALMOLOGY.

President: A. S. PERCIVAL, M.B., M.R.C.S.

Vice-Presidents: A. J. BALLANTYNE, M.D., F.R.F.P.S.; Sir WILLIAM T. LISTER, K.C.M.G., M.D., F.R.C.S.; JOHN ROWAN, M.B., F.R.F.P.S.

Honorary Secretaries: PERCIVAL J. HAY, M.D., 350, Glossop Road, Sheffield; W. H. MANSON, M.D., F.R.F.P.S., 17, Royal Terrace, Glasgow.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Etiology of Optic Atrophy. To be opened by C. O. HAWTHORNE, M.D., F.R.C.P., Mr. J. HOGARTH PRINGLE, M.B., C.M., F.R.C.S. (Glasgow), and H. MOSS TRAQUAIR, M.D., F.R.C.S.Edin.

Papers:

Mr. A. F. MACCALLAN, C.B.E.: Ophthalmic Progress in Egypt.

Dr. A. FREELAND FERGUS, LL.D.: Importance of the Light Sense in Navigation.

Dr. WELLWOOD FERGUSON: The Cerebro-spinal Fluid in Disease of the Fundus.

Mr. W. B. INGLIS POLLOCK: The "Open" Treatment in Eye Operations.

July 27th (10 a.m.).—Discussion: The Clinical Significance and Treatment of Heterophoria. To be opened by Mr. A. S. PERCIVAL, M.A., M.B., B.Ch. (Newcastle-upon-Tyne), and Dr. L. WEBSTER FOX (Philadelphia).

Papers:

Dr. T. STEWART BARRIE: Monocular and Binocular Vision.

Dr. H. WRIGHT THOMSON: Education of Partially Blind Children in Myope Classes.

Mr. A. R. MOODIE: Notes on a Case of Migraine with Unusual Symptoms.

Dr. E. J. PRIMROSE: The Venereal Disease Clinic of the Glasgow Eye Infirmary.

Dr. HERBERT CAIGER: Conjunctivitis Artefacta.

July 28th.—Clinical Demonstration at the Glasgow Eye Infirmary.

The local office-bearers of the Section of Ophthalmology desire to entertain the members of the Association attending the Section at luncheon in the Central Station Hotel on Thursday, July 27th, at 1 p.m. Members proposing to attend the meetings of the Section are asked to notify Dr. W. H. Manson, 17, Royal Terrace, Glasgow, W., as soon as possible, in order that some estimate can be made of the number likely to be present at the luncheon.

PATHOLOGY (HUMAN AND COMPARATIVE).

President: Professor ROBERT MUIR, M.D., F.R.C.P.Edin., F.R.S.

Vice-Presidents: J. S. C. DOUGLAS, M.D.; Professor JOHN SHAW DUNN, M.D.; ARCHIBALD LEITCH, M.D.; Professor JOHN H. TEACHER, M.D., F.R.F.P.S.

Honorary Secretaries: JOHN ANDERSON, M.B., C.M., "Westerhill," St. Bride's Road, Newlands, Glasgow; ROBERT DONALDSON, M.D., F.R.C.S.Edin., St. George's Hospital, London, S.W.1.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Origin of Cancer in relation to Specific Forms of Irritation. To be opened by Dr. J. A. MURRAY (London); followed by Dr. A. LEITCH, Mr. CECIL ROWNTREE, Dr. J. CRUICKSHANK, Dr. ALEX. SCOTT, and others.

July 27th (10 a.m.).—Discussion: Animal and Vegetable Pathology in relation to Human Disease. To be opened by Professors F. G. HOBDAY, F.R.C.V.S., and W. H. LANG, F.R.S.; followed by Sir CLIFFORD ALLBUTT, Mr. W. B. BRIERLEY, Mr. T. F. BROOKS, Mr. W. M. SCOTT, F.R.C.V.S., and others.

July 28th (10 a.m.).—Papers.

The Pathological Museum will be housed in the Anatomical and Natural History Departments, in the same block as that in which the Section will meet.

PUBLIC HEALTH.

President: A. K. CHALMERS, M.D., F.R.F.P.S., D.P.H.

Vice-Presidents: R. J. REECE, C.B., M.D., M.R.C.P., D.P.H.; F. E. FREMANTLE, O.B.E., M.P., M.B., F.R.C.P., D.P.H.; HAROLD KERR, O.B.E., M.D., D.P.H.

Honorary Secretaries: R. S. FULLARTON, M.A., M.D., F.R.F.P.S., D.P.H., Sanitary Chambers, Glasgow; J. J. PATERSON, M.D., D.P.H., Guildhall, Maidenhead; RICHARD PATON, M.B., D.P.H., Sanitary Chambers, Glasgow.

The following provisional programme has been arranged:

July 26th.—President's Remarks.

Papers:

Dr. RICHARD J. REECE, C.B.: Port Sanitary Administration, its Development and its Relation to the Public Health of England and Wales.

Dr. F. E. FREMANTLE, M.P.: Public Health Economics.

Dr. JOHN BROWNLEE: Facts of the Health of Children under Five Years of Age.

Dr. T. F. DEWAR: Puerperal Fever.

July 27th.—Discussion: The Defects of Children at Infancy and on Attaining School Age. To be opened by Dr. BRUCE on "Defects on Attaining School Age"; by Dr. MENZIES on "Infant Welfare Schemes for Scotland"; and by Dr. MARGHARITA M. L. COUPER on "Defects of Infancy."

Papers:

Dr. DAVID MCKAIL: Industrial Fatigue and Vocational Selection on a Basis of Physical Inquiry.

Dr. J. P. KINLOCH: The Constituents of Fresh and Vitiated Air, and their Significance in Problems of Ventilation.

Dr. F. E. WYNNE (Sheffield): The "Wrong Turning" in Public Health.

July 28th.—Paper: Councillor W. B. SMITH: Smoke Abatement.

Discussion: The Training for the D.P.H. and the New Regulations. To be opened by Dr. E. W. HOPE (Liverpool).

11.30 a.m., Joint Discussion (with Tuberculosis Section): The Administrative Requirements for the Various Types of Tuberculosis. To be opened by Dr. A. S. M. MACGREGOR (Glasgow).

A Public Health Exhibition, organized by the Corporation of Glasgow, will be held in the Kelvin Hall from July 25th to 28th inclusive.

SURGERY.

President: Professor H. ALEXIS THOMSON, C.M.G., M.D.Edin., F.R.C.S.

Vice-Presidents: JAMES BERRY, F.R.C.S.; Sir KENNEDY DALZIEL, M.B., F.R.F.P.S.; A. ERNEST MAYLARD, M.B., F.R.F.P.S.; G. GREY TURNER, M.S., F.R.C.S.; R. J. WILLAN, M.V.O., O.B.E., M.S., F.R.C.S.

Honorary Secretaries: J. A. C. MACEWEN, M.B., F.R.F.P.S., 3, Woodside Crescent, Charing Cross, Glasgow; JOHN PATRICK, M.B., F.R.C.S.Edin., 9, Newton Place, Glasgow; H. S. SOUTTAR, C.B.E., M.Ch., F.R.C.S., 58, Queen Anne Street, London, W.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Diagnosis and Treatment of Cholelithiasis. To be opened by Professor J. RUTHERFORD MORISON, LL.D., Dr. DE MARTEL (Paris), and Mr. FARQUHAR MACRAE.

Papers:

Professor BULL (Christiania): Extrapleural Thoracoplasty in the Treatment of Pulmonary Tuberculosis; 77 Cases treated by Operation.

Mr. D. P. D. WILKIE: Chronic Duodenal Ileus, its Complications and Surgical Treatment.

Mr. M. LOGAN TAYLOR: Duodenal Obstruction due to the Condition known as "Ring Pancreas."

July 27th (10 a.m.).—Discussion: Surgical Treatment of Non-traumatic Affections of the Spleen. To be opened by Dr. JAMES CARSLAW, Dr. E. H. KETTLE, and Sir KENNEDY DALZIEL.

Papers:

Mr. A. J. WALTON: The Surgery of the Pituitary Gland.

Mr. G. H. EDINGTON: The Plating of Fractures.

Mr. ARCHIBALD YOUNG: A Five Years' Survey of the Routine Treatment of Fractures by Operative Methods.

Mr. DONALD DUFF: Treatment of Ununited Fractures by Bridge Grafts.

July 28th (10 a.m.).—Discussion: The Surgical Treatment of Non-malignant Affections of the Colon. To be opened by Sir WILLIAM ARBUTHNOT LANE, Mr. WAUGH, and Sir H. M. W. GRAY.

Paper:

Mr. H. S. SOUTTAR: Operative Treatment of Difficult Hernias.

The following Sections will meet on two days.

DERMATOLOGY.

President: H. LESLIE ROBERTS, M.D., C.M.

Vice-Presidents: A. M. H. GRAY, C.B.E., M.D., F.R.C.P.; G. H. LANCASHIRE, M.D.; J. G. TOMKINSON, M.D.

Honorary Secretaries: WM. HERBERT BROWN, M.D., 20, Park Circus, Glasgow; HALDIN DAVIS, M.B., F.R.C.S., 17, Cavendish Place, London, W.1.

The following provisional programme has been arranged:

July 26th.—Discussion: Etiology of Seborrhoea and Seborrhoeic Dermatitis. Opening paper by Dr. CRANSTON LOW. The discussion will be opened by Dr. HAROLD W. BARBER.

July 27th.—Discussion: Occupational Dermatitis. Opening paper b Dr. WM. JAS. O'DONOVAN.

The following short private papers will be introduced:

Dr. GEORGE HERBERT LANCASHIRE: Dermatitis Artefacta.

Professor J. GOODWIN TOMKINSON: Alopecia Areata and Strabismus, a Family Group of Cases.

Clinical Demonstrations will be arranged on both days; the hour probably 9 a.m.

DISEASES OF CHILDREN.

President: Sir HERBERT F. WATERHOUSE, M.D., F.R.C.S.

Vice-Presidents: LEONARD FINDLAY, M.D., F.R.F.P.S.; ROBERT HUTCHISON, M.D., F.R.C.P.; ALEX. MACLENNAN, M.B., C.M., R. H. A. WHITELOCKE, M.D., F.R.C.S.

Honorary Secretaries: GEOFFREY BOURNE, M.D., M.R.C.P., 150, Harley Street, London, W.1; G. B. FLEMING, M.B.E., M.D., 13, Lynedoch Crescent, Glasgow.

The following provisional programme has been arranged:

July 26th (Morning Session).—Joint Discussion with the Section of Physiology: Etiology of Rickets. To be opened by Dr. LEONARD FINDLAY and Professor MELLANBY, and followed by Dr. ROBERT HUTCHISON and Professor NOËL PATON.

Afternoon Session.—Clinical Demonstrations at the Royal Hospital for Sick Children (medical and surgical). Mr. ALEX. MACLENNAN will give a demonstration on scoliosis.

July 27th (Morning Session).—Discussion: Treatment of Tuberculous Cervical Glands. To be opened by Mr. JOHN FRASER; followed by Mr. ALEX. MACLENNAN, Mr. ALEX. MITCHELL, Mr. R. H. PARRY, and others.

Afternoon Session.—Clinical Demonstrations at the Royal Hospital for Sick Children (medical and surgical). Mr. ALEXANDER MITCHELL will show skiagrams of Regeneration of Bone in Osteomyelitis.

Dr. G. B. FLEMING will demonstrate the Benedict-Talbot apparatus for the determination of the respiratory exchange in infants.

INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

President: Professor JOHN GLAISTER, M.D., F.R.F.P.S., D.P.H., F.R.S.E.

Vice-Presidents: GODFREY CARTER, M.B., M.R.C.P.Edin., D.P.H.; WILLIAM LEDINGHAM RUXTON, M.B.; Sir WILLIAM H. WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P.

Honorary Secretaries: ANDREW ALLISON, M.B., F.R.F.P.S., D.P.H., St. Vincent Park, Paisley Road, W. Ibrox, Glasgow; JAMES R. KERR, C.B.E., Ch.M., The Pilkington Special Hospital, St. Helens, Lancs.

The following provisional programme has been arranged:

July 26th.—Opening address by Professor GLAISTER.

Papers:

Sir W. H. WILLCOX: Dangers to Health arising from Use of Preparations of Arsenic in Various Industries.

Dr. ANDREW ALLISON: The Importance of Teaching Forensic Medicine to Students of Medicine and Law.

July 27th.—Papers:

Sir THOMAS OLIVER: Some Circumstances which make for Industrial Efficiency.

Dr. ALEX. SCOTT: Paraffin Dermatoses.

Dr. JAMES R. KERR: The Treatment of Industrial Accidents.

Dr. JOHN GLAISTER, jun.: New Apparatus for the Assessment of Efficiency after Injuries.

PHYSIOLOGY.

President: Professor J. A. MACWILLIAM, M.D., C.M., F.R.S.

Vice-Presidents: Professor EDWARD MELLANBY, M.D.; Professor D. NOËL PATON, M.D., F.R.C.P., F.R.S.

Honorary Secretaries: GEORGE GRAHAM, M.D., F.R.C.P., 37, Queen Anne Street, London, W.1; W. F. SHANKS, M.B., Ch.B., Physiological Institute, University of Glasgow.

The following provisional programme has been arranged:

July 26th (Morning Session).—Joint meeting with the Section of Diseases of Children: Discussion on Rickets. To be opened by Dr. LEONARD FINDLAY (Glasgow) from the clinical side, and Professor E. MELLANBY (Sheffield) from the physiological side; followed by Miss HARRIETTE CHICK, Professor KORENCHEVSKY, Professor NOËL PATON, Drs. ROBERT HUTCHISON, J. B. ORR, T. Y. FINLAY, and others. Paper by Dr. J. SIM WALLACE (London): Dental Hypoplasia and Rickets.

Afternoon Session: Demonstrations in the Physiological Institute of specimens relating to Rickets.

July 27th (Morning Session).—Discussion on Basal Metabolism. To be opened by Professor E. P. CATHCART (Glasgow), followed by Professor J. C. MEAKINS, Drs. C. M. WILSON, J. B. ORR, and G. B. FLEMING.

Afternoon Session: Demonstrations, of general and physiological interest, in the Physiological Institute.

RADIOLOGY AND ELECTROLOGY.

President: LEONARD A. ROWDEN, M.B., C.M.

Vice-Presidents: E. P. CUMBERBATCH, M.B., M.R.C.P.; JAMES ROBERTSON RIDDELL, F.R.F.P.S.

Honorary Secretaries: F. HERNAMAN-JOHNSON, M.D., 66, Harley Street, London, W.1; D. O. MACGREGOR, M.B., C.M., Langside Cottage, Langside, Glasgow.

The following provisional programme has been arranged:

July 26th (10 to 11.30 a.m.).—Discussion: The X-ray Treatment of Deep-seated Cancers, with special reference to Erlangen Methods. To be opened by Dr. J. R. RIDDELL (Glasgow); followed by Dr. DOUGLAS WEBSTER, Dr. F. HERNAMAN-JOHNSON, and Dr. C. W. SALEEBY, the last from the point of view of a non-practising medical man.

12 to 1 p.m.—Discussion on the Value of Gas Inflation in X-ray Diagnosis. To be opened by Dr. F. HERNAMAN-JOHNSON (London), followed by Dr. J. MAGNUS REDDING (London).

July 27th (10.30 a.m.).—Papers:

Dr. H. E. GAMLEN (Newcastle-upon-Tyne): A Short Account of the Bucky-Potter Diaphragm and the Lead-Glass Shield for the 7 in. Coolidge Tube.

Dr. C. W. S. SABERTON (Harrogate): Points in the Differential Diagnosis of Simple and Malignant Bone Disease.

Dr. JAMES CROCKET (Glasgow): The Differentiation of Active from Quiescent Tuberculosis of the Lung.

Dr. E. W. REED (Manchester): X Rays in Diseases of the Skin.

Dr. J. GIBSON GRAHAM (Glasgow): X-Ray Treatment of Tinea.

11.30 a.m. to 1 p.m.—Discussion on the Therapeutic Value of High-Frequency Currents and Static Electricity. To be opened by Dr. E. P. CUMBERBATCH (London), Dr. F. HOWARD HUMPHRIS (London), and Dr. W. F. SOMERVILLE (Glasgow).

The following Sections will meet each on one day.

ANAESTHETICS.

President: W. J. McCARDIE, M.B., B.Ch.

Vice-Presidents: JAMES PATON BOYD, M.B., F.R.F.P.S.; L. MABEL RENWICK CAMPBELL, M.B., Ch.B.

Honorary Secretaries: H. PRESCOT FAIRLIE, M.D., 19, Bute Gardens, Glasgow; HUBERT PINTO-LEITE, M.R.C.S., L.R.C.P., 24, Fellows Road, South Hampstead, London, N.W.3.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion on Broncho-pulmonary Complications following Operation under Anaesthesia. To be opened by Dr. DAVID LAMB. Offers from those desiring to take part in the discussion should be sent to one of the Secretaries.

Paper and demonstration by Dr. A. L. FLEMMING: Different Effects produced by Exposing Tissues to various Concentrations of Anaesthetic Vapour.

Demonstrations of Anaesthetic Apparatus.

ANATOMY.

President: Professor ALEXANDER MACPHAIL, M.B., C.M., F.R.F.P.S.

Vice-Presidents: Professor J. C. BRASH, M.C., M.B., Ch.B.; Professor J. T. WILSON, M.B., F.R.S.

Honorary Secretaries: JAMES BATTERSBY, F.R.C.S., F.R.F.P.S., 616, Great Eastern Road, Glasgow; JOHN GRAHAM, M.B., F.R.F.P.S., 351, Renfrew Street, Glasgow.

The following provisional programme has been arranged:

July 28th.—Papers:

Professor J. C. BRASH (Birmingham): The Relation of the Ureters to the Vagina.

Dr. ALFRED PINEY (Birmingham): The Naked-Eye Anatomy of the Bone Marrow with Age Changes.

Dr. J. M. WOODBURN MORISON (Manchester): The Teaching of Anatomy by Radiology, in the Anatomy Department.

Dr. W. B. PRIMROSE (Glasgow): The Problem of the Structure of the Vertebrate Head.

Dr. W. K. CONNELL (Glasgow): Observations on the Form of the Palate in Children.

Dr. JOHN T. HUNTER (Sydney): Intestinal Diverticulum with Retroposition of the Transverse Colon.

Discussion: The Administration of the Anatomy Act. To be opened by Dr. ALEX. MACPHAIL.

Demonstration of a series of embryological models by Professor THOMAS H. BRYCE, F.R.S.

LARYNGOLOGY.

President: JOHN MACINTYRE, M.B., C.M., F.R.F.P.S.

Vice-Presidents: A. BROWN KELLY, M.D., F.R.F.P.S.; Sir STCLAIR THOMSON, M.D., F.R.C.P., F.R.C.S.

Honorary Secretaries: F. F. MUECKE, C.B.E., M.B., F.R.C.S., 36, Cavendish Square, London, W.; W. S. SYME, M.D., F.R.F.P.S., 11, Lynedoch Crescent, Glasgow.

The following provisional programme has been arranged:

July 27th.—Discussion: Diseases of the Oesophagus, their symptomatology and differential diagnosis. To be opened by Dr. D. R. PATERSON (Cardiff) and Mr. W. G. HOWARTH, F.R.C.S. (London).

Papers:

Mr. A. J. WRIGHT (Bristol): Congenital Occlusion of the Posterior Choanae.

Dr. HENRY HALL FORBES (New York): The Use of Radium in Malignant Disease of the Larynx and Oesophagus.

MEDICAL SOCIOLOGY.

President: E. ROWLAND FOTHERGILL, M.B., B.S.

Vice-Presidents: CHARLES E. S. FLEMMING, M.R.C.S., L.R.C.P.; JAMES HUDSON, M.D., C.M.; PETER MACDONALD, M.D.

Honorary Secretaries: ALEX. FORBES, M.B., C.M., Hillsboro' Lodge, Sheffield; DAVID MCKAIL, M.D., F.R.F.P.S., D.P.H., 2, Morris Place, Monteith Row, Glasgow.

The following provisional programme has been arranged:

July 28th.—The Section will meet in the Debating Hall of the University Union. Subject for discussion: Alcohol as a Beverage, and its relation to Certain Social Problems.

10 a.m.—Action of Alcohol on the Human Economy. By Professor F. MELLANBY and Dr. JOHN T. MACCURDY (Cornell University Medical College); to be followed by Professor A. R. CUSHNY and the Rev. C. C. WEEKS, M.R.C.S.

Alcohol in Relation to the Problems of Mental Disorders. To be opened by Sir FREDERICK W. MOTT, K.B.E., and Dr. AUGUST LEY (Brussels), followed by Dr. C. HUBERT ROND.

2.15 p.m.—Alcohol and Industrial Efficiency. To be opened by Professor EDGAR L. COLLIS and Dr. M. HINDHEDE (Copenhagen), followed by Sir THOMAS OLIVER, Dr. W. E. ELLIOT, M.P., and the Right Rev. the BISHOP OF CROYDON.

Alcohol and Infant Mortality. To be opened by Dr. J. W. BALLANTYNE and Professor C. R. STOCKARD (Cornell University, U.S.A.), followed by Dr. C. W. SALEEBY, Miss IVENS, M.S., Professor LOUISE MCILROY, D.Sc., M.D., and Mrs. STACEY CLEMINSON, M.B.

Lay persons specially interested may be present only by invitation, a request for which should be made to one of the Honorary Secretaries.

OTOLOGY.

President: ALBERT ALEX. GRAY, M.D., F.R.F.P.S.

Vice-Presidents: J. G. CONNAL, M.B., F.R.F.P.S.; W. F. WILSON, M.B.

Honorary Secretaries: F. J. CLEMINSON, M.Ch., F.R.C.S., 32, Harley Street, London, W.1; J. W. LEITCH, M.B., 6, Clairmont Gardens, Charing Cross, Glasgow.

The following provisional programme has been arranged:

July 26th.—Discussion: Septic Sinus Thrombosis, its Diagnosis and Treatment. To be opened by Sir WILLIAM MILLIGAN and Mr. LIONEL COLLEDGE. The following members will take part in the discussion: Mr. G. J. JENKINS, Mr. T. B. LAYTON, Mr. ARCHER RYLAND, and Dr. T. RITCHIE RODGER.

Papers:

Professor HOLGER MYGIND: Benign Forms of Otogenic Meningitis.

Dr. J. S. FRASER and Dr. STEPHEN YOUNG: Is it worth while to Remove Aural Polypi?

TUBERCULOSIS.

President: Professor Sir ROBERT PHILIP, M.D., LL.D., F.R.C.P.E.

Vice-Presidents: JAMES CROCKET, M.D., D.P.H.; Professor S. LYLE CUMMINS, C.B., C.M.G., M.D.; WM. HY. DICKINSON, O.B.E., M.B., D.P.H.

Honorary Secretaries: A. HOPE GOSSE, M.D., M.R.C.P., 75, Harley Street, London, W.; A. S. M. MACGREGOR, O.B.E., M.D., D.P.H., 488, Clarkston Road, Muirend, Cathcart, Glasgow.

The following provisional programme has been arranged:

July 27th (10 a.m.).—Discussions: (1) The Clinical Differentiation of Pulmonary Tuberculosis from other Respiratory Affections. To be opened by Professor RIST (Paris). (2) Some Aspects of the Treatment of Surgical Tuberculosis. To be opened by Mr. JAMES TAYLOR, O.B.E., F.R.C.S.E. (Glasgow).

In the afternoon Dr. ROLLIER (Leysin) will give a cinematograph demonstration in the Kelvin Hall at 2.15 illustrating "The Share of the Sun in the Treatment and Prevention of Tuberculosis."

On Friday, July 28th, at 11.30 a.m., there will be a joint meeting with the Section of Public Health, when Dr. A. S. M. MACGREGOR will open a discussion on the administrative requirements of the various types of tuberculosis.

There will be a demonstration in the Kelvin Hall of radiographs illustrative of chest conditions by Dr. HENDERSON (Glasgow), open for inspection during the period of the annual meeting.

Honorary Local General Secretary:

Dr. GEO. A. ALLAN, 22, Sandyford Place, Glasgow, W.

PROVISIONAL PROGRAMME AND TIME-TABLE.

THE Headquarters of the Annual Meeting of the Association will be in the University of Glasgow.

MEETINGS OF COUNCIL, REPRESENTATIVE BODY, ETC.

Friday, July 21st.

10 a.m.—Meeting of Representative Body, Bute Hall, University.

4.45 p.m.—Extraordinary General Meeting, Bute Hall.

7.15 p.m.—Representatives' Dinner, Grand Hotel, Charing Cross.

Saturday, July 22nd.

9.30 a.m.—Representative Meeting, Bute Hall.

1 p.m.—Photograph of Representative Body.

8 p.m.—Smoking Concert, Grand Hotel.

Sunday, July 23rd.

11 a.m.—Services in Glasgow Cathedral and St. Mary's Cathedral.

2 p.m.—Sail to the Firth of Clyde on s.s. *Skirmisher*, by invitation of Messrs. Henderson Bros.

Monday, July 24th.

9 a.m.—Council Meeting, Randolph Hall, University.

9.30 a.m.—Representative Meeting, Bute Hall.

9 p.m.—Music Hall Entertainment, Alhambra, by invitation of Local Committee.

Tuesday, July 25th.

9.30 a.m.—Representative Meeting, Bute Hall.

2 p.m.—Annual General Meeting, Bute Hall, followed immediately by Representative Meeting.

5 p.m.—*Official Religious Service, Glasgow Cathedral.

8 p.m.—*Adjourned General Meeting and President's Address.

Wednesday, July 26th.

9 a.m.—Council Meeting, Randolph Hall.

2 p.m.—Secretaries' Conference, Debating Hall, University Union.

6.30 p.m.—Secretaries' Dinner, University Union.

ENTERTAINMENTS FOR LADIES ACCOMPANYING REPRESENTATIVES.

July 21st.
8.30 p.m.—Reception and Social Evening in the Ladies' Club (Burlington House, 183, Bath Street) to meet the members of the Ladies' Committee.

July 22nd.
Afternoon—Visit to the Cathedral and Provand's Lordship.
Evening—Picture House Entertainment.

July 23rd.
Church Services at the Cathedrals.
Sail on s.s. *Skirmisher*.

July 24th.
Afternoon—Motor run to Loch Lomond and Gareloch; tea on board Clyde training ship *Empress*.
Evening—Either a Musical Evening at Burlington House or join the Representatives at the Alhambra.

For further information for ladies see note, p. 15.

SECTION MEETINGS AND EXHIBITIONS.
(For Sections see detailed list.)

The *Pathological Museum* will be open from July 25th to 28th inclusive, and will be housed in the Anatomical and Natural History Departments, in the same quadrangle as most of the Sections (see descriptive note in next column).

A *Public Health Exhibition*, organized by the Corporation, will be held in the Kelvin Hall, immediately opposite the south-west gate of the University, and will be open from July 25th to 28th inclusive (see p. 14). It will be designed to demonstrate the bearing of the various municipal activities on the health of the public.

The *Annual Exhibition* of surgical instruments, electrical appliances, drugs, foods, and books will be on view in the Kelvin Hall on the same days. It is hoped that every member will make a point of visiting the Exhibition.

The *Kelvin Hall* will be the only official place for daily lunches during the time of the general meetings, and the Exhibitors' Club will also be available for the use of members.

GENERAL MEETINGS, SOCIAL AND OTHER FUNCTIONS, AND ENTERTAINMENTS.

Tuesday, July 25th.
10 a.m.—Official Opening of Exhibition.
2 p.m.—Annual General Meeting, Bute Hall (short session).
6 p.m.—*Official Religious Service, Glasgow Cathedral.
8 p.m.—*Adjourned General Meeting and President's Address in Bute Hall.

Wednesday, July 26th.
8 a.m.—Holy Communion at St. Mary's Cathedral (Scottish Episcopal Church), Great Western Road.
2 p.m.—Party of 300 will leave by charabancs for Bridge of Weir, to visit Quarrier's Homes and the Consumption Sanatoria of Scotland, and will be entertained at Duchal by Sir Joseph and Lady Maclay.
2.15 p.m.—Party will leave by motors to visit Glasgow Waterworks at Mugdock, and will be entertained at Craigend Castle by Mr. and Mrs. Harold E. Yarrow.
2.15 to 3 p.m.—Charabancs will leave for short trips to places of interest in or near the city.
Visits have also been arranged to the Glasgow Art Galleries and Museum, Kelvingrove Park, the Glasgow Observatory, and the Sugar Refineries at Greenock, where the party will be entertained to tea at the Greenock Royal Infirmary.
4 p.m.—Royal Infirmary, Royal Hospital for Sick Children, and the Royal Maternity Hospital will entertain parties to tea, and they will have an opportunity of seeing round the hospitals.
8.30 p.m.—*Reception by the Vice-Chancellor and University Court in the Bute Hall and Hunterian Museum.

Thursday, July 27th.
8.15 a.m.—Temperance breakfast, University Union, by invitation of the National Temperance League.
9 a.m.—*Celebration of Mass at St. Andrew's Cathedral, Great Clyde Street.
1 or 2.30 p.m.—Honorary Graduation, Bute Hall.
2 p.m.—Golf Competition for the Ulster Cup, and Gold Medal to be presented to the winner by the Glasgow Medical Golf Club, at Killermont (Glasgow Golf Club); party of 200 will be entertained to tea by Professor Munro Kerr (Captain of the Club) and Mrs. Munro Kerr.
2.15 p.m.—International Bowling Match, North v. South, on Willowbank Bowling Green.
3.30 p.m.—*Civic Reception in the City Chambers, by invitation of the Lord Provost, Magistrates, and Councillors of the City of Glasgow.
7 p.m.—Annual Dinner of the Association, in St. Andrew's Halls (Grand Hall), Charing Cross.
10 p.m.—Dance in St. Andrew's Halls, Ball Room Suite, by invitation of Local Committee.

Friday, July 28th.
2 p.m.—Motors leave for a trip to the birthplace of William and John Hunter, and will be entertained to tea by Dr. Livingstone Loudon at Hamilton (party limited to 40).
2.15 p.m.—Train leaves Partick Central Station for Erskine House (Princess Louise Scottish Hospital for Limbless Sailors and Soldiers), where a party of 500 will be entertained.
2.15 to 3 p.m.—Charabancs leave for short trips to places of interest in or near the city.
Visits have also been arranged to the Art Galleries and Museum, and to the Broadstone Jubilee Hospital, Port Glasgow.
3.30 or 4 p.m.—Western Infirmary, Victoria Infirmary, and Royal Samaritan Hospital will entertain parties to tea, and they will have an opportunity of seeing round the hospitals.
8 p.m.—Popular Lecture by Professor Graham Kerr, F.R.S. Subject: "The Physician—Naturalist, Teacher, Benefactor."
9 p.m.—*Reception and Dance by invitation of the President and Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow (500 guests).
9 p.m.—Music Hall Entertainment, Alhambra, by invitation of the Local Committee (450 guests).

* It is requested that Academic Dress or uniform be worn at the functions marked with an asterisk.

Saturday, July 29th.

DAY EXCURSIONS.

Three day excursions have been arranged:

Firth of Clyde.—The turbine steamer, *Duchess of Argyll*, specially chartered, will leave the Broomielaw for a cruise on the Firth of Clyde and through the Kyles of Bute, returning to Gourock for special train about 6 p.m., due in Glasgow 7 p.m. Tickets, inclusive of lunch and tea, 12s. 6d. This is the principal excursion.

Land o' Burns.—An excursion, limited in numbers, has been arranged to Ayr and the "Land o' Burns." Train to Ayr, thence charabancs to Mauchline (Burns Museum), Alloway (Burns Cottage), Crossraguel Abbey, etc. Tickets, inclusive of lunch at Alloway Hotel (Banks of Doon) and tea, about 20s.

Stirling and Bannockburn.—An excursion, limited in numbers, has been arranged to Stirling, Bannockburn, Bridge of Allan, and Dunblane, thus including places of historical, balneological, and ecclesiastical interest. Tickets, including lunch and tea, 12s. 6d.

ACADEMIC DRESS.

Academic Dress for the Scottish Universities may be hired from Messrs. Thomson, Son, and Laidlaw, 159, St. Vincent Street, Glasgow, Official Robe Makers to the University of Glasgow, who will attend for that purpose in the University Union during the meeting, but members are requested to make early application. Those desiring Robes, etc., for English degrees should communicate with Messrs. Ede and Ravenscroft, 93 and 94, Chancery Lane, London, W.C.2, Official Robe Makers for the Association, or with the robe makers of their own university before coming to the meeting.

PATHOLOGICAL MUSEUM.

The Subcommittee responsible for the organization of the Pathological Museum wishes to draw the attention of members to this branch of the Annual Meeting. It is particularly desired that specimens should be shown which illustrate subjects to be discussed. The Museum will be situated in the Anatomical Department of the University, and will therefore be convenient to the various Sections. Provision will be made for the display of museum preparations of all kinds, photographs or drawings, microscopic specimens, lantern slides, radiographic negatives, and instruments. An endeavour is being made to get together a collection of specimens illustrating disease of animals and plants of economic importance, and the development of malignant disease in relation to specific forms of irritation.

Whilst the exhibits are primarily intended to illustrate the work of the various Sections, the Committee wishes it to be understood that individual specimens of special interest or a series demonstrating some special subject, specimens and illustrations relating to any recent research, and instruments relating to clinical diagnosis and pathological investigations, will be welcomed. Every care will be taken of specimens, and the contents of the Museum will be insured.

In order that arrangements may be made and the necessary forms for the description of specimens supplied, intending exhibitors are requested to communicate at once with the Honorary Secretary of the Pathological Museum Subcommittee, Dr. G. Haswell Wilson, Glasgow University.

A special feature of the Museum will be the anatomical and pathological preparations of William Hunter. The anatomical

collection, which is of great intrinsic and historical interest, has recently been displayed in the gallery of the museum of the Anatomical Department along with the preparations of the late Professor Allen Thomson and Emeritus Professor Cleland. The pathological specimens of William Hunter and Professor Cleland are exhibited in other sections of the Department.

PUBLIC HEALTH EXHIBITION BY THE CORPORATION OF GLASGOW.

In view of the Annual Meeting of the British Medical Association to be held in Glasgow in July, and of the prominent place which the city has acquired in the advancement of public health, the Corporation has cordially responded to the desire for an exhibition portraying its diversified activities in safeguarding the health of the community. Towards the fulfilment of this object twenty-one departments of municipal work are co-operating with the Health Department. The exhibits will illustrate as far as possible the varied work of the public health administration of the city, and the closely related departments of work represented in bacteriology, chemistry, and the inspection of meat and milk. The other departments will similarly indicate and exemplify their important functions in contributing to the maintenance and promotion of the well-being of the citizens, and will have reference to the water, gas, and electricity supplies; to street construction, street lighting, and the tramway service; to housing and city improvements; to public baths and washhouses, cleansing, and the disposal of sewage; to public parks and open spaces, museums, and libraries; and to markets, the standardization of weights and measures, and the prevention of fire.

The Exhibition will be accommodated in the Kelvin Hall, in which a space of 20,000 square feet has been set apart by the Corporation, and will be open from July 25th to 28th. The City Bacteriologist is in charge of the arrangements for the collection of the exhibits to be supplied by the various departments.

ACCOMMODATION AT THE ANNUAL MEETING.

THE Hotels and Lodgings Committee wishes to impress on members the advisability of making their arrangements as early as possible. Most of the hotels are unwilling to reserve rooms, and accommodation in them can only be secured by early and definite booking.

A list of hotels and hydros in Glasgow and vicinity is appended. Information regarding train service for those out of town was given in the SUPPLEMENT of April 29th (p. 122).

A number of beds will be available in students' hostels, which are being specially reopened for the time of the meetings, and for these the Committee has had to guarantee a minimum number of residents. The daily charge for bed and breakfast is 8s. 6d. per person.

A list of private lodgings, which have been personally inspected, has been prepared, and Dr. James Hendry, the Secretary of the Committee, will arrange to place any visitors who wish to be thus accommodated if they will indicate their requirements.

All applications and inquiries about accommodation should be sent to Dr. James Hendry, 4, Clifton Place, Glasgow, W.

HOTELS AND HYDROS IN GLASGOW AND VICINITY.

GLASGOW.

	Bedroom and Breakfast.
Central Station Hotel (Caledonian Railway) ...	12/- to 15/6
North British Station Hotel	12/6 to 14/-
St. Enoch Station (G. and S.W. Railway)	From 11/-
More's Private Hotel, India Street	From 9/-
Bath Hotel, 152, Bath Street	From 8/6
Waverley (Cranston's) Temperance Hotel, 172, Sauchiehall Street	From 8/-

CLYDE COAST RESORTS.

Helensburgh:

Queen's Hotel: Bedroom and breakfast, 11/- per person.
Imperial Hotel: Bedroom and breakfast, 8/6 per person.

Shandon:

Shandon Hydro Hotel: Offers special terms for bedroom and breakfast at 12/6 per person. Will arrange for their motor to meet at Helensburgh the train which leaves Glasgow at 10.40 p.m.

Greenock:

Tontine Hotel: Bedroom and breakfast, 10/- to 11/6 per person.

Gourock:

Ashton Hotel: Bedroom and breakfast, 9/6 to 10/6 per person.

Wemyss Bay:

Wemyss Bay Hydropathic, Skelmorlie: Requires very early notice, and gives inclusive terms only at 16/- and upwards per day per person.

Dunoon:

Argyll Hotel ... ... 8/6 per person.
Crown Hotel ... ... 8/6 ,, ,,
McColl's Hotel ... ... 8/6 ,, ,,
Wellington Hotel ... ... 7/6 ,, ,,
Royal Hotel ... ... 7/6 ,, ,,
Queen's Hotel, Kirn ... ... 10/6 ,, ,,

Innellan:

Royal Hotel, Innellan: Bedroom and breakfast, 10/- per person.

Rothesay:

Glenburn Hotel Hydro: Offers special terms for dinner, bedroom, and breakfast at 15/- per person.
Kyles of Bute Hydropathic, Port Bannatyne, Rothesay: Offers inclusive terms only at 18/- per person per day.

AYRSHIRE COAST RESORTS.

Ayr:

Ayr Station Hotel: Bedroom and breakfast, 11/- and upwards per person.

Prestwick:

Royal Hotel, Prestwick: Bedroom and breakfast, 8/6 per person.

Troon:

Marne Hotel: Beautiful situation on the edge of the links. Bedroom and breakfast from 11/- to 12/- per person.
Craiglea Hotel: Bedroom and breakfast, 10/- per person.

INLAND HOTELS.

Peeblesshire:

Peebles Hydro, about one and a half hours from Glasgow: Inclusive terms, 15s. per person.

Renfrewshire:

Kilmalcolm Hydropathic: The Hydro offers only inclusive terms at 15/- to 21/- per person.

Loch Lomond Side:

Tarbet Hotel, Loch Lomond: Bedroom and breakfast, 10/- per person.

Trossachs District.

Bridge of Allan:

Allan Water Hotel: Bedroom and breakfast, 9/- and upwards per person.
Queen's Hotel: Bedroom and breakfast, 11/- per person.

Dunblane:

Dunblane Hotel Hydro: Bedroom and breakfast, 12/- per person.

Crieff:

Drummond Arms Hotel: Bedroom and breakfast, 10/- per person.

EXCURSIONS, ETC.

ATTENTION is drawn to the whole-day excursions arranged for Saturday, July 29th (see p. 13). The trip arranged on the turbine steamer *Duchess of Argyll* will give visitors an opportunity of seeing the river as well as the Firth of Clyde. The route suggested will include some of the finest scenery in the district, and will pass near many of the well-known Clyde summer resorts.

The excursions arranged to the Stirling and Ayr districts will be by train and charabanc. The former will pass over much historic ground, while the latter will be through a county intimately connected with the life of Robert Burns.

A more detailed description of the country covered by these three excursions will appear in the JOURNAL of July 15th.

Facilities for engaging in golf, tennis, and bowling have been made, and attention is drawn to the Ladies' Golf Competition at Hillfoot, of which details are published at page 15. Those intending to enter should send their names to the convener, Mrs. T. K. Monro, 12, Somerset Place, Glasgow, as soon as possible, as the rules of the club require that names of competitors shall be presented to the committee before the date for play.

SPORTS.

GOLF.

COMPETITION for the Ulster Cup (see p. 15) and the Glasgow Medical Golf Club's Medal will take place on Thursday, July 27th, at 2 p.m., at Killermont, by permission of the Glasgow Golf Club. Entries will be received by Dr. J. Glaister McCutcheon, 14, Belmont Street, Glasgow, W., or at the Reception Room, up to Wednesday, July 26th. See special notice, p. 15, for conditions, etc.

Facilities for golf during the week have been granted by the following clubs: Glasgow Golf Club, Killermont (gentlemen only); Erskine Golf Club; Pollok Golf Club; Bishopbriggs Golf Club. Arrangements have also been made for play at Gailes (Western Golf Club), and at Prestwick Championship Course. (This last privilege is granted contingent on the course not being closed after the amateur championship.)

BOWLING.

Several of the best bowling greens in Glasgow will be open to members of the Association for individual play during the meeting in Glasgow. It is proposed that an international match, North *v.* South, should be played on the Willowbank

bowling green on Thursday, July 27th. Those who wish to take part in the game are requested to write as soon as possible to Dr. W. Snodgrass, 11, Victoria Crescent, Glasgow, W., stating their experience in match play and their usual position in rinks as leads, seconds, thirds, or skips. Lunch will be provided by Colquhoun, 225, Byres Road, at 1.15 p.m., and it is hoped to have the game finished in time to allow players to attend the civic reception in the Municipal Buildings in the afternoon. Application should be made soon, so that it may be known how many will play and final arrangements be made. Players will be provided with bowls at the club-house or may bring their own bowls if they so prefer.

Facilities for bowling have been granted on the following greens: Willowbank, Partick, Burnbank, Queen's Park, Bellahouston, and Titwood.

LAWN TENNIS.

Facilities for lawn tennis have been granted on the following courts: Partick, Pollokshields, and Titwood.

CLUBS, ETC.

Honorary membership of the University Union will be granted to all members registering at the Annual Meeting. Lunches will be provided during the Meeting of Representatives, but later the official place for daily lunches will be at Kelvin Hall.

Daily privileges (not residence) have also been granted by the Royal Scottish Automobile Club, the Liberal Club, the Conservative Club, the Royal Faculty of Physicians and Surgeons, and the Arlington Baths Club.

Cards will be provided at the Reception Room.

ARRANGEMENTS FOR LADIES DURING THE ANNUAL MEETING.

WHILE the General Offices of the Association during the Annual Meeting will be in the University Buildings at Gilmorehill, attention is drawn to the fact that special arrangements have been made to secure club rooms in the city for ladies accompanying Representatives or members. Burlington House has been engaged for this purpose. It is situated at 183, Bath Street, adjoining Sauchiehall Street, and within half a minute of the more important tram lines. All information about the programme for ladies may be obtained here, and all excursions specially reserved for ladies will start from this point. Meals will be provided if required, and the house may be used as an address for letters, while facilities will be afforded for those who wish to rest or change before proceeding to any of the evening entertainments. Queen Margaret College Union has also been engaged, and a small suite of rooms for ladies has been reserved in the University Union.

On the forenoons of Wednesday, Thursday, and Friday, July 26th, 27th, and 28th, during the sittings of the Scientific Sections, charabancs have been reserved for the use of ladies, and these will leave Burlington House between 10 and 11 o'clock. They will afford an opportunity of visiting the Cathedral, Provand's Lordship, the Art Galleries and Museum, some of the Child Welfare Centres, the School of Domestic Science, one of the children's country hospitals, Coats's Thread Mills, Templeton's Carpet Factory, and some of the other local industries.

On the forenoon of Thursday the Gaumont Film Company has consented to give a special film display in one of the picture houses.

The other entertainments and functions arranged during the afternoons and evenings of these days are open to ladies, application for tickets having to be made by a member.

Ladies Accompanying Representatives.

All ladies accompanying Representatives are invited to a social evening in Burlington House on the evening of Friday, July 21st, at 8.30 p.m. Lady Macewen, President of the Ladies' Committee, and Lady MacAlister, Convener of the Ladies' Receptions Committee, will welcome the guests. It is hoped that all lady visitors will endeavour to be present so that members of the Committee may make their acquaintance and so be the better able to make their stay in the city as pleasant as possible. On the afternoon of Saturday, July 22nd, a visit will be paid to the Glasgow Cathedral, which is one of the two pre-Reformation cathedrals in Scotland which is still in regular use as a place of worship. Thereafter the party will be taken to Provand's Lordship, which is quite near. Though now used as a museum and containing some interesting relics, it is also of note that it was probably the earliest of Glasgow's hospitals—part of the building dating from 1471, when it was known as St. Nicholas's Hospital. The Provand's Lordship Club has kindly agreed to entertain the company to tea. In the evening seats will be reserved in one of the picture houses in the city.

On Sunday, July 23rd, the Glasgow Cathedral (Church of Scotland) and St. Mary's Cathedral (Scottish Episcopal Church) have services at 11 o'clock. In the afternoon a sail on the River and Firth of Clyde has been arranged by the kindness of Messrs. Henderson Bros. (Anchor Line), who have placed the s.s. *Skirmisher* at disposal. Visitors will be able to procure meals on board.

A motor trip has been arranged for Monday afternoon, July 24th, a number of private cars having been lent to the Committee for the day. It is proposed to go by way of Loch Lomond and then to cross over the hill to the Gareloch, where the party will be entertained to tea on board the Clyde training ship *Empress*, and a display of musical drill will be given by the boys. The return journey will be by another route. In the evening there will be music at Burlington House or ladies may join the Representatives at the Alhambra.

LADIES' GOLF COMPETITION.

A Ladies' Golf Competition will take place on Wednesday morning, July 26th. A prize has been offered for the best score (Union handicap) over eighteen holes, at Douglas Park Golf Course, Hillfoot. A special prize, in connexion with the same competition, will be given for the best scratch score for six "nidden holes."

The train leaves Charing Cross Station for Hillfoot at 9.23 a.m., returning 1.40 p.m.; return ticket 2s. 0½d. Luncheon will be provided at the Club House.

Those wishing to take part in the competition should send their names and handicap to Mrs. Monro, 12, Somerset Place, Glasgow, as soon as possible.

Facilities for Golf, Tennis, and Bowling will be available for the forenoons of Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. Arrangements will be made each morning at Burlington House, 183, Bath Street.

RAILWAY TRAVELLING TO GLASGOW.

THE British Medical Association has applied to the Railway Clearing House for a renewal of the concessions in regard to members travelling to the Annual Meeting which were customarily granted before the war. We regret to state that the Clearing House does not see its way to permit the issue of tickets at reduced rates to medical practitioners proposing to attend the forthcoming Annual Meeting at Glasgow. Any member of the Association travelling to Glasgow can therefore purchase his ticket individually on the same terms as though it were booked for him through the Central Office. Should any member, however, desire the Central Office to take tickets, or book seats, it is requested that an early note may be sent to the Financial Secretary, stating the day on which he intends to travel and the time and place of departure.

GOLF COMPETITION FOR THE ULSTER CUP.

IN 1909 the Ulster Medical Society presented to the British Medical Association a cup to be played for at Annual Meetings, and to be won out and out by any member winning it three times in all, or twice in succession.

The following is a list of winners whose names are engraved on the base:

1909	.....	Dr. Shackleton, Holywood.
1910	.....	Dr. G. E. Haslip, London.
1911	.....	Dr. W. J. McCardie, Birmingham.
1912	.....	Mr. Albert Lucas, Birmingham.
1913	.....	Dr. H. L. Hatch, Pinner.
1914	.....	Dr. D. Barty King, London.
1920	.....	Mr. Albert Lucas, Birmingham.
1921	.....	Dr. S. T. Irwin, Belfast.

On the occasion of the competition in Glasgow on Thursday afternoon, July 27th, a gold medal will be presented to the winner of the cup by the Glasgow Medical Golf Club. The cup and the gold medal will be presented to the winner at the Annual Dinner of the Association on the same day.

Conditions.

1. The competition is open to all members of the British Medical Association.
2. Bogey play under handicap not exceeding 18.
3. One round of 18 holes to be played on Thursday, July 27th, by permission of the Glasgow Golf Club, at their course at Killermont.

4. No previous play permitted on the course on the day of the competition.

5. Those intending to compete are required to furnish with their entry a certificate, signed by their club secretary, stating (*a*) their lowest score handicap; (*b*) the bogey score of their course; (*c*) the length of their course.

Any dispute connected with the competition to be decided by the committee in chargo—namely, Professor J. M. Munro Kerr, Dr. D. T. Laird, Dr. John Henderson, and Dr. J. Glaister McCutcheon, 14, Belmont Street, Glasgow (convener). Entries must be in the hands of the convener not later than 4 p.m. on Wednesday, July 26th. The official hour of starting is 2 p.m., but members who are not taking part in the Sections may play in the forenoon by arrangement with the convener of the committee at the Reception Room. Partners will be balloted for as entrants arrive at the course.

Competitors and friends will be entertained to tea in the Club House from 3.30 till 5 p.m. by the present Captain of the Glasgow Golf Club, Professor J. M. Munro Kerr, and Mrs. Munro Kerr. Information regarding the route to Killermont may be obtained from any member of the committee, or from bills posted in the Reception Room.

Note.—The attention of competitors is specially directed to paragraph 5 of the Conditions.

British Medical Association.

CURRENT NOTES.

Professional Secrecy.

IN the Proceedings of Council in the SUPPLEMENT of June 24th (p. 242) we recorded that a letter was received from the Council of the National Union of Scientific Workers stating that that body had passed a resolution in regard to the sanctity of confidential communications between doctor and patient. The National Union of Scientific Workers was thanked for its expression of opinion, and informed that the British Medical Association would be glad if it would give publicity to the resolution of its council. The following announcement has accordingly now appeared in the public press:

"At the half-yearly council meeting of the National Union of Scientific Workers the following resolution was adopted unanimously:

'That, in the opinion of this council of the National Union of Scientific Workers, the sanctity of confidential communications to doctors by their patients is not primarily a matter for lawyers to decide, and that this council instructs the executive to give its strenuous support to the doctors' efforts to retain intact their professional honour.'"

The National Insurance Bill in Grand Committee.

We reported last week that the National Health Insurance Bill had passed through Grand Committee on June 27th. The bill, it will be remembered, has for its purpose the transference of certain liabilities connected with medical benefit from the Treasury—that is to say, from the moneys voted by Parliament—to the accumulated surpluses in the hands of the approved societies. We have received from the Medical Secretary some notes and reflections of a medical man who was present at the meeting. With a few elisions they are as follows:

"There are 52 members of Standing Committee C to which the bill was remitted, and 29 were present on June 27th. Seeing the purpose for which the money in question is required, and in view of the certainty of questions arising which affect the medical profession, it might have been expected that one or more of the medical M.Ps. would have been at the Committee. There were representatives of the approved societies of all kinds, representatives of the employers, representatives of insurance committees, and representatives of the Ministry of Health, but no doctor.

"Most of the talk came from Major Mackenzie Wood, who strove hard to prevent certain expenditure on mileage in Scotland being defrayed by the societies. In view of the way in which the societies have been patted on the back by each other and by members of the Government for offering to relieve the Government of this particular burden, it was somewhat painful to find that one of the societies at any rate was not anxious to share in the glory. But Major Wood was careful to explain that though his society was not anxious to pay, he did not want the Scottish rural doctors to suffer, but had a plan whereby they would pay one another. Each insurance area, he said, accumulated every year certain moneys on behalf of the unallocated insured persons. This money he seemed to suggest had been lying loose until the doctors (Scottish doctors, presumably), unwilling to see it going begging, had put in a claim to it, and, nobody else seeming to want it, had got it. Now, said Major Wood, if this money is divided among the rural doctors as payment for their mileage, the town doctors, it is true, will not get any of it, but they will never miss it, and the approved societies will not have to pay it. A few members of the Committee seemed quite taken with the idea, but the Minister pointed out that, the scheme being an insurance scheme, the doctors of the area collectively were entitled to all the money, allocated and unallocated, because collectively they had undertaken the medical responsibility for all the insured persons in the area. Sir Kingsley Wood made a gallant attempt to drive this home to the Major and his supporters, but without much success. The amendment was, however, heavily defeated. At the end of the debate, as at the beginning, some of the members of the Committee seemed, to one observer at any rate, to be quite ignorant of what a medical insurance scheme really means. Apparently the only thing that would satisfy Major Wood and his friends would be that every insured person should need the doctor during every year. Perhaps some actuarial friend may yet succeed in showing Major Wood that if he had his way the medical insurance premium would have to be raised, just as, if all houses insured against fire actually took fire, fire insurance premiums would be quite considerably increased.

"The only other point of interest to the medical profession was the attempt to get incorporated in the bill the following amendment:

'The Minister of Health shall obtain the consent of the National Conference of Friendly Societies before making any further agreement on the question of rates of remuneration and terms of service of the medical profession.'

This was down in the name of Mr. Cautley, and a similar amendment was backed by Mr. Rhys Davies, Mr. Bromfield, and Mr. A. T. Davies. Mr. Cautley pleaded hard for some declaration in the bill which should make it incumbent on the Minister to give the societies that place in the negotiations with the medical profession to which, he said, their participation in the administration of the system entitled them, and to which their recent monetary sacrifice had strengthened their claim. His only difficulty was that he was not sure that the National Conference of Friendly Societies was quite the right body to be consulted. Sir Alfred Mond, however, would have none of it. He was prepared to stand by the declaration he had made on the second reading, but he could not consent to have his hands tied in the way suggested. He would give the approved societies full opportunities for expressing their views before he came to any fresh agreement with the representatives of the medical profession, and would do his best to meet their views so far as was compatible with his duty to the other parties concerned. Farther he would not go, and he was evidently determined to carry out the business of his department in his own way, while being ready, as Ministers must be, to listen to all parties concerned. So Mr. Cautley withdrew his amendment and the bill was reported to the House.

"One visitor, at least, went away with a firmer conviction than ever that neither the medical profession nor the public will ever get fair play in connexion with national insurance matters until some medical man who knows the business at first-hand and can speak with authority is put into Parliament. Much of the ignorance—honest ignorance for the most part—which was shown in the debate could and ought to have been exposed on the spot by somebody who knew. But why does not Parliament make use of the material it already has at hand? Dr. Farquharson had spoken, and spoken well, on the bill on the second reading. Why should he not have been asked to serve on the Committee?"

Pensions Boards Medical Officers.

In the SUPPLEMENT of June 3rd, page 218, there appeared a report of a deputation from the British Medical Association to the Minister of Pensions protesting against the reduction of the rate of remuneration to ordinary members of Pensions Boards from £1 11s. 6d. to £1 6s. 3d., and that of chairmen from £1 16s. 9d. to £1 11s. 6d., for a session not exceeding two hours and a half. The Minister's answer has now been received, and is as follows:

"In reply to your letter of the 22nd inst. I am directed to state that the Minister has given careful consideration to the points raised by your deputation on the 26th May regarding the question of remuneration to Medical Officers to Ministry of Pensions Medical Boards, and he regrets that he is unable to depart from his previous decision."

To this a reply has been sent intimating that the Association greatly regrets the Minister's decision, and still holds

strongly that a payment of £1 6s. 3d. for two and a half hours' work requiring special knowledge and entailing great responsibility is totally inadequate. The next step obviously rests with the medical men doing this work. Some of them are men who, for various reasons, have to depend upon the Pensions Board work as their main means of livelihood, and they may very naturally be reluctant to give it up. But those doctors to whom the Pensions work is merely incidental have now an opportunity of showing that they agree with the Association that the remuneration for this work is quite inadequate and that it constitutes a precedent which will certainly be quoted against the profession. There is little doubt that the decision of the Minister was considerably influenced by such incidents as he quoted to the deputation from the Association, when he said that he had recently had a deputation of doctors from Glasgow, who asked for Board work and raised no difficulties about the payment.

New Graduates and the Association.

On June 28th the Executive Committee of the Sheffield Division entertained at luncheon the successful candidates at the June Final M.B. Examination of Sheffield University. Dr. W. H. Helm, Chairman of the Division, presided, and after the loyal toast had been honoured proposed the toast of "Health and success to the new graduates." Dr. Helm expressed the pleasure it gave him to welcome the successful students as members of the profession who were received not as new competitors but as colleagues, and he referred to the importance of co-operation among the various branches of the profession. The toast was supported by Colonel Mackinnon and drunk with enthusiasm. Dr. Francis Wrench then responded in a short but witty speech. "The University Staff" was proposed by Dr. Doris Pindar, and, in the unavoidable absence of Professor Hall, was replied to by Dr. Barnes. There were afterwards brief addresses from Drs. Gordon, Wynne, Caiger, and Mart, several speakers referring to the indebtedness of the profession to the British Medical Association, and pointing out the benefits to be derived by the young practitioner from being a member. The toast of "The Chairman," proposed by Dr. J. Russell, concluded a most enjoyable and successful meeting. Dr. Margaret Cannon, Dr. Forbes, and Dr. Forrest wrote regretting their inability to attend.

British Medical Association.

NOTICE OF EXTRAORDINARY GENERAL MEETINGS.

NOTICE IS HEREBY GIVEN by the Council that an Extraordinary General Meeting of the above named Association will be held in the Bute Hall of the University of Glasgow, in the City of Glasgow, on Friday, the 21st day of July, 1922, at 4.45 o'clock in the afternoon, when the subjoined Resolutions for altering the Articles of Association will be proposed as Extraordinary Resolutions.

Article 1.

1. That in Article 1 there be inserted immediately after the paragraph defining "Division" and "Branch" a new paragraph to read as follows:

> "'Branch Council' or 'Council of a Branch' when used in relation to a Corporate Branch (as hereinafter defined) means the Governing Body of that Branch by whatever name the same may be called."

Article 3.

2. That in Article 3 there be substituted for the words, from "of the qualifications" to "United Kingdom" (both inclusive) the words:

> "qualification entitling him to be so registered and any Medical Practitioner residing within the area of any Branch of the Association not in the United Kingdom."

Article 7.

3. That in Article 7 the word "Council" with which the Article concludes be deleted.

Article 11.

4. That the heading "Formation" immediately preceding Article 11 be deleted.

5. That in the said Article the figure "(1)" be inserted immediately after the Number 11.

6. That there be added to the said Article two new sub-paragraphs to read as follows:

> "(2) Each Division shall have a local area to be determined as hereinafter provided and a Branch shall be a Division or a group of Divisions."
>
> "(3) Provided that no body of Members shall be finally recognized as a Division or Branch until they shall have adopted Rules of Organization and the current Rules governing procedure in Ethical matters and such Rules shall have been approved by the Council."

7. That there be inserted immediately after Article 11 new headings and a new Article (herein referred to as Article 11*a*) to read as follows:

> "BRANCHES NOT IN THE UNITED KINGDOM.
>
> *Incorporation.*
>
> "11*a*.—(1) Subject as hereinafter provided, it shall be competent for the Members of a Branch not in the United Kingdom to procure themselves to be incorporated (in accordance with the law in force in the area of the Branch) under a name indicating that the Body so incorporated is a Branch of the Association. A Branch so incorporated is hereinafter referred to as a Corporate Branch.
>
> (2) The objects, powers, and obligations of a Corporate Branch, as defined by its Memorandum of Association, shall coincide with the objects, powers, and obligations of the Association as similarly defined, with such variations only as the Association shall approve.
>
> (3) The membership of a Corporate Branch (save as otherwise provided by paragraph (2) of Article 4 hereof) shall be strictly confined by its Articles of Association to Members of the Association, and it shall be thereby provided that any Member of the Corporate Branch shall, upon ceasing to be a Member of the Association, *ipso facto* and immediately cease to be a Member of such Branch.
>
> (4) The Corporate Branch shall not be deemed to be an agent for, and shall have no power to impose any responsibility, or liability on, or to pledge the credit of the Association in respect of any acts, expenses, matters or things done or incurred by the Corporate Branch, and the Articles of Association of such Branch shall contain a provision to that effect in such form as may be approved by the Association.
>
> (5) The drafts of the Memorandum and Articles of Association of the Corporate Branch shall, before the incorporation thereof, be submitted to the Association for approval, and such incorporation shall not be effected except under a Memorandum and Articles of Association which have been so approved.
>
> (6) The Corporate Branch shall immediately upon the incorporation thereof enter into an Agreement with the Association to the effect mentioned in the By-laws.
>
> (7) The Corporate Branch shall, before effecting any alteration in its Memorandum or Articles of Association submit the same to the Association for approval, and shall not effect the same unless such approval shall have been obtained, and shall also transmit to the Association at the Head Office once in every year true and complete copies of its Memorandum and Articles of Association for the time being in force.
>
> (8) In this Article the expression "Memorandum of Association" shall include any Charter or other instrument of foundation of the Corporate Branch, and the expression "Articles of Association" shall include any similar regulations for the government of such Branch."

Article 12.

8. That the following heading be inserted immediately before Article 12:

> "Formation, alteration, dissolution, etc., of Branches and Divisions."

9. That the whole of paragraph (1) of the said Article and the numeral "(2)" in line 4 thereof and the word "calendar" in the last line but three thereof be deleted.

10. That there be added at the end of the said Article, after the word "proposed," the following words:

> "and in the case of a Corporate Branch no alteration in the boundaries or area thereof or of any Division thereof shall be made without the consent of that Branch."

Article 13.

11. That the heading "Boundaries" immediately preceding Article 13 be deleted.

12. That there be inserted immediately after Article 13 two new Articles (herein referred to as Articles 13*a* and 13*b* respectively) and a heading to read as follows:

> "13*a*. It shall be competent for the Association by resolution of the Council and by giving not less than six months' notice in writing to the Branch concerned, to dissolve any unincorporate Branch and to exclude any Corporate Branch from continuing to be a Branch of the Association."
>
> "*Federal Councils.*
>
> "13*b*. Federal Councils representative of the Branches in any area outside the United Kingdom defined and approved by the Council may be formed in the manner and for the purposes specified in the By-laws."

Or in the alternative to read as follows:

"13*a*. It shall be competent for the Association by resolution of the Representative Body on the report of the Council and by giving not less than six months' notice in writing to the Branch concerned to dissolve any unincorporate Branch and to exclude any Corporate Branch from continuing to be a Branch of the Association."

"Federal Councils."

13*b*. Federal Councils representative of the Branches in any area outside the United Kingdom defined and approved by the Representative Body on the report of the Council may be formed in the manner and for the purposes specified in the By-laws."

Article 15.

13. That there be added at the end of Article 15, after the word "expedient," the following words:

"but so that in the case of Members of a Corporate Branch such obligations shall not conflict with any obligations imposed by such Branch."

Article 28.

14. That in Article 28 there be inserted immediately after the words "composed of" at the end of the fourth line thereof the following words:

"the Chairman and the immediate Past-Chairman of the Representative Body *ex officio* and of"

Article 31.

15. That in line 1 of paragraph (a) and in lines two, seven and eight of paragraph (f) of Article 31 there be substituted for the words "three months" the words "one month."

Article 32.

16. That Article 32 be altered so as to read as follows:

"The Council shall be composed of the President of the Association, the President-Elect, the Past-President, the Chairman, the immediate Past-Chairman and the Deputy-Chairman of the Representative Body, the Chairman and the immediate Past-Chairman of Council, the Treasurer and (during the year immediately following his period of office as Treasurer) the Past-Treasurer *ex officio*, and of the Members of the Association elected by the bodies, and in the manner prescribed in that behalf by the By-laws."

Article 36.

17. That in Article 36 there be substituted for the words "of Representative Meetings" the words "and a Deputy-Chairman of the Representative Body."

18. That there be inserted in the fifth line of the said Article after the word "shall" the words "be elected in such manner and shall."

[NOTE.—*The left marginal numbers affixed to the resolutions are for purposes of reference merely.*]

Should the above Resolutions or any of them be passed by the requisite majority the same will be submitted for confirmation as Special Resolutions or a Special Resolution to a further Extraordinary General Meeting, and such Meeting will be held at the Head Office of the Association, No. 429, Strand, London, on Tuesday the 8th day of August 1922 at 2.30 o'clock in the afternoon for the purpose of considering and if thought fit confirming as Special Resolutions or a Special Resolution such of the above Resolutions set forth as shall have been so passed.

Dated this third day of July 1922.

By Order of the Council,

ALFRED COX,
Medical Secretary.

429, Strand, London, W.C.2.

Association Notices.

TABLE OF DATES.

July 7, Fri. Last day for receipt at Head Office of Amendments and Riders for Annual Representative Meeting Agenda.

July 21, Fri. Annual Representative Meeting, Glasgow, 10 a.m. Nominations for election of 12 Members of Council by grouped Representatives to be received (at A.R.M., Glasgow) by 11 a.m. on this date. An Extraordinary General Meeting will be held in Bute Hall, The University, Glasgow, *re* alteration of Articles of Association, 4.45 p.m.

July 25, Tues. The Annual General Meeting will be held in the Bute Hall, The University, Glasgow, at 2 p.m. Business: (1) Minutes of last meeting; (2) appointment of auditors; (3) report of election of President for year 1923-24.

ALFRED COX, *Medical Secretary.*

NOTICES OF MOTION BY DIVISIONS FOR THE ANNUAL REPRESENTATIVE MEETING, GLASGOW, 1922.

Medico-Political Information in the "British Medical Journal."

By WEST SUFFOLK:

That the Council be instructed to consider the advisability of securing that once a month the first page of the BRITISH MEDICAL JOURNAL be placed at the disposal of the Medical Secretary for medico-political information.

Eight Members of Council: Representation of Scotland.

By GLASGOW EASTERN:

That with regard to the recommendation of the Council (SUPPLEMENT, December 24th, 1921, p. 249, para. (26)) proposing that in future eight members of Council be elected by the Representative Body under By-law 46 (d), one of these members should represent Scotland, and a standing order to that effect should be included in the Standing Orders of the Representative Body.

Report on Hospital Policy.

By TORQUAY:

That the principle of payment of hospital staffs be accepted; but before the principle is carried out a campaign for the education of the public regarding hospitals policy be energetically pursued.

CHANGE OF NAME OF WESTMINSTER DIVISION.

NOTICE is hereby given to all concerned that the Council has changed the name of the Westminster Division to "Westminster and Holborn" Division, the change to take effect on July 1st, 1922.

BRANCH AND DIVISION MEETINGS TO BE HELD.

DORSET AND WEST HANTS BRANCH.—The summer meeting of the Dorset and West Hants Branch will be held at the Yeatman Hospital, Sherborne, on Wednesday, July 12th, at 3.30 p.m. Dr. W. Johnson Smyth (President) will take the chair. 1.30 p.m.: Drs. Whittingdale and McCarthy very kindly invite members to luncheon at the Digby Hotel. 2.30 p.m.: Visit to the Abbey, the historical and architectural features of which will be fully described and should not be missed. The King's School, possessing some interesting old monastic buildings and a fine library and museum, may also be visited close by. 3.30 p.m., Agenda: To fix date and place of autumn meeting; exhibition of cases of clinical interest in the hospital. Dr. Whittingdale, O.B.E., will read a paper on "The diagnosis and infectivity of measles, rubella, and scarlet fever."

EAST YORK AND NORTH LINCOLN BRANCH.—The sixty-sixth annual meeting of the East York and North Lincoln Branch will be held at Withernsea on Friday, July 14th. Business: Financial statement and annual report, election of officers, presidential address. Further details will be given later.

ESSEX BRANCH.—The annual meeting of the Essex Branch will be held at 2.30 p.m. at the Palace Hotel, Southend-on-Sea, on July 14th; lunch at 1.30 p.m. Dr. Charles Forsyth, President of the Branch, will read a paper on "Some remarks on tuberculosis and milk," and Mr. P. Jenner Verrall, F.R.C.S., will give an address on "Minor traumatic disabilities of the upper limb." By the kind invitation of the President members are invited to tea after the meeting. The Branch Council will meet before the lunch.

LANCASHIRE AND CHESHIRE BRANCH: MID-CHESHIRE DIVISION.—A general meeting of the Mid-Cheshire Division will be held at the Altrincham General Hospital on Sunday, July 9th, at 4 p.m. Tea will be provided at 3.45 p.m. Agenda: Discussion of resolutions before the Annual Representative Meeting, and instructions to Division Representative.

NORTH WALES BRANCH.—The annual meeting of the North Wales Branch will be held at the Anglesey Arms Hotel, Menai Bridge, on Tuesday, July 11th, at 2 p.m. Agenda: To introduce the President-elect. To receive the report of the Branch Council. To elect President, Honorary Secretary, and select places of meetings for 1923-24. To adopt, if so determined, the ethical rules drawn up by the Council of the Association. To consider, and if approved adopt, the model organization rules. Presidential address. Dr. John Hay (Liverpool) will deliver a British Medical Association lecture on "Cardiac failure."

NORTH WALES BRANCH: NORTH CARNARVON AND ANGLESEY DIVISION.—A meeting of the North Carnarvon and Anglesey Division will be held at Bangor on Friday, July 14th.

OXFORD AND READING BRANCH.—The annual meeting and dinner of the Oxford and Reading Branch will be held in Reading on Thursday, July 13th. Members wishing to read papers or show cases should communicate at once with the Secretary, 2/5, King's Road, Reading. It might be possible to arrange a golf match in the morning if a sufficient number of members could

assemble about 10 o'clock at the main G.W.R. station. Maidenhead, Newbury, and Oxford members are asked to note this, and write to the Secretary if they wish golf to be arranged.

YORKSHIRE BRANCH: HARROGATE DIVISION.—The Chairman, Dr. Greenwood, is inviting medical practitioners, each with a lady, to meet at Fountains Abbey, Ripon, between 4 and 6 p.m. on Wednesday, July 19th. Tea at half-past 4.

Meetings of Branches and Divisions.

BIRMINGHAM BRANCH: NUNEATON AND TAMWORTH DIVISION.

THE annual general meeting of the Nuneaton and Tamworth Division was held on June 21st at the Nuneaton General Hospital.

The following officers were appointed for 1922-23:

Chairman: D. McColl, M.B. (Tamworth). *Vice-Chairman:* Mr. H. K. Bradbury (Nuneaton). *Honorary Secretary:* Dr. C. J. G. Taylor (Nuneaton). *Representative in Representative Body:* Dr. C. J. G. Taylor.

The business transacted at the meeting consisted in the giving of instructions to the Representative for the Annual Representative Meeting at Glasgow.

It was also decided by the meeting to give every support to Dr. Tapper, Medical Officer of Health, in the dispute concerning salary with the Nuneaton Rural District Council.

DORSET AND WEST HANTS BRANCH: WEST DORSET DIVISION.

THE annual meeting of the West Dorset Division was held on June 15th at Dorchester. The following office-bearers were elected:

Chairman: Dr. P. W. MacDonald. *Vice-Chairman:* Dr. J. F. L. Whittingdale. *Honorary Secretary:* Dr. F. W. Smerdon, Cornwall Road, Dorchester. *Representative in Representative Body:* Dr. C. J. Marsh, Penn Hill, Yeovil.

The meeting received with great regret the request of Surgeon-Lieut.-Colonel Decimus Curme to be relieved of the post he had so long filled of Representative in the Representative Body, on account of his advancing age, and the following resolution was recorded:

The members of the West Dorset Division desire to place on record their grateful thanks to Surgeon-Lieut.-Colonel Decimus Curme, who has so devotedly served them as their Representative at the Annual Representative Meeting for the long period of fifteen years, and to assure him that they have received his resignation with much regret; and that this resolution be entered on their minutes and recorded in the BRITISH MEDICAL JOURNAL.

GLASGOW AND WEST OF SCOTLAND BRANCH: GLASGOW EASTERN DIVISION.

THE quarterly general meeting of the Glasgow Eastern Division was held on June 16th.

A letter was read from the Medical Secretary intimating the Council's approval (with one slight verbal amendment) of the Divisional Rules of Organization adopted on April 26th, stating that the printing of them, together with the Ethical Rules adopted on February 26th, 1920, was in hand. A copy will be sent to each member of the Division.

The annual report of the Council was considered. It was suggested that if paragraph 87 (referring to the number of members of Council to be elected by the Representative Body) was approved by the Annual Representative Meeting the eight members of Council to be elected might be distributed as follows: five for England and Wales (one of these might be allotted to Wales, and in this way satisfy the instruction considered in paragraph 88), two for the Overseas Branches, and one for Scotland. The principle of paragraphs 130 and 163 was approved, and the feeling was expressed that more part-time work should be encouraged. This was given fuller expression to in regard to paragraph 151. It was felt that the resolution of the Orthopaedic and Diseases of Children Section was worthy of support, but that it raised the whole question of the position of the general practitioner in any such scheme. It was stated that many who would otherwise oppose further interference with private patients were not likely to do so at present, because they had enough work to content them. As a result the practitioner in the future would find very little private practice left to him after distributing the patients to the various clinics. He should therefore have a place in such schemes to safeguard him against total extinction. This was regarded as a strong argument for all clinics being provided and staffed by the local profession, or at least staffed by them.

The following motion was approved:

That the Glasgow area be formed into one Division with the existing Divisions as subdivisions as per Article 12 and By-law 21 (1) of the Regulations of the Association.

The reasons for the suggested alterations were (1) the present unsatisfactory attendances at Divisional meetings; (2) that it would enable quicker action to be taken on the part of the city as a whole in regard to all matters; (3) opportunity would be afforded to run scientific and social meetings; and (4) that the Division would be large enough to consider the establishment of various voluntary funds, such as benevolent, etc.

Dr. David McKail was nominated for election to the Scottish Committee from the Glasgow area.

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.

A MEETING of the Willesden Division was held at St. Andrew's Hall on Wednesday, June 21st, with Dr. SKENE in the chair, when, after a letter from the Ministry of Health and copies of letters from the Ministry and the Board of Education to the Willesden Urban District Council had been read relative to the conduct of the local clinics, Mr. ALECK W. BOURNE, F.R.C.S., opened a discussion on pelvic pain in the absence of physical signs. After remarking on the frequency of the condition in both hospital and private practice, he dwelt chiefly upon the frequency of pelvic pain being a local manifestation of a condition of general exhaustion. In spite of the emphasis of the patient's description of her pain and its localization in one defined area, there was a complete absence of physical signs in the pelvis, and further examination would often reveal other symptoms and signs of exhaustion, such as depression, atonic dyspepsia, constipation, toneless abdominal wall, increased knee-jerks, and constant fatigue. The underlying cause was often obscure and of long standing, and required careful search. Sometimes it could be traced to a "phobia," domestic unhappiness and anxiety, dyspareunia, or sterility. Under modern conditions of life treatment was difficult. It consisted in confident and repeated assurance in the case of "phobia," removal as far as possible of worries and anxieties, complete and prolonged rest, and change of occupation.

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.

THE annual meeting of the Kensington Division was held at 21, Westbourne Terrace, W.2 (by kind invitation of Mr. E. B. Turner), on June 22nd, when Dr. W. E. FRY was in the chair. The following officers were elected for the ensuing year:

Chairman: Dr. W. E. Fry. *Honorary Secretary and Treasurer:* Dr. Howard M. Stratford. *Representatives in Representative Body:* Dr. F. C. Martley, Dr. H. M. Stratford, Mr. E. B. Turner. *Deputy Representative:* Dr. W. E. Fry.

After discussion, the following resolution was carried unanimously:

That, in the opinion of this Division, it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned.

The following resolution was also carried:

That the sum spent in scientific research is quite unworthy of the magnitude of the Association and the position which it ought to occupy in the scientific world.

NORTH WALES BRANCH.

AT the spring meeting of the North Wales Branch held at Wrexham on April 4th the following resolution was, on the motion of Dr. LLOYD OWEN (Criccieth), seconded by Dr. C. E. MORRIS (Holywell), unanimously passed:

That this meeting desires to express and record its emphatic conviction—First, that in order to facilitate the inspection of meat, all private slaughter-houses in a locality should be immediately replaced by a public abattoir, where a butcher can benefit from the assistance and counsel of brother butchers and of the attendant, and where diseased meat can be more easily detected. Secondly, that in order to prevent cruelty—thoughtless for the most part—and to spare much excruciating and largely superfluous suffering to our dumb and helpless benefactors, the method of humane slaughtering (that is, the rendering of every animal unconscious in an instantaneous manner before the knife is used) should be universally adopted, and that the by-law enacting the use of certain mechanically operated instruments (usually called humane killers) should be translated into an Act of Parliament, and that forthwith.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following announcements are notified by the Admiralty:—Surgeon Commanders: G. Valpy French to the *Centaur*; B. R. Bickford and J. E. Johnston to the *President*, additional for three months' hospital course; Surgeon Lieutenant T. G. Roche to the *Dispatch*.

Surgeon Commanders T. T. Jeans, C.M.G., and H. S. Burniston have been promoted to the rank of Surgeon Captain.

The appointment of Kenneth W. Leon as a Surgeon Lieutenant has been cancelled at his own request.

Mr. M. B. Devane has entered as a Surgeon Lieutenant and appointed to R.N. Hospital, Haslar.

ROYAL NAVAL VOLUNTEER RESERVE.

J. D. Pollock, O.B.E., to be Honorary Surgeon Commander.

ROYAL ARMY MEDICAL CORPS.

Colonel R. W. Clements, C.M.G., D.S.O., late R.A.M.C., retires on retired pay, February 24th, 1922 (substituted for notification in the *London Gazette*, January 16th, 1922).

Lieut.-Colone R. L. Argles retires on retired pay.

Captain P. M. J. Brett is restored to the establishment.

The notification in the *London Gazette* of June 11th, 1919, regarding temporary Captain A. Shearer, is cancelled.

The following officers relinquish their commissions and retain their rank except where otherwise stated: Temporary Captain W. A. Clayton, and is granted the rank of Major; temporary Captain H. C. Perkins, E. E. Isaac, M.C., D. R. C. Shepherd. Temporary Lieutenant A. Shearer, March 20th, 1919 (substituted for notification in the *London Gazette*, May 6th, 1919).

ROYAL AIR FORCE MEDICAL SERVICE.

Flying Officer R. Boog-Watson to be Flight Lieutenant.

Wing Commander C. E. C. Stanford, D.S.O., to be Group Captain.

Squadron Leaders to be Wing Commanders: W. Tyrrell, D.S.O., M.C., B. A. Playne, D.S.O., H. A. Treadgold, D. Rankeu.

Flight Lieutenants to be Squadron Leaders: E. P. Punch, J. H. Porter, M.C., R. W. Ryan, H. S. C. Starkey, O.B.E.

Flight Lieutenants to be Honorary Squadron Leaders: H. B. Smith, E. Brown, H. B. B. Greene.

INDIAN MEDICAL SERVICE.

Lieut.-Col. B. H. Deare, C.I.E., appointed as Surgeon-General with the Government of Bengal from date on which he assumed charge of duties.

Majors to be Lieut.-Colonels (March 1st): J. H. Murray, C.I.E., F. P. C. Mackie, O.B.E., F. P. Connor, D.S.O. (Brevet Lieut.-Col.), S. R.

Christophers, C.I.E., O.B.E., H. E. Smith, H. R. Dutton, H. M. Brown, H. B. Stiles Webb, W. W. Jeudwine, C.M.G., T. C. McCombie Young, W. J. Collinson, C. L. Dunn, H. M. H. Melhuish, D.S.O. (Brevet Lieut.-Col.), R. D. Saigol, C. E. Buttee, O.B.E., J. L. Lunham (Brevet Lieut.-Col.), F. C. Rogers.

The following officers have retired from the service with effect from dates specified: Colonel J. Garvie, K.H.S. (March 25th); Lieut.-Colonels: A. E. Berry (December 1st, 1921), W. E. McKechnie (January 23rd), E. J. O'Meara, O.B.E. (January 25th), T. S. Ross (February 1st), T. S. B. Williams (March 7th), A. E. J. Lister (March 17th), M. H. Thornely (February 8th), E. V. Hugo, C.M.G. (April 8th), J. A. Hamilton, C.M.G. (June 1st), Major J. W. H. Babington (March 18th).

Capt. L. A. P. Anderson appointed temporarily to the Bacteriological Department (March 20th).

Lieut.-Col. H. Ainsworth granted combined leave for one year from April 15th, 1920.

Col. Bhola Nath, C.I.E., to be Honorary Physician to the King, vice Major P. Carr White, C.B.E. (ret.) (February 14th).

MILITIA.

ROYAL ARMY MEDICAL CORPS.

Captains R. Cunningham and G. G. Cooper relinquish their commissions and retain the rank of Captain.

VACANCIES.

BARNSLEY AND WAKEFIELD JOINT SANATORIUM.—Assistant Tuberculosis Officer for the Borough and Resident Medical Officer at the Mount Vernon Sanatorium. Salary, £400 per annum.

BIRMINGHAM UNIVERSITY.—Professor of Pathology. Stipend, £1,000 a year.

DARLINGTON GENERAL HOSPITAL.—Senior House-Surgeon (male). Salary, £250 per annum.

DEVON MENTAL HOSPITAL, Exminster.—Locumtenent (male). Salary, 7 guineas a week.

FREEMASONS' HOSPITAL AND NURSING HOME, 287, Fulham Road, S.W.—Resident Medical Officer. Salary, £250 per annum.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon (male). Salary, £150 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Two House-Physicians. Honorarium, £50 for six months.

MACCLESFIELD GENERAL INFIRMARY.—Senior House-Surgeon (male). Salary, £200 per annum.

MANCHESTER: ANCOATS HOSPITAL.—Honorary Radiologist.

MANCHESTER: COUNTY ASYLUM, Prestwich.—Locumtenent. Salary, £4 8s. a week.

MANCHESTER ROYAL INFIRMARY.—(1) Resident Medical Officer. (2) Assistant Medical Officer. Salary, £200 and £100 per annum respectively.

MINISTRY OF PENSIONS.—Two Medical Officers (surgeons), at the Highbury Group of Hospitals, Moseley, Birmingham. Salary, £350 per annum each.

NEWRY GENERAL HOSPITAL, co. Down.—Visiting Physician and Surgeon. Salary, £200 per annum.

NORFOLK EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary, £500 per annum, rising to £600.

NOTTINGHAM: GENERAL HOSPITAL.—House-Surgeon. Salary at the rate of £200 per annum.

PLYMOUTH GUARDIANS.—Resident Medical Officer for the Workhouse and Infirmary. Salary, £200 per annum, rising to £350.

PLYMOUTH: SOUTH DEVON AND EAST CORNWALL HOSPITAL.—Honorary Out-patient Anaesthetist.

PRESTON AND COUNTY OF LANCASTER ROYAL INFIRMARY.—Resident Surgical Officer. Salary, £225.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—(1) House-Physician. Salary, £50 per annum. (2) Clinical Assistants in the Throat, Nose and Ear Department.

ROYAL NORTHERN HOSPITAL, Holloway Road, N.—Resident Medical Officer. Salary, £250 per annum.

SHEFFIELD ROYAL INFIRMARY.—Ophthalmic House-Surgeon. Salary, £150 per annum.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—(1) House-Physician. (2) Junior House-Surgeon. Salary, £150 per annum each.

SOUTH SHIELDS: INGHAM INFIRMARY.—Senior and Junior House-Surgeons (male). Salaries, £200 and £150 per annum respectively.

WEST BROMWICH AND DISTRICT HOSPITAL.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

WEST LONDON HOSPITAL, Hammersmith Road, W.—Honorary Medical Radiographer.

WESTMINSTER HOSPITAL, S.W.—(1) Assistant House-Physician. (2) Assistant House-Surgeon. Honorarium at the rate of £52 per annum each.

WIGAN: ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House-Surgeon. Salary, £175 per annum.

CERTIFYING FACTORY SURGEONS.—The following appointments are vacant: Mountsorrel (Leicester) and Oxted (Surrey).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

GRAY, Arthur, F.R.C.S., M.R.C.P., Assistant Physician for Diseases of Women to the London Homoeopathic Hospital.

PIMBLETT, W. H., M.B., C.M., Medical Officer, H.M. Prison, Preston.

SCOTT, Miss Hilda D., M.B., Ch.B. Edin., Junior Resident Medical Officer to Children's Hospital, Sunderland.

ALL SAINTS' HOSPITAL, Vauxhall Bridge Road.—Surgical Registrars: S. H. Loughnane, F.R.C.S., H. E. Griffiths, M.S., F.R.C.S. Radiologist: J. P. Buschen, M.R.C.S., L.R.C.P., D.R.M.E. Camb. House-Surgeon: G. E. Bury, M.B., B.S.

CHARING ROYAL HOSPITAL FOR MENTAL DISEASES.—Resident Medical Superintendent: John A. C. Ray, M.B., vice John Sutcliffe, M.B., C.M., M.D., D.P.H. Senior Assistant Medical Officer: William G. Thomson, M.B., D.P.H.

CERTIFYING FACTORY SURGEONS: G. L. Barker, M.R.C.S., L.R.C.P., for the Cerrig-y-Druidion District, co. Denbigh. R. L. Barker, B.Ch. Cantab., for the Knutsford District, co. Chester. C. B. Davies, M.C., L.M.S.S.A., for the Gnosall District, co. Stafford. J. Hale, M.R.C.S., L.R.C.P., for the Cobham District, co. Surrey. W. B. Moore, M.B., Ch.B., for the Kilbirnie District, co. Ayr.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

JULY.

9 Sun. Mid-Cheshire Division: Altrincham General Hospital, 4 p.m.
10 Mon. London: Standing Ethical Subcommittee, 3.15 p.m.
11 Tues. London: Science Committee, 2.30 p.m.
North Wales Branch, Annual Meeting, Anglesey Arms Hotel, Menai Bridge, 2 p.m.: B.M.A. Lecture by Dr. John Hay (Liverpool).
12 Wed. Dorset and West Hants Branch, Yeatman Hospital, Sherborne. Luncheon, 1.30 p.m. Visit to the Abbey, 2.30 p.m. Meeting, 3.30 p.m.
13 Thurs. Oxford and Reading Branch, Annual Meeting and Dinner, Reading.
14 Fri. East York and North Lincoln Branch, Annual Meeting, Withernsea.
Essex Branch, Annual Meeting, Palace Hotel, Southend-on-Sea, 2.30 p.m.; Lunch, 1.30 p.m.
North Carnarvon and Anglesey Division, Bangor.
19 Wed. Harrogate Division: Fountains Abbey, Ripon, 4 to 6 p.m.
21 Fri. Glasgow: Annual Representative Meeting, Bute Hall, University, 10 a.m.
Glasgow: Extraordinary General Meeting, Bute Hall, 4.45 p.m.
22 Sat. Glasgow: Annual Representative Meeting, Bute Hall, University, 9.30 a.m.
24 Mon. Glasgow: Council Meeting, Randolph Hall, University, 9 a.m.
Glasgow: Annual Representative Meeting, Bute Hall, University, 9.30 a.m.
25 Tues. Glasgow: Annual Representative Meeting, Bute Hall, University, 9.30 a.m.
Glasgow: Annual General Meeting, Bute Hall, 2 p.m.
Glasgow: Adjourned Annual General Meeting and President's Address, Bute Hall, 8 p.m.
26 Wed. Glasgow: Council Meeting, Randolph Hall, University, 9 a.m.
Glasgow: Conference of Honorary Secretaries, Debating Hall, University Union, 2 p.m.

The programme of the work of the Sections of the Annual Meeting at Glasgow is printed at p. 9 et seq.

DIARY OF SOCIETIES AND LECTURES.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester Square, W.C.2.—Thurs., 7 p.m., Annual Oration by Dr. T. Caspar Gilchrist (Baltimore); 9 p.m., Reception by the President.

SOCIETY FOR THE STUDY OF INEBRIETY, 11, Chandos Street, W.1.—Tues., 4 p.m., Mr. C. J. Bond, C.M.G., F.R.C.S.: The Influence of Hospitals on Temperance Reform.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Wed., 5 p.m., Professor A. H. Todd: Surgery in Rheumatoid Arthritis.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Dr. Paterson: Summer Diarrhoea.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.15.—Daily, 2.30 p.m., In- and Out-patient Clinics, Operations, etc. Lectures: 4.30 p.m., Mon., Dr. J. B. Alexander: Clinical Significance of Pulmonary Symptoms—Thoracic Pain. Tues., Mr. C. H. Hayton: Intracranial Lesions of Otitic Origin. Wed., Mr. N. B. B. Fleming: Eye Changes in General Disease.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Balham Hill, Balham, S.W.—Fri., 4 p.m., Mr. Joly: Common Errors in Diagnosis in regard to the Urinary System.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Daily, 2 p.m., Operations, In-patients. 5 p.m., Lectures, Mon., Dr. Saunders: Summer Diarrhoea and its Treatment. Tues., Mr. Harman: Ophthalmia Neonatorum. Wed., Dr. Simson: Modern Developments in the Management of Labour. Thurs., Mr. Harman: Blepharitis. Fri., Mr. Maingot: Amputations of the Present Day.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

DEATH.

MOSS.—On 3rd inst., at Millbank Military Hospital, J. G. Owen Moss, M.D.Edin., Captain I.M.S. (ret.)

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 15TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

The Medical Service in the West Indies 22

CURRENT NOTES:
- Membership of the Association 21
- The Annual Exhibition 21
- The Lister Ward at Glasgow 21
- Ebbw Vale 21
- Seamen's National Insurance Society 21
- The Association's Minimum for Assistant School Medical Officers 21
- Willesden Medical Advisory Committee 22

HOSPITAL MANAGEMENT 22

MEETINGS OF BRANCHES AND DIVISIONS 25

INSURANCE: London Panel Committee 26

PAGE

Notice of Extraordinary General Meetings 25

ASSOCIATION NOTICES:
- Table of Dates 24
- Formation of Guernsey and Alderney, and Jersey, Divisions 24
- Branch and Division Meetings to be held 24

NAVAL AND MILITARY APPOINTMENTS 27

VACANCIES 27

ASSOCIATION INTELLIGENCE AND DIARY 23

APPOINTMENTS 23

DIARY OF SOCIETIES AND LECTURES 23

BIRTHS, MARRIAGES, AND DEATHS 23

British Medical Association.

CURRENT NOTES.

Membership of the Association.

In its annual report, published in the Supplement of May 6th, the Council reported that the membership of the British Medical Association on December 31st, 1921, was 23,621. The membership figure is now 23,795.

The Annual Exhibition.

Arrangements are now complete for the Exhibition of Surgical Instruments, Electro-Medical Apparatus, Drugs, Foods, Books, and Medical Accessories, which is to be held in the Kelvin Hall, Glasgow, from Tuesday, July 25th, to Friday, July 28th, inclusive. Here members will find many things to interest them. Much ingenuity has been spent in bringing up to date the appliances, etc., which will be exhibited; many of the ideas are new, and this will be the first occasion on which they are submitted to the notice of the medical profession. It may also be of interest to members to know that the Medical Insurance Agency proposes to be represented in the exhibition, and advice on all kinds of insurance will be available. A great deal of time and labour has already been devoted to collecting together so large a display of appliances and therapeutical preparations of every kind, and it is hoped that all members attending the Glasgow Meeting will take this opportunity of informing themselves of the new appliances and preparations which are now at their disposal.

The Lister Ward at Glasgow.

An interesting addition has been made to one item of the programme of the Annual Meeting at Glasgow, printed in last week's Supplement. On Wednesday afternoon, July 26th, during the entertainment of visitors at the Royal Infirmary, tea will be served at 4 o'clock in the Lister ward. An indication of the site of this memorial of Lister's work was given in the view of the new Glasgow Royal Infirmary quadrangle reproduced in the Journal of June 3rd (p. 884). The old Lister ward is shown in the bottom left-hand corner of the picture.

Ebbw Vale.

Since the struggle between the Workmen's Committee and the local doctors began at Ebbw Vale on May 1st fourteen doctors have been imported into the district, of whom one was a woman. Five have left, including the medical woman. According to a newspaper report of the Ebbw Vale Education Committee, the Workmen's Committee (which formerly encouraged the Education Authority to send school children to the hospital of the society) is now anxious to get the Education Authority either to pay them for this work or to take the work away and appoint a specialist medical officer of their own. In the discussion one or two members of the authority mentioned the fact that they thought they were paying for these services by their subscriptions to the society, which has always encouraged its members to believe that it provided for them a very full medical service—much better than that provided by the average colliery doctor. If the Workmen's Committee succeeds in getting rid of its responsibilities to its subscribers for the treatment of their children's eyes the subscribers will have a good case for a decreased contribution.

Seamen's National Insurance Society.

The British Medical Association has just received from the Seamen's National Insurance Society a letter stating that a reduction of 6.6 per cent. on the current rates of the fees paid by it to medical practitioners became operative on July 1st, 1922. The Association was aware that the society was thinking of making a reduction, and had advised it that any reduction would be keenly resented by the profession. It was then pointed out that no increase had been made in their fees until January, 1919; that then only a 20 per cent. increase was made; and that it was not until April 1st, 1920, that the increase was brought up to 50 per cent. On these grounds the Association thought it was premature to reduce a fee which at no time was considered adequate. This was dealt with in para. 164 of the Annual Report of Council. The society has been informed by two of its medical officers that they refuse to continue to treat its members. This, in the circumstances, is not surprising. In view of the report of Council on this matter members should note that the reduction has not been agreed to centrally, and they should hold their hand before making any decision as to whether they will accept the reduced fees or not until the matter has received the full consideration of the Medico-Political Committee.

The Association's Minimum for Assistant School Medical Officers.

The *Birmingham Post* reports that at a meeting of the Birmingham Education Committee on June 30th, Mrs. George Cadbury, in bringing forward the report of the Hygiene Committee, pointed out that the Committee was in a difficulty by reason of the fact that the minimum salary of the school medical officers, as approved by the Salaries, Wages, and Labour Committee, fell below the standard set up by the British Medical Association. Some applications had been received from persons not sufficiently equipped for the purpose of the Committee, but it was unable to obtain suitable medical officers.

Willesden Medical Advisory Committee.

Six members of the Willesden Division of the British Medical Association, and six representatives of the Urban District Council, recently met in conference and recommended that, in the interest of the public health of Willesden, the local Advisory Medical Committee should be recognized by the Council. The Conference agreed that the duties of the Advisory Committee should be as follows:

(*a*) To advise the Council and the Education Committee, through the Health Committee and Children's Care Committee, upon any matter of public health which the Council or Education Committee may refer to the Advisory Committee.

(*b*) To bring to the notice of the Council and the Education Committee any matter affecting the public health of the district which may seem to require attention.

At its last meeting the Willesden Urban District Council accepted this recommendation, and resolved accordingly that the Medical Advisory Committee be recognized, and that its functions should be those agreed upon at the conference. The Education Committee also has accepted the recommendation. The constitution of this committee was mentioned in a Current Note on May 6th (p. 162).

Lending Library.

The Librarian will be glad to assist members of the Association in the selection of works to be sent them by post, in accordance with the arrangements for borrowing books that are notified each week on the last page of the SUPPLEMENT.

THE MEDICAL SERVICE IN THE WEST INDIES.

THE conditions of the Medical Service in the West Indies, and more particularly in the Leeward and Windward Islands, have caused the Dominions Committee of the British Medical Association increasing anxiety over a considerable period. These medical services are aptly called the Cinderellas of the Overseas Services, for they have had but small share in the general movement towards reconstruction and reform by which the African and Indian Medical Services have so largely benefited. Formal memorials, temperate in expression and urging only the most moderate and essential measures of amelioration, have lain unanswered at the Colonial Office for well over a year; individual cases of hardship taken up by the Association centrally, whilst they have been treated with sympathy, have been found to depend upon conditions of so general a nature that redress was impossible pending the introduction of radical reform. The main grievances which the Association has had to combat have been three: (1) total inadequacy of pay, aggravated by the enforcement of official tariffs for private fees; (2) the absence of any recognized system of promotion and facilities for leave or study; and (3) the imposition of new and onerous duties without additional remuneration. Effective action has invariably been hindered by the delay incident on the reference of special points to the Colonial Governments and by the fact that the duties and emoluments of any given post are subject to arbitrary variation by the governor, whilst the Colonial Office itself, in advertising vacancies, is unable to supply candidates with adequate information as to the conditions of service.

In these circumstances the Dominions Committee welcomed the announcement in November last of an official visit to the West Indies, confident that first-hand investigation of local conditions by one in such a responsible position as the Parliamentary Under-Secretary of State for the Colonies would result in the vindication of the claims urged during the last two years. That confidence has, in the main, been justified by Mr. Wood's recommendations, of which a general account is given in the JOURNAL this week. The report shows an appreciation of local conditions at once shrewd and sympathetic, and whilst the recommendations for immediate action fall short in several respects of the fair claims of the officers concerned, the ultimate goal—namely, the unification of the West Indian Medical Service—is throughout kept well in sight. Moreover, the recommendations put forward are clearly in Mr. Wood's view not only urgent but immediately practicable. And this, having regard to the acute economic difficulties of the moment, is in itself no small advantage.

The main recommendations may be very briefly summarized as follows:

The initial salary for all medical appointments, which at present range from £315 a year, should be £400 a year, and this should rise by annual increments to £450, allowances for special duties being absorbed in substantive salaries so far as this limit permits. This scale should be supplemented when possible by an increase of £200 in the upper limit. A general minimum of £60 a year should be established for transport allowance on all salaries, irrespective of the manner in which travelling is done. After the completion of three years' service in the Leeward and Windward Islands the Governors of these Colonies should be prepared to place applications for transfer before the Governors of Trinidad and British Guiana. At least two supernumerary medical officers should be appointed in the Leeward Islands and two in the Windward Islands in order to enable leave to be granted without difficulty. Extra allowance should be granted in any case in which the work or responsibilities of a medical officer are materially increased through his being required to undertake duties not specified in the terms of his appointment or not customary locally at the time of his appointment. The Colonial Government should be asked to consider whether the work of the campaign against yaws in Grenada should not receive special recognition. Definite information as to the value of private practice in districts where such is available should be collected whether or not the districts are vacant, and should be annually revised by the local Government so as to be available for reference in connexion with vacancies filled from the United Kingdom. The local Governments should, so far as possible, make good the shortage of houses, charging a reasonable rent to the officers for the accommodation thus provided.

These recommendations, if adopted, will go far to remove the most pressing grievances of the service in the Windward and Leeward Islands, and accordingly the Committee has expressed its gratitude to Mr. Wood for the trouble he has taken in investigating the matters contained in his report, and its general satisfaction with the recommendations he has put forward to the Secretary of State. Certain points, however, are not satisfactory. In the first place it is to be regretted that the special difficulties of other services besides those in the Leeward and Windward Islands have not received closer consideration. For instance, Mr. Wood was unable to see the deputation from the medical officers of Jamaica which desired to submit certain very definite grievances for his consideration. Moreover, whilst the £400 initial salary is the amount actually asked for by the officers concerned, the maximum of £600 has long been regarded as essential and the indefinite postponing of its introduction is unfortunate. Then again, the general maximum transport allowance of £60 a year represents no advance in many cases where the existing allowance is demonstrably inadequate. These points will be the subject of strong representations to the Colonial Office.

It must not be forgotten in considering the advance actually achieved that Mr. Wood's recommendations are as yet recommendations only. Their effect will depend in part upon the reception accorded to them by the Colonial Office and in part on the local Governments. It is for the West Indian Branches to continue to exert such pressure as they can locally, whilst the Dominions Committee brings all possible pressure to bear on the Colonial Office. In this connexion the formation of a sound and well-informed parliamentary opinion is of no small importance, and the thanks of the Association are due to Dr. F. E. Fremantle, M.P., for the able manner in which he directed attention, in the discussion on the Colonial Office vote, to the responsibility of the Colonial Office in connexion with the public health problems of the colonies, and to the claims of the Overseas Medical Services.

HOSPITAL MANAGEMENT.

THE Voluntary Hospitals Commission, having been asked by several local hospital committees for some general suggestions as to the tests of efficiency in hospital management, and the points to which attention might most profitably be directed, has issued a pamphlet, *Notes on Hospital Management*,[1] for the guidance of such committees.

The Commission recognizes the impossibility of laying down hard and fast rules applicable to all cases, since the term "hospital" covers a variety of institutions, ranging from the medical school hospital with 1,000 beds to a cottage hospital with 10 beds. The object of these Notes is therefore to summarize the generally accepted principles followed by the most experienced and successful hospital administrators. Any rules laid down must in the nature of things need some modification to meet local conditions. In the compilation of the Notes the Commission has had the assistance of Colonel

[1] V. H. Cmn. 6. H.M. Stationery Office. Price 3d. net

R. J. S. Simpson; Mr. J. G. T. Buckle, Secretary, University College Hospital; Mr. E. W. Morris, House Governor, London Hospital; and Mr. R. Orde, House Governor, Royal Victoria Infirmary, Newcastle-upon-Tyne.

The first paragraph opens with the statement that as regards lay administrators there is nothing in the management of a hospital which sets it apart from any form of commercial undertaking. The committee should therefore, if possible, include a member with the same special knowledge of the details of catering and management (as distinct from medical treatment and nursing) as the managing director of a company has of his special work; in any case in a large hospital one of the staff should possess some special qualifications of this kind. Supervision of all details of expenditure should be carried out by this officer.

The general relations between the Committee of Management and the medical staff are regarded as falling outside the scope of these Notes; but mention is made of the difficulties which occasionally arise between a committee and its medical members upon questions vitally affecting expenditure.

"Apart from the control of the routine consumption, these usually concern new apparatus or even the development of a department for new methods of diagnosis or of treatment. New methods of diagnosis are, on the whole, of less financial importance. Every hospital must have access to some laboratory or *x*-ray clinic. Whether or not it has a laboratory of its own and an *x*-ray outfit depends on its number and class of patients and on the other facilities which may be available. Where different hospitals are conveniently situated in relation to one another the work and expense may sometimes be distributed between them, and where practicable this course should be followed. Experience has shown that one central hospital could very well do all that was needed in this way for a considerable number of smaller hospitals. There are many laboratories available which undertake the necessary work on payment. The decision rests largely on relative costs, but it should be borne in mind that a certain proportion of cases cannot be sent out of the hospital for diagnosis. The question of new methods of treatment is on a different footing. Experience shows that new methods, though they may attain for a time a high degree of popularity, have often only a short life. Further, they may involve increase in staff and expensive equipment. Hence where restriction of expenditure is essential, time should be allowed for the new method to prove its value. The largest hospitals, especially those with medical schools, must incur expenditure on experimental work; but the smaller hospitals would be well advised to defer adopting new and costly equipment until its value has been fully established. Every effort should be made to secure the co-operation of the medical staff in the control of expenditure, and the risk of friction between them and the Committee of Management will be largely overcome if they are represented on the House and Finance Committee and other sub-committees and so brought into direct touch with the revenue and expenditure of the hospital."

In regard to the keeping down of expenditure generally, a system of rationing departments is held to be valuable, if only as a moral factor. While the extent to which it pays to elaborate the machinery of financial control must depend upon the size of the hospital, even the smallest cottage hospitals are advised to prepare an annual budget and to compare it every quarter with the actual expenditure. The Commission hopes to produce shortly a system of uniform accounts suitable for each class of hospital. Nevertheless, a low average cost per bed in any one hospital may conceal the fact that extravagance is going on in some ward or department: "Cheapness is not necessarily a test of efficient management, and a low cost per bed may be obtained at the expense of the patients." Discussing administration in general, it is insisted that all expenditure should come under the control of an administrator specially qualified for that purpose and (except in the very small institutions) distinct from the technical and scientific staff of the hospital.

The remaining eight pages of the pamphlet are devoted to a detailed consideration of methods of controlling expenditure in the several departments of a hospital's work. The hints given under the various items of expenditure should prove of value even to experienced administrators. Most of these are outside our immediate province, but we may note the following paragraph on drugs in the section headed "Surgery and Dispensary":

"Stock mixtures should be used as far as possible; they save time, and reduce the stock of drugs to be maintained. The formulae by which they are compounded may often be revised with advantage. Many of these formulae were written a good many years ago; advances in pharmacology and improvements in trade preparations have now made it possible to obtain an equivalent combination at less than the cost of the original. A trained pharmacologist (a medical man) should be consulted on this point, who might also be asked to draw up a list of expensive drugs which should not be used except on the special order of a member of the medical staff."

British Medical Association.

NOTICE OF EXTRAORDINARY GENERAL MEETINGS.

NOTICE IS HEREBY GIVEN by the Council that an Extraordinary General Meeting of the above-named Association will be held in the Bute Hall of the University of Glasgow, in the City of Glasgow, on Friday, the 21st day of July, 1922, at 4.45 o'clock in the afternoon, when the subjoined Resolutions for altering the Articles of Association will be proposed as Extraordinary Resolutions.

Article 1.

1. That in Article 1 there be inserted immediately after the paragraph defining "Division" and "Branch" a new paragraph to read as follows:

> "'Branch Council' or 'Council of a Branch' when used in relation to a Corporate Branch (as hereinafter defined) means the Governing Body of that Branch by whatever name the same may be called."

Article 3.

2. That in Article 3 there be substituted for the words, from "of the qualifications" to "United Kingdom" (both inclusive) the words:

> "qualification entitling him to be so registered and any Medical Practitioner residing within the area of any Branch of the Association not in the United Kingdom."

Article 7.

3. That in Article 7 the word "Council" with which the Article concludes be deleted.

Article 11.

4. That the heading "Formation" immediately preceding Article 11 be deleted.

5. That in the said Article the figure "(1)" be inserted immediately after the Number 11.

6. That there be added to the said Article two new sub-paragraphs to read as follows:

> "(2) Each Division shall have a local area to be determined as hereinafter provided and a Branch shall be a Division or a group of Divisions."
>
> "(3) Provided that no body of Members shall be finally recognized as a Division or Branch until they shall have adopted Rules of Organization and the current Rules Governing Procedure in Ethical Matters and such Rules shall have been approved by the Council."

7. That there be inserted immediately after Article 11 new headings and a new Article (herein referred to as Article 11*a*) to read as follows:

> "BRANCHES NOT IN THE UNITED KINGDOM.
>
> "*Incorporation.*
>
> "11*a*.—(1) Subject as hereinafter provided, it shall be competent for the Members of a Branch not in the United Kingdom to procure themselves to be incorporated (in accordance with the law in force in the area of the Branch) under a name indicating that the Body so incorporated is a Branch of the Association. A Branch so incorporated is hereinafter referred to as a Corporate Branch.
>
> "(2) The objects, powers, and obligations of a Corporate Branch, as defined by its Memorandum of Association, shall coincide with the objects, powers, and obligations of the Association as similarly defined, with such variations only as the Association shall approve.
>
> "(3) The membership of a Corporate Branch (save as otherwise provided by paragraph (2) of Article 4 hereof) shall be strictly confined by its Articles of Association to Members of the Association, and it shall be thereby provided that any Member of the Corporate Branch shall, upon ceasing to be a Member of the Association, *ipso facto* and immediately cease to be a Member of such Branch.
>
> "(4) The Corporate Branch shall not be deemed to be an agent for, and shall have no power to impose any responsibility, or liability on, or to pledge the credit of the Association in respect of any acts, expenses, matters or things done or incurred by the Corporate Branch, and the Articles of Association of such Branch shall contain a provision to that effect in such form as may be approved by the Association.
>
> "(5) The drafts of the Memorandum and Articles of Association of the Corporate Branch shall, before the incorporation thereof, be submitted to the Association for approval, and such incorporation shall not be effected except under a Memorandum and Articles of Association which have been so approved.

"(6) The Corporate Branch shall immediately upon the incorporation thereof enter into an Agreement with the Association to the effect mentioned in the By-laws.

"(7) The Corporate Branch shall, before effecting any alteration in its Memorandum or Articles of Association submit the same to the Association for approval, and shall not effect the same unless such approval shall have been obtained, and shall also transmit to the Association at the Head Office once in every year true and complete copies of its Memorandum and Articles of Association for the time being in force.

"(8) In this Article the expression 'Memorandum of Association' shall include any Charter or other instrument of foundation of the Corporate Branch, and the expression 'Articles of Association' shall include any similar regulations for the government of such Branch."

Article 12.

8. That the following heading be inserted immediately before Article 12:

"Formation, alteration, dissolution, etc., of Branches and Divisions."

9. That the whole of paragraph (1) of the said Article and the numeral "(2)" in line 4 thereof and the word "calendar" in the last line but three thereof be deleted.

10. That there be added at the end of the said Article, after the word "proposed," the following words:

"and in the case of a Corporate Branch no alteration in the boundaries or area thereof or of any Division thereof shall be made without the consent of that Branch."

Article 13.

11. That the heading "Boundaries" immediately preceding Article 13 be deleted.

12. That there be inserted immediately after Article 13 two new Articles (herein referred to as Articles 13*a* and 13*b* respectively) and a heading to read as follows:

"13*a*. It shall be competent for the Association by resolution of the Council and by giving not less than six months' notice in writing to the Branch concerned, to dissolve any unincorporate Branch and to exclude any Corporate Branch from continuing to be a Branch of the Association."

"*Federal Councils.*

"13*b*. Federal Councils representative of the Branches in any area outside the United Kingdom defined and approved by the Council may be formed in the manner and for the purposes specified in the By-laws."

Or in the alternative to read as follows:

"13*a*. It shall be competent for the Association by resolution of the Representative Body on the report of the Council and by giving not less than six months' notice in writing to the Branch concerned to dissolve any unincorporate Branch and to exclude any Corporate Branch from continuing to be a Branch of the Association."

"*Federal Councils.*

"13*b*. Federal Councils representative of the Branches in any area outside the United Kingdom defined and approved by the Representative Body on the report of the Council may be formed in the manner and for the purposes specified in the By-laws."

Article 15.

13. That there be added at the end of Article 15, after the word "expedient," the following words:

"but so that in the case of Members of a Corporate Branch such obligations shall not conflict with any obligations imposed by such Branch."

Article 28.

14. That in Article 28 there be inserted immediately after the words "composed of" at the end of the fourth line thereof the following words:

"the Chairman and the immediate Past-Chairman of the Representative Body *ex officio* and of"

Article 31.

15. That in line 1 of paragraph (a) and in lines two, seven, and eight of paragraph (f) of Article 31 there be substituted for the words "three months" the words "one month."

Article 32.

16. That Article 32 be altered so as to read as follows:

"The Council shall be composed of the President of the Association, the President-Elect, the Past-President, the Chairman, the immediate Past-Chairman, and the Deputy Chairman of the Representative Body, the Chairman and the immediate Past-Chairman of Council, the Treasurer and (during the year immediately following his period of office as Treasurer) the Past-Treasurer *ex officio*, and of the Members of the Association elected by the bodies, and in the manner prescribed in that behalf by the By-laws."

Article 36.

17. That in Article 36 there be substituted for the words "of Representative Meetings" the words "and a Deputy Chairman of the Representative Body."

18. That there be inserted in the fifth line of the said Article after the word "shall" the words "be elected in such manner and shall."

[NOTE.—*The left marginal numbers affixed to the resolutions are for purposes of reference merely.*]

Should the above Resolutions or any of them be passed by the requisite majority the same will be submitted for confirmation as Special Resolutions or a Special Resolution to a further Extraordinary General Meeting, and such Meeting will be held at the Head Office of the Association, No. 429, Strand, London, on Tuesday the 8th day of August 1922 at 2.30 o'clock in the afternoon for the purpose of considering and if thought fit confirming as Special Resolutions or a Special Resolution such of the above Resolutions set forth as shall have been so passed.

Dated this third day of July 1922.

By Order of the Council,

ALFRED COX,
Medical Secretary.

429, Strand, London, W.C.2.

Association Notices.

TABLE OF DATES.

July 21, Fri. Annual Representative Meeting, Glasgow, 10 a.m.

Nominations for election of 12 Members of Council by grouped Representatives to be received (at A.R.M., Glasgow) by 11 a.m. on this date.

An Extraordinary General Meeting will be held in Bute Hall, The University, Glasgow, *re* alteration of Articles of Association, 4.45 p.m.

July 25, Tues. The Annual General Meeting will be held in the Bute Hall, The University, Glasgow, at 2 p.m. Business: (1) Minutes of last meeting; (2) appointment of auditors; (3) report of election of President for year 1923–24.

ALFRED COX, *Medical Secretary.*

FORMATION OF GUERNSEY AND ALDERNEY, AND JERSEY, DIVISIONS.

NOTICE is hereby given by the Council to all concerned that, as a result of a proposal made by the members of the Association resident in Jersey, the Council has decided that as from the date of publication of this notice there shall be 2 (instead of 1) Divisions for the area of the Channel Islands, as follows:

1. Guernsey and Alderney Division,
2. Jersey Division,

the areas of the new Divisions to be coterminous with the areas of the Islands of Guernsey and Alderney, and Jersey, respectively.

BRANCH AND DIVISION MEETINGS TO BE HELD.

ESSEX BRANCH.—The annual meeting of the Essex Branch will be held at 2.30 p.m. at the Palace Hotel, Southend-on-Sea, on July 14th; lunch at 1.30 p.m. Dr. Charles Forsyth, President of the Branch, will read a paper on "Some remarks on tuberculosis and milk," and Mr. P. Jenner Verrall, F.R.C.S., will give an address on "Minor traumatic disabilities of the upper limb." By the kind invitation of the President members will be entertained to tea after the meeting. The Branch Council will meet before the lunch.

SURREY BRANCH: GUILDFORD DIVISION.—The annual meeting of the Guildford Division will be held at the Royal Surrey County Hospital, on Thursday, July 20th, at 4.30 p.m. Agenda: Election of officers; any other business. The Executive Committee will meet at 4 p.m., prior to the above meeting.

SUSSEX BRANCH: CHICHESTER AND WORTHING DIVISION.—A meeting of the Chichester and Worthing Division will be held at the Worthing Hospital on Tuesday, July 18th, at 4 p.m., at which clinical cases will be shown. A second meeting will be held at Warne's Hotel on the same day at 6.30 p.m., at which the Representative will receive final instructions for the Glasgow conference of Representatives. This will be followed by a dinner at 7.30, the cost of which, exclusive of wine, is 7s. 6d.

YORKSHIRE BRANCH: HARROGATE DIVISION.—The Chairman, Dr. Greenwood, is inviting medical practitioners, each with a lady, to meet at Fountains Abbey, Ripon, between 4 and 6 p.m. on Wednesday, July 19th. Tea at half-past 4.

Meetings of Branches and Divisions.

BATH AND BRISTOL BRANCH: BATH DIVISION.

THE annual meeting of the Bath Division was held on June 22nd, when Dr. A. E. NORBURN was in the chair.

The following officers were elected for 1922–23:

Chairman: Dr. N. Lavers. *Vice-Chairman:* Dr. A. E. Norburn. *Honorary Secretary and Treasurer:* Mr. W. G. Mumford. *Representative in Representative Body:* Dr. N. Lavers. *Deputy Representative:* Dr. R. G. Gordon.

The reports of the Executive Committee and of the Central Council were discussed and approved.

Prior to the meeting the Chairman entertained the members and their wives at tea.

BRITISH GUIANA BRANCH.

A MEETING of the British Guiana Branch was held on March 22nd, 1922, with Dr. A. T. OZZARD, the President, in the chair. There were present thirteen members. Seven clinical cases were shown and discussed. Included among them was a case shown by Dr. DELGADO illustrating Steinach's rejuvenation experiment. This was done on an East Indian, aged 53, who was admitted for right inguinal hernia. He had been impotent for three years. Both testicles small and somewhat atrophied. At the operation for the hernia (done by Dr. Craigen) a double ligature was placed at the junction of the caput of epididymis and the lower pole of testicle, and section of comi vasculosi. The patient did not know of this part of the operation. Healing was by first intention. After two and a half months patient put on 10 lb. in weight, sexual desire and capacity were present; wrinkles disappearing from face. Blood pressure before operation was 150, systolic now 135. He was still under observation, and further experiments would be done as cases become available.

A meeting was held on April 26th, when fifteen members were present, and Dr. OZZARD delivered his Presidential address entitled "Our medical and health problems." He dealt with the subject under the following heads: (*a*) Malaria; (*b*) filariasis; (*c*) ankylostomiasis; (*d*) bowel diseases; (*e*) infantile mortality; (*f*) public health. A discussion followed in which Dr. W. J. WINCKLER remarked that Dr. Ozzard had not mentioned venereal disease, and this was of such importance that some steps should be taken to form a venereal clinic. Dr. DELGADO stated that of male medical admissions in the hospital over 70 per cent. admitted for other diseases were suffering from venereal, chiefly gonorrhoea; 10 per cent. of active cases had been found in the native police force at a recent inspection. It was unanimously decided that a letter signed by all medical men should be forwarded to the Government urging the starting of a clinic and the appointment of a medical officer for venereal diseases. A discussion also took place on the advisability of admission into the Civil Service of candidates showing enlarged groin glands, probably of filarial origin, and whether operation was advisable.

ESSEX BRANCH: NORTH-EAST ESSEX DIVISION.

A MEETING of the North-East Essex Division was held on June 6th. The annual report was adopted and the following officers were elected for 1922–23:—*Chairman:* Dr. Ben Hall, Colchester. *Honorary Secretary:* Dr. J. P. Charnock, 42, West Stockwell Street, Colchester. *Representative in Representative Body:* Dr. Agnes Escourt-Oswald, Colchester.

It was resolved to hold a luncheon at the Red Lion Hotel early in October to discuss the work for the winter.

METROPOLITAN COUNTIES BRANCH.

THE seventieth annual general meeting of the Metropolitan Counties Branch was held on June 23rd, when Dr. H. B. BRACKENBURY, President of the Branch, was in the chair. The following officers were declared elected for 1922–23:

President: Mr. N. Bishop Harman. *President-elect:* Dr. Charles Sanders. *Past President:* Dr. H. B. Brackenbury. *Vice-Presidents:* Dr. J. H. Hildige, Dr. E. W. G. Masterman, Mr. Herbert Tauner, and Dr. C. F. T. Scott. *Honorary Treasurer:* Mr. Comyns Berkeley. *Honorary Secretaries:* Dr. F. W. Goodbody and Dr. W. E. A. Worley.

On the motion of the CHAIRMAN, seconded by Dr. C. SANDERS, the annual report of the Branch Council and financial statement for 1921–22 was adopted without discussion.

The report of the four Representatives of the Branch on the Central Council for the year 1921–22 was received.

The CHAIRMAN in introducing his successor, Mr. Bishop Harman, said they were all agreed that no one during recent years had done so much for the appropriate consideration of those matters which interested the profession than Mr. Bishop Harman, and there was no one more worthy to occupy the Presidential Chair into which he had the greatest pleasure to induct him.

Mr. BISHOP HARMAN then took the chair and delivered his Presidential Address entitled "London: the Triumph of Medicine," which was published in the SUPPLEMENT of July 1st, page 2.

Dr. SANDERS, in moving a hearty vote of thanks to Dr. Brackenbury for his services in the chair during the past year, said that Dr. Brackenbury had loyally served his colleagues, the Branch Council, and the Council, and soon hoped to serve his country. He drew attention to his work on behalf of the general practitioners, especially during the passing of the National Insurance Act, and said that there was scarcely any subject of difficulty which affected the Branch Council or the Association but what they could always turn to Dr. Brackenbury for profitable advice and help.

The vote was cordially agreed to and Dr. BRACKENBURY returned thanks.

Dr. C. O. HAWTHORNE moved a vote of thanks to Mr. Bishop Harman for his address, which was duly carried, and the meeting terminated.

METROPOLITAN COUNTIES BRANCH: CHELSEA DIVISION.

A MEETING of the Chelsea Division was held at the Fulham Town Hall on June 28th, when Dr. JACKSON was in the chair. Dr. A. S. WOODWARK, C.M.G., C.B.E., read a paper on organotherapy; this was followed by a discussion, in which a number of members joined.

NORFOLK BRANCH: EAST NORFOLK DIVISION.

A MEETING of the East Norfolk Division was held in the Medical Library, Norwich, on July 5th, when Dr. TURNER BELDING was in the chair.

On the motion of the SECRETARY, seconded by the CHAIRMAN, Dr. D. G. Thomson, who no longer resides within the area of the Division, was elected an Associate Member.

The following officers were elected:

Chairman: Dr. Belding. *Vice-Chairman:* Dr. Owens. *Secretary:* N. S. Carruthers.

Dr. THOMSON explained the report of Council on the revision of the constitution and machinery of the Association and the Annual Report of Council.

NORTHERN COUNTIES OF SCOTLAND BRANCH.

THE annual meeting of the Northern Counties of Scotland Branch was held at Strathpeffer Spa on June 24th, when Dr. KENNETH GILLIES (Inverness), President, was in the chair.

The following office-bearers were elected:

President: Dr. Kenneth Gillies (Inverness). *President-elect:* Dr. MacLachlan (Dornoch). *Vice-President:* Dr. John Taylor (Elgin). *Honorary Secretaries and Treasurers:* Dr. D. MacFadyen, Dr. J. Munro Meir.

It was resolved to hold the annual meeting of the Branch at Dornoch in January, 1923. Instructions were given to the Representatives in connexion with the Representative Meeting at Glasgow. Dr. DREVER, the Scottish Medical Secretary, attended the meeting and gave an address on several subjects which fall to be discussed at the Representative Meeting in July.

Through the courtesy of Sir George Hastings, Strathpeffer Spa Syndicate, members and their friends had an opportunity of inspecting the baths, and the gardens, tennis courts, and bowling greens were open for the use of members and their friends. The Committee of the Strathpeffer Golf Club extended the courtesy of the greens to the members, and a friendly match was engaged in. The members and the ladies accompanying them had luncheon at the Highland Hotel, Strathpeffer Spa, where a pleasant afternoon was spent. Motor drives to the Falls of Rogie were arranged, while others indulged in walks in the neighbourhood. All agreed that this meeting, held at the foot of Ben Wyvis amidst beautiful surroundings on an ideal midsummer day, had been thoroughly successful.

NORTH LANCASHIRE AND SOUTH WESTMORLAND BRANCH.

THE annual meeting of the North Lancashire and South Westmorland Branch was held at Calgarth Hospital, Windermere, on June 22nd.

The following officials were elected:

President: Dr. Chapman. *President-elect:* Dr. Johnston (Ravenglass). *Vice-Presidents:* Dr. Rutherford, Mr. A. T. Barling. *Honorary Treasurer:* Dr. W. D. Barrow. *Honorary Secretary:* Dr. Livingston.

President's Address on Birth Control.

Dr. CHAPMAN thanked the members for the honour of electing him president. He said the thanks of the Branch were due to Mr. Hough, and through him to Mr. Hedley, for allowing them to meet at the Calgarth Hospital. He gave a short presidential address on "Birth control." He began with the proposition that quality in a race is of more importance than quantity. There was no gain in increasing birth rate unless we diminished death rate. With control a decreased birth rate often was followed by an increased population. Rate of increase depended on the power of supplying a population, not producing it. A fall of death rate to that of a sufficiently fed population should reach the rate of 9 per 1,000 per annum. It was to be regretted that fall of birth rate should predominate in the educated. Early wedlock and reduction of families were advocated. By a small family was meant three to five—not the one-child family, which was to be deprecated. Early marriage and control tended to lessen immorality and prostitution, as self-control in youth had a breaking point. Birth control did not mean diminished morality. All civilization involved an ever-increasing forethought for others, even for others yet unborn. The application of conception control should be determined by the advice of the family doctor. Birth control had come to stay. Generally speaking birth control before the first child was undesirable. The answer to the question "Is birth control harmful?" might be obtained from the study of the number and distribution of the children of the professional classes. In conclusion, the President said: "I know no profession better qualified than our own to consider without preconceived bias these aspects, no profession less hidebound by dogma, and therefore more competent to deal with these difficulties."

Orthopaedic Methods.

Dr. SOMERVELL read a paper on and demonstrated "Modern orthopaedic methods." He said that the importance of the subject might be gathered from the fact that a recent textbook extended to 700 pages. These cases could not be treated by routine, but each case had to be studied separately. As soon as a case was admitted all points should be noted. Short cuts towards cure were to be deprecated. At one time many cases of tuberculous disease of joints ended in amputation. Then excision was practised, but now rest and non-operative methods were in use, and it was to H. Owen Thomas we owed this. Tuberculous cases did not heal quickly, but with patience even advanced cases did very well. Cure consisted of sound bony ankylosis in a useful position. Dr. Somervell mentioned three cases: (1) Child with tuberculous disease of knee-joint, now with a very useful limb after eighteen months. (2) Knee in which the disease was limited to synovial membrane. These cases were treated by extension on Thomas's splint—by means of plaster to which was attached lampwick, which was found to be better than any other form of material as it did not tear and did not stretch. (3) Tuberculous disease of hip in which the head of femur had almost completely melted away. Abduction to angle of 30° to 40° to begin with was essential. In treating rickets often the deformity was well treated but not the disease, so that other deformities arose.

The various forms of flat-foot were mentioned, and a rapid method of treating spasmodic flat-foot was described. In regard to infantile paralysis, all those who treated acute anterior poliomyelitis were responsible for the prevention of deformities. Ultimate loss of power of some muscles could not be prevented by any known method, but deformities could and should be prevented. Muscles should not be allowed to stretch, and unopposed muscles should not be permitted to produce deformity. The acute stage might be reckoned to occupy anything up to eight weeks, and the stage of recovery up to two years. Various ingenious splints, callipum, and supports were shown, and the method of applying plaster-of-Paris was demonstrated. A plaster cast of a rare condition of pure talipes equinus was shown.

Tea was provided by the President, who also entertained the ladies and put a motor boat at their disposal on Lake Windermere.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.

THE annual meeting of the Buckinghamshire Division was held at the Crown Hotel, Aylesbury, on June 30th. The following officers were elected for the year:

Chairman: Dr. H. Rose (Wendover). *Vice-Chairman*: Dr. Harwood-Yarred (High Wycombe). *Secretary and Treasurer*: Dr. T. Perrin.

The annual report presented by the committee was adopted. The Report of the Central Council was further considered and instructions were given to Dr. Rose, the representative, on certain matters.

SOUTH-WESTERN BRANCH: WEST CORNWALL DIVISION.

THE annual meeting of the West Cornwall Division was held at the Royal Cornwall Infirmary on June 20th, when the Chairman, Dr. H. C. SHARP, presided.

The following officers were elected:

Chairman: Dr. E. C. Edwards. *Vice-Chairman*: Dr. B. J. Mayne. *Honorary Secretary and Treasurer*: Dr. F. Rees. *Representative in Representative Body*: Dr. F. Rees. *Deputy Representative*: Dr. J. H. Hood.

A hearty vote of thanks was unanimously accorded to the retiring chairman. A paper on "Indigestion" was delivered by Dr. L. C. PANTING, F.R.C.S.

SUSSEX BRANCH.

THE ninth annual meeting of the Sussex Branch was held at the Royal Pavilion, Brighton, on July 5th. The following were elected officers for the year 1922–3:

President: Dr. George Morgan. *President-elect*: Sir C. O'Brien Harding, J.P. *Vice-Presidents*: Dr. Frank Hinds and Dr. Muir-Smith, J.P. *Honorary Secretary and Treasurer* (from August 1st, 1922): Dr. L. A. Parry.

The President having been inducted to the chair, a hearty vote of thanks to Dr. Hinds for his services as president during the past year was carried with applause. The annual report and financial statement were approved. A vote of thanks to Dr. Daldy for his services as honorary secretary and treasurer for the past seven years was proposed, carried with applause, and gratefully acknowledged. The President, Dr. MORGAN, read a paper on swellings and sinuses in the necks of children. In proposing and seconding a vote of thanks to Dr. Morgan for his paper, Mr. SANDERSON and Mr. FITZMAURICE-KELLY commented on and discussed it.

Before the meeting the President-elect, Dr. Morgan, entertained to luncheon, in the banqueting room of the Royal Pavilion, the mayors of Brighton and Hove, the vicar of Brighton, the minister of Clifton Road Church, the director of the Royal Pavilion, and fifty-two Sussex members of the Association. A vote of thanks to Dr. Morgan for his hospitality was proposed by Sir C. O'BRIEN HARDING, seconded by the MAYOR OF BRIGHTON, and passed with acclamation.

After the meeting, the Director, Mr. H. D. ROBERTS, gave an address on the history of the Royal Pavilion, and then conducted the members through the rooms explaining the various points of interest. The members subsequently adjourned to the restaurant on the Palace Pier, where the Executive Committee of the Brighton Division entertained them to tea.

At the meeting of the Branch Council, before the annual general meeting, the PRESIDENT, on behalf of the members, made a presentation of an electric ophthalmoscope and an inscribed salad bowl to Dr. A. M. Daldy, on the occasion of his resignation of the honorary secretaryship after seven years' tenure of the office. Dr. DALDY warmly thanked the members for their kind action and handsome testimonial.

SUSSEX BRANCH: HASTINGS DIVISION.

A MEETING of the Hastings Division was held on June 29th at the Eversfield Hotel, St. Leonards, when Mr. D. LIGAT took the chair. The present system of treatment adopted at the school clinics of the borough was criticized as being overdone, and the meeting elected a subcommittee to go into the matter. With regard to newspaper insurances and fees for medical certificates, it was agreed that a fee of 5s. be charged for such certificates. The scale of fees for administering gas or ether to insured persons having teeth extracted by dentists under the scheme of certain approved societies was fixed at 7s. 6d. for gas, the dentist providing the gas, and 21s. for ether, the doctor supplying the ether. With reference to the fees for examination of intending emigrants, a resolution was passed that in a large number of cases it was very hard that the applicant should have to pay the fee, and asks the Association when discussing the matter with the Directors of Migration to consider this.

Instructions for the Division's Representative at the Annual Representative Meeting were settled. A handicap golf tournament, open to all members of the Division, was arranged to take place on the Hastings Links in the autumn, Mr. Ligat very kindly offering two prizes. An appeal for the Russian doctors gathered in 50s.

WILTSHIRE BRANCH: SALISBURY DIVISION.

THE annual general meeting of the Salisbury Division was held at the Infirmary on May 31st, when Dr. THORNTON was in the chair.

The following officers were elected:

Chairman: Dr. G. E. Thornton. *Vice-Chairman*: Dr. G. C. Adeney. *Secretary*: Dr. R. C. Mommington. *Representative in Representative Body*: Dr. C. E. S. Flemming. *Deputy Representative in Representative Body*: Dr. J. E. Gordon.

A vote of thanks to outgoing chairman and secretary, with special reference to the war work carried out by the latter, was carried by acclamation. The financial statement showing a balance was presented and approved.

It was unanimously decided to give a donation of £1 1s. to the Salisbury Infirmary.

In connexion with the matters referred to Divisions it was agreed on the motion of Dr. ARMITAGE, seconded by Dr. GORDON, "That the recommendations of Council be adopted."

Other business: A general desire was expressed for the revival of the pre-war clinical meetings, and the Executive Committee was asked to arrange a meeting as soon as possible after the second week of September. Clinical material and cases were shown or reported by Drs. Bardsley, Fison, Thornton, Luckham and Willcox.

WORCESTERSHIRE AND HEREFORDSHIRE BRANCH.

THE annual meeting of the Worcestershire and Herefordshire Branch was held at the General Hospital, Hereford, on June 28th. Dr. Dennis Fitch was elected President for 1923-4. Dr. Butler was re-elected Honorary Secretary and Treasurer.

In response to the appeal from headquarters to help starving Russian doctors the sum of £4 was collected. The financial report of the Branch, showing a balance of £8 13s. 11d., was presented and passed. Dr. HOLBECHE then vacated the chair and introduced his successor, Dr. L. B. Green (Ross).

Dr. HOLBECHE read a paper entitled "Some past and present experiences in medicine and surgery," which was most interesting, amusing, and instructive.

On the motion of Dr. HERBERT JONES, seconded by Dr. L. STRETTON, a very hearty vote of thanks was unanimously accorded to Dr. Holbeche, not only for the paper, but also for his many valued services to the Worcestershire and Herefordshire Branch of the Association. At the close of the meeting Dr. GREEN expressed the pleasure of the Branch in having amongst them that day as an honoured guest Dr. Ewart, consulting physician of St. George's. The members adjourned to tea at the Nurses' Home.

Insurance.

LONDON PANEL COMMITTEE.

AT the June meeting of the London Panel Committee, Dr. H. J. CARDALE presiding, certain resolutions were agreed to for inclusion in the agenda of the annual Conference of Local Medical and Panel Committees. One of these instructed the Insurance Acts Committee to negotiate the inclusion of a pensions scheme in any new arrangement as to the terms of insurance service with the Ministry of Health. Another expressed the view that the time had arrived for the establishment of a whole-time executive committee under the control of the Insurance Acts Committee, seeing that it was unreasonable to expect a voluntary body to afford adequate protection of the interests of the medical profession engaged in insurance practice. A third laid it down that where the personnel of the Panel Committee and the Local Medical Committee for an insurance area were identical, the Panel Committee should be empowered to exercise all the rights and duties of the Local Medical Committee.

Capitation Fee for Drugs Supplied by Practitioners.—It was also agreed by the Committee to include among the resolutions to be

sent up to the annual Conference one pointing out the inadequacy of the capitation fee of 1s. 3d. per 100 insured persons for drugs not specially scheduled supplied by practitioners, and urging, further, that the schedule of drugs and appliances which were excluded from those in respect to which a capitation rate was payable was incomplete and should be brought up to date.

The Medical Service Subcommittee.—The Panel Committee has been devoting considerable attention to the constitution and procedure of the Medical Service Subcommittee of the Insurance Committee, and some time ago appointed a section to consider the matter. As a result the Insurance Committee is to be asked to appoint representatives to meet representatives of the Panel Committee to discuss certain suggested alterations. The Panel Committee has resolved to approach the Ministry of Health with a view to ascertaining whether payment of out-of-pocket expenses of the medical members of the subcommittee may be made from the funds of the Panel Committee. It also proposes that the procedure in hearing cases be amended in certain particulars, chiefly with a view to dispensing with the personal attendance of parties, where written statements can properly be taken instead. It is also urged that a second subcommittee is necessary in view of the size of the London area.

Pensions Certificates.—The Panel Committee concurred in a proposal of the Insurance Committee to make representations to the Ministry of Health that in cases where a practitioner is required to furnish certificates to an insured person who, under instruction from the local Pensions Committee, is receiving treatment at a hospital quite apart from any action taken by the practitioner in attendance, the insurance practitioner responsible for the issue of certificates should be informed of the fact that the insured person had been referred to a hospital for special treatment and should be given facilities to furnish him with proper certificates of incapacity, or, alternatively, that arrangements should be made for the certificates to be given at the hospital or other centre where the insured person is obtaining treatment.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following announcements are notified by the Admiralty:—Surgeon Commanders G. G. Vickery, O.B.E., to the *Coventry* as squadron Medical Officer; G. P. Adshead to the *Diomede* on commissioning; A. R. H. Skey to the *Queen Elizabeth* and as Fleet Medical Officer. Surgeon Lieutenant Commander M. J. Aitken to the *Diomede* on commissioning. Surgeon Lieutenant J. F. H. Gaussen transferred to the permanent list.

ROYAL ARMY MEDICAL CORPS.

The notification in the *London Gazette* of April 25th, placing Lieut.-Colonel H. S. Anderson, C.M.G., on the half-pay list, is cancelled.

Major R. V. Cowey, D.S.O., relinquishes the acting rank of Lieutenant-Colonel.

The following officers retire on retired pay: Lieut.-Colonel and Brevet Colonel Sir A. L. A. Webb, K.B.E., C.B., C.M.G., Major W. MacD. MacDowall.

The following officers retire receiving a gratuity: Major G. E. Ferguson, Captains D. W. John, M.C., R. N. Porritt.

Captain E. Davies is placed on the half-pay list on account of ill health, June 9th, 1922 (substituted for notification in the *London Gazette*, June 16th, 1922).

The Christian names of Captain Alastair Caulfield Jebb are as now described and not as printed in the *London Gazette* of May 19th, 1914, September 3rd, 1918, July 25th, 1918, January 10th, 1917, April 2nd, 1918, July 25th, 1918, and March 31st, 1919.

ROYAL AIR FORCE MEDICAL SERVICE.

The following officers are granted short service commissions in the ranks stated: Flight Lieutenant J. C. Osburne, Flying Officer V. S. Ewing.

Flying Officer T. A. G. Hudson is granted a short service commission, retaining his present substantive rank and seniority.

INDIAN MEDICAL SERVICE.

To be Honorary Surgeons to the King (February 14th): Col. Close, vice Hon. Col. Sir W. R. Hooper, K.C.S.I. (deceased); Col. W. G. Pridmore, C.M.G., vice Major-General P. S. Turnbull (deceased).

Lieut.-Col. S. Hunt granted combined leave for twelve months (March 3rd).

Major R. B. Lloyd, M.B., granted leave for two months from April 24th.

Lieut.-Col. C. A. Sprawson, C.I.E., has been confirmed in the appointment of Principal, King George's Medical College, Lucknow, from November 8th, 1921.

Major R. H. Bolt to act as Principal of the King Edward Medical College, Lahore, in addition to his own duties during absence on leave of Lieut.-Col. H. Ainsworth.

Capt. H. G. Alexander to act as Professor of Ophthalmology in addition to his own duties, April 18th.

Lieutenants to be Captains: M. S. Ullah, M.C., H. R. Cursetji, N. M. P. Dotivala, M.C., A. N. Sharma, C. C. Ittycheria, A. D. Logandan, S. C. Alagapan, A. K. Sahibzada, H. Das, G. V. R. Mohan.

The following temporary officers have been appointed permanently to the service: H. R. Cursetji, N. M. P. Dotivala, M.C., A. N. Sharma, C. C. Ittycheria, A. D. Logandan, S. C. Alagapan, A. K. Sahibzada, H. Das, S. D. S. Greval, R. I. Advani, G. V. R. Mohan.

Lieut.-Col. G. D. Franklin, O.B.E., granted leave for four months from February 16th.

Major S. R. Christophers, C.I.E., O.B.E., granted combined leave for thirteen months from April 1st.

The services of Major H. E. Stranger Leathes have been placed at the disposal of the Chief Commissioner of Delhi from March 7th for appointment as Health Officer, Imperial City, Delhi.

The King has approved the resignation of Capt. C. Burnham (February 14th).

Major H. W. Pierpoint, O.B.E., posted as Agency Surgeon, Bushire, from March 24th.

Col. J. K. Close granted combined leave for six months and seventeen days from April 21st.

Lieut.-Col. A. W. R. Cochrane to officiate as Inspector-General of Civil Hospitals, United Provinces, with effect from the date on which he assumes charge of duties.

Capt. C. N. Newton-Davis, M.C., to be Major (January 30th).

Major R. B. Seymour Sewell granted leave for five months from May 6th.

Lieut.-Col. B. H. Deare to be Major-General, C.I.E., vice Major-General W. H. B. Robinson (deceased), February 8th.

Lieut.-Col. T. A. Granger, C.M.G., to be Colonel, vice Col. J. Garvie, retired (March 24th); tenure of appointment to reckon from April 16th.

Lieut.-Col. R. McCarrison appointed temporarily to the Bacteriological Department (April 29th).

Lieut.-Col. H. Burden, C.I.E., granted the rank of Colonel on retirement.

The services of the following officers have been placed at the disposal of the Government stated from the dates indicated:

Punjab (permanently): Majors N. M. Wilson, O.B.E. (September 6th, 1921), R. A. Chambers, O.B.E. (September 6th, 1921), N. S. Sodhi, M.C. (September 7th, 1921), K. S. Singh (September 17th, 1921, and D. H. Rai, M.C. (November 12th, 1921).

Madras (permanently): Major R. E. Wright of the Bacteriological Department.

Bihar and Orissa: Major F. J. Kolapore (temporarily) with effect from date on which he assumed charge of Jail Department; Major A. S. M. Peebles (replaced), March 24th.

Assam: Major H. E. Shortt (temporarily) for appointment as acting Director, Pasteur Institute, Shillong (May 1st).

Bombay: Major J. Morison (April 4th).

Burma: Major G. G. Jolly, C.I.E., for employment as Assistant Director of Public Health (March 7th), Major R. E. Flowerdew (temporarily) for employment in Jail Department.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The following officers having attained the age limit are retired and retain their rank, except where otherwise stated:—Colonels, with permission to wear the prescribed uniform: W. Coates, C.B., C.B.E., V.D., T.D., C. Averill, V.D., H. D. Brook, V.D.; Major R. Corfe, and is granted the rank of Lieutenant-Colonel; Major W. E. Miles, T.D., and is granted the rank of Lieutenant-Colonel with permission to wear the prescribed uniform; Major G. D. E. Jones and W. C. Macaulay; Captain T. J. T. McHattie, and is granted the rank of Major; Captains R. T. Caesar, M.C., L. L. Preston, G. Scott, M.C., G. H. L. Whale, W. H. Dickinson, J. H. Jones, and A. R. Spencer.

The following officers relinquish their commissions and retain their rank except where otherwise stated: Captains L. P. Harris, M.C., and K. D. Wilkinson, O.B.E., and are granted the rank of Major; Captains W. B. Stewart, G. B. Pritchard, H. W. Weir, G. C. Williams, R. A. Kerr, M.C., J. P. Race.

Captain P. T. Rutherford, O.B.E., relinquishes his commission and is granted the rank of Lieutenant-Colonel.

T. C. McKenzie to be Lieutenant.

General Hospitals.—Captain A. J. Drew having attained the age limit is retired and retains the rank of Captain.

Sanitary Service.—Major L. R. Tesswell, O.B.E., relinquishes his commission and retains the rank of Major. Major (Brevet Lieut.-Colonel) W. Butler relinquishes his commission and retains his rank.

Captain H. E. S. Richards, M.C., to be Major, and remains seconded.

To be Captains: Captain G. S. Phillips (late R.A.M.C.), with precedence as from September 9th, 1918. Captain A. A. Watson (late R.A.M.C.), with precedence as from May 18th, 1919.

Captain A. C. M. Savage, from T.A.Res., to be Captain, with precedence as from April 1st, 1915.

VACANCIES.

ABERDEEN UNIVERSITY.—Lectureship in Bacteriology. Salary, £600 per annum.

BARNSLEY AND WAKEFIELD JOINT SANATORIUM.—Assistant Tuberculosis Officer for the Borough and Resident Medical Officer at the Mount Vernon Sanatorium. Salary, £400 per annum.

BARNSTAPLE: NORTH DEVON INFIRMARY.—House-Surgeon. Salary, £170 per annum.

BATH: ROYAL UNITED HOSPITAL.—(1) House-Physician. (2) Junior House-Surgeon (males). Salary, £180 and £150 per annum respectively.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer. Salary, £450 per annum.

BIRMINGHAM: GENERAL HOSPITAL.—Resident Casualty Officer (male). Salary at the rate of £250 per annum.

BIRMINGHAM: RUBERY HILL AND HOLLYMOOR MENTAL HOSPITAL.—Two Junior Assistant Medical Officers. Salary, £350 per annum, increasing to £400.

BIRMINGHAM UNIVERSITY.—Professor of Pathology. Stipend, £1,000 a year.

BOOTLE BOROUGH HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

BRADFORD: ROYAL EYE AND EAR HOSPITAL.—Honorary Aural Surgeon.

BURY INFIRMARY.—Junior House-Surgeon (male). Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Surgeon (male). Salary at the rate of £130 per annum.

CANCER HOSPITAL, Fulham Road, S.W.—House-Surgeon. Salary at the rate of £150 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—: hysician to Out patients.

DONCASTER ROYAL INFIRMARY.—(1) Senior House-Surgeon. (2) Junior House-Surgeon. Salary at the rate of £220 and £175 per annum respectively.

EDINBURGH HOSPITAL FOR WOMEN AND CHILDREN.—(1) Senior House-Surgeon. (2) Junior House-Surgeon. Salary at the rate of £60 and £40 per annum respectively.

EDINBURGH ROYAL HOSPITAL FOR SICK CHILDREN.—Four Honorary Resident Medical Officers.

EXETER: ROYAL DEVON AND EXETER HOSPITAL.—Assistant House-Surgeon. Salary at the rate of £150 per annum.

EXMINSTER: DEVON MENTAL HOSPITAL.—Third Assistant Medical Officer (male). Salary, £300 per annum, rising to £350.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon (male). Salary, £150 per annum.

HACKNEY UNION.—District Medical Officers. Salary, £80 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Two House-Physicians. Honorarium, £50 for six months.

HULL ROYAL INFIRMARY.—Assistant House Surgeon. Salary, £150 per annum.

KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION.—Second Assistant Resident Medical Officer at the North Wales Sanatorium, near Denbigh. Salary, £250 per annum.

LEEDS GENERAL INFIRMARY.—(1) Resident Ophthalmic Officer. (2) Ophthalmic and Aural House-Surgeon. Salary, £120 and £50 respectively.

LINCOLN COUNTY HOSPITAL.—Junior House-Surgeon (ma'e). Salary, £150 per annum, rising to £200.

LIVERPOOL UNIVERSITY.—Lecturer in Pathology. Salary, £500 per annum.

MANCHESTER: ANCOATS HOSPITAL.—(1) House-Surgeon. Salary at the rate of £150 per annum. (2) Honorary Radiologist.

MANCHESTER: COUNTY ASYLUM, Prestwich.—Locumtenent. Salary, £8 8s. a week.

MANCHESTER ROYAL INFIRMARY.—(1) House-Physicians. (2) House-Surgeons. (3) House-Surgeon to the Aural, Gynaecological, and Ophthalmic Departments. Salary at the rate of £100 per annum each.

MANCHESTER: ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Assistant Medical Officer for Children, Out-patient Department. Salary, £100 per annum.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich Road, S.E.—(1) House-Physician. (2) House-Surgeon. Salary, £150 per annum each.

MINISTRY OF PENSIONS.—Junior Medical Officers at (1) Ministry of Pensions Hospital, Mosside, Maghull; (2) Harrowby Camp, Grantham; (3) Knotty Ash, Liverpool. Salary, £250 per annum.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Resident Medical Officer (male). Salary at the rate of £150 per annum.

NOTTINGHAM CITY.—Resident Assistant Medical Officer at the Bagthorpe Institution and Infirmary. Salary, £300 per annum.

NOTTINGHAM: GENERAL HOSPITAL.—House-Surgeon. Salary at the rate of £200 per annum.

READING: ROYAL BERKSHIRE HOSPITAL.—House-Physician. Salary, £200 per annum.

ST. GEORGE'S HOSPITAL, S.W.—Resident Medical Officer (male) for the Convalescent Branch, Copse Hill, Wimbledon. Salary at the rate of £300 per annum.

SHEFFIELD ROYAL INFIRMARY.—Ophthalmic House-Surgeon. Salary, £150 per annum.

SOUTH AFRICA: FREERE HOSPITAL, East London.—Resident Medical Officer. Salary, £50 per annum, rising to £240, with certain fees approximately amounting to £250 to £300.

SOUTHAMPTON: ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House-Surgeon. Salary, £150 per annum.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—Additional House-Surgeon. Salary, £200 per annum.

SWANSEA GENERAL AND EYE HOSPITAL.—House-Physician. Salary, £200 per annum.

TICEHURST HOUSE MENTAL HOSPITAL, Ticehurst.—Assistant Medical Officer. Salary, £400 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

WEST HAM UNION.—Resident Assistant Medical Officer at the Forest Gate Sick Home. Salary, £350 per annum, rising to £400.

WEST LONDON HOSPITAL, Hammersmith Road, W.—Honorary Medical Radiographer.

WEST RIDING COUNTY ASYLUM, Wadsley, near Sheffield.—Fourth Assistant Medical Officer. Salary, £400 per annum, rising to £500.

WESTMINSTER HOSPITAL, S.W.—(1) Assistant House-Physician. (2) Assistant House-Surgeon. Honorarium at the rate of £52 per annum each.

WIGAN: ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House-Surgeon. Salary, £175 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

BEVERS, E. C., M.B., Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 36.

DANNETT, R. M., M.B., B.S.Lond., Assistant Medical Superintendent to Camberwell Infirmary, London, S.E.5.

GIBSON, Hy. J. C., M.D.Edin., Medical Superintendent, Dundee Royal Infirmary, vice H. E. Fraser, M.D.Edin., deceased.

MCCULLAGH, W. McK. H., D.S.O., M.C., F.R.C.S.Eng., Assistant Resident Medical Officer to Queen Charlotte's Lying-in Hospital, Marylebone Road, N.W.

CERTIFYING FACTORY SURGEONS.—L. R. King, M.R.C.S., L.R.C.P., for the Stow-on-the-Wold District, co. Gloucester; E. StClair Gainer, M.R.C.S., L.R.C.P., for the Thrapston District, co. Northampton.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE.—General meeting of Fellows, Tues., 5 p.m. *Section of Dermatology*: Thurs., 4.30 p.m., Cases.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Wed., 5 p.m., Mr. Victor Bonney: Myomectomy as opposed to Hysterectomy.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—Thurs., 4 p.m., Dr. Thompson: Dwarfs.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Oaseley Road, Balham, S.W.12.—Wed., 4 p.m., Dr. . Wood: Investigation of Obscure Cases of Sudden Death

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediseera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

JULY.

14 Fri. East York and North Lincoln Branch, Annual Meeting, Withernsea.*
Essex Branch, Annual Meeting, Palace Hotel, Southend-on-Sea, 2.30 p.m.; Lunch, 1.30 p.m.
North Carnarvon and Anglesey Division, Bangor.

18 Tues. Chichester and Worthing Division, Worthing Hospital, 4 p.m.
Second Meeting, Warne's Hotel, 6.30 p.m.; Dinner, 7.30 p.m.

19 Wed. Harrogate Division: Fountains Abbey, Ripon, 4 to 6 p.m.

20 Thurs. Guildford Division, Annual Meeting, Royal Surrey County Hospital, 4.30 p.m. Executive Committee, 4 p.m.

Annual Meeting, Glasgow.

21 Fri. Annual Representative Meeting, Bute Hall, University, 10 a.m.
Extraordinary General Meeting, Bute Hall, 4.45 p.m.

22 Sat. Annual Representative Meeting, Bute Hall, 9.30 a.m.

24 Mon. Council Meeting, Randolph Hall, University, 9 a.m.
Annual Representative Meeting, Bute Hall, 9.30 a.m.

25 Tues. Annual Representative Meeting, Bute Hall, 9.30 a.m.
Annual General Meeting, Bute Hall, 2 p.m.
Adjourned Annual General Meeting and President's Address, Bute Hall, 8 p.m.

26 Wed. Council Meeting, Randolph Hall, University, 9 a.m.
Meetings of Sections, 10 a.m.
Conference of Honorary Secretaries, Debating Hall, University Union, 2 p.m.
Secretaries' Dinner, University Union, 6.30 p.m.

27 Thurs. National Temperance League Breakfast, 8.15 a.m.
Mass at St. Andrew's Cathedral, 9 a.m.
Meetings of Sections, 10 a.m.
Honorary Graduation Ceremony, Bute Hall, 1 to 2.30 p.m.
Annual Dinner of the Association, 7.30 p.m.

28 Fri. Meetings of Sections, 10 a.m.
Popular Lecture, 8 p.m.

29 Sat. Whole-day excursions. Early application should be made to the Honorary Local General Secretary of the Meeting 22, Sandyford Place, Glasgow, W.

The Annual Exhibition of Surgical Instruments, Electro-Medical Apparatus, Drugs, Foods, etc., will be held in the Kelvin Hall from Tuesday, July 25th, to Friday, July 28th, inclusive.

The programme of the work of the Sections of the Annual Meeting at Glasgow was printed at p. 9 et seq. of the SUPPLEMENT *of July 8th, and will appear again next week.*

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9S., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

ALLEN.—On 5th July, 1922, at 10, Coates Crescent, Edinburgh, to the wife of Capt. C. H. P. Allen, I.M.S.—a daughter.

MEYER.—On Saturday, July 8th, at Preston Hall, Aylesford, Kent, the wife of Dr. R. G. Meyer, of a daughter.

WOODRUFF.—On June 26th, 1922, at Bosham House, Southsea, the wife of Dr. D. Winthrop Woodruff, of a son.

MARRIAGES.

TILLYARD—TILBURY.—On the 8th July, at St. Peter's, Eaton Square, Frederick Edward Tillyard, M.B., youngest son of the late John J. Tillyard of Norwich, to Minnie, youngest daughter of the late John Tilbury of Sheardown, Hampshire.

WALKER—HUMPHREYS.—At St. Andrew's Church, Wraysbury, on the 10th inst., by the Rev. L. F. Hake, Captain Herbert Walker, M.C., R.A.M.C., younger son of Mr. and Mrs. J. D. Walker, Dunira, Osborne Road, Newcastle-on-Tyne, to Dorothy, youngest daughter of the late F. L. Humphreys, of Montevideo, Uruguay, S. America, and Mrs. Humphreys.

DEATHS.

AUDEN.—On June 3rd, of blackwater fever, at Alexandra, Kenya Colony, Reginald, only son of F. T. Auden, M.D.Edin., and Mrs. Auden, late of Rustenburg, Transvaal, in his 23rd year.

SPOONER.—On June 25th, William Casswell Spooner, M.B., Ch.B.Edin., M.R.C.S., L.R.C.P. and L.S.A.Lond., of Blandford, aged 46. Interred at Blandford Cemetery.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 22ND, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION,	PAGE
Annual Meeting at Glasgow: Programme—	
The Sections	29
Time-Table	32
Pathological Museum	33
Accommodation in Glasgow and Vicinity	34
Excursions; Sports, etc.	34
Arrangements for Ladies	35
Competition for the Ulster Cup	35
HONORARY DEGREES TO BE CONFERRED AT GLASGOW	35
THE ANNUAL EXHIBITION	36
BADGES FOR MEMBERS ATTENDING THE ANNUAL MEETING	36
TEMPERANCE BREAKFAST	36

	PAGE
MEETINGS OF BRANCHES AND DIVISIONS	37
ASSOCIATION NOTICES	38
INSURANCE NOTES:	
Inquiries into the Conduct of Practitioners	38
Kent Medical Advisory Council	39
Expenditure and Income Statistics	39
Statistics of Insurance Work	39
London Panel Committee	39
NAVAL AND MILITARY APPOINTMENTS	39
VACANCIES AND APPOINTMENTS	40
ASSOCIATION INTELLIGENCE AND DIARY	40
POST-GRADUATE COURSES AND LECTURES	40
BIRTHS, MARRIAGES, AND DEATHS	40

British Medical Association.

NINETIETH ANNUAL MEETING, GLASGOW, JULY 25th, 26th, 27th, & 28th, 1922.

Patron: His Majesty the King.

President: David Drummond, C.B.E., M.A., M.D., D.C.L., Vice-Chancellor and Professor of the Principles and Practice of Medicine, University of Durham.

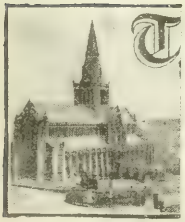
President-Elect: Sir William Macewen, C.B., D.Sc., D.C.L., M.D., F.R.S., Regius Professor of Surgery, University of Glasgow, one of the Honorary Surgeons to H.M. the King in Scotland.

Chairman of Representative Meetings: R. Wallace Henry, B.A., M.D.

Chairman of Council: Robert Alfred Bolam, M.D., F.R.C.P.

Treasurer: George Ernest Haslip, M.D.

PROGRAMME.



Glasgow Cathedral.

THE Annual Meeting of the Representative Body will begin on Friday, July 21st, at 10 a.m., in the Bute Hall of the University, and be continued on the following three week-days.

The Representatives' Dinner will be held on Friday, July 21st, at 7.15 p.m.

The Statutory Annual General Meeting will be held in the Bute Hall of the University, on Tuesday, July 25th, at 2 p.m., and the Adjourned General Meeting at 8 p.m., when the oversea delegates and foreign guests will be received, and the President, Sir William Macewen, C.B., will deliver his address.

The official Religious Service will be held in Glasgow Cathedral on the same day at 5 p.m.

The Conference of Secretaries will be held in the University Union on Wednesday, July 26th, at 2 p.m., and the Secretaries' Dinner will take place on the same evening.

The Annual Dinner of the Association will be held in St. Andrew's Hall on Thursday, July 27th, at 7 p.m.

The Popular Lecture will be delivered by Professor Graham Kerr, F.R.S., on Friday, July 28th, at 8 p.m.; subject: "The Physician—Naturalist, Teacher, Benefactor."

THE SECTIONS.

The Scientific Sections will meet in the classrooms of the University for papers and discussions from 10 a.m. to 1 p.m. on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. Laboratory and clinical demonstrations in connexion with the work of the Sections will be given at other hours on the same days either in the University or in some of the hospitals.

Speakers desiring to take part in any of the discussions or to make any communications should get in touch with the secretary of the Section concerned. The Director of Demonstrations is Mr. R. H. Parry, 25, Blythswood Square, Glasgow.

The following Sections meet on three days—Wednesday, Thursday, and Friday, July 26, 27, and 28.

MEDICINE.

President: Professor Thomas Kirkpatrick Monro, M.D., F.R.F.P.S.

Vice-Presidents: John M. Cowan, M.D., F.R.F.P.S., D.Sc.; Sir Archibald E. Garrod, K.C.M.G., M.D., F.R.C.P., F.R.S.; George Hall, C.M.G., M.D., M.R.C.P.; C. O. Hawthorne, M.D., F.R.C.P.; John Hay, M.D., F.R.C.P.

Honorary Secretaries: Adam Patrick, M.D., F.R.F.P.S., 16, Buckingham Terrace, Glasgow; H. Letheby Tidy, M.D., F.R.C.P., 39, Devonshire Place, London, W.1.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Prognosis and Treatment of Chronic Renal Disease. To be opened by Professor Hugh Maclean, D.Sc., M.D.; followed by Dr. J. D. Comrie, Professor

J. SHAW DUNN, Dr. GEORGE GRAHAM, Dr. I. JONES, Dr. KATHARINE ROBERTSON, Dr. BATTY SHAW, Dr. J. O. SYMES, Dr. O. L. V. S. DE WESSELOW.

July 27th (10 a.m.).—Discussion: Exophthalmic Goitre. To be opened by Professor GEORGE R. MURRAY, M.D., F.R.C.P. (Manchester); followed by Mr. JAMES BERRY, Dr. J. R. RIDDELL, Dr. C. M. WILSON, Lieut.-Colonel R. MCCARRISON, I.M.S. (written communication), and Dr. J. STRICKLAND GOODALL.

July 28th (10 a.m.).—Discussion: Degenerative Diseases of the Liver. To be opened by Sir HUMPHRY D. ROLLESTON, K.C.B., M.D., F.R.C.P.; followed by Professor HUGH MACLEAN, Dr. J. W. MCNEE, Professor R. MUIR, Dr. J. C. SPENCE, Professor M. J. STEWART, Dr. C. M. WILSON, Sir W. H. WILLCOX, Dr. H. MORLEY FLETCHER, and Dr. R. L. MACKENZIE WALLIS.

MICROBIOLOGY (INCLUDING BACTERIOLOGY).

President: ROBERT MACNEIL BUCHANAN, M.B., F.R.F.P.S.

Vice-Presidents: JOHN ANDERSON, M.A., B.Sc.; Professor HY. ROY DEAN, M.D., F.R.C.P.; Sir WM. B. LEISHMAN, K.C.M.G., C.B., F.R.S.

Honorary Secretaries: S. PHILLIPS BEDSON, M.D., Lister Institute, Chelsea, London, S.W.; J. L. BROWNLIE, M.D., D.P.H., 12, St. James Terrace, Glasgow.

The following provisional programme has been arranged:

July 26th.—Discussion:

Dr. F. D'HERELLE (Pasteur Institute, Paris) and Dr. F. W. TWORT: The Bacteriophage (Bacteriolysin); followed by Drs. ANDRÉ GRATIA, LEDINGHAM, MCLEOD, FLEMING, and ELLIS.

Paper:

Dr. W. R. WISEMAN (Glasgow): An Outbreak of Food Poisoning by Milk, caused by *B. aertrycke.*

July 27th.—Discussion:

Dr. MERVYN H. GORDON, C.M.G., C.B.E.: The Bacteriology of Influenza; followed by Drs. MCINTOSH and DIBLE.

Papers:

Dr. R. CECIL ROBERTSON, M.C. (Glasgow): On the Toxins of *B. dysenteriae* (Shiga).

Dr. ANDREW CONNAL (Director, Medical Research Institute, Lagos): The Development of *Loa loa* in Chrysops (with demonstration).

July 28th.—Discussions:

Professor V. H. BLACKMAN, F.R.S.: Some Similarities and Dissimilarities in the Microbiology of Plant and Animal Diseases, with special reference to Immunity and "Virus" Diseases; followed by Dr. E. J. BUTLER, C.I.E., Dr. W. B. BRIERLEY, Mr. J. RAMSBOTTOM, F.L.S., F. H. GAIGER, F.R.C.V.S., and Professor C. H. BROWNING.

W. B. BRIERLEY, D.Sc.: Mutation of Species: followed by Dr. S. G. PAINE and Professor DAVID ELLIS, D.Sc. (Glasgow).

Paper:

Professor DAVID ELLIS: The Intimate Structure of the Bacterial Cell.

Demonstrations in the Laboratory adjoining the Section room:

Professor GRAHAM KERR and J. S. DUNKERLEY, B.Sc., Ph.D.: Protozoal Parasites.

Sir WILLIAM LEISHMAN: Leishmaniasis; Spirochaetosis of Tick Fever.

Dr. ANDREW CONNAL: The Development of *Loa loa* in Chrysops.

Dr. R. ST. JOHN BROOKS: Cultures of Organisms Pathogenic for Man, Animals, and Plants.

Professor DAVID ELLIS: Iron Bacteria; Sulphur Bacteria; Fossil Iron-moulds.

Dr. R. CECIL ROBERTSON, M.C.: Culture Media for the Isolation of Bacilli of the Enterica and Dysentery Groups.

NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

President: Professor GEORGE M. ROBERTSON, M.D., F.R.C.P.Edin.

Vice-Presidents: A. STANLEY BARNES, M.D., F.R.C.P.; C. C. EASTERBROOK, M.D., F.R.C.P.Edin.; J. H. MACDONALD, M.B., F.R.F.P.S.; Sir JAMES PURVES STEWART, K.C.M.G., C.B., M.D., F.R.C.P.

Honorary Secretaries: HILDRED CARLILL, M.D., M.R.C.P., 146, Harley Street, London, W.1; D. K. HENDERSON, M.D., F.R.F.P.S., 17, Whittinghame Drive, Glasgow.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: Psychotherapy. To be opened by Dr. T. W. MITCHELL, on Psycho-therapeutics and Psycho-pathology; followed by J. A. HADFIELD, on the Making of a Neurotic; Dr. JANE SUTTIE, on Mental Stresses of Adjustment in Women; and by Dr. CRICHTON MILLER, on the Psychic and Endocrine Factors in Functional Disorders.

July 27th (10 a.m.).—Discussion: The Treatment of Neuro-syphilis. To be opened by Sir JAMES PURVES STEWART; followed by Dr. KINNIER WILSON, on Observations on the Treatment of Neuro-syphilis; Dr. DOUGLAS K. ADAMS, on the Treatment of Neuro-syphilis, with Special Reference to the Changes in the Cerebro-Spinal Fluid; and Dr. ERNEST M. DUNLOP, on the Bearing of the Wassermann Reaction on Diagnosis and Control of Treatment of Nervous Syphilis. The following will take part in the discussion: Dr. ALDREN TURNER (General Results of the Modern Methods of Treatment), Dr. DAVID LEES, Dr. EDWIN BRAMWELL, Professor CARL BROWNING, and Dr. HENRY J. MACBRIDE.

July 28th (10 a.m.).—Papers:

Dr J. H. MACDONALD: The Elements of Contrast in the Psychic Mechanism.

Dr. DONALD CORE: Spreading Subdural Haemorrhage.

Dr. ALDREN TURNER: Epilepsy and Gunshot Wounds of the Head.

OBSTETRICS AND GYNAECOLOGY.

President: Professor EWEN J. MACLEAN, M.D., F.R.C.P., F.R.S.E.

Vice-Presidents: H. RUSSELL ANDREWS, M.D., F.R.C.P.; Professor J. M. MUNRO KERR, M.D., F.R.F.P.S.; Professor LOUISE MCILROY, M.D., D.Sc.; E. FARQUHAR MURRAY, M.D., F.R.C.S.

Honorary Secretaries: S. J. CAMERON, M.B., F.R.F.P.S., 30, Lynedoch Street, Charing Cross, Glasgow; W. D. MACFARLANE, M.B., F.R.F.P.S., 17, Woodside Crescent, Glasgow; H. G. TAYLOR, M.B., 15, Cavendish Place, London, W.1.

The following provisional programme has been arranged:

July 26th (Morning Session).—Discussion: Stillbirths and Neo-natal Deaths. Speakers: Dr. J. W. BALLANTYNE: Ante-natal, Intra-natal, and Neo-natal Death; Causes, Pathology, and Prevention, with special reference to Ante-natal Death. Dr. EARDLEY HOLLAND: Intra-natal Death. Professor A. M. KENNEDY and Dr. F. J. BROWNE: Neo-natal Death. Professor LOUISE MCILROY: Ante-natal Death due to Toxaemia of Pregnancy. Dr. J. N. CRUICKSHANK: Syphilis as a Cause of Ante-natal Death. Dr. GILBERT STRACHAN.

In the afternoon there will be a demonstration of Professor A. M. Kennedy's and Dr. J. N. Cruickshank's specimens in the museum.

July 27th (Morning Session).—Papers:

Dr. T. W. EDEN: Treatment of Eclampsia.

Dr. W. OSBORNE GREENWOOD: Anaesthetics and Analgesics in Labour.

July 28th.—Papers:

Dr. ROBERT KNOX: Use of Radium and *X* Rays in Relation to Gynaecology.

Dr. JOHN CAMPBELL (Belfast): Treatment of Salpingo-oöphoritis.

Dr. ARCHIBALD LEITCH: Vaginal Involvement in Cancer of the Cervix.

OPHTHALMOLOGY.

President: A. S. PERCIVAL, M.B., M.R.C.S.

Vice-Presidents: A. J. BALLANTYNE, M.D., F.R.F.P.S.; Sir WILLIAM T. LISTER, K.C.M.G., M.D., F.R.C.S.; JOHN ROWAN, M.B., F.R.F.P.S.

Honorary Secretaries: PERCIVAL J. HAY, M.D., 350, Glossop Road, Sheffield; W. H. MANSON, M.D., F.R.F.P.S., 17, Royal Terrace, Glasgow.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Etiology of Optic Atrophy. To be opened by C. O. HAWTHORNE, M.D., F.R.C.P., Mr. J. HOGARTH PRINGLE, M.B., C.M., F.R.C.S. (Glasgow), and H. MOSS TRAQUAIR, M.D., F.R.C.S.Edin.

Papers:

Mr. A. F. MACCALLAN, C.B.E.: Ophthalmic Progress in Egypt.

Dr. A. FREELAND FERGUS, LL.D.: Importance of the Light Sense in Navigation.

Dr. WELLWOOD FERGUSON: The Cerebro-spinal Fluid in Disease of the Fundus.

Mr. W. B. INGLIS POLLOCK: The "Open" Treatment in Eye Operations.

July 27th (10 a.m.).—Discussion: The Clinical Significance and Treatment of Heterophoria. To be opened by Mr. A. S. PERCIVAL, M.A., M.B., B.Ch. (Newcastle-upon-Tyne), and Dr. L. WEBSTER FOX (Philadelphia).

Papers:

Dr. T. STEWART BARRIE: Monocular and Binocular Vision.

Dr. H. WRIGHT THOMSON: Education of Partially Blind Children in Myope Classes.

Mr. A. R. MOODIE: Notes on a Case of Migraine with Unusual Symptoms.

Dr. E. J. PRIMROSE: The Venereal Disease Clinic of the Glasgow Eye Infirmary.

Dr. HERBERT CAIGER: Conjunctivitis Artefacta.

July 28th.—Clinical Demonstration at the Glasgow Eye Infirmary.

The local office-bearers of the Section of Ophthalmology desire to entertain the members of the Association attending the Section at luncheon in the Central Station Hotel on Thursday, July 27th, at 1 p.m. Members proposing to attend the meetings of the Section are asked to notify Dr. W. H. Manson, 17, Royal Terrace, Glasgow, W., as soon as possible, in order that some estimate can be made of the number likely to be present at the luncheon.

PATHOLOGY (HUMAN AND COMPARATIVE).

President: Professor ROBERT MUIR, M.D., F.R.C.P.Edin., F.R.S.

Vice-Presidents: J. S. C. DOUGLAS, M.D.; Professor JOHN SHAW DUNN, M.D.; ARCHIBALD LEITCH, M.D.; Professor JOHN H. TEACHER, M.D., F.R.F.P.S.

Honorary Secretaries: JOHN ANDERSON, M.B., C.M., "Westerbill," St. Bride's Road, Newlands, Glasgow; ROBERT DONALDSON, M.D., F.R.C.S.Edin., St. George's Hospital, London, S.W.1.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Origin of Cancer in relation to Specific Forms of Irritation. To be opened by Dr. J. A. MURRAY (London); followed by Dr. A. LEITCH, Mr. CECIL ROWNTREE, Dr. J. CRUICKSHANK, Dr. ALEX. SCOTT, and others.

July 27th (10 a.m.).—Discussion: Animal and Vegetable Pathology in relation to Human Disease. To be opened by Professors F. G. HOBDAY, F.R.C.V.S., and W. H. LANG, F.R.S.; followed by Sir CLIFFORD ALLBUTT, Mr. W. B. BRIERLEY, Mr. T. F. BROOKS, Mr. W. M. SCOTT, F.R.C.V.S., and others.

July 28th (10 a.m.).—Papers.

The Pathological Museum will be housed in the Anatomical and Natural History Departments, in the same block as that in which the Section will meet.

PUBLIC HEALTH

President: A. K. CHALMERS, M.D., F.R.F.P.S., D.P.H.

Vice-Presidents: R. J. REECE, C.B., M.D., M.R.C.P., D.P.H.; F. E. FREMANTLE, O.B.E., M.P., M.B., F.R.C.P., D.P.H.; HAROLD KERR, O.B.E., M.D., D.P.H.

Honorary Secretaries: R. S. FULLARTON, M.A., M.D., F.R.F.P.S., D.P.H., Sanitary Chambers, Glasgow; J. J. PATERSON, M.D., D.P.H., Guildhall, Maidenhead; RICHARD PATON, M.B., D.P.H., Sanitary Chambers, Glasgow.

The following provisional programme has been arranged:

July 26th.—President's Remarks.

Papers:

DR. RICHARD J. REECE, C.B.: Port Sanitary Administration, its Development and its Relation to the Public Health of England and Wales.

DR. F. E. FREMANTLE, M.P.: Public Health Economics.

DR. JOHN BROWNLEE: Facts of the Health of Children under Five Years of Age.

DR. T. F. DEWAR: Puerperal Fever.

July 27th.—Discussion: The Defects of Children at Infancy and on Attaining School Age. To be opened by Dr. BRUCE on "Defects on Attaining School Age"; by Dr. MENZIES on "Infant Welfare Schemes for Scotland"; and by Dr. MARGHARITA M. L. COUPER on "Defects of Infancy."

Papers:

DR. DAVID MCKAIL: Industrial Fatigue and Vocational Selection on a Basis of Physical Inquiry.

DR. J. P. KINLOCH: The Constituents of Fresh and Vitiated Air, and their Significance in Problems of Ventilation.

DR. F. E. WYNNE (Sheffield): The "Wrong Turning" in Public Health.

July 28th.—Paper: Councillor W. B. SMITH: Smoke Abatement.

Discussion: The Training for the D.P.H. and the New Regulations. To be opened by Dr. E. W. HOPE (Liverpool).

11.30 a.m., Joint Discussion (with Tuberculosis Section): The Administrative Requirements for the Various Types of Tuberculosis. To be opened by Dr. A. S. M. MACGREGOR (Glasgow).

A Public Health Exhibition, organized by the Corporation of Glasgow, will be held in the Kelvin Hall from July 25th to 28th inclusive.

SURGERY.

President: Professor H. ALEXIS THOMSON, C.M.G., M.D.Edin., F.R.C.S.

Vice-Presidents: JAMES BERRY, F.R.C.S.; Sir KENNEDY DALZIEL, M.B., F.R.F.P.S.; A. ERNEST MAYLARD, M.B., F.R.F.P.S.; G. GREY TURNER, M.S., F.R.C.S.; R. J. WILLAN, M.V.O., O.B.E., M.S., F.R.C.S.

Honorary Secretaries: J. A. C. MACEWEN, M.B., F.R.F.P.S., 3, Woodside Crescent, Charing Cross, Glasgow; JOHN PATRICK, M.B., F.R.C.S.Edin., 9, Newton Place, Glasgow; H. S. SOUTTAR, C.B.E., M.Ch., F.R.C.S., 58, Queen Anne Street, London, W.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion: The Diagnosis and Treatment of Cholelithiasis. To be opened by Professor J. RUTHERFORD MORISON, LL.D., Dr. DE MARTEL (Paris), and Mr. FARQUHAR MACRAE.

Papers:

Professor BULL (Christiania): Extrapleural Thoracoplasty in the Treatment of Pulmonary Tuberculosis; 77 Cases treated by Operation.

Mr. D. P. D. WILKIE: Chronic Duodenal Ileus, its Complications and Surgical Treatment.

Mr. M. LOGAN TAYLOR: Duodenal Obstruction due to the Condition known as "Ring Pancreas."

July 27th (10 a.m.).—Discussion: Surgical Treatment of Non-traumatic Affections of the Spleen. To be opened by Dr. JAMES CARSLAW, Dr. E. H. KETTLE, and Sir KENNEDY DALZIEL.

Papers:

Mr. A. J. WALTON: The Surgery of the Pituitary Gland.

Mr. G. H. EDINGTON: The Plating of Fractures.

Mr. ARCHIBALD YOUNG: A Five Years' Survey of the Routine Treatment of Fractures by Operative Methods.

Mr. DONALD DUFF: Treatment of Ununited Fractures by Bridge Grafts.

July 28th (10 a.m.).—Discussion: The Surgical Treatment of Non-malignant Affections of the Colon. To be opened by Sir WILLIAM ARBUTHNOT LANE, Mr. WAUGH, and Sir H. M. W. GRAY.

Paper:

Mr. H. S. SOUTTAR: Operative Treatment of Difficult Hernias.

The following Sections will meet on two days.

DERMATOLOGY.

President: H. LESLIE ROBERTS, M.D., C.M.

Vice Presidents: A. M. H. GRAY, C.B.E., M.D., F.R.C.P.; G. H. LANCASHIRE, M.D.; J. G. TOMKINSON, M.D.

Honorary Secretaries: WM. HERBERT BROWN, M.D., 20, Park Circus, Glasgow; HALDIN DAVIS, M.B., F.R.C.S., 17, Cavendish Place, London, W.1.

The following provisional programme has been arranged:

July 26th.—Discussion: Etiology of Seborrhœa and Seborrhoeic Dermatitis. Opening paper by Dr. CRANSTON LOW. The discussion will be opened by Dr. HAROLD W. BARBER.

July 27th.—Discussion: Occupational Dermatitis. Opening paper by Dr. WM. JAS. O'DONOVAN.

The following short private papers will be introduced:

DR. GEORGE HERBERT LANCASHIRE: Dermatitis Artefacta.

Professor J. GOODWIN TOMKINSON: Alopecia Areata and Strabismus, a Family Group of Cases.

Clinical Demonstrations will be arranged on both days; the hour probably 9 a.m.

DISEASES OF CHILDREN.

President: Sir HERBERT F. WATERHOUSE, M.D., F.R.C.S.

Vice-Presidents: LEONARD FINDLAY, M.D., F.R.F.P.S.; ROBERT HUTCHISON, M.D., F.R.C.P.; ALEX. MACLENNAN, M.B., C.M., R. H. A. WHITELOCKE, M.D., F.R.C.S.

Honorary Secretaries: GEOFFREY BOURNE, M.D., M.R.C.P., 159, Harley Street, London, W.1; G. B. FLEMING, M.B.E., M.D., 13, Lynedoch Crescent, Glasgow.

The following provisional programme has been arranged:

July 26th (Morning Session).—Joint Discussion with the Section of Physiology: Etiology of Rickets. To be opened by Dr. LEONARD FINDLAY and Professor MELLANBY, and followed by Dr. ROBERT HUTCHISON and Professor NOËL PATON (see Physiology).

July 27th (Morning Session).—Discussion: Treatment of Tuberculous Cervical Glands. To be opened by Mr. JOHN FRASER; followed by Mr. ALEX. MACLENNAN, Mr. ALEX. MITCHELL, Mr. R. H. PARRY, and others.

Afternoon Session.—Clinical Demonstrations at the Royal Hospital for Sick Children (medical and surgical). Mr. ALEX. MACLENNAN will give a demonstration on scoliosis. Mr. ALEXANDER MITCHELL will show skiagrams of Regeneration of Bone in Osteomyelitis.

Dr. G. B. FLEMING will demonstrate the Benedict-Talbot apparatus for the determination of the respiratory exchange in infants.

INDUSTRIAL DISEASES AND FORENSIC MEDICINE.

President: Professor JOHN GLAISTER, M.D., F.R.F.P.S., D.P.H., F.R.S.E.

Vice-Presidents: GODFREY CARTER, M.B., M.R.C.P.Edin., D.P.H.; WILLIAM LEDINGHAM RUXTON, M.B.; Sir WILLIAM H. WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P.

Honorary Secretaries: ANDREW ALLISON, M.B., F.R.F.P.S., D.P.H., St. Vincent Park, Paisley Road, W. Ibrox, Glasgow; JAMES R. KERR, C.B.E., Ch.M., The Pilkington Special Hospital, St. Helens, Lancs.

The following provisional programme has been arranged:

July 26th.—Opening address by Professor GLAISTER.

Papers:

Sir W. H. WILLCOX: Dangers to Health arising from Use of Preparations of Arsenic in Various Industries.

Dr. ANDREW ALLISON: The Importance of Teaching Forensic Medicine to Students of Medicine and Law.

July 27th.—Papers:

Sir THOMAS OLIVER: Some Circumstances which make for Industrial Efficiency.

Dr. ALEX. SCOTT: Paraffin Dermatoses.

Dr. JAMES R. KERR: The Treatment of Industrial Accidents.

Dr. JOHN GLAISTER, jun.: New Apparatus for the Assessment of Efficiency after Injuries.

PHYSIOLOGY.

President: Professor J. A. MACWILLIAM, M.D., C.M., F.R.S.

Vice-Presidents: Professor EDWARD MELLANBY, M.D.; Professor D. NOËL PATON, M.D., F.R.C.P., F.R.S.

Honorary Secretaries: GEORGE GRAHAM, M.D., F.R.C.P., 37, Queen Anne Street, London, W.1; W. F. SHANKS, M.B., Ch.B., Physiological Institute, University of Glasgow.

The following provisional programme has been arranged:

July 26th (Morning Session).—Joint meeting with the Section of Diseases of Children: Discussion on Rickets. To be opened by Dr. LEONARD FINDLAY (Glasgow) from the clinical side, and Professor E. MELLANBY (Sheffield) from the physiological side; followed by Miss HARRIETTE CHICK, Professor KORENCHEVSKY, Professor NOËL PATON, Drs. ROBERT HUTCHISON, J. B. ORR, T. Y. FINLAY, and others. Paper by Dr. J. SIM WALLACE (London): Dental Hypoplasia and Rickets.

Afternoon Session: Demonstrations in the Physiological Institute of specimens relating to Rickets.

July 27th (Morning Session).—Discussion on Basal Metabolism. To be opened by Professor E. P. CATHCART (Glasgow), followed by Professor J. C. MEAKINS, Drs. C. M. WILSON, J. B. ORR, and G. B. FLEMING.

Afternoon Session: Demonstrations, of general and physiological interest, in the Physiological Institute.

RADIOLOGY AND ELECTROLOGY.

President: LEONARD A. ROWDEN, M.B., C.M.

Vice-Presidents: E. P. CUMBERBATCH, M.B., M.R.C.P.; JAMES ROBERTSON RIDDELL, F.R.F.P.S.

Honorary Secretaries: F. HERNAMAN-JOHNSON, M.D., 66, Harley Street, London, W.1; D. O. MACGREGOR, M.B., C.M., Langside Cottage, Langside, Glasgow.

The following provisional programme has been arranged:

July 26th (10 to 11.30 a.m.).—Discussion: The X-ray Treatment of Deep-seated Cancers, with special reference to Erlangen Methods. To be opened by Dr. J. R. RIDDELL (Glasgow); followed by Dr. DOUGLAS WEBSTER, Dr. F. HERNAMAN-JOHNSON, and Dr. C. W. SALEEBY, the last from the point of view of a non-practising medical man.

12 to 1 p.m.—Discussion on the Value of Gas Inflation in X-ray Diagnosis. To be opened by Dr. F. HERNAMAN-JOHNSON (London), followed by Dr. J. MAGNUS REDDING (London).

July 27th (10.30 a.m.).—Papers:

Dr. H. E. GAMLEN (Newcastle-upon-Tyne): A Short Account of the Bucky-Potter Diaphragm and the Lead-Glass Shield for the 7 in. Coolidge Tube.

Dr. C. W. S. SABERTON (Harrogate): Points in the Differential Diagnosis of Simple and Malignant Bone Disease.

Dr. JAMES CROCKET (Glasgow): The Differentiation of Active from Quiescent Tuberculosis of the Lung.

Dr. E. W. REED (Manchester): X Rays in Diseases of the Skin.

Dr. J. GIBSON GRAHAM (Glasgow): X-Ray Treatment of Tinea.

11.30 a.m. to 1 p.m.—Discussion on the Therapeutic Value of High-Frequency Currents and Static Electricity. To be opened by Dr. E. P. CUMBERBATCH (London), Dr. F. HOWARD HUMPHRIS (London), and Dr. W. F. SOMERVILLE (Glasgow).

The following Sections will meet each on one day.

ANAESTHETICS.

President: W. J. MCCARDIE, M.B., B.Ch.

Vice-Presidents: JAMES PATON BOYD, M.B., F.R.F.P.S.; L. MABEL RENWICK CAMPBELL, M.B., Ch.B.

Honorary Secretaries: H. PRESCOT FAIRLIE, M.D., 19, Bute Gardens, Glasgow; HUBERT PINTO-LEITE, M.R.C.S., L.R.C.P., 24, Fellows Road, South Hampstead, London, N.W.3.

The following provisional programme has been arranged:

July 26th (10 a.m.).—Discussion on Broncho-pulmonary Complications following Operation under Anaesthesia. To be opened by Dr. DAVID LAMB. Offers from those desiring to take part in the discussion should be sent to one of the Secretaries.

Paper and demonstration by Dr. A. L. FLEMMING: Different Effects produced by Exposing Tissues to various Concentrations of Anaesthetic Vapour.

Demonstrations of Anaesthetic Apparatus.

ANATOMY.

President: Professor ALEXANDER MACPHAIL, M.B., C.M., F.R.F.P.S.

Vice-Presidents: Professor J. C. BRASH, M.C., M.B., Ch.B.; Professor J. T. WILSON, M.B., F.R.S.

Honorary Secretaries: JAMES BATTERSBY, F.R.C.S., F.R.F.P.S., 616, Great Eastern Road, Glasgow; JOHN GRAHAM, M.B., F.R.F.P.S., 351, Renfrew Street, Glasgow.

The following provisional programme has been arranged:

July 25th.—Papers:

Professor J. C. BRASH (Birmingham): The Relation of the Ureters to the Vagina.

Dr. ALFRED PINEY (Birmingham): The Naked-Eye Anatomy of the Bone Marrow with Age Changes.

Dr. J. M. WOODBURN MORISON (Manchester): The Teaching of Anatomy by Radiology, in the Anatomy Department.

Dr. W. B. PRIMROSE (Glasgow): The Problem of the Structure of the Vertebrate Head.

Dr. W. K. CONNELL (Glasgow): Observations on the Form of the Palate in Children.

Dr. JOHN T. HUNTER (Sydney): Intestinal Diverticulum with Retroposition of the Transverse Colon.

Discussion: The Administration of the Anatomy Act. To be opened by Dr. ALEX. MACPHAIL.

Demonstration of a series of embryological models by Professor THOMAS H. BRYCE, F.R.S.

LARYNGOLOGY.

President: JOHN MACINTYRE, M.B., C.M., F.R.F.P.S.

Vice-Presidents: A. BROWN KELLY, M.D., F.R.F.P.S.; Sir STCLAIR THOMSON, M.D., F.R.C.P., F.R.C.S.

Honorary Secretaries: F. F. MUECKE, C.B.E., M.B., F.R.C.S., 36, Cavendish Square, London, W.; W. S. SYME, M.D., F.R.F.P.S., 11, Lynedoch Crescent, Glasgow.

The following provisional programme has been arranged:

July 27th.—Discussion: Diseases of the Oesophagus, their symptomatology and differential diagnosis. To be opened by Dr. D. R. PATERSON (Cardiff) and Mr. W. G. HOWARTH, F.R.C.S. (London).

Papers:

Mr. A. J. WRIGHT (Bristol): Congenital Occlusion of the Posterior Choanae.

Dr. HENRY HALL FORBES (New York): The Use of Radium in Malignant Disease of the Larynx and Oesophagus.

Dr. DOUGLAS will show a series of photographs illustrating various plastic operations on the nose.

MEDICAL SOCIOLOGY.

President: E. ROWLAND FOTHERGILL, M.B., B.S.

Vice-Presidents: CHARLES E. S. FLEMMING, M.R.C.S., L.R.C.P.; JAMES HUDSON, M.D., C.M.; PETER MACDONALD, M.D.

Honorary Secretaries: ALEX. FORBES, M.B., C.M., Hillsboro' Lodge, Sheffield; DAVID MCKAIL, M.D., F.R.F.P.S., D.P.H., 2, Morris Place, Monteith Row, Glasgow.

The following provisional programme has been arranged:

July 28th.—The Section will meet in the Debating Hall of the University Union. Subject for discussion: Alcohol as a Beverage, and its relation to Certain Social Problems.

10 a.m.—Action of Alcohol on the Human Economy. By Professor E. MELLANBY and Dr. JOHN T. MACCURDY (Cornell University Medical College); to be followed by Professor A. R. CUSHNY and the Rev. C. C. WEEKS, M.R.C.S.

Alcohol in Relation to the Problems of Mental Disorders. To be opened by Sir FREDERICK W. MOTT, K.B.E., followed by Dr. W. C. SULLIVAN, Medical Superintendent, State Criminal Lunatic Asylum, Broadmoor.

2.15 p.m.—Alcohol and Industrial Efficiency. To be opened by Professor EDGAR L. COLLIS and Dr. M. HINDHEDE (Copenhagen), followed by Sir THOMAS OLIVER, Dr. W. E. ELLIOT, M.P., and the Right Rev. the BISHOP OF CROYDON.

Alcohol and Infant Mortality. To be opened by Dr. J. W. BALLANTYNE and Professor C. R. STOCKARD (Cornell University, U.S.A.), followed by Dr. C. W. SALEEBY, Miss IVENS, M.S., and Professor LOUISE MCILROY, D.Sc., M.D.

Lay persons specially interested may be present only by invitation, a request for which should be made to one of the Honorary Secretaries.

OTOLOGY.

President: ALBERT ALEX. GRAY, M.D., F.R.F.P.S.

Vice-Presidents: J. G. CONNAL, M.B., F.R.F.P.S.; W. F. WILSON, M.B.

Honorary Secretaries: F. J. CLEMINSON, M.Ch., F.R.C.S., 32, Harley Street, London, W.1; J. W. LEITCH, M.B., 6, Clairmont Gardens, Charing Cross, Glasgow.

The following provisional programme has been arranged:

July 26th.—Discussion: Septic Sinus Thrombosis, its Diagnosis and Treatment. To be opened by Sir WILLIAM MILLIGAN and Mr. LIONEL COLLEDGE. The following members will take part in the discussion: Mr. G. J. JENKINS, Mr. T. B. LAYTON, Mr. ARCHER RYLAND, and Dr. T. RITCHIE RODGER.

Papers:

Professor HOLGER MYGIND: Benign Forms of Otogenic Meningitis.

Dr. J. S. FRASER and Dr. STEPHEN YOUNG: Is it worth while to Remove Aural Polypi?

TUBERCULOSIS.

President: Professor Sir ROBERT PHILIP, M.D., LL.D., P.R.C.P.E.

Vice-Presidents: JAMES CROCKET, M.D., D.P.H.; Professor S. LYLE CUMMINS, C.B., C.M.G., M.D.; WM. HY. DICKINSON, O.B.E., M.B., D.P.H.

Honorary Secretaries: A. HOPE GOSSE, M.D., M.R.C.P., 75, Harley Street, London, W.; A. S. M. MACGREGOR, O.B.E., M.D., D.P.H., 488, Clarkston Road, Muirend, Cathcart, Glasgow.

The following provisional programme has been arranged:

July 27th (10 a.m.).—Discussions: (1) The Clinical Differentiation of Pulmonary Tuberculosis from other Respiratory Affections. To be opened by Professor RIST (Paris). (2) Some Aspects of the Treatment of Surgical Tuberculosis. To be opened by Mr. JAMES TAYLOR, O.B.E., F.R.C.S.E. (Glasgow).

In the afternoon Dr. ROLLIER (Leysin) will give a cinematograph demonstration in the Kelvin Hall at 2.15 illustrating "The Share of the Sun in the Treatment and Prevention of Tuberculosis."

On Friday, July 28th, at 11.30 a.m., there will be a joint meeting with the Section of Public Health, when Dr. A. S. M. MACGREGOR will open a discussion on the administrative requirements of the various types of tuberculosis.

There will be a demonstration in the Kelvin Hall of radiographs illustrative of chest conditions by Dr. HENDERSON (Glasgow), open for inspection during the period of the annual meeting.

Honorary Local General Secretary:

Dr. GEO. A. ALLAN, 22, Sandyford Place, Glasgow, W.

PROGRAMME AND TIME-TABLE.

THE Headquarters of the Annual Meeting of the Association will be in the University of Glasgow.

MEETINGS OF COUNCIL, REPRESENTATIVE BODY, ETC.

Friday, July 21st.
10 a.m.—Meeting of Representative Body, Bute Hall, University.
4.45 p.m.—Extraordinary General Meeting, Bute Hall.
7.15 p.m.—Representatives' Dinner, Grand Hotel, Charing Cross.

Saturday, July 22nd.
9.30 a.m. Representative Meeting, Bute Hall.
1 p.m.—Photograph of Representative Body.
8 p.m.—Smoking Concert, Grand Hotel.

Sunday, July 23rd.
11 a.m.—Services in Glasgow Cathedral and St. Mary's Cathedral.
2 p.m.—Sail to the Firth of Clyde on s.s. *Skirmisher*, by invitation of Messrs. Henderson Bros.

Monday, July 24th.
9 a.m.—Council Meeting, Randolph Hall, University.
9.30 a.m.—Representative Meeting, Bute Hall.
9 p.m.—Music Hall Entertainment, Alhambra, by invitation of Local Committee.

Tuesday, July 25th.
9.30 a.m.—Representative Meeting, Bute Hall.
2 p.m.—Annual General Meeting, Bute Hall, followed immediately by Representative Meeting.
5 p.m.—Official Religious Service, Glasgow Cathedral.
8 p.m.—Adjourned General Meeting and President's Address.

Wednesday, July 26th.
9 a.m.—Council Meeting, Randolph Hall.
2 p.m.—Secretaries' Conference, Debating Hall, University Union.
6.30 p.m.—Secretaries' Dinner, University Union.

ENTERTAINMENTS FOR LADIES ACCOMPANYING REPRESENTATIVES.

July 21st.
8.30 p.m.—Reception and Social Evening in the Ladies' Club (Burlington House, 183, Bath Street) to meet the members of the Ladies' Committee.

July 22nd.
Afternoon—Visit to the Cathedral and Provand's Lordship.
Evening—Picture House Entertainment.

July 23rd.
Church Services at the Cathedrals.
Sail on s.s. *Skirmisher*.

July 24th.
Afternoon—Motor run to Loch Lomond and Gareloch; tea on board Clyde training ship *Empress*.
Evening—Either a Musical Evening at Burlington House or join the Representatives at the Alhambra.

For further information for ladies see note, p. 35.

SECTION MEETINGS AND EXHIBITIONS.
(*For Sections see detailed list.*)

The *Pathological Museum* will be open from July 25th to 28th inclusive, and will be housed in the Anatomical and Natural History Departments, in the same quadrangle as most of the Sections (see descriptive note in next column).

A *Public Health Exhibition*, organized by the Corporation, will be held in the Kelvin Hall, immediately opposite the south-west gate of the University, and will be open from July 25th to 28th inclusive (see p. 34). It will be designed to demonstrate the bearing of the various municipal activities on the health of the public.

The *Annual Exhibition* of surgical instruments, electrical appliances, drugs, foods, and books will be on view in the Kelvin Hall on the same days (see p. 36). It is hoped that every member will make a point of visiting the Exhibition.

The *Kelvin Hall* will be the only official place for daily lunches during the time of the general meetings, and the Exhibitors' Club will also be available for the use of members.

GENERAL MEETINGS, SOCIAL AND OTHER FUNCTIONS, AND ENTERTAINMENTS.

Tuesday, July 25th.
10 a.m.—Official Opening of Exhibition.
2 p.m.—Annual General Meeting, Bute Hall (short session).
5 p.m.—*Official Religious Service, Glasgow Cathedral.
8 p.m.—*Adjourned General Meeting and President's Address in Bute Hall.

Wednesday, July 26th.
8 a.m.—Holy Communion at St. Mary's Cathedral (Scottish Episcopal Church), Great Western Road.
2 p.m.—Party of 300 will leave by charabancs for Bridge of Weir, to visit Quarrier's Homes and the Consumption Sanatoria of Scotland, and will be entertained at Duchal by Sir Joseph and Lady Maclay.
2.15 p.m.—Party will leave by motors to visit Glasgow Waterworks at Mugdock, and will be entertained at Craigend Castle by Mr. and Mrs. Harold E. Yarrow.
2.15 to 3 p.m.—Charabancs will leave for short trips to places of interest in or near the city.
Visits have also been arranged to the Glasgow Art Galleries and Museum, Kelvingrove Park, the Glasgow Observatory, and the Sugar Refineries at Greenock, where the party will be entertained to tea at the Greenock Royal Infirmary.
4 p.m.—Royal Infirmary, Royal Hospital for Sick Children, and the Royal Maternity Hospital will entertain parties to tea, and they will have an opportunity of seeing round the hospitals. At the Royal Infirmary tea will be served in the Lister Ward.
8.30 p.m.—*Reception by the Vice-Chancellor and University Court in the Bute Hall and Hunterian Museum.

Thursday, July 27th.
8.15 a.m.—Temperance breakfast, University Union, by invitation of the National Temperance League.
9 a.m.—*Celebration of Mass at St. Andrew's Cathedral, Great Clyde Street.
1 p.m.—Honorary Graduation, Bute Hall.
2 p.m.—Golf Competition for the Ulster Cup, and Gold Medal to be presented to the winner by the Glasgow Medical Golf Club, at Killermont (Glasgow Golf Club); party of 200 will be entertained to tea by Professor Munro Kerr (Captain of the Club) and Mrs. Munro Kerr.
2.15 p.m.—International Bowling Match, North *v.* South, on Willowbank Bowling Green.
3.30 p.m.—*Civic Reception in the City Chambers, by invitation of the Lord Provost, Magistrates, and Councillors of the City of Glasgow.
7 p.m.—Annual Dinner of the Association, in St. Andrew's Halls (Grand Hall), Charing Cross.
10 p.m.—Dance in St. Andrew's Halls, Ball Room Suite, by invitation of Local Committee.

Friday, July 28th.
2 p.m.—Motors leave for a trip to the birthplace of William and John Hunter, and will be entertained to tea by Dr. Livingstone Loudon at Hamilton (party limited to 50).
2.15 p.m.—Train leaves Partick Central Station for Erskine House (Princess Louise Scottish Hospital for Limbless Sailors and Soldiers), where a party of 500 will be entertained.
2.15 to 3 p.m.—Charabancs leave for short trips to places of interest in or near the city.
Visits have also been arranged to the Art Galleries and Museum, and to the Broadstone Jubilee Hospital, Port Glasgow.
3.30 or 4 p.m.—Western Infirmary, Victoria Infirmary, and Royal Samaritan Hospital will entertain parties to tea, and they will have an opportunity of seeing round the hospitals.
8 p.m.—Popular Lecture by Professor Graham Kerr, F.R.S. Subject: "The Physician—Naturalist, Teacher, Benefactor."
9 p.m.—*Reception and Dance by invitation of the President and Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow (500 guests).
9 p.m.—Music Hall Entertainment, Alhambra, by invitation of the Local Committee (450 guests).

* It is requested that Academic Dress or uniform be worn at the functions marked with an asterisk.

Saturday, July 29th.

DAY EXCURSIONS.

Three day excursions have been arranged:

Firth of Clyde.—The turbine steamer. *Duchess of Argyll*, specially chartered, will leave the Broomielaw for a cruise on the Firth of Clyde and through the Kyles of Bute, returning to Gourock for special train about 6 p.m., due in Glasgow 7 p.m. Tickets, inclusive of lunch and tea, 12s. 6d. This is the principal excursion.

Land o' Burns.—An excursion, limited in numbers, has been arranged to Ayr and the "Land o' Burns." Train to Ayr, thence charabancs to Mauchline (Burns Museum), Alloway (Burns Cottage), Crossraguel Abbey, etc. Party will be entertained to tea at Culzean Castle by invitation from Marquis and Marchioness of Ailsa. Tickets, inclusive of lunch at Alloway Hotel (Banks of Doon), 16s.

Stirling and Bridge of Allan.—An excursion, limited in numbers, has been arranged to Stirling, Bridge of Allan, and Dunblane, thus including places of historical, balneological, and ecclesiastical interest. Tickets, including lunch and tea, 12s. 6d.

ACADEMIC DRESS.

Academic Dress for the Scottish Universities may be hired from Messrs. Thomson, Son, and Laidlaw, 159, St. Vincent Street, Glasgow, Official Robe Makers to the University of Glasgow, who will attend for that purpose in the University Union during the meeting, but members are requested to make early application. Those desiring Robes, etc., for English degrees should communicate with Messrs. Ede and Ravenscroft, 93 and 94, Chancery Lane, London, W.C.2, Official Robe Makers for the Association, or with the robe makers of their own university before coming to the meeting.

PATHOLOGICAL MUSEUM.

The Subcommittee responsible for the organization of the Pathological Museum wishes to draw the attention of members to this branch of the Annual Meeting. It is particularly desired that specimens should be shown which illustrate subjects to be discussed. The Museum will be situated in the Anatomical Department of the University, and will therefore be convenient to the various Sections. Provision will be made for the display of museum preparations of all kinds, photographs or drawings, microscopic specimens, lantern slides, radiographic negatives, and instruments. An endeavour is being made to get together a collection of specimens illustrating disease of animals and plants of economic importance, and the development of malignant disease in relation to specific forms of irritation.

Whilst the exhibits are primarily intended to illustrate the work of the various Sections, the Committee wishes it to be understood that individual specimens of special interest or a series demonstrating some special subject, specimens and illustrations relating to any recent research, and instruments relating to clinical diagnosis and pathological investigations, will be welcomed. Every care will be taken of specimens, and the contents of the Museum will be insured.

In order that arrangements may be made and the necessary forms for the description of specimens supplied, intending exhibitors are requested to communicate at once with the Honorary Secretary of the Pathological Museum Subcommittee, Dr. G. Haswell Wilson, Glasgow University.

A special feature of the Museum will be the anatomical and pathological preparations of William Hunter. The anatomical

collection, which is of great intrinsic and historical interest, has recently been displayed in the gallery of the museum of the Anatomical Department along with the preparations of the late Professor Allen Thomson and Emeritus Professor Cleland. The pathological specimens of William Hunter and Professor Cleland are exhibited in other sections of the Department.

PUBLIC HEALTH EXHIBITION BY THE CORPORATION OF GLASGOW.

In view of the Annual Meeting of the British Medical Association to be held in Glasgow next week, and of the prominent place which the city has acquired in the advancement of public health, the Corporation has cordially responded to the desire for an exhibition portraying its diversified activities in safeguarding the health of the community. Towards the fulfilment of this object twenty-one departments of municipal work are co-operating with the Health Department. The exhibits will illustrate as far as possible the varied work of the public health administration of the city, and the closely related departments of work represented in bacteriology, chemistry, and the inspection of meat and milk. The other departments will similarly indicate and exemplify their important functions in contributing to the maintenance and promotion of the well-being of the citizens, and will have reference to the water, gas, and electricity supplies; to street construction, street lighting, and the tramway service; to housing and city improvements; to public baths and washhouses, cleansing, and the disposal of sewage; to public parks and open spaces, museums, and libraries; and to markets, the standardization of weights and measures, and the prevention of fire.

The Exhibition will be accommodated in the Kelvin Hall, in which a space of 20,000 square feet has been set apart by the Corporation, and will be open from July 25th to 28th. The City Bacteriologist is in charge of the arrangements for the collection of the exhibits to be supplied by the various departments.

ACCOMMODATION AT THE ANNUAL MEETING.

THE Hotels and Lodgings Committee wishes to impress on members the advisability of making their arrangements as early as possible. Most of the hotels are unwilling to reserve rooms, and accommodation in them can only be secured by early and definite booking.

A list of hotels and hydros in Glasgow and vicinity is appended. Information regarding train service for those out of town was given in the SUPPLEMENT of April 29th (p. 122).

A number of beds will be available in students' hostels, which are being specially reopened for the time of the meetings, and for these the Committee has had to guarantee a minimum number of residents. The daily charge for bed and breakfast is 8s. 6d. per person.

A list of private lodgings, which have been personally inspected, has been prepared, and Dr. James Hendry, the Secretary of the Committee, will arrange to place any visitors who wish to be thus accommodated if they will indicate their requirements.

All applications and inquiries about accommodation should be sent to Dr. James Hendry, 4, Clifton Place, Glasgow, W.

HOTELS AND HYDROS IN GLASGOW AND VICINITY.

GLASGOW.

	Bedroom and Breakfast.
Central Station Hotel (Caledonian Railway) ...	12/- to 15/6
North British Station Hotel	12/6 to 14/-
St. Enoch Station (G. and S.W. Railway) ...	From 11/-
More's Private Hotel, India Street ...	From 9/6
Bath Hotel, 152, Bath Street ...	From 8/6
Waverley (Cranston's) Temperance Hotel, 172, Sauchiehall Street	From 8/-

CLYDE COAST RESORTS.

Helensburgh:

Queen's Hotel: Bedroom and breakfast, 11/- per person.
Imperial Hotel: Bedroom and breakfast, 8/6 per person.

Shandon:

Shandon Hydro Hotel: Offers special terms for bedroom and breakfast at 12/6 per person. Will arrange for their motor to meet at Helensburgh the train which leaves Glasgow at 10.40 p.m.

Greenock:

Tontine Hotel: Bedroom and breakfast, 10/- to 11/6 per person.

Gourock:

Ashton Hotel: Bedroom and breakfast, 9/6 to 10/6 per person.

Wemyss Bay:

Wemyss Bay Hydropathic, Skelmorlie: Requires very early notice, and gives inclusive terms only at 16/- and upwards per day per person.

Dunoon:

Argyll Hotel	8/6 per person.
Crown Hotel	8/6 ,, ,,
McColls's Hotel	8/6 ,, ,,
Wellington Hotel	7/6 ,, ,,
Royal Hotel	7/6 ,, ,,
Queen's Hotel, Kirn	10/6 ,, ,,

Innellan:

Royal Hotel, Innellan: Bedroom and breakfast, 10/- per person.

Rothesay:

Glenburn Hotel Hydro: Offers special terms for dinner, bedroom, and breakfast at 15/- per person.
Kyles of Bute Hydropathic, Port Bannatyne, Rothesay: Offers inclusive terms only at 18/- per person per day.

AYRSHIRE COAST RESORTS.

Ayr:

Ayr Station Hotel: Bedroom and breakfast, 11/- and upwards per person.

Prestwick:

Royal Hotel, Prestwick: Bedroom and breakfast, 8/6 per person.

Troon:

Marne Hotel: Beautiful situation on the edge of the links. Bedroom and breakfast from 11/- to 12/- per person.
Craiglea Hotel: Bedroom and breakfast, 10/- per person.

INLAND HOTELS.

Peeblesshire:

Peebles Hydro, about one and a half hours from Glasgow: Inclusive terms, 15s. per person.

Renfrewshire:

Kilmalcolm Hydropathic: The Hydro offers only inclusive terms at 15/- to 21/- per person.

Loch Lomond Side:

Tarbet Hotel, Loch Lomond: Bedroom and breakfast, 10/- per person.

Trossachs District.

Bridge of Allan:

Allan Water Hotel: Bedroom and breakfast, 9/- and upwards per person.
Queen's Hotel: Bedroom and breakfast, 11/- per person.

Dunblane:

Dunblane Hotel Hydro: Bedroom and breakfast, 12/- per person.

Crieff:

Drummond Arms Hotel: Bedroom and breakfast, 10/- per person.

EXCURSIONS, ETC.

ATTENTION is drawn to the whole-day excursions arranged for Saturday, July 29th (see p. 33). The trip arranged on the turbine steamer *Duchess of Argyll* will give visitors an opportunity of seeing the river as well as the Firth of Clyde. The route suggested will include some of the finest scenery in the district, and will pass near many of the well-known Clyde summer resorts.

The excursions arranged to the Stirling and Ayr districts will be by train and charabanc. The former will pass over much historic ground, while the latter will be through a county intimately connected with the life of Robert Burns.

Facilities for engaging in golf, tennis, and bowling have been made, and attention is drawn to the Ladies' Golf Competition at Hillfoot, of which details are published at page 35. Those intending to enter should send their names to the convener, Mrs. T. K. Monro, 12, Somerset Place, Glasgow, as soon as possible, as the rules of the club require that names of competitors shall be presented to the committee before the date for play.

SPORTS.

GOLF.

COMPETITION for the Ulster Cup (see p. 35) and the Glasgow Medical Golf Club's Medal will take place on Thursday, July 27th, at 2 p.m., at Killermont, by permission of the Glasgow Golf Club. Entries will be received by Dr. J. Glaister McCutcheon, 14, Belmont Street, Glasgow, W., or at the Reception Room, up to Wednesday, July 26th. See special notice, p. 35, for conditions, etc.

Facilities for golf during the week have been granted by the following clubs: Glasgow Golf Club, Killermont (gentlemen only); Erskine Golf Club; Pollok Golf Club; Bishopbriggs Golf Club. Arrangements have also been made for play at Gailes (Western Golf Club), and at Prestwick Championship Course. (This last privilege is granted contingent on the course not being closed after the amateur championship.)

BOWLING.

Several of the best bowling greens in Glasgow will be open to members of the Association for individual play during the meeting in Glasgow. It is proposed that an international match, North *v.* South, should be played on the Willowbank bowling green on Thursday, July 27th. Those who wish to take part in the game are requested to write as soon

as possible to Dr. W. Snodgrass, 11, Victoria Crescent, Glasgow, W., stating their experience in match play and their usual position in rinks as leads, seconds, thirds, or skips. Lunch will be provided by Colquhoun, 225, Byres Road, at 1.15 p.m., and it is hoped to have the game finished in time to allow players to attend the civic reception in the Municipal Buildings in the afternoon. Application should be made soon, so that it may be known how many will play and final arrangements be made. Players will be provided with bowls at the club-house or may bring their own bowls if they so prefer.

Facilities for bowling have been granted on the following greens: Willowbank, Partick, Burnbank, Queen's Park, Bellahouston, and Titwood.

LAWN TENNIS.

Facilities for lawn tennis have been granted on the following courts: Partick, Pollokshields, and Titwood.

CLUBS, ETC.

Honorary membership of the University Union will be granted to all members registering at the Annual Meeting. Lunches will be provided during the Meeting of Representatives, but later the official place for daily lunches will be at Kelvin Hall.

Daily privileges (not residence) have also been granted by the Royal Scottish Automobile Club, the Liberal Club, the Conservative Club, the Royal Faculty of Physicians and Surgeons, and the Arlington Baths Club.

Cards will be provided at the Reception Room.

ARRANGEMENTS FOR LADIES DURING THE ANNUAL MEETING.

WHILE the General Offices of the Association during the Annual Meeting will be in the University Buildings at Gilmorehill, attention is drawn to the fact that special arrangements have been made to secure club rooms in the city for ladies accompanying Representatives or members. Burlington House has been engaged for this purpose. It is situated at 183, Bath Street, adjoining Sauchiehall Street, and within half a minute of the more important tram lines. All information about the programme for ladies may be obtained here, and all excursions specially reserved for ladies will start from this point. Meals will be provided if required, and the house may be used as an address for letters, while facilities will be afforded for those who wish to rest or change before proceeding to any of the evening entertainments. Queen Margaret College Union has also been engaged, and a small suite of rooms for ladies has been reserved in the University Union.

On the forenoons of Wednesday, Thursday, and Friday, July 26th, 27th, and 28th, during the sittings of the Scientific Sections, charabancs have been reserved for the use of ladies, and these will leave Burlington House between 10 and 11 o'clock. They will afford an opportunity of visiting the Cathedral, Provand's Lordship, the Art Galleries and Museum, some of the Child Welfare Centres, the School of Domestic Science, one of the children's country hospitals, Coats's Thread Mills, Templeton's Carpet Factory, and some of the other local industries.

On the forenoons of Tuesday and Thursday there will be special film displays in two of the picture houses.

The other entertainments and functions arranged during the afternoons and evenings of these days are open to ladies, application for tickets having to be made by a member.

Ladies Accompanying Representatives.

All ladies accompanying Representatives have been invited to a social evening in Burlington House on the evening of to-day (Friday, July 21st), at 8.30 p.m. Lady Macewen, President of the Ladies' Committee, and Lady MacAlister, Convener of the Ladies' Receptions Committee, will welcome the guests. On the afternoon of Saturday, July 22nd, a visit will be paid to the Glasgow Cathedral, which is one of the two pre-Reformation cathedrals in Scotland which is still in regular use as a place of worship. Thereafter the party will be taken to Provand's Lordship, which is quite near. Though now used as a museum and containing some interesting relics, it is also of note that it was probably the earliest of Glasgow's hospitals—part of the building dating from 1471, when it was known as St. Nicholas's Hospital. The Provand's Lordship Club has kindly agreed to entertain the company to tea. In the evening seats will be reserved in one of the picture houses in the city.

On Sunday, July 23rd, the Glasgow Cathedral (Church of Scotland) and St. Mary's Cathedral (Scottish Episcopal Church) have services at 11 o'clock. In the afternoon a sail on the River and Firth of Clyde has been arranged by the kindness of Messrs. Henderson Bros. (Anchor Line), who have placed the s.s. *Skirmisher* at disposal. Visitors will be able to procure meals on board.

A motor trip has been arranged for Monday afternoon, July 24th, a number of private cars having been lent to the Committee for the day. It is proposed to go by way of Loch Lomond and then to cross over the hill to the Garelochl, where the party will be entertained to tea on board the Clyde training ship *Empress*, and a display of musical drill will be given by the boys. The return journey will be by another route. In the evening there will be music at Burlington House or ladies may join the Representatives at the Alhambra.

LADIES' GOLF COMPETITION.

A Ladies' Golf Competition will take place on Wednesday morning, July 26th. A prize has been offered for the best score (Union handicap) over eighteen holes, at Douglas Park Golf Course, Hillfoot. A special prize, in connexion with the same competition, will be given for the best scratch score for six "hidden holes."

The trina leaves Charing Cross Station for Hillfoot at 9.23 a.m., returning 1.40 p.m.; return ticket 2s. 0½d. Luncheon will be provided at the Club House.

Those wishing to take part in the competition should send their names and handicap to Mrs. Monro, 12, Somerset Place, Glasgow, as soon as possible.

Facilities for Golf, Tennis, and Bowling will be available for the forenoons of Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. Arrangements will be made each morning at Burlington House, 183, Bath Street.

RAILWAY TRAVELLING TO GLASGOW.

THE British Medical Association has applied to the Railway Clearing House for a renewal of the concessions in regard to members travelling to the Annual Meeting which were customarily granted before the war. We regret to state that the Clearing House does not see its way to permit the issue of tickets at reduced rates to medical practitioners proposing to attend the forthcoming Annual Meeting at Glasgow. Any member of the Association travelling to Glasgow can therefore purchase his ticket individually on the same terms as though it were booked for him through the Central Office.

GOLF COMPETITION FOR THE ULSTER CUP.

IN 1909 the Ulster Medical Society presented to the British Medical Association a cup to be played for at Annual Meetings, and to be won out and out by any member winning it three times in all, or twice in succession.

The following is a list of winners whose names are engraved on the base:

1909	.....	Dr. Shackleton, Holywood.
1910	.....	Dr. G. E. Haslip, London.
1911	.....	Dr. W. J. McCardie, Birmingham.
1912	.....	Mr. Albert Lucas, Birmingham.
1913	.....	Dr. H. L. Hatch, Pinner.
1914	.....	Dr. D. Barty King, London.
1920	.....	Mr. Albert Lucas, Birmingham.
1921	.....	Dr. S. T. Irwin, Belfast.

On the occasion of the competition in Glasgow on Thursday afternoon, July 27th, a gold medal will be presented to the winner of the cup by the Glasgow Medical Golf Club. The cup and the gold medal will be presented to the winner at the Annual Dinner of the Association on the same day.

Conditions.

1. The competition is open to all members of the British Medical Association.
2. Bogey play under handicap not exceeding 18.
3. One round of 18 holes to be played on Thursday, July 27th, by permission of the Glasgow Golf Club, at their course at Killermont.
4. No previous play permitted on the course on the day of the competition.
5. Those intending to compete are required to furnish with their entry a certificate, signed by their club secretary, stating (*a*) their lowest score handicap; (*b*) the bogey score of their course; (*c*) the length of their course.

Any dispute connected with the competition to be decided by the committee in charge—namely, Professor J. M. Munro Kerr, Dr. T. D. Laird, Dr. John Henderson, and Dr. J. Glaister McCutcheon, 14, Belmont Street, Glasgow (convener). Entries must be in the hands of the convener not later than 4 p.m. on Wednesday, July 26th. The official hour of starting is 2 p.m., but members who are not taking part in the Sections may play in the forenoon by arrangement with the convener of the committee at the Reception Room. Partners will be balloted for as entrants arrive at the course.

Competitors and friends will be entertained to tea in the Club House from 3.30 till 5 p.m. by the present Captain of the Glasgow Golf Club, Professor J. M. Munro Kerr, and Mrs. Munro Kerr. Information regarding the route to Killermont may be obtained from any member of the committee, or from bills posted in the Reception Room.

Note.—The attention of competitors is specially directed to paragraph 5 of the Conditions.

The postal address for members during the Annual Meeting will be "British Medical Association Meeting, The University, Glasgow."

HONORARY DEGREES.

In connexion with the visit of the British Medical Association, the Senate of Glasgow University has resolved to confer the honorary degree of Doctor of Laws (LL.D.) on the following:

ROBERT ALFRED BOLAM, M.D., F.R.C.P., Direct Representative for England on General Medical Council; Chairman of Council, British Medical Association.

DAVID DRUMMOND, C.B.E., M.A., M.D., D.C.L., Vice-Chancellor and Professor of Medicine, University of Durham; President of the British Medical Association.

SIR ARCHIBALD EDWARD GARROD, K.C.M.G., M.A., M.D., F.R.C.P., F.R.S., Regius Professor of Medicine, Oxford.

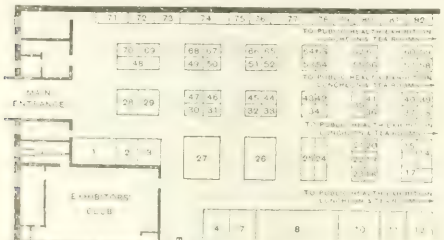
SIR HUMPHRY DAVY ROLLESTON, K.C.B., M.A., M.D., President of the Royal College of Physicians of London.

SIR DAWSON WILLIAMS, M.D., F.R.C.P., D.Sc., D.Litt., Editor of the *British Medical Journal*.

The degrees will be conferred in the Bute Hall at the University at a special graduation ceremonial, open to the public, without tickets, to be held on Thursday, July 27th, at 1.15 p.m.

THE ANNUAL EXHIBITION.

MEMBERS are again reminded of the Annual Exhibition of instruments, apparatus, drugs, foods, books, and medical accessories, which has been arranged in the Kelvin Hall in connexion with the Annual Meeting. This will form an important feature in Glasgow next week. A great effort has been made, not only to bring together representative exhibits of direct practical interest to the medical profession, but also



Plan of Exhibition.

to give the Exhibition a pleasing and uniform appearance. For the comfort of visitors a large and airy hall has been chosen, with numerous and wide gangways between the stalls. Provision is also made for luncheons, teas, and light refreshments in a large restaurant in the Exhibition Building, under the management of a well-known local firm of caterers. This convenience to the visitor should be much appreciated, since without it a journey of at least three miles from the Kelvin Hall would be necessary in order to reach the centre of Glasgow where the leading hotels and restaurants are situated. The Exhibition will be open on Tuesday, Wednesday, Thursday, and Friday, July 25th to 28th, from 9 a.m. to 6 p.m. each day, and it is hoped that every member who takes part in the Glasgow Meeting will make a point of attending it.

BADGES FOR MEMBERS ATTENDING THE ANNUAL MEETING.

THE Local Committee has decided to issue brooch badges to all members attending the Annual Meeting in addition to the official badges usually issued to office-bearers of Sections and to officers of the Association. These badges will admit members to the University Union, Queen Margaret Union, Burlington House, Kelvin Hall, and the various golf courses, bowling greens, and tennis courts, but will not admit to any function or entertainment for which special tickets are issued. A number of badges will be available at a nominal charge for friends accompanying members, and these will afford the same privileges.

The Story of the Glasgow Arms.

The badge, of which a reproduction is printed below, incorporates the main features of the Arms of the City of Glasgow; these in turn are associated with incidents, real or imaginary, in the life of St. Kentigern or St. Mungo, who founded the city in 543—though probably St. Ninian towards the end of the fourth century consecrated as a Christian burial place a small space of ground supposed to be about the site on which the Royal Infirmary now stands.



Four separate events are depicted on the Arms of the City: The *bell* is supposed to represent one which St. Mungo brought from Rome. The *tree* and the *bird* refer to incidents in his early life in Culross; he was then being trained by St. Serf, and some of his fellow students through jealousy extinguished a fire which he was set to watch, and at another time tried to kill a tame sparrow of which he was very fond: he rekindled the fire by rubbing some branches together and restored life to the bird. The *fish* with the ring in its mouth is supposed to be a salmon which he caught in the Clyde and in which was found the lost ring of the Queen of Cadzow.

It is interesting to note that the first Professor of Physick in the University of Glasgow, Doctor Robert Mayne, who is described in his epitaph as orator, poet, and physician, explains the arms in Latin verse as under:

"Salmo maris, terræque arbor, avis æris urbi,
"Promittunt quicquid trina elementa ferunt.
"Et campana fr. quens celebret quod numinis aras,
"Urbs superesse Polo non peritura docet.
"Neve quis dubitet sociari æterna caducis,
"Annulus id pignus conjugale notat."

These couplets the first historian of Glasgow, John M'Ure, "Englishes" thus:

"The Salmond which a Fish is of the sea,
The Oak which springs from Earth that loftie Tree.
The Bird on it which in the Air doth flee,
O *Glasgow* doth presage all Things to thee!
To which the Sea or Air, or fertile Earth
Do either give their Nourishment or Birth.
The Bell that doth to Publick Worship call,
Says *Heaven* will give most lasting Things of All.
The Ring the Token of the Marriage is,
Of Things in Heav'n and Earth both thee to bless."

TEMPERANCE BREAKFAST.

IN accordance with the custom of previous years the National Temperance League has, with the permission of the Council, arranged a breakfast party during the Annual Meeting. The breakfast will take place this year in the University Union, Glasgow, on Thursday, July 27th, at 8.15 a.m., with Lord Rowallan in the chair. The President, ex-President, and President-elect, Chairman of Representative Body, and Chairman of Council of the British Medical Association, have

accepted invitations, and the chairman will be supported also by the Presidents of various Sections, the Medical Secretary, and the Hon. Local General Secretary. The Rev. Courtenay C. Weeks, M.R.C.S., representing the National Temperance League, will give an address, which will be followed by other speeches, the proceedings ending at 9.30 a.m.

Meetings of Branches and Divisions.

SIERRA LEONE BRANCH.

THE first scientific meeting of the newly formed Sierra Leone Branch was held on May 13th at the offices of the Colonial Hospital, Water Street. The PRESIDENT, Dr. Beringer, was in the chair and opened the meeting by giving a short history of the British Medical Association and the formation of the Branch, after which he introduced Professor BLACKLOCK, who read a paper entitled "Some research problems in tropical medicine." Afterwards specimens and microscopical slides illustrating the paper were demonstrated.

Problems in Tropical Medicine.

Professor Blacklock began by saying that the existence of a Branch of the Association in Sierra Leone would without doubt have far-reaching results not only in promoting the interchange of ideas between members engaged in medical work on the West Coast of Africa, but also in attracting the interest of the profession at home to the very many scientific problems which the medical officers and practitioners of tropical West Africa had in past years done so much to solve. It was a coincidence that in the same year in which this Branch of the British Medical Association was established, the Sir Alfred Lewis Jones Research Laboratory of the Liverpool School of Tropical Medicine had been completed. The construction of this laboratory was planned to take place some years ago, but the scheme was postponed owing to the war. His colleagues and himself who were undertaking the duties of research in that laboratory were well aware that if in time the results of their work should in any degree contribute towards the solution of some of the problems of tropical medicine it would in very large measure be due to the interest taken by members of this Branch in their efforts and to the support they gave. He wished to record on this occasion the appreciation of the Liverpool School of Tropical Medicine of the very helpful attitude adopted towards its enterprise by those members of the Branch who had it in their power to assist him and his colleagues—and in particular the Principal Medical Officer of Sierra Leone, Dr. Taylor.

Professor Blacklock then spoke of the loss which the cause of tropical medicine had suffered by the removal of Sir Patrick Manson's influence. The work of Manson had always an especial interest for members of the British Medical Association on account of the fact that he was a valued contributor to the JOURNAL. His work further had a peculiar appeal to members of a Branch such as this, situated in, and carrying on its work in, the tropics. The schools of tropical medicine which arose at the end of last century had inculcated new methods of research and study which by their application had produced already far-reaching effects. Many instances could be adduced of the impetus given to the effective elucidation of disease in temperate climates, by the successful efforts primarily directed towards the solution of problems which faced the practitioner in the tropics.

Professor Blacklock then considered briefly some of the results yielded by the study of beri-beri, of amoebic dysentery, of malaria, and of trypanosomiasis. In regard to work on the trypanosomes he pointed out that the problem of the morphologically identical parasite occurring in animals and man was a constantly recurring one, and was naturally of great importance. Other instances which suggested themselves were among bacteria the tubercle bacillus, among protozoa *Balantidium coli*, and among helminths *Ascaris lumbricoides* and *suilla*.

The significance of the observation of natural infection with nematode larvae going on more or less constantly was clear. The difficulty attending such work was great, because where few larvae were penetrating in a given period it was far from easy to demonstrate them even by grinding up and filtering whole organs. Yet when they observed that an animal had in its intestine very numerous adult nematodes, and when they considered that each of these had gained access to the intestine only after previous passage through the lungs, some idea could be formed of the constant and repeated injuries which were being inflicted on these organs. Thus it seemed that in the future the real significance of nematode infection would be contained not in the answer to the question, What are the lesions in the intestine?" but in the answer to the much wider question, "What are the lesions to the lungs and other vital organs?" In this connexion strongyloides infection assumed importance, and even with our present knowledge it appeared that the strongyloides carrier might be a more serious menace to a community than the ankylostome carrier. Whatever the difficulty of eradicating adult ankylostomes from the intestine, strongyloides adults presented much more difficulty, because they were well protected in the mucosa from the actions of drugs passing through the alimentary canal. Experiences of efforts to eliminate strongyloides infection were disappointing, as could be expected from the anatomical relationships. The measures to be taken to prevent infection would constitute a very difficult problem; some idea of it might be gathered from the degree of resistance possessed by ascaris ova.

In conclusion Professor Blacklock said: It is timely to ascertain whether in the tropics children who are clearly exposed to repeated nematode invasion of the lung do not show a morbidity rate due to this, either directly or in consequence of supervening pulmonary complications, such as pneumonia or tuberculosis of the lung. Also we must consider afresh how many of the signs and symptoms of such diseases as ankylostomiasis are dependent not so much on the presence of adults in the intestine as upon the effect produced by the larvae migrating throughout the body.

CAMBRIDGE AND HUNTINGDON BRANCH.

THE seventy-eighth annual meeting of the Cambridge and Huntingdon Branch was held at Addenbrooke's Hospital, Cambridge, on July 7th, when Dr. ENNION, President, was in the chair.

The following were elected to office for the ensuing year:

President: Mr. Arthur Cooke. *President-elect*: Dr. Collins. *Vice-Presidents*: Dr. Aldren Wright and Mr. Dudley. *Honorary Secretary and Treasurer*: Dr. Haynes.

The newly elected President, Mr. ARTHUR COOKE, gave a very interesting and instructive address, entitled "Surgical wanderings," in which he described his experiences and impressions obtained from visits to various clinics both at home and on the Continent.

Mr. Cooke was warmly thanked on behalf of those present by Sir CLIFFORD ALLBUTT and Mr. WHERRY.

Afterwards a company of over a hundred members and their wives were most hospitably entertained at Grove Lodge to lunch by the President and Mrs. Arthur Cooke.

ESSEX BRANCH.

AT the annual meeting of the Essex Branch held on July 15th the following members were elected as officers for the ensuing year:

President: Dr. Percy Rowland. *President-elect*: Dr. Spencer-Phillips. *Honorary Secretary and Treasurer*: Dr. A. N. Fell. *Vice-Presidents*: Dr. Grosvenor Hinks and Dr. Ren Hall.

The HONORARY SECRETARY reports that a most successful meeting was held in spite of inclement weather and bad roads; twenty-seven members attended the lunch and meeting at the Palace Hotel, two coming from Clacton, four from Colchester, and one from Brentwood. The retiring President, Dr. FORSYTH, read an excellent paper on milk and tuberculosis, and the company was delighted with the masterly paper on minor traumatic disabilities of the upper limb, by Mr. P. JENNER VERRALL, as well as much entertained by his wit and humour. That he should have journeyed from Penzance to give this paper is a fact worthy of cogitation by those who are unable to attend meetings of Divisions or Branches. The company was very kindly entertained to tea by Dr. Forsyth at the close of the meeting.

KENT BRANCH: BROMLEY DIVISION.

THE annual golf match was held at the Bromley and Bickley Golf Club on July 6th. In spite of the inclement weather a pleasant afternoon was spent. The winner this year was Dr. A. Tennyson Smith, who won the medal round with a score of 86.

LANCASHIRE AND CHESHIRE BRANCH.

THE eighty-sixth annual meeting of the Lancashire and Cheshire Branch was held at Blackburn on June 28th. From 12 to 1.30 p.m. the members, as they arrived, lunched as guests of the Blackburn Division, and at 1.45 were received by the President and welcomed by the Mayor of Blackburn.

After the routine business of the annual meeting the President, Dr. GILBERT E. ORME, J.P., delivered his address on "The general practitioner as an asset to the community." In the course of the address he briefly referred to the relationship of the early Greek and Roman physicians to the community in which they lived. Passing on, he pointed out the value of early home influences and general education in the creation of the future useful general practitioner, early specialism was a temptation owing to the vastness of the subject of general medicine and surgery at the present day. In his opinion there were few medical men, especially physicians, who specialized who would not derive benefit from an early compulsory participation in general practice. Dr. Orme suggested a scheme for the maintenance of efficiency which he thought could be made to apply to all higher qualifications—for example, M.D., M.R.C.P., M.S., F.R.C.S.—and which involved the passing of one of a series of tests at the end of ten and twenty years from taking the degree. He deprecated too great a spirit of nationalism, pointing out that medicine was so essentially international in character, its aims and objects and practice being identical all over the civilized world. In conclusion, he appealed for a more general participation in the activities of the British Medical Association if it was to be a force for good not only to itself, but to the community generally.

Votes of thanks were adopted to the President for his address and to the retiring officers and Council.

Dr. Walker (Bootle) and Dr. Petyt (Rufford) were appointed Vice-Presidents, and Dr. Turner (Liverpool) and Dr. Lewis (Southport), Auditors. Dr. RENSHAW and Mr. FAIRBROTHER gave an account of their work on diabetes. The paper was based on their work published in the JOURNAL of April 29th, 1922 (p. 674),

together with the results of some more recent investigations. Dr. DALY gave an interesting account of changes in type of the acute infectious diseases in recent times.

After tea different parties of members were taken to see the Royal Infirmary, Stoneyhurst College, and the Epileptic Colony. A most enjoyable afternoon was spent under the guidance of the President and the local members, the beauty of the Upper Ribble Valley being much appreciated by the visitors. The annual dinner was held at the Old Bull Hotel at 7 p.m., between fifty and sixty members attending.

LANCASHIRE AND CHESHIRE BRANCH: LIVERPOOL DIVISION.

A MEETING of the Liverpool Division was held at the Liverpool Medical Institution on July 12th. In the absence of the Chairman Dr. PERCY EDWARDS, O.B.E., Vice-Chairman, occupied the chair. The Model Rules of Organization were with some slight modifications adopted; instructions were given to the Representatives for the A.R.M. The annual report and supplementary report of Council were discussed.

Senior Surgeon Commanders.—The compulsory retirement without compensation, under the reorganization scheme, of certain surgeon commanders, R.N., was discussed (see BRITISH MEDICAL JOURNAL, July 8th, 1922, p. 52). The Division decided to give cordial support to any action the Council might take on their behalf, since the Division had special experience of the expedients to which these officers had been driven to meet financial liabilities incurred under the regulations which had now been altered.

NORTH OF ENGLAND BRANCH.

THE annual meeting of the North of England Branch was held at Berwick-on-Tweed on July 6th.

In spite of the inclemency of the weather the journey was undertaken by between twenty and thirty members to the historic border town, where the members spent what ultimately turned out to be a most agreeable day. The business part of the meeting was held in the King's Arms Hotel, where an excellent luncheon was served, and later by the kind invitation of the President an agreeable hour or two was spent at his residence, where his hospitality was much appreciated. A feature of the meeting was the election of over twenty new members, most of them being recent graduates of Durham University. In introducing the President-elect, the retiring President, Dr. EUSTACE HILL, alluded to the fact that Dr. Maclagan was not only receiving the honour of the Presidency of the Branch, but was at the same time chief magistrate of his native town, an honour he had held on a former occasion. Dr. Hill also spoke of the many members of Dr. Maclagan's family who had distinguished themselves in medical, literary, ecclesiastical, and even military affairs. Dr. MACLAGAN, in returning thanks for the honour conferred on him, recalled some family reminiscences, and mentioned that he was celebrating the one hundredth of the institution of his practice at Berwick by his grandfather.

The officers elected were:

President: Dr. C. G. Maclagan (Berwick). *President-elect:* Dr. J. Charles (Consett). *Vice-Presidents:* Dr. H. Dickie (Morpeth), Dr. R. H. Dix (Sunderland. *Scientific Secretary:* Mr. P. A. Hindmarsh, M.S., F.R.C.S. (Newcastle). *Honorary Secretary (pro tem.) and Treasurer:* Dr. James Don (Newcastle).

The weather having cleared up the members adjourned to the Goswick links, where an interesting game of golf was thoroughly enjoyed, a fitting conclusion to an exceptionally satisfactory day.

OXFORD AND READING BRANCH.

THE annual meeting of the Oxford and Reading Branch was held at Reading on July 15th. The day opened with a golf competition at Sonning: 1, Dr. Woodward (Abingdon); tied for sweep, Dr. W. Collier and Dr. W. M. Taylor.

A meeting of the Branch Council was held at 3 o'clock. At the general meeting held afterwards the following officers were elected:

President: Dr. Duigan. *President-elect:* Dr. F. W. Stansfield. *Vice-President:* Mr. W. J. Foster.

The Secretary was re-elected.

Mr. FOSTER having presented his cup for the winner at golf, four very interesting papers were read—by Dr. W. J. TURRELL on treatment by diathermy, Dr. F. J. HATHAWAY on the immediate closure of empyemata, Mr. W. J. FOSTER, F.R.C.S., on the opaque meal, and Dr. W. COLLIER on the ebb and flow of disease. Thirteen members dined at the G.W.R. Hotel after a very successful meeting.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: NORTH GLAMORGAN AND BRECKNOCK DIVISION.

THE North Glamorgan and Brecknock Division held its annual meeting on June 15th at Rydal Mount, Penygraig, the residence of Dr. C. J. Wyatt, who is a past secretary of the Division. On the motion of Dr. W. LL. JONES, the retiring Chairman, Dr. Glanville Morris was unanimously elected to the chair for the ensuing year, and Dr. R. F. Thomas was elected Vice-Chairman. Dr. A. T. Jones was re-elected Secretary and Treasurer. A hearty vote of thanks was accorded to the retiring chairman, who in response said he had had a very happy year of office, and wished his successor the same. The various committees were elected, and on the conclusion of the business Dr. Wyatt invited the members to tea and to join the ladies, to whom Dr. and Mrs. Wyatt had extended an invitation, and a very social gathering was enjoyed. Musical items were rendered at intervals, and at the close Dr. W. W. JONES proposed, and Dr. J. M. REES seconded, that the best thanks of the Division be given to the host and hostess, and both Dr. and Mrs. WYATT responded.

On June 29th Dr. MORLEY FLETCHER, senior physician to St. Bartholomew's Hospital, London, delivered a B.M.A. lecture on renal disease and treatment to a meeting of the Division at Pontypridd. There was a good attendance of members, together with members from the Cardiff Division. The lecturer illustrated his address by diagrams on the blackboard. At the close of the lecture several members discussed various points and asked questions, to which Dr. Fletcher replied, further elucidating the subject.

On the motion of Dr. D. N. MORGAN, president of the South Wales and Monmouthshire Branch, seconded by Dr. MORGAN REES, and supported by Dr. MARTIN JONES, a hearty vote of thanks was unanimously accorded to Dr. Morley Fletcher for his excellent lecture, who, in response, expressed the pleasure he had had in addressing the Division.

A dinner, at which thirty guests were present, was subsequently held, under the presidency of Dr. R. F. THOMAS. The toast of "Our Guest" was proposed by Dr. W. E. THOMAS and responded to by Dr. MORLEY FLETCHER in a very pleasant and eloquent speech. Dr. CORNELIUS GRIFFITHS proposed the toast of the North Glamorgan and Brecknock Division, to which the CHAIRMAN and SECRETARY of the Division replied. Several other items were gone through, the company testifying to a most enjoyable social gathering, which was encouraging for similar functions in the future.

SUFFOLK BRANCH.

A MEETING of the Suffolk Branch was held at the Angel Hotel, Bury St. Edmunds, on June 30th. Dr. Hinnell, O.B.E. (Bury) was elected president and Dr. Whitwell (Melton) president-elect. An interesting paper entitled "Ancient sites of Bury St. Edmunds" was read by Mr. V. B. PEDSTONE. Able and interesting addresses were given by Mr. J. STEVEN on "The indications for, and limitations of, surgery in chronic and abdominal disease," and by Dr. MACKENZIE WALLIS on "Protein hypersensitiveness and its relation to asthma and allied diseases." Lunch was served at the kind invitation of Dr. Hinnell and tea at that of Dr. and Mrs. Hinnell.

Association Notices.

LIBRARY OF THE BRITISH MEDICAL ASSOCIATION.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 6.30 p.m. (on Saturdays 10 a.m. till 2 p.m.).

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORFOLK BRANCH.—The annual meeting of the Norfolk Branch will be held at the Norfolk and Norwich Hospital on Wednesday, July 26th.—2.45 p.m., Exhibits of interest from the Museum and X-Ray Departments of the Hospital will be on view; and Messrs. Down Brothers will exhibit instruments. 3 p.m., General Meeting. Agenda: To receive the Report of the Branch Council and Annual Financial Statement. Induction of the new President, Dr. A. J. Cleveland, O.B.E., F.R.C.P., by the retiring President. To appoint a President-elect and two Vice-Presidents. An address by Sir John Thomson Walker, O.B.E., M.B., C.M., F.R.C.S., on "Pyelitis." 4.30 p.m., tea in the hospital grounds, by invitation of Dr. and Mrs. Cleveland.

Insurance.

INQUIRIES INTO THE CONDUCT OF PRACTITIONERS.

WHEN the Minister of Health orders an inquiry to be held under Part VI of the National Health Insurance (Medical Benefit) Regulations, 1920, a formal announcement of the place, date, and time is sent beforehand to the Editor of the BRITISH MEDICAL JOURNAL, with an intimation that the inquiry will be open to the public and the press. After the conclusion of the inquiry the Ministry sends a copy of the letter in which the decision of the Minister is conveyed to the body on whose representation the investigation was made. For the information of insurance practitioners we reproduce copies of two such letters received from the Ministry of Health during the past two months. In doing this we omit in each case the name and address of the medical man against whom a representation was made that his continuance upon the medical lists would be prejudicial to the efficiency of the medical services of the insured

persons. The first letter, dated May 25th, 1922, is addressed to the solicitors of the London Local Medical Committee:

I am directed by the Minister of Health to state that he has had under consideration the report of the Inquiry Committee constituted under Part VI of the Medical Benefit Regulations, 1920, to investigate the representation made by your clients, the London Local Medical Committee, with regard to Dr. A., of B——. A copy of the report of the Inquiry Committee is enclosed herewith, together with a formal document in which is embodied the decision of the Minister.

While the findings of the Inquiry Committee do not, in the Minister's opinion, suffice to justify the conclusion that the continuance of Dr. A. upon the medical list would be prejudicial to the efficiency of the medical service of the insured, he considers that the conduct of Dr. A. was open to serious censure and that the Local Medical Committee were fully justified in making their representation for this inquiry. The Minister has accordingly directed that the costs of the Local Medical Committee shall be borne by Dr. A.

The second letter, dated June 27th, 1922, is addressed to the Clerk of the West Ham Insurance Committee. It is accompanied by a document of twelve foolscap typewritten pages, being a copy of the Inquiry Committee's report. This is signed by Mr. E. H. Tindal Atkinson, barrister-at-law (chairman), Dr. P. V. Fry, and Dr. Arnold Lyndon, who conducted the investigation, and, after carefully summarizing and weighing the evidence, set out their findings of fact and their inferences for the guidance of the Minister.

I am directed by the Minister of Health to state that he has had under consideration the report of the Inquiry Committee constituted under Part VI of the Medical Benefit Regulations, 1920, to investigate a representation made by the West Ham Insurance Committee in regard to Dr. X., of Y——, a practitioner on the Insurance Committee's medical list.

I am to inform you that, after taking the report into consideration, the Minister is satisfied that the continuance of Dr. X. on the medical list would be prejudicial to the efficiency of the medical service of the insured, and he has accordingly decided, in pursuance of Section 15 (2) *(b)* of the National Insurance Act, 1911, and of all other powers enabling him, to remove Dr. X.'s name from the list. This decision will take effect as from the 1st July, 1922.

A copy of the report of the Inquiry Committee is enclosed herewith, together with a formal document embodying the Minister's decision.

KENT MEDICAL ADVISORY COUNCIL.

We are informed by the Clerk to the Kent Local Medical and Panel Committees that the formation of a Local Medical Advisory Council for the County of Kent on the lines of the Dawson Report has now been completed as follows:

A. Public Health Authorities.

1. Whole-time Medical Officer of Health: Dr. Alfred Greenwood, Maidstone.
2. Whole-time Tuberculosis Medical Officer: Dr. Hills, Assistant County Medical Officer for Tuberculosis.
3. Whole-time Educational Medical Services: Dr. Fox, Assistant School Medical Officer for Kent.

B. Medical Practitioners.

1. General Medical Practitioners: Dr. Starling, Tunbridge Wells; Dr. A. Smith, Marden; Dr. Yolland, Bromley; Dr. C. Firth, Gravesend; Dr. Brightman, Broadstairs; Dr. J. Sterry, Sevenoaks; Dr. F. E. Nichol, Margate; Dr. Molesworth, St. Margaret's-at-Cliffe.
2. Representatives of Hospital Staffs and Consultants: Dr. F. T. Travers, Maidstone; Dr. G. Taunton, Chatham.
3. Whole-time member of Asylum Staff: Dr. F. H. Guppy, Bexley Mental Hospital.
4. Whole-time member of Fever Hospital Staff: Dr. Cameron, Joyce Green Fever Hospital, Dartford.
5. Whole-time representative of Poor Law Medical Services: Dr. Freear, Medway Union Hospital, Chatham.
6. Members of Kent Local Medical and Panel Committees: Dr. J. J. Day, Canterbury; Dr. Gordon Ward, Sevenoaks; Dr. R. M. H. Randell, Beckenham; Dr. M. W. Renton, Dartford.
7. Woman Practitioner: Dr. Joan Watts, Margate.
8. Member from Canterbury Medical Insurance Committee: No nomination at present.

A meeting for the election of officers will be held probably in October.

EXPENDITURE AND INCOME STATISTICS.

The attention of the medical profession is again drawn to the offer of a gratuitous copy of a model account book to any practitioner undertaking to forward the information entered therein for the confidential use of the Insurance Acts Committee. There can be no doubt that all information under this head ought to be in the possession of the central negotiating body for insurance practitioners (the Insurance Acts Committee) for use at the time of the revision, at the end of 1923, of the present bargain with respect to the insurance capitation fee. Inquiries should be addressed to the Medical Secretary, 429, Strand, W.C.2.

STATISTICS OF INSURANCE WORK.

Insurance practitioners are reminded of the necessity for the Insurance Acts Committee to be supplied with statistics of insurance work done in 1921. Information under the following heads should be sent to the Medical Secretary, 429, Strand, W.C.2.

Name.	Insurance Address.	No. of Insured Persons on List.	No. of Insured Persons Attended during 1921—that is, No. of Patients.	No. of Consultations.	No. of Visits.

LONDON PANEL COMMITTEE.

Dr. Robert J. Farman, Secretary of the Panel Committee for the County of London, writes with reference to our report of the the proceedings of the meeting of that committee on June 20th, 1922: The resolution expressing the view that the time had arrived for the appointment of a whole-time executive under the control of the Insurance Acts Committee was not passed by the Committee, but was referred back to the appropriate Subcommittee for reconsideration.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following announcements are notified by the Admiralty:—Surgeon Commander J. Bourlas to the *Cleopatra*. Surgeon Lieutenants N. A. H. Barlow to the *Repulse*, W. A. Joliffe to the *Beaufort*, F. G. Hunt to the *Ganges*, additional for R.N. Sick Quarters, Shotley.

Surgeon Commander J. E. H. Phillips is placed on the retired list with the rank of Surgeon Captain.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel and Brevet-Colonel R. S. Hannay, C.M.G., D.S.O., relinquishes the temporary rank of Colonel.

Lieut.-Colonel E. W. Siberry and Major M. F. Foulds retire on retired pay.

The Christian names of Captain Thomas Vicars Oldham are as now described and not as printed in the *London Gazette* of May 9th, 1919.

Captain H. R. L'Estrange, O.B.E., is placed on the half-pay list on account of ill health.

ROYAL AIR FORCE MEDICAL SERVICE.

The following are granted permanent commissions in the ranks stated, with effect from the dates indicated, retaining their present seniority, except where otherwise stated. The notifications in the *London Gazette* of the dates indicated in brackets appointing them to short service commissions are cancelled: Flight Lieutenants: A. Briscoe, July 13th, 1920 (July 13th, 1920), T. Montgomery, July 13th, 1920 (July 13th, 1920), G. H. H. Maxwell, August 24th, 1920 (September 14th, 1920), S. E. Elphick, April 4th, 1921 (April 12th, 1921). Flying Officer (since promoted) R. Boog-Watson, June 7th, 1920 (June 15th, 1920).

The following Flight Lieutenants are transferred to the Reserve, Class D.2: W. A. Malone, J. P. Wells, C. H. Young.

INDIAN MEDICAL SERVICE.

Major H. R. B. Gibson has been posted as Agency Surgeon, Tochi Scouts, and Civil Surgeon, Bannu, from May 5th.

Captain (Brevet Major) T. A. Hughes to be Major (January 30th).

Lieutenants to be Captains: L. C. A. Smith (July 1st, 1921), N. H. Smith, M.B. (October 15th, 1921).

The following officers have been granted rank on retirement:—As Captain: G. B. Haviland (September 17th, 1921), T. H. Almond (September 1st, 1921). As Lieut.-Colonel: C. E. Sunder (April 1st, 1922).

Captain H. G. Alexander officiates as Professor of Ophthalmology and Diseases of the Ear, Nose and Throat, King Edward Medical College, Lahore, from June 16th to August 13th, 1922, inclusive.

Lieut.-Colonel A. A. Gibbs, Officiating Assistant Director-General, Indian Medical Service (Stores), has been confirmed in that appointment with effect from May 11th, 1922, *vice* Major H. Ross, O.B.E.

The services of the following officers have been placed provisionally at the disposal of the Government indicated.—*Madras*: Major G. F. Malcolmson (September 7th, 1920). *Burma*: Majors H. S. Matson, L. A. H. Lack and H. B. Scott (April 29th, 1919), and Major C. H. Fielding (January 11th, 1916) for employment in the Jail Department.

The following officers have been permitted to retire from the service: Lieut.-Colonels C. E. Sunder (April 1st, 1922), and J. Penny, Madras (July 28th, 1921).

TERRITORIAL ARMY.

Royal Army Medical Corps.

Captain C. Webb-Johnson to be Major.

The following officers relinquish their commissions: Captain H. A. Macmillan, M.C., and is granted the rank of Major. Captain A. S. Hebblethwaite, M.C., and W. J. F. Craig, and retain the rank of Captain.

The following officers having attained the age limit are retired and retain their rank, except where otherwise stated: Majors J. McD. Nicoll and F. J. Warwick, T.D., with permission to wear the prescribed uniform; Major J. P. Milne. Captain G. H. Spencer, and is granted the rank of Lieutenant-Colonel; Captain T. Graham, M.C., and is granted the rank of Major; Captains E. E. B. Landon, W. Smith, H. Stonehouse.

General Hospitals.—The following officers having attained the age limit are retired and retain their rank, except where otherwise stated: Lieut.-Colonel C. Douglas, Captain W. T. Harkness, and is granted the rank of Major.

MILITIA.

ROYAL ARMY MEDICAL CORPS.

Captain T. S. Nelson relinquishes his commission and retains the rank of Captain.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel G. A. Troup, T.D., from General List to be Lieutenant Colonel.

Major J. Turtle from General List to be Major.

Major J. Barkley, D.S.O., from General List, to be Lieut.-Colonel.

Captain S. R. Foster, M.C., relinquishes his commission and retains the rank of Captain.

VACANCIES.

ABERDEEN UNIVERSITY.—Lectureship in Bacteriology. Salary, £600 per annum.

ATLESBURY: ROYAL BUCKINGHAMSHIRE HOSPITAL.—Resident Medical Officer. Salary at the rate of £200 per annum.

BIRMINGHAM: GENERAL HOSPITAL.—Two House-Physicians for six months. Salary £100 (£70 from October 1st).

BIRMINGHAM: RUBERY HILL AND HOLLYMOOR MENTAL HOSPITAL.—Two Junior Assistant Medical Officers. Salary, £350 per annum, increasing to £400.

BIRMINGHAM UNIVERSITY.—Professor of Pathology. Stipend, £1,000 a year.

BRADFORD CITY.—Assistant Medical Officer, chiefly for School work. Salary, £500 per annum.

BURY INFIRMARY.—Junior House-Surgeon (male). Salary, £150 per annum.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Surgeon (male). Salary at the rate of £130 per annum.

CANCER HOSPITAL, Fulham Road, S.W.—House-Surgeon. Salary at the rate of £150 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Physician to Out-patients.

DERBY COUNTY BOROUGH: MATERNITY AND CHILD WELFARE.—Medical Officer (female). Salary £500 per annum.

DUNDEE DISTRICT ASYLUM.—Assistant Medical Officer (Male) for the Institution at Westgreen. Salary, £293 per annum.

EDINBURGH HOSPITAL FOR WOMEN AND CHILDREN.—(1) Senior House-Surgeon. (2) Junior House-Surgeon. Salary at the rate of £60 and £40 per annum respectively.

EXMINSTER: DEVON MENTAL HOSPITAL.—Third Assistant Medical Officer (male). Salary, £300 per annum, rising to £350.

GLASGOW VICTORIA INFIRMARY.—Visiting Surgeon.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon (male). Salary, £150 per annum.

GRIMSBY COUNTY BOROUGH.—Assistant Medical Officer of Health and Assistant Tuberculosis Officer. Salary, £600 per annum, rising to £700.

HOSPITAL FOR WOMEN, Soho Square, W.—Resident Medical Officer. Salary, £100 per annum.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End Road, N.W.8.—Resident Medical Officer (male). Salary at the rate of £150 per annum.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House-Surgeon (male). Salary, £250.

HULL ROYAL INFIRMARY.—Assistant House Surgeon. Salary, £150 per annum.

LONDON TEMPERANCE HOSPITAL, Hampstead Road, N.W.—Assistant Resident Medical Officer (male). Honorarium £120 per annum.

MANCHESTER: ANCOATS HOSPITAL.—(1) House-Surgeon. Salary at the rate of £150 per annum. (2) Honorary Radiologist.

MANCHESTER: HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Resident Medical Officer for In-patient Department, Bowdon. Salary, £350 per annum.

MANCHESTER: HULME DISPENSARY.—Resident Medical Officer. Salary, £350 for first year, £400 for second.

MANCHESTER: ROYAL EYE HOSPITAL.—Junior House-Surgeon. Salary, £120.

MANCHESTER: ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Assistant Medical Officer for Children. Out-patient Department. Salary, £100 per annum.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich Road, S.E.—Senior Resident Medical Officer (unmarried). Salary, £330 per annum.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Resident Medical Officer (male). Salary at the rate of £150 per annum.

NOTTINGHAM: GENERAL HOSPITAL.—House-Surgeon. Salary at the rate of £200 per annum.

OLDHAM COUNTY BOROUGH.—Assistant Medical Officer of Health (female). Remuneration, £350 per annum.

OXFORD COUNTY AND CITY MENTAL HOSPITAL, Littlemore.—Second Assistant Medical Officer. Salary, £350 per annum.

PETERBOROUGH INFIRMARY.—House-Surgeon (male). Remuneration at the rate of £200 per annum.

PORTSMOUTH: ROYAL PORTSMOUTH HOSPITAL.—House-Surgeon. Salary, £150 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—Honorary Medical Officer in charge of Radio-Electro-Therapeutic Department.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £200.

SHEFFIELD ROYAL INFIRMARY.—Ophthalmic House-Surgeon. Salary, £150 per annum.

SOUTH AFRICA: FREERE HOSPITAL, East London.—Resident Medical Officer. Salary, £350 per annum, rising to £400, with certain fees approximately amounting to £250 to £300.

STAFFORD: STAFFORDSHIRE GENERAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

STOCKPORT INFIRMARY.—Honorary Ophthalmic Surgeon.

STOKE-ON-TRENT: NORTH STAFFORDSHIRE INFIRMARY.—Additional House-Surgeon. Salary, £200 per annum.

SWANSEA GENERAL AND EYE HOSPITAL.—House-Physician. Salary, £200 per annum.

SYDENHAM: SOUTH-EASTERN HOSPITAL FOR CHILDREN.—Resident Medical Officer. Honorarium, £100 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

WEYMOUTH AND DISTRICT HOSPITAL.—House-Surgeon (male). Salary, £180 per annum.

YORK: COUNTY HOSPITAL.—Third Resident Officer. Salary, £150 per annum.

CERTIFYING FACTORY SURGEONS.—The following vacant appointments are announced: Glastonbury (Somerset); Hyde (Chester); Smethwick (Stafford).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

MACKENZIE, Miss Ella, M.B., Ch.B., L.M., D.P.H., Assistant Medical Officer of Health, Assistant Tuberculosis Officer, and Assistant School Medical Officer for the County Borough of Smethwick.

LEAKE, W. H., M.B., Ch.B.Leeds, Resident Aural Officer to the General Infirmary, Leeds.

SUTTIE, I. D., M.B., Ch.B.Glas., Medical Officer of Perth Prison and Medical Superintendent of the Criminal Lunatic Department at Perth, vice Leslie H. Skene, M.B., Ch.B., resigned.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

JULY.

26 Wed. Norfolk Branch: Annual Meeting, Norfolk and Norwich Hospital. Exhibits 2.45 p.m.; General Meeting 3 p.m.; Tea 4.30 p.m.

Annual Meeting, Glasgow.

21 Fri. Annual Representative Meeting, Bute Hall, University, 10 a.m.
Extraordinary General Meeting, Bute Hall, 4.45 p.m.

22 Sat. Annual Representative Meeting, Bute Hall, 9.30 a.m.

24 Mon. Council Meeting, Randolph Hall, University, 9 a.m.
Annual Representative Meeting, Bute Hall, 9.30 a.m.

25 Tues. Annual Representative Meeting, Bute Hall, 9.30 a.m.
Annual General Meeting, Bute Hall, 2 p.m.
Adjourned Annual General Meeting and President's Address, Bute Hall, 8 p.m.

26 Wed. Council Meeting, Randolph Hall, University, 9 a.m.
Meetings of Sections, 10 a.m.
Conference of Honorary Secretaries, Debating Hall, University Union, 2 p.m.
Secretaries' Dinner, University Union, 6.30 p.m.

27 Thurs. National Temperance League Breakfast, 8.15 a.m.
Mass at St. Andrew's Cathedral, 9 a.m.
Meetings of Sections, 10 a.m.
Honorary Graduation Ceremony, Bute Hall, 1 to 2.30 p.m.
Annual Dinner of the Association, 7.30 p.m.

28 Fri. Meetings of Sections, 10 a.m.
Popular Lecture, 8 p.m.

29 Sat. Whole-day excursions. Early application should be made to the Honorary Local General Secretary of the Meeting, 22, Sandyford Place, Glasgow, W.

The Annual Exhibition of Surgical Instruments, Electro-Medical Apparatus, Drugs, Foods, etc., will be held in the Kelvin Hall from Tuesday, July 25th, to Friday, July 28th, inclusive.

The full programme of the work of the Sections of the Annual Meeting at Glasgow is printed at page 29 et seq.

POST-GRADUATE COURSES AND LECTURES.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, Balham.—Wed., 4.30 p.m., Mr. H. Barr Grimsdale, F.R.C.S.: Common Errors in Diagnosis in regard to the Eyes.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

DEATHS.

CRABB.—On July 11th, at Craigielea, Parkhurst Road, Holloway, James Crabb, M.A.(Aberd.), M.D., C.M.(Edin.), D.P.H., aged 72.

STIELL.—On July 15th, at 54, Elms Road, Clapham, S.W., Gavin Stiell, M.D., aged 65.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, JULY 29TH, 1922.

CONTENTS.

ANNUAL REPRESENTATIVE MEETING. PAGE

Friday, July 21st.

AGENDA OF THE MEETING ... 41
REPORTS OF COUNCIL ... 42
PRESIDENT, 1923-24 ... 42
ANNUAL MEETING, 1924 ... 42
ELECTION OF SIR ALEXANDER OGSTON AS VICE-PRESIDENT 42
THE PRESIDENT-ELECT ... 43
ORGANIZATION: CONSTITUTION AND MACHINERY OF THE ASSOCIATION ... 42
FACILITIES FOR INCORPORATION OF OVERSEA BRANCHES ... 42
ORGANIZATION OF THE PROFESSION IN SOUTH AFRICA ... 43
REVISION OF CONSTITUTION AND MACHINERY ... 44
ASSOCIATION SUBSCRIPTIONS ... 44
ISSUE OF ANNUAL REPORT ... 44
POSTAL VOTE ... 45
COMPOSITION OF COUNCIL AND COMMITTEES ... 45
REPORT OF POST-GRADUATE COMMITTEE ... 46, 49
PROFESSIONAL SECRECY ... 46
NOTIFICATION OF VENEREAL DISEASES ... 49
EXTRAORDINARY GENERAL MEETING ... 49
OFFICE COMMITTEE ... 50
NATIONAL INSURANCE:
APPROVED SOCIETIES AND CONTROL OF MEDICAL BENEFIT ... 50
CONTINUANCE OF INSURANCE ACTS SYSTEM ... 51

PAGE

Saturday, July 22nd.

HOSPITAL POLICY OF THE ASSOCIATION ... 52
REMUNERATION FOR HOSPITAL SERVICES ... 55
FORMATION OF STAFF FUNDS ... 54
DEFINITION OF "VOLUNTARY HOSPITAL" ... 57
CATEGORIES OF IN-PATIENTS ... 59
ELECTION OF CHAIRMAN AND DEPUTY CHAIRMAN ... 55
ELECTION OF TREASURER ... 60

Monday, July 24th.

HOSPITAL POLICY (DISCUSSION RESUMED) ... 60
PRIVATE PATIENTS IN NURSING HOMES ATTACHED TO HOSPITALS ... 61
PRIVATE IN-PATIENTS IN HOSPITAL ... 62
OUT-PATIENTS ... 62
ELECTIONS ... 62

ANNUAL GENERAL MEETING.

INDUCTION OF PRESIDENT ... 63
FOREIGN GUESTS AND DELEGATES FROM OVERSEAS ... 63
PRESENTATION OF ASSOCIATION GOLD MEDAL TO LIEUT.-COLONEL MARTIN-LEAKE, V.C., AND SIR CLIFFORD ALLBUTT, K.C.B., F.R.S. ... 63
PRESENTATION OF STEWART PRIZE TO DR. J. C. McVAIL ... 64
PRESIDENT'S ADDRESS ... 64
ASSOCIATION NOTICES ... 64
VACANCIES ... 64
BIRTHS, MARRIAGES, AND DEATHS ... 64

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.

GLASGOW, 1922.

ANNUAL REPRESENTATIVE MEETING.

Friday, July 21st.

THE twentieth Annual Representative Meeting was opened in the Bute Hall of Glasgow University at 10 a.m. on Friday, with Dr. R. WALLACE HENRY (Chairman of Representative Body) in the chair. He began by reading a cable message from Australia conveying the best wishes of the Federal Committee for a successful Representative Meeting. (Applause.) The Medical Secretary was instructed to convey the thanks of the meeting to the Federal Committee.

STANDING ORDERS.

The customary standing orders were adopted, with the addition of an order that representatives of the Press should be admitted to the Representative Meeting only on the understanding that they would not report any matters which the meeting decided should be regarded as private.

A further standing order was proposed, that in the voting papers for the election of members of the Council from the Representative Meeting, former members of the Council should be indicated by asterisks.

Dr. E. R. FOTHERGILL declared himself totally opposed to this proposal. If the senior men were wanted on the Council the representatives could put them there, but he objected to labelling them on the voting papers in the manner suggested.

Dr. J. D'EWART (Manchester) also objected to the proposal. He did not think the old members of the Council should be insulted by being marked in a special manner so as to call attention to their work on behalf of the Association in years gone by. The Representative Body had a right to elect four members, and to elect whom it pleased from its own membership. Let the representatives exercise their free choice without any preference being given to one person more than to another.

The CHAIRMAN, in putting the motion, said that his own sympathies were not very strongly in favour of it, and on a show of hands it was lost.

AGENDA OF THE MEETING.

The report of the Agenda Committee with its recommendations was agreed to. It was decided after the preliminary business that morning to take the matter of organization, followed by medical ethics; to take as the first business on Saturday morning the hospitals report, and on Monday morning finance and medico-political matters.

It was also proposed by the Agenda Committee that there should be a standing Agenda Committee to consider and report to each meeting of the Representative Body on the method of dealing with the agenda of such meeting, such committee to consist of the Chairman and Deputy Chairman of Representative Meetings and the Chairman of Council, with power to co-opt not more than four other members from among the chairmen of standing committees.

Dr. GORDON BELL (Sunderland) moved as an amendment to add the words "and one other [member] not included in any of the foregoing categories." He agreed that it was essential that those who had to arrange the business should have some power to arrange the order of business, but thought the Representative Body as a whole, in whose interests that was done, ought to have at least one direct representative on the Committee.

The amendment not being seconded, the motion was then put and carried.

REPORTS OF COUNCIL.

The CHAIRMAN OF COUNCIL (Dr. R. A. Bolam) moved that the Annual Report of Council, 1921–22, Balance Sheet and Financial Statement for 1921, Estimate of Income and Expenditure for 1922, Supplementary Report of Council, 1921–22, Report of Council on the Constitution and Machinery of the Association, and Report of Council on the Organization of Voluntary Hospitals be received. This was agreed to.

President 1923–24.

The CHAIRMAN OF COUNCIL moved the following recommendation of Council: "That Charles P. Childe, F.R.C.S., Honorary Senior Surgeon, Royal Portsmouth Hospital, be elected President of the Association for 1923–24." This was carried by acclamation.

Mr. CHILDE thanked the Chairman of the Council for proposing the recommendation and the meeting for adopting it unanimously. It was a great personal honour to himself, but more particularly he regarded it as an honour to Portsmouth, and he could assure the meeting that when they came to Portsmouth next year they would meet with a hearty welcome. He recognized the obligations which would be entailed by the office to be conferred upon him, and would use his best endeavours to uphold the high ideals and principles of the Association and through it of the profession generally.

Annual Meeting, 1924.

The CHAIRMAN OF COUNCIL moved the recommendation of Council that the Annual Meeting, 1924, be held at Bradford. This was agreed to.

Election of Sir Alexander Ogston as Vice-President.

The CHAIRMAN OF REPRESENTATIVE MEETINGS moved a recommendation of Council that Sir Alexander Ogston, K.C.V.O., M.D. (President of the Association, 1914–16) be elected a Vice-President of the Association in recognition of his services as President of the Association. Had it not been for the war, he said, the proposal would have been brought forward earlier. The recommendation was agreed to.

On the proposal of the CHAIRMAN OF COUNCIL, the remainder of the Annual Report under "Preliminary" was approved.

The following motion stood on the agenda in the name of the Glasgow Eastern Branch:

> That upon the acceptance of an invitation from a particular town or district to hold the Annual Meeting there, it shall thereupon be the Medical Secretary's duty to send a copy of the rules and suggestions anent the carrying out of annual meetings to every member of the Branch Council concerned.

In the absence of the Branch's Representative, the motion was formally moved by the CHAIRMAN. The CHAIRMAN OF COUNCIL said that from the point of view of economy there would be difficulties in forwarding the literature referred to to all the members; it would be done where desirable, but should not be made compulsory. The motion was lost.

Position of Branch Council in Area of Annual Meeting.

A motion also stood on the agenda in the name of the Glasgow Eastern Branch, proposing that when the Annual Meeting was fixed to be held in a city agreed upon, the Branch Council for that area should be thereby constituted the parent committee for the Annual Meeting, and should control and supervise the formation of all other committees usually appointed. In the absence of the Branch's Representative, the motion was formally moved by the CHAIRMAN.

The CHAIRMAN OF COUNCIL considered the present method of inviting the whole of the profession to co-operate with the Division or Branch concerned was preferable to that suggested in the motion. The motion was lost.

On the motion of the CHAIRMAN OF COUNCIL, the Supplementary Report of Council under "Preliminary" was approved.

ORGANIZATION.

Constitution and Machinery of Association.

Dr. S. MORTON MACKENZIE (Chairman of Organization Committee) voiced what he thought was the general feeling of the meeting in regretting that Mr. Russell Coombe felt obliged, after the Newcastle meeting, to relinquish the chairmanship of the Organization Committee, and had so far refused to be nominated for the Council. He hoped Mr. Coombe would allow himself to be nominated for the Council during the present meeting. He wished to preface the introduction of the motions he had to propose by a word of explanation and apology. The amendments, articles, by-laws, and governing resolutions of the Representative Meeting last year occupied about seventeen pages of closely printed SUPPLEMENT, and to have printed them in the agenda would have more than trebled its bulk. He therefore intended to propose a covering resolution in the agenda and to deal with the by-laws and amendments from the SUPPLEMENTS in which they were originally published in the JOURNAL.

Facilities for Incorporation of Oversea Branches.

Dr. MORTON MACKENZIE then moved the approval and adoption of the amended and new articles and by-laws submitted by the Council in Section I of its report on revision of the constitution and machinery of the Association (SUPPLEMENT, December 24th, 1921, pp. 237–240) as to facilities for incorporation of Overseas Branches (where so desired), subject to a slight verbal amendment of Article 11 A (2). These, he said, were the Rules drafted by the Council in accordance with the resolution passed last year to give effect to Australia's wishes to have power to make their Branches incorporated bodies and yet remain members of the Association. It would be remembered that Dr. Todd (who was both lawyer and doctor) had come all the way from Australia in order to promote the scheme. The draft by-laws and articles had been sent to Australia and had met with the entire approval of Dr. Todd and of the Australian Branches, with one slight exception. Dr. Todd, in returning the drafts, had remarked on the extreme skill with which they had been drawn up, and the congratulations of the meeting were due to the office staff, to the Solicitor, and to the Counsel, Mr. Colquhoun Dill, for this work. He therefore formally moved the resolution.

Dr. E. R. FOTHERGILL (Brighton) moved a series of amendments to the new articles and by-laws submitted by the Council. The principle of these amendments was to retain matters of policy within the control of the Representative Body, and not to delegate such control in a general way to the Council, which was merely the executive of the Representative Body. It had been urged that if the Council were not given the powers asked for time would be lost, but supposing the Council were ready to complete negotiations in June, its recommendations could be submitted to the Representative Body the following month.

Dr. MACKENZIE hoped the meeting would not think too much of Dr. Fothergill's lurid picture. The Organization Committee had no intention of belittling the Representative Body. The object was merely to give the Council power to settle details in order to save time.

The amendment was defeated, and the motion was agreed to.

Dr. MACKENZIE moved that the Representative Meeting approve the draft form of agreement (SUPPLEMENT, December 24th, 1921, p. 254), submitted by the Council, between an incorporated Branch and the Association, and this was agreed to.

Dr. MACKENZIE then proposed the adoption of a recommendation of the Council that the Representative Meeting approve and adopt a new article and by-law providing facilities for the formation of federal councils of overseas Branches (where so desired). In doing so, he said that no objections had been raised to the by-law in Australia, and there were no amendments. The motion was carried.

Dr. J. F. WILKINSON (Victoria, Australia) expressed the thanks of the Federal Committee and members of the Australian Branches generally for the very friendly way in which they had been met in this matter, and particularly to the officers of the Association and the Solicitor, who had rendered every possible assistance, once they were convinced that this thing could be done, in passing the desired alterations in the constitution. In Australia, he said, it was felt that this was going to be a matter of very great importance to them. It would enable them to work out their medical affairs in a manner that seemed to them to be best, and without any kind of break from the parent Association, which to them was the most vital factor of all. They had all felt very strongly that they wanted nothing to be done which would in any way weaken the link that bound them to the parent Association. Finally, he expressed the deep gratitude of the Australian Branches of the Association for the way in which they had been met in this matter.

The CHAIRMAN thanked Dr. Wilkinson for the kindly way in which he had spoken, reciprocated his good wishes, and expressed the hope that the Association in Australia would flourish in the future even more than in the past.

THE PRESIDENT-ELECT.

There was an interval at this point, in which the new President of the Association, Sir William Macewen, was accorded a hearty welcome, the representatives all standing.

Sir WILLIAM MACEWEN, on behalf of the Executive of the Reception Committee, welcomed the representatives to the city of Glasgow. He expressed his regret that the representatives had come to Glasgow on what the Glasgow people called their fair holidays, and when everybody who could crawl had left the city. The magistrates of the city were also away, with one exception, but he did not suppose that that would prevent the representatives from being accorded a very hearty welcome to the city.

Dr. G. A. ALLAN (Honorary General Secretary of the Meeting), after being introduced by the CHAIRMAN, said it had been hoped that Sir William Macewen would have been accompanied on the platform by one of the representatives of the city. The Lord Provost was out of town, and the only magistrate in the city, who should have deputized for him, was engaged in court work. He hoped the members would have a happy time in Glasgow.

The CHAIRMAN tendered to Sir William Macewen and Dr. Allan the heartiest thanks of the meeting for their kind words of welcome.

The Organization of the Medical Profession in South Africa.

The CHAIRMAN OF THE ORGANIZATION COMMITTEE then went on to speak of the position of the Overseas Branches. He said that the Association was almost unique in having overseas branches, and everything possible was being done to make them active and happy. They had already heard that Australia was happy. The Branches in Canada were not so active, and there was a strong Canadian Medical Association. The Council had sent out to the Canadian Association detailed proposals for federation (which were withdrawn last year for further consideration) together with an invitation to the Canadian Medical Association to express its opinion on them, and possibly enter into some negotiations with regard to federation. As to Ireland, one could do nothing there at the moment. In South Africa a difficult position had arisen. Last year South Africa took a referendum of all the practitioners in the Union of South Africa. The practitioners were asked to say whether they preferred to go on as they were, with the Association, or whether they preferred to form a South African Medical Association or join the existing one and federate it with the British Medical Association. Not more than half the practitioners replied. Of those who replied (about 700) there was a majority of about 30 or 40 in favour of the formation of a new body to be federated with the Association. The members of the Association in South Africa formed about half the medical population, and of the members of the Association who voted two-thirds voted for the continuation of the present position. After that the South African Congress met; this body was not concerned with the Association at all, except that its executive was the South African Medical Committee, which was an Association body. The Congress, through this Committee, addressed a motion to London asking that definite federation proposals might be passed at that meeting. In reply, the Organization Committee sent out to South Africa the same definite proposals that were sent to Canada and invited South African opinion on these, but said quite frankly that the necessity of giving two months' notice of alterations of by-laws made it very difficult if not impossible to get them through at that meeting. In May a cable was received stating that the proposals were unacceptable. A later cable stated that the intention had been only to ask the Representative Meeting to pass a resolution favouring the principle of federation and continuing the discussion of the details. The Association naturally desired to consider the whole medical profession in South Africa, but two-thirds of the Association members in South Africa apparently wished to go on as they were. If the majority of the members in South Africa wished to have a fresh body, federated to the Association, the Organization Committee would willingly do all it could to give them that facility; but the Committee desired to be convinced that there was a definite demand to that effect. He therefore proposed a resolution which, after certain verbal alterations had been suggested by Dr. R. D. MOTHERSOLE and adopted, read as follows:

> That the Representative Body reiterates its previously expressed opinion in favour of federation of any purely medical body or bodies representing substantially an ex-Branch or group of ex-Branches of the Association outside Great Britain who desire it with the Association, and instructs the Council to continue the discussion of the scheme proposed to the South African Committee or any alternative scheme suggested by it.

In reply to Dr. CANDLER-HOPE, Dr. MACKENZIE said that the last word "it" in the resolution referred to the South African Medical Committee.

Dr. J. A. MACDONALD wanted to correct an impression which might have been gained from a remark of the Chairman of the Organization Committee to the effect that if this new organization were formed in South Africa it would mean the wiping out of the Association's Branches. He (Dr. Macdonald) did not think that that was the case. The great majority of the members of the Association would still remain members. It was quite possible that the Branches out there must be maintained even if the new Association were formed. He hoped that the negotiations with South Africa would be continued. It would be a pity to lose a number of men who were a great credit to the Association.

Dr. BARNARD FULLER (Cape of Good Hope, Western Province) said that one of the charges levelled against the South African members was laziness. As far as his own Branch was concerned, its members were content to leave things as they were. Not only their own corner, but the whole of Cape Colony was quite content. But in South Africa there was, not only among medical men, but among the general population, a large section to whom anything with the prefix "British" was anathema. Among the medical men in South Africa a considerable number did not belong to any organization. There were others who, like some in the British Isles, did not altogether approve the Association's policy, and wished to make it more of the nature of a trade union. Those of them who had thought a great deal about the situation in South Africa felt that probably the wisest thing to do was to have a South African Medical Association into which all the conflicting elements in the profession could be gathered, and so be held together, and that this body should be federated with the British Medical Association. He himself had been a member of the Association for more than thirty years, and he wanted to remain a member, but he had the greatest difficulty in deciding which way he should vote in the South African referendum. The matter was very complicated; it was not a question of lethargy. He looked forward to a new association, which would bring all South African medical men into its discipline, and which should be linked up with the British Medical Association. He begged for patience. It was necessary to handle matters carefully. Those of them who were most anxious to keep in intimate touch with the British Medical Association were those who felt the greatest difficulty. In South Africa it was necessary to go warily both in general and in medical politics. He did not see why those who chose to do so should not keep up their membership of the Association, even though they became also active members of the South African Medical Association. He begged that South African representatives might be credited with the desire to do the best they could for the medical profession. (Applause.)

Dr. MACDONALD asked Dr. Fuller whether he thought there was now any greater possibility of bringing the Dutch medical men into the British Medical Association. Dr. FULLER thought there was quite a chance of getting in a large proportion of them, but there would always be a proportion of men, both British and Dutch, who would not join any association. The word "British" was a stumbling-block to many of the Dutch medical men.

Dr. MACKENZIE, replying to Dr. Macdonald and Dr. Fuller, said that the Federation would have to represent areas formerly covered by Branches, which would therefore have to be dissolved. It would be impossible for the Association to federate with a body representing the South African profession and at the same time compete with it by continuing its own Branches in South Africa. The new body when federating could make it a condition that members should have the JOURNAL if they desired it. He hoped Dr. Fuller would appreciate that the Organization Committee realized the difficulties met with in South Africa, and desired to help in solving them.

The motion was then put and carried.

On the proposal of Dr. MACKENZIE the remainder of the Report of the Council as to the question of federation facilities was approved.

Revision of Constitution and Machinery.

Dr. MORTON MACKENZIE moved that the Representative Meeting should approve and adopt the draft amended and new Articles and By-laws submitted by the Council. He said he did not propose to take the amended Articles and By-laws separately, but would take them page by page except where amendments had been put down or where some new point of principle was raised. The amendments, which for the most part put into legal phraseology decisions arrived at last year, had been most carefully checked by the solicitor, by counsel, and by himself, and certain active Divisions had called attention to a few points which had been overlooked.

Medical Benevolent Fund.

The CHAIRMAN OF REPRESENTATIVE MEETINGS formally moved the following amendment on behalf of the Glasgow Eastern Branch:

That the Memorandum of Association be amended so as to include the following as one of the objects for which the Association is established—namely, (9) To establish a Benevolent Fund for the benefit of members and their dependants.

After discussion the meeting resolved to proceed to the next business.

Association Subscriptions.

Dr. MORTON MACKENZIE moved that By-law 11 read as follows:

11. (1) On and after the 1st of January, 1923, the Annual Subscription to the Association shall be Three Guineas. Provided that in the case of members of the classes or descriptions mentioned in column 1 of the following table the said subscription shall be reduced to the extent appearing in column 2 thereof.

1. Members entitled to Reduction of Subscription.	2. Reduced Subscription payable.
A. Any Officer on the Active List of the Royal Navy Medical Service, the Royal Air Force Medical Service, the Medical Service of the Regular Army, or the Indian Medical Service, wherever resident	Two guineas.
B. Members of the following descriptions resident in the United Kingdom and not falling within class A above described—	
(i) Any Member of not less than 40 years' standing as such	Two guineas.
(ii) Any Member of not less than 10 years' standing as such who has definitely and permanently retired from the active practice of the medical profession and has signed and transmitted to the Treasurer a declaration to that effect	Two guineas.
(iii) Any Member who is engaged on a whole-time basis in the work of medical instruction or medical research and is not engaged in the practice of the medical profession either as consultant or otherwise	Two guineas.
(iv) Two Members jointly being a husband and his wife residing together	Four guineas and a half.
(v) Any Member admitted to membership before the expiration of two years from the date of his registration under the Medical Acts	One guinea and a half until the 31st December next occurring after the expiration of four years from the date of such registration.
C. Any Member resident outside the United Kingdom and not falling within class A above described	One guinea and a half.

Provided also that any Member, wherever resident, who is admitted on or after the 1st July in any year, shall pay only half his current subscription for that year.

(2) For the purposes of this by-law a Member shall be deemed to reside in that place in which his ordinary place of abode is situate at the time at which according to the Regulations his subscription is considered due.

This embodied two slight alterations, one according to the instruction of the Representative Body last year, and the other recommended by Council. The latter occurred under B (iii), and the former under A.

The motion was agreed to.

Which Members of Council shall be Members ex officio of Branch Councils.

Referring to the next item on the agenda, the amendment by Edinburgh and Leith (see below), Dr. MORTON MACKENZIE said that the instruction passed last year was:

That it be an instruction to the Council to take steps for amendment of By-law 16 (*a*) so as to provide that every member of the Council elected by a Branch or group of Branches shall, *ipso facto*, be a member of the corresponding Branch Council or Councils, and that no other member of the Council, as such, shall be a member of the Branch Council.

The Organization Committee had interpreted that, and had instructed Solicitor and Counsel to interpret that, as meaning to include both the twenty-four and the twelve members of the Council as *ex officio* members of their Branch Councils.

Dr. J. STEVENS (Edinburgh and Leith) moved the omission of the words from the amended By-law 16 (1) (*a*):

and those of the twelve members (hereinafter mentioned) of the Council who are elected (as hereinafter provided) wholly or in part by the Representatives of constituencies comprised in the Branch.

and the substitution of the following:

and such one, if any, of the twelve members (hereinafter mentioned) of the Council elected by Representatives of Constituencies at the Annual Representative Meeting as resides within the area of the Branch.

His Division took the opposite view to that of the Chairman of the Organization Committee with reference to the meaning of the instruction passed last year. Previously the position had been that the twelve members were members of the Branch Councils, and the object of passing the minute at all was to change previous conditions. If the present proposal were carried, in his area a member of Council would be a member of the Branch Council of the Branches of Edinburgh, Fife, Perth, Dundee, Aberdeen, and the Northern Counties, in only one Branch of which he would have any real interest.

Dr. FOTHERGILL (Brighton) said that the matter was a legal one pure and simple. The point under discussion was not the principle as to whether certain persons should be on the Council, but what was the decision of the Representative Body last year.

Dr. MACKENZIE said that there was admittedly some argument about what was meant last year, but he thought the issue could be put before the meeting, and he would suggest to the Chairman that the meeting should vote on the matter. Those who wished that the twelve members of Council should be *ex-officio* members of the Branch Councils should vote for the original proposition, and those members who did not wish that they should be *ex officio* members should vote for one of the amendments.

The CHAIRMAN called upon Mr. Hempson to address the meeting.

The SOLICITOR to the Association (Mr. E. W. Hempson) said that he experienced—and so did Mr. Dill, the Counsel—considerable difficulty in considering the resolution last year and deciding as to the intention of the meeting. In fact, he referred it back to the Association for instructions on that point, and this resulted in the by-law now before the meeting being evolved. According to his reading of that resolution the by-law gave effect to it.

A show of hands was taken on the Edinburgh and Leith amendment. There voted:

In favour	...	...	56
Against	...	...	54

The amendment was subsequently carried as the substantive motion by the requisite two-thirds majority.

Issue of Annual Report.

The CHAIRMAN formally moved the following amendment on behalf of the Glasgow Eastern Branch:

That in view of the fact that resolutions affecting the policy, Articles, or By-laws of the British Medical Association must this year be received at head office not later than April 29th, whilst the Annual Report of Council is to appear in the SUPPLEMENT of May 6th, steps be taken to have the Annual Report issued, if possible, at an earlier date, or to have the date of receiving resolutions made later, or both, as it is highly desirable that such resolutions should in many cases be made in the full knowledge of the Council's latest report on certain matters.

Dr. MACKENZIE thought there was a good deal of justice in the complaint to which the amendment gave expression, but there would be great difficulties in carrying out the remedy suggested. If the Annual Report of Council was to be useful at the Representative Meetings it must be issued as late as possible. On the other hand, it was essential, both legally and from a practical point of view, that formal notice of amendments to By-laws must be given two months before the meeting. Amendments had sometimes to be referred back to elucidate doubtful points, and for that a few extra days were required. He would promise, however, to do everything possible to give time to get amendments in after the Annual Report of Council had been issued.

The CHAIRMAN thereupon withdrew the amendment.

Dr. MACKENZIE, referring to the SUPPLEMENT of December 24th, 1921, said the only new principle on pages 240 and 241 was contained in the last paragraph of the latter page, where

the wording had been altered by the Council to include Overseas Branches not within the British Empire. Such Branches existed in Iraq and China. On page 242 he wished to propose an amendment to draft Article 32. The Council had overlooked the fact that the Treasurer of the Association held office for three years, and the Article as it stood would make him an *ex officio* member for three years longer. He therefore proposed that the article be amended to make the Treasurer, and, during the year immediately following his period of office, the past Treasurer, *ex officio* members of the Council.

This was agreed to.

Postal Vote.

Dr. B. E. FORDYCE (Cambridge and Huntingdon) moved an instruction to the Council to make provision for any Branch or Division to take a postal vote after the question had been discussed at a meeting of the Branch or Division, if the members present deemed a postal vote to be desirable, provided that with each such postal vote there should be transmitted such observations on the subject under discussion as the meeting might direct, and that a full report of the proceedings should be submitted to the Council. A resolution of the same nature was submitted at Newcastle, when it was lost by nine votes; he had now added the proviso (already given) to his former resolution, and he hoped this would ensure more favourable consideration. The intention was to safeguard against any possible interference with the existing articles and by-laws. Those who attended a meeting were not always representative of the whole body of constituents, and a small divisional meeting could not be regarded as representing the preponderance of opinion. It was quite true that the arguments heard at a meeting were often much more effective than the mere reading of the matter in the JOURNAL, but in his own Division, in connexion with insurance matters, such a procedure had been used, with great benefit to the representative at the Panel Conferences. All his Division desired in bringing forward this resolution was that there should be equal opportunity for all members to make their opinions felt, whether they were at a meeting or not.

Dr. MORTON MACKENZIE asked where there was any objection under the by-laws to what was now proposed. He was unable to see why the procedure was not already allowable.

Dr. FORDYCE replied that the Council in its Report for 1921 deprecated the postal vote.

The CHAIRMAN OF COUNCIL said that the postal vote was allowable, and the resolution asked that formal provision should be made for it. Every Branch and Division had the power to take a postal vote on any subject in which it was interested.

Dr. FORDYCE said that what his Division desired was that the postal vote should be regularized by this Representative Meeting.

The CHAIRMAN ruled the motion out of order.

Composition of Council.

Dr. MACKENZIE next moved an amendment of By-law 46 (SUPPLEMENT, December 24th, 1921, p. 249), the principal provision of which was that eight (instead of four) members of Council might be elected by the Representative Meeting. This was agreed to without discussion.

Composition and Reference of Science Committee.

Dr. FOTHERGILL, on the proposal (SUPPLEMENT, December 24th, 1921, p. 252) that the Representative Meeting should appoint four members on the Science Committee, said that just as, during the last twenty years, the medico-political side of the Association had been developed, so now it was desirable to go ahead with the development of the scientific side, not merely so far as concerned grants and scientific investigation, but in the development of the scientific work in Branches and Divisions, thereby carrying into science the life and organization which had been so successfully carried into medical politics. He hoped the Representative Body would elect on the Science Committee men who had both scientific and organizing value in their localities.

Dr. FOTHERGILL went on to move an amendment of By-law 48 (2) so that the voting papers for the election of twenty-four members of Council by the Branches or Groups of Divisions in the United Kingdom should contain the names of those candidates who had been nominated by a Branch Council, as well as by a Division, or in writing by members of the Branch.

Dr. H. B. BRACKENBURY said that, although the motion might be a good thing for the rest of the country, it seemed to him that it would be a very inequitable thing for the metropolitan counties. The Metropolitan Counties Branch Council was unique, in that it represented the whole of the area from which four of these twenty-four members of Council were elected. In every other case a Branch Council represented only one part of the area from which those representatives were elected. If the representatives of all the Divisions met together as a Branch, and decided to nominate four candidates, representing the whole of the electorate, it would give those four a pull over the others nominated by a single Division. He asked whether Brighton would consent to the withdrawal of the motion for further consideration, or whether it was possible to put in the words "except in those areas in which the Branch Council represents the whole of the electorate."

The amendment was lost.

Dr. FOTHERGILL next moved a resolution the object of which was to widen the basis of nomination for election of members of Council by groups of Representatives, by the adoption of a by-law. This set out that the election of twelve members of Council by the groups of Representatives of constituencies shall be by means of voting papers issued at the Annual Representative Meeting to each Representative comprised in the group, containing names of candidates, the nominations being by a Division or by three members of a Division.

The CHAIRMAN said it was a motion excluding the right of individual Representatives to make a nomination.

Dr. FOTHERGILL agreed, and said that Brighton considered that no individual Representative in a group should himself put up a candidate for election. Elections and nominations should be distinct.

Mr. N. BISHOP HARMAN said Dr. Fothergill was trying to make the nominations come from a great body, while the electors came from a little body, which was the reverse of Euclid's proposition that the greater includes the less.

The motion was lost.

Composition of the Insurance Acts Committee.

Dr. MORTON MACKENZIE moved that the following recommendation of the Council (SUPPLEMENT, May 6th, 1922, p. 140) be adopted:

(1) That the figure "5" be substituted for "6" in the third line of the fifth column of the Schedule to the By-laws headed "Otherwise appointed" concerning the constitution of the Insurance Acts Committee; (2) that the words "Great Britain" be substituted for the words "the United Kingdom" in the seventh and eighth lines; (3) that the word "each" in the eleventh line and the words "and for Ireland respectively" in the thirteenth and fourteenth lines be deleted; and (4) that the figure "19" be substituted for the figure "18" in the fifth column "Otherwise appointed" of the Schedule to the By-laws relating to the constitution of the Insurance Acts Committee.

The Council, he said, had been able to recommend the meeting to make this change without actually increasing the numbers of the committee. At present the Insurance Acts Committee consisted of 4 *ex officio* members of the Association, 4 nominated by outside bodies, 18 directly elected, and 6 elected by the Representative Meeting. Of the latter 6, 4 came from England and Wales, 1 from Scotland, and 1 from Ireland. He was told that the Act did not apply to Ireland at present. It was proposed, therefore, that the representative from Ireland should be dropped, and that the number of representatives elected by the insurance practitioners themselves should be increased from 18 to 19.

Professor R. J. JOHNSTONE, M.P., held that Ireland should not be excluded from the Insurance Acts Committee. He did not know what authority there was for the assertion that the Act did not apply to Ireland. He mentioned an interview in the previous week with the Minister of Labour in Northern Ireland on the question of the Insurance Act. He hoped the meeting would still permit Ireland to retain its representative on the Insurance Acts Committee.

Dr. BRACKENBURY said that the Irish Representative on the Insurance Acts Committee had not attended any of the meetings of the Committee. But the real point was that at the moment Ireland had nothing to do with the Parliament of Great Britain or with the administrative departments of the British Government; the Act, so far as Ireland was concerned, was entirely under the control of the Northern Parliament of Ireland or the Irish Free State Government.

The motion was carried, together with two others, one of which was merely consequential, and the other provided that

one of the new panel practitioners co-opted (if any) shall be in general practice in an industrial area.

A recommendation of the Council that the Representative Meeting should approve and adopt the draft amended Articles and By-laws submitted by the Council pursuant to the instructions of the Representative Meeting of 1921, as further amended by this meeting, was adopted. That, said Dr. MACKENZIE, completed the amendments to the constitution which was started by the Scrutiny Committee three years ago.

Dr. MACKENZIE went on to deal with the work of the Organization Committee for the past year. The reports submitted by the Divisions and Branches showed very considerable improvement, and he expressed the gratitude of the Organization Committee to the officers of the Divisions and Branches for their work. As to the membership of the Association, this had increased to 23,925, which was very satisfactory. The Organization of Medical Students Subcommittee had "got a move on," and he believed the encouragement of students to join the Association as soon as qualified had at last been put on a proper basis. Meetings held at Newcastle, Liverpool, and Glasgow to enrol members from amongst those who had just qualified were highly successful. The general principle of the Committee was to encourage the local Divisions to do propaganda work among the students as they qualified. A special handbook giving useful information was being prepared for the use of the newly qualified, and the Council had sanctioned the distribution of £150 in prizes to last-year students. He moved the adoption of the remainder of the Report and this was agreed to.

The CHAIRMAN OF REPRESENTATIVE MEETINGS congratulated Dr. Morton Mackenzie on the successful manner in which he had got through his report. (Applause.)

REPORT OF POST-GRADUATE COMMITTEE.

Sir RICHARD LUCE, in moving the adoption of the Report said the Post-Graduate Committee had been appointed to consider the report of a committee set up by the late Minister of Health, Dr. Addison, under the presidency of the Earl of Athlone, to consider how post-graduate work in London could be benefited. The Athlone Committee was appointed in February, 1920, and reported in May, making two principal proposals: (1) That a school attached to a hospital centrally situated in London should be devoted solely to post-graduate medical education, and that that school should be part of the London University, and (2) that a central office should be established to co-ordinate and develop the work of post-graduate education in London, which would provide the accommodation necessary for social purposes as well as offices. The Committee over which he presided held a joint meeting with the Fellowship of Medicine, which had interested itself in the work in London, and which established a bureau immediately after the war to help practitioners and others who desired to avail themselves of facilities in London for post-graduate study. After three or four meetings a report was made to the Council, whose conclusions appeared in the Annual Report of Council. All that remained for the Committee to do, therefore, was to inform the Government of the Council's opinion. Since then a deputation had interviewed the Minister of Health to discuss the question of what help the Government could give to post-graduate work, and were told that some small assistance might be given in forming the central bureau suggested by the Athlone Committee.

Dr. FERDINAND REES (West Cornwall) thought the Committee could hardly be congratulated on the position of affairs. A great deal would depend on post-graduate training in future. In the last few years the Army and Navy had found it essential for their medical staffs to go back to the hospitals at certain intervals to increase their efficiency, and a keen Minister of Health might with reason demand the same from panel practitioners, who should be offered considerable inducements to undergo post-graduate courses at certain intervals. The hospitals themselves should offer greater facilities for such work.

Mr. BISHOP HARMAN said that if one went to the Government and pointed out the advantages of post-graduate study and the desirability of assisting it, one would be referred to the University Grants Committee, which, in its turn, would state its inability to give help to bodies not recognized by the university, and the universities would not recognize post-graduate work. The most important thing was to obtain recognition of post-graduate education in schools which were quite capable of doing the work but were not at present recognized.

WELCOME FROM THE UNIVERSITY OF GLASGOW.

At this point Sir Donald MacAlister (Vice-Chancellor and Principal of the University) entered the hall, and the discussion was suspended to allow of his addressing the meeting.

Sir DONALD MACALISTER said he was present as an interloper, because the meeting was a strictly business one, which he had no right to attend. He might be permitted, however, to express on behalf of the University of Glasgow its very cordial welcome to the Association, and to assure them of the sympathy of the University with their proceedings and their best wishes for their success. He was not himself, for reasons of a legal nature, a member of the Association, but at one time he had been and he was proud of his former connexion with it. He desired to assure the representatives present that Glasgow was a place accustomed to hospitality, and on the present occasion was prepared to exercise it to the full.

The CHAIRMAN announced that the discussion of the Post-Graduate Committee's report would be resumed after the discussion of the report of the Ethical Committee (see p. 49).

PROFESSIONAL SECRECY.

The CHAIRMAN read the following extract from standing orders:

> That representatives of the Press shall only be admitted to the Representative Meeting on the understanding that they will not report any matters which the meeting decide should be regarded as private,

adding that as the matters about to be discussed had aroused considerable public interest members would ask the Press to suppress such part of their remarks as they desired not to be reported. He would take it that "silence meant consent" on the part of the Press representatives.

Dr. R. L. LANGDON-DOWN (Chairman of the Ethical Committee) moved two resolutions which he combined as follows:

> That Minute 48 be rescinded, and that it be the policy of the Association to support in every way possible any member of the Association within the United Kingdom who, in the opinion of the Council, or the Central Ethical Committee acting on behalf of the Council, after due consideration of the circumstances, is deemed to have been justified in refusing to disclose any information he may have obtained in the exercise of his professional duties.

A literal interpretation of Minute 48 seemed to promise that the Association would support any member who chose to disobey an order of the court that he should divulge information which he ought not to divulge. To hold out that prospect would, in the opinion of the Council, be to accept wider responsibility than the Association would under present circumstances be justified in assuming. During the past twelve months Minute 48 had been in force, but no application happened to have been made to the Council for support under its terms, but the Council was faced with the fact that it might be placed in an extremely difficult position. The Council therefore desired to reserve the right to decide whether the refusal of the member was justified or not in the interests of the public and of the profession.

Dr. J. MCGREGOR ROBERTSON (Glasgow North-Western) opposed the resolution. There was no half-way house; either the British Medical Association must maintain that its members were privileged as solicitors and clergymen were privileged, or it should do nothing. Last year the meeting had expressed its view in a definite and emphatic manner that a medical man who declined to divulge confidential communications given to him in the course of his professional relations with his patient should be supported by the full strength of the Association. That was a perfectly well-defined issue, and without disrespect he ventured to submit that the solution which the Council had offered was really an evasion. Under the suggested alteration, if a doctor were imprisoned for contempt of court the Council were not bound to act: their duty was merely to consider the case. The motion did not state by what means the machinery was to be started, whether a special meeting was to be called, or whether the matter would be considered at the next meeting of the Council. Dr. Robertson quoted two Scottish cases in which a clergyman had been upheld by the courts in declining to answer questions relating to information acquired in the exercise of professional duties, and concluded by urging that the whole force of the Association should be

bent to establishing a similar position with regard to doctors. He thought it was possible to discriminate between the prosecution and the defence. If the defence chose to put in the box a medical man who had attended the accused person, he thought it was a reasonable proposition that the defence should not be permitted to pick out certain questions and to put others. If the medical man was put into the witness box by the defence, that submitted the medical man to the full inquiry which should be made of him. But in the case of the prosecution he maintained that the prosecution should not be permitted to put the medical man in the witness box at all. These were intricate questions which the Council had not sufficiently considered. If it were known that any medical man who refused to give confidential information which he had obtained in the course of his professional duty was punished, he was quite sure that he would be protected by the whole force of the Association. The same moral force that guarded the clergyman would be available to the doctor. He urged that the matter was of far too great consequence to be dealt with in this way, and the Newcastle decision should be remitted back to the Council for further consideration.

Dr. JAMES STEWART (Lambeth) said that, as one who had been fifty-six years in the profession, he wanted to express his opinion on this subject in the most decided manner. At all costs the idea must be prevented from getting abroad that there was going to be any relaxation of the conditions that had existed hitherto. He hoped that the meeting would in no uncer ain way express itself, that there should be no diminution of the power that medical men now possessed of being of service to their patients, as there would be if the secrecy which hitherto had been deemed inviolate was in any way relaxed.

Dr. E. F. THOMAS (City of London) pointed out that in the political press about two months ago there was an inspired paragraph to the effect that the Lord Chancellor had considered the question of privilege and had circularized a private memorandum that in his opinion no privilege could be granted to medical men. If that was the case the profession would not get any arrangements with the legal profession but must stand on its own feet. A distinction should be made between a claim for privilege in criminal cases and in non-indictable cases. In criminal cases—murder cases, for instance—the profession might by a hard and fast decision be placed in an impossible position.

Dr. A. LYNDON (Guildford) said that the thunders of Dr. Stewart and other speakers left him unmoved. The eloquence of these gentlemen started from the assumption that the medical profession should have absolute privilege. That was an entire fallacy. Even in the Hippocratic oath absolute privilege was not claimed, but only that there should not be disclosure of what ought not to be divulged. In England solicitors had privilege; they had it because they were officers of the court, and without it the procedure of justice could not be carried on. That was not the case with the medical profession, and the vast majority of its members realized that they had no absolute privilege. If any medical man should get up in a court of law and refuse to answer a reasonable question by a judge, it was absurd that the Association should be compelled to support that man, although the members of the Association themselves might be well aware that it was a question which he should have answered. He hoped that the Representative Meeting would not be led away by the eloquence of previous speakers, but would support the Council in its recommendation.

Dr. H. G. DAIN said that although he had moved last year the resolution it was now proposed to rescind, he did not regard the conditions set out in the resolution now proposed as an unreasonable limitation on the one it was designed to replace. When an individual practitioner was called on to give evidence his decision as to what he would or would not say was a matter of conscience. It was to a large extent the fault of the profession if such liberty of conscience were not accorded to them; too frequently they readily answered questions concerning which a claim as to privilege might be upheld by the court. The Council should have the right to say whether it would accord its support to any particular individual or not. If the full weight of the Association were to be thrown in favour of anyone who had reasonable justification for refusing to give evidence a great advance would have been made on the position two years ago, and the position of the objector would have been considerably strengthened, for judges would not be anxious to promote a conflict in which public opinion might be ranged against them. It had been argued that giving discretion to the Council would involve delay, but that was not so. It would be regarded as a matter of urgency and immediate action would be taken, perhaps by the Chairman of the Ethical Committee, who would continue to act until a special meeting was summoned.

Dr. DAVID LAWSON (Aberdeen), while sympathizing with the object of the Ethical Committee, opposed the method by which they sought to attain it. The oath a doctor took in the witness box was that he would tell "the truth, the whole truth, and nothing but the truth." To refuse to give evidence after taking that oath would be a violation of it, and the first duty of the Association was therefore to press for an alteration of the oath.

Dr. C. E. DOUGLAS (Fife) said that, although he had examined the records as far back as 1873, he could find no case of contempt of court for refusing to betray professional secrecy in Scotland. If questions involving such a breach had been put, there would certainly have been such a case. The attitude of the medical profession in the matter was being watched by the lawyers, who hoped for a sign of weakening, and by the general public. The Association were not fighting the battle of the medical profession in this matter, but that of their patients and the public.

Dr. H. C. BRISTOWE (Bristol) remarked that the oath taken in court by medical men was the same as that taken by clergymen, who nevertheless held themselves free to refuse to answer questions. He agreed it was the secrecy not of the profession but of the general public which it was sought to protect. If a patient had no objection to publicity the question did not arise, but if from fear of publicity he withheld information from his doctor the matter was altered. The general public must be shown that it was their interests, and not those of the profession, which were threatened; once that was done greater regard would be paid to the demand for secrecy.

Dr. R. D. MOTHERSOLE (Bolton) pointed out that the words of the oath taken were "the evidence you *shall* give," and therefore to refuse to speak was no breach of the oath. He desired to move an amendment to the second of the two motions before the meeting, to omit the words "deemed to have been," which appeared to him redundant.

Dr. I. W. JOHNSON (Bury) seconded the amendment, which was put and lost.

A division was then taken on the two motions, which were carried with seven dissentients.

Dr. LANGDON-DOWN then proposed:

> That the proper preservation of professional secrecy necessitates a measure of special consideration being recognized for medical witnesses in courts of law above and beyond what is accorded to the ordinary witness.

Special consideration, he said, was asked for partly in the interests of the public, partly to safeguard the doctor's feelings towards his patients, and partly in recognition of the special and exceptionally valuable services that were so constantly being rendered to the courts by the medical profession. It was, he believed, recognized now by the lawyers—certainly by some in very important positions in the legal profession—that the public interest in this matter was pulling in two directions. There was the public interest which aimed at maintaining the public health by not sacrificing the interests of the patients, and there was the public interest which required that the necessary evidence for the carrying out of the processes of law and justice should be there. The Association had to find some honourable compromise between the two claims. The resolution had been framed in wide and moderate terms, and it was hoped that it might prove to be an acceptable basis for further discussion and negotiation with the authorities, so that arrangements might be arrived at which would bring about harmony between the public, the lawyers, and the doctors. It avoided the laying down in set terms of exactly the extent and the nature of the consideration which it was thought should be granted, or the way in which the consideration should be exercised; those must be left for discussion in any negotiations that might follow. He added that the resolution had the united approval of the Council.

Dr. C. BUTTAR (Kensington) moved, as an amendment:

> That in the opinion of this meeting it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned.

A representative suggested that the amendment was not relevant to the resolution, but an entirely separate proposition, but the Chairman ruled that it was a legitimate amendment.

Dr. BUTTAR said that the Kensington Division brought forward their amendment because it objected very strongly to the watering down of a thing which should be a principle. He suggested that the right course for the medical profession was to state its principle—that the information obtained from patients was secret; to stand by that as a principle; and leave matters to work themselves out in the end. The indignation at the meeting last year was due to the case in Chester, under the care of Dr. Elliott, who was directed by a judge to reveal certain information which he had obtained in the course of treatment at a venereal clinic. He (Dr. Buttar) had never had an answer to the question of whether Dr. Elliott was right or wrong in obeying. He was clearly of the opinion, however, that Dr. Elliott was wrong. The original motion suggested that doctors should hold conversations with lawyers to decide how to water the thing down. They might as well give up the principle entirely, because who was going to decide what should be given away and what should not? Unless they surrendered the whole principle of professional secrecy into the hands of the judge in a court of law, they must stand by the proposition that Kensington was putting up. Attempts were made to draw a distinction between the lawyer, the priest, and the doctor, but to him there was no distinction whatever. The lawyer and the priest had, by their own efforts, attained a position in which they were never attacked by a judge, although every judge was entitled, at any rate, to attack the priest, and, he believed, the lawyer also.

Dr. BRACKENBURY hoped the meeting was in no danger of confusing the resolution and the Kensington amendment. The Association had already affirmed the position with the word "voluntarily" before the word "divulged"; now Kensington proposed that they should reaffirm it without that word, and the Council proposed that it should be reaffirmed in the form given in the resolution. The Association was not going back upon anything, but was going forward. He submitted that the form adopted by the Council was better, and considered that in the form preferred by Kensington they were being carried too far. If that were accepted they would not only have strengthened but have revolutionized the position of the doctor in the box. If a doctor gave information he had to face professional and private opinion, which might hold that he should not have done so. But if, in the exercise of his conscience, he should answer a question after the Kensington proposition had been carried he would not be in that position. He would have done something which was contrary to the policy of the Association and would be in danger of expulsion. It would be unwise to put the doctor in the position of saying that if he chose to answer a question then the whole profession might turn him out of its respectable ranks; that was the effect of the Kensington amendment. But the Council's resolution said that the doctor ought to be protected in the position he had taken up to a greater degree than if he were an ordinary witness. The Association ought to arrange with the lawyers and the authorities that he should have special consideration extended to him. In France it had been said that no doctor should disclose any information, and that if he did he should go to prison or pay a fine, and the whole medical profession of France was trying to get rid of that requirement.

Dr. H. J. CAMPBELL (Torquay) supported the Kensington amendment on two grounds. The first was one of practical politics. No resolution that they might carry, he said, could possibly override the law. But, let a case which had gained any great notoriety come before the courts, and let any doctor refuse absolutely, without the consent of the patient, to divulge what he had discovered professionally, and if the public were with the profession, the law would be altered. If they held firmly to the position, it would be only a short time before the law was altered. Secondly, what chance had they of being accorded a special position without an actual fight and doctors being condemned for contempt of court? Again and again in England the judge had refused to allow the doctor any discretion whatever, although in Scotland it was often done, possibly because the Scottish mind was a little more logical than the English. But if they once averred, not with dissentients, but unanimously, that the position they took up would be that their duty to their patients was greater than any duty to give evidence against them, he believed that in a very short time they would gain their point.

Mr. E. B. TURNER thought that the great majority of representatives would be in favour of the Kensington amendment, but if they were not, then the resolution of the Council might be a step on the way to get it. On the question of professional secrecy he held strong and fixed opinions. He believed that those things which were told in the confidence of professional consulting rooms should be regarded as inviolable secrets. Even for lawyers and clergymen he believed there was no written law of privilege. In the case arising out of the Jameson Raid a solicitor was put into the box, and he declined to give away his client's affairs and was threatened with imprisonment in the Tower; but the threat was not carried out. The strict law had not been pressed against priests because it was known that the priests would not give away such things; and therefore if doctors wanted the same privilege as that enjoyed by lawyers and priests they would have to make it clear, if necessary by going to prison, that they were determined to preserve their professional secrecy. He had himself once refused to divulge information, and the matter had not been pressed against him, and if he were called upon again he would stick to his guns, and he was quite certain that if medical men generally would stick to their guns, though one or two of them might "sample skilly," such cases would soon cease to be by reason of public opinion. The public, the medical profession, and the Association would be with those doctors who stood by their principles and kept intact the honour of their profession.

In reply to Dr. FOTHERGILL, who asked whether the Kensington delegates would agree to adopt a resolution combining their own motion and that of the Council, the CHAIRMAN said that if Kensington would accept that suggestion it could be put to the meeting after the next speech.

Sir JENNER VERRALL suggested that there was a little confusion of thought in making the Kensington motion and that of the Council alternative and contrary to each other. The Kensington motion was meant to strengthen the attitude of the medical man in refusing to give the evidence demanded of him. The other resolution dealt with a rather different aspect of the question. Unless they were prepared to press for an absolute and special privilege (which they might quite possibly decide to do eventually) they must face the law as it existed to-day. At present the law and their conscientious refusal were both designed in the interests of the public. The judge at present had in his hands the power to decide whether he would or would not demand of a doctor certain evidence at a given crisis. Judges differed enormously in the line they took, and that point should be kept in view. It seemed to him that the object of the Council's motion was to guide those judges who were disposed to be temperate in their demands to support them, as against those judges who looked at nothing except the possibility or the probability of getting a conviction. The Council's motion urged the recognition of the fact that the medical man, by the nature of his profession, was not as other men, and was not as free to give evidence as other men would be.

Dr. BUTTAR announced that the Kensington Division would accept Dr. Fothergill's suggestion to combine the Kensington motion with that of the Council.

The CHAIRMAN read the motion as revised, as follows:

> That as in the opinion of this meeting it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned, the Annual Representative Meeting, 1922, express the opinion that the proper preservation of professional secrecy necessitates a measure of special consideration being recognized for medical witnesses in courts of law above and beyond what is accorded to the ordinary witness.

Dr. A. BLACKHALL-MORISON (Marylebone) wished to emphasize the Kensington proposal by eliminating the final words "without the consent of the patient concerned," but an amendment to this effect was lost. The revised motion of Kensington was then carried unanimously and with applause.

Dr. LANGDON-DOWN, as an individual member, moved to add after the Kensington resolution the words "save to prevent grave injury to the State, the patient, or other members of the community." He instanced many eventualities in which this question might arise: a person on trial for murder and on the point of conviction, when a doctor knew that the person charged was innocent, and that his own patient was guilty; a divorce case in which there was a counter-charge, and in which, if a doctor did not give evidence as to what he knew, one of the parties might labour under an unjust aspersion; a young man engaged to be married who was known by his doctor to be suffering from active syphilis; a patient who tried to defraud an insurance company; also, possibly, designs against the State in time of war. Was the profession going to insist in all such cases on absolute privilege?

Dr. A. LYNDON (Guildford) seconded.

Dr. FOTHERGILL hoped that the amendment would not be passed. If a whole category of exceptions were to be put in, what would be the use of passing any resolution at all?

Dr. LANGDON-DOWN's amendment was lost by a large majority.

Suggested Government Inquiry.

Dr. C. W. CUNNINGTON (Hampstead) moved a rider to instruct the Council to press for a committee of inquiry by the Government into the whole question of medical secrecy.

Dr. LANGDON-DOWN said that the report of Council already stated that the Council proposed to negotiate with the authorities concerned as to what measure of special consideration could be secured, and it was wiser that the matter should be left in this open form rather than adopt the Hampstead rider. The subject was not one which lent itself to Government inquiry at all. He doubted whether it would lead anywhere even if the Government would grant such a committee.

The Hampstead amendment was lost.

The Remainder of Annual Report under "Medical Ethics."

On the motion of Dr. LANGDON-DOWN, the remainder of the Annual Report of Council under "Medical Ethics" (with the exception of paragraph 110, which had been withdrawn by the Council in the Supplementary Report of Council) was adopted.

Dr. E. R. FOTHERGILL (Brighton) proposed that the Council should be instructed to consider the advisability of substituting the following for Rule 10 of the report on the ethics of consultation:

"The attendance of a consulting practitioner shall cease when the consultation is concluded, unless another appointment is made, and no medical practitioner introduced to a family in consultation shall afterwards undertake sole attendance upon members of that family residing in the same house except with the knowledge and consent of the former medical attendant."

The question had arisen in his district in consequence of a friendly test case brought before the Ethical Committee, which drew attention to the unsatisfactory nature of the present Rule 10. Anyone who saw a patient for another doctor ought to realize that he would never have done so had it not been for the other doctor, and that he must therefore never do so again.

Dr. LANGDON-DOWN having declared his readiness to accept the motion as an instruction to the Council, it was adopted.

Notification of Venereal Diseases.

Mr. BISHOP HARMAN proposed that the Council be instructed to appoint a special committee to consider the proposed scheme for the modified notification of venereal diseases. He had been told, he said, that strong pressure was being brought to bear on Lord Trevethin's Committee to recommend the notification, in some form or other, of those who were infected with venereal disease. That committee had been collecting information which suggested that the medical profession would welcome such notification.

Mr. E. B. TURNER (Kensington) said the reference to Lord Trevethin's Committee was so wide as to bring this matter within their purview. They were at present considering the question of chemical prophylaxis, and he, as an individual, had been asked to give evidence on that and on the question of absolute notification or modified notification with regard to those who did not continue their treatment. Any committee set up by the Council should have its inquiry made as wide as possible. The feeling was growing among the general public that those who took up treatment should be obliged to continue it until they were no longer a danger to themselves or other people. It was impossible for that to come about until an educated public opinion and the profession demanded it; if forced on an unwilling public it might be very harmful. He hoped that in time to come venereal diseases would be treated by general practitioners, who would therefore be interested in regulations made for notification of the large number of persons who declined to carry on their treatment.

The CHAIRMAN suggested the motion should be altered to read, "That the Council be instructed to refer to *an appropriate* Committee." This was agreed to, and the motion as amended carried.

Dr. R. A. WELSH (North Northumberland) asked whether the Central Ethical Committee had considered the action of certain distinguished members of the profession who signed a petition to the King in the matter of granting a knighthood to a certain irregular practitioner in London, and whether they proposed to report upon the matter.

Dr. LANGDON-DOWN said the answer to the first part of this question was in the negative. If Dr. Welsh would make a reference to the Committee he was sure it would receive consideration.

The meeting then adjourned for a short time.

EXTRAORDINARY GENERAL MEETING.

Before the Representative Meeting was resumed, an Extraordinary General Meeting of the Association was held, Dr. R. A. BOLAM (Chairman of Council) occupying the chair. The MEDICAL SECRETARY read the notice convening the meeting which appeared in the SUPPLEMENT to the JOURNAL of July 8th and 15th last.

The CHAIRMAN said the resolutions to be proposed were consequent upon the work done that morning in connexion with the Report of the Organization Committee. The Solicitor had examined them and found them to be in order.

The resolutions affecting Articles 1, 3, 7, 11, and 12 were put and carried unanimously *seriatim*.

The CHAIRMAN pointed out that two proposals appeared for amending Article 13. The Representative Meeting that morning had adopted the first alternative.

The first alternative was unanimously agreed to.

The CHAIRMAN pointed out that the proposed Article 11 (*a*) would not really form part of Article 11, but was to be construed as a new Article.

The proposed new Article was adopted unanimously, as were also the proposed amendments to Articles 15, 28, 31, 32, and 36, which were put *seriatim*.

The CHAIRMAN stated that the Articles would be renumbered to include the new Articles, and the meeting then terminated.

REPORT OF POST-GRADUATE COMMITTEE.

Resumption of Discussion.

The business of the Extraordinary General Meeting being concluded, Dr WALLACE HENRY again took the chair, and discussion of the Report of the Post-Graduate Committee was resumed by the Representative Body.

Dr. A. BLACKHALL-MORISON (Marylebone) considered there was a good deal of unnecessary pessimism as to the general practitioner's lack of opportunity of becoming efficient. Personally he believed the general practitioner could obtain all the education he required if he took advantage of the means already at his disposal in the shape of local medical societies, hospitals, and so on.

Dr. E. LEWIS LILLEY (Leicester and Rutland) thought there were two sides to the question. In the first place, thousands of practitioners were wanting post-graduate instruction, and such instruction would be far more efficient if the attendance was limited to graduates. With some central organization the general practitioner himself might be encouraged to become a student afresh, and many problems which arose in everyday practice might be collectively investigated, thus helping on the great work in which all practitioners were engaged.

Dr. J. O. SYMES (Bristol) said that the Association might do more for post-graduate education than any other body. In the West of England in six or eight centres around the University of Bristol classes had been formed for general practitioners for post-graduate education. Dr. Toye (who was present) had helped to form a class at Barnstaple, and Dr. Flemming one in Wiltshire. The *modus operandi* was for the Secretary of the Division to write, in that case, to Bristol University, saying that a course of lectures or demonstrations would be valuable. The men met together at the cottage hospital of the district, the lecturers coming from one centre, and the lectures being given at such times as suited the practitioners. The financial difficulty was met by the payment of a fee of two guineas by each member of the class for the course of lectures. He therefore hoped that the life of the Post-Graduate Committee would be renewed.

Mr. H. S. SOUTTAR (Marylebone) said that, being responsible for the surgical teaching at the London Hospital, the subject had come before him on many occasions, and had resulted in a deep degree of pessimism. That was not because they were not prepared to supply all the post-graduate teaching which could possibly be wanted; it was that nobody seemed to want it. They at the London hospitals were only

too glad to place all clinical material at the disposal of practitioners, but he begged of general practitioners to come and ask for what would be freely given.

The resolution was carried unanimously.

OFFICE COMMITTEE.

Dr. BOLAM moved that the Annual Report of Council under "The Work of the Office Committee" be approved. There was no definite recommendation; it was simply a record of some of the activities of that Committee, among which he would particularly mention the Intelligence Department, which supplied a very real need in the office. Under Miss Lawrence, the Intelligence Officer, the work was slowly, but steadily and most satisfactorily, extending. The motion was adopted without discussion.

NATIONAL INSURANCE.

Approved Societies and Control of Medical Benefit.

Dr. H. B. BRACKENBURY moved:

> That the Representative Body insists upon the continuance of the system of negotiating the actual terms of the contract of service which has prevailed since the coming into force of the National Health Insurance system—that is, direct negotiations between the Government and the profession without the intervention of any third party; but will continue to welcome the co-operation of all those interested in the development of the best possible medical service for insured persons.

This resolution, Dr. Brackenbury added, was identical in terms with a resolution passed recently by the Conference of Local Medical and Panel Committees, and had reference to a situation which might mature in the course of the next fifteen months. In view of the importance of the matter he thought it very necessary that the Representative Body should pass a resolution in similar terms. The present position was that the State had determined that it must have regard to the medical treatment of certain sections of the community—namely, employed persons. The State having determined that that was part of the State work, it became necessary to define the action of the medical profession, as the only means through which that work could be carried out, and the essential points laid down were that the profession could not do that work on behalf of the State unless it was satisfied, first, that the terms and conditions on which they worked were such as they could honourably accept, and, secondly, that those terms and conditions were defined and agreed upon between the medical profession and the representatives of the whole community, and not between the profession and a special section of the community. The British Medical Association was perfectly willing to consider with anybody and everybody the best ways in which the service could be made effective and helpful, but the terms and conditions on which the profession could carry out the work must be determined between the State on the one hand and the profession on the other, and by nobody else.

Dr. C. BUTTAR (Kensington) said that, although he was not acutely interested in the question, he was concerned with the impression the resolution might make on the community at large, because he was most anxious that the profession should be able to assert its proper position with regard to the community. He had approached one or two of the leading officials of the approved societies, with a view to finding out their position. He had a letter from one in which the writer expressed regret that there was a sort of opposition between the panel doctor and the approved societies which seemed to amount almost to bitterness, and he was very anxious that this should be removed. He said, also, that it was a great mistake to assume that the approved societies had any desire to be regarded as the employers of the doctors, and added that both the societies and the doctors were in the position of contracting parties, and, in that capacity, were on an equal footing; the more they could appreciate each other's point of view the better chance there must be of an amicable arrangement. If the resolution were passed he (Dr. Buttar) hoped effect would be given to the second part with regard to welcoming co-operation from those interested. He advocated that the doctors should approach those people as soon as possible on their own initiative and discuss the terms and conditions; it was better to do that than to allow them to approach the Minister on their own initiative, which would happen if the doctors did not meet them round a table.

Mr. E. B. TURNER said that if it were necessary to fight, he hoped the whole profession would fight together. Some of the societies were out to get the doctors under their thumb. If the question of the reduction of the capitation fee came up there would be a big fight and the panel practitioners would want the support of the rest of the profession. They must be very sure of their foundations before they went into the fight, and before asking other members of the profession they must let them see that things were sound and right. He was saying this to the meeting now because they would have a year to think over it and get ready for it. They would have a Panel Conference, which would be attended by picked men from the panel committees, and the panel committee members were the picked men, more or less, of the different areas. But did those committees really represent the whole of the rank and file? Did they represent what the men who were doing the work "on the ground floor" were thinking? He was speaking for a Division containing about 900 practitioners, of whom about 100 were working under the Insurance Act. They did not love the Insurance Act; he himself hated it, but he was perfectly ready to help every man of his own profession to get what was right. If they were put under the heel of the friendly societies it would be infinitely more derogatory to the medical profession than anything that had happened before. The distinct pledge given to them, that never should the clubs or the friendly societies hold the control in this matter, must not be broken for political expediency.

Dr. J. STEVENS (Edinburgh) pointed out that anything which affected one part of the profession must affect the whole profession indirectly. He had not forgotten that one of the six cardinal points was that the medical benefits should be administered by the Insurance Committee, and not by the approved societies. He suggested the addition of the following words to the motion:

> and will strive for the resumption of the former free and independent relations between the profession and the public without the intervention even of Insurance Committees.

Dr. H. G. DAIN (Birmingham), speaking on behalf of insurance practitioners, described the letter quoted by Dr. Buttar as being priceless. If every representative of an approved society felt like that, the difficulties of the doctors would have disappeared. But if certain representatives of approved societies asked with pained surprise why the medical profession seemed hostile; they had only to read the speeches of their own leaders and consider what effect these might be expected to produce in the mind of the doctor. These people had invited hostility; they had done everything possible to cultivate it, and then when it appeared they were surprised at it. He pointed out that the insurance practitioners were contracting parties, but their contract was with the State. They were perfectly willing to deal with approved societies on other questions than remuneration and terms of service. The defects which existed in the system were not all medical defects. They knew the great delay that often took place before the patients' just claims for benefits were met. Insurance practitioners were quite prepared to do everything to give the best possible service, and he hoped that in any struggle they would have the support of the entire profession.

Dr. H. ROSE said that in Buckinghamshire they had formed a committee to organize the profession. The committee was independent of the British Medical Association so as to get hold of that minority which was not inside the Association, and it was finding out what the profession was prepared to accept. Let each representative go back to his Division and organize the profession in his own county.

Dr. BRACKENBURY said that a very definite principle was being laid down in the resolution, but he did not necessarily feel that they were going out against a hostile army. If the principle could be thoroughly established they would be satisfied. He believed that the effect of a unanimous expression of that principle might very likely be to do away with the need for a struggle of that type at all.

The recommendation of Council on the subject of approved societies and control of medical benefit was then put and carried unanimously and with applause.

The Continuance of the Insurance Acts System.

Dr. BRACKENBURY then moved, as a recommendation of Council:

> That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has, in the opinion of the Representative Body, been sufficient to justify the profession in uniting to ensure the continuance and improvement of this system.

This, he said, was a motion equally important with the one just passed, but it might not command the same unanimity

If there were a small number of "Die-hards" in the assembly these might feel compelled to vote against it. But the State undoubtedly would not go back upon its attitude that it was its business to see that people had proper medical attention, whether they could afford to pay for it or not. There was only one other system by which this could be accomplished, and that was a whole-time State medical service. The State having determined that medical attention should be given to these people, it was for the profession to decide whether it wished the insurance system to be scrapped in favour of another. The motion affirmed that on the whole this ten years' experience had justified the continuance and improvement of the system. The Representative Body had affirmed that it did not want a whole-time medical service at any cost, and the insurance system, whatever its defect, had the advantage that it did carry into effect in the State system many of the traditions and methods of private practice. He asked the meeting to accept this carefully worded resolution. If there was to be a fight it would be a fight for proper and honourable terms and conditions under the insurance system.

Dr. ROSE asked whether, if the resolution were carried, it would include a possible extension of the system to women and children, and Dr. BRACKENBURY said "Yes."

Dr. J. STEVENS (Edinburgh) moved as an amendment:

> That this meeting is of opinion that, until a wide inquiry into the working of the Insurance Acts has taken place, it is premature and injudicious to put on record a definite official opinion as to the success or otherwise of the National Health Insurance Acts system.

Dr. Stevens disagreed with Dr. Brackenbury's statement that there were only two alternatives: the insurance system and a State medical service. There was a third—that the profession should regain its freedom and independence. His amendment was proposed and seconded in Edinburgh by insurance practitioners and carried in a meeting in which several insurance practitioners were present. If Dr. Brackenbury's resolution were passed it would be the first time that the British Medical Association had committed itself to approval of the National Insurance Acts. Dr. Brackenbury was proposing that the Association should give this support before there had been any proper investigation of the working of the Acts. Not much more than 50 per cent. of the members of the Association were insurance practitioners. What was to be the effect of the passing of this resolution upon members who were not insurance practitioners?

The CHAIRMAN, in reply to a representative, said that there was no doubt, as they had proved in Leicester, that a third alternative did exist—namely, a public medical service conducted by the profession itself—but the difficulties of arranging such a service as this third alternative would involve were very great.

Dr. B. G. M. BASKETT (South Essex) supported Dr. Stevens's amendment. In South Essex they were "not against the Act." Their dislike of it increased as time went on. He quoted Sir Leo Money as having stated in 1914 that the poor could not have high wages and social services both. He quoted also other authorities, and said that there must be something wrong with a system which called forth the disapproval on the one hand of a Fabian like Mr. Sidney Webb, and on the other of an individualist like Mr. Harold Cox. Dr. Baskett was prevented by the time limit from elaborating his theme, but he finished by declaring that a nation could no more be taxed into health than it could be taxed into wealth.

The Edinburgh amendment was then put to the meeting, and the CHAIRMAN declared that it was not carried. On a request to give the figures of the show of hands, he said that he had counted 39 in favour of the amendment and had left off counting those against on reaching 40, but a number of hands against the amendment had still remained uncounted.

Dr. J. T. D'EWART (Manchester) moved that the words "the continuance and" in Dr. Brackenbury's motion should be deleted, on the ground that at the next Panel Conference suggestions were to come before that Conference with regard to suggested alternative methods of dealing with medical benefit, and it would be inadvisable to show a preference beforehand for any particular system.

Dr. FOTHERGILL asked Dr. Brackenbury if he would accept the words at end "an insurance system" instead of "this system." Dr. BRACKENBURY agreed, and the resolution was amended accordingly.

Dr. MORTON MACKENZIE said his Division considered it dangerous for the Association to express this opinion at the moment; they did not like the idea of excluding any other possible system. They hoped the Chairman of the Insurance Acts Committee would withdraw his proposal.

Dr. FOTHERGILL thought there could be no question that the only method by which employees could provide themselves with adequate medical service was by insurance. Medical men should state, therefore, the terms on which they would give their services to such employees. Personally, he believed that the Manchester system of so much a visit was to be preferred.

Dr. BLACKHALL-MORISON asked whether it was advisable for the Association to make itself the instrument for fixing on a particular system in view of the difference of opinion that existed among its members. An alternative might be discovered in the most unexpected quarters, and he thought the meeting would be unwise to adopt the resolution, and thus give the impression that the British Medical Association not only approved of the system but made itself the instrument for its imposition.

Dr. H. G. DAIN (Birmingham) supported the resolution as amended, because he thought the Association should express its opinion. It had expressed the view that the service was derogatory, an opinion given before it had been tried. Many general practitioners were now connected with the insurance system, and had had considerable opportunity of expressing their opinion, but he found that those who spoke against it were often those who had had no experience of it. Those who had worked under it would never go back to the old conditions. The present service was capable of great improvement, as the resolution suggested, but nevertheless he thought the Association should express itself in favour of a system which the majority of practitioners approved, and in which considerable improvements had already been made. The Manchester system of payment could have been adopted throughout the country if it had seemed desirable, but it was evident that the majority of men concerned thought that the capitation method was preferable.

The CHAIRMAN OF COUNCIL said he had been present at the Conference of Panel Committees, which had unanimously passed the resolution now before the meeting. All that its adoption implied was that the system in vogue had met with sufficient success to warrant its continuance, although improvements were necessary. After that expression from the men who knew best careful consideration was necessary before a resolution of the kind in question was opposed.

A division was then taken on the motion of Dr. BRACKENBURY. More than ten members rising in their places, the vote was taken by roll-call. There voted—

In favour	...	...	81
Against	...	...	21

A motion to suspend standing orders had to be adopted in order to permit the roll-call to be taken, as the hour of adjournment had already arrived.

The meeting rose at 6.50 p.m.

Saturday, July 22nd.

HOSPITAL POLICY OF THE ASSOCIATION.

On Saturday morning the report on the Hospitals Policy of the Association, as published in the SUPPLEMENT of February 25th, 1922 (including amendments contained in paragraph 239 of the Supplementary Report of Council, SUPPLEMENT, June 24th), was taken.

Mr. BISHOP HARMAN (Chairman of the Hospitals Committee) moved that the report be considered paragraph by paragraph. He said that last year at the Representative Meeting a very considerable advance was made in the policy of the Association with regard to hospitals, and there were referred to the Council for examination certain contributory schemes. When these and previous resolutions and directions were examined by the Hospitals Committee it was found that there were a large number of fragments of policy which reflected the policy of the Association at different times, but they did not make a homogeneous picture. In the report now presented he believed the Association would at last arrive at a constructive whole. The report represented the greatest common measure of professional opinion with regard to the hospitals. The policy had been printed and issued to the Divisions at a very early date, and it had been subjected to criticism both in the Divisions and at a Hospitals Conference in London. He urged that in making laws they should endeavour to be as clear and precise as possible, but in the application of those laws to be generous and elastic. Some of the amendments on

the agenda were trying to carry that elasticity into the text of the laws themselves, and this he deprecated.

Dr. N. MACFADYEN (East Hertfordshire) moved:

> That it is not wise at the present moment to adopt the policy suggested, as it will alter the present status of the medical staff of a voluntary hospital in a manner detrimental to the interests of the profession.

He said that if this policy was passed as the policy of the Association at the present time it would be detrimental to the interests of the profession in general. The interests of the profession in general were bound up with the interests of the medical staffs. He believed that the remedy proposed was worse than the disease. When a remedy was applied it should not be given in homœopathic doses. If this policy was adopted the profession would suffer professionally, politically, economically, and in public estimation. The hospital medical staff in any town was the aristocracy of the profession in that town. A town was judged medically by the condition of affairs in its hospital and by the status of its staff. It was desirable that hospital staffs should be elected purely for their merit and their services to the community. The medical staffs at the present time were close corporations. The medical staff of a hospital should be on as broad a basis as possible, and as many medical men as possible should be interested in the work of the hospital by being allowed to attend their own patients. By this policy the staff would be made a closer corporation than ever. If a financial vested interest were introduced into the affairs of the medical staff the effect would be to close it up and keep it as small and select as possible. The only people who would rejoice if this policy were adopted would be those who were seeking to bring about the State management of hospitals. The equal partnership at present existing in hospitals between medical men and boards would gradually disappear. Wherever the money went there the control would be, and as the money interests were introduced the medical staffs would be more and more subject to lay control. Economically the point was this: at the present time it would be quite impossible to establish any adequate method of payment. Any kind of payment that could now be established would be the minimum, but the minimum very quickly became the maximum. He knew a hospital where a medical staff fund existed now, and it was an absolute farce. The public point of view also was a very important one. This question of lay control was coming up in an acute form next year. The voluntary hospitals were engaged in a very great effort to maintain themselves. He was not one of those who gave lip service to the voluntary principle; he believed out and out in the voluntary system, and wished to see it maintained and kept on a sound basis. It would be a great help if it could go out from that meeting that the profession, instead of putting a stumbling block in the path, declared that it was ready to waive any rights it possessed, and to put aside its just claims in order to establish a system in this country which, he believed, was best for the sick, and had a very honourable tradition behind it.

Dr. C. E. S. FLEMMING (Salisbury) opposed the amendment. The dignity and influence and independence of the hospital staffs, he said, were in no way governed by the payment or non-payment of their services. The influence of an eminent doctor was dependent on his experience and knowledge, and as to his independence, every doctor was dependent upon his appointment, whether voluntary or not, to the extent that his fame was dependent upon his actual work. Further, under the present system the choice of personnel was limited to men of independent means.

Dr. F. REES (West Cornwall) said that as the representative of West Cornwall he was voting for the report, but speaking as a private individual he was opposed to much contained in it. He was almost moved to tears when he compared the far-sighted idealism of the Dawson Report with the report under consideration. He could see no reason why the profession should be called upon to take sides in the struggle between socialism and individualism. To his mind paragraphs 6 and 7 of the report were simply absurd. The voluntary principle of financing hospitals had broken down badly, and would do so again, and those recurring crises in the life of the hospitals were, to say the least, extremely worrying. The great war was not won on the voluntary system; it was not won until the nation arose as a nation, and the same principle applied to the hospitals.

Mr. H. S. SOUTTAR (Marylebone) said that the voluntary system, in the old sense, was absolutely dead. ("No, no.") He did not believe that the great hospitals, at any rate, could ever in the future be run entirely on voluntary subscriptions. ("They can.") Why, indeed, should they be?

A REPRESENTATIVE: Because they were founded as voluntary hospitals.

Mr. SOUTTAR said that there was no reason why they should still be run on the old system, because the poor were no longer with us. At the present time, was there a British working man, whether in work or out of it, who could not afford to pay 6d. a week towards his insurance against sickness? ("Plenty!") Those who had had anything to do with the report considered that it was enormously to the advantage of the working classes that they should contribute towards their support whilst in sickness. They did not want charity; they wanted to pay their way. To quote the exact words of the Foundation Charter of the London Hospital, the hospital was founded for the treatment of "miserable objects," and "miserable objects" were not to be found in the wards of the London Hospital to-day. ("Oh!") The cost of treatment, medical and surgical, had enormously increased—to such an extent, indeed, that only the rich could afford it—and he failed to see why those who could not afford to pay privately for the elaborate examinations of modern methods of diagnosis should be debarred from obtaining them in the hospitals, especially as those were the people upon whom most of the medical profession were dependent for their living. The necessary corollary of admitting those patients to the hospitals was that the staff must be paid for their services. The first speaker had maintained that it was impossible that the staffs of the hospitals should be selected from the widest possible basis. He (the speaker) absolutely agreed with that, and as a fact at the present moment it was impossible for a man to take a post on the staff of a London hospital unless he had private means, which was unfair. Then was it true that doctors did not take money at the present time? The other day he had been present at a meeting of the staffs of the teaching hospitals in London, and all around him opinions were expressed that the bottom would fall out of the medical profession if any medical man took money from anybody for anything. After some talk he had pointed out that at the London Hospital, for example, £14,000 was paid by the London County Council and various State authorities for services rendered, and that a very large proportion of that went to junior members of the staff. It would not do to stand too much on one's dignity. Some day, possibly, there might be a Labour Government which would come and ask doctors what their services were worth. Doctors would say "Nothing," and the Labour Government would reply, "We should jolly well think so, and we are not going to pay you anything."

The amendment was lost.

Dr. J. J. ANNING (Leeds) moved an amendment expressing the opinion that many of the proposals in the report were revolutionary, and not at present practicable.

The amendment was lost.

Dr. K. D. WILKINSON (Birmingham Central) moved:

> That in considering any scheme for the organization of voluntary hospitals, the great teaching hospitals should be considered apart from the smaller hospitals to which no medical school is attached.

He pointed out that students introduced so large a factor into the teaching hospitals that it seemed to those in Birmingham that it was impossible to legislate for the organization of those hospitals which had medical schools on the same lines as those which had not. The staff arrangements, and the reasons for the admission of patients to the two classes of hospital, were essentially different, and therefore he asked the Committee to consider whether it would not be an advantage to exclude the teaching hospitals from the consideration of the organization generally of voluntary hospitals, or to include them under a different heading.

Dr. BRACKENBURY said that, although they would agree that there was a difference between hospitals used largely for teaching purposes and those which were not, he did not know whether the motion meant that the report, as at present drawn up, was inapplicable to the case of teaching hospitals, and, if so, whether the motion declared, in effect, that they should be considered outside the report. He was not clear what the purpose and intention of the motion was and what the consequences of its adoption would be.

Mr. A. LUCAS (Birmingham Central) said that on the report his Division considered that there were three classes of hospitals—namely, the large teaching hospitals, the large country hospitals, and the cottage hospitals—and that the difference between the three had not been clearly defined.

What was applicable to one class of hospital was not applicable to the other. The teaching hospital received patients of a different standing from those who were admitted merely for treatment. Medical education and research had to be considered, and, therefore, more distinction should be drawn between the two classes of hospitals.

Dr. FOTHERGILL (Brighton) asked if Mr. Lucas could point specifically to two or three paragraphs in the report which he considered inapplicable to the large teaching hospitals. Mr. LUCAS said he had not the report with him, but would be pleased to give Dr. Fothergill what he wanted after looking through it.

Dr. F. REES (West Cornwall) said it seemed to him that, considering that the great teaching hospitals of the country were dealing with the education of the young doctors of the future in the interests of the State, they might, quite naturally, and without offence to the friends of the voluntary system, receive State support.

Dr. F. RADCLIFFE (Oldham) considered it a great mistake to make a big distinction between the large teaching hospitals and the great hospitals which were not teaching hospitals, although he admitted that there was a considerable difference between the latter and the cottage hospitals. He had found from experience that the great hospitals which had not schools had to complete the teaching given to the students in the great teaching hospitals. (Laughter.) Not only had they to complete that teaching, but they had also to teach the general practitioners in their areas all the time; and they were teaching themselves. Then they also had something to do with research, perhaps in a smaller degree than the large teaching hospitals, but to the extent of their capacity, and it would be a great pity to try to draw a strict line between the two classes of hospitals.

Dr. WILKINSON, replying on the points raised in the discussion, said that as to the points in the report which would not apply to the teaching hospitals, first there was the point that, as far as possible, the patient admitted should be allowed attendance by his ordinary medical attendant. ("No.") With regard to the constitution of the staff of the hospitals, there was a proposal originally that the staffs of the hospitals should, as far as possible, include practitioners in the area. It was obvious that in teaching hospitals this would be impracticable. These points alone were sufficient to differentiate between the large teaching hospitals and the others. It was a pleasure to him to hear that hospitals to which school's were not attached continued to teach in their areas. He took it that everyone was always learning and teaching something or somebody, but that did not alter the fact that the teaching hospitals must stand on a very different footing from those to which a school was not attached.

The motion was lost.

It was then agreed to consider the report paragraph by paragraph.

Introduction.

Mr. BISHOP HARMAN then moved paragraphs 1 and 2 of the report on hospital policy. Paragraph 1 was adopted; on paragraph 2, which stated that the exaction of payment from the patient modified the original understanding and fundamentally altered the basis of the relationship between the honorary medical staffs and the subscribers,

Dr. F. A. ROPER moved to delete the words "fundamentally alters the basis of the relationship," considering that such a phrase enunciated too precisely what was to follow in the report. The meaning of the paragraph was sufficiently indicated without it.

The amendment was lost.

Dr. J. D. COMRIE (Edinburgh and Leith) proposed that the definition of medical treatment in paragraph 2 should be amended to include simple certificates of illness, by which he meant a simple statement that the patient was in hospital. On the other hand, elaborate written reports should not be so included. Further, he proposed that throughout the report the word "treatment" should be prefaced by the word "medical" where such was intended.

Mr. HARMAN, while accepting the second amendment proposed by Dr. Comrie, disagreed with the first, on the ground that the giving of statements that a patient was in hospital was the duty of the clerical and not the medical staff.

Professor R. J. JOHNSTONE, M.P., regarded paragraph 2 as a misstatement of facts. Relations between doctors and patients who continued to be treated gratuitously had not been fundamentally altered. He suggested that some such words as "with regard at least to all patients from whom payment is demanded" should be added.

Mr. HARMAN said the words "general tendency" covered the point raised. Where that tendency existed it did alter the relations which previously existed.

Paragraph 2, with the addition of the word "medical" before the word "treatment," was then adopted.

Mr. HARMAN then moved paragraph 3 of the report. The Association, he said, were willing and desirous of rendering gratuitous service where it might properly be given, but wished to take account of the new conditions which had arisen in regard to payment by patients.

Remuneration for Hospital Services.

Dr. A. E. COPE (Westminster and Holborn) moved:

That the time has now arrived when the staff of the hospitals should receive remuneration for their services.

He believed there ought not to be in the remuneration of the hospital staffs any distinction between the charitable and the non-charitable patients. Payment should be for the services rendered by the medical men. Already several kinds of payment were made, including the resident staff, the staffs of Poor Law hospitals, and the staffs of various public clinics. His Division wished to emphasize the point that it was desirable to keep the open door for merit; it was not right for a man to be kept out of a hospital because he had not money to back him, and on that account there was a *prima facie* case for a subsistence allowance or some amount that would save a man from being blocked out from hospital staffs. It was desirable also to get a more speedy running up of the younger men on to the senior staff. For those two reasons his Division thought it desirable that there should be payment as a general principle, and that the Association should not commit itself to a differentiation between the resident and the honorary staff. Whatever medical men might do in a hospital they could never be paid for their services adequately. There was always a charitable residue whatever paid work was done by a medical man. The medical man's service in a hospital was invaluable; it should not, therefore, be looked upon as being valueless financially to him.

Dr. A. BLACKHALL-MORISON (Marylebone) said that the last speaker's oration was a bold plea for a State subsidy for hospitals. He thought a distinction should be drawn between the resident and the honorary staff of a hospital. The honorary staff of a hospital was really well paid. Probably every fortune which had been made in medicine had been made by members of the honorary staffs of hospitals. Some honorarium for current expenses was not an uncommon thing in some hospitals. But to give a salary to keep a man on a hospital staff was not good policy, and was only smoothing the way for hospitals to be placed under the State.

Dr. LOWE (Middlesbrough) hoped this amendment would not be passed. There was nothing like unanimity on the subject, either in the Association or the profession. If a decision of this sort was come to it would make a great difference to the Association. The passing of the amendment would make it necessary for many hospital men up and down the country to choose between continuing their hospital work or remaining members of the Association. Dr. Cope had made the point that no member of a hospital staff could be adequately paid for his services. He quite agreed; if the question of payment was going to arise the payment must be adequate or there must be no payment at all.

Dr. H. J. STARLING (Norwich) was against the amendment as expounded by Dr. Cope because it suggested that the medical staff should be paid not only out of the contributed funds of the hospital, but out of the charitable donations as well. That was preposterous. The hospitals nowadays were in a very bad way; to maintain that the medical staff should receive a fraction of funds already inadequate was really out of the question. He described the contributory scheme at the Norwich Hospital; he thought it would not be right for the medical staff to accept any of the money paid under this contributory scheme.

Dr. G. E. HASLIP supported the amendment proposed by Dr. Cope. He considered it was the only consistent resolution on the question of the report which the majority of that meeting appeared to support. It stated quite clearly that the time had arrived for the staff of the hospital to receive remuneration for their services. Those who agreed with the report of the Hospitals Committee said practically the same thing, but they were not quite so straightforward in saying it. They wanted still to retain the honorary touch. To whom did they wish to remain honorary physician or surgeon? To the very poor patients who had not a penny to pay? He failed

to see what charity there was in that. Every general practitioner was doing work of that kind, but they did not call themselves "honorary general practitioners." With due respect to the men on hospital staffs, they, like general practitioners were out for their livelihood. They—except a few of them—were not there from a philanthropic motive. He himself was extremely doubtful about the wisdom of the general report, and he hoped that some means would be found at the end of the meeting of securing that the resolutions passed were passed only provisionally, and were subject to reconsideration in a year's time. It was a question which must not be hurried over. By opening out their arms to paying patients, a very serious position would be created. The more the hospital got financially into difficulties the more they would lay themselves out to receive paying patients, whether contributory or tariff. As they took more paying patients into their so-called voluntary hospitals, what became of the necessitous poor? They would go into the municipal hospitals. Mr. Souttar made a good point with regard to the Labour party. What was the position of the Labour party with regard to the honorary staffs of hospitals? Had the Labour party report thanked them for their past services? No; they had been told that the Labour party did not want their charity, and if they persisted in urging charity, the Labour party became suspicious of their charity altogether. The working man, like the business man, appreciated more what he had to pay for than what he received free.

Dr. C. E. S. FLEMMING (Salisbury) was anxious that the younger men, at any rate, should receive some remuneration for their hospital work. They all knew of many medical men who had been anxious to take up hospital work. It was necessary to extend the field of choice for hospital staffs, and this could not be done unless the younger men were going to be helped in the early days, when the struggle was so severe. There was another very strong claim: the work done by the staffs of hospitals directly and indirectly was for the benefit of all classes of the community—not only those treated at the hospitals. The research that was carried out there was for the benefit of the whole public, and he thought it established a very real claim on the public. In the interests of the public it was essential that there should be as large a flow as possible of young and energetic medical men.

Mr. W. MCADAM ECCLES (Marylebone) maintained that the staffs of voluntary hospitals, at any rate those with teaching schools, did receive indirect, and in some cases direct, remuneration. The amount which had been given by way of direct remuneration was very great; in the case of his own hospital it amounted to over £100,000. He asserted, therefore, that the proposal put forward by Westminster was without meaning, though had it asked for "*adequate* remuneration" the position would have been different.

Dr. H. J. M. MILBANK-SMITH (Chichester) said the hospital with which he was connected absolutely refused to have anything to do with a medical pool. He thought the Westminster proposal was lacking in tact, and trusted it would not be accepted.

Dr. C. BUTTAR said the report of the Hospitals Committee, although an admirable document, was not accepted in its entirety, and in some cases was not accepted at all, by the staffs and governing bodies of the great hospitals of the country. The staffs of the London teaching hospitals did not accept the proposal of payment made by Mr. Souttar. The report of the Hospitals Committee did not divide hospital patients into suitable classes. He suggested they fell easily into four divisions. First of all there were those for whom the State or municipality paid the hospital, and in their case the profession generally was agreed that the staffs also should be paid. Secondly, there were the indigent patients, for whom no member of the medical profession would wish to accept payment. Thirdly came the patient who contributed in part or wholly to what was termed his maintenance in hospital, which was the sum which King Edward's Fund recognized as being spent per bed in a hospital—about £3 or £4 a week. The staffs of the great London hospitals were almost unanimous in refusing to take payment for that class of patient. The last, and to his mind the most important, class consisted of those for whom payments were made by the authority or body referring them to the hospital, which might be a trade union, an employers' federation, or a large employer. He thought the staffs of London hospitals would wish to be paid for the first class of patient he had mentioned, would decline to accept payment for the second and third classes, but were not decided as to their attitude with regard to the fourth class.

Dr. B. E. A. BATT (West Suffolk) said there were a large number of hospital staffs who were determined not to receive any payment at all, no matter what the Association might decide. They were also of opinion that if the time came when they would have to ask for payment they would have to ask for adequate payment instead of a staff fund system. It would be a mistake to agree to paragraph 3, which was not in the least likely to be carried out in future.

MR. BISHOP HARMAN said that Westminster desired revolution. He abhorred revolution, but had an immense admiration for evolution, and the report was an attempt at evolution. The resolution of Westminster had been put up at the Conference of the Hospital Staffs at Wigmore Hall in London, and was then wiped out unanimously. He hoped the meeting would treat it in the same manner.

The Westminster and Holborn amendment was then put and lost.

Formation of Staff Funds.

A long discussion ensued on the formation of staff funds, centering round paragraph 33 of the Hospital Report, which read as follows:

> In the event of decisions being taken which would lead to patients (other than private patients referred to in Sections IX (*a*) and (*b*) paying, in part or in whole, hospital charges either individually or by some contributory method, or with the addition of rate aid or State aid, or by a combination of two or more of these methods, such charges should be considered to include payment towards maintenance and treatment, and a percentage of all such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital.

Dr. W. B. CRAWFORD TREASURE (Cardiff) moved an amendment that no such payments as suggested in paragraphs 3, 4, (and 33, q.v.) should be accepted by members of honorary medical staffs. The great hospitals of the country had been established by philanthropic men in the past for the treatment of those who had no means to provide adequate treatment for themselves, and his Division regarded any payment for services in those hospitals as an abrogation of the principle on which the hospitals were founded. The admission of patients who could afford to pay would still further increase the crowding out of those for whom the hospitals were originally intended. The principle of payment by the Government or by municipalities opened the door to Government or municipal management. He hoped therefore that the meeting would turn down any system of payment for services in the hospitals.

The amendment was lost.

In the absence of the representative of Plymouth the CHAIRMAN moved:

> That this meeting disapproves of the principle of a percentage of tariff patients' contribution being paid to the staff of a hospital except in so far as concerns the payments made by public authorities, and which includes such a percentage over and above the amount necessary to discharge in full all the claims of the hospital for maintenance and hospital accommodation: (The words "public authorities" in the foregoing to be interpreted as meaning only State or municipal authorities.)

Dr. BRACKENBURY said that that would probably be the most convenient opportunity to bring out the point which, with Dr. Buttar, he regarded as essential for the meeting to determine. The amendment really covered several others, but the point was for what class of patients ought a proportion of the payment to be passed into a staff fund? That raised the one point on which he differed from the policy of the Hospitals Committee in the report, and he thought it essential that it should be clearly determined by the meeting. He agreed with every word spoken by Dr. Buttar on the subject. There were three classes of patients: (1) those who could pay nothing; (2) those paid for by the community; (3) those who pay for themselves or are paid for by someone other than the community; and it was necessary to draw a distinction between the three classes. He believed it was appropriate that there should be a purely charitable element in the work of the staff, and that it should be recognized and approved and supported on moral grounds. But when the community had assumed that function it was not right that part of the community should pay for it, but the whole of the community, and in that case it was right that a proportion of the money paid should go into the hands of the medical staff. With regard to the third class it was questionable, to his mind, whether it was right or wise for the staff to take any payment at all (and that was the point, as he took it, raised by the amendment) unless that payment was of such an amount that it first fully met all the charges of maintenance and hospital accommodation.

Mr. HARMAN pointed out that that was not the definition of the tariff patient given in paragraph 22 of the Report as amended in accordance with paragraph 289 of the Supplementary Report of Council. A tariff patient, therefore, included one who was paid for by an employer of labour or by an approved society or insurance company which entered into a bargain to provide hospital benefit—were they to be excluded?

Dr. BRACKENBURY said that it would depend upon the amount of the premium.

Mr. HARMAN replied that it did not matter about the premium; it was a question whether the patient was paid for when in the hospital. The resolution might have meant what Dr. Brackenbury suggested, but it did not say so. Therefore if the amendment were passed the Association would land itself in a great difficulty.

Dr. BLACKHALL-MORISON said it was quite palpable that the policy of the hospitals marched on all fours with the policy of the National Health Insurance movement; the two were inseparable. The tariff question was an elastic one, and, from his own experience, the sifting out of the indigent patient, involving waiting until full inquiry had been made to see whether that person was eligible, frequently meant the postponing of the admission of the patient until he was much more likely to have to consult his undertaker than his doctor!

Some discussion then took place as to which of the various motions in regard to this matter of staff funds should be voted upon, as there seemed to be overlapping.

Dr. FOTHERGILL asked how the meeting could vote on the Plymouth amendment, without tying its hands in regard to a later motion by the Chairman of the Hospitals Committee that paragraph 33 of the report as amended should be adopted, and in regard to an addition to that paragraph suggested by Brighton. He suggested that the Plymouth amendment should be withdrawn until the others had been considered.

Dr. BRACKENBURY said that paragraph 3 of the report must have some amendment, in order to bring out the point he had raised, because paragraph 33 said that for *all* patients other than indigent ones arrangements should be made for remuneration of the honorary staff.

The CHAIRMAN asked Dr. Brackenbury to move an amendment which he (Dr. Brackenbury) considered would meet the case.

The CHAIRMAN OF COUNCIL, on the question of interpretation, said he hoped Dr. Brackenbury would agree that it was not necessary at the present stage to complicate matters by going into the point he had raised. Paragraph 3 stated that other patients who are not indigent may be received for treatment at voluntary hospitals when they cannot pay for or obtain adequate treatment elsewhere, and that for them payment should be received by the hospital in various ways, and that on account of their treatment some method of remuneration of the honorary medical staff should be arranged. He took it that that work might conceivably be so arranged that for the certain class for which Dr. Brackenbury was anxious to legislate there should be no particular payment; for another group there should be an intermediate payment; and for yet another group a large payment. He did not think it was more than a general proposition, and he considered that it would be better to adopt a suggestion by the Chairman to consider the motion for the adoption of paragraph 33 first.

Dr. N. MACFADYEN (East Hertfordshire) said that he did not like paragraph 3 at all, and it should be referred back to the Council altogether, or until after the most important point had been discussed.

The meeting then discussed paragraph 33.

Mr. BISHOP HARMAN said that the resolution, in its original form, was the policy of the Association. It came up again because the Council asked for some alterations of its phraseology, in order to bring it into line with paragraph 34. That policy of the Association was about to be challenged by Dr. Brackenbury and others, but there was no reason why the previous decision should not be adhered to. He contended that any patient who went into a hospital and paid for his maintenance was under the impression that he was paying for the services of the doctor; he did not think that he was paying for the cleaning of the doorstep, the running of the lift, and similar matters.

The CHAIRMAN said that there was a distinct difference between last year's resolution and the present one. Last year maintenance only was included, but this year both maintenance and treatment were included.

Mr. HARMAN agreed that paragraph 34 did say "maintenance and treatment." The Representative Meeting was not awake last year, having passed one thing in one resolution and another thing in another resolution.

Dr. C. W. CUNNINGTON (Hampstead) then introduced a motion that it is inconsistent with the principles of a voluntary hospital that a staff fund be created from the contributions of tariff patients. His opinion was that, as regards Hampstead, tariff patients paid for by the local authorities would go to municipal hospitals.

Dr. H. M. EVANS (North Suffolk) referred to the manner in which payments from education authorities and contributors overlapped. In his area a contributory scheme existed which worked well until the education authority called on contributors to refund it the payment for operations for tonsils, adenoids, etc. The hospital committee thereupon wisely decided to wipe out the arrangements made with the education authority and pay the surgeons from the contributory fund the amount which they would otherwise receive from the education authority. All the medical men in his district were in favour of a percentage or contributory scheme. All decent working men hated to feel they were the object of charity.

The Hampstead motion was then put and lost.

Dr. E. R. FOTHERGILL (Brighton) moved as an amendment:

> In each case where the Board of Management advises the medical staff that the sum or sums received from a patient have been obtained only from that patient and without any other financial assistance, and are insufficient to pay more than the whole of the cost of maintenance of that patient, and that the financial position of the patient is such as to render him unable to make any further payment, the medical staff of the hospital should decline to receive any part of such payments for the Staff Fund.

The differentiation made in the amendment was, he thought, fundamental. The staffs of Sussex hospitals felt they could not accept paragraph 33 unless the words he proposed were added to it.

Mr. HARMAN said the amendment threw on the hospital secretary the duty of ascertaining whether a patient paid himself without any financial assistance and whether the sum so paid was sufficient to cover his maintenance, although by not doing those things more money would remain in the hospital coffers. The hospital secretary would be more than human if he did anything of the kind. The real remedy for the difficulty was to get the law right and apply it generously afterwards.

The amendment proposed by Dr. Fothergill was then put and lost.

Dr. BRACKENBURY moved an amendment to omit certain words from paragraph 33 and insert others, so that the paragraph would read as follows:

> 33. In the event of decisions being taken which would lead to patients (other than private patients referred to in Sections IX (*a*) and (*b*)) paying in part or in whole, hospital charges, (1) where such payments are in any part made by rate aid or State aid, and (2) where such payments in other cases are of an amount exceeding the cost of hospital maintenance and accommodation, such charges should be considered to include payment towards maintenance and treatment, and a percentage of all such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital.

Dr. G. E. HASLIP believed that the cost of maintenance per patient varied from £3 to £4 10s. a week in London. He doubted whether many people would pay any such sum to the hospitals.

Dr. BRACKENBURY considered the point immaterial.

Dr. FRANK RADCLIFFE (Oldham) said that if the cost of maintenance were £3 or £4 a week and a patient contributed only £2 a week and the medical staff took 8s. from that, the 8s. would really come from the gratuitous contributions, from money given for charitable purposes.

Dr. J. W. BONE (Bedfordshire) said that he was in direct conflict with Dr. Brackenbury on this question. If his amendment were carried, the bottom was knocked out of medical staff funds at a single blow. At Bedford they had a hospital which they claimed to be the only truly voluntary hospital in this country. (Laughter.) A concrete example he wished to give them referred to that hospital. A building in the grounds of that hospital had just been adapted as a nursing home; it had been paid for by public charity, and it was proposed to admit to that nursing home the intermediate class who could pay something towards their maintenance. It was suggested that the payment should be four or five

guineas a week for maintenance. If this amendment was passed it meant that for these patients, who paid no more than their maintenance, the doctors would receive nothing. Even in Bedford they were not going to stand that. They would insist that such patients should be treated as tariff patients, and that a portion of their payments should go to staff funds.

Dr. F. REES (West Cornwall) mentioned a hospital whose income was over £26,000. The working classes last year contributed nearly £15,000 towards that income, the Government provided £4,000, and private patients £711. The annual subscriptions were a little over £1,000. If Dr. Brackenbury's amendment were carried the staff in that hospital would not be paid anything at all. The working-class contribution came in the shape of small deductions from workmen's wages; it was a delusion to call them voluntary contributions. What was going to be the position of the staff in such a hospital? Would there be any staff fund possible for them? The working-class contribution was all absorbed in maintenance. The hospital certainly was £1,000 to the good at the end of the year, but he did not see how a medical staff fund was going to be get out of that.

The CHAIRMAN OF COUNCIL said that he was sorry to disagree with Dr. Brackenbury, but the amendment left loopholes for very grave abuses. Take the case of all contributory schemes. Dr. Brackenbury would be the first to admit that under his proposition, if the premium of a contributory scheme could be so adjusted that it only just covered the cost of maintenance and accommodation, and nothing was payable for the medical services, there would be no contributory scheme which made any recognition for medical services. So it was with other matters. What insurance company, making an arrangement with a voluntary hospital which had agreed to take cases for it, in order that the beneficiaries might be got back to work as soon as possible and the company's liability relieved, would pay anything more than maintenance, if it knew that payment for maintenance would be sufficient? The company would take the path of least resistance, and who could blame it?

Dr. A. E. COPE (Westminster and Holborn) disapproved of Dr. Brackenbury's amendment. Apparently, if patients were divided up into four, three, or two classes, or were comprised all in one class, it did not make much difference to the medical staff. Medical men had the same responsibility for all, whether indigent or not. A great number of patients were being passed on from the voluntary hospitals to the Poor Law, to be paid for there, and he held strongly that the different classes of patients in hospital ought not to be multiplied.

Dr. BRACKENBURY, in reply, said that he believed he could have as many unanswerable conundrums put to him as there were members of that meeting. But he on his side could multiply unanswerable conundrums to those who stood by this resolution unamended. There were enormous difficulties either way; that was why the meeting got so mixed up about it last year, and why it was not perfectly clear in its mind even now. On the supposition that at the end of the discussion the meeting would adopt some provisional resolution which would keep the matter open for discussion he believed that that future consideration would be more fruitful if the amendment he had proposed were embodied in the policy. One of the conundrums which he would himself put was this: Were they going to the public to say that if a man contributed one shilling a week out of his resources to the hospital while he was a patient in it the medical staff was going to take 3d. of it? If a policy which involved such a course as that was enunciated from that meeting it would damage the profession in the eye of the public. Although the profession did not mean what he had just stated, that was what the unamended resolution would imply. He admitted that if his own amendment were incorporated cases which seemed equally unanswerable might be stated on the other side. But he would rather send out the policy with this amendment which left these unanswerable cases to their disadvantage than allow the unamended policy to go out, which left the disadvantage with the general public.

Dr. Brackenbury's proposal to amend paragraph 33 of the report was then put to the meeting, when there voted:

In favour	...	...	... 64
Against	...	...	... 55

Mr. MCADAM ECCLES asked whether a two-thirds majority was not required. The CHAIRMAN said that the whole resolution when it was eventually put would require a two thirds majority.

ELECTION OF CHAIRMAN AND DEPUTY CHAIRMAN.

The discussion was interrupted at this point to permit of some announcements.

The MEDICAL SECRETARY announced that there was only one nomination for the Chairmanship of Representative Meetings—the present chairman. (Applause.)

Dr. WALLACE HENRY said that he appreciated the compliment very highly. He feared that members might repent of their choice before the discussion on hospital policy was over, and it was possible that he would himself have to be carried to a hospital, where he was not quite certain on what scale he would be treated. (Laughter.)

The MEDICAL SECRETARY announced also that there was only one nomination for the post of Deputy Chairman—Dr. Brackenbury. (Applause.) For the treasurership a contest would be necessary. The two nominated were Dr. Haslip and Mr. Bishop Harman.

HOSPITALS POLICY (*continued*).

Dr. FOTHERGILL (Brighton) moved that the Council's motion as amended by Dr. Brackenbury should be amended by the addition, after the words "State aid," of the words, "or by an employer of labour, approved society, insurance company, or under a contributory scheme or other scheme." Private patients would be excluded, and also people who, individually, could not pay more than the maintenance, but everyone else would be considered to be paying both for maintenance and for treatment, and a percentage would be taken by the hospital staff.

Dr. J. W. BONE (Bedfordshire) formally seconded.

Mr. HARMAN suggested that as the inclusion of a number of exceptions would lead to confusion, Minute 236 of 1921 should remain the policy of the Association as at present, that he should withdraw the Council motion, and move that the Council be instructed to reconsider the policy in relation to expressions of opinion as to inequities likely to arise therefrom, and to consider what, if any, modification might be desirable.

Dr. BRACKENBURY agreed that the method suggested by the Chairman of the Hospitals Committee was the best course that the Representative Body could pursue at present. The expression of opinion of the meeting was a valuable one which he personally wanted, and one which could be taken by the Council, by the profession, and by the public for what it was worth.

Sir JENNER VERRALL said he agreed with Mr. Bishop Harman's suggestion only if the Representative Body felt that it could not advance the position since last year. But he would prefer that that Body should, if possible, prove to the public that since last year the matter had been considered, by carrying matters a step or two farther, rather than allow it to appear that the matter was referred back to the Council year after year. It appeared to him that if the meeting passed what Dr. Fothergill had read out (which he thought was a safe thing to do) it would show some progress had been made since last year. If, however, the meeting did not feel it safe to make any advance, he agreed that Mr. Bishop Harman's suggestion was the next best course.

Dr. F. RADCLIFFE (Oldham) said that they should all be quite clear about what was meant by the words used. He defied anyone to say what they meant by "a contributory scheme." That phrase was put in the original resolution in view of the Sussex contributory scheme. Did the phrase mean the kind of contributions which were deducted week by week from workmen's wages, and were handed over in bulk to the hospitals to do what they liked with? did it refer to a scheme under which people contributed so much per week to a fund, which latter paid so much per patient, or per week, or per bed occupied? or did it mean the widow's mite, which she contributed on Hospital Sunday?

Dr. N. MACFADYEN pointed out that to pass Dr. Fothergill's amendment would make it extremely difficult for the hospitals to work at the present time. He had been instrumental in getting up a contributory scheme which would come under this, but he could not put in any more than was obtained in the scheme already. He believed that that was the feeling of a great many people who were working in hospitals. He was sorry that they could not advance, but suggested that the matter should be referred back to the Council.

Dr. FOTHERGILL, interrupting the Chairman, who was about to put his amendment to the meeting, said that the meeting was not clear as to whether the matter was to go back. If it were to go back, and a favourable or adverse vote

was obtained from the meeting, the hands of the Council would be tied. He withdrew his amendment until that of Mr. Harman had been decided upon.

Dr. G. E. HASLIP hoped that the matter would be referred back to the Council. Those in favour of the staff funds were not clear amongst themselves as to where those funds should come from. Surely they should be perfectly clear about that if they were going to put the matter forward as the policy of the Association. It was imperative that the matter should be referred back to the Council for further consideration and for report next year. They had a policy to follow—a policy which had done no harm in the past, and which he did not think would do much harm in the coming year.

Dr. J. A. MACDONALD urged that the proposal of the Chairman of the Hospitals Committee should be adopted—that the matter should be referred back for further consideration. He traced the development of the Association's policy in this respect, and observed that at present it seemed that an impasse had been reached.

Mr. BISHOP HARMAN desired to recast his motion in the following terms:

> That it be an instruction to the Council to reconsider the terms of the policy in Minute 236 of 1921, and to report what, if any, modifications may be desirable to meet any possible inequities which may arise from its operation.

Dr. MCGREGOR ROBERTSON said that the general system of the voluntary hospitals in Scotland differed materially from much of the system in England, and sufficient representation did not seem to have been made to the Hospitals Committee on this point. He did not know of any of the great Scottish hospitals which received paying patients. None of the great hospitals, so far as he knew, paid their residents; residents, indeed, used until recent years to pay a small sum for the privilege of being residents. There were other differences of that sort which must be taken into account, and they made it impossible to draft a resolution which should include all these details. Another development was taking place in Scotland: Poor Law hospitals were gradually being put more or less on the basis of the great general hospitals. The Poor Law hospitals were being equipped with clinical laboratories. This tendency was bound to increase. The Poor Law hospitals, although supported from the rates, were yet paying honorariums, smaller than or on the same inadequate basis as the voluntary institutions. He thought, therefore, that it was eminently desirable that this should go back to the Council for further consideration.

Mr. HARMAN'S motion for referring the matter back to the Council was then put and carried.

In reply to several questions, the CHAIRMAN ruled that Dr. Brackenbury's amendment, not having been carried as a substantive motion, lacked binding force, but it would be considered by the Council, together with the amendments proposed by Dr. Fothergill and Sir Jenner Verrall, which had not been pressed to a division.

Paragraph 33 was withdrawn, paragraph 34 was carried, and paragraph 35 was withdrawn as being closely related to paragraph 33.

Introductory Paragraphs of the Hospital Report.

The meeting then reverted to the consideration of the introduction to the report, and dealt with paragraph 3. Two verbal amendments to paragraphs (*a*) and (*b*), proposed by Dr. G. H. LOWE (Cleveland), were put to the vote and lost.

Dr. BUTTAR thought the whole question which had been referred back to the Council that afternoon was based on paragraph (*b*), and doubted whether, that being so, the meeting should adopt it.

Dr. BRACKENBURY proposed to omit all the words in paragraph (*b*) from the words "either from the patients" to the end, to avoid prejudging a question referred to the Council and to avoid possible misinterpretation.

Mr. BISHOP HARMAN said the paragraph mentioned indigent patients whom the staff would treat gratuitously and paying patients for whom some form of remuneration should be received, but no mention was made of part-paying patients. It was therefore not incompatible even with Dr. Brackenbury's earlier proposal.

Dr. A. E. COPE suggested the whole of (*b*), rather than a part of it, should be omitted.

The CHAIRMAN OF COUNCIL thought great care should be exercised in rejecting the paragraph. If it were not adopted the medical staffs of the hospitals would be in a very difficult position with regard to paying patients. Doctors should preserve their right to say something about the disposition of payments, or a most awkward situation would be created.

Dr. N. MACFADYEN (East Hertfordshire) seconded Dr. Brackenbury's amendment, which was then put and lost.

Professor R. J. JOHNSTONE (Ulster) moved a drafting amendment to paragraph 3 (*b*), that the words "either from the patients themselves or on their behalf from the authority or body referring them to the hospital," should be deleted.

Mr. HARMAN said that the words were valuable. No very great stress was laid upon them, and if the meeting were doubtful he would sacrifice them, but he did not want to, because they were useful.

The amendment put by Professor Johnstone was lost, and the motion as it stood was carried by the necessary two-thirds majority.

A motion was then put to the meeting that paragraph 4 of the report be adopted. Dr. E. J. TOYE (Barnstaple) supported the adoption of the paragraph, subject to the reservation that such patients be classified as "tariff patients." His Division, he said, wished him to point out that the two groups of patients treated there were synonymous. The amendment was lost.

Dr. FOTHERGILL (Brighton) then moved that the following words be added to the original paragraph:

> The same principles shall apply to all services at voluntary hospitals required by approved societies, employers of labour, insurance companies, or other bodies, or under any contributory scheme.

The amendment by Brighton was lost, and the original motion was carried by a two-thirds majority. A motion that paragraph 5 of the report be adopted was also carried.

Definition of the Voluntary Hospital.

Mr. BISHOP HARMAN moved the adoption of paragraph 6 of the report, which was carried.

In moving the adoption of paragraph 7 he said that this was the first attempt to define what the Association meant by "a voluntary hospital." Paragraph 6 was the policy of the Association, and paragraph 7 was an expression of opinion of the Representative Meeting and should be confirmed. On the walls of voluntary hospitals they often saw the phrase "supported by voluntary contributions," but it was not true that a voluntary hospital was wholly maintained by voluntary contributions at present. The one thing which differentiated the voluntary hospitals from any others was that they had an independent administration and were not controlled by any statute. The Association was trying to point out what differentiated these hospitals from those maintained by the State. They were as much alive and elastic as a living organism.

Dr. A. LYNDON (Guildford) moved as an amendment that the following be substituted for paragraphs 6 and 7 of the report:

> That the maintenance of the system of voluntary hospitals of the country consists in the voluntary system of support and consequent absence of State and municipal control, and that this is not necessarily related to the medical staff.

Mr. HARMAN opposed the amendment on the ground that it mentioned only two out of several forms of control. Hospitals might be controlled by insurance companies or friendly societies, and therefore he thought it better not to attempt to define too closely.

Dr. A. BLACKHALL-MORISON (Marylebone) supported the amendment on the ground that State and municipal control was the principal danger confronting hospital practice.

The amendment was lost.

Dr. E. J. TOYE (Barnstaple) moved as an amendment that in the opinion of the meeting a voluntary hospital should be defined as one in which no charge is made to the patient either for maintenance or treatment.

This amendment also was lost.

Dr. GARSTANG (Mid-Cheshire) moved that the definition of a voluntary hospital should be an institution which was neither owned, leased, nor controlled by any State-constituted authority.

This was negatived, as was another, by Dr. BONE (Bedfordshire), urging that whenever the expression "voluntary hospital" occurred some such term as "public hospital" should be substituted. Certain other amendments were moved and negatived, one of the movers stating that he did not agree with the amendment of his Division, and another that he did not know what it meant. Dr. F. REES (West Cornwall) criticized the definition of the voluntary hospital in the Hospitals Report.

Dr. G. E. HASLIP said that he, too, did not understand the definition of voluntaryism in the report. It seemed as though the framers of the report had not the pluck to say that there was no such thing as a voluntary hospital, and took cover in the definition of "independent and voluntary management." Were they not just making these definitions to suit themselves? They were carried away by sentiment and tradition. They had been brought up in the hospitals and loved them. But the time had come, in view of the economic changes in this country, to make a big change. The voluntary system was dead. When he saw voluntary hospitals in London depending upon collections by dressed-up students he felt that the end of the voluntary system could not be long delayed.

The CHAIRMAN OF COUNCIL said that there was no question over which so much feeling had been aroused as over the definition of the voluntary hospitals. He himself had the greatest sympathy with the amendment just brought forward by Dr. Bone. The time would come, no doubt, when these hospitals would be called general hospitals. There were many grades of hospitals in this country, yet they were all called voluntary. The fourteen teaching hospitals still preserved the old idea of the fabric endowed and funds provided by charitable people, and of work done gratuitously by the staff. But other hospitals would be found in which half the funds were provided by contributory schemes—schemes in which the artisan contributed money for which he expected and demanded admission, and that did not conform to the original ideal of the voluntary hospital. There was only one thing which remained: it was that the staff should work in an institution which was under a management responsive to public opinion and criticism; in that way only could they arrive at the freedom which was necessary for the hospital system throughout the country.

Dr. MCGREGOR ROBERTSON said that voluntary hospitals in Scotland were those established by voluntary contributions and maintained by them. If by "voluntary" was meant "unpaid management," the term would apply to some rate-aided institutions. If men were sent to Scottish hospitals by the Ministry of Pensions, the Ministry would contribute towards their maintenance, but that did not deprive the hospitals of their voluntary character.

Sir JENNER VERRALL said that now voluntary hospitals were no longer entirely supported by voluntary contributions it was difficult to find a suitable definition. However great that difficulty might be, it was necessary to arrive at a definition of some sort, so that the profession and the public might know to what hospitals the resolutions which were being passed referred.

Dr. W. NEWLANDS (New Zealand), who was received with applause, outlined the hospital system prevailing in New Zealand, where for many years the hospitals had been supported entirely from public contributions, half being taken from the rates and half from a consolidated fund. As to control, representatives were entirely elected on a local vote, at the same time and under the same conditions as local municipal representatives. Those representatives were just as reasonable and as anxious to work harmoniously with the hospital staffs as any managers appointed by subscribers could be. He was of opinion that the old voluntary system of this country was doomed, and would disappear long before the advent of a Labour Government. On the other hand, the experience of New Zealand showed that there was no need to fear a State system of hospitals.

In reply to Mr. MCADAM ECCLES, who asked whether in New Zealand the Board, elected by the ratepayers, had full and independent control of the hospital and the funds which came from the consolidated fund and the ratepayers, or whether the Board was controlled by any higher body, Dr. NEWLANDS said that the Health Department had the right of veto as regards any new institutions, but that the power of the department was always exercised fairly. The CHAIRMAN asked whether the staff was paid, and Dr. NEWLANDS said that as regards the staff in four big centres—Dunedin, Christchurch, Wellington, and Auckland—they received no remuneration whatever. In the smaller centres—some of which, like Hamilton, with a hospital containing 200 beds, were fairly big—the hospitals were managed by the medical superintendent and various assistants, but there was a general feeling that with the class of patients received in the hospitals the days of the honorary staff were practically ended. In reply to Dr. W. DOUGLAS, who asked whether any patients paid, Dr. NEWLANDS said that they paid what they were able to pay. The full fee at Dunedin was 9s. a day. The patient was told also that if he liked to give something more than the 9s. a day as a return for the services of the medical staff it would be welcomed as a donation to the hospital; but the medical staff got no money whatever from the patients. Dr. DOUGLAS asked whether any patients were maintained perfectly freely, and Dr. NEWLANDS answered that an account was rendered to every patient as he left the hospital, and if he satisfied the secretary of the board that he could not pay, the amount was written off.

Dr. T. RUSSELL (Glasgow) said that the Royal Infirmary at Glasgow was managed without public bodies having any control. Last year the income was more than the expenditure. The Pensions Board had their own hospital at Bellahouston. The Royal Infirmary was entirely a charitable institution for the treatment of the poor who were unable to pay proper fees.

Mr. BISHOP HARMAN urged that it was necessary to formulate a policy and make a leadership. The definition was really wanted, particularly in view of the effects of the Cave Committee. The distinction between the State hospital and the voluntary hospital ought to be emphasized. In this country we had had such a lesson of State control that we were sick of the very word.

The motion was carried by an overwhelming majority.

Paragraph 8 of the report was then carried; to paragraph 9, urging that it was undesirable that the voluntary hospitals should be subsidized by the local rating authorities except in so far as payment was made for the treatment of patients for whom the authorities were responsible, Dr. F. REES moved that the paragraph be amended by the insertion of the words "*pro rata*" before "payment." Dr. J. D'EWART said that there was a good deal of substance in this view, and Mr. Harman accepted the amendment.

Dr. BRACKENBURY did not agree with paragraph 9, and thought it a mistake to pass it. From both the public point of view and the point of view of the hospitals there was no advantage in saying that hospitals should not accept a contribution to their funds if such contribution was offered by a public body. All that ought to be done was to say that if contributions from municipalities were accepted they should carry with them no more and no less authority than similar contributions from individuals. He wanted to make it quite clear that the contribution by the ratepayers was not made by the local authority as an employer of labour for services which the hospital would render to its employees, but was a voluntary contribution made by the local authority to the hospital. If Mr. Harman thought that that was not what was intended by the resolution he begged him in the interests of the profession so to amend it to make that clear.

Mr. HARMAN said there was another resolution on this point. The State was not to subsidize the hospitals directly. The Committee had tried to provide against control. In paragraph 40 of the report the Committee had tried to secure that all those who had a right to representation by reason of subscriptions should be balanced so equally that no one party should have a predominant influence in the hospital. But when a rating authority which had its own hospital came in and gave subsidies to a voluntary hospital there was direct competition between the rate-aided hospital and the voluntary in a very acute form, and the ratepayers in a short time would say that they had already their own hospital, but were also contributing to the voluntary hospital: the control of the two would be amalgamated and the voluntary hospital would die. That must be guarded against, even if it meant the sacrifice of occasional contributions.

The motion was put and carried by a two-thirds majority.

Mr. BISHOP HARMAN then moved the adoption of paragraph 10 of the report. He pointed out that a resolution of the Representative Meeting of 1909 defined contributions, and pointed out the effect they would have. The present paragraph was the same, with the word "gratuitous" in the front. The resolution had been very useful in the past, but it had to be altered because the possibility of contributory schemes was being recognized, and therefore "contributions" could not stand alone. It must be made quite clear what "contributions" meant, and that no rights should be claimed in respect of them.

Dr. C. J. KIRK (Darlington) moved to substitute the words "regarded merely" for the word "considered," to avoid giving the impression that money contributed would go towards the upkeep of the hospital and any benefit which accrued to the contributors would be regarded only as a side line. Thereupon Mr. Harman offered to replace the word "considered" by "treated," and to this Dr. Kirk agreed.

An amendment standing in the name of the Manchester

Division, to substitute the words "maintenance and medical treatment" for the word "treatment" was accepted, and paragraph 10 as amended adopted.

An amendment to paragraph 11 standing in the name of the Darlington and Bedford Divisions to delete the words "during treatment," and an amendment by the Manchester Division to amend the phrase "maintenance and treatment" to read "maintenance and medical treatment" were accepted and the paragraph as amended adopted.

Upon Mr. HARMAN moving the adoption of paragraph 12, Dr. HASLIP maintained that the subject dealt with in this paragraph was outside the scope of the Association; it was a matter for the managements of the hospitals. To this Mr. HARMAN rejoined that the paragraph was most useful, and should be retained; through it many insurance companies had been brought to see their duty and had behaved accordingly.

Dr. A. LYNDON (Guildford) moved an amendment to make the paragraph applicable to approved societies, which now possessed large funds. Many of them paid the whole cost of treatment of any of their members who were in hospital, and the practice should be encouraged. Replying to this point, Mr. HARMAN argued that approved societies stood on an entirely different footing. Employers of labour and insurance companies were under no necessary obligation to contribute to hospitals, but gratuitous contributions were not wanted from approved societies, which should make *pro rata* payments for the patients they sent to hospital. Dr. BRACKENBURY, however, disagreed with Mr. Harman. The Association had never expressed the opinion that approved societies should make their payments on the *pro rata* system and not by a large contribution in the same way as any generous donor. He himself would prefer that approved societies should contribute generously to hospitals without conditions rather than pay so much a week for treatment to their individual members. He therefore supported the amendment.

Dr. F. RADCLIFFE (Oldham) asked how, if the approved societies were not to give their contributions in proportion to the number of their members who had been treated, how were the Prudential, for example, to give anything to Newcastle? Dr. HASLIP thought that the question had no bearing on the point. It was up to the Prudential, if they liked, to give a larger sum to any district which particularly needed money, quite independent of the number of their members in the district.

Dr. WM. BRANSON (Halifax) hoped that the motion would be adopted as it was. If the approved societies in the mass were to be asked to contribute, then it would be a good excuse for other subscribers to cease their subscriptions, and further, by introducing the approved societies in that connexion possibilities were opened up the end of which could not be foreseen.

The amendment was lost, and the motion carried by a large majority.

Contributory Schemes.

Mr. BISHOP HARMAN, in moving the adoption of paragraph 13, said that that paragraph and the three following ones were the really new and revolutionary part of the report. The Council had been asked to approve certain contributory schemes last year, but had said in effect that they did not consider it desirable to approve any individual contributory scheme, preferring to lay down certain standards to which they thought it desirable that every contributory scheme should conform. The statement of fact would be found in paragraph 13, and then certain of those standards were in the following three paragraphs.

Paragraph 13 was agreed to without discussion.

The other three paragraphs of this section were also adopted, without contrary amendment or discussion.

Suitability of Patients for Hospital Treatment.

Mr. HARMAN next moved paragraph 17 of the report, which declared that the primary consideration in the admission of a patient to hospital should be the suitability of a case on medical grounds.

Dr. THOMAS (City of London) considered that the paragraph should be amended to make it quite clear that all urgent cases should be admitted whatever their means. Mr. HARMAN said that this was included in the intention of the original paragraph; and Dr. THOMAS withdrew an amendment he had moved.

On paragraph 18, which stated that some means of investigation into the circumstances of applicants for relief should be employed in all medical charities, Mr. HARMAN said that this asked for a return to the policy of 1908. So long as there were medical charities, there should be a test of the indigency of the patients. The paragraph was adopted.

The CHAIRMAN having formally, on behalf of Plymouth, moved a new paragraph declaring that the ticket system for admission or treatment should be abolished, Mr. HARMAN said that it was the policy of the Association that the system should be abolished as soon as possible, and he thought it had better be left at that. The motion was lost.

Categories of In-patients.

Mr. HARMAN said that this was a recommendation of Council to define the patients. Three groups were suggested: free (indigent), tariff, and private patients (the last hitherto known as paying patients). An amendment was put forward by Birmingham Central that only two classes of patients be considered: those who did not pay full maintenance fees and private patients who paid full maintenance charges and for medical treatment. Mr. HARMAN resisted this proposal, and urged that provision must be made for free patients. The amendment was lost. An objection by Dr. R. BOYD (Manchester) to the word "indigent" as derogatory was not upheld.

Dr. MILBANK-SMITH (Chichester and Worthing) said that his Division was very anxious that the class of tariff patients should be split up into three distinct divisions.

Dr. BRACKENBURY asked Mr. Harman whether he could emphasize the division of the tariff patients by the introduction of figures into the resolution as it stands, so that the section dealing with tariff patients should read, ". . . this group includes all those for whom any payment has been made by (1) public authorities; (2) approved societies, employers of labour, insurance companies, or other bodies; or (3) under any contributory scheme." It might be found convenient for those three classes to be considered separately. Thereupon Mr. HARMAN intimated that he would accept that subject to the approval of the meeting.

Dr. C. M. PEARSON (Edinburgh and Leith) asked whether in addition to paying for special accommodation, private patients had their own private medical attendants. Mr. HARMAN answered that the details of that would be defined later.

The amendment by Chichester and Worthing was lost, as was an amendment by Plymouth to delete all the words from and including "approved societies" in subparagraph (*b*).

Dr. F. A. ROPER (Exeter) moved that subparagraph (*b*) should be divided into four categories, as follows: (1) patients who pay themselves in part; (2) patients who pay themselves in whole; (3) patients aided or paid for by insurance or contributory schemes; and (4) State- or rate-aided patients. His Division, he said, was of the opinion that the tariff group was practically impossible to deal with equitably or with fairness with the classes of patients grouped together in (*b*), if the financial arrangement was to hold in all its different classes. It would be impossible, and extremely dangerous, to the profession and the hospitals if all the patients, as tariff patients, were to be meted out the same treatment. For the sake of clarity of thought the Exeter Division thought it would be wise to divide the group into categories each of which should be dealt with by different financial arrangements. Under the motion as it stood the poor patient who could pay 5s. a week towards his maintenance would be suffering a grave injustice.

In declining to accept the amendment, Mr. HARMAN said that subparagraph (*b*) did not define the terms under which the patients concerned paid, and the treatment they received. The CHAIRMAN remarked that the only difficulty he could see to classifying in the manner suggested was the possibility that later on another class might crop up which might require to be inserted.

The amendment was lost.

Free (Indigent) In-patients.

Mr. BISHOP HARMAN explained that paragraph 20 was merely a statement at greater length of what had already been approved in paragraph 19. The clause was agreed to, an amendment by Manchester being defeated.

Paragraph 21 was carried with the addition in the last line of the word "advice" before the word "maintenance," an amendment by Birmingham Central being withdrawn. The

paragraph read: "In case of patients referred by Poor Law medical officers to hospital for consultation and treatment payment should be required from the Poor Law guardians both for their maintenance and treatment."

Tariff In-patients.

The meeting proceeded to the consideration of Section 22. In the introductory paragraph it was agreed, on the proposal of Mr. BISHOP HARMAN, to substitute for the words "should be considered to cover" the words "should be taken as covering." An amendment to paragraph (*a*), to substitute the word "treatment" for the words "payment of medical staff," was rejected.

Dr. T. J. HOLLINS (Chesterfield) moved to delete the reference to payment of medical staff in paragraph (*a*) on the ground that any payment of hospital staffs was objectionable. The amendment was rejected.

The following amendment, in the absence of the Stockton representative, was formally moved by the CHAIRMAN:

> Payments made for Class B in-patients should be for work done based upon a scale of contribution agreed upon from time to time between the contracting parties, such scale of contribution making full allowance for provision of hospital accommodation, maintenance, and payment of resident staff.

This was rejected, Mr. HARMAN saying it had already been decided that hospitals should not take contributions under contributory schemes.

Dr. BRACKENBURY pointed out that the opening paragraph of Section 22 might be construed as prejudicing the question which had been referred back to the Council that morning. The CHAIRMAN said the reference was only to those paying the full cost of maintenance and treatment, but Dr. BRACKENBURY called attention to the fact that the words were "should be taken as covering the full cost," which was a different matter. Mr. HARMAN held that the matter had already been dealt with under Clause 34. Dr. RADCLIFFE said he had been informed that tariff patients included individuals who paid part of their maintenance. Mr. HARMAN replied that people who came and said they could pay 5s. a week were not referred to

Dr. BRACKENBURY said he was quite sure that Mr. Harman would not wish to undo by what might be called a subterfuge the very definite instruction which he himself had moved, that the Council should take the matter into consideration whether there should be any alteration of the policy.

Mr. BISHOP HARMAN said he appreciated and sympathized with the point put by Dr. Brackenbury, but the paragraph applied only to patients who came from an employer of labour, public authority, approved society, or insurance company, and did not cover those who came in and paid, themselves, at the time and said that so much was all they could afford.

Dr. BRACKENBURY said that if the Chairman of the Hospitals Committee would assure him that the essence of the paragraph was in the words "enters into a financial arrangement with," then he would be content. Mr. HARMAN, having given this assurance, Dr. BRACKENBURY said he understood that it meant a definite bargain—a scheme entered into before any patient was received at all—and Mr. HARMAN agreed.

The section dealing with tariff in-patients was then taken clause by clause.

Mr. BISHOP HARMAN said with regard to the limits of income for tariff in-patients, there was a motion on the agenda that it be subject to period revisions as well as to local variations. He was willing to accept this.

Dr. LANGDON-DOWN (South Middlesex) said that in his Division it was felt that practitioners would be deprived of many ordinary private patients by the maintenance of so high a scale.

Dr. J. STEVENS (Edinburgh) also opposed the income limits. His Division considered it unwise to enter into so much detail at the present time, and, indeed, he thought it was a mistake to have a scale at all.

Mr. HARMAN explained that the scale had been reduced from the original figure, because it was found that the King's Fund was lower than the scale originally fixed. He pressed for the setting up of a scale, which was valuable because it gave a lead.

Dr. FOTHERGILL pointed out that if the scale were published it would be looked upon as a minimum, whereas in the view of the Association it was a maximum; and Mr. HARMAN accepted the suggestion to put the word "maximum" before "scale."

Dr. W. J. LEIGHTON (Preston) said that in his Division they preferred to have no scale at all, or that, if any definite scale was laid down, it should be made a household and not an individual scale.

A motion by South Middlesex that the scale was too high was lost. Dr. W. E. A. WORLEY (City of London) said that his Division considered that the scale should be wholly discretionary and in no way arbitrary, but this also was defeated, as was an amendment by Dr. J. C. MATTHEWS (Liverpool) proposing deletion of the scale of income limit.

Dr. JAMES STEWART moved: "That some elasticity should be allowed tariff patients requiring special treatment." The advance of medical knowledge had been very great, even since the passing of the Insurance Acts, and many special operations were occasionally performed which ought to be paid for at a higher rate. Upon this Dr. FOTHERGILL remarked that it would not be the individual patients who would have to pay the fees, and the amendment was lost.

Dr. A. LYNDON (Guildford) moved that paragraph 22 (*g*) be amended by the deletion of "a private practitioner" and the substitution therefor of "the attending practitioner." Mr. HARMAN considered this an undue limitation. The amendment was, however, carried.

Dr. FOTHERGILL moved the reimposition of the word "private." He held that the doctor in attendance on the patient should be the only one who should have the right of recommendation and not the consultant who walked in on any afternoon. Dr. BRACKENBURY, seconding, said that if they left out the word "private" it might include a whole-time officer. Dr. H. G. DAIN (Birmingham Central) opposed the amendment, and could see no necessity to interfere with the word "attending." They merely wanted to provide that a patient came into the hospital on the recommendation of a doctor, and the attending doctor was the only really important factor. Dr. Fothergill's amendment was lost, and the motion, as already amended, was then put to the meeting and carried.

Election of Treasurer.

The announcement that Dr. Haslip had been returned, after a contest, as Treasurer, was greeted with applause.

The meeting adjourned at 6.35.

Monday, July 24th.

[When the meeting resumed on Monday morning, July 24th it proceeded to discuss the sections of the report of Council dealing with finance and the report of the Medico-Political Committee. In order to maintain continuity, however, it has been thought well to postpone the report of the proceedings on these matters until our next issue. The discussion on hospitals policy was resumed on the afternoon of Monday, and the following is a report of the proceedings:]

Private Patients in Nursing Homes attached to Hospitals.

The CHAIRMAN OF THE HOSPITALS COMMITTEE moved paragraph 23 of the report:

> Where it is desirable that special accommodation in the nature of a nursing home should be provided in connexion with voluntary hospitals for the reception of private patients it should provide as follows:
>
> (*a*) Private patients should be admitted to such special accommodation only on the recommendation of a private practitioner except in cases of emergency.
>
> (*b*) It shall be open to a private patient to select any registered medical practitioner as his attendant.
>
> (*c*) The scale of charges for the private patient for maintenance shall be such as fully to cover every cost to the hospital.
>
> (*d*) No fixed rate of payment for professional services rendered to such patients should be established; the fees so payable to remain, as at present, a matter of arrangement between patient, family physician, and consultant.

Mr. BISHOP HARMAN, in moving the adoption of the clause (*a*) of the paragraph, said that in deference to a generally expressed opinion the word "where" had been introduced at the beginning of the paragraph, although personally he would have preferred the omission. There were many admirable nursing homes throughout the country, but he did not think a nursing home was a proper place for the reception of patients to be subjected to major operations unless it had a resident medical officer. That was the practice in other countries, such as Canada and the United States, but as it was thought to be impossible in this country at the present time the word "where" had been added. The subparagraphs (*a*) to (*d*) were the provisions that should apply to nursing

homes. With regard to subparagraph (*a*), he accepted an amendment by Gateshead, that where a patient was admitted or treated as an emergency the patient's own medical attendant should be informed.

An amendment by Norwich to delete the words in (*a*) "except in cases of emergency" was defeated.

Dr. A. LYNDON (Guildford) moved an amendment to substitute the words "the patient's medical attendant" for "a private practitioner" in subparagraph (*a*). His proposal, he said, was similar to one accepted by the meeting on Saturday, and it did not insist on the patient's attendant being necessarily a private practitioner.

Dr. BRACKENBURY sympathized with the amendment, but said that as worded it would allow a hospital to enter into arrangements with people to accept them as private patients on the recommendation of the resident medical officer of that hospital, who would go out and see the patients and become their medical attendant.

Mr. HARMAN thought the amendment Dr. Lyndon introduced on Saturday was a good one and improved the wording of the paragraph it affected, but he was doubtful about that which was now before the meeting. He felt the words "private practitioner" were sufficiently comprehensive.

The amendment was put and lost.

Mr. HARMAN, in moving subparagraph (*b*), said that to this he could accept no amendment. This provision did not give the right of entry into the hospital itself, and therefore there was no ground for the fear that consultants might entrench upon their rights and privileges.

Mr. A. LUCAS (Birmingham Central) moved that the paragraph be amended by the insertion of the words "when practicable." After some discussion he agreed that a subsequent amendment by Northampton more completely covered his objection:

> It shall be open to a private patient to select any registered medical practitioner as his attendant, provided he be in a nursing home which is an entirely separate entity from the general hospital.

If it could be proved that the nursing home was an entirely separate entity, then the objection fell to the ground. In a large hospital all sorts of practitioners could not come in and order a particular treatment. If it was an entirely separate building, then there was no objection to private practitioners coming in, as he believed was the case with St. Thomas's Home in connexion with St. Thomas's Hospital.

The Northampton amendment was formally moved.

Dr. C. BUTTAR said that the remarks of Mr. Lucas led him to raise the question of what the nursing homes were actually intended for. He was sure, from a perusal of the amendments, that many Divisions had not the remotest notion. Were these nursing homes to be sources of income to the voluntary hospital to which they were attached, or were they designed merely for the better treatment of better-class patients? If the latter was the case, why should they be attached to the voluntary hospital at all? If, on the other hand, they were going to be put up for the purpose of swelling the coffers of the voluntary hospital, Mr. Lucas's objections were very valid indeed. The administration of a voluntary hospital would become responsible for the nursing home. He was quite sure very few in that hall were certain as to what was meant exactly by nursing homes attached to hospitals.

Dr. F. REES (West Cornwall) said it had been suggested that these new nursing homes were going to be attached to general hospitals for the purpose of assisting the funds of the voluntary hospitals. Would it not be much better for the sake of the profession that the nursing homes of the country should go to improve the funds of the voluntary hospitals instead of going to put something into the pockets of the medical men attending these nursing homes? He was inclined to think that it would be a very good thing if these nursing homes should be built in connexion with hospitals.

Dr. BRACKENBURY hoped the meeting would allow no interference with paragraph 23 (*b*), which was the charter of the private practitioner in this connexion. If they were to have voluntary hospitals setting up nursing homes in these places, and attracting into them the fairly well-to-do patients of private practitioners, the least they could insist upon was that they should have the right to continue their treatment of the patient therein.

Dr. HASLIP said that the matter was very interesting to London. Dr. Brackenbury had laid it down that the general practitioner should be allowed the right of treating his patient in those homes. That was what might be wished for, but he thought that in London there was not the slightest likelihood of that permission being given. The problem for general practitioners was where they could obtain proper nursing at a proper price for their patients. He did not think that the Committee had sufficiently studied the report of Sir Napier Burnett, in which he had classed the hospitals as A, B, and C, which had been explained very clearly in the JOURNAL—the A hospitals with over 100 beds, B those with less than 100 but not under 30, and C the cottage hospitals. In the country the practitioners had developed the cottage hospitals, and that was what should be done in London. The London practitioner was working under far greater difficulties than his colleague in the country. Only a few days ago he had had to send a patient to a nursing home at Windsor, not for treatment but for diagnosis, because this saved his patient 50 per cent. in expenses. There were no facilities in the greatest city in the world, whereas in a city like Vienna he had found nursing homes at reasonable rates in a building with 200 beds and three operating theatres (one for septic cases). He agreed with Dr. Buttar that the matter must be referred again to the Divisions to hear exactly what were their opinions upon it.

Dr. DOUGLAS (Maidstone) asked what were the hospital charges in Vienna. Dr. HASLIP replied that on a pre-war basis (for it was useless to give the cost in present currency) a large room with attached small room for the nurse and a private bath could be obtained for the equivalent of about £7 or £8 a week.

Mr. LUCAS (Birmingham) said that if nursing homes were started in connexion with big general hospitals his committee would disagree with it. If the nursing home was an entirely different building he would have no objection, but, whatever the meeting might decide, it was impossible to put the patients under the same conditions as the ordinary patients.

Dr. FOTHERGILL said the paragraph under discussion was prefaced by the word "where." He thought the meeting should adopt it. If in any area it was considered that a nursing home should be formed in connexion with a general hospital, the Association should say it must adopt the five points laid down. It was no use saying the staff or the governing body would turn it down; they were not asked to take it up, but if they took it up they must conform to certain principles. The paragraph before the meeting was a charter for the profession, and should be adopted; if the hospitals did not comply with its provisions private nursing homes should be opened where the hospital staffs would not have an unfair monopoly.

Mr. BISHOP HARMAN, replying, said that there was no question of the benefit of the hospital; it was all a question of the betterment of the treatment of the patients. St. Thomas's annexe was not separate from the hospital; it was within the precincts. As to the admission of practitioners, most of them were admitted, though not all. Consultants wished for admission to these hospitals or annexes, and they had every right. He pointed out that the word "shall" was used in this case instead of the word "should," and the Committee would not accept anything else.

The Northampton amendment was lost.

Dr. H. J. STARLING (Norwich) moved that to paragraph 23 (*d*) the following words should be added:

> That no person should be admitted as a paying patient whose income from all sources exceeds the limit of a specified scale.

The amendment, he said, was brought up in order that a nursing home provided by a hospital should not enter into unfair competition with other nursing homes.

Mr. HARMAN thought that was intolerable: it meant that they would put up the best form of nursing home and say that only those who were semi-poor should go there.

Dr. FOTHERGILL disagreed with Mr. Harman, who, he said, wished that everybody, including millionaires, could go into the hospital nursing homes. Brighton doctors were absolutely against that. The very wealthy could go to the enormously expensive private homes, and the medical staffs at Brighton could see no reason why the nurses and matrons who ran such homes should be turned out of honest livings in order to get homes near the hospitals.

Dr. HASLIP said it was useless to think about a limit. If a hospital had a private nursing home attached, and it followed the five points just passed, how they should be conducted was not the business of the meeting. If he were a millionaire he would much sooner have a room in an annexe, and be attended by his own doctor, than go into a nursing

home, probably in an old-fashioned house, with creaking stairs, and without proper sanitary arrangements. They wanted to progress; they could not say that because a man had a large income he should not have the very latest appliances for his treatment.

The amendment was lost.

Dr. McGregor Robertson, speaking on the motion as originally proposed by Mr. Bishop Harman, said it was not possible to take a private nursing home as an annexe to a voluntary hospital without trenching upon the facilities of that charitable institution to a very large extent. For instance, were they going to have an *x*-ray department belonging to the annexe? If not, the apparatus of the hospital would be at the disposal of the nursing home, which latter was thereby at an enormous advantage as compared with a private home, because the installation of the *x*-ray apparatus in a private institution would involve enormous capital expenditure. It was impossible for the private institution to compete unless those private institutions were also given the advantage of using the hospital's *x*-ray apparatus. The Association should encourage the establishment on an adequate scale of private nursing institutions, with all facilities for modern diagnostic work, and because he believed that the establishment of private nursing institutions in connexion with hospitals would delay that development he did not think the Association should encourage them. The paragraph as a whole should be referred back for consideration.

Dr. D. Wilkinson (Birmingham) asked why doctors themselves did not start nursing homes, instead of asking that they should be attached to large hospitals. He had been instrumental in starting a very successful home, with 100 beds, operating theatres, lifts, pathological, electrical, and *x*-ray departments, housed in a specially constructed building and not in a converted house. It was intended for those who could not afford the ordinary private nursing home, but were not suitable for an ordinary hospital, and it provided inclusive treatment—nursing charges, maintenance, and professional fees—for 10 guineas a week.

Paragraph 23 was approved.

Private In-patients in Hospital.

Mr. Bishop Harman, in moving the adoption of Section IX (6), said it was a new section designed to meet the case of private patients admitted to the ordinary public wards of a voluntary hospital. If a patient was in a public ward he must be attended by the hospital staff or someone invited by them, and therefore paragraph (*b*) of the previous resolution was omitted.

An amendment in the name of the Coventry Division, which sought to make the fees payable for professional services a matter for arrangement between the patient, family physician, and consultant, except where the hospital authorities and staff agreed to a graduated scale of charges according to the patient's ability to pay, was defeated.

The section was agreed to.

Out-patients.

Mr. Harman, in moving paragraph 24—"the primary object of the out-patient department should be for consultation"—said it did not exclude secondary objects.

Dr. W. F. Dearden (Manchester) moved the addition of the following words: "with an important secondary object as a means of medical education." Medical students had few opportunities of becoming familiar with the common ailments the practitioner had to treat on starting for himself; their experience inside the hospitals was more concerned with special diseases and complications. It should be left to the discretion of the physician or surgeon of the out-patients' department to retain the slighter cases which would be of advantage in teaching. His amendment, however, was not accepted.

Dr. J. O. Symes (Bristol) moved that paragraph 24 should be deleted and the words "The use of the out-patient department for consultation should be encouraged" substituted. They believed that the primary object of the out-patient department should be the treatment of the sick poor, chiefly women and children. From the point of view of the junior staffs of the hospitals it was desirable that they should have experience of the "common or garden" patient who came to the out-patient department, and the same argument applied still more strongly in the case of students.

Mr. Harman remarked that the motion he had put down had been the policy of the Association since 1908.

The amendment was lost, and the motion declared carried by a two-thirds majority.

Mr. Harman then moved paragraph 25:

> Only such treatment should be given as cannot consistently with the best interests of the patient be properly undertaken by a general practitioner of ordinary professional competence and skill.

Dr. E. J. Toye (Barnstaple) moved to add words excepting patients referred for prolonged treatment by their own medical attendant. Dr. Brackenbury warned the meeting against anything which would lend countenance to the accusation, which might be true in a few isolated cases, that an insurance practitioner might send troublesome patients to hospital for treatment which came within the terms of his contract. Dr. Toye said that his Division had in mind the case of an uninsured woman or child who required prolonged treatment, and it might well be in the interest of the patient not to allow her to run up a doctor's bill of £10 or £20, but to send her to the hospital. The motion was lost.

Dr. R. Fawcitt (Furness) moved that the paragraph should stop at the words "general practitioner," on the ground that the words following were impossible of definition. The amendment was lost, and the motion announced to be carried by the necessary majority.

Mr. Harman moved paragraph 26:

> All cases not suitable for hospital treatment should be referred in general terms to a medical practitioner, to a public medical service, an approved provident dispensary, or to the relieving officer under the Poor Law.

This was agreed to without discussion.

In moving paragraph 27:

> 27. Where arrangements for consultations or specialist services for tariff patients are made under some contributory scheme or otherwise, such arrangements should provide that these services shall be given so far as is possible and consistent with the best interests of the patients by the private practitioner at his consulting rooms or at the patient's own home and not at the out-patient department of the voluntary hospital.

Mr. Harman said that the Domestic Workers' Friendly Society had, on the advice of the Association, entered into an excellent arrangement whereby consultations with ophthalmic and dental specialists were held at the consultant's own residence at half fees.

The motion was carried.

Elections.

During the meeting the following election returns were announced:

Dr. Wallace Henry, Chairman of Representative Meetings.
Dr. H. B. Brackenbury, Deputy Chairman.
Dr. G. E. Haslip, Treasurer.

Election of twelve members of Council 1922–23 by Grouped Representatives:

Dr. A. Forbes, North of England, North Lancashire and South Westmorland, Yorkshire.
Dr. F. Radcliffe, Lancashire and Cheshire.
Dr. J. W. Bone, East York and North Lincoln, Midland, Cambridge and Huntingdon, Essex, Norfolk, Suffolk, South Midland.
Dr. T. Ridley Bailey, Birmingham, Staffordshire, North Wales, Shropshire and Mid-Wales, South Wales and Monmouthshire.
Mr. W. McAdam Eccles, Metropolitan Counties, Inner Group.
Dr. H. B. Brackenbury, Metropolitan Counties, Outer Group.
Dr. C. E. S. Flemming, Bath and Bristol, Gloucestershire, West Somerset, Worcestershire and Herefordshire, Dorset and West Hants, South-Western, Wiltshire.
Dr. S. Morton Mackenzie, Oxford and Reading, Surrey, Southern, Sussex, Kent.
Dr. C. E. Douglas, Aberdeen, Northern Counties, Dundee, Perth, Edinburgh, Fife.
No valid nomination, Glasgow and West of Scotland, Border Counties, Stirling.
Dr. R. B. Mahon, Connaught, Leinster, South-Eastern of Ireland.
Dr. J. S. Darling, Munster, Ulster.

Election of eight Members of Council under By-law 46 (*d*) and Standing Order 38:

Dr. J. A. Macdonald.	Dr. R. Langdon-Down.
Dr. H. G. Dain.	Mr. H. S. Souttar.
Dr. E. R. Fothergill.	Dr. J. Steven.
Dr. Lewis Lloyd.	Mr. E. D. Turner.

Election of four Members of Insurance Acts Committee under By-law 69:

Dr. H. S. Beadles, Dr. Herbert Jones, Dr. H. G. Dain, Dr. E. K. Le Fleming.

ANNUAL GENERAL MEETING.

Induction of President.

The ninetieth annual general meeting of the Association was held in the Bute Hall of the University, Glasgow, on Tuesday, July 25th, at 2 p.m. The President for 1922–23, Sir William Macewen, C.B., F.R.S., Regius Professor of Surgery in the University of Glasgow, was inducted by the retiring President, Professor David Drummond, C.B.E., M.A., D.C.L. The proceedings at this meeting, which was adjourned until the evening, will be reported in our next issue.

In the evening, at 8 o'clock, a very large and distinguished audience filled the Bute Hall to witness the presentation and hear Sir William Macewen's address. The President was supported on the platform by Sir Donald MacAlister, Principal and Vice-Chancellor of the University, and by three past Presidents (Sir James Barr, Sir Clifford Allbutt, and Professor David Drummond), and by Sir Jenner Verrall, Major-General Sir W. G. Macpherson, Dr. J. A. Macdonald, Sir Frederick Mott, Sir James Reid, Professor Alexis Thomson, Dr. Wallace Henry, Dr. R. A. Bolam, Dr. Alfred Cox (Medical Secretary), Dr. N. G. Horner (Assistant Editor), Mr. L. Ferris-Scott (Financial Secretary), Mr. W. E. Hempson (Solicitor), and others.

Introduction of Foreign Guests and Delegates from Overseas Dominions.

A large number of delegates from Overseas Dominions and foreign guests were presented to the President by the local General Secretary of the meeting, Dr. Geo. A. Allan. Their names were as follows:

Delegates from the Overseas Dominions.

Dr. E. Wells Witham (Assam), Dr. H. G. Massiah (Barbados), the Hon. Major-General W. E. Jennings, I.M.S. (Bombay), Dr. John Wallace Weir (Border, South Africa), Dr. W. F. Law (British Guiana), Dr. J. E. Sharples (Demerara), Dr. G. Carrington Purvis (Cape of Good Hope, Eastern Provinces), Dr. E. Barnard Fuller (Cape of Good Hope, Western Provinces), Dr. H. P. Joseph (Colombo, Ceylon), Dr. F. R. Alles (Ceylon), Senator Dr. A. H. Watkins (Griqualand Branch), Dr. W. H. A. Moore and Dr. G. Montague Harston (Hong Kong and China), the Hon. D. J. Galloway (Malaya), Dr. Noel Clarke (Malaya), Dr. Russell Strapp (Natal Inland), Sir Alexander Jarvie Hood, K.B., M.B., Dr. Sinclair Gillies, Dr. Charles MacLaurin, Dr. John Campbell Douglas, and Dr. Warren (New South Wales), Dr. W. Newlands (New Zealand), Dr. G. Meredith Sanderson (Nyasaland), Dr. Francis R. Gairdner (Pretoria), Dr. H. Swift (South Australian Branch), Lieut.-Col. T. H. Symons, O.B.E., I.M.S. (South Indian and Madras), Dr. R. A. L. van Someren (Uganda), Dr. J. F. Wilkinson (Victorian Branch), Dr. John Randle (West Africa), Dr. D. D. Paton and Dr. Charles W. T. Woods (Western Australia), Dr. J. S. de Souza (Zanzibar).

Foreign Guests.

The foreign guests included Professor Bull (Christiania), Dr. Cawadias (Athens), Professor Couvelaire (Paris), Dr. Henry Hall Forbes (New York), Dr. L. Webster Fox (Philadelphia), Dr. André Gratia (Brussels), Dr. F. d'Herelle (Paris), Dr. M. Hindhede (Copenhagen), Surgeon W. W. King (United States Public Health Service), Dr. Korenchevsky (Petrograd), Mr. J. T. McCurdy (New York), Dr. Holgar Mygind (Copenhagen), Professor Rist (Paris), Dr. A. Rollier (Leysin), and Professor C. R. Stockard (New York).

Presentation of Medal of Association to Lieut.-Colonel Martin-Leake, V.C., F.R.C.S.

The Association's Gold Medal of Merit and Illuminated Address was presented to Arthur Martin-Leake, V.C., F.R.C.S. This award was made in 1915. Captain Martin-Leake was the first of his Majesty's subjects to be awarded a Bar to the Victoria Cross for his most conspicuous bravery and devotion to duty throughout the war, especially during the period October 29th to November 8th, 1914, near Zonnebeke, in rescuing, whilst exposed to constant fire, a large number of wounded men who were lying close to the enemy's trenches.

The Chairman of Council (Dr. R. A. Bolam), in presenting Lieut.-Colonel Martin-Leake to the President, said:

In the year 1915 the Council of the Association resolved that the Gold Medal of the Association for Distinguished Merit should be presented to Captain Martin-Leake for his most conspicuous bravery and devotion to duty in the circumstances set out in the printed copy of the engrossed testimonial accompanying the medal. A full tale of seven years has passed before Captain Martin-Leake has been able to leave his duties to come to receive the award announced at the Annual Meeting in 1915. No opportunity presented itself to confer this medal during the years of war, and on the conclusion of hostilities Captain Martin-Leake (then Lieutenant-Colonel) returned to his duties as surgeon on an Indian railway. In that he has been acclaimed once and again "For Valour" by his King and country he has added fresh lustre to the character of a profession not undistinguished in the past for its record of courage and devotion. The highest honour in our gift we offer him as an earnest of the just pride we feel in his achievements. To the simple glory of that twice-won cross of bronze we can add—nothing.

Lieut.-Colonel Martin-Leake then came to the dais amid loud applause, and was invested by the President with the gold medal and handed the illuminated address.

Presentation of Association's Gold Medal to the Right Hon. Sir T. Clifford Allbutt.

The Chairman of Council then asked the President to present the Association's Gold Medal of Merit and Illuminated Address to the Right Honourable Sir T. Clifford Allbutt, K.C.B., M.D., F.R.S., for his long and distinguished services to the profession and the Association, and in commemoration of his five years' Presidency of the Association at the time of the great war, 1916–21. Dr. Bolam said:

Mr. President: In the name of the British Medical Association I have the honour to ask you to present the Gold Medal for Distinguished Merit to the Right Honourable Sir Clifford Allbutt, Regius Professor of Physic in the University of Cambridge. It has been awarded to him in recognition of his great services to the profession, and in particular to the Association as its President through many anxious years, and of his high achievements as a physician. It is customary to present with the Gold Medal a testimonial setting out the grounds on which the award is based. On this occasion there is a departure from routine which will indicate the deep esteem in which all our profession hold Sir Clifford Allbutt. The narrative is the combined and loving work of two Fellows of his craft whose names I may not mention, one holding high rule in the profession, one eminent in letters. The testimonial is engrossed and illuminated with water-colour drawings of scenes which will bring back memories of interest and happiness to our Medallist. This work is the personal contribution of one who sits at the portal of the profession on the banks of Thames, not a Barber Surgeon but an Artist Surgeon, Mr. Frederic G. Hallett. The text of the engrossed testimonial which we have before us tells in more eloquent phrase than I can command the story of an unremitting labour and of epochal results.

We can discern two guiding principles run, like golden threads, conspicuous through this rare fabric of a life work. One the truth (long recognized in these northern parts in the old-time name) that physiology is the basis of medicine, disease but deranged function, the progress of the "Institutes" bound up with that of medicine itself. The other, the fundamental unity of life in all its forms, so that he who would know the life processes of man to rightly aid him in the hour of danger from hurt or disease must not disdain the study of the simplest things. As an Association we have many things to thank you for. You have been our guide in the path of science. In the turbulent sea of medical politics you have been a captain whose simple unwavering faith in the ultimate triumph of good was at once inspiration and rebuke to a sometimes doubting crew. In all our work we have been grateful for your example of an unvarying gentleness and patience born of true humility.

Now that the burden of office slips from your shoulders after these heavy years, we pray you take our heartfelt wishes that your days of leisure may be many and full of happiness, and that by the quiet Cam slow sweet hours may bring you all things good.

Sir Clifford Allbutt received the Gold Medal and Illuminated Address at the hands of the President amid a scene of great enthusiasm, the whole assembly standing and applauding. He said:

I could have wished that the custom of receiving the Gold Medal in silence might not be broken on this occasion, but I have been asked to make at any rate a very, very short acknowledgement of your great kindness. I can only say, Mr. President, and ladies and gentlemen, that you are a great deal too good to me. But I must not dwell upon that. It is

very hard for me at this moment to realize what you have done in my honour and what you have said concerning me to-night; but I should like to say one more thing, and that is that in no small measure the gift which I have received at your hands to-night is enhanced in its value for me by reason of the fact that it is received in company with our distinguished member, Martin-Leake, whom you have similarly honoured, and whose example I must speak of as a glorious one, and one that will remain a pattern for all time. Mr. President and ladies and gentlemen, I thank you very much. (Loud applause.)

PRESENTATION OF STEWART PRIZE TO DR. J. C. McVAIL.

The CHAIRMAN OF COUNCIL then asked the President to present the Stewart Prize, in recognition of distinguished service to the community in preventive medicine, to Dr. John C. McVail, LL.D.Glasg., M.D., F.R.F.P.S., D.P.H. The prize consisted of an illuminated certificate and a cheque for £30.

The PRESIDENT, in bestowing the prize upon Dr. McVail, amid loud applause, said that he was very proud to bestow this distinction upon a brother. It was a distinction which Dr. McVail thoroughly deserved.

PRESIDENT'S ADDRESS.

The PRESIDENT then, to a deeply attentive audience, delivered his Presidential Address, first divesting himself of his academic robes, in order, he said, that he might have greater freedom in speaking. His address is printed in full in the opening pages of the JOURNAL this week. It was followed with rapt attention by the audience that filled every part of the great hall.

At its conclusion a vote of thanks to the President was proposed by Dr. WALLACE HENRY, Chairman of Representative Meetings, and seconded by Sir FREDERICK MOTT, F.R.S., in an admirable speech.

Association Notices.

Proposed Reorganization of the Division Areas of the Surrey Branch.

NOTICE is hereby given by the Council to all concerned of the following resolutions proposing reorganization of the Division areas of the Surrey Branch unanimously adopted at a meeting of the Branch held on June 28th, 1922:

1. That the Divisions in the Surrey Branch be reduced to four—namely, Croydon, Kingston, Guildford, and Reigate.
2. That the present Richmond Division be henceforth included in the Kingston Division.
3. That the Wimbledon Division be also included in the Kingston Division.
4. That the new combined Division be called the Kingston Division.
5. That the districts of Epsom, Ewell, Ashstead and Leatherhead be transferred from the Croydon Division to the Kingston Division.
6. That the districts of Purley, Sanderstead and Kenley be transferred from the Reigate to the Croydon Division.
7. That the districts of Walton-on-the-Hill, Burgh Heath, Tadworth and Upper Kingswood be transferred from the Croydon to the Reigate Division.
8. That East and West Horsley be transferred from the Croydon to the Guildford Division.

The numbers of the new Divisions as changed in accordance with the above will become roughly as follows:

Kingston.. ..	126	Guildford ..	135
Croydon	106	Reigate	73

Any member affected by the proposed change and objecting thereto is requested to write, giving reasons therefor, to the Medical Secretary, 429, Strand, not later than August 29th, 1922.

SUFFOLK BRANCH:

Correction.

In the report of a meeting of this Branch published in last week's SUPPLEMENT (p. 38) two names are incorrectly given. The paper entitled "Ancient sites of Bury St. Edmunds" was read by Mr. Redstone; and the address on "The indications for, and limitations of, surgery in chronic abdominal disease" was given by Mr. Sherren.

VACANCIES.

ASHTON-UNDER-LYNE DISTRICT INFIRMARY.—Resident Surgical Officer. Salary, £250 per annum.

BENENDEN, KENT, NATIONAL SANATORIUM.—Assistant Medical Officer (male). Salary, £250 per annum.

BIRMINGHAM: RUBERY HILL AND HOLLYMOOR MENTAL HOSPITAL.—Two Junior Assistant Medical Officers. Salary, £350 per annum, increasing to £400.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Honorary Assistant Surgeon and Honorary Anæsthetist.

BRADFORD CITY.—Assistant Medical Officer, chiefly for School work. Salary, £500 per annum.

BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Physician (male). Remuneration, £175 per annum.

BURY INFIRMARY.—Junior House-Surgeon (male). Salary, £150 per annum.

DURHAM COUNTY AND SUNDERLAND EYE INFIRMARY.—Surgeon as Locum for one month.

EDINBURGH: THE HOSPICE MATERNITY HOSPITAL.—House-Surgeon. Remuneration at the rate of £50 per annum.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House-Surgeon (male). Salary, £150 per annum.

GRIMSBY COUNTY BOROUGH.—Assistant Medical Officer of Health and Assistant Tuberculosis Officer. Salary, £600 per annum, rising to £700.

HOLLOWAY SANATORIUM, Virginia Water.—Junior Assistant Medical Officer (male). Salary, £400 per annum.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End Road, N.W.8.—Resident Medical Officer (male). Salary at the rate of £150 per annum.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House-Surgeon (male). Salary, £250.

HULL ROYAL INFIRMARY.—Assistant House-Surgeon (male). Salary, £150 per annum.

LEEDS UNIVERSITY.—Lecturer in Bacteriology. Salary, £500. Demonstrator in Department of Pathology and Bacteriology. Salary, £250.

LIVERPOOL: ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—Two Resident House-Physicians and two Resident House-Surgeons for a period of six months. Salary in each case at the rate of £20 per annum.

LUDLOW UNION.—Medical Officer for the Ludlow District (salary, £125 per annum) and for the Union Workhouse (salary, £85 per annum).

MANCHESTER: ANCOATS HOSPITAL.—House-Surgeon. Salary at the rate of £150 per annum.

MANCHESTER: HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Resident Medical Officer for In-patient Department, Bowdon. Salary, £350 per annum.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON.—Senior Resident Medical Officer; salary, £350 per annum. House-Physician; salary, £150 per annum. House-Surgeon; salary, £150 per annum.

OLDHAM COUNTY BOROUGH.—Assistant Medical Officer of Health (female). Remuneration, £350 per annum.

OXFORD COUNTY AND CITY MENTAL HOSPITAL, Littlemore.—Second Assistant Medical Officer. Salary, £350 per annum.

PETERBOROUGH INFIRMARY.—House-Surgeon (male). Remuneration at the rate of £200 per annum.

PRESCOT UNION.—Non-Resident Assistant Medical Officer at the Institution, Whiston. Salary, £400 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—Honorary Medical Officer in charge of Radio-Electro-Therapeutic Department.

ROYAL FREE HOSPITAL.—Medical Officer in charge of Electro-Therapeutic and Massage Department. Honorarium, £50 per annum.

ROYAL SOCIETY.—Foulerton Research Professor, £1,400 per annum. Foulerton Research Student, £700 per annum.

ST. MARY, ISLINGTON, INFIRMARY.—Assistant Medical Officer. Salary, £350 per annum.

SALISBURY GENERAL INFIRMARY.—House-Surgeon. Salary, £200.

SHEFFIELD ROYAL INFIRMARY.—Ophthalmic House-Surgeon. Salary, £150 per annum.

SOUTHEND-ON-SEA: SOUTHEND VICTORIA HOSPITAL.—House-Surgeon. Salary, £200 per annum.

SPRINGFIELD MENTAL HOSPITAL, Wandsworth Common.—Assistant Medical Officer (male). Salary, £400 per annum.

STAFFORD: STAFFORDSHIRE GENERAL INFIRMARY.—House-Surgeon. Salary, £200 per annum.

WARRINGTON INFIRMARY AND DISPENSARY.—Junior House-Surgeon. Salary, £200 per annum.

WEST BROMWICH AND DISTRICT HOSPITAL.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary, £175.

WEYMOUTH AND DISTRICT HOSPITAL.—House-Surgeon (male). Salary, £180 per annum.

YORK: COUNTY HOSPITAL.—Third Resident Officer. Salary, £150 per annum.

CERTIFYING FACTORY SURGEONS.—The following vacant appointment is announced: South Glasgow (Lanark).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

LEGARD.—At Dunedin, 17, St. Mark's Hill, Surbiton, on Friday, July 21st, to Dr. and Mrs. N. Hood Lingen-a daughter.

Published (Wednesdays) by the Publishing Department at their Office, No. 429, Strand, in the Parish of St. Mary-le-Strand, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

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CONTENTS.

ANNUAL GENERAL MEETING. PAGE

INDUCTION OF PRESIDENT, 1922-23 65
PRESIDENT-ELECT 65
VOTE OF THANKS TO PAST PRESIDENT 65
PRESIDENT'S ADDRESS: VOTE OF THANKS 66

ANNUAL REPRESENTATIVE MEETING.

Monday, July 24th.

FINANCE OF THE ASSOCIATION 67
ESTABLISHMENT OF A RESERVE FUND 68
MEDICO-POLITICAL MATTERS:
SALARIES OF TEACHING STAFFS 68
ASSOCIATION'S PUBLIC MEDICAL SERVICE SCHEMES 68
REMUNERATION FOR MINOR AILMENT CLINICS 69
DISMISSAL OF MARRIED MEDICAL WOMEN 69
FEES FOR PRACTITIONERS CALLED IN ON ADVICE OF MIDWIVES ... 70
USE OF OPIUM AND PITUITARY EXTRACT BY MIDWIVES ... 70
NURSES' REGISTRATION 71
HOSPITAL POLICY OF THE ASSOCIATION (*continued*):
MEDICAL STAFFS OF VOLUNTARY HOSPITALS 71
THE MEDICAL STAFF FUND 71
RECOGNITION OF LOCAL ADVISORY MEDICAL COMMITTEE ... 71
ADOPTION OF REPORT ON HOSPITAL POLICY 72
UTILIZATION OF MUNICIPAL HOSPITALS FOR CIVIL NEEDS ... 73
NATIONAL INSURANCE 74
IMPROVEMENT OF MEDICAL SERVICES UNDER INSURANCE ACTS ... 74
NON-PANEL COMMITTEE 74

Tuesday, July 25th.

SCIENCE COMMITTEE 75
THE JOURNAL 75
PUBLIC HEALTH AND POOR LAW:
SUPERANNUATION OF PUBLIC HEALTH OFFICERS 75
THE MANCHESTER APPOINTMENT 75
NAVAL AND MILITARY:
POSITION OF SENIOR SURGEON COMMANDERS 75
PARLIAMENTARY ELECTIONS COMMITTEE 77
WELSH COMMITTEE 77
SCOTLAND; IRELAND; OVERSEA BRANCHES 77
VOTES OF THANKS 78

The Annual Dinner 78
Honorary Degrees at Glasgow 80
THE REPRESENTATIVES' DINNER 81
EXHIBITIONS AT KELVIN HALL 82
PUBLIC HEALTH EXHIBITION OF GLASGOW CORPORATION ... 82
ANNUAL EXHIBITION SMOKING CONCERT 83
MEETINGS OF BRANCHES AND DIVISIONS 83
ASSOCIATION NOTICES 84
NAVAL AND MILITARY APPOINTMENTS 84
VACANCIES AND APPOINTMENTS 84
BIRTHS, MARRIAGES, AND DEATHS 84

NINETIETH ANNUAL MEETING
OF THE
British Medical Association.
GLASGOW, 1922.

NINETIETH ANNUAL GENERAL MEETING.

THE ninetieth Annual General Meeting of the Association was held in the Bute Hall, the University, Glasgow, on Tuesday, July 25th, 1922, at 2 p.m. The retiring President, Professor DAVID DRUMMOND, C.B.E., M.A., D.C.L., occupied the chair at the opening of the meeting.

INDUCTION OF PRESIDENT 1922-23.

The RETIRING PRESIDENT said it was his privilege and pleasure, though that pleasure was accompanied by a certain degree of sadness, to vacate the chair in favour of his distinguished successor, Sir William Macewen. Sir William needed no introduction to the members of the British Medical Association, and especially to his professional brethren assembled in the great city of Glasgow, which had been the scene of his admirable labours for so many years. Sir William had received many honours during his brilliant career, but none greater, he thought, than that which the Association had conferred upon him in electing him its President.

Professor David Drummond then vacated the chair, which was taken by Sir William Macewen, who was invested with the Badge of Office by the Retiring President amidst prolonged applause.

The PRESIDENT (Sir William Macewen, C.B., LL.D., M.D., F.R.C.S., F.R.S., D.Sc.) thanked the Representatives for the very great honour which they had conferred upon him in electing him President of the British Medical Association, which he agreed was perhaps the greatest honour which could be given to any medical man. The British Medical Association was a very great one, and the more intimately one was acquainted with it the greater did it appear. It was only since he became President-Elect that he had obtained an intimate knowledge of the work of the Association as seen from within, but what he had seen had inspired him with confidence and a very great hope for the future of the medical profession. In conclusion, he wished again to thank the Association for the high honour he had received at its hands.

The MEDICAL SECRETARY read the notice convening the meeting, after which the minutes of the last Annual Meeting, held in Newcastle-upon-Tyne in 1921, were confirmed.

APPOINTMENT OF AUDITORS.

Sir JENNER VERRALL moved:

That Messrs. Price, Waterhouse, and Co. be and they are hereby appointed auditors of the British Medical Association until the next Annual General Meeting at a remuneration of 200 guineas.

Dr. EDWARD BUXTON (Great Crosby, Liverpool) seconded, and this was agreed to unanimously.

PRESIDENT-ELECT.

On the reception of the report—

That Mr. Charles P. Childe, B.A., F.R.C.S., honorary senior surgeon, Royal Portsmouth Hospital, had been elected by the Annual Representative Meeting as President of the Association for the year 1923-24,

Mr. CHILDE, who was received with loud applause, said that he had to thank the members very sincerely. Speaking for Portsmouth, he would say that when the Association met there next year the members would find a very cordial reception awaiting them, not only from the Portsmouth Division, who would be the official hosts, but from the members of the profession generally in the area, and from the corporation and the naval and military authorities. He was quite certain that Portsmouth would rise to its opportunities in this connexion. It was true that at Portsmouth there was no university or medical school, and therefore the meeting would have to be on different lines from that of Glasgow. But they could not expect to have the same thing everywhere, and it might not be well for them if they could. But Portsmouth and district had many attractions, and they would endeavour to incorporate them in the meeting.

Vote of Thanks to Past President.

Dr. R. A. Bolam (Chairman of Council) moved that the hearty vote of thanks of the Annual General Meeting of the Association be given to the retiring President, Professor David Drummond, C.B.E., M.A., D.C.L., for his services during the year 1921–22. It was a very personal pleasure to him to move that vote, because he happened to be one of Professor Drummond's old students, and had been associated with him on the staff of the general hospital of Newcastle-upon-Tyne all the days of his professional life, and he knew perhaps better than anyone in the meeting how Professor Drummond had worked in a very quiet and a very solid way for the good of the profession and the Association. It was forty-four years since Professor Drummond had become a member. As Secretary and as President of the Branch he had been a member of Council long before many of those present joined the Association. In the year 1893 he had delivered a memorable Address in Medicine when the Annual General Meeting was held in Newcastle-upon-Tyne, and it was a very great pleasure to those in Newcastle that he had been able to act as President at the meeting there. Dr. Bolam, in conclusion, on behalf of the meeting, tendered the most grateful thanks of the Association to Professor Drummond for all he had done in the past, and for the successful climax of his service during the past year. (Applause.)

The President said that although it was quite unnecessary to second the motion, he would ask permission to support in a formal way the words of the Chairman of Council. (Applause.)

Professor Drummond (Past President), who was greeted by prolonged cheering, the members standing, said: Dr. Bolam, ladies and gentlemen, this resolution which you have so kindly passed is, I need scarcely say, to me a very welcome resolution. The all too generous terms in which my old friend, Dr. Bolam, has submitted the vote of thanks appealed to me very much, but I feel that I have done very little indeed to deserve it. My year of office has been uneventful, but it has been an illuminating and most pleasant experience—illuminating to a degree—for as you will discover, sir, as President you are immediately pitchforked into the extraordinary vortex of the multifarious duties performed by the governing bodies and the secretaries and the officials of this great Association. The amount, and the extraordinary importance, of the work performed by the Council, have amazed me; I cannot tell you how much this has impressed me. It is work of the greatest importance to the profession at large, and incidentally, to the country in which this great organization is engaged, and in which it is becoming a great and increasing power. (Hear, hear.) I have also been greatly impressed, during my year of office, with the ability, the enthusiasm, and the business acumen of the officials, of the Chairmen of Council and the Representative Body, and the Chairmen of the Committees of the Council; but where all deserve praise it is perhaps invidious to indicate a few. I thank you most sincerely for this resolution. (Loud applause.)

The meeting then stood adjourned until the same evening at 8 o'clock.

ADJOURNED ANNUAL GENERAL MEETING.

President's Address: Vote of Thanks.

At the conclusion of the President's Address, which was printed in full in last week's Journal, at page 155, Dr. Wallace Henry (Chairman of Representative Meetings) proposed a vote of thanks. (An account of the earlier proceedings appeared in the Supplement.)

Dr. Wallace Henry said that many years ago, when he was a student, and preparing for the examination for a degree in surgery, it was his fate in common with others to have to state the technique of certain operations, and try to learn the use of certain instruments devised by a certain Mr. Macewen, who, even at that time, had a great reputation as a distinguished surgeon. He little thought that an occasion would come when, in proposing a vote of thanks, he would have the opportunity of returning good for what at that time he considered evil! Those present might recollect that last year, among many wise pieces of advice from the Past President (Professor Drummond) there was one particular item which caught the attention alike of the public and the press. Medical men were advised to make *post-mortem* examinations on their patients and on their theories, and, having discovered where they were wrong, to build stepping stones on their dead selves to a higher state of knowledge. During the last year, he had no doubt, so far as their theories went, they had conducted such *post-mortem* examinations in considerable numbers, and, so far as their patients went, he trusted, in very few cases. But the fact that they had engaged in this exercise made them all the better fitted to appreciate an address of such peculiar interest as they had heard that evening. It was an address which would appeal, not only to those interested in neurology, but to every practising physician as well. As to the matter of the address, he did not propose to say anything, because one far more fitted than he—namely, Sir Frederick Mott—would speak of that in seconding the vote of thanks. But as to the President himself he would like to say a few words. Those of them who were Glaswegians knew the President well, and it would be unnecessary for the speaker to say anything about him were there not many in that hall from other parts of the British Isles and from overseas as well. Sir William Macewen had peculiar advantages when starting his career as a surgeon because he was—what very few in that hall were—a pupil of the late Lord Lister, and absorbed from that great master those principles of antiseptic surgery which revolutionized surgical practice. Sir William Macewen was one of the first to apply, and if anything to improve upon, those principles by adopting the method of boiling for sterilization. As a result of the knowledge of antiseptics he had acquired he was able to perform many operations which previously had been carried out with as great risk to the patient as would have been incurred by letting the case alone. He had told them that morning that he had performed over 2,000 operations for osteotomy in cases of rickets. Those operations it would have been impossible for him to have carried out had it not been for his training under Lister. His works were numerous, and in addition to those of a strictly surgical or medical nature he had produced as what might be called a "side show" a monograph on the antlers of the deer, which had gained a considerable amount of notice because it threw new light upon the growth and development of bone. As a result of the work he had done he had naturally received many honours and degrees from universities in the British Isles, so that were he to wear all the hoods to which they entitled him he would appear like Joseph in a coat of many colours. Of many foreign societies he had been made an honorary member, and, last of all, he had been elected recently President of the International Congress of Surgery. But there was no honour that Sir William Macewen would value more than his election as President of the British Medical Association. It was an honour given him by those who knew him best, not merely an honour from a distance given on the reputation of his writings, which never had quite the same value as an honour conferred by those who had grown up around him. He asked them to accord their heartiest thanks to their distinguished President for his address.

Sir Frederick Mott, in seconding, said that as a neurologist he knew what a debt neurology owed to Sir William Macewen. The President was a great pioneer in brain surgery, and of his results in that respect they had heard something that evening; but he was also a pioneer in respect to pyogenic infections and, again, to transplantation of bone. He heard him give an address on this last subject at the Royal Society and show his specimens, and that was the first time he had the pleasure of meeting Sir William Macewen; he felt that he was in the presence of a great man. Sir William was an outstanding figure in brain surgery, known all over the world, and his address would go as a message to all English-speaking doctors and would be welcomed by them as the last thing said on that subject. The public must not judge of Sir William Macewen only by the results he had attained himself; he had sown the seed, as Lord Lister sowed the seed. Every house-surgeon who had been taught by him had gone away, not only with the technical methods which he had learned, but with the philosophic understanding with which Sir William Macewen had inspired him. That was a great thing for Glasgow University; those who sat at his feet learnt the very best of surgery. Like Lord Lister, he had contributed to the social heritage because his teaching had spread all over the civilized world, and that was the greatest honour a man could have had, and gave him an imperishable monument.

The vote of thanks was carried by acclamation, and the President, in responding, said that having kept his audience for so long it would be very bad taste in him to keep them one moment more, except to thank them for their patience.

ANNUAL REPRESENTATIVE MEETING.

Monday, July 24th.

On the resumption of the sitting on Monday morning, with Dr. Wallace Henry in the chair, the portion of the annual report of Council under the heading "Finance" was first taken.

The Finance of the Association.

The Treasurer (Dr. G. E. Haslip), in moving the adoption of the report of Council under "Finance," thanked the representatives for his re-election to the post of Treasurer. It had been his personal intention to resign, and he only stood again at the request of certain members of the Association, who believed that there were special reasons why there should be no change at the moment. He was glad to say that the financial statement for this year showed a marked improvement in the condition of the Association. From the surplus account it would be seen that the Finance Committee had been able this year to add that which last year had to be taken away. That was because the Association's income had been above its expenditure. (Applause.) The year 1921 showed an excess of income over expenditure of £15,290, which had enabled them to pay off the overdraft at the bank, and to add £1,195 to the balance. At present there was a surplus account of £140,000. A free hand had been given to the accountants on the question of depreciation. It would be seen that the freehold was now valued at £121,516, and that for depreciation of premises a sum of £3,000 had been written off. Last year the Association was unable to take off anything. The Finance Committee had now placed the depreciation on a sound actuarial basis—namely, that 2½ per cent. on the value of the building should be deducted yearly. In future it was proposed that the sum of £1,250 should be written off instead of, as previously, £1,000. There had been no need this year to set down anything in depreciation of investments, as the stocks had really increased, but it was thought prudent to refrain from enhancing their value for balance-sheet purposes. Proceeding with his examination of the accounts, the Treasurer said that the library account was now brought into line with the other accounts. Last year the stock of paper was valued at £4,747; this large amount was due to the fact that they were buying on a rising market. This year the paper stock was valued at £360. The Association had every reason to congratulate itself on the manner in which the purchases of paper had been conducted in the office. (Hear, hear.) They had reason to be grateful for the advice given them from outside. Their paper merchants had treated them very fairly. At present, with a falling market, it was not necessary to keep any large stock in hand. Another point was that the amount entered under subscriptions in arrears had increased this year. That was entirely due to the increase in subscription. As a matter of fact, the number of members in arrear at the end of the year was smaller than the number in arrear at the end of 1920. The number in arrear at the end of 1921 was 1,489, which had since been reduced to 467. He wished the members to note also that the overdraft at the bank of £11,962 on the previous balance sheet had now been turned into £4,000 on deposit and £795 on the current account. He moved the adoption of the balance sheet.

Dr. H. Rose (Buckinghamshire) said that Buckinghamshire was of opinion that the Council were not sufficiently careful. It was not for him to say exactly how it might be more careful; he believed the Council was too large, too unwieldy. The printing bill of the Council was colossal. Did they all realize that this country was passing through a ghastly financial crisis? If they realized that, was the Council acting up to it? The large industrial concerns of the country who usually paid millions in dividends were paying nothing this year, and the Government was getting no income tax from those millions; the Government did not know where to look for money. Buckinghamshire was an agricultural county, and one of the principal people there had said to him (Dr. Rose) that if farmers kept their accounts very few would pay income tax this year. That meant that they had no money behind them with which to pay—among other people—the doctor. It meant also that the tinker and the tailor in their turn had no money to pay the doctor, and that the doctor in the poor agricultural district was going to have a bad time during the next twelve months. Probably they all felt that the Government was doing its best (Cries of "No" and laughter) to economize. It was an honour to the members of the medical profession that they also tried to economize; insurance practitioners had been asked by the Government, and had agreed, to make a patriotic sacrifice, and the general practitioner in the country was very badly hit. Then what was the Association doing? When he looked at the accounts and saw continual increases it seemed to him that the only mistake he himself had made in a time of national emergency was that he did not become an official of the Association. He did not want to say that the officers were not doing their best; he believed they were, but Buckinghamshire said they might still try to do a little better.

Dr. Gordon Bell (Sunderland) moved to add to the motion for the adoption of the report the words "but the attention of the Council is called to the inclusion as assets of arrears of subscriptions and unpaid advertisements." He considered that the inclusion of those items was unsound finance, and pointed out that in 1919 £1,400 odd had to be written off as bad debts, in 1920 £2,100 odd, and in 1921 £2,500. The present balance sheet showed as assets arrears of subscriptions amounting to £3,000. There was an item of £6,000 for unpaid advertisements and £1,000 under the head of unpaid publishing, and in order to obtain an explanation from the Treasurer he moved his amendment.

Dr. Haslip, in reply, said that money owing must be shown as an asset in any balance sheet; whether it was obtained in one year's time or two years' was another question. The sum shown with regard to advertisements was large, but was so shown merely as a process of book-keeping. The money lost during the previous year by bad debts was £27. The increase of £1,000 over the sum shown as owing for advertisements during the previous year was due to the fact that the Journal had become larger, more advertisements had been obtained, and more had been charged for them. With regard to unpaid subscriptions, of the amount of £3,049 shown as being in arrear £1,580 had already been paid, and there were still five months to go. A certain residue of bad debts owing to unpaid subscriptions was inevitable, and the larger the amount of the subscription the larger would be the amount owing, although the actual number of unpaid subscriptions might remain the same. Of the £1,500 still outstanding at least £500 should be obtained, and the remainder could not be called a bad debt for three or four years. Only the other day a prominent member of the profession said to him, "I have not paid my subscription for three years; to whom shall I send it?" Personally, he was satisfied with the two items to which objection had been taken. The whole amount due for advertisements would be paid in time, and all but about £1,000 of the amount due for subscriptions.

The amendment was withdrawn.

Dr. Bell, dealing with the balance sheet generally, said that the expenditure of the Association was steadily increasing, although not so fast as the income. If a bad year came, however, and a number of members left and others did not pay their subscriptions, the Association would be faced with an increasing expenditure and a decreasing income. He considered the size of the financial staff was enormous in view of the amount of money which had to be handled; he asked for some explanation of the size of the financial and clerical staff.

Dr. F. C. Martley (Kensington) congratulated the Association on having the advantage of Dr. Haslip's services for another period. He asked why the deeds of the freehold property were at the bank—whether it was for convenience of borrowing, or were they already mortgaged? Why, also, was there no mention of where the Midland Railway scrip was deposited?

Dr. J. Melvin (Rochdale) asked what was the reason for the increase of £950 in the central staff expenses.

Dr. F. C. Martley moved that it be an instruction to the Council to consider the possibility and advisability of the Association spending more money on scientific work. This was agreed to.

Dr. Haslip, in reply to the discussion, said that as far as Dr. Rose's point was concerned the agricultural labourer did remarkably well at the end of the war. ("Not now.") He could not agree with Dr. Gordon Bell's view as to the expenditure of £5,000 on the administration of a business of £100,000 per annum. In his view the expenditure of 5 per cent. was moderate. Dr. Haslip also informed Dr. Martley that the deeds were deposited at the bank merely for safety; they were subject to no mortgage. The increase of £950 in staff expenses referred to by Dr. Melvin was in accordance with the decision of the Representative Body at Cambridge two years ago. No one was more alive than himself to the

necessity for economy. He agreed with Dr. Gordon Bell that expenses were going up enormously, but it was the activity of the Association which increased the expenditure. ("Hear, hear.") If the subscription had not been increased there would have been another deficit of £3,000, which, added to the previous deficit, would have made a deficit of £20,000. In the last year there had been an increase of membership of 1,000.

Dr. D. Roxburgh (Marylebone) was informed by Dr. Haslip that the scrip of the Bank of England, Midland Railway, and other holdings were deposited in the bank.

The Report under "Finance" was approved.

Establishment of a Reserve Fund.

The Treasurer then moved as a recommendation from the Council:

> That the Council establish a reserve fund for the extension of the work and premises of the Association to which from time to time shall be transferred from the revenue account such sums as shall be decided upon by the Council.

He said that what was now proposed was that there should be a definite sum shown on the balance sheet under the term "reserve fund." During his term of office he had not been in a position to think of such a thing, because he had had no money at his disposal to place in a reserve fund. But it was very gratifying now to have a good balance at the bank, and that was why he had thought it the psychological moment for him to retire! There always had been in effect a reserve fund. It had not shown itself unless a member who was interested in the accounts looked for it. But the Association was now in a position to take certain money and put it into a reserve fund. They would, roughly, start with £20,000. This would come out of the stock in the Midland Railway Company, and certain investments in colonial stock. This reserve fund would be marked as such on the balance sheet, and it was hoped that year by year they would be able to add to it. He went on to make a few remarks on the general financial state of the Association. When he took office in 1916 the surplus account stood at £132,000; to-day it stood at £140,000. That was not very much progress in six years. It must be remembered that they had passed through the difficult war and post-war periods; also the expenses of a libel action had had to be borne. In 1916 the income was £61,900, and to-day it was £116,000. The expenditure, which was £50,900 in the former year, had now reached the enormous figure of £103,000. He quite agreed with other speakers as to the need for economy. The expenditure had been doubled, and he thought that this emphasized the argument for a reserve. It was to be hoped that the reserve fund would be added to year by year.

Mr. Bishop Harman said that it was a great point to let one's resources be known. A hostile authority was apt to think twice before it attacked an organization which plainly had funds behind it. They were putting by for a rainy day, and they did not know how strong the shower might be. Therefore let them have a good umbrella. The possession of reserves gave a greater security to their own membership. There was less likelihood of revolutionary propaganda when large funds were involved. The work of the Association, again, must grow if it was to be alive. At any time the Association might be faced with the possibility of having to conduct an immense piece of propaganda, and it was far better to have the money in hand than to borrow from the bank. The reserve fund could be legitimately used for all those purposes to which the income could be applied.

Mr. Strong Heaney (Liverpool) said that his Division cordially supported the formation of a reserve fund, but by the proposition as now put forward it was strictly limited to the extension of the work and premises of the Association. Should anyone suggest later on that the subscription might be reduced it would not be possible to apply the reserve fund for this purpose. He therefore moved that the words "for the extension of the work and premises of the Association" should be deleted, and that without prejudice either to the extension of the work or of the premises.

The Chairman of Council did not think the meeting would wish to tie its own hands and those of the Council in the way suggested by the amendment. It would be impossible, if it were thought that the fund should be only at the discretion of the Representative Body, to deal with it without calling the Representative Body into session. The funds of the Association were expended by its executive body, the Council, which had a Finance Committee for that purpose, and he thought a fluid asset, such as they aimed at having at present, might be transferred by the amendment into something so concrete that nothing would shift it.

Dr. Brackenbury thought it highly undesirable to establish a reserve fund which should be used later for the purpose of reducing subscriptions. If a reserve fund was set up, it should be for the use of the Association in the conduct of its activities, and not in order that it might be appropriated in order to reduce subscriptions.

The amendment was lost.

The motion for the establishment of a reserve fund was then put and carried, as was also a motion, proposed by Dr. Haslip, for the adoption of the remainder of the Supplementary Report of Council under "Finance."

Dr. H. Rose (Buckinghamshire) suggested that the Finance Committee should so organize the library that it might be used as a resting place and meeting place by country members visiting London, and that some light literature should be provided.

Dr. C. G. C. Scudamore (Croydon) proposed that the Council should be instructed to consider the advisability of Divisions being empowered to make grants from their funds towards paying the expenses of representatives.

Dr. A. O. Holbeche (Worcester), as a country practitioner, supported the Croydon amendment. The representatives from the country appreciated the payment of their fares, but considerable further expenses were incurred when travelling. It had been suggested that a fund might be set up for the payment of representatives' expenses to which members in the Divisions and Branches could contribute, but it was found, generally speaking, that few active members supported it, whilst a very considerable proportion of others entirely failed to do so. It was hard on those members who worked for the Association to have a kind of extra tax imposed upon them.

The amendment was lost.

Medico-Political Matters.

Salaries of Teaching Staffs.

Mr. E. B. Turner (Chairman of the Medico-Political Committee) moved the recommendation of Council with regard to the salaries of non-professorial medical teaching staffs (Supplement, May 6th, p. 135), which proposed that such staffs be divided into three grades, and defined the minimum salary for each grade. He said that this matter was brought forward last year by the Committee after a conference with representatives of the lecturers and teachers, and a somewhat elaborate scale of salaries was set out. The Representative Meeting, however, did not like it, and referred it back to the Committee, which, after further consideration, working on the lines suggested by the Representative Meeting, preferring a simple minimum scale of salaries, brought the matter up in its present form this year. The salaries were purely minimum, and he hoped that these minimums would not be taken as maximums.

Dr. J. C. Matthews (Liverpool) moved that the last paragraph of the resolution, which provided that after the probationary period dismissal should only be possible on grounds of neglect of duty, improper conduct, or incapacity, should be deleted. His Division, he said, felt that the words were unnecessary; no one would claim that dismissal was not proper for the reasons given, but there might easily be other reasons for dismissal, which might be equally proper. Sufficient protection was given by the common law with regard to the relations between employer and employed, and it was unnecessary for the Association to interfere.

Mr. Turner insisted on the original wording. The Committee, he said, thought that there should be security of tenure as far as possible in these important appointments, and that the men should not be liable to dismissal for trivial reasons or reasons involving prejudice.

The Liverpool amendment was lost, and the original motion setting up the scale of salaries was carried.

Association's Public Medical Service Schemes.

Mr. Turner moved that the Council be authorized to amend the existing public medical service schemes as thought proper. He pointed out that the model schemes had served well in the past, but as time went on they became a little out of date, and the Council wanted power to bring them up to date when necessary.

Dr. Fothergill (Brighton) said that, as drafted, the resolution simply put into the hands of the Council the

determining of the policy with regard to medical services, which was most unwise. He suggested that the words "and submit to the next Representative Meeting" be added.

The Chairman considered that words should be inserted in order to make it clear that they were concerned with details and not policy.

Mr. Turner suggested that the motion should read:

> That the Council be authorized to amend, *as to detail*, the existing public medical service schemes as thought proper, *and report to the Representative Body*.

This was carried.

Minimum Remuneration for Minor Ailment Clinics.

Mr. Turner then moved a resolution that the minute of the 1920 meeting, which fixed the minimum remuneration of medical practitioners for the treatment of minor ailments at maternity and child welfare and school children clinics at two guineas per session of not more than two and a half hours should be rescinded, and that the fee be fixed at £1 11s. 6d. per session of not more than two hours, provided there was a limitation of the average number of new cases to be seen in each session. He said that the Committee had been working under great disadvantages during the past year, because on every occasion, when dealing with Government Departments or other contracting bodies, they had had thrown at them the patriotic action of the insurance practitioners in accepting the 1s. 6d. reduction on the capitation fee. They had been up against a stone wall. They must all be prepared to accept some limitation such as suggested, and the Committee had come, with very great regret, to the conclusion that this proposal was a wise and proper thing to bring before the meeting.

Dr. D. J. Matthews (Liverpool) moved that the words "not less than" be inserted before £1 11s. 6d." This amendment was accepted by Mr. Turner.

Dr. W. Douglas (Maidstone) asked what would happen if the time were exceeded, and Mr. Turner replied that the doctor would probably average out the length of his sessions.

Dr. F. W. Goodbody (Marylebone) said that there was a distinct understanding with the London County Council that if a man had worked overtime on one day he could leave the moment he had finished his work on the following day.

Dr. J. Clarke (Woolwich) strongly opposed the motion. He did not want the Council to have the power which the resolution would give them. Mr. Turner had urged that one of the great reasons for accepting the reduction was that one ought to be content to take less because the insurance practitioner took less. The minor ailment doctor of the clinic was the poor general practitioner, yet there was no mention of the reduction of any of the salaries for men engaged in specialist work, such as eye, throat, or *x*-ray work. He did not think that the Metropolitan Branch had any right to force that recommendation through the Committee. The proper committee for the consideration of that sort of thing was the Contract Practice Subcommittee, but the matter had not come before that body. He had written to Dr. Cox on the subject, and Dr. Cox had promised to advise him as to the course of events, but the first he had heard had been the notice on the agenda paper. He urged general practitioners to put their hearts into clinic work. They could do it if they would, but the medical officers of health were saying that doctors would not do it. It was evident that the Council itself was in two minds on the subject, for there were two motions by the Council which were contradictory, one asking for a reduction from £2 2s. to to £1 11s. 6d., and the other asking for fees to be put up. In conclusion, Dr. Clarke urged the meeting not to pass the motion, and not to allow the poor general practitioner always to be the one to be hit.

Dr. Brackenbury said that the proposal, which was a general one and not confined to London, was for the variation of the first clause only of a whole scheme. The subsequent clauses of that scheme, dealing with remuneration at specialist clinics, were now under review and would be brought before the next Representative Meeting. It was not a matter of singling out the minor ailments clinics from the others for special consideration. It might be supposed from what the previous speaker had said that something was being done in London to reduce the remuneration at the clinics in question, but as a matter of fact an agreement had just been concluded with the London County Council by which in some respects the remuneration for that work would be increased. The proposition in regard to minor ailment clinics was a general one, and did not deal with London at all, because in London as much as £1 11s. 6d. was never received. Local authorities throughout the country were tending to reduce their terms, and said if they had to pay two guineas every time they would prefer to employ one of their whole-time staff. That danger was not a bogy—it was real. The present proposal was that instead of insisting on two guineas for every session, provided it did not exceed two and a half hours, the Association should permit the acceptance of £1 11s. 6d. for a session not exceeding two hours, and with the further proviso that the number of cases sent should be limited: hitherto there had been no limitation. When the new agreement was made the authorities would undertake, if the number of patients exceeded a certain figure, to institute more sessions. The proposed alteration would be advantageous and tend to check the tendency of local authorities to employ whole-time officers.

Dr. J. Clarke (Woolwich) asked whether it was contended that practitioners attending the minor ailments clinics of the London County Council had never received more than £1 11s. 6d. per session. Dr. Brackenbury said that the payment had been made by an annual sum and not per session, and was not so advantageous as the new proposal.

The motion as amended was carried.

Remainder of Report.

Mr. E. B. Turner, in moving the approval of the remainder of the Annual Report of Council under "Medico-Political," said he hoped the shilling fee for notification of infectious diseases had finally disappeared. With regard to the relation of the Ministry of Health to medical inspection and treatment of school children, he said a very strong deputation from the Association and the Society of Medical Officers of Health went to interview the Ministry of Health, which was fortified by the presence of some of the principal secretaries in the Education Department and by Sir George Newman. The result of the interview appeared satisfactory, but things had not panned out as well as was expected: a case had arisen in which the Education Department had insisted on the Medical Department sending all its reports with regard to school children through it, and had asserted its right to alter or suppress any part of such reports. The matter had been brought before the Ministry of Health, but the Association had not received a satisfactory reply, and another interview with the Ministry would probably be necessary.

With regard to fees for the medical examination of intending emigrants, the Committee, as stated in their report, had fixed the fees at 10s. 6d. for each adult and 2s. 6d. for each child. The dominions authorities regarded that as too high. The Committee had been gratified by the way in which the members were prepared to resign their appointments in order to support it in its demands, but such action had proved unnecessary. Sir Jenner Verrall, Dr. Cox, Dr. Anderson, and himself had an interview with the authorities, as a result of which they had agreed to a fee of 10s. 6d. for each adult and 2s. 6d. for each child, with a limitation of two children per family; more than that number would not be charged for. He had been told that the emigrant families with more than two children formed something like 1 per cent. of the whole. They had told the authorities that in the case of people who were really too poor to pay the fees they were certain that the doctors would make whatever allowance was necessary, but that the standard now suggested was the lowest that could be officially recognized by the Association.

Mr. Turner concluded by summarizing the information and conclusions given in paragraphs 140, 141, 142, 144, 147, 148, and 153 of the report (Supplement, May 6th, p. 136 et seq.).

Dismissal of Married Medical Women.

Dr. G. A. Rorie (Dundee) moved, in view of recent cases, that advertisements should not be accepted for the Journal where a difference was made between members of the profession on economic grounds. At St. Pancras and in Glasgow medical women had been dismissed by the local authorities on marriage. It had been found that no legal pressure could be exercised upon the bodies concerned, and his own Division, in considering the position, thought that it might be met by refusing advertisements for the Journal.

Mr. Turner said that his committee was, of course, strongly opposed to this differentiation. It was not for the Medico-Political Committee to supervise advertisements for the Journal, but if the meeting expressed a strong opinion the Journal Committee would no doubt consider it with the attention it deserved.

Dr. Brackenbury asked what was meant in the motion by the words "on economic grounds." Were they to refuse an advertisement of a vacancy when the advertisement stated that married women must not apply? Had not a local authority the right to say that it preferred in a given case to appoint a man or a woman, or a married or an unmarried person? He thought it would be dangerous to accept the words "on economic grounds."

Dr. Rorie, in reply to a question from the chair, said that the vague term "economic grounds" was purposely employed in order to cover situations that might arise.

Dr. J. A. Macdonald said that the Journal made no difference in its refusal or acceptance of advertisements on economic grounds. Advertisements were not accepted if they made any difference between the two sexes. But how the economic principle came in he did not know, nor how the Journal Committee came into the question.

Dr. N. Macfadyen (East Hertfordshire) thought that the motion ought to be put forward in wider terms. An advertisement should not be accepted for the Journal when the vacancy arose in consequence of something which was contrary to the policy of the Association.

The Chairman: That is done already.

Mr. Russell Coombe asked whether, in the original advertisement for the medical woman who had been dismissed at St. Pancras, it was stipulated that the candidate must be unmarried.

The Chairman understood that that stipulation was not made in the advertisement.

Dr. D. Roxburgh (Marylebone) said that this lady was dismissed because she got married. He submitted that the Council should not accept an advertisement for a vacancy which had been created as a result of some action which was *ultra vires*.

Dr. C. W. Cunnington (Hampstead) said that St. Pancras had a Labour council which passed a resolution that all their women employees should be single, and, having made that rule, the council felt that it could not make an exception in the case of a medical woman.

The motion by Dundee was then put and lost.

Dr. Agnes Estcourt-Oswald (North-East Essex) asked whether this vote of the meeting implied that the representatives approved the dismissals.

The Chairman: Certainly not; the vote has had to do simply with the question of advertisements.

Motor Taxation and other Matters.

Dr. B. E. Fordyce (Cambs and Hunts) moved that the Government should be pressed to restore the 50 per cent. rebate in the tax on motor vehicles used for professional purposes. The arguments in favour of and against that course were so well known that he would not labour them.

Mr. Turner said that when the new arrangements for taxation of motor cars were made the representatives of the Association met the Ministry of Transport and argued the matter with them, but were met with the almost unanswerable objection that for the first time the commercial motor had been brought under full taxation, so that the rebate on the doctor's motor must also go. As would be seen from the first paragraph of the Committee's Supplementary Report Mr. Arthur Neal had stated that the whole basis of motor taxation was to be considered afresh by a departmental committee, and the whole influence of the Association would be used to get the taxation brought back to a tax on petrol and not on the cylinder capacity of the car. He was himself in communication with the Automobile Association and the Motor Union, and the Association was ready to act with them at the first opportunity.

Dr. Fordyce withdrew his amendment in view of Mr. Turner's excellent reply.

Mr. T. Russell (Glasgow East) asked whether in fact commercial vehicles were not differentiated from others by a lower tax, which the doctor's professional car ought to enjoy.

Mr. Turner replied that a doctor could enjoy the privilege if he chose to put his name and address on his car in sufficiently large characters. (Laughter.)

Dr. G. Mackie (Shropshire and Mid-Wales) moved as a further amendment that where industrial insurance company agents require the medical referee to visit the proposer for medical examinations, a mileage fee of 2s. 6d. a mile, or part of a mile, should be paid, in addition to the ordinary fee. Mr. Turner said that the negotiations with the insurance companies as to the fees to be paid for the examination of intending insurers had met with a very favourable result, and thought it would be unwise to reopen the question of mileage fees. The authority representing the insurance companies was very emphatic that it was only in exceptional cases (for which they were prepared to pay) that intending insurers need be visited by the doctor. It was the business of the agent to get the insurer to go to the doctor, and if the doctor visited to oblige the agent he could not expect payment for that from the company.

The amendment was carried by 55 votes to 48.

The Chairman said that the meeting would no doubt wish to congratulate Dr. W. Paterson, the Secretary of the Willesden Division, on the successful issue of the work referred to in the report by the Chairman of the Medico-Political Committee. (Applause.)

Dr. Paterson thanked the meeting for the appreciation they had shown of what the Division had done. His Division had now a Medical Advisory Committee, and the Town Council Education Committee agreed that the function of the advisory committee should be to advise the council on any matters on which the council sought advice, and to bring to the attention of the council anything which the advisory committee thought necessary. He urged representatives to consider whether they could not do similar work in their own Divisions, and to watch carefully the action of their medical health authority. (Hear, hear.) In that way they would be doing a very great service not only to the practitioners but also to the country at large.

The motion was carried as amended.

Fees for Practitioners Called in on Advice of Midwives.

A motion from the City of London Division instructed the Council to take steps to secure that the fee for suturing the perineum, for the removal of adherent or retained placenta, for exploration of the uterus, for the treatment of *post-partum* haemorrhage, or for any operative emergency arising directly from parturition, including all subsequent necessary visits during the first ten days, inclusive of the date of birth, should be increased from one guinea to two guineas.

Mr. Turner said that his Committee had tried to get this and had failed every time. If the Representative Meeting desired it to try again it would do so. But it had been at the Ministry of Health over this question of midwives' fees almost interminably.

Dr. D. Roxburgh (Marylebone) said that there was one point in connexion with midwives' fees which it was desirable should be brought forward prominently. This policy of paying a fee of one or two guineas for skilled and experienced opinion or operation was perfectly ridiculous. In the old days the value of a medical man's practice was largely determined by his midwifery list. Nowadays that had been reversed, and the value of an ordinary practice was largely determined by the number of insured persons on the list. The result was that in a few years' time there would be no skilled accoucheurs among ordinary medical practitioners because it was not worth the doctor's while to devote himself to the acquisition of a midwifery practice. The only way in which this could be remedied would be by making it worth while for the medical man to attend midwifery cases to get the necessary experience.

The City motion was lost.

Another motion from the City, relating to the collection of fees by London County Council officers during the puerperium, was referred to the Council.

Use of Opium and Pituitary Extract by Midwives.

Dr. C. G. C. Scudamore (Croydon) moved an amendment expressing the opinion that the use of opium and pituitary extract was fraught with danger, and that a continued protest should be made against its use by midwives. His Division felt that midwives should not be in a position to give any poison at all. There were midwives in practice who were registered under the old Act because they had been in practice for so long a time, and some of them were women whose ignorance was colossal. If the administering of poisons, such as opium, by midwives could not be stopped it should be carefully watched in all cases.

Dr. E. Lewys Lloyd (South Carnarvon and Merioneth) supported the amendment, and pointed out that the danger was a very real one.

Dr. A. E. Cope (Westminster and Holborn) suggested a verbal alteration which made the protest against the use of

these substances by midwives more emphatic, and this was accepted by Dr. Scudamore.

A REPRESENTATIVE said it was a dangerous thing to allow midwives of any description to have opium and pituitary extract in their bags.

Dr. J. T. D'EWART (Manchester) said that midwives of the best class were not asking, to any great extent, for the power to use opium; they preferred to be covered by the doctor. The local supervising authority could refuse permission for midwives to use it. If midwives were allowed to use opium and pituitary extract, what reason would there be for not permitting them to use any drug?

Dr. J. STEVENS (Edinburgh and Leith) said that the Midwives Board for Scotland did not sanction the use by registered midwives on their own responsibility of preparations containing opium.

Mr. TURNER said that what they had all heard that morning seemed to be the most scathing indictment that could possibly be imagined of the whole system of midwifery. If they had a number of women capable of deciding that there were symptoms that required the attention of a doctor, surely they would be capable of giving laudanum to a multipara suffering from after-pains, who was five or six miles away from a doctor. Had the patient to be left all night in pain, or had the doctor to be sent for to order 10 drops of laudanum? Asked whether the midwives were supposed to be able to distinguish between after-pains and commencing peritonitis, Mr. Turner said there was not likely to be much pain from commencing peritonitis or that peritonitis was likely to be confounded with after-pains at the stage when opinion was needed.

The Croydon amendment was carried by a very large majority. It read:

> That this meeting is of opinion that the practice of the use of opium (as well as of pituitary extract) is fraught with considerable danger, and considers that a continued protest against such use should be made.

Nurses' Registration.

Dr. J. MCGREGOR ROBERTSON (Glasgow North-Western) said there was no reference in the Report to the Nurses' Registration Act. He was anxious that the Council should consider carefully a recent rule passed by the Nursing Council for England and Wales, which empowered the secretary of an approved nurses' organization to certify to the qualifications of nurses applying for registration, a duty formerly discharged by an appropriate committee of the Nursing Council. This rule was in his opinion a serious menace to the purity of the elections, as it would allow of any number of nurses being certified *en bloc*. He desired to propose a motion in the sense indicated.

The motion, as an instruction to the Council, was agreed to, and the Supplementary Report of Council under "Medico-Political" approved.

The meeting then adjourned for luncheon.

HOSPITAL POLICY OF THE ASSOCIATION.*

Medical Staffs of Voluntary Hospitals.

Paragraph 28 of the report having been adopted without amendment, together with a new paragraph, laying it down that in cases where consultation or treatment was given at an out-patient department the ordinary hospital routine should not be modified nor should any preferential treatment be given to tariff or private patients, the meeting turned to the discussion of paragraphs 29-32 of the report, dealing with the opportunity which should be given to private practitioners to participate in the work of voluntary hospitals, and the way in which such opportunity could be secured.

Dr. A. E. COPE (Westminster and Holborn) moved:

> That any change in hospital policy should, in the interest of the public, be accompanied by changes affording the coming generation of medical men greater opportunities of holding responsible appointments on the staffs of hospitals.

He urged the need for some governing introduction to this section of the report which would emphasize the interests of the public and of the coming generation of practitioners.

Dr. HASLIP supported the motion. All that was asked by it, he said, was that facilities should be given so that a larger number of men, directly they were qualified, could see the practical side of the profession at their hospitals.

The CHAIRMAN OF COUNCIL said that they were all in sympathy with Dr. Haslip's aspirations, but surely the paragraph in the report covered all that he wished. He could not see that any such qualifying resolution as Westminster desired was necessary.

Dr. BLACKHALL-MORISON said that the young man had many advocates in that room, but his own experience of hospital work was that as a rule a man was turned out by superannuation just about the time when he was beginning to learn his job. The interests of the public were quite possibly better served by experience than by youth. Dr. E. W. G. MASTERMAN also thought that the middle-aged man as well as the young man should be remembered.

Dr. F. REES (West Cornwall) said that in his own town several reforms had been introduced in connexion with the local hospital which might with advantage be copied elsewhere. There were six honorary medical officers to a hospital of about 200 beds, and it was agreed that each honorary physician and surgeon should have an honorary assistant physician and surgeon to assist him. In that way younger men at once got on to the staff. The second reform was that the assistant surgeons had to assist the senior surgeons in operations, and not the house-surgeon. In that way they obtained very valuable experience.

The amendment of Westminster and Holborn was lost.

Speaking on the main paragraph of the report Dr. BRACKENBURY said the usefulness of the older medical men should not be lost sight of. The possibility of old members of the staff, especially in teaching hospitals, retaining some active connexion with their institutions after passing the present age limit should not be excluded.

Dr. J. A. MACDONALD said that if the policy of the General Medical Council in regard to the education of medical students was to be carried out, there would have to be an increase in the number of clinical posts. An important point which ought not to be lost sight of was continuity of knowledge in the hospitals. If an age limit were fixed it might quite possibly result in the whole of the staff being changed at one time, men who knew nothing of hospital work or teaching filling all the posts. A system of assistant physicians and surgeons was desirable. He was not referring to teaching hospitals, of which he had no experience. In paragraph (*c*), he thought the word "tariff" should be omitted: whether the patients were tariff or not was beside the point.

It was agreed to omit the word, and paragraphs 28–32 were then adopted.

The Medical Staff Fund.

Mr. BISHOP HARMAN next moved paragraph 36 of the report (33–35 having been dealt with previously), which suggested to the honorary staff methods of disposal of the moneys in the staff fund. Several amendments which had appeared on the agenda were withdrawn, and the paragraph was agreed to.

On paragraph 37, which provided that where members of the staffs attended tariff patients at stated hours under arrangement they should receive adequate payment upon a time basis, an amendment was put forward by Plymouth to delete the words "tariff patients" and substitute "State, municipal, or rate aided patients"; but this was not carried, and the paragraph was adopted as it stood.

Recognition of Local Advisory Medical Committee.

Paragraph 38 of the report, which embodied an entirely new policy, providing for the formation of a representative local advisory medical committee in every hospital area, to be recognized by the authorities concerned, and from which representation should be given upon the voluntary hospitals committee, was next proposed.

Dr. W. F. DEARDEN (Manchester) moved that the paragraph be approved subject to the method of selection being further considered. Manchester, he said, recognized the importance of the proper selection of these committees. It would be difficult for the Representative Meeting to consider so intricate a question, and therefore he suggested that method of selection be remitted to the Hospitals Committee.

In reply to Dr. CANDLER-HOPE (Scarborough), who asked how long the voluntary hospital committees would remain in existence, the CHAIRMAN OF COUNCIL said that this depended upon local enthusiasm, which varied in different districts.

The Manchester amendment was lost and the paragraph was adopted.

* The discussion on the first twenty-seven paragraphs of the Report on Hospital Policy and the decisions arrived at were reported in last week's SUPPLEMENT (pp. 51–62).

Representation on Boards of Management.

Paragraph 39, which pointed out the desirability of having officially recognized representatives of the local medical profession associated in the promotion and general management of hospitals was agreed to without discussion. Paragraph 40, which provided that where representation of benefactors, subscribers, or contributors to the funds of a voluntary hospital was given on the board of management, no single interest should be in a majority, was also adopted.

Contributory Schemes and Additional Services.

Mr. Bishop Harman moved the adoption of paragraph 41:

> No contributory scheme for hospital benefit should be considered satisfactory unless there are arrangements for an adequate home nursing and ambulance service.

An amendment by Plymouth reserving opinion on this and the subsequent paragraph until a contributory scheme be proposed was lost, and the paragraph was carried. The next paragraph, which dealt with the hospital facilities necessary for a complete contributory scheme, gave rise to some discussion as to its exact intention, and in the result the paragraph was deleted, and the words "and for dental, laboratory, and *x*-ray facilities" were added to paragraph 41 already passed.

Cottage Hospitals.

Mr. Bishop Harman moved paragraphs 43 and 44:

> As far as possible, every patient in a cottage hospital should have the right to be attended by his usual medical attendant. The previous provisions contained in this report are also applicable to cottage hospitals.

Dr. N. Macfadyen (East Herts) asked how a cottage hospital could be defined. Mr. Harman said that as soon as a hospital had a recognized staff it ceased to be a cottage hospital. The paragraphs were agreed to.

Admission of Cases in Receipt of Maternity Benefit.

Mr. Harman, in moving the adoption of paragraph 45, explained that paragraphs 45, 46, 47, and 48 were in accordance with the existing policy of the Association. The Council desired to withdraw paragraph 46 as unnecessary. Paragraph 45 was carried.

Dr. F. Radcliffe (Oldham) moved that paragraph 46 be rescinded. This was carried. Paragraphs 47 and 48 were then declared carried by the necessary majority. This concluded what might be called the committee stage of the report.

Adoption of Report on Hospital Policy.

The Chairman of the Hospitals Committee then formally moved that the Report of the Hospital Policy of the Association be adopted.

An amendment was put forward by the Reigate Division:

> That the Report as published be adopted, but that the decisions of this meeting be regarded as provisional.

Dr. Dain asked whether the amendment was in order. Either the report was the policy of the Association or it was not.

The Chairman of Council said the steps taken to carry out a policy might be spread over a considerable period. Would not a satisfactory result be obtained by stating that the hospital policy now approved be proceeded with in stages, and that the work undertaken during the ensuing year be that of educating the public and governing bodies of hospitals by propaganda, the immediate enforcement of the policy not being too rigidly proceeded with?

Dr. Morton Mackenzie (Reigate), in supporting his amendment, said that the report, if adopted, would become the hospital policy of the Association and all the influence of the Association would be used to make it operative. His Division was of opinion that the time had not yet arrived for the full powers of the Association to be used for its enforcement.

The Chairman of Council suggested that the following be substituted for the Reigate amendment:

> That the carrying out of the hospital policy of the Association now approved be proceeded with in stages; that during the ensuing year 1922-23 the education of the public in general and hospital governors in particular be undertaken, and progress reported to the Annual Representative Meeting, 1923.

Dr. Mackenzie accepted the proposal, subject to the addition of "the profession," to which the Chairman of Council agreed.

Dr. Haslip said that in the report the words "should" and "shall" appeared, and he wished to ask what was their precise significance. Mr. Bishop Harman said the hospital policy was a great piece of propaganda work, and was pursuasive rather than imperative in character. No one who refused to carry out its provisions would be penalized, as they were recommendations only, and therefore "should" was used, and not "must."

Dr. Morton Mackenzie then formally moved:

> That the carrying out of the hospital policy of the Association as now approved be proceeded with in stages; that during the ensuing session 1922-23 the education of the public in general, the hospital governors in particular, and the profession be undertaken; and that progress be reported to the Annual Representative Meeting, 1923.

He wished to make it quite clear that he was not endeavouring to side-track this report, nor was his Division desirous of doing so. He considered it to be one of the most statesmanlike things the Association had done during the last few years. They congratulated the Chairman of the Hospitals Committee on the work he had so ably carried out. (Applause.) But he was in grave danger of wrecking the scheme by trying to push it on too fast; and the speaker submitted that it was not statesmanlike to issue this report as the hospitals policy of the Association when the main point remained to be decided. He did not think that the report was yet in its final stage. At the last Council meeting previous to the Representative Meeting the chairman of the Hospitals Committee himself brought forward pages of amendments which he had adopted at the last moment in order to try to get the thing squared up. It was said that this was the policy of the Association. Technically it might be. But he did not consider that it had been before the Divisions in a form in which they had had a chance of deciding upon it. His own Division (Reigate) had a good meeting to consider the first report, but when another special meeting was called to consider the Supplementary Report of the Council, only five men turned up, and on inquiring why the others had not come he found that the numerous amendments had made it quite impossible for them to understand the report. The final meetings of the Divisions did not adequately express the views of the Association as a whole.

Dr. N. Macfadyen (East Herts) did not believe that the opinions of the Divisions were really represented by what had happened, and he hoped the matter would go back for reconsideration by the Divisions before anything else was done.

Dr. Fothergill (Brighton) argued that the addition of "the profession" to the motion made it appear that the doctors did not know their own minds, and consequently it was useless to attempt to educate the public.

The Chairman thought that the resolution reconciled the opposing camps.

The motion was then carried.

Dr. B. E. A. Batt (West Suffolk) moved as a further rider (Dr. Starling of Norwich seconding):

> That when the report of the hospital policy comes before the Divisions again for consideration, statistics should be sought showing the number of hospitals in which a staff fund has been established, the various sources from which it is derived, and the amount of remuneration obtained therefrom.

In support of this resolution Dr. Batt urged that in any campaign for educating the public it was necessary to have some concrete examples of what was actually being done.

Mr. Bishop Harman agreed that the Association would be perfectly justified in finding out the number of hospitals at which staff funds had been established, but he doubted very much whether it would be possible to ask for the sources from which they came and the amounts. He thought that course would be very injudicious, at any rate at the present time.

Dr. H. J. M. Milbank-Smith (Chichester and Worthing) asked whether the whole definition of what was understood as the policy of the Association had not been altered that afternoon. He had always considered that matters of policy as decided by the Representative Body were binding on members, and that if members were unable to follow that policy they would have no alternative but to resign. He thought if a clear definition of policy were not laid down there would be a large number of resignations up and down the country.

The Chairman said that personally he would regard the policy of the Association as that which had been laid down as the thing to be aimed at by the Association. That was the first step. The second step was (as the Chairman of Council had suggested to him) that every Act of Parliament had an appointed day, and the appointed day was not always

immediately. The Association had to aim at getting its policy carried out, and in some respects for the moment all that could be done was to aim at what it was trying to get.

Mr. Harman suggested that the proposition of Dr. Batt should end at the word "established." Dr. Batt agreed to the alteration, and the resolution was then carried.

Dr. Batt then moved:

> That this meeting records its appreciation the time and labour which has been given by the Hospitals Committee to the preparation of its report and the ability with which it has been presented by its Chairman.

The resolution was carried by acclamation, and acknowledged by the Chairman on behalf of his Committee.

Utilization of Municipal Hospitals for Civil Needs.

Mr. Bishop Harman moved:

> That the principles for the utilization of municipal hospitals for civil needs, based upon the resolutions of the Representative Meeting, 1921, as to the utilization of Poor Law infirmaries for civil needs (Supplement, May 6th, 1922, p. 147), be adopted.

He explained that last year the Representative Meeting passed a series of resolutions with regard to Poor Law hospitals, and that what was now proposed was the corollary to this in respect to municipal hospitals.

Dr. E. W. G. Masterman (Camberwell) spoke on the third of the paragraphs in the report on the utilization of municipal hospitals for civil needs—namely, that concerning the admission of private patients employing their own doctor. He said that he was obliged to refer to the experience of Poor Law infirmaries as an example of what they might suppose municipal hospitals were going to be. Some of the large infirmaries now called themselves municipal hospitals, and, so far as one could see, it was these large Poor Law infirmaries which would be municipalized if any such change took place. Therefore it became of importance to consider this question of the admission of private patients. If it were passed over, they would not be prepared for the change when it came. After six years in charge of one of the largest infirmaries in London, he was perfectly convinced that the proposal as set out in the report—that where a general practitioner wished to continue to treat in a municipal hospital patients of his own, he should be allowed to do so under the general administrative supervision of the medical superintendent, and that any of these patients should be allowed to call in a consultant from outside, the patient paying the cost thereof—would lead to endless friction and difficulty. A great hospital of 800 or 900 beds could not be properly administered when half the people were under the control of the medical superintendent and half were not. A later paragraph in the report mentioned that provision should be made for wards on the lines of the suggested primary health centre; that was a different thing, for it meant that a portion of the building would be set apart for general practitioners to look after entirely on their own. The staff of these hospitals consisted of the medical superintendent and a number of whole-time medical officers who, certainly in most London infirmaries, were experienced men. Recently, in most of the Poor Law hospitals, the system had been adopted of bringing in consultants. Thus there was a most competent staff for dealing with all cases. He had brought this suggestion, about the admission of private patients employing their own doctor, before a gathering of medical superintendents, and it was most heartily condemned. They said that if this kind of thing was to be forced upon them they would have nothing to do with the general practitioner's patients. They said that if a patient was to be treated by someone outside the staff that person must be entirely responsible for him. He wished, however, to put forward a compromise. He knew that in some of the provincial Poor Law institutions something like this system was being carried out, and, he believed, with a certain amount of success. It was the great desire of those for whom he spoke that these hospitals, if municipalized, should work in the happiest relationship with the general practitioner. He would like the Post-Graduate Committee to take it into consideration whether more could not be done in the way of post-graduate work in connexion with these institutions. But he believed that a resolution might be passed which would make it possible to give, in the one case, a medical superintendent a great deal of power to allow an outside practitioner to attend, and yet would not force a policy upon the other medical superintendents who were unable or unwilling to adopt the system. Therefore he proposed a compromise in the terms of the following amendment:

> That in municipal hospitals, when certain beds are set aside for private patients paying a fee to be settled by the local sanitary authority, every facility should be given to the private practitioner in the case to co operate in treatment under the general supervision of the medical superintendent.

The sentence in the report, for which the above was put forward as a substitution, ran: "Where a general practitioner wishes to continue to treat therein patients of his own he should be allowed to do so under the general administrative supervision of the medical superintendent." Dr. Masterman believed that the arrangement he proposed would offer altogether a better system than the one set out in the report, if for no other reason than that the latter would not be accepted by the municipal hospital staff, and if any attempt were made to force it upon them would lead to a great deal of friction and difficulty.

Dr. F. Radcliffe (Oldham) seconded the amendment, and said that he agreed with everything Dr. Masterman had put forward. Men connected with hospitals were usually anxious for general practitioners to go into them, but, speaking in particular for the institution with which he was connected, there were general administrative difficulties which prevented it. He thought that Dr. Masterman's amendment provided an admirable compromise.

Dr. J. D'Ewart (Manchester) said that although Dr. Masterman had declared that the system outlined in the report would not work in London it was already in operation in many places in the provinces. He thought it would be well to obtain more information before taking a final decision. Some hospitals took private patients in large numbers, and these were attended, although not to any great extent as yet, by their own private doctors from beginning to end, and without friction. To one hospital in his neighbourhood twenty general practitioners had gone in a single day to attend their patients, and no friction had occurred. The entrance of specialists and general practitioners did not prejudice the authority of the medical superintendent, who continued to exercise complete control. Trouble and difficulty might be inevitable at times, but with goodwill and co-operation they could be overcome, and the scheme had worked satisfactorily in Manchester for some years. In reply to a question Dr. D'Ewart said that legally the responsibility rested on the medical superintendent, and as a medical superintendent himself he thought it desirable that it should, but the general practitioner in charge of the case had practical responsibility.

Dr. Brackenbury said that in the recommendations given in the report the word "should" and not "shall" was used; a policy to be aimed at rather than a state of affairs to be enforced was laid down. The admission of private practitioners to attend their own patients, if they desired it, was already the policy of the Association in regard to voluntary and Poor Law hospitals. How much more, therefore, ought it to be the case in connexion with hospitals which might in the future be gradually established by municipalities and county councils all over the country. It was essential that the Association should not weaken its policy of the right of the patient who went into one of the institutions in question for certain purposes, and who paid more than the fee arranged with the authority for the purpose, to have his own practitioner to attend him if the practitioner was willing to do so. There were considerable difficulties, but after what Dr. D'Ewart had said it was impossible to contend that those difficulties were insurmountable, given goodwill and a determination to overcome them.

Dr. Masterman, in a brief reply, said that, in London at all events, the patients in the infirmaries were as well looked after as they were in the voluntary hospitals.

The amendment he had moved was then put, and adopted by 45 votes to 42. Before it was put as a substantive motion,

Dr. Brackenbury said that in Poor Law infirmaries, if the policy of the Association was carried out, private practitioners must have the right to go in and attend their own patients. That policy remained, in spite of the vote just given.

On the amendment being put as as a substantive motion, Mr. Bishop Harman moved as an amendment to alter the principal sentence so that it would run: "Where a general practitioner is desired by the patient to continue treatment, he should be allowed to do so under the general administrative supervision of the medical superintendent . . ."

Dr. A. E. Cope seconded, Mr. F. J. S. Heaney supported, and the amendment was carried by a large majority; the

resolution as amended was also carried, and the remainder of the annual report under "Hospitals" was then approved.

Subsidizing by Government of Hospitals in Financial Difficulties.

Mr. Bishop Harman moved that in the event of voluntary hospitals being subsidized, such subsidies should be made through some central hospital fund, and not direct to individual hospitals, in the same way as educational grants were made by the Government to universities and educational authorities through the University Grants Committee. This was agreed to without debate.

The remainder of the supplementary report under "Hospitals" was approved, and on leaving the platform, after a day and a half on the Hospitals Report, Mr. Bishop Harman was loudly applauded, and complimented by the Chairman.

National Insurance.

The remainder of the annual report on "National Health Insurance" was approved. (Certain previous resolutions in connexion with insurance had been taken on the Friday.)

In reply to a question by Dr. Dain of Birmingham, on the proposal to withdraw a motion to rescind Minute 22 of the Special Representative Meeting of November 19th, 1912 (Supplement, May 13th, 1922), which declared the Regulations issued by the Insurance Commissioners to be "unworkable and derogatory to the profession," the Chairman said that the policy of the Association was quite clear. The minute referred to the Regulations at the time, which had since been entirely altered. At that time the Regulations were felt to be derogatory, but the changes had been so great that the minute in question had ceased to be applicable.

Improvement of Medical Services under Insurance Acts.

The Chairman, in the absence of the Representative of Mid-Staffordshire, formally proposed a motion instructing the Council to consider fully the feasibility of the improvement of medical services under the Insurance Act by the inclusion of consultative and specialist services, for which payment should be provided by a supplementary capitation fee, the allocation of which should be in the hands of a suitable committee of the profession. The Chairman added that in view of the financial position of the country it seemed to be rather a pious expression of hope.

Dr. W. J. Leighton (Preston) agreed that the motion contained a very pleasant and pious idea; but still there were other ways in which a consultative service might be supplied for insured persons, and the representatives of approved societies had very different ideas as to how those services might be supplied. Like Dr. Dain, he took a rather particular interest in the reports of the various friendly societies. From what he had seen in the public press and other places, their idea seemed to be that the overpaid panel practitioners should pay for their consultations. The idea in the minds of the approved societies was that the insured persons must pay for nothing, and that if one did not know what was the matter with him, it was up to medical practitioners (being overpaid) to pay for filling up the gaps in their medical education, and not an insured person! That might seem a very extraordinary idea, but he was bringing that before the meeting as what was actually passing through the minds of representatives of approved societies at the present time.

Dr. Brackenbury opposed the resolution. They might all agree as an abstract proposition that the extension of the Insurance Act to consultative and specialist services was desirable, though they might hold other views. The wisest thing would be to withdraw the resolution.

The motion was withdrawn.

The Supplementary Report of Council under "National Health Insurance" was then approved.

A motion was proposed from Dundee to substitute "British Medical" for "National Insurance" in the title of the National Insurance Defence Trust, but this was not carried.

The Non-Panel Committee.

Dr. A. Blackhall-Morison moved that the Non-Panel Committee of the Association be revived and reconstituted. He said that the Non-Panel Committee came into existence in 1913. For some time it met regularly, and did good spade work. At the time it started, more than 15,000 members of the Association belonged to the non-panel section, and about 14,000 to the panel section. Probably these proportions did not hold good at the present time, but there was still a very large non-panel element in the Association, and in touch with the non-panel element outside. At present the non-panel element in the Association had very little opportunity of emphasizing its existence. On the Insurance Acts Committee the very small fraction of non-panel members could, obviously, have no medico-political influence upon that very large body. It was unfortunate, he said, that this motion came at the very end of the day's meeting when representatives were too much exhausted to give it proper attention, and if the relegation of it to the last of the many motions of the day was intentional, it was certainly a very effective move on the part of those who opposed it.

The Chairman reminded the representative that it might have been taken next day, only Dr. Blackhall-Morison himself had asked that it might be taken that day, as he would be away from Glasgow on the morrow.

Dr. Blackhall Morison said that if it would assist the proper consideration of the motion he would defer his departure. He thought that this was a very serious decision for the Representative Body. If it rejected the proposal that the non-panel element in the Association should have an opportunity of co-operative action, he thought it would come to regret a mistaken action.

Mr. E. B. Turner said that for the two years that the Non-Panel Committee was in existence he was its chairman, and thus he came to know something of it. He quite agreed with a great deal that Dr. Blackhall-Morison had said; the non-panel practitioners in the Association were somewhat inarticulate. But he did not think that it was at all advisable to reconstitute that Committee at the present time, for there was practically no reference which it could be given. The committee might be reconstituted, but he did not know what there would be for it to discuss. An occasion might arise when it would be necessary that the strong non-panel element that there was in the Association should have some voice outside the actually constituted committees, and in that case it was within the power of the Council to appoint a non-panel committee. Should he be convinced at any time that there was the slightest necessity for such a committee to be reconstituted he would press it with all his might, but to start a non-panel committee at the present moment would not be of the slightest use. What reference could be given it beyond the old reference? It would be simply an expense to the Association of something like £100 a meeting, and for very little good. The Council might safely be trusted at once and unanimously to appoint such a committee should the need arise.

Dr. J. Stevens (Edinburgh and Leith) said he was on both the former non-panel committees, whose chief fault was that they contained many *ex-officio* members who were opposed to the attitude of the other members or not fully in sympathy with it. While supporting the proposal of Dr. Blackhall-Morison, therefore, he was of opinion that the new non-panel committee, if it was to be of any real use, must consist of genuinely non-panel men, and have the same power to act for them as the Insurance Acts Committee had to act for insurance practitioners. At the meeting of the Representative Body held in January, 1913—a meeting attended largely by those who had taken service under the Act—a resolution was passed declaring its continued opinion that the Act was unsatisfactory, and that where men were still holding out against the Act the Association would give them every assistance within its power. It was difficult to see what the Association had done in support of that undertaking; if anything of the kind now proposed could be brought forward it might help to bring back the men who had left the Association in consequence of its attitude.

Dr. Blackhall-Morison said he could rely on Mr. Turner and on those who held similar views to give others the opportunity of collaborating as a non-panel committee if the occasion arose, and relying on that definite understanding, he thought the wisest course open to him was to withdraw his motion.

The motion being by leave withdrawn the meeting adjourned at 6.45 p.m.

Tuesday, July 25th.

The Annual Representative Meeting resumed at 11 a.m., the proceedings having been delayed in order to enable representatives to attend the opening of the exhibitions.

Science Committee.

Sir Clifford Allbutt (Chairman of the Science Committee) moved the adoption of the report of the Science Committee. He referred, in the first place, to the British Medical Association lectures. This comparatively new departure had been a very great success. A reference had been made at the opening of the exhibitions that morning to the development of the Association from a provincial into an imperial organization. An attempt was now being made to do the same thing on the scientific side, and one principal means of furthering this attempt was the sending of scientific missionaries into various districts so that those practitioners who were not near the great university centres—and even some who were—should have the opportunity of hearing the very highest possible authorities, experts in their special subjects. But they were not content with the temporary success which had been achieved. It was hoped that the scheme would develop in time, perhaps into an exchange of professors or demonstrators from one school to another. He would not indulge, however, in visions of the future, but the great problem at the moment was to introduce the extremely elaborate processes of modern medicine into districts which were rather far away from university centres. He next drew attention to the way in which the Association was co-operating with expert bodies in certain special directions—the National Physical Laboratory, the National Union of Scientific Workers, and the British Lampblown Scientific Glassware Manufacturers' Association. The Science Committee had taken a great deal of trouble over the Association Library, which was getting to large dimensions. The Committee was desirous of enabling members to use the Library to the best advantage.

The report of the Council under "Science" was approved.

The Journal.

Dr. J. A. Macdonald (Chairman of the Journal Committee), in moving the adoption of the Supplementary Report of Council under "British Medical Journal," said that the Journal had improved during the past year the position it had always held among the medical journals of the world. As long as the Journal had such an editorial, journalistic, and business staff as at present, it had nothing to fear in the way of competition. The advertising had been a distinct success. It had formerly been the custom to publish reports of the sectional meetings of the Association in one or two issues of the Journal just after the meetings, but it had been decided in recent years that a more appropriate way was to spread over the reports, and they had been satisfactorily finished by December. One of the greatest difficulties of the Committee was to decide which advertisements were suitable for publication in the Journal. The greatest care was taken to ensure that the advertisements were strictly in accordance with truth, but the task was not always easy. In addition to the services of an expert pharmacologist a small subcommittee had now been appointed, which would consult on the report of the pharmacologist and endeavour to attain a still greater degree of accuracy in dealing with advertisements. The increase in the number of Journals printed in 1921 was 81,924, making a total during the year of 1,444,082 issued from the office. (Applause.)

Dr. B. E. A. Batt (West Suffolk) proposed that the Council should consider the advisability of devoting the first literary page of the Journal once a month to medico-political information. His object in doing so was to call attention to the fact that medico-political news did not always receive sufficient prominence, and was sometimes overlooked by the members. Instead of being contained in a Supplement it might be printed where everyone would see it. Dr. Macdonald said the whole of the Journal was built up from the first literary page, which was generally allocated, therefore, to articles of a scientific nature which were received in good time. Many years ago a Supplement to the Journal was started in order to supply medico-political information to members, and he thought it would be unwise to interfere with that arrangement. The amendment was lost.

Dr. C. J. Kirk (Darlington) proposed that notices of births, marriages, and deaths should not be charged for by the Journal at ordinary newspaper rates in view of the fact that such information relating to members was of general interest to the profession. The amendment was lost.

Dr. Macdonald moved the approval of the Supplementary Report of Council under "British Medical Journal," and mentioned that the Council had now decided to reverse its previous policy and accept suitable advertisements from German and Austrian sources.

In reply to a question, the Treasurer said that the Council had formerly refused such advertisements on the ground that this country was not legally at peace with Germany. Since then the position had changed: Britain and Germany were now at peace, and from an economic standpoint it was desirable to abandon restrictions of the kind in question. The chief reason which actuated the Council in reversing its decision, however, was that if such advertisements were not accepted when they came direct from ex-enemy countries they would be presented in some way or other indirectly, and control over them would to a large extent be lost.

The motion was approved.

Public Health and Poor Law.

Dr. T. W. H. Garstang (Chairman of Public Health Committee), in moving the approval of the Annual Report of Council under "Public Health and Poor Law," said that although the committee had no recommendations to submit to the meeting it must not be thought they had not worked exceedingly hard. Many of the matters with which they had dealt had been settled by the committee and accepted by the Council almost as matters of routine, being largely of an administrative nature. Of the 12 elected members of the committee, 9 or 10 were members of the Society of Medical Officers of Health. Ten of them never missed a single committee or subcommittee meeting and the eleventh only one meeting of a subcommittee, which he thought was an excellent record.

Superannuation of Public Health Officers.

Dr. Herbert Jones referred to the question of the superannuation of public health medical officers. It was quite possible that superannuation would come along for insurance practitioners, and therefore it might interest the Representative Body to learn what was being done in connexion with the superannuation of public health officers. Asylums officers had been subject to superannuation for some years, and some most instructive information had been elicited. The superannuation scheme was a contributory one. The asylums officers paid 5 per cent. of their salaries towards the scheme, and during the twelve years since it had been in force that 5 per cent contribution very nearly paid for the whole scheme. The amount of money which had to be taken out of public funds was almost negligible. In his own county of Herefordshire the call upon the rates under this heading averaged £40—a negligible amount in a county in which a penny rate produced £3,000. In one or two cases it was found that the scheme actually resulted in an increase of money in the public coffers.

The Manchester Appointment.

Dr. Garstang referred to the appointment of the new medical officer of health for Manchester. He did not need to say anything on general principles, but merely to give the course of events since the issue of the annual report of Council, in which it was said that the result was still unknown. The meeting ought to understand what an extremely important result had been achieved. The bare fact of the matter was that on the Manchester Corporation, which was a very large body with over 100 members, there were at least two parties, and possibly three, as to how this matter should be dealt with. The party which ultimately carried the day was the party which had advocated a friendly arrangement with the British Medical Association and its ally the Society of Medical Officers of Health. Instead of the unsatisfactory terms offered originally, the Corporation ultimately offered, not indeed the very highest that some members would have liked to ask for, but a halfway step, which within a couple of years would have reached a reasonable level. Instead of the £1,500 that was offered originally, and instead of the £2,000 or upwards that some of their own extremists demanded, the commencing salary was £1,700, with an annual increment bringing it up to £2,000 in two or three years. (Applause.) The way in which this result was achieved was by reasonable agreement between the two bodies interested. It was a very good augury for the future.

The Chairman of Council said that this was an example of what might be accomplished when men of goodwill came to talk sensibly about what was best in the public interest. He knew of no clearer example where professional expert advice was able to guide a public body into a path which was in the best interests of the public they served. This would not have been possible had it not been that they had in Manchester a living Division of the Association. It was in Manchester itself that the greater part of the work had been

done. The propaganda was really carried on in the city, and it was a lesson to every Division and Branch as to what might be done by the exercise of their influence. The active secretary in Manchester, Dr. Macgowan, was of the greatest possible help throughout the negotiations, and the members of the Division most ably seconded him.

The Annual and Supplementary Reports of Council, under "Public Health and Poor Law," were approved, and a motion by Dr. W. E. A. WORLEY (City), urging that the fee for attendance at maternity cases by district Poor Law medical officers should be at the same rate as that paid by the London County Council when practitioners were called in by midwives, was referred to the Council for consideration.

NAVAL AND MILITARY.

Representation of the Medical Department of the Royal Navy.

Sir RICHARD LUCE (Chairman of the Naval and Military Committee) moved that Surgeon Rear Admiral Sir Percy Bassett Smith, K.C.B., C.M.G., R.N. (ret.), be elected to represent the Medical Department of the Royal Navy on the Council for the period 1922–25. This was agreed to without discussion.

The Position of Senior Surgeon Commanders.

Sir RICHARD LUCE, in moving the adoption of paragraphs 211–7 of the report, reviewed the action of his Committee in connexion with paragraphs 212, 213, 216, and 217. Paragraph 213, on the grievance of senior surgeon commanders R.N., had been dealt with fully in the JOURNAL of July 8th, 1922. Although officers in the medical service of the navy had received an increase of pay of only 10 per cent. to meet the cost of living, they had been subject to a possible reduction of 20 per cent. on the fall in the cost of living. The action of the Committee had removed that particular hardship. With regard to paragraph 216, the number of Territorial Army general hospitals had been reduced from twenty-three to three, and that position was being carefully watched. On paragraph 217 Sir Richard Luce said that the Committee had enabled the officers concerned to recover two-thirds of the salary lost to those D.A.Ds.M.S. who had been dismissed at the end of two years instead of four, free of income tax. In that respect great help had been received from a medical member of the House of Commons (himself an ex-D.A.D.M.S.)—Lieut.-Colonel Fremantle. (Applause.)

Mr. F. J. S. HEANEY (Liverpool) said his Division had asked him to emphasize the disability to which senior surgeon commanders were subjected by compulsory retirement. Officers of 50 years of age who had held senior appointments in the navy and had been retired were now acting as junior surgeons on Atlantic liners—an obvious injustice, the failure to rectify which was probably the most marked failure the Association had yet had. Young men should be discouraged from entering the navy, because a definite undertaking had been given to the men now being compulsorily retired that if they reached the rank of surgeon commander they would be kept on to the age of 55, and that undertaking had been broken.

The motion was carried.

Sir RICHARD LUCE, in moving the approval of the Supplementary Report of Council under "Naval and Military," referred with regret to the fact that Lieut.-Colonel R. H. Elliot had been forced by his doctor's orders to resign the chairmanship of the Committee, an office he had held with conspicuous ability for three years. The good work Colonel Elliot had done in connexion with the Indian Medical Service would long be remembered. He mentioned that a Committee was now sitting to consider the amalgamation of the medical services of the Army, Navy, and Air Force, but had not yet reached a stage at which the assistance of the Association was required.

Sir JENNER VERRALL wished the meeting to do something more than pass the report; he thought a definite resolution cautioning young men in regard to entering the navy should be recorded, so that they might know the exact circumstances under which they would enter the service. A Government department must, in certain circumstances, have the right to take action which practically amounted to the breaking of a contract, but when that was done equitable compensation should be paid. Although all he proposed was covered by the report, to give the matter greater prominence he desired to move:

> That this Representative Body of the British Medical Association cordially approves the decision of the Council to advise recently qualified medical practitioners to consider seriously the disadvantages to which they are liable if they place their careers in the hands of the Admiralty.

Dr. FOTHERGILL seconded the motion.

Dr. W. DOUGLAS (Maidstone) supported the proposal, and only regretted it was not in stronger terms, and that nothing was being done for those who had already been compulsorily retired by the Admiralty.

Dr. D. A. SHEAHAN (Portsmouth), in supporting the proposal, gave an instance of the power of the Association by referring to the situation in Nigeria, where the grievances under which the medical profession had laboured for many years were removed by an article which appeared in the BRITISH MEDICAL JOURNAL, and which when copied in the Nigerian papers moved the Governor to action after previous direct appeals had failed. He did not doubt but that the same effect could be produced on the Admiralty.

Dr. J. B. SIMPSON (Caithness and Sutherland) said that all who served in the navy during the war would know the disadvantages under which the Naval Medical Service laboured, and he hoped the representatives present would use all their influence to dissuade their younger medical brethren from entering it. Towards the end of the war the Admiralty offered permanent commissions to those on temporary service, but of over 1,000 so serving only 2 per cent. responded to the offer, which was good evidence of the state of affairs prevailing.

Dr. MCGREGOR ROBERTSON said the condition of the medical and surgical service in the navy was scandalous, and the naval hospitals compared very unfavourably with civilian ones. He thought the Council should consider not only conditions of service but conditions of treatment, and use its influence to secure an improvement in both.

In reply to Mr. HEANEY, who asked whether the JOURNAL had accepted Admiralty advertisements since the Council's decision, the TREASURER said that none had been sent in.

Dr. JAMES STEWART (Lambeth), in a vigorous speech, said that he had practical experience as a naval surgeon in the Admiralty; he had the honour of serving under the white ensign in the early part of his medical career. Nothing was more distinctly in the minds of naval men than the fact—which he pressed upon the meeting—that the treatment which naval officers were receiving deserved severe reprobation. If the Association did not stand by the naval men it would lose the character which in the past it had gained. He begged the Association to express in no measured terms its disapproval of the Admiralty.

Dr. C. BUTTAR (Kensington) hoped that the meeting would support the proposition of the Council. He had had quite a prolonged experience of the Admiralty, both as a member of the Central Medical War Committee and, since then, as a member of the Naval and Military Committee, and he had come to the conclusion that sooner or later they must deal rather emphatically with the Admiralty. It was the one Government department, to his mind, which avoided taking notice of the British Medical Association. Continually the Association found trouble in approaching the Admiralty. Occasionally it had refused to receive deputations, and now there had arisen this question of the surgeon commanders. He had followed these negotiations right through, and he was quite sure these men were being badly treated. He wanted the Association to go to the fullest extent practicable in dealing with this question. He hoped that not only would medical men be advised to avoid taking commissions in the navy, but that the JOURNAL would decidedly refuse to accept any Admiralty advertisements. It was only by bringing it home to the Admiralty in every way possible that any effect would be obtained. If the *British Medical Journal* refused to accept the advertisements, he hoped that the *Lancet* would be asked to help by doing the same.

Mr. RUSSELL COOMBE referred to the action taken by the Association some years ago in connexion with the Army Medical Service. It was the failure to procure candidates for the service which brought the War Office to reason. The Admiralty was, if possible, a more autocratic body even than the War Office. He believed that advertisements still went into the JOURNAL all through that fight; and it was when an advertisement for forty candidates produced two or something of that sort that the War Office began to come to terms.

The CHAIRMAN OF COUNCIL said that the Council was extremely glad to have this very definite endorsement of the policy it desired to carry out. There was only one matter that was a little difficult, and this he was going to put to the mover of the resolution. In all these matters the best results

could very often be achieved by a little care in the steps taken to carry out the policy; and he would be extremely sorry if the Representative Body laid down in detail the hour at which the advertisement columns of the JOURNAL were to be closed to the Admiralty or in what way the propaganda was to be carried out. He wanted full latitude to be left to the Council and the Journal Committee. (Hear, hear.)

Sir JENNER VERRALL said that his resolution was expressly drawn up to admit of that. He believed that at this stage it was possible with perfect honesty to accept advertisements which intimated that a post was open, and at the same time to tell men not to accept the post unless he knew very well what it would involve from the history of the past which had been laid before him.

Dr. HASLIP could not agree with Sir Jenner Verrall that they could pass this resolution and at the same time accept advertisements. That was neither businesslike nor straightforward. He would favour a resolution leaving it to the Council to take action at the proper time.

Dr. FOTHERGILL said that by endorsing the action of the Council they would be giving the Admiralty a last opportunity of rectifying the position. If the Admiralty then said that it was of no use to send in an advertisement, that was the Admiralty's business.

Dr. W. F. LAW deprecated a hard and fast resolution which would make the Admiralty take up a more intransigeant attitude.

The motion by Sir Jenner Verrall was carried, with one dissentient.

Dr. W. DOUGLAS (Maidstone) moved a further resolution that no advertisements for naval medical officers be published in the JOURNAL, owing to the unsatisfactory conditions of the Naval Medical Service, and that any money already received for such should be returned. He believed that a letter should be written to the Admiralty saying that the Association had recorded that they thought it would be unfair to accept such advertisements, and that they could give no encouragement to young medical men to join the service. Dr. J. STEWART (Lambeth) seconded. On the proposal of Dr. FOTHERGILL, who said it was undesirable that the motion should be thrown out, because such an action might be interpreted wrongly, the meeting proceeded to the next business.

The Supplementary Report of Council under "Naval and Military" was then approved.

Parliamentary Elections Committee.

Mr. BISHOP HARMAN (Chairman of the Committee), in moving the adoption of the Annual Report under "Parliamentary Elections Committee," said that the enthusiasm with which the Parliamentary Elections Fund had been started had not been justified by subsequent events. It was necessary to appeal for more money, and in this connexion he invited practitioners who were prepared to help in propaganda work to send in their names to him. The candidature of Sir Sydney Russell-Wells had been supported by the Association, and in this connexion a somewhat difficult situation had arisen owing to the fact that another medical man, Dr. W. H. R. Rivers, had also stood for the same constituency. After the most mature consideration, however, it had been decided to support Sir S. Russell-Wells, one main reason being that the other medical candidate was standing for a party which had proved itself hostile to the medical profession on the matter of hospital policy. Everyone would regret that the issue of events had removed the other candidate from their midst; they regretted the loss of Dr. Rivers as a colleague and as a man of great distinction and exceedingly lovable character. Dealing with figures, Mr. Harman called particular attention to the amount required for the work of the Committee. From the balance sheet it would be seen that last year about £500 was received in subscriptions and interest on deposit. That was not enough. For each candidate they would want about £300 for what he might call "nursing fees" and about £125 to store up against election expenses, which might be expected to be required about every four years. Last year there was only enough money to support one candidate and to pay running expenses. The fund was independent and had to pay its own costs, and no share of its costs could fall upon the finances of the Association. Two shillings a head from each member of the Association in this country alone would give £1,500 a year, which would enable the fund to run three candidates.

Dr. B. E. FORDYCE (Cambs and Hunts) thought that a very good plan would be to promote the candidature of medical men in the university constituencies where there would be a good chance of winning elections owing to the great voting power of medical graduates. Secondly, his Division held a view that good work could be done by keeping in touch with the member of Parliament for the constituency. In some ways a good deal more could be done in the private room of a minister or in confidential talk after dinner than by more public methods of propaganda.

Dr. E. E. DYER (Stirling) asked whether it was the intention to supplement the £400 a year which members of Parliament received, or to pay the electioneering expenses if required? Mr. HARMAN replied that nothing was being paid towards the living expenses of the candidates. Power to do so was contained in the terms of the Trust, but the situation had not arisen. In reply to Dr. Fordyce, one university candidate was being supported, and he happened to be of the other political colour, so that the two Parliamentary candidates now being supported represented rival parties, which was an advantage. It was not proposed to attempt to drive out good men in Parliamentary constituencies simply because they were not medical men. The motion was carried.

Welsh Committee.

Dr. CRAWFORD TREASURE (Chairman of the Welsh Committee), in moving the adoption of the part of the Report of Council for which his committee was responsible, said that the principal work of the committee had been the consideration of the report of the Welsh Consultative Council. This matter was not yet ready for a practical issue, and therefore it had not been placed before the Representative Body in any detail. The only other point arising out of the report was an appeal to Welsh medical men to support the University of Wales Medical School appeal. The Government proposed to supplement any sums raised by the university during the next twelve months in order to overcome certain financial difficulties in which the university was placed. That appeal had been responded to very generously, and a considerable sum of money had been raised. The report was received and approved.

Scotland.

Immediately on the adjournment of the Annual General Meeting the Representative Body considered the Annual Report under "Scotland."

Dr. J. STEVENS, in the absence of Dr. Snodgrass (Chairman of the Scottish Committee) owing to illness, moved its adoption. After summarizing some of the matters with which it dealt he referred to the fact that, owing largely to the efforts of the Chairman of Council, it had been decided that where no local medical committee which adequately represented the profession existed the local Branch of the Association should have the power to nominate members to the local voluntary hospitals committees.

Dr. J. B. SIMPSON (Caithness and Sutherland) said he had been asked by his Division to convey their hearty thanks to the Association and the Scottish Medical Secretary for the work they had done on behalf of practitioners in the highlands and islands of Scotland during the past year, more especially in connexion with the maintenance of the mileage rate, which was paid from a Treasury grant and on which highland practitioners largely depended, at a satisfactory level after attempts had been made to reduce it. The motion was carried.

Ireland.

Dr. JOHN MILLS (Connaught), in moving the adoption of the Annual Report under "Ireland," said the work of the Association in that country had been hampered of recent years by the disturbed conditions prevailing, but the Irish Committee was struggling to fulfil the trust imposed on it and hoped soon to be in clearer waters. The motion was carried.

Oversea Branches.

Dr. MACDONALD, who moved the adoption of the Annual Report under "Oversea Branches," apologized for the absence of Mr. Dunhill, Chairman of the Committee, who had been prevented from attending the meeting. The Oversea Committee dealt with a very important part of the Association's activities, but did not always receive the appreciation it deserved. The conditions of service in outlying parts of the empire were often exceedingly onerous, and the efforts of the Committee were directed towards their improvement. Its activities in that direction had been facilitated by an arrangement arrived at with the Colonial Office and the various Colonial Governors, whereby the Association was supplied with copies of their regulations on medical matters with as little delay as possible. A difficult position had been created

in East Africa owing to the fact that the Colonial Office had sent young medical men from the army to serve in that country at salaries £200 a year greater than were received by men who had served there for twelve to fourteen years. After the exercise of considerable pressure by the Committee, the Colonial Office had agreed not to continue that practice. Dr. Macdonald concluded by summarizing various other matters referred to in the report in connexion with the West Indies, where the terms of medical employment were very unsatisfactory, and Egypt, where doctors formerly employed by the Egyptian Government were anxious about their position under the new arrangement.

Dr. Macdonald then moved that the Supplementary Report of Council under "Oversea Branches" be approved, and in doing so pointed out how widespread were the Oversea Branches. One found them active, not merely in the larger dominions, but in such places as British Guiana, Ceylon, Malaya, Nyasaland, Uganda, and Zanzibar. The Branches overseas set an admirable example to the Branches at home.

Dr. T. D. Greenlees expressed appreciation, on behalf of members residing abroad, of the work of the Dominions Committee.

Help for Starving Russian Doctors.

The Chairman said they would recollect that an appeal was sent out comparatively recently asking for financial assistance for their professional brethren in Russia. (See articles in the British Medical Journal of July 1st, 1922, p. 19 and p. 26.) He understood that somewhere about £1,500 had already been forwarded for distribution. (Applause.)

Votes of Thanks.

After the motion had been carried giving general approval to the Annual and Supplementary Reports of Council, two resolutions were adopted with hearty applause, on the motion of the Chairman. One of these conveyed the best thanks of the meeting to the General Executive, the Reception Committee, with its Honorary Secretary, Dr. J. McGregor Robertson, Dr. G. A. Allan, Local Honorary General Secretary of the Annual Meeting, and to all concerned in the excellent arrangements for the comfort and convenience of the Representative Body. The other accorded the best thanks of the meeting to the Senate and Principal of the University of Glasgow for granting the use of Bute Hall and other University buildings. The Chairman said that wherever the Association went for its Annual Meeting the local committees did their very best and provided the members with plenty of interest and means of relaxation. They had a delightful time at Newcastle last year, but they were having an equally delightful time at Glasgow, and those who had the pleasure of going down the Clyde on Sunday afternoon would never forget the occasion. Then, again, the hall in which they met was one of the most beautiful in which it had ever been their lot to assemble.

After the minutes had been confirmed a further resolution conveying the thanks of the meeting to the officials of the Association, also put from the chair, was adopted by acclamation. During eleven months of the year, said the Chairman, the various officials worked as hard as it was possible to work, and during the twelfth month their work was superhuman. Only a few of the Representatives had the opportunity of seeing the work which went on at headquarters, but all could appreciate how admirably the agenda had been got ready and what excellent arrangements had been made.

The Medical Secretary said that it was very gratifying to his colleagues and himself to have this vote of thanks. The work behind the scenes was heavy, but they were all willing and anxious to do their best for the Association, and in Glasgow the work had been rendered easy and pleasant by the excellent arrangements made by the local people.

Mr. L. Ferris-Scott, Financial Secretary and Business Manager, also added his thanks, and mentioned the loyalty of the staff at 429, Strand.

Dr. Garstang proposed a vote of thanks to the Chairman of Representative Meetings, and the applause was so hearty that Dr. Garstang said he need not support the motion by a speech or call upon a seconder.

Dr. Wallace Henry, in reply, said that thanks to the hearty co-operation of the Representatives and their ready acquiescence in his decisions the business had gone through with admirable dispatch. It was the first time in his recollection that the business had been got through without having to cut short the time allowed to speakers.

The Representative Meeting closed at 3 p.m.

THE ANNUAL DINNER.

The annual dinner of the British Medical Association took place in St. Andrew's Halls, Glasgow, on July 27th. The President, Sir William Macewen, was in the chair, and among those at the head table were—

Sir Clifford Allbutt, Sir James Barr, Dr. R. A. Bolam, Sir Robert Bruce (editor of the *Glasgow Herald*), Mr. C. P. Childe, Sir Kennedy Dalziel, Professor David Drummond, Sir Archibald Garrod, Dr. André Gratia (Brussels), Dr. G. E. Haslip, Dr. Wallace Henry, Professor J. Graham Kerr, Sir W. B. Leishman, Sir Donald MacAlister, Dr. J. A. Macdonald, the Rev. James McGibbon (Minister of Glasgow Cathedral), Archbishop Mackintosh, Sir J. P. Maclay, Lieut.-Colonel A. Martin-Leake, V.C., Sir Frederick Mott, Dr. Holger Mygind (Copenhagen), Sir Thomas Oliver, Sir John Reid, Sir Humphry Rolleston, Bailie J. A. Stewart, Sir Jenner Verrall, and Sir Dawson Williams.

Mr. J. Meredith-Kay and his orchestra contributed to the Scottish flavour of the banquet, which began with the grace from Burns, "Some hae meat and canna eat," and ended with "Auld Lang Syne." The haggis was played in to the sound of the pipes.

The Navy and Army Medical Services.

After the loyal toast had been honoured the President proposed the health of the imperial forces. He said that many might be able to do the toast more justice than himself, but none could propose it with greater gratitude. The imperial forces had saved the country from disaster at the hands of a hostile nation which had been preparing for twenty years. On the medical side he happened to know that Germany had prepared down to the last detail. Four months before the war he was on a professional visit to that country and saw the recent hospital provision and equipment, and learned how much sanitary work and reconstruction had to be completed by the May of 1914. Everything was prepared, along that line as along others, for the need which was soon to come. In this country, he was sorry to say, we had not prepared, and it was the younger generation that saved the nation. He referred to his own experience in connexion with the navy from the very outbreak of the war. Comparatively little was known of what the navy did in the war. The country did not hear very much of its sacrifice and suffering. The men of the navy were magnificent specimens. He used sometimes to stand back and admire the Greek development of their muscles. The like was very seldom seen in civil experience. Their perseverance and the stoical manner in which they took their wounds was equally a matter for admiration. After Jutland he remembered seeing some very terrible cases of injury, but one man who had been wounded very severely said that he would not have missed it for the world. He told the story of a man who had been blown up in the *Pathfinder*, and dropped into a funnel, where he was almost suffocated, until a great wrench came and the funnel itself went over, along with the forepart of the ship, and there the man was in the water, with a fractured leg, a fractured pelvis, and a fractured skull. He thought he was going down, when he heard a cheery voice calling to him, and someone came and put a spar underneath his legs, which was the means of bringing him into safety. When he asked his rescuer how he himself would fare, he replied, "Never mind me; I'll get another spar." The rescuer was his captain. Sir William went on to say that he made the acquaintance of that captain, who said of his exploit that it was no more than anyone else would have done. He told that story in a certain company the other day, and said that the captain's name was Leake, whereupon a gentleman who was sitting at his table said, "Oh, yes, that was my brother, but I never heard that story." (Applause.) With regard to the medical service of the navy, he had often wondered whether to admire more its patience or its proficiency. He was sorry that medical officers of the navy were being shunted, owing to the operation of the Geddes "axe." He had very great sympathy with many of these men, cashiered at a most inopportune time. With regard to the army, certainly the medical service had done a great deal of most excellent work in diminishing the mortality from disease and wounds. He coupled the toast with the name of Sir Humphry Rolleston, whom he had met during the war on the deck of a battleship, and of Sir William Leishman, whose name was famous wherever the knowledge of pathological investigation had penetrated.

Sir Humphry Rolleston said that it was an honour to be chosen to reply for the Naval Medical Services, but he regretted that the Director-General was not present to respond to this toast. Had Sir Robert Hill been there he would have expressed his debt of gratitude to the civil medical profession for all that it did in the war. He had often heard him speak particularly of the bravery of the men not yet qualified—the men who were at first called "surgeon probat oners." Men in mind and courage, they were only boys in physique and years. The medical department of the navy was particularly fortunate in securing the services during the war of Sir William Macewen as its consulting surgeon in Scotland: he was indefatigable in visiting the hospitals—sometimes at eight o'clock in the morning! The medical service of the navy, of course, had its base hospitals in the South of England, but in view of the way in which the Grand Fleet was always oscillating about the northern coasts the greater burden of looking after the navy really fell upon Scotland, and the hospital accommodation was very generously provided in Edinburgh and Glasgow and the districts round about. Sir Humphry Rolleston concluded with a few words about the Royal Air Force, and the enormous debt which that force owed to the medical profession. It was during the war that the medical problems of flying came into existence, and these were largely solved with the help of civilian doctors. The first medical administrator of the Royal Air Force was a naval man—Fleet-Surgeon Munday—who did his work under considerable difficulties.

Sir William Leishman spoke of the sincere pleasure with which he found Sir William Macewen in the chair of the Association; knowing how entirely appropriate it was that Sir William should fill that distinguished position. The medical department of the army did not represent at the moment a very large part of the profession, but he had not yet got out of the way of thinking of the army on its war basis, and those of them who were in the regular service had the happiest recollections of the comradeship of those who came into the service for the period of hostilities. In those days it was indeed a profession in arms. The Royal Army Medical Corps was now going through a very difficult phase. Military medicine was a specialty in itself and must keep abreast of the time. It was trying to do so. He was not one of those who liked to pose as an alarmist, but if one looked out on the world just now one could not but be impressed by the immense responsibilities which this country was discharging in territory new and old. The time was not yet ripe for turning the swords into niblicks and putters.

The City of Glasgow.

Professor David Drummond (Past President) gave the toast of the City of Glasgow. The greatness of Glasgow, he said, depended largely on its natural resources, and particularly on the river Clyde, which at one time did not bring incoming sea vessels nearer than fifteen miles from the city. Since the middle of the seventeenth century, however, the river had been improved so as to admit the largest vessels afloat. Glasgow had a most fascinating record, reading like a fairy tale, of the advance of commerce. In 1707 its population was 13,000, and now it was the second city of the empire, with a population of just over a million. It was renowned for its shipbuilding, for its patronage of art and science, and for its up-to-date municipal services. St. Mungo, the patron saint of Glasgow, was accustomed to call it "the city of dear friends," and the visitors on this occasion had found it more than ever deserving of the name.

Bailie Stewart, who replied in the absence of the Lord Provost, extolled some of the glories of Glasgow. In London, in the early summer, he noticed placards warning the public against any unnecessary use of water. But in Glasgow, even if no more rain fell until next spring, the Corporation would not have to call upon the public to limit its supply or deprive itself of a needed bath. He conjured up some pictures of the early history of the city, when, under the shadow of the cathedral, monks wandered on the banks of what was then the crystal Clyde, and the mighty commercial progress which had now transformed Glasgow out of all recognition.

The Ulster Golf Cup.

The President at this point presented to Dr. Macfarlane of Glasgow the golf cup given by the Ulster Medical Society, to which had been added this year a gold medal presented by the Glasgow Medical Golf Club. The play had been one round of 18 holes on the Glasgow Golf Club's course at Killermont. Dr. Macfarlane received the trophies amid loud applause, but he did not respond to calls from many quarters for a speech.

Glasgow University.

Sir Frederick Mott proposed the toast of the University. Glasgow University was founded in 1451 by Bishop Turnbull, and received a guarantee of peace and protection from James II of Scotland. He referred to some of the great names associated with the university—Hazlitt, Boswell the prince of biographers, and Adam Smith, amongst others. It was the University which set up James Watt in business as its mathematical instrument maker. He had seen, the previous evening, the Newcomen engine which was sent to Watt for repair. That was the birth of the power of steam, and therefore the birth of the great industries of the city. Glasgow made the University, and the University returned the compliment by making Glasgow. The reputation of Glasgow had gone into all the world with the sons of its University. It had produced some of the greatest of men—men like Kelvin, Lister, and William Hunter, who would always give lustre to its name. At the present time in Sir Donald MacAlister it had a Principal of unexampled learning—a great mathematician, a great physician, a great classical scholar, and a great linguist. In Sir William Macewen it had an outstanding figure in British surgery, carrying on the tradition of Lister. The University was the first to establish teaching laboratories in chemistry, physics, and engineering. It had still its "meal Monday," recalling the fact that some of the great men from this University had come to it originally as poor boys, whose chief possession was a sack of oatmeal. In Scotland there was no bar between the village school and the University. The Scottish people knew how to appraise learning. On almost any steamer in the world one would find a Scottish engineer—a well-educated man with a very logical mind. He recalled a Scotsman whom he found, wounded, in a hospital during the war. This man protested against the literature provided, and asked for Burns, Shakespeare, the Bible, and the *Pilgrim's Progress*. The man told him that he got his schooling at Stonehaven, but "I got mae po-lish at Aberdeen!"

Sir Donald MacAlister, after a genial protest against the frequency with which he was called upon to reply to this toast, said that he was grateful to Sir Frederick Mott for the handsome compliments he had paid to the University of Glasgow. The University had taken 470 years to grow to its present stature, and it was still growing. It had received a great inheritance from the past through pioneers in science like Robert Simson, Adam Smith, James Watt, Joseph Black, and Lord Kelvin, and in medicine like Cullen, William Hunter, Smellie, and Lord Lister, and it was resolved to maintain and increase its heritage. From the beginning it had been closely interwoven with the life of the city and nation, and the bonds of common interest and sympathy were never closer or stronger than to-day. For many years it had sent out earnest and well-equipped graduates to fill the good places in less favoured parts of the world, and this missionary work it was still carrying out more effectively than ever. In few British faculties at home or overseas would they fail to find a professor or two of Glasgow breeding. The Bishop of Manchester (Dr. Temple) told them the other day of one Australian senate which he had to address on academic matters. His preliminary inquiries proved to him that if he praised Scottish university men to that body it would be direct flattery, if he criticized them it would be indirect suicide. Dr. Temple, of course, was an Englishman: he had yet to learn that if he had praised the Scottish professors they would merely have smiled encouragingly at his dawning intelligence, and if he had criticized them they would have smiled again, compassionately, at his residual ignorance. All the pleasant things that had been said of the University they accepted without undue humility, and when the time came for frank criticism he could promise that it would be considered with equal frankness and the proper modicum of gratitude. "We are proud and glad," Sir Donald MacAlister concluded, "that you have honoured Glasgow and its University by meeting here: proud and glad, not alone for our own sakes, but for yours. It is good for us all that the natives of the Southern peninsula of Great Britain in particular should now and again visit Scotland, if only they might come to understand better how and by whom their province is in fact governed. It is an English poet who says: 'What do they know of England who only England know?' An Englishman who has to some extent become conversant

with Scotland and its ways will have a deeper insight into the actual working of English institutions, of Church and State, of learning and science, of commerce and industry. He will know where the 'heids o' departments' come from, and how they were bred and trained for their responsibilities across the Border."

The British Medical Association.

Sir Robert Bruce, LL.D., proposed the health of the British Medical Association. He said that the citizens of Glasgow, all through that memorable week, had been endeavouring in a great variety of ways to carry out the ancient injunction, "Honour a physician with the honour due unto him for the uses ye may have of him." To polite ears this injunction might sound ungracious; the suggestion of an absence of disinterestedness in the adulation struck a jarring note, and preference might be given to the other saying of the wise old writer, "The skill of the physician shall lift up his head, and in the sight of great men he shall be in admiration." But here again there was a flaw. It was pure presumption to think that they were, all of them, great men. As common people they took to themselves the privilege of admiring the physician's skill, and of holding the practitioner, as Glasgow had been doing that week, in honour and respect. If it were true that the honour and respect were in part an expression of appreciation of the uses they might have for medical men, he could not see why they should be diffident about making frank acknowledgement. It was not only fitting but prudent in the interests of the health of the people that they should drink to the health of that large body of devoted men and women, members of the British Medical Association, who spent themselves in the great cause of maintaining the race in physical and mental fitness. More than thirty years had passed since the Association last held its conference at Glasgow. Yet the interval did not seem to have been so great as the years suggested. The distinguished President showed no sign that thirty-four years had passed since he thrilled a Glasgow audience by a discourse on surgery which made that Annual Meeting memorable. Did anyone really believe, listening to his Presidential Address two nights previously, that a full average toll of working years separated the two achievements? When, however, they contrasted the condition of medical and surgical science as it was in 1888 with the revelations made at the Annual Meeting of 1922, they were constrained to believe that the space of years had been even greater, and on turning their eyes to the records of the Association that impression appeared to be confirmed. Those records disclosed a remarkable progression, and if the mind were cast back to the beginning of the Association in 1832 and some of the contemporary accounts of the state of medical science and consequential state of public health and its administration were studied and compared with the wonderful edifice of scientific knowledge and practice from which healing radiated to-day, they became possessed by a mood of fervent thankfulness that it was put into the heart of those pre-Victorians to attempt to apply the principle of united action to the solution of a great national problem. It would be, of course, absurd to claim that anything like the whole of the credit for the great transformation was due to the work of the Association. No one could be so foolish as to ignore the influence of progressive public opinion, stimulated in no small measure by generations of noble-minded laymen who had caught the vision splendid. But the Association had ever been a focusing centre of action, an explorer and deviser of ways and means, a lever for the uplift of the profession in knowledge and esteem, and a shield against knavish quackery. The City of Glasgow was proud of its long and close connexion with the profession. It felt honoured to number among its citizens the President of the Association (Sir William Macewen) and the President of the General Medical Council (Sir Donald MacAlister); and in the past it had numbered Lister and not a few others whose names would ever remain inscribed on the golden roll as great healers of the people.

Dr. R. A. Bolam (Chairman of Council) thanked Sir Robert Bruce for the glowing terms in which he had spoken of the profession as a whole and of the work of the Association. One who knew editors well said it was the path of wisdom to say as little as one could that might excite them, and as much as one could that might conciliate them. Those words were wasted in the present instance. In Sir Robert Bruce they had a genial critic of the Association, a man evidently familiar with its history and ready to pay a tribute to its work. One reproach which had been hurled by some people against the Association was that it was the strongest trade union in the world. What he would rather say was that it was the greatest voluntary association of men and women in the world. Nearly 25,000 men and women had banded themselves together of their own free will for the promotion of medical science and the honour and interest of the profession. He hoped that the day was far distant when a profession of their standing would put itself within the trammels of a trade union system. (Applause.) He added a word of thanks to all the workers in the Divisions and Branches of the Association. The strength of the Association was in its Secretaries of Divisions and Branches, the Chairmen of its Committees, and the members of its permanent staff. The last named, with their loyal adherence to the Association's guiding principles, kept on the right track those of them who came as amateurs to occupy for a time high places in the ranks. He was afraid that medical men were rather inclined to look on the dark side with regard to the things which might happen. He would bid them keep their faces always to the sunshine and let the shadows fall behind them. (Applause.)

At 10.30 p.m. the company adjourned to the reception and dance in the ballroom suite of St. Andrew's Halls by invitation of the Local Committee.

HONORARY DEGREES AT GLASGOW.

A special graduation ceremony took place in the Bute Hall of the University of Glasgow on Thursday, July 27th, when the honorary degree of Doctor of Laws was conferred upon Dr. R. A. Bolam, Professor David Drummond, Sir Archibald Garrod, Sir Humphry Rolleston, and Sir Dawson Williams. There was a large attendance.

The Vice-Chancellor (Sir Donald MacAlister) presided; he was accompanied by Professor Sir William Macewen, President of the British Medical Association, and by many members of the Senate of the University. The recipients of the honour were presented to the Vice-Chancellor by Professor Glaister, Dean of the Faculty of Law, who said:

Mr. Vice-Chancellor: In the name and by authority of the Senate, as Dean of the Faculty of Law, I present to you the following distinguished persons who, on this special occasion, have been deemed worthy to be promoted to the honorary degree of Doctor of Laws of this University:

Robert Alfred Bolam.

Dr. Bolam is a Member of the Order of the British Empire, a Doctor of Medicine of the University of Durham, and a Fellow of the Royal College of Physicians of London. He has had a distinguished career in Newcastle-upon-Tyne and the North of England, having in his time filled the important positions of Lecturer in Pathology and Physiology in the College of Medicine of the University of Durham, and in which he is now the Lecturer in Dermatology. He has also been Honorary Assistant Physician and Pathologist to the Royal Victoria Infirmary, Newcastle, of which he is now Physician to the Skin Department. He is a Member of the Consultative Council of the Ministry of Health and of the Voluntary Hospitals Commission, and is the Representative of the Medical Graduates on the Senate of his University. In connexion with the British Medical Association, whose ninetieth Annual Meeting is being held this year in this city after an absence of thirty-four years, he has shown much activity, and he holds at present the responsible and honourable position of Chairman of its Council. As an evidence of the confidence reposed in his wide knowledge and wise judgement in medical affairs, he has been chosen by his brethren in the profession to be one of the Direct Representatives for England on the General Medical Council.

David Drummond.

Professor Drummond is a Commander of the Order of the British Empire, a Master of Arts, and a Doctor of Medicine of Trinity College, Dublin, and received the degree *honoris causa* of Doctor of Civil Law of the University of Durham. On the occasion of the meeting of the British Medical Association in Newcastle he occupied the proud position of President—a position which he has held with great distinction, and which he has just vacated in favour of one of our most distinguished colleagues in this University. Professor Drummond is Pro-Vice-Chancellor of Durham University, President of its College of Medicine, and Professor of Medicine in that college, besides being Consulting Physician to the Royal Victoria Infirmary and other medical institutions in Newcastle-upon-Tyne. His writings have been mainly in the field of medicine. He is the author of *Diseases of the Brain*

and Spinal Cord, of *Peripheral Paralysis*, and of numerous contributions to the medical journals. His address as President of the Association will long be remembered by those who heard it, and by the many more who read it, as containing much of the ripe judgement and sapient observation of a learned physician culled from a rich experience.

Sir Archibald Edward Garrod.

Sir Archibald Garrod is a Knight Commander of the Most Distinguished Order of St. Michael and St. George by conferment of His Most Gracious Majesty the King. A Master of Arts and Doctor of Medicine of the University of Oxford and a Fellow of the Royal College of Physicians of London, he is the Regius Professor of Medicine in his own University and a Fellow of the Royal Society of London. Prior to his appointment as Professor in Oxford he was for many years physician to St. Bartholomew's Hospital, London, and was appointed director of the medical unit in that institution. From 1915 till 1919, during the great war, he acted in Malta as Consulting Physician to His Majesty's Forces, in which he was accorded the rank of Colonel in the Army Medical Service, and for which the University of Malta anticipated us in giving him a degree *honoris causâ*. His learned contributions to medicine have not been few. From an early period in his career his attention has been especially directed to the chemistry of the human body and its derangements, as shown in his treatise on *Inborn Errors of Metabolism, Rheumatism and Rheumatoid Arthritis*, and in his contributions to the second edition of that great *System of Medicine* by Allbutt and Rolleston. He was Croonian Lecturer to the Royal College of Physicians in 1908 and Lettsomian Lecturer to the Medical Society of London in 1912. The name of Garrod has long been familiar to generations of medical students and practitioners not only because of the once famous *Materia Medica and Therapeutics* by his distinguished father in the sixties and seventies of last century, the chosen textbook then in the chief schools of medicine in this country, but largely because of the original work of his father, who was the first to demonstrate the presence of uric acid in the blood of gouty persons. The distinguished son of a distinguished father, Sir Archibald continues to maintain the family name because of his own eminent career.

Sir Humphry Davy Rolleston.

Sir Humphry Rolleston received the honour from the King of being created a Knight Commander of the Most Honourable Order of the Bath. He was a distinguished student of the University of Cambridge, of which he is a Master of Arts, a Doctor of Medicine, and a Fellow of St. John's College. He is also a Fellow of the Royal College of Physicians of London, of which he holds at present the dignified office of President. He has been long associated with the subject of Medicine, having been physician, now emeritus, of St. George's Hospital for several years, and also of the Victoria Hospital for Children. He was Goulstonian Lecturer in 1895 and Lumleian Lecturer in 1919. From 1914 till 1919, during the great war, he was Consulting Physician to the Royal Navy, in which he held the temporary rank of Rear-Admiral, and for which he laid all other duties aside. His has been a busy pen. His works on *Diseases of the Liver*, clinical lectures, and *Splenic Anæmia*, form but a portion of its output. As joint editor with Sir Clifford Allbutt of the second edition of that *magnum opus*, the *System of Medicine* in eleven volumes, his name, with that of his illustrious colleague, will pass down to coming generations of doctors wherever the English language penetrates, among the outstanding Masters of Medicine. He is in the line of a distinguished ancestry, for he is the son of the late eminent professor of anatomy and physiology in Oxford, the grandson of Dr. John Davy, a distinguished physician and chemist in his time, and grand-nephew of the famous Sir Humphry Davy, the discoverer of the effects of nitrous oxide gas, the man who gave its name to chlorine gas, and the inventor of the safety lamp in coalmines.

Sir Dawson Williams.

Sir Dawson Williams has been honoured by His Majesty in being made a Knight, and a Commander of the Order of the British Empire, for his eminent services in medical journalism. He was a distinguished student in his time. When he received the degree of Doctor of Medicine of the University of London it was recorded of his work in the examination that it was worthy of a Gold Medal. He is a Fellow of the Royal College of Physicians of London, besides being Doctor of Science and Doctor of Letters *honoris causâ* of other English universities. He is, perhaps, best known in the medical world as the brilliant editor of the British Medical Journal and as the worthy successor of preceding able editors, of whom the name of Ernest Hart should not be forgotten. Associated with the literary work of the Journal for thirty years, of which for twenty-five years he has been editor, he has had little time for didactic writing, although his book on the *Medical Diseases of Infancy and Childhood*, his report made for the Clinical Society in 1892 on the periods of incubation and contagiousness of certain infectious diseases, as well as articles in various professional journals may be perused by the practitioner with interest and profit. Sir Dawson Williams has proved himself the able editor of the Journal of a vast medical organization, and produces weekly a journal of light and leading in medical affairs which has few equals and is excelled by none in the medical journalism of the world.

Each of the recipients was heartily acclaimed as he stepped on the dais, was capped, invested with the hood, and handed the scrip.

At the conclusion of the ceremony the Vice-Chancellor said:

In the name of the University I am privileged to welcome into the Fellowship of its graduates the five distinguished persons whom, by the authority of the Chancellor, I have to-day created Doctors of Laws. At any time their personal and professional merits would have abundantly qualified them for academic honour, but the Senate, in offering them its laurel at this particular time, desires to mark its sense also of their representative character as standing for the whole of the membership of the British Medical Association now assembled within these walls. It seeks to do honour through them to that great incorporation and to the profession of medicine, for whose furtherance the Association exists. I count myself happy that the privilege of expressing the University's welcome to them and to you has fallen to me, not only as Vice-Chancellor and President of the Senate, but as the executive head of a great and growing school of medicine, as President of the Council which by statute is charged with the supervision of medical education and discipline in the United Kingdom, and as myself a registered medical practitioner, and, therefore, to-day a medical colleague among medical colleagues, and, may I add, a professional brother among professional brethren. (Applause.)

The proceedings terminated with the Benediction and the singing of the first verse of the National Anthem.

THE REPRESENTATIVES' DINNER.

A dinner for members of the Representative Body was held at the Grand Hotel on Friday, July 21st, Dr. R. Wallace Henry (Chairman of the Representative Body) presiding. There were some 150 Representatives present.

The loyal toast having been enthusiastically honoured, the Chairman proposed that of the President-elect, who, he said, had been no mere figure-head, but had taken a most active part in making the necessary arrangements for the present meeting, and had done everything in his power to make it a success.

Sir William Macewen, in the course of an entertaining reply, referred to the Representative Meeting as the Medical Parliament, and emphasized the need for a strong and united profession which could make its influence felt. Brain workers did not command the influence wielded by manual workers because they were unwilling to enforce their demands by withholding their services, but the opinions of a united medical profession could not be disregarded. The most direct means of influencing the Government might be by direct representation in Parliament, but a strong Association could influence a very much greater number of members. He dealt also with the effect of a strict regard for professional secrecy in securing the confidence of the public, and insisted that patients in hospital wards had the same right to be protected as private patients.

Dr. R. A. Bolam, in proposing the toast of "The Chairman of the Representative Body," said the past history of the Association was one of steady and continual progress; it was stronger now in numbers than it ever had been, except during the two years of the insurance fight. On the scientific side, the Journal was to-day one of the three or four leading medical journals in the world, while, as to the medico-political side, the Association was frequently referred to, though with a want of appreciation of all that such a term connotes, as the strongest trade union in the country. It should be the pride and pleasure of everyone to see that the same standard was maintained in the future. The success which had attended the Representative Meetings during their twenty years of life had largely been due to their excellent chairmen, from Sir Victor Horsley onwards, and Dr. Wallace

Henry had already shown that he was admirably fitted for the office he held. (Cheers.)

Dr. Wallace Henry said that as a child he had often wondered why Daniel in the well-known picture of Daniel in the lions' den wore so cheerful an expression. It was, he now realized, because Daniel knew that when the feast was over he would not be called upon to speak. (Loud laughter.) He hoped when the Representatives returned to their Divisions they would take every opportunity of speaking about the work of the Association and help to dispel the apathy and ignorance which were too often met with. The reports of the Council and its Committees gave some idea of the work that was being done for every section of the community throughout the country, and he suggested the Divisions should hold summer meetings at which that work should be explained.

Dr. J. A. Macdonald proposed the toast of "The Local General Secretary," and said that if the result of Dr. Allan's labours that day were taken as a guide to what would follow during the week, he was certain the Glasgow Meeting would be one of the most successful ever known in the history of the Association.

Dr. George Allan having briefly responded, Dr. Brackenbury proposed the health of the Officers and Secretaries of the Association. The more one knew of the affairs of the Association the more astounding did its work appear and the more one appreciated the work the secretaries of the Association were doing day by day for the profession generally.

Dr. Alfred Cox said that it gave him very great pleasure to respond to the toast on behalf of himself and his colleagues. He was glad they had managed to keep up the delusion that they worked hard. (Laughter.) The staff at headquarters were a very happy family, and he knew of no body of men who worked together more heartily and with a more single aim. When he heard people speak apologetically of the Association it made his blood boil: when he heard anyone say they did not think much of the Association he always replied that the compliment was reciprocated. He should like to allude to the work done by the Scottish Secretary, Dr. Drever, whose duties were much more arduous than those of his English colleague, in that he had to deal with a race of men whose altruistic sense was very highly developed; it was with the greatest difficulty that Scotsmen could be got to accept the fees which Englishmen asked for. (Laughter.) He also referred to the work done amid circumstances of the greatest difficulty by the Irish Secretary, Dr. Hennessy, and to the good work done by the Association's Intelligence Officer, Miss Lawrence. (Cheers.) In conclusion, he said he could not help thinking of the pride with which Sir Charles Hastings, their founder, would regard the Association which had sprung from such small beginnings, and which was so loyally and successfully carrying on the work for which it had been created, though necessarily under very different conditions from those contemplated by its founder.

EXHIBITIONS AT KELVIN HALL.

The Annual Exhibition of foods, drugs, and surgical instruments and the exhibition of the Public Health Department of the City of Glasgow, both of which were housed in Kelvin Hall, close to the University, were opened on Tuesday morning, July 25th. The Representative Meeting put back its hour of meeting in order to enable the Representatives to attend, which they did in large numbers. Sir William Macewen, the President, was supported by Sir Clifford Allbutt, ex-President, Dr. R. A. Bolam, Dr. Wallace Henry, and Bailie Allan, convenor of the Public Health Department of the Corporation of Glasgow

The President, in formally declaring open the exhibition of foods, drugs, and surgical instruments, said that it seemed to be quite a splendid exhibition, and he hoped that everyone would avail himself of the many very interesting exhibits and illustrations which had been gathered together.

Bailie Allan extended a very hearty welcome to those present. He regretted the absence of the Lord Provost and the senior magistrate. When the Corporation first heard that the Association was coming to the city they had been very anxious to do something to mark that interesting occasion. The President had suggested that the Corporation should show the members of the Association in an exhibition some of the activities of the Public Health Department. The suggestion was taken up most heartily by the various people concerned—he mentioned especially the help given by the Corporation bacteriologist, Dr. Buchanan. Included in the exhibition were illustrations of child welfare centres and tuberculosis dispensaries, and, closely allied with these, exhibits representing sewage disposal, housing reform, the provision of parks and playgrounds, and other amenities of a city with a population of a million. He drew particular attention to an exhibit illustrating a slum tenement side by side with an up-to-date crèche. From his experience in the health department he knew that no work yielded higher dividends than work amongst the children.

Dr. A. K. Chalmers, M.O.H. for the City, drew attention to some illustrations of the effect of environment on the individual. These included a plaster cast of three Glasgow school children belonging to families living in one, in two, and in three rooms, and showing the differences in their stature according to the housing conditions under which they lived.

Sir Clifford Allbutt proposed a hearty vote of thanks to Bailie Allan and the Corporation for the welcome they had extended to the Association. He also praised the achievements of the Corporation of Glasgow, and of public health services in general. He had been astonished lately to learn of the diminution in mortality from tuberculosis. The last few years had made a surprising difference in the outlook upon some common diseases. As to the trade exhibition, always a great feature of the Association's meeting, he remarked upon the exquisite adaptation of some of the instruments shown, and the ingenuity and variety of the other exhibits.

Dr. Wallace Henry seconded the vote of thanks. This was supported by Dr. Bolam, who said that the exhibition compared favourably with any other he had seen, and by the President, who referred to the great strides which Glasgow had made in health reform of recent years, particularly as exhibited in the diminution of the incidence of rickets.

An account of the Public Health Exhibition appears below, and the Annual Exhibition will be described in subsequent issues.

THE PUBLIC HEALTH EXHIBITION OF THE GLASGOW CORPORATION.

At a time when every effort is being made to bring more closely together the curative and preventive branches of medical science there was a particular appropriateness in the suggestion of the President of the Association that the customary Annual Exhibition of surgical instruments, drugs, etc., should be supplemented by one illustrating the various activities of the City of Glasgow so far as the public health is concerned. The proposal was taken up with enthusiasm by the heads of the Corporation departments, who by means of models, plans, diagrams, and actual exhibits indicated in the exhibition the manner in which Glasgow is supplied with water, is drained, lighted, and warmed, how the inhabitants are housed, how public cleansing is carried out, and public baths and wash-houses are provided. An attractive exhibit by the Parks Committee indicated the extent to which the municipality caters for the recreations of the citizens, and the Committee was courageous enough to display specimens of shrubs showing the effects of a smoky atmosphere as compared with corresponding plants grown outside the city. Instructive exhibits relating to the libraries, from which nearly three and a half million volumes are issued annually, and to the art galleries and museums demonstrated the excellence of these institutions. In the section devoted to markets photographs of the public slaughter-houses and tripery were shown and in that concerning weights and measures was a very informing historical display. The Tramways Committee gave a very useful series of photographs, which have been sent to all the Glasgow schools, intended to show children how accidents happen and how they may be avoided. The evolution of the motor fire engine from the hand fire engine with its water butt was extremely interesting and in the same section were shown automatic fire alarm installations.

The Public Health Section was organized by Dr. R. M. Buchanan, the city bacteriologist, who is to be congratulated on the success of his efforts. Dr. A. S. M. Macgregor, the city tuberculosis officer, had arranged a series of x-ray films showing tuberculous and other lesions of the lungs. They numbered about a hundred, and were lighted from behind with opal glass to diffuse the light and to bring out the finer details. Merely as photographs they met with unqualified praise from those who understand the art of photography. On another stand were models and plans of the Knightswood Fever Hospital and of the proposed hospital at Southfield, Mearns, about ten miles from Glasgow, which is to accommodate 164 children suffering from surgical tuberculosis and 136 men

with pulmonary tuberculosis. The buildings, of the pavilion type, include 24-bed dormitories with 80 sq. ft. and 800 cub. ft. per bed and a few single-bed wards. There is an operating theatre, leading out of which is an anaesthetic room and a receiving room, a plaster room, and an *x*-ray room, attached to which is a developing room. The nurses' home will be a detached three-story building, and the matron and medical superintendent will have detached residences. Detached cottages are provided for the gardeners, engineers, joiners, electricians, and other tradesmen employed in the institution. The extensions to the Knightswood Fever Hospital are provided by army huts which have been divided into wards for acute cases with 144 sq. ft. and 1600 cub. ft. per bed, and for convalescent cases with 80 sq. ft. and 800 cub. ft. per bed. There is also an isolation pavilion with fourteen rooms, each containing one bed.

In the exhibit of food supplies was a milking machine and a counter milk can, fitted with a plunger, which works when the lid of the can is opened, to ensure adequate distribution of fat before each sale. There was a specimen of homogenized milk produced under a pressure of one and a half tons to the square inch, whereby the fatty globules are ruptured and emulsification is effected. The twenty-five specimens of food fishes in glass jars served to remind us how large a part fish take in our food supplies.

On another stand were statistical charts, models of common lodging-houses, samples of rag flock and rag flock substitutes, apparatus relating to smoke prevention, including the model of a mechanical stoker, and exhibits showing the evolution from the combined iron and stoneware valve closet to the present day pedestal stoneware water-closet all in one piece.

The most remarkable exhibit in the public health section, if not in the whole exhibition, was the model in plaster of three boys showing the average types of those living respectively in houses of one, two, and three apartments. The artist was provided not only with the average weights and measurements of these boys, but they were classified by the school teachers in accordance with their general intelligence. As a result he very cleverly depicted the small-limbed, narrow-chested, somewhat gaunt-looking boy of the one room and the taller, more muscular, better-fed boy of three rooms, and showed in the attitude and countenance of the former their apathy, weariness, and unconcern, in striking contrast with the alertness of posture and intelligent air of the latter.

The importance of the work of the bacteriologist was well exemplified by specimens illustrating, among other matters, the development of the house-fly, the carriage of infection by insects, and diseases communicable from animals to man. The section of the chemical laboratories was concerned with food supplies, air purification, and biological filters as applied to sewage. The methods of sewage disposal as carried out in Glasgow were illustrated in a separate section, where was an apparatus exhibiting activated sludge and demonstrating its character. A small exhibit concerned with veterinary inspection emphasized the importance of this department in the public health service.

The chief interest in the Child Welfare Section was the furniture for children and the toys made in the Erskine workshops, described elsewhere in this issue. All the furniture for children in the recently established Child Welfare Country Home at Mount Blow was made in these workshops, and the examples shown of low tables, small chairs, kicking pens, lockers, baskets, and stretchers for use in the rest hour are evidence of good tuition and careful execution. The Mount Blow Home is one of three similar institutions supported by the Glasgow Corporation to which are sent children from 1 to 5 years of age, who attend the welfare centres and who are considered likely to benefit by a stay of five or six or more months.

The electricity department of the Glasgow Corporation has long been recognized as one of the most enterprising and successful in the country, so that the section for which it is responsible was popular. The requirements of hospitals were well catered for; there was not only the familiar vacuum cleaner but a floor scrubber and polishing machine which travelled by itself and only required a guiding hand. The electric kettle and teapot were shown, and also two or three methods of obtaining a central hot-water supply which can be fitted to an existing hot-water cylinder or over a lavatory basin or bath. An electrically heated towel rail taking about one half unit an hour might well be adapted to the heating of a bed-pan rack. A feature of some electric sterilizers shown was a three-heat switch which enabled the amount of heat in the sterilizer to be regulated. A useful electric night light shown used only one unit during 200 hours. Daylight lamps of a new type, and adapted for operating theatres, were shown, as were also the most modern forms of electric fires.

An account of the exhibition would be incomplete without a reference to the military exhibit, for which Lieut.-Colonel R. G. H. Tate, A.D.P. and H., Scottish Command, is responsible. With the assistance of actual exhibits, well-executed models, and photographs, a very clear idea could be obtained of modern methods of water purification as carried out in the army, when contrasted with former systems. A full-sized modern water-cart was shown, together with Horrocks's clarifier, and, for comparison, photographs of the old type of water-cart, with its filter candles, cylinders, and wrappers. Improvised water-carts and a chlorine lorry were illustrated. A water-distilling apparatus made from biscuit tins or oil drums as suggested by Captain F. Rose, R.A.M.C. (T.), D.Sc., was shown in model, together with a diagram and description, with a photograph of the French ultra-violet ray sterilization plant. Of historical interest was the collection of water-bottles used in the army, beginning with the barrel-shaped vessel known to have been in use in 1794, and including the Turkish canvas bandolier bottle.

THE PRESENTATION OF THE STEWART PRIZE TO DR. J. C. McVAIL.

In the report of the brief remarks of the President in presenting the Stewart Prize to Dr. J. C. McVail at the Annual Meeting on July 25th there is an error, owing to the omission of a line. Sir William Macewen said that he had had the pleasure of long acquaintance with the two distinguished brothers, Dr. David and Dr. J. C. McVail, and that he was glad to be the means of presenting the distinction awarded by the Association to one of them.

ANNUAL EXHIBITION SMOKING CONCERT.

The usual annual exhibitors' smoking concert was held on Thursday, July 27th, at the Grand Hotel. An excellent programme was provided and there was a large attendance. The chairman, Mr. Lionel Cooper, expressed the pleasure the exhibitors had in welcoming among their guests Dr. Wallace Henry, Chairman of Representative Meetings, Dr. Alfred Cox, Medical Secretary of the British Medical Association, and Mr. Nethersole, President of the Pharmaceutical Society. Dr. Wallace Henry said that he had visited the display of goods and the exhibitors had every reason to be proud of it. It was to his mind one of the best exhibitions he had seen during the annual meetings of the Association. He hoped every member of the Association would follow his example and visit the show. The exhibitions were of great value to medical practitioners, who had thus an opportunity of seeing the latest improvements and new books. He was very glad to hear on all sides that the exhibition had been a great success, which he hoped to some extent was the result of his being able to bring down his family of Representatives on the opening day; this, he thought, was setting a good example for other members to follow. Dr. Cox also expressed the hope that all members of the Association would take an opportunity of visiting the exhibition, which he considered was an education for medical practitioners. As a regular visitor to the Annual Exhibition for the past twenty years, he thought it would be a calamity if that exhibition did not continue to be a success. Mr. Nethersole thanked the assembly for the welcome extended to him.

Meetings of Branches and Divisions.

Suffolk Branch: West Suffolk Division.

A meeting of the West Suffolk Division was held at the West Suffolk General Hospital, Bury St. Edmunds, on Tuesday, July 18th, 1922, with Dr. H. H. Stiff in the chair. Dr. Leeming read a letter which he had sent to the Secretary with regard to the action of the county medical officer of health in recommending for attendance at the orthopaedic clinic a baby with hare-lip, which had been already operated upon privately. This was done without reference to the parents' own doctor. In conjunction with this letter, certain paragraphs of the annual report of the county medical officer were considered, and a discussion took place as to what steps could be taken to prevent the continued increase of treatment by the county medical officer without reference to the family doctor. It was finally decided that at present nothing can be done, but that the Division should collect specific cases with a view to making a definite complaint to the county council at a later date.

The Supplementary Report of Council (Supplement, June 24th) was considered, and the various recommendations contained were approved.

Association Notices.

FURTHER EXTRAORDINARY GENERAL MEETING.

Members are reminded that a further Extraordinary General Meeting of the British Medical Association will be held at the Head Office of the Association, 429, Strand, London, W.C.2, on Tuesday, the 8th day of August, 1922, at 2.30 o'clock in the afternoon, for the purpose of considering, and if thought fit confirming, as Special Resolutions the Resolutions which were passed by the requisite majority at the Extraordinary General Meeting of the Association held at the Bute Hall, the University, Glasgow, on Friday, July 21st, 1922, Notice of which Meeting was given in the successive *Supplements* to the *British Medical Journal* dated July 8th and 15th, 1922.

It is necessary that a quorum should be obtained at this Meeting in conformity with By-law 29, otherwise the Meeting will have to be adjourned in pursuance of the provisions of By-laws 29 and 30.

By order of the Council.

ALFRED COX,
Medical Secretary.

L. FERRIS-SCOTT,
Financial Secretary and Business Manager.

August 5th, 1922.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

The Reading Room, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

Lending Library: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

Subscriptions and Advertisements (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
Medical Secretary (Telegrams: Medisecra, Westrand, London).
Editor, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (3 lines).

Scottish Medical Secretary: 5, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
Irish Medical Secretary: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following announcements are notified by the Admiralty:—Surgeon Commanders A. F. Fleming, D.S.O., to the *Dartmouth* on commissioning; R. H. Hole, M.B., to the *Fisgard* for R.N. Hospital, Plymouth; F. M. Langdale to the *Pandora*; R. Willan to the *Ark Royal* on recommissioning; A. K. Smith-Shand, M.B., to the *Columbine*; J. S. Dudding to the *Hood*, F. G. Hitch to the *Valiant*, R. F. Clark, D.P.H., to the *Virid* additional for R.N.B.; W. N. Blatchford to the *Cambrian* on recommissioning, A. H. Joy, M.B., to the *Caupso* on recommissioning, F. H. Nimmo, M.V.O., to the *Victory* for R.N.B., R. Kennedy to the *Granges*, additional for R.N. Sick Quarters, Shoeby; D. S. Wentworth to the *Blenheim*, C. G. Sprague to the *Courageous*, A. C. W. Newport, C.V.O. to the *President*, additional for Cambridge University Naval School. Surgeon Lieutenant Commanders J. G. Dawson to the *Egmont* additional for R.N. Hospital, Malta; J. A. O'Flynn, M.B., to the *Pembroke*, G. W. W. [illegible] to the *Broke*, W. G. Thwaytes, M.D., to the *Marlborough*, A. J. [illegible] to the *Weald*, additional for R.N. Hospital, Plymouth; D. H. [illegible] to the *Hood*, H. L. P. Peregrine to the *Petersfield* on [illegible]. A. Simpson to the *Pembroke*, additional for R.N. Division, Chatham. Surgeon Lieutenants J. E. Clark to the *Keppel*, G. Kirker, M.B., to the *Warspite*, J. T. Wood to the *Repulse* temporarily, P. C. H. Horner to the *Victory* for R.N. Hospital, Haslar.

Surgeon Commander L. C. Rowen Robinson has at his own request been placed on the retired list.

C. C. Elliott, D.Sc., has been granted a commission as Surgeon Lieutenant.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Lieutenant Commander T. Turner, M.B., to the *Warspite* for training; Surgeon Lieutenant S. W. Davidson to the *Malaya* for training.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel St. J. B. Killery retires on retired pay.

The following Majors (temporary Lieutenant-Colonels) retain their temporary rank whilst temporarily employed: J. Mackenzie, T. H. Gibbon, O.B.E.

Major J. W. Houston, D.S.O., relinquishes the temporary rank of Lieutenant-Colonel on ceasing to be specially employed.

Major and Brevet Lieut.-Colonel Cuthbert G. Browne, C.M.G., D.S.O., is placed temporarily on the half-pay list on account of ill health.

[illegible] temporary rank of Lieutenant-Colonel on ceasing to be specially employed

[illegible] ry Lieutenant-Colonel whilst

[illegible] restored to the

VACANCIES.

Belgrave Hospital for Children, Clapham Road, S.W.—House-Surgeon (woman). Salary at the rate of £160 per annum.

Birmingham Maternity Hospital.—Junior House-Surgeon. Salary, £75.

Brighton: Royal Sussex County Hospital.—House-Physician (male). Remuneration, £175 per annum.

Bristol Royal Infirmary.—Non-Resident Dental House-Surgeon. Salary, £155 per annum.

Chester Royal Infirmary.—Assistant House-Surgeon. Salary, £150 per annum.

Chirbury and Braemar Parish.—Medical Officer and Public Vaccinator.

Dudley: Guest Hospital.—Honorary Surgeon.

Durham County and Sunderland Eye Infirmary.—Surgeon as Locum for one month.

Edinburgh: The Hospice Maternity Hospital.—House-Surgeon. Remuneration at the rate of £50 per annum.

Glamorgan County Council.—(1) Medical Inspector of Children in Schools. (2) Dental Surgeon. Salary, £630 and £500 per annum, rising to £830 and £700 respectively.

Gloucestershire Royal Infirmary and Eye Institution.—Assistant House-Surgeon (male). Salary, £150 per annum.

Holloway Sanatorium, Virginia Water.—Junior Assistant Medical Officer (male). Salary, £409 per annum.

Huddersfield County Borough.—Assistant Medical Officer of Health. Salary at the rate of £500 per annum.

Huddersfield Royal Infirmary.—Senior House-Surgeon (male). Salary, £250.

Hull Royal Infirmary.—Assistant House-Surgeon (male). Salary, £150 per annum.

Infants Hospital, Vincent Square, S.W.—(1) Assistant Physician. (2) Radiographer. (3) Anaesthetist.

Leeds Township Infirmary.—Assistant Medical Officer. Salary, £380 per annum.

Leeds University.—Lecturer in Bacteriology. Salary, £500. Demonstrator in Department of Pathology and Bacteriology. Salary, £250.

Leicester City Mental Hospital, Humberstone.—Assistant Medical Officer. Salary, £600 per annum, with additional £50 if candidates hold a psychological medicine qualification.

Liverpool: Royal Southern Hospital.—(1) Pathologist Medical Registrar and Tutor. (2) Resident Casualty Officer, salary £150 per annum. (3) Two House-Physicians and three House-Surgeons, salary £100 per annum.

Miller General Hospital for South-East London, Greenwich Road, S.E.—(1) Senior Resident Medical Officer (unmarried); salary, £350 per annum. (2) House-Physician and House-Surgeon; salary, £150 per annum each.

Northumberland Mental Hospital, Morpeth.—Assistant Medical Officer (male, single). Salary £400.

Norwich: Jenny Lind Hospital for Children.—Junior Resident Medical Officer (lady). Salary, £110.

Peterborough Infirmary.—House-Surgeon (male). Remuneration at the rate of £200 per annum.

Rochford Union.—District Medical Officer and Public Vaccinator of the Prittlewell West District. Salary, £105 15s. 4d. and fees.

Royal Free Hospital.—Medical Officer in charge of Electro-Therapeutic and Massage Department. Honorarium, £50 per annum.

Seamen's Hospital Society, Greenwich, S.E.—House-Physician at the "Dreadnought" Hospital. Salary £150 per annum.

South-Eastern Hospital for Children, Sydenham.—Resident Medical Officer. Honorarium, £100 per annum.

Warbington Infirmary and Dispensary.—Junior House-Surgeon. Salary at the rate of £200 per annum.

West Bromwich and District Hospital.—Resident Assistant House-Surgeon (male). Salary, £180 per annum.

West End Hospital for Nervous Diseases, Welbeck Street, W.—Honorary Medical Officer for Electrical Department.

Certifying Factory Surgeons.—The following vacant appointments are announced: Blandford (Dorset), Ribchester (Lancaster).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

Hewer, C. Langton, M.B., B.S.Lond., Anaesthetist to the Seamen's Hospital, Royal Albert Dock.

Lethem, W. A., M.C., M.D.Edin., D.P.H., Assistant M.O.H. and Port Sanitary Officer to the City of Liverpool.

Levi, J. J., L.R.C.P.I. and L.M., L.R.C.S.I. and L.M., House-Surgeon and House-Physician, General Infirmary, Salisbury.

Statham, R. S. S., O.B.E., M.D., Ch.M., Obstetrician to the Bristol Royal Infirmary, vice Dr. W. C. Swayne, resigned.

Stewart, J. Barbour, M.B., Surgeon to the Glasgow Eye Infirmary.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9*s.*, *which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTH.

McRobert.—At 1, Carden Terrace, Aberdeen, on June 30th, the wife of Captain George R. McRobert, I.M.S., Jhelum, Punjab, of a son.

DEATHS.

Harries.—On July 27th, after a brief illness, Arthur John Harries, M.D., of 50, St. James's Square, Pall Mall, S.W., aged 65.

Malins.—On July 25th, at his residence, 52, Newhall Street, Birmingham, Sir Edward Malins, M.D., F.R.C.P., in his 81st year.

Ransome.—At Sunnyburst, 43, Portchester Road, Bournemouth (late of Bowdon, Cheshire, and Manchester), Arthur Ransome, M.D., M.A. Cantab., F.R.C.P., F.R.S., aged 88. Cremated at Bournemouth Cemetery. (New Zealand papers please copy.)

Published by the Association at their Offices, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 12TH, 1922.

CONTENTS.

	PAGE
BRITISH MEDICAL ASSOCIATION.	
Proceedings of Council	86
CURRENT NOTES:	
SECTION OF MEDICAL SOCIOLOGY	85
THE DANGEROUS DRUGS REGULATIONS	85
THE FUND FOR RUSSIAN DOCTORS	85
FEES FOR EXAMINATION OF EMIGRANTS	86
MEMBERSHIP OF THE ASSOCIATION	86
THE HALF-YEARLY INDEXES	85
CONFERENCE OF HONORARY SECRETARIES OF DIVISIONS AND BRANCHES	87
HONORARY SECRETARIES' DINNER	89
ANNUAL EXHIBITION OF SURGICAL INSTRUMENTS, DRUGS, FOODS, ETC.	89
MEETINGS OF BRANCHES AND DIVISIONS	90
ASSOCIATION NOTICES:	
FURTHER EXTRAORDINARY GENERAL MEETING	91
CORRESPONDENCE:	
THE LONDON PANEL COMMITTEE	91
NAVAL AND MILITARY APPOINTMENTS	91
ASSOCIATION INTELLIGENCE	92
VACANCIES	92
APPOINTMENTS	92
BIRTHS, MARRIAGES, AND DEATHS	92

British Medical Association.

CURRENT NOTES.

Section of Medical Sociology.

THE report of the proceedings of the Section of Medical Sociology is completed this week. It was a one-day section, but it held two sessions, one in the morning and one in the afternoon. The attendance of persons not members of the British Medical Association or of the medical profession was invited, and the popularity of the subject is evidenced by the fact that, as we are informed, 250 were present in the morning and 200 in the afternoon. The general question discussed was how far alcohol as a beverage could be considered to have any influence on the human economy, mental disorders, industrial efficiency, and infant mortality. It was discussed under a number of headings. The opening paper, by Professor Mellanby (published last week), dealt with the action of alcohol on the human economy; the next subdivision of the subject was opened by Sir Frederick Mott, who dealt with alcohol in its relation to the problems of mental disorder, while Dr. John T. MacCurdy of Cornell University dealt with the general etiological factors in the alcohol psychoses. These papers also, together with the discussions on all three, were published last week. This week the papers and discussions on the other divisions of the subject are published; they include a paper on alcohol and industrial efficiency by Professor Collis of Cardiff; on alcohol restriction and mortality by Dr. M. Hindhede of Copenhagen; on alcohol as a beverage in its relation to infantile mortality by Dr. Ballantyne of Edinburgh; and an address by Professor Stockard of Cornell University on alcohol as a selective agent in the improvement of racial stock. It will be seen, therefore, that the subject was presented from many points of view, and the Section concluded by asking the Council of the British Medical Association to assist in the promotion of a further inquiry into the effect of alcohol as a beverage on the individual and the community.

The Dangerous Drugs Regulations.

In the *London Gazette* of August 4th statutory notice was given of draft amendments to the Dangerous Drugs Regulations, 1921. The regulations in question were issued in their present form after protracted negotiations between the British Medical Association, the Pharmaceutical Society, and the Home Office; they were accepted by the Council of the Association as embodying its more important recommendations, subject to the reservation that they were unlikely to have an effect commensurate with the trouble they would cause to doctors, chemists, and patients. The draft amendments provide for preservation of the prescribed records for not less than two years from the date of any prescription or document or last entry in any register, and also for supplementing the prohibition of possession of the drugs by prohibition of the attempt to obtain them. So far the suggested additions are unexceptionable, but the same cannot be said of the proposal to add to the existing provisions for regulating the giving and dispensing of prescriptions the proviso that "the prescription shall not be given for the use of the prescriber himself." In drafting this regulation the Home Office would appear to be following the suggestion made recently by the Liverpool stipendiary magistrate in dismissing a summons against a ship's doctor on the charge of purchasing quantities of morphine and cocaine on a prescription made out to himself. The practitioner in question declared that he had used the drugs to treat himself for a painful complaint, and the magistrate suggested that in future doctors should obtain prescriptions for their own use from a fellow practitioner. The ostensible object of the new regulations is to render such a course compulsory, and thereby minimize one opportunity for abuse existing under the present regulations. It is impossible to believe that the proposed amendment can have any appreciable effect upon the consumption of the drugs. The average practitioner, even where he does not himself dispense, is entitled to possess a supply for emergency purposes, and accordingly the new restriction can affect only the limited section of the profession not actually in practice; where it might become operative, as in the case of a practitioner on holiday in a country district, it might obviously give rise to unnecessary discomfort and annoyance. Where, on the other hand, a registered medical practitioner actually desires to obtain a supply of the drugs for unlawful use, there are other opportunities open to him far more difficult to defeat than that afforded by the possibility of signing a prescription for himself. The regulation, therefore, is futile, and that it is futile is in itself sufficient to render it contrary to public policy, since the multiplication of regulations can be justified only by their practical efficacy. The Council of the Association, as reported on page 87, has already protested against the proposal as "an undesirable limitation of the privileges of a registered medical practitioner without any compensating advantage to the public."

The Fund for Russian Doctors.

The fund which has been instituted by the Council of the British Medical Association for the relief of Russian medical men and their families had on Saturday, August 5th, reached

the sum of £1,551 3s. 4d. The fund is for the purpose of sending food parcels through the American Relief Administration to individual medical men and to groups for distribution among members of the profession who are in greatest need. The American Relief Administration informs us that Mr. Edgar Rickard and Mr. Walter Lyman Brown, two of the directors of the Administration, who have recently returned from a month's visit to Russia, report that the condition of the general population is decidedly on the mend, but that the condition of the professional classes, and particularly of the medical profession, is deplorable, and rapidly becoming worse. As is usual in countries with depreciated currencies, the income of every class of the population is increased before that of the professional classes, and the coming winter holds for the members of the medical profession and their families a most unhappy prospect. It will be practically impossible for those with fixed incomes to buy enough food to keep themselves alive, and in order to live they will be dependent upon outside assistance. Remittances have already been made to the American Relief Administration from the fund, and this money is being used for the purchase of food packages to be distributed among medical men, professors, and their assistants in medical subjects at the universities of Moscow, Kiev, Kharkov, Kazan, Odessa, and Rostov-on-Don, and also to professors and their assistants in the same subjects at the Military Medical Academy at Petrograd. The sum of 5s. has been suggested by the Council as a suitable donation to the fund from members of the British Medical Association, but many members have sent larger sums, which have been gratefully received.

Fees for Examination of Emigrants.

On previous occasions attention has been drawn in Current Notes to the question of the fees which should be charged for the examination of emigrants from this country to the Dominions. On June 10th it was announced that there was to be a conference between representatives of the British Medical Association and the Directors of Migration, and members who had been advised to withdraw from the appointment of medical referee were asked to go on doing the work until the results of the conference should be known. We are glad to report that an agreement has been arrived at between the Association and the Directors of Migration which has now been approved by the Council of the Association and the Representative Body. It is to the effect that the fees chargeable by the medical referees appointed by the Dominions of the Empire to examine proposed migrants shall be 10s. 6d. for each adult of the age of 16 years and over, and 2s. 6d. for each child, but that in no case shall more than two children be charged for. It will be remembered that the fees to which the Association objected were 10s. 6d. for a man, or 15s. for a man and wife, with £1 1s. limit for parents and children. It is hoped that members of the Association will loyally accept the new terms, and do their best to assist the Dominions in obtaining the kind of emigrant most likely to build up a healthy empire.

Membership of the Association.

In its Annual Report, which was published in the Supplement of May 6th, the Council stated that the number of members of the Association on December 31st, 1921, was 23,621. Since then the number of members has increased to 24,012.

The Representatives' Dinner: A Correction.

In the report of the dinner of members of the Representative Body published last week (page 81), the remarks attributed to Dr. R. A. Bolam should have been assigned to Dr. T. W. H. Garstang.

The Half Yearly Indexes.

The usual half-yearly indexes to the Journal and to the Supplement and Epitome have been prepared and printed. They will, however, not be issued with all copies of the Journal, but only to those readers who ask for them. Any member or subscriber who desires to have one or all of the indexes can obtain what he wants, post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Those wishing to receive the indexes regularly as published should intimate this desire.

PROCEEDINGS OF COUNCIL.

Two meetings of the Council were held in the Randolph Hall of the University during the week of the Glasgow Meeting. The first was held on July 24th; it was presided over by Dr. R. A. Bolam, and there were also present:

Dr. R. Wallace Henry (Chairman of Representative Meetings), Professor David Drummond (Past President), Dr. G. E. Haslip (Treasurer), Dr. T. Ridley Bailey, Dr. H. S. Beadles, Dr. J. W. Bone, Dr. H. B. Brackenbury, Dr. H. C. Bristowe, Dr. C. Buttar, Mr. Russell Coombe, Dr. H. G. Dain, Dr. J. Don, Dr. C. E. Douglas, Mr. W. McAdam Eccles, Dr. A. Forbes, Dr. E. R. Fothergill, Dr. T. W. H. Garstang, Dr. T. Duncan Greenlees, Mr. N. Bishop Harman, Mr. F. J. S. Heaney, Dr. A. O. Holbeche, Professor R. J. Johnstone, Dr. R. Langdon-Down, Dr. W. F. Law, Sir Richard Luce, Dr. J. A. Macdonald, Dr. S. Morton Mackenzie, Major-General Sir W. Macpherson, Dr. Hugh Miller, Mr. A. W. Nuthall, Dr. R. C. Peacocke, Dr. F. Radcliffe, Dr. C. E. Robertson, Dr. D. A. Sheahan, Dr. John Stevens, Dr. W. B. Crawford Treasure, Mr. E. B. Turner, Dr. E. O. Turner, Sir Jenner Verrall, and Dr. D. Walshe.

The Medical Secretary read Article 31, the purport of which is that the Council shall examine the minutes of the Representative Meeting with a view to deciding whether there is any matter upon which a referendum of the members shall be taken. The minutes, as far as confirmed, were thereupon examined, and it was agreed, on the motion of the Chairman of Council, that there were no resolutions to call for any such referendum.

The Council Dinner.

The Office Committee brought forward a list of guests whom it was desired to invite to the dinner which the Council had already decided should be held in connexion with its October meeting. The names were approved, and power was given to the Committee to add to or amend the list and attend to the general arrangements. The dinner, which is to be held on October 25th in London, is a Council dinner, but members of the Association are invited to attend.

National Insurance Policy.

Dr. Brackenbury submitted a report of action taken by the Insurance Acts Committee. He said that the Committee had had under its consideration the question of an alternative medical service in the event of insurance practitioners finding themselves unable to renew their contracts after the end of 1923. A memorandum on this subject was being prepared for the next meeting of the Committee, with a view to its issue to Local Medical and Panel Committees, and a discussion upon it at the October Panel Conference. He added that the memorandum would be placed before the Council.

Dr. Dain said that he was not yet in a position to report on the question of co-operation with the Medical Practitioners' Union in regard to the Defence Fund. The first suggestion on the part of the representatives of the union was that the National Insurance Defence Trust should be reorganized as a trade union. To this the representatives of the Insurance Acts Committee who met the representatives of the Union in conference were unable to agree, and their action was endorsed by the main Committee. A further proposal was now under consideration.

Fees for Examination of Migrants.

Mr. E. B. Turner brought forward a recommendation of the Medico-Political Committee on the fee to be paid to medical referees appointed by the Dominions to examine prospective migrants. As the result of a Conference with the Directors of Migration some misunderstandings had been cleared away. The Association's suggested fee of 10s. 6d. for the examination of each adult, without any reduction for a man and wife, was accepted; the charge for each child was to be 2s. 6d., with a proviso that not more than two children in a migrating family should be charged for. It was agreed to recommend the Representative Meeting to accept these figures.

Conference with the Society of Medical Officers of Health.

A report on the conferences between representatives of the Association and of the Society of Medical Officers of Health was received. The chairman of the conferences (Dr. Bolam) said that three meetings had been held, and a good deal of progress had been made towards general agreement. He indicated certain circumstances which made it desirable that the conversations should continue. A scheme of co-operation was put forward, which was accepted by both sides in the conferences, subject to the consent of the parent bodies and to further consideration of details. The scheme involved certain alterations to the constitution both of the Association and of the Society of Medical Officers of Health so as to allow of direct representation of members of the public health services on the local and central executives of the Association, and direct representation of the Association on the local and central executives of the Society. Other parts of the scheme dealt with the methods to be followed by the two bodies in arriving at and furthering a common policy.

The scheme was received by the Council as a narrative of what had taken place at the conferences, but a decision as to approval was deferred. It was agreed that the reference to the present representatives of the Association in these conferences should be extended to include discussion with the Society on the new schedule of salaries of medical officers in the public health services.

Prizes, Scholarships, Grants, and Lectures.

A report of the Organization Committee was approved outlining a scheme of prizes for medical students in conformity with the decision of the Council that the Association should spend annually, through the deans, a sum not exceeding £150 in prizes for competition by last-year students of the medical schools for essays on clinical and pathological subjects. It was proposed to give a prize of £10 in each of thirteen groups of medical schools (six in London, three elsewhere in England and Wales, three in Scotland, and one in Ireland).

The Science Committee brought forward certain recommendations relating to the appointment or reappointment of four research scholars, the renewal of three grants for research, and the making of six new grants. These were agreed to. Another item in the report of this committee was a list of the British Medical Association lectures—fifteen in number—which had been given in the Branches and Divisions since December, 1921.

Overseas Medical Services.

The Dominions Committee reported on certain matters affecting the colonial medical services, principally the remuneration and conditions of service in East Africa, Jamaica, and Egypt.

FIRST MEETING OF NEW COUNCIL.

The first meeting of the new Council took place on July 26th. Dr. Bolam again presided.

Those present were the same as on the previous occasion, save that Professor Drummond, Mr. Russell Coombe, Dr. Holbeche, Dr. Radcliffe, and Dr. Robertson were absent, and the following newly-elected members were present: Dr. Noel Clarke, Dr. C. E. S. Flemming, Dr. E. K. Le Fleming, Dr. E. Lewys-Lloyd, Dr. Arnold Lyndon, Dr. A. Manknell, and Mr. H. S. Souttar.

The Chairman welcomed the new members, and expressed the regret that through the ordinary process of change, or by reason of the fact that they felt themselves unable to continue the work,

Sir Clifford Allbutt, Mr. Russell Coombe, Dr. A. C. Farquharson, M.P., Dr. A. O. Holbeche, Dr. David Lawson, Dr. P. G. Lee, Dr. C. E. Robertson, Dr. W. Snodgrass, and Dr. F. O. Stedman,

were no longer on the Council. It was agreed to convey the thanks of the Council for the work they had done, and its regret in parting with them.

Instructions were given that the necessary steps be taken to fill four vacancies among members of Council elected by grouped members or by Branches, and to fill the vacancy due to Dr. Brackenbury's retirement as one of the twelve members elected by grouped representatives, in virtue of his seat on the Council *ex officio* as Deputy Chairman of the Representative Body.

Procedure and Minutes.

On the motion of Sir Jenner Verrall the Chairman of Council was authorized to arrange the order of the Council agenda as to the reception of reports of committees in accordance with what he considered to be the relative importance of the subjects to be dealt with. The minutes of the last three days of the Representative Meeting were then examined, and it was agreed that no occasion had arisen for the taking of a referendum on any of the resolutions.

Dr. Fothergill moved that the Annual Representative Meeting in 1923, to be held at Portsmouth, begin on July 20th, and that the Annual General Meeting be held on July 24th. This was agreed to, and the dates of Council meetings were fixed as follows: October 25th, December 13th, February 14th, April 18th, and June 13th.

Special Committees.

The Parliamentary Elections Committee, the Committee to consider the expansion of the Army Medical Service in the event of National Emergency, and the Committee to meet representatives of the Society of Medical Officers of Health, were reappointed. The appointment of a Medico-Sociological Committee was postponed for consideration at the October meeting. On the proposal to set up again the Post-graduate Committee Sir Richard Luce and others considered it desirable to have a committee on this subject, but in the result it was agreed to refer the matter to the Science Committee with instructions to form a special subcommittee. Mr. E. B. Turner urged that an *ad hoc* committee be set up to consider the proposed scheme for the modified notification of venereal diseases; with Lord Trevethin's Committee sitting it would be lamentable if a scheme of modified notification were brought forward, and no machinery was available in the Association for considering the matter promptly. An alternative proposal moved by Dr. Macdonald was that the Medico-Political Committee be instructed to appoint a subcommittee for this purpose, with power to co-opt. It was agreed that a special committee, to which the resolution of the Representative Meeting on the subject might be referred, be appointed as follows:

The officers of the Association, with Dr. Dain, Dr. Fothergill, Dr. Garstang, Mr. Bishop Harman, Dr. Langdon-Down, Dr. J. McGregor Robertson, Mr. E. B. Turner, and Sir Jenner Verrall.

The Plea of Insanity in Criminal Trials.

The Council considered the action to be taken in view of the appointment by the Lord Chancellor of a committee to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised. Dr. Fothergill said that the committee consisted entirely of members of the legal profession; he held that the medical profession should have a voice in the matter. Dr. Brackenbury remarked on the absence from the committee of any expert in modern psychology. Dr. Langdon-Down pointed out that the Medico-Psychological Association at its recent meeting in Edinburgh set up a special committee to consider this question with a view to giving evidence on its medical aspects; some action of the kind by the British Medical Association, either alone or jointly with the Medico-Psychological Association, seemed to be called for. In the course of debate Mr. Bishop Harman suggested that the need for medical representation on the committee should be urged upon the Lord Chancellor, but a motion to this effect was not carried. With regard to the offering of evidence, it was agreed after some discussion to send a formal letter to the Lord Chancellor, stating that the Council had observed that the committee was to be set up, and that it presumed that the committee would wish representatives of the British Medical Association to give evidence; also to write to the Medico-Psychological Association, stating that the Council proposed to form a committee to deal with the subject, and inquiring as to the feasibility of a joint committee being set up for co-operation between the two bodies.

Dangerous Drugs: New Home Office Regulation.

Mr. E. B. Turner, Chairman of the Medico-Political Committee, brought forward, as a matter of urgency, a new regulation proposed to be issued by the Home Office, under the Dangerous Drugs Act, to forbid the sale of "dangerous drugs" on a prescription made out by a medical practitioner for his own use. The view of the Home Office was that this provision would cause no inconvenience to a medical practitioner's legitimate use of the drugs in question, as he was able to obtain them, under Regulation 11, so far as was necessary for the practice of his profession, but that it would be a barrier to medical drug addicts who—it was alleged—were in the habit of purchasing considerable quantities of cocaine and morphine by means of prescriptions made out to themselves. Mr. Turner and the Medical Secretary had interviewed Sir Malcolm Delevingne at the Home Office and had pointed out the inconvenience and the futility of the proposed procedure, but the Home Office had replied that its effectiveness or otherwise was a departmental concern. After a statement by Dr. Bone, who has had special experience of the Regulations, and some discussion on the embarrassments which the amended Regulation would entail, the Council resolved:

That the proposed new Regulation of the Home Office, by which medical practitioners will be prevented from prescribing "dangerous" drugs for themselves, is, in the opinion of the Council, an undesirable limitation of the privileges of a registered medical practitioner without any compensating advantage to the public.

CONFERENCE OF HONORARY SECRETARIES OF DIVISIONS AND BRANCHES.

The annual conference of honorary secretaries of Divisions and Branches took place in the Debating Hall of the University Union at Glasgow on July 26th. Dr. L. A. Parry (Brighton) was elected to the chair. Dr. Morton Mackenzie, in the name of the Organization Committee, welcomed the secretaries, and congratulated them on the excellent way in which Division and Branch reports had lately come to hand. It was the desire of his committee that no Division should be starved for funds, providing that it was using them for legitimate purposes.

The first business was a suggestion to alter the date of the conference, making it independent of the Annual Meeting

and holding it, possibly, in the autumn in London. The feeling of those present was decidedly against any such alteration.

Branch and Division Finance.

Dr. T. W. H. Garstang (Chairman of Grants Subcommittee) opened a discussion on the inter-relationship of the Divisions, Branches, and Council on financial matters. He said that there were in the United Kingdom 36 Branches consisting of more than one Division, 7 Branches consisting of one Division, and rather more than 200 Divisions. He had examined with meticulous care the annual reports from Branches and Divisions, and while he admitted that local circumstances might sometimes seriously upset any general rule, he could not help reflecting upon the unpunctuality with which certain annual reports were sent in. Seven of the largest Branches were able to send in their annual reports before March 15th, so that there seemed to be no reason why the smaller Branches should not do the same. With regard to the Divisions, such large Divisions as Marylebone, Kensington, the City of London, Westminster, and Hampstead, sent in their annual reports during January, and the same was true of Liverpool, Birmingham Central, Bristol, Newcastle, and other large provincial Divisions. If the secretary was methodical in his account keeping and in other matters the reports should be in even much earlier than the by-laws allowed.

Dr. Garstang then drew attention to the Circular (D 9) sent out to secretaries with regard to Branch and Division expenditure. Branches and Divisions were not expected to prepare complete balance sheets; the secretaries had only to furnish particulars of their surplus at the beginning of the year, the money received, and the money spent and owing. On the report form there was a space for unpaid accounts. In his view this really meant bills received and not paid; it did not necessarily include expenditures incurred but not invoiced. It was not required to state assets and liabilities. Some Branches and Divisions had fixed dates of their own for their annual meetings, and made up their accounts in correspondence with those dates. Such statements, sometimes very elaborate, were extremely useful to the head office, but they must not be considered as complying with the requirement for a return on the form sent out. On the form there were indications as to how the payments should be differentiated. In connexion with expenditures he indicated directions in which economies might be effected—for example, sharing a place of meeting with the local medical society, if this was possible. There were wide disparities in clerical expenditures, some Divisions, for example, purchasing typewriters, which would be a heavy tax on Association finance if all Divisions followed suit. He thought the Swansea Division report could fairly claim to be the best for 1921. There had been fifteen Divisional meetings during the year and eight Executive Committee meetings; the expenditure had been only 4s. a head for a most exceptional amount of work; no claim had been made for clerical assistance, although a great amount of clerical work must have been done; no accounts were outstanding, and there was a balance in hand. (Applause.)

The Position of Non-members.

In conclusion, Dr. Garstang touched upon the question of Branch and Division meetings and invitations to non-members in the area. When meetings of Divisions or Branches for Association purposes only were being held outsiders ought not to be brought in. An exception to the rule was to be made in the event of any national movement or disturbance, such as the passing of the Insurance Act, when it was necessary to elicit the opinion of the whole profession in the area. Scientific meetings were in a different category, and the introduction of outsiders to a particular session sometimes led to the getting in of new members. Strangers ought not to be brought in to scientific meetings except on the direct personal invitation and responsibility of members, and the secretary should be informed of the intention of a member to bring a visitor.

Discussion.

The address gave rise to some general discussion. Dr. J. Melvin (Rochdale) said that it was impossible to get in the reports by January 1st, and if the date were postponed to the end of January a more satisfactory report would be forthcoming. Dr. D. McKail (Glasgow) pointed out that the financial year at headquarters dated from January to December, while the divisional year might run from April to March or July to June, and the branch year again was different. He thought the Organization Committee should try to bring order out of this chaos. The year which seemed most convenient was July to June; this would obviate some work in January, when medical practice was apt to be at its busiest. With regard to expenses, clerical aid should be more strictly defined. There were secretaries who undertook the equivalent of an office correspondence and made no charge to the Association. Dr. F. G. Layton (Walsall) said, amid laughter, that personally he could send in his report just as well on January 1st as later, but he deferred sending it because if he waited he got "a letter from Cox, which is always worth waiting for"! Dr. F. Rees (West Cornwall) said that in his area meetings were held in hospital board rooms without charge. His scattered Division contained an unusual proportion of non-members, and a regular propaganda campaign had lately been undertaken. Dr. E. A. Starling (Kent Branch) urged that the heads of expenditure which might be considered legitimate and illegitimate should be set out and circulated to the secretaries. With regard to Branch Councils, this year the Representative Body had made some variations, adding to the membership of Branch Councils the secretaries of Divisions as *ex-officio* members. That was a wise procedure, and it appeared to him that the Branch Council might have a more definite place in the Association. It might be advantageous also to submit divisional reports and statements of accounts to the Branch Council for criticism and signature before sending them on to the head office.

With regard to the recruitment of new members, Dr. J. Livingstone Loudon (Lanarkshire) remarked that in his own town (Hamilton) of 40,000 inhabitants there was not a single medical man who was not a member of the Association—(Applause)—but there were three boroughs in his county where the members were fewer than the non-members. Dr. E. E. Dyer (Stirling Branch) asked that the list of non-members sent out periodically from the head office might be arranged not in alphabetical order, but in the order of localities; it would then be easier for the secretary to divide the work among his members, especially if, as in his own case, the area was a large one, covering more than one county. Dr. E. W. Squire (Oxford and Reading) said that a golf competition in his own area had been the means of bringing in new members.

Dr. J. M. Morris, the Swansea secretary, gave an interesting account of the work of his Division, and the ways in which economies had been effected. Another Welsh secretary, Dr. G. I. Strachan, thought it legitimate for a secretary to call in the aid of a typist.

Dr. Garstang said that the discussion had been one of the most practical he could remember at a Secretaries' Conference. He deprecated the suggestion that a slip should be published showing what expenses were legitimate and what were not. It was desirable that Branches should supervise their constituent Divisions much more closely. When the new constitution came into existence in 1905 the Divisions were made the units of the Association, the Branches being left with practically no duties except to attend to scientific work. The necessity of having Branches had been very much brought home to him of recent years. The Branches must be living and governing forces in their areas, and exercise a paternal care over their Divisions. He thought it only reasonable to ask the smaller and constituent bodies to fall in with the head office arrangements with regard to the Association year, which ended on December 31st.

Improvement of the Handbook.

Provision was made on the agenda for suggestions for the improvement of the Association's *Handbook*. Dr. McKail asked that a page should be provided in the *Handbook* to set out exactly what details the secretary was expected to render in his annual accounts. Dr. J. F. Walker (South Essex) thought that a page of the *Handbook* might be devoted to notable achievements of the Association during the previous year. A list of Association successes would be very useful to a secretary. Dr. W. Paterson (Willesden) wanted the inclusion of a copy of the form of the annual report which Division secretaries had to fill in. Another speaker urged that an index would be a useful addition. Dr. H. S. Beadles thought the book might with advantage be brought to the notice of ordinary members of the Association, but the Medical Secretary pointed out that the *Handbook* was entirely for workers, and that for the average member it would often be so much waste paper.

Co-ordination of Divisions and Branches.

A motion by Dorset and West Hants suggested that inasmuch as the Division secretaries were *ex-officio* members of the Branch Councils, the converse should also obtain—that is, Branch secretaries should be *ex-officio* members of the Division executives of their area. This was supported by Dr. Keppie Paterson (Edinburgh) and Dr. Lewys-Lloyd (North Wales), while Dr. F. Rees (West Cornwall) maintained the general principle of closer co-operation between Divisions and Branches, especially with a view to carrying out the great development of the scientific work of the Association

which he foresaw. Dr. Muir Smith (Eastbourne) opposed the motion unless it was to be permissive only.

Dr. J. Stevens (Edinburgh), while in favour of anything which would assist in the co-ordination of the Branches with their constituent Divisions, was afraid that the proposal as it stood would be impracticable. The Branch secretary ought to receive the agenda and minutes of all executive and general meetings of the Divisions in his Branch. He asked whether it was proposed to give the Branch secretary a right to vote in the Division executive, to which the Chairman replied that certainly as an *ex-officio* member the secretary would have such a right. Dr. F. L. Angior (Wigan) moved as an amendment that Branch secretaries should be sent the agenda and minutes of Divisional executive meetings: this was agreed to, and on the motion of Dr. Beadles it was agreed that Division secretaries should be instructed to send a copy of all notices of Divisional meetings to their Branch secretary.

Propaganda.

Two motions by Brighton, one dealing with elections to Council and Committees, and the other with central office and committee expenditure, were ruled out as not germane to the purpose of the Conference. On the meeting being thrown open for "any other business" one or two members asked for information, which was given, on certain matters of medical practice, apart from the work of secretaries. The remainder of the time was devoted to a discussion on propaganda.

Dr. F. J. Walker (South Essex) said that the Conference had had a surfeit of finance, and he suggested that another year one or two short papers from secretaries in typical districts should be invited on the best way of helping the Association. Dr. John Mowat (Lincolnshire, Holland) referred to the special difficulties of a secretary in a sparsely populated country district, and the desirability that propaganda should be carried out from the head office rather than from the Divisions.

The Medical Secretary, in reply to the last speaker, said that it was indeed a bitter blow to have it suggested at this time of day that the head office had not been active on propaganda. A Propaganda Subcommittee had been hard at work for years. Yet he himself was no great believer in propaganda from headquarters; the best propaganda was done through the influence of the men on the spot. It was personality which counted, and only energetic action on the spot could overcome local apathy. Every member of the Division executive must feel convinced that it was not a mere compliment to be on that executive, but that it involved very definite responsibilities for the carrying out of a particular task.

A vote of thanks to the Chairman and another to the Medical Secretaries concluded the proceedings.

HONORARY SECRETARIES' DINNER.

The honorary secretaries and the ladies accompanying them met at dinner following the Conference, Dr. L. A. Parry (Brighton) presiding over a company of more than a hundred in the University Union. Speech-making was brief, but several toasts were enthusiastically honoured.

Proposing the health of Dr. Wallace Henry, Dr. Livingstone Loudon said that they thought of him, not so much as Chairman of the Representative Body, but as the highly efficient Secretary of the Midland Branch and the Leicester and Rutland Division. Dr. Wallace Henry said that the success of the Association depended very largely upon the work put into it by the secretaries of the Divisions and Branches. In connexion with their organization, as with every other large body, there were a number of members up and down the country who apparently did not take any active interest in the Association's affairs. To overcome internal apathy was always the greatest difficulty which an organization had to face, but fortunately the British Medical Association was so constructed as to be able, more or less, to cover the country with highly efficient workers on its behalf. The members of the Association should be given a little more insight into its manifold work. It would be a revelation to many of them to see, as it were, in longitudinal section the activities of 429, Strand. He himself had spoken in two or three Divisions of the internal work of the Association, and on each occasion at the close of his address several members came forward and said that they had had no idea that all this activity was going forward.

The Chairman proposed the health of the Medical Secretary, whose virtues, he said, were well known and needed no enumeration. He was sure that every local secretary felt grateful to Dr. Cox. The Medical Secretary, in response, said that it was pleasant to hear compliments, but often he had to hear the reverse. Not all the criticism which reached the Medical Secretary's department came from outside the Association. There were honorary secretaries who wrote letters sometimes couched in highly scriptural language but contained highly unscriptural ideas! On the other hand, there were other secretaries who wrote in a more flattering strain—but these were young men! The real work of the Association was done by the Divisions and their secretaries. He hoped Branch secretaries whose areas contained unorganized Divisions would realize that such Divisions were a standing reproach to the Branch and a danger to the Association. He was sure that the meeting would wish to associate in its compliments to himself, his colleagues, Dr. Anderson, Dr. Lord, Dr. Macpherson, and Miss Lawrence, also the Financial Secretary, Mr. Ferris-Scott. (Applause.) Dr. Drever ought also to be included, for the experiment of the Scottish Secretaryship had been a great success. There, if anywhere, they had the right man in the right place. Dr. J. R. Drever said that in the Scottish Office, if they had any moments of despondency, they went and visited the Divisions, which were invariably better even than their reports. The members for whom the Scottish Office was responsible numbered, when the office was formed, 1,800, and now they numbered over 2,200.

Dr. Parry, the Chairman, in responding to the toast of his own health, said that the Secretaries' Conference as a feature of the Annual Meeting had the advantage of bringing the secretaries together in the right atmosphere of medical politics, science, and social functions. The final toast was that of "The Ladies," proposed by Dr. Milbank-Smith, and responded to in a few graceful words by Dr. Carrie Sims of Redditch, herself a Divisional honorary secretary.

THE ANNUAL EXHIBITION OF SURGICAL INSTRUMENTS, DRUGS, FOODS, AND BOOKS.

We commence in this issue the usual review of the annual exhibition of surgical instruments, drugs, foods, and books which was held during the Glasgow meeting. The exhibition was housed in Kelvin Hall, which is said to be the largest exhibition hall in the kingdom, and had the advantage of being only a short and pleasant walk from the University, where the meetings were held. Special efforts had been made this year to give the exhibition a more definite place in the programme of the Annual Meeting, and it was gratifying to learn, in conversation with many of the exhibitors, that the result had been highly successful; not one firm made the complaint, which has been heard sometimes in former years, that in a week of many engagements the claims of the exhibition had been overlooked.

In this brief review we describe the various stands in the order in which they were arranged in the hall, thereby forfending ourselves against any charge of intentional selection. To have attempted a classification of the exhibits would have been unsatisfactory because so many of the stands would in that case have had to be mentioned under two or three different categories. It would be out of the question to describe all that was on view, besides which, what is very interesting when laid out objectively on a counter, is apt to be extremely tedious in description. We have endeavoured to select at each stand those exhibits which appeared to be new or those which the exhibitors themselves placed in the forefront. The address of the firms exhibiting is London unless otherwise stated.

On entering the hall the visitor's attention was drawn to an exhibit of hospital beds and bedding, and he was made to realize that the art of bed-making, so far from being simple, is highly specialized in view of the various needs of maternity, infancy, invalidism, and surgical conditions. One of the beds at this stand of Hoskins and Sewell, Ltd., of Bordesley, was specially designed for use in the sunlight treatment of tuberculous bones and joints, and had affixed to it a sunshade arrangement capable of being adjusted in any position to protect the face and head.

Next to this was the stand of Burroughs Wellcome and Co., whose distinctive exhibit on this occasion was moogrol, an oil representing a mixture of esters of acids of the chaulmoogric series for use in combating leprosy. The same firm showed its tabloid thyroid and pituitary gland preparations in various stages, from the raw animal glands to the compressed products. Another interesting exhibit here was the use of stainless steel for hypodermic needles; the needles were shown bright and unspotted under conditions which would reduce ordinary steel to a state of rust. Yet

another line of exhibits was the Carlsbad, Kissingen, and Vichy mineral water salts in compact form, presenting an obvious advantage over the bulky bottled waters.

Crossing over from these entrance stands and making his way along the south aisle the visitor came upon a refrigerator machine made by Charles Hearson and Co., Ltd. It was an automatically controlled refrigerating unit, in which the production of cold depended upon electricity. The current, however, was only consumed by the machine during the time that its activity was necessary to maintain the food chambers below a certain temperature. The arrangement depended upon a special material called "isidor gas," working under low pressure. Altogether, this was a very interesting contrivance, designed to make the householder independent of the uncertain and ever dwindling supplies of ice; it was only one of Messrs. Hearson's exhibits, which included incubators, sterilizers, and various other laboratory apparatus.

At the next stand H. K. Lewis and Co., Ltd., had its usual interesting book exhibit, including many well known manuals published by the firm itself and by the Cambridge University Press, and Maclehose, Jackson, and Co. At this stand also, by means of loose-leaf medical ledgers and pocket-books, the methods of book-keeping and the making of memoranda were placed before the practitioner. The exhibit of Kodak, Ltd., apart from some photographic accessories, was confined to a series of negatives on the Eastman "dupli-tized" *x*-ray film, which is a special emulsion coated on both sides of a thin transparent base, the double coating serving to increase the speed and simplify the developing and fixing processes. From the secrets of the dark room the visitor was invited next to the clear light of the kitchen by the Oxo display, to which was added an exhibit of Hospital Oxo, described as a peptonized and unseasoned form of this fluid-beef, specially prepared for invalids. Next to this was another food preparation in the shape of Horlick's malted milk, both in its soluble and tablet forms; it is already familiar to most people by name, and to large numbers of people—and those not invalids only—as an article of diet. The interest of visitors to the neighbouring well arranged stand of Glaxo was aroused by a miniature kinematograph which exhibited views of the factories where this dried milk is prepared.

Equally happy in its design was a stand just opposite devoted to advertising the attractions of Bath, its ancient springs and its modern treatments. The frieze showed in silhouette an impression of old-world Bath, with its beaux and sedan-chairs, while the elaborate literature which was given away indicated that Bath is not living on its past. This stand formed one of four on an island; a second was devoted to a display of chemicals by C. J. Hewlett and Son, Ltd., who showed various ointments and emollients, antiseptic creams, medicated skin lotions, iodine preparations, and, in the forefront, a paraffin, for internal administration, named Deliciol. A number of new sprays, atomizers, and vapourizers were shown here also. Various opium alkaloids, as well as many pharmaceutical products, were to be seen at the adjoining stand, which was that of T. and H. Smith, Ltd., of Edinburgh; it furnished another instance of the enterprise and resource of the British manufacturer in the production of fine chemicals and galenicals. The fourth stand at this corner contained a fine display of surgical instruments by John Weiss and Son, Ltd. It included some new designs of instruments for bladder examination; but perhaps its most interesting feature was a projection lamp without a filament and casting no shadow; its special capabilities for the projection of microscope slides were well demonstrated, and with some adjustment it could be used as a hand-lamp for operations.

After noting what Glasgow could do in the way of providing a medical bookstall, John Smith and Son, Ltd., of that city showing recent medical works, classified according to their subjects, from a number of publishing houses, the visitor passed to the stand of the Genito-Urinary Manufacturing Company, Ltd., where the most interesting of a large number of urological and other instruments were a posterior urethroscope—a modification of the Geiringer instrument—and an anterior urethroscope, both of them made to the design of Mr. Swift Joly, the second being an improved model of the operating and observation urethroscope which he introduced in 1914. The visitor was again reminded at this point of the endless making of medical books, in the shape of the Oxford Medical Publications, the latest among them being Professor Munro Kerr's *Clinical and Operative Gynaecology*. The virtues of Eno's fruit salt were set forth at an attractive stand, and beyond this was the first of several stands devoted to orthopaedics, especially the supply of artificial limbs. Beckett and Bird, Ltd., of Glasgow, had a number of interesting orthopaedic appliances, including moulded leather spinal jackets, leg splints, and various arrangements in steel and leather for the treatment and correction of scoliosis, spinal caries, and infantile paralysis.

One of the most appetizing stands in the exhibition was that of Cadbury Brothers, Ltd., of Bournville, where the whole art of making cocoa was demonstrated, and, thus refreshed, the visitor was ready to inspect the typewriters by Watson Typewriters, Ltd., of Glasgow, as well as the various filing cabinets and office accessories of interest to the practitioner. Another typewriter exhibit on a stand close by was that of the Multiplex Hammond Typewriters, on which, by merely turning a knob, a different style of type could be substituted. Other machines had keyboards with mathematical symbols, or those used by the practitioner in writing prescriptions. Workers in the laboratory found an interesting corner here, where Watson and Sons, Ltd., of London, through their Glasgow agents, Scott and Co., exhibited a number of microscopes suitable for research work. The chief of these was the "Service" microscope built to a specification prepared by the British Science Guild, and having various parts interchangeable, so that the student could begin with a more or less simple construction, and without changing its body, add to it various mechanical refinements until it became a complete instrument for research.

(To be continued.)

Meetings of Branches and Divisions.

Border Counties Branch.

The thirty-first annual general meeting of the Border Counties Branch was held at the County Hotel, Carlisle, on June 30th, when Dr. Edington, the retiring president, was in the chair. The members took tea at the invitation of the incoming president, Dr. Scott.

The financial statement, with report and balance sheet, was read and adopted.

The following were elected office-bearers for 1922–23: *President-Elect*: Dr. G. B. Muriel. *Hon. Sec. and Treasurer*: Dr. G. T. Willan (Carlisle). Dr. Norman Maclaren was elected on the Branch Council in place of Dr. Muriel.

Dr. Edington, on vacating the chair, introduced the new president, Dr. W. Scott, who gave his presidential address entitled "Impressions of a short stay in Central Africa." A hearty vote of thanks was accorded to Dr. Scott for his most interesting address. Votes of thanks were also accorded to Dr. Edington for his services as president, and to Dr. Norman Maclaren on vacating the post of honorary secretary and treasurer after several years' good work as such. These were duly acknowledged. It was decided to hold the next meeting at Dumfries.

Connaught Branch.

The annual general meeting of the Connaught Branch was held at the Royal Hotel, Galway, on June 22nd, when Dr. R. B. Mahon was in the chair.

Dr. M. J. McDonough was elected president, and Dr. R. B. Mahon vice-president for the ensuing year. The honorary secretary, representative, and deputy representative, the representatives on the Irish Committee and on Branch Council, were elected.

Dr. Foley wrote suggesting a scheme of organizing the profession for the defence of its interests, and to obtain "a vocational council" as outlined under the Constitution of the Irish Free State, and to get a grant from the new Government to subsidize a medical paper in the interests of the vocational council.

A discussion ensued on the inequality of increases of salaries given to medical men as compared with other increases, the omission of medical men from the County Insurance Committee, and other public boards recently elected, and it was decided that the attention of the Irish Medical Secretary be drawn to the matter with a view to concerted action by the profession to safeguard its interests which seem to be jeopardized by the present unrest.

The Secretary said he had requested the Secretary of the South-East of Ireland Branch to observe the agreement made some years ago that a member of Council should be elected alternately by the two Branches, and as South-East of Ireland had elected for several years it was the turn of Connaught now. It was decided to call the attention of the Medical Secretary to the fact that South-East of Ireland had elected notwithstanding. The Medical Secretary's monthly circular and the report of Council were considered.

Surrey Branch.

The ninth annual meeting of the Surrey Branch was held on June 28th at the Municipal Buildings, Reigate, by kind permission

of the Mayor of Reigate. The members were entertained to lunch at the White Hart Hotel by the Reigate Division, and afterwards went to the Reigate Hippodrome, where an attractive medical and surgical cinema exhibition was given. The operations shown included bone graft of jaw, hysterectomy, and appendicectomy. The pace of the films has been considerably retarded since they were shown in London a year ago, and the value of the film for instructional purposes thereby very much increased.

The following officers were elected for the ensuing year:

President: Dr. Charles Caldecott. *President-elect*: Dr. Scudamore. *Vice-Presidents*: Dr. Linden and Dr. Hewetson. *Secretary and Treasurer*: Dr. Lankester.

The report and financial statement for the year was received and adopted. The meeting also recommended various changes in the Divisions of the Branch, and it is hoped that these will shortly become effective. It was also resolved that in future invitations should be extended to the wife or husband of a member to attend all or any of the functions at the annual meeting of the Branch, except the business meeting; such invitations, however, to be at the discretion of the Divison in whose area the annual meeting is held.

The President, Dr. Caldecott, Medical Superintendent of the Royal Earlswood Institute for Mental Defectives, then gave his presidential address, taking for its subject, "Behaviour in relation to development and deficiencies of mind."

Association Notices.

FURTHER EXTRAORDINARY GENERAL MEETING.

A further Extraordinary General Meeting of the British Medical Association was summoned at the Head Office, 429, Strand, London, W.C.2, for Tuesday, August 8th, 1922, at 2.30 p.m., to consider, and if thought fit to confirm, the special resolutions which were passed by the requisite majority at the Extraordinary General Meeting held at the Bute Hall, the University of Glasgow, on Friday, July 21st, 1922. On August 8th Dr. R. Wallace Henry was in the chair, but the necessary quorum not being present the meeting stood adjourned to Tuesday, August 15th, at the same place and hour, in pursuance of the provisions of By-laws 29 and 30.

By order of the Council.

Alfred Cox,
Medical Secretary.

L. Ferris-Scott,
Financial Secretary and Business Manager.

August 8th, 1922.

Correspondence.

The London Panel Committee.

Sir,—Allow me to draw attenton to the carelessness with which the London Panel Committee conduct their business. The paragraph relating to the "Use of rectified spirit" in the June number of the *London Panel Committee Gazette*, after cautioning panel practitioners not to use Sp. Vin. Rect. when Sp. Meth. will do equally as well, contains the following vague sentence: "For external use, the Committee are of opinion that S.V.M. fulfils all requirements except in the preparation of Lot. Cantharidin." Now, no such lotion is to be found, either in the *British Pharmacopoeia*, the *Extra Pharmacopoeia*, or in Squire's *Companion*. Surely this sentence might have been made more clear? Then follows: "The Committee have decided that the following preparations shall be deemed to be included among the formulae of the L.I.P."; and here are given formulae for "Lot. Evaporans" and "Lot. Crinalis." But there is already a Lot. Evap. in the L.I.P., made with ammonium chloride. The sentence does not specify that the former is to be substituted for the latter, or state that both are to exist in the L.I.P. But, if the latter, how is the pharmacist to know which formula is intended?

Then, again, instead of using the pharmacopoeial name Liq. Plumb. Subac. Fort. as an ingredient, *Lic. Plumb. Conc.* is used, which is certainly very unprecise and vague. Then, with regard to "Lot. Crinalis," the Committee are preaching economy, and at the same time have as ingredients in this formula (evidently taken from Squire) oil of rosemary and honey water (Aq. Mellist, both expensive and unnecessary ingredients, the latter especially so; and instead of using the proper pharmacopoeial name—Liq. Ammonia, or Liq. Ammon. Fort.—gives as an ingredient the vague name "*Solution of Ammonia*," a name which is not to be found in the present pharmacopoeia. Though the above two formulae are added to the L.I.P., I learn to-day, by telephone, after giving a prescription for Lot. Crinalis to a patient, that the pharmacists *have not received any intimation of these additions*, and asking for the formula.

Surely such vague paragraphs and formulae should not emanate from a committee of medical practitioners, and greater care should be exercised in formulating their information in the above gazette, which is intended for the guidance of practitioners. The *B.P.* is our official authority, and the names of drugs therein contained should be carefully adhered to. When such formulae as Lot. Cantharidin are mentioned (not being pharmacopoeial) it should be stated definitely where such is to be found. Such slipshod diction in a gazette conducted by medical men should be eschewed, and should be accompanied by greater precision and exactitude.—I am, etc.,

Chelsea, July 27th. W. W. Hardwicke, M.D.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are announced by the Admiralty:—Surgeon Commanders A. B. Cox to the *Ark Royal*, H. C. Devas to the *Maidstone*. Surgeon Lieutenant Commander R. P. Ninnis to Yarmouth Hospital. Surgeon Lieutenant S. G. Rainsford to the *Victory* for R.N. Hospital, Haslar.

ROYAL NAVAL VOLUNTEER RESERVE.

C. C. Elliott, D.S.C., has been granted a commission as Surgeon Lieutenant (substituted for notice published last week).

ROYAL ARMY MEDICAL CORPS.

The following Lieutenant-Colonels (temporary Colonels) from R.A.M.C. to be Colonels: W. P. Gwynn, C.M.G., vice Colonel C. E. Polock, C.B., D.S.O., O.B.E. (promoted); N. H. Ross, vice Colonel L. P. More (retired pay).

The following Lieutenant Colonels to be temporary Colonels whilst specially employed: G. M. Goldsmith, C.B.E., C. J. O'Gorman, D.S.O.

Major G. A. Kempthorne, D.S.O., to be acting Lieutenant-Colonel from June 24th to November 1st, 1919.

Major and Brevet Lieut.-Colonel D. S. Skelton, D.S.O., is restored to the establishment.

Captain S. M. Hattersley, M.C., relinquishes the temporary rank of Major.

The following officers retire, receiving a gratuity: Captain and Brevet Major A. G. J. MacIlwaine, C.I.E., Captains R. J. Clausen, M.C., H. Mitchell, D. R. Hennessy.

The following officers relinquish their commissions: Temporary Lieut.-Colonel F. L. Vaux and retains the rank of Lieutenant-Colonel. Temporary Major H. St.A. Agate, M.C., and retains the rank of Major. Temporary Captains and retain the rank of Captain: F. Osborne, R. K. S. Sutherland, J. G. F. Heal.

The following officers retire on retired pay: Lieut.-Colonel C. H. Furnivall, C.M.G., May 21st, 1922 (substituted for notification in the *London Gazette*, June 2nd, 1922), Lieut.-Colonel G. B. Crisp, Major A. S. Arthur, O.B.E., and is granted the rank of Lieutenant-Colonel. Majors: R. J. C. Thompson, C.M.G., D.S.O., on account of ill health contracted on active service; A. H. Hayes.

REGULAR ARMY RESERVE OF OFFICERS.

Royal Army Medical Corps.

Captain H. E. A. Boldero resigns his commission.

ROYAL AIR FORCE MEDICAL SERVICE.

E. E. Isaac, M.C. (Captain R.A.M.C.), is granted a temporary commission as Flight Lieutenant, with effect from and seniority of July 3rd.

Flight Lieutenant A. C. Ransford is granted a short service commission, retaining his present substantive rank and seniority, July 25th, 1922.

B. C. W. Pasco is granted a short service commission as a flying officer (honorary Flight Lieutenant), with effect from and seniority of July 17th, 19.2.

H. A. Tillman (temrorary Captain R.A.M.C.) is granted a temporary commission as a Flight Lieutenant, with effect from and seniority of July 18th, 1922.

MILITIA.

Royal Army Medical Corps.

Major K. B. MacGlashan relinquishes his commission and retains the rank of Major.

Captain A. J. Brown, D.S.O., is employed with the R.A.F.

TERRITORIAL ARMY.

Royal Army Medical Corps.

Major G. F. Haycraft resigns his commission and retains the rank of Major.

Major J. J. E. Biggs, O.B.E., resigns his commission and retains the rank of Major.

Major S. J. Fielding to be Lieutenant-Colonel and to command 54th (East Anglian) Field Ambulance.

The announcements regarding Major W. D. Watson, T.D., and Captain J. F. Edmiston which appeared in the *London Gazette* of May 19th and February 8th, 1922, respectively are cancelled.

The following officers resign their commissions: Captain (Brevet Major) W. Brander, and is granted the rank of Major; Captains J. W. Scott, M.C., and H. A. Lake, and are granted the rank of Major; Captains B. E. A. Batt and R. H. Swindells, and retain the rank of Captain.

To be Lieutenants: Captain P. Hickey, from Durham Light Infantry, T.A. Reserve, and relinquishes the rank of Captain; J. Broadfoot (late R.A.M.C. T.F.); Captain A. T. Sloan (late R.F.A.), and relinquishes the rank of Captain.

General Hospitals.—Lieut.-Colonel F. E. A. Webb, O.B.E., T.D., resigns his commission and retains the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform. Lieut.-Colonel G. N. Biggs resigns his commission and retains the rank of Lieutenant-Colonel. Captain C. P. Lapage relinquishes his commission and is granted the rank of Major.

Supernumerary for Service with the O.T.C.—Major Sir W. Taylor, K.B.E., C.B., resigns his commission and is granted the rank of Colonel. Captain P. C. Purser, O.B.E., resigns his commission and is granted the rank of Major. Captain W. Gilliatt resigns his commission and retains the rank of Captain. Major C. F. Searle, M.C. (late R.A.M.C.), to be Captain, with the local rank of Major, for service with the Cambridge University O.T.C., and relinquishes the rank of Major. Hon. Captain L. B. Maxwell (late General List) to be Lieutenant for service with the University of London O.T.C., and relinquishes the honorary rank of Captain.

Sanitary Companies.—Captain J. Grounds, T.D., to be Major; J. A. Bingham to be Lieutenant.

The following vacate the appointment of D.A.D.M.S. to the Divisions shown against their names: Major L. A. Avery, D.S.O. (East Anglian Division), Major F. W. Squair, T.D. (Highland Division), Major (Brevet Lieut.-Colonel) H. A. Leebody, T.D. (Lowland Division), Major E. J. T. Cory, O.B.E., T.D. (1st London Division), Captain O. Teichman, D.S.O., M.C. (2nd London Division), Major C. J. Martin, O.B.E. (Northern Division), Lieut.-Colonel C. I. Ellis, C.M.G. (Wessex Division), Major C. H. Lindsay (West Lancs Division), Lieutenant-Colonel P. Paget, T.D. (East Lancs Division), Major G. B. Robinson (Home Counties Division), Captain J. Grant Johnston (South Midland Division).

The following officers relinquish their commissions and retain their rank, except where otherwise stated: Captains P. S. Price and W. Stobie, and are granted the rank of Major; Captains J. Bannerman, W. M. Langdon, C. E. Whitehead, and H. P. Malcolm, M.C.

The following officers, having attained the age limit, are retired and retain their rank, except where otherwise indicated: Lieut.-Colonel R. M. West, O.B.E., D.S.O., T.D., with permission to wear the prescribed uniform. Majors O. L. Appleton, E. J. T. Cory, O.B.E., T.D., and J. Gray, O.B.E., T.D., and are granted the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform. Major A. J. Riddell, Captains R. D. Moore, M.C., and J. W. Thomson, and are granted the rank of Major. Captains J. B. McLean, T. M. Metcalfe, R. Watson, and W. McC. Wanklyn.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams; Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

VACANCIES.

ASHTON-UNDER LYNE: DISTRICT INFIRMARY.—Resident Surgical Officer. Salary, £250 per annum.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham Road, S.W.—House-Surgeon. Salary at the rate of £120 per annum.

BERKENHEAD COUNTY BOROUGH.—Assistant Medical Officer. Salary, £650 per annum.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—House-Surgeon. Salary, £121 per annum.

CARDIFF: KING EDWARD VII WELSH MEMORIAL ASSOCIATION.—Medical Man for Laboratory work. Salary, £800 per annum.

CITY OF LONDON MATERNITY HOSPITAL, City Road, E.C.—Resident Medical Officer (male). Salary, £100 per annum.

DUDLEY: GUEST HOSPITAL.—Honorary Surgeon.

GLAMORGAN COUNTY COUNCIL.—(1) Medical Inspector of Children in Schools. (2) Dental Surgeon. Salary, £650 and £500 per annum, rising to £800 and £700 respectively.

HARTLEPOOLS HOSPITAL.—House-Surgeon. Salary, £200 per annum.

HERTFORD COUNTY COUNCIL.—Medical Superintendent of the County Sanatorium, Ware Park. Salary, £500, rising to £600.

HOLLOWAY SANATORIUM, Virginia Water.—Junior Assistant Medical Officer (male). Salary, £100 per annum.

HUDDERSFIELD COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary at the rate of £500 per annum.

KESTEVEN COUNTY ASYLUM, Sleaford.—Medical Superintendent. Salary, £800 per annum.

LEICESTER CITY EDUCATION COMMITTEE.—Assistant School Medical Officer, (male). Salary, £500 per annum.

LEICESTER CITY MENTAL HOSPITAL, Humberstone.—Assistant Medical Officer. Salary, £600 per annum, with additional £50 if candidates hold a psychological medicine qualification.

LIVERPOOL: ROYAL SOUTHERN HOSPITAL.—(1) Pathologist Medical Registrar and Tutor. (2) Resident Casualty Officer, salary £150 per annum. (3, 4) Two House-Physicians and three House-Surgeons, salary, £100 per annum.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond Street, W.C.—Resident Medical Officer. Salary, £100 per annum.

LONDON TEMPERANCE HOSPITAL, Hampstead Road, N.W.—(1) House-Surgeon. (2) Casualty Officer. Salary, £200 and £100 per annum [illegible]

MANCHESTER ROYAL INFIRMARY.—(1) Assistant Director of the Clinical Laboratory. (2) Resident Medical Officer at the Barnes Convalescent Hospital. Salary, £350 and £500 per annum respectively.

NEWCASTLE-UPON-TYNE: ROYAL VICTORIA INFIRMARY. — Honorary Medical Registrar.

NEWCASTLE-UPON-TYNE: UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Senior Demonstrator of Anatomy. Salary, from £500 to £700 per annum.

NORTHUMBERLAND MENTAL HOSPITAL, Morpeth.—Assistant Medical Officer (male, single). Salary, £400.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—House-Surgeon. Salary, £150 per annum.

OPORTO: BRITISH HOSPITAL.—Medical Officer. Minimum income of £650 per annum guaranteed.

PUTNEY HOSPITAL, S.W.—Resident Medical Officer. Salary, £150 per annum.

ROCHFORD UNION.—District Medical Officer and Public Vaccinator of the Prittlewell West District. Salary, £105 13s. 4d. and fees.

ROTHERHAM HOSPITAL.—Junior House-Surgeon (male). Salary, £150 per annum.

ST. PETER'S HOSPITAL FOR STONE, ETC., Henrietta Street, W.C.—House-Surgeon. Salary, £75 per annum.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—House-Physician at the "Dreadnought" Hospital. Salary, £150 per annum.

SHOREDITCH PARISH OF ST. LEONARD.—Temporary Assistant Medical Officer at St. Leonard's Hospital. Salary, £300 per annum.

VENTNOR: ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Male Assistant Resident Medical Officer. Salary, £300 per annum.

WARWICKSHIRE AND COVENTRY JOINT COMMITTEE FOR TUBERCULOSIS.—Medical Superintendent for the King Edward VII Memorial Sanatorium. Salary £700 per annum.

WEST BROMWICH COUNTY BOROUGH.—(1) First Assistant Medical Officer of Health and Clinical Tuberculosis Officer. (2) Second Assistant Medical Officer of Health, Maternity and Child Welfare Medical Officer, and Assistant School Medical Officer. Salary, £700 and £500 per annum respectively.

WEST END HOSPITAL FOR NERVOUS DISEASES. — House-Physician. Salary, £100 per annum.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary, £175 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

GRAHAM, F. Muriel L., M.B., Ch.B., D.P.H.Vict., School and Assistant M.O.H. for Rochdale.

LUKER, S. Gordon, M.A., M.D., B.Ch.Cantab., M.R.C.P.Lond., F.R.C.S. Edin., Gynæcologist to the Hampstead General and North-West London Hospital, Haverstock Hill, N.W.

ROBINSON, Jas. S., B.A., M.B., B.Ch.Dubl., F.R.C.S.Edin., Honorary Assistant Surgeon and Orthopædic Surgeon, Cheltenham General Hospital.

SCOTT, T. Graham, M.R.C.S., L.R.C.P., Anæsthetist, Dental Department, University College Hospital.

EDINBURGH ROYAL INFIRMARY.—The following appointments are announced:—Assistant Physician: C. G. Lambie, M.C., M.B., Ch.B., M.R.C.P.Edin. Assistant Gynæcologists: R. W. Johnstone, C.B.E., M.D., F.R.C.S.E., H. S. Davidson, O.B.E., M.B., Ch.B., F.R.C.S.Edin. Resident House-Physicians: W. M. Hyslop, M.B., Ch.B., to Dr. Ramsy; J. K. Murray, M.B., Ch.B., to Dr. Chalmers Watson. Resident House-Surgeons: H. A. Eadie, M.B., Ch.B., to Mr. Scot Skirving; P. W. Tait, M.B., Ch.B., to Mr. Hurie Watson, C.S.O.P.D. Non-Resident House-Surgeon: M. J. Gibson, M.B., Ch.B., to Dr. J. S. Fraser. Clinical Assistants: Miss Elizabeth B. Clark, M.B., Ch.B., to Dr. J. D. Lithgow; U. N. Das, B.A., M.B., to Dr. J. S. Fraser; P. O. King, M.B., to Dr. J. S. Fraser.

LEEDS GENERAL INFIRMARY.—Resident Ophthalmic Officer: K. S. Laud, L.M.S.Bombay. Resident Gynæcological Officer: Miss Kathleen Wilson, M.B., Ch.B. House-Physicians: S. Levy, M.B., Ch.B., Miss Platt, M.B., M.B., Ch.B., Miss Mary Hellier, M.B., Ch.B., Miss Kathleen M. Peacock, M.B., Ch.B., Miss Mary Hellier, M.B., Ch.B., D. Chamberlain, Ch.B. House-Surgeons: J. T. Blackburn, M.B., Ch.B., D. Chamberlain, M.B., Ch.B., R. E. Jowett, M.B., Ch.B., J. A. Trewick, M.B., Ch.B.

CERTIFYING FACTORY SURGEONS.—G. P. Evans, M.R.C.S., L.R.C.P., for the New Southgate District, co. Middlesex; J. Lunn, M.B., C.M.Glasg., for the Wainfleet District, co. Lincoln; P. C. Lornie, M.B., Ch.B.Edin., for the Chirnside District, co. Berwick; J. P. Tolmie, L.R.C.P., L.R.C.S.Edin., L.R.F.P.S.Glasg., for the Stornoway District, co. Ross and Cromarty; W. H. Robertson, M.B., for the Burton-in-Kendal District, co. Westmorland.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 6s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

HARRISON.—On July 28th, at "St. Annes," 1, Tubs Hill, Sevenoaks, the wife of James M. Harrison, D.S.C., M.R.C.S.Eng., L.R.C.P.Lond.—a son.

MARRIAGE.

STALLARD—PLANT.—On August 2nd, at All Saints Church, Marple, by the Rev. Canon Whates, assisted by the Rev. C. G. Mytton, B.A., Vicar, Charles M. Stallard, M.B., youngest son of J. Prince Stallard, M.D., to Dorothea Hope Plant, eldest daughter of Mr. and Mrs. Tom Plant, of The Hollies, Marple.

DEATH.

POWELL.—On August 2nd, at the Manchester Royal Infirmary, Winston Elias Powell, M.B., Ch.B., aged 24, younger son of David and Mary Powell, The Croft, High Lane, Stockport.

Published by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT

TO THE

BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 19TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Council and Committees for 1922-23 91

CURRENT NOTES:

Alteration in Terms of Service of Insurance Practitioners by "Order of the Minister" 92

Socialization of Hospitals 93

EXTRAORDINARY GENERAL MEETING 93

ASSOCIATION NOTICES 95

NAVAL AND MILITARY APPOINTMENTS 95

ASSOCIATION INTELLIGENCE 95

VACANCIES 95

APPOINTMENTS 96

BIRTHS, MARRIAGES, AND DEATHS 95

British Medical Association.

CURRENT NOTES.

Alteration in Terms of Service of Insurance Practitioners by "Order of the Minister."

It will be recalled that, at the time of the reduction of the insurance capitation fee at the beginning of this year, considerable apprehension was caused amongst insurance practitioners by the action of the Ministry in introducing the new fee as from January 1st, having regard to the fact that three months' notice of the intended change had not been given to individual practitioners. The question was taken up with the Ministry, who contended that, three months' notice of a change having been given to the negotiating body on behalf of Panel Committees (that is, the Insurance Acts Committee of the Association), individual notice of such change was not necessary. The Ministry further stated that the fact that the Central Pool, out of which insurance practitioners are paid, was each year constituted by an Order of the Minister, was also a reason why individual notice was not necessary. The Insurance Acts Committee had not previously heard of the existence of an "Order of the Minister," and the Ministry was asked the extent of the powers vested in the Minister which rendered possible modifications of the conditions of insurance practice by such an Order, and, therefore, without requiring, in accordance with paragraph 2 of the Terms of Service, that three months' notice of the proposed modification should be given to individual practitioners. A list of the matters on which the Minister is at present empowered by Regulation to take action modifying the conditions of service throughout the country has been furnished by the Ministry. The Ministry was also asked for an assurance (similar to that already given in connexion with Orders in Council) that, in the event of any alteration proposed to be made by Order of the Minister, three months' notice thereof will be given to the Insurance Acts Committee, and that previous opportunity for discussion will be afforded whenever possible. The following reply has been received:

Ministry of Health, Whitehall, S.W.1,
July 27th, 1922.

Sir,

In reply to your letter of the 11th inst. . . . the Minister desires to give the definite assurance that he will, before making an Order which affects the terms of service of insurance practitioners, discuss its provisions with the Committee representing the Panel Committees of the country, and will, after the Order has been made, give to the individual practitioner the fullest notice of its provisions which the national exigencies permit.

I am to add that, although the period of notice given to the representative Committee will not in the ordinary course be less than three months, it is essential that the Minister should retain power to deal by Order with possible emergencies, and it is believed that your Committee will appreciate that serious disadvantages, both to the medical profession and to the insured population, might arise if the terms of the assurance for which the Committee have asked were such as to render it impossible in emergency to introduce by Order modifications of the terms of service, which might be urgently required, within a period of less than three months. In no case, however, will these emergency powers be exercised without prior consultation with your Committee.

I am, Sir, your obedient Servant,
(Sgd.) L. G. BROCK.

The Secretary, Insurance Acts Committee of the British Medical Association.

Socialization of Hospitals: Resolution of the Social Democratic Federation.

The resolution passed at the Annual Conference of the Social Democratic Federation pressing for the immediate socialization of the hospitals in the services of the nation will not, we are sure, find favour with the public generally. State contributions must inevitably lead to State interference with the independent and voluntary management which the Representative Body maintains is the essence of the voluntary system in this country. The resolution above referred to is in reality a counsel of despair, and none of those who have the true interests of the voluntary system at heart are likely to be influenced by the clamorous advocates of nationalization. We believe that the public desires the continuance of the present system, and therefore it is for the public to show by its generous support that where there is a will there is a way.

Association Notices.

FURTHER EXTRAORDINARY GENERAL MEETING.

A FURTHER Extraordinary General Meeting of the British Medical Association was held at the Head Office, 429, Strand, London, W.C.2, on Tuesday, August 15th, 1922, at 2.30 p.m., when Dr. H. B. Brackenbury, Deputy Chairman of the Representative Body, was in the chair.

The Solicitor explained the reason for which the meeting had been called and the necessity for the Resolutions passed at the Extraordinary General Meeting held in the Bute Hall at the University of Glasgow on Friday, July 21st, 1922, being confirmed by the members present.

The proposed alterations in the Articles of Association were then submitted by the Chairman *serialim* and were unanimously approved and confirmed.

PROPOSED AMALGAMATION OF MID-ESSEX AND NORTH-WEST ESSEX DIVISIONS.

NOTICE is hereby given to all concerned of a proposal made by the Council of the Essex Branch for amalgamation of the Mid-Essex and North-West Essex Divisions of the Essex Branch, the new Division to be known as the "Mid-Essex Division."

The matter will be determined in due course by the Council. Any member affected by the proposed change and objecting thereto is requested to write, giving reasons therefor, to the Medical Secretary, 429, Strand, London, W.C 2, not later than September 19th, 1922.

British Medical Association.

COUNCIL AND COMMITTEES FOR 1922-3.

COUNCIL.

Ex officio.

Dr. R. A. Bolam, LL.D., Newcastle-upon-Tyne, *Chairman of Council.*
Sir William Macewen, C.B., LL.D., M.D., F.R.C.S., F.R.S., D.Sc., Glasgow, *President.*
Dr. R. Wallace Henry, Leicester, *Chairman of Representative Body.*
Dr. G. E. Haslip, London, *Treasurer.*
Professor David Drummond, C.B.E., M.A., D.C.L., Newcastle-upon-Tyne, *Past-President.*
C. P. Childe, Esq., F.R.C.S., Southsea (Portsmouth), *President-Elect.*
Dr. H. B. Brackenbury, London, *Deputy Chairman of Representative Body.*

Twenty-four Elected by Branches in United Kingdom.

England and Wales.

Dr. H. S. Beadles, London.
Dr. H. C. Bristowe, Wrington, Somerset.
Dr. C. Buttar, London.
The Rt. Hon. Lord Dawson of Penn, K.C.M.G., G.C.V.O., C.B., M.D., London.
Dr. James Don, Newcastle-upon-Tyne.
Dr. T. W. H. Garstang, c/o B.M.A., London.
N. Bishop Harman, Esq., London.
F. Strong Heaney, Esq., F.R.C.S., Liverpool.
Dr. E. K. Le Fleming, Wimborne, Dorset.
Sir Richard Luce, K.C.M.G., C.B., Derby.
Dr. Arnold Lyndon, O.B.E., Grayshott, Surrey.
Dr. A. Mankneil, Bradford.
A. W. Nuthall, Esq., F.R.C.S., Birmingham.
Dr. D. A. Sheahan, Portsmouth.
Dr. W. B. Crawford Treasure, Cardiff.
Dr. E. O. Turner, Great Missenden, Bucks.

Scotland.

Dr. G. W. Miller, D.S.O., Dundee.
Dr. Hugh Miller, Hamilton.
Dr. C. M. Pearson, Edinburgh.
Vacancy.

Ireland.

Professor R. J. Johnstone, F.R.C.S., M.P., Belfast.
Dr. Reginald C. Peacocke, O.B.E., Blackrock, co. Dublin.
Dr. Denis Walshe, Graigue, Kilkenny.
Vacancy.

Seven Elected by Branches outside United Kingdom.

Dominions.

Dr. Noel L. Clarke, London (*Hong Kong and China, and Malaya Branches*).
T. P. Dunhill, Esq., C.M.G., M.D., B.S., London (*S. Australian, Tasmanian, Victorian, and West Australian Branches*).
Vacancy (*Grouped Indian Branches*).
Dr. D. Ewart, O.B.E., Chichester (*New Zealand Branch*).
Dr. T. Duncan Greenlees, St. Leonards-on-Sea (*African Branches*).
Dr. W. F. Law, Dublin (*West Indian and Canadian Branches*).
Sir Jenner Verrall, LL.D., Leatherhead (*New South Wales and Queensland Branches*).

Twelve Elected by Grouped Representatives.

England and Wales.

Dr. T. Ridley Bailey, Bilston, Staffs.
Dr. J. W. Bone, Luton.
W. McAdam Eccles, Esq., M.S., F.R.C.S., London.
Dr. C. E. S. Flemming, Bradford-on-Avon.
Dr. A. Forbes, Sheffield.
Dr. S. Morton Mackenzie, Dorking.
Dr. F. Radcliffe, Oldham.
Vacancy.

Scotland.

Dr. C. E. Douglas, Cupar, Fife.
Vacancy.

Ireland.

Dr. J. S. Darling, Lurgan, co. Armagh.
Dr. R. B. Mahon, Galway.

Eight Elected by Representative Body.

Dr. H. Guy Dain, Birmingham.
Dr. E. R. Fothergill, Hove.
Dr. R. Langdon-Down, Hampton Wick.
Dr. E. Lewys-Lloyd, Towyn, Merioneth.
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(*b*) A medical representative from the Local Election Committee formed in any area in which an approved Medical Candidate is standing for election.

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L. Ferris-Scott, Esq., F.C.A., *Financial Secretary and Business Manager.*

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty:—Surgeon Commanders G. D. G. Fergusson to the *Curlew* on commissioning; H. A. Kellond-Knight to the *Pembroke* for R.N. Hospital, Chatham; D. H. C. Given to the *Victory*, additional for R.N. Barracks for duty with Surgeon Rear Admiral, Haslar, as Naval Health Officer, Portsmouth Command; C. H. Dawe to the *Firth*, additional for R.N. Barracks, Devonport, for duty with Surgeon Rear Admiral, Plymouth, as Naval Health Officer, Devonport; J. D. S. Mills to the *Glorious*; A. Woolcombe to the *Pembroke*, additional for R.N. Barracks, Chatham, for duty with Surgeon Rear Admiral, as Naval Health Officer, Nore Command. Surgeon Lieutenant Commanders H. E. Y. White, M.V.O., to the *President*, additional for three months' hospital course; M. S. Moore to the *Columbine*, additional for R.N. Hospital, South Queensferry. Surgeon Lieutenant G. G. Mitchell to the *Clematis*.

Surgeon Commander A. J. Wornet has retired at his own request with the rank of Surgeon Captain.

S. G. Rainsford to be Surgeon Lieutenant.

ROYAL ARMY MEDICAL CORPS.

The following officers relinquish their commissions: Temporary Captains: E. F. Bashford and H. A. Tillman, and are granted the rank of Major; G. L. K. Finlay and C. A. Harrison, and retain the rank of Captain; temporary Honorary Captain W. M. Richards, and retains the honorary rank of Captain.

Major W. L. Bennett, half-pay list, late R.A.M.C., is placed on retired pay on account of ill health.

The following Captains to be Majors: Brevet Major C. H. H. Harold, F. L. Fyffe, R. F. Bridges, T. J. Hallinan (and to remain seconded), H. G. Monteith, D.S.O., O.B.E. (and to remain seconded), Brevet Major J. D. Bowie, D.S.O., C. H. Stringer, D.S.O., J. K. Gaunt.

ROYAL HORSE GUARDS.

Surgeon Lieut.-Colonel B. Pares, C.M.G., D.S.O., retires on retired pay on account of ill health, May 17th, 1922 (substituted for notification in the *London Gazette*, May 16th, 1922).

INDIAN MEDICAL SERVICE.

Major A. N. Dickson, an Agency Surgeon, has been appointed to hold charge of the office of Agency Surgeon, Wana, in addition to his own duties as Civil Surgeon, Dera Ismail Khan, with effect from April 13th.

The services of Lieut.-Colonel H. Emslie Smith have been placed permanently at the disposal of the Government of Bengal, with effect from February 8th.

The services of Lieut.-Colonel W. J. Collinson have been placed temporarily at the disposal of the Government of Assam.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

The Reading Room, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

Lending Library: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

Subscriptions and Advertisements (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

Medical Secretary (Telegrams: Medisecra, Westrand, London).

Editor, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (3 lines).

Scottish Medical Secretary: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

Irish Medical Secretary: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

VACANCIES.

Birkenhead Borough Hospital.—Junior House-Surgeon (male). Salary, £100 per annum.

Birkenhead County Borough.—Assistant Medical Officer. Salary, £650 per annum.

Birmingham and Midland Ear and Throat Hospital.—House-Surgeon (non-resident). Salary, £200 per annum.

Birmingham: General Hospital.—(1) Anæsthetist. (2) House-Surgeon. (3) Obstetric House-Surgeon. (4) House-Surgeon to special departments (Skin and Venereal). Salaries for first three £100, and for (4) £125; they will be reduced by £30 on October 1st.

Bristol General Hospital.—(1) Two House-Physicians. (2) House-Surgeon. (3) Casualty House-Surgeon. (4) Obstetric Officer and House-Surgeon. Salaries at the rate of £150 per annum.

Canterbury: Kent and Canterbury Hospital.—Honorary Bacteriologist and Pathologist.

Central London Throat, Nose, and Ear Hospital, Gray's Inn Road, W.C.—(1) Registrar. (2) Second Resident House-Surgeon, remuneration at the rate of £75 per annum. (3) Clinical Assistants.

City of London Maternity Hospital, City Road, E.C.—Resident Medical Officer (male). Salary, £100 per annum.

Dumfries: Crichton Royal Mental Hospital.—Junior Assistant Physician. Salary, £350 per annum.

Guildford: Royal Surrey County Hospital.—House-Surgeon. Salary, £150 per annum.

Halifax: Royal Halifax Infirmary.—Second and Third House-Surgeons. Salary £2 second and £17 per annum respectively.

Hartlepools Hospital.—House-Surgeon. Salary, £200 per annum.

Kesteven County Asylum, Sleaford.—Medical Superintendent. Salary, £800 per annum.

Leeds: General Infirmary.—(1) Resident Medical Officer. (2) Resident Medical Officer at the Ida and Robert Arthington Hospitals. (3) Ophthalmic and Aural House-Surgeon. Salary, £200, £65, and £50 per annum respectively.

Leicester City Education Committee.—Assistant School Medical Officer (male). Salary, £500 per annum.

Liverpool: Royal Southern Hospital.—(1) Pathologist, Medical Registrar and Tutor. (2) Resident Casualty Officer, salary £150 per annum. (3) Two House-Physicians and three House-Surgeons, salary, £100 per annum.

Manchester City Council.—Third Assistant Medical Officer at the Monsall Fever Hospital. Salary, £250 per annum.

Manchester Royal Infirmary.—(1) Assistant Director of the Clinical Laboratory. (2) Resident Medical Officer at the Barnes Convalescent Hospital. Salary, £350 and £300 per annum respectively.

Manchester: St. Mary's Hospitals for Women and Children.—Resident Obstetric Surgeon. Salary, £250 per annum.

Manchester: Victoria Memorial Jewish Hospital, Cheetham.—Resident Medical Officer. Salary at the rate of £150 per annum.

Ministry of Pensions.—Junior Medical Officer at the Ministry of Pensions Hospital, Cannock Chase. Salary, £350 per annum.

Newcastle-upon-Tyne: University of Durham College of Medicine.—Senior Demonstrator of Anatomy. Salary, from £500 to £700 per annum.

Norwich: Norfolk and Norwich Hospital.—House-Surgeon. Salary, £150 per annum.

Nottingham General Dispensary.—Resident Surgeon (Branch). Salary, £500 per annum.

Oporto: British Hospital.—Medical Officer. Minimum income of £650 per annum guaranteed.

Portpatrick Parish Council.—Medical Officer. Salary, £110 first year, rising to £120 second year.

Public Dispensary, 122, Drury Lane, W.C.—Resident Medical Officer. Salary, £105 per annum.

Putney Hospital, S.W.—Resident Medical Officer. Salary, £150 per annum.

Queen Mary's Hospital for the East End, Stratford, E.—House-Surgeon. Salary, £150 per annum.

Rotherham Hospital.—Junior House-Surgeon (male). Salary, £150 per annum.

St. Mary's Hospital, Paddington, W.—Medical Superintendent. Salary, £350 per annum.

St. Peter's Hospital for Stone, etc., Henrietta Street, W.C.—House-Surgeon. Salary, £75 per annum.

Seamen's Hospital Society, Greenwich, S.E.—House-Physician at the "Dreadnought" Hospital. Salary, £150 per annum.

Throat Hospital, Golden Square, W.1.—Resident House-Surgeon. Salary at the rate of £100 per annum.

Warwickshire and Coventry Joint Committee for Tuberculosis.—Medical Superintendent for the King Edward VII Memorial Sanatorium. Salary £700 per annum.

West Bromwich County Borough.—(1) First Assistant Medical Officer of Health and Clinical Tuberculosis Officer. (2) Second Assistant Medical Officer of Health, Maternity and Child Welfare Medical Officer, and Assistant School Medical Officer. Salary, £700 and £500 per annum respectively.

West End Hospital for Nervous Diseases, Welbeck Street, W.1.—Honorary Clinical Assistants.

West London Hospital, Hammersmith Road, W.—(1) House-Physician. (2) Two House-Surgeons (males). Salary, £100 per annum each.

Winsley Sanatorium, near Bath.—Assistant Resident Medical Officer (male). Salary, £250 per annum, rising to £300.

Certifying Factory Surgeons.—The following vacant appointment is announced: Longtown (Cumberland).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

Broster, L. R., O.B.E., M.A., D.M., M.Ch.Oxon, F.R.C.S.Eng., Assistant Surgeon to the Queen's Hospital for Children, Hackney Road.

Cameron, S. J., M.B., Ch.B.Glas., F.R.F.P.S., Gynæcologist, Western Infirmary, Glasgow.

Grosman, S., M.R.C.S., L.R.C.P., Junior Assistant Medical Officer, Cardiff Mental Hospital, Whitchurch.

Locke, R. W., M.B., B.S.Durh., Resident Medical Officer, Newcastle Dispensary, vice I. M. Pirrie, M.C., M.B., B.S.Durh.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9*s.*, *which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

MARRIAGES.

Harber—Mainwaring.—On August 14th, Francis Strachey Harper, M.B., C.M., of Broughton, Bucks, to Una Evelyn, eldest daughter of the late Captain Percy Mainwaring and Mrs. Mainwaring of Shorebam, Sussex.

Tuite—Wilson.—At Dublin, on the 7th of August, Captain Mark Tuite, M.C., Connaught Rangers, J.P. co. of Longford, of Kilcene, and Cloone, co. Cavan, eldest son of the late Major Robert Stratford Tuite, R.I.R., to Ethel, sixth daughter of the late Dr. Thomas Wilson and Mrs. Wilson, of Edgeworthstown.

DEATH.

Thomas.—On the 7th inst., at his residence, 200, Pristol Road, Birmingham, William Thomas, M.B.Lond., F.R.C.S., aged 82.

Advertisements are published by the British Medical Association at the Office, No. 429, Strand, in the Parish of St. Mary-le-Strand, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, AUGUST 26TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

CURRENT NOTES:
Alteration in the Terms of Service of Insurance Practitioners ... 97
Midwifery Engagements ... 97

ANNUAL EXHIBITION OF SURGICAL INSTRUMENTS, DRUGS, FOODS, AND BOOKS ... 97

ASSOCIATION NOTICES:
Council, 1922-23: Vacancies ... 98
Branch and Division Meetings to be held ... 99

MEETINGS OF BRANCHES AND DIVISIONS ... 99
EXAMINATIONS UNDER THE DENTISTS ACT, 1921 ... 99
NAVAL AND MILITARY APPOINTMENTS ... 100
VACANCIES ... 100
APPOINTMENTS ... 100
ASSOCIATION INTELLIGENCE AND DIARY ... 100
BIRTHS, MARRIAGES, AND DEATHS ... 100

British Medical Association.

CURRENT NOTES.

Alteration in the Terms of Service of Insurance Practitioners.

THE object of the National Health Insurance Act, 1922, is to give statutory effect to the arrangements made between the Ministry of Health and Approved Societies whereby certain of the money now provided by the Treasury for medical benefit shall no longer be defrayed out of the national exchequer but shall come out of the funds of Approved Societies. Provision is contained in the Act for the Ministry of Health to prescribe the conditions attaching to the payment of this money to practitioners; such conditions were hitherto contained in an agreement between the Ministry of Health attaching to what has been known as the Treasury Grant and have always been part of an insurance practitioner's agreement with Insurance Committees. On June 15th the Ministry informed the Insurance Acts Committee that as the arrangements on this point would have to be put into the form of Regulations and come into operation immediately upon the bill becoming law, opportunity was being taken to make various amendments to the Regulations upon a number of other points which experience had shown to be desirable, some of which had been suggested by the Committee. The Ministry furnished the Committee with a memorandum as to the effect of the proposed changes, and various suggestions were made by the Committee and were included in the draft Regulations. The draft Regulations were considered by the Committee on July 6th, when they were approved subject to two reservations which have since been met by the Ministry. The Committee has informed the Ministry that it approves the Regulations on behalf of Panel Committees and insurance practitioners, and accordingly it has no hesitation in recommending the acceptance by insurance practitioners and Panel Committees of these amendments to the Regulations. It is understood that the Ministry of Health has issued to Insurance Committees sufficient copies of the new Regulations and of an explanatory memorandum for dispatch to insurance practitioners. The Regulations as to the old Treasury Grant conditions are retrospective as from April 1st last, while the other Regulations come into operation on September 1st next.

Midwifery Engagements.

The medical profession holds that an engagement to attend a midwifery case is binding on both sides unless due notice is given, and claims that the fee is payable even if the practitioner is not present when the child is born. The reason for this is that the practitioner must of necessity keep himself free from other engagements, and must not absent himself from home at or about the time when the confinement is expected.

This contention is borne out by a decision given by his Honour Judge Moore Cann at the Eastbourne County Court. From the report in the *Eastbourne Chronicle* of August 12th we gather that in this case a doctor sued the defendant for a professional retainer fee of £2 2s., which he claimed he was entitled to recover under an agreement made with the defendant's wife in May, 1921, to attend her in her prospective accouchement expected at the end of November or the beginning of December following; the particulars of the engagement were entered on a professional card given to her at the same time.

According to the plaintiff's version of the subsequent incidents, which first came to his knowledge when he called on the wife of the defendant at the beginning of this year, in the early part of last December, when the confinement was at hand, the plaintiff's retained services were not requisitioned by the defendant, but another doctor was summoned (it is alleged at the instigation of the nurse in attendance) to assist at the completion of the confinement, and that he continued to attend the defendant's wife throughout her convalescence, and was paid by the defendant for his services. No explanation was tendered, nor cause or reason assigned by the defendant for dispensing with the plaintiff's services. At the plaintiff's last interview the defendant's wife admitted liability for his fee, which she promised to pay very shortly. As this promise was not fulfilled within a reasonable time, the plaintiff sent a written demand for payment to the defendant, who, in reply, repudiated all liability. Hence this action. After hearing the defendant's evidence, which in no essential contravened the plaintiff's statement of facts, and after listening to and reviewing the legal arguments pro and con the validity of the "agreement" as a definitely binding contract, his Honour held that the plaintiff was entitled to the full amount of his claim of £2 2s., with costs.

In this case the doctor brought the case into court solely for the purpose of reasserting the principle set out at the commencement of this note.

THE ANNUAL EXHIBITION OF SURGICAL INSTRUMENTS, DRUGS, FOODS, AND BOOKS.

(*Continued from page 90.*)

A LITTLE group of stands devoted to orthopaedics was a special centre of interest in the exhibition. The stand of J. E. Hanger and Company, Ltd., of Roehampton, displayed some very ingenious metal limbs for amputations below and above the knee and through the hip. A demonstration was given at this stand by limbless men, who showed the perfection of the fitting by the ease with which they used the appliance; indeed, it needed more than a casual glance to make sure that they had not the use of their natural limbs. J. F. Rowley, Ltd., also of Roehampton, exhibited a special rubber foot and other refinements, such as ball-bearing joints for the elimination of the shock or jar from which wearers of artificial appendages find it difficult always to escape. The whole exhibit proved how refined a thing the production of artificial limbs has become—that it is not a question merely of providing something in the shape of a limb, but of attending to a great number of small details which make all the difference to the comfort of the wearer and to the ease with which he can get about. Other ingenious examples of surgical mechanics were to be seen at the stand of Hinders, Ltd., who exhibited various forms of foot supports, in which special attention was given to contour, and of shields and medicaments for foot hygiene.

The Holborn Surgical Instrument Company showed a very large number of instruments, principally for genito-urinary purposes, including various forms of urethroscopes and cystoscopes; prominence was given also to instruments for the surgery of the ear, nose, and throat, and especially to a pantoscope for giving illumination in these examinations. The Anglo-French Drug Company, Ltd., shared a stand with Modern Pharmacals, Ltd., and both firms exhibited a large number of pharmaceutical preparations. One of the most interesting things shown by the former house was a self-contained ampoule, the contents of which it was declared would keep indefinitely, for carrying "914" in solution.

The next stand was devoted entirely to ophthalmic instruments and equipment. Of the many interesting devices shown by Theodore Hamblin, Ltd., the principal was a combined instrument for perimetry and scotometry. It was claimed as one of the advantages of this instrument that no gut or wire was used in its construction, so that it was free from certain disadvantages attaching to other mechanical types of perimeters. Some improved patterns of the Morton ophthalmoscope were also to be seen here, and special attention was directed to the reversible small mirror, and its freedom from edge reflections.

A large and varied display of surgical instruments was to be seen at the stand of Mayer and Phelps, whose exhibit included instruments for use in urology, gynaecology, and laryngology, as well as anaesthetic apparatus. Perhaps the most noteworthy exhibit on this occasion was an instrument for the examination of the oesophagus and air passages. It consisted of combined electroscope and endoscope tubes, with interchangeable proximal and distal lighting. Near by was a stand of more particular interest to members of the dental profession, De Trey and Company, Ltd., devoting their exhibit to hypodermic needles and to a special form of sterilizer. The hypodermic needles were made of a stainless steel so as to resist the action of all common acids; it was stated that some of the needles had been left immersed in sea water for several days, and that not the slightest tarnish was to be detected.

The claims of Buxton were advanced at a neighbouring stand, and the photographs and literature of the mountain spa and the Peak District made a very attractive display indeed. The Buxton waters in bottle were also shown. This end of the centre aisle was, indeed, a very attractive part of the exhibition. Here the Museum Galleries, of London, were showing some delightful mezzotints and stipple engravings of the works of the old masters, as well as a gallery of a hundred famous portraits, including Lord Lister and other great figures in medicine.

The uses of colour, not in art but in science, were demonstrated close at hand by the British Dyestuffs Corporation, Ltd. A dozen or more dyes designed to be used as stains for microscopic work were exhibited here. The term "purity" as applied to such stains can only be appreciated and determined by an expert analyst, schooled in the tradition of such a chemical and scientific industry as that of the manufacture of dyestuffs. All the stains prepared by the Corporation had been tested analytically in this fashion, and tested also in respect of perfect solubility, uniformity, and pathological "correctness" as well as purity. The stains shown included methylene blue, tolnidine blue, basic magenta, gentian violet, methyl violet, safranine, neutral red (for staining ganglion cells), eosin, night blue (a stain for flagella), and a number of others. The Corporation also showed acriflavine, which it has manufactured since 1917; it presented a quarter of a million grams of this substance to the British Government for use in hospitals during the war. A paper on this antiseptic was communicated to the Section of Pathology, and was published in full, with a special plate of illustrations, in the Journal for August 19th (p. 306).

The general anaesthetic known as "ethaneal" was the principal feature at the stand of Savory and Moore, Ltd. This is an ether preparation, containing the higher ketones, some carbon dioxide (which is thought to exercise a stabilizing influence), and some ethylene, and was described originally at a meeting of the Section of Anaesthetics of the Royal Society of Medicine last year (British Medical Journal, April 16th, 1921, p. 565). Among the other exhibits at this stand were a number of medicinal preparations, including quinine sulphate, prepared in the form of thin, pliable gelatin sheets, or "lamels," of uniform thickness, each containing an exact quantity of the drug. The firm also showed its infants' and invalids' food. Special foods were again the feature of the stand of Numol, Ltd., but some surgical antiseptics were also shown, including a solution for the sterilization of surgical instruments. The preparations of the Maltine Manufacturing Company, Ltd., were shown at another stand, these including the original "maltine," plain and in various combinations, and a later introduction under the name of "maltoline," which is a combination of "maltine" with other constituents; it is supplied in a palatable powdered form with a view to its use in diseases of malnutrition.

The mineral waters shown by Ingram and Royle, Ltd., included samples from almost every European spa, but the first place was still given to the water and salt of the Vichy springs in France. Gaymer's cyder, ready in the glass, accounted for a refreshing corner, and many visitors sampled this Norfolk beverage. A neighbouring stand was devoted to perfumery, in the shape of the floral disinfectants of the Cromessol Company, of Glasgow, in which the attars of flowering plants were used for obtaining the various odours. Disinfectant perfumery is carried to its limit when it is suggested that in a cinematograph hall or theatre a particular odour can be used in consonance with the picture or scene presented.

One of the few stands to show *x* ray and electro-medical equipment was that of Schall and Son, where the principal exhibit was an apparatus for deep therapy, suitable for passing a current of 3 milliampères continuously through a gas-filled tube with an equivalent spark-gap of 16 inches, or a Coolidge tube with one of 20 inches, for eight hours a day, which prolonged exposure may be necessary in the treatment of carcinomas in a single sitting. Allied with this was a couch for deep therapy with an overhead gear, by means of which the tube-box could be adjusted in any position with regard to the patient lying below.

(To be continued.)

Association Notices.

COUNCIL, 1922–23.

(*a*) Vacancies.

Notice is hereby given of the following vacancies in the membership of the Council:

(i) *Glasgow and West of Scotland, four City Divisions* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(ii) *Munster Branch* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(iii) *Glasgow and West of Scotland, Border Counties, and Stirling Group of Branches* (one of the "12"), owing to no valid nomination having been received at the election during the Annual Representative Meeting;

(iv) *Metropolitan Outer Group* (one of the "12"), owing to the resignation of Dr. H. B. Brackenbury, consequent upon his now, as Deputy Chairman of the Representative Body, being a member of the Council *ex officio*; and

(v) *Indian Group*, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S. (ret.).

Under new By-law 54 (2) the Council is empowered either to fill the vacancies itself or cause them to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present cases.

(*b*) Nomination and Voting.

(i) *Home Areas.*

Nominations in respect of vacancies (i) and (ii) above (*i.e.*, in the "24") require to be either (*a*) by a Division comprised in the Group in question, or (*b*) by not less than 3 Members of any such Branch.

Nominations in respect of vacancies (iii) and (iv) above (*i.e.*, in the "12") must be by a Representative of one of the Constituencies comprised in the Group.

Forms of Nomination will be forwarded on application to the Medical Secretary, 429, Strand, and should be returned so as to reach him not later than Saturday, September 16th, 1922.

In the event of more than one candidate being nominated for any vacancy, Voting Papers will be issued to the electors concerned on September 29th, and should be returned so as to reach the Medical Secretary not later than first post on Friday, October 6th.

The result of the elections will be published in the *British Medical Journal Supplement* of October 14th, 1922.

(ii) *Area Outside United Kingdom.*

Nominations in respect of the Grouped Indian Branches must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922:

COUNCIL, 1922–23.

Nomination Form for Election of a Member by the Grouped Indian Branches.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....

of ..... (*Full name and address to be given*)

for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922–23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by Voting Papers, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

Alfred Cox, *Medical Secretary.*

BRANCH AND DIVISION MEETINGS TO BE HELD.

Yorkshire Branch: Harrogate Division.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on Some of the Clinical Manifestations of Tabes, which will be illustrated by lantern slides.

Meetings of Branches and Divisions.

Edinburgh Branch.

The annual meeting of the Edinburgh Branch was held at Galashiels on June 21st, with Dr. W. Stewart, President, in the chair. At the conclusion of the luncheon in the Douglas Hotel the President proposed that a Branch Golf Club should be instituted, which was unanimously agreed to, the President being elected *ex-officio* captain, and Dr. J. M. Bowie secretary. The afternoon from 1.30 to 4.30 was devoted, at the choice of the members, to a golf competition, bowling, and a motor drive by Bemersyde to Dryburgh Abbey and back by Melrose. At 4.30 p.m. the members of the South-Eastern Counties Division entertained the company to tea in the Technical College, and the business meeting of the Branch was afterwards held, being attended by some forty members. The President proposed: "That the new Rules of Organization of the Branch, submitted by the Branch Council in draft, be adopted as the Rules of Organization of the Branch, in substitution for the Rules of Organization dated 1904." This was unanimously agreed to, and the new Rules of Organization came immediately into effect. The action of the Branch Council in nominating Dr. J. M. Bowie and Mr. H. Wade to serve on the Local Voluntary Hospitals Committee for the Lothians and Peebles under the Voluntary Hospitals Commission was unanimously approved. The treasurer submitted his annual report, which was approved, and Dr. W. Stewart was elected a trustee in the place of the late Professor Boyd.

The following office-bearers, nominated by the Branch Council, were unanimously elected:

President: Dr. J. S. Muir. *President-elect:* Dr. W. R. Martine. *Past President:* Dr. W. Stewart. *Vice-Presidents:* Dr. J. Playfair and Dr. J. Lamond Lackie. *Honorary Treasurer:* Dr. R. Thin. *Honorary Secretary:* Dr. J. Stevens. *Assistant Honorary Secretary:* Mr. F. E. Jardine.

Dr. J. S. Muir was then installed as President, and in his introductory remarks gave reminiscences of the history of his Division from the time he became a member. Dr. Thin proposed a cordial vote of thanks to Dr. Stewart for his services as President during the past year, which was given with acclamation. It was intimated that Dr. C. M. Pearson had been elected to represent the Edinburgh and Fife Branches on the Council of the Association for 1922-23, in succession to Dr. John Stevens, whose six years' period of office in that capacity had expired. Dr. J. Haig Ferguson was elected to the annual vacancy on the Board of Management of the Queen Mary Nursing Home in place of the retiring member, Dr. William Fordyce. Dr. Martine proposed a vote of thanks to the honorary secretary, Dr. John Stevens, for his services, which was cordially agreed to, and the Secretary replied expressing his acknowledgement of the compliment.

North Wales Branch.

A meeting of the North Wales Branch was held at Menai Bridge on July 11th. The President, Dr. H. Drinkwater (Wrexham), introduced the President-elect, Lieut.-Colonel H. Jones-Roberts, who took the chair. The report of the Branch Council was read and approved, and the model Ethical rules were adopted without modification. The model Organization rules were considered, and, with some alterations, were adopted.

The President delivered his address on "A review of the history of the Branch from its formation in 1849." He recalled that in 1869 at the annual meeting the Council of the Branch was congratulated on the passing of the Medical Act, which included the registration of all duly qualified medical men, and registration societies were formed all over the country. But the Medical Act did not satisfy the members of the Association, and several forcible resolutions were passed, including one suggesting that chemists and druggists should be prohibited from visiting the sick and prescribing for them. The opinion was also expressed that the doctrines of homœopathy were based on erroneous and false data, were the product of ignorance, and were dangerous to public health, and that it was the duty of all qualified members on no account to meet practitioners of that system in consultation. In 1869 a case of fracture, dealt with "under Dr. Lister's method," was brought forward, regarding which the report was rather qualified. In 1873 the Branch was entitled to three members on the Council, while at the present time it was not entitled to one; this was an injustice, he considered, not only to the Branch, but to the Principality. In 1875 reference was made at the annual meeting of the Branch to the resignations of their posts as quarry doctors at Dinorwic and Penrhyn (Bethesda) of two members of the Branch rather than accept the services of an unqualified bonesetter. In 1877 a petition was signed against the admission of women members of the British Medical Association, it being observed that if females were allowed to enter it was very desirable that their education and examination should be conducted separately from the males, and they should be placed in a separate department of the Register, similar to that of foreign degrees! In conclusion, the President said that lessons were to be learned from a review of the past. The loyalty of the old members to the Branch was remarkable. They had no motor cars or fast trains in those early days, and had to do much hard work on horseback. Yet they attended the Branch meetings, and withal found time to keep themselves abreast of the times. The British Medical Association was not yet what they wished it to be. They should have better and closer association between the Branches and the Council. Every Branch, he believed, should be represented on the Council by a member of the Branch and not by the group system.

Another lesson to be learned from the history of the past was that their forefathers possessed a high sense of honour. They lived in a different age to-day. But it was well to remember that in spite of all changes of circumstances and time that the honour and prestige of the profession was a sacred trust handed down to them, which they in turn must hand down unsullied and undefiled.

On the motion of Dr. Robert Parry (Carnarvon), seconded by Dr. Hugh Jones (Dolgelly), the President was cordially thanked for his inspiring address.

Dr. John Hay of Liverpool then delivered a British Medical Association lecture on "Cardiac failure." In the discussion which followed, several members took part, and Dr. Hay replied. A hearty vote of thanks to Dr. Hay was carried with acclamation.

After the meeting the members were entertained to tea on the hotel lawn by the President.

During the meeting, which was very successful from every point of view, a leaflet, prepared by the President, was circulated containing the names of all the Presidents and officials of the Branch from 1849 to the present time.

EXAMINATIONS UNDER THE DENTISTS ACT, 1921.

We have received from Colonel Norman King, Registrar of the Dental Board of the United Kingdom, a table of the results of the first series of examinations under the new Act, which took place last month in London, Manchester, and Edinburgh. Part 1 includes a written paper and an oral examination; Part 2 the practical examinations in operative dentistry and dental mechanics. It is interesting to note that the majority of those who failed did so in Part 2, which included the subjects in which they claimed to be proficient, and not in Part 1, with regard to which most of them seemed to have the greater anxiety. The table printed below is a summary of that supplied by Colonel King, in which the candidates were classified under the headings "Mechanics," "Practitioners," and "W. S. Candidates"; the separate figures were also given for the three cities in which the examinations were held.

	No. of Candidates.	Passed.	Failed.		
			Part 1.	Part 2.	Parts 1 & 2
Mechanics	111	86	9	12	4
Practitioners	55	41	3	8	3
"W. S." candidates ...	68	47	5	10	6
Total	234	174	17	30	13

"W. S." candidates are those who were unable to show five years of practice exclusive of war service, and were admitted to examination without fee and with certain other advantages. If they fail in one part of the examination they are allowed to take that part afterwards by itself, but this

concession is not made to those who are not within this category. It will be seen by the table that ten "W. S." candidates will have to take Part 2 again, five will have to take Part 1 again, and those who failed in both parts will have to take the whole examination again. Section 3 (1) of the Dentists Act, 1921, states that the Board shall admit to the *Dentists Register* "any person who makes an application in that behalf within the interim period and satisfies the Board that he is (i) of good personal character; and (ii) was for any five of the seven years immediately preceding the commencement of this Act engaged, as his principal means of livelihood, in the practice of dentistry in the British Islands, or was admitted to membership of the Incorporated Dental Society not less than one year before the commencement of this Act; and (iii) had attained the age of twenty-three years before the commencement of this Act."

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following announcements are notified by the Admiralty: Surgeon Captains E. T. Meagher to the *Tyne*, for R.N. Hospital, Plymouth; H. S. Burniston, C.M.G., to the *Tyne*, for R.N. Barracks. Surgeon Commander R. Willan to the *Pembroke*, for R.N. Barracks. Surgeon Lieutenant-Commanders J. D. S. Higgins to the *Barham*, A. C. Paterson to the *Pembroke*, for Royal Marines, Deal. Surgeon Lieutenants H. L. Pritham to the *Ladybird*, and for group; K. A. I. Mackenzie to the *Queen Elizabeth*.

Surgeon Commander A. J. Wernet is placed on the retired list at his own request, with the rank of Surgeon Captain.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel (temporary Colonel) W. P. Gwynn, C.M.G., from R.A.M.C., to be Colonel, vice Colonel C. E. Pollock, C.B., C.B.E., D.S.O. (promoted), June 1st, 1922 (substituted for notification in the *London Gazette* of August 1st, 1922).

Major T. W. Stallybrass is restored to the establishment.

Captain H. A. Crouch, M.C., from the half-pay list, is restored to the establishment, June 4th, 1921, with precedence next below W. E. K. Coles (substituted for notification in the *London Gazette*, July 25th, 1922).

The following officers relinquish their commissions: Temporary Captains R. W. S. Christmas, and is granted the rank of Major; C. A. Meaden, and retains the rank of Captain.

ROYAL AIR FORCE MEDICAL SERVICE.

Dr. J. G. F. Heal is granted a short service commission as a Flight Lieutenant, with effect from, and with seniority of, August 1st, 1922.

The following are granted temporary commissions as Flight Lieutenants, with effect from, and with seniority of, August 1st, 1922: M. Coghlan, J. W. H. Steil.

VACANCIES.

Birmingham and Midland Ear and Throat Hospital.—House-Surgeon (non-resident). Salary, £200 per annum.

Bootle County Borough.—Assistant School Medical Officer and Assistant Medical Officer of Health. Salary, £630 per annum, rising to £750.

Bournemouth: Royal Victoria and West Hants Hospital (Boscombe Branch).—Resident Medical Officer. Salary, £175 per annum.

Bristol Eye Hospital.—House-Surgeon. Salary, £150 per annum.

Bristol General Hospital.—(1) Two House-Physicians. (2) House-Surgeon. (3) Casualty House-Surgeon. (4) Obstetric Officer and House-Surgeon. Salaries at the rate of £150 per annum.

Central London Throat, Nose, and Ear Hospital, Gray's Inn Road, W.C.—(1) Surgical Registrar (honorary). (2) House-Surgeon, salary £75 per annum. (3) Clinical Assistants.

Guildford: Royal Surrey County Hospital.—House-Surgeon. Salary, £150 per annum.

Guildford Union.—Medical Officer of the Institution. Salary, £175 per annum and extra fees.

Knowle Mental Hospital, Fareham.—Third Assistant Medical Officer (male). Salary, £500 per annum, rising to £550.

Leeds: General Infirmary.—(1) Resident Medical Officer. (2) Resident Medical Officer at the Ida and Robert Arthington Hospitals. (3) Ophthalmic and Aural House Surgeon. Salary, £200, £65, and £50 per annum respectively.

Lewisham Hospital.—Third Assistant Medical Officer. Salary, £400 per annum.

London Temperance Hospital, Hampstead Road, N.W.—(1) House-Surgeon. (2) Casualty Officer. Salary, £200 and £100 per annum respectively.

Manchester City Council.—Third Assistant Medical Officer at the Monsall Fever Hospital. Salary, £250 per annum.

Manchester: St. Mary's Hospitals for Women and Children.—Resident Obstetric Surgeon. Salary, £250 per annum.

Margate: Princess Mary's Hospital for Children, Cliftonville.—Junior Assistant Medical Officer. Salary, £122 per annum and bonus.

Metropolitan Asylums Board.—Junior Assistant Medical Officer at the Downs Hospital for Children, Sutton. Salary, £478 per annum, with war bonus.

Newcastle-upon-Tyne: University of Durham College of Medicine.—Senior Demonstrator of Anatomy. Salary, from £600 to £700 per annum.

Nottingham General Dispensary.—Resident Surgeon (Branch). Salary, £300 per annum.

Perth: Murray Royal Asylum.—Assistant Physician (male). Salary, £50 per annum.

Portpatrick Parish Council.—Medical Officer. Salary, £110 first year, rising to £120 second year.

Putney Hospital, S.W.—Resident Medical Officer. Salary, £150 per annum.

Queen Mary's Hospital for the East End, Stratford, E.—House-Surgeon. Salary, £150 per annum.

Rochester: St. Bartholomew's Hospital.—House-Physician. Salary, £100 per annum.

Rotherham Hospital.—Junior House-Surgeon (male). Salary, £150 per annum.

Royal Northern Hospital, Holloway, N.—Anaesthetist. Honorarium, £10 10s. per annum.

St. Mary's Hospital Medical School, Paddington, W.—Laboratory Research Worker. Salary, £500 per annum.

West London Hospital, Hammersmith Road, W.—(1) House-Physician. (2) Two House-Surgeons (males). (3) Non-resident Casualty Officer. Salary for (1) and (2), £100 per annum each, and for (3) £5 5s. a week.

Westminster Hospital, S.W.—Medical Registrar and Casualty Medical Officer. Honorarium, £150 per annum.

York City Council.—Assistant Medical Officer of Health and Assistant School Medical Officer (female). Salary, £500 per annum, or £400 if resident in Maternity Hospital.

Certifying Factory Surgeons.—The following vacant appointments are announced: Cleobury Mortimer (Salop); Patterdale (Westmorland).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

Bradford Royal Eye and Ear Hospital.—Honorary Ophthalmic Surgeon: J. Duff McCulloch, M.B., Ch.B.Glas. Honorary Aural Surgeon: Donald Watson, M.B., Ch.B.Edin., F.R.C.S.

Lilley, E. L., M.B., B.S., F.R.C.S., Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 20, and to be attached more particularly to the Hinckley, Leicester, Market Harborough, and Melton Mowbray County Courts.

Wilmot, Thomas J. T., M.D.T.C.D., L.M.Rot., Medical Officer of the No. 4 District of the Mansfield Union.

Wilson, Arthur J., M.B., Ch.B.Edin., House-Physician and Surgical Casualty Officer, Coventry and Warwickshire Hospital.

Certifying Factory Surgeons: R. P. Parker, L.R.C.P. and S.Edin., L.R.F.P.S.Glas., for the Royton District, co. Lancaster; B. A. Astley-Weston, M.B., Ch.B.Bristol, for the Glastonbury District, co. Somerset.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

The Reading Room, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

Lending Library: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

Subscriptions and Advertisements (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

Medical Secretary (Telegrams: Mediscera, Westrand, London).

Editor, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

Scottish Medical Secretary: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

Irish Medical Secretary: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

7 Thurs. London: Insurance Acts Committee, 2.30 p.m.
22 Fri. London: Science Committee.
25 Mon. London: Central Ethical Committee.
27 Wed. London: Hospitals Committee.
29 Fri. London: Public Health Committee.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

Anderson.—August 17th, at 37, Clanricarde Gardens, W.2, to the wife of R. Gracme Anderson, M.D., Ch.B., F.R.C.S., of 75, Harley Street—a daughter.

Davidson.—On 17th August, at Avonleigh, Acadia Road, Torquay, to Ivy, the wife of Dr. W. Cameron Davidson—a daughter.

Jones.—On 14th of August, 1922, at Bryn-y-Dre, Pangor, N. Wales, to the wife of Dr. Fenwick Jones—a daughter.

MARRIAGE.

Gibson—Palmer.—August 3rd, at St. Botolph's Church, Worthing, by the Rector, the Rev. J. P. Fallowes, M.A., Dr. Charles Gibson, Medical Officer of Health, Islington, eldest son of the late Dr. Charles Gibson, J.P., of Harrogate, to Myra Sarah, elder daughter of Mr. and Mrs. J. R. C. Palmer, Coniston, St. Botolph's Road.

DEATHS.

Lyttle.—At a nursing home in Brighton, August 13th, James Shaw Lyttle, M.D., M.Ch., M.A.O., late of Garthmore, Greigien, Court Royal Hotel, Brighton.

Taplin.—On the 15th of August, suddenly, at Nice, Dr. Julian Taplin.

Warren.—On the 17th inst., at his residence, St. James Lodge, Enfield Highway, Middlesex, William Pennefather Warren, L.R.C.S., L.R.C.P. Edin., D.P.H. Dublin, M.O.H. for Enfield, aged 62.

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SUPPLEMENT
TO THE
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CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

CURRENT NOTES:
- FUTURE PROSPECTS IN THE INDIAN MEDICAL SERVICE ... 101
- CORONER'S LAW 101
- SOMERSET COUNTY COUNCIL AND ITS ASSISTANT SCHOOL MEDICAL OFFICERS 102

THE ANNUAL EXHIBITION, GLASGOW, 1922 (CONCLUDING NOTICE) 102

ASSOCIATION NOTICES:
- COUNCIL, 1922-23: VACANCIES 103
- BRANCH AND DIVISION MEETINGS TO BE HELD 104

MEETINGS OF BRANCHES AND DIVISIONS 104

MILK AND DAIRIES (AMENDMENT) ACT, 1922 104

PAGE

THE *MEDICAL REGISTER*: UNTRACEABLE PRACTITIONERS, A TO G 105

THE SCOPE OF MEDICAL BENEFIT 104

INSURANCE NOTES:
- DENTAL BENEFIT 107
- SUPPLY OF DRUGS, ETC., FOR INSURANCE PATIENTS 107
- LONDON INSURANCE COMMITTEE 107
- LONDON PANEL COMMITTEE 107

DANGEROUS DRUGS ACT 107

NAVAL AND MILITARY APPOINTMENTS 107

VACANCIES AND APPOINTMENTS 108

ASSOCIATION INTELLIGENCE AND DIARY 108

BIRTHS, MARRIAGES, AND DEATHS 108

British Medical Association.

CURRENT NOTES.

Future Prospects in the Indian Medical Service.

THE Government of Madras has issued an Order, dated June 10th, 1922 (G.O. No. 815—A, P.H.), dealing with the reorganization of the Sanitary Department, which in future is to be known as the Public Health Department. The Order states that "the Department will, as hitherto, remain distinct and entirely provincial in character. It will be composed partly of Indian Medical Service officers and partly of others. Officers of the Bacteriological Department will also be eligible for appointment to the Public Health Department at the discretion of the Government. A proportion of the appointments (which will be fixed by the Secretary of State) will be reserved for officers of the Indian Medical Service. The rest will ordinarily be recruited from the ranks of health officers; but outsiders with the requisite qualifications will also be eligible." The appointment of Director of Public Health will be open to all members of the department, and as regards the appointment of Assistant Directors "the existing practice under which Indian Medical Service officers desirous of entering the Public Health Department register their names with the Director-General I.M.S. will be continued. Selection will, however, rest entirely with local governments."

We have not seen the full text of the Order, though the above quotations from it are, we have every reason to believe, correct. A correspondent has sent us a cutting from *The Antiseptic* (July, 1922), a monthly medical journal published in Madras, which seems to show how the wind blows. The article objects to the provision that "the recruitment must be partly of I.M.S. officers and partly of others," and continues as follows:

> "When the new reorganization is being ushered in this Presidency why should we implicate ourselves by having two kinds of services, over one of which only the Ministers have got control? This state of affairs must not be allowed to continue. For the Provincial Sanitary Department we are of opinion that none of the men of the Indian Medical Service should be entertained. First, they are very costly. Secondly, they are not conversant with the habits, customs, and language of the people, and, further, the experience that they gain in the course of their sanitary administration of the province goes away with them when they retire, and the country does not benefit by it at all. Another important objection to employ them in the Provincial Sanitary Department is that they may be called away at any time for military duty. We are for getting the best qualified men for the post available either in India or in England or in any other part of the world. For a matter of that, the G.O. states, 'Selection will, *however*, rest entirely with local governments.' We hope that the Minister for Public Health will take advantage of this loophole to appoint as many qualified Indians for the post as he could possibly do without lowering the efficiency."

We have received a letter from an I.M.S. officer in India commenting on this Order. "It discloses," he says,

> "the present position not only in the sanitary departments but in every branch of civil employ for which the I.M.S. man is eligible. Posts become vacant in the provinces, and officers of the service are nominated therefor by the D.G.I.M.S. The actual appointment then rests with the Indian Minister, and as often as not the I.M.S. candidate is not accepted. The door of the civil side of the service is rapidly closing, and future prospects have fallen to zero. Proportionate pensions were offered to men of under seventeen years' service on condition that the D.M.S. (Military) was unable to absorb them. The D.M.S. is only too glad to have as many European officers as possible, and the net result of this is that the proportionate pension scheme so far as these officers are concerned is a farce. . . . The foregoing affects only a few officers—namely, those in civil employ under seventeen years' service who are dissatisfied with present conditions and fear the future. An opportunity should be given these men to take their small pension and begin life elsewhere before it is, for them, too late."

If the D.M.S. is glad to have as many European officers as possible this must tend to have the effect of preventing the retirement of those officers who wish to do so, as many of them are dissatisfied with the present conditions, and doubtful of what the future may have in store.

It is true that the I.M.S. is primarily a military service, but the India Office holds out to intending British candidates the possibility of increasing their income by private practice as an inducement to join the service. The British Medical Association has drawn the attention of the India Office to the dissatisfaction which exists owing to the proviso attached to the offer of proportionate pensions, and has asked that it may be amended at an early date so as to permit officers to retire if they wish and be compensated in the same way as officers in the Civil Service, on the grounds of the diminished prospects of any increase in income due to private practice.

The India Office has replied to the effect that the British Medical Association's representations have been communicated to the Government of India, and that a further communication will be made to the Association after the receipt of the Government of India's reply.

Coroner's Law.

It is common for writers of romance to add to the interest and mystery of their works by the introduction of medical incidents, and such incidents are frequent in books dealing with crime and the detection of crime; but it is rarely that these works present any interest to the professional reader over and above the evanescent relaxation he derives from the reading of light literature. There are, however, exceptions to this generalization. In two recent novels scenes have been staged in the coroner's court. *If Winter Comes*, by A. S. M. Hutchinson, shows not unfairly the travesty of justice an ignorant and bullying coroner may effect. What an inquest sometimes is, and what it should be, are well brought out in the novel entitled *Helen Vardon's Confession*,[1] by R. Austin Freeman, which introduces the reader, at the critical point of the story, into the coroner's court. The case is one of supposed suicide. Superficially, the evidence is clear and emphatic on the point. An elderly man of repulsive habit and dubious character had by false pretences secured marriage with a young, handsome, and clever woman. She sacrifices herself to save her father; she finds she has been cheated, and she does not

[1] *Helen Vardon's Confession*. By R. Austin Freeman. London: Hodder and Stoughton, Ltd. (7/6 net.)

even save her father, who dies in circumstances that require a coroner's inquest. That inquiry is inefficiently carried out, and forms the beginning of the coil. The woman repudiates her husband; he agrees to the separation. Some months later the man receives anonymous letters relating to the death of his wife's father; these prey on his mind, and he owns to a fear that he will put an end to his life even as had several of his blood relations. The man is found dead in his bedroom as though by hanging. There is the inquest. The horror of the "identification" of the body by the wife is finely sketched. Then comes a singularly true picture of the coroner's court, which brings into high relief the inadequacy and inefficiency of the court as a means of discovering the cause of death. The coroner takes such evidence as is submitted to him, makes sundry cheap remarks upon expert medical evidence, and on the strength of the "plain evidence" before the court weaves an indictment which is nothing less than that of murder in the second degree against the dead man's wife. Happily a Home Office inquiry had been instituted into the case through an expert medico-legal practitioner, who attends the court in the nick of time to give his evidence. The coroner admits his evidence with ill-concealed anger and caustic remarks upon this unwarrantable intrusion upon the rights of his court. The new evidence is a statement of a scientific inquiry into the cause of death; it is simple and irresistible, and it proves that the man was poisoned, and by his housekeeper and unmarried wife. Medical practitioners have just cause of complaint against the antiquated, ill-defined, and cumbrous procedure of the coroner's court. The British Medical Association has for many years pressed upon the Government the urgent necessity of reforming procedure in inquiries into the cause of death where such inquiry is needed. The Association desires that the coroner should be an officer properly equipped and authorized to make a scientific inquiry that shall establish the cause of death so far as that may be ascertained, and that those features of the coroner's court which make it a travesty of a court of first instance should be abolished. According to a recent statement of the Home Secretary, the office and duties of the coroner are now under consideration. In the past works of fiction have played no small part in securing desired reforms; maybe Mr. Austin Freeman's book will take an honourable place amongst these works. His book is well written, his psychology is good, his knowledge of fine art enviable, and he has no mean acquaintance with the law. His book is well worth reading.

Somerset County Council and its Assistant School Medical Officers.

It appears that the campaign for "economy at any cost" has broken out in an aggravated form in the county of Somerset. The County Council is advertising for an assistant school medical officer at a commencing salary of £300 *plus* bonus, which, "for the next six months," will be at the rate of £149 13s., or £449 13s. in all, the basic salary to rise by increments of £12 10s. to £350 per annum. The salary offered *plus* bonus is, in the first instance, £50 below the British Medical Association's minimum of £500, and it may be taken for granted that the fall in bonus which will take place during the next twelve months will not be compensated by an increment at the end of that period of £12 10s. It should not be forgotten that the Association's pre-war basic salary for an assistant school medical officer was £350 per annum, so that the Somerset County Council's proposals should serve as a useful reminder of what the future has in store if members of the medical profession submit to any tampering with the present modest standard demanded by the Association.

Expenditure and Income Statistics.

The attention of the medical profession is again drawn to the offer of a gratuitous copy of a model account book to any practitioner undertaking to forward the information entered therein for the confidential use of the Insurance Acts Committee. There can be no doubt that all information under this head ought to be in the possession of the central negotiating body for insurance practitioners (the Insurance Acts Committee) for use at the time of the revision, at the end of 1923, of the present bargain with respect to the insurance capitation fee. Inquiries should be addressed to the Medical Secretary, 429, Strand, W.C.2.

THE ANNUAL EXHIBITION OF SURGICAL INSTRUMENTS, DRUGS, FOODS, AND BOOKS.

(*Concluded from page 98.*)

A SELECTION of surgical instruments was shown by Archibald Young and Son of Edinburgh. These were of wide range, and included instruments for the examination of the eye, the ear, the nose, and the throat, midwifery appliances (the Milne-Murray axis-traction forceps and the Jardine combined perforator-cranioclast), and orthopaedic appliances for correcting deformities and fitting to amputations. The Camp physiological belt, made by a Michigan firm of that name, was also shown at this stand. Among the interesting exhibits in this part of the hall were those of the Medical Insurance Agency, whose manager informed us that the agency had done more business on this occasion than ever before; the five hundred books on medical and allied subjects at the stand of H. R. Ellis; the Blick typewriter shown by the company of that name; and the dentifrice of Kolynos Incorporated, which takes the form of a delightful cream. The preparations of Bengué and Company were shown, including ethyl chloride, which this firm claims to have been the first to introduce into this country for local and general anaesthesia.

"Nujol," a product of the Standard Oil Company of New Jersey, was the principal exhibit at the stand of the Anglo-American Oil Company; this is a pure liquid paraffin (BRITISH MEDICAL JOURNAL, May 22nd, 1920, p. 709), complying with all the requirements of the *British Pharmacopoeia*, 1914. A more recent introduction at the same stand was "Mistol," a nose and throat spray, for which it was claimed that it afforded relief in irritated and inflamed conditions. The Anglo-American Pharmaceutical Company, Ltd., at the neighbouring stand showed principally Huxley's pharmaceutical products, including concentrated mixtures, glycerophosphate compounds, liniments, dressings, and antiseptics. Yet another firm with American connexions, the C. H. Phillips Chemical Company of New York and London, exhibited principally its "milk of magnesia" for neutralizing milk, and its phosphomuriate of quinine, an aromatic syrup, put forward as an appetizer and tonic.

From this array of chemicals it was a relief to pass to the confectionery stand of Malcolm Campbell, Ltd., of Glasgow, and the literary wares of John Wright and Sons, Ltd., of Bristol. The latter showed a number of leading textbooks, as well as some consulting-room equipment in the shape of a card-index system and other helps to method in medical practice. Rustless and stainless steel was a feature at yet another stand, that of J. Gardner and Son of Edinburgh, who claimed for the steel that its temper was such that a cataract knife made of it had been used by an eminent surgeon in Edinburgh several times without the necessity of resharpening. The same firm showed an interesting variety of surgical instruments.

Of the many exhibits at the stand of Allen and Hanburys, Ltd., the principal was the new pedestal operation table made originally for St. Bartholomew's Hospital. It can be raised and lowered bodily by means of an oil pump worked by a foot pedal; the raised pelvic position is obtained by lifting a lever and inclining the table to the desired degree; the table rotates easily on its base, but is perfectly rigid when once the required position is obtained. It was stated that this operation table had now been supplied to 100 institutions, and that five such tables had been installed at St. Bartholomew's. Among the other hospital requirements shown here was a nitrous-oxide apparatus (a modification of Boyle's apparatus) with an all-metal frame, and an examination lamp designed to throw a clear light without shadow. The remaining stand in this row was that of Oppenheimer, Son, and Company, Ltd., whose palatinoids (medicaments in fine powder without excipient) and colloidal products were exhibited. Here also was an oxygen generator recently described in our columns (July 15th, 1922, p. 78). Another ingenious arrangement was the "ever hot" water bottle, in which the heat was generated by chemical means in the bottle itself; by the addition of cold water the temperature could be maintained at one level for twenty-four hours.

Turning now to the last row of stands, the first—one of the largest in the exhibition—was that of Down Brothers, Ltd., with an extremely varied collection of surgical instruments and hospital furniture. Of many of these exhibits there is no need to speak because they have already been noticed at various times. The hospital furniture included some of the

most recent types of operating tables, and among the surgical instruments the various modifications of original patterns could be traced alongside the patterns themselves. The next stand, that of Boots Pure Drug Company, Ltd., of Nottingham, was, on the pharmaceutical and medicinal side, an equally diversified collection. The products included a hundred or more different synthetic and medicinal chemicals of the firm's own manufacture, and many of these were exhibited as compressed tablets or in other forms to facilitate a special use. The products included "Stabilarsan," a compound of "606" and glucose.

Another illustration of the progress of pharmaceutical standardization was provided by the stand of Parke, Davis, and Company. Here "Mercurosal," a soluble mercurial salt, was exhibited for the treatment of syphilis. It is supplied in tubes of two kinds, one for intravenous and the other for intramuscular injection, the first containing one-tenth of a gram, and the second half this amount. A still later product of the firm's research department was "Neoprotosil," a colloidal silver iodide compound, prepared with a soluble protein base. Antidiphtheria and antitetanus serums were exhibited, also bacterial vaccines prepared in the laboratory of St. Mary's Hospital. The exhibitors drew special attention on this occasion to their adrenalin, which was introduced some twenty years ago.

A large space was occupied by the exhibit of John Bell and Croyden, Ltd., the firm which has incorporated Arnold and Sons, manufacturers of surgical instruments. The central place was given to a lamp for the operating theatre. A specially tinted glass screen was employed; as seen from below in an enclosed building it had the appearance of an ordinary skylight, and the colour effect produced on objects was equivalent to that produced by daylight. The "Royal" operating theatre was remarkable for the way in which every position could be immediately obtained by the manipulation of a hand lever. On the medical side a barium cream meal ready prepared for use in *x*-ray examinations, and the same in a pastille form, were noticeable.

The Crookes Laboratories (British Colloids, Ltd.) again showed colloidal preparations of standard drugs, and a special place was assigned to the latest introduction in the "collosol" range in the shape of colloid calcium, which has been applied in the treatment of tuberculosis. The Edinburgh firm of Duncan, Flockhart, and Company, which made the chloroform for Simpson's discovery, had a distinctive exhibit. During the war this firm began the cultivation of medicinal plants, and herbs from its pharmaceutical farm at Warriston, in the suburbs of Edinburgh, were on exhibition, also samples of the dried drugs as offered on the market. The commercial crops included *Aconitum napellus*, *Atropa belladonna*, *Digitalis purpurea*, and *Rosa gallica*. The firm also exhibited the various ethers required for anaesthesia, and a number of endocrine products, most of them in tablet form. The exhibition of Jeyes's fluids included "Cyllin," which figured in a dozen different forms, as inhalant, syrup, pastilles, soap, and powder. The same firm showed "Branalcane" as an antiseptic and sedative. Next door was the sanitary polish of Ronuk, Ltd., with a telling exhibition of its powers in dealing with flooring and interior woodwork. Another floor polish, specially prepared for the use of public institutions and nursing homes, was the "Shell" brand, exhibited by A. H. Hamilton and Company, Ltd., of Glasgow, and said to be the result of thirty-three years' experience of works chemistry. The last of the bookstalls to be visited was that of W. B. Saunders and Company, Ltd., which contained, in addition to many other important works, the seventh and eighth volumes of Keen's *Surgery*. At this corner another English spa advertised its claims. This was Droitwich, where the natural brine is said to be twelve times the strength of that of the ocean, so that the springs of this Worcestershire resort constitute the most saline waters known. Evidently from the literature at the stand the chemical constituents of its waters are not Droitwich's only claim to consideration, and it enjoys a full share of those amenities which visitors to spas expect.

The firm of Carl Zeiss of Jena, through its London representatives J. W. Atha and Company, showed models of ophthalmoscopes and other apparatus for eye work, including a slit mirror for the focal illumination of the eye, a corneal microscope, a differential pupilloscope for the examination of disturbances of the pupils, and various special glasses for spectacle lenses. An exhibit of microscopes for both general and special work was shown by Ogilvy and Company, the British agent for Leitz. The latest model was a microscope combining the advantages of both the monocular and binocular forms; the objective and revolving nosepiece was attached to a special fitting, and the one body could be lifted off its dovetailed channel and the other placed in position without any disturbance of the adjustments, and, of course, only one set of objectives was required. An improvement since last year was embodied in a new lamp for research work, giving a homogeneous mass of white light.

The special feature at the stand of Genatosan, Ltd., was the exhibit of detoxicated—or, more properly, residual—vaccines, including specimens of the protein fraction of various bacteria, and the different vaccines available. This firm's disinfectants and antiseptics and other well-known preparations were also on view, as well as a new form of syringe. The last stand—in the order in which we have taken the exhibition—was that of the Dowsing Radiant Heat Company, Ltd., with apparatus for the treatment of rheumatism, gout, sciatica, and kindred ailments. The apparatus consists of a bed containing a series of lamps and reflectors (developing a heat of 300° F.); each of the lamps is controlled by a separate switch, and the whole by a lever governing a rheostat; all the lamps can thus be controlled by a single movement. There were also displayed a number of similar pieces of apparatus for local treatment.

Even when the visitor had completed the circuit of the medical exhibition there remained an equally large space in Kelvin Hall devoted to the public health exhibition arranged by the Corporation of Glasgow, of which some account has already been given (SUPPLEMENT, August 5th, p. 82).

Association Notices.

COUNCIL, 1922–23.

(*a*) VACANCIES.

NOTICE is hereby given of the following vacancies in the membership of the Council:

(i) *Glasgow and West of Scotland, four City Divisions* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(ii) *Munster Branch* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(iii) *Glasgow and West of Scotland, Border Counties, and Stirling Group of Branches* (one of the "12"), owing to no valid nomination having been received at the election during the Annual Representative Meeting;

(iv) *Metropolitan Outer Group* (one of the "12"), owing to the resignation of Dr. H. B. Brackenbury, consequent upon his now, as Deputy Chairman of the Representative Body, being a member of the Council *ex officio*; and

(v) *Indian Group*, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S.(ret.).

Under new By-law 54 (2) the Council is empowered either to fill the vacancies itself or cause them to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present cases.

(*b*) NOMINATION AND VOTING.

(i) *Home Areas.*

NOMINATIONS in respect of vacancies (i) and (ii) above (*i.e.*, in the "24") require to be either (*a*) by a Division comprised in the Group in question or (*b*) by not less than 3 Members of any such Branch.

NOMINATIONS in respect of vacancies (iii) and (iv) above (*i.e.*, in the "12") must be by a Representative of one of the Constituencies comprised in the Group.

FORMS of NOMINATION will be forwarded on application to the Medical Secretary, 429, Strand, and should be returned so as to reach him not later than Saturday, September 16th, 1922.

In the event of more than one candidate being nominated for any vacancy, VOTING PAPERS will be issued to the electors concerned on September 29th, and should be returned so as to reach the Medical Secretary not later than first post on Friday, October 6th.

The result of the elections will be published in the *British Medical Journal Supplement* of October 14th, 1922.

(ii) *Area Outside United Kingdom.*

NOMINATIONS in respect of the Grouped Indian Branches must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922;

COUNCIL, 1922-23.

NOMINATION FORM FOR ELECTION OF A MEMBER BY THE GROUPED INDIAN BRANCHES.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....
of ..... (*Full name and address to be given*)
for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922-23.

Signatures and Addresses of Nominators .....
Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by VOTING PAPERS, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

ALFRED COX, *Medical Secretary.*

BRANCH AND DIVISION MEETINGS TO BE HELD.

KENT BRANCH.—A meeting of the Branch will be held on Thursday, September 14th, at 3 o'clock, at the Kent and Canterbury Hospital, Canterbury (by kind permission of the Hospital Committee). A discussion on "The work of maternity and infant welfare clinics" will be introduced by Dr. Rowan McCombe, Medical Officer of Health and School Medical Officer, Margate; Dr. F. Wacher, Medical Officer of Health, Canterbury, and Dr. Constant Ponder, Assistant County Medical Officer, will also take part. For the convenience of those attending, a luncheon has been arranged at the County Hotel, Canterbury, at 1.45 p.m.; charge 3s. each. Those wishing to avail themselves of this should send a postcard to the hotel not later than Monday, September 11th. After the meeting Dr. F. Wacher will entertain those present to tea.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on "Some of the clinical manifestations of tabes," which will be illustrated by lantern slides.

Meetings of Branches and Divisions.

NORFOLK BRANCH.

THE annual meeting of the Norfolk Branch was held at the Norfolk and Norwich Hospital on July 26th, with the President, Dr. R. C. M. COLVIN-SMITH, in the chair. Exhibits of interest from the museum and *x*-ray department of the hospital were on view, and Messrs. Down Bros. exhibited instruments.

The report of the Branch Council and the annual financial statement were adopted.

The new president, Dr. A. J. Cleveland, O.B.E., having been inducted by the retiring president, Colonel Herbert Ellis Rowell (East Rudham) was elected president-elect, and Colonel J. M. G. Bremner, O.B.E. (Norwich), and Dr. B. B. Sapwell (Aylsham) vice-presidents.

A very interesting and instructive address on pyelitis was given by Sir JOHN THOMSON WALKER. It was very much appreciated, and gave rise to a good discussion; a hearty vote of thanks was accorded to the lecturer.

After the meeting, which was one of the most successful ever held by the Branch, members and their wives had tea in the hospital grounds by invitation of Dr. and Mrs. Cleveland.

WILTSHIRE BRANCH.

THE annual general meeting of the Wiltshire Branch was held at the County Hotel, Salisbury, on June 28th, when Dr. C. E. S. FLEMMING was in the chair.

The following officers were elected:

President: Dr. J. E. Gordon. *President-elect:* Dr. T. P. Berry. *Vice-Presidents:* Drs. Flemming, Haydon, and Kempe. *Honorary Secretary:* Dr. Bond. *Representative in Representative Body:* Dr. Flemming. *Deputy Representative:* Dr. J. E. Gordon.

It was recommended that in future the Division whose turn it will be to provide the next president be asked to nominate someone.

A vote of thanks having been adopted to Dr. Flemming for his services in the past as President and Representative, Dr. GORDON took the chair.

The following scale of fees for attendance on members of the police force was agreed to:

Consultation at surgery, 3s. 6d.
Visit, 5s.
Mileage 1s. a mile both ways, over two miles.
Night visits (8 p.m. to 8 a.m.) double.
Medicine extra.

Members were asked to contribute to the Wood-Hill Fund. The appeal of the British Medical Association on behalf of the Russian Doctors' Fund was received, and members were asked to support it.

With reference to the question of mileage for attendance at inquests, it was resolved to write to the County Council, asking for 1s. a mile each way.

YORKSHIRE BRANCH: HARROGATE DIVISION.

ON July 19th an enjoyable afternoon was spent by the members of the Harrogate Division and their friends at Fountains Abbey, by the kind invitation of Dr. Greenwood (Ripon), President of the Harrogate Division. The meeting was favoured with fine weather, and tea was served in the grounds, between fifty and sixty people being present. After tea Canon Garrod of Ripon gave a most interesting lecture on the early history of the Abbey, and conducted the party round the ruins, explaining the architecture and history of each part. Everyone expressed appreciation of the President's hospitality and of Canon Garrod's address.

MILK AND DAIRIES (AMENDMENT) ACT, 1922.

THE Ministry of Health has issued a Circular (No. 335, price 1d. net.), calling the attention of local authorities to the provisions of the above Act, which (excepting Section 3) came into force on September 1st, 1922. Hitherto sanitary authorities have been bound to register every dairyman, in whatever way he carried on his business, and have had no power to remove him. Two registers must now be kept, one for retailers only, the other for wholesalers and producers, and the Local Authority has power both to refuse admission to the former register and to remove from it the name of any person likely to endanger the public health by any act or default in connexion with his dairy business. This remedies a long-recognized defect in milk legislation. There is, of course, full provision for appeal against alleged wrongful refusal or removal. Removal may be absolute or only in respect of specified premises. Section 3 of the Act, dealing with certified and graded milk, comes into force on January 1st next, when existing Orders expire. It is intended that licences for certified milk shall be granted only by the Department, but that local authorities shall issue licences for Grade A milk under substantially modified conditions, and also for pasteurized milk. Another section prohibits the addition to milk for sale of water or colouring matter or skimmed or separated milk. A heavy penalty is imposed by Section 5 on the sale of milk from a cow with proved or reasonably ascertainable tuberculosis of the udder. For a second offence there may be a fine of £100 and/or six months' imprisonment with or without hard labour. If a local authority fails to do its duty its powers may be transferred to the county council.

THE SCOPE OF MEDICAL BENEFIT.

A MEETING of the Worcester City Insurance Committee was held on August 30th to consider the reply of the Ministry of Health to representations by that Committee against the charges made by certain insurance practitioners for operations, etc., upon insured patients, which the Committee thought should be within the scope of medical benefit. The general effect of the Ministry's letter was to uphold the action of the practitioners as being in accordance with the present Regulations. If, however, Insurance Committees generally thought that changes in the Regulations were desirable, the Ministry would examine any well-considered suggestions for modifying the procedure. The chairman of the Committee, Mr. Fairbairn, remarked that as the Ministry's decision was against the Committee's view, and appeared to invite action, he felt it was incumbent on them to attempt to create a definite expression of public opinion in favour of a complete extension of medical benefit so as to provide a full medical and surgical service without further cost to the community. He subsequently moved the following resolution:

> That in the opinion of this Committee the total funds now contributed by insured persons, their employers, and the State should be regarded as sufficient to provide for the inclusion in medical benefit of all kinds of medical and surgical treatment (comprising major operations, specialist and consultant services, hospital facilities, laboratory diagnosis, etc., etc.); the cost of any service other than that usually rendered by a practitioner of ordinary professional competence and skill to be a first charge on the Practitioners' Fund; and that the Medical Benefit Regulations and any schemes made thereunder should be amended accordingly.

This was supported by two representatives of friendly societies. Mr. Bullock, on behalf of the Oddfellows, said that friendly society men and women were very dissatisfied with the present position, and would insist upon receiving all the benefits which they considered they and their employers already paid for. Dr. Moore Ede suggested an amendment which would leave the point as to the present contributions open. Dr. A. Foster, in seconding this amendment, said that he had no doubt that medical men generally desired to see medical benefit extended completely, so as to provide an entirely satisfactory service. The amendment was strongly opposed by the representative of the Hearts of Oak Society, and after further discussion it was defeated, the Chairman saying that it would make the resolution quite unacceptable for their purpose. The resolution was then carried by nine votes to two. It was further agreed to forward the resolution to the Ministry of Health, to the National Association of Insurance Committees, to all Insurance Committees, and to approved societies in the area, inviting their support.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS, A TO G.

WE are requested by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. The list includes all untraceable names from A to G in the body of the *Medical Register*, as it is only this section which has come under review this year. Anyone who finds his or her name included in this list should communicate immediately with the Registrar (E) of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1; or (S) of the Scottish Branch Council, 20, Queen Street, Edinburgh; or (I) of the Irish Branch Council, 35, Dawson Street, Dublin.

Since this list was prepared a large number of further inquiries have been sent out, but it would be advisable that in all cases in which a practitioner's name appears in the list a communication should be addressed to the Registrar.

Abbott, Fredk. Ernest, L.S.A. 1883 (E)
a'Beckett, William G., M.R.C.S. 1860 (E)
Ackland, Frederick C., L.R.C.P. and S. 1899 (S)
Acton, Thomas, M.R.C.S. 1900 (E)
Adam, Basil J., M.B. 1886 (S)
Adams, Melville M., M.B. 1912 (E)
Adams, Russell G. W., F.R.C.S. 1905 (S)
Adler, Saul, M.B. 1917 (E)
Agnew, Francis Vere, M.D. 1912 (I)
Ahern, Mary J. (Miss), L.R.C.P. 1913 (I)
Ainsley, James E., L.R.C.P. and S. 1916 (E)
Aitken, Arthur N., M.R.C.S. 1920 (E)
Aitken, Charles, M.B. 1885 (S)
Alcorn, John M., L.R.C.P. 1905 (I)
Aldred, John C., L.K.Q.C.P. 1883 (E)
Alexander, Alfred G., M.B. 1900 (I)
Alexander, John, M.R.C.S. 1880 (E)
Alexander, Joseph, M.B. 1918 (S)
Alexander, Robert H., M.C., M.B. 1914 (S)
Alexander, Walter S., M.B. 1890 (I)
Allan, William, M.B. 1887 (S)
Allen, Patrick Joseph, M.R.C.S. 1871 (I)
Allen, Sydney H., L.R.C.P. and S. 1901 (S)
Allen, Thomas, L.S.A. 1839 (E)
Alleyne, Evelyn Addison W., M.R.C.S. 1909 (E)
Ambrose, Charles Going, M.B. 1919 (E)
Ambrose, William C., M.R.C.S. 1898 (I)
Amenabar, Julio D., M.R.C.S. 1897 (E)
Amyot, Thomas E., M.B. 1904 (E)
Anderson, Arthur L., M.B. 1898 (E)
Anderson, George M., M.B. 1870 (S)
Anderson, Henry Morris, M.B. 1909 (S)
Anderson, James R., M.R.C.S. 1883 (E)
Anderson, John G., M.C., M.B. 1914 (S)
Anderson, Thomas C., M.B. 1892 (S)
Andrew, Miss Agnes W., M.B. 1915 (S)
Andrew, Charles Todd, M.B. 1902 (S)
Andrews, John J., L.R.C.P. and S. 1904 (S)
Ansari, Mukhtar, A., M.B. 1905 (E)
Apergis, Hector D., M.R.C.S. 1917 (E)
Armistead, William, M.B. 1865 (E)
Armstrong, Cedric C., M.R.C.S. 1917 (E)
Arnold, Henry L., L.R.C.P. and S. 1902 (E)
Arundel, Robert J., M.D. 1895 (I)
Asbury, Robert A. J., M.B. 1900 (S)
Askins, John Hawkins, M.B. 1904 (I)
Aspland, William B. G., L.R.C.P. 1856 (E)
Atkins, Thomas G., M.D. 1878 (I)
Atkinson, Frank, M.B. 19 (S)
Atkinson, John L., M.R.C.S. 1909 (E)
Attfield, George C., M.R.C.S. 1850 (E)
Attridge, James C., L.R.C.P. 1916 (I)
Aubrey, Richard, L.R.C.P. 1869 (E)
Auld, Robert William, M.B. 1901 (S)
Austin, Mrs. Cristina, M.B. 1 05 (S)
Austin, Robert Blake, M.B. 1910 (S)
Bagnall, Robert G. A., M.B. 1907 (S)
Bailey, John G., L.A.H. 1914 (I)
Baird, Alexander James, M.B. 1900 (S)
Baird, James A., L.R.C.P. and S. 1901 (S)
Baird, Miss Mary A. H., M.B. 1914 (S)
Baker, Alexander, M.B. 1895 (E)
Baker, Charles H. N., M.C., L.R.C.P. and S. 1913 (S)
Baker, George W., L.R.C.P. 1882 (E)
Baker, Oswald, L.R.C.P. 1863 (E)
Ballachey, Henry H., L.R.C.P. 1884 (S)
Banajee, Hilla Furdoonjee, L.R.C.P. 1902 (S)
Banister, Thurston E., M.R.C.P. 1912 (E)
Bankier, Alexander M., M.B. 1885 (S)
Barber, Thaddeus B., M.B. 1892 (S)
Barber, William J., L.R.C.P. and S. 1906 (S)
Barclay, William, L.R.C.P. and S. 1902 (S)
Barlow, Frederick C., L.R.C.P. 1909 (S)
Barnard, John H., O.B.E., M.R.C.S. 1878 (E)
Barnardo, George F., M.B. 1892 (S)
Barras, Mrs. Kathleen, M.B. 1919 (E)
Barrett, Sidney E., M.R.C.S. 1886 (E)
Barrington, Nicholas W., M.R.C.S. 1857 (E)
Barron, W. N., C.M.G., M.V.O., M.R.C.S. 1896 (E)
Bartlett, Edward Leslie, M.R.C.S. 1903 (E)
Bartlett, Mrs. Gertrude E., M.B. 1908 (E)
Bashford, Ernest F., M.B. 1899 (S)
Basu, Dhirendra N., M.R.C.S. 1918 (E)
Batchelor, George A., M.R.C.S. 1914 (E)
Batchelor, Ralph, M.B. 1914 (S)
Bates, Herbert, M.B. 1901 (E)
Battersby, Charles H., M.R.C.S. 1833 (I)
Bayfield, Thomas F., L.R.C.P. and S. 1903 (S)
Beamish, Miss Henrietta O'D. M., L.R.C.P. 1907 (I)
Beamish, Thomas, L.R.C.S. 1862 (I)
Bean, John W. B., M.R.C.S. 1907 (E)
Beattie, Joseph A., L.R.C.S. 1877 (I)
Beaumont, William H., L.S.A. 1887 (E)
Beaven, Miss Grace M., L.M.S.S.A. 1919 (E)
Bedford, Charles F., L.S.A. 1868 (E)
Bell, Mrs. Claudia A. P. R., M.B. 1898 (E)
Bell, Eileen M., M.B. 1916 (I)
Bell, Hugh T. S., M.R.C.S. 1896 (E)
Bell, James B., M.B. 1893 (S)
Bell, John H. M., M.B. 1901 (S)
Benbow, Thos. A. P., M.R.C.S. 1916 (E)
Bendeh, James F., M.B. 1900 (S)
Berne, John G., L.R.C.P. 1894 (E)
Berry, Robert S., L.S.A. 1892 (E)
Berry, Winslow S., M.B. 1904 (I)
Bethell, Stanley E., M.B. 1914 (S)
Beveridge, Alexander W., M.B. 1904 (S)
Beyers, Gideon E., M.R.C.S. 1916 (E)
Beyers, John M., L.R.C.P. and S. 1914 (S)
Bhagwat, Sakharam R., L.R.C.P. and S. 1908 (S)
Bhalla, Bawa R. S., M.R.C.S. 1917 (E)
Bibby, William A., L.M.S.S.A. 1917 (E)
Bidie, Evan, L.R.C.P. and S. 1902 (S)
Binnie, John F., M.B. 1886 (S)
Birmingham, Alfred, M.B. 1866 (I)
Birmingham, Herbert J., L.R.C.S. 1880 (I)
Bishop, Frederick M., M.R.C.S. 1903 (E)
Bisset John A., L.R.C.P. and S. 1898 (S)
Blackburn, James, L.R.C.P. and S. 1916 (S)
Blackley, David, M.B. 1904 (S)
Blair, Mrs. Naini H., L.S.A. 1899 (E)
Baker, Walter C., L.S.A. 1870 (E)
Blanchard, Nicholas, L.R.C.P. and S. 1901 (S)
Blanchard, Robert J., M.B. 1877 (S)
Bloom, Arthur, M.C., M.B. 1911 (S)
Blott, Herbert, L.S.A. 1877 (E)
Blumenel, Charles S., M.R.C.S. 1917 (E)
Boake, William, L.R.C.S. 1883 (I)
Boazman, William H., M.B. 1890 (S)
Boissiere, Jean F. de, M.B. 1885 (E)
Boltman, Robert F., M.B. 1918 (S)
Bomford, William H., L.R.C.P. 1908 (I)
Bond, Barnabas M., M.R.C.S. 1886 (E)
Booker, Charles G., L.R.C.P. and S. 1916 (S)
Boots, John H., M.R.C.S. 1835 (E)
Borrah, Indranarayan, L.R.C.P. and S. 1918 (S)
Borthwick, Fernichirst, M.B. 1904 (S)
Bowie, John T., M.B. 1911 (S)
Bowie, William A., M.B. 1912 (S)
Boyd, John A., M.B. 1907 (I)
Boyton, Arthur H., M.R.C.S. 1895 (E)
Brachman, David S., M.R.C.S. 1916 (E)
Braddon, William L., M.R.C.S. 1884 (E)
Brady, Patrick, L.R.C.P. and S. 1900 (S)
Bramley-Moore, John, L.M.S.S.A. 1909 (E)
Bratton, William, L.R.C.P. and S. 1894 (I)
Brennan, John J., M.B. 1891 (S)
Brereton-Barry, Hans S., L.A.H. 1914 (I)
Brown, Adam A., M.R.C.S. 1895 (E)
Brewis, Andrew S., O.B.E., M.B. 1887 (E)
Bridge, Solomon D., L.R.C.P. and S. 1913 (S)
Bridgman, Roger O., M.R.C.S. 1912 (E)
Brinck, Miss Julia M., L.K.Q.C.P. 1886 (E)
Briscoe, Moses, L.R.C.P. 1917 (I)
Brock, John, M.R.C.S. 1856 (E)
Broderick, Simon, L.R.C.P. 1908 (I)
Brodrick, Thomas F., L.R.C.P. 1918 (I)
Brodziak, Frank A. J., M.B. 1909 (E)
Brooke-Pechell, Sir Aug. A., M.B. 1881 (S)
Brooke, Edward, M.B. 1888 (S)
Brooks, Gertrude, M.B. 1911 (E)
Brook, James H., L.S.A. 1853 (E)
Brown, Joseph Oste, M.R.C.S. 1872 (E)
Browne, Augustus J. A., L.R.C.S. 1881 (I)
Browne, Dodwell, M.B. 1895 (I)
Bruce, William, O.B.E., M.B. 1911 (S)
Brunskill, William E., L.R.C.P. 1905 (I)
Bryer, Hendrik J. P., M.B. 1915 (S)
Bryson, Alexander C., M.C., M.B. 1905 (E)
Buchanan, Henry M., O.B.E., M.B. 1911 (S)
Buchanan, William, M.B. 1885 (S)
Buck, Arthur H., M.R.C.S. 1892 (E)
Buck, John S., M.R.C.S. 1878 (E)
Budd, Herbert H., L.M.S.S.A. 1911 (E)
Bullis, William H., L.R.C.P. 1854 (S)
Bullmore, Charles C., L.R.C.P. and S. 1895 (E)
Buncle, Alexander, M.B. 1867 (S)
Burd, Edward L., M.R.C.S. 1885 (E)
Burge, Arthur M., L.R.C.P. and S. 1915 (S)
Burnes, George, M.B. 1886 (S)
Burjorjee, Bhunnonjee N., M.B. 1909 (S)
Burns, William, M.B. 1877 (S)
Burr, Edward, L.R.C.P. and S. 1900 (S)
Burr, William A., M.R.C.S. 1908 (E)
Burton-Brown, Frederick H., L.S.A. 1890 (E)
Burwood, Thomas W., L.R.C.P. 1870 (E)
Bury, George, M.R.C.S. 1857 (E)
Butler, Alban, L.R.C.S. 1884 (I)
Buttery, Harold R., M.R.C.S. 1917 (E)
Byrne, James P., M.R.C.S. 1867 (E)
Cade, Frederick J. R., L.R.C.P. and S. 1898 (S)
Cagney, Patrick, M.C., M.B. 1 13 (I)
Cahir, John P., M.B. 1908 (I)
Caldwell, Charles W., L.R.C.P. and S. 1897 (I)
Cameron, Robert M. F., M.R.C.S. 1894 (E)
Campbell, Mrs. Florence G., M.B. 1891 (E)
Campbell, George J., L.R.C.P. and S. 1900 (S)
Campbell, John A., L.R.C.P. and S. 1837 (S)
Campbell, Richard, M.D. 1880 (I)
Campbell, Richard A., L.R.C.P. and S. 1900 (I)
Campbell, Thomas V., M.B. 1888 (S)
Campiche, Paul, M.R.C.S. 1903 (E)
Carbery, Andrew K. D., C.B.E., L.R.C.P. and S. 1881 (I)
Carlisle, James, L.F.P.S. 1869 (I)
Carney, Philip, M.C., M.B. 1914 (I)
Carpenter, William S., M.R.C.S. 1890 (E)
Carr-Harris, Ferguson, D.S.O., M.C., M.R.C.S. 1903 (E)
Carroll, John J., M.B. 1916 (E)
Carter, Gerald B., M.B. 1896 (I)
Carter, William J. B., M.R.C.S. 1888 (E)
Carthew, Morden, M.B. 1899 (E)
Castaneda, Tiburcio P., M.R.C.S. 1881 (E)
Castellan, John G., M.R.C.S. 1905 (E)
Catto, William, M.B. 1853 (S)
Catto, William R., M.B. 1904 (S)
Cave, Miss Joan K. S., M.R.C.S. 1920 (E)
Cawley, George, M.R.C.S. 1895 (E)
Cawston, Frederick G., M.R.C.S. 1909 (E)
Chaffey, Elswood, L.R.C.P. 1872 (S)
Chapman, Arthur Palmer, L.R.C.P. and S. 1893 (E)
Chatfield, Herbert T., M.C., M.B. 1914 (I)
Chatterjee, Basanta K., L.R.C.P. and S. 1900 (E)
Chen, Yun Y., M.B. 1916 (S)
Chenoy, Framusji J., L.R.C.P. and S. 1906 (S)
Chisholm, Edwin, M.R.C.S. 1850 (E)
Choulet, Harold Gordon, L.R.C.P. and S. (1910 (S)
Christal, Charles H., L.R.C.P. and S. 1908 (I)
Christian, John G., M.R.C.S. 1859 (I)
Chrystal, Francis M., M.B. 1912 (S)
Chu, Ando H., M.B. 1915 (S)
Church, Hester M., M.R.C.S. 1916 (E)
Cleary, John, L.R.C.S. 1882 (I)
Clarke, Arthur E., M.R.C.S. 1837 (E)
Clarke, George S., M.R.C.S. 1883 (E)
Clarke, Henry M., L.R.C.P. 1835 (I)
Clay, William R., M.R.C.S. 1 8 5 (E)
Clayton, Geoffrey S., L.S.A. 1835 (E)
Clement, Antonio M., M.R.C.S. 1917 (E)
Clements, Francis H., M.B. 1892 (I)
Clinton, Samuel A., L.R.C.P. 1875 (E)
Coates, Albert P., L.R.C.P. and S. 1889 (E)
Cochrane-Brown, Edith, M.B. 1 05 (S)
Coetsee, Johannes C., M.B. 1920 (I)
Coetzee, Louis, M.B. 1902 (S)
Cogan, Denis, L.R.C.P. and S. 1911 (S)
Coghlan, Harold E., M.B. 189 (E)
Cogswell, Philip D., M.R.C.S. 1893 (E)
Colaco-Belmonte, Jacob A. B., L.R.C.P. and S. 18 5 (S)
Cole, William A., L.R.C.P. and S. 1901 (S)
Collie, Frank L., M.B. 1886 (S)
Collingwood, Bertram J., M.B.E., M.B. 1900 (E)
Collins, Geoffrey, L.R.C.P. and S. 1908 (I)
Coman, John J., L.R.C.P. and S. 1918 (I)
Compton, Thomas A., M.R.C.S. 1864 (E)
Conlon, Peter J., M.B. 1917 (I)
Conry, John, L.K.Q.C.P. 1868 (I)
Constantian, Raphael A. G., M.B. 1893 (S)
Conway, James, L.R.C.P. and S. 1859 (I)
Conyngham, Henry F., L.R.C.P. and S. 1895 (I)
Cook, Alan G., M.B. 1904 (E)
Coombe, Ethelbert E. S., M.B. 1889 (E)
Coomber, Arthur B., M.R.C.S. 1907 (E)
Cooper, Charles, L.R.C.P. and S. 1905 (I)
Cooper, Dossabhoy N., M.R.C.S. 1832 (E)
Cooper, Kaikhusroo D., L.R.C.P. and S. 1901 (S)
Corbett, Michael, L.R.C.P. 1872 (I)
Corbett, William J., L.R.C.P. and S. 1891 (I)
Corcoran, Patrick J., M.B. 1914 (I)
Corke, Cecil A., L.S.A. 1879 (E)
Cormick, George, L.R.C.P. and S. 1888 (E)
Cornish, Charles N., M.R.C.S. 1881 (E)
Coronel, Julius, M.R.C.S. 1884 (E)
Cory, Frank G., M.R.C.S. 1889 (E)
Cory, Harold M., M.R.C.S. 1901 (E)
Coskey, Alexander P., M.B. 1902 (S)
Cottew, Arthur A., L.R.C.S. 1882 (I)
Cotlin, Henrique A., L.M.S.S.A. 1915 (E)
Coward, Ernest G., M.B. 1896 (E)
Cowen, Charles E., L.R.C.P. and S. 1893 (E)

Cowen, Herbert O., M.B. 1888 (S)
Cowper, Alfred, M.B. 1894 (S)
Cox, William L., L.S.A. 1876 (E)
Coy, William F., M.R.C.S. 1887 (E)
Coyle, Edward, L.S.A. 1883 (E)
Craig, Stanley D., M.B. 1912 (S)
Craig, William B., D.S.O., M.B. 1894 (S)
Craighead, Alexander C., M.B. 1914 (S)
Crawford, John B., M.B. 1910 (I)
Crawshaw, James H., L.S.A. 1896 (E)
Creagh, William, M.R.C.S. 1857 (E)
Crease, James R., L.R.C.P. and S. 1894 (S)
Creyk, William, M.B. 1860 (E)
Cripps, Francis Roy, M.B. 1916 (S)
Croly, Arthur H., L.R.C.P. and S. 1911 (I)
Crombie, David, L.R.C.P. and S. 1900 (S)
Crookshank, Edgar M., M.R.C.S. 1881 (E)
Cross, Miss Cordelia J., M.B. 1920 (S)
Cross, William J., L.R.C.P. 1880 (S)
Crosse, Walter, L.R.C.P. and S. 1910 (S)
Crossle, Francis E., M.B. 1911 (I)
Crowe, John J., L.A.H. 1919 (I)
Crowe, Patrick V. F., L.R.C.P. and S. 1912 (I)
Crowther, Edward L., M.R.C.S. 1865 (E)
Culbertson, Robert, L.R.C.P. and S. 1901 (S)
Cummings, Richard H. La B., L.R.C.P. and S. 1907 (S)
Cuppage, Burke, M.B. 1915 (I)
Currie, Oswald J., M.R.C.S. 1881 (E)
Cusack, Bernard A., M.B. 1915 (I)
Dadachanji, Edalji R., L.S.A. 1880 (E)
Dalal, Muljibhai K., L.R.C.P. and S. 1914 (S)
Dalgado, Patrick, M.R.C.S. 1898 (E)
Daly, Frederick J. P., M.R.C.S. 1899 (E)
Daly, James T., M.R.C.S. 1909 (E)
Daly, Ramsay L., M.B. 1881 (E)
Daly, Ulick A., M.B. 1878 (I)
Dalziel, William, L.R.C.P. 1873 (E)
D'Amico, Guido de P., M.R.C.S. 1908 (E)
Dantra, Dhunjeeshaw H., L.R.C.P. and S. 1894 (E)
Dardenne, Henri, M.B. 1889 (E)
D'Arifat, André C. de L., M.R.C.S. 1913 (E)
Darwent, Claude T., L.R.C.P. and S. 1915 (S)
David, Jesudason S., L.R.C.P. and S. 1915 (S)
David, Sebastian E., L.A.H. 1909 (I)
Davidson, David McD., C.I.E., M.B. 1887 (E)
Davidson, James, M.B. 1911 (S)
Davidson, John, L.R.C.P. and S. 1879 (S)
Davies, Henry, M.B., 1895 (S)
Davies, Lucy E., M.B. 1910 (S)
Davies, William M., L.R.C.P. 1872 (S)
Davies, Wm. T. F., C.M.G., D.S.O., M.R.C.S. 1882 (E)
Davin, Alfred L. V., M.B. 1916 (S)
Davis, Frederick H., L.S.A. 1875 (E)
Davison, Neville H., M.B. 1918 (E)
Dawson, Thomas, L.R.C.P. and S. 1893 (S)
Dawson, Henry T., M.B. 1892 (S)
Dawson, William H., M.B. 1898 (S)
Deane, John H., L.R.C.P. 1881 (S)
Deans, John, M.R.C.S. 1862 (E)
de Costa, Marcel Inc., M.R.C.S. 1914 (E)
Dedrickson, Robert F., L.R.C.P. 1877 (I)
De Lacy, Robert C., M.B. 1895 (E)
Delamotte, George C., M.R.C.S. 1862 (E)
De Leon, John, M.R.C.S. 1851 (E)
Demary, Andrew F., L.R.C.P. and S. 1905 (S)
Demech, Philip, M.D. 1856 (E)
Demerdash, Mahmoud A. R., M.R.C.S. 1917 (E)
Dempster, Harold W., M.B. 1907 (S)
Dennis, Arthur W., M.R.C.S. 1914 (E)
Derkson, Cornelius H., M.B. 1907 (S)
Desai, Narayan K., L.R.C.P. and S. 1905 (I)
de Silva, Christopher I., M.B. 1916 (E)
Devenish, Arthur C., M.B. 1903 (S)
de Villiers, Jacob I., M.B. 1916 (S)
Dewar, Alexander, L.S.A. 1902 (E)
de Wardt, Mrs. Iris, L.M.S.S.A. 1918 (E)
Dewhirst, Wilfred A., M.B. 1897 (E)
Dey, Kshirendra M., M.B. 1917 (S)
Dey, Nalini N., L.R.C.P. and S. 1902 (S)
Dias, Charles W., M.R.C.S. 1915 (E)
Dick, William, L.R.C.P. and S. 1904 (S)
Dickey, Hugh J., M.B. 1892 (I)
Dickey, Samuel, M.D. 1879 (E)
Dickey, Thomas, M.B. 1919 (I)
Dickey, Wm. C. McK., M.R.C.S. 1907 (E)
Dickson, John William, M.R.C.S. 1890 (E)
Dickson, Joseph S., L.R.C.P. and S. 1915 (S)
Dickson, Thomas A., L.R.C.S. 1881 (S)
Dillon, Henry V., L.R.C.S. 1881 (I)
Dillon, William, L.R.C.S. 1884 (I)
Dina, Ahmad R. K., M.R.C.S. 1919 (E)
Dissent, Miss F. E., L.R.C.P. and S. 1894 (E)
Dive, Hubert R., M.C., M.R.C.S. 1913 (E)
Dixon, Alban, M.R.C.S. 1908 (E)
Dixon, Charles W., M.B. 1914 (E)
Docherty, Peter A., L.R.C.P. and S. 1890 (S)
Dockrell, Maurice, L.R.C.P. 1917 (I)
Dodds, Harry J., O.B.E., L.R.C.P. and S. 1895 (S)
Dods, Archibald, L.R.C.P. and S. 1900 (S)
Doherty, Edmond, M.B. 1915 (I)
Donnellan, John A., M.B. 1909 (E)
Donoghue, John, L.R.C.P. 1909 (I)
Donovan, Thomas M., L.R.C.P. and S. 1896 (S)
Dooley, Miss Annie, M.B. 1916 (I)
Dorland, Solomon M., L.R.C.P. 1884 (S)
Douglas, John C., M.B. 1871 (S)
Dowley, Thomas P., M.B. 1908 (I)
Dowling, George W., M.R.C.S. 1890 (E)
Downes, James B., M.R.C.S. 1862 (E)
Dowzer, Thomas, M.C., L.R.C.P. 1912 (I)
Doyle, Andrew A., L.R.C.S. 1884 (I)
Drew, Francis C., M.B. 1902 (S)
Drew, Hedley V., M.R.C.S. 1882 (E)
Drew, John M., M.B. 1911 (S)
Driver, Henry L., M.R.C.S. 1902 (E)
Drummond, James H. G., L.R.C.P. 1876 (E)
Drummond, John, M.B. 1910 (S)
Drummond, Maurice, L.R.C.P. 1910 (I)
Duarte, Thomas J., M.B. 1919 (I)
Dudgeon, Christopher R., M.C., M.R.C.S. 1912 (E)
Dudley, Bernard J., M.R.C.S. 1901 (E)
Duff, Thomas, L.R.C.P. and S. 1900 (S)
Dutton, Miss Marjory J., M.B. 1918 (S)
Duggan, Cornelius, M.B. 1917 (E)
Duggle, Richard L., L.R.C.P. and S. 1919 (S)
Duncan, Horace, M.R.C.S. 1887 (E)
Duncan, Robert, M.B. 1920 (I)
Duncombe, Charles E. B., L.R.C.P. 1883 (E)
Dundon, Edward, L.R.C.P. 1903 (I)
Dunlop, Albert, L.R.C.P. 1872 (I)
Dunn, Spencer S., M.B. 1888 (E)
Dunnet, Henry W., L.R.C.P. and S. 1912 (S)
Dunstone, Leonard J., M.B. 1907 (E)
Durdin, Robert C. G., L.R.C.S. 1879 (I)
Durell, Robert E., M.R.C.S. 1893 (E)
Durrant, Charles E., M.R.C.S. 1895 (E)
Dublie, James F., M.B. 1916 (S)
du Toit, Thomas A., L.R.C.P. and S. 1920 (S)
Dwyer, Joseph B., L.R.C.P. 1917 (I)
Dwyer, Pierce M., L.R.C.P. and S. 1890 (I)
Dyas, Albert E., L.K.Q.C.P. 1887 (I)
Dyer, James A., L.R.C.P. 1875 (S)
Dyk, Cornelius G. L. van, M.B. 1918 (S)
Dyke, Kenneth H., M.B. 1917 (S)
Eaves, James, M.B. 1910 (S)
Eder, Montague D., M.R.C.S. 1895 (E)
Edey, Thomas H., M.R.C.S. 1915 (E)
Edmond, William R., M.R.C.S. 1875 (S)
Edwards, Charles A., L.S.A. 1883 (E)
Eede, Eliz, L.R.C.P. 1884 (E)
Eldrid, Mrs. Elsie R.C., L.R.C.P. and S. 1899 (S)
Elias, Peter, L.S.A. 1904 (E)
Elliott, Adam G., L.R.C.P. 1884 (S)
Elliott, Thomas W. E., M.B. 1915 (I)
Ellis, Austin D., M.B. 1888 (S)
Ellis, John C., M.R.C.S. 1911 (E)
Ellis, Vincent C., M.B. 1916 (I)
Eloff, Johan S., M.R.C.S. 1917 (E)
Elwood, John R., L.A.H. 1915 (I)
Emrys-Jones, Mansel F., L.M.S.S.A. 1907 (E)
Enslin, Johannes S., M.B. 1920 (S)
Erulkar, Abraham S., M.B. 1911 (E)
Esler, Alexander R., M.R.C.S. 1913 (E)
Etheridge, Charles E., M.R.C.S. 1899 (E)
Evans, David T., M.R.C.S. 1915 (E)
Evans, John, L.A.H. 1874 (I)
Evans, Leonard W., M.R.C.S. 1916 (E)
Evans, Owen G., L.R.C.P. and S. 1916 (S)
Evans, Thomas, M.B. 1899 (E)
Evans, William G., L.R.C.P. 1884 (S)
Everest, Clare A., L.R.C.P. 1881 (E)
Ewart, James C., M.B. 1874 (S)
Ewart, William, M.B. 1899 (S)
Ewing, Samuel A., L.R.C.P. and S. 1889 (E)
Fahmy, Moustafa, M.R.C.S. 1915 (E)
Farac, Mounir, M.R.C.S. 1915 (E)
Farley, George W., M.B. 1891 (I)
Farncomb, Alfred, L.R.C.P. 1884 (S)
Farnuin, Charles M. S., M.R.C.S. 1894 (E)
Farquhar, Alexander, M.B. 1915 (S)
Farr, Arthur J., M.R.C.S. 1866 (E)
Farrell, Michael A., M.B. 1920 (I)
Faruqi, Shaikh M. A., M.B. 1917 (E)
Faulkner, William C., M.B. 1885 (E)
Fehrsen, Guy, M.R.C.S. 1916 (E)
Felix, Jean J. T. R., M.B. 1904 (E)
Fennelly, Martin, L.K.Q.C.P. 1884 (I)
Fenn, Maud T., L.R.C.P. and S. 1909 (S)
Ferguson, John, L.R.C.P. 1880 (S)
Ferriere, Joseph A., M.B. 1901 (E)
Field, Corelli C., L.R.C.P. and S. 1896 (S)
Field-Martell, Harold H., L.R.C.P. and S. 1909 (S)
Fielder, Sidney, L.K.Q.C.P. 1889 (E)
Findlay, Aubrey G. C., L.S.A. 1905 (E)
Finlay, Sinclair, L.R.C.S. 1883 (I)
Fisher, Arthur G., M.C., M.B. 1915 (I)
Fisher, Francis C., L.R.C.P. and S. 1877 (I)
Fisher, Reginald W., M.R.C.S. 1894 (E)
Fisher, Richard D., M.R.C.S. 1896 (E)
Fisher, Thomas C., M.B. 1875 (I)
Fitchett, Francis W. B., M.B. 1895 (S)
Fitzgerald, Daniel A., M.B. 1919 (I)
Fitzgerald, James J., M.B. 1895 (I)
Fitzgerald, Richard, L.R.C.P. and S. 1890 (S)
Fitzgerald, William, M.B. 1895 (S)
Fitzpatrick, Jas., L.R.C.P. and S. 1913 (I)
Fitzwilliams, G. H. L., M.B. 1904 (S)
Fleming, George, M.B. 1915 (S)
Fleming, Joseph, L.R.C.P. and S. 1895 (I)
Fletcher, James, M.B. 1895 (E)
Fletcher, James H., D.S.O., M.C., L.Med.L.S. 1914 (I)
Fletcher, Jas. O'F., M.R.C.S. 1920 (E)
Flide, Charles M., M.B. 1888 (E)
Flint, Harold E., M.R.C.S. 1907 (E)
Flood, Edward F., L.A.H. 1884 (I)
Flood, Edward S., M.B. 1919 (I)
Flood, James J., M.B. 1907 (I)
Flood, John W., M.B. 1909 (I)
Floyer, Blaise B., M.R.C.S. 1872 (E)
Flynn, Denis J., M.D. 1886 (I)
Foley, Bryan, L.R.C.P. and S. 1907 (I)
Fonmartin, Henry de, L.S.A. 1875 (E)
Fooks, Edward V. R., M.R.C.S. 1894 (E)
Fooks, George E., M.R.C.S. 1879 (E)
Foot, Ernest G., L.S.A. 1883 (E)
Foote, Herbert J., M.B. 1915 (S)
Forbes, Alexander K. M. C., M.B. 1912 (S)
Forbes, Arthur L. A., L.R.C.P. 1870 (E)
Forrester, William R., M.B. 1887 (S)
Forsyth, John M., M.C., D.S.O., M.B. 1912 (S)
Foster, Archibald L., L.R.C.P. and S. 1897 (S)
Fourie, Louis, M.B. 1904 (S)
Fowler, William M., M.B. 1893 (S)
Fox, Arthur C. L., L.R.C.P. 1900 (S)
Fox, Cornelius B., M.R.C.S. 1865 (E)
Francis, Reginald C. H., M.R.C.S. 1909 (E)
Francois, Charles A., L.R.C.P. and S. 1895 (S)
Fraser, Alexander R., M.B. 1882 (S)
Fraser, Alexander T., B.C. 1900 (E)
Fraser, Lizzie T., M.B. 1900 (S)
Freeman, Frank P., M.C., L.A.H. 1914 (I)
Freeze, Edwin H., L.R.C.P. and S. 1904 (S)
Freyer, Patrick William, M.B. 1905 (S)
Friedlander, Arthur J., M.R.C.S. 1909 (E)
Frost, Walter, M.R.C.S. 1865 (E)
Fry, William B., M.B. 1881 (E)
Fryer, George E., O.B.E., M.R.C.S. 1888 (E)
Fulss, Frederick C. J., M.B. 1888
Fulton, Jane McC., M.B. 1907 (I)
Fulton, Thomas F. S., M.B. 1912 (I)
Fulton, William, M.B. 1892 (S)
Gabriel, William M., L.R.C.P. and S. 1887 (S)
Galloway, David J., M.B. 1884 (S)
Galvin, John S., M.B. 1916 (S)
Gamble, Leonard D., M.B. 1886 (I)
Garde, Godfrey E., L.R.C.P. 1885 (S)
Garland, Albert I., M.R.C.S. 1874 (E)
Gault, David, L.R.C.P. 1880 (I)
Gauntlett, Eric G., C.B.E., D.S.O., M.R.C.S. 1908 (E)
Gentle, David, M.D. 1865 (S)
Gentles, Mrs. Lisette A. M., M.B. 1905 (S)
Geoghegan, Francis M., M.D. 1876 (I)
George, Thomas W., M.B. 1910 (E)
Gerson, Herman M., M.R.C.S. 1919 (E)
Ghosh, Abani M., M.B. 1915 (E)
Ghosh, Bharat C., L.R.C.P. and S. 1893 (S)
Ghosh, Sourendra M., M.R.C.S. 1914 (E)
Gibbs, John M., M.R.C.S. 1865 (E)
Gibbons, John F., L.R.C.P. 1910 (I)
Gibson, Colin C. G., M.R.C.S. 1915 (E)
Giffard, Douglas W., M.R.C.S. 1871 (E)
Gilbert, Charles W., M.R.C.S. 1892 (E)
Gilbert, John, L.R.C.S. 1891 (I)
Gilbertson, William, M.R.C.S. 1897 (E)
Gill, George F., M.R.C.S. 1902 (E)
Gillespie, James, L.R.C.S. 1861 (I)
Gillespie, James, M.B. 1892 (S)
Gilmer, Hamilton A. H., M.B. 1899 (S)
Gilroy, Robert C., M.B. 1885 (S)
Girdwood, William, M.B. 1900 (S)
Girgis, Aziz, M.R.C.S. 1917 (E)
Glaister, Joseph, M.B. 1905 (S)
Glanville, Ruby E., M.B. 1905 (E)
Glassford, Ian C. G., M.C., M.R.C.S. 1902 (S)
Gleeson, Daniel, M.B. 1904 (I)
Gleeson, Frank H., L.R.C.P. and S. 1903 (I)
Gluckman, Henry, M.R.C.S. 1917 (E)
Glynn, John J., L.R.C.P. and S. 1913 (I)
Glynn, Patrick D., L.R.C.P. and S. 1897 (I)
Godfrey, Clarence G., L.R.C.P. and S. 1889 (E)
Goff, John, M.B. 1882 (S)
Gokhale, Vaman G., L.R.C.P. and S. 1909 (E)
Gold-mith, Bridson K., M.B. 1899 (S)
Gollard, Alfred, M.R.C.S. 1877 (E)
Gold-tein, John L., M.R.C.S. 1903 (E)
Gomes, Antonio S., M.R.C.S. 1867 (E)
Gonin, Bertram W., M.R.C.S. 1902 (E)
Gonsalvez, Daniel R., L.R.C.P. and S. 1902 (E)
Good, James W., L.R.C.P. 1877 (S)
Goodchild, John F., M.B. 1904 (S)
Goodchild, Thomas A., L.R.C.P. and S. 1889 (I)
Goodman, Henry C., C.B.E., M.R.C.S. 1894 (E)
Goodman, Hyam, M.B. 1899 (S)
Goonetillehe, Frederick W., M.R.C.S. 1904 (E)
Gorakshakar, Vinayak R., M.B. 1904 (S)
Gordon, Charles N., M.B. 1920 (S)
Gordon, George A. C., M.C., M.B. 1914 (S)
Gorrie, Peter, M.B. 1908 (S)
Gould, Charles H., M.R.C.S. 1913 (E)
Govindu Rajulu, Miss Rose, M.B.E., L.R.C.P. and S. 1895 (I)
Gow, Peter, M.R.C.S. 1903 (E)
Gowans, William H., M.B. 1906 (S)
Grace, Jeremiah, L.R.C.P. and S. 1905 (I)
Graham, Miss Alice M., M.B. 1919 (S)
Graham, George R. M., L.K.Q.C.P. 1883 (E)
Graham, George W., L.R.C.P. 1871 (S)
Graham, James D., L.R.C.P. and S. 1897 (S)
Graham, Lionel A. J., L.M.S.S.A. 1915 (E)
Graham, Lorne R., M.R.C.S. 1918 (E)
Graham, Miss Mildred E., L.R.C.P. and S. 1897 (E)
Graham, Roland H., M.B. 1915 (I)
Graham, Vyner, M.R.C.S. 1866 (E)
Grantham-Hill, Clermont, M.R.C.S. 1918 (E)
Graves, Robert K. G., M.B. 1904 (E)
Gray, Miss Elizabeth, M.B. 1915 (S)
Gray, Robert W., M.B. 1892 (S)
Green, Edwin A. T., M.C., M.R.C.S. 1915 (E)
Green, Thomas H., M.R.C.S. 1864 (E)
Greene, Arthur P., L.R.C.P. 1870 (I)
Greene, John S., L.R.C.S. 1863 (I)
Gregg, James, M.B. 1896 (I)
Gregory, Thomas, M.R.C.S. 1896 (E)
Grenfell, Wilfred T., C.M.G., M.R.C.S. 1888 (E)
Greval, Shiva D. S., M.B. 1917 (E)
Grey, Robert, M.B. 1914 (S)
Grieve, Alexander N., M.B. 1886 (S)
Griffin, Montague L., M.B. 1892 (I)
Grogan, Patrick J., M.B. 1908 (I)
Guilfoyle, John M., M.B. 1915 (E)
Gunn, Miss Elizabeth C., M.B. 1903 (S)
Gunn, Michael B., L.R.C.P. and S. 1917 (I)
Gunn, Roderick McK., M.B. 1906 (S)
Gunne, John R., M.R.C.S. 1906 (E)
Gunson, Edward B., M.B. 1910 (S)
Guthrie, Harry A. L., L.R.C.P. and S. 1915 (S)
Guthrie, John, M.B. 1874 (S)
Gwynne, George, L.R.C.S. 1874 (I)

Insurance.

DENTAL BENEFIT.

THE following paragraph of news, headed "Panel Dentistry: Standard Fee Agreed On," appeared in the *Times* of September 1st, 1922, and substantially the same information was published in other newspapers:

"Dental care will very shortly be one of the benefits available to the working classes under the National Insurance Act. At yesterday afternoon's session of the annual conference of the Incorporated Dental Society, a scheme embodying a standard fee, which has already been approved by the Ministry of Health, was accepted by a very large majority. This agreement places the Society in unison with the British Dental Association, and it only remains for the approved societies to complete their arrangements for putting the scheme into operation. Over 150 approved societies have already agreed to use their large surplus funds to bring dental benefits within reach of their members. The President of the Society, Mr. Forest Bowen, was in the chair."

SUPPLY OF DRUGS, ETC., FOR INSURANCE PATIENTS.

THE *London Panel Committee Gazette* for September, 1922, contains the following note for the benefit of insurance practitioners in London:

Some practitioners would appear to be unaware of the fact that they may and should prescribe any drug or dressing in any quantity which in their opinion may be reasonably necessary for the adequate and efficient treatment of the insured persons upon their lists. The Panel Committee have imposed upon them the duty, under Article 34 of the Medical Benefit Regulations, 1920, of investigating the character and amount of the drugs and appliances ordered or supplied for insured persons; this, however, should not be taken as preventing the ordering of any drug or appliance which may be reasonably necessary. The word "appliance" in this respect bears a technical meaning and refers to those appliances which appear in the Second Schedule to the Medical Benefit Regulations, 1920. The list of appliances, which are chargeable to the Drug Fund and which may be prescribed on the Form (M.B. 13) issued by the Insurance Committee, is as follows:

List of Appliances.

Adhesive plaster.
Bandages, rolled: Calico, crêpe, domette, elastic-webb, flannel, india-rubber, muslin, open wove, plaster-of-Paris.
Catheters: Gum-elastic, soft rubber.
Cotton-wools, absorbent: Boric, sal-alembroth, unmedicated.
Gauzes: Boric, carbolic, double cyanide, iodoform, picric, sal-alembroth, sublimate, unmedicated.
Gauze and cotton-wool tissue.
Ice-bags: Check sheeting, india-rubber.
Lints: Boric, sal-alembroth, unmedicated.
Protectives: Gutta-percha tissue, jaconet, oiled cambric, oiled paper, oiled silk.
Splints.
Suspensory bandages: Cotton.
Tows: Carbolized, unmedicated.
Wood-wool.

In any case where doubt may arise it is asked that the advice of the Secretary of the London Panel Committee (51, Chancery Lane, W.C.2) shall be sought either by letter or telephone.

LONDON INSURANCE COMMITTEE.

Services within the Scope of Medical Benefit.—At the last meeting of the London Insurance Committee a return was presented, on the motion of Mr. P. Rockliff, containing a list of the services which the Committee and the Local Medical Committee had held not to come within the scope of medical benefit under the Insurance Acts. Of the 51 cases so decided 23 consisted of retinoscopy (under homatropine and cocaine), estimating refraction, or testing eyesight by the ophthalmoscope; among the other cases were blood tests for Wassermann reaction and sterility, the removal of nasal and aural polypi (under cocaine), the removal of haemorrhoids, complete blood examinations, tonsillectomy, injections of salvarsan, the electrolytic treatment of hypertrichosis, the treatment of periodontal abscess, and removal of septic teeth. Cases which had been decided as coming within the competence of a general practitioner of ordinary professional competence and skill included the removal of half a toe-nail, the cutting of quinsies, urethral irrigation for gonorrhoea, and tapping to remove ascitic fluid.

The Practitioner's List.—Article 15 (2) of the Medical Benefit Regulations contains the proviso that a practitioner carrying on insurance practice single-handed shall not have more than 3,000 insured persons on his list. Under clause 6 (vi) of the allocation scheme, however, it is possible at certain times for a practitioner to exceed the figure of 3,000 due to a very technical administrative arrangement) if the capitation fees fall below a certain value. The Insurance Committee has approached the Ministry of Health on the subject, and the Ministry states in reply that the object of Article 15 is to limit actual responsibility for treatment by an insurance practitioner in such a manner as to avoid the risk of the insured persons receiving inadequate attendance. It is the Ministry's view that there is no direct method of measuring this actual responsibility, and that the number of names on a practitioner's list at a given moment is a false criterion of such responsibility. The Committee agrees that there is inevitably and must continue to be a certain amount of inflation in a practitioner's list, as under the present method it appears not to be possible for a practitioner at any time to regard the names of the persons included in his list as those for whom he may be called upon to provide treatment. The Ministry states that the administrative difficulties are appreciated, and that it will be glad to consider any alternative method.

LONDON PANEL COMMITTEE.

Post-Graduate Courses.—The Panel Committee for the County of London, with the co-operation of the Post-Graduate Council of Guy's Hospital, has arranged courses of post-graduate instruction for the coming autumn. The courses will comprise general medicine, general surgery, and midwifery and gynaecology. Each course will consist of ten lecture-demonstrations with cases. The courses will be held simultaneously on Thursdays at 4 p.m., and will commence on either September 22nd or 29th, 1922. It is the wish of the Panel Committee that these courses should be successful and that insurance practitioners will avail themselves of this opportunity of obtaining post-graduate instruction. The fee for each course will be £3 3s. payable in advance to the Secretary of the Panel Committee. Applications should be made to the Secretary (Dr. Robt. J. Farman), the London Panel Committee, 51, Chancery Lane, W.C.2.

DANGEROUS DRUGS ACT.

THE following notification from the Home Office has been received for publication: "The Home Secretary gives notice that he has withdrawn from Dr. Sidney Robert Walker, M.R.C.S., L.R.C.P., late of Beech Grove, Ripon, the authorization granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the said Act applies. Any person supplying Dr. Walker with raw opium or any of the drugs to which Part III of the Act applies will be committing an offence against the Act."

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty:

Surgeon Captain T. J. Jeans, C.M.G., to the *Vivid*, additional, for R.N. Hospital, Plymouth; Surgeon Commanders H. M. Braithwaite to the *Valiant*, A. R. Fisher to the *Champion*, and S. W. Grimwade to the *Ceres*, on recommissioning; Surgeon Lieutenant Commanders L. W. Gemmell to the *Pembroke* for R.N. Hospital, Chatham, for specialist duties; P. L. Gibson to the *President*, additional, for three months' hospital course, and G. E. D. Ellis O.B.E., to the *Concord*; Surgeon Lieutenant T. N. D'Arcy to the *Ceres*, on recommissioning.

Surgeon Commander L. C. Rowan-Robinson has been placed on the retired list at his own request.

Messrs. A. Pomfret, R. W. Mussen, and P. J. Grimes have entered as Surgeon Lieutenants, and have been appointed to the *Victory* for R.N. Hospital, Haslar, for course.

Surgeon Captain W. H. S. Stalkartt is placed on the retired list, with the rank of Surgeon Rear Admiral; P. C. H. Homer to be Surgeon Lieutenant, September 1st (substituted for previous notice).

ROYAL ARMY MEDICAL CORPS.

The following temporary Captains relinquish their commissions and retain the rank of Captain: W. Stanwell, B. McDermott.

Lieut.-Colonel Arther F. Carlyon is placed on the half-pay list on account of ill health.

Lieut.-Colonel M. H. Lowsley, D.S.O., retires on retired pay (September 2nd).

Major Benjamin A. Oblum, O.B.E., retires, receiving a gratuity.

Captain Rudolf W. Galloway, D.S.O., M.B., to be temporary Major while employed as Deputy Assistant Director of Hygiene.

ROYAL AIR FORCE MEDICAL SERVICE.

Dr. J. F. Carruthers is granted a temporary commission as a Squadron Leader, with effect from and with seniority of July 21st, 1922.

The following are granted short service commissions as Flight Lieutenants, with effect from, and with seniority of, the dates indicated: J. K. R. Landells (August 16th), and J. A. Musgrave (August 17th).

Dr. C. Alan Harrison is granted a temporary commission as a Flight Lieutenant, with effect from, and with seniority of, August 8th, 1922.

INDIAN MEDICAL SERVICE.

Brevet Major T. A. Hughes has been granted combined leave for five months and fourteen days, with effect from October 2nd, 1922.

The services of Major E. H. V. Hodge have been placed at the disposal of the Government of Bengal, with effect from April 13th.

The services of Major J. Taylor, D.S.O., have been placed temporarily at the disposal of the Government of Bombay.

Major G. A. Jolly to be Lieutenant-Colonel, April 5th.

Lieut.-Colonel H. B. Foster has been permitted to retire from the service, June 28th.

Major J. J. H. Nelson, O.B.E., M.C., has been granted with effect from September 23rd, 1921, combined leave in addition to the College vacation from June 16th, 1922, to September 30th, 1922.

Captain S. N. Hayes appointed to officiate as Professor of Physiology, King Edward Medical College, Lahore, with effect from October 2nd.

Major H. H. Broome, M.B., F.R.C.S., has been confirmed in the appointment of Professor of Surgery, King Edward Medical College, Lahore, and Major P. B. Bharucha, D.S.O., O.B.E., F.R.C.S., has been confirmed in the appointment of Professor of Anatomy, King Edward Medical College, Lahore, both with effect from April 7th, 1922.

Major H. Hallilay, M.B., to be Lieutenant-Colonel (July 26th).

The services of Captain H. Aung Kin have been placed temporarily at the disposal of the Government of Burma.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Major W. F. Roe, D.S.O., T.D., relinquishes his commission on account of ill health, and is granted the rank of Lieutenant-Colonel.

Captain W. A. Robertson, M.C., to be Major.

The following officers having attained the age limit are retired, and retain their rank except where otherwise stated: Lieut.-Colonel W. F. Somerville, T.D., with permission to wear the prescribed uniform; Lieut.-Colonel L. W. Pockett, T.D., with permission to wear the prescribed uniform; Major F. R. Bremner; Major W. A. Burns, T.D., with permission to wear the prescribed uniform; Major J. A. H. Aitken, O.B.E.; Major T. B. Hobling, T.D.; Captains W. W. Greer, M.C., J. M. Dupont, W. H. Morrison, and J. Muir, O.B.E., and are granted the rank of Major; Captain A. M. Watson; Major (Brevet Lieut.-Colonel) H. A. Leebody, T.D., and is granted the rank of Colonel; Major W. C. Murray, O.B.E., T.D., with permission to wear the prescribed uniform; Captain H. N. Barnett, F.R.C.S., and is granted the rank of Lieutenant-Colonel.

The undermentioned officers resign their commissions and retain their rank except where otherwise stated: Major J. H. Dixon, T.D., with permission to wear the prescribed uniform; Captains R. G. Walker, M.C., J. A. Henderson, M.B., K. I. Smith, H. M. Calder, and D. W. Berry, M.C., and are granted the rank of Major; Captains N. Scott, F.R.C.S., R. Lawson, M.C., A. J. G. Hunter, M.C., H. P. Ashe, H. Evers, F. L. Golla, O.B.E., E. B. Kitching, G. J. Linklater, O.B.E., A. G. McFarlane, W. R. Sadler, W. J. Seade, M.C., R. W. Smith, E. W. Strange, and R. Welch.

Captain L. Million, M.C., relinquishes his commission and is granted the rank of Major.

Captain T. Murray relinquishes his commission and retains the rank of Captain.

Captain J. H. Owens to be Major.

Captain J. G. Willmore (late R.A.M.C.) to be Captain, with precedence as from November 30th, 1918.

VACANCIES.

ASHTON UNDER-LYNE UNION.—Medical Officer and Medical Superintendent of Infirmary. Salary, £450, rising to £500, with emoluments.

BARROW-IN-FURNESS: NORTH LONSDALE HOSPITAL.—House-Surgeon (male). Salary, £225 per annum.

BARRY URBAN DISTRICT COUNCIL: ACCIDENT AND SURGICAL HOSPITAL.—Surgeon (male). Salary at the rate of £750, rising to £900 per annum.

BRADFORD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £200 per annum.

CAMBRIDGE MENTAL HOSPITAL, Fulbourn.—Senior Assistant Medical Officer (male). Salary, £400 per annum, rising to £500.

CUMBERLAND INFIRMARY, Carlisle.—Resident Medical Officer (male), six months as House-Physician, salary at the rate of £175 per annum; and six months as House-Surgeon, salary at the rate of £200 per annum.

DERBY COUNTY ASYLUM.—Medical Superintendent. Salary, £1,000 per annum and emoluments.

DORCHESTER: DORSET COUNTY HOSPITAL.—House-Surgeon. Salary, £150.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Senior Resident Medical Officer (male). Salary, £175 per annum.

DURHAM COUNTY HOSPITAL.—Honorary Assistant Surgeons.

EAST HAM MUNICIPAL MATERNITY AND CHILD WELFARE DEPARTMENT.—Lady Medical Officer for four sessions weekly. Remuneration, £1 11s. 6d. per session.

EDINBURGH ROYAL INFIRMARY.—Eye Department: Senior Clinical Assistant and Clinical Tutor. Annual emoluments, 145 guineas.

EXETER: ROYAL DEVON AND EXETER HOSPITAL.—House-Physician (male). Salary at the rate of £150 per annum.

GENERAL LYING-IN HOSPITAL, York Road, S.E.1.—Resident Medical Officer. £100 per annum.

GRAVESEND HOSPITAL, Kent.—House-Surgeon. Salary, £200 per annum.

HEREFORD: VICTORIA EYE AND EAR HOSPITAL.—Honorary Surgeon.

HULL ROYAL INFIRMARY.—Assistant House-Surgeon (male). Salary, £150 per annum.

ISLINGTON DISPENSARY, Upper Street, N.—Resident Medical Officer. Salary, £300 per annum.

KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION: NORTH WALES SANATORIUM, near Denbigh.—Assistant Resident Medical Officer. Salary, £200 per annum.

MAIDSTONE: WEST KENT GENERAL HOSPITAL.—House-Surgeon (male and of British nationality). Salary at the rate of £220 per annum.

MINISTRY OF PENSIONS.—Junior Medical Officers at Hospital, Harrowby Camp, Grantham. Salary, £350 per annum.

NORTHAMPTON: ST. ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Second Assistant Medical Officer. Salary, £400 per annum, rising by £25 a year to £450.

PRINCE OF WALES GENERAL HOSPITAL, Tottenham.—(1) House-Physician. (2) House Surgeon. £200 per annum each. (3) Junior House-Surgeon, and (4) Junior House-Physician. £120 per annum each.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road.—District Resident Medical Officer. Salary at the rate of £80 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—Resident Medical Officer. Salary, £300 per annum.

ROYAL CHEST HOSPITAL, City Road.—(1) Resident Medical Officer. Salary at the rate of £200 per annum. (2) House-Physician. Salary at the rate of £120 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road.—(1) and (2) First and Second Assistants to the Medical Officer in charge of the V.D. (Female) Department. Salaries, £200 and £100 per annum respectively. (3) Medical Registrar. Salary, £2'0.

[illegible] Hospital, Holloway, N.—House-Physician. Salary at the rate of [illegible] per annum.

[illegible] MEDICAL COLLEGE.—Demonstrator of [illegible].

ST. BARTHOLOMEW'S HOSPITAL, Rochester.—House-Physician. Salary, £200 per annum.

ST. GEORGE'S HOSPITAL, S.W.—Radiologist. Honorarium at the rate of [illegible].

TUNBRIDGE WELLS GENERAL HOSPITAL.—House-Surgeon. Salary, £160.

WANDSWORTH COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary, £700 per annum, rising by £50.

WEST LONDON HOSPITAL, Hammersmith Road, W.—(1) House-Physician. (2) Two House-Surgeons (males). (3) Non-resident Casualty Officer. Salary for (1) and (2), £100 per annum each, and for (3) £5 5s. a week.

WESTMINSTER HOSPITAL, S.W.1.—(1) Assistant House-Physician and (2) Assistant House-Surgeon (males). Honorarium at the rate of £52 per annum in each case. (3) Medical Registrar and Casualty Medical Officer. Honorarium of £150 per annum.

WESTMINSTER UNION.—Second and Third Assistant Medical Officers for Infirmary, Fulham Road. Remuneration, £300 per annum each, rising to £350.

CERTIFYING FACTORY SURGEON.—The following vacant appointment is announced: Alva (Clackmannan).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

DAWSON, W. S., M.B., M.R.C.P., D.P.M., Senior Assistant, Maudsley Hospital.

EELES, Miss Jessie, M.B., Ch.B.Edin., Resident Medical Officer at the Ida and Robert Arthington Hospitals in connexion with the Leeds General Infirmary.

FETRIE, A. A. W., M.D., M.R.C.P., D.P.M., Deputy Medical Superintendent, Maudsley Hospital.

CERTIFYING FACTORY SURGEONS.—A. L. Brown, L.R.C.P. and S.Edin., L.R.F.P.S.Glas., for the Glasgow (South) District, co. Lanark; L. B. Scott, M.D., D.P.H.Oxon., for the Blandford District, co. Dorset.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer (Central Branch): Dorothea Sandison, M.B., Ch.B. Senior House-Surgeons: W. L. Maitland, M.B., Ch.B.; W. Geraghty, M.B., Ch.B., N. S. Craig, M.B., Ch.B., O. M. Duthie, M.B., Ch.B., G. H. Buckley, M.B., Ch.B. Senior House-Surgeon (Specials Department): J. Brown-Hendry, M.B., Ch.B. House-Surgeon (Specials Department): H. P. Fay, M.B., Ch.B. House-Physicians: P. D. Abbatt, M.B., Ch.B., R. Anderton, M.B., Ch.B., J. H. Struthers, M.B., Ch.B. House-Surgeons: A. Ingram, M.B., Ch.B., J. H. Bennett, M.B., Ch.B., P. H. Scotson, M.B., Ch.B., A. Rosenstone, M.B., Ch.B., K. V. Bailey, M.B., Ch.B.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

8 Fri. London: Organization Committee, Special Meeting, 2.30 p.m.
14 Thurs. Kent Branch, Kent and Canterbury Hospital, 3 p.m. Luncheon, County Hotel, 1.45 p.m.
22 Fri. London: Science Committee.
25 Tues. London: Central Ethical Committee.
27 Wed. London: Hospitals Committee, 2.30 p.m.
29 Fri. London: Public Health Committee.

OCTOBER.

3 Tues. London: Organization Committee.
4 Wed. London: Medico-Political and Parliamentary Committee.
5 Thurs. London: Journal Committee.
6 Fri. London: Dominions Committee.
7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tabes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.
10 Tues. London: Naval and Military Committee.
20 Fri. London: Central Hall, Westminster: Annual Conference of Representatives of Local Medical and Panel Committees at 10 a.m.
25 Wed. London: **Council**, 10 a.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

MCCULLOUGH.—On July 4th, at the Provincial Mental Hospital, Ponoka, Alberta, Canada, Dr. Mary McCullough, the wife of Dr. D. L. McCullough—of a son.

MARRIAGES.

CRUICKSHANK—SLIMMON.—At the High United Free Church, Kilsyth, on Tuesday, August 29th, John Norman Cruickshank, M.C., M.B., Ch.B., F.R.F.P.S.G., 9, Royal Crescent, Glasgow, W., to Elizabeth Helen May Slimmon, M.B., Ch.B., younger daughter of the late James M. Slimmon, Kirkintilloch, and of Mrs. Slimmon, Castleview, Kilsyth.

HOLMES—BEALES.—On August 16th, Arthur Hillyard Holmes, M.D., M.R.C.P., eldest son of Mr. and Mrs. A. E. Holmes of Manley Road, Whalley Range, Manchester, to Hilda, only daughter of the late Mr. Henry Beales and Mrs. Beales of Alexandra Park, Manchester.

DEATH.

SUPPLE.—On August 8th, 1922, suddenly, at Haywards Heath railway station, Colonel James Francis Supple, A.M.S., of Haywards Heath, in his 80th year.

Printed and published by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 16TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

CURRENT NOTES:
- New Medical Officer of Health for Manchester ... 109
- An Impudent Suggestion 109
- Monmouth County Council and its Medical Officers ... 109
- Assistant Medical Officer for Wallasey 110

ASSOCIATION NOTICES:
- Council, 1922-23: Vacancies 110
- Branch and Division Meetings to be held 110

INTERNATIONAL ASSOCIATION OF MEDICAL WOMEN ... 111

CORRESPONDENCE: PAGE
- Proposed Dinner to the Insurance Acts Committee ... 111

INSURANCE NOTES:
- Warwickshire Panel and Local Medical Committee ... 111

NAVAL AND MILITARY APPOINTMENTS 111

VACANCIES 112

ASSOCIATION INTELLIGENCE AND DIARY 112

BIRTHS, MARRIAGES, AND DEATHS 112

British Medical Association.

CURRENT NOTES.

New Medical Officer of Health for Manchester.

At a meeting of the Manchester City Council on September 6th Dr. R. V. Clark, medical officer of health for Croydon, was appointed medical officer of health for Manchester in succession to Dr. Niven, who retired some months ago. It will be recalled that the conditions of this appointment, when first announced last January, gave rise to discussion between the British Medical Association and the City Council. A salary of £1,500 a year was first offered, without any bonus or promise of increments. The British Medical Association considered that this salary was a reflection upon the medical profession and did not compare favourably with the salaries of other important Corporation officials of Manchester. After some hesitation the City Council entered into amicable negotiations with representatives of the British Medical Association and the Society of Medical Officers of Health, and as a result a reasonable compromise was arrived at. The appointment now carries a salary of £1,700 a year, rising by annual increments of £100 to £2,000. Dr. Clark has been selected out of thirty-four candidates. He has been for the past eleven years medical officer of health for the borough of Croydon. He was educated at Edinburgh University, and graduated M.A. in 1896, B.Sc. in 1900, and M.B., Ch.B. in 1901; he took the D.P.H.Oxon. in 1907. He was formerly assistant medical officer of health of Leeds, demonstrator of physiology in the University of Leeds, and for a time lecturer on the hygiene of mines in that university. During the war he had charge of the treatment of infectious diseases among the men of the Royal Naval Division at the Crystal Palace and in several military hospitals. He is a member of the British Medical Association and the author of several contributions to the columns of this journal.

An Impudent Suggestion.

A medical man practising in Harley Street sends us the following letter which he lately received from a person named Greene, who describes himself as an "expert optician," and writes from an address in Gray's Inn Road, London.

"Dear Sir,

"Having written to you asking for your kind patronage, in sending me some of your patients, I am sorry in not having a reply from you. Why? It would be such a great help to me, as having just started on my own after twenty years' experience in frame-fitting, etc., I am certain I can please you and your patients.

"You will, I am sure, be delighted in my high-class work and cheap prices, and as I supply hospitals, school clinics, and doctors, I can show you many testimonials received from their patients. I venture once more to enclose a few of my printed envelopes to put your prescription in before handing to your patients, whom I trust you will kindly recommend to me in future, as I guarantee entire satisfaction.

"Should it be your custom to receive a commission on each patient sent me, then I express my wish to do so, and make it worth your while, to pay for your trouble, working to our mutual advantage. Awaiting your reply,

"Yours faithfully,

"MALCOLM R. GREENE."

Our correspondent adds that he received a similar effusion from this person a few months ago. He very properly thinks that the suggestion contained in Greene's last paragraph is disgraceful, and he hopes the British Medical Association will take notice of it. We have never seen a more impudent offer of secret commission to a medical man. It would be interesting to learn the extent to which these objectionable methods have proved successful in securing business.

Monmouthshire County Council and its Medical Officers.

In June last the Monmouthshire County Council gave notice to its employees (with two exceptions, for special reasons) of a reduction of 10 per cent. in their salaries. As in October, 1920, the salaries of the medical staff had been placed on a definite and satisfactory basis, with no question of bonuses, the staff were naturally very reluctant to have the scale thus recently fixed upset. Accordingly, they approached the British Medical Association and the Society of Medical Officers of Health, asking them to take what action was possible to protect their interests. The Monmouth County Council was asked to receive a deputation, and this occurred on September 11th, when the Salaries Committee of the Council (chairman, Sir Henry Mather-Jackson, Bt., C.B.E.) met the following representatives of the two medical bodies:

Society of Medical Officers of Health.—Dr. C. Sanders, Dr. Joseph Cates, and Mr. G. S. Elliston (secretary).

British Medical Association.—Monmouthshire Division: Colonel W. D. Steel, Dr. S. Hamilton, and Mr. W. J. Greer (secretary); with Dr. T. W. H. Garstang (Chairman of the Public Health Committee) and the Medical Secretary.

The deputation urged the Council not to upset the scale so recently fixed, since it was, though not entirely satisfactory, better than that which obtains in many areas, and to that extent an example to the majority of public health authorities who, as is well known to the profession, frequently place a very low monetary value upon the services of their medical officers. The Chairman of the Salaries Committee said that the County Council was very well satisfied with its medical staff, and had only proposed the reduction with great reluctance, owing to the financial state of the county. He did not see that it would be possible to exclude the medical officers from a reduction which was imposed upon those servants of the Council who were in receipt of much lower salaries than the medical staff. After discussion the deputation retired, and on its return the Chairman announced that the Committee had agreed to modify the reduction as follows:

The salary of the county medical officer would be reduced by £100 a year, and the assistant medical officers (with one exception, where the salary would remain unaltered) would be excluded from

the 10 per cent. reduction on condition that, as offered by the medical staff, they would forgo for a period of years any increment of salary due to them.

This compromise has been accepted because, though it entails a reduction which the staff would naturally have liked to avoid, it leaves intact the scale which had been fixed and was on the whole considered satisfactory.

Assistant Medical Officer for Wallasey.

An interesting situation has arisen at Wallasey, where the Town Council offered to the *British Medical Journal* an advertisement for an assistant medical officer of health at a salary of £600 a year, who, it turned out, was to be in clinical charge of both the tuberculosis and venereal disease work. On being satisfied that the officer would have these direct responsibilities the advertisement was refused, and the Council was informed that the British Medical Association could not accept an advertisement for an officer who was to be the senior tuberculosis officer at a less salary than £700 a year. On hearing that the *Journal*, as also the *Lancet*, declined to accept the advertisement, the Council withdrew it and offered a fresh advertisement at a salary of £700, rising by £25 a year to a maximum of £800. This appeared in our issue of last week.

The Medical Secretary's comment on the present situation is as follows: The next step was that the action of the Public Health Committee, which had taken the responsibility for increasing the salary, was turned down by the Council at its meeting on September 7th, and the report of the Council meeting shows that much play was made with the alleged "dictation" of the British Medical Association as to what the Council should do with the ratepayers' money. An interesting comment was made by someone who is called in the press report "a labour leader." He pointed out that the Association was acting as it had done in spite of the fact that wages and salaries were on a downward grade, and that "the danger of a trade union in the medical profession was not sufficiently realized." The "labour leader's" knowledge of the action of his friends in the Labour movement must be very restricted if he is not aware that the trade unions have not ceased to try to prevent wages which in their opinion are already too low being reduced on the grounds of passing phases of industrial depression. It is not sufficiently realized, even in the medical profession, that the salaries of many public health officers have always been dangerously low, and, irrespective of post-war conditions, must be improved. To talk about "dictation" is, of course, foolish. The Association, in fixing standards of remuneration which it expects its members to observe, has done so after thorough discussion and with full knowledge of professional conditions. If it is "dictation" for a calling to fix a standard and try to secure its observance, what do the worthy councillors of Wallasey think of the action of their tradesmen, who tell them that the price of a certain article is so much and that they are not prepared to bargain about it? The butcher and the baker, who no doubt are represented on the Council, would laugh if they were accused of "dictating" to their customers when they state what their prices are. The Council decided by twenty-nine to seven to offer the appointment at a salary of £650, rising by £50 increments to £800, and those members of the profession who have applied for the appointment on terms which are no longer applicable, must expect on selection to be asked if they will accept the lower figure. They will know how to act. There seems no real need for the profession to accept the "dictation" of the Wallasey Town Council.

Association Notices.

COUNCIL, 1922-23.

(*a*) VACANCIES.

NOTICE is hereby given of the following vacancies in the membership of the Council:

(i) *Glasgow and West of Scotland, four City Divisions* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(ii) *Munster Branch* (one of the "24"), owing to no nomination having been received at the time of the annual election;

(iii) *Glasgow and West of Scotland, Border Counties, and Stirling Group of Branches* (one of the "12"), owing to no valid nomination having been received at the election during the Annual Representative Meeting;

(iv) *Metropolitan Outer Group* (one of the "12"), owing to the resignation of Dr. H. B. Brackenbury, consequent upon his now, as Deputy Chairman of the Representative Body, being a member of the Council *ex officio*; and

(v) *Indian Group*, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S.(ret.).

Under new By-law 54 (2) the Council is empowered either to fill the vacancies itself or cause them to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present cases.

(*b*) NOMINATION AND VOTING.

(i) *Home Areas.*

NOMINATIONS in respect of vacancies (i) and (ii) above (*i.e.*, in the "24") require to be either (*a*) by a Division comprised in the Group in question or (*b*) by not less than 3 Members of any such Branch.

NOMINATIONS in respect of vacancies (iii) and (iv) above (*i.e.*, in the "12") must be by a Representative of one of the Constituencies comprised in the Group.

FORMS of NOMINATION will be forwarded on application to the Medical Secretary, 429, Strand, and should be returned so as to reach him not later than Saturday, September 16th, 1922.

In the event of more than one candidate being nominated for any vacancy, VOTING PAPERS will be issued to the electors concerned on September 29th, and should be returned so as to reach the Medical Secretary not later than first post on Friday, October 6th.

The result of the elections will be published in the *British Medical Journal Supplement* of October 14th, 1922.

(ii) *Area Outside United Kingdom.*

NOMINATIONS in respect of the Grouped Indian Branches must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922:

COUNCIL, 1922-23.

NOMINATION FORM FOR ELECTION OF A MEMBER BY THE GROUPED INDIAN BRANCHES.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....
of ..... (*full name and address to be given*)
for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922-23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by VOTING PAPERS, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

ALFRED COX, *Medical Secretary.*

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORTHERN COUNTIES OF SCOTLAND BRANCH: BANFF, ELGIN, AND NAIRN DIVISION.—The annual meeting of the Division will be held at Duff House, Banff, on Saturday, September 23rd, at 4.15 p.m. Through the kindness of Dr. Spriggs demonstrations will be given in the laboratories and x-ray department at Duff House. Tea will also be provided at Duff House. It is hoped that there will be a large attendance. Members are asked to make their own arrangements about getting to Banff by train or motor.

SOUTHERN BRANCH.—The following meetings of the Southern Branch will be held at the South-Western Hotel, Southampton, at 2.30 p.m., when addresses will be given:—*Thursday, September 28th, 1922:* "Intestinal obstruction," Mr. R. P. Rowlands, O.B.E., M.S., F.R.C.S., surgeon to Guy's Hospital. *Thursday, December 14th, 1922:* "The prevention and conservative treatment of senile gangrene," Mr. W. Sampson Handley, M.S., F.R.C.S., surgeon to Middlesex Hospital. *Thursday, March 22nd, 1923:* "The diagnosis and treatment of cholecystitis and gall stones," Dr. Arthur F. Hurst, Physician to Guy's Hospital. Members are earnestly requested to make a special effort to attend the meetings.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on "Some of the clinical manifestations of tabes," which will be illustrated by lantern slides.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C.2. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 6.30 p.m. (on Saturdays 10 a.m. till 2 p.m.).

INTERNATIONAL ASSOCIATION OF MEDICAL WOMEN.

We have received from the secretary of the Medical Women's Federation the following report by the British representatives at the Conference of the International Association of Medical Women, held at Geneva from September 4th to 7th, 1922:

The inaugural meeting of this Association took place in New York in the autumn of 1919. There were present medical women from fifteen nations, and the meeting, which was called to discuss international problems and subjects connected with health, ended by drawing up a provisional constitution which was to be amended or reconstructed at some subsequent session to be held overseas.

This second meeting has just taken place at Geneva, organized by the joint efforts of the officers of the International Association, of which Dr. Christine Murrell was the British representative, and there were present medical women from nineteen different countries. Many of these representatives were sent by their various accredited organizations; Great Britain sent five representatives, the U.S.A. the same, and the other countries more or less in proportion to their numbers. About eighty members in all were present.

The chief business before the meeting was the reconstruction of the constitution, a very difficult task in view of the many different nations composing the committee appointed for its consideration. This committee was presided over by Dr. Jane Walker. The deed was, however, satisfactorily accomplished, and a revised constitution was accepted by a unanimous vote of the committee, and later by the general meeting, and to be ratified at the next International Medical Women's Association's Conference to be held in London next year.

Subjects of interest on which only action which is international in character can be effective were discussed. They were: the treatment and prevention of venereal disease in its relation to the State; the white slave traffic; and cocaine and other drug traffic. In relation to this latter subject, a strong resolution was passed requesting the League of Nations to insist on Government control both as to the manufacture and the sale of cocaine.

But important as the meeting was both on its administrative and scientific side, the greatest value of it was the better understanding among the representatives of the various countries. Each day they saw more clearly, realizing each other's good points and grasping each other's difficulties and problems in a way which could hardly have been believed possible when they started. All this was helped by various social functions, interspersed with the more serious business of the meetings. The British contingent, for example, gave a tea-party to which practically all the members came. Two French representatives—Dr. Thuillier-Landry and Dr. Long-Landry, who have a villa near Geneva—also entertained all the delegates. But the banquet, presided over by Dr. Esther Lovejoy (U.S.A.), at which the nineteen official representatives in turn made a short speech, the British speaker being Dr. Mary Scharlieb, was the crowning point of the union. The President of the Federation of Medical Women in Great Britain, Lady Barrett, and the President of the National Association of Women Physicians of the United States of America, Dr. Grace Kimball, as well as their vigorous and veteran senior physician, Dr. Mosher, also spoke.

Thus ended a really notable conference which cannot but be fraught with real good and genuine help to the world at large.

Correspondence.

Proposed Dinner to the Insurance Acts Committee.

SIR,—In 1920 the Standing Committee of Group K organized a Conference Dinner to the Insurance Acts Committee which proved such a success that at subsequent conferences of Local Medical and Panel Committees many inquiries were made as to when the function was to be repeated.

In consequence of these inquiries the chairman of my committee, Dr. Cardale, proposed that London should take the initiative. London, no longer forming part of Group K, but being a group by itself, has invited the co-operation of the committees on its immediate borders, and this co operation has in most cases been readily afforded, and a joint committee formed for the purpose of arranging for a dinner to be held on the night of the Conference of Local Medical and Panel Committees, Friday, October 20th, 1922. The object of the dinner is twofold; the first being to recognize the appreciation of the panel profession of the great amount of work done on their behalf by the Insurance Acts Committee, and secondly to afford the representatives attending the Conference an opportunity of meeting under less formal conditions than the Conference permits.

It is hoped that all committees will agree to support this dinner, which will thus place the profession in the position of hosts both to the members and officials of the Insurance Acts Committee and their representatives to the Conference. Committees are asked to subscribe a sum of £2 2s. per representative, which amount will cover the expenses.

The Committee will be obliged by receiving early intimation from committees and practitioners of their intention to support the dinner as accommodation is limited; notifications to this effect should reach me, if possible, not later than September 30th, 1922.

There will be a limited amount of accommodation for representatives' guests and others on payment of £1 11s. 6d. Morning dress will be worn.—I am, etc.,

ROBT. J. FARMAN,
Secretary.

Staple House, 51, Chancery Lane, W.C.2, Sept. 11th.

Insurance.

WARWICKSHIRE PANEL AND LOCAL MEDICAL COMMITTEE.

AT a meeting of the Warwickshire Panel and Local Medical Committee, held at Coventry on September 7th, Dr. H. Tibbits presiding, the position created by the local Insurance Committee's hostility to the introduction for use in the area of the *Group F Formulary* was again considered. It was resolved to agree to a conference with the Insurance and Pharmaceutical Committees on the subject in order to follow the procedure prescribed by the Ministry, and to ensure that any administrative directions which might prove to be *ultra vires* of the Panel Committee should be deleted from the *Formulary*. The Committee again resolved that, being satisfied with the nature of the formulae and having adopted them in the area, it was not their intention to destandardize the *Formulary* by any variations as the result of the proposed conference.

It was resolved that special remuneration from the Practitioners' Fund for the treatment of abortion and miscarriage, and for the provision of an anaesthetist's service (where any such treatment came within the scope of medical benefit), should be deleted from the local Remuneration Scheme. The view was expressed that the special arrangements which were very generally made in the spring of 1920 for remunerating these services as a first charge on the Practitioners' Fund had broken down, as most claims for anaesthetist's fees had come from partnerships, whilst very few claims for the treatment of abortion and miscarriage had been received. It was considered that this provision—especially where it related to anaesthetist's fees—bore unfairly on the single-handed country doctor, who often had to manage without the assistance of a second doctor when administering an anaesthetic, and that the system also encouraged the unjustifiable administration of a general anaesthetic where local anaesthesia would have sufficed.

The Committee again considered the scrutiny of prescribing in relation to the Ministry's intimation that the regional medical staff may in future be associated in the investigation of alleged excessive prescribing. The Warwickshire Panel Committee having already expressed their opinion that this work—invidious in the extreme, when performed by a committee representing panel insurance interests—might suitably be performed by a medical and technical subcommittee of the Insurance Committee, the following resolution was unanimously adopted:

> That, failing a complete transfer of the duties now imposed upon Panel Committees under Article 34 of the Regulations to a suitably appointed subcommittee of the Insurance Committee, this Conference insists upon the retention by Panel Committees unchanged of all duties now imposed on them by the Article; and that they accordingly deprecate the reference in Memo. R.M.1A to the introduction of the staff of the Ministry of Health, also the proposal for reducing the supply to Panel Committees of statistical data contained in the recent memorandum issued to the Pricing Bureaux.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty:

Surgeon Commanders W. K. D. Breton to the *Excellent*, temporarily, and W. R. Harrison, O.B.E., to the *Pembroke* for R.N. Hospital, Chatham, temporarily (September 28th), B. R. Bickford, D.S.O., to the *President*, additional for R.N. College, Greenwich, temporarily (October 11th); A. R. David on to the *Fisgard* (September 7th); R. J. G. Parnell to the *Victory* for R.N. Barracks, Portsmouth, for general and specialist duties, and R. M. Richard; to the *Victory* for R.N. Barracks, Portsmouth (October 1st). Surgeon Lieutenant Commanders F. E. Fitzmaurice to the *Victory*, additional for R.M.A., Eastney, temporarily (September 2.th); J. L. Priston, H. W. Fitzroy-Williams, H. B. Parker, D.S.C., R. A. W. Ford, A. C. Shaw, R. K. Shaw, M.C., R. A. Brown, J. Kirker, L. R. Warburton, O.B.E., O. D. Brownfield, O.B.E., and P. W. Carruthers to the *President*, additional for five months' course of instruction (September 23th); J. F. Pace to the *Impregnable* (October 1st). Surgeon Lieutenants J. S. McGrath to the *Victory*, additional for R.N. Hospital, Haslar; J. H. B. Crosbie to the *Ramillies*, and A. E. Phillips to the *Fitzroy* (September 28th).

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel W. J. P. Adye-Curran, O.B.E., retires on retired pay on account of ill health contracted on active service, June 24th (substitut d for notice published on July 1st).

Lieut.-Colonel A. F. Carlyon, half-pay list, late R.A.M.C., retires on retired day on account of ill health (September 9th).

Major A. W. Howlett is placed temporarily on the half-pay list on account of ill health (August 25rd).

Major J. T. Simpson is restored to the establishment (August 23rd).
Captain P. A. With retires receiving a gratuity (September 5th).
Captain H. J. Davidson, M.C., to take rank and precedence in the Corps and in the Army as if his appointments as Captain bore date May 21st, 1920.

ROYAL HOSPITAL, CHELSEA.—*Physician and Surgeon:* Major Edmund T. Potts, C.M.G., D.S.O., vice Major R. J. C. Thompson, C.M.G., D.S.O. (vacated), August 2nd.

ROYAL AIR FORCE MEDICAL SERVICE.

David J. Jones, M.B., is granted a temporary commission as a Flight Lieutenant, with effect from and with seniority of August 21st.
Flight Lieutenant J. C. Smyth is transferred to the Reserve Class D2 (August 26th).
Captain A. F. M. Fuoss relinquishes his commission (August 17th), and retains the rank of Captain.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Captain G. G. B. Holroyde, M.C., to be Adjutant 56th (1st London) Division, R.A.M.C., T.A. (July 17th).
Captain W. J. Purves, M.C., having attained the age limit, is retired (September 6th), and is granted the rank of Major.
The undermentioned officers resign their commissions (September 30th) and are granted the rank of Major: Captains W. R. Pierce, O.B.E., G. Stevenson, B. M. Footner, M.B.E., and K. A. P. R. Murray, M.C.
The following officers resign their commissions and retain the rank of Captain: Captains E. A. Williams (September 6th), A. V. Glendenning, G. L. Wilkinson, R. B. M. Yates, D. Buchanan, and R. A. Hooper (September 30th).
Captain J. K. Davies (late R.A.M.C.) to be Captain.
Ernest A. Sparks (late Surgeon Sub-Lieutenant, R.N.V.R), to be Lieutenant.
Lieutenant T. D. Webster to be Captain.
Hon. Lieutenant G. Nicholson (late R.F.A.) to be Lieutenant.
General Hospitals.—Major A. P. Watson, O.B.E., T.D., from General List to be Major. Captain W. J. Foster, F.R.C.S., having attained the age limit, is retired and retains the rank of Captain.
Sanitary Service.—Captain J. M. Hamill, O.B.E., relinquishes his commission and is granted the rank of Major.
Sanitary Companies.—Captain H. H. Fowler, from T.A. Reserve, to be Captain, with precedence as from May 6th, 1919.

VACANCIES.

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House-Surgeon (male). Salary, £250.

BARROW-IN-FURNESS: NORTH LONSDALE HOSPITAL.—House-Surgeon (male). Salary, £225 per annum.

BARRY URBAN DISTRICT COUNCIL: ACCIDENT AND SURGICAL HOSPITAL.—Surgeon (male). Salary at the rate of £750, rising to £900 per annum.

BELFAST: ROYAL VICTORIA HOSPITAL.—Resident Biochemist. Salary, £200 per annum.

BIRMINGHAM: QUEEN'S HOSPITAL.—Two Resident House-Surgeons. Salary in each case at the rate of £70 per annum.

BRADFORD ROYAL INFIRMARY.—Two House-Surgeons. Salary, £100 per annum.

BUXTON: DEVONSHIRE HOSPITAL.—(1) House-Physician; salary, £200 per annum. (2) Assistant House-Physician; salary, £150 per annum, rising to £175.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd Street.—(1) House-Surgeon; salary at the rate of £100 per annum. (2) Junior House-Surgeon; salary at the rate of £50 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House-Physician. Salary at the rate of £125 per annum.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Senior Resident Medical Officer (male). Salary, £175 per annum.

EASTBOURNE: PRINCESS ALICE HOSPITAL.—Resident House-Surgeon. Salary at the rate of £175, rising to £200 per annum.

EDINBURGH ROYAL INFIRMARY.—Eye Department: Senior Clinical Assistant and Clinical Tutor. Annual emoluments, 145 guineas.

GREENWICH: "DREADNOUGHT" HOSPITAL.—House-Surgeon (male). Salary at the rate of £150 per annum.

HACKNEY UNION INFIRMARY.—Two Junior Assistant Medical Officers. Remuneration at the rate of £334 18s. 5d. per annum.

HULL ROYAL INFIRMARY.—Assistant House-Surgeon (male). Salary, £150 per annum.

INFANTS' HOSPITAL, Westminster.—Assistant Physician.

ISLINGTON DISPENSARY, Upper Street, N.—Resident Medical Officer. Salary, £200 per annum.

LANCASTER COUNTY ASYLUM.—Assistant Medical Officer. Salary, £100 per annum and bonus.

LUCKNOW UNIVERSITY.—Professor of Ophthalmology. Salary, Rs.1,200 a month, rising to Rs.1,400 a month.

MANCHESTER: ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House-Surgeon for Maternity Hospital. Salary at the rate of £160 per annum.

METROPOLITAN ASYLUMS BOARD.—Junior Assistant Medical Officer at High Wood, Brentwood. Salary, £122 per annum and bonus.

MONTROSE ROYAL ASYLUM.—Assistant Medical Officer. Salary, £100 per annum.

NEWPORT (MON.): ROYAL GWENT HOSPITAL.—House-Surgeon. Salary at the rate of £180 per annum.

OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—(1) Honorary Assistant Physician, and (2) Anæsthetist. An honorarium of £100 per annum is attached to the latter post.

[illegible] HOSPITAL FOR ACCIDENTS.—Assistant House-Surgeon. Salary at the rate of £150 per annum.

PRINCE OF WALES GENERAL HOSPITAL, Tottenham.—(1) House-Physician. (2) House-Surgeon. [illegible] per annum each. Junior [illegible] House Physicians. [illegible] per annum each.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—Resident Medical Officer. Salary, £300 per annum.

RICHMOND (SURREY) ROYAL HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland Street.—Two Honorary Radiologists.

ROYAL [illegible] HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.—House-Surgeon. Salary at the rate of £100 per annum.

RYDE: ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House-Surgeon. Salary at the rate of £200 yearly.

SALFORD ROYAL HOSPITAL.—(1) Resident Surgical Officer, (2) House-Physician, (3) House-Surgeon, (4) House-Surgeon, (5) Casualty House-Surgeon. Salary at the rate of (1) £250, (2) £200, (3), (4) and (5) £150 per annum.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE.—Demonstrator of Midwifery.

ST. GEORGE'S HOSPITAL, S.W.—Radiologist. Honorarium at the rate of £100 per annum.

SHEFFIELD ROYAL HOSPITAL.—Assistant Casualty Officer. Salary, £150 per annum.

SOUTHWARK UNION.—District Medical Officer of No. 5 District. Salary at the rate of £250 per annum.

SUNDERLAND UNION.—(1) Head Resident Medical Officer; salary, £600 per annum. (2) Female Resident Assistant Medical Officer; salary, £100 per annum.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street.—Honorary Medical Officer in charge of Electrical Department.

WEST HAM MENTAL HOSPITAL, Goodmayes.—Junior Assistant Medical Officer. Salary, £150, rising to £225.

WEST HAM UNION: WHIPPS CROSS HOSPITAL, Leytonstone.—Deputy Medical Superintendent. Salary (*a*) if married and non-resident, £650 per annum, rising to £750, and bonus; (*b*) if single and resident, £500 per annum, rising to £600, and bonus.

WESTMINSTER HOSPITAL, S.W.1.—(1) Assistant House Physician and (2) Assistant House Surgeon (males). Honorarium at the rate of £52 per annum in each case.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

19 Tues. London: Notification of Venereal Diseases Committee, 2.30 p.m.
20 Wed. London: Propaganda Subcommittee, 2.15 p.m.
22 Fri. London: Science Committee, 2.30 p.m.
23 Sat. Banff, Elgin, and Nairn Division: Autumn Meeting at Duff House, Banff, 4.15 p.m.
25 Tues. London: Central Ethical Committee, 2.30 p.m.
27 Wed. London: Hospitals Committee, 2.30 p.m.
28 Thurs. Southern Branch, South-Western Hotel, Southampton, 2.30 p.m.: Address by Mr. R. P. Rowlands, O.B.E., M.S., F.R.C.S., on Intestinal Obstruction.
29 Fri. London: Public Health Committee, 3.0 p.m.

OCTOBER.

3 Tues. London: Organization Committee.
4 Wed. London: Medico-Political and Parliamentary Committee.
5 Thurs. London: Journal Committee.
London: Insurance Acts Committee, 2.30 p.m.
6 Fri. London: Dominions Committee.
7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tabes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.
11 Wed. London: Finance Committee, 2.30 p.m.
20 Fri. London: Central Hall, Westminster: Annual Conference of Representatives of Local Medical and Panel Committees at 10 a.m.
25 Wed. London: **Council**, 10 a.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is **0s.**, *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

MARRIAGE.

MARTIN—WILLIAMSON.—At Northumberland Square Presbyterian Church, North Shields, on the 5th inst., Norman A. Martin, M.B., B.S. Dunelm, eldest son of A. Angus Martin, F.R.C.S.E., and Mrs. Martin, 25, Northumberland Square, North Shields, to Ruth, fourth daughter of the late Joseph Burrell and Mrs. Williamson, Camp End, North Shields.

DEATHS.

RYALL.—Sir Charles Ryall, C.B.E., F.R.C.S., of 62, Harley Street, W., suddenly, at Dornoch, 5th September.
WINNETT.—On September 7th, 1922, after a long illness most courageously borne, Julius Maurice Winnett, B.A., M.R.C.S., L.R.C.P., dearly loved husband of Sybil Winnett, of 454, Uxbridge Road, London, W.12, and eldest son of Mr. and Mrs. H. Winnett of Cape Town, aged 28.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 23RD, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Current Notes:
- Membership of the Association ... 113
- Election of Direct Representatives on the Insurance Acts Committee ... 113
- "Unorganized and Inactive" ... 113
- Fife School Medical Officers' Salaries ... 115
- Salaried Appointments in South Wales Colliery Areas ... 113
- Willesden Health Policy ... 113
- The Remuneration of a Tuberculosis Officer ... 114

ASSOCIATION NOTICES:
- Council, 1922-23: Vacancy ... 122
- Branch and Division Meetings to be Held ... 122

MEETINGS OF BRANCHES AND DIVISIONS ... 122

REPORT OF THE INSURANCE ACTS COMMITTEE, 1921-22: PAGE
- I.—Administrative Machinery ... 115
- II.—General Position of Medical Benefit ... 115
- III.—Medical Benefit Regulations ... 117
- IV.—Miscellaneous ... 121

THE PRESENT POSITION OF NATIONAL INSURANCE ... 114

THE MILK AND DAIRIES (AMENDMENT) ACT, 1922 ... 123

NAVAL AND MILITARY APPOINTMENTS ... 123

VACANCIES AND APPOINTMENTS ... 124

ASSOCIATION INTELLIGENCE AND DIARY ... 124

BIRTHS, MARRIAGES, AND DEATHS ... 124

British Medical Association.

CURRENT NOTES.

Membership of the Association.

THE following figures of membership of the British Medical Association were submitted to the Propaganda Subcommittee of the Organization Committee at its meeting on September 20th. The period covered by these figures is that from April 21st to September 12th, 1922:

New members	992	
Arrears paid	213	
Resignations withdrawn	14	
		1,219
Resignations	59	
Deaths	99	
		158

The net gain in membership was thus 1,061. The total number of members on September 12th, 1922, was 24,140, compared with 23,079 on April 20th, 1922.

Election of Direct Representatives on the Insurance Acts Committee.

The attention of honorary secretaries to Panel Committees is directed to the fact that Monday, October 9th, is the last date for the receipt of nominations for Direct Representatives upon the Insurance Acts Committee. Forms of nomination may be obtained from the Medical Secretary, 429, Strand, on application.

"Unorganized and Inactive."

A melancholy little document headed "Unorganized and Inactive Divisions in England and Wales" was laid before the last meeting of the Propaganda Subcommittee—perhaps as a corrective to the membership figures recorded above. Nine Divisions appeared on this list: one in East Anglia, one in Lancashire, one in Hampshire, one in London, one in Surrey, two in Yorkshire, and one each in an island. In several of these Divisions, however, there are hopeful signs of renewed activity, and steps are being taken to revive others or to merge them in adjoining Divisions. Of a tenth Division (in North Wales) it was reported that this had become organized since the last meeting of the subcommittee. Here a secretary has been appointed, good meetings are being held, and the members already outnumber the non-members.

Fife School Medical Officers' Salaries.

About a year ago two assistant school medical officers were appointed by the Fife Education Authority at a salary of £500, with promise of an increase (unspecified) at the end of a year. In June last they were notified that their salaries would be reduced, as from September, to £475. They applied to the British Medical Association for help, and the Scottish Medical Secretary wrote to the Education Authority asking that body to reconsider its decision. The Education Authority has done so and has intimated that the salaries will remain at £500 per annum. The local newspapers in reporting the decision make what is becoming almost a stereotyped comment on "the strength of the doctors' trade union."

Salaried Appointments in the Colliery Areas of South Wales.

It is seldom that a week passes without the Medical Secretary being consulted by some young practitioner as to whether he should or should not accept a post which he has been offered, or reply to an advertisement in a lay newspaper relative to such a post, in South Wales. The older members of the British Medical Association do not need to be reminded that all medical appointments made by bodies of workmen in South Wales or elsewhere are prima facie to be suspected. If the advertisement appears in a lay paper and not in one of the medical journals something is almost certainly wrong with it. The explanation often is that it has been refused by those journals. In connexion with all such appointments the first thing to do is to see if it is mentioned among the "Important Notices" in our advertising columns. If it appears there, it is the clear duty of every practitioner who respects himself and his profession to apply for the information there offered him. If it is not mentioned among the "Important Notices," but is not advertised in the *British Medical Journal* or the *Lancet*, practitioners will be wise to write to the Medical Secretary. The salaries offered in some of these posts are attractive to young men, but those who have accepted them soon become aware that even good salaries can be earned too dearly.

Willesden Health Policy.

The health policy which was being pursued by the Willesden Urban District Council has received careful consideration by the Willesden Medical Advisory Committee, the election of which was reported in this column some months ago (SUPPLEMENT, May 6th, 1922, p. 162). It will be remembered that the Willesden Division of the British Medical Association had taken a strong line in regard to the health policy of the Urban District Council, and had suggested important modifications which it considered desirable both in the interests of public health and of municipal economy. At

the last elections of the Urban District Council the health policy was the leading matter of contention between the different parties, and as the result of the elections the adherents of the policy adopted by the Willesden Division of the British Medical Association gained a large majority in the Council. The new Council at once recommended that a local Medical Advisory Committee should be appointed, and this committee was elected by the medical practitioners residing in Willesden, and included one consultant, nine general practitioners, and one whole-time medical officer. After consideration of the whole matter, together with the correspondence between the Council, the Ministry of Health, and the Board of Education, the following conclusions—which in no way conflict with the views expressed by the Ministry of Health or the Board of Education—have been laid before the Willesden Urban District Council:

School Medical Service.—Routine medical inspection of the three age groups should be carried out so that parents should be informed as soon as possible of any defects requiring attention. Children found on inspection to be suffering from defects (except dental) should be referred to the family doctor, and the method recommended for doing this is that adopted in Dunfermline. The Board of Education has laid down the following conditions as those which may be treated at the Council's clinics: visual defects, enlarged tonsils and adenoids, dental defects, ringworm for *x* rays, and minor ailments. Some difficulty arises with the heading "minor ailments," and whatever the final definition it is clear that the treatment clinics must be confined to conditions coming within the scope of the Board's instructions, and other conditions must be referred to a hospital out-patient department or to the district medical officer of the Guardians. In regard to the question of payment for treatment, it is pointed out that the Board of Education's letter of December 29th, 1921, enjoins payment by parents for all treatment, and the appointment of voluntary almoners at each clinic is suggested; there should be no registration fee, as this is likely to keep away those who most require treatment. While not desiring to interfere with the present appointments, the Committee is of opinion that when vacancies arise arrangements should be made for carrying on the work by part-time private practitioners.

Maternity and Child Welfare.—The Committee expresses the opinion that the object of maternity and child welfare centres should be educational and advisory, and therefore preventive. Mothers and children under the care of their family doctors should not attend while undergoing treatment. Mothers and children found to require treatment should be referred to their family doctors, and the same procedure followed as in the case of school children suffering from defects. Thus, maternity cases should be referred to the family doctor, who may treat or arrange to send to hospital. The treatment of gynaecological cases is outside the scope of the service.

Hospital Treatment.—In regard to maternity cases the Committee recommends that arrangements should be made with the Guardians to accommodate these cases at Park Royal Hospital, and that no maternity cases should be admitted for confinement to the Isolation Hospital. The opinion is expressed that no school children should be treated at the Isolation Hospital except those suffering from infectious diseases, and the suggestion is made that the Council should make arrangements with the Willesden General Hospital and St. Monica's Hospital for operations on tonsils and adenoids, etc.

Notifications of Births.—The forms for notification of births might be amended to admit of the doctor indicating that attention from a health visitor is not necessary, thus saving unnecessary visits.

The Remuneration of a Tuberculosis Officer.

In 1912 the Plymouth Borough Council appointed a tuberculosis officer at a salary of £500 per annum. In 1922 this officer informed the British Medical Association that his salary was still unchanged and that he had not even been granted a war bonus. His case was taken up by the Plymouth Division and local efforts were supported by representations from the Head Office. In June last the Medical Secretary wrote remonstrating with the Council on its treatment of the tuberculosis officer, pointing out that £500 a year was inadequate remuneration for a man who acted as a consultant and expert in tuberculosis, and adding that if this officer were to resign and a new appointment had to be made it was unlikely that they would get anyone to replace him for less than £700 a year, that being the minimum recognized by the Association. It is satisfactory to be able to announce now the following readjustment of this officer's salary:

> From April 1st, 1920, to March 31st, 1921, to £600,
> From April 1st, 1921, to March 31st, 1922, to £650,
> From April 1st, 1922, to March 31st, 1923, to £700,
> and
> After March 31st, 1923, to £750 per annum maximum.

For an experienced officer who has been for ten years with one authority a maximum salary of £750 is little enough, but the increase is a move in the right direction. The assistance given by the Association has been cordially acknowledged.

Insurance.

THE PRESENT POSITION OF NATIONAL INSURANCE.

THE autumn session of the London Centre of the Faculty of Insurance was opened on September 18th at the Institute, Aldersgate Street, by Sir Kingsley Wood, M.P., Parliamentary Private Secretary to the Minister of Health, with an address on "The present position of national insurance."

Sir Kingsley Wood's Review.

The national insurance scheme, he said, was working smoothly and well. Its financial strength had gained as a result of the war, but in his judgement this country had reached under present conditions the extreme limit of contribution by compulsion for insurance purposes. There were in England to-day some 1,136 approved societies operating, with a total membership of 11,985,000. They were mainly operated by the friendly societies, trade unions, and the collecting insurance organizations. It was satisfactory that the number of deposit contributors continued to decrease; the reduction in numbers was largely due to transfers to approved societies. A curious feature illustrating certain of our national habits was that last year there were no fewer than 50.000 contribution cards not accounted for and derelict. National insurance had escaped the Geddes Committee comparatively unharmed. Each year £1,000,000 would be saved by the reduction in the insurance practitioners' fees, another saving of £1,800,000 was effected by charging the whole excess cost of medical benefit hitherto met by Exchequer grants to insurance funds, and a reduction of £300,000 had been effected by reducing the number of members of Insurance Committees. In consequence of the recent valuations, over 12,000,000 persons became entitled either to increased cash benefits or to new services as the rules of their societies prescribed.

Dental treatment was a popular form of benefit, and 534 societies had adopted a dental scheme; for payment of the whole or half of dental treatment £150,000 was available. An unofficial system of panels of registered dentists was being organized throughout the country and a recognized scale of charges drawn up. Nearly £300,000 could also be applied in payment to hospitals on behalf of members by societies which had included these additional benefits in their schemes. The schemes now numbered 973, covering approximately 7,500,000 insured persons. There were also 415 schemes for optical treatment, and an annual allocation for this purpose of £32,000.

The insured persons of the country (continued Sir Kingsley Wood) had a right to the same medical attention from the insurance practitioner as a private patient. A general indictment against the general quality of panel practice could not be sustained, and the standard was improving. The cost of medical benefit was, for this country, £8,250,000, of which the cost of drugs represented £1,250,000—an average of 5¾d. for each prescription. An important new clause had been recently incorporated in the medical practitioners' agreements directed against lock-up surgeries which were not in touch with the doctor.

New proposals based upon the principle of insurance by industry had been put forward, and with them Mr. McCurdy had recently associated himself. This was an attractive proposition, but it had not yet been considered favourably by the majority of the trade unions. The boot and shoe industry had been put forward as an example of what could be accomplished. The State was to pay its present contributions in relation to health insurance, unemployment insurance, and old age pensions; the workman was to provide two shillings a week, and the employers their present contributions, based, however, upon output, with the addition of an extra threepence on each pair of boots and shoes. Benefits were to be considerably increased, and old age pensions were to start at 62 years of age. Sir Kingsley Wood awaited with interest an actuarial report on the proposals, how they were to be administered, and at what cost. An extra tax upon commodities was, however, not to be lightly advocated to-day.

A LIST of periodical publications, official reports, and Blue Books in the Library of the British Medical Association available for issue to members on loan has been printed, and copies can be obtained free on application to the Librarian at the house of the Association, 429, Strand, W.C.2. The regulations governing the loan of these publications are stated in the introduction to the list. The Library is open for consultation from 10 a.m. till 6.30 p.m. (on Saturdays 10 a.m. till 2 p.m.).

British Medical Association.

REPORT OF INSURANCE ACTS COMMITTEE, 1921-22.

I.—ADMINISTRATIVE MACHINERY.

OCTOBER, 1921, ANNUAL CONFERENCE, AND MAY, 1922, SPECIAL CONFERENCE.

1. Copies of the Minutes of the 1921 Annual Conference were issued on November 8th, 1921, and of the May, 1922, Special Conference on May 31st, 1922, to Chairmen, Secretaries and representatives of Local Medical and Panel Committees.

DIRECT REPRESENTATIVES ON I.A.C.

2. As a result of the voting by Members of Local Medical and Panel Committees, the following practitioners were elected as direct representatives upon the Committee for the Session 1921-22:

Dr. M. Dewar (Edinburgh) and Dr. D. Lyon Stevenson (Larkhall, Lanarks) (Group "A"); Dr. A. Smith (Whickham, Durham) (Group "B"); Sir William Hodgson (Crewe), Dr. H. F. Oldham, M.B.E. (Morecambe), and Dr. Frank Radcliffe (Oldham) (Group "C"); Dr. A. Forbes (Sheffield) and Dr. G. B. Hillman, M.B.E. (Wakefield) (Group "D"); Dr. W. E. Thomas (Ystrad, Rhondda) (Group "E"); Dr. T. Ridley Bailey (Bilston, Staffs) and Dr. E. Lewis Lilley (Leicester) (Group "F"); Dr. T. Cuming Askin, M.B.E. (Woodbridge, Suffolk) (Group "G"); Dr. T. Wood Locket (Melksham, Wilts) (Group "H"); Dr. J. P. Williams-Freeman (Andover, Hants) (Group "I"); Dr. P. V. Fry (East Molesey, Surrey) (Group "J"); Dr. H. B. Brackenbury (Hornsey), Dr. E. A. Gregg (London), and Dr. C. H. Panting (Leyton) (Group "K").

The election of 18 Direct Representatives for the Session 1922-23 is now proceeding.

ATTENDANCES AT COMMITTEE AND SUB-COMMITTEE MEETINGS.

3. The following is a list of attendances at Insurance Acts Committee meetings and Sub-Committees during the Session from the 1921 Annual Conference to September 7th, 1922:

	Insurance Acts Committee		General Purposes Sub-Committee		Rural Practitioners Sub-Committee		Insurance Acts Sub-Committee (Scotland)	
	Actual.	Possible.	Actual.	Possible.	Actual.	Possible.	Actual.	Possible.
*Drummond, Prof. David, C.B.E. M.A., D.C.L.	—	7	—	—	—	—	—	—
†Macewen, Sir Wm., C.B., LL.D., M.D., F.R.C.S., F.R.S., D.Sc.	—	1	—	—	—	—	—	—
Henry, Dr. R. Wallace	6	8	2	2	—	—	—	—
Bolam, Dr. R. A., LL.D.	8	8	2	2	—	—	—	—
Haslip, Dr. G. E.	1	8	—	2	—	—	—	—
Askin, Dr. T. Cuming, M.B.E.	7	8	—	—	2	2	—	—
Bailey, Dr. T. Ridley	8	8	2	2	2	2	—	—
Beadles, Dr. H. S.	8	8	2	2	2	2	—	—
Brackenbury, Dr. H. B. (Chairman)	8	8	2	2	2	2	—	—
‡Cope, Dr. A. E.	6	6	—	—	—	—	—	—
Craig, Dr. R. W.	8	8	2	2	—	—	3	3
Dain, Dr. H. G.	8	8	2	2	—	—	3	3
*Darling, Dr. J. Singleton	—	—	—	—	—	—	—	—
Dewar, Dr. M.	6	8	2	2	—	—	3	3
Forbes, Dr. A.	8	8	2	2	—	—	—	—
Fry, Dr. P. V.	8	8	2	2	—	—	—	—
Green, Dr. A. Withers	8	8	—	—	—	—	—	—
Gregg, Dr. E. A.	8	8	2	2	2	2	—	—
Hillman, Dr. G. B., M.B.E.	8	8	2	2	—	—	—	—
Hodgson, Sir William	6	8	—	—	—	—	—	—
Howarth, Dr. W. J., C.B.E.	8	8	—	—	—	—	—	—
Jones, Dr. Herbert	8	8	2	2	2	2	—	—
†Le Fleming, Dr. E. K.	1	1	—	—	—	—	—	—
Lilley, Dr. E. Lewis	8	8	—	—	—	—	—	—
Locket, Dr. T. Wood	8	8	2	2	2	2	—	—
Oldham, Dr. H. F., M.B.E.	8	8	—	—	—	—	—	—
*Palmer, Dr. C. J.	3	3	—	—	—	—	—	—
Panting, Dr. C. H.	8	8	2	2	—	—	—	—
Radcliffe, Dr. F.	6	8	—	—	—	—	—	—
Ramsay, Dr. Mabel	8	8	2	2	2	2	—	—
Smith, Dr. A.	7	8	—	—	—	—	—	—
Souttar, Mr. H. S., C.B.E., F.R.C.S.	5	8	—	—	—	—	—	—
Stevenson, Dr. D. Lyon	7	8	—	—	—	—	—	—
Thomas, Dr. W. E.	6	8	1	2	2	2	3	3
Williams-Freeman, Dr. J. P.	7	8	2	2	2	2	—	—
Baigent, Dr. W.	—	—	—	—	1	2	—	—
Burkitt, Dr. J. C. S.	—	—	—	—	1	2	—	—
Harding, Dr. R.	—	—	—	—	1	2	—	—
Jones, Dr. Hugh	—	—	—	—	1	2	—	—
Sydenham, Dr. G. F.	—	—	—	—	1	2	—	—
Andrew, Dr. J.	—	—	—	—	—	2	2	3
Dickson, Dr. D. E.	—	—	—	—	—	2	2	3
Douglas, Dr. C. E.	—	—	—	—	—	2	3	3
Dunlop, Dr. J.	—	—	—	—	—	2	3	3
Lawson, Dr. W.	—	—	—	—	—	2	3	3
Little, Dr. J. W.	—	—	—	—	—	2	3	3
Martine, Dr. W. R.	—	—	—	—	—	2	3	3
Miller, Dr. G. W.	—	—	—	—	—	2	3	3
Miller, Dr. Hugh	—	—	—	—	—	2	2	3
Muir, Dr. J. S.	—	—	—	—	—	2	2	3
Nairn, Dr. C.	—	—	—	—	—	2	3	3
Rorie, Dr. D.	—	—	—	—	—	2	2	3
Todd, Dr. J.	—	—	—	—	—	2	3	3

* Membership ceased July, 1922.
† Appointed July, 1922.
‡ Successor to Dr. A. Withers Green as Poor Law M.O.'s Association representative.

MEMBERS APPOINTED BY REPRESENTATIVE MEETING, 1922.

4. The five Members of the Committee elected by the Annual Representative Meeting, 1922, of the B.M.A. are as follows:

Dr. H. S. Beadles (London),
Dr. H. G. Dain (Birmingham),
Dr. Herbert Jones (Hereford),
Dr. E. K. Le Fleming (Wimborne, Dorset) } England and Wales,
Dr. R. W. Craig (Dalkeith) ... ... Scotland.

Note.—An Irish representative is not now elected on the Committee by the A.R.M.—see para. 7 of Report.

REPRESENTATIVES OF OUTSIDE BODIES.

5. The following nominees of outside bodies were appointed members of the Committee for the past session:

Dr. Mabel Ramsay, Plymouth (Medical Women's Federation), Dr. W. J. Howarth, C.B.E., Longfield, Kent (Society of Medical Officers of Health), Dr. A. Withers Green, London, and afterwards Dr. A. E. Cope, London, (Poor Law Medical Officers' Association), Mr. H. S. Souttar, C.B.E., F.R.C.S., London, was appointed by the Hospitals Committee of the Association as a representative of the Staff of a Voluntary Hospital.

CHAIRMAN.

6. Dr. H. B. Brackenbury was reappointed Chairman.

CONSTITUTION OF INSURANCE ACTS COMMITTEE—ELECTION OF DIRECT REPRESENTATIVES.

7. The 1921 Annual Conference (Min. 20) decided that London should constitute a separate Group for the purpose of the election of direct representatives upon the I.A.C. As matters stood at the time of the passing of this resolution, it was understood that the effect would be that London, with one representative would be underrepresented. To give it two representatives would result in its being overrepresented, and would have necessitated the withdrawal of a representative from some other Group. The Committee considered that the best way out of the difficulty would be to ask the Representative Body of the B.M.A. to alter the constitution of the Committee by reducing the number elected by the Representative Body—six—to five, and increasing the number of direct representatives from 18 to 19. This was approved by the Representative Body, with the result that the constitution of the Committee is now as follows:

5 Ex-officio Members (*i.e.*, the President, Chairman of Representative Body, Chairman of Council, and Treasurer of the B.M.A., and the Chairman of Conferences of Local Medical and Panel Committees).
5 Elected by the Representative Body of the B.M.A. (*i.e.*, 4 for England and Wales and 1 for Scotland).
19 Direct representatives of Local Medical and Panel Committees, who need not necessarily be members of the British Medical Association.
1 Member of the Staff of a Voluntary Hospital, nominated by the Hospitals Committee of the Association.
1 Nominated by the Medical Women's Federation.
1 Nominated by the Society of Medical Officers of Health.
1 Nominated by the Poor Law Medical Officers' Association.

8. It now remains for the Conference to allocate the additional direct representative to an appropriate Group.

The Committee recommends:

Recommendation A:—That the additional direct representative be allocated to Group "L" (London).

Non-Panel Representation on Committee.

9. As at present constituted the Insurance Acts Committee has power to co-opt non-panel practitioners up to the number of four. The Annual Representative Meeting of the Association in 1921 considered that one, at least, of the non-panel practitioners on the Committee should be in general practice in an industrial area. The Committee agrees, and feels sure that the Conference will agree, that this is desirable. The necessary alteration has therefore been made, with the approval of the Representative Body, to allow of this being done.

Voting for Direct Representatives on I.A.C.

10. Up to the present the members of both Local Medical and Panel Committees have been entitled to vote in connection with the election of direct representatives on the I.A.C., but the Committee is of opinion that the power to vote should be restricted to members of Panel Committees only. It is realised, of course, that the personnel of both Committees is identical in the majority of areas, and that the above restriction would affect merely that small number of practitioners who are members of a Local Medical Committee only and who have therefore a less direct and immediate interest in the conduct of affairs of insurance practitioners.

The Committee therefore recommends:

Recommendation B:—That as regards future elections of direct representatives on the Insurance Acts Committee, only members of Panel Committees shall be entitled to vote and not members of Local Medical and Panel Committees as hitherto.

11. There is a number of instances where members of a County Panel Committee are also members of one or more County Borough Panel Committees in the same Group, and thus would appear to be entitled to vote in respect of each of the Committees of which they are members. In the absence of any definite instruction on the point this course has been allowed, but the Committee is of opinion that a definite pronouncement should be made on the matter by the Conference.

The Committee therefore recommends:

Recommendation C:—That as regards future elections of direct representatives on the Insurance Acts Committee, a voter shall have only one vote in any one Group, irrespective of his membership of more than one Panel Committee in that Group.

REPRESENTATIVES TO CONFERENCE.

12. The Committee was instructed by the last Annual Conference (Min. 9) to consider the question of laying down some definite ruling in regard to the eligibility of practitioners for appointment as representatives to Conferences of Local Medical and Panel Committees.

The Committee recommends:

Recommendation D:—That the following be added to the Standing Orders of the Conference:

Eligibility of Representatives to Conferences.

All representatives shall, at the time of their election, be medical practitioners and members or officers of a Local Medical or Panel Committee.

ELECTION OF PANEL COMMITTEES.

13. Minute 27 of the 1921 Annual Conference, expressing the opinion that proxy voting at elections of Panel Committees should be abolished, was brought to the notice of the Ministry, who stated that it was purely a question of asking Panel Committees to amend the schemes for their election, and that although the Ministry might undertake not to approve fresh schemes in which proxy voting was admitted, it was doubtful whether approval already given to a scheme could be withdrawn on this account. It is understood that as new schemes are submitted for approval, the Ministry is, if necessary, returning them for amendment in the direction desired by the Conference. The Committee suggests that those Panel Committees which have not yet taken steps for this amendment of their schemes should at once do so in accordance with the resolution of the last Annual Conference.

REPRESENTATION OF INSURANCE PRACTITIONERS ON INSURANCE COMMITTEES.

14. The protest raised by the 1921 Annual Conference against the reduction of direct representation of the medical profession on Insurance Committees has met with a satisfactory result. It will be remembered that in 1921, under the revised constitution of Insurance Committees, the medical profession, in common with all other parties represented thereon, had its direct representation halved. This was considered to be a hardship, particularly in small areas where only one direct representative was appointed. Representations were accordingly made to the Ministry, with the result that the latter has agreed to forego its right to appoint a medical representative on Insurance Committees consisting of 20 and 25 members, and to allow the Local Medical Committee to appoint two representatives instead of one.

15. Another point which has arisen in connection with the reduction in the personnel of Insurance Committees is the difficulty which is being experienced in some areas of finding a suitable Chairman and Vice-Chairman of the Allocation and Medical Services Sub-Committees, owing to the fact that such posts can only be filled from a very small number of the Committee. The attention of the Ministry has been drawn to this, and a promise has been made that attention will be given to the matter in the appointment of members of the Insurance Committees by the Ministry.

II.—GENERAL POSITION OF MEDICAL BENEFIT UNDER NATIONAL HEALTH INSURANCE.

PROFESSIONAL APPROVAL OF INSURANCE SYSTEM.

16. It will be of interest to the Conference to know that the Representative Body of the Association, at its Annual Meeting in July, passed the following Resolution:

> 84. Resolved: That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has, in the opinion of the R.B., been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system.

This is almost identical with Minute 43 of the last Annual Conference.

APPROVED SOCIETIES AND MEDICAL BENEFIT.

17. The National Health Insurance Bill, introduced by the Government with a view to legalising the arrangement for the payment of Approved Societies out of certain surplus funds of that portion of the capitation fee hitherto known as the "Treasury Grant," and which was the subject of discussion at the Special Conference in May last, has now become law. The Bill was watched very carefully during its passage through Parliament. Efforts were made by representatives of Approved Societies during the Committee Stage to introduce amendments giving Societies official status in the matter of the terms of remuneration and service of insurance practitioners. The Minister of Health, however, refused to accept the amendments or to go beyond the following statement he had made in the House of Commons before the Second Reading on May 24th, 1922:

> "I understand that a certain amount of apprehension exists in the mind of the medical profession that the present Bill may make some change or enable some change to be made in the arrangements for the control of medical benefit. I have already said in answer to questions in the House that there is not a word in this Bill which modifies the existing statutory provision for the control of medical benefit, and I take this opportunity of formally repeating that statement. Having regard to the provision in this Bill for contributions in relief of State expenditure from the surplus funds of Approved Societies, I have thought it no more than reasonable to say that I shall give these Societies an opportunity of expressing their views before new terms of service are made with panel practitioners on the expiry of the existing contract of service. But the responsibility for settling that contract rests and will continue to rest with the Minister of Health. A question has been raised as to possible implications in the words 'subject to such conditions as may be prescribed' in Clause 1 (1) (a) of the Bill. Those words are intended solely to provide for detailed conditions which may arise in the field of administration. They will certainly not be used in any way inconsistent with the principle I have just laid down."

In view of this statement the Committee did not feel it necessary to carry out the provisional instructions of the May Conference (Min. 30) to obtain the inclusion of a proviso to the effect that nothing in the Bill should confer upon Approved Societies any additional right to consider or to adjudicate upon the terms and conditions under which medical benefit is arranged or provided.

18. The Conference will be pleased to learn that the Representative Body of the Association in July last passed the following resolution on the recommendation of the Insurance Acts Committee:

> Resolved: That the Representative Body insists upon the continuance of the system of negotiating the actual terms of the contract of service which has prevailed since the coming into force of the National Health Insurance system—*i.e.*, direct negotiations between the Government and the profession without the intervention of any third party; but will continue to welcome the co-operation of all those interested in the development of the best possible medical service for insured persons.

This is identical with Minute 13 of the Special Conference in May last.

ORGANISATION OF THE PROFESSION.

19. The question of the organisation of insurance practitioners in readiness for eventualities has engaged the attention of the Committee, and a memorandum (M. 10) on the whole question is submitted to Panel Committees with a view to consideration at the Annual Conference. The subject is of such vital importance that the Committee proposes that that discussion shall be of a general nature; that no final decision shall be arrived at until after the memorandum, together with the report of the discussion, has been placed before insurance practitioners throughout the country; and that a Special Conference should be called to discuss the matter further in the spring of 1923.

COLLECTIVE BARGAINING SCHEME.

20. In 1915 the Conference of representatives of L.M. & P. Committees requested the Insurance Acts Committee to devise a scheme for collective bargaining whereby new agreements under the Insurance Acts, when signed, could be collected by the various Panel Committees and forwarded to the Insurance Acts Committee to be dealt with at its discretion. A scheme was accordingly devised and approved by successive Conferences. In 1917 all Panel Committees were circularised, asking for their individual support to the scheme, and close on 80 per cent. of the Panel Committees signed a pledge loyally to support the Insurance Acts Committee should it be found necessary to carry the scheme into effect. In view of impending events the Committee considers it advisable that the scheme should now be brought up to date, and accordingly submits it in its amended form for approval by the Conference (see M. 12). It will be seen that in paragraph (g) of the Scheme the percentage of resignations required to be in the hands of Panel Committees before action is taken, has been reduced from 80 to 66·6, as it is considered that the lower figure is sufficiently high to be effective. An alteration has also been necessitated in paragraph (b) by the fact that changes in the terms of service may now be made at any time, subject to three months' notice.

The Committee therefore recommends:

Recommendation E: That the Conference approve the scheme for Collective Bargaining as amended, and instructs the Insurance Acts Committee to take steps to obtain the adherence thereto of all Local Medical and Panel Committees.

CONFERENCES WITH REPRESENTATIVES OF BODIES INTERESTED IN INSURANCE ACTS.

21. The Special Conference in May last referred to the Committee the question of holding conferences with bodies interested in the administration of the National Health Insurance Acts, with an instruction to report thereon to the Annual Conference. The Committee is of opinion that much good would arise from such a conference, or series of conferences, especially if initiated by the Conference of L.M. & P. Committees.

The Committee therefore recommends:

Recommendation F: That it is desirable that a conference of the Insurance Acts Committee with other persons interested in the medical service of the National Health Insurance Acts, including representatives of Approved Societies and Insurance Committees, should be held.

PRESS AND PUBLICITY CAMPAIGN.

22. The Special Conference in May expressed the opinion that the time had come for an extensive press and publicity campaign in order to enlist the support and sympathy of the public to combat the threatened control of Insurance Acts administration by Approved Societies. The efficacy of a publicity campaign depends very largely upon its timeliness, and the Insurance Acts Committee is not convinced of the advisability of launching a press campaign on behalf of insurance practitioners at the present time. A general instruction has, however, been issued to the office (a) to draw the attention of the Panel Committee concerned to any statements, either in Parliament or outside, by any Member of Parliament, which are in any way antagonistic to the profession or to the manner in which insurance practitioners perform their duties under the Health Insurance Acts, and (b) to urge that the Panel Committee should take the matter up actively with the Member in question and report the facts, together with any correspondence thereon, to the local press.

CO-OPERATION WITH MEDICAL PRACTITIONERS' UNION.

23. At the 1921 Annual Conference a motion instructing the Committee to take such steps as might be necessary to ensure co-operation with the Medical Practitioners' Union was withdrawn upon the suggestion of the Chairman that it be left to the Insurance Acts Committee to use its discretion in its endeavours to obtain united action by the profession. The matter has received the attention of the Committee at several of its meetings, and discussions have taken place between representatives of the I.A.C. and of the M.P.U. The matter is not yet ripe for report as these discussions are being continued.

ADDITIONAL BENEFITS UNDER INSURANCE ACTS.

24. The Committee's attention was drawn, early in the year, to the action of a number of Approved Societies, both individually and through a body known as the National Insurance Beneficent Society, for the giving of ophthalmic benefit, viz., sight testing and supply of spectacles, etc., to insured persons out of surplus monies which have been made available as a result of the recent valuation of the assets of Approved Societies. This benefit the Insurance Acts Committee held to be "of the nature of Medical Benefit," and therefore such as should be administered by and through the Insurance Committees, having regard to the following paragraph of Section 14 of the 1911 Act:

> 14 (1) . . . . . medical and sanatorium benefits shall in all cases be administered by and through the Insurance Committees; additional benefits shall be administered by the society or branch of which the persons entitled thereto are members, except where such benefits are in the nature of medical benefits, in which case they shall be administered by and through the Insurance Committees.

25. Attention was drawn to the matter by the Committee at an interview with the Ministry on February 2nd, when the representatives of the Ministry stated that, according to their legal advisers, any Society using its surplus funds for the direct provision of medical benefits and treatment would be acting against Section 14 of the 1911 Act, but that the additional benefit now being referred to as being supplied by Approved Societies was a monetary payment for part or the whole of the cost of the treatment obtained by members themselves and not the organisation of services for them. There are several legal points of considerable doubt or difficulty in connection with this matter, and the Committee with the Trustees of the National Insurance Defence Trust, is watching developments very carefully as points may arise of the first importance to insurance practitioners and the whole profession.

III.—MEDICAL BENEFIT REGULATIONS.

TRANSFER OF PRACTICES.

26. The 1921 Annual Conference instructed the Insurance Acts Committee to endeavour to obtain the withdrawal of the arrangements embodied in the present Regulations in regard to transfer of practices, and the substitution of others on the lines indicated in the Committee's Report of last year (paras. 25-30, excepting para. 28 (b)). Various discussions have taken place during the past twelve months with representatives of the Ministry, and though the formal communication has not yet been received, the Committee is given to understand semi-officially that the Ministry has decided to accept in substance the last proposals which were put before them by the Insurance Acts Committee. As the regulations stand at present in cases where a practice changes hands there is a compulsory assignment at the end of three months of all patients who have not made a new choice of doctor in the meantime. The Insurance Acts Committee has always demurred to this wholesale assignment, and understands that under the new scheme there will be no assignment until 18 months after the transfer of the practice, and it is anticipated that the number of patients who will have failed to exercise their choice during this period will be relatively small. From the practitioners' point of view it would have been preferable to have avoided assignment altogether, but the Ministry takes the view that on administrative grounds provision must be made for assignment at some period in order to allow of the final clearance of the old list. It is generally recognised that the adoption of such an arrangement as this requires in equity some modification of the distribution scheme. In the normal case the successor in the transferred practice will be at risk in respect of the great majority of the patients on his predecessor's list, especially if, as generally happens, he takes over his predecessor's house. Those patients who have no special reason for transferring to another doctor will normally go to the successor in the practice, but under the present distribution schemes the in-coming practitioner receives no credits until his predecessor's patients have definitely applied to him for acceptance. This means that while one doctor in the area is carrying virtually the whole risk, the credits are divided between all the doctors in the area. The remedy is in the hands of the Panel Committees themselves, but the Committee understands that the Ministry will be ready to approve in principle of a provision in distribution schemes for allowing the successor in the practice extra credits in proportion to the number of insured persons on his predecessor's list who have not yet exercised their choice.

It is expected that an official letter will be received from the Ministry before the Conference.

MEDICAL RECORDS.

27. Minute 78 of the last Annual Conference, urging the Ministry to withdraw the obligation to enter the dates of all consultations and visits on the new record cards, was brought to the notice of the Ministry. It was argued by the Ministry that, although it had been made clear from the beginning that these

columns were of no particular use to the profession, they were of value to the Ministry and that the time had not yet arrived when the question of the abolition of the columns in question should be re-opened. A promise was given that the matter would be reconsidered after a longer experience in working.

28. The Ministry has promised to consider the proposal of the October, 1921, Conference (Min. 81) that the method of transmission of the record cards should be so altered as to provide that they should be sent in one special type of envelope and handled in the offices of Insurance Committees only by specially selected confidential clerks.

29. Mention was made in the Committee's last Annual Report of an expressed desire on the part of the Ministry that re-payment for the cost of forwarding the new record cards should be waived by insurance practitioners if it were found that the expense of keeping records of the extra postage incurred by practitioners was disproportionate to the results. Subsequently, the Ministry suggested that instead of making these small payments to individual practitioners, Insurance Committees should be authorised to pass them over in bulk to Panel Committees to be used in connection with their administrative expenses. On being assured that such payments would not be conditional upon any supervision or control of the expenditure by the Insurance Committees, the Committee agreed to the change.

30. The Committee's attention has been drawn to the fact that cases have occurred where, on an insured person's title to benefit being challenged by the Insurance Committee, the record card has been returned to the Insurance Committee and lost, a new card being issued when the title to benefit has been re-established. In these cases the practitioner is often deprived of valuable records of previous illnesses, and such deprivation is to the detriment of the insured person. Furthermore, the procedure complained of is directly in opposition to the scheme of medical records, and deprives the scheme of much of the value which is, rightly or wrongly, claimed for it. The matter was brought to the notice of the Ministry, which states that the attention of Insurance Committees will be drawn to the matter.

Meaning of an "Order of the Minister."

31. Local Medical and Panel Committees are familiar with events resulting in the reduction of the capitation fee from 11s. to 9s. 6d. The Ministry's action in introducing the new fee as from January 1st, 1922, caused a good deal of dissatisfaction amongst the general body of insurance practitioners. It was contended that, although three months' notice was given to the negotiating body (the Insurance Acts Committee) of an intended change in remuneration, each individual practitioner was entitled to a similar notice of the exact amount after it had been determined by central negotiations. The Ministry declined to accept this view, maintaining that if individual notice was to be given of everything decided by collective bargaining, that method was reduced to absurdity; the Ministry also maintained that as the Central Pool was each year constituted by an Order of the Minister, individual notice of a change was not necessary. This was regarded by the Insurance Acts Committee as a straining of the interpretation of the proviso to paragraph 2 of the Terms of Service, and the question was taken up with the Ministry, who were asked the extent of the powers vested in the Minister which rendered possible modifications of the conditions of insurance practice by Order of the Minister, and therefore in accordance with paragraph 2 of the Terms of Service, without requiring that three months' notice of the proposed modification should be given to individual practitioners. The Ministry states that it is advised that the matters on which the Minister is at present empowered by Regulation to take action modifying the conditions of service throughout the country are as follows:

1. The determination of the Central Practitioners' Fund. (Art. 19.)
2. The determination of the Central Mileage Fund. (Art. 19.)
3. The determination of the Drug Tariff. (Art. 6.)
4. The determination of the distribution among Insurance Committees of the Central Practitioners' Fund and the Central Mileage Fund. (Art. 20 (5).)
5. The provisional determination, if it appears to him that the circumstances so require, of the amounts and distribution of the Central Practitioners' Fund and the Central Mileage Fund. (Art. 20 (7).)
6. The determination of the form of Records. (Para. 11 of Part I of the First Schedule.)
7. Prescribing forms of reports in the case of domiciliary treatment of tuberculosis. (Para. 12 of Part I of the First Schedule.)

32. The relevant provision of the Medical Benefit Regulations, 1920, is indicated in each case. In addition to the above matters, which affect insurance practitioners throughout the country as a whole, there are powers relating to particular areas, such as those conferred by the proviso to Section 15 (2) of the 1911 Act, Section 11 of the 1913 Act, and Art. 15 (6) or Art. 21 of the Regulations [illegible] and the [illegible] Act, 1920, and the [illegible] Regulations made in regard to [illegible].

33. In view of the foregoing statement the Minister has been asked for, and has given [illegible] to that given in connection with Orders in Council) that, in the event of any alteration proposed to be made by Order of the Minister, three months' notice thereof will be given to the Committee representing the Panel Committees of the country, and that previous opportunity for discussion will be afforded whenever possible. The Minister still retains the power, however, to deal by order with possible emergencies, involving, possibly, a shorter notice than three months being given to the representative Committee, but in no case will these emergency powers be exercised without prior consultation with that Committee. In addition, an assurance has been given that, after an Order has been made, the fullest notice of its provisions will be given to individual practitioners which is permitted by national exigencies.

Amendment of Medical Benefit Regulations.

34. As stated in circular M. 6/1922-23, dated August 9th, 1922, the Ministry has recently had to issue Regulations embodying the conditions attaching to what was hitherto known as the Treasury Grant, such Regulations being necessitated by the fact that certain of this money is no longer defrayed out of the Exchequer but comes out of the funds in the hands of Approved Societies. The Ministry took this opportunity of making amendments to the 1920 Medical Benefit Regulations upon a number of other points which experience had shown to be desirable, some of which had been suggested by the Insurance Acts Committee. Form G.P. 29, which it is understood has been issued through Insurance Committees to every insurance practitioner, explains the effect of each of the amending Regulations. There is therefore no need for them to be discussed in this report; but they may be enumerated as follows:

Dispensing in Rural Areas (Reg. 3).

35. Experience has proved that few insured persons in rural areas take advantage of the opportunity afforded them under the old Regulation (Art. 10 (2) and (3)) to decide whether to obtain their medicines, etc., from the doctor or the chemist. The new Regulation authorises Insurance Committees (in the case of those insured persons in rural areas resident more than a mile from the nearest chemist) to decide, after the insured person has been included in the list of a practitioner, whether that insured person shall be entitled to obtain his medicine from the doctor or chemist, and inform him accordingly. If the insured person objects within seven days the Insurance Committee will then make the alternative arrangement for him.

Practitioners with Excessive Lists (Reg. 5).

36. The words "Not being longer than one year" in line 5 of Article 15 (2) of the principal Regulations are deleted, as it has been found that as long as provisional financial settlements are necessary it is not administratively possible to effect reductions of lists within the period of one year.

Change of Doctor (Reg. 4).

37. This Regulation simplifies the procedure by which an insured person may change his doctor, and does away with the necessity for the insured person notifying the Insurance Committee of his desire to change. The receipt by the Insurance Committee of the medical card from the new doctor will be sufficient notification of the insured person's desire to change. The Insurance Acts Committee secured the introduction of a proviso requiring notice to be given, as under the old Regulations, of a change from a doctor to an Institution, or *vice versa*.

Hearings by Local Medical Committees (Reg. 7).

38. The old Regulation 36 imposed upon Local Medical Committees the duty of considering any complaint made to it, involving a question of the efficiency of the medical service, by one insurance practitioner against another. Certain difficulties, which are referred to in another paragraph of this Report, have recently arisen in this connection, which resulted in representations being made to the Ministry upon the matter. The result has been the introduction of this amending Regulation, which, instead of making it compulsory for Local Committees to consider such cases, now makes it optional. The Insurance Acts Committee, whilst not entirely satisfied by the new Regulation, feels that it is the best that can be obtained and should be accepted.

Power to Dispense with Oral Enquiry where a Practitioner is Convicted of a Criminal Offence (Reg. 8).

39. This Regulation makes provision whereby, in the case of a practitioner who has been convicted of a criminal offence and representations are made for his removal from the medical list solely on the ground of that conviction, an enquiry may (with the practitioner's concurrence) be dispensed with. This new

arrangement will save the expense of setting up an Enquiry Committee merely to find the fact of conviction, which is proved by the formal production of the Court certificate.

Charges by Practitioners—Evidence of Insured Person's Title to Benefit (Reg. 9).

40. Isolated instances have occurred where advantage has been taken of the wording of Clause 7 (2) of the terms of service to render an account for treatment given to a person pending the establishment of his title to benefit. The new Regulation makes it clear that a fee charged to a person under such circumstances must be by way of deposit only, and shall apply not only to fees paid in cash but also to accounts rendered covering a series of attendances.

Supply of Dressings and Appliances by Doctors (Reg. 10).

41. Prior to the introduction of the 1920 Regulations a practitioner was not called upon to supply out of the capitation fee of 1s. 3d. per hundred persons, "appliances ordinarily administered by the practitioner in person." The 1920 Regulations, however, unwittingly imposed this obligation on the insurance practitioner, but, except in one or two areas, the practice observed has been in accordance with the pre-1920 custom. Regulation 10 is a reversion to the position under the old Regulation, and relieves the practitioner of any responsibility for supplying dressings and appliances required for immediate administration out of the present capitation fee of 1s. 3d. per hundred insured persons.

42. At the request of the Insurance Acts Committee the Ministry has agreed to allow local option as to whether there should be a flat rate payment in respect of each occasion upon which drugs, etc., are supplied under the revised Regulation, or a per capita rate, and an instruction to this effect has been issued to Insurance Committees.

Medical Records (Reg. 11).

43. Arising out of the discussion in recent years upon the above question, it transpired that, while English and Welsh Insurance practitioners were under an obligation to keep records there was no obligation upon them to forward them to the Ministry. Regulation 11 makes it incumbent upon practitioners to transmit records to the Insurance Committee when required. The Insurance Acts Committee, in accepting this Regulation, made it quite clear that there was to be no obligation upon insurance practitioners to defray postage on record cards.

Appeals under Section 67 of the 1911 Act (Reg. 12).

44. Hitherto no provision existed for the attendance of an insured person's doctor in connection with an appeal under Section 67 of the 1911 Act. Regulation 12 makes provision in the terms of service for the attendance of the doctor if requested so to do by the insured patient.

45. The Insurance Acts Committee only agreed to this Regulation on the understanding that provision was made for the payment of a fee of £2 2s., plus travelling expenses, to any insurance practitioner required to attend such an enquiry. This has been agreed to by the Ministry.

Definition of Permanent Assistant (Reg. 13).

46. Some confusion and misunderstanding has apparently arisen through the somewhat indefinite wording of Clause 10 (1) and (2) of the terms of service, and the new Regulation has been designed to make the position quite clear in regard to the meaning of the words "permanent assistant."

Lock-up Surgeries (Reg. 14).

47. This is a new Regulation, but it does not impose any fresh obligation on insurance practitioners. It merely provides what is already implied in the Regulations, that a practitioner who lives away from his surgery shall make such arrangements as will ensure that his insured patients are able to get promptly into touch with him in cases of urgency.

Medical Certification (Reg. 15).

48. Form Med. 40 is intended to be used only on the occasions covered by the certification rules. Cases have arisen where a practitioner has issued a certificate on that form when the circumstances were not covered by the rules, with the result that the Approved Society has been misled or the insured person has suffered. The new Regulation makes it quite clear that the certification rules must be strictly adhered to.

49. This question first arose owing to the Insurance Acts Committee having drawn attention to the difficulty in which insurance practitioners were placed by reason of the fact that, where a certificate had not been given within twenty-four hours of the examination, Approved Societies refused under Rule 5 to pay sickness or disablement benefit. Under the new Regulation it would be illegal for an insurance practitioner to give a certificate in such circumstances. The position is, therefore, that any such extra certificates given by an insurance practitioner may be charged for, and with a view to preventing misunderstanding in this connection the Committee has informed the Ministry that it cannot agree to any further form being issued by the Ministry of Health. The Committee is of opinion that any such extra form required for such occasions should be printed and published by the British Medical Association in the same way as certificates for the use of non-panel practitioners.

Conditions attaching to Treasury Grant (Reg. 16).

50. Regulation 16 merely puts into regulation form well-known conditions hitherto attaching to what has been termed the Treasury Grant.

PRESCRIPTION FORMS.

51. A uniform prescription form has recently been introduced by the Ministry for adoption in all areas, as soon as the present stock of prescription books is exhausted. A single form of script is urged by the Ministry as a measure of economy, but it will be left to each individual area to decide whether it will continue the use of duplicate or triplicate forms or adopt the single script. Areas which are at present using the single form, however, will not be allowed to adopt the duplicate form. The Insurance Acts Committee was consulted before the revised model form was introduced, and did not see any reason to oppose the change.

LOCAL MEDICAL COMMITTEE—QUESTION OF PRIVILEGE OF PROCEEDINGS THEREAT.

52. A difficulty has recently occurred in regard to the position of Local Medical Committees under the Insurance Acts. Most of the duties which Local Medical Committees were intended to carry out under the 1911 Act have been transferred to Panel Committees, but it has always been recognised that there is a place in the administration of the Act for the operations of a Committee which should be representative of all the medical practitioners in the area and not only of insurance practitioners. One of the two special duties which are given to Local Medical Committees is dealt with in the following Regulation 36:

> *36.* It shall be the duty of the Local Medical Committee to consider any complaint made to that Committee by an insurance practitioner against any other insurance practitioner involving any question of the efficiency of the medical service of insured persons, and the Local Medical Committee may make representations to the Minister that the continuance on the medical list of the practitioner against whom complaint is made will be prejudicial to the efficiency of the service.

53. Two cases have recently occurred which threatened to involve members of the Local Medical Committee, either individually or collectively, in considerable legal expenditure. The first was the case of a practitioner who, dissatisfied at the action of the Local Medical Committee in declining on the ground of insufficient evidence to hear a complaint by him against another practitioner, threatened to apply for a *mandamus* to force the Committee to hear the case. The second case raised the question as to whether the proceedings at a Local Medical Committee are privileged. A letter of complaint by one practitioner against another was read at a meeting of a Local Medical Committee. The practitioner against whom the complaint was made, without waiting for an enquiry to be heard, threatened a libel action against the practitioner making the complaint, and demanded from the Secretary of the Local Medical Committee a copy of the letter referred to above. Acting on advice received from this Office the Secretary of the Committee refused to supply a copy of the letter to anybody outside the membership of the Committee. On the question of privilege, the Ministry has stated that this is not a case in which it could properly intervene.

54. Having no funds and being unable to claim the protection of the Ministry on the question of privilege, it will readily be seen that Local Medical Committees are in a precarious position. However, as Committees will see from another paragraph of this Report, Regulation 36 has now been amended so as to make it optional whether a Local Medical Committee undertakes an enquiry into any particular complaint, instead of it being obligatory upon Local Medical Committee so to do. It must therefore be left to Local Medical Committees to exercise their own judgment in particular cases as they arise as to whether it is advisable for them to undertake an enquiry or not. The second case cited above, however, shows how important it is that practitioners who make complaints against fellow practitioners should do so in careful and restrained language.

DISPENSING CAPITATION FEE.

55. A full report of the position in regard to the proposal of the Ministry to reduce the capitation fee payable to those practitioners who dispense for their insured patients, was made to the Special Conference on May 18th, 1922, at which time the matter was still in abeyance. The following letter dated June 19th

1922, has since been received, from which it will be seen that the question has been satisfactorily settled, at any rate, as regards 1922:

Sir,

I am directed by the Minister of Health to refer to the discussions which have taken place between representatives of this Department and your Committee in regard to the amount of the capitation fee to be paid to practitioners in rural areas in respect of those patients on their lists to whom they are required to supply all requisite drugs and prescribed appliances.

In view of the strong representations which have been made in this matter on behalf of rural practitioners, the Minister, although these representations appear to him to be in part based upon a misunderstanding which has been fully discussed with your Committee, desires to meet with the views which have been put before him by your Committee so far as may be compatible with the financial considerations involved. I am accordingly to inform you that the Minister, after careful consideration of all the circumstances, does not propose to make any reduction for the current year in the amount of the capitation fee referred to in the first paragraph of this letter.

The question of the amount of the capitation fee for the year 1923 will receive further consideration.

I am, Sir,

Your obedient Servant,

(Sgd.) L. G. BROCK.

PROCEDURE ON WITHHOLDING OF GRANT AND REMOVAL FROM PANEL.

56. Acting on the instructions of the 1921 Annual Conference (Min. 91) the Committee has been in communication with the Ministry, both by correspondence and by interview, in the above matter. On the question of the withholding of a portion of the Parliamentary Grant due to a practitioner as part of his remuneration, the Committee maintains that, provision having been made in the Regulations for the appointment of a Medical Service Sub-Committee to deal with certain matters and report to the Insurance Committee, it is not equitable for a higher authority (*i.e.*, the Minister) to step in and decide that action shall be taken in those cases in which the Insurance Committee has decided that action should not be taken. The Ministry, however, contends that the Parliamentary Grant from which such deductions are made is a grant made subject to certain conditions, for which the Minister has a direct responsibility to Parliament; that he has no right to delegate this to other persons or bodies; and that, whilst appreciating the fact that the Committee which conducts the investigation of a particular case is in a position to express an opinion thereon which may be of assistance to him, and which he welcomes, he reserves to himself the right to make the actual decision both because of his responsibility to Parliament, and also because, the conditions of the service being substantially identical throughout the country, practitioners are entitled to expect that a uniform standard shall be applied in judging of the gravity of defaults, and consequently in the assessment of the proportion of the remuneration of the defaulting practitioner which should be withheld.

57. There appears to be very little hope of any alteration in the present procedure, having regard to the attitude taken up by the Ministry, but the Committee is making representations to the Ministry urging the desirability of the appointment of a medical tribunal to which practitioners whom it was proposed to fine for alleged negligence in keeping records could appeal before the Minister made his decision final. It should be mentioned, however, that, since the last Annual Conference, the Ministry, on the suggestion of the Committee, has announced that it will give Panel Committees concerned the opportunity of sending a representative to be present and to speak at any hearing which may be held at the request of a practitioner under Article 33 of the Medical Benefit Regulations.

DISCLOSURE OF NAMES OF PARTIES TO MEDICAL SERVICE SUB-COMMITTEE PROCEEDINGS.

58. At an interview with representatives of the Ministry in February last the latter stated that although it had always been in the discretion of Insurance Committees to publish in their Minutes the names of medical practitioners and others concerned in Medical Service Sub-Committee cases, the Ministry had at the outset advised the Committees in general not to do so, in order that practitioners and others should not be unfairly prejudiced. Now, however, that the scheme was working well and considerable experience had been gained by all concerned, it was felt that in the public interest the Insurance Committees should be at liberty to publish the names of those found to be in default in these cases (medical and otherwise) after all rights of appeal had been exhausted.

59. The Committee has expressed the opinion that it is not desirable that the names of practitioners concerned in an enquiry held before a Medical Service Sub-Committee should be divulged under any circumstances, and this expression of opinion has been communicated to the Ministry, which does not propose to take any further action at present.

ADMINISTRATION OF ANÆSTHETICS TO INSURED PERSONS IN HOSPITAL—RANGE OF SERVICES.

60. The Committee has had under consideration the question as to whether an insurance practitioner's agreement only covers what is understood to constitute domiciliary attendance, or includes attendance upon an insured person in an institution in cases where the treatment is clearly within the range of service. The opinion of the Solicitor of the Association was obtained as to what, from the purely legal aspect, were the responsibilities of an insurance practitioner to insured persons in hospital for whom he is responsible, which opinion was, briefly, to the effect that, subject to certain conditions, it is part of an insurance practitioner's agreement to treat insured persons whilst in hospital. The Committee then proceeded to draw up the following list of the limitations which, in its opinion, should be placed upon the right of an insured person in an institution to treatment by an insurance practitioner:

(a) That the service in question must be a service within the practitioner's contract.

(b) That the institution must be an institution to which every practitioner has a right of access for purposes of attending his own patients.

(c) That no restriction be imposed by the hospital upon the choice of an anæsthetist in connection with cases requiring an anæsthetic.

(d) That the institution is situated within the area for which the practitioner has undertaken to attend the insured person.

(e) That the arrangements should not apply to Temporary Residents or Emergencies in Hospitals, and should not apply in convalescent homes merely for certification purposes.

61. The above limitations have been discussed with the Ministry, and agreement has been reached upon (a), (b), (c) and (d), the Ministry reserving its right to consider the exact wording of (c). With regard to (c) the Ministry could not agree, and this is still under consideration.

ASSISTANTS' NAMES ON MEDICAL LISTS.

62. The Committee has given further consideration to the question of safeguarding the interests of a practitioner whose assistant's name is required to be placed upon the Medical List. As stated in the Committee's last report (para. 33), the only safeguard a principal has is to insert a clause in his contract with his assistant forbidding that assistant to accept insured persons on his own behalf. It was suggested that the form of agreement between assistant and Insurance Committee should be slightly varied from the original form, but the Ministry still declines to modify the form of contract which an assistant is required to enter into with the Insurance Committee. This is at present the uniform form of agreement for all practitioners desiring to undertake insurance work.

DOMICILIARY TREATMENT OF TUBERCULOSIS.

63. It appeared to the Committee to be eminently desirable that the reports, both initial and progressive, which insurance practitioners were required to furnish in connection with those of their patients who were receiving domiciliary treatment for tuberculosis should be amended, and a special Sub-Committee was formed consisting of representatives of the Committee, the Public Health Committee of the B.M.A., and the Society of Medical Officers of Health with this object in view. The following recommendations were approved by the Committee and forwarded to the Ministry for its favourable consideration:

1. That the initial report by insurance practitioners on tuberculosis cases should be in a uniform form differing from that of subsequent reports.

2. That it would be in the general interest if the initial report, like subsequent reports, were sent to the Tuberculosis Officer instead of, as at present, to the Regional Medical Officer.

3. That the requirement of a three-monthly report should come into force only in cases where domiciliary treatment is being carried out.

4. That when, after a period of sanatorium or dispensary treatment, domiciliary treatment is to be resumed, the Tuberculosis Officer should notify the practitioner that such is the case, at the same time furnishing him with a report as to the condition of the patient.

5. That the before-mentioned reports should be the same size as the continuation record cards of insurance practitioners.

6. That when quarterly reports from practitioners are due, the Tuberculosis Officer should remind the practitioner by sending him a Record of Progress form.

7. That the clerical details on the reports should be filled in by the Tuberculosis Officer before the forms are issued to the practitioner.

8. That the following be the form of the initial report (*see* Appendix A).

9. That the Record of Progress form should be as follows (*see* Appendix B).

IV.—MISCELLANEOUS.

Central Pool.

64. It will be remembered that in the compilation of the original formula for the constitution of the Central Pool an actuary (Mr. S. G. Warner, F.I.A.) appointed by the Committee consulted with the Government actuary and assured the Committee that he was perfectly satisfied as to the correctness of that formula. The Committee had reason to believe that there had been some difficulty in regard to the final settlement for 1921 in applying this formula accurately, owing to the prevailing unemployment, and the Ministry was asked if Mr. Warner might be informed of any modification in order that he might assure the Committee as to its correctness or otherwise. The Ministry consented and a consultation took place between the two actuaries. Mr. Warner was able to report that such modifications as had been made in the existing formula were not disadvantageous to insurance practitioners. He also stated that he was convinced that every element in the case was closely and continuously watched and studied so as to make the yearly Central Pool, in its finished form, a true representation of what is due to insurance practitioners.

Inflation of Index Registers.

65. Minute 93 of the last Annual Conference, regarding the lax and dilatory manner in which some Approved Societies carry out the requirements of the Ministry in respect of such of their members as have ceased to be insured, has been brought to the notice of the Ministry.

Revision of Standards for Appliances for Insured Persons.

66. A revision of the standards for dressings supplied to insured persons has recently taken place, and the Committee was asked by the Ministry for its views as to the kind of standard packages which would meet the requirements of insurance practitioners generally. Eleven Panel Committees, representative of all types of areas, were asked for suggestions, and their suggestions were communicated to the Ministry.

Pension Scheme for Insurance Practitioners.

67. The question of the formation of a pension scheme for insurance practitioners has again been raised by the London Panel Committee. It will be remembered that in 1920 representatives of the Committee, the London Panel Committee, and the Medical Sickness, Annuity and Life Assurance Society conferred upon the matter. It was agreed by all three parties at the time that a further conference should be held. However, the London Panel Committee and the Society conferred alone and the recommendations arising thereout, promised by the London Panel Committee to be forwarded to the I.A.C. were not received, and the matter has therefore been in abeyance. The Insurance Acts Committee has expressed its willingness to resume consideration of the matter, and arrangements have been made for a conference of representatives of the Committee and the London Panel Committee.

Medical Representation in Parliament Fund.

68. Panel Committees are again reminded of the existence of the above Fund, the object of which is

> "To ensure the presentation to Parliament of expert medical opinion on matters relating to national health or involving the welfare of the medical profession, and for this purpose (i) to secure a larger representation of the medical profession in Parliament by obtaining suitable Medical Candidates for Parliament and suitable constituencies, and assisting when necessary by monetary grants such candidates, irrespective of political party; (ii) to help to maintain approved Members of Parliament as may be deemed necessary or advisable; (iii) to promote such other Parliamentary action as may be thought advisable."

The special interest which Panel Committees and insurance practitioners as a whole have in the Fund is that Dr. H. B. Brackenbury, Chairman of the Insurance Acts Committee, is being supported by the fund as a prospective candidate for Parliament. There is little need to discourse on Dr. Brackenbury's past services to insurance practitioners, and, as a Member of Parliament, insurance practitioners would have in him a spokesman of inestimable value.

69. It will probably be of interest to Panel Committees to know that the candidature of Sir Sydney Russell-Wells, the Conservative candidate for representation in Parliament of the University of London, has also been approved. Sir Sydney has been a practising physician for thirty years, holding hospital and other appointments, is well known for his active work for the University of London, of which he is Vice-Chancellor, representing it also on the General Medical Council. He is a member of the British Medical Association and has expressed his willingness, if elected to Parliament, to keep the Association advised of any procedure in Parliament likely to affect the profession, and to confer with the representatives of the Association as to their views thereon.

70. Donations and subscriptions from Panel Committees as well as individual practitioners would be greatly appreciated. The following is a list of Committees which have so far subscribed to the Fund, together with the total amounts of their subscriptions:

Barrow-in-Furness £4 4s., Bedfordshire £10 10s., Berkshire £10 10s., Bournemouth £10, Devonshire £42, Dudley £3 3s., Fifeshire £20, Forfarshire £5 5s., Halifax £5 5s., Kilmarnock £6 6s., Kingston-upon-Hull £10 10s., Lanarkshire £11 10s., Manchester £20, Middlesbrough £21, Middlesex £30, Northamptonshire £10 10s., Nottingham £75, Oxford City £10 10s., Oxfordshire £10 10s., Sheffield £25, Smethwick £2 2s., South Shields £5 5s., Suffolk (East) £7 9s. 6d., Surrey £21, Sussex (West) £10 10s., Walsall £2 2s., Warwickshire £10 10s., Westmorland £5 5s., Wiltshire £10 10s., York £20.

71. In addition to the above, half the balance of the funds of the late Association of Panel Committees, amounting to £40, has been received; also the balance of the fund for the complimentary dinner to the Insurance Acts Committee in 1920, amounting to £123 12s. 9d.; and a sum of about £30 has been received from individual Birmingham practitioners subscribing through the Secretary of the Panel Committee.

APPENDIX A.

G.P.

Reference No......

DOMICILIARY TREATMENT OF TUBERCULOSIS.

INITIAL REPORT.

County, County Borough or Metropolitan Borough } of .....

Dispensary at .....

Name of patient .....

Address .....

Occupation* .....

Date of clinical examination upon which the following Report is based .....

(A) History bearing on present illness:

(B) Condition on date of examination:

1. Condition of organs affected by tuberculosis:
   (*a*) Lungs .....
   (*b*) Other organs .....
2. Other diseases or complications .....

(C) Is the patient able to work full time, part time, able to get about, or confined to bed? .....

(D) Is it in your opinion desirable that the patient should have—

1. Treatment in a Sanatorium? .....
2. Treatment in a Hospital? .....
3. Domiciliary treatment? .....

(E) Do you desire a consultation with the Tuberculosis Officer? .....

Signed..... *Date* .....

* The precise nature of the occupation should be stated as fully as possible.

APPENDIX B.

G.P.

Reference No......

DOMICILIARY TREATMENT OF TUBERCULOSIS.

RECORD OF PROGRESS.

County, County Borough or Metropolitan Borough } of .....

Dispensary at .....

Name of Patient .....

Address .....

Occupation* .....

Date of clinical examination upon which the following Report is based .....

(A) Condition on that date:

1. Condition of organs affected by tuberculosis:
   (*a*) Lungs .....
   (*b*) Other organs .....
2. Other diseases or complications .....

(B) Is the patient able to work full time, part time, able to get about, or confined to bed? .....

(C) Condition as to special symptoms, such as, *e.g.*, wasting, temperature, etc. .....

(D) Is the patient carrying out instructions satisfactorily—

1. With regard to treatment? .....
2. With regard to precautionary measures? .....

(E) Is it in your opinion desirable that the patient should have—

1. Treatment in a Sanatorium? .....
2. Treatment in a Hospital? .....
3. Domiciliary treatment? .....

(F) Do you desire a consultation with the Tuberculosis Officer? .....

(G) Are there any conditions to which you would desire to draw the attention of the Tuberculosis Officer, *e.g.*—

1. Hygienic conditions of the home? Is the presence of the patient in the home dangerous to the other occupants of the house? ...
2. Sufficiency of food? .....

(H) Does the patient require nursing attendance? .....

Signed ..... *Date* .....

* The precise nature of the occupation should be stated as fully as possible.

Association Notices.

COUNCIL, 1922–23.

Drs. G. A. Allan and C. E. Robertson of Glasgow have been nominated for the vacancy upon the Council in respect of Glasgow and West of Scotland, four City Divisions (one of the "24").

Drs. J. Hunter (Dumfries), D. McKail (Glasgow), and McGregor Robertson (Glasgow) have been nominated for the vacancy upon the Council in respect of Glasgow and West of Scotland, Border Counties and Stirling Group of Branches (one of the "12").

Dr. W. Paterson (Willesden), being the only candidate nominated for the vacancy upon the Council in respect of the Metropolitan Outer Group, is hereby declared to have been elected a member of the Council (one of the "12").

Voting papers in connexion with the two Scottish vacancies will be issued from the Central Office to the electors concerned on September 29th, and should be returned so as to reach the Medical Secretary not later than the first post on Friday, October 6th. The result of the elections will be published in the *Supplement* to the *British Medical Journal* of October 14th, 1922.

VACANCY.

Notice is hereby given of the following vacancy in the membership of the Council:

Indian Group, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S. ret.).

Under By-law 54 (2) the Council is empowered either to fill the vacancy itself or cause it to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present case.

Nominations must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th 1922:

COUNCIL, 1922–23.

NOMINATION FORM FOR ELECTION OF A MEMBER BY THE GROUPED INDIAN BRANCHES.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....

of ..... *(Full name and address to be given)*

for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922–23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by VOTING PAPERS, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

ALFRED COX, *Medical Secretary.*

BRANCH AND DIVISION MEETINGS TO BE HELD.

NORTHERN COUNTIES OF SCOTLAND BRANCH: BANFF, ELGIN, AND NAIRN DIVISION.—The annual meeting of the Division will be held at Duff House, Banff, on Saturday, September 23rd, at 4.15 p.m. Through the kindness of Dr. Spriggs demonstrations will be given in the laboratories and *x*-ray department at Duff House. Tea will also be provided at Duff House. It is hoped that there will be a large attendance. Members are asked to make their own arrangements about getting to Banff by train or motor.

OXFORD AND READING BRANCH: READING DIVISION.—The annual golf meeting will be held on Thursday, September 28th, at Wellington College, by the courtesy of the East Berkshire Club. Play will begin not earlier than 10 a.m., nor later than 3 p.m., for the Challenge Cup. There will be no entrance fee, but an optional sweep of 2s. 6d., one-third of which falls to the winner and two-thirds to the runner-up. In the afternoon a bogy sweepstake will be arranged.

SOUTHERN BRANCH.—The following meetings of the Southern Branch will be held at the South-Western Hotel, Southampton, at 2.30 p.m., when addresses will be given:—*Thursday, September 28th, 1922:* "Intestinal obstruction," Mr. R. P. Rowlands, O.B.E., M.S., F.R.C.S., surgeon to Guy's Hospital. *Thursday, December 14th, 1922:* "The prevention and conservative treatment of senile gangrene," Mr. W. Sampson Handley, M.S., F.R.C.S., surgeon to Middlesex Hospital. *Thursday, March 22nd, 1923:* "The diagnosis and treatment of cholecystitis and gall stones," Dr. Arthur F. Hurst, Physician to Guy's Hospital. Members are earnestly requested to make a special effort to attend the meetings.

SURREY BRANCH: CROYDON DIVISION.—A general meeting of the Croydon Division will be held at the Croydon General Hospital on Tuesday, September 26th, at 4 p.m. Agenda: Report of Direct Representative; arrangements for future meetings; any other business.

SUSSEX BRANCH: BRIGHTON DIVISION.—A meeting of the Brighton Division will be held at the Queen's Road Dispensary on Monday, October 2nd, at 8.30 p.m. Agenda: Correspondence; report of Secretary on Conference of Secretaries at Glasgow; report of Representative on Annual Representative Meeting; report of Executive Committee. The Executive Committee recommend the Division to pass the following resolution:

That the Council be requested to consider the advisability of making all elections to Council and Central Committees triennial instead of annual as at present.

Arrangements for coming session. Election of Deputy Representative in place of Dr. L. A. Parry, resigned. Dr. A. M. Daldy will read a short paper on "Sudden blindness in one eye." The Brighton Division has arranged a series of clinical meetings at the various hospitals in the town, particulars of which are given below. The meetings are on Thursday afternoons and commence at 4 p.m. Tea will be provided at 3.45 p.m. Members are very cordially invited to attend without charge these demonstrations, which have proved such a success in past years. For non-members of the Association there will be a charge of 1 guinea for the series. *List of Clinical Meetings.*—October 19th, 1922, Royal Sussex County Hospital; November 16th, Children's Hospital; December 14th, Royal Sussex County Hospital. January 18th, 1923, Lady Chichester Hospital; February 15th, Royal Sussex County Hospital; March 15th, Eye Hospital; April 19th, Royal Sussex County Hospital; May 17th, Children's Hospital; June 21st, Royal Sussex County Hospital.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on "Some of the clinical manifestations of tabes," which will be illustrated by lantern slides.

Meetings of Branches and Divisions.

BRITISH GUIANA BRANCH.

A MEETING of the British Guiana Branch was held on May 31st at the Public Hospital, Georgetown, when Dr. A. T. OZZARD read a paper on four fatal cases of tetanus following intramuscular injection of quinine. The following cases were shown and discussed: Dr. BURTON showed a case of tetanus (acute) in a girl aged 10 years, treated with serum; the total amount given was 10,000 units intraspinally and 6,500 intramuscularly and subcutaneously. The case resulted in complete recovery. Dr. DELGADO showed (1) a case of corrosive sublimate poisoning seen five hours after taking 8.75 grains (one tablet). The case was treated with calcium sulphide, 9 grains intravenously, and made an uninterrupted recovery. (2) Three cases of severe lobular pneumonia (both lungs) treated with 10 c.cm. 2 per cent. carbolic acid intravenously daily until the temperature was normal; all recovered. (3) A case of pulmonary tuberculosis, with a swinging temperature, treated with sodium morrhuate injections subcutaneously and intravenously. The temperature became normal and the lung condition was improving. (4) Case of diarrhœa due to syphilitic ulceration of intestine, and a case of gumma of the upper jaw; both were treated successfully with salvarsan and potassium iodide.

A meeting was also held on June 28th at the Public Hospital, Georgetown, when the following cases were shown and discussed: Dr. OZZARD showed charts of a case of malarial fever with a continuous temperature for twelve days; the diagnosis inclined towards typhoid fever. The Marris atropine test was negative; parasites were found in the blood. He also read notes of a case of intolerance to atropine, gr. 1 50 having been given for the Marris test. Dr. BURTON showed a case of a child aged 8, with marked anæmia and a psoriasis-like rash on the posterior surfaces of the limbs; the blood showed eosinophilia, and the condition was decided to be due to a helminth infection. Dr. REED showed a case of rheumatic fever and morbus cordis in a child aged 8 years; the thyroid gland showed enlargement. Dr. DELGADO showed (1) a case of arsenical dermatitis in a man aged 48, who had had eight injections of novarsenobenzol over an interval of three months. The case was severe and was treated with intramuscular injections of intramine and sublimed sulphur gr. xxx thrice daily; it resulted in recovery. (2) A case of neuro-syphilis in a man aged 24, with marked sensory phenomena; there was complete astereognosis in the left hand. The Wassermann test was positive in the blood and cerebro-spinal fluid; albumin and globulin were present, but there was no excess of cells. (3) A case of aneurysm of the arch of the aorta in a male aged 34. Mental signs and symptoms of general paralysis of the insane were present. The Wassermann test was positive for blood and cerebro-spinal fluid; there was excess of cells, and albumin and globulin were present. Dr. ROSE showed numerous *x*-ray photographs illustrating tuberculosis of the lungs in different stages.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.

A MEETING of the Darlington Division was held at Greenbank Hospital on September 7th. The report of the Representative to the Annual General Meeting was read, discussed, and approved.

Lectures for the forthcoming session were selected from a list sent by the Branch Secretary. The Secretary reported that he had

secured a lecture from a local veterinary surgeon on "Intercommunicable diseases of man and beast," and it was decided to invite members of the veterinary profession as guests to this lecture. The medical officer of health, Dr. Mostyn, had also promised a lecture on the development of the town from a public health point of view. It was suggested that two short lectures, each on the same evening, on "Pyorrhoea" and "Some aspects of the dental work of the school clinics," should be secured from two of the local dentists, and that members of the British Dental Association be asked as guests on the evening of the lecture. The date of the annual dinner was fixed for the early part of December.

NORTH WALES BRANCH: DENBIGH AND FLINT DIVISION.

ON September 7th the members of the Division paid a highly interesting visit to the North Wales Sanatorium, Denbigh, and were entertained to luncheon by Mrs. Powell and Dr. D. A. Powell, the medical superintendent. After luncheon the Director of the King Edward Memorial Sanatorium, Mr. Evans, welcomed the Division, and laid stress on the importance of close co operation of practitioners with the movement. After luncheon the members were conducted around the sanatorium and shown the various methods of treatment in use. The tour was completed by a demonstration on an actual case of the technique of artificial pneumothorax. The whole "outing" was greatly enjoyed, and the Division's thanks are due to its Vice-Chairman, Dr. Powell, both for his hospitality and for the interesting tour on which the took the members.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: SOUTH-WEST WALES DIVISION.

THE annual meeting of the South-West Wales Division was held at Carmarthen on September 6th. Dr. T. J. Jenkins, the retiring chairman, entertained the members to lunch before the meeting.

Dr. OWEN WILLIAMS, J.P., gave a full and interesting account of his work as representative of the Division at the Annual Representative Meeting in Glasgow.

Dr. T. J. JENKINS, in an encouraging address entitled "After fifteen years," spoke of his experiences during fifteen years of general practice, and reviewed the advances made in medicine, surgery, and midwifery. A hearty vote of thanks was accorded to Dr. Jenkins for his interesting address.

The following officers were elected:

Chairman: Dr. T. Morgan (Llandovery). *Vice-Chairman*: Dr. W. D. Owen (Whitland). *Honorary Secretary and Treasurer*: Dr. A. H. D. Smith (Llanelly).

THE MILK AND DAIRIES (AMENDMENT) ACT, 1922.

A CIRCULAR has been issued by the Scottish Board of Health directing the attention of local authorities to the provisions of the Milk and Dairies (Amendment) Act, which came into operation on September 1st, and which applies in Scotland as well as to England and Wales. Important changes have been made in the system of registration of milk purveyors. The local authority must now keep two registers of milk vendors, one of them a register of "persons carrying on the trade of retail purveyors of milk," and the other a register of wholesale dealers and of producers who do not sell their milk by retail. A local authority may now, if it considers that the public health is endangered by any act or default of a retail purveyor, refuse registration or take steps to remove him from the register. When a retail purveyor is convicted of an offence against the regulations for the sale of milk he may be removed from the register either absolutely or in respect of any premises for such period as may be considered fit, the distinction as regards premises being made in order to draw a line between cases in which the methods of a business are unsatisfactory and those in which the premises, or the methods practised at the premises, are unsuitable or objectionable.

The Act now makes provision for the sale of at least four grades of milk—namely, "Certified," "Grade A (tuberculin tested)," "Grade A," and "Pasteurized," and it is made an offence to sell milk under these designations without a licence. There is no prohibition of the pasteurization of milk, nor is any general control of pasteurizing plant contemplated. Under the Act it is an offence to add any colouring matter, or water, or any dried or condensed milk, or any fluid reconstituted therefrom, or skimmed or separated milk, to milk intended for sale. It is also an offence for any person to sell as milk any liquid in the making of which dried or condensed milk has been used. An important provision prohibits the sale of milk from a cow suffering from tuberculosis of the udder; the fine for a first offence is not to exceed £20, and, for a second or subsequent offence, not to exceed £100, or imprisonment, with or without hard labour, for a period of six months, or both fine and imprisonment. The Board is empowered by the Act to make regulations for the prevention of danger to the public health from the importation of milk intended for sale; also to make regulations prescribing standards for dried and condensed milk, and for the marking of receptacles of dried, condensed, skimmed, or separated milk.

DENTAL EXAMINATIONS.

THE Registrar of the Dental Board of the United Kingdom announces that the second series of the Prescribed Examinations under the Dentists Act, 1921, will be held during the month of November, and this will be the last examination held before the expiration of the interim period. The closing dates for entries are as follows:

For examination in Edinburgh, before October 4th.
For examination in Dublin, before October 12th.
For examination in Manchester, before October 24th.
For examination in London, before November 1st.

Notices have been sent to all whose names have been entered on the list of those intending to sit for this examination. Communications relating to this subject should be addressed to the Secretary for Examinations, Dental Board, 44, Hallam Street, London, W.1.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Surgeon Captain F. W. Parker, O.B.E., is placed on the retired list with the rank of Surgeon Rear-Admiral. Surgeon Commanders W. W. Keir, C.M.G., to the *Barham* as Squadron Medical Officer; A. Fairly to the *President*, additional, for Porton Experimental Station; J. R. A. Clark-Hall to the *Columbine*, for Port Edgar Base (temporary). Surgeon Lieutenant Commander T. Gwynne-Jones to the *Kellett*. Surgeon Lieutenants G. S. Rutherford to the *Bluebell*, M. B. Devane to the *Wallace*, to be accommodated in the *Vancouver*. Dr. W. McCoach has entered as a Surgeon Lieutenant for short service, and been appointed to the *Victory* for R.N. Hospital, Haslar, for course of instruction.

ROYAL ARMY MEDICAL CORPS.

Major-General Sir George B. Stanistreet, K.B.E., C.B., C.M.G., late R.A.M.C., retires on retired pay.

Lieut.-Colonel A. J. MacDougall, C.M.G., retires on retired pay and is granted the rank of Colonel.

Captain (acting Major J. M. Mackenzie, M.C., to be acting Lieutenant-Colonel from September 12th to October 17th, 1920, and from November 22nd, 1920, to May 7th, 1921.

Captain D. Reynold to be acting Major from October 17th, 1919, to July 24th, 1920.

The following Captains to be temporary Majors: Brevet Major C. Ryles, O.B.E., from February 25th, 1918, to May 12th, 1919, from May 14th to September 18th, 1919, and from September 27th, 1919, to July 29th, 1920 (substituted for the notification in the *London Gazette*, January 31st, 1922). D. Reynolds, from February 25th, 1918, to October 16th, 1919 (substituted for the notification in the *London Gazette*, November 30th, 1921). J. M. Mackenzie, M.C., from June 1st to December 27th, 1921.

Captain H. A. Crouch, M.C., retires, receiving a gratuity.

Captain John E. Rea, to take rank and precedence in the Corps and in the army as if his appointment bore date May 26th, 1922.

ROYAL AIR FORCE MEDICAL SERVICE.

Dr. J. F. Carruthers is granted a temporary commission as a Squadron Leader, with effect from and with seniority of July 31st, 1922 (substituted for notice published in the *London Gazette* of August 22nd).

REGULAR ARMY RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel A. F. Heaton, having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Major F. Coleman, M.C., resigns his commission and retains the rank of Major.

Captain L. M. V. Mitchell, O.B.E., relinquishes his commission and is granted the rank of Major.

Captain R. Findlay relinquishes his commission and retains the rank of Captain.

Captain W. E. Alexander Buchanan (late R.A.M.C.) to be Captain.

P. Lloyd-Williams (late Surgeon Lieutenant, R.N.) to be Lieutenant, September 1st, 1920, with precedence as from January 31st, 1919 (substituted for notification in the *London Gazette* of November 25th, 1920).

The following officers having attained the age limit are retired and retain their rank except where otherwise stated: Major W. S. Kerr (and is granted the rank of Lieutenant-Colonel), Major F. J. Green, M.C., Captain H. B. Sproat (and is granted the rank of Major), Captains H. Lee, E. B. H. Hughes, V. Bateson, M. B. G. Sinnette, E. S. G. Fowler.

INDIAN MEDICAL SERVICE.

The services of Major M. S. Irani have been placed at the disposal of the Government of Bombay, with effect from April 15th.

Lieutenant H. D. Sovani has been permitted to resign the service, with effect from August 4th.

The King has approved the retirement of the following officers, with effect from the dates specified: Lieut.-Colonels H. B. Foster (June 28th) and W. E. McKeennie (June 23rd).

Majors to be Lieutenant-Colonels: H. H. Broome, D. P. Gorl, D. Heron, C.I.E., H. C. Keates, J. Kirkwood, R. A. Needham (temporary Lieut.-Colonel), L. Reynolds, and W. J. Shaw.

Captains to be Majors: H. L. Batra, M.C., P. B. Bharucha, D.S.O., O.B.E., R. C. Clifford, D.S.O., M.C., R. de S. B. Herrick, D.S.O., R. W. G. Hingston, L. H. Khan, M. Purvis (Brevet Major), and W. O. Walker.

The following officers have been permitted to retire from the service, with effect from the dates specified: Colonel T. A. Granger, C.M.G. (August 1st); Lieut.-Colonels J. A. Hamilton, C.M.G. (June 8th), and R. H. Maddox, C.I.E. (July 27th); Major H. H. Drake (June 21st).

Captain H. L. Barker has been transferred to the non-effective list (July 23).

The following Captains have been promoted to the rank of Major (July 28th):—J. Scott, D.S.O. (Brevet Major), F. W. Hay, G. Tate, S. M. Hepworth, H. S. Cormack, M.C., K. G. Pandalai, J. L. Sen, M.C.

Lieut.-Colonel C. R. Pearce has been permitted to retire (July 14th).

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel J. Mackinnon, D.S.O., from General List, to be Co'onel.

Majors J. D. Fiddes, M.C., W. S. Richardson, A. R. Muir, W. A. L. Holland, and E. F. Skinner, and Captains R. A. Stark, M.C., and T. E. A. Carr, from General List, to be Majors.

Lieut.-Colonel G. W. Craig and Major G. Mackie, D.S.O., T.D., from General List, to be Lieut.-Colonels.

Captains D. E. Core, W. T. J. Kimber, and W. S. Forbes, from General List, to be Captains.

Captain R. J. McConnell relinquishes his commission and retains the rank of Captain.

Lieutenant R. E. Pleasance, from General List, to be Lieutenant.

General Hospitals.—Lieut.-Colonel C. A. Lees, C.B.E., T.F. Reserve, to be Lieutenant-Colonel.

MILITIA.

ROYAL ARMY MEDICAL CORPS.

Captains Robert A. Greenwood, M.C., and R. L. Horton relinquish their commissions and are granted the rank of Major.

VACANCIES.

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House-Surgeon (male). Salary, £250.

BIRMINGHAM GENERAL HOSPITAL.—Two House Surgeons for Special Departments: (1) Skin and Venereal; salary, £95 per annum. (2) Ear, Throat, and Eye; salary, £70 per annum.

CARDIFF: KING EDWARD VII HOSPITAL.—Two House-Surgeons. Salary, £150 per annum.

CHESTER ROYAL INFIRMARY.—Assistant House-Surgeon. Salary, £150 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House-Physician. Salary at the rate of £125 per annum.

CLARE HALL SANATORIUM AND HOSPITAL, South Mimms.—Assistant Medical Officer (male). Salary, £350.

EASTBOURNE: PRINCESS ALICE HOSPITAL.—Resident House-Surgeon. Salary at the rate of £175, rising to £200 per annum.

FIFE AND KINROSS DISTRICT ASYLUM, Cupar.—Assistant Medical Officer (male). Salary, £300 or £350 per annum.

GATESHEAD MENTAL HOSPITAL, Stannington.—Assistant Medical Officer (male). Salary, £400 per annum, rising to £500.

GREENWICH: "DREADNOUGHT" HOSPITAL.—House-Surgeon (male). Salary at the rate of £150 per annum.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End Road, N.W.8.—Bacteriologist and Pathologist. Honorarium, 50 guineas per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—(1) House-Surgeon: (2) House-Physician and Assistant Casualty Officer. Salary, £50 for six months and £2 10s. laundry allowance each.

HULL ROYAL INFIRMARY.—Assistant House-Surgeon (male). Salary, £150 per annum.

LUCKNOW UNIVERSITY.—Professor of Ophthalmology. Salary, Rs.1,200 a month, rising to Rs.1,400 a month.

MANCHESTER: ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House-Surgeon for Maternity Hospital. Salary at the rate of £100 per annum.

MIDDLESEX COUNTY COUNCIL.—Dental Officer. Salary, £400 per annum, rising to £500, together with war bonus.

MONTROSE ROYAL ASYLUM.—Assistant Medical Officer. Salary, £300 per annum.

NEWPORT (MON.): ROYAL GWENT HOSPITAL.—House-Surgeon. Salary at the rate of £180 per annum.

OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—(1) Honorary Assistant Physician, and (2) Anaesthetist. An honorarium of £100 per annum is attached to the latter post.

PEKING: UNION MEDICAL COLLEGE.—Associate Professor for Department of Ophthalmology. Salary and house allowance, 3,100 dollars (American currency).

PRINCE OF WALES GENERAL HOSPITAL, Tottenham.—(1) House-Physician. (2) House-Surgeon. £200 per annum each. (3) Junior House-Surgeon, and (4) Junior House-Physician. £120 per annum each.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—(1) House-Surgeon; (2) Casualty House-Surgeon. Salary, £100 per annum each.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—(1) Resident Medical Officer; (2) Casualty Officer. Salary, £300 and £150 per annum respectively.

RICHMOND (SURREY) ROYAL HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.1.—(1) Assistant Surgeon to the Ear, Nose and Throat Department. (2) Assistant Anaesthetist in the Obstetric and Gynecological Unit; honorarium, £100 per annum. (3) Casualty Officer; salary, £100 per annum.

ST. BARTHOLOMEW'S HOSPITAL, E.C.—Two Junior Resident Anaesthetists. Salary, £80 per annum.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE.—Demonstrator of Midwifery.

ST. GEORGE'S HOSPITAL, S.W.—Radiologist. Honorarium at the rate of £100 per annum.

SHEFFIELD ROYAL HOSPITAL.—Assistant Casualty Officer. Salary, £150 per annum.

SHROPSHIRE ORTHOPAEDIC HOSPITAL, Oswestry.—House-Surgeon. Salary, £250 per annum.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.—Temporary Assistant Physician (female).

SOUTH STONEHAM UNION.—District Medical Officer and Public Vaccinator. Salary, £100 per annum and vaccination fees.

SUNDERLAND ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon (males). Salary, £100 per annum each.

SWANSEA COUNTY BOROUGH.—Lady Assistant Medical Officer. Salary, £500 per annum, rising to £600.

WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck Street, W.—Honorary Clinical Assistants.

WEST HAM UNION: WHIPPS CROSS HOSPITAL, Leytonstone.—Deputy Medical Superintendent. Salary (*a*) if married and non-resident, £600 per annum, rising to £750, and bonus; (*b*) if single and resident, £500 per annum, rising to £600, and bonus.

CERTIFYING FACTORY SURGEON.—The following vacant appointment is announced: Bishop Auckland (Durham).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

SEPTEMBER.

22 Fri. London: Science Committee, 2.30 p.m.
23 Sat. Banff, Elgin, and Nairn Division: Autumn Meeting at Duff House, Banff, 4.15 p.m.
25 Tues. London: Central Ethical Committee, 2 p.m.
Croydon Division: General Meeting, Croydon General Hospital, 4 p.m.
27 Wed. London: Hospitals Committee, 2.30 p.m.
28 Thurs. Reading Division: Annual Golf Meeting, at Wellington College.
Southern Branch, South-Western Hotel, Southampton, 2.30 p.m.: Address by Mr. R. P. Rowlands, M.S., F.R.C.S., on Intestinal Obstruction.
29 Fri. London: Public Health Committee, 3.0 p.m.

OCTOBER.

2 Mon. Brighton Division: Queen's Road Dispensary, 8.30 p.m.
3 Tues. London: Organization Committee.
4 Wed. London: Medico-Political and Parliamentary Committee.
5 Thurs. London: Journal Committee, 2.5 p.m.
London: Insurance Acts Committee, 2.30 p.m.
6 Fri. London: Dominions Committee.
7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tabes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.
11 Wed. London: Finance Committee, 2.30 p.m.
20 Fri. London: Central Hall, Westminster: Annual Conference of Representatives of Local Medical and Panel Committees at 10 a.m.
24 Tues. London: Organization of Medical Students Subcommittee, 2.30 p.m.
25 Wed. London: **Council**, 10 a.m. Council Dinner, 7 for 7.30 p.m.

APPOINTMENTS.

ARNOTT, T. F., M.B., Ch.B.Glas., House-Physician, Royal Devon and Exeter Hospital.

GILFILLAN, John Aitken, M.D.Glas., D.P.M.Lond., Second Assistant Medical Officer, City Mental Hospital, Humberstone, Leicester.

GRACE, W. H., M.D.Lond., B.Sc.Syd., D.P.H., D.T.M and H., M.R.C.P. Lond., Honorary Assistant Physician, and Honorary Pathologist in charge of the John Elliott Memorial Laboratory, Chester Royal Infirmary; also Pathologist to the County Mental Hospital, Upton, Chester.

LESLIE, Norman H., M.B., House-Physician, West End Hospital for Nervous Diseases, N.W.

INFANTS' HOSPITAL, Vincent Square, Westminster.—Assistant Physicians: Donald Paterson, M.B., Ch.B.Edin., M.R.C.P., and Helen Mackay, M.D.Lond., M.R.C.P., M.R.C.S. Anaesthetist: Enid M. Moore, M.R.C.S., L.R.C.P.

CERTIFYING FACTORY SURGEONS.—T. C. McKenzie, M.D., F.R.C.P.Edin., for the Strathkvik District, co. Stafford; L. Patchett, L.R.C.P., L.R.C.S.Edin., L.R.F.P.S.Glas., for the Ribchester District, co. Lancaster; Dr. D. Robertson, for the Longtown District, co. Cumberland.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTH.

WILKINSON.—On the 16th inst., at 91, Cornwall Street, Birmingham, to Dr. and Mrs. R. Douglas Wilkinson, a daughter.

Published by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, SEPTEMBER 30TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Current Notes:
British Medical Association Dinner 125
The Panel Conference 125
Post-Graduate Demonstrations at Hereford 125
Isle of Wight County M.O.H. 125
Assistant Medical Officer for Wallasey 125
Another Aspect of the Economy Question 126
Division and Branch Membership 125

ASSOCIATION NOTICES:
Council Vacancy 125
Branch and Division Meetings to be held 126

Insurance Correspondence: PAGE
Report of Insurance Acts Committee 127
Organization of the Profession 127
NAVAL AND MILITARY APPOINTMENTS 127
VACANCIES 128
ASSOCIATION INTELLIGENCE AND DIARY 128
APPOINTMENTS 128
DIARY OF SOCIETIES AND LECTURES 128
BIRTHS, MARRIAGES, AND DEATHS 128

British Medical Association.

CURRENT NOTES.

British Medical Association Dinner.

As was reported to the Representative Body last July, the Council is trying the experiment, which it hopes may become an annual event, of holding a dinner in London in connexion with the first meeting of the Council next month. The primary idea of the dinner is to do honour to any officers of the Association who may be retiring—in this case the Past-President, Professor David Drummond. But in addition the opportunity is being taken to invite other distinguished persons. Invitations have been issued in the name of the Chairman and members of the Council of the Association to some forty guests, and it is hoped shortly to announce the names of those who may be expected to be present. The Council is very anxious to make the dinner worthy of the position of the Association, and it is hoped that many members will be present. The dinner will be held on October 25th at the Grand Hotel, Charing Cross, at 7 for 7.30 p.m., and tickets (price 10s. 6d., exclusive of wine) may be obtained on application to Mr. L. Ferris-Scott, Financial Secretary and Business Manager, 429, Strand, W.C.2.

The Panel Conference.

The annual conference of representatives of Local Medical and Panel Committees will open on Friday, October 20th, at 10 a.m., at the Central Hall, Westminster. A provisional agenda paper has now been published, and the final agenda will be issued on October 13th. Committees desiring to bring forward motions are asked to send them to the Medical Secretary as soon as possible; those received at 429, Strand, by first post on Monday, October 9th, will be included in the final agenda, but relevant motions or amendments received later will be dealt with at the conference. The following documents have been circulated with the provisional agenda: (1) the annual report of the Insurance Acts Committee for 1921-22 (printed in full in last week's SUPPLEMENT; (2) a report on the organization of insurance practitioners in the event of a refusal of the terms offered by the Government; (3) the report for 1921–22 of the trustees of the National Insurance Defence Trust; (4) the Model Public Medical Service scheme; and (5) the Collective Bargaining scheme. The attention of Panel Committees is especially drawn to the report on the Organization of Insurance Practitioners, which it is hoped will be discussed fully at the conference.

Post-Graduate Demonstrations at Hereford.

It is of much interest to note the further development of post-graduate instruction under the auspices of Branches and Divisions of the Association. The Hereford Division has arranged in connexion with the University of Bristol a series of post-graduate demonstrations at the Herefordshire General Hospital on Mondays, at 3 p.m., commencing Monday, October 9th. The fee for the course is two guineas. The subjects to be dealt with in the course are stated in the notice published at p. 127 this week.

Isle of Wight County M.O.H.

An advertisement has been received for a county medical officer of health for the Isle of Wight, offering a commencing salary of £1,000 per annum, rising, by increments of £50, to £1,200. In addition to this, £50 was offered by way of travelling expenses, and as this seemed inadequate, inquiries were made of the Town Clerk. He has replied that it was never contemplated that the M.O.H. would require a motor car, as most of the travelling can be done by omnibus and train, but he has given an assurance that if the sum offered is found insufficient in the light of twelve months' experience, the question of the travelling allowance will be reconsidered. Such being the case, the advertisement has been accepted, and appears in this week's issue of the JOURNAL.

Assistant Medical Officer for Wallasey.

A Current Note in our issue of September 16th referred to the situation at Wallasey, where the town council is advertising for an assistant medical officer of health to be in clinical charge of both the tuberculosis and venereal disease work. The British Medical Association's minimum salary for an officer of this kind is £700 a year. The town council, after offering an advertisement at £600 a year which was refused, offered another at £700 rising by £25 a year to £800, and this was inserted. The latter advertisement had been sent on the authority of the Wallasey Public Health Committee, whose action was repudiated by the town council at its meeting on September 7th, and the candidates who had applied for the post on the terms approved by the Association were supplied with a copy of the resolution of the council stating that it was prepared to offer the appointment at a salary of £650 rising by £50 increments to £800, and they were asked to allow their applications to stand at the altered terms.

As it was apparent that there was a good deal of misunderstanding on the part of the Wallasey Corporation and public regarding the position taken up by the Association, the Wallasey Public Health Committee, which met on September 21st, was asked to receive a deputation from the Association and consented to do so. The deputation was

introduced by Dr. W. C. Milroy (Chairman of the Birkenhead Division), who was accompanied by Drs. A. R. and C. Wilson and Dr. P. W. Leathart (the Secretary of the Division), together with the Medical Secretary. The deputation dealt mainly with two points: The first was that the action of the Association in fixing standards of remuneration for public appointments and trying to enforce these was not unreasonable, and that, in fact, this was the method adopted by practically all the organizations with which public bodies have to deal. The second point was that, although the Council would probably have applicants who would be willing to accept their new terms, they would be ill advised in choosing one of those candidates; because, on the one hand, the list would not be a representative one, as a good many of the best men had already withdrawn or were intending to do so; and on the other, any man appointed at the terms now offered by the Council could not receive that support and co-operation from the local practitioners which were essential if his work were to be successful. A discussion, which was on very friendly lines, then took place, and the Chairman of the Committee, Dr. J. McMillan, said that what the deputation had laid before the Committee would be reported to the Council at a future meeting and that the result must necessarily depend to a large extent on the way in which the candidates for the post backed up or failed to back up the position taken up by the Association. Dr. Milroy thanked the Committee for receiving the deputation, which then withdrew.

A very considerable proportion of the candidates who are known to have applied have already informed the Medical Secretary that they have withdrawn their applications and cordially support the action taken by the Association in trying to improve the conditions of employment of Public Health medical officers.

Another Aspect of the Economy Question.

As was shown in the Current Note last week headed "Fife School Medical Officers' Salaries," some public authorities are beginning to realize that there are limits to the extent to which they can safely carry "economy" in medical salaries. The *Poor Law Officers' Journal* states that the St. George's Relief Committee, in reporting to the Southwark Guardians a vacancy in the office of Medical Officer for No. 5 District, reminded the Board that in response to recent advertisements for a local medical practitioner to fill this vacancy only one application was received, and it had been ascertained that the local doctors regarded the remuneration of £160 per annum as inadequate, the district being one of the heaviest in the union. The work was now being carried out under a temporary arrangement at the rate of 5½ guineas a week, and as it was obvious that it would be impossible to obtain the services of any medical practitioner of high reputation at the rate of £160 per annum, the Committee recommended that, subject to the consent of the Minister of Health, a salary of £250 should be offered. The Committee's report was adopted.

Division and Branch Membership.

At its meeting on September 20th the Propaganda Sub-committee had before it a return of the membership of each Division and Branch in Great Britain and Ireland. The Sub-committee directed that its congratulations should be sent to the following bodies, which showed the highest membership percentages: The Nuneaton and Tamworth, Newcastle-on-Tyne and North Northumberland Divisions; and the North of England, Staffordshire, and East York and North Lincoln Branches.

Association Notices.

COUNCIL, 1922-23.

VACANCY.

Notice is hereby given of the following vacancy in the membership of the Council:

Indian Group, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S. (ret.).

Under By-law 54 (2) the Council is empowered either to fill the vacancy itself or cause it to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present case.

Nominations must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922:

COUNCIL, 1922-23.

NOMINATION FORM FOR ELECTION OF A MEMBER BY THE GROUPED INDIAN BRANCHES.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....

of ..... (*Full name and address to be given*)

for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922-23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by VOTING PAPERS, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

ALFRED COX, *Medical Secretary.*

CHANGES OF BOUNDARY.

Mid-Essex and North-West Essex Divisions.

THE following change has been made by the Council, and takes effect as from the date of publication of this Notice:

That the area of the North-West Essex Division be added to that of the Mid-Essex Division, the new Division to be known as the "Mid-Essex Division."

BRANCH AND DIVISION MEETINGS TO BE HELD.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION.—A meeting of the Bournemouth Division will be held at Bournemouth on Thursday, October 19th, when a British Medical Association lecture will be delivered by Dr. J. A. Ryle.

NORTH OF ENGLAND BRANCH: SUNDERLAND DIVISION.—A meeting of the Sunderland Division will be held at 48, John Street, on Tuesday, October 3rd, at 8.15 p.m. Business:—Report of Representative at Annual Representative Meeting. To consider the following midwifery tariff: (1) No fee less than two guineas to be charged in any midwifery case; (2) the midwifery fee includes subsequent attendance for not more than fourteen days; (3) where a house in the midwifery tariff list is tenemented a reduction may be made in the fees. Report of Scientific Subcommittee. Memorial to the late Dr. Middlemass. Correspondence. Any other business.

SHROPSHIRE AND MID-WALES BRANCH.—The forty-seventh autumn meeting of the Shropshire and Mid-Wales Branch will be held at the Royal Salop Infirmary on Tuesday, October 10th, at 3.30 p.m., when the President, Dr. Glynn Pigott, will take the chair. Agenda: Election of new members. Correspondence on appointment of medical officer to borough police. Address by the President, entitled "Various abnormalities met with in a series of eleven hundred cases of midwifery, with special reference to placenta praevia and its treatment." A council meeting will be held at 3 p.m. By kind invitation of the President, tea will be provided. The annual dinner will be held at the Masonic Hall, College Hill, at 6 p.m. Morning dress will be worn. Tickets, 10s. 6d.

SOUTHERN BRANCH.—The following meetings of the Southern Branch will be held at the South-Western Hotel, Southampton, at 2.30 p.m., when addresses will be given:—*Thursday, December 14th, 1922*: "The prevention and conservative treatment of senile gangrene," Mr. W. Sampson Handley, M.S., F.R.C.S., surgeon to Middlesex Hospital. *Thursday, March 22nd, 1923*: "The diagnosis and treatment of cholecystitis and gall stones," Dr. Arthur F. Hurst, physician to Guy's Hospital. Members are earnestly requested to make a special effort to attend the meetings.

SUFFOLK BRANCH.—A meeting of the Suffolk Branch will be held at Ipswich on Friday, October 27th, when an address will be delivered by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its failings, its achievements, and its possibilities." Sir Henry Gauvain will also read a paper.

SUFFOLK BRANCH: SOUTH SUFFOLK DIVISION.—A meeting of the South Suffolk Division will be held in the Council Chamber, County Hall, Ipswich, on Friday, October 6th, at 3.30 p.m. Agenda: Business arising out of minutes. Consideration of Report of Annual Meeting at Glasgow (see SUPPLEMENT, July 29th, 1922). Report of Representative, Dr. H. V. Mitchell. Short address by Dr. H. M. Cade, County Bacteriologist, on the bacteriology of cerebro-spinal fluid, with particular reference to the diagnosis of meningitis, to be followed by a demonstration in the County Laboratory of microscopical specimens and cultures. Tea will be provided.

SUSSEX BRANCH: BRIGHTON DIVISION.—A meeting of the Brighton Division will be held at the Queen's Road Dispensary on Monday, October 2nd, at 8.30 p.m. Agenda: Correspondence; report of Secretary on Conference of Secretaries at Glasgow; report of Representative on Annual Representative Meeting; report of Executive Committee. The Executive Committee recommend the Division to pass the following resolution:

That the Council be requested to consider the advisability of making all elections to Council and Central Committees triennial instead of annual as at present.

Arrangements for coming session. Election of Deputy Representative in place of Dr. L. A. Parry, resigned. Dr. A. M. Daldy will read a short paper on "Sudden blindness in one eye." The Brighton Division has arranged a series of clinical meetings at the various hospitals in the town, particulars of which are given below. The meetings are on Thursday afternoons and commence at 4 p.m. Tea will be provided at 3.45 p.m. Members are very cordially invited to attend without charge these demonstrations, which have proved such a success in past years. For non-members of the Association there will be a charge of 1 guinea for the series. *List of Clinical Meetings.*—October 19th, 1922, Royal Sussex County Hospital; November 16th, Children's Hospital; December 14th, Royal Sussex County Hospital. January 18th, 1923, Lady Chichester Hospital; February 15th, Royal Sussex County Hospital; March 15th, Eye Hospital; April 19th, Royal Sussex County Hospital; May 17th, Children's Hospital; June 21st, Royal Sussex County Hospital.

YORKSHIRE BRANCH.—A meeting of the Yorkshire Branch will be held at the Grand Hotel, Scarborough, at 2.45 p.m., Saturday, September 30th, when there will be a demonstration of specimens and papers.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on "Some of the clinical manifestations of tabes," which will be illustrated by lantern slides.

WORCESTERSHIRE AND HEREFORDSHIRE BRANCH: HEREFORD DIVISION.

Post-Graduate Demonstrations.

Post-graduate demonstrations have been arranged by the Hereford Division, in connexion with the University of Bristol, at the Herefordshire General Hospital, at 3 p.m. on successive Mondays, beginning October 9th. Members of the British Medical Association in adjoining counties who desire to attend should communicate with the Honorary Secretary of the Hereford Division, Dr. Herbert Jones, Tower Road, Hereford. The fee for the course is two guineas. The subjects are:

Modern Treatment of Diabetes, by Dr. J. A. Nixon, C.M.G.
Diagnosis and Treatment of Common Gastric Disorders, by Mr. A. Rendle Short, F.R.C.S.
Diagnostic Value of Cerebro-spinal Fluid Examinations, by Dr. G. Hadfield.
Diagnosis and Treatment of Toxæmia of Pregnancy, by Dr. Walter Swayne.
Diagnosis and Treatment of Gall-bladder Diseases, by Mr. T. Carwardine.
Normal and Acquired Resistance to Disease, by Professor Walker Hall.

Correspondence.

Report of Insurance Acts Committee.

SIR,—I note with much satisfaction that the Insurance Acts Committee in their "Recommendation F" (SUPPLEMENT, September 23rd, p. 117) have definitely adopted the proposal of the West Sussex Panel Committee of a conference between lay and medical workers under the Insurance Act. The necessity for this proceeding, which I recommended in the JOURNAL nearly three years ago, is surely obvious. The interests of all workers under the Act are in the main identical—namely, to promote the best possible service for the insured, with greatest possible satisfaction to all workers, at the least possible cost to the taxpayers, who are incidentally our private patients, and ourselves.

Now, I have before me a monthly circular letter from the Medical Secretary, dated March, 1922, wherein, under "Suggestions for Divisional meetings," joint meetings are recommended with "dentists, pharmacists, veterinary surgeons, and public authorities concerned in health matters." Surely if such meetings are desirable, a conference between parties who have actually been engaged in the same work together for ten years is long overdue. By such conference many mutual misunderstandings may be removed and mutual difficulties explained. It is the only way by which that atmosphere of good will may be induced which is so essential, and which was conspicuously and disastrously lacking in 1912. We should have no difficulty in convincing our opponents that a cheap and bad service is no more to their interests than our own, and they will explain to us their difficulties, which are very real, as any one who studies both sides of the question knows. There are society officials who delight in baiting doctors, and there are doctors who deliberately create difficulties for these officials. An agreement between us is the only barrier possible against the absolutely despotic power now vested in the Minister of Health, who is able to issue regulations having the force of Acts of Parliament, and, as a single individual, may, if prejudiced, be far more dangerous than the old Commissioners.

There is but one criticism to be made on "Recommendation F." No mention is made of representatives of "Clerks of Insurance Committees." These were definitely and advisedly included by me in the West Sussex motion. At an Insurance Committee meeting the clerk is almost always the best-informed man present; he is, in fact, the only man who absolutely specializes in that particular work alone. Privately both doctors and representatives of approved societies seek his advice, and he has intimate knowledge of the difficulties—and, I must add, delinquencies—of both, and of defects in administrative details which might be remedied with advantage and economy. The clerks have their own association, conferences, and journal, *The Naoctic*, and I have reason to believe that the continual neglect hitherto to consult these experts on matters intimately concerning them is resented by the clerks. A conference without some representatives of their association would be most incomplete, and in view of their intimate acquaintance with just those matters with which doctors are unfamiliar they would be particularly helpful to us.—I am, etc.,

Chichester, Sept. 24th. G. C. GARRATT.

Organization of the Profession.

SIR,—There are ominous signs that the friendly societies intend to fight for increased control over panel practitioners, and there is also reason to think that the Ministry of Health will to a certain extent (because of such societies' political power) be amenable to the pressure which will be used.

Fortunately, the more senior panel practitioners know well enough, from past experience, what increased control will mean, and I think they may be trusted to resist even to resignation; but what about the younger men, and especially all the men who will be qualified within the next two or three years? I do not know if anything is being done to "educate" these men, but if not, can the Insurance Acts Committee start at once an intensive crusade, and by means of lectures or addresses to students point out the disastrous effects of such control? One can easily imagine how a recently qualified man, without much capital, could be inveigled into accepting an appointment under a large friendly society unless he was shown the other side of the picture. Prevention is better than cure and time is of importance.—I am, etc.,

Plymstock, Sept. 22nd. S. NOY SCOTT.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Surgeon Commanders W. W. D. Cuilcott and R. F. P. Cory to the *Royal Sovereign* on recommissioning, C. T. Baxter to the *Courageous*. Surgeon Lieutenant Commander C. C. Greeson to the *Dolphin*, temporary.

ROYAL ARMY MEDICAL CORPS.

Colonel Denis J. Collins, C.M.G., late R.A.M.C., to be Major-General, vice Major-General Sir George H. Stanistreet, K.B.E., C.B., C.M.G.

Lieut.-Colonel (temporary Colonel) E. T. Inkson, V.C., D.S.O., from R.A.M.C. to be Colonel, vice Colonel D. J. Collins, C.M.G.

Major T. J. Potter, O.B.E., is placed on the half-pay list on account of ill health contracted on active service.

Captain R. R. Thompson, M.C., to be acting Major, December 13 h, 1919, to May 3rd, 1921.

Captain J. H. Boaz, M.C., retires receiving a gratuity.

Temporary Captain F. W. Harlow relinquishes his commission and retains the rank of Captain.

ROYAL AIR FORCE MEDICAL SERVICE.

Flight Lieutenant J. Paxton relinquishes his temporary commission on ceasing to be employed.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The following officers having attained the age limit are retired, and retain their rank except where otherwise stated: Lieut.-Colonels J. Howard-Jones and E. C. Stack, T.D., with permission to wear the prescribed uniform. Major (Brevet Lieutenant-Colonel) H. A. Leebody, T.D., August 12th, 1922, and is granted the rank of Colonel, with permission to wear the prescribed uniform (substituted for notice in the *London Gazette*, August 11th, 1922): Captain C. G. Murray, and is granted the rank of Major; Captains H. Mills and H. Sankey.

Major D. H. Weir, M.C., T.D., relinquishes his commission, and is granted the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform.

Major H. H. B. Cunningham, T.D., resigns his commission and reverts to the Regular Army Reserve of Officers (Royal Irish Fusiliers), and is granted the rank of Lieutenant-Colonel.

G. F. Wilson to be Captain, with pay and allowances of Lieutenant.

VACANCIES.

BIRMINGHAM: MOSELEY HALL CONVALESCENT HOSPITAL FOR CHILDREN.—Honorary Acting Surgeon.

CLARE HALL SANATORIUM AND HOSPITAL, South Mimms.—Assistant Medical Officer (male). Salary, £250.

EVELINA HOSPITAL FOR CHILDREN, Southwark, S.E.—Physician to Out-patients (honorary).

GATESHEAD MENTAL HOSPITAL, Stannington.—Assistant Medical Officer (male). Salary, £400 per annum, rising to £520.

GRIMSBY COUNTY BOROUGH.—Assistant to the Medical Officer of Health. Salary, £500 per annum.

HONG-KONG UNIVERSITY.—Professor of Medicine. Salary, £800 per annum, rising to £1,000.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End Road, N.W.8.—Bacteriologist and Pathologist. Honorarium, 50 guineas per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—(1) House-Surgeon; (2) House-Physician and Assistant Casualty Officer. Salary, £50 for six months and £2 10s. laundry allowance each.

HUDDERSFIELD ROYAL INFIRMARY.—Junior House-Surgeon. Salary, £200 per annum.

HULL ROYAL INFIRMARY.—Honorary Radiographer.

IPSWICH: EAST SUFFOLK AND IPSWICH HOSPITAL.—(1) General Surgeon: (2) House-Surgeon, salary, £150 per annum.

ISLE OF WIGHT COUNTY COUNCIL.—County Medical Officer. Salary, £1,000 per annum, increasing to £1,200.

ITALIAN HOSPITAL, Queen Square, W.C.—Honorary Surgeon for the Throat, Nose, and Ear Department.

LANARK COUNTY EDUCATION AUTHORITY.—Assistant Medical Officer. Salary, £500 per annum.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond Street, W.C.—Third Anæsthetist. Honorarium £50 per annum.

MANCHESTER CITY.—Second and Third Assistant Medical Officers at the Monsall Fever Hospital. Salary, £300 and £250 per annum respectively and bonus.

METROPOLITAN ASYLUMS BOARD.—Medical Superintendent at the Leavesden Mental Hospital, King's Langley. Salary, £800 per annum, rising to £950, with unfurnished house and bonus.

MIDDLESEX COUNTY COUNCIL.—Dental Officer. Salary, £400 per annum, rising to £500, together with war bonus.

PADDINGTON GREEN CHILDREN'S HOSPITAL.—(1) Physician to Skin Department; (2) House-Physician; (3) House-Surgeon. Salary at the rate of £150 per annum each for (2) and (3).

PRINCE OF WALES GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist. Honorarium £20 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.—(1) House-Surgeon; (2) Casualty House-Surgeon. Salary, £100 per annum each.

ROCHESTER: ST. BARTHOLOMEW'S HOSPITAL.—Resident House-Surgeon. Salary at the rate of £250 per annum.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.1.—(1) Assistant Surgeon to the Ear, Nose and Throat Department. (2) Assistant Anæsthetist in the Obstetric and Gynæcological Unit; honorarium, £100 per annum. (3) Casualty Officer; salary, £100 per annum.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland Street, W.—Two Honorary Radiologists.

SOUTHAMPTON COUNTY BOROUGH.—School Dentist. Salary, £500 per annum, rising to £650.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.—Temporary Assistant Physician (female).

STIRLING EDUCATION AUTHORITY.—Assistant School Medical Officer. Salary, £500 per annum.

SUNDERLAND ROYAL INFIRMARY.—(1) House-Physician; (2) House-Surgeon (males). Salary, £100 per annum each.

SWANSEA COUNTY BOROUGH.—Lady Assistant Medical Officer. Salary, £500 per annum, rising to £600.

WAKEFIELD: COUNTY COUNCIL OF WEST RIDING OF YORKSHIRE.—Chief Tuberculosis Officer. Salary, £700 per annum, rising to £800.

WHITECHAPEL PARISH.—Assistant Resident Medical Officer (male) at the Vallance Road Infirmary. Salary, £400 per annum.

CERTIFYING FACTORY SURGEONS.—The following vacant appointments are announced: Dawley (Salop); Nottingham, West (Nottingham); Burnley, North (Lancaster); Stroud (Gloucester).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

PINTO-LEITE, Hubert, B.A., M.R.C.S., L.R.C.P., Honorary Anæsthetist, Royal Dental Hospital, Leicester Square, London, W.C.

SEWELL, William A., B.Sc., M.B., Ch.B., has been appointed Visiting Surgeon to the Victoria Infirmary, Glasgow, in lieu of Mr. Farquhar Macrae, transferred to the Western Infirmary.

DIARY OF SOCIETIES AND LECTURES.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham.—Thurs., 4.15 p.m., Sir Archibald Reid: X-ray Examination of the Pyloric End of the Stomach and its Vicinity.

ROYAL SOCIETY OF MEDICINE.—*Section of Orthopædics*: Tues., 5 p.m., Cases; 5.30 p.m., Presidential Address, Mr. T. H. Openshaw: Traumatic Spondylitis. *Section of Obstetrics and Gynæcology*: Thurs., 8 p.m., Dr. Arthur E. Giles: Indications and Results of Myomectomy in the Treatment of Uterine Fibroids; Mr. Victor Bonney: On the Scope of Myomectomy and the Technique of the Operation. Dr. Giles will also show a specimen of large fibroid developing in the cervical stump after subtotal hysterectomy.

ST. JOHN'S HOSPITAL, 49, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture by Dr. W. Griffith: The Elementary Lesions of Skin Diseases.

POST-GRADUATE COURSES AND LECTURES.

LONDON LOCK HOSPITAL (91, Dean Street, W.1).—Mon., 5 p.m., Mr. Charles Gibbs: Anterior and Posterior Urethritis. Wed., 5 p.m., Mr. F. Juler: The Commoner External Venereal Diseases of the Eye. 283, Harrow Road, W.9.—Wed., 3 p.m., Mr. Ernest Lane: Ante- and Post-natal Syphilis.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. A. Ramsbottom: Pulmonary Tuberculosis. Fri., 4.15 p.m., Dr. E. S. Reynolds: Brain Tumour.

OXFORD: RADCLIFFE INFIRMARY.—Mon., 10.30 a.m., Pathological Specimens; noon, Medical Cases; 2.30 p.m., Dr. Waters: Rheumatism; 4.30 p.m., Dr. Collier: Arterio-sclerosis. Tues., 10.30 a.m., Surgical Cases; noon, Pathological Department; 2.30 p.m., Mr. Dodd: Parker: Gall Stones; 4.30 p.m., Dr. Gibson: Chronic Bronchitis. Wed., 10.30 a.m., Electro-therapeutic Department; noon, Maternity Home; 2.30 p.m., Dr. Malam: Skin Diseases; 4.30 p.m., Mr. Whitelock: Drainage in Surgery. Thurs., 10.30 a.m., X-ray Department; noon, Ear, Nose, and Throat Department; 2.30 p.m., Dr. Purrell: Sciatica; 4.30 p.m., Mr. Bevers: Surgery of the Rectum. Fri., 10.30 a.m., Medical Cases; noon, Surgical Cases; 2.30 p.m., Mr. Girdlestone: Pott's Disease; 4.30 p.m., Dr. Good: Mental Disorders. Sat., 10.30 a.m., Headington Orthopædic Hospital; 2.30 p.m., Professor Gunn: The Autonomic Nervous System in relation to Medicine; 4.30 p.m., Sir A. Garrod: Endocrine Glands in Medical Practice.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.—Infant and Child Welfare. Thurs., 6 p.m., Dr. Eric Pritchard: Infant Mortality.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Attiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4727 Dublin.)

Diary of the Association.

SEPTEMBER.

29 Fri. London: Public Health Committee, 3.0 p.m.; Public Health Superannuation Subcommittee, 2 p.m.; Foods and Drugs Subcommittee, 4.30 p.m.

30 Sat. Yorkshire Branch, Grand Hotel, Scarborough, 2.45 p.m. Demonstration of Specimens and Papers.

OCTOBER.

2 Mon. Brighton Division: Queen's Road Dispensary, 8.30 p.m.

3 Tues. London: Organization Committee, 12 noon.
Sunderland Division, 48, John Street, 8.15 p.m.

4 Wed. London: Medico-Political and Parliamentary Committee, 2.30 p.m.

5 Thurs. London: Journal Committee, 2.30 p.m.
London: Insurance Acts Committee, 2.30 p.m.

6 Fri. London: Dominions Committee, 2.30 p.m.
South Suffolk Division, Council Chamber, County Hall, Ipswich, 3.30 p.m.

7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tabes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.

9 Mon. Hereford Division. Post-graduate Demonstration, Hereford-shire General Hospital, 3 p.m.

10 Tues. Shropshire and Mid-Wales Branch, Autumn Meeting, Royal Salop Infirmary, 3.30 p.m.; Council Meeting, 3 p.m.; Annual Dinner, Masonic Hall, College Hill, 8 p.m.

11 Wed. London: Finance Committee, 2.30 p.m.

19 Thurs. Bournemouth Division. B.M.A. lecture by Dr. J. A. Ryle.

20 Fri. London: Central Hall, Westminster: Annual Conference of Local Medical and Panel Committees at 10 a.m.

24 Tues. London: Organization of Medical Students Subcommittee, 2.30 p.m.

25 Wed. London: **Council**, 10 a.m. Council Dinner, 7 for 7.30 p.m.

27 Fri. Suffolk Branch, Ipswich. Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its failings, its achievements, and its possibilities." Paper by Sir Henry Gauvain.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 6*s., which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTH.

ELLIS.—August 1st, at 63, Hagley Road, Edgbaston, Birmingham, the wife of F. W. Ellis, M.D., F.R.C.S., of a daughter, "Margaret Wendy."

MARRIAGES.

COLE—ALCOCK.—On September 20th, J. McMurray Cole, F.R.C.S.E., of Onehunga, N.Z., to Doris Elizabeth Alcock, M.B., B.S., second daughter of J. Simpson Alcock, J.P., of Gaywood, Mansfield, Notts.

YORKE—WILSON.—On the 18th of September, Francis C. Yorke, M.B., B.Ch., of Edgworthstown, second son of the late Dr. and Mrs. Yorke of Granard, co. Longford, to Sister Bertha Wilson of St. Dunstan's, London, fourth daughter of the late Dr. Thomas Wilson and Mrs. Wilson of Edgeworthstown.

DEATH.

HODGE.—On September 21st (suddenly), at Dr. Hickey's, Gainford, Peter Hodge, M.B., C.M., of 87, Desmond Road, Newcastle-on-Tyne, late of Chadwick House, West Hartlepool.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, OCTOBER 7TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Annual Representative Meeting, 1922:
Synopsis of Proceedings 130
Hospital Policy of the Association 135

CURRENT NOTES:
Council Dinner 129
County Medical Officer for the Isle of Wight 129
Dangerous Drugs Prescriptions 129
A Varied Programme 129
Scottish Association of Insurance Committees 129

ASSOCIATION NOTICES:
Council Vacancy 135
Branch and Division Meetings to be held 135

MEETINGS OF BRANCHES AND DIVISIONS 137

PAGE

National Insurance:
Conference of Scottish Insurance Committees 138
London Insurance Committee 138

CORRESPONDENCE:
Domiciliary Nursing of Insured Persons 138

NAVAL AND MILITARY APPOINTMENTS 139

VACANCIES 139

ASSOCIATION INTELLIGENCE AND DIARY 140

APPOINTMENTS 140

DIARY OF SOCIETIES AND LECTURES 140

BIRTHS, MARRIAGES, AND DEATHS 140

British Medical Association.

CURRENT NOTES.

Council Dinner.

MEMBERS are reminded that the first Council dinner will be held on October 25th at 7 for 7.30 p.m. at the Grand Hotel, Charing Cross, and it is hoped that prompt application will be made for tickets. The list of guests is a long and important one, and the Council trusts that members who can make it convenient to be in London, and particularly those residing in or near London, will help in making the event a great success. Members are at liberty to bring guests, and ladies will be welcomed. The price of the ticket is 10s. 6d. Applications should be made to the Financial Secretary, 429, Strand, W.C.2.

County Medical Officer for the Isle of Wight.

In our issue of September 30th there appeared an advertisement from the Isle of Wight County Council asking for applicants for the post of county medical officer at a salary of £1,000 per annum, rising to £1,200 by four annual increments of £50, with a travelling allowance of £50. We gather from a report in the *Portsmouth Evening News* of September 28th that the action of the committee which authorized this advertisement was repudiated by the county council at a meeting on September 27th, and the council adopted an amendment fixing the salary at £800, rising to £1,000. Up to the time of writing no revised advertisement embodying these reduced terms has been offered to the BRITISH MEDICAL JOURNAL; but if and when it is, it will not be accepted. The reason for refusal would be that the salary previously announced is the least that should be accepted in pursuance of the settled policy of the British Medical Association to do what it can to improve the salaries and conditions of service of doctors engaged in the Public Health Services. Whether the Isle of Wight County Council now proceeds by communicating with those who applied under the previously announced conditions, or by advertising afresh, it is hoped that members of the profession who are eligible for the post will show their feeling about the present position by either promptly withdrawing their applications until the former conditions are restored or by refraining from applying under the new conditions. The Association is spending a great deal of its energy just now in the campaign to improve the conditions of public health officers, and it can only succeed if it has the cordial support of those members of the profession who have taken up public health as their line of work, and are therefore those most directly concerned.

Dangerous Drugs Prescriptions.

A letter has been received from the Chemists' Defence Association informing the British Medical Association that prosecutions under the Dangerous Drugs Act have occurred in which pharmacists were implicated because the doctor had omitted to sign his full Christian name on the prescription. The request is made that we should call the attention of the medical profession to the fact that the Regulations made under the Dangerous Drugs Act, 1920, require a prescription for "the drugs" to be signed with the full name—that is, Christian name or names as well as surname—of the medical practitioner giving it. The Chemists' Defence Association has approached the Home Office on the subject, suggesting that the procedure should be modified, but the Home Secretary replied that in his opinion there was not sufficient ground for altering the requirement, which was settled, after full consideration, by the Departmental Committee on the draft Regulations.

A Varied Programme.

At page 136 of this week's SUPPLEMENT will be found the programme of meetings arranged for the session 1922–23 by the South Indian Branch of the British Medical Association. Readers who glance through the list of subjects set down for discussion will feel inclined to congratulate the Honorary Secretary, Major E. W. C. Bradfield, I.M.S., and his committee on the variety and practical interest of the topics they have chosen. The first meeting was devoted to obstetrics; papers were read on the practitioner's duty towards a pregnant woman, and on eclampsia. At the second meeting, on October 4th, an Indian judge addressed the Branch on "Medicine and the Law." The third and fifth meetings will be devoted to papers on recent advances in research and in medicine. At the fourth meeting the surgical treatment of chronic dyspepsia will be discussed; and at the sixth meeting the border line between internal medicine and ophthalmology will be approached by means of a paper on optic atrophy. Finally, we note that all medical men in Madras are cordially invited to attend and take part in the scientific discussions of the South Indian Branch.

Scottish Association of Insurance Committees.

The Annual Conference of the Scottish Association of Insurance Committees, briefly reported at page 138, seems to have been a very successful function. Some of the remarks made at the Conference will interest the medical profession as being a welcome change from the kind of talk that is too usual at meetings of this kind. The President, Mr. John Grieve of Glasgow, in his address, while saying that it would be only fair to give societies an opportunity of expressing their views before any new terms of service were

made with practitioners, strongly deprecated the idea of a return to the old club system. Mr. Alexander Clark, who is clerk to the Aberdeenshire Insurance Committee, in a paper on medical benefit, said that no one who had kept in touch with the proceedings of the British Medical Association could doubt that while it endeavoured, and naturally so, to secure the best terms and conditions, the responsible representatives of the profession were willing and anxious to discuss any proposals that might have the effect of improving and extending the medical service. Replying to the criticisms of the system made by Mr. F. J. Hoffman, of the Prudential Insurance Company of America, who had said that the present system carried with it a taint of cheapness and some charity, Mr. Clark said that because the employee paid only part of the fee to say that there was any charity about it was almost an abuse of language, and it was equally incorrect to say it was cheap, because, so far as it went, the system was good, and on the average the doctor was paid for his services at least as well as for attendance in private practice on the same class of patients. He laid considerable stress upon the principle that any extension of national insurance should be based upon the family doctor as the necessary unit, and moved a resolution affirming that the system of medical benefit under the National Insurance Acts affords a satisfactory basis for the provision of a complete medical service for the community, and urging the Scottish Board of Health and the Government to take action as soon as possible with a view to providing the auxiliary services recommended in the Report of the Consultative Council on Medical and Allied Services. He ended by saying that, notwithstanding criticisms, he had no fear of the result of any inquiry into medical benefit. Mr. James Wyllie, of Ayr County, in seconding, stated he had never met a private patient who had been treated differently from a panel patient. The resolution was adopted. A motion from Fife calling for the discontinuance of the medical record system was approved. The *Aberdeen Evening Gazette* of September 23rd, in a leaderette on "Medical benefit," commenting on Mr. Clark's address, said:

"In the main there will be general agreement with the conclusions of Mr. Clark. There may have been difficulties at the outset with the doctors; there have been occasional differences since then over the vexed question of remuneration; but, all things considered, the arrangements have worked exceedingly well."

ANNUAL REPRESENTATIVE MEETING, JULY 21st TO 25th, 1922.

SYNOPSIS OF PROCEEDINGS.

(Note.—*Members are requested to preserve this for reference.*)

One hundred and sixty-nine constituencies made returns of Representatives out of a possible 222. Of the fifty-three constituencies making no return, twenty-two were in the United Kingdom and thirty-one overseas. One hundred and seventy-five Representatives attended the meeting.

This synopsis deals only with outstanding items of action taken, declarations of policy, and important instructions given to the Council.

COMPLIMENTARY.

Election of a Vice-President.

Sir Alexander Ogston, K.C.V.O., M.D., was elected Vice-President of the Association in recognition of his services as President of the Association from 1914 to 1916.

Votes of Thanks.

The Representative Body passed votes of thanks to the Australian Federal Committee for wishes received by cable for a successful meeting; to the President (Sir William Macewen) and the local Honorary General Secretary of the Annual Meeting (Dr. G. A. Allan) for the welcome extended on behalf of Glasgow; to all the persons and Committees responsible for the arrangements made in connexion with the comfort and convenience of members; to the Senate and Principal of the University of Glasgow for the use of the Bute Hall and other University buildings; to the Hospitals Committee and its Chairman for the time and labour given to the preparation of the report on the organization of voluntary hospitals; to the Dominions Committee for the work done on behalf of the Oversea Branches; to its Chairman (Dr. R. Wallace Henry) for the manner in which he conducted the meeting; and to the staff of the Association.

ANNUAL MEETING, 1924.

The Representative Body decided that the Annual Meeting of the Association, 1924, be held at Bradford.

FINANCE.

Subscription to the Association.

By-law 11 altered to read as follows:

Amount of Subscriptions.

11. (1) On and after January 1st, 1923, the annual subscription to the Association shall be three guineas. Provided that in the case of members of the classes or descriptions mentioned in Column 1 of the following table the said subscription shall be reduced to the extent appearing in column 2 thereof.

1. Members entitled to Reduction of Subscription.	2. Reduced Subscription payable.
A. Any Officer on the Active List of the Royal Naval Medical Service, the Royal Air Force Medical Service, the Medical Service of the Regular Army, or the Indian Medical Service, wherever resident	Two guineas.
B. Members of the following descriptions resident in the United Kingdom and not falling within class A above described:	
(i) Any Member of not less than 40 years' standing as such	Two guineas.
(ii) Any Member of not less than 10 years' standing as such who has definitely and permanently retired from the active practice of the medical profession and has signed and transmitted to the Treasurer a declaration to that effect	Two guineas.
(iii) Any Member who is engaged on a whole-time basis in the work of medical instruction or medical research and is not engaged in the practice of the medical profession either as consultant or otherwise	Two guineas.
(iv) Two Members jointly being a husband and his wife residing together	Four guineas and a half.
(v) Any Member admitted to membership before the expiration of two years from the date of his registration under the Medical Acts	One guinea and a half until the 31st December next occurring after the expiration of four years from the date of such registration.
C. Any Member resident outside the United Kingdom and not falling within class A above described	One guinea and a half.

Provided also that any Member, wherever resident, who is admitted on or after July 1st in any year shall pay only half his current subscription for that year.

(2) For the purposes of this By-law a member shall be deemed to reside in that place in which his ordinary place of abode is situate at the time at which, according to the Regulations, his subscription is considered due.

Reserve Fund.

Instructed the Council to establish a reserve fund for the extension of the work and premises of the Association, to which from time to time shall be transferred such sum or sums as shall be decided by the Council.

ORGANIZATION.

Facilities for Incorporation of Oversea Branches (where so desired).

Draft new Articles and By-laws submitted by the Council (Supplement, December 24th, 1921) as to facilities for incorporation of Oversea Branches where so desired were, with verbal amendment, approved and adopted (Mins. 23-25); also (same Supplement) a draft form of agreement between an incorporated Branch and the Association. (Min. 26.)

Facilities for Formation of Federal Councils of Oversea Branches (where so desired).

Draft new Article and By-law adopted (Supplement, December 24th, 1921) as to facilities for formation of Federal Councils of Oversea Branches where so desired. (Min. 27.)

Question of Federation Facilities: Organization of Medical Profession in South Africa.

The Representative Body reiterated its opinion expressed in 1921 in favour of federation of any purely medical body or bodies representing substantially an ex-Branch or group of ex-Branches of the Association outside Great Britain, who desired it, with the Association, and instructed the Council to continue the discussion of the scheme proposed to the South African Committee or any alternative scheme suggested by it. (Min. 33.)

Other questions of Organization.

Draft amended Articles and By-laws submitted by the Council (Supplement, December 24th, 1921) to give effect to the various decisions of the Annual Representative Meeting at Newcastle as to revision of the constitution and machinery of the Association adopted. (Mins. 35-56). The following are the chief new provisions:

MEMBERSHIP.

Election of Members by Home Branches.

Candidates for membership resident in United Kingdom to forward their applications to head office; latter at once to notify both Division and Branch Secretaries concerned. (By-law 5.*)

* References to Articles and By-laws are to the new edition, dated August, 1922. Copies are being sent to office-bearers, and may be had by members on application.

Eligibility of Practitioners not Resident in a Branch Area.
Any practitioner not resident within a Branch area but registered or registrable in United Kingdom to be eligible. (Article 3.)

Election of Candidates not Resident in a Branch Area.
Only two approving signatures to be required in the case of such a candidate. (Article 6.)

DIVISIONS AND BRANCHES.

Question of Recognition of Divisions and Branches which have not adopted Rules.
No new group of members within the British Islands to be officially recognized as a Division or Branch until it shall have adopted rules of organization and the current rules governing procedure in ethical matters and such rules shall have been approved by the Council. (Article 11.)

Composition of Branch Council.
In the case of Branches in the United Kingdom the following and no other members of the Council shall be members *ex officio* of the Branch Council—namely: (1) Those of the twenty-four members of the Council elected by the Branch, or by any group of Branches to which the Branch belongs; and (2) such one, if any, of the twelve members of the Council elected by the grouped Representatives of constituencies at the Annual Representative Meeting as resides within the area of the Branch. (By-law 18.)
The Honorary Secretary of each Division made a member *ex officio* of Branch Council. (By-law 18.)
Any member or members of any local statutory committee, or of any local medical society, made eligible for appointment or co-option to Branch Council, provided they are members of the Association. (By-law 18.)

Honorary Secretaries of Divisions and Branches.
Every Division and Branch must have an Honorary Secretary, who must be a member of Association. (By-law 21.)

Non-members of British Medical Association Not to be Eligible for Membership of Division Executive Committee or Branch Council.
Non-members of Association made ineligible for membership of Division Executive Committee or Branch Council. (By-laws 18 and 24.)

Duties of Council as regards Unorganized Branch.
Power given to Council to organize any Branch which may have become unorganized or inactive, and to act for such Branch pending its reorganization. (By-law 19.)

Duties of Branch Council as regards Unorganized Division.
Similar power given to Branch Council to deal with an unorganized or inactive Division. (By-law 20.)

DIVISIONS.

Composition of Division Executive Committee.
Divisions can now put on their Executive Committee any member or members of any local statutory committee or of any local medical society, being members of the Association. (By-law 24.)

Discontinuance of Subdivisions: Joint Meetings and Joint Committees of Divisions.
Subdivisions abolished; procedure as regards formation of Joint Committees simplified. (By-law 26.)

REPRESENTATIVE BODY.

Power to Make Small Division an Independent Constituency.
Council empowered to make, whether for geographical *or any other* reason, any Division an independent constituency in Representative Body. (By-law 38.)

Representatives.
Representatives, who may as before be appointed not more than 9, must now be appointed not less than 2, months (instead of 4 weeks) before Annual Representative Meeting; and their names have to be notified not less than 6 weeks before Annual Representative Meeting. (By-law 40.)

Deputy-Representatives.
Deputy-Representatives must now, like Representatives, be elected *for the year*. (By-law 42.)

Meeting of Constituencies.
Constituencies are required to hold meetings within 28 days before Annual Representative Meeting to instruct their Representatives. (By-law 40.)

Voting at Representative Meetings.
Roll-call voting at Representative Meetings regularized. Desire for roll-call to require endorsement by 15 Representatives to secure such a vote; and desire by a majority of Representatives to secure vote by card. (By-law 47.)

Calling of Special Representative Meetings.
Requisition by at least 20 (instead of 7 constituencies required to secure a Special Representative Meeting. (By-law 34.)

REFERENDUM.
Meeting of Council to consider resolution of Representative Body or of General Meeting must be held within one month (instead of three). (Article 34.)

COUNCIL.

Composition of Council.
Eight members of Council (instead of 4) to be elected by the Representatives at Annual Representative Meeting, acting together. (By-law 51.)
Past-Chairman and Deputy-Chairman of Representative Body, and Past-Treasurer to be members of Council *ex-officio* for twelve months. (Article 35.)

Standing of United Kingdom Members of Council as Members of Association.
No one to be eligible for election as member of Council to represent a U.K. Branch or group unless at time of election he or she has been a member of Association for at least three years. (By-law 51.)

Filling of Vacancy in Council Caused by Failure to Elect.
In the case of a vacancy, other than a casual vacancy, among elected members of Council, Council to have option to fill such vacancy either by an election conducted in usual way, or by itself filling the vacancy. (By-law 59.)

CENTRAL COMMITTEES.

Special Assistance for Special Purposes.
Power of co-option by Committees abolished, and they are instead simply empowered to obtain special assistance for special purposes. (By-law 81.)

Consultation between Committees.
Committees given full power to consult, report to, or make suggestions to each other; and similarly Subcommittees of same parent committee. (By-law 77.)

Absence from Meetings of Committees.
An appointed member of any committee or subcommittee absent from three successive meetings thereof to be (except in case of illness or other satisfactory reason) deemed to have resigned membership thereof, and casual vacancy thereupon to arise. (By-law 78.)

Arrangements Committee.
A standing Arrangements Committee set up, to organize Annual Meeting.

Dominions, Irish, Scottish, and Welsh Committees.
Dominions, Irish, Scottish, and Welsh Committees not to be (as are the other standing committees) obliged to appoint a member of Council as Chairman, so long as either the Chairman, Deputy-Chairman, or Honorary Secretary of the Committee is a member of Council. (By-law 75.)

Finance Committee.
Membership of Finance Committee reduced, by six, to fourteen. (Schedule to By-laws.)

Insurance Acts Committee.
Election of member of Committee by Irish Representatives discontinued; an additional direct Representative of the Local Medical and Panel Committees in Great Britain; method of election of the (now) 23 direct Representatives defined more clearly; and one of the four non-panel members of the Committee to be in general practice in an industrial area. (Schedule.)

Journal Committee.
Membership of Journal Committee increased by three—namely, one each to be elected by Representative Body, Council, and Organization Committee. (Schedule.)

Medico-Political and Parliamentary Committee.
Name of "Medico-Political" altered to "Medico-Political and Parliamentary" Committee. (Schedule.)

Organization Committee.
Reference to Organization Committee enlarged in accordance with its present work. (Schedule.)

Science Committee.
Membership of Science Committee increased by two. (Schedule.)

Welsh Committee.
Honorary Secretaries of North Wales and South Wales and Monmouthshire Branches included in *ex-officio* membership of Welsh Committee. (Schedule.)

OFFICERS.

Chairman, Past-Chairman, and Deputy-Chairman of Representative Body.
Titles "Chairman, Past-Chairman, and Deputy-Chairman of Representative Meetings" altered to "Chairman (etc.) of the Representative Body." (Articles 35 and 39.)
Chairman made during his office and for one year thereafter a member of Representative Body *ex officio*. (Article 31.)
Deputy-Chairman of Representative Body made an officer of Association. (Article 39.)

SCIENCE.

Instructed Council to consider possibility and advisability of the Association expending more money in scientific work. (Min. 217.)

MEDICAL ETHICS.

Professional Secrecy.
Passed the following resolutions:

That Minute 48 of the Annual Representative Meeting, 1921, be rescinded, and that it be the policy of the Association to support in every way possible any member of the British Medical Association within the

United Kingdom who, in the opinion of the Council, or of the Central Ethical Committee acting on behalf of the Council, after due consideration of the circumstances, is deemed to have been justified in refusing to disclose any information he may have obtained in the exercise of his professional duties. (Min. 62.)

That as in the opinion of this meeting it is an essential principle of medical conduct that information obtained in connexion with the treatment of patients should not be divulged without the consent of the patient concerned, the Annual Representative Meeting, 1922, express the opinion that the proper preservation of professional secrecy necessitates a measure of special consideration being recognized for medical witnesses in Courts of Law, above and beyond what is accorded to the ordinary witness. (Min. 68.)

Venereal Diseases.

Instructed the Council to refer to an appropriate Committee consideration of the proposed scheme for modified notification of venereal diseases. (Min. 75.)

MEDICO-POLITICAL.

Salaries of Non-professorial Medical Teaching Staffs.

Passed a resolution to the effect that the essentially whole-time non-professorial medical teaching staff should be divided into three grades as defined below, and with the salaries as stated:

Grade III.—Comprising those who are junior workers temporarily employed on probation; no person shall remain in Grade III for more than two years.

That the minimum salaries for Grade III shall be as follows:

1st year	...	...	...	...	...	...	£300
2nd year	...	...	...	...	...	...	£350

Grade II.—Comprising laboratory or research workers or teachers, who are permanently and exclusively employed as such.

That in accordance with Minute 65 of the A.R.M. 1920, the minimum commencing salary for Grade II shall be £500 per annum; and this shall be subject to increments at regular fixed intervals.

Grade I.—Comprising those of Grade II whose qualifications or duties justify a position of seniority in status and a higher remuneration.

That the minimum salary for Grade I shall be £750 per annum, subject to increments at regular fixed intervals.

That after the probationary period—that is, Grade III—has been completed, dismissal should only be possible on grounds of neglect of duty, improper conduct or incapacity. (Min. 229.)

Association's Minimum Remuneration for Minor Ailments Clinics.

Decided that the following paragraph be substituted for paragraph (1) of Minute 100 of Annual Representative Meeting, 1920, which fixed the minimum remuneration of medical practitioners for the treatment of minor ailments at maternity and child welfare and school clinics at two guineas per session of not more than two and a half hours:

"(i) For the treatment of minor ailments, not less than £1 11s. 6d. per session of not more than two hours, provided there is a limitation of the average number of new cases to be seen in each session." (Min. 231.)

Mileage for Insurance Examinations.

Passed a resolution to the effect that where industrial insurance company agents require the medical referee to visit proposers for medical examination, a mileage fee of 2s. 6d. per mile or part of a mile be paid in addition to the ordinary fee. (Min. 235.)

Women Medical Officers employed at G.P.O.

Approved action reported by the Council in challenging the action of the Post Office in proposing to pay women medical officers employed at the G.P.O. at a lower rate than that paid by the Department to men medical officers doing similar work. (Min. 236.)

Contract Medical Attendance on Uninsured Persons.

Approved the following principles, adopted by the Council for guidance in connexion with suggested reductions of remuneration in respect of contract medical attendance on uninsured persons (Min. 236):

(i) That where a definite understanding has been adopted that the contract practice fee shall be the same as that paid under the National Insurance system, a cut similar to that made under that system should be made locally to come into operation at the same time as the reduced insurance capitation fee, and to be reviewed when the latter fee is reviewed;

(ii) that wherever the remuneration has been raised to 11s. (or 13s. with medicine) or more, even though there has been no explicit relation of the fee to the insurance capitation fee, there is a *prima facie* case for a discussion;

(iii) that the amount of any reduction made must necessarily vary in different areas and must be settled locally in accordance with local conditions, subject to the approval of the Association;

(iv) that it must be clearly laid down that any reduction is a concession on the ground of present economic circumstances; that no difference will be made in the character of the service given; and that the reduction is temporary; and

(v) that any contract shall be for an agreed period, and that three months' notice shall be given, prior to the termination of the agreed period, by either side applying for a review.

Midwives and Use of Opium and Pituitary Extract.

Expressed the opinion that the practice of the use by midwives of opium (as well as of pituitary extract) is fraught with considerable danger, and that a continued protest should be made against such use. (Min. 240.)

PUBLIC HEALTH AND POOR LAW.

Referred to Council a motion by City Division that the fee for attendance at maternity cases by district Poor Law medical officers should be at the same rate as that paid by the London County Council when practitioners are called in by midwives. (Min. 354.)

NATIONAL HEALTH INSURANCE.

Approved Societies and Control of Medical Benefit.

Passed the following resolution:

That the Representative Body insists upon the continuance of the system of negotiating the actual terms of the contract of service which has prevailed since the coming into force of the National Health Insurance system—that is, direct negotiations between the Government and the profession without the intervention of any third party; but will continue to welcome the co-operation of all those interested in the development of the best possible medical service for insured persons. (Min. 76.)

General Position of National Health Insurance Acts.

Resolved:

That the measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has, in the opinion of the Representative Body, been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system. (Min. 84.)

HOSPITALS.

Report on Hospital Policy.

The report of the Council on the organization of voluntary hospitals was amended in certain respects. The report as approved by the Meeting (Mins. 88–325) is printed below at p. 133. It will be noted that para. 32 is under consideration by the Council, and a report on the subject may be expected shortly by the Divisions.

Hospital Staff Funds: Information for Divisions.

Resolved that when the report on hospital policy comes before the Divisions for further consideration statistics should be supplied showing the number of hospitals in which a staff fund has been established. (Min. 327.)

Utilization of Municipal Hospitals for Civil Needs.

The meeting verbally amended, and adopted as amended, the report submitted by the Council on the utilization of municipal hospitals for civil needs. The following is the report as thus adopted:

REPORT ON THE UTILIZATION OF MUNICIPAL HOSPITALS FOR CIVIL NEEDS.

In any contemplated application by a local sanitary authority of the Public Health Act, 1875 (Section 131), enabling such authority to establish or maintain a public hospital:

1. Any such additional hospital accommodation should be related to existing hospital accommodation whether in voluntary hospitals or Poor Law infirmaries, so as to ensure that there shall be no duplication of accommodation or competition with or between the institutions provided.

2. Representatives of the medical practitioners chosen by the practitioners of the area for which additional hospital accommodation is proposed should be invited to consult with and advise the representatives of the local sanitary authority in the formulation of its scheme. For the selection of these representatives use should be made of the local organization of the British Medical Association.

Admission of Private Patients Employing their own Doctor.

3. In municipal hospitals established by the local sanitary authority certain beds should be set aside for private patients paying a fee to be settled by the authority; that where a general practitioner is desired by the patient to continue treatment, he should be allowed to do so under the general administrative supervision of the medical superintendent, and any of these patients should be allowed to call in a consultant from outside, the patient bearing the cost thereof.

Inclusive Charge for Maintenance: Doctor paid by Private Arrangements.

4. For private patients admitted to municipal hospitals there should be an inclusive charge to cover the cost of medical supervision, maintenance, nursing, food, and medicines, within the ordinary tariff and pharmacopœia of the hospital, the patient paying his medical attendant independently.

Extra Comforts to be Available as "Extras."

5. Any extra nursing and any food or medicine ordered over and above those allowed under the ordinary tariff and pharmacopœia of the hospitals, should be charged as extras to the patient.

Administrative Supervision by Medical Superintendent.

6. All medical attendance by private practitioners on "paying" patients in hospitals should be under the administrative supervision of the medical superintendent.

Utilization of Infirmaries for Medical Education.

7. Municipal hospitals so far as practicable should be utilized for medical education.

Tendency towards "Primary Health Centre" Type.

8. In any hospital maintained by a local authority for general cases, provision should be made for wards on the lines of the suggested primary health centre as outlined in the Consultative Council's report for the reception of private patients admitted on the recommendation of their own practitioner, who should be allowed to attend these patients in such wards.

Representation of Profession on Management Committee.

9. Municipal hospitals should be controlled by an *ad hoc* Committee, on which there should be a small but definite

representation of the medical profession, nominated by members of the local profession.

Method of Admission to Hospital.

10. The normal method of admission to a municipal hospital should be on the recommendation of a general practitioner.

Staffs of Municipal Hospitals.

11. Except for the treatment of private patients, the normal medical staff of any municipal hospital should be a combination of the whole-time resident staff or a part-time selected staff with part-time specialists, the last being called in by the medical superintendent as and when necessary. (Min. 330–3.)

Subsidizing by Government of Hospitals in Financial Difficulties.

Resolved that in the event of the voluntary hospitals being subsidized by the central government, such subsidies should be made through some central hospital fund or organization and not to the hospitals direct. Payment for work done by a hospital for a government department is not to be considered a subsidy. (Min. 335.)

NAVAL AND MILITARY.

Senior Surgeon Commanders, R.N.: Recently Qualified Practitioners and the Admiralty.

Representative Body approved a report of action by the Council in connexion with the new regulations for the earlier compulsory retirement of certain surgeon commanders, R.N., and expressed its cordial approval of the decision of the Council to advise recently qualified practitioners to consider seriously the disadvantages to which they are liable if they place their careers in the hands of the Admiralty. (Min. 358.)

ELECTIONS.

Mr. Charles P. Childe, F.R.C.S. (Southsea), was elected President of the Association for 1923–24, to come into office as President at the Annual Meeting, Portsmouth, 1923 (Min. 15); Dr. R. Wallace Henry (Leicester), Chairman of the Representative Body, 1922–3 (Min. 111); Dr. H. B. Brackenbury (North Middlesex), Deputy-Chairman for the same period (Min. 112); and Dr. G. E. Haslip (London), Treasurer of the Association for 1922–5.

APPENDIX.

HOSPITAL POLICY OF THE ASSOCIATION.

As Approved by the Annual Representative Meeting, 1922.

INTRODUCTION.

1. The requirements of the voluntary hospitals as affected by present-day conditions of finance, and the consequential demand made by many of the hospitals for payment from patients for hospital services, have been carefully considered by the British Medical Association. Also numerous contributory schemes for the provision of hospital benefit for certain sections of the community, submitted to the Association for its approval, have been subjected to examination. Throughout this document the term "medical treatment" includes any and all of those services which can be and are rendered by a registered medical practitioner—for example, examination whether clinical or laboratory, advice, consultation, and the application of remedies whether medical, physical, or operative.

2. The voluntary hospitals have grown up upon a general understanding between the subscribers, the Board of Management, and the members of the honorary medical staff that both funds and services were placed gratuitously at the disposal of those members of the community unable to pay for adequate medical treatment. This understanding for gratuitous service was mutual and reciprocal, and the general tendency now existing for the exaction of payment, however small, from the patient, necessarily modifies the original understanding and fundamentally alters the basis of the relationship between the honorary medical staffs and the subscribers.

3. The Association recognizes a dual policy as regards the voluntary hospitals: (*a*) that the purely charitable side should be continued wherein the whole cost of the maintenance of indigent patients is met by the gratuitous contributions received by the hospital and on whose behalf the services of the honorary medical staffs are given gratuitously; (*b*) that other patients who are not indigent may be received for treatment at voluntary hospitals when they cannot pay for or cannot obtain adequate treatment elsewhere, and that for them payment should be received by the hospital either from the patients themselves or on their behalf from the authority or body referring them to the hospital, and that on account of their treatment some method of remuneration of the honorary medical staff should be arranged.

4. In view of the tendency of the State through local and central authorities to require services of the voluntary hospitals, it should be provided that in any arrangements for such services the State should pay the full cost to the hospital for such services so that no portion thereof shall be charged to the charitable funds of the hospital, and that the payment so made shall include an amount for the remuneration of the honorary medical staff of the hospital. It is neither just nor expedient for the community to throw upon one section thereof the onus of undertaking, gratuitously, professional work of a responsible character. Services rendered to the State should be remunerated by the State, not only on the grounds of justice to those concerned but also on the grounds of public advantage. Such work could only be requested gratuitously either as an act of charity or as a demand on the services of the citizen. Charity can only be requested on behalf of those who are themselves unable to pay, and the State does not come within this category. Further, there can be no just claim by the State on the gratuitous services of a particular class of citizens which can be rendered only by that particular section, and are not and cannot be demanded from the general body of citizens.

5. This Report aims at the consolidation of the known policy of the Association with only such modifications as are necessitated by recent developments. Many of the details of policy arising out of the present state of affairs have already been dealt with by the Representative Body. In the following paragraphs such of these decisions or resolutions as are now material are set out, with such other recommendations as appear necessary to make a complete statement of the policy of the Association.

THE VOLUNTARY HOSPITAL.

6. The Association records its belief that the voluntary method of administration of the voluntary hospitals of the country is to the advantage of the public, medical science, and the medical profession, and that it should be maintained.

7. The Association maintains that the essence of the voluntary hospital system is the independent and voluntary management, and that this is not necessarily related to the conditions of service of the medical staff.

Sources from which Funds are Received by Voluntary Hospitals.

8. Funds may be received by hospital authorities from two sources: (*a*) gratuitous contributions—that is, contributions from whatever source to which no such conditions are attached as would involve the obligations of service on the part of the hospital, but are charitable contributions to be expended at the discretion of those to whom the management of the hospital is entrusted; and (*b*) contributions for services rendered or to be rendered—that is, contributions made either by patients themselves or on their behalf for hospital benefit.

9. It is undesirable that the voluntary hospitals should be subsidized by the local rating authorities except in so far as pro rata payment is made for the maintenance and medical treatment of patients for whom these authorities are responsible.

10. Gratuitous contributions to hospitals by employers of labour or by employees should not be treated as the payment of premiums for insurance against the cost of maintenance and medical treatment for sickness or accident, nor as entitling the contributors to claim hospital treatment either for themselves or for persons nominated by them, but as charitable contributions to be expended at the discretion of those to whom the management of the hospital is entrusted.

11. Every patient of a voluntary hospital who is able should make a contribution towards the cost of maintenance and medical treatment, unless the contributory method of subscription is adopted as essential in industrial areas.

12. Greatly extended support for voluntary hospitals should be sought from employers and insurance companies, seeing that they benefit largely both directly and indirectly by the services of the voluntary hospitals.

Contributory Schemes.

13. It is undesirable that the Association should approve specific contributory schemes for the provision of hospital benefit as such. To do so would imply that the Association had considered and provided against all the possibilities that may arise out of any scheme approved, such as financial stability, sufficiency of hospital accommodation for the area involved, and a number of other and related conditions which can only be determined during the actual working of several of these schemes for an extended period. But it is desirable that certain principles should be approved by the Association as applicable to any contributory scheme.

14. In any schemes for providing hospital benefit by voluntary hospitals it is undesirable that the hospitals concerned should undertake any insurance risk—that is, undertake to provide hospital benefit when required in return for a periodic payment by an individual or a group of individuals:

so that where schemes are set up to provide payment for hospital benefit for specified individuals or groups of individuals, such schemes should be organized not by the hospital but by some independent body.

15. The acceptance by voluntary hospitals of an insurance risk under any scheme for the provision of hospital benefits would (*a*) prejudice the primary consideration in the admission of a patient to hospital—namely, the suitability of the case for admission on medical grounds: and (*b*) in the event of the actuarial estimates upon which the scale of premiums and benefits are based proving faulty, render the hospitals liable to meet outlays for which there was no financial provision and consequently endanger the purely charitable funds of the hospitals.

16. In any contributory scheme the presence, limitations, or absence of a contractural obligation for the provision of hospital and additional benefits should be plainly stated to the contributors. Failure to provide such statement is likely to reflect upon the good faith of the hospitals and of the promoters of the scheme.

Suitability of Patients for Hospital Treatment.

17. The primary consideration in the admission of a patient to hospital should be the suitability of the case on medical grounds.

18. Some means of investigation into the circumstances of the applicants for relief, by means of an almoner or other agent, should be employed in all medical charities.

CATEGORIES OF PATIENTS FOR IN-PATIENT TREATMENT.

19. Patients admitted to voluntary hospitals should be classed under the following groups: "Free" (Indigent), "Tariff," and "Private."

(*a*) *Free (Indigent) Patients.*—Those certified by the almoner or other officer of the hospital as unable to contribute in any way towards their maintenance and treatment.

(*b*) *Tariff Patients.*—Those paying, or for whom is paid, in part or in whole, the tariff cost of maintenance and treatment; this group includes all those for whom any payment has been made by (i) public authorities; (ii) approved societies, employers of labour, insurance companies, or other bodies; or (iii) under any contributory scheme; and

(*c*) *Private Patients.*—Those who pay for special accommodation and who arrange for medical treatment fees independently of the hospital.

Free (Indigent) In-Patients.

20. Those certified by the almoner or other officer of the hospital as unable to contribute in any way towards their maintenance and medical treatment; and for whom hospital benefit is provided by the gratuitous contributions placed at the discretion of the hospital managers and by the gratuitous services of the honorary medical staffs.

21. Cases of obvious destitution or cases already in receipt of Poor Law relief, should, after they have been seen once in the casualty or out-patient department, be referred to the Poor Law relieving officer, unless they should be retained by the hospital for treatment. But in case of patients referred by Poor Law medical officers to hospital for consultation or treatment, payment should be required from the Poor Law guardians both for advice, treatment, and maintenance.

Tariff In-Patients.

22. When the Board of Management of a voluntary hospital enters into a financial arrangement with an employer of labour, a public authority, approved society, insurance company, or any other body, or under a contributory scheme for the reception of patients, such arrangements should be taken to cover the full cost of maintenance and medical treatment, and should provide as follows:

(*a*) Payments made for tariff in-patients should be for work done based upon a tariff of fees agreed upon from time to time between the contracting parties; such tariff of fees making full allowance for provision of hospital accommodation, maintenance and payment of medical staff.

(*b*) The accounts of the hospitals should be kept so as to show the cost of this hospital benefit.

(*c*) Inability to pay for adequate treatment as a private patient whether in the hospital or outside, should be the consideration for the admission of all tariff patients for hospital treatment.

(*d*) All persons, whether insured under the National Health Insurance Acts or not, whose income from all sources does not exceed the limits of a specified scale, should be eligible for hospital benefit on tariff rates. The hospital should reserve its right to challenge admissions.

The following maximum scale is suggested, subject to economic and local variations and to periodic revision:

CLASS 1.—*Limit of Income* £200. (*a*) Single persons over 16 years of age. (*b*) Widower or widower without children under 16 years of age.

CLASS 2.—*Limit of Income* £250. (*a*) Married couples without children under 16 years of age. (*b*) Persons with one dependant under 16 years of age.

CLASS 3.—*Limit of Income* £300. (*a*) Married couples with a child or children under 16 years of age. (*b*) Persons with more than one dependant under 16 years of age.

(*e*) For those persons whose income places them beyond the agreed specified scale for tariff patients arrangements may be made to receive them as private patients, for the conditions governing which see paragraphs 23 and 24 below.

(*f*) The ordinary hospital routine of admission, transference and discharge of patients should not be modified for tariff patients, nor should any preferential treatment be given to them.

(*g*) No tariff patient should be admitted without the recommendation of the attending practitioner, except in the case of emergency.

Private Patients in Nursing Homes Attached to Hospitals.

23. Where it is desirable that special accommodation in the nature of a nursing home should be provided in connexion with voluntary hospitals for the reception of private patients there should be provided as follows:

(*a*) Private patients should be admitted to such special accommodation only on the recommendation of a private practitioner, except in cases of emergency. In the latter circumstances the patient's own medical attendant should be informed.

(*b*) It shall be open to a private patient to select any registered medical practitioner as his attendant.

(*c*) The scale of charges for the private patient for maintenance shall be such as fully to cover every cost to the hospital.

(*d*) No fixed rate of payment for professional services rendered to such patients should be established; the fees so payable to remain, as at present, a matter of arrangement between patient, family physician, and consultant.

Private In-Patients in Hospitals.

24. Where private patients are admitted under special arrangements into the public wards of a voluntary hospital:

(*a*) Private patients should be admitted to such wards only on the recommendation of a private practitioner, except in cases of emergency.

(*b*) The scale of charges for the private patient for maintenance shall be such as fully to cover every cost to the hospital.

(*c*) No fixed rate of payment for professional services rendered to such patients should be established; the fees so payable to remain, as at present, a matter of arrangement between patient and the member of the staff of the hospital.

(*d*) The accounts of the hospitals should be kept so as to show the cost of this hospital benefit.

(*e*) The ordinary hospital routine of admission, transference and discharge of patients should not be modified for these private patients, nor should any preferential treatment be given to them.

OUT-PATIENTS.

25. The primary object of the out-patient department should be for consultation.

26. Only such treatment should be given as cannot consistently with the best interests of the patient be properly undertaken by a general practitioner of ordinary professional competence and skill.

27. All cases not suitable for hospital treatment should be referred in general terms to a medical practitioner, to a public medical service, an approved provident dispensary, or to the relieving officer under the Poor Law.

28. Where arrangements for consultations or specialist services for tariff patients are made under some contributory scheme or otherwise such arrangements should provide that these services shall be given so far as is possible and consistent with the best interests of the patients by the private practitioner at his consulting rooms or at the patient's own home and not at the out-patient department of the voluntary hospital.

29. Private patients should not be seen or treated at the out-patient department of a voluntary hospital except where no other arrangement is practicable, or in case of emergency, and in such cases preceding para. 23 (*c*) and (*d*) should govern arrangements.

30. In cases where consultations or treatment are given at an out-patient department the ordinary hospital routine should not be modified, nor should any preferential treatment be given to tariff or private patients.

MEDICAL STAFFS OF VOLUNTARY HOSPITALS.

31. Full opportunity should be given to private practitioners who possess the necessary qualifications and experience to participate in the work of voluntary hospitals, and for that purpose:

(*a*) The age limit or tenure of office of members of the honorary medical staffs of voluntary hospitals should, where necessary, be so modified as to allow more and younger practitioners to obtain responsible hospital experience.

(*b*) Greatly increased facilities should be provided for the appointment of clinical and chief clinical assistants to the various departments of the larger hospitals.

(*c*) When the number of patients of voluntary hospitals increases the medical staff of all grades should be increased.

(*d*) In considering the eligibility of a practitioner for one of these appointments the points which would afford indications to obtain due regard should be given are one or more of the following: (i) special academic or post-graduate study, if combined with some evidence of actual practice of the speciality; (ii) tenure of hospital

and other appointments affording special opportunities for acquiring experience; and (iii) local professional recognition of competence in a consultative or expert capacity.

Formation of Staff Funds.

32. That in the event of decisions being taken which would lead to patients [other than paying patients referred to in foregoing paragraphs 23 and 24] paying, in part or in whole, the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate-aid or State-aid, or by a combination of two or more of these methods, a percentage of all such payments should be passed into a fund which can be allocated in any manner which the honorary medical staff may determine (Annual Representative Meeting, 1921, Min. 236).

On amendments being proposed to the foregoing paragraph 32 at the Annual Representative Meeting, 1922, the following resolution was carried: "That it be an instruction to the Council to reconsider the terms of the policy of the Association as expressed by the Annual Representative Meeting, 1921 (Min. 236—see above), and to report what, if any, modifications may be desirable to meet any possible inequities that may arise from its operation."

33. When the Board of Management of a voluntary hospital enters into a financial arrangement with a public authority, an employer of labour, approved society, insurance company, or under a contributory scheme or otherwise for the reception of patients, such arrangement should be taken to cover the cost of maintenance and medical treatment and a percentage of all such receipts should be passed into a fund which is at the disposal of the honorary medical staff of that hospital.

34. The honorary medical staffs may find the following suggestions valuable in connexion with the disposal of the moneys in the special fund, and accordingly the Association suggests to the hospital staffs concerned that one or more of the following methods of distribution of any moneys in the special fund may be found suitable:

(*a*) To the members of the honorary medical staffs for their own personal disposal;

(*b*) For the assistance of members of the medical staff in connexion with research work;

(*c*) For the purchase of instruments, books, etc., for the use of the medical staff, or for lending to other members of the profession;

(*d*) For the initiation or development of post-graduate teaching in the institution;

(*e*) The institution of a local medical benevolent fund, administered by the members of the honorary medical staff, for dealing with necessitous cases—for example, widows and children of former colleagues;

(*f*) Grants to any recognized medical benevolent fund or institution; or

(*g*) Otherwise as the medical staff may decide.

35. In cases where members of the staffs of voluntary hospitals attend tariff patients at stated hours under arrangement, they should receive adequate payment upon a time basis.

Recognition of Local Advisory Medical Committee.

36. In every hospital area (for example, the area of a voluntary hospitals committee) the Association, through its local organization, should form a representative local advisory medical committee which should be recognized by the authorities concerned, and from which representation should be given upon the Voluntary Hospitals Committee.

Representation on Boards of Management.

37. *Medical Representation.*—The association of officially recognized representatives of the local medical profession in the promotion and general management of hospitals and other medical charities is desirable in the interests of those institutions as well as of the profession, and that for the appointment of such representatives use should be made of the machinery afforded by a Division of the British Medical Association.

38. *Lay Representation.*—Where representation of benefactors, subscribers, or contributors to the funds of a voluntary hospital is given on the board of management or governors of the hospital, representation should be distributed so as to secure the representation of each interest in the hospital, and so that no single interest should be in a majority. Contributions given with an implicit or explicit obligation of hospital service shall not rank for representation with other benefactions.

Contributory Schemes and Additional Services.

39. No contributory scheme for hospital benefit should be considered satisfactory unless there are arrangements for an adequate home nursing and ambulance service, and for dental, laboratory, and *x*-ray facilities.

Cottage Hospitals.

40. As far as possible, every patient in a cottage hospital should have the right to be attended by his usual medical attendant.

41. The previous provisions contained in this Report are also applicable to cottage hospitals.

Admission of Cases in Receipt of Maternity Benefit.

42. As it is necessary for the training in midwifery of medical students and pupil midwives that there should be an adequate supply of clinical material available for that purpose, no parturient woman should be refused treatment in the obstetric department of a voluntary hospital or similar institution on the ground that she is eligible for a maternity benefit.

43. All women receiving treatment through the obstetric department of a voluntary hospital, or similar institution, who are entitled to a maternity benefit, should be required to pay such sum to the hospital or institution as shall be determined upon by the governing body.

44. From each sum an amount, to be agreed upon between the governing body and medical staff, should be placed to a special fund, which shall belong to the medical staff.

Application of Hospital Policy.

45. That the carrying out of the hospital policy of the Association, as now approved, be proceeded with in stages; that during the ensuing session 1922–3, the education of the public in general, governing bodies of hospitals in particular, and the medical profession, be undertaken, and that progress be reported to the Annual Representative Meeting, 1923.

Association Notices.

COUNCIL, 1922–23.

Vacancy.

Notice is hereby given of the following vacancy in the membership of the Council:

Indian Group, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S. (ret.).

Under By-law 54 (2) the Council is empowered either to fill the vacancy itself or cause it to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present case.

Nominations must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922:

COUNCIL, 1922–23.

Nomination Form for Election of a Member by the Grouped Indian Branches.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....

of ..... (*Full name and address to be given*)

for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922–23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by Voting Papers, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

Alfred Cox, *Medical Secretary.*

BRANCH AND DIVISION MEETINGS TO BE HELD.

Birmingham Branch.—The annual meeting of the Birmingham Branch will take place at the Medical Institute on Thursday, October 19th, at 3.30 p.m. Business: To receive the annual reports. To elect officers for the ensuing session. The President, Mr. Albert Lucas, F.R.C.S., will deliver his inaugural address on the hospital policy of the Association. Tea will be provided at the close of the meeting by the President.

Birmingham Branch: Coventry Division.—The annual dinner of the Coventry Division will be held on Tuesday, October 10th, at the Masonic Hall, Little Park Street, Coventry, at 7.30 p.m. Tickets, £1 1s. with wine, 14s. without. The following programme for the session 1922–23 has been prepared: October 10th, annual dinner; November 7th, paper by Dr. Croft (Chairman) and Representative's report; December 5th, paper by Mr. F. Barnes, F.R.C.S., "Excision of gastric ulcers"; February 6th, 1923, paper

by Mr. Beckwith Whitehouse, F.R.C.S.; March 6th, paper by Dr. A. P. Thomson; May, annual meeting. The ordinary meetings of the Division are held in the board room of the Coventry and Warwickshire Hospital. Members are invited to show cases or specimens at any meeting.

BORDER COUNTIES BRANCH.—A general meeting of the Border Counties Branch will be held at the Dumfries and Galloway Royal Infirmary, Dumfries, on Friday, October 13th, at 3 p.m. Agenda: Dr. P. Murray Kerr, "Random notes on some surgical and medical cases with *x*-ray plates." Dr. Livingston will show cases and pathological specimens. Dr. Glover, "Notes on some recent cases." Dr. Robson will deal with some aspects of treatment of various diseased conditions. Dr. R. Connell will show some *x*-ray plates. Other members of the infirmary staff will show cases, etc. The Branch Council will meet at 2.45 p.m.; tea at 4.15 p.m.

DORSET AND WEST HANTS BRANCH.—The autumn meeting of the Dorset and West Hants Branch will be held at the Royal Bath Hotel, Bournemouth, on Wednesday, October 11th, when the President, Dr. W. Johnson Smyth, will take the chair at 3 p.m. The practitioners in the Bournemouth district invite members to luncheon at the Royal Bath Hotel at 1.30 p.m. Agenda: To fix date and place of annual meeting. Election of officers, 1922-23. Consider the question of inviting the Association to hold its annual meeting in Bournemouth in the near future. Dr. C. J. Girling, Vice-President, will read a paper on some criticisms and suggestions in regard to our professional modes and manners. Mr. W. Arch. Mein, F.R.C.S.E., will read a paper on spinal anaesthesia. Dr. Johnson Smyth invites members to tea after the meeting.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION.—A meeting of the Bournemouth Division will be held at Bournemouth on Thursday, October 19th, when a British Medical Association lecture will be delivered by Dr. J. A. Ryle.

ESSEX BRANCH: SOUTH-ESSEX DIVISION.—A meeting of the medical practitioners of the borough will be held at the Victoria Hospital, Southend-on-Sea, on Friday, October 6th, at 3.15 p.m. Agenda: To consider the following resolution of the Committee of the Southend Victoria Hospital:

> That the opinion of the local British Medical Association be invited as to the method of future appointments to the honorary staff of the hospital, and with particular reference to its enlargement for service in the new Out-patients Department for the consideration of the Hospital Committee in amending the rules of the institution.

It is felt that this very important matter should be decided by the local practitioners of the town, including non-members of the Association, and it is hoped that as many as possible will be present and voice their opinions. After the meeting the annual general meeting of the Division will be held. Agenda: Election of officers for ensuing session. The annual dinner of the Division will be held at the Palace Hotel on Friday, October 13th, when Dr. Alfred Cox, Medical Secretary, will be the guest of the Division.

LEICESTER AND RUTLAND DIVISION.—A golf match between members of the Leicester and Rutland Division and members of the Nottingham Division has been arranged, and will take place on the links of the Leicestershire Golf Club, by the kind permission of its committee, on Thursday, October 12th, at 2 p.m.

A meeting of the Division will be held at the Medical Club, Bond Street, Leicester, on Friday, October 13th, at 4 p.m., when an address on the future of the National Health Insurance system will be given by Dr. G. C. Anderson, Deputy Medical Secretary, British Medical Association.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—At the meeting of the Division to be held at the Metropolitan Hospital, Kingsland Road, E 8, on October 10th, at 9.15 p.m., Dr. Mackenzie Wallis, Chemical Pathologist at St. Bartholomew's Hospital, will read a paper on the application of the skin tests for protein hypersensitivity to asthma and allied conditions, with an outline of treatment.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.—The first meeting of the session of the East Hertfordshire Division will be held at 3 p.m. on Wednesday, October 11th, at the County Hospital, Hertford, when Mr. W. H. Bowen, F.R.C.S. (Cambridge), will read a paper on the Mayo clinic. Tea will be provided at 1s. a head.

METROPOLITAN COUNTIES BRANCH: SOUTH MIDDLESEX DIVISION.—The following programme has been arranged for 1922-23, the meetings to take place at St. John's Hospital, Twickenham, at 8.15 p.m.: Wednesday, October 18th: Paper by Mr. Kenneth Walker, F.R.C.S., on Haematuria. Wednesday, November 15th: General business; discussions on (1) Applied immunity, to be opened by Dr. E. G. Perodeau; (2) Sciatica, to be opened by Dr. P. W. L. Camps; (3) Medical fees, to be opened by Dr. C. C. Scott. Wednesday, February 21st, 1923: Paper by Dr. T. Watts Eden, Obstetric Physician to Charing Cross Hospital. Wednesday, March 21st: General business: discussions on (1) Gout and rheumatism, to be opened by Dr. G. S. Ewen; (2) Asepsis in [illegible] to be opened by Dr. A. P. Yonge; 3. Colds, to be opened by Dr. C. E. E. Hemington. Wednesday, April 18th: Paper by Dr. G. H. Dupont, M.O.H. Twickenham Urban District Council. Points of contact between the general practitioner and the public health authorities. Wednesday, May 16th: Annual general meeting. A popular lecture entitled "Is industrial unrest a symptom of ill health?" will be given by Sir Kenneth Goadby in the lecture hall of the Public Library early in 1923.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.—The following is the programme arranged for 1922-23:—October 19th: Mr. Hill, M.R.C.V.S., Intercommunicable disease of man and beast. November 16th: Paper by Mr. G. Grey Turner. December 7th: Dr. Wells Patterson, Thyroid gland in health and disease. January 18th, 1923: Mr. R. J. Willan, Senile diseases of prostate gland. February 15th: Dr. W. E. Hume, Heart disease. March 15th: Dr. Mostyn, M.O.H., Development of Darlington from public health point of view. April 19th: Dr. E. Farquhar Murray, Gynaecology in general practice. May 10th: Mr. W. F. Wilson, Common diseases of ear, nose, and throat. Papers on Pyorrhoea by Mr. Hamilton, and on Some aspects of school dental work by Mr. Horsley, will also be read on dates to be arranged. Members of the Veterinary Association are invited to be present and to take part in the discussion on Mr. Hill's paper, and the presence of members of the British Dental Association is invited at Messrs. Hamilton and Horsley's papers.

NORTH WALES BRANCH: NORTH CARNARVONSHIRE AND ANGLESEY DIVISION.—A clinical meeting of the North Carnarvonshire and Anglesey Division will be held at the Metropole Hotel, Colwyn Bay, on Tuesday, October 17th, at 3.45 p.m. The Colwyn Bay Medical Society invites members of the Division, and is making arrangements to entertain them. The following agenda has been arranged: (1) The diagnostic methods in the *x*-ray examination of chests, with particulars of several cases shown by Drs. Lord and Nuttall. (2) Some further experiences of the treatment of fractures by the Lane's bolts and screws, by Dr. A. N. Leeming. (3) A demonstration of Shipway's anaesthesia, by Dr. Eric Lightwood. (4) A comparison of the various operative measures in the treatment of prolapse of the uterus, by Dr. W. E. Huff-Hewitt. Members who propose to attend are requested to notify Dr. J. R. Prytherch, Honorary Secretary, on or before October 10th, so that the Colwyn Bay Medical Society may know how many to expect. Fast train from Bangor 2.51 p.m. Return from Colwyn Bay 6.0 or 7.36 p.m.

SHROPSHIRE AND MID-WALES BRANCH.—The forty-seventh autumn meeting of the Shropshire and Mid-Wales Brauch will be held at the Royal Salop Infirmary on Tuesday, October 10th, at 3 30 p.m., when the President, Dr. Glynn Pigott, will take the chair. Agenda: Election of new members. Correspondence on appointment of medical officer to borough police. Address by the President, entitled "Various abnormalities met with in a series of eleven hundred cases of midwifery, with special reference to placenta praevia and its treatment." A council meeting will be held at 3 p.m. By kind invitation of the President, tea will be provided. The annual dinner will be held at the Masonic Hall, College Hill, at 6 p.m. Morning dress will be worn. Tickets, 10s. 6d.

SOUTHERN BRANCH.—The following meetings of the Southern Branch will be held at the South-Western Hotel, Southampton, at 2.30 p.m., when addresses will be given:—*Thursday, December 14th, 1922:* "The prevention and conservative treatment of senile gangrene," Mr. W. Sampson Handley, M.S., F.R.C.S., surgeon to Middlesex Hospital. *Thursday, March 22nd, 1923:* "The diagnosis and treatment of cholecystitis and gall stones," Dr. Arthur F. Hurst, physician to Guy's Hospital. Members are earnestly requested to make a special effort to attend the meetings.

SOUTH INDIAN BRANCH.—The following is the programme of meetings arranged for the session 1922-23:—September 6 *th*: The practitioner's duty towards a pregnant woman, by Major-General G. G. Giffard, C.S.I., K.H.S., I.M.S.; Eclampsia, by Major C. A. F. Hingston, O.B.E., I.M.S. October 4th: The relations of medicine and the law, by the Hon. Mr. Justice Coutts-Trotter. November 1st: Recent advances in research, by Major J. Cunningham, M.D., I.M.S., and Major J. A. Cruickshank, M.C., M.D., I.M.S. December 6th: The surgical treatment of chronic dyspepsia, by Major E. W. C. Bradfield, M.S., M.B., F.R.C.S., I.M.S. January 3rd: Recent advance in medicine, by Lieut.-Colonel F. F. Elwes, C.I.E., M.D., I.M.S. February 7th: Optic atrophy, by Major R. E. Wright, B.A., M.D., B.Ch., I.M.S. The meetings are held at the Medical College on the first Wednesday of each month, and all medical men in Madras are cordially invited to attend and take part in the scientific discussions.

SUFFOLK BRANCH.—A meeting of the Suffolk Branch will be held at Ipswich on Friday, October 27th, when an address will be delivered by Dr. G. C. Anderson, Deputy Medical Secretary, on "The British Medical Association—its failings, its achievements, and its possibilities." Sir Henry Gauvain will also read a paper.

SUSSEX BRANCH: BRIGHTON DIVISION.—*List of Clinical Meetings:*—October 19th, 1922, Royal Sussex County Hospital; November 16th, Children's Hospital; December 14th, Royal Sussex County Hospital. January 18th, 1923, Lady Chichester Hospital; February 15th, Royal Sussex County Hospital; March 15th, Eye Hospital; April 19th, Royal Sussex County Hospital; May 17th, Children's Hospital; June 21st, Royal Sussex County Hospital.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A meeting of the Harrogate Division will be held at Y.M.C.A., Harrogate, on Saturday, October 7th, at 5 p.m., when Dr. Gordon Holmes will deliver a British Medical Association lecture on "Some of the clinical manifestations of tabes," which will be illustrated by lantern slides.

WORCESTERSHIRE AND HEREFORDSHIRE BRANCH: HEREFORD DIVISION.

Post-Graduate Demonstrations.

Post-graduate demonstrations have been arranged by the Hereford Division, in connexion with the University of Bristol, at the Herefordshire General Hospital, at 3 p.m. on successive

Mondays, beginning October 9th. Members of the British Medical Association in adjoining counties who desire to attend should communicate with the Honorary Secretary of the Hereford Division, Dr. Herbert Jones, Tower Road, Hereford. The fee for the course is two guineas. The subjects are:

Modern Treatment of Diabetes, by Dr. J. A. Nixon, C.M.G.

Diagnosis and Treatment of Common Gastric Disorders, by Mr. A. Rendle Short, F.R.C.S.

Diagnostic Value of Cerebro-spinal Fluid Examinations, by Dr. G. Hadfield.

Diagnosis and Treatment of Toxæmia of Pregnancy, by Dr. Walter Swayne.

Diagnosis and Treatment of Gall-bladder Diseases, by Mr. T. Carwardine.

Normal and Acquired Resistance to Disease, by Professor Walker Hall.

Meetings of Branches and Divisions.

Kent Branch.

A MEETING of the Kent Branch was held on September 14th at the Kent and Canterbury Hospital, Canterbury, with Dr. PERCY LEWIS, President, in the chair, when a discussion took place on the work of maternity and child welfare clinics.

Maternity and Child Welfare Clinics.

Dr. ROWAN MCCOMBE, medical officer of health, Margate, said that by the medical inspection of schools which commenced in 1910 various defects were found which ought to be and could be remedied much earlier in life. It followed that if we wanted to raise a healthy race of people we must commence with the baby as soon as it was born, even with the parent, or better still, with the boy and girl during adolescence. At Margate the maternity and child welfare work, begun ten years ago in a very small way, had gradually evolved new ideas until they had gone as far as the Ministry of Health would permit. The necessities for the work were a sufficient number of health visitors, midwives, and voluntary workers, and a properly constructed building. Health visitors gave weekly lectures to mothers on such subjects as the importance of breast-feeding for babies, infantile diarrhœa, ante-natal hygiene, infantile and infectious diseases. Leaflets on these subjects were given free to the mothers and small books sold at cost price. At the end of the lecture the babies were weighed—healthy ones monthly, others weekly. A certain amount of emulation thus arose amongst the mothers. The medical officer of health saw all the babies as soon as practicable after they were born; if the baby were healthy in every way and it went on all right and gained weight steadily he did not see it again. The commonest trouble or ailment with which he had to deal was the feeding. They had to "ring the changes" and have the baby weighed at least once a week. They never allowed the mother to give up breast-feeding. He believed that 95 per cent. of mothers could breast-feed their babies if they only tried and were told the best way to go about it. Another trouble was a tight prepuce, which could generally be remedied with a probe and vaseline. They always had a certain number of babies with diarrhœa and constipation, and a few cases of rickets, but he only gave advice to the mother, with occasionally a few grey powders and cod-liver oil emulsion. When children were really ill he advised the parents to consult their own doctor. The health visitor assisted him at his consultations and visited the baby the next day and saw that his instructions were carried out. Two municipal midwives were employed in Margate, and they carried out the ante-natal visiting; but it was very seldom that he could get a prospective mother to come and see him, though he felt sure that by examination and proper advice much might be done to reduce the number of premature births and the infantile mortality. In addition they had a clothing stall and a bookstall, goods being sold at cost price. There was also a dinner fund, and tea was partly given. Dr. McCombe regarded the reduction in infant mortality during the last few years as chiefly due to this work.

Dr. F. WACHER, medical officer of health, Canterbury, said that the local doctors most readily co-operated in the work by giving lectures, and when necessary by admitting maternity cases to the hospital. He found that mothers' ideas as to the times to feed children often were so strange that he had drawn up a leaflet as a guide to them about feeding babies. He found citrated milk very useful, and added malt extract when the baby was two months old. He referred to the success he had had with some children left orphans at or soon after birth. He considered that the reduction in infantile mortality was largely a consequence of the work of these clinics.

Dr. CONSTANT PONDER, assistant county medical officer, Kent, described the development of the Kent infant welfare scheme. He said that the scheme operated in seventeen urban and twenty rural districts that did not adopt the Notification of Births Act. The nurse in charge was the health visitor; she also acted as tuberculosis and school nurse for her area, overlapping thus being avoided. The Kent scheme was largely concerned with small infant welfare centres in villages; the success of some of these centres, where the nurse, doctor, and voluntary helpers worked well together, was striking. Success or failure depended mainly on the nurse. The Kent centres were conducted on the usual lines, the doctor being a consultant. No treatment was given and cases of illness were referred to the patient's own doctor. The sale of artificial foods was discouraged as far as possible. The present-day insistence on economy was hindering the full development of the work, which was probably the most valuable branch of preventive medicine. He made an appeal for the co-operation and sympathy of the general practitioners in this important public health work.

Dr. SELBY (Teynham) considered that infant welfare centres were chiefly responsible for the reduction of infant deaths by about half and for the vast improvement in children's health. Dr. FERGUSON (Canterbury) said that ante-natal work was important, useful, and valuable, but he found it difficult to get a patient to come for examination. In his opinion the better feeding and clothing of children consequent on higher wages during and since the war was chiefly responsible for the improved health of children.

Dr. SCURFIELD (Folkestone) referred to the proper use of "altered cow's milk" in infant feeding, and drew upon his experiences at Sheffield. In his opinion the interest of competition excited by infant welfare centres and the knowledge by the mothers that there was a friend who would help them were of great value. Dr. EVANS (Herne Bay) said that tact on the part of the nurses and an agreeable personality in the health visitors would go a long way to give success; he found that citrated milk could not be prepared by many mothers, and what was needed was a simple "fool-proof" infants' food.

Dr. RENTON (Dartford) said there was one point not touched upon to which he should like to refer—namely, the suitability of the general practitioner for this work, which was, in fact, such as fell to his lot every day. In his opinion it would not be for the ultimate good of the public if the treatment of infants were taken from the general practitioner and handed over to a specialist class. Dr. H. M. RAVEN (Broadstairs) said that too much of the midwifery was done by midwives to the exclusion of the general practitioner. Dr. TYSON (Folkestone) urged that the general practitioner was specially fitted for this work, and should be more closely associated with it.

Subsequently Mr. BERESFORD JONES conducted the company over the new orthopaedic department of the Kent and Canterbury Hospital. He showed several patients under treatment, and also explained appliances which were used. He considered "re-education" the most important part of treatment.

Dr. F. WACHER afterwards entertained the members to tea.

British Guiana Branch.

A MEETING of the British Guiana Branch was held at the Public Hospital, Georgetown, on July 26th, when Dr. A. T. OZZARD was in the chair. The President welcomed Dr. P. J. Kelly, the newly appointed Surgeon General, who suitably replied. It was resolved to reopen the correspondence with the Government regarding the appointment of a special venereal disease medical officer and formation of a clinic.

The following cases were shown and discussed: (*a*) Three cases of rodent ulcer treated with zinc ionization, all recovering; (*b*) two cases of general œdema with albumin in urine treated with 1/6 grain doses of thyroid extract thrice daily, recovery in ten days; (*c*) case of gonorrhœal synovitis with septicæmia treated with vaccine; (*d*) three cases of neuro-syphilis with negative Wassermann blood test, but cerebro-spinal fluid strongly positive, all improving under intravenous injections of neo-salvarsan; (*e*) case of severe vomiting of pregnancy in which abortion was performed. A discussion followed regarding the treatment of such cases by psychotherapy.

A discussion took place on the treatment of eclampsia by veratrone and morphine, and figures were shown illustrating the large percentage of recoveries at the Public Hospital, Georgetown.

A further meeting was held on August 8th, under the chairmanship of Dr. A. T. OZZARD.

In reply to the letter from the Medical Secretary, dated July 11th, asking for the opinion of the Branch on certain points in the report by the Hon. E. F. L. Wood, M.P., Parliamentary Under-Secretary of State for the Colonies, on the condition of the Colonial Medical Services in the West Indies and British Guiana, it was resolved:

(1) That no benefit would be gained by British Guiana joining with the West Indian Islands in the formation of a unified West Indian Medical Service. (2) That there should be a minimum salary of £500, rising automatically to £700 by £25 per annum *with* private practice; this does not include special appointments—for example, Public Health, Bacteriologist. (3) To notify the parent Association that a special committee is sitting at present under the chairmanship of His Excellency the Governor; the findings of this committee regarding the reorganization of the Medical Service will be duly communicated.

Southern Branch.

A MEETING of the Southern Branch was held at the South-Western Hotel, Southampton, on September 28th, when Lieut.-Colonel A. C. STABLBERG, O.B.E. (D.C.M.S., Channel Islands area, Ministry of Pensions), President, was in the chair. After the usual business had been transacted, Mr. R. P. ROWLANDS, O.B.E., M.S., Surgeon to Guy's Hospital, gave an address on "Intestinal obstruction," which was followed by a discussion in which Mr. C. P. CHILDE (President-elect, British Medical Association, 1923) and Drs. PURVIS, ASTON KEY, BOSWORTH WRIGHT, LAMPLOUGH, BRISCOE, LOCKHART STEPHENS, STAMBERG, MACKEITH took part. The practical nature of the address called forth a most interesting and useful discussion. Several of the speakers called attention to the important part such addresses played in the work of the Association, and how much was lost by those members who do not take the trouble to attend meetings of their Branch or Division. A cordial vote of thanks to Mr. Rowlands was proposed by the President and carried with acclamation.

Surrey Branch: Croydon Division.

A meeting of the Croydon Division was held at the Croydon General Hospital on September 26th, with Dr. Genge in the chair.

Letters were read regarding the vacancy caused by the appointment of Dr. R. Veitch Clark as M.O.H. for Manchester. The Honorary Secretary (Dr. Scudamore) stated that he had personally delivered a letter to the Town Clerk asking if the Borough Council would be prepared to receive a deputation consisting of representatives of the British Medical Association and the Society of Medical Officers of Health to hear their views before advertising the vacancy and deciding on the terms of service.

The following resolution was passed:

That this meeting, in confirming the action of the Secretary in asking for a deputation, is of opinion that the condition of appointment of M.O.H. for Croydon should be such as to secure a man of the highest professional attainment and standing, and further, the meeting is of opinion that one of such a character is well worthy of a salary of £1,500 per annum.

In the event of a deputation being received the Chairman and Honorary Secretaries were appointed to attend.

It was referred to the Committee to arrange for meetings on the lines of those held last year, which had been so successful. The Representative gave an account of the Annual Representative Meeting in Glasgow.

Insurance.

CONFERENCE OF SCOTTISH INSURANCE COMMITTEES.

The tenth annual conference of the Scottish Association of Insurance Committees was held at Montrose on September 22nd, and was attended by 150 delegates from all parts of Scotland.

President's Address.

In his presidential address, Mr. John Grieve, chairman of the Glasgow Insurance Committee, said that, with regard to any new terms to be made on expiry of the existing contract of service, a number of medical practitioners seemed to think that the approved societies would endeavour to bring in terms similar to the old "club" rates paid by friendly societies. As a friendly society worker of over forty years' standing he sincerely hoped that the old conditions would be allowed to rest, as he did not think that any persons with a full knowledge of the facts would even suggest that the old "club" practice was equal to the medical service under the Insurance Acts as it existed to-day. As a branch secretary he could assure his audience that complaints against the doctors were much more prevalent then than now, and, he was confident, with much more reason. If an insurance practitioner conscientiously carried out his terms of service he was entitled to reasonable and just payment, but it was, of course, the business of insurance committees to see that as far as it was possible they got the service for which they were paying. In regard to the fixing of fair terms for the medical profession after 1923, he would suggest that whoever was consulted should be elected representatives and not a self-constituted or nominated body. In the early days of national insurance medical practitioners seemed to be under the impression that the representatives of approved societies or insurance committees were antagonistic to them, but he thought that the general consensus of opinion of medical practitioners who knew the inside workings of an insurance committee was that it dealt quite fairly with the doctors and the insured.

Medical Benefit.

Mr. Alexander Clark, clerk to the Aberdeen County Insurance Committee, said, in a paper on "Medical benefit," that national health insurance was instituted under conditions which were not favourable to its success. The medical profession, if not actually "commandeered," was, on the whole, unwilling, and many of the public were hostile. In regard to the charge that the present system carried with it a taint of cheapness and semi-charity, the assertion that because the employee paid only part of the premium the system carried with it a taint of semi-charity was almost an abuse of language. It was equally incorrect to say that it was cheap, for so far as it went the system was good, and on the average the doctor was paid for his services, at least as well as for attendance in his private practice for the same class of patients. So far as concerned the working of the system, there had been many complaints by insured persons against doctors and by doctors against insured persons. But the true test whether or not the service was giving satisfaction was to be found in the records of the Medical Service Subcommittee, the tribunal appointed to deal with all complaints, whether by the doctors or the insured persons, and judged by this standard the results could not be regarded as otherwise than highly satisfactory. So far as administration was concerned, he questioned if any material improvements in the present system were called for. No one had ever suggested that medical benefit was a perfect system, but such as it was the system had worked, on the whole, satisfactorily, and the conviction was growing strongly that it had in it the fundamentals of a good medical service.

Mr. A. Clark (Aberdeen) moved a resolution expressing the opinion that the system of medical benefit under the National Insurance Act afforded the basis for the provision of a complete medical service for the community, and urging upon the Scottish Board of Health and the Government to take action as soon as possible with a view to the provision of the auxiliary services recommended in the report of the Consultative Committee on Medical and Allied Services. Mr. James Wyllie, clerk to Ayr County Committee, in seconding, claimed that medical benefit had been a success so far, but the only trouble was that it had not gone far enough. The resolution was unanimously adopted.

LONDON INSURANCE COMMITTEE.

Limitation of Practitioners' Lists.—At the meeting of the London Insurance Committee on September 28th a subcommittee reported that it had had under consideration the possibility of a further limitation of the numbers of insured persons on the lists of practitioners. It did not regard it as desirable that the present figures (3,000 for a practitioner practising single-handed, 4,500 for a practitioner who has received permission to employ an assistant) should be regarded as permanent; a smaller number would be to the advantage of the insured. Information had been obtained from Insurance Committees for various county boroughs with populations of 100,000 or over, and in the vast majority of cases the maximum number was 3,000. At present, therefore, and in view of the fact that the matter properly fell within the province of the Allocation Committee, it did not feel able to make any recommendation, and the reference was accordingly discharged.

Range of Medical Service.—The Committee considered a resolution from the Lancashire Insurance Committee urging that representations be made to the Ministry of Health that the duty of deciding whether or not a particular operation was within the competence and skill of an ordinary general practitioner should be withdrawn from Insurance Committees. The Lancashire Committee made no suggestion as to the body which should deal with these cases, and the London Committee found itself unable to support the Lancashire opinion.

Half-yearly Transfers.—It was reported to the Committee that 3,422 persons had given notice of their desire to change their doctor for the current half-year, and that 302 had been removed from lists at the request of practitioners.

Conduct of Practitioners.—Following upon a complaint sent to the Ministry of Health by the Committee with regard to the conduct of a practitioner in the treatment of a case, the Ministry has held an inquiry and has found that the practitioner's conduct was quite inconsistent with the observance of a proper standard of medical service. In view of the fact that the inquiry had reference only to one case, and that general character was not called in question, the Ministry has decided not to remove the practitioner from the list; but £100 is to be withheld from the Exchequer grant in respect of medical benefit, this amount to be recovered from the practitioner by deduction from his remuneration, and the practitioner is also to pay the Committee's costs at the inquiry. Another case against a practitioner for alleged failure to exercise reasonable care in treatment gave rise to a long discussion in the Committee. The Medical Service Subcommittee brought forward a recommendation exonerating the practitioner, but reported that its members representing insured persons were unable to support the recommendation, which was arrived at on the advice of the medical members. After a debate which showed a sharp division of opinion among the medical members of the Committee, the recommendation was thrown out, and it was decided that the practitioner had failed to exercise reasonable care, and that the case must be brought to the attention of the Ministry of Health.

Correspondence.

Domiciliary Nursing of Insured Persons.

Sir,—I am directed by the Cheshire Insurance Committee to request that you will kindly permit the use of your valuable paper for the expression of its opinions and the conclusions at which it has arrived in connexion with the domiciliary nursing of insured persons. For some considerable time past its serious attention has been concentrated on this question, and during the current year a real attempt was made to promote a scheme in the county of Cheshire.

Briefly, the scheme provided for the services of nurses being made available to all insured persons entitled to medical benefit, irrespective of their right to participate in additional benefits out of "valuation surpluses" or otherwise; the cost of the scheme to be borne by contributions from approved societies.

It was further proposed that the cost of the administration of the scheme should be borne by the Insurance Committee, and should not be a charge upon the nursing services. It was proposed to utilize all existing nursing agencies in the carrying out of the scheme.

The result of the Committee's inquiries as to whether the approved societies having members in the area were prepared to contribute to such a scheme has not been sufficiently satisfactory as to justify the Insurance Committee in proceeding to put the scheme into operation. In many cases the approved society has stated that it would be quite prepared to contribute to the scheme, but inasmuch as in other parts of the country such schemes were not in operation, the insured persons in Cheshire would thereby have an undue advantage over their members in other parts of the country; they could not, therefore, see their way to contribute. This would appear to be the main difficulty which confronts approved societies

in the matter, and points to the necessity of inaugurating a system of nursing for insured persons, national in its character and application, as a solution of the problem.

In their report upon this matter the Association of Approved Societies, through their Nursing Subcommittee, so long ago as 1913 stated that

"ever since the Insurance Bill was introduced into Parliament discussions have taken place upon the question of supplementing medical and sickness benefits by a scheme of trained nursing, and that any scheme adopted must be a uniform one, and must be started upon a more permanent foundation than would be afforded by any local scheme adopted by one or more individual societies."

In 1914 Parliament provided a substantial grant in aid for this purpose, in respect of which, when introducing the matter the present Prime Minister stated:

"The Insurance Act has helped to make it clear that any system of doctoring is hopelessly inefficient which is not supplemented by a good system of nursing." He further stated "there are voluntary associations throughout the country doing admirable work, but they are inadequately financed."

Certain approved societies have already made arrangements with the Queen Victoria Jubilee Institute for Nurses for the provision of nursing to the members of such societies, but this is not in any sense of the term a national scheme.

The subject is one of vital importance to the health of the nation. The efforts of the medical practitioner supplemented by the pharmacist are very often rendered fruitless by the lack of trained nursing. Especially is this the case where the patient is a woman placed in circumstances where she is unable to obtain any help from outside, and is forced to rely upon her husband or young children to give effect to the doctor's instructions, either in the preparation of her food, medicine, or otherwise.

The medical profession readily acknowledge that in a very high percentage of cases the period of disability is unnecessarily prolonged by reason of the absence of the services of a trained nurse. As already expressed by a well-known member of the medical profession the ultimate success of National Health Insurance must rest upon the tripod—doctor, chemist, and nurse. The doctor and chemist have been provided, and it is essential to the complete success of the scheme that national nursing should immediately be forthcoming. It is held that it should be an integral part of medical benefit to which an insured person is entitled under the National Insurance Acts.

Any partial scheme relating to the members of only certain approved societies involves the societies, the nursing associations, and all concerned in additional work of discrimination between those entitled and others not so fortunate. It draws a distinction between insured persons which should not exist, having regard to the fact that no variations in rates of contributions under the National Insurance Acts is contingent thereupon.

It is hoped that the expression of these views through the columns of your valuable paper may concentrate public opinion upon a matter which has become urgently pressing, and it is hoped thereby to bring pressure to bear upon Government to induce it forthwith to go forward with the inauguration of a National System of Nursing which was considered so urgently necessary and desirable in 1914.—I am, etc.,

F. T. West,
Clerk to the Cheshire Insurance Committee.

Chester, Sept. 19th.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

The following notifications are announced by the Admiralty: Surgeon Commander E. D. J. O'Malley is placed on the retired list; Surgeon Commander F. Cock to the *Ark Royal*.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel M. Swabey retires on retired pay.

Major and Brevet Lieut.-Colonel W. F. Tyndale, C.M.G., D.S.O., relinquishes the temporary rank of Lieutenant-Colonel.

Major J. W. S. Seccombe, O.B.E., is placed on the half-pay list on account of ill health.

Major F. E. Rowan-Robinson is placed temporarily on the half-pay list on account of ill health.

Captain D. W. John, M.C., retires, receiving a gratuity, July 8th, 1922, and is granted the rank of Major (substituted for the notification in the *London Gazette*, July 7th, 1922).

Temporary Captain G. S. Ware relinquishes his commission and retains the rank of Captain.

ROYAL AIR FORCE MEDICAL SERVICE.

The following are granted short service commissions in the ranks stated, with effect from and with seniority of September 11th: Flight Lieutenant T. McClurkin, Flying Officer E. D. Gray.

G. S. Ware is granted a temporary commission as a Flight Lieutenant, with effect from and with seniority of September 11th.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The announcement regarding Major F. J. Green, M.C., which appeared in the *London Gazette* of September 15th, 1922, is cancelled.

Captain E. Osborne having attained the age limit is retired, and is granted the rank of Major.

Captain J. H. Robinson relinquishes his commission, and is granted the rank of Major.

Captain E. A. Mackenzie relinquishes his commission, and retains the rank of Captain.

The following officers having attained the age limit are retired, September 20th, 1921, and retain their rank except where otherwise stated: Captains J. P. Milton, C. H. Caldicott, M.B.E., H. C. Adams, O.B.E., and F. A. W. Drinkwater, and are granted the rank of Major, Captain J. Carroll.

G. F. Wilson to be Captain with pay and allowances as Lieutenant, July 30th, 1922 (substituted for notification in the *London Gazette* of September 19th, 1922).

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

The announcement regarding Lieut.-Colonel J. Miller, D.S.O., M.C., which appeared in the *London Gazette* of August 1st, 1922, is cancelled.

VACANCIES.

Aberdare Urban District Council.—Lady Assistant Medical Officer. Salary, £500 per annum.

Berks and Bucks Joint Sanatorium, Peppard Common.—Resident Assistant Medical Officer. Salary, £350 per annum, rising to £400.

Bournemouth: Royal National Sanatorium for Consumption and Diseases of the Chest.—Resident Medical Officer and Clinical Tuberculosis Officer. Salary as R.M.O., £350, rising to £450, and as Clinical Tuberculosis Officer an additional salary of £220, rising to £250.

Bridge of Weir: Consumption Sanatoria of Scotland.—Assistant Physician (male). Salary, £250.

Bristol Royal Infirmary.—(1) Honorary Ophthalmic Surgeon. (2) Medical Registrar. (3) Obstetric Registrar.

Chelmsford Borough.—Medical Officer of Health and School Medical Officer. Salary, £700 per annum.

Darlington General Hospital. — Junior House-Surgeon (male). Salary, £175 per annum.

East London Hospital for Children, Shadwell, E.—(1) Resident Medical Officer. (2) House-Surgeon. (3) House-Physician (males). Salary for (1) £200, and for (2) and (3) £125 per annum.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—(1) Surgeon to Out-patients. (2) Physician to Out-patients.

Hendon: Colindale Hospital. — Senior Assistant Medical Officer. Salary, £535, rising to £591, with bonus in addition.

Hong-Kong University. — Professor of Medicine. Salary, £830 per annum, rising to £1,000.

Hospital for Consumption and Diseases of the Chest, Brompton. —House-Physician. Honorarium £50 for six months.

Hospital for Sick Children, Great Ormond Street, W.C.—(1) House-Surgeon. (2) House-Physician and Assistant Casualty Officer. (3) House-Physician. Salary, £50 each for six months.

Hull Royal Infirmary.—Honorary Radiologist.

Italian Hospital, Queen Square, W.C.—Honorary Surgeon for the Throat, Nose, and Ear Department.

Manchester City.—Second and Third Assistant Medical Officers at the Monsall Fever Hospital. Salary, £300 and £250 per annum respectively and bonus.

Margate: Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Surgeon. Salary, £200 per annum.

Metropolitan Asylums Board. — Medical Superintendent at the Leavesden Mental Hospital, King's Langley. Salary, £800 per annum, rising to £950, with unfurnished house and bonus.

Newcastle-upon-Tyne: Royal Victoria Infirmary.—(1) Four House-Physicians. (2) six House-Surgeons. (3) Two House-Surgeons to Accident Department. (4) House-Surgeon to Throat, Ear, and Eye Departments. (5) House-Surgeon to Gynaecological Department. (6) House-Surgeon to the Skin and Venereal Departments. (7) House-Surgeon to Out-patient Dressing Department. Remuneration at the rate of £50 per annum each, except for (7), which is £100 per annum.

Northampton: St. Andrew's Hospital for Mental Diseases. — Second Assistant Medical Officer (male). Salary, £400 per annum, rising to £450.

Paddington Green Children's Hospital. — (1) House-Physician. (2) House-Surgeon. Salary at the rate of £150 per annum each.

Plymouth: South Devon and East Cornwall Hospital.—Male House-Surgeon. Salary, £200.

Poplar Borough.—Assistant Tuberculosis Officer. Salary, £500 per annum, rising to £600.

Prince of Wales General Hospital, Tottenham, N.—Honorary Anaesthetist. Honorarium £20 per annum.

Queen's Hospital for Children, Hackney Road, E.—(1) House-Surgeon; (2) Casualty House-Surgeon. (3) Two House-Physicians. (4) Assistant Casualty Surgeon. Salary, £100 per annum each.

Royal Free Hospital, Gray's Inn Road, W.C. — Female Clinical Assistant (medical).

Salford Union Infirmary.—Second Resident Assistant Medical Officer. Salary, £350 per annum, rising to £400.

Seamen's Hospital Society.—(1) Medical Superintendent of King George's Sanatorium for Sailors, Bramshott. (2) House-Surgeon at the Albert Dock Hospital. Salary, £600 and £150 per annum respectively.

University College Hospital, Gower Street, W.C.—Second Clinical Assistant in the Child Welfare Department.

WAKEFIELD: COUNTY COUNCIL OF WEST RIDING OF YORKSHIRE.—Chief Tuberculosis Officer. Salary, £750 per annum, rising to £800.

WALTHAM: HOLY CROSS URBAN DISTRICT COUNCIL.—Medical Officer of Health. Salary, £100 per annum.

CERTIFYING FACTORY SURGEONS.—The appointment of certifying factory surgeon at Meriden (Warwick) is vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

ADDENBROOKE, R. G., M.R.C.S., L.R.C.P.Lond., Certifying Factory Surgeon for the Cleobury Mortimer District, co. Salop.

BAGULEY, George N., M.B., B.S.Lond., Medical Superintendent Derby County Asylum, Mickleover, vice Dr. M. L. Rowan.

HANCOCK, Basil J., M.R.C.S., L.R.C.P., House-Surgeon to the General Hospital, Tunbridge Wells.

HARRIS, W. T. J., M.B., Ch.M., District Resident Medical Officer at Queen Charlotte's Lying-in Hospital, Marylebone Road, N.W.

EDINBURGH ROYAL INFIRMARY.—Resident House-Physicians: E. Bulmer, M.B., Ch.B., to Professor Gulland; A. M'Farlane, M.B., Ch.B., to Dr. Fleming; D. T. M'Donald, M.B., Ch.B., to Dr. Bramwell; N. S. Craig, M.B., Ch.B., to Professor Meakins; J. C. Moir, M.B., Ch.B., to Dr. Matthew; J. S. Hovell, M.B., Ch.B., to Dr. W. T. Ritchie. Resident House-Surgeons: C. M. Rautenbach, M.B., Ch.B., to Sir David Wallace; W. M. Hyslop, M.B., Ch.B., to Professor Thomson; G. S. Scott, M.B., Ch.B., to Mr. Miles; T. M'W. Millar, M.B., Ch.B., to Mr. Dowden; H. K. Corkill, M.B., Ch.B., to Professor Sir Harold Stiles; I. D. Stronach, M.B., Ch.B., to Mr. Chiene; E. C. Fahmy, M.B., Ch.B., to Dr. Haig Ferguson; W. M. Robb, M.B., Ch.B., to Dr. Fordyce; G. D. Steven, M.B., Ch.B., and P. W. Tait, M.B., Ch.B., to Mr. Jardine, in the surgical out-patient department. Non-Resident House-Surgeon: Miss Agnes G. Brough, M.B., Ch.B., to Mr. J. D. Lithgow. Clinical Assistants: R. J. O. Taylor, M.B., Ch.B., to Mr. Lees; and Miss Agnes B. M'Gregor, M.B., Ch.B., D.P.H., to Mr. J. D. Lithgow. Junior Clinical Assistants: D. A. D. Bannerman, M.B., Ch.B., to Dr. Sinclair; J. Martin, M.B., Ch.B., to Dr. Sinclair; and Miss A. M. Williams, M.B., Ch.B., to Dr. Sinclair.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer, Barnes Convalescent Hospital: H. Stafford, M.B., Ch.B.Manch. Assistant Director of the Clinical Laboratory: Miss A. E. Somerford, M.B., Ch.B.Manch.

DIARY OF SOCIETIES AND LECTURES.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Fri., 5 p.m., Museum Demonstration by Sir Arthur Keith. Specimens illustrating the effects of castration in man.

ROYAL SOCIETY OF MEDICINE.—*War Section:* Royal Army Medical College, Millbank, S.W.1., Monday, 4.30 p.m., Tea in the Officers' Mess, and visitors will be welcomed, whether members of the Section or not. 5 p.m., Presidential Address by Lieut.-General Sir John Goodwin, D.G., A.M.S. The laboratories will be open after the address, when it is hoped to demonstrate specimens of interest. *Section of Therapeutics and Pharmacology:* Tues., 4.30 p.m., Presidential Address, Dr. W. Langdon Brown: The Problems of Asthma; Dr. T. Izod Bennett: The Modification of Gastric Function by Means of Drugs. *Section of Neurology:* Thurs., 8.30 p.m., Presidential Address, Dr. Wilfred Harris: Toxic Polyneuritis. *Clinical Section:* Fri., 5 p.m., Cases. *Section of Ophthalmology:* Fri., 8 p.m., Cases. Mr. Williamson-Noble will exhibit a plain glass retinoscope. 8.30 p.m., Presidential Address by Mr. A. L. Whitehead; Mr. N. Bishop Harman: A Standard of Vision for Scholars and Teachers in Council Schools.

ST. JOHN'S HOSPITAL, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture, Dr. W. Knowsley Sibley: General Principles of Treatment.

SOCIETY FOR THE STUDY OF INEBRIETY, 11, Chandos Street, W.1.—Tues., 4 p.m., Colonel L. W. Harrison, D.S.O.: The Relation of Alcoholism to Venereal Disease.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—Wed., 5 p.m., Sir James Galloway: Hodgkin's Disease and Similar Unexplained Maladies (lantern illustrations).

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 3 p.m., Dr. J. A. Nixon, C.M.G.: Modern Treatment of Diabetes.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—Thurs., 4 p.m., Dr. Cockayne: Asthma.

LONDON LOCK HOSPITAL (91, Dean Street, W.1).—Tues., 2.30 p.m., Mr. J. E. R. McDonagh: Complications of Gonorrhœa. Wed., 5 p.m., Mr. F. Juler: Syphilitic Affections of the Fundus Oculi. Thurs., 5.30 p.m., Mr. Swift Joly: Acute Gonorrhœa in the Male. Fri., 4 p.m., Mr. Johnston Abraham: Gonorrhœa in the Female. (283, Harrow Road, W.9.)—Wed., Mr. Ernest Lane: Treatment of Syphilis by Tréponal, the Arsenical Compounds, and Intravenous Cyanide of Mercury.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Mr. J. Howson Ray: Tumours of the Breast. Fri., 4.15 p.m., Dr. E. S. Reynolds: Epilepsy.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Mon., 3.0 p.m., Dr. James Taylor: Clinical Lecture. Tues., 3.30 p.m., Dr. Risien Russell: Paralysis Agitans. Thurs., 3.30 p.m., Dr. Kinnier Wilson: Pituitary Disorders. Fri., 3.30 p.m., Mr. Scott: Aural Vertigo. Operations, Tues. and Fri., 9 a.m.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.1.—Dr. Janie Pritchard: Infant and Child Welfare. Mon., 6 p.m., How to Conduct an Infant Consultation, etc. Thurs., 6 p.m., Breast Feeding.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, ST. JAMES'S HOSPITAL, Queseley Road, Balham.—Wed., 4.30 p.m., Introductory Lecture of the Autumn Session. Sir Humphry Rolleston: Functions of the Liver.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 5 p.m., Sir Charles Ballance: Opening Lecture, Some Surgical Cases. Tues., 4.30 p.m., Dr. Burrell: Vital Capacity. Wed., 4.30 p.m., Dr. Burnford: Applied Pathology in Diagnosis. Thurs., 4.30 p.m., Dr. Snowden: Conversion Hysteria. Daily, 10 a.m. to 6 p.m., Saturdays, 10 a.m. to 1 p.m.: In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

OCTOBER.

6 Fri. London: Dominions Committee, 2.30 p.m.
South Essex Division: Victoria Hospital, Southend-on-Sea, 3.15 p.m.
South Suffolk Division: Council Chamber, County Hall, Ipswich, 3.30 p.m.
7 Sat. Harrogate Division: B.M.A. lecture by Dr. Gordon Holmes: Some of the Clinical Manifestations of Tubes (illustrated by lantern slides), at Y.M.C.A., 5 p.m.
9 Mon. Hereford Division: Post-graduate Demonstration, Hereford-shire General Hospital, 3 p.m.
10 Tues. City Division: Metropolitan Hospital, Kingsland Road, E.8, 9.15 p.m.
Coventry Division: Annual Dinner, Masonic Hall, Little Park Street, Coventry, 7.30 p.m.
Shropshire and Mid-Wales Branch, Autumn Meeting, Royal Salop Infirmary, 3.30 p.m.: Council Meeting, 3 p.m.; Annual Dinner, Masonic Hall, College Hill, 6 p.m.
11 Wed. Dorset and West Hants Branch, Royal Bath Hotel, Bourne-mouth. Luncheon, 1.30 p.m.; Meeting, 3 p.m.
East Hertfordshire Division: County Hospital, Hertford, 5 p.m.
London: Finance Committee, 2.30 p.m.
13 Fri. Border Counties Branch, Dumfries and Galloway Royal Infirmary, Dumfries, 3 p.m.: Branch Council, 2.45 p.m.
Leicester and Rutland Division: Medical Club, Bond Street, Leicester, 4 p.m. Address by Deputy Medical Secretary on the Future of the National Health Insurance System.
South Essex Division: Annual Dinner, Palace Hotel, Southend-on-Sea.
17 Tues. North Carnarvonshire and Anglesey Division: Clinical Meeting, Metropole Hotel, Colwyn Bay, 3.45 p.m.
18 Wed. South Middlesex Division: St. John's Hospital, Twickenham, 8.15 p.m.
19 Thurs. Birmingham Branch, Annual Meeting, Medical Institute, 3.30 p.m.
Bournemouth Division: B.M.A. lecture by Dr. J. A. Ryle, Darlington Division.
20 Fri. London: Central Hall, Westminster: Annual Conference of Local Medical and Panel Committees at 10 a.m.
24 Tues. London: Organization of Medical Students Subcommittee, 2.30 p.m.
25 Wed. London: **Council**, 10 a.m. Council Dinner, 7 for 7.30 p.m.
27 Fri. Suffolk Branch, Ipswich. Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its failings, its achievements, and its possibilities." Paper by Sir Henry Gauvain.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is **os.**, *which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

BUCHAN.—On 1st October, at 3:6, Brownhill Road, Catford, London, S.E.6, the wife of C. J. B. Buchan, M.B., Ch.B.Glas.—a son.

COKKINIS.—On September 30th, at Cranbrook Road, Ilford, to Enid, the wife of A. J. Cokkinis, M.B., B.S.Lond., F.R.C.S.Eng., of a daughter.

MARRIAGE.

GORST—ILLINGWORTH.—September 30th, at the Parish Church, Shotwick, by the Rev. F. R. Wansborough, B.D., Philip Eldon Gorst, M.D., Ch.B., M.R.C.S., L.R.C.P., son of Mrs. Gorst and the late Philip T. Gorst, of Liverpool, to Mary Ethel Illingworth, M.D., Ch.B., M.R.C.S., L.R.C.P., B.Sc., D.P.H., younger daughter of Mrs. Illingworth and the late Alfred Illingworth, of Oxton.

DEATHS.

GOODLIFFE.—At Kingston, Jamaica, on the 26th September, John Henry Goodliffe, M.D., formerly M.O. Uganda Protectorate.

ROSE.—At Aylesbury, on September 19th, Octavia, widow of the late Alfred Rose, of Maida Hill, W., aged 80 years.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, OCTOBER 14TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION.	PAGE
CURRENT NOTES:	
Council Dinner	141
Dangerous Drugs Act, 1920	141
Council Election	141
The Fund for Russian Doctors	141
ASSOCIATION NOTICES:	
Election of Members of Council, 1923–24	142
Branch and Division Meetings to be held	142

	PAGE
NATIONAL INSURANCE:	
Medical Practitioners and Approved Societies	143
VACANCIES	143
DIARY OF SOCIETIES AND LECTURES	144
Post-Graduate Courses and Lectures	144
ASSOCIATION INTELLIGENCE	144
DIARY OF THE ASSOCIATION	144
BIRTHS, MARRIAGES, AND DEATHS	144

British Medical Association.

CURRENT NOTES.

Council Dinner.

Members will be interested to hear that among those guests who have up to the present accepted the invitation of the Council to dinner on Wednesday, October 25th, at the Grand Hotel, are: The Minister of Health, the Home Secretary, the Postmaster-General, the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the Master of the Apothecaries' Society, the President of the Royal Society of Medicine, the President of the Medical Women's Federation, the Chief Medical Commissioner, Board of Control, the Director-General, R.A.F.M.S., the Past President of the Society of Medical Officers of Health, Sir Arthur Robinson (Secretary of the Ministry of Health), the Secretary of the Pharmaceutical Society, and several medical members of Parliament. The dinner is open to members of the Association and their guests, who may include ladies. As space is limited early application should be made for tickets (10s. 6d.) to the Financial Secretary, 429, Strand, W.C.2.

Dangerous Drugs Act, 1920.

The following announcement is sent to us for publication by the Home Office. We repeat our opinion that the new provision numbered "1" will prove as futile as it is vexatious.

"The Home Secretary gives notice that he has made new Regulations under the Dangerous Drugs Act, 1920, amending the Regulations already in force. These amending Regulations come into force forthwith. Copies may be obtained through any bookseller or direct from H.M. Stationery Office.

"The object of these amending Regulations is to correct certain defects which have been shown to exist in the original Regulations of May 20th, 1921. Thus:

"1. The persons authorized to give prescriptions for dangerous drugs may no longer prescribe *for themselves*. This Regulation, which has the concurrence of the General Medical Council, is made because several cases have recently come to the Secretary of State's notice in which medical men who were victims of the drug habit procured considerable quantities of cocaine and morphine by giving prescriptions made out to themselves. It will not of course in any way affect a doctor's existing powers of procuring the drugs for use in the practice of his profession.

"2. It is made an offence to *attempt to obtain* the drugs to which the Act applies. It is intended to deal with the case of a person who tries to obtain drugs from a chemist by misrepresentation even though the chemist discovers the fraud before actually parting with the drugs.

"3. Persons dealing in the drugs are required to preserve for two years all prescriptions, records, etc., which the Act and Regulations direct them to keep."

Council Election.

The voting for the vacancy on the Council among the "12" by the Representatives of the grouped constituencies in the Glasgow and West of Scotland, Border Counties and Stirling Group of Branches, for which there were three candidates, namely, Dr. Joseph Hunter of Dumfries, Dr. David McKail and Dr. J. McGregor Robertson of Glasgow, has resulted in the election of Dr. J. McGregor Robertson.

The voting for the vacancy on the Council among the "24" by the members comprised in the group formed by the Glasgow Central, Glasgow Eastern, Glasgow North-Western, and Glasgow Southern Divisions of the Glasgow and South-Western Branch, for which there were two candidates, namely, Drs. G. A. Allan and C. E. Robertson, has resulted in the election of Dr. G. A. Allan. Of the 535 voting papers issued to members, 260 were returned, of which 8 were spoiled. Of the remaining 252 valid papers 171 were in favour of Dr. Allan and 81 were in favour of Dr. Robertson.

The Fund for Russian Doctors.

Our readers will remember that the Council of the British Medical Association on June 14th had before it an appeal from the Pirogoff Medical Society for help for starving medical men and their families in Russia. It was unanimously resolved to raise a fund for the sending of food parcels to those in greatest need. An urgent appeal was issued to every member of the Association asking for a subscription of 5s., as it was felt that limitation to a small sum would go far to secure an immediate and widespread response. The money received in response (£1,605) has been used in the dispatch of food parcels to doctors and their families in Russia through the American Relief Administration. Several letters of thanks from individual Russian doctors have been received by the Association, and the Medical Secretary will make a general report on the matter to the Council at its next meeting. In the meanwhile we print the translation of a letter, dated September 3rd, 1922, addressed to the British Medical Association, with a request for publication, by the executive of the Pirogoff Medical Society of Moscow. It was forwarded by Professor Korenchevsky of the Lister Institute, who states that the Russian doctors are most anxious that this expression of gratitude should reach their generous colleagues in this country.

Moscow, September 3rd, 1922.

The Executive of the Pirogoff Russian Medical Society asks British medical men to accept the expression of its deep gratitude for their valuable help in the form of forty-nine food parcels sent to families of Russian doctors in distress and to invalid and aged medical men according to the list of names supplied by the Secretary of our Society, Dr. D. N. Zhbankoff. The difficult conditions in which Russian medical men and their families find themselves are the result of the terrible famine in Russia coupled with the enormously high mortality, among Russian doctors, from infectious diseases, and particularly from spotted typhus. Exact data as to the number of doctors who succumbed in Russia during the last few years are not yet available, but suffice it to say that in one Tula district during the four years 1917–20 sixty-six doctors died, of whom 44 to 66 per cent. fell victims of spotted typhus. In one year, 1919, which was particularly bad in regard to spotted typhus, twenty-six doctors died from that disease—that is, 12 per cent. of the total number of doctors in that district. Information reaching us from other parts of Russia tells the same sad tale; it is intended to collect exact data covering the whole country.

The Executive has appointed a Special Committee for the purpose of collecting information about families of medical men in distress; the Committee is trying to help them out of contributions sent in by members of the Society, and at the present time renders regular assistance to about a hundred families and invalid and aged medical men, but this is only a small part of those in need of help.

In face of the great dearth of foodstuffs in Russia your help in the form of food parcels greatly relieves a family for two to three months.

As regards the future, the position will hardly improve after the hardships of last year, and in view of the bad harvest in some localities this year, also in view of the comparatively poor yield of the crops even in districts where the harvest is good, in consequence of a considerable reduction of the area under cultivation and the decrease by over 50 per cent. of the live stock. It may be mentioned that the Pirogoff Medical Society never spared any efforts to help the famine-stricken peasant population, and since 1899 in every case of failure of the harvest it used to raise funds and to send medical and provisioning parties to the affected localities where the needy population was looked after medically and fed at hospitals, feeding centres, soup kitchens, crèches, etc., opened by the Society. To our greatest regret the Pirogoff Society was unable, for reasons beyond its control, to help the famine-stricken population in 1921–22, and had to confine its activities to the care for bereaved families of medical men, to aged and invalid doctors.

If the British Medical Association will also in future be able to send food to those whose names were already given as well as to doctors from whom fresh applications are being received, the Executive of the Pirogoff Society would suggest, as the most expedient and convenient way, that the food parcels should be sent through the Moscow organization of the American Relief Administration—namely, that part of the parcels should go to the Moscow office of the A.R.A. (corner of Neglinnaya and Trubnaya Ploshchadi) for distribution among the needy Moscow doctors, and the greater part to the Chief Office of the Food Remittances Department of the A.R.A. (Moscow, Spiridonovka, No. 17) for dispatch to provincial towns from which applications for help are received. If this suggestion is adopted, then it will also be necessary for the British Medical Association to inform the two Moscow offices of the A.R.A. just mentioned that the parcels intended for the Pirogoff Medical Society should be distributed in Moscow and dispatched to the provinces at the indication of the Executive of the Society or its Secretary.

The executive of the Pirogoff Society begs once again to convey its sincere thanks to the British Medical Association and to Dr. A. Cox, who did so much in the matter, for the assistance rendered to Russian doctors, which shows that the spiritual solidarity of medical men stands high above frontiers and national barriers; perhaps there will be a time when Russian medical men will have an opportunity to be of service to their British colleagues. Long live the British Medical Association, and may soon a *Medical Association of the World* become a reality in fulfilment of the great words: "There shall be neither Hellene nor Hebrew." May a real brotherhood of nations be established, of which our teacher, N. I. Pirogoff, whose name our Society bears, was such a prominent champion.

The original is signed by the President and Secretary of the Pirogoff Russian Medical Society.

Association Notices.

ELECTION OF MEMBERS OF COUNCIL, 1923–24, BY BRANCHES OUTSIDE THE UNITED KINGDOM.

NOTICE is hereby given that, in accordance with By-law 54, ***Nominations*** of Candidates for election as Members of Council by certain of the grouped Branches outside the United Kingdom (please see below) for a period of either one, two, or three years, as prescribed by By-law 57 (2), ***must be forwarded*** in writing so as to reach the Medical Secretary ***on or before February 10th, 1923.***

Nominations must be signed by not less than three Members of any Branch in the group, and must be in the form prescribed below or in one to the like effect.

The elections, where contests occur, will be by voting papers, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each member of each Branch in the group.

NOMINATION FORM.

By not less than Three Members of the Grouped Branches.

We, the undersigned, hereby nominate .....

of .....[*Full name and address to be given*]

for election by the [*Please state the names of the Branches in the group*] Branches as a Member of the Council of the Association for the period .....

Signatures and addresses of Nominators.....

Branches.....

Date ..... 19.....

In or about the second week in June, 1923, a notice of the result of the elections will be published in the JOURNAL.

In the case of the African Branches no nomination is required, the present Representative for that group having been appointed for the three years 1922–25.

GROUPING (ABOVE REFERRED TO) OF BRANCHES NOT IN THE UNITED KINGDOM FOR REPRESENTATION ON THE COUNCIL OF THE ASSOCIATION, 1923–24.

	Members of Council.
(I) South Australian, Tasmanian, Victorian, Western Australian	1
(II) New South Wales, Queensland	1
(III) New Zealand, Fiji	1
(IV) Barbados, Bermuda, British Guiana, Grenada, Halifax (Nova Scotia), Jamaica, Leeward Islands, Montreal, St. John (New Brunswick), Saskatchewan, Toronto, Trinidad and Tobago	1
(V) Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, North Bengal, Punjab, South Indian and Madras ...	1
(VI) Hong Kong and China, Malaya	1
(VII) Border (South Africa), Cape of Good Hope (Eastern), Cape of Good Hope (Western), East Africa, Egyptian, Gibraltar, Griqualand West, Malta, Natal Coastal, Natal Inland, Nyasaland, Orange Free State and Basutoland, Pretoria, Rhodesia, Sierra Leone, Uganda, Witwatersrand, Zanzibar (**no vacancy**)	1

ALFRED COX,
Medical Secretary.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH.—The annual meeting of the Birmingham Branch will take place at the Medical Institute on Thursday, October 19th, at 3.30 p.m. Business: To receive the annual reports. To elect officers for the ensuing session. The President, Mr. Albert Lucas, F.R.C.S., will deliver his inaugural address on the hospital policy of the Association. Tea will be provided at the close of the meeting by the President.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION.—A meeting of the Bournemouth Division will be held at Bournemouth on Thursday, October 19th, when a British Medical Association lecture will be delivered by Dr. J. A. Ryle.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—The following is the programme of meetings arranged by the City Division for 1922-23:—Tues., Nov. 14th, 9.15-9.30 p.m., Metropolitan Hospital, Mr. Ernest Miles: Lantern lecture on Cancer of the rectum. Thurs., Nov. 30th: Annual Dinner, Abercorn Rooms, Great Eastern Hotel, Liverpool Street, 7.15 p.m. Tues., Dec. 12th: General Meeting. Thurs., Dec. 14th: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m. Jan. 9th, 1923: British Medical Association lecture (lantern) by Sir Henry Gauvain on The utilization of natural aids of cure in the treatment of surgical tuberculosis. Feb. 15th: Paper by Dr. W. Langdon Brown. Feb. 15th: Dinner Dance in Abercorn Rooms, 7.15 p.m. to 1.30 a.m. March 1st: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m.; fancy dress optional. March 15th: General Meeting. Paper on Plastic surgery and results obtained, illustrated by lantern slides, by Mr. H. D. Gillies. April 10th: Paper by Dr. Berrard Hart. May 8th: Pathological specimens by Dr. T. H. G. Shore, Pathologist to St. Bartholomew's Hospital, lasting one hour; business after. June 12th: Annual General Meeting. July 10th: General Meeting. A clinical afternoon will be held during the session by Dr. W. Brander, at the Hackney Infirmary, and it is hoped to arrange for one at the Queen Alexandra Hospital for Children, Hackney Road.

METROPOLITAN COUNTIES BRANCH: SOUTH MIDDLESEX DIVISION.—The following programme has been arranged for 1922–23, the meetings to take place at St. John's Hospital, Twickenham, at 8.15 p.m.:—Wednesday, October 18th: Paper by Mr. Kenneth Walker, F.R.C.S., on Haematuria. Wednesday, November 15th: General business; discussions on (1) Applied immunity, to be opened by Dr. E. G. Perodeau; (2) Sciatica, to be opened by Dr. P. W. L. Camps; (3) Medical fees, to be opened by Dr. J. C. Scott. Wednesday, February 21st, 1923: Paper by Dr. T. Watts Eden, Obstetric Physician to Charing Cross Hospital. Wednesday, March 21st: General business; discussions on (1) Gout and rheumatism, to be opened by Dr. G. S. Ewen; (2) Asepsis in obstetrics, to be opened by Dr. A. P. Yonge; (3) Colds, to be opened by Dr. C. E. E. Herington. Wednesday, April 18th: Paper by Dr. G. H. Dupont, M.O.H. Twickenham Urban District Council. Points of contact between the general practitioner and local public health authorities. Wednesday, May 16th: Annual general meeting. A popular lecture entitled "Is industrial unrest a symptom of ill health?" will be given by Sir Kenneth Goadby in the lecture hall of the Public Library early in 1923.

METROPOLITAN COUNTIES BRANCH: STRATFORD DIVISION.—The Stratford Division has arranged a programme of scientific meetings for the first half of the winter session. On October 17th, at 9.15 p.m., Dr. Cecil Wall will open a discussion on The treatment of asthma and bronchitis; Dr. Russell Andrews will lecture on Dysmenorrhœa on November 21st, at 9.15 p.m.; and Mr. A. J. Couzens, F.R.C.S., has arranged for a Clinical Meeting at Queen Mary's Hospital, Stratford, on Tuesday, December 5th, at 3.30 p.m.

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.—A meeting of the Willesden Division will be held on Wednesday, October 18th, at 9 p.m., at the Edinburgh Club, 17, Shoot-up Hill, N.W.10, in the hall kindly lent by the members of the club. Mr. F. D. Saner will read a paper on The chronic abdomen.

MIDLAND BRANCH: CHESTERFIELD DIVISION.—A special general meeting of the Chesterfield Division will be held at the Chesterfield Hospital on Friday, October 20th, at 3 p.m., to consider and, if approved by a three-fourths majority of those present and voting,

pass, without alteration and without amendment, the following resolutions, which were adopted at a special general meeting on April 4th, 1921:

1. That in the opinion of the Chesterfield Division no medical practitioner within the area of the Division should hold any colliery appointments for medical attendance on the dependants of miners at a lower rate of remuneration than a family rate of 7ls. 8d. per annum, or such a flat rate per worker as would be its equivalent.
2. That in the opinion of the Chesterfield Division no medical practitioner within the area of the Division should hold any private family club at a lower rate of remuneration than 13s. per annum for a wife alone; or 25s. per family, to include all children up to 16 years of age, but not to include aged dependants.
3. That in the opinion of the Chesterfield Division no medical practitioner within the area of the Division should hold any friendly society appointment for medical attendance on adult uninsured members at a rate less than 11s. without, or 13s. with, medicine per annum; or for medical attendance on juveniles at a less rate than 8s. per annum.

North of England Branch: Darlington Division.—The following is the programme arranged for 1922-23:—October 19th: Mr. Hill, M.R.C.V.S., Intercommunicable disease of man and beast. November 16th: Paper by Mr. G. Grey Turner. December 7th: Dr. Wells Patterson, Thyroid gland in health and disease. January 18th, 1923: Mr. R. J. Willan, Senile diseases of prostate gland. February 15th: Dr. W. E. Hume, Heart disease. March 15th: Dr. Mostyn, M.O.H., Development of Darlington from public health point of view. April 19th: Dr. E. Farquhar Murray, Gynecology in general practice. May 10th: Mr. W. F. Wilson, Common diseases of ear, nose, and throat. Papers on Pyorrhoea, by Mr. Hamilton, and on Some aspects of school dental work, by Mr. Horsley, will also be read on dates to be arranged. Members of the Veterinary Association are invited to be present and to take part in the discussion on Mr. Hill's paper, and the presence of members of the British Dental Association is invited at Messrs. Hamilton and Horsley's papers.

North Wales Branch: North Carnarvonshire and Anglesey Division.—A clinical meeting of the North Carnarvonshire and Anglesey Division will be held at the Metropole Hotel, Colwyn Bay, on Tuesday, October 17th, at 3.45 p.m. The Colwyn Bay Medical Society invites members of the Division, and is making arrangements to entertain them. The following agenda has been arranged: (1) The diagnostic methods in the x-ray examination of chests, with particulars of several cases shown by Drs. Lord and Nuttall. (2) Some further experiences of the treatment of fractures by the Lane's boits and screws, by Dr. A. N. Leeming. (3) A demonstration of Shipway's anaesthesia, by Dr. Eric Lightwood. (4) A comparison of the various operative measures in the treatment of prolapse of the uterus, by Dr. W. E. Huff-Hewitt. Members who propose to attend are requested to notify Dr. J. R. Prytherch, Honorary Secretary, on or before October 10th, so that the Colwyn Bay Medical Society may know how many to expect. Fast train from Bangor 2.51 p.m. Return from Colwyn Bay 6.0 or 7.35 p.m.

Suffolk Branch.—A meeting of the Suffolk Branch will be held at Ipswich on Friday, October 27th, when an address will be delivered by Dr. G. C. Anderson, Deputy Medical Secretary, on "The British Medical Association—its failings, its achievements, and its possibilities." Sir Henry Gauvain will also read a paper.

Sussex Branch: Brighton Division.—*List of Clinical Meetings:* October 19th, 1922, Royal Sussex County Hospital; November 16th, Children's Hospital; December 14th, Royal Sussex County Hospital. January 18th, 1923, Lady Chichester Hospital; February 15th, Royal Sussex County Hospital; March 15th, Eye Hospital; April 19th, Royal Sussex County Hospital; May 17th, Children's Hospital; June 21st, Royal Sussex County Hospital

Insurance.

MEDICAL PRACTITIONERS AND APPROVED SOCIETIES.

The following is an extract from the speech of Dr. Ridley Bailey at the annual dinner of the Coventry Division on October 10th. Dr. Ridley Bailey, who was the guest of the Division, responded to the toast of the British Medical Association.

"It was my duty last Friday to attend the annual meeting in London of the Association of Insurance Committees. I had, in my absence, been appointed by the Staffordshire Insurance Committee as one of the four representatives of that large county. Nothing impressed me so much as the feeling, manifested among nearly all sections of the meeting from the President (Sir Alfred Warren, M.P.) downwards, of antagonism to the medical profession. The President, in his address, definitely claimed the right of the Association and of the approved societies to have, in 1923, a share in determining the amount of remuneration and the conditions of service of all panel doctors. He asserted, and his remarks were received with applause, that panel patients got much worse treatment now than with the Friendly Societies in former days.

"Later in the day a member of the Conference actually proposed that the regional medical officers should have the right to visit practitioners in their surgeries during consulting hours, be present at the examination of their patients, and scrutinize the prescriptions they gave. Though this motion was defeated, it received very large support.

"The Executive Council's report contained the following clause:

"'The Council have also considered the report of the deputation of medical practitioners to Sir Arthur Robinson, Secretary to the Ministry of Health, and a resolution from the Federation Executive Committee of the English, Scottish, and Welsh Associations of Insurance Committees expressing the opinion that Insurance Committees, as well as approved societies, should confer with the doctors in arranging rates of remuneration, etc., after 1923, and recommending that arrangements be made for a joint meeting of the Federation Committee, the Executive Council of the National Association of Insurance Committees, and the Approved Societies' Consultative Council. They have taken preliminary steps with a view to arranging for a conference with representatives of approved societies to consider the question of negotiations with regard to the terms and conditions of service (including the remuneration of insurance practitioners).'

"'When this clause was submitted for adoption by the Conference I deemed it my duty to inform the members that the Insurance Acts Committee of the British Medical Association some time ago passed a resolution to be submitted to the next Panel Conference on the 20th instant, and which I had no doubt would be carried, to invite representatives of the Insurance Committees, approved societies, and other bodies taking part in, or being concerned with, the work of the National Insurance Acts to a conference, the object of which would be to discuss improvements in the service, its extension in various directions, and the inclusion of dependants, and other matters. I stated quite definitely, on behalf of the Insurance Acts Committee, that under no circumstances would the profession consider the conditions of service or the amount of remuneration at such a Conference. These could only be discussed with the Ministry of Health.

"No comments followed this statement of mine, and the next business was at once proceeded with. I hope the members of the profession, and panel practitioners in particular, will take special note. In face of this experience, you will realize how absolutely essential it is, in my opinion, that the profession should, without delay, prepare for the inevitable conflict, and should unite its forces for this purpose. Woe be to that man, or to any body of men, who attempt in any way to prevent or impede such an obvious precaution."

VACANCIES.

Aberdare Urban District Council.—Lady Assistant Medical Officer. Salary, £500 per annum.

Birmingham and Midland Ear and Throat Hospital.—Junior House-Surgeon (non-resident). Salary, £20 per annum.

Bournemouth: Royal National Sanatorium for Consumption and Diseases of the Chest.—Resident Medical Officer and Clinical Tuberculosis Officer. Salary as R.M.O., £350, rising to £450, and as Clinical Tuberculosis Officer an additional salary of £220, rising to £250.

Bristol Royal Infirmary.—(1) Honorary Ophthalmic Surgeon. (2) Medical Registrar. (3) Obstetric Registrar.

Cancer Hospital, Fulham Road, S.W.—Surgeon.

Cardiff: King Edward VII Hospital.—Ophthalmic House-Surgeon. Salary, £150 per annum.

Church of Scotland Foreign Mission.—Medical Missionary in Nyasaland.

City Dispensary, College Street, E.C.4.—Deputy Medical Officer. Remuneration, 5½ guineas per annum.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—House-Physician (male). Salary, £125 per annum.

Darlington General Hospital.—Junior House-Surgeon (male). Salary, £175 per annum.

Derby: Derbyshire Royal Infirmary.—(1) Ophthalmic House-Surgeon. (2) Assistant House-Surgeon and Casualty Officer. Salary at the rate of £100 per annum.

East London Hospital for Children, Shadwell, E.—(1) Resident Medical Officer. (2) House Surgeon. (3) House-Physician (males). Salary for (1) £200, and for (2) and (3) £125 per annum.

Essex County Council: Saffron Walden Borough and Rural District Councils.—Joint appointment of Local M.O.H., Medical Superintendent of Isolation Hospital, and Assistant County Medical Officer. Combined salary, £700.

Exeter City Mental Hospital.—Medical Superintendent. Salary, £700 per annum, rising to £800.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—(1) Surgeon to Out-patients. (2) Physician to Out-patients.

Hastings County Borough.—Medical Officer of Health and Tuberculosis Officer. Salary, £850 per annum, rising to £950.

Hong-Kong University.—Professor of Medicine. Salary, £800 per annum, rising to £1,000.

Hospital for Consumption and Diseases of the Chest, Brompton.—House-Physician. Honorarium, £50 for six months.

Ipswich: Administrative County of East Suffolk.—Two Assistant Tuberculosis Officers. Salary, £500 per annum.

Leeds University.—University Tutor on Obstetrics and Resident Medical Officer at the Leeds Maternity Hospital. Salary, £300 per annum.

Leicester Royal Infirmary.—House-Surgeon. Salary at the rate of £200 per annum.

London County Council.—Seventh Assistant Medical Officer for the Mental Hospital Service. Salary, £300 per annum, rising to £400 and temporary additions.

London Homœopathic Hospital, Great Ormond Street, W.C.—Surgeon,

LONDON HOSPITAL, Whitechapel, E.—Assistant Surgeon.

MANCHESTER ROYAL INFIRMARY.—(1) Second Medical Registrar. (2) House-Physician. (3) House-Surgeon Aural, Gynaecological, and Ophthalmic Departments. Salary for (1) £150 per annum, and for (2) and (3) £100 per annum.

MARGATE: ROYAL SEA-BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Surgeon. Salary, £200 per annum.

METROPOLITAN HOSPITAL, Kingsland Road, E.8.—(1) Casualty Officer and Resident Anaesthetist. (2) Assistant House-Physician. (3) Senior House-Physician. (4) Assistant House-Surgeon. Males. Salary, £110 per annum for (1) and £100 per annum the others.

MILLER GENERAL HOSPITAL, Greenwich Road, S.E.—Resident Casualty Surgeon. Salary, £200 per annum.

MONMOUTHSHIRE COUNTY COUNCIL.—Two Assistant Medical Officers. Salary, £500 per annum, rising to £750.

NEWCASTLE-UPON-TYNE PARISH.—Resident Deputy Medical Superintendent at the Wingrove Hospital and Assistant Medical Officer of the Poor Law Institution (male). Salary, £400 per annum, rising to £450.

NORTHAMPTON: ST. ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Second Assistant Medical Officer (male). Salary, £400 per annum, rising to £450.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—Assistant Pathologist. Salary, £300 per annum.

PLYMOUTH: SOUTH DEVON AND EAST CORNWALL HOSPITAL.—Male House-Surgeon. Salary, £200.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anaesthetist.

ROCHFORD UNION.—District Medical Officer and Public Vaccinator for the Prittlewell West District. Salary, £106 13s. 4d. per annum and extra medical fees and vaccination fees.

ROYAL CHEST HOSPITAL, City Road, E.C.—Physician to Out-patients.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—Female Clinical Assistant (unsalaried).

ROYAL NORTHERN HOSPITAL, Holloway Road, N.—(1) House-Physician. (2) Two House-Surgeons. (3) Casualty Officer. Salary for (1) and (2) at the rate of £150 per annum, and for (3) £200 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.—Honorary Physician in charge of Out-patients.

SALFORD UNION INFIRMARY.—Second Resident Assistant Medical Officer. Salary, £350 per annum, rising to £400.

SEAMEN'S HOSPITAL SOCIETY.—(1) Medical Superintendent of King George's Sanatorium for Sailors, Bramshott.

SOMERSET COUNTY COUNCIL.—Assistant School Medical Officer. Commencing salary, £550 including bonus.

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.C.—(1) Second Clinical Assistant in the Child Welfare Department. (2) Honorary Resident House-Surgeon at the Royal Ear Hospital, Dean Street, Soho.

WAKEFIELD: CLAYTON HOSPITAL.—House-Surgeon. Salary, £200 per annum.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1.—Radiologist.

CERTIFYING FACTORY SURGEONS.—The following vacant appointments are announced: Rainham (Essex), Felixstowe (Suffolk).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

DIARY OF SOCIETIES AND LECTURES.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—Mon., 8 p.m., General Meeting and installation of new President, Lord Dawson of Penn. 8.30 p.m., Presidential address on "Certain developments in medicine," to be followed by a discussion.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Wed., 4 p.m., Harveian Oration by Dr. Arnold Chaplin.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Museum Demonstrations, 5 p.m., Mon., Professor Shattock: Anatomical Results of Inflammation. Fri., Sir Arthur Keith: Hydrocephaly.

ROYAL SOCIETY OF MEDICINE.—General Meeting of Fellows, Tues., 5 p.m. *Section of Pathology:* Tues., 8.30 p.m., Presidential Address: Dr. J. C. G. Ledingham: Natural Resistance to Infection and the Study of Normal Defence Mechanisms. Dr. C. C. Okell: Notes on Haemolysins and Haemagglutinins. Dr. Passey and Dr. Ryle: Spirochaetosis ictero-haemorrhagica in Surrey. Demonstrations will also be given. *Section of Dermatology:* Thurs., 4.30 p.m., Cases; 8.30 p.m., Dr. L. C. A. Savatard: Benign Epithelioma of the Skin: to be followed by a discussion. *Section of Otology:* Fri., 4.15 p.m., Cases. A specimen will be exhibited by Mr. E. D. D. Davis. Dr. Albert A. Gray: Some Cases of Oto-sclerosis with Unusual Symptoms. Demonstration:—Mr. Somerville Hastings and Major Tucker: An Attempt to Standardize Tests for Hearing.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos Street, W.—Thurs., 8.15 p.m., Dr. R. Row (Bombay): Rat-bit Fever, the rôle of Phlebotomus in Leishmaniasis, and a case for diagnosis. Preceded by a demonstration by Dr. Row at 7.45.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester Square, W.C.—Tues., 4.30 p.m.; tea 4.15 p.m.; 4.30 p.m., pathological specimens, cases; 6.45 p.m., clinical meeting.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—Tues., 5 p.m., Mr. P. Franklin: Clinical Aspects of Tonsils and Adenoids.

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 3 p.m., Dr. A. Rendle Short: Common Gastric Disorders.

LONDON LOCK HOSPITAL (91, Dean Street, W.).—Mon., 5 p.m., Mr. C. Gibbs: Treatment of Syphilis. Tues., 2.30 p.m., Mr. McDonagh: Syphilis of the Nervous System. Thurs., 2.30 p.m., Mr. W. V. Cornetet: Demonstration of Tests used in Syphilis and Gonorrhoea. 4.30 p.m., Mr. S. Joly: Treatment of Chronic Gonorrhoea in the Male. Fri., 6 p.m., Mr. J. Abrahams: Late Sequelae of Gonorrhoea in the Female (285, Harrow Road, W.) Wed., 3 p.m., Mr. E. Lane: Treatment of Gonorrhoea in Women.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. E. M. Brockbank: Pneumonia. Fri., 4.15 p.m., Dr. E. S. Reynolds: Functional [illegible]

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., Fri., 2 p.m., Out-patient Clinics. Mon., 12 noon, Dr. J. Godwin Greenfield: Neuropathology; 3.30 p.m., Dr. Aldren Turner: Clinical Lecture. Tues., 3.30 p.m., Dr. Risien Russell: Involuntary Movements. Wed., 3.30 p.m., Mr. Leslie Paton: Papilloedema. Thurs., 3.30 p.m., Dr. Kinnier Wilson: Disorders of the Sympathetic Nervous System. Fri., 3.30 p.m., Mr. Scott: Cerebral Complications of Disease of the Ear. Operations, Tues. and Fri., 9 a.m.

NORTH OF ENGLAND BRANCH, BRITISH MEDICAL ASSOCIATION, Durham County Hospital.—Thurs., 2.30–3 p.m., Mr. Hamilton Drummond: Common Diseases of the Colon and their Treatment; 3–3.30 p.m., Dr. E. Farquhar Murray: Borderline Gynaecology; 3.30–4 p.m., Dr. F. J. Nattrass: Meningitis; 4–4.15 p.m., Tea; 4.15–5.15 p.m., Demonstrations of Cases by the Honorary Staff of the Durham County Hospital.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., 4 p.m., Professor Louise McIlroy: Influence of Ante-natal Care upon Infant Mortality.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture by Dr. W. Griffith: Treatment of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.1.—Dr. Eric Pritchard: Infant and Child Welfare. Mon., 6 p.m., Artificial Feeding of Infants. Thurs., 6 p.m., Modification of Milk.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At University, Tues., 5 p.m. Professor Mellanby: Shock. At Royal Infirmary, Fri., 3 p.m., Dr. Barnes: Demonstration of Stomach Cases; 4 p.m., Mr. Finch: Surgical Treatment of Indigestion.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Saunders: Scurvy in Children and its Treatment. Tues., 4.30 p.m., Mr. Tyrrell Gray: Surgical Aspects of Dyspepsia. Wed., 4.30 p.m., Dr. Burnford: *B. coli* infections. Thurs., 4.30 p.m., Mr. Baldwin: Some Points in Rectal Surgery. Fri., 4.30 p.m., Mr. Simson: Modern Developments in the Management of Labour. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (3 *lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

OCTOBER.

13 Fri. Border Counties Branch, Dumfries and Galloway Royal Infirmary, Dumfries, 3 p.m.: Branch Council, 2.45 p.m.
Leicester and Rutland Division: Medical Club, Bond Street, Leicester, 4 p.m. Address by Deputy Medical Secretary on the Future of the National Health Insurance System.
South Essex Division: Annual Dinner, Palace Hotel, Southend-on-Sea.
17 Tues. London: Central Ethical Standing Subcommittee, 2.30 p.m.
Stratford Division, 9.15 p.m.
North Carnarvonshire and Anglesey Division: Clinical Meeting, Metropole Hotel, Colwyn Bay, 3.45 p.m.
18 Wed. South Middlesex Division: St. John's Hospital, Twickenham, 8.15 p.m.
Wiltshire Division: Edinburgh Club, 17, Shoot-up-Hill, N.W.10., 9 p.m.
19 Thurs. Birmingham Branch, Annual Meeting, Medical Institute, 3.30 p.m.
Bournemouth Division: B.M.A. lecture by Dr. J. A. Ryle.
Darlington Division.
20 Fri. London: Central Hall, Westminster: Annual Conference of Local Medical and Panel Committees at 10 a.m.
Chesterfield Division: Chesterfield Hospital, 3 p.m.
24 Tues. London: Organization of Medical Students Subcommittee, 2.30 p.m.
25 Wed. London: **Council**, 10 a.m. Council Dinner, 7 for 7.30 p.m.
27 Fri. Suffolk Branch, Ipswich. Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its failings, its achievements, and its possibilities." Paper by Sir Henry Gauvain.

NOVEMBER.

14 Tues. City Division: Metropolitan Hospital, Kingsland Road, 9.15 to 9.30 p.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 6s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

MARRIAGE.

BULLMORE—STOKES.—On October 5th, at St. Alban's, Holborn, Edward Augustus Bullmore, F.R.C.S.Edin., to Dorothy Stokes.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

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CONTENTS.

BRITISH MEDICAL ASSOCIATION.	PAGE
CURRENT NOTES:	
Council Dinner	145
Classified Telephone Directories	145
Newly Qualified Practitioners and the British Medical Association	145
"The Two Voices" on National Health Insurance	145
ASSOCIATION NOTICES	146
MEETINGS OF BRANCHES AND DIVISIONS	146
ASSOCIATION INTELLIGENCE AND DIARY	148

	PAGE
CORRESPONDENCE:	
Medical Practitioners and Approved Societies. By Sir William Glyn-Jones	146
Organization of the Profession. By G. C. Garratt, M.D.	147
NAVAL AND MILITARY APPOINTMENTS	147
VACANCIES	147
APPOINTMENTS	148
DIARY OF SOCIETIES AND LECTURES	148
BIRTHS, MARRIAGES, AND DEATHS	148

British Medical Association.

CURRENT NOTES.

Council Dinner.

The attention of members of the British Medical Association is again drawn to the dinner to be given by the Council at the Grand Hotel, London, on Wednesday next, October 25th, at 7 for 7.30 p.m. As a large number of guests prominent both in public life and in the medical world will be present, the Council hopes that it will be supported by the presence of as many members as can make it convenient to attend. Members may bring guests, who may be ladies. Application for tickets (10s. 6d. a head) should be made to the Financial Secretary, 429, Strand, W.C.2, at once. Decorations should be worn.

Classified Telephone Directories.

We understand that the enterprise of those who were responsible for the publication of the "Buff Book" in London is being copied by other firms in different parts of the country. Circular letters have been sent to medical practitioners in some districts with the request that they should give certain particulars in order that these particulars, along with the telephone number, may be inserted in a classified telephone directory. It will be remembered that in view of the exception taken by the British Medical Association to the publication of a limited list of this kind and the consequent risk of the public accepting it as a list of doctors who have a special claim to the insertion of their names, the authorities of the "Buff Book" eventually decided to include in their publication the names of all doctors who were telephone subscribers in the London area. Any medical man who receives a request for certain particulars with a view to the publication in a classified trade telephone directory is advised to reply to the effect that he does not wish his name to appear unless the list of medical names it is proposed to publish is a complete one. The entries should be uniform and the use of special bold type in relation to any particular name should be avoided. The Association has been approached by the Post Office Stores Department for its advice on the subject, and has advised that in any classified telephone directory the names of all medical men who are telephone subscribers should be inserted under the common heading, "Physicians and Surgeons."

Newly Qualified Practitioners and the British Medical Association.

In a letter to the *Stethoscope*, the organ of the Bristol Medical Club's Union, Dr. J. O. Symes, the President of the Bath and Bristol Branch, writes, advising the newly qualified student first of all to join a medical defence union.

"The next point (he continues) is not less important as it involves his duty to his profession. It is that he should at once join the British Medical Association. It is important that he should join quickly, as if he does so he is admitted for half price, and the forty years' membership which entitles him to a reduced subscription is the sooner over. The British Medical Association is not so well known among students as it should be, and in order to arouse them to greater enthusiasm the Association is giving a valuable prize to each medical school which will be awarded annually under terms which will shortly be published. Every resident medical officer ought to belong to the local Division of the Association, partly in order that he may secure his weekly copy of the *British Medical Journal* and keep his scientific work up to date, but more particularly that he may attend the meetings that deal with medico-political subjects, which are of vital interest to us all."

Dr. Symes ends by saying that as President of the local Branch he is most desirous of interesting "our newly qualified students in this most excellent institution." His letter is a further sign of the greatly increased interest that has recently been taken in the newly qualified practitioner by the local officials of the British Medical Association. Glasgow, Newcastle, Liverpool, Sheffield, and now Bristol have taken steps which cannot fail to do good to the Association and which are worthy of being followed in the other areas where there are medical schools.

"The Two Voices" on National Health Insurance.

The proceedings of the Annual Meeting of the National Association of Insurance Committees, held on October 6th, contain useful material for the student of National Health Insurance as well as for those who enjoy the little ironies of life. The retiring president, Sir Alfred Warren, M.P., a well-known and highly respected champion of the old Friendly Societies, said that "panel patients got much worse treatment than did the members of Friendly Societies under their old arrangements with the medical profession, and there was serious complaint of the way in which the panel patient was treated as compared with the private patient." The same report (taken from the *Times*) says that Sir William Glyn-Jones, the new President, paid a tribute to the work of the medical practitioners and to the "remarkable services which they had rendered to the insured public, who had received treatment such as was impossible for them to obtain in pre-insurance days." It will be remembered that in the SUPPLEMENT of October 7th we quoted from a report of the Annual Conference of the Scottish Association of Insurance Committees, where the reader of the chief paper said that notwithstanding criticisms he had no fear of the result of any inquiry into medical benefit, and the representative of Ayr County stated that he had never met a private patient who had been treated differently from a panel patient.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at Bromsgrove on Thursday, November 23rd, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on Mental hygiene.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—A meeting of the South Essex Division will be held at Southend-on-Sea on Friday, November 10th, when Dr. W. Langdon Brown, physician to St. Bartholomew's Hospital, will deliver a British Medical Association lecture.

KENT BRANCH: BROMLEY DIVISION.—A meeting of the Bromley Division will be held at the Royal Bell Hotel, Bromley, to-day (Friday, October 20th), at 8.30 p.m. Agenda: Report of Representative; Report of Executive *re* Branch Meeting, 1923; Joint Meeting with Lewisham Division, 1923; Lantern Demonstration of intra-nasal anatomy and diseases, by Mr. John F. O'Malley, F.R.C.S. Members are urged to attend and are invited to ask non-members to the meeting.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—The following is the programme of meetings arranged by the City Division for 1922-23:—Tues., Nov. 14th, 9.15-9.30 p.m., Metropolitan Hospital, Mr. Ernest Miles: Lantern lecture on Cancer of the rectum. Thurs., Nov. 30th: Annual Dinner, Abercorn Rooms, Great Eastern Hotel, Liverpool Street, 7.15 p.m. Tues., Dec. 12th: General Meeting. Thurs., Dec. 14th: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m. Jan. 9th, 1923: British Medical Association lecture (lantern) by Sir Henry Gauvain on The utilization of natural aids of cure in the treatment of surgical tuberculosis. Feb. 13th: Paper by Dr. W. Langdon Brown. Feb. 15th: Dinner Dance in Abercorn Rooms, 7.15 p.m. to 1.30 a.m. March 1st: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m.; fancy dress optional. March 13th: General Meeting. Paper on Plastic surgery and results obtained, illustrated by lantern slides, by Mr. H. D. Gillies. April 10th: Paper by Dr. Bernard Hart. May 8th: Pathological specimens by Dr. T. H. G. Shore, Pathologist to St. Bartholomew's Hospital, lasting one hour; business after. June 12th: Annual General Meeting. July 10th: General Meeting. A clinical afternoon will be held during the session by Dr. W. Brander, at the Hackney Infirmary, and it is hoped to arrange for one at the Queen Alexandra Hospital for Children, Hackney Road.

METROPOLITAN COUNTIES BRANCH: KENSINGTON DIVISION.—A general meeting of the Kensington Division will be held at Kensington Palace Mansions Hotel (Merrick Rooms), De Vere Gardens, W.8 (opposite De Vere Hotel), on Tuesday, October 24th, at 8.45 to 9 p.m., when a B.M.A. lecture will be given by Dr. T. Eastham, K.C., entitled "Medical men and their legal difficulties."

SOUTHERN BRANCH: WINCHESTER DIVISION.—A clinical meeting of the Winchester Division will be held on Thursday, October 26th, at the Royal Hants County Hospital at 2.45 p.m. Agenda: The question of fees for doctors called in by midwives; the question of entertaining at Winchester those members of the Association visiting Portsmouth for the Annual Meeting next July. Mr. H. J. Godwin will show a case of nephritis treated by decapsulization of the kidney. The following papers will be read: Dr. F. F. C. Jagger, Some uses of the *x* rays for the general practitioner; Dr. Bruce Young, Epidemic jaundice; Dr. Highet, Some common forms of eye disease found in general practice.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—A meeting of the Buckinghamshire Division will be held at the Crown Hotel, Aylesbury, on Friday, October 27th, in conjunction with and following the meeting of the practitioners on the Bucks Panel, to discuss the National Insurance Act. A series of questions has been sent to all members of the Division and insurance practitioners, with a request that they may be answered and returned to the Secretary before the meeting, so that the replies may be tabulated. Several have already answered, and it is hoped that many more will do so. The Panel meeting starts at 3 p.m.

SOUTH-WESTERN BRANCH.—The autumn intermediate meeting of the South-Western Branch will be held at the Royal Devon and Exeter Hospital, Exeter, on Thursday, October 26th, at 3.15 p.m., when Dr. James Neal, secretary of the Medical Defence Union, will deliver an address entitled "Medical defence work." The attendance of non-members at this meeting is invited. Tea will be provided at the hospital after the meeting. The Committee of the Exeter Medical Dinner invite members of the South-Western Branch to the annual "Exeter and District" Medical Dinner, which is to be held at Delier's Café, Exeter, on the evening of the Branch meeting. Tickets, 10s. 6d. each (of which 7s. 6d. will be returned in the event of inability to attend), can be obtained of the Secretary of the Dinner Committee, Dr. R. V. Solly, 40, Southernhay West, Exeter. Any member wishing to stay the night in Exeter is requested to notify Dr. F. A. Roper, Honorary Secretary, 12, Southernhay West, Exeter, as several Exeter medical men have offered to put guests up for the night.

SUFFOLK BRANCH.—A meeting of the medical men resident in the county of Suffolk will be held at the Town Hall, Ipswich, on Friday, October 27th, at 3 p.m. Agenda: Paper by Sir Henry Gauvain, M.D., M.Ch.—Modern Methods in the Conservative Treatment of Surgical Tuberculosis (illustrated with lantern slides); Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The British Medical Association—its failings, its achievements, and its possibilities." Dr. Stewart, County M.O.H., and Mrs. Stewart kindly invite those present to tea.

Meetings of Branches and Divisions.

PERTH BRANCH.

A MEETING of the Perth Branch was held on September 22nd, when Dr. LIDDELL (Errol) presided. Four new members were elected. Dr. Burgess, the Representative to the Annual Representative Meeting, was thanked for the lucid account he gave of the Glasgow Meeting.

The appointment of arbitrators under the Insurance Act was considered and Dr. MURRAY YOUNG, the Regional Director, described at length the arrangements for the appointment of arbitrator and the duties connected with the post. The meeting approved that 21s. be the fee when a patient was examined at the doctor's house and 42s. if the doctor had to call and see the patient at the patient's house, travelling expenses being extra. Dr. Young was thanked for his address and sympathy was expressed with him at the recent death of his brother. A letter was read from Dr. Dewar (Edinburgh) requesting the opinion of the Branch regarding the advisability of the Insurance Acts Committee co-opting one or more members of the Medico-Political Union. The meeting approved of the co-option of at least one member of the union, and instructed the representative at the Panel Conference to vote accordingly.

Dr. Burgess was appointed President vice Dr. Ferguson Watson, and Dr. Hume, the Secretary, was reappointed, as was also Dr. Stewart, Honorary Treasurer.

OXFORD AND READING BRANCH: READING DIVISION.

THE annual golf meeting was held at Wellington College on September 28th. Twelve members played; Drs. Mawhood and Gifford tied for the cup. The bogy sweep was divided between Drs. Gifford and Richmond. On October 2nd the cup tie was played off, Dr. Gifford winning with a net score of 80. It was agreed to meet at Huntercombe in 1923.

[Reports received from several other Branches and Divisions are held over from lack of space.]

Correspondence.

Medical Practitioners and Approved Societies.

SIR,—I was present throughout the proceedings at the recent Conference of Delegates to the National Association of Insurance Committees. I read with great surprise the extract from the speech of Dr. Ridley Bailey at the dinner of the Coventry Division, published in your issue last week (SUPPLEMENT, p. 143), especially the following statement referring to that Conference:

"Nothing impressed me so much as the feeling, manifested among nearly all sections of the meeting, from the President (Sir Alfred Warren, M.P.), downwards, of antagonism to the medical profession."

My excuse for intervening is that I am satisfied that such an impression is a false one, and that if it became widespread incalculable harm would be done. It is true that the retiring president, Sir Alfred Warren, M.P., in criticizing the treatment received by panel patients expressed opinions which it would be wrong to attribute to the Association.

The president's address is invariably an expression of the views of the holder of the office for the time being, and is not subject to discussion at Conference meetings. The attitude of the Association to the profession should be judged by its official policy and action. I have been a member of the Executive Committee from the inception of the Association. That Executive has each year received the overwhelming support of the delegates who were elected at the Annual Conference. I have an intimate knowledge of the attitude of the Executive towards the medical profession, and it is the reverse of antagonism. It has invariably given evidence of this in its relations with the British Medical Association. In a democratically constituted conference opportunities arise for the expression of opinion, however foolish or even mischievous, held by minorities, however small. My experience that extreme minorities are often more vocal than convincing is not confined to conferences of laymen. It is even possible that at British Medical Association conferences opinions may have been expressed in support of foolish resolutions which were defeated. Incalculable mischief will be done to the service, and I think to the profession, if the atmosphere in which the future medical service is to be arranged and developed is allowed to be created by the speeches of extremists, or affected by defeated resolutions.

I have had no opportunity since seeing the report of Dr. Ridley Bailey's speech of consulting my colleagues on the Executive, but I have no hesitation in expressing my personal view that in alleging a spirit of antagonism on the part of the Association towards the profession, Dr. Bailey is

doing the Association an injustice. Nothing has transpired in my opinion to justify a change in the cordial relationships which have hitherto existed between the British Medical Association and the National Association of Insurance Committees, and I see no ground for suspicion that the mutual rights and privileges of the profession and Association will not be fully respected in the future as in the past.—I am, etc.,

Sutton, Surrey, Oct. 17th. W. S. GLYN-JONES.

Organization of the Profession (Document M. 10).

SIR,—By all means let us organize, but beware of provoking counter-organization. Having since 1912 lost confidence in such methods, and regarding, as I should, a second strike, declared as before without any previous effort to win the good will and support of the public, as doomed to certain failure, I would offer preliminary proposals, designed to avert, if possible, any such risky measure, and to fortify our position in its event.

1. Let medical members of all Insurance Committees get them, if possible, to pass resolutions of confidence in their panel doctors, approval of their work, and desire to improve the service on the present lines. Some have already done so.

2. Induce a number of them, both in urban and rural districts, to appoint small subcommittees, consisting of the clerk and representatives of doctors, employers of labour, and approved societies in equal numbers, to discuss in friendly manner defects in the Acts and their remedy. To explore methods for increasing economy and efficiency, for abolishing or reducing futile or superfluous work, and removing legitimate grievances. I believe this proceeding would have an excellent effect upon public opinion, produce many useful ideas, and promote good feeling all round. These suggestions should be brought by the Insurance Committee concerned to the notice of the Conference which will, I hope, result from "Recommendation F."

3. Let our Insurance Acts Committee begin in good time to collect and collate the material necessary for the really adequate and businesslike presentation of our case to the public or any arbitrators on different lines to their previous effort. For this purpose it is essential that they should obtain lay assistance, and I can suggest no one more admirably suitable than Mr. R. W. Harris, late Assistant Secretary to the Minister of Health, whose enthusiasm for the service might induce him to co-operate, and whose fairness to all parties is generally allowed.

They should prepare accurate figures showing the average number of panel consultations and visits in urban and in rural areas, demonstrating average pay per consultation per visit and per hour in both classes. They should show the average mileage per visit in rural areas and how it is met by the mileage fund. All these figures are available. They should produce figures for 1923, first of the ordinary cost of living, food, fuel, clothing, and the like, and in addition particularly of the cost of those things which specially affect us—for example, rates and rents of houses of the class we live in, wages of such servants as are essential to us, and prices of motor cars of moderate size with their upkeep, repair, and running expenses. They should show the average number of children in our class of life, and the cost of clothing that number and educating them in such schools as we must send our children to. Again, they should give prices of such drugs and instruments as are in frequent use. In every case these figures should be compared with similar figures for 1913 when the capitation of 7s. 3d. was agreed to after a great struggle, and for 1920 when 11s. was fixed by independent arbitrators. In this way a fair estimate of the figure for 1923 should be obtained. Again, a comparison of the estate left by a number of doctors as compared with that of men of similar eminence in business and in the legal profession, a summary of the cost and duration of medical as compared with other education, details as to the expectation of life among doctors, and some experiences drawn from the records of our medical charities would all be helpful. Such a research would have permanent value to every advocate of our cause, and once it was prepared every effort should be made to bring it to the notice of the Minister of Health, the lay press, members of Parliament, and the public generally, including approved societies; also we should make clear our willingness to submit it to any impartial arbitrators, and our desire to avoid strikes. I feel assured that such methods would not only promote the best interests of our profession, of the public, and of National Health Insurance, but would have infinitely more chance of success than processes notoriously unpopular with the educated public, and ill suited to a learned profession.

I allow that it would involve a great deal of hard work, but much of it could be done by clerks and accountants at small salaries, and the work would be well repaid.—I am, etc.,

Chichester, Oct. 8th. G. C. GARRATT.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Surgeon Rear-Admiral J. Chambers, C.M.G., to the *Vivid*, for R.N. Hospital, Plymouth; Surgeon Commanders F. H. Stephens, O.B.E., to the *President*, additional for R.N. College and Hospital School, Greenwich, temporary; G. E. Duncan, O.B.E., to the *Vivid*, additional for R.N. Division, Plymouth; R. B. Scribner to the *Vivid*, additional for H.M. Dockyard, Pembroke Dock.

Surgeon Rear-Admiral Sir Daniel J. P. McNabb, K.B.E., C.B., has been placed on the retired list.

Surgeon Captain (ret.) E. A. Penfold, D.S.O., has been promoted to the rank of Surgeon Rear-Admiral (ret.), with seniority of March 31st.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel H. G. B. Walton retires on retired pay.

Captain G. R. Grant, M.C., is seconded for service with the Egyptian Army.

Temporary Captain V. Vesselovsky relinquishes his commission and is granted the rank of Major.

ROYAL AIR FORCE MEDICAL SERVICE.

C. Y. Roberts is granted a short service commission as a Flight Lieutenant, with effect from, and with seniority of, September 2nd.

Flying Officer (Honorary Flight Lieutenant) B. C. W. Pasco to be Flight Lieutenant.

Flight Lieutenant T. H. Kirkpatrick MacLaughlin relinquishes his temporary commission on ceasing to be employed.

INDIAN MEDICAL SERVICE.

Lieut.-Colonel F. T. Thomson has been permitted to retire from the service (July 1st, 1922).

Captain L. A. P. Anderson has been appointed temporarily to the Medical Research Department (March 5th, 1922).

Major A. N. Dickson, M.C., an Agency Surgeon, has been granted leave on average pay for four months, with effect from July 1st, 1922.

Majors to be Lieutenant-Colonels (September 1st): A. K. Lauddie, C. A. F. Hingston.

The King has approved the retirement of Lieut.-Colonel R. H. Maddox, C.I.E. (July 27th 1922).

REGULAR ARMY RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel K. B. Barnett and Major E. M. Williams, having attained the age limit of liability to recall, cease to belong to the Reserve of Officers.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Major L. A. Mackenzie, M.C., from General List, to be Major.

The following officers, having attained the age limit, are retired: Major W. V. Sinclair, and is granted the rank of Lieut.-Colonel, Major J. R. Reid, and retains the rank of Major, Captain H. J. Pechell, and retains the rank of Captain.

VACANCIES.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL.—Junior House-Surgeon (non-resident). Salary, £200 per annum.

BIRMINGHAM GENERAL HOSPITAL.—(1) Two House-Surgeons. Salary, £70 per annum. (2) House-Surgeon to Special Departments (Skin and Venereal). Salary, £95 per annum.

BRADFORD: GRASSINGTON SANATORIUM.—Assistant Resident Medical Officer. Salary, £250.

BRADFORD ROYAL INFIRMARY.—Resident Surgical Officer (male). Salary, £250 per annum.

CHELSEA HOSPITAL FOR WOMEN.—Anæsthetist. Honorarium, £21 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House-Physician (male). Salary, £125 per annum.

CROSSLEY SANATORIUM, Kingswood, Frodsham, Cheshire.—Assistant Medical Officer. Salary, £250 per annum.

ESSEX COUNTY COUNCIL: SAFFRON WALDEN BOROUGH AND RURAL DISTRICT COUNCILS.—Joint appointment of Local M.O.H., Medical Superintendent of Isolation Hospital, and Assistant County Medical Officer. Combined salary, £700.

FIFE EDUCATION AUTHORITY.—Assistant School Medical Officer. Salary, £300 per annum.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—House-Surgeon (male). Salary £200 per annum.

HONG-KONG UNIVERSITY.—Professor of Medicine. Salary, £800 per annum, rising to £1,000.

HULL AND GOOLE PORT SANITARY AUTHORITY.—Assistant Medical Officer of Health. Salary, £750 per annum.

IPSWICH: ADMINISTRATIVE COUNTY OF EAST SUFFOLK.—Two Assistant Tuberculosis Officers. Salary, £500 per annum.

IPSWICH: EAST SUFFOLK AND IPSWICH HOSPITAL.—Assistant Surgeon.

LEEDS UNIVERSITY.—University Tutor on Obstetrics and Resident Medical Officer at the Leeds Maternity Hospital. Salary, £300 per annum.

LONDON HOSPITAL, Whitechapel, E.—Assistant Surgeon.

METROPOLITAN HOSPITAL, Kingsland Road, E.8.—(1) Casualty Officer and Resident Anæsthetist. (2) Assistant House-Physician. (3) Senior House-Physician. (4) Assistant House-Surgeon. Males. Salary, £120 per annum for (1) and £100 per annum the others.

MONMOUTHSHIRE COUNTY COUNCIL.—Two Assistant Medical Officers. Salary, £500 per annum, rising to £750.

NAPSBURY MENTAL HOSPITAL.—Junior Assistant Medical Officer. Salary, £546 14s., including war bonus.

NORTH MIDDLESEX HOSPITAL, Edmonton.—Male Assistant Medical Officer. Salary, £200 per annum.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—Assistant Pathologist. Salary, £500 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—Assistant Resident Medical Officer. Salary £80 per annum, rising to £100 on appointment as Senior Resident Medical Officer.

ROCHFORD UNION.—District Medical Officer and Public Vaccinator for the Prittlewell West District. Salary, £ c. 13s. 4d. per annum and extra medical fees and vaccination fees.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Refraction Assistant. Salary, £100 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.—Honorary Physician in charge of Out-patients.

ST. HELENS HOSPITAL, Lancashire.—Resident Medical Officer. Salary, £250 per annum.

SEAMEN'S HOSPITAL SOCIETY.—(1) Medical Superintendent of King George's Sanatorium for Sailors, Braunshott.

SOMERSET COUNTY COUNCIL.—Assistant School Medical Officer. Commencing salary, £514 including bonus.

SOUTHAMPTON PARISH.—Resident Assistant Medical Officer (male) of the Parish Infirmary. Salary, £350 per annum.

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.C.—(1) Second Clinical Assistant in the Child Welfare Department. (2) Honorary Resident House-Surgeon at the Royal Ear Hospital, Dean Street, Soho.

WEST SUFFOLK COUNTY COUNCIL.—Assistant County Medical Officer of Health and Assistant School Medical Officer. Salary, £500 per annum.

WOLVERHAMPTON POOR LAW UNION.—Assistant Resident Medical Officer of the Workhouse and Infirmary and Medical Officer of Cottage Homes. Salary, £250 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

CARR, Ruby T., M.B., Ch.B.Edin., Medical Officer in the Women's Medical Service for India under the Dufferin Fund.

COMPTON, Arthur, M.B., B.Ch., B.O.A. (R.N.I.), Third Assistant in the Surgical Unit established at St. Mary's Hospital Medical School.

GABRIEL, W. B., M.S.Lond., F.R.C.S.Eng., Surgical Registrar to the Middlesex Hospital.

GRAHAM, R. Stewart, M.B., B.Ch.Belf., House-Physician to the Royal Infirmary, Chester.

MOON, H. J., M.R.C.S., L.R.C.P., Certifying Factory Surgeon for the Patterdale District, co. Westmorland.

QUINTON, P. G., M.D., B.S.Lond., Medical Superintendent of St. Mary's Hospital.

ROSS, James A., M.B., Ch.B., Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 3.

INFANTS HOSPITAL, Vincent Square, S.W.—Assistant Physician: Mrs. Noel Olivier Richards, M.B., B.S.Lond. Radiologist: Bertram Shires, M.B., Ch.B.Edin.

SUNDERLAND ROYAL INFIRMARY.—House-Physician: A. Murray Marr, M.B., Ch.B.Edin. House-Surgeon: John Milne, M.B., Ch.B.Aberd.

CERTIFYING FACTORY SURGEONS.—A. H. Davidson, M.B., Ch.B.Glasg., for the Alva District, co. Clackmannan; W. O. Evans, L.R.C.P. and S. Edin., L.R.F.P.S., for the Pontardawe District, co. Glamorgan; J. S. Gray, M.B., Ch.B.Aberd., for the Sileby District, co. Leicester.

DIARY OF SOCIETIES AND LECTURES.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Museum Demonstrations, 5 p.m., Mon., Professor Shattock: Carcinoma. Fri., Sir Arthur Keith: Results following Resection of the Bowel, illustrated by experimental work by Mr. Tyrrell Gray.

ROYAL SOCIETY OF MEDICINE.—*Section of Odontology:* Mon., 8 p.m., Presidential Address: Mr. W. R. Ackland: Some Considerations for Preventive Dentistry. *Section of Medicine:* Tues., 5.30 p.m., Presidential Address: Dr. Newton Pitt. Paper: Mr. Gordon Sir John Moore, R.A.V.C.: Glanders and Anthrax. To be followed by a discussion, to which all Fellows interested in the subject are invited to contribute. *Section of Urology:* Thurs., 2.30 p.m., Operations at St. Peter's Hospital; 8.30 p.m., Presidential Address: Sir J. Thomson Walker: Relation of Calculus Abdominal Glands to Urinary Surgery. *Section of Study of Disease in Children:* Fri., 4.30 p.m., Cases: 5 p.m., Presidential Address: Dr. Eric Pritchard: Rickets, its Causation and Pathogenesis. *Section of Epidemiology and State Medicine:* Fri., 8 p.m., Dr. R. J. Ewart: Economics and Tuberculosis. *Section of Electro-Therapeutics:* Fri., 8.30 p.m., Presidential Address: Dr. Robert Knox: Cardiac Diagnosis—a Survey of the Development of Physical Methods. Exhibition of apparatus and radiograms bearing upon the diagnosis of heart conditions.

HARVEIAN SOCIETY, Town Hall, Harrow Road, W.—Thurs., 8.30 p.m., Discussion: The Notification of Infectious Diseases. To be opened by Dr. Reginald Dudfield, followed by Drs. Buttar, Menzies, Hamer, and Carnwath.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS, 122, Harley Street, W.—Fri., 4 p.m., Sir Robert Jones: Tuberculous Disease of the Knee, Ankle, and Tarsus. Dr. Gordon Pugh: Observations on the Treatment of Tubercular Disease of the Spine and Hip-joint. Discussion: The Curriculum for the Training of Nurses in Tuberculosis.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—Wed., 8.30 p.m., Dr. Eric Pritchard: Feeding of Infants from Birth to the End of the Second Year.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. W. Dyson: Diseases of the Hair. Fri., 4.15 p.m., Dr. E. S. Reynolds: Ataxia.

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 3 p.m., Dr. G. Hadfield: Diagnostic Value of Cerebro-spinal Fluid Examinations.

LONDON LOCK HOSPITAL (91, Dean Street, W.).—Mon., 5 p.m., Mr. C. Gibbs: Ante-Natal and Post-Natal Treatment of Syphilis. Tues., 2.30 p.m., Mr. J. E. R. McDonagh: Clinical Demonstration, with exhibition of paintings; 4.30 p.m., Mr. S. Joly: Complications of Gonorrhœa in the Male. Thurs., 2.30 p.m., Mr. W. V. Corbett: Interpretations of the Wassermann Reaction. Fri., 4 p.m., Mr. J. Abraham: Syphilis in Women.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. Hamill: Diseases of the Myocardium.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Mon. and Thurs., 12 noon, Dr. J. Godwin Greenfield: Neuropathology. Mon., 3.30 p.m., Dr. James Taylor: Clinical Lecture. Tues., 3.30 p.m., Dr. H. Howell: Syphilitic Disease of the Nervous System. Wed., 3.30 p.m., Mr. L. Paton: Neuro-ophthalmology — Papilloedema. Thurs., 3.30 p.m., Dr. Grainger Stewart: Clinical Lecture. Fri., 3.30 p.m., Dr. Collier: Encephalitis Lethargica. Operations, Tues. and Fri., 9 a.m.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture by Dr. W. K. Sibley: Electrical Treatments—*X* Rays.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.—Dr. Eric Pritchard: Infant and Child Welfare. Mon., 6 p.m., Uses of Dried Milk and Patent Foods. Thurs., 6 p.m., Physiology and Pathology of the Digestive System in Infants and Young Children.

SALFORD ROYAL HOSPITAL.—Thurs., Dr. H. T. Ashby: Convulsions in Childhood.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At Royal Infirmary, Tues., 3 p.m., Mr. Kerr: Diagnosis and Treatment of Chronic Maxillary Sinusitis; 4 p.m., Mr. Cuff: Clinical Surgery. At Royal Hospital, Fri., 3 p.m., Dr. Naish: Poliomyelitis; 4 p.m., Mr. G. Wilson: Demonstration of Cases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, Balham.—Fri., 4.30 p.m., Dr. Wordsworth Barber: Principles of Treatment in Diseases of the Skin.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Saunders: Nephritis in Children and its Treatment. Tues., 4.30 p.m., Mr. Addison: Tuberculous Disease of the Spine. Wed., 4.30 p.m., Dr. Pernet: Itching. Thurs., 4.30 p.m., Mr. Todd: Orthopaedic Treatment of Infantile Paralysis. Fri., 4.30 p.m., Mr. Simson: Modern Developments in the Management of Labour. Sat., 10 a.m., Mr. Simmonds: Orthopaedics. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager: Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4561 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4757 Dublin.)

Diary of the Association.

OCTOBER.

20 Fri. London: Central Hall, Westminster: Annual Conference of Local Medical and Panel Committees at 10 a.m.
Chesterfield Division: Chesterfield Hospital, 3 p.m.
Bromley Division: Royal Bell Hotel, Bromley, 8.30 p.m.

24 Tues. London: Organization of Medical Students Subcommittee, 2.30 p.m.
Kensington Division: Kensington Palace Mansions Hotel (Merrick Rooms), De Vere Gardens, W.8, B.M.A. lecture by Dr. T. Eastham on Medical Men and their Legal Difficulties, 8.45–9 p.m.

25 Wed. London: **Council**, 10 a.m.
London: ASSOCIATION DINNER, Grand Hotel, 7 for 7.30 p.m.

26 Thurs. London: **Adjourned Council.**
South-Western Branch: Royal Devon and Exeter Hospital, Exeter, 3.15 p.m., Address by Dr. James Neal.
Winchester Division, Clinical Meeting Royal Hants County Hospital, 2.45 p.m.

27 Fri. London: Parliamentary Subcommittee, 2.30 p.m.
Suffolk Branch, Ipswich. Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its failings, its achievements, and its possibilities." Paper by Sir Henry Gauvain on "Modern Methods in the Conservative Treatment of Surgical Tuberculosis."
Buckinghamshire Division, Crown Hotel, Aylesbury, 3 p.m.

31 Tues. London: Contract Practice Subcommittee, 2.30 p.m.
London: Standing Ethical Subcommittee, 2.30 p.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9*s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

LLOYD.—On 12th October, at Southend-on-Sea, to the wife of Edmund Eyre Lloyd, M.R.C.S., L.R.C.P.—a daughter.

MITCHELL.—At Ness House Nursing Home, Inverness, on the 11th inst., the wife of L. M. V. Mitchell, O.B.E., M.B., D.P.H., 5, Ardross Terrace, Inverness, of a daughter.

SHARROD.—On 7th October, at Langdale New Road, Stourbridge, the wife of A. R. Sharrod, M.B., B.S.Lond.—a son.

DEATH.

HEELIS.—On October 15th, at nursing home, the dearly loved wife of Robert Heelis, M.D., 33, Church Street, Lenton, Nottingham.

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SUPPLEMENT
TO THE
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CONTENTS.

	PAGE
ANNUAL PANEL CONFERENCE:	
Procedure: Standing Orders	149
Co-operation with Medical Practitioners' Union	150
Constitution of Insurance Acts Committee	151
Collective Bargaining	152
National Insurance Defence Trust	152
Organization of Insurance Practitioners	153
Alternative Medical Services	155
Chairmanship of the Conference	156
Additional Benefits and Specialists' Services	156
Change of Doctor	158
Title of Insured Person to Benefit	158
Excessive Prescribing	159
Miscellaneous Business	60
DINNER TO INSURANCE ACTS COMMITTEE	161
SCOTTISH COMMITTEE	162
ASSOCIATION NOTICES	163

	PAGE
CURRENT NOTES:	
Post-Graduate Course at Plymouth	161
The Warble Fly	161
Professional Classes Aid Council	162
Statistics of Insurance Work	162
MEETINGS OF BRANCHES AND DIVISIONS	164
MEDICAL WOMEN'S FEDERATION	165
REVISED TUBERCULOSIS SCHEME IN LONDON	165
INSURANCE: Practitioners' Accounts	166
CORRESPONDENCE	167
NAVAL AND MILITARY APPOINTMENTS	167
VACANCIES	167
APPOINTMENTS	168
DIARY OF SOCIETIES AND LECTURES	168
ASSOCIATION INTELLIGENCE AND DIARY	168
BIRTHS, MARRIAGES, AND DEATHS	168

ANNUAL PANEL CONFERENCE.

Friday and Saturday, October 20th and 21st, 1922.

THE annual Conference of representatives of Local Medical and Panel Committees opened in the Central Hall, Westminster, on Friday, October 20th.

Dr. H. G. DAIN (Birmingham) presided, and was supported by Dr. H. B. Brackenbury (Chairman of the Insurance Acts Committee), Dr. Alfred Cox (Medical Secretary of the British Medical Association), Dr. G. C. Anderson (Deputy Medical Secretary), and Mr. W. E. Hempson (Solicitor to the Association). The number of representatives attending was 160, together with 15 members of the Insurance Acts Committee who were not acting as representatives.

PROCEDURE: STANDING ORDERS.

The standing orders approved by the previous Annual Conference were received, and on the motion of the CHAIRMAN an additional standing order, arising out of the minutes of the last Conference, was agreed to. This provided that all representatives should, at the time of their election, be medical practitioners and members or officers of a Local Medical or Panel Committee. The Chairman, in reply to Dr. CANDLER-HOPE, said that "officers" included paid officers if these were medical practitioners.

Dr. J. HOLMES (Bury) moved to add to the standing order whereby thirty Committees could call a special Conference a provision that such Committees must be sub-cribers to the National Insurance Defence Trust. Whilst the representatives of all Committees were welcome at the Conference, he thought that only those who had shown a willingness to subscribe to the expenses should be allowed to take the initiative in calling a special Conference.

Dr. G. H. L. HAMMERTON (Dewsbury) protested against the motion as vexatious, especially at a time when there was a general effort to secure unity in the profession. It would have, if carried, a divisive effect. At Dewsbury at present, in view of the existing arrangements of the National Insurance Defence Trust, his Committee did not intend to subscribe, but it was quite willing to subscribe to a fund if it could be sure that the moneys could be used at the time they were wanted.

Dr. E. BURCHELL (Brighton) said that it would be very unfortunate to divide, as this motion would do, Panel Committees into two categories—those which subscribed and those which did not. The Ministry of Health in that event might easily refuse to recognize the Conference.

Dr. P. MACDONALD (York) said that the motion looked like an attempt to divide Committees. The time might come when the policy advocated by Bury would be wise and necessary; at the present time it would be disastrous.

Dr. BRACKENBURY hoped the motion would be withdrawn. During the past year great strides had been made in connexion with the Defence Trust. There were various reasons why at the moment certain Panel Committees were not able to send money to the Fund, and more time should certainly be given before any such distinction was set up.

Dr. HOLMES declined the Chairman's suggestion to withdraw his motion. It cost £1,000 a year to run the Conferences, and the motion simply asked that Committees which were empowered to call a conference should subscribe to the working fund.

Dr. D. F. TODD asked whether it was true that the Conference cost £1,000 a year. The CHAIRMAN replied: No. Dr. HOLMES said that last year when two Conferences were held the cost was between £300 and £1,000.

The motion was lost by a very large majority.

Dr. T. L. BUNTING (Newcastle-on-Tyne) moved that it should be competent for Group Conferences to forward resolutions for discussion at the annual Conference, such resolutions to be in charge of and moved by a representative appointed by the Group. It was often difficult to get Group Conferences and meetings of the constituent Panel Committees in such an order that the Committees would be able afterwards to pass the resolutions which the Group Conference had framed, so it was proposed that such Conferences should be able to forward resolutions on their own initiative.

Dr. BRACKENBURY said that this proposal looked like an innocent "baby," but if it were allowed to grow up it might strangle its parents. The present Conference was a Conference of Local Medical and Panel Committees, not of groups of such committees. The grouping of the committees was carried out in order to get as equitable a representation as possible on the Insurance Acts Committee. The motion before the meeting might, if carried, have certain unfortunate consequences. If a resolution were sent up from a Group Conference there would be a tendency among the representatives of the committees in that group to vote solidly in its favour without reference to their individual committees. That might not matter if the groups were approximately equal in size. But the groups were not constructed for this purpose, and if there was a tendency for groups to act as groups within the Conference it would destroy the representative character of the Conference so far as the individual Panel Committees were concerned.

Dr. CANDLER-HOPE, who supported the motion, said that the idea which lay behind it was that unless a group had some power of initiative it was of very little use to have

a group meeting at all. In his (North of England) group men came from long distances, and if they were simply to meet to select a representative for the Insurance Acts Committee they might only meet once a year or not at all. If more power could not be given to the groups they might as well be dissolved.

Dr. R. H. Dix said that the purpose of the motion was to simplify business, not to render it more complicated. The difficulties which Dr. Brackenbury had suggested existed only in his imagination. Each representative would still be instructed by his own Panel Committee.

Dr. Bunting, in replying on the discussion, stated that in a concrete instance in the North of England Dr. Brackenbury's fears had not been realized.

The motion was lost.

Co-operation with Medical Practitioners' Union.

Dr. Gordon Ward (Kent) moved that the agreed reports of the two meetings of delegates of the Insurance Acts Committee and the Medical Practitioners' Union should be circulated in time for consideration by the present Conference. The relations between these two bodies had, later in the day, to be discussed, and representatives should have these documents before them. The Committee had stated that the matter was not yet ripe for report. That did not seem to be quite the case, judging from the view of the delegates of the Union, who regarded their task as having been discharged. If the discussion was to be adequate the reports must be before the Conference.

Dr. P. Macdonald seconded.

Dr. Brackenbury said it would be possible for the reports to be copied and circulated for the Conference by the lunch hour, but he doubted whether the interval for lunch would be adequate for their digestion. He had no objection to the utmost publicity being given to these documents, but he desired that that publicity should be given at a time when it would be of the greatest advantage or the least possible disadvantage. It might be from the point of view of one of the bodies which had entered into these conferences that the matter was now closed, but from the point of view of the Insurance Acts Committee it was not closed. The Committee desired to go on with the consideration of the subject, and if this was to be done with any profit at all, he could assure them, the less said about it the better that day. If it was desired that all that could be said should be said on that occasion, he for one was prepared to say it; but he would deprecate doing so at this juncture.

Dr. D. O. Twining (Devonshire) said that this was a matter which was not on the agenda. If the Panel Committees had had any strong feeling on the matter they would have sent up motions, and they had not done so.

Dr. T. L. Bunting said that his Newcastle Committee considered the matter to be of great importance. It did not know what view to take on the question until it had been furnished with the documents. The matter should be discussed and worked out thoroughly.

Dr. Hammerton said that the representatives were entitled to further information in view of the remarkable fact that while the representatives of the Insurance Acts Committee said that the matter was not closed the representatives of the Medical Practitioners' Union declared that it was.

The Chairman: The reports will hardly help one to say which side is correct.

Dr. R. H. Dix believed that the matter had been unduly held up, and that the Conference ought now to have a report on what had been done.

Dr. H. J. Cardale (London) said that he did not want to prejudice any negotiations nor to leave the Conference under any mi-apprehension. What had actually happened was that representatives of the Insurance Acts Committee and representatives of the Medical Practitioners' Union had met—their last meeting was held in July—and had agreed unanimously upon a certain course of action. The Council of the Union had endorsed the action of their representatives in agreeing to the proposals, and to that extent, therefore, the negotiations were regarded as being at an end. He thought that the whole matter was one which needed very careful consideration at the hands of all Panel Committees.

Dr. Brackenbury undertook that the full documents should be circulated. The Insurance Acts Committee, however, could not circulate the documents until it had itself taken a decision on them. As soon as that decision was arrived at full information would certainly be circulated to the Committees.

Dr. Burchell moved as an amendment that the Committee be instructed to circulate these documents to all Panel Committees forthwith.

Dr. Gordon Ward said that the Medical Practitioners' Union had deferred all criticism and propaganda for its own funds pending the result of these negotiations. It had put forward nothing expressive of its own views which might be held to hamper the conferences. In the further absence of these documents he did not think the Union could be expected to exercise this restraint in the future.

Dr. D. F. Todd supported the amendment calling for the documents to be circulated at once to the Panel Committees. This question had been discussed *ad nauseam* by the annual conferences, and explicit instructions were given at the last Conference that the matter should be taken in hand. He himself was not speaking on behalf of the Medical Practitioners' Union, but on behalf of one of the large Panel Committees which had been annoyed by this dispute.

Dr. J. P. Williams-Freeman said that he was sorry to differ in opinion from the Chairman of the Insurance Acts Committee, but he must support the motion that the documents be circulated to the Conference that day. The question of co-operation with the Medical Practitioners' Union could not possibly be discussed with full knowledge by the Conference unless a plain statement was before it as to how the matter stood. The Committee appointed an extremely strong subcommittee to meet representatives of the Union, a great deal of trouble was expended on the discussion, and the subcommittee made what it considered a useful and painstaking report, which contained within it the terms of a good and beneficial settlement. The Insurance Acts Committee had not adopted it but had referred it to another larger subcommittee for further consideration. If the Conference was of opinion that some agreement with the Union ought to be effected, it should have before it the work that had been done by this able subcommittee.

Dr. Brackenbury protested against the word "forthwith" in Dr. Burchell's resolution. It was of no use asking for an incomplete report for circulation to Panel Committees; chaos would be made worse than it was at present. He asked the representatives to wait a little longer. He was himself prepared to accept the later motions on the paper calling for unity of the profession, but if it was desired to have a discussion on the methods of achieving unity in the profession such a discussion would be frustrated and not helped by the circulation "forthwith" of these documents to the Panel Committees. Seeing that the Insurance Acts Committee was acutely divided on the subject and had referred the matter back to an enlarged subcommittee—a subcommittee containing all the original members—it was in the interests of everybody that the Panel Committees when they were given information should have full information, together with the considered opinion of those who had been dealing with the subject at close quarters. He believed that all the documents might be circulated to Panel Committees before Christmas. The report of the two sets of delegates was not valid until it had been before their parent bodies. It had been before one of those bodies, which, apparently, was prepared to accept it as it stood, but the other body—the Insurance Acts Committee—was not prepared to accept it as it stood, and wanted further information to clear up doubtful points. With the greatest desire to achieve real unity, he begged the Conference not to pass a resolution calling for the circulation of the documents "forthwith."

Dr. J. G. McCutcheon (Glasgow) supported Dr. Brackenbury's contentions, but at the same time did not want to wait for many months before these reports were obtainable.

Dr. D. F. Todd said that they were on the eve of the election of a new Insurance Acts Committee, by which body the matter might have to be discussed *de novo* if it were held up any longer. Every consideration had been given to the subject, and it was now time for the Panel Committees to have this information.

Dr. A. Foster supported Dr. Brackenbury's point of view, but thought there ought to be a time limit.

Dr. Brackenbury asked how, within the next month of political turmoil, it was to be expected that the Insurance Acts Committee could give the subject calm and impartial consideration. He was greatly disappointed—though he saw the necessity of such a course—that the Committee could not come to a decision at its meeting on October 5th, so that it might report to the Conference, and he would do his best

to get the Committee to come to a decision one way or the other at the earliest possible moment, when these and any other documents would at once be circulated. He thought he could give an undertaking to circulate these documents before Christmas, though such undertakings were always liable to be interfered with by unforeseen circumstances.

Dr. Ward withdrew his motion calling for the production of the documents during the Conference in favour of Dr. Burchell's amendment calling for their circulation to Panel Committees "forthwith" after the Conference, and to this an amendment was proposed by Dr. Brackenbury instructing the Committee to circulate the documents before Christmas. This was carried by a very large majority.

Later in the proceedings a motion by London—

> That this Conference is of opinion that it is desirable that no effort should be spared to secure the unity of the profession working under the National Insurance Acts—

was carried unanimously and without discussion.

Constitution of Insurance Acts Committee.

On the motion that the additional direct representative on the Insurance Acts Committee (consequent upon the action of the Representative Body in increasing the number of direct representatives from 18 to 19) be allocated to London,

Dr. H. F. Oldham (Lancashire) pointed out that the effect of this would be to give two representatives to London. While they in Lancashire had no desire to deprive London of anything it might properly have, he thought that the group of which Lancashire was a part had a better claim. London had 1,480 insurance practitioners.

Dr. R. J. Farman: The number is now 1,585.

Dr. Oldham said that he took the figures on which the apportionment of direct representatives was based. The number of practitioners in Group "C"—which included Lancashire, Cumberland, Westmorland, and Cheshire—was 2,960. The numbers, therefore, were nearly double those of London. Moreover, London had only one Panel Committee, with seventy members, who would thus return two direct representatives, whereas Group "C" had twenty-six Panel Committees, with over 600 members, who at present returned three representatives. The area of Group "C" was some five thousand square miles, and extended from Crewe to Carlisle and from the coast to Oldham and Stockport. He moved that the additional representative be allocated to Group "C."

Dr. J. Holmes (Bury) pointed out that Manchester and Salford were the only Panel Committees in which the system of payment for work done instead of the capitation system prevailed, and it was desirable that this other system of remuneration should be represented on the Insurance Acts Committee.

Dr. Brackenbury—who evidently related the motion with a further motion by Lancashire that the Manchester Panel Committee should be given a separate direct representative—said that the number of Manchester practitioners on the panel was 265. There were twelve Panel Committees in the country with larger constituencies, and if Manchester was to be given a single representative the only equitable thing would be to reconstruct the Insurance Acts Committee on a similar basis of units, in which event the number of direct representatives on the Committee would have to be more than fifty. Even if Salford were added the number of practitioners represented by Manchester would be only some 400, and the same principle followed out through the country would mean doubling the direct representatives on the Committee. The better thing to do would be for Group "C" with its existing three direct representatives to make an internal arrangement whereby one of the three was nominated by Manchester and Salford.

Dr. H. J. Cardale (London) remarked that it was impossible to allocate representatives on a strict arithmetical basis with regard to the numbers of electors (that is, members of Panel Committees). Were this amendment accepted it would give Group "C" four direct representatives, or one to every 715 insurance practitioners, while London would be left with one to 1,500. London included about one-tenth of the insurance practitioners in the kingdom, which would roughly entitle it to two representatives on the Committee.

Dr. Oldham said that the London members represented solely urban practice, while Group "C" included rural as well as urban, and various other kinds of practice, such as colliery practice.

On a division the numbers were:

To allocate the representative to London ...	...	62
To allocate the representative to Group "C"	...	56

Dr. Gordon Ward had a motion on the paper regretting that only nineteen direct representatives were allowed on the Insurance Acts Committee, but he withdrew it in favour of a motion by Sunderland expressing the opinion that the number of direct representatives should be increased. It was freely admitted that when the Insurance Act came in the British Medical Association provided all the central organization that the insurance practitioners had at that time, just as the British Empire instituted forms of government for the uncivilized races at its periphery. But with the advance of civilization increasing measures of self-government were given, and a similar "imperial gesture" might be given here. It was because his original resolution might be construed in some sense as a reflection upon the Insurance Acts Committee or its parent Association that he preferred the terms of the Sunderland motion.

Dr. R. H. Dix then moved the Sunderland resolution. The present proportion, he said, was not sufficient, though he had no objection to the other elements remaining on the Committee. The proportion of direct representatives should be 75 per cent.

Dr. Brackenbury said that he would like to make the gesture of the kind asked for by Dr. Gordon Ward. But it was necessary to correct some misapprehensions. The Insurance Acts Committee was composed effectively of thirty persons (reckoning as effective two of the four members who were on the Committee as officers of the British Medical Association). Of the thirty twenty (he included the chairman of the Conference, who was *ex officio* a member) came from the Panel Committees themselves. The direct representation, therefore, was two-thirds of the Comm ttee. It had now been declared—what had not previously been declared by those who urged more and more direct representation—that there was no objection to the presence of other elements in the Committee, and that led him to approve the "imperial gesture." He thought there ought to be an increased direct representation, provided there was no reduction of the other elements in the membership. He was prepared, therefore, as part of the move towards unity to accept this resolution. He thought it might offer a way out from some of the present disunion without involving some of the dangers to which other courses would certainly give rise. He regarded this motion by Sunderland, a later motion by London calling for increased efforts after the unity of the profession, and another motion calling for full contributions to the National Insurance Defence Trust, as all of a piece, and understanding they would hang together he supported the first.

The motion was carried unanimously.

Dr. Brackenbury said that the Insurance Acts Committee had put forward a recommendation to the Conference that only members of Panel Committees, and not, as hitherto, members of Local Medical and Panel Committees, should be entitled to vote at future elections of direct representatives to the Insurance Acts Committee; on second thoughts, however, he and others had doubts whether this was a wise resolution to pass. There was not much difference usually in the personnel of the two Committees, but there were circumstances which it might be well to consider a little further before a resolution of this kind were adopted.

Dr. T. L. Bunting said that the motion on this point was originally sent in by his (Newcastle) Committee. The reason for proposing it was that the membership of Local Medical Committees varied very much in different parts of the country. In most towns the Local Medical and the Panel Committees were identical in membership, and there could be no advantage in having the former represented in these cases; but in other towns the conditions were different. In Newcastle there was a small representative Local Medical Committee, whereas in the neighbouring town of Sunderland every practitioner was a member of the Committee. Thus Sunderland had twice as many voters as in Newcastle, although in Sunderland there were only half as many practitioners.

It was agreed that the question should be reconsidered by the Insurance Acts Committee.

Dr. Brackenbury then moved, on behalf of the Insurance Acts Committee, that in future elections of direct representatives a voter should have only one vote in any group, irrespective of his membership of more than one Panel Committee in that group.

Dr. Burchell opposed the motion. Cases of plural voting could not be very many, and the man who was a member of

two Panel Committees was likely to be a man who took considerable interest in insurance practice and whose vote was perhaps of more value than that of the ordinary individual.

Dr. P. Macdonald also opposed. The man who had two votes had each of them in a different capacity for the two areas.

Other representatives criticized the proposal, but it was in the end agreed to.

The Secretariat of the Insurance Acts Committee.

Dr. H. J. Cardale was in charge of a motion which urged that the time had arrived for the establishment of a whole-time secretariat under the control of the Insurance Acts Committee. He believed it to be unreasonable to expect part-time officers to afford the constant vigilance which was necessary adequately to protect the interests of insurance practitioners. No reflection was intended upon the able gentlemen who had been doing the secretarial work, but the time had come for a whole-time staff. He wished the matter to be referred to the Insurance Acts Committee for consideration.

Dr. Brackenbury said that if he accepted the reference the Conference must be under no misapprehension. He was prepared there and then to ask the Conference with no uncertain voice to reject this motion.

Dr. G. G. Genge (Croydon) said that his committee was opposed to the underlying suggestion in the resolution. Dr. Crawford Treasure (Cardiff) was instructed to oppose this tooth and nail. The present secretariat had done its work excellently. He believed that this proposal might be the thin end of the wedge, preliminary to ousting the British Medical Association, and his committee would have none of it. Dr. A. Lyndon (Surrey) also opposed it; the existing arrangement worked well. Dr. R. H. Dix had been instructed to support the resolution, provided that the work was still carried on under the aegis of the British Medical Association. Dr. H. F. Oldham also thought it the thin end of the wedge, but not in the same direction as Dr. Crawford Treasure. He thought it might be the first step towards getting a paid representative of insurance practitioners in Parliament. Dr. Wood Locket (Wiltshire) hoped that the proposal might be referred to the Committee, and not turned down, for, after all, the representatives must have an open mind as to the future improvement and development of the service. The time was coming when they might have to consider the whole framework of the organization.

Dr. Brackenbury said that the manner in which the proposal was framed suggested that this was a matter of practical politics, whereas it was not. Insurance practitioners did not want to have their affairs segregated from the affairs of the rest of the profession. On that ground it would be a mistake for the Conference to accept a particular form of words. If the suggestion was offered in the spirit of the speech of Dr. Wood Locket, that the conduct of affairs was not perfect and the organization not final, he would accept it very readily.

The proposal was then put to the meeting and lost by a very large majority.

Insurance Committees.

Dr. Lorton Wilson (Barrow-in-Furness) moved as an expression of opinion from the Conference that power be given to Medical Service Subcommittees to elect as their chairman and vice-chairman persons not members of the Insurance Committee. This, he said, was an important matter in the case of small committees. He pointed out that the suggestion made by the Ministry that they might get over the difficulty in making their nominations for the Insurance Committees was impracticable, as one of their nominees was promised to the doctors and the other to the chemists.

Dr. Lauriston Shaw (London) pointed out that a chairman outside the Committee could not be present at the meeting of the Committee to take responsibility for the report and defend it. The difficulty had been represented to the Ministry of Health, and the Ministry had undertaken, when appointing its representatives upon Insurance Committees, to consider the choice of a person who would be suitable for the chairmanship of the Medical Service Subcommittee.

The resolution was lost.

Dr. A. Foster (Worcester) moved a resolution asking the Committee to approach the Ministry of Health with a view to the introduction of a Regulation enacting that in the event of the appointment of any subcommittee by an Insurance Committee such subcommittee should have amongst its members at least one medical practitioner elected from and by the persons serving on the Insurance Committee. He gave an account of the special circumstances in his area which had prompted the resolution.

Dr. Brackenbury said that the Conference would sympathize with Worcester practitioners in the particular circumstances in which they were placed and in the fight they were putting up against some resolutions of their Insurance Committee. But while in full sympathy with Worcester, he doubted whether the Conference could pass the resolution as it stood. They could scarcely demand that every subcommittee of every kind must have medical representation upon it: the claim would not hold water. The particular case of Worcester ought to be brought to the serious attention of the Ministry of Health. It was against the spirit of the Insurance Acts that the kind of procedure which had been followed there should be adopted.

Dr. Crawford Treasure said that there was no doubt that there should be a medical man on the Medical Benefit Subcommittee, but he did not think that it signified to have medical representation on all subcommittees.

The Chairman asked whether Dr. Foster would be prepared to withdraw his motion on the understanding that the case of Worcester would be brought before the Ministry. Dr. Foster signified his agreement to this course.

Collective Bargaining.

Dr. Brackenbury moved the approval of the amended scheme for collective bargaining and an instruction to the Insurance Acts Committee to take steps to obtain the adherence thereto of all Local Medical and Panel Committees. The point which the Conference had to determine was the percentage of resignations which was to be taken by the Committee to constitute an effective proportion. In the old collective bargaining scheme the percentage of resignations which had to be in the hands of Panel Committees before action was taken was given as 80. The Committee considered that in the light of present circumstances an entirely effective proportion would be two-thirds. It was proposed, therefore, that the collective bargaining scheme as approved by successive Conferences should be adopted practically as before, with the amendment that 66.6 per cent. be substituted for 80 per cent. The scheme laid it down that if in any particular area there were fewer resignations than the required percentage it should be within the discretion of the Insurance Acts Committee to take action in that area. He was sure that the Committee would never take action without informing and consulting with the practitioners in that area and asking them if they would reconsider their decision. A motion to this effect from Nottinghamshire was one which he was prepared to accept.

Dr. R. Wardlaw (Greenock) moved that the Committee should not instruct the sending in of the resignations unless at least 75 per cent. of the total number of insurance practitioners in the kingdom had placed their resignations in the hands of their respective Panel Committees. He thought 66.6 per cent. too low a proportion.

Dr. Palmer (Plymouth) thought that the lowering of the percentage was rather a serious question. It was necessary to pay regard, not only to the numbers of practitioners, but to the size of their lists. The men with the large lists would be the men who would be more likely to stay in.

Dr. Brackenbury did not think that the Ministry of Health would be prepared to carry on the service if it was left only with the men with the largest lists. Such men were not always those whose status was the highest—of course, there were many men whose lists were large and who e status was as high as could be wished—but the personnel and status of the service was a factor which must weigh with the Ministry. If 66.6 per cent. of insurance practitioners declined to go on with the service, it did not matter who they were or what the condition of their lists, the service would break down, and the Ministry would know that it had broken down.

Dr. T. L. Bunting said that a factor which needed to be borne in mind, in addition to the 33.4 per cent. of men who did not refuse service, was the entrance into the profession of newly qualified men.

Dr. A. E. Joscelyne (Somerset) said that while the men with the big lists were those who would suffer most, it was the men with small lists, especially country practitioners, whom the Government could not do without. If the country

practitioners remained firm the Government could not move, because it could not afford to put a doctor in each rural district.

Dr. J. G. McCutcheon, speaking from his experience in Glasgow, favoured 66.6 per cent. rather than 75 per cent.

The Chairman (Dr. Dain), speaking as a representative, said that originally he was in favour of 80 per cent. But two facts had impressed themselves upon him with experience. In the first place the Government was responsible to Parliament for the best service it could get. The Government could not allow any impairment of the service; it was not enough to have a mere skeleton of a service. He was satisfied, for his own part, that even if a much smaller proportion than 66.6 per cent. came out, providing always that the men were resolved to stay out until conditions were made satisfactory, the result would be to kill medical benefit. With anything like 50 per cent. of firm resignations it would be perfectly possible for the Committee to get any reasonable terms which the Conference liked to put up.

Mr. P. L. Giuseppi (East Suffolk) pointed out the difficulty in the case of a small town with, say, six practitioners; if four stood out the remaining two could carry on for the Government service. The Chairman thought it must be a very small town if the two were not rendered extremely busy. In any case they would have no room for private practice, which would fall to the lot of the other four.

Dr. A. Dixon (Preston) said that during the war many large industrial towns were depleted of two-thirds of their practitioners, yet the service was carried on; he admitted that large numbers of the male population were away in the army.

Dr. R. H. Dix observed that the war conditions in respect to the shortage of insurance practitioners were very unpopular among the insured persons, and were the subject of much complaint; and what the people put up with during the war they would not put up with during peace. A representative said that he came from a rural district in which 500 insured persons were scattered over an area of fifteen square miles. How was it possible to employ a whole-time service man in that case?

The Greenock amendment calling for 75 per cent. of resignations was lost, and the scheme of collective bargaining (including the figure 66.6 per cent.), together with the instruction to the Committee to take steps to obtain the adherence thereto of all Local Medical and Panel Committees, was approved.

National Insurance Defence Trust.

The Medical Secretary (Dr. Alfred Cox) said that the report of the trustees of the National Insurance Defence Trust on this occasion was by far the most encouraging that had ever been made. The latest document in the hands of representatives showed that 135 Committees had subscribed up to October 12th; 21 had agreed to support the Trust, but so far had not sent any contributions; 7 had declined to support the Trust, and 36 had given no indication of their intentions. Still later figures increased the number of those actually subscribing by 13; 8 others who had given no indication of their intentions had now agreed to support the Trust, although so far their subscriptions had not come to hand, and the number of those who had declined to support the Trust was reduced to 4. The total amount received up to date was £34,536. There was, however, one fact to be set against this encouraging record. The average amount received each year since the Fund started was £6,025. This, at a halfpenny per insured person, represented 2,892,000 insured persons, which meant that the Fund was only receiving one-quarter of the amount which the Conference had agreed should be paid by each Panel Committee.

London's £20.

Dr. H. J. Cardale (London), with reference to an amount of £20 which appeared as a contribution from London, said that he must remove any misapprehension as to the policy of the London Panel Committee. This sum was sent as a contribution towards the expenses of the Special Conference held in May, which the London Committee took the initiative in calling.

Dr. Brackenbury said that the cheque was made payable to the National Insurance Trust, and therefore there was no alternative but to put it with the Trust moneys. He would like to know in which of the categories London was to be placed. London had passed a resolution to support the Trust, and subsequently rescinded it. If London absolutely declined to support the Trust he would like to know it.

Dr. Cardale said that London was among those committees which were not supporting the Trust. ("Shame.")

Dr. Palmer (Plymouth) wanted to know why such an important constituency as London could not do better. In the West they were ashamed of London. Four London representatives came to the Conference and expected to have an influential voice and to control the position, and yet the London Committee had paid not one penny to the Trust. Plain speaking was necessary. He ascribed some of the trouble to the fact that the London Committee was too large. London ought to reconsider its position.

Dr. R. J. Farman (London) said that London was divided into twenty-nine constituencies, and at the last election the question of the Trust was one of two questions brought before the electors, and the Trust was turned down. The electors felt that until there was closer union between the Medical Practitioners' Union and the Insurance Acts Committee they could not support the Trust.

Dr. D. O. Twining (Devonshire) moved:

> That at the present serious moment in the fortunes of insurance practitioners it is of the utmost importance to the successful organization of the profession that every Panel Committee should at once arrange to contribute fully to the National Insurance Defence Trust.

He could not understand why, with the organization available in London, the London practitioners had not been tackled in the interests of the Fund. The Conference had just given London an extra representative on the Insurance Acts Committee. "God knows why we did it." (Laughter.) The idea of Devonshire was that the Insurance Acts Committee should establish some definite organization for dealing with those areas which had not yet subscribed.

Dr. Brackenbury reminded Dr. Twining of a previous resolution that the trustees should not go behind the Local Medical Committee in making an individual appeal to the doctors in an area. This, although it handicapped the trustees, was, he thought, a wise provision for the moment. The conditions of the metropolitan area, partly because of its mass, made these voluntary funds much more difficult to arrange and guide than in smaller areas. He asked for every possible leniency for London in view of a real and lasting difficulty. Let the Conference exercise patience a little longer and a contribution would be forthcoming even from the metropolitan area.

Dr. D. F. Todd (Durham) thought it would remove some difficulty if the expenses of the Insurance Acts Committee and the Conference were paid by the Panel Committees instead of out of the general funds of the British Medical Association. If this money were paid directly by the Committees it would accustom them to the idea of bearing their *pro rata* share.

Dr. Brackenbury replied that the expenses of the Committee were borne by the British Medical Association, but those of the Conference were borne by the Trust, and had been now for two years. If the Trust were properly supported the whole of the organization expenses of Committee and Conference could be met out of the interest, apart from the share of the secretarial and clerical services.

Dr. C. F. T. Scott (Middlesex) said that men who did not subscribe could not expect any financial aid when the fight did come. Dr. H. F. Oldham said that the Conference had that day passed a resolution which interfered with the success of the Trust, in that it had given an additional representative on the Committee to London, which contributed nothing, and refused it to Manchester, which had made a contribution of £750.

The Devonshire resolution was carried with one dissentient—namely, Dr. Gregg of London, who said he voted against it by instructions.

Dr. B. E. A. Batt (West Suffolk) asked that future reports of the trustees might show the number of insured persons in each area and the number of contributions paid, and this was agreed to.

The Organization of Insurance Practitioners.

A discussion then took place on a memorandum from the Insurance Acts Committee on the organization of insurance practitioners in the event of a refusal of the terms offered by the Government for national health insurance work. The memorandum was prepared on the instruction of the Special Conference in May last. After reciting the circumstances in detail which might call for organization, and the alternatives before the Government if it declined to ask Parliament for a sufficient grant and offered a final figure which the

Conference had refused, the document went on to discuss the action to be taken with advantage by practitioners on the suspension of medical benefit. Two plans were put forward. One was based on the principle of "no contract practice for insured persons," which the Committee considered to be the strongest and most effective line to take "if everywhere adopted." The other was for an alternative medical service, either on the lines of a model scheme for a public service in each area (which was circulated), an individual contract with insured persons, or the extension of certain existing contract arrangements.

The Two Policies.

Dr. Brackenbury said that it was not proposed to determine finally that day what the action of the Conference should be. It was only a general discussion upon the suggestions in the documents before the members which was desired. These documents, together with such report of the discussion as might seem suitable to the Chairman of the Conference, would afterwards be circulated to the Committees. It was hoped to place all the available material before the Panel Committees so that representatives called to the Special Conference which would be held during the first half of next year would be prepared to determine finally what the course of action should be. The Committee believed that if, at the end of 1923, it was necessary to enter upon this fight, it had best be done along the lines of refusing all contract service for insured persons. That was the policy which was most likely and in the shortest time to bring the struggle to a successful issue. But that policy would not be successful unless it was universally adopted. A universal adoption of this simple policy of no contract practice whatever for insured persons was the most promising line of action. Unless, however, it could be universally adhered to, the difficulties in the way would be very great. It might be, therefore, that the Conference would consider that some alternative method had better be pursued. He discussed the case of colliery areas, in which practitioners found themselves unable to follow the simple course just mentioned, although quite prepared to carry on a fight. There were in such areas clubs for the medical benefit of the families of miners, ironworkers, and so on, and along with those benefiting by this club treatment the practitioners had to do with the insured person. In that case the simplest and easiest way might be to say, "We repudiate the insurance service, but you (the insured person) can come into the club from which your family already receives benefit, and you will pay a slightly increased contribution." But if that was considered to be legitimate in a colliery area there would be individual practices in other areas where substantially the same conditions obtained, and the practitioners concerned might quite properly say, "We ought to be able to do the same in our practice without any suggestion that we are doing something which is illegitimate." He wanted the Conference to visualize this difficulty and take it fully into account, and if members who had experience of practices under such conditions and were of opinion that the first policy—that of no contract—could be rightly pursued, he hoped that they would say so; if on the other hand they thought it would break down, he would like to hear their opinion as to the prospects of the alternative proposal, the "second best," of legitimatizing the kind of service he had just outlined, and of carrying on the fight on this less ideal but, under the circumstances, more effective line. There were certain courses which might quite legitimately be taken by individual doctors in a particular area. They might establish in their area a public medical service upon agreed lines, or the individual practitioner might enter into a contract with his insured persons. The practitioner might write to all the persons now on his list, saying that he and his fellows were not going to work the national system any longer, but that he wished to retain his connexion with the insured person, and offered him, therefore, a private contract. He might say to each of his insured persons, "I am prepared to go on at a contract rate of x shillings a quarter, and if you pay me that in advance I will attend you as I have been doing under the National Insurance Act." An important condition in any such contract would be that the fees charged were at a rate which was not below a certain minimum to be fixed centrally, and it was also very important that approved societies must not be in any way, directly or indirectly, recognized. Another legitimate course would be an extension of the existing contract arrangements. Under such arrangements weekly contributions were deducted from wages at the source, and this might be extended, but without bringing in the approved society. It might be said to the employer or other person, "I will attend your people for a contract rate, provided you have nothing to do with approved societies, and that you consent to the deduction of the contribution at the source." That would be, in certain contingencies, a legitimate thing to do. What had to be done between now and next year was to determine which of these plans was the best for carrying out the fight. He directed attention to the memorandum circulated outlining the scheme for a Public Medical Service, based primarily upon a capitation system of payment, the scheme which had been approved by the Council of the British Medical Association. In a few places throughout the country there was established either a complete medical service of this type or the nucleus of such a service, and it would obviously be legitimate to adopt a plan of that kind in an area as one of the alternatives if the first plan of all, "no contract practice for insured persons," was not feasible. All that the Committee asked of the Conference that day was to consider these suggestions, not in detail, but in broad outline, and to give such advice and help as was available, knowing that the remarks made would be very useful to the Committee and, eventually, to the general body of insurance practitioners.

The Funds Available for Medical Benefit.

Dr. Gordon Ward (Kent) moved:

> That this Conference considers that payments in respect of medical benefit should be the first charge on the central pool meaning by the central pool the central funds for sickness benefit as a whole].

He said that the idea at the back of this resolution originated with the representative for Smethwick (Dr. Bradshaw) and was not his own discovery, although the Chairman had put this resolution into his hands. At the end of 1923 the sum of seven shillings, and no more, so far as they could see at the moment, would be available as the remuneration for the profession for each insured person. It was the fact, however, that in the central pool, which was made up of the contributions of insured persons and others, there was a further sum, over and above this seven shillings, which might be made available for medical benefit. The suggestion in his resolution was that the funds in respect of medical benefit should be the first charge on this pool—in other words, that those who negotiated on behalf of insurance practitioners should say to the Government, if the Government argued that funds were not available, "You have enough already; it is simply a question of rearranging existing funds." He hoped the Conference would consider that this was a sound line to take, and that an instruction to that effect would be given to those in charge of the negotiations.

The Chairman said that he had attended a meeting at Smethwick, called for the consideration by insurance practitioners of the Insurance Defence Trust, and in the course of discussion the gentleman who represented Smethwick at that Conference pointed out that whereas in the memorandum on the organization of insurance practitioners in the event of a refusal of terms it was stated that no more money was available than that which would produce seven shillings per insured person, it was evident that more money was available if the matter were approached from another point of view. When regard was paid to the contributions of the insured person and of the employer, plus the Government contribution of two-ninths, it was seen that, after allowing for other calls, more than seven shillings per insured person was available for the profession. It might be urged upon the Government that the money allowed for approved society expenditure should be reduced. At all events, a study of the contributions made under the Insurance Act opened up for consideration a means whereby the provision of seven shillings could be amplified. The central funds for sickness benefit would provide more money for professional remuneration if they were distributed on a different basis. He thought that the originator of this idea should have the credit of putting it before the Conference in order that representatives might be made aware that there was a way of getting more money without raising contributions or depleting the reserves of the approved societies.

Dr. Brackenbury said that the motion was in the form of an instruction as to how negotiations should be conducted. This was very useful, but what he was at present hoping to learn from the Conference was as to the way in which the struggle should be conducted if negotiations failed.

Dr. Genge asked whether it was a fact that 60 per cent. of the central funds were spent on administration. The Chairman: I cannot tell you.

No vote was taken on the resolution moved by Dr. Gordon Ward, which was simply accepted as a suggestion for the negotiating body.

Alternative Medical Services.

A number of representatives from colliery and industrial districts then gave an account of the conditions prevailing in their areas with regard to contract practice and their opinions as to the likelihood of the success of the policies indicated in the Insurance Acts Committee's memorandum—that is, the the plan of "no contract practice for insured persons," or, failing this, the establishment of a public medical service, the making of an individual contract with insured persons, or the extension of existing contract arrangements. Those who spoke were Dr. R. M. Rendall (Nottingham), Dr. W. Steven (West Riding), Dr. D. E. Dickson (Fife), Dr. James McDonald (Motherwell), Dr. J. C. S. Burkitt (Leicestershire), Dr. D. F. Todd (Durham), Dr. Morgan Rees (Glamorgan), and Mr. Lionel Dingley (West Bromwich). The position in residential and seaside districts was put forward by Dr. A. W. Holthusen (Southend), Dr. Muir Smith (Eastbourne), and Dr. G. G. Genge (Croydon), and in rural districts by Dr. J. O. Summerhayes (Oxfordshire) and others.

Dr. P. Macdonald (York) said that it was very desirable to interchange knowledge of the views of constituents. He thought it would be useful for the Conference to have an opportunity of passing a resolution as to the desirableness or otherwise of contract practice. The Chairman said that resolutions had been left out deliberately; discussion was wanted, but not at present a binding expression of opinion. Dr. Macdonald went on to say that his own Panel Committee was of opinion that it was very desirable that there should be, in the contingency indicated, no contract service for insured persons, but the question was whether such a course was practical politics. The question of a public medical service had also been discussed by his Committee. There was such a service in York, and he gathered from the model scheme put forward by the Insurance Acts Committee that this owed something in its inspiration to the York service. There was a division of opinion in his constituency as to the possibility of running such a service on a large scale. The feeling of the majority was that it could be done, but there was a very considerable minority.

Dr. R. H. Dix said that in Sunderland there would be no difficulty in carrying out the plan of no contract practice for insured persons; all club and friendly society practice had been eliminated since the Insurance Act came in. The problem in the colliery areas outside the town was, however, different, and it seemed desirable that some special policy should be adopted with regard to colliery areas.

Dr. F. Radcliffe did not agree with Dr. Brackenbury in saying that it a fight was going to be waged on the lines of "no contract practice for insured persons" it would have to be universal. Such a plan was likely to break down in colliery districts where there had never been anything but contract practice. Surely Lancashire might pursue one course and, say, Nottinghamshire another, without imperilling the position for the country. In Oldham the practitioners were quite prepared to revert to private practice if that was the feeling of Lancashire, and he did not think it signified what different methods were pursued in other parts of the country.

The Chairman said that some speakers appeared to be labouring under a misapprehension with regard to the proposals of the Committee. The organization suggested was intended only to be temporary, so that pressure might be brought upon the Government; it was not intended as a permanent arrangement.

Dr. Lauriston Shaw (London) said that the Insurance Acts Committee was to be congratulated upon bringing forward a plan of campaign which could be carried on temporarily during a fight. In the past it had been the weakness of insurance practitioners that they had not thought sufficiently of what they would do while they were fighting. The scheme, of course, was purely a temporary one, to be carried on from the time when negotiations were broken off to the time when they were renewed. If a fight was to be successful, however, it was important to have public sympathy. No set of participants in an industrial struggle had been successful unless public opinion was on their side. If practitioners stood out for the ideally perfect line of no contract practice for insured persons it would follow that some of those persons, being poor, and thinking they could not get attendance under any scheme, would go without medical advice altogether. Should one of such persons die without medical attention a prejudice would be created in the public mind which would interfere with the success of the struggle. It was very important, therefore, to consider what schemes should be set up to avoid the possibility that the ex-insured person might go untreated.

The Medical Secretary then addressed the Conference. He said that he was well aware of the difficulties in the colliery areas and of the great sacrifices which the men in such areas might be asked to make. But he was not aware that any fight worth calling so could be conducted without sacrifice, and his experience had shown him that doctors in contract practice areas were as willing and as able to make sacrifices as any other section of the profession when such a course seemed necessary.

Dr. J. P. Williams-Freeman thought that too great stress had been laid upon the need for a universal line of action. He did not see why it should be universal. In some towns, like certain seaside resorts, the line of "no contract practice for insured persons" could be adopted without any great hardship to the insured persons or, for the matter of that, to the practitioners. In other places if this attitude were taken it would alienate public sympathy. He did not like the hard and fast line of "no contract practice" all over the country. The position would not be weakened if side by side with this plan a public medical service was established in districts where this was the most practicable line to take. He believed that the establishment of a public medical service was quite possible even in rural districts. The plan of no contract practice might be followed in places where the average wage was high, and a public medical service in rural areas, where the wage was very low, and in certain industrial areas, where some contract arrangement was the general custom. There was no danger that the public medical service would prove so very smooth in its working that the Government would turn round and say, "You do it well; we will wash our hands of it." It was well to give the fighters in the different areas a chance of using the weapon which they knew best how to wield.

Dr. Wallace Henry said that he assumed that the whole object of a refusal to attend the insured person was to arouse such a feeling amongst the public as would bring pressure to bear upon the Government. In Leicestershire he believed it would be possible to carry on work on contract lines for insured persons quite satisfactorily. One point of view had been forgotten. If in colliery areas, where the difficulties of the Government in providing services were great, a service was provided on the practitioner's own initiative so satisfactory to the ex-insured that they did not bring any pressure to bear upon the Government, the bottom would be knocked out of the fight. A public medical service also would require a great deal of organization; it would take probably a year to bring it to a state of perfection.

Dr. Brackenbury said that the discussion had been enlightening and helpful to the Insurance Acts Committee, which would be better enabled to put before the next Special Conference some practical suggestions.

The necessity for a universal plan (Dr. Brackenbury continued) was that if in certain areas a contract with regard to insured persons might be entered into, with the employer deducting at the source, there would be in a large proportion of other areas individual practitioners, or little groups of practitioners, the conditions of whose practice were similar in that they had to do with individual factories or small local industries, and who would feel that it was legitimate for them to do the same as their colleagues had done in, say, the colliery areas. If a practice were allowed in one part of the country it could hardly be described as unprofessional in another, and so there would be a breaking down which would have considerable extensions. If the first plan of "no contract practice for insured persons" were made universal it would bring the fight quickly to a conclusion, but even if the second plan were adopted there would be so many exceptions to the arrangement, and such evident strain, a breakdown at so many points, that the Government would see that it was necessary to resume negotiations with a view to a more satisfactory basis. Public opinion would be with the profession on more than one side. There would be the public opinion of those for whom the alternative to an insurance service was Poor Law or charitable treatment and who did not want that; there would be the public opinion of those whose concern was the provision of Poor Law and hospital facilities; and there would be the public opinion of that very important body of persons who had a real concern for the national health. He believed, therefore, that although the alternative scheme might not be as good as the first scheme of "no contract practice for insured persons," it was by no means impossible for the fight to be carried through successfully on the alternative

lines. In industrial areas the danger would be the bringing in, in one form or another, of approved societies or trade unions. That would be fatal to the principle of the struggle. The idea must find no place that trade unions or approved societies were the employers of doctors with whom they could make terms. The approved societies and their officials must at all costs be kept out of these arrangements. He reminded the Conference, finally, that there could be no fighting without hazard. If they fought for something that was worth fighting for—and they would never fight for anything else—the risks and sacrifices must be accepted. Nor would the profession consent to the giving of some inferior service for the lower capitation fee. The service which the profession rendered must always be its best. He added, in reply to questions, that the aim of the Committee would be to bring negotiations with the Government to a definite conclusion before the end of September, 1923, and the collective bargaining scheme could not be brought into operation until the negotiations were concluded.

A motion by Nottingham calling for steps to be taken to bring the matters dealt with in the memorandum to the attention of the senior medical students likely to qualify next year was agreed to, but on a further motion by Bury, calling for a special campaign in the press on behalf of the point of view of insurance practitioners as against that of the approved societies, Dr. Brackenbury said that he hoped the Conference would allow the Committee to do its business in its own way; the Committee was quite alive to the necessity of educating the public. The motion was withdrawn.

Dr. J. McCrea (Berkshire) moved to instruct the Insurance Acts Committee to call for an inquiry into the financial administration under the Insurance Acts before any reduction of the capitation fee was considered. How was it that the friendly societies had been able to accumulate large surpluses?

Dr. D. F. Todd supported the motion. It was known, he said, that a large amount of money had accumulated in the funds of approved societies.

Dr. H. Rose (Buckinghamshire) said that the Committee was asked last year to institute a similar inquiry. The only result appeared to be a summary of the Ministry of Health financial report which was given in the Journal. He would like to have some particulars not furnished by the Ministry.

Dr. Brackenbury said that all the information demanded was at their disposal. If anyone expected to get it from any other source than the actuaries under the Government he was under a delusion. Surely the Conference would not suggest any suspicion of the *bona fides* of the actuaries. As for the future, the actuary's report was that the accumulations had not been excessive for an insurance scheme, and in his (the actuary's) opinion would barely meet the real insurance requirements which would come along during the next few years. The problem was purely a scientific one, and was being dealt with by responsible and eminent actuaries.

Dr. Candler-Hope said that the actuaries must have made some mistake, otherwise how could the surplus of fifteen millions be accounted for?

The Berkshire motion was lost.

The Collection of Practitioners' Statistics.

Mr. P. L. Giuseppi called for the collection of statistics from a certain number of practitioners scattered over the country, the statistics to determine on the basis of one year the amount paid per visit, consultation, etc., so that the Ministry of Health might be in possession of definite data on which to base the amount of the capitation fee.

Dr. Williams-Freeman said that in the mileage inquiry, in which yearly returns were taken from over 600 practitioners, the average number of visits to each insured person on the lists for one year was 1.6. They would not be wrong to take it that for every visit paid by the practitioner to an insured person there were three visits by the insured person to the practitioner.

Dr. Brackenbury, while urging that all possible data should be forthcoming, said that there was no need to pass the resolution, because the Insurance Acts Committee had been doing the very thing it was now called upon to do.

Dr. Gregg urged that all figures should be supplied upon which practitioners could lay their hands. In London there had been circulated among certain practitioners a form of card for the recording of statistics.

Dr. Muir Smith said that it was necessary to state in such statistics the number of persons on the list, the number of attendances, visits, and consultations, and the amounts received. During the last two years his own record had worked out at something like 1s. 3d. an item.

The East Suffolk motion was lost.

Dr. W. M. Holmes handed in to the Insurance Acts Committee some particulars of the kind relating to the public medical service at Leicester.

Conferences with Representatives of Interested Bodies.

Dr. Brackenbury brought forward a recommendation from the Insurance Acts Committee declaring it to be desirable that a conference of the Committee with other persons interested in the medical service of the Insurance Acts, including representatives of approved societies, Insurance Committees, and their clerks, should be held. He said that the Committee, having given this matter further consideration since the last Special Conference, was unanimously of opinion that it should be pursued. He hoped that the Committee might be allowed to take the initiative in calling such a conference.

Dr. G. H. L. Hammerton held that before the Committee entered into any arrangements for such conferences it should first take steps to obtain the opinions of insurance practitioners themselves upon the working of the Act and upon any grievances they might have. The Committee required to be equipped with all possible knowledge, so as to meet any argument which might be advanced from the other side. At the present time one of the approved societies was sending round a young woman inspector to question patients, asking them if they were satisfied with their doctor, how their doctor treated them, how many times he came to see them, and whether they would like to change their doctor. If that was the way in which approved societies were going to work it was just as well that the Insurance Acts Committee should know of it.

Other representatives had had similar experiences. One said that he had reported the matter to the regional medical officer, who stopped the whole business.

The Chairman said that if any representative had glaring examples of this kind the Committee would be glad to have particulars.

The recommendation of the Committee was agreed to.

The Chairmanship of the Conference.

The Medical Secretary announced at this point that, following a contest, Dr. H. G. Dain had been elected again Chairman of the Conference. (Loud applause.)

Dr. Dain thanked the representatives for this expression of their continued confidence. He had decided to submit himself to re-election on that occasion, this being the third time he had been chosen. But he thought it was wise not to wear chairmen too thin, and, following the precedent set by the Chairmen of Representative Meetings of the British Medical Association, he proposed, after he had served this third year, not again to put himself forward.

Dr. Brackenbury begged Dr. Dain not to make any stipulations as to an early relinquishment of his office. (Hear, hear.)

Additional Benefits and Specialists' Services.

Dr. W. H. Lowman (Coventry) moved:

> That this Conference strongly urges that nursing, hospital, ophthalmic, and dental benefits are undoubtedly of the nature of medical benefits within the spirit of Section 14 of the National Insurance Act, 1911, and should be administered accordingly by and through Insurance Committees.

Dr. Brackenbury said that the Committee had urged that these benefits, with the exception of dental benefits, which were separate, were undoubtedly of the nature of medical benefits. In any ordinary interpretation of the English language this position must hold good, but the contention of the Government was that, provided the additional benefits under approved societies were couched in a certain form of words, they were removed, by the Act itself, from being of the nature of medical benefit, and brought entirely under the control of approved societies, and not of Insurance Committees. But, inasmuch as there was a possible loophole, the Committee was watching things very carefully, and was determined to take the matter into court if it appeared that in a particular case there was a likelihood of advantage. If it was possible for any approved society by putting down its additional benefit in a certain form to give a benefit which, though ancillary to medical attendance, was not in the legal sense medical benefit, which was wholly and solely under the control of the society itself, and in which the medical profession could have no part or voice, the issue

was one of vast importance. These things would then be partial, incomplete, and given to some insured persons and not others. As long as they were additional benefits under the Act they must be partial, and it would require alteration of legislation—not any mere matter of administration—to make them anything else. It was very necessary that these additional benefits should be brought, if they could in justice be brought, within the scope of ordinary medical benefit. With regard to a laboratory service, mentioned in a later proposal, although he agreed that this was absolutely essential, to establish it as an additional benefit would be a mistake, but this was what a later motion on the agenda, from West Riding, demanded. Another resolution, by Kent, said, what on the face of it was not unreasonable, that the Conference was opposed to any extensions of medical service which would make the amount available for the remuneration of general practitioner services dependent upon the amount of previous deductions from the pool for specialist services. If laboratory services were made another charge upon the pool, and the pool were adequate, such services would be saved from being under lay control and administration, and practitioners would have secured the right to a voice in whatever arrangements were made. He begged, therefore, that the hands of negotiators might not be tied as the Kent resolution would tie them, because he himself believed that it might be helpful to negotiation if the negotiators could say that if a full laboratory diagnostic service were provided, insurance practitioners would be very glad to have it.

Dr. Candler-Hope said that Dr. Brackenbury had dismissed dental benefits as being outside medical benefit. At a meeting of his own Medical Benefit Subcommittee, however, the question had recently been raised as to the payment of a doctor's bill for extraction of teeth, and the decision of the Ministry, to whom the matter was referred, was that, if there was no resident dentist within a reasonable distance, and if the medical practitioner were in the habit of extracting teeth, he was required to extract teeth without making any extra charge.

Dr. Brackenbury said that this was not a new fact. Indeed, it figured in the annual report of the Committee last year. If, however, the decision to which Dr. Candler-Hope had referred had actually been given, the Committee would like to have particulars, and, he thought, would take the case up. The Ministry had said that in rural practices it would be inclined to hold that the extraction of teeth should form part of the practitioner's service, if no dentist was available, and if the practitioner was in the habit of extracting teeth. The Committee had said that it would not agree with that, and so far it had maintained its position. It had been awaiting the decision of the Ministry of Health.

Dr. Lowman's motion was withdrawn and motions by Kent and the West Riding were agreed to, the one disapproving of any extension of the Acts by which additional benefits of a medical nature were made available for a section only of the insured population or were administered otherwise than through Insurance Committees, and the other declaring it essential for the satisfactory treatment of diseases amongst insured persons that a full and complete laboratory service should be established in every area, and requesting the Insurance Acts Committee to take such steps as would help towards such a service at the earliest possible moment.

Dr. Gordon Ward (Kent) then moved:

> That while fully aware of the desirability of making the medical service under the National Insurance Acts as full and complete as possible, this Conference is opposed to any system of extension which would make the amount available for the remuneration of general practitioner services dependent on the amount of previous deductions from the pool for such specialist services as major operations, laboratory work, etc.

He said that the important word here was "specialist." Certain services now were charged on the fund—for example, anaesthetics. They had tolerated that because the giving of anaesthetics was not really a specialist service. The Worcester Committee had asked that all ancillary services should become a first charge on the fund. In some committees in which the Worcester proposal had been made the medical members had spoken against it. In others the proposal had been allowed to lie on the table. But there was quite a volume of opinion in favour of that particular procedure, of making specialist services the first charge on the ordinary insurance practitioners' fund. He invited the Conference to support the view that specialist services should never be the first charge on the remuneration of the ordinary insurance practitioner.

Dr. Brackenbury said that in his opinion it would be fatal to progress if this resolution were passed. It would handicap negotiations very seriously. As the law stood, these laboratory services could be established by approved societies as an additional benefit. In that case insurance practitioners would lose all control over such services. On the other hand, a good many of them were established by the public health authorities in many areas, but in a good many other areas there were no such services. If an inquiry were made into the cost per insured person of the provision of these services where not already provided for by the public service, and it was found that the cost was a certain figure—he thought 3d. or 4d. per insured person was an outside figure—or if x-ray diagnosis were included and a full extension on the present basis of public provision, then 6d. would cover all estimated margins. Which would practitioners rather take: 8s. per insured person under the existing conditions, or 9s. per insured person, to include a service which would enhance the popularity of the insurance medical service with the public, would help the practitioner in his profession, and would put 6d. per insured person into his pocket?

The Chairman, speaking as a member of the Conference, said that he shared with Kent the grave suspicion of any extra charges on the pool. One really successful thing that practitioners had done in the way of expressing their views in opposition to the Government was in refusing to allow drugs to be made a first charge on the medical pool. It might be, as Dr. Brackenbury believed, that anything under 6d. would provide all these services now, but there was no guarantee that their future cost might not be 1s. He was opposed to any system under which something else was made a first charge on the practitioners' fund. The Kent resolution did not rule out such charges under all circumstances, but as a general expression of opinion he thought it would be unwise to allow anything other than general practitioners' service to be a first charge.

The Kent motion was carried by a large majority.

Transfer of Practices.

Before coming to some resolutions on the transfer of practices,

Dr. Brackenbury said that this matter had, in fact, matured in the way he had intimated at the last Special Conference. By the introduction of a special paragraph into the local distribution scheme, which would receive the sanction of the Ministry, it could be arranged that on the decease or retirement of a practitioner the whole of his credits should be immediately transferred to his successor, and remain so transferred for a period of eighteen months. During that period his list would be adjusted from quarter to quarter, and at the end there would be an allocation by the Allocation Subcommittee of such of the actual persons who were on the deceased or retiring practitioner's list as had not chosen a doctor. This system meant that the individual person was not transferred, but the credit for that person was transferred at once and continuously until the person concerned actually chose or was allocated to somebody else. It was possible for the practitioner to be assured, therefore, of eighteen months' purchase for his insured persons. After that time there was the same liability as on any other list. There was this further point to be noted, that the practitioner had no vested interest in the insured persons on his list, and, if the Ministry chose to terminate the whole system at the end of 1923 or any subsequent date, practitioners as individuals could not claim compensation from the State owing to the fact that their insured persons no longer existed as such. He added, in reply to a question, that the Insurance Acts Committee would circulate a draft clause for incorporation in the local distribution schemes, and this would be certain of receiving the sanction of the Ministry. Asked what would happen if an Insurance Committee would not accept the new arrangement, Dr. Brackenbury said that it would be compelled to do so by the Ministry.

The Chairman said that the Scottish Medical Secretary had approached the Scottish Board of Health on the same subject, but had not yet received a reply.

Certain motions on the agenda were not pressed, having regard to Dr. Brackenbury's explanation.

Record Cards.

Two motions from Newcastle were agreed to without discussion, one that the interchange of record cards be expedited, and the other that when a person moved from Scotland to England or in the opposite direction, he should be given a new record card of the size used in the country to which he had moved.

Notice of Alteration in Terms of Service.

Dr. McCutcheon moved as an instruction to the Insurance Acts Committee to endeavour to ensure that three months' notice was given to Local Medical and Panel Committees for consideration of any proposed future alteration in the terms of service. Dr. Brackenbury pointed out that very many of the alterations were made in carrying out the resolutions of the Conference. After a brief discussion, which centred upon the question as to the time given in the case of recent alterations in the Scottish regulations, the motion was accepted.

This concluded the first day's proceedings (at 6.30 p.m.), the representatives leaving to attend the dinner given to the Insurance Acts Committee by the London Panel Committee.

ADJOURNED SESSION.

The Conference met again on Saturday morning at 9 o'clock to complete its business. Dr. Dain again occupied the chair. Dr. Brackenbury and the Medical Secretary were unable to be present owing to engagements previously made, as it was not anticipated that the Conference would extend over to the second day.

The discussion on notice of alteration in terms of service was continued. The first motion, by Durham, that the Insurance Acts Committee should not approve of alterations to regulations or terms of service before submitting them to Local Medical and Panel Committees, was opposed by the Chairman, who urged that the Committee should be given a certain amount of authority to act.

The motion was lost.

Dr. J. Holmes (Bury) wanted the Committee to take counsel's opinion as to how far the Ministry had power to alter regulations by order of the Minister without the notice embodied in the agreement.

The Chairman said that the order of the Minister was not peculiar to the Ministry of Health. The Committee could not attempt to abolish the powers of Ministers. The Minister, speaking generally, was reasonable in the exercise of his power.

Dr. Gordon Ward urged that not even a Minister could act contrary to the British constitution. If he exercised his powers wrongly he could be brought to the courts. It was time some attempt was made to check the arbitrariness of departments.

The Chairman said that he did not mean that the Minister could act other than constitutionally, but the Committee was in possession of a printed statement as to what could be done by order of a Minister.

The motion asking for counsel's opinion to be taken was lost, as was also a motion that whenever fresh amendments were made to the regulations the Ministry should be asked to issue fresh complete copies to every practitioner.

Change of Doctor.

Dr. D. F. Todd moved to instruct the Insurance Acts Committee to consider what steps should be taken to prevent canvassing for transfers of patients either through or on behalf of any practitioner or society. In Durham they would like to make it a matter of regulation that the person to whom the card belonged should apply personally for a transfer.

Dr. H. F. Oldham declared that there was a danger of approved societies instructing their members to transfer so that all their members might in time be on one or a certain number of selected lists. Approved societies had been establishing in certain districts a spirit of favouritism towards particular medical men; they took up a certain man and ran him for all he was worth.

Another representative thought that the ethical point involved in the resolution could be dealt with locally. As for the approved societies, he did not believe that they could influence 1 per cent. of their members to change their doctor.

Dr. R. H. Dix said that in the county of Durham this was a very serious question. Behind the resolution there was not the fear of what might happen in the future, but the knowledge of what was happening now. Free choice of doctor was a very desirable thing, but it should be a personal choice between patient and doctor, without the intervention of any official.

Dr. Johnstone (Manchester) said that if the system of free choice of doctor were combined with payment by attendance it would do away with this trouble.

Dr. J. C. S. Burkitt (Leicestershire) said that it was not only from the larger approved societies that the danger came; it came equally from the friendly societies. He believed that there were three million persons in the friendly societies. A member of a friendly society had to apply to the secretary for his card in order to bring it to the doctor, and it often happened that the secretary influenced the new member with regard to the doctor of his choice.

Dr. Gordon Ward suggested that the Committee might be pressed to try to make it a penal offence for anyone to be in possession of a medical card who was not entitled to it—that is to say, who was not the person to whom the card belonged or the clerk of the Insurance Committee.

Dr. J. L. Speirs (Gateshead) said that the members of his Committee viewed the new Regulation for transfer of patients with extreme distrust. The Minister by this Regulation had simply given an advantage to the man who was not "going straight." The whole position depended on the personal interpretation that a man gave to a regulation, and if certain individuals took this as justifying the collection of cards and canvassing for patients there seemed to be no legal prohibition, and the result was a great injustice.

The Chairman said that the discussion had been very instructive. He had not imagined that there was so much risk attached to these regulations in this particular. It seemed extremely unfortunate that the first step to be taken for a long time to make it easy for the patient to change his doctor was fraught with dangers of this sort—on the one hand from certain practitioners, and on the other from approved societies. The question was how to make the choice free and yet protect the ordinary honourable insurance practitioner.

Dr. E. Welch (Leeds) referred to a concrete instance in which there had been gross infringement, but in which the only course of action was to take proceedings against the doctor whose list had been enlarged, although there was no direct blame attaching to him, except for not at once dissociating himself from the canvassing which had proceeded on his behalf, and the difficulty of bringing any proof was great. There was no penalty, apparently, to be imposed upon any member of the community who liked to interfere with free choice of doctor, except upon the doctor himself.

Dr. Todd's motion was carried unanimously.

Title of Insured Person to Benefit.

A motion from Buckinghamshire was next taken, urging that there should be a regulation to make it clear to insured persons that the onus of declaring themselves to be such lay with them, and unless at the time of applying for treatment they produced their medical cards or made a claim to be treated as insured persons they would be responsible for the payment of the practitioner's fee as private patients.

The Chairman said that the difficulty was that the insured person was entitled to treatment by some doctor, and that payment for that treatment had been made into the central pool. He agreed that something ought to be done to make the patients declare themselves, but the practitioner could tell to a fair nicety who were insured and who were not. He asked for suggestions as to means by which an insured person could be made to declare himself.

Dr. Laird Pearson (Birkenhead) thought that a simple notice in the surgery, "Every insured person *must* present his medical card," would answer the purpose. Dr. H. F. Oldham thought it sufficed to ask the patient his occupation; if an occupied person under the Act he must be insured.

The motion was referred to the Insurance Acts Committee.

Dr. Johnstone (Manchester) drew attention to the number of insured persons receiving medical benefit subsequent to their suspension therefrom, and asked the Insurance Acts Committee to devise steps to obviate it. In the Manchester Insurance Committee he had raised the question, and discovered that there were thousands of cases which had been out of benefit for three, four, or five years. In one case in which he himself had been giving treatment for five years it was found that the man was never entitled to benefit. In one recent quarter in Manchester 647 attendances were given and 171 visits and 3 special visits paid in the case of persons for whom the Insurance Committee had no orange slip. The amount involved in that quarter was £130: in the previous quarter £93. One of these cases had been suspended from benefit since January, 1915, and yet up to 1922 that man was able to obtain medical benefit from any practitioner in Manchester. It was most difficult to determine whether or not a person was in benefit. The fault lay entirely with the approved society.

The Chairman said it was quite evident from the Manchester figures that there were a number of people for whom no contribution was made to the central pool and who were able to obtain treatment. This was due to the fault of the approved society.

The motion was agreed to as a reference to the Insurance Acts Committee, which, it was understood, would ventilate the matter when it met approved society representatives.

Dr. H. D. Pollard (Bedfordshire) had a motion dealing with a parallel matter—the case of those patients for whom the doctor was not paid, but who were entitled to benefit. He asked the Committee to inquire into what appeared to be a serious administrative defect whereby some insured persons entitled to benefit were not credited to the doctor. In some cases this was due to clerical errors in the offices of the Insurance Committees or of the approved societies, but there still remained other cases not covered by these facile explanations.

This also was referred to the Committee.

A motion from Cardiff declaring that when an insured person is struck off the practitioner's list the insured person should be notified as well as the doctor was agreed to.

Payment for Drugs Administered by Practitioners.

Dr. E. A. Gregg (London) had a motion expressing the view that the present capitation fee of 1s. 3d. per hundred insured persons per annum was insufficient to cover the amount of drugs and appliances "necessarily or ordinarily administered by practitioners in person or needed for use before a supply can conveniently be obtained otherwise under the Regulations." He said that the effect of the 1s. 3d. per hundred was to place upon the doctor the onus of providing medicine when the chemist's shop was closed. If the chemist's shop were open the chemist would in each case receive a dispensing fee of 5d., *plus* the cost of the drugs supplied, and if the prescription were marked "urgent" the dispensing fee would be increased to 10d. Owing to the normal closing hour of chemists being 8 p.m. it might be assumed that more than 2 per cent. of patients received medicine from their doctors for which the chemists would be paid 1s. 8d. dispensing fee, *plus* the cost of the drugs supplied. There was thus a saving at the doctor's expense of money which would otherwise have been paid to the chemist.

Dr. Burkitt supported these contentions from the point of view of rural practice. Dr. R. H. Dix pointed out that if an area was an abnormal one the 1s. 3d. could be increased; in one area it had been raised to 2s. 6d. per hundred insured persons. The Chairman said that the 1s. 3d., although a smaller sum than they had had before, had relieved panel practitioners of certain liabilities. They were able now to order dressings on a prescription. In many areas he thought 1s. 3d. was sufficient, but it was not a fixed sum, and in some areas, where a case had been put up to the Ministry, it had been increased.

The motion was carried, as was a further motion by Dr. Gregg, calling attention to the incompleteness of the schedule of drugs and appliances which were excluded from those in respect to which a capitation rate was payable. Expensive colloidal drugs and other preparations should be added.

Certification.

Dr. Gordon Ward asked the Conference to urge upon the Ministry of Health the desirability of simplifying the certification system; the multiplication of certificates was becoming a serious nuisance. The Chairman said that this was a matter which he hoped would be taken up with the approved societies. The present position was in some respects farcical.

Another motion asked that in the case of an insured person entering a convalescent home the intermediate convalescent certificate should cover the whole period spent in the institution. The Chairman thought that this matter also might be taken up in conversation; it was very difficult to get any amendment of the rules.

These motions were agreed to on the understanding that the Committee would make representations on the matter.

Dr. J. L. Speirs moved a protest against certain clauses in the new regulations which were unjust to insurance practitioners, particularly Article 9, paragraph 13, of G.P. 29, which stated:

> Even when a doctor has been notified that a patient has ceased to be entitled to medical benefit, he must, if the patient applies for treatment as an insured person, provide such treatment without charge, unless he follows strictly the procedure for charging by way of deposit only or for rendering an account in the special official form, subject to proof of right to benefit.

He contended that the person who made the mistake should suffer for it, but under this regulation all the suffering was to be borne by the doctor.

The motion was agreed to.

Prescription Forms.

Dr. Laird Pearson, after one motion of his on the subject of prescription forms had been ruled out of order, complained that the Insurance Acts Committee ought to have obtained the opinions of Panel Committees upon the prescription form question. In Birkenhead they were much surprised at the easy-going manner in which the Committee had dealt with the subject.

The Chairman said that when this question of prescription forms came before the Insurance Acts Committee he with one other member urged that it should not be required to put in the addresses. The general feeling, however, was that the address was probably necessary, though he still thought it a useless insertion. Dr. Lewys-Lloyd gave an instance of the useful purpose which an address on the prescription form might serve.

Dr. Laird Pearson, in withdrawing a motion on the subject, said that this was the first time he had tabled any resolution which in the least reflected upon the Insurance Acts Committee. He did not want to be driven into the arms of the Medical Practitioners' Union. (Laughter.)

Some discussion took place on a motion by Leicestershire with regard to the merits of fixed carbons in duplicate prescription books. The Chairman said that the Committee was willing to take up the question of the form of book which would be most useful, and he asked Panel Committees to send in copies of the kind of book they would press for.

Powers of Local Medical Committees.

Dr. E. A. Gregg moved:

> That where the personnel of the Panel Committee and the Local Medical Committee are identical the Panel Committee shall be empowered to exercise all the rights and duties of the Local Medical Committee.

He said that claims for fees for the provision of the services of a second practitioner for the administration of a general anaesthetic were sometimes received in which it was doubtful if the service fell within the scope of medical benefit, and it would save time if the Panel Committee could express an opinion without referring the matter to its own members sitting as the Local Medical Committee. This also applied to emergency claims and to other matters.

This was agreed to.

Pension Scheme for Insurance Practitioners.

Dr. Gregg moved an instruction to the Insurance Acts Committee to negotiate the inclusion of a pension scheme in any new arrangements as to the terms of insurance service made with the Ministry of Health. What was asked for at the moment was only investigation conducted in the way they would expect to have investigation conducted by the Insurance Acts Committee. He hoped that no Committees would lightly turn down this pension scheme out of prejudice.

The Chairman said that a subcommittee of the Insurance Acts Committee was now investigating this question. London had done a very great amount of work in endeavouring to discover whether a pension scheme was possible and what form it should take. The subcommittee was now making use of the information which had been gathered together. He thought he could say that its members were satisfied that an equitable scheme providing an annuity or alternative benefits, or possibly both annuity and benefits, was practicable.

The motion was withdrawn on this explanation.

Dr. Fox (Walsall) suggested that any scheme should be considered in the light of the Poor Law pension scheme—retirement at 65, and a pension on ill health after ten years' service.

Excessive Prescribing.

A lengthy motion on the subject of excessive prescribing was down in the name of Warwickshire, and was moved in the absence of the Representative by Dr. W. H. Lowman (Coventry). He said that the Ministry had proposed that in future the regional medical officer should check excessive prescribing. But the regional medical officer was an official of the Ministry, and there was a fear that excessive economy in prescribing might be enjoined upon practitioners, and that they might be surcharged without proper investigation. It was unwise to put any additional inspectorial or police powers into the hands of regional medical officers, and the resolution proposed that, instead of this method of checking excessive prescribing, either the Panel Committee should retain unchanged all duties now imposed on them under this Article of the Regulations or that their duties should be transferred

to a standing subcommittee of the Insurance Committee, comprising a majority consisting of practitioners nominated by the Panel Committee, with a medical chairman.

Asked why laymen should be introduced on this subcommittee, Dr. Lowman said that the laymen would be representatives of insured persons, and would have an interest in seeing that their patients were properly prescribed for. Nineteen times out of twenty the laymen on such a subcommittee would be on the side of the doctors in any question of alleged excessive prescribing.

Dr. A. Manknell (Bradford) thought it undesirable to introduce any lay element, and moved an amendment:

> That no alteration be made in the present procedure until the matter has been fully discussed and considered by the Insurance Acts Committee and reported to this Conference.

He thought they should object strongly to any alteration whatever being made in the present scheme.

Dr. A. Foster (Worcester) said that possibly Warwickshire had been subjected to the same influences as Worcester. In Worcester there had been a suggestion that the examination of these scripts might be taken on by a subcommittee of laymen and doctors. His own Panel Committee was against any such innovation. If there was any need for tightening up the investigations the regional medical officer was the man to carry it through. The present powers of Panel Committees should remain as they were under the Regulations.

Dr. Manknell's amendment (which stood in the name of York) was agreed to.

This concluded the matters referred to in the Annual Report of the Insurance Acts Committee as to action taken since the last Annual Conference, and the report was then generally approved.

The Capitation Fee.

Dr. H. Rose wished to move a resolution requesting the Insurance Acts Committee to obtain a report from every Panel Committee as to the prospects of support for a certain capitation figure.

The Chairman thought it would be impolitic to fix a figure at the present juncture. He added that he had received information from certain representatives who did not speak in the discussion on the previous day that they were quite satisfied that in their own districts they could carry their men.

Dr. Rose did not press his motion.

Miscellaneous Business.

Dr. Gregg asked the Conference to express the opinion that nothing should be done to interfere with the responsibility and duty of an insurance practitioner in determining the necessity of a consultation for his insured patients. He said that this matter arose as a result of the recent regulations, whereby it was possible for an approved society to initiate a consultation which might have no bearing whatever on the question of incapacity. He felt that there should be no interference with the responsibility of the practitioner himself in determining the necessity of a consultation, though of course the practitioner must not be foolish or unreasonable in this matter.

Dr. J. C. S. Burkitt said that the insured person had the right of having a consultant if he wished, and he did not think that it would hurt the practitioner to have the consultant called in.

Dr. C. F. T. Scott supported the motion. Dr. Wood Lockey suggested some improved wording to make it clear that the practitioner did not stand in the way of any person who wanted a consultation, and after some little further discussion the motion was agreed to in the following form:

> That this Conference is of opinion that nothing should be done to interfere with the responsibility and duty of an insurance practitioner in determining in association with his patient the necessity for a consultation.

Dr. J. Holmes brought forward a motion which pointed out that while the Ministry of Health had reduced the Treasury grant towards the capitation fee by considerably over 20 per cent., it had reduced the remainder of its departmental expenditure by less than 4 per cent. The motion proceeded to urge that as practitioners only accepted the reduction of 1s. 6d. in the capitation fee on the urgent ground of national economy, the amount should be restored immediately, or the expenditure of the remainder of the department should be reduced to correspond. Dr. Holmes said that the estimated expenditure of the Ministry of Health for 1921–22 was 24¾ millions, and for 1922–23 22¼ millions. The total number of insured persons entitled to medical benefit in 1920–21 was 12,300,000, and a deduction of 1s. 6d. in respect of each of them amounted to £922,500. Thus more than half the saving in the total expenditure of the department was represented by the reduction in the remuneration of insurance practitioners.

The motion was lost.

Dr. Gregg brought forward a motion, which was referred to the Insurance Acts Committee, that when new or revised forms in connexion with the regulations or rules were required, specimens of such forms should be supplied to practitioners, with the notification of the new regulations or rules in question. He said that the forms which a doctor was now required to use were so numerous that it was desirable that the practice of other Ministries—such as the Pensions Ministry—should be followed in this respect.

A motion by Birkenhead calling for the necessary steps to be taken to assist insurance practitioners to resist the attempt of Insurance Committees to extend the time of evening surgery attendance hours beyond 7 o'clock was accepted by the Chairman on behalf of the Insurance Acts Committee.

Other matters which were similarly dealt with were to the effect that payment should be permitted, out of the statutory funds of Panel Committees, of expenses incurred by members in attending meetings of subcommittees and outside bodies when representing the Committee; that inquiries should be made into the proposed scheme of the British Dental Association for providing dental treatment to insurance patients; and that the use of spiritus vini meth. in the preparation of the external applications included in any local insurance formulary should be recognized by the Board of Customs and Inland Revenue. The Chairman said that he did not think the last matter could be altered by the passing of a resolution by the Conference, but on behalf of the Insurance Acts Committee he would accept the reference. The Conference also expressed the opinion, on a London motion, that when complaints heard by Medical Service Subcommittees were not substantiated, the complainant's expenses should not be paid by the Insurance Committee.

Mileage.

Dr. T. L. Bunting moved a resolution of protest against the mileage fees being based on figures collected during a year in which, owing to the mildness of the winter and the absence of serious epidemics, the sickness incidence was much below the average.

Dr. D. O. Twining desired that fresh statistics might be obtained, and that the Committee should be instructed to obtain them.

Dr. Williams-Freeman said that he was perfectly convinced that the statistics collected were dealt with in an absolutely fair manner by the Ministry of Health officials. Of course, some of the returns showed gaps of a fortnight or so during which there was no entry, and those had to be thrown aside because they would vitiate the average. But no kind of selection was exercised over the returns. He thought that the time would soon come when the Distribution Committee would ask for another year's statistics, and he hoped that the Committees in rural areas would furnish every assistance. It was desirable to get statistics for semi-urban, ordinary rural, and very sparsely populated areas, and in order to get a true picture Committees should select the practitioners from whom returns were asked so that these different areas might be represented in their true proportion. He hoped that the Rural Practitioners' Subcommittee would soon be able to issue a short statement for circulation, and he had every confidence that Committees would render assistance towards getting another set of statistics as good as or better than the last.

The Chairman referred to the great amount of work done by the Rural Practitioners' Subcommittee, and he thought it might well be left to that subcommittee to consider the question as to whether and when the labour of getting fresh figures would be justified.

This course was agreed to.

Admission to Medical List.

Dr. D. F. Todd moved that practitioners applying to be placed on the Medical List and who were not known should be called upon to present references as to their *bona fides*. He said that there had been unfortunate experiences in his own county (Durham). The Chairman opposed the motion, which he regarded as an extremely retrograde step. Every medical practitioner had the right to go on the panel, and all that he had to prove was the fact of his registration. In the case of any fraud the matter could be taken up in the ordinary courts.

The motion was lost.

Concluding Proceedings.

A final motion, by Coventry, asked that the next Annual Conference might be held in the provinces; Birmingham was suggested, whereupon another representative voiced the claims of Manchester. The Chairman indicated the difficulties which would attend a removal from London; the metropolis was the place most convenient of access from all parts of the country, and the work of the secretariat would be increased and rendered more costly if a centre away from London were chosen. The motion was withdrawn.

A vote of thanks was accorded with much heartiness to the Chairman (Dr. Dain) and the Chairman of the Insurance Acts Committee (Dr. Brackenbury), and the Conference concluded its labours shortly after noon.

DINNER TO INSURANCE ACTS COMMITTEE.

The Annual Conference dinner to the Insurance Acts Committee took place at the Holborn Restaurant on October 20th. Dr. H. J. Cardale, Chairman of the London Local Medical and Panel Committee, presided, and the arrangements were in the capable hands of the secretary of that Committee (Dr. R. J. Farman). An enjoyable evening was spent, and in addition to several speeches a long musical programme was carried through.

Dr. Peter Macdonald proposed the toast of the Insurance Acts Committee. He said that he had been identified with a certain section who had not seen altogether eye to eye with the Insurance Acts Committee nor agreed with the policy which constituted the Committee the mouthpiece of Panel Committees. He did not appear that night as a repentant sinner, but having failed to get insurance practitioners in general to take his own view and that of his friends, he was not going to waste his time kicking against a wall. He had never thought Achilles a heroic figure when he sulked in his tent. The Insurance Acts Committee was appointed deliberately the mouthpiece of the Panel Committees, and that being so he accepted the situation loyally, and would do all that he could to strengthen its hands. The necessity for a "live" organization of the profession was not now less, but greater. He proceeded to give some instances of the value of organization to insurance practitioners. In 1912 such organization as there was succeeded in getting from "the greatest bluffer of our times"—(laughter)—an extra 2s. 6d. per insured person. That alone put about £1,500,000 into the pockets of insurance practitioners. In 1919, when the capitation fee was increased to 11s., the amount ultimately conceded was one shilling or perhaps two shillings greater than it would have been without a good Insurance Acts Committee to voice the doctors' claims. If the advantage was only one shilling this worked out at £600,000 per annum. That result was mainly—not entirely—the work of the Committee. At the end of 1921 the capitation fee was reduced to 9s. 6d. But the Treasury figure was 8s., and the 1s. 6d. was saved for insurance practitioners only by the persistent pressure put upon the Minister almost exclusively by the Insurance Acts Committee. The increase of the mileage grant to rural practitioners meant an additional £250,000, and this was the work of the Rural Practitioners' Subcommittee. When, this year, the shadow of approved society control was lifted—and, he believed, permanently lifted—the advantage could not be measured in money, but again it was the work, mainly, of the Insurance Acts Committee. He passed on to say a few words about some of its members; and he placed first one who was not technically a member, but who was the embodiment of its activities—Dr. Cox. (Applause.) Recently he had a letter from Dr. Cox in which the sentence occurred, "God knows I am a man of peace." The remark of a friend to whom he showed the letter was, "God is the only one who does know it." (Laughter.) He spoke next of Dr. Brackenbury. He was reared in medical politics with a prejudice against Dr. Brackenbury, but he had learnt to mistrust his prejudices. He had learned also how right Dr. Brackenbury generally was, and to admire the energy he put into his work. He trusted that one result of the present political turmoil would be that Dr. Brackenbury would enter a sphere in which his capacity to serve the profession would be greatly increased. (Applause.) Thirdly he spoke of Dr. Dain. In his own first experience of Conferences the man in the chair was his namesake—Macdonald of Taunton. Nothing higher could be said in Dr. Dain's praise than that in the exchange the Conference had not lost very much. Of course, Dr. Dain was not a Macdonald! Poor English fellow, how could he be? (Laughter.) Then there was Dr. Williams-Freeman; he trusted his shadow would never grow less. Dr. Williams-Freeman was worth £200,000 a year to his fellow rural practitioners; his labours on their behalf had not filled his own pockets, but had probably lightened them. These men had laboured without fee, yet not altogether without reward. Dr. Brackenbury, to take him again as an example, had his reward in the admiration of the members of his profession. (Applause.)

Dr. Brackenbury said that Dr. Macdonald had rightly observed that the work had its reward. It had also its interest, which was continuous, because the problems were always changing. Several problems had been solved, but he did not suppose there would ever come a time when there was nothing for the Insurance Acts Committee to do. He did hope, however, that they would not be always in the state of uncertainty imposed upon them by the present conditions of political life, but would be able to settle down to the steady accomplishment of their ordinary professional tasks. The Committee did know something about the problems it had to deal with; it was not an isolated body which required the most elementary instruction. It had gained experience from within its own membership, from contact with the Ministry, and from conference with representatives of Panel Committees. On the whole it had been a very harmonious Committee, and the occasions on which it had had to take important decisions by a majority had been very few. They had gone along in the spirit of Carlyle and Sterling: "We have been for a walk for three hours over the hills, in disputatious argument all the way, but, except in opinion, not disagreeing." (Applause.) In that spirit he trusted they would be able to carry on.

Dr. Dain also responded to the toast, and referred to the spiritual rewards which came to those who laboured on behalf of their profession. It was a pity that often it was not until a man had lost his first energy in long years of practice that he could spare the time to take a part in professional affairs. He hoped that Panel Committees would give their younger men a chance.

Dr. Williams-Freeman added a few words testifying to the pleasure which it gave to rural practitioners to come up occasionally from the country and take part in the discussions around the table at 429, Strand.

Dr. Cox, who was called upon from many quarters for a speech, said that it had been his privilege to work with people who devoted their spare time to the interests of their profession, and a man would be less than human if he could live in such an atmosphere and not feel proud of the amount of unrewarded enthusiasm, and energy, and patience which was put by such people at the service of their fellows. And it was the greater marvel that they continued to render such service, because often they were subjected to the most unjust and cruel misrepresentation. The Insurance Acts Committee was behind no body in its devotion to the interests of its constituents and its knowledge of its job.

The proceedings concluded with the toast of "The Chairman," proposed by Dr. D. F. Todd.

British Medical Association.

CURRENT NOTES.

Post-Graduate Course at Plymouth.

It will be seen from the notice printed at page 168 of the Supplement this week that Plymouth — like several other Divisions and Branches of the British Medical Association—is organizing a course of demonstrations and lectures for practitioners. The Executive Committee of the Plymouth Division has arranged with the Committee and staff of the South Devon and East Cornwall Hospital for a six weeks' course of post-graduate instruction there. The fee for the course, which is open to all members of the profession, is £2 2s. Applications for tickets, together with the fee, should reach the Honorary Secretary, Dr. S. Noy Scott, Elmleigh, Plymstock, by November 1st.

The Warble Fly.

The Hide, Leather and Allied Trades Improvement Society has asked the British Medical Association for its support in connexion with a campaign for the destruction of the warble fly (*Hypoderma bovis* and *H. lineata*). An article on this pest by Sir Arthur Shipley was published in our columns on January 9th, 1915 (p. 68), and afterwards reprinted in the author's entertaining book, *More Minor Horrors*. The larvae of the warble fly bore through the skin of cattle and apparently wander freely through the tissues, and they cause an enormous amount of damage and suffering to the cattle. Many hides are spoiled, the affected meat in warbled carcasses is rendered unsaleable, and the animals are so worried by the fly and its larvae that the quantity of milk is

diminished. In one way and another the prevalence of the fly is the cause of heavy financial losses to farmers. Some years ago the Board of Agriculture appointed a committee to investigate the natural history of the warble fly and the damage it caused, and to suggest a method of stamping it out. The method first suggested—by squeezing out and destroying the ripe maggots between the months of May and August and applying carbolic oil—was troublesome and entailed much labour. As a result of the researches of the committee another method has been devised, consisting in dressing the backs of cattle with a wash prepared from a tobacco powder mixed with lime; the treatment is commenced in February and continued until the end of June; no injurious effects are produced in the cattle. The fear has been expressed, however, that the leaflet describing this effective method of treatment will be looked upon by the average farmer as merely a pious expression of opinion. The British Medical Association has therefore been invited, in association with a number of agricultural, veterinary, and scientific societies, to hold a conference with the object of petitioning the Board of Agriculture to make it compulsory for farmers to take steps to eradicate the pest. Dr. T. W. H. Garstang, Chairman of the Public Health Committee of the Association, and Dr. W. J. Howarth, M.O.H. of the City of London, have been appointed to represent the British Medical Association at this conference.

Professional Classes Aid Council.

Among the benevolent organizations with which the British Medical Association collaborates is the Professional Classes Aid Council. Its predecessor, the Professional Classes War Relief Council, was founded in October, 1914, for the purpose of relieving distress among professional and other highly educated people and their dependants, and promoting co-operation between interested bodies. The close of the war was far from ending distress, and in 1921 the council was reconstituted with its present name. The president is Lord Phillimore, and the chairman is Major Leonard Darwin, Sc.D. The British Medical Association is represented on the Council by its treasurer, Dr. G. E. Haslip, and Dr. Newton Pitt represents the Royal Medical Benevolent Fund. The first annual report has just been issued from the office at 251, Brompton Road, S.W.3. The opening section on the objects and methods of the Council replies in advance to a question which must often be put:

"It may be asked, seeing that most of the professions have benevolent funds of their own, why applicants should come to us for help and what room there is for a body like this Council. The answer is twofold. In the first place we have found that many persons do not know of the existence of funds connected with their own professions. Still less are these funds known to widows and other dependants. These people accordingly come to the Council, and part of our work is to put them on the right track. Secondly, when that has been done there remains a large number of persons belonging to the professional classes who do not come within the scope of any professional benevolent fund. The functions and scope of these funds vary considerably, but as a rule they necessitate work within strictly defined limits. Some assist their own subscribers only; others are restricted to persons with defined technical qualifications. Many applicants fall outside such limits, and these the Council take in hand."

Statistics of Insurance Work.

Insurance practitioners are again reminded of the necessity for the Insurance Acts Committee to be supplied with statistics of insurance work done in 1921. Information under the following heads should be sent to the Medical Secretary, 429, Strand, W.C.2.

			No. of Insured Persons Attended during 1921—that is, No. of Patients.	No. of Consultations.	No. of Visits.

Expenditure and Income Statistics.

The attention of the medical profession is again drawn to the offer of a gratuitous copy of a model account book to any practitioner undertaking to forward the particulars entered therein for the confidential use of the Insurance Acts Committee. All information under this head ought to be in the possession of the central negotiating body for insurance practitioners (the Insurance Acts Committee) for use at the time of the revision, at the end of 1923, of the present bargain with respect to the insurance capitation fee. Inquiries should be addressed to the Medical Secretary, 429, Strand, W.C.2.

Lending Library.

The Librarian will be glad to assist members of the Association in the selection of works to be sent them by post, in accordance with the arrangements for borrowing books that are notified each week on the last page of the Supplement.

SCOTTISH COMMITTEE.

A meeting of the Scottish Committee of the British Medical Association was held in Edinburgh on Thursday, October 12th.

Officers and Membership.

Dr. John Stevens, Edinburgh, was elected Chairman and Dr. C. E. Douglas, Cupar, Deputy Chairman for the session.

Dr. John Patrick, Glasgow, was elected to the vacancy caused by the election of Dr. Geo. A. Allan to the Council. Dr. R. C. Buist was co-opted a member.

Subcommittees.

The usual subcommittees were appointed, and it was resolved to continue co-operation with the Scottish Colliery and Public Works' Surgeons' Committee.

Minimum Salaries for Public Appointments.

A report was submitted showing the action taken by the Secretary in connexion with various appointments by education authorities in Scotland at less than the minimum salaries of the Association. In one case the action taken had resulted in the obtaining of the minimum. Action was pending in the others, and there was reason to hope that in some cases at least a satisfactory decision would be obtained.

Fees to Practitioners called in by Midwives.

A letter was submitted from the Scottish Board of Health, intimating that in response to representations from local authorities the Board proposes to reduce the scale of fees for visits to 3s. 6d. and 7s. 6d. for day visits and night visits respectively and inviting the observations of the Committee. It was resolved to send a reasoned reply to the Board, outlining the Committee's objections to the reduction.

Association Notices.

COUNCIL, 1922–23.

Vacancy.

Notice is hereby given of the following vacancy in the membership of the Council:

Indian Group, comprising the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches, owing to the resignation of Lieut.-Colonel R. H. Elliot, I.M.S. ret.).

Under By-law 54 (2) the Council is empowered either to fill the vacancy itself or cause it to be filled by means of an election by the Body authorized to elect, and has decided to adopt the latter course in the present case.

Nominations must be signed by not less than 3 Members of any Branch in the Group, and must be in the following form, or in one to the like effect, and should be received by the Medical Secretary not later than Saturday, November 25th, 1922:

COUNCIL, 1922-23.

Nomination Form for Election of a Member by the Grouped Indian Branches.

By Not Less than 3 Members of the Grouped Indian Branches.

We, the undersigned, hereby nominate .....

of ..... (*Full name and address to be given*)

for election by the Assam, Baluchistan, Bombay, Burma, Ceylon, Hyderabad and Central Provinces, Mesopotamia, Punjab, and South Indian and Madras Branches as a Member of the Council of the Association for the Session 1922–23.

Signatures and Addresses of Nominators .....

Branch(es) .....

Date ..... 1922.

The election, if a contest occurs, will be by Voting Papers, containing the names of all duly nominated Candidates, issued from the Head Office, 429, Strand, London, W.C.2, to each Member of each Branch in the Group.

Alfred Cox, *Medical Secretary.*

CHANGES OF BOUNDARIES.

Divisions of Surrey Branch.

THE following changes have been made by the Council and take effect as from the date of publication of this Notice:

(i) That the Richmond and Wimbledon Divisions be incorporated in the Kingston-on-Thames Division, the new Division to be known as the "Kingston-on-Thames Division"; and

(ii) That the areas of the Divisions of the Branch be reorganized as follows:

Croydon Division: To comprise the County Borough of Croydon, the Urban Districts of Sutton, Carshalton, Beddington, Wallington, and that portion of the Urban District of Coulsdon and Purley containing Purley, the C.P. of Sanderstead, and Kenley; that portion of the Rural District of Epsom containing the C.Ps. of Cheam and Banstead (excluding Burgh Heath and Tadworth).

Guildford Division: To comprise the Municipal Boroughs of Guildford and Godalming; the Urban Districts of Farnham, Haslemere, Woking, Chertsey, Weybridge, Egham, Windlesham, and Frimley; the Rural Districts of Farnham, Guildford, Hambledon, and Chertsey.

Kingston-on-Thames Division: To comprise the Municipal Boroughs of Kingston-on-Thames, Richmond, and Wimbledon; the Urban Districts of The Maldons and Coombe, Esher and the Dittons, Ham, Surbiton, Molesey, Walton-on-Thames, Epsom, Leatherhead, Barnes, Mortlake, Merton and Morden, and Mitcham; the Rural District of Epsom, excluding the C.Ps. of Cheam and Banstead.

Reigate Division: To comprise the Municipal Borough of Reigate; the Urban Districts of Caterham and Dorking and that portion of the Urban District of Coulsdon and Purley containing the C.P. of Coulsdon; the Rural Districts of Dorking, Reigate and Godstone, and the Townships of Burgh Heath and Tadworth in the Rural District of Epsom.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BATH AND BRISTOL BRANCH.—A special meeting of the Bath and Bristol Branch will be held at the Red House, Bath, to-day, Friday, October 27th, at 8.15 p.m., when Dr. Alfred Cox, O.B.E., Medical Secretary to the Association, will open a discussion on the Position of the Medical Profession in Relationship to National Health Insurance Work. For the convenience of those who are unable to attend the above, a second meeting will be held at the Swan Hotel, Wells, Saturday, October 28th, at 3 p.m., when Dr. Cox will open a similar discussion. Tea 4.30 p.m., by invitation of the President. In view of the very great importance of the matters for discussion to the whole medical profession, all medical men, whether carrying on panel work or not, and whether members or non-members of the Association, are earnestly requested to attend.

BIRMINGHAM BRANCH.—Ordinary meetings of the Branch will be held on the following Thursdays: November 16th, January 18th, 1923, February 15th, and March 15th. The following members have promised to read papers: Dr. Douglas Stanley, Mr. Seymour Barling, Mr. Musgrave Woodman, and Mr. G. P. Mills. Members are reminded that they are entitled to bring cases and specimens to the meetings for demonstration and discussion.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at Bromsgrove on Thursday, November 23rd, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on Mental hygiene.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—A meeting of the South Essex Division will be held at Southend-on-Sea on Friday, November 10th, when Dr. W. Langdon Brown, physician to St. Bartholomew's Hospital, will deliver a British Medical Association lecture.

LANCASHIRE AND CHESHIRE BRANCH: ASHTON-UNDER-LYNE DIVISION.—A clinical meeting of the Ashton-under-Lyne Division will be held at Stamford Villa, Stalybridge Road (Dr. Mamourian's house), to-day (Friday, October 27th), at 8 p.m., when a lecture on "Certain changes in the blood found in common diseases: their significance and value." will be given by Dr. O. C. Gruner, Lecturer on Pathology in Leeds University. The lecture will be illustrated by lantern slides and films.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—The following is the programme of meetings arranged by the City Division for 1922–23:—Tues., Nov. 14th, 9.15–9.30 p.m., Metropolitan Hospital, Mr. Ernest Miles: Lantern lecture on Cancer of the rectum. Thurs., Nov. 30th: Annual Dinner, Abercorn Rooms, Great Eastern Hotel, Liverpool Street, 7.15 p.m. Tues., Dec. 12th: General Meeting. Thurs., Dec. 14th: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m. Jan. 9th, 1923: British Medical Association lecture (lantern) by Sir Henry Gauvain on The utilization of natural aids of cure in the treatment of surgical tuberculosis. Feb. 13th: Paper by Dr. W. Langdon Brown. Feb. 15th: Dinner Dance in Abercorn Rooms, 7.15 p.m. to 1.30 a.m. March 1st: Dinner Dance, Abercorn Rooms, 7.15 p.m. to 1.30 a.m.; fancy dress optional. March 13th: General Meeting. Paper on Plastic surgery and results obtained, illustrated by lantern slides, by Mr. H. D. Gillies. April 10th: Paper by Dr. Bernard Hart. May 8th: Pathological specimens by Dr. T. H. G. Shore, Pathologist to St. Bartholomew's Hospital, lasting one hour; business after. June 12th: Annual General Meeting. July 10th: General Meeting. A clinical afternoon will be held during the session by Dr. W. Brander, at the Hackney Infirmary, and it is hoped to arrange for one at the Queen Alexandra Hospital for Children, Hackney Road.

METROPOLITAN COUNTIES BRANCH: NORTH MIDDLESEX DIVISION.—A general meeting of the North Middlesex Division will be held on Tuesday, October 31st, at 3.30 p.m., in the Wortley Hall, Seven Sisters Road, Finsbury Park. Agenda: Chairman's inaugural address, "The treatment of pneumonia." Other business. It is proposed to hold a divisional dinner and dance during December or January, if sufficient interest is shown by members of the Division.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.—The annual general meeting of the Darlington Division will be held at Greenbank Hospital, on Tuesday, October 31st, at 8.30 p.m. Agenda: Election of office-bearers; Secretary's statement of session's programme; "Some points of contact between medical and dental professions," Mr. F. P. Hamilton; "Some aspects of school dental work," Mr. F. Horsley; Other business.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—A meeting of the Buckinghamshire Division will be held at the Crown Hotel, Aylesbury, on Friday, October 27th, in conjunction with and following the meeting of the practitioners on the Bucks Panel, to discuss the National Insurance Act. A series of questions has been sent to all members of the Division and insurance practitioners, with a request that they may be answered and returned to the Secretary before the meeting, so that the replies may be tabulated. Several have already answered, and it is hoped that many more will do so. The Panel meeting starts at 3 p.m.

SOUTH MIDLAND BRANCH: NORTHAMPTONSHIRE DIVISION.—A meeting of the Northamptonshire Division will be held on Tuesday, November 14th, when Dr. Comyns Berkeley will deliver a British Medical Association lecture.

SUFFOLK BRANCH.—A meeting of the medical men resident in the county of Suffolk will be held at the Town Hall, Ipswich, on Friday, October 27th, at 3 p.m. Agenda: Paper by Sir Henry Gauvain, M.D., M.Ch.—Modern Methods in the Conservative Treatment of Surgical Tuberculosis (illustrated with lantern slides); Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The British Medical Association—its failings, its achievements, and its possibilities." Dr. Stewart, County M.O.H., and Mrs. Stewart kindly invite those present to tea.

SURREY BRANCH.—A general meeting of the Surrey Division will be held at Surbiton Hospital on Tuesday, October 31st, at 8.45 p.m. Mr. C. Max Page, D.S.O., F.R.C.S., will give an address on "Fractures." A large attendance is hoped for.

SURREY BRANCH: CROYDON DIVISION.—In response to a widely expressed wish a farewell dinner (morning dress) will be given to Dr. Veitch Clark as an expression of the goodwill and regard of the practitioners residing in the Croydon Division. The date has been fixed for Thursday, November 16th, at the Greyhound Hotel, Croydon, at 8 p.m., and it is hoped that there will be a large attendance of members and non-members of the Association. Tickets 10s. 6d. each, exclusive of wine. This will allow (in addition to the cost of the dinner) the presentation of a small memento. In the event of members being unable to take a dinner ticket, the Honorary Secretary of the Division, Dr. C. G. C. Scudamore (117, Whitehorse Road, Croydon), will be glad to receive 5s. towards the cost of the presentation. The Executive Committee of the Division has again arranged a programme for the coming session which should be of special interest to the general practitioner, and it is hoped that every member will make a point of being present at as many meetings as possible. The first meeting will be held at the Croydon General Hospital, on Tuesday, October 31st, at 8.15 p.m., when Dr. G. F. Still will read a paper on "Some cases of vomiting in childhood." On Wednesday, November 8th, at 3.30 p.m., Dr. Alfred Cox, Medical Secretary, will be present at the General Hospital for the purpose of meeting the members of the Division, of giving a short account of the principal work of the Association, and of answering any questions.

SOUTH-WESTERN BRANCH: PLYMOUTH DIVISION.

Post-Graduate Course.

The Executive Committee of the Plymouth Division of the British Medical Association has arranged with the Committee and staff of the South Devon and East Cornwall Hospital for a course of post-graduate instruction there. The course, which will extend over six weeks, will consist of special demonstrations and lectures at 2.30 p.m. on Wednesdays, commencing November 8th, when Mr. H. F. Vellacott will deliver a lecture on enlargement of the prostate, and a demonstration on laboratory tests for renal efficiency will be given by Dr. Eric Wordley. The fee for the course, which is open to all members of the profession, is £2 2s. Applications for tickets, together with the fee, should reach the Honorary Secretary, Dr. S. Noy Scott, Elmleigh, Plymstock, by November 1st.

Meetings of Branches and Divisions.

Birmingham Branch.

The annual report of the Branch Council shows an increase of 28 in membership. The rules of the Branch, as adopted by a special meeting of members in December, 1921, were approved by the Central Council in January, 1922. The area of the Branch has been modified by the exclusion of the area of Walsall, which is now included in the Walsall and Lichfield Division of the Staffordshire Branch. The average attendance at the ordinary meetings had been 30, but at a special emergency meeting of members and non-members, held under the auspices of the Branch in September, 1921, to discuss the National Insurance System, there were 250 present. The report gives a list of attendances at the Branch Council meetings, a list of members who had served on central committees of the Association, and the financial statement.

Dorset and West Hants Branch.

The autumn meeting of the Branch was held on October 11th at the Royal Bath Hotel, Bournemouth. There was an excellent attendance. Forty-eight members sat down to lunch, and this number was considerably increased at the subsequent meeting.

Dr. W. Johnson Smyth, President, moved the following resolution:

> This meeting of the Dorset and West Hants Branch of the British Medical Association desires to intimate to the Council of the Association that at the earliest date it is desirable to return to Bournemouth for an annual meeting; a very cordial welcome will be extended.

Dr. E. Hyla Greves seconded the motion, which was carried without dissent. It was stated that the Mayor of Bournemouth had given his assurance of the heartiest civic welcome and co-operation in making such visit an unqualified success.

The following officers were elected:

President-Elect: Dr. T. MacCarthy, Sherborne. *Vice-Presidents:* Dr. A. Kinsey Morgan, Bournemouth; Dr. F. H. Rodier Heath, Weymouth. *Honorary Secretaries:* Dr. Walter Asten, Bournemouth; Dr. C. Grey-Edwards, Parkstone.

An instructive and original paper was read by Dr. C. J. Girling entitled "Some criticisms and suggestions in regard to our professional modes and manners," in which he advocated re-examination of medical men at various periods of their professional life, and the removal of their diplomas in the event of failure.

Dr. W. Arch Main read an interesting paper on "Spinal anaesthesia."

Dorset and West Hants Branch: Bournemouth Division.

A meeting of the Bournemouth Division was held on October 19th at St. Peter's Hall, Bournemouth, when a British Medical Association lecture was delivered by Dr. J. A. Ryle, Assistant Physician to Guy's Hospital. The chair was taken by Dr. G. Batterbury of Wimborne, and there was an attendance of sixty-seven, including one visitor from Southampton. The subject of the lecture was "The investigation of dyspeptics," and at its close Dr. Ryle replied to questions asked by several members. On the motion of Dr. Batterbury, seconded by Dr. P. Duncan, a hearty vote of thanks and appreciation was accorded to the lecturer, and, in replying, Dr. Ryle thanked the Division for asking him to address them.

Edinburgh Branch: South-Eastern Counties Division.

A meeting of the South Eastern Division of the British Medical Association was held on September 27th in the Railway Hotel, Newtown St. Boswells, with Dr. N. P. Fairfax, vice-chairman, in the chair. The secretary read a considerable volume of correspondence that had been exchanged with reference to medical attendance on the police force in the counties of Selkirk, Roxburgh, and Berwick. After an animated discussion, Dr. Campbell proposed that the arrangement adopted in Kent, as set forth in the Scottish Medical Secretary's letter, should, with a slight alteration, be offered to the police authorities—namely, 2s. 6d. for a consultation, 5s. for a consultation at the patient's residence, with mileage (one way) over a mile at 1s. 6d. per mile. Dr. Georgeson seconded, and the motion was unanimously adopted.

A discussion arose on an application made from Dr. M. Dewar for the opinion of members on a proposal that a member of the Medical Practitioners' Union should be co-opted to the Insurance Acts Committee. The meeting expressed itself in favour of co-operation with the union, if this could be done without sacrificing any of the principles or authority of the British Medical Association. Dr. D. C. Graham then read a paper entitled "The acute abdomen," in which he gave an analysis of the cases on which he had operated, and contrasted the various types of cases met with. He strongly advocated that every case should be operated as soon as diagnosed. An interesting discussion then ensued.

Malaya Branch.

A meeting was held of the Malaya Branch in the General Hospital, Singapore, on August 17th. The business of the meeting included a reference to the Far Eastern Association of Tropical Medicine Congress to be held in Singapore in September, 1923.

Renal Efficiency Tests.

Dr. G. H. MacAlister read a paper on "Renal efficiency tests." He gave a short account of the development of these tests, describing them as a growth of the last twelve years. They now formed part of the routine clinical work in European America. The tests were classified as follows: (1) Those involving physical and chemical studies of the urine. (2) Tests of the power of the kidney to excrete substances artificially introduced—(*a*) foreign substances—for example, dyes such as phenol-sulphonephthalein, (*b*) normal constituents of the urine—for example, urea or diastase. (3) Comparative studies of blood and urine. (4) Tests applied separately to each kidney. (5) Miscellaneous tests such as comparative studies of toxicity in normal and pathological urine. Detailed descriptions were given of the urea concentration test, the dye test, the determination of diastase, and the estimation of blood urea. The value of the urea concentration factor based on simultaneous estimation of urea in blood and in urine was referred to, but the speaker deprecated the employment of pseudo-mathematical formulas such as Ambarr's coefficient as giving a spurious appearance of precision. In conclusion, Dr. MacAlister spoke of the value of such tests in determining the correct treatment in cases of nephritis, and as a guidance to the surgeon in planning the safest means of operative treatment in certain types of genito-urinary disease.

In the course of the discussion Mr. C. J. Smith dealt particularly with the value of the tests in cases where prostatectomy was to be undertaken. Much of the subject was still debatable ground. Mr. Black referred to the procedure of Sir Peter Freyer, who performed the operation for prostatectomy in two stages, and did not rely on efficiency tests. Professor Kay Mouat said that fallacies might arise in some of the experiments, particularly the estimation of blood urea by the urease method owing to the unreliability of urease preparations and the instability of centi-normal solutions of acid and alkali. Dr. Dawson agreed with the last speaker as to the instability of chemicals, and referred to the danger of full nitrogenous diet in cases of threatened uraemia.

In reply, Dr. MacAlister spoke of the practice at St. Thomas's Hospital, where blood urea tests were always performed in cases of enlarged prostate. Where the blood urea exceeded 80 mg. per 100 c.cm. the surgeon was advised to operate in two stages, in the first instance draining the bladder by means of a suprapubic cystotomy performed under local anaesthesia. The blood urea soon fell to 40 mg., and the complete operation could then be safely undertaken. He agreed with Professor Kay-Mouat that the quality of the soya bean utilized as the source of urease was variable, but did not think that the error on this account exceeded 20 per cent.—an error which hardly affected the clinical interpretation of results. The instability of weak solutions was overcome by keeping stock normal solutions and diluting these as required.

Metropolitan Counties Branch: Lewisham Division.

A meeting of the Lewisham Division was held at St. George's Hall Annexe, Forest Hill, S.E.23, on October 17th, when Dr. T. E. White occupied the chair. Mr. George Richardson, F.R.C.S., read a paper on "Operation for undescended testicle." He showed a boy who had been operated on successfully. He described the operation. He was of opinion that the vas was never short enough to prevent the descent of the testicle. He makes a small incision in the septum separating the two sacs, and brought the testicle through it, so that both testicles were on the same side, thus keeping the testicle down in the scrotum; if the operation was not performed spermatozoa were in abeyance. He suggested that the operation should be performed between the ages of 6 and 12, at any rate before puberty. The testicle should not be removed, as there was an internal secretion. Drs. White, Charsley, Beattie and Orr joined in the discussion, and a vote of thanks was passed to Mr. Richardson for his paper.

Metropolitan Counties Branch: South Middlesex Division.

A meeting of the South Middlesex Division was held at St. John's Hospital, Twickenham, on October 4th, when Dr. Perodeau was in the chair.

The model rules of organization were fully discussed, and after additions and deletions, were unanimously agreed to. On the motion of Dr. Camps, seconded by Dr. Günther, the Executive Committee was unanimously elected as an Ethical Committee. The Executive Comittee was also appointed to act as the Local Medical Advisory Council which shall be prepared to offer its advice in any local medical matters outside the scope of the Insurance Act. Dr. Camps was asked to draft a letter which might be sent to local authorities and otherwise for submission to the Division at the next meeting.

The Honorary Secretary read letters from Dr. Wood-Hill thanking the Division for a donation towards the expenses of his law suit, from Dr. Murphy resigning his position on the Executive Committee owing to retirement from practice, and from the Medical Secretary, regarding the programme for 1922-23. Drs. Camps and Ruddock-West were requested to make arrangements for the date of Sir Kenneth Goadby's lecture.

North of England Branch: North Northumberland Division.

A meeting of the North Northumberland Division was held on October 13th at the infirmary, Alnwick, when Dr. Dey was in the chair.

On the motion of Dr. Welsh it was resolved that a reply be sent to headquarters to a question recently raised before the Central Ethical Committee.

It was arranged that the annual dinner of the Division should be held on November 9th to invite Dr. G. C. Anderson, Deputy Medical Secretary of the Association, to be the guest of the evening. Dr. Moyes was elected to represent the Division on the

Contract Practice Committee. It was decided, in reply to a question raised, that no lunacy certificate should be granted for a fee of less than £1 1s. It was agreed that Dr. Wells Patterson should be asked to address the next meeting of the Division. A very interesting address on common diseases of the ear and their treatment was delivered by Dr. Maclay, to whom, on the motion of Dr. Macdonald, a cordial vote of thanks was accorded.

Staffordshire Branch: Walsall and Lichfield Division.

The first of the meetings of the twentieth session of the Walsall and Lichfield Division was held in Walsall on October 19th. The honorary secretary's report is as follows: There were present twenty members—that is, 34 per cent. of the whole, which isn't bad, considering the area covered by the Division. Those who turned up had a good supper; it is to be hoped that those who didn't had a bad one!) and afterwards there was a general discussion embracing the Government; the future of doctors (material: not metaphysical); psycho-analysis; the Panel Practitioners' Union; Mr. Lloyd George; etc., etc. An attractive programme is promised for the coming months; and it is gratifying to learn that men from outlying districts are keen to turn up, in spite of the handicap of distance and the kind of roads supplied to us in return for the tax we shall be called upon to pay in January. The next meeting will be addressed by a member from A-long-way-off. The secretary who roped him in realized suddenly that the way to make sure of the attendance of country members is to give him something nice to do. There is nothing nicer than writing a paper—except reading it, or, better still, pulling it to pieces!

Yorkshire Branch.

The quarterly meeting of the Branch was held on September 30th in the Grand Hotel, Scarborough. Demonstration of specimens commenced at 2.45 p.m. Dr. Leonard Rowden showed a large series of skiagrams to illustrate the radiologist's contribution to the differential diagnosis of malignant from simple disease of bone. Professor M. J. Stewart brought six specimens of haemachromatosis of the liver and other organs, some specimens illustrating the hepatic lesions caused by trinitrotoluene and salvarsan. There was also a remarkable case of lymphangitis with cyst formation in an infected filarial lesion round the kidney. Mr. J. A. Coupland showed (*a*) an encysted rubber drainage tube removed from the lung three years after an operation for empyema; (*b*) a sequestrum following staphylococcal disease of the lumbar vertebrae; and (*c*) multiple calculi removed from the right kidney. Mr. J. W. Thomson and Dr. P. L. Sutherland showed macroscopic and microscopic specimens of a large epithelioma of the dorsum of the foot. Dr. P. L. Sutherland demonstrated the diastase reaction, some biochemical reactions useful in the differential diagnosis between the *B. diphtheriae* and Hoffmann's bacillus, specimens of the experimental lesions produced by tuberculosis in the guinea-pig, and some sections of renal tumours.

The formal meeting commenced at 3.30. Forty members were present. Dr. R. A. Veale, in a paper on "Some points in the prognosis of cardiac disease," first emphasized the importance and extreme value of a careful estimate of the general condition of the patient apart from any instrumental aid, then referred to the value of diastolic murmurs as opposed to systolic murmurs, and passed to a review of the commoner irregularities of the heart, illustrating them by electro-cardiograph tracings. He confined his remarks to (1) respiratory arrhythmia—merely a sign of youth with the prospect of long life before the individual; (2) the premature beat—a definite abnormality but of little value in prognosis, which should be founded on associated symptoms; (3) auricular fibrillation—a serious condition, but in some cases consistent with many years of life and the ill effects of which can be so strikingly modified by digitalis; (4) heart-block—much more serious, particularly in the early stages before it became complete with an autonomous ventricle free to work at its own pace, the special dangers of heart-block in the early stages. He entirely agreed with Dr. Veale in his estimate of the value of the electrocardiograph: the more one used it the more one learnt to do without it.

Mr. J. W. Thomson, in "Some observations on intestinal obstruction," by the recitation of actual cases illustrated the symptomatology and treatment of volvulus of the small intestine, partial volvulus of the stomach, left duodenal hernia, and obstruction due to uterine fibroid and occlusion by gall stones. He insisted on the greater safety of digital dilatation of the ring in dealing with strangulated femoral hernia. Mr. Coupland in the discussion emphasized the necessity for improving our diagnosis of intestinal obstruction in the early stages. The profession impressed by the rigidity of peritonitis did not pay sufficient attention to the soft abdomen of obstruction. Dr. Godfrey remarked that the largest gall stone ever removed for gall-stone occlusion was removed by a former Scarborough surgeon. Mr. Oldfield remarked on the rarity with which uterine fibroids in spite of their size and position caused obstruction; this was practically limited to cases with adhesions. Professor M. J. Stewart described a specimen in which myomat. us tissue evidently transplanted from a fibroid had formed an annular ring closely mimicking a carcinoma except that the mucosa was intact. He suggested that surgeons should look for small myomatous transplantations and excise them.

Dr. Eurich described two unusual cases of vertigo ascribed to increase of pressure in the posterior fossa of the skull and relieved by lumbar puncture.

The meeting terminated with votes of thanks to the contributors and to the Scarborough Division for hospitality.

MEDICAL WOMEN'S FEDERATION.

The half-yearly meeting of the Council of the Medical Women's Federation was held at Liverpool on October 12th to 14th under the presidency of Lady Barrett, M.D. Several cases of unequal payment or unfair treatment of medical women were reported and considered. It was determined to continue to maintain energetically the principle of equal pay for equal work and to resist especially the attempts of Government and municipal authorities to obtain women at lower pay or to give them less opportunity of advancement than men. It was also decided to develop on a larger scale the work of assisting medical women to obtain posts, and for this purpose to obtain early notice of vacant posts and to invite medical women seeking practices, assistantships, or other posts to apply to the office of the Federation. Reports of the various committees of the Federation were received and considered. The report of the Standing Committee on Venereal Disease contained a concise statement of the lines of policy of the different bodies concerned with venereal disease and of the views of the Medical Women's Federation. This has been incorporated in a memorandum. The Subcommittee on Birth Control reported that demands were often received for some pronouncement on this difficult subject; the subcommittee was authorized to draw up a pamphlet for the guidance of newly qualified medical women. The Standing Committee for the Defence of Married Medical Women reported that it had been agreed to join a deputation to the Prime Minister now being arranged by the "Six Point Group" to protest against the manner in which the Sex Disqualification (Removal) Bill, when tested, had failed to attain its object, and to ask for its amendment. The delegate from the Federation would specially bring forward the injustices to which married medical women have recently been subjected. The report of the Standing Committee on International Relations included a report on the recent conference at Geneva,[1] held by the Medical Women's International Association, an association which was formed in America in 1919.

At the conclusion of the Council meetings a general meeting was held at which Lady Barrett gave a presidential address on the work and value of the Federation. The question of the Federation joining the International Association was then brought forward. Dr. Christine Murrell, Dr. Catherine Chisholm, Dr. Dickinson Berry and Dr. Jane Walker spoke on the work of the Conference and the new Constitution. After a short discussion the meeting voted unanimously in favour of the Federation joining the International Association. Both meetings took place in the rooms of the Medical Institution, kindly lent for the purpose. On the evening of October 13th a reception was given by the President, Miss Frances Ivens, and the members of the Liverpool Medical Women's Association, at which were present the Lord Mayor and Lady Mayoress, as well as other Liverpool notabilities.

REVISED TUBERCULOSIS SCHEME IN LONDON.

The London County Council has approved a revised scheme for the treatment of tuberculosis in London and sent it to the Ministry of Health. The scheme replaces that of 1914, but involves no new principle. Only two provisions have been modified. One of these specifies the arrangements into which the Council is prepared to enter with the authorities in other county areas when it is uncertain to which area the patient belongs; the other states the Council's decision that in cases in which the income of the insured person receiving residential treatment is the main support of the family no assessment shall be made for contribution towards the cost of treatment if the income is sensibly reduced while the insured person is undergoing treatment. The Council has approved a prefatory note to its scheme, in which the main purposes are stated to be: (1) To stimulate and co-ordinate all the forces, public and voluntary, available for combating tuberculosis, and to provide, directly or indirectly, such facilities for treatment as may be necessary; (2) to encourage every variety of effort directed towards the prevention of tuberculosis; and (3) to encourage all efforts for the care of tuberculous persons, with a view to securing that, after receiving treatment, their home conditions and occupations shall be such as to minimize the risk of relapse.

[1] See Supplement, September 16th, 1922, p. 111.

Insurance.

PRACTITIONERS' ACCOUNTS.

We are indebted to Dr. E. R. Fothergill for a copy of the form now in use in East Sussex for making the quarterly statements of insurance practitioners' accounts. The plan, he says, has been elaborated after much thought by Mr. F. Bentham Stevens, Clerk to the Insurance Committee, and he suggests that it might be of interest to insurance practitioners generally and to other Committees.

EAST SUSSEX INSURANCE COMMITTEE.

Calculation of Amounts Payable to Practitioners for Quarter ended 30th September, 1922.

PART A.

1. Central Practitioners' Fund for 1922 as provisionally determined by the Minister of Health under Article 20 of the Medical Benefit Regulations, 1920 ... ... £

2. Proportion (per cent) of Central Fund credited to the East Sussex Insurance Committee in accordance with the Distribution Committee's Report ... ... £

3. (*a*) One fourth available for the third quarter .. ... £
(*b*) Balance brought forward from second quarter ... £
Less supplementary retrospective payments ... £
£
£

(*c*) Deduct—Anæsthetists' fees ... ... £
Emergency treatment ... ... £
£

Total amount available for distribution ... ... £

4. Number of Insured Persons on Practitioners' lists as on 1st July, 1922 ... ...
Add (*a*) Temporary Residents at 6 to 1
Add (*b*) .. .. (institutional) at 3 to 1

Total number of units as on 1st July, 1922 ... ...

5. Amount available per unit ... ...

6. Practitioners at ... d. per unit ... ... £
7. Carried forward at ... d. per unit ... ... £
d. £

PART B.

1. Dr ..... No. .....
2. " ... units included in list on 1st July, 1922 (as per statement agreed), at ... ... £
3. " units as above to whom the practitioner is required to supply drugs and appliances at 6d. £
4 .. .. units re "Emergency" drugs at 3½d. per 100 units £
5. ..... units in respect of mileage at 1s. ... £
£
6. Special payments or deductions (if any) ... £
Total amount payable £

* These figures include ... units in respect of Temporary Residents except those during the quarter ended 30th June, 1922.

Correspondence.

What is the Matter with the Panel Doctor?

SIR,—There appears to be in full swing at the present moment a most virulent campaign of abuse—the victim of which is the panel doctor. That the campaign is organized and carefully timed is obvious; that it has a definite object in view is equally obvious. The profession is aware of the existence of the campaign and ignores it. What is the reason? Is it a sense that our work is so conspicuously good that it needs no advertisement, or is it a consciousness that it is so uncommonly bad that the less said the sooner mended, or is it sheer indifference? Now, sir, we panel doctors do not claim to be supermen, but we do believe that we are as good as, and no worse than, the average of mankind. It follows, then, that the question at issue must be the value of the services of the *average* panel doctor. If Sir George Newman's report is worth anything it would appear that insurance practitioners, after the passing of the storm, are now doing their work conscientiously. Sir George ought to know. He at any rate has no axe to grind. His opinion, I venture to say, is the opinion of all fair-minded persons who are in a position to know. Why has this campaign been timed for the present? The answer is obvious. To our great embarrassment we are led to believe that in fifteen months' time our remuneration is to be again reduced. So that once more we are in the position we occupied in 1911—of hateful memory—fervently discussing strikes, black lists, and other abominations of that sort. What an ideal atmosphere for "conscientious" work!

But despite this may I urge my colleagues to remember that in any controversy that may ensue the one thing that matters is *the quality of our work?* I fervently appeal to our brethren to work in a manner satisfactory to their own conscience, having in mind not only pecuniary considerations but the advancement of medical science as well.

The panel system has been condemned by many because of the much-advertised deficiencies of a few panel doctors. The approved societies have seen to it that the deficiencies are properly advertised. The societies' opinion can clearly not be a disinterested one inasmuch as the unfortunate panel doctor is virtually the adjudicator as between the financial interests of the insured person and the financial interests of the approved societies. Were he an angel from heaven or merely a grocer from a back street he could not expect to escape their censure in these circumstances. The fair-minded man who has studied the system knows this quite well, and it is to the judgement of the fair-minded man that we must appeal.

When I urge my fellow practitioners to work conscientiously may I suggest at the same time that the Ministry might well make our work less dreary and at the same time more useful were it to think less in the form of Regulations and Orders and more in the form of suggestions for our guidance and encouragement? But to do the Ministry justice one has already to note a movement in this direction. How many of the general crowd of panel doctors know of the existence of the Inquiry into Rheumatic Diseases in Insured Persons—an inquiry which is being conducted by the Ministry with the aid of a few score of panel doctors who have volunteered for observation work and to keep records? I may be an optimist, but I feel convinced that there are hundreds of my colleagues who had they been approached in this matter would have been glad to join in—men whose services would have greatly enhanced the value of this inquiry. One cannot doubt, however, that there is in the profession a certain type of man who would have resented the suggestion as being another attempt to get something for nothing out of the panel doctor. The sole desire of this individual is to do as little as possible for the money he gets. He is a nuisance because he is always there to compromise us in the eyes of those who are ready and willing to be deceived. What a pity he ever strayed into medicine! He clearly mistook his calling. His instinct is that of the tradesman, and he might have attained a sort of happiness as a successful butter merchant or a far-seeing horse dealer. His ideas are certainly not those usually associated with one's conception of the good physician.

May I take this opportunity to hint to the Ministry, apropos of the rheumatism inquiry, that the scope of the inquiry might with advantage be vastly extended, and that it should embrace a period of not less than three years? Further, may I advocate similar investigations in other fields? Perhaps the Ministry has in contemplation some such scheme. If so, it ought now to be maturing its plans for next year. If I am mistaken in my optimism and the profession falls short in the matter, then at least we shall know where we stand. The Ministry, and the public too, will know where we stand, and will not be slow to apply the remedy.

A doctor financially embarrassed of course cannot be expected to do good work. He may indeed be a great danger to his patients, but a doctor without honour is a greater danger still.—I am, etc.,

Brighton, Oct. 10th. CHARLES FRASER.

Insurance Medical Practice.

SIR,—From time to time and almost daily we see in the lay press statements that panel patients do not receive as much and as careful medical attention as is given to private patients; these statements are almost always made by chairmen of approved societies. If they are true, which I deny, the remedy suggested by those who make them is an amusing one—namely, "pay the panel doctor less." Now, if the statements were true, would reducing the panel doctor's pay make him any more anxious to increase his attention to his patients? As a matter of fact, for the small sum he pays, the panel patient gets considerably more than he ought. First, he gets the doctor's attention, and surely we have our brains in action just as much when seeing a panel patient as when seeing a private patient. Secondly, he gets the very best drugs (if the chemist is honest, and all I have had to do with have been so); not only does he get his medicine, but he is entitled to numerous things which the private patient has to pay extra for—for example, cod-liver oil and malt, lysol, dressings, etc. In many cases a panel patient gets more visits when ill than a private patient, for the reason that many private patients simply will not let you pay them proper attention on account of the expense. It is certainly not advisable to neglect panel patients, and have as a result to give them more attendance; to speak plainly, it pays to get them well quickly and off the list. When anybody abuses anyone or anything there is always a hidden reason which he does not advertise; in this case the approved societies

want more of the money for themselves. With a little wisdom they would realize that they want the panel doctor's help. If the doctor is underpaid and does not in consequence treat his patients well, the approved societies will have to hand out millions of pounds in benefit to sick people which could be saved with an efficient medical service. It will pay the approved societies best to make panel practice so satisfactory that the best medical men are in charge who will cure these patients quickly and save the societies paying out week after week benefit to people who if they had a better doctor would be well in a few days.—I am, etc.,

Leytonstone, Oct. 22nd. ARTHUR T. TODD-WHITE.

The Annual Representative Meeting and the Insurance Act.

SIR,—I do not hope that the public generally will concern itself with the resolutions of the Annual Representative Meeting, but I am very sure that people interested in the administration of the Insurance Acts will quote them if they suit their purpose; and the official reference thereto (SUPPLEMENT, p. 132, par. 2) is liable to mislead without the context.

What the Committee asked us to assert was that the Act has been so successful as to justify the extension of a system which "treats employed persons as a fixed, separate, and lower caste, who must not themselves dispose of the margin of their small wages." Happily the meeting would not do that; instead they voted an amendment which admits of voluntaryism—a very different thing, with all deference to the gentlemen responsible for the notice in Section 16 (p. 116 of the SUPPLEMENT).

As a fact, the Leith motion for an inquiry into the effect of the Act, which was substantially the same as that which had twice been submitted by my Division, won much more support than ever before. Men told me that they voted unwillingly against it, in accordance with the instructions from Divisions which had not heard the argument; others, as I hear, voted against it in haste and repented at leisure; and I am inclined to think that had any other man moved the original motion, the amendment for an inquiry would have passed.

One hates to oppose Dr. Brackenbury, who has worked so devotedly for what he considers our interests. But he must have felt the weakness of his case. He could not else have urged us to vote for this measure, lest worse befall us. Such a plea was unworthy of him as of us. It is an indignity to propose that in voting on a measure, profoundly revolutionary, which violently thrusts back a huge class from the condition of contract which it has slowly and painfully won into the degradation of status, educated men should be guided solely by its reaction on their own lives.

In the Sociological Section there was—and notably in Dr. Wynne's paper—much implicit disapproval of the methods of the Act. The chief organ of the approved societies immediately afterwards was declaiming against its "pauper taint." Only last week a high official in the Ministry of Health stated that he considered the subsidy from taxation a blot on the scheme, an *a fortiori* condemnation of a system of taxation of individuals picked out specially from their fellows because they have to employ labour, not more invidious in its aim than futile in its results. I had hoped, but had not time, to read a letter from a labour leader at that meeting, pointing out the growing feeling among thoughtful labour men in favour of voluntaryism.

Everything points to a coming reaction against the Act, and the moral of the amendment to the Committee's resolution is that that growing feeling amongst the public is filtering through, if slowly, to the profession.—I am, etc.,

Rayleigh, Essex, Oct. 15th. B. BASKETT.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following announcements are notified by the Admiralty: Surgeon Commanders A. T. Rivers to the *Calcutta*, and as Fleet Medical Officer on Staff of Commander-in-Chief, North America and West Indies Station, H. M. Langdale to the *Cyclops*, A. G. Malcolm to the *Triad*. Surgeon Lieutenants to be Surgeon Lieutenant Commanders: O. J. M. Kerrigan, J. J. Carroll, C. N. Ratcliffe.

P. J. Maguire has entered as Surgeon Lieutenant and has been appointed to R.N. Hospital, Haslar, for course.

ROYAL ARMY MEDICAL CORPS.

Captain J. R. N. Warburton, M.C., is seconded for service with the Egyptian Army.

ROYAL AIR FORCE MEDICAL SERVICE.

The following are granted short service commissions as Flight Lieutenants with effect from, and with seniority of the dates indicated: F. E. Johnson (September 30th), lt. G. J. McCullagh (October 4th).

INDIAN MEDICAL SERVICE.

Major T. A. Hughes, M.D., has been granted combined leave for one year in addition to the College vacation from July 15th to October 1st.

Lieut.-Colonel W. R. Battye, D.S.C., an Agency Surgeon, has been granted leave on average pay for six months, with effect from July 7th.

Lieut.-Colonel C. B. McConaghy, an Agency Surgeon, has been appointed to be Administrative Medical Officer, Central India, in addition to his duties as Agency Surgeon, Bhopal, with effect from July 27th.

Lieut.-Colonel G. D. Franklin, O.B.E., I.M.S., an Agency Surgeon, has been posted as Residency Surgeon, Indore, with the charge of the appointments of Agency Surgeon in the Southern States of Central India, and Superintendent, Central India Agency Jail, Indore, with effect from July 27th.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel E. T. Burke, D.S.O. (late R.A.M.C. Special Reserve), to be Captain with precedence as from April 1st, 1915, and relinquishes the rank of Lieutenant-Colonel.

Captain P. T. Rees, M.C., to be Major.

The following officers have resigned their commissions and retain their rank: Lieut.-Colonel A. H. Vernon, T.D., with permission to wear the prescribed uniform; Lieut.-Colonel J. MacMillan, D.S.O., M.C., Lieut.-Colonel C. M. Kennedy, M.B.E., Major J. C. Grieve, M.C., Major C. J. Martin, T.D., with permission to wear the prescribed uniform: Major F. J. Stoker, Major T. M. Jamieson, Captain W. A. Milner.

The following officers, having attained the age limit, are retired, and retain their rank except where otherwise stated: Majors J. Scott, T.D., and is granted the rank of Lieutenant-Colonel with permission to wear the prescribed uniform; H. C. Parsons, T.D., and is granted the rank of Lieutenant-Colonel; C. A. C. Smeit, with permission to wear the prescribed uniform; G. Black, T.D., with permission to wear the prescribed uniform; G. R. Wilson, T.D., with permission to wear the prescribed uniform; C. Thomson, P. E. Barber, A. A. Martin, with permission to wear the prescribed uniform; Major E. G. Stocker, T.D., with permission to wear the prescribed uniform. Captains and age granted the rank of Major: W. J. Richards, H. Connop, C. W. J. Brasher, and C. D. Law. Captains W. H. E. Stewart, M.C., E. H. Scholefield, A. H. Davis, H. N. Collier, C. G. Tench, J. L. Baskin, P. W. Kent, H. W. Case, R. D. Gawn, A. Silbermann.

General Hospital.—Captain A. J. Brown from General List to be Captain with precedence as from April 1st, 1915.

Captain W. I. Cumberlidge relinquishes his commission and retains the rank of Captain.

Captain J. M. Smeaton (late R.A.M.C.) to be Captain, with seniority from January 17th, 1919.

MILITIA.

ROYAL ARMY MEDICAL CORPS.

Captain P. S. Vickerman, O.B.E., relinquishes his commission and is granted the rank of Lieut.-Colonel.

VACANCIES.

BIRMINGHAM: MOSELEY HALL CONVALESCENT HOSPITAL FOR CHILDREN.—Honorary Acting Surgeon.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Honorary Surgeon.

BRADFORD: GRASSINGTON SANATORIUM.—Assistant Resident Medical Officer. Salary, £250.

BURSLEM: HAYWOOD HOSPITAL.—Resident Medical Officer (female). Salary, £200 per annum.

BURY ST. EDMUNDS: WEST SUFFOLK GENERAL HOSPITAL.—Resident House-Surgeon. Salary, £200.

CHARING CROSS HOSPITAL, W.C.—Assistant Physician. Honorarium, £100 per annum.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House-Physician (male). Salary, £125 per annum.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—(1) Physician to Out-patients (honorary). (2) House-Physician; salary at the rate of £150 per annum.

KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION, Cardiff.—First Assistant Resident Medical Officer at the North Wales Sanatorium, near Denbigh. Salary, £400 per annum.

LEEDS: GENERAL INFIRMARY.—Orthopaedic House-Surgeon.

LINCOLN: COUNTY OF THE PARTS OF LINDSEY.—Lady Assistant Medical Officer. Salary, £550, rising to £700, and £200 to cover travelling and out-of-pocket expenses.

LONDON HOMOEOPATHIC HOSPITAL, Great Ormond Street, W.C.—Pathologist. Salary, £200 per annum.

LONDON LOCK HOSPITAL, 91, Dean Street, W.—Honorary Surgeon to Out-patients.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES.—House-Surgeon. Salary, £100 per annum.

MANCHESTER ROYAL INFIRMARY.—Assistant Surgical Officer at the Cent ai Branch. Salary, £75 per annum.

MIDDLESBROUGH: NORTH ORMESBY HOSPITAL.—Assistant House-Surgeon. Salary, £150 per annum.

MILLER GENERAL HOSPITAL, Greenwich Road, S.E.—Resident Casualty Officer. Salary, £200 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Resident Casualty Officer (male). Salary at the rate of £250 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—(1) Physician to Out-patients; (2) Radiologist.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone Road, N.W.—Assistant Resident Medical Officer. Salary £83 per annum, rising to £100 on appointment as Senior Resident Medical Officer.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—Honorary Assistant Surgeon.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—Surgical Registrar. Salary £250.

SOUDAN GOVERNMENT MEDICAL DEPARTMENT.—Medical Inspector. Pay commencing at £E650 a year, rising to £E1,080, with a further increase to £E1,200 after three years in special cases.

STOCKTON AND THORNABY HOSPITAL.—Junior House-Surgeon. Salary, £175 per annum.

CERTIFYING FACTORY SURGEON.—The appointment of Certifying Factory Surgeon at Mauchline (Ayr) is vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

BARNES, Hugh Woodward, M.R.C.S., L.R.C.P., Honorary Surgeon to the Victoria Eye and Ear Hospital, Hereford, and Honorary Ophthalmic Surgeon to the Hereford General Hospital.

BROWNLIE, W. Barrie, M.D.Glasg., F.R.C.S.Edin., Medical Referee for Ophthalmic Cases under the Workmen's Compensation Act for County Court Circuit No. 5.

BURR, W. S., M.B., Ch.B.Edin., Ophthalmic House-Surgeon, Derbyshire Royal Infirmary.

DODWELL, H. B., M.A., B.Ch., Anaesthetist, the Royal Northern Hospital, Holloway Road.

GIBBS, Miss N. K., M.R.C.S., L.R.C.P.Lond., Assistant House-Surgeon and Casualty Officer, Derbyshire Royal Infirmary.

GOODSON, Bessie, M.B., Ch.B.Leeds, Assistant Medical Officer of Health, Swansea County Borough.

LOVELL, E. R., M.B., B.S.Lond., D.P.H., Assistant Medical Officer of Health, Birkenhead Town Council.

FANTING, Laurence C., M.A., M.D., B.Ch.Oxon, M.R.C.P., F.R.C.S., Honorary Consulting Surgeon to the St. Austell and District Cottage Hospital.

ROBERTS, C. S. Lane, M.S., F.R.C.S., Demonstrator of Midwifery, St. Bartholomew's Hospital.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2.—House-Physician: K. B. Williamson, M.B., Ch.B.Edin.; House-Surgeon: D. S. Middleton, M.B., Ch.B.Edin.

DIARY OF SOCIETIES AND LECTURES.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—Mon., 8.30 p.m., Clinical Evening: Exhibition of cases and radiograms illustrating "Tumours of the Abdomen" (excluding tumours of the female appendages).

NORTH EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.—Wed., 4.15 p.m., Mr. H. W. Carson: Preliminary Treatment of Acute Abdominal Disease.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Thurs., 5 p.m., Bradshaw Lecture by Sir Maurice Craig: Mental Symptoms in Physical Disease.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Museum Demonstration, Mon., 5 p.m., Professor Shattock: Specimens of Foreign Bodies.

ROYAL SOCIETY OF MEDICINE.—*Section of Surgery:* Wed., 5.30 p.m., Presidential Address, Mr. James Berry: The Progress of Surgery and the Rise and Fall of Surgical Operations, to be followed by a discussion, in which Sir John Bland-Sutton, Mr. Percy Sargent, and Sir John Thomson-Walker will take part. An exhibition of museum specimens of tumours of the lower jaw will be on view from 4.30 p.m. *Section of Laryngology:* Fri., 4 p.m., Cases. 4.45 p.m., Epidiascope Demonstration by Dr. Irwin Moore, on operative procedures in the treatment of bilateral paralysis of the abductor muscles. *Section of Anaesthetics:* Fri., 8.30 p.m., Dr. Herbert R. Spencer: The Anaesthetization of Patients for the Classical Caesarean Section, to be followed by a discussion. Members of the Section of Obstetrics and Gynaecology are specially invited to attend.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.—Tues., 5 p.m., Dr. C. E. Lakin: Indigestion. At Children's Clinic, Western General Dispensary, Marylebone Road, N.W., Th rs., 4.45 p.m., Professor Sir William Bayliss: Some Points in the Physiology of Digestion.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION, Royal Infirmary.—Wed., 4.15 p.m., Dr. J. M. Cowan: Medical Cases. Thur., 4.15 p.m., Professor Munro Kerr and Dr. Hendry: The Mother and the Newborn Infant.

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 3 p.m., Dr. Walter Swayne: Toxaemia of Pregnancy.

LONDON LOCK HOSPITAL, 91, Dean Street, W.1.—Tues., 2.30 p.m., Mr. McDonagh: Microscopic Demonstration of *Leucocytozoon syphilidis.*

MANCHESTER: ANCOATS HOSPITAL.—Thurs., 4.30 p.m., Dr. Arnold Renshaw: Diabetes.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. F. Craven Moore: Jaundice. Fri., 4.15 p.m., Dr. E. S. Reynolds: Paraplegia.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Sir S. Russell-Wells: Diseases of the Endocardium.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., an I Fri., 2 p.m., Out-patient Clinics. Mon. and Thurs., 12 noon, Dr. Greenfield: Neuropathology. Mon., 3.30 p.m., Dr. Russell Reynolds: X-ray Demonstration. Tues., 3.30 p.m., Dr. Head: Syphilitic Disease of the Nervous System. Wed., 3.30 p.m., Mr. L. Paton: Optic Atrophy. Thurs., 3.30 p.m., Dr. Grainger Stewart: Clinical Lecture. Fri., 3.30 p.m., Dr. Collier: Aphasia. Operations, Tues. and Fri., 9 a.m.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., Dr. W. M. Feldman: Prenatal Hygiene and Problems of Maternity and Child Welfare.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture by Dr. W. Griffith: Pathology

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.—Dr. Eric Pritchard: Infant and Child Welfare. Mon., 6 p.m., Physiology and Pathology of Nutritional Disorders. Thurs., 6 p.m., The Tuberculous Mother and her Child, the Syphilitic Mother and her Child, and the Management of Difficult Cases.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At Jessop Hospital, Tues., 5 p.m.: Professor Phillips: Puerperal Infection: 4 p.m., Dr. Naish: Demonstration of Cases in Infants. At Royal Hospital, Fri., 5 p.m., Mr. Hay: The Practitioner and the Prevention of Squint: 4 p.m., Mr. Morrell: Modern Methods of Abdominal Examination by the Opaque Meal (illustrated).

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Dulwich Road, Balham.—Thurs., 4 p.m., Dr. T. S. P. Strangeways: Rheumatoid Arthritis: its Varieties and their Treatment.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Saunders: Nephritis in Children and its Treatment. Tues., 4.30 p.m., Mr. E. Gray: Surgical Aspects of Dyspepsia. Wed., 4.30 p.m., Mr. D. Armour: Surgery of the Pancreas. Thurs., 4.30 p.m., Dr. Legge: Industrial Conditions, Past and Present. Fri., 4.30 p.m., Dr. Owen: Diagnosis of Renal Disease. Sat., 10 a.m., Mr Simmonds: Orthopaedics. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
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IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Facilus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

OCTOBER.

27 Fri. Ashton-under-Lyne Division, Clinical Meeting, Stamford Villa, Stalybridge Road, 9 p.m.
Bath and Bristol Branch, Red House, Bath, 8.15 p.m. Discussion on the Position of the Medical Profession in Relationship to National Health Insurance Work, to be opened by the Medical Secretary.
Buckinghamshire Division, Crown Hotel, Aylesbury, 3 p.m.
Suffolk Branch, Ipswich. Address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The B.M.A.—its Failings, its Achievements, and its Possibilities." Paper by Sir Henry Gauvain on "Modern Methods in the Conservative Treatment of Surgical Tuberculosis."

28 Sat. Bath and Bristol Branch, Swan Hotel, Wells, 3 p.m. Similar discussion to that held at Bath on October 27th.

31 Tues. London: Contract Practice Subcommittee, 2.30 p.m.
London: Standing Ethical Subcommittee, 2.30 p.m.
Croydon Division, Croydon General Hospital, 8.5 p.m.
Darlington Division, Annual Meeting, Greenbank Hospital, 8.30 p.m.
North Middlesex Division, Wortley Hall, Seven Sisters Road, Finsbury Park, 3.30 p.m.
Surrey Branch, Surbiton Hospital, 8.45 p.m. Address by Mr. C. Max Page, D.S.O., F.R.C.S., on "Fractures."

NOVEMBER.

3 Fri. Conference between representatives of British Medical Association and Society of Medical Officers of Health, 2.30 p.m.

8 Wed. Plymouth Division, Post-Graduate Course, South Devon and East Cornwall Hospital, 2.30 p.m.

10 Fri. South Essex Division, Southend: B.M.A. lecture by Dr. W. Langdon Brown.

14 Tues. City Division: Metropolitan Hospital, Kingsland Road, 9.15 to 9.30 p.m.
Northamptonshire Division. B.M.A. lecture by Dr. Comyns Berkeley.

16 Thurs. London: Insurance Acts Committee, 2.30 p.m.
Birmingham Branch, Ordinary Meeting.
Croydon Division Farewell Dinner to Dr. Veitch Clark, Greyhound Hotel, Croydon, 8 p.m.

23 Thurs. Joint Meeting of Bromsgrove and Dudley Divisions at Bromsgrove, 3 p.m.: B.M.A. lecture by Sir Frederick Mott, K.B.E., F.R.S., on "Mental Hygiene."

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

GREENISH.—On 20th October, at Fleet, Hants, to the wife of Harold Greenish, M.A.Camb., M.R.C.S., L.R.C.P.—a son.

PANTON.—On the 18th September, at Ranikhet, India, the wife of Captain D. F. Panton, R.A.M.C., of a son.

REES.—On the 17th October, at 29, Lower Seymour Street, to Dr. and Mrs. J. R. Rees (née Hemingway), a daughter.

WORTHINGTON.—On the 2nd October, at 152, Rye Hill, Newcastle-on-Tyne, to Dr. Stanley and Mrs. Worthington—a daughter.

MARRIAGE.

CHAPMAN—OGILVIE.—At All Saints Pro-Cathedral, Shillong, on September 26th, by the Right Reverend H. Pickenham-Walsh, D.D., Bishop in Assam, Thomas Milne, eldest son of Harry H. Chapman and Mrs. Chapman, Edinburgh, to Robina Hannay, elder daughter of Colonel W. H. Ogilvie, C.M.G., I.M.S., and Mrs. Ogilvie, Shillong.

DEATHS.

EVANS.—On 21st October, at 121, Harley Street, London, W.1, Charles Hotham Evans, F.R.C.S., late Captain R.A.M.C., fourth son of the late Evan Evans, M.D., R.N.

HORT.—On October 14th, at Cannes, Edward Collett Hort, F.R.C.P.Ed., the dearly loved husband of Ethel Augusta, and third son of the late Fenton John Antony Hort, D.D.Camb.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 4TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION.	PAGE
CURRENT NOTES:	
The Council Dinner	... 169
Association Prizes for Essays by Medical Students	... 169
Approved Societies: Administration Allowance ...	... 169
ASSOCIATION NOTICES:	
Branch and Division Meetings to be Held ...	... 170
MEETINGS OF BRANCHES AND DIVISIONS	... 170
ASSOCIATION INTELLIGENCE AND DIARY	... 172

	PAGE
CORRESPONDENCE:	
Medical Practitioners and Approved Societies ...	... 171
NAVAL AND MILITARY APPOINTMENTS	... 171
VACANCIES	... 171
APPOINTMENTS	... 172
DIARY OF SOCIETIES AND LECTURES	... 172
BIRTHS, MARRIAGES, AND DEATHS	... 172

British Medical Association.

CURRENT NOTES.

The Council Dinner.

The British Medical Association Council dinner, held on the evening of Wednesday, October 25th, at the Grand Hotel, London, was most successful. The company numbered about 130, and, although the political crisis prevented several late Ministers and medical members of Parliament from attending, a large number of distinguished guests were present, including the Presidents of the two Royal Colleges and of other medical bodies, the late Home Secretary, and the permanent heads of the Ministry of Health. A report of the speeches and a list of the official guests who attended is printed in the JOURNAL at p. 887.

Association Prizes for Essays by Medical Students.

The Council of the British Medical Association will in March, 1923, award prizes of £10 each for the best essays on the diagnosis and treatment of jaundice arising from obstruction of the larger bile ducts. One prize is open to final year medical students in each of the following groups of medical schools:

GROUP 1.—University of Aberdeen; University of St. Andrews (University College, Dundee).

GROUP 2.—Queen's University of Belfast; University of Dublin (Trinity College); National University of Ireland (University College, Cork; University College, Dublin; University College, Galway); Royal College of Surgeons in Ireland (Schools of Surgery).

GROUP 3.—University of Birmingham; University of Bristol; University of Wales.

GROUP 4.—University of Durham; University of Leeds; University of Sheffield.

GROUP 5.—University of Edinburgh; School of Medicine of the Royal Colleges.

GROUP 6.—University of Glasgow; Anderson College of Medicine; Queen Margaret College Medical School for Women; St. Mungo's College.

GROUP 7.—University of Liverpool; Liverpool School of Tropical Medicine; Victoria University of Manchester.

GROUP 8.—London: Charing Cross Hospital Medical School; King's College Hospital Medical School.

GROUP 9.—London: Guy's Hospital Medical School; London Hospital Medical College.

GROUP 10.—London: London (Royal Free Hospital) School of Medicine for Women; University College Hospital Medical School.

GROUP 11.—London: Middlesex Hospital Medical School; St. Mary's Hospital Medical School.

GROUP 12.—London: St. Bartholomew's Hospital Medical College; St. George's Hospital Medical School.

GROUP 13.—London: St. Thomas's Hospital Medical School; Westminster Hospital Medical School.

The prizes will be awarded to the authors of the essays deemed by the examiners to be the best sent in by the respective groups, but if no essay received from a group is deemed by the examiners to be deserving of a prize no prize will be awarded in respect of that group. The essays, which should be clinical in nature, must include concise notes of not less than three cases personally observed by the student and illustrative of points in the essay. Essays must not exceed 5,000 words in length; they should be plainly written or typed on foolscap paper (one side only) and must reach the Medical Secretary, British Medical Association, 429, Strand, London, W.C.2, *not later than January 31st, 1923.* Each essay must be signed by a pseudonym and be accompanied by a sealed envelope marked on the outside with the pseudonym, and containing inside a signed and dated statement that the essay has been the bona fide work of the competitor, and that he or she has not yet passed the final professional examination, together with particulars of his or her name, address, and medical school. The essays will be adjudicated on by examiners appointed by the British Medical Association from among members of the Association not resident in the area of the particular group, and the decision of such examiners will be final.

Notices in regard to the essays are being sent to the deans of the medical schools for exhibition on the notice boards, as well as to those hospitals concerned with the education of medical students, and to the Honorary Secretaries of the Divisions and Branches of the British Medical Association in whose areas the respective schools are situated.

Approved Societies: Administration Allowance.

The *National Insurance Gazette* for October 28th, 1922, gives in full the manifesto on administration allowance recently issued by approved societies. This is evidently the societies' answer to action proposed by the Ministry of Health to secure a reduction of the allowance to societies for *administering* sickness, disablement, and maternity benefits. It shows that the National Insurance Act of 1911 fixed the allowance at 3s. 5d. per member, which was increased in 1919 to 4s. 5d., and again to the present sum of 4s. 10d. in May, 1921. The manifesto protests strongly against any reduction of the present allowances, which, it is pointed out, is only an increase of 41 per cent. on the 1912 figure. In view of this protest, it is of interest to note that the present capitation fee for medical practitioners is only 31 per cent. higher than that of 1912.

Dr. R. W. Simpson, who is contesting the Northern Division of Newcastle-upon-Tyne at the forthcoming General Election, has accepted an invitation to address members of the medical profession on the future of medicine as affected by approaching legislation. The meeting will be held in the Property Mart (Auctioneers' Institute), 12, Eldon Square, Newcastle-on-Tyne, on Tuesday, November 7th, at 8.30 p.m. A large attendance is hoped for.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at the Golden Cross, Bromsgrove, on Thursday, November 23rd, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on Mental hygiene.

BIRMINGHAM BRANCH: COVENTRY DIVISION.—A meeting of the Coventry Division will be held at 8.30 p.m. on Tuesday, November 7th, 1922, at the Coventry and Warwickshire Hospital. The Chairman will give an address on professional secrecy, and the Representative will present his report. Messrs. Arnold and Sons' representative will show a selection of surgical instruments in Dr. Rice's room before the meeting.

CAMBRIDGE AND HUNTINGDON BRANCH.—The next meeting of the Cambridge Medical Society will be held at Addenbrooke's Hospital to-day (Friday, November 3rd), at 2.30 p.m. Agenda: A Solution of the Hospital Problem, by Dr. J. R. Garrood; a case of Thoracopagus (specimen shown); an electric headlight, Dr. J. R. C. Canney. By arrangement all members of the Cambridge and Huntingdon Branch are entitled to attend the meetings of the Cambridge Medical Society. These meetings, which are held on the first Friday in every month, excepting August and September, will count as clinical meetings of the Association.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—A meeting of the South Essex Division will be held at Southend-on-Sea on Friday, November 10th, when Dr. W. Langdon Brown, physician to St. Bartholomew's Hospital, will deliver a British Medical Association lecture.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.—A meeting of the East Hertfordshire Division will be held at 2.30 p.m. on Wednesday, Nov. 8th, at the Letchworth Hospital. Agenda: 2.30 p.m., To receive the report of the Representative in Annual Representative Meeting; Lecture by Dr. Geoffrey Bourne: The significance and treatment of some common heart irregularities, followed by demonstrations of the polygraph. Tea will be provided at 1s. a head.

METROPOLITAN COUNTIES BRANCH: HAMPSTEAD DIVISION.—A clinical meeting of the Hampstead Division will be held at the Hampstead General Hospital on Thursday, November 9th, at 8.30 p.m. Members are invited to bring forward cases and specimens of interest.

METROPOLITAN COUNTIES BRANCH: WESTMINSTER AND HOLBORN DIVISION.—The next meeting of the Westminster and Holborn Division will be held on November 23rd at 8.30 p.m. at the Central Hall (Room D), Westminster, when Dr. B. Dunlop (late Secretary of the Malthusian Society) will open a debate on birth control, speaking in favour of the following motion: "That the interests of the State would be promoted by educating the adult population in the science of birth control."

MIDLAND BRANCH: DERBY DIVISION.—A meeting of the Derby Division will be held at the Derbyshire Royal Infirmary on Friday, November 10th, at 3 p.m., when Dr. Alfred Cox, O.B.E., Medical Secretary of the British Medical Association, will deliver an address on "The general activities of the Association, with special reference to the position of insurance practitioners at the end of 1923"; there will be a discussion afterwards. Non-members of the Association are invited to attend.

NORTH OF ENGLAND BRANCH: NEWCASTLE-ON-TYNE DIVISION.—A meeting of the Newcastle-on-Tyne Division will be held at the Property Mart, 12, Eldon Square, Newcastle-on-Tyne, on Tuesday, November 7th, at 8 p.m. The meeting will be followed by another meeting at 8.30 p.m., open to all members of the profession, at which Dr. R. W. Simpson, parliamentary candidate for the North Division of Newcastle-on-Tyne will give an address on matters of purely medical interest.

NORTH OF ENGLAND BRANCH: NORTH NORTHUMBERLAND DIVISION.—The annual dinner of the North Northumberland Division will be held at the Plough Hotel, Alnwick, on Thursday, November 9th, at 7.0 for 7.30 p.m. Dr. G. C. Anderson, Deputy Medical Secretary of the British Medical Association, will be the guest of the Division. The price, exclusive of wine, is 10s. 6d. per head.

SOUTH MIDLAND BRANCH: NORTHAMPTONSHIRE DIVISION.—A meeting of the Northamptonshire Division will be held on Tuesday, November 14th, when Dr. Comyns Berkeley will deliver a British Medical Association lecture.

SUFFOLK BRANCH: NORTH SUFFOLK DIVISION.—A meeting of the North Suffolk Division will be held at the Lowestoft Hospital on Friday, November 10th, at 4 p.m. Members are requested to make a special effort to attend. Dr. H. M. Evans will give an account of the Annual Representative Meeting held in Glasgow. Dr. J. L. M. Symns will read a paper on the functional element in organic disease.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A general meeting of the Sheffield Division will be held in the Library of the Literary and Philosophical Society, Church Street, Sheffield, to-day (Friday, November 3rd) at 8.30 p.m. Agenda: Report of Representatives—Dr. Forbes, Dr. Mackinnon. Election of four Representatives on the Yorkshire Branch Council. The annual medical ball of the Sheffield University Medical Society will be held at the Grand Hotel on Thursday, December 14th. The number of tickets is limited; application should be made to Mr. J. R. Baker, Honorary Secretary of the Society; price, for visitors, 16s., for students, 12s. 6d. *Medical Dinner.*—A dinner open to all male members of the medical profession in Sheffield will be held in the Grand Hotel on Thursday, January 18th, 1923. Further particulars will be announced later.

Meetings of Branches and Divisions.

SOUTH WALES AND MONMOUTHSHIRE BRANCH: SWANSEA DIVISION.

Annual Dinner.

THE annual dinner of the Swansea Division took place at the County Club, Swansea, on October 26th, Mr. C. LEONARD ISAAC, Chairman of the Division, in the chair. Dr. G. E. Haslip (London), Treasurer of the Association, was to have been the guest of the evening, and intended to address the members on "The future position of voluntary hospitals, as affecting both consultants and panel practitioners." Unfortunately, at the last moment he was prevented from being present through illness. A record attendance had come to hear Dr. Haslip, and the sympathy of the gathering was expressed with him in the circumstances.

Sir ALFRED MOND, M.P. for Swansea, proposed the toast of "The British Medical Association." In the course of a racy speech he paid tribute to his successor at the Ministry of Health (Sir A. Griffith-Boscawen). He strongly repelled the aspersions, directed against panel practitioners, with which his correspondence had been so frequently overloaded. He animadverted upon the claims of the approved societies for the future control of health insurance, and expressed his regret that the question of remuneration of panel practitioners could not be settled on a permanent basis, instead of being the subject of repeated negotiations. He gave it as his considered opinion that the National Insurance Act had been a splendid achievement, and had done a great deal for the developing and extending of national health. One mistake of the framers was in making the man the unit instead of the family, which was the direction in which it ought to lie. He called for a co-ordination of hospitals, appealing for voluntary institutions to be run more on American lines, where paying patients were catered for. In his opinion middle-class requirements were greatly neglected, and he thought that better use could be made of Poor Law infirmaries, part of which might be set aside as nursing homes by arrangement with private practitioners. "Destitution," he stated, "would shortly be the only way of making a living." Sir Alfred Mond also gave his views on the present unsatisfactory position of the treatment of tuberculosis.

The CHAIRMAN suitably replied. Dr. COOK, American Consul, and Mr. STANLEY COOK, President of the local Chamber of Commerce, responded for the "Visitors." One of the most successful functions in the history of the Division was put to the credit of the Secretary, Dr. Urban Marks, who had faced the difficulties arising from the unfortunate absence of Dr. Haslip with the organizing ability which made his name famous from Basra to Baghdad during the war.

BORDER COUNTIES BRANCH.

A GENERAL meeting of the Border Counties Branch was held at the Dumfries and Galloway Royal Infirmary, Dumfries, on October 13th, at 3 p.m., being preceded by a meeting of the Branch Council. Dr. WM. SCOTT, President, was in the chair. Dr. P. MURREY KERR read notes on several cases—amongst others, an interesting chest case—and illustrated them by photographs and skiagraphs. Dr. G. R. LIVINGSTON showed (1) portions of bone removed from a girl's skull fractured in a motor accident; (2) a boy who had his skull fractured by a cricket ball and was trephined and had his right middle meningeal artery tied for haemorrhage; (3) a piece of metal removed from a tibia after forty years; (4) a locket removed from small intestine of a child; (5) a large needle removed from the splenic flexure of a man's colon; (6) three uteri removed by vaginal hysterectomy. He also read notes on three cases of Caesarean section for (1) eclampsia, (2) contracted pelvis, and (3) hyperemesis; and on a case of gastro-jejunostomy performed for severe haemorrhage due to duodenal ulcer.

After an enjoyable tea interval, Dr. R. M. GLOVER showed two cases of gastro-jejunostomy in illustration of his notes on the subject. Dr. J. D. ROBSON described his methods of treatment for cases of localized rheumatism, sciatica, etc., and of chronic eczema. Dr. GORDON HUNTER showed a renal calculus and a tumour he had removed from a patient; this proved to be the kidney in which all the normal tissue had been entirely destroyed and replaced by fatty degeneration. Dr. R. CONNELL showed, in the x-ray department, a series of very interesting x-ray photographs and plates, the progress of two cases of phthisis being clearly shown by skiagraphs taken at regular intervals.

Questions were asked and discussions took place. The meeting closed with a vote of thanks to all who had contributed to a most successful clinical meeting.

KENT BRANCH: BROMLEY DIVISION.

A MEETING of the Bromley Division was held at the Royal Bell Hotel, Bromley, on October 20th, when Dr. HENSHAW presided. Members had been invited to ask non-members to the meeting. After the usual business the Representative, Dr. TENNYSON SMITH, gave a brief report of the recent meeting in Glasgow. The report of the Executive Committee on the meeting of the Kent Branch in Bromley in 1923 was received, and a joint meeting with the Lewisham Division to be held next spring was agreed upon. The scientific portion of the meeting was devoted to a most interesting and able lantern demonstration of intra-nasal anatomy and diseases by Mr. John F. O'Malley, F.R.C.S.

YORKSHIRE BRANCH: HARROGATE DIVISION.

A MEETING of the Harrogate Division was held at Harrogate on October 7th, when Dr. GREENWOOD (Ripon), President, was in the chair. The President welcomed and introduced Dr. Gordon Holmes, who gave a British Medical Association lecture on Some of the clinical manifestations of tabes. The lecture, which was illustrated by lantern slides, proved most absorbing and interesting, and was thoroughly appreciated by all present. On the motion of Dr. EDGECOMBE, seconded by Dr. MICHAEL FOSTER, a cordial vote of thanks was accorded to Dr. Holmes with acclamation.

Correspondence.

Medical Practitioners and Approved Societies.

SIR,—As a delegate to the recent Conference of the National Association of Insurance Committees, permit me to say in reply to Sir W. S. Glyn-Jones, who deprecated the view that the attitude of the Conference was antagonistic to the medical profession, that my impressions of that Conference entirely agree with those expressed by Dr. Ridley Bailey in his speech at Coventry, and reported by you in the JOURNAL SUPPLEMENT of October 14th.

The remarks of the retiring president (Sir Alfred Warren, M.P.) were bitter and provocative, and coming from the chair carried a certain weight and influence that were bound to have a hurtful effect on the minds of those who heard them, and would tend to intensify prejudices already existing against the medical profession. During the Conference there was hardly a word said by way of appreciation of the vast amount of skilful and conscientious work that is being done by the profession under the National Insurance service all over the country.

Certainly, my impression of the Conference quite confirms that of Dr. Ridley Bailey—indeed, on making a brief report to my Insurance Committee a few days afterwards, I said, "One impression I had got was that the insurance practitioner was the villain of the piece."

I believe that Sir W. S. Glyn-Jones takes a much fairer view of medical service, and I hope that as President of the National Association of Insurance Committees, he will enjoy a successful year, and use his best influence to maintain and strengthen those "cordial relationships" which, he asserts, exist between his association and the British Medical Association.—I am, etc.,

Halifax, Oct. 24th. W. M. BRANSON.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Surgeon Captain A. Maclean, D.S.O., has been promoted to the rank of Surgeon Rear-Admiral. Surgeon Lieutenant S. R. Johnston has been promoted to the rank of Surgeon Lieut.-nant Commander. E. J. Benson has entered as Surgeon Lieutenant for short service, and has been appointed to the R.N. Hospital, Haslar. A. G. L. Brown has entered as Surgeon Lieutenant, and has been appointed to R.N. Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS.

Colonel D. J. Collins to be Assistant Director of Medical Services from February 15th to October 31st, 1918.

Major W. K. Beaman, D.S.O., is placed temporarily on the half-pay list on account of ill health.

Major T. H. Gibbon, O.B.E., relinquishes the temporary rank of Lieut.-Colonel on ceasing to be employed as Assistant Director of Pathology.

Captain and Brevet Major T. A. Weston, and Captain K. L. O'Sullivan retire, receiving a gratuity.

Temporary Captains J. R. Kemp, M.C., and S. P. Hyam relinquish their commissions and retain the rank of Captain.

Captain J. L. R. Phillip, late temporary Captain R.A.M.C., on ceasing to be employed with the I.M.S., is granted the rank of Captain.

ROYAL AIR FORCE MEDICAL SERVICE.

Flight Lieutenant H. S. C. Starkey, O.B.E., is granted a permanent commission in the rank stated, July 18th, 1921 (since promoted). The notification in the *London Gazette* of August 2nd, 1921, appointing him to a short service commission, is cancelled.

Flight Lieutenant T. M. Walker is granted a short service commission, retaining his present substantive rank and seniority.

Captain B. F. Beatson, I.M.S., is granted a temporary commission as a Flight Lieutenant, while seconded for duty with the R.A.F.

INDIAN MEDICAL SERVICE.

The services of Captain U. J. Bourke have been placed temporarily at the disposal of the Government of Bihar and Orissa for employment in the Jail Department.

The services of Major J. L. Sen, M.C., have been placed temporarily at the disposal of the Government of Assam, with effect from July 15th.

The services of Major A. G. Coullie have been placed temporarily at the disposal of the Government of Bombay.

The services of Lieut.-Colonel C. E. Southon, O.B.E., have been placed permanently at the disposal of His Excellency the Commander-in-Chief in India.

The services of Major A. M. Dick O.B.E., have been placed temporarily at the disposal of the Government of the Punjab.

Captain R. Sweet, D.S.O., to be an officiating officer in charge, Medical Store Dépôt, with effect from July 6th.

The services of Major M. D. Wadia have been placed at the disposal of the Government of the Punjab for employment in the Jail Department, with effect from the date on which he assumes charge of his duties.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The following officers, having attained the age limit, are retired, and retain their rank except where otherwise stated: Major W. Young, V.D. Captains W. Ritchie, W. T. Barrie, T.D. (with permission to wear the prescribed uniform), T. P. Thomas, R. Cross, E. P. Minett, J. Grant-Johnston.

The following officers relinquish their commissions and retain their rank: Captains H. D. Pickles, M.C. (on account of ill health), G. S. Glass, F. C. Kempson, T. J. P. Saunders.

The following officers resign their commissions and retain their rank except where otherwise stated: Lieut.-Colonel H. W. Thomson, D.S.O., T.D. (with permission to wear the prescribed uniform), Major G. B. Fleming, M.B.E., and is granted the rank of Lieutenant-Colonel; Captain J. Taylor, O.B.E., and is granted the rank of Major; Captains G. W. Rogers, M.C., R. F. Young, M.C., J. K. Rennie, M.C.

Captain C. B. Moss-Blundell, from Sanitary Company, to be Captain, with precedence as from August 15th, 1914.

To be Captains: Lieutenants G. E. Lloyd, M.C., P. Lloyd-Williams.

General Hospitals.—Lieut.-Colonel H. Collinson, C.B., C.M.G., D.S.O., resigns his commission and is granted the rank of Colonel, with permission to wear the prescribed uniform. Major (Brevet Lieut.-Colonel) J. H. Drysdale relinquishes his commission and retains his rank.

Supernumerary for Service with O.T.C.—Captain I. W. Corkey resigns his commission and retains his rank.

TERRITORIAL FORCE RESERVE.

ROYAL ARMY MEDICAL CORPS.

Captain J. C. Bridge, having attained the age limit, is retired and retains the rank of Captain.

Sanitary Companies.—Captain A. S. Reeves, from 2nd London Sanitary Company, to be Captain.

VACANCIES.

BERMONDSEY BOROUGH.—Assistant Medical Officer to the Maternity and Child Welfare Department. Salary, £600 per annum.

BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN.—House-Surgeon. Salary, £100 per annum.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Honorary Surgeon.

BRISTOL MEDICAL MISSION.—Superintendent. Salary, £400 per annum.

CANCER HOSPITAL, Fulham Road, S.W.—Assistant Surgeon.

CHARING CROSS HOSPITAL, W.C.—Assistant Physician. Honorarium, £100 per annum.

KINGSTON UNION.—Second Assistant Resident Medical Officer at the Kingston and District Hospital. Salary, £300 per annum.

LEEDS: GENERAL INFIRMARY.—Orthopaedic House-Surgeon.

LONDON FEVER HOSPITAL, Liverpool Road, N.1.—Honorary Assistant Physician.

LONDON LOCK HOSPITAL, 91, Dean Street, W.1.—Honorary Surgeon to Out-patients.

MANCHESTER: ANCOATS HOSPITAL.—Anaesthetist. Fee, 10s. 6d. per attendance.

MANCHESTER: MONSALL FEVER HOSPITAL.—Third Assistant Medical Officer. Salary, £250 per annum and bonus.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer. Salary, £250 per annum.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL, Fitzroy Square, W.1.—(1) Assistant Surgeon; (2) Senior Clinical Assistant.

MIDDLESEX COUNTY COUNCIL: THE COUNTY (TUBERCULOSIS) SANATORIUM, Harefield.—Third Assistant Resident Medical Officer (male). Salary, £400 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Resident Casualty Officer (male). Salary at the rate of £250 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.—(1) Physician to Out-patients; (2) Radiologist.

PIETERMARITZBURG: GREY'S HOSPITAL.—Male House-Surgeon. Salary, £400 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham.—Honorary Assistant Physician.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.—Honorary Assistant Surgeon.

ROCHDALE INFIRMARY AND DISPENSARY.—Junior House-Surgeon (male). Salary, £200 per annum.

ROYAL NORTHERN HOSPITAL, Holloway, N.—(1) House-Surgeon, salary at the rate of £150 per annum; (2) Obstetric Physician with charge of out-patients.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—Surgical Registrar. Salary, £250.

SHEFFIELD: ROYAL INFIRMARY.—House-Surgeon. Salary, £150 per annum.

SHEPTMINSTER HOSPITAL, S.W.1.—Medical Registrar and Casualty Medical Officer. Honorarium, £250 per annum.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—Resident House-Surgeon (male). Salary, £225 per annum.

WORCESTER GENERAL INFIRMARY.—(1) Vacancy on Honorary Surgical Staff; (2) Honorary Surgeon to take charge of Ear, Nose and Throat Department.

CERTIFYING FACTORY SURGEON.—The appointment of Certifying Factory Surgeon at Perranporth (Cornwall) is vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

CAMERON, DONALD H., M.B., Ch.B., M.A., Assistant Medical Officer to the Gateshead Mental Hospital, Stannington.

MCCULLAGH, A. C. H., D.S.O., M.D.Durh., Certifying Factory Surgeon for the Bishop Auckland District, co. Durham.

MACPHAIL, IAN ROSS, L.R.C.P. and S. Edin., L.F.P.S.Glasg. Medical Superintendent, Kesteven County Asylum, vice J. A. Ewan, M.D.

EDINBURGH ROYAL INFIRMARY.—Clinical Tutors and Senior Clinical Assistants: A. R. Wightman, M.B., Ch.B.; J. Davidson, M.B., Ch.B.; C. Strachan, M.B., B.Sc., G. Morris, M.B., Ch.B., G. L. M. Smith, M.B., Ch.B.; A. R. Matheson, M.B., Ch.B.; J. H. Crawford, M.B., Ch.B.; L. S. P. Davidson, M.B., Ch.B., R. Aitken, M.D., F.R.C.P.Edin., F. J. Browne, M.D., F.R.C.S.E., T. F. W. Haultain, M.C., M.B., F.R.C.S.E., D. A. Miller, M.B., F.R.C.S.E., and S. Bolton, M.D. Supervisors of Anæsthesia: Helen T. Campbell, M.B., Ch.B., T. F. W. Haultain, M.C., M.B., F.R.C.S.E., D. A. Miller, M.B., F.R.C.S.E., and S. Bolton, M.D. Clinical Assistants: S. E. Ammon, M.B., Ch.B., and Beatrice Galsworthy, M.B., Ch.B. Junior Clinical Assistant: Gertrude D. MacLaren, M.B., Ch.B., D.P.H.

DIARY OF SOCIETIES AND LECTURES.

LONDON HOSPITAL MEDICAL COLLEGE.—Wed., 4 p.m., Schorstein Memorial Lecture by Dr. Percy Kidd: Forty Years in the History of Tuberculosis.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Savoy Hill, Victoria Embankment.—Tues., 8.15 p.m., Presidential address by Sir Humphry D. Rolleston, K.C.B., M.D.: Acute Constitutional Symptoms due to Radiations.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—Tues. and Thurs., 5 p.m., FitzPatrick Lectures by Dr. R. O. Moon: Philosophy and the Post-Hippocratic School of Medicine.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, Balham.—Fri., 4 p.m., Mr. Swift Joly: Frequency of Micturition and its Causes.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, London, W.—*Section of Tropical Diseases and Parasitology*: Mon., 8.30 p.m., Lieut.-Colonel H. M. Perry: Occurrence of Leishmania in the Intestinal Tissues in Indian Kala-azar, the Pathological Changes and their Possible Significance. Dr. Khalil: Morphology of Gastrodiscoides Hominis from the Napu Mouse Deer. Demonstration by Professor Leiper and Miss Lebas: Some Stages in the Development of Helminths. *Section of Orthopædics*: Tues., 5 p.m., Cases. *Section of Pathology*: Tues., 8.30 p.m., Laboratory meeting. Imperial Cancer Research Fund, 8, Queen Square, Bloomsbury. Dr. A. N. Begg, Carcinomatous Infiltration of Nerves; Dr. A. H. Drew, The Conditions for Growth *in vitro*; Dr. W. Cramer, Blood Platelets; Dr. B. R. G. Russell, Intra-cerebral Tumour Heteroplasty; Dr. J. A. Murray, Multiple Primary Cancer. *Section of Surgery*: *Sub-section of Proctology*: Wed., 5.30 p.m., Informal Discussion on "Gonorrhœal Stricture of the Rectum and its Treatment," to be opened by the President, Sir Charters Symonds. *Social Evening*: Wed., Fellows, Members of Sections, Associates, and their friends will be received by the President, Sir William Hale-White, and Lady Hale-White, at 8.30 p.m. Sir John Bland-Sutton will deliver a short address at 9 p.m. entitled, "Spolia Nemoralia: Shrunk Human Heads, Labrets and Ear-plugs." The library will be open, and various objects of interest will be exhibited. Music, light refreshment and smoking. *Section of Neurology*: Thurs., 8 p.m., Clinical meeting. *Clinical Section*: London Hospital, Fri., 4 p.m., Tea. Cases will be on view until 5 p.m., when the meeting will commence. *Section of Ophthalmology*: Fri., 8.30 p.m., Clinical evening. 8 p.m., Cases. N.B.—Owing to the joint meeting with the Section of Medicine on Tuesday, November 28th, which may be continued on December 8th, the clinical meeting announced in the Calendar for December is being held in November instead.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, at Western General Dispensary, Marylebone Road, N.W.—Dr. B. Myers: Tues., 4.45 p.m., Scientific Feeding of Infants. Thurs., 3.45 p.m., Causes and Treatment of Vomiting, Constipation, and Diarrhœa in Children. At 1, Wimpole Street, W.—Thurs., 5 p.m.: Mr. Zachary Cope: Some Important but Ignored Symptoms in Acute Abdominal Disease.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Western Infirmary, Wed., 4.15 p.m., Sir Kennedy Dalziel: Surgical Cases. At Royal Maternity and Women's Hospital, Thurs., 4.15 p.m., Dr. Shannon: The Mother and the Newborn Infant.

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 3 p.m., Mr. T. Carwardine: Gall Bladder Diseases.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Mr. Pitts: Etiology and Prevention of Dental Caries.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. R. O. Moon: Disease of the Aortic Valve.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Mon. and Thurs., 12 noon, Dr. J. G. Greenfield: Neuropathology. Mon., 3.30 p.m., Dr. Aldren Turner: Clinical Lecture. Tues., 3.30 p.m., Mr. Armour: Compression of the Spinal Cord amenable to Surgical Treatment. Wed., 3.30 p.m., Mr. L. Paton: Optic Atrophy. Thurs., 3.30 p.m., Dr. Gordon Holmes: Cerebellar Disease. Fri., 3.30 p.m., Dr. Saunders: Clinical Lecture. Operations, Tues. and Fri., 9 a.m.

PLYMOUTH DIVISION, BRITISH MEDICAL ASSOCIATION, South Devon and East Cornwall Hospital.—Wed., 2.30 p.m., Mr. H. F. Vellacott: Enlargement of the Prostate. Dr. Eric Wordley: Demonstration of Laboratory Tests for Renal Efficiency.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., 4 p.m., Dr. Margaret Rorke: The Problem of the Syphilitic Child.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield Lecture by Dr. Bunch: Pruritis and Itching Diseases of the Skin.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.—Dr. Eric Pritchard: Infant and Child Welfare. Mon., 6 p.m., Rickets: Causes, Symptoms, and Treatment. Thurs., 6 p.m., Feeding of Children between 9 months and 2 years.

SALFORD ROYAL HOSPITAL.—Thurs., 4.30 p.m., Mr. G. Wright: Common Diseases of the Rectum.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. A. E. Barclay: Demonstration of the New X-Ray Department. Fri., 4.15 p.m., Dr. E. S. Reynolds: Neuritis.

UNIVERSITY OF SHEFFIELD FACULTY OF MEDICINE.—At Royal Infirmary, Tues., 3 p.m., Dr. Hallam: Common Skin Diseases. 4 p.m., Mr. Mouat: Treatment of Genito-urinary Diseases. At the University, Fri., 3 p.m., Professor Douglas: Exudates.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Pinchin: Physical Signs in Pulmonary Disease. Tues., 4.30 p.m., Mr. Addison: Hare Lip and Cleft Palate. Wed., 4.30 p.m., Mr. Armour: Surgery of the Pancreas. Thurs., 4.30 p.m., Dr. James Taylor: Ocular and Visual Conditions in Nervous Disease. Fri., 4.30 p.m., Dr. Owen: Diagnosis of Renal Disease. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 1 0 a.m. to 1 p.m.), In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS AND ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

NOVEMBER.

3 Fri. London: Conference between representatives of British Medical Association and Society of Medical Officers of Health, 2.30 p.m.
Cambridge and Huntingdon Branch, Addenbrooke's Hospital, 2.30 p.m.
Sheffield Division, Library of the Literary and Philosophical Society, Church Street, Sheffield, 8.30 p.m.
6 Mon. Hereford Division, Herefordshire General Hospital, 3 p.m.
7 Tues. London: Regulations and Standing Orders Subcommittee, 2 p.m. London: Organization Committee, Special Meeting, 3 p.m.
Coventry Division, Coventry and Warwickshire Hospital, 8.30 p.m.
Newcastle-on-Tyne Division, Property Mart, 12, Eldon Square, 8 p.m.; followed by another meeting at 8.30 p.m., when Dr. R. W. Simpson, Parliamentary candidate, will give an address on matters of purely medical interest.
8 Wed. London: Hospital Subcommittee, 2.30 p.m.
East Hertfordshire Division, Letchworth Hospital, 2.30 p.m.
Plymouth Division, Post-Graduate Course, South Devon and East Cornwall Hospital, 2.30 p.m.
9 Thur. Hampstead Division, Clinical Meeting, Hampstead General Hospital, 8.30 p.m.
North Northumberland Division, Annual Dinner, Plough Hotel, Alnwick, 7 for 7.30 p.m.
10 Fri. Derby Division, Derbyshire Royal Infirmary, 3 p.m., address by Dr. Alfred Cox, Medical Secretary: "The General Activities of the Association, with special reference to the Position of Insurance Practitioners at the End of 1923," to be followed by a discussion.
North Suffolk Division, Lowestoft Hospital, 4 p.m.
South Essex Division, Southend: B.M.A. lecture by Dr. W. Langdon Brown.
14 Tues. City Division: Metropolitan Hospital, Kingsland Road, 9.15 to 9.30 p.m.
Northamptonshire Division, B.M.A. lecture by Dr. Comyns Berkeley.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTHS.

GARRATT.—On October 26th, at "Myrtle House," 30, Dunstable Road, Luton, Beds, Winefride Mary, wife of Dr. Frank Garratt, of a daughter.

WORTHINGTON.—On October 22nd, at 132, Rye Hill, Newcastle-on-Tyne, to Dr. and Mrs. Stanley Worthington—a daughter.

MARRIAGES.

HASTINGS—PATON.—On the 24th October, Thomas Ernest Hastings, M.C., M.B., Ch.B., D.P.H.Edin., of Wolverhampton, elder son of Mr. and Mrs. J. R. Hastings, Londonderry, to Beatrice Holbrow, only child of Mr. and Mrs. R. H. Paton, Scarborough.

YOUNG—HOLYOAKE.—On October 28th, at Holy Trinity Church, Stratford-on-Avon, by the Rev. Noel Paterson, assisted by Canon Melville, Alexander Waugh Young, M.C., M.D., F.R.C.S.Edin., second son of the late Alexander Waugh Young, M.A., and Mrs. Young, of Cluny Drive, Edinburgh, to Maud, younger daughter of Frank Holyoake, Esq., of Bromsgrove, Solicitor.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.
LONDON: SATURDAY, NOVEMBER 11TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

PROCEEDINGS OF COUNCIL 174

Current Notes:
- Annual Meeting, Portsmouth, 1923 173
- Parliamentary General Election 173
- Medical Candidates for Parliament 173
- The Scottish Board of Health and Salaries for Public Appointments 174
- Medical Officer of Health for Croydon 174
- Association Handbook 174

ASSOCIATION NOTICES:
- Branch and Division Meetings to be held 178

MEETINGS OF BRANCHES AND DIVISIONS 173

ASSOCIATION INTELLIGENCE AND DIARY 184

PAGE

National Insurance:
- Insurance Acts Committee and Scottish Subcommittee: Election of Direct Representatives ... 179
- Transfer of an Insurance Practice: Action for Alleged Breach of Covenant 179
- London Insurance Committee 181
- London Panel Committee 181

CORRESPONDENCE:
- Insurance Medical Service 182
- Range of Medical Benefit 182
- The Annual Meeting of the Association of Insurance Committees 183

NAVAL AND MILITARY APPOINTMENTS 183

VACANCIES 183

APPOINTMENTS 184

DIARY OF SOCIETIES AND LECTURES 184

BIRTHS, MARRIAGES, AND DEATHS 184

British Medical Association.

CURRENT NOTES.

Annual Meeting, Portsmouth, 1923.

The Annual Meeting of the British Medical Association will be held during the last week of July, 1923, at Portsmouth, under the presidency of Mr. Charles P. Childe, F.R.C.S., Senior Surgeon to the Royal Portsmouth Hospital. The Annual Representative Meeting will open on Friday, July 20th, the Statutory Annual General Meeting will be held on Tuesday, July 24th, and the scientific Sections will meet on the three following days. The Arrangements Committee for the Annual Meeting will hold its first full meeting on November 16th, when the general lines upon which the Annual Meeting is to be conducted will be laid down and the provisional programme for the work of the Sections drafted. The proposals then made will be put before the Council of the Association for confirmation at its meeting on December 13th. The Arrangements Committee consists of the Officers of the Association—namely, the President, Sir William Macewen (Glasgow); the Chairman of the Representative Body, Dr. R. Wallace Henry (Leicester); the Chairman of Council, Dr. R. A. Bolam (Newcastle); and the Treasurer, Dr. G. E. Haslip (London); six local representatives of the Executive Committee in Portsmouth—namely, the President-elect, Mr. C. P. Childe, Dr. Lockhart Stephens, C.B.E. (Honorary Treasurer), Mr. Bosworth Wright, Dr. C. F. Routh, Dr. C. Lamplough, and Mr. C. A. Scott Ridout (Honorary Local Secretary); and six members elected by the Council—namely, Sir Humphry Rolleston, P.R.C.P., Sir Anthony Bowlby, P.R.C.S. (London), Dr. G. A. Allan (Glasgow), Dr. H. C. Bristowe (Wrington), and Dr. A. Manknell (Bradford). (There is a vacancy among the Council members.) Preliminary meetings of the local and central divisions of the Arrangements Committee have already been held, and it is provisionally proposed to recommend to the Council that the scientific and clinical work of the Portsmouth meeting shall be divided among fifteen Sections. Of these the Sections of Medicine, Surgery, Obstetrics and Gynaecology, Pathology and Bacteriology, Neurology and Psychological Medicine, would meet each on three days; the Sections of Ophthalmology, Public Health, Diseases of Children, Laryngology and Otology, Radiology, would meet on two days; and the following Sections would meet on one day: Medical Sociology, Orthopaedics, Naval and Military Hygiene, Venereal Diseases, Tuberculosis. It is hoped to follow again next summer the plan found so successful in recent years of arranging afternoon demonstrations in connexion with the work of each Section. Further announcements will be made from time to time as the arrangements for the work of the Annual Meeting take definite shape.

Parliamentary General Election.

In view of the forthcoming General Election on Wednesday, November 15th, the Medical Secretary issued a letter early last week to Honorary Secretaries of Divisions and Branches pointing out that this occasion offered special opportunities for bringing the views of the medical profession and the existence of the British Medical Association before candidates for Parliament and their immediate supporters. Divisional Secretaries were therefore urged to take immediate steps to bring before all parliamentary candidates within their area the memoranda and questions, on matters affecting public health and the medical profession, drawn up by the Association. The letter expressed the hope that Secretaries would at once call their executive or the whole Division together and arrange for deputations to the candidates. Failing a deputation, copies of the questions should be sent to the candidates for their replies. Where a constituency is partly in the area of one Division and partly in another, overlapping might be avoided by arrangement with the neighbouring Division. The Association's memoranda and questions for parliamentary candidates deal with five main topics: (1) Ministry of Health; (2) Death Registration and Coroners' Law; (3) National Health Insurance Acts; (4) Remuneration of Women Medical Practitioners; and (5) Grants to Universities. The intention is to file the answers of successful candidates at the head office for subsequent use at interviews and in other ways.

Medical Candidates for Parliament.

The name of Dr. H. D. Levick, a past Chairman of the Cleveland Division of the Association, who is standing as National Liberal candidate for West Middlesbrough, should be added to those whose candidature has been approved by the Association. The Cleveland Division cordially recommended his candidature to the Parliamentary Elections Committee; Dr. Levick announced his willingness, if elected, to support the policy of the Association and to give it all the help he could in Parliament; and the Parliamentary Elections Committee has approved his candidature and has cordially wished him success. Attention is again called to the fact that the Association has formally approved the candidatures of Sir Sydney Russell-Wells (Conservative candidate for London University) and Dr. H. B Brackenbury (Liberal candidate for East Walthamstow), and it is hoped that members of the Association in those constituencies will give them all the support they can. The members of the Association in these constituencies have a good opportunity to further the frequently expressed desire of the Representative Body for more medical representatives in Parliament. Letters of support have been written on behalf of the Parliamentary Elections Committee to Dr. F. E. Fremantle, Unionist candidate for the St. Albans Division, and Dr. W. E. Elliot, of the Lanark Division, both of whom by their

advice and support in the last Parliament deserve well of the profession. The Manchester and Newcastle-on-Tyne Divisions have, it is understood, had meetings to hear the views on medical matters of Dr. T. Watts, Unionist candidate for the Withington Division of Manchester, and Dr. R. W. Simpson, Liberal candidate for Newcastle-on-Tyne North, but at the moment of writing nothing has been heard about the result of the meeting at Newcastle. Dr. T. Watts, an old and highly respected member of the Association who has long taken an active part in the work of the Lancashire and Cheshire Branch, addressed a meeting of the executive of the Manchester Division on November 2nd, when his candidature was cordially endorsed and recommended to the Association.

The Scottish Board of Health and Salaries for Public Appointments.

It is well that intending entrants into the Public Health Service, Scotland, should know what prospects this service offers as a career. A clear indication may be obtained from recent decisions of the Board of Health. Some time ago a local authority resolved to appoint an assistant medical officer of health at £500. The Board objected to that salary and induced the authority to lower its terms to £400. More recently three education authorities have advertised vacancies as assistant school medical officers at £500. They have been informed that "the Board consider that £500 is unnecessarily high in the present circumstances for an assistant school medical officer." The "present circumstances" are apparently these: that "there has been a material fall in the cost of living during the last two years, and that the Glasgow education authority are advertising a similar appointment at a commencing salary of £405." Further, lest it should be thought that the Board is indifferent to the claims of professional ability and experience for adequate remuneration there is added this gem of reasoning:

"The Board are of opinion that in present financial circumstances the only method by which prospects of reasonable advancement, which would attract and retain practitioners of ability, can be given is by reducing the starting salaries of junior appointments. Thereby there will be attracted younger practitioners of ability with sufficient training and experience who look to the work as a profession."

The British Medical Association rather holds the view that a sufficient commencing salary, *plus* reasonable prospects of advancement, is more likely to attract practitioners with the qualifications and the post-graduate training and experience which are necessary for these posts, than a poor salary with nebulous prospects of advancement, but it may have to revise its view in the light of bureaucratic reason. Some inducement to do so might be offered if the Board showed any desire to improve the conditions for senior officers, but the evidence all tends in the opposite direction. Last year a local authority in Scotland, on proceeding to the appointment of a medical officer of health, was instructed by the Board to fix the salary at £500, and for this sum the favoured applicant was to discharge the duties of medical officer of health, tuberculosis officer, maternity and child welfare attendant, venereal diseases medical officer, police doctor, and medical attendant at the combination hospital. It is difficult to avoid the conclusion that cheapness is the main criterion of the Board's policy, and if the result should be to deter the best type of men from entering the service, the desired economy might be dearly purchased at the cost of lowered efficiency.

Medical Officer of Health for Croydon.

The Croydon Borough Council is advertising in the lay press for a medical officer of health at an annual salary of £1,000, rising to £1,200. The decision to do this was taken by the Council after its advertisement had been refused by the *British Medical Journal* and by the *Lancet*, after the Croydon Division had decided that the salary for this officer ought to be £1,500 a year, and after a combined deputation from the Association and the Society of Medical Officers of Health had met the Public Health Committee of the Borough Council and informed that body why the salary they proposed to offer was insufficient. Croydon is an important borough with a population of nearly 200,000, which has always prided itself on its public health efficiency, and it has had a succession of medical officers of health eminent in their branch of the profession. Dr. Veitch Clarke, the officer who has just resigned, has taken office at Manchester. The opinion of the Croydon Division was that a specially trained officer competent, as shown by his past record, to take such a post should be paid a salary which would put him on a level with local medical men prominent and successful in other branches of the profession. The deputation to the Public Health Committee prophesied that if the Council persisted in trying to appoint an officer at the salary now offered no medical man of the right class would apply, and expressed its opinion that no man of any other class could expect to have that cordial co-operation from the local medical profession which was essential if the public health work of Croydon was to continue to be successfully performed. It remains to be seen whether the local Division and the deputation will be justified in their action by the event.

Association Handbook.

The Handbook of the British Medical Association for 1922–23 is now available, and copies can be had gratis and post free by members on application. Among new features the new edition contains a summary of some of the work of the Association in 1921–22, information regarding the *British Medical Journal* and its work, and the representation of the Association on outside bodies. To non-members of the Association the book is on sale at 2s. 6d.; post free, 2s. 9½d.

PROCEEDINGS OF COUNCIL.

Wednesday and Thursday, October 25th and 26th, 1922.

A MEETING of the Council was held at 429, Strand, on October 25th, with Dr. R. A. BOLAM in the chair, and was continued on the following morning. The members present were:

Sir William Macewen (President), Professor David Drummond (Past President), Mr. C. P. Childe (President elect), Dr. R. Wallace Henry (Chairman of Representative Body), Dr. G. E. Haslip (Treasurer), Dr. G. A. Allan, Dr. T. Ridley Bailey, Surgeon Rear-Admiral Sir P. Bassett-Smith, Dr. H. S. Beadles, Dr. J. W. Bone, Dr. H. B. Brackenbury, Dr. H. C. Bristowe, Dr. C. Buttar, Dr. N. L. Clarke, Dr. H. G. Dain, Dr. J. S. Darling, Lord Dawson of Penn, Dr. James Don, Dr. C. E. Douglas, Mr. T. P. Dunhill, Mr. W. McAdam Eccles, Dr. C. E. S. Flemming, Dr. A. Forbes, Dr. E. R. Fothergill, Dr. T. W. H. Garstang, Dr. Duncan Greenlees, Mr. N. Bishop Harman, Mr. F. S. Heaney, Dr. R. Langdon-Down, Dr. E. K. Le Fleming, Dr. E. Lewys-Lloyd, Sir Richard Luce, Dr. A. Lyndon, Dr. J. A. Macdonald, Dr. S. Morton Mackenzie, Dr. J. Macgregor-Robertson, Major-General Sir W. G. Macpherson, Dr. A. Manknell, Dr. R. B. Mahon, Dr. G. W. Miller, Dr. Hugh Miller, Mr. A. W. Nuthall, Dr. W. Paterson, Dr. C. M. Pearson, Dr. F. Radcliffe, Dr. D. A. Sheahan, Mr. H. S. Souttar, Dr. John Stevens, Dr. W. B. Crawford Treasure, Mr. F. B. Turner, Dr. E. O. Turner, and Sir Jenner Verrall.

The Chairman welcomed certain members attending the Council for the first time (Drs. Allan, Macgregor-Robertson, Miller, Paterson, and Pearson), and voiced the sympathy of the Council with Dr. David Ewart, who had undergone a serious operation. He also intimated the resignation of Colonel T. D. Barry, who, being compelled to spend much of his time on the Continent, felt that he could not give adequate attention to his duties on the Council; this was accepted with regret and with an expression of appreciation of Colonel Barry's past services.

The Late Sir James Galloway.

The Chairman said that the Association had to record a great loss in the death of Sir James Galloway, who was a member of Council from 1914 to 1918. He was a most helpful member, and his activities on behalf of the Association were not limited to what he did in public. Sir James Galloway filled important positions during the war, and the Central Medical War Committee profited greatly from his advice. He was also chairman of the conferences of hospital medical staffs, which he guided through a very difficult and intricate task. He was a personal friend of most of the members of the Council, and well known to a very wide circle, from whose memory the kindly impression of him would not soon be effaced. A resolution of sympathy with the family was passed by the Council standing.

Election of a Vice-President.

A recommendation to the Representative Body that Professor David Drummond be elected a Vice-President of the Association in recognition of his services during the year of his presidency was adopted unanimously. The Chairman said that this was no mere formality, for very solid and useful services had been performed by Professor Drummond.

Place of Annual Meeting, 1925.

It was reported that invitations to the Association for the Annual Meeting of 1925 had been received from the Bath Division, from the Nottingham Division, and, for a meeting at Bournemouth, from the Dorset and West Hants Branch. The invitation from Nottingham was for 1925 or the earliest possible date thereafter, and that from Bournemouth for the earliest date at which the Council deemed it desirable to visit that town, where the Association last met in 1891. Dr. Flemming supported the invitation to visit Bath, which had

not had the pleasure of entertaining the Association since 1878. The accommodation for visitors in Bath was ample, there was abundant provision of suitable meeting places, and the amenities of the city and its historical interest were well known. From the medical point of view Bath was sometimes regarded as old-fashioned, but no one could read the recent report of the medical advisory committee to the Bath City Council without realizing that medicine in Bath was at the dawn of a new era. He promised the hearty co-operation of both the civic authorities and the local profession in making the meeting a success. Dr. H. C. Bristowe said that the Bath Division would be seconded in its hospitality by the sister Division of Bristol. It was agreed unanimously to recommend the Representative Body to hold the meeting of 1925 at Bath. Sir Richard Luce said that Nottingham would like its invitation to stand good for another year. The Medical Secretary was instructed to thank Bournemouth for its invitation, which it was hoped would be repeated later.

Annual Meeting Arrangements.

On the motion, which was heartily agreed to, that the Chairman of Council be authorized to prepare and transmit to all those who contributed to the success of the Glasgow Meeting the grateful thanks of the Association, the Chairman said that the Council was fortunate in being able to express its thanks personally that day to Sir William Macewen, the President, and Dr. G. A. Allan, the honorary local general secretary. A communication had been received from Dr. Allan containing some suggestions for future Annual Meetings from the point of view of a general secretary. This was a very comprehensive and valuable document, and had been transmitted to the Office and Arrangements Committees for consideration. Later in the meeting the Office Committee reported that Dr. Fothergill had transmitted a series of suggestions for the organization of the Annual Meeting, more particularly the Section of Medical Sociology. The Office Committee considered some of these most useful, while pointing out certain objections to the adoption of others. The Council was also asked to appoint six members on the Arrangements Committee, whose reference is to consider and advise the Council as to the appointment of officers of Sections and readers of addresses and as to other arrangements for the Annual Meeting. The six members chosen by the Council were: Sir Humphry Rolleston (President of the Royal College of Physicians), Sir Anthony Bowlby (President of the Royal College of Surgeons), Dr. G. A. Allan, Dr. H. C. Bristowe, Dr. A. Mankneil, and Professor C. J. Martin. (Six other members are appointed by the local committee of management.) The Chairman remarked that a letter had been received on behalf of the exhibitors at Kelvin Hall during the Glasgow Meeting, expressing their thanks for the admirable manner in which the arrangements for the Annual Exhibition had been carried out, whereby the attendance and interest shown were altogether satisfactory. They added a special word of thanks (which the Chairman said should be recorded in the minutes) to Mr. Ferris-Scott, the Financial Secretary and Business Manager, for his personal attention.

Certain resolutions from the Scientific Sections at Glasgow came before the Council, and were referred to the appropriate Committees; one from the Obstetrical and Gynaecological Section (on the prevention of stillbirths and neo-natal deaths) was sent to the Medico-Political and Parliamentary Committee; one from the Industrial Diseases and Forensic Medicine Section (with regard to the sale of arsenical preparations) to the same Committee; one from the Neurology and Psychological Medicine Section (with regard to the instruction of medical students in psychology and psychopathology) to the Science Committee; and, to the same Committee, one from the Section of Medical Sociology on the need for a further inquiry into the effect of alcohol as a beverage.

The Australasian Medical Congress.

A communication was read from the President of the Australasian Medical Congress, 1923 (Dr. G. A. Syme), calling attention to this event, and to the fact that it would be the first session of the Congress to be held under the control of the Branches of the British Medical Association in Australasia, and requesting the attendance of the President or of some distinguished officer. The Chairman said that this was an invitation which the whole Council would desire to see accepted, but, of course, it would mean a serious sacrifice of time on the part of the person chosen as ambassador. He was informed that, if the Council thought it advisable, Sir William Macewen would consider very carefully whether he could visit Melbourne for the Congress in November of next year. Mr. Dunhill, on behalf of the Dominions Committee, cordially supported the invitation to the President. He said that there was great unanimity in support of the British Medical Association among the profession in Australia, and the Association's prestige there and elsewhere overseas would be enhanced by a visit from the President (or the Past President, as he would be then). Dr. C. E. Douglas pointed out that a great number of the graduates in Australia and New Zealand were Scotsmen, among whom Sir William Macewen would be specially welcome. The Council having expressed its desire that the President or some other distinguished officer should attend the Congress, it was referred to the Finance Committee to consider ways and means. The President said that he had all the will to go if the Council considered that he could be of service to the Association by going, but he would like to have a little time to think over the project before making a decision. It was his feeling that the Branches of the Association overseas ought to be supported in every way possible.

Fund for Relief of Russian Doctors.

The Chairman said that the Council had done a very timely piece of work in appealing on behalf of the Russian medical men to the sympathies of the profession in this country. The total subscriptions received amounted to £1,605. A number of acknowledgements and other communications from Russia had been received, and he suggested that a statement of the position and of the requests for further help in the way of medical literature, chemical reagents, and laboratory instruments might be ventilated in the JOURNAL. Dr. Fothergill asked that the fund might still be left open, and the Chairman said that, should necessity be shown, the Office Committee would take appropriate action to stimulate again the flow of subscriptions.

The Association's Finance.

The Treasurer (Dr. G. E. Haslip) presented for approval the accounts for the period May 1st to August 31st, amounting to £35,486. An increase over the amount for the corresponding period of last year was due to the fact that in 1921 considerable stocks of paper were in hand, whereas this year paper had to be purchased. The receipts also showed an increase, due to the increased subscription. The accounts were approved and the Treasurer was empowered to transfer certain investments standing in the balance sheet and certain stocks purchased during the current year to the Reserve Fund "for the extension of the work and premises of the Association" which was set up in accordance with the resolution of the last Representative Meeting. He was also authorized to formulate rules for the administration and control of that fund. The treasurer remarked that the Association was much indebted to Mr. F. G. Hallett for his valued assistance in the preparation and illumination of the testimonial to Sir Clifford Allbutt. (Later in the day it was reported that Mr. Hallett, as a labour of love for the profession, had undertaken to do the illumination and superintend the engrossing of the memorial to members of the Association who fell in the war, and would accept no remuneration for his services, but only payment for expenses, but would agree that a gift should be made towards some charitable object in which he was interested, an offer which the Committee in charge of the memorial had gratefully accepted.)

A further recommendation of the Finance Committee, which was agreed to, was that a grant of £100 should be made to the Scottish Committee for the purpose of conducting an investigation into the after-results of the operations of gastro-enterostomy and gastrectomy. The Chairman of Council said that this was an experiment for which Scotland presented a suitable field, one neither too large nor too small, and that it need not involve any great expenditure. The Scottish Medical Secretary (Dr. Drever) was already in touch with those who would assist him in the matter. Sir Jenner Verrall said that the time was ripe for the compilation of some reliable history of patients treated by these methods, and he hoped that similar investigations would follow in England. The proposal was supported by Mr. Souttar, who said that surgeons were dependent to a great extent upon general practitioners, often at a distance, for information as to ultimate results in cases which had passed through their hands. Dr. Stevens expressed the appreciation of the Scottish Committee for this act of the Council.

Encouragement of Scientific Work.

The Chairman of the Science Committee (Mr. Souttar) said that by instruction of the Representative Body his Committee had considered in what directions the Association might spend more money in scientific work. At present the disbursements of the Association for this purpose took the form of scholarships—one of £200 and three of £150 each, which the Committee regarded as being of special value because they could be held by men who already held junior appointments; grants for scientific research were also made from time to time, small in amount it was true, but the demand also was small, because at most hospitals considerable sums were already available for such work: then post-graduate education on the initiative of Divisions and Branches was fostered to some extent; and, finally, a

system of British Medical Association lectures had been set up. The view of his Committee was that any further development should take place along these two last lines. Branches and Divisions which wished to organize post-graduate education should be informed, if their funds were inadequate for the purpose, that the Council was prepared to make provision for approved schemes; further, the present system of Association lectures should be extended by encouraging invitations to lecturers from a distance, so that gradually an exchange of ideas and instruction might take place between different parts of the kingdom. A recommendation on these lines was agreed to.

Membership and Organization.

The Chairman of the Organization Committee (Dr. Morton Mackenzie) reported an increase of 1,061 in the membership of the Association during the period from April 21st to September 12th. The membership at the latter date stood at 24,140. This was a great achievement, and much of the credit was due to the propaganda work done on the Association's behalf. The Council had already sanctioned the issue of a handbook for newly qualified students, but the cost (about £125) was more than had been anticipated, so he brought the matter before the Council again for instructions. Mr. Souttar said that having read the draft of the handbook which had been prepared he thought it most excellently devised to help the newly qualified practitioners and the Association. The Council agreed that the work should go forward if the Finance Committee raised no objection. Other recommendations from the Organization Committee related to the grouping of Branches for the election of Council and the representation of Divisions in the Representative Body. Two Divisions—Jersey, and Guernsey and Alderney—had taken the place of the Channel Islands Division, and owing to the difficulty of intercommunication between the islands the Committee felt that both Guernsey and Alderney Division and Jersey Division should be independent constituencies. A proposal was forthcoming from the New South Wales Branch that there should be a reduced subscription for husband and wife residing together overseas. So many exceptions to the ordinary subscription were already in existence that the by-law (By-law 11) was sufficiently complicated. His Committee, therefore, suggested that instead of the central subscription being reduced to meet this particular case, the Branch should be asked to make some reduction in its own subscription. The simplification of the by-law, which now included special provision for nine different classes of members, presented some difficulty. It had been suggested that the subscriptions should be stated, not in amounts, but in proportions of the basic subscription, but this method would lead to difficulty if at any time the ordinary subscription were raised or lowered, and he proposed to withdraw a recommendation on this subject, which embodied a redraft of the by-law, and to ask the Council now to state that if and when the time came for an alteration in the subscription the different classes of exceptions, the amounts to be paid, and the way in which those amounts were expressed, should be referred to a joint meeting of the Finance and Organization Committees. This course was agreed to.

The Position in South Africa.

Dr. Mackenzie regretted that he was not in a position to put the South African question before the Council in a form admitting of debate. The Organization Committee had spent a great deal of time in answering a number of hypothetical questions from various quarters in South Africa, and in every case it had been most careful, if it expressed an opinion at all specifically, to state that it was the opinion of the Committee alone, and was subject to confirmation by the Council and the Representative Body. To continue the history from the point at which it was left at the June Council (SUPPLEMENT, June 24th, p. 243), the South African Congress was held in September, and the Committee had heard by cable that it was decided to take two further referendums, one of all the practitioners in South Africa, and the other of the Association members only, on the question of federation. The South African Committee had been asked to delay the second referendum in order to give the central office time to communicate with the members by circular or otherwise; the South African Committee had met this proposal quite fairly, and the second referendum would not be taken before mid-December at the earliest. The question had been raised by the South African Committee as to what the Council would do if one Branch in South Africa declared that it would have nothing to do with the proposal for federation of the new Medical Association of South Africa with the British Medical Association. To this the Medical Secretary, after consultation with him, telegraphed that it was impossible to forecast the action in these circumstances, but that his personal opinion was that the Council would be guided by the weight of actual numbers and the opinion of the Association's South African Committee. The President of the South African Committee was told that he might rely on the strong desire of the Council to do what the South African members thought best for the unity of the profession in the Dominion. The profession in South Africa, and more particularly those who were trying to run the new Medical Association, were quite convinced of the sincerity of the British Medical Association, and in the *South African Medical Journal*, which represented the views of the active members of the new organization, it was stated that the terms of federation offered by the British Medical Association to South Africa were extremely generous.

Ethical Matters.

The Chairman of the Central Ethical Committee (Dr. Langdon-Down) brought forward a recommendation to alter in one particular the regulations relating to the insertion of "Important Notices" in the JOURNAL. This was agreed to. It was reported that the Committee still had under consideration the newer journalistic method of advertising and the ethics of consultation, and that the plan to be followed in opening up negotiations with representatives of the legal profession on the question of professional secrecy was now being studied. The Council expressed some desire that this last matter should be expedited.

Public Health Appointments.

The Chairman of the Public Health Committee (Dr. Garstang) gave an account of the position in regard to the superannuation of public health medical officers. The Council, at its meeting in February, had approved a draft bill to provide for such superannuation, but in the meantime another body—the National Association of Local Government Officers—had introduced a bill into Parliament to provide for the superannuation of all employees of local authorities, and, thanks to the permissive character of this measure, it became law in August last. The measure drafted by the Association was compulsory, and also contained a proviso whereby certain years of service would be added to counteract the effect of the greater age at which medical officers entered the public service as compared with other employees of local authorities. The new Act contained no such provision. Although his Committee was not altogether pleased with what had been done, it recognized that the measure which had been passed had stabilized the position for the time being, and that it was not opportune to press for further alterations. The policy to pursue was to get as many public authorities as possible to adopt the new permissive Act.

Dr. Garstang said that the next matter he had to bring forward involved a question which was still under discussion between the British Medical Association and the Society of Medical Officers of Health—namely, the minimum remuneration for public health appointments. A recommendation which he brought up from his Committee was that, pending a new scale of salaries for such officers, and without prejudice to the final settlement between the two bodies meeting in conference, the minimum salaries should be £700 per annum for seniors and £500 for juniors, in place of the pre-war £500 and £350 respectively. The purpose of this recommendation was to fill a gap which had been found inconvenient, and when a decision had been arrived at in the conferences (which would be resumed very shortly) the whole matter would be finally reported to the Council. In the meantime his Committee was satisfied that as a temporary measure the minimum salaries should be as stated. The resolution was agreed to.

The Ministry of Health and Milk Prosecutions.

The Council had under consideration, at the instance of the Public Health Committee, a Circular (No. 325) issued to local authorities in July last by the Ministry of Health, stating that conditions of a purely temporary kind might cause cow's milk on occasion to be below the regulation limit for fat content, and that the results of an isolated test could not be regarded as conclusive evidence that the milk was in general below that limit; the Ministry therefore deprecated prosecutions based on the results of an isolated test. In answer to criticisms,* the Ministry issued a memorandum stating that its recommendation was solely that a prosecution should not be based on the results of an isolated test when other tests of this particular source of milk supply had proved satisfactory; prosecutions should be instituted only when a series of tests had shown repeated default. The Public Health Committee felt that the unfortunate impression given by the original circular was not removed by the subsequent memorandum, and recommended that certain expressions of

* See BRITISH MEDICAL JOURNAL, August 5th, 1922, p. 232, August 19th, p. 325, and September 30th, p. 612.

opinion should be sent to the Ministry as to the possible results of following the advice given in the circular. It was pointed out that the Food and Drugs Acts were never intended to admit of any such concession, that unscrupulous dealers would take advantage of it to adulterate their milk, and that infants and invalids, to whom milk was the most important of foods, might continue to be supplied with inferior milk whilst the series of tests necessary to prove repeated default was being conducted. It was agreed that these expressions of opinion should be sent to the Minister of Health, with a request that he should, in the exercise of his discretion, withdraw or modify Circular 325.

Interference by Local Authority between Doctor and Patient.

Dr. Brackenbury raised the question, which also figured in the report of the Public Health Committee, of a controversy which has arisen in Hornsey between the public health authority and the local profession. The Hornsey Town Council, on the recommendation of its Public Health Committee, adopted a report which included the statement that deaths in certain cases of diphtheria could be attributed to the fact that there was delay either on the part of the patient in sending for the medical practitioner or of the practitioner in diagnosing the case, and that the medical officer of health should be allowed to take what action he thought desirable in future cases and, if necessary, report to the coroner. The North Middlesex Division, in a letter to the Town Council, strongly objected to the assumption that the public health authority had the right to take punitive action either against inhabitants of the borough as to the exact period at which they should call for medical attention or against the doctor for his conduct of a private case. In the opinion of the Public Health Committee of the Association it was inadvisable that any local authority should take action which seemed to suggest that it had a right to interfere between a doctor and his patients as regards methods of diagnosis or treatment. The protest of the local profession having secured the same publicity as the original report, both the Division concerned and the Council of the Metropolitan Counties Branch had stated that no further action was necessary.

Municipal Clinics and Hospitals.

The Chairman of Council moved that the memorandum on municipal clinics and municipal hospitals in their relation to private practitioners and medical officers employed by local authorities be approved and submitted to the Representative Body. This memorandum was the result of the joint conferences of the Medico-Political, Public Health, and Hospitals Committees and the members of the late Ministry of Health Committee. The Committees had already reported to the Council the results of their conferences so far as medical inspection and treatment of school children and maternity and child-welfare work were concerned, and the report on municipal clinics and hospitals now submitted was mainly a restatement of previous decisions of the Association.

Dr. Brackenbury said that this memorandum might become an extremely important document, and therefore it was necessary that it should be very clear and unambiguous in its wording. It contained one proposition which, he believed, was not consonant with what the Representative Body had determined:

> The Council is of opinion that all inspection of school children should, wherever possible, be carried out by whole-time medical officers.

He thought that this was not quite the right emphasis. It had been found convenient in many cases that this inspection should be carried out by general practitioners, and therefore he moved that the paragraph be amended to read:

> The Council is of opinion that inspection of school children may be carried out by whole-time medical officers, but that there is no objection to the employment of part-time officers when the exigencies of the service make this more convenient.

He explained that a "part-time officer" was a technical term which covered a private practitioner. The amendment was agreed to, as was a further amendment by Mr. Bishop Harman, altering the arrangement of the paragraphs in the section on municipal hospitals so as to secure a better sequence, omitting one paragraph on the ground of redundancy, and clearing up an ambiguous phrase in another. Some discussion took place on the question whether it was necessary that the whole of the report should go back again to the Representative Body; every proposal in the report had already received its assent, though the section on municipal hospitals had not technically been approved. In the result it was decided that the whole memorandum should be submitted to the Representative Body.

Hospital Policy.

The Chairman of the Hospitals Committee (Mr. Bishop Harman) said that his Committee had again considered the report on the hospitals policy of the Association in the light of the instructions embodied in a set of resolutions from the Representative Meeting. To carry out these resolutions certain alterations were necessary, the chief of which was that paragraphs 32 and 33 of the report should be transposed, and the former paragraph 32 amended to read as follows:

> Income derived from gratuitous contributions, existing assets, endowment funds, and the like are not liable to assessment for Medical Staff Fund purposes, but all payments made for hospital benefit (other than payments made by private patients referred to in Sections IX (*a*) and IX (*b*)) are in fact payments towards all the services of the hospital whether medical or ancillary, and therefore a percentage of such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital. Small payments of individual patients not recoverable from third parties may be assessed in a nominal percentage only as a token recognition of the policy enunciated.

The last clause of this paragraph was criticized by Dr. Fothergill, who moved an alternative form of words:

> Small payments, as defined by the Board of Management and the staff of each hospital, of individual patients who are unable to make any further payment, and whose hospital charges are not recoverable in part or whole from third parties, may be assessed in a nominal percentage only as a token recognition of the policy enunciated.

Without this proviso Dr. Fothergill thought that the principle of small payments might be abused. Mr. Harman considered that this was unnecessary precision in definition, and that it was not desirable at the present time to crystallize matters too sharply. After some discussion Dr. Fothergill withdrew his amendment on the understanding that the whole memorandum, which is to be submitted to the Divisions, would be scrutinized before publication so as to be made quite free from ambiguity.

Local Advisory Medical Committees.

Mr. Harman raised the question of the local medical advisory committees and their relation to the branch or divisional organization of the Association, upon which it seemed necessary to come to some clear decision. The appropriate paragraph in the Hospitals Report ran as follows:

> In every hospital area (that is, the area of a voluntary hospital committee) the Association through its local organization should form a representative local advisory medical committee which should be recognized by the authorities concerned, and from which representation should be given upon the voluntary hospitals committee.

The Chairman of Council said that it was very important that something should be done in this matter, and he did not think that the Branch could be absolved from the duty of setting the proper Divisions to work in any district which seemed to be a voluntary committee area. A question arose as to the functions of voluntary hospital committees in the future, and Professor Drummond asked whether the Association could not approach the Ministry of Health with a view to getting these voluntary hospital committees established on a more permanent basis. Mr. Harman and Dr. Fothergill suggested that with a view to giving the Divisions and Branches more control the paragraph given above should be amended to read: "the Association through its local organization should form *and maintain* . . ." The Medical Secretary said that there were many areas in which the Branch was generally recognized as representing the whole profession, and he questioned the soundness of suggesting to the Branches that they should abrogate their position in favour of a local medical advisory committee in every area. Sir Jenner Verrall endorsed the view that the Council should assume, unless evidence was forthcoming to the contrary, that the organization of the Association met the requirements. The Chairman of Council said the case of certain areas in which there was a body of professional opinion outside the Association which demanded representation could well be met by a special committee of Branch or Division giving such representation. The addition suggested to the paragraph, that the Association should "form *and maintain*" the representative local advisory medical committee, was agreed to, and it was also agreed that a memorandum on the subject should be prepared and submitted to the Council at its December meeting.

Medico-Political Activities.

The report of the Medico-Political Committee embraced many matters of interest, though few that lent themselves to immediate discussion. The Chairman of the Committee (Mr. E. B. Turner) again brought forward the question of the use by midwives of opium and pituitary extract, which was the subject of a resolution at the Representative Meeting. His Committee had made another protest to the Ministry of

Health. The Ministry's reconsidered opinion was that, while there was no harm in the use of opium by midwives, pituitary extract should only be used by a midwife under direction of a doctor, though there might be exceptional circumstances (such as *post-partum* haemorrhage) which would justify midwives in administering the drug. The Committee had decided that it could take no further action at present, and it was at least satisfactory to have this official opinion with regard to pituitary extract. Dr. Stevens and others hoped that the Committee would maintain its protest.

Mr. Turner next presented the Association's public medical service schemes as amended in detail according to the authorization of the Representative Meeting, and said that these had been approved by the solicitor, with the exception of a paragraph relating to the expulsion of members. The schemes, apart from this paragraph, were formally approved, and the paragraph was referred to the Medico-Political and Central Ethical Committees with a view to reporting to the next meeting of Council.

Mr. Turner said that a subcommittee had been appointed by his Committee to consult with representatives of the Medico-Psychological Association upon the evidence to be submitted to the committee set up by the late Lord Chancellor to consider questions relating to insanity and criminal trials. The Chairman of the Committee (Lord Justice Atkin) had asked for a memorandum as to the kind of evidence the Association would be prepared to present.

On the matter of the new regulations formed to prohibit self-prescribing by doctors of scheduled dangerous drugs, with regard to which the Committee was continuing its protest, a statement had been made that the regulations had the approval of the General Medical Council. Inquiry showed, however, that they had never been before the General Medical Council in any form; they had been submitted to one committee of the Council, which had passed a resolution that it did not disapprove the form of words.

Another matter which had engaged the attention of the Committee was a position which had arisen in Hampshire, where the medical officer of health had issued a circular suggesting that in certain cases practitioners who were called in on the advice of midwives should endeavour to obtain the fee themselves, and only apply to the medical officer of health for payment if they failed to obtain it. It was pointed out that this was distinctly in contravention of the arrangement whereby fees "shall" be paid by the county council; the Divisions in the area concerned were being asked to consider the position. Another matter on which the Committee was keeping itself informed was the status of the school medical officer in relation to the directors of education and education committees (which was the subject of a deputation to the Minister of Health in February last); any cases of difficulty which came to the Committee's notice would be reported at his request to Sir George Newman.

Notification of Venereal Diseases.

The Chairman of the Special Committee set up to consider the proposed scheme for the modified notification of venereal diseases (Sir Jenner Verrall) submitted certain recommendations. The first of these declared that general notification of cases by index numbers to the local health authorities would be valueless so far as it might be thought to bear upon any immediate reduction of the disease, and that its accuracy would be doubtful; the second, that notification by name and address of cases of venereal disease presenting themselves to a doctor at his surgery or at a clinic would not at present receive the support of public or professional opinion; and the third, that if, despite these considerations, any general system of notification should be instituted, the responsibility for notifying the disease should be placed upon the person suffering from the disease and not upon the doctor. After a brief discussion, these expressions of opinion, together with a memorandum containing an account of the position in other countries, were adopted by the Council for issue to the Divisions. The Chairman of Council thought that the Divisions should be asked to send up their definite opinions upon the effect of a form of modified notification, both in its possible bearing on the incidence of the disease and its acceptability or otherwise to the profession. Mr. Turner drew attention to some of the movements at present at work which made the introduction of a system of modified notification not unlikely, and urged that it was important to keep the Divisions informed so that notification as a thing accomplished should not be sprung suddenly and without warning upon the profession.

Scottish Business.

Dr. Stevens, in moving the report of the Scottish Committee, said that his Committee challenged a statement in the report of the Central Midwives Board for Scotland that the practice of midwifery in certain areas was falling largely into the hands of midwives. The Committee had information which showed that some of the returns made by medical officers of the local supervising authority were inaccurate, and that cases were returned as attended by a midwife when a doctor was also in attendance. The Committee was asking the Board to verify the returns in future reports. It had been reported to the Committee that in a number of cases the salaries of assistant school medical officers had been reduced, and the Glasgow education authority was being asked to receive a deputation with regard to the low salary it had offered for a vacant post. The Scottish Board of Health was also reducing certain fees, and in all these cases the Committee was taking up the matter as vigorously as possible.

The Association Overseas.

Sir Jenner Verrall, in the absence of the Chairman of the Dominions Committee (Mr. T. P. Dunhill), moved the report of that committee, which contained an account of various matters affecting the colonial medical services. One of these related to registration and medical practice in Kenya Colony of British East Africa. The Association had protested against unqualified assistant and subassistant surgeons being allowed to practise after retirement from the Government service. The reply of the Colonial Office was to point to the financial conditions in Kenya and to certain other considerations, and the correspondence was being forwarded to the practitioners there, with an intimation that the Committee could not at present see any possibility of further useful action. A question relating to reduction of local allowances and change of coin currency in Kenya and other parts of East Africa was awaiting a communication from the Uganda Branch. A criticism of the report of the late Parliamentary Under Secretary for the Colonies (Mr. E. F. L. Wood) on his visit to the West Indies had been received from the British Guiana and Grenada Branches, together with suggestions for improved terms and conditions of service, which had been forwarded to the Colonial Office. The Committee had pressed upon the Colonial Office the reasonableness of an increase of the maximum salary for medical officers in the West Indies, but the reply from the Colonial Office was not encouraging. Its chief point was a reference to the financial difficulties of most of the West Indian Governments. As to this, Sir Jenner Verrall said that if the Colonial Office persisted in this view—that the West Indies could not afford better terms—the Association must inform any of its members who were thinking of going into the Colonial Service of the conditions which obtained in this part of the empire.

Other reports which were approved in the course of the two day sitting were those of the Insurance Acts Committee, the Journal Committee, and the Office Committee. These gave rise to no discussion, because the matters dealt with were of a routine nature or were such as commanded immediate agreement. The Council rose at noon on the second day.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at the Golden Cross, Bromsgrove, on Thursday, November 30th, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on mental hygiene. Members are requested to make a special effort to attend. Non-members are cordially invited.

BORDER COUNTIES BRANCH: ENGLISH DIVISION.—On the invitation of Dr. Mark Fraser, the Division will meet at the Egglethwaite Industrial Colony at 3 p.m. to-day (Friday, November 10th). The members will be shown over the Colony and have an opportunity of seeing the working of the institution.

DORSET AND WEST HANTS BRANCH: WEST DORSET DIVISION.—The annual meeting of the West Dorset Division will be held at the Dorset County Hospital, Dorchester, on Saturday, November 25th, at 2.30 p.m., when Dr. G. F. Still will give a British Medical Association lecture on diseases of children.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—A meeting of the South Essex Division will be held at the Victoria Hospital, Southend-on-Sea, to-day (Friday, November 10th), when Dr. W. Langdon Brown, physician to St. Bartholomew's Hospital, will deliver a British Medical Association lecture entitled "Some minor endocrine defects."

LANCASHIRE AND CHESHIRE BRANCH: HYDE DIVISION.—The following is the programme of meetings arranged by the Hyde Division in addition to the ordinary meeting held on November 9th, when Dr. G. J. Awburn delivered his presidential address:—December 7th: Annual Dinner, Queen's Hotel, Manchester, 6.30 p.m. January 11th, 1923: Ordinary meeting at the Manor

House, Mottram, 8.30 p.m. February 8th: Smoker in Dukinfield Town Hall, 8.30 p.m. March 1st: Ordinary meeting at Norbury House, Hyde, 8.30 p.m. Debate to be opened by Dr. M. W. Paterson, O.B.E., M.C. May 31st: Annual Picnic to Bakewell, Haddon Hall, and Chatsworth. Meet at 11 a.m., The Manor House, Mottram.

LANCASHIRE AND CHESHIRE BRANCH: MID-CHESHIRE DIVISION.—An ordinary general meeting of the Mid-Cheshire Division will be held on Sunday, November 12th, at 4 p.m., at the Altrincham General Hospital. Tea will be served at 3.45 p.m. Agenda: (*a*) Report of the Division's Representative at the Annual Representative Meeting; (*b*) Discussion on the medical treatment of school children, with special reference to tonsils and adenoids; (*c*) Discussion on proposed Division dinner, and other forms of social intercourse; (*d*) Royal Medical Benevolent Fund. Dr. Langley (Manchester) will read a short paper on blood pressure.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.—A meeting of the Southport Division will be held on Friday, November 24th, at 8.15 p.m., when Dr. G. C. Anderson, Deputy Medical Secretary, B.M.A., will deliver an address entitled "The recent activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."

METROPOLITAN COUNTIES BRANCH: WESTMINSTER AND HOLBORN DIVISION.—The next meeting of the Westminster and Holborn Division will be held on November 23rd at 8.30 p.m. at the Central Hall (Room D), Westminster, when Dr. B. Dunlop (late Secretary of the Malthusian Society) will open a debate on birth control, speaking in favour of the following motion: "That the interests of the State would be promoted by educating the adult population in the science of birth control." On December 14th Dr. Gollingwood will read a paper on the newer physiology in general practice. In January Dr. R. A. Gibbons will contribute a paper on obstetrics, and in February Sir J. Thomson Walker on obscure symptoms of renal origin. Exact dates and places of meeting to be announced later. All members of the profession are cordially invited.

MIDLAND BRANCH: DERBY DIVISION.—A meeting of the Derby Division will be held to-day (Friday, November 10th), at the Derbyshire Royal Infirmary, at 3 p.m. Agenda: Report on the question of club fees in New Mills and district. Dr. Alfred Cox, O.B.E., Medical Secretary of the British Medical Association, will give an address entitled "The general activities of the Association, with special reference to the position of insurance practitioners at the end of 1923"; a discussion will take place afterwards. Non-members of the Association are invited to attend this meeting. In view of the importance of the subject of Dr. Cox's address it is hoped that there will be a large attendance.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.—A clinical meeting of the Darlington Division will be held on Thursday, November 16th, at Greenbank Hospital, at 8.30 p.m. Mr. Grey Turner (Newcastle-on-Tyne) will address the meeting on "The application of surgical principles to some problems of general practice."

SOUTH MIDLAND BRANCH: NORTHAMPTONSHIRE DIVISION.—A meeting of the Northamptonshire Division will be held on Tuesday, November 14th, when Dr. Comyns Berkeley will deliver a British Medical Association lecture.

SUFFOLK BRANCH: NORTH SUFFOLK DIVISION.—A meeting of the North Suffolk Division will be held at the Lowestoft Hospital on Friday, November 10th, at 4 p.m. Members are requested to make a special effort to attend. Dr. H. M. Evans will give an account of the Annual Representative Meeting held in Glasgow. Dr. J. L. M. Symns will read a paper on the functional element in organic disease.

SURREY BRANCH: CROYDON DIVISION.—In response to a widely expressed wish a farewell dinner (morning dress) will be given to Dr. Veitch Clark as an expression of the goodwill and regard of the practitioners residing in the Croydon Division. The date has been fixed for Thursday, November 16th, at the Greyhound Hotel, Croydon, at 8 p.m., and it is hoped that there will be a large attendance of members and non-members of the Association. Tickets 10s. 6d. each, exclusive of wine. This will allow (in addition to the cost of the dinner) the presentation of a small memento. In the event of members being unable to take a dinner ticket, the Honorary Secretary of the Division, Dr. C. G. C. Scudamore (117, Whitehorse Road, Croydon), will be glad to receive 5s. towards the cost of the presentation. The following is the syllabus for Winter Session 1922–23: Wed., Nov. 8th, 3.30 p.m., Dr. Alfred Cox, O.B.E., "Principal work of the Association." Thurs., Nov. 16th, 8 p.m., at the Greyhound Hotel, Croydon, Farewell dinner to Dr. R. Veitch Clark. Tues., Nov. 28th, 8.15 p.m., Mr. F. J. Steward, F.R.C.S., "Some Cases of Renal Surgery." Tues., Dec. 19th, 8.15 p.m., Papers by members of the Croydon Hospital Staff. Tues., Jan. 23rd, 8.15 p.m., Dr. Ernest Jones, "Psycho-analysis." Tues., Feb. 27th, 8.15 p.m., to be arranged. Tues., March 27th, 8.15 p.m., Dr. F. M. R. Walsh, O.B.E., "Differential Diagnosis of Common Nerve Disorders." Tues., April 17th, 8.15 p.m., to be arranged. All the meetings will be held at the Croydon General Hospital.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the Sheffield University on Friday, February 2nd, 1923, at 8.30 p.m., when Dr. J. W. Ballantyne will give a British Medical Association lecture on "The Problem of the Newborn Infant."

Meetings of Branches and Divisions.

METROPOLITAN COUNTIES BRANCH: STRATFORD DIVISION.

A MEETING of the Stratford Division was held at the Educational Offices, Stratford, on October 17th, when Dr. CECIL WALL, Physician to the London Hospital, opened a discussion on bronchitis and asthma. He gave an interesting history of the various methods of treatment that have been used for asthma, and a lively discussion took place, in which Drs. CHALLANS, KENNEDY, ROSE, RANDALL, STEEN, HARCOURT, and MESCALL joined. A vote of thanks was passed to Dr. Wall for coming to open the winter session of the Division.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.

THE annual general meeting of the Darlington Division was held at Greenbank Hospital on October 31st. Dr. Sinclair was elected chairman for the incoming session; Dr. Kirk and Dr. Pridham were re-elected honorary secretary and honorary treasurer respectively, as were also the executive committee and Branch representatives. Mr. F. P. HAMILTON, L.D.S., and Mr. F. HORSLEY, L.D.S., addressed the meeting on some points of contact between the medical and dental professions, and some aspects of school dental work, respectively. The addresses were full of information—wise, pithy, and to the point, and a hearty vote of thanks was accorded the lecturers for the success of an innovation which is likely to become a permanent annual affair.

Insurance.

INSURANCE ACTS COMMITTEE AND SCOTTISH SUBCOMMITTEE.

ELECTION OF DIRECT REPRESENTATIVES.

THE following have been elected as direct representatives of Local Medical and Panel Committees on the Insurance Acts Committee and its Scottish Subcommittee for the session 1922–23:

Insurance Acts Committee.

Group "A."—Dr. M. Dewar (Edinburgh) and Dr. D. Lyon Stevenson (Larkhall, Lanarks).

Group "B."—Dr. A. Smith (Whickham, Durham).

Group "C."—Dr. R. G. McGowan (Manchester), Dr. H. F. Oldham, M.B.E. (Morecambe), and Dr. Frank Radcliffe (Oldham).

Group "D."—Dr. A. Forbes (Sheffield) and Dr. G. B. Hillman, M.B.E. (Wakefield).

Group "E."—Dr. W. E. Thomas (Ystrad Rhondda).

Group "F."—Dr. T. Ridley Bailey (Bilston, Staffs) and Dr. E. Lewis Lilley (Leicester).

Group "G."—Dr. D. G. Greenfield (Rushden, Northants).

Group "H."—Dr. T. Wood Locket (Melksham, Wilts).

Group "J."—Dr. J. P. Williams-Freeman (Andover, Hants).

Group "J."—Dr. P. V. Fry (East Molesey, Surrey).

Group "K."—Dr. H. B. Brackenbury (Hornsey) and Dr. C. H. Panting (Leyton).

Group "L."—Dr. H. J. Cardale (London) and Dr. E. A. Gregg (Hampstead).

Scottish Subcommittee.

County Panel Committees.—Dr. C. E. Douglas (Cupar, Fife), Dr. J. W. Little (Newmains, Lanarkshire), Dr. J. S. Muir (Selkirk), Dr. R. W. Martine (Haddington).

Burgh Panel Committees.—Dr. Jas. Andrew (Coatbridge), Dr. Wm. Lawson (Glasgow), Dr. G. W. Miller (Dundee), Dr. James Todd (Glasgow).

The counting of the votes in Groups A, B, C, D, F, G, and Scottish Subcommittee, where contests took place, has been verified by the Proportional Representation Society.

TRANSFER OF AN INSURANCE PRACTICE.

ACTION FOR ALLEGED BREACH OF COVENANT.

IN the Chancery Division, before Mr. Justice Astbury, on October 27th and three subsequent days, the case was heard of Pell *v.* Noble, in which the plaintiff alleged that he had purchased an insurance practice the nature of which had not been properly represented to him. He asked for the specific performance of certain covenants, or, alternatively, for damages. There was a counterclaim for a portion of the purchase money withheld, and for the return of a motor-car which had been lent to the practice by the defendants.

The plaintiff was Dr. William Pell, of Leicester, and the defendants were the executors of the late Dr. D. W. Noble, of the same town. The plaintiff was represented by Mr. A. F. Luxmoore, K.C., and Mr. Danckwerts, and the defendants by Mr. N. Micklem, K.C., and Mr. Buckmaster.

Mr. Luxmoore, in opening, said that Dr. Noble died on July 6th, 1918, and his son, a medical student, was anxious that his father's practice should be carried on until he could qualify and take it over. Through a transfer agent Mr. Noble was introduced to Dr. Pell, and represented to him that his father's practice included a panel list of about 4,000 insured persons, and brought in £1,800 a year. Dr. Pell agreed to buy the practice by paying to the executors as from July 1st, 1918, one-half the gross receipts for two years, and one-third for a third year, by which time it was hoped that Mr. Noble would qualify and come into partnership;

and a covenant was drawn up whereby the vendors agreed to take all necessary steps to secure the transfer of the insured persons to Dr. Pell. The plaintiff by this arrangement had already paid to the executors some £2,000, and about £700 was still owing by him; he had withheld this amount because he discovered eventually that there had been misrepresentation as to the practice, though he did not suggest that this was wilful. The fact was that the 4,000 insured persons had never been on Dr. Noble's list at all; they were on the list of the Leicester Friendly Societies' Medical Association, which was an approved institution under the National Insurance Act. Thus there were no insured persons to be transferred from one individual doctor to another; all that could be transferred was the opportunity of being employed as medical officer by the same institution as had employed Dr. Noble to look after the insured persons on its list. There were very few of these approved institutions in the country, and only some 150,000 insured persons received medical attendance through them. No purchaser would pay anything like as much for an institution practice, in which he was liable to dismissal from the institution, as for a practice in which the insured persons were on his own list. Counsel doubted whether either party at the time understood the difference between an approved institution and an approved society. His Lordship asked what was the difference. Mr. Luxmoore said that an approved society simply collected contributions, whereas an approved institution made itself responsible for medical benefit also. Dr. Pell, on going to Leicester, accepted a subtenancy of the premises which Dr. Noble had occupied and which were the registered offices of the association. Mr. Noble did not qualify by the time stated, and in that event, according to the agreement, the practice was to belong solely to Dr. Pell; so that Dr. Pell thought it was to be in complete possession of a practice with some 4,000 insured persons on the list, which would be saleable at a high price to-day; but, in fact, he had nothing that was saleable should he desire to leave Leicester. In December, 1921, certain friction developed between Dr. Pell and the association; he was given notice to vacate the premises, and was told that his duties as resident medical officer would be at an end, but that he could apply for the vacant post. He applied, and received the appointment, terminable at three months' notice, the insured persons remaining on the panel of the institution, which now employed two doctors, of whom Dr. Pell was one, on a definite arrangement to look after its insured persons. Early in his practice at Leicester Dr. Pell noticed that the name of the association was stamped on the cards, but the late Dr. Noble's name was also on the cards, and he did not suspect that anything different from the ordinary arrangement held good until December, 1920, when he was told that the association, being unable to meet its expenses out of the dispensing fee which it received, asked for sixpence on each capitation fee paid to the doctor.

His Lordship at this point suggested that the parties should come to a private settlement. He did not suppose that either of them could afford expensive litigation. "Panel doctors as a rule do not leave much money." It was true that if the facts were as alleged Dr. Pell did not get exactly what he thought he was getting; nevertheless, he entered upon a very good and remunerative practice, and he had got all he bargained for, except that he could not resell.

Mr. Luxmoore said that Dr. Pell had surrendered half his fees for two years, and would be unable to get anything like £2,000 for the goodwill of the practice to-day. He asked that the money he had paid for the practice might be paid back to him, though, of course, Mr. Noble was entitled to some consideration for that part of the practice, amounting to £80 or £100 a year, which was not insurance practice.

His Lordship: So because young Noble made a mistake—an innocent mistake—he is to lose the goodwill of his father's practice as I pay back the money already paid to him. This is one of the cases that should be adjusted out of the court. Make me arbitrator and I will settle it for you in five minutes.

[illegible] said that the late Dr. Noble was originally a [illegible] the association and received [illegible] Insurance Act came into operation. Owing to Dr. Noble's [illegible] their doctor, and thereupon the committee of the association [illegible] gested that he should remain in the house he had hitherto [illegible] tenanted, which was also the office of the association, and Dr. Pell followed him in occupation.

[illegible] Dr. Noble's executors covenanted to transfer [illegible] it was thought that legally transfer, the [illegible] [illegible] because the covenant would not be [illegible] a remuneration which the [illegible] [illegible] that is, that the institution be [illegible] in favour of Dr. Pell. Therefore the [illegible] [illegible] [illegible]

that the president of the association had repudiated Mr. Noble's right to sell. On Dr. Pell's arrival in Leicester the president told him that he would be pleased if he would carry on the work done by the late Dr. Noble, and that there would be no interference with him so long as he continued on the lines of his predecessor. Dr. Pell thereupon said that although it was not exactly the kind of practice he wanted it would at least be an introduction to Leicester. Dr. Pell first began to raise any question about the practice in April, 1921, when he complained that the association had too much control.

In cross-examination Mr. Noble said he knew all along that his father had not an ordinary insurance practice; the patients came through the association, but he still thought they were his father's patients. He believed that 4,000 insured persons under such conditions could be transferred to a new doctor, though not in the technical sense on which the cross-examining counsel insisted. Asked what sum was put upon the goodwill of the practice for probate, he thought it was about £500. Dr. Pell had known all along that this was not an ordinary individual practice. Indeed, the surveillance of the committee was treated at first between himself and Dr. Pell as something of a household joke. His own view was that the institution had no hold over the doctor, except as to the tenancy of the house. He himself paid the sixpence in respect to each capitation fee, because he thought it essential to the practice that the association should be supported.

Mr. T. W. Lawrence, manager of the Leicester Public Medical Service, said that when Dr. Pell went to Leicester he explained to him that the association, like two other approved institutions in the town, had arranged to obtain medical treatment for its members from doctors who were on the panel of the Public Medical Service. There were sixty doctors in the Service, and between 30,000 and 40,000 members. The only control the association had over Dr. Noble or Dr. Pell was with regard to the tenancy of the premises. Members were at liberty to transfer—as they did constantly—from one doctor on the Service panel to another. The right to such change of doctor was one of the conditions under which an institution was approved.

Mr. R. Jelley, president of the association, said that he introduced Dr. Pell to the committee, and on Dr. Pell expressing surprise that there was a committee, he told him that this was an approved institution under the Act, and must be under the control of a committee, but that as long as he carried out his duties in the way that Dr. Noble had done there would be no interference. Dr. Pell raised no further objection. When Dr. Noble resigned his appointment on the passing of the Insurance Act, he was virtually reappointed on certain well-defined terms, and on Dr. Pell taking his place the committee regarded him as the doctor of the institution and subject to dismissal.

Two medical transfer agents were then called. Mr. Percy W. Needes said that he had had no experience of practices which were mainly in connection with approved institutions, but he would be very sanguine as to the prospects of selling such practices provided the goodwill were not interfered with. An insurance practice now would, perhaps, fetch two years' purchase; eighteen months' purchase was the average. In insurance practice, no personal introduction being necessary, a death vacancy was as good as a vacancy caused by retirement. Mr. Percival Turner said that the terms on which Dr. Pell bought the practice were exceptionally easy. It was very seldom that a practice was bought without something being paid down. An institution practice would fetch a good price, presuming that the institution approved the new arrangement.

This concluded the evidence.

Mr. Justice Astbury said that the question he had to decide was what Dr. Pell was told about this business. Dr. Pell saw the cards and prescription books. He was introduced to the committee of the association, and was told that the insured persons were on the association's panel. His Lordship accepted the evidence of Mr. Noble, which he thought was given very fairly, and it was corroborated by two other witnesses. Dr. Pell's contention that he did not understand that this was not an ordinary panel practice was difficult to accept. Dr. Pell was informed in such a way as would have made it plain to the stupidest person. On the other hand, the only question which worried him the judge) was the clause in the agreement, "The vendor to covenant to take the necessary steps required by the Insurance Committee to transfer all panel patients to the purchaser." The person who drafted that clause (Dr. Field Hall) swore that he did not know that this was an institution practice. He certainly intended it to mean one thing and Mr. Noble another.

Mr. Micklem urged that the clause was not a covenant to transfer, but only to take the necessary steps required by the Insurance Committee, and if the Insurance Committee decided that no steps were necessary or could be taken the covenant was not effective and therefore was not broken. Mr. Noble had stated in evidence that he went to see the clerk of the Insurance Committee, and understood from him that the transfer would be automatic.

His Lordship said that this might be, but underlying the covenant there was the hypothesis that a panel existed which could be transferred. It had, of course, to be borne in mind that Dr. Pell was no tyro; he had already transferred an insurance practice in London, and it was his business to see that the insured persons in Leicester were properly upon his list. Mr. Luxmoore objected that the covenant was that the vendors should take the necessary steps. His Lordship said that that was so, but surely Dr. Pell might be expected to assure himself that it had been done. What was the effect of a vendor entering into a covenant with a purchaser that he would do something which the purchaser knew quite well the vendor could not do and did not expect him to do? The matter was complicated by the fact that the parties had documents drawn up by transfer agents who knew nothing of the practice, and afterwards went to solicitors who knew just as little. But Dr. Pell was told the facts by Mr. Noble, Mr. Lawrence, and Mr. Jelley, and if he did not understand the legal effect of what he was told, he must not throw the onus of misrepresentation on the defendants. His Lordship did not himself think that there had been even innocent misrepresentation: Dr. Pell had even signed the cards in the place where he would not have signed them if the insured persons had been on his own panel.

Some discussion arose on the question of the cards, and Mr. Lawrence, recalled, said that members of the association were given a list of doctors whose services were available, and the institution arrangement was (unlike the ordinary arrangement) that if members were dissatisfied with their doctor they could change quarterly.

Mr. Micklem submitted that the action should be dismissed.

His Lordship said that he had formed a strong view with regard to the evidence, but it was subject to anything that might be urged in a final speech by Mr. Luxmoore on behalf of Dr. Pell. He asked whether it was not possible even now for the parties to come to terms.

The court then adjourned. On the following morning—the fourth day of the hearing—a consultation between counsel and parties took place, and on his Lordship taking his seat, Mr. Luxmoore said:

My Lord, I am glad to say that the parties in this case have come to an arrangement which will result in the whole of the proceedings being stayed. My client [Dr. Pell] has agreed to pay a sum to the executors [of the late Dr. Noble] in full satisfaction, and terms have been arranged as to how that money shall be paid. There will be a stay of proceedings on those terms.

His Lordship assented.

The terms were not announced in court.

LONDON INSURANCE COMMITTEE.

Change of Doctor.—At the meeting of the London Insurance Committee on October 26th a discussion took place on the necessity or otherwise of informing insured persons of their right to change their doctor at the end of June or December by presenting their medical cards to the second doctor for signature, without any necessary application to the first doctor or to the Committee. A subcommittee recommended that a notice informing insured persons of the procedure necessary in connexion with a change of doctor should be advertised in the public press. The Committee, however, negatived this proposal, believing that the circulation of information through approved societies or from one insured person to another is sufficient.

Postage on Medical Records.—Hitherto postages incurred by practitioners in the transmission of forms of medical record to the Committee have been refunded to them, and have been added to their quarterly payments. The Ministry of Health suggested that the amounts be paid in bulk to the Panel Committee, forming a sum additional to the statutory amount for meeting the administrative expenses of the Committee. The Insurance Committee, however, decided, although two medical members spoke in favour of the other course, to continue the present practice of making refunds to individual practitioners unless or until their consent was obtained for the transference of the amounts to the Panel Committee.

Refusal to Furnish Certificate.—Among the complaints reported on by the Medical Service Subcommittee was one with regard to a practitioner who had refused on two occasions to comply with the request of an insured person for a certificate of incapacity, the reason for his refusal being that she would not consent to engage his services for her approaching confinement; she had made arrangements with a midwife who had attended her previously. The Committee passed a resolution censuring the practitioner and calling the attention of the Ministry of Health to the case with a view to its receiving consideration in connexion with the distribution of the supplementary grant. An amendment, moved by a medical member of the Committee, that representations should be made to the Ministry that the continuance of this practitioner on the list was detrimental to the service was lost by a small majority.

LONDON PANEL COMMITTEE.

At the meeting of the London Panel Committee on October 24th the chairman, Dr. H. J. Cardale, was elected the second representative of the Committee on the Insurance Acts Committee. The allotment of two representatives to London instead of one as before was the result of the decision of the recent Panel Conference.

Terms of Service.—Attention was drawn to a clause in the terms of service which states that a practitioner is required to visit an insured person provided the insured person is within a distance of two miles from the practitioner's place of residence. In view of the fact that many doctors practising in London do not reside at their surgeries the Ministry of Health was approached on the matter, and as a result the Insurance Committee asked the Panel Committee to agree to an amendment of the clause whereby instead of the words "place of residence of the practitioner," the words are inserted "place of residence or surgery where the practitioner is ordinarily available for the treatment of insured persons." The Panel Committee agreed to the amendment, but stated its opinion that the clause was not well worded, and that the Insurance Acts Committee should be asked to give attention to redrafting.

Excessive Prescribing.—The Committee considered three cases of alleged excessive ordering of drugs and appliances, and found the charge proved in two of them. In one case the excess amount was

estimated at £7 7s., being 10 per cent. of the cost of the prescription issued, and in the other case £8 3s. 6d., being 5 per cent. of the cost. In reply to a question as to why the one practitioner should be mulcted in a 10 per cent. fine and the other in a 5 per cent., the Chairman said that the second case was a first offence, while the other practitioner was a "hardened offender."

Correspondence.

Insurance Medical Service.

SIR,—Reading the report of the Panel Conference (SUPPLEMENT, October 28th, 1922), attending two meetings, and talking to many men convinced me that there is a large body of medical men who do not want to fight, not for fear of the consequences, not that they would refuse if a fight was necessary, but because it is alien to their professional sympathies and disturbing to their work, and because they are tired of these frequently recurring threats of a trial of strength with other bodies. Although they are agreed that it is of prime importance that we should keep our defences in first-class order there can be little doubt that they would devote their energies with more satisfaction to an endeavour to remove the cause of the trouble, which is nearly always brought about by some actual or threatened action of a Government department. It must be remembered that it is the duty of the Government to ensure that the public are provided with an efficient medical service, but it is not necessarily their duty themselves to provide that service, and if a satisfactory service is otherwise provided no Government is likely itself to desire to undertake the work, so it becomes our interest to see that so far as in us lies this service is efficient and satisfactory.

In considering the medical service given under the Insurance Act we are practically considering that given in ordinary general practice, and we must admit that that is not what it might be.

In the SUPPLEMENT of October 28th (p. 166) there is an excellent letter by Dr. Fraser entitled, "What is the matter with the Panel Doctor?" There is nothing wrong with the panel doctor; individually he gives the best possible service, he has the skill, the knowledge, and the desire that are necessary for good work, and he does his very best, apart from any question of remuneration; but, collectively considered, the service is not complete, and so not as effective as it should be.

Apart from the prejudiced growser, lay and medical, the Insurance Act is not really unpopular except in so far as both patients and medical men may be disappointed that they are not able to get and to give what they had expected. At present our patients are not getting the full benefit that they might get from medicine of to-day, using the word "medicine" in its widest sense; each member of the crew is pulling his weight, but the time is so indifferent that the boat is not making the way it should. The inefficiency is due to want of proper means, opportunity, and method.

When we look at the best type of work in diagnosis and treatment as carried out in a hospital, we realize what, under better conditions, it might be in general practice. If the service is to be satisfactory there must be changes in our method of practice; for instance, we must save time for more thorough work, by avoiding the waste of overlapping journeys. In one village near me, with a population of less than 1,000, the inhabitants are attended by eleven different medical men; time could be saved by treating many more of our patients in hospital than we do at the present time; especially does this apply to maternity cases. This means that we must have better co-operation between medical men practising in the same area, must have more hospital beds, especially those of the cottage hospital or general practitioner type, and more beds for maternity cases.

In this way not only should we have more time to do our work more thoroughly, but we should have the benefit of more frequent consultations between fellow practitioners and have available for our patients those better means of diagnosis and treatment which are practicable only in institutions.

Unfortunately making suggestions of this sort gives rise to the suspicion that such reform means marching on the road to a State medical service, though actually the object is exactly the opposite; of course if we do not carry it out ourselves the State eventually must and will do it for us.

Many interested in public health are making a very insistent demand for a better and more generally available service, and we have many critics, not always friendly, who are apt to pick out the worst examples of men and methods and hold them up as illustrations of the whole. When I say that the future is in our hands, I am met by the question, What can we do? We are already taking steps, perhaps not intentionally and certainly not according to any definite plan, but nevertheless effective, to reconstruct our medical service. Medical men are working together in larger combinations and in practice generally in ways that would not have been thought possible a few years ago. The increasing co-operation between hospitals, between medical practitioners and hospitals, and between both of these and the public services, and the recently instituted, disjointed, but very general courses of post-graduate instruction, which must have a profound and far-spreading effect on practice in every direction, are potent forces in the formation of a more satisfactory service.

Can more be done? I think so. No scheme is needed, no "decision of the Representative Body," but a clear and united purpose; our Association, our JOURNAL, and still more ourselves, if we constantly have this aim in view and promote it on every opportunity, cannot fail to advance it. The present time is not opportune for advocating some of the additional services under the Insurance Act which we all admit are required, but if we do our utmost ourselves, and make our intentions well known, I am convinced that we can disarm our critics, and have an unanswerable case when we claim for our work that proper reward which we have not hitherto received.—I am, etc.,

Bradford-on-Avon, Nov. 1st. CHAS. E. S. FLEMMING.

Range of Medical Benefit.

SIR,—With reference to a resolution relative to the range of medical service under the National Insurance Acts recently passed by the St. Helens Insurance Committee, there appears to be a feeling prevailing amongst certain insurance practitioners that the resolution was passed by the Committee in a spirit antagonistic to the medical profession. The resolution was as follows:

> That this Committee is of the opinion that Clause 8 (1) of Part 1 of the First Schedule to the Medical Benefit Regulations, 1920, should be so amended that an insured person shall be entitled to receive every kind of medical treatment which the insurance practitioner on whose list the insured person's name appears is qualified to render. And so that if such treatment be considered by the Panel Committee to be beyond the competence of the ordinary general practitioner practising in the district there shall be made to the insurance practitioner concerned a special payment on an agreed scale, such payment to be a first charge on the Practitioners' Fund, in manner similar to the payments for administration of a general anaesthetic under Clause 2 of the scheme for providing method of remunerating insurance practitioners.
>
> That a copy of this resolution be sent to the Ministry of Health, the National Association of Insurance Committees, and to each Insurance Committee in England.

As the Honorary Secretary to the St. Helens Panel Committee and a member of the St. Helens Insurance Committee I consider that it is only fair to state that the relationship existing between the St. Helens Insurance Committee (including its officers) and the insurance practitioners in the area is that of the most hearty trust and co-operation. The medical service in St. Helens is working very smoothly and efficiently, and part of this success is due to the sympathetic spirit adopted by the St. Helens Insurance Committee to the medical profession.

When the resolution was being considered the members of the medical profession on the Committee moved as an amendment to leave out the words regarding the method of payment for the suggested special services, but the amendment did not receive the support necessary to carry it. In the discussion arising the Committee did not express any opinion, whatsoever, that they considered the present capitation fee to be sufficient to include the extended range of service as detailed in the resolution. The Committee realized that before any financial alterations could become effective that the same would have to be discussed by the Ministry of Health with the Insurance Acts Committee of the British Medical Association, and they put forward the resolution in order that the same could receive consideration when the question of revision (if any) of the capitation fee is being dealt with at the end of 1923.

Unfortunately the resolution concerned has been closely associated with the one passed by the Worcester Insurance Committee, but there appears to be a vast difference in the spirit in which the two resolutions were put forward.

I can assure my fellow insurance practitioners that the resolution of the St. Helens Insurance Committee was passed by the lay members in their honest endeavour to provide something that they considered in their opinion to be in the best interests of insured persons, and in no way was intended as an expression of the adequacy or inadequacy of the present capitation fee.—I am, etc.,

St. Helens, Lancs, Oct. 27th. D. CAMPBELL.

The Annual Meeting of the Association of Insurance Committees.

Sir,—It is interesting to compare accounts of what happened at the above meeting. Three representatives of our Committee who were present all dispute the version given by Dr. Bailey and Dr. Branson, and support that of the new president. No doctors went from here, but one is a member of the executive and now vice-president. It is noteworthy that Sir Alfred Warren had recently been severely snubbed by his own "societies" at their Conference at Cheltenham for his vote in Parliament on old age pensions. He seems to have adopted the not uncommon practice of venting his resentment at the first opportunity on someone else, thereby winning some cheap applause from extremists. I have heard from other sources than Sir William Glyn-Jones's letter that the speech of the former in no way represents the attitude of the executive, therefore we may expect that Dr. Branson's hopes as to the future may be fulfilled.

Meanwhile I would remind Dr. Bailey and Dr. Branson that the presence of medical men at that lay gathering was more or less accidental, and would inquire whether it is their experience that at meetings of panel doctors "appreciation" is shown of the "conscientious work" done by approved societies? Having myself made regular and careful study of the literature of both parties for about eight years, I am obliged to confess that far more "appreciation" of the good work and of the point of view of panel doctors is shown therein by lay workers under the Act than is ever exhibited by panel doctors for that of lay workers. Making selection from a number of instances this year alone, I would mention leading articles in the *National Insurance Gazette* on April 8th, April 29th, and October 7th; also two papers, one by Mr. A. Clark, clerk to the Aberdeen County Insurance Committee, read and appreciated at the tenth Annual Conference of the Scottish Association of Insurance Committees on September 22nd, and the other by Mr. E. Lamble, clerk of the Tynemouth Insurance Committee, published in the *National Insurance Gazette* of November 4th, where the speech of Dr. Bailey also appears. If we would have laymen "appreciate" our work and understand our difficulties we must meet them in friendly, at times indeed lively, discussion, not abuse them at a distance. Further, we must exhibit at least as much "appreciation" of their work as they have done of ours, and a desire to understand their difficulties. I am pleased to note that Dr. Bailey approves of the proposed conference with lay workers, whereby I trust such results may be in time achieved as will on the one hand prevent such ill-informed general criticism as that of Sir Alfred Warren, and on the other hand moderate such perorations as that of Dr. Bailey himself, especially when they are likely to be reported in the lay press.—I am, etc.,

Chichester, November 5th. G. C. GARRATT.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following announcements are notified by the Admiralty: Surgeon Commanders F. G. Goble to the *Emperor of India* on commissioning, D. P. Chapman to the *Calliope* on expiration of foreign service leave; Surgeon Lieutenant Commanders H. E. Scargill to the *Constance*, H. M. Whelan to the *Glorious*, temporary.

Surgeon Lieutenants W. J. Colborne and J. F. Haynes have been promoted to the rank of Surgeon Lieutenant Commanders.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Commanders A. R. Brailey, M.C., W. K. Wills, O.B.E., V.D., and R. J. E. Hanson, O.B.E., have been promoted to the rank of Surgeon Captain; Surgeon Lieutenant Commander A. G. V. Elder, D.Sc., to R.N. Hospital, Haslar, for training; late temporary Surgeon Sub-Lieutenant S. B. Borthwick has transferred to the permanent list as Surgeon Lieutenant.

ROYAL ARMY MEDICAL CORPS.

Major A. C. H. Gray, O.B.E., retains the temporary rank of Lieutenant-Colonel whilst employed as Assistant Director of Pathology.

Captain Alexander Hood to be temporary Major whilst employed as Deputy Assistant Director of Pathology.

The following officers retire on retired pay: Colonel J. B. Anderson, late R.A.M.C., on account of ill health, October 10th, 1922 (substituted for the notification in the *London Gazette*, October 10th, 1922); Lieut.-Colonel T. C. Lauder, June 24th, 1922 (substituted for the notification in the *London Gazette*, June 9th, 1922); Lieut.-Colonel P. H. Collingwood.

Captain J. R. Hill to be Major.

Captain H. S. Milne, M.C., retains the temporary rank of Major whilst employed as Deputy Assistant Director of Pathology.

Temporary Captain D. V. O'Malley relinquishes his commission on appointment to the Indian Medical Service.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Captain W. A. Robertson, M.C., to be Major, March 1st, 1922 (substituted for notification in the *London Gazette* of August 22nd, 1922).

Captain Llewellyn McIntyre Weeks, M.C. (late R.A.M.C.), to be Captain.

The following officers relinquish their commissions and retain their rank: Majors A. H. Horsfall, D.S.O., T.D., and E. F. Finch. Captains W. W. J. Lawson, E. White, P. G. Doyne, P. W. Green, A. Mitchell, J. Millard, D. S. Twigg, S. Thompson, and J. Mach. Taylor.

The following officers, having attained the age limit, are retired, and retain their rank except where otherwise stated: Captain L. C. Bruce, M.C., and is granted the rank of Lieutenant-Colonel. Captains A. W. Bowie and J. Young.

The following officers resign their commissions and retain their rank except where otherwise stated: Lieut.-Colonel T. Kay, D.S.O., T.D., and is granted the rank of Colonel, with permission to wear the prescribed uniform; Lieut.-Colonel J. W. Leitch, D.S.O., T.D., with permission to wear the prescribed uniform; Major B. Addenbrooke, T.D., with permission to wear the prescribed uniform; Captain G. Dalziel, M.C., and is granted the rank of Major; Captain G. B. Eadie, and is granted the rank of Major; Captain F. L. Napier, Captain L. R. G. de Glanville, Lieutenant D. M. Lindsay.

Supernumerary for Service with the O.T.C.—Major C. F. Searle, M.C. (late R.A.M.C.), to be Captain for service with Cambridge University O.T.C., and relinquishes the rank of Major, June 14th, 922 (substituted for notification in the *London Gazette*, August 4th, 1922); Captain C. F. Searle, M.C., to be local Major whilst serving with Cambridge University O.T.C., June 14th, 1922.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Captain W. E. L. Elliott, having attained the age limit, is retired, and retains the rank of Captain.

The following officers relinquish their commission and retain their rank: Major F. A. Hadley, Captain A. C. Young.

General Hospital.—Major J. D. Comrie, from 2nd Scottish General Hospital, to be Lieutenant-Colonel.

Sanitary Companies.—A. E. Bonham, from Sanitary Companies, to be Captain.

VACANCIES.

BARNET: WELLHOUSE HOSPITAL.—Resident Medical Officer. Salary £350 per annum.

BELFAST COUNTY BOROUGH.—School Medical Officer. Salary £750 per annum.

BRIGHTON COUNTY BOROUGH.—Resident Medical Officer at the Borough Sanatorium. Salary £350 per annum.

BRISTOL GENERAL HOSPITAL.—Honorary Anaesthetist.

BRISTOL MEDICAL MISSION.—Superintendent. Salary, £400 per annum.

CANCER HOSPITAL, Fulham Road, S.W.—Assistant Surgeon.

DONCASTER ROYAL INFIRMARY AND DISPENSARY.—Senior Junior House-Surgeons. Salary £220 and £175 per annum respectively.

DUDLEY: GUEST HOSPITAL.—Resident Medical Officer (Male). Salary, £200 per annum.

ECCLES AND PATRICROFT HOSPITAL.—Resident House-Surgeon. Salary, £200.

GLASGOW ASYLUM SERVICE.—Junior Assistant Medical Officer. Salary £275.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—House-Surgeon. Salary £50 for six months and £2 10s. laundry allowance.

LEAMINGTON SPA: WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Resident House-Surgeon. Salary, £150 per annum.

LONDON HOMOEOPATHIC HOSPITAL, Great Ormond Street, W.C.—Pathologist. Salary, £200 per annum.

LONDON JEWISH HOSPITAL, Stepney Green, E.1.—(1) Resident Medical Officer. (2) Junior Resident Medical and Casualty Officer. Salary £150 and £100 per annum respectively.

LONDON UNIVERSITY.—University Chair of Anatomy tenable at St. Bartholomew's Hospital Medical College. Salary £1,000 a year.

MANCHESTER: MONSALL FEVER HOSPITAL.—Third Assistant Medical Officer. Salary, £250 per annum and bonus.

MANCHESTER ROYAL INFIRMARY.—Anaesthetist. Salary, £50 per annum.

MANCHESTER ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—(1) House-Surgeon for the Maternity, Whitworth Street West. (2) House-Surgeon for the Whitworth Park Hospital (Gynaecological and Children). Salary at the rate of £100 per annum each.

MANCHESTER UNION.—Resident Assistant Medical Officer of the Crumpsall Institution and Infirmary. Salary, £225 per annum.

METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL, Fitzroy Square, W.1.—Anaesthetist.

MIDDLESEX COUNTY COUNCIL: THE COUNTY (TUBERCULOSIS) SANATORIUM, Harefield.—Third Assistant Resident Medical Officer (male). Salary, £400 per annum.

NEWPORT, MON.: ROYAL GWENT HOSPITAL.—House-Surgeon. Salary, £200 per annum.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—Honorary Surgeon in charge of Ear, Nose, and Throat Department.

OXFORD COUNTY AND CITY MENTAL HOSPITAL.—Second Assistant Medical Officer. Salary £350 per annum.

PIETERMARIZBURG: GREY'S HOSPITAL.—Male House-Surgeon. Salary, £400 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham.—Honorary Assistant Physician.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.2.—Assistant Physician.

ROYAL NORTHERN HOSPITAL, Holloway Road, N.7.—Obstetric Physician with charge of Out-patients.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—House-Surgeon at the Dreadnought Hospital. Salary at the rate of £150 per annum.

WALTHAMSTOW URBAN DISTRICT COUNCIL.—Resident Medical Officer at the Hospital for Infectious Diseases, Chingford. Salary, £250 per annum.

WALLASEY COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary, £700 per annum, rising to £800.

WESTMINSTER HOSPITAL, S.W.1.—Medical Registrar and Casualty Medical Officer. Honorarium, £250 per annum.

WREXHAM INFIRMARY.—House-Surgeon. Salary, £150.

CERTIFYING FACTORY SURGEONS.—The appointments of Certifying Factory Surgeons at Fowey (Cornwall) and Grange-over-Sands (Lancaster) are vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

POWER, ALEXANDER H., M.B., B.S.Durh., Resident Medical Officer at the Poor Law Institution and Cottage Homes of the Sunderland Union.

BROWN, J. JOPLING, M.S., F.R.C.S.E., Hon. Surgeon, Newton Abbot General Hospital, District Medical Officer, Public Vaccinator and Medical Officer for Scattered Homes, Newton Abbot.

FLEMING, Miss A. MARGARET, M.B., B.Ch., Assistant in the Anatomy Department, University of Glasgow.

GILCHRIST, A. RAY, M.B.Edin., House-Physician to the East London Hospital for Children.

GROSS, MALCOLM, M.B., B.S.Lond., D.P.H., Assistant Medical Officer of Health, County of West Suffolk.

HICKMAN, Miss E. M., M.B., Ch.B.Leeds, Demonstrator in the Department of Pathology and Bacteriology, University of Leeds.

HILLS, HAROLD W., M.B., B.S.Lond., Certifying Factory Surgeon for the Stroud District.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Surgeon to Out-patients: W. H. Ogilvie, M.A., M.Ch.Oxf., F.R.C.S. Physicians to Out-patients: F. E. Saxby Willis, M.C., M.B., B.S.Lond., and Dr. Herbert Oddy.

DIARY OF SOCIETIES AND LECTURES.

HARVEIAN SOCIETY, Town Hall, Harrow Road, W.—Thurs., 8.30 p.m., Sir J. Thomson Walker, K.B.E.: Problems of Prostatectomy. To be followed by a discussion.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—Mon., 8.30 p.m., Discussion on Pernicious Anaemia, to be introduced by Dr. P. N. Panton, followed by Dr. Arthur Ellis, Dr. A. F. Hurst, Dr. Arthur Maitland-Jones, Dr. Price-Jones, Dr. J. J. Conyb are, and others.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, London, W.—*War Section:* Mon., 5 p.m., Surg. Rear-Admiral W. Pett: Venereal Disease as a War Casualty. *Section of Therapeutics and Pharmacology:* Tues., 4.30 p.m., Discussion: The Physiological Effects of Light, to be opened by sir William Bayliss, followed by Dr. Leonard Hill, Dr. C. J. Martin, and Sir Henry Gauvain. Short Papers: Dr. J. Trevan and Miss E. Boock: The Effect of Light on the Response of Frogs to Drugs. *Section of Psychiatry:* Tues., 8.30 p.m., Dr. F. L. Golla: The Basis of the Hysterical Syndrome. *Section of History of Medicine:* Wed., 5 p.m., Presidential Address by Dr. Arnold Chaplin. Mr. George Gask: The Medical services of Henry V's Campaign of the Somme in 1415, with a Note on William Bradwardyn, Surgeon. *Section of Dermatology:* Thurs. 4.30 p.m., Cases. *Section of Odontology:* Fri., 4.45 p.m., Cases. 5 p.m., Papers by Dr. Albert A. Gray and Mr T. B. Layton. Cases and Specimens will be shown. *Section of Electro-Therapeutics:* Joint meeting with the Röntgen Society at Manchester:—Fri., 3.30 p.m. Short Papers and Demonstrations. Professor W. L. Bragg: The Structure of Metals as Analysed by X Rays. Professor A. V. Hill: The Psycho-galvanic Reflex: The Hot Wire Symmorerandi. 5 p.m.: The two following meetings will run concurrently: (1) Cauterization of Pleural Adhesions under Fluoro-copic Control, by Professor Jacobaeus, of Stockholm. (2) Measurement of High Voltages, by J. R. Clarke: Storage Batteries, by E. G. McKinnon; Examination of Metals, by V. E. A. Pullin. 7.30 p.m., Dinner. Professor Jacobaeus will be the guest of the evening, and will be supported by Sir Humphry Rolleston, President of the Röntgen Society, and Dr. Robert Knox, President of the Section of Electro-Therapeutics. Sat., Visits will be made to various institutes and works. 2.30 p.m., Opening of the X-ray and Electrical Department of the Royal Infirmary by Sir Humphry Rolleston, F.R.C.P.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—Laboratory meeting at the London School of Tropical Medicine, Endsleigh Gardens, Euston Road, 8.15 p.m. Demonstrations by Colonel A. Alcock, F.R.S., Squad Leader Whittingham, M.D., Colonel S. P. James, M.D., Dr. Manson-Bahr, Dr. A. C. Stevenson, Dr. J. G. Thomson, Mr. C. A. Hoare, B.Sc., and others.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE. At Western General Dispensary, Marylebone Road, N.W.—Dr. B. Myers: Mon., 4.15 p.m., (1) Failure of Infant to Gain Weight; (2) Dyspepsia in Infants. Thurs., 4.15 p.m., Marasmus, Malnutrition, Atrophy. At 1, Wimpole Street, W.—Wed., 8.30 p.m., Mr. W. Sampson Handley: Diagnosis of Breast Cancer.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—Tues., 4.15 p.m., Royal Hospital for Sick Children, Dr. Findlay: The Mother and the Newborn Infant. Wed., 4.15 p.m., Royal Maternity and Women's Hospital, Dr. D. Shannon: Obstetrical Cases. Fri., 4.15 p.m., Research Department, Royal Maternity and Women's Hospital, Dr. Cruickshank: The Mother and the Newborn Infant.

HEREFORD DIVISION, BRITISH MEDICAL ASSOCIATION, Herefordshire General Hospital.—Mon., 5 p.m., Professor Walker Hall: Normal and Acquired Resistance to Disease.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Mr. Barrington Ward: Minor Surgery.

MANCHESTER: ANCOATS HOSPITAL.—Thurs., 4.30 p.m., Mr. F. H. Diggle: Treatment of some Common Affections of the Ear.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Demonstration of Medical Cases by the Honorary Physicians.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. J. Strickland Goodall: Mitral Stenosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C. Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Dr. J. G. Greenfield. Mon., 12 noon: Poliomyelitis and Encephalitis Lethargica. Thurs., 12 noon: Syringomyelia and Motor Neuron Disease. Mon., 3.30 p.m., Dr. Walshe: Disorders of Muscle Tone in Nervous Diseases. Tues., 3.30 p.m., Mr. Armour: Compression of the Spinal Cord amenable to Surgical Treatment. Wed., 3.30 p.m., Mr. Leslie Paton: Ocular Palsies. Thurs., 3.30 p.m., Dr. Gordon Holmes: Cerebellar Disease. Fri., 3.30 p.m., Dr. Saunders: Clinical Lecture. Operations, Tues. and Fri., 9 a.m.

NORTH OF ENGLAND BRANCH, BRITISH MEDICAL ASSOCIATION, Royal Victoria Infirmary, Newcastle-upon-Tyne.—Thurs., 2.15–3 p.m., Professor Rutherford Morison: The Indications for Operation. 3–4 p.m., Professor Burns: Functions of the Endocrine Glands. 4–4.15 p.m., Tea. 4.15–5 p.m., Dr. Bernard Shaw: Some Considerations on the Pathology of the Endocrine Glands.

PLYMOUTH DIV[illegible] South Devon and [illegible] Barnbury: Early [illegible] Investigation of X-Ray [illegible]

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., 4 p.m., Dr. G. E. C. Pritchard: Scientific Principles underlying Infant Feeding.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C. —Thurs., 5 p.m., Chesterfield lecture by Dr. W. K. Sibley: Syphilis.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.—Dr. Eric Pritchard: Infant and Child Welfare. Mon., 6 p.m., Food Values and the drawing up of Diet Sheets.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At Jessop Hospital: Tues., 5 p.m., Mr. King: Demonstration of Cases. At Royal Hospital: Fri. 3 p.m., Dr. Skinner: Clinical Cases. 4 p.m., Mr. Townrow: Demonstration of Cases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ousseley Road, Balham.—Wed., 4 p.m., Dr. Chas. E. Lakin: Modern Cardiology.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1.—Wed., 4.30 p.m. Dr. L. Rea: Ocular Palsies. Fri., 1.30 p.m., Dr. Hildred Carlill: Hysteria.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Mr. Harman: Squint. Tues., 4.30 p.m., Dr. Cole: The Medico-Legal Aspects of Insanity. Wed., 4.30 p.m., Mr. D. Armour: Surgery of the Pancreas. Thurs., 4.30 p.m., Dr. William Hunter: Diagnosis and Treatment of Severe Anaemias. Fri., 12–5 p.m., Dr. Burnford: Applied Pathology. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.). In-patients, Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY: 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Department.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

NOVEMBER

10 Fri. Derby Division, Derbyshire Royal Infirmary, 3 p.m., address by Dr. Alfred Cox, Medical Secretary: "The General Activities of the Association, with special reference to the Position of Insurance Practitioners at the End of 1923," to be followed by a discussion.
English Division, Border Counties Branch, Englethwaite Industrial Colony, 3 p.m.
North Suffolk Division, Lowestoft Hospital, 4 p.m.
South Essex Division, Southend: B.M.A. lecture by Dr. W. Langdon Brown.

12 Sun. Mid-Cheshire Division: Altrincham General Hospital, 4 p.m.

13 Tues. London: Central Ethical Standing Subcommittee, 2.30 p.m.
City Division: Metropolitan Hospital, Kingsland Road, 9.15 to 9.30 p.m.
Northamptonshire Division, B.M.A. lecture by Dr. Comyns Berkeley.

16 Thurs. London: Arrangements Committee, 2 p.m.
London: Insurance Acts Subcommittee, 2.30 p.m.
Birmingham Branch, Ordinary Meeting.
Croydon Division: Farewell Dinner to Dr. Veitch Clark, Greyhound Hotel, Croydon, 8 p.m.
Darlington Division, Greenbank Hospital, 8.30 p.m.

17 Fri. London: Insanity and Crime Subcommittee, 2.30 p.m.
Westminster and Holborn Division, Central Hall (Room D), Westminster, 8.30 p.m.

21 Tues. London: Regulations and Standing Orders Subcommittee, 12 noon.
London: Organization Committee, 2.15 p.m.
London: Insurance Acts Rural Practitioners' Subcommittee, 2.30 p.m.

24 Fri. Southport Division, 8.15 p.m., address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The Recent Activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."

25 Sat. West Dorset Division: Annual Meeting, Dorset County Hospital, Dorchester, 2.30 p.m. B.M.A. lecture by Dr. G. F. Still on Diseases of Children.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

MARRIAGE.

WATSON—CALDER.—At Craigiebuckler Parish Church, on November 1st, 1922, by the Rev. James N. Cuthbert, B.D., George William Watson, M.R.C.S.Eng., L.R.C.P.Lond., of Distington, Cumberland, to Margaret Winifred Calder, M.A., M.B., Ch.B.Aberd., of Marryville, Aberdeen.

DEATHS.

DONALDSON.—On October 19th, at Ringwood, Tom Campbell Donaldson, M.D., late of The Elms, Harlington, Middlesex, aged 59.

ROBERTS.—On November 4th, at Ruabon, Richard Lawton Roberts, M.D., D.P.H., aged 76.

THORNELY.—On October 30th, at 21, Alexandra Road, Epsom, Michael Harris Thornely, F.R.C.S.E., M.R.C.S., L.R.C.P.Lond., D.T.M., Lieut.-Colonel, I.M.S., aged 47 years.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 18TH, 1922.

CONTENTS.

PAGE

BRITISH MEDICAL ASSOCIATION.

Hospital Policy of the Association. REPORT OF COUNCIL ... 186
Notification of Venereal Diseases. REPORT BY THE COUNCIL, WITH QUESTIONS FOR DIVISIONS 187

CURRENT NOTES:
VIS UNITA FORTIOR 185
ASSOCIATION PRIZES FOR ESSAYS BY MEDICAL STUDENTS ... 185
ELECTION OF REPRESENTATIVE BODY 185
"MEDICAL INSURANCE PRACTICE" 186
MEETINGS OF BRANCHES AND DIVISIONS 183
ASSOCIATION INTELLIGENCE AND DIARY 192

PAGE

ASSOCIATION NOTICES:
HOME CONSTITUENCIES FOR ELECTION OF REPRESENTATIVE BODY, 1923-24 189
BRANCH AND DIVISION MEETINGS TO BE HELD 189
CORRESPONDENCE 190
CHESHIRE INSURANCE COMMITTEE 191
NAVAL AND MILITARY APPOINTMENTS 191
VACANCIES 191
APPOINTMENTS 192
DIARY OF SOCIETIES AND LECTURES 192
BIRTHS, MARRIAGES, AND DEATHS 192

SPECIAL NOTICE TO MEMBERS.

Every Member is requested to preserve this "Supplement," which contains matters specially referred to Divisions, until the subjects have been discussed by the Division to which he or she belongs.

British Medical Association.

CURRENT NOTES.

Vis Unita Fortior.

IN a recent issue of the *Veterinary Journal* (October) an appeal is made to the younger members of the veterinary profession not stupidly to rush for small and inadequately paid posts; "even for the miserable pittance of £200 a year offered by our Government department there seems to be no difficulty in obtaining qualified men whose professional education has taken four, and in some instances five, years of hard study." The action of the medical profession in abiding by the advice of the British Medical Association, and the influence the Association can exert, are held out as examples to the younger veterinary surgeons, who are asked loyally to support the efforts of the Salaries Committee of the National Veterinary Association to obtain what is after all, as food and rents stand nowadays, barely a living wage. Particular reference is made to the action taken by the British Medical Association in regard to the remuneration of a tuberculosis officer which resulted in his salary, which had been £500 a year, being raised by steps to a maximum of £750. Our contemporary suggests that loyal support of the National Veterinary Association by the members of the veterinary profession, as the British Medical Association has the support of the great majority of the medical profession, will have a similar effect. It is astonishing to learn from such good authority that a miserable salary of £200 a year is offered by the Ministry of Agriculture and still more astonishing that it is accepted by the members of a learned profession. On such a salary, as our contemporary says, "he can barely exist. A chauffeur is much better off, both as regards pay and the position he has to keep up. The motto of the Veterinary Association is, we learn, *Vis Unita Fortior*. We may venture to express the hope that the members of the veterinary profession will act up to it, and we wish the Veterinary Association and the *Veterinary Journal* success in their efforts.

Association Prizes for Essays by Medical Students.

There appeared in this column in the SUPPLEMENT of November 4th particulars of the prizes proposed by the Council of the British Medical Association to be awarded for essays by final-year medical students on "The diagnosis and treatment of jaundice arising from obstruction of the larger bile ducts." Copies of the printed notice on the subject have been sent to the deans of the medical schools, to the other hospitals concerned with the education of medical students, and to the Honorary Secretaries of the Divisions and Branches of the British Medical Association in whose areas the schools are situated. Copies of the notice have also been sent to the students' unions and their medical societies. A question has been raised as to the interpretation of the term "final-year medical student." The point would appear to be fully covered by the terms of the notice itself, but as the question has been asked it has been submitted to the Chairman of the Medical Students Subcommittee of the Association. He confirms the following interpretation: A candidate, to be eligible, must not have passed, at the time when the essay is sent in, the final professional examination—that is, the final examination in respect of any medical degree or diploma entitling to admission to the *Medical Register* of the United Kingdom.

Election of Representative Body.

Members will find on page 189 of the SUPPLEMENT this week the provisional list of home constituencies for election of the Representative Body 1923-24 as proposed by the Council. It will be seen that the Council proposes to repeat the existing arrangements, except that the Hexham and Newcastle-upon-Tyne Divisions of the North of England Branch and the new Guernsey and Alderney, and Jersey, Divisions of the Southern Branch shall be separate constituencies. Any Division objecting to the proposed arrangements should send to the Medical Secretary, not later than January 9th, 1923, a statement of its objection and of the reasons therefor, and of what change the Division would suggest the Council should make. Under new By-laws 40 and 42, Representatives and Deputy Representatives must be elected not more than nine nor less than two months before the Annual Representative Meeting at Portsmouth, commencing on July 20th next. Each constituency of not less than 150 members is entitled to elect an additional Representative for each 100 members in excess of 50. It is a matter for the Executive Committee of the Division—or where the constituency comprises more than one Division, for a joint meeting of the Executive Committees of the Divisions forming the constituency—to decide whether the Representative(s) and Deputy Representative(s) shall be elected by a general meeting of the constituency or by postal vote. The meeting must be called (or, where the election is by voting papers, the papers must be issued) by the Secretary of the Division forming the constituency, or (in the case of constituencies comprising more Divisions than one) by the Secretary of the

[illegible] containing the largest number of members. Which-[illegible] election is adopted, a meeting of the con-[illegible] is summoned to be held within the four weeks before [illegible] Representative Meeting, that is within the period [illegible] 1st to 28th May, to consider the Representative or [illegible] Representatives. The names of Representatives and Deputy [illegible] appointed must be notified to the Medical Secretary [illegible] date from time to time.

"Medical Insurance Practice."

[illegible] reviewed a fortnight ago a copy of the useful book entitled *Medical Insurance Practice*, by Mr. R. W. Harris and Mr. [illegible] Slade. A notice of this work will be found in the [illegible] this week at page 883.

Matters Referred to Divisions.

HOSPITAL POLICY OF THE ASSOCIATION.

The Hospital Policy of the Association as approved by the Representative Body at Glasgow in July last was published in the SUPPLEMENT of October 7th, 1922 (pp. 153-5). In regard to that part of the policy (para. 32 dealing with the formation of Medical Staff Funds, the Council was directed by the Representative Body to report what, if any, modifications might be desirable to meet any possible inequities which might arise from the operation of para. 32 of the policy. The following report of the Council deals with this instruction.

Members are requested to consider this Report at an early opportunity and forward their comments thereon so as to reach the Medical Secretary of the Association if possible before December 23rd, 1922.

REPORT OF COUNCIL ON THE SUGGESTED REVISION OF THE HOSPITAL POLICY OF ASSOCIATION TO GIVE EFFECT TO THE RESOLUTIONS OF THE A.R.M. 1922.

[illegible] SCHEMES.

Definition of Approved Schemes.

1. The [illegible] considered that [illegible] should be a provision [illegible] Sections IX. (a) and IX. (b) [illegible] that [illegible] [illegible] [illegible] [illegible] hospital [illegible] [illegible] [illegible] [illegible]

inevitably lead to the extension of such arrangements whereby patients paid the hospital charges themselves which would afterwards be refunded to them by those responsible for their hospital benefit.]

(b) *Proposed Amendment.*

11. To overcome this difficulty, and at the same time meet the difficulties put forward by those who fear that the definite policy of assessment of all payments to hospitals, however small, would lead to friction, and therefore be repugnant to a majority of hospital staffs, the Council **recommends** as follows:

(1) That paragraph 33 of Report become paragraph 32.

(2) That paragraph 32 of the Report *(i.e.*, Min. 236 of 1921) be amended to read as follows, and become paragraph 33:

Income derived from gratuitous contributions, existing assets, endowment funds and the like are not liable to assessment for Medical Staff Fund purposes, but all payments made for hospital benefit [other than payments made by private patients referred to in Sections IX. (a) and IX. (b)] are in fact payments towards all the services of the hospital, whether medical or ancillary, and therefore a percentage of such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital. Small payments of individual patients not recoverable from third parties may be assessed in a nominal percentage only as a token recognition of the policy enunciated.

12. The middle clause of the suggested amendment to Minute 236 of 1921 *(i.e.* para. (2) above) is a plain statement of fact and is incontrovertible. It is a clearer definition of the Association's policy. The final clause specifying how small payments are to be assessed meets the position of those who fear that difficulties may arise. It states that these small payments should be assessed, but that where thought desirable they may be assessed only by way of token recognition—by a mere "peppercorn." The hospitals where such arrangements should be made, the smallness of the payments of patients given under such arrangement, and the character of the token recognition, would all be matters for local adjustment. The requirement of only a token assessment of these small payments will show that the Hospitals' Staffs are desirous of continuing their charitable services, at the same time safeguarding the position for the future by recognizing the principle that all payments are assessable.

REPORT BY THE COUNCIL ON THE NOTIFICATION OF VENEREAL DISEASES,

WITH QUESTIONS FOR DIVISIONS.

The Council has had under consideration the question of a modified system of compulsory notification of Venereal Diseases, which question is at present under consideration by a Departmental Committee. Modified notification may be taken to mean the compulsory notification to the health authority of those persons who when consulting a doctor or attending a V.D. clinic failed to be treated or to continue treatment until cured after being warned that they should be so treated.

It is generally accepted that early treatment of V.D. and continuance of treatment until cured is essential. In those countries which have adopted notification to the health authorities of those cases which have begun treatment and discontinued treatment before a cure has been effected, and in those countries where methods are in force for the discovery of cases, it is claimed that such procedures have been successful. The Council, however, is not satisfied that the conditions in the British Isles are so identical with the countries in which notification has been adopted as to enable it to urge upon the profession and the public that the same procedure should be adopted in the British Isles.

For instance, a system which would be effectual in small villages or townships where the inhabitants were largely known to one another would have no chance of success in some of the large and densely populated cities in the British Isles. The Council is of opinion that an expression of opinion from the organized profession on the question of notification of these diseases is desirable and is also of opinion that the subject should be thoroughly discussed by all Branches and Divisions with a view to ascertaining how far the profession is prepared to co-operate in carrying out some such scheme.

In order to assist in such discussions the following article by Sir Lindsey Smith reprinted from "Health and Empire" of Jan.-Feb. 1922 on "How Continuous Treatment is secured elsewhere" will be found helpful:

Legislation for the suppression of venereal disease runs on very similar lines in all the countries where it has been introduced. The three main objects aimed at are:

1. To discover which members of the community are infected.

2. To ensure that such persons receive treatment until they are cured.

3. To prevent them whilst so infected from spreading infection among others.

1. The two methods adopted for attaining the first end (discovery) are (a) making it compulsory for all infected persons to present themselves for treatment to a qualified practitioner, and for the practitioner to immediately notify all such cases to the authorities; (b) compulsory examination of persons in prisons and public institutions, and suspected persons.

(i.) The obligation on the sufferer to consult, that of the practitioner to notify, is common to all countries in Europe which have legislated on the subject (Denmark, Norway, Sweden), Union of South Africa, Australia, New Zealand, Canada and the United States, and certain Colonies in the West Indies. If either fail in their respective duties they are liable to a fine, which varies in the different countries and states. Where the infected person is under sixteen, it is the parent or guardian's duty to see that a doctor is consulted, and if the child refuses to go for treatment such parent must report to the authorities.

The Island of Jersey alone, though it compels practitioners to notify, does not seem to have made it obligatory for all infected persons to consult a doctor.

(ii.) The other method of discovering infected persons is by compulsory examination of (a) inmates of prisons and public institutions, (b) suspected persons.

(a) In Australia, Canada, and nearly all the States of U.S.A., all persons under arrest or in gaol may be examined, but in Queensland such examination only takes place if the medical officer has reason to suspect a prisoner of venereal disease.

In Sweden, the only European country where such a provision seems to exist, only those persons who are confined for offences concerning public morals are so examined.

There appears to be no provision of any kind for such examination in the Union of South Africa, nor in any of the West Indian Islands, but in the United States it is of a very wide nature, and includes the examination of persons in all public institutions.

(b) Suspected persons. In the Union of South Africa, in Australia, Canada, and in all the States of United States (except Idaho, Nevada, and Massachusetts) where the authorities reasonably suspect any person is suffering from venereal disease, and he fails when ordered to produce a certificate of health, they may cause him to be examined by a medical officer, and detained for investigation. In Queensland, South Australia, Tasmania and Victoria the authorities do not act until they receive a signed statement from an informer. In Western Australia it is sufficient if "they have reason to believe." In the Canadian Provinces of Ontario, Nova Scotia, and Saskatchewan no signed statement is necessary, it is enough if the authorities "are credibly informed," whereas in the United States and the West Indies "reasonable suspicion" is sufficient ground for the initiation of these proceedings.

Perhaps the widest powers are given to the authorities in Alberta and Manitoba, as they are allowed to enter any house and order examination of the inmates, and their removal and detention, if necessary. There is some such provision in the law of the Union of South Africa, only it is confined to localities where venereal disease is prevalent.

A very useful proviso bearing on this part of the subject, which does not seem to be in force anywhere else, is included in the legislation of Norway, Denmark and Sweden. A doctor treating a new patient for venereal disease is required to try and ascertain from such patient the source of his infection, and if it be ascertained he has to forward to the authorities the name and address of the person who infected his patient. Such person is then dealt with as a suspected person.

2. The second object, viz., ensuring that the patient continues his treatment, is effected, in the case of voluntary patients, by a provision requiring the doctor to communicate to the authorities the name and address of any patient who does not attend the doctor regularly for treatment. The authorities then order him to continue treatment. These provisions are common to the legislation of all the countries I have already referred to. If such order be not obeyed, penal proceedings are taken against the offender in the West Indies; but in all the other countries he is detained, after certain formalities, for compulsory treatment. The same

rule applies to suspected persons who are ordered to carry out treatment and fail to do so. In those countries where prisoners are examined for venereal disease, they are detained until free from infection (except in the State of Queensland, where they are only detained if likely to infect others), and in Denmark and Norway persons admitted into hospital to be treated for venereal disease cannot leave until discharged.

3. It is not necessary here to discuss the measures affecting the third purpose of the legislation. It is dealt with by including provisions for giving precautionary advice to infected persons, preventing their marriage, and their employment in certain trades, and in some countries by penal clauses if they are the cause of infecting others. I will only allude to one provision made in Denmark and Norway which might well have been also referred to when dealing with continuous treatment number 2. In both these countries it is enacted that paupers and persons who live under such conditions that their removal is necessary to prevent them infecting others, must be sent to hospital for treatment.

The Council has expressed the following opinions on this matter:—

(a) That general notification of cases of Venereal Diseases by index numbers to the local health authorities would be valueless as having any bearing on the immediate reduction of the disease, and would be of doubtful accuracy;

(b) That general notification by name and address of cases of Venereal Diseases presenting themselves to a doctor, either privately or at a clinic, would not at present receive the support either of public or professional opinion;

(c) That if, notwithstanding the foregoing expressions of opinion, any general scheme of notification of Venereal Diseases is instituted, the responsibility for notifying the disease should be placed upon the person suffering from the disease and not upon the doctor.

Questions for Divisions.

In order that the Council may have the opinion of the profession throughout the country before making any Recommendations to the Annual Representative Meeting, 1923, Divisions are asked to give the matter their earnest consideration and to forward their opinions thereon, together with replies to the following specific questions, so as to reach the Medical Secretary, if possible, by the end of the present year:—

(a) Is it desirable that a modified form of notification of Venereal Diseases, *i.e.*, notification to the local health authorities of persons who, having commenced treatment for one or other of these diseases, either at a clinic or a doctor's private surgery, have discontinued such treatment before being pronounced free of infection, after being warned that they should remain under treatment till cured, should be introduced, having regard to its effect upon the incidence of the diseases and to its bearings on professional life?

(b) Would general notification of cases of Venereal Diseases by index numbers to the local health authorities be of value in connection with the immediate reduction of the incidence of the diseases; and would the accuracy of such notification be open to doubt?

(c) Would general notification by name and address of cases of Venereal Diseases presenting themselves to a doctor, either privately or at a clinic, receive, at present, the support of either public or professional opinion?

(d) If any general scheme of notification should be instituted by the Government, should the responsibility for notifying the disease be placed on the person suffering from the disease, or on the doctor?

British Medical Association,
4, 9, Strand, London, W.C.2.

Meetings of Branches and Divisions.

British Guiana Branch.

A meeting of the British Guiana Branch was held at the Public Hospital, Georgetown, on August 23rd, when Dr. A. T. Ozzard (the President) was in the chair. There was a large attendance of members and their friends.

Dr. W. E. Roth delivered a lecture, which was profusely illustrated by original slides and photographs, entitled "Some anthropological notes from North Queensland." Dr. Roth had lived for many years in Queensland, and made a special study of the habits, etc., of the natives.

A further meeting of the Branch was held in the Public Hospital, Georgetown, on September 20th, when Dr. A. T. Ozzard (the President) was in the chair. The following cases were shown and discussed: (1) Two cases of vomiting of pregnancy treated successfully by suggestion. (2) Case of parovarian tumour showing rapid growth in three weeks. (3) Acute gonorrhœa treated with intramuscular injections of collosol manganese. (4) Case of liver abscess treated by one aspiration and intramuscular injections of emetine; recovery. (5) Case of native boy, aged 7, with mental symptoms due to ascaris. (6) Severe case of osteomyelitis of humerus. (7) Two cases for diagnosis. (8) Several *x*-ray pictures of chests illustrating pulmonary tuberculosis in different stages.

Glasgow and West of Scotland Branch: Ayrshire Division.

A meeting of the Ayrshire Division was held in the Infirmary, Kilmarnock, on November 3rd, when Dr. J. R. Dreyer, Scottish Secretary, gave an address on "National Health Insurance—the problem for next year." There was an excellent attendance, and the address was much appreciated.

Metropolitan Counties Branch: South Middlesex Division.

A meeting of the South Middlesex Division was held at St. John's Hospital, Twickenham, on October 18th, when Dr. Perodeau, Chairman, presided.

A suggested draft letter, prepared at the request of the last meeting by Dr. Camps, in connexion with the Local Advisory Medical Council, for circulation to local authorities, offering advice in any medical matters outside the scope of the Insurance Act, was, after a few minor alterations, adopted.

Dr. Cooper was unanimously elected to fill the vacancy on the Executive Committee vice Dr. Murphy, resigned.

Mr. Kenneth Walker, O.B.E., F.R.C.S., read a paper entitled "Haematuria." He divided the subject into three headings: (1) initial, usually occurring from posterior urethra, prostate; (2) terminal, from bladder; (3) total, usually from kidney. He enumerated the following signs as being of diagnostic value: (1) Clots: formed when a small amount of blood is present; if worm-like they originate from the ureter, if flaky from the bladder. (2) Pain: suggesting renal colic. (3) Frequency: suggesting lesion in lower urinary tract although it may be from the bladder. Among the general causes of haematuria were haemophilia, scurvy, toxaemia. Surgical lesions were trauma, calculus, tuberculous pyelitis, new growths, movable kidney, acute or chronic nephritis, idiopathic haematuria. Conditions in the bladder causing haematuria were trauma, neoplasm, calculus, tuberculous cystitis, bilharzia. Mr. Walker then passed round for examination water-colour drawings, showing cystitis, ulceration, papilloma, carcinoma, varicose veins.

A discussion was opened by Dr. Perodeau, in which Drs. Cooper, Ewen, P. Langdon-Down, and Lieut.-Colonel Esmonde White took part. On the motion of Dr. Perodeau, seconded by Dr. Yonge, a hearty vote of thanks was accorded to Mr. Kenneth Walker for his most interesting paper.

North of England Branch: Newcastle-on-Tyne Division.

At a meeting arranged by the Newcastle-on-Tyne Division, held on November 8th and open to all members of the profession, Dr. R. W. Simpson, parliamentary candidate for the North Division of Newcastle-on-Tyne, addressed the assembly. He said that the trend of all legislation was to bring the State closer to the medical man and make medicine more and more of a public service. It was imperative, therefore, that medical men, who thoroughly understood the requirements of the community, should take a prominent part in the moulding of such legislation. He pointed out that the legal profession in the House of Commons is well able to defend itself in legislation affecting its own interests. He made an appeal, therefore, for medical men to come forward as parliamentary candidates, so that the profession might be adequately represented at legislative councils. Dr. Simpson strongly advocated maintaining the individuality of the medical man. He supported the voluntary system and strongly favoured the organization of hospitals on a voluntary basis; he was against giving the approved societies control over the doctors. He considered that there was a great deal of overlapping in Poor Law administration, and he favoured a central medical authority which would have representatives from the ratepayers and various institutions, such as the Royal Victoria Infirmary, in the area.

A hearty vote of thanks was accorded to Dr. Simpson for his address.

The replies to the questionnaire issued by the Head Office of the Association from all the candidates in the Newcastle-on-Tyne area were reported to be satisfactory, with minor reservations in every case.

Suffolk Branch.

The autumnal meeting of the Suffolk Branch was held at the Town Hall, Ipswich, on October 7th. Sir Henry Gauvain read an interesting paper, illustrated by lantern slides, on modern methods of the conservative treatment of surgical tuberculosis. Dr. G. C. Anderson, Deputy Medical Secretary of the British Medical Association, gave an able address on the British Medical Association: its failings, its achievements, its possibilities. The members and non-members were entertained to tea by the Secretary of the South Suffolk Division, Dr. Stewart, and his wife.

Association Notices.

PROVISIONAL HOME CONSTITUENCIES FOR ELECTION OF REPRESENTATIVE BODY, 1923-24.

(Divisions bracketed together form one Constituency.)

ABERDEEN—
{Aberdeen
{Orkney
{Shetland

BATH AND BRISTOL—
Bath
Bristol

BIRMINGHAM—
{Bromsgrove
{Dudley
Central
Coventry
Nuneaton and Tamworth
Warwick and Leamington
West Bromwich

BORDER COUNTIES—
Dumfries and Galloway
English

CAMBRIDGE AND HUNTINGDON—
{Cambridge and Huntingdon
{Isle of Ely

CONNAUGHT—
{Mid Connaught
{North Connaught
{South Connaught

DORSET AND WEST HANTS—
Bournemouth
West Dorset

DUNDEE

EAST YORK AND NORTH LINCOLN—
East York
North Lincoln

EDINBURGH—
Edinburgh and Leith
South-Eastern Counties
The Lothians

ESSEX—
Mid Essex
North-East Essex
South Essex

FIFE

GLASGOW AND WEST OF SCOTLAND—
{Argyllshire
{Dumbartonshire
Ayrshire
Glasgow Central
Glasgow Eastern
Glasgow North-Western
Glasgow Southern
Lanarkshire
Renfrewshire and Buteshire

GLOUCESTERSHIRE

KENT—
Bromley
{Dartford
{Rochester, Chatham, and Gillingham
Dover and Folkestone
Isle of Thanet
Maidstone
Tunbridge Wells

LANCASHIRE AND CHESHIRE—
{Ashton-under-Lyne
{Glossop
Birkenhead
Blackburn
{Blackpool
{Isle of Man
Bolton
Burnley
Bury
{Chester
{Crewe
{Hyde
{Stockport, Macclesfield, and East Cheshire
{Leigh
{Wigan
Liverpool
Manchester
Mid Cheshire
Oldham
Preston
Rochdale
{St. Helens
{Warrington
Salford
Southport

LEINSTER—
Dublin
East Leinster
{Mid Leinster
{North Leinster
{North-West Leinster
{South-East Leinster

METROPOLITAN COUNTIES—
Camberwell
Chelsea
City
Ealing
East Hertfordshire
Finchley and Hendon
Greenwich and Deptford
Hampstead
Harrow
Kensington
Lambeth
Lewisham
Marylebone
North Middlesex
South Middlesex
South-West Essex
Stratford
Tower Hamlets
Wandsworth
West Hertfordshire
Westminster and Holborn
Willesden
Woolwich

MIDLAND—
Chesterfield
Derby
{Holland
{Kesteven
Leicester and Rutland
Lincoln
Nottingham

MUNSTER—
{North Munster
{South Munster
{West Munster

NORFOLK—
East Norfolk
Norwich
West Norfolk

NORTHERN COUNTIES OF SCOTLAND—
Banff, Elgin, and Nairn
Caithness and Sutherland
Inverness
{Islands
{Ross and Cromarty

NORTH LANCASHIRE AND SOUTH WESTMORLAND—
{Furness
{Kendal
Lancaster

NORTH OF ENGLAND—
{Bishop Auckland
{Durham
{Blyth
{Morpeth
Cleveland
{Consett
{Gateshead
{Darlington
{Hartlepool
{Stockton
Hexham
Newcastle-on-Tyne
North Northumberland
{South Shields
{Tyneside
Sunderland

NORTH WALES—
Denbigh and Flint
N. Carnarvon and Anglesey
S. Carnarvon and Merioneth

OXFORD AND READING—
Oxford
Reading

PERTH

SHROPSHIRE AND MID WALES

SOUTH-EASTERN OF IRELAND—
{Carlow and Kilkenny
{Waterford

SOUTHERN—
Guernsey and Alderney
Jersey
{Isle of Wight
{Southampton
Portsmouth
Winchester

SOUTH MIDLAND—
Bedford
Buckinghamshire
Northamptonshire

SOUTH WALES AND MONMOUTHSHIRE—
Cardiff
Monmouthshire
North Glamorgan and Brecknock
South-West Wales
Swansea

SOUTH-WESTERN—
Barnstaple
East Cornwall
Exeter
Plymouth
Torquay
West Cornwall

STAFFORDSHIRE—
North Staffordshire
South Staffordshire
Walsall and Lichfield

STIRLING

SUFFOLK—
North Suffolk
South Suffolk
West Suffolk

SURREY—
Croydon
Guildford
Kingston-on-Thames
Reigate

SUSSEX—
Brighton
{Chichester and Worthing
{Horsham
Eastbourne
Hastings
Lewes and East Grinstead

ULSTER—
{Ballymoney, North Antrim, and South Derry
{Derry
Belfast
{Enniskillen
{Monaghan and Cavan
{Omagh
Portadown and West Down

WEST SOMERSET

WILTSHIRE—
{Salisbury
{Swindon
{Trowbridge

WORCESTERSHIRE AND HEREFORDSHIRE—
Hereford
Worcester

YORKSHIRE—
Barnsley
Bradford
{Dewsbury
{Leeds
Halifax
Harrogate
Huddersfield
Rotherham
Scarborough
Sheffield
Wakefield, Pontefract, and Castleford
York

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at the Golden Cross, Bromsgrove, on Thursday, November 30th, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on mental hygiene. Members are requested to make a special effort to attend. Non-members are cordially invited.

DORSET AND WEST HANTS BRANCH: WEST DORSET DIVISION.—A meeting of the West Dorset Division will be held at the Dorset County Hospital, Dorchester, on Saturday, November 25th, at 2.30 p.m., when Dr. G. F. Still will give a British Medical Association lecture on diseases of children. A cordial invitation is extended to members of the Bournemouth Division.

LANCASHIRE AND CHESHIRE BRANCH: HYDE DIVISION.—The following is the programme of meetings arranged by the Hyde Division:—December 7th: Annual Dinner, Queen's Hotel, Manchester, 6.30 p.m. January 11th, 1923: Ordinary meeting at the Manor House, Mottram, 8.30 p.m. February 8th: Smoker in Dukinfield Town Hall, 8.30 p.m. March 1st: Ordinary meeting at Norbury House, Hyde, 8.30 p.m. Debate to be opened by Dr. M. W. Paterson, O.B.E., M.C. May 31st: Annual Picnic to Bakewell, Haddon Hall, and Chatsworth. Meet at 11 a.m., The Manor House, Mottram.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.—A meeting of the Southport Division will be held on Friday, November 24th, at 8.15 p.m., when Dr. G. C. Anderson, Deputy Medical Secretary, B.M.A., will deliver an address entitled "The recent activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—A clinical meeting of the City Division, in conjunction with the Aesculapian Society, will be held at the Metropolitan Hospital on Friday, November 24th, at 4 p.m. Clinical cases: Mr. Curtis.

METROPOLITAN COUNTIES BRANCH: LEWISHAM DIVISION.—A meeting of the Lewisham Division will be held on Tuesday, November 21st, at 8.45 p.m., at St. George's Parish Hall Annexe, Carholme Road, Forest Hill, S.E.23, when Dr. T. E. White will preside. Dr. Jane Walker will read a paper on "Some observations connected with tuberculosis in children."

METROPOLITAN COUNTIES BRANCH: WESTMINSTER AND HOLBORN DIVISION.—The next meeting of the Westminster and Holborn Division will be held on November 23rd at 8.30 p.m. at the Central Hall (Room D), Westminster, when Dr. B. Dunlop (late Secretary of the Malthusian Society) will open a debate on birth control, speaking in favour of the following motion: "That the interests of the State would be promoted by educating the adult population in the science of birth control." On December 14th a dinner will be held at the Criterion Restaurant at 7.30 p.m., to be followed at 8.30 p.m. by an address by Professor Collingwood on the newer physiology in general practice. In January Dr. R. A. Gibbons will contribute a paper on obstetrics, and in February Sir J. Thomson Walker on obscure symptoms of renal origin. Precise dates and places of meeting to be announced later. All members of the profession are cordially invited.

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.—A meeting of the Willesden Division will be held at the Edinburgh House Club, 17, Shoot-up-Hill, in the hall kindly lent by the members for the evening, at 9 p.m., on Wednesday, November 22nd.

Agenda: Dr. John Freeman, Director of the Department of Inoculation, St. Mary's Hospital, will read a paper on vaccine therapy, to be followed by a discussion. The Report of the Executive Committee will be presented by Dr. Scott. Medical visitors will be honorary members of the club for the evening and may dine (price 3s. and obtain refreshments there. Members are asked to bring medical friends to the meeting. At the meeting of the Division on Wednesday, December 20th, Dr. Haldin Davis will read a paper on some points in the diagnosis and treatment of the commoner skin diseases.

MIDLAND BRANCH: NOTTINGHAM DIVISION.—A meeting of the Nottingham Division will be held at 64, St. James's Street, Nottingham, on Tuesday, November 21st, at 4 p.m. Agenda: Report of Ethical Committee. The following resolutions will, on the recommendation of the Executive Committee, be submitted for confirmation by the Division:

1. That in the opinion of the Nottingham Division no medical practitioner within the area of the Division should hold any colliery appointment for the medical attendance upon the dependants of miners at a lower rate of remuneration than a family rate of 21s. 6d. per annum or such a flat rate per worker as would be its equivalent.
2. That in the opinion of the Nottingham Division any arrangements which are entered into in connexion with the attendance upon the dependants of miners must be approved by the Colliery Surgeons Subcommittee acting for the Executive Committee of the Nottingham Division of the British Medical Association.
3. That in the opinion of the Division in connexion with any arrangements regarding the attendance upon the dependants of miners the offtakes must be collected at the source by the colliery officials, or by a recognized field club.
4. That in the opinion of the Nottingham Division there must be free choice of doctor in connexion with any arrangements made regarding the treatment of the dependants of mine workers.

A report of the dispute between the Nottingham Division and and the Notts Colliery Field Club Board leading up to the above resolutions will be submitted to the meeting.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.—The annual dinner of the Darlington Division will be held at the King's Head Hotel, on Tuesday, December 12th, at 8.15 p.m. Members may bring one or more guests, who need not be members of the medical profession. Tickets, price 12s. each, should be applied for as soon as possible to the honorary secretary, Dr. Charles J. Kirk, 22, Westbrook, Darlington. The following clinical lectures at the Greenbank Hospital have been arranged by the Division: Thursday, December 21st, Dr. Wells Patterson: "Thyroid Gland in Health and Disease." Thursday, January 18th, 1923, Mr. R. J. Willan: "Senile Diseases of Prostate Gland." Thursday, February 15th, Dr. W. E. Hume: "Heart Failure." Thursday, March 15th, Dr. S. G. Mostyn: "Development of Darlington from a Public Health Point of View." Thursday, April 19th, Dr. E. Farquhar Murray: "Gynaecology in General Practice: Some Points in Diagnosis and Treatment." Thursday, May 10th, Mr. W. F. Wilson: "Some Common Diseases of Ear, Nose, and Throat, and their Treatment."

SURREY BRANCH: KINGSTON-ON-THAMES DIVISION.—The following programme of meetings of the Kingston-on-Thames Division has been arranged: November 28th: Annual dinner for Members of the Division at Nuthall's Restaurant, Kingston. December 12th, Clinical meeting (place and time to be announced later). January 9th, 1923, address by Dr. A. M. H. Gray: "Skin Diseases in General Practice." February 6th, address by Sir William H. Willcox, K.C.I.E. May 1st, annual general meeting. All meetings, except when otherwise stated, will be held at the Surbiton Hospital (by kind permission of the staff and committee) at 8.30 p.m.

SUSSEX BRANCH: CHICHESTER AND WORTHING DIVISION.—The annual meeting of the Chichester and Worthing Division will be held at Worthing Hospital to-day, Friday, November 17th, at 3.30 p.m. After the meeting Dr. Parry, Branch Secretary, will give a short address on his visit to the annual Conference of the British Medical Association at Glasgow.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the Sheffield University on Friday, February 2nd, 1923, at 8.30 p.m., when Dr. J. W. Ballantyne will give a British Medical Association lecture on "The Problem of the Newborn Infant."

Correspondence.

Professional Etiquette.

SIR,—The commercialization of the medical profession, made manifest by the scheme of National Health Insurance, finds countenance in a notice (inter alia) appearing in the current number of the *London Panel Committee Gazette*, a single-sheet periodical issued to panel practitioners in the county, drawing attention to the notices exhibited in their surgery windows by a certain type of practitioner. Examples of such notices are: "Panel Patients Accepted," "Private and Panel," "Vaccinations," "Teeth Extracted," etc., and are shown on cards, brass plates, tin plates, and even on the labels attached to bottles.

While apparently deprecating the exhibition to the general public of these vulgarities, the official organ of the London Panel Committee proceeds:

"It is the wish of the Panel Committee that those practitioners practising under the National Insurance Acts should very strictly observe the ethical rules of the profession, more especially seeing that there is some tendency on the part *of a section* (italics throughout are mine) of the public to class such practitioners on a lower plane than other members of the profession, a view which, *being without foundation*, the Panel Committee are doing all in their power to remove. It is hoped that all such notices as those referred to will be removed from public view."

Now comes the choice bit:

"The exhibition of such notices inside a surgery for the information of the patients of the doctor concerned is a matter for his own consideration, *and may be desirable*."

This, Sir, is the manner in which the London Panel Committee endeavours to remove the correct impression on the part of the public at large that practitioners who should have been shopkeepers are on a lower plane than those of their colleagues who observe the ordinary decencies of the profession.—I am, etc.,

Middle Temple, Nov. 6th. C. H. PRING, M.A.

St. Helens Insurance Committee.

SIR,—I am instructed to forward herewith the following resolution, passed on November 6th, 1922, by the Insurance Committee for the Borough of St. Helens:

That having regard to the fact that the resolution of the Committee relative to the range of medical service passed at the last meeting has had the effect of creating an erroneous impression in the mind of a section of the medical profession that the resolution was passed in an antagonistic spirit to the profession, this Committee hereby expresses its confidence in the general manner in which insurance practitioners on the medical list of the Committee carry out their professional duties under the National Health Insurance Acts.

That a copy of this resolution be sent to the Ministry of Health, the National Association of Insurance Committees, and to each Insurance Committee in England.

—I am, etc., WM. SHAW,
St. Helens, Nov. 7th. Clerk to the Committee.

Questions for Parliamentary Candidates.

SIR,—I append herewith for your information copy of a letter which has this day been sent to the two parliamentary candidates for the borough of St. Helens, which may be of interest to other Panel Committees.—I am, etc.,

St. Helens, Nov. 7th. D. CAMPBELL.

Dear Sir,

On behalf of the above-named Committee, representing approximately thirty insurance practitioners in St. Helens, I beg to request that you will be good enough to forward your observations on the questions set hereunder—namely:

1. Whether you are prepared to support the British Medical Association, representing insurance practitioners, in their policy for direct negotiations with the Ministry of Health on questions of terms of service and capitation fee, payable under the National Health Insurance Acts?
2. Whether you are prepared to deprecate any attempt made on behalf of approved societies to be represented at such negotiations, and have voice in the matters referred to in the above paragraph?
3. Whether you are prepared to support the continuance of Insurance Committees as being the statutory authority for administering medical benefits under the National Health Insurance Acts?
4. Whether you are prepared to support the contention that all additional benefits in kind (as apart from cash benefits at present administered by approved societies should be transferred to the administration of Insurance Committees?

Yours faithfully,
(Signed) D. CAMPBELL,
Hon. Secretary, St. Helens Local Medical and Panel Committee.

The Medical Profession and Approved Societies.

AN URBAN INSURANCE PRACTITIONER writes: Avoiding all criticism may I suggest that the friction between the societies and ourselves really centres round one matter only—the certificates? So long as the granting of the intermediate and final certificates rests with the panel doctor so much as it does now this friction must always exist, for every certificate granted is a tax on the funds of the society. Malingering, too, is always present, and no one can avoid being caught sometimes, and judgements as to "fitness" are bound to differ. I would suggest that to avoid this the panel doctor in all large towns should only be required to give the "first" certificate. He should give the medical treatment necessary as now, but not the intermediate or final certificates. There should be attached to the staff of each regional medical officer in such places two other medical officers, one appointed by the State and one by the societies. Immediately a "first" certificate was given the recipient should then come under the supervision of these two, with whom should rest the giving of the intermediate and final certificates. The patient, that is, should apply to these for his further certificate, and not to his panel doctor. In case of divergence of views between the two the regional medical officer would decide. In all the larger towns at any rate this source of friction between societies and doctors would at once disappear. I leave it to a rural area practitioner to suggest the best method for rural districts.

Insurance.

CHESHIRE INSURANCE COMMITTEE.

At a general meeting of the Cheshire Insurance Committee held at Crewe on October 18th an address was given by Mr. George Wright, J.P., chairman of the Committee.

President's Address.

Mr. Wright said that owing to the reduction of the members of the Insurance Committee which became necessary under the new regulations of the National Health Insurance Act, 1921—whereby the membership of the Cheshire Committee was reduced from sixty to thirty-five—the call upon the time and service of individual members had been considerably heavier, but the attendances of members had been remarkably well maintained. He had had considerable misgivings as to the fate of the tuberculous insured person when the Insurance Committee ceased to be responsible for the administration of sanatorium benefit; but now, through the greater facilities and resources of the County Council he was inclined to the opinion that the insured persons had benefited by the change. He would like to see, however, a much closer working co-operation between those responsible for the domiciliary treatment of tuberculosis, which now formed part of the medical benefit of an insured person, and the dispensary and institutional treatment administered by the county.

During the present year an extension of the duties of the regional medical staff had been made, which, he thought, would prove of great service to insured persons, and also probably to medical practitioners. While in the past the work of the regional medical staff was chiefly confined to dealing with cases where a society desired advice in a question of incapacity to work, references might now be made both by approved societies and by the panel doctors for consultations. The responsibility, however, of the regional medical staff in respect of cases referred to them was confined to advising societies and practitioners respectively, and neither the society nor the practitioner was relieved of responsibility, nor was the doctor's treatment of his patient in any way superseded. A complete consultative service might perhaps arise out of the initiation of that service.

The Committee had again been very active in connexion with the provision of domiciliary nursing for insured persons, and during the year a full scheme was prepared and submitted to approved societies with a view to ascertain whether they would be prepared to contribute to it. The replies of the approved societies were not sufficiently encouraging to justify the Committee in proceeding with their scheme, and very reluctantly it had been compelled to abandon it.

Mr. Wright realized that the relationship between the Minister of Health, Insurance Committees, approved societies, and medical practitioners would before very long become one of the burning questions of the day. Owing to the necessity for economy it was decided that the Treasury should be relieved of the payment of the grant which made possible the increased payments to the panel practitioners. It was at first suggested that this should be provided by an additional contribution from the insured person and the employer, but as it was considered that these payments had reached their limit under present conditions, the Consultative Council and the approved societies suggested that instead of increasing the contribution the approved societies would be prepared to provide the necessary money, amounting to about £1,800,000, from their resources, on condition that when the services and remuneration of the panel doctors were again under consideration, the approved societies should be consulted. Many insurance practitioners had expressed strong resentment of the entry of the approved societies into negotiations on the question of medical benefit and their remuneration. He thought it was true to state that the desire actuating the leaders of approved societies was to improve the medical service and not to do anything inimical to the interest of panel doctors.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Surgeon Commanders A McCloy to the *Tamar*, additional as Medical Officer in charge, Wei-hai-Wei, and for R.N. Sick Quarters, F. G. Goble to the *Emperor of India* on recommissioning. Surgeon Lieutenants: A. A. Pomfret to the *Malcolm*, J. F. Ainley to the *Columbine* for R.N. Hospital, South Queensferry, G. L. Stanley to the *Excellent*, J. H. B. Crosbie to the *Emperor of India* on commissioning.

Surgeon Lieutenant Commanders promoted to the rank of Surgeon Commander: H. E. Perkins, J. G. Danson, E. C. Holtom, H. H. Ormsby, E. Moxon-Browne, and A. E. P. Cheesman.

ROYAL ARMY MEDICAL CORPS.

Major-General S. G. Moores, C.B., C.M.G., late R.A.M.C., is appointed Honorary Surgeon to the King, vice Colonel (honorary Major-General) W. F. Stevenson, C.B., retired pay, late R.A.M.C., deceased.

Colonel A. H. Morris, C.I.E., C.B.E., late R.A.M.C., retires on retired pay.

Lieut.-Colonel (temporary Colonel) C. J. O'Gorman, D.S.O., late R.A.M.C., to be Colonel, vice Colonel J. B. Anderson, retired.

Major A. S. Littlejohns, D.S.O., relinquishes the temporary rank of Lieutenant-Colonel on ceasing to be employed as Assistant Director of Pathology.

Temporary Captain A. C. Murray relinquishes his commission and retains the rank of Captain.

The substituted notification in the *London Gazette* of May 10th, 1922, regarding Captain B. C. O. Sheridan, M.C., is cancelled.

INDIAN MEDICAL SERVICE.

The services of Captain H. K. Rowntree, M.C., have been placed temporarily at the disposal of the Government of Bihar and Orissa, with effect from the date he assumes charge of his duties.

Lieut.-Colonel P. Dee to be Inspector-General of Civil Hospitals, Burma, with effect from September 27th.

Lieut.-Colonel A. W. R. Cochrane, Officiating Inspector-General of Civil Hospitals, United Provinces, has been confirmed in that appointment, with effect from November 9th.

Captain H. S. Annand has been appointed as a probationer in the Chemical Examiner's Department and has been attached to the Chemical Analyser's Laboratory at Bombay.

Major E. C. Hodgson, D.S.O., Officiating Assistant Director-General I.M.S. (Sanitary), has been appointed to officiate, in addition to his own duties, as Public Health Commissioner with the Government of India during the absence on deputation of Lieut.-Colonel F. H. G. Hutchinson, C.I.E., with effect from October 28th.

Major W. D. H. Stevenson, C.I.E., has been appointed Officiating Director, Pasteur Institute of India, Kasauli, with effect from the date on which he assumes charge of his duties.

REGULAR ARMY RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel G. S. Mansfield, having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The following officers relinquish their commissions and retain their rank except where otherwise stated: Major W. B. Armstrong, T.D., with permission to wear the prescribed uniform. Captains and granted the rank of Major: (Brevet Major) A. S. M. Macgregor, R. Brierciffe, O.B.E., H. B. Low, M.C., R. Arvor, C. G. K. Sharp, G. Young. Captains N. J. Wigram, W. Stott, C. D. Rogers, R. W. Nevin, B. McKean, W. A. Stokes, J. D. Lickley, T. W. Crowley, C. R. Harrison, J. Rosencwge.

The following officers, having attained the age limit, are retired, and retain their rank except where otherwise stated: Majors C. B. Ker, M. G. Foster, O.B.E., and G. B. Robinson, T.D., with permission to wear the prescribed uniform. Captains and granted the rank of Major: J. A. Willett and F. C. Pinnuer; Captains R. Hitchings, H. M. Harwood, T. S. P. Parkinson, J. T. Williams, R. Lamb, W. A. Hooton, J. Pearson, J. Stoker, H. W. Spaight, E. C. Hobbs, E. M. de Jong, J. A. Menzies.

Captain V. H. Wardle, M.C., resigns his commission, and is granted the rank of Major.

Captain D. R. E. Roberts resigns his commission, and retains the rank of Captain.

Lieutenant B. Kelly to be Captain.

General Hospitals.—Lieut.-Colonel G. S. Jackson, C.B.E., D.S.O., T.D., resigns his commission, and retains the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform. Major J. M. Cowan, C.B.E., having attained the age limit, is retired, and is granted the rank of Colonel.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

The following officers relinquish their commissions and retain their rank, except where otherwise stated: Captains F. Wigglesworth, M.C. (and is granted the rank of Major), H. V. Capon, W. G. Lloyd, (Brevet-Major) W. J. Wilson, J. M. Fonseca, V. J. White.

Captain E. A. Goulden, having attained the age limit is retired, and retains the rank of Captain.

MILITIA.

ROYAL ARMY MEDICAL CORPS.

Captain J. A. O'Driscoll relinquishes his commission and retains the rank of Captain.

VACANCIES.

BRADFORD ROYAL INFIRMARY.—(1) Honorary Acting Consulting Laryngologist. (2) Honorary Acting Consulting Ophthalmic Surgeon.

BRISTOL MEDICAL MISSION.—Superintendent. Salary, £400 per annum.

BRISTOL: SOUTHMEAD INFIRMARY.—Assistant Medical Officer. Salary if married £350, and £300 if unmarried.

CAIRO: EGYPTIAN GOVERNMENT SCHOOL OF MEDICINE.—Radiologist and Lecturer in Radiology and Medical Electricity. Salary, £E480, if European appointed he will receive £E120 expatriation allowance.

CARDIFF: KING EDWARD VII HOSPITAL.—(1) Honorary Medical Officer to the Physiotherapy Department. (2) Two House-Surgeons, salary, £150 per annum each.

DONCASTER ROYAL INFIRMARY AND DISPENSARY.—Senior Junior House-Surgeon. Salary £22) and £175 per annum respectively.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston Road, N.W.—(1) House-Physician. (2) Obstetric Assistant. (3) Two House-Surgeons, Females. Salary at the rate of £50 per annum each.

GLASGOW ASYLUM SERVICE.—Junior Assistant Medical Officer. Salary £275.

GRIMSBY AND DISTRICT HOSPITAL.—House-Surgeon. Salary, £.00 per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—House-Surgeon. Salary £50 for six months and £2 10s. laundry allowance.

ISLE OF MAN CENTRAL EDUCATION AUTHORITY.—School Medical Officer. Salary £700 per annum.

KING EDWARD VII SANATORIUM, Midhurst.—Second Assistant Medical Officer. Salary £250 per annum, rising to £350.

LONDON COUNTY COUNCIL.—Two Assistant Medical Officers at the Maudsley Hospital, Denmark Hill.—Salary, £350 and £3.0 per annum respectively, with temporary increase to meet cost of living.

LONDON LOCK HOSPITAL, 91, Dean Street, W.1.—Clinical Assistantships in the Out-patient Department.

MANCHESTER: ANCOATS HOSPITAL.—Honorary Surgeon.

MANCHESTER ROYAL INFIRMARY.—Anaesthetist at the Central Branch. Salary, £50 per annum.

MANCHESTER ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—(1) House-Surgeon for the Maternity, Whitworth Street West. (2) House-Surgeon for the Whitworth Park Hospital (Gynaecological and Children). Salary at the rate of £100 per annum each.

MANCHESTER UNIVERSITY.—(1) Assistant Lecturer in Bacteriology. (2) Demonstrator in Bacteriology. Stipend, £5.0 and £400 per annum respectively.

MILDMAY MISSION HOSPITAL, Austin Street, E.2.—Senior and Junior Resident Medical Officers. Salary, £140 and £100 per annum respectively.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—(1) Honorary Assistant Physician. (2) Honorary Anæsthetist, honorarium, £30 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—House-Physician. Salary, £150 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.2.—Assistant Physician.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—(1) Gynæcological Registrar; salary, £250. (2) House-Physician. (3) Two House-Surgeons. (4) Assistant Casualty Officer. (5) Obstetric House-Surgeon. (6) House-Surgeon Marlborough Maternity Section, £50. (7) Obstetric Assistant, £50.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.—(1) Honorary Physician in Charge of Out-patients. (2) House-Surgeon, salary, £100 per annum.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William Street, W.C.—Assistant Surgeon.

SAMARITAN FREE HOSPITAL, Marylebone Road, N.W.—Registrar (Surgical). Salary at the rate of £50 per annum.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—House-Surgeon at the Dreadnought Hospital. Salary at the rate of £150 per annum.

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.C.1.—Medical Officer of the Electro-Therapeutic and Massage Department (half-time). Salary, £300 per annum.

WAKEFIELD: WEST RIDING COUNTY COUNCIL.—School Medical Inspector. Salary, £500 per annum, rising to £550.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.—Pathologist.

WREXHAM INFIRMARY.—House-Surgeon. Salary, £150.

CERTIFYING FACTORY SURGEON.—The appointment of Certifying Factory Surgeon at Mansfield (Nottingham) is vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

CHANDLER, F. G., M.A., M.D.Cantab., M.R.C.P.Lond., Assistant Physician, Charing Cross Hospital.

HENDERSON, Miss A. M., M.B., B.S.Lond., Resident Medical Officer to the Haywood Hospital, Burslem.

CERTIFYING FACTORY SURGEONS.—James B. Robertson, M.B., C.M.Glas., for the Dawley District, co. Salop; John M. Morris, M.B., C.M.Edin., for the Neath District, co. Glamorgan; H. W. B. Danaher, M.R.C.S., L.R.C.P., for the Rainham District, co. Essex.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE.—General Meeting of Fellows, Tues., 5 p.m. Ballot for Fellowship. *Section of Pathology:* Tues., 8.30 p.m., Dr. O. L. V. de Wesselow: The Calcium and Phosphorus of the Blood in Nephritis. Dr. C. E. Dukes: A New Fermentation Tube. Dr. J. C. G. Ledingham: Notes on Tularæmia: Histology and Diagnosis. Dr. J. C. Mottram: Effects of Exposure to Radium on the Blood Platelets. Dr. A. J. Eagleton, Dr. G. C. Okell, and Miss E. M. Baxter: Serological Classification of *B. diphtheriæ*. Occasional Lecture, Wed., 5 p.m., Professor H. C. Jacobaeus (Stockholm): The Practical Importance of Thoracoscopy, especially in the Pneumothorax Treatment of Pulmonary Tuberculosis. *Section of Study of Diseases in Children:* Fri., 4.30 p.m., Cases. *Section of Epidemiology and State Medicine:* Fri., 8 p.m., Dr. F. M. Turner: Statistical Study of the Age Incidence of Scarlet Fever. Dr. John Brownlee: Relation between Rainfall and Scarlet Fever.

HUNTERIAN SOCIETY, Cutlers' Hall, Warwick Lane, E.C.—Mon., 9 p.m., Dr. Porter Phillips: The Position of Insanity in Criminal Law.

LONDON DERMATOLOGICAL SOCIETY, Leicester Square, W.C.2.—Tues., 4.30 p.m., Specimens and Cases. 5.15 p.m., Vaccine Therapy in Dermatology, to be opened by Dr. A. K. Gordon.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos Street, W.1.—5 p.m., Annual General Meeting. Dr. A. R. Friel: Ionization Treatment of Otorrhœa, followed by a discussion.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE. At Western General Dispensary, Marylebone Road.—Dr. B. Myers: Mon., 4.15 p.m., Intestinal Intoxication. Thurs., 4.15 p.m., Dysentery. At 1, Wimpole Street, W.—Wed., 5 p.m., Dr. S. A. Kinnier Wilson: The Old Motor System and the New.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Royal Hospital for Sick Children: Wed., 4.15 p.m., Dr. L. Findlay: Children (medical). At Royal Maternity and Women's Hospital, Dr. D. Shannon: The Mother and the Newborn Infant.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., Dr. D. Paterson: Tuberculous Meningitis.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Mr. E. D. Telford: Some Bacillus Coli Infections.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. J. Parkinson: Mitral Regurgitation. Daily (except Sat.), Out-patients. Ward Demonstrations, Tues. and Sat., 10 a.m., Thurs., 4.30 p.m.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Mon., 12 noon, Dr. J. G. Greenfield: Disseminated Sclerosis. 3.30 p.m., Dr. Walshe: Disorders of Muscle Tone in Nervous Diseases. Tues., 3.30 p.m., Dr. Adie: Muscular Atrophy. Wed., 3.30 p.m., Mr. L. Paton: Ocular Palsies. Thurs., 12 noon, Dr. J. G. Greenfield: Pathology of Cerebral and Spinal Tumours. 3.30 p.m., Demonstration of Physical Exercises. Fri., 3.30 p.m., Mr. Sargent: Cerebral Tumours from a Surgical Aspect. Operations, Tues. and Fri., 9 a.m.

PLYMOUTH DIVISION, BRITISH MEDICAL ASSOCIATION, South Devon and East Cornwall Hospital.—Wed., 2.30 p.m., Mr. G. C. F. Robinson: Chronic Abdominal Pain. Dr. W. C. Wilson and Mr. M. Melrose: Demonstration of X Ray Examination of the Digestive Tract. Dr. Eric Wordley: Demonstration: Laboratory Tests for Intestinal Functions.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., 4 p.m. Dr. H. Scurfield: The Milk Problem, including the Use of Dried Milks.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield lecture by Dr. W. Griffith: Common Forms of Dermatitis.

SALFORD ROYAL HOSPITAL.—Thurs., 4.30 p.m., Dr. Clifford: Some Causes of *Post-partum* Pyrexia.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Upper Tooting Road, Balham.—Wed., 4 p.m., Dr. E. A. Peters: Newer Methods of Examination in Conditions of the Trachea and Oesophagus.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At Royal Infirmary: Tues., 3 p.m., Dr. Yates: Serous Meningitis. 4 p.m., Mr. Finch: Prostatic Obstruction. At Royal Hospital: Fri., 3 p.m., Dr. Mould: Treatment in Insanity. 4 p.m., Mr. F. Wilson: Carcinoma of the Stomach.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.—Tues., 4.30 p.m., Dr. R. Prentice: Disseminated Sclerosis. Fri., 4.30 p.m., Dr. C. Worster-Drought: Neuro-syphilis.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Mr. Harman: Pink Eye. Tues., 4.30 p.m., Mr. Banks-Davis: Clinical Lecture. Wed., 4.30 p.m., Mr. Armour: Surgery of the Pancreas. Thurs., 4.30 p.m., Sir H. D. Rolleston: Blood Pressure. Fri., 4.30 p.m., Mr. Banks-Davis: Clinical Lecture. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In- and Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY: 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS: Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediseca, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (*3 lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

NOVEMBER

17 Fri. London: Insanity and Crime Subcommittee, 2.30 p.m.
Chichester and Worthing Division: Annual Meeting, 3.30 p.m.

21 Tues. London: Regulations and Standing Orders Subcommittee, 12 noon.
London: Organization Committee, 2.15 p.m.
London: Insurance Acts Rural Practitioners' Subcommittee, 2.30 p.m.
Lewisham Division, St. George's Parish Hall Annexe, Carholme Road, Forest Hill, 8.15 p.m.
Nottingham Division, 64, St. James's Street, Nottingham, 4 p.m.

22 Wed. London: Maternity and Child Welfare Subcommittee, 2.30 p.m.
Willesden Division, Edinburgh House Club, 17, Shoot-up-Hill, 9 p.m.

23 Thurs. Westminster and Holborn Division, Central Hall (Room D), Westminster, 8.30 p.m.

24 Fri. City Division: Clinical Meeting with Aesculapian Society, Metropolitan Hospital, 4 p.m.
Southport Division, 8.15 p.m., address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The Recent Activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."

25 Sat. West Dorset Division: Dorset County Hospital, Dorchester, 2.30 p.m. B.M.A. lecture by Dr. G. F. Still on "Diseases of Children."

28 Tues. London: Conference between representatives of the British Medical Association and the Society of Medical Officers of Health, 10.30 a.m.
London: Naval and Military Committee, 2.30 p.m.
Kingston-on-Thames Division: Annual Dinner, Nuthall's Restaurant, Kingston.

30 Thurs. London: Insurance Acts Committee, 2.30 p.m.
Joint Meeting of Bromsgrove and Dudley Divisions at Bromsgrove, 3 p.m. B.M.A. lecture by Sir Frederick Mott, K.B.E., F.R.S., on "Mental Hygiene."

DECEMBER

6 Wed. London: Post-Graduate Subcommittee, 2.30 p.m.
7 Thurs. Hyde Division: Annual Dinner, Queen's Hotel, Manchester, 6.30 p.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

DEATHS.

AITKEN.—On November 6th, at Glasgow, William Blair Aitken, M.B.Glas., M.R.C.S., L.R.C.P., late of Innestown, S. Australia, aged 61.

MILNE.—On Wednesday, November the 8th, Robert Milne, M.D., of 75, Windsor Road, Forest Gate, for forty years Medical Officer of Dr. Barnardo's Homes.

SIBLEY.—On November 11th, at Tunbridge Wells, Clara Fanny, aged 87, widow of Septimus W. Sibley, F.R.C.S., late of 7, Harley Street, and Whitehall, Bletchingley, last surviving daughter of the late Sir Robert Walter Carden, Bart., M.P.

Printed and published by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, NOVEMBER 25TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION	PAGE
Current Notes:	
Classified Directories	193
Vaccination of Insured Persons	193
Unemployment Insurance Act and Doctors' Chauffeurs ...	193
The Press and the Panel Doctor	194
South Africa and the British Medical Association ...	194
SOUTH AFRICAN COMMITTEE	195
ASSOCIATION NOTICES	19
MEETINGS OF BRANCHES AND DIVISIONS	197
Position of Insanity in Criminal Law	197
NAVAL AND MILITARY APPOINTMENTS	199
VACANCIES	199
ASSOCIATION INTELLIGENCE AND DIARY	200
APPOINTMENTS	200
DIARY OF SOCIETIES AND LECTURES	200
POST-GRADUATE COURSES AND LECTURES	200
BIRTHS, MARRIAGES, AND DEATHS ...	200

British Medical Association.

CURRENT NOTES.

Classified Directories.

On several occasions we have commented upon the enterprise of certain publishing companies in issuing to the public special classified directories of medical practitioners. Our attention is now drawn to a circular which has been issued by the Grafton Publishing Company in connexion with a proposal "to issue forthwith in a concise, practical and handy form a list of the legally qualified physicians, surgeons and dentists practising in Greater London with address, telephone, consulting and visiting hours, etc." The circular states further that "for the benefit of the public, the book will comprise (*inter alia*) three sections—viz., (1) alphabetical list; (2) street or district list; (3) list of doctors under their particular speciality or study, so that the public can quickly ascertain the particular doctor suitable to their needs. We therefore trust you will not fail to emphasize your own special study, as this section will be *particularly* full and comprehensive." It is stated also that there will be a large free distribution to hotels, restaurants, clubs, inquiry offices, police stations, etc.

The objection taken by the British Medical Association to certain features of classified telephone directories is applicable equally in this case. It is stated in the circular that "the accuracy of this list is secured by the fact that only data furnished by practitioners themselves ordering the volume, will be inserted," and the presumption is that unless the volume is ordered the particulars will not appear. Compiled in this manner the list would, therefore, be a selected one, because insertion of a doctor's name and qualifications, etc., is apparently meant to be contingent upon his purchase of the publication.

The British Medical Association has always maintained that the best person to advise members of the public regarding the services of a consultant or specialist is the patient's ordinary medical attendant. The grouping of practitioners under various specialties in a directory intended for public use is to be deprecated. We have no hesitation therefore in advising medical practitioners to decline to allow their names to appear in the volume in question, for if the names contained therein are to be selected and grouped in the manner stated in the circular, those who so allow their names to appear therein are liable to have their conduct called in question.

Vaccination of Insured Persons.

In common with the rest of the public an insured person has a right to be vaccinated by the public vaccinator of his area where such provision has been made by the local Board of Guardians. Vaccination is, however, within an insurance practitioner's agreement, but on an insured person presenting himself for vaccination it is for the practitioner to exercise his judgement as to whether or not it is advisable to vaccinate, and in this connexion the practitioner will doubtless be guided by the prevalence or otherwise of small-pox in his area or in the areas likely to be visited by the insured person. If the practitioner considers vaccination advisable as being in the patient's interest, then he must vaccinate as part of his terms of service. If the practitioner does not consider it necessary to vaccinate the insured person he need not do so, but he must be prepared to stand by his decision and defend any complaint that may possibly be brought against him by the insured person in question. In no circumstances is it proper for an insurance practitioner to accept fees for vaccinating any insured person on his list. As the vaccine is one of the special drugs scheduled in Part II of the Distribution Scheme, it is irregular for the doctor to order it on the official prescription form from the chemist, but the local Insurance Committee must pay for it upon notification from the doctor that he has supplied it to his patient, even although he dispenses all drugs.

Unemployment Insurance Act and Doctors' Chauffeurs.

In November, 1920, the Unemployment Insurance Act came into force. The Act provides that certain persons who are liable to spells of unemployment shall insure against this contingency by paying weekly contributions which entitle them to benefit during unemployment. The employer and employed person each pays a share, and it is the duty of the employer to see that these contributions are paid. Domestic servants, generally speaking, are exempt from the provisions of the Act, and the Minister of Labour has from time to time given decisions concerning the position of certain employed persons or groups of employed persons who are not strictly domestic servants, but whose duties are partly domestic. The question of the doctor's chauffeur arose in February, 1921, and the following ruling was given: "Contributions are payable in respect of . . . a coachman employed by a doctor." The decision, it was added, would apply to persons employed in the same occupation under similar

conditions, and the decision regarding a doctor's coachman would apply in principle to chauffeurs employed by medical practitioners to drive them on their rounds to visit patients. Some medical men objected to this decision on the ground that their chauffeurs were domestic servants, and it is believed that some of them are not paying the tax. The advice that has invariably been given by the Medical Secretary to members of the British Medical Association who have asked whether they were liable or not is that they were liable and should pay, and reasons have been given why, in the best interests of the profession, objection should not be raised to the payment of this tax. In order to relieve the Minister of Labour from the onus of making final decisions in cases where the status of an employee was in dispute provision has been made for cases to be taken to the High Court for the opinion of one of His Majesty's judges. Mr. Justice Roche has dealt with all these cases and there is no appeal from his decision. The British Medical Association has always thought it undesirable that the question of liability of the doctor in respect of his chauffeur should be argued in the courts. Unfortunately, some medical men, without first asking the advice of the Association, have forced the hand of the Ministry and compelled it to obtain a ruling. The case came before Mr. Justice Roche on November 15th, and was argued by counsel at the instance of the Medical Defence Union. The questions for decision were, Was the chauffeur a domestic servant? Was he employed in the business of a doctor, if it were a business? Was the carrying on by a doctor of his profession a business? Mr. Justice Roche decided that "a chauffeur thus employed was a domestic servant, that the carrying on by a doctor of his profession was an occupation or business carried on for the purpose of gain, sufficient to bring it within the Act, and that the chauffeur was thus insurable." The position, therefore, so far as liability is concerned, is unchanged and the medical practitioner must pay. It would be as well that those practitioners who have not paid this tax should at once reconsider their position, as in view of this decision they will render themselves liable to prosecution if they do not insure their chauffeurs.

The Press and the Panel Doctor.

Since the inception of the National Insurance system the lay press has interested itself more or less spasmodically in its different phases, particularly medical benefit. Some of the articles published have been genuine attempts to discuss the good and bad points of the system and to discover how far it was meeting the legitimate claims of the beneficiaries; but many of them can be described in the jargon of the street as "stunts," often instigated by the remarks of discontented leaders of approved societies at conferences of friendly societies and the like. Recently a number of articles have appeared in the provincial papers bearing a strong family resemblance in style, and all having the same theme—namely, that the insurance medical system is bad and incomplete, that the doctors are not doing the work for which they are paid, and that insured persons are dissatisfied with it and would rather return to the good old times before 1913. Many replies have appeared in the newspapers which published these articles, exposing their errors both of fact and inference and stating the case for the insurance practitioner who does his work properly. Some of these replies have been written by the Medical Secretary, some by local members of the profession. Special mention should be made of the letters and articles of Dr. Harry Roberts of Stepney, who, in addition to being a panel doctor, has the pen of the ready writer. He has recently been dealing in the *Daily Herald* with some remarks by Mr. Hill, the Chairman of the Association of Approved Societies. Mr. Hill had made the usual attacks on panel doctors, accusing them of carelessness and inefficiency, of having too much to do, and of giving preferential treatment to their private patients by providing special doors for panel patients. In reply, Dr. Roberts said that, after reading Mr. Hill's letter, he visited the premises of the fourteen doctors nearest to his own surgery and found that all of them attended panel patients, but none provided a separate entrance for them. In the month of August he put the following question to 519 panel patients, taken at random: "Would you rather stick to the panel system of doctoring or have the old one back again?" Of these, 503 expressed their preference for the panel system and 16 for what Mr. Hill had said they would prefer. The reply, which is admirable both in temper and substance, ended by an invitation to Mr. Hill to visit Dr. Roberts's surgery and see for himself the kind of provision panel doctors really make for their patients. This is excellent, and it is to be hoped that more doctors who have the knowledge and the requisite literary skill will take part in it.

SOUTH AFRICA AND THE BRITISH MEDICAL ASSOCIATION.

The following letter, dated November 15th, 1922, has been addressed to the members of the British Medical Association resident in South Africa:

DEAR SIR (OR MADAM),

You will already have taken part in a referendum on the question of the further organization of the medical profession in South Africa, and you will shortly be called upon to vote in another referendum limited to members of the Association. The Organization Committee of the Association places the following considerations before you.

You are probably familiar with the recent discussions on the subject, including the following decisions of the South African Medical Congress of September last:

(1) That this meeting of Congress advises that the formation of a new Association, affiliated with the British Medical Association, be deferred until a referendum of the Branches indicates that a majority of votes of the members of the British Medical Association in South Africa are in favour of such formation.

(2) That the referendum of the British Medical Association be taken as soon as may be found possible.

(3) That in view of the unsatisfactory return of the last referendum this Congress is of opinion that another referendum be taken (under some new method to be decided upon), to the result of which all members of the profession pledge themselves to subscribe and agree, provided 66 per cent. of the registered practitioners in the Union vote.

(4) That it be an instruction to the South African Committee to form a committee to deal with the above resolutions, and to co-opt a representative from each province, who is not a member of the British Medical Association, to act with them.

(5) That means be adopted whereby the greatest possible number of votes may be cast; if necessary, by means of canvassers.

Present Position.

The Association exists for the maintenance of the honour and interests of the profession, including the promotion of the medical and allied sciences. Since its foundation in 1832 it has striven to carry out worthily those great objects, and it can fairly claim that a large measure of success has attended its work. The best evidence of this is the fact that the Association is recognized by the Government, and by public bodies all over the British Empire, and by kindred associations all over the world, as the chief organized body of the medical profession, not only in this country but in the Dominions, in India, and in the various British Colonies and Dependencies. The membership of the Association is now 24,196, and its influence is greater to-day than ever it was.

Nowhere has the Council watched with greater pride the steady march and success of the Association than in the great self-governing Dominions. The Branches and Divisions in these countries have for obvious reasons always had, under the Association's constitution, much wider powers than those possessed by such bodies in the United Kingdom. Demands have from time to time been made by South Africa for still larger powers, and these have at once, by means of mutual consultation and co-operation, been arranged for. The result is that the link between the Branches and South African Committee on the one hand, and the parent body on the other, has come to be nothing more than a nominal one as regards any "control" now exercised or exercisable by the home body. Yet the Organization Committee believes that the ties of good feeling, friendship and loyal co-operation have grown steadily stronger, and certainly are as highly prized as ever by the members in the United Kingdom.

The latest proposal is that, in order to secure unity of the profession in South Africa, the machinery of the Association in that country should be "scrapped," and that the Branches, and the South African Committee which they have set up, should be dissolved and their places taken by a new body, affiliated to the Association. The home Association is, as you know, ready to consent even to this further development if by sufficient majorities the members in South Africa so decide. In arriving, however, at a decision on a matter which is a momentous one for the Association, the Organization Committee hopes that members will give due weight to the question whether the existing machinery of the Association in South Africa, much of it of comparatively recent origin, has been given a full trial. In the opinion of the Organization Committee such full trial has not yet been made, largely, no

doubt, as a result of the dislocation caused by the war. As the Committee sees the matter, it is clear that the machinery of the Association in South Africa can, if desired by the members, be so developed and improved as to make the British Medical Association in South Africa a body of as wide powers and at least as effective an instrument in safeguarding and furthering the honour and interests of the profession as could result from the formation of any new body. The Organization Committee is prepared to give any steps taken in this direction by the South African members, Divisions, Branches, and Committee every possible assistance if so desired.

The knowledge of what has been and is being accomplished by the Association in this country, in Australia and in New Zealand under the present constitution, forbids any idea that any new form of organization is likely *qua* organization to give better results so far as the promotion and protection of the interests and welfare of the profession are concerned.

The Council fully realizes that the profession in South Africa works under circumstances of somewhat exceptional difficulty from the racial point of view. It has been largely a recognition of this fact that has led the parent body to arrange greater and greater autonomy as soon as proposed, insomuch that now the Council does not know of any of the great and wide powers exercised by the Association in the United Kingdom which is not also open to the South African Branches and the South African Committee.

The Proposed Change.

The proposal is that the Branches and the South African Committee should be dissolved and replaced by a new body entirely outside the Association, to be affiliated to the Association. The British Medical Association has at present 755 members in South Africa (the membership there having increased by nearly 50 during the present year), and the total number of the profession in the area is understood to be about 1,500. Whether any association consisting of members of a learned profession can reasonably hope to include anything like all the members of that profession is a matter of opinion. In the United Kingdom it is estimated that something like 60 per cent. of the practising members of the profession belong to the Association. Members in South Africa will be better able than we are to judge what prospect there would be in South Africa of securing, as members of a new body, a larger percentage of the profession than would be possible for the present organization if arrangements were made for increased activity and for its claims to be more actively pressed.

The conditions upon which affiliation of a new body to the British Medical Association could be effected would be a matter for arrangement between the two. But whatever arrangement were arrived at for mutual support it must be clearly realized by our members that there would be great changes.

The result of the proposed arrangement might be put in the form of a profit and loss account as follows. If the anticipations of those favourable to the change are realized the number of doctors inside a medical organization in South Africa would be increased; the sentiment of those who favour the idea of a purely South African body would be satisfied; and federation with the British Medical Association would ensure a working arrangement on terms. On the other hand, there is no certainty that a large number of those now outside a medical organization would join the new body; there is therefore no certainty that it would have a sufficient income to prosecute that active propaganda which will probably be found to be necessary if any great advances are to be made in medical organization in South Africa under any auspices; the Branches of the Association in South Africa would disappear; a considerable number of men who have been active in the work of medical organization under the auspices of the British Medical Association might be antagonized or rendered indifferent; the imperial factor in the Association, whereby a member of the British Medical Association moving from the United Kingdom to one of the Dominions or vice versa finds himself still a member of the same British Medical Association, would be lost so far as South Africa was concerned; and it would be a loss not only to the British Medical Association, but might also be felt as such by those who would then be members of a smaller, less widespread, and less well known body.

The Voting on the New Referendum.

As you know, the parent body has in justice to itself and its members made it a condition that no body would be regarded as eligible for affiliation to the Association other than a purely medical body representing substantially an ex-Branch or group of ex-Branches of the Association. The Organization Committee thus feels that it could not recommend the Council to take upon itself the responsibility of dissolving the existing Branches of the Association in South Africa (with which would disappear the South African Committee) unless at least two-thirds of those British Medical Association members who now vote vote in favour of a new body, and unless there is also a simple majority in favour of such a change of the members of *each* Branch in South Africa. The figure of two-thirds has been fixed because that is the figure used in all important decisions of policy in the Representative Body. The Organization Committee feels that if, of the ten Branches of the Association in South Africa, one or more Branches should in the referendum now to be taken show a majority against such a change as is proposed and all the others declare majorities in favour of the change, it will be the duty of the Committee to recommend the Council to postpone the decision until the medical profession in South Africa arrives more nearly at unanimity.

It must be clearly understood that in putting these considerations before you the Council wishes, if possible, to retain its South African members as organized members of the one great Association, and it would do much to secure this. But it has no intention of withdrawing from the offer it has made. If the members of the British Medical Association in South Africa come deliberately to the conclusion that it will be better for the profession in South Africa that the British Medical Association should disappear from that country to make room for an organization believed to be more likely to satisfy South African needs and aspirations, the Council will accept that decision loyally and will proceed with the process of federation, so that the new body may be kept in as close relation to the British Medical Association as the new circumstances will permit.

Yours faithfully,

S. MORTON MACKENZIE,
Chairman of Organization Committee.

ALFRED COX,
Medical Secretary.

429, Strand, London.

SOUTH AFRICAN COMMITTEE.

A MEETING of the South African Committee of the British Medical Association was held in Johannesburg on September 18th and 23rd, 1922, with the President, Dr. W. WATKINS-PITCHFORD, in the chair. Representatives were present from the following Branches: Cape of Good Hope (Western Province), Cape of Good Hope (Eastern Province), Witwatersrand, Pretoria, East London (Border Branch), Orange Free State, Natal Coastal, Natal Inland, and West Griqualand; together with the honorary secretary, Dr. F. R. Martin.

The minutes of the meeting held on May 8th, 1922, in Johannesburg were confirmed and signed, and the treasurer's balance sheet, covering the period from October 5th, 1921, to August 20th, 1922, was adopted. The meeting approved the report which had been prepared for presentation to Congress at its first business meeting.

Referendum of the South African Profession.

The President reviewed the correspondence which had taken place with London since the last meeting. He pointed out that it was inadvisable for the South African Committee to present any formal resolution to the South African Medical Congress then in session, since such would have the appearance of being the considered opinion of all the Branches of the British Medical Association in South Africa, whereas the Branches had not, as yet, been asked to come to a final decision on the matter. Until the South African Committee had received a definite mandate from the Branches, each member was free to express his own views at the Congress.

It was resolved that the Committee should recommend to the Branches that each Branch should take a referendum of its members on the following points:

(*a*) The maintenance of the British Medical Association in South Africa; and

(*b*) The formation of a Medical Association of South Africa, federated with the British Medical Association.

At the conclusion of the second business meeting of the Congress the following resolutions of Congress, referring to this matter, were received by the South African Committee:

1. "That this meeting of Congress advises that the formation of a new association, affiliated with the British Medical Association, be deferred until a referendum of the Branches indicates that a majority of the votes of the members of the British Medical Association in South Africa are in favour of such formation."
2. "That a referendum of the British Medical Association be taken as soon as may be found possible."

3. "That, in view of the unsatisfactory return of the last referendum, this Congress is of opinion that another referendum be taken (under some new method to be decided upon), to the result of which all members of the profession pledge themselves to subscribe and agree, provided 66 per cent. of the registered practitioners in the Union vote."
4. "That it be an instruction to the South African Committee to form a committee to deal with the above resolution and to co-opt a representative from each Province, who is not a member of the British Medical Association, to act with them."
5. "That means be adopted whereby the greatest possible number of votes may be cast; if necessary, by means of canvassers."

The manner in which the South African Committee could best give effect to the foregoing resolutions of Congress was discussed. The President pointed out that, by the desire of Congress, the general referendum should be made before the referendum to the Branches, and he thought the Committee was bound to fall in with this wish. He drew attention to the fact that no funds for the purpose of carrying out the referendum had been placed by Congress at the disposal of the Committee, and that the expense (exclusive of the services of canvassers) had been estimated at about £180.

It was resolved that, if the necessary funds were not provided by the Organizing Committee of Congress, an appeal for subscriptions should be made through the medium of the medical press. It was also resolved that the South African Medical Association should be invited to nominate the representatives to be co-opted from each Province to assist the South African Committee in conducting the general referendum.

Medical Ethics.

It was reported that the draft code of medical ethics, as prepared by the subcommittee appointed for the purpose, had been circulated to every member of the Committee. This draft was now discussed, and after a few minor alterations it was resolved that the draft, as amended, should be forwarded to the various Branches for their comments. It was agreed that the "Revised Rules approved by the Representative Body in July, 1919," as altered to suit local requirements, should be accepted by the Committee and forwarded to the Branches with a recommendation that they should be adopted.

War Memorial.

The President reported that the sum of £17 16s. 6d., placed at the disposal of this Committtee by the Witwatersrand Branch for the purpose of a memorial to members of the medical and nursing professions from South Africa who had fallen in the late war, was still unexpended. He stated that the Witwatersrand Branch had been asked whether this sum might be passed to the Central Benevolent Fund or whether the sum should be subscribed in assistance of the War Memorial to be erected in connexion with the new Children's Hospital, Johannesburg. No reply had yet been received from the Witwatersrand Branch. The President's action was approved.

Business of the South African Medical Congress.

At its adjourned meeting on September 23rd the Committee received the resolutions passed at the business meetings of Congress. The first five of these resolutions referred to the taking of a general referendum to all practitioners, and subsequently to the various Branches of the British Medical Association, concerning the formation of a Medical Association of South Africa or the maintenance of the British Medical Association in South Africa. These resolutions are recorded in full above and the discussion thereon is noted.

The sixth, seventh, and eighth resolutions remitted from Congress were as follows:

6. "(*a*) That the control of all general hospitals in the Union should be vested in the Union Department of Public Health. (*b*) That the above resolution be forwarded by the South African Committee to the Minister of Public Health."
7. "That, in view of the importance of the native labour supply to the economic life of South Africa, the prevalence of tuberculosis amongst the natives, and the present lack of knowledge of the prevalence and of the conditions favouring the spread of this disease among the natives, this Congress recommends that a field investigation of tuberculosis from the clinical, bacteriological, and preventive aspects be undertaken by the Union Government in conjunction with the large employers of labour and others concerned."
8. "That the invitation of the Cape of Good Hope (Eastern Province) Branch of the British Medical Association to hold the 1923 Congress in Grahamstown be accepted."

The Secretary was requested to forward resolutions Nos. 6 and 7 to the appropriate authorities, and to inform the Secretary of the Eastern Province Branch of resolution No. 8.

It was provisionally decided that the next meeting of the Committee should be held in Durban upon a date to be decided by the President according to circumstances.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISIONS.—A joint meeting of the Bromsgrove and Dudley Divisions will be held at the Golden Cross, Bromsgrove, on Thursday, November 30th, at 3 p.m., when Sir Frederick Mott, K.B.E., F.R.S., will give a British Medical Association lecture on mental hygiene. Members are requested to make a special effort to attend. Non-members are cordially invited.

DORSET AND WEST HANTS BRANCH: BOURNEMOUTH DIVISION.—A meeting of the Bournemouth Division will be held on Wednesday, November 29th, at St. Peter's Small Hall at 4.15 p.m. Tea at 4 p.m. Agenda: Report of the representative at the Annual Representative Meeting at Glasgow, July, 1922; paper by Dr. A. D. Edwards on childbirth in many ages, to be followed by discussion; any other business.

ESSEX BRANCH: SOUTH ESSEX DIVISION.—A meeting of the South Essex Division will be held at the High School for Boys, Southend-on-Sea, on Thursday, November 30th, at 8 p.m., when Mr. Harold Cox (Editor *Edinburgh Review* and ex-M.P. for Bradford) will give an address on population and the public health. At a meeting of the Division to be held on Wednesday, December 6th, at 8.15 p.m., at the Victoria Hospital, Southend-on-Sea, Professor Frederick Hobday, C.M.G., F.R.C.V.S., will give an address on diseases of cattle communicable to man.

LANCASHIRE AND CHESHIRE BRANCH: HYDE DIVISION.—The following is the programme of meetings arranged by the Hyde Division:—December 7th: Annual Dinner, Queen's Hotel, Manchester, 6.30 p.m. January 11th, 1923: Ordinary meeting at the Manor House, Mottram, 8.30 p.m. February 8th: Smoker in Dukinfield Town Hall, 8.30 p.m. March 1st: Ordinary meeting at Norbury House, Hyde, 8.30 p.m.; debate to be opened by Dr. M. W. Paterson, O.B.E., M.C. May 31st: Annual Picnic to Bakewell, Haddon Hall, and Chatsworth. Meet at 11 a.m., The Manor House, Mottram.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.—A meeting of the Southport Division will be held on Friday, November 24th, at 8.15 p.m., when Dr. G. C. Anderson, Deputy Medical Secretary, will deliver an address entitled "The recent activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.—A clinical meeting of the City Division, in conjunct ou with the Aesculapian Society, will be held at the Metropolitan Hospital on Friday, November 24th, at 4 p.m. Clinical cases: Mr. Curtis.

METROPOLITAN COUNTIES BRANCH: LAMBETH DIVISION.—A meeting of the Lambeth Division will be held on Wednesday, November 29th, at 4.30 p.m., at the Lambeth Carlton Club, 376, Coldharbour Lane, Brixton, when a paper will be read by Dr. E. P. Poulton on treatment of diabetes. Any member of the British Medical Association cordially invited.

NORFOLK BRANCH: NORWICH DIVISION.—A meeting of the Norwich Division will be held in the Medical Library on Tuesday, November 28th, at 8.30 p.m. Agenda: Correspondence. Report of the Norwich representative on the Annual Representative Meeting. Replies of the Norwich Parliamentary Candidates to the questionaire issued by the British Medical Association. Report on Hospital Policy of Association (BRITISH MEDICAL JOURNAL, SUPPLEMENT, November 18th). Report by the Council with regard to Notification of Venereal Diseases (SUPPLEMENT, November 18th). Certain important questions will be submitted to the Division on this subject. The Honorary Secretary reports that a wreath was sent in the name of the Norwich Division of the British Medical Association as a token of esteem and affection for the late Dr. Hugh Whitwell.

NORTH OF ENGLAND BRANCH: CONSETT DIVISION.—A meeting of the Consett Division will be held in the Commercial Hotel, Consett, on Wednesday, November 29th, at 7.30 p.m. At 7.45 (after the meeting) Dr. W. E. Hume (Newcastle) will give an address on the recognition and treatment of heart irregularities. All members and non-members of the Division are invited to the lecture, and to the supper which follows at 8.30 p.m., when Dr. Hume will be entertained by the Division. Those intending to be present at the supper should inform the Honorary Secretary, or Dr. Murray (Blackhill), not later than Monday, November 27th. Supper tickets, 5s. Morning dress.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.—A meeting of the Darlington Division will be held at Greenbank Hospital, on Thursday, November 30th, at 8.30 p.m. The business is important, comprising amongst other matters consideration of the reports on (1) the Hospital Policy of the Association, and (2) Notification of Venereal Diseases. It is hoped that all members will endeavour to attend and give their opinions on these matters.

NORTH OF ENGLAND BRANCH: STOCKTON DIVISION.—A meeting of the Stockton Division will be held in the Stockton and Thornaby Hospital to-day (Friday, November 24th), at 8.30 p.m., when Dr. E. Farquhar Murray will give a lecture on some points in the diagnosis and treatment of certain gynaecological and obstetrical conditions.

NORTH LANCASHIRE AND SOUTH WESTMORLAND BRANCH.—A meeting of the North Lancashire and South Westmorland Branch will be held on Wednesday, November 29th, at 3 p.m., at Royal Albert Institute, Lancaster, when Dr. Coupland will give an address on the Mental Deficiency Act. A meeting of the Branch

Council will be held at 2.30, when Dr. F. E. Daniel (Barrow), at the request of the Branch Council, will discuss the position in regard to non-members.

SURREY BRANCH: KINGSTON-ON-THAMES DIVISION.—The following programme of meetings of the Kingston-on-Thames Division has been arranged:—November 28th: Annual dinner for members of the Division at Nuthalls's Restaurant, Kingston. December 12th, Clinical meeting (place and time to be announced later). January 9th, 1923, address by Dr. A. M. H. Gray: "Skin Diseases in General Practice." February 6th, address by Sir William H. Willcox, K.C.I.E. May 1st, annual general meeting. All meetings, except when otherwise stated, will be held at the Surbiton Hospital (by kind permission of the staff and committee) at 8.30 p.m.

SURREY BRANCH: REIGATE DIVISION.—A meeting of the Reigate Division will be held on November 30th, at 8.30 p.m., at the Reigate and Redhill Hospital, when Mr. Leslie Wright, M.R.C.S., L.D.S., will give an address on The Recent Advances in Dentistry in Relation to General Practice.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the Sheffield University on Friday, February 2nd, 1923, at 8.30 p.m., when Dr. J. W. Ballantyne will give a British Medical Association lecture on "The Problem of the Newborn Infant."

Meetings of Branches and Divisions.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.

A VERY well attended meeting of the East Hertfordshire Division was held at the Letchworth Hospital on November 8th.

Dr. MACFADYEN (Representative in Annual Representative Meeting) gave a very clear account of the work of the Annual Representative Meeting, of the line taken by him as the representative in connexion with hospital policy.

The Secretary was instructed to proceed with the negotiations for the transference of this Division from the Metropolitan Counties Branch to the Huntingdon and Cambridge Branch. Dr. Haynes, secretary of the last-named Branch, was present and answered several questions.

Dr. GEOFFREY BOURNE read a paper on the significance and treatment of some common heart irregularities, illustrated by diagrams. A general discussion followed, after which there were demonstrations of the polygraph. A hearty vote of thanks was accorded to Dr. Bourne for his interesting paper.

After tea the members were shown round the new hospital. Prior to the meeting several members from a distance lunched with the chairman (Dr. Ledward) and Dr. Macfadyen at the Letchworth Hall Hotel. It was very evident that these opportunities of meeting one another socially are much appreciated.

The next meeting will be held at the County Hospital, Hertford, on December 13th, when Mr. H. W. Carson, F.R.C.S., will give a lecture on cancer of the stomach, illustrated by lantern slides.

NORTH OF ENGLAND BRANCH: HARTLEPOOLS DIVISION.

THE annual dinner of the Hartlepools Division was held in the Grand Hotel, West Hartlepool, on October 28th. Invitations were sent to non-members, and a large number of practitioners in the district were present. Dr. STRAIN, chairman of the Division, presided, and a very enjoyable evening was spent. At the end of the dinner the Chairman made a few humorous remarks on why a good dinner was capable of bringing together medical men who did not appear at ordinary meetings as might be desired. Dr. Biggart then presented the Biggart cup to the winner of the annual golf competition, Dr. Gray, who suitably replied.

SOUTHERN BRANCH: WINCHESTER DIVISION.

A CLINICAL meeting of the Winchester Division was held on October 26th at the Royal Hants County Hospital. The question of fees for doctors called in by midwives was discussed. It was decided to entertain at Winchester next July some of the members of the Association attending the annual meeting at Portsmouth.

Mr. H. J. GODWIN read an interesting paper on nephritis treated by decapsulation of the kidney. He gave full notes of a successful case treated in hospital. Dr. JAGGER read a paper on some uses of the *x* rays for the general practitioner. He emphasized the value of *x* rays in ringworm and discussed the treatment of fibroids thereby. Dr. BRUCE YOUNG (M.O.H. for the city) read a most instructive paper on epidemic jaundice, and Dr. HIGHET on some common forms of eye disease found in general practice. These papers were keenly appreciated and the readers cordially thanked for their trouble in preparing them. Tea was provided and a very successful meeting terminated—twenty-one members having been present. Dr. Fuller England (Winchester) was proposed and seconded as president of the Southern Branch for next year.

SUFFOLK BRANCH: NORTH SUFFOLK DIVISION.

A MEETING of the North Suffolk Division was held at the Lowestoft Hospital on November 10th. Dr. EVANS gave an account of the proceedings at the Annual Representative Meeting at Glasgow. Dr. SYMNS read a paper on the functional element in organic disease, which was followed by a discussion, in which Dr. CLEVELAND (Norwich) and several members of the Division took part.

The replies of two of the three parliamentary candidates to questions affecting the public health and the medical profession were read. No reply had been received from the third candidate. A very successful dinner was held in the evening. The Mayor and several other leading residents were present as the guests of the Lowestoft and district practitioners.

SUFFOLK BRANCH: WEST SUFFOLK DIVISION.

THE annual Armistice Day dinner, to which all doctors resident in West Suffolk were invited with their guests, was held at the Suffolk Hotel, Bury St. Edmunds, when 35 were present, including 19 guests. Six were unavoidably prevented at the last moment from attending. The dinner was a great success, and a committee was appointed to make arrangements for carrying it on next year.

POSITION OF INSANITY IN CRIMINAL LAW.

A MEETING of the Hunterian Society of London was held at Cutlers' Hall on November 20th, when a discussion took place on "The position of insanity in criminal law." The chair was taken by Dr. FORTESCUE FOX, and there was a very large attendance, including many eminent members of the Bar. Among others present were Lord Dawson of Penn, Sir Frederick Willis, chairman of the Board of Control, and representatives of the Medico-Legal Society.

The CHAIRMAN said that in recent years there had been a tendency to substitute treatment for punishment in the case of offenders who were mentally unstable or defective. The passage of such Acts as the Probation of Offenders Act and the Mental Deficiency Act indicated a fundamental change in public opinion, and this was welcomed in no quarter more heartily than in the medical profession.

Dr. PORTER PHILLIPS, medical superintendent of Bethlem and Bridewell Royal Hospitals, introduced the subject in a paper which he severely curtailed in order to admit of discussion. He said that the difficulty attached to the question arose from the necessity of satisfying the demands of two somewhat opposite schools of thought: those concerned with the purely psychological aspect of crime, and those concerned with the administration of the law. The discussion must focus on the question: Was the person responsible in the sense of being liable under the law as it was at present to receive punishment for the action he had done? The present legal ruling in criminal cases was based on the famous judgement in the McNaughton case (1843). Eminent jurists and others, including committees of the Medico-Psychological Association and the British Medical Association, had attempted to deal with the problem arising from the state of the law in respect to criminal responsibility, but apparently little advance had been made upon this judgement. When one considered the advances made in the field of psychological medicine it was regrettable that the strictly legal position in assessing criminal responsibility should have remained stationary for eighty years. The term "responsibility" meant ability to respond, and this had been regarded as a quality of the person; on the other hand, it might be shown that the term was not satisfied by this simple definition, and responsibility might be looked upon as involving a demand by his fellow-beings that a man should suffer penalty for misdoing. The psychological element in the commission of a crime might be summed up as an intention to do what one knew to be illegal, and it involved three elements: the power of volition, the knowledge of right and wrong, and the ability to forsee the consequences. A matter which frequently gave rise to serious controversy in connexion with a crime was the question of impulse. No doubt powerful and irresistible impulses took possession of individuals who were otherwise normal in conduct. The impulses often appeared to have no motive, but it might justly be argued that they were really the outward and contorted manifestations of repressions in early life, for which the individual could not be held responsible. The speaker attempted a definition of insanity: he said that in the medico-legal sense insanity was a disordered condition of the function of mentation, due to volitional or organic disease of the central nervous system, manifesting itself by an abnormal reaction so that the individual by his conduct alienated himself from, or entered into conflict with, the recognized ideas, customs, and habits of the social body to which he belonged; moreover, this alienation must be of such a degree as to necessitate that the individual be controlled. As a rule a great deal of consideration was given to motives and intention in the course of a criminal trial, the law contending that intention was one of the conditions of

criminal responsibility in all crime save those of negligence. It was the desire, not the knowledge, which constituted the intention.

The question of sheer inability to control conduct must, of course, arise. It arose in connexion with certain transitory conditions. When alcoholism brought about a certain stage of physical inco-ordination, the mental condition might be looked upon as a temporary form of insanity. The late Dr. Charles Mercier said that there was no form of insanity which the effects of alcohol could not simulate. All criminal acts committed under the influence of alcohol should be carefully investigated from the psychological side, both as to the stage of addiction and the state of the person's mind. Another mental state worthy of recognition in connexion with crime was that frequently met with in epilepsy and some forms of hysteria. In this dissociated state many acts over which the individual had no conscious control might be performed automatically, and of these the individual on returning to the normal state might retain no memory. The legal doubt as to the existence of such mental states was gradually being swept away. The speaker touched also on moral insanity, which the law was loth to recognize, but with regard to which, he thought, the Legislature should take a different attitude, and should accept the medical view that there might be an insanity exhibited by impairment of the moral sense.

The failure of law and medicine to agree was due to the fact that the conception of responsibility as laid down by the law did not always coincide with that laid down by psychologists. Psychological medicine, not being an exact science, found it difficult to fit itself into the rigid framework of a legal definition. Each case of crime associated with mental impairment should be studied on its merits. It was noteworthy that only in cases of murder was the question of insanity pressed to extreme limits; in attempted suicide the sentence was usually light, and no question of insanity was raised, although, should the intending suicide complete his act the verdict was generally "unsound mind." No doubt, during remand, prison medical officers had ample opportunity of keeping an offender under observation, but some of the less obvious cases required the skill of an experienced alienist. The psychology of insanity was quite different from that of recidivism or confirmed criminality. He thought that the Crown should set up a medical tribunal in each case, consisting of at least four medical experts, with power to investigate, not only the mental state of the accused in prison, but the whole circumstances of his mental condition.

In conclusion, Dr. Porter Phillips referred to the True case, in which, although the medical evidence was unanimously in support of insanity, this plea was rejected at the trial, but the accused was reprieved by the Home Secretary on similar medical evidence to that already submitted to the jury. This paradoxical state of affairs should not be possible in law.

Sir FRANCIS NEWBOLT said that any assistance he could give in the discussion would only be to point out one or two fallacies in the public mind and one or two obstacles to immediate changes in the law as affecting the position of insane persons. He wished first to make it plain that if any person whose mental condition was doubtful was prosecuted in an English court the attitude of the court was one of generous protection; there was no harshness, barbarity, or want of consideration. Dr. Porter Phillips's paper had been inspired probably by the True case, the issue of which proved that even after sentence a man still had a claim to mercy and to the most scientific treatment available. An interesting recent case was the Beard case, on which the late Lord Chancellor (Lord Birkenhead) delivered a remarkable judgement. The crime in this case was committed in a state of drunkenness. Some people asserted that drunkenness was no defence in a criminal trial, others could see no difference between delirium caused by self-indulgence and delirium caused by disease. The truth lay between the two. A man might escape entirely from a criminal charge, although his mental condition was due to his own fault. If he was really in a state of delirium he was not responsible for his actions; on the other hand, in very many cases it was no excuse for a man to say that he was drunk at the time and did not know what he did. Another interesting case was the Penge case, tried by Mr. Justice Hawkins, in which a woman had been starved to death under revolting circumstances by four people, all of whom were found guilty on the capital charge. Thereupon an agitation arose in the medical profession, and a petition was signed by four hundred doctors, the plea being that it was possible that the woman died of some obscure disease. But it would have been quite impossible to have found in England any jury, however educated or stupid, to acquit such persons on a nice point of expert argument. One was up against a human law in such cases, which was wider than precise definitions. That was not a case into which insanity entered, but it illustrated the limitations of strictly medical evidence. The speaker referred, in conclusion, to Mr. Galsworthy's play *Justice* as an instance of popular ideas with regard to insanity in legal pleading. Here a man, charged with forgery, did not set up the plea, as he might have done, that his chivalry had been aroused on behalf of a badly treated woman, but simply pleaded insanity; and the first witness called in support of the plea was the man himself, who swore that he was insane at the time the crime was committed! Whatever licence might be given to dramatic genius, it was as well to be correct on a fundamental point of law. The first thing done to prove insanity was to bring forward medical evidence; the last thing was to bring forward the evidence of the prisoner.

Dr. T. B. HYSLOP said that his experience as former medical superintendent at Bethlem Royal Hospital supported the view that any procedure based on a knowledge of right and wrong among the insane and criminal would be useless from a medico-legal standpoint. He had known an excellent system of moral philosophy to be written by a lunatic. The law was very loath to accept the fact that a person might suffer from loss of control without being insane. One legal gentleman who had totally disagreed with him on this point afterwards asked him to see his valet, which he did, and reported that the man was perfectly sound so far as his general mentality was concerned, but that every morning he had an unreasoning impulse to cut his master's throat while shaving him. Thereupon the legal gentleman acknowledged his conversion to the medical view! The law almost invariably refused to accept what was a well ascertained fact in psychology and medicine, that there existed a condition known as automatism and various forms of epilepsy in which a person performed acts which would be regarded as criminal if he had full possession of his faculties. In one case a man who had committed four murders went to sleep in the very place where he had committed them; he was evidently suffering from dangerous homicidal mania, but this plea was not accepted by the court of appeal, and he suffered the extreme penalty of the law. Why was it that medical men were prevented from expressing any opinion in the witness box on the question of responsibility? One could not depend upon a jury to assess that question. In one case that had come within his own experience a murderer had been found at night hunting about under his bed for money, and the jury, impressed by the idea that a man in that position should be searching for untold wealth under his bed, judged him to be insane; but the murderer, in fact, told the speaker that he had dropped a "tanner" and was looking for it! If the law would recognize the advances made in medicine—or even if it would admit simply the knowledge of epilepsy and its variations that was current, say, in biblical and pre-Socratic times—medical men would be satisfied. On several occasions he had almost refused to go into the witness box on account of the adamant condition of the legal mind with regard to the problems of epilepsy.

Sir RICHARD MUIR said that for many years the medical profession had been endeavouring to find a solution to the question of the application of the criminal law to persons who might be insane. The legal profession, too, since 1843 had made one very great effort to satisfy the medical profession and the public. Both attempts had failed. In 1874 the greatest legal minds of the time were applied to the codification of the criminal law, one part of which was the working definition of insanity. Lords Blackburn and Bramwell both expressed views on the subject, and Sir James Fitzjames Stephen expressed views upon Lords Blackburn and Bramwell, who, he said, contradicted one another while he disagreed with both. In 1896 a committee of the Medico-Psychological Association undertook an investigation and carried it through with a thoroughness which left nothing to be desired from the medico-legal point of view. It set itself to determine what were the defects in the administration of criminal law as affecting insane persons, and how those defects were to be remedied. The answer at which it arrived was, in plain English, that there were not any defects, and that no remedy could be suggested. The committee found that the defects for which the medical profession had criticized the legal definition of insanity were only theoretical in character, and that in the actual trial of prisoners they did not arise, or at least had not so far arisen. The committee stated the opinion of Sir James Fitzjames Stephen that the rules in the McNaughton case could be so interpreted as satisfactorily to dispose of all cases whatsoever, and added that its investigation of cases which had been tried showed that judges and juries had so interpreted those rules that in practice justice had been done. After all, there were only two things to be sought in criminal law: to protect society against criminals

and to do justice to accused persons. Dr. Hyslop had complained that the courts did not recognize epileptic automatism, but the speaker had defended a gentleman on three occasions whose only defence was epileptic automatism. He was acquitted on two occasions; on the third the judge said that this meant insanity or nothing, and the gentleman was now in Broadmoor. The answer of the legal profession to the medical profession was to deny the accusation that it was not receptive of improvements either in law or practice. The legal profession had constantly to deal with new states of the law. It was a libel to say that it was not ready to accept any satisfactory definition of insanity which could be offered. The Committee of the Medico-Psychological Association declared in 1896 that to frame a definition of insanity which should be universally applicable was wellnigh impracticable, and the Association amended the recommendation of its committee to the effect that, while not approving of the law, it could not suggest any improvement. In 1915 the British Medical Association appointed a committee to investigate the same question: a few alterations in procedure were recommended, mostly founded upon a misapprehension of what the actual procedure was, and it got no further. The Committee of Inquiry now set up by the Government was very desirous of acquainting itself with medical opinion. Nobody proposed to abolish trial by jury for murder, and therefore it was necessary to have some working rule which would be understood by juries. He wished to assure Dr. Hyslop that juries understood perfectly what was meant by automatism. In some, at any rate, of the cases of which Dr. Hyslop complained the sole question was not whether the man was an epileptic but whether the crime was in fact committed during his state of epileptic automatism. The law recognized epileptic automatism and every other form of insanity which medical men could put forward, but there must be some rule of conduct which juries could understand, and the rule of conduct was simply whether a man knew the nature and quality of his act and was aware that it was wrong. It was not the legal profession which objected to the codification of the law in 1874; it was a committee of the House of Commons which decided that the best thing in the interests of the community was to stick to the interpretation of the rules in the McNaughton case as laid down by the legal profession. All practitioners of the criminal law were willing to learn from the medical profession—and, indeed, they had learnt from the medical profession how to apply the rules in the McNaughton case so as to march with the advance of medical science. They were willing, further, to listen to any possible amendment which could be suggested, but it must be an amendment which could be applied and understood by a jury. The problem was to find some definition of insanity which was satisfactory to the medical profession, which would be a protection to the public, and which would be within the understanding of juries. The legal profession certainly would not stand in the way of its adoption.

Dr. W. C. SULLIVAN said that he had charge, at Broadmoor State Criminal Asylum, of a number of men who had escaped the extreme penalty of the law because they had been regarded as partially or wholly insane. He agreed with Sir Richard Muir that in all cases, at any rate of recent years, substantial justice had been done, and that no murderer who was a lunatic had been hung. But that was not an entire answer to the medical criticism of the existing rule of law. The application rigidly of the McNaughton rule, if it were made retrospective, would deprive the speaker of a large number of his patients, to the benefit of the hangman, and he thought that the maintenance of that rule, however leniently it might be interpreted, discredited English law, and to some extent English civilization. It was not legitimate to ask the medical profession to suggest for the consideration of lawyers another rule of law. An analytical rule of the McNaughton description was really unnecessary. It was sufficient simply to follow the parallel of other countries by the simple statement that responsibility was barred by the existence of a state of disease. That was a perfectly intelligible formula which could be fairly interpreted by the judges. Much of the absurd psychology of the McNaughton rule was due to medical doctrines with regard to monomania which prevailed at that time, and which would not be defended by any alienist to-day.

Dr. PORTER PHILLIPS, in a brief reply at a very late hour, said that the report of the Committee of the Medico-Psychological Association in 1896 was a very illuminating one, but the opinions held by psychologists and alienists had altered considerably since then, especially during the last ten years, and the time was ripe for the psychological view of these cases to be seriously considered.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced by the Admiralty: Surgeon Lieutenant Commanders: H. R. B. Hall to the *Pembroke*, additional, for R.N. Hospital, Chatham, for course, and to the *Pembroke*, additional, for R.N. Hospital, Chatham, for general and specialist duties; H. F. Stephen to the *Godetia*; H. E. Scarcill to the *Dublin*. Surgeon Lieutenants: L. F. Wallace to the *Thistle*; P. C. H. Homer to the *Iroquois*, on commissioning; A. W. McRorie to the *Columbine*, additional, for Port Edgar Base; J. C. Brown to the *Vivid* for Royal Marines, Plymouth.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Lieutenant W. H. Butcher to the R.N. Hospital, Haslar, for twenty-eight days' training.

ROYAL ARMY MEDICAL CORPS.

Temporary Major A. G. W. Bowen (Fleet Surgeon R.N., ret.), relinquishes his temporary commission on account of ill health, and retains the rank of Major.

The following temporary Captains relinquish their commissions and retain the rank of Captain: R. W. Long, E. G. S. Hall.

ROYAL AIR FORCE MEDICAL SERVICE.

John G. Russell is granted a short service commission as Flying Officer, with effect from, and with seniority of, October 30th, 1922.

Flying Officer J. Prendergast to be Flight Lieutenant.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Captain A. C. H. McCullagh, D.S.O., from General List, to be Lieutenant-Colonel, December 18th, 1918 (substituted for notification in the *London Gazette* of January 10th and February 14th, 1919).

Major C. E. K. Herapath, M.C., and Captain E. V. Connellan, from General List, to be Major.

Captain R. P. Anderson, M.C., from General List, to be Captain.

The following officers, having attained the age limit, are retired, and retain their rank, except where otherwise stated: Lieut.-Colonel W. S. Sharpe, T.D., with permission to wear the prescribed uniform, Major J. C. S. Burkitt, and is granted the rank of Lieutenant-Colonel, Major R. Markey-Smith, T.D., with permission to wear the prescribed uniform, Major B. W. Hogarth, Captains H. C. Phillips, R. S. Young, and P. T. Jones.

Captain R. H. Hardwick relinquishes his commission, and retains the rank of Captain.

VACANCIES.

ASHTON-UNDER-LYNE: DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House-Surgeon. Salary, £150.

BERMONDSEY MEDICAL MISSION HOSPITAL, 44, Grange Road, S.E.1.—Resident Medical Officer (female). Salary, £100 per annum.

BRADFORD: MUNICIPAL GENERAL HOSPITAL (ST. LUKE'S).—House-Physicians and House-Surgeons. Salary, £200 per annum.

CAIRO: EGYPTIAN GOVERNMENT SCHOOL OF MEDICINE.—Radiologist and Lecturer in Radiology and Medical Electricity. Salary, £E480, if European appointed he will receive £E12) expatriation allowance.

CARNARVONSHIRE AND ANGLESEY INFIRMARY, BANGOR.—House-Surgeon.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn Road, W.C.1.—Second Resident House-Surgeon (male). Salary, £75 per annum.

CHESHIRE EDUCATION COMMITTEE.—Lady Assistant School Medical Inspector. Salary, £500 per annum, rising to £500.

CROYDON BOROUGH HOSPITAL FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer.—Salary, £350 per annum.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston Road, N.W.—(1) House-Physician. (2) Obstetric Assistant. (3) Two House-Surgeons. Females.) Salary at the rate of £50 per annum each.

GLASGOW ASYLUM SERVICE.—Senior Assistant Medical Officer. Salary, £450 per annum, rising to £550.

GLASGOW EYE INFIRMARY.—Resident Assistant House-Surgeon. Salary, £75 per annum.

HASTINGS: EAST SUSSEX HOSPITAL.—Vacancy on the Honorary Senior Surgical Staff.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.—Ear, Nose and Throat Surgeon.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—House-Surgeon. Salary £50 for six months and £2 10s. laundry allowance.

ISLE OF MAN MENTAL HOSPITAL, Douglas.—Assistant Medical Officer. Salary, £300 per annum.

KING EDWARD VII SANATORIUM Midhurst.—Second Assistant Medical Officer. Salary £250 per annum, rising to £350.

LONDON LOCK HOSPITAL, 91, Dean Street, W.1.—Clinical Assistantships in the Out-patient Department.

LANARK COUNTY.—Clinical Assistant at the Hairmyres Sanatorium and Colony. Salary, £250 per annum.

MANCHESTER: ANCOATS HOSPITAL.—Honorary Surgeon.

NOTTINGHAM CHILDREN'S HOSPITAL.—Resident House-Physician (woman). Salary at the rate of £150 per annum.

OLDHAM ROYAL INFIRMARY.—House-Surgeons to (1) Casualty Out-patient and Special Departments, (2) Women and Children's Wards. (3) Men's Wards. Salary, £200 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anaesthetist, honorarium, £70 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—House-Physician. Salary, £150 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney Road, E.2.—Assistant Physician.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—(1) Gynaecological Registrar, salary, £250. (2) House-Physician. (3) Two House-Surgeons. (4) Assistant Casualty Officer. (5) Obstetric House-Surgeon. (6) House-Surgeon Marlborough Maternity Section, £90. (7) Obstetric Assistant, £50.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—House-Surgeon at the Dreadnought Hospital. Salary at the rate of £150 per annum.

SHEFFIELD: JESSOP HOSPITAL.—Assistant House-Surgeons. Salary at the rate of £100 per annum.

SOUTHPORT GENERAL INFIRMARY.—Senior House-Surgeon. Salary, £250 per annum, with additional fees worth about £10. Junior House-Surgeon. Salary, £175 per annum.

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.C.1.—Medical Officer of the Electro-Therapeutic and Massage Department (half-time). Salary, £300 per annum.

WEST LONDON HOSPITAL, Hammersmith Road, W.—(1) House-Physician. (2) House-Surgeon. (3) Aural House-Surgeon and Resident Casualty Officer. (Males.) Salary at the rate of £100 per annum each.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Assistant Surgeon to the Nose, Throat and Ear Department.

WILLESDEN: PARK ROYAL HOSPITAL.—Assistant Medical Officer. Salary, £350 per annum, and war bonus, at present £91.

CERTIFYING FACTORY SURGEON.—The appointment of Certifying Factory Surgeon at Brandon (Suffolk) is vacant.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

FULLER, A. R., M.R.C.S., L.R.C.P., Certifying Factory Surgeon for the Perranporth District, co. Cornwall.

QUINE, W. J. A., M.B., B.S.Lond., Port Medical Officer of Health for Plymouth.

REID, D. McKinlay, M.D.Glas., Medical Superintendent, Exeter City Asylum, vice G. N. Bartlett, M.B., B.S.Lond., resigned.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE.—*Section of Odontology*: Mon., 8 p.m., Dr. Watson-Williams: Infections of the Teeth and Gums in Relation to the Ear, Nose, and Throat. *Section of Medicine and Ophthalmology*: Tues., 5.30 p.m., Joint Discussion on "The Significance of the Vascular and Other Changes in the Retina in Arterio-sclerosis and Renal Disease," to be opened by Dr. Batty Shaw (Medicine) and Mr. Foster Moore (Ophthalmology). Dr. J. F. Gaskell, Dr. Arthur Ellis, Dr. C. O. Hawthorne, Mr. F. Adams, and Mr. Percy Bardsley will take part in the discussion. *Section of Balneology and Climatology*: Wed., at Royal Society of Medicine, 5.0 p.m., Exhibition of the *Aerologia* of Domenico Panarolio, published at Rome in 1642, by Dr. S. Sunderland (for Dr. Guy Hinsdale). Discussion on "Blood Pressure," to be opened by Dr. J. Campbell McClure. Members of the Section will dine together at the Welbeck Palace Hotel, Welbeck Street, at 7 p.m. Thurs., at the Zoological Gardens, 10.30 a.m., members will be shown the working of the Prosectorium. Occasional Lectures: Thursday, 5 p.m., Sir Almroth Wright: New Principles in Therapeutic Immunization. *Section of Urology*: Thurs., 2.30 p.m., Operations at the London Hospital by Mr. Rutherfurd Cotte, 6.30 p.m., at Hunterian Institute, W.1, Dr. Langdon Brown: Some Factors in Uræmia. To be followed by discussion. *Section of Laryngology*: Fri., 4 p.m.: Cases. 4.45 p.m., Lantern Demonstration by Dr. Logan Turner: An Unusual Tonsillar Appendage and Its Relation to Cartilage Formation in the Tonsil. *Section of Anæsthetics*: Fri., 8.30 p.m., North Western Administrations of Special Interest. Each communication will be followed by a brief discussion.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—Mon., 8.30 p.m., Discussion: Blood Transfusion in Civil Practice. To be introduced by Mr. Geoffrey Keynes, to be followed by Mr. Gordon Taylor, Sir Thomas Horder, Mr. Kenneth Walker, Mr. Eardley Holland, and others.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Fri., 5 p.m., Harben Lecture by Professor Theodore Madsen: Specific and Unspecific Antitoxin Production.

TUBERCULOSIS SOCIETY, Margaret Street Hospital, W.—Mon., 7.30 p.m., Dr. J. B. McClure: Association of Bronchitis with Pulmonary Tuberculosis.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Mon., 5 p.m. Mr. J. D. Mortimer: The Medico-Legal Position of the Anæsthetist.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Eye Infirmary: Wed., 4.15 p.m., Eye Cases by the Staff. At Royal Hospital for Sick Children: Thurs., 4.15 p.m., Dr. Findlay: The Mother and the Newborn Infant.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Mr. Addison: Demonstration of Surgical Cases.

MANCHESTER: ANCOATS HOSPITAL.—Thurs., 4.30 p.m., Dr. S. Reid: Syphilis of the Internal Organs.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Mr. A. H. Burgess: Renal Tuberculosis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. F. W. Price: Cardiac Arrhythmias. Daily (except Sat.): Out-patients. Ward Rounds: Thurs., 2 p.m.; Fri., 4 p.m.; Sat., 11 a.m.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Mon., Tues., Thurs., and Fri., 2 p.m., Out-patient Clinics. Mon., 3.30 p.m., Demonstration of Physical Exercises. Tues., 3.30 p.m., Dr. Adie: Muscular Atrophy. Wed., 3.30 p.m., Mr. L. Paton: Visual Fields. Thurs., 3.30 p.m., Dr. Bailey: Electrical Testing of Muscles. Fri., 3.30 p.m., Mr. Sargent: Cerebral Tumours from the Surgical Aspect. Operations, Tues. and Fri., 9 a.m.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.—Mon., 3.30 p.m., Dr. A. J. Whiting: Study of Cardiac Irregularities. Tues., 4.30 p.m., Mr. C. H. Hayton: Middle Ear Deafness; Causes and Treatment (with exhibition of cases). Thurs., 3.30 p.m., Dr. J. Metcalfe: Radiography of the Heart and Aorta. Daily: Operations, Clinics in the various General and Special Departments, etc.

PLYMOUTH DIVISION, BRITISH MEDICAL ASSOCIATION, South Devon and East Cornwall Hospital.—Wed., 2.30 p.m., Dr. E. L. Fox: Functional Nervous Diseases. Mr. C. Kennedy: Demonstration on Treatment of Early and Late Conditions in Acute Anterior Poliomyelitis.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Wed., 4 p.m., Dr. J. Sim Wallace: School Dental Clinics.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At Jessop Hospital, Tues., 5 p.m., Mr. Chisholm: Cases. At Royal Infirmary: Fri., 5 p.m., Dr. Barnes: Cases. 4 p.m., Professor Connell: Fractures.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Cowsley Road, Balham.—Wed., 4 p.m., Dr. Stanley Wyard: The Value of Blood Examination.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield lecture by Dr. W. K. Sibley: Electrical Treatments.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1.—Fri., 1.30 p.m., Sir James Dundas-Grant: Nerve Deafness.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Saunders: Rheumatism in Children. Tues., 4.30 p.m., Dr. Pritchard: Intravenous and Intramuscular Forms of Treatment. Wed., 4.30 p.m., Dr. Pernet: Affections of the Genitalia, Syphilitic and otherwise. Thurs., 4.30 p.m., Sir StClair Thomson: Sinusitis and its Treatment in General Practice. Fri., 4.30 p.m., Mr. Steadman: Pathology and Morbid Anatomy of Periodontal Disease. Sat., 10 a.m., Mr. Simmonds: Orthopædics. Daily, 10 a.m. to 5 p.m. (Sat., 10 a.m. to 1 p.m.), In- and Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediseca, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (3 *lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

NOVEMBER.

24 Fri. City Division, Clinical Meeting with Aesculapian Society, Metropolitan Hospital, 4 p.m.
Southport Division, 8.15 p.m., address by Dr. G. C. Anderson, Deputy Medical Secretary, on "The Recent Activities of the Association and the situation which will arise at the end of 1923 concerning the Insurance Act."
Stockton Division: Stockton and Thornaby Hospital, 8.30 p.m.

25 Sat. West Dorset Division: Dorset County Hospital Dorchester, 2.30 p.m. B.M.A. lecture by Dr. G. F. Still on "Diseases of Children."

28 Tues. London: Conference between representatives of the British Medical Association and the Society of Medical Officers of Health, 10.30 a.m.
London: Naval and Military Committee, 2.30 p.m.
Kingston-on-Thames Division: Annual Dinner, Nuthall's Restaurant, Kingston.
Norwich Division: Medical Library, 8.30 p.m.

29 Wed. Bournemouth Division, St. Peter's Small Hall, 4.15 p.m. Tea 4 p.m.
Consett Division: Commercial Hotel, 7.30 p.m., address by Dr. Hume, 7.45 p.m., supper 8.30 p.m.
Lambeth Division: Lambeth Carlton Club, 376, Coldharbour Lane, Brixton, 4.30 p.m.
North Lancashire and South Westmorland Branch: Royal Albert Institute, Lancaster, 3 p.m.; Branch Council, 2.30 p.m.

30 Thurs. London: Insurance Acts Committee, 2.30 p.m.
Darlington Division: Greenbank Hospital, 8.30 p.m.
Joint Meeting of Bromsgrove and Dudley Divisions at Bromsgrove, 3 p.m.: B.M.A. lecture by Sir Frederick Mott, K.B.E., F.R.S., on "Mental Hygiene."
Reigate Division: Reigate and Redhill Hospital, 8.30 p.m.
South Essex Division: High School for Boys, Southend-on-Sea, 8 p.m.

DECEMBER.

5 Tues. London: Insanity and Crime Subcommittee, 2.30 p.m.
6 Wed. South Essex Division: Victoria Hospital, Southend-on-Sea, 8.15 p.m.
7 Thurs. Hyde Division: Annual Dinner, Queen's Hotel, Manchester, 6.30 p.m.
8 Fri. London: Post-Graduate Subcommittee, 2.30 p.m.
12 Tues. Darlington Division: Annual Dinner, King's Head Hotel, 8.15 p.m.
13 Wed. London: **Council**, 10 a.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

SYLVESTER.—On November 20th, at St. Minver, Leiston, Suffolk, to Mr. and Mrs. Herbert Mayris Sylvester—a son.

DEATHS.

BIGGS.—November 10th, Lieut.-Colonel Biggs, T.D., of 31, Wimpole Street, aged 41.

JEPSON.—On November 13th, Edward Jepson, M.D., M.R.C.S., at Ruislip, aged 73.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 2ND, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

Current Notes:
- Classified Directories ... 201
- Doctors and the Administration of the Insurance Act ... 201
- The "Two Voices" on National Health Insurance ... 201

ASSOCIATION NOTICES:
- Proposed St. Lucia Branch ... 203
- Council Election ... 203
- Branch and Division Meetings to be held 203

General Medical Council: PAGE
- President's Address ... 201
- VACANCIES ... 203
- APPOINTMENTS ... 203
- DIARY OF SOCIETIES AND LECTURES ... 203
- POST-GRADUATE COURSES AND LECTURES ... 203
- ASSOCIATION INTELLIGENCE AND DIARY ... 203
- BIRTHS, MARRIAGES, AND DEATHS ... 203

British Medical Association.

CURRENT NOTES.

Classified Directories.

A NOTE under this heading was published last week with regard to a circular which had been issued by the Grafton Publishing Company in connexion with a proposal to publish a classified directory of legally qualified physicians, surgeons, and dentists in Greater London. We have received a letter in reply from the company. We must, however, postpone dealing with the matter this week in order that we may communicate with the General Medical Council with regard to certain references in the letter to that body.

Doctors and the Administration of the Insurance Act.

The *Weekly Argus*, a Monmouthshire newspaper, in its issue of November 25th, draws attention to the fact that the new chairman of the Monmouthshire Insurance Committee is Dr. Edmond Ryan, J.P., C.C., who is not only honorary secretary of the Panel Committee but also chairman of the Monmouthshire Division of the British Medical Association; at Newport Dr. S. Hamilton, chairman of the Insurance Committee, is also secretary of the Panel Committee and vice-chairman of the Monmouthshire Division. The *Argus* suggests that these facts have some bearing upon the allegations as to the unsatisfactory nature of the work of the medical profession in connexion with the insurance system, and goes on to say that "whoever is responsible for the administration of medical benefit, the ultimate responsibility for its success will rest with the doctors, and it is testimony to the confidence reposed in them that two of them should have been selected to preside over the Insurance Committees for Monmouthshire and Newport." The retiring chairman of the Monmouthshire Committee, in acknowledging a vote of thanks for his services during his year of office, referred to the satisfactory manner in which the medical profession had performed its work, and went on to say that "while the Act had been in force there had not been a single serious complaint against a panel doctor."

The "Two Voices" on National Health Insurance.

Under the above heading in a Current Note on October 21st we referred to a speech made by Sir Alfred Warren, retiring president of the National Association of Insurance Committees, in which he said that "panel patients got much worse treatment than did the members of friendly societies under their old arrangements with the medical profession, and there was serious complaint of the way in which the panel patient was treated as compared with the private patient." We went on to contrast this statement with the tribute made at the same meeting by Sir William Glyn-Jones, the new president of the National Association of Insurance Committees. Apparently Sir Alfred Warren, in the stress of his candidature for Parliament, has been reconsidering his position, because in a letter to the editor of the *Tottenham Weekly Herald* of November 17th he stated that, his attention having been called to his observations at the Conference as possibly implying that he was passing a general stricture on the whole medical profession, he wished to make it quite clear that such was not his intention and that his observations referred only to a small number of the medical profession throughout the country.

GENERAL COUNCIL
OF
MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1922.

Tuesday, November 27th, 1922.

Sir DONALD MACALISTER, K.C.B., President, in the chair.

THE one hundred and sixteenth session of the General Council of Medical Education and Registration was opened at the offices of the Council on Tuesday, November 27th.

New Appointments.

Notification was made of the following appointments:

Sir WILLIAM LESLIE MACKENZIE, M.D., F.R.C.P., LL.D., as Crown nominee for Scotland for five years from October 28th, 1922.

ROBERT BRIGGS WILD, M.D., F.R.C.P., as representative of the University of Manchester for two years from October 22nd, 1922.

Sir HUMPHRY D. ROLLESTON, K.C.B., M.D., as representative of the Royal College of Physicians of London for five years from November 24th, 1922.

Dr. Wild was introduced by Sir Gilbert Barling, and Sir Humphry Rolleston by Mr. H. J. Waring. Sir Leslie Mackenzie was prevented by ill health from being present.

PRESIDENT'S ADDRESS.

Sir DONALD MACALISTER said: Three distinguished colleagues have since our last session retired from the membership of the Council. Sir Norman Moore has resigned office after more than twenty-one years' service as representative of the Royal College of Physicians of London. His eminence as a scholar and historian, and the high place he held in the counsels of his college, added weight to the contributions he made to our discussions, and dignified the office of Treasurer to the Council, which he occupied at the date of his resignation. On many of our committees he was a leading member, and all who have worked with him will join with me in thanking him for his long and helpful collaboration, and in wishing him health and fruitful occupation in his retirement. His successor is the able President of the Royal College, Sir Humphry D. Rolleston, K.C.B., who, since his undergraduate days in Cambridge, when I had the privilege of guiding his early studies, has steadily advanced to ever higher positions in the confidence and regard of the profession. The Council may well congratulate itself on gaining a member so capable of valuable service.

Dr. John C. McVail, appointed by His Majesty in Council as Crown member for Scotland in 1912, retires on the expiry of his second term of five years. We recall the terse and

touching address of farewell which he made to us last session. During his period of service his great experience, both in medical practice and in medical administration, enabled him to suggest and to advocate effectively important improvements in the courses of study for medical and for public health qualifications. The revised curricula, which the Council has recently approved and recommended, include much that is due to his initiative and perseverance. He has by this and much other good work left the profession his debtor, and I am glad to observe that several honourable marks of the profession's recognition have lately been conferred upon him. To succeed him His Majesty has appointed Sir W. Leslie Mackenzie, M.D., Medical Member of the Scottish Board of Health, whose reputation as an accomplished student, man of letters, and medical administrator has long been established in Scotland. Unfortunately the state of his health prevents him from being here to-day, but we can assure him of a hearty welcome for his own sake and for that of the important public department he worthily represents.

Professor Roy Dean, who came to us from Manchester three years ago, and whose capabilities we soon learned to value, leaves us in consequence of his appointment to a chair in my old University of Cambridge. That within a few years he should have been professor of pathology in Sheffield, in Manchester, in London, and in Cambridge, successively, is a remarkable testimony to his personal and scientific quality. He is succeeded by Dr. R. B. Wild, professor of materia medica and therapeutics in the University of Manchester. I remember gratefully how zealously and skilfully he aided the late Professor Leech and myself when we were engaged in preparing the *British Pharmacopoeia*, 1898. I am not without hope that we may have the advantage of his co-operation in the revision of the *British Pharmacopoeia*, 1914. He knows the traditions, and he has the energy and the knowledge to improve upon them. He may accept my assurance that he will find in the Council ample scope for his energies.

Medical Reciprocity.

Our negotiations for the renewal of the reciprocal relations with Belgium which subsisted during the war, and which were acknowledged by Belgian practitioners to be of much advantage to them, have failed for the present. The Belgian Government, moved by the advice of the Royal Academy of Medicine, has decided against the conclusion of the proposed permanent agreement of reciprocity. No further communication has been received regarding reciprocity with Spain.

As the Dominion Medical Act is not yet in full operation throughout Canada, separate agreements for reciprocity have had to be made, under the Medical Act (1886) Amendment Act, 1905, with individual Provinces. Certain administrative difficulties have arisen from the varying terms of these agreements, and from differences in the Provincial procedure in regard to examination and registration. These difficulties suggest that the time has come for an endeavour to arrive at greater uniformity throughout the Dominion. The Executive Committee hopes, with the help of our legal adviser, and in consultation with the Dominion and Provincial medical authorities, to arrive at some generally applicable form of agreement, which shall be more satisfactory to the Council, to the Provinces, and to the Dominion Medical Council.

Midwifery Training in India.

The report of Dr. Norman Walker on the midwifery training and examinations required for Indian medical degrees registrable in this country, and the resolutions of the Executive Committee thereupon which were adopted in May, 1922, were duly transmitted to the Secretary of State for India, and communicated by him to the Government of India. The Secretary of State invited that Government to nominate, for approval by the Council, an officer suitable for the appointment of official inspector of the Universities of Bombay, Calcutta, Punjab, and Lucknow, in respect of midwifery. The University of Bombay has in the meantime made certain important changes in its regulations with the object of bringing them into conformity with the Council's recommendations on the subject. The Government of India has now nominated, and the Secretary of State has recommended, the appointment of Lieut.-Colonel R. A. Needham, C.I.E., D.S.O., who was associated with Dr. Norman Walker during his visit to India, as Official Inspector of the universities mentioned. The Executive Committee has had pleasure in intimating, on behalf of the Council, its cordial approval of the appointment of Colonel Needham, and trusts that a satisfactory report from him, which is an essential condition of the Council's recognition, after June, 1923, of the degrees in question, will be forthcoming in time for consideration at our next session.

Revision of the Curriculum.

The devoted labours of the Council, and of its committees, before and during its last session, enabled it to complete and approve for publication its new resolutions and recommendations relating respectively to the registration of medical and dental students, the courses of study for medical and dental qualifications, the conduct of professional examinations, and the rules for diplomas and degrees in public health. In a sense our educational work is thus for a time accomplished, and the duty of discussing new schemes of professional study and examinations now lies upon the licensing bodies. So far as I can learn the discussion is going forward actively; but some time must pass before the bodies are all in a position to formulate and publish the changes they propose to make in their curricula. They recognize, I am glad to say, that our single aim is, in the light of modern conditions, to improve medical education, and that the method we employed—that of full and free consultation with teachers and teaching institutions, followed by equally full and free debate in this Council, in which all the medical faculties and corporations are represented—was that best adapted to produce results valuable in themselves and generally acceptable to the profession. Our resolutions, in fact, are the expression of a concordat amicably reached, not of an ordinance framed and issued by external authority. For that reason our schemes will assuredly commend themselves to the authorities concerned, and each will be considered by them as a connected and co-ordinated whole, even where opinions may reasonably differ on this or that minor detail.

One such detail, in reference to the Council's pre-registration requirements, has given rise to questions in some quarters; and on it I think it expedient to say a few words. It has been asked whether, in the case of a student whose matriculation or other preliminary examination has included chemistry and physics as subjects of general education, the same examination may be held to exempt him from the pre-registration examination in these subjects, now required before entrance on the professional curriculum. The Regulations of the Council, however, make it clear that the pre-registration test must be in addition to the matriculation test in general education, whatever subjects that test may have included. The latter must be complete in itself, and the pre-registration examination must be supplementary to it. To hold otherwise would in effect be to frustrate the Council's purpose to improve the standard of the intending medical student's general and special preparation for entrance on the curriculum. A student intending the Faculty of Medicine is, therefore, to complete his school course of general education up to the same level as his fellows intending the Faculties of Arts or Pure Science. That foundation being secured, he is to acquire, in addition, such further knowledge of chemistry and physics as will enable him, immediately after registration, to take up intelligently the study of these sciences *in their application to medicine*. By raising the age of registration by one year, the Council made room, as it were, for the special supplementary equipment which the intending student of medicine needs if he is to enter on the revised curriculum with profit. It is my own opinion—and it is shared by many interested in higher education—that until the schoolboy has attained the matriculation standard in general education, whether it be on the classical or on the modern side, the less he "specializes" on quasi-professional subjects the better progress he will make in his professional course.

Inspection: Discipline.

The inspection and visitation of qualifying examinations is still not quite complete. In the University of London a second inspection of the examinations in midwifery has shown that certain changes have been made in the regulations and arrangements, which are regarded by the Examination Committee as improvements. In the case of Cambridge, where similar improvements have not yet been brought into operation, the Committee recommends that a third inspection or visitation of the midwifery examinations shall be held in December.

Our old Standing Orders laid it down that the November session was to be devoted chiefly to cases of discipline. For years past it has been found impracticable to observe this direction, owing to the pressure of our educational preoccupations. On this occasion the number of complaints

impugning the conduct of medical practitioners is, unfortunately, larger than usual, and most of our time must therefore be given to judicial inquiries. There are no reports from the Dental Board relating to the conduct of practitioners on the *Dentists Register*. It is impossible to predict the length of time over which these inquiries will extend, but I shall be surprised if we are not able to carry them all to a conclusion by Friday of this week. In this expectation it has been thought prudent to summon certain of the Committees to meet somewhat earlier than usual.

At the conclusion of the address a vote of thanks to the President was accorded, on the motion of Dr. MACKAY, seconded by Dr. NORMAN WALKER.

Association Notices.

PROPOSED FORMATION OF A "ST. LUCIA" BRANCH.

NOTICE is hereby given to all concerned of a proposal made by the members of the British Medical Association in St. Lucia for the formation of a St. Lucia Branch of the Association, coterminous with the island. Written notice of the proposal has been given to the Barbados Branch, and the matter will be decided in due course by the Council. Any member affected by the proposed change and objecting thereto is requested to write, giving reasons therefor, to the Medical Secretary, 429, Strand, London, W.C.2, to reach him not later than February 2nd, 1923.

COUNCIL ELECTION.

LIEUT.-COLONEL H. KIRKPATRICK, I.M.S. (ret.), London, being the only candidate nominated for the vacancy upon the Council for the remainder of the present session 1922–23, to represent the Indian Group of Branches, he is hereby declared to have been elected a Member of the Council for the period in question.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH: COVENTRY DIVISION.—A meeting of the Coventry Division will be held on Tuesday, December 5th, at 8.30 p.m., at the Coventry and Warwick Hospital. Agenda: Paper by Mr. F. Barnes, F.R.C.S., on "Excision of gastric ulcers." Discussion of reports of Council: (1) Hospital Policy of the Association; (2) Notification of Venereal Diseases.

CAMBRIDGE AND HUNTINGDON BRANCH: CAMBRIDGE MEDICAL SOCIETY.—The next meeting of the Cambridge Medical Society will be held at Addenbrooke's Hospital on Friday, December 8th, at 2.30 p.m. Agenda: Election to membership. Any other business. The rest of the meeting will be "clinical." Members having cases, specimens, etc., to show are requested to communicate with the Hon. Secretary (J. R. Campbell Canney) forthwith.

EDINBURGH BRANCH: SOUTH-EASTERN COUNTIES DIVISION.—A meeting of the South-Eastern Counties Division will be held at the Railway Hotel, Newtown St. Boswells, at 3 p.m. on Thursday, December 7th, 1922. Business: To pass a resolution to express the views of the Division on the hospital policy of the Association (see SUPPLEMENT, November 18th). Paper by Dr. Lees, Clinical Officer of the Royal Infirmary, Edinburgh, on the incidence of venereal diseases and their treatment. Notification of venereal diseases, and replies to the questions (SUPPLEMENT, November 18th). Arrangements for the annual dinner. (Following custom, this year the annual dinner falls to be held at Duns.) As it is difficult to obtain accurate information, and Dr. Lees has kindly consented to give the meeting the benefit of his large experience, it is hoped that there may be a full attendance of members.

LANCASHIRE AND CHESHIRE BRANCH.—A clinical meeting of the Lancashire and Cheshire Branch will be held at Preston Royal Infirmary on Thursday, January 11th, 1923. Clinical cases and pathological specimens will be exhibited and discussed and short papers read. A committee will shortly meet to draw up the programme, and members wishing to contribute should communicate as early as possible with the Secretary of the Preston Division (Dr. Walter Sykes, 31, Winckley Square), or with the Branch Secretary, Mr. F. Strong Heaney, 72, Rodney Street, Liverpool.

LANCASHIRE AND CHESHIRE BRANCH: HYDE DIVISION.—The annual dinner of the Hyde Division will be held in the Queen's Hotel, Manchester, on Thursday, December 7th, at 6.30 p.m. Tickets may be obtained from Dr. Ralphs, Dr. Brewis, or the Hon. Secretary, and should be applied for before December 3rd.

MIDLAND BRANCH: LEICESTER AND RUTLAND DIVISION.—A meeting of the Leicester and Rutland Division will be held at the Medical Club, Bond Street, Leicester, on Friday, December 1st, at 8.45 p.m. Agenda: Election of Representatives. Paper by Mr. H. J. Blakesley, F.R.C.S., on "Observations on the diagnosis and treatment of gonorrhoea and syphilis," to be followed by a discussion on "Conditional notification of venereal disease."

NORFOLK BRANCH.—A meeting of the Norfolk Branch will be held at the Norfolk and Norwich Hospital on Wednesday, December 13th, at 3 p.m., when Sir Henry Gauvain, Medical Superintendent of Lord Mayor Treloar's Cripple Hospital, will read a paper on "Modern methods in the conservative treatment of surgical tuberculosis," illustrated with lantern slides.

SOUTH MIDLAND BRANCH: BEDFORD DIVISION.—A general meeting of the Bedford Division will be held at the Bedford County Hospital on Tuesday, December 5th, at 3 p.m., to discuss the proposed compulsory notification of venereal diseases and to consider the further report of Council on the Hospital Policy of the Association. Tea will be provided.

SUFFOLK BRANCH: SOUTH SUFFOLK DIVISION.—A meeting of the South Suffolk Division will be held in the Magistrates' Room, Town Hall, Ipswich, on Friday, December 1st, at 3.30 p.m. Agenda: Business arising out of minutes. Address by Dr. Thomas F. Cotton (London) entitled "Prognosis in acquired structural disease of the heart." Any other business. It is hoped that there will be a full attendance at the meeting, as the subject of Dr. Cotton's address is of great interest.

SUSSEX BRANCH: BRIGHTON DIVISION.—A supper will be held by the Brighton Division at the Royal Albion Hotel on Friday, December 8th, at 8.30 p.m., price 5s., which should be forwarded to Dr. Gemmell, 45, Upper Rock Gardens, Brighton. After the supper Earl Russell will give an address on professional secrecy, which will be followed by a discussion. It is hoped that there will be a large gathering of friends and guests.

YORKSHIRE BRANCH: HARROGATE DIVISION.—A special meeting of the Harrogate Division will be held on Tuesday, December 5th, at 8.30 p.m., at the Imperial Café. Dr. D'Oyly Grauge will report on the proceedings at the Annual Representative Meeting at Glasgow, July, 1922. Dr. Frankling will open a discussion on the Hospital Policy of the Association with reference to the report of Council on the suggested revision (vide SUPPLEMENT, November 18th). The Chairman, Dr. Greenwood (Ripon), will open a discussion on the report by the Council on the notification of venereal diseases (vide SUPPLEMENT, November 18th). The reply from the Hon. E. F. L. Wood, M.P., to questions relating to parliamentary subjects affecting the public health and the medical profession will be read and discussed. Members are requested to take with them the SUPPLEMENT for November 18th.

YORKSHIRE BRANCH: HUDDERSFIELD DIVISION.—The next medical dance will be held on Wednesday, December 6th, in the Royal Infirmary, from 9 p.m. to 1 a.m. Reception 8.45 p.m. For those who do not wish to dance a bridge drive, commencing 9.15, will be arranged. Tickets 7s. 6d. each; admission by programme, to be obtained from the Hon. Sec., Dr. David Wilson, 30, New North Road, Huddersfield.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A general meeting of the Sheffield Division will be held at the Church House, St. James's Street, Sheffield, on Friday, December 15th, at 8.30 p.m., to consider the reports of the Council on hospital policy and on the notification of venereal diseases (see SUPPLEMENT, November 18th).

VACANCIES.

BIRMINGHAM: ST. CHAD'S HOSPITAL.—Resident Medical Officer. Salary, £100 per annum.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Resident Surgical Officer. Salary, £200 per annum.

BRADFORD CHILDREN'S HOSPITAL.—House-Surgeon. Salary, £150 per annum.

BRISTOL GENERAL HOSPITAL.—Honorary Clinical Assistants.

CAIRO: EGYPTIAN GOVERNMENT SCHOOL OF MEDICINE.—Radiologist and Lecturer in Radiology and Medical Electricity. Salary, £E480; if European appointed he will receive £E120 expatriation allowance.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd Street, W.C.—Rhinologist.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.—Resident House-Surgeon (male). Remuneration, £75 per annum.

CHESTER ROYAL INFIRMARY.—Honorary Assistant Ophthalmic Surgeon.

CROYDON BOROUGH HOSPITAL FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer.—Salary, £350 per annum.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Haverstock Hill, N.W.3.—(1) House-Physician, (2) House-Surgeon, (3) Casualty Medical Officer, (4) Casualty Surgical Officer. Salary at the rate of £150 per annum each.

HASTINGS: EAST SUSSEX HOSPITAL.—Vacancy on the Honorary Senior Surgical Staff.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.—House-Surgeon. Salary £50 for six months and £2 10s. laundry allowance.

ISLE OF MAN MENTAL HOSPITAL, Douglas.—Assistant Medical Officer. Salary, £300 per annum.

LEEDS GENERAL INFIRMARY.—Resident Orthopaedic Officer. Salary, £150.

LONDON COUNTY COUNCIL.—Assistant Medical Officer in the Mental Hospital Service. Salary, £3 0 per annum, rising to £400, *plus* fluctuating additions.

LONDON LOCK HOSPITAL.—Surgical Registrar.

LONDON TEMPERANCE HOSPITAL, Hampstead Road, N.W.—Casualty Officer (male). Salary, £150 per annum.

LONDON UNIVERSITY.—University Chair of Anatomy, tenable at St. Bartholomew's Hospital Medical School. Salary, £1 000 per annum.

MIDDLESBOROUGH: NORTH ORMESBY HOSPITAL.—(1) Honorary Physician. (2) Honorary Assistant Surgeon. (3) Senior House-Surgeon (male); salary, £175 per annum.

NEWCASTLE-UPON-TYNE: HOSPITAL FOR SICK CHILDREN.—Honorary Surgeon to the Throat and Ear Department.

NORWOOD AND DISTRICT COTTAGE HOSPITAL.—Honorary Anaesthetist.

NORWOOD TREATMENT CENTRE FOR CHILDREN.—Positions on the rota for the following Departments: (1) Throat, (2) Eye, (3) Anaesthetics, (4) X Ray, (5) Minor Ailments.

OLDHAM ROYAL INFIRMARY.—House-Surgeons to (1) Casualty Out-patient and Special Departments, (2) Women's and Children's Wards, (3) Men's Wards. Salary, £200 per annum.

OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—(1) Casualty House-Surgeon. (2) Resident Accoucheur. Salary at the rate of £500 per annum each.

PORTSMOUTH: ROYAL PORTSMOUTH HOSPITAL.—House-Surgeon. Salary, £150 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist. Honorarium, £20 per annum.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—House-Physician. Salary, £150 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.1.—(1) Honorary Surgeon to the Ear, Nose and Throat Department. (2) Honorary Physician in charge of Out-patients. (3) House-Physician, salary at the rate of £100 per annum.

ST. MARY'S HOSPITAL, Paddington, W.—Medical Registrar. Salary, £200 per annum.

SHEFFIELD: JESSOP HOSPITAL.—Assistant House-Surgeons. Salary at the rate of £100 per annum.

STAFFORDSHIRE: WOLVERHAMPTON AND DUDLEY JOINT COMMITTEE FOR TUBERCULOSIS.—Dental Surgeon. Salary, £550 per annum.

UNION OF SOUTH AFRICA.—Medical Officer for Durban Suburbs. Salary, £800 per annum, increasing to £900.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.—Half-time Pathologist at the In-patient Department, Regent's Park. Salary, £300 per annum.

WEST LONDON HOSPITAL, Hammersmith Road, W.—(1) House-Physician. (2) House-Surgeon. (3) Aural House-Surgeon and Resident Casualty Officer. (Males.) Salary at the rate of £100 per annum each.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Assistant Surgeon to the Nose, Throat and Ear Department.

WESTMINSTER UNION INFIRMARY, Fulham Road, S.W.—Third Assistant Medical Officer. Remuneration, £300 per annum, rising to £350.

YORK: COUNTY HOSPITAL.—House-Physician. Salary, £150 per annum.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

CAMPBELL, William S., M.D., C.M.Edin., Honorary Surgeon, Victoria Cottage Hospital, Sidmouth.

DIAS, D. A., L.R.C.P., L.R.C.S.Edin., L.R.F.P.S.Glasg., L.D.S.L'pool, House-Surgeon to the Eccles and Patricroft Hospital.

MARTIN, A. A., T.D., M.D.Lond., B.S., M.R.C.S., Supervisor of the War Pensions Clinic at Eastbourne.

MCCATTA, Miss Sybil, F.R.C.S.Eng., Assistant Resident Medical Officer, Queen Charlotte's Lying-in Hospital, Marylebone Road, N.W.

SHATTOCK, C. E., M.D., M.S.Lond., F.R.C.S.Eng., Assistant Surgeon to the Cancer Hospital, Fulham Road.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.—*Section of Tropical Diseases and Parasitology (informal evening)*: Mon., 8.30 p.m., The President (Sir Leonard Rogers): Distribution of Leprosy throughout the World. Professor R. T. Leiper: Kinema film, "British Guiana: its People, Natural History, and Scenery." Specimens and photographs will be shown on tropical subjects of general medical interest. The Chalmers Library will be open for inspection. The Council of the Section invites members of other Sections to be present. Light refreshments; smoking. *Section of Orthopædics*: Tues., 5 p.m., Cases; 5.30 p.m., Discussion: "Operative Treatment of Dislocation of the Hip, Congenital and Pathological," to be opened by Mr. H. A. T. Fairbank. *Section of Pathology*: St. Mary's Hospital, Paddington, Tues., 8.30 p.m., Sir Almroth Wright: Immunization *in vitro*. Dr. J. Freeman: Protein Sensitization Experiments. Mr. C. G. Schoneboom: Intertraction. Mr. A. F. Hayes: Classification of Acne bacilli. Dr. A. L. Punch: Tubercle Complement Fixation with Cow's Serum. Dr. A. Penning, Mr. C. B. Dyson, and Mr. V. D. Allison: Antibacterial Properties of Egg White. Mr. W. D. Newcomb and Dr. J. M. Ross: Demonstration of Pathological Specimens. *Section of Surgery*: Wed., 5.30 p.m., Discussion: "Mistakes in Diagnosis and Treatment and the Lessons to be learned from them." The President, Vice-Presidents, Members of Council, and others will take part. *Sections of Obstetrics and Gynæcology and Therapeutics and Pharmacology*: Thurs., Joint meeting, 8 p.m., Dr. H. H. Dale: The Value of Ergot in Obstetrical and Gynæcological Practice, with special reference to its present position in the *British Pharmacopœia*, to be followed by a discussion. *Clinical Section*: Fri., 5 p.m., Cases. *Section of Ophthalmology*: (Joint meeting with Section of Medicine), Fri., 8.30 p.m., continuation of the discussion on "The Significance of Vascular and other changes in the Retina in Arterio-sclerosis and Renal Diseases."

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.—Thurs., 4.15 p.m., Dr. A. Lloyd-Williams: Cases of Skin Disease, to be followed by a discussion.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Thurs., 5 p.m., Dr. R. Hutchinson: Diagnostic Significance of Abdominal Pain.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Victoria Infirmary: Wed., 4.15 p.m., Dr. Ivy McKenzie: Medical Cases. At Royal Maternity and Women's Hospital: Thurs., 4.15 p.m., Dr. Shannon: The Mother and the Newborn Infant.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Dr. Pearson: Dyspnœa.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. J. G. Clegg: Glaucoma.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. F. W. Price: Diseases of the Arteries. Daily, Out-patients. Thurs., 3 p.m., and Sat., 11 a.m., Ward Rounds. Fri., 4 p.m., Ward Demonstration.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.—Mon., 5.30 p.m., Dr. A. J. Whiting: [illegible] and Flutter and their Treatment. Tues., [illegible] C. H. Hayton: Middle Ear Deafness—Causes and Treatment (with exhibition of cases). Wed., 5.30 p.m., Mr. T. H. C. Benians: Cardiac Infections. Daily: Operations, Clinics in the various General and Special Departments, etc.

PLYMOUTH DIVISION, BRITISH MEDICAL ASSOCIATION, South Devon and East Cornwall Hospital.—Wed., 2.30 p.m., Dr. A. Bertram Soltau, C.M.G., C.B.E.: Diabetes and the Modern Methods of Treatment. Dr. Eric Worsley: Laboratory Demonstration—Testing for Blood Sugar, etc.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell Square, W.C.—Harben Lectures by Professor Theodore Madsen, Mon., 5 p.m., Antitoxic Treatment; Tues., 5 p.m., Influence of Temperature on Antigen and Antibodies. Wed., 4 p.m., Dr. C. W. Hutt: Medical Inspection in Secondary and Continuation Schools.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester Square, W.C.—Thurs., 5 p.m., Chesterfield lecture by Dr. W. Griffith: Eczema.

SALFORD ROYAL HOSPITAL.—Thurs., 4.30 p.m., Mr. J. B. Macalpine: Treatment of Cystitis.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At the University, Tues., 3 p.m., Professor Leathes: Significance of Basal Metabolism in Health and Disease. At the Royal Hospital, 3 p.m., Professor Hall: The Parkinsonian Syndrome; 4 p.m., Dr. Wilkinson: Diseases of the Accessory Sinuses of the Nose.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Oaseley Road, Balham.—Wed., 4 p.m., Dr. Grainger Stewart: Suggestive Therapeutics.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1.—Wed., 4.30 p.m., Sir Charles Ballance: Some surgical cases. Thurs., 1.30 p.m., Dr. E. D. Macnamara: General Paralysis of the Insane. Fri., 4.30 p.m., Sir James Purves-Stewart: Clinical cases.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon. and Fri., 4.30 p.m., Dr. Granger Stewart: Demonstrations of Examination of Selected Cases. Tues., 4.30 p.m., Dr. Pritchard: Gastric Ulcers. Thurs., 4.30 p.m., Mr. MacDonald: Urinary Surgery. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In- and Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Mediseora, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (3 *lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

DECEMBER.

1 Fri. Leicester and Rutland Division: Medical Club, Bond Street, Leicester, 8.45 p.m.
South Suffolk Division: Town Hall, Ipswich, 3.30 p.m.
5 Tues. London: Insanity and Crime Subcommittee, 2.30 p.m.
Bedford Division: Bedford County Hospital, 3 p.m.
Coventry Division: Coventry and Warwickshire Hospital, 8.30 p.m.
Harrogate Division: Imperial Café, 8.30 p.m.
6 Wed. London: Central Ethical Standing Subcommittee, 2.30 p.m.
Huddersfield Division: Dance, Royal Infirmary, 8.45 p.m.
South Essex Division: Victoria Hospital, Southend-on-Sea, 8.15 p.m.
7 Thurs. Hyde Division: Dinner, Queen's Hotel, Manchester, 6.30 p.m.
South-Eastern Counties Division, Edinburgh Branch: Railway Hotel, Newtown St. Boswells, 3 p.m.
8 Fri. London: Post-Graduate Subcommittee, 2.30 p.m.
Brighton Division Supper, Royal Albion Hotel, 8.30 p.m.
Cambridge and Huntingdon Branch (Cambridge Medical Society): Addenbrooke's Hospital, 2.30 p.m.
12 Tues. Darlington Division: Dinner, King's Head Hotel, 8.15 p.m.
13 Wed. London: **Council**, 10 a.m.
Norfolk Branch: Norfolk and Norwich Hospital, 3 p.m.
14 Thurs. Westminster and Holborn Division: Dinner, Criterion Restaurant, 7.30 p.m., followed at 8.30 p.m. by an address by Professor Collingwood on The Newer Physiology in General Practice.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0*s., which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

BUCKLER.—On November 25th, to May (*née* Shaul), wife of Eric Buckler, M.B., Whitehall Park, Highgate—a daughter.

COCK.—On November 17th, to Mollie, wife of Reginald Cock, M.R.C.S., L.R.C.P., 243, Hackney Road, E.2—a daughter.

MARRIAGE.

THOMPSON—DONALDSON.—On November 23rd, at All Saints' Pastou, Peterborough, Captain Ralph Reakes Thompson, M.C., R.A.M.C., eldest son of Mr. and Mrs. John Thompson, of Berwick-on-Tweed and Hampstead, to Eanswythe Frances, youngest daughter of the Rev. Canon F. Lewis Donaldson and Mrs. Donaldson, of Paston, Peterborough.

[illegible] Medical Association, and printed by Cox, Sons & Co., at their Office, No. 129, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

The British Medical Association.

FOUNDED 1832.

Patron: HIS MAJESTY THE KING.

President: SIR WILLIAM MACEWEN, C.B., LL.D., M.D., F.R.C.S., F.R.S., D.Sc., D.C.L.,
Regius Professor of Surgery, University of Glasgow; Honorary Surgeon to H.M. the King in Scotland.

The close of the year affords an opportunity to draw the attention of those members of the medical profession who are not already members of the British Medical Association to the chief aims and objects of the Association, and to give some information regarding its work and organization.

AIMS AND METHODS.

The British Medical Association, the largest, oldest, and most powerful of the British organizations devoted to the welfare of the medical profession, was established to promote the medical and allied sciences, to maintain the honour and interests of the profession, and foster a feeling of friendship among its members. To attain the above objects it holds periodical meetings for the discussion of medical and scientific subjects, both at its Annual Meeting and during the year in its Divisions and Branches; it publishes the *British Medical Journal;* it owns a large freehold building centrally situated in London, where it maintains an extensive Reference and Lending Library; is in possession of very considerable funds and resources; has instituted scholarships, medals, and grants for research work, and prizes for medical students; and does an enormous amount of work for the maintenance of the honour and interests of the profession.

Constitution and Administration.

The British Medical Association has Branches and Divisions throughout Great Britain and Ireland, and also in the Dominions, Colonies, and Dependencies. The Divisions are arranged territorially, and number, in all, 277. For certain purposes of administration or of scientific and clinical work, the Divisions are combined into Branches, which number 93. Members of Divisions elect representatives on the Branch Councils and also members of the Representative Body, which is the governing body of the Association and determines its policy.

The Council is the executive of the Association. It is elected partly by the Divisions and Branches and partly by the Representative Body, and includes representatives of the Navy, Air Force, Army, and Indian Medical Services.

The Representative Body and Council elect Standing Committees to take charge of different subjects. Among these may be mentioned the Science, Medico-Political and Parliamentary, Ethical, Hospitals, Public Health, and Naval and Military Committees. There are also Committees for the Dominions, Scotland, Ireland, and Wales, and for the working machinery of the Association, such as the Organization, Journal, and Finance Committees. The Insurance Acts Committee, elected partly by the Association and partly by Insurance practitioners, is financed by the Association.

Privileges of Members.

Members of the British Medical Association have the right—

1. To attend the annual and other general meetings of the Association and the meetings of the Division and Branch to which they belong.
2. To take part by personal vote in the election of the representatives of the Division in the Representative Body and Council.
3. To receive by post the *British Medical Journal*, published weekly, which gives a full record, with commentary, of progress in clinical and scientific medicine, and of medico-political affairs throughout the British Empire.
4. To receive the help and advice of the Central Office in any professional difficulty.
5. To use the Library as a reading room and to borrow modern medical or scientific books (up to four at a time), free of all charge except carriage. In addition to modern works and periodical medical literature—foreign as well as English—the Library contains many valuable works of historic interest.

The full benefits of the British Medical Association can only be attained by the co-operation of large numbers of the medical profession, who, by their annual subscriptions, provide the necessary funds. The larger the membership and the larger the funds, the more efficient and influential does the Association become. Its membership is now over 24,000, but there is scope for large increase. The Association may claim without fear

of contradiction that during its existence it has been the direct means of benefiting every class of medical men and medical women, and that it has upheld their honour and interests to the utmost of its power. To record the Association's activities for even one year would take more room than can be afforded in this brief sketch. The recent institution of British Medical Association Lecturers, who visit Divisions and Branches as may be arranged, is a new venture which has been greatly appreciated. A handbook for newly qualified members of the profession is in preparation.

In asking for new members, we address ourselves not only to the older members of the profession, but to those recently qualified. To new entrants to the profession a concession is made as regards subscription. The same remark applies to members of the medical services of the Navy, Air Force, Army, and India, on whose behalf the work of the Association has been unceasing and invaluable. The only practical way to recognize the services of the Association is to become a Member and take an active part in its work.

The Application for Membership form, printed at page 215, should be signed and sent to the British Medical Association, 429, Strand, London, W.C.2.

WILLIAM MACEWEN,
President.

R. WALLACE HENRY,
Chairman of Representative Body.

R. A. BOLAM,
Chairman of Council.

FIFTY YEARS OF MEMBERSHIP: 1872-1922.

THE chart on this page is reproduced from a part of the curve showing the annual membership figures of the British Medical Association from its foundation ninety years ago up to the present time. The Association had its origin in a meeting held by fifty medical men in the Board Room of the Worcester General Infirmary in the year 1832, with Sir Charles Hastings, the Founder, in the chair.

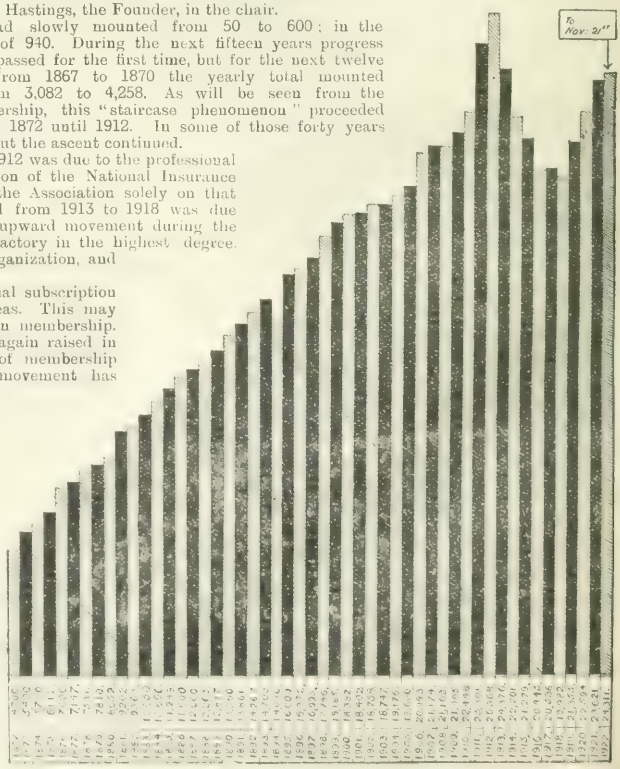
From 1832 to 1837 the membership had slowly mounted from 50 to 600; in the following year it rose to the modest total of 940. During the next fifteen years progress was slow. In 1854 the figure of 2,000 was passed for the first time, but for the next twelve years or so it kept almost stationary. From 1867 to 1870 the yearly total mounted steadily upwards in staircase fashion from 3,082 to 4,258. As will be seen from the accompanying chart of fifty years' membership, this "staircase phenomenon" proceeded with but one intermission (in 1894) from 1872 until 1912. In some of those forty years the upward step was small, in others large, but the ascent continued.

The very considerable rise in 1911 and 1912 was due to the professional upheaval that followed upon the introduction of the National Insurance scheme. Many practitioners who joined the Association solely on that account subsequently resigned, and the fall from 1913 to 1918 was due to this and to the effects of the war. The upward movement during the past four years must be regarded as satisfactory in the highest degree. It is an outward sign of stability in the organization, and of confidence on the part of the profession.

It is to be noted that in 1914 the annual subscription to the Association was increased to 2 guineas. This may have contributed in some degree to the fall in membership. Nevertheless, though the subscription was again raised in January, 1921, to 3 guineas, no decrease of membership followed. On the contrary, the upward movement has been maintained.

The complete chart showing the annual figures of membership from 1832 to 1921 is published in the current edition of the *Annual Handbook of the Association*. The *Handbook* contains a great deal of information about the work, constitution, and history of the Association. It is primarily intended as a reference book for honorary secretaries of Divisions and Branches and other workers of the Association, but there is much in it of interest to all members. A limited number of copies is still available for members, free of charge. Application should be made to the Medical Secretary, 429, Strand, London, W.C.2. The price to non-members is 3s. Early application is necessary.

In the past fifty years the Association has expended more than £40,000 on science scholarships and grants; it spent over £30,000 on the National Insurance campaign, and £15,000 on the work of the Central Medical War Committee.



SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 9TH, 1922.

CONTENTS.

PAGE

THE BRITISH MEDICAL ASSOCIATION: Its Aims and Methods 205
Fifty Years of Membership: 1872—1922. With Chart ... 206
Form of Application for Membership 215
Branches which Require Approving Signatures ... 216

CURRENT NOTES:
CLASSIFIED DIRECTORIES 209
A BRITISH MEDICAL ASSOCIATION CALENDAR 209

MEETINGS OF BRANCHES AND DIVISIONS 209

ASSOCIATION NOTICES 21

CONFERENCE OF STAFFS OF VOLUNTARY HOSPITALS IN LONDON 211

PAGE

GENERAL MEDICAL COUNCIL:
Indirect Advertising by Medical Practitioners ... 207
THE LATE SIR NORMAN MOORE 212
DISCIPLINARY INQUIRIES 212

CORRESPONDENCE 213

NAVAL AND MILITARY APPOINTMENTS 2 3

VACANCIES 213

ASSOCIATION INTELLIGENCE AND DIARY 214

APPOINTMENTS 214

DIARY OF SOCIETIES AND LECTURES 214

BIRTHS, MARRIAGES, AND DEATHS 214

INDIRECT ADVERTISING BY MEDICAL PRACTITIONERS.

AT the morning meeting of the General Medical Council on December 1st Dr. BOLAM, one of the Direct Representatives, called attention to the prevalence of certain forms of indirect advertising by medical practitioners. He refrained from mentioning any names, but he spoke with documentary evidence in his hands. After a brief discussion the Council unanimously adopted a resolution instructing the Executive Committee to consider and report upon the expediency of amending paragraph 5 of the Council's Warning Notice with respect to canvassing and advertising, so as to make its scope more clear and comprehensive.

Dr. R. A. BOLAM said that the terminology of the motion he would propose might be open to some question, but he thought that its object would be understood. It was:

> That it be remitted to the Executive Committee to consider and report upon the prevalence of oblique or indirect advertising by medical practitioners in the lay press.

The object was to elicit a pronouncement, either directly or by way of the Executive Committee, from the Council on certain developments of journalistic advertising which had arisen during the last few years. If these tendencies were not checked there was a danger that some of the cherished traditions of the profession would be undermined and the reputation of the profession lowered in the eyes of the thinking sections of the community. He was not disposed to suggest to the Council that any action taken should include a retrospective review of what had happened in the columns of the lay press during the last two or three years; he felt that, even if no definite warning beyond the bald statement of the Council's classic Warning Notice in regard to advertising had been given, certain new developments were within its scope. It would, however, scarcely be fair to pillory any of those who had been led by their own action or the action of other people into a questionable position; it would not be fair without more explicit warning to bring them before the Council as a disciplinary tribunal. Therefore, retrospective action being ruled out, he felt that it would be within his province to comment, without explicit reference to names, upon certain matters which had come to his notice to an increasing extent even within the last few months. If the Council could see its way to make some pronouncement on general lines, or to indicate that certain things were likely to come within the terms of its Warning Notice, so that hereafter it would be open to any person to forward to the Council a complaint or information on which action might be taken in the disciplinary sense, it would be to the public advantage. It was now something like seventeen years since the Council passed its resolution against canvassing and advertising. The Notice, passed on December 1st, 1905, read as follows:

> Whereas it has from time to time been made to appear to the General Medical Council that some registered medical practitioners have, with a view to their own gain, and to the detriment of other practitioners, been in the habit of issuing or sanctioning the issue of advertisements of an objectionable character . . . and whereas in the opinion of the Council such practices are contrary to the public interest and discreditable to the profession of medicine, the Council hereby give notice that any registered medical practitioner resorting to such practices thereby renders himself liable to be charged under the 29th Section of the Medical Act, 1858, with "infamous conduct in a professional respect," and if after due inquiry he is judged by the Council to have been guilty of such conduct the Council may, if they see fit, direct his name to be erased from the *Medical Register*.

Part of this Warning Notice referred to canvassing, with which he was not at the moment concerned. During the present session the Council had formally adopted a Notice, to be brought before the members of the dental profession, which amplified the original Notice in the definition of what might be regarded as unprofessional actions.

It was very rarely indeed now that blatant advertisements, such as the issue of handbills commending the attainments of any special doctor, were met with. Such instances had been known to occur in certain walks of the profession, but they had been extremely rare since the Council took the action it did seventeen years ago. But there were other more subtle and insidious methods which had come into being, and to these he proposed to refer, not in great detail, but sufficiently to indicate the various objectionable forms which this oblique advertising assumed. He took them roughly in the order of their increasing gravity. The first was the practice which obtained of inserting brief notices of medical men in a column of the newspaper which was sometimes called the "Court Circular" column, at the foot of which a notice might be found to the effect that advertisements were inserted there at a special rate, very often an enhanced rate as compared with the ordinary advertisement sections of the paper. The notices inserted in this column were sometimes obituary paragraphs concerning persons related to a practitioner, and the practitioner's name, preceded by some such remark as "that well-known physician," was inserted. Some people, who might possibly be mistaken, were inclined to see in such notices an element of advertising. Again, notices of engagements or marriages were inserted, and while, of course, it was perfectly proper to proclaim such happy events, it would surely suffice to indicate the persons concerned so that they would be known to their friends and those interested without seizing the opportunity to retail to the public the qualifications and the professional address of the bridegroom or of the father of

one or other of the contracting parties. He had collected quite a number of such announcements, culled from the columns of two of the principal newspapers.

Then there were announcements as to illness and absence from home. No one would cavil at the publication of the statement that a well-known medical man had recently undergone a serious operation, and was at present in a nursing home, where he was progressing satisfactorily; but objection was to be taken to such intimations as that a certain person had returned to a certain address after absence, and was resuming his avocation, and that his telephone number was unchanged. Notices of changes of address might be couched in a form to which objection could be taken, as when it was announced that Dr. X. Y. Z. (with certain qualifications), having disposed of his premises in a certain street, had moved to another street, and that his telephone number was so-and-so. Now and again there were announcements with regard to a medical man of nomadic habits that he had removed from one place to another, on the Continent or in town, as the case might be, or that a doctor whose name was given was now in practice at a specified address. It might be argued that these were matters rather of taste than of flagrant offence, but he thought there were some which might very readily come within the definition of advertisement.

He passed on to speak of the way in which, wittingly or unwittingly, practitioners were advertised in the lay press by the publication of their opinions on matters of the moment. He had in his hand, he said, a sheaf of press cuttings collected within the last three months. In many cases medical men had contributed to the correspondence column. Some of them took the wise precaution of appending to their letters nothing more than their name; others added an address which was sufficiently indefinite not to convey any element of advertising; but when the signature was followed by the professional degrees and qualifications and the full professional address one could only conclude that there was definite advertising intent. A further method of advertisement was that which brought in the name of a practitioner in connexion with his patients. It was reported of a prominent member of the Government that, being in ill health, he had consulted two very eminent members of the profession, one of whom was mentioned by name, and the assurances which these gentlemen had given him were set out. In another case it was reported that a candidate for Parliament had been counselled by his medical adviser to give up his candidature on account of ill health, and in that case the journalist had incorporated the name of the medical adviser, which did not seem to be necessary on public grounds. It would be stated, chiefly in provincial papers, that a certain operation had been successfully carried out on a prominent local citizen by Dr. X. Y. Z. in his private nursing home, and explicit details would be given of the mode in which this practitioner had gathered together the material and assistance necessary for the operation.

He came next to a class which might be regarded as more or less direct advertisement in the press. In one case the doctor advertised that he received patients at a certain address, and that certain advantages were to be obtained at that address for a fee specified; the name of the doctor was not given in this instance, but the system of a box reference number was adopted. In another case of communication to a paper, extraordinarily suggestive of intent to advertise, the communication appeared to emanate from a person who not long ago had been before the Council in a disciplinary sense. Then there was a very large class—he had with him some fifteen examples gathered within the last three months—in which the advertisement took the form of interviews with practitioners. The matter of the interviews ranged from the chronicle of experiences of doctors on liners, fighting epidemics, or performing operations by wireless, to the expression of opinions as to the spread of cancer and the possibilities of its treatment. Portraits were published in some of these cases; the names of the gentlemen, who were described as experts on these particular subjects, were given, and sufficient information was imparted as to where they might be found. One doctor was described as a "Harley-street . . . specialist" (the speaker omitted the specialty so as not to identify the person, but really this kind of thing ranged through all the specialties, even to that of psychotherapy). Of another member of the profession it was said that he had just returned to London, bringing with him a certain apparatus not supposed to be in the possession of other practitioners in this country. The lady members of the profession were not immune from the indiscretions of journalists.

A more serious complaint still might be based upon the repeated communication by one person to a series of lay journals of articles on one specific topic, some such phrase recurring in the articles as my vast and unusual experience. He had in his hand six articles, all emanating from the same source, in most of which this sort of phraseology was used, and in most of them a portrait of the gentleman appeared. Then, again, in a certain popular periodical, within the last few weeks, there had appeared an article in which very serious claims were made on behalf of a certain highly placed member of the profession that he had influenced an important section of the profession in its progress and outlook, and very sweeping claims advanced as to the effect of the action of this gentleman upon the health of the community as a whole. The lay reader could hardly escape the conclusion that this gentleman was a man of superlative attainments, not only with regard to organizing and administrative capacity, but with regard to his professional skill. The article was amplified by personal details in a way customary among interviewers. Altogether it was a very regrettable publication, no matter whether the journalist writing the article was the responsible person, or the subject of the article had inspired it. It had been a disappointment that no disclaimer had been forthcoming.

He was not suggesting for one moment that any medical practitioner should be deprived of his ordinary rights as a citizen. It was a man's duty and right to take part in public life, but there was no reason why this should involve any advertisement of the fact that he was a doctor. Many men who engaged in public work found themselves compelled to enjoy or suffer a certain amount of publicity, but this publicity need not be—and was not, among the high-minded—linked with anything which might bear the construction that it was an advertisement of their professional standing or skill. If the object to be aimed at in these interviews and other publicity matters which he had mentioned was the proper instruction of the public, the names of the medical writers or informants should be in the possession of the editors, but not for publication. The newspapers could give their readers the assurance that the writer was of the requisite professional standing. By the practice of dispensing with names the lay press would gain far greater advantage than accrued from the present course of broadcast naming. Men of greater experience and standing would be encouraged to place their views and information at the service of the public if they knew that there was no danger that their names would be bandied about in the public press. The medical men most often quoted in the press were not necessarily those whose opinions carried most weight in the profession or with the educated public. It might be urged that this indirect advertising had become so common that it must be accepted, but this would be to admit that there were different standards of ethical conduct for different sections of the profession. The Council had stated its opinion with regard to overt advertising, and it could not be right to permit another method of advertisement which was even more effective from the point of view of personal gain. The extension of such a system could lead only to a competition in which the abler and more scrupulous members of the profession must be left behind by men professionally inferior, and the traditions of self-respect which had given the British medical profession its present high status would deteriorate. (Applause.)

The PRESIDENT asked whether Dr. Bolam adhered to the precise terms of his motion, because there was a difficulty with regard to it. The Council appreciated the discretion which Dr. Bolam had exercised in bringing this matter before it. He had refrained, as was quite proper, from mentioning any names. In view of the possibility that the persons concerned might later appear before the Council, it would have been improper to have mentioned names, and improper also, he thought, to remit to the Executive Committee an inquiry into certain specific cases, for the Council, which included the members of the Executive Committee, could not be both judge and detective, and if it was decided to inquire into specific cases the Council or the members of its executive would be disqualified if afterwards a case came up for discipline. He suggested the motion should run:

> That it be remitted to the Executive Committee in consultation with the legal advisers to consider and report upon the expediency of amending the Council's Warning Notice (No. 5) with respect to canvassing and advertising so as to make its scope more clear and comprehensive.

Dr. BOLAM thanked the President for this suggestion, and

asked the permission of the Council, which was granted, to amend his motion so that it would read in the manner suggested by the President.

In the absence of Mr. H. J. Waring, who had promised to second the amendment, Professor HARVEY LITTLEJOHN seconded, saying that Dr. Bolam's very clear speech had made any further remarks on his part unnecessary.

Sir JOHN MOORE thought that "desirability" would be a better word than "expediency"; that some action was desirable had been completely shown by Dr. Bolam.

Dr. BOLAM said that he felt that "expediency" was the better word.

Sir JENNER VERRALL hoped that the word "expediency" would be retained. It was very important that no suspicion should arise that the Council adopted one attitude towards open advertising and another towards indirect advertising. The matter should be explored, not only in the public interest but in the interest of the rank and file of the profession. The chief duty of the Council was to the public, but it had a secondary duty to protect and advise one medical man with regard to his conduct in relation to another. In the rank and file of the profession there was undoubtedly a feeling that the work of the Council had been directed in times past—quite properly, but rather too exclusively—against the more blatant forms of advertising, and that it was high time these more subtle forms should be dealt with. This could be urged in the interests not only of the profession but of the public. The public, perhaps, had scant sympathy with some of the ethical views of the Council, some portion of the public might even regard them as constituting an interference with the liberty of the subject. But, whatever the public might think, it was in its own interests, as well as in the interests of the profession, that action on this matter should be taken. He hoped that the ventilation of the matter in the Council would itself lead to greater reticence.

Sir GEORGE NEWMAN said that he was warmly in sympathy with the resolution, but wondered whether it was sufficiently wide to enable the Executive Committee to deal with certain members of the profession who were engaged in the public service. He represented a branch of the profession in which direct or indirect canvassing for patients did not arise in the same way as in other branches; but it was within the knowledge of everybody present that in recent years in this branch of the profession a new kind of problem and difficulty had arisen, which seemed to be very germane to the issue raised. He did not propose to dwell upon the subject, but he wished merely to ask whether the Executive Committee would be empowered to make its inquiry sufficiently wide to include publicity of an improper kind by medical men who were engaged in the public service. The complaint to which he referred did not involve advertising nor canvassing for direct gain to the individuals themselves, and yet what he had in mind, which would be familiar to every member of the Council, was a practice which brought something very undesirable into the public medical service.

The PRESIDENT said that by the terms of the resolution every word in the existing Notice would be brought under the review of the Executive Committee, and therefore in his judgement the Committee would be perfectly right in taking into its cognizance the matters to which Sir George Newman had alluded.

Dr. J. A. MACDONALD mentioned one point which he hoped would not be lost sight of. The names of many prominent men appeared on pamphlets advertising certain foods or medicaments. In some cases, he admitted, the men did not know that their names had appeared, but when there was knowledge and consent this became one of the worst forms of advertising.

Mr. E. B. TURNER said that the thanks of the Council were due to Dr Bolam for bringing this matter forward. In the days of his own youth advertisements were rampant, but in a different form. It was then very customary in the case of prominent persons who happened to be ill to publish full descriptions of their illness and its treatment by the physician concerned. That practice had died down, but with the coming of modern journalism this rather worse form of publicity had arisen, and from the recurrence of certain names in articles of the kind to which Dr. Bolam had alluded the conclusion could only be drawn that there was intentional advertisement.

Sir E. COEY BIGGER expressed his thanks to Dr. Bolam, but said that the question might be more difficult than it appeared at first. It was not an uncommon thing for a medical man to be presented by his patients with a public testimonial, and that was a form of advertisement which it would be very hard to prevent. Similarly he knew of public meetings at which reference was made to the absence of a distinguished person, with the statement that he was progressing as well as possible under the care of Dr. —— ; and of course such remarks were reported in the press.

Twelve o'clock having arrived, at which hour the Council had arranged to take other business, Sir ISAMBARD OWEN moved that the question be put, and this being agreed to, Dr. Bolam's resolution in the terms suggested by the President was put to the Council and adopted unanimously.

British Medical Association.

CURRENT NOTES.

Classified Directories.

IN the SUPPLEMENT of November 25 th a note appeared with the above heading, commenting upon a circular issued by the Gratton Publishing Company in connexion with a proposal to publish a classified directory of medical practitioners and dentists in Greater London, and pointing out certain definite objections which were taken to the publication of this directory on the lines proposed. The Medical Secretary has since received an assurance from the Gratton Publishing Company to the following effect: (1) The book will be as far as possible a complete list of all practising doctors and dental surgeons in Greater London; (2) the insertion of a name and particulars in the directory will not be contingent upon the purchase of a copy or the payment of a fee; (3) no names will be inserted in larger or more distinctive type than the others; (4) the names will not be grouped under various specialties. These assurances were reported to the Standing Ethical Subcommittee of the British Medical Association on December 6th, and the Subcommittee decided that no objection need be taken to the proposed publication of the directory on the amended lines.

A British Medical Association Calendar.

The City Division of the British Medical Association has hit upon an excellent idea for keeping in the minds of its members the programme for the coming session. It has issued a calendar, extending from November, 1922, to July, 1923. Each month has a separate leaf upon which are printed the days of the week and the dates in white upon a purple ground; but the date upon which a meeting of the Division falls is printed prominently in purple upon a white ground, so as to catch the eye at once. On the upper part of the calendar the programme of the Division is printed in full. It may be observed that the social aspects of medicine receive as much consideration as the scientific, for, in addition to an annual dinner (which took place on November 30th), there are three dinner-dances to be held during the session. The honorary secretary, Dr. Ernest A. Worley, also calls attention to the clinical afternoons which are held each month in conjunction with the Aesculapian Society, on a Friday, at the Metropolitan Hospital. He goes on to say that he wishes members to keep him posted on all matters of value to the Division or the profession generally, and that he can assure them of energetic action. If the production of this calendar is any criterion of the enterprise of the office-bearers of the Division such an assurance is hardly necessary.

Meetings of Branches and Divisions.

METROPOLITAN COUNTIES BRANCH: CAMBERWELL DIVISION.

A MEETING of the Camberwell Division was held at the Camberwell Infirmary on November 22nd. A most interesting address was given by Dr. J. S. FAIRBAIRN, St. Thomas's Hospital, on "Backache in women." In the course of his remarks the lecturer touched on all the usual causes of backache and then devoted the remainder of his time to an account of his views on the nervous origin of this symptom in the great majority of cases, the backache being one manifestation of the general mental and physical exhaustion unfortunately prevalent among mothers of to-day. He pointed out the need for rest entirely away from the family, as an important point in the treatment.

This meeting was very well attended, and it is hoped that members of the Division will make a point of attending future meetings in even greater numbers. The next meeting will be on Wednesday, January 17th, 1923, when Dr. A. E. Russell will give an address on cholelithiasis.

METROPOLITAN COUNTIES BRANCH: SOUTH MIDDLESEX DIVISION.

A MEETING of the South Middlesex Division was held at St. John's Hospital, Twickenham, on November 15th, when Dr. PERODEAU, chairman, presided.

It was decided to call a special meeting in December to deal with (1) notification of venereal diseases, and (2) hospital organization, the date to be decided later by the chairman and secretary.

Applied Immunity.

Dr. PERODEAU read a paper on applied immunity. He divided immunity into: A. *Natural*. B. *Acquired*: (1) Active Immunity—(*a*) by injection of an attenuated virus, (*b*) by injection of toxins; (2) Passive Immunity—by injection of serum from immunized animals. Vaccines for the production of active immunity might be ordinary, mixed, polyvalent, sensitized, or detoxicated. Passive immunity was quickly developed and of short duration; there was a danger of anaphylaxis. Of the antitoxic serums antidiphtheritic and antitetanic serum were the best known. Among the antibacterial serums Dr. Perodeau mentioned antidysenteric, antipneumococcic (mixed or polyvalent), and antistreptococcic serum.

In the discussion which followed, Dr. Camps stated that he had used phylacogen in rheumatic cases without much success. From his experience in the army he did not consider a vaccine would kill organisms when in the tissues. Pertussis vaccine was very useful from a prophylactic point of view. He had had a case of tetanus recover after an incubation period of five days. Dr. Herington advised vaccination of the skin with the serum to be used in order to eliminate anaphylaxis. A reaction should appear in forty minutes. When using pneumococcal vaccines it was important to employ the correct type. Dr. Perodeau replied to the various questions raised.

Sciatica.

Dr. CAMPS read a paper on sciatica. This disease, he said, was commonly diagnosed by the patient, who was usually wrong. It might be neuralgia or neuritis, partial or complete, primary or secondary. Sciatica was a symptom of an infection or infections elsewhere, and all parts of the body should therefore be thoroughly examined. It was due to a toxaemia of low virulence usually due to *Streptococcus faecalis*. The primary causes were cold, changes in life, gout, syphilis. The secondary causes were deformities, extension from muscles, traction or pressure, constipation, piles, spinal disease, etc. Points in the differential diagnosis between neuralgic and neuritic forms of sciatica were shown in tabular form:

Neuralgia.	*Neuritis.*
Onset sudden, spontaneous, periodical, intermittent.	Onset insidious, constant.
Movement not painful.	Movement painful.
Nerve tender.	Nerve not tender.
Muscles not wasted.	Muscles wasted.
Limbs normal.	Limbs—trophic changes, colder, bluish.

Dr. Camps then enumerated several methods of detecting malingerers, and discussed prognosis. Treatment, he said, consisted essentially in removing the cause after investigation of the alimentary canal, rest in bed, flushing out the body with water, and the use of purgatives; diet must depend on the type of patient. Dr. EWEN discussed treatment by salt baths.

Medical Fees.

Dr. SCOTT read a paper on medical fees. Fees, he said, must usually depend on the neighbourhood and the doctor's opinion of his own worth; they were usually fixed on a rental basis. A large amount of work was now taken out of the general practitioner's hands by local authorities and others. A higher fee should be charged for a first consultation and for casual attendances. He suggested a round sum for attendance upon cases of prolonged illness—for example, pneumonia. Dr. Scott then discussed the advantages of contract practice and of ready-money payments in practice among working-class patients. Accounts should be rendered more regularly and oftener. He suggested the following scale of charges:

Fees 2s.6d. to 10s. 6d., with an average of 5s. for middle classes; 10s. 6d. upwards for higher class.
Night calls 10s. 6d.
Midwifery £3 3s. upwards.
Operations £5 5s. for assistance at major cases, £1 1s. for performing minor operations. Vaccination not less than 5s.

A lively discussion took place, in which all the members took part.

METROPOLITAN COUNTIES BRANCH: LEWISHAM DIVISION.

A MEETING was held on November 21st at St. George's Parish Hall Annexe, Forest Hill, with Dr. T. E. WHITE in the chair.

Dr. JANE WALKER read a paper on "Some observations connected with tuberculosis in children." She confined herself to the lungs and was of opinion that milk took no part in the production of lung cases. School medical inspection showed great variations in the incidence of tuberculosis according to different observers. Three to five years' duration of illness is common. Loss of appetite, loss of flesh, and pallor were symptoms; cough was not essential, though usually occurring at some stage of the illness. These children had to be differentiated from two other groups—the rheumatic and the gastric intestinal; these latter did not respond to treatment like the tuberculous cases, who had a slow pulse and could eat fat readily. Contact with previous cases seemed to be more important as a cause of infection than heredity. The percentage of recoveries was about 85 per cent., and the disease in childhood appeared to protect against adult infection, but when tubercle bacilli were found in sputum of a child outlook was grave. Impairment of resonance on percussion on the right side in front and behind is a valuable sign of tuberculosis. Diagnosis was helped by *x*-ray examination.

An interesting discussion followed, in which Drs. ARNOLD, BEATTIE, BUCHAN, CHARSLEY, GILCHRIST, SUMMERSKILL, and WHITE joined.

MIDLAND BRANCH: LEICESTER AND RUTLAND DIVISION.

AT a meeting of the Leicester and Rutland Division held on December 1st, Dr. R. Wallace Henry and Dr. R. H. Fagge were elected Representatives of the Division to the Annual Representative Meeting, 1923, and Dr. E. Lewis Lilley, Deputy Representative.

A discussion took place on the subject of notification of venereal disease. The replies of the Division to the questions submitted were: That modified notification is undesirable (two dissentients); that general notification by number would not be of value, and that its accuracy would be open to doubt; that general notification would not receive the support of the public or of the profession; and that if adopted notification should be made by the patient and not by the doctor.

NORFOLK BRANCH: NORWICH DIVISION.

A MEETING of the Norwich Division was held on November 29th. The reports by the Council on the hospital policy of the Association and upon the notification of venereal diseases were fully discussed, and the recommendations of the Council in both cases were agreed to by large majorities.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.

A CLINICAL meeting of the Darlington Division was held at Greenbank Hospital on November 16th, when Mr. G. GREY TURNER, F.R.C.S. (Newcastle-upon-Tyne), delivered an excellent lecture on the application of surgical principles to some problems of general practice, which was illustrated by a large series of lantern slides. Mr. Turner was accorded a hearty vote of thanks for a most enjoyable evening.

NORTH OF ENGLAND BRANCH: NORTH NORTHUMBERLAND DIVISION.

THE annual dinner of the North Northumberland Division was held at the Plough Hotel, Alnwick, on November 9th, and a most enjoyable evening was spent by twenty-one members and guests.

Dr. Welsh (Felton) was in the chair, and Dr. G. C. Anderson, Deputy Medical Secretary of the British Medical Association, was the chief guest, among the others being Professors Stuart McDonald and Angus, also Drs. Willan, Hume, Maclay, Wells Patterson, Hindmarsh, and Don, of the Newcastle Division. The toast to the Association was proposed by Dr. JAMES MCDONALD (Belford), and replied to by Dr. ANDERSON, who gave a most stirring account of the work of the British Medical Association and "its future policy in view of coming events," which was greatly appreciated by all present. "Our Guests" was proposed by Dr. SCOTT PURVES and responded to by Professor STUART MCDONALD. Replying to his health, Dr. DON, the secretary of the North of England Branch, gave an interesting account of the work which was being carried on by the Branch.

The evening terminated with a vote of thanks to the chairman, proposed by Dr. MACKAY, and carried with acclamation. Dr. WELSH, in a humorous reply, thanked the members for the honour they had conferred upon him, and said that he would like to draw the attention of Dr. Anderson to the activity displayed by the North Northumberland Division, necessitating the services of two secretaries, while at headquarters there were but four. He concluded with the expression of opinion that the dinner had been the most successful the Division had ever held—an opinion heartily endorsed by all present.

SOUTH-WESTERN BRANCH.

A MEETING of the South-Western Branch was held on October 25th, at the Royal Devon and Exeter Hospital, with Mr. E. HAYDON, president of the Branch, in the chair. The formal business of the meeting having been disposed of, an address was delivered by Dr. JAMES NEAL, secretary of the Medical Defence Union, entitled, "Medical Defence Work." The address was a comprehensive one, and was fully illustrative of the many difficulties—moral, legal, and financial—which may arise in the course of medical practice through no fault of the practitioner. Much excellent advice was also given as to proper procedure and precautions for the avoidance of many of these difficulties. Stress was also laid on the invaluable work of the Union in the prosecution of unqualified practitioners. Dr. Neal's remarks, which were given in an extremely lucid style, were greatly appreciated and thoroughly aroused the interest of his audience, as evidenced by the number of questions asked at the subsequent discussion. The business of the meeting closed with a hearty vote of thanks to the lecturer.

SUSSEX BRANCH: HORSHAM DIVISION.

A MEETING of the Horsham Division was held on November 16th, at the Infirmary, Christ's Hospital. The members were entertained to tea by Dr. FRIEND, M.O. of Christ's Hospital, who read a paper on scarlet fever. The guests included Sir Jenner Verrall and Mr. Hamilton Fyfe, Headmaster of Christ's Hospital. In answer to questions from the Branch Council it was decided to send a copy of the agenda of Division meetings to the honorary secretary of the Branch, and to invite him to the meetings. A resolution expressing regret at the present laxity in regard to vaccination, and urging on the Association the necessity of taking steps to remedy this in the interests of the community, was adopted. Members adjourned to a dinner in the town.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH.—Ordinary meetings of the Branch will be held on the following Thursdays: January 18th, February 15th, and March 15th, 1923. The following members have promised to read papers: Dr. Douglas Stanley, Mr. Seymour Barling, Mr. Musgrave Woodman, and Mr. G. P. Mills. Members are reminded that they are entitled to bring cases and specimens to the meetings for demonstration and discussion.

BIRMINGHAM BRANCH: CENTRAL DIVISION.—A meeting of the Central Division will be held on Thursday, December 14th, at 18, Bennett's Hill, Birmingham, at 4 p.m. Agenda: Hospital Policy (SUPPLEMENT, November 18th). Co-operation between B.M.A. and M.P.U. School Medical Officers.

CAMBRIDGE AND HUNTINGDON BRANCH: CAMBRIDGE MEDICAL SOCIETY.—The next meeting of the Cambridge Medical Society will be held at Addenbrooke's Hospital on Friday, December 8th, at 2.30 p.m. Agenda: Election to membership. Any other business. The rest of the proceedings will be clinical. Members having cases, specimens, etc., to show are requested to communicate with the Hon. Secretary (J. R. Campbell Canney) forthwith.

KENT BRANCH.—A meeting of the Kent Branch will be held in the Council Chamber, Tonbridge Castle, Tonbridge (by kind permission of the Urban District Council), on Thursday, December 14th, at 3 p.m. A paper will be read by Dr. Claude Wilson on "Limitation of effort in heart disease." Tea will be provided afterwards by the Tunbridge Wells Division. For the convenience of those attending, a luncheon has been arranged at the Angel Hotel, Tonbridge, at 1.45 p.m., charge 3s. 6d. each. Those wishing to avail themselves of this will kindly send a postcard to the hotel not later than Monday, December 11th.

KENT BRANCH: MAIDSTONE DIVISION.—A clinical meeting will be held at the West Kent Hospital on Wednesday, December 13th, at 3 p.m. The Council reports on the hospital policy as approved by the Representative Body at Glasgow and on notification of venereal diseases will also be considered.

LANCASHIRE AND CHESHIRE BRANCH.—A clinical meeting of the Lancashire and Cheshire Branch will be held at Preston Royal Infirmary on Thursday, January 11th, 1923. Clinical cases and pathological specimens will be exhibited and discussed and short papers read. A committee will shortly meet to draw up the programme, and members wishing to contribute should communicate as early as possible with the Secretary of the Preston Division (Dr. Walter Sykes, 31, Winckley Square), or with the Branch Secretary, Mr. F. Strong Heaney, 72, Rodney Street, Liverpool.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.—A meeting of the East Hertfordshire Division will be held at 2.30 p.m. on Wednesday, December 13th, at the County Hospital, Hertford. Agenda: To consider (1) Council's report on the hospital policy of the Association; (2) Council's report with regard to notification of venereal diseases (SUPPLEMENT, November 18th). At 3.15 p.m. Mr. H. W. Carson will deliver a lecture on "Cancer of stomach, diagnosis and treatment," illustrated by lantern slides. Each member may invite one non-member. Tea will be provided at 1s. a head.

METROPOLITAN COUNTIES BRANCH: WESTMINSTER AND HOLBORN DIVISION.—The next meeting of the Westminster and Holborn Division will be held on Thursday, December 14th, at the Criterion Restaurant, Piccadilly Circus, at 8.30 p.m., when Dr. Collingwood, Professor of Physiology, St. Mary's Hospital, will give a lecture on "The newer physiology in general practice." The meeting will be preceded at 7.30 p.m. by a dinner, price 7s. 6d. (exclusive of wine). All members of the profession are cordially invited to be present. Those desiring tickets for the dinner are requested to write to the Honorary Secretary, Dr. Bennett, 18, Savile Row, W.1; others unable to attend the dinner will be welcomed to hear the lecture. Members of the Division are requested to make a special effort to attend this meeting, and to bring guests.

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.—At the meeting of the Willesden Division, to be held at the Edinburgh House Club, Shoot-up Hill, N.W., on Wednesday, December 20th, at 9 p.m., Dr. Hadin D. Davis will give a lantern lecture on "Some points in the diagnosis and treatment of common skin diseases." Members may dine at 7.30 p.m. (3s. 6d.) on notifying stewardess before 11 a.m. (telephone, Hamstead 357).

NORFOLK BRANCH.—A meeting of the Norfolk Branch will be held at the Norfolk and Norwich Hospital on Wednesday, December 13th, at 3 p.m., when Sir Henry Gauvain, Medical Superintendent of Lord Mayor Treloar's Cripple Hospital, will read a paper on "Modern methods in the conservative treatment of surgical tuberculosis," illustrated with lantern slides.

NORTH OF ENGLAND BRANCH: STOCKTON DIVISION.—A meeting of the Stockton Division will be held on Friday, February 9th, 1923, when Dr. G. C. Anderson, Deputy Medical Secretary, will give an address.

SOUTHERN BRANCH.—A meeting of the Southern Branch will be held at the South-Western Hotel, Southampton, at 2.30 p.m. on Thursday, December 14th. Agenda: Report as to progress of arrangements for Annual Meeting of the Association at Portsmouth, 1923. Address on "The prevention and conservative treatment of senile gangrene," by Mr. W. Sampson Handley, M.S., F.R.C.S., Surgeon to Middlesex Hospital; to be followed by a discussion. A collection will be made for Epsom College. This has usually been made at the annual meeting of the Branch, but was omitted this year on account of the small attendance.

SUSSEX BRANCH: BRIGHTON DIVISION. — A meeting of the Brighton Division will be held on Monday, December 11th, at 8.30 p.m., at the Queen's Road Dispensary. As very important matters will be submitted for consideration, members are specially requested to be present. Agenda: Report of Executive Committee. Consideration of reports of Council (1) on hospital policy, (2) on notification of venereal diseases.

SURREY BRANCH: CROYDON DIVISION.—A general meeting of the Croydon Division will be held at the Croydon General Hospital on Tuesday, December 19th, at 8 p.m. Agenda: Reports on (1) hospital policy of Association, and (2) notification of venereal diseases (SUPPLEMENT, November 18th). To receive and adopt the report of the Executive Committee of the Division as to the question of the appointment of M.O.H. to the county borough of Croydon. To discuss and vote upon the following resolution:

> That, in the opinion of the Croydon Division, no medical practitioner within the Division should hold the appointment of M.O.H. to the county borough of Croydon at a lower rate of remuneration than £1,500 per annum, exclusive of travelling and other official expenses.

Papers by members of the Croydon Hospital staff.

SURREY BRANCH: KINGSTON-ON-THAMES DIVISION.—A general meeting of the Kingston-on-Thames Division will be held on Tuesday, December 12th, at 8.30 p.m., at the Surbiton Hospital. Agenda: Clinical cases will be shown and discussed. Discussion on report of Council on the suggested revision of the hospital policy, and the report of Council with regard to notification of venereal diseases (SUPPLEMENT, November 18th). Discussion on the position of the panel practitioner with regard to vaccination.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A general meeting of the Sheffield Division will be held at the Church House, St. James's Street, Sheffield, on Friday, December 15th, at 8.30 p.m., to consider the reports of the Council on hospital policy and on the notification of venereal diseases (see SUPPLEMENT, November 18th).

CONFERENCE OF STAFFS OF VOLUNTARY HOSPITALS IN LONDON.

A CONFERENCE of the medical staffs of voluntary hospitals in London was held by the invitation of the Metropolitan Counties Branch Council in the Council Chamber of the Association, 429, Strand, on Wednesday, November 22nd, at 4 p.m., "to consider the situation arising out of the adoption by the King's Fund for London of the scheme of the 'Hospital Saving Association.'" Mr. BISHOP HARMAN, President of the Branch, took the chair. Those present included Mr. F. B. Elliot, C.B.E., General Secretary of the Hospital Saving Association, who attended by request to answer questions.

The discussion turned mainly on the following points:

(1) The liability that the "insurance risk", of the scheme would fall upon the charitable funds of the hospitals.

(2) The absence of provision requiring the attendance of a contributor by his own doctor before applying for hospital benefit.

(3) The proposal to eliminate the almoner.

(4) The risk, in the absence of any limitation of out-patient treatment, (*a*) that the out-patient departments will be flooded with trivial cases; (*b*) that those who at present make their own arrangements for specialist services will be diverted to the special departments of hospitals.

(5) The absence of indication that provision is made for the payment of both maintenance and medical treatment.

(6) The lack of consultation with the medical staffs of the hospitals by the promoters of the scheme, or of provision for representation of the medical staffs upon the management of the scheme.

On the suggestion of the CHAIRMAN it was resolved to take advantage of Paragraph 36 of the British Medical Association Hospital Policy, A.R.M., 1922, to form an Advisory Hospital Committee for London with instructions to draft a report on the scheme for the information of hospitals staffs with a view to further action.

The conference nominated Dr. H. Morley Fletcher, Mrs. H. H. C. Gregory, Mr. T. P. Legg, C.M.G., Dr. F. J. Poynton, Mr. H. S. Souttar, C.B.E., Dr. H. Letheby Tidy; the General Purposes Committee of the Branch nominated Dr. H. B. Brackenbury, Mr. N. Bishop Harman, Dr. E. W. G. Masterman, Dr. Christine Murrell, Dr. W. Paterson, Dr. H. Harvey Norton, and Dr. W. E. A. Worley (Hon. Secretary) as members of the new committee. A meeting of this (the Advisory Hospitals Committee) was held on Friday, December 1st, at 4 p.m.

GENERAL COUNCIL
OF
MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1922.

Sir DONALD MACALISTER, K.C.B., President, in the chair.

THE President in his opening address, reported last week, observed that under the old standing orders of the Council the November session was to be devoted chiefly to cases of discipline. For years past it has not been practicable to observe this direction owing to the pressure of discussions on educational matters. These having been concluded the Council during the present session was largely concerned with disciplinary inquiries.

THE LATE SIR NORMAN MOORE.

The PRESIDENT said that he had just received the news of the death of Sir Norman Moore, which had taken place somewhat unexpectedly. The Council would desire to express to the family its sincere condolences.

The vote of condolence was carried by the Council standing.

Restorations.

On November 30th the Council, after a private deliberation, restored to the *Medical Register* the name of William Herbert Fawcett, and to the *Dentists Register*, on a report from the Dental Board, the names of George Horatio Jones and Thomas William Frederick Stewart.

DISCIPLINARY INQUIRIES.

A Case Heard in Camerâ.

On November 29th the Council commenced the hearing of the case of Samuel Leon Szpigner, registered as of 100, Commercial Road, London, E., L.M.S.A. (1917, who was summoned to appear on eight charges concerning his relations with a woman patient and with two other women. Dr. Szpigner was present, with his counsel, Mr. Neilson, K.C., and the complainant, whose name was not given publicly, was represented by Mr. Lewis Thomas, K.C.

At the outset of the proceedings Mr. Lewis Thomas asked that the case should be heard *in camerâ*. Mr. Neilson, for the defendant, when asked whether he objected to this course, said that he would not object if the Council took a certain line of procedure in dealing with the case. Of the eight charges against Dr. Szpigner—perhaps the vaguest series of charges it had ever been his lot to meet—three were of a nature which might have formed the subject of criminal proceedings. In two of these it was alleged that the defendant had endeavoured to procure abortion, one of the gravest offences known to the criminal law. Yet with regard to these charges no criminal proceedings had been instituted, nor, so far as he was aware, had any information been laid. It was never intended in the Medical Acts to give the Council jurisdiction to try serious criminal charges upon the evidence of witnesses who, as was the case with witnesses before the Council, were not upon oath. He submitted that it would be a deplorable departure from the practice of the Council to embark upon what was in effect a prosecution on grave criminal charges when no charge had been instituted in the ordinary courts. He was proceeding to say that a conviction by the Council would have very important consequences, when the President intervened to remark that the Council could not convict. Mr. Neilson amended the phrase, and said that in the event of the Council finding Dr. Szpigner guilty of what was alleged against him the effect upon any possible proceedings in other courts was obvious. If the Council decided to dispose of the three charges he had named by saying that they ought first to form the subject of a criminal prosecution, then there was no necessity why the remaining charges should not be dealt with *in camerâ*; but if it was decided that these three charges should be taken, then he must object to the hearing *in camerâ*.

The Council then deliberated as to its procedure, and on the readmission of strangers and parties the President announced that the Council had decided to hear the case *in camerâ*, though at the Council's discretion the sitting might be made public at any stage of the case. With regard to jurisdiction, the Council would hear portions of the charge, to the hearing of which *in camerâ* Mr. Neilson had raised objection, only in their bearing on the charge of professional misconduct.

The members of the public and the press then withdrew, and the consideration of the case occupied the remainder of November 29th, the whole of November 30th, save for some brief preliminary business, the afternoon of December 1st, and the morning of December 2nd—a hearing of thirteen hours in all.

When the public was readmitted, Mr. H. J. Waring, the acting President announced the Council's decision as follows:

"I have to announce that the Council has considered the charge against Samuel Leon Szpigner, namely:

"That being a registered medical practitioner: (1) In the month of December, 1918, you assaulted a patient—namely, one A. B., the wife of B. B., by embracing and kissing her against her will; (2) in the month of June, 1919, you assaulted the said A. B. and endeavoured to have [illegible] her; (3) thereafter, by threatening the said A. B. to inform her husband of what had occurred, you induced her on some six occasions between June, 1919, and June, 1921, to permit like improper relations with you; (4) on or about April 28th, 1921, you had full sexual intercourse with the said A. B.; (5) on or about June 4th, 1921, you endeavoured to procure the abortion of the said A. B., and, having failed, you subsequently endeavoured to induce her to have an illegal operation performed; (6 . . . ; (7) in December, 1919, or January, 1 20, you had sexual intercourse with one Miss C. D. by force and against her will, and subsequently you sent the said C. D. to a woman unknown for the purpose of her performing an illegal operation upon the said C. D., and paid the fee for such operation; (8) in March or April 1922, you committed an indecent assault upon Mr. E. F. when she called at your surgery for medicine for her husband; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

"The Council finds the charges proved, with the exception of charge 6, which is not found to be proved. The Registrar will be directed to erase the name of Samuel Leon Szpigner from the *Medical Register*."

Cases in which Judgement had been Postponed.

On November 28th the Council considered the case of Dr. Nariman Bejanji Kolsa-Walla, in which judgement had been postponed at the previous November session, after certain facts had been found proved against the practitioner—namely, that he had sought to attract to himself patients in two villages in Nottinghamshire who, to his knowledge, were on the insurance list of another practitioner, Dr. N. M. Tarachand. The facts were set out in the SUPPLEMENT of December 10th, 1921, p. 220.

The Solicitor to the Council said that the complainant, Dr. Tarachand, had no further evidence to bring before the Council, and the defendant, Dr. Kolsa-Walla, had put in a number of testimonials as to general and professional character. Dr. R. Saunders of Blidworth, Dr. Murray of Mansfield, and Dr. J. A. Master, of Commercial Road, London, bore witness to the integrity of his conduct, so far as their knowledge went, since the previous hearing. Dr. Kolsa-Walla stated that he had continued to practise in Nottinghamshire until the last two or three months, when he had started practice in Hackney.

After deliberation in private the PRESIDENT announced that the Council had not seen fit to direct the Registrar to erase Dr. Kolsa-Walla's name from the *Medical Register*. He added as an expression of his personal opinion that he had no doubt the warning Dr. Kolsa-Walla had received as a consequence of the proceedings would be useful to him in guiding his future conduct.

The Council next considered the case of Dr. William Young of Inverdeen, Usworth, Durham, in which judgement had been postponed at the May session after the practitioner was proved to have been convicted on more than one occasion of drunkenness while in charge of a motor car, and of other misdemeanours. The case was set out in the SUPPLEMENT, June 10th, 1922, p. 224. Dr. Young was not present, and the Solicitor to the Council stated that he had twice written to him drawing his attention to the fact that the Council required his attendance on this occasion. No answer had been received, nor had the letters been returned. The Council, after a brief deliberation in private, decided to direct the Registrar to erase Dr. William Young's name from the *Medical Register*.

Conviction for Felony.

The next case was that of Dr. Sydney Firth, of Corner House, Ropsley, Grantham, who was summoned to appear on the charge that at the Lincoln assizes, held in June last, he was convicted on four counts, that, with intent to procure the miscarriage of certain women, he had unlawfully used a certain instrument or some other unknown means. Dr. Firth did not appear, and the Solicitor to the Council, having put in the certificate of the conviction, stated that Dr. Firth had been sentenced to seven years' penal servitude, and was now at Parkhurst prison, Isle of Wight. A letter which had been received from him was read; he stated therein that he quite appreciated that erasure must follow the verdict. The Council, after deliberation in private, directed the Registrar to erase Dr. Firth's name from the *Medical Register*.

Misdemeanours.

The case of Dr. Averyl Harcourt, of 184, Haverstock Hill, Hampstead, was next taken. She had been summoned to appear on the charge that (in the name of Marjory or Marjorie Harcourt) she had been convicted at the Marylebone police court for assault, of wilfully obstructing an officer of the sanitary authorities in the execution of his duties, and, on the same occasion as the latter charge, of assaulting a police constable; also at the Hampstead petty sessions, of insulting words and behaviour, which last conviction was confirmed on appeal to the quarter sessions.

The Solicitor to the Council asked, as the result of a previous conversation with the lady, that Dr. Harcourt, who was in the building, might not be required to appear. He explained that she was labouring under a sense of repeated injustices, and if she spoke at all before the Council might not be able to repress her feelings. After private deliberation, the Council decided that Dr. Harcourt should be requested to attend. In reply to questions from the President, she said that she could not deny that the convictions had taken place, but that she was the victim of a conspiracy of persecution by the police and others. Dr. Harcourt broke down while addressing the Council. The Council deliberated in private, and the President announced its judgement as follows:

"Mrs. Harcourt, I have to inform you that it has been proved to the satisfaction of the Council that you have been convicted of the misdemeanours charged against you in the notice of inquiry, but that the Council has not seen fit to direct the Registrar to erase your name from the *Medical Register*."

Correspondence.

Removal of Names of Insured Persons from Doctors' Lists.

SIR,—In the very kind notice of the book *Medical Insurance Practice* which appeared in the BRITISH MEDICAL JOURNAL of November 18th (p. 983), your reviewer suggested that a statement should be made in another edition with regard to the position of a doctor when a patient's name is removed from his list as from some earlier date.

I should be glad of the opportunity of drawing attention in your columns to the statement, italicized on page 22 of the book, that when a notice is sent to a doctor of the removal of a name from his list the date from which the removal takes effect *cannot be earlier than the date on which the notice is sent to the doctor*. This provision was inserted in the 1920 Medical Benefit Regulations (Art. 18 (2)) to obviate the difficulties which had previously arisen from the practice, all too common, of notifying alterations in a doctor's list with retrospective effect. The case contemplated by your reviewer, if I have not misunderstood what he had in mind, should not therefore now occur, except as a mistake, which the Clerk to the Insurance Committee would no doubt at once put right.—I am, etc.,

Kenley, Surrey, Nov. 27th. R. W. HARRIS.

The Medical Profession and Approved Societies.

SIR,—Most panel doctors, I believe, will regard the proposal of "An Urban Insurance Practitioner" (SUPPLEMENT, November 18th) to throw the onus of issuing intermediate and final certificates to insured persons upon the regional medical officers as ill considered, ill advised, and unworkable.

If adopted, it would necessitate the creation of a huge staff of medical officers under the control of the friendly societies; it would introduce a dual system of medical supervision irksome both to panel doctors and their insured patients; and it could only be effectually worked at an immense cost. Further, it would result in a demand for a big reduction of the capitation fee on the part of the friendly societies for the work taken off the panel doctor's hands, and it would add not a jot to the efficiency of the insurance medical service. The proposal, I submit, is one to be entirely discarded.

Malingerers and "club loafers" are only a small minority of our panel patients. The sickness benefit allowance is not so ample as to encourage insured patients to linger on the funds, and as a rule they return to work as soon as they are physically fit without any pressure on the doctor's part. When such pressure is required the panel doctor is seldom wanting in the fulfilment of his obligations.

It is unfair to put the blame of the malingering evil entirely on the panel doctor's shoulders; the societies themselves are not without blame and responsibility. They might do more to combat the evil if they exercised the same supervision of their sick members as they did in pre insurance days by means of their agents and sick-visitors. Panel doctors are always willing to assist in bringing the malingerer and loafer to heel, but they cannot constantly be playing the part of the medical detective.

They have co-operated heartily with the regional medical officers in their work, and I believe with good results. They might do more in this direction were their attendance at consultations with the regional medical officers made optional in *all* cases, as the time involved in such consultations is a serious matter for most practitioners.

On our part we have no grievance with the friendly societies, and are always ready to help them as far as we can. But is it not the case that we are becoming too sensitive to the grumbling of their leaders, and suffer their complaints and submit to their accusations far too patiently? Is there not the danger that in time we shall come to believe them, and the public likewise? We must put an end to all this, and the sooner the better.—I am, etc.,

Stanley, Durham, Nov. 26th. J. CHARLES, M.D.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following announcements are notified by the Admiralty: Surgeon Commanders T. W. Jeffery, O.B.E., to the *Malaya*, W. P. Hingston to the *Tamar*, additional for R.N. Sick Quarters, Yokobama. Surgeon Lieutenants A. E. Phillips to the *Ajax*, W. A. Jolliffe to the *Birmingham*. Surgeon Lieutenant Commander G. F. B. Page is allowed to withdraw with a gratuity. Surgeon Lieutenant F. H. Vey has been promoted to the rank of Surgeon Lieutenant Commander.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel R. McK. Skinner retires on retired pay.

Major E. Rowan-Robinson, half-pay list, late R.A.M.C., retires on retired pay.

Captain A. B. Preston retires, receiving a gratuity.

Temporary Captain Norman E. Stewart relinquishes his commission, March 18th, 1919, and retains the rank of Captain (substituted for the notification in the *London Gazette*, March 21st, 1919).

The following temporary Captains relinquish their commissions: R. W. Harper, J. B. Taylor (and retains the rank of Captain).

Captain J. H. Ward, D.S.O., M.C., retires receiving a gratuity, and is granted the rank of Lieutenant-Colonel.

ROYAL AIR FORCE MEDICAL SERVICE.

Squadron Leader J. F. Carruthers relinquishes his temporary commission on account of ill health contracted on active service.

REGULAR ARMY RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieut.-Colonel P. J. Probyn, D.S.O., and Major A. E. Milner, having attained the age limit of liability to recall, cease to belong to the Reserve of Officers

Lieut.-Colonels James Cowan, A. E. Bourke, D.S.O., and Mervyn W. Falkner, Major H. O. M. Beadnell, Captain A. W. Byrne, and Captain C. B. Hogg cease to be one to the Reserve of Officers on account of physical unfitness.

Captain A. L. Urquhart, O.B.E., resigns his commission.

MILITIA.

Royal Army Medical Corps.

Captain W. R. Gardner, D.S.O., to be Major.

The following officers having attained the age limit for retirement are placed on the retired list: Lieut.-Colonel A. A. Watson, C.M.G., D.S.O., V.D., and is granted the rank of Colonel; Lieut.-Colonel W. K. Steele, and retains the rank of Lieutenant-Colonel; Captain D. J. Armour, C.M.G., and is granted the rank of Major.

Captains W. Bryars and C. Shaw-Crisp relinquish their commissions and retain the rank of Captain.

TERRITORIAL ARMY.

Royal Army Medical Corps.

The following officers relinquish their commissions and retain their rank except where otherwise stated: Lieut.-Colonel W. E. Foggie, D.S.O., T.D., with permission to wear the prescribed uniform; Majors F. C. Whitmore and G. E. Stock-Stockwell, Captains, and are granted the rank of Major; A. Cameron, M.C., R. R. Powell, K. F. R. Davison, A. C. Tibbits, J. Everidge, O.B.E., I. C. Marshall, O.B.E. Captains F. Chadwick, M.C., R. Wilan, J. A. Bell, M.C., D. T. Lewis, C. J. E. Bennett, J. M. Pringle, M.C., N. MacInnes, W. Rutherford, M.C., W. Combe, H. W. Robinson.

Major D. Macnair resigns his commission, and retains the rank of Major.

Major D. C. L. Orton, T.D., to be Lieutenant-Colonel and to command 4th (Cheshire) Cavalry Field Ambulance.

Major C. S. Wink, from T.A. Reserve, to be Captain, and relinquishes the rank of Major.

VACANCIES.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Resident Surgical Officer. Salary, £200 per annum.

BRADFORD CHILDREN'S HOSPITAL.—House-Surgeon. Salary, £150 per annum.

BRIGHTON: ROYAL SUSSEX COUNTY HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

BRISTOL GENERAL HOSPITAL.—Honorary Clinical Assistants.

CAIRO: EGYPTIAN GOVERNMENT SCHOOL OF MEDICINE.—Radiologist and Lecturer in Radiology and Medical Electricity. Salary, £E480; if European appointed he will receive £E120 expatriation allowance.

CAMBRIDGE: ADDENBROOKE'S HOSPITAL.—House-Surgeon. Salary, £120 per annum.

CANCER HOSPITAL, Fulham Road, S.W.3.—(1) Surgical Registrar. (2) House-Surgeon; salary at the rate of £150 per annum.

CARDIFF UNION.—Assistant Medical Officer for the Workhouse. Salary, £300 per annum, rising to £400.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.—Second Resident House-Surgeon (male). Remuneration, £75 per annum.

CEYLON MEDICAL COLLEGE.—Professor of Physiology and Registrar. Salary, £800 per annum.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House-Surgeon (male). Salary, £200 per annum.

EALING BOROUGH.—Assistant Medical Officer of Health. Salary, £550 per annum.

GREENWICH: DREADNOUGHT HOSPITAL.—Surgeon for Diseases of the Throat, Nose, and Ear.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Resident Medical Officer.

HUDDERSFIELD ROYAL INFIRMARY.—Junior House-Surgeon. Salary, £200 per annum.

KINGSTON UNION.—Second Assistant Resident Medical Officer (male) at the Kingston and District Hospital. Salary, £300 per annum.

KINGSTON-UPON-HULL CITY AND COUNTY.—Resident Tuberculosis Officer (male and unmarried) for the Hull Tuberculosis Sanatorium, Cottingham. Salary, £550 per annum.

LEEDS GENERAL INFIRMARY.—Resident Orthopaedic Officer. Salary, £150.

LINCOLN: COUNTY HOSPITAL.—Junior House-Surgeon (male). Salary, £150 per annum, rising to £200.

MALAYA.—Medical Officers in the Government Service of the Straits Settlements and Malay States. Pensionable salary equivalent to £616, rising to £1,120 per annum.

NEWCASTLE-UPON-TYNE: UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Junior Demonstrator of Anatomy. Salary, £350 per annum.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—(1) Casualty House-Surgeon. (2) Resident Accoucheur. Salary at the rate of £200 per annum each.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.—Two Resident House-Surgeons. Salary, £150 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.1.—(1) Honorary Surgeon to the Ear, Nose and Throat Department. (2) Honorary Physician in charge of Out-patients. (3) House-Physician, salary at the rate of £100 per annum.

ST. GEORGE'S HOSPITAL, S.W.—(1) House-Physician; salary at the rate of £50 per annum. (2) Resident Anaesthetist; salary, £100 per annum.

SALFORD ROYAL HOSPITAL.—Resident Surgical Officer. Salary at the rate of £250 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House-Surgeon. Salary, £120 per annum.

UNION OF SOUTH AFRICA.—Medical Officer for Durban Suburbs. Salary, £800 per annum, increasing to £900.

WEST LONDON HOSPITAL, Hammersmith Road, W.—(1) House-Physician. (2) House-Surgeon. (3) Aural House-Surgeon and Resident Casualty Officer. (Males.) Salary at the rate of £100 per annum each.

WESTMINSTER HOSPITAL, S.W.1.—(1) Assistant House-Physician. (2) Assistant House-Surgeon. Honorarium at the rate of £52 per annum each.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

ABEL, A. Lawrence, M.S.Lond., F.R.C.S.Eng., Honorary Surgeon to Out-patients at the London Lock Hospital, Dean Street, W.

KILLICK, Charles, M.D.Cantab., F.R.C.S.Eng., Honorary Consulting Ophthalmic Surgeon to the Royal Infirmary, Bradford.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer: Raymond Williamson, B.Sc., M.B., Ch.B. Assistant Surgical Officer (Central Branch): Gilbert A. Wardrop, F.R.C.S. Second Medical Registrar: N. Kletz, M.B., M.R.C.P. House-Physician: E. Walker Clough, M.B., Ch.B.

ST. THOMAS'S HOSPITAL.—The following gentlemen have been selected as House Officers:—Obstetric House-Physicians: (Senior) F. A. Phillips, M.B., B.Ch., (Junior) H. L. Sauguer, M.R.C.S. Ophthalmic House-Surgeons: (Senior) F. B. Sudbury, M.R.C.S., (Junior) D. A. Davies, M.R.C.S. Clinical Assistants: (Throat) H. S. Hoga, M.R.C.S., (Skin) G. S. Lund, M.R.C.S., (Ear) G. E. Williams, M.R.C.S., (Children's Medical) A. L. Creckford, M.C., M.R.C.S., J. G. D. Currie, M.R.C.S., A. G. Story, M.R.C.S., (Tuberculosis Department) A. E. Slater, M.R.C.S., (Orthopædic) J. H. Doggart, M.R.C.S., L. French, B.Sc.Lond., M.R.C.S., (Electro-Cardiograph) C. F. R. Gibson, M.R.C.S., R. A. Hughes, M.R.C.S. Twenty-three other gentlemen have received an extension of their appointments.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.—*War Section*: Mon., 5 p.m., Colonel R. C. Campbell: Physical Training in the Army; to be followed by a discussion. *Section of Psychiatry*: Tues., 8.30 p.m., Dr. Mary Bell: Use and Abuse of the Relationship between Doctor and Patient in the Practice of Psychotherapy. Social Evening, Wed. 8.30 p.m., Reception by the President, Sir William Hale-White, and Lady Hale-White. Wireless concert in the Robert Barnes Hall between 8.30 and 9 p.m. 9 p.m., Short Lecture by Dr. Arnold Chaplin on "Engraved Portraits of Medical Men," with illustrations from the Society's Collection. The Library will be open, and objects of interest will be exhibited. Music, light refreshments, and smoking. *Section of Neurology*: Thurs., 8.30 p.m., Dr. W. J. Adie: Dystrophia myotonica (myotonia atrophica), an heredo-familial disease with cataract. *Section of Electro-Therapeutics*: Fri., 8.30 p.m., Dr. Gilbert Scott: Opaque Meal Examination. Dr. Stanley Melville: Pulmonary Tuberculosis revealed by X rays, but without physical signs. *Section of Medicine*: Fri., 5 p.m., Dr. T. G. Longstaff: Some Experiences with the Everest Expedition; to be followed by a discussion on "Medical aspects of life at high altitudes," to which Mr. J. Barcroft, Commander Martin Flack, Professor J. C. Meakins, Mr. T. H. Somervell, and Dr. Malcolm L. Hepburn will contribute.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Thurs., 5 p.m., Thomas Vicary Lecture by Mr. W. G. Spencer, O.B.E.: Vesalius and his Delineation of the Framework of the Human Body.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.—Mon., 8.30 p.m., Discussion on the Clinical, Pathological, and Radiological Aspects of Infections of the Teeth and Gums," to be introduced by Sir William Willcox, K.C.I.E., C.B., M.D., and followed by Mr. Maxwell Stephens, L.D.S.Eng., Professor McIntosh, Dr. J. H. Woodroffe, Dr. Geoffrey Evans, Dr. Watson-Williams, Mr. W. R. Ackland, and others.

HARVEIAN SOCIETY, Town Hall, Paddington Green, W.—Thurs., 8.30 p.m., Major Austen: Diptera which disseminate Disease, with lantern demonstration.

POST-GRADUATE COURSES AND LECTURES.

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, W.1.—Tues., 8.30 p.m., Professor W. S. Lazarus-Barlow: What we may expect from the Radiation Treatment of Cancer.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At the Royal Maternity and Women's Hospital: Wed., 4.15 p.m., Dr. A. N. McLellan: Obstetrical Cases. Thurs., 4.15 p.m., Dr. Cruickshank: The Mother and the Newborn Infant.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.—Thurs., 4 p.m., Mr. Doyne: The Myopic Child.

MANCHESTER: ANCOATS HOSPITAL.—Thurs., 4.30 p.m., Dr. Wm. Stirling: Cataract.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Dr. E. B. Leech: Hypnotics.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland Street, W.1.—Mon., 5.30 p.m., Dr. F. W. Price: Diseases of the Arteries. Out-patients daily. Ward Rounds: Tues. 10a.m., Thurs. 2 p.m., Sat. 11 a.m. Clinical Demonstration, Auricular Fibrillation, by Dr. J. Strickland-Goodall, Fri., 4 p.m.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.—Mon., 5.30 p.m., Dr. A. J. Whiting: Sinus Arrhythmia and Extra-systole. Tues., 4.30 p.m. Mr. C. H. Hayton: Foreign Bodies in the Air Passages and Oesophagus (with cases). Thurs., 3.30 p.m., Mr. W. E. Tanner: Surgery of Heart and Pericardium. Daily: Operations, Clinics in the General and Special Departments, etc.

PLYMOUTH DIVISION, BRITISH MEDICAL ASSOCIATION, South Devon and East Cornwall Hospital.—Wed., 2.30 p.m., Mr. H. G. Pinker: Uterine Haemorrhage. Laboratory and X-ray Demonstration by Dr. A. Bertram Soltau and Dr. E. Worley: Detection and Treatment of Acute Blood Diseases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell square, W.C.—Wed., 4 p.m., Dr. C. W. Saleeby: Sunlight and Childhood.

SHEFFIELD UNIVERSITY FACULTY OF MEDICINE.—At the Royal Infirmary, Tues., 3 p.m., Mr. Pooley: Intoxication and Infections of the Eye. 4 p.m., Mr. Cuff: Clinical Surgery. At the Royal Hospital, 3 p.m., Mr. G. Wilson: Demonstration of Cases. 4 p.m., Mr. G. Simpson; Clinical Cases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION. St. James's Hospital, Ouseley Road, Balham.—Wed., 4 p.m., Mr. Morrow: The Interpretation of X-Ray Negatives.

TUBERCULOSIS SOCIETY, Margaret Street Hospital, W.—Fri., 7.30 p.m., Tuberculous Adenitis.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1.—Mon., 1.30 p.m., Dr. Harry Campbell: Hemiplegia. Wed., 1.30 p.m., Dr. W. H. Revell: Common Neuroses. Fri., 4.30 p.m., Dr. C. Worster-Drought: Diseases of the Spinal Cord.

WEST LONDON POST-GRADUATE COLLEGE, Hammersmith, W.—Mon., 4.30 p.m., Dr. Dudley Buxton: Dental Emergencies from the General Practitioner's Point of View. Tues., 4.30 p.m., Mr. Page: Spinal Anæsthesia. Wed., 4.30 p.m., Mr. D. Armour: Surgery of the Pancreas. Thurs., 4.30 p.m., Mr. MacDonald: Urinary Surgery. Fri., 4.30 p.m., Dr. Cole: Medico-Legal Aspects of Insanity. Sat., 10 a.m., Dr. Saunders: Medical Diseases of Children. Daily, 10 a.m. to 6 p.m. (Sat., 10 a.m. to 1 p.m.), In- and Out-patients, Operations, Special Departments.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).
MEDICAL SECRETARY (Telegrams: Medisecra, Westrand, London).
EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).
Telephone number for all Departments: Gerrard 2630 (3 lines).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)
IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4737 Dublin.)

Diary of the Association.

DECEMBER.

8 Fri. London: Post-Graduate Subcommittee, 2.30 p.m.
Cambridge and Huntingdon Branch (Cambridge Medical Society): Addenbrooke's Hospital, 2.30 p.m.
11 Mon. Brighton Division, Queen's Road Dispensary, 8.30 p.m.
12 Tues. Darlington Division: Dinner, King's Head Hotel, 8.15 p.m.
Kingston-on-Thames Division: Surbiton Hospital, 8.30 p.m.
13 Wed. London: **Council**, 10 a.m.
East Hertfordshire Division, County Hospital, Hertford, 2.30 p.m. Lecture by Mr. H. W. Carson, 3.15 p.m.
Maid-tone Division, West Kent Hospital 3 p.m.
Norfolk Branch: Norfolk and Norwich Hospital, 3 p.m.
14 Thurs. Westminster and Holborn Division: Dinner, Criterion Restaurant, 7.30 p.m., followed at 8.30 p.m. by an address by Professor Collingwood on The Newer Physiology in General Practice.
Central Division, Birmingham Branch, 18, Bennett's Hill, Birmingham, 4 p.m.
Kent Branch, Council Chamber, Tonbridge Castle, Tonbridge, 3 p.m. Luncheon, 1.45 p.m.
Southern Branch, South-Western Hotel, Southampton, 2.30 p.m., Address by Mr. W. Sampson Handley.
Walsall and Lichfield Division, Stork Hotel, Walsall, 8.30 p.m.
15 Fri. Sheffield Division: Church House, St. James's Street, Sheffield 8.30 p.m.
19 Tues. London: Insanity and Crime Subcommittee, 2.30 p.m.
Croydon Division, Croydon General Hospital, 8 p.m.
20 Wed. Willesden Division, Edinburgh House Club, Shoot-up Hill, N.W., 9 p.m.:—Dr. Haldin D. Davis: Some Points in the Diagnosis and Treatment of Common Skin Diseases (with lantern illustrations).

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notices not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

MARRIAGES.

CHITTY—OGILVIE.—On November 15th, at St. Peter's Church, Fort William, Calcutta, by the Rev. D. E. Lee, Garrison Chaplain, assisted by the Rev. P. Higham, Bishop's Chaplain, Arthur A. E. Chitty, Captain the Queen's Own Royal West Kent Regiment, only son of the late Lieut.-Colonel E. R. I. Chitty, Indian Army, and of Mrs. Chitty, Eastbourne, to Anna Theodora, younger daughter of Colonel W. H. Ogilvie, C.M.G., I.M.S., and Mrs. Ogilvie, Calcutta.

POSTON—MACMILLAN.—At St. Giles's Cathedral, Edinburgh, on November 23rd, Richard Irvine Poston, M.B., B.Ch., B.A.O., to Margaretta McLean Macmillan, M.B., B.Ch., B.A.O.

DEATHS.

BUNN.—At Rose Cottage, Laxfield, on Friday, December 1st, of enteric fever, Charles Grinling, B.A., L.S.A., aged 37, only son of the late Charles Grinling Bunn, M.D., of Norwood and Laxfield.

ROBSON.—At York, on November 20th, Frank Blair Robson, aged 34, M.B., B.S.Durh., late Major R.A.M.C., beloved husband of Mary Robson and only son of Mrs. Robson, 21, St. Mary's, York.

BRITISH MEDICAL ASSOCIATION.

FOUNDED 1832.

Patron: HIS MAJESTY THE KING.

THE BRITISH MEDICAL ASSOCIATION is established for the promotion of the Medical and allied Sciences and the maintenance of the honour and interests of the Medical Profession. It has Divisions and Branches throughout the British Empire. There are 43 Branches, with 210 Divisions, in the United Kingdom; and 50 Branches, with 67 Divisions, in the British Empire Overseas.

Any Medical Practitioner registered in the United Kingdom under the Medical Acts; any Medical Practitioner who does not reside within the area of any Branch of the Association and who though not so registered is possessed of any qualification entitling him to be so registered; and any Medical Practitioner residing within the area of any Branch of the Association not in the United Kingdom who is so registered or possesses such medical qualification as shall (subject to By-laws) be prescribed by the Rules of the said Branch, is eligible as a Member of the Association. Members of the Association are, *ipso facto*, Members of the Division and Branch in the areas of which they reside.

The liability of Members is limited.

The annual subscription, which is due in advance on January 1st in each year, and entitles the Member to all the ordinary privileges of Membership of the Association, including Membership of the Division and Branch in which he or she resides, and the weekly supply of the *British Medical Journal* post free, is as follows:

(A) Members resident in United Kingdom.	
Ordinary Subscription	£3 3s.
Member of not less than 40 years' standing	£2 2s.
Member of not less than 10 years' standing retired from practice	£2 2s.
Member engaged whole-time in medical instruction or research, and not in practice	£2 2s.
Newly qualified practitioner elected within 2 years of registration	£1 11s. 6d. (up to end of 4th year after registration).
Two Members, being husband and wife, residing together	£4 14s. 6d.
(B) Members resident outside United Kingdom.	
Member resident within the area of a Branch	£1 11s. 6d. (or more according to Rules of Branch).
Member resident where no Branch is organised	£1 11s. 6d.
(C) Wherever resident.	
Officer of Royal Naval, Royal Air Force, Army or Indian Medical Service	£2 2s.

In the case of a Member elected after June 30th, in any year, the subscription for that year is one-half the current annual subscription.

If you desire to become a Member of the Association, please fill in and post this form to the Association, 429, Strand, London, W.C. 2, with a cheque or postal order for your first subscription.* Cheques or postal orders should be crossed, and made payable to "The British Medical Association." Election is ordinarily by the Council of the Branch in the area of which the Candidate resides, but in the case of Candidates resident in any area outside the United Kingdom where no Branch is organised, is by the Council of the Association. In the case of most Branches, NO signature, other than that of the Candidate, is required (for Branches which require approving signatures see back). For election by the Council (as above), 2 approving signatures are ordinarily required. Under no circumstances are approving signatures necessary in the case of Officers of the Royal Naval, Royal Air Force, Army, Indian or Colonial Medical Service, on the Active List.

Please Detach Here.

APPLICATION FOR ELECTION.

TO THE BRITISH MEDICAL ASSOCIATION,
429, STRAND, LONDON, W.C. 2

(Full Christian and Surnames. Please write distinctly.) I,.....

a Registered Medical Practitioner, am desirous of being, and hereby apply to be elected a Member of the BRITISH MEDICAL ASSOCIATION, and I agree, if elected, to pay the subscription and to abide by the Articles and By-laws of the Association for the time being in force, and the Rules of the Division and Branch to which I may at any time belong.

Signature.....

Qualifications.....

Permanent Address.....

.....

Address for Journal.....

.....

Date....., 192 .

Additional Forms of Application for Membership and all particulars may be had on application to the BRITISH MEDICAL ASSOCIATION, 429, Strand, London, W.C.2.

* Applicants for Membership resident in the areas of the *Oversea Branches* should send their applications and remittances to the Honorary Secretary of the Branch if his or her address is known to them, failing which the application and remittance should be sent to the Head Office, 429, Strand, London, W.C.2.

HOME BRANCHES WHICH REQUIRE APPROVING SIGNATURES.

Branch.	No. of approving signatures required.	Branch.	No. of approving signatures required.
Cambridge and Huntingdon	2	North of England	2
Connaught	2	Oxford and Reading	2
Leinster	2	South Wales and Monmouthshire ...	2
Midland	2	Staffordshire	2
Munster	2		

OVERSEA BRANCHES WHICH REQUIRE APPROVING SIGNATURES.

Branch.	No. of approving signatures required.
British Guiana	3
Mesopotamia	3
New South Wales	3
Punjab	2

Candidates (other than Service) resident within any of the Branches above named are requested to arrange for the necessary approving signatures to the certificate at foot. Candidates (other than Service) resident outside the United Kingdom where no Branch is organised are requested to arrange for 2 approving signatures. In any case of doubt or difficulty, Candidates are invited to communicate with the Head Office, 429, Strand, London, W.C.2.

CERTIFICATE.

(For use only in the case of a Candidate (other than a Service Candidate) resident within the area of one of the Branches named above, or resident outside the United Kingdom where no Branch is organised.)

We, the undersigned Members of the BRITISH MEDICAL ASSOCIATION, hereby certify that ....., named on the front page hereof, is personally known to us, and is a suitable person to be elected a Member of the BRITISH MEDICAL ASSOCIATION.

Signed (1) .....

(2) .....

(3) .....

Published weekly by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 16TH, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION.	PAGE
Current Notes:	
LOCAL GOVERNMENT AT ST. HELENS	217
HINDLEY URBAN DISTRICT COUNCIL—APPOINTMENT OF M.O.H. AND SCHOOL MEDICAL OFFICER	217
THE MEDICAL SECRETARY'S CIRCULAR: A CORRECTION ...	217
ASSOCIATION NOTICES	218
MEETINGS OF BRANCHES AND DIVISIONS	218
ASSOCIATION INTELLIGENCE AND DIARY	220

General Medical Council:	PAGE
FINAL MIDWIFERY EXAMINATIONS	219
DIPLOMA IN PUBLIC HEALTH	219
EDUCATION AND STUDENTS' REGISTRATION	219
ELECTIONS	219
NAVAL AND MILITARY APPOINTMENTS	219
VACANCIES AND APPOINTMENTS	220
DIARY OF SOCIETIES AND LECTURES	220
BIRTHS, MARRIAGES, AND DEATHS	220

British Medical Association.

CURRENT NOTES.

Local Government at St Helens.

WHAT might almost be called a local government comedy is being played at St. Helens at the present time. In October last the borough council resolved to reduce the salaries of all its chief and deputy officers, from the town clerk downwards, by sums varying from £100 to £200 a year. The salaries were by no means large, they had not been increased until prices had risen very considerably, and there was no question of a bonus. Negotiations had been going on in the various committees with a view to reduction of some of the salaries, but the Labour members of the council, possibly in view of the November elections, possibly to maintain their reputation for economy, took the bull by the horns and got the council to pass the resolution above mentioned. The effects of the resolution, so far as the medical officer of health and his deputy are concerned, were as follows: the medical officer of health was appointed in July, 1921, at a salary of £900, rising by £50 a year to £1,000; the deputy medical officer of health was appointed in October, 1921, at a salary of £700. There was no mention of any bonus nor of any suggested future decrease in the salaries. The officers took the posts believing that the borough council by that time had made up its mind what the proper salary ought to be, and under the impression that they could rely upon fair and honourable treatment. The resolution of the council took these and the other officers by surprise, but all of them were given three months' notice to leave if they did not accept the reductions—extraordinary treatment for responsible officers, some of whom had been twenty years and more in their posts. All the officers accepted the notices, stated their intention of acting together, and placed their interests in the hands of the societies to which they belonged. These societies, which are mostly combined in the National Association of Local Government Officers, called a conference of the bodies concerned, including the British Medical Association and the Society of Medical Officers of Health, and decided to ask the St. Helens Borough Council to receive a deputation. The interview took place on December 5th. The National Association was represented by its General Secretary and several other members representing different branches of municipal service; the Society of Medical Officers of Health was represented by Dr. C. Sanders of West Ham, and the British Medical Association by the Medical Secretary, and Dr. Knowles (secretary) and Drs. Unsworth and Merrick, members of the St. Helens Division. The representatives of the other side were supposed to be the parliamentary and official staff committee of the corporation, but it was noticeable that with one exception—and he had to leave almost immediately on account of illness—none were present except Labour members.

The meeting did not carry matters much farther. The deputation was asked what it had to propose, and replied that it was prepared to submit the matter to arbitration if the notices were withdrawn, but that until that was done it was not prepared to offer anything. The corporation's representatives, though they admitted that they were anxious to find a way out and did not wish to get rid of their officers, were not prepared to recommend the borough council to withdraw the notices. They, however, went so far as to pass a resolution in favour of the notices being suspended for a month in the hope of some arrangement being reached. This was reported to the council next day, when the same curious abstention of the other members of the council was noticed, the resolution being carried unanimously by the Labour members only. The members of the corporation who met the deputation very much resented the suggestion that their action savoured of the introduction of politics into the municipal services, but it is difficult to draw any other conclusion from the facts above stated. Municipal officers cannot be expected to do their duty efficiently and in comfort if they have any suspicion that the St. Helens methods are likely to be adopted. Further developments will be watched with interest, and in the meantime the officers are solidly united against the injustice which has been inflicted on them and have been assured of the full support of the associations to which they belong.

Hindley Urban District Council—Appointment of M.O.H. and School Medical Officer.

In September last the Hindley Urban District Council submitted an advertisement for a whole-time medical officer of health, offering a basic salary of £500 per annum *plus* a bonus which for the time being would bring the total remuneration to £703. The local Division took the matter into consideration and decided that the advertisement ought not to be accepted, on the grounds that a reduction of bonus, which might be expected shortly, would bring the salary below the British Medical Association's present minimum. The Division pointed out to the urban district council that in its opinion a commencing basic salary of £700 should be offered free of all expenses. The advertisement was published in the lay press, but the authority was unable to make an appointment. The district council has now submitted an advertisement for insertion in the *Lancet* offering a salary of £700 per annum. There is now no reason why members of the Association should not apply for the post, and the "Important Notice" has been withdrawn. The Hindley Urban District Council is to be congratulated on the action it has taken, which should enable it to obtain a sufficiently wide choice of officers experienced in public health work.

The Medical Secretary's Circular: A Correction.

The Medical Secretary asks us to state that in his *Monthly Circular* of December, 1922, his readers were referred in page 3, under the heading "Secretarial Enterprise," to the SUPPLEMENT of "September 9th" for a Current Note describing a British Medical Association Calendar recently issued by the City Division. The reference should have been to the SUPPLEMENT of *December 9th, page 209.*

Association Notices.

PROPOSED CHANGE OF AREAS OF BARNSLEY, AND WAKEFIELD, PONTEFRACT AND CASTLEFORD DIVISIONS.

NOTICE is hereby given by the Council to all concerned of the following proposal made by the Barnsley, and Wakefield, Pontefract and Castleford Divisions of the Yorkshire Branch:

> That the Civil Parishes of Hemsworth, South Elmsall, and South Kirby, all in the Hemsworth Rural District, be transferred from the Barnsley Division to the Wakefield, Pontefract and Castleford Division.

The matter will be determined in due course by the Council. Any member affected by the proposed change and objecting thereto, is requested to write, giving reasons therefor, to the Medical Secretary, 429, Strand, London, W.C.2, not later than January 16th, 1923.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH.—Ordinary meetings of the Branch will be held on the following Thursdays: January 18th, February 15th, and March 15th, 1923. The following members have promised to read papers: Sir Gilbert Barling, Mr. Douglas Stanley, Mr. Furneaux Jordan, and Mr. Seymour Barling. Members are reminded that they are entitled to bring cases and specimens to the meetings for demonstration and discussion.

LANCASHIRE AND CHESHIRE BRANCH.—A clinical meeting of the Lancashire and Cheshire Branch will be held at Preston Royal Infirmary on Thursday, January 11th, 1923. Clinical cases and pathological specimens will be exhibited and discussed and short papers read. A committee will shortly meet to draw up the programme, and members wishing to contribute should communicate as early as possible with the Secretary of the Preston Division (Dr. Walter Sykes, 31, Winckley Square), or with the Branch Secretary, Mr. F. Strong Heaney, 72, Rodney Street, Liverpool.

METROPOLITAN COUNTIES BRANCH: LEWISHAM DIVISION.—A meeting of the Lewisham Division will be held on Tuesday, December 19th, at 8.45 p.m., at St. George's Parish Hall Annexe, Carholme Road, Forest Hill, S.E.23, when Dr. T. E. White will occupy the chair. Agenda: Address on "Haematuria," by Kenneth M. Walker, F.R.C.S., Honorary Surgeon, Miller Hospital, Greenwich. Consideration of report on hospital policy of Association and on notification of venereal diseases (SUPPLEMENT, November 18th).

METROPOLITAN COUNTIES BRANCH: WILLESDEN DIVISION.—At the meeting of the Willesden Division, to be held at the Edinburgh House Club, Shoot-up Hill, N.W., on Wednesday, December 20th, at 9 p.m., Dr. Haldin D. Davis will give a lantern lecture on "Some points in the diagnosis and treatment of common skin diseases." Members may dine at 7.30 p.m. (3s. 6d.) on notifying stewardess before 11 a.m. (telephone, Hampstead 357).

MIDLAND BRANCH: KESTEVEN DIVISION.—A meeting of the Kesteven Division will be held on Tuesday, December 19th, at 3 p.m., at the house of the Honorary Secretary, Vine House, Grantham. Business: To discuss the reports on (1) hospital policy of Association, (2) notification of venereal diseases (see SUPPLEMENT for November 18th). To nominate Chairman and officers for the ensuing year, subject to confirmation at the next annual meeting.

NORTH WALES BRANCH: SOUTH CARNARVON AND MERIONETH DIVISION.—A meeting of the South Carnarvon and Merioneth Division will be held at the Corsygedoe Hotel, Barmouth, on Thursday, December 21st, at 1 p.m., to consider (1) the hospital policy of the Association, (2) the notification of venereal diseases (SUPPLEMENT, November 18th). A paper will be contributed on "Maternal and infant mortality."

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—The following meetings of the Buckinghamshire Division have been arranged for the coming session. Extra meetings will be held should the necessity arise. January 26th, 1923, at the Crown Hotel, Aylesbury: General business and election of Representative. March 30th, at the Crown Hotel, Aylesbury: General business. May 16th, at the Royal Bucks Hospital, Aylesbury: Clinical address on a surgical subject, to be announced later. June 30th, at the Crown Hotel, Aylesbury: Annual general meeting. The Local Medical and Panel Committee meets on the last Friday in the month. A member having any difficulty regarding insurance practice which he wishes to bring forward should communicate it to a member of the committee.

SURREY BRANCH: CROYDON DIVISION.—A general meeting of the Croydon Division will be held at the Croydon General Hospital on Tuesday, December 19th, at 8 p.m. Agenda: Reports on (1) hospital policy of Association, and (2) notification of venereal diseases (SUPPLEMENT, November 18th). To receive and adopt the report of the Executive Committee of the Division as to the question of the appointment of M.O.H. to the county borough of Croydon. To discuss and vote upon the following resolution:

> That, in the opinion of the Croydon Division, no medical practitioner within the Division should hold the appointment of M.O.H. to the county borough of Croydon at a lower rate of remuneration than £1,500 per annum, exclusive of travelling and other official expenses.

Papers by members of the Croydon Hospital staff.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the University on Friday evening, February 2nd, 1923, when Dr. J. W. Ballantyne (Edinburgh) will deliver a British Medical Association lecture on "The problem of the newborn infant."

Meetings of Branches and Divisions.

BIRMINGHAM BRANCH: BROMSGROVE AND DUDLEY DIVISONS.

A JOINT meeting of the Bromsgrove and Dudley Divisons was held at the Golden Cross, Bromsgrove, on November 30th, when Dr. BODGER, chairman of the Bromsgrove Division, presided.

A very instructive and interesting British Medical Association lecture was delivered by Sir FREDERICK MOTT, K.B.E., F.R.S., on mental hygiene. The lecture was followed by a discussion in which Dr. LYON SMITH (Inkberrow), Dr. HAWKINS (Barnt Green), and Dr. EADY (Evesham) took part, and a warm vote of thanks was accorded to the lecturer.

LANCASHIRE AND CHESHIRE BRANCH: ROCHDALE DIVISION.

A JOINT meeting of the Rochdale Division and the Rochdale and District Medical Society was held in the Town Hall, Rochdale, on November 29th, when Dr. BATEMAN, chairman of the Division, presided.

Dr. JEFFERSON, chairman of the Panel and Medical Committee, made a presentation of a handsome solid silver tea service to Dr. Melvin on his retirement from the secretaryship of the Panel Committee and also for his services as secretary of the Rochdale Division. He spoke of Dr. Melvin's work as secretary and regretted the cause of his retirement. Dr. LORD (the first chairman) also spoke, and Dr. BATEMAN referred to Dr. Melvin's work as secretary of the Division. Dr. MELVIN, in reply, thanked those present for their appreciation of his services.

Dr. DUNCAN, Medical Referee for Rochdale district under the National Insurance Act, then spoke on "Some of the difficulties in the administration of the Insurance Act." He said medical referees were called for by the profession itself; they had been in existence for over two years, and their work kept growing and part-time men had to be called in. All doctors desired to get their patients well as soon as possible, but the approved societies asked if patients were really as bad as the medical practitioner said. He had 100 cases to see every week so had not had time to call and examine cards. Form R.M. 9 went to the society and R.M. 10 to the practitioner. If the patient was not able to travel the practitioner must say so, but domiciliary visits should be avoided as far as possible. The practitioner had a right to be present at the examination, and his presence was very helpful because in this way he and the referee could discuss the case together. Dr. Duncan pointed out that the referee's duty was advisory; the societies could act on his advice as they thought best; but if it was adverse to the patient they had a right to appeal, and if the doctor was called to give evidence on the patient's behalf, he received £2 2s. and first-class railway fare. Lastly, Dr. Duncan urged insurance practitioners not to neglect their record cards, for the amount of their grant would probably depend upon the amount of work done.

Questions were asked by Drs. BATEMAN, LORD, COX, RAMSBOTTOM, GEDDES, and CARSE. On the motion of Dr. RICHMOND, seconded by Dr. HITCHON, a vote of thanks was accorded to Dr. DUNCAN, who replied.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.

THE annual dinner of the City Division was held in the Abercorn Rooms, Great Eastern Hotel, on November 30th, under the chairmanship of Dr. H. L. HANDS. Ninety-four members and guests sat down to an excellent dinner, and enjoyed a very pleasant evening.

The toast of "The King," proposed by the CHAIRMAN, having been duly honoured, that of "The Health of the Association" was proposed in a humorous speech by the RECTOR OF SOUTH HACKNEY and responded to by Mr. BISHOP HARMAN, President of the Metropolitan Counties Branch. Dr. CUTHBERT DIXON, in proposing the health of the guests, said how indebted the members of the Division were to them for the educational delicacies they had given them in the past year; they were trying that night to show how much they appreciated what had been done for the Division.

The guests included Mr. A. W. Sheen, Professor of Surgery, Cardiff University; Mr. R. C. Elmslie, Dr. James Collier, Mr. W. E. Miles, Mr. Loughborough, Dr. Mackenzie Wallis, Dr. Shaw, Dr. Parry (honorary secretary of the Brighton Division), and Dr. Batty Shaw. Mr. A. W. SHEEN replied on behalf of the visitors.

The toast of "The Ladies," proposed by Dr. T. H. G. SHORE in a short and humorous speech, was acknowledged by Dr. DAVID ROSS. The health of the chairman was proposed by Dr. FRANKEL, who dwelt on the genial and efficient manner in which Dr. Hands carried out his duties as chairman of a Division in which many of the members had diverse opinions and were not afraid to express them. The toast was drunk with musical honours. Dr. HANDS briefly replied, calling attention to the pleasure it gave him to see so many members and distinguished guests present.

The evening terminated with a vote of thanks to the secretary and his wife, and to the entertainers who enlivened the evening.

GENERAL COUNCIL
OF
MEDICAL EDUCATION AND REGISTRATION.

WINTER SESSION, 1922.

Sir Donald MacAlister, K.C.B., President, in the chair.

Final Midwifery Examinations.

Dr. Norman Walker, in submitting to the Council the report of the Examination Committee, said that the principal matter with which the Committee had been occupied was the Final Examinations in Midwifery at London and Cambridge. Further reports on these examinations had been received from the inspector (Sir William Smyly). With regard to London, the inspector found that very considerable improvements had been made since his previous inspection. A longer period of time was allowed for the examination, and two examiners participated in the oral examination of every candidate. The inspector, however, was still dissatisfied with the allocation of marks as between the written and oral parts of the examination and with the absence of a clinical examination. The reply of the Senate to the first objection was that as candidates must pass both written and oral parts of the examination independently, the point was not of serious importance. Dr. Norman Walker agreed that, however hard this arrangement might be from the candidate's point of view, it certainly involved no lowering of the standard. The answer of the Senate to the second objection was that, owing to the number of candidates, it was impossible to hold a clinical examination in London, but that the University now required, in place of such an examination, an additional certificate of "adequate clinical training in midwifery and diseases of women." In view of the considerable improvements which had been instituted the Committee felt that no further action need be taken at present, although, in the absence of a clinical test, the inspector could not yet report the examination as "sufficient." With regard to Cambridge the Committee had understood, on asking Sir William Smyly to make a reinspection, that certain changes which the Council desired had been to a certain extent accepted; but when the inspector paid his visit he found that these changes had not in fact become operative. Candidates were still being examined in the presence of one examiner only; the proportion of marks allotted to the written and to the oral examinations gave too much importance to the former; and there was no clinical examination. The explanation of the authorities was that it was thought advisable to defer the new regulations until the appointment of new examiners, which was now taking place, and that a reallocation of marks giving equal value to the written and to the oral and practical examinations would be part of the new arrangements. With regard to a clinical examination the difficulties of this in the case of Cambridge were insisted upon. Dr. Walker thought that in this last requirement it would be well for the Council to proceed slowly and not to expect any miracles to happen, but the number of bodies which had at first declared a clinical examination to be impossible was diminishing. The word "impossible" was too strong. Every six months it was reported to the Committee that one body or another had found it no longer impossible, though if there was any school in which such a plea might be urged with some reason it was the school in a small town like Cambridge.

Professor Hopkins, speaking for Cambridge, said that he was very anxious to assure the Council that serious consideration had been given to all its recommendations, and the fact that the necessary alterations were not made earlier was, he thought, to be regretted. The medical board had given very anxious consideration to the possibility of instituting a clinical examination at Cambridge, but if it finally decided that this was impossible its decision was not due to any want of respect for the Council.

Dr. Magennis, speaking on a reference in the report to the fact that the tables of exemptions from and results of examinations which the Apothecaries' Hall of Ireland was requested to continue to furnish had not been received since March, 1920, said that he had received a telegram stating that events in Dublin had delayed the dispatch, but that the returns would be sent as soon as possible.

The President said that the Council fully appreciated the local difficulties.

It was agreed that another visitation of the examination in midwifery at Cambridge should be made at an early date, and that another request for returns should be made to the Apothecaries' Hall, Dublin.

The Diploma in Public Health.

Sir John Moore introduced the report of the Public Health Committee, which was concerned only with certain inquiries regarding the interpretation of the new resolutions and rules for diplomas in public health. In reply to an inquiry from India, the Committee had stated that there was no intention on the part of the Council to make it compulsory for an examining body to demand from candidates certificates in regard to any particular work undertaken apart from study for the Diploma in Public Health, and that it was left to the examining body to make such regulations in this matter as it thought fit.

Education and Students' Registration.

Dr. Mackay, Chairman of the Education Committee, said that he had no report of any importance to make on that occasion. The business transacted by the Committee since the last meeting of the Council had been of a routine nature, and there was nothing in it which called for special mention. He went on to move the report of the Students' Registration Committee, which contained particulars of certain applications for exceptional registration as students or for the antedating of the commencement of professional study. In view of the fact that the Education Committee, under the new regulations of the Council, had to take into consideration the qualifications necessary for the student, it was felt that these and all the duties of the Students' Registration Committee might properly be transferred to the Education Committee, and the Students' Registration Committee cease to exist.

The President said that the Students' Registration Committee had had three functions—the antedating of the commencement of professional study, the approval of recognized secondary schools and teaching institutions, and the occasional recognition of colonial and foreign qualifications. The second of these duties was now relegated to the licensing bodies, and the third, under the new rules, to the Education Committee, and therefore it seemed that the remaining function of the Students' Registration Committee might properly be transferred also to the Education Committee.

A motion to this effect was agreed to.

Elections.

Sir James Hodsdon moved the election of Sir George Newman as a treasurer of the Council in the place of Sir Norman Moore. He paid a tribute to the late treasurer, whose work in various capacities for the Council was so highly esteemed. Sir John Moore seconded, and Sir George Newman was unanimously elected. Sir George Newman was also elected a member of the Executive Committee, Dr. Griffith a member of the Education Committee, and Mr. Leathes and Sir Leslie Mackenzie members of the Public Health Committee.

(To be concluded.)

Naval and Military Appointments.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Lieutenant F. P. Nicholson has been promoted to the rank of Surgeon Lieutenant Commander and attached to the Tyne Division.

ROYAL ARMY MEDICAL CORPS.

Major-General O. E. P. Lloyd, V.C., C.B., retired pay, is appointed Colonel Commandant, vice Major-General Sir G. D. Bourke, K.C.M.G., C.B., retired pay.

Major J. H. Graham, half-pay list, late R.A.M.C., is placed on retired pay on account of ill health contracted on active service.

The following officers retire on retired pay: Lieut.-Colonel H. Simson, O.B.E., Major A. H. McN. Mitchell.

TERRITORIAL ARMY.

Major E. H. Marshall, D.S.O., from R.F.A. (T.A.), to be Major, with pay and allowances of Captain.

Captain R. C. Aitchison, R.A.M.C., to be Adjutant, 52nd (Lowland) Division, R.A.M.C. (T.A.) and School of Instruction, vice Major J. R. Hill, R.A.M.C.

Captain (acting Major) R. W. Swayne, O.B.E., relinquishes the acting rank of Major.

The following officers having attained the age limit are retired and retain their rank except where otherwise stated: Lieut.-Colonels A. B. S. Stewart, O.B.E., T.D., C. E. Humphreys, W. P. Peake, T.D., and A. P. Swanson, T.D., and Majors J. Livingstone, T.D., F. W. Squair, T.D., R. L. FitzGerald, E. Solly, T.D., and H. J. Taylor, each with permission to wear the prescribed uniform. Major A. Milne-Thomson, C.M.G., and is

granted the rank of Colonel; Majors, and are granted the rank of Lieutenant Colonel, R. T. Hughes, A. R. Henchley, D.S.O., M.C.; Majors E. Knight, R. A. Draper; Captain J. H. Thomas, D.S.O., and is granted the rank of Lieutenant-Colonel; Captains, and are granted the rank of Major, J. Mcfi. Macfarlane, M.C., T. J. Wright, W. Redpath, F. W. Lewis; Captains E. C. Hobbs, November 9th, 1922 (substituted for notification in the *London Gazette* of November 10th, 1922), F. W. Brunker, M.C., C. R. Crowther, J. J. C. Hamilton, D. D. McNeill, H. C. Bevan, J. W. Malim, G. G. P. Chapman, M. Dixon, F. S. Walker, A. J. Presslie, T. W. Leighton, O.B.E.

The following officers resign their commissions and retain their rank except where otherwise stated: Lieut.-Colonel E. L. Gowland, D.S.O., Major E. D. Gairdner, D.S.O., T.D., with permission to wear the prescribed uniform, Captain C. W. T. Baldwin, and is granted the rank of Major, Captain A. A. Turner, M.C., Lieutenants O. G. Misquith, C. G. Teall.

J. H. Mellotte to be Lieutenant.

Sanitary Company.—Captain S. R. O. Dudfield, O.B.E., having attained the age limit is retired and retains the rank of Captain.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonels from General List, to be Lieut.-Colonels, A. G. Hamilton, O.B.E., T.D., S. G. Barling, C.M.G.

Captain H. J. Dunbar, O.B.E., from General List, R.A.M.C.(T.A.), to be Major.

VACANCIES.

ASCOT: HEATHERWOOD ORTHOPAEDIC HOSPITAL FOR CHILDREN.—Resident Medical Superintendent. Salary, £850 per annum.

BOURNEMOUTH: ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Resident House-Surgeon. Salary, £150 per annum.

BRADFORD: MUNICIPAL GENERAL HOSPITAL, St. Luke's.—(1) Senior House-Surgeon. (2) Junior House-Surgeon. (3) Junior House-Physician. Salary for (1) £250, and for (2) and (3) £200 per annum.

CARDIFF: KING EDWARD VII HOSPITAL, Surgical Unit.—House-Surgeon (male). Salary, £150 per annum.

CEYLON MEDICAL COLLEGE.—Professor of Physiology and Registrar. Salary, £800 per annum.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House-Surgeon (male). Salary, £200 per annum.

EXETER: ROYAL DEVON AND EXETER HOSPITAL.—Medical Officer in Charge of Venereal Clinic. Salary, £100 per annum.

GREENWICH: DREADNOUGHT HOSPITAL.—Surgeon for Diseases of the Throat, Nose, and Ear.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Resident Medical Officer.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Assistant Physician.

ILFORD URBAN DISTRICT COUNCIL.—Woman Assistant Medical Officer of Health. Salary, £500 per annum, rising to £600.

KINGSTON-UPON-HULL CITY AND COUNTY.—Resident Tuberculosis Officer (male and unmarried) for the Hull Tuberculosis Sanatorium, Cottingham. Salary, £550 per annum.

LLANELLY BOROUGH.—Assistant Medical Officer of Health and Assistant Schools Medical Officer (lady). Salary, £500 per annum, increasing to £600.

LONDON COUNTY COUNCIL.—Assistant Medical Officer in the Mental Hospital Service. Salary, £300 per annum, rising to £400 *plus* temporary fluctuating additions.

MALAYA.—Medical Officers in the Government Service of the Straits Settlements and Malay States. Pensionable salary equivalent to £616, rising to £1,120 per annum.

NATAL: CORPORATION OF DURBAN.—Medical Officer of Health. Salary, £1,500 per annum, rising to £1,700.

NORWICH: NORFOLK AND NORWICH HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Resident Casualty Officer (male). Salary, £250 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Clinical Assistants.

RICHMOND, Surrey: ROYAL HOSPITAL.—House-Surgeon (male). Salary, £150 per annum.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, Great Portland Street, W.—Two Resident House-Surgeons. Salary, £150 per annum.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Road, S.E.1.—(1) Honorary Surgeon to the Ear, Nose and Throat Department. (2) Honorary Physician in charge of Out-patients. (3) Casualty Officer; salary at the rate of £150 per annum.

ST. GEORGE'S HOSPITAL, S.W.1.—(1) House-Physician; salary at the rate of £50 per annum. (2) Resident Anaesthetist; salary, £100 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House-Surgeon. Salary, £120 per annum.

SALOP EDUCATION AUTHORITY.—School Dentist. Salary, £500 per annum, rising to £650.

UNION OF SOUTH AFRICA.—Medical Officer for Durban Suburbs. Salary, £800 per annum, increasing to £900.

WESTMINSTER HOSPITAL, S.W.1.—(1) Assistant House-Physician. (2) Assistant House-Surgeon. Honorarium at the rate of £52 per annum each.

WOMAN'S ROYAL VOLUNTARY EDWARD INFIRMARY.—Junior House-Surgeon (male). Salary £100 per annum.

CERTIFYING FACTORY SURGEONS.—The following vacant appointments are announced: Topsham (co. Devon), Ulceby (co. Lincoln).

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

BRANDER, Miss Eileen, M.B., Ch.B.Edin., Assistant Resident Medical Officer at the Bermondsey Medical Mission, 44, Grange Road, Bermondsey.

HEBB, Enid M., M.B., Ch.B.Edin., Junior House-Surgeon, Darlington General Hospital.

JOHNSTON, Graham S., M.D., D.P.H., Chief Tuberculosis Officer for the County Council of the West Riding of Yorkshire.

MORGAN, Oswald Gayer, M.Ch.Camb., F.R.C.S., Assistant Surgeon to the Royal Westminster Ophthalmic Hospital.

CERTIFYING FACTORY SURGEONS.—R. I. C. Rodgers, M.R.C.S., L.R.C.P. (Burnley North District, co. Lancaster), A. O. English, M.B., B.S.Lond. (Meriden District, co. Warwick).

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY (Telegrams: Mediseera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (5 lines).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 4757 Dublin.)

Diary of the Association.

DECEMBER.

19 Tues. London: Insanity and Crime Subcommittee, 2.30 p.m.
Croydon Division, Croydon General Hospital, 8 p.m.
Kesteven Division, Vine House, Grantham, 5 p.m.
Lewisham Division, St. George's Parish Hall Annexe, Carholme Road, Forest Hill, 8.45 p.m.

20 Wed. London: Dominions Executive Subcommittee, 3.30 p.m.
Willesden Division, Edinburgh House Club, Shoot-up Hill, N.W., 9 p.m.:—Dr. Haldin D. Davis: Some Points in the Diagnosis and Treatment of Common Skin Diseases (with lantern illustrations).

21 Thurs. South Carnarvon and Merioneth Division, Corsygedoe Hotel, Barmouth, 1 p.m.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE.—General Meeting of Fellows, Tues., 5 p.m., Ballot for Fellowship. *Section of History of Medicine:* Wed., 5 p.m., Dr. J. A. Nixon: The Debt of Medicine to the Fine Arts. *Section of Dermatology:* Thurs., 4.30 p.m., Cases.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos Street, W.1.—Thurs., 8.15 p.m., Lieut.-Colonel Clayton Lane, M.D., I.M.S. (ret.): The Mass Diagnosis of Ankylostome Infestation. Part I. (Preceded at 7.45 by a demonstration of methods.) Dr. Chas. F. Harford: Some Psychical Aspects of the Sequelae of Malaria and Dysentery and their Treatment by Auto-suggestion.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester Square, W.C.2.—Tues., 4.30 p.m., Pathological Specimens, Cases sent for Consultation. 4.45 p.m., Clinical Meeting, chiefly cases of "Lichen Planus."

POST-GRADUATE COURSES AND LECTURES.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—At Royal Infirmary, Wed., 4.15 p.m., Dr. J. F. Smith: Skin Cases. At Royal Hospital for Sick Children, Thurs., 4.15 p.m., Dr. Findlay: The Mother and the Newborn Infant.

MANCHESTER ROYAL INFIRMARY.—Tues., 4.15 p.m., Mr. C. Roberts: Acute Appendicitis and its Complications.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.—Mon., 5.30 p.m., Dr. A. J. Whiting: Pulsus Alternans and Heart-block. Tues., 4.30 p.m., Mr. C. H. Hayton: Intracranial Abscess of Otitic Origin (with Cases). Daily: Operations, Clinics in the various Departments, etc.

NORTH OF ENGLAND BRANCH, BRITISH MEDICAL ASSOCIATION, Royal Victoria Infirmary, Newcastle-upon-Tyne.—Thurs., 2.15–2.45 p.m., Professor W. E. Hume, C.M.G.: Heart Failure. 2.45–3.15 p.m., Dr. J. Don: Intralaryngeal Disease. 3.15–3.45 p.m., Dr. H. E. Hamilton: Erlangen Method of Deep Radiotherapy. 3.45–4 p.m., Tea. 4.0–4.30 p.m., Mr. A. E. Morison: Common Injuries and Infections of the Hand. 4.30–5 p.m., Dr. D. Wells Patterson: Estimation of Renal Efficiency.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley Road, Balham.—Tues., 4.30 p.m., Dr. Hector Cameron: Demonstration of Cases.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.—Tues., 4.30 p.m., Dr. R. Prentice: Poliomyelitis. Fri., 1.30 p.m., Dr. H. Carlill: Tabes Dorsalis.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 0s., *which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

GROGONO.—On December 9th, at Helions House, Haverhill, Suffolk, to Florence Muriel ("Sissie," *née* Steele), wife of Jonathan Grogono, M.R.C.S., L.R.C.P., twin sons.

WEBSTER.—At Poona, on October 20th, 1922, the wife of Captain W. J. Webster, I.M.S., of a son.

MARRIAGE.

LEWIS—HATCHER.—On December 7th, at Broadmead Baptist Chapel, Bristol, by the Rev. J. Nicholas, London, assisted by the Rev. Charles Davies, Cardiff, Rhys T. Lewis, M.B., B.S.Lond., eldest son of Mr. and Mrs. J. Lloyd Lewis, Rhoslunog, Pwm., to Edith Catharine, second daughter of the late Mr. Robert Hatcher of Taunton and Mrs. E. N. Hatcher, The Laurels, 13, Belvoir Road, Bristol.

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SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 23RD, 1922.

CONTENTS.

BRITISH MEDICAL ASSOCIATION. PAGE

PROCEEDINGS OF COUNCIL 222
CURRENT NOTES:
Classified Directories 221
Insurance Act: Canvassing 221
Prescribing of Thyroid Extract by Insurance Practitioners 221
The Atlantic Assurance Company and its Fees 221
A New Inquisition for Insurance Practitioners 221
INSURANCE ACTS COMMITTEE: Report of Meeting ... 230
MEETINGS OF BRANCHES AND DIVISIONS 226
ASSOCIATION NOTICES 227
ASSOCIATION INTELLIGENCE AND DIARY 232

General Medical Council: PAGE
Dental Education and Examination Committee 228
Dental Warning Notice 228
Disciplinary Inquiries 229
NEWCASTLE DOCTORS' HOLIDAY SCHEME 229
CORRESPONDENCE 229
INSURANCE NOTES:
London Panel and Insurance Committees 231
Leicestershire Insurance Committee 231
NAVAL AND MILITARY APPOINTMENTS 232
VACANCIES 232
BIRTHS, MARRIAGES, AND DEATHS 232

British Medical Association.

CURRENT NOTES.

Classified Directories.

THE Medical Department is still receiving inquiries from doctors in London as to the position of the British Medical Association in regard to the publication by the Grafton Publishing Company, 33, Chancery Lane, of a directory entitled "London Doctors and Dental Surgeons." It may save correspondence to direct attention to the Current Note under the above heading which appeared in the SUPPLEMENT of December 9th (p. 209.) This was to the effect that the assurances given by the Grafton Publishing Company had removed the objections of the Association.

Insurance Act: Canvassing.

At the October Conference of Representatives of Local Medical and Panel Committees, during the discussion of the new Regulations permitting an insured person to change his doctor during the month of June or December merely by getting his medical card signed by the new doctor of his choice, attention was drawn to the possibility of canvassing for transfers of insured persons either through or on behalf of any practitioner or society. It appears to the Insurance Acts Committee that there are two classes of cases involved in this question—namely, (1) that in which insured persons' cards are collected by some interested body and presented to some one or more selected doctors for signature, and (2) that in which the cards are collected by or on direct behalf of a practitioner himself. With respect to the first class, the Committee is prepared to call the attention of the Ministry of Health to any case, evidence as to which is forwarded to it by any Panel Committee. Cases coming within the second class are matters for action either by the British Medical Association or by one of the medical defence societies and the General Medical Council. Evidence of canvassing by or on behalf of any insurance practitioner, on being forwarded to the Insurance Acts Committee, will be considered with a view to suitable action being taken, and it is hoped that Panel Committees will take prompt action in any such cases.

Prescribing of Thyroid Extract by Insurance Practitioners.

It is understood that difficulty is sometimes experienced in the matter of dispensing prescriptions for thyroid gland for insured persons. The official preparations are:

(*a*) *Thyroideum siccum*, a dried concentrated powder equal approximately to five times the strength of the fresh gland. Of this the official dose is 1/2 to 4 grains, the practical dose often being much smaller than this.

(*b*) *Liquor thyroidei*, a solution prepared from the fresh gland, 100 minims representing one entire gland. This should be freshly prepared for use, and the official dose is 5 to 15 minims, the practical dose again being frequently smaller.

There are a large number of thyroid gland tablets on the market, and the dose of most of them is expressed as so many grains of thyroid "gland"; many purport to be made of the fresh gland. It would be an advantage if insurance practitioners, in prescribing thyroid gland or its preparations, would designate exactly the preparation and dose they wish to be given, and in the case of tablets would indicate whether the dried or fresh gland is intended to be dispensed.

The Atlantic Assurance Company and its Fees.

A member of the Association has drawn attention to the fact that the Atlantic Assurance Company only pays a fee of 10s. 6d. for examinations for life insurance for amounts up to £300. The company is not a signatory to the agreement between the British Medical Association and the Life Offices Association. The company's attention has been called to the agreement with the other companies, which is now almost universally recognized, and the hope has been expressed that they would see their way to granting the same terms. The Managing Director, in reply, states that he has not experienced any difficulty in having small cases examined for a fee of 10s. 6d.; that there is a growing practice to dispense with medical examination where the sum assured is small, and that this may have some relation to the negotiations for a minimum fee of a guinea; and that his company has not adopted this practice, preferring that the medical examination should be made, although in some cases by the time even a fee of 10s. 6d. and other expenses have been met the company is but a few shillings in hand to carry a £100 risk. In estimating the value of these arguments it should be remembered that the Life Offices Association agreed to a fee of £1 1s. for ordinary offices whatever the amount of the policy, and that the companies comprised in that association are prosperous bodies which are not likely to pay any fee for which value is not received.

A New Inquisition for Insurance Practitioners.

Insurance practitioners have grown accustomed to being asked by the agents of approved societies to alter the dates of certificates or to give reasons for a diagnosis, but an incident which has come to our knowledge seems to suggest that the resources of civilization in that direction are not yet exhausted. An insurance practitioner recently received a letter to the following effect:

"Dear Sir,

"The . . . [members of a religious body] having heard that Miss . . . of . . . has been taken off the panel, would be obliged by your kindly informing them the reason, as she is still quite unfit to go to work."

PROCEEDINGS OF COUNCIL.

Wednesday, December 13th, 1922.

A MEETING of the Council was held at the offices of the Association on Wednesday, December 13th. Dr. R. A. BOLAM (Chairman of Council) presided, and the others present were:

Dr. R. Wallace Henry (Chairman of Representative Body), Dr. G. E. Haslip (Treasurer), Professor David Drummond (Past President), Dr. G. A. Allan, Dr. T. Ridley Bailey, Surgeon Rear-Admiral Sir Percy Bassett-Smith, Dr. H. S. Beadles, Dr. D. J. W. Bone, Dr. H. B. Brackenbury, Dr. H. C. Bristowe, Dr. C. Buttar, Dr. N. L. Clarke, the Right Hon. Lord Dawson of Penn, Dr. H. G. Dain, Dr. J. Don, Dr. C. E. Douglas, Mr. T. P. Dunhill, Mr. W. McAdam Eccles, Dr. C. F. S. Flemming, Dr. A. Forbes, Dr. E. R. Fothergill, Dr. T. W. H. Garstang, Dr. T. Duncan Greenlees, Mr. N. Bishop Harman, Dr. R. Langdon Down, Dr. E. K. Le Fleming, Dr. E. Lewys-Lloyd, Sir Richard Luce, Dr. A. Lyndon, Dr. J. A. Macdonald, Dr. S. Morton Mackenzie, Major-General Sir William G. Macpherson, Dr. A. Manknell, Dr. Hugh Miller, Dr. W. Paterson, Dr. R. C. Peacocke, Dr. C. M. Pearson, Dr. F. Radcliffe, Dr. D. A. Sheahan, Mr. H. S. Souttar, Dr. John Stevens, Dr. W. B. Crawford Treasure, Mr. E. B. Turner, and Dr. E. O. Turner.

Lieut.-Colonel H. Kirkpatrick, elected to fill the vacancy upon the Council in respect of the Indian group of Branches, and Dr. G. W. Miller, D.S.O., of Dundee, one of the Representatives elected by Branches in the United Kingdom, took their seats for the first time, and were welcomed by the Chairman.

Communications.

A communication from the general manager of the British Empire Exhibition, 1924, was read, desiring the Council to nominate a member of the Association to serve on the Committee for Tropical Diseases responsible for a section of the exhibition. In view of the absence from the committee as at present constituted of anyone with special knowledge of ophthalmology, the Council nominated Mr. Bishop Harman to represent the Association. The registrar of the University of Wales had invited the Chairman of Council, as required by the statute of the Advisory Board of Medicine of the University, to appoint one member to the Board; the chairman reported that he proposed to appoint Dr. Ewen Maclean, already a professor in the university, and the appointment was endorsed by the Council. Letters were read from the honorary secretary of the Bath Division, expressing the appreciation of his executive committee at the acceptance by the Council of the invitation to hold the Annual Meeting of 1925 at Bath, and from the town clerk of Bournemouth, regretting that the Association could not see its way to accept an invitation for 1925 or 1926, and saying that the invitation would be repeated later.

It was reported that the Southern Branch had resolved to offer the "Childe" Golf Cup (presented by the President-elect to the Branch) to the Association as a permanent gift for competition at Annual Meetings. Dr. Sheahan, who conveyed the President-elect's regret at his inability to be present, said that Mr. Childe fully concurred in the proposal. The Council thanked the Branch and the President-elect for a gift which would add to the amenities of the Annual Meeting.

Fees for Medical Examination of Migrants.

Mr. E. B. Turner, Chairman of the Medico-Political Committee, reported on a conference held between representatives of the Association, the Oversea Settlement Committee, and the Directors of Migration, with regard to the fees for the medical examination of prospective migrants. The fees previously approved by the Council were 10s. 6d. for each adult and 2s. 6d. for each child, not more than two children in one family to be charged for. The Oversea Settlement Committee, however, had since been urging an arrangement whereby migrants, at least from large cities, might be examined on a sessional basis. He and Sir Jenner Verrall with members of the secretariat had attended a conference, when it was urged upon them that a large proportion of the migrants were unemployed or very poor, and quite unable to afford a half-guinea fee. It was suggested, therefore, that the applicants should be gathered together at one time and place and examined on a sessional basis at a reduced fee. It appeared that the Australian Government—the one most concerned in the proposal—was prepared to guarantee a fee of 5s., which it would endeavour to recover from the migrant afterwards; other Dominions were prepared to support this proposal. The representatives of the Association gave no pledge whatever, and stated that they could not ask the Council to recommend the medical referees to accept a lower fee for individual medical examination, nor to accept a reduced fee on a sessional basis, but that the proposals would be duly reported. Mr. Turner added that the examination required was very thorough, and the form to be filled up was substantialy the same as that used in various large insurance bodies, when the fee was one guinea. The idea behind the sessional basis was that the migrants would be available in a group, and the authorities would provide supervision and clerical assistance. Various opinions were expressed during a brief discussion in the Council. One member pointed out that as it was the Dominion Governments which insisted upon the examination, and not the migrants, the Governments might afford a reasonable sum for such examination, more especially as in many cases they were assisting the migrant's passage. It was resolved that the Council did not see fit to take any further action at present.

The Working of the Dangerous Drugs Act.

Dr. Haslip suggested that the Medico-Political Committee should inquire into the working of the Regulations under the Dangerous Drugs Act. He believed that it was working not at all smoothly, and that the profession was not being treated properly in this matter by the Government. Mr. Harman supported this suggestion, and Mr. Turner willingly accepted the reference to his committee.

NAVAL AND MILITARY MATTERS.

Sir Richard Luce, Chairman of the Naval and Military Committee, proposed that it be recommended to the Representative Body that Major-General Sir W. G. Macpherson and Colonel Sir W. J. Buchanan be re-elected to represent on the Council the Army Medical Service and the Indian Medical Service respectively, and that Colonel C. B. Heald be elected to represent the Royal Air Force Medical Service, in view of the retirement of Colonel Barry. The Council approved these nominations, and agreed to invite Colonel Heald to attend the Council meetings during the interval before his election by the Representative Body.

The Committee reported that it had again considered the case of Senior Surgeon Commanders of the Royal Navy, as affected by the 1919 regulations, and that in view of the change of Government and of the fact that the new First Lord of the Admiralty (Mr. Amery) had shown himself rather sympathetic when the matter was previously broached, it had decided to reopen the matter once more with the Admiralty in the hope that the injustice sustained by the officers concerned might now be rectified.

Indian Medical Service.

Sir Richard Luce reported that a proposal had been brought forward by the India Office whereby a certain limited number of appointments to the Indian Medical Service would be offered on special terms. The special terms were that on completing five years' active service in India the officers might claim to retire on a gratuity of £1,000, and they would be eligible for free return passage for themselves and their families. The Association was asked by the India Office to bring this new recruitment favourably to the notice of possible candidates. His Committee raised no objection to the publication in the JOURNAL of advertisements of these posts, but before making any favourable pronouncement it awaited a promised reply by the India Office to a question which had been raised with regard to the status of the Director-General of the Indian Medical Service and the heads of the Civil Medical Service in the Provinces. Sir Richard Luce explained that certain promises made to the Association, although carried out in the letter, had not, according to the Committee's information, been carried out in the spirit. The Director-General and the Surgeons-General in the Provinces were allowed direct access to the Viceroy or the Governor, as the case might be, but the access was limited to one original interview, and no subsequent opportunity was given of meeting criticisms on, say, any proposals which they had put forward, or of elaborating any matter, before the final decision was promulgated. The India Office had promised a letter on the subject, and this the Committee was awaiting.

THE ORGANIZATION OF THE ASSOCIATION.

Conduct of Elections.

Dr. Morton Mackenzie, Chairman of the Organization Committee, brought forward certain proposals relating to the conduct of the central elections of the Association. These were in the form of recommendations to the Representative Body, some of them incorporating suggestions by Dr. Fothergill. Dr. Mackenzie said that, with one exception, none of these recommendations raised any new question of principle. The exceptional recommendation was that, on a convenient occasion, the by-law concerned should be amended to permit of any member of the Representative Body nominating and voting in the election of President, Chairman and Deputy Chairman of the Representative Body, and Treasurer. He explained that members of Council, unless they were also elected representatives, had no vote in the Representative Meeting, although they had a right to be there and to speak. His Committee considered that in these particular elections it was right that members of Council as well as elected representatives should have voting power. To

the suggestion that the same might apply to the elections of committees, he pointed out that on committees the Council could appoint certain members on its own initiative, so that there was no need for any further privilege in this respect. The objection to general participation by members of Council in the voting of the Representative Body was that many of the propositions came forward as recommendations from the Council, and it would not be right to weight them beforehand with forty or fifty votes. One member suggested that if members of Council were given the right to vote for the Chairman of the Representative Body, representatives might claim the right to vote for the Chairman of Council; to this Dr. Mackenzie replied that it was only members of Council who sat under the Chairman of Council, whereas not only representatives but members of Council sat under the Chairman of the Representative Body. One or two speeches were made in criticism of the proposal, on the ground that it was the representatives who really constituted the Representative Meeting, and that nothing should be done to reduce the importance of representatives; but in the result the recommendation to the Representative Body to give the members of Council voting power in these elections was agreed to. The other proposals were to amend the Standing Orders so as to put on a formal basis the decision already made by the Representative Meeting in favour of the transferable vote system; to rearrange on a more convenient plan the forms of nomination; to define the functions of the returning officer (the Medical Secretary); and to regulate the acknowledgement of nominations and the publication of elections. All these were approved.

The Position in South Africa.

Dr. Morton Mackenzie then made a statement on the position in South Africa, which was the subject of a leading article in the JOURNAL on November 25th. He recapitulated the history of the matter up to the meeting of the South African Medical Congress in Johannesburg last October. On that occasion a resolution was carried advising that the formation of a new association, to be affiliated with the British Medical Association, be deferred until a referendum of the Branches had been taken. The congress also decided, in view of the unsatisfactory nature of the previous referendum, to take another referendum of the whole of the practitioners in South Africa, to the result of which, if at least two-thirds voted, the whole profession would be expected to adhere. This general referendum was to be taken previously to the referendum to the Branches, and its result was expected to be known during the first half of December, when the Association referendum would take place. The time-table made it evident to the Organization Committee that it could not afford to wait until the present meeting of the Council before taking whatever action might seem necessary, and accordingly the Committee on its own responsibility sent out to all members of the Association in South Africa a circular letter, which was published in the SUPPLEMENT of November 25th. This letter intimated that the Committee could not recommend the Council to dissolve the existing Branches unless at least two-thirds of those Association members who voted in the Association referendum voted in favour of the new body, and unless there was also a simple majority of the members of each Branch in South Africa in favour of such a change. The Organization Committee felt that if one or more Branches in South Africa should in this referendum show a majority against such a change, even though all the others declared in its favour, it would be the duty of the Committee to recommend the Council to postpone decision until the profession in South Africa had arrived at something nearer unanimity. It had taken this course because it felt the necessity of doing everything that was possible to support the loyal members. The desire of the Council to retain the South African members as organized members of the one great Association was re-emphasized in the letter, though, of course, the Committee would adhere to the offer it had made.

Dr. Greenlees said that he feared the Council, in its desire to give perfect freedom, was rather helping South Africa to separate. He was convinced that there was at all events a very large minority in South Africa who desired to remain in the British Medical Association. The profession in South Africa was heading for a precipice, and the efforts of the Organization Committee appeared to be devoted to ensuring a comfortable descent instead of a violent one into the valley. Dr. Fothergill questioned the arrangement whereby, even if only one Branch showed a majority against the proposed change, the whole matter would be deferred. South Africa in area, he supposed, was roughly equal to Europe, and it would be a strange thing to make a decision affecting the whole continent depend upon a single contrary vote in an area the size, say, of Spain. After some further discussion the Council approved the circular letter which had been sent out, and the Chairman thanked Dr. Mackenzie in the name of the Council for his handling of the situation.

NATIONAL INSURANCE.

Dr. Brackenbury, in introducing the report of the Insurance Acts Committee, said that, although it contained no recommendation, it touched on several matters of importance. With regard to the transfer of practices, a satisfactory conclusion had been arrived at which preserved the right of the insured person to make a fresh choice of doctor, but extended the period of assignment to eighteen months after the transfer. During that time the purchaser of the practice would receive payment alike for those who had already transferred to his list, and those who, not having chosen another doctor, remained technically on the list of his predecessor, and it was expected that the number of insured persons who failed to exercise their choice during the period would be very small. In connexion with additional benefits and specialist services, the attention of the Committee had been drawn to the action of one of the approved societies which, in its opinion, contravened the ruling of the Ministry, that where any society used its surplus funds for direct provision of medical attendance and treatment it was acting against Section 14 of the 1911 Act, which states that additional benefits of the nature of medical benefit should be administered by Insurance Committees. The Ministry was being approached on this subject. Mr. Harman congratulated the Committee on its alertness with regard to this development, and hoped that it would pursue the matter very diligently.

Constitution of the Insurance Acts Committee.

Dr. Brackenbury further stated that on the question of co-operation between the Insurance Acts Committee and the Medical Practitioners' Union, the Committee had come to the conclusion that it could not carry this matter any farther so far as the proposal for some organic connexion between the two bodies was concerned. A report on the negotiations, with the whole of the correspondence which had taken place, formed a long appendix to the report of the Committee. One matter had arisen, however, which the Committee desired to further. This was the proposal of the recent conference of Local Medical and Panel Committees that the number of direct representatives of such committees on the Insurance Acts Committee should be increased. The present number was 19. It was very difficult to work out an equitable territorial representation, but if the total number of practitioners who had insurance lists were taken, a direct representation of 23 on the Committee would mean one representative to between 750 and 800 such practitioners. It was proposed to enlarge the direct representation somewhat on this basis, which would involve an increase of about four in the number of members. In reply to a question as to expenditure, he said that at the present time the expenses of certain meetings of the Committee (other than ordinary meetings, which were defrayed by the Association) and of the Conference were met out of the interest on moneys in the National Insurance Defence Fund. It was understood that the proposal to increase the number of direct representatives on the Committee would, after further consideration by the Insurance Acts Committee, go to the Organization Committee in order that the necessary slight alteration in the Schedule to the by-laws might be drafted.

ANNUAL MEETING ARRANGEMENTS.

Dr. Bolam, as Chairman of the Arrangements Committee, brought forward certain recommendations with regard to the programme and the Sections at the Annual Meeting. The proposals were to have five three-day Sections, eight two-day Sections, and four one-day Sections, and these were agreed to. A list of names of proposed sectional officers was also approved, and the Chairman of Council and President-elect were empowered to fill casual vacancies. A valuable memorandum by Dr. G. A. Allan, honorary local secretary at the Glasgow Meeting, had been considered by the Committee, and certain recommendations in consonance therewith were made. These concerned the functions of the Section secretaries, particularly the local secretaries, the relation of various officers to one another so as to facilitate business, and certain matters regarding the provision of hospitality. The suggestion, made by Mr. R. J. Willan last year and endorsed by Dr. Allan, that a permanent official should be appointed to be placed at the disposal of local committees and to act as liaison officer with the head office was deferred for later consideration; but in the meantime the honorary local secretary at Portsmouth was urged to supply himself with efficient administrative and clerical assistance in order that his own time and energies might be economized as much as possible.

APPOINTMENT OF HONORARY LIBRARIAN.

Mr. Souttar, Chairman of the Science Committee, in harmony with a suggestion previously made to the Council, brought forward a recommendation from his Committee to appoint Mr. Walter G. Spencer, O.B.E., M.S., F.R.C.S. (senior surgeon to the Westminster Hospital), as Honorary Librarian of the Association. The duties of the Honorary Librarian would be to exercise general supervision over the books in the library, and their cataloguing and storage, and to advise as to the new books which should be purchased, and the books or editions of books which might be eliminated. Mr. Spencer's appointment was unanimously agreed to.

THE BRITISH MEDICAL ASSOCIATION AND THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

The main discussion of the afternoon arose on the report of the conference between representatives of the Association and the Society of Medical Officers of Health with regard to co-operation between the two bodies and the formulation of a scale of minimum salaries for public health officers. The Chairman of Council, who had presided over the conference, said that he hoped the report, which was the result of five meetings between the two bodies during recent months, would be carefully studied, because it might lead to a very important departure in the work of the Association. Its acceptance would imply more than assent to certain lines of policy or to a scale of salaries; it would imply some rather novel changes in organization. The report consisted of three sections: the first of these formulated the policy agreed upon between the two bodies with regard to public health services, and the principles laid down were in accordance with the views already expressed by the Association; the second put forward a scale of minimum salaries for medical officers in the public health service; and the third examined tentatively a scheme for co-operation between the Association and the Society. All three, which were brought forward as recommendations to the Representative Body, hung together. The first section, formulating policy, should be regarded as an earnest o the desire of the two bodies concerned to work more closely together, and the other two sections as offering methods of cementing the alliance and making co-operation a normal process in the future.

Policy in regard to Public Health Medical Services.

The first section, on policy, was then considered. It was put forward in the form of ten clauses, on methods of securing closer co-operation between the local medical profession, and on the schemes of local authorities for medical survey or inspection and treatment. Where private practitioners placed their opinions before local authorities on any proposed scheme it was urged that their representations should have due consideration; also that those engaged in general practice must either be prepared to accept responsibility for the treatment of such of their private patients as were discovered by the local authority to be in need of treatment, or to agree that treatment be undertaken by the local authority without regarding such medical provision as an encroachment on their practice.

"To this end persons found to be in need of treatment should, in the first instance, be referred to their private medical practitioner, or, if they have no regular medical attendant, they should be advised to consult a private medical practitioner."

The purpose and manner of working of the clinics and centres for advice and treatment were also to some extent set out. The main discussion in the Council centred round Clause vii, which read:

"That payments or charges, if any, made in respect of medical treatment at centres or clinics established by local authorities should be either voluntary or of such a character as will not deter persons from seeking advice and obtaining early treatment."

Mr. Harman objected to what he called loopholes in the words "if any" and "either voluntary," but Dr. Brackenbury hoped that such criticisms would not be pressed; the provision, quoted already, whereby persons being in need of treatment were to be referred in the first place to a private practitioner, which was inserted at the instance of the Association representatives, must be taken to govern the whole plan of action. The Chairman also pleaded for acceptance of the document as it stood, without verbal amendment, unless it was felt that it contravened some principle. An amendment by Mr. Harman to leave out the words to which he had objected was lost, and an amendment by Dr. Fothergill to leave out the clause entirely found no seconder. The whole of this section of the report was then approved as a recommendation to the Representative Body.

Scale of Minimum Salaries.

The Chairman, in introducing the section which laid down a scale of minimum salaries for public health medical officers, said that this was again presented as an agreed report between the two bodies. There was a considerable difference between the scale now proposed and the one put forward at the Representative Meeting at Cambridge in 1920. Economic circumstances had made it evident that that former scale suggested by the Society was not one which at present could be successfully demanded. One matter which had given the conference a great deal of trouble was the salary and qualifications of officers employed in departments, working directly under a senior medical officer, and without responsibility for the work of other medical officers. At present the Association's minimum for such posts was £500 a year, and the representatives of the Association had great difficulty in agreeing to any increase upon that amount, in view of the fact that this was a commencing salary for junior officers. The representatives of the Society, however, pointed out that all progressive health authorities required evidence of considerable special experience in connexion with junior appointments, and that often such candidates had done work in various special hospitals in order to equip themselves for different branches of public health work. In these circumstances the conference agreed to recommend a minimum salary of £600 on the understanding that such medical officers would have had at least three years' experience in the practice of their profession subsequent to obtaining a registrable qualification. The other principal difference was in the scale of salaries of medical officers of health in relation to population. It was agreed between the two bodies that this should start at £800 for a population of under 35,000, £900 for a population of under 50,000, and so on up to £1,800 for a population of over 600,000. For resident medical officers employed in institutions the minimum salary was £350 together with emoluments; for senior medical officers in charge of departments £750, if without assistants, with increases on a scale according to the number of assistants; for deputy or chief assistant medical officers in institutions or departments 60 per cent. of the salary of the medical superintendent or senior medical officer in charge, but not less than the salary of a medical officer employed in the department; and for deputy or assistant medical officers of health 60 per cent. of the salary of the medical officer of health, but not less than the salary of the next grade of medical officer in the department. The operation of the scale was not to affect prejudicially any existing officer. The application of the current civil service bonus, and of an annual increment at the rate of 5 per cent. per annum up to 40 per cent. above the minimum basic rates were not put in the scale itself, but were appended as guiding principles which could be recommended to the authorities for adoption.

Some discussion took place on the salary of £600 for medical officers employed in departments. Dr. Langdon-Down asked whether it was to be taken as a definite understanding that newly qualified men should not be eligible for these posts. Dr. Brackenbury pointed out that the corollary to acceptance of this figure would be that the Association would not countenance the holding of these appointments by persons without at least the three years' experience required and would not accept advertisements except on those terms. Dr. Stevens moved the reference back of the whole section. He spoke of the peculiar difficulties in Scotland, where it was impossible at the present moment to obtain such a scale of salary in view of the great demand for public economy. Were the scale insisted upon, many men in Scotland might have to leave the Association, and newly qualified men would be deterred from entering. Dr. Douglas seconded the reference back, believing the present time inopportune for such drastic demands in emoluments. Several members of Council spoke in support of the scale, and the motion to refer back was lost. The recommendation to the Representative Body that it should approve the scale was then agreed to. The Chairman, in putting this motion, said that the whole of the public medical service was looking to the Association for genuine help. The atmosphere had changed remarkably during the last two years, and he hoped the Representative Body would in due course give a mandate for the carrying out of these provisions.

Co-operation between the Association and the Society of Medical Officers of Health.

The Chairman then moved the third recommendation in the report of the conference, which set forth a scheme of permanent co-operation between the Association and the Society of Medical Officers of Health. On the one side it was proposed that the Association should so alter its constitution as to allow of the direct representation of such of its members as were in the public health service on its various governing bodies, local and central, and on the other that the Society

of Medical Officers of Health should so alter its constitution as to allow of the Association being directly represented on the council of each branch and on the central council of the Society. It was further proposed that the Society should continue to formulate and urge any medico-political policy that it wished, and where such policy was of mutual concern to the Society and the Association the Society should present that policy to the Association through its direct representatives. When any medico-political matter had been finally determined by the Representative Body all consequent action should be taken by the Association. The Society should refrain from taking any action in support of a divergent policy until after the decision of the Representative Body, and even in the event of the Society thereafter feeling constrained to consider the taking of separate action, such action should not be taken until the two Councils had conferred together. The third clause in the scheme of agreement laid down as a preliminary condition the promulgation of such a common declaration of policy and such an arrangement with regard to salaries as had just been accepted by the Council.

The Chairman said that he was aware that there was difficulty in some minds with regard to this proposal. This was the first suggestion for craft representation within the Association. The proposal was a wide one, but he did not think it involved anything from which there was need to shrink. He personally had viewed with a good deal of disquiet the tendency throughout the profession to form various specialized bodies for medico-political purposes, whose separate action, on account of the slightness of the machinery available to further it, must almost necessarily fail. He was anxious to concentrate all the medico-political activity of the profession within the Association, so that thereby the profession could speak with one authoritative voice. Under this proposal the Society of Medical Officers of Health would limit itself to its scientific and social activities and to an attitude of watchfulness and suggestion with regard to medico-political action, but when such action was called for the Association was the body to initiate it and carry it through. At present there was no provision in the constitution for ensuring that the opinions of members working as officers for public health authorities should be made known directly. Such officers had, in fact, taken an active part in the work of the Association, both local and central, but that was due to individual initiative. It was not ensured by the constitution, and the representation hitherto had been accidental and indirect. He spoke of the excellent thing which it would be to both sides concerned to be brought into direct and necessary contact.

Dr. Mackenzie observed that the proposal involved a new form of election which would make a considerable revision of the constitution necessary. He had yet to learn what advantage this arrangement would bring to the Association. Medical officers of health, by the ordinary means now available, had been able to get a reasonable amount of representation on the executive committees of the Divisions, the Branch Councils, the Central Council, and the Representative Body. He believed, therefore, that this special representation was unnecessary. At the same time, he thought it well worth exploration whether some special provision might not be made for the representation of whole-time officers as a whole —not medical officers of health only—and his Committee would be very willing, if he might speak for it, to take that matter into consideration. He moved that the part of the recommendation which bore on the constitution of the Association be referred to the Organization Committee for consideration and report to the next meeting. Dr. Bone seconded, and the amendment was supported by Dr. Lyndon.

Dr. Garstang pointed out that nothing more than tentative proposals as to the manner in which the constitution might be altered had as yet emerged from the discussions; the arrangement of details was a matter for future conference. Up to a short time previously he had felt, with a good deal of reluctance, that he must oppose the adoption of any part of this report, but at the last moment the concessions made by representatives of the Society as regards the scale of salaries and other matters had removed his misgivings, and it seemed to him that the Council, by agreeing as it had done to the minimum scale of salaries, had already accepted the more difficult part of the arrangement. If the scheme were accepted it would mean that two important bodies would work together in as nearly a state of harmony as two such bodies could be expected to work. The Society would have given up any claim to separate medico-political action, and such action would be carried out by the Association. It was true that there was a protection clause on behalf of the Society, stating under what circumstances separate action might be taken, but such cleavage could only arise after a certain procedure, which meant waiting for the decision of the Representative Body, and after that for a conference of the two Councils, had been carried through. Only in the event of an absolute breakdown would the Society reassert its medico-political individuality. On the other hand, if these proposals were not accepted the result would be that a Society, not of course numerically anything like as strong as the Association, but specifically representing a section of the profession, would go its own way on medico-political questions, with the probability that the two bodies at some point would take divergent lines and pull against each other, which would be to the good of neither of them, nor of the profession. Dr. Lewys-Lloyd also supported the proposals, remarking that it was quite by accident that any member of the public health service did get on the Association's councils. Dr. Brackenbury was in favour of the scheme being submitted to the Organization Committee, and suggested that members of the conference, representing both bodies, should be invited to attend the Committee meeting. He wished the proposal to go to the Organization Committee, however, with the sympathy of the Council. It was very important to take the present opportunity of effective co-operation between medical officers of health and the Association. Medical officers of health had the ears of public bodies, and could do much to help or hinder the work of the general practitioner. It was not right to assume that the antagonistic attitude which had prevailed in the past was going to exist always. For his own part he wished to see in the Association a place for different crafts of practitioners, as well as for territorial groups. Mr. Harman opposed the recommendation on the ground that the Association was a body of registered medical practitioners, and took no cognizance of the special work in which they might be engaged. Special provision for the representation of medical men in the services was only made because they could not exercise their territorial function. Dr. Henry supported the recommendation, and pointed out that, among other advantages, it would mean a considerable accession of members to the Association. At present, out of every seven medical officers of health, four were members of the Association. The Society had agreed that if this proposal went through it would take every possible step to see that its members were members of the Association also. Dr. Mackenzie pressed his amendment on the ground that he wished his Committee to consider the wider question as it related to all whole-time officers, but the amendment was lost, and the Chairman then, by permission of the Council, amended the recommendation by the omission of certain tentative suggestions with regard to elections on the different governing bodies, and moved formally that the Council approve this part of the scheme for co-operation, and remit to the Organization Committee the consideration of the alterations in the regulations of the Association which will be necessary if the Representative Body accepts the recommendation. This was agreed to. A further amendment by Dr. Mackenzie to delete certain words from a later clause which recited the circumstances under which the Society might take separate action, so that the clause read, "The Society shall refrain from taking any action in support of a divergent policy," was lost, and the recommendation as a whole was then agreed to. Dr. Mackenzie paid a tribute to the urbanity and tact of the Chairman of Council, who had presided over the conference, and said that any useful result would be due largely to his temper and skill.

Other Committees.

The reports of the Scottish Committee and of the Office Committee were taken without discussion. Dr. Stevens, for the Scottish Committee, reported to the Council that it was extremely difficult to secure the minimum scale of salaries for public appointments under present conditions in Scotland, where there was a widespread demand for economy in public administration, and where the salaries of public officials of all kinds were being reduced. It was agreed that the Scottish Committee should be requested to confer with the Scottish Branch of the Society of Medical Officers of Health with regard to the peculiar conditions obtaining in Scotland, and the difficulty of enforcing there the scales which the Council earlier in the afternoon had accepted. The Office Committee report was mainly occupied with the question of printing machinery, and the Council agreed on its recommendation to instal a linotype machine for the resetting of members' lists and similar work.

The Plight of Russian Doctors.

The Chairman reported that some very gratifying letters had been received from Russia with regard to the appeal which the Association had made on behalf of the members of the profession in that country, but disquieting communications from other sources showed that the need for further benevolence was acute. The Medical Secretary said that many of the letters he had received expressed such gratitude and at the same time revealed such a piteous state of affairs that they had made him feel ashamed at the smallness of the sacrifice represented by the gifts. It appeared that

many doctors were able to subsist only by the sale of their furniture, and several had died at their posts in hospital. Dr. Douglas moved that the appeal be renewed, and that the method of appeal and the date of its issue be left for the officers of the Association to determine, and this course was agreed to. (A letter to the British medical profession, signed by the four officers, appears in the JOURNAL this week at page 1228.)

This concluded the business of the Council.

Meetings of Branches and Divisions.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.

A WELL-ATTENDED clinical meeting of the City Division took place on November 24th at the Metropolitan Hospital, in conjunction with the Aesculapian Society, with Mr. HENRY CURTIS in the chair, when the following cases were shown and discussed.

Mr. RAMSAY exhibited a case of swelling of the lower third of the right thigh in a man aged 30, in which *x* rays showed a cavity and sequestrum situated in the centre of the shaft of the femur. Discussion ensued on the origin of the infection and on modes of treatment. He also showed a case of bilateral acute epididymitis following a gunshot wound passing from the right thigh to the left buttock. Examination showed injury to the urethra, resulting finally in stricture. The epididymitis cleared up on treatment and cure of the urinary obstruction by sounds. The patient now had a small discharging sinus in the left side of the scrotum. Mr. ACTON DAVIS showed a boy of 19 with severe epilepsy, who had dislocated his left shoulder in a fit four weeks ago; the patient had very good range of movement. Discussion took place on the present local condition, and on the advisability of attempting reduction by operation as manipulation had failed. He also showed a case of torticollis in a child aged 5, following birth injury. The asymmetry of the face, structures in the neck, and spine were demonstrated, and discussion took place on the comparative advantages of the open and closed tenotomy operations. Mr. HEATH showed a case of perforation of the palate of twelve years' standing; the patient had a negative Wassermann. In the discussion on the treatment of a blotchy rash over the nose, Dr. ROSS advised gradually increasing doses of dilute HCl after food, as he had seen excellent results in similar cases due to the gastric condition. Mr. HEATH also showed a case with a condition that was, in his opinion, probably gumma of the tip of the tongue, in a man aged 50. Discussion ensued regarding the diagnosis from epithelioma. This case had presented the typical picture of the gumma when first seen two months previously, but now the diagnosis was in doubt. It was decided to remove a portion for section. Mr. CURTIS showed a case of bilateral spermatocele in a man aged 35. The patient had had two operations previously for spermatocele (the last by the "eversion" method) on the right side. Discussion took place on various methods of treatment and the comparative results. He also showed a man suffering from malignant new growth of the cheek (epithelioma) with rapid and unusual spread from the buccal to the skin surface, ulceration on both ends, and involvement of lower left maxilla. Discussion took place on possible treatment. Dr. YOUNG showed a case of lupus vulgaris of the face, of thirty-five years' standing, in a woman aged 50; she had had treatment by Finsen light fourteen years before, and various operations and grafts since. Dr. Young demonstrated the present treatment with (weekly) "sulphanilic picric" and "brass oil," or the composition trimitro phenyl-cupri-zinci oleate ("Ellis's treatment"), and the excellent results of one year's trial of the latter, resulting in almost complete resolution of the disease in the treated areas. Mr. DANIEL exhibited a case of syphilis of the skull in a man with *x*-ray plates showing the "worm-eaten" condition of the bone and the formation of abscesses, sinuses, and sequestra. The treatment was with potassium iodide, etc.

The meeting terminated with a vote of thanks to the surgeons who demonstrated cases.

METROPOLITAN COUNTIES BRANCH: LAMBETH DIVISION.

A MEETING of the Lambeth Division was held on November 29th, when Dr. E. P. POULTON read a paper on treatment of diabetes, which proved most interesting and instructive.

BIRMINGHAM BRANCH: WEST BROMWICH DIVISION.

A MEETING of the West Bromwich Division was held on November 30th. After discussing the hospital policy of the Association it was resolved to support the recommendation of the Council with regard to the proposed amendment.

Regarding the notification of venereal diseases, it was agreed that, though desirable, general notification was not at present advisable; it was considered that a modified form of notification would be really useful. It was decided to reply to question (*a*) in the affirmative, and to questions (*b*) and (*c*) in the negative. With reference to question (*d*), it was considered that if a modified form of notification was adopted the doctor would be responsible for notifying the disease, but that the person suffering from the disease should be held responsible for presenting himself for treatment in the first instance.

DORSET AND WEST HANTS BRANCH: WEST DORSET DIVISION.

A MEETING of the West Dorset Division was held at the Dorset County Hospital on November 25th, when Dr. P. W. MACDONALD, the chairman, presided. Dr. G. F. STILL delivered a lecture on congenital hypertrophic stenosis of the pylorus, which was much appreciated by a large number. A most successful meeting terminated with tea, to which the lecturer and members were entertained by the chairman.

EDINBURGH BRANCH: SOUTH-EASTERN COUNTIES DIVISION.

A MEETING of the South-Eastern Counties Division was held at the Railway Hotel, Newtown St. Boswells, on December 7th, when Dr. MACLAGAN, chairman of Division, presided.

The SECRETARY referred to the position regarding the hospital policy of the Association as set forth in the Circular D. 7. He explained the difficulty with reference to the resolution adopted by the Representative Body in 1921 (Minute 236), and briefly indicated the various resolutions suggested. After discussion it was agreed on the motion of Dr. FAIRFAX, seconded by Dr. SOMERVILLE, that the Division support the amendment suggested by the Council in Paragraph 11 of the above circular.

The arrangements for the annual dinner at Duns were discussed, and the members of the Association resident in Duns, together with the chairman of the Division, were appointed a subcommittee to make arrangements for a dinner to take place not later than April 30th.

Dr. DAVID LEES, D.S.O., lecturer at the University of Edinburgh and clinical officer to the corporation, read a paper on venereal disease. He first dealt with the incidence of these diseases. Although it was impossible to obtain accurate statistical returns he was able to show from returns of recruiting during the war, from the experience of clinics, and from the number of cases reported from private practices, that these diseases were very common, there being possibly not less than 140,000 cases in the population of Scotland at the present time. He then dealt with the clinical side of the question, and strongly emphasized the importance of early treatment and the necessity for early and accurate diagnosis. In conclusion, he dealt with the question of notification. The paper was illustrated by a large number of beautiful wax models, which proved to be of the greatest interest to the members present.

The meeting, with the assistance of Dr. Lees, discussed the questions with regard to the notification of venereal diseases, referred to it by the Council in Circular D. 8. In answer to the first question as to the desirability of introducing a modified form of notification, it was unanimously agreed that a modified form of conditional notification was desirable, and the answer by the Division to the question (*a*) was in the affirmative. Dr. LEES expressed the opinion that the number to be notified would be very small, probably not more than 1 per cent. of those treated, the fact that the doctor possessed the power of enforcing continuance of treatment being sufficient in most cases. The meeting also approved of notification by index numbers in reply to question (*b*). The HONORARY SECRETARY, as a medical officer of health, stated that he failed to see how the health authorities would be able to keep in touch with many of the cases or know whether treatment were continued or otherwise. The remaining questions as to the adoption of general notification and the responsibility being placed on the person suffering from the disease were answered in the negative.

On the motion of the CHAIRMAN a most cordial vote of thanks was accorded to Dr. Lees for his kindness in attending the meeting and for his valuable address.

NORFOLK BRANCH.

A VERY successful meeting of the Norfolk Branch was held at the Norfolk and Norwich Hospital on December 13th, when the president, Dr. A. J. CLEVELAND, took the chair, and over fifty members were present. Sir HENRY GAUVAIN, M.D., M.Ch., medical superintendent of Lord Mayor Treloar's Cripple Hospital, gave an interesting and instructive address on "Conservative methods in the treatment of surgical tuberculosis." The address was profusely illustrated by a series of beautiful lantern slides, and was very much appreciated by the audience. A discussion followed, and Sir Henry Gauvain replied to various questions raised, and was accorded a very hearty vote of thanks. Tea was served after the meeting.

NORFOLK BRANCH: EAST NORFOLK DIVISION.

A MEETING of the East Norfolk Division was held in Norwich on November 29th, when Dr. TURNER BELDING was in the chair. The CHAIRMAN moved that "the capitation fee payable by all non-insured patients be reduced for the year 1923." A letter on this subject from the Head Office of the Association was read. The Chairman having divided the subject under different headings it was agreed that old infirm members of friendly societies be not included in these rules. It was further resolved that no distinction be made between members of friendly societies and non-members. Two resolutions regarding the minimum fee for contract practice were directed to be sent to each member of the profession in the East Norfolk Division.

NORTH OF ENGLAND BRANCH: CLEVELAND DIVISION.

A MEETING of the Cleveland Division was held on December 7th, when the reports of the Council on hospital policy and on notification of venereal diseases were considered. After discussing the report on hospital policy, the following resolution was carried:

> That no remuneration should be received by the staffs of voluntary hospitals, but that there should be an income limit, approved by the staffs, for patients admitted to the hospitals.

The recommendation of the Council was therefore not approved. The following answers to the questions regarding the notification of venereal diseases were adopted: (*a*) No; (*b*) (1) No, (2) Yes; (*c*) No; (*d*) Yes.

NORTH OF ENGLAND BRANCH: CONSETT DIVISION.

A MEETING of the Consett Division was held in the Commercial Hotel, Consett, on November 29th, when Dr. A. D. M. MACINTYRE (Vice-Chairman) presided. The agenda was curtailed to allow time for an address by Dr. W. E. HUME, of Newcastle, on "The recognition and treatment of heart irregularities." The lecture, which was illustrated by diagrams and photographs, dealt briefly with modern advances in cardiology, and described in some detail the various forms of cardial irregularity and their causation with the utmost clearness and precision. Practical diagnostic ways of distinguishing the different varieties of irregularity without the aid of the polygraph were explained, and the value of electrocardiography was emphasized. The lecture was listened to with great attention, and was much appreciated by those present, who warmly supported the vote of thanks to the lecturer moved by the CHAIRMAN. A very successful supper, at which Dr. Hume was entertained by the Division, fitly concluded a most agreeable and profitable meeting.

NORTH OF ENGLAND BRANCH: DARLINGTON DIVISION.

A MEETING of the Darlington Division was held at Greenbank Hospital on November 30th. Dr. CHAS. J. KIRK was re-elected representative to the Annual General Meeting at Portsmouth, 1923. The report on hospital policy (D. 7) was thoroughly discussed, and the Council's recommendation as regards the vexed question of assessment of all payments to hospitals was accepted unanimously as the policy of the Division. Consideration was then given to the report on notification of venereal diseases. In regard to question (*a*), it was moved by Dr. HERN, seconded by Dr. FISHER:

> That the time is not ripe for general notification, but a modified form of notification for those already under treatment might be considered as a method of enforcing treatment.

The motion was carried as the answer of the Division to (*a*), after two other amendments had been lost. To question (*b*) the answer was "No," to question (*c*) "No," and to (*d*), "That the onus of notifying the disease should be on the doctor," was carried after a contrary amendment had been lost.

On the motion of Dr. BRODIE, M.O. at the local V.D. clinic, the following resolution was carried, and the representative was instructed to bring it forward as a motion at the Annual Representative Meeting, 1923:

> That the Health Authority should be given power to enforce treatment in cases of congenital syphilis referred to it from school medical inspections.

The SECRETARY gave notice that he would move at the next meeting:

> That a Representative be appointed from the Division to the general committee of the Darlington Hospital for advisory purposes.

NORTH OF ENGLAND BRANCH: HARTLEPOOLS DIVISION.

THE first scientific meeting of the Hartlepools Division for the winter session was held at the Hartlepools Hospital, Hartlepool, on November 30th; Dr. STRAIN, chairman of the Division, presided. Mr. A. E. MORISON, F.R.C.S.E., gave an address on modern orthopaedics to a largely attended meeting comprised of members, non-members, and others interested in the more recent advances in that surgical specialty. He introduced his subject by taking the arm and hand as examples on which to demonstrate the newer methods of treatment adopted, and urged a detailed knowledge of the anatomy of the parts as an essential to success. The treatment described was copiously illustrated by means of lantern slides, and the actual apparatus employed was shown in use on patients under Mr. Morison's care in the hospital. The lecture, which was thoroughly practical and very valuable to the general practitioner, was much appreciated by all who heard it.

STAFFORDSHIRE BRANCH: WALSALL AND LICHFIELD DIVISION.

A MEETING of the Walsall and Lichfield Division was held at the Stork Hotel, Walsall, on November 30th. After supper Dr. ADAMSON, Neurologist at the Ministry of Pensions Hospital, Cannock Chase, read a most interesting paper on "Some contents of the unconscious."

At the next meeting of the Division, on December 14th, the subject will be continued, and a paper will be read on "The new psychology as seen by a general practitioner," or a similar subject. Any member of the British Medical Association who is in this neighbourhood will be welcome. Supper will be served at the Stork Hotel at 8.30 p.m. Price 3s. 6d.

SUFFOLK BRANCH: WEST SUFFOLK DIVISION.

A MEETING of the West Suffolk Division was held at the West Suffolk General Hospital, Bury St. Edmunds, on December 5th, when Dr. H. H. STIFF was in the chair. Circular D. 7, 1922–1923 (Hospital Policy of the Association) was considered, and after discussion a motion proposed by Dr. J. S. HINNELL, seconded by Dr. Dr. H. H. STIFF, that the Division do not accept the recommendation of Council, was carried by five votes to two. The meeting adhered to the previous decision of the Division that the formation of staff funds for payment of the honorary medical staff is not at present desirable. It was felt that if the formation of such funds became definitely the policy of the Association, Divisions carrying out that policy should demand an adequate percentage, and that the assessment of small payments in a nominal percentage as suggested by the Council was impracticable.

With reference to Circular D. 8 (Report on Notification of Venereal Diseases) it was decided to reply to the questions asked as follows: (*a*) Modified form of notification—undesirable. (*b*) Notification by index numbers—undesirable. (*c*) General notification by name and address—undesirable. (*d*) The patient should notify.

SUSSEX BRANCH: BRIGHTON DIVISION.

AT a meeting of the Brighton Division held on December 11th it was resolved that no decision on the resolution on hospital policy should be come to until the report of the Branch Council on the matter was received and the staffs of the local hospitals have been consulted. Answers were adopted to the questions issued by the Council with regard to the notification of venereal diseases.

YORKSHIRE BRANCH: HARROGATE DIVISION.

A SPECIAL meeting of the Harrogate Division was held on December 5th, at the Imperial Café, when Dr. GREENWOOD was in the chair. A letter was read from Dr. D'Oyly Grange regretting his inability to attend the meeting on account of indisposition, and informing members of some of the work done at the Annual Representative Meeting. He strongly advised the Division to formulate a definite policy which the representative could support at the Annual Representative Meeting. A vote of thanks was passed to Dr. Grange for his letter.

Mr. FRANKLING opened a discussion on the Report of Council on the suggested revision of the hospital policy of the Association, and the following resolution was adopted:

> That the Harrogate Division views with regret the decision of the Annual Representative Meeting regarding the formation of staff funds, but, as the principle is now the policy of the Association, considers that the suggested amendment of the Council (the proposed new paragraph 35) should be adopted.

The CHAIRMAN opened a discussion on the report by the Council with regard to notification of venereal diseases. The following answers to the questions contained in the SUPPLEMENT of November 18th, 1922, were agreed to: (*a*) "Rejected." (*b*) "No value." (*c*) "Afraid it would not." (*d*) "Obligatory on the patient, and in default of the patient, obligatory on the doctor."

The reply of the Hon. E. F. L. Wood, M.P., to questions relating to parliamentary subjects affecting the public health and the medical profession, was read. A vote of thanks was accorded to Mr. Wood for the very full and satisfactory reply.

YORKSHIRE BRANCH: HUDDERSFIELD DIVISION.

A MEETING of the Huddersfield Division was held on November 29th. The Council's report on hospital policy (D. 7) was considered, and the proposed amendment was adopted. The report on the notification of venereal disease (D. 8) was discussed, and the following answers to the questions submitted were agreed: (*a*) No; (*b*) 1, No; 2, Yes; (*c*) No. No opinion was expressed on the hypothetical question contained in (*d*). The Division model rules of organization were considered, and, as adopted, were directed to be sent to the Head Office for confirmation. Lastly, the representative gave an account of the Annual Representative Meeting at Glasgow, for which he was heartily thanked.

YORKSHIRE BRANCH: SCARBOROUGH DIVISION.

THE annual meeting of the Scarborough Division was held at the Pavilion Hotel on November 3th. It was decided that the annual dinner should be held on December 15th, and that the members of Parliament for the Scarborough and Whitby, and Buckrose Divisions should be invited together with the Mayor as guests of the Division. The balance sheet showing a deficit of £6 5s. 3d. was passed and it was decided to collect a levy of 5s. per member to wipe off the deficit. The following office-bearers were elected for the ensuing year:

Chairman: Dr. Fox Linton. *Vice-Chairman:* Dr. Thornley. *Honorary Secretary:* Dr. Chapman. *Representative to the Annual Representative Meeting:* Dr. Candley-Hope. *Representative to the Branch Council:* Dr. Fox Linton. *Executive Committee:* Drs. Dick, Ferguson, Weightman, and Elvins.

It was resolved that the formation of a parliamentary committee be brought forward for discussion at the next divisional meeting.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH.—Ordinary meetings of the Branch will be held on the following Thursdays: January 18th, February 15th, and March 15th, 1923. The following members have promised to read papers: Sir Gilbert Barling, Mr. Douglas Stanley, Mr. Furneaux Jordan, and Mr. Seymour Barling. Members are reminded that they are entitled to bring cases and specimens to the meetings for demonstration and discussion.

LANCASHIRE AND CHESHIRE BRANCH.—A clinical meeting of the Lancashire and Cheshire Branch will be held at Preston Royal Infirmary on Thursday, January 11th, 1923. Clinical cases and pathological specimens will be exhibited and discussed and short papers read. A committee will shortly meet to draw up the programme, and members wishing to contribute should communicate as early as possible with the Secretary of the Preston Division (Dr. Walter Sykes, 31, Winckley Square), or with the Branch Secretary, Mr. F. Strong Heaney, 72, Rodney Street, Liverpool.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.—A meeting of the East Hertfordshire Division will be held at the County Hospital, Hertford, on January 10th, 1923, when Dr. W. Langdon-Brown, Physician to St. Bartholomew's Hospital, will read a paper on Minor Endocrine Defects.

NORTH OF ENGLAND BRANCH: STOCKTON DIVISION.—A meeting of the Stockton Division will be held on Friday, February 9th, 1923, when Dr. G. C. Anderson, Deputy Medical Secretary, will give an address.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—The following meetings of the Buckinghamshire Division have been arranged for the coming session. Extra meetings will be held should the necessity arise. January 26th, 1923, at the Crown Hotel, Aylesbury: General business and election of Representative. March 30th, at the Crown Hotel, Aylesbury: General business. May 16th, at the Royal Bucks Hospital, Aylesbury: Clinical address on a surgical subject, to be announced later. June 30th, at the Crown Hotel, Aylesbury: Annual general meeting. The Local Medical and Panel Committee meets on the last Friday in the month. A member having any difficulty regarding insurance practice which he wishes to bring forward should communicate it to a member of the committee.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the University on Friday evening, February 2nd, 1923, when Dr. J. W. Ballantyne (Edinburgh) will deliver a British Medical Asscciation lecture on "The problem of the newborn infant."

GENERAL COUNCIL
OF
MEDICAL EDUCATION AND REGISTRATION.

*WINTER SESSION, 1922.**

Sir DONALD MACALISTER, K.C.B., President, in the chair.

DENTAL EDUCATION AND EXAMINATION COMMITTEE.

SIR JAMES HODSDON brought forward a report from the Dental Education and Examination Committee on applications for exceptional registration. These were in most cases colonial and foreign applications, and some of the applications were acceded to, others not acceded to, and others postponed for further inquiry.

The Committee also reported that inquiries had been received from certain universities as to the place in the course of study and examination which should be occupied by the examination in dental mechanics. It was decided to draw the attention of these bodies and others to the fact that the new recommendations of the Council in this respect differed in no way from the old, which left it to the licensing bodies to make their own arrangements as to the manner in which the subjects should be combined or distributed for the purpose of teaching or examination. By placing dental mechanics in the final examination the Council intended that there should be a test of the capacity of students in the actual treatment of patients by mechanical appliances; this did not preclude an examination at an earlier stage in the purely technical part of dental mechanics.

Other matters mentioned in the report included a protest from the Manchester Dental Hospital against the extensive changes in and additions to the curriculum suggested in the new recommendations of the Council on the ground was inopportune in view of the fact that thousands of persons had just been admitted to the *Dentists Register* under the Dentists Act, 1921, without any examination at all. It was decided to point out to the hospital that the new resolutions had been adopted only after very careful consideration with all the circumstances in view, that they did not come into force until 1923, and that each teaching and examining body was expected to bring them into operation as soon as it conveniently could. It was agreed that preliminary steps should be taken for the inspection of dental examinations, including the submission of names to the next session of the Council of persons suitable to act as inspectors. The last cycle of inspection took place in 1911.

The report was then approved.

DENTAL WARNING NOTICES.

The PRESIDENT announced that the Council had approved of new Warning Notices submitted by the Dental Board, in substitution for the Warning Notices of the Dental Board previously approved by the Council. The Warning Notices as approved were as follows:

NOTICE.

The Dental Board of the United Kingdom after consultation with the General Medical Council have drawn up, and desire to bring to the notice of all persons registered in the *Dentists Register*, the following warning regarding certain forms of professional misconduct.

It is enacted by Section 13 of the Dentists Act, 1878, as amended by Section 8 of the Dentists Act, 1921, that:

> Where a person registered in the *Dentists Register* has, either before or after he is registered, been convicted in His Majesty's Dominions or elsewhere of an offence which if committed in England would be a felony or misdemeanour, or been guilty of any infamous or disgraceful conduct in a professional respect, that person shall be liable to have his name erased from the *Register*.
>
> The Board may, and on the application of any medical authority shall, cause an inquiry to be made into the case of a person alleged to be liable to have his name erased under this Section, and if the Board on any such inquiry are satisfied that the name of that person ought to be erased from the *Register*, they shall forward a report to the General Medical Council setting out the facts proved at the inquiry and the finding of the Board.
>
> The General Medical Council, after receiving any such report, and after hearing any observations which the person affected or the medical authority may desire to make with reference to the report, may make an order directing the Registrar to erase from the *Register* the name of the person affected.
>
> Provided that the name of a person shall not be erased under this Section on account of his adopting or refraining from adopting the practice of any particular theory of dentistry or dental surgery, or on account of a conviction for a political offence out of His Majesty's dominions, or on account of a conviction for an offence which, though within the provisions of this Section, does not, either from the trivial nature of the offence or from the circumstances in which it was committed, disqualify a person from practising dentistry.
>
> Any name erased from the *Register* in pursuance of this Section shall also be erased from the list of licentiates in dental surgery or dentistry of the medical authority of which such person is a licentiate.

Certain forms of professional misconduct are particularized below, but the Board wish it to be clearly understood that these do not constitute, and are not intended to constitute, a complete list of the offences which may be punished by erasure from the *Register*; and that by issuing this notice neither the Board nor the Council are precluded from considering and dealing with any form of professional misconduct (as, for example, the giving of false certificates or immorality involving abuse of professional relationship) which may be brought before them. Circumstances may and do arise from time to time in relation to which there may occur questions of professional conduct in respect of which no warning notice has been issued. In such instances, as in all others, the Board and the Council have to consider and decide upon the facts brought before them.

Unregistered Assistants and Covering.

Section 14 (2) of the Dentists Act, 1921, is as follows:

> For the purposes of this Act the practice of dentistry shall be deemed to include the performance of any such operation and the giving of any such treatment, advice, or attendance as is usually performed or given by dentists, and any person who performs any operation or gives any treatment, advice, or attendance on or to any person as preparatory to or for the purpose of or in connexion with the fitting, insertion, or fixing of artificial teeth shall be deemed to have practised dentistry within the meaning of this Act.

The practice of dentistry, except by persons registered in the *Dentists Register* or in the *Medical Register*, is prohibited by the Dentists Act, 1921, and any person who contravenes this provision is liable to be summarily convicted and fined. Accordingly the employment by any registered dentist in his professional practice of an assistant who is not registered either in the *Dentists Register* or in the *Medical Register*, if he is permitted to practise dentistry and in particular to do any of the things specified in the section quoted above, is contrary to law; and any registered dentist who has so acted renders himself liable, on proof of the facts, to have his name erased from the *Register*. Similarly, any registered dentist who by his presence, countenance, advice, assistance, or co-operation has knowingly enabled an unregistered person, whether described as an assistant or otherwise, to practise dentistry or to do any of the things specified in the section quoted above, renders himself liable, on proof of the facts, to have his name erased from the *Register*.

Advertising and Canvassing.

The practices:

> (*a*) Of advertising with a view to procuring patients, or of sanctioning, or of being associated with or employed by those who sanction, such advertising; and
>
> (*b*) of canvassing or employing any agent or canvasser for the purpose of procuring patients, or of sanctioning, or of being associated with or employed by those who sanction, such employment;

are in the opinion of the Board and of the General Medical Council contrary to the public interest and discreditable to the profession of dentistry; and any registered dentist who resorts to any such practice renders himself liable, on proof of the facts, to have his name erased from the *Dentists Register*.

Use of Titles and Descriptions.

Section 4 of the Dentists Act, 1921, is as follows:

> 4. *Use of Titles and Descriptions.*—A person registered under the principal Act—
>
> (*a*) Shall, by virtue of being so registered, be entitled to take and use the description of dentist or dental practitioner:

* Concluded from p. 219.

(*b*) Shall not take or use, or affix to or use in connexion with his premises, any title or description reasonably calculated to suggest that he possesses any professional status or qualification other than a professional status or qualification which he in fact possesses and which is indicated by particulars entered in the *Register* in respect of him.

Any registered dentist who may have infringed the provisions of this section renders himself liable, on proof of the facts, to have his name erased from the *Register*.

The Prescribed Examination.

Any person who has obtained registration in the *Dentists Register* in virtue of having passed the prescribed examination under the Dentists Act, 1921, is warned against making use of any words or abbreviations calculated to give the impression that registration has been obtained by passing a qualifying examination, or that any such person has been admitted to the prescribed examination as a student of a recognized hospital or school. Any person who may have so acted renders himself liable, on proof of the facts, to have his name erased from the *Register*.

By order of the Board,

NORMAN C. KING, Registrar.

44, Hallam Street, W.1, November, 1922.

A QUALIFICATION RESIGNED.

The President reported on the action taken by the Executive Committee with regard to John William Springthorpe, a member of the profession in Australia, who informed the Committee early in the year that the only qualification in virtue of which he was registered in the United Kingdom—that of M.R.C.P.Loud.—had been resigned. It was suggested to Dr. Springthorpe that he might desire to register his M.D.Melbourne, and thereby have his name retained on the *Register*, but no reply had been received. The Executive Committee had therefore resolved to direct the Registrar to remove from the *Register* the qualification of M.R.C.P.Loud. appearing against the name of John William Springthorpe, and this being the only qualification by virtue of which his name appeared upon the *Register* to report the fact of such erasure to the Medical Council. The Council approved the report, and agreed that removal of the name from the *Register* must follow the removal of the qualification. The Committee added that it was satisfied that Mr. Springthorpe had not been deprived of his qualification on account of the adoption of any theory of medicine or surgery.

DISCIPLINARY INQUIRIES.

Misdemeanours.

The Council proceeded to the consideration of the case of Dr. James Reidy, of Gardenfield, Newcastle West, co. Limerick, who was summoned to appear on the charge that he had been convicted at Wood Green and at Thames police-court of certain misdemeanours—namely, on four occasions of being drunk, or drunk and disorderly or incapable, and on one occasion of an assault on the police.

The Solicitor to the Council said that the defendant had received two warning notices previous to the last conviction. As the result of an inquiry by the Minister of Health, the defendant's name had been removed from the list of insurance practitioners, but some hope had been held out, previous to the last conviction, of restoration.

Mr. J. T. Davis, defendant's solicitor, asked the Council to deal with the case leniently. He expressed Dr. Reidy's great regret for what had occurred, and his assurance that nothing of the kind should be repeated. He asked that allowance might be made for Dr. Reidy's Irish temperament; it was some reflection upon Irishmen at the time when the situation was acute that led to the assault upon the police.

The Council deliberated in private, after which the PRESIDENT announced to Dr. Reidy that the Council had found the convictions alleged against him proved to its satisfaction. The convictions indicated a habit which was not only discreditable to his profession, but might be dangerous to his patients. In order to give him an opportunity of reconsidering his habit in this matter the Council had postponed judgement until the November session, 1923, before which date he would be required to send to the Registrar the names of some of his professional brethren who might be willing to testify as to his character and conduct in the interval. In the event of any further conviction in the meantime for a similar offence the Council might instruct the Registrar to erase his name from the *Medical Register*. Dr. Reidy gave a solemn undertaking to refrain from drink for the rest of his life.

The case next considered was that of Dr. Trevor Owen Williams, registered as care of a shipping company in Liverpool, who was summoned on the charge that, being a registered medical practitioner and a captain in the Royal Army Medical Corps, he was tried in 1917 by a general court-martial overseas for drunkenness whilst on active service, was found guilty, and was sentenced to be dismissed from His Majesty's service, which finding and sentence were duly confirmed; also that while giving evidence before Mr. Justice Greer at Liverpool Assizes on February 2nd, 1922, he was drunk, and was reprimanded by the judge for being in that condition; further, that at the City of Liverpool police-court on June 23rd, 1922, he was convicted of being drunk and disorderly.

The Solicitor to the Council said that with regard to the second of these charges, that of being reprimanded by the judge of assize, he understood that Dr. Williams contended that it did not involve misconduct in a professional respect. The fact was that Dr. Williams was subpoenaed to give evidence, and when in the witness-box made incoherent replies, which made the judge remark that if he came into court in that condition again he would send him to prison for contempt. It was true that he was not professionally engaged at the time but his evidence was called for as a doctor, and to that extent he was acting in a professional capacity.

Dr. Williams stated to the Council that he was very sorry for what had occurred. He had served for nine months on the Gallipoli peninsula, and for more than two years in the trenches in France, and he was not the same man afterwards. After the first of the charges he had been a total abstainer for two years. (An interval of four and a half years elapsed between the first and second charges). He had already renewed his resolve in that particular, and intended to be a total abstainer for the rest of his life.

The Council having deliberated in private, the PRESIDENT announced its decision in terms similar to the decision given in the previous case of Dr. Reidy, judgement being postponed to the November session of 1923.

On December 1st the Council considered the case of Dr. James Law, of 1, Venner Road, Sydenham, who was summoned to appear by reason of his conviction at the police-court on three occasions for being drunk—in 1915, in 1921, and in 1922. Dr. Law appeared, and expressed his great regret for a temporary lapse. He had now become a total abstainer, and intended to remain so for the rest of his life. The Council's decision was similar to that in the previous cases of Dr. Reidy and Dr. Williams, judgement being postponed until the November session of 1923.

Adultery.

On November 29th the Council considered the case of Dr. David Arnold Chaning Pearce, of 7, Hopton Road, Streatham Common, who was summoned to appear on the charge that, being a registered medical practitioner, he abused his position by committing adultery with a married woman, with whom and whose family he stood in professional relationship, of which adultery he was found guilty by the decree of the Probate, Divorce, and Admiralty Division on March 28th, 1922, in a case in which he was co-respondent.

Dr. Pearce did not attend, nor was he represented. The Solicitor to the Council handed in an official certificate of the decree. Dr. Pearce, he stated, was called in as medical attendant by Mrs. Cooke in 1916. In 1921 the wife of the petitioner made a confession to her husband with regard to her relations with Dr. Pearce. A letter from Dr. Pearce was read to the Council in which he said that he recognized that the finding of the court made any defence before the Council difficult, but that he hoped he might not be prejudiced in any subsequent effort to be restored to the *Register*. Mr. Cyril John Cooke gave evidence as to his wife's confession, and to the relationship of himself and his wife, professional and social, with Dr. Pearce. His wife was a trained nurse, and therefore her frequent association with Dr. Pearce aroused no suspicion in his mind.

After the Council had deliberated in private, the PRESIDENT announced that the Council had judged Dr. Pearce to have been guilty of infamous conduct in a professional respect, and had directed the Registrar to erase his name.

NEWCASTLE DOCTORS' HOLIDAY SCHEME.

THE annual meeting of the members of the Newcastle-upon-Tyne doctors' holiday scheme was held at the Medical Institute, Newcastle, on December 8th. Dr. Fortune occupied the chair and referred to the success of the scheme during the two years that it had been in operation. He was pleased to say that during that time no complaints had been made, the membership was increasing, and the finances were in a satisfactory state. It was resolved to hold a special meeting for the alteration of rules in a few months. Dr. Fortune was unanimously re-elected chairman, and Drs. Campbell, Hudson, Laverick, Ritchie and Watson were elected members of the committee. The scheme is as follows: In cases of illness of a member, or his being on holiday, his work is done by the other members living near to him. The expenses of a whole-time locumtenent are thus saved: patients have a choice of doctors during their own medical man's absence; and the amount paid by an absentee member can be earned back again. The working expenses are small, and are paid equally by the members who do the work and those who have it done for them.

Correspondence.

Professional Unity.

SIR,—That the interests of the medical profession have suffered in the past from the want of united and central action is a statement which can hardly be controverted. The greater therefore, the necessity for united action between important bodies such as the British Medical Association and the Medical Practitioners' Union, in view of the negotiations which will have to be entered into with Government at an early date. Notices regarding the raising of a defence fund have been issued by the London Panel Committee and the Medical Practitioners' Union, but so far no indication has been given by the British Medical Association that unity of action with other representative bodies has been secured. The *sine qua non* condition of success in withstanding any lowering of professional status (pecuniary or other) is the condition of united front and action.

I should have little confidence in entrusting the interests of the profession to any Committee who, before entering into negotiating, came forward with the confession that they have failed to secure unanimity of policy and action with other representative bodies.

The vital interests of the profession stand before any consideration such as *amour propre* of one society and another.—I am, etc.,

London, S.E., Dec. 11th. R. G. ROBSON.

*** The subject of Dr. Robson's letter is referred to in the report of the last meeting of the Insurance Acts Committee, and in the proceedings of Council, both printed in this issue of the SUPPLEMENT.

Insurance.

INSURANCE ACTS COMMITTEE.

A MEETING of the Insurance Acts Committee was held at the offices of the British Medical Association on November 30th, when there were present:

Dr. H. B. Brackenbury in the chair), Dr. R. A. Bolam (Chairman of Council), Dr. R. Wallace Henry (Chairman of Representative Meetings), Dr. T. Ridley Bailey, Dr. H. S. Bead es, Dr. H. J. Cardale, Dr. A. E. Cope, Dr. H. G. Dain, Dr. M. Dewar, Dr. A. Forbes, Dr. P. V. Fry, Dr. D. G. Greenfield, Dr. E. A. Gregg, Dr. G. B. Hillman, Dr. W. J. Howarth, Dr. E. K. Le Fleming, Mr. E. Lewis Lilley, Dr. T. Wood Locket, Dr. R. G. McGowan, Dr. H. F. Oldham, Dr. C. H. Panting, Dr. F. Radcliffe, Dr. Mabel Ramsay, Dr. A. Smith, Dr. D. Lyon Stevenson, Mr. H. S. Souttar, Dr. W. E. Thomas, and Dr. J. P. Williams-Freeman.

Dr. H. B. Brackenbury has been reappointed Chairman of the Committee for the session 1922–23.

The names of the Direct Representatives on the Committee for the session 1922–23 were reported in the SUPPLEMENT of November 11th. The Poor Law Medical Officers' Association, the Society of Medical Officers of Health, and the Medical Women's Federation have reappointed Drs. A. E. Cope (London), W. J. Howarth, and Mabel Ramsay as their respective representatives on the Committee for the ensuing session.

Three Subcommittees were appointed—namely: (*a*) General Purposes, (*b*) Rural Practitioners, (*c*) Insurance Acts (Scotland).

It was decided to take no further action with regard to the proposal referred back by the recent conference that only members of Panel Committees should, in future, vote in elections for direct representatives upon the Committee. In future, however, a voter will have only one vote in one group, irrespective of his membership of more than one Panel Committee in that group.

Public Medical Service Scheme.

The Committee received revised versions of the two paragraphs of the Model Public Medical Service Scheme headed "Expulsion of Members" and "Eligibility." The former had been amended by the solicitor of the Association; the latter was amended as a result of attention having been drawn thereto by a Panel Committee. Copies of the revised versions will be supplied to any Panel Committee applying to the Medical Secretary, 429, Strand, W.C.2.

Conference of Representatives of Bodies Interested in the National Insurance Acts.

As the recent Conference of Local Medical and Panel Committees resolved upon the desirability of holding a conference of the Insurance Acts Committee with other persons interested in the medical service of the National Insurance Acts, including representatives of approved societies, insurance committees and clerks to insurance committees, the Committee is arranging for a conference to be held either in the last fortnight in January or the first fortnight in February of members of the Committee with representatives of insurance committees, approved societies, pharmacists and clerks to insurance committees. The question of inviting any of the permanent officials of the Ministry of Health to be present is left to the conference itself to settle. The total number of invitations will be limited to approximately 150, other than members of the Insurance Acts Committee.

It is not proposed that any decisions should be arrived at by the conference unless there is practical unanimity, but it is felt that in these circumstances resolutions would be useful. The representatives of the various above-mentioned sections of those interested in the working of the Insurance Acts will be asked to submit subjects to be placed on the agenda. The Committee, as the convener of the conference, will make it clear that it reserves to itself the right to omit from the agenda any item so proposed.

Deputation to Ministry of Health.

It was arranged that the members of the Committee should meet representatives of the Ministry on Thursday December 21st, 1922, in connexion with various resolutions of the Annual Conference, etc., relating to record cards, notice of alteration of terms of service, title of insured persons to benefit, charges by practitioners for certification, powers and duties of Local Medical Committees, excessive prescribing, consultations, expenses in connexion with complaints heard by Medical Service Subcommittee, use of specific medicines and revenue authorities.

Consideration of other resolutions of the Annual Conference relating to the following subjects was deferred to a later meeting of the Committee: Evening surgery hours, expenses of representatives of Panel Committees on outside bodies, anaesthetics.

Co-operation with Medical Practitioners' Union.

The Committee, as a result of the instruction contained in Minute 19 of the Annual Conference—namely, that the documents relating to the negotiations between the Insurance Acts Committee and the Medical Practitioners' Union be circulated to all Panel Committees before Christmas—issued on December 13th to the secretary of each Local Medical and Panel Committee sufficient copies of its report on the above matter for circulation to individual members of Panel Committees. Each secretary was informed that sufficient copies of the report would, on request, be forwarded to enable a copy to be sent to each insurance practitioner in the area. A copy will also be forwarded to any practitioner applying for it to the Medical Secretary.

The effect of the report, briefly stated, is to recommend that the request of the Medical Practitioners' Union for separate representation on the Committee be not acceded to, but that the number of direct representatives of insurance practitioners on the Committee be increased so as to give the fullest opportunity for every kind of opinion to be represented, if endorsed by the majority of practitioners in any of the electoral areas. The report strongly deprecates the existence of two funds for the protection of the interests of insurance practitioners.

It will be noted in the report of the proceedings of Council which appears elsewhere in this issue of the SUPPLEMENT, that the Council of the British Medical Association at its meeting on December 13th, acquiesced in the proposal to increase the number of direct representatives on the Insurance Acts Committee.

Transfer of Practices.

The Committee had before it a communication from the Ministry of Health conveying what the Committee considers a satisfactory result of the long negotiations with regard to this question and which was referred to in the Committee's annual report. The proposal will be given effect to very shortly by the issue to Panel Committee secretaries of draft modifications of the allocation and distribution schemes. Any Panel Committee desiring to give effect to such modifications, should approach the local Insurance Committee with a view to the necessary alterations being made.

The proposal is, briefly, that the Ministry, while not in any way recognizing any vested interest in insurance practice, has agreed that in connexion with the practice of any insurance practitioner who retires from insurance practice or dies, the period within which insured persons on such practitioner's list have to be assigned by the Allocation Subcommittee to some other practitioner, will be extended to eighteen months after the transfer of the practice. It is anticipated that the number of patients who will fail to exercise their choice during this period will be relatively small. During this period of eighteen months, the purchaser of the practice will receive payment in respect of (*a*) those persons who were on his predecessor's list and who have actually transferred to his list, and (*b*) the remaining persons on his predecessor's list who have, in effect, not chosen any doctor. In respect of those persons who choose a doctor other than the successor to the practice, the payment will, of course, go to the practitioner chosen.

Rural Practitioners and Mileage.

The Committee had before it the minutes of its Rural Practitioners Subcommittee of November 21st, and, as a result of that subcommittee's recommendations, passed the following resolutions, which have been forwarded to the Ministry:

Resolved: That the Ministry of Health be recommended, instead of adopting the suggestion referred to and contained in the report of the Distribution Committee, to collect fresh statistics for 1923 by means of a form similar to that previously used, namely, 211 I.C., subject to the addition of an extra column which would allow of such practitioners as might desire, showing the total number of insured persons visited each day under two miles.

Resolved: That with a view to facilitating the collection of adequate statistics on the above point, the suggestion be made to the Ministry that the distribution scheme of any locality where statistics are being kept might permit of the Panel Committee agreeing to pay practitioners selected by the Panel Committee to keep records, such payment being a first charge upon the local mileage fund.

Resolved: That the Committee intimate to the Ministry that, while it is willing to co-operate in any endeavour to secure records from 10 per cent. of the practitioners of any locality, it is of opinion that 5 per cent. would be sufficient for the purpose in question.

List of Specially Expensive Drugs.

The Committee is recommending to the Ministry of Health that the following be added to the list of specially expensive drugs appended to Part II of the Distribution Scheme: Oxygen, malt and cod-liver oil, peptone for injection, glandular extracts, emetine. The Committee will be glad to consider suggestions for further additions to this list from any Panel Committee.

Organization of Insurance Practitioners.

The Committee had before it the report of the discussion at the recent Panel Conference upon M.10, the document which discussed this question. The Committee referred the preparation of a document revised in accordance with the information gained at the Conference, to the General Purposes Subcommittee for report at the next meeting. It is expected that the revised print of document M.10 will be ready for circulation to Local Medical and Panel Committees in February.

Visiting of Insured Persons: Allocation of Moneys.

A request for advice by the London Panel Committee in connexion with the arrangement in London for visiting insured persons at other than their place of residence, was referred to the General Purposes Subcommittee for consideration and report.

Resolutions having been received from various Panel Committees forwarding copies of resolutions passed by them on the allocation of moneys available for the treatment of insured persons at the instance of the St. Helens Panel Committee, these were noted for

reference in the revised M.10 as raising the possibility of a new source of revenue at the end of 1923.

Inquiry into Working of Insurance Acts.

The Committee considered a communication from a Panel Committee inquiring what steps, if any, were being taken to bring the desirability of an inquiry into the working of the Insurance Acts to the notice of the Ministry of Health. The Committee approved the reply which had been sent pointing out that it had always been ready to give evidence before any body appointed to hold an inquiry; but that it did not propose to press for an inquiry, because the time the system had been in operation was too short for arriving at any useful conclusions as to its effect on public health, and the period of trial had been rendered still less effective for test purposes by the upset due to the war and its results.

Vaccination of Insured Persons.

The Committee had before it the above question which was dealt with fully in a Current Note in the SUPPLEMENT of November 25th, 1922, and endorsed the opinion therein expressed.

The proceedings lasted from noon until 7 p.m.

LONDON PANEL COMMITTEE.

London and the Defence Trust Fund.—At the meeting of the London Panel Committee on November 21st, Dr. H. J. CARDALE presiding, a recommendat on was brought forward that practitioners in the London area should be asked to authorize a deduction of a percentage of their capitation fees, the money so deducted to be paid, according to the desire of the practitioner concerned, either to the National Insurance Defence Trust of the British Medical Association or the Panel Practitioners' Protection Fund of the Medical Practitioners' Union. This proposal was accepted, and it was agreed to appoint a special subcommittee which should be responsible for the collection, custody, and transmission of the money, the subcommittee to include two co-opted members, one nominated by the trustees of each of the two funds named. From each practitioner's remuneration, provided he gives the necessary authority, an amount is to be deducted equal to one halfpenny a year for each insured person on his list. This deduction is to be made quarterly.

Vaccination of Insured Persons.—The Minister of Health having ruled that vaccination falls within the obligation of practitioners working under the National Insurance Acts the executive of the Panel Committee reported that it had issued a circular to insurance practitioners informing them as to the procedure to be adopted. Dr. R. S. PEARSON thereupon moved a resolution that as vaccination and revaccination were and had been for many years past fully provided for by Government arrangements, if insurance practitioners were expected to vaccinate all or any of the insured persons on their lists such practitioners should be paid for this service at the usual rate of pay of public vaccinators, and should be supplied with the materials from a Government source. He pointed out that there were official public vaccinators whose records were of importance, whereas if this work was thrust upon insurance practitioners the information would have to be dissected at considerable trouble from the mass of entries upon their record cards. The chairman quoted legal opinion to the effect that the practitioner by virtue of his agreement was under an obligation to vaccinate any person on his list who asked for it and in whose case he considered it necessary, and that he could not charge a fee for so doing. Dr. GREGG and other members expressed the view that the matter was not big enough to fight about, and a too rigid attitude on this matter would cause practitioners to lose public sympathy, of which later they might stand in need. The resolution was lost.

Valuation of Medical and Sickness Benefit Funds.—A communication was considered from the St. Helens Local Medical and Panel Committee asking the London Committee to support a resolution pressing for the reconsideration by the Ministry of Health of the basis on which the distribution of the amounts received for national health insurance was made. The opinion behind the resolution was understood to be that, in view of the results of the last valuation of the benefit funds in approved societies, if a smaller amount were allocated to meet the expenditure of approved societies for the benefits administered by them, and a larger amount for medical benefit, it would not be necessary to rely on other sources, such as the Treasury or the approved societies, for financial assistance. The view of the London Committee was that the resolution should be strongly supported, and a resolution was passed to that effect.

LONDON INSURANCE COMMITTEE.

AT the meeting of the London Insurance Committee on November 23rd Mr. F. A. Thomas was elected chairman for the year, in succession to Sir Thomas Neill, and Mr. De la Rue vice-chairman.

Cases of Excessive Prescribing.—Three charges of excessive prescribing came before the Committee on which the Subcommittee had recommended, after investigation, that amounts of about £3, £7, and £8 respectively should be deducted from the remuneration payable to the practitioners concerned. Dr. C. H. Pring protested against these surcharges, which, he said, were helping to bring the insurance medical service into contempt. The London Panel Committee was continually writing letters to practitioners calling attention to supposed extravagances in their prescribing, and the threat behind the letters appeared to be that if they ventured to treat their insurance patients in the same way as their private they would do so at their peril. He did not believe that in a single instance the Panel Committee had complained because a practitioner had under-prescribed. The effect of these letters was to encourage inadequate prescribing. Dr. H. J. Cardale, chairman of the Panel Committee, said that Dr. Pring's allegations were unwarranted and untrue. The Panel Committee had not in any case suggested to a practitioner that he should use cheap drugs. There was no method of treatment too expensive for use for insurance patients if it could be shown to be justified in a particular instance, but it was the duty of his committee to see that public money was not wasted on mere extravagances. Two lay members of the Insurance Committee supported Dr. Pring's contention that too great a tendency to surcharge should be checked. It was agreed that the three cases under consideration should be referred back to the Subcommittee in order that complete figures as to the prescribing complained of should be placed before the main body.

Frivolous Remarks on Certificates.—The Committee had before it a series of complaints brought by an approved society against a practitioner. The chief complaint was that on a number of certificates issued in respect of one patient the practitioner had made frivolous remarks. The only member of the Committee to defend the practitioner was a layman, who suggested that the remarks denoted nothing more than a sense of humour. It was agreed by the Committee that the practitioner had written frivolous and unjustifiable remarks on certificates; also that he failed to state sufficiently the cause of incapacity in one case, and in another refused to initial an alteration in the date of a certificate; and the Committee decided that the practitioner should be censured.

Refusal to Attend at Patient's House.—In another case, in which a practitioner had refused to attend at the home of a patient and to issue certificates for incapacity, the defence of the practitioner was that the insured person, upon whom he had repeatedly urged the great importance of activity and exercise in his state of nervous debility, could scarcely be persuaded to leave his house, and for many weeks refused to call in person for his certificates, so that at length, solely to induce the patient to bestir himself, the practitioner refused to issue further certificates unless the patient attended in person. The finding of the Subcommittee was that the practitioner committed an error of judgement and should be cautioned. After some discussion by the main Committee it was agreed that the recommendation should go back for redrafting so as to convey the idea that the Committee, while still considering that there had been an error of judgement, fully appreciated the rightness of the practitioner's motives.

LEICESTERSHIRE INSURANCE COMMITTEE.

IN its annual report the Leicestershire Insurance Committee states that since its appointment under amending regulations in November, 1921, Insurance Committees generally have been able to consolidate their administration and report much progress.

So far as Leicestershire is concerned, although the membership of the Committee has been reduced from forty to thirty, its year of service is stated to have been fruitful in good work accomplished not only as regards medical and pharmaceutical services, but in the general administration of the National Health Insurance Acts in the area. In regard to medical benefit, the total amount available to doctors for treatment in 1922 is £45,342, while £4,600 has been allotted for mileage payments (1921), with a special grant of £339 to those doctors who have cases difficult of access; in regard to drugs and appliances supplied to insured persons, £6,550 was paid in 1921 in this area to the chemists, and £3,970 to doctors who are required to dispense as well. With a view to giving careful consideration to the reports of the Panel Committee on prescribing, the Medical Benefit Subcommittee appointed a Drug Investigation Subcommittee, which is stated to have accomplished much useful work. This subcommittee is also supervising the provision of an independent scheme for the testing of samples of drugs and appliances for the area.

The report goes on to say that it is questionable whether the financial success of many approved societies in the form of surpluses is likely to tend to the general benefit and satisfaction of insured persons. The Act allows the provision of additional benefits, in cash and in kind, and it is suggested that it is here that a weakness arises. Societies are permitted independently to determine such additional benefits, with the consequent result that there is a variation in the proposals made. This state of affairs is considered to tend to complications, and dissatisfaction will be created when it is found that one member in one society is in receipt of additional benefit, whereas another member is not so equally fortunate. The question of benefits, this report considers, whether in cash or treatment, should be a national one and not left to the societies to determine. It is hoped, therefore, that at an early date the Minister of Health will create legislation for the provision of nursing and additional services to be allied to that of medical benefit.

Undoubtedly (the report continues) the medical service is gradually tending to increased efficiency to the benefit of all concerned. In the Leicestershire area the service provided by the insurance medical practitioners has been most satisfactory. It is essential that the co-ordination and goodwill of the medical practitioner should be consistently maintained in order to consolidate still more the provisions of medical benefit. During the past year only six complaints were received against insurance practitioners in the area, two of which were not substantiated. If there must be criticisms, it is emphasized that these should be constructive. In the interests of the general health of the community it is hoped that the scope of medical benefit will be extended to include specialist services and to provide additional financial recognition to those practitioners who are competent to give such services.

The Leicestershire Insurance Committee claims to be the pioneer in this country in respect of health propaganda under the

powers and duties authorized by Section 60 of the National Health Insurance Act, 1911. The report closes with an acknowledgement of the work performed by Dr. G. J. Harris, vice-president of the committee, who also acts as its honorary secretary, and whose guidance is stated to have been of immense value.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty:—Surgeon Commanders: G. L. Buc eridge to the *President*, additional for temporary service at Medical Department: R. S. Osborne to the *Defiance*: F. Bolster to the *Ganges*, additional for R.N. Sick Quarters, Shotley; H. P. Turnbull to the *Dryad*; F. E. Anley to the *Victory*, for R.M. Division, Forton, Gosport; J. Fullarton to the *Vernon*; J. R. A. Clark-Hall to the *Warspite*. Surgeon Lieutenant Commander T. Gwynne-Jones to the *Columbine* for Port Edgar Base.

Messrs. L. McGolrick, P. J. Alfred the O'Rourke, and D. R. Ainsworth have entered as Surgeon Lieutenants for short service, and have been appointed to R.N. Hospital, Has'ar.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Lieutenant Frederick P. Nicholas has been promoted to the rank of Surgeon Lieutenant Commander.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel and Brevet Colonel T. C. MacKenzie, D.S.O., half-pay list, late R.A.M.C., retires on retired pay on account of ill health contracted on active service and is granted the rank of Colonel.

Lieutenant (temporary Captain) W. Y. Escott to be Captain, September 20th, 1922, but not to reckon for pay or allowances prior to November 24th, 1922.

ROYAL AIR FORCE MEDICAL SERVICE.

C. V. D. Rose is granted a short service commission as Flying Officer, with effect from, and with seniority of, November 27th.

E. F. N. Currey is granted a temporary commission as a Flight Lieutenant, with effect from, and with seniority of, November 29th.

REGULAR ARMY RESERVE OF OFFICERS.

ROYAL ARMY MEDICAL CORPS.

The following officers cease to belong to the Reserve of Officers on account of physical unfitness: Lieut.-Colonels E. Brodribb, D. E. Curme, J. D. G. Macpherson, J. P. J. Murphy, and H. K. Palmer, Major and Brevet Lieut.-Colonel F. W. Lambalie, Captain T. J. Crean, V.C., D.S.O.

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

Major (Brevet Lieut.-Colonel) R. T. Turner, T.D., having attained the age limit, is retired, and is granted the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform.

Captain H. B. Whitehouse resigns his commission and retains the rank of Captain.

Percy Hay is to be Lieutenant.

TERRITORIAL ARMY RESERVE.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonel T. A. Green, D.S.O., from General List, to be Lieutenant-Colonel.

Major T. P. Puddicombe, D.S.O., from General List, to be Lieutenant-Colonel.

Captains from General List, to be Majors: S. McCausland, M.C., W. Sneddon, T. C. Clarke, M.C.

Captains from General List, to be Captains: L. B. Stott, M.C., H. W. Featherstone.

Captain A. G. Laing-Meason resigns the rank of Captain which he was permitted to retain in the *London Gazette* of November 22nd, 1921, on enlistment into the ranks.

The following officers, having attained the age limit, are retired, and retain their rank except where otherwise stated: Lieut.-Colonel W. B. Cockill, T.D., with permission to wear the prescribed uniform, Majors H. M. Evans, A. P. H. Simpson; Captains and are granted the rank of Major, J. W. Dale, M.C., and J. O'Sullivan; Captains J. R. Holmes, J. Buckner, F. G. Bennett, G. Dick, R. J. Isaac, S. McCoull, A. Heath, W. T. Wood, N. S. Jeffrey.

The following officers relinquish their commissions and retain their rank: Lieut.-Colonel W. A. Benson, D.S.O., T.D., Majors A. T. Sissons and C. B. Whitehead, Captains P. McEwan, J. A. L. Magee, H. I. Shanley, and R. P. Thomason. *Sanitary Companies:* Captain A. H. Savage.

VACANCIES.

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House-Surgeon (male). Salary, £200 per annum.

ASCOT: H ATHERWOOD ORTHOPAEDIC HOSPITAL FOR CHILDREN.—Resident Medical Superintendent. Salary, £850 per annum.

BIRMINGHAM CITY HOSPITAL, Little Bromwich.—Senior Assistant Medical Officer (male). Salary, £350 per annum, rising to £500.

BIRMINGHAM GENERAL HOSPITAL.—(1) House-Physician, (2) House-Surgeon, (3) House-Surgeon to Skin and Venereal Departments. Salary for (2) £70 per annum and for (3) £95 per annum.

[illegible] Orthopaedic Surgery, School Medical Officer, temporary part-time, £8 a year, £20 per annum.

[illegible] Professor of Physiology and Registrar. Salary, £[illegible] per annum.

CORNWALL EDUCATION COMMITTEE, Truro.—Deputy Assistant School Medical Officer (male). Salary, £500 per annum.

DUNDEE CORPORATION.—Resident Medical Officer for the Ashludie Sanatorium, Monifieth. Salary, £300 per annum.

EAST LONDON HOSPITAL FOR CHILDREN, Shadwell, E.—Morning Casualty Officer (non-resident). Salary, £120 per annum.

EXETER: ROYAL DEVON AND EXETER HOSPITAL.—Medical Officer in Charge of Venereal Clinic. Salary, £400 per annum.

GREENWICH: DREADNOUGHT HOSPITAL.—Surgeon for Diseases of the Throat, Nose, and Ear.

HACKNEY WICK SCHOOL TREATMENT CENTRE.—Anaesthetist for dental cases. Usual L.C.C. fees.

HEMEL HEMPSTEAD: WEST HERTS HOSPITAL.—Resident Medical Officer.

HOSPITAL FOR WOMEN, Soho Square, W.1.—Pathologist and Registrar. Honorarium, £100 per annum.

JARROW BOROUGH.—Medical Officer of Health, School Medical Officer, and Medical Superintendent of the Isolation Hospital. Salary, £750 per annum.

LLANELLY BOROUGH.—Assistant Medical Officer of Health and Assistant Schools Medical Officer (lady). Salary, £500 per annum, increasing to £600.

LONDON COUNTY COUNCIL.—Assistant Medical Officer in the Mental Hospital Service. Salary, £300 per annum, rising to £400 *plus* temporary fluctuating additions.

MALAYA.—Medical Officers in the Government Service of the Straits Settlements and Malay States. Pensionable salary equivalent to £616, rising to £1,120 per annum.

MANCHESTER: ANCOATS HOSPITAL.—(1) Honorary Physician, (2) Honorary Radiologist. (3) Resident Surgical Officer, salary, £250 per annum.

MINISTRY OF PENSIONS.—Junior Medical Officer at the Pensions Hospital, Bath. Salary, £350 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Resident Casualty Officer (male). Salary at the rate of £250 per annum.

OLDHAM COUNTY BOROUGH.—Assistant Schools Medical Officer. Salary, £530 per annum.

PARISHES OF BOLESKINE AND DORES.—Medical Officer and Vaccinator. Salary at the rate of £70 10s. per annum, together with £60 from British Aluminium Company and about £360 from other public appointments.

PLYMOUTH: SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House-Physician. Salary, £120 per annum.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Clinical Assistants.

ST. MARYLEBONE GENERAL DISPENSARY, Welbeck Street, W.1.—(1) Gynaecologist, (2) Physician for Infant Consultation.

WAKEFIELD: CLAYTON HOSPITAL.—House-Surgeon (male). Salary, £200 per annum.

MEDICAL REFEREE.—Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 25. Applications to Private Secretary, Home Office, S.W.1, by January 3rd.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

British Medical Association.

OFFICES AND LIBRARY, 429, STRAND, LONDON, W.C.2.

Reference and Lending Library.

THE READING ROOM, in which books of reference, periodicals, and standard works can be consulted, is open to members from 10 a.m. to 6.30 p.m., Saturdays 10 to 2.

LENDING LIBRARY: Members are entitled to borrow books, including current medical works; they will be forwarded, if desired, on application to the Librarian, accompanied by 1s. for each volume for postage and packing.

Departments.

SUBSCRIPTIONS and ADVERTISEMENTS (Financial Secretary and Business Manager. Telegrams: Articulate, Westrand, London).

MEDICAL SECRETARY Telegrams: Mediseeras, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

Telephone number for all Departments: Gerrard 2630 (3 *lines*).

SCOTTISH MEDICAL SECRETARY: 6, Rutland Square, Edinburgh. (Telegrams: Associate, Edinburgh. Tel.: 4361 Central.)

IRISH MEDICAL SECRETARY: 16, South Frederick Street, Dublin. (Telegrams: Bacillus, Dublin. Tel.: 47.7 Dublin.)

Diary of the Association.

JANUARY.

2 Tues. London: Sight Testing by Opticians Subcommittee, 4 p.m.
5 Fri. London: Insanity and Crime Subcommittee, 2.30 p.m.
10 Wed. London: Propaganda Subcommittee, 2.30 p.m.
East Hertfordshire Division, County Hospital, Hertford. Dr. W. Langdon Brown: Minor Endocrine Defects.
11 Thurs. Lancashire and Cheshire Branch: Clinical Meeting, Preston Royal Infirmary.
16 Tues. London: Central Ethical Committee.
18 Thurs. London: Insurance Acts Committee, 12 noon.
23 Tues. London: Organization Committee.
26 Fri. London: Organization of Medical Students Subcommittee, 2.30 p.m.
Buckinghamshire Division, Crown Hotel, Aylesbury.
31 Wed. London: Finance Committee, 2.30 p.m.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

WILLIAMS.—At Ty-Gwalia, Llanelly, on December 19th, 1922, the wife of Oscar Williams, M.B., B.S.Lond., of a son.

DEATHS.

BIDDLE.—On December 15th, at 5, Park Terrace, Merthyr Tydfil, Cornelius Biddle, M.R.C.S., L.R.C.P.Lond., J.P., in his 77th year.

COLES.—On December 19th, 1922, after very short illness, John William Coles, at 197, Camberwell New Road, S.E., in his 82nd year.

PICKERING.—On December 19th, at 38, St George's Place, Bolton, Bernard Pickering, M.B., Ch.B., the beloved husband of May Pickering, aged 41 years.

Printed and published by the British Medical Association at their Office, No. 429, Strand, in the Parish of St. Martin-in-the-Fields, in the County of London.

SUPPLEMENT
TO THE
BRITISH MEDICAL JOURNAL.

LONDON: SATURDAY, DECEMBER 30TH, 1922.

CONTENTS.

	PAGE
Plight of the Russian Doctors: An Appeal to the Medical Profession...	235
CURRENT NOTES:	
The Scottish Board of Health and Medical Salaries ...	234
The Half-yearly Indexes	234
ASSOCIATION NOTICES	234
MEETINGS OF BRANCHES AND DIVISIONS	234
DENTAL BOARD OF THE UNITED KINGDOM	235
NAVAL AND MILITARY APPOINTMENTS	235
VACANCIES	236
ASSOCIATION INTELLIGENCE AND DIARY	236
APPOINTMENTS	236
DIARY OF SOCIETIES AND LECTURES	236
BIRTHS, MARRIAGES, AND DEATHS	236

THE PLIGHT OF THE RUSSIAN DOCTORS.

A New Year Appeal to the British Medical Profession.

In June last the Council of the British Medical Association made an appeal for the starving doctors of Russia. In order that the response should be as widespread as possible the subscription was limited to 5s. Within the next few weeks the sum of £1,610 was received and was paid over to the American Relief Administration, which promptly dispatched food parcels to those doctors and members of deceased doctors' families whose names had been supplied by an organization of Russian doctors in this country. The Association has had a signed receipt from Russia for every parcel delivered.

Since the appeal many letters have been received from individual doctors and from bodies of doctors in Russia, testifying in the most touching way the gratitude of the recipients of the food parcels, not only for the gift but for the evidence that the doctors in Russia had not been forgotten by their more fortunate colleagues in other parts of the world.

A typical individual letter is one recently received from a woman doctor in Russia who is working at a clinic for mental diseases. She gives full particulars about herself and her professional status and goes on to say:

"My family, which lives solely on my earnings, consists of my aged mother of 70, two brothers (both war invalids from 1914–15: one, 45 years old, was wounded in arm and leg and is almost totally disabled; the other, 47 years old, was wounded in the head and is mentally deranged), and a sister who recently underwent a serious operation—half her stomach was removed. I ask you to help these four persons who are unable to do any work, be it only by sending them *one* food parcel."

The following acknowledgement from Petrograd is typical of many received from collective medical bodies:

"The section of the American Relief Administration in Petrograd has in the name of the British Medical Association transmitted to the Academy of Medicine for the professors and assistants 44 boxes containing in all 132 poods of different nutritive substances. The professors and assistants of the Academy of Medicine are glad to see in that gift a token of the unity of the whole scientific world and wish to express their deep gratitude to the representatives of the British Medical Association." (This was signed by the vice-president of the Academy and eleven other representatives.)

It is only too clear that what has been done is a mere scratching of the surface, below which is a dreadful mass of want and misery. The situation is perhaps best described in the words of Mr. W. E. Haigh, F.R.C.S., a British doctor who is attached to the Nansen High Commission In a letter addressed to the Association, dated "Moscow, September 24th," in which he expressed his satisfaction with what the Association had already done, he went on to say:

"The position of our colleagues becomes steadily worse. . . . The depreciation of the rouble and soaring prices make it impossible for them to provide food for their families, even were such obtainable in plenty. The salaries paid are fantastic, being much less than those of workers; for example, I pay my chauffeur one hundred millions a month and food packets; doctors working in the cholera blocks of the Odessa City hospitals receive 27 millions and, happily, have gifts of maize from the American Relief Administration, but pay is always in arrears. There are doctors in the country who have had no pay this year, and depend on small gifts from the peasants, but this in famine-stricken areas cannot be much. The doctors in Cherson on the Black Sea have had no pay for six months, and their lot is desperate. That city, once of 80,000 inhabitants, passed through all the horrors of famine last winter, combined with epidemics of typhus and relapsing fever, followed by a severe epidemic of cholera in the summer. Hospitals, unheated, without soap, appliances, drugs, provided with a ration for all of 600 calories a day, often mixed with surrogates, conditions have been such as require the pen of Dante to describe. . . . The sole means of keeping doctors and nurses alive was the American maize. . . . I know those (doctors) who have had their children at home with oedema, living on surrogates, those who have eaten linseed cattle cake instead of bread, or the pressed mass after the extraction of oil from sunflower seeds; some have died on duty, and typhus has taken fresh toll, and for their wives and children there is nothing. The best off financially are poor and their means are often the sale of books, silver, the furs, clothing, and jewellery of their wives, and these reserves are now exhausted. . . . Surgeons of repute may have no stockings, medical women no fires in their room in winter, yet they will entertain one if they can, and it is pathetic to see their enthusiasm to talk 'shop' . . . and their joy at having a colleague from abroad even for half a day. The needs of the professors are great . . . but the rankers are in worse straits, and I wish to point out that all forms of help can now be administered best through the local medical societies; if we find the food they know the needs best. . . . Wood for firing costs to-day in Odessa 40,000 roubles a pound, petroleum is 8 millions a pood, butter 1,800,000 a pound, and with such a market the doctor's wife has to sell necessary clothes, not to buy."

Dr. Haigh's evidence is borne out by many pathetic letters the Association has received, and the Council at its meeting on December 13th resolved to make a Christmas appeal to the medical profession in this country to do something more to alleviate the terrible conditions in which our colleagues in Russia, through no fault of theirs, are living—and dying.

The results of the present appeal will be divided between the American Relief Administration and the All-British Appeal of the Nansen High Commission. There is plenty of room for both bodies, and each in its own way can be depended upon to see that money subscribed by the British medical profession is spent in providing the necessities of life to Russian doctors and their families.

Clothing is almost as badly needed as food. The American Relief Administration in its latest report (December, 1922) says: "While the need of foodstuffs in Russia continues a grave problem, the needs of the population for warm clothing are equally grave." The American Relief Administration has entered into an agreement with the Soviet Government to allow clothing remittances to be made for individuals. This arrangement will be utilized to send clothing where we are advised that clothing is more urgently needed than food.

Subscriptions of *5s., or multiples of 5s.*, should be made payable to the Russian Doctors Relief Fund and sent to Mr. L. Ferris Scott, the Financial Secretary of the Association, 429, Strand, London, W.C.2, who will acknowledge their receipt. The amount collected will be acknowledged week

by week in the BRITISH MEDICAL JOURNAL, but not the names of individual subscribers.

We ask each of our readers who is looking forward to a happy New Year to send something to help to keep alive medical men and women in Russia, who are striving to carry on their work under almost impossible conditions and in a spirit of devotion and self-sacrifice which is an inspiration to the profession the world over.

WILLIAM MACEWEN,
President.
R. WALLACE HENRY,
Chairman of Representative Body.
R. A. BOLAM,
Chairman of Council.
G. E. HASLIP,
Treasurer.

British Medical Association.

CURRENT NOTES.

The Scottish Board of Health and Medical Salaries.

ON previous occasions reference has been made in these columns to the ideas held by the Scottish Board of Health on the question of the salaries of the medical men who come under its supervision. Professional men generally may well feel thankful that their salaries and status are not regulated by a body whose views are so narrow and eccentric. Recently the Stirlingshire Education Authority appointed a medical woman as assistant school medical officer at a salary of £500 a year, but the Board of Health has since informed the authority that while it approves of the appointment it is not prepared to approve of an initial salary of more than £450 under the scheme of medical inspection and treatment. From the report published in the *Glasgow Herald* of December 15th it appears that the Chairman of the Education Committee said "it was extremely doubtful whether the Board of Health had any legal right to object to the salary fixed by the authority, which, it appeared, was the minimum laid down by the British Medical Association." The Stirlingshire Education Authority adhered to its former decision fixing the salary at £500 as being fair and reasonable, and we hope it will stand to its guns. It would almost seem as though the Scottish Board of Health is determined to use all its influence to compel medical practitioners who desire to seek a career in the public services to come over the Border. Thus the Dundee Education Authority is now advertising in the lay press for an assistant school medical officer at a salary of £450 per annum.

The Half-Yearly Indexes.

The usual half-yearly indexes to the JOURNAL and to the SUPPLEMENT and EPITOME have been prepared and will be published shortly; they will, however, not be issued with all copies of the JOURNAL, but only to those readers who ask for them. Any member or subscriber who desires to have one or all of the indexes can obtain what he wants, post free, by sending a post-card notifying his desire to the Financial Secretary and Business Manager, British Medical Association, 429, Strand, W.C.2. Those wishing to receive the indexes regularly as published should intimate this desire.

Association Notices.

BRANCH AND DIVISION MEETINGS TO BE HELD.

BIRMINGHAM BRANCH.—Ordinary meetings of the Branch will be held on the following Thursdays: January 18th, February 15th, and March 15th, 1923. The following members have promised to read papers: Sir Gilbert Barling, Mr. Douglas Stanley, Mr. Furneaux Jordan, and Mr. Seymour Barling. Members are reminded that they are entitled to bring cases and specimens to the meetings for demonstration and discussion.

LANCASHIRE AND CHESHIRE BRANCH.—A clinical meeting of the Lancashire and Cheshire Branch will be held at Preston Royal Infirmary on Thursday, January 11th, 1923. Clinical cases and pathological specimens will be exhibited and discussed and short papers read. A committee will shortly meet to draw up the programme, and members wishing to contribute should communicate as early as possible with the Secretary of the Preston Division (Dr. Walter Sykes, 31, Winckley Square), or with the Branch Secretary, Mr. F. Strong Heaney, 72, Rodney Street, Liverpool.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.—A meeting of the East Hertfordshire Division will be held at the County Hospital, Hertford, on January 10th, 1923, when Dr. W. Langdon-Brown, Physician to St. Bartholomew's Hospital, will read a paper on minor endocrine defects.

NORTH OF ENGLAND BRANCH: STOCKTON DIVISION.—A meeting of the Stockton Division will be held on Friday, February 9th, 1923, when Dr. G. C. Anderson, Deputy Medical Secretary, will give an address.

SOUTH MIDLAND BRANCH: BUCKINGHAMSHIRE DIVISION.—The following meetings of the Buckinghamshire Division have been arranged for the coming session. Extra meetings will be held should the necessity arise. January 26th, 1923, at the Crown Hotel, Aylesbury: General business and election of Representative. March 30th, at the Crown Hotel, Aylesbury: General business. May 16th, at the Royal Bucks Hospital, Aylesbury: Clinical address on a surgical subject, to be announced later. June 30th, at the Crown Hotel, Aylesbury: Annual general meeting. The Local Medical and Panel Committee meets on the last Friday in the month. A member having any difficulty regarding insurance practice which he wishes to bring forward should communicate it to a member of the committee.

YORKSHIRE BRANCH: SHEFFIELD DIVISION.—A meeting of the Sheffield Division will be held at the University on Friday evening, February 2nd, 1923, when Dr. J. W. Ballantyne (Edinburgh) will deliver a British Medical Association lecture on "The problem of the newborn infant."

Meetings of Branches and Divisions.

BIRMINGHAM BRANCH: NUNEATON AND TAMWORTH DIVISION.

A MEETING of the Nuneaton and Tamworth Division was held on December 13th.

The report of the Council on the hospital policy of the Association having been discussed, the amendment suggested by the Council was adopted *nem. con.*

An interesting discussion took place on the report of the Council on the notification of venereal disease. Dr. TAPPER, M.O.H., spoke strongly in favour of a comprehensive scheme of notification. Dr. CYRIAX followed and gave a clear exposition of the law as it is applied in Sweden, which was much appreciated. Answers to the questions submitted by the Council were then put to the meeting and agreed to.

LANCASHIRE AND CHESHIRE BRANCH: ROCHDALE DIVISION.

A MEETING of the Rochdale Division was held on December 12th, when Dr. BATEMAN, chairman of the Division, presided.

Dr. ALAN MCDOUGALL, of the David Lewis Epileptic Colony, Alderley Edge, gave an address on epilepsy. In regard to the definition of epilepsy, he regarded loss of consciousness as an essential feature, but he had seen several cases where there was not an entire loss of consciousness. Epilepsy was classified into major and minor cases, but there was no real boundary line. In some individuals there might be both major and minor attacks; some might have one attack in a couple of years, and Dr. McDougall had seen a patient who had 500 fits in twenty-four hours—one every three minutes. The patient might have a high temperature—up to 107°, but this was very serious. A person might have epileptic attacks which were really hysterical; such people were clinically epileptic but must be treated as hysteria. Those cases which were like infantile convulsions in character, with a raised temperature, yielded readily to chloroform, but unless seen in a few minutes were usually fatal; those cases which brought up a blood-stained sputum were also fatal if they were not at once given an injection of atropine, which seemed to stop the oedema. As a rule epileptics behaved well, but some could become objectionable; a good deal depended upon their treatment. He believed that institutional treatment was good, as there an epileptic was a normal member of his community, and could do what everybody else was doing, whereas outside he could not do so. An epileptic might use a bicycle inside the institution, whereas outside he must not, as he would be sure of injuring either himself or somebody else. Early cases were best treated in colonies, and one-third of them were cured there. Probably in the case of children something at home got on their nerves, and when worried nothing would help them but removal from the cause. As to medicinal treatment, he did the same in the colony as the practitioners did outside; they could keep the patient on bromide if they wanted, but let them please themselves. He had been using luminal instead of bromide, but it was not a cure, though it helped, at least for a time. Questions were asked by Dr. W. H. BATEMAN, Dr. GRANT, and Mr. J. C. JEFFERSON. A vote of thanks was moved by Dr. LOMAS, seconded by Mr. JEFFERSON, and carried; Dr. MCDOUGALL replied.

LANCASHIRE AND CHESHIRE BRANCH: SOUTHPORT DIVISION.

A MEETING of the Southport Division was held on December 15th. The report of the Council on the hospital policy of the Association was discussed. The following amendment to paragraph 32 was carried by a small majority:

That paragraph 32 be amended to read as follows: "Income derived from gratuitous contributions, existing assets, endowments funds and the like are not liable to assessment for medical staff fund purposes, but all payments other than those made by private patients referred to in Sections IX (*a*) and (*b*)) made for hospital maintenance and treatment directly or indirectly on behalf of patients, whether by rate-aided or State-aided funds, or by an employer, approved society, insurance company, or under any contributory scheme for providing hospital benefit, should be liable to assessment for medical

staff fund purposes. Small payments made by *individual* patients not recoverable from any society or insurance company should not be so assessable.

The report of the Council on the notification of venereal disease was considered and answers to the questions submitted by the Council were adopted.

METROPOLITAN COUNTIES BRANCH: EAST HERTFORDSHIRE DIVISION.

A MEETING of the East Hertfordshire Division was held at the County Hospital, Hertford, on December 13th. The report of the Council on hospital policy was considered, and on the motion of Dr. LAWSON SMITH, seconded by Dr. MACFADYEN, it was unanimously resolved:

That the East Hertfordshire Division, after considerable discussion at a well-attended meeting, unanimously decides to reject the compromise on the payments of "tariff" payments proposed by the Council. The Division feels that the profession is being jockeyed into a position which it has no desire to occupy. Contributions made by patients who cannot pay private fees were intended to assist the upkeep of voluntary hospitals, and were not meant to subsidize an honorary medical staff.

To depart from this definite principle is to destroy the spirit of the voluntary hospital and the honorary medical staff, and to weaken our position in the event of possible alteration by establishing a rate of payment which would most certainly be used as a basis of remuneration in the future. This the Division is not prepared to do.

The report on the notification of venereal diseases was discussed and answers were adopted to the questions submitted by the Council.

After the meeting Mr. H. W. CARSON, F.R.C.S., delivered a most practical lecture on "Cancer of the stomach, diagnosis, and treatment," illustrated by lantern slides, eminently suited to the general practitioner. A hearty vote of thanks was accorded to Mr. Carson for his interesting and useful lecture.

YORKSHIRE BRANCH: WAKEFIELD, PONTEFRACT, AND CASTLEFORD DIVISION.

A MEETING of the Wakefield, Pontefract, and Castleford Division was held at the Great Bull Restaurant, Wakefield, on December 7th, when Dr. WILLIAM STEVEN, chairman of the Division, presided. Supper was served at 8 p.m., followed by the meeting.

The CHAIRMAN, as treasurer of the Representatives' expenses fund, reported that up to date only £5 had been received in response to the appeal recently issued by the honorary secretary, instead of £20, the amount which would have been realized if every member had subscribed. He appealed for a fuller support for this fund for defraying the out-of-pocket expenses of the Division's Representatives at the Annual or other Representative Meetings of the Association.

Dr. GIBSON reported upon a proposed scheme to bring about unite action between the Wakefield book club and the Wakefield Division of the British Medical Association, in the direction of clinical meetings. He had been in communication with the president of the book club, Dr. Roulston, and the matter was to be considered at the annual meeting of the club in February next. Discussion followed, and Dr. ROULSTON expressed his interest in the proposal, which would receive the friendly consideration of the book club.

Dr. GEORGE W. WATSON, of Leeds, delivered an address on "Blood pressure," illustrated diagrammatically. He dealt with the question first from the physiological and secondly from the pathological point of view. He emphasized that investigation of the diastolic and pulse pressures was relatively more important than that of the variations of the systolic pressure. He considered a systolic pressure over 150 and a diastolic pressure of 110 as pathological. He discussed the effect of physical exertion and of emotional excitement on blood pressure in health and disease. A brief discussion took place, and the meeting ended with a hearty vote of thanks to Dr. Watson for his paper.

DENTAL BOARD OF THE UNITED KINGDOM.

AT the winter session of the Dental Board of the United Kingdom, the Right Hon. Francis Dyke Acland presiding, it was reported that the number of persons who had obtained admission to the *Dentists Register* under the new Act was now a little under 7,000, and the total, when those who had presented themselves for the November and December examinations were included, was expected to reach 8,000.

Grants by the Dental Board.—In his address from the chair Mr. Acland said that before the Board committed itself to making grants it would be necessary to discover what level of income the Board might expect. Once a reliable forecast of future income was possible, grants might be made with the object of giving facilities for a larger number of students to enter the profession, of assisting persons who had obtained registration without the licentiateship to obtain the licentiateship or a degree, of providing better accommodation and teaching in the schools, and of encouraging post-graduate study and research. By far the largest part of the fund would be derived from the fees of those who had obtained registration in virtue of past practice, and it would only be fair that a reasonable proportion of the income should be devoted to their interests. If, however, the requisite number of students was not forthcoming to maintain a practising list of 16 000 (the number of practising dentists required on the basis of one to every 3,000 of the population), and if the schools were not able to train properly those who came forward, it would be for the Board to help in every way it could.

Unprofessional Advertising.—Mr. Acland went on to remark that one point in regard to which difficulties seemed almost certain to arise among those who had obtained registration under the new Act was in connexion with the use of showcases or the giving of unprofessional prominence to the work that was being carried on. The Board would take a strong view in regard to these matters, and intended to do its utmost to put down unprofessional advertising. It was impossible to lay down definite rules, because those who wished to evade them would not find it difficult to do so; but the Board would lay down a principle and consider each case on its merits. A practice which might be frowned at in Harley Street would not meet with the same disapproval in Hoxton, but the Board would carefully consider all complaints sent in, and would not hesitate to take action in those cases in which it seemed clear that the practitioner had endeavoured, by any form of advertising, to obtain an advantage over other practitioners in his neighbourhood.

Disciplinary Action.—The Board at this session approved warning notices regarding certain forms of professional misconduct. These were also approved by the General Medical Council, and appear in the report of the proceedings of that body (SUPPLEMENT, December 23rd (page 228). Only one disciplinary case came for the first time before the Board—a dentist being summoned to appear on the charge that he had been convicted of certain misdemeanours: judgement was postponed for one year. Seventeen dentists against whom the charge of covering was proved at the last session came up for judgement, and in all cases except one (which was further postponed until another session) it was decided that, in view of testimonials as to conduct in the interval, the name should not be erased and that the case should be closed.

Minor Dental Work.—A committee of the Board which was appointed to confer with representatives of the Ministry of Health on the scheme for the performance of minor dental work in the public dental service by persons who were not registered dentists reported that certain conditions had been approved by the Minister of Health for such work in the school medical service. The work was limited to cleaning and polishing, applying or removing dressings or temporary fillings, charting, recording, and work of like responsibility. There were certain stipulations as to the standing of the person doing the work, and the supervisory duties of the registered dentist under whom the work must be performed. The report was referred back to the Committee, which was directed to communicate with the Ministry with regard to the modification of the conditions in a certain respect.

Employment of Dentists by Co-operative Societies.—Deputations were received by the Board from the Parliamentary Committee of the Co-operative Congress on the question of the employment of dentists by co-operative societies, and also from the British Dental Association which objected to the methods employed by co-operative societies in regard to dentistry. After the deputations had been heard the Chairman suggested that a conference should be arranged between the two bodies, and the Board would be willing to give any assistance which might help to bring about a mutual understanding.

Other Reports.—The report of the Examination Committee, of which Sir James Hodsdon is chairman, furnished particulars of the prescribed examinations. Out of 234 candidates who presented themselves in July, 171 satisfied the examiners as to their knowledge of dentistry, and fulfilled the other requirements of the Act. Communications were received giving particulars of the dental legislation of other parliaments. The Isle of Man Dentists Act, 1922, adopted the *Dentists Register* of the United Kingdom, and closely followed the British Dentists Act. An Act had been lately passed in Quebec amending the statutes relating to dentistry by certain requirements as to final examinations and the granting of licences and diplomas. Legislation, rather less recent, of Jamaica and of Tasmania, was also tabled. The Registrar (Mr. Norman King) gave an account of the work of registration. He said that although some of the applicants under the new Act seemed to think that the chief object of the officials was to put difficulties in their way, in most cases they had been ultimately convinced that the opposite was the intention, and that it was only a stern sense of duty which necessitated such searching inquiries and satisfactory corroboration of statements.

Course of Lectures.

Under the auspices of the Dental Board of the United Kingdom, a series of four lectures will be delivered in London, Manchester, and Edinburgh on "The diseases of the periodontal tissues due to infection in their relation to toxaemia," by Mr. J. G. Turner, F.R.C.S., L.D.S., Mr. J. Howard Mummery, O.B.E., D.D.Sc.Pen., M.R.C.S., Professor E. E. Glynn, M.D., and Sir William Willcox, K.C.I.E., C.B., C.M.G., M.D. In London the lectures will be given at the Royal Society of Medicine, 1, Wimpole Street, W.1, at 5.30 p.m. on March 1st, 8th, 15th, and 22nd, 1923; in Manchester at the Physiology Lecture Theatre, Victoria University, at 5.30 p.m. on March 1st, 8th, 15th, and April 6th; and in Edinburgh at Professor Thomson's Lecture Room, the University, at 5.30 p.m., on March 2nd, 9th, 16th, and April 7th. The lectures are open to registered dentists and medical practitioners.

Naval and Military Appointments.

ROYAL NAVAL MEDICAL SERVICE.

THE following notifications are announced by the Admiralty: Surgeon Captains H. S. Burniston, C.M.G., to the *Tamar*, additional, for R.N. Hospital, Hong Kong; D. W. Hewitt, C.B., C.M.G., to the *Victory* for R.N. Hospital, Haslar, on relief; Surgeon Commanders H. E. R. Stephens, O.B.E., to the *Victory* for R.N. Hospital, Haslar; W. G. Edwards and W. R. Hastings to the *President*, additional, for hospital course; Surgeon Lieutenants P. J. Maguire to the *Ganges* for R.N. Sick Quarters, Shotley, temporary, W. McCoach to the *Benbow*.

Surgeon Lieutenant K. A. I. Mackenzie has been promoted to the rank of Surgeon Lieutenant Commander.

ROYAL ARMY MEDICAL CORPS.

Colonel R. J. Blackham, C.B., C.M.G., C.I.E., D.S.O., late R.A.M.C., is placed on the half-pay list under the provisions of Art. 485, Royal Warrant for Pay and Promotion, 1922.

Lieut.-Colonel G. B. Riddick retires on retired pay.

INDIAN MEDICAL SERVICE.

The services of Major W. L. Forsyth have been placed temporarily at the disposal of the Government of the Punjab, with effect from the date on which he assumes charge.

Captain J. M. Shah, M.B.E., to be Deputy Assistant Director-General, I.M.S. (October 16th).

The services of Captain J. B. Huban, O.B.E., have been placed temporarily at the disposal of the Chief Commissioner of Delhi, with effect from the date on which he assumes charge.

Captain N. H. Smith has been permitted to resign the service, with effect from October 15th.

Colonel H. F. Cleveland, C.I.E., has been permitted to retire from the service, with effect from October 25th.

The King has approved the resignation from the service of Captain G. A. S. Ramsay, with effect from August 2nd.

The services of Captain C. J. Lodge Patch, M.C., have been placed temporarily at the disposal of the Government of the Punjab, with effect from November 1st.

The undermentioned officers have been appointed to the Medical Research Department, with effect from the dates shown: Major H. H. King (March 15th, 1921), Major H. E. Short (August 30th, 1921), Brevet Major J. A. Sinton (February 8th, 1921), Captain G. C. Maitra and Captain R. H. Malone (November 1st, 1922).

TERRITORIAL ARMY.

ROYAL ARMY MEDICAL CORPS.

The following officers relinquish their commissions and retain their rank, except where otherwise stated: Lieut.-Colonels P. S. Hichens, D. A. Cameron, G. C. Taylor, O.B.E.; Major T. L. Fennell, T.D. (with permission to wear the prescribed uniform). Captains and are granted the rank of Major: C. F. M. Saint, C.B.E., A. C. Alport, G. W. Shore, O.B.E., W. Briggs, A. Rankine, M.C., C. M. Nicol, F. R. Eddison, H. J. A. Longmore. Captains: W. W. N. King, L. A. Celestin, N. H. Hill, J. Chalmers, J. Green, M.B.E., J. C. W. Methven, C. F. Walters, J. M. Plews, A. A. McKenzie, C. S. O'Hagan, L. T. Challenor, C. C. Boyle, H. Yallow, I. J. Davies, L. B. Cane, T. D., W. L. Holyoak, E. R. Flint, W. Johnston, H. G. Ludolf, M.C., W. Longley.

Sanitary Companies.—Major J. Grounds, T.D., and Captain J. Inglis, O.B.E., resign their commissions and retain their rank.

VACANCIES.

ASCOT: HEATHERWOOD ORTHOPAEDIC HOSPITAL FOR CHILDREN.—Resident Medical Superintendent. Salary, £850 per annum.

BIRMINGHAM CITY HOSPITAL, Little Bromwich.—Senior Assistant Medical Officer (male). Salary, £350 per annum, rising to £500.

BIRMINGHAM EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary, £600 per annum, rising to £700.

CAMBRIDGE AND HUNTINGDON HOSPITAL.—Clinical Pathologist. Salary, £500 per annum.

CAPE TOWN UNIVERSITY.—Senior Lecturership in Physiology. Salary, £1,000 per annum, rising to £1,200.

CITY OF LONDON MEN AT HOSPITAL, near Dartford.—Second Assistant Medical Officer. Salary, £350 per annum, rising to £400.

DERBYSHIRE SANATORIUM FOR TUBERCULOSIS, near Chesterfield.—Assistant Medical Officer. Salary, £300 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—(1) Assistant Physician. (2) Assistant Resident Medical Officer; salary, £150 per annum. (3) House-Physician; honorarium, £50 for six months.

LADY CHICHESTER HOSPITAL FOR WOMEN.—Vacancy on Honorary Surgical and Gynaecological Staff.

LONDON COUNTY COUNCIL.—Assistant Medical Officer in the Mental Hospital Service. Salary, £320 per annum, rising to £400 *plus* temporary fluctuating additions.

MANCHESTER ROYAL INFIRMARY.—(1) Honorary Physician, (2) Honorary Radiologist.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen Square, W.C.—Senior House-Physician. Salary, £150 per annum.

PARISHES OF BOLESKINE AND DORES.—Medical Officer and Vaccinator. Salary at the rate of £70 10s. per annum, together with £60 from British Aluminium Company and about £360 from other public appointments.

PLYMOUTH: SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House-Physician. Salary, £120 per annum.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—Milroy Lecturer for 1924.

ROYAL FREE HOSPITAL, Gray's Inn Road, W.C.—House-Physician.

ROYAL LONDON OPHTHALMIC HOSPITAL, City Road, E.C.—Refraction Assistant. Salary, £100 per annum.

ST. HELENS COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary, £450 per annum.

SALFORD UNION INFIRMARY.—Third Resident Assistant Medical Officer. Salary, £300 per annum.

VICTORIA HOSPITAL FOR CHILDREN, Tite Street, S.W.—(1) House-Physician; (2) House-Surgeon. Salary at the rate of £100 per annum.

WEST HAM UNION.—Temporary District Medical Officer (part-time). Salary, £130 per annum, rising to £180 with bonus and extra medical work.

WHITTINGHAM: COUNTY MENTAL HOSPITAL.—(1) Pathologist and Assistant Medical Officer. (2) Assistant Medical Officer. Salary, including bonus, £419 13s. each.

This list of vacancies is compiled from our advertisement columns, where full particulars will be found. To ensure notice in this column advertisements must be received not later than the first post on Tuesday morning.

APPOINTMENTS.

EDWARDS, H. V., M.R.C.S., L.R.C.P., Certifying Factory Surgeon for the Felixstowe District, co. Suffolk.

HANNAY, A. S., M.B., Ch.B.Glasg., Certifying Factory Surgeon for the Mauchline District, co. Ayr.

MARTIN, James Purdon, M.R.C.P.Lond., M.D., M.A.Belf., Medical Registrar to St. Mary's Hospital, Paddington, W.2.

STOKER, Frederick, F.R.C.S., Laryngologist to the Italian Hospital, Queen Square, W.C.

TITY, Cecil B. F., M.Ch., M.B., B.A.O., R.U.I., Assistant Ophthalmic Surgeon, Royal Albert Hospital, Devonport.

British Medical Association.

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MEDICAL SECRETARY (Telegrams: Mediscera, Westrand, London).

EDITOR, *British Medical Journal* (Telegrams: Aitiology, Westrand, London).

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Diary of the Association.

JANUARY.

5 Fri. London: Insanity and Crime Subcommittee, 2.30 p.m.
10 Wed. London: Propaganda Subcommittee, 2.30 p.m.
East Hertfordshire Division, County Hospital, Hertford. Dr. W. Langdon Brown: Minor Endocrine Defects.
11 Thurs. London: Special Committee on Notification of Venereal Diseases, 2.30 p.m.
Lancashire and Cheshire Branch: Clinical Meeting, Preston Royal Infirmary.
12 Fri. London: Science Committee, 2.30 p.m.
16 Tues. London: Central Ethical Committee.
18 Thurs. London: Insurance Acts Committee, 12 noon.
19 Fri. London: Parliamentary Elections Committee, 3 p.m.
23 Tues. London: Organization Committee.
25 Thurs. London: Journal Committee, 2.30 p.m.
26 Fri. London: Organization of Students Subcommittee, 2.30 p.m.
Buckinghamshire Division, Crown Hotel, Aylesbury.
30 Tues. (and following day if necessary). London (Council Chamber, Guildhall): Conference of Insurance Acts Committee with representatives of Approved Societies, Insurance Committees and their Clubs, and Pharmacists.
31 Wed. London: Finance Committee, 2.30 p.m.

DIARY OF SOCIETIES AND LECTURES.

ROYAL SOCIETY OF MEDICINE.—*Section of Surgery:* Wed., 5.30 p.m., Mr. W. Sampson Handley: Pathology and Treatment of Renal Calculi. *Section of Obstetrics and Gynaecology:* Thurs., 8 p.m., Dr. Robert Wise: Glycosuria with Diabetic Symptoms in a First Pregnancy, resulting in Birth of a Dead Child, treated with success in a Second Pregnancy. Mr. Clifford White: Instruments Left in the Peritoneal Cavity; Analysis of 44 Cases. Specimens: Dr. Watts-Eden and Mr. Aubrey Goodwin: Two Cases of Cancer of the Cervix treated by Radium before Operation. *Section of Laryngology:* Fri., 3.30 p.m., Cases. Extra meeting limited to cases for diagnosis which will not be published. Particular attention is called to the alteration of the time of showing cases for this meeting.

ASSURANCE MEDICAL SOCIETY, 11, Chandos Street, W.1.—Wed., 5.30 p.m., Dr. J. Strickland Goodall: The Significance of Extra-systole.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham.—Wed., 4.15 p.m.: Mr. T. H. C. Benians: Blood Infections, to be followed by a discussion.

BIRTHS, MARRIAGES, AND DEATHS.

The charge for inserting announcements of Births, Marriages, and Deaths is 9*s., which sum should be forwarded with the notice not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.*

BIRTHS.

ANTHONY.—On November 2nd, at Vincent Square, London, to Eveleen, wife of A. L. Anthony, M.R.C.S., L.R.C.P., Medical Officer, Ashanti Goldfields Corporation, Ashanti—a daughter.

COBB.—On December 15th, to Eleanor M., wife of J. H. Cobb, M.B., B.S., F.R.C.S., 281, Glossop Road, Sheffield—a son.

MARRIAGE.

PATERSON BROWN—WISHART.—At S. Giles Cathedral, Edinburgh, on December 15th, by the Rev. John B. Duke, B.D., Morningside U.F. Church, Edinburgh, and the Rev. Duncan Marmichael, B.D., Largs Parish Church, Keith Paterson Brown, M.B., F.R.C.S.E., son of Mr. J. Paterson Brown and Mrs. Paterson Brown, Harlaw, Hope Terrace, Edinburgh, to Margaret Cleland, younger daughter of Mr. D. F. Wishart and Mrs. Wishart, Sydney Lodge, Whitehouse Loan, Edinburgh.

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INDEX TO THE EPITOME FOR VOLUME II, 1922.

READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma; Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosuria, and Sugar; Eye, Ophthalmia, and Vision, etc.

The Figures in this Index refer to the Number of the Paragraph, NOT the Page.

A.

Abdominal disease, acute, shoulder pain in, 484
Abdominal membranes, anomalous, 173
Abdominal pain, diagnostic value of, 12
Abdominal pain, "thermo-penetration" for, 488
Abdominal wall, post-operative hernia of, 363
Abortion, treatment of, 492
Abscess of tongue, primary cold, 37
Accessory sinuses. *See* Sinuses
Acetonuria, post-operative, 212
Acid secreted by the kidneys, mechanism of neutralization of, 88
Actinomycosis, buccal, 343
Actinomycosis, treatment of, 232
ACTON, H. W.: Causation of lathyrism, 251
Addison's disease and pregnancy, 240
Adeno-carcinoma of the fundus uteri, 344
Adenomyoma of the uterus, diffuse, 128
Adrenaline reaction in cases of high blood pressure, 68
Adrenaline, resuscitation by the intracardiac injection of, 358
Agglutination, group, 408
AIEVOLI: Lumbago and sciatica, 97
Air passages, upper, surgical diathermy for inoperable growth of, 342
Albe-'s operation for Pott's disease, 402
Albuminuria and bismuth poisoning, 315
Albuminuria and eclampsia, influence of diet on the incidence of, 83
Albuminuria, orthostatic in pregnancy, dis-appearance of, 155
Alcoholic epilepsy, 167
ALVAREZ, W. C.: Improvements in pre operative and post-operative care, 422
Amaurosis in infants, some causes of, 208
AMBARD: Mechanism of neutralization of acid secreted by the kidneys, 88
AMES: Length of life of transfused erythrocytes, 66
AMUNDSEN, P.: The blood picture of radiologists, 431
Anaemia, blood transfusion and the treatment of, 170
Anaemia, infantile splenic, 3
Anaemia, pernicious, due to stricture of the intestines, 504
Anaemia, severe, and leukaemia in childhood, 25
Anaesthesia, intraspinal, the causes of fatalities from, 256
Anaesthesia, spinal, followed by meningitis, 511
Anaesthesia, spinal, non-success in, 214
Anaphylaxis in man, fatal case of, 179
ANDREWES, F. W.: Group agglutination, 408
Aneurysm of the uterine vessels, 449
Angina abdominalis, 435
Angina pectoris, 270
Aniline copying ink as a toxic foreign body, 420
Ankylosis of joints, arthroplasty for, 148
ANSCHÜTZ: Palliative trephining for pressure on the brain, 461
Antidiphtheritic vaccination, the effect of, 220
Antidysenteric serum, action of on lysis due to the bacteriophage of d'Herelle, 410
Antityphoid vaccination, effect of on the enteric fevers, 520
Antityphoid vaccination in the German army during the war, 312
Appendicitis the cause of general chronic debility, 126
Appendicitis, sex incidence of, 100
Appendix, radiography of, 441
Arachnoid fluid, the precipitation test of, 198
ARMAND-DELILLE: Researches on the value of antibodies in tuberculosis, 181
ARMSTRONG: Embryology and physiology of stasis of the colon, 54
Arterial hypertension, 332
Arterio-sclerosis in children, 476
Arthritis, chronic, dietetic treatment of, and its relationship to the sugar tolerance, 297
Arthritis, gonococcal, 340
Arthritis, haemophiliac, 93
Arthroplasty for ankylosis of joints, 148
Artificial pneumothorax. *See* Pneumothorax
Ascarides and urticaria, 53
Ascaris, the mode of infection by, 6
Ascites complicating myoma uteri, 19
Ascites in the female, physiological, 129
Aspirin in asthma, 186
Aspirin as a urinary disinfectant, 165
Asthma, aspirin in, 186
Asthma, bronchial, relation between pulmonary tuberculosis and, 117
Asthma, the suprarenals in, 30
Asthma, vaccine treatment of, 437
Atrophy, infantile, importance of hereditary syphilis in, 273
Auricular fibrillation, action of quinidine sulphate in, 1, 293
Auscultation sign of Richard Karplus, 482
AYRES, S.: Subungual verrucae, 304

B.

BABARCZY, M. v.: Changes in the amount of cholesterin in the blood in cholelithiasis, 454
BACCARINI, L.: Rare localizations of hydatid disease, 259
B. aertrycke, human infections with, 267
B. paratyphosus B in the blood, the significance of, 219
B. suipestifer infection 223
BACKMAN: The sex incidence of appendicitis, 100
Bacteriophage of d'Herelle, the action of anti-dysenteric serum on lysis due to the, 410
Bacteria, vitamins for, 200
BAEHR, G.: Histopathology of filter-passing virus of influenza, 370
BALDENWECK, L.: Vaccine therapy in oto rhino-laryngology, 339
BALDOZZI, C.: Voluntary diplopia, 317
BALLANTYNE, J. W.: Foetal post-maturity, 194
BALSAMO: Methods of drainage in surgery, 278
BANAUDI, E.: Eosinophilia in muscular rheumatism, 453
BANG, S.: Aspirin in asthma, 186
BANSSILLON: The rapid diagnosis of urinary tuberculosis, 22
BARBÉ, A.: Mental disorders in epidemic en cephalitis, 480
BARBIER, H.: The importance of hereditary syphilis in infantile atrophy, 273
BARD, L.: Physiology of the sympathetic nervous system, 271
BARRENSCHEEN: A new reaction for urea and its clinical value, 23
BARTLETT: Indications for splenectomy in children, 31
Basophile inclusions in polymorphonuclear leucocytes, 369
BATDY, M.: A new method of isolation of the tubercle bacillus from the sputum, 474
BAUER, A. W.: Glycosuria in pregnancy, 468
BAUER, J. H.: Tetanus bacillus in intestines of man, 327
BEAUMONT, W. M.: Butyn as a cocaine substitute, 125
BECK: Indications for Caesarean section, 16
BÉGOUIN, P.: Necrobiosis of myomata, 175
BÉGUET, M.: The Schick reaction in an epidemic of diphtheria, 475
BELAI: A new typhus organism, 160
BERBLINGER, W.: Acute leukaemia, 225
Berlin, post-operative, 341
BERNHARD, P.: Intravenous injections of calcium in congestion of the lungs, 397
BESSEMANS, A.: The effect of antidiphtheritic vaccination, 220
BESSON, A.: Human infections with *B. aertrycke*, 267
BEYER, AV.: Vaccines in osteomyelitis, 338
BEZANÇON, F.: Necrotic dissecting pneumonia, 245
BICKEL, G.: Is tuberculous meningitis curable? 433
Bile ducts, accidental wounds of the, 191
Bilharzia disease treated by emetine, 163
Biliary passages, traumatic rupture of, 490
BINETTI: Serological test for cancer, 45
Bismuth poisoning and albuminuria, 315
Bismuth preparations in treatment of syphilis, 392
BLASCHKO: Dermatitis from dyed furs, 2
Blastomycosis pulmonary, 276
Blastomycosis, systemic, 310
BLOCH, M.: Influence of antityphoid vaccination on the enteric fevers, 520
BLOCK, B.: Treatment of syphilis with bismuth preparations, 392
BLOCK, F.: Vaccines in influenza, 206
Blood, *B. paratyphosus* B in, significance of, 219
Blood cholesterol in syphilis, 182
Blood coagulation during pregnancy, variations in the time of, 452
Blood elements, metabolization of, 157
Blood nitrogen in surgical lesions of the kidney, 381
Blood, pathological significance of abnormal leucocytes in, 348
Blood picture of radiologists, 431
Blood pressure, high, the adrenaline reaction in cases of, 68
Blood pressure, high, myomata and, 448
Blood pressure, high, without renal disease, 92
Blood sugar, effect of the removal of the liver on, 183
Blood transfusion, 60
Blood transfusion and the treatment of anaemia, 170
Blood, venous and capillary, relationship between the leucocytes of, 161
BLOOMFIELD: Significance of influenza bacilli, 21
BLOOMFIELD, A. L.: Bacteriology of the mouth, 201
BLUM, Paul: Bismuth poisoning and albuminuria, 315
BOAS: Simultaneous injection of salvarsan and mercury, 140—Syphilis during pregnancy, 470—A triad of symptoms in nervous dyspepsia, 501
BOCAGE: Variations in the coagulation time during pregnancy, 452
BÖHRINGER, K.: Haematuria following sodium bromide for pyelography, 424
BOLTEN, G. C.: The nervous system in influenza, 296
Bone, second metatarsal, a disease of the head of the, 56
BONNAMOUR, S.: Vaccine treatment of asthma, 437
BOORSTEIN, S. W.: Cervical rib, 423
BOQUET, A.: Vaccination against tuberculous infection, 329
BORREL: Influence of glycogen on tumour grafts of the mouse, 24
BORREMANS-FONTHIÈRE, P.: The effect of anti-diphtheritic vaccination, 220
BOSE, J. P.: Transient glycosuria in pregnancy, 241
BOSSAN, E.: A new method of isolation of the tubercle bacillus from the sputum, 474
BOTEY, R.: The technique of laryngectomy, 382
Botulinus poisoning, test for, 496
Botulism, encephalitis, poliomyelitis, etc., differential diagnosis of, 294
BOYD, Gladys: Nephritis in children, 46
BOYD, W.: Gall-bladder problems, 442
BOYER, L.: A new medium for the gonococcus, 371
BRAASCH, W. F.: Horseshoe kidney, 337
Brain pressure, palliative trephining for, 461
BRANDT, G.: The treatment of acute osteomyelitis, 321
BRAUN, Ludwig: The auscultation sign of Richard Karplus, 482
Broad ligament, fibromyoma of, 80
BRODIN, P.: Hepatic "anergy" in tuberculosis, 353
Bronchial asthma. *See* Asthma
BROWN, A.: Chronic intestinal dyspepsia in children, 291
BROWN, C. C.: The urethroscope in the treatment of gonorrhoea, 189
BROWN, J. J. Graham: Sthenic dyspepsia or hyperchlorhydria 372
BROWN, W.: Responsibility and modern psychology, 416
BROWNE, F. J.: Foetal post-maturity, 194
Buccal actinomycosis, 343
Buccal infections with the tubercle bacillus, 269
Buccal mucous membrane, injury to, by *x* rays, 145
BUCHHOLTZ, J.: Aspirin in asthma, 186
BUFALINI, E.: The relation between bronchial asthma and pulmonary tuberculosis, 117
BUMM: Paravaginal radium applications, 62
BURKE, V.: Test for botulinus poisoning, 496
Butyn as a cocaine substitute, 125

C.

CADENAT, F. M.: Gastrectomy for acute perforated gastric ulcer, 103
Caesarean section, abdominal, the end-results of, 177
Caesarean section, indications for, 16, 17
Caesarean section, low cervical, value of, 152
CALAMITA, O.: The leucocytes in pulmonary tuberculosis, 308
Calcium, intravenous injections of, in congestion of the lungs, 397
Calculi, shadowless renal, 8
Calculi, ureteric, removal of, by the cystoscope, 98
Calculi, vesical, following prostatectomy, 421
Calculus, renal, 512
CALKINS, L. A.: Foetal measurements, 326
CALMETTE, A.: Milch cows and tuberculin, 180—Vaccination against tuberculous infection, 329
CAMESCASSE: Treatment of neuralgia, 52
Camphor in nocturnal enuresis, 143
CAMUS, Jean: Recent advances in neurological therapeutics, 352

Cancer of breast, recurrence in, 491
Cancer of breast, recurrent, and pregnancy, 65
Cancer of breast, x ray treatment of, 465
Cancer of cervix and pregnancy, 346
Cancer of cervix, pre-operative radiotherapy of, 403
Cancer of cervix, radium treatment of, 127
Cancer of cervix following supravaginal hysterectomy, 347
Cancer, end-results in, 356
Cancer, gastric, and gastric ulcer, 489
Cancer, gastric, and venous thrombosis, 150
Cancer of kidney, papillary, 486
Cancer, the origin of, 429
Cancer of ovary, metastatic, 84
Cancer, serological test for, 45
Cancer of the throat, oral sepsis in, 13
Cancer of the tongue, 58
Cancer of uterus of unusually long duration, 387
Cancer of the uterus, radio-therapeutic drainage of the pelvis for, 153
Cancer of the uterus, radiotherapy in, 132
CANNATA: Milk intolerance, 438
Capillary circulation in pregnancy nephropathies 40
Capillary and venous blood, relat nship between the leucocytes of, 161
CARAVEN: Vesical calculi following prostatectomy, 421
Carbohydrates, the effect of, in the production of immune bodies, 498
Carbonic acid, the action of, in gastric motility, 328
Carcinoma. *See* Cancer
Cardiac complications of gonorrhoea 434
Cardiac failure during pregnancy and labour, 285
Care, pre-operative and post-operative, improvements in, 422
CARNOT, P.: The action of carbonic acid on gastric motility, 328
CARONIA: Chloroma, 142
CARREL, A.: Pure cultures of large mononuclear leucocytes, 349
Carrel's irrigation method in treatment of tendovaginitis, 467
CASPARIS, H.: Ultra-violet radiations in rickets, 250
Castor oil and quinine for induction of labour, 39
Catalytic activity of the tissues, 472
Cataract, capsular, 169
CAULE, J. R: Blood nitrogen in surgical lesions of the kidney, 381
CAUSSADE: The cardiac and aortic complications of malaria, 73
Cautery, the actual, in the treatment of paralysis from vertebral disease, 29
CAVAILLON: An epidemic of bacillary dysentery in France, 396
CAWSTON, F. G.: Emetine in the treatment of bilharzia disease, 163
Cerebro spinal fluid: its source, distribution, and circulation, 246
Cervical rib, 423
CESA-BIANCHI: The specific therapy of visceral syphilis, 393
CHAHOVITCH, H.: Diagnosis of organic and functional meningeal conditions by Pandy's reaction, 289
Chancre fluid, Wassermann test with, 89
Chancres, soft, treated by local application of "914" (novarsenobenzol), 96
CHARLES, J. W.: Neuropathic keratitis a result of focal infection, 363
Children's diseases, sedatives and hypnotics in, 460
CHIRAY, M.: Indications for splenectomy, 443
Chloroma, 142
Chlorosis, the ovarian origin of, 105
CHOUKOLKA, E: Stenosis of the female urethra, 495
Choked disc. *See* Optic disc
Cholelithiasis, early signs of, 277
Cholelithiasis: Changes in the amount of cholesterin in the blood in, 454
Cholera, 135
Cholera, vaccination against by the oral method, 158
CHRISTIAN, T. B.: Treatment of syphilis in the insane, 394
CHRISTIANSEN, V.: Late effects of injuries to the nervous system, 479
Chronic acid, facial paralysis following cauterization with, 318
CHURCHMAN, J. W.: Bacteriostatic power of gentian violet, 112
CIOPPA: Naso-pharyngeal lesions in children predisposed to tubercle, 466
Circulatory system in tuberculosis, 478
CLAES, Egide: Acute staphylococcal osteomyelitis of femur cured by vaccine treatment, 379
CLARKE, J. G.: Uterine haemorrhage of benign origin treated by radium, 215
CLARKE-KENNEDY, A. B.: The value of quinidine in auricular fibrillation, 295
Clavicle, sarcoma of, 509
Club-foot, congenital, frequency of, 508
Cocaine substitute, butyn as, 125
COCHRANE, W. A.: Disabilities of the hand and wrist, 316
CODREANU, A.: The leucocytes in the capillary and venous blood in scarlet fever, 199
COEN, G.: Detachment of ovarian cysts, 407
Colic, umbilical, in children, 503
Colitis, severe, and chronic dysentery, 5
COLLET: Tracheo-cutaneous suture in the treatment of foreign bodies, 35
Colloidal iodine in gonorrhoea, 362
Colon, diverticulitis of the, 235
Colon stasis, embryology and physiology of, 54
Colostrum, significance of, 265
COMBY, J.: Disorders of dentition, 322
Complement fixation reaction in tuberculosis of domestic animals, 411
Complement fixation test for hydatid disease, 79
Conception, ovarian inhibition of, 409
CONSEIL, E: Oral administration of vaccines, 354
COOPMAN, H. L.: Cancer of uterus of unusually long duration, 387—Umbilical colic in children, 503
COPE, Zachary: Shoulder pains in acute abdominal disease, 484
CORNELL, E. L.: Value of low cervical Caesarean section, 152
CORPER, H. J.: Pulmonary aspiration of particulate matter, 110
Corpus luteum, cysts of the, 238
Coryza in infants, treatment of, 505
COSTA, S.: A new medium for the gonococcus, 371
COTTE: Myomectomy, 405—Treatment of disease of the uterine appendages, 428
COTTENOT: Treatment of malignant tumours of the maxillary sinus, 398
COTTON, H. A.: Infections of the gastro-intestinal tract, 457
COULON: Influence of glycogen on tumour grafts of the mouse, 24
COURMONT, P.: The humoral reactions of pleural fluid, 389
COURTNEY, A. M.: Chronic intestinal dyspepsia in children, 291
COUSIN, G.: Oculo motor lesions in lethargic encephalitis, 481
COWARD, K. H.: The relation of the fat-soluble factor to rickets in pigs, 108
COWIE, D. M.: Horse serum treatment of pyelitis and pyuria, 336
Cows, milch, and tuberculin, 180
COZZOLINO: Endo-uterine transmission of scarlet fever, 71—Treatment of tuberculous meningitis, 168
CRAMER, A.: Is tuberculous meningitis curable? 453
Cranial fossa, the middle, a symptom of tumour of, 202
Craniotomy: is it ever necessary? 154
Crepitation, scapular, 514
Cretinism and endemic goitre, and their prophylaxis, 483
Cullen's sign of ruptured extrauterine pregnancy, 239
CULPIN, Millais: The nomenclature of minor mental disorders, 247
CURSCHMANN, H.: Effect of war diet on Graves's disease, 115
Cystoscope for removal of ureteric calculi, 98
Cysts of the corpus luteum, 238
Cysts of ovary, detachment of, 407
Cytological researches on glioma of the retina, 134

D.

DAELS: Radio-therapeutic drainage of the pelvis for cancer of the uterus, 153
DAHLSTRÖM, S.: The cause of fatalities from intraspinal anaesthesia, 256
DAVIDE, H.: The virus of herpes and the virus of encephalitis, 268
DAVIDSON: Megacolon, 151
DEAN, H. R.: Fatal anaphylaxis in man, 179
Death, intrauterine, signs of, 41
DE BARZY: Gonococcal arthritis, 340
DE BEAUCAR, Mme. Grumspar: The medical application of diathermy, 292
DE BRUYNE, F.: Ovarian grafts, 323
DE LAVERGNE, V.: Herpes and facial paralysis, 187—Human infections with *B aertrycke*, 267
DE LEE, J. B.: Value of low cervical Caesarean section, 152
DELIE, A.: Oto-sclerosis and its treatment, 399
DELLA TORRE: Traumatic epilepsy, 190
DEMOLE, V.: Alcoholic epilepsy, 167
Dental caries, 133
Dentition, disorders of, 322
Dentition, pathological, 376
Dermatitis from dyed furs, 2
DERRICK, E. H.: The pathogenesis of renal tumours, 281
DE SMETH, Jean: Hypernephroma, 464
DESPEIGNES: The rapid diagnosis of urinary tuberculosis, 22
DE STEFANO: Infantile splenic anaemia, 3
Diabetes insipidus, recovery from, 141
Diabetes mellitus, classification and therapeutics of, 69
Diabetes mellitus, treatment of, 205
Diabetic mortality, decreasing: increasing incidence of glycosuria, 139
Diaphragmatic paralysis, therapeutic, 172
Diathermy, the medical applications of, 292
Diathermy, surgical, for inoperable growth of the upper air and food passages, 342
DIDIER: Haemoclasic reaction in normal and abnormal pregnancy, 87
Diet, influence of, on the incidence of eclampsia and albuminuria, 83
Diet, war, effect on Graves's disease, 116
DIETSCH: Palliative treatment of hay fever, 119
Digitalis causing paroxysmal tachycardia, 456
Digitalis preparations, special indications and methods of administration of, 355
DI FACE: Non-success in spinal anaesthesia, 214
Diphtheria epidemic, the Schick reaction in a, 475
Diphtheria, familial immunity to, 451
Diphtheria, glycaemia in, 497
Diphtheria, treatment of, 252
Diphtheria of the vulva, 414
Diplopia, voluntary, 317
Disc, choked optic, 299
Diverticulitis of the colon, 235
DÖDERLEIN, A: Treatment of puerperal fever, 284
DOSSENA: Conservative operation for ectopic gestation, 82
DOWNS, T. McKean: The Wassermann reaction in non-luetic cases, 518
DOYNE, P. G.: Some causes of amaurosis in infants, 208
Drainage in surgery, methods of, 278
DRAPER, J. W.: Infections of the gastro intestinal tract, 457
DUBOIS, L.: Diagnosis of viability, 324
DRUMMOND, J. C: The relation of the fat-soluble factor to rickets in pigs, 108
DRURY, H. C.: Treatment of diphtheria, 252
Dublin methods in treatment of eclampsia, 446
DUCHÊNE: Myomectomy, 405
DUFFAU, H. E.: Bacteriotherapy in typhoid fever, 85
DUFOURT, A.: Diagnosis of organic and functional meningeal conditions by Pandy's reaction, 289
DUNKHASE: Ascites complicating myoma uteri, 19
Duodenal ulcers. *See* Ulcers
Duodeno-biliary drainage, a non-surgical method of, 211
Duodenum, retroperitoneal rupture of, 302
Dupuytren's contraction, 213
DUQUAIRE: Vaccine treatment of asthma, 437
Dysentery, bacillary, an epidemic of, in France, 396
Dysentery, chronic, and severe colitis, 5
Dysentery, serum treatment of, 28
Dyspepsia, chronic intestinal, in children, 291
Dyspepsia, factors in, 502
Dyspepsia, nervous, a triad of symptoms in, 501
Dyspepsia, sthenic, or hyperchlorhydria, 372
Dystrophy, progressive muscular, myocardial degeneration in, 499

E.

Ear, middle, surgical complications of acute suppuration of, 77
Ears, syringing of in otitis media, 55
EBELING, A. H.: Pure cultures of large mononuclear leucocytes, 349
EBRIGHT, G. E.: Differential diagnosis of encephalitis, poliomyelitis, botulism, etc., 294
Eclampsia and albuminuria, influence of diet on the incidence of, 83
Eclampsia, Dublin methods in treatment of, 446
Eclampsia, *post-partum*, 217
Eclampsia, treatment of, 384, 550
Ectopic gestation. *See* Gestation
Eczema, flavine in treatment of, 4
EDEN, T. W.: Treatment of eclampsia, 384
EDWARDS, J. G.: Radiography of the appendix, 441
EGE, R.: Pepsin and hydrochloric acid medication, 417
EHRHORN, G: The genesis of urogenital tuberculosis, 234
Elbow-joint, resection of, 303
Elephantiasis, the Kondoléon operation for, 123
Embolism and puerperal thrombosis, 366
Embryotomy: is it ever necessary? 154
Emetine in treatment of bilharzia disease, 163
Emetine, intolerance to, 91
Encephalitis, epidemic, influenza and, 49
Encephalitis, epidemic, mental disorders in, 480
Encephalitis, epidemic, ocular symptoms of, 36
Encephalitis lethargica, 204
Encephalitis lethargica, herpetiform eruptions in, 377
Encephalitis lethargica, oculo-motor lesions in, 481
Encephalitis, poliomyelitis, botulism, etc., differential diagnosis of, 294
Encephalitis, virus of, and the virus of herpes, 268
Endocarditis, gonorrhoeal, 162
Endocrine glands, relation of the pituitary to other, 113
Endocrine glands, toxic effects of helminthiasis and, 114
Endocrine. *See also* Glandular
ENGELMANN, R.: Zinc poisoning after vaginal douching, 426
Enteric fever. *See* Fever
Enuresis, nocturnal, camphor in, 143
Enzymes of *Streptococcus haemolyticus*, 111
Eosinophilia in muscular rheumatism, 453
Epididymectomy, Steinach's, for senile decay, 236
Epididymis, syphilis of the, 32
Epilepsy, alcoholic, 167
Epilepsy, surgical treatment of, 440
Epilepsy, traumatic, 190
Eruptive disease in infancy, a peculiar, 166
Erythema nodosum and tuberculosis, 138, 439
Erythrocytes in pelvic disease, sedimentation of, 136
Erythrocytes, transfused, length of life of, 66
Ether in whooping cough, 378—Intramuscular injections of, 272

ETIENNE, G.: The ovarian origin of chlorosis, 105
EUSTIS, R. S.: Intracranial haemorrhage in the newborn, 380
EVANS, Geoffrey: Arterio-sclerosis in children, 476
Exophthalmic goitre. *See* Goitre *and* Graves's disease

F.

FABER: Gastroptosis and the shape of the thorax, 26
Facial paralysis from cauterizing with chromic acid, 318
Facial paralysis and herpes, 187
FAIRBANK, H. A. T.: Results of treatment of congenital dislocation of the hip, 301
FAIRLEY: The complement fixation test for hydatid disease, 79
Fallopian tube, treatment of, occlusion of, 197
Fallopian tubes and sterility, 61
Fat-soluble factor, relation of to rickets in pigs, 108
Fats: action of certain fats on osseous metabolism, 43
FELDMAN, S.: Treatment of skin diseases by potassium permanganate, 334
Fever, enteric, bacteriotherapy of, 86
Fever, enteric, influence of antityphoid vaccination upon, 520
Fever, enteric, jaundice in, 333
Fever, enteric, treatment of, 477
Fever, scarlet, diagnostic signs in, 412
Fever, scarlet, endouterine transmission of, 71
Fever, scarlet, the leucocytes in the capillary and venous blood in, 199
Fever, typhus, a new organism, 160
Fever, yellow, immune serum in, 368
Fevers, enteric, influence of antityphoid vaccination on, 520
Fibromyoma of the broad ligament, 80
FIESSINGER, N.: Hepatic "anergy" in tuberculosis, 353
Filix mas jaundice, 458
FINSTERER, H.: The value of early operation in acute haemorrhage from gastric and duodenal ulcers, 122
FISCHER: *X*-ray treatment of Graves's disease, 99
FITZGIBBON, G.: Dublin methods in treatment of eclampsia, 446
FITZPATRICK, G.: Pregnancy and Addison's disease, 240
Flavine in treatment of eczema, 4
FLETCHER, A. A.: Dietetic treatment of chronic arthritis and its relationship to the sugar tolerance, 297
Focal infections, 164
Foetal death, diagnosis of, 324
Foetal measurements, 326
Foetal post-maturity, 194, 325
Foetus, living, is perforation of, ever necessary? 154
Food passages, surgical diathermy for inoperable growth of, 342
Food poisoning, 243
Food, preserved, 436
Foreign bodies, tracheo-cutaneous suture in the treatment of, 435
Foreign body, toxic, anilin copying ink as a, 420
FOSTER: Ocular symptoms of epidemic encephalitis, 36
FOSTER, N. B.: Treatment of hypertension, 311
FOWLER: Megacolon, 151
FOWLER, J. S.: Pyuria in children, 90
France, an epidemic of bacillary dysentery in, 396
FRANK, R. T.: Cervical carcinoma after supravaginal hysterectomy, 347
FRASER: Pneumococcal peritonitis, 7—Syphilis of the epididymis, 32
FRAZIER, C. H.: Tumours of the spinal cord, 298
FREEDMAN, L.: Vitamins for yeasts and bacteria, 200
FRENCH, T. R.: The tongue as a source of infection, 231
FREY, W.: Angina abdominalis, 435
FRUHINSHOLZ, A.: Thyro-parathyroid insufficiency and pregnancy, 345
FÜLLEBORN, F.: The mode of infection by ascaris, 6
Fundus uteri, adeno-carcinoma of, 344
FUNK: Vitamins for yeasts and bacteria, 200
FURNO, A.: Tuberculosis in country districts, 335
Furs, dyed, dermatitis from, 2

G.

Gall bladder problems, 442
Gall stones, incidence of, *post mortem*, 102
Gall stones, treatment of, 149
GALLOIS, P.: Aspirin as a urinary disinfectant, 159
GAMMELTOFT: Syphilis in obstetrics, 64—Syphilis during pregnancy, 470
Gangrene of the lung, neo-salvarsan in, 295
GARDINER, W. T.: Scarlatinal otitis, 357
GARVIE, A.: Influenza, 330
GASBARRINI: Encephalitis lethargica, 204
Gastrectomy for acute perforated gastric ulcer, 103
Gastric carcinoma. *See* Cancer
Gastric crises, surgical treatment of, 124
Gastric motility, the action of carbonic acid on, 328
Gastric tumour. *See* Tumour
Gastric ulcer. *See* Ulcer
Gastro-enterostomy followed by retrograde intussusception of the small intestine, 9
Gastro-intestinal tract, infections of, 457
Gastroptosis and the shape of the thorax, 26
GAUDISSART: Focal infections, 164
GAUDY: Bilateral pyelography, 403
GEIPEL: Transmission of placental tuberculosis, 495
Gentian violet, bacteriostatic power of, 112
German army, antityphoid vaccination in during the war, 312
Gestation, ectopic, conservative operation for, 82
Gestation, simultaneous uterine and ectopic, 367
Gestation. *See also* Pregnancy
GEWIN, W. C.: Nephrolithiasis, 418
GÉZES, R.: Buccal actinomycosis, 343
GIBSON, A.: Injuries of the shoulder, 319
GILLETT: Selenium in the treatment of malignant disease, 78
GIORDANO: Surgical treatment of gastric crises, 124
Gland, pineal, extirpation of, 351
Gland, thyroid, and sensitivity to tuberculin, 290
Glands, endocrine, relation of the pituitary to, 113
Glands, endocrine, toxic effects of helminthiasis and, 114
GLASS, E.: Anilin copying ink as a toxic foreign body, 420
Glioma of the retina, cytological changes in, 134
GLOBUS, Joseph H.: Myocardial degeneration in progressive muscular dystrophy, 499
GLOYNE, S. Roodhouse: Buccal infection with tubercle bacillus, 269
Glycaemia in diphtheria, 497
Glycogen, influence of on tumour grafts of the mouse, 24
Glycosuria, increasing incidence of, decreasing diabetic mortality, 139
Glycosuria in pregnancy, 468, 469
Glycosuria in pregnancy, transient, 241
Goitre, endemic, and cretinism, and their prophylaxis, 483
Goitre, exophthalmic, radium in, 121
Goitre, toxic, surgery of, 192
Goitre. *See also* Graves's disease
GOLDING, J.: The relation of the fat-soluble factor to rickets in pigs, 108
Gonococcal arthritis, 340
Gonococcus, a new medium for the, 371
Gonorrhoea, cardiac complications of, 434
Gonorrhoea, colloidal iodine in, 362
Gonorrhoea, early, effect of hyperpyrexia upon, 513
Gonorrhoea, the urethroscope in the treatment of, 189
Gonorrhoeal endocarditis, 162
GORDON: Treatment of spastic paralysis, 47
GORRES, H.: Albee's operation for Pott's disease, 402
GOTTESMAN, J.: Resuscitation by the intracardiac injection of adrenaline, 358
GOUGEROT, H.: Visceral nitritoid crises, 137
GOULLIOUD: Myomectomy, 405
GRAVES: Tuberculous renal calculi, 8
Graves's disease, effect of war diet on, 116
Graves's disease, influence of thyroidectomy on the heart in, 444
Graves's disease, *x*-ray treatment of, 94
Graves's disease. *See also* Goitre
GRECO: Ligneous perinephritis, 320
GREENBAUM, S. G.: Pathogenic moulds, 222
GRIGORIU, C.: Extirpation of the pineal gland, 351
Group agglutination, 408
GUARINI: *X*-ray treatment of skin diseases, 373
GUBLER, S.: The prognosis for dislocations of the shoulder, 360
GUÉRIN, M.: The origin of cancer, 429

H.

HABERLANDT, L.: Ovarian inhibition of conception, 409
Haematoma of ovary, endometrial, 237
Haematoma of the rectus abdominis muscle, 76
Haematuria, essential, 463
Haematuria following sodium bromide for pyelography, 424
Haemoclasic reaction in normal and abnormal pregnancy, 87
Haemolytic functions of certain organs, 307
Haemolytic streptococci, 111, 287
Haemophilia causing menorrhagia, 176
Haemophiliac arthritis, 95
Haemorrhage, acute, from gastric and duodenal ulcers, value of early operation in, 122
Haemorrhage, intracranial, in the newborn, 380
Haemorrhage, intracranial, medico-legal significance of in the newborn, 266
Haemorrhage, myopathic, and the treatment of myoma, 295
Haemorrhage of uterus of benign origin treated by radium, 215
HAGEMANN, J.: Frequency of pulmonary complications in puerperal sepsis, 447
HAGSTRÖM, P.: Puerperal thrombosis and embolism, 366
HALL, T. P.: Etiology of whooping-cough, 248
Hallucinations, lilliputian, 331
Hand and wrist, disabilities of the, 316
HANNS, Alfred: The haemolytic functions of certain organs, 307
HANSEN: The incidence of gall-stones *post mortem*, 102
HANSSEN, O.: Filix mas jaundice, 458
HAROLD, C. H.: Chemistry of Wassermann reaction, 244
HARRIS, H. E.: Treatment of puerperal septicaemia, 364
HARRIS, W. H.: Retroperitoneal rupture of the duodenum, 302
HAUDUROY, P.: The action of antidysenteric serum on lysis due to the bacteriophage of d'Herelle, 410
HAY: Diagnostic value of abdominal pain, 12
Hay fever, palliative treatment of, 119
Heart disease, congenital, prognosis of, 415
Heart disease, quinidine in, 228
Heart failure during prognancy and labour, 285
Heart in Graves's disease, influence of thyroidectomy on, 344
HEBERT, P.: Influenza of antityphoid vaccination on the enteric fevers, 524
HEDLUND, E.: Operative treatment of ulcer of the stomach and duodenum, 361
HERMAN, H.: Indications for tonsillectomy, 485
HEITZ, Jean: The therapeutics of quinidine, 203—Arterial hypertension, 332
HEITZ: Hyperplesis and myomata, 365
HERTOEN, L.: The precipitin test of the arachnoid fluid, 198
Heliotherapy in tuberculosis, 50
HELLSTRÖM, J.: Treatment of osteochondritis dissecans of the knee 359
Helminthiasis, toxic effects of, and the endocrine glands, 114
HENNENBERG, R.: The treatment of tabes dorsalis, 188
Hepatic "anergy" in tuberculosis, 353
HERFF, F. P.: The Kondoleon operation for elephantiasis, 123
HERMANN, H.: The effect of artificial pneumothorax on general nutrition and growth, 288
Hernia of abdominal wall, post-operative, 363
Hernia, inguinal, recurrence of, 400
Hernia, sciatic, 260
Herpes and facial paralysis, 187
Herpes, virus of, and the virus of encephalitis, 268
Herpes zoster followed by varicella, 224
Herpetiform eruptions in encephalitis lethargica, 377
HERTZ, P.: Value of the tuberculin test, 309
HESSERT, W.: Recurrence of inguinal hernia, 400
HILLEMAND: Researches on the value of antibodies in tuberculosis, 181
HINDHEDE: Overfeeding in tuberculosis, 51
HINSDALE: Heliotherapy in tuberculosis, 50
Hip, congenital dislocation, frequency of, 508
Hip, congenital dislocation of, results of treatment of, 301
HIPPEL, V.: Diagnosis and treatment of choked (optic) disc, 299
HOLLAND, W.: Erythema nodosum and tuberculosis, 439
Horse serum treatment of pyelitis and pyuria, 336
Horseshoe kidney, 337
HOTZ, G.: Endemic goitre and cretinism and their prophylaxis, 483
HOWARD, H. H.: Malarial relapses, 275
HOWLAND, J.: Ultra-violet radiations in rickets, 250
HUNTER, W. K.: Syphilis of the liver, 391
HURST: The suprarenals in asthma, 30
HUTCHISON, W. J.: Treatment of puerperal septicaemia, 364
Hydatid disease, complement fixation test for, 79
Hydatid disease, rare localizations of, 259
Hydatidiform mole, treatment of, 515
Hydrochloric acid medication and pepsin, 417
Hydronephrosis, traumatic, 462
Hyoscyamus and hyoscine, tincture of, in paralysis agitans, 314
Hyperchlorhydria in sthenic dyspepsia, 372
Hyperemesis gravidarum, 131
Hypernephroma, 464
Hyperplesis and myomata, 365
Hyperpyrexia, effect of, upon early gonorrhoea, 513
Hypertension, treatment of, 311
Hyperthyroidism, mild, recognition of, 395
Hypnotics and sedatives in diseases of children, 460
Hysterectomy, supravaginal, followed by cervical carcinoma, 347

I.

IACONO: A symptom in the diagnosis of early phthisis, 144
Immune bodies, the effect of carbohydrates in the production of, 498
Infancy, a peculiar eruptive disease in, 166
Infant, pyenature, pathology of the, 432
Infantile atrophy. *See* Atrophy
Influenza, 330
Influenza bacilli, significance of, 21
Influenza and epidemic encephalitis, 49
Influenza, histopathology of the filter-passing virus of, 370
Influenza, the nervous system in, 296
Influenza, treatment of, 253
Influenza, vaccines in, 206
Injuries to the nervous system, late effects of, 479

Ink, aniline copying, as a toxic foreign body, 420
Insane, treatment of syphilis in the, 393
Intestinal dyspepsia, chronic, in children, 291
Intestinal obstruction, acute, cause and relief of, 171
Intestinal obstruction from difficult labour, 406
Intestinal obstruction during pregnancy, 156
Intestinal permeability for saccharose, 67
Intestine, small, retrograde intussusception of, after gastro-enterostomy, 9
Intracranial haemorrhage. *See* Haemorrhage
Intraspinal anaesthesia. *See* Anaesthesia
Intravenous medicine, the limitations of, 184
Intussusception, acute, 99
Intussusception of the small intestine, retrograde, after gastro-enterostomy, 9
Iodine, colloidal, in gonorrhoea, 362
ISCH-WALL: Variations in the coagulation time during pregnancy, 452
Itchy points (puncta pruritica), 313

J.

JACKSON, A. C.: Nephrolithiasis, 418
JACOBY, P.: Scapular crepitation, 514
JACOD, M: Vaccine therapy in oto-rhino-laryngology, 339
JACQUIN, P.: Abdominal pregnancy, 283
JAMES: Dental caries, 133
Jaundice, chronic, significance of, 459
Jaundice, filix mas, 458
Jaundice in typhoid fever, 333
JELLETT, H.: Maternal mortality in New Zealand, 38
JERVELL, O: Convalescent serum in the prophylaxis of measles, 413
Joints, loose bodies in the, 210
JÖRGENSEN, G.: The medico legal significance of intracranial haemorrhages in the newborn, 266
JOSLIN, Elliott P.: Decreasing diabetic mortality, increasing incidence of glycosuria, 139—The treatment of diabetes mellitus, 205
JUDD, E. S.: Horse-shoe kidney, 337

K.

KAISER, A. D: Effects of tonsillectomy on the general health of children, 209
Kala-azar, Indian, occurrence of Leishmania in the intestinal tissues in, 430
KEENE, F. E.: Uterine haemorrhage of benign origin treated by radium, 215
KELLER, R.: Cysts of the corpus luteum, 238
KENNEDY, W. T.: Treatment of occlusion of the Fallopian tube, 197
KEPINOW, L: The thyroid gland and sensitivity to tuberculin, 290
Keratitis, neuropathic, a result of focal infection, 383
Keratomalacia in Southern India, 57
KEY: Syphilis and mental deficiency, 185
Kidney, blood nitrogen in surgical lesions of the, 381
Kidney, horse-shoe, 337
Kidney, rhabdomyoma of, 109
Kidney, papillary carcinoma of, 486
Kidneys, acid secreted by, mechanism of, neutralization of, 88
KILDUFFE, R. A.: Comparative value of Sachs-Georgi and Wassermann reactions in the diagnosis of syphilis, 473
KING, E. L: The end-results of abdominal Caesarean section, 177
KIRSTEIN: Labour under hypnosis, 85
KLAUDER: Wassermann test with chancre fluid, 89
KLEINBERG, S: Operative treatment of scoliosis, 279
KLEINSCHMIDT, L.: The fate of syphilitics with salvarsan rashes 274
KLING: Chronic dysentery and severe colitis, 5—The virus of herpes and the virus of encephalitis, 268
KNAPP: Multiple neuritis during and after the war, 72
Knee, treatment of osteochondritis dissecans of, 359
Knee, stiff, of polyarthritis, treatment of, 104
KOETTLITZ: Treatment of coryza in infants, 505
KOLMER: Wassermann test with chancre fluid, 89—The tuberculin reaction, 227
Kondoleon operation for elephantiasis, 123
KORTEBOS, H. P.: Spontaneous rupture of the uterus, 242
KOSER, S. A: Food poisoning, 243
KOSKOWSKI, W.: The action of carbonic acid on gastric motility, 328
KRAMER, B.: Ultra-violet radiation in rickets, 250
KRUMWIEDE, C.: Haemolytic streptococci, 287
KULBS, F.: High blood pressure without renal disease, 92
KÜSTNER, O.: Is perforation of the living foetus ever necessary? 154
KYLIN, Eskil: The adrenaline reaction in cases of high blood pressure, 68

L.

LAACHE, S.: Significance of chronic jaundice, 459
LABBÉ: Classification and therapeutics of diabetes mellitus, 69
Labour, difficult, causing intestinal obstruction, 406
Labour, heart failure during pregnancy and, 285
Labour under hypnosis, 85
Labour, induction of, by the use of castor oil and quinine, 39
Labour, tears of the tentorium and falx during, 286
LAMBRETHSEN: Intestinal obstruction from difficult labour 406
LANG, B. T.: Some causes of amaurosis in infants, 208
LANGE: Therapeutic diap ragmatic paralysis, 172
LANGENSKIÖLD, F.: Conservative treatment of Pott's disease, 401
LANNOIS, M. M.: Syringing the ears in otitis media, 55
LANTIN: Serum treatment of dysentery, 28
Laryngeal tuberculosis. *See* Tuberculosis
Laryngeal ventricle, prolapse of and eversion of the sacculus, 193
Laryngectomy, the technique of, 382
Laryngology and otology in the medical curriculum, 147
Lathyrism, causation of, 251
LANE: Injury to the buccal mucous membrane by *x* rays, 145
LAURENTI, T: Post-operative acetonuria, 219
LAUTIER, R.: Treatment of leukaemia by sodium cinnamate, 500
LAZARUS-BARLOW: Dental caries, 133
LEARY: Dried milk, 118
Leishmania in the intestinal tissues in Indian kala-azar, 430
LEMAIRE, G.: The Schick reaction in an epidemic of diphtheria, 475
LEMAITRE: Treatment of malignant tumours of the maxillary sinus, 398
LEMIERRE, A: The significance of *B. paratyphosus* B in the blood, 219
LEOF, M. V.: *X*-ray treatment of skin diseases, 374
LEORAT, L.: Diagnostic signs in scarlet fever, 412
LEPRAT, L.: Glycaemia in diphtheria, 497
LEREBOULLET, P.: The therapeutics of quinidine, 203—Arterial hypertension, 332—Hyperglycaemia in diphtheria, 497
LEREDDE: Syphilis in country practice, 27
LEROY: Lilliputian hallucinations, 331
LESTOCQUOY: Researches on the value of antibodies in, 181
LETULLE, M.: Necrotic dissecting pneumonia, 245
Leucocytes in the capillary and venous blood in scarlet fever, 199
Leukaemia, acute, 225
Leukaemia and severe anaemia in childhood, 25
Leukaemia and malignant disease, etiology of, 42
Leukaemia treated by sodium cinnamate, 500
Leucocytes in the blood, abnormal, the pathological significance of, 348
Leucocytes, large mononuclear, pure cultures of, 349
Leucocytes, polymorphonuclear, basophile inclusions in, 369
Leucocytes in pulmonary tuberculosis, 308
Leucocytes of venous and capillary blood, relationship between, 161
LEVEN, G.: "Uncontrollable" vomiting in pregnancy, 106
LEVESQUE, J.: The significance of *B. paratyphosus* B in the blood, 219
LEVINE, S. A.: Angina pectoris, 270
LEVY-BRUHL, M.: Gonorrhoeal endocarditis, 162
LEWIS: Action of quinidine sulphate in auricular fibrillation, 1
LEYNEN, F.: Treatment of perineal tears, 516
LICHTWITZ, L.: Blood transfusion and the treatment of anaemia, 170
LIEBERMANN, T. v.: Facial paralysis from cauterizing with chromic acid, 318
Light baths, universal, in treatment of tuberculosis of the larynx, 230
Ligneous perinephritis, 320
LILJENQUIST, F.: The virus of herpes and the virus of encephalitis, 268
LINZENMEIER: Sedimentations of erythrocytes in pelvic disease, 136—Pregnancy after *x*-radiation of the ovaries, 471
LION, G.: Gonorrhoeal endocarditis, 162
LITTLE, Ralph: Significance of colostrum, 265
Liver, acute and subacute atrophy of, 249
Liver, effect of the removal of, on the blood sugar, 183
Liver, syphilis of the, 391
LIVIERATO: The circulatory system in tuberculosis, 478
LOEWE, L.: Histopathology of the filter-passing virus of influenza, 370
Loose bodies in the joints, 210
LORIER: Myonectomy, 406
LOURDEL: Vesical calculi following prostatectomy, 421
LOUROS: Prevention of puerperal sepsis, 517
Lumbago and sciatica, 97
LUNDBERG: Retrograde intussusception of the small intestine after gastro-enterostomy, 9
Lungs, congestion of, intravenous injections of calcium in, 397
Lungs, gangrene of, neo salvarsan in, 295
Lungs, pulmonary aspiration of particulate matter, 110
LUSSANA: Sarcoma of the clavicle, 509
LYNCH, F. W.: Uterine displacements after childbirth, 494
Lysis due to the bacteriophage of d'Herelle, the action of antidysenteric serum on, 410

M.

MCCARTNEY: Pneumococcal peritonitis, 7
MACDONALD, V.: Pathological dentition, 376
MCFARLAND, A. R.: Blood cholesterol in syphilis, 182
MCGRATH, A. B.: Myomata and high blood pressure, 448
MCINTOSH: Dental caries, 133
MCKENZIE: Oral sepsis in cancer of the throat, 13
MACKENZIE, J.: *B. swipestifer* infection, 223
MACLACHLAN, I. F.: Chronic intestinal dyspepsia in children, 291
MCNALLEY: Diffuse adenomyoma of the uterus, 123
MCPHERSON, R.: Treatment of eclampsia, 450
MADERNA: Treatment of sycosis, 254
MADSEN, S. T.: Neo-salvarsan in gangrene of the lung, 295
MAGALHAES: Indications for Caesarean section, 17
MAGATH, T. B.: Effect of removal of the liver on the blood sugar, 183
Malaria, cardiac and aortic complications of, 73
Malaria parasite, situation of, in relation to red cell, 350
Malarial relapses, 275
Malignant disease and leukaemia, etiology of, 42
Malignant disease, selenium treatment of, 78
MANCINELLI: Treatment of whooping-cough with ether, 378
MANN, F. C.: Effect of removal of the liver on the blood sugar, 183
MARCHAND: Treatment of soft chancres by local application of "914" (novarsenobenzol), 96
MARCHIAFAVA, E.: Classification of pulmonary tuberculosis, 506,
MARIE, P. L.: Glycaemia in diphtheria, 497
MARINESCO, M. G.: Steinach's operation and rejuvenescence, 101
MARION: Radium treatment of tumours of the bladder and urethra, 15
M. REIN: Complications following removal of tonsils, 10
MARTINEZ: Radium in oto-rhino-laryngology, 419
MASKI: Cholera, 135—Vaccination against cholera by the oral method, 158
Mastoid, tuberculosis of, diagnosis and treatment of, 34
MATAGNE: Cancer of the tongue, 58
Maternal mortality in New Zealand, 38
MATHIEU: Gastric tumour of nervous origin, 75
MAWAS, J.: Cytological researches on glioma of the retina, 134
Maxillary sinus, lesions of in neolithic man, 14
Maxillary sinus, treatment of malignant tumours of, 398
MAY, C. W.: Test for botulinus poisoning, 496
MAYER, A.: Prognosis in sterility, 385—Preoperative radiotherapy of cervical carcinoma, 404
Mayo, Charles H.: Cause and relief of acute intestinal obstruction, 171—End-results in cancer, 356
Measles, convalescent serum in the prophylaxis of, 413
Medical curriculum, laryngology and otology in, 147
Medico-legal significance of intracranial haemorrhages in the newborn, 266
Megacolon, 151
MEIGS, J. V.: Endometrial haematoma of the ovary, 237—Adeno-carcinoma of the fundus uteri, 344
MELCHIOR, L.: The incidence of syphilis in the deadhouse, 44
MELENEY, H. E.: Acute infection in syncytioma, 282
MELLON: Megacolon, 151
Membranes, anomalous abdominal, 173
MENARD, M.: "Thermo-penetration" for abdominal pain, 488
Meningeal conditions, organic and functional, diagnosis of, by Pandy's reaction, 289
Meningitis following spinal anaesthesia, 511
Meningitis, tuberculous, is it curable? 433
Meningitis, tuberculous, treatment of, 168
Menopausal phenomena, atypical, following *x*-ray castration, 196
Menorrhagia due to haemophilia, 176
Mental deficiency and syphilis, 185
Mental disorders in epidemic encephalitis, 480
Mental disorders, minor, nomenclature of, 247
Mercury and salvarsan, simultaneous injection of, 140
METALNIKOW, S.: The thyroid gland and sensitivity to tuberculin, 290
Metatarsal bone, second, a disease of the head of the, 56
MEULENGRACHT, E.: Pernicious anaemia due to stricture of the intestines, 504
MEUMANN: Menorrhagia due to haemophilia, 176
MICHAEL, J. C.: A peculiar eruptive disease in infancy, 166
MICHEL: Action of certain fats on osseous metabolism, 43
MICHELEAU, P. E.: Treatment of typhoid fever, 477
Middle ear. *See* Ear
Milch cows and tuberculin, 180
Milk, dried, 118
Milk intolerance, 438
MILLER, C. S.: Treatment of myoma and myopathic haemorrhage, 195
MILLER, J. L.: The recognition of mild hyperthyroidism, 395

MIRONESCO: Relationship between the leucocytes of venous and capillary blood, 161—The leucocytes in the capillary and venous blood in scarlet fever, 199
MITTELL, E. A.: Myomata and high blood pressure, 448
MOCQUOT: Resection of the elbow-joint, 303
MOLLARD, J.: Special indications and methods of administration of digitalis preparations, 355
MOLLON: Tincture of hyoscyamus and hyoscine in paralysis agitans, 314
MONTANARI: Haemophiliac arthritis, 93
MONTUORO, F.: Calcification and torsion of myomata, 262
MOORE: Renal retinitis, 70
MOORE, Irwin: Prolapse of the laryngeal ventricle and eversion of the sacculus, 193
MOORE, R. F.: Some causes of amaurosis in infants, 208
MOORHEAD: Venous thrombosis and gastric carcinoma, 150
MORAWITZ: Indications for removal of the spleen, 33
MORSE, J. L.: Leukaemia and severe anaemia in childhood, 25
Mortality, maternal, in New Zealand, 38
MOUCHET, Albert: Torsion of the spermatic cord in children, 255
Moulds, pathogenic, 222
MOULONGUET, A.: Vaccine therapy in oto-rhino-laryngology, 339
MOURGUE, R: Torsion spasm, 95
MOURIQUAND: Action of certain fats in osseous metabolism, 43—Diagnostic signs in scarlet fever, 412
Mouth, bacteriology of the, 201
MOYNIHAN, Sir Berkeley: Early signs of cholelithiasis, 277
Mucous membrane, buccal. *See* Buccal
MUELLER, A.: Appendicitis the cause of general chronic debility, 126
MUNRO, D.: Intracranial haemorrhage in the newborn, 380
Muscle, rectus abdominis, haematoma of, 76
MYGIND: Surgical complications of acute middle-ear suppuration, 77
Myocardial degeneration in progressive muscular dystrophy, 499
Myoma, treatment of, and myopathic haemorrhage, 195
Myoma of uterus complicated by ascites, 19
Myomata, calcification and torsion of, 262
Myomata and high blood pressure, 448
Myomata and hyperplesis, 365
Myomata, necrobiosis of, 175
Myomata, pathogenesis of, 178
Myomata of uterus, radium treatment of, 216
Myomectomy, 405

N.

Naso-pharyngeal lesions in children predisposed to tubercle, 466
NASSAU, C. F.: Surgery of toxic goitre, 192
NEAME, H.: Some causes of amaurosis in infants, 208
Necrobiosis of myomata, 175
NÈGRE, L.: Vaccination against tuberculous infection, 329
NEIRYNCK, R.: Diverticulitis of the colon, 235
NEMOURS-AUGUSTE, S.: "Thermo-penetration" for endodominal pain, 488
Neolithic man, lesions of the maxillary sinus in, 14
Neo-salvarsan in gangrene of the lung, 295
Nephritis in children, 46
Nephrolithiasis, 418
Nephropathies of pregnancy, capillary circulation in, 40
Nerve, optic, and accessory sinuses, 174
Nervous system in influenza, 296
Nervous system, late effects of injuries to, 479
Nervous system, sympathetic, physiology of, 271
NETTER, Arnold: Cases of varicella following herpes zoster, 224—Herpetiform eruptions in encephalitis lethargica, 377
Neuralgia, treatment of, 52
Neuritis, multiple, during and after the war, 72
Neurological therapeutics, recent advances in, 352
Neuropathic keratitis a result of focal infection, 383
Neuro-recurrences following salvarsan treatment, 115
Neuro syphilis in ex-service men, 226
NEVERMANN: Capillary circulation in pregnancy nephropathies, 40
Newborn, intracranial haemorrhage in, 380
Newborn, medico-legal significance of intracranial haemorrhages in, 266
New Zealand, maternal mortality in, 38
NEYMANN, C. A.: The precipitin test of the arachnoid fluid, 198
NICOLLE, C.: Oral administration of vaccines, 354
NIELSEN, O.: Post-operative hernia of the abdominal wall, 363
NIELSEN, T.: Treatment of the stiff knee of chronic polyarthritis, 104
Nine hundred and fourteen ("914"). *See* Novarsenobenzol
Nitritoid crises, visceral, 137
NOGUCHI, Hideyo: Immune serum in yellow fever, 368
Non-luetic cases, the Wassermann reaction in, 518
NORDENTOFT, S.: X-ray treatment of cancer of the breast, 465
NORSK, F.: Results of tonsillectomy, 300
NOVAK: Physiological ascites in the female, 129
Novarsenobenzol, local applications of, in treatment of soft chancres, 96
Nutrition and growth, the effect of artificial pneumothorax on general, 288

O.

Obstetrics, syphilis in, 64
Obstruction, intestinal, acute, cause and relief of, 171
Obstruction, intestinal, from difficult labour, 406
Obstruction, intestinal during pregnancy, 156
OCHS, B. F.: Treatment of skin diseases by potassium permanganate, 334
Ocular symptoms of epidemic encephalitis, 36
Oculo-motor lesions in lethargic encephalitis, 481
Oesophagus, dilatation of, 74
OHTAKI, M.: The effect of carbohydrates in the production of immune bodies, 498
Oil, castor, and quinine for inducing labour, 39
OLMSTED, W. H.: Blood nitrogen in surgical lesions of the kidney, 381
OMBRÉDANNE: Congenital elevation of the scapula, 59
Oophorectomy, value of, 264
Optic disc, choked, diagnosis and treatment of, 299
Optic nerve and accessory sinuses, 174
Oral administration of vaccines, 354
Oral sepsis in cancer of the throat, 13
Orthostatic albuminuria. *See* Albuminuria
Osseous metabolism, the action of certain fats on, 43
Osteochondritis dissecans of the knee, treatment of, 359
Osteomyelitis, acute, treatment of, 321
Osteomyelitis, acute staphylococcal, of femur, cured by vaccine treatment, 379
Osteomyelitis, vaccines in, 338
Otitis media, syringing the ears in, 55
Otitis, scarlatinal, 367
Otology and laryngology in the medical curriculum, 147
Oto-rhino-laryngology, radium in, 419
Oto-rhino-laryngology, vaccine therapy in, 339
Otosclerosis and its treatment, 399
OUDEMANS-HOEKSMA, J. S.: The prognosis of congenital heart disease, 415
Ovarian cysts, detachment of, 407
Ovarian grafts, 223
Ovarian inhibition of conception, 409
Ovaries, *x* radiation of: pregnancy after, 471
Ovary, endometrial haematoma of, 237
Oxydase reaction, 159

P.

PALFREY, F. W.: Factors in dyspepsia, 502
Pancreatic necrosis, acute, early stages of, 257
Pandy's reaction in diagnosis of organic and functional meningeal conditions, 289
PANISSET, L.: The complement fixation reaction in tuberculosis of domestic animals, 411
PANNER, H. T.: A disease of the head of the second metatarsal bone, 56
Paralysis agitans, tincture of hyoscyamus and hyoscine in, 314
Paralysis, facial, from cauterizing with chromic acid, 318
Paralysis, facial, and herpes, 187
Paralysis, spastic, treatment of, 47
Paralysis, therapeutic diaphragmatic, 172
Paralysis from vertebral disease, the actual cautery in the treatment of, 29
Paravaginal radium applications, 62
PARDEE, H. E. B.: Cardiac failure during pregnancy and labour, 285
PARFENOV, J.: Effect of artificial pneumothorax on general nutrition and growth, 288
PARK, J. H.: A peculiar eruptive disease in infancy, 166
PARROT, L.: The Schick reaction in an epidemic of diphtheria, 475
Particulate matter, pulmonary aspiration of, 110
PARTSCH, F.: Pneumoperitoneum in splenic tumours, 487
Pathogenic moulds, 222
PAUZAT: Experimental rickets, 519
PAVLOVITCH: Diagnostic signs in scarlet fever, 412
Pelvic contraction, 305
Pelvic disease, sedimentation of erythrocytes in, 136
Pelvic tuberculosis. *See* Tuberculosis
PENTAGNA: Ascarides and urticaria, 53
Pepsin and hydrochloric acid medication, 417
Perineal tears, treatment of, 516
Perinephritis, bilateral, 320
Peritonitis, fatal, following tonsillitis, 280
Peritonitis, pneumococcal, 7
PERMAN: Haematoma of the rectus abdominis muscle, 76
PERRIN, Maurice: The haemolytic functions of certain organs, 307
PERRY, H. M.: Occurrence of Leishmania in the intestinal tissues in Indian kala-azar, 430
PESTALOZZA: Tuberculosis of the reproductive system, 18
PETERSON, R.: Surgical treatment of pelvic tuberculosis, 425
PETIT-DUTAILLIS, P.: Radio-therapeutic drainage of the pelvis for cancer of the uterus, 153
PETRIVALSKY: Relation of the pituitary to other endocrine glands, 113
PFEIFFER, R.: Antityphoid vaccination in the German army during the war, 312
Phenolphthalein as a purgative: dangers of, 375
PHILLIPSON, C. E. J.: Surgical diathermy for inoperable growth of the upper air and food passages, 342
Physiology of the sympathetic nervous system, 271
PLANE, F.: Rhabdomyoma of the kidney, 109
Pigs, rickets in. *See* Rickets
PIPER: Syphilis and mental deficiency, 185
Pineal gland, extirpation of, 351
Pituitary, relation of to the endocrine glands, 113
Placental circulation, regulation of the, 263
Pleural fluid, the humoral reactions in, 389
Pneumaturia, 229
Pneumococcal peritonitis, 7
Pneumonia, intravenous injections of calcium in, 397
Pneumonia, necrotic dissecting, 245
Pneumoperitoneum in splenic tumours, 487
Pneumothorax, artificial, effect of on general nutrition and growth, 288
Pneumothorax, artificial, in the rabbit, 390
Poisoning, bismuth, and albuminuria, 315
Poisoning, botulinus, test for, 496
Poisoning, food, 243
Poisoning, zinc, after vaginal douching, 426
POLAK: Indications for Caesarean section, 16
POLAK, J. O.: Myomata and high blood pressure, 448
Poliomyelitis, encephalitis, botulism, etc., differential diagnosis of, 294
POLLEDRI: Loose bodies in the joints, 210
Polyarthritis, chronic, treatment of the stiff knee of, 104
PONTOPPIDAN: Simultaneous injection of salvarsan and mercury, 140
PONZIO: Deep *x*-ray therapy, 120
Potassium permanganate in treatment of skin diseases, 334
POTOTZKY, C.: Camphor in nocturnal enuresis, 143
Pott's disease, Albee's operation for, 402
Pott's disease, conservative treatment of, 401
Precipitin test of the arachnoid fluid, 198
Pregnancy, abdominal, 283
Pregnancy and Addison's disease, 240
Pregnancy, disappearance of orthostatic albuminuria in, 155
Pregnancy and blood coagulation, variations during, 452
Pregnancy and recurrent cancer of the breast, 65
Pregnancy and carcinoma of the cervix, 346
Pregnancy, extrauterine, Cullen's sign of ruptured, 239
Pregnancy, glycosuria in, 468, 469
Pregnancy, transient glycosuria in, 241
Pregnancy, intestinal obstruction during, 156
Pregnancy and labour, cardiac failure during, 285
Pregnancy nephropathies, capillary circulation in, 40
Pregnancy, normal and abnormal, the haemoclasic reaction in, 87
Pregnancy, syphilis during, 306, 470
Pregnancy and tabes, 427
Pregnancy and thyro parathyroid insufficiency, 345
Pregnancy, tubal, recurring on the same side, 81
Pregnancy and tuberculosis, 63
Pregnancy, "uncontrollable" vomiting in, 106
Pregnancy after *x* radiation of the ovaries, 471
Pregnancy. *See also* Gestation
Premature infant, pathology of the, 432
PRICE, R. H.: Neuro-syphilis in ex-service men, 226
Prostatectomy followed by vesical calculi, 421
Proteins, non-bacterial, sensitiveness to, 455
PROUST, R.: Ulcer of the stomach treated by division of the sympathetic nerves, 445
Psychology, modern, and responsibility, 416
Puerperal fever, prevention of, 107
Puerperal fever, treatment of, 284
Puerperal sepsis, prevention of, 517
Puerperal sepsis, frequency of pulmonary complications in, 447
Puerperal septicaemia, treatment of, 364
Puerperal thrombosis and embolism, 366
Puerperium, retention of urine in the, 130
Pulmonary decortication, 258
Pumeta pruritica, 313
PUSINICH, G.: Glycosuria during pregnancy, 469
PUSSEP, L.: The surgical treatment of epilepsy, 440
Pyelography, bilateral, 403
Pyuria in children, 90
Pulmonary aspiration of particulate matter, 110
Pulmonary blastomycoses, 276
PUTTI: Arthroplasty for ankylosis of joints, 148
Pyelitis, horse serum treatment of, 336
Pyelography treated with sodium bromide followed by haematuria, 424
Pyuria, horse serum treatment of, 336

Q.

QUIGNON: Renal calculus, 512
Quinidine in heart disease, 228
Quinidine sulphate in auricular fibrillation, action of, 1, 293

Quinidine, the therapeutics of, 203
Quinine and castor oil for inducing labour, 39
QUIRIN: Frequency of congenital club-foot and dislocation of the hip, 508

R.

Radiography of the appendix, 441
Radiologists, the blood picture of, 431
Radio-therapeutic drainage of the pelvis for cancer of the uterus, 153
Radiotherapy in cancer of the uterus 132
Radiotherapy, pre-operative, of cervical carcinoma, 404
Radium applications, paravaginal, 63
Radium treatment of cancer of the cervix, 127
Radium in exophthalmic goitre, 121
Radium in oto-rhino-laryngology, 419
Radium treatment of tumours of the bladder and urethra, 15
Radium treatment of uterine haemorrhage of benign origin, 215
Radium treatment of uterine myomata, 216
RASCH: Dermatitis from dyed furs, 2
RAULSTON, B. O.: The recognition of mild hyperthyroidism, 395
RENAUTT: Tincture of hyoscyamus and hyoscine in paralysis agitans, 314
Rectus abdominis muscle, haematoma of, 76
REDMAN, T.: Treatment of intestinal tuberculosis, 388
REED, C. B.: Foetal post-maturity, 325
REES: Scaphoid scapula, 11
Rejuvenescence and Steinach's operation, 101
Renal calculi, shadowless, 8
Renal calculus, 512
Renal retinitis, 70
Renal tumours, pathogenesis of, 281
Reproductive system, tuberculosis of, 18
Responsibility and modern psychology, 416
Resuscitation by the intracardiac injection of adrenaline, 358
Retina, glioma of, cytological researches on, 134
Retinitis, renal, 70
Rhabdomyoma of the kidney, 109
Rheumatism, muscular, eosinophilia in, 453
Rib, cervical, 423
Richard Karplus, the auscultation of, 482
RICHARD, M.: Radium treatment of cancer of the cervix, 127
RICHTER, G.: Tabes and pregnancy, 427
Rickets, experimental, 519
Rickets and growth in pigs, the relation of the fat-soluble factor to, 108
Rickets, ultra-violet radiation in, 250
RIEDEL, F.: Tonsillitis followed by fatal peritonitis, 280
RIST, E.: Familial immunity to diphtheria, 451
ROCHAIX: The rapid diagnosis of urinary tuberculosis, 22
ROMINGER, E: Sedatives and hypnotics in diseases of children, 460
RONGY: The Fallopian tubes and sterility, 61
ROSENFELD: The Fallopian tubes and sterility, 61
ROSNER: Pathogenesis of myomata, 178
ROTTENBERG, S.: Value of oöphorectomy, 264
ROUX-BERGER: Pulmonary decortication, 258
RUBOW, V.: Aspirin in asthma, 186
RUDBERG, H.: Traumatic rupture of the biliary passages, 490
RUIZ-CONTRERAS: Influence of diet on the incidence of eclampsia and albuminuria, 85

S.

SABRAZÈS, J.: The oxydase reaction, 159—The pathological significance of abnormal leucocytes in the blood, 348—Basophile inclusions in polymorphonuclear leucocytes, 369
Saccharose, the intestinal permeability for, 67
Sacculus, eversion of, and prolapse of the laryngeal ventricle, 193
Sachs-Georgi and Wassermann reactions in the diagnosis of syphilis, comparative value of, 473
Salvarsan injections followed by nitritoid crises, 137
Salvarsan rashes, the fate of syphilitics with, 274
Salvarsan and mercury, simultaneous injection of, 140
Salvarsan treatment followed by neurorecurrences, 115
SAND: Steinach's epididymectomy for senile decay, 236
SANFILIPPO: Intolerance to emetine, 91
SARBÒ, A. v.: A symptom of tumour of the middle cranial fossa, 202
Sarcoma of the clavicle, 509
Sarcoma of the uterus, 218
SARGNON: Dilatation of the oesophagus, 74
SATTERLEE, G. R.: Infections of the gastro-intestinal tract, 457
SAVARIAUD, M.: Accidental wounds of the bile ducts, 191
SAWAGUCHI, S: The effect of carbohydrates in the production of immune bodies, 498
Scabies, transmission of from the cat to man, 48
Scapula, congenital elevation of, 59
Scapula, scaphoid, 11
Scapular crepitation, 514
Scarlatinal otitis, 357
Scarlet fever. *See* Fever
SCHALLI, F. A.: Gastric cancer and gastric ulcer, 489
Schick reaction in an epidemic of diphtheria, 475
SCHMID: The mechanism of neutralization of acid secreted by the kidneys, 89
SCHMIDT, H. R.: Prognosis in sterility, 385
SCHMILINSKY, K: The dangers of phenolphthalein as a purgative, 375
SCHMITT, W.: Regulation of the placental circulation, 268
SCHNEIDER, O.: Post-operative beri-beri, 341
SCHÖNFELDER, T.: Intramuscular injections of ether in whoo ping-cough, 272
SCHOOL, A. J.: Horse-shoe kidney, 337
SCHREIBER, K.: Effect of hyperpyrexia upon early gonorrhoea, 513
SCHUMANN, E. A.: Treatment of hydatidiform mole, 515
SCHWARTZ, G.: Value of oöphorectomy, 264
SCHWARZ: Diffuse adenomyoma of the uterus, 128
SCHWEIZER: Prolapse of the umbilical cord, 20—Pregnancy and carcinoma of the cervix, 346
SCHWENSEN, C.: Quinidine in heart disease, 223
Sciatic hernia, 260
Sciatica and lumbago, 97
Scoliosis, operative treatment of, 279
SEDAILLAN: Tincture of hyoscyamus and hyoscine in paralysis agitans, 314
Sedatives and hypnotics in diseases of children, 460
SEITZ, L.: Radiotherapy in cancer of the uterus, 132
Selenium in the treatment of malignant disease, 78
Senile decay, Steinach's epididymectomy for, 236
SERGENT Tuberculosis and pregnancy, 63
SERGENT, E.: The Schick reaction in an epidemic of diphtheria, 475
Serum, antidysenteric, action of, on lysis due to the bacteriophage of d'Herelle, 410
Serum, convalescent, in the prophylaxis of measles, 413—Serum treatment: Of dysentery, 28—Of pyelitis and pyuria, 336
SERVET, F.: Pulmonary blastomycoses, 276
Shoulder dislocations, prognosis for, 360
Shoulder injuries, 319
Shoulder pain in acute abdominal disease, 484
SIFFRE: Lesions of the maxillary sinus in neolithic man, 14
SIGWART: Tubal pregnancy recurring on the same side, 18
SIMICI, D.: Treatment of influenza, 253
SIMONI, P.: Toxic effects of helminthiasis and the endocrine glands, 114
SINTON, J. A: Situation of malaria parasite in relation to red cell, 350
Sinus, maxillary, lesions of, in neolithic man, 14
Sinus, maxillary, treatment of malignant tumours of, 398
Sinuses, accessory, and the optic nerve, 174
SIPPEL, A.: Simultaneous uterine and ectopic gestation, 367
Skin diseases treated by potassium permanganate, 359
Skin diseases, *x*-ray treatment of, 373, 374
SMITH, Ferguson: Flavine in treatment of eczema, 4
SMITH, Theobald: Significance of colostrum, 265
Sodium bromide for pyelography followed by haematuria, 424
Sodium cinnamate in treatment of leukaemia, 500
SOLOMONS, Bethel: Treatment of sterility, 386—Dublin methods in treatment of eclampsia, 446
SPALDING, A. B: Signs of intrauterine death, 41
Spastic paralysis, treatment of, 47
Spermatic cord, torsion of, in children, 255
SPILLER, W. G: Tumours of the spinal cord, 298
Spinal anaesthesia, non-success in, 214
Spinal cord, tumours of the, 298
Splenectomy, indications for, 443
Splenectomy in children, indications for, 31
Spleen, indications for the removal of the, 33
Spleen, tumours of. *See* Tumours
Sputum, a new method of isolation of, from the tubercle bacillus, 474
STACY, Leda J.: Anteversion and retroversion of the uterus, 261
Steinach's epididymectomy for senile decay, 236
Steinach's operation and rejuvenescence, 101
STEINER: Influence of thyroidectomy on the heart in Graves's disease, 444
STELLWAGEN, T. C.: Papillary carcinoma of the kidney, 486
Stenosis of the female urethra, 493
Sterility and the Fallopian tubes, 61
Sterility, prognosis in, 385
Sterility, treatment of, 386
STEVENS: The enzymes of *Streptococcus haemolyticus*, 111
STEWART, R. N.: The cerebro spinal fluid: its source, distribution and circulation, 346
Sthenic dyspepsia. *See* Dyspepsia
STICH: Blood transfusion, 60
STIEFEL, E.: The Wildbolz auto-urine test for tuberculosis, 221
STOMBAERTS: Bilateral pyelography, 403
Stomach ulcer, operative treatment of, 361
Stomach ulcer treated by division of the sympathetic nerves, 445
STONE: The treatment of tetanus, 146
STRANDBURG: Diagnosis and treatment of tuberculosis of the mastoid, 34—Treament of tuberculosis of the larynx with universal light baths, 230
STRAULI, A.: Traumatic hydronephrosis, 462
Streptococcus, haemolytic, 287
Streptococcus haemolyticus, the enzymes of, 111
Strophanthus causing paroxysmal tachycardia, 456
Subungual verrucae, 304
Sugar, blood, effect of the removal of the liver on the, 183
SUKEGAWA, K.: The effect of carbohydrates in the production of immune bodies, 498
SUMMERS, J. E.: Sciatic hernia, 260
SUNDELIUS: Influenza and epidemic encephalitis, 49
Suprarenals in asthma, 30
Surgery, methods of drainage in, 278
Surgical diathermy. *See* Diathermy
SURREL: Treatment of malignant tumours of the maxillary sinus, 398
Sycosis, treatment of, 254
SYLVEST, E.: Disappearance of orthostatic albuminuria in pregnancy, 155
Sympathetic nervous system. *See* Nervous
Syncytioma, acute infection in, 282
SYNNOTT, M. J.: A non-surgical method of duodeno-biliary drainage, 211
Syphilis, bismuth preparations in treatment of, 392
Syphilis, blood cholesterol in, 182
Syphilis diagnosis, comparative value of Sachs-Georgi and Wassermann reactions in, 473
Syphilis in country practice, 27
Syphilis in the deadhouse, incidence of, 44
Syphilis of the epididymis, 32
Syphilis, hereditary, the importance of in infantile atrophy, 273
Syphilis in the insane, treatment of, 394
Syphilis of the liver, 391
Syphilis and mental deficiency, 185
Syphilis in obstetrics, 64
Syphilis during pregnancy, 306, 470
Syphilis, visceral, the specific therapy of, 393
Syphilitics with salvarsan rashes, the fate of, 274
Syringing the ears in otitis media, 55

T.

Tabes dorsalis, the treatment of, 188
Tabes and pregnancy, 427
Tachycardia, paroxysmal, due to digitalis and strophanthus, 466
TADDEI: Primary cold abscess of tongue, 37
TANT Colloidal iodine in gonorrhoea, 362
TAYLOR: Anomalous abdominal membranes, 173
TAYLOR, F. B.: Improvements in pre-operative and post operative care, 422
TEDENAT, M.: Sarcoma of the uterus, 218
TENBROECK, Carl: Tetanus bacillus in intestines of man, 327
Tendo-vaginitis treated with Carrel's irrigation method, 467
Tentorium and falx, tears of during labour, 286
TERRY, W. L.: Radium in exophthalmic goitre, 121—Improvements in pre-operative and post-operative care, 422
Tetanus bacillus in intestines of man, 327
Tetanus, treatment of, 146
THALER, H.: *Post-partum* eclampsia, 217
"Thermo penetration" for abdominal pain, 488
THAYER, W. S.: Cardiac complications of gonorrhoea, 434
THÉVENOT, Léon: Removal of ureteric calculi by the cystoscope, 98
THIBIERGE: Transmission of scabies in the cat to man, 48
THOMAS: Serological test for cancer, 45
THOMAS, J.: The catalytic activity of the tissues, 472
THOMAS, R. T.: Acute intussusception, 99
THOMSON: Capsular cataract, 169
Thorax, gastroptosis and the shape of the, 26
Thrombosis, venous, and gastric carcinoma, 150
Thyroid gland and sensibility to tuberculin, 290
Thyroidectomy, influence of, on the heart in Graves's disease, 444
Thyro-parathyroid insufficiency and pregnancy, 345
Tissues, the catalytic activity of the, 472
Tongue as a source of infection, 231
Tongue, primary cold abscess of, 37
Tonsillectomy, effects of, on the general health of children, 209
Tonsillectomy, indications for, 485
Tonsillectomy, results of, 300
Tonsillectomy in certain systemic diseases, 507
Tonsillitis followed by fatal peritonitis, 280
Tonsils, complications following removal of, 10
TOOMEY, N.: Itchy points (puncta pruritica), 313
Torsion spasm, 95
Toxins, non-bacterial, sensitiveness to, 455
Tracheo-cutaneous suture in the treatment of foreign bodies, 35
TRÉMOLIÈRES: The cardiac and aortic complications of malaria, 73
Trephining, palliative, for pressure on the brain, 461
TRIPPUTI: Diphtheria of the vulva, 414
TROUT: Recurrent cancer of the breast and pregnancy, 65
Tubal pregnancy. *See* Pregnancy
Tubercle bacillus, buccal infection with, 269
Tubercle bacillus, new method of isolation of from the sputum, 474
Tuberculin and milch cows, 180
Tuberculin reaction, 227
Tuberculin test, the value of the, 309

Tuberculin, the thyroid gland and sensitivity to, 290
Tuberculosis, antibodies in, researches on the value of, 181
Tuberculosis, the circulatory system in, 478
Tuberculosis in country districts, 335
Tuberculosis of domestic animals, the complement fixation reaction in, 411
Tuberculosis, early, a symptom in the diagnosis of, 144
Tuberculosis and erythema nodosum, 138, 439
Tuberculosis, heliotherapy in, 50
Tuberculosis, hepatic "anergy" in, 353
Tuberculosis, intestinal, treatment of, 388
Tuberculosis of larynx treated with universal light baths, 230
Tuberculosis of the mastoid, diagnosis and treatment of, 54
Tuberculosis, overfeeding in, 51
Tuberculosis, pelvic, surgical treatment of, 425
Tuberculosis, placental, transmission of, 495
Tuberculosis and pregnancy, 63
Tuberculosis, pulmonary, classification of, 506
Tuberculosis, pulmonary, relation between bronchial asthma and, 117
Tuberculosis, pulmonary, the leucocytes in, 308
Tuberculosis of the reproductive system, 18
Tuberculosis, urinary, the rapid diagnosis of, 22
Tuberculosis, uro-genital, the genesis of, 234
Tuberculosis, the Wildbolz auto-urine test for 221
Tuberculous infection, vaccination against, 329
Tuberculous meningitis, is it curable? 433
Tuberculous meningitis, treatment of, 168
TUCKER: Recovery from diabetes insipidus, 141
Tumour of bladder, radium treatment of, 15
Tumour, gastric, of nervous origin, 75
Tumour grafts of the mouse, influence of glycogen on, 24
Tumour of the middle cranial fossa, a symptom of, 202
Tumour of urethra, radium treatment of, 15
Tumours of the maxillary sinus, malignant, treatment of, 398
Tumours, renal, pathogenesis of, 281
Tumours of the spinal cord, 298
Tumours of the spleen, primary, 510
Tumours, splenic, pneumoperitoneum in, 487
TURCO: Fibromyoma of the broad ligament, 80
TURNER, A. Logan: Laryngology and otology in the medical curriculum, 147
Typhoid fever. *See* Fever, enteric
Typhus fever. *See* Fever
Typhus organism, a new, 160
TYTGAT: Dupuytren's contraction, 213

U.

Ulcer of duodenum, operative treatment of, 361
Ulcer, gastric, and gastric cancer, 489
Ulcer, gastric, gastrectomy for acute perforated, 103
Ulcer of stomach and duodenum, operative treatment of, 361
Ulcer of stomach treated by division of the sympathetic nerves, 445
Ulcers, gastric and duodenal, the value of early operation in acute haemorrhage from, 122
Ultra-violet radiation in rickets, 250
UMBER, F.: Acute and subacute atrophy of the liver, 249
Umbilical colic in children, 503
Umbilical cord, prolapse of, 20
UNDERHILL, T. J.: Preserved food, 436
Urea, a new reaction for, and its clinical value, 23
URECHIA, C. I.: Extirpation of the pineal gland, 351
Ureter, intravesical management of obstructions in, 233
Urethra, female, stenosis of, 493
Urethroscope in the treatment of gonorrhoea, 189
Urinary disinfectant, aspirin as a, 165
Urinary tuberculosis. *See* Tuberculosis
Urine retention in the puerperium, 130
Uro-genital tuberculosis. *See* Tuberculosis
Urticaria and ascarides, 53
Uterine appendages, treatment of disease of, 428
Uterine cavity, adeno-carcinoma of, 344
Uterine displacements after childbirth, 494
Uterine and ectopic gestation, simultaneous, 367
Uterine haemorrhage. *See* Haemorrhage
Uterine vessels, aneurysm of, 449
Uterus, anteversion and retroversion of, 261
Uterus, cancer of. *See* Cancer
Uterus, diffuse adenomyoma of the, 128
Uterus, spontaneous rupture of, 242
Uterus, sarcoma of, 218

V.

Vaccination, antidiphtheritic, the effect of, 220
Vaccination against cholera by the oral method, 158
Vaccine therapy in oto rhino-laryngology, 339
Vaccine treatment of asthma, 437
Vaccines in influenza, 203
Vaccines, oral administration of, 354
Vaccines in osteomyelitis, 338, 379
Vaginal douching followed by zinc poisoning, 426
VALENTINE, E: Haemolytic streptococci, 287
VALTIS, J. S.: Artificial pneumothorax in the rabbit, 390
VAN DER HOEVE: The optic nerve and accessory sinuses, 174
VAN DONGEN, J. A.: Treatment of abortion, 492
VAN DOUGEN: Metastatic ovarian cancer, 84
VAN HEUKELOM, A. S.: Jaundice in typhoid fever, 333
VAN NES, C. P.: Essential haematuria, 463
VAN NEST, A. E.: Syphilis during pregnancy, 306
Varicella following herpes zoster, 224
VAUTRIN, M.: Intestinal obstruction during pregnancy, 156
Venous blood. *See* Blood
Venous thrombosis and gastric carcinoma, 150
Ventric'e, laryngeal, prolapse of, and eversion of the sacculus, 193
VERGE, J.: The complement fixation reaction in tuberculosis of domestic animals, 411
VÉRITÉ, H.: The Schick reaction in an epidemic of diphtheria, 475
Verrucae, subungual, 304
VERRUCOLI: Hyperemesis gravidarum, 131
Vertebral disease causing paralysis, the actual cautery in the treatment of, 29
Vesical calculi following prostatectomy, 421
VETLESEN, E. J.: Erythema nodosum and tuberculosis, 138
Viability, diagnosis of, 324
VIEFELT, G.: Treatment of tendo-vaginitis with Carrel's method, 467
VIGI, F.: Primary tumours of the spleen, 510
VIOLET, M. H.: Radium treatment of uterine myomata, 216
Virus of influenza, histopathology of filter-passing, 370
Visceral mitritoid crises, 137
Visceral syphilis, the specific therapy of, 393
Vitamins for yeast and bacteria, 200
VOEGTLIN, C.: The limitations of intravenous medicine, 184
VOGT, E.: Atypical menopausal phenomena following x-ray castration, 195—Aneurysm of the uterine vessels, 449
Vomiting in pregnancy, "uncontrollable." *See* Pregnancy
VON BABARCZY: Changes in the amount of cholesterin in the blood in cholelithiasis, 454
VON BARACZ, R.: Treatment of actinomycosis, 232
Vulva, diphtheria of, 414

W.

WAKELEY: Selenium in the treatment of malignant disease, 78
WALLENSTEIN: Interpretation of the Wassermann reaction, 207
WALLIS, R. L. Mackenzie: Transient glycosuria in pregnancy, 241
WALTHARD, H.: Pneumaturia, 229
WALTHER, C.: Treatment of disease of the uterine appendages, 428
WALTHER, H. W. E.: Intravesical management of obstructions in ureter, 233
War diet. *See* Diet
WARREN: Length of life of transfused erythrocytes, 66
Warts, radium treatment of, 304
Wassermann reaction, chemistry of, 244
Wassermann reaction, interpretation of, 207
Wassermann reaction in non-luetic cases, 518
Wassermann and Sachs-Georgi reactions in the diagnosis of syphilis, comparative value of, 475
Wassermann test with chancre fluid, 89
WEARN: Length of life of transfused erythrocytes, 66
WEIL, P. Emile: Variations in the coagulation time during pregnancy, 452
WEILL, M. M.: Diagnosis of organic and functional meningeal conditions of Pandy's reaction, 289
WEISS, M.: Familial immunity to diphtheria, 451
WELTMANN: A new reaction for urea and its clinical value, 23
WELZ, W. E.: Syphilis during pregnancy, 306
WERTHEIMER, P.: Meningitis following spinal anaesthesia, 511
WESSEL, C.: The treatment of gall stones, 149
WHITFIELD, A.: Sensitiveness to non-bacterial toxins and proteins, 455
WHITTON: Tonsillectomy in certain systemic diseases, 507
Whooping cough, etiology of, 248
Whooping-cough treated with ether, 378
Whooping cough, intramuscular injections of ether in, 272
WIART: Recurrence in cancer of the breast, 491
WIBAUX: An epidemic of bacillary dysentery in France, 396
WIDERÖE, S.: The cause of fatalities for intraspinal anaesthesia, 256
Wildbolz auto-urine test for tuberculosis, 221
WILLIAMS, J. R.: Systemic blastomycosis, 310
WILLIAMSON, A. C.: Induction of labour by the use of castor oil aad quinine, 39
WIRTH: The actual cautery in the treatment of paralysis from vertebral disease.
WOODCOCK, H. M.: The metabolization of the blood elements, 157
WORINGER: The intestinal permeability for saccharose, 67
WORMS, G: Herpes and facial paralysis, 187
WRIGHT: Keratomalacia in Southern India, 57
Wrist and hand, disabilities of the, 316
WYBAUW, R.: Action of quinidine sulphate in auricular fibrillation, 1

X.

X-ray castration, atypical menopausal phenomena following, 196
X-ray therapy, deep, 120
X-radiation of the ovaries, pregnancy after, 471
X-ray treatment of cancer of the breast, 465
X-ray treatment of Graves's disease, 94
X-ray treatment of skin diseases, 373, 374
X rays causing injury to the buccal mucous membrane, 145

Y.

Yeasts, vitamins for, 200
Yellow fever. *See* Fever
YLPÖ, A.: Pathology of the premature infant, 432
YOUNG: Etiology of malignant disease and leukaemia, 42

Z.

ZACHARIAE, P.: Retention of urine in the puerperium, 130
ZANGEMEISTER, W.: Pelvic contraction, 305
ZIMMERMAN, E. L.: Neuro recurrences following salvarsan treatment, 115
ZIMMERMAN, R.: Tears of the tentorium and falx during labour, 286
Zinc poisoning after vaginal douching 426
ZOEPFFEL, H.: Early stages of acute pancreatic necrosis, 257
ZUM BUSCH, J. P.: Cullen's sign of ruptured extrauterine pregnancy, 239
ZWEIFEL, P.: The prevention of puerperal fever, 107
ZYLVA, S. S.: The relation of the fat-soluble factor to rickets and growth in pigs, 108

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EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

1. Action of Quinidine Sulphate in Auricular Fibrillation.

R. WYBAUW (*Arch. des mal. du coeur, des vaisseaux et du sang*, April, 1922) refers to his former publication (with DUMONT and JOOS) in *La Polyclinique* (Brussels, March, 1921) of a series of cases of persistent auricular fibrillation. In half the cases the cardiac rhythm was restored, as shown by electrocardiograms, but the re-storation of normal rhythm is not a cure, the patient returns to his former condition, and the breakdown of compensation is only delayed. "Since then, the remedy has been used regularly at the Brussels Polyclinic; the positive results and the controls have maintained an analogous ratio, and yet, without the test of experience, we cannot at present differentiate between those cases which react favourably and others." He now continues the administration of quinidine for some weeks after the restoration of normal rhythm, because fibrillation is apt to recur, especially when some slight infection supervenes—for example, coryza or transient enteritis. He commences with a moderately large dose- 1.25 to 1.50 grams per diem for three or four days. If the beat becomes regular 1 gram per diem is given for one to two weeks. Then digitalis (infusion of 1 gram of powdered leaves) and quinidine are given alternately, each for a period of four or five days. He describes the case of a man who had suffered for seven months from precordial pain, dyspnoea on exertion, and violent palpitation. Blood pressure = 130 to 100 mm. Hg approximately. Both sides of the heart were much hypertrophied; heart sounds were normal, but action very rapid. Digitalis infusion (= 1 gram of powdered leaves in forty-eight hours) was prescribed and continued for seventy-two hours longer. Heart action became slightly slower. Then 1.5 grams quinidine sulphate were given daily for two days. On the third day the pulse was quite regular = 96 per minute. The patient was much easier and free from pain. Quinidine was given regularly for ten days more, when the pulse was regular and had fallen to 76. Four days after, the pulse, still regular, had risen to 156 per minute. The author gives three cardiograms which show remarkable changes in "P" and "R" waves before and after administration of quinidine. Pulsus alternans developed, and further attempts to retard the pulse failed. All treatment was stopped and at the end of three months the pulse again became irregular. Quinidine restored regularity again, but the reaction was rapid and the "P" wave still negative. Six months after admission a third course of quinidine slowed and regulated the pulse, and the "P" wave became positive. Treatment was continued, when tonsillitis supervened and caused a relapse, although the patient felt well. A fourth course of quinidine in the following month resulted in permanent improvement. Wybauw shows that his results confirm clinically the latest views of Lewis (*Heart*, 1921) and of De Boer on the mechanism of auricular fibrillation, and compares the action of digitalis, which diminishes the conductivity of the auriculo-ventricular bundle, with that of quinidine, which prolongs the "refractory period." A clear analysis of the clinical symptoms and interpretation of the cardiograms follow, and he comments on the importance of the study of the therapeutic action of quinidine, the discovery of which coincided with the recent advances in cardiology.

2. Dermatitis from Dyed Furs.

RASCH (*Ugeskrift for Laeger*, April 13th, 1922) has observed within two months nine cases of dermatitis of the face and neck which he traced to the wearing of dyed furs. All the patients were women between the ages of 24 and 47, and in two cases the disease was simply a recurrent itching erythema of the chin. In other cases it was eczematous or lichenoid, but common to all the different types of rash was the distribution, and the longest diameter of each patch was parallel with the line of the jaw or across the neck. In one case the erythema was vesicular, and the lips were swollen. In another case itching and swelling of the eyelids occurred. Some of the patients stated that the rash was worst after they had been out of doors for some time. All the patients had worn for some weeks or months new coats trimmed with a brown fur known to the trade as "biberette." In one case the peccant fur was sold under the name of "fillade." These furs were probably rabbit skins treated so as to resemble beaver. The author refers to a publication by Blaschko (*Deut. med. Woch.*, 1913, No. 49) in which he discussed the use in the German fur industry of the drug para phenylendiamin, which turns fur brown, and the author suggests that this highly irritating substance is responsible for his cases. The rash in every case cleared up within five to fourteen days of discarding the furs, and in the meantime he treated them with powders, compresses, zinc lotions, and zinc pastes. Many of the author's colleagues have seen similar cases, and the condition is evidently not rare.

3. Infantile Splenic Anaemia.

DE STEFANO (*La Pediatria*, May 1st, 1922) publishes 23 cases of infantile splenic anaemia, and attempts to give the cause of the disease. In 13 syphilis alone appeared sufficient to account for the condition, in 6 the syphilis was associated with tuberculosis, in 2 tuberculosis alone, and in 2 the cause was unknown. These findings correspond with the reports of other observers. Malaria or leishmaniasis accounts for some cases. Most of the cases show a certain amount of pyrexia, but variable in type and often due to intercurrent disease, and never as typical as that seen in leishmaniasis. As regards the blood, leucopenia was noted in 10 out of 19 cases. In the tuberculous cases more or less marked lymphocytosis was present. The exact mechanism of the production of the anaemia is not easy to determine. It may be due to congenital inheritance, to congenital dystrophy of the haemopoietic organs, or the toxins transmitted through the mother's milk. Excluding the cases of direct transmission of syphilis or tubercle with localization in the haemopoietic organs the author believes most cases can best be understood by assuming an hereditary dystrophy of the blood-making system.

4. Flavine in Treatment of Eczema.

FERGUSON SMITH (*Brit. Journ. of Derm. and Syph.*, May, 1922) has tried the effect of substituting flavine for boric acid in the starch poultice treatment of eczema, so commonly practised in Scotland. Boric acid has been used hitherto because other antiseptics to be efficient have to be present in strengths which the inflamed skin will not tolerate, but amongst the flavines are found chemical substances which are comparatively non-irritating in efficient concentration, and whose activity is enhanced rather than diminished in the presence of serous discharge. The flavine starch poultice is made in the following way: Four tablespoonfuls of rice starch and 0.6 gram of acriflavine are mixed with a little cold water, one pint of boiling water is added, and the mixture is boiled with constant stirring until it thickens, and when nearly cold it is poured on to the dressing cloth so as to form a layer half an inch thick. When quite cold and set it is covered with a single layer of gauze or butter muslin and applied to the part. It is changed three or four times a day, and at each change the part is bathed with acriflavine 1 in 1,000 in 0.85 per cent. NaCl, and the treatment should be continued until more stimulating remedies may safely be applied. Flavine starch poultices have proved very useful in treating obstinate cases of "seborrhoeic" eczema of the head and groin.

5. Chronic Dysentery and Severe Colitis.

KLING (*Wien. klin. Woch.*, March 16th and 23rd, 1922) states that hitherto no cases have been recorded in which the transformation of acute dysentery into severe colitis has been observed. He therefore reports 11 cases in which a direct transformation of the lesions of the acute stage of typical bacillary dysentery into those of severe colitis could be followed by means of a series of rectoscopic examinations. All the cases occurred during an epidemic of bacillary dysentery at Vienna in the summer of 1920 and the following months. During this time 1,439 cases were admitted to Kling's hospital. In 102 cases, or 7.5 per cent., the course of the dysenteric attack was prolonged in consequence of a sequel such as mild colitis, dyspepsia, articular rheumatism, etc. Only 0.4 per cent. of all the cases of acute dysentery and 9 per cent. of the cases of chronic dysentery developed severe colitis; 9 occurred in women and only 2 in men, suggesting that the female sex is much more prone to the transformation of dysentery into severe colitis. The ages of the patients ranged from 18 to 60. The following causes for the transformation could be incriminated: (1) lack of treatment and nursing during the acute stage; (2) an inferior constitution, shown by an asthenic disposition, chlorosis, and congenital malformation; (3) concurrent diseases.

6. The Mode of Infection by Ascaris.

P. FÜLLEBORN (*Klinische Wochenschrift*, May 13th, 1922) has collated the observations of many parasitologists and has summarized his own work on this subject since 1911. He states that ascarides infesting mankind and pigs are identical, but that belascaris, found in dogs, is of a different species. The author found that ascaris ova in human or pigs' faeces, deposited in moist garden soil and swallowed by another animal, quickly discharged their freely motile larvae, which, in a few hours, penetrate the wall of the alimentary canal, reach a branch of the portal vein, and travel thence to the lungs. One plate shows massive infection with numerous haemorrhages on the surface of the lungs of a young guinea-pig, nineteen hours after infection with pig's ascaris ova; another shows a collection of young ascarides coiled up in the bronchus of a rabbit, fifteen days after ingestion of eggs. An ascaris larva was found in a cerebral capillary of a guinea-pig twenty-five hours after infection. Fülleborn insists that ascaris infection must be regarded as a general systemic condition, as, in addition to those plates, others show a young ascaris larva in a rat's liver, a belascaris cyst in a dog's cardiac muscle, and blood-clot in a convoluted tubule of a guinea-pig's kidney nineteen hours after infection with the eggs; he has observed haematuria in several of his experimental animals, and has also found free ascaris larvae ("resembling strongyloides-filaria forms") in the peritoneal and pleural cavities. The larvae appear to take one of two courses: (1) those which pierce the pulmonary alveolar epithelium, travel up the air passages, often setting up bronchitis, and are eventually swallowed with the saliva and so return to the intestine, where they become mature; or (2) those which are carried in the pulmonary circulation to the left ventricle, reach the systemic circulation, and their subsequent behaviour resembles that of *Trichinella spiralis*. Fülleborn confirms the observations of Stewart and Ransom, and alludes to cases of bronchitis and bronchopneumonia, and to the effects of toxins liberated in the course of pulmonary or cerebral infections by *Ascaris lumbricoides*.

SURGERY.

7. Pneumococcal Peritonitis.

MCCARTNEY and FRASER (*British Journal of Surgery*, April, 1922) point out that about 2 per cent. of the abdominal emergencies of childhood are due to pneumococcal infection, and this ranks as one of the most serious abdominal emergencies in children. The mortality is high, being 65 per cent. for the past twenty years. There is an essential division of pneumococcal peritonitis into two classes—primary and secondary. The secondary form follows previous infection elsewhere, such as lungs and pleurae; the primary type is peculiar to the female sex. The peritoneal cavity of the female possesses one characteristic which distinguishes it from that of the male—it communicates with the exterior through the medium of the genital tract. It is suggested that this channel may be the medium through which the infection enters the peritoneal cavity. The age of incidence is most frequently the fifth and sixth years; perhaps this is related to the alkaline reaction of the vaginal secretion, as after that period it becomes acid. The condition begins as a pelvic peritonitis with pain and frequency of micturition, and pain referred to the suprapubic region. This is further shown in early cases, where the condition is found localized around the Fallopian orifices. Three varieties of the primary disease are recognized—fulminating, acute, and chronic. The striking manifestations of the condition are excessive vomiting in the early stage, diarrhoea, and bladder symptoms. With regard to treatment, early operation affords the best prospects of recovery: drainage of the peritoneal cavity under gas and oxygen anaesthesia, with the addition of blood transfusion. Transfusion is best done when the signs of septicaemia are beginning to appear. The adoption of this method has greatly diminished the mortality figures.

8. Shadowless Renal Calculi.

GRAVES (*Annals of Surgery*, April, 1922) states that it is common knowledge that a small percentage of renal calculi fail to cast shadows in an *x*-ray plate; probably 80 to 90 per cent. of stones will show. These calculi, which present no greater density than the body soft parts, are chiefly of uric acid or urate composition. Concerning the visibility of cystin calculi, there seems to be little accurate information; general opinion classifies them as shadow-casting stones. He reports a case of a pure cystin calculus which failed to reveal itself in two *x*-ray examinations. Experimental capsules containing cystin and swallowed failed to show on *x*-ray examination. The opacity of a calculus is determined not alone by its composition but by its thickness and structure as well. It is possible for two stones of the same composition to present different degrees of permeability to the *x* rays, one being of loose texture, the other perhaps harder and more compact. Pure cystin calculi, with their characteristic loosely knit structure, should be classified among the relatively invisible stones. Admixture with inorganic substances may account for exceptions to this rule, and may explain the results of other observers. In cases of doubt, by the injection of an opaque solution into the ureter and renal pelvis, invisible stones may sometimes be shown by negativity.

9. Retrograde Intussusception of the Small Intestine after Gastro-enterostomy.

LUNDBERG (*Acta Chirurgica Scandinavica*. April 29th, 1922) has observed one case, and collected the records of eight other cases, in which gastro-enterostomy was followed by retrograde invagination of the small intestine into, or towards, the artificial opening in the stomach. In his own case this accident happened nearly ten years after anterior gastro-enterostomy had been performed, and the patient was too debilitated to be operated on, dying soon after admission to hospital. The only case in which this condition was diagnosed before operation or death was Baumann's, in which a history of a similar accident to the patient eight weeks earlier greatly facilitated the diagnosis. The prognosis depends entirely on the treatment; the cases operated on recovered, those not operated on died within a few days. The mechanism of this condition is practically the same as for other forms of intussusception, and an additional factor may possibly be found in the comparative speed with which food in the stomach is emptied into the small intestine which may be unnaturally stimulated by this partially digested food. As Baumann has shown, ascending intussusception of the gut is very rare, descending intussusception being approximately 200 times more common.

10. Complications following Removal of Tonsils.

MARTIN (*Journ. Laryngol. and Otol.*, February, 1922) summarizes the immediate results of operations for the removal of the tonsils in 14,960 cases operated upon in the ear and throat department of the Royal Infirmary, Edinburgh (1907–20), chiefly from the point of view of estimating the relative risk attending in- or out-patient treatment. In the first 7,133 tonsillotomy was performed in the majority of instances, but from 1914 to 1920 7,575 cases were treated with the guillotine by the Sluder-Whillis-Pybus method, and in the remaining 252 cases the tonsils were dissected out. Of the 7,575 cases 2,524 were treated as in-patients and 5,051 as out-patients. The mortality of the whole series of 14,960 cases was six, one being due to delayed anaesthetic poisoning, one attributed to status lymphaticus, one to septic absorption, and three to bronchopneumonia, associated in one with hyperplasia of the lymphatic tissue. In no case was death due to haemorrhage, and that following the guillotine operation is almost negligible provided no tags of tonsillar tissue are left. During the last ten years (the period of enucleation by guillotine) there was no occurrence of haemorrhage requiring forceps or clamps for its control, while of the 252 operations with scissors and snares five cases of primary haemorrhage occurred, four being slight and controlled by sponges, and the fifth requiring a clamp. Complications occurred so much more frequently in those treated as out-patients, owing to the exposure on the journey home and unsuitable atmospheric conditions (6 arising when the operation was in the summer and 16 when in the winter months), as to justify the discouraging of out-patient treatment, at least in the winter.

11. Scaphoid Scapula.

REIJS (*Nederl. Tijdschr. v. Geneesk.*, February 18th, 1922), who reports an illustrative case, states that the condition of scaphoid scapula—that is, a scapula with a concave vertebral border—was first described in 1910 by Graves, who attributed it to inherited syphilis. This, however, is not the only cause, as Kellner among 50 idiots found scaphoid scapula in 40, only 15 of whom had inherited syphilis. The degenerative character of the deformity is also shown by Drasche, who in the examination of 5,000 school children found 10 to 20 per cent. with this deformity, which was present in 30 per cent. of the mentally deficient. Other causes incriminated are alcohol, tuberculosis, and rickets. Reijs himself found scaphoid scapula in 22 out of 119 school children and in 58 out of 114 mentally defective children. Examination at the Groningen Museum of 32 complete skeletons and 53 loose scapulae showed only three examples among the former and two among the latter—in other words, a much lower frequency than in living subjects. Reijs regards the scaphoid scapula as a sign of degeneration indicating a throwback to lower forms, because a scapula with a convex border is found only in certain primates and in man.

12. Diagnostic Value of Abdominal Pain.

HAY (*Canadian Practitioner*, April 1st, 1922), believing that every internal condition has an external expression, points out the value of pain, tenderness, and rigidity in the diagnosis of abdominal and pelvic diseases. Intermittent pain is indicative of either neuralgia or obstruction, the former being referred to the surface, relieved by pressure, present along the course of nerves, sharp and darting in character, and increased by cold or lowered vitality; while the latter is intensified by pressure, mainly felt in front, not related to the course of nerves, paroxysmal and wave-like, gradually reaching intensity and then subsiding, and increased by stimulation of peristalsis. An intense, sudden, tearing pain producing collapse with vomiting is common in the rupture of organs permitting the escape of irritating fluid into a healthy peritoneal cavity, as occurs in rupture of ectopic gestation, pyosalpinx, appendix abscess, gall bladder, gastric and duodenal ulcer. In colic the pain is intermittent, and the abdomen is not rigid between the attacks, while in acute abdominal conditions the pain is continuous, and accompanied by tenderness and rigidity. Rigidity over an inflamed viscus does not occur until its peritoneal surface becomes inflamed. In intussusception the pain is intermittent, and it is at the height of the paroxysm that the intussusception is most palpable, because both the pain and the mass are caused by the increased peristalsis. In palpation the hand should be warm, gently applied, and never raised from the abdominal wall, but gradually allowed to creep over the surface while the patient's attention is distracted by questions which require some thought to answer. The combination of pain and tenderness is of value in diagnosis, since in ordinary colic, lead colic, gall stone, renal and ureteral colic there is pain, but no tenderness; while both are present in appendicitis, peritonitis, gall-bladder empyema, or perinephritic abscess.

13. Oral Sepsis in Cancer of the Throat.

MCKENZIE (*Journ. Laryngol. and Otol.*, May, 1922), observing that all the cases coming under his care of cancerous ulcers of the pharynx and oesophagus in which progress was slow were edentulous, and had been so before any symptoms of cancer arose, considers that the slow progress of the growth is due to the fact that the mouth secretions are much less virulently infective when all the teeth have been removed. That treatment by diathermy temporarily improves both the appearance of the ulcer and the resulting symptoms of pain and difficulty in swallowing is explained by its sterilizing action rendering the growth area for a time aseptic. He contends that the progress of the cancerous growth is rendered slow or rapid according to whether the teeth are absent or present, since septic infection exerts a powerfully stimulating influence; and the contention is supported by the fact that most cases of throat cancer die from septicaemia rather than from haemorrhage, asphyxia, or starvation. The extraction, therefore, of all the teeth is advised as a preliminary to all grave surgical operations on the pharynx or oesophagus, and in the palliative treatment of ineradicable throat cancer by diathermy.

14. Lesions of the Maxillary Sinus in Neolithic Man.

SIFFRE (*Rev. de Laryngol.*, February 28th, 1922) describes seven cases of maxillary sinus infection found by him in forty-nine specimens of neolithic man found at Guiry. There was no true caries such as is seen to-day. Infection probably started after traumatic injury of the tooth, or in some cases excessive wear, the crown being quite worn down. The maxillary sinuses were perforated in seven cases, and communicated with the dental alveolus or the buccal cavity. Each specimen is described and drawings given of the condition found.

15. Radium Treatment of Tumours of the Bladder and Urethra.

MARION (*Journ. d'urol.*, March, 1922), who during the last three years has made frequent use of radium in various affections of the urinary tract, draws attention to its haemostatic action in tumours of the bladder and urethra. He records seven cases—six of vesical and one of urethral growth—in which profuse haemorrhage was checked by this means. In addition to its haemostatic action radium caused a distinct atrophy, and in one instance a destruction of the growth. Apart, however, from any curative action, radium is of great value in inoperable tumours, which may give rise to profuse haemorrhage. The technique of its application is very simple. In each case a dose of 10 cg. was introduced by a rubber catheter into the bladder and left for twelve hours. After the application the patients sometimes showed a slight reaction, consisting in a frequent and painful desire to micturate, but never had any severe pain, and the bladder was never injured by the application.

OBSTETRICS AND GYNAECOLOGY.

16. Indications for Caesarean Section.

POLAK and BECK (*Surg., Gynecol., and Obstet.*, May, 1922) speak of a too ready tendency shown at the present day to perform Caesarean section. The operation is attended by a greater mortality and morbidity than other abdominal operations for intrapelvic abnormalities such as myoma and ovarian cyst. From an analysis of 2,000 Caesarean sections performed in American clinics it is reported that in 210 clean cases in which the operation was done before or early in labour and no vaginal examination had been made the mortality was 2.9 per cent.; potentially infected cases (1,260 in number) and frankly infected cases (530) showed percentage mortalities of 6.2 and 11.5 respectively. Caesarean section may be made an operation of election when it is clear that the child's life will be seriously endangered, or the mother's health probably affected seriously, by delivery *per vias naturales*. More general and careful prenatal study will permit of Caesarean section being made with comparative safety in a larger number of cases at an early stage uncomplicated by infection. Apart from pelvic tumours likely to cause insuperable dystocia, absolute indication for abdominal hysterotomy is found only in contracted pelves with a true conjugate of 6 or 6.5 cm. Relative indication may be found in placenta praevia when the foetus is alive, the mother at or near term, the placenta implanted centrally or nearly so, and infection probably absent; occasionally in pre eclamptic conditions which have resisted medical treatment, provided that pelvic contraction or abnormalities of the soft parts are also present and likely to render vaginal delivery difficult; and in placental abruption (accidental haemorrhage) if the birth passages are totally unprepared.

17. MAGALHAÈS (*Gynécol. et Obstét.*, 1922, v, 5) finds no contraindication to Caesarean section in cases in which the foetus is living and in which either spontaneous vaginal delivery is impossible or operative vaginal delivery presents real difficulty; he supports his arguments by quotations from the records of the maternity clinic at Rio de Janeiro. For disproportion between foetus and pelvis Caesarean section offers prospects which for the mother are equal, if not superior, to those of forceps delivery or version, and better than those of symphysiotomy, pubiotomy, or embryotomy; the outlook for the foetus is immeasurably superior after abdominal hysterotomy. According to the writer the high forceps operation and pubiotomy are both procedures to be condemned. For cervical rigidity Caesarean section has a better prognosis than metallic dilatation, incisions with the bistoury, or vaginal hysterotomy. For dystocia due to contraction of Bandl's ring, Caesarean section removes the risk of rupture of the uterus, and in the writer's thirteen cases led to one maternal and no foetal deaths. The one death, like many others occurring in dystocia, was attributable to employment of vain tentatives to deliver by forceps or embryotomy. For the writer, Caesarean section is the operation of election in cases of prolapse of the cord, prolapse of a limb in cephalic presentations, and central placenta praevia; and late Caesarean section, even in cases in which, as a result of repeated examination and attempts to deliver, infection is probable if not indeed demonstrable, appears to him to offer less risk to the mother than is the case with other methods of delivery.

18. Tuberculosis of the Reproductive System.

ACCORDING to PESTALOZZA (*La Gynecologia Pratica*, March, 1922), tuberculosis of the female reproductive organs appears to be especially frequent in Italy, where about 10 per cent. of female subjects of tuberculosis exhibit tuberculous disease in the reproductive organs, and where young women are most commonly and children not rarely affected. The Fallopian tube is the organ most commonly diseased; ovarian tuberculosis is rare, but tuberculous disease of the vaginal portion of the cervix has been observed with increasing frequency of late years. Primary tuberculous affection of the genital organs is extremely rare; in one-third of cases peritoneal and genital tuberculosis coexist, the former being primary and leading to involvement of the reproductive organs either by direct extension or propagation along the lymphatic vessels. In the other cases the genital organs are infected through the blood stream or by extension from neighbouring organs apart from peritoneal involvement. In childhood tuberculous disease of the uterus or adnexa is much more common than is generally supposed; it may prove fatal by giving rise to generalized tuberculosis, or in the process of cure genital hypoplasia may occur, of which the most frequent sign is uterine atresia. In this way many cases of amenorrhoea and dysmenorrhoea in the adult find their origin. Anatomically, tubal tuberculosis is characterized

by sactosalpinx formation, by cold abscess, or by vegetating or papillary lesions which may or may not be accompanied by ascites; tuberculous endometritis almost invariably fails to pass beyond the internal os, and tuberculosis of the cervix is manifested in papillary excrescences. Clinically the most characteristic symptoms are amenorrhoea (primary or secondary), retarded puberty, with signs of partial or complete uterine atresia, of papillary affection of the cervix, or of chronic adnexal inflammation. Therapeutically, in addition to fresh-air treatment and administration of iodides, amputation of the cervix or curetting is indicated for tuberculous disease confined to the portio vaginalis or the corporeal endometrium respectively; more radical operation is indicated in the presence of severe pain or prolonged incapacity. Since removal of the adnexa is associated with a mortality of 2 per cent., and of the uterus and adnexa with one of 10 per cent., prolonged preliminary trial of heliotherapy and of radiotherapy—of which latter good reports have been given of late—is recommended.

19. Ascites Complicating Myoma Uteri

ACCORDING to DUNKHASE (*Zentralbl. f. Gynäk.*, May 6th, 1922), ascites is a more common complication of uterine myoma than is usually recognized: Casanouve has described it as occurring in 10 per cent. of cases. The writer describes the case of a patient aged 51 who complained of sudden wasting and rapid swelling of the abdomen: 20 litres of ascitic fluid were removed and hysterectomy was performed, the uterus being the site of a large subserous pedunculated myoma. Cure ensued rapidly. The occurrence of ascites in connexion with myoma is to be ascribed to irritation of the omentum, and it is noteworthy that in the case recorded this organ was connected with the myoma by strands of tissue which included several thick and twisted venous stems. The presence of small degrees of ascites does not affect the prognosis in cases of myoma, but considerable accumulations of fluid afford strong indication for speedy operation.

20. Prolapse of the Umbilical Cord

ACCORDING to SCHWEIZER (*Muench. med. Woch.*, 1922, 3), prolapse of the cord occurred in 1.13 per cent. of 19,000 births at the Leipzig Frauenklinik; foetal mortality was 56 per cent., or 38 per cent. among foetuses which were still living at the time of admission of the mother. Early diagnosis of the condition is all-important. When the cord presents, but has not prolapsed, it is essential to preserve the integrity of the bag of waters as long as possible; rupture of the membranes should be followed at once by vaginal examination and by careful observation of the foetal heart. For prolapse of the cord manual reposition followed by introduction of a dilating bag is a procedure which warrants more frequent trial; the same is true of vaginal hysterotomy. Caesarean section is indicated in cases of pelvic contraction, especially in the early stages of labour in primiparae. The quality of the foetal heart sounds is of greater significance as regards prognosis for the child than is the presence or absence of pulsation in the cord. The foetal mortality varies inversely with the extent of cervical dilatation.

PATHOLOGY.

21. Significance of Influenza Bacilli.

BLOOMFIELD (*Johns Hopkins Hosp. Bull.*, May, 1922) is decidedly of the opinion that Pfeiffer's bacillus is not the cause of influenza, because, although this organism is commonly recovered from the throats of patients with influenza during an epidemic, there is always an equally high incidence of this organism in other diseases, such as measles, at the same time. The lesions produced by experimental infections with influenza bacillus cultures resemble more closely the post-influenza pneumonias than uncomplicated influenza lesions. Moreover, there is evidence that the bacteria classified as influenza bacilli belong to a heterogeneous group differing widely in their biological characters, whereas it would have been expected that a pandemic would have been caused by a highly virulent strain. What, then, is the significance of *B. influenzae*? A study of the comparative incidence of influenza bacilli at various times has shown that the high incidence of Pfeiffer's bacillus in the throats of healthy people which was present during and after the pandemic has declined to the normal or pre-epidemic figure. A study of the seasonal variance shows that there is no evidence that the incidence of *B. influenzae* in healthy people varies with the incidence of mild respiratory infections. A study of the conditions necessary for the production of the carrier state has shown that the organisms may continue to live and multiply in a focus of infection, such as chronic bronchitis or bronchiectasis; that normal people without any recent history of respiratory disease may harbour *B. influenzae* for brief or prolonged periods; that great variations have followed the introduction of influenza bacilli experimentally in man, in some cases the bacteria being promptly eliminated and in other cases inducing a carrier state. The author concludes that Pfeiffer's bacilli only possess a partial degree of adaptation to free growth on normal mucous membrane. A variety of acute infections, notably that known as influenza, alter the soil in such a way that Pfeiffer's bacilli are able to become temporarily adapted to widespread growth in affected individuals.

22. The Rapid Diagnosis of Urinary Tuberculosis.

DIRECT examination for the presence of tubercle bacilli in the urine is frequently negative, while injection into a guinea-pig necessitates a delay of four to six weeks before a definite answer can be obtained. In order to obviate these two difficulties, ROCHAIX and BANSSILLON (*C. R. Soc. Biologie*, May 6th, 1922) have resorted to the use of cultural methods, by which they are able to record a high percentage of positive results and a saving of two to three weeks. The medium they employ is Petrof's veal-peptone-egg mixture containing 1 in 10,000 gentian violet. The deposit from the centrifuged urine is seeded directly on to several tubes of the medium, and a growth is obtained—if positive—within a fortnight. Although in the great majority of cases the findings have been closely correlated with those obtained by the injection of a guinea-pig, they quote two instances in which the cultures were negative even in the presence of advanced urinary tuberculosis. For this reason they conclude that reliance is only to be placed on positive results, negative ones being of little value—a conclusion, it may be stated, which holds good for a very large number of laboratory tests for the presence of infective disease. In the same number DESPEIGNES records his experiences on the use of Petrof's medium for the rapid diagnosis of genito-urinary tuberculosis. Much the same technique is employed, but instead of seeding the deposit direct on to the medium he subjects it to a preliminary digestion for one hour with 4 per cent. sodium hydrate solution. His results appear to be wholly satisfactory.

23. A New Reaction for Urea and its Clinical Value.

WELTMANN and BARRENSCHEEN (*Klinische Wochenschrift*, May 27th, 1922) describe a new reaction for urea. The addition of Ehrlich's aldehyde to the urine produces a greenish yellow coloration. A marked greenish-yellow coloration is also produced when Ehrlich's aldehyde is added to a watery solution of urea. No other substance occurring in normal urine, except urea, produces this reaction. The authors think the reaction will be of great practical value in estimating the residual nitrogen in blood serum, which has hitherto been a complicated procedure. In carrying out the test, the albumin of the serum is removed by means of 20 per cent. trichloracetic acid; to 1 c.cm. of the filtrate two drops of Ehrlich's aldehyde are added. A yellowish-green colour is only produced when the residual nitrogen is pathological in amount. A positive reaction indicates an increase of the residual nitrogen. The authors think this reaction will be of value in clinical work, as a rough means of deciding if the residual nitrogen is normal or pathological in amount. Only a small quantity of blood serum is required for the test.

24. Influence of Glycogen on Tumour Grafts of the Mouse.

IT is known that glycogen tends to be distributed particularly in cells which are undergoing rapid reproduction, such as those of embryonic tissues and of new growths, and there is some evidence in the case of the latter to suggest that the more malignant the tumour the higher the glycogen content of its cells. Working on the basis of this affinity of the neoplastic cell for glycogen, BORREL and COULON (*C. R. Soc. Biologie*, May 20th, 1922) endeavoured to ascertain whether it would be possible to introduce some protoplasmic poison into the substance of the tumour by combining it with this body. The antiseptic they chose was iodine. A compound of glycogen, extracted from a horse's liver, with Lugol's solution of iodine was prepared and injected into a series of mice which had been inoculated ten days beforehand either with a sarcomatous or with an epithelial graft. The result was that in 50 per cent. of cases the tumour underwent retrogression, following on a course of five or six injections. Control animals which received no injection, and controls which were inoculated with glycogen alone, were studied at the same time. The latter were found to die before the former, presenting larger-sized tumours. Glycogen therefore appears to act as a food substance for the cancerous cells. Mice in which retrogression of the growth had occurred subsequent to the introduction of the glycogen-iodine compound were found to be refractory to subsequent grafts. However successful this method may be with inoculated tumours, the authors admit that it has never yet been able to cause retrogression of spontaneously occurring tumours.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

25. Leukaemia and Severe Anaemia in Childhood.

J. L. MORSE (*Boston Med. and Surg. Journ.*, May 18th, 1922) publishes a study of 37 cases. No cases in infancy, nor of haemophilia, purpura, and secondary anaemias due to haemorrhage or to sepsis, have been included. Morse states that myelogenous leukaemia is very rare in children, but he records one fatal case in a boy of 4 who died suddenly. The liver and spleen were enormously enlarged and showed the typical changes. There were 12 cases (4 boys and 8 girls), the ages ranging from 2 to 13 years. The duration of disease in 11 cases was from three to thirteen weeks, in one case apparently nine months. In one the blood was normal prior to scarlet fever, and in another the disease occurred after a fall. No possible causes were discovered in the other cases. The symptoms varied, but haemorrhages occurred in all but one case. Anaemia, enlargement of lymph nodes, abdominal pains, vomiting, weakness, fever, and anorexia were common. An enormous increase of white cells, chiefly mononuclears, even up to 1,000,000, was found in every case. There were 18 cases of severe anaemia with moderate or low leucocyte counts, but with a high percentage of mononuclears. In one there was a doubtful history of malaria, but no plasmodia were found, and in another an alveolar abscess, but no improvement followed extraction. The cervical glands were enlarged in 15 cases. Vomiting, weakness, and haemorrhages occurred frequently as in the other series. The spleen was enlarged in 12 cases, and the liver in 16 cases. The Wassermann test (2 cases) and tuberculin test (6 cases) were negative. The haemoglobin was below 50 per cent. in 15 cases; leucocytes below 30,000 in all but 2 cases—in the majority of cases they were entirely or chiefly of lymphocyte type, but in 3 cases large mononuclears predominated. Blood platelets were seen in only 8 cases; normoblasts in 4 cases. One of these had many megaloblasts. Morse discusses the question whether this group should be termed "lymphatic leukaemia in an aleukaemic stage" or a form of severe anaemia. He thinks the condition is due to functional failure of bone-marrow. In a girl of 5 and a boy of 8 there was great enlargement of liver and spleen; the girl had a number of normoblasts and myelocytes, lymphocytes 69 per cent., but polymorphs much diminished. In the other case polynuclear neutrophils (86 per cent.) predominated. Haemoglobin was reduced to 35 per cent. and 25 per cent. A boy aged 8½ years died after three years' illness. The liver was just palpable, and pigmentation of the skin resembled Addison's disease. Haemoglobin 15 per cent.: many megaloblasts; red cells 860,000; white 8,000; small mononuclears 61 per cent. A girl aged 9½ years died after sixteen months' illness. Her skin was dirty yellow, with deeper pigmentation of axillae, groins, and nipples. At 8½ years she had severe epistaxis. The liver and spleen could not be felt. Haemoglobin 25 per cent.; in other respects the blood picture was almost identical with the preceding case. In both cases the Wassermann and tuberculin tests were negative. The author regards both these as cases of severe aplastic anaemia, though the coagulation-time in the latter suggests the possibility of purpura. Transfusion was done several times in this case, and there was temporary improvement. In the case of a boy who died at 9½ years the illness lasted twenty months; it commenced with epistaxis and headache, and occasional purpuric spots. Haemorrhages ceased after six months, but haemoglobin = 20 per cent.; red corpuscles 738,000, white 5,700; small mononuclears = 90 per cent.; one normoblast; very slight anisocytosis or poikilocytosis. There was no enlargement of liver, spleen, nor of lymph nodes. He improved somewhat and showed no sign of tuberculosis, etc., but peripheral lymph nodes began to enlarge. He developed acute otitis media and mastoiditis, which were cured by operation. Six months before death the haemoglobin = 25 per cent.; the blood picture was otherwise almost unchanged. This was apparently a case of severe aplastic anaemia, not due to infection, as its progress was unchanged by the otitis media. The last case had a similar blood picture to the above. A boy, aged 2½ years, had otorrhoea for five to six months, and became very pale and weak. There was general slight enlargement of liver, spleen, and lymph nodes, and a foul discharge from the right ear. Haemoglobin 25 per cent.: red corpuscles 1,272,000, white 6,600; normoblasts 6 per cent., megaloblasts 3 per cent., polymorphs 42 per cent. only. After tonsillectomy he improved, and lymph nodes, liver, and spleen all diminished. The otorrhoea persisted. Four months later he returned with severe purpura—gums oozing; liver, spleen, etc., enlarged. Haemoglobin 43 per cent.; white cells 29,000; mononuclears 85 per cent. He was transfused, but bleeding did not cease for a month. His otorrhoea persisted; a retropharyngeal abscess ruptured and drained into the throat; many other abscesses were opened and drained. He recovered, and at 9 years of age appears quite well. This case suggests that infection or intoxication may be the source of these severe anaemias, though undiscovered in the other cases.

26. Gastroptosis and the Shape of the Thorax.

FABER (*Ugeskrift for Laeger*, May 11th, 1922) finds that the frequency of gastroptosis increases considerably with the degree of deformity and narrowing of the chest. The position of the stomach, as shown by the *x* rays after a "contrast" meal, and when the patient stands up, may be such that (1) it is entirely above the umbilicus; (2) the lesser curvature is above, the greater below the umbilicus; (3) the lesser curvature is 2 cm. or less below the umbilicus; or (4) it is at least 2 cm. below the umbilicus. The author has devised what he calls the "epigastric index." A line is drawn from the umbilicus to the lower end of the sternum. At the middle point on this line a horizontal line is drawn from one costal arch to the other. The epigastric index is obtained by multiplying the length of this horizontal line by 100 and dividing by the length of the vertical line. The author finds that the average epigastric index is 59.3 for men and 45.4 for nulliparous women. A high index was usually associated with a high position of the stomach among men and nulliparous women. But in parous women there was little relation between the epigastric index and the degree of gastroptosis, which was evidently determined chiefly by child-bearing. One of the author's patients was a tall, thin woman with an epigastric index of 30 and the lesser curvature of the stomach several centimetres below the umbilicus. After six years, during which her weight rose from 46 to 80 kg., the lesser curvature was 8 cm. and the greater curvature 3 cm. above the umbilicus.

27. Syphilis in Country Practice.

LEREDDE (*Paris méd.*, March 4th, 1922) remarks that though numerous practitioners state that they have never met with syphilis in the country, it is really very frequent there in its nervous, visceral, and osteo-articular manifestations, although examples of chancres or secondary lesions are rarely seen. He quotes Dr. Etienne of Vernon (Eure), who in the course of sixteen months among 524 patients found 243 cases of undoubted syphilis, consisting of 82 of acquired syphilis and 161 of the inherited disease. Among the 82 cases of acquired syphilis there was only one instance of a chancre, 2 of secondary syphilis, 12 of tertiary cutaneous lesions, 27 of nervous syphilis (including hemiplegia, paraplegia, general paralysis, epilepsy, and tabes), 3 of cardiac or aortic syphilis, 1 of pulmonary syphilis, 1 of anaemia, 1 of exophthalmic goitre, and 1 of chronic rheumatism. In 22 cases maternal syphilis was discovered. In addition to 243 cases of undoubted syphilis were 19 cases of probable or possible acquired syphilis and 117 of probable or possible inherited syphilis. Leredde points out that syphilis is one of the principal causes of mortality at all ages. It is estimated that it is responsible for 80,000 deaths annually in France, and this figure might possibly be raised to 150,000 if all the consequences of syphilis were included; according to Couvelaire half the deaths among infants within the first three days after birth, including still-births, are due to syphilis, or 19,000 deaths a year. Leredde recommends the institution of antisyphilitic dispensaries throughout France with laboratories attached.

23. Serum Treatment of Dysentery.

LANTIN (*Philippine Journ. of Science*, December, 1921) administered antidysentery serum to cases of Shiga and Flexner dysentery by five different methods—namely, per rectum alone, intramuscular injection and per rectum, intramuscular injection alone, intramuscular and intravenous injection, and intravenous injection alone. In administering the serum per rectum the patient assumed the knee-chest position and was first given a cleansing enema of sodium bicarbonate (1.5 per cent.), followed by another enema of 60 to 100 c.cm. of starch solution with 15 drops of laudanum so as to diminish the irritability of the intestines; half an hour later 30 to 80 c.cm. of antidysentery serum was given through a long rubber tube. The nine cases treated in this

way by daily serum enemata all recovered, but the treatment was not adopted for serious cases, and even in the milder cases some were unable to retain the serum long. The intramuscular injections were given into the buttock, the dose being 20 c.cm. every four hours for the first three days and 20 c.cm. twice a day thereafter. In the intravenous injections 10 to 20 c.cm. was found to be the best dose, and 1 c.cm. was injected four to six hours previously so as to avoid anaphylaxis. Since the cases selected for the different methods of administering the serum varied considerably in their severity, it is not possible merely by considering case mortality to appraise the value of the different routes of injection, but there were clinical grounds for believing that the rectal injection of the serum resulted in alleviation of the symptoms as shown by diminished pain and tenesmus, decrease in number of stools, and fall in temperature. The serum is known to have both bactericidal and antitoxic powers, therefore this, the simplest method, should be used in patients well enough to retain the enemata. The combined method (serum per rectum and intramuscular injection) gave as good results as any, and is regarded as the safest method. Intravenous injection produces immediate effects, and in severe cases is clearly indicated, but it should be used with caution because of the greater danger of anaphylaxis and emboli.

29. The Actual Cautery in the Treatment of Paralysis from Vertebral Disease.

WIRTH (*Klinische Wochenschrift*, April 8th, 1922) records his experience of the use of the actual cautery in paralysis from vertebral disease. He supports the view of Quincke as to its value, and thinks it may be of service, especially in spastic paraplegia following tuberculous disease of the spine. He records three successful cases. Examination of the first case revealed disease of the fourth and fifth dorsal vertebrae; diminished sensation from the fifth dorsal segment downwards; spastic condition of the legs; Babinski reflexes; ankle-clonus. After open-air treatment for tuberculosis the bone symptoms disappeared, but the spastic paralysis increased, so that the patient could not stand. The spine was cauterized. Prompt improvement occurred and he was soon able to walk. Two months later the spasm of the legs had disappeared, and there was no ankle-clonus, no Babinski reflex, and no sensory disturbance. In the second case there was disease of the twelfth dorsal and first lumbar vertebrae. The chief symptoms were pains in the thighs, formication in the feet, ataxic gait and ataxia of the left leg. The spine was cauterized. The ataxia, pains, and paraesthesia disappeared rapidly. In the third case (myelitis of the lumbar region and conus—chiefly in the anterior grey matter) the chief symptoms were priapism, marked atrophy of the left leg and slight of the right. After cauterization of the spine the priapism soon disappeared, the movements of the left leg improved, and the atrophy was less marked. The cautery is applied on each side of a vertebral spine during slight ether narcosis.

30. The Suprarenals in Asthma.

HURST (*New York Med. Journ.*, March 11th, 1922) considers that asthma is due to an inborn condition in which the broncho-motor part of the vagus nucleus is abnormally active, and consequently responds too readily to blood-borne irritants and to peripheral and psychical stimuli. The overactivity of the broncho-constrictor fibres of the vagus are kept in check by the activity of broncho-dilator fibres of the sympathetic owing to the constant secretion of adrenaline. Hypersensitiveness to certain proteins largely depends upon their depressing effect upon the suprarenals manifesting itself in depression of their normal activities in connexion with the blood vessels, alimentary canal, or bronchi, giving rise in different individuals to vasomotor disturbances—for example, urticaria, vomiting and diarrhoea, or an attack of asthma. Fright may stop an attack of asthma through its stimulation of the sympathetic and suprarenal secretion, and that asphyxia may have the same effect explains the relief which an asthmatic experiences if he continues walking up to a moderate degree of dyspnoea, and for this reason exercise should be encouraged if there is shortness of breath during the first quarter of an hour. An adrenaline injection cuts short an acute attack of asthma more rapidly than any other treatment, 1 minim of 1 in 1,000 adrenaline chloride solution being sufficient, since it is not necessary to produce such general symptoms as a rise in blood pressure or rapid pulse. The injection should be given at the beginning of an attack and before it has fully developed, and in such small doses no unpleasant immediate or after effects result. It is the only form of injection which is justifiable for self-administration, because of the necessity for its being given directly the first symptoms of an attack are recognized.

SURGERY.

31. Indications for Splenectomy in Children.

THE conditions for which relief or cure by splenectomy may be indicated are present in the first years of life more frequently than is generally accepted. BARTLETT (*Amer. Journ. Dis. of Children*, April, 1922) has collected reports of fifty-one cases of splenectomies in children under 14 years of age. He states that haemolytic jaundice, Banti's disease, Gaucher's disease, and Von Jaksch's anaemia are conditions for which relief or cure by splenectomy may be the only treatment. It is desirable to remove the spleen in the early stages of the pathological process for which splenectomy is indicated. Of those conditions to which splenectomy appertains, haemolytic jaundice, familial or acquired, offers the greatest hope of a cure by removal of the spleen. In Banti's or Gaucher's disease the decision to remove the spleen is based on the presence of a large spleen, persistence of secondary anaemia after repeated blood transfusions, and a physical disability which makes the individual a chronic invalid. Splenectomy for these conditions may give relief of symptoms and serve to prolong life. Von Jaksch's disease is probably not an independent condition. Cases of haemolytic jaundice have the advantage of the distinguishing sign of icterus. With regard to leukaemia, this disease, above all others, must be excluded in a decision to remove the spleen; removal of the spleen is contraindicated. The writer reports three cases in which splenectomy was carried out. In one case of Banti's disease radium treatment proved of no avail, and he considers it of little use for this condition. With regard to blood transfusion, if a child with an enlarged spleen and a secondary anaemia fails to improve after two or more transfusions, splenectomy is advisable.

32. Syphilis of the Epididymis.

FRASER (*British Journ. of Derm. and Syph.*, June, 1922) points out that there are two forms of syphilitic implication of the epididymis—interstitial epididymitis and gummatous formation, the former of which may be acute or chronic. In acute interstitial epididymitis pain is sudden in onset and accompanied by a dragging sensation in the scrotum and along the vas; there is great tenderness and swelling, which invariably commences in the globus major and very soon involves the body and tail; the epididymis becomes uneven and nodular, probably due to infiltration with lymphocytes and plasma cells and hyperplasia of the fixed elements. Chronic interstitial epididymitis may follow an acute attack, but more frequently is slow, painless, and insidious in its onset and occurs in a much later stage of the disease. Here also the globus major is first affected, and irregular, diffuse, nodular infiltrations make their appearance. The patient's attention is directed to the condition often only because of the gradual increase in the size and weight of the scrotum due to the accompanying hydrocele. The author reports an unusual case of bilateral syphilitic interstitial epididymitis which occurred eighteen years after the initial infection and was acute on one side and chronic on the other. There was unilateral implication of the vas, but the prostate and seminal vesicles were not affected and both testes were normal. There was no other evidence of syphilis, and the condition responded rapidly to treatment. A previous gonococcal infection may have acted as a predisposing factor in determining the site for the spironemal activity.

33. Indications for Removal of the Spleen.

MORAWITZ (*Klinische Wochenschrift*, April 15th, 1922) briefly describes the haemolytic and other functions of the spleen and gives an interesting summary of the indications for removal of that organ, viewed from the standpoint of the physician. Apart from surgical conditions, removal of the spleen is indicated in diseases in which abnormal haemolysis occurs in the spleen and through the spleen. This is most clearly the case in chronic haemolytic (or acholuric) jaundice. The symptoms are usually completely checked by this operation, but the author advises it only in the severe forms of the disease. In pernicious anaemia and leucocythaemia the operation is dangerous and the results are unfavourable. In polycythaemia the operation is useless, but *x*-ray treatment is now successfully carried out. Recently successful results have followed removal of the spleen in the rare cases of true morbus maculosus (purpura) or essential thrombopenia (Frank), but caution is necessary in the diagnosis, as thrombopenia, with haemorrhagic diathesis, occurs as a symptom in a number of varied diseases. The operation is only advisable when the previous history and clinical examination show that the case is one of the essential and chronic forms of this affection. In Banti's disease permanently successful results may be obtained by removal of the spleen in the first and second stages of the disease. In many other forms of splenic enlargement the exact diagnosis is often

difficult and the indications as to operation are less clear. In hypertrophic cirrhosis of the liver (Hanot's form) the spleen has often been removed, but though improvement has followed permanent results have not been obtained. In Gaucher's form of splenomegaly removal of the spleen has only been followed by temporary results.

34. Diagnosis and Treatment of Tuberculosis of the Mastoid.

STRANDBERG of the Finsen Institute in Copenhagen (*Hospitalstidende*, March 15th, 1922) notes that, by the inoculation of guinea-pigs, it can be shown that 10 per cent. of all cases of mastoiditis are tuberculous. The differential diagnosis is of great importance to treatment, which, when the disease is tuberculous, should be by Finsen light. Of thirteen cases thus treated after operation, all but one terminated in recovery, and in the one exception the patient discontinued the treatment prematurely. The author agrees with Leegaard in his finding that in 63 per cent. of all cases of tuberculous middle-ear disease and mastoiditis the onset of the disease is associated with severe pain and high fever, and it is impossible to exclude tuberculosis because the onset of the disease is not painless and is associated with a rise of temperature. The macroscopic appearance at the time of operation is of no value to the differential diagnosis, which rests solely with the guinea-pig.

35. Tracheo-cutaneous Suture in the Treatment of Foreign Bodies.

COLLET (*Lyon Médical*, April 25th, 1922) records a case of partial asphyxia in an infant due to swallowing a plum stone which lodged in the right bronchus. The trachea was opened and the two sides sewn to the skin; by pulling the sides apart a good view could be obtained and local cocainization easily managed. The author has treated several cases of foreign bodies in the air passages in this way, where for various reasons bronchoscopy was either impossible or unsuitable. He says it is simpler and more effective than putting in a tube, which often prevents the foreign body from escaping. The method is most applicable in the case of smooth, rounded, voluminous foreign bodies.

33. Ocular Symptoms of Epidemic Encephalitis.

FOSTER (*Amer. Journ. Ophthalmol.*, January, 1922) records observations upon the ocular symptoms in two cases of epidemic encephalitis, and urges the desirability of carefully reporting such observations in order that, by clinical grouping of the symptoms in individual cases, greater assistance may be given to early diagnosis. In the first, a man aged 46, there was partial loss of function of the left abducens and, to a less degree, of the left levator palpebrae, with total loss of function, sudden in onset, of both inferior recti. The following day the patient slept almost continuously, and the paresis of the ocular muscles became more marked, the left eye having almost no movement except inward, while in the right eye the externus was the only muscle which seemed to function normally. The pupils were small, and reacted quickly to light but not to accommodation. After five days of lethargy recovery slowly began, and three days later the ptosis had almost disappeared, and the other extrinsic muscles, with the exception of the left externus, had regained their functions. In the second case, a man aged 44, the striking feature was the very fleeting nature of all the ocular symptoms. Commencing with ptosis of the left upper lid and paresis of the left superior and inferior recti, and followed by complete paralysis of the left internus, at the end of six days the ptosis was less and all the ocular paralysis had disappeared. After an uninterrupted convalescence the patient was discharged apparently well, but later developed fits of drowsiness preceded by ptosis, partial or total, until he sank into complete lethargy with the eyes fixed straight forward, and the left cornea was much more sensitive than the right. The pupils in the first attack reacted both to light and to accommodation, but there was little reaction to light later.

37. Primary Cold Abscess of the Tongue.

ACCORDING to TADDEI, director of the Surgical Clinic at Pisa University (*Il Policlinico*, Sez. Prat., March 27th, 1922), primary tuberculous abscess of the tongue is generally regarded in the textbooks as very rare. Although it is certainly not a frequent occurrence, he has seen four examples of the condition, in three of which he removed the tuberculous lesion. Three were in women and one in a man. As a rule the abscess is situated deeply in or between the muscles of the tongue, but in some cases it is localized in the submucous tissue. The course of the disease is fairly rapid; regional adenitis is rare and occurs late. The diagnosis is made by animal inoculation. The prognosis is favourable provided that a complete extirpation of the focus is carried out.

OBSTETRICS AND GYNAECOLOGY.

38. Maternal Mortality in New Zealand.

ACCORDING to H. JELLETT (*New Zealand Med. Journ.*, April, 1922, p. 35), the general maternal mortality in New Zealand is somewhat excessive. For 1920 the mortality for the whole country was one in 154 births, and in the districts with the highest mortalities 89 deaths occurred among 6,876 births—a proportion of one in 77. About three-quarters of the deaths were certified under one of the four headings: sepsis, eclampsia, *post-partum* haemorrhage, placenta praevia. The mortalities from all of these causes were considerably higher than those shown in the statistics of the Rotunda Hospital during twenty-six years; the basis of comparison is said to be approximately fair, for although hospitals enjoy special advantages in treatment the average morbidity of the cases on admission is greater than in ordinary practice. The high death rate from eclampsia is attributed in part to too frequent treatment by Caesarean section. The unusually large distances separating the residences of doctor and patient account, in part at any rate, for the high mortality from placenta praevia and *post-partum* haemorrhage. Deaths from sepsis numbered one in 459 births; it is suggested that the chief contributory causes are increased virulence and prevalence of septic organisms, operative midwifery, and unsuitable surroundings. Unnecessary operative midwifery consists in prophylactic *ante-* or *post-partum* douching, unnecessary vaginal examinations, unnecessary forceps applications, and interference with the physiological course of the third stage of labour. With regard to unsuitable surroundings, it is probable that a private house adapted to the purpose of a hospital, but inadequately or improperly equipped or staffed, is the most dangerous place for delivery. For the excessive maternal mortality the remedies suggested are: (1) Alterations in the relations between the medical attendant and the patient in cases of normal labour; as suggested by Fairbairn (this JOURNAL, March 19th, 1921), the duty of the doctor in the future will consist chiefly in the supervision and "vetting" of pregnant women, the detection of abnormalities, and the treatment of complications—in other words, to secure a normal labour or to treat an abnormal one. The doctor whose time is not wasted in attending normal labour will be free from the temptation to interfere, for the purpose of saving time, by application of forceps or hasty expression of the placenta. (2) Improvement of obstetrical homes and erection of midwifery blocks for paying patients in connexion with the large general hospitals. (3) Improvement of obstetrical education as regards the amount of practical teaching and the opportunities of practical experience by students. (4) It should be recognized that obstetrical and gynaecological specialists are essential in large centres of population, and that it is impossible for them to become efficient unless there are places made for them on hospital staffs and unless they get the support of practitioners.

39. Induction of Labour by the Use of Castor Oil and Quinine.

FOR induction of labour A. C. WILLIAMSON (*Surg., Gynec., and Obstet.*, June, 1922, p. 812) gives ½ oz. of castor oil at midnight in primiparae and about 7 in the morning in multiparae. A hot enema is administered as soon as the oil is effective, and quinine sulphate is given in four half-hourly doses of 5 grains. If the attempt fails, a second trial is not made until ten days later. Administration of quinine is stopped if the patient complains of nausea or ringing in the ears. Of 300 cases, of which about one-half were primiparous, this procedure was followed by onset of labour in 46.6 per cent. Labour should be carefully watched; there were twenty cases of fulminating labour, and occasionally tetanic uterine contractions led to foetal or maternal distress. It is admitted that in the successful cases the patient had arrived at or passed term as fixed by dates; the head was fixed or beginning to engage in the pelvis; the cervix was partially or completely obliterated and the internal os would admit a finger; and the uterus showed irritability by readily contracting as a result of manipulation. In the therapeutic mechanism two factors are concerned—a direct action of quinine on the uterine muscle, and stimulation of sympathetic centres as a result of increased intestinal peristalsis due to the castor oil.

40. Capillary Circulation in Pregnancy Nephropathies.

NEVERMANN (*Zentralbl. f. Gynäk.*, April 22nd, 1922) recapitulates his findings, confirmed by other observers, that in cases of eclampsia, of the pre-eclamptic condition, or of "pregnancy kidney," alterations in the cutaneous capillaries may be observed with the capillary microscope, and consist in lengthening of the capillaries, thickening of the venous to a greater extent than of the arterial radicles, and retardation

of the intracapillary blood flow, which becomes tortuous and shows periodically partial or complete stases. He believes that the severity of these alterations in capillary circulation afford a measure of that of the existing toxaemia; retardation and stases are most marked in association with eclamptic convulsions, and become less manifest as improvement is found clinically to occur. After recovery the passage of blood through the capillaries quickly becomes normal, but alteration of capillary form may persist for some weeks. Similar alterations of capillary circulation occur in cases of nephritis in non-pregnant subjects and of mitral disease, arteriosclerosis, and vascular neuroses. The benefit following venesection in pre-eclamptic and eclamptic conditions is explained, partially at least, by the observation that an amelioration of capillary circulation may be demonstrated to ensue. Nevermann has found retardation of capillary flow and periodic stases in capillary microscopic examinations of the capillary circulation in twisted ovarian tumours at laparotomy. That other capillaries than those of the skin show similar circulatory variations he has proved by observing the cutaneous capillaries as well as those of the mesentery, the ileum, and the uterus, both in animals and in patients after opening of the abdomen. In a patient on whom Caesarean section was performed for eclampsia he was able to demonstrate in the uterine capillaries morbid changes corresponding closely with those seen in the skin capillaries. The inference that in pre-eclamptic and eclamptic conditions impairment of capillary circulation takes place not only in the skin but in the viscera and brain is of importance in connexion with the etiology of eclampsia.

41. Signs of Intrauterine Death.

ACCORDING to A. B. SPALDING (*Surg., Gynec., and Obstet.*, June, 1922, p. 754), crepitation in the foetal head bones, which it is sometimes possible to elicit by vaginal or abdominal palpation, constitutes practically the only positive diagnostic sign hitherto reported of intrauterine death of the foetus. The patient may or may not complain of malaise, vomiting, breast changes, or vaginal discharge of blood or clear fluid. The medical attendant may or may not note changes in the blood pressure, a slight increase of temperature, a subnormal temperature in the cervix uteri, or stationary or diminished height of the fundus. As a sign pathognomonic of intrauterine death the writer describes the finding by *x*-ray examination of marked overlapping of the skull bones with distinct signs of shrinkage of the skull contents. The latter finding distinguishes the overlapping of the bones from that associated with compression of the foetal head during labour.

PATHOLOGY.

42. Etiology of Malignant Disease and Leukaemia.

YOUNG (*Edin. Med. Journ.*, June, 1922) has isolated a micro-organism with specific characters from thirty-four out of forty malignant tumours examined and from four carcinomatous growths in the mouse. The tumour tissue was incubated under partially anaerobic conditions in a fluid medium rendered acid by the fresh addition of a solution of 0.2 per cent. HCl placed in the medium so as to surround the tumour fragment. The parasitic form of this organism consists of a minute phase which is passed in the nucleus of the cancer cell, the presence of this irritant supplying constant stimulus to growth and accounting for the riotous proliferation which characterizes malignant disease. In culture this organism is found to be markedly pleomorphic, and granules, bacillary, coccoid, and filamentous forms are described. Two strains have been identified—the human and the mouse type—resembling each other in their morphology and general cultural characters, but differing in the ease with which they can be isolated. The results of the injection of these cultures into mice are not yet complete, but as far as they go they demonstrate that inoculation induces lesions which are either toxic or proliferative in type, though only two out of a large number of inoculated mice have developed carcinomatous tumours. In many cases, however, a marked degree of lymphoid proliferation occurred, leading to a condition similar to lymphoma or lymphoid sarcoma. In three cases of human leukaemia an organism similar to that described for human carcinoma has been recovered from the blood, and cultures of this organism when injected into mice produced lesions similar to those found with mice infected with the mouse strain. The author concludes that malignant disease and related leukaemia phenomena, both in the human subject and in the mouse, are dependent upon an infection of the body cells by an organism which has specific characters.

43. The Action of Certain Fats on Osseous Metabolism.

MOURIQUAND and MICHEL (*C. R. Soc. Biologie*, May 27th 1922) set out to study the action of certain fats in their relation to the antiscorbutic factor. Guinea-pigs fed on barley, hay, and a fatty substance—either butter, olive-oil, or cod-liver oil—all succumbed with typical scurvy. A second series of animals was then given a mixture of barley, 10 c.cm. of lemon juice, and either 5 grams of butter, or 2.5 c.cm. of olive oil, or 2.5 c.cm. of cod-liver oil. Out of seven guinea-pigs fed on the dietary containing butter, only one died of scurvy; out of six fed with olive oil not one developed scurvy; while all the ten animals fed on cod-liver oil died between the 29th and 107th days with definite scorbutic lesions of the bones. Not only was this last group affected with scurvy, but skin troubles were present, the coats of the animals being coarse and bristling. In order to study further the effect of cod-liver oil, this substance was added to a diet which was already complete—namely, one consisting of barley, hay, and lemon juice. The animals of this series remained well, displaying neither osseous nor cutaneous lesions. These results with cod-liver oil are very surprising and unexpected. They must, of course, be considered merely as applying to the guinea-pig, but they do suggest that there may be certain foods which exert an adjuvant or a retarding effect on the development of scurvy. They likewise provide a warning not to regard all fat-soluble factors as necessarily similar in action.

44. The Incidence of Syphilis in the Dead-house.

L. MELCHIOR (*Hospitalstidende*, May 12th, 1922, p. 106) has investigated the frequency with which syphilis can be demonstrated clinically and by *post-mortem* evidence among hospital patients. Between 1914 and 1920, 5,865 bodies were examined at the Communal Hospital in Copenhagen, and in 4,717 cases the ages of persons dying over the age of 15 years were recorded. Among these there were 358 (7.6 per cent.) with anamnetic, clinical, or *post-mortem* evidence of syphilis. The percentage proportion of men to women was 69 to 31. There was a considerable difference in the age at death of these syphilitics and of all the hospital cases. Thus, 65.4 per cent. of the syphilitic died between the ages of 30 and 60, whereas only 46 per cent. of all the patients died between these ages. Only 25.1 per cent. of the syphilitic died after the age of 60, and only 7.2 per cent. after the age of 70; whereas the corresponding percentages for all the patients were 44 and 22.5 respectively. A definite history of infection was obtained only in 54 per cent., and the date at which infection had occurred was given in barely 50 per cent. In this category, about every other patient had died from five to twenty-five years after infection, and 15 per cent. within the first three years of infection. But only in 7 out of 26 of these cases could the cause of death be traced to syphilis. Syphilitic changes were found *post mortem* in 248 cases—that is, in 69.3 per cent.—the percentage rising with the age of the patient, being only 23.5 among persons dying under the age of 30, and 88.5 among persons dying after the age of 70.

45. Serological Test for Cancer.

THOMAS and BINETTI (*Les Néoplasmes*, No. 2, March, 1922) claim to have devised a serological test for cancer based upon the reducing power of the serum. The ingredients necessary for the test are: (*a*) an extract of a malignant tumour prepared by maceration of the tissues in 1 per cent. sulphuric acid and a mixture of alcohol and ether, the two solutions after evaporation being redissolved in distilled water, neutralized and sterilized; (*b*) a 1 in 350 solution of methylene blue containing 1 c.cm. of glycerin; (*c*) normal serum and serum to be tested. On mixing graded quantities of normal serum with the extract and one drop of the methylene blue solution, reduction of the methylene blue gradually takes place, beginning at the bottom of the tube. This reduction does not take place for at least sixty minutes when normal serum and extract are mixed with methylene blue, but if the serum comes from a case of cancer the reduction often commences within ten minutes and is complete much earlier. In 65 patients not suffering from malignant disease negative results were found, while 80 cases of cancer affecting different organs all gave a positive result. But in an advanced case of inoperable cancer the blood reaction was negative, a result which the authors ascribe to a failure of the defensive ferments due to the advanced stage of the disease. Again, it would appear that an individual whose parents have suffered from cancer may show a positive reaction although not suffering from a tumour at the time, this being an indication, we are told, of a predisposition to malignant disease. Cases are recorded in which the reaction was positive before the removal of the tumour and negative afterwards.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

46. Nephritis in Children.

GLADYS BOYD (*Amer. Journ. Dis. of Children*, May, 1922) publishes a detailed study of 26 cases of nephritis in children, whose ages varied from 2 weeks (2 cases) to 14 years, the mean being 6.29 years; 7 cases (mean=4.59 years) died. The cases were classified thus: (1) acute nephritis, 24; chronic glomerulo-nephritis, 2. Of the acute cases 12 recovered and 6 became chronic. Infections, often apparently slight, were the most frequent cause—11 cases being due to tonsillitis, 4 to scarlet fever, 3 to otitis media, and 3 to nasopharyngitis. From 2 cases of tonsillitis pure cultures of *Streptococcus haemolyticus* were obtained; 5 blood cultures yielded *Streptococcus haemolyticus* in 3 cases. Uncomplicated cases showed a moderate lymphocytosis, and secondary anaemia was more marked than would be accounted for by haematuria. A rise of blood pressure was either slight or moderate in most cases, but a persistent rise of 120 mm. indicated a bad prognosis. No cardiac enlargement occurred, except towards the end, in fatal cases. There was enlargement of the liver in 50 per cent. and of the spleen in 23 per cent. of the cases. Eye changes were infrequent, but retinal haemorrhages occurred in 2 fatal cases. Daily examinations of urine were made—quantity, specific gravity, presence of blood, albumin (Esbach's method), and chloride excretion (Volhard's method). Chemical examinations of the blood were made from time to time. The kidney efficiency was tested by: (1) A "dry" diet (less than 10 oz. fluid in twenty-four hours'. (2) By giving a large quantity of water and after preliminary micturition collecting the quantity passed in twenty-four hours. Normal children excreted 80 to 90 per cent. within four hours. The whole, or more, should be passed in twenty-four hours. (3) For solids by daily estimation of chlorides on (*a*) a salt-free diet and (*b*) after taking 5 grams of sodium chloride. Slight oedema was common, but general anasarca occurred in 2 cases only. Haematuria usually persisted for two to four weeks, and recurred after tonsillectomy or the administration of an irritant—for example, sodium chloride. Casts were usually finely granular or hyaline; blood casts were rare, even when there was much haematuria. A trace of albumin usually persisted long after disappearance of symptoms. The phenol sulphonephthalein test was of little value until all acute symptoms had subsided; transient haematuria followed its administration in 2 cases. The average stay in hospital was two months, the limits being two weeks and four months. The 6 "non-resolving" cases were of a more severe type: fever, without obvious cause, was common, and all but one showed persistent slight rise of blood pressure; haematuria and albuminuria were more severe, and oedema or anasarca was more persistent. One fatal case followed administration of calomel (dose not stated) for seven days; 50 per cent. of patients made a good recovery. Persistence of oedema and haematuria for over a month, frequent relapses, and a rise of blood pressure if maintained, all indicate a bad prognosis. Treatment was confined to rest in bed, and milk only, until all acute symptoms had disappeared. The dietary was then enriched in the following order: cereals, milk puddings, vegetables (on good elimination of retained waste products), fish, chicken, and later, meat and eggs on alternate days. The diet was "salt-free" throughout hospital treatment. Calcium chloride, or preferably lactate, in 5-gram doses four times daily, appeared to relieve oedema, but small doses of digitalis did not stimulate diuresis. Hot stoves to the loins appeared to relieve oedema as much as hot packs, and were less disturbing. Blood transfusion was done in 2 cases of uraemia—one had been anuric for four days, but secretion returned after transfusion. The other patient was moribund, therefore transfusion did not relieve him. Simple transfusion proved most effectual in 2 cases of secondary anaemia.

47. Treatment of Spastic Paralysis.

GORDON (*Journ. Neurol. and Psychopathol.*, May, 1922), in considering the treatment of spastic paralysis, points out that, the muscles being hypertonic owing to the loss of control of the higher nervous arcs upon the spinal arc reflex, further stimulation by electricity or massage is injurious. In long-standing cases of hemiplegia, when certain muscles have been overcome by the hypertonic groups and are wasted and atonic, massage may be useful if confined to the atonic muscles, but electricity is contraindicated because of the impossibility of confining the current so that it does not spread beyond the atonic muscles to the hypertonic. By proper splinting, stretching and atonicity of the weaker muscles, with resulting contractures, may be prevented. A useful hand-splint consists of a leather gaiter over the forearm and reaching to the heads of the metacarpals held in slightly extended position. Fastened by hooks to the back of the gaiter at the level of the wrist are five steel springs, to which are attached leather finger-stalls, thus holding the fingers in extension without impeding necessary flexion. For dropped and inverted foot two springs attached to the top of a simple leather leg gaiter are fixed to loops in the centre of the boot at the level of the metatarsal heads, and on the outer side of the boot at the level of the fifth toe. In order to induce relaxation of the hypertonic muscles and encourage the action of their opponents movements should be encouraged with the hand in as hot water as can be borne (102°–104°), together with passive movements while so immersed, the patient being urged to use the hand as much as possible. The same treatment is adopted for the legs, the patients at Bath being slung from the roof with their legs immersed in a bath 30 ft. square and 4½ ft. deep, with water at 104°, passive movements being carried out and active movements encouraged. The intelligent co-operation of the patient is essential to treatment. By this method quite helpless cases soon become able to execute strong movements in the water, and, as improvement takes place, the slings can be gradually dispensed with as they become able to walk round the bath helped by an attendant. About fifteen to twenty baths are usually sufficient, each bath lasting not more than twenty minutes, and being given about three times a week.

48. Transmission of Scabies in the Cat to Man.

THIBIERGE (*Paris méd.*, March 18th, 1922) states that the cat, like most domestic animals, may be affected by several varieties of scabies. The only form, however, which can be transmitted to man is that caused by *Sarcoptes notoedres cati*, the size of which is smaller than that of the parasite of human scabies. The eruption produced in man by the feline sarcoptes is a pink papule, 2 to 3 mm. in diameter, with a vesicle in the centre which soon ruptures. In a few days the papule loses its colour, becomes flattened out, and only a brownish or greyish crust is left, which disappears in a few days. The pearly vesicles and burrows characteristic of human scabies are absent. Except in patients simultaneously affected with pediculosis the eruption of feline scabies is never accompanied by pyodermia or eczema. The localization of the lesions corresponds to the region of the body or clothes in which the cat has been in the habit of nestling. The sites of predilection in human scabies, such as the interdigital spaces, wrists, elbows, and penis, are not affected. The eruption persists and increases in intensity and extent until its cause is recognized and the cat is removed. The irritation then subsides and the eruption disappears. In nervous subjects, however, the irritation may persist for a long time, and can only be cured by psychotherapy. Thibierge has found that feline scabies is frequent in hospital patients, but he has seen only one instance in private practice. The treatment is simple. Unless the cat is a valuable animal, when it should receive special treatment, it should be killed. The patient should be given a plain bath or one containing starch, and a sedative ointment such as zinc oxide with 5 per cent. ichthyol or 1 per cent. menthol. Parasiticides, especially sulphur preparations, should be avoided, as they are not only unnecessary, but are also irritating, and keep up the lesions indefinitely.

49. Influenza and Epidemic Encephalitis.

SUNDELIUS (*Finska Läkaresällskapets Handlingar*, March and April, 1922) publishes charts showing the incidence in Helsingfors of influenza from 1908 to 1922. A separate chart is devoted to epidemic encephalitis, the outbreak of which occurred in the winter of 1920–21. This outbreak lasted about eight weeks, during which 201 cases were notified. In support of the argument that epidemic encephalitis is merely a cerebral manifestation of influenza, the author notes that the eight weeks' duration of this outbreak was approximately the duration of the various outbreaks of influenza, and he points out that practically every wave of influenza has exhibited some selective preference for an organ or groups of organs. Thus in 1918 influenza in Helsingfors was characterized by catarrhal manifestations, without pulmonary complications, and by a fever of a purely toxic type. At this stage gastric, nervous, and rheumatoid forms of influenza were hardly

known. In the spring of 1919 the dominant characteristic of influenza was the concomitant pneumonia. Later in this outbreak gastro-intestinal manifestations began to accumulate. When, therefore, it is evident that influenza picks out one system after another from time to time, it is natural to regard epidemic encephalitis as influenza of the central nervous system. As one of the author's charts shows, the rise and fall, as well as the duration, of the outbreak of epidemic encephalitis closely resembled those of earlier outbreaks of influenza. The author also notes that in earlier epidemics of influenza cases have been observed which were characterized chiefly by drowsiness.

50. Heliotherapy in Tuberculosis.

HINSDALE (*Brit. Journ. Tuberculosis*, April, 1922) reviews the progress of heliotherapy in the treatment of surgical and pulmonary tuberculosis as carried out in the United States of America and Canada. The ultra-violet chemical rays are the essential ones, operating best in high altitudes where there is freedom from water vapour, though they present almost equal efficiency at the seashore owing to intensification by reflection from the sea surface. A definitely graded increasing dosage is necessary in order to prevent erythema and to secure tanning over the whole body. Individuals vary greatly in their response to light; the occurrence of pigmentation, in many cases intense, is a defensive reaction, and there appears to be a correspondence between its degree and the curative action, the patient being healed, not because of the pigmentation, but because of deep-seated defence reactions. From three to ten days are allowed for acclimatization to altitude before commencing exposure to sunlight, which must be gradual, and checked by the patient's reaction. On the first day the feet are exposed five times for five minutes at hourly intervals, the legs up to the groins being similarly exposed on the next day. On the third day the feet, legs, and thighs are given three or four exposures of ten minutes each. On the fourth day the abdomen is exposed, and on the fifth the thorax back and front, the cardiac area being covered with a damp cloth. The results are remarkable, and it is claimed that tuberculous peritonitis can be cured unless complicated by advanced pulmonary lesions or a faecal fistula. Mirrors, covered with blue glass to cut off the heat rays, are used in place of direct sunlight in some instances, and by concentrating the light on a focus a bath richer in blue, indigo, and violet is obtained, and the treatment of tuberculous laryngitis by means of the laryngeal mirror—starting with one minute a day, increasing to eight minute exposures—has been very successful.

51. Overfeeding in Tuberculosis.

HINDHEDE (*Ugeskrift for Laeger*, May 4th, 1922) publishes numerous tables showing the dietaries of various institutions for the tuberculous and the therapeutic results obtained. He comes to the conclusion that the richer the dietary the poorer are the results, and he suggests that the most suitable dietary for tuberculous as well as for healthy persons is lacto-vegetarian. The institutions from which he obtained his figures are Rollier's establishments for rich and poor patients, Saugman's sanatorium for well-to-do patients, and eight Danish public sanatoriums. At Saugman's sanatorium the average daily consumption of calories per head was 4,738, at the eight public sanatoriums it was 3,725, and at Rollier's establishment (Le Chalet) it was only 2,742. At this last institution the consumption of meat was exceedingly small, and of butter and margarine much below that of the other institutions under discussion. The author admits that many other factors than the dietary in these institutions determined the results obtained, and that until a fairer comparison can be made the conclusions to which he has come must remain of a tentative and suggestive character.

52. Treatment of Neuralgia.

CAMESCASSE (*Bull. Soc. de Thér.*, April 12th, 1922) systematically changes the drug every twenty-four hours in order to prevent its losing its effect. The first step consists in an injection of morphine, which is given in the evening. The next day aspirin is administered throughout the day, and discontinued at night. On the third day a pill containing extract of hyoscyamus, extract of belladonna, extract of datura, āā 5 mg., is given at bedtime, followed by a second pill in the night if the patient is unable to sleep. On the fourth day another injection of morphine is given, and so on.

53. Ascarides and Urticaria.

PENTAGNA (*La Pediatria*, April 1st, 1922) reports two cases of urticaria in children aged 2½ and 6 years, which seemed to be associated with the presence and expulsion of ascarides. In the absence of any other sufficient cause the author believes the urticaria was due to the worms, and compares the urticaria which is sometimes seen in hydatid cysts and is anaphylactic in origin.

SURGERY.

54. Embryology and Physiology of Stasis of the Colon.

ARMSTRONG (*Canadian Med. Assoc. Journ.*, April, 1922) points out that on the periodic functioning of the colon depends our health, comfort, mental alertness, and emotional outlook to a greater degree than we care to confess. The reason for all this is that within the colon are matters which, if not regularly and properly disposed of otherwise, are absorbed into the body and there interfere with the functioning of the organs concerned in the carrying on of the processes of life. It is probable that the real pathology of colonic stasis may finally be proved to be a question of nerves. Since absorption has been found to be particularly active from the caecum and ascending colon the operation of hemicolectomy has given as much if not more satisfaction than a complete colectomy. Two cases Armstrong reports suggest that embryology may perhaps throw some light on the question of colonic stasis, particularly if the caecum and ascending colon are responsible for the toxaemia of intestinal stasis. The anomaly consisted in the absence of mesentery for the terminal six or seven inches of the ileum. It is probable that the anomaly caused a partial obstruction under certain conditions. Normally the ascending mesocolon of the foetus fuses with the parietal peritoneum. In the cases described the fusion has extended low enough to include the mesentery of the terminal part of the ileum. The peritoneum does not appear to hold in suspension the stomach and intestine: the organs are held in place by the abdominal and pelvic muscles; the folds of peritoneum merely maintain the organs in their proper relations to each other. The abnormally slow passage of contents through the hepatic flexure is seen by the *x* rays, and to explain this the embryology of nerve supply to the colon must be considered. Again, the condition of chronic arterio-mesenteric obstruction has been relieved by removing the ascending colon, and the pressure upon the third part of the duodenum by the superior mesenteric artery can be demonstrated in certain cases. The author concludes that hemicolectomy is followed by wonderful improvement in selected cases and is a safe operation.

55. Syringing the Ears in Otitis Media.

M. M. LANNOIS (*Lyon méd.*, May 10th, 1922) discusses past and present opinions of French otologists regarding the practice of syringing the ears in acute and chronic otitis media. He states that the practice was condemned formerly on the ground that pus in the external meatus might be washed into the middle ear, thereby aggravating the inflammation. Wicks of antiseptic gauze were recommended, but were subsequently discarded as useless, infective, and irritant. Although personal and domestic cleanliness was formerly doubtful, Lannois considers that lavage of the ears as a routine treatment of acute or chronic middle-ear inflammation can now be carried out in the ordinary French household if care be taken to sterilize the syringe, receiver, and antiseptic solution. He recommends a pear-shaped all-rubber syringe in preference to the usual glass syringe with a rubber piston, but says that Moure prefers an enema syringe, as it delivers the lotion in regular waves, which cleanse the walls of the meatus more effectually. Lannois agrees with this writer that lavage with warm solutions gives relief even in acute otitis media, and prefers an isotonic NaCl solution, though others may choose boric acid or borax solutions. He condemns mercuric chloride solutions as dangerous, but H_2O_2 or iodine (in weak dilution) may be used if preferred. He recommends that after syringing the ear should be thoroughly dried with pledgets of sterilized absorbent cotton. During the first twenty-four or forty-eight hours after rupture of the tympanic membrane the only course is to wash away the profuse discharge. In spite of the general condemnation of oily applications, the author, during that first period, uses "l'huile goménolée," which is bland and mildly antiseptic, and at least disinfects the meatus. After that he recommends 1 in 10 to 1 in 20 solutions of protargol or argyrol, or alcohol (75 to 80 per cent.) in which a little powdered boric acid may be suspended, though this is sometimes painful; zinc sulphate or copper sulphate (1 in 50) solutions may be preferred.

53. A Disease of the Head of the Second Metatarsal Bone.

H. I. PANNER (*Hospitalstidende*, April 26th, 1922, p. 6) has in ten children, nine of whom were between 10 and 14 years old, and in three adults observed a disease of the metatarsal bones presenting clearly defined features. The disease has nothing to do with tuberculosis or syphilis, and develops in previously healthy persons. Its onset is insidious, there is no history of trauma as a rule, and the first symptom is pain on walking. In the overwhelming majority of cases the pain is referred to the second metatarso-phalangeal joint; it is

seldom severe and is never present at rest. There is definite but not great swelling of the structures about this joint on both surfaces, notably the dorsal surface, and there is also, as a rule, considerable tenderness; but heat and redness of the skin are never present. There is little limitation of movement, but plantar flexion is usually a little reduced, and in two of the author's cases there was considerable pain on lateral movements. The disease runs a benign course and requires no radical intervention; it is enough to avoid excessive strain. The *x* rays show some shortening and flattening of the head of the bone in which abnormally dark areas alternate irregularly with abnormally light areas. The author dismisses as improbable the suggestions that this condition represents a form of simple arthritis deformans or a simple fracture, and he is inclined to regard it as allied to Calvé-Perthe's disease of the hip, Köhler's disease of the os naviculare, and Schlatter's disease of the tuberosity of the tibia.

57. Keratomalacia in Southern India.

WRIGHT (*Brit. Journ. Ophthalmol.*, April, 1922), after reviewing the literature of experimental keratomalacia, points out that the disease, as experienced in Madras and Southern India, differs from the experimental type in that it does not appear to depend upon the deprivation of fat-soluble A, though it is essentially associated with deficiencies in diet, and responds slowly to treatment with cod-liver oil, liver, thyroid extract, and salts. Corneal degeneration, which starts with a smokiness of the conjunctiva, rapidly leads to complete corneal destruction, with exposure of the iris and extrusion of the lens, and night blindness is a frequent, but not constant, early manifestation. Accompanying and antecedent to the condition are grave constitutional disturbance, marasmus, diarrhoea, and jaundice, diarrhoea and bronchopneumonia being among the terminal affections in fatal cases. In less severe cases blindness is frequent, and the prognosis as to sight is bad if both corneae are attacked before treatment is commenced. Cleanliness, warmth, and protection are essentials in local treatment, the conjunctival sac being flushed with normal saline solution, and a drop of 10 per cent. argyrol instilled two or three times a day. Constitutional treatment, mainly with cod-liver oil by inunction and by mouth, is necessary, and cases respond slowly to such treatment, together with liver, thyroid extract, and a mixture containing the chlorides of calcium, sodium, and ammonium. While undoubtedly associated with deficiencies in dietary in a population prone to such conditions, its prevention is as much an economic problem as a medical, and syphilis and consanguinity must not be lost sight of as factors in its causation.

58. Cancer of the Tongue.

MATAGNE (*Le Scalpel*, May 6th, 1922), whilst admitting the frequency of leucoplakia as a precancerous condition, does not believe it is a necessary precursor, nor always syphilitic. He describes an arthritic type which he says responds well to treatment at St. Christan Spa in the Pyrenees. Radium often acts remarkably well in leucoplakia, but it is uncertain in cancer. Seeing the large number of muscles (17) in the tongue and their constant action, it is not surprising that glandular enlargement quickly follows the development of malignant growth. In the majority of cases the glands are affected within a month of the development of the growth. In treatment there is a choice of excision, radio-therapy, electro-coagulation, and the cold cautery. The baso-cellular epithelioma is very sensitive to radium, but the epidermoid type is strongly resistant. If radium is used one application only should be given, for the growth becomes radio-resistant. The author has given up the use of radium and speaks favourably of electro-coagulation and the cold cautery, as practised largely by de Forest in America. Brief details of cases treated by the author are given.

59. Congenital Elevation of the Scapula.

OMBRÉDANNE (*Bull. et Mém. Soc. Chir. de Paris*, May 2nd, 1922) reports the case of a child presenting an extreme degree of this deformity, where the arm could not be raised above the horizontal. As the result of operative treatment he has freed the scapula, resected its superior angle, and brought the whole scapula to a lower level. The inferior angle of the scapula he fixed to a rib, and attached the root of the spine of the scapula with a strong silver wire to the ligaments of the spinal column, the fixation of the upper part of the scapula acting as the pivot for the scapular movements. The functional result has been excellent and the two inferior angles of the scapulae are almost on a level. In a previous case the bringing down of the scapula caused a paralysis of the brachial plexus from overstretching, which took several months to recover. He now considers that this paralysis was due to compression of the brachial plexus between the thoracic wall and the triangle formed by the clavicle and the scapula being too small. In the last case he divided the clavicle, and has not seen this paralysis from so-called stretching of the plexus; he concludes that it was due to compression, as already suggested. The operation described has given an excellent result without causing any post-operative nervous symptoms.

60. Blood Transfusion.

STICH (*Klinische Wochenschrift*, May 13th, 1922), in discussing the present position, inquires why blood transfusion should be delayed when it must be admitted that transfused blood is an efficient substitute for that which has been lost, and quotes Wieting's definition of physiologically efficient blood. He observes that the transfusion of heterologous blood, in addition to the danger of haemolysis, may result in other damage to the tissues, and that in the most favourable cases we do not know how long the donor's red corpuscles remain active in the circulation of the recipient. He considers that Hotz's observations that the haemoglobin efficiency of the recipient's blood rises considerably (from 20 to 60 per cent.) during, and in one case after, transfusion does not alter the fact that in many cases at least the greater part of the transferred red corpuscles die, although the momentary result of transfusion is in many cases so remarkable that it may lead the observer to attribute recovery to it alone. He describes three methods for the prevention of haemolysis and agglutination after transfusion: (1) In indirect transfusion the sterilized instruments should be coated with liquid paraffin; (2) the mixing of the donor's blood with neutral sodium citrate solution; or (3) defibrination by shaking the blood with sterile glass beads for ten minutes. He also recommends Thies's method of "auto-transfusion" in cases of intraperitoneal traumatic haemorrhage, and describes the technique. The fluid blood is collected, filtered through sterilized gauze, and diluted with physiological NaCl solution in the proportion of 2 to 3. As much as 1½ litres of the diluted blood may then be injected into a mesenteric vein or into one of the veins of the arm, and the laparotomy completed. He concludes that the value of blood transfusion lies in the stimulation of blood reproduction.

OBSTETRICS AND GYNAECOLOGY.

61. The Fallopian Tubes and Sterility.

RONGY and ROSENFELD (*Amer. Journ. Obstet. and Gynecol.*, May, 1922) state that, owing to diminished prevalence of gonorrhoea in the male, 10 per cent. only in the past two (as distinguished from 25 per cent. in preceding) years of cases of sterility in females applying for treatment have been traceable to causes due to the husband. To regard stenosis of the cervical canal as responsible for sterility is fallacious; in 75 per cent. of cases in a series of 400 the writers found that dilatation or other operation on the cervix had been performed on at least one occasion. A word of warning is also spoken as to treatment by exhibition of extracts of ductless glands: it is usually futile, for sterility and disturbed endocrine balance are alike the expression of a more remotely arising causative factor of uncertain nature. In the writers' 400 cases the potency of Fallopian tubes was tested by intra-uterine insufflation of oxygen or carbon dioxide, followed by fluoroscopic examination in the erect posture: 58 per cent. showed presence of gas within the abdomen. Contra-indications to the test are presence of acute vaginal or pelvic infection, chronic infection accompanied by pain, and heart disease (especially myocardial). The tubal inflation constitutes a valuable routine method in diagnosis and treatment of sterility; with regard to the former, among its special uses is that it enables tubal potency to be examined in patients who have had a unilateral tubal infection or operation, or who have had myomectomy performed. Post-operative insufflation tests will eventually permit of conclusions being drawn as to the value of plastic operations on the oviducts in treatment of sterility. Myomata in sterile subjects may be excised less reluctantly if insufflation has shown the tubes to be impervious.

62. Paravaginal Radium Applications.

BUMM (*Zentralbl. f. Gynäk.*, April 21st, 1922) in a preliminary note records the treatment of twenty patients by applications of radium made through an incision leading from the skin of the buttock through the fat of the ischio-rectal fossa into the base of the broad ligament; the cases selected were those of metastatic infiltration of the bases of the broad ligaments from primary growth in the cervix uteri or of similarly situated recurrences of the growth after operative treatment. From 80 to 100 mg. of radium element were introduced for from forty to sixty hours; the local reactions were

unimportant. Subjective and objective improvement followed in all cases. In a later series the writer has combined paravaginal application of 50 mg. of radium element with intrauterine introduction of 50 mg. and application of 70 mg. in the neighbourhood of the primary growth. In two cases he has employed radium drainage by Daels's method, radium contained in an india-rubber tube being introduced within the pelvis along a track leading from the neighbourhood of the anterior superior spine along the innominate bone to emerge in the ischio-rectal fossa; Bumm, however, finds the paravaginal method described above to be simpler and to permit of more certain and direct approximation of the radium to the metastatic foci.

63. Tuberculosis and Pregnancy.

SERGENT (*Journ. de méd. et de chir. prat.*, April 25th, 1922) remarks that opinions differ as to the influence of gestation on tuberculosis. While of recent years this influence is generally regarded as unfavourable, the degree of pessimism varies, and is much higher among physicians than among obstetricians. This difference of opinion is to be attributed to the obstetricians' observations being mainly confined to the period of pregnancy and the puerperium, while physicians, particularly specialists in tuberculosis, chiefly see the remote results of confinement. It is mainly, but not indirectly, after delivery that a fatal attack of tuberculosis occurs. Demineralization, and especially decalcification, is a well-established fact during pregnancy. It is even more marked after delivery, and to a certain extent explains the greater frequency of tuberculosis developing at this stage. The process of demineralization is aggravated by suprarenal incompetence which occurs during pregnancy. Tuberculosis may occur within the first few days after delivery and assume an acute or hyperacute form, but it may also develop insidiously, and its true nature may only be revealed at the end of several months. Such cases, which do not come under the notice of the obstetrician, are the most numerous and least serious. Sergent recommends interruption of pregnancy as soon as signs of active tuberculosis develop. In three cases in which he advised this procedure the results were most satisfactory.

64. Syphilis in Obstetrics.

GAMMELTOFT (*Hospitalstidende*, May 5th, 1922) has found that at the Rigshospital in Copenhagen the frequency of syphilis in the obstetric department has risen from 3.7 per cent. in 1912 to 7.7 per cent. in 1921. The rise during this interval was uniform, and was to a certain extent, but certainly not entirely, due to advances in diagnostic methods. Since 1917 Wassermann's test has been carried out in every maternity case, and when it was positive a careful clinical examination almost invariably revealed other signs of syphilis. The author finds that the influence of syphilis in causing abortions has been greatly overrated, and that the subjects of syphilis do not oftener show a febrile reaction during labour than healthy women. Indeed, only 2.2 per cent. of the syphilitic women were febrile during labour, as compared with 2.7 per cent. for all the maternity cases. The total puerperal morbidity for the syphilitics was 20 per cent., for all the maternity cases 19.4 per cent. But there was a marked difference in the puerperal morbidity of the syphilitics who gave birth to stillborn children and those who gave birth to live children without clinical signs of syphilis, the percentages being respectively 29 and 17. While the average weight for healthy children at birth is 3,333 grams, the 320 infants without signs of syphilis, but born to syphilitic mothers, weighed on the average only 3,200 grams. The average weight of the 104 living infants with signs of syphilis at birth was only 2,917 grams, and the average weight of the 97 syphilitic infants born dead was only 1,887 grams. The frequency and severity of obstetrical complications, such as nephritis and eclampsia, seemed to be little affected by the presence of syphilis.

65. Recurrent Cancer of the Breast and Pregnancy.

TROUT (*Surg., Gynecol., and Obstet.*, May, 1922), in tracing the after-history of patients in whom one breast had been removed for malignant disease, found that of 31 aged under 40, two only had become pregnant; both developed cancer of the remaining breast during their pregnancy. Of the remaining 29, in none had cancer recurred in the remaining breast; and of the 106 patients aged more than 40 (none of whom became pregnant) less than 10 per cent. had suffered from a recurrence in that situation. From a questionnaire answered by forty-six American surgeons it was possible to trace only fifteen instances of pregnancy following amputation of one breast for cancer; 13 of these patients had shown development of malignant disease in the other breast—the interval between operation and recurrence varying from two to ten years. It is suggested that surgeons are justified in advising women in whom the breast is excised for malignant disease to refrain from subsequently becoming pregnant.

PATHOLOGY.

66. Length of Life of Transfused Erythrocytes.

WEARN, WARREN, and AMES (*Arch. Int. Med.*, April, 1922) transfused red blood corpuscles of Group 4 donors into patients in Group 2 with pernicious anaemia and anaemia secondary to nephritis, and by means of Ashby's technique counted the unagglutinated cells when the recipient's blood was mixed with a Group 4 serum, which would agglutinate the recipient's own cells but not the transfused cells. In this way they were able to determine the length of time the transfused cells remained in the recipient's circulation. They found that the last of the transfused red blood cells disappeared from the circulation in from 59 to 113 days, with an average of 83 days, an observation which suggests that the life of the human red blood cell is much longer than has been believed to be the case. No difference was noted in the duration of the stay of the transfused red blood corpuscles in the circulation between patients with primary anaemia and secondary anaemia due to nephritis. The long life of the transfused red cells may supply an explanation of the improvement noticed after transfusion, for this improvement, which is generally of about two or three months' duration, is probably governed by the fact that some of the transfused corpuscles function between sixty and ninety days. Thus a timely transfusion may tide a patient over the acute stages of primary and secondary anaemias by purely mechanical means.

67. The Intestinal Permeability for Saccharose.

HITHERTO it has been generally held that all disaccharides must be broken up in the intestine into their respective monosaccharide molecules before being absorbed. According to WORINGER (*C. R. Soc. Biologie*, May 20th, 1922), saccharose forms an exception to this rule. He finds that however much be given to the fasting stomach a certain percentage is absorbed unchanged and is excreted as such in the urine. His experiments have been conducted both on dogs and on human infants. In each case much the same result was obtained. The quantity absorbed and the quantity excreted always forms a definite proportion of the amount administered. Thus, whether 25 grams or 200 grams be fed to the animal a constant proportion of about 1.5 per cent. is eliminated in the urine. The coefficient of permeability for saccharose would therefore appear to be a function of the intestine. If this be so it will be interesting to study the possible variations which may result from disease of the alimentary tract. Already Woringer has been able to show that in cholera this absorption coefficient is considerably increased.

68. The Adrenaline Reaction in Cases of High Blood Pressure.

ESKIL KYLIN (*Zentralbl. f. inn. Med.*, No. 20, May 20th, 1922) refers to his former communications in the same journal (Nos. 22 and 45 of 1921) dealing with variations of blood pressure in acute glomerulo-nephritis and senile diabetes. His observations on the latter condition extended from January, 1920, to September, 1921. He now suggests that the same disturbance of internal secretion underlies both hypertonia and the senile form of diabetes. Since his last communication he has tested the adrenaline reaction in cases of hypertonia (which was present in 75 per cent. of all his cases of senile diabetes), using Dresel's technique (*Ergebnisse der gesamten Medizin*, 1921, Band II). The blood pressures were taken immediately before the subcutaneous injection of 1 mg. adrenaline, and again at intervals of ten minutes for a full period of sixty minutes from the administration of adrenaline. Four charts are given: One is that of a case of acute nephritis whose preliminary blood pressure was 155 mm.; in five minutes the blood pressure rose to 205 mm., falling to 170 mm. at thirty and forty minutes, and to 160 mm. sixty hours after the injection of adrenaline. Chart II is that of a healthy person whose blood pressure rose in five minutes from 160 to 180 mm. and remained at 180 mm. at the end of ten minutes. The pressure then fell regularly to 160 mm. at the end of fifty minutes, and was stationary ten minutes afterwards. The reaction therefore in acute nephritis is similar to that in a normal person, except that the initial rise is much greater and the return to normal less regular. On the other hand, in "benign nephrosclerosis" (Volhard) the initial rise (Curve III) does not occur, or (Curve IV) is very slight, and is followed by a rapid fall of 20 mm. Kylin states that fourteen observations show that Curve III is more typical, when a fall of 20 mm. occurred in ten minutes, followed by a rise of 15 mm. at the end of twenty minutes. He found that in these cases the pulse rate became usually rather slower, and that no palpitation, tremors, nor nervous disturbance occurred after the injection. He terms this "the paradoxical reaction of benign nephrosclerosis."

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

69. Classification and Therapeutics of Diabetes Mellitus.

LABBÉ of Paris (*Rev. Méd. de la Suisse Romande*, May, 1922) reviews the present state of knowledge of this disease, and, while criticizing the older classifications, can find none that is entirely satisfactory. Diabetes is a pathological condition in which the system has wholly or partially lost the power to utilize carbohydrates obtained from food, resulting from alimentary metabolism, or from tissue destruction. Its chief characteristic is a permanent difficulty of "glyco-regulation." He adopts H. Labbé's classification: I. Diabetes without "nitrogen denutrition," in which there is only difficulty of carbohydrate metabolism. II. Diabetes with "nitrogen denutrition," where the failure of carbohydrate metabolism is associated with failure of protein and hydrocarbon metabolism, representing the gravest factor. Class I corresponds to those formerly described as "fat" or "arthritic" diabetics. Their glycosuria is usually moderate, but may be increased by overfeeding. The amount of sugar alone does not indicate the severity, and varies with the hydrocarbon ingestion, but the daily loss of sugar in the urine is always less than the quantity of carbohydrates taken—that is, the patient maintains some capacity for utilizing them. That degree of tolerance indicates roughly the gravity of the case. A more exact estimate of ability to oxidize carbohydrates is to reduce them till the glycosuria has disappeared, and then to increase them until sugar reappears. This limit of tolerance may be maintained for years, but may be varied—for example, by the occurrence of an acute infection. Nitrogenous metabolism is unchanged. II. Diabetes with "nitrogen denutrition," formerly termed "wasting" or "pancreatic diabetes"—a bad term, for the pancreas is not more often diseased in these cases than in Class I. The quantity of sugar excreted is greater than that of carbohydrates ingested and the excess is provided by protein and hydrocarbon metabolism. Glycosuria never disappears when carbohydrates are withheld. The failure of protein metabolism is shown in two ways. (*a*) There is a constant or intermittent loss of nitrogen, averaging 1 to 3 grams daily. The nitrogenous equilibrium is destroyed, and the patient's fate is inevitable. (*b*) Nitrogen metabolism is incomplete, by-products—ammonia bases, amino-acids, creatin, etc.—appear. Blood analysis reveals the breakdown of nitrogen metabolism. Acidosis is always present and is progressive. This form of diabetes often attacks thin patients, and is never, apparently, due to overfeeding. It is occasionally hereditary and always fatal, though sometimes arrested for long periods. Between these two classes are those cases which show moderate and transient "nitrogen denutrition" and acidosis. Prognosis should be founded not only on the physio-pathological classification but on a knowledge of the evolution of the disease. In regard to therapeutics, there is no specific treatment; arsenic, pancreatic extracts, alkalis, and natural mineral waters act favourably in associated troubles, in hepatic congestion or cirrhosis, in pancreatic insufficiency, and on the general health or when acidosis is imminent. Regulation of diet is the only efficient treatment, but each form of the disease has its special indications. In Class I the diet should be mixed, with reduction of carbohydrates below the tolerance limit, and meat should be reduced in quantity, lest serious acidosis supervene. To produce a rapid result, the patient may be ordered a green vegetable diet; this has yielded excellent results. In the grave forms of Class I, when glycosuria persists in spite of this diet, the patient should be ordered to fast for two to four days. The author has published cases which show this treatment to be both harmless and very beneficial. In Class II a mixed diet, with reduction of carbohydrates in cases with little or no acidosis, helps to maintain nitrogenous equilibrium and to reduce glycosuria. Meats should be reduced to a minimum (vide supra). The "milk cure" and "potato cure" have been useful in transient acidosis, but usually increase glycosuria. Von Noorden's "oatmeal cure" is sometimes very useful when coma threatens. Leguminous vegetables offer the same advantages; on account of their large protein content they check nitrogen waste, their protein is better borne than that of meat when acidosis is imminent; 1,200 to 1,500 grams per diem of green vegetables or salads neutralizes acids and relieves hunger. Vegetables should be cooked in milk and only slightly seasoned. Butter, oil, or fat bacon may be added, and the diet may be enriched with eggs, cheese, milk, and gluten bread. Occasional fasting is often beneficial, but if prolonged or too frequently repeated it augments tissue waste and hastens the end. In the milder cases treatment relieves symptoms, but only masks the defect in metabolism: the patient should be warned that only by strict adherence to the diet suitable to his carbohydrate tolerance can improvement be maintained. In the severer forms unhoped-for results often follow (even in children) the green vegetable and fasting treatments. The results of the "Allen treatment" have been somewhat exaggerated, but a groundless fear of acidosis should not prevent its trial in suitable cases. "While we can ameliorate the condition and retard the evolution of the gravest symptoms by physiologically sound dietetic treatment, we cannot pretend to cure diabetes."

70. Renal Retinitis.

MOORE (*British Journ. of Ophthalmol.*, May, 1922) records an unusual case of renal retinitis in a man, aged 45, who, without any history of previous illness, complained of failing sight, the retinal changes being so severe as to produce detachment of the retina in both eyes. The retinitis and retinal detachments slowly disappeared until, at the end of nineteen months, his blood pressure was reduced and the albumin had disappeared, the only ocular change, beyond signs of secondary atrophy and attenuated vessels, being a very little exudate. During the greater part of the next five and a half years he was working overtime in a small arms factory, at the end of which time he returned under observation with blood pressure 265 mm., a heavy cloud of albumin, and the fundi but little altered since he was last seen. Shortly afterwards he was admitted to hospital and died in uraemia. The *post-mortem* examination showed chronic nephritis, arterio-sclerosis, nutmeg liver, and oedema and infarction of the lungs. Microscopic examination of the eyes showed no retinal detachment, but a slight exudate in Henle's layer in the left eye, with a peculiar localized pigment proliferation in the retina. The case is of interest on account of the length of time the patient lived after developing renal retinitis, the disappearance of the detachments, and the subsidence of the retinitis, it being comparatively rare to be able to trace its gradual disappearance to a point at which it may be said to have completely subsided. Since very few patients die in uraemia without presenting some fundus changes it would appear that this case would not have died without developing retinitis had not the eyes been protected against its recurrence as a consequence of the atrophy following the previous disease.

71. Endo-uterine Transmission of Scarlet Fever.

COZZOLINO (*La Pediatria*, June 1st, 1922) reports the following case as a probable example of intrauterine infection of scarlet fever. The mother died in childbirth on the fifth day of scarlet fever, leaving two children, one aged 21 months and the other just born. The children were taken away, and six days later the older child developed a malignant type of scarlet fever and died in two days. It was then found that the newborn child, aged 20 days, was suffering from acute glomerular nephritis of a scarlatinal type (albumin, blood, hyaline granular casts in the urine), and a muco-purulent discharge was seen coming from both ears. No desquamation had been noted, and no rash except a slight erythema, which was probably nothing more than the erythema often seen in young babies. In due course this second child recovered. The type of nephritis and the time at which it appeared, coupled with the absence of any other known cause, make it highly probable that this was a scarlatinal nephritis secondary to an intrauterine attack of scarlet fever.

72. Multiple Neuritis During and After the War.

KNAPP (*Deut. med. Woch.*, May 19th and 26th, 1922) has found that the incidence of multiple neuritis has increased enormously during and after the war, the number of abortive and rudimentary forms in particular being very great. The chief cause of this increase is probably due to altered and inadequate food, notably want of fats. Alcohol plays a comparatively subsidiary part, whereas nicotine is more harmful than heretofore owing to increased consumption of tobacco and to deterioration of its quality. The success of interdicting the use of tobacco was in many cases so complete that there could be no doubt as to the cause of the multiple neuritis. In several cases it was associated with vaccination against typhoid fever and hydrophobia, intercostal neuritis being observed on the same side of the chest as that on which the vaccine was injected. In spite of the severe pain in these cases they usually ran a favourable course. Another

important cause of the increased frequency of multiple neuritis during the war was CO poisoning, against which the German gas masks were ineffective. The author himself was dragged out unconscious from his quarters in the Siegfried line, and the headache, giddiness, and nausea which he experienced at first having passed off completely, he thought he had escaped scot free. But fifty hours later he developed multiple neuritis. Probably many cases of relapsing multiple neuritis at the present time have their origin in gas poisoning. The author also discusses the relation of multiple neuritis to acute articular rheumatism, suggesting that the two may be the different expressions of one and the same infective agent. At all events the association of these two diseases is too frequent to be accidental.

73. The Cardiac and Aortic Complications of Malaria.

TRÉMOLIÈRES and CAUSSADE (*Rev. de méd.*, March, 1922) made observations on 1,000 cases of malaria, among which they found 42 with cardiac affections. All were soldiers, aged from 23 to 40, who had been in Macedonia for a period ranging from a few months to two years, and had been repatriated for malaria. The cases were classified in two groups, according as malaria alone (34 cases), or another cause as well (8 cases), was responsible for the cardiac condition. Each group consisted of three categories, the first comprising functional disturbances, such as precordial pain, palpitation, breathlessness, and tachycardia; the second, aortic lesions, with or without endocarditis; and the third, myocardial lesions. As a general rule, the functional disturbances and the aortic and myocardial lesions all appeared at an early stage of malaria, but did not cause the patient any distress until several months or even a year later. In every case but one the general condition remained satisfactory. Malaria was found to have a predilection for the arterial system, as was shown by the frequency of renal sclerosis, generalized arterio-sclerosis, and Raynaud's disease among these patients. The hypothesis of cardiac lesions of endocrine origin is also plausible, suprarenal insufficiency having been demonstrated in a number of cases during the war (Paisseau and Lemaire). The prognosis of cardiac affections of malarial origin depends partly upon the nature of the cardiac lesion, but the following unfavourable factors must also be considered—namely, organic enfeeblement due to malaria, and the possibility of repeated attacks, with their prejudicial effect upon the cardio-vascular system. Treatment entirely depends on the heart condition, on which quinine has no effect.

SURGERY.

74. Dilatation of the Oesophagus.

DIFFUSE dilatation of the oesophagus may be thoracic, or thoracic and cervical. Often only found after death, it may be recognized during life by *x* rays and the oesophagoscope. SARGNON (*Rev. de lar., d'otol. et de rhinol.*, May 31st, 1922, p. 395), in discussing this condition, says it may attain large dimensions, and may be found in children and adults. It may first give rise to symptoms in adolescence, with slowly increasing dysphagia; it rarely has a sudden onset, except in spasmodic conditions or when of inflammatory origin. The progress of the case shows four signs which make diagnosis easy: regurgitation during or after a meal, containing mucus and recent or old particles of food; radioscopic examination to exclude the presence of an aneurysm, whilst the opaque meal shows the dilatation; the passage of bougies differentiates the spasmodic and inflammatory strictures; whilst the oesophagoscope confirms the *x*-ray findings, and should be carried out under cocaine anaesthesia. The condition may terminate with progressive wasting and complete attacks of dysphagia, rarely haemorrhage or compression of neighbouring organs. Three types of mega-oesophagus are described: (1) the congenital type due to a congenital valve; (2) due to spasm and with large pocket formation and easy passage of bougies; (3) the inflammatory type may be rapid in onset and passage of a bougie may be difficult or impossible without the assistance of the oesophagoscope. The treatment for these conditions is medical or surgical. Medical consists in tonics, hydrotherapy, careful attention to diet, avoidance of spices, and slow mastication. Surgically, high-frequency currents have been applied locally; in non-inflammatory conditions the passage of bougies. Where there is a stricture the bougie is guided by the oesophagoscope. Gastrostomy may be performed and retrograde dilatation. As a last resort and in bad cases gastrostomy should always be done; this gives the oesophagus rest, supplies the patient with nourishment, and later allows treatment of the stricture, or whatever condition is found, to be carried out.

75. Gastric Tumour of Nervous Origin.

MATHIEU (*Bull. et Mém. de la Soc. de Chir. de Paris*, May 23rd, 1922) reports an interesting case of a pediculated tumour removed from the pyloric region of a patient aged 50 years. Pathological examination of the specimen showed that it was a tumour of nervous origin, analogous to the growths sometimes found in the viscera in Recklinghausen's disease. The patient had not exhibited any other symptoms of this affection. It is generally recognized that a tumour of nervous origin may arise from the sheath of Schwann, and the writer suggests that in all probability this was the nature of his case. This patient did not exhibit any cutaneous nodules, such as one usually finds in Recklinghausen's disease. These neuro-fibromata arising in connexion with the viscera appear to be rare. Lecène reported a case of fibro-sarcoma of the small intestine in a patient who showed multiple pigmented areas and small nodules scattered over the whole body. He resected the intestine and attached tumour and the patient recovered. Recklinghausen himself has described, under the disease which bears his name, tumours of this nature: in one case he records two sarcomatous stalked tumours arising, one from the stomach, the other from the jejunum.

76. Haematoma of the Rectus Abdominis Muscle.

PERMAN (*Acta Chirurgica Scandinavica*, April 29th, 1922) has come to the conclusion that haematoma in the sheath of the rectus abdominis muscle is of common occurrence, and he records eleven cases of his own as well as reviewing the accounts of nine cases published by other writers. According to some authorities the diagnosis is easy, but, as the twenty cases under review show, this opinion is incorrect. Only in six of the twenty was the right diagnosis made or suspected before operation. In no fewer than six cases torsion of an ovarian cyst was suspected, and in three of these cases the hypothetical ovarian cyst was distinctly palpated through the vagina. In these cases the large haematoma was in the lower part of the sheath of the rectus, where it bulged into the abdominal cavity. Ruptured intrauterine pregnancy, intestinal obstruction, appendicitis (several cases), incarcerated hernia of the abdominal wall, tumours of the abdominal wall, and various other conditions were diagnosed by mistake. A haematoma in this position may disappear without complications under conservative treatment, but in as many as seventeen of the twenty cases the haematoma was evacuated by operation. In addition to trauma, which plays the most important part, typhoid fever and influenza are apt to give rise to this condition and to lead to suppuration. In these circumstances opening and drainage are imperative, whereas a small traumatic haematoma may well be left alone.

77. Surgical Complications of Acute Middle-ear Suppuration.

MYGIND (*Hospitalstidende*, March 15th, 1922) has performed 1,000 operations in the period 1905–20 on the mastoids of 830 patients, some of whom were operated on twice on the same side, and others on both sides. He found that influenza played a most important part in the etiology, and that the germs responsible in an overwhelming majority of cases were streptococci. The mortality among the streptococcal cases was particularly high. Only in 1.4 per cent. of the children operated on were tubercle bacilli found in the pus, but the author considers that this figure greatly under-estimates the frequency with which the tubercle bacillus is responsible for the disease. With regard to treatment, he does not recommend opening up the mastoid when, in the first stage of acute suppurative middle-ear disease, simple periostitis of the mastoid develops, even when this is associated with considerable swelling. But periosteal swelling at a later stage indicates more deep-seated disease and calls for more radical treatment. In about a third of all his cases the periostitis led to a subperiosteal abscess, which was three times more frequent among children than among adults. Thrombophlebitis occurred in 5.2 per cent. of all his cases, and was almost twice as frequent among adults as among children. Recovery from this complication occurred in 60 per cent.; among children 70 per cent. recovered. All the seven patients suffering from thrombophlebitis with metastatic complications in the joints, tendon sheaths, and bursae recovered. But thrombophlebitis with pulmonary metastases proved almost invariably fatal. In 6 per cent. of the children and 9.1 per cent. of the adults there were signs of meningitis before the operation. In 46 per cent. of the children and only 10.5 per cent. of the adults the meningitis ended in recovery. With regard to the high mortality among children suffering from middle-ear disease, the author points out that most were already weakly or tuberculous children, and that among children who were healthy apart from the middle-ear disease the mortality was very low indeed.

78. Selenium in the Treatment of Malignant Disease.

GILLETT and WAKELEY (*British Journal of Surgery*, April, 1922) report the result of the employment of selenium in the treatment of malignant disease in over one hundred cases. With regard to dosage, they find that a large dose (5 c.cm.) if continued week by week spells disaster, and that a smaller dose should be given immediately after the maximum reaction has been obtained. A lower average dose was the only method by which a focal reaction of such urgency as to necessitate cessation of treatment could be avoided. A leucocytosis was present after the earlier injections, but not after the later ones; this explains the apparent improvement often referred to by the patient. Further, after the first few injections the toxaemia is diminished, with a concurrent improvement in the patient's general health. Selenium combined with *x* rays or radium was not found to be of benefit. Pain and insomnia are aggravated in most cases. On these grounds, or because of the severity of the local reaction, the injections have to be suspended. The weight of the patient follows the same course as in every malignant lesion. The authors have observed no gain in weight during the treatment. The conclusions arrived at are that temporary improvement is the most that can be expected. To obtain temporary improvement small doses are essential, the number of injections being limited to eight or ten.

79. The Complement Fixation Test for Hydatid Disease.

FAIRLEY (*Med. Journ. of Australia*, April 1st, 1922) describes his technique for the complement fixation test for hydatid disease and discusses its clinical value from observations of 153 cases. The reaction is specific, depending upon the presence of specific antibody in the blood or body fluids of patients who have been absorbing hydatid antigen derived from the cysts of *Taenia echinococcus*. The most effective antigen consists either of hydatid fluid containing scolices collected under sterile conditions from the liver or lung cysts of sheep, or of a saline, or alcoholic, extract of well-washed scolices. The serological test described was applied in 1,070 cases, in 917 of which there was no evidence of echinococcosis, and in none of these was a misleading positive or pseudo-positive reaction obtained, thus pointing to the absolute specificity of the test. The value of the reaction in preoperative diagnosis in 83 cases of hydatid disease is shown by the high incidence (84.3 per cent.) of positive serological diagnosis, 70 out of the 83 cases being rightly diagnosed as hydatid, while clinically only 31 were definitely diagnosed, the remaining 52 being doubtful or not suspected. The persistence of the reaction twelve months after operation is diagnostic of the presence of another cyst, and, given reasonable grounds for suspecting its location, laparotomy is indicated. Absence and non-reappearance of the reaction within a few months of operation would afford ground for an optimistic prognosis as regards the chance of recurrence.

OBSTETRICS AND GYNAECOLOGY.

80. Fibromyoma of the Broad Ligament.

ACCORDING to TURCO (*Annali di Ostetricia e Ginecologia*, May, 1922), fibromyoma growing primarily in the broad ligament is not uncommon; Strohcker in 1903 was able to collect 73 cases from the literature. Women aged from 30 to 50 are most frequently affected, and the tumour appears, as a rule, to grow more slowly than is the case with uterine myomata, although both have the same histological characters. Pedunculated fibromyomata, usually attached to the upper portion of the ligament, are less common than sessile tumours occupying its middle portion; the larger growths are often lobulated. Probably some fibromyomatous tumours of the broad ligament have in the first instance grown in connexion with the uterus and have acquired a secondary vascular supply independent of that organ; a primary fibromyoma of the broad ligament is situated external to the uterine artery, and may arise in the muscular fibres which are normally contained within the connective tissue of the ligament, or possibly in embryonic remnants of Müllerian origin. The tumours are not rarely oedematous, but cystic, calcareous, fatty, or malignant changes are uncommon. The most characteristic clinical picture is that of presence of pelvic tumour with compression signs but absence of morbid menstrual changes; pre-operative diagnosis, however, is difficult. Turco records three cases treated by laparotomy and enucleation; hysterectomy also is necessary in many cases. For the rare case in which an intraligamentary tumour is diagnosed before operation Tricomi has proposed an extraperitoneal removal, approach being made as for ligature of the common iliac artery.

81. Tubal Pregnancy Recurring on the same Side.

SIGWART (*Zentralbl. f. Gynäk.*, May 6th, 1922) states that about 5 per cent. of cases of tubal pregnancy have been preceded by pregnancy in one or other tube, treated at antecedent operation. The recurrence of ectopic gestation on the same side is somewhat rare, fewer than twenty instances having been recorded in the literature. The writer records the case of a girl, aged 23, in whom the right tube with the exception of a minute stump of the isthmus was removed at operation for rupture of tubal gestation; four months later similar acute symptoms ensued, and at operation a developing ovum was found embedded in the tubal fragment and finding secondary attachment to a loop of small intestine. Recurrence of extrauterine gestation in the ampullary portion of a tube partially removed at operation has been described by Bracht, in a case, moreover, in which the ostium abdominale was certainly occluded. Sigwart records also an instance of recurrence of tubal pregnancy, necessitating a second laparotomy, in a patient in whom the whole of the isthmic portion had been left behind. Ectopic gestation in a tubal stump which had not been excised at operation for adnexal disease has been recorded in several cases. The practical conclusion to be drawn is that whenever possible careful suture of the tubal stump should be practised, either by removal of a wedge-shaped piece of the isthmic region of the uterus as recommended by Stoeckel, or by careful coaptation of the peritoneal remnants. The recurrences of ectopic gestation have taken place for the most part in cases in which the serious condition of the patient at the time of the first operation had rendered these procedures impossible.

82. Conservative Operation for Ectopic Gestation.

DOSSENA (*Annali di Ostetricia e Ginecologia*, May, 1922) pleads for a more frequent conservation of the Fallopian tube at operation for ectopic gestation, and records eleven cases in which Mangiagalli at the Milan Scuola di Ostetricia refrained from salpingectomy; the recoveries were uneventful, and four pregnancies have so far followed. Salpingectomy is certainly indicated where tubal rupture, with tear of the wall, has occurred; it is, however, unnecessary in certain cases of tubal abortion. Provided that the integrity of the tubal wall is complete, that there are no long-standing adhesions with neighbouring organs, that the permeability of the lumen can be demonstrated by passage of a sound, and that the ovary of the same side appears to be perfectly healthy, it is correct, in young patients, to refrain from excising the gravid tube; if that tube is found empty at operation peritoneal toilet and closure of the abdomen are all that is required, but a partial tubal abortion is first to be completed by gentle digital compression. According to the author, in cases of tubal abortion (although not of rupture) all danger of bleeding ceases when the gestation sac has been emptied. Although it has been argued that to leave the tube *in situ* is to subject the patient to the danger of recurrence of tubal gestation, it is by no means certain that the cause of this condition lies in morbid tubal changes, either of one or the other side. A third objection to conservative treatment is that there is danger of development of malignant disease from decidual remnants left behind; only three such cases appear, however, to have been recorded.

83. Influence of Diet on the Incidence of Eclampsia and Albuminuria.

RUIZ-CONTRERAS (*Zentralbl. f. Gynäk.*, May 13th, 1922), working in a Barcelona ante-natal clinic, found albuminuria to be present in 2 per cent. only of pregnant patients and fewer than one case of eclampsia in 400; at the same time both conditions were considerably more frequent in private practice. The difference he attributes to a difference in diet among the poorer and richer sections of the community. The finding is similar to that of diminished incidence of eclampsia and albuminuria in Germany during the great war, but whereas German reports usually explained the difference as being due to scarcity of fat during the war, the writer believes that the only significant difference in the dietary of his two classes of patients concerned protein foodstuffs. Coincidentally with the increase of wages which followed the armistice the figures of the Barcelona clinic showed an increase both of albuminuria (6 per cent.) and of eclampsia (3 per 1,000).

84. Metastatic Ovarian Cancer.

VAN DOUGEN (*Nederl. Tijdschr. v. Geneesk.*, April 22nd, 1922) remarks that it was formerly believed that secondary cancer of the ovary was exceptional, but that now this opinion is no longer held, some authorities, such as Bland-Sutton, believing that ovarian cancer is almost always secondary. In more than half the cases it is bilateral and may rapidly attain a considerable size, so as to give the impression of being

a primary growth, as in a case observed by Van Dougen in a woman, aged 56, of colloid carcinoma of both ovaries secondary to carcinoma of the appendix. Van Dougen also reports a case of unilateral carcinoma of the ovary secondary to cancer of the stomach in a woman aged 38, associated with pregnancy. Premature delivery took place in the sixth month, followed by death three weeks later. The association of pregnancy with ovarian cancer is very rare, owing to the fact that the favourite time for the development of a new growth in general, and of cancer in particular, is after the menopause.

85. Labour under Hypnosis.

KIRSTEIN (*Zentralbl. f. Gynäk.*, May 27th, 1922) quotes the results reported from the Heidelberg clinic of conducting labour in patients hypnotized during the early stages, and previously prepared by suggestions made during three or four preliminary attendances at the clinic. Von Oettingen had two failures among 16 labours; Schultze-Rhonhof, 8 among 77. The writer endeavoured to modify the technique so as to make it less exacting for the physician; in the preparatory sittings the suggestion was impressed that the patient, after being hypnotized by the physician, would sleep through a painless labour and would only awake on receiving the command to do so from the doctor at a time when birth had been accomplished. The nurse was instructed to reinforce these suggestions, should the patient prove restless, by application of an empty ether mask and by saying, "Go on sleeping quietly until the doctor comes and wakes you." In 14 out of 22 cases this method led to satisfactory results, the conduct of labour being left to the nurse, and the patient being awakened by the doctor at his routine visit, which took place in several instances on the day following the birth. The writer speaks favourably of combination of hypnosis with narcosis, as recommended by Friedländer: the nurse is authorized to administer 3 to 5 drops of chloroform during each pain. The case is recorded of a vaginal Caesarean section performed for valvular disease of the heart with failing compensation and bronchitis; during the operation, which lasted 110 minutes, the patient, after initial induction of hypnosis, received 70 c.cm. of ether; she replied to questions but was not restless, and no recollection of the operation was subsequently preserved.

PATHOLOGY.

83. Bacteriotherapy in Typhoid Fever.

IT has long been a moot point whether prophylactic injection of typhoid vaccine has any effect in altering the course of an attack of enteric fever—should it subsequently develop—or whether it acts merely by diminishing the chances of contracting the disease. Some very interesting observations on this point are brought forward by H.-E. DUFFAU (*Arch. Inst. Past. de l'Afrique du Nord*, 1922, No. 1, vol. ii, p. 53). A detachment of soldiers on a march halted at a certain place, notorious as an endemic centre for typhoid. They reached their destination the following day. Twelve days later some of them were vaccinated with 2 c.cm. T.A.B. vaccine, which some—for special reasons—were excused. In the subsequent ten days a small epidemic of typhoid fever broke out in which nine men were attacked, five of them vaccinated, four of them unvaccinated. A description, with the temperature chart appended, is furnished of each of these cases. Two points are very striking. In the case of the vaccinated soldiers not only were the symptoms of the disease very mild, but without exception the disease ran its course completely in ten days. On the other hand, with the unvaccinated men the symptoms were much more severe—one had a severe intestinal haemorrhage—and the disease ran its usual course of eighteen to twenty-four days; two of the cases, moreover, had short relapses. It must be remembered that the inoculations were made just at the end of the incubation period; this would seem to suggest that bacteriotherapy might give favourable results in enteric fever if employed at the very onset of the disease.

87. The Haemoclasic Reaction in Normal and Abnormal Pregnancy.

ACCORDING to DIDIER (*Gynécol. et Obstét.*, 1922, v, 5), the haemoclasic reaction evoked by administration to the fasting patient of proteins (milk or meat) is absent during the first five months of gestation, but present in 35 per cent. of gravid patients, irrespective of the duration of pregnancy. A reaction is present in about 60 per cent. of pregnant patients after ingestion of sugar. No parallelism is shown by the reactions with each other, or with the presence of urobilin or bile-salts in the urine, or with Maillard's coefficient. In abnormal pregnancy the author has made the following observations. Patients, primiparous or multiparous, suffering from complications of pregnancy such as did not affect the liver, showed absence of the haemoclasic reaction up to the sixth month but presence of the reaction in 42 per cent. of cases near term. In a second group of cardiopathic, syphilitic, or tuberculous patients, the haemoclasic reaction was somewhat more often positive, but had no significance as regards prognosis or severity of the complications. In a third group in which the patients suffered from albuminuria, oedema, pyelonephritis, or icterus, 10 albuminuric subjects showed a positive reaction in 8; 5 women with oedema but no albuminuria showed a positive reaction in 4; and 2 of 4 jaundiced patients reacted. The conclusions are drawn that especially during the first five months of gestation the pregnant patient in normal conditions does not generally show evidence of toxaemia of hepatic origin; and that pregnant patients manifesting simple oedema without signs of hepatic insufficiency are more generally than is commonly supposed the subjects of hepatic derangement.

88. The Mechanism of Neutralization of Acid Secreted by the Kidneys.

AN interesting explanation of the renal secretion of acid is put forward by AMBARD and SCHMID (*C. R. Soc. Biologie*, April 29th, 1922). Organic acids, such as aceto-acetic and oxybutyric, are excreted by the kidneys in the free form, while the inorganic acids, such as hydrochloric and sulphuric, can only be eliminated when combined with bases. One knows that in herbivora this neutralization is performed by sodium and potassium and in carnivora by ammonia; this difference is dependent solely upon the altered character of the diet in the two classes of animals, for it has been shown that herbivora fed on urea react to intoxication by acids by the production of ammonia, while carnivora, on the other hand, if deprived of nitrogen, have recourse to their reserve supply of alkaline bases to combat acidaemia. In explanation of this difference the following hypothesis is offered. When acid is present in the blood its passage into the kidney causes an increased hydrogen-ion concentration in the cells of this organ, which lowers the threshold of excretion for the alkaline bases. These, therefore, pass into the kidney, where they neutralize the acid which has just arrived, with the result that the latter is excreted in the form of a neutral salt. In the carnivorous animal the mere presence of an increased amount of acid in the blood brings about an increased formation of ammonia from urea, so that when the acid passes into the kidney the ammonia is there already to neutralize it. This explains why in herbivora during excretion of acid there is a fall in the alkali reserve of the blood, whereas in carnivora no such fall is observed. With organic acids, however, the case is different. Their ionization is very feeble; in consequence during the process of their excretion they do not succeed in raising the hydrogen-ion concentration of the kidney sufficiently to lower the threshold of the renal cells for the alkaline bases. No sodium or potassium therefore passes into this organ, and the acids are eliminated in the free, uncombined state. Briefly, then, acids which cause an increase in the hydrogen-ion concentration of the kidney lower the threshold for the alkaline bases; acids which are too weakly ionized to bring about such an increase are able to pass out free. Further, the greater the increase in hydrogen-ion concentration, the lower is the threshold depressed, and the more therefore is the blood depleted of its alkaline constituents.

89. Wassermann Test with Chancre Fluid.

KLAUDER and KOLMER (*Arch. of Derm. and Syph.*, May, 1922) have shown that fluid expressed from a syphilitic chancre will give a positive Wassermann reaction in the early period when the blood is still negative. The fluid was obtained by aspiration by means of a small rubber bulb attached to the end of a fine capillary pipette, and when insufficient juice could be obtained in this way the chancre was washed with saline and the diluted excretion still gave a strongly positive reaction. The presence of a trace of blood made no difference to the delicacy of the test; secondary bacterial invasion showed no disturbing effect; and local treatment with a spirochaeticidal drug, although causing the disappearance of the spirochaetes from the surface, did not inhibit the local formation of the Wassermann fixing substance. The clinical value of the test in the diagnosis of early syphilis is of definite but limited value. It cannot replace the simpler method of discovering spirochaetes by dark-ground illumination, but in those cases in which the spirochaete search has been negative, or in which the chancre has been previously treated with a spirochaeticidal drug, a Wassermann test with the chancre fluid will give a positive reaction before the test with the patient's blood gives any indication of the disease.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

90. Pyuria in Children.

J. S. FOWLER (*Edinburgh Med. Journ.*, July, 1922, p. 1) records his experience of 76 cases of pyuria in children with a view to ascertain to what extent the clinical and bacteriological findings are a guide as to whether any given case should be referred for surgical investigation or whether it will probably respond to medical treatment alone. Acute cases are most frequent in infancy, and the condition is much more common in girls than in boys, its occurrence in the latter being more likely to be of a serious nature, so that the prospect of a necessity for surgical treatment is greater. Bacteriologically the coliform group of organisms predominates, though in chronic cases repeated pure cultures of *B. coli* are no proof that it is the only infection, and in cases of stone or tubercle its absence is of more diagnostic value than its presence. In the diagnosis between grave and benign types of the disease the following seven points should be borne in mind: male sex; large quantities of pus; pre-ence of blood in the urine; palpable enlargement of the kidney; continued tenderness in the loin; presence of organisms other than the coli group; and cachexia. Attempts to distinguish between cystitis and infection higher up are of little value since frequent painful micturition may be met with in either type, and pain in one or other loin, beyond pointing to the kidney involved, often exists in cases which recover well on complete rest and urotropine. The presence of casts is more suggestive of calculus than of either pyelitis or renal tuberculosis, and though in the latter the tubercle bacillus is only rarely found early diagnosis is essential since it usually only affects one kidney, and the results of nephrectomy are very satisfactory. Of the benign cases only one was fatal, meningitis developing as a separate condition some weeks later, showing the necessity when diagnosis is in doubt of excluding meningitis by lumbar puncture. While fretfulness and irritability accompany pyelitis in quite young children, they are not so characteristic in older children at the age when meningitis is more common. Medical treatment consists in rest in bed, abundant fluids, with urotropine in chronic cases and alkalis in acute cases, surgical treatment being considered in long-standing obstinate cases even in the absence of definite proof of stone or tubercle.

91. Intolerance of Emetine.

SANFILIPPO (*Il Morgagni*, June 5th, 1922, p. 245, and *Studium*, November 20th, 1921) reports three cases wh re unusual effects followed the use of emetine. (1) A case of amoebic dysentery treated with emetine for some time without any bad effects and cured of the dysentery, but later (forty days after) amoebae were again found, and five capsules of emetine and bismuth were given (one capsule per diem). Immediately after the fifth a sudden complete amaurosis set in, unaccompanied by any other disturbance. The blindness disappeared in about forty-eight hours without leaving any sequelae. (2) A case of amoebic dysentery. After 12 cg. of emetine had been given a sense of precordial discomfort arose, the pulse came down to 40 (from 60), the knee-jerks were abolished, and there was marked motor weakness. The symptoms were relieved by adrenaline and spartein, but the bradycardia persisted. In the third case (amoebic dysentery with non-suppurative hepatitis) the chief irregular result of emetine was elevation of temperature unaccompanied by local symptoms.

92. High Blood Pressure without Renal Disease.

F. KÜLBS (*Dent. med. Woch.*, June 2nd, 1922, p. 717) finds pressures of 160–200 mm. of mercury comparatively frequent, even in the absence of signs of granular kidney. Among 288 patients, 172 of whom were men, he has observed pressures not less than 170–180, and in none of these could albumin or cells be found in the urine during an observation period of months and even years. In about 20 per cent. this high pressure was unassociated with subjective discomfort. Among the remainder, the chief symptoms were palpitation of the heart, shortness of breath, insomnia, a sense of pressure within the head, epistaxis, and haemorrhoids. The cases are thus classified: (1) mental stress and excitement, 75 cases; (2) climacteric disturbances, 65 cases; (3) syphilis, 50 cases; (4) nicotine poisoning, 39 cases; (5) alcoholism, 19 cases; (6) adiposity, 16 cases; (7) gout, 8 cases; (8) organic heart disease, 7 cases; (9) bronchial asthma, 5 cases; (10) plethora vera, 4 cases. Among the syphilitic cases the prognosis was bad, and 13 of the 50 patients had already died. Almost two-thirds of the nicotine cases were greatly benefited by the withholding of tobacco, pressures about 180 falling to 150 or 140. Among the patients suffering from adiposity, great relief was obtained by reducing their weight. The pressure among the cases of gout could not be reduced below 170, although symptomatic improvement was effected by general and specific treatment. The age period at which high pressure was most common was between 50 and 60, and educated persons were much oftener subject to this condition than the working classes. Under treatment with rest, a diet deficient in salts, venesection, and small doses of digitalis, the author succeeded in reducing the pressure in most of his cases to 150 or 160 mm. with, as a rule, improvement in the general condition.

93. Haemophiliac Arthritis.

MONTANARI (*La Chirurgia degli Organi di Movimento*, April, 1922, p. 214) reports, with illustration, 13 cases of arthritis due to haemophilia. The knee is the commonest joint affected, and is usually first noted about the fifth or sixth year. Injury is generally the starting point. In one case the effusion recurred no less than thirty times. Onset is rapid and not very painful, and walking is, as a rule, not much interfered with. Periarticular ecchymosis may or may not be present; the temperature of the affected joint is slightly raised. Absorption may take place rapidly or very slowly, leaving a permanently damaged joint. Except for a greater density in the shadow it is doubtful if radiographic examination helps much in the differential diagnosis. All the author's cases were male; in 6 heredity played a part. Amongst other theories as to the etiology possibly the state of the "interstitial gland" may play some part. The condition should be differentiated from trophic haemarthrosis (hemiplegia is then present), scurvy rickets, rare haemorrhagic and traumatic synovitis (here the injury is much more severe). The prognosis *quoad vitam* is favourable, but poor as regards local function. Operative interference is out of the question. If there is excessive effusion some may be drawn off by trocar, otherwise treatment is limited to support of the joint and conservative measures.

94. The X-Ray Treatment of Graves's Disease.

FISCHER (*Ugeskrift for Laeger*, April 13th and 20th, 1922) has treated 490 cases of Graves's disease with the *x* rays, and has effected either recovery or definite improvement in about four-fifths of the total. In the remaining fifth no harm was done, and in the one case in which death occurred six days after an exposure this could certainly not be held responsible. The results were much better in the author's private practice than among his hospital patients, many of whom relapsed because they could not avoid overwork and worry. Only 11 patients were males, and the average age of the females was between 30 and 45. Particularly good results were obtained in early or abortive forms with marked nervous symptoms and only slight tachycardia, whereas the results were rather disappointing when the clinical picture was dominated by tachycardia and the enlargement of the thyroid and the nervous symptoms were slight. The author pleads for *x*-ray treatment at an early stage, and is convinced that it does not interfere with subsequent operative treatment by provoking adhesions around the gland.

95. Torsion Spasm.

ACCORDING to R. MOURGUE (*Gaz. hebd. des sci. méd. de Bordeaux*, May 28th, 1922, p. 254), who records a case following lethargic encephalitis, torsion spasm described by Kurt Mendel under the name of *Torsionsdystonie* is an extremely rare condition. The great majority of cases hitherto recorded have occurred in Russian Jews, especially natives of Galicia. Its occurrence after infectious diseases, such as typhoid fever, malaria, and whooping-cough, or after slight trauma, is not uncommon, but no case has previously been reported after lethargic encephalitis. The symptoms consist of muscular hypotonus during rest, and in the development of hypertonus when the patient walks upright, hypotonus reappearing when he crawls along the ground, lumbar lordosis, forward projection of the pelvis, distortion of the trunk in relation to the axis of the body, varo-equinus position of the foot in walking, choreo-athetoic movements, and hepatic insufficiency without clinical signs.

96. Treatment of Soft Chancres by Local Application of "914" (Novarsenobenzol).

H. MARCHAND (*Lyon Médical*, June 10th, 1922, p. 469) states that chemical caustics or antiseptics, or the thermo-cautery, when used in the treatment of soft chancre, require three or four weeks of painful treatment to effect a cure. The author has been using "914" as a local application, with entirely satisfactory results, during the last eighteen months. His method is as follows: A 15-gram ampoule of arsenobenzol is opened and the contents immediately dissolved in 5 c.cm. of boiled or distilled water, giving a 3 per cent. solution. A small tampon of absorbent cotton is saturated in this and applied to the surface of the ulcer for five to ten minutes, care being taken to wash all irregularities, and especially the edges of the ulcer, with the solution. This lavage being completed, a pad of absorbent cotton-wool, saturated in the same solution, is then applied and allowed to remain in contact with the ulcer for some hours. The patient then washes it with boiled water and covers the chancre with dermatol or aristol to prevent infection of the surrounding skin. Next day he bathes the ulcer with dilute H_2O_2 solution and again applies the powder. On the second day a fresh application of "914" solution is made, and the treatment is repeated at the same intervals until the cure is complete. Even old and extensive ulcers have been healed in from thirteen to fifteen days; a chancre as large as a florin has been sterilized and cicatrized in six or seven days. Marchand remarks that the treatment is usually painless, but in cases where there is much inflammation he applies a 1 in 30 solution of cocaine for a few minutes before commencing the swabbing of the ulcer. In addition to the painless nature of the treatment, he claims that the rapid sterilization of the ulcer prevents adenitis; none of his cases treated by this method have developed a bubo. The author gives details of five cases which confirm his statements in regard to rapidity of cure and absence of complications arising during treatment.

97. Lumbago and Sciatica.

AIEVOLI (*Rif. Med.*, May 22nd, 1922), in a review of the above conditions, refers to a series of 1,578 cases recorded by Lindstedt. One group could be correlated into various articular or spinal deformities, inducing a disturbance of the dorso-lumbar muscular mechanics. Some cases seem due to excessive muscular exertion. Others may be due to changes in the nervous supply of the muscles. Sciatica is not a constant clinical entity but rather a symptom complex not precisely delimitable. Many cases of sciatica are associated with definite lesions of the neighbouring organs, and might be looked on as a neuralgia from irradiation, or reflex, comparable to trigeminal neuralgia.

SURGERY.

98. Removal of Ureteric Calculi by the Cystoscope.

LÉON THÉVENOT (*Arch. des mal. des reins et des organes génito-urinaires*, April 1st, 1922, p. 56) points out that the cystoscope may be used not only for catheterizing the ureter as an exploratory procedure, but also to dislodge foreign bodies causing an obstruction to the flow of urine. Owing to the improvements in the cystoscope, the results obtained in this manner are most encouraging. This plan has been employed chiefly in relation to renal and ureteric calculus, and the expulsion of calculi has been produced in cases of persistent colic, calculus anuria, and where a stone has been discovered perhaps by chance. Two methods are employed—the simple passage of the ureteric catheter and the injection of anaesthetic solutions and lubricants. Cocaine or novocain may be used to abolish the spasm which prevents the passage of the stone, whilst lubricants, such as glycerin or oil, allow the stone to pass easily along the ureter. In cases of calculus anuria many successful results have been published. It is used during the stage of tolerance, and if one catheter fails another should be tried. Bilateral catheterization should be carried out as a rule; where only one side is done this should be on the painful side and the one most recently involved. When signs of uraemia are present nephrotomy must be performed. In cases of persistent colic the ureteric catheter is frequently successful in causing the expulsion of a stone into the bladder, and then it may be passed spontaneously. In the cases of calculi not causing acute symptoms, the author records a number of successes following ureteral catheterization and injections of oil. A successful result depends on the shape and size of the stone. If it is not larger than a cherry or date stone it will probably pass spontaneously. It also depends on the condition of the ureter. If it is stenosed the calculus cannot pass. This method exposes the patient to no danger, and it is logical to try it before having recourse to a pyelotomy or ureterotomy.

99. Acute Intussusception.

R. T. THOMAS (*New York Med. Journ. and Med. Record*, June 7th, 1922, p. 656) urges that the real problem in intussusception is to make prompt diagnoses general. If the diagnosis were as easy as in appendicitis the mortality of operative reduction would probably be less than that of appendicectomy. If reduction were done in all cases within twelve hours after the onset of the condition there would probably be very few deaths. Intussusception is the great cause of acute obstruction in children, and between one-third and two thirds of all acute intestinal obstructions occur in children. Therefore diagnosis looms large and is particularly important. The great majority of intussusceptions begin near or at the junction of the small and the large bowel. The diagnosis shows the usual signs of acute obstruction—abdominal pain, shock, vomiting, and constipation. The pain is severe and shows periodic exacerbations, whilst there may be diarrhoea or a discharge of blood-stained mucus. The temperature and pulse may be normal, and a palpable tumour may be present. The great object in treatment is to release the invagination before stasis and exudation make reduction impossible or gangrene occurs. The latter condition usually leads to a fatal termination. When simple reduction can be carried out the mortality will be about 25 per cent. It appears probable that during reduction the last part to appear was the first part to go in during the formation of the intussusception. Where it is necessary to do more than a simple reduction the mortality mounts up. Resection and end-to-end union, or formation of an artificial anus may be done, whilst lateral anastomosis above and below the intussusception may give the patient a better chance in some cases.

100. The Sex Incidence of Appendicitis.

BACKMAN (*Acta Medica Scandinavica*, April 22nd, 1922) has investigated the sex incidence of 933 consecutive cases of appendicitis operated on in the period 1909–15. He found that the males were represented by 335, the females by 598 cases, the percentages being 35.9 and 64.1 respectively. Classifying his cases according as the disease was simply catarrhal or destructive at the time of operation the author found that in the catarrhal class there were only 194 males to 465 females, whereas in the destructive class the numbers were approximately equal (141 males to 133 females). Discussing the comparative frequency of simple catarrhal appendicitis in females the author notes that in this class 50 per cent. of the females suffered from chronic constipation, whereas this was the case only in 24 per cent. of the males, and he suggests that chronic constipation is largely responsible for the genesis of catarrhal appendicitis in women. Catarrhal appendicitis terminates in destructive appendicitis more frequently in the male than in the female because the appendix of the male has a single, not a double, blood supply.

101. Steinach's Operation and Rejuvenescence.

M. G. MARINESCO (*Journ. de méd. et de chir. prat.*, June 10th, 1922, p. 416), at a recent meeting of the Académie de Médecine, described his recent researches in continuation of the work of Ancel and Bouin, who first described the "interstitial gland" of the testis. He refers to the experiments of Steinach (1920), who endeavoured to awaken the activity of the interstitial gland in aged rats by a resection of the vas deferens after isolating it from the blood supply of the testis. The results were in many cases remarkable: increase in weight, of activity and pugnacity, recovery of sexual powers, etc. Lichtenstern performed the same operation on three men, and this was followed by signs of general physical and mental rejuvenescence. However, the statements of Steinach have not been confirmed by the majority of German observers. Some have come to the conclusion that suggestion played an important part; others have questioned the separate existence of the "interstitial gland." Marinesco's researches have convinced him that there is a histological specialization of the interstitial tissue, at least among mammalia, and that ligation of the vas deferens produces an hypertrophy of the interstitial gland, but there our hopes must end. He performed the operation on three aged patients: two suffered from paralysis agitans and one had tabes dorsalis. He observed, at first, increase of muscular strength and of activity, with a return of sexual power, but no phenomena which justified the description "rejuvenescence." The sexual activity disappeared at the end of two months, and in one year the patients were in the same state as before. The author thinks that Steinach's anticipations were ill founded. Senile processes do not depend on anatomical and histological

changes but on protoplasmic cellular alterations. All the organic and inorganic colloids follow an inexorable vital curve; their senescence ends in dehydration of the colloidal particles; precipitation follows agglomeration. On the other hand, the theory of non-reversibility dominates biology. Growth and differentiation are essential conditions of life; differentiation once acquired is irrevocable; a differentiated cell cannot return to the embryonic form—it is condemned to die, and disappears when senility no longer permits it to fulfil its function.

102. The Incidence of Gall Stones. Post Mortem.

HANSEN (*Ugeskrift for Laeger*, April 27th, 1922) has systematically examined for gall stones the bodies of 1,191 persons over the age of 20 coming to necropsy at his hospital. He found gall stones in 293—that is, in 25 per cent. Comparing this high figure with the findings of other pathologists, he notes that their ratios have varied from 1 to 18 per cent. This lack of conformity does not depend on differences of race and other factors, but simply on the thoroughness shown by different observers in their search for gall stones. The author found gall stones in 19 per cent. of the men and in 31 per cent. of the women. In those cases in which the gall stones had induced no inflammatory reaction in their surroundings the sex incidence was practically equal. But the ratio of women to men was as 2 to 1 in the case of gall stones associated with morbid changes in the biliary system. This observation tallies with the fact that the ratio of males to females operated on for gall stones is, according to Rovsing, 1 to 4, and in hospital patients 1 to 9. In the period under review necropsies were made on 40 persons whose death was due to gall stones. In the same period only 26 persons came to necropsy whose death was due to appendicitis. Nine out of the 40 deaths occurred in medical wards. The author considers that this state of affairs reflects most discreditably on the modern treatment of cholelithiasis, which still occupies the position held by appendicitis a considerable time ago.

103. Gastrectomy for Acute Perforated Gastric Ulcer.

F. M. CADENAT (*Bull. et Mém. Soc. Chir. de Paris*, June 13th, 1922, p. 833) reports three cases of gastrectomy for acute perforated gastric and duodenal ulcer. The treatment of this condition may be simple suture, suture and gastro-enterostomy, or gastrectomy. Of the three reported cases two have been cured and one is dead. The latter case had perforated sixteen hours previously; the ulcer was on the lesser curvature and of large size. The patient was in poor condition and the writer considers he would have died anyhow. In one case where the ulcer was in the duodenum he tried to close it with a purse-string suture, but this tore out. Closure by infolding would have resulted in stenosis. As the patient's condition was good gastrectomy was performed, with a satisfactory result. The writer finds haemorrhage which may recur after simple suture is prevented by resection. Also resection allows sutures to be inserted in healthy tissues, whilst it takes no longer than suturing a difficult perforation followed by a gastro-enterostomy, and is a far more satisfactory procedure. When should resection be performed? This depends on the question of time. When the patient is seen within six hours and his general condition is good he will stand the operation satisfactorily. The technique of the operation is just the same as that usually employed. The Polya operation is quicker than the Billroth II. The author further emphasizes the difficulties of diagnosis, specially when perforation is the first symptom of an ulcer. He advises a median incision and then proceeds according to the characters of the fluid found in the abdomen. With regard to drainage he advises this in late cases or where there is a large perforation, the drainage tube passing to the right iliac fossa. He concludes that in cases perforated under six hours they will stand a resection as well as if it was carried out under ordinary conditions.

104. Treatment of the Stiff Knee of Chronic Polyarthritis.

T. NIELSEN (*Ugeskrift for Laeger*, June 15th, 1922, p. 693) has come to the conclusion that the disorders of gait associated with chronic polyarthritis are in the overwhelming majority of cases primarily due to disease of the knee and not of the hip. Attention should therefore be concentrated on the knee, and it is possible in many early cases to restore the functions of the knee to normal. It is of the greatest importance to encourage the patient to keep the limb completely extended at rest. To recommend pads and supports under the flexed knee in order to relieve pain is malpractice, although it is a course adopted even in large hospitals. In advanced cases the choice of treatment lies between resection of the knee-joint and forcible correction under a general anaesthetic, followed by immobilization for two to four weeks in plaster, and by weeks and even months of massage and muscular exercises. The first procedure is comparatively straightforward and simple; three cases of resection were a great success in the author's hands. As for forcible correction he admits it is under a cloud because without skilled and prolonged after-treatment it is liable to end in complete ankylosis. There is also the risk of serious injury and an exacerbation of the disease as a result of forcible correction. This fear is exaggerated, in the author's opinion, and he has six successful cases to enforce his advocacy of this method. He records, however, a case in which forcible correction was speedily followed by gangrene, entailing amputation at the knee.

OBSTETRICS AND GYNAECOLOGY.

105. The Ovarian Origin of Chlorosis.

G. ETIENNE (*Rev. méd. de l'Est*, May 15th, 1922, p. 329) observes that the discoveries of Brown-Séquard and his followers brought about a new conception of the nature of chlorosis and of its origin. It may be regarded as an auto-intoxication produced by a perversion of ovarian function. He classifies ovarian function as follows: (1) external secretion (ovulation); (2) elimination of toxic products at the menstrual period; (3) internal secretion, which plays an important part in the general nutrition. Chlorosis, therefore, is a toxic disturbance, amenorrhoea arresting the elimination of toxic products, while the failure of the internal secretion has profound effect on nutrition and the composition of the blood. He refers to recent researches on the internal secretion of the testicle and of the ovary and their effects on the general development of the individual, and states that in sixteen cases opotherapy has had striking results. In periods ranging from three to six weeks the red corpuscles have rapidly increased in number (in one case from 1,500,000 to 4,495,000). At the same time the number of abnormal corpuscles has diminished and the specific gravity of the urine has increased, with a proportionate increase in the excretion of urea and of phosphates. At the same time the patients' weight increased rapidly. The author and Prenant suggest that the corpora lutea provide the ovarian internal secretion. He refers to the general cellular activity of puberty and suggests that if the ovaries become active at this period and menstruation is established, the first corpus luteum is formed, and its internal secretion plays its part in the general development. Quoting the analogous case of thyroid insufficiency and the production of myxoedema, the author suggests that ovarian insufficiency results in chlorosis. He believes that, prior to the development of ovarian activity, growth and development may be controlled by the thyroid and thymus, and that chlorosis may occur in the "physiological interregnum" resulting from too early retrogression of the thymus or retarded development of the ovary. The author considers that all the conditions to which chlorosis is usually ascribed—insanitary environment, deficient ventilation, improper food, etc.—act by arresting normal ovarian development. The author states that the administration of preparations of iron, in addition to that of ovarian extract, hastens the improvement in the condition of the blood.

106. "Uncontrollable" Vomiting in Pregnancy.

G. LEVEN (*Bull. Soc. de Ther.*, May 10th, 1922, p. 164), after treatment of a large number of cases of so-called "uncontrollable" vomiting in pregnancy, has come to the conclusion that the vomiting can very often be readily cured. In most cases it is due to one or more of the following causes: (1) dyspepsia created or aggravated by pregnancy, (2) gastric ptosis, (3) aerophagia. Cases due to the first cause consist of women whose meals have not been judiciously regulated: a cure can readily be effected in such cases by a proper arrangement of the diet. Cases due to the second cause consist of patients whose vomiting ceases spontaneously in the course of pregnancy when the uterus is large enough to raise the stomach: the application of a belt or a corset also produces a cure by the same mechanism. The third group consists of subjects of aerophagia which results from the salivation produced by pregnancy. In all these cases accurate diagnosis and suitable treatment lead to a rapid cure, provided hepatic or renal lesions are not present.

107. The Prevention of Puerperal Fever.

P. ZWEIFEL (*Deut. med. Woch.*, June 9th, 1922, p. 759) publishes tables showing how, at his hospital in Leipzig, the mortality from puerperal fever has varied in three different periods. After eliminating the cases which were already infected on admission to hospital, he finds that in the period 1887–1900 the mortality from puerperal fever was 0.0955; in the period 1901–1908 it was 0.1035; and in the period 1909–1917 it was only 0.0234. Since 1909 the practice has been adopted of examining the vaginal discharge of every pregnant woman

on admission to hospital. A thin, hollow speculum, through which 50 c.cm. of water are passed, is moved backwards and forwards in the vagina, and the returned fluid is then examined. If it is of a white, milky colour it is regarded as normal, but if it is yellow and flocculent the vagina is irrigated every day with 0.5 per cent. lactic acid. After this practice had been adopted for ten years, it was found that half the cases of severe puerperal fever occurred among women whose vaginal discharge was pathological during pregnancy and who had not undergone adequate prophylactic irrigation. On the other hand, 90 to 93 per cent. of the women who had been given prophylactic irrigations for at least ten days underwent a normal puerperium. In the cases with an abnormal vaginal discharge, which was often due to chronic gonorrhœa, the normal acidity was appreciably reduced. The author mentions two other precautions to which his reduced mortality from puerperal fever can be traced. The first was the isolation of all pregnant women with boils or other forms of suppuration anywhere in the body. The second was never to allow anyone to assist at a gynæcological operation who had, within the past eight days, been in contact with pus, whether gloves had been worn or not.

PATHOLOGY.

108. The Relation of the Fat-soluble Factor to Rickets and Growth in Pigs.

Deprivation of vitamin A alone having been found insufficient to give rise to rickets in pigs, experiments have been performed by J. Golding, S. S. Zilva, J. C. Drummond, and K. H. Coward (*Biochem. Journ.*, 1922, xvi, No. 3, p. 394) to ascertain whether this condition can be produced by the combined absence of vitamin A and of calcium from the dietary. Eight pigs from the same litter were divided into two groups; all were fed on the sow's milk, but, in addition, those in the second group received cod-liver oil and cream—rich in vitamin A—while two of the first group were given olive oil, which contains no vitamin A. After a period of fifty-three days the animals were weaned, and were then placed in four groups of two each. The first group received a diet devoid of vitamin A and of calcium; the second group, one devoid of vitamin A, but containing calcium: the third and fourth groups both received ample supplies of vitamin A, but, whereas the latter was given calcium as well, the former received none. During the following fifty-four days, though the intake in all the four groups was the same, there was a marked disparity in their weights. The two animals in Group I gained 42 lb., in Group II 49 lb., in Group III 63 lb., in Group IV 75 lb. After 145 days the experiment was terminated, and all the animals—with the exception of one of Group I, which had died in the meantime—were killed. The difference in rate of growth had been maintained throughout, those in Group IV being the heaviest and that in Group I the lightest of the animals. None of the pigs, however, developed rickets.

109. Rhabdomyoma of the Kidney.

Pianese (*R. Accad. med. chir. di Napoli*, February 25th, 1922, and *Il Morgagni*, June 15th, 1922, p. 265) reports the finding at a necropsy held on a child aged 13 years. Two large tumours were found behind the peritoneum, filling the abdominal cavity and apparently attached to the kidneys. The tumour on the right side weighed 1,500 grams and measured 16 by 18 by 8½ cm.; that on the left weighed 780 grams and measured 16 by 10 by 5½ cm. On section the mass appeared to be made up of bundles of fibres like a fibroid, dryish, of a greyish-white colour, with here and there some reddish-yellow patches. There was no naked-eye evidence of degeneration. It apparently arose from the kidney. It was made up of striped muscle fibres, very few blood vessels, connective tissue, and here and there a few isolated groups of cells which the author interpreted as undifferentiated cells from Balfour's intermediary cell group. The tumour was a pure rhabdomyoma of congenital origin, due to a defect in embryonic development.

110. Pulmonary Aspiration of Particulate Matter.

According to H. J. Corper (*Journ. Amer. Med. Assoc.*, June 17th, 1922, p. 1858), the distribution in the lung of particulate matter introduced into the respiratory passages depends to a considerable extent on the nature of the substrate in which it is suspended. Working with rabbits and dogs, he finds that inhaled smoke or soot is distributed fairly regularly throughout both lungs, where it is found chiefly in the air passages; very little appears to reach the actual alveoli. On the other hand, after aspiration of particulate matter suspended in fluids—such as India ink—it is found that the distribution of the foreign particles is markedly irregular; only certain portions of the lung are affected, but in this the inhaled fluid is seen to have reached the alveoli themselves. Directing his attention to a closer study of this latter phenomenon, he shows the preponderating effect of posture in determining the actual location of the fluid in the lung. Thus, if India ink be dropped into a rabbit's nose while the animal is held in the vertical posture, it passes down to the lower lobes, while if it be introduced while the animal is kept in the horizontal position under ether anaesthetic it is subsequently found to be confined to the upper lobes. Moreover, if the rabbit be laid horizontally on one side, it is to the upper lobe of that side that the ink will flow. Using dogs, and replacing his ink by a saline suspension of dead tubercle bacilli, he was able to produce definite necrotic lesions in the upper lobe of either lung by simple instillation of the fluid into the dog's nose while the animal was kept on one or other side in the horizontal position under ether anaesthesia. Whether posture is responsible to a noticeable degree for the transmission of tubercle bacilli from one part of the lung to another in the human subject it is difficult to say: but there is little or no doubt of the importance of the position of the patient during anaesthesia in determining the subsequent development of aspirative pneumonia.

111. The Enzymes of Streptococcus haemolyticus.

Stevens and West (*Journ. Exper. Med.*, June, 1922) have succeeded in extracting three different enzymes from the haemolytic streptococcus—namely, a peptolytic, a saccharolytic, and a lipolytic one. The substances on which their activity was tested were peptone, cane sugar, and an ester of a fatty acid, such as ethyl butyrate or triacetin. Their most noticeable effect was found to occur in a slightly alkaline medium—somewhere between P_H 7.0 and 8.0—corresponding closely with the reaction necessary for the optimum growth of streptococci. All three enzymes were highly susceptible to the influence of heat, acids, and antiseptics: a temperature of 60 C. for ten minutes was sufficient to destroy them completely. Minor differences in their resistance to acid were noticed. It is, of course, dangerous to infer from *in vitro* experiments to natural *in vivo* conditions, but there seems to be little doubt that, as in the case of the pneumococcus, the ferments secreted by streptococci are closely bound up with the pathological changes resulting from the invasion of the body with these organisms.

112. Bacteriostatic Power of Gentian Violet.

J. W. Churchman (*Johns Hopkins Hosp. Bull.*, June, 1922, p. 227) has studied the bacteriostatic and bactericidal power of gentian violet under varying temperature conditions. The large majority of Gram-positive bacteria do not survive exposure to gentian violet at room temperatures or in the ice-box, whereas about 90 per cent. of Gram-negative bacteria are completely unaffected by exposure to gentian violet for an hour under the same conditions. Heated to 50° C. gentian violet is actively bactericidal to all bacterial strains, an effect which the author thinks cannot be attributed to greater penetration at higher temperatures, or to the combined effect of heat and long exposure. Gentian violet is being used extensively as a bactericidal agent in purulent arthritis, empyema, and other suppurative conditions, but can only be successful after preliminary mechanical cleansing and lavage. Its effect is not so much bactericidal as bacteriostatic, for in empyema the dye does not sterilize the chest by killing the bacteria, but if a moderate quantity of the dye is left in the pleural cavity growth of organisms becomes very difficult if not impossible. Substances which hold bacteria in check without actually killing them may have real therapeutic value; but for this purpose gentian violet should be used as hot as possible to produce the maximum effect.

113. Relation of the Pituitary to other Endocrine Glands.

Petrivalsky (*Sbornik Lékarsky*, xxi, 1–4, and *Zentralbl. f. Gynäk.*, April 22nd, 1922) compared the response shown by dogs, before and after extirpation of the hypophysis, to mechanical and electrical excitation of the muscle of the small intestine performed after subcutaneous injection of extracts of various endocrine glands. Extracts of thymus and intestine mucosa, which exerted on the intestinal musculature a well-marked spasmophilic effect lasting one or two hours, were found to exhibit diminished action in animals from which the hypophysis had been removed. In comparison with these extracts testicular and pancreatic extracts showed a less intense and less persistent spasmophilic action, which in the animals whose hypophysis had been excised was still less in the case of testicular extract, but somewhat greater in that of pancreatic extract. The spasmophilic action of thyroid extract was equally slight in normal dogs and in those whose hypophysis had been removed.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

114. Toxic Effects of Helminthiasis and the Endocrine Glands.

P. Simonin (*Rev. méd. de l'Est*, May 15th, 1922, p. 314) enumerates the cardinal symptoms of helminthiasis, and states that recent discoveries regarding "foreign proteius" have considerably expanded our knowledge of the toxins resulting from the presence of intestinal worms. These include every poisonous substance or group of substances which may give rise to symptoms in the patient, whether resulting from the secretions of the parasite, from its metabolic activity, or from disorders of the patient's metabolism produced by the presence of entozoa. The author claims that clinical observations regarding the interference of these toxins with the functions of the endocrine glands have been fully confirmed by recent experiments. He considers that the well-known fact that patients infested by the entozoa often lose weight rapidly, in spite of a good appetite and an apparently unimpaired digestion, is due to interference with the process of oxidation of carbohydrates and hydrocarbons, which has been noted by several observers in the course of ankylostomiasis, and that this interference arises from diminution of ferment activity which, in its turn, is the result of "glandular insufficiency" directly traceable to cellular toxic degeneration of the liver, pancreas, and suprarenals. On the other hand, the urine often contains excess of nitrogen bodies and of phosphates, showing that abnormal tissue destruction is in progress. In some cases the patient becomes cachectic from the double process of imperfect assimilation and excessive tissue destruction. In children and young people growth and development are seriously interfered with; several authors have described the physical and mental degeneration of children in Tunisia suffering from ankylostomiasis. Siccardi has termed this "ankylostomal infantilism," as in these patients the mental and physical characteristics of infancy persist beyond the age of puberty. Similar observations have been recorded by the American Commission in Porto Rico. He considers that the numerous records of cases of amenorrhoea, dysmenorrhoea, metrorrhagia, and abortion attributed by various authors to helminthiasis show that these parasites have a distinctly toxic action on the ovaries, numerous cases having been reported by Tridondani in which abortion has taken place after complete destruction of the parasites. After quoting examples from comparative pathology, the author describes in detail the various degenerations found in endocrine glands—the suprarenals, pituitary, thyroid, testicle, and ovary—after experimental injection of fluids obtained from hydatid cysts, from ascaris, etc., and a number of plates illustrate the description. The author concludes that further observations in clinical medicine and experimental pathology will bring about a more general recognition of the part played by helminthiasis in the production of general malnutrition and systemic disturbances.

115. Neuro-recurrences following Salvarsan Treatment.

E. L. Zimmermann (*Arch. Derm. and Syph.*, June, 1922, p. 723), from a series of 39 neuro-recurrences following treatment with arsphenamin (salvarsan), describes two pathological types: a diffuse meningo-vascular process in which the spinal fluid is abnormal; and focal lesions chiefly involving the second, seventh, and eighth cranial nerves, without diffuse cerebral changes. The initial course of treatment in early syphilis consisted of six doses of 0.3 to 0.4 gram each of arsphenamin at weekly intervals, followed by a course of mercury by inunction. Clinically three groups of neuro-recurrences were noted: (1) acute syphilitic meningitis, with or without focal lesions; (2) slight meningitis symptoms of headache and focal lesions; (3) a focal lesion without any general symptoms of meningitis. Occurring weeks or months after the interruption of antisyphilitic treatment such neuro-recurrences are the result of resumed activity of temporarily suppressed organisms in a host whose resistance has not developed owing to therapeutic interference, and occasionally a secondary syphilide will develop simultaneously with the appearance of a neuro-recurrence, the temporary suppression of infection by arsphenamin being followed by a flaring up of neuro-syphilis when the treatment is suspended. Meningitic symptoms subside rapidly if intensive antisyphilitic treatment is instituted early, one patient, who had been comatose for forty-eight hours, recovering under spinal drainage, with intravenous administration of neoarsphenamin and mercurial inunctions. Intravenous therapy usually suffices when neuro-recurrences develop six or eight weeks after arsphenamin treatment, but when they occur during or a few days after a course satisfactory results can only be obtained by intraspinal therapy. Mercury has a marked protective action against neuro-recurrences, it being immaterial whether it is employed simultaneously with, or immediately following, a course of arsphenamin.

116. Effect of War Diet on Graves's Disease.

H. Curschmann (*Klinische Wochenschrift*, June 24th, 1922, p. 1296) records that during the period of underfeeding in the recent war the number of cases of Graves's disease in his practice (hospital and private) in Rostock greatly diminished; also severe cases were less numerous. Other physicians in Rostock and Mecklenburg had similar experiences. Since the middle of 1919 (when the food, as regards meat and fat, rapidly improved) the number of cases of Graves's disease has rapidly and considerably increased. Similar improvement was produced by underfeeding in the war period as regards diabetes, gout, cholelithiasis, some forms of constipation, and obesity. During this period of underfeeding the author noted an increase in the number of cases of myxoedema, and an increase of the symptoms in those already suffering. He quotes the experiences of twelve other physicians and surgeons in Germany who noted a definite diminution of the number of cases of Graves's disease, and especially of the severe cases, during the years of underfeeding. The cause of this diminution is carefully discussed, and the author concludes that underfeeding has a depressing influence on the functions of the thyroid gland and that abundant feeding has a stimulating influence on the gland. Also he considers it is probable that not only meat but also fat and excessive feeding generally are able to lead to an increase of the function of the thyroid gland, and thus, in Graves's disease, probably to an injurious increase of the activity of the gland as regards internal secretion. These observations support the views of Blum as to the value of a diet free from meat in Graves's disease.

117. The Relation between Bronchial Asthma and Pulmonary Tuberculosis.

E. Bufalini (*Il Policlinico*, Sez. Prat., May 29th, p. 703) remarks that the views on the relations between bronchial asthma and pulmonary tuberculosis have undergone considerable changes within the last thirty years. The old doctrine of an antagonism between asthma and tuberculosis rested on the belief that asthma was a manifestation of arthritism which was regarded as incompatible with tuberculous infection. Landouzy was the first to contest this doctrine, and not only denied the existence of this antagonism but declared that bronchial asthma was an expression of larval tuberculosis. Investigations on the relations between bronchial asthma and tuberculosis were conducted by Bufalini on 22 patients with bronchial asthma, 10 of whom were men and 12 women. In 15 there had been a history of respiratory affections such as pneumonia, bronchitis, or pleurisy, preceding the onset of the asthma. Although only one showed active tuberculous lesions of the lung, 19 reacted positively to tuberculin by the cuti-, intradermo-, or subcutaneous method. *X*-ray examination showed tuberculous lesions in the lungs, especially at the apex or hilus glands, in 8 cases. Bufalini comes to the following conclusions: (1) There is no real antagonism between bronchial asthma and tuberculosis. (2) The existence of true bronchial asthma of tuberculous origin is not proved, nor does anything support the theory of the anaphylactic asthma as maintained by Landouzy. (3) On the other hand, the presence of latent tuberculous lesions either in the pulmonary parenchyma or in the lymphatic glands is frequent. In such cases tuberculosis may favour the outbreak of asthma in predisposed persons just like non-specific respiratory affections.

118. Dried Milk.

Leary (*Boston Med. and Surg. Journ.*, May 4th, 1922) points out that it is the fluid nature of milk that renders it a perishable food, and adds considerably to the expense of its delivery to the consumer. By the two standard processes of drying milk its constituents are altered by heating, but these alterations do not seriously affect its nutritive value, and reconstituted dried milk corresponds closely in chemical composition with boiled and sterilized milk. In the roll process the milk adheres for a few seconds to the surfaces of

rolls heated to from 110° to 140° C., while by the spray process the milk is atomized under pressure into a chamber where it meets whirling currents of warm air, the temperature being lower but the process longer than in the former method. The spray process is more destructive of the antiscorbutic properties than the roll process, but in practice no diet should depend upon milk, either raw or dried, for its antiscorbutic element, the substance being given in addition to the diet by the administration of orange juice, etc. Full-cream milk powder will keep in tins at least three months, and skimmed milk powder at least a year. By the use of dried milk, milk-borne epidemics are eliminated, since the drying process destroys the organisms originating in the milk as drawn, or renders the multiplication of those contaminating it through handling improbable, and economically much of the expense of transit is saved. By the development of present-day apparatus it should become possible for milk producers to dry their own milk at the source, which would cheapen it considerably to the consumer, a result which would also follow its more universal use. It must be borne in mind that dried milk when reconstituted is as good a culture medium as fresh milk, and consequently such reconstituted milk should only be prepared as it is required, in order to prevent contamination.

119. Palliative Treatment of Hay Fever.

DIETSCH (*Deut. med. Woch.*, May 19th, 1922) has found in his own case and in that of many of his patients that an attack of hay fever often culminates in violent sneezing followed by considerable relief. He has therefore attempted to abort these attacks by inducing early sneezing. He insufflates a mixture containing 3 parts of pure guaiacol, 40 of oil of eucalyptus, and 60 of liquid paraffin. This acts as a mild transitory irritant which is sufficient to bring on an attack of sneezing. While the insufflation is proceeding the patient's head should be bent forward, and when the insufflation is completed the head should be flexed backwards and the eyes fixed on some bright object overhead. Sneezing then sets in, and the insufflations should be repeated till they can no longer provoke sneezing. It is well at the completion of this treatment to wash out the mouth with a gargle. The insufflations leave a pleasantly cool feeling in the nose. The author admits that the composition of the prescription is not perfect and that one with a better taste would be preferable.

SURGERY.

120. Deep X-ray Therapy.

PONZIO (*Rif. Med.*, May 3rd, 1922, p. 433) says we ought to accept with caution the hopeful views of the effect of deep therapy in malignant disease. That it is a considerable advance in treatment, that it does improve certain cases and holds out prospects of better results when more is known, he feels sure; but that is a long way from speaking of it as a systematic cure of cancer. It is not merely a question of mathematically calculating the exact dosage for each class of growth, writing as it were an electro-physical prescription, but one ought to estimate all the clinical aspects of the case as well, and adapt the method to the disease, and not the disease to the method.

121. Radium in Exophthalmic Goitre.

W. J. TERRY (*Journ. Amer. Med. Assoc.*, July 1st, 1922, p. 1), from a total of 33 cases, advocates the use of radium emanation in the treatment of exophthalmic goitre. The skin over the thyroid is anaesthetized at the sites selected with a small cotton sponge saturated with ethyl chloride, and the minute capillary tubes containing the emanation are inserted by means of a hollow needle with plunger. Usually from six to eight tubes, containing a total of from 4 to 10 millicuries, according to the size of the goitre and intensity of the symptoms, are inserted into the upper, middle, and lower thirds of each lobe through one skin puncture on each side. On examining the changes produced each tube is seen to be the centre of a small white area, mostly fibrin, with a narrow zone beyond of degenerating thyroid and increased connective tissue, and beyond this compact thyroid tissue with undifferentiated cells, the alveoli being lined by cuboidal or low columnar epithelium and containing little or no colloid. The final results observed in 16 of the 33 cases treated showed that the emanations are of value in preparing serious cases for resection, and in 2 there was an apparent cure by radium alone. While the treatment might be of value in the colloid and simple hypertrophic types, it is contraindicated in adenomatous goitres on account of the danger of producing atrophy of the gland proper and consequent hypothyroidism. Investigations showed that the frequency of haemorrhages within adenomas is due to the weak walls of the intracapsular veins, which are deficient in adventitia, musculature, and elastic tissue, so that any abnormal intravenous pressure, such as that produced by coughing, might easily cause rupture of a vein within the capsule.

122. The Value of Early Operation in Acute Haemorrhage from Gastric and Duodenal Ulcers.

H. FINSTERER (*Klinische Wochenschrift*, June 17th, 1922, p. 1253) advocates early operation, within twenty-four or forty-eight hours, without awaiting the result of medical treatment, in cases of acute haemorrhage from gastric and duodenal ulcers. Against early operation it is urged (1) that death is exceedingly rare when such cases are treated medically, and (2) that the results of surgical treatment are worse than those of medical treatment. But Finsterer points out that death from these haemorrhages is not so rare as is usually believed (in ten years in Vienna hospitals 992 ulcers found *post mortem* and 150 deaths from erosion of large vessels in the ulcer); also he asserts the results of medical treatment are not better than those of surgical treatment but the opposite (statistics given). The longer the haemorrhage continues the greater the anaemia and the risks of bad results afterwards: and hence the value of early operation. By early operation the patient escapes the danger of fatal haemorrhage from erosion of blood vessels, especially in ulcers extending to adjacent organs. By early operation the risk of perforation is avoided. Finsterer considers that with care the diagnosis should not be difficult; but that in doubtful cases exploratory operation (under novocain anaesthesia) is justifiable. The results in early operation are dependent upon certain arrest of the haemorrhage; and this is best obtained by resection of the ulcer and ligation of eroded vessels (7 cases of ulcer of the stomach and 6 of ulcer of the duodenum all cured by resection of the ulcer). The author employs novocain anaesthesia in all cases. His mortality in these early operations was 5.5 per cent.

123. The Kondoléon Operation for Elephantiasis.

F. P. HERFF (*Surg., Gynec., and Obstet.*, June, 1922, p. 758) reminds us that elephantiasis is pathologically due to an obstruction of the lymphatic vessels of the part, resulting in hyperplasia of the skin and tissues, which microscopically are thickened, waxy, and indurated. The operation devised by Kondoléon, of Greece cannot be considered as a cure for this condition, but it is the best operation so far introduced tending to make lymphatic obstruction of limbs bearable and controllable. Before operating the following should be observed: a negative Wassermann, patient's general health carefully considered, and every means of reducing the size of the limb must be tried, such as rest, elevation, massage, and elastic bandage. Such precautionary measures reduce the chance of infection and make the affected area more pliant. The principle of the operation is the establishment of a connexion between the superficial and deep lymphatics—the latter generally being involved. This is done by breaking the fascial wall between the muscles and subcutaneous tissues by removing wedges from the inner and outer aspect of the entire length of the affected limb. Each wedge comprises skin, fat, and deep fascia. It is an advantage to break the incision opposite the joints. Drainage is usually employed, as it allows general reduction of the limb and lymph to escape. After operation the limb is firmly bandaged and elevated and the patient not allowed to walk for a month, and then only with a bandage on. Some sort of support must be worn, and light massage given from time to time. A complete cure cannot be obtained, but recurrence can be held in check. The author reports three cases treated by this method.

124. Surgical Treatment of Gastric Crises.

GIORDANO (*Rif. Med.*, June 5th, 1922, p. 530) reports the case of a woman, aged 36, suffering from tabetic gastric crises (Argyll Robertson pupils, no knee-jerks, ataxia, paraesthesia, etc.). Treated medically by strychnine, valerian, radiotherapy, suspension, neo-salvarsan, silver nitrate, and pararachidian cauterization with no benefit, the stomach was explored under local anaesthesia, the vagus nerve cut, and the fibres of the sympathetic separated. Posterior gastro-enterostomy was also done to avoid gastric stasis. The stitches were removed on the eighth day, which proved too soon, as shortly after the stomach and colon protruded. On the tenth day the patient suffered from incontinence of urine. Meanwhile the gastric crises had ceased, but two months later reappeared and have continued at varied intervals since, but are much less troublesome, and fourteen months after operation the patient, although still weak as a tabetic, reported herself much better as regards the gastric attacks and having put on weight.

125 Butyn as a Cocaine Substitute.

W. M. Beaumont (*Brit. Journ. Ophthalm.*, July, 1922, p. 316) advocates the use of butyn as an ideal substitute for cocaine in ophthalmic practice, it being free from the disadvantages of mydriasis and desiccation of the cornea. Combined with eserine in the treatment of glaucoma it minimizes the twitching and discomfort which may be experienced from eserine alone. From his own experience he confirms the findings of the committee appointed by the American Medical Association that it has a more powerful action, and therefore can be used in less quantity than cocaine; that its action is more rapid and prolonged and less toxic; that it is non-irritant, and does not affect the pupils or the accommodation; and that its efficiency is unimpaired by boiling. Satisfactory results followed its use in 2 per cent. solution in operations for the extraction of cataract and iridectomy, and in 1 per cent. solution it produces anaesthesia without causing conjunctival infection when used for the removal of foreign bodies in the cornea and conjunctiva, and its use as a lotion to relieve pain in herpes of the head and eye, and in detachment of the retina, is advocated. If used in combination with other drugs its incompatibility with chlorides must be borne in mind. Having no attraction for the drug taker, its possibilities for reducing the necessity for the manufacture and sale of cocaine are obvious.

126. Appendicitis the Cause of General Chronic Debility.

A. Mueller (*Deut. med. Woch.*, June 16th, 1922, p. 798) develops the theory, on the basis of about 600 operations on the appendix, that appendicitis is only a link in a comparatively long chain of events which profoundly affects the general health. An attack of diarrhoea in infancy is followed by constipation and chronic colitis; or an attack of dysentery or typhoid fever in childhood is followed by constipation and chronic colitis. The appendix becomes involved, and constipation becomes aggravated by a sedentary life and neglect of regular defaecation. This state of affairs may last for decades, and the dramatic exacerbation which leads to an operation for appendicitis is but a short page in a long chapter. There are many children who do not thrive but who show no definite symptoms apart from headache and a tender point over the appendix. Appendicectomy in these cases acts like a charm. In women the uterine appendages are often involved by extension of the inflammation from the appendix, and the differential diagnosis between appendicitis and cophoritis is the less important, as in a large number of cases they represent one and the same disease, for which there is but one satisfactory treatment—operation.

OBSTETRICS AND GYNAECOLOGY.

127. Radium Treatment of Cancer of the Cervix.

M. Richard (*Paris Méd.*, June 17th, 1922, p. 511) describes radium treatment of cancer of the cervix uteri as carried out at the Pasteur Institute. With regard to early malignant disease, limited to the cervix, with no clinically demonstrable affection of the parametria, surgical intervention is indubitably indicated if microscopical examination of an excised piece of the growth shows the presence of aberrant inclusions derived from the stratum corneum; in other cases the admissibility of radium treatment as an alternative to operation, although challenged, has not been disproved. Concerning combination of surgical with radium treatment of these early cases it is said that post-operative radium applications should be abandoned; they are made at a moment when the cancerous cells are most radio-resistant and when an application must necessarily be remote from the parametria and the pelvic wall, and near to the intestine, which at all costs should be respected. In the writer's experience pre-operative radium applications, made with proper technical precautions three weeks before performance of hysterectomy, have been attended with fortunate results, and have not increased by production of dense scar tissue the operative difficulties. For more advanced but still operable cases (for example, those with involvement of the inner portion of the parametria) a combination of *x* ray, radium, and surgical treatment, employed in the order named, is recommended; in the case of other than baso-cellular epitheliomata the *x* rays are omitted. The radiations are conducted within as short a period as possible and operation is performed three weeks later. Another line of treatment employed for this group of cases consists in hysterectomy together with introduction of radio-active tubes, contained in a sound of which one end is left in the region of the bifurcation of the iliac vessels and the other protrudes in the vagina (preoperative *x*-ray or radium applications are sometimes made in addition); the pain and persistent discharge which often ensue are a drawback to this technique, which was prescribed by Dominici and Desjardins. With regard to inoperable cases, invasion of the bladder or rectum constitutes a contraindication to all active treatment. In the absence of such complications, *x*-ray or radium treatment is given according to the degree of radio-sensibility indicated by microscopical examination of an excised piece of growth. Radium treatment may be given *per vias naturales*, by the Dominici-Desjardins method, or by introduction, after laparotomy, of rubber drains, containing radium salts or emanation in Regaud's needles, into the body and cervix of the uterus and into the broad ligaments (Regaud-Richard technique). The third method is attended by less shock than the second. Other contraindications to local treatment are given by extreme cachexia of the patient, by extensive infiltration of the vaginal vault, and by involvement of the lumbar glands, as found at operation and indicated by persistent severe lumbar pain.

128. Diffuse Adenomyoma of the Uterus.

Schwarz and McNalley (*Amer. Journ. of Obstet. and Gynecol.*, May, 1922, p. 457) discuss the etiological factors concerned in the production of diffuse uterine adenomyoma on the basis of a study of 23 early and 26 well-advanced cases in which the uterus was submitted to microscopic examination. They agree with Cullen and with Frankl that inflammation plays an inconspicuous part, and is frequently entirely absent. In the present series, diffuse adenomyoma was accompanied practically always by other uterine lesions; hyperplasia of the endometrium, subinvolution, or myomata were present (alone or combined with one another) in 26, 34, and 21 respectively of the 49 cases. Hyperplasia of the myometrium was noticed in most cases, but varied in degree from case to case; it was characterized by hyperplasia and hypertrophy of muscular and connective tissue elements, and by absence of signs either of degeneration or round-cell infiltration. The genesis of diffuse uterine adenomyoma is explained by the writers chiefly on mechanical grounds. Subinvolution favours invasion of glands from the mucosa, with reaction by the myometrium resulting in some instances in hypertrophy; the absence of myometrial hypertrophy in some cases of subinvolution is ascribed to the somewhat atrophic condition of the endometrium. In cases associated with endometrial hyperplasia, this lesion is to be regarded as primary: a resulting work hypertrophy of the myometrium gives it a coarse structure, and allows mucosal extensions to penetrate between the widened interstices. In cases associated with myomata in the absence of endometrial hyperplasia or of subinvolution a similar work hypertrophy consequent on the presence of discrete nodules of new formation predisposes to penetration of the endometrium. Clinically 31 of these 49 cases were associated with menorrhagia, the incidence of which appeared to be dependent to a large extent on the existence of endometrial hyperplasia.

129. Physiological Ascites in the Female.

Novak (*Zentralbl. f. Gynäk.*, May 27th, 1922) has remarked the finding of a moderate amount of free fluid in the pelvis at operation cases—for example, those of uterine malpositions or myoma—in which there is no suspicion of inflammation or irritation of the pelvic peritoneum such as, proceeding from recent adnexial disease or torsion, might account for an exudation of peritoneal fluid. A similar finding has not been recorded in the male. Of 33 recent operation cases, 21 showed, in the absence of acute or subacute inflammation or peritoneal irritation, ascites: it was found that the sole distinction between these cases and those in which free fluid was absent consisted in the presence of a recently ruptured ovarian follicle or a fresh corpus luteum. The suggestion is put forward that the ripe follicle and the early corpus luteum lead to the production of a peritoneal irritation and exudation; the latter may have the physiological function of favouring the transit of the ovum. Free fluid was absent in cases of corpus luteum cyst, and also when the corpus luteum by reason of ovarian disease did not impinge on the surface of the ovary.

130. Retention of Urine in the Puerperium

P. Zachariae (*Hospitalstidende*, May 3rd, 1922, p. 293) observes that, according to Knapp, the first spontaneous evacuation of urine after labour occurs in about 50 per cent. of all cases as late as twelve hours *post partum*, and that intervals of twenty-four to thirty-six hours are not uncommon, although the last interval must be indicative of pathological conditions. Various simple devices, such as warming the bed-pan, hot compresses on the abdomen, and letting the patient sit up and swing her legs over the edge of the bed, are often successful, but if they are not, there are the alternatives of exerting light pressure with one hand on the bladder or passing a catheter. The author prefers the former, pointing out that it is not always easy to find the

opening of the urethra after it has been bruised and stretched by labour. The use of the catheter also requires great cleanliness. But pressure on the bladder is not devoid of risk, even in the hands of a skilled nurse, and in this connexion the author records the case of a primipara, aged 29, who suffered from pyelitis during pregnancy. Expression of the bladder in the puerperium was followed by intraperitoneal rupture of the bladder. The symptoms were those of acute intestinal obstruction rather than those of ruptured bladder; there was little shock, no vesical tenesmus, and the urine drawn from the bladder after the accident was not blood-stained. Although laparotomy was not performed till twenty-four hours after the accident, and the rent in the bladder was large, complete recovery was effected.

131. Hyperemesis Gravidarum.

ACCORDING to VERRUCOLI (*Annali di Ostetricia e Ginecologia*, March 31st, 1922), cases of hyperemesis gravidarum at the Pisa clinic numbered 17 in twenty-six years; multiparae were affected more frequently than primiparae. In 2 instances the vomiting was attributed to grave organic disease, and proved fatal. In the remaining 15 cases of true pernicious vomiting of pregnancy uterine displacement was absent save in one instance, renal function was normal, and cure was attained by simple administration of anodynes. It is concluded that hyperemesis gravidarum is very rarely due to pregnancy toxaemia, and is always almost an entirely functional condition.

132. Radiotherapy in Cancer of the Uterus.

SPEAKING at a meeting, at Frankfurt a.M. on April 23rd, of the German Central Committee for the Study and Combating of Cancer, L. SEITZ (*Deut. med. Woch.*, May 26th, 1922, p. 716) discussed the results which he and Wintz had obtained at Erlangen with radiotherapy. Some cases of cancer of the uterus had been treated with a combination of radium and x rays, and others with the x rays alone. Although every case, including the most unfavourable cases, was counted, and more than two years had passed, 56 per cent. in the former class, and 53 per cent. in the latter class, were still alive and well. Cases treated with radium *plus* x rays have now stood the test of a five-year observation period, and of 58 cases of carcinoma of the cervix 12 were still alive five years after treatment. A permanent cure could be claimed in 50 per cent. of the cases of sarcoma of the uterus, and of 132 cases of genital and extragenital sarcoma 59, or 45 per cent., were still alive two to five years after treatment.

PATHOLOGY.

133. Dental Caries.

MCINTOSH, JAMES, and LAZARUS-BARLOW (*Brit. Journ. of Exper. Path.*, June, 1922, p. 138) claim to have isolated two types of bacilli which are the infective agents in dental caries, and for which they propose the names of *B. acidophilus odontolyticus* 1 and 2. When grown in glucose broth these organisms produce great acidity, and the final P_H value of the broth after several weeks' growth may be as acid as 2.75. Teeth left in contact with pure cultures of these organisms show first of all a loss of transparency of the enamel, which becomes opaque—the first sign of dental caries—and sections from such teeth show that the organisms have penetrated the dentinal tubules for a considerable distance. Control teeth kept in cultures of *Streptococcus salivarius* and *B. coli* showed no such changes. Having penetrated through the enamel these *acidophilus* bacilli may proceed to liquefy the dentine, for it can be shown that when completely deprived of carbohydrates the organisms isolated can exert a liquefying action on the collagen matrix of the dentine. In natural caries, however, it is probable that this liquefaction of the dentine is carried out by secondary bacterial invaders, the chief function of *B. acidophilus odontolyticus* being to produce sufficient acid to decalcify teeth and to initiate dental caries. Two types of bacilli are described. Type 1 is a long, thin bacillus with a marked tendency to parallelism or palisade formation in dried films; type 2 is a shorter bacillus growing in chains. Both are Gram-positive and non-motile. They show a finely granular scanty growth on agar, a turbidity in broth, and do not liquefy gelatine. The sugar reactions are somewhat variable, but most strains produce acid but no gas in glucose and lactose.

134. Cytological Researches on Glioma of the Retina.

To decide as to the real nature of the so-called glioma of the retina J. MAWAS (*Bull. Assoc. française pour l'étude du Cancer*, May, 1922, p. 209) has undertaken a detailed study of several cases. Immediately after enucleation the eye was fixed either in 10 per cent. formol, or in Bouin's picro-formol acetic mixture, or in Zenker's fluid. Various methods for staining for special tissues were employed. Examination of the tumour after fixation in formol showed that on gentle shaking a number of fine filaments became visible, which were not, however, of neuroglial nature, but resulted from the gelification of necrosed areas of the tumour. From microscopical observation he describes the growth as consisting of one type of tissue which appears in two forms: (1) as actively proliferating groups of deeply stained cells lying in close relation to the blood vessels—these he calls the germinal zones; and (2) as pale areas of avascular and necrotic appearance—these are centres of degeneration. Close study of the former type of cell shows it to possess a limiting membrane from which little prolongations of cytoplasm project, giving it a similarity to the embryonic visual cell. From this he concludes that the neoplasm is not a glioma, but should be regarded as a malignant tumour of epithelial origin, consisting of retinal cells whose development is atypical and does not proceed to complete maturity.

135. Cholera.

MASKI (*Ann. de l'Institut Pasteur*, May, 1922, pp. 399-415), in an article on the mechanism of infection in cholera, describes the effect produced by injecting the vibrios by various routes. After intraperitoneal inoculation the organisms pass immediately into the blood and thence to the intestine; ten hours after inoculation cultures from the peritoneum, blood, and bile are negative, whilst the vibrios are abundant in the small intestine, where they remain for two or three days. When the organisms are injected subcutaneously a small abscess forms, from which the vibrios are transported to the intestines, where they make their appearance in about six hours. Injected intravenously the organisms rapidly disappear from the blood as before, to reappear after a brief interval in the intestines. When vibrios are administered by the mouth rabbits do not develop any agglutinins or protective antibodies unless the organisms are given after previous sensitization with bile according to Besredka's method. Such sensitization leads to the appearance of agglutinins, which are of a higher titre following the ingestion of dead vibrios than after living vibrios. There does not appear to be any relationship between immunity and the presence of agglutinins in the serum, and the only animals which appeared to possess protective substances were rabbits which had been previously sensitized and had ingested living cultures. This the author attributes to the existence of local intestinal immunity due to recovery from a mild attack of the disease.

136. Sedimentation of Erythrocytes in Pelvic Disease.

LINZENMEIER (*Zentralbl. f. Gynäk.*, April 8th, 1922), from observation of the rate of sedimentation of the red blood cells in 230 patients suffering from adnexal disease, pelvic peritonitis, or complicated extrauterine gestation, comes to the following conclusions: In differential diagnosis between recently ruptured ectopic gestation on the one hand, and acute adnexal or other pelvic inflammations on the other, a slow sedimentation rate points with great probability to ectopic pregnancy. Observation of this rate is of great assistance in fixing the time at which operative intervention may with propriety be undertaken for the inflammatory adnexal affections; if the time of sedimentation be under one hour it is possible that virulent micro-organisms are still present in the inflammatory mass, and operation should be deferred. On the other hand, no local infection need be feared if the sedimentation time is over two hours. A sedimentation time of less than thirty minutes points to an acute inflammatory process, with the single exception that in cases of ruptured tubal pregnancy with profuse intra-abdominal haemorrhage there is also a greatly increased sedimentation velocity. According to Linzenmeier measurements of the erythrocyte sedimentation rate afford a much more delicate index of persistence of bacterial infection than is offered by the most careful observations of the body temperature.

137. Visceral Nitritoid Crises.

H. GOUGEROT (*Paris Méd.*, May 13th, 1922, p. 393) states that since nitritoid crises following injections of salvarsan were first described by Milian there has been too great a tendency to suppose that the cephalic region only is affected, as shown by congestion of the face and oedema of the bucco-pharynx and larynx. Milian, however, in addition to the ordinary form had described several localized forms, including haemorrhagic and asthmatiform varieties. Gougerot now reports a case of a utero-placental nitritoid crisis giving rise to abortion, a pseudo-rheumatismal articular form, a neuralgic and paraplegic form, and a renal form with haematuria. He recommends that while intravenous injections may be given in all tolerant cases, especially in the primary stages, subcutaneous or intramuscular injections should be given in all weakly subjects, especially pregnant women, to avoid the occurrence of accidents.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

138. Erythema Nodosum and Tuberculosis.

H. J. Vetlesen (*Tubercle*, July, 1922, p. 433) has scrutinized the records of more than 1,800 cases admitted to the Communal Hospital in Christiania in the 21-year period 1895–1915, during which he was medical superintendent. He followed two lines of research: (1) to collect the records of cases of erythema nodosum, to search for manifestations of tuberculosis in these patients or their relatives, and to ascertain the subsequent fate of the former; and (2. to collect the records of patients admitted with manifestations of tuberculosis, and to ascertain the frequency with which they had suffered from erythema nodosum. (1) There were 45 cases of erythema nodosum, as many as 42 being females. In 24 cases there was no family history of tuberculosis. Three cases were tuberculous at the time of the eruption, another three developed tuberculosis subsequently, and six were tuberculous suspects. Thus altogether 12, or 26.6 per cent., could be regarded as tuberculous. (2) Of 350 patients with pleurisy 18 had previously suffered from erythema nodosum, and of 1,317 patients suffering from other forms of tuberculosis 12 had previously suffered from erythema nodosum. Thus 5.1 per cent. of the patients with pleurisy, and 0.9 per cent. of the patients with other manifestations of tuberculosis, had suffered from erythema nodosum. In no fewer than 12 of the 18 cases of pleurisy the interval between the outbreak of this condition and of the erythema nodosum was only three and a half months or less. The author concludes that there can be little doubt as to the relationship of the two conditions, and he has learnt to regard erythema nodosum as a danger signal and as an incentive to vigilant supervision.

139. Decreasing Diabetic Mortality: Increasing Incidence of Glycosuria.

Elliott P. Joslin (*Boston Med. and Surg. Journ.*, June 8th, 1922, p. 761) states that in the United States the highest recorded mortality from diabetes—that is, 17.5 per 100,000—was reached in 1915. In the subsequent quinquennium there has been a decrease, the lowest figure being 14.9 in 19.9. From 1880, when the deaths recorded were 2.8 per 100,000, the rate rose steadily until 1915, no retrogression in the curve exceeding 0.2 per cent. "The decrease in diabetic mortality is by no means wholly attributable to a lessened frequency of the disease. It reflects better treatment." In the period 1898–1913 the average duration of life in fatal cases in Boston was 3.3 years. In 1915 the average was 4.3 years, and in 1920 it rose to 5.3 years. On the other hand, the records of the Metropolitan Life Insurance Company (*Statistical Bulletin*, November, 1921) show that whereas in 1919 sugar was found in 0.6 per cent. of specimens examined, the ratio in 1921 was almost doubled—that is, 1.1 per cent. Joslin cannot accept the theory that the increase in glycosuria is due to increased sugar consumption; he quotes statistics showing that in 1919 and 1921 the sugar consumption *per capita* was almost identical, although in 1921 the percentage of cases of glycosuria discovered was nearly double that of 1919. In his own practice, 300 successive case histories of "supposedly non-diabetics" showed sugar present in 50, a rate of 165 per 1,000. None of the patients suspected glycosuria, and only one case was "frank diabetes." Thus, while the Metropolitan Life Insurance Company's statistics showed 11 cases per 1,000, the writer's statistics for the same year yielded 165. This may be explained by the fact that the Insurance Company's cases were apparently healthy, while the writer's patients were ill.

140. Simultaneous Injection of Salvarsan and Mercury.

Boas and Pontoppidan (*Ugeskrift for Laeger*, June 8th, 1922) warmly recommend the practice, introduced by Linser, of giving salvarsan and mercury in one and the same intravenous injection. During the past six months they have treated 70 patients in all stages of syphilis, but not suffering from general paralysis or congenital syphilis, on this principle. The dosage was 0.2 gram neo-silver-salvarsan *plus* 1 c.cm. novasurol or cyarsal at the first injection. The respective quantities of the salvarsan and mercury compounds at subsequent injections were 0.3 gram and 2 c.cm., rising to 0.5 gram and remaining at 2 c.cm. The intervals between the injections were half a week to one week, and after six intravenous injections the treatment was completed with four injections of 10 cg. ol. cinereum, so as to provide the patient with a reliable amount of mercury. No ill effects from the combined administration of salvarsan and mercury were observed. After an observation period of only a few months it was too early to discuss the permanent results, but the immediate results were excellent from both the clinical and the serological points of view, and it was noteworthy that not a single case of neuro-recurrence was seen among these cases. The authors therefore regard this system as a definite improvement both from the patient's point of view and from that of his medical attendant, whose work is greatly simplified.

141. Recovery from Diabetes Insipidus.

Tucker (*Amer. Journ. Med. Sciences*, May, 1922) records a case of immediate recovery from early diabetes insipidus after lumbar puncture, and instances three cases reported in the literature in which striking results followed the relief of intracranial pressure by the same means. A man, aged 27, with marked polyuria and thirst, complained of profuse sweating and of a dry feeling behind the bridge of the nose, which he associated with the cause of his thirst. Personal and family histories were negative, physical examination showed lungs, heart, blood pressure, reflexes, and glandular systems normal, and the sella turcica was normal to *x* rays. Subjective symptoms pointed to involvement of the first, second, fifth, and eighth cranial nerves, and urinary analysis showed an output of 4,100 c.cm. in fifteen hours, specific gravity 1005, no albumin, and no sugar. Following removal of 8 c.cm. clear spinal fluid under normal pressure the profuse sweating ceased, and the urinary output dropped to 406 c.cm. in twenty-four hours, and the specific gravity rose to, and remained at, 1026 to 1030, while the fluid intake became 1,200 c.cm., as compared with 5,970 c.cm. before lumbar puncture. Five and a half months later examination was negative except for evidence of hypopituitarism, as shown by a very high sugar tolerance. It would appear that the condition was the result of a serous meningitis with oedema of the infundibulum cerebri and involvement of certain left cranial nerves, pointing to the fact that anything causing obstruction to the flow of normal pituitary secretion, such as transient oedema, inflammatory exudate, or increased intracranial pressure, may, apart from destructive lesions of the gland, set up diabetes insipidus, and every case should be given the chance of early relief by lumbar puncture.

142. Chloroma.

Caronia (*La Pediatria*, May 15th, 1922) reports the following interesting case of chloroma. A boy, aged 3, had measles and bronchopneumonia six months previously and recovered slowly; for the last two months he showed palpebral oedema and a progressive painful swelling in the left temporal region. He was pallid but not green; there was enlargement of the cervical glands. In addition to the tumour in the left temporal region, there were two smaller nodules in the parietal and occipital areas. There was slight ptosis and exophthalmos, and the optic disc was rather pale. The liver was normal, but the spleen was enlarged three fingerbreadths below the costal margin. There was some tenderness of the long bones. The red corpuscles numbered 3,030,000, white 6,100, and haemoglobin 55 per cent.; there was slight aniso-and poikilocytosis, a few normoblasts, and occasional megaloblasts and blood plates. Lymphocytes 17 per cent., monocytes 4 per cent., neutral polymorphs 59 per cent., acid polymorphs 1.4 per cent., no mast cells, myeloblasts 0.9 per cent., myelocytes 1.7 per cent., Türk cells 0.4 per cent., Rieder cells 0.6 per cent. The Wassermann reaction was positive in the mother, negative in the child. Examination of the bone medulla from the tibia and of the temporal tumour confirmed the diagnosis of haemocytoblasto-myeloblastoma. A microphotograph of the sections is given. The absence of a typical greenish tint was explained by the scarcity of the typical green pigment in the growth. Etiologically the only factors noted were the positive Wassermann in the mother and the previous attack of measles. The author discusses the relation between leukaemia and chloroma.

143. Camphor in Nocturnal Enuresis.

C. Pototzky (*Deut. med. Woch.*, June 2nd, 1922, p. 730) warmly recommends the exhibition of camphor in nocturnal enuresis. He first gave it as camphora monobromata, and the suggestion being made that its success depended on the bromine present he tried pure camphor alone, and found its effect equally beneficial. As bromine is apt to make the subjects of enuresis sleep even more deeply than usual, it is

wiser to give pure camphor or a camphor compound deprived of the unpleasant taste of pure camphor. The action of camphor on enuresis appears to depend partly on its sedative effect locally, and also on its ability to stimulate the cardio-vascular system. A third factor may be its stimulating effect on the brain, the result being that the patient sleeps more lightly than usual. Though he recommends camphor, the author insists on adapting treatment to each of the many possible causes of enuresis, and he puts suggestion treatment and calcium medication in neuropathic children before camphor medication.

144. A Symptom in the Diagnosis of Early Phthisis.

IACONO (*Rif. Med.*, June 5th, 1922, p. 529), after corroborating the observations of Boeri respecting the tenderness along the edge of the trapezius muscle and the muscular atrophy of the same muscle in incipient cases of phthisis, describes a symptom he has observed himself. This is a tenderness on pressure over the first and second intercostal spaces, when the finger is placed in the axilla and pressed on this area. The author says he has frequently noticed this local tenderness, either in association with Boeri's signs or alone. The tenderness may perhaps be due to a little local pleurisy or may be reflex.

145. Injury to the Buccal Mucous Membrane by X Rays.

LAUE (*Zentralbl. f. inn. Med.*, April 22nd, 1922), who records two cases from the Bonn Skin Clinic, states that the first signs of damage to the buccal mucous membrane by *x* rays in the treatment of skin diseases of the face are redness and swelling of the mucosa and dryness of the mouth due to affection of the salivary glands. Difficulty in speaking and interference with mastication result. Treatment is purely symptomatic, and consists in washing out the mouth with bland lotions. Further, irritation by strong antiseptics should be avoided. Prophylaxis consists in reducing the deep action of the *x* rays to the minimum, especially in the treatment of skin lesions of the face.

SURGERY.

146. The Treatment of Tetanus.

DURING the interval between March 22nd, 1916, and December 7th, 1921, forty-nine patients with tetanus were admitted to the Los Angeles County Hospital. During this interval there were 74,393 total admissions, or one admission for tetanus to 1,518 admissions for all other causes. Twenty-six deaths occurred, or a mortality of 53 per cent. An analysis has been made by W. J. STONE (*Journ. Amer. Med. Assoc.*, June 24th, 1922) of the records of these forty-nine patients. The most important factor in the treatment of tetanus is its prevention. It should be the universal rule to give a prophylactic dose of 1,500 units of antitoxin to all patients who have received lacerated or penetrating wounds. If the wound contains necrotic tissue or a suspected foreign body the dose should be repeated in ten days, and subsequently if operation on the wound is contemplated. Treatment of all extensive lacerated wounds surgically by primary excision and primary or delayed suture will greatly reduce the incidence of the disease. The incubation period of the disease is usually about ten days, but may be as short as three days. So-called tardy tetanus may occur months after an injury if the wound is subsequently reopened. The shorter the incubation period before symptoms the greater will be the probable mortality. But little difference occurs in mortality whether the wound focus involves the lower or the upper extremity. The type of infection appears to vary in virulence in different years. In four different years between 1916 and 1921 the mortality varied from 14.3 to 71 per cent. in a comparable number of patients each year, and with the same general plan of treatment. When symptoms of the disease have appeared the attempt should be made to saturate the patient with antitoxin before fixation of toxin has occurred in the nerve cells of the spinal cord. This can best be accomplished by intraspinal and intravenous injections during the first three days of treatment; the total dosage, of which half should be given intraspinally, should approximate 125,000 units.

147. Laryngology and Otology in the Medical Curriculum.

A. LOGAN TURNER (*Journ. Laryngol. and Otol.*, July, 1922, p. 317) discusses the position of laryngology and otology in the medical curriculum of Great Britain, and the regulations at present governing such teaching in the different universities and medical corporations. He points out that it should always be borne in mind that the instruction is for the future general practitioner and not for those intending to specialize, and that therefore any detailed or elaborate handling of the subject suitable to post-graduate courses should be avoided. The importance of certain clinical signs, not only in connexion with local diseases of the ear, nose, and throat, but in their relationship to general diseases, should be emphasized in order to enlarge the student's outlook upon general medicine rather than allow him to regard the instruction as being upon a "watertight" specialty. While there is little doubt but that these subjects will find a place in the new regulations under consideration by the General Medical Council it is advisable that each of the qualifying bodies should be permitted some scope in choosing that form of examination and instruction best suited to individual circumstances, each school being at liberty to advance its own scheme of education in its own way.

148. Arthroplasty for Ankylosis of Joints.

PUTTI (*Lyon Chirurgical*, March–April, 1922), in reviewing his results of the operation of arthroplasty, comes to the following conclusions. The modern operation enables one to create a joint of functional value equal to the normal joint, or one which gives complete satisfaction to the patient. With regard to indications—in cases of ankylosis of the temporo-maxillary joint, or bilateral ankylosis of the hip, or an elbow ankylosis in extension, there can be no doubt. Many of these joints after operation have allowed the patient to carry on laborious occupations; some were declared fit for military service after arthroplasty on the knee and elbow and served in the war. In ankylosis of the lower limb it is possible to obtain a firm and mobile joint. Putti considers the knee as a joint which gives complete satisfaction to the patient and surgeon after operation. The operative technique consists in using ample incisions to give free exposure. Enough bone is removed to leave an articular space which permits free movement; the ends of the bones are shaped to an appropriate form in each joint. It is absolutely essential to cover the bone ends with some substance which separates the osseous surfaces; Putti advises, and uses, free grafts of fascia lata. The mode of formation of the new joint surfaces agrees with that described by Murphy. The author drains the joint after operation. The secret of success depends on the judicious choice of cases, the careful technique at the operation, and in correct after-treatment. With regard to prognosis for each joint after operation he places them in the following order: elbow, knee, temporo-maxillary, and hip. Arthroplasty is not a dangerous operation; his mortality is under 2 per cent.

149. The Treatment of Gall Stones.

C. WESSEL (*Hospitalstidende*, April 26th and May 3rd, 1922, p. 15) reviews his experience of the treatment of gall stones in his hospital in the seven-year period 1914–20, in which 366 cases were observed. Of these, 200 were operated on, and in 56 per cent. the field of operation was sterile. The superiority of operative over conservative treatment has been borne in on him with increasing force, and he has come to the conclusion that an operation should be recommended as soon as the diagnosis has been made. The fact that only 200 out of the 366 cases were operated on was partly due to his not having been insistent enough on the need for operative treatment in the first years of the period under review. There were also cases in which, owing to advanced age or complications, an operation was contraindicated. But the most common reason for not operating was the patient's refusal to submit to an operation after acute pain had ceased. The author preserves the gall bladder whenever he can, and only in 67 cases did he perform cholecystectomy; only in one out of 87 cholecystostomies did a fistula persist. Cholecystendysis was performed in 40 cases, in none of which did the author rue his choice of operation, and he recommends this procedure in uncomplicated cases.

150. Venous Thrombosis and Gastric Carcinoma.

MOORHEAD (*Irish Journ. Med. Science*, April, 1922), from recent experience in four cases, reviews the diagnostic importance, originally suggested by Trousseau in gastric carcinoma, of venous thrombosis as an early sign in malignant growths. In the first case—a labourer, aged 43—thrombosis of the internal jugular and axillary veins caused a painful swelling of the right side of the neck, and swelling of the right hand, with later involvement on the left side. Necropsy showed an unsuspected ulcerating cancer of the lesser curvature of the stomach, the peripheral venous thrombosis being the only prominent clinical symptom, and probably resulting from microbial invasion of the ulcerated growth. In the second case of gastric carcinoma thrombosis of the right femoral and saphenous veins occurred as a terminal symptom, practically every vein in the body becoming affected in turn during the last six weeks of life. In the third case thrombosis of the left subclavian and axillary veins preceded the discovery of an inoperable adenocarcinoma of both ovaries, while the fourth case was an example of general thrombosis in advanced malignant

cachexia, practically every superficial vein in the body, including those of the abdominal wall, becoming thrombosed. At autopsy the cancer was found to involve the pancreas, stomach, colon, liver, and the diaphragm, with thrombosis of both femoral veins extending up the inferior vena cava as far as the renal veins. Secondary growths, but no actual ulceration, were present in the walls of the vena cava, the lumen of which was constricted by the growth in the diaphragm. The cachexia of itself would seem to afford sufficient explanation of the condition in those cases in which the thrombosis was a late development, while in the early cases it is possible that tumour cells or organisms gain access to the blood stream; or, as Trousseau assumed, the condition may be accounted for by the existence of a special blood state favouring coagulation.

151. Megacolon.

THE occurrence of idiopathic dilatation of the colon in childhood is relatively infrequent, but congenital megacolon in the adult is rare. FOWLER, DAVIDSON, and MELLON (*Surg., Gyn., and Obstet.*, May, 1922) report a case of this nature. The term "megacolon" is usually applied to the congenital and idiopathic condition which bears the name of Hirschsprung's disease. The symptomatology consists of obstinate constipation, marked distension, and active visible peristalsis, finally accompanied by signs of intestinal toxaemia, and usually resulting in early death. This active acute process begins at birth or soon after, and the dilatation and hypertrophy are present from the start. The typical picture appears to be that of an emaciated child with prominent abdomen; the dilated coils of intestine can be seen and masses felt within them. Enemata are followed by copious, offensive stools. X-ray pictures following a barium enema confirm the diagnosis. The disease often pursues a chronic course. Instances of acute obstruction of the redundant sigmoid, usually volvulus, have been reported. The diagnosis should be relatively simple, and a point in the diagnosis is that ascites does not accompany megacolon. In the treatment of megacolon, Ladd found to his surprise that the surgeons suggested medical treatment and the clinicians advised operation. Dietary regulations and measures designed to empty the bowels may be tried. In the advanced cases medical treatment merely accomplishes partial removal of the retained faeces at intervals. In these cases operation should be advised. Surgical treatment aims at removal of the functionless bowel and restoration of the intestinal continuity. Some surgeons favour a single-stage operation, others advocate a preliminary colostomy with secondary resection and anastomosis. The prognosis of megacolon is largely that of intercurrent diseases consequent on malnutrition. The theories regarding its etiology are numerous; the authors consider there is little clinical verification that it is a congenital pathological entity. The only congenital feature is a redundant sigmoid, and the anatomical arrangement invites obstruction at the recto-sigmoid junction, and kinks and valves have been demonstrated here.

OBSTETRICS AND GYNAECOLOGY.

152. Value of Low Cervical Caesarean Section.

J. B. DE LEE and E. L. CORNELL (*Journ. Amer. Med. Assoc.*, July 8th, 1922, p. 109) advocate low cervical Caesarean section (laparotrachelotomy) as the operation of choice, reserving the old classic operation for special aseptic and early cases. Through an abdominal incision an area of the cervix and lower uterine segment is exposed of sufficient size to permit delivery of the child without encroaching on that portion of the peritoneum which is opened in the higher operation. The advantages claimed are that the cervix and lower abdomen resist infection better, and the cervical wound, being unaffected by after-pains and active involution, is more at rest and heals better than the wound in the fundus. Since the wound in the cervix can be more perfectly closed and covered with fascia and peritoneum, there is relatively little danger of leakage of the lochia, and any spill at the time of operation is limited to a very small peritoneal area just above the pubes, which is known to resist infection well. The occurrence of adhesions, abdominal hernia, and the possibility of rupture of the scar in subsequent pregnancies are reduced to a minimum, and the operation can be performed after prolonged labour, and even in the presence of fever which contra-indicates the higher operation. E. L. KING (Ibid., p. 112), from a review of the end-results in 117 cases of abdominal Caesarean section, urges restriction rather than extension of the indications for its performance by greater pre-natal care, careful pelvimetry, early treatment of toxaemia, and better obstetrical teaching. Craniotomy or embryotomy on the dead baby should be undertaken more frequently, and the Porro operation extended in infected cases; while laparotrachelotomy is becoming the operation of choice in the presence of infection.

153. Radio-therapeutic Drainage of the Pelvis for Cancer of the Uterus

DAELS (*Gynécol. et Obstét.*, 1922, v, 5, p. 394) reported to the Société Belge de Gynécologie et Obstétrique the results of the treatment, introduced by him, of cancer of the cervix by radium "drainage" of the pelvis. This treatment consists in the extraperitoneal insertion into the pelvis of india-rubber tubes containing radium disposed at various points so as to affect the parametria and the pelvic lymphatic glands. Daels now makes the track for the tube by introducing, with the guidance of a finger, a graduated semicircular sound through an incision behind and external to the tuber ischii; it is passed upwards between the perineal and coccygeal portions of the levator ani and in front of the sacro sciatic ligament, and withdrawn after being made to pass behind the great vessels through an incision external to the anterior superior spines. Spinal anaesthesia is preferred. The radiation, which is preceded by that of the primary growth, lasts, as a rule, for three days. The series recorded consists in 26 cases, of which 19 were frankly inoperable and 4 were post-operative recurrences. Of 4 cases in which the procedure was combined with hysterectomy (a combination which has now been abandoned) death ensued in 2 and convalescence was difficult in the others. Of the remaining 22 cases, 3 died at the sixth week (2 from pulmonary disease) and 1 on the seventh day; 5 had abscesses which became cured, 1 had a recto-vesical fistula, and 3 suffered from deep radium dermatitis. The cases are too recent for the more remote issue to be estimated critically, but include two instances of two years' cures of apparently hopeless cases. No immediate operative complication occurred in the 31 cases. P. PETIT-DUTAILLIS (*La Gynécologie*, April, 1922, p. 215) criticizes adversely the method of Daels, and enumerates the dangers which it entails of injury to important vessels and nerves. He suggests as an alternative introduction of a radio-active drain between the obturator internus and its aponeurosis, and points out that the external iliac glands may be irradiated, without opening the abdomen, by means of the classic access for ligation of the corresponding artery.

154. Is Perforation of the Living Foetus Ever Necessary?

O. KÜSTNER (*Zentralbl. f. Gynäk.*, June 4th, 1922, p. 882) believes that the introduction of extraperitoneal Caesarean section has rendered it unnecessary ever to perform craniotomy or embryotomy on a living child, even if auscultation of the foetal heart shows its existence to be severely endangered. In upwards of 200 Caesarean sections made extraperitoneally in the antero-lateral aspect of the lower uterine segment, the mortality, in spite of the fact that nearly one-half of the patients showed pyrexia before operation, was less than 1 per cent. Accordingly, Küstner criticizes the attitude of those who, while granting the extraperitoneal an equal or superior place to that of the classical operation, hesitate to perform the former in patients who apparently show signs of severe infection. He points out that it is difficult clinically to estimate the chances of survival of a foetus whose life appears to be threatened; that clinical judgement, as well as that made by searching for the presence of various streptococci, regarding the extreme severity of maternal infections is in the highest degree uncertain; and that destructive operations are attended with a danger of sepsis and with a mortality which are at least equal to those connected with extraperitoneal Caesarean section. The prognosis of the accidental injuries, which may occasionally accrue to the urinary tract during low hysterotomy, is good.

155. Disappearance of Orthostatic Albuminuria in Pregnancy.

E. SYLVEST (*Ugeskrift for Laeger*, May 25th, 1922, p. 563) has frequently examined for albumin the urine of a woman, aged 30, since she was 10 years old. At this age albumin was found in the urine, but casts were never demonstrable, and the morning urine never contained albumin. At the age of 19, in the second month of her first pregnancy, the urine was free from albumin, and it remained so throughout the rest of the pregnancy. After labour the albumin returned in the evening urine. The second pregnancy, at the age of 23, was again associated with complete freedom from albuminuria. Just before she became pregnant for the third time the evening urine contained albumin, but five weeks after her last menstruation no albumin could be found. Though there was no other sign of pregnancy it was diagnosed on the strength of the disappearance of the albuminuria, and this diagnosis proved correct. After the termination of this pregnancy the urine continued to be free from albumin.

156. Intestinal Obstruction during Pregnancy.

ACCORDING to M. VAUTRIN (*La Gynécologie*, April, 1922, p. 193), intestinal obstruction occurring during pregnancy, in the absence of the usual causes encountered apart from gestation, is most frequent among multiparous subjects of chronic constipation who suffer from visceroptosis. The site of the occlusion is almost invariably the pelvic colon in the neighbourhood of the attachment of the infundibulo-pelvic ligament; the upward enlargement of the gravid uterus produces tension of the infundibulo-pelvic ligament and angulation of the pelvic colon, and the same enlargement, together with the rotation which the uterus undergoes during pregnancy, may lead at the same time to a certain degree of axial rotation of the colon. An accumulation of faeces, together with the external compression exerted by the pregnant uterus, serves to render the chronic obstruction acute. In many instances treatment by purges and enemas suffices to ameliorate the obstruction, which returns in subsequent pregnancies, but in some cases operation is necessary; this should consist simply in draining the caecum, if possible through the opening of the excised appendix. Vautrin relates the history of three personal cases which support the explanation advanced above of the pathogenesis of the intestinal obstruction of pregnancy; a similar explanation has been put forward by Cunéo, Sencert, and Okinczyc.

PATHOLOGY.

157. The Metabolization of the Blood Elements.

H. M. WOODCOCK (*Journ. Royal Army Med. Corps*, June–July, 1922) considers that not only the macrophages, but also many other types of tissue cell are capable of metabolizing blood elements in order to elaborate by the utilization of the formed blood elements (mainly the erythrocytes) various substances, such as secretions or excretions, which are requisite for the welfare of the body as a whole. He uses the term "haemetaboly" for the metabolization of the blood elements, whether it occurs intracellularly or extracellularly; and "haematophagy" for the actual ingestion of the blood cells by the tissue cells. From a study of the formation of colloid in the thyroid gland, as observed in adenoma, the author concludes that the small masses of colloid seen in sections are formed by the metabolization of the red corpuscles, this transformation being effected by means of a ferment secreted by the nucleus of the epithelial cells in immediate relation. The corpuscles are metabolized whilst they are still actually in the minute capillaries, the ferment either passing through the delicate wall, or probably dissolving the wall itself. The haemoglobin is not split up into two separate compounds but metabolized into one uniform material, colloid, which probably contains all the haemoglobin in the form of another complex organic compound. In studying the condition as found in the normal thyroid the author demonstrated that the colloid secretion contains iron, similar to that of the haemoglobin of the red blood corpuscles, whereas the epithelial cells of the thyroid do not appear to contain any iron. As a result of changes in blood pressure the red corpuscles pass by diapedesis either through or between the epithelial cells, into the lumen of the follicle, becoming changed into a substance homogeneous in appearance but not yet showing the finely granular character of the surrounding colloid. By appropriate staining the evolution of this substance into normal colloid may be determined. A similar course of haemetaboly may take place between the acini in the interfollicular zone and not in the lumen. The colloid contained within the lumen of the acinus escapes into the lymph channels probably through the disintegration of the epithelial wall in places where the lining cells become effete and die. In addition to the colloid, formed by the metabolization of the red cells, there is also present in the lumen of the follicle some liquid substance which has been secreted by the epithelial cells themselves, but there is no evidence of the transformation of this secretion into colloid, and such a secretion only takes place into a lumen already containing formed colloid. Thus the conception is false that red blood corpuscles serve only to bring oxygen to the tissues; they are concerned also in the production of vitally important secretions. In studying the melanin pigment of the skin the author has observed the occurrence of unaltered red cor[illegible] in the epithelial cells of the normal skin of the scalp, and puts forward the hypothesis that these red cells are digested by some ferment of nuclear origin with the production of melanin pigment. If tissue cells are capable of assimilating nourishment from the metabolization of other cells, then it is easy to understand how in malignant disease certain individual cells might assimilate such nourishment for their own independent use and inco-ordinated growth and reproduction, thus reverting to the state of single-celled animals, and devour and digest red cells, leucocytes, and other tissue cells.

158. Vaccination against Cholera by the Oral Method.

AN attempt has been made by MASAKI (*Ann. de l'Inst. Pasteur*, May, 1922) to devise an effective method for the immunization of animals against cholera. If the *Vibrio cholerae* be injected in suitable doses intraperitoneally, subcutaneously, or intravenously into a guinea-pig the animal dies a few hours later; bacteriological examination *post mortem* shows in each case an abundance of the organisms in the small and large intestines, while the blood and the peritoneal fluid, as a rule, are sterile. It is clear, then, that, however introduced into the body, the vibrios are excreted into the gut. The problem is to render the cells of the intestinal mucosa insensitive to the action of the cholera toxin. Simple oral ingestion of either dead or living vibrios fails to immunize the animals, nor do any symptoms of illness occur. But if the animal be previously given, while by the mouth the cells are so altered as to become more or less permeable to the cholera toxin secreted by the organisms, and consequently allow a certain amount to enter the blood stream. If the sensitization be carefully controlled and the subsequent dose of living vibrios be likewise regulated strictly it is possible—at any rate in the rabbit—to render the animal refractory to a dose of living organisms injected intravenously. In such a case the blood can be shown to be free from protective antibodies, so that it would appear to be a local cellular immunity of the intestinal epithelium which is responsible for the state of insensitiveness thus engendered.

159. The Oxydase Reaction.

SEVERAL different methods for demonstrating the presence of peroxidasis in the white cells of the blood have been tried—none with entire success. J. SABRAZÈS (*Gaz. hebdom. Sci. Méd. de Bordeaux*, July 9th, 1922, p. 331), who has been working on the subject, has come to regard the following technique as being the most satisfactory. An ordinary blood film—air dried—is covered with a 0.5 per cent. alcoholic solution of benzidine, to which a few drops of hydrogen peroxide are added. After allowing the reagent to act for five to twelve minutes the slide is washed in distilled water, which is then shaken off. The film is finally placed face downwards on a cover-slip flooded with a 0.2 per cent. solution of methylene-blue, reversed, and examined under the microscope in the moist condition. Using this technique, he has paid particular attention to the mononuclear leucocytes. Whether or no the blue oxydase reaction is given seems to depend on the size of the cell. The smaller ones, with nuclei which are oval or only slightly indented, fail to react, while the larger cells with multilobate nuclei usually react in a positive manner. The test, varying as it does considerably in its intensity, is obviously of little use in the classification of these cells. In cases of chronic myelaemia the neutrophile and eosinophile myelocytes give a positive reaction, just as do the polymorphonuclear and eosinophile leucocytes; on the other hand, the basophile myelocytes and the myeloblasts are negative in their response.

160. A New Typhus Organism.

BELAI (*Wien. klin. Woch.*, April 20th, 1922) gives an account of an organism described by Schestopal under the name of "*Spirochaeta emitiae* Schestopal," which is found in the blood of the roseolae or petechiae of typhus patients. It is present in all stages of the disease, but is most likely to be met with in roseolae two or three days old. The organism is a spirochaete varying in length from a quarter to five times the diameter of a red corpuscle. It is thinner than a red corpuscle, and is about the size of *Spirochaeta pallida*, but has more numerous and smaller spirals. Almost all the spirochaetes in the field are attached to red corpuscles. They show active movements which last for about thirty-six hours after the blood has been taken.

161. Relationship between the Leucocytes of Venous and Capillary Blood.

THE question asked by MIRONESCO (*C. R. Soc. Biologie*, June 3rd, 1922) is: What is the meaning of a leucocytosis? Is there an actual new formation of white cells in the haematopoietic organs of the body, or is there merely a redistribution of them in the blood? In answer to this he quotes cases in which the number of leucocytes in the capillary blood was considerably in excess of that found in the venous blood removed from the basilic vein, and other cases in which the inverse relationship was established. Similarly in the rabbit distinct differences have been noticed in the leucocyte count taken from the capillary blood, from the inferior vena cava, and from the heart. Further, it is known that simple changes in posture may bring about an alteration in the blood picture of the patient. From all these facts he concludes that in a leucocytosis it is not a new formation of cells, but a redistribution of the cells already in existence, which is involved.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

162. Gonorrhoeal Endocarditis.

G. LION and M. LÉVY-BRUHL (*Arch. Mal. du Coeur, des Vaisseaux et du Sang*, May, 1922, p. 289) give brief notes of five fatal cases of gonorrhoeal endocarditis recorded by French and American authors, four patients being young men and one a little girl aged nearly 2 years. In addition to these, 58 cases have been collected by Sagot, who found endocarditis only on the left side of the heart in 48 cases. The aortic orifice only was attacked in 27 instances, both aortic and mitral lesions were found in 8 cases, while in 13 others the mitral valve only was affected. In 6 cases lesions were on the right side of the heart, while in 4 others both sides of the heart were affected. Only 26 per cent. of the patients were females. They now record the case of a woman, aged 29, who had a healthy child aged 8, and no subsequent pregnancy. She was admitted to hospital on October 29th, 1920, having been confined to bed since the onset of generalized rheumatism two months previously. After treatment by sodium salicylate, swelling and pain disappeared from all joints except the left shoulder. Fever, however, persisted, the temperature rising every evening, with shivering followed by profuse sweats. She was emaciated, weak, and anaemic, with a generalized chronic dermatitis, especially over the knees, and scanty mucous sputum with a few scattered bronchitic rales heard at the back. The patient complained of occasional palpitation, the heart was dilated, the apex-beat being in the fifth interspace outside the nipple line. Pulse 96, regular. In the "aortic" region a soft blowing diastolic bruit with maximum intensity at the base of the xiphoid was heard; here there was also a faint systolic bruit, and a haemic murmur over the jugulars. Nothing abnormal was found in the abdomen except that the spleen was just palpable. She had no appetite and took no food but a little milk. The stools and urine were normal. The symptoms persisted, vomiting commenced three days after admission, and she died on the fifth day. At the autopsy no signs of disease were found in either abdominal or genital organs. The heart showed a large vegetation on the posterior aortic valve, but no other valvular disease. Blood cultures on ordinary bouillon made on admission and two days afterwards were negative, but serum obtained on the day after admission produced marked agglutination in a typical laboratory culture of gonococci. The technique (Maurice Nicolle) is minutely described. Under the microscope the pericardial fluid, heart blood, and fragments of the vegetation removed aseptically at the autopsy all showed very numerous Gram-negative diplococci morphologically identical with gonococci; these were also found on section in scattered groups or in large masses in the partially organized granulation tissue of the vegetation from the aortic valve. No other micro-organism was found. Only one fragment of this vegetation yielded a growth on an ordinary medium; this was transferred to ascites agar and resulted in an abundant growth of typical diplococci. The authors consider that the occurrence of gonorrhoeal endocarditis, though rare, can no longer be doubted, and state that the lemon-yellow pericarditic effusion of moderate amount (in which they found numerous gonococci) is pathognomonic, and that the purulent pericarditis described by some authors is exceptional. They discuss the clinical symptoms and bacteriological findings and emphasize the statements of several observers—that blood cultures frequently fail; for this reason the agglutination test is preferred as being more reliable, enabling an earlier diagnosis to be made, when vaccine or serum therapy may arrest the disease before irreparable damage has resulted.

163. Emetine in the Treatment of Bilharzia Disease.

F. G. CAWSTON (*Journ. Trop. Med. and Hygiene*, May 1st, 1922, p. 112) emphasizes the efficacy of intramuscular injection of emetine for bilharziasis, as the result of an experience of over 300 injections of emetine hydrochloride. He states that where the doses are skilfully given and properly regulated this method of treating bilharzia disease is free from undesirable effect and is permanently successful in eradicating the infection; but on account of the slight cardiac depression caused by the large doses required by adults, the emetine treatment should be confined to children and young persons, and the pulse watched carefully throughout. The emetine salt is dissolved in boiling carbolic acid solution (1 per cent.) before injection into a muscle, and the dose of emetine hydrochloride given is from 1 8 to 3 4 grain according to age; injections should not be given more frequently than on alternate days. There is a risk that patients will consider that they have had enough treatment when the macroscopic blood has disappeared from the urine, but microscopic examination of the urine must be employed to judge of the effect of treatment and to decide the regulation of doses. It is also important to test for albumin or other evidences of ipecacuanha poisoning towards the end of treatment. The usual duration of treatment is to give intramuscular injections daily for three days and then three times a week for three weeks. The solution must be prepared within half an hour of each injection.

164. Focal Infections.

GAUDISSART (*Arch. Méd. Belges*, March, 1922) under the above title discusses the researches of Schottmüller, Rosenow, and Billings, and states that they appear to have proved the "transmutability" of *Streptococcus viridans* into a diplococcus of the pneumococcus group. *Streptococcus viridans* was grown upon various media and the growths injected into the blood of experimental animals, producing a pneumococcal infection. Billings states that Forssner made cultures of *Streptococcus haemolyticus* on kidney tissue and in media containing renal extract; these cultures when injected intravenously invariably produced renal lesions, but this "elective affinity" was lost by subcultures on ordinary bouillon, and reappeared on addition of renal extract to the medium. Rosenow repeated his experiments on a larger scale in order to prove that the "streptococcus-pneumococcus" group acquire specific pathogenic affinity in focal infections and also in other organs. A remarkable table of Rosenow's results is given showing that streptococci isolated from a specific organ or tissue show a striking affinity for that organ or tissue—for example, forty strains isolated from cases of appendicitis reproduced that disease in 68 per cent. of cases, while cultures obtained from other sources produced appendicitis in 5 per cent. only of the experimental animals. The author inclines to the theory of selective affinity, rather than to the alternative of a systemic infection in which the streptococci are destroyed elsewhere than in the damaged organ. He enumerates the possible foci of primary infection, emphasizing the dangers of alveolar abscess and of acute or chronic tonsillitis. He quotes Billings as deprecating tonsillectomy during an attack of acute rheumatism, as it does not change the course of the disease, but in chronic cases brilliant results have followed tonsillectomy and dental operations: the latter, and drainage of infected accessory sinuses, have cured or relieved cases of acute nephritis; and Babcock has reported good results in chronic myocarditis after drainage of the bile ducts.

165. Aspirin as a Urinary Disinfectant.

P. GALLOIS (*Bull. Soc. de Thér.*, May 10th, 1922, p. 149) during the last six years has made use of aspirin in cases of enlarged prostate, and has found it to be the best of urinary antiseptics with the exception of *B. coli* auto-vaccines. He was first led to employ the drug by noticing that in a case of enlarged prostate in which aspirin had been given for the relief of sciatica the urine became clear on administration of the drug, but became purulent again when it was discontinued. The doses given were 1½ to 2 grams a day for a week or fortnight. Aspirin was sometimes combined with other drugs such as uroformin or boric acid in doses of 1 gram a day. No cases of intolerance for aspirin were observed.

163. A Peculiar Eruptive Disease in Infancy.

J. H. PARK and J. C. MICHAEL (*Amer. Journ. Dis. Children*, June, 1922, p. 521) record observations upon 21 cases of an unusual eruptive disease occurring in children, aged from 4 months to 2 years, 10 being boys and 11 girls. Abrupt in onset, with fretfulness and fever, reaching as high as 105°, for from three to five days, when it usually resolved by crisis, with the appearance of discrete macules from 2 to 3 mm. in diameter on the buttocks or sides of the neck. The rash rapidly spread, being most profuse on the trunk and less intense on the extremities, and presenting a morbilliform aspect, with occasionally slightly raised maculo-papules, either entirely discrete or confluent, and reaching its height in twenty-four hours, disappearing the next day without desquamation. No Koplik's spots occurred and no definite cause for the fever could be discovered, and there was no infectivity or recurrence. During the pre-eruptive stage a leukopenia and lymphocytosis occurred. Diagnostically measles was excluded by the absence of contagion, catarrhal symptoms,

Koplik's spots, desquamation, and by defervescence on the appearance of the eruption; while rubella was excluded by the fact that there was no adenitis, no contagion, and that the fever preceded the eruption. The disorder appears to be a definite clinical entity with the uniform occurrence of a moderate leukopenia and lymphocytosis as essential parts of the syndrome.

167. Alcoholic Epilepsy.

V. DEMOLE (*Rev. Méd. de la Suisse Romande*, June, 1922, p. 337) has studied the frequency of alcoholic epilepsy in Switzerland before and after the entry into force of the law of January, 1909, prohibiting the sale of absinthe. Before 1909 30 per cent. of the alcoholics admitted for institution treatment suffered from alcoholic epilepsy, whereas since 1909 only 18 per cent. of the cases admitted showed epileptic crises. The suppression of the sale of absinthe has also lessened the violence of the alcoholic inmates, doctors and attendants being unanimous in declaring that since the abolition of the "*fée verte*" the average delirious patient has been less excited and aggressive. The total admissions for alcoholism have been slightly reduced, but such statistics are hardly comparable from year to year, because of war and post-war conditions. The author states that alcoholic delirium would diminish more and more if the consumption of distilled alcoholic beverages were reduced, since alcoholic epilepsy is very rare in communities which drink only beer and wine. The introduction of the law suppressing absinthe has been responsible for the saving of more than a quarter of a million francs in the expenses required for the restraint of alcoholic patients in Switzerland.

168. Treatment of Tuberculous Meningitis.

COZZOLINO (*La Pediatria*, May 15th, 1922), whilst realizing the futility of the methods hitherto used in the treatment of tuberculous meningitis—if a case of meningitis recovered it used to be said it could not have been tuberculous—offers certain considerations on the decompressive and Bier treatment of this disease. The gravity of tuberculous meningitis is partly due to the selective action of the tuberculous toxin on the cerebral tissues, and is too often merely the last link in a chain of miliary tuberculosis. Reichmann and Rauch report two cures of tuberculous meningitis (associated with tubercle bacilli in the spinal fluid) by means of Bier's treatment (applying an elastic band at the root of the neck). Squarti tried this method in eight cases and all died. If the improvement is due to the cerebral venous stasis, one ought to see similar good results where acute hydrocephalus is present. The author tried the Bier treatment in three clear cases of tuberculous meningitis, but without any good results, nor even any temporary improvement, and indeed caused some additional discomfort. His final verdict is that it is only an addition to the other instruments of torture which have been tried in the past to cure this fatal disease.

SURGERY.

169. Capsular Cataract.

THOMSON (*Brit. Journ. Ophthalmol.*, June, 1922) records notes of seven cases of capsular cataract associated with the deposit of pigment at or around the centre of the capsule, and discusses their etiology. They were noted during the routine examination of 7,500 school children for defective vision. In three the condition was similar in both eyes, the fellow eye in the remaining four being normal. The amount of pigment varied, and in six of the cases there were in addition very superficial small white or bluish-white capsular or subcapsular opacities, and in two of the cases the iris was adherent to some part of the central pigmented region of the capsule. In none of them were there reasons to suspect that there had been a post-natal iritis. The opacities were always outside the central pigmented area, though apparently related to it, and in shape they were rounded or radial, the round spots giving the appearance of being an integral part of the capsule, while the radial ones seemed to be subcapsular. Etiologically the condition is regarded as developmental, there being several reasons against the suggestion that it is due to post-natal iritis with pigment left in the lens capsule, or to "quiet" iritis. The theory that the deposits are remains of the tunica vasculosa lentis, whose persistence is due to pre-natal uveal inflammation, is questioned, seeing that iritis due to hereditary syphilis is rare in infants, and its exclusion presupposes intrauterine inflammation due to a toxaemia. The incidence of something under 1 in 1,000 suggests the advisability of further investigations, since it is important to be able to distinguish cases of iritis, or its sequelae, from congenital anomalies in the development of the iris and anterior lens capsule.

170. Blood Transfusion and the Treatment of Anaemia.

L. LICHTWITZ (*Klinische Wochenschrift*, May 20th, 1922) commends Oehlecker's method of blood transfusion as worthy of more general application in surgical clinics. He discusses the serological tests and other precautions to be observed before the operation and the application of transfusion to the treatment of pernicious anaemia. Lichtwitz considers that transfusion effects a more rapid and lasting improvement in these cases than any other method of treatment, particularly before the onset of chronic sepsis of enterogenous origin, giving rise to endocarditis lenta and other complications. He suggests that an "etiological moment" governs the condition and that an improvement in the general blood condition of the patient may prevent the advent of sepsis. He considers that the transfusion of a large quantity of blood (500 to 1,000 c.cm.) acts chiefly by "substitution therapy," but that a greater and more prolonged improvement results from the stimulation of the blood-producing organs. He gives details of several cases which show that the transfusion of small quantities of blood (10 to 40 c.cm.) have a remarkable effect on the recipients' blood state in a few hours. In one case of aplastic anaemia, two hours after the transfusion of 20 c.cm. of blood, the erythrocyte count rose from 0.96 to 1.7 million; at that time no normoblasts were seen. After four hours a distinct leucocytosis was observed, and after a second transfusion (at the end of fourteen days) of 40 c.cm. of blood the erythrocyte count rose from 1.5 to 2.46 million. In another case, previously treated on the usual lines without improvement, 150 c.cm. of blood were transfused. A preliminary differential blood count showed 200 leucocytes, 4 normoblasts, 9 megaloblasts, and 4 "stippled" cells. An hour after transfusion the numbers were 89 leucocytes, 4 normoblasts, 18 "stippled" cells. Since obtaining these results the author has made a practice of transfusing 150 c.cm. as routine treatment, although in some cases, after transfusion of 80 or 100 c.cm., there was a marked improvement in appetite and general condition. He recommends transfusion in all cases of severe carbon monoxide poisoning, and in severe secondary anaemias the results of transfusion of blood have been so much more satisfactory than that of normal NaCl solution that they outweigh the possible danger of thrombosis after blood transfusion, which he considers is less likely to occur after the immediate improvement in the nutrition of the arterial wall following transfusion.

171. Cause and Relief of Acute Intestinal Obstruction.

CHARLES H. MAYO (*Journ. Amer. Med. Assoc.*, July 15th, 1922, p. 194) states that the high mortality attending ileus is lowered by early diagnosis, judgement, and prompt action when the condition is relievable. Obstruction is due to the various types of hernia. True intra-abdominal ileus is due to bands, volvulus, and openings in the mesentery or in the diaphragm, which are serious because of the difficulties of diagnosis. Obstruction just below the duodenum causes alkalosis, with tetany; obstruction lower in the tract is manifested by vomiting of foul fluids. Prompt surgical relief of high obstruction is discussed. Colonic obstructions are most commonly due to malignancy, diverticulitis, or volvulus. Time should not be lost in instituting efforts to make an exact diagnosis of the cause, but surgical measures should be instituted at the earliest moment. The dangers of an unnecessary exploration are trivial compared with the grave risks of delay. Operations for relief of obstruction should be limited to a life-saving procedure, such as colostomy or enterostomy. The nature of the obstruction should be determined at operation, and future procedures should be based on the cause of obstruction. There is difficulty in differentiating diverticulitis from malignancy. Post-operative obstruction too often suffers from delay. The stomach tube is a valuable instrument in cases of obstruction. Early exploration should be made in post-operative obstruction to free adhesions. If exploration is delayed, ileostomy or jejunostomy is indicated. Local anaesthesia or combined anaesthesia is, in the author's opinion, the method of choice.

172. Therapeutic Diaphragmatic Paralysis.

LANGE (*Deut. Zeit. f. Chir.*, Bd. 169, Hefte 3 und 4, 1922) has collected 43 cases from the literature as well as 40 cases from Sauerbruck's clinic at Munich, in which section of the phrenic nerve was performed for therapeutical purposes. Of the 40 cases, 35 were operated on for pulmonary tuberculosis, 1 for empyema and pulmonary tuberculosis, 1 for cardiospasm, 1 for mediastinal cysts, and 2 for purposes of operative technique. Pain in the shoulder was observed in cases of typical resection in 8 instances, and pain in the abdomen in 5. In 20 cases no pain was noted. Adhesions of the diaphragm before the operation were present in 5, and fixation of the diaphragm in 6. In 24 cases the diaphragm was found to be movable. In the 5 cases in which adhesions were

present the expectoration was unaffected. In 3 of the 6 cases in which there was fixation of the diaphragm the expectoration was relieved by the operation, in 2 it was not affected, and in 1 no note was made. In cases in which the diaphragm was movable expectoration was relieved in 20, and in no instance was it aggravated, and in 4 no note was made. Total paralysis of the diaphragm was present in 17 cases. Lange's conclusions are as follows: The expectations entertained as to the success of the operation have been fulfilled only to a moderate extent, although the indications for it have been considerably increased. The best results have been obtained in definite forms of tetanus, in constant clonic and tonic contractions of the diaphragm, and in those forms of pain in the shoulder which are due to the fibres of the phrenic nerve. According to Sauerbruck, phrenicotomy may be of great value in intrathoracic operations. In other diseases, such as pulmonary tuberculosis, bronchiectasis, empyema, and scoliosis, it does not possess much therapeutic value by itself, but only in combination with other measures. The symptoms resulting from unilateral and probably also from bilateral artificial paralysis of the diaphragm are slight compared with those of diaphragmatic paralysis produced by disease. Expectoration is relieved and bronchitis and pneumonia do not result. There is no appreciable effect on respiration and no circulatory disturbance. The operation, which is simple in its technique, may be regarded as harmless in its consequences.

173. Anomalous Abdominal Membranes.

TAYLOR (*Annals of Surgery*, May, 1922) finds that anomalous membranes are present in from 15 to 20 per cent. of newborn infants. They occur at the hepato-duodenal region, duodenojejunal angle, and about the caecum and ascending colon. They result from atypical peritoneal fusion in foetal life, and may become modified later owing to traction and inflammation. These membranes cause mechanical disturbances resulting in partial and often continuous obstruction, and as a result dilatation proximal to the obstruction. Symptoms may appear at any period of life, and not, as hitherto thought, only after 20 years of age; these develop when the obstruction becomes greater than the peristaltic efficiency can overcome. The symptoms consist of digestive disturbances, general nutritional disturbances, and neurasthenia. The appendix becomes tender owing to reflex action, and when removed there is no improvement. There may be dilatation of the stomach and caecum and tender spots over these areas. The most important element of evidence is found in the barium gastro-intestinal series; this may show a dilated and ptosed stomach or a dependent and dilated duodenum. With a pericolic membrane the hepatic flexure shows high fixation with dilated caecum and ascending colon; the ileo-caecal valve is often incompetent and the appendix retains the barium for long periods. The treatment should be by medical means in the first place; when in spite of this the symptoms tend to become more continuous and severe, relief by surgery is indicated. The best incision is a transverse right rectus incision, as this gives the best exposure. Subsequently massage and a careful diet are given, and the results on the whole are satisfactory.

174. The Optic Nerve and Accessory Sinuses.

VAN DER HOEVE (*Arch. Ophthalmol.*, May, 1922), in considering the relation of optic nerve disease and affections of the accessory sinuses, points out that the optic nerve involvement is much more frequent in diseases of the posterior than of the anterior sinuses, and that the origin of a retrobulbar neuritis cannot be determined by the signs in the eye. The diagnosis of sinus disease, especially of a posterior sinus, is often impossible, even with the aid of *x* rays, so that the only satisfactory method of excluding suppuration of those sinuses—the sphenoidal and posterior ethmoidal cells most likely to be causing serious orbito-ocular trouble—when *x*-ray examination is negative, is to open them up, since the absence of sinus affection cannot be definitely diagnosed otherwise. Sinus disease can affect the optic nerve by direct inflammatory extension, by the pressure of the walls of a dilated sinus, or by toxins, oedema, and congestion, the optic nerve changes being reparable or irreparable according to the degree with which the nerve has become affected by these agencies. When there is a sinus affection accompanying the optic nerve affection, many cases can be cured with a cocaine-adrenaline spray without operative interference, the difficulty as to the course to be adopted arising in those cases of optic nerve disease presenting no signs of sinus disease. Further statistics are required as to the results of operation as they affect restoration of sight and damage to the nose, as against the results in those patients for whom no sinus operation is performed, in order to solve the question as to whether we should operate on the nasal sinuses in optic nerve disease of unknown origin.

OBSTETRICS AND GYNAECOLOGY.

175. Necrobiosis of Myomata.

P. BÉGOUIN (*Paris Médical*, June 17th, 1922, p. 503) distinguishes between ordinary microbial gangrene of polypoid or submucous uterine myomata, and aseptic gangrene, or necrobiosis, of interstitial or subperitoneal myomata. Anatomically the necrobiotic myoma frequently shows a characteristic wine-red colour, but may be green or brown; it is much softened, particularly towards the centre, which may show cystic cavities. Microscopically various degrees of necrosis are shown in different tumours; the surrounding vessels and capillaries are dilated and engorged, and the adjacent tissue shows interstitial haemorrhages and sometimes venous thromboses. Necrobiotic tissue is completely aseptic. In explanation of the origin of the ischaemia which admittedly provokes the necrobiotic change Bégouin compares the condition with aseptic gangrene of the extremities or with focal cerebral softening, and points out that although all myomata possess a peripheral as well as a central system of arterial supply, in a large number the two systems are devoid of any anastomosis, so that arteritis with thrombosis, embolus, or even simple compression of the terminal artery supplying the centre of a myoma will suffice to induce necrobiosis. Clinically necrobiosis is frequently characterized by the following syndrome: pain, sudden increase of volume of the tumour accompanying sudden softening of its consistency, and alteration of the patient's general condition. The pain may be very acute, slight, or even absent, but tenderness of the altered tumour is constant; the alteration of the general condition is manifested as a rule by pyrexia, and often by a somewhat characteristic yellowish coloration of the face. Prognosis is good, largely because acute onset of necrobiosis usually leads to speedy operation, which is not rendered more difficult nor more precarious by reason of the alteration of the tumour. Delay in operating may lead to grave deterioration of the patient's condition as a consequence of intoxication, or more rarely to infection and suppuration. Coexistence of pregnancy, during which necrobiosis is relatively more frequent, does not contraindicate operation. As a rule hysterectomy should be done, but myomectomy may be possible in early instances of degeneration of subperitoneal myomata. During pregnancy if the foetus is viable hysterectomy is preceded by a Caesarean operation.

176. Menorrhagia due to Haemophilia.

MEUMANN (*Zentralbl. f. Gynäk.*, April 15th, 1922) records the case of a 2-para, aged 29, admitted to hospital on account of profound anaemia and intractable menorrhagia of twelve years' standing. Evidence that the condition was due to haemophilia was found in the family history, in the personal history of repeated epistaxis, frequent spontaneous subcutaneous ecchymoses, and alarming bleeding during each labour. Examination showed purpuric patches and a small adnexal tumour, diagnosed as a haematoma of the corpus luteum. The uterine haemorrhage, which did not respond to treatment by injections of pituitary extract or horse serum, was brought to a standstill by dilating the cervix by means of a tent and applying a solution of ferric chloride to the endometrium; the menorrhagia was subsequently controlled by calcium therapy. Haemophilia as a cause of menorrhagia is said to be exceptional, in that in most families of bleeders the morbid subjects are males and the females act as transmitters. In the family of Meumann's patient the male members were healthy but transmitted the haemophilic tendency to certain female descendants, and the patient's brother suffered from red-green amblyopia.

177. The End-results of Abdominal Caesarean Section.

IN 117 abdominal Caesarean sections performed at the Charity Hospital of New Orleans (excluding the Porro cases), there were twelve deaths from peritonitis and two from sepsis; all of these patients had had vaginal examinations or attempts at delivery before operation. The majority of all seventy-six patients recovering had fever, the puerperium being absolutely afebrile in only seventeen. Of sixty Charity Hospital patients in whom subsequent pregnancy was possible, five have not become pregnant since, four have passed through normal labours, two were delivered by forceps after long second stages (one by the Scanzoni method for unrotated right occipito-posterior position), one has had a second Caesarean operation, two have miscarried, one returned with a ruptured scar, one died eighteen months after operation when six months pregnant, and forty-three could not be located. Of twenty-seven private patients (on whom thirty-three sections were performed), two were delivered normally, four had a second Caesarean section, one had three Caesarean sections, four were patients cared for in 1921 (in whom subsequent pregnancy is as yet hardly possible), one sustained a

ruptured scar at subsequent labour, five died (one after her second Caesarean section), and ten in whom subsequent pregnancy was possible have not been traced. Six cases of ruptured cicatrix are reviewed by E. L. KING (*Journ. Amer. Med. Assoc.*, July 8th, 1922). He believes that the indications for Caesarean section should be restricted rather than broadened. In obstetric teaching, more and more stress should be laid on the importance of careful pelvimetry and of the early detection and proper treatment of toxaemia. Craniotomy or embryotomy on the dead baby may be resorted to more frequently, pubiotomy may occasionally be employed, and the use of the Porro operation may be advantageously extended in infected cases. The low extraperitoneal operation, through the lower uterine segment, or partly through this structure and partly through the upper portion of the cervix, bids fair to become the operation of choice in the great majority of cases in which there is infection, especially if its claim to a lower percentage of subsequent rupture of the scar is borne out by experience.

178 Pathogenesis of Myomata.

ROSNER (*Gynécol. et Obstét.*, 1922, v, 5) in previously published studies found that of 450 gynaecological patients 39 per cent. showed signs of constitutional subnormal development of the genital organs. More recently he has found that 22 per cent. only of myomatous patients come within this category, so that constitutional genital hypoplasia does not appear to favour the myomatous change. The reverse of this has been claimed to be true on the grounds that myomata are frequent among nulliparae and that sterility is most common in connexion with hypoplasia of the reproductive organs. Examining a series of 100 nulliparous patients, who had menstruated during twenty years, Rosner found that no fewer than 49 were myomatous; of the patients with genital hypoplasia 24 per cent. had myomata, but of others 78 per cent. were myomatous, and in this group the mean size of the tumours was considerably greater. On the grounds of these observations the writer concludes that (1) about one-half of women, who in spite of having menstruated for twenty years have had no children, uterine myomata are present; (2) if such women be classified according as the genital organs show normal or hypoplastic conditions, the former class show more frequently the presence of uterine myomata, and these as a rule are of larger size than in the latter class.

PATHOLOGY.

179. Fatal Anaphylaxis in Man.

H. R. DEAN (*Journ. of Pathol. and Bact.*, July, 1922, p. 305) gives an account of the histology of a case of anaphylactic shock occurring in man. The patient was a soldier, aged 22, who had been wounded in the back and shoulder. He had previously received three doses of antitetanus serum without provoking any symptoms. The fourth dose, of 500 units, was given after an interval of twelve days, and almost immediately he called out that he felt very ill, and became cyanosed and began to vomit. In spite of injection of stimulants, massage, and artificial respiration, he died seventy minutes after the injection. The man had been apparently healthy until the day of his death, and all his wounds had completely healed. Death seemed to result from the fall of blood pressure and cardiac failure. It was found at the autopsy that the liver had a deep purplish colour and appeared to contain an excess of blood. Sections showed an extreme dilatation and engorgement of the sinusoids, and in spite of the short time which had elapsed since the injection many of the liver cells appeared to be swollen and empty, and in some the nucleus had disappeared. The lungs showed an irregular dilatation of the capillaries, and in some places the alveoli were compressed and in others dilated. There was enlargement of the lymphatic glands, which were more vascular than normal, and some showed an excess of fibrous tissue, but there was no trace of thymus tissue. The condition of the liver was very much the same as that found in acute anaphylactic death in dogs, so that it seems probable that in man also the primary and essential change is in the liver, and that the fall in blood pressure is the result of a dilatation of the capillaries of the liver. The capillaries of the liver contained enormous numbers of leucocytes, 12 per cent. of which were polymorphonuclear eosinophils.

130 Milch Cows and Tuberculin.

A. CALMETTE (*Rev. d'Hyg.*, May, 1922, p. 401) discusses the question whether milch cows which give a positive reaction to tuberculin should be destroyed. He states that in 1920 the total bovine population in France amounted to 12,757,720, of which it was estimated that no less than two million gave a positive reaction to tuberculin. Similar statistics were published in Great Britain by Sheridan Delépine, who showed that the proportion of animals giving a positive reaction increased with age, the percentage under 1 year being 3.4, from 1 to 2 years 13.2, from 2 to 3 years 24.1, from 3 to 5 years 23.5, and from 5 to 9 years 48.9. A similar increase in the number of cases giving a positive reaction to tuberculin is met with in the human subject, but in neither instance does a positive reaction indicate the presence of slow tuberculous lesion or the liability to spread the disease. It merely shows the existence of a focus of infection which in the great majority of cases remains latent throughout life and often clears up altogether. Calmette comes to the conclusion that it is unjustifiable to forbid the sale of cows which have no obvious clinical lesion, whose milk does not contain tubercle bacilli, and whose general condition is satisfactory, on the ground that they give a positive reaction to tuberculin. If such a practice were carried out the production of milk in France would be reduced by one-third, with deplorable results for the feeding of children.

181. Researches on the Value of Antibodies in Tuberculosis.

THE antibodies studied by ARMAND-DELILLE, HILLEMAND, and LESTOCQUOY (*Bull. Soc. Méd. des Hôpitaux de Paris*, June 8th, 1922) were those concerned in the fixation of complement; they were vitiated by the method of increasing doses of alexin, using a methylic antigen. The reaction was performed on 177 tuberculous patients in various stages of the disease; of these no fewer than 85 per cent. gave a positive reaction—a figure which is in fairly close accord with those given by other workers. It was further found that the reaction was positive in 5 out of 11 perfectly healthy individuals, and in 5 out of 8 patients who were suffering from non-tuberculous affections. From a diagnostic standpoint it would appear that the complement fixation test is of little or no value. Can it be used for prognosis? To determine this point the authors made repeated examinations on the same patients; taking very severe cases, it was found that in some there was an increase, in some a decrease, and in others merely an irregularity in the titre of the antibodies. Similarly with improved and with stationary cases. No correlation could be established, in fact, between the progress of the patient and the antibody titre of his serum. They conclude by issuing a caution against the rash interpretation of the reaction—a warning which was amply endorsed in the discussion which followed on the reading of their paper.

182. Blood Cholesterol in Syphilis.

A. R. MCFARLAND (*Arch. of Derm. and Syph.*, July, 1922, p. 39) was led to study the quantity of cholesterol in the serum of syphilitics by a consideration of the fact that alcoholic extracts *plus* cholesterol have been proved to be the best antigens for the Wassermann reaction, and also because the *Spirochaeta pallida* readily attacks tissues rich in cholesterol, such as the central nervous system and liver. It has been shown that in other diseases, such as pneumonia and empyema, the blood cholesterol is low during the period of invasion, but increases as convalescence takes place; in many other diseases the cholesterol content of the blood appears to be an unassociated factor. The results derived from studying the blood cholesterol of a large number of patients manifesting a positive Wassermann reaction showed that blood cholesterol values in syphilitic patients show a normal cholesterin content or one even below the average. A possible explanation for this may be that cholesterol as an agent of defence is low in chronic disease like syphilis, just as leucocytosis is low in chronic infections, but it is not claimed that from a practical standpoint such cholesterol determinations have much value. Cases of syphilis of the nervous system, however, showed a large proportion of high cholesterol estimations, and this apparent increase in cerebral syphilis was the only recognizable relation between the clinical type of syphilis and blood cholesterol values.

183. Effect of Removal of the Liver on the Blood Sugar.

F. C. MANN and T. B. MAGATH (*Arch. Intern. Med.*, No. 1, vol. 30, July 15th, 1922 [U.S.A.], p. 73) record the results of their experiments on dogs, with respect to the effect of removal of the liver on the blood sugar. These results are carefully considered, and the authors draw the following conclusions: There is a marked and progressive decrease in the blood sugar following total removal of the liver. The glycogen content of the muscles also decreases. Coincident with this decrease in blood sugar characteristic symptoms develop and progress until death. Removal of the liver also produces a marked decrease in blood sugar in other animals (dog, goose, turtle, and fish).

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

184. The Limitations of Intravenous Medication.

THE practice of intravenous medication has come to the front to an ever-increasing extent; and, though by no means a new procedure, its application to the treatment of disease has assumed such proportions that C. VOEGTLIN (*Journ. Amer. Med. Assoc.*, August 5th, 1922, p. 421) regards it as both timely and important to consider the real merits and limitations of this therapeutic method. The intravenous use of salvarsan and its substitutes has done more than any other single factor to popularize intravenous treatment. The demonstration of the relative harmlessness of intravenous salvarsan injections has prompted physicians to apply this method within recent years to other drugs and to other diseases, principally on the assumption that intravenous injection is of necessity followed by a more powerful therapeutic effect than is administration of the drug through other channels. The fact was forgotten that the intravenous administration of salvarsan was simply an attempt to avoid pain and local reaction, and that it was not introduced in order to increase the therapeutic effect. With regard to the efficacy of intravenous quinine injections, clinical observers agree that the action in extreme cases is more prompt than when the drug is given by mouth, and the patient's life may thus be saved. However, as soon as the critical condition has passed quinine should be given by mouth for the reason that the available evidence shows that malaria is not more readily cured by intravenous medication; and this is supported by some recent findings which indicate that about 90 per cent. of the quinine injected intravenously in man disappears from the blood within one minute, and is stored in the tissues. Voegtlin states that what has been said concerning the superior value of intravenous medication with regard to the therapeutic effect is sufficient to raise a question as to the unscientific claims made by certain commercial interests who advertise a great variety of drugs put up in solution for intravenous use. Many of these products are sold under misleading claims regarding their alleged safety and efficiency. It appears that a considerable amount of evidence has accumulated in recent years which indicates that the nicely adjusted equilibriums of the blood and those of the easily accessible tissues may be temporarily upset by intravenous medication; and this disturbance may give rise to undesirable symptoms and even cause death. In many cases untoward reactions can be avoided by introducing the drug solution at a slow rate, which permits the protective mechanism of the blood and tissues to operate efficiently; whereas, if the injection rate is too fast, this mechanism breaks down, and symptoms make their appearance as visible results of the disturbance of the chemical or physical equilibrium of the blood and tissues. Voegtlin suggests that we should strive to simplify the technique of the administration of drugs wherever possible, in order to avoid the necessity of the injection of the medicament directly into the circulation. The subcutaneous injection of morphine and similar drugs is an exceedingly simple procedure, which very often is left to the attending nurse. Would it not be a great step forward if such drugs as salvarsan or its substitutes could be given subcutaneously? The author urges that every effort should be made to render the administration of such drugs as simple and safe as possible, without, however, sacrificing their therapeutic efficiency. Intravenous medication will, he believes, never serve this purpose, and will always have a more or less restricted field of usefulness.

185. Syphilis and Mental Deficiency.

KEY and PIJPER (*South African Med. Record*, April 22nd, 1922, p. 142) report the results of their investigations into the part played by syphilis in the causation of mental deficiency in 217 cases. The diagnosis of syphilis was based solely upon the Wassermann reaction, and, although looked for in each case, the stigmata of hereditary syphilis were very seldom present. The degree of mental deficiency was based upon intelligence tests, the Stanford revision of the Binet-Simon scale being used, giving the mental age of an adult idiot as under 3, of an adult imbecile as between 3 and 7, and of an adult feeble-minded as between 7 and 11 years, border-line cases being excluded. The highest degree of positive Wassermann results occurred in the lowest degree of amentia—namely, idiocy—and of the 217 serums examined 120 (55.2 per cent.) were positive. To a certain extent the incidence of the test decreases as age advances, and the same applies to its intensity after the age of 25. There does not appear to be any symptom, or group of symptoms, common to those giving a positive reaction, and it is doubtful if the syphilitic virus is the sole agent responsible for the amentia in all the cases, some other predisposing cause probably being present in most of them, syphilis, though a sufficient factor in itself, often exerting a deciding influence where morbid heredity or other unfavourable conditions are present. Could the family histories have been thoroughly investigated it is highly probable that a fairly large proportion of them would have shown a neuropathic inheritance, and, if ever such investigations can be systematically undertaken, the institution of antisyphilitic treatment in parents, and their children from birth, would exercise a decided check upon the growth of the mentally deficient population in South Africa.

186. Aspirin in Asthma.

V. RUBOW (*Ugeskrift for Laeger*, May 25th, 1922, p. 586) has found that in many cases aspirin is most effective in preventing attacks of asthma at night. But in four out of 70 cases aspirin precipitated violent attacks of asthma, probably on account of idiosyncrasy to the drug. A somewhat similar effect is sometimes obtained with atropine, and in the case of aspirin, which tends to dry up the mucous membrane in cases of protracted or acute rhinitis, it may be that its action on asthma depends on its reduction of the bronchial secretion. In the exceptional cases in which aspirin provokes asthma instead of aborting it the explanation may be that, by drying up the secretions too effectively, the patient is unable to clear the bronchial tubes of fluid already secreted. S. BANG (Ibid.) also stresses the duplicity of the action of aspirin in asthma. Sometimes the drug has an almost specific curative effect, and even when the disease has lasted for years and has become severe a rapid and complete cure may be effected by the consistent exhibition of aspirin. One of his patients was a man treated in hospital for asthma and emphysema. For several weeks he had suffered from numerous and severe attacks every day. Immediately after the administration of 1 gram of aspirin he was seized with an attack of unprecedented severity, with collapse, great cyanosis, and tachycardia. He rallied after stimulants were given, and for the next two weeks he was almost free from attacks. Then, without his knowledge, he was given 5 cg. of aspirin. Half an hour later a severe attack, with dyspnoea and cyanosis, set in. J. BUCHHOLTZ (Ibid.) notes that phenacetin, as well as aspirin, may be very dangerous in asthma, and he records a case in which the administration of 1 gram of phenacetin was followed in a couple of hours by most severe asthma and complete cessation of respiration. Artificial respiration had to be continued for about an hour.

187. Herpes and Facial Paralysis.

G. WORMS and V. DE LAVERGNE (*Paris Médical*, June 10th, 1922, p. 431) consider that the researches of numerous French, American, and Belgian observers have proved that herpes zoster is due to an infective agent, which, when it attacks the geniculate ganglion, produces facial paralysis at the same time that a circumscribed vesicular cutaneo-mucous eruption appears in certain definite regions. They are of opinion that as the Gasserian ganglion is homologous to the posterior root ganglion of a spinal nerve, so the geniculate ganglion is that of the sensory branch of the facial nerve (nerve of Wrisberg). They describe the distribution of the sensory branch (1) (through the chorda tympani) to the anterior two-thirds of the tongue; (2) to the internal and middle ear (petrosal nerves); (3) to a portion of the tonsillar region; and (4) to the tympanic membrane, the external auditory meatus, and portions of the concha. They state that when the infective agent attacks the geniculate ganglion pain is felt in all these regions, followed by the appearance of small vesicles in the external meatus, the inner portion of the concha, anterior two-thirds of the tongue, and the tonsillar region; this eruption may be associated with deafness, tinnitus, and vertigo, sometimes with an attack of auditory (Ménière's) vertigo, and finally with total or partial facial paralysis. Souques has termed this association of symptoms "syndrome géniculé"; the authors prefer to add "complet"; they consider that the facial paralysis is due to the compression of the motor fibres by the swelling of the ganglion in the bony canal. They give details of four cases of the disease in young soldiers and of one in a boy of 15. While they are not prepared to say that all cases of facial paralysis diagnosed as "a frigore" are due to this cause, they consider that herpetic infection is the origin of a certain number of cases, and that these may be recognized by the appearance of vesicles on the walls of the external meatus and on the tongue and fauces; these will

disappear quickly or will ulcerate owing to a secondary infection; and they advise a minute examination of these regions, as the pain and fever may seem to indicate an acute otitis media complicated by facial paralysis. In the absence of definite herpetic vesicles in the regions indicated the differential diagnosis may be made after lumbar puncture and examination of the cerebro-spinal fluid, as Brissaud and Sicard have shown that, in the course of herpes zoster, the cerebro-spinal fluid often shows lymphocytosis, with an increased amount of albumin and of sugar.

188. The Treatment of Tabes Dorsalis.

R. HENNEBERG (*Klinische Wochenschrift*, July 8th, 1922, p. 1415) gives a careful critical review of the present treatment of tabes dorsalis. It cannot be well condensed into a brief abstract, but several of his conclusions are of practical importance. The syphilitic origin of tabes can no longer be doubted, but it cannot be cured. The spirochaetes produce their injurious effects on the posterior nerve roots. By neuritic and perineuritic changes (at Nageotte's points) the nutrition of the root fibres is affected. The results of the syphilitic inflammatory processes at these points are cicatricial connective tissue changes, which can no longer be influenced by any antisyphilitic treatment and are as injurious as the syphilitic inflammation itself. Hence the unsatisfactory results of antisyphilitic treatment. But many consider that mercurial treatment is of service in early tabes and is indicated especially as an introduction to salvarsan treatment. Mercurial inunctions may be employed, or injections of mercurial or arsenical and mercurial preparations (embarin or novasurol). The old salvarsan failed; intradural injections of salvarsan are not to be recommended. The author agrees with those who consider that a repeated mild combined mercury and salvarsan treatment is indicated. He has treated a large number of cases of early tabes with neo-salvarsan and embarin, or mercurial inunctions. In no case had the disease a definite progressive unfavourable course, and improvement occurred not infrequently as regards certain symptoms. For the pains of tabes combinations of narcotics and antineuralgic drugs are often of service, such as pyramidon 0.3 gram and veronal 0.3 gram, or phenacetin 0.5 gram and luminol 0.1 gram. Most patients find by experience one drug which is of most service for the relief of pains, and often that drug is aspirin, in rather large doses. The compensatory exercise treatment is of undoubted service. For the perforating ulcers, besides hot-water treatment and hot-air treatment, recently *x*-ray treatment has been recommended. Overstrain (especially affecting the legs) should be avoided. Syphilitic patients cannot be prevented with certainty from developing tabes, even by careful antisyphilitic treatment. Tabes and general paralysis can only be prevented with certainty by the prevention of syphilis.

SURGERY.

189. The Urethroscope in the Treatment of Gonorrhoea.

C. C. BROWN (*Edin. Med. Journ.*, August, 1922, p. 49) considers that urethroscopic examination is essential in the diagnosis and treatment of gonorrhoea, relapse cases being prevented by the discovery and cure of their underlying cause. In the majority of cases anterior urethroscopy is all that is required, the necessity for examining the posterior urethra only occasionally arising, as in a case of recurrent epididymitis. By affording accuracy in diagnosis the appropriate treatment and its extent are indicated, and the relative values of various forms of therapy can be gauged. Urethroscopy is indicated in chronic urethritis and should not be undertaken until all acute manifestations have subsided. Prior to examination, a multiple glass test of the urine should be made and the instrument should not be used until the urine is clear, though a few "threads" in the first glass only are not contraindications. Other contraindications are a history of frequent acute relapses, active or subacute complications, and anatomical defects, such as a small meatus, for which bougie dilatation or meatotomy may be required. Force must be avoided, the instrument being allowed to glide down the urethra by its own weight, care being taken to prevent its collar injuring the mucosa. Only sufficient light should be used satisfactorily to illuminate the field, since too powerful a light is dazzling. The lustre of the mucosa, the condition of the follicles and lacunae, the presence of infiltrates or new growths, and the degree of elasticity of the walls, as tested by air distension, are among the points to be noted. The procedure should be painless and local anaesthesia unnecessary, but in posterior urethroscopy a little novocain should be instilled into the deep urethra beforehand, and after allowing the instrument to glide down to the bulb its beak is supported against the pubic arch, assisted by a finger in the rectum, and the eyepiece carried downwards until the beak rotates under the pubic arch, when the bladder is entered by sliding the instrument, with the guidance of the finger in the rectum, to the neck of the bladder, after which it is slightly withdrawn. Descriptions of the normal and pathological appearances of acute, subacute, and chronic lesions as seen with the urethroscope are given, together with notes of illustrative cases. The treatment of strictures consists in dilatation with bougies until it is possible to introduce Kollmann's dilator, by which means the stricture can be overdilated until it ceases to recur, thus often effecting a permanent cure when treatment by bougies alone fails.

190. Traumatic Epilepsy.

DELLA TORRE (*Archiv. Ital. di Chirurg.*, May, 1922, p. 349) publishes nine cases of traumatic epilepsy induced by head injuries in the war. In all the cases the onset of the epilepsy was very early. Full details and comments are given for each case. The nine cases were part of the first hundred cases of head injury seen during 1915 and 1916. In six the epilepsy was of the Jacksonian type, and in three generalized. There was no hereditary history of epilepsy in the cases, and none of them had an epileptic fit at the time of the injury. Rapid loss of consciousness was a marked feature of the attacks. Free craniectomy and preservation as far as possible of the meninges were practised. The subsequent history showed that seven were cured absolutely, whilst in two the fits reappeared in two and six months after operation. Of the cured cases one suffered from persistent weakness of the left leg, and another from continual buzzing in the ears.

191. Accidental Wounds of the Bile Ducts.

M. SAVARIAUD (*Bull. et Mém. Soc. Chir. de Paris*, June 20th, 1922, p. 864) reminds us that accidental wounds of the bile ducts in the course of cholecystectomy are far from being rare. He records two cases where the operative procedure was straightforward, without haemorrhage or difficulty. In the first case, on pulling on the gall bladder, the hepatic duct was drawn up and a portion was cut out of the side wall of this duct. In cases of retrograde cholecystectomy wounds of the common bile duct are due to the shortness of the cystic duct, the surgeon mistaking the cystic for the common duct. The chief cause of these injuries is the difficulty of recognizing the junction of these three ducts: this is greater in the presence of adhesions or when a stone lies at the termination of the cystic duct. The best means of avoiding accidental injury of the ducts is by returning to the old method of gradually dividing with scissors from the fundus of the gall bladder to the junction where one can see the opening into the common duct. When the surgeon perceives his mistake he should be able to repair it forthwith. In case of a lateral loss of substance he has the choice between suture or healing by second intention over a tube: in case of complete division either end-to-end suture or implantation to the stomach or duodenum. In cases where a fistula has formed the upper end of the duct should be implanted into the stomach or duodenum: searching for the lower end is useless and open to the dangers of haemorrhage or wounds of the duodenum. End-to-end suture is more difficult than implantation into the intestine, and is liable to end in cicatricial stenosis.

192. Surgery of Toxic Goitre.

C. F. NASSAU (*Therapeutic Gazette*, May 15th, 1922, p. 305) points out that surgical mortality is unusually high in cases operated upon in a state of progressive hyperthyroidism, and that in such cases palliative measures should be adopted rather than the radical operation. *X*-ray treatment is of greatest value in adolescent thyroid enlargement, but is useless in cases of colloid or adenomatous goitre. The type of operation depends upon the patient and the stage of the disease, and in very grave cases multiple steps may be necessary by ligation of one vessel, to be followed later by ligation of the second vessel, and then partial, and finally complete, lobectomy. During acute thyroid crises operation must be avoided, the patient being treated by rest, fluids, and careful nursing until weight is gained, with a corresponding subsidence of pulse rate, nervousness, and irritability. Ligation has for its object the testing of the patient's suitability for, or as preparatory to, thyroidectomy, a week usually intervening between ligations. Although the improvement after ligation is often so striking as to give the patient the impression of being cured, lobectomy should always be urged about three months later to minimize the possibility of relapse. In mild cases a wedge-shaped bilateral resection, with complete suture of the capsule, will usually suffice, but in the severe cases only a thin layer of thyroid tissue lining the posterior surface of the capsule should be left, one-sixth of the gland being sufficient to maintain normal function.

193. Prolapse of the Laryngeal Ventricle and Eversion of the Sacculus.

IRWIN MOORE (*Journ. Laryngol. and Otol.*, June, July, and August, 1922, pp. 265, 333, and 381) discusses the so-called prolapse of the laryngeal ventricle and eversion of the sacculus from a study of 85 cases, the total number recorded in the literature. After reference to the confusion and ambiguity to which loose definitions have given rise, prolapse of the ventricle is defined as the protrusion of a portion of the ventricular mucosa as a result of inflammatory oedema or hyperplasia, so that parts of the ventricle normally out of sight are carried inwards with the swelling and come into view of the laryngoscope. By eversion of the ventricle is meant an inward displacement or invagination of its mucosa so that it protrudes into the airway between the ventricular band and the vocal cord, and this condition has not been observed apart from an inflammatory oedema or thickening, or from the concurrent growth of a cyst or tumour. Eversion of the sacculus signifies a turning inside out of the sac and its subsequent displacement into the airway between the ventricular band and the vocal cord; and, although eversion of the ventricle has not been observed apart from an inflammatory oedema, thickening, or growth, it is conceivable that complete eversion of the sacculus might extend and subsequently involve the mucous membrane of the ventricle itself. The mucous membrane in the ventricle presents well-marked corrugations constituting a long fold projecting across it almost to the glottic aperture, and this fold may become hypertrophied sufficiently to give the appearance described as eversion or prolapse of the ventricle. Histologically the so-called prolapse is due to hypertrophied folds of mucous membrane from its wall becoming displaced into the larynx by their own weight, and, from an experimentally produced hyperplasia, the prolapse may arise from oedema accompanying an inflammation. Displacement of the mucous membrane of the ventricle may result from relaxation of the mucosa giving rise to protruding folds, the eversion being due to (*a*) mechanical or non-inflammatory causes—for example, traumatism, voice strain; (*b*) acute inflammatory oedema or hyperplasia—for example, acute catarrh; (*c*) chronic hyperplasia—for instance, chronic catarrh, tuberculosis, syphilis; or to the traction of cysts and tumours. From the recorded cases of so-called prolapse of the ventricle without involvement of the sacculus chronic catarrh and ulceration of the respiratory tract are predominant features, and, beyond the inflammation and ulceration and accompanying coughing to which tuberculosis and syphilis give rise, these diseases do not appear to be otherwise specific causes. The condition occurs in adults, and more frequently in males than females (25 to 5), and is more often unilateral than bilateral (27 to 12), with symptoms of chronic cough, or a severe attack of coughing, in a patient suffering from chronic laryngeal catarrh accompanied by hoarseness, varying from a coarse whisper to complete aphonia, which may be intermittent or persistent. Dyspnoea, inspiratory stridor, and cyanosis, dysphagia, and pain over the larynx are present in many cases. Laryngoscopically a pear-shaped, smooth, or oedematous-looking mucous membrane tumour, distinct from the cords, is seen protruding from the ventricle, varying in size from a mere fold to that of a pigeon's egg. Soft in consistency, it is easily indented with a probe and can be replaced into the ventricle only to protrude again on coughing. Removal is indicated only when the condition causes inconvenience by dyspnoea or stridor, and among the 85 cases recorded urgent symptoms requiring immediate operation only arose twice. Rest, inhalations, cold compresses, astringent sprays, and injections of menthol often suffice, the swelling disappearing when the accompanying laryngitis is cured, and in more chronic cases daily replacement with a bent probe, followed by painting with astringents, has relieved and even cured. In several cases a series of superficial incisions over its contour has successfully reduced the prolapse, and the galvano-cautery has given good results. Removal may be effected endolaryngeally by forceps, snare, or guillotine, or by thyro-fissure with a preliminary tracheotomy. In eversion of the sacculus without eversion of the ventricle, it is probable that chronic inflammatory conditions, by producing relaxation of its supports, predispose to its eversion as the result of negative pressure in coughing, which latter is the main factor in its production. Symptoms may be absent, or there may be sudden loss of voice, and slight dyspnoea if a bilateral swelling causes narrowing of the glottis. Laryngoscopically a tumour is seen in the anterior third of the larynx with the true cords standing clear of the mass, the contour of the ventricular bands is not lost, and its upper border does not merge into the upper surface of the swelling as in eversion of the ventricle. Removal may be necessary if causing inconvenience, and this can be done by forceps or snare, though the best procedure is by ligaturing off the sac at its neck, or by fixation in its normal position with ligatures through a window resection of the thyroid ala.

OBSTETRICS AND GYNAECOLOGY.

194. Foetal Post-maturity.

ACCORDING to J. W. BALLANTYNE and F. J. BROWNE (*Journ. of Obstet. and Gyn. of the British Empire*, Summer, 1922, p. 177), post-maturity of the foetus is a condition which, although not susceptible of diagnosis with certainty from any one anatomical or physiological sign, has a real existence: its presence may be inferred with tolerable confidence from the presence of a group of anatomical characters of the foetus, of which excessive length, excessive weight, the presence of certain ossification centres, and the existence of advanced senile changes in the placenta and umbilical cord are the most significant. From a consideration of 500 autopsies on stillborn infants and cases of early neo-natal deaths it is concluded that excessive weight and length are not in themselves a proof of post-maturity, but that their absence in a given case constitutes prima facie evidence against the occurrence of prolonged pregnancy, unless supporting evidence is forthcoming from the presence of other signs and from a clinical history to which value may be reasonably attached. Head and body measurements have little value; absence of lanugo and vernix caseosa, the length of the nails and the abundance of the scalp hair, the presence of desquamation, the absence of the red colour of the skin which is characteristic of prematurity, and the thickness of the subcutaneous fat are signs possessing some diagnostic importance but showing a large degree of variability. From consideration of a large series of foetuses the authors conclude that from ossification alone it is impossible to tell the age of a foetus within one month; the fallaciousness of ossification tests is shown clearly for the sternum as well as for the lower end of the femur and the cuboid. In two cases of post-maturity established clinically the authors found by microscopic examination a considerable degree of avascularity of the placenta, with obliterative endarteritis: the mucoid tissue of the cord was partially replaced by fibrous tissue and the vascular intima was much thickened. The ease with which the dura mater can be separated from the foetal shell at autopsy is of importance. If the dura falls away, as in the adult, after the head is opened, a strong indication of post-maturity is given; nevertheless, this sign has been absent in certain well-authenticated cases of post-maturity. The dangers, both to mother and child, of a prolonged pregnancy are greatly increased by the fact that post-maturity is not usually recognized before the onset of labour; adequate ante-natal supervision provides a means by which the element of surprise can be eliminated from the post-mature labour, with immediate improvement in maternal and infantile prognosis. Treatment, therefore, is preventive, consisting in induction of labour at or soon after the carefully calculated term of gestation. Administration of quinine and pituitary extract should be given a trial, and in some cases will render instrumental induction unnecessary. With regard to clinical recognition before labour of post-maturity, the authors point out that there is no means of calculating the impregnation-delivery period within eight or ten days, which is the interval which probably may elapse between insemination and impregnation. It is impossible, therefore, to state the exact duration of any pregnancy. Probably, post-maturity can most certainly be recognized by determination of the size of the uterus made by a competent observer using bimanual examination on several occasions from the third month onwards.

195. Treatment of Myoma and Myopathic Haemorrhage.

FROM results of treatment of 400 cases of myoma and myopathic haemorrhage, one half by radium applications and the other by operation, C. S. MILLER (*Surg., Gynecol., and Obstet.*, May, 1922, p. 593) concludes that surgery is unquestionably the method of choice in young women in whom definite growths produce excessive bleeding, in cases of submucous myoma, and in cases in which there is suspicion of malignant disease. In the first-named class myomectomy should be done; if this afterwards proves unsuccessful in checking the haemorrhage, radium will complete the cure without further surgical intervention. Cases unsuitable for radium therapy exclusively are those of myoma larger than the size of a three and a half months' pregnant uterus—here changes are present such as adhesions, salpingitis, degeneration, and pressure symptoms, which require the more precisely applied surgical treatment; those of submucous myoma—sloughing and formation of pyometra—may follow; and those complicated by pelvic infection, which is not infrequently fanned into activity by radium applications. Myomatous patients, although relieved of excessive haemorrhage, by no means invariably cease, after radium treatment, to suffer pain, although the tumour may have become much smaller. With regard to patients with myopathic haemorrhage, 1 3 in number, the writer found 95 per cent. to be cured after one

radium application. Five patients, aged from 15 to 18, in whom myopathic haemorrhage had resisted all other therapeutic measures, were given three to eight hours' exposures to 25 mg. of radium element; temporary amenorrhoea followed, but menstruation was re-established in all cases within fourteen months, and in four instances was normal.

196. Atypical Menopausal Phenomena following X-ray Castration.

ACCORDING to E. VOGT (*Zentralbl. f. Gynäk.*, June 4th, 1922, p. 914), excessive haemorrhage is a rare accompaniment of the artificial menopause following *x*-ray castration, and occurred in only 10 cases among 1,300 observed by him. In 8 instances an anatomical cause of the bleeding was demonstrated after hysterectomy—in 3 cases myoma (two being submucous), in 3 adenocarcinoma of the uterus, in 1 pyometra, and in 1 an antecedent hydatidiform mole. The haemorrhage occurred from one-half to five years after the radiation, and the patients were aged from 40 to 58. The adenocarcinomata developed five years in two cases, and six months in one case, after radiation. Although it is not possible with certainty to ascribe the onset of any of the complications recorded to the influence of *x*-ray treatment, these cases show that caution should be exercised with regard to the prognosis given to the patient before treatment; they point also to one of the disadvantages of *x* rays as compared with operative treatment of excessive uterine haemorrhage.

197. Treatment of Occlusion of the Fallopian Tube

ACCORDING to W. T. KENNEDY (*Amer. Journ. of Obstet. and Gyn.*, June, 1922, p. 667), insufflation of the Fallopian tubes with carbon dioxide, as described by Rubin, leads in some instances to the detection of tubal obstructions which produce sterility. Such a diagnosis being established, and evidence of acute or subacute salpingitis being absent, the writer opens the abdomen, separates adhesions in the neighbourhood of the fimbriae, and uses the following procedures for restoring and preserving tubal patency. A bristle-ended solid silver probe is passed along one tube, from the outer extremity, into the uterine cavity; it is subsequently replaced by a hollow silver probe of 0·75 to 1 mm. diameter. The other oviduct is similarly treated, and if there are signs of old inflammation the tubes are irrigated with alcohol by attaching a syringe to the outer end of the hollow probe. Resection of a part of the tube or tubes, if necessary, is done at this stage. The hollow probe is now made to traverse one Fallopian tube, then the uterine cavity, and then the other tube; the cut ends are anastomosed. To a strand of piano wire which has been passed through the hollow probe is affixed a strip of Cargile membrane 40 cm. long and 3 cm. wide. The probe and wire having been withdrawn, the membrane is left traversing both tubes and the uterine cavity. About 7 cm. of membrane protrudes from the fimbriated extremity of the tube on each side; the outer end of the membrane is sutured to the broad ligament as a precaution in case pregnancy should occur before the membrane is absorbed.

PATHOLOGY.

198. The Precipitin Test of the Arachnoid Fluid.

IN many abnormal conditions of the central nervous system there is an increase in the protein content of the cerebro-spinal fluid. In order to detect this and to form some quantitative estimate as to its amount, C. A. NEYMANN and L. HEKTOEN (*Journ. Nerv. and Mental Dis.*, July, 1922, p. 16) have had the happy idea of preparing precipitating serums to various kinds of protein and testing their effects on the arachnoid fluid of the patient in question. In some cases the serums were obtained against pure solutions of albumin or of globulin, and in others by using the cerebro-spinal fluid of a paretic as the antigen. The test, which is carried out by the usual ring technique, is very simple, and can be performed with not more than a few drops of the arachnoid fluid. The results appear to agree very well with the other tests, such as the Wassermann, Pandy, and colloidal gold, used for the detection of cerebral disease. Actually, they find that in general paralysis of the insane the fluids react in dilutions from two to eight times those of the normal maximum, and that this reaction is far more strongly marked with anti-human than with antialbumin serum. In tabes the increase of the globulin fraction is not so well marked. With epilepsy the tests show the presence of a greater amount of albumin than normal. Slight reactions are obtained with fluids from patients suffering from dementia praecox or epidemic polioencephalitis. It seems possible that if, after the collection of data by several observers, the results are as favourable as those obtained hitherto, the test may, by its very simplicity, come to be regarded as a most valuable one.

199. The Leucocytes in the Capillary and Venous Blood in Scarlet Fever.

T. MIRONESCO and A. CODREANO (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, May 11th, 1922, p. 752), as the result of examination of nine cases of scarlet fever and five of other diseases, have found that with one exception in all the cases of scarlet fever there was a larger proportion of the leucocytes in the capillaries of the skin than in the veins of the elbow during the eruptive period. Thus in one case there were 28,600 leucocytes in the capillaries and 18,200 in the elbow vein. In the other diseases examined this relation between the capillary and venous leucocytes did not hold good. Thus in a case of pelvic peritonitis there were 34,000 leucocytes found in the capillary blood as compared with 40,200 in the vein, and in a case of typhoid fever there were 4,000 leucocytes in the capillary blood and 4,200 in the venous blood. The writers believe that the pathogenic agent of scarlet fever is abundant in the skin, and that the leucocytes favoured by vaso-dilatation convey the defences of the organism to the periphery. They are therefore found in greater numbers in the capillaries than in the venous blood.

200. Vitamins for Yeasts and Bacteria.

L. FREEDMAN and C. FUNK (*Journ. of Metabolic Research*, April, 1922, p. 457) have studied the nutritional factors in the growth of yeasts and bacteria, with special reference to the necessity of substances known to contain vitamin B. They find that certain substances are present in beef and ox-heart infusions, in peptone and autolysed brewers' yeast, which show a strong growth-stimulating activity on both haemolytic streptococci and yeast cells. By shaking with certain adsorbents, such as fuller's earth and charcoal, they were able to extract these active substances from their natural sources, and to recover them from the adsorbent by baryta and acetic acid. They find the active substance to be similar to the so-called vitamin D, and observe also that another substance is present in beef and ox-heart infusions which is necessary for the growth of haemolytic bacteria, a substance probably associated with haemoglobin. In studying the effects of various proteins in bacterial growth they found that certain substances can be obtained from purified casein, commercial gelatin, yeast protein and edestin, which show marked growth-stimulating activity on haemolytic streptococci. Hydrolysates of purified egg globulin, lactalbumin, and hordein only contain traces of this stimulating substance, whereas other proteins examined failed to show its presence. These active substances are not a constituent part of the protein molecule, but the amount present depends on the physical and adsorptive properties of the protein and on the method and degree of purification. These substances also are probably related to the water-soluble vitamins obtained from brewers' yeast, particularly the so-called vitamin D.

201. Bacteriology of the Mouth.

A. L. BLOOMFIELD (*Johns Hopkins Hospital Bull.*, July, 1922, p. 252), in attempting to answer the question why it is that the "normal" flora of the mouth continue to flourish in the buccal secretions, whereas other organisms are rapidly eliminated, has carried out a series of experiments with the object of removing the bacterial flora of the tongue by thorough washing with water, scrubbing, and copious irrigation. Such mechanical cleansing carried out for thirty minutes failed to remove the normal bacterial inhabitants of the tongue, showing that such organisms are not growing free in the mouth secretions but are intimately bound to the mucous membrane, just as are foreign organisms in a focus of infection. The organisms could not be drawn out from the deeper cells of the mucous membrane by the application of strongly hypertonic solutions and the salt pack. The actual niduses of growth of the bacteria must therefore be in the crevices of the epithelium and in the gland orifices; here they multiply, certain organisms being thrown off and removed just as are foreign particles or bacteria experimentally introduced. Confirmation of this hypothesis was derived from the results obtained from the introduction of extraneous organisms into the mouth, it being shown that such abnormal inhabitants are to a large extent eliminated by the mechanical lavage which failed to remove the normal flora. Thus any organism which persists on a normal mucous membrane for more than a few hours must be in vital biological relationship to the mucous surface, otherwise it would be removed as a foreign particle by the normal eliminative mechanism. The saliva, as a rule, plays no significant part either favourable or inhibitory. For this reason bacteria, such as the colon bacilli, which thrive in saliva *in vitro*, are not found in the normal mouth, whereas organisms such as pneumococci or influenza bacilli, which die in saliva *in vitro*, are frequently present.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

202. A Symptom of Tumour of the Middle Cranial Fossa.

A. v. SARBÓ (*Klinische Wochenschrift*, August 5th, 1922, p. 1597) describes a symptom which he regards as a valuable indication in the diagnosis of tumour affecting the middle cranial fossa and especially the mid-brain. This symptom consists in a peculiar reeling backwards when in the standing position. The upper part of the body is bent backwards first, and reeling backwards follows. To the symptom the author gives the name of "hyptokinesis." The patient stands with his feet together, the examiner raises the patient's head by the chin, so that the neck is bent backwards; if reeling does not occur, then the patient is told to close the eyes. When hyptokinesis or reeling backwards is well marked, retropulsion also occurs. The author records three cases in which, in addition to other symptoms of brain tumour, reeling backwards (associated later with ataxia in two of the cases) was a prominent symptom. In one the growth was in the mid-brain (left corpus mammillare); in two the growth extended to the mid-brain, though commencing in other parts. The author has observed this symptom, hyptokinesis, in certain cases of epidemic encephalitis, in paralysis agitans, in endoarteritic circulatory disturbances or softening in the corpus striatum, in tumours of the mid-brain (corpora mammillaria, pineal gland, corpora quadrigemina, optic thalamus, around the third ventricle) and in tumours arising in other parts but compressing the mid-brain; also in hydrocephalus with distension of the third ventricle. The author considers the hyptokinesis and the ataxia to be the results of affection of the red nuclei (of the tegmentum of the crura cerebri) and of the fibres connected with these nuclei. He considers the maintenance of static equilibrium to be the function of the red nucleus and its fibre system. Disturbance of equilibrium is a characteristic sign of disease of the mid-brain. At first (whether the disease be encephalitis, or tumour, or circulatory disturbance or softening) the disturbance of equilibrium is shown by hyptokinesis; as the disease advances greater disturbances of equilibrium occur—retropulsion and ataxia.

203. The Therapeutics of Quinidine.

P. LEREBOULLET and JEAN HEITZ (*Paris Médical*, July 1st, 1922, p. 7), in their annual review of diseases of the heart and blood vessels, discuss the therapeutics of quinine and quinidine in cardiac irritability. Quinidine is an isomer of quinine, than which it is more soluble and has a greater tonic effect on the cardiac muscle; it diminishes cardiac irritability, acting in an entirely different way from digitalis, adrenaline, etc. It suppresses auricular fibrillation and counteracts certain drugs which produce fibrillation. Quinidine diminishes the contractility of cardiac muscle fibres, and in the end paralyses them; it reduces the conductivity of the bundle of His. In large doses it is said to paralyse the pneumogastric centres in the medulla and then the peripheral nerve endings. Arterial pressure is lowered by experimental injections of quinidine. In a large number of cases of complete arrhythmia quinidine restores the normal rhythm in a very short time. The majority of writers have been more successful in recent cases of arrhythmia than in those in which it has existed for some years. Some authors have found that complete arrhythmia returns in a few days or even in a few hours. The authors recommend that the drug should be administered for some time in small doses in order to prevent the return of arrhythmia, and they cite a number of cases recorded by various observers in which this was successful. The dosage employed by different writers varies greatly. Frey recommends a daily dose of 0.2 gram at first, and has never exceeded 0.8 gram, while Jenny has given 3 grams per diem; the latter author records the highest proportion of successes. Some cases of intolerance occur even after smaller doses have been taken. The normal rhythm is usually restored suddenly, sometimes without the patient being conscious of it. The pulse rate often falls to 54–60, but a few auricular extrasystoles, recurring more or less regularly, are often observed. It would appear that quinidine acts better in those cases in which moderate doses of digitalis have previously been given. Schrumpf alone advises that the two drugs should be given simultaneously, but Hewlett and Sweeney have observed the Stokes-Adams syndrome in such cases, and it is recommended that caffeine or camphor should be substituted if a cardiac tonic is considered necessary.

204. Encephalitis Lethargica.

GASBARRINI (*Archiv. di Patolog. e Clin. Med.*, June, 1922, p. 353) discusses at some length the phenomena of encephalitis lethargica. He describes the classical features of the disease, giving a detailed analysis of the various symptoms, and points out the chief clinical data which serve to differentiate this disease from other affections. He thinks there has been too much division of the disease into a number of different types. On the whole, he believes encephalitis lethargica has no direct relation with influenza. Dubini's electric chorea corresponds to the myoclonic form of encephalitis. There is some ground for believing that epidemic hiccup is a form of encephalitis. According to the predominance of certain symptoms the disease may be of a somnolent type, a myoclonic, a polyneuritic, or more rarely a hyperkinetic variety. The course of the disease may be acute, subacute, or chronic, lasting for months or years. Oscillation and relapses are not uncommon. Amongst the sequelae the author draws special attention to the Parkinsonian symptoms, the pseudo-paralysis agitans, and to the inversion of the rhythm of sleep and wakefulness, so that night is turned into day. Mortality varies very much—5 to 55 per cent. So far no therapeutic means has been found to cure the disease.

205. The Treatment of Diabetes Mellitus.

ELLIOTT P. JOSLIN (*Boston Med. and Surg. Journ.*, June 22nd, 1922, p. 833) refers to the fact that the average known duration of fatal cases of diabetes in the period 1895–1913 was 3.3 years (Boston City statistics) and that in 1920 the duration was 5.3 years. He gives four tables showing his own results, which confirm the general experience, and observes that in the first decade of life the duration in these cases has exactly doubled. "The needless mortality in diabetes is greater than we realize." "Diabetics seldom die of their disease *per se*, but of complications which are largely preventable—coma, gangrene, infections." The marked reduction in the diabetic death rate in hospitals is, he considers, almost entirely due to the prevention of coma. Nearly all these deaths occur when the patient's diet is suddenly changed. It should be an absolute rule in severe, long-standing, complicated, obese, and elderly cases, and in all cases with acidosis, to make only gradual changes in diet. Nearly all these cases can be traced to overfeeding with fat and restriction of carbohydrate. The author states that in the larger hospitals in Boston the danger of ether as an anaesthetic for diabetics has led to its replacement by nitrous oxide and oxygen. Diabetics should always be warned of the danger of gangrene following minor injuries if they become infected. Table V gives "Diabetic diet cards, with composition of essential foods," the author explaining his system of "test" and "maintenance diets." Calorie values are of importance, as a continued low caloric diet causes nearly all patients to become sugar-free. The rationale of treatment should be explained to patients from the beginning. Acidosis may be largely prevented by "Shaffer's formula," which shows that alkalis are needless and that the carbohydrate-fat ratio should be regulated in accordance with actual metabolism. Newburgh and Marsh have shown the necessity of the patient receiving sufficient calories. The author states that obesity preceded diabetes in fully 75 per cent. of 1,000 of his cases, and that 66 per cent. admitted excess in food. He recommends systematic routine examinations and regular instruction. An excess of blood sugar may warn the physician before sugar appears in the urine.

206. Vaccines in Influenza.

F. BLOCK and others (*Hygiea*, June 15th, 1922, p. 467), constituting a committee of inquiry, report on the therapeutic experiences gained in Sweden and elsewhere during the recent epidemics of influenza. They have little good to say of the numerous drugs, including alcohol, experimented with in influenza, but they have come to the conclusion that inoculation with the products of streptococci, pneumococci, and Pfeiffer's bacillus is of considerable value in preventing the complications of influenza. In Sweden the vaccine distributed was streptococcal and pneumococcal, and of the sixty-five physicians who sent reports on their experiences with vaccines to the Board of Health, forty-one claimed to have obtained strikingly good results, the course of the disease being rendered more mild, and the frequency of complications being reduced. The results obtained in the Swedish army by inoculations in November, 1918, pointed in

the same direction. This procedure has proved to be perfectly harmless, but it is probable that the immunity conferred is of comparatively short duration, and may not last for more than about three months.

207. Interpretation of the Wassermann Reaction.

WALLENSTEIN (*New York Med. Journ.*, May 3rd, 1922, p. 514) discusses the reliability and limitations of the Wassermann reaction, pointing out the importance of correctly interpreting the results of the test, which for all practical purposes may be regarded as specific, indicating the presence of spirochaetes somewhere in the body, with the few exceptions of yaws, leprosy, malaria, and scarlet fever. A doubtful reaction in early or late latent cases must be regarded as positive, but, although insufficient for the diagnosis of syphilis in the absence of symptoms and a history of infection, a doubtful reaction accompanying a suspicious primary lesion is confirmatory. A negative reaction is of no value in eliminating syphilis when a primary sore is suspected, but it is of great value when suspicious secondaries are present, and syphilis can only be excluded when a negative result persists for several months, and the same is the case in suspected tertiaries. In treated cases a negative reaction is necessary for at least a year before a cure can be pronounced; during that time there must be absence of symptoms and the spinal fluid must also be negative. The intensity of the reaction in the various stages of the disease is of value in prognosis, persistently positive reactions being indicative of visceral or nervous syphilis, and usually pointing to grave infections. Contaminated blood may give falsely positive reactions, and a positive reaction may be obtained shortly after general anaesthesia or in blood containing bile, while the ingestion of alcohol for two days prior to taking the blood will render the reaction negative. In a suspected case eight consecutive daily tests should be made, since a single negative reaction means nothing. A positive reaction with the cholesterinized antigen only, or by the ice-box method of fixation, is of value in treated cases only with a history or symptoms of syphilis.

SURGERY.

208. Some Causes of Amaurosis in Infants.

R. F. MOORE, B. T. LANG, H. NEAME, and P. G. DOYNE (*Brit. Journ. Ophthalmol.*, August, 1922, p. 337), in their report to the Committee of the Lang Research Scholarship, based upon sixty cases, give the results of investigations of all possible causes affecting the sight of infants. All the cases when first seen had defective vision, some presenting temporary amaurosis, others becoming mentally defective, and a close relationship existed between delay in the development of the fixation reflex and the presence of albinism. Each feature is reported upon independently, with notes of illustrative cases. The absence of the light fixation reflex in infants with otherwise normal eyes is frequently an early sign of future mental deficiency, as evidenced by such signs as delay in holding up the head, development of speech, etc., and delay in the appearance of the reflex is often associated with a pigment deficiency affecting the retina and choroid, but in such cases the light fixation is only delayed and appears in due time. The reaction of the pupils to light was only absent when there was a definite disease of the optic nerve, and all the cases of temporary amaurosis and of mental deficiency showed an intact pupillary reflex arc. Only seven of the series afforded evidence of congenital syphilis, in four of which choroido-retinitis was present with, in one case, considerable opacities in the vitreous. Consanguinity of the parents (three cases), difficult labour (ten cases), and premature birth (five cases), did not appear to have any particular etiological relation to the condition, and the presence of eye-rubbing, head-nodding, nystagmus, and squint usually pointed to a defect in the eyeball, such as cataract, refractive error, or pigment deficiency. Albinism affecting the retina and choroid was present in seventeen cases, associated with nystagmus in all but three, in whom fixation never properly developed. An analysis of these sixty cases showed the primary cause of amaurosis to be: temporary amaurosis (5), mental deficiency (19), albinism (17), cataract (7), hypermetropia (5), and fundus disease (7), in which, however, there was a certain amount of overlapping, as, for instance, mental deficiency being often associated with albinism.

209. Effects of Tonsillectomy on the General Health of Children.

Of 10,000 children on whom tonsillectomy has been performed under uniform conditions, 5,000 have been re-examined by A. D. KAISER (*Journ. Amer. Med. Assoc.*, June 17th, 1922) one year after operation, and a detailed history of the child's complaints are tabulated before and after operation. Analysis of the causes for operation shows that obstructive symptoms or evidences of tonsillar infection existed in 99 per cent. of the cases. In 5,000 children re-examined, the greatest improvement came to the group that showed evidence before operation of obstruction and infection. Obviously, a child suffering from obstructive tonsils and adenoids with symptoms of infection should have the benefit of tonsillectomy. Considerable improvement in the child's general health was noted in the group that presented evidences of infection from the tonsil but when the tonsil presented no marked hypertrophy. Undoubtedly this group showed benefit from this operation. No marked change was found in the child's general condition in the group operated on for hypertrophy only. There was less malnutrition in this group. One year is too short a period in which to determine the benefits of the operation to this group. Taken as a group, there was a very decided improvement in the general condition of the children operated on. The nutritional status was improved in many instances. The high percentage of undernourished children one year after operation—29 per cent.—suggests that diseased tonsils are only a small factor in the production of malnutrition. The operative risk is not great, for 10,000 children were operated on without a surgical fatality, and post-operative complications occurred in only a small percentage of the children, assuring reasonable safety if proper care is taken. The ultimate effect of the operation on a child cannot be determined at the end of a year; but at that time 84 per cent. of the children have been considered in better general health, as indicated by their physical examination and analysis of their complaints.

210. Loose Bodies in the Joints.

POLLIDORI (*La Chirurg. degli Organi di Movim.*, April, 1922, p. 187) publishes a case of loose bodies in the knee-joint and takes the opportunity to refer at some length to the whole subject. Apparently Paré, in 1558, was the first to describe a loose body discovered in opening an abscess of the knee. Loose bodies occurring in healthy joints are usually traumatic in origin. Experimentally it is not easy to produce a permanent loose body by injury, as it tends to become absorbed. Probably a series of injuries is necessary, or some pathological change goes on as a secondary result, and possibly there exists some tendency to their formation in individuals, for injury will not cause a loose body to form in every case. When once formed they may increase in size. In diseased joints they may form in the thickness of the fibrous capsule or subsynovial cellular tissue, from the synovial membrane itself, from the articular cartilage, or as sequestra from the bone as a result of dissecting osteo-choudritis, tubercle, or other obscure cause. A lengthy bibliography of the subject is appended.

211. A Non-surgical Method of Duodeno-biliary Drainage.

M. J. SYNNOTT (*Amer. Journ. of Surgery*, June, 1922, p. 136) describes the diagnostic and therapeutic value of Lyon's method of duodeno biliary drainage. Infections play an important part as an underlying cause of chronic ailments. A systematic attempt must be made to locate all focal lesions and eliminate them if possible. Lyon has demonstrated that the gall bladder and bile ducts have frequently been overlooked in the search for infections, particularly in the absence of clinical symptoms referable to that portion of the anatomy. Many chronically infected gall bladders give no local symptoms. To establish early diagnosis and treatment of biliary stasis is most important, because this later means gall stones. Lyon's method is the only way in which a diagnosis can be made in every case. This is based on the fact that a solution of magnesium sulphate, when instilled into the intestine of dogs, produces relaxation of the sphincter of Oddi, with a flow of bile from the common duct. The duodenal tube is swallowed and the stomach washed out. The patient then lies down and the tube is swallowed to the 75 cm. mark, when the metal tip is in the duodenum. The magnesium sulphate solution is then introduced and the bile specimens obtained by aspiration, and cultures taken. The specimens thus obtained are studied chemically and bacteriologically, whilst all possible precautions are taken against contamination. Finally, transduodenal lavage is performed, consisting of the instillation of Ringer's solution into the duodenum, after which the tube is removed. Vaccines are later prepared and the patient immunized against the infecting organism, and other treatment adopted as appears indicated. The Lyon technique offers a rational plan of treatment, the undoubted value of which is proved by a constantly increasing mass of clinical evidence.

212. Post-operative Acetonuria.

T. LAURENTI (*Il Policlinico*, Sez. Chir., May 15th, 1922, p. 282) examined the urine for acetone of 160 cases, 85 of which were men and 75 women, on whom various operations had been performed under chloroform, ether, local anaesthesia with 0.5 per cent. novocain, and spinal anaesthesia

with a mixture of 4 per cent. novocain and 2 per cent. stovaine. The results were as follows: (1) Post-operative acetonuria was almost constant in spinal anaesthesia (84 per cent.), chloroform narcosis (81 per cent.), and much less frequent in local anaesthesia (15 per cent.). (2) The duration of the phenomenon varied on the average from two to five days. It was rarely as long as six days, and in only one instance lasted till the seventh day. (3) The presence of acetonuria did not in any way affect the post-operative course of the case. (4) The nature of the disease and the character of the operation were of no importance in the pathogenesis of acetonuria. (5) While sex had no etiological significance, the age of the patient was of some importance, as the reaction was most intense in young persons. (6) The fluid diet which was given to all the patients for from three to eight days after the operation was also a factor, as the phenomenon almost always disappeared when normal diet was resumed. (7) Rise of temperature, which occurred in the first twenty-four to forty-eight hours after the operation, especially after spinal anaesthesia, had no effect on the appearance of the acetonuria. (8) The degree of acetonuria was always directly related to the nature of the anaesthetic, and was not connected with the character of the operation. (9) The operative trauma in itself was essentially the determining cause of the acetonuria, as it developed after the operation, but was not influenced by its nature, the nervous system of each individual reacting differently to stimuli.

213. Dupuytren's Contraction.

TYTGAT (*Le Scalpel*, June 17th, 1922, p. 569) reports a well-marked case of Dupuytren's contraction operated upon with complete success five years ago by thorough removal of the palmar aponeurosis. None of the other methods (partial excision, fibrolysin injections, electricity, etc.) gives permanently satisfactory results. In this patient the result, as judged by the photograph taken five years after operation, is perfect, and the man is able to do his work as an egg merchant without drawback. Early massage and exercises are indicated.

214. Non-success in Spinal Anaesthesia.

DI PACE (*Rif. Med.*, May 20th, 1922, p. 508) has examined one of the factors to which non-success in spinal anaesthesia has been attributed—namely, admixture of blood in the cerebro-spinal fluid. He concludes that in the small proportion of blood no cause of failure can be found, and that the presence of blood is a mere coincidence. He bases his conclusion on clinical experience—for example, a hysterectomy was done under spinal anaesthesia with stovaine dissolved in sanguinolent cerebro-spinal fluid, using a thick needle with a defective point, conditions all said to be a cause of failure, and the anaesthesia was complete. Stovaine injected directly into the blood produces its ordinary effects, showing that blood does not destroy its power.

OBSTETRICS AND GYNAECOLOGY.

215. Uterine Haemorrhage of Benign Origin treated by Radium.

AN analysis of 527 cases of myoma uteri and other benign lesions causing uterine haemorrhages which have been treated by irradiation is presented by J. G. CLARK and F. E. KEENE (*Journ. Amer. Med. Assoc.*, August 12th, 1922, p. 546). In 476 cases which required only one treatment permanent amenorrhoea occurred promptly, or after a short interval of temporary amenorrhoea there was a return to normal when the dosage had been intentionally light with this end in view. Of 433 cases, 40 either required a second application of radium, or an operation was necessitated on account of a persistent flow. The actual percentage in which the bleeding was controlled by the first application of radium in 476 cases was 91. In this whole number only one death occurred, and this was of obscure origin. In 47 cases bleeding recurred after the application of radium; in 27 several months after the treatment. The recurrence was slight, or the periods returned to normal and did not require subsequent treatment, in 23 cases. Menopausal symptoms seldom if ever occur in young women when a dosage of 50 mg. is applied for from six to eight hours; and in no case has the climacteric been induced by this dosage. Larger doses will produce these symptoms. The age factor in its relationship to the menopause is not nearly so much to be taken into account as the temperamental and nervous factors. In the total number of cases in which radium has been used five women subsequently became pregnant. It is evident that the application of radium gives but little forecast in favour of restoring the child-bearing possibilities; for of these pregnancies only two children came to full maturity. This study, therefore, emphasizes the statement already made that when pregnancy is still in contemplation by the patient an operation should be advised, instead of irradiation. The criticism offered as to the use of radium has been that the final results of irradiation are not yet known. In at least 300 cases that have been followed from three to six years, so far no single instance has come to the attention of the authors in which there was any remote deleterious result which could in any way be traced to radium. A reapplication was necessary for the relief of a continuation or a recurrence of the abnormal bleeding in 28 cases. In all of these the condition was cured by a second application except in two, which required operation. Of the 527 patients, 18 were operated on subsequent to irradiation. Fourteen of these were myomatous cases in which the bleeding persisted or recurred more or less profusely, following a variable period of amenorrhoea. Four patients were subsequently operated on for chronic pelvic inflammatory disease and one for haemorrhage. In the 14 patients requiring a subsequent operation, 10 of the operations were for myomata of the larger submucous type, 3 for myopathic haemorrhage, and one, in which there was recurrent bleeding from a cervical stump after a hysterectomy, for an adenomyoma. In the entire series there was but one death, which occurred from peritonitis a few days after an extensive plastic operation and an application of 50 mg. of radium for twenty-four hours. Phlebitis occurred in two cases; in one, a mere recurrent symptom of an old phlebitis. In the second, bilateral phlebitis followed a repair of the cervix, a posterior colporrhaphy, and irradiation. Eight patients developed symptoms of more or less severe neuritis. This mode of treatment is not offered as a competitor of surgery; the two go hand in hand, and both must be supervised by the surgeon and not by the *x*-ray expert or the radiologist, for each, in a varying degree, is a surgical measure. Irradiation is considered by the author to be the treatment of choice for the smaller myomata in women approaching or within the menopausal years whose only symptom is haemorrhage.

216. Radium Treatment of Uterine Myomata.

M. H. VIOLET (*Lyon Médical*, May 25th, 1922, p. 419) is of opinion that although the majority of uterine myomata are unsuited for radium therapy, this treatment has definite indications (1) as a preliminary to operation in patients who have become so anaemic that immediate surgical intervention would be dangerous; (2) in cases of uncomplicated myomata of which the capital symptom is menorrhagia, and in which the patient, although a semi-invalid, is averse to operation. Small myomata, if subperitoneal and pediculated, are best treated by polypectomy; if intramural, by enucleation; and if submucous, by intrauterine exploration and extirpation. Larger myomata in multiparous subjects are suitable for treatment by subtotal hysterectomy. Cervical myomata causing or capable of causing compression phenomena call for total hysterectomy. Surgical operation is clearly indicated when there are signs suggesting coincident adnexal disease, peritoneal adhesions, sarcomatous transformation or degeneration of the myoma, presence of cancer of the corpus uteri, or pregnancy. In cases treated by radium applications, endeavour should be made to graduate the dosage so as to obtain haemostasis and shrinkage of the tumour without necessarily the production of a definitive amenorrhoea. In women aged over 40 Violet finds doses of 7 to 10 "millicuries destroyed" usually sufficient. The case is related, as an example of an ideal result, of a patient, aged 32, who suffered from profuse menorrhagia due to the presence of a myoma twice as large as the fist; after application of 75 mg. of radium bromide for twenty-four hours, corresponding to 7 "millicuries destroyed," the uterus regained its normal dimensions, and as a sequel to eight months' amenorrhoea with symptoms of artificial menopause the menses gradually resumed their normal characters, and signs of ovarian insufficiency disappeared. It is preferable to give small doses, repeated if necessary. Comparatively larger doses will be required if the myoma is of large size, if the uterine cavity is central, and if the thickness of the wall exceeds 2 cm.

217. Post-partum Eclampsia.

ACCORDING to H. THALER (*Zentralbl. f. Gynäk.*, June 24th, 1922, p. 1019), it is rare for *post-partum* eclampsia to manifest itself later than a few hours after labour. Of 472 cases of eclampsia treated during twenty-nine years at the Vienna Frauenklinik 82 were examples of *post-partum* eclampsia, and in 4 only was the first convulsion observed to occur later than seventeen hours after labour. Prognosis is more favourable in early than in late *post-partum* eclampsia: death occurred in 2 of 41 cases of eclampsia manifesting itself within three hours of labour, and in 7 of 40 later cases. Similar findings have been reported from other clinics. *Post-partum* eclampsia

is especially liable to be followed by severe psychoses, and this is particularly frequent in the cases in which the onset of the eclampsia is late. Thaler's statistics do not confirm those of Seitz in correlating post-eclamptic psychoses with previous occurrence of unusually numerous convulsions. B. BIENENFELD (Ibid., p. 1013), from a study of the literature, has traced records of 14 cases only of the first occurrence of an eclamptic convulsion late in the puerperium—from the sixth to fourteenth day. She records the case of a 2-para, aged 32, who after an instrumental delivery at term suffered from severe septic endometritis; on the twelfth day, after an apyrexial interval of six days, vomiting, albuminuria, coma, and convulsions occurred, followed by an acute psychosis. Although slight albuminuria persisted six months later, the case is regarded as one of eclampsia rather than uraemia.

218. Sarcoma of the Uterus.

ACCORDING to M. TEDENAT (*La Gynécol.*, May, 1922, p. 298), sarcoma of the uterus is from forty to fifty times more rare than carcinoma, and affects five times more frequently the corpus uteri than the cervix. Large sarcomata of the cervix, when ulcerated, are usually regarded as carcinomata, from which they cannot be distinguished except by microscopical examination. Sarcomata may take origin either in the endometrium, in which they are more often of the diffuse than the circumscribed variety, or in the myometrial layer, more often in the connective tissue than in the muscle fibres. Sarcomatous metaplasia of myomata is frequent and should be suspected in myomatous patients in whom metrostaxis persists after the age of the menopause, in conjunction with an increase in the size of the tumour. Hyaline and mucous degenerations and haemorrhages into the tumour not infrequently supervene in cases of uterine sarcoma and lead to formation of pseudo-cysts, which may attain considerable dimensions and resemble closely ovarian cysts or adenomyomata. Owing to the widespread metastases which occur, prognosis is grave. Clinical experience points to the advisability of performing hysterectomy in cases in which myomata do not undergo well-marked atrophy following the menopause.

PATHOLOGY.

219. The Significance of B. Paratyphosus B in the Blood.

A. LEMIERRE and J. LEVESQUE (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, July 13th, 1922, p. 1045) report the case of a man, aged 59, suffering from lymphatic leukaemia, who developed an acute lobar pneumonia. On his admission to hospital on the sixth day of disease a blood culture was taken, which showed the presence of *B. paratyphosus* B. The sputum contained large numbers of pneumococci, and there was nothing in the clinical picture of the patient to suggest anything atypical. The temperature fell on the twelfth day, but rose again later as a result of the involvement of the opposite lung. Three weeks after the commencement he was perfectly convalescent. Examination of the patient's serum on the eighth, twelfth, and twentieth days of disease for the presence of agglutinins against his own organism was uniformly negative, while a second blood culture performed on the eighteenth day failed to reveal the paratyphoid bacillus. It would seem doubtful whether, in this case, the bacillus exerted any pathogenic effect whatever. There are a number of cases in the literature in which this organism has been recovered from the blood of patients suffering from such diverse diseases as scarlatina, measles, tuberculosis, cerebrospinal fever, and malaria, without there being any evidence of sufficient weight to incriminate it as playing any causative part in the genesis of the clinical symptoms. There are also cases in which the bacillus has been associated with other organisms, which were apparently the primary invaders, and which had merely paved the way for a secondary paratyphoid infection. The bacillus is widespread, and the authors insist that its presence—even in the blood—in the absence of clinical signs and of confirmatory serum reactions, must not be forthwith regarded as responsible for the origin of the disease.

220. The Effect of Antidiphtheritic Vaccination.

IN order to test the immunizing effect of an antidiphtheritic vaccine A. BESSEMANS and P. BORREMANS-PONTHIÈRE (*Le Scalpel*, July 8th, 1922, p. 653) selected twenty children with a positive Schick reaction, and gave them three injections, at intervals of eight days, of a toxin-antitoxin mixture containing 80 per cent. of the L + dose of toxin. Five months later sixteen of the children were retested for susceptibility, and in order to make the test more rigid they used, not 1/50 minimal lethal dose of toxin, but two doses injected at different points of the arm, one of 1/40 minimal lethal dose, and the other of 1/10 minimal lethal dose. Control reactions of treated toxin were made on the opposite arm. Thirteen of these children were frankly negative to both injections of active toxin; one was negative to the smaller dose, but reacted to the higher. One other was positive to both, but as this child had only received two prophylactic inoculations it is hardly fair to take it into consideration. Finally, one child which had been fully vaccinated reacted to both doses, showing that its susceptibility had not been sufficiently diminished to render it Schick-negative. Is the failure of this last case to be attributed to an insufficient amount of toxin in the vaccine, or is it dependent on an individual peculiarity of the child in question? This point is one which will only be rightly decided when further work has demonstrated the optimum constitution of the immunizing mixture.

221. The Wildbolz Auto-Urine Test for Tuberculosis.

E. STIEFEL (*Schweiz. med. Woch.*, July 27th, 1922, p. 746) has investigated the behaviour of the Wildbolz test in 400 persons, most of whom were suffering from pulmonary tuberculosis. The test consists of injecting into the patient's skin a small quantity of his urine, concentrated by evaporation *in vacuo*; it is assumed that the more active the disease the greater is the quantity of the tuberculous antigens in the urine. The author controlled this test by simultaneous intracutaneous injections of tuberculin (Mantoux's test). In 206 cases of presumably active tuberculosis there were 173 giving a positive reaction both to the Wildbolz and the Mantoux tests, and 18 giving a negative reaction to both these tests. Only in 4 per cent. was the Wildbolz reaction negative or doubtful, while the Mantoux reaction was positive. Among 143 cases without signs of active tuberculosis, as great a proportion as 28 per cent. gave a positive reaction to the Wildbolz test. A comparison of the severity of the two reactions showed that, with certain exceptions, in severe disease the Wildbolz reaction was as great or greater than the Mantoux reaction, and this comparison can therefore serve as an aid to prognosis. The author concludes that while a negative Wildbolz reaction is strongly presumptive of the absence of active tuberculosis in cases giving a positive Mantoux reaction, a positive Wildbolz reaction is not proof positive of active tuberculosis, for in 23 per cent. of cases of clinically inactive tuberculosis it may be positive.

222. Pathogenic Moulds.

S. G. GREENBAUM (*Journ. of Infect. Dis.*, July, 1922, p. 26) has made a study of the biological properties of pathogenic moulds. He found that the power to liquefy gelatin is a common property of the higher vegetable parasites and varies with the organism, for, although all possess the ferment gelatinose, there is a marked difference in the rate of liquefaction of gelatin by different species. None possess amylolytic ferments, as shown by the fact that no sugar is produced from starch; the fungi grow quite well in 3 and 5 per cent. starch solution, indicating that they can assimilate the larger starch molecule without previous hydrolytic cleavage. The pathogenic fungi do not ferment saccharose, dextrin, glucose, laevulose, maltose, or lactose, and they produce no acids or casein. No indol was produced. Cutaneous affections produced by the higher vegetable organisms are ordinarily not associated with systematic disturbances, but the author has shown that two of the large-spored ringworm fungi and *Achorion schoenleinii* (the fungus of favus) elaborate toxins fatal to guinea-pigs. After death marked congestion of the suprarenals was observed, the appearance resembling that produced by the intraperitoneal injection of diphtheria toxins.

223. B. Suipestifer Infection.

A CASE is reported of *B. suipestifer* infection of man in which the organism was recovered by blood culture (J. MACKENZIE, *Journ. R.A.M.C.*, July, 1922, p. 51). The illness began with an acute inflammation of the nasopharynx, which subsided after three days, but was followed by a relapse accompanied by high temperature, pains in the back, and slight bronchitis. Blood culture yielded an organism which obviously belonged to the paratyphoid-enteritidis group, but which, when first isolated, failed to agglutinate with any of the standard serums. After prolonged subcultivation, however, it agglutinated with *B. paratyphosus* B, *B. paratyphosus* C, and *B. aertrycke* serum. It differed from these organisms in its fermentation reactions when the complete set of sugars was inoculated, but behaved exactly like *B. suipestifer*. Agglutination absorption tests suggested *B. suipestifer*. The organism was pathogenic for rabbits, producing some enlargement and mottling of the liver, resembling a "nutmeg" liver. It is generally held that there is no authentic and conclusive record of a *B. suipestifer* infection in man, and this is the first case in which a bacillus showing such reactions has been recovered from the blood of man.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

221. Cases of Varicella following Herpes Zoster.

ARNOLD NETTER (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, July 6th, 1922, p. 1004) refers to 2 patients brought before the society by J. Pignot and H. Durand (p. 1002), and to his previous communication to the Academy of Medicine (June 29th, 1920, and May 16th, 1922) on the relations of varicella and zona. Netter now gives particulars of 9 hitherto unpublished cases, which, added to those already reported, makes a total of 26 French cases. In support of his argument he states that for the first time he has seen generalized varicella appearing on the fourth day in a case of herpes occipito-cervicalis. The details of his second case are remarkable. A Paris physician who does not practise general medicine and is not likely to be exposed to infection, in December, 1921, had an attack of herpes cervicalis which prevented him from carrying on his hospital or private practice for fifteen days: he went out for the first time on December 20th. On December 22nd or 23rd his daughter, aged 3, developed varicella, and on December 24th his son, aged 1 year, developed the same disease. Under these circumstances Netter concludes that it is very difficult to imagine any other origin for the children's illness than that they were infected by their father. After giving details of the other cases, which resemble those already reported by numerous observers, Netter concludes by quoting Elliott's paper (*Glasgow Med. Journ.*, May, 1922) on five outbreaks of chicken-pox in a fever hospital in the period 1914–21 following admissions of cases of herpes. Netter regrets that he has been unable to compile similar statistics from his own hospital registers, but in 1919, 1920, and 1922 he saw chicken-pox follow herpes in three cases. "We have not only proved that cases of varicella may appear among the 'contacts' of patients suffering from herpes. We have shown that the sequence is frequent, provided that among the 'contacts' there are persons susceptible to varicella—that is, who have not been immunized by that disease." Netter's case of concurrent herpes and varicella is as follows: "A concierge, aged 60, had violent pain on the left side of his head and ear for forty-eight hours; he then developed two red patches, as large as a'monds, on the same side of the scalp near the middle line; on these a few small vesicles formed, followed by typical vesicles in the external meatus and behind the ear. The doctor who saw him next day diagnosed herpes, but four days later found a generalized vesicular eruption, so severe that the case was notified as one of small-pox. The absence of lumbar pain and vomiting and the mildness of the constitutional disturbance, together with the remains of the herpetic eruption, caused Netter, who saw him in consultation a week after the generalized eruption appeared, to change the diagnosis to varicella. At the meeting of the society at which Pignot and Durand presented their cases Comby protested strongly against the astonishing theory 'that the association of herpes and varicella was other than fortuitous.' In forty years I have seen thousands of cases of varicella and scores of cases of herpes, but I have never seen the coincidence of these two affections."

225. Acute Leukaemia.

W. BERBLINGER (*Klinische Wochenschrift*, July 15th, 1922, p. 1449) points out that, though cases of leukaemia may be divided by their clinical course into acute and chronic forms, histologically they do not greatly differ. Both the acute leukaemic myelosis (acute myeloid leukaemia) and the acute leukaemic lymphadenosis (acute lymphatic leukaemia) are characterized by the abrupt onset of severe general symptoms, with fever and haemorrhages in the skin and from the mucous membranes. In the acute forms the number of white corpuscles is less than in the chronic forms. In the acute myeloid leukaemia the white cells are chiefly myeloblasts, with many transitional forms between these and myelocytes. STERNBERG considers that acute myeloid leukaemia is not a definite disease. He thinks the symptoms are due to septic infection, especially by streptococci, and that the symptoms of acute lymphatic leukaemia are due to a general infection. Berblinger records six cases, four of which by their course and the blood conditions can be regarded as acute myeloid leukaemia. In the sixth case the blood was found normal just before the onset of the symptoms of the disease, and the duration up to the fatal termination was only about eight weeks; accumulations of cells, myeloblasts, and myelocytes were found between the muscular fibres of the diaphragm. No bacteria were found in the blood or in sections of the organs in any of the cases. Also the *post-mortem* changes did not correspond to those of sepsis in any of the cases. From his observations the author concludes that we must admit the occurrence of acute myeloblastic leukaemia on the grounds of the clinical course, the blood examination, and the histological changes.

226. Neuro-syphilis in Ex-Service Men.

R. H. PRICE (*Journ. Nervous and Mental Dis.*, June, 1922, p. 485) summarizes the experience gained in the treatment of over 80 cases, incident to military service, at the United States Public Health Service Hospital No. 49, Philadelphia. Following upon a six weeks' course of neo-salvarsan intravenously, with mercurial inunctions and potassium iodide, spinal drainage was instituted, while each case, rather than the disease, was treated by regulating the diet, exercise, etc., and improving the physical tone with hydro- and electro-therapy. Two years' treatment is necessary before any positive conclusion can be arrived at as to the prognosis or value of specific therapy. Of 12 cases treated regularly for one year 4 showed no improvement, while of the remainder none actually recovered, though they showed varying degrees of change for the better either mentally, physically, or both. The blood Wassermann became negative in 3 and the spinal fluid Wassermann negative in 2. Of the 12 patients treated regularly for a year or more by spinal drainage only 2 showed no reduction in the gold curve and blood count, the latter being reduced much sooner than the former, it taking three months to produce any reduction in the gold reaction, so that it is only by lengthy trials that the value of various forms of therapy can be determined. Definite results as to treatment cannot as yet be stated in respect of the rest of the 80 cases, since the time is too short to draw any conclusion as to prognosis. In less than a year 1,579 Wassermann reactions, 868 spinal punctures, and 1,356 intravenous injections were conducted. Opinion of authorities is divided as to the value of intraspinous therapy, Dercum and Gilpin considering that repeated spinal drainages, combined with medication other than intraspinous, are of benefit, while Lowrey holds that intensive intravenous therapy gives the best results, intraspinous therapy being chiefly of value in early painful cases, spinal drainage being useful in cases which would react well to any form of intensive treatment, but of no value in others.

227. The Tuberculin Reaction.

J. A. KOLMER (*Therapeutic Gazette*, June 15th, 1922, p. 381), in discussing the nature of the tuberculin reaction and its use in diagnosis and treatment of tuberculosis, remarks that the local and focal reaction to tuberculin is allergic shock, which by its effect upon the vasomotor system causes hyperaemia around the foci of the disease, the constitutional reaction being the result of increased absorption of poisons from these foci. These reactions are highly diagnostic and specific, since they occur only in tuberculosis, with less than 3 per cent. of error, which is due to the fact that allergic sensitization may be set up by undetected, possibly microscopic lesions. While the focal reaction is useful in the clinical diagnosis of lesions, positive local skin and mucous membrane reactions show the presence of tuberculosis without indicating the locality of the lesions. Specially useful in diagnosis in children, the value of these reactions decreases as age advances. In advanced and acute tuberculosis the reaction may be negative owing to desensitization by absorption from the foci, and reactions may become negative during immunization, or from the production of sufficient fibrous tissue around the foci to prevent absorption. While a slight degree of immunity to later infection may be engendered by the insoluble tuberculins in which the dead bacilli exist in suspension, there is no proof that Koch's old tuberculin confers any immunity against virulent bacilli. Anything which favours the production of hyperaemia and serous and cellular exudation around the foci of disease is of therapeutic value, and tuberculin is especially useful in the treatment of chronic or localized cases, but it is important that the doses should be so small and so spaced as to produce only a mild, but more or less continuous, focal reaction and slight constitutional effects. It is in such mild allergic tuberculin shocks, which favour the production of fibrous tissue, that the value of tuberculin in suitable cases lies.

228. **Quinidine in Heart Disease.**

C. SCHWENSEN (*Ugeskrift for Laeger*, June 29th, 1922, p. 778) has come to regard quinidine as an exceedingly dangerous drug even when given in small doses under close observation in hospital, and after preliminary treatment with digisolvin and rest in bed. At the Bispebjaerg Hospital in Copenhagen 14 patients between the ages 56 and 70, suffering from endocarditis, myocarditis, and auricular fibrillation, were treated with quinidine sulphate, given on Bergmann's principle—that is, a small initial dosage, followed by doses up to 0.5 gram three times a day. When severe signs of intolerance were observed the drug was discontinued. Only in 3 of the 14 cases could the normal auricular rhythm be restored, and in one of these cases success was achieved at the cost of alarming collapse. Among the failures there was one case of sudden death and another of collapse, with loss of consciousness for about half an hour. In the former case the necropsy failed to reveal the cause of death; there was no thrombosis of the coronary arteries nor embolism of the pulmonary arteries. Other slighter sequels to the exhibition of quinidine were headache, ocular symptoms, palpitation of the heart, and diarrhoea. The author notes that, as Bergmann's initial test dose of 0.2 gram affords no security against alarming symptoms, and as these have hitherto always occurred in connexion with small doses early in the treatment, quinidine should be reserved for desperate cases in which other remedies have failed.

SURGERY.

229. **Pneumaturia.**

H. WALTHARD (*Schweiz. med. Woch.*, August 17th, 1922, p. 809) notes that gas in the bladder may be introduced from without by a catheter, or from within through a sinus communicating with the intestines. It may also be generated by gas-forming organisms, and four different forms of pneumaturia due to the activity of germs have been distinguished. Ammoniacal fermentation has been credited with gas formation, but it is doubtful if this is really the case. There is also hydrothionuria, due to the generation of sulphuretted hydrogen—a very rare condition, which has once been traced to *B. coli*—and there is the comparatively common form of gas generation due to alcoholic fermentation in urine containing sugar. Finally, there is the bacterial generation of gas in urine containing no sugar but certain proteins. After recording in detail such a case, the author notes that the prognosis of bacillary pneumaturia is not necessarily bad, provided it does not develop on the basis of malignant disease, as in two cases recorded by Adrian and Hamm. Cystitis is an important predisposing factor, and the pneumaturia is remarkably refractory to treatment with disinfectants given by the mouth or introduced direct into the bladder. Occasionally antidiabetic diet cures the pneumaturia by banishing glycosuria.

230. **Treatment of Tuberculosis of the Larynx with Universal Light Baths.**

O. STRANDBERG (*Deut. med. Woch.*, July 14th, 1922, p. 935) gives an account of the treatment adopted at the Finsen Institute in Copenhagen, where, during the last few years, 61 cases of tuberculosis of the larynx have been treated. In all these cases the patients also suffered from pulmonary tuberculosis, which in most cases was in an advanced stage. In 53 cases the patients came as out-patients to the institute for treatment, returning in the intervals to their homes, and often to work. In spite of these unfavourable conditions 31, or 50 per cent., were discharged with the disease "apparently cured." Only in one case did it relapse after an interval of a year, and renewed treatment led to renewed arrest of the disease. The treatment consisted of sitting or lying stark naked in a room in which powerful carbon arc lamps were burning. The patients sat as near these lamps as they could without discomfort, with eyes protected by shaded glasses or paper, turning round every now and then so as to expose the whole body to the light. The exposures lasted only ten to fifteen minutes at first in debilitated cases, and were gradually increased to a maximum of two and a half hours at a sitting. Patients not very debilitated began with an exposure of thirty to forty-five minutes, and after the first exposures there would be a general erythema of varying degrees of intensity. The reaction might in some cases culminate in the outbreak of vesicles. After a short time the patients became pigmented and ceased to suffer any discomfort, deriving, on the contrary, a sense of great comfort from the exposures. It was also observed that during this treatment the patients were extraordinarily immune to winter colds; one of the patients was a street newspaper vendor, the arrest of whose laryngeal disease was maintained in spite of her becoming pregnant and being out in all weathers.

231. **The Tongue as a Source of Infection.**

T. R. FRENCH (*New York Med. Journ.*, June 21st, 1922, p. 725) points out that the lymphoid structures on the base of the tongue, and the white coating on its oral dorsum, are sources of systemic infection. In addition to the lingual tonsil an apron of lymphoid tissue containing retention crypts extends across the base of the tongue between the borders formed by the lingual branches of the faucial tonsils. A white coating on the dorsum is, except in febrile cases, indicative of a diseased condition of the lingual lymphoid apron, its extent and density affording a fairly accurate estimate of the disease in the lymphoid tissue at the base of the tongue. Necrotic material removed from the crypts in 120 unselected subjects yielded cultures of the *Staphylococcus pyogenes aureus* or *albus* in every instance, and the *Streptococcus viridans* or the pneumococcus in about 20 per cent., while the bacillus of Vincent's angina was present in some. After the application of 4 per cent. solution of cocaine to the lymphoid apron, and cleansing the whole surface of the tongue with 50 per cent. solution of alcohol, the necrotic material can be removed by curettage with a lingual plane firmly swept over the surface. Such curettage is usually followed by reactions evidenced by increased pain in myositis, or nausea, diarrhoea, and cramps in gastro-intestinal infections, etc. Such reactions tend to diminish in severity after each application of the treatment, pointing to the decline in virulence of the micro-organisms in the reproduced necrotic tissue. That this lingual necrotic tissue may be the sole cause of chronic constipation from infection was demonstrated in a number of cases, while in others its causal relationship to myositis, rheumatism, arthritis, vasomotor rhinitis, inflammatory new growths, enlarged thyroids, and altered blood pressure, was established.

232. **Treatment of Actinomycosis.**

R. VON BARACZ (*Zentralbl. f. Chir.*, May 6th, 1922, p. 634) during the last nineteen years has treated 36 cases of actinomycosis, with one exception by injection of copper sulphate solution. The parts affected were in 30 cases the head and neck, in 2 the tongue, in 1 the lung, with metastases in the abdominal wall, in 2 the abdomen, and in 1 the gluteal region. In 30 cases a permanent cure was effected, 2 patients were lost sight of, and 2 were still under treatment. The method consists in injection of a 1 per cent. solution of copper sulphate every few days until softening of the infiltration occurs. In small lesions injection of a few cubic centimetres is sufficient. In extensive lesions the first injections are carried out under an anaesthetic, the abscesses are opened and scraped, large quantities (40 to 100 c.cm.) of a dilute solution (1 4 to 1 per cent.) being injected. The advantages claimed for the method are destruction of the fungus, softening and liquefaction of the infiltrated parts, removal of necrotic foci, avoidance of an extensive operation followed by disfiguring scars, and the possibility of out-patient treatment.

233 **Intravesical Management of Obstructions in Ureter.**

MANY cases of obscure intra-abdominal pain, H. W. E. WALTHER (*Journ. Amer. Med. Assoc.*, August 26th, 1922, p. 733) asserts, are due to obstructions in the ureter. Cystoscopy and ureteral sounding should be employed in all cases in which the symptoms of abdominal distress cannot be traced to some definite surgical condition distinct from the urinary tract. Stone and stricture are the two principal factors in the causation of ureteral obstruction. Approximately 90 per cent. of ureteral stones can be removed by non-operative means. Transurethral instrumental ureteral dilatation is rational, is safe in the hands of the experienced, and is efficient in its results. Ureteral stricture is a definite clinical entity and merits more careful consideration, especially in dealing with abdominal pain in women. Thorough dilatation produces definite and apparently lasting benefit.

234. **The Genesis of Uro-genital Tuberculosis.**

G. EKEHORN (*Hygiea*, July 16th, 1922, p. 513) insists that tuberculosis of the bladder in the female is practically proof positive of primary tuberculosis of one or both kidneys; he has only seen one exception to this rule, and in this case the disease had spread from the pelvis by direct continuity to the bladder. In the male, however, there are more exceptions to the above rule because tuberculosis of the bladder may be secondary to disease of the prostate and epididymis. But whether the site of the primary disease be these two structures or the kidneys, eradication of the primary disease is almost invariably followed by recovery from the disease of the bladder. With regard to the genesis of the disease in the kidneys, it may be due to the kidneys acting as the ports of exit of tubercle bacilli circulating in the blood. The author is sceptical about such an "excretion tuberculosis," and he prefers the hypothesis that the disease starts with a deposit, direct from the blood, of bacilli in some of the capillaries of

the kidneys. From such embolic foci the disease spreads to other parts. The success following nephrectomy points to the correctness of this view, for were the disease contracted in the process of eliminating a chronic blood infection with tubercle bacilli nephrectomy would surely be of little avail.

235. Diverticulitis of the Colon.

R. NEIRYNCK (*Journ. de radiol. et d'électr. méd.*, June, 1922, p. 293) states that Carman and Case in 1914 were the first to describe the radiological appearances of this rare affection, which it is impossible to detect by ordinary clinical examination. The diverticula, which are almost always multiple, may be found on any of the segments of the colon, but are most frequent on the descending colon or sigmoid. They are usually associated with more or less secondary inflammation. Their presence is revealed by the usual method of examination—namely, administration of barium by mouth or rectum. Pictures taken from fifteen to thirty-nine hours after the meal show a narrowing of the lumen (due to secondary colitis), external to which are to be seen small projections, which are round or oval, sessile or pedunculated. Their persistence several hours after evacuation of the colon is characteristic of diverticulitis.

236. Steinach's Epididymectomy for Senile Decay.

SAND (*Ugeskrift for Laeger*, June 1st and 8th, 1922) has performed Steinach's operation on fifteen cases since September, 1920. Ten patients were suffering from ordinary or premature senile changes, and five from such conditions as impotence, depression, failing memory, and the like. Realizing that vasectomy at any level might merely lead to the formation of cysts without inducing the desired changes, the author resected the vas as near the testicle as possible, dissecting out the epididymis and carefully avoiding injuries to the vessels and nerves before the vas was divided and the ends were cauterized. The operation was performed under local anaesthesia and both sides were operated on only in some cases. No ill effects were observed apart from a slight feeling of tension in the parts concerned for a short time after the operation. The patients being a motley group, and exhibiting a great variety of morbid changes other than those for which they were operated on, and the actual indications for operation also varying considerably, it was very difficult to form a correct opinion of the results achieved. In some cases they were quite negative. In others they were strikingly beneficial, depression and inability to concentrate vanishing, and potentia coeundi returning or becoming more lively than before. One patient married again on the strength of these changes.

OBSTETRICS AND GYNAECOLOGY.

237. Endometrial Haematoma of the Ovary.

J. V. MEIGS (*Boston Med. and Surg. Journ.*, July 6th, 1922, p. 1), from a study of 16 specimens removed at operation, is able to confirm Sampson's views that perforating haemorrhagic (chocolate) cysts of the ovary are in many instances due to the presence in this organ of menstruating endometrial-like tissue. In Meigs's cases, as in Sampson's, the majority of patients were aged over 30, and sterility was relatively common; two only had reached the menopause. Six patients complained of dysmenorrhoea, 4 of menorrhagia of recent origin, and 6 of abdominal pain; in one only did the endometrial haematoma form a clinically palpable tumour. Uterine retroposition was demonstrable in 9 cases. If antecedent gonorrhœa can first be ruled out, endometrial haematoma of the ovary, it is said, should be susceptible of diagnosis in 50 per cent. of cases from the history and physical findings. The cysts measure from 1 to 12 cm. in diameter, but are not usually larger than 4 cm.; they are nearly always situated on the lateral surface or free border of the ovary. Periovarian adhesions are always found, and nearly always the cyst has perforated; the contents are typical—dark, chocolate-coloured, or tarry fluid. Microscopically, the endometrial tissue which can be recognized in the ovary shows a layer of cuboidal, columnar, or cylindrical epithelium resting on a tissue composed of blood vessels and loose connective substance, with abundant old and recent extravasations of blood. Sampson finds that these cysts are capable of implanting early adenomata of endometrial type on the peritoneum at the site of adhesions about the perforation, and he has found at distant portions of the pelvic peritoneum small blood cysts histologically resembling dilated glands in an adenoleiomyoma. He believes that adenoleiomyoma of the Fallopian tube, the round ligament, the posterior wall of the uterus, the posterior surface of the mesosalpinx, and the sigmoid or other portions of the bowel are in some instances the result of invasions by these implanted cysts. In 4 cases of Meigs's series adenoleiomyoma was present in one of the above-named situations, and in 1 case the peritoneal implantation was verified microscopically. Probably the endometrium of the cysts is governed by ovarian secretion; it shows phasic menstrual variations, and Meigs reports that in one case implanted nodules in the rectum disappeared after castration.

238. Cysts of the Corpus Luteum.

R. KELLER (*Gynécol. et Obstét.*, 1922, v. 6, p. 458), from a microscopical study of 27 corpus luteum cysts of the ovary, concludes that the different types of these cysts described by Schil and by Fraenkel are explained by the varying histological characters shown at different stages of development of a structure which is typically uniform. The external layer of the cyst wall is composed of vascular connective tissue which may contain recognizable cellular remnants of the theca externalis. Internal to this is the layer of luteum cells, which in older cysts acquire a characteristic arrangement, due to penetration of vascular ingrowths of connective tissue from the external layer. Still nearer the interior an investment of connective tissue of embryonic character may or may not be present. This layer has erroneously given rise to the description of an innermost endothelial or epithelium lining, which, according to Keller, does not in fact occur. A causal connexion has been suggested between corpus luteum cysts and pathological nidation of the ovum, giving rise to ectopic pregnancy: Keller, however, in large series of cases found the occurrence of the cysts to be equally as common in ovaries removed for adnexal inflammatory conditions as for extrauterine gestation, and in 13 cases only of 150 ectopic pregnancies was a lutein cyst present. The formation of the cysts is explained by the writer as being due to defective development of lymph spaces in connexion with the outer layers of the wall; absorption of the fluid contents is thereby impeded. Lutein cysts are commonly present in cases of hydatidiform mole and chorion-epithelioma; they take up the major part of the ovary and have a scanty lutein cell layer. The formation of the mole precedes that of the cyst, which is probably to be ascribed to follicular degeneration.

239. Cullen's Sign of Ruptured Extrauterine Pregnancy.

J. P. ZUM BUSCH (*Deut. med. Woch.*, July 14th, 1922, p. 941) discusses the sign first described by Cullen of Baltimore in 1919. It consists of discoloration of the skin about the umbilicus. Being found associated with free blood in the peritoneal cavity following rupture of an extrauterine pregnancy, it has been regarded as suggestive of such a rupture, and pathognomonic of an effusion of blood into the peritoneal cavity. The author records a case to show that this view is incorrect. His patient was a woman, aged 60, who showed signs of the acute abdomen. In addition to violent pain and retention of flatus and faeces, there was a bluish-green discoloration, with a yellow tint, about the umbilicus. Laparotomy revealed a large ovarian cyst which had become twisted on its pedicle. The cyst, which contained almost black haemorrhagic fluid, was slightly adherent over an extensive area to the anterior and lateral abdominal walls. There was no free blood in the peritoneal cavity. Thus the discoloration of the umbilicus due to absorption of effused blood cannot be traced to invasion of the peritoneal cavity with blood.

240. Pregnancy and Addison's Disease.

G. FITZ-PATRICK (*Surg., Gynecol., and Obstet.*, July, 1922, p. 72) summarizes the eleven cases which have been recorded in the literature of Addison's disease complicating pregnancy or the puerperium, and records a personal case: A primipara, aged 28, began twenty hours after labour to manifest irregular pyrexia first ascribed to septic endometritis. Eight days later deep cutaneous pigmentation, mental lethargy, asthenia, and diminished blood pressure were all well marked. The influence of pregnancy and labour on Addison's disease is frankly bad, if one judges by the recorded cases, in five out eleven of which the mothers died before they had reached term or within a few days after labour. It is probable that pregnancy may act as a stimulus rendering a latent Addison's disease manifest in a patient whose suprarenals are already faulty; cases in which the disease has been recognized before pregnancy appear to undergo an intensification of the signs and symptoms during the gravid condition. Foetal prognosis is bad because of the frequent occurrence of abortion. In none of the cases was there uterine atony or insufficiency at or after labour, so that if adrenaline plays any part in the mechanism of labour the conclusion must be drawn that the loss of adrenaline of suprarenal origin must have been compensated for in some unknown manner. The writer's patient showed considerable improvement after exhibition of suprarenal and thyroid extracts.

241. Transient Glycosuria in Pregnancy.

ACCORDING to R. L. MACKENZIE WALLIS and J. P. BOSE (*Journ. of Obstet. and Gynaec. of the Brit. Emp.*, Summer, 1922, p. 274), who describe a new technique for estimation of glucose in blood and urine, and find that normal urine contains from 0.06 to 0.09 gram of glucose per cent., two types of glycosuria are encountered during pregnancy—namely, (1) intermittent or transitory glycosuria, (2) severe glycosuria and true diabetes mellitus. These types may be differentiated by the glucose tolerance test, which consists in giving the patient 50 grams of glucose dissolved in 150 to 200 c.cm. of water and estimating the blood sugar after successive intervals of 15, 15, 30, 30, and 30 minutes respectively, and the urinary sugar at the end of the first and second hours. Transient or intermittent glycosuria does not usually appear until the sixth month of pregnancy, and rapidly disappears after labour; it is accompanied by very slight hyperglycaemia, and as a result of restriction of the carbohydrate of the diet the blood sugar is little, if at all, altered in amount, although the glycosuria may be increased. No dietetic treatment is required. Transient glycosuria may return when the patient again becomes pregnant. The authors find that the curve obtained by graphically recording the blood sugar after exhibition of glucose in cases of transient or intermittent glycosuria resembles with remarkable closeness that found in acromegaly, extreme adiposity, adiposis dolorosa, and other clinical conditions characterized by pituitary hyperfunction: they attribute transient glycosuria to altered carbohydrate metabolism consequent on increased pituitary activity during pregnancy. Clinically the glycosuria, which is of a very moderate grade, is often accompanied by polyuria, and usually by extreme lassitude.

242. Spontaneous Rupture of the Uterus.

H. P. KORTEBOS (*Nederl. Tijdschr. v. Geneesk.*, July 22nd, p. 363) reports the case of a woman, aged 25, who was admitted to hospital with signs of peritonitis. Three days previously she had been seized with violent pain in the abdomen, followed by vomiting. She was pregnant and a week over term. She had had two children, the younger of whom was a year old. Her previous pregnancies and deliveries had been normal. A diagnosis of perforative peritonitis, due to ruptured extrauterine gestation, was made. On laparotomy a macerated foetus, partly invested in its membranes and connected with the placenta, was found lying free in the peritoneal cavity. Examination of the uterus showed a transverse rupture in the fundus, but no local cause was found to explain the diminished resistance at this site. The wound was sewn up and recovery was complete and uneventful.

PATHOLOGY.

243. Food Poisoning.

S. A. KOSER (*Journ. Infect. Dis.*, July, 1922, p. 79) has studied the development of the common food-poisoning bacilli of the paratyphoid-enteritidis group in various foodstuffs by inoculating these organisms into various common articles of diet and measuring the rate of multiplication of the organisms in samples withdrawn at regular intervals. He finds that all the strains of the paratyphoid-enteritidis group multiply in the liquor of several common cooked vegetables, such as tomatoes, spinach, string beans, corn, peas, and also in milk, but not in highly acid media such as sauerkraut. In several meat products, such as corned beef, Hamburg steak, and red salmon, these organisms exhibited a marked ability to spread from one original point of inoculation throughout the foodstuff, although this occurred only under optimum temperature conditions—namely, at 37° C.; at lower temperatures practically no invasion of the surrounding food was found. In most of the foods the paratyphoid-enteritidis group failed to give any evidence of growth visible to the naked eye; there appeared no evidence of contamination, no odour, and probably no abnormal taste. This is in accordance with the experience of reported cases of food-poisoning epidemics, when it is usually stated that none of the individuals who partook of the infected food complained of any abnormal appearance, taste, or smell. In foodstuffs contaminated with *B. botulinus*, on the other hand, it is usually reported that the infected food was noted to be abnormal with respect to either the odour, appearance, or swelled condition of the container.

244. Chemistry of Wassermann Reaction.

C. H. H. HAROLD (*Journ. Royal Army Med. Corps*, August, 1922, pp. 85–97) has studied the euglobulin group of proteins in relation to the Wassermann reaction. He finds that the so-called Wassermann bodies, which are responsible for the positive syphilitic reactions, are solely contained in the euglobulin group of proteins, and are capable of complete precipitation with this group by dilution acetic acid methods. The amount of precipitable euglobulin in syphilitic serums varies directly as the strength of the Wassermann reaction, a fact which can be verified by opacity tests, estimation of bulk after centrifugalization, and Kjeldahl estimations. If the euglobulin group be separated from a positive serum deviating three M.H.D. complement and concentrated, a solution can be prepared which is not anticomplementary, and which will deviate twelve M.H.D. complement when in contact with antigen. Although the Wassermann bodies are intimately bound up with the euglobulin group by careful treatment of a syphilitic serum with CO_2 and acetic acid, it appears possible to separate out the main euglobulin group with a fraction of the Wassermann bodies, and also a fine film of precipitate, which has stronger deviating powers in proportion to its bulk than the whole euglobulin group and at the same time it is not anticomplementary. By employing ammonium sulphate precipitation methods solutions are obtained which are markedly anticomplementary and which do not contain such a great concentration of the Wassermann substance. The haemolytic bodies in haemolytic amboceptor, on the other hand, are chiefly contained in the pseudoglobulin group. In malaria, under certain conditions, bodies may appear in serum which belong to the globulin group and react in the same way as the Wassermann bodies.

245. Necrotic Dissecting Pneumonia.

UNDER this imposing title M. LETULLE and F. BEZANÇON (*Annal. de méd.*, July, 1922, p. 1) call attention to a particular variety of pulmonary consolidation which they have encountered during the past two or three years. Commencing as a lobar pneumonia, the disease involves one or more lobes of the lung in a fibrinous inflammation, which, instead of resolving after a week or so, passes on to a purulent infiltration. The whole of the lung tissue becomes converted into a necrotic mass bathed in pus; a cavity forms, filled with brownish-yellow fluid, in which little sequestra of hepatized lung may be found. The wall of the cavity is irregular, and is lined by a false membrane of tissue which has undergone coagulation necrosis. Outside, there is a very definite reaction on the part of the healthy lung, which becomes fibrosed after a preliminary formation of granulation tissue. Growing over this newfound cicatricial tissue are here and there to be found smooth prolongations of epithelium from the bronchi. Sometimes the cavity extends outward to the pleura, with a resulting pyopneumothorax. That the affection is not a simple gangrene is shown by the absence of odour in the fluid in the cavity or in the sputum. Each case described ran a fatal course in four or five weeks, and at autopsy much the same findings were recorded. In spite of the attempt to shut off the contents of the cavity from the healthy lung tissue, the disease appeared to be progressive, while death was hastened by a terminal bronchopneumonia of the opposite lung. The bacteriological examinations revealed nothing constant.

246. The Cerebro-spinal Fluid: Its Source, Distribution, and Circulation.

R. M. STEWART (*Journ. of Neur. and Psychopath.*, August, 1922, p. 144) reviews the present state of knowledge of this subject, observing that greater advances have been made in its pathology than in its physiology. In the course of an exhaustive review (to which is appended a very complete bibliography) Stewart arrives at the following conclusions: (1) On the whole there is almost complete unanimity of opinion that the choroid plexuses are the chief source of the cerebro-spinal fluid. This conception rests not on any single conclusive piece of evidence, but on well-established data derived from histological, pharmacological, and pathological observation. (2) The question whether the cerebro-spinal fluid is a true secretion or a dialysate cannot as yet be fully answered. (3) The possibility of subsidiary sources of supply, either by drainage from the perivascular spaces or from the membranous surfaces of the brain, must be considered. (4) Conclusive proof that the cerebro-spinal fluid functions as the lymph of the brain is at present lacking. (5) Thus far the methods devised for computing the rates of formation and absorption are unreliable. (6) Absorption of cerebro-spinal fluid takes place by a process of diffusion through microscopic arachnoid villi into the large dural sinuses and, to a lesser extent, through the lymph sheaths of the cranial nerves. In this spinal subarachnoid space the fluid is drained by way of the lymphatic system only. (7) Cerebro-spinal fluid circulates in the ventricles of the brain and in the subarachnoid space surrounding it. Whether it also circulates in the substance of the brain remains to be established. Movements of the fluid in the spinal subarachnoid space are probably minimal in degree.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

247. The Nomenclature of Minor Mental Disorders.

MILLAIS CULPIN (*Journ. of Neur. and Psychopath.*, August, 1922, p. 105) criticizes the prevalent laxity in the use of the terms "neurosis" and "neurasthenia." After quoting the definition of "neurosis" in the *Oxford English Dictionary*, he shows that the word has been employed by distinguished writers in the eighteenth and nineteenth centuries to describe definite organic disease, and as late as 1874 Maudsley refers to insanity and epilepsy as "neuroses." Culpin claims that, speaking generally, functional nervous disorders are mental disorders. "Our own meaningless use of words with meanings has taught our patients to speak of their nerves with the same satisfaction with which our ancestors talked of 'rheums' and 'humours.'" He observes that "the source of greatest offence to accuracy of thought is 'neurasthenia.' It has now become only a thought-saving device, and covers any disturbance of mental processes that is not insanity or a glaring hysteria." It connotes a pathology vague and indeterminate but influential. He agrees with Rows that we should cease trying to classify certain cases as epilepsy or hysteria and be content to describe them as "convulsive seizures." We must avoid diagnostic words that give a false sense of knowledge. Culpin proposes to limit the term "neurosis" to such a derangement of the intrinsic function of nerve tissue as is exemplified by D.A.H. "Psychosis" is usually applied to insanity, but some authorities have used it to denote minor disturbances—for example, H. Head uses "functional psychosis" as an alternative to "shell shock." Culpin suggests that the term "minor psychoses" may be used to indicate "functional nervous disorders," and under the heading "Conditions found in the minor psychoses" the author groups: (1) hysteria, (2) anxiety states, (3) obsessional states, (4) hypochondria, (5) psychasthenia, with (6) neurasthenia, which latter he and Ernest Jones have found actually present in only 1 per cent. of a series of cases. Such a word as "neurasthenia" is as powerful as it is pernicious—such phrases have been a real hindrance to treatment. By using words implying a pathology which may be, and probably is, false we hinder a healthy confession of ignorance or an acknowledgement of the difficulty of the subject.

248. Etiology of Whooping-cough.

T. P. HALL (*New York Med. Journ. and Med. Record*, August 2nd, 1922, p. 158), considering that the chief source of danger in whooping-cough is the associated stomach disturbance, found that considerable benefit resulted from stomach lavage. In eight cases immediate relief of symptoms followed, and the disease was cured in from three to six days, the spasms losing their intensity after the first day's lavage. The stomach washings contained a white tenacious mucoid mass consisting of thin-walled semi-mucilaginous threads 2 to 4 μ in diameter, each divided into cells 10 to 50 μ long, with some spore-like bodies of the same diameter. Growth in various nutrient media developed aerial spores, at first white and gradually becoming blue-green, producing a blue-green penicillium mould. An easily digested diet, excluding milk, should be given, and lavage undertaken twice a day before meals, two quarts of water at 100° F. being used containing alternately 20 minims of lysol and 3 or 4 drachms of sodium bicarbonate. In six cases with hoarse spasmodic cough, but without whoop, penicillium was present, and cure followed lavage in one to three days. In one other case no penicillium was found, and in another, which did not respond to treatment, a variety of penicillium was present in which the spores and threads were one-quarter the diameter of those found in the other six. The distress caused by the treatment is less than that from the cough, and becomes negligible after the third treatment.

249. Acute and Subacute Atrophy of the Liver.

F. UMBER (*Klinische Wochenschrift*, August 5th, 1922, p. 1585) draws attention to the increase of liver diseases, and of acute atrophy of the liver, especially in his own hospital practice in Berlin since 1919. Others have recorded similar experiences. The important pathological change in acute and subacute atrophy is the breaking down of the liver cells. The author considers that an important factor in the production of these changes is the deficiency of the glycogen in the liver cells owing to malnutrition; and as a result thereof the liver cells cannot withstand the action of various bacterial and chemical toxic substances. The recent food deficiency in Germany has affected the liver especially; and the *post-mortem* observations of O. Weber have shown that in 1916–18 the weight of the liver was distinctly less than in 1914–15, whilst the weights of the heart, lungs, kidneys, and brain were unchanged. The question of the injurious action of salvarsan has been much discussed. Undoubtedly a liver injured by syphilis may pass into acute atrophy through the action of salvarsan. But the author thinks the injurious effect of salvarsan has been much overestimated. It has not yet been shown that in therapeutic doses salvarsan alone, without syphilis, can produce acute atrophy of the liver. Of the author's 33 cases 20 were females. The disease was not associated with phosphorus poisoning or with pregnancy in any of these cases. The most important symptoms are progressive diminution in the size of the liver (detected by palpation and percussion), which, at first enlarged, may finally disappear under the costal margin; signs of hepatic intoxication—increasing somnolence passing into deep coma, various irritative nervous symptoms in some cases preceding the coma; a peculiar, sweet, aromatic, characteristic smell of the breath; jaundice, and bilirubin in the urine (in all of the author's 33 cases). Ascites was only detected in 5 of the cases. The presence of leucin alone in the urine is of no diagnostic value; but the association of tyrosin with leucin is a characteristic symptom (11 in 33 cases). The temperature may be normal during the whole course, but sometimes rises rapidly just before death.

250. Ultra-violet Radiation in Rickets.

B. KRAMER, H. CASPARIS, and J. HOWLAND (*Amer. Journ. Dis. of Children*, July, 1922, p. 20) give the results of treatment of five children showing clinical and *x*-ray evidences of rickets by systematic exposure to the rays from the mercury-vapour quartz lamp, healing of the process in the bones taking place in each instance. The effect of the ultra-violet radiation on the calcium and inorganic phosphorus concentration of the serum of these children showed a gradual increase of the latter, with the appearance of calcium deposit in the bones. Healing of the bones after radiation appears to occur at about the same time as it does after the administration of cod-liver oil, and the changes in the phosphorus concentration of the serum were identical with those following cod-liver oil treatment. The five children—four coloured and one white—were exposed to radiation from a mercury-vapour quartz lamp at a distance of 50 cm. every day for five minutes, gradually increasing to twenty minutes, 8 amperes of current being used. The ventral and dorsal aspects of the body were radiated on alternate days, the eyes being carefully protected. Before and during treatment frequent *x*-ray examinations were made, the calcium and inorganic phosphorus of the serum being determined at least once before and twice during treatment. The pigmented skin of the coloured children did not interfere with the action of the rays, and they required no more intensive treatment to produce healing than the white children.

251. Causation of Lathyrism.

H. W. ACTON (*Indian Med. Gazette*, July, 1922, p. 241) investigated the causation of lathyrism, a type of spastic paraplegia, occurring among the inhabitants of North Rewah, and generally attributed to an exclusive diet of kesari dāl (*Lathyrus sativus*). In some parts of Central India and the United Provinces about 6 per cent. of the population are affected, equivalent to 60,000 cases in North Rewah, the majority occurring between the 15th and 30th years, males suffering about eight times as frequently as females, and all of the lowest labouring classes. The great predisposing cause is the harwar system or system of bondage, and there appears to be a definite relation to famine years, and at such times the harwars (ploughmen) are paid in kind with the cheapest food (kesari dāl). The majority of cases occur in July, owing probably to the production of poisonous amines during germination, and, though an alkaloid has been isolated, the matter is still under investigation. The incidence of the disease is frequently associated with chills. Sudden in onset, without pain, the legs are noticed to be weak, and that there is difficulty in sitting down or getting up. In the earliest stage the patient can walk unaided, or with only a short stick, and has a characteristic hesitating springy gait on tiptoe. In the second stage he requires the support of a long stick, and the body is thrown forward with the knees more flexed and the foot slightly turned in, one foot being brought in front of the other owing to adductor spasm.

In the third stage two long sticks are used, the knees are acutely flexed and drawn one in front of the other (scissors progression). In the last stage the knees are flexed almost on to the thighs, and progression is only possible by crawling or by using wooden shoes for the hands. Consciousness is never lost, the bladder and rectum are not involved, Romberg's sign is absent, the knee-jerks are increased, ankle clonus is well marked, and Babinski's reflex is present. There is no paralysis, but the spastic condition involves the quadriceps extensors, adductors, gastrocnemii, and posterior peroneals, the trunk and upper limb muscles being unaffected. The condition is due to an upper neuron lesion below the second lumbar root, involving the motor tracts, and apparently caused by an amine from the germinating seed of kesari dāl. Soaking the grain for twenty-four hours in three changes of water removes the poison. Prevention of the disease should be aimed at by abolishing the harwar system, by improving the agricultural methods, and instituting famine relief to decrease the consumption of kesari dāl, and by increasing the popular knowledge as to its toxicity and method of removal. The small-grained kesari, being less toxic, should be grown to meet local requirements, and germination prevented by storing in dry places during the damp months of July and August.

252. Treatment of Diphtheria.

H. C. DRURY (*Irish Journ. of Med. Science*, June, 1922, p. 153), from considerable experience in the treatment of diphtheria by antitoxin, advocates a much smaller dosage than that usually adopted, his practice being in a mild case, either adult or child, to administer 2,000 units daily, or night and morning, until the membrane disappears, which usually occurs after three doses at most. In severe cases 4,000 units per dose are required, while in desperate cases a dosage of 6,000 units should be given. By such a method toxaemia is suppressed and neutralized, the patients making a rapid recovery and becoming free from infection in a comparatively short time. Notes of two severe cases are given in which recovery took place after a total of 16,000 and 12,000 units respectively in divided doses spread over three days. It was found that such doses were quite as effective as larger ones in shortening the period of infection and in the opinion of those having experience of both methods no better results are obtained by the larger doses. An experience of over eight years in treating bad scarlet fever throats by the administration of diphtheria antitoxin has shown the efficacy of such treatment on non-diphtheritic conditions, and the excellent results, originally accidentally discovered, have led to its adoption in severe scarlatinal sore throat with satisfactory results.

253. Treatment of Influenza.

D. SIMICI (*Paris méd.*, June 3rd, 1922, p. 474), owing to the difficulty of treating influenza by the injection of convalescents' serum, especially when a large number of patients have to be injected at once, has substituted the use of whole blood. Another advantage claimed by him for his method is that the albumin contained in the other elements of the blood apart from the serum are introduced into the organism as well as the bactericidal or antitoxic substances contained in the serum. The technique consists in injecting subcutaneously or intramuscularly 10 to 20 c.cm., which has been withdrawn a few moments before from a patient convalescent from a severe attack of influenza in whom the temperature has been normal four or five days. To prevent coagulation 2 c.cm. of a 2 per cent. solution of sodium citrate should first be drawn into the syringe and well mixed with the blood. Simici has employed this treatment in twenty-four cases of the septicaemic form of influenza, all of which were complicated by more or less extensive lesions of the respiratory system. Twenty recovered and four died. The effect of the treatment was indicated by the favourable action of the injections on the temperature, general condition, and respiratory symptoms, and also by an increased diuresis, patients who had previously been passing little urine excreting from 1,000 to 2,000 c.cm. in the twenty-four hours.

254. Treatment of Sycosis.

MADERNA (*Rif. Med.*, July 3rd, 1922, p. 625) reports 11 cases of tinea sycosis successfully treated by means of endovenous injections of Lugol's fluid. This is made up of iodine 1 gram, potassium iodide 2 grams, and distilled water 300 grams. The initial dose is 1 c.cm. diluted in 10 c.cm. of water. An injection was given every other day, increasing the dose to 5 c.cm. If the case was seen early—for instance, within five to ten days—cure was usually obtained in fifteen to eighteen days after seven or eight injections; if later, twelve to fourteen injections were required. No ill effects were observed, and the results were equally good with the sycotic as with the erythemato-squamous type of trichophyton infection. Illustrations before and after treatment are given.

SURGERY.

255. Torsion of the Spermatic Cord in Children.

ALBERT MOUCHET (*Paris méd.*, July 15th, 1922, p. 63) describes two cases which illustrate the two types of this condition: (1) volvulus of testicle in an abnormally large tunica vaginalis and (2) true torsion *en masse* of the spermatic cord above the tunica vaginalis. CASE I.—A boy, aged 8, whose parents had observed for three months that the left side of his scrotum had enlarged to the size of a pear. Three days before admission he was seized with violent pain in the left testicle, accompanied by vomiting. On admission, the pain was less severe, and, except for a slight rise of temperature, there was little systemic disturbance. The right side of the scrotum was normal, but the left was swollen to the size of a small lemon and was too painful to permit the testicle and epididymis to be felt. The skin was red and the subcutaneous tissues oedematous; the swelling was translucent. The cord was intact and the urethra healthy. A provisional diagnosis of tuberculous epididymitis was made. Local treatment gave some relief, and five days after the onset an exploratory puncture yielded a small quantity of lemon-coloured fluid containing red corpuscles and polynuclears. The pain persisting, two days afterwards the tunica vaginalis was opened (under a general anaesthetic); it contained about 12 c.cm. of yellow serum; the testicle was normal, but the globus major was swollen to thrice its size and the whole epididymis was separated from the testicle. The cord was swollen and was twisted spirally thrice from left to right inside the tunica. It was easily reduced, the epididymis fixed to the upper surface of the testicle, and the tunica vaginalis resected. The testis was only slightly congested, and the patient made a rapid recovery. CASE II.—A boy of 9 was admitted with a large swelling of the left side of the scrotum, attributed to a fall on one of his sabots. He felt a sudden pain, which quickly disappeared, and nothing further occurred until he was awakened in the night by severe scrotal pain and vomiting. Pain and malaise persisted for three days, when he walked to the hospital. The symptoms resembled those of CASE I; the cord was intact, and there was no urethral discharge. There were no ecchymoses nor history of infection. Seven days after the onset the oedematous scrotum was incised; on opening the tunica vaginalis the testis was seen to be quite black. A second incision near the external ring showed that the whole cord had been twisted one and a half turns from left to right. As the testis appeared to be gangrenous it was removed. Pathological investigation showed that it was quite disorganized.

256. The Cause of Fatalities from Intraspinal Anaesthesia.

S. WIDERÖE and S. DAHLSTRÖM (*Norsk Mag. for Laegevidenskaben*, June, 1922, p. 450) note that the intraspinal injection of novocain or stovaine not infrequently causes paralysis of respiration, necessitating prolonged artificial respiration. Investigating the mechanism of this accident, they have experimented on syphilitic lunatics, injecting air and phenol-sulphonephthalein into the spinal canal, and noting the time taken for the air and the dye to reach the ventricles of the brain. When the dye was injected into the ventricles of the brain it was almost at once found in the cerebro-spinal fluid, and when the dye was injected into the spinal canal it was found within five minutes in the ventricles of the brain. Intraspinal injections of air also showed that it could easily escape to the surface of the brain and into its ventricles. The authors conclude that respiratory failure following the intraspinal injection of an anaesthetic is probably due to the action of the anaesthetic on the fourth ventricle.

257. Early Stages of Acute Pancreatic Necrosis.

H. ZOEPFFEL (*Klinische Wochenschrift*, June 10th, 1922, p. 1203) points out that acute pancreatitis is one of the rarer complications of gall-stone affections (10 cases met with amongst 150 operations on the biliary passages; in 9 of these cases direct connexion with gall stones, in one case connexion probable). When a gall stone obstructs the terminal common portion of the ducts from the liver and pancreas the obstructed bile is pressed into the pancreas and acute pancreatic necrosis may follow. But other cases are met with in which operation reveals oedema of the pancreas and adjacent parts without necrosis. Three such cases are recorded, and the author regards the condition as an early stage of pancreatic necrosis. In all three cases there was a previous history of gall-stone attacks, then a specially severe attack with desperate pain in the epigastrium; in all these cases gall stones were found. Operation was performed within the first twenty-four hours, and all three patients recovered. Death occurred in seven cases operated upon after twenty-four hours,

and haemorrhagic necrosis was found in the pancreas. If, in the course of cholelithiasis, a specially severe attack occurs, with pain which radiates to the left in the epigastrium, with tension, or only tenderness on pressure in this region, the possibility of commencing acute pancreatic necrosis should be thought of, and operation immediately performed. The author thinks his observations indicate the value of early operation in certain gall-stone attacks, since early pancreatic œdema is thereby prevented from developing into actual pancreatic necrosis. Also in early operations generally, the gall stones may be found in the gall bladder, and their passage into the choledochus prevented, and thus the chief cause of pancreatic necrosis avoided.

258. Pulmonary Decortication.

ROUX-BERGER (*Bull. et Mém. Soc. Chir. de Paris*, May 9th, 1922), in discussing the treatment of pleural empyema, finds that the best position for operation is for the patient to be seated. It has the advantage that the patient is in the same posture as that in which he was x-rayed, and respiration is rendered easier. He then describes the operation of pulmonary decortication—here a general anaesthetic is necessary and the prone position is found best. Before this operation is carried out it is advisable to investigate the type of organism present and the size of the cavity in the chest. The most difficult cases are those occupying the whole extent of the thorax, reaching from the first rib to the diaphragm; in these cases pulmonary decortication is necessary. When the whole lung is involved the operation cannot be completed through a single incision. In certain cases it is essential to reach the apex of the lung. The lung always retracts away from the chest wall, whilst the base and the apex remain in position, and usually have firm attachments which limit the retraction to some extent. In some cases the apex retracts downwards, but he has never seen the base separated from the diaphragm. If decortication is incompletely carried out a firm cap is left over the summit of the lung which prevents its ultimate expansion. With a low incision one cannot reach the apex of the lung satisfactorily, and a second incision over the second intercostal space may be required. Such an operation may be carried out in two stages. In those cases where only a small cavity is found, occupying three or four spaces, the treatment is relatively simple compared to the above—the fistula then being opened up and the cavity itself treated.

259. Rare Localizations of Hydatid Disease.

L. BACCARINI (*Il Policlinico*, Sez. Prat., May 22nd, 1922, p. 676), who records a case of echinococcus cyst of the neck in a boy aged 10, successfully removed by operation, states that little attention has been given to this localization of hydatid disease. Of 116 cases of hydatid disease studied in the Paediatric Clinic at Montevideo by Morquio and De Penna, only three occurred in the neck. As a rule, a hydatid cyst in this region is situated below the sterno-mastoid along the course of the large vessels. It is very unusual for it to be situated in the posterior part of the neck, as in the present case, and rarest of all to be within the substance of the sterno-mastoid. When it has attained a certain size, the cyst may give rise to symptoms of compression on the vessels, more rarely on the nerves, and disturbance of deglutition, phonation, and respiration. As a rule, a hydatid in the cervical region develops fairly slowly, at some periods remaining almost stationary, and at others taking on a rapid growth. Cervical cysts are generally single and do not contain daughter cysts. The only certain method of diagnosis is exploratory puncture, which reveals the presence of characteristic hooklets. ROMANO (Ibid., p. 678) records a case in which the hydatid cyst was situated either in the omentum corresponding to the greater curvature of the stomach or in the retroperitoneal connective tissue of the left hypochondriac region. Its exact position could not be determined, as the patient refused operation.

260. Sciatic Hernia.

J. E. SUMMERS (*Annals of Surgery*, June 1st, 1922, p. 672) points out that this type of hernia may be met with in three forms—those which pass out both posterior sciatic notches, the greater sciatic notch, and the lesser sciatic notch. In all cases the hernia will have the greater sacro-sciatic ligament under it. The hernia then appears in the gluteal fold under the gluteus maximus. There is a greater frequency for this hernia in the female sex, probably because the notch is slightly larger and the ligament in women is of greater length and laxity. The hernia occurs more commonly on the right side. It is most frequently caused in women as a result of the pressure and trauma of labour, and may contain any viscus sufficiently movable to pass out of the pelvic cavity. The hernia varies in size from a chicken's egg to a grape fruit, and may be mistaken for a teratoma or lipoma. Unless symptoms of strangulation are produced it is best left alone. When interference is necessary an attempt should be made to close the hernial opening from without: in the presence of strangulation a combined operation should be performed. In operating a large incision through the gluteus maximus is made and the two flaps retracted; the sac is isolated and incised. If it is necessary to enlarge the hernial opening care must be taken not to injure neighbouring arteries. The contents and the sac are then dealt with in the usual manner. If gangrene has developed the operation must be completed by the abdominal route. The author refers to twenty-five cases reported in the literature, and describes a case of his own.

OBSTETRICS AND GYNAECOLOGY.

261. Anteversion and Retroversion of the Uterus.

ONE thousand consecutive unmarried women, aged from 15 to 45 years, who had no record of pelvic infection, pelvic tumour, or pregnancy, were investigated by LEDA J. STACY (*Journ. Amer. Med. Assoc.*, September 2nd, 1922, p. 793) to determine, if possible, the relative frequency with which the various displacements of the uterus and the attendant symptoms occur in cases in which no pathological or physiological factors could have affected the position of the uterus. Retroversion of the uterus was found in 202 (20.2 per cent.). Anteversion, probably the normal position in most cases, occurred in 798 (79.8 per cent.). In view of the fact that the infantile type of uterus with which one expects to find delayed menstruation is more often in anteversion, it is of interest that in these cases menstruation was established at the average age of 15.85 years, and in cases of retroversion at the average age 14.18 years. Dysmenorrhoea occurred in 102 (12.8 per cent.) of the patients in whom the uterus was in anteversion, and in 33 (16.33 per cent.) of the patients with retroversion. Backache occurred during menstruation in only 7.25 per cent. of the 798 patients with anteversion, and in 11.38 per cent. of the 202 patients with retroversion. Intermenstrual backache occurred in 8.39 per cent. of all the patients, although the ratio remained the same in retroversion and in anteversion. None of the 1,000 patients had marked leucorrhoea. Operation for pelvic complaints (practically always dysmenorrhoea) was advised for only 6 (0.75 per cent.) of the patients with anteversion, and for 3 (1.48 per cent.) of the patients with retroversion. There seems to be little difference in the character and incidence of symptoms as a whole in cases of anteversion and in cases of retroversion of the uterus. Congenital retroversion of the uterus, associated with backache, dysmenorrhoea, and so forth, usually is part of a general picture of deficiency of development. Surgical procedure to relieve pelvic symptoms in uncomplicated cases should be advised only after careful study of the patient from the point of view of the general, as well as the gynaecological, condition.

262. Calcification and Torsion of Myomata.

ACCORDING to F. MONTUORO (*Rivista d'Ostetricia e Ginecologia Pratica*, June, 1922, p. 300), calcification of uterine myomata is not rare, being found in 3 to 10 per cent. of cases. It may occur as a consequence of post-menopausal degeneration of the uterine vessels, or in some cases appears to have been brought about by reason of the occurrence either of torsion of the pedicle of a myoma or of axial rotation of a myomatous uterus as a whole. The case is recorded of a nullipara, aged 63, in whom a myoma had increased in size and become progressively harder after the menopause; at operation the calcified myomatous uterus was found to be axially rotated. Torsion facilitates calcification, but the reverse is also true, especially in the case of pedunculated tumours. Calcified myomata, besides causing intolerable pain, may lead to grave consequences by reason of their compression of the pelvic or other viscera; their removal is, as a rule, easy and well borne by the patients in spite of their advanced age.

263. Regulation of the Placental Circulation.

W. SCHMITT (*Zentralbl. f. Gynäk.*, July 22nd, p. 1190) confirms the finding of other observers that nerve endings cannot be distinguished in the walls of the placental blood vessels nor in the umbilical cord; from anatomical considerations, therefore, it appears probable that the calibre of the placental vessels is regulated by other influences than that of vaso-motor nerves. Testing the response of physical and chemical stimulation of the placental vessels, both in perfusion experiments and in strips of excised surviving arterial wall, he found that the vessels dilated in response to warmth, contracted after application of histamin, pituitary extract, or barium chloride, and dilated under the influence of amyl nitrite. In contrast to other blood vessels, however, which

contract in response to adrenaline in concentration so low as 1 in 20,000, the placental arteries showed little if any variation in the presence of concentrations of 51 in 1,000 of that substance. Since adrenaline acts on the nerve endings or myoneural junction, these experiments afford physiological evidence that the placental circulation is independent of nervous regulation. In both modes of experiment the blood vessels showed a remarkable sensitiveness to the oxygen tension to which they were subjected. Their tone was increased, in the presence of increasing amounts of oxygen, to a definitely proportional extent; and this reaction was absent in control experiments with the carotid artery of the ox. It is suggested that *in vivo* the calibre of the placental arteries is regulated by the oxygenation of the foetal blood; anoxaemia leads to vaso-dilatation, and in the presence of high oxygen tensions the vessels contract.

264. Value of Oophorectomy.

S. ROTTENBERG and G. SCHWARTZ (*New York Medical Journal and Medical Record*, July 5th, 1922, p. 39), in cases in which an ovary appears unduly large or tense, or in which there are symptoms pointing to menorrhagia, metrorrhagia, or dysmenorrhoea of ovarian origin, have found it useful and safe to examine the interior of the ovary by splitting it in half from the free convex border to the clamped pedicle; catgut sutures restore the integrity of the ovary, of which the function is not subsequently impaired. They state that most ovarian cysts, especially dermoids, arise from embryonic rests in the medullary portion of the organ, and that primary ovarian cancer in its early stage is not recognizable from the exterior, the ovary, in spite of its enlargement, presenting a smooth surface. By splitting the ovary the early stages of morbid conditions, which might otherwise escape recognition, may therefore be detected. In two such cases, of which the histories are given, the writers found small dermoid cysts in the interior of not greatly enlarged ovaries in young patients.

PATHOLOGY.

265. Significance of Colostrum.

THEOBALD SMITH and RALPH LITTLE (*Journ. Exper. Med.*, August, 1922, p. 181) have carried out a series of experiments to ascertain what is the function of colostrum to the newborn calf. Two sets of 10 newborn calves were kept as far as possible under identical conditions, and all of the 10 calves which were permitted to take colostrum after birth survived, whereas of the 10 calves which did not get colostrum 8 died and 1 was killed, moribund. Bacteriological examination revealed in nearly every fatal case a *B. coli* septicaemia, indicating that the calf deprived of colostrum lacks something which permits intestinal bacteria to invade the body and multiply in the various organs. In most cases where the calf is deprived of colostrum a rapidly fatal *B. coli* septicaemia develops; but should the animal survive for a few days, then fibrinous and purulent exudations are likely to appear in the joints and kidneys, these also being caused by *B. coli* or some organism associated with it. The cultural characters showed this strain of *B. coli* to belong to that variety which is non-motile, indol-producing, and which fails to ferment saccharose. It appears that the function of the colostrum is essentially protective against miscellaneous bacteria which are harmless later on when the protective functions of the calf have begun to operate and accumulate energy. There seems to be no function in colostrum which controls development or growth or which is essential to the starting of the mechanism of digestion, since calves not having had colostrum appear to do as well as the others when the infection has been overcome.

263. The Medico-Legal Significance of Intracranial Haemorrhages in the Newborn.

C. JÖRGENSEN (*Ugeskrift for Laeger*, July 20th, 1922, p. 869) discusses the significance of intracranial haemorrhages in newborn infants. At one time this condition was interpreted as evidence, practically irrefutable, of violence done to the infant after birth; in a case published in Sweden in 1918 this was the chief evidence on which sentence of two months' imprisonment was pronounced on a woman. The author has investigated the records of 147 necropsies made on newborn infants for medico-legal reasons in Denmark in the period 1911–20, and he has found that large or small intracranial haemorrhages were found in 23 cases. Ten of these cases could be eliminated because there were other lesions indicative of violence inflicted after birth. Another case was not of interest in this question because the intracranial haemorrhage had followed forceps delivery. After giving details of the remaining 12 cases, the author comes to the conclusion that this lesion may well occur during labour, and that this may be either precipitate or quite normal. In other words, an intracranial haemorrhage is not necessarily indicative of prolonged and difficult labour. It is not, therefore, necessary to disbelieve the mother who states that she was surprised by labour, and that it was so precipitate that she had not time to summon help. The author also found that even a slight intracranial haemorrhage may be sufficient to cause death, for a slight haemorrhage may be the result of serious injury during labour.

267. Human Infections with B aertrycke.

THE troubled question as to the identity or the duality of the two micro-organisms—*B. paratyphosus* B, Schottmüller, and *B. aertrycke*—has been attacked once more by A. BESSON and V. DE LAVERGNE (*Ann. de l'Inst. Pasteur*, June, 1922, p. 502). Actually their work has consisted in comparing four strains of *paratyphosus* B, isolated from the stools of patients suffering from gastro-enteritis, with six strains of *paratyphosus* B; recovered from the blood of patients subject to paratyphoid infection. Though resembling each other very closely, certain differences could be substantiated between them. Thus, the former group proved to be more resistant to malachite green, while their behaviour on media which had been previously exhausted with other organisms of the enteric group was distinct from that of the blood strains. By employing a strict paratyphoid B. Schottmüller, serum they showed that only the blood strains were affected, while, when a polyvalent paratyphoid B serum was used, both groups were agglutinated. Absorption tests, however, performed on this serum served to differentiate the strains fairly sharply. Finally, crossed immunity experiments on guinea-pigs revealed inequalities in the protective powers of the two groups towards each other. From these observations they conclude that the blood strains are identical with *B. paratyphosus* B, Schottmüller, and the faecal strains with *B. aertrycke*, while the differences substantiated between these two type strains are sufficient to warrant their being regarded as two definite species.

268. The Virus of Herpes and the Virus of Encephalitis.

IN an article by C. KLING, H. DAVIDE, and F. LILJENQUIST (*C. R. Soc. Biologie*, June 10th, 1922, p. 79), certain data are advanced which militate against Levaditi's contention that the virus of herpes and the virus of encephalitis lethargica are identical. Exact microscopical studies of the lesions produced in the brains of rabbits after intracerebral inoculation with each virus has been carried out and the two sets carefully compared. In the case of the herpetic virus a definite meningitis is found; there is an infiltration with large numbers of cells, of which the majority are mononuclears, though polymorphs are quite frequent. In the brain the main lesion is found in the cortex; not only are foci of cellular infiltration seen, but there is a diffuse inflammation throughout the cerebral tissue; polymorphonuclear leucocytes are abundant, and are often collected into small groups forming miniature abscesses. In the case of the encephalitic virus, on the other hand, the meningeal infiltration is less marked and is more or less limited to the area around the vessels; the cells, too, are mainly lymphocytes, no polymorphonuclears being seen. In the brain the cortex is generally exempt; it is the mesencephalon which is attacked. Here there are definite foci of inflammation, perivascular cuffs of cells, and striking alterations in the nerve cells themselves. The authors consider that the lesions produced by these two viruses are sufficiently distinct to preclude—or, at any rate, to form a contraindication to—their identity.

269. Buccal Infection with the Tubercle Bacillus.

S. ROODHOUSE GLOYNE (*Tubercle*, August, 1922, p. 497) has attempted to answer the questions: (1) Are virulent tubercle bacilli commonly present in the mouths of patients suffering from pulmonary tuberculosis? (2) If so, can these organisms be transferred to table utensils? And (3) Does the washing of these utensils destroy the bacilli? Of 20 sputum-positive patients 10 had only a little and 10 had much sputum. Their mouths were washed out with 40 to 50 c.cm. of sterile water containing 0.5 per cent. antiformin to destroy secondary organisms. The centrifugalized deposit was injected into guinea-pigs, and of the 10 cases with scanty sputum 2 gave a positive result, and of the 10 with much sputum 8 gave a positive result. Similar experiments made with spoons used by 20 patients yielded 60 per cent. positive results in cases with profuse expectoration, whereas none of the 10 patients with scanty expectoration gave positive results. Other table utensils were not found to be infected, and samples of ward crockery also gave negative results. The author concludes that patients with profuse expectoration are more infective than those with scanty expectoration, and that plain water, used in sufficient quantities, is a satisfactory sterilizing agent in consumption hospitals.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

270. Angina Pectoris.

A CLINICAL study of 103 cases of angina pectoris was made by S. A. LEVINE (*Journ. Amer. Med. Assoc.*, September 16th, 1922, p. 928), on which were based the following observations: The disease is much more common in males than in females, while vascular hypertension, which plays an important part in the etiology of the disease, is, on the contrary, more common in women. Physical work may account for this discrepancy. The typical patient with angina is a strong, muscular, and well-set person. The disease seems to be comparatively rare in the underdeveloped, poorly nourished, and weak. In this series syphilis was an etiological factor in only six patients. There were seven who had diabetes mellitus, and five who had gout. Organic valvular disease was rarely found associated with angina pectoris. Two patients had typical mitral stenosis, and there were two young patients with rheumatic disease of the aortic valves. The average systolic blood pressure was 160.6 mm., and the diastolic 95 mm. The variations from the mean systolic pressure extended from 80 to 260 mm. About two-thirds were between 140 and 200 mm. Observations on the blood pressure in a few cases were made in relation to the onset of the attack of angina and the administration of nitroglycerin. Two patients showed a marked increase with the onset of the attack, and then a fall as the attack subsided after the nitroglycerin had been given. In a third the change was not significant either as the attack developed or as it subsided under treatment. Examination of the heart in many cases was negative. Of the 103 patients 47 showed no murmurs, 49 had a systolic murmur at the apex or base, and 7 had a diastolic murmur. Of the latter group, 2 had definite and 1 probable syphilitic aortitis, 3 had rheumatic aortic insufficiency, and 1 had mitral and tricuspid stenosis. The heart was generally found hypertrophied on ordinary examination or by orthodiagraphy or electrocardiography. An occasional patient showed no hypertrophy even after the most careful search. The dominant rhythm of the heart in angina pectoris was regular, although there were occasional extra systoles. Only 1 out of 103 showed persistent auricular fibrillation. The quality and loudness of the heart sounds are of practical importance in angina, especially the first heart sound at the apex. Oedema of the limbs and swelling of the liver are rare, but congestive rales at the bases of the lungs are common, especially in those patients with cardiac infarction. The electrocardiograms were occasionally normal in appearance and often showed only slight alterations. There was evidence of left ventricular preponderant hypertrophy in the great majority of cases.

271. Physiology of the Sympathetic Nervous System.

L. BARD (*Ann. de Médecine*, June, 1922, p. 453) observes that in the last twenty years so little investigation in regard to the general and pathological physiology of the peripheral receptors and centripetal tracts of the sympathetic system has been carried out that even the existence of centripetal tracts is contested. He refers to the theory of the antagonistic action of the pneumogastric and the sympathetic, and describes the further division of the latter system into two parts—"great sympathetic" and "parasympathetic." The functional antagonism between these divisions is the *leit-motiv* of this theory; the experimental control of their varying reactions to various drugs has become the basic principle of this study. Bard regards the "parasympathetic" as occupying an intermediate position; the "great sympathetic" belongs exclusively to "the life of nutrition," while the parasympathetic appears to be a connecting link with the "life of relation," controlled by the pneumogastric. Gaskell regarded these two divisions of the sympathetic as having different embryonic origins, and Guillaume believes that the connexions between the endocrine glands and the sympathetic system constitute a true morpho-physiological unity. Bard lays down certain theses: "Varying stimuli demand appropriate receptive mechanisms"—hence there is a sympathetic reflex mechanism regulating trophic function, analogous to that of the cerebro-spinal system. "The functions of 'the life of nutrition' fall into three groups, clearly distinct in all details of their biological mechanism." These groups are: (1) muscular apparatus in order to obtain and assimilate all materials necessary to metabolism, (2) secretory apparatus of every kind, and (3) mechanism controlling metabolism. These three groups have a "pendulum-like function—that is, alternation in two phases," each complementary to the other. He illustrates this by reference to accepted physiological phenomena—for example, respiration, peristalsis, gland secretion, etc. Bard's next thesis is: "Alternation of phases results in oscillations around a position of rest." This double action requires receiving apparatus for the stimuli which are the source of all reflex action. The peripheral receptors of stimuli can only exist in the interiors of organs; he cites as example the bundle of His and Auerbach's and Meissner's plexuses, the former being the more complex; but recent researches (Ramón y Cajal and Dogiel) have thrown some light on their structure. Bard concludes that the various nerve elements can furnish a complete reflex arc and illustrates this by the analogy of a vascular reflex, "which should be constrictor or dilator, as the impression which evokes it demands increased flow or restriction of the blood stream." Many other illustrations from the physiology of the central nervous system are given. Bard remarks that the intervention of the sympathetic, which plays a leading part in the production of morbid phenomena, shows itself chiefly by anomalies of reflex action, and concludes by referring to various drugs which exercise a powerful influence on the sympathetic—atropine, eserine, adrenaline, etc.—and especially on the contrasted action of digitalis and of quinidine. These few examples, collected from cardiac therapeutics, explain the importance of the preceding principles and the new aspect given to the greater part of therapeutic problems pertaining to symptomatic medication.

272. Intramuscular Injections of Ether in Whooping-cough.

T. SCHÖNFELDER (*Tidsskrift for den Norske Laegeforening*, August 1st, 1922, p. 650) has tested the efficacy of intramuscular injections of 1 to 2 c.cm. of ether in cases of whooping-cough at the Ullevaal Fever Hospital, and has found them remarkably effective in reducing the frequency and severity of the paroxysms. His review of the literature of the subject shows that Audrain read a paper on it at Havre on the day before war was declared. During the war this treatment fell into abeyance, but since 1919 several papers have been published on the subject, and most of them have been confirmatory of Audrain's claims. The injections should be given every day for the first three or four days, and later every other day. The intramuscular is preferable to the subcutaneous route, as the latter entails more pain; there is also the risk of necrosis of the skin following a subcutaneous injection of ether. Injected into the muscles in the upper part of the gluteal region, it is not painful for long, and the child usually falls asleep within half an hour. This treatment is also useful in bronchopneumonia, and there have been favourable reports on its action in cases of measles and scarlatina. But the results of the injections are most dramatically successful in uncomplicated whooping-cough; much debilitated children suffering from anorexia and vomiting, combined with paroxysmal cough, have been restored in a few days to almost complete health. In cases of acute adenoiditis, simulating true whooping-cough, these injections seem to be practically useless.

273. The Importance of Hereditary Syphilis in Infantile Atrophy.

H. BARBIER (*Journ. de méd. et de chir. prat.*, July 10th, 1922, p. 453) observes that until recently the atrophy of nurslings was confused with the so-called "gastro-enteritis." These patients suffer almost constantly from dyspepsia, upon which true enteritis is often grafted by accidental infection, but this has no direct connexion with the original disease. The infection attacks not only the intestine, but the skin and the respiratory tract. The wretched state of the patients increases the gravity of any infection, and the greatest care should be exercised in maintaining scrupulous cleanliness by sterilizing clothing, etc., to prevent any pyogenic infection, which may lead to adenitis, otitis, bronchopneumonia, etc. The underlying cachexia is due to one or both of the following conditions: (1) hereditary or congenital conditions, (2) environment (and alimentation). Of these, the first preponderate, and greatly aggravate the dangers of faulty hygiene, but the child of healthy parents may become cachectic if improperly fed, and may be cured if the mother resumes suckling. Barbier then discusses the biology of hereditary disease due (*a*) to intoxications, or (*b*) to infections. Among the toxic agents, he places alcohol first, then lead, mercury, phosphorus, morphine, and cocaine. Barbier states that infections act in two ways: (1) by toxic action on the sexual glands, or (2) by attacking the impregnated

ovum. The most common infective diseases are tuberculosis, syphilis, and malaria. In regard to syphilis, 33 per cent. of all the author's cases had a positive Wassermann reaction, but others with negative reaction showed definite clinical symptoms (9 per cent.). Barbier therefore estimates that syphilis is responsible for 42 per cent. of all cases of infantile atrophy. He states that these patients may often be cured very rapidly by specific treatment. He prefers arsenic compounds to mercury, and recommends subcutaneous injections of sulfarsenol, given in daily doses of 0.01 to 0.02 cg. per kilo of body weight. The larger doses (up to 1 cg. per kilo) that have been recommended by some writers he considers dangerous, at least at the commencement of treatment.

274. The Fate of Syphilitics with Salvarsan Rashes.

L. KLEINSCHMIDT (*Dent. med. Woch.*, July 21st, 1922, p. 981) refers to a paper by Buschke and Freymann, who re-examined 10 patients who had suffered from severe salvarsan dermatitis. With one exception these patients were found to be clinically well and Wassermann-negative, although the specific treatment had been incomplete. It was concluded from these cases that the reaction of the skin plays an important part in recovery from syphilis. With this conclusion Kleinschmidt disagrees. Since 1916 he has observed 19 cases of syphilis with severe toxic rashes. He included in this category only those cases which, at the beginning of antisyphilitic treatment, showed either an eruption on the skin or mucous membranes or a positive Wassermann reaction. Of the 19 patients, all of whom suffered from severe dermatitis, 7 showed a negative reaction after the outbreak of the rash. But a conversion of a positive to a negative Wassermann reaction usually follows salvarsan treatment, so this serological change could hardly be traced to the dermatitis. All the other 10 patients continued to show a positive Wassermann reaction in spite of a severe and general dermatitis, with oedema of the face and limbs, secondary furunculosis, pyodermia, and abscesses of the sweat glands.

275. Malarial Relapses.

H. H. HOWARD (*Southern Med. Journ.*, May, 1922, p. 343), from experience while directing an experimental campaign for the control of malaria by antimosquito measures, found that in 1919 44.1 per cent. of the cases were relapses and 55.9 per cent. were new infections, while in 1920 the ratio was 61.3 per cent. to 38.7 per cent. respectively. Since a large percentage of malaria each year results from relapses from infections acquired in previous seasons the use of quinine in sterilizing carriers is indicated, seeing that the occurrence of relapses will continue whether mosquitos are present or not. On this account relapses become a limiting factor in malarial control by antimosquito measures alone, and lead to the obvious conclusion that the sterilization of carriers by quinine is an essential auxiliary to success in obtaining early and satisfactory results. The district investigated was divided into two areas—one, "the controlled," being that in which measures for the prevention of mosquito production were carried out, and the other, "the non-controlled," being that in which no such measures were adopted. Relapses occur with great frequency for long periods after the initial infection is acquired, so that the malarial morbidity rate of any given year is due largely to relapses from infections received in the previous year or years.

276. Pulmonary Blastomycoses.

A VALUABLE general review on the subject of the blastomycoses is given by F. SERVET (*Rev. méd. de l'est*, June 1st, 1922, p. 364). The term may be defined as connoting those diseases which are due to the group of fungi known as the blastospores. These organisms are capable of invading any tissue in the body. As regards the lungs two types of the disease may be distinguished: in the first there is a primary and exclusive localization of the parasite in these organs; in the second the pulmonary affection is secondary to a generalized blastomycosis. There is a very close similarity to tuberculosis, and there is little doubt that many of the cases have been wrongly diagnosed. From the pathological standpoint the essential lesion of the disease consists in small nodules, closely resembling those produced by the tubercle bacillus, but differing from them in the greater readiness with which they break down into pus. The diagnosis is made by examination of the sputum, when, instead of the discovery of acid-fast bacilli, large round or oval yeast-like elements are found. In some cases the presence of a positive complement fixation reaction may be established, as also the existence of agglutinins in the patient's serum. Only occasionally can the organism be isolated from the blood. The importance of a correct diagnosis lies in the fact that there is generally a remarkable response to treatment with potassium iodide; with the administration of large doses the disease often clears up in a few weeks.

SURGERY.

277. Early Signs of Cholelithiasis.

SIR BERKELEY MOYNIHAN (*British Journal of Surgery*, July, 1922, p. 127) states that probably many surgeons have operated upon cases where a diagnosis of cholelithiasis has been made and failed to find any gall stones present. Many of these gall bladders, however, may show signs of disease, a condition known as "strawberry gall bladder" perhaps being present, where the congested mucosa is studded with yellow dots ending at the cystic duct. The symptoms often diagnosed as gall stones may be due to an infection of the gall bladder, set up, it may be, by stones, but not seldom existing in the absence of stones. There are several channels by which invading organisms can reach the gall bladder: (1) Infection may ascend along the duodenum, but this mode of infection is probably rare. (2) Infection may descend from the liver, organisms reaching the liver by way of the portal stream. The portal blood comes from the alimentary canal and the spleen, and it is possible that in some cases organisms may come from the spleen. The association of disease of the liver and spleen has recently become clearer, and splenectomy may be found necessary for recurrent cholelithiasis in some cases. One function of the spleen is to filter out organisms and send them to the liver for destruction. It may sometimes harbour rather than destroy them. (3) Infection may be derived from the blood, as shown by Rosenow. Organisms may be found beneath the mucous layer, and calculi may originate there, and later detach themselves and become free in the gall bladder. (4) Infection may reach the gall bladder by the lymphatics of the liver. Affections of the liver have been often noticed in operations for gall stones. The view is held that cholecystitis is secondary to hepatitis. (5) Infection may reach the gall bladder by direct continuity. This method is rare. Gastric and duodenal ulcers may have the gall bladder adherent to them, and infection penetrate the gall bladder from its serous surface inwards. In cases where infection reaches the submucosa a considerable development of fat may be found beneath the peritoneum. A similar deposit may be seen over gastric ulcers and in the mesentery in chronic appendices or with diverticula of the colon. The symptoms of gall stones are early wholly referable to the stomach—flatulence and a fullness after meals, nausea accompanied by faintness, and often salivation. It is in the association of these symptoms that their importance lies. Sometimes pain and a slight enlargement of the liver may be present. It is likely that in many cases the liver is first involved, and the gall bladder attacked later by way of the lymphatics or by direct extension.

278. Methods of Drainage in Surgery.

BALSAMO (*Rif. Med.*, June 26th, 1922, p. 607), after a brief reference to old methods of treating collections of pus, divides modern methods of drainage into two main groups: (1) using substances supposed to possess absorptive power—for example, cotton-wool, threads, charcoal, catgut, sand, iodoform, sugar, etc.; (2) tubes which keep the channel open and allow the pus to escape within or along the line of the tube—of the various materials used rubber and gauze are the commonest. Cigarette drainage, introduced by Ruggi in 1897, is also used. Paraffin drainage, proposed by Soresi in 1915 (either *en bloc* or by strips of gauze soaked in paraffin), has given good results. Filiform drainage by means of horsehair or silk is especially useful in fistulous tracks. None of these methods give perfect satisfaction, and for some time the author has abandoned drainage in open surgical wounds and trusted to the use of thin rubber sheets. Fragments of old rubber gloves well boiled are introduced to the bottom of the wound, packing loosely like a plug and using no strips of gauze. The author has treated in this way empyemata, appendix abscesses, and many other conditions, and is very pleased with the result. The pus flows out between the folds of rubber, and the change of dressing is simple and painless. The slight inconvenience of saturation or maceration of the skin by the pus may be partly avoided by smearing vaseline.

279. Operative Treatment of Scoliosis.

S. KLEINBERG (*New York Med. Journ. and Med. Record*, July 19th, 1922, p. 93), in a preliminary report, records his experience of an operative treatment of scoliosis by which it is hoped to obtain the same improvement as that following the more prolonged treatment in plaster jackets, and by fusion and splinting of the spine to retain such improvement and prevent any increase of deformity. The pre-operative stage consists of continuous extension or hyperextension on a convex stretcher frame, traction being applied to the head and pelvis, with, in some cases, lateral traction over the convexity. As soon as the maximum degree of reduction

has been obtained (usually in about eight weeks, as compared with many months with plaster) a fusion operation of the spine is performed by the addition to the ordinary Hibbs's fusion operation (which does not apparently always result in solid bony ankylosis) of a splinting of a number of vertebrae with a stout beef-bone graft, extending from one end to the other of a single curve, or of one section of a compound curve. Usually the graft is about eight inches long, and extends from the second or third to the twelfth dorsal vertebra, beef bone being used in order to shorten the time of operation. After Hibbs's fusion operation has been performed upon the most curved part of the spine, the spinous processes of the two uppermost and two lowest vertebrae of the section operated on are split, and the graft is laid on the laminae and transverse processes on the concavity of the curve and its ends embedded in the split spinous processes. The periosteum and muscles are sutured with kangaroo tendon, and the subcutaneous tissue and skin with catgut. The patient is put to bed and not on to the frame for the following week or ten days, after which he is placed on the frame and traction is applied to the head and pelvis for about eight weeks. A supporting brace, or plaster jacket, is then worn for about three to six months.

280. **Tonsillitis followed by Fatal Peritonitis.**

F. RIEDEL (*Deut. med. Woch.*, August 11th, 1922, p. 1075) records two cases, occurring in the same household, of tonsillitis followed by rapidly fatal peritonitis. The first patient was a servant, aged 48, who developed tonsillitis after getting wet. She was admitted to hospital on the second day of the disease with redness and swelling of the pharynx and a yellow-brown coating, thick and dirty-looking, on the tonsils and palatine arches. Diphtheria bacilli could not be found either in smears or on culture. The temperature was 104° F., and the glands in the neck were swollen and painful. After the reaction in the throat had subsided considerably and the temperature had begun to fall the patient suddenly developed severe diarrhoea and vomiting. The temperature rose to 103.5° F. and the pulse to 120, the abdomen meanwhile becoming tender and distended. Two days later free fluid in the abdominal cavity was demonstrable, and the patient died eight days after admission to hospital. A few cubic centimetres of pus were found in the right pleural cavity, and in the peritoneal cavity there was a large quantity of thick green pus, from which streptococci were cultivated. Three days after this patient fell ill a woman, aged 27, living in the same house, developed tonsillitis. The signs and symptoms were almost exactly similar to those of the first case, being, however, even more severe; the second patient died on the same day as the first, and in both cases a prominent feature was the great respiratory distress. The first patient had doubtless infected the second, and the increased severity of the disease in the second case was probably due to the virulence of the infecting organism having been increased in the course of transmission from the one patient to the other.

281. **The Pathogenesis of Renal Tumours.**

E. H. DERRICK (*Med. Journ. of Australia*, June 10th, 1922, p. 623), as the result of a study of 66 cases of renal and adrenal tumour, discusses the pathology of tumours of the kidney. The Wilms tumour of the kidney attacks infants, and in 75 per cent. before the age of 5. It is malignant, grows rapidly, and recurs after removal. These tumours show a combination of adenoma-like tubules with broad bands of indifferent spindle-celled tissue; smooth muscle and myxomatous connective tissue may also be seen. They arise through a disturbance of the normal development of the kidney. The Grawitz tumour or hypernephroma is the commonest tumour of the kidney; of tumours in adults it comprises about 80 per cent. It arises in all parts of the cortex, is rounded, and varies in size; it does not infiltrate the kidney, and has a fibrous capsule. Cysts are common; and it is yellow and red in colour, due to fat and haemorrhage. The typical cell is large with a small nucleus. Grawitz considered that these tumours grow from misplaced portions of adrenal tissue in the kidney. This must be rejected, the evidence being in support of its renal origin. The Grawitz tumour may be traced through the adenomata from the renal tubules, and it is entirely different from tumours in the suprarenal gland itself. Wilson asserts that the Grawitz tumours arise from rests of embryonal kidney tissue which remain undeveloped till they take on neoplastic properties. This suggestion, however, cannot be accepted, and the age incidence is inconsistent with the embryonic origin. Renal tumours may be divided into four great groups according to the type of cells: (1) an embryonal group, the usual form being the mixed tumours of Wilms; (2) the series of epithelial tumours, including adenoma and Grawitz carcinoma; (3) a heterogeneous group, mainly small and benign; (4) renal pelvis tumours, papillomata and carcinomata. In children the Wilms mixed tumour is found, in adults the Grawitz carcinoma.

OBSTETRICS AND GYNAECOLOGY.

282. **Acute Infection in Syncytioma.**

ACCORDING to H. E. MELENEY (*Surg., Gynecol., and Obstet.*, August, 1922, p. 137), it is frequent, in cases of the more benign syncytiomata, with little tendency to formation of metastases, to encounter an acute infection of the uterus leading in many instances to a fatal septicaemia or peritonitis. The persistence in the uterus of soft, vascular, and partially disintegrating tissue provides a favourable culture medium for bacteria which are accidentally present and leads to so-called "syncytial endometritis." In Schlauch's summary of 206 cases seven died of sepsis, and in all these the tumour was benign. It is important to establish an early diagnosis of the cause of persistent uterine bleeding after abortion or parturition, in order not only to deal properly with the tumour itself, but also to avoid acute general infection. The writer records a case of severe uterine haemorrhage persisting during twelve months after abortion; the patient died, apparently from septicaemia, after a short period of pyrexia unaccompanied by pain. At autopsy haemolytic streptococci were isolated from the blood, peritoneal cavity, and uterus: in the uterine cavity near the entrance to the right Fallopian tube was a small regressing syncytial nodule 1.5 cm. in diameter, which, apart from the infection which terminated the case, would probably have disappeared. Pus was demonstrated microscopically in the vessels leading to the peritoneal cavity and in the general circulation.

283. **Abdominal Pregnancy.**

ACCORDING to P. JACQUIN (*Gynécol. et Obstét.*, 1922, v, 6, p. 493), many of the cases reported as examples of primary abdominal pregnancy have been instances of tubo-abdominal pregnancy (the ovum being inserted on a portion of the tubal fringe), of pregnancy in an accessory Fallopian tube, or of secondary abdominal pregnancy coming late to operation at a time when traces of the original implantation have become difficult or impossible to find. Sittner and also Wolff have shown that in rabbits the foetus may reach full growth and normal configuration at term, after experimental transplantation, at the eighth day of gestation, from the uterus to the abdominal cavity. For clear demonstration of the occurrence of primary abdominal pregnancy in the human subject it is important that the ovum examined should be living or recently detached and that macroscopical and microscopical examination should be made both of the site of insertion of the ovum and of the genital organs, especially the tubes and ovaries. Jacquin relates a case in which these conditions were fulfilled and which, he thinks, is with a considerable degree of certainty to be regarded as an instance of primary abdominal pregnancy. A 5-para, aged 32, was operated on for probable ruptured left tubal gestation with severe intra-abdominal bleeding; to the left and at the lower part of the pouch of Douglas an ovum measuring 2 by 3 cm. was implanted on the posterior aspect of the posterior wall of the cervix and had caused haemorrhage, from which the patient died two days later. The genital organs were examined microscopically in serial sections and showed no trace of a recent uterine, tubal, or ovarian gestation. G. VALMALE and ROBIOLIS (*La Gynécologie*, June, 1922, p. 363) record the case of a primipara, aged 34, whose pregnancy, except for slight metrostaxis, accompanied by prolapse of the cervix uteri, was uneventful until the seventh month, when severe abdominal pain was experienced, lasting for ten days. In the eighth month an attack of intestinal obstruction occurred. At operation a living foetus was found developing, external to the membranes, below the stomach and transverse colon. The mother succumbed a few hours later, but the child, which was free from deformities save unilateral talipes, appeared healthy at the age of 2 months.

284. **Treatment of Puerperal Fever.**

A. DÖDERLEIN (*Deut. med. Woch.*, 1922, xlviii, p. 22), after removing with forceps any retained shreds of foetal membrane, treats patients suffering from puerperal fever by injecting at low pressure into the uterus 1 litre of a solution of iodine or one of its preparations. Curetting and other forcible manipulations are to be avoided, and mercuric chloride or carbolic acid should never be used for uterine douching. In many cases the fever disappears after one lavage, but if streptococci are detected in the lochia and the pyrexia persists, injections of colloid and protein substances are given. Antipyretics are beneficial. Abscess in the parametrium should be opened, from the vagina when possible; hysterectomy is contraindicated in cases of streptococcus infection, but may in certain other cases be performed with successful results. Ligation of the veins draining the pelvis may be beneficial in some cases of thrombophlebitis, but the choice of cases calls for very skilful judgement. The necessary abdominal drainage for suppurative peritonitis is best

done by posterior colpotomy, which in over 70 per cent. of cases leads to cure. Coeliotomy via the posterior fornix is a useful diagnostic procedure; it is attended by little shock, and if pus is not found the wound can be closed by sutures.

285. Cardiac Failure during Pregnancy and Labour.

IN the experience of H. E. B. PARDEE (*Amer. Journ. of Obstet. and Gynec.*, June, 1922, p. 620) mitral stenosis has been less dangerous than aortic regurgitation as a complication of pregnancy and labour. The prognosis is more grave when the cardiac decompensation is first manifested during labour, not during pregnancy. In such circumstances tachycardia, orthopnoea, cyanosis, pinkish frothy expectoration, and distension of the neck veins indicate impending cardiac failure and oedema of the lungs. The immediate treatment should consist in hypodermic injection of 1·4 grain of morphine and 1/50 grain of atropine, withdrawal of about 8 oz. of blood from a vein, and intravenous injection of 1/50 grain of digitoxin if the patient has not been previously receiving digitalis. If in spite of giving morphine labour continues to progress and if the morbid symptoms show no improvement, labour must be terminated. Version is attended by much shock and vaginal Caesarean section is too lengthy an operation, so that if a low forceps operation is not feasible abdominal section is probably the best method of treatment. The administration of ether, preceded by a little chloroform, throws less strain on the heart than is the case with gas and oxygen anaesthesia. When decompensation is first noted some weeks or months before labour, proper treatment usually leads to quick recovery, and most patients can be safely carried through to term or to labour induced during the eighth month; in such cases proper observation and prompt operation, if necessary, will usually prevent the occurrence of severe decompensation during labour.

286. Tears of the Tentorium and Falx during Labour.

R. ZIMMERMANN (*Münch. med. Woch.*, 1922, 31) classifies tears of the tentorium and falx produced during labour according as they are infratentorial, supratentorial, or mixed. Two of thirteen cases coming to autopsy were of the first-named group, and the writer believes that the clinical picture corresponding to infratentorial tears is a characteristic one; death of the child ensues immediately after the first respiration, the placental circulation being still intact. Probably the haemorrhage from the tear is insufficient to affect the respiratory centre until reinforced by the circulatory changes following the first respiratory effort.

PATHOLOGY.

287. Haemolytic Streptococci.

E. VALENTINE and C. KRUMWIEDE (*Journ. of Exper. Med.*, August, 1922, p. 157) had been using a culture of a haemolytic streptococcus for more than a year for the production of immune serum, and during this period it was subcultured at frequent intervals and no change in its characters was observed. When plated in April, 1921, however, it was found that 10 per cent. of the colonies showed no evidence of haemolysis, but resembled closely a pneumococcus colony. The two apparently different strains were obtained in pure culture, and since then have bred true for more than fifty transfers. Morphologically and culturally the strains showed no differences, except that one was haemolytic and the other non-haemolytic. Antiserum was prepared against each strain and showed that both fractions were agglutinated equally well, and that absorption of serum by either fraction removed completely the agglutinins for both fractions, thus showing that the loss of haemolytic power had not been accompanied by any change in the agglutinogenic complex of the cocci. Virulence tests revealed the fact that the haemolytic variety was more pathogenic for mice than the non-haemolytic. It was not found to be possible to restore haemolytic properties to the non-haemolytic strain by increasing the virulence by mouse passage or by successive cultures in blood broth. Variations in the physiological functions of bacteria occur with frequency, which has given rise to the impression that the fundamental antigenic constituents are also readily subject to change. But general experience indicates a high degree of stability of bacterial types as regards the antigenic qualities of the body substance, indicating that a change in antigenic constituents is a fundamental and radical change, and therefore an unusual occurrence. This study offers additional evidence in favour of the hypothesis that functional changes among bacteria are only very infrequently associated with changes in the antigenic matrix of bacteria.

283. Effect of Artificial Pneumothorax on General Nutrition and Growth.

THE modification of the respiratory exchange produced by artificial pneumothorax induced J. PARISOT and H. HERMANN (*C. R. Soc. Biologie*, June 17th, 1922, p. 177) to study the effect of the functional suppression of one lung on the general nutrition. For this purpose two sets of experiments were conducted—one dealing with adult rabbits, the other with young growing rabbits. In the first series it was found that subsequent to the operation the animals lost weight to the extent of about 10 per cent.; at this level they remained relatively stable. *Post mortem* the most striking point was the disappearance of the fatty reserves of the body, especially those around the kidneys. In the second series artificial pneumothorax was performed on rabbits 1 month old, and their growth curves compared with those of control animals of the same litter. Both as regards weight and size the animals which had been operated on increased at a slower rate than did the controls: this difference was retained throughout the whole period of development till, at the end of seven or eight months, when growth had practically ceased in both sets of animals, there was a striking dissimilarity noticeable. At the autopsy the experimental rabbits were found to have laid down no fat reserves at all. It would seem, therefore, as if the effect of artificial pneumothorax was to increase the rate and extent of fat metabolism in the body; the explanation of this the authors hope to bring forward in an approaching publication.

289. Diagnosis of Organic and Functional Meningeal Conditions by Pandy's Reaction.

M. M. WEILL, A. DUFOURT, and H. CHAHOVITCH (*Lyon Médical*, June 10th, 1922, p. 842) state that it is often impossible by clinical examination only, particularly in infants, to differentiate between actual meningitis and a functional meningeal disturbance. Clinically, certain forms of meningitis are extremely latent, while there are patients in whom the violence of functional meningeal reactions leads to a diagnosis of a meningeal lesion which does not exist. The quantitative analysis of the fluid and a leucocyte count require certain laboratory apparatus, while the simplicity, rapidity, and accuracy of Pandy's test have led the author to adopt it during the last year in the examination of forty specimens of normal or pathological cerebro-spinal fluid. The technique is as follows: (1) Dissolve 10 grams of pure phenol in 150 c.cm. of distilled water. (2) Pour 1 c.cm. into a small test tube and allow one drop of the fluid under examination to fall into the solution. If the reaction is negative no change occurs; if positive, a bluish-white cloud appears, which descends spirally to the bottom of the tube, and finally discolours all of the fluid. It is a quantitative reaction, and due to precipitation of albumins in the cerebro-spinal fluid. The author's results are as follows: 18 cases of tuberculous meningitis, 1 of acute syphilitic meningitis, 5 of cerebro-spinal meningitis, 1 of meningitis following spinal anaesthesia, 12 cases of "meningismus." In all cases in which definite meningitis developed the reaction was positive at the first examination. The 12 negative cases were subsequently found to be free from meningitis—they were functional reactions occurring in the course of pneumonia, enteric fever, influenza, etc. Pandy's test always agreed with other chemical tests of the cerebro-spinal fluid, and proved to be most valuable in cases of babies and young children.

280. The Thyroid Gland and Sensitivity to Tuberculin.

L. KEPINOW and S. METALNIKOW (*C. R. Soc. Biologie*, June 24th, 1922, p. 210) have been working out the relation of the thyroid gland to tuberculin sensitization in infected animals. Four thyroidectomized guinea-pigs and four controls were given a very virulent culture of living tubercle bacilli subcutaneously. A month later they were injected with tuberculin, two of each set being given a lethal and two a non-lethal dose. In the control animals the temperature rose from 1.5 to 1.8° C., and two of them died. In none of the animals whose thyroids had been removed, however, did the temperature rise more than 0.6 C., even in the two which died after receiving a lethal dose. From this it would appear as if two distinct phenomena were being dealt with: one which may be classed amongst the anaphylactic reactions and which depends for its appearance on the integrity of the thyroid, and one which is purely toxic and which bears no relation to this gland. In a second series of experiments they found that, by injecting the serum of a tuberculous guinea-pig into a normal animal, it was possible to sensitize the latter to the febrigenic factor in tuberculin, but not apparently to the toxic factor. If, however, the serum of a tuberculous thyroidectomized guinea-pig was used for preparing the normal animal, there was no passive transmission of either factor.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

291. Chronic Intestinal Dyspepsia in Children.

A. BROWN, A. M. COURTNEY, and I. F. MACLACHLAN (*Brit. Journ. Child. Dis.*, July–September, 1922, p. 113) record the results of their investigations at the Nutritional Research Laboratories of the Hospital for Sick Children and the Department of Pediatrics of the University of Toronto. Their cases were divided into three groups—namely, (1) mild, (2) moderately severe, and (3) severe, this last group representing the classical type of chronic intestinal indigestion or intestinal infantilism of Herter. In the first group there were four cases, ranging in age from 2 to 5 years. The chief symptoms, which had been present for from four months to about a year before coming under observation, consisted of looseness of the bowels, with definite evidence of fermentation, general lack of tone, and fatigue with restless sleep. A mild degree of anaemia was present. There was a record of excessive feeding with breadstuffs and sweets. A response to moderate high protein diet with lactic acid milk took place in about six to nine months' time. In the second group, in which there were six cases, ranging in age from 18 months to 5 years, the symptoms of carbohydrate indigestion were exaggerated. There was pronounced evidence of undernutrition with distension, so that a more rigid exclusion of carbohydrates from the diet was required, and recovery took place from six months to a year longer. The third group, in which there were nine cases, presented the classical picture of varying degrees of emaciation with greatly distended abdomen, lack of growth, physical and mental fatigue, and a moderate degree of anaemia. The previous histories of these patients consisted of repeated digestive upsets, usually associated with diarrhoea and invariably connected with a high carbohydrate diet. Treatment consisted in keeping these patients on an exclusively protein diet until the stools showed no evidence of fermentation and lost their acid reaction. Carbohydrate foods were then added gradually until a fuller diet was reached. The writers maintain that the outstanding feature in chronic intestinal indigestion is fat intolerance. As this cannot be overcome in the presence of excessive fermentation such as exists in all cases of chronic intestinal indigestion a diet was selected to reduce the process of fermentation to a minimum, consisting of protein or lactic acid milk, curds, meat, cheese, and gelatin. This method was employed in seven cases, in all of which a satisfactory recovery took place. Tables are given showing the results of metabolic investigations in three cases.

292. The Medical Applications of Diathermy.

MME GRUNSPAR DE BRANCAS (*Journ. de radiol. et d'électrol.*, August, 1922, p. 364) states that the chief physiological effects of diathermy are three in number: it is a powerful sedative of pain, it produces hyperaemia, and it increases secretion. The indications for its use are therefore numerous. The writer has employed it with success in the treatment of old pleurisy, neuralgia, and peripheral neuritis, and most of all in arthritis. Gonorrhoeal rheumatism is rapidly relieved when treated from its onset by diathermy. Gouty arthritis is also greatly benefited by it. Special mention should be made of the application of diathermy to gynaecological affections. Numerous cases of perimetritis and parametritis and chronic neuralgia of the adnexa, due to various causes, have been improved and cured by diathermy after many other methods have been tried in vain. Lastly, gastralgia, dyspepsia, and spasm of the pylorus have been treated by diathermy with encouraging results. According to AYNARD it has also been used with benefit in some painful inflammatory affections of the gall bladder.

293. The Value of Quinidine in Auricular Fibrillation.

A. E. CLARK-KENNEDY (*Quart. Journ. of Med.*, July, 1922, vol. xv, No. 60, p. 279) records the results of careful observations on the value of quinidine in the treatment of 20 cases of auricular fibrillation. He gives notes of the cases and adds a review of the present position of our knowledge of the action of quinidine in auricular fibrillation, with theoretical considerations. Space limits permit only a few of his results to be mentioned. Twenty unselected cases of auricular fibrillation admitted to the medical wards of a general hospital were treated with quinidine and in 17 (85 per cent.) normal cardiac rhythm returned. Of these 17 successful cases 12 were rheumatic, 1 rheumatic and infective, 2 degenerative, and 2 had auricular fibrillation associated with exophthalmic goitre. Of the 3 unsuccessful cases 2 were rheumatic and 1 degenerative. In all cases quinidine was pushed to the maximum dose that it was thought safe to administer. In 3 of the 17 successful cases relapses occurred prior to their discharge from hospital, but in 14 the normal rhythm persisted until the patient was discharged. Mitral stenosis was present in 11 of the 17 cases in which the normal rhythm was restored. As regards the ill effects of the drug, certain toxic symptoms were common—mild gastric symptoms, nausea, anorexia, vomiting, abdominal pain, diarrhoea, headache; but in most cases these symptoms passed off spontaneously, though the drug was continued in the same dose. Embolism occurred in 3 cases, and probably in 2 others. In one case small doses of quinidine led to excessive vomiting, and later a severe syncopal attack occurred. As quinidine is known to cause amblyopia, visual symptoms of moderate severity are an absolute contraindication to continuing the drug. The author thinks it is logical to administer quinidine also as a prophylactic to patients suffering from auricular fibrillation of the paroxysmal type, and also possibly to patients the victims of mitral stenosis and exophthalmic goitre, seeing that auricular fibrillation is so common in these cases.

294. Differential Diagnosis of Encephalitis. Poliomyelitis. Botulism. etc.

G. E. EBRIGHT (*Amer. Journ. Med. Sci.*, August, 1922, p. 253) discusses the differential diagnosis of epidemic encephalitis, acute poliomyelitis, botulism, and certain forms of food and drug poisoning, such as poisoning by veronal and the belladonna group, which may affect the cranial nerves and cause diagnostic difficulties. A feature of epidemic encephalitis is the spread-out course of the symptoms, in sharp contrast to poliomyelitis, in which the total extent of the paralysis may occur within a few hours, or at most a few days. Somnolence, asthenia, irregular fever, and cranial nerve palsies are suspicious symptoms of epidemic encephalitis, especially if the condition has been preceded by "influenza." In mild cases the somnolence may not be very marked, but, as a rule, lethargy distinguishes the mental condition from that of poliomyelitis or botulism, in which the mind usually remains clear, though in poliomyelitis drowsiness may be present, from which, however, the patient can be easily roused, and is then irritable. Meningeal invasion in poliomyelitis is characterized by neck stiffness and weakness of the anterior neck muscles, drowsiness, hyperaesthesia, ataxic gait, and sometimes muscle twitchings. Cases of botulism are characterized by double vision, weakness, and difficulty in walking, inhibition of secretions, dysphagia, aphonia, and constipation, and the condition may be confused with acute poliomyelitis, but an absence of prodromal symptoms and fever, together with the fact that in poliomyelitis definite paralyses of groups of muscles in the extremities generally occur, are diagnostic features. Further, there may be a tendency for the head to fall forward in botulism owing to paralysis of the posterior or all of the muscles of the neck, while in poliomyelitis the head may tend to fall backwards, from stiffness of the posterior neck muscles with weakness of the anterior muscles, and movements may be painful. Drugs of the belladonna group inhibit secretions and dilate the pupils, as occurs in botulism, but in the former there are cerebral symptoms, flushings, etc. Veronal poisoning may resemble encephalitis with ptosis, double vision, and nystagmus, but without other paralyses, gastro-intestinal disturbance, or diminished secretion. Methyl alcohol poisoning, by its symptoms of dizziness, gastro-intestinal disturbance, optic neuritis often resulting in blindness, and clondiness of mental functions, may present diagnostic difficulties, but the state of the optic nerve and the mental condition easily distinguish it from botulism and poliomyelitis.

295. Neo-salvarsan in Gangrene of the Lung

S. T. MADSEN (*Medicinsk Revue*, July and August, 1922, p. 313) has given neo-salvarsan in 5 cases of gangrene of the lung or bronchiectasis. One of these cases, which was complicated by tuberculosis, ended fatally. In the remaining cases considerable success was achieved by the intravenous injection of neo-salvarsan, given at intervals of four to seven days. The dosage of each injection ranged from 0.3 to 0.6 gram, the quantity being rapidly increased in each case. The total quantity of neo-salvarsan given varied from 2.7 to 3.9 grams. The improvement was so uniform and striking in all four

cases that its relationship to the treatment could hardly have been accidental. In one case in which spirochaetes were found before the treatment was instituted none was demonstrable after the third injection. In none of these cases was there any sign of syphilis. The author, who gives details of 13 cases of purulent disease of the lungs and respiratory passages, has also found that restricting the fluid intake to a minimum, according to Singer's system, is often remarkably effective in reducing the purulent expectoration and restoring the patient's general health.

296. The Nervous System in Influenza.

G. C. BOLTEN (*Nederl. Tijdschr. v. Geneesk.*, June 10th, 1922, p. 2255) remarks that it is a well-known fact that the central nervous system is very sensitive to the still unknown bacterial cause of influenza or its toxins, as is shown by the numerous cases of lethargic encephalitis, which Bolten regards as influenzal in origin, and influenzal psychoses. Most of the latter are due to bacterial intoxication, and the clinical picture is one of toxic delirium, but in some of the cases there is the possibility of slight meningeal changes and of multiple foci of encephalitis. Bolten also draws attention to numerous symptoms occurring in or directly after an attack of influenza, which indicate damage to the sympathetic, such as fall of blood pressure, loss of hair, cyanosis of the hands and fingers, profuse sweating, acroparaesthesia, etc. These phenomena are sometimes very persistent, and can be best explained by the hypothesis of very small foci of encephalitis in the floor of the third ventricle or in the fourth ventricle (vasomotor centre). Von Riese, who first described these symptoms, had very good results from administration of pituitary extract. Bolten generally uses adrenaline or thyroid extract, as these two hormones are the most powerful agents for raising the sympathetic tonus. In addition to cases of polyneuritis and one of transverse dorsal myelitis, Bolten saw three cases of meningitis occurring directly after influenza during the last severe pandemic. They were all fatal, and did not differ in any respect from meningitis of pneumococcal, staphylococcal, or streptococcal origin. Bolten, like many others, has noticed that a mild attack of influenza may be followed by very severe nervous symptoms.

297. Dietetic Treatment of Chronic Arthritis and its Relationship to the Sugar Tolerance.

A. A. FLETCHER (*Arch. Intern. Med.*, U.S.A., No. 1, vol. 30, July 15th, 1922, p. 106) records the results of dietetic treatment in 100 cases of chronic non-purulent arthritis. Gonorrhœal cases were excluded, and dietetic treatment was not commenced until at least six weeks after the onset; also the patients were allowed to remain for two weeks in bed until the process appeared to have become more or less stationary. At first various diets were tried. Reduction of the carbohydrates was sometimes followed by much improvement; but better results were obtained by a more general reduction of diet, and in the large majority of the 100 cases the diet consisted of three glasses of milk, three glasses of butter milk, half a grape fruit, and one or two oranges a day for one week; then the gradual addition of eggs, fish, fowl, meat, 5, 10, and 15 per cent. vegetables, fruits, junkets, and jellies; and finally, brown bread in small amounts. Within four weeks the food value was increased up to 1,500 to 2,000 calories daily. If no improvement occurs in this time generally it is useless to continue the diet. Sugar tolerance tests were also made, and the blood sugar estimated. Of 100 cases of chronic arthritis treated by this reduction of diet alone, 8 recovered and 43 improved quite evidently. The sugar tolerance was decreased in the large majority of these cases. Patients who have a low sugar tolerance are much more frequently benefited by reduction in diet than those cases with a normal tolerance. In certain cases of chronic arthritis, dietetic regulation appears to be the most effective form of treatment. The lowering of the sugar tolerance is a useful clinical indication for this procedure.

SURGERY.

298. Tumours of the Spinal Cord.

C. H. FRAZIER and W. G. SPILLER (*Journ. Amer. Med. Assoc.*, September 23rd, 1922, p. 1024) analyse 14 consecutive cases of spinal cord tumour, and lay emphasis on certain points which are calculated to make for earlier diagnosis in such tumours, and, as a result, to the consideration of surgical treatment before degeneration of the cord has deprived the patient of relief from crippling deformities. In 13 cases out of 14 pain was not only a conspicuous symptom but was the first symptom. While in later stages pain may be referred to a more widespread distribution, the original zone of pain continues throughout the course of the disease, and is, therefore, an important localizing sign. In one-third of the cases three or more years elapsed between the onset of pain and the first signs of motor impairment. Given a case with pain of definite localization, aggravated by movement, coughing, or sneezing, and persisting with occasional remissions, without variation except in degree, in the original region for months or for longer periods, the authors consider that one should at least have in mind the possibility of a spinal cord tumour. Subjective sensory disturbance — variously described as a sense of numbness in the limbs, itching, tingling, or a sense of constriction about the limb or trunk—was invariably the second symptom. In not one of the series was there a typical Brown-Séquard syndrome. Motor disturbances were present in each of the 14 cases in greater or less degree. Too much stress, the authors consider, must not be laid on the presence of a spinal block—it is a late rather than an early symptom. Xanthochromia was present in only 5 cases, and these were of long duration. In the accurate localization of a tumour the following points were found of the greatest assistance: (1) level of sensory loss or impairment; (2) point of referred pain; (3) sympathetic phenomena; (4) absent reflex; (5) muscular atrophy. The exposure and removal of tumours of the spinal cord present rather elementary surgical problems, but the authors found that when mistakes were made in the attempt to expose the tumour the opening in the spinal cord was invariably too low. To avoid this error the following rule is recommended: The level of the lowest lamina to be removed should correspond with the position of the segment representing the highest level of sensory loss. As endotheliomas grow from the spinal meninges, the operator should remove, with the tumour, that portion of the meninges from which it originated, to prevent recurrence.

299. Diagnosis and Treatment of Choked (Optic) Disc.

V. HIPPEL (*Klinische Wochenschrift*, June 3rd, 1922) distinguishes between "choked disc," papillitis, and optic neuritis, and mentions various views held as to the causation, since von Graefe first showed that "choked disc" was frequently associated with brain tumour, and usually with increased intracranial pressure. At the early stage uncomplicated "choked disc" does not cause disturbance of vision (in contrast with the majority of cases of papillitis), but "choked disc" of sufficiently long duration may lead to permanent blindness. "Choked disc" usually indicates increased intracranial pressure. "Choked disc," if not treated, or if treated only with iodides and mercury, is followed in the great majority of cases by incurable blindness, but by correct and early treatment usually this can be avoided. Horsley showed that not only removal of the diseased cerebral focus, but also simple trephining, with opening of the dura mater, causes the subsidence of the "choked disc" in the majority of cases. When the diseased focus cannot be removed operative treatment for the relief of the "choked disc" should be undertaken. Lumbar puncture is not advisable if cerebral tumour is probable; but in syphilitic cases and in meningitis permanent good results may be obtained by this treatment. Palliative or decompression trephining (subtemporal on the right side) is a relatively simple operation and can be performed under local anaesthesia. The prospect of curing "choked disc" without loss of vision is only good when the operation is undertaken early, before vision has commenced to fail. The author concludes from experience in 58 cases that recovery, without disturbance of function, can be obtained in the majority of cases of "choked disc" by early surgical treatment; and though the majority of the patients die of the primary disease in the course of a few years they do not usually lose their sight. A minority of the cases are permanently cured, and thus, if recovery occurs from the primary disease, blindness (otherwise so frequent) is avoided.

300. Results of Tonsillectomy.

F. NORSK (*Hospitalstidende*, July 12th, 1922, p. 62) has investigated the after-effects of tonsillectomy in patients operated on between 1910 and 1919. Questionnaires were addressed to these patients, of whom 130 answered in writing and 72 presented themselves for re-examination. Of the 102 operated on for frequent attacks of acute tonsillitis, 85 were symptom-free, 9 were better, and 8 still suffered from symptoms. Of the 33 operated on for peritonsillar abscess, 30 were symptom-free, 2 were better, and only 1 was not improved. All of the 14 patients operated on for acute tonsillitis in conjunction with rheumatic fever proved to be symptom-free. The remainder of the cases in which tonsillectomy was performed represented an assortment of diseases, including recurrent attacks of diphtheria and malignant disease. The author concludes that tonsillectomy achieves a complete cure in 94 per cent. of cases of peritonsillar abscess, provided the upper pole of the tonsil is entirely removed. The percentage of cures by tonsillectomy in relapsing acute tonsillitis is 84. In as great a proportion as 24 per cent. he found remains of tonsillar tissue, but it was not clear whether this tissue

had been left at the time of the operation or represented extension of the lingual tonsil to the tonsillar fossae. Commenting on this investigation, H. Mygind (Ibid.) states that he never performs tonsillectomy on professional singers unless the indications are urgent, for there is no guarantee that the operation will not be followed by adhesions about the palatine arches, spoiling the singer's voice. He has often observed professional singers with good voices and yet with considerable hyperplasia of the tonsils, yet in no respect did this condition affect the voice.

301. Results of Treatment of Congenital Dislocation of the Hip.

H. A. T. Fairbank (*Brit. Journ. of Surgery*, July, 1922, p. 24) arrives at the following conclusions: If cases are sent to the surgeon before the end of the third year an anatomical cure ought to be obtained by manipulative reduction in about 75 per cent. of the unilateral cases and 50 per cent. of the bilateral. In the majority the function should be excellent for many years. The treatment adopted has been the Lorenz method with slight modifications. Open reduction should not be necessary in the younger cases, but may be useful where manipulative reduction is impossible. This operation should only be performed in selected cases after 6 years of age. The following complications during and after reduction may be met with: fracture of the femur, changes in the head of the femur similar to pseudo-coxalgia, and arthritis as shown by stiffness in the hip. Anterior displacement of the head of the femur is not a rare complication and usually occurs while the child is in the plaster case. When this occurs it should be corrected without delay. Traumatic and late redislocations are not common. Apart from trauma, the cases have probably been imperfect from the first. After reduction the leg should be put up in full right-angled abduction in plaster and retained in this position for never less than six months. Patients are encouraged to walk after the first month in plaster. The knee is not included in the plaster as a routine. After six months, massage and exercises should be carried out for some months. This probably exerts a permanent influence on the function of the hip, but is not likely to affect the anatomical result.

302 Retroperitoneal Rupture of the Duodenum.

W. H. Harris (*Canadian Practitioner*, July, 1922, p. 294) discusses retroperitoneal rupture of the duodenum and gives notes of two cases together with a review of the literature. Arising from violence by blunt force, leaving very little visual evidence of abdominal injury, the lesion usually occurs in the descending or transverse duodenum, where there is no true mesentery, the fixed duodenum being crushed against the lumbar spine. Since a fundamental difference between extra- and intra-peritoneal ruptures is that in the latter symptoms arise earlier and are more pronounced, retroperitoneal duodenal injury may be suspected when the symptoms of suppurative effusion following an upper abdominal blow are delayed in onset, and, apart from this, the signs of intra- and extra-peritoneal bowel rupture are very similar. In diagnosis chest injuries, signs of which are often referred to the abdomen, must be excluded, the symptoms of bowel rupture from injury being pain, tenderness, and rigidity (less marked than that characteristic of ruptured duodenal and gastric ulcer), decreased liver dullness, and evidence of intraperitoneal fluid, together with the general symptoms of shock. The transmission of cardiac and respiratory sounds over the abdomen sometimes occurs as a symptom of gas infiltration of the peritoneum, and post-cervical pain on pressure over the abdominal wall, owing to diaphragmatic irritation of the phrenic nerve distributions, may be elicited. At operation the most valuable sign pointing to the seat of the lesion is a sense of crepitation due to retroperitoneal emphysema, which, at first most marked in the region of the transverse mesocolon, spreads downwards over the right kidney, into the root of the mesentery, and even into the pelvis or upwards into the mediastinum. Extravasation of blood and duodenal contents always occurs, with delayed symptoms localized to the right upper quadrant, and the absorption of toxic material from this effusion is an important factor in the high mortality of these cases. Success in treatment depends upon early operation by suturing the severed ends and performing a gastro enterostomy, but owing to the grave condition of the patient a simple drainage is sometimes all that should be attempted.

303. Resection of the Elbow-joint.

Mocquot (*Bull. et Mém. Soc. Chir. de Paris*, May 16th, 1922) reports the case of a female patient with bilateral ankylosis of the elbow-joints. He performed resection of the right elbow-joint, with the placing of a graft of fascia lata in the joint. The two elbows were ankylosed at an angle of about 140 degrees; this condition dated back for six years, being the result of a gonococcal infection. It was a crippling condition, and it was only with difficulty that the patient could raise a spoon to her mouth with the left hand. She could not perform this movement with the right hand. At the operation Mocquot freed the triceps tendon and detached it at its insertion into the olecranon. The bones were divided with a chisel, and after resection of the ends he shaped the humerus and radius. Between the articular surfaces a graft of fascia lata was fixed so as to cover all the bony surfaces. Mobilization of the joint was started on the twelfth day, but at the end of five or six weeks there was a period of some difficulty; some reaction was produced and the joint appeared as if about to become re-ankylosed. However, with care and the perseverance of the patient good movement and power in the arm have resulted. Actually flexion of the elbow is almost complete, and the fingers can touch the shoulder, whilst extension is almost full and the joint is quite strong. The functional result is good, especially in an ankylosed joint of inflammatory origin. The radiogram shows, however, that the fascial graft has not completely prevented a certain overgrowth of bone from the bony surfaces.

304. Subungual Verrucae.

S. Ayres, Junr. (*Arch. Derm. and Syph.*, June, 1922, p. 748) reports two cases in which strikingly satisfactory results followed the use of radium in the treatment of warts growing under the finger-nails. After paring the nail down over the lesion as closely as possible, and protecting the normal tissue with lead foil, 5.5 mg. of radium element were applied, with only paper screening, for twenty minutes in the first case, with two subsequent exposures at fortnightly intervals of forty and thirty-five minutes respectively, making a total of ninety-five minutes' treatment. In the second case only one exposure of seventy-five minutes was given. In neither instance was there any pain, and the greatest amount of reaction consisted of a mild erythema and scaling, and no trace of the lesions could be seen two months afterwards. The advantages of this method over surgical removal, fulguration, or cauterization are seen in the absence of pain, non-interference with function, avoidance of secondary infection, and the complete eradication of the lesion with perfect cosmetic result.

OBSTETRICS AND GYNAECOLOGY.

305. Pelvic Contraction.

According to W. Zangemeister (*Zentralbl. f. Gynäk.*, September 2nd, 1922), the pelvic dimension which is of greatest obstetric significance is the true or obstetric conjugate; this in normal conditions measures, not 11 cm. (this figure being derived from measurements of the bony pelvis), but 10.3 cm., as deduced from measurements made in living subjects. A constant proportion holds good between the true conjugate and the intercristal measurement in all cases of normal or universally contracted pelvis, and the former dimension can be inferred with tolerable certainty if the latter is known. The relations of the two are shown in a straight-line graph, according to which a true conjugate of 10.3 cm. corresponds to an intercristal space of 29 cm., of 9.5 cm. to one of 26 cm., etc. The writer suggests that pelves (whether flat or generally and equally contracted) with true conjugates greater than 9.5 cm. are not properly to be regarded as instances of pelvic contraction, and suggests classification of contraction in five grades, according as the true conjugate is from 9.5 to 8.6, 8.5 to 7.6, 7.5 to 6.6, 6.5 to 5.6, or less than 5.6 centimetres. At the Marburg clinic 20 per cent. of pelves are contracted; of these seven-tenths are of Grade 1. According to the author's clinical experience, 9.5 cm. is the lowest limit at which a pelvis may be consid red normal; 8.5 cm. the lowest dimension with which spontaneous delivery is, given normal foetal dimensions, to be expected with any degree of probability; 7.5 cm. marks the limit of indication for induction of premature labour; 6.5 cm. is the lowest measurement which, with the help of moulding of the head, can possibly (and exceptionally) permit of living birth of a mature child; and 5.5 cm. the lowest recorded dimension at which a mature foetus after destructive operation has proved susceptible of pelvic delivery. In contrast with the reports usually given, Zangemeister's statistics, based on about 500 cases of birth through contracted pelves, show that in generally contracted as contrasted with flat pelvis the prospect of spontaneous birth of a living child is better; occipito-posterior and transverse presentations are less common, and premature rupture of the membrane as well as prolapse of the cord or an arm is less frequent. Face presentations, on the contrary, seemed less common in generally contracted than in flat pelves. The size of the

foetus has a significance with regard to prognosis of labour in contracted pelvis that is frequently underestimated. The foetal mortality in this series was 9 per cent. in children of 4 kg., 30 per cent. in those of 5.5 kg., and 80 per cent. in those of 6.5 kg. With regard to diagnosis of pelvic contraction, Zangemeister remarks that some of the measurements which are advised are both unnecessary and unreliable; careful taking of the true conjugate and intercristal diameters is almost invariably sufficient. The former must be measured directly, not inferred from the diagonal conjugate; there is little difficulty provided the pelvis is contracted and the observer employs a suitable pelvimeter, under anaesthesia if necessary. The true conjugate and intercristal dimensions being known, reference to the graph given by the writer will decide whether the pelvis concerned is generally contracted or flat. Improvement in foetal mortality may be expected from increased use of Caesarean section in selected cases—possibly from development of the technique of operations in which the pelvic girdle is temporarily or permanently widened—but with greatest certainty from judicious induction of early labour, due regard being had not only to the size of the pelvis but also to that of the foetal head. In the first grade of contraction it is not necessary to induce premature birth but to prevent post-mature birth. A true conjugate of 9.5 cm. permits of live birth of a foetus of 3,250 grams; one of 7.6 cm. a foetus of 2,400 grams. With a conjugate of less than 7.6 cm. induction is useless.

306. Syphilis during Pregnancy.

ACCORDING to W. E. WELZ and A. E. VAN NEST (*Amer. Journ. of Obstet. and Gynecol.*, August, 1922, p. 174), 13.1 per cent. of 1,457 pregnant women attending a pre-natal clinic during 1921 were found to be syphilitic, including 19.3 per cent. of the 700 white women. About 90 per cent. of those diagnosed as syphilitic gave a positive Wassermann test, and about 75 per cent. a positive lutein test. Only one chancre was found in the whole series; 20 per cent. of the syphilitics had cutaneous lesions, 29 per cent. markedly impaired reflexes, and 56 per cent. ocular changes. Approximately 85 per cent. of those diagnosed as syphilitic suffered from latent syphilis; none made any complaint of illness, and they visited the clinic only because they were pregnant, the disease being detected during routine examination. Treatment, which was initiated irrespective of the stage of pregnancy, consisted of two injections of mercury salicylate in oil and one intravenous dose of neo-salvarsan, all given weekly for six weeks and followed, time permitting, after one month's intermission by a second similar course. The 46 patients who received adequate treatment consisting in three or more injections of neo-salvarsan and eight or more of mercury gave birth to 45 living children and 1 dead child; among the 100 insufficiently treated cases foetal mortality numbered 26. Thirty per cent. only of negative Wassermann reactions were found in the 26 instances in which blood from the umbilical cord was examined in babies whose mothers had had full treatment; the authors do not think it possible, except very early in pregnancy, to prevent by antisyphilitic medication of the mother transmission of the spirochaete to the foetus.

PATHOLOGY.

307. The Haemolytic Functions of Certain Organs.

MAURICE PERRIN and ALFRED HANNS (*Arch. des Mal. du Coeur, des Vaisseaux et du Sang*, August, 1922, p. 552) state that haemolysis has been often studied and its literature is abundant, but the precise determination of the organs which have a haemolytic function is less advanced. They therefore review the knowledge already acquired relating to the organs which appear to possess that function. "The organ which appears to play the greatest part in haemolysis is the spleen." They then review the investigations of the Italian school, and particularly the researches of Banti. These suggest that this function of the spleen is due to the formation of haematic antibodies, or haemolysins. Gilbert, Chabrol, and Bénard have shown that splenic extract is haemolytic; it is not attenuated by heating to 56° C., and is not specific. Other authors deny this and attribute the result to septic infection of the extract. Perrin and Hanns discuss these divergent opinions and suggest that variations may occur as the result of modifications of technique. They state that splenectomized animals show an increased resistance to haemolysing intoxications, and that this serum, added to a haemolytic system, has a greater retarding action than normal serum. The question of a possible haemolytic action of the liver is then discussed. "The liver plays a part in the transformation of the pigment of red corpuscles, but there is no proof that it actually destroys the erythrocytes; possibly they are broken up elsewhere, notably in the spleen." The authors then discuss the action of bile and of bile salts. Vaquez and Ribierre have shown that in the blood of icteric patients resistance to the haemolytic action of distilled water and of sodium taurocholate is doubled. The part played by cholesterin in haemolysis is then discussed. Cholesterin neutralizes the haemolytic action of the serum of nephritis. The possible haemolytic function of the thyroid and of the suprarenals is then discussed. The authors conclude that it is thus difficult at the present time to come to a final conclusion, and no definite reply to the above question is possible. Some organic extracts have haemolytic properties. Are the substances which confer that property present *in vivo*, and are they specially secreted for a destined end? or rather, is it simply the chemical constitution of the tissue which gives to the extract that haemolytic power? The haemolytic substance in that case may be liberated artificially by the manipulations necessary to the preparation of these extracts.

308. The Leucocytes in Pulmonary Tuberculosis.

O. CALAMITA (*Il Policlinico*, Sez. Prat., July 3rd, 1922, p. 875), as the result of the examination of the blood in 46 cases of pulmonary tuberculosis, came to the following conclusions: The leucocyte count is generally normal in the first and second stages and beginning of the third stage independently of the general condition, the temperature, and extent of the lesions. It is, on the other hand, increased, sometimes to a high degree, in extensive ulcerative lesions. It declines again when the cavities are healed or reduced in size. Neutrophilia, as a general rule, goes hand in hand with the leucocytosis. It is therefore associated with the presence of cavities and may be of value in differential diagnosis. Eosinophilia varies with the organic resistance of the patient and is independent of the stage of the lesion. In favourable cases and after recovery the eosinophil quotient is greatly increased, while it diminishes or disappears when the activity of the tuberculous process overcomes the resistance of the organism. No conclusions can be drawn from the behaviour of the mast cells and lymphocytes. The mast-cell quotient does not vary to any extent. The number of the lymphocytes is usually inversely proportional to that of the neutrophils and therefore diminishes considerably in hyperleucocytosis with neutrophilia. The mononuclears follow the behaviour of the cosinophils, being abundant in early or favourable cases and diminishing or disappearing in severe forms of the disease. The displacement of the neutrophil picture, which is only slight at the beginning of the disease, becomes more pronounced with increase in the severity of the case. It is entirely independent of the anatomical nature of the lesion and closely connected with the organic resistance of the patient. Two patients with the same neutrophil picture may not only have different pathological lesions, but may have an unequal organic resistance. Every improvement or aggravation of the disease is followed by a shift to the right or left of Arneth's picture. The practical importance of determining the neutrophil picture is therefore very great. It is always a valuable help in the diagnosis of clinical recovery and may prevent a series of disagreeable surprises.

309. Value of the Tuberculin Test.

P. HERTZ (*Ugeskrift for Laeger*, July 13th, 1922, p. 837) has investigated the reaction of 88 children to different tuberculins given in different ways. Every child was given, as a rule, seven to eight tests, and 40 of the 88 gave a positive reaction to one or more tests. It was found that the age of the tuberculin used for von Pirquet's test did not affect the reaction, a five-year-old preparation of old tuberculin provoking a lively reaction. The results were also as good with an old tuberculin ointment as with a recent preparation for Moro's inunction test. A comparison of four tuberculin ointments showed that their potency varied greatly; of 38 children giving a positive reaction to Moro's test only 23 gave a more or less strong positive reaction to all four tuberculin ointments. As for the comparative value of von Pirquet's and Moro's tests, it was found that they were at variance in 18 cases; in 11 of these von Pirquet's reaction was positive, whereas one or more of the tuberculin ointments gave a negative reaction. The conclusion to be drawn is that a single tuberculin test, with only one tuberculin preparation, is untrustworthy: and the author calculates that, had he relied on single tests with the least satisfactory tuberculins, 18 of the 40 children giving a positive reaction would have shown a negative reaction. All the children giving a negative reaction to the Moro and von Pirquet tests were given subcutaneous injections of 0.1 mg. of tuberculin, and in all save one the reaction was again negative. This method is therefore the most accurate, but it is not so suitable as the others for tests on a large scale.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

310. Systemic Blastomycosis.

J. R. WILLIAMS (*Med. Journ. of Australia*, August, 1922, p. 185) reports a case of systemic blastomycosis due to a pathogenic yeast. The patient gave a history of influenza and bronchitis, and was admitted to hospital suffering from meningitis, which, on account of its chronic character and the clear appearance of the cerebro-spinal fluid removed by lumbar puncture, was attributed to a tuberculous lesion, this being supported by the existence of a patch of consolidation at the base of the right lung. But microscopical examination of the cerebro-spinal fluid revealed the presence of large numbers of oval cells, slightly larger in length than polymorphonuclear leucocytes: on incubation these cells showed budding, and after three days' culture on blood agar yielded a moist sticky growth of yeast cells. The patient was in hospital twenty-nine days, and the course of the disease was a gradual decline, unaccompanied by any fever. At the *post-mortem* examination the lower lobe of the right lung was found to be partly consolidated and partly collapsed, the surface being lumpy and irregular. Scrapings from the cut surface showed the parasite in countless numbers under the microscope, and sections of the affected area revealed vast aggregations of the parasite surrounded by a network of damaged lung tissue with fibrotic changes. On removing the brain excess of sticky cerebro-spinal fluid was noted, and the subarachnoid area contained little patches of glue-like excretion in the pontine area; on section the brain presented multiple minute abscesses close to the cortex. A study of the morphological characters of the parasite showed that the most typical cell was an elongated cellule, pointed at one end and rounded at the other, containing two refractile bodies and surrounded by a well-defined double-contoured capsule. Cultures were most easily obtained in blood agar, and in this medium the organism grew in a circular form, the individual cells varying considerably in size, but being on the average much smaller than the cells observed in the tissues. Not all the laboratory animals inoculated with cultures developed lesions, but in one rabbit the kidneys were found to be large and granulomatous, and on section the parasites were easily discoverable in the renal tissue. Although it is known that there are many varieties of pathogenic yeasts blastomycotic lesions of the nervous system have only rarely been reported.

311. Treatment of Hypertension.

N. B. FOSTER (*Journ. Amer. Med. Assoc.*, September 30th, 1922, p. 1089) contributes a study of definite disease groups wherein some type of hypertension is a symptom. The most common disorder under this heading is nephritis. The principle which is most likely to be useful in the management of this disorder, he says, is to regard vascular hypertonus in this group of cases as a symptom of an intoxication. These cases progress to cardiac disorders and vascular accidents. Having in mind the usual course of events, it is necessary to correct the disorder in its earliest stage—the only stage in which restitution to normal can be expected. It is essential not only to know the details of the physical state of the patient so far as it is possible to know them, but also to become acquainted with the temperament and the habits of the patient, especially in respect to work (both physical and mental), food, and sleep. The primary object in regulating the treatment is to correct modes of life which are unwholesome. In the case of the person who has been accustomed to little or no exercise it becomes necessary to increase the exercise gradually until he is able to do as much as a person of his age should do. His diet should be regulated according to his proper weight and not according to his real weight; that is to say, if a person weighs 200 lb., and his proper weight for his height is 180 lb., his diet should be on the basis of maintaining his weight at 180 lb. As a general rule, the treatment of hypertension cannot be carried out successfully at home. It is Foster's belief that early cases of hypertension should be treated in special sanatoriums. The mental atmosphere is primarily one of sport; vigorous exercise is the rule, but in the form of games and of sports rather than in the form of gymnastic exercises. Under a regimen in this sort of atmosphere the patient receives a kind of re-education. Physically, the flabby individual becomes hard, and all his bodily functions are toned up accordingly. Instead of consuming more calories in food each day than he expends, he will, for a period, expend more than he consumes and lose weight in consequence. When it is possible to secure the co-operation of patients so that one may carry out a careful regimen through a sufficiently long period of time, high blood pressure in early cases is susceptible of cure. The chief obstacles to treatment are, first, that the patient will not co-operate because he still feels perfectly well at a stage in his disorder when treatment offers the best prospect of a successful issue. The second obstacle is economical, in the sense that relatively few persons can afford to devote themselves exclusively, for a number of months, to the cultivation of their health. When the patient cannot give up enough of his time to carry out a routine such as that outlined, the best compromise consists in directing therapeutic effort to the adjustment of the diet, so that it shall be adequate for the patient but not too much; and secondly, regulating the life of the patient to ensure as much exercise and diversion as is compatible with his necessary routine activities. The observation of a large number of cases of hypertension has led Foster to believe that the disorder is far more common among those of sedentary occupations than among persons who do vigorous manual labour. Many cases of hypertension come first under observation at a period when the heart is already seriously damaged and when a considerable degree of arterial degeneration and sclerosis is detectable. Many of these patients also have a serious impairment of the renal functions. At this stage in the disease little or nothing can be done for the treatment of hypertension. The best that can be hoped for is to diminish in some degree the burden on the labouring heart.

312. Antityphoid Vaccination in the German Army during the War.

R. PFEIFFER (*Arch. de med., cir. y esp.*, June 10th, 1922, p. 433) states that as early as September and October, 1914, there was a considerable rise in the typhoid mortality in the German army, the maximum of 0.5 per thousand being reached in December. There was then a marked drop, 0.02 per thousand being reached in July, followed by a rise to 0.06 per thousand in September and October, 1915. Subsequently the epidemic, which had threatened to be serious, became practically extinct, the typhoid mortality during the following years of the war being about 0.01 per thousand, which corresponded approximately to the statistics of peace time. During the first year of the war (August, 1914, to August, 1915) there were 8,065 deaths from typhoid; in the second year the deaths numbered 1,909, and in the third year fell to 638, while in the last year they rose again to 1,031, because at this stage of the war the physical value of the men called up was very inferior. The marked drop in the incidence of typhoid can only be attributed to antityphoid vaccination. The hypothesis that the typhoid bacillus had lost its virulence after the first few months of the war is quite unfounded and is shown to be erroneous by the fact that in certain areas the vaccinated troops remained immune while an epidemic of typhoid developed among the non-vaccinated civil population. Moreover, in that part of the Austrian army in which inoculation was delayed until 1915 typhoid retained its virulence, and it was only after the introduction of inoculation that the epidemic assumed a mild character like that in the German army after March, 1915. Although some cases among the inoculated were severe, such cases were exceptional. Whereas in the non-vaccinated the mortality ranged from 12 to 20 per cent., in the vaccinated it did not exceed 2 to 3 per cent. and sometimes fell to zero.

313. Itchy Points (Puncta Pruritica).

N. TOOMEY (*Arch. Derm. and Syph.*, June, 1922, p. 744) describes a rare type of itching, frequently confused with tic and neurotic scratching, but differing in distribution, character, and appearance. The lesion is limited to one or more minute points, each apparently smaller than the point of a steel pin, and, unless manipulated, presenting no change from the normal, and not giving rise to excoriations, since titillation and pressure, rather than scratching, affords most relief. The attacks, lasting from ten minutes to an hour, may occur several times during the twenty-four hours, with several weeks' interval of freedom. While usually occurring in the skin over a bony prominence they may appear on the abdomen, calf, and lateral aspects of the thigh and leg. The areas of skin most frequently involved are those over the helix of the ear, forehead, malar eminence, lateral aspect of the nasal bone, lower border of the mandible, scapular spine, distal thirds of the ulna and radius, styloid processes, carpo-phalangeal joints, lower ribs, crest of

the ilium, sacral prominences, femoral trochanters and condyles, malleoli, and first joint of the great toe. The etiology is unknown, but intestinal toxaemia and alcoholic and sexual excesses appear to precipitate, if not actually cause, such attacks. The diagnosis from such conditions as incomplete herpes, dermatitis herpetiformis, pruritus, seborrhoeic dermatitis, prurigo, lichen planus, and neurotic itching rests upon such features as the minutely circumscribed nature of the affection, absence of vesicles, etc. Local applications are useless, a strong menthol lotion, for example, only affording temporary relief. Any intercurrent toxaemia requires treatment, two patients with fermentative enteritis becoming cured concurrently with the cure of the enteritis. The administration of 20-grain doses of sodium thiosulphate, well diluted, after meals effected a cure after a three months' course in one patient in whom it was tried.

314. Tincture of Hyoscyamus and Hyoscine in Paralysis Agitans.

MM. REBATTU, MOLLON, and SEDAILLAN (*Journ. de Méd. de Lyon*, June 5th, 1922, p. 342) state that hyoscine and tincture of hyoscyamus given in many cases of paralysis agitans, of athetosis, and of chorea have had the following results: (1) Hyoscine in injection may be dangerous (poisoning has followed a dose of 0.5 mg.). Its effects on tremors and insomnia have been transient, symptoms returning when treatment ceased. (2) Hyoscine by the mouth is better borne (1 mg. is the maximum dose). It has no action on tremors, and only slight effect on insomnia. (3) Hyoscine given with tincture of hyoscyamus has caused cessation of tremors for three days, disappearance of pain, and return of sleep. (4) The tincture given alone diminishes slightly tremors and pain, increases sleep and sense of well-being, and is better borne by patients. (5) Contrary to Erb's statements, heart disease does not appear to contraindicate the use of hyoscine. It has been well borne by two patients, one of whom had mitral incompetence and the other had permanent bradycardia. (6) Hyoscine given by the mouth in two cases of athetosis and one of chorea has not affected the movements.

315. Bismuth Poisoning and Albuminuria.

PAUL BLUM (*Paris Médical*, July 29th, 1922, p. 105) observes that stomatitis and other forms of bismuth poisoning have again attracted attention since the discovery of the anti-syphilitic action of certain bismuth salts. Stomatitis appears to have been most frequently observed, although gastro-intestinal, renal, and hepatic lesions have been described. Although several eminent French authors have seen no other effect on the kidneys than a transient polyuria, others have described cases of syphilis under treatment by intravenous injections of bismuth salts, who developed quite suddenly severe albuminuria, followed by the passage of epithelial, granular, and hyaline casts. The author has collected numerous cases, from the time of Pott (1739) onwards, in which there was intolerance of bismuth salts, especially after their external application. Toxic symptoms have been observed after the application of bismuth subnitrate (to varicose ulcers, burns, etc.), which forms a soluble albuminate in contact with a raw surface. The oxygallate (airol) and subgallate (dermatol) and Beck's paste have all produced toxic effects, and these have followed the injection of bismuth emulsion in cases of fistula, either for radioscopy or when treating cloacae. A number of writers have observed stomatitis, black patches on the gums and tongue, enteritis, and albuminuria (occasionally). Eggenberger has published a fatal case in a child of 7. Reich and Matsuoka have recorded fatal cases in which renal lesions were found at the autopsies. Internal administration of bismuth is far less dangerous, but cases have been recorded when the subnitrate has been given for gastric ulcer or for skiagraphic purposes. The symptoms recorded suggest that the presence of nitrites is responsible. Poisoning from bismuth carbonate is much more rare, though its conversion into a soluble chloride in some instances was noted by Chassevant. Blum gives details of numerous experiments on animals with various double salts. The renal lesions observed were not exceptional albuminuria, casts, and parenchymatous nephritis, with more or less fatty degeneration. In animals, as in man, renal lesions coexisted with stomatitis and enteritis. Pisenti compares the action of bismuth to that of phosphorus and antimony. Bismuth is eliminated as sulphide, which explains the fact that certain urines are black, resembling that of haemoglobinuria, although there is no renal lesion. Blum emphasizes the point that, clinically and experimentally, the lesions in the mouth and intestine are the first signs of bismuth poisoning — they are danger signals which indicate the necessity for a systematic examination of the urine. In syphilis, during a course of bismuth treatment, it is especially necessary to examine the urine systematically, as when the patient is undergoing treatment with mercury or arsenic. Should one pay attention to a slight albuminuria? In the author's opinion it should not be considered of toxic origin unless accompanied by the above-named symptoms; in certain cases it may be a "Herxheimer's reaction," indicating the continuance of the treatment rather than its cessation. Thus, Fournier and Guénot have obtained excellent results in the treatment of syphilis while disregarding very slight albuminuria. In toxic albuminuria, bismuth treatment should be stopped immediately, and thus the possibility of more serious results may be avoided.

SURGERY.

316. Disabilities of the Hand and Wrist.

W. A. COCHRANE (*Edinburgh Med. Journ.*, September, 1922, p. 97) points out that disabilities of the hand and wrist form an important group of cases, and their care must be based upon the anatomical data, of which he attempts to give an analysis. The hand presents three arches, one longitudinal and two transverse, and the thumb stands in relationship to all of them. The integrity of the longitudinal arch may be impaired after fracture of one of the inner metacarpals; this results in limitation in full flexibility of the metacarpo-phalangeal joints, and a form of claw hand may develop. This is due to the lumbricales and interossei having to operate at a disadvantage. With regard to the thumb, the basal joint is the big factor in relation to function and range of motion of this digit. A thumb in the position of adduction and extension is fatal from a functional standpoint, and in splinting abduction and opposition must be secured. The transverse arches are proximal and distal, depending on the carpal bones and the heads of the metacarpals. In the examination of crippled hands, the loss of the arches, joint stiffness, and tendon stiffness form a trinity of difficulties. In any disability of the hand after reduction of the deformity the member should be placed with the wrist slightly dorsiflexed, the thumb in full abduction and rotated into opposition, while the metacarpo-phalangeal joints are slightly flexed. In Colles's fracture complete reduction is of first importance. Twelve to sixteen days' immobilization is the routine practice, somewhat shorter in the aged, the hand being fixed in moulded plaster splints, flexed, pronated, and with ulnar deviation. The scaphoid and semilunar are the bones most frequently fractured in the carpus; in dislocation it is usually one of the bones of the proximal row that is affected. Fractures are treated on a cock-up splint and usually unite satisfactorily. In compound fractures the wrist must be treated in dorsiflexion, whether ankylosis may supervene or not. Fracture of the metacarpals leads to shortening, and should be treated by finger traction. Stiff fingers may be treated by immersions in hot or cold water. In severe cases forcible manipulations should never be attempted. A policy of traction and distraction is instituted by prolonged finger traction until evidence of joint separation is seen by depression of the skin and the *x* rays. This, combined with massage, gives good results and shows almost no tendency to recurrence of stiffness.

317. Voluntary Diplopia.

O. BALDOZZI (*Il Policlinico*, Sez. Prat., July 17th, 1922, p. 946) records two cases of voluntary diplopia, the mechanism of which differed in each patient. The first patient, by contracting each external rectus separately, produced a crossed diplopia, while the second was able to contract each internal rectus separately, giving rise to homonymous diplopia. There was thus a voluntary dissociation in movements which are normally synergic. The possibility of dissociating synergic movements, which is so rare in the ocular muscles, is more frequently found in the frontalis muscle, whose two halves, which usually contract synergically, may be dissociated in some subjects, so that they contract separately. In the cases described by Baldozzi the nuclei of the third and sixth nerves are closely connected by fibres which run in the posterior longitudinal bundle and maintain the functional synergy of the respective muscles. In the first case the nucleus of the sixth nerve and in the second case the portion of the nucleus of the third nerve belonging to the internal rectus are freed from their physiological interdependence on receiving the usual stimulus from the cerebral cortex.

318 Facial Paralysis from Cauterizing with Chromic Acid.

T. v. LIEBERMANN (*Deut. med. Woch.*, July 7th, 1922, p. 905) points out that the practice of cauterizing granulation tissue with chromic acid in the neighbourhood of the facial nerve is dangerous, and he records a case in which paralysis of this nerve was traced to poisoning with chromic acid. The patient was a man, aged 32, operated on for acute mastoid disease. As the operation wound did not heal satisfactorily, the granulations which had formed were touched with chromic acid under cocaine anaesthesia. During this

procedure the chromic acid rod slipped out of the holder on to the surface of the wound, and the irrigation of the wound, which was at once adopted, was followed by paralysis of all the branches of the facial nerve. This paralysis passed off in an hour, but next day it had returned, and on the patient's discharge from hospital the paralysis was practically complete. Probably the chromic acid first caused transitory paralysis of the facial nerve by direct chemical action on its trunk, and later caused permanent paralysis by provoking necrosis of the bone in the neighbourhood of the nerve.

319. Injuries of the Shoulder.

A. GIBSON (*Journ. of Bone and Joint Surgery*, July, 1922, p. 552) points out that pain in the shoulder region is an exceedingly common condition. The influence of minor injuries to the brachial plexus in shoulder-joint injuries does not appear to have been emphasized. Injuries to the brachial plexus may be of minor degrees only, with slight atrophy of the infraspinatus at one limit to slight wasting of the thenar and hypothenar eminences at the other in cases of cervical rib. The violence may be directly or indirectly applied to the shoulder. If a fracture is present it absorbs the surgeon's attention, and accompanying conditions are subsidiary. Many cases with no fracture show pain and limitation of movement for perhaps months. Painful shoulder-joint is not uncommon following a fall on the hand; the violence has been directly transmitted to the humero-scapular articulation, bruising the articular surfaces, and time is required for the repair of the damaged tissues. After accidents resulting from a fall on the shoulder the condition may improve for a time, but the shoulder may remain painful and disabled for many months, sometimes permanently; there may be atrophy of the deltoid and spinati, and these muscles are tender. Most frequently this involvement of muscle and long-continued tenderness is the result of damage to the upper trunk of the brachial plexus. This is, in fact, a minor degree of Erb's paralysis, and the lesion varies from a haemorrhage into the sheath to actual rupture of the nerve fibres. The treatment of these conditions should be rest, only little active movement being permitted; massage and electricity are useful adjuncts.

320. Ligneous Perinephritis.

GRECO (*Annali Ital. di Chirurg.*, July, 1922, p. 281) reports a case of this uncommon disease. A man, aged 31, was admitted into hospital on December 7th, 1913, with a history of slight pain in the right loin for the last six weeks, temperature 38° to 38.5° C., no shivering, no disturbance of micturition. The liver and spleen were normal, the complexion pale; slight sweating was more or less constant. There was a large hard mass in the right flank, no fluctuation. The tumour did not move with respiration and was dull on percussion. Cystoscopy showed a normal bladder, but no urine came from the right ureter. The urine had a specific gravity of 1028, acid reaction, no albumin or muco-pus, no sugar, urea 16 per cent., abundant urates. The daily amount passed averaged 1,000 grams. The mass was explored on December 11th, 1913, and found to contain a few drops of pus, in the hard woody mass. Except some slight congestion the kidney appeared healthy. The swelling gradually disappeared, with free suppuration, in about three weeks, and the patient was quite well in forty days. Cystoscopy twenty-five days after operation showed urine passing normally from the right ureter. There was no history of any infective focus either in the tonsils, intestines, or kidney.

321. The Treatment of Acute Osteomyelitis.

G. BRANDT (*Deut. med. Woch.*, July 21st, 1922, p. 972) has investigated the records of the 304 cases of acute osteomyelitis treated under various surgeons in the past twenty years in the surgical department of the University Hospital in Halle. He classified these cases according as they were treated by simple incision of the periosteum or by resection of bone in an attempt to provide free drainage from the interior of the infected bone. In the first class there were 89 cases, with a mortality of 17.97 per cent.; in the second class there were 170 cases, with a mortality of 29.41 per cent. The remaining cases were either not operated on because they were moribund, or they were treated first by incision and later by resection of bone. After eliminating the cases which were already pyaemic or suffering from other complications before treatment could be instituted the author still found that the mortality for simple incision was far less than for resection, being 7.59 and 16.66 per cent. respectively. With regard to post-operative complications, he found that pyarthrosis occurred in 8.8 per cent. of his resection cases, and only in 4.7 per cent. of his incision cases. Metastases in other bones, or in the soft tissues, followed resection in 13.5 per cent., and incision only in 6.7 per cent. Classifying his resection cases according as this operation was performed early or late in the disease, the author found the mortality was 42.1 per cent. within the first five days, and only 13.3 per cent. when resection was performed after the fourteenth day. The conclusion to which he comes is that in most cases of acute osteomyelitis it is better to confine operative treatment to simple incision of the periosteum than to open up the bone itself.

322. Disorders of Dentition.

J. COMBY (*Journ. de Méd. et de Chir. Prat.*, July 10th, 1922, p. 457) deprecates the popular belief that the eruption of the teeth can give rise to or aggravate a series of morbid conditions to which infancy is liable. He quotes with approval the aphorism uttered forty years ago by H. Roger, one of the leaders of pediatrics in France—"the disorders of dentition do not exist." The author gives a number of historical instances of this widespread belief and supplements this with numerous examples occurring in his own practice during a period of forty years. Comby regrets that many experienced practitioners appear to take the line of least resistance and give way before the eloquence of an excited mother "who demands that the child's gums shall be lanced," whereas he is convinced that patient investigation of the case of any child suffering from fever, catarrh, diarrhoea, etc., so frequently attributed by relatives to dentition, would show the true origin of the disease. He quotes the case of a child seen in consultation last winter: "A child of 1 year, suffering for six days from influenzal bronchopneumonia with a temperature of about 40° C. Other cases were in the house, and the mother, convalescent but still coughing, begged the medical man to lance the child's gums, although he had eight teeth and had no dental symptoms. The author passes in review cases of "teething cough" and "dental asthma," which have no better foundation than the preceding instances. He refers to acute dermatoses, attributed to dentition, and states that the greater part of these are "toxidermias"—"nevertheless the mother is obsessed by that idea of dentition which she believes to be supremely dangerous." In the same way, infantile neuroses—insomnia, enuresis, convulsions, and epilepsy—are often attributed to dentition. After giving numerous other examples of this widespread popular belief, the author concludes by reiterating Roger's aphorism—"the disorders of dentition do not exist."

OBSTETRICS AND GYNAECOLOGY.

323. Ovarian Grafts.

F. DE BRUYNE (*Gynécol. et Obstét.*, 1922, vi, 2) records the clinical experience of the Gand clinic with respect to 58 cases in which, after subtotal hysterectomy with bilateral salpingo-cophorectomy, two portions of ovarian tissue taken from the organs removed were implanted, one on each side, subcutaneously in the abdominal wall at the level of the anterior superior spine. In 28 cases the grafts during the course of the next six to eighteen months became impalpable, or no larger than a pea; in 13 cases the graft of one side and in 17 cases that of both sides underwent hypertrophy. The hypertrophied ovarian tissue caused considerable inconvenience to the patients, but was in a favourable situation for easy removal if necessary. In certain instances it was possible to diminish for a time the size of the enlarged cystic graft by external compression. More or less regular crises of congestion of the hypertrophied grafts occurred in many patients. With regard to the effect of the grafting, it was found that symptoms of precocious menopause following operation were absent in 88 per cent. of those with bilaterally and in 69 per cent. of those with unilaterally successful grafts, as against about 29 per cent. of those with no grafts and of those in whom the grafts were impalpable or very small. It was found that the frequence of the occurrence of hypertrophy of the implanted fragment varied according to the zone of the ovary from which it was taken; grafts of the cortical zone were most frequently and of the corpus luteum least frequently successful, while medullary grafts were scarcely more often successful than those of the corpus luteum. Signs of ovarian insufficiency were absent in all of the nine patients in whom the graft of each side was composed of cortical tissue. The writer describes the histological finding, in an ovarian graft extirpated two months after implantation, of cystic hypertrophy, attributed to abnormal production of lutein tissue. The cases in general showed hypertrophy of the graft to be relatively more common when it was taken from ovaries of normal microscopical characters. Grafts taken from subjects aged more than 40 were never found to undergo hypertrophy. Transplanted follicles are regarded as being principally concerned in the beneficial effects of the grafting.

324. Diagnosis of Viability.

ACCORDING to L. DROSIN (*New York Med. Journ. and Med. Record*, July 5th, 1922, p. 20), foetal death taking place early in the period of gestation is followed by cessation of the growth of the uterus and of enlargement of the abdomen (if this has occurred); in some cases by secretion of milk; and sometimes by subjective symptoms such as pelvic discomfort, anorexia, and chills. When death takes place in the later months foetal movements and foetal heart sounds disappear, and after a time the uterus shrinks in size, and there is loss of resiliency and crepitation of the foetal skull. Maternal albuminuria, peptonuria, or acetonuria may usually be detected. It is quite possible for all foetal movements to be suspended, the results of auscultation of the foetal heart to be negative, the foetal movements to be absent or undetectable, and for the child nevertheless to be still alive; in such cases the continued foetal life can only be established by repeated palpation and auscultation, and repeated uterine and abdominal measurements. The writer describes two diagnostic measures which in his hands have proved to be useful. In the first the mother is made to hold her breath after a deep expiration: after ten or fifteen repetitions the diminished aeration of the foetal blood leads, it is stated, to more or less active foetal movements. In the second manœuvre upward and backward pressure is made firmly on the anterior foetal shoulder; in a large number of cases, especially if the abdominal wall be not too thick, wriggling movements of the shoulder and of the whole foetal body follow.

325. Foetal Post-maturity.

ACCORDING to C. B. REED (*Southern Med. Journ.*, 1922, xv, p. 286), mature babies measure from 48 to 53 cm. in length and weigh from 5 to 9 lb. Measurement of the foetus *in utero* is more certain than pelvimetry. By Ahlfeld's method the distance between the upper foetal pole and the maternal symphysis is measured by the pelvimeter, and after deduction of 2 cm. for the thickness of the abdominal wall the measurement is multiplied by 2; in Reed's experience this estimate of the foetal length corresponded exactly with the *post-partum* figure in 37 per cent. of cases. By Perret's manœuvre the foetal head, lying across the pelvic inlet, is measured from occiput to frontal bone; the biparietal measurement is inferred by deduction of from 2.5 cm. to 1.5 cm., in correspondence with the occipito-frontal dimension obtained. McDonald determines the month of pregnancy by measuring from symphysis to fundus in centimetres and dividing by 3.5. All these methods are unsatisfactory in cases of obesity and hydramnios. Not all babies weighing 9 lb. or more are post-mature, although according to Winckel 78.4 per cent. have passed the estimated date of their maturity.

326. Foetal Measurements.

L. A. CALKINS (*Amer. Journ. of Obstet. and Gynec.*, August, 1922, p. 109), from measurement of 369 foetuses preserved in formalin, ranging in length from 23 to 544 mm., has constructed formulae by which, any single foetal dimension being known, it is possible accurately to estimate the external body proportions of the foetus at any stage of development. Measurements of the head, he finds, plotted as ordinates against standing heights (crown to heel) as abscissae give a graph which is a straight line. The relationship between any two dimensions can be expressed by the formula $y = ax \pm b$, x and y being body dimensions and a and b constants. It follows that by accurately determining any one body dimension *in utero* the size of the foetal head can be deduced; an x-ray technique suitable for the purpose is now being sought by experiment. From his measurements the author is led to believe that birth-moulding effects greater changes in head dimensions than is usually believed.

PATHOLOGY.

327. Tetanus Bacillus in Intestines of Man.

CARL TENBROECK and J. H. BAUER (*Journ. Exper. Med.*, September, 1922, p. 261) were able to demonstrate the presence of tetanus bacilli in 34.7 per cent. of stools from 78 individuals in Peking. A suspension of the stool to be examined was treated at 80° C. for twenty minutes to destroy the non-spore-bearing organisms, after which 1 c.cm. of the suspension was transferred to sugar-free broth containing a piece of sterile rabbit kidney or spleen in a fermentation tube. After four days' incubation films were made from the sediment in the tube and searched for forms characteristic of tetanus bacilli. If such organisms were seen, pure cultures were obtained and mice injected with pure cultures alone and with a protective dose of antitetanus serum. In order to be certain that tetanus bacilli were present it was found to be necessary always to employ pure cultures in the animal experiment tests, since it was found that spasms and death did not always occur after the injection of mixed cultures, even when true tetanus bacilli were present. It is evident, therefore, that there are organisms which interfere with the production of, or destroy, tetanus toxin, and the injection of mixed cultures is not a reliable method to use in the detection of tetanus bacilli. Not only has it been shown that one-third of the male population in the vicinity of Peking carries tetanus bacilli in the intestinal tract, but experiments have shown that the tetanus bacilli multiply in the normal intestine. Thus patients fed for several days with sterilized food continued to pass tetanus bacilli in their stools in very great numbers. Even on such a diet one individual may eliminate several million spores of tetanus bacilli in a single stool. Man thus plays a large part in the distribution of this bacillus in China, where, because of the primitive sanitary arrangements, constant reinfection must take place. Perhaps not so high a percentage of tetanus carriers would be found in similar tests on Western races, which do not live in such intimate contact with the soil, but the fact that this virulent organism is present and multiplies in the normal intestine is of great epidemiological importance.

328. The Action of Carbonic Acid on Gastric Motility.

IN seeking to explain the therapeutic effect of sodium bicarbonate and of those mineral waters—such as Vichy—which contain bicarbonates on the digestive functions, P. CARNOT and W. KOSKOWSKI (*C. R. Soc. Biologie*, 1922, July 22nd, p. 613) have studied the action of carbon dioxide alone on gastric motility. Working with dogs, on which a duodenal fistula had been made, they were able to show that the movements of the stomach are greatly increased after the administration of carbonic acid—and this independently of the direct stimulus of the gas on the mucosa, for the same result was obtained after subcutaneous injection of the gas. Control experiments made with air were all negative. The carbon dioxide, when given beneath the skin, appears to stimulate the peripheral nerves, and this stimulus is transmitted to the stomach by the vagus. Its effect is counteracted by the subsequent injection of atropine. Turning to human beings, they confirmed this action of carbonic acid by following the movements of the stomach under the x-ray screen. Baryta water was given by the mouth, while the CO_2 was sometimes introduced directly into the stomach, sometimes beneath the skin. In each case the contractions were increased greatly and the evacuation of the stomach was hastened in comparison with control cases.

329. Vaccination against Tuberculous Infection.

SOME fresh experiments on the immunization of small animals against tuberculosis are recorded by A. CALMETTE, L. NÉGRE, and A. BOQUET (*Ann. de l'Inst. Pasteur*, September, 1922, p. 625). Rabbits were injected intravenously with either 20 or 30 mg. of a culture of an avirulent strain of the bovine bacillus on glycerin-bile-potato medium emulsified in saline. Either thirty-five or seventy days later they were tested for immunity by the intravenous administration of 0.01 mg. of a virulent strain of bovine tubercle. Control animals, given the same dose, died within fifty-eight to seventy-five days with lesions of generalized tuberculosis. Of the vaccinated animals, some unfortunately were carried off by an intercurrent infection with an organism of the Pasteurella group, but of the remainder not one developed a generalized tuberculosis, while many survived for several months. A study of the antibody development in the case of vaccinated rabbits showed that the maximum number of units was present about five to six weeks after inoculation, after which they diminished till, in three months, they had disappeared completely from the blood. That the antibody titre and the resistance of the animal to infection did not correspond to each other was shown by the fact that vaccinated rabbits responded in the same way to infection whether tested one month or three months after prophylactic inoculation. Similar experiments conducted on guinea-pigs showed that vaccination by appropriate doses was able to confer a considerable amount of protection against experimental infection. Both with rabbits and guinea-pigs, however, this protection is temporary and does not last more than five to six months. It disappears when all the bacilli given in the vaccine have been absorbed or eliminated and when the power of the animals to react to tuberculin has been lost.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

330. Influenza.

A. GARVIE (*Glasgow Med. Journ.*, October, 1922, p. 232) combats the conclusion in the report on the "Pandemic of influenza" issued by the Ministry of Health, that at the first feeling of illness the patient should go to bed at once and remain at rest and in the warmth. He aims rather at preventing the onset of the secondary stage and the spread of infection to other inmates of the house. Observations during an epidemic showed that a definite relationship exists between the household wave and cases developing the secondary stage, and that none of the patients first seen in consultation at the surgery, however serious their symptoms appeared to be, subsequently developed symptoms of the secondary stage, and none died. It was noted that in the primary stage those did best who suffered most from the flow of nasal secretion and paroxysms of sneezing, and that in a considerable number those were the only symptoms which manifested themselves. Furthermore, in those suffering from the secondary stage, none of the purely primary symptoms were present, and it appeared that the presence or absence of a free flow of nasal secretion had a very intimate bearing upon the subsequent course of the illness. He holds that the chief aim of treatment should be to produce a maximum amount of primary symptoms, especially in those showing a commencing toxaemia, and such an aim is best realized by obtaining a maximum amount of air current in the sick-room associated with plenty of bodily warmth attained by the use of covering and not by artificial heating of the air of the room. Of 223 patients so treated no case in the primary stage passed into the secondary and there were no deaths, and in only six instances did a second case develop in any house. In industrial areas, where a separate well-ventilated bedroom cannot be obtained, the patients were advised as to ventilation, and if capable of outdoor exercise were encouraged not to remain too much indoors. Drug treatment aimed at stimulating cough and increasing the flow of secretion, and, though vaccines may be of use theoretically in aiding the defensive mechanism of the body, in actual practice their usefulness is problematical. Doubt is expressed as to an attack of influenza predisposing to chronic illnesses, since, out of between 1,500 to 2,000 influenzal cases, only one instance of resulting chronic illness was observed.

331. Lilliputian Hallucinations.

RAOUL LEROY (*Journ. Nerv. and Ment. Dis.*, October, 1922, p. 325) calls attention to a new syndrome of visual hallucinations, Lilliputian in character, in which diminutive people are seen, together with animals and objects, all proportionately small in size, though seen quite apart from micropsia, the patient preserving a normal conception of surrounding objects. It is a veritable Lilliputian vision such as that created by Swift in Gulliver, the hallucinations being mobile, coloured, and generally multiple, and usually accompanied by a pleasurable and amused state of mind in watching the antics, as opposed to the majority of visional toxic hallucinations, which produce a painful impression. Occasionally the small people are heard to speak, though it is unusual for auditory hallucinations to coexist with visual. The individuals of this little world are generally seen in bright colours, walking, running, playing, and working in relief and perspective, and giving an impression of real life. The syndrome may occur in any mental malady, and it is met with in the febrile delirium of typhoid, cholera, erysipelas, pneumonia, or empyema, and in chorea and other infections, and especially in intoxications by alcohol, ether, cocaine, or hashish. Opium does not give rise to the phenomena. Apart from infections and intoxications, the condition has been observed in arterio-sclerosis, senility, fasting and inanition, and in dementia; it may exist apart from any mental malady, and such Lilliputian visions are not rare in dreams. Several instances are cited, both from experience and from general literature, showing the extremely varied character of the scenes, and of the dress and actions of the actors which may appear.

332. Arterial Hypertension.

P. LEREBOULLET and JEAN HEITZ (*Paris Méd.*, July 1st, 1922, p. 6), in the course of their annual review of diseases of the heart and blood vessels, refer to Paillard's discovery that hypertension is relatively frequent in women who have undergone oöphorectomy. Among 25 women who had persistent high blood pressure, 12 had had oöphorectomy performed, and 2 others had received *x*-ray treatment for fibromyoma. In another series of 31 patients who had had hysterectomy performed, 13 had symptoms of hypertension, most evident in 3 cases. Ovarian opotherapy had no effect in any of these patients. Heitz confirms Paillard's statements from his observations of 208 women, 48 of whom had been treated for fibromyoma. The authors do not agree that all cases of hypertension are secondary to renal disease, but think that the sudden arrest of haemorrhage in these cases is an important factor. They suggest that radiotherapy in regulated doses may be preferable to surgical treatment, and observe that such cases should be watched for several years. They refer to de Meyer's researches on the importance of the "pulse pressure"; they distinguish the cases showing an increase of oscillation between the systolic and diastolic pressures, as the former rises, from those more numerous cases in which the "pulse pressure" is reduced; they point out that this should prove an important aid to prognosis. The authors discuss the treatment of hypertension, and after alluding to the use of several benzyl compounds they recommend "arc lamp" treatment and especially diathermy by Duhem's method—two large metallic electrodes are applied directly to the skin and a high-frequency current of approximately 1,800 thermic milliampères is passed for twenty minutes; in 14 cases out of 15 treated thus they have observed a distinct fall of blood pressure with relief of the cerebral and cardiac subjective symptoms.

333. Jaundice in Typhoid Fever.

A. S. VAN HEUKELOM (*Nederl. Tijdschr. v. Geneesk.*, August 19th, 1922, p. 801), who reports 2 cases, remarks that jaundice is one of the rarest complications of typhoid fever. Murchison saw only 1 case, Giesinger among 600 typhoid patients saw 10 cases (including cholelithiasis), Biermer among 695 patients saw 1 case, Liebermeister among 1,420 patients saw 26 cases, and Osler among 500 patients did not see a single case. Among 1,500 cases of jaundice observed at the front by Garnier and Reilly there was only one due to *B. typhosus*. Leube states that the presence of jaundice in a doubtful case is against typhoid fever. The first of van Heukelom's cases was that of a man aged 42, who, after feeling out of sorts for a few weeks, developed some jaundice with pain in the muscles suggestive of spirochaetosis icterohaemorrhagica. Although most of the characteristic symptoms of typhoid fever were absent—namely, clouded sensorium, intestinal manifestations, enlargement of the spleen, rose spots, bronchitis, positive diazo-reaction, and agglutination—the blood culture was positive on two occasions and the temperature and pulse were typical. The liver was much enlarged and the faeces were not acholic. Van Heukelom concludes that the patient was suffering from acute hepatitis and cholangitis caused by *B. typhosus*. The second case, in which jaundice was a mere coincidence unconnected with typhoid fever, occurred in a man aged 19, in whom the disease began with symptoms of acute obstruction of the bile passages—namely, jaundice, acholic faeces, enlargement of the liver and gall bladder, tenderness of the liver, and colic. Four days after the onset of jaundice he vomited an ascaris after a violent attack of colic and the jaundice then subsided. The possibility of typhoid fever, however, was suggested by the high continued fever, with relative bradycardia and the positive diazo-reaction, and the suspicion was confirmed by a positive blood culture. The disease then ran its course like an ordinary attack of typhoid fever, being subsequently complicated by pneumonia of the right lung, intestinal haemorrhage, bilateral parotitis, periostitis, and right otitis media. Recovery took place.

334. Treatment of Skin Diseases by Potassium Permanganate.

S. FELDMAN and B. F. OCHS (*Arch. Derm. and Syph.*, August, 1922, p. 163) speak very highly of the value of solutions of potassium permanganate as a curative agent in dermatological practice. Their attention having been directed to the good results obtained by this drug in a severe case of eczematoid ringworm, they have given it an extensive trial in many similar conditions. In early moist and irritated lesions it should be used diluted to 1 in 5,000, whereas in lesions associated with deep infiltration and lichenification it may be employed as a saturated solution. Potassium permanganate has yielded better results in the treatment of epidermophytosis than any drug or combination of drugs hitherto employed. Cases of intertrigo of the mammary folds and on the upper thighs yield readily to very dilute solutions, while in the intertrigenous type of epidermophytosis occurring

between the fingers and toes stronger solutions may be employed with equally good results. In eczema marginatum good results are obtained by wet dressings, and, in old lesions, by painting with strong solutions of the drug. In eczematoid ringworm far better results are obtained by this method of treatment than with the use of Whitfield's ointment, but these cases require a longer period of treatment in order to obtain a cure than those mentioned above, and the treatment must be kept up a long time after the disappearance of the lesions in order to make the results permanent. The dysidrotic form is the most resistant to treatment, especially in the presence of deep-seated vesicles and a thickened epidermis. Even here good results are obtained after the lesions are prepared by some keratolytic agent. The manner in which the drug acts in the fungus diseases has not been ascertained, but from clinical observation there seems to be an indication that the beneficial action takes place by means of changes produced in the cells of the epidermis rather than by the direct action of the drug on the fungus.

335. Tuberculosis in Country Districts.

A. Furno (*Il Policlinico*, Sez. Prat., June 15th, pp. 809, 843) states that one of the most serious and distressing public health questions since the war is the spread of tuberculosis in the rural districts of all highly civilized countries. From his experience at Reggio Emilio he does not hesitate to affirm that 50 per cent. of his patients, two-thirds of whom live in the country, are suffering from tuberculosis. Many of these are cases of incipient apical disease, but there are also examples of advanced pulmonary tuberculosis. The disease was much more widely spread among females than among males, owing to overwork, excessive fecundity and prolonged lactation, and to early loss of teeth, which, by giving rise to gastric trouble, rendered them less able to resist infection. Another important cause of the predisposition of country people to tuberculosis is the spread of alcoholism. Lastly, the consumption of unboiled milk has some etiological importance. While in towns milk is usually boiled before drinking, in the country this practice is generally neglected.

336. Horse Serum Treatment of Pyelitis and Pyuria.

D. M. Cowie (*Amer. Journ. Dis. Children*, September, 1922, p. 179) relates experience in the treatment of a number of cases of pyuria with horse serum (foreign protein). Some of them were probably cases of pyelitis, but in only two of the cases was this proved by cystoscopy, by which method alone is it possible to diagnose pyelitis positively. In the first case horse serum injected subcutaneously cleared up a long-standing pyuria which had obstinately resisted the usual methods of treatment, the pus completely and permanently disappearing after the third injection, and from control experience in several cases it was found that horse serum frequently cleared up a refractory case. Intravenous injection of dead typhoid and colon bacilli produced no effect in a few cases which subsequently responded to treatment with horse serum subcutaneously, although horse serum intravenously induces reactions analogous to those of dead typhoid bacilli. That the effect does not depend upon hyperæmia as the result of hyperallergy is suggested by the fact that beneficial results sometimes occur with the first injection ahead of the development of the symptoms of serum disease, and it is impossible to say whether it is the protein of the horse serum, or the anti-substance, or the combination of both that produces the result. The cases are reported rather from the standpoint of developing knowledge of the action of non-specific foreign protein in disease than with the idea of advocating the general adoption of this method of treating infections of the genito-urinary tract.

SURGERY.

337. Horseshoe Kidney.

Sixteen cases of horseshoe kidney seen at the Mayo Clinic, and which required operation, are analysed by E. S. Judd, W. F. Braasch, and A. J. School (*Journ. Amer. Med. Assoc.*, October 7th, 1922). In seven there was hydronephrosis; in six of these the diseased segment was removed, and in the seventh the isthmus was divided and the diseased kidney rotated in order to permit the ureter to lie in the normal position. One patient died; the others recovered rapidly from the operation. Four are now perfectly well—1 eight years, 1 four years, and 2 one year after operation. The formation of stone is common. Eight patients of the series were operated on for renal calculi, which in most cases were removed through a lumbar incision. There were no deaths. Three patients are perfectly well—1 five years and 2 two years after operation. Two patients are in excellent health, but still have occasional dull pain in the lumbar region—1 four years and 1 one year after operation. One patient was well four months after operation, but the urine still contained pus. One patient, seven months after operation, had not had a recurrence of renal colic, but dysuria and frequency continued. In one case, heminephrectomy for tuberculosis was followed by a good result. In spite of complications, the results of the operations on fused kidneys have been quite as good as similar operations on normally developed kidneys.

338. Vaccines in Osteomyelitis.

A. v. Beust (*Schweiz. med. Woch.*, August 31st, 1922, p. 869) considers it unwise to temporize with vaccine treatment in the early stage of acute osteomyelitis, when operative treatment is imperative if general sepsis and other complications are to be avoided. But, as a supplement to operative treatment, vaccines may prove beneficial, and at the author's hospital during 1919 and 1920 46 cases of osteomyelitis have been treated, of which 23 were acute. In 6 acute and 9 chronic cases vaccines were given, an autogenous vaccine containing 500 million germs per cubic centimetre being preferred to polyvalent vaccines. Only 50 million germs were given at the first injection, and when this gave rise to no alarming symptoms, twice this dose was given after three or four days, and a dosage of 10,000 million was reached in some cases. As in all the acute cases this treatment was supplemented by incisions and drainage, it was difficult to form an estimate of its value, but it was noteworthy that all these acute cases terminated in recovery after treatment lasting one to five months. Only in 2 cases did it seem obvious that the vaccines played an important part in the patient's recovery, and though the author's enthusiasm for this treatment is mild he has sufficient faith in it to continue its use.

339. Vaccine Therapy in Oto-rhino-laryngology.

A review, including many of their own observations, on the value of vaccine treatment in diseases of the nose, ear, and throat is furnished by L. Baldenweck, M. Jacod, and A. Moulonguet (*Arch. Internat. de Laryngologie*, July–August, 1922, p. 785). Their most striking results have been obtained in the case of boils—especially repeated attacks—and phlegmonous tonsillitis. In the former malady they employ for preference autogenous vaccines, which they give in very large doses—up to 6,000 million at a time—gauging the injections at invervals of two or three days. On the other hand, in phlegmonous tonsillitis they resort to intravenous administration of stock vaccines. Their actual technique is not described at all in detail, nor the composition of the bacterial emulsion they used, which appears to have been prepared by a colleague. Of 14 cases which they treated 11 resolved spontaneously, while in the remainder the abscess burst of its own accord. As their convictions are so strong on the efficacy of their therapeutics, it is to be regretted that their account is so lacking in precision. With chronic colds, muco-purulent rhino-pharyngitis, ozæna, and tubal otorrhœa they have had several successful results; in chronic sinusitis failures have been frequent; while in otitis media—both acute and chronic—they regard vaccine treatment with some degree of disfavour, many of their cases having subsequently developed mastoiditis. Their general conclusions are that vaccine therapy cannot replace operative treatment, though it may be employed as a very useful adjunct to the latter.

340. Gonococcal Arthritis.

De Barzy (*Bull. et Mém. Soc. Chir. de Paris*, June 27th, 1922, p. 888) discusses the merits of surgical treatment by arthrotomy, suture without drainage and early mobilization, and the advantages of intra-articular injections of serum. The latter method is most satisfactory, but may fail on some occasions. In articulations such as the wrist the injection may be easy when the joint is swollen, but later it becomes difficult and may be impossible; or, again, synovitis of the tendon sheaths may accompany the joint lesion, on which it has little or no effect. On other occasions the gonococci may be of a type very resistant to the injections of serum. In some cases the injection is painful after the second or third inoculation and the joint becomes intolerant of the serum; the articulation swells up and the patient is attacked with malaise, vomiting, and rise of temperature. These phenomena continue till the joint is emptied of its contents. Usually a thick liquid is found containing the unabsorbed serum, polynuclear cells, and no bacilli. If, therefore, the joint shows itself intolerant to the serum treatment and the patient exhibits signs of fever it is advisable to stop the injections and to empty the joint. Surgical treatment should then be adopted without further delay; this, though a little more complicated, is usually quite successful.

341. Post-Operative Beri-beri.

O. SCHNEIDER (*Zentralbl. f. Chir.*, September 16th, 1922, p. 1357), who was formerly attached to the Chulalongkorn Memorial Hospital, Bangkok, records four cases of post-operative beri-beri which ended fatally, as well as others which recovered. Although all the patients did not give a previous history of beri-beri it is probable that those who did not had had mild attacks which were not diagnosed, and that the disease was present in a latent form. A feature common to all the patients in addition to the employment of chloroform anaesthesia was that the operation had been carried out during the cold season of the year when the natives' resistance was lowered and the development of post-operative beri-beri was favoured. Recent infection with beri-beri in the hospital could be excluded in all the cases. The variety of beri-beri observed was exclusively the vagus form, in which the heart, lungs, and stomach are principally involved, as was manifested by a diminution in the tone of these organs. The other forms of beri-beri, such as the dropsical, atrophic, scorbutic, and paraplegic forms, were not observed after operations. Schneider is inclined to attribute the occurrence of beri-beri mainly to chloroform, first because it has the property of affecting the heart and respiration, and secondly because the symptoms observed were referable to these organs. In any case he is convinced that in patients who have once had beri-beri chloroform and operations, especially during the cold season, act as an exciting cause of an attack. Since he has taken the precaution of making a careful inquiry for a previous history of beri-beri, and on the slightest suspicion of it using local anaesthesia with novocain, he has not had a fatal case of post-operative beri-beri.

342. Surgical Diathermy for Inoperable Growth of the Upper Air and Food Passages.

C. E. J. PHILLIPSON (*South African Med. Record*, June 24th, 1922, p. 222) calls attention to the advantages of surgical diathermy when operation is contraindicated; it is practically bloodless and non-productive of shock, while it sterilizes the tissues, blocks lymphatics, and prevents dissemination of cancer cells, frequently relieving pain, and minimizing the occurrence of septic pneumonia. Its disadvantages are that it destroys healthy and diseased tissues alike, that secondary haemorrhage may result from the walls of adjacent vessels becoming softened, and that keloid may occur when the skin is involved. Heat is generated within the tissue, instead of being spread, as in the actual cautery, by conduction from a heated metal, a coagulation of the tissues *in situ* being produced, which is of greater extent than that caused by the actual cautery. For inoperable growths of the larynx and pharynx it is advisable to do a preliminary tracheotomy, and to pass an oesophageal feeding tube immediately after diathermic treatment, since the parts around the coagulated areas swell, and there is always a profuse exudation of lymph. Small malignant ulcers without palpable glands were operated upon under local anaesthesia, but in extensive operations infected glands were removed and the external carotids, or the several branches, ligatured a week or ten days beforehand. Although this latter procedure by starving the area of the growth delays the rapidity with which the slough is extended, this is more than counterbalanced by the diminished risk of haemorrhage. In all cases the mouth and teeth are carefully prepared for days in advance, to eliminate as far as possible the introduction of sepsis, and it is advisable for the operation to be followed by a course of *x* rays to the area for a few weeks.

343. Buccal Actinomycosis.

R. GÉZES (*Rev. de laryngol., d'otol. et de rhinol.*, June 30th, 1922, p. 490) reports an unusual case of actinomycosis of the throat. The patient, aged 62 years, commenced with slight pain in the throat; this continued for two or three days and caused no anxiety. Four days later the patient complained of general malaise and rise of temperature, the throat being inflamed and swollen; the voice was hoarse and speech became painful, and later there was general oedema of the fauces and submaxillary swelling. Bacteriological examination at this time showed diplococci in chains and many polynuclear cells. His condition became worse, and a kind of pseudo-membrane covered the fauces. Bacteriological examination at this stage, eleven days after the onset, showed the predominance of the mycelium of actinomycosis. Treatment with large doses of iodide led to a rapid improvement in the patient's condition. This observation is interesting as the condition is unusual, and there was little to make one think of actinomycosis. Actinomycosis is characterized by its slow development and the typical yellow granules. In this case brownish liquid was obtained on puncture of the swelling, and the rapid course resembled rather an acute infection. It should therefore be borne in mind that a swelling at the back of the pharynx with a rapid onset, similar to angina, may be an actinomycotic infection.

OBSTETRICS AND GYNAECOLOGY.

344. Adeno-carcinoma of the Fundus Uteri.

J. V. MEIGS (*Amer. Journ. of Obstet. and Gynecol.*, September, 1922, p. 241) analyses the clinical and pathological findings in 44 cases of carcinoma growing in the uterine cavity above the internal os, whether springing from the surface or the gland epithelium. The average age of the patients was 50 years, but fifteen patients were under that age; about three out of four had had children. As many as 5 per cent. had not passed the menopause, and thus presented greater difficulty in diagnosis than other cases. The first symptom of the tumour appearing before the menopause was menorrhagia or metrorrhagia. Discharge—at first thin and watery, but later foul, irritating, and blood-tinged—occurred before the bleeding in cases after the menopause, but after the bleeding in cases before the menopause. Pain was by no means a constant sign, and cachexia was not generally noted. Loss of weight occurred in 8 only of the 44 cases, and 7 were gaining weight. The writer remarks that symptoms are present very early in the disease, but appearing about the time of the menopause are often overlooked and indeed attributed to the menopause. He adds that patients with abnormal bleeding or discharge about this time, even if no other symptoms are present and a thorough physical examination is negative, should be submitted promptly to intrauterine examination and diagnostic curetting. In over one-half the cases of the series the diagnosis was made or suspected before operation or intrauterine exploration. Microscopic diagnosis from "gland hypertrophy" presented difficulty in some cases. A condition frequently confused with carcinoma of the uterine body was atresia of the cervix, leading to intermittent bloody infected discharges. Five years or more after operation, 62.5 per cent. of the cases were free from recurrence. The operation recommended is complete hysterectomy (not Wertheim's operation) with removal of the adnexa of both sides.

345. Thyro-parathyroid Insufficiency and Pregnancy.

A. FRUHINSHOLZ (*Gynécol. et Obstét.*, 1922, vi, 3, p. 146) discusses, on the basis of four personal cases taken in conjunction with a survey of the literature, the connexion between pregnancy and insufficiency of the thyroid and parathyroid glands. Partial thyroidectomy has in many instances been followed by no harmful appearances during gestation, whether this occurred after or had begun before the operation; in a number of cases, however, convulsions, tetany, and albuminuria have followed, and have recurred in succeeding pregnancies. According to the author, the thyroid hypertrophy whose occurrence is the rule from the fifth or sixth month of gestation onwards is absent in about 19 per cent. of subjects; these women are in a condition of relative hypothyroidism, and nine out of ten of them become albuminuric. Habitual hypothyroidism is accompanied by dysmenorrhoea and menorrhagia; and Hertoghe was probably right in regarding many cases of repeated abortion during the early months in non-syphilitics as due to thyroid deficiency, and as curable by exhibition of thyroid substance. Sabouraud, Falta, and others have reported falling of the hair, cutaneous thickening, and even frank myxoedema first appearing in connexion with pregnancy. With regard to the effect of pregnancy supervening in those already the subjects of hypothyroidism, disappearance during pregnancy of migraine, chronic rheumatism, and asthma—attributed to minor thyro-parathyroid deficiency—has been observed in some instances. Fruhinsholz describes the course of pregnancy in four patients showing indubitable stigmata of a moderate degree of long-standing or congenital thyroid inadequacy. Two had eclampsia with slight albuminuria, one albuminuria, and one pregnancy oedema; two gave birth prematurely to dead foetuses. Pregnancy in moderately severe cases of myxoedema, though comparatively infrequent, is not so rare as might be inferred from a study of the literature. Tetany is found very frequently in connexion with pregnancy, the puerperium, or lactation, all of which probably may be regarded as having thrown extra burdens on parathyroids which were already relatively insufficient. It is significant that these cases are accompanied by an increased excretion of calcium at a time when calcification of the foetal skeleton demands an unusual degree of activity of the maternal calcium metabolism.

346. Pregnancy and Carcinoma of the Cervix.

IN the experience of SCHWEIZER (*Zentralbl. f. Gynäk.*, September 30th, 1922, p. 1586), cervical carcinoma is encountered in about 0.05 per cent. of pregnancies, and attacks more frequently those who have had many children, especially in rapid succession. In many cases it is difficult to decide as to whether the gestation antedates the cancer or vice versa. The case having once come to examination, diagnosis

presents little difficulty, but, with regard to subjective signs, haemorrhage occurs late, is rarely if ever profuse, and may be absent. Slowing of the rate of growth of a carcinoma during pregnancy was not observed. The malignant disease affects the course of gestation by predisposing to premature labour, and of labour by favouring tears and interfering with dilatation of the cervix; infection is exceptionally liable to occur before, during, or after birth. Prognosis is more unfavourable in those cases in which the carcinoma makes its appearance shortly after termination of pregnancy—the so-called puerperal carcinoma. Of the author's cases, 82 per cent. were operable. The treatment advised is, for inoperable cases, symptomatic measures combined with *x*-ray therapy, followed at term by abdominal hysterotomy and supravaginal amputation of the uterus with extraperitoneal fixation of the cervix: for operable cases, wide hysterectomy, preceded, if the child be viable, by Caesarean section. In pregnancies which have reached their latter half, however, the prognosis is somewhat better after radium treatment than after Wertheim's hysterectomy; against the former is the sacrifice of foetal life and the risk that dense scars may be left behind.

347. Cervical Carcinoma after Supravaginal Hysterectomy.

R. T. FRANK (*Surg., Gynecol., and Obstet.*, September, 1922, p. 334), in discussing the indications for total or supravaginal hysterectomy for myoma, comes to the conclusion that although 256 cases of cancer developing in the cervical stump after the latter procedure have been recorded from American sources alone, it is unwise to advocate total hysterectomy as the routine operation. Even total excision of the cervix may be followed by cancer of the vaginal vault, stump cancer follows amputation for conditions other than myoma, and the mortality of total hysterectomy is higher than that of supravaginal removal. "Coring out" the cervix, as recommended by Kelly, may be of service and does not add to the operative risk. Before operation minute examination of the cervix (a speculum being employed), together with removal of a piece of any suspicious area for microscopical examination, should be carried out. A case is reported of cancer noticed in the cervical stump five months after supravaginal hysterectomy for uterine myomata, and presumably overlooked at the time of operation: an unusual feature was that a small metastatic focus was found in the tip of the vermiform appendix, which was free and had no direct connexion with the growth.

PATHOLOGY.

348. The Pathological Significance of Abnormal Leucocytes in the Blood.

A SUMMARY is given by J. SABRAZÈS (*Gaz. hebdom. des Sciences médicales de Bordeaux*, October 8th, 1922, p. 481) of his report to the sixteenth French Congress of Medicine in Paris on the subject of the diverse morphology of white cells encountered in the blood stream. After referring to the normal genesis of the leucocytes and describing the various types of mother cells from which they are derived, he proceeds to the consideration of their abnormalities. These he classifies under five headings: (1) Degenerating cells, such as are met with in septicaemias, intoxications, leukaemias, etc.; these show leucolysis, pyknosis, degenerative cytoplasmic granules, excessive lobulation of the nucleus, fatty infiltration and degeneration, iodophilia, etc. (2) Immature cells, the product of a physiological cytogenesis; examples are met with when the bone marrow is stimulated to rapid output, and include the myeloblasts, myelocytes, megakaryoblasts, etc.; similarly, immature forms of lymphoid cells are included in this category. (3) Abnormal cells derived from an atypical cytogenesis; among these are the large, undifferentiated types of lymphoidocytes, Rieder's lymphocytes, polymorphonuclears with basophile inclusions, cells with abortive mitoses, etc. (4) Degenerative forms of cells which are abnormal either through simple immaturity or through a deviation in their evolution; such cells result from the occurrence of cytoplasmic or nuclear fragmentation in cells which are already profoundly altered, and are seen to contain protoplasmic masses of basophilic, neutrophilic, or eosinophile reaction; as examples, the cells of Türck are cited. (5) Cells usually foreign to the blood, such as tumour cells.

349. Pure Cultures of Large Mononuclear Leucocytes.

A. CARREL and A. H. EBELING (*Journ. Exper. Med.*, October, 1922, p. 365) have isolated large mononuclear leucocytes from the blood of a hen and cultured them, maintaining them in an active condition for nearly three months. The blood was collected in paraffined tubes and centrifuged; after removal of the plasma a few drops of diluted embryonic tissue juice were placed at the surface of the coat of leucocytes and fifteen minutes later the coagulum containing the white cells was removed and placed in a watch-glass with a small amount of Ringer's solution. After washing away the red cells, small fragments were selected and taken from the fluid with the point of a cataract knife. Cultures were made in a medium composed of plasma alone, of plasma and Tyrode solution, or in media composed of plasma and chick embryo juice. The culture medium was placed in a cover-glass of mica and a small fragment of the leucocyte film was embedded in it before coagulation, care being taken that the leucocytes embedded in the medium were neither too few nor too many in number. When the culture was properly prepared, a great many amoeboid cells were seen in the medium after twenty-four hours. For subculture the invaded coagulum was divided into several fragments with a very sharp knife and the cells migrated into the new medium. After the first passage the transfer into a fresh medium was made every forty-eight hours and then every third, fourth, and fifth day. The cultures were examined while living and drawings and photographs were made of the cells, of which many illustrations are reproduced. In these cultures the large mononuclears became transformed into cells which assumed the appearance of fibroblasts, forming spindle-shaped or stellate cells, with long and slender processes uniting sometimes in a reticulum with those of other cells. The mononuclears migrated and proliferated at a slower rate than similar cultures of fibroblasts, than which they were much less resistant. It was found that the activity of the large mononuclears was increased by embryonic tissue juice and inhibited by homologous serum.

350. Situation of Malaria Parasite in Relation to Red Cell.

J. A. SINTON (*Indian Med. Gazette*, October, 1922, p. 366) supports the view, originally put forward by Dr. Mary Rowley-Lawson, that the malaria parasite is attached to the outer surface of the red cell and is not inside the cell, as maintained in most descriptions. Working with subtertian malaria infection, Sinton distorted the shape of the red cells by rendering the blood hypotonic, and also, in a second series, hypertonic; films, stained in the usual way, showed the malaria parasites often attached to the edge of the red cell. Applying the same methods to benign tertian infection the parasites were seen apparently extracellular running along the margin of the cells, often with their pseudopodia extending on to the surface. Blood was also taken directly from the finger and allowed to drop in fixative solution, after which the cells were dehydrated, embedded in paraffin, and sections cut, and stained with Giemsa. When these sections were examined the parasites could be seen, on careful focusing, to be on a different plane from the host cell and to be attached apparently either to its upper or lower surface. It is only by such means as this that the real situation of the parasite can be determined, for when an ordinary blood smear is made the cells, on account of their flattened shape, tend to lie on one of their concave surfaces, and when parasites are seen occupying one of these concave surfaces they would appear the same whether they were inside or outside the cell. If the parasite is extracellular the concave surfaces would appear to be points of vantage for the parasite because the concavity of the cell would afford the parasite a certain amount of protection against the dangers of being rubbed off by the other blood cells as they flow past in the circulation before it has obtained a firm hold on the host cell.

351. Extirpation of the Pineal Gland.

IN spite of the difficulty in technique, C.-I. URECHIA and C. GRIGORIU (*C. R. Soc. Biologie*, July-September, 1922, p. 815) have successfully removed the pineal gland from a couple of cocks, and have been enabled to study the changes subsequently ensuing. After the operation the birds presented an involution of the secondary sexual organs lasting approximately for two months; when this period had elapsed growth set in rapidly, and the development of these organs became well marked. Eight months after the extirpation of the gland the animals were killed. They presented on inspection no difference from the controls of the same generation. The weight of the testicles was the same, but the interstitial tissue was in greater abundance in the operated animals. As regards the pituitary, this gland was found to be considerably enlarged, being about three times the size of that common to normal cocks. On microscopical examination it was possible to substantiate an increase in the acidophilic cells, the presence of numerous acini filled with acidophilic colloidal material, and a simple hypertrophy of the nervous lobe. The conclusion is drawn from these two experiments that the result of the removal of the pineal gland was to increase the size of the pituitary, and probably to stimulate its function.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

352. Recent Advances in Neurological Therapeutics.

JEAN CAMUS (*Paris Médical*, October 7th, 1922, p. 297) concludes his annual review of neurology in 1922 by describing recent advances in treatment. Painful cramps in paraplegia "en flexion" have been successfully treated by intramuscular injections of cicutine hydrobromide, the dose being 1 to 3 mg. each day for eight consecutive doses. Almost all the patients experienced rapid improvement, sometimes within three or four hours of the injection. Pain and involuntary contractions of the lower limbs are especially relieved, and patients sleep better. The treatment is successful in different types of spastic paraplegia, whether due to compression by tumour, Pott's disease, injury to the cord, or syphilitic myelitis. The good effects last for four or five days after discontinuance of treatment; freedom from pain may be maintained by further injections (0.5 to 1 mg.) every second day. Pierre Marie and others have compared the results of hypodermic injections of curare (5 to 10 mg.) in similar cases. Curare acts as powerfully and more rapidly than cicutine. The former appears preferable in more severe cases. Calvé has treated severe paraplegias due to Pott's disease by intraspinal aspiration of cold abscess. In three cases he has obtained two cures, and in the other case marked relief. Collewaert has devised re-educative treatment of cases of writer's cramp by means of passive and very gentle active movements, followed by carefully planned writing exercises, the patient sitting at a table of suitable height with both forearms resting on the table and elbows well flexed. Careful modifications of the handwriting to avoid all strain on the fingers, the movements being performed as far as possible by elbow and shoulder, the hand gliding over the paper with minimal finger movements. Camus states that the results of intrathecal treatment are excellent in some forms of meningitis, and he has shown its advantages in tetanus. He has also demonstrated the dangers of intrathecal poisoning by mercurial and arsenical salts, etc. Paulian and Dragesco have injected 1 or 2 c.cm. of 25 per cent. $MgSO_4$ solution into the cerebro-spinal fluid in cases of chorea with good results. Marinesco confirms this. Camus remarks that similar treatment in tetanus is not free from danger, and its effect is very doubtful. In a number of mental cases—acute mania, general paresis, delirium tremens, and dementia praecox—Urechia has obtained good results from intrathecal injections of isotonic solutions of calcium salts. Marinesco continues to recommend intrathecal injection of salvarsanized serum in cases of neuro-syphilis, but Sicard has seen no beneficial results and considers the treatment dangerous. Auto-serotherapy may produce anaphylaxis, even when the serum has been heated to 55°. Camus states that certain authors have found spirochaetes in cases of disseminated sclerosis a few hours after death, although the Wassermann reaction was negative. He recommends treatment by neo-salvarsan, when the diagnosis is certain. Karl Petren has treated paralysis agitans by combined active and passive movements systematically carried out for a long time. He claims that cases have improved and that progress of the disease has been retarded by this treatment. Rodriguez, however, has seen no improvement result from physical methods, but relies upon sodium nucleinate and cacodylate and scopolamine given hypodermically. Sicard also recommends this treatment in conjunction with massage and Swedish movements. In epilepsy, luminal (gardenal) has been very generally used, but it is stated that it sometimes produces mental torpor and in other cases delirium. The dose should therefore be reduced very gradually and belladonna, caffeine, bromides, and potassium biborate, in conjunction with luminal, are recommended. In status epilepticus, bromides, luminal, bleeding, hypodermic injections of scopolamine (0.1 or 0.2 mg.), rectal injections of chloral, and inhalations of chloroform have all been recommended.

353. Hepatic "Anergy" in Tuberculosis.

N. FIESSINGER and P. BRODIN (*Ann. de Méd.*, June, 1922, p. 475) adopt von Pirquet's term "anergy" to describe the disappearance of the normal systemic and local reactions to infective agents; this has been observed in all acute and severe infections, especially in measles and during pregnancy. The authors give details of four fatal cases of tuberculosis in married women, whose ages ranged from 34 to 61 years. All the patients had hepatic cirrhosis, two of the atrophic and two of the hypertrophic type: the youngest had a positive Wassermann reaction. The autopsies showed old fibrous or fibro-caseous tuberculous lesions in every case, although very limited and undiscovered during life. All four patients were "very clearly alcoholic"; the initial symptoms were rapid emaciation with anorexia, followed by ascites and slight jaundice. Fever and signs of severe hepatic insufficiency supervened. The patients suffered from delirium and hallucinations before death, attributed to chronic alcoholism and severe terminal jaundice. Evidence of acute tuberculous meningitis was present in only one case (the eldest), but all had recent progressive tuberculous lesions. The authors admit the frequency of a terminal acute tuberculosis in hepatic cirrhosis, but consider that their cases do not fall within that category, their view being that the fatal infection failed to stimulate the liver to a protective reaction. The arguments for and against the generally accepted interpretation are set forth at great length with an elaborate description of the pathological findings, followed by details of experiments, which the authors consider are proof of the correctness of their hypothesis—"an organism disarmed and a weapon which fails—the healthy functioning of the liver." Their practical conclusions are: "To treat with care the liver of quiescent cases of tuberculosis; especially to avoid blind overfeeding, that absurd digestive therapeutic measure in which ordinary practice demands the association of toxic drugs—creosote, guaiacol, arsenic, phosphorus, and others more or less in fashion in that imaginary antisepsis which exists no more in tuberculosis than in any other pathological condition. To forbid alcohol lest it should injure the liver. We shall not go further. 'Hepatic opotherapy' in certain forms of tuberculosis is an experiment only . . . it is one of those indefinite, uncertain therapeutic procedures which, whether followed by favourable or unfavourable results, prove nothing."

354. Oral Administration of Vaccines.

THE possibility of the successful administration of vaccines by the mouth is a question which is exciting a considerable amount of interest at present in France. C. NICOLLE and E. CONSEIL (*Ann. de l'Inst. Pasteur*, August, 1922, p. 579) have just brought forward evidence in favour of the efficaciousness of this method in the case of two diseases so different as Malta fever and bacillary dysentery. In the former case two volunteers received by ingestion a total of 400,000 million dead organisms from a vaccine made up with five different strains of *M. melitensis*. The doses were distributed over a period of five days. After fifteen days they, together with a control volunteer, were injected subcutaneously with 450 million living organisms. On the two vaccinated individuals no effect was produced, while the unvaccinated control developed a typical attack of Malta fever, starting in seventeen days, showing a positive blood culture after thirty-nine days, and yielding in another ten days to the daily inoculation of a *melitensis* vaccine. In the case of dysentery, two volunteers ingested a total of 400,000 million dead Shiga bacilli over a period of five days. One of them, with an unvaccinated control, was infected fifteen days later with 10,000 million living bacilli given by the mouth, while the other, also with a control, received 20,000 million living bacilli eighteen days later. In each case the control individuals developed typical dysentery, Shiga's bacillus being isolated from their stools, and in each case they were rapidly cured by treatment with antidysenteric serum. The two persons who had been vaccinated, on the other hand, remained perfectly well. These results are quite clear cut, and though the experiments were made on a small scale they certainly have the merit of being performed on human beings and not on laboratory animals.

355. Special Indications and Methods of Administration of Digitalis Preparations.

J. MOLLARD (*Journ. de Méd. de Lyon*, September 20th, 1922, p. 569) condemns the modern tendency to reduce the dose of digitalis—such small doses are useless; it is better to adhere to the dosage of the *Codex*. It has not been demonstrated that the various preparations of digitalis have special indications. It is, however, useful to try different preparations in the treatment of heart disease, in order to discover which best suits the patient's case. The administration of digitalis should be carefully watched on account of its cumulative action. Mollard has seen its effects persist for twenty or thirty days after its administration has been stopped, although generally they disappear in from eight to

twelve days. The author enumerates the official preparations of the *Codex*, and discusses the varying quantities of active principles which they contain. "Digitaline cristallisée is the only one with a definite chemical composition, and a constancy of action on which one can rely." The powdered leaves are particularly unstable on account of intracellular diastases which set up fermentation. After discussing the official doses, Mollard states that, according to Manquat and Fiessinger, these should be three or four times stronger, but he himself prefers the dosage of the *Codex*, and considers that these doses suffice in ordinary cases; but he has never seen bad results following the administration of 1 mg. of digitaline cristallisée in one dose, as advised by Vaquez. The author praises the mode of administration and doses recommended by English writers, and he does not agree with the theory that the extract or infusion is more diuretic than digitaline, but affirms Mackenzie's view that variations in the action of digitalis depend more on the nature of the heart lesion than on the preparation of the drug chosen. In cases of "gastric intolerance" of digitalis, hypodermic or intravenous administration should be employed, for which purpose the 1 in 1,000 alcohol glycerin solution of digitaline (*Codex*), which is sterile and can be diluted with water without precipitation, is recommended. In urgent cases the daily dose of 20 drops may be exceeded. This method is contraindicated in the last stage of heart failure, uraemia, bradycardia due to auriculo-ventricular "block," and in serious hepatic or renal complications. Mollard concludes by reiterating his remarks regarding the potency of digitalis and the need for careful observation of its effects.

SURGERY.

356. End-Results in Cancer.

IN a discussion of cancer C. H. MAYO (*Annals of Surgery*, September, 1922, p. 308) points out that the disease selects its victims from the mature and aged rather than from the youth of the nation. The greatest loss from cancer is between the ages of 40 and 60. The sexes are affected in the ratio of three women to two men, the difference being in the organs of reproduction. Environment and, apparently, acids are contributing factors; more than one-third of cancers in men are found in the highly acid stomach; the acid large bowel is often affected, the alkaline small intestine rarely. Views suggested are that regression or degeneration of cells, loss of function, and irritation are factors in its etiology; or it may arise in the immature, waiting, or repair cell. Ochsner believes the cause to be of microbic origin. Chemical environment is undoubtedly a most important stimulating force. The cells of youth are more resistant to cancer, but once affected the results are more serious. Treatment is making great progress. Operations are more radical, whilst radium and *x*-ray treatment checks the activity of growth if operation is advisable. The action of the rays causes complex physio-chemical changes in which the cells become oedematous and nuclear substance breaks down, whilst all powers of cell regeneration are lost; the débris is carried away by phagocytes and replaced by connective tissue. Many early and some late cases have been apparently cured by such treatment. The end-result of *x*-ray and radium therapy is fibrosis, which often changes the type of malignancy. The probability of the cure of cancer can be largely foretold by the pathologist, depending on the amount of fibrosis present. A very active cellular growth with proliferation, especially if the lymphatics are invaded, is a most fatal type.

357. Scarlatinal Otitis.

W. T. GARDINER (*Journ. of Laryngol. and Otol.*, October, 1922, p. 497) reports results of two years' otological work in the scarlet fever wards at the Edinburgh City Hospital for Infectious Diseases. In 1920–21 10 per cent. of the admissions showed ear complications, and in 1921–22 6 per cent., the otorrhoea commencing most commonly during the first three weeks of the illness, and especially in the first week. Pain is a reliable sign of ear mischief, though it is not infallible, as it may be due to peritonsillar abscess, or even impacted wax, and ear discharge occurs twice as often without pain as with it. It is usually present in the early stages of the first and second weeks, but is seldom complained of from the third week onwards. The discharge is generally purulent and may have a foul odour frequently diagnostic of diphtheria and confirmed by meatal swabs. The tympanic membrane may present every variation of change, from a mild catarrh to a red bulging with obliteration of landmarks, and in the majority of cases the meatus contains desquamated epithelium which syringing will not remove sufficiently to give a view of the membrane. No case of the membrane being destroyed in a few hours, or even in a few weeks, was observed, and in all cases where a large perforation was noted a history of previous ear discharge existed. Adenoids were diagnosed 141 times in 300 cases, and in some the otorrhoea dried up without operation. As regards early paracentesis, the drum head ruptures so readily that it is impossible to dogmatize, though in favourable cases it was performed within six hours of observing the bulging, and even this was frequently not soon enough, the membrane having already ruptured spontaneously. Conservative treatment consisted of the usual instillation of H_2O_2 and regular syringing. Although otorrhoea associated with adenoids may dry up under such treatment the result is only temporary, and therefore every case of scarlet fever with adenoids, whether otorrhoea occurs while in hospital or not, should have the adenoids removed before leaving, because of the liability for otorrhoea to develop with the first attack of rhinitis acquired afterwards. Five hundred units of diphtheria antitoxin were given before operation, and no untoward occurrence resulted from performing the operation while in the general wards of the fever hospital. Seven per cent. of the cases developed mastoid complications, two types occurring practically equally—namely, (*a*) developing in the third week of the otorrhoea with pain, tenderness, oedema, and fever; and (*b*) developing quietly without pain, tenderness, or even fever in the fourth or fifth week. Bone should be removed wide of the apparent disease; in no case was it found necessary to perform the radical or modified radical operation.

358. Resuscitation by the Intracardiac Injection of Adrenaline

J. GOTTESMAN (*Journ. Amer. Med. Assoc.*, October 14th, 1922, p. 1334) reports the case of a man, aged 73, with generalized arterio-sclerosis, who developed severe pain in the right leg due to trophic changes. The pain continued to be very severe, and on September 20th amputation of the affected extremity under spinal anaesthesia was attempted. The injection of 10 c.cm. of 1 per cent. solution of procain into the spinal canal was followed almost immediately by drowsiness, cyanosis, and shallow respiration. The heart action remained good for about five minutes, when the patient became unconscious, respiration ceased, and the pulse and the heart sounds could not be detected. Artificial respiration was begun and various cardiac stimulants, including caffeine, camphor, and adrenaline, were given hypodermically, but without effect; the breathing had ceased and the heart's action seemed to have stopped. Twenty minims (1.2 c.cm.) of adrenaline, full strength, were then injected into the left auricle by puncture of the chest wall between the left third and fourth ribs, the position in the cavity of the heart having been determined by aspiration of blood. There was immediate reappearance of the radial pulse and of feeble respiratory efforts. This was followed by the return of the heart sounds. The cyanosis was gradually replaced by normal colour, and within a few minutes respiration became regular, the heart's action good, and consciousness was restored. After this the patient made an uneventful recovery from his symptoms.

359. The Treatment of Osteochondritis Dissecans of the Knee.

J. HELLSTRÖM (*Acta Chirurgica Scandinavica*, September 18th, 1922, p. 190) reviews the literature and records in detail five cases of osteochondritis dissecans. The choice of treatment depends on the stage of the disease. If it has already given rise to a free body in the joint operative treatment is imperative. It is also indicated when there are symptoms without the existence of a free body. The choice of treatment is more difficult when there are no symptoms, and the disease is accidentally discovered by the *x* rays. In such cases it may be sufficient to adopt expectant, conservative treatment, but, as two of the author's cases show, osteochondritis dissecans is apt to provoke secondary arthritis deformans, and when this is demonstrable by the *x* rays operative treatment should not be delayed even in the absence of symptoms. The procedure which the author inveighs against is to wait till some of the diseased bone has broken loose and then to be satisfied with the mere removal of the free body without eradicating its source. This course implies a second operation at a later date. At the first operation, therefore, removal of diseased bone should be as radical as possible.

360. The Prognosis for Dislocations of the Shoulder.

H. GUBLER (*Schweiz. med. Woch.*, September 28th and October 5th, 1922, pp. 960 and 985) points out that as dislocations of the shoulder represent from 51 to 54 per cent. of all dislocations, it is very important to be familiar with the prognosis under various conditions. He has collected the records of the 252 cases occurring in 1920 and coming under the Swiss Accident Insurance administration. The value of this material, as compared with hospital cases, is

that it represents all shoulder dislocations—not merely such as have been admitted to hospital on account of their severity and serious complications. The 252 cases were thus represented: subcoracoid 111, axillary 31, undiagnosed or not recorded 41, posterior 1, complicated 40, and habitual dislocation 28. In 25 cases (10 per cent.) permanent disability was inflicted and compensation accorded. In 11 of these cases the dislocation was uncomplicated, in 12 it was complicated, and in 2 it was habitual. The average time taken in recovery was forty-eight days, and it was thirty-eight days for the uncomplicated cases. This period could, in the author's opinion, have been further considerably reduced had the practitioners in charge invariably adopted treatment by active and passive movements directly after the accident. As his survey of the literature shows, this procedure has never provoked a recurrence of the dislocation. And, as de Marbaix has shown, the period of invalidism may be reduced to an average of eighteen days by the immediate institution of mobilization. One of the patients in the author's material was a workman, aged 37, who resumed work as soon as the dislocation was reduced, and whose period of invalidism set up a record for brevity.

361. Operative Treatment of Ulcer of the Stomach and Duodenum.

E. HEDLUND (*Svenska Läkaresällskapets Handlingar*, September 30th, 1922, p. 167) has analysed the 485 operations performed at his hospital up to the end of 1920, and has come to the conclusion that the more radical the operation the more satisfactory and permanent are the results. He classifies his cases in two periods (1905-11 and 1912-20) and he notes that in the first period only 13 per cent. of the operations were resections of the pylorus, while in the second period this ratio had risen to 44 per cent. In the same periods the ratio of transverse resections had risen from 0 to 14 per cent., while the ratio of gastro-enterostomies had dwindled from 71 to 20 per cent. The operation mortality in the two periods was 4.5 and 6.5 per cent. respectively. This rise in the mortality was not, however, due to the increasing frequency of the more radical operations, but to comparatively accidental factors. The author's general impression that his most radical operations were the most successful was confirmed by an investigation of the after-histories of 455 patients, all but 22 of whom were traced. Complete recovery was achieved by primary resection of the pylorus in 73 per cent., and this ratio could be increased to 85 per cent. by adding the cases of almost complete or partial recovery. On the other hand, gastro-enterostomy was followed by complete recovery only in 30 per cent., and this ratio could be increased only to 54 per cent. by adding the cases of almost complete or partial recovery. The ratio of patients unimproved by primary resection of the pylorus was only 6.5 per cent., as compared with 17 per cent. of the patients treated by gastro-enterostomy. Only 2.5 per cent. of the patients treated by resection had to undergo a second operation, whereas 8 per cent. of the gastro-enterostomies required reoperation. Undoubtedly the risk of post-operative peptic ulcer is smaller after resection of the pylorus than after any of the other operations, and for this and other reasons the author is emphatically in favour of resection operations instead of gastro-enterostomies.

362. Colloidal Iodine in Gonorrhoea.

TANT (*Le Scalpel*, September 9th, 1922, p. 874) gives his experience in the treatment of gonorrhoea by colloidal iodine. Of the 167 cases treated 62 are eliminated because in 34 the treatment was not regularly carried out and in 28 the patients were still being treated. To abort the disease 2 c.cm. were injected three times a day. Only three cases presented themselves for abortive treatment, and of these one was cured in six days and two in seven days. Of the acute cases (28) the mean duration was twenty-three days and only six required treatment for more than a month. Of the chronic cases (74) the gonococci had completely disappeared in 53 after a mean treatment of thirty-seven days. The "morning drop" generally disappeared in three or four weeks. Of the total number (167) only one presented any complication, and that was an epididymitis in a man who had been treated for four days.

363 Post-operative Hernia of the Abdominal Wall.

O. NIELSEN (*Hospitalstidende*, July 5th, 1922, p. 65) has investigated the frequency with which a hernia followed laparotomy among 1,181 patients operated on in the period 1916-20. He personally sought out 495 patients who had not followed the injunction to present themselves at his hospital for examination a year after the operation. He thus obtained information as to the subsequent fate of 915 patients, and he classifies his material according as the operations were for diseases of the biliary passages or stomach, or were situated in the right iliac fossa or in the pelvis. He further classifies his cases according as the operation wound was drained or closed at once, the latter class being again subdivided according as the operation wound became septic or not. The conclusion to which he comes is that there is little prospect of reducing the frequency of this complication by devising new lines of incision. Drainage and sepsis of the operation wound are the two chief factors promoting post-operative hernia, and doubtless if immediate closure of the wound were preferred to drainage more often than is usually the case the frequency of post-operative hernia would be reduced. But this is a less serious matter than the ill effects of inadequate drainage.

OBSTETRICS AND GYNAECOLOGY.

364. Treatment of Puerperal Septicaemia.

W. J. HUTCHISON and H. E. HARRIS (*New Zealand Med. Journ.*, August, 1922, p. 210), from an experience of 16 consecutive cases of puerperal septicaemia, consider that vaccine therapy, properly prepared and administered, is the most efficient remedy. Of 10 cases from October, 1915, to March, 1921, in which the usual treatment of douching, polyvalent antistreptococcic serum, stock vaccine, etc., was carried out, only one recovered, while of 6 cases since March, 1921, treated by autogenous vaccines prepared from the patient's blood, only one was fatal. Vaccines prepared from the uterine contents are unreliable. The method adopted which has given satisfactory results consists in an examination of the patient under an anaesthetic in the lithotomy position, taking a swab of the uterine contents for preparing a vaccine pending that from blood culture, curetting if necessary, and douching with 1 in 5,000 solution of potassium permanganate; 5 to 10 c.cm. of blood are then drawn from a superficial vein into a sterilized syringe, and this is added in varying amounts to three or four tubes of sterile broth, and a vaccine prepared and administered in 5-million doses every second day. The first dose generally produces marked improvement, and usually two or three doses are sufficient to bring the pulse and temperature down to normal. If the blood culture shows no growth in two or three days fresh cultures should be made and the intrauterine douching should be continued until a vaccine is prepared. The organisms found in the blood are not always similar to those found in the uterus, and in one case, while the first blood cultures showed no growth, the uterine swab gave a pure culture of streptococcus, and, though the vaccine therefrom had no effect, excellent results followed the administration of a vaccine from a second blood culture, which gave a pure growth of a haemolytic streptococcus. Failures in the past have probably been due to improper dosage and at too long intervals, and since vaccine therapy on the above lines has been carried out every case of puerperal septicaemia yielding a growth of organisms from blood culture has recovered. Pleuritic pain with subsequent effusion occurred in three of the six reported cases, though in only one was recovery delayed thereby.

365. Hyperpiesis and Myomata.

HEITZ (*Gynécol. et Obstét.*, 1922, vi, 3, p. 208) confirms the frequence of the association in females of high blood pressure with the presence of uterine myomata, as first pointed out by Vaquez. Among 208 women having high blood pressure he found that no fewer than 45 had or had been surgically treated for myoma; increased arterial tension was specially common in those in whom haemorrhage had been checked by hysterectomy or *x*-ray treatment. These findings are not in accord with the views of those who regard high blood pressure as a consequence of renal changes. The practical lessons to be learnt are that too radical suppression of haemorrhages which may have some beneficial effect is not without danger, radiotherapy in carefully selected doses presenting advantages as compared with hysterectomy; and that it is important that patients after treatment for myomata should be kept under continued medical supervision, especially as regards the circulatory system.

366. Puerperal Thrombosis and Embolism.

P. HÄGGSTRÖM (*Upsala Läkareförenings Förhandlingar*, September 11th, 1922, p. 305) has investigated the frequency with which thrombosis and embolism occurred among 11,475 maternity cases at the University Hospital in Upsala. There were 149 cases of thrombosis, 13 of which led to embolism, which proved fatal in 6 cases. Collecting the figures of fifteen other writers, the author has obtained a total of 140,752 maternity cases, among which there were 882 cases of thrombosis (0.6 per cent.) and 80 of embolism (0.06 per cent.). The calculation is made that, as 125,000 to 135,000

children are born yearly in Sweden, approximately 1,000 women suffer every year from puerperal thrombosis, which leads in about every tenth case to pulmonary embolism. For every 2,000 births there is one death from pulmonary embolism, and it is probable that in Sweden alone 60 to 70 women die every year from this condition. Puerperal thrombosis increases with age; in the author's material its incidence was only 0.6 per cent. among women under 20, whereas among women over 40 it was as high as 2.7 per cent. Among primiparae it was only 0.9 per cent., as compared with 1.6 per cent. among multiparae. A point on which the author lays stress is the importance of the premonitory signs given by the pulse and temperature. Among the 132 cases of thrombosis in which a record of the pulse was kept there were as many as 97 in which the pulse rate ranged from 90 to 140 before the thrombosis was detected; in 95 cases there was also a premonitory rise of temperature. The pulse and temperature are therefore a useful guide, and when raised they should lead to a search for signs of thrombosis. The author's statistics also show that the incidence of thrombosis is somewhat higher among patients who have been examined internally in connexion with labour, or have had a ruptured perineum sutured, than among women who have not had to submit to either of these procedures.

367. Simultaneous Uterine and Ectopic Gestation.

A. Sippel (*Deut. med. Woch.*, September 8th, 1922, p. 1202) records a case to which he can find only two parallels in the literature. A multipara, aged 39, was operated on for tubal abortion seven weeks after her last menstruation. At the operation he was surprised to find a uterine pregnancy of the same date as the pregnancy of the right tube. This was removed with great care, and the patient went to term, giving birth to a well-developed child on June 1st, 1920. She menstruated regularly till July 17th, 1921. On August 7th, 1921, she was operated on for a tubal abortion on the left side, pregnancy having evidently lasted seven weeks. Uneventful recovery followed. In connexion with this case the author discusses the advisability of operating on both sides on the occasion of a ruptured extrauterine pregnancy in order to prevent a recurrence of this condition on the other side. It has been calculated that about 5 per cent. of all cases of ectopic gestation sooner or later involve both sides, but, as there may be normal intrauterine pregnancies in the interval, ligature of both tubes may not always be justifiable.

PATHOLOGY.

368. Immune Serum in Yellow Fever.

Hideyo Noguchi (*Journ. Exper. Med.*, September, 1922, p. 357) has studied the duration of the protective effect of anti-icteroides immune serum after subcutaneous inoculation into animals. It had been found that when non-immune persons contracted yellow fever notwithstanding vaccination, the onset occurred soon after vaccination, and since the incubation period in yellow fever is six days it seemed that infection must have taken place in some instances during the period while protection was developing. On the other hand, immune serum protects at once against experimental *Leptospira icteroides* infection, and it might be possible to provide immediate protection by means of anti-icteroides serum. It was found with guinea-pigs that complete protection enduring five days was provided by very small quantities of serum, but that after five days the immune substance rapidly diminished, and to keep the animal protected for as long as ten days it was necessary to give a hundred times as much protective serum. This sudden disappearance of the immune substance after about ten days may be connected with the precipitin formation for the heterologous anti-icteroides horse serum. But since the titre of the immune serum suffers reduction when kept at 37° C. *in vitro* a similar reduction would certainly be expected in the blood of a foreign species. Noguchi's results suggest that for a man weighing 80 kilos 0.16 c.cm. of serum would theoretically be sufficient to protect for at least five days and 16 c.cm. for ten days. This temporary protection would be a valuable antecedent to that furnished by vaccination, since the final effect of the latter cannot be expected until at least nine or ten days have passed.

369. Basophile Inclusions in Polymorphonuclear Leucocytes.

J. Sabrazès (*Gaz. hebdom. des Sci. méd. de Bordeaux*, October 1st, 1922, p. 470) finds that it is possible by certain staining reactions to distinguish between two different kinds of basophile staining substances which occur in the cytoplasm of polymorphonuclear leucocytes. The one kind is encountered more or less often in scarlet fever and in the majority of the infectious diseases, and is stained blue by May-Giemsa; the other, which is altogether more rare, results from nuclear disintegration, and is coloured red by this dye. For further differentiation Pappenheim's mixture of carbol-fuchsin, polychrome blue, and methyl green may be used; this stains chromatin green, spongioplasm blue, and the basophile paraplasm red. With this reagent the basophile inclusions of the first type appear blue, and may therefore be regarded as the remnants of the spongioplasm of the original myeloblasts. Leucocytes containing such inclusions have attained nuclear but not cytoplasmic maturity. Their cell substance still retains tiny areas which have escaped the oxyphilic change of the paraplasm and its granular infiltration. A simpler method of distinguishing these inclusions from fragments of nuclear material is to examine a dried blood film under a cover-slip after treatment with carbol-toluidine; the former are stained a greyish-blue colour, while the latter take on a beautiful red wine shade.

370. Histopathology of Filter-passing Virus of Influenza.

G. Baehr and L. Loewe (*Arch. Intern. Med.*, September, 1922, p. 307) describe the pulmonary lesions produced in rabbits by the intratracheal inoculation of Berkefeld filtrates of naso-pharyngeal washings from early cases of influenza, which are as follows: (1) Congestion, oedema, and small haemorrhages in the mucous membrane of the trachea and bronchi. (2) Presence of a profuse, slightly blood-tinged, frothy, serous fluid in the lumen of the bronchi. (3) Diffuse patchy distribution of red, jelly-like lesions throughout the lungs. (4) Intense congestion of a large part of the intervening lung parenchyma and acute emphysematous overdistension of alveoli. (5) Widespread exudation of serum and extravasation of red blood cells from the vessels, filling interstitial tissues and groups of alveolar air spaces. (6) Aplastic, structureless character of the exudate. (7) Aneurysmal dilatation of short stretches of capillaries and arterioles, and sometimes closure of the lumen of these vessels at these sites by blood platelet thrombi. (8) Tendency to early secondary invasion with pyogenic organisms, which then induce a rapid purulent infiltration, thereby completely obliterating the primary and specific picture of the disease. Similar lesions were produced by the intratracheal inoculation of cultures of the filtrable punctiform bodies cultivated from naso-pharyngeal washings in early influenza. These specific pathological characteristics have all been observed in human influenza by pathologists who have had the opportunity to study the lungs of patients with fulminating disease who died within the first few days of their illness and before secondary infection had occurred. They can best be explained on the supposition that the virus of this disease possesses a remarkable affinity for the vascular endothelium. The virus gains access by the respiratory passages, and is rapidly absorbed through the mucous membrane of the trachea, bronchi, and bronchioles, when, as the result of its peculiar endotheliotoxic property, it rapidly causes a profuse outpouring of serum and red blood cells in patchy areas throughout the lungs. The complete loss of tonus in many capillary loops and the early occlusion of many capillaries and minute arterioles by blood platelet thrombi are further evidence of this vascular damage.

371. A New Medium for the Gonococcus.

S. Costa and L. Boyer (*C. R. Soc. Biologie*, July-September, 1922, p. 856) claim to have secured good results in the isolation and preservation of the gonococcus from a medium whose chief characteristic is the replacement of the usual non-coagulated protein by powdered gum, obtained from the exudation of the *Astragalus gummifer* and trees of neighbouring species. In preparation a peptone-beef bouillon is made up, filtered, and made slightly attractive to litmus (exact P_H not given); 1 per cent. of gum is then added in small quantities at a time, and the fluid agitated till a homogeneous mixture is obtained; 3 per cent. agar is used for rendering the medium solid, and the usual filtration and sterilization performed. The finished product is almost as transparent as ordinary nutrient agar, but the surface is moister, more viscous, and more sticky. The gonococcus will live on it for eight days. For keeping the organism, once it is isolated, they find that a semi-liquid medium, prepared in the same way but containing only 0.3 per cent. agar, is more serviceable; on this the gonococcus will remain alive for a month or longer. That the value of the gum does not depend on the starch it contains they have shown by adding sufficient malt to the medium to ferment all the starch; the subsequent growth obtained is not diminished in any way. They have therefore come to the conclusion that the action of the gum is probably more of a physical than a chemical nature, serving to produce a peculiar degree of humidity and viscosity which is favourable to the growth of the gonococcus.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

372. Sthenic Dyspepsia, or Hyperchlorhydria.

J. J. Graham Brown (*Edinburgh Med. Journ.*, October, 1922) approves Rosenbach's dictum that the great majority of cases of gastric disorder are originally of nervous origin, whatever complications may ensue. He emphasizes the necessity of studying the physiology of gastric activity and of the experimental findings of the laboratory. The mere study of symptoms in human patients must remain almost futile without the sure foundation of physiology. He then describes the twofold innervation of the stomach—sympathetic and parasympathetic—the one leading to atonic and the other to hypertonic conditions; if one be depressed by toxic or other causes the other autonomic system becomes dominant. Conversely, one may be hyperstimulated and so overpower the other. The efferent parasympathetic neurones of the vagus which control the activities of the stomach are mainly (1) motor and (2) secretory; both may be disturbed separately, but more usually both are involved to a greater or lesser degree. Motility varies in different parts, the fundus acting chiefly as a food receptacle (Cannon), but is not entirely quiescent. Terminal fibres of both vagi form synapses with Auerbach's plexus, and efferent stimuli start peristalsis in the prepyloric region, and may be stimulated by pilocarpine and inhibited by adrenaline; Mann and others claim that adrenal insufficiency is found in many cases of acute gastric ulcer. Pure gastric juice is of fairly constant acidity—0.5 per cent. HCl; but this is reduced by saliva, mucus, and by reflux of duodenal secretion to 0.2 per cent. The term "hyperchlorhydria" is therefore not accurate—it often denotes excess of "appetite-juice" from vagal hyperactivity. The physiological importance of free HCl is described, and the inhibition of gastric secretion by emotional stimulation of the sympathetic. Hypersecretion is due to (1) absolute or (2) relative vagal hypertonus. Inhibition of secretion is due to vagal hypotonus—(1) absolute (from toxic poisoning as in enteric, or from the action of drugs such as atropine, or from exhaustion) or (2) relative (emotion producing endocrine stimulation). Although the nerve mechanism regulating secretion may be intact, pathological changes in the mucous membrane (for example, cancer or chronic alcoholism) or unsuitable food may produce achylia. Overstimulation of the parasympathetic, stated to be more common in men, results in increased peristalsis and increased secretion of gastric juice; the patient is active and vigorous and complains of pain, relieved by food, or the pain may come on shortly after taking food, owing to increased peri-talsis—the lighter the meal the more rapidly does the stomach empty itself. The highly acid stomach contents may cause painful pyloric spasm, and when the stomach is empty pain returns, there is heartburn, flatulence, acid eructations, and sialorrhoea. The patient eats rapidly and masticates insufficiently. A bismuth meal and skiagrams show hypertonus, the greater curvature above the umbilicus, active powerful peristalsis, and possibly bismuth-containing "pockets" in the stomach or duodenum, indicating an ulcer. A test meal will show excess of acid, and the percentage of free *plus* organically combined HCl should be estimated. This may rise to 0.3 or 0.35 per cent. Flatulence results from neutralization of large quantities of alkaline saliva with liberation of free CO_2. In these cases the pupils are small (sympathetic hypotonus), the oculo-cardiac reflex may be so marked that the radial pulse may disappear, and the "exercise tolerance" test is very good. When untreated these cases suffer from exhaustion of the gastric muscular wall eventually, and secondary gastroptosis with the usual symptoms follows. The stomach now never completely empties itself except by vomiting. Treatment, in the first stage, is directed to vagus depression—that is, to control peristalsis and lessen HCl secretion. In the later stage of dilatation the object is to restore motor activity and to prevent toxaemia. Stimulation of the sympathetic by mental and physical exercises is recommended. Moderate fatigue will stimulate the adrenals, and small doses of thyroid extract act as stimuli to the sympathetic system. Tincture of belladonna, alkalis, and a salt-free diet tend to lessen secretion of HCl. Prolonged mastication of food increases the secretion of saliva, and consequently the alkalinity of the mass when swallowed. Stimulants and condiments are to be avoided, and the dietary should include plenty of soluble fat. Green vegetables and stale bread are recommended, and potatoes, carefully steamed, may be eaten in small quantity.

373. X-Ray Treatment in Skin Diseases.

Guarini (*Rif. Med.*, September 11th, 1922, p. 876) describes some of the established results in the *x*-ray treatment of skin diseases. For most cases it is better to use hard rays well filtered. Primary cancer of the skin usually responds excellently, and secondary nodules—for example, after the removal of the breast for cancer—are often much improved. Even where the case appears hopeless the mental effect of *x* rays may perhaps be worth trying. Port-wine stains are better treated by radium or electrotherapy; cavernous naevi do well with *x* rays. Keloid, warts, condylomata, and mycosis fungoides are also favourably influenced. The technique for *x*-ray treatment of ringworm is now well known and accepted as the most efficacious form of treatment. In treating the face it should be remembered that this part of the body is specially sensitive to *x* rays. The results in hypertrichosis are often very good but variable. For ordinary defluvium capillorum and alopecia *x* rays are often used. Acne, furunculosis, hyperidrosis, rhinoscleroma, psoriasis (in this case applying the rays to the thymus), pruritus (except the neurosis type), and seborrhoea are also mentioned as favourable cases for this treatment.

374. M. V. Leof (*New York Med. Journ. and Med. Record*, October 4th, 1922, p. 379) discusses the value of *x* rays in the treatment of skin diseases. The effectiveness of the treatment is due to the fact that *x* rays produce chemical action by oxidation, and that, by their biochemical action, they modify the production and action of enzymes and ferments, besides possessing bactericidal powers. While a minute amount of radiation stimulates, large amounts inhibit and destroy, and undifferentiated, immature, biologically or physiologically active cells are most readily affected. In the treatment of acne vulgaris *x* rays are superior to any other methods, ten to sixteen fractional doses usually effecting a cure, and in the treatment of furunculosis, tinea tonsurans and barbae, and in favus it gives the best results. In sycosis vulgaris the effects of *x*-ray treatment are not constant, and its application should be in conjunction with other methods, such as vaccines, etc. Nearly all forms of eczema derive benefit from the treatment, though it should not be applied in acute or inflamed conditions. While in psoriasis a ready response is obtained recurrences are common, and it is of doubtful value in general pruritus, though distinctly useful in regional pruritus. Except in the ulcerative type of lupus the treatment is of little value, as is the case in tuberculosis of the skin and allied conditions, though in tuberculous adenitis a large percentage of cases are cured. Warts, senile keratosis, benign new growths, and rhinoscleroma respond well to *x*-ray treatment, but with the exception of the cavernous type it is unsatisfactory in dealing with naevi. In basal-cell epithelioma *x* rays are the only known prophylactic, and should be resorted to early, but the results are not so favourable in prickle-cell epithelioma because of the likelihood of metastases taking place.

375. The Dangers of Phenolphthalein as a Purgative.

K. Schmilinsky (*Deut. med. Woch.*, September 29th, 1922, p. 1311) considers phenolphthalein a dangerous drug which is capable of causing wholesale destruction of the red blood corpuscles, and inducing acute toxic degeneration of the kidneys. The author, who gives references to previous cases, records the case of a girl, aged 9 years, whose mother gave her, in one dose, two tablets, each of which contained 0.1 gram of phenolphthalein. A normal evacuation followed, but next day there was violent pain in the right abdomen, with fever, nausea, and vomiting. The rectal temperature was 39.3°, the pulse 130 to 145. The region about McBurney's point was very tender and hard, and, perityphlitis being suspected, laparotomy was performed. But the only abnormality found was a number of threadworms in the appendix, which was macroscopically normal. Next day the condition of the temperature and pulse was unaltered, the ribs and sternum were tender on percussion, and a blood count showed 3.5 million erythrocytes, 73 per cent. haemoglobin, 57,000 leucocytes, 90 per cent. of which were neutrophiles, 9 per cent. monocytes, and 1 per cent. lymphocytes. By the eleventh day the number of the erythrocytes had risen to 4.5 million, and the leucocytes had fallen to 12,700. A few days later the number of leucocytes was further reduced to 6,700. The author, who interprets these phenomena as signs of irritation of the myeloid system by phenolphthalein, advises caution in its administration.

376. Pathological Dentition.

V. Macdonald (*Med. Journ. of Australia*, September 9th, 1922, p. 290) considers pathological dentition to be a definite clinical entity, and that though dentition is normally physiological it may become pathological. In the eruption of teeth the action of the ductless glands, such as the pituitary and thyroid, has to be considered, there being a direct relationship between the growth of bone and their eruption and growth. The stages of eruption and the relation of the teeth of the first dentition to those of the second point to a period of great physiological activity not without pathological possibilities in a delicate organism of developing cells in various stages of completion and specialization, in finely adjusted balance easily upset by a storm centre in any portion of the organism, and dependent for its stability upon the nutritional and physiological balance of the entire organism. Anything which upsets this balance will impair harmony between the root growth and the absorption of the tissues overlying the tooth crown resulting in a steady backward pressure of the calcified portion of the tooth root upon the dentinal papilla, and so setting up any, or all, of the phenomena of pathological dentition. The tooth thus becomes a mechanical irritant, and thorough lancing of the teeth next in order of eruption in cases due to dentitional upset is said by the author to give excellent results. Of the second dentition the chief abnormal nervous phenomena are mainly due to impacted or misplaced teeth, but even when erupting in correct alignment they may be subjected to backward pressure, the second and third molars being the most frequent sources of trouble in this respect. Without attributing too much to dentitional disturbance, or confusing coincident disease with that incident to dentition, the possibility of a perfectly normal physiological process occasionally becoming pathological and a factor in the causation of disease is maintained.

377. Herpetiform Eruptions in Encephalitis Lethargica.

Arnold Netter (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, July 6th, 1922, p. 1028) states that he has seen herpetiform eruptions in the course of encephalitis lethargica in two cases and has found records of three others; he considers that they occur in at least 1 per cent. of all cases. Guizetti (Parma) and Bériel (Lyons) have described the pathological changes found in the posterior spinal root ganglia and in their cranial homologues in the case of two women who died after twenty and twenty-six days' illness, which commenced with intense pain accompanied by myoclonic spasms. The ganglia and nerve roots showed an inflammatory exudation, consisting chiefly of lymphocytes with a few plasma cells. The nerve cells were largely retracted and the nuclei were opaque and atrophic. These changes were found in all the nuclei of the sensory nerves of the areas in which intense pain had occurred during life. Netter's first case was that of a healthy man of 34 in whom intercostal herpes preceded (by nine days) an attack of myoclonic encephalitis, from which he recovered. The second case was a child in whom intercostal herpes and encephalitis occurred simultaneously; she recovered. In the third case, reported by Medea (Milan), the encephalitis was accompanied by supraorbital herpes, followed by paraesthesia of the affected area. In the fourth case (Souques) bilateral herpes zoster followed the encephalitis eight months after its onset; myoclonic spasms of the left side persisted. In the fifth case (Simone) the patient was aged 8¼ years. Encephalitis commenced on March 25th. On April 6th bilateral gluteal herpes appeared. Patient was admitted to hospital on May 27th quite unconscious. The child died on October 10th of streptococcal meningitis. Histological examination of the brain and salivary glands showed changes characteristic of encephalitis. On April 21st (that is, fifteen days after this patient developed herpes) another child in the same ward (admitted February 2nd) developed varicella, and on May 5th another little girl (admitted March 13th) also developed confluent varicella.

378. Treatment of Whooping-cough with Ether.

Mancinelli (*La Pediatria*, September 1st, 1922, p. 801) gives the results of the ether treatment of whooping-cough in 36 children treated as out-patients and 35 as in-patients. For children of 1 year 1 c.cm. of ether prepared according to a formula of Professor Valagussa was injected on alternate days, the dose being increased with the age of the patient. In the out-patient group the results were remarkably good, but in the in-patients less than half gave any good result, but in most of these cases there were complications—for example, severe rickets. The five deaths in the second group were due to bronchopneumonia. No bad effects were observed after the injections. Apart from the complications present the better results obtained in the first group were probably due to the greater freedom to air.

SURGERY.

379. Acute Staphylococcal Osteomyelitis of Femur Cured by Vaccine Treatment.

Egide Claes (*Le Scalpel*, September 23rd, 1922, p. 919) records the case of a rachitic child, aged 2½ years, who while playing fell on her left leg. She felt no pain at the time, but in the night complained of pain in the thigh and knee, could not sleep, and kept the knee and hip flexed, with thigh everted. Three days after the fall the lower part of the left thigh was swollen and very tender; the child refused food, and sweated profusely; the temperature was 38.5° to 40° C. Applications of liq. plumbi subacet. dil. relieved pain and reduced the temperature to 38°. She was admitted to hospital fifteeen days after the fall. She was wasted, pale, temperature 38.6°, pulse 128, urine normal. The local symptoms—acute tenderness, slight subcutaneous venous dilatation, inability to move the limb, knee flexed at 90 degrees, with brawny swelling of the lower part of thigh and thickening of femur in epiphyseal region—suggested the diagnosis of osteomyelitis; this was confirmed by absence of pus on exploratory puncture and a skiagram showing no bony lesion. Vaccine treatment was ordered, the vaccine being that of the Pasteur Institute containing *Staphylococcus aureus* three parts, *Staphylococcus albus* one part. The first dose injected hypodermically into the right thigh was 500 million; temperature fell from 38.6° to 37.5°. Next day 1,000 million were given; temperature fluctuating, but swelling less and general condition better. On the third day the dose was 2,000 million; temperature fell to 37.2° at night; local and general improvement. On the fourth day the dose of 2,000 million was repeated; temperature fell to 37°, and did not rise at night. On the fifth day no injection; marked general improvement. Next day 4,000 million were given. No injection on the seventh day, but the same dose was repeated the next day, when fluctuation appeared on the inner side of the thigh; 20 c.cm. of thick yellow pus mixed with blood was evacuated. Examination showed much phagocytosis of staphylococci by polynuclears, very few free cocci. These intervals followed by increasing doses were observed; on the tenth day after 6,000 million had been given; the temperature varied from 37.3° to 37.7°; 10 c.cm. of pus, as on the seventh day, were evacuated. On the twelfth day a 7,000 million dose was given; temperature did not fall below 37°; slight cough with râles at left base. Next day temperature fell to normal. The injections caused no local reaction and only slight rise of temperature. After an interval of ten days, in order to prevent a relapse, five more doses, varying from 1,000 to 8,000 million, were given from the twenty-third to the twenty-eighth day after admission to hospital. In the first twelve days the child received doses amounting to 26,500 million, and in the second series of injections 23,000 million—equal to a total of 49,500 million. Claes observes that the usual intervals between injections were observed, but he believes the rapid improvement was due to the very large doses employed—"in any case one may conclude that even after these large doses of vaccine the reaction is slight, apparently even insignificant."

380. Intracranial Haemorrhage in the Newborn.

D. Munro and R. S. Eustis (*Amer. Journ. Dis. Children*, October, 1922, p. 273) suggest an etiological classification of intracranial haemorrhage in the newborn, and report methods of diagnosis and treatment which proved successful in 14 cases. The classification indicates: (1) a traumatic group in which the haemorrhage is caused by excessive moulding of the head and overriding of the sutures; (2) an asphyxia group resulting from excessive cerebral venous congestion with rise of intracranial pressure; (3) a foetal disease group in which the haemorrhage has no relation to the labour, but is most commonly caused by haemorrhagic disease, and rarely by syphilis and other toxaemias. Diagnosis rests upon the history and physical examination, the measurement of intracranial pressure by spinal manometer, and the determination of the coagulation and bleeding time; the result of these findings enables a proper classification to be made so that suitable treatment can be adopted. The normal bleeding time in the newborn is from two to five minutes, and can be estimated by noting the length of time a wound of given depth will bleed, while the normal coagulation time, estimated by observing how long it takes a drop of blood to clot sufficiently to arrest the movement of a small lead shot within it, is from five to nine minutes. Cases showing a prolonged bleeding and coagulation time should be classed and treated as haemorrhagic disease irrespective of other findings. Diagnosis in traumatic cases rests upon the history and, in most cases, evidence of trauma, while in asphyxia cases it rests upon manometric findings of increased intracranial pressure, microscopic blood in the cerebro-spinal

fluid, together with a history of dry or prolonged labour, deep anaesthesia, or prematurity. All cases, whatever their cause, suffer from complicating acute hydrocephalus, and symptoms become worse or fatal only because of the increase in intracranial pressure, and attempts to relieve the hypertension may prevent death, although the haemorrhage remains untreated, since it is only in very favourable cases that surgical removal of the clot is possible. In cases due to haemorrhagic disease treatment consists in the subcutaneous administration of normal whole blood until the bleeding and coagulation times become normal, to be followed by relief for the hypertension. In traumatic cases treatment aims at the prompt elevation of depressed fractures and, as also in asphyxia cases, relief of hypertension by lumbar or ventricular drainage, puncture, or typical subtemporal decompression.

381. Blood Nitrogen in Surgical Lesions of the Kidney.

W. H. Olmsted and J. R. Caulk (*Journ. Amer. Med. Assoc.*, October 21st, 1922, p. 1380) point out that there is considerable difference in the interpretation of the retention of blood nitrogen in the different classes of kidney disease. In chronic nephritis, as seen in the medical wards of any hospital, there has been a gradual destruction of kidney tissue, analogous, from the functional standpoint, to the experimental surgical removal of kidney tissue. In the infectious and obstructive processes of the genito-urinary tract seen by urologists, on the other hand, the loss of kidney function, after drainage and removal of the obstructions, may be partially regained. If the latter conditions have gone on long enough, permanent loss of kidney function results, just as in the case of chronic nephritis. In the authors' experience, the cases of chronic nephritis were not materially improved, as shown by the failure of the non-protein nitrogen to go down after having reached this level, and by the high death rate. In cardiac patients, unlike those suffering from nephritis, recovery from retention of nitrogen depends entirely on how well the heart will respond to treatment. In the authors' opinion, if the blood nitrogen does not reach a normal level within a month of hospital treatment it will never do so. The interpretation of the retention of urea depends on the nature of the disease present, and especially on the presence or absence of systemic intoxication. With retention of urea bilateral disease is always present, whether anatomical or functional or both.

382. The Technique of Laryngectomy.

R. Botey (*Rev. de laryngol., d'otol. et de rhinol.*, September 30th, 1922) thinks that in spite of the progress made in the treatment of cancer of the larynx by means of radium and x rays, the results have not been encouraging. The best results follow early and radical operation. In his operation he avoids pharyngeal fistulae by the following technique. Instead of using two purely cutaneous flaps, he includes the sterno-hyoid and omo-hyoid muscles, which reinforce and increase the nutrition of the flap. Non-union of the edges of the wound and a pharyngeal fistula are nearly always due to placing the cutaneous sutures over those of the pharynx. In his operation the flap comprises muscle and skin, is thick and well nourished. The aesthetic result of the single flap with its base at the hyoid is good, the scar following the lines and folds of the neck. Another advantage of this flap is that in cases of infection with sloughing and prolonged suppuration, fistulae and unsightly scars do not follow. This flap is chiefly useful in cases of intrinsic cancer, without glands or invasion of the pharynx. When the case is not simple it is better to employ two flaps, for in these cases one is not certain of being able to close the walls of the pharynx by immediate suture. The purely cutaneous flap is thin, the pharynx being covered by the skin alone. The author finds it preferable that the muscles should cover in the oesophagus and the hypopharynx.

383. Neuropathic Keratitis a Result of Focal Infection.

J. W. Charles (*Amer. Journ. Ophthalmol.*, September, 1922, p. 703) considers that dendritic and neuropathic keratitis are caused by lesions of the terminal divisions of the corneal nerves, and a case of neuropathic keratitis is reported which rapidly cleared up after treatment of subacute ethmoiditis on the side of the affected eye. A neurotic girl, aged 22, gave a history of influenza followed after a week by watering and redness of the right eye. On examination six days later small branching corneal ulcer, photophobia, lacrymation, and ciliary injection were present, and remained unrelieved by all the usual local remedies. A badly decayed right lower third molar received dental treatment, without relief to the eye symptoms, and it was not until she received palliative treatment for a mild suppurative subacute ethmoiditis on the right side that the eye began to improve, the ulcer having healed two days later, though the ciliary injection lasted longer before finally disappearing. In support of the theory that such terminal lesions may result from focal infections may be quoted those neuralgias without any other apparent complication which are relieved by treatment of the offending focus.

OBSTETRICS AND GYNAECOLOGY.

384. Treatment of Eclampsia.

T. W. Eden (*British Journ. of Obstet. and Gynaecol.*, Autumn, 1922, p. 386), in a commentary on the reports, dealing with eclampsia, presented to the British Congress of Obstetrics and Gynaecology (June, 1922), states that the mean mortality of 2,005 cases was 22.5 per cent.; the mortality among 204 Dublin cases was 10.29 per cent., and that of other regions from 21 to 25 per cent. In 65 per cent. of the Dublin, and from 44 to 54 per cent. of the other cases, the infant left the hospital alive. Primigravidae numbered 69.3 per cent. of the grouped series. Premonitory symptoms appeared to have preceded eclampsia in about 85 per cent. of cases, but cases in which such symptoms were not noticed did not seem to be more severe than others. Cases in which there was deep coma, a pulse rate of over 120 a minute, a temperature of over 103°, or a blood pressure of over 200 mm., gave a mortality rate considerably in excess of the average, and lethal cases had sustained on an average nearly twice as many convulsions as the others. Reviewing the mortality in connexion with various methods of treatment, the author sees in the figures a very powerful plea for restraint in the obstetric management of cases of eclampsia, and remarks that Caesarean section and forcible dilatation of the cervix diminish instead of increasing the patient's chances of recovery. All cases of eclampsia, whether mild or severe, are best treated with the minimum of obstetric interference. Not only the Dublin mortality figures, but also analysis of the other group reports, appear to indicate that active and early obstetric intervention, as advocated by Dührssen and others, should be discarded in favour of expectant and eliminative therapy along the lines advocated by Stroganoff and by Hastings Tweedy. Eden points out that since it is easier to prevent than to cure eclampsia, prophylaxis is all-important; it should assist in treating patients who have shown albuminuria, oedema, headache, or visual disturbances, accompanied more rarely by epigastric pain, vomiting, muscular twitchings, or attacks of petit mal, by rest in bed, fluid diet only (mostly water), purgatives, and diaphoretics. If progress is unsatisfactory or if relapses occur, labour should be induced without regard to the period of the pregnancy or the chances of foetal survival. Eclampsia having passed beyond the pre-eclamptic stage calls for hospital treatment as urgently as the most serious surgical operation.

385 Prognosis in Sterility.

According to H. R. Schmidt (*Med. Klinik*, 1922, 23, p. 722), about one-third of cases of sterility in the female are attributable to morbid conditions of the husband; of other cases, about one-third are due to gonorrhoea in the female and about two-thirds to an infantile condition of the female genital organs. In the last-named group prognosis as regards possibility of child-bearing may to a certain extent be guided by the history and objective findings. If there has been menstrual irregularity characterized by long periods of amenorrhoea, and if the uterus is of subnormal size, probably ovaries and tubes are underdeveloped and the outlook is unfavourable. If menstruation is regular and bimanual examination shows a corpus uteri of normal size and well-developed uterine appendages, prognosis is much better, many of the cases being connected with abnormalities of the cervix. In these cases Schmidt recommends Fehling's method of cervical dilatation; for three successive periods of three days a glass tube of the thickness of a pencil, having a plate-like expansion at the outer end, is left within the cervical canal, the cavum uteri being injected with 1 per cent. formalin on several occasions. Not all subjects tolerate this procedure, but at the Lund and Bonn clinics pregnancy is reported to have ensued in about one-third of the cases in which it has been used—some patients, however, had been married for less than four years. A. Mayer (*Zentralbl. f. Gynak.*, September 23rd, 1922) believes that genital hypoplasia plays a considerable part in causation of sterility, especially among patients seen in private as distinguished from hospital practice. In certain cases uterine retroflexion is responsible, but its correction, on account of the associated hypoplastic conditions, does not necessarily cure the sterility. He has found cervical dilatation and curetting to be followed by pregnancy in 20 per cent. of cases. The examination of the fragments removed by curetting may be of diagnostic and

prognostic utility; absence of signs of the cyclic endometrial changes may be found, or, as in no fewer than 7.8 per cent. of Mayer's cases, evidence pointing to tuberculosis.

385. **Treatment of Sterility.**

According to Bethel Solomons (*Irish Journ. of Med. Science*, September, 1922, p. 303), treatment by administration of extracts of ductless glands is sometimes strikingly successful in sterile females. Those having scanty menstruation should be given corpus luteum in doses of 5 grains daily for two days, gradually increased to three times this amount; extracts of the whole ovary are less useful but less expensive. When sterility is associated with excessive obesity and oligomenorrhoea or amenorrhoea, thyroid extract may be given in 1 2 grain doses thrice daily; pituitary, testicular, and pluriglandular extracts are not recommended. With regard to operative treatment the author remarks that curettage or cauterization of the uterus is very seldom indicated and often harmful, but that occasionally it is right to curette a sterile subject who suffers from severe menorrhagia. Some form of dilatation of the cervix is often necessary. Hegar's dilators may be used up to a size which does not induce laceration, and iodoform gauze two inches wide may subsequently be left for twenty-four hours in the cervix. In this way a permanent dilatation may be secured—for example, of 8 mm. after instrumental stretching to 12 mm. Posterior splitting of the cervix is only indicated in extreme anteflexion, and if performed with stretching by catgut instead of silkworm gut is apt to be followed by troublesome leucorrhoea. Tubal disease is the most commonly overlooked etiological factor in sterility and may have no other symptom than that condition. Tubes of normal shape, size, and position, save that the abdominal ostia are closed, are treated by Solomons as follows: if possible the obstruction is removed by expression, and, if not, the fimbriated extremity is resected, in either case a plait of eight strands of No. 4 catgut being left within the lumen. When the tubes are of normal size and shape, but bound down by adhesions, they should be freed and inflated, and the fimbriated extremity, if it has been injured during the operation, carefully sutured, strands of catgut being left within the ostium; the prognosis in these cases is excellent. For stenosis of the tube remote from the ostium abdominale a plastic operation is described, a portion of tube being resected and a strand of No. 2 catgut being left, traversing the reconstructed oviduct and penetrating at its respective ends, which are then united to the fundal musculature and the abdominal ostium. In cases of bilateral sactosalpinx the raw surfaces of tubes left after puncture or resection are sutured, and in the case of hydrosalpinx catgut is threaded through; to meet the risk of local peritonitis and abscess formation Douglas's pouch is opened at the end of the operation and a forceps passed through it per vaginam. The abdomen is opened on to the forceps and iodoform gauze drawn out to the vulva.

387. **Uterine Cancer of Unusually Long Duration.**

H. L. Coopman (*Nederl. Tijdschr. v. Geneesk.*, October 21st, 1922, p. 1844) remarks that Martin and Jung in their textbook on diseases of women have drawn attention to the fact that many women in advanced life with cancer of the uterus apparently die of old age without the uterine condition giving rise to any obvious symptoms. He records the case of a woman who had undergone a supravaginal amputation of the uterus for malignant disease at the age of 47, and consulted him three years later for haemorrhage, when an inoperable cancer was found. The patient survived for another seven years in a fairly comfortable state under palliative treatment only, and then died suddenly. There was no autopsy.

PATHOLOGY.

388. **Treatment of Intestinal Tuberculosis.**

T. Redman (*Journ. of Path. and Bact.*, October, 1922, p. 433), after observing that intestinal tuberculosis is more frequently due to the bovine bacillus in children, whereas in older people secondary intestinal tuberculosis due to the human bacillus may follow swallowing of sputum, proceeds to describe the course and distribution of intestinal tuberculosis in the human subject and in animals, and remarks on the essential similarity of the disease in each species. There then follows an account of experimental work carried out to test the therapeutic value of naphthalene emulsion in the treatment of this disease in guinea-pigs artificially infected by feeding with heavily infected sputum intimately mixed with a bran-mash. Striking results were obtained when such infected animals were treated with naphthalene emulsion, the formula for the preparation of which is given in the paper. Only one dose of the tuberculous material was given to the animals, and then, after varying periods, a constant dose of naphthalene emulsion was given for a week or ten days to check the course of the disease. The animals were killed at different dates to observe the effects of the naphthalene emulsion, a *post-mortem* examination being made on each animal. Untreated animals acted as controls. Tuberculous infection of twenty days' standing appeared to be completely eradicated after the use of naphthalene emulsion in some cases, and in others the rate of progress of infection of the lymph glands was markedly retarded. Seventy-five days after the administration of naphthalene emulsion to infected animals the only evidence of tuberculosis was in three small caecal glands, the control animals showing great enlargement of mesenteric and other glands, while in 111 days the mesenteric glands of treated animals were enlarged but no others, and there was no infection of the organs such as occurred in controls. Infection of the spleen, one of the first organs to suffer in the ordinary course, was prevented for between fifty-four and seventy-five days; the liver and lungs were protected from infection for about 115 after ingestion by the animal of tuberculous material. Even in very severe cases of infection life was prolonged. Microscopically it was found that in the tuberculous glands of the treated animals the typical tuberculous structure was replaced by the formation of fibrous tissue much earlier than in untreated animals.

389. **The Humoral Reactions of Pleural Fluid.**

P. Courmont (*Journ. de méd. de Lyon*, October 20th, 1922, p. 617) has made a study of the serological reactions of pleural effusions, with especial reference to the question of tuberculosis. He finds that in the case of adults suffering from this disease no fewer than 76 per cent. of fluids agglutinate an emulsion of tubercle bacilli to a titre of at least 1 to 5, while with fluids withdrawn from non-tuberculous individuals there is a failure of such agglutination to occur. A positive reaction therefore affords a strong presumption in favour of the existence of tuberculosis. Apparently the agglutination titre is highest in benign cases of pleurisy, especially during the period of recovery; while in the severer forms and during relapses it may be lowered even to complete disappearance. This point may be used for prognosis. Thus, out of 115 tuberculous individuals, whose histories have been followed over a period of some years, 75 per cent. of those which gave a positive agglutination reaction recovered, while of those which gave a negative reaction 73 per cent. died. Further, the higher the titre given the greater was the percentage of recoveries. He has obtained some evidence, from a comparison of the agglutinin content of the pleural fluid and the blood serum of the same patient, that a local formation of antibodies may occur in the pleura. These antibodies he considers to be of value to the patient, and therefore advises against the withdrawal of fluid except in chronic cases. He also uses this fact to support the practice of autoserotherapy in suitable cases. He appears to consider the agglutinin titre of the fluid as a measure of its antibody content; this has not been the experience of most workers.

390. **Artificial Pneumothorax in the Rabbit.**

That the effects of artificial pneumothorax in the cure of pulmonary tuberculosis are different in the rabbit from those in the human being is shown by J. S. Valtis (*Ann. de l'Inst. Pasteur*, September, 1922, p. 664). Six rabbits were used for experimentation. Two were kept as controls, and were injected—one intratracheally, the other both intravenously and intratracheally—with living human tubercle bacilli. Killed from eight to eleven weeks later, both were found to have their lungs infected with tubercle in the form of small granules. Two other rabbits were similarly infected with tubercle bacilli, but were subsequently submitted to artificial pneumothorax on the right side, the operation being repeated every few days so as to maintain the pulmonary collapse. Both of these rabbits died one after eight weeks, the other after eleven weeks from the date of inoculation. In each case the right lung was retracted towards the hilum; both lungs contained lesions of caseous pneumonia, those on the right side being the more marked. In two other rabbits artificial pneumothorax was induced and maintained on the right side, and then infection with tubercle bacilli carried out either intravenously or intratracheally ten to twelve days later. The collapse of the lung was kept up till the animals were killed fifty-two to fifty six days after inoculation. In each case both lungs were affected with tubercle, and in each case the lesions on the right side were greater than those on the left. In all of the four rabbits operated on the infection of the lungs was more advanced than that in the control animals. The author concludes that in the rabbit the effect of artificial pneumothorax is to facilitate the development of tuberculous lesions in the lungs, particularly in the lung of that side on which the operation is performed.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

291. Syphilis of the Liver.

W. K. Hunter (*Glasgow Med. Journ.*, October, 1922, p. 225) records two cases of syphilis of the liver with symptoms of abscess formation, showing that such cases may, by presenting fever and rigors, be suggestive of suppuration and be mistaken for abscess, malaria, or typhoid. Case I, a man aged 36, was admitted to hospital complaining of vomiting, jaundice, and ague of several weeks' duration, with a history of occasional malarial attacks during the past eight years. From the intermitting type of the temperature and rigors the case was regarded as possibly malarial, but blood examination was negative, and there was no response to large doses of quinine. Although physical signs pointed to hepatic abscess no pus was obtained on exploratory puncture. Five weeks after admission the Wassermann reaction was taken and was strongly positive; within three days of commencing antisyphilitic treatment the fever disappeared and convalescence was established. Case II, a man aged 24, complained of severe pain in the upper abdomen with vomiting and slight jaundice. There were tenderness in the left lumbar region and a mass palpable in the region of the gall bladder displacing the heart and liver area upwards. The temperature ranged from 98° to 101.2°, and the leucocyte count varied from 13,700 to 19,000. While exploration was in contemplation a Wassermann test proved strongly positive, and from the institution of antisyphilitic treatment improvement commenced, the pain and tenderness gradually disappearing, and the epigastric induration lessening with complete ultimate recovery. The positive Wassermann and rapid response to antisyphilitic treatment in both these cases pointed to the spirochaete of syphilis being the causative factor. In the first case the primary lesion was in the liver, and there may have been an abscess, probably situated far back, though exploration failed to find it. The physical signs in the second case suggested a considerable effusion into the left subphrenic region, probably a gummatous abscess in the left lobe of the liver, directly or indirectly infecting the subphrenic region, and later the left lung, as evidenced by dullness and moist râles at the left base. A further case of syphilis of the liver is reported, simulating gall stones in the severity of the pain, although it was always towards the left rather than the right costal margin. This case improved under salvarsan treatment, and later responded well to increasing doses of potassium iodide.

392. The Treatment of Syphilis with Bismuth Preparations.

B. Block (*Klinische Wochenschrift*, September 16th, 1922, p. 1883) gives his experience of the effects of bismuth preparations in the treatment of syphilis. The value of this drug was shown, clinically and experimentally, by Sazerac and Levaditi in 1921. Most cases have been treated by intramuscular injections of insoluble bismuth preparations. The author considers the best preparation is the combination of bismuth, sodium, and potassium tartrate, known as "Trépol" (especially the recent preparation known as "Trépol indolore"). Intragluteal injections are given twice a week—1 to 2 c.cm. of the 10 per cent. emulsion. For an adult a course of fifteen injections is required. In all three stages of syphilis bismuth injections produce a marked beneficial effect. The author's experience has been similar to that of most French observers. He concludes that we possess in bismuth a remedy which undoubtedly has a very powerful action in destroying the spirochaetes. Clinically and bacteriologically the good effects closely approach those obtained by salvarsan, if they do not equal them, and in this respect it is certainly superior to mercury. But, as regards its influence on the Wassermann reaction, it does not equal salvarsan. Toxic symptoms resembling those caused by mercury may occur. The most frequent are a bismuth line on the gums, resembling the lead line on the gums in lead poisoning, and bismuth stomatitis, which may lead to ulceration. The bismuth stomatitis is a milder affection than mercurial stomatitis. Occasionally slight albuminuria occurs. What place bismuth will take in the therapeutics of syphilis cannot be definitely stated at present, but it is certainly a welcome remedy in cases in which there is intolerance to mercury and salvarsan and in the rare cases in which the mercurial and salvarsan treatment fail. There are no grounds for thinking that bismuth will replace salvarsan, but the author's impression is that bismuth is superior to mercury, and therefore, in the future, in the conjoint treatment of syphilis the mercurial preparations will be partly or completely supplanted. Recently the author has commenced a combined salvarsan-bismuth treatment, and the results are said to be excellent.

393. The Specific Therapy of Visceral Syphilis.

Cesa-Bianchi (*Archiv. di Patolog. e Clin. Med.*, August, 1922, p. 477) publishes a long article on the treatment of visceral syphilis. After an introduction he describes the differing action of mercurial and arsenobenzolic preparations, and details their advantages and disadvantages and the technique of administration. He then goes on to the symptoms of the various syphilitic visceral lesions, beginning with syphilitic affections of the cardio-vascular apparatus: next he discusses affections of the digestive and respiratory system, the kidney, haemopoietic organs, and endocrinic system. He describes various types of syphilitic fever, and in the last two chapters discusses fully syphilis of the nervous system, and adds an extensive bibliography of recent literature on the subject. He says that for most types of visceral syphilis (including syphilis of the nervous system) the associated mercury and arsenobenzol treatment gives the best results—except perhaps in the case of progressive paralysis. Of the mercurial preparations the insoluble salts (especially calomel) are to be preferred. Of the arsenobenzol group the best results are obtained by neo-salvarsan and silver salvarsan, given intravenously in progressive weekly doses. Treatment should be continued with minimum intervals of time according to the general and local state of the patient; lumbar puncture should precede each period of treatment. In the intervals full doses of potassium iodide should be given by the mouth, especially in syphilis of the nervous system.

291. Treatment of Syphilis in the Insane.

T. B. Christian (*Amer. Journ. Med. Sci.*, October, 1922, p. 529) states that in the great majority of American state hospitals for the insane, syphilitics are not treated. He considers that the opinion of many authorities that latent syphilis is incurable, as far as the production of a permanent negative Wassermann reaction is concerned, does not justify this inaction. He states that in asylums three distinct types of syphilis are found: (1) Cases showing strongly positive Wassermann reaction in the blood and negative in the cerebro-spinal fluid, with no clinical signs of syphilis; these constitute the majority. (2) Cases with positive Wassermann reaction in the blood and negative in the cerebro-spinal fluid, but with clinical signs. (3) Psychosis with syphilis as the etiological factor, such as general paralysis of the insane, tabo paresis and tabes with psychosis. At present he is treating all cases with strongly positive Wassermann reactions, with or without clinical symptoms, including a few cases of general paralysis of the insane. Ninety-five per cent. of his cases belong to the tertiary or latent class with no active lesions or other signs except a positive Wassermann and paretic mental symptoms. The author and his colleagues do not treat cases of general paralysis of the insane expecting a cure but only to ameliorate their symptoms and hold in check the progress of the fatal disease. Only 2 out of 20 cases showed slight mental improvement. The two slightly improved cases showed a lessening of the Wassermann reaction in the blood, but the cerebro-spinal fluid remained strongly positive. Fifteen cases showed no improvement in reaction nor in clinical symptoms. Christian thinks that cases in which improvement has followed intraspinal injections were those in which normal remissions of the disease had occurred. He has discontinued intraspinal therapy in paretics, having had no success, but on the contrary several serious reactions occurred. Intraspinal therapy is, however, he considers, indicated in early selected cases of neuro-syphilis, such as syphilitic meningitis, meningo-encephalitis, or meningo-myelitis. The author gives details of cases in which general paralysis of the insane appeared after prolonged antisyphilitic treatment and negative blood Wassermann tests, and discusses the period over which antisyphilitic treatment should be continued in latent syphilis.

395. The Recognition of Mild Hyperthyroidism.

J. L. Miller and B. O. Raulston (*Journ. Amer. Med. Assoc.*, October 28th, 1922, p. 1509) assert that every case in which the chief complaint is nervousness should be considered as one of possible hyperthyroidism. Increased nervousness was present in all their cases, and was usually manifested by increased irritability and often by moderate insomnia:

the patients were easily disturbed by minor annoyances. Very suggestive was the frequent statement that these symptoms had developed in recent months or years and without apparent cause. Either the patients were conscious of a definite tremor when excited, or tremor could easily be detected in the outstretched hand. Loss of weight was present in only 30 per cent. of this group. There was no definite relation between the loss in weight and the basal metabolic rate. Visible or palpable enlargement of the thyroid was present in 56 of the 61 cases. In a considerable number of instances the patient was not aware of the presence of a goitre. A very definite goitre was rarely present. Exophthalmos, even of a moderate degree, was present in only 10 of the 61 cases. It was pronounced in only 4. In one it was unilateral. One patient with exophthalmos had a normal metabolic rate. In this series of 61 cases only 4 or 5 had been diagnosed previously as definite or probable cases of hyperthyroidism, although all the patients had been examined by one or more medical men. The most frequent diagnosis was nervousness; a few had been considered as organic heart disease; the diagnosis of tuberculosis had been made in a few instances, based on the rapid pulse and loss in weight. *X*-ray treatment is especially applicable to this type of case. Seventy-four per cent. of this series now consider themselves cured; they are able to pursue their ordinary vocations with, at most, only slight inconvenience. The remainder show varying degrees of improvement, but all received more or less benefit.

393. An Epidemic of Bacillary Dysentery in France.

CAVAILLON and WIBAUX (*Rev. d'Hygiène*, September, 1922, p. 800) record the history of an epidemic of bacillary dysentery which affected the department of the Aisne during the summer of 1921. Starting in April it attacked four persons in the same family, three of whom succumbed. Bacteriological investigation established the etiological part played by *B. dysenteriae* Shiga. Following this preliminary outburst all was quiet till the end of June, when the disease appeared in a different commune at a considerable distance from the first. Here 98 cases occurred with 11 deaths. Towards the end of the following month another big outbreak, involving 82 cases with 13 deaths, affected a small place in a different department. From July to October several more villages were attacked, some of them showing only a few cases, others minor epidemics. Altogether there were 250 patients attacked, with a total mortality of 16 per cent. Clinically, many of the cases were atypical—so much so in fact that at first the nature of the malady was not recognized. Bacteriologically, the Shiga bacillus seems to have been recovered frequently from the stools, though the number of positive results is not stated. The main substance of the article is concerned with the administrative measures taken to combat the spread of the epidemic. These resolved themselves into (1) a systematic inspection and visitation of the localities involved by sanitary officials, who carried out measures of disinfection; (2) examination of suspected material at a central laboratory; and (3) vaccination and serotherapeutic treatment. Unfortunately the details of these latter modes of action are not very explicit, but it is clear that vaccination was only carried out on a small proportion of the susceptible population. Serum was injected both prophylactically and curatively with apparently beneficial results, though the numbers concerned were too small to permit the drawing of any safe conclusions as to the value of the treatment. The authors are quite convinced that the epidemic was prevented from becoming greater by the vigorous hygienic measures adopted, but they may be reminded how impossible it is to decide on this point in any epidemic, since in every case a natural termination is reached whether efforts are made to control it or not. Knowledge of epidemics is as yet far too small to warrant any self-congratulation on the efficiency of control.

397. Intravenous Injections of Calcium in Congestion of the Lungs.

P. BERNHARD (*Deut. med. Woch.*, October 13th, 1922, p. 1375) has given intravenous injections of 5 to 10 c.cm. of a 10 per cent. solution of calcium chloride at intervals of two to three days in a variety of diseases. The most prompt and dramatic results were obtained in 22 cases of congestion of the lungs. One patient was a man, aged 21, who suddenly developed pneumonia of the left lower lobe, and six days later pneumonia of the right lower lobe. His condition was practically hopeless, and various cardiac stimulants proved useless. Two hours after an injection of calcium chloride tracheal rales ceased to be heard, and in a few days he was afebrile. In two similar cases the injection appeared to save life. In the remaining 19 cases of pulmonary oedema the immediate response was equally satisfactory, but the oedema subsequently returned.

SURGERY.

398. Treatment of Malignant Tumours of the Maxillary Sinus.

MM. LEMAITRE, COTTENOT, and SURREL (*Bull. de l'Association française pour l'Etude du Cancer*, July, 1922, p. 457) publish details of the results which they have obtained in 9 cases of malignant tumours of the upper jaw by a combination of partial (atypical) resection, *x*-ray treatment, and radiotherapy. Although the authors have abandoned complete resection of the superior maxilla on the grounds that it is often unnecessary and produces needless mutilation, they point out the greater risk, in partial resection, of failing to distinguish between the neoplasm and the surrounding healthy tissue; therefore atypical resections are followed frequently by recurrences. After discussing the various uses of *x* rays, gamma rays, and radium, and the extended application of prosthetic methods to prevent cicatricial deformities, the authors observe that to-day the problem of treatment of maxillary sinus neoplasms consists in the judicious selection and rational association of the various means of treatment at our disposal. Their 9 cases are grouped as follows: Squamous-celled epithelioma, 5 cases; lymphocytoma, 2 cases; myeloid sarcoma, 1 case; pedunculated sarcoma, 1 case. After using the combined methods of treatment only one case of epithelioma remained apparently cured at the end of three years. The other 4 cases suffered from recurrences, the first patient dying eleven months after the first application of radium. In lymphocytoma, one patient remained apparently cured five months after and the other three years after completion of radiotherapeutic treatment. In the case of myeloid sarcoma "combined" treatment produced violent local reaction, and complete cicatrization was delayed for six months. The pedunculated sarcoma was as large as an orange; it was shelled out, but in less than three months two small recurrences appeared in the region of the operation scar. After four applications of *x* rays the tumours disappeared and the patient remained in good health for more than two years. After discussing the various types of tumours of the upper jaw and the details of treatment, the authors conclude that the prognosis of these malignant tumours, very grave before the days of radiotherapy, is to-day much more hopeful. Connective tissue tumours show cures in 100 per cent. of cases, while the more refractory epitheliomata show a complete cure only in 1 case out of 5. The recurrence always takes place in the lymph nodes of the face and neck, and never locally. They therefore recommend irradiation of the tributary lymphatic areas, stating that if this procedure is generally adopted it should prove very valuable.

399. Otosclerosis and its Treatment.

A. DELIE (*Le Scalpel*, October 21st, 1922, p. 1005) states that otosclerosis is a familial disease, due to definite changes in the labyrinthine capsule, especially in the bony margin of the fenestra and leading to ankylosis. It is a degeneration: any inflammatory changes are secondary, but they increase the damage. Rarefying osteitis is the last phase of capillary changes in the Haversian canals. The majority of patients are apparently healthy, of arthritic type and placid temperament. The author details many symptoms, and considers that the condition amounts to a trophoneurosis, a sign of thyroid insufficiency; he advises that these patients should avoid all excesses, and that they should not smoke. Hereditary syphilis should be remembered as a possible complication; if found it must be treated energetically. In other cases thyroid medication and iodine in organic form are indicated. These may be combined, or calcium salts may be given with thyroid tablets to improve the nutrition of bone. During pregnancy and after confinement ovarian preparations should, he suggests, be prescribed in addition to thyroid and calcium preparations. Politzer prescribed pilocarpine in sudden exacerbations of otosclerosis accompanied by labyrinthine symptoms. Pilocarpine is vagotonic, and may be very beneficial. Belladonna, atropine, and duboisine should be avoided on account of their paralysing effects on the terminations of the pneumogastric. All treatment likely to produce any irritation in the middle or internal ear must be avoided. The patients should avoid all kinds of excitement or emotion and lead a tranquil life. The choice of a profession will be determined by the degree of deafness and consideration of the disastrous effects produced among the deaf by heredity, the necessity of working in the midst of loud or continuous noise, or of listening constantly to sounds of varying intensity (as telephonists do). Artificial drums may assist otosclerotics; they are obviously useless when the labyrinth—the organ of sound perception—is damaged.

400. Recurrence of Inguinal Hernia.

W. Hessert (*Surg., Gyn., and Obstet.*, October, 1922, p. 431), in discussing the causes of recurrence following operations for inguinal hernia, finds that the average operator is prone to underrate his recurrences. Most surgeons admit from 5 to 10 per cent. of recurrences, all cases considered. Apart from sepsis, failure is due to the inattention of the operator and to not employing that form of repair which is proper for the case at hand. Recurrence is more common in direct hernias due to a deficient conjoined tendon. The cord should be transplanted in this type and a flap of fascia from the rectus sheath used for additional firmness. Most sliding hernias recur, as in these cases excision of the sac cannot be carried out. Castration is justifiable in these cases and the sutures should be placed so that no weak areas are left. Recurrence at the internal ring may be due to faulty ligation of the sac. The most essential feature of every hernia operation is the high ligation of the sac; in children high ligation alone is sufficient to cure the rupture. Where the veins are in excess they should be excised, whilst any fatty tissue which accompanies the cord should be removed, so that the size of the cord may be lessened. Recurrence at the external ring occurs in direct hernia, where a wrong operation has been done, or an indirect hernia during recurrence may traverse the canal and appear at the external ring. No one operation will fit all cases, but the essentials are removal of the sac and closure of the hernial opening by suturing the conjoined tendon to Poupart's ligament. In direct hernia the cord emerges through the aponeurosis as in Halsted's operation. In indirect hernia the cord lies between the two layers of imbricated external oblique fascia.

401. The Conservative Treatment of Pott's Disease

F. Langenskiöld (*Acta Chirurgica Scandinavica*, July 15th, 1922, p. 51) has treated 237 cases of Pott's disease at a hospital in Helsingfors, and has subsequently traced 148. The total mortality of these cases, which were treated on conservative lines, was 40.5 per cent.: 37 per cent. of these deaths were more or less directly due to the disease of the spine. Only 22, or 16 per cent., were definitely cured, and in 31 per cent. the result of treatment was considered good. The comparative frequency with which the cervical, dorsal, and lumbar regions were affected was in the proportions 16.5, 56.5, and 27 per cent. The prognosis was best for cervical spondylitis, the mortality being only 24 per cent., while good results were achieved in 70 per cent. The prognosis was worst for disease of the dorsal vertebrae, the mortality being 44 per cent., and good results achieved only in 18 per cent. The average stay in hospital of cases with good results was seven months, whereas the average stay for the cases with bad results was only four months. Hence the lesson that hospital treatment should be prolonged and that after-care at home should be carefully controlled. If finances prevent prolonged conservative treatment Albee's bone-grafting operation is indicated.

402. Albee's Operation for Pott's Disease.

H. Görres (*Deut. med. Woch.*, June 30th, 1922, p. 864), who has performed Albee's bone-grafting operation for Pott's disease of the spine in 120 cases, and who is an enthusiastic advocate of this operation, has investigated the subsequent fate of his first 60 patients. Eight could not be traced, two had died within six months of the operation, and in one case the bone graft had become infected and been discharged. Of the remaining 49, 35 were examined by the author, and in all but one case, in which a fistula persisted, complete recovery had been effected. In 22 of these cases more than three years had passed since the operation had been performed, and the results may therefore be said to be permanent. The results in the remaining 14 cases, on which reports were obtained without personal examination by the author, were equally good. In no case had the bone graft interfered with the development or mobility of the spine, and, provided there was no deformity at the time of operation, the contour of the spine remained normal; and when there was deformity at the time of operation there was no subsequent increase in this deformity. The operation did not even interfere with the growth in height of the children operated on, and their spinal mobility was such that they were able to join healthy children in gymnastic exercises. The author stresses in particular the saving of time effected by this operation, which entails a sojourn in bed of only three to four months.

403. Bilateral Pyelography.

Gaudy and Stobbaerts (*Le Scalpel*, September 9th, 1922, p. 869) say that in radiographing the kidney it is far better to take bilateral pictures, and they describe a simplified process by which this can be done. It consists of two conical needles which can be fitted on to the ureteral sound, connected with a common tube and syringe. The solution used was a 15 per cent. solution of NaI_2, which is painless and gives good shadows. The presumably sound side is first injected, stopping as soon as any discomfort arises, and then the affected side is injected. Before leaving the patients are given an injection of a small dose of morphine. The authors say no bad results have followed. They give brief details of seven cases, with radiograms. In one case a large double hydronephrosis was shown, 24 c.cm. being injected into the right and 22 c.cm. into the left kidney.

OBSTETRICS AND GYNAECOLOGY.

404. Pre-operative Radiotherapy of Cervical Carcinoma.

A. Mayer (*Zentralbl. f. Gynäk.*, October 7th, 1922, p. 1599) believes that the chief advantage of pre-operative over post-operative radium or *x*-ray treatment of cervical carcinoma is that the former diminishes the contamination by virulent pathogenic micro-organisms in and around the growth. In radical operations he has found about half of the primary mortality of 20 per cent. to be due to post-operative peritonitis—a complication which is necessarily not preventable by post-operative radiation, but which in a series of 67 cases he reduced to 4.4 per cent. as a sequel to the use of pre-operative radiation in septic cases. His present practice is to operate only on carcinomata showing no evidence of local suppuration; other cases are operated on when, as a consequence of *x*-ray or radium applications, the local septic conditions have disappeared. In contrast with many observers, Mayer has not found that pre-operative radiation increases to a notable extent the technical difficulty of the hysterectomy by reason of the production of dense scar tissue; the somewhat increased difficulty of dissecting and removing the connective tissue is compensated for, he remarks, by a diminished difficulty in dealing with the pelvic venules. Operating only in the absence of sepsis near the cervix, he has found the percentage of operable cases in his practice to be reduced from 65 to 50; for the cases excluded from radical treatment radiotherapy, however, remains, and as a compensation it is found that radiation renders operable certain cases which, in the first instance, were regarded as unsuitable for hysterectomy. A further advantage of pre-operative radiotherapy is that the cessation of the haemorrhage and the local septic processes permits of the patients being brought to operation at a time when the general condition and powers of resistance have been greatly improved. More probably the disappearance of exudate in the parametria after radiation is due to elimination of sepsis rather than destruction of cancer cells. Patients in whom after radiation all clinical signs of malignant disease disappear show at operation microscopically demonstrable islets of carcinoma cells in the parametrium or adjacent portions of the cervix. The choice of the time (after operation) at which radiation is to be again employed calls for careful judgement.

405. Myomectomy.

According to Goullioud (*La Gynécol.*, August, 1922. p. 493), myomectomy is followed by involution of the uterus, the cavity of which returns to normal dimensions at the same time as the menstrual losses become less profuse. True recurrences of myomata are sometimes noted, but, as a rule, after not less than ten years: in one case noted by the author the patient bore two children during the interval between her two operations. Submucous and polypoid myomata are neither amenable to nor suitable for treatment by myomectomy, an operation which Goullioud finds applicable in about 11 per cent. of myomatous patients. Myomata which are near the exterior or near the fundus of the uterus are specially suitable for myomectomy; unsuitable cases are those in which the removal of numerous interstitial or subperitoneal tumours would leave a distorted and injured "*loque utérine*." Physiological circumstances should play a part in the presumptive indications for myomectomy—as, for example, in those betrothed, married, or pregnant. The author has seen a mortality of 3 among 104 cases of myomectomy done during twenty-six years, and has been struck by the rarity of post-operative thrombosis or embolus. He has seen eleven instances of ensuing pregnancy. In aged or single patients he prefers to give radium treatment, and in general he advocates hysterectomy in those cases only in which the tumours are exceptionally large, there are coexistent adnexal tumours, or there is suspicion of malignant diseases. Cotte (Ibid., p. 497) records the case of a 1-para, aged 30, who in the third month of pregnancy suffered from dysuria with crises of retention; the myomatous uterus, fixed in the pouch of Douglas, compressed the ureter so much as to render the passage of a sound difficult. A myoma the size of the fist was removed from the posterior uterine wall, and pregnancy continued without interruption.

Leriche has had a similar finding in two cases, Condamin in one, and J.-L. Faure in one. Lorier and Duchêne (Ibid., p. 488) relate the unusual case of a woman who, after having an abortion at the second month at the age of 17, became pregnant twenty-two years later, and suffered during the fourth month of gestation from an attack of acute abdominal pain, pyrexia, and intractable vomiting. At operation the small intestine was found to be acutely kinked by adhesions to an interstitial myoma growing from the right of the fundus uteri; the adhesions having been divided and the myoma (which showed signs of softening and necrosis) enucleated, pregnancy continued almost to term.

406. Intestinal Obstruction from Difficult Labour.

Lambrethsen (*Hospitalstidende*, August 30th, 1922, p. 93) records the case of a 2-para, aged 41, who had aborted four years earlier in the third month. She was admitted to hospital at term. The pelvic measurements were normal, and there was a head presentation with the infant's back to the right. The liquor amnii escaped after labour had lasted fourteen hours. During the following twenty-four hours the head descended considerably, but it could still be felt above the brim of the pelvis. On the seventh day after the escape of the liquor the head could no longer be felt above the brim of the pelvis, and a certain degree of abdominal distension was traced to dilatation of the colon, which felt as thick as an arm, passing from the left iliac fossa across the abdomen. There had been no escape of faeces or flatus since the previous day. An enema proved futile, and a tube could not be passed more than 6 or 7 cm. up the rectum. Slight attacks of vomiting set in with a rise of pulse. The cervix being fully dilated, axis-traction forceps were applied, and a live infant weighing 3,800 grams was delivered. There was an immediate and tumultuous escape of flatus, and the colon collapsed after more flatus had been withdrawn by a rectal tube. The vomiting ceased and recovery followed.

407. Detachment of Ovarian Cysts.

According to G. Coen (*Annali di Ostetricia e Ginecologia*, September 22nd, 1922, p. 695), detachment of an ovarian cyst, so that its original fixation and nutrition through its pedicle are totally interrupted, is not a very rare event, about eighty cases having been recorded in the literature. The secondary attachments which are required are in many cases exiguous, and in about one-fourth of the cases have connected the cyst with the omentum or mesentery, more rarely with the anterior parietal peritoneum, the ileo-caecal regions, the broad ligaments, or other portions of the pelvis. Rokitansky and Kidd reported a case in which the detached cyst did not appear to have acquired any secondary connexion. In one or two instances it is possible that detachment was due to extreme length of the pedicle, but probably it has nearly always occurred as a sequel to repeated attacks of torsion of the pedicle. The contents of the cyst are not always haemorrhagic. According to Steinmann about one-fourth of cysts which have become detached are dermoids. Coen records the case of a 3 para, aged 53, who three years after the menopause suffered from repeated crises of abdominal pain and vomiting; the ovarian cyst which was removed at laparotomy contained 1.5 litres of fluid, in which much blood and also cholesterin could be recognized. Its wall was thin and the cyst was adherent to the peritoneum of the anterior abdominal wall; no sign of a pedicle or of its former insertion was recognizable.

PATHOLOGY.

408. Group Agglutination.

F. W. Andrewes (*Journ. of Path. and Bact.*, October, 1922, p. 505) finds that a mass culture of an organism belonging to the Salmonella group is not a homogeneous entity, but that there exist side by side bacteria with widely different properties, as shown by agglutination reactions. He describes a method for preparing mono-specific serums by saturating a serum prepared against any member of the Salmonella group with all the allied members of this group; by this method stock serum can be stored which reacts specifically with one organism only, the troublesome factor of group agglutination being thus eliminated and more clearly defined results being obtained. Examination of plate colonies of pure cultures of these organisms showed that the colonies fell sharply into two groups: one group reacted well with monospecific serum, but failed to agglutinate with allied group serum; the other agglutinated well with group serum, but only weakly with monospecific serum. The appearances of the colonies of these two different types was identical, and with most of the organisms examined they were in approximately equal numbers. The types did not breed true, but on cultivation each type changed readily into the other—a change which apparently took place abruptly. A means was found of preparing sufficient suspension of the specific type to use for examination, and such suspensions gave very clear-cut results in the diagnosis of disease, the patient's serum only agglutinating the specific strain of the organism causing the disease. Similarly specific serum can be prepared by immunizing animals with specific types, and such serum enables an organism to be identified with much greater precision and rapidity than when serum is used as prepared in the ordinary way. The facts brought out by this research explain many peculiar phenomena previously observed but hitherto not understood.

409. Ovarian Inhibition of Conception.

L. Haberlandt (*Pflüger's Archiv. f. d. ges. Physiologie* and *Zentralbl. f. Gynak.*, October 7th, 1922, p. 1627) found evidence, after transplantation into rabbits and guinea-pigs of ovaries from gravid animals of the corresponding species, of a temporary sterilization lasting three months in the former and one month in the latter species. Subsequent examination of the transplanted organs showed the survival of compact groups of large polygonal cells. The author concludes that the inhibition of conception is due to hormones arising from interstitial cells of the ovary of the gravid animal; these hormones cause suspension of ripening or bursting of the follicles. Clinical use of these observations is suggested for the production of temporary sterilization in the human subject for therapeutic purposes.

410. The Action of Antidysenteric Serum on Lysis due to the Bacteriophage of d'Herelle.

P. Haudurov (*C. R. Soc. de Biologie*, October 28th, 1922, p. 966) finds that antidysenteric serum exerts an inhibitory action on the lysis of *B. dysenteriae* Shiga, by d'Herelle's bacteriophage. Thus, if equal quantities of a young culture of the bacillus be placed in a series of tubes, a drop of the corresponding bacteriophage be added to each, together with increasing amounts of antidysenteric serum, and incubation carried out, it is found that those tubes containing small quantities of serum are lysed after three or four hours, that those containing larger quantities are not lysed till after seven or eight hours, while those containing relatively considerable quantities are still opaque after sixteen hours. What is the explanation of this action of the serum? Apparently no effect is exerted on the bacteriophage itself, for if one of the above series of tubes be filtered before lysis has occurred the lytic principle is recovered intact in the filtrate. The serum probably, therefore, acts on the bacillus itself or on some substance secreted by the bacillus. It is this latter hypothesis which is favoured by the author. He imagines that the bacillus during its development produces a soluble substance which is fixed by the serum. The fixing of this substance interferes with lysis. If growth of the organism continues, and more of this soluble principle be produced than can be neutralized by the serum, then lysis will take place. This, however, does not enlighten us as to the nature of the bacteriophage.

411. The Complement Fixation Reaction in Tuberculosis of Domestic Animals.

L. Panisset and J. Verge (*Ann. de l'Institut Pasteur*, October, 1922, p. 690) have attempted to ascertain the value of the complement fixation reaction in the diagnosis of tuberculosis amongst cattle. Using Calmette and Massol's technique, with increasing doses of complement in the presence of fixed quantities of antigen, they have studied the serums of 148 tuberculous cows, 63 healthy cows, and 4 dogs. The results obtained were controlled by autopsy of 126 of the tuberculous cows; the other 22 reacted to tuberculin; all the healthy animals were examined clinically and submitted to the tuberculin test. Having taken these confirmatory precautions they find that the complement fixation reaction is positive in 90.5 per cent. of tuberculous cows, while it is negative in 88.8 per cent. of cows clinically free from tuberculosis and not reacting to the tuberculin reaction. Of the four dogs one which was suffering from hypertrophic osteoarthropathy gave a positive reaction, while the other three healthy ones were negative. There is no exact parallelism between the tuberculin test and the fixation test, and the two probably have a different significance: the latter appears to be partly correlated with the extent of the morbid lesions, and possibly with the resistance of the animal, while the tuberculin test is probably unconnected with the richness of antibodies in the serum. They conclude that the complement fixation reaction is of considerable value in diagnosis especially when positive—but that as it is given frequently by animals infected with other acid-fast bacilli and by those suffering from chronic hypertrophic enteritis, its specificity cannot be considered as absolute.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

412. Diagnostic Signs in Scarlet Fever.

G. MOURIQUAND, L. LÉORAT, and PAVLOVITCH (*Journ. de Méd. de Lyon*, October 5th, 1922, p. 587) refer to the difficulty of diagnosis in some cases of scarlet fever. A scarlatiniform rash may appear in the course of other exanthemata, in septicaemia, drug intoxications, and anaphylaxis (serum rashes or alimentary urticaria). Some cases of scarlet fever show an atypical or no eruption, or the disease may be associated with another exanthem—for example, diphtheria. Desquamation may follow a scarlatiniform erythema, further confusing the original diagnosis. The authors describe eight new clinical signs. "The sign of the bend of the elbow" (signe du pli du coude) described by Pastia consists of single or more often several bright red lines (changing later to port wine colour) appearing in the flexures of the limbs, in the axillae, neck, and groins at the commencement of the eruption, and lasting for some time after its disappearance, in the form of a rather intense linear ecchymosis. The explanation given for this sign is that the skin in these regions is more delicate, and therefore more readily injured, than elsewhere. To elicit the sign the forearm should be extended and the skin of the flexure of the elbow gently drawn up and down to render it smooth. The authors state that this sign is very valuable as it is positive in from 90 to 99 per cent. of cases of ordinary scarlet fever, but in the "puerperal" form the authors have found it only in 20 per cent. It is scarcely ever found in erythema or the other exanthemata, but they have seen it occasionally in rubeola and in recurrent scarlatiniform erythema. The persistence of the sign after total disappearance of the scarlatinal rash may enable a retrospective diagnosis to be made. The authors do not regard any of the other signs described by them as reliable, neither do they place any value on chemical tests of the urine, nor on differential leucocyte counts and complement deviation. They rely on "the phenomenon of extinction"—the serum of a convalescent patient whose scarlet fever occurred more than three weeks previously, or that of a normal person who has not had the disease, has the peculiar property of extinguishing the scarlatinal rash in the region in which it has been injected hypodermically. The authors describe the technique: 20 c.cm. of blood are drawn off in two tubes, one of which is subjected to the Wassermann test; the other is placed in an ice-chest until the serum separates; this is then decanted into sterilized 1 c.cm. ampoules. Some writers recommend that it be inactivated at 56° C. for one hour, others add phenol to the serum, but the authors and other observers consider that the reaction is more distinct if unheated serum be used. Care must be taken to inject the serum beneath the Malpighian layer, otherwise a bulla forms and the test must be repeated. It should be done in the first three days of the eruption with aseptic precautions. In positive cases, in from six to ten hours after the injection of the serum, the rash becomes pale and definitely disappears from an area varying from that of a five-shilling piece to that of the palm of the hand; the rash usually disappears first at the centre, but may do so from the periphery. Desquamation in some cases does not occur in the area from which the rash disappeared. The authors describe in detail a number of their observations; they consider that the "sign of extinction" is more reliable than any other.

413. Convalescent Serum in the Prophylaxis of Measles.

O. JERVELL (*Norsk Mag. f. Laegevidenskaben*, August, 1922, p. 601) has achieved marked success with the prophylactic injection of the serum of convalescents in a hospital holding 31 children under the age of 2 years. On January 9th one of the children in a ward accommodating eight developed a typical measles rash, and next day a new case occurred in another ward. On previous occasions the outbreak of measles in this hospital was the signal for immediate isolation of the first case, but this did not prevent all the other children in the same ward from contracting measles. On this occasion all the children exposed to infection were given injections of convalescent serum. The donor was a woman who had suffered from measles eight days earlier. On January 11th 3 c.cm. of her serum were given by intramuscular injection to each of the eight children exposed to infection. The two who had already contracted measles were not given serum and were not isolated, and no special precaution was taken to prevent spread of infection to the injected children, two of whom were only a few weeks old. The remaining six were about 18 months old. Not one of the children given prophylactic injections contracted measles. Two other children about the age of 18 months were given intramuscular injections of 10 c.cm. of citrated blood from a man who had contracted measles in childhood, and they also did not develop measles. Quoting Degkwitz and Rietschel, the author points out that the prophylactic system under discussion is of particularly great importance in children's hospitals where the inmates are especially liable to suffer from the ill effects of measles. The serum of convalescents remains potent for at least nine months, and inability to provide a sufficient quantity of serum is the chief bar to the wholesale introduction of this system of prophylaxis.

414. Diphtheria of the Vulva.

TRIPPUTI (*La Pediatria*, September 15th, 1922, p. 852) publishes two cases of this uncommon condition. (1) A child, aged 3, who suffered for about a fortnight from redness and swelling of the vulva, with membranous plaques on the labia. The child was very pale, wasted, and ill. There was a trace of albumin in the urine; no sore throat. A brother a month previously had suffered from a bad throat of uncertain nature, but was quite well. Swabs from the vulva showed Klebs-Loeffler bacilli. Antitoxin was given, but the child died subsequently of heart failure. (2) A child, aged 20 months, with similar history, except that there was no record of sore throat in any other member of the family. Similar local conditions were present, and in spite of treatment this child also died of heart failure. In the absence of other symptoms suggesting diphtheria, the diagnosis of diphtheria of the vulva is difficult, and can only be definitely settled by bacteriological examination.

415. The Prognosis of Congenital Heart Disease.

J. S. OUDEMANS-HOEKSMA (*Nederl. Tijdschr. v. Geneesk.*, October 7th, 1922, p. 1628) states that the prognosis of congenital heart disease depends more on the patient's general condition, especially the degree of cyanosis and shortness of breath, than on the character of the cardiac lesion. Patients with a patent ductus arteriosus and with a patent foramen ovale or septum defect have a chance of a fairly long survival if they follow a reasonable mode of life. On the other hand, the prognosis of pulmonary stenosis is very bad, and, when uncomplicated, makes life impossible; only by its association with a patent ductus arteriosus or septum defect is it possible for the blood to pass into other channels, and thus enable the child to survive. The author made an inquiry into the subsequent history of 154 cases of congenital heart disease which had been treated at the Emma Children's Hospital at Amsterdam between 1909 and 1920, with the following results: In June, 1922, 62 were still alive, 87 were dead, and the fate of 4 was unknown. Of the 87 fatal cases 21 had died before the age of 3 months, 35 between 3 months and 1 year, 8 during the second year, and the rest between 3 and 21 years of age. Whooping-cough and pneumonia were frequent causes of death, but probably as many died from the cardiac condition as from intercurrent diseases. In the survivors marked cyanosis was seldom found; clubbed fingers were seen in only one instance, and the general condition was satisfactory in most cases. Examination of the blood pressure showed that it was neither too high nor too low. Only a few of the children were undersized, and some were even above the average height. On the other hand, the mental development left much to be desired. The prognosis, therefore, of congenital heart disease should not be too gloomy, nor should the child be subjected to a number of prohibitions, at least before the age of athletic sports is reached.

416. Responsibility and Modern Psychology.

W. BROWN (*Psyche*, October, 1922, p. 133) regrets the tendency for a deeper knowledge of psychological laws to become a popular fad instead of a serious study, thereby encouraging an extremism foreign to the spirit of true science. Any suggestion that modern doctrines of psychology tend to weaken the sense of moral responsibility both in the criminal and in the judge is fallacious, since psychology is not concerned with the problem of responsibility but merely attempts to trace antecedent factors of wrong-doing in the criminal's heredity, previous mental constitution, and conditions of environment. Most wrong-doing represents the failure of social instincts to control merely self-regarding instincts when such control is called for in the interests of the community, and is caused either by excessive strength

of impulse or exceptional weakness of control, or by a disturbance of intellectual life preventing the individual from knowing what he is doing, all of which factors may contribute to the resulting act. While the legal definition of responsibility only recognizes the intellectual factor, it must be borne in mind that effective knowledge of an act must include knowledge of the circumstances in which it is performed. In addition to the many forms of mental illness to which such a criterion applies—for example, alcoholic mania, post-epileptic automatism, etc.—there is a class of individuals who suffer from overwhelming compulsion to criminal acts, as in kleptomania, the compulsion being so strong that normal powers of control are inadequate to hold it in check. Psychological analyses in such cases often point to the events and fantasies of early childhood and strong repression of infantile tendencies as being responsible, and the problem of moral responsibility resolves itself into a redistribution of responsibility among the right persons rather than towards its abolition. The psycho-analytical school, according to this author, errs in restricting its investigation to instinctive bases of mental life, and fails to do justice to the nature of volition or other higher forms of mental activity, and it can have no right to deny personal responsibility, because it has not yet even begun to deal with the concept of responsibility. While not contesting the reality of moral responsibility, modern psychology regards criminals who suffer from certain forms of mental disease as being less fully responsible for their acts than normal people, but it in no way lends countenance to the view that all criminals suffer from mental illness or that such illness is an invariably sufficient excuse for crime. Since many forms of psychoneurosis are partly due to defective will, this may be strengthened and re-educated by mental analysis and suggestion.

417. Pepsin and Hydrochloric Acid Medication.

R. EGE (*Ugeskrift for Laeger*, September 21st, 1922, p. 1227) has carried out quantitative analyses of the pepsin content of the stomach, and has used a modification of Fuld's edestin method for this purpose. He calculates that the quantity of pepsin secreted daily is not less than the equivalent of 10 grams of Armour's pepsin. As the quantity of pepsin usually given is much less than 1 gram a day, it is difficult to conceive how such timid dosage can be of any value. Even in cases of much reduced pepsin secretion the author has found from 3 to 5 grams, and the smallest quantity he has found was about 0.5 gram. The usual dosage of HCl is also ludicrously inadequate, and the amount usually given in Denmark is approximately one-twentieth of the amount normally secreted by the stomach. It is useless to give pepsin to a patient with a low HCl secretion, for the pepsin is inert unless the acidity of the gastric juice is brought up to a certain level. To achieve this object without giving large quantities of HCl by the mouth it is necessary to introduce the HCl through a stomach tube, the discomforts of which are great. The author therefore recommends substituting citric acid for HCl, as the former's capacity for neutralizing bases is approximately 300 times greater than that of HCl. Another advantage of citric acid is that it can be given in a pill, and the quantity of citric acid given would have to be 7 grams to bring the acidity of neutral gastric juice up to its normal HCl acidity.

SURGERY.

418. Nephrolithiasis.

A. C. JACKSON and W. C. GEWIN (*Amer. Journ. of Surg.*, September, 1922, p. 212) find that renal calculi occur more frequently in males than in females, and in the third and fourth decades. Calculi are probably bacterial in origin. The disease is bilateral in about 10 per cent. of cases. Colic rarely occurs unless a stone passes into the ureter. The pain is more often a dull soreness in the back on the affected side and referred down the ureter to the penis and scrotum. Haematuria is usually mild in type and rarely alarming; pyelitis with pus in the urine may be present later. Diagnosis depends on *x* rays and cystoscopy. There is no medical treatment for renal calculi, so the question of operation must be considered. About 75 per cent. of stones will pass spontaneously, and a large majority within six months after onset, so immediate operation is to be condemned; if the stone is too large to pass, nothing is gained by delay. If stones are found in both kidneys and are large and multiple and the symptoms not acute, operation is not advisable, as these patients usually live as long and as comfortably without operation. The function of the kidneys should be tested before operation to ascertain how radical this may be. The lumbar incision is to be preferred for exposure of the kidney. There are three methods for removal of the stones: pelviolithotomy, nephrolithotomy, and nephrectomy. Pelviolithotomy causes less destruction of renal tissue and less haemorrhage. In cases of pyonephrosis with stone nephrectomy becomes imperative, after being sure of the presence of a second kidney with good function. Conservation should be the keynote in nephrolithiasis, but one must always be radical enough to get results.

419. Radium in Oto-Rhino-Laryngology.

MARTÍNEZ (*Arch. de med., cir. y espec.*, October 14th, 1922, p. 95) records his experience of radium treatment in oto-rhino-laryngology since April, 1918. All the cases of rodent ulcer, which were particularly frequent on the nose, were cured. In the mouth success was only obtained in a case of small epithelioma of the palate. In all the other cases the application of radium was not sufficiently intense to affect the lesion. In the pharynx the results were not very satisfactory, owing to a sufficient amount of radium not having been employed. In one case in which a large quantity was used a complete cure was effected. In another case, in which the growth of the tumour was very rapid, application of radium considerably retarded its growth. In the larynx papillomas were all cured by radium. In epithelioma of the larynx radium was useless, except in one case where it was associated with thyrotomy. In the nasal fossa a fibroma and in the external auditory meatus a naevus were cured by radium. Martínez concludes that up to now radium is the only substance which can modify a new growth, and that not only must a large quantity of it be employed, but that it should be applied at an early stage.

420. Anilin Copying Ink as a Toxic Foreign Body.

E. GLASS (*Deut. med. Woch.*, October 13th, 1922, p. 1383) records two cases showing how dangerous it is to leave the stump of an anilin pencil embedded in the tissues. This accident is by no means rare, and Erdheim has recently published as many as 21 cases. The author's first patient was a clerk who bruised his right forearm, which became swollen and painful. About two days later the swelling was incised and some violet fluid evacuated. The wound closed without the formation of a fistula, and when the author saw the patient for the first time about four weeks later there was a swelling of the size of half a walnut on the extensor aspect of the right forearm. The tender and oedematous swelling was incised, and about 10 c.cm. of a bright violet, jelly-like fluid were withdrawn. Analysis of the fluid proved it to be stained by methyl violet. Curiously enough, the patient was unaware of having been pricked by a pencil, and it was not till six days later that, on free opening of the swelling, a fragment of pencil was found embedded in necrotic tissues. These were excised, and recovery followed. Common to this and the second case was the general toxaemia produced by the dye; in the second case the patient looked very ill, although he had pulled the broken fragment of pencil out of his right thumb directly after its entry. These and Erdheim's cases show that the copying pencil may be a very dangerous thing if it gets into the tissues. When particles of it lodge in the eye, severe conjunctivitis, terminating in necrosis of the conjunctivae, is liable to occur.

421. Vesical Calculi following Prostatectomy.

CARAVEN and LOURDEL (*Journ. d'urologie médicale et chirurgicale*, August, 1922, p. 111) observe that the presence of calculi is one of the least known, or in any case least studied, complications of prostatectomy. One of the authors has observed 2 cases among 213 prostatectomies in his own practice; details of these cases are given. In both severe dysuria and chronic cystitis occurred some months after the primary operations; no treatment gave relief until cystotomy was again performed and phosphatic calculi removed from the base of the bladder or from the cavity left after prostatectomy. The authors' third case "has had prostatectomy performed by a distinguished surgeon," who packed the prostatic cavity with tampons of gauze. The patient subsequently consulted one of the authors: he was suffering from dysuria, and a fistula communicating with the bladder had formed. The symptoms suggested the presence of a neoplasm, and cystotomy was performed: three gauze tampons, which had been placed in the cavity from which the prostate had been enucleated and had been overlooked, were removed. Cure resulted in two or three weeks, but four or five months afterwards cystitis recurred, and cystoscopy showed three calculi of phosphatic appearance. Cystotomy was again performed, the calculi were removed, and the scar tissue resulting from the previous operations was sutured. A rapid cure followed. The authors observe that it is very difficult to determine the frequency of the occurrence of this complication. Canterman has seen it in 2 cases out of 63, Gonzales in 3 cases in 75 prostatectomies. One of the authors has seen it in 2 cases among 213 of his own

patients, and has been able to collect 68 other published cases. They discuss the mode of origin of these calculi at considerable length, and classify the cases as follows: (1) those cases where the operation is or appears to be clearly responsible; (2) those where the operation is not responsible; (3) those where its part is open to discussion. They conclude the paper by giving particulars of 11 other cases which they have collected, of which the majority have not been published hitherto.

422. Improvements in Pre-operative and Post-operative Care.

THE essential point made by F. B. TAYLOR, W. I. TERRY, and W. C. ALVAREZ (*Journ. Amer. Med. Assoc.*, November 4th, 1922, p. 1578) is that in a large hospital, with young and inexperienced house officers, the standing orders should call for as little meddlesome interference as possible. If any patient develops symptoms which require the use of purges or enemas they can always be prescribed, but they should not be made compulsory for the patient who is making a smooth and rapid convalescence. Furthermore, the standing orders must not be such that the life of a man coming in with an acute intestinal obstruction, a perforating appendix, or a gangrenous Meckel's diverticulum must depend on the intervention of some intelligent house-surgeon. The salient points in the treatment endorsed by the authors are: (1) the omission of the pre-operative purge had no definite influence on the amount of vomiting, but it had a decided effect on the amount of pain in the abdominal cases, reducing its incidence from 75 to 42 per cent.; (2) the delay in giving the post-operative purge had a decided effect on the amount of vomiting, reducing its incidence from 45 to 30 per cent. in the abdominal group and from 20 to 4 per cent. in the extra-abdominal group; (3) in both groups there was more complaint of pain when the post-operative purges and enemas were withheld.

423. Cervical Rib.

S. W. BOORSTEIN (*Journ. of Bone and Joint Surgery*, October, 1922, p. 687), in a review of the subject, considers that many cases of shoulder disability are due to cervical ribs. The size of the rib bears no relation to the intensity of the symptoms, some of the large ribs causing little or no trouble. An aponeurotic band extending downwards to the first rib may cause similar symptoms. The symptoms are commoner on the right side, and they usually first cause trouble between 20 and 30 years of age. The symptoms are local, with pain and tumour; nervous symptoms are generally neuralgic pains with numbness and tingling; usually the inner cord is involved and sometimes analgesia is present. Vascular symptoms may vary from slight coldness to actual gangrene; a difference in the radial pulse has been noted; of the muscular symptoms, atrophy of the small muscles of the hand are usually seen with loss of power or grip. A cervical rib must be thought of in a case of sensory symptoms along the lowest cord of the brachial plexus, with paralysis of the intrinsic hand muscles, vasomotor changes, and perhaps tumour in the supraclavicular fossa. X-ray examination is a great help in diagnosis. The treatment consists in removal if there are no definite contraindications. The more the nerves have been damaged, the less likely is the result to be a complete cure. If operation is delayed thrombosis in the vessels may occur. The best method of removal is an incision from the posterior border of the sterno-mastoid passing upwards and outwards to the border of the trapezius. The brachial plexus is exposed and retracted forward, the rib is then defined, its muscular and ligamentous attachments divided, and finally the rib is removed. Care must be taken of the vertebral artery, and if it is damaged it should be ligated near its origin. Venous haemorrhage may be controlled by packing. The nerve and blood-vessel symptoms usually abate gradually after resection of the rib, but may persist for a year or longer.

424. Haematuria following Sodium Bromide for Pyelography.

K. BÖHRINGER (*Zentralbl. f. Chir.*, October 21st, 1922, p. 1558) remarks that almost all recent reports on sodium bromide in pyelography state that it is completely harmless. Gaudy and Stobbaerts recorded two exceptional cases of colic, rise of temperature, and vomiting, and Jules François, who employed a 30 per cent. solution, described a severe case of irritation of the bladder and pain in the kidney after its use. In Germany a solution of 20 to 25 per cent. is usually employed. Böhringer now records 3 cases in which haematuria developed after pyelography or cysto-radiography, in which a 30 per cent. solution of sodium bromide had been used. Two of the cases were women, aged 21 and 49 respectively, who presented symptoms of movable kidney and intermittent hydronephrosis. Severe colic and haematuria developed shortly after the introduction of the solution. The haematuria lasted in one case about a month, and in the other a fortnight. The third case occurred in a man aged 25, suffering from chronic nephritis, in whom cysto-radiography was performed for dysuria. The bladder was filled with 150 c.cm. of a 30 per cent. solution of sodium bromide. Severe haematuria developed the same day, and lasted for another six days, when death took place. The autopsy showed cystic degeneration of both kidneys, severe haemorrhagic cystitis, and multiple skin haemorrhages. A fatal issue in this case was inevitable, as was shown by degeneration of the kidney and the high degree of residual nitrogen in the blood, but the sodium bromide had undoubtedly a very irritating effect upon the vesical mucosa. In none of the three cases could an error in technique be regarded as responsible for the haematuria. The solution was some days old, but according to the literature stock solutions have been used by others without ill effects. In future, however, the authors intend to employ only freshly made solutions not exceeding 20 per cent. in strength.

OBSTETRICS AND GYNAECOLOGY.

425. Surgical Treatment of Pelvic Tuberculosis.

R. PETERSON (*Amer. Journ. of Obstet. and Gynecol.*, September, 1922, p. 234) records the after-history of 100 cases of pelvic tuberculosis in which the diagnosis was confirmed by microscopical examination of tissue removed at operation. The primary mortality was 7 per cent. Of the 7 patients concerned 4 showed before operation distinct rises of temperature and pulse rate due to pulmonary tuberculosis; in such circumstances it is better to postpone or avoid operation. Among the remaining 93 patients, of whom all but 2 were traced, there were 16 deaths only in a period of eighteen years, and 9 succumbed to some form of tuberculosis, 7 of them being patients having morbid pulmonary signs at the time of operation. Since in the 100 cases the peritoneum was involved in 60, the omentum in 20, and the uterus in 30, ascites being found in 23, it seems justifiable to conclude that prognosis after operation, especially in afebrile cases, is distinctly favourable. Unless it be too extensive, tuberculosis of the peritoneum will be cured if the other pelvic tuberculous lesions be removed. In the present series 5 faecal and 2 vesico-vaginal fistulae were noted after operation. Fistulae much more readily follow separation of adhesions due to tuberculous than those due to gonorrhoeal peritonitis, and drainage when possible should be avoided in the former group of cases. From examination of 44 cases in which hysterectomy together with bilateral salpingo-oöphorectomy was done, it was found that in 23 per cent. the uterus, tubes, and ovaries were involved, in 50 per cent. the uterus, and in 86 per cent. the tubes. On the whole radical rather than conservative resections of the pelvic organs seem to be preferable, although much depends on the extent and severity of the primary focus of the disease; in the group of 44 cases radically treated, 66 per cent. showed affection of the parietal peritoneum, 20 per cent. ascites, and 32 per cent. pulmonary disease, yet the percentage of cure was higher than in the series as a whole.

426. Zinc Poisoning after Vaginal Douching.

R. ENGELMANN (*Deut. med. Woch.*, 1922, 15), records the case of a patient aged 45 who douched herself thrice daily with 1 drachm of zinc chloride solution (50 per cent.) to 1 litre of water. After the second injection made during the menstrual period she was suddenly seized with acute abdominal pain, nausea, and vomiting; the abdomen was swollen and tender, the pulse was small, and the urine showed the presence of albumin and casts. Convalescence occupied six weeks. The conclusion is drawn that patients douching themselves on account of gonorrhoea or other maladies should be warned to suspend during menstruation the injections of zinc chloride, silver nitrate, or mercury oxycyanide.

427. Tabes and Pregnancy.

G. RICHTER (*Zentralbl. f. Gynäk.*, October 7th, 1922, p. 1618) adds records of two cases to the eleven which he has been able to find hitherto described of pregnancy coexisting with tabes. The first patient, a 3-para aged 28, who had borne two children showing signs of congenital syphilis, had presented for three years the classical signs of tabes; pregnancy continued after the initiation in the third month of treatment by salvarsan given in carefully graduated small doses. In the second patient the birth at term of the second, like that of a former child, was painless; this woman, aged 34, showed, in addition to ataxia, sluggish pupillary reaction and absence of patellar and Achilles reflexes, old trophoneurotic lesions at the finger-tips, marked impairment of sensation, and a negative Wassermann reaction in the blood (repeated lumbar

puncture having failed to give a specimen of fluid). The child appeared healthy; the mother was given during pregnancy small doses of salvarsan.

428. Treatment of Disease of the Uterine Appendages.

C. WALTHER (*Journ. de Méd. et de Chir. Prat.*, June 10th, 1922) publishes the remote results obtained by him in 400 cases of chronic adnexal disease treated, at operation, as conservatively as possible, with the view of preserving menstruation and other physiological functions of the genital organs and permitting the possibility of occurrence of pregnancy. Cuneiform partial resection was preferred in large, ignipuncture in small, sclerocystic ovaries; the incidence of subsequent conception appeared to be about the same. Of the 242 patients who could be traced, 184 were apparently cured, 47 still suffered some pain, and 11 had had to submit to a second operation, 3 of them for myoma and 8 for salpingitis. Taking the cases of conservative operation on both ovaries, or of excision of one with conservative operation on the other, the author found that among 188 patients 50 had had one or more children after operation, totalling sixty children in all. Walther believes that conservative treatment of the adnexa at operation has not received the attention which it merits, and quotes the case of Patel, whose patient, after a first operation for disease of the left adnexa and a second for tubal gestation (the right ovary and the portion only of the right tube being left), went through two normal pregnancies. Conservative adnexal operations can only be done remotely from any acute exacerbation of the disease. M. S. COTTE (*La Gynécologie*, July, 1922, p. 428) has tried in 25 cases of acute exacerbations of chronic adnexal inflammation, treatment by injections of mixed antipyogenic vaccine. Of these patients 13 subsequently required operative castration, 6 came to conservative operation on the adnexa, 2 required colpotomy only, and 4, although persistent adnexal lesions could be demonstrated, were not judged to require operation. Apart from the remote results, the administration of the first or second dose of the vaccine was followed, in all cases but one, by prompt relief of pain, at a time when fever was still well marked and persistent. The author regards vaccine treatment as giving relief rather than cure, and one which cannot diminish the extensive period which is necessary for the complete abatement of subacute or chronic adnexal inflammation. In recent acute salpingitis, vaccine therapy promptly begun may, on the other hand, profoundly modify the course of the infection.

PATHOLOGY.

429. The Origin of Cancer.

M. GUÉRIN (*Les Néoplasmes*, September-October, 1922, p. 167) observes that all the theories advanced hitherto to explain the origin of cancer have proved unsatisfactory because all tumours have not a common etiology. There are, he says, three chief varieties: (1) infective tumour (due probably to virus or parasite); (2) irritative or traumatic tumour, often associated with infection; (3) tumour of embryonic origin of which the precise causation is unknown. This complex etiology is explained when the neoplasm is looked upon not as an entity but as a simple expression of tissue reaction. Normal cells may respond to a physico-chemical stimulus in two ways: (1) inflammation, the ordinary reaction; or (2) neoplastic reaction in two stages—benign and malignant tumour, clinically cancer. We may observe the transition from one to the other as well clinically as by histological sections and by laboratory experiments. Thus the classic distinction between benign and malignant tumour is only of value as a broad clinical classification; it has none from the etiological or pathogenic standpoint. Hitherto the mechanism of the neoplastic reaction has escaped us almost completely. Two facts must be remembered however: (1) the similarity between the cancer cell and the sexual cell; (2) the existence of a normal reaction of one or other cell—that "vital influx" has been clearly demonstrated by culture experiments of normal tissues and of tissue regeneration. It is the derangement of these intercellular influences which characterizes cancer. May we go farther and recognize the reason of this derangement? Possibly, by applying the recent addition to biology in the domain of organic colloids. It may be admitted that the neoplastic process results in a modification of the colloidal nucleo-protoplasmic suspension of the cell. That modification will be a greater dispersion of granules; thence increased intensity of catalytic phenomena, of cellular exchanges and karyokinetic manifestations. Increased activity and abnormal proliferation of the cell result. This fact must be remembered—that the cancer cell, having become "anarchic," exists by itself and for itself; it is a parasite of the organism. This idea, he considers, should dominate all therapeutics.

430. Occurrence of Leishmania in the Intestinal Tissues in Indian Kala-azar.

HITHERTO no observations relating to the pathological changes in the small intestine in kala-azar appear to have been made, and it is to supply this deficiency that H. M. PERRY (*Journ. Roy. Army Med. Corps*, November, 1922, p. 323) now describes the results of an examination which he has conducted on small portions of the jejunum from two cases of the Indian variety of the disease. Macroscopically, the only change noticeable was a very slight thickening of the mucosa. It was likewise to this coat that the pathological lesions were confined when examined histologically. Sections stained by Wolbach's modification of Giemsa's method showed great enlargement of the villi, which appeared as swollen, distorted polypoid bodies connected with the submucous tissue by constricted stalks of connective tissue. From their surface the columnar epithelium had disappeared, and they were bounded solely by the basement membrane. Within the villi was an enormous proliferation of the endothelial cells lining the lymph vessels; and contained in these cells were large numbers of Leishmania bodies. In many cases the intracellular growth of these bodies had been so great as to lead to rupture of the cell, and their consequent extrusion into the villus. Similarly, the proliferation of these bodies and of the endothelial cells containing them had brought about a rupture of the villus itself in some places, thus allowing its contents to be discharged into the intestine. The possible significance of these results is discussed, especially with reference to the spread of the disease by means of alimentary infection, and, in view of the inability of the flagellate stage of the organism to grow in the presence of bacteria, the suggestion is made that an encysted form of the parasite may be developed in the faeces.

431. The Blood Picture of Radiologists.

P. AMUNDSEN (*Tidsskrift for Den Norske Laegeforening*, October 15th, 1922, p. 862) has examined the blood of fifteen persons connected with an *x*-ray radium institute, and has come to the conclusion that the new Coolidge tubes are very dangerous, and that the penetrative capacity of the gamma rays is astounding. The samples of blood were drawn about noon, and the erythrocytes and leucocytes were counted in a Thoma-Zeiss chamber. The haemoglobin content of the blood was determined by Sahli's method. In every case the haemoglobin was about 100 per cent. or more, and the colour index was about normal. The total number of the leucocytes was also about normal, but there was a pronounced change in their comparative numbers, the proportion of lymphocytes being increased at the cost of the polynuclear leucocytes. It was remarkable that this lymphocytosis was observed not only in persons directly concerned with the *x* rays and radium, but also in those whose work did not bring them into prolonged or intimate contact with either. Thus, two servant girls, a night watchman, and a photographer, whose only duty in the building consisted of taking photographs of ulcers and tumours, showed lymphocytosis. The same condition was found in two medical students who had worked for only a month with the *x* rays and radium. In two cases the blood was examined both at the time of exposure and after it had been discontinued for some months, and it was found that a brief absence from exposure to *x* rays and radium was sufficient to reduce the lymphocytosis considerably. The author concludes that in spite of such protection as is afforded by lead, rubber, and glass, the radiologist suffers to a certain extent from his occupation.

432. Pathology of the Premature Infant.

ACCORDING to A. YLPÖ (*Klinische Wochenschrift*, 1922, 25), about 5 per cent. of children born in Germany, and about one-fourth of sick children attending children's clinics, are premature, as indicated by a weight at birth of less than 2,000 grams. Over one-half of 650 premature infants whose fate the author was able to trace died during early childhood; the mortality was relatively greater in children whose birth was induced prematurely on medical grounds or who were born before term by reason of morbid maternal conditions. Parental syphilis and tuberculosis were less significant factors in early mortality than was markedly low weight at birth or injury at that time to the brain or spinal cord. Nine out of the children weighing under 1,000 grams at birth showed injuries of these organs. Mental deficiency, Little's disease, or spasmophilia manifesting itself late in childhood is frequently traceable to such injuries at birth. Premature children show at first an increased haemoglobinaemia which is speedily followed by an aplastic anaemia. As early as the first or second month of life the rickets of premature infants may be demonstrated in the form of craniotabes by *x*-rays. Premature infants do not exhibit any compensatory acceleration of the customary rate of growth.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

433. Is Tuberculous Meningitis Curable?

A. CRAMER and G. BICKEL (*Ann. de Méd.*, September, 1922, p. 226) observe that the unanimous opinion of several generations of physicians has been that tuberculous meningitis is incurable, prognosis fatal, and death inevitable. Everyday experience has confirmed this view. The authors then discuss the extreme gravity of this disease compared with other forms of tuberculosis. Ninety per cent. of cases present other tuberculous lesions, often of the generalized miliary type; very frequently meningitis is a terminal development. The mechanical effects on such delicate structures are far more serious and rapid in action than in other organs. The toxin has an elective affinity for the central nervous system. In spite of all these facts cases of recovery have been recorded, though in the majority sufficient scientific proof is wanting. The authors record the case of a youth of 19, having a history of winter cough, etc., for several years, who developed typical tuberculous meningitis, the diagnosis being fully confirmed by bacteriological and experimental findings. Full details of the case are given. In all four lumbar punctures were performed during a period of twenty-nine days; the cerebro-spinal fluid at the last puncture was normal and the patient was discharged, apparently completely cured, two and a half months after his admission to hospital. Eighteen months afterwards he was in excellent health, played games, and neither physically nor intellectually showed any sign of disease. The writers have collected from various sources about 250 cases of cured tuberculous meningitis. Rejecting all cases in which the diagnosis was not confirmed by discovery of tubercle bacilli in the cerebro-spinal fluid and the infection of guinea-pigs which had been inoculated with the fluid, they have found 45 cases which fulfil these conditions, of which particulars are given. The authors append a table of results in 40 of these cases whose ages have been given by the writers. This shows that whereas the percentage of recoveries below 2½ years is only 2.5 per cent., that of patients above 20 years is as high as 30 per cent. The majority of authors who have published these cases think that recovery was due to treatment. That most generally employed is cerebral decompression, usually by repeated lumbar punctures; others have achieved this by trephining. Bier's treatment was employed in 6 cases, of which 2 are stated to have recovered. Tuberculin is recommended by several authors. "Auto-serotherapy"—that is, subcutaneous injection of a few cubic centimetres of the patient's cerebro-spinal fluid—has been employed with good results, but continuous drainage of the vertebral canal and puncture and irrigation of the cerebral ventricles have not produced any cures. Much depends on the patient's power of resistance and on the relative mildness of the infection.

434. Cardiac Complications of Gonorrhoea.

W. S. THAYER (*Johns Hopkins Hosp. Bulletin*, October, 1922, p. 361) reviews the cardiac complications of gonorrhoea occurring at the Johns Hopkins Hospital over a period of thirty-three years, together with 60 cases collected from the literature. Of 176 cases of acute endocarditis 20 were gonococcal, the organism being cultivated *intra vitam* and *post mortem* and demonstrated bacterioscopically in six instances culturally negative. Arthritis occurred in 41.1 per cent., as compared with 68.5 per cent. of cases from other sources, and the relation of the time of onset of cardiac involvement to the appearance of the disease was indefinite. Cardiac complications usually appear as acute or subacute vegetative and ulcerative endocarditis, arising at varying periods in the course of the infection, and frequently without any other apparent complications. The onset is usually acute, but may develop gradually with chills and remittent or intermittent fever, and a rapidly developing anaemia and leucocytosis. Constitutional symptoms are usually severe, and there may be petechial eruptions, embolic phenomena, and signs of grave nephritis. The duration is usually from four to nine weeks, but may be longer in the subacute variety. The aortic valves are those most commonly involved, but the right side appears to be affected more often than in chronic rheumatic valvular disease, and the involvement is not restricted to the endocardium, endoaortitis, pericarditis, and suppurative myocarditis being not unusual. The course of the disease is generally progressive and fatal, its virulence occupying a position between the more subacute *S. viridans* and *B. influenzae* infections and those produced by the more virulent *Staphylococcus albus* and *aureus*, pneumococcus, or *Streptococcus haemolyticus*. Recovery may occur, but is rare.

435. Angina Abdominalis.

W. FREY (*Klinische Wochenschrift*, September 30th, 1922, p. 1984) describes an abdominal affection similar in nature to angina pectoris and intermittent limping (claudication). It is characterized by the occurrence of attacks of severe pain in the abdomen, associated with increased blood pressure and meteorism. In a case recorded the autopsy revealed marked arterio-sclerosis of the intima of the aorta, extending as far as the iliac arteries. The renal, splenic, and superior and inferior mesenteric arteries showed also arterio-sclerotic changes in the intima. In the etiology of the affection the sclerosis of the mesenteric arteries is the most important factor and gives the diagnosis a certain basis. The symptoms are produced by a more or less acute disturbance of the arterial blood circulation in the intestine. It has been shown that inhibition of the supply of oxygen to the isolated intestine of the rabbit produces first a condition of stimulation, followed by paralysis. Probably paroxysmal arterial contraction occurs in the attacks of angina abdominalis, and the author offers suggestions as to the exact cause thereof. In well-marked cases of angina abdominalis, with severe pain in the abdomen, sudden increase in the blood pressure, and meteorism developing acutely, the diagnosis is easy. In the less severe cases the diagnosis is often indefinite. The proneness to abdominal pain in every arterio-sclerotic patient should suggest the possibility of changes in the intestinal arteries.

436. Preserved Food.

T. J. UNDERHILL (*Journ. Roy. Naval Med. Service*, October, 1922, p. 241) discusses some points of interest regarding preserved food, particularly as supplied to the Royal Navy, consisting of corned beef, unsweetened condensed milk, jams, beef-tea, Bovril, gravy, and ox-tail soups, chicken and mutton broth, bottled fruits, sausages, sardines, bacon, beans, peas, meat and vegetable rations, salmon, refined suet, and salt pork. With the exception of the last, which is contained in casks, and of the bottled fruits and jams, all are packed in tins and the contents sterilized by heat. Jam and marmalade rely for their preservation upon a percentage of water and sugar and the exclusion of air, the tins being filled and closed while the contents are very hot. Refined suet is not sterilized, but decomposition is slow when it has been freed from nitrogenous matter and protected from light, air, and moisture in tins. Sterilization and desiccation are the most satisfactory methods for preventing decomposition for long periods. Freedom from metallic contamination by tin, lead, copper, and zinc is essential, 2 grains of tin per pound being the maximum permitted, and it is the unsweetened milk which gives the greatest trouble. Carrots, tomatoes, onions, and black currants exert a very pronounced action upon tin surfaces, but treatment of the surface with a specially prepared lacquer has overcome the difficulty, and no importation of fruits should be permitted unless in tins so treated. No coating, however, has yet been obtained which will resist sterilization at high temperature of meat products, broths, etc. The continuous use of saltpetre in the preservation of corned beef and other articles has more disturbing effects upon digestion than is generally appreciated, and its only effect is to redden the meat and render it more presentable and appetizing. Experience shows that large firms of repute, guided by skilled chemists, with clean factories and well-paid and well-cared-for employees, are thoroughly reliable.

437. Vaccine Treatment of Asthma.

S. BONNAMOUR and DUQUAIRE (*Lyon méd.*, July 25th, 1922, p. 609) treated a large number of cases of asthma and emphysema of different kinds by antituberculosis vaccines derived from various sources (Maragliano, Méricux, Lumière), which were applied by scarification. A general reaction, shown by fever, prostration, and somnolence, was rare. Locally the reaction might be feebly positive in the form of erythema with branny desquamation, or strongly positive, as shown by the formation of a large scab on an erythematous base. In cases of cardiac and uraemic asthma the skin reaction was negative and the therapeutic result was *nil*. In other cases in which a previous history of bronchitis suggested tuberculosis the vaccine treatment was also without result, showing that the disease was due to another cause. Lastly, every case of asthma in a tuberculous subject was not

necessarily due to tuberculosis, so that an asthmatic patient with a positive skin reaction might show little or no improvement from vaccine treatment. The authors report 16 cases in which the local reaction was very definite and the success of vaccine treatment very rapid. Most of the patients were aged from 50 to 80 with a history of tuberculosis or bronchitis, and had suffered from emphysema for several years, with attacks of asthma which first occurred at long intervals, and subsequently became more frequent, proving refractory to ordinary treatment. In some cases the cure lasted for several years, and seemed permanent. As a general rule, however, it lasted about six months, and a fresh vaccination was needed. Several cases were cured in thirty-six hours, after an illness of fifty years in one instance and of forty-three years in another.

438. Milk Intolerance.

CANNATA (*La Pediatria*, June 15th, 1922, p. 529) says that intolerance of the nursing infant to milk may be termed either complete, when this intolerance is present for any woman's milk, or incomplete, when it is concerned with only one woman. The symptoms are mainly those of dyspepsia, or may resemble anaphylactic shock. The class of case considered has no relation to chemical changes in the milk, but applies only to cases where as far as can be ascertained the milk presents no chemical or microscopic departures from the normal. Not infrequently milk which disagrees with one child may be quite satisfactory for another. The author quotes a case illustrating this. In the case of cow's milk some cases may be explained on anaphylactic grounds—for instance, where milk feeding has been suspended for a time owing to gastric disturbances and on resumption acute symptoms arise. Peshkin and Rost showed that in 10 per cent. of normal children a condition of sensitiveness to heterogeneous albumin is present—in other words, a state of potential anaphylaxis. Some of these cases have been improved by anti-anaphylactic injections of milk. On the other hand, some children show intolerance to mother's milk from birth, which is rather against the anaphylactic theory. The author thinks one should exclude every other possible cause before taking repose in anaphylaxis.

439. Erythema Nodosum and Tuberculosis.

W. HOLLAND (*Norsk Mag. f. Laegevidenskaben*, August, 1922, p. 626 is sceptical as to the teaching that erythema nodosum is a reaction to the tubercle bacillus, and he notes that hitherto the relationship between the two has not been proved by histological examinations, inoculations of animals, or tuberculin tests. Between November, 1916, and December, 1921, thirteen cases of erythema nodosum were treated at the skin department of the Rikshospital in Christiania, and the inoculation of thirteen guinea-pigs with fresh nodules from nine of these patients invariably gave negative results. Early in 1922 inoculation of two guinea-pigs with the fresh nodes from a patient, aged 19, failed to provoke any disease, but cultures from the nodes yielded an anaerobic, short, Gram positive streptococcus. The author adds that the frequency of the association of erythema nodosum with acute rheumatic conditions cannot be ignored, and the causal relationship of these two diseases must be disproved before the relation of erythema nodosum to the tubercle bacillus can be regarded as probable.

SURGERY.

440. The Surgical Treatment of Epilepsy.

L. PUSSEP (*Klinische Wochenschrift*, October 21st, 1922, p. 2142) records the results of his operations on 318 cases of epilepsy during the last twenty years. In 13 cases only (4 per cent.) was a definite cure obtained (that is, no fits had occurred after five years). In 29 cases (9 per cent.) an interval of three years elapsed before the fits recurred. In 71 cases (28 per cent.) an interval of one year elapsed before the fits recurred. Thus 113 cases (one-third) had no fits in the first year after the operation. The best results were obtained in cases of circumscribed or localized cortical epilepsy—4 cases cured in 23 (17 per cent.). The portion of the brain surface presenting definite pathological changes was always removed. In traumatic localized cortical epilepsy the results were less favourable—3 cases cured in 43 (7 per cent.). In general traumatic epilepsy (showing scars or bone deformities) only 2 cases in 46 (4.3 per cent.) were cured. In non-traumatic cortical epilepsy, with general convulsions, only 4 in 97 cases were cured (4 per cent.). In 37 of these cases small serous cysts were found at the operation. No cures were obtained in 28 cases of general traumatic epilepsy without signs of skull injury, and also in 40 cases of essential (idiopathic) epilepsy, and in 19 cases of epilepsy with idiocy. The author concludes: (1) That operative treatment is indicated in localized cortical epilepsy (limited cerebral cortex epilepsy) when the affection is not of long duration. (2) In traumatic epilepsy, both cortical and general, operation is only indicated when brain cortex symptoms are detected. In all other cases operation is not indicated. The author considers it best to remove all areas of the brain cortex and meninges presenting pathological changes. In cases where definite objective changes in the cortex are not detected the brain cortex should be stimulated by the electric current, and centres of increased excitability should be removed to a depth of about half a centimetre. It must be allowed that the surgical treatment of epilepsy is unsatisfactory. Cases in which the disease presents a definite localized character form an exception.

441. Radiography of the Appendix.

J. G. EDWARES (*Med. Journ. of Australia*, August 26th, 1922, p. 238) points out that the value of radiographic examination in the diagnosis of appendix disease is little known to the general practitioner; the appendix shadow can be demonstrated in 80 per cent. of examinations. The patient is given a meal of barium sulphate suspended in mucilage of acacia. The stomach and duodenum are examined, and the patient is seen after six hours, and again after twenty-four hours. The caecum and appendix, when examined on the screen, may vary in level as much as four inches. The size of the lumen of the normal appendix is small and its outline regular; it should not contain barium after the caecum has emptied. The pathological appendix may have a lumen of large size and show segmentation. By palpation under the screen it can be shown whether the appendix is fixed by adhesions or kinked. The organ may be found in many unusual situations—it may be to the left of the mid-line or adherent to the pylorus or liver. When the appendix is adherent at its tip it drags on the loaded caecum and causes appendicular colic. Any marked delay in emptying points to a pathological condition. When the appendix cannot be seen adhesions of the ileum and caecum may be shown, with tenderness over the site of the appendix. This points to antecedent inflammatory lesions in the right iliac fossa. A loop of terminal ileum may be mistaken for the appendix, and is a possible source of error.

442. Gall-Bladder Problems.

W. BOYD (*Canadian Med. Assoc. Journ.*, October, 1922, p. 689) points out that the blood cholesterol is derived from a dual source, the first coming from the food by absorption through the intestine, the second being the cholesterol in the bile which is reabsorbed through the gall bladder, and that it is this circulating cholesterol which becomes deposited in the mucosa of the "strawberry gall bladder." It seems also that in some cases gall stones originate in the gall-bladder mucosa, eventually becoming detached and increasing in size from additional deposits of cholesterol and bile pigment. Under a low-power dissecting microscope the mucosa of the normal gall bladder, when immersed in water, shows tall, delicate, fine membranes covered by a tracery of blood vessels, and dividing the mucosa into a series of tiny, well-like spaces sunk between the surrounding walls. In the strawberry gall bladder these delicate folds become thickened and opaque, with yellow lipoid material in discrete deposits along the ridges. Investigation shows that this lipoid stains with ordinary fat stains, is soluble in ordinary fat solvents, is doubly refractive, and answers the chemical tests for the ester of cholesterol. Further examination showed that there was a real increase of cholesterol content in the strawberry cases, being sometimes 120 times more than normal. That the cholesterol content may vary in different parts of the same gall bladder was shown by one case in which two-thirds of the gall bladder showed advanced inflammatory changes without there being any lipoid visible to the naked eye, while the remaining third showed a marked strawberry appearance though the inflammatory change was comparatively slight. Recent research and the anatomical arrangement of the mucosa point to the function of the gall bladder being one of absorption, and this receives further proof from investigations as to the effect of cholesterol feeding and cholecystectomy on the blood cholesterol in rabbits, it being found that the cholesterol in the bile is reabsorbed into the blood by means of this gall-bladder function.

443. Indications for Splenectomy.

M. CHIRAY (*Journ. de Méd. et de Chir. Prat.*, October 10th, 1922, p. 685), after an exhaustive study of the physiology, anatomy, and histology of the spleen, applies the ascertained facts to the question of splenectomy. With reference to experimental splenectomy, it is pointed out that the patients' power of resistance is not so great as that of laboratory animals, and that an unfortunate splenectomy may prove quickly fatal

from haemorrhage or some other cause. Splenectomy is, of course, indicated in splenomegaly resulting from solid or cystic tumours, or due to primary tuberculous infection (when diagnosed). Chiray considers that splenectomy is contra-indicated in all cases of splenomegaly with blood diseases apparently connected with a functional splenic derangement. Thus in all forms of splenic anaemia the author does not advise operation, and he is rather surprised that American surgeons practise it in these cases, even in infantile anaemias and in pernicious anaemia without splenic hypertrophy. In such cases the regular occurrence of disasters settles the question. The same absolute prohibition extends to myelogenous or lymphatic leucocythaemia, and to other diseases belonging to that group; also to Vaquez's disease, in which a deficient erythrolysis exists. Moreover, certain splenectomies have been followed by Vaquez's syndrome, which they appear to have provoked. Splenomegaly from hepatic cirrhosis does not appear to justify intervention. It is an effect, a secondary result of the liver disease, and not a cause. Furthermore, it develops in an area of operative danger. Splenectomy is an open question in certain infections, from the moment that the spleen ceases to be an organ of systemic defence to become a storehouse of infection. Obviously this eventuality will occur only late and rarely. The enthusiasm of Italian surgeons for splenectomy in malarial patients is not shared in France. It may be advisable in very chronic malaria, when the spleen is greatly enlarged, painful, but still mobile and the patient not very cachectic. There remains a group in which splenectomy is more specifically indicated, as removing an organ which has become the centre of a pathogenic process. The operative statistics in Banti's disease are, on the whole, brilliant. Operation may also be advisable in chronic hyperhaemolytic jaundice, and particularly in chronic splenomegalic jaundice. Here again operation arrests splenic hyperhaemolysis, the source of danger. It gives good results with a low operation mortality, but it must not be forgotten that this is a disease in which the prognosis is favourable, and the question must be asked whether it is always right, in these circumstances, to advise operation.

444. Influence of Thyroidectomy on the Heart in Graves's Disease.

STEINER (*Schweiz. med. Woch.*, August 31st, 1922, p. 872) has made a study of the heart in 80 cases one year after thyroidectomy, and he has come to the conclusion that the degree of respiratory distress is not, as a rule, proportional to the degree of compression of the trachea. He found some cases in which the trachea had not returned to its normal shape after the thyroidectomy, yet the respiratory disturbances had completely disappeared. It seems that the pressure exerted on the trachea causes respiratory distress independently of the degree of compression of the trachea. Tracheal stenosis had no influence on the hypertrophy of the heart, and, indeed, such hypertrophy was comparatively rare in association with marked compression of the trachea. In toxic disease of the thyroid hypertrophy of the heart was twice as common as in cases of goitre exerting a chiefly mechanical action. In about three-quarters of all the cases thyroidectomy was followed by a reduction of the heart to normal dimensions, and this process was most evident in cases of toxic goitre. The results of thyroidectomy were in other respects satisfactory, exophthalmos and tremor having invariably disappeared and nervousness having vanished or become slighter. Subjective heart symptoms and tachycardia had also disappeared or become less, and in most cases adventitious heart sounds had disappeared. The author's verdict is therefore emphatically in favour of thyroidectomy in selected cases.

445. Ulcer of the Stomach treated by Division of the Sympathetic Nerves.

R. PROUST (*Bull. et Mém. Soc. Chir. de Paris*, July 18th, 1922, p. 994) reports three cases of ulcer of the lesser curvature of the stomach treated by division of the sympathetic nerves. In two cases there was immediate relief of the pain, whilst in the third case the pain disappeared more slowly. In dividing the nerve fibres it may be found advisable to divide the coronary artery. Parmau and Dorcils have described a plexus of gastric nerve fibres sharply defined; this enables the nerves to be isolated and divided in a set operation. The author prefers a limited division of the nerve fibres rather than a massive resection of the vessels and nerves surrounding them. In the three recorded cases a gastro-enterostomy was also carried out; this may account for the good results, as it is difficult to differentiate the effect of the two procedures. In those cases resection of the ulcer was not possible, and the section of the nerves to the stomach led to great improvement in the patients' condition. It should be possible in the future to carry out the operation by dividing the nerves and leaving, so far as possible, the vessels intact.

OBSTETRICS AND GYNAECOLOGY.

446. Dublin Methods in Treatment of Eclampsia.

G. FITZGIBBON (*Brit. Journ. of Obstet. and Gynaecol.*, Autumn, 1922, p. 402), in a paper of which one of the objects is to emphasize the grouping of pregnancy albuminuria, hyperemesis, neuritis, accidental haemorrhage, and eclampsia as conditions of one and the same disease (toxaemia of pregnancy, with differing clinical pictures, of which albuminuria is the only universal symptom), describes the treatment carried out for toxaemia and eclampsia at the Rotunda Hospital in Dublin. The patient is kept in bed and given continued purgatives (3 oz. doses, two or three times daily, of mistura sennae co., with mag. sulph. 1 drachm to 1 oz.). Enemata are given at the beginning of the treatment if the bowels have not acted for some time. No food, but at least 6 pints of water are given daily; when the symptoms have abated and the urinary secretion is at least normal in amount, milk is added gradually to the diet. If the patient does not respond, or relapses, or if the foetus is dead, labour is induced; this, however, was only necessary in 5 of 40 cases, and then not before the eighth day of treatment. In cases characterized by much vomiting, this treatment is modified by withholding fluid by the mouth for from twenty-four to forty-eight hours and by giving frequent enemata, colonic lavage if the enemata are not effective, and subcutaneous infusions of sodium bicarbonate solution if the symptoms are severe; purgatives given orally can always be retained at the end of forty-eight hours. These lines of treatment are those adopted for pregnancy toxaemias, for pre-eclamptic states, and for eclampsia when the patient is sufficiently conscious to be able to drink. In a comatose eclamptic subject the stomach is washed out with sodium bicarbonate solution, of which about 15 oz., together with 4 oz. of mist. sennae co., are allowed to be retained. Through a long tube introduced per rectum into the colon (a procedure which is often difficult, and may take as long as two hours) irrigation with soapy water is carried out until the bowel contents appear in and then disappear from the washings; 8 or more gallons may be required. The irrigation is continued with sodium bicarbonate solution, and 2 pints are left in, with 4 oz. of mist. sennae co. This is repeated at five-hourly intervals until the patient is sufficiently conscious to drink, or until the bowels act spontaneously; the toxaemia treatment is then continued. If labour sets in it may be completed when the presenting part reaches the perineum; otherwise it is not interfered with, nor induced when not present. The comatose patient is kept on her side, is given large poultices to the loins in most cases, and may receive subcutaneous infusions of sodium bicarbonate. This treatment is substantially that introduced by Hastings Tweedy in 1905, modified by reduction of the amount of morphine given, which in the latest cases has frequently been *nil* and has not exceeded 1 2 grain. The twenty years' 214 consecutive eclamptic cases have shown the exceptionally low mortality of 8.87 per cent. BETHEL SOLOMONS (Ibid., p. 416) describes a similar treatment. He emphasizes the importance of careful watching in an adequately lighted room, by a skilled observer, of the comatose patient; mucus may be swabbed out from the throat from time to time, and the patient's head and shoulders made to hang over the side of the bed with the face down. He advises routine injection of sodium bicarbonate solution under the breasts in all but the mildest cases.

447. Frequency of Pulmonary Complications in Puerperal Sepsis.

J. HAGEMANN (*Deut. med. Woch.*, October 13th, 1922, p. 1376), in a review of the literature of puerperal sepsis, observes that most authorities touch on pulmonary complications very lightly, usually dismissing them with a casual reference to the possibilities of pulmonary thrombosis and embolism. This neglect of the pulmonary factor is the more astonishing as pulmonary disease is often the cause of death in puerperal sepsis. To obtain exact information on this subject the author has investigated the records of 209 fatal cases of puerperal sepsis occurring at the Rudolf Virchow Hospital in Berlin. Some of them were *post-partum* cases, but the majority were due to abortions. Necropsies were performed in 147 cases, and only in 35, or 23 per cent., were no morbid changes found in the lungs. Thus in 77 per cent. the lungs were involved. Of the 112 cases of pulmonary complications there were 24 of simple hyperaemia, which was presumably the first stage of a pneumonia. In 57 cases pneumonia and in 31 pulmonary abscesses were found. In 12 cases the lungs were perfectly healthy, although abscesses were found in the liver. As pulmonary complications occur in more than three-quarters of all cases of puerperal sepsis they deserve more attention than they have hitherto received.

448. Myomata and High Blood Pressure.

J. O. POLAK, E. A. MITTELL, and A. B. MCGRATH (*Amer. Journ. of Obstet. and Gynecol.*, September, 1922, p. 227) conclude, from examination of 416 patients suffering from uterine myoma, that there is no effect on the blood pressure which can be attributed to the presence of myomata in young women; those myomatous subjects who have high blood pressure are usually over 40 years old or show signs of renal or cardio-vascular disease. Patients who have suffered from excessive haemorrhages do not appear to have lower blood pressure than other myomatous patients. Although removal of the uterus and appendages of both sides is followed during a varying period by increase of blood pressure, the pre-operative pressure is rapidly regained unless some intercurrent morbid condition is present.

449. Aneurysm of the Uterine Vessels.

E. VÖGT (*Zentralbl. f. Gynäk.*, September 9th, 1922, p. 1469) records a case in which, five years after a war injury from a bomb splinter, a pulsating, compressible swelling, somewhat larger than a hen's egg, was found occupying the left antero-lateral portion of the vaginal vault. A loud murmur, more intense during systole, was audible over the common iliac and femoral arteries as well as the lower part of the abdominal aorta. Operation was indicated by reason of the danger of compression of the ureter, bladder, and pelvic nervous and vascular trunks, and by the danger of rupture of the aneurysm during pregnancy or labour. The excised preparation showed an arterio-venous aneurysm, of which the wall in the venous portion was thickened but not "arterialized."

450. Treatment of Eclampsia.

R. MCPHERSON (*Amer. Journ. of Obstet. and Gynecol.*, July, 1922, p. 50) has treated 104 cases of eclampsia according to the following plan: On admission to hospital the patient's blood pressure is measured, a catheter specimen of the urine is taken, and she is placed in a darkened and quiet room. One-half of a grain of morphine having been given subcutaneously, the stomach is washed out, 2 ounces of castor oil are poured down the tube, and subsequently the colon is irrigated with 5 gallons of 5 per cent. glucose solution. If the systolic blood pressure is greater than 175 mm. phlebotomy is done, a sufficient amount of blood being abstracted to reduce the pressure to 150 mm. It is unwise to bleed a patient whose blood pressure is less than 175 mm., for if for any reason a good deal of blood is lost during delivery the pressure may be so reduced that the patient may die from shock; the same objection applies to *ante-partum* injections of large doses of veratrum viride. The patient subsequently receives a dose of morphine (1/4 grain) every hour until the respirations drop to 8 a minute; at this time the convulsions have usually ceased, and the patient is generally in labour. Occasionally while one is waiting for the effect of the morphine it is necessary to control the convulsions by administration of ether. In almost all cases the patient is delivered spontaneously or by an easy low forceps operation. In the writer's series the maternal mortality (moribund cases included) was 16.3 per cent. and the foetal deaths were 25.4 per cent.—figures considerably less than those obtained after accouchement forcé or Caesarean section.

PATHOLOGY.

451. Familial Immunity to Diphtheria.

IN order to gain some idea as to the distribution of immunity to diphtheria amongst members of the same family, E. RIST and M. WEISS (*Ann. de Méd.*, November, 1922, p. 356) have carried out a series of Schick reactions on the members of 33 families, and have made a very careful analysis of the results obtained. Altogether 169 persons were tested, of whom 87 were under 15 years of age and 82 above this age. The percentage of positive reactions followed a regular curve, decreasing with advancing age; thus in children from 1 to 5 years it was 68 per cent., in children of 8 years it was about 50 per cent., while in adults it was only 24 per cent. The percentage of pseudo-reactions described a curve in the opposite direction, being 6.8 per cent. for children of 5 to 10 years, and 17.5 per cent. for adults; the curve was irregular for children under 5 years. Of 28 families containing two or more children the reaction was concordant between the brothers and sisters in 12—7 positive and 5 negative—while in the remaining 16 families the results disagreed. In this latter case it was generally found that the elder children gave a negative reaction, and the younger ones a positive reaction. No definite relation between the immunity of the mother and that of her children over 1 year of age could be established. The age at which the children ceased to give positive reactions varied considerably; in some families it became negative at the age of 5, while in others the transition had not occurred even at 29 years of age. In those families in which a child had suffered from diphtheria several years previously, the brothers and sisters who had witnessed the attack generally gave a negative reaction, while those children born subsequently were generally positive; curiously enough, the actual patient was more often positive than negative, indicating that an attack of diphtheria is not a sure method of acquiring immunity against it. It will be seen that these results are in agreement with the large amount of work which has been previously done on the subject.

452. Variations in the Coagulation Time during Pregnancy.

IN normal individuals the coagulation time of the blood has a constant value of approximately three minutes, with not more than half a minute's variation each way. P. EMILE-WEIL, BOCAGE, and ISCH-WALL (*C. R. Soc. de Biologie*, October 14th, 1922, p. 925) find, however, that in pregnancy there is considerable irregularity in this time; nearly always it is increased, variable, and subject to quite arrhythmical fluctuations. This change appears at the commencement of gestation, and continues till after delivery, and sometimes longer. It appears to be more marked in the case of women who have previously displayed haemorrhagic tendencies. It is interesting to note that this delay in coagulation has apparently no relation with the number of blood platelets, which are usually present in normal quantity. All the women studied showed slight anomalies in the actual process of clotting, such as sedimentation of the red cells with coagulation of the plasma, diminution in the retractility of the clot, or disintegration of the coagulum. All these changes the authors would refer to some degree of hepatic insufficiency, and conclude that pregnancy in urban women is no longer a physiological state as it should be. Experiments on guinea-pigs show that there is no difference in the coagulation time between males and females, or, in the latter, between gravid and non-gravid animals.

453. Eosinophilia in Muscular Rheumatism.

E. BANAUDI (*Il Policlinico*, Sez. Prat., October 9th, 1922, p. 1322) records the results of his researches in eosinophilia in 7 cases of muscular rheumatism, the distribution of which was as follows: neck muscles, lower limbs, shoulders and back, thoracic muscles, lumbar region, generalized. All other causes, such as dermatoses, helminthiasis, etc., could be excluded. The eosinophilia varied from 6 to 13 per cent. —a finding which agreed fairly closely with those of Bittorf and Staeckert. There was no increase in the lymphocytes, however, as found by Staeckert. On the other hand, there was a slight diminution in the neutrophil polymorphonuclears, as if the increase in the eosinophiles had taken place at their expense. The eosinophilia was found to be directly dependent upon muscular rheumatism, because it disappeared entirely as soon as the disease was cured. The degree of eosinophilia was in direct proportion to the severity of the disease, the eosinophilia being slight and transient in mild forms and as high as 13 per cent. in severe attacks.

454. Changes in the Amount of Cholesterin in the Blood in Cholelithiasis.

M. V. BABARCZY (*Klinische Wochenschrift*, September 9th, 1922, p. 1828) has estimated the amount of cholesterin in the blood in a number of affections, and gives the results of previous observers. (The estimations were made according to Bloor's method, but Hellige's colorimeter was used.) The conditions in cholelithiasis were chiefly studied. The percentage of cholesterin in the blood in this affection was found to be sometimes normal, sometimes diminished, sometimes increased. The author found, however, an increase in the percentage of cholesterin in the blood in all cases of cholelithiasis on the morning following an attack of gall-stone colic. This occurred both in cases with and without jaundice. In the colic and crises associated with other affections (nephrolithiasis, gastric crises, ulcer of the stomach, etc.) this increase of the percentage of cholesterin in the blood did not occur. The author thinks that the increase in the percentage of cholesterin in the blood directly after an attack of gall-stone colic is due to diminished excretion of cholesterin by the liver. From these observations Babarczy concludes: (1) that in cholelithiasis the amount of cholesterin in the blood is normal, in uncomplicated cases, between the attacks of gall-stone colic; (2) that the cholesterin in the blood increases directly after an attack of gall-stone colic—hypercholesterinaemia occurs, which continues about a week; (3) that this increase of the percentage of cholesterin in the blood is so constant that it is of value in the differential diagnosis of gall-stone colic from other affections producing somewhat similar symptoms.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

455. Sensitiveness to Non-bacterial Toxins and Proteins.

A. WHITFIELD (*Brit. Journ. Dermatol. and Syph.*, November, 1922, p. 331), in discussing the question of sensitiveness to non-bacterial toxins and proteins, considers that sensitiveness to external irritants should not be confused with the anaphylaxis of protein sensitization, because, while in the former first contact usually causes some reaction, and further contacts cause reactions varying in inverse proportion to the interval between them, and the sensitiveness is exalted rather than destroyed thereby, in the latter no disturbance results from first contact, and reactions follow further contacts only after a considerable interval, and the sensitiveness is destroyed by the reaction. That some patients react to the extravasation of blood into their tissues with the production of an erythematous eruption was shown by four cases in which erythemato-urticarial eruptions occurred on the tenth day after severe traumatic ecchymoses unaccompanied by any breach of surface, recovery taking place in a few days. Auto-sensitization of the patient's skin to the serum of his own blisters was shown in a case of acute bullous eczema in which the trickling of serum from the bullae produced, in rapid succession, an erythematous streak, or wheal, and finally a row of vesicles. No such effects occur in *Rhus toxicodendron* poisoning, thus supporting the contention that there is a difference in kind between plant sensitiveness and serum sensitiveness (anaphylaxis). Attention is called to the phenomenon observed in some cases associated with muscular rheumatism where a patchy eczematous eruption frequently occurs on the outer sides of the limbs, notably above the external malleolus and over the great trochanter and subcutaneous border of the ulna. If these patches are rubbed briskly erection of the hair follicles, followed by redness and swelling of the part owing to serous effusion, takes place, and shortly after the subsidence of this urticarial reaction itching may be complained of in various asymmetrical regions widely separated from the original site. While this may be due to absorption of bacteria or to a reflex nervous irritation, its possible etiology from absorption of exuded lymph producing a toxic urticaria is suggested. Two other cases are recorded—one in which an insect bite on the leg was followed fourteen days later by the development of a herpetiform group of vesicles at the site, and an acute vesicular eczema all over the face. The other case was one of severe hay fever, accompanied in each attack by marked pityriasis of the scalp and falling out of the hair; this patient was also a chronic dyspeptic in whom strawberries always produced indigestion and all the symptoms of hay fever.

456. Paroxysmal Tachycardia due to Digitalis and Strophanthus.

D. DANIÉLOPOLU (*Arch. des Mal. du Coeur, des Vaisseaux et du Sang*, August, 1922, p. 537) observes that the very complex action of digitalis and drugs belonging to the same group on the normal myocardium becomes still more difficult of comprehension in myocardial failure. While in one direction these drugs diminish automatism and conductivity, in another they increase excitability and contractility. Thus in some cases of cardiac failure digitalis relieves, while in others it aggravates, the condition. The author refers to recent researches by Cushny and others which show that in an advanced stage of digitalis poisoning the ventricle may begin to contract automatically, with an acceleration of auricular pulsations. Other observers have found that strophanthin produces an intense stimulation of the normal and heterotopic centres, characterized by tachycardia and extra-systolic arrhythmia, leading to ventricular fibrillation. Numerous clinical observations are cited, which show that digitalis and strophanthin may produce (in addition to "coupled rhythm") paroxysmal tachycardia. Details are given of two cases, women aged 30 and 25 years respectively, both having enormously dilated hearts following polyarticular rheumatism. In the first case large and repeated doses of digitalin (Nativelle) failed to relieve the condition. In the second case the same drug improved the myocardial action and promoted diuresis, followed, however, by vomiting; all drugs were stopped, and after forty-eight hours the rhythm became normal at 120, but a slight recurrence of acute polyarticular rheumatism was followed by "coupled rhythm" and paroxysmal tachycardia lasting three days. A third (fatal) case was that of a man, aged 88, suffering from chronic nephritis with much hypertrophy of the left side of the heart and dilatation of the right; transient improvement followed two intravenous injections of 0.25 mg. strophanthin daily for three days, followed by daily injections of the same amount. The dilatation then increased and digitalin was given, but the heart continued to enlarge and the pulse rose to 112; digitalin, strophanthin, and quinine were given alternately or in combination, and transient improvement occurred at intervals but was not maintained, and the patient died in six days. Daniélopolu concludes: (1) The chief phenomenon of myocardial failure is diminution of contractility accompanied by increase of excitability. In chronic dilatation where the myocardium is still capable of responding to cardiac tonics these substances act typically—they increase contractility, restore coronary nutrition, which itself lessens excitability. (2) In unrelieved dilatation, where contractility is seriously lessened, digitalis has no effect, as in the "eserinized" heart (Frölich and Pick) it lessens contractility. The vagus is often hyperexcitable in asystolic cases. If the myocardial excitability is not very great (this is rare) the vagotropic action of digitalis slows the pulse rate (direct negative chronotropic action of digitalis). This is P. Merklen's dissociated action, where the aggravation of myocardial failure is not due solely to lengthening of diastole but above all to its negative inotropic action. Then, almost always, myocardial hyperexcitability is greatly increased. Negative chronotropic action does not follow, for it cannot overcome the greatly increased myocardial hyperexcitability. By its negative inotropic action digitalis lessens contractility, while, either directly or indirectly, it increases excitability, producing either normotropic or heterotropic tachycardia or pulsus bigeminus. This is the "inverse action" of digitalis, the commonest of its typical effects. (3) Dissociated or inverse effects are rarer with strophanthus than with digitalis; when they appear after administration of strophanthus in the ultimate phases of cardiac failure we may consider the patient doomed.

457. Infections of the Gastro-intestinal Tract.

G. R. SATTERLEE, J. W. DRAPER, and H. A. COTTON (*Amer. Journ. Med. Sci.*, September, 1922, p. 313) discuss respectively the medical, surgical, and neurological aspects of infection of the gastro-intestinal tract. The *medical* treatment (G. R. SATTERLEE) of chronic intestinal toxaemia consists of diet, massage, hydrotherapy, and vaccines or serum, and the removal of all obvious foci in the mouth, rectum, or elsewhere is essential to prevent the resulting toxaemia becoming generalized and causing a lowering of resistance. From the experience of over 500 cases treated by autogenous colon vaccines, it appears that the colon bacillus is the primary cause of the lowered resistance, and that the streptococcal and other bacterial infections are secondary. The chief foci of infection are found in the tonsils, teeth, in abscesses and necrosis of the jaw, and in the nasal sinuses, rectum, seminal vesicles, and cervix uteri, and thorough investigation, followed by efficient treatment, is essential to success. From the *surgical* point of view (J. W. DRAPER, with pathological report by J. EWING) colon pathology in its relation to the etiology of systemic disorders requires further investigation, since there is not enough evidence as yet available to prove that any particular group of mental symptoms can with certainty be attributed thereto, and the extirpation of considerable portions of the ileum is unwarranted if based solely upon anatomical conditions. In all functional psychoses extensive colon pathology exists in 20 per cent. of the cases, and mental symptoms have been arrested or improved by operation in a large percentage, though colectomy is contraindicated until the patient has had all other foci removed and has been treated with vaccines and serums. The mortality from the operation was found to be 12 per cent. in 77 consecutive cases. From the *neurological* standpoint (H. A. COTTON) the special relation of the clinical symptoms of functional psychoses to regional distribution of focal infection is emphasized, the source and type of chronic infection in the psychotic patient being the same as that found in many of the systemic disorders. Infection of the teeth is the most constant focus, and the removal of all infected teeth and tonsils is imperative before treatment with autogenous vaccines and serums is commenced. The type, specificity, and severity of the infection, together with

any constitutional lack of resistance, are the factors determining whether or not a psychosis will develop, heredity and psychogeneses rather precipitating than actually causing its occurrence.

458. **Filix Mas Jaundice.**

O. HANSSEN (*Medicinsk Revue*, July-August, 1922, p. 304) considers that the use of filix mas as an anthelmintic is so dangerous that it ought not to be sold without a prescription. In doses of 20 grams it not infrequently causes toxic jaundice, and even in doses of 10 grams the author has found it to give rise to bilirubinaemia. Indeed, only in one out of twenty cases treated with the extract of male fern could bilirubinaemia not be demonstrated. Occasionally jaundice of the sclerae and skin was also observed, but the faeces were never discoloured. This jaundice has been regarded as haemolytic, but the author has never been able to find signs of blood destruction; the percentage of haemoglobin and the number of red cells is increased rather than diminished after the exhibition of male fern, the increase being due to the concentration of the blood caused by diarrhoea. Though no permanent ill effects were observed, larger doses are apt to cause acute yellow atrophy of the liver, as shown by Sternberg and Grawitz, and even in the slight cases of bilirubinaemia it is probable that the extract of the male fern has injured the parenchyma of the liver. The difference between the condition underlying this slight bilirubinaemia and acute yellow atrophy of the liver is only a matter of degree.

459. **Significance of Chronic Jaundice.**

S. LAACHE (*Norsk Mag. f. Laegevidenskaben*, October, 1922, p. 745) has made a study of chronic non-haemolytic jaundice in 16 men and 15 women between the ages of 19 and 76. Most of them were middle-aged or elderly; 19 came to necropsy and 3 others to biopsy (operation). In as many as 14 of these 22 cases cancer was diagnosed. The importance of gall stones as a cause of chronic jaundice proved to be comparatively slight, and they were found only in 7 cases, in 3 of which they were associated with malignant disease. As in these 3 cases the gall stones may have developed as the result of the cancer, the importance of cancer as compared with gall stones in the genesis of chronic jaundice is seen to be very great. Cirrhosis of the liver was found in two cases, the disease probably being syphilitic in one of these cases. A remarkable feature of the other case of cirrhosis was the definite improvement that followed the exploratory laparotomy at which the diagnosis was made; this improvement was, however, not maintained. This material shows how essential it is to arrive at an exact diagnosis before treatment is attempted.

460. **Sedatives and Hypnotics in Diseases of Children.**

E. ROMINGER (*Klinische Wochenschrift*, September 23rd, 1922, p. 1949) discusses the importance of sedatives and hypnotics in the treatment of certain diseases of children. Drugs should be avoided which are liable to produce cumulative effects, and also those liable to act injuriously on the respiratory and circulatory centres in the medulla. Many hypnotics suitable for adults are unsuitable for children. Chloral hydrate is a powerful hypnotic. It may be given by the rectum, but risk of toxic action must be kept in mind; it is especially dangerous in marasmic and badly nourished children. Paraldehyde and amylen hydrate are uncertain and not free from risk, and may produce, in older children, symptoms resembling alcoholic intoxication. Urethan is uncertain in its action and liable to cause toxic symptoms; but hedonal is a very useful drug, and almost free from bad effects (dose in infants 0.5 to 1 gram in 20 to 40 c.cm. of mucilage by rectum). Sulphonal and trional are unsuitable owing to cumulative action. Veronal and medinal have also a cumulative action, and sometimes produce toxic and cutaneous symptoms. Luminal is a motor sedative, used with good results in epilepsy in adults, but cumulative action and injurious influence on the respiratory centre are objections. Sodium luminal is the most satisfactory preparation; it is useful in the convulsions of infants and in epilepsy, but as a hypnotic is uncertain. As a general rule morphine should not be given to children. Opium and pantopon are less dangerous when relief of pain is desirable. Great caution as to the dose is necessary. It is estimated that three-quarters of the cases of poisoning by morphine and opium occur in children under 5 years of age. Certain antipyretics have a sedative action on the nervous symptoms and act as hypnotics—antipyrin, pyramidon, phenacetin, and lactophenin. Caution is necessary in deciding the dose of antipyrin and phenacetin, but with pyramidon and lactophenin the risk is less. Bromural and adalin are useful as sedatives in cases of disturbance of sleep through motor unrest. Adalin is the more powerful. Bromides and valerian tea may lead to sleep by diminishing motor unrest.

SURGERY.

461. **Palliative Trephining for Pressure on the Brain.**

ANSCHÜTZ (*Deut. med. Woch.*, October 20th, 1922, p. 1406) reviews the results achieved in the 50 cases in which he trephined for the relief of pressure symptoms. He admits that the diagnosis of cerebral tumour is far from easy, and in one of his cases, in which cerebellar trephining was performed for the relief of pressure (cerebro-spinal fluid under a pressure of 700 mm.) and for severe congestion papillitis, the necropsy failed to show any pathological change in the brain. The author classifies his material according to the height of the pressure of the cerebro-spinal fluid: in 7 cases it was up to 300 mm., and at the other extreme there were 7 cases in which it was over 600 mm. The latter class represented hopeless cases. Among the remaining 43 cases there were 6 deaths, one from meningitis. In addition to these 6 operative fatalities and 6 cases which could not be traced, there were 10 cases in which the operation gave relief, but death occurred within a year. The author concludes that, though palliative trephining is almost invariably useless when high pressure and coma have lasted some time, it may be strikingly successful in averting blindness and prolonging life when the symptoms are due to slowly growing malignant disease. The results are still better when new growths are of a stationary character, and the author records the case of a man suffering from a glioma the size of a plum in the optic thalamus and a malignant adenoma of the pituitary body. Palliative trephining not only reduced the intracerebral pressure, but restored his eyesight and general working capacity, and it was not till nearly eleven years after the operation that he died from influenzal pneumonia, and the diagnosis of tumour of the brain was confirmed. The author's technique is practically identical with that followed by Cushing for subtemporal trephining.

462. **Traumatic Hydronephrosis.**

A. STRÄULI (*Schweiz. med. Woch.*, October 12th and 19th, 1922, pp. 997 and 1033) records in detail the case of a man, aged 25, whose hydronephrosis was traced to a fall on his back. The author's discussion of the accident insurance aspect of such cases shows how difficult it is to trace the genesis of a hydronephrosis to an accident, and though about 50 cases of traumatic hydronephrosis have been recorded, all do not bear close scrutiny. In distinguishing between traumatic and non-traumatic hydronephrosis the three following points should be considered: (1) absence or presence of renal symptoms before the accident; (2) absence or presence of other causes of hydronephrosis, such as congenital anomalies of the urinary system, disease of the uterine appendages, chronic perityphlitis and peritonitis, tumours of the abdomen and bladder, and gonorrhoeal stricture of the urethra; (3) proof that the accident directly affected the kidney or led to changes which could be regarded as responsible for obstruction to the flow of urine.

463. **Essential Haematuria.**

ACCORDING to C. P. VAN NES (*Nederl. Tijdschr. v. Geneesk.*, August 26th, 1922, p. 919), in addition to the ordinary causes of renal haemorrhage (such as tuberculosis, stone or tumour, and acute nephritis), general or local renal congestion (so-called renal varix) may be responsible for haematuria. Chronic nephritis or acute glomerulo-nephritis may be the cause of the bleeding. Haemorrhage from the kidney without any anatomical lesion, or so-called essential haematuria, if it occurs at all, is very rare. The diagnosis of haemorrhage from a healthy kidney can even be made clinically, but is only possible after careful naked-eye and microscopical examination of the kidney in question. Unilateral haemorrhagic nephritis has been repeatedly observed, although the absolute proof, consisting of comparative examination of both kidneys, is still wanting. Nephrectomy in these cases is only indicated in the event of dangerous haemorrhage. Nephrotomy or removal of portion of the kidney for examination is, according to the literature, a good operation, since it is only by this means that other causes can be excluded, and the operation may have a favourable effect upon the haemorrhage.

464. **Hypernephroma.**

JEAN DE SMETH (*Le Scalpel*, October 7th, 1922, p. 957) points out that there are two varieties of epithelial tumour corresponding in structure to the suprarenal: (1) the benign hypernephroma or adenoma, which does not differ from other adenomata, often very small and under the capsule; (2) the malignant hypernephroma, the type more usually met with, a nodular tumour of yellowish or red colour, perhaps soft, or it may be hard in places; this often lies at the upper pole of the kidney or surrounds the organ. These tumours, sometimes called after Grawitz, are found in young subjects

and in either sex, frequently at the upper pole of the kidney. Israel finds that a rise of temperature is present more often with this than with other renal growths. The predominant symptoms are swelling, haematuria, and pain; a diagnosis, however, may be impossible without a microscopical examination or perhaps before metastases are found. Analysis of the urine in the absence of haematuria gives no indication. The weakness of the patient, sometimes cachexia, may give evidence of a malignant tumour. Bimanual palpation shows the size of the growth, or perhaps radiography will give a picture of the tumour without the necessity of pneumoperitoneum. The author, after describing four cases, draws attention to the frequency of hypernephroma and the means of approach for renal tumours. He advises the incision of Grégoire, which allows good exposure of the kidney and ureter, and enables the glands to be removed along with the kidney.

165. X-Ray Treatment of Cancer of the Breast.

S. NORDENTOFT (*Ugeskrift for Laeger*, October 5th, 1922, p. 1300) publishes the results of *x*-ray treatment of 42 cases of cancer of the breast under his care in the period 1915–19. Of operable cases not operated on or treated by such a limited operation as excision of the tumour without amputation of the breast, there were 8 cases, 7 of which were still alive at least three years after treatment. Of 11 inoperable cases treated by the *x* rays alone all were dead. Of the 23 cases of recurrence following operative treatment all but two were dead. The author admits that these figures are discouraging, but by themselves they are misleading. It must be remembered that the number of cases of cancer of the breast which five years ago were given *x*-ray treatment which can be regarded as adequate according to modern standards is exceedingly small. It is obviously unfair to judge of the present efficacy of *x*-ray treatment by the results obtained with the methods employed several years ago. The present statistics would therefore hardly be worth publishing were it not for the encouraging results obtained among the operable cases. The author deplores the tendency to dilettantism exhibited by practitioners who imagine that to provide themselves with an *x*-ray outfit is the most essential move towards becoming an *x*-ray specialist. To stress this point the author refers to a series of *x*-ray disasters and to cases in which the *x*-ray dosage was absurdly small, and he looks forward to the time when *x*-ray treatment may be forbidden everyone but the fully qualified radiologist. Till then the dilettante radiologist will not only directly injure his patients, but will degrade the good name of a procedure possessed of great and growing possibilities.

466. Naso-pharyngeal Lesions in Children Predisposed to Tubercle.

CIOPPA (*Rif. Med.*, September 4th, 1922, p. 844) has compared the results of examining 100 children detained on account of a predisposition to tuberculosis and a series of normal children. The figures show a marked preponderance of naso-pharyngeal trouble in the former children. Pharyngeal catarrh was present in 68 per cent. of the children with tuberculous predisposition as against 36 per cent. in other children, enlarged tonsils in 54 per cent. against 20 per cent., adenoids 51 per cent. against 18 per cent., incipient middle-ear trouble 62 per cent. against 38 per cent. The membrana tympani was apparently normal in 25 per cent. of the first group as against 54 per cent. in the second, the nasal passages in 23 per cent. against 80 per cent., and the throat in 9 per cent. against 48 per cent. Since tuberculosis may be encouraged by an unhealthy condition of the nasopharynx it is important that any defects observed, especially in children who may be suspected of a tuberculous predisposition, should be treated.

467. Treatment of Tendo-vaginitis with Carrel's Method.

G. VIDFELT (*Acta Chirurgica Scandinavica*, October 11th, 1922, p. 242) has systematically used Carrel's irrigation method for the treatment of acute septic tendo-vaginitis at the Sabbatsberg Hospital in Sweden, and his report deals with 43 cases of acute tendo-vaginitis, 13 of which were complicated by carpal bursitis. Immediately after free opening of the tendon sheath and the insertion of rubber tubes, hourly irrigation with Dakin's solution was instituted and kept up day and night. To relieve the pain 1 gram of acetyl-salicylic acid was given from three to five times a day. The drug seemed to have a favourable effect on the septic process as well as relieving the pain caused by the irrigations. In 31 cases the tendons were entirely preserved, and in 12 there was partial or complete necrosis of the tendons. With regard to the wisdom of preserving the ligamentum carpi volare, the author has come to the conclusion that its preservation involves definite risks of injury from pressure on the neighbouring structures. In one case, in which he deferred division of this ligament, gangrene of the median nerve occurred. Free division of this ligament does not, as might be expected, entail prolapse of the tendons in the volar channel or necrosis of the motor nerve supply of the muscles of the thumb.

OBSTETRICS AND GYNAECOLOGY.

468. Glycosuria in Pregnancy.

ACCORDING to A. W. BAUER (*Zentralbl. f. Gynäk.*, September 2nd, 1922, p. 1413), pregnancy produces no alteration in the blood sugar content of about 0.08 per cent. This percentage is increased after ingestion of carbohydrates, but the amount and duration of the increase are similar whether the genital organs are normal or diseased, and whether the uterus is or is not gravid. In both the pregnant and non-pregnant states the blood sugar is similarly augmented after subcutaneous injection of 0.5 to 1 c.c.m. of adrenaline. The frequency of spontaneous glycosuria in pregnancy—given by Reichenstein as 11 per cent.—was found by the writer to be less than 1 per cent. Conflicting reports have been given of the significance of glycosuria after carbohydrate ingestion as a diagnostic indication of early pregnancy; Frank and Nothmann found it in 100 and other observers in 50 per cent. of cases. Guggisberg found adrenaline glycosuria in 85 per cent. of pregnant subjects. The hyperglycaemia and glycosuria appear to take independent rather than parallel courses. In the clinical use of these tests Bauer believes that it is essential that the patient should be in bed, and fasting. In all of 170 women who were in the first three months of pregnancy he found after oral administration of 100 grams of grape sugar the glycosuria occurred without conspicuous increase in the blood sugar; the findings were similar in two-thirds of those pregnant after the third month. For the test to be reliable, blood sugar estimation is necessary in addition to examination of the urine, for in a good proportion of healthy non-pregnant subjects, and also of patients with deranged thyroid function, latent diabetes, or neurasthenia, glycosuria follows the taking of 10 grams of sugar, but is accompanied by well-marked increase of the blood sugar content. Probably the excessive renal permeability to sugar during pregnancy is due to diminished ovarian function at that time. On these lines can be explained the finding that glycosuria, unaccompanied by notable hyperglycaemia, follows carbohydrate ingestion not only during pregnancy but also in the presence of adnexal tumours and inflammations. It is of practical importance that a negative test points much more strongly to the absence of early gestation than does a positive test to the presence of pregnancy. The test is positive in extrauterine pregnancy, but for the reasons given above is of no use in differential diagnosis from adnexal disease.

469. G. PUSINICH (*Rivista d'Ostetricia e Ginecologia Pratica*, August, 1922, p. 444) found that 26 women in the first five months of pregnancy exhibited glycosuria 20 to 180 minutes after intramuscular injection of 2.5 mg. of phloridzin. The test was positive in 50 per cent. of cases during the last four months of pregnancy, in 15 per cent. of puerperal subjects, and in 10 per cent. of women apart from pregnancy. No figures are given regarding the findings in those suffering from adnexal abnormalities, but it is concluded that the absence of phloridzin glycosuria, elicited as is explained, may be taken as excluding the possibility of a gestation in the earlier months.

470. Syphilis during Pregnancy.

H. BOAS and S. A. GAMMELTOFT (*Acta Gynecologica Scandinavica*, 1922, vol. i, fasc. 3, p. 309) publish their conclusions concerning the incidence, treatment, and prognosis of syphilis during pregnancy, as derived from ten years' experience at the Rigshospital in Copenhagen, where the percentage of syphilitics has been found to have increased from 3.7 per cent. in 1912 to 7.7 per cent. in 1921, among 1,300 to 1,900 patients annually admitted, from the fifth or sixth month of pregnancy onwards. The authors' main deduction is that it is of paramount importance, if a living and healthy child is to be born, that apart from the history with regard to previous anti-syphilitic medication, and apart from the result of the Wassermann test, treatment of the mother by salvarsan or one of its derivatives should be instituted during pregnancy. The figures published are of more than usual significance, in that almost 70 per cent. of the mothers and children have been traced during a period of at least six months (frequently much longer) after birth. Of 158 syphilitic mothers who had never received treatment, one only gave birth to a healthy child; of the remaining 157, 70 only gave birth to living children. Of these 70 children, 28 appeared healthy at birth, but gave a positive Wassermann reaction; and 26 others,

although at birth apparently healthy, with negative Wassermann reaction, showed signs of syphilis during the first four months of life. The larger proportions of apparently healthy children of syphilitic mothers which are given in other reports are ascribed to inferior opportunities of "following up." In mothers who had not received treatment during pregnancy but had previously been given mercury or salvarsan, only 12 per cent. gave birth to healthy infants; but 31 out of 111 mothers receiving mercurial treatment, and 60 out of 79 receiving salvarsan treatment—given in each case during pregnancy—had healthy children. Roughly, one-third of these patients suffered at the commencement of treatment from secondary syphilis and two-thirds from latent syphilis. The conclusion is drawn that in the absence of signs of impairment or inadequacy of renal function every syphilitic pregnant subject should receive treatment, during pregnancy, by salvarsan or a derivative of that drug, combined—if the diagnosis is made sufficiently early during pregnancy—with courses of inunctions of mercury. In not a few instances a patient who had received adequate combined treatment gave birth after subsequent pregnancy to a syphilitic infant; but after a still later pregnancy, during which salvarsan had been administered, a healthy child was born. That the Wassermann test in the maternal blood may be negative does not alter the fact that in the absence of antisyphilitic medication pregnancy will probably terminate in the issue of a congenitally infected infant. The percentage of syphilitic children born is equally large whether the maternal infection be of recent date or of ten to twenty years' standing. The Wassermann test in the maternal blood at the time of labour is of prognostic significance if antisyphilitic treatment has not just been concluded; 7 healthy children were born to 267 mothers giving a positive reaction at term, but 80 to 104 giving a negative reaction.

471. Pregnancy after X-Radiation of the Ovaries.

G. LINZENMEIER (*Zentralbl. f. Gynäk.*, September 30th, 1922, p. 1560) has traced in the literature eight cases, and adds notes of two personal cases, in which after application of small doses of *x* rays to the ovaries, for therapeutic purposes, pregnancy has followed. In none of these cases did the child show malformation or nutritional disturbance, although injuries of the foetus appear to have followed similar treatment given during the early months of an unrecognized gestation, and in animal experiments malformations have resulted from radiation of early ova. The two cases recorded by Linzenmeier are regarded as suggesting that in certain cases *x*-ray treatment in small doses may be of benefit in sterility. The first patient, who had a uterine myoma, bore a living and healthy infant twelve months after radiation for menorrhagia and dysmenorrhoea; the second, who was treated for severe menorrhagia and metrorrhagia, conceived nine months later, and shortly after birth at term of a normal child again became pregnant. The menstrual disorders in both cases were ascribed to abnormally increased ovarian activity, probably in the follicles; it is only in those cases of sterility which may have a similar causation that benefit is to be expected from *x*-ray therapy.

PATHOLOGY.

472. The Catalytic Activity of the Tissues.

J. THOMAS (*Les Néoplasmes*, September-October, 1922, p. 145) defines catalytic ferments or "catalases" as ferments possessing the property of decomposing oxygenated water. All the tissues and fluids of the body possess similar properties in varying degree. Certain authors have thought that they could observe differences between the catalytic activity of the tissues and fluids among normal subjects and those suffering from cancer. Thomas has therefore studied the physiological and pathological variations in non-cancerous and cancerous patients. He quotes Winternitz and Meloy's statement that age does not appear to have any influence on the catalytic activity of human tissues and reviews the observations of numerous authors who have tested the catalytic activity of human and animal tissues and secretions. It has been found that renal tissue has a greater catalytic power than that of the lung, liver, or spleen, or of the blood. Thomas's investigations lead him to the following conclusions: The tissue and blood content of catalytic ferments varies normally, not only in one animal species compared with another and among individuals of the same species, but even in the same subject according to physiological conditions (sleep or wakefulness, rest or fatigue, hunger or digestion). Probably there is a physiological catalytic activity analogous to physiological leucocytosis. Experimentally, destruction of certain organs (liver or kidney parenchyma) appears to have no influence on the catalytic content. A patient suffering from neoplasm of either of these organs may have normal catalytic power. Conversely, destruction of the thyroid, testis, or ovary produces diminution of that power.

473. Comparative Value of Sachs-Georgi and Wassermann Reactions in the Diagnosis of Syphilis.

R. A. KILDUFFE (*Amer. Journ. Med. Sci.*, October, 1922, p. 523) refers to his former communication on results of these tests in 295 serums, when he stated that "a diagnosis of syphilis or conclusions as to treatment cannot be based upon the results of a Sachs-Georgi test with safety, and the reaction is not suitable for general use for this purpose." Since that date (April, 1921) a number of reports have appeared in foreign and American literature. The former are uniformly favourable, while the latter in the main confirm the usefulness of the test. Kilduffe then describes his technique for both tests, and gives six tables illustrative of his results. The results of 430 parallel tests are reported and co-ordinated with his previous series of 290 tests. His conclusions are as follows: (1) the Sachs-Georgi test is often difficult to read; (2) the reaction is neither as delicate nor as trustworthy as the Wassermann test; (3) the Sachs-Georgi test may be positive with Wassermann-negative serums and negative with Wassermann-positive serums in a relatively high percentage of cases; (4) the number of non-specific reactions is sufficiently high to render the test unreliable as a means of diagnosis; (5) a diagnosis of syphilis, or conclusion as to results of treatment, cannot be based upon the results of a Sachs-Georgi reaction with safety, and the reaction does not seem suitable for general use for this purpose.

474. A New Method of Isolation of the Tubercle Bacillus from the Sputum.

E. BOSSAN and M. BAUDY (*C. R. Soc. de Biologie*, October 21st, 1922, p. 954) propose the following procedure for the cultivation of the tubercle bacillus from sputum. On reception at the laboratory the sputum is placed in a sterile 10 per cent. solution of pure sulphuric acid in distilled water. The mixture is shaken frequently over a period of ten minutes. At the end of this time the sputum will either be completely homogeneous or it will be broken up into particles of greater or less size. In the former case a platinum loop is plunged into the thickest portion of the liquid and seeded directly on to tubes containing 4 per cent. glycerin potato medium; in the latter case a particle of the still solid material is used for the same purpose. The inoculum is well rubbed into the surface of the potato, which is then gently covered two or three times with the bouillon in the tube. After being fitted with rubber caps the tubes are incubated at 38° C. The authors have treated fifteen specimens of sputum in which tubercle bacilli were detectable microscopically by this method, and have obtained pure cultures in thirteen of them. Many of the sputa were badly contaminated, but in only a few instances did the cultures show evidence of impurity. How valuable this method may be it is difficult to conjecture; it is noticeable that all the sputa used contained large numbers of tubercle bacilli; whether it will be successful when these organisms cannot be demonstrated by any method of microscopical examination is somewhat doubtful.

475. The Schick Reaction in an Epidemic of Diphtheria.

ON the occasion of a small epidemic of diphtheria in two primary schools in the town of Algiers, E. SERGENT, M. BÉGUET, L. PARROT, G. LEMAIRE, and H. VÉRITÉ (*Arch. des Inst. Pasteur de l'Afrique du Nord*, 1922, No. 3, p. 349) made an investigation of the number of carriers amongst the scholars, and at the same time tested their susceptibility by means of the Schick reaction. Of 101 children, consisting of boys and girls varying between the ages of 6 and 15 years, there were 9 who were carriers of an organism morphologically and culturally indistinguishable from *B. diphtheriae*. The Schick reaction was performed by injecting unheated toxin on the left forearm, and controlled by the same toxin heated to 75° C. on the right forearm. Results were read on the second, third, eighth, and twelfth days. Of 101 children tested 29 gave positive reactions. Of the 9 positive carriers 4 were positive to the Schick test, while 5 were negative. In addition to the simple positive, simple negative, and pseudo-reactions usually obtained, they observed in 21 of the subjects a peculiar type of response which they name the paradoxical reaction. It consists of a definite reaction on the control arm (right arm) with little or none on the left arm. They consider it in the light of a protein reaction, and explain its greater intensity and duration on the right side by the effect of heat on the control toxin. In the same journal J. CIAVALDINI (p. 355) describes the performance of the Schick test on 45 children of 6 to 14 years of age. Of 11 Europeans 7 were positive, of 34 natives 12 were positive. He concludes that the natives show less susceptibility to diphtheria than Europeans.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

376. Arterio-sclerosis in Children.

GEOFFREY EVANS (*Quart. Journ. of Med.*, October, 1922, p. 33) confirms Poynton's statement that arterio-sclerosis in children and adults is identical. He publishes four cases, which not only confirm the previous observations of others, but go farther in exhibiting the identity of a particular type of arterial lesion—diffuse hyperplastic sclerosis in children and adults. This identity is confirmed in detail in the type of arterial lesion, its vascular distribution, its incidence in several organs, and association with a raised blood pressure and left ventricular hypertrophy. Arterio-sclerosis is not uncommon in children; it may result from acute infection, from syphilis, and in the course of renal disease; future observations may determine whether this particular type of arterio-sclerosis occurs in syphilis or in acute infections apart from kidney disease. Possibly by the definition of diffuse hyperplastic sclerosis in children, the association of arterio-sclerosis with chronic nephritis may be explained. The present observations throw no new light on this association. The endothelial proliferation in the arterioles now demonstrated for the first time indicates active inflammation. Further, the active inflammatory changes in the kidneys in all four cases, particularly the epithelial proliferation in Bowman's capsule, indicate a primary disease of the renal parenchyma. Such proliferation would not result from interruption of the glomerular blood supply; it indicates that the renal lesion is primary and not secondary to vascular disease. At present the simplest interpretation is that the vascular and renal lesions are both produced by a single pathogenic agent. Another possibility is that renal disease indirectly causes arterial disease through toxaemia resulting from renal inefficiency. The author cites a remarkable case of Hale-White's (*Guy's Hospital Reports*, lv, 17): a boy, aged 6 months, in whom extensive arterio-sclerosis was associated with bilateral hydronephrosis and extreme renal cirrhosis due to phimosis; in this case it was thought that syphilis was the primary cause and that the kidney disease was contributory. In Evans's four cases there was no evidence of syphilis. Chronic nephritis of this type in children is generally considered non-syphilitic. The author made the autopsies in all four cases, and the records (from dates of admission) are very full. The first three cases belong to the type of chronic nephritis in children termed "renal infantilism"; the fourth case differed in some respects, but the renal and cardio-vascular changes justify its inclusion with the others. All exhibited marked cardiac hypertrophy and very high blood pressure. Evans concludes that (1) diffuse hyperplastic sclerosis is identical in children and adults, and (2) its association with chronic nephritis in children is more significant than in adults because many causes of arterio-sclerosis are excluded in children by reason of their age.

377. Treatment of Typhoid Fever.

P.-E. MICHELEAU (*Gaz. hebd. des Sci. méd. de Bordeaux*, October 22nd, 1922, p. 506), as the result of twenty years' experience, is inclined to agree with Huchard, who used to say that in typhoid fever the patient was exposed to two dangers—the disease and the treatment—and that the former was not always the more dangerous. He relates two cases which nearly died of collapse as the result of treatment by pyramidon, but were saved by stopping this treatment and substituting a warm bath, which acted as a cardiac tonic. Another patient suffered from post-typhoid asthenia for several months as the result of too energetic treatment. During the day there was barely half an hour in which he did not have some injection, an enema, or a bath; and it was only during the night that he had a few hours' uninterrupted rest. Micheleau's method of treatment is as follows: Patients are allowed to drink as much water as they can in the form of vegetable soup, weak tea or coffee to which a little alcohol is sometimes added, and lemonade made of citric or tartaric acid. Milk is forbidden, as it tends to coat the tongue and favours intestinal fermentation. The bowel is cleared out morning and evening with an enema of boiled water containing one or two tablespoonfuls of glycerin, and three or four cachets, each containing 0.30 cg. quinine sulphate and benzonaphthol. Cold baths are not given except in special circumstances. From time to time an injection of camphor oil or a few centigrams of adrenaline, caffeine, or spartein are given as required.

378. The Circulatory System in Tuberculosis.

LIVIERATO (*Rif. Med.*, September 18th, 1922, p. 889) says that tuberculosis may affect the circulatory system in four ways, causing—(1) morphological alteration, (2) trophic changes, (3) functional changes, (4) changes due to localized infections of the vascular organs. The morphological changes constitute the so-called "phthisical habit," comprising dwarfism of the heart and hypoplasia of the aorta and vessels. There is, he declares, no special habit predisposing to phthisis, although it is true certain people contract phthisis more readily than others; the habit, if present, is more often a result than a cause of phthisis; a syphilitic "habit" is not regarded as constituting a predisposition to syphilis. The acquired morphological changes of the heart are the result of profound disturbances of nutrition. Nutritive changes include fatty degeneration of the heart and arterio-sclerosis. The functional disturbances include dilatation of the heart (especially the right ventricle), palpitation, especially after the evening meal, tachycardia (which, when persistent, is often due to pressure on the vagus); bradycardia is more common in mild cases. Low blood pressure is common, and is probably due to an endocrinic want of equilibrium. High blood pressure may precede haemoptysis. The localized infections comprise tuberculous pericarditis (often latent), myocarditis, endocarditis, obliterative arteritis, phlebitis. Lastly, tubercle bacilli may be found in the circulating blood.

379. Late Effects of Injuries to the Nervous System.

V. CHRISTIANSEN (*Ugeskrift for Laeger*, October 26th, 1922, p. 1444) deplores the fact that the Danish Workmen's Compensation Act is worded so that every compensation claim must be settled within three years of the accident. During the author's conduct of the Neurological Polyclinic of the Rigshospital in Copenhagen in the past nine years he has seen at least 50 cases in which the symptoms first developed ten to thirty years after an accident. Most of the cases, of which he gives full records, were not complicated by compensation claims, and it was therefore possible to obtain unbiased evidence as to the relation of the accident to the injury. In one case of late traumatic apoplexy, with symptoms of haemorrhage into the oculo-motor nuclei, the combination of drowsiness and coma with paralyses of the muscles of the eyes led to the mistaken diagnosis of lethargic encephalitis. To enforce his suggestion that the three-year limit of the Workmen's Compensation Act is arbitrary, unfair, and too short, the author points out that in some cases improvement occurs after this interval, and the compensation awarded is, accordingly, too high. Although he records many cases he has not found it necessary to draw on that large class represented by tabes, disseminated or combined sclerosis, syringomyelia, dementia paralytica, or amyotrophic lateral sclerosis. He notes that while late haemorrhages into the brain long after an accident are now generally recognized little is known as to the late traumatic genesis of haemorrhages into the spinal cord. He is, however, convinced that such haemorrhages do occur, and he has seen several cases in which the interval between injury to the cord and haemorrhage into it was long.

380. Mental Disorders in Epidemic Encephalitis.

ACCORDING to A. BARBÉ (*Paris méd.*, October 21st, 1922, p. 349), the mental disturbances following epidemic encephalitis are usually manifested at first by symptoms of confusion, obsessions of guilt and unworthiness, sometimes followed by a period of confusion with stupor, necessitating confinement in an asylum, and accompanied by a slight Parkinsonian condition and disturbance of speech. In children encephalitis may be revealed by a change of character, so that the convalescent presents a striking resemblance to a case of congenital mental deficiency. Strange to say, the patients often retain a consciousness of their morbid state even at a late period of the disease. When the acute stage of epidemic encephalitis has subsided, the patient presents symptoms which vary according to the intensity of the lesions. In some cases there may be a hebephreno-catatonic syndrome ending in recovery, while in others there may be a mental disturbance of a melancholic type often ending in suicide. The most frequent sequel of epidemic encephalitis is Parkinsonianism, which is often accompanied by mental disturbances, shown by somnolence, change of character, spasmodic laughing and crying, and loss of memory. In rare cases a pseudo-bulbar syndrome may develop. Pierre Kahn claims to have obtained rapid improvement in post-encephalitic mental disturbances by daily hypodermic injections of 0.40 cg. of sodium cacodylate.

481. Oculo-motor Lesions in Lethargic Encephalitis.

G. COUSIN (*Paris méd.*, September 2nd, 1922, p. 207) remarks that the oculo-motor changes in lethargic encephalitis vary considerably, and in some cases may constitute the whole clinical picture. The following classification is adopted: (1) Clinical forms differing according to the situation of the lesions. The nuclei of the third nerve are principally affected, the symptoms being as follows: ptosis, especially at the onset, insufficiency or paralysis of the rectus internus with nystagmiform jerkings, ophthalmoplegia interna, and paralysis of accommodation either alone or in association with the other symptoms. Paralysis of the sixth nerve is rare and may occur in association with that of the third nerve or alone. Paralysis of the fourth nerve has hardly ever been observed in lethargic encephalitis. (2) Clinical forms varying according to the intensity of the symptoms. Ocular palsies are a constant feature of the disease, whatever the intensity of the symptoms may be, being found alike in the well-marked forms characterized by somnolence and fever, and in the incomplete forms in which they may be the only symptoms, sometimes consisting merely in paralysis of convergence or accommodation. As a rule, progressive improvement occurs and the symptoms completely disappear, except when the Parkinsonian syndrome develops, in which case they may persist in a more or less attenuated state, especially in the form of slight paralysis of convergence. Syphilis and botulism must be excluded in the diagnosis. No special treatment is required.

482. The Auscultation Sign of Richard Karplus.

LUDWIG BRAUN (*Zentralbl. f. Innere Medizin*, July 29th, 1922, p. 489) discusses this phenomenon—a modification of the vocal resonance—in diseases of the lungs and pleurae, which he regards as a definite addition to diagnostic signs. Karplus found that on auscultation over a pleural effusion the vowel *u* is clearly heard as *a*. He recommends that one ear should be applied to the chest wall and the other closed with the finger. Braun discusses in detail the acoustic problems involved; he states that vibrations of the vocal cords give rise to low-pitched harmonic overtones, and that the modification of the vowel sound is heard only over the area of pleural dullness; elsewhere it is normal. With a small pleural effusion *a* is changed into *ao*, and eventually is heard as *oa*. He gives numerous examples of changes in the vowel sound which he has observed, and which are more marked in areas where bronchophony or oegophony is present.

483. Endemic Goitre and Cretinism, and their Prophylaxis.

G. HOTZ (*Klinische Wochenschrift*, October 14th, 1922, p. 2073) describes the recent attempts made in Switzerland to prevent goitre. They are based on the old experience that iodine, administered in small doses for a long period, diminishes the most common forms of goitre. It is now known that only very small doses of iodine are required. It should be given for many years (during the whole period of childhood and in the years of sexual activity). Various conditions of the thyroid gland are found in cretins. The author's observations show that in early childhood the cretinous condition often develops under the influence of a large vascular active goitre, and that by the early resection of most of the goitre the cretinous condition may be arrested; the child then develops in a normal manner and increases in height. In cretinous families usually the mother or father or both parents suffer from goitre. Chemical researches respecting endemic goitre are at present in their early stages. One fact is known with certainty—that the normal thyroid gland substance, iodothyrin, iodothyreoglobulin, and thyroxin are able to prevent or diminish goitre. The prophylactic iodine treatment shows that potassium iodide has the same action. The iodine prophylaxis is carried out in Switzerland in two ways: (1) Potassium iodide is added to the ordinary cooking salt in the proportion of 0.5 gram of potassium iodide to 100 kg. of ordinary cooking salt. This iodized salt is sold at the same price as ordinary common salt, and can be employed for household use. This prophylaxis is carried out in the cantons Appenzell and Wallis. (2) In other districts tablets, each containing 5 mg. of iodine, are given to the children in schools; one is given weekly. The reports of Bayard show a marked diminution of goitre in the districts where the iodized cooking salt is used. The reports of Steinlin and Imbach respecting 7,500 school children treated with tablets show a diminution of the number of cases of goitre. The cost of the tablets for each child for a year was one franc. Caution in the treatment is, of course, necessary, as in certain cases of goitre in adults small doses of iodine lead to symptoms of Graves's disease.

SURGERY.

484. Shoulder Pain in Acute Abdominal Disease.

ZACHARY COPE (*Brit. Journ. of Surgery*, October, 1922, p. 192) shows the great importance of pain referred to the shoulder in acute abdominal disease. By "phrenic" shoulder pain is indicated pain felt in the top of the shoulder in consequence of an irritation of the terminations of the phrenic nerve. This referred pain is felt over the areas of skin supplied by the same spinal segments as the phrenic nerve. Pain is roughly felt in the areas supplied by the descending cutaneous branches of the third and fourth cervical nerves. Any condition causing irritation of the diaphragm may cause this pain, disease of the liver, stomach, duodenum, pancreas, and spleen being most common. The position of the pain varies according to the part of the diaphragm irritated. Irritation of the right side of the diaphragm causes pain in the right shoulder, whilst left shoulder pain results from affection of the left diaphragm. Irritation of the anterior part of the diaphragm causes pain in the clavicular or supraclavicular region, and when the posterior part is irritated pain is felt in the supraspinous fossa. Pain over both shoulders indicates a median irritation. The author finds that gall stones and gall-bladder disease are less commonly the cause of phrenic shoulder pain than are perforated ulcers of the stomach. Cholecystitis does not cause this pain unless there is accompanying local peritonitis. The pain is often a help in making a diagnosis. In perforated duodenal ulcer it is the rule for pain to be felt in the right supraspinous fossa, whilst in appendicitis it is very rare. In acute pancreatitis pain may be experienced in the left supraspinous fossa, associated with the signs of an acute abdominal lesion.

485. Indications for Tonsillectomy.

H. HEIMAN (*Amer. Journ. Dis. Children*, September, 1922, p. 204) inveighs against indiscriminate removal of the tonsils, and urges the substitution of more conservative principles in treatment. From an analysis of 200 cases he formulates the following rational indications for removal of the tonsils and adenoids: Adenoids should be removed in cases presenting obstructive symptoms, mouth breathing, and snoring, without any evidence of these being caused by a high arched palate, and in those with an obstinate nasal discharge without signs of sinusitis. Tonsillectomy is indicated when the tonsils are obviously causing obstruction to breathing or swallowing, are definitely diseased, or present recurrent accumulations of cheesy material with symptoms of toxic absorption; and when tonsillitis is followed by persistent cervical adenitis, whether pyogenic or tuberculous. Each case requires careful consideration on its merits before recommending operation.

486. Papillary Carcinoma of the Kidney.

T. C. STELLWAGEN (*Therapeutic Gazette*, October 15th, 1922, p. 685) points out that these growths are of rare occurrence. They are usually considered to arise within the kidney pelvis; some consider them secondary to vesical papillomata. It is possible that irritation of the renal epithelium in the pelvis plays a definite rôle in their causation; they are found associated with stone in a number of cases. Papillary carcinoma is generally believed to grow from the renal pelvis or epithelial lining of the collecting tubules in the Malpighian pyramids. They may occur as solitary or multiple buds, perhaps filling the whole pelvis and causing obstructive symptoms. They are more common in the male than the female, in the ratio of two to one, and occur between the fifth and sixth decades of life. The diagnosis is seldom made with certainty. Haematuria is the most important symptom, and cystoscopy should be employed to determine the source of the bleeding. Papilloma of the bladder is strong evidence of a growth higher up, especially when associated with renal haemorrhage or the growth involves the ureteral outlet. All cases of symptomless haematuria should be suspected of papilloma. Hypernephromata are usually more rapid in growth, appear earlier, and cachexia is more pronounced; there is usually a dull aching pain in the loin, and sometimes attacks of colicky pain. Treatment depends on early diagnosis, and it becomes essential, if cure is to be effected, to do nephrectomy early before the change to malignancy has occurred. In doubtful cases an exploratory incision should be made, followed if necessary by nephrectomy and ureterectomy. The ureter should be removed down to the bladder wall. Operation should be performed in cases where bleeding persists and the patient is losing health rapidly from loss of blood. When all other methods have failed and the haemoglobin has remained in the neighbourhood of 60 per cent., exploration should be carried out.

487. Pneumoperitoneum in Splenic Tumours.

F. PARTSCH (*Zentralbl. f. Chir.*, June 24th, 1922, p. 905) draws attention to the value of pneumoperitoneum before attempting to remove splenic tumours. As Heinecke has shown, splenectomy in Banti's disease and other chronic disorders of the spleen is often rendered very difficult by adhesions, and most of the fatalities from this operation are to be attributed to this cause, which gives rise to secondary haemorrhage. Partsch states that during the last six months pneumoperitoneum has been carried out on three occasions at the Rostock University surgical clinic before splenectomy. The first case was one of hydatid disease of the spleen, the second one of splenomegaly with portal thrombosis, and the third one of haemolytic jaundice. In the first case pneumoperitoneum showed the presence of echinococcus disease of the liver in addition to a large rounded splenic tumour. The liver and spleen were firmly adherent to the diaphragm and did not allow the air to penetrate between them and the diaphragm. An attempt to separate the spleen in spite of these adhesions led to rupture of the diaphragm and pneumothorax. In the second case, after evacuation of 4 litres of ascitic fluid, extensive adhesions to the anterior abdominal wall, due to a previous operation, were shown. The splenic tumour reached three fingerbreadths below the costal margin, the diaphragm was freely movable, the upper pole of the spleen was free from adhesions and the sides were adherent. In the third case adhesions were not shown on pneumoperitoneum and the operation confirmed the *x*-ray findings. These cases show that pneumoperitoneum, though it cannot exactly take the place of exploratory laparotomy, can nevertheless serve as a guide to the difficulties of splenectomy and is of prognostic value, as in cases of extensive adhesions it may supply a sufficient reason for refusing to operate.

488. "Thermo-penetration" for Abdominal Pain.

M. MENARD and S. NEMOURS-AUGUSTE (*Journ. de Radiol. et d'Electrol.*, September, 1922, p. 397) discuss the effects of "thermo-penetration" on the abdominal organs. They use a current of such a strength that the patient feels a sensation of warmth, very slight and not unpleasant; they advise the maximum strength which the patient can bear, and this varies in different cases. They have treated patients suffering from affections of the alimentary canal, both those who have been operated upon without success and others prior to operation—cases of gastric ulcer, vesical calculus, gastritis, and appendicitis. In all cases they carry out a blood examination and test meal of the fasting stomach. Many cases on a screen examination showed evidence of pyloric spasm. The pyloric pain was often relieved without change in the *x*-ray appearances after treatment. Cases of persistent vomiting and spasmodic pain with haematemesis have been greatly improved under the treatment. In cases of dysmenorrhoea the results have been excellent, and the pains have disappeared. The authors conclude that this form of treatment gives good results in certain gastro-intestinal lesions, while for dysmenorrhoea in particular it is the treatment of choice.

489. Gastric Cancer and Gastric Ulcer.

F. A. SCHALIJ (*Nederl. Tijdschr. v. Geneesk.*, October 14th, 1922, p. 1726) remarks that whereas it was formerly held that a very large percentage of so-called chronic gastric ulcers ended in cancer, the present view is that this result occurs in only a small proportion of cases. If it is true that a high proportion (50, 60, or 90 per cent.) of chronic gastric ulcers is liable to malignant change, a large number of patients with gastric cancer should give a history of chronic gastric ulcer. Schalij has investigated 200 cases of gastric cancer, 97 of which came to operation and 103 did not. Of the former, 79 had a history of gastric symptoms lasting only from four weeks to eleven months before coming under treatment, and of the remaining 18 only 12 had symptoms suggestive of gastric ulcer. Of 103 patients who were not operated on, 100 had symptoms for less than a year before seeking medical advice, so that out of a total of 200 cases of gastric cancer only 15 had in all probability been suffering from gastric ulcer. This did not, however, imply that the old ulcer had always been transformed into cancer, as Schalij had seen patients who had formerly had gastric ulcer, but in whom the cancer developed in a different part of the stomach from that in which the ulcer had been situated.

490. Traumatic Rupture of the Biliary Passages.

H. RUDBERG's study of 41 cases of traumatic rupture of the biliary passages (*Upsala Lakareförenings Förhandlingar*, August 5th, 1922, p. 223) shows that the structures most often involved are the ductus choledochus, the ductus hepaticus and its chief branches. Occasionally the rent in the biliary passage was complete, but as a rule it was not, and only in two cases was the course of the rent longitudinal; in the other case it was transverse. Children are said to be more liable to this injury than adults, and among the author's cases there were 12 patients under the age of 15. Only 3 of the patients were females, and the preponderance of males is assumed to be due to their living under less sheltered conditions. The clinical picture was extraordinarily uniform in these cases. Immediately after the injury there were signs of shock, with pain in the abdomen, rapid pulse, and pallor, often accompanied by vomiting. The symptoms of shock soon passed off, and many of the patients were able to walk home. During the next few days the abdominal pain diminished, and, apart from slight diffuse abdominal tenderness, there were no signs of peritonitis. The temperature was either normal or only slightly raised. On the third or fourth day the urine contained bile pigments, and jaundice became progressively more severe, and was accompanied by signs of free fluid in the abdominal cavity. In the cases not operated on death occurred in a few weeks or months, during which the patients became emaciated and very weak. In one case as much as 22 litres of bile were found *post mortem* in the peritoneal cavity.

491. Recurrence in Cancer of the Breast.

WIART (*Bull. et Mém. Soc. Chir. de Paris*, July 11th, 1922, p. 979) has followed up all the cases of carcinoma of the breast operated upon by himself over six months and under three years previously. The cases operated upon were those which did not show ulceration, which were movable over the chest wall, and were not accompanied by glandular enlargement in the axilla. The operation consisted in removal of a large area of skin and a still more extensive removal of the subcutaneous fatty tissue, removal of the pectoralis major and minor, and a careful dissection of the axilla as high as possible under the clavicle. The number of cases investigated was 26. Of these, 9 are dead—8 during the second year and 1 at the end of two years and a half—from general metastases in the bones, lungs, glands, and opposite breast in the different cases. There was no local recurrence in the scar in these patients at the time of their death, but in 3 there was pain and oedema of the arm, probably due to axillary recurrence; this was perhaps due to an incomplete removal of the fatty tissue in the axilla, and should be avoidable. The 17 remaining patients are all alive; 2, however, show signs of recurrence in a nodule in the region of the scar. The 15 other cases are all in good health and give no evidence of recurrence. Where there is any limitation of abduction due to removal of the pectorals this is too slight to cause any inconvenience. The performance of a radical operation considerably diminishes the number of recurrences, and with careful technique these should be very few. On the other hand, in a certain number of cases this will not prevent the rapid appearance of secondary deposits and death.

OBSTETRICS AND GYNAECOLOGY.

492. Treatment of Abortion.

J. A. VAN DONGEN (*Nederl. Tijdschr. v. Geneesk.*, November 4th, 1922, p. 2033) has treated 1,081 cases of abortion in hospital and 112 in private practice since 1914 by curetting. Sixteen deaths occurred among the hospital cases and none among the private cases, so that the total mortality was 1.4 per cent.; 897 cases were afebrile and 296, or 24.8 per cent., were febrile—that is, had an axillary temperature of 100.4° F. or higher before curetting. This figure holds an intermediate position between the statistics of Kermauner-Zelnik, in which 22.4 per cent. of the abortions were febrile, and those of Steffen at Kiel University clinic, in which 400, or 26.1 per cent., of 1,600 abortions were febrile. Of Halban's abortion cases, 28.7 per cent. were febrile, and of Latzko's 33.5 per cent. In 4 of van Dongen's 16 fatal cases the temperature before curetting was normal, or at least below 100.4°. The causes of death in these 4 cases were sublimate poisoning, influenzal pneumonia, haemorrhages, and embolism of the pulmonary artery respectively, and not sepsis, peritonitis, or parauterine complications, so that death cannot be attributed directly to the curetting. It is therefore clear that in afebrile abortion active treatment is indicated, as the mortality among 897 such cases was only 0.4 per cent. Of the 12 fatal cases of febrile abortion, 9 were complicated by infection of the adnexa or parametrium, and only 3 were uncomplicated, so that the mortality of cases of uncomplicated febrile abortion treated by curetting was only 1.09 per cent.—a far better figure than any hitherto recorded, the next best being that of Halban, who had a mortality of 3.13 per cent. in cases of febrile abortion. The three principal objections to conservative treatment of abortion are the danger of haemorrhage, the risk of sepsis, and the longer duration of treatment. In almost 80 per cent. of the

uncomplicated febrile cases the temperature became normal two days after curetting. The average duration of treatment was 11.25 days. In a subsequent paper van Dongen proposes to discuss whether instrumental or digital removal of the residues of abortion is better.

493. Stenosis of the Female Urethra.

F. CHOCHOLKA (*Casopis lékarův ceských* and *Zentralbl. f. Gynäk.*, October 28th, 1922, p. 1743) records nine cases of stenosis of the female urethra, none of which was of gonorrhoeal origin. Three were cases of syphilitic stricture, and yielded to antisyphilitic medication without other treatment. In five cases the obstruction was due to polypus near the external orifice or in the lower third of the urethra; these cases exhibited symptoms of stricture and of secondary affection of the bladder and upper urinary tract. Cure was effected by destroying the polypus by means of the Paquelin cautery and stretching the scar. In the remaining case the stenosis was caused by a vertical scar left behind by a vaginal tear dating from labour many years back; after internal urethrotomy the vaginal scar was excised, the urethra freed, and the wound sutured in the vertical direction.

494. Uterine Displacements after Childbirth.

F. W. LYNCH (*Amer. Journ. of Obstet. and Gynecol.*, October, 1922) has found a surprising frequency of uterine displacements during the fourth to the twelfth months after childbirth. His records are those of 1,230 among 2,037 women delivered at term in an obstetric clinic, and 505, or 41.1 per cent., of the 1,230 were found to have retroposition of the womb at some time during the twelve months ensuing on labour. Apart from those traced in the systematic "follow up," no fewer than 32 per cent. of the patients with retroposition returned to the clinic on account of pelvic symptoms, and only 10.5 per cent. of the control series with normally placed uterus gave similar complaints, which consisted in bearing-down sensations, a feeling of pressure in the pelvis, or sacral backache. These results are in conflict with the school which has concluded—largely from the work of Schroeder, who found that one-fourth of women having no pelvic symptoms showed retroposition of the uterus—that uterine displacements are of little importance. From the fact that fewer than 20 per cent. of private patients showed retroposition, it may be argued that insufficient rest after labour is a factor of etiological importance. Of the 505 displacements, 18 per cent. developed between the fifth and eighth months, and 6 per cent. between the ninth and twelfth. Treatment was attempted in all cases, subinvolution being treated by douches and tampons. Not less than five weeks after delivery straightening (without anaesthesia as a rule) and correction by pessary were tried in 281 cases, with 68 per cent. of cures. Cases suitable for operation, pessary treatment having been unsuccessful, or impossible on account of a relaxed condition of the vagina, numbered 47. With regard to retrodisplacement and fecundity, it was found that the percentage of subsequent pregnancies in married subjects was twice as great in those with treated as in those with untreated malpositions, and three times as great as in those without displacements. Emphasis is laid by the author on the importance of examining the uterus at stated periods after childbirth and of early correction of retropositions.

495. Transmission of Placental Tuberculosis.

GEIPEL (*Zentralbl. f. Gynäk.*, September 9th, 1922, p. 1453) was led by an observation of Schmorl—who found a caseous mass in the chorion, breaking through and allowing entrance of detritus and tubercle bacilli into the liquor amnii—to examine liquor amnii from pregnant patients suffering from advanced tuberculosis of the lungs and other organs; the centrifugalized fluid was stained and also injected into guinea-pigs. No evidence of the presence of tubercle bacilli was obtained in two cases, in one of which the placenta contained a tubercle with tubercle bacilli; in a third case, in which the chorion contained two tubercles but the amnion was intact, the liquor amnii contained a clump of tubercle bacilli and infected the guinea-pigs into which it was injected. No evidence of tuberculous infection was found in the foetus of the last-named case, but, theoretically at any rate, infection of the gastro-intestinal tract or skin was possible. Geipel, however, is sceptical concerning the occurrence of effective infection; he points out that, although tubercle bacilli have been found in foetal lymph glands and liver, evidence of local reaction has been absent. Similarly the detection of tubercle bacilli in the intervillous placental space in maternal tuberculosis is not evidence of placental tuberculosis unless tubercle formation is histologically proved. A case is recorded by the author, in which, in connexion with a five months' abortion, the placenta presented a condition of pseudo-tuberculosis, with numerous nodules containing round, epithelioid, and giant cells; no tubercle bacilli or spirochaetes were detected.

PATHOLOGY.

496. Test for Botulinus Poisoning.

V. BURKE and C. W. MAY (*Journ. Amer. Med. Assoc.*, November 11th, 1922, p. 1669) have devised a rapid test for the etiological factor in bacterial food poisoning, for which the claim is made that it can be readily applied by practitioners lacking access to a diagnostic laboratory. The test consists of a rapid, confirmed test for the toxin of *Clostridium botulinum* (*B. botulinus*) combined with a slower presumptive test for organisms of the paratyphoid-enteritidis group. There is also described a rapid presumptive test for the presence of botulinus toxin which may be used when botulinus antitoxin is not available. The application of this test in a recent outbreak of botulism, with the resulting diagnosis and case history, is described. In testing to determine the presence and nature of the poisonous substance in a jar of tinned asparagus, 2 c.cm. of the unfiltered asparagus liquor was placed in each of five serum tubes. To the asparagus juice in the second tube was added 1 c.cm. of Type A botulinus antitoxin. To the third tube was added 1 c.cm. of Type B botulinus antitoxin. The fourth tube was placed in boiling water for ten minutes. To the fifth tube was added 0.5 c.cm. of a 10 per cent. solution of hydrochloric acid, which was allowed to stand for ten minutes. The contents of all five tubes were then neutralized to litmus with a saturated solution of sodium bicarbonate. The contents of each tube were then injected into the marginal ear vein of a medium-sized rabbit. The results indicated that the asparagus contained a botulinus Type A toxin.

497. Glycaemia in Diphtheria.

P. LEREBOULLET, P.-L. MARIE, and L. LEPRAT (*Paris méd.*, November 4th, 1922, p. 417) for some months have been carrying out investigations on the presence of glycaemia in diphtheria for the following reasons: (1) because in recent years stress has been laid on the hypoglycaemia which is the rule in suprarenal insufficiency, and (2) because severe forms of diphtheria are often associated with acute suprarenal insufficiency. They found that in three cases of mild diphtheria without much constitutional disturbance or toxic symptoms the blood sugar remained normal, varying between 0.91 and 1.13 gram; while in six cases of severe diphtheria, characterized by extensive membrane, oral fetor, much adenitis, and albuminuria, the glycaemia, with one exception, in which it was normal, was decidedly diminished, the amounts being 0.597, 0.71, 0.77, 0.79, and 0.74 gram respectively. In some of the cases the hypoglycaemia was associated with other signs of suprarenal insufficiency. The authors conclude that if these findings are confirmed by further observations hypoglycaemia in severe diphtheria may be regarded as an indication of suprarenal involvement which is so frequent in diphtheritic intoxication.

498. The Effect of Carbohydrates in the Production of Immune Bodies.

IN view of the beneficial effect which has so frequently been observed to follow the administration of glucose in infective diseases, M. OHTAKI, K. SUKEGAWA, and S. SAWAGUCHI (*Japan Med. World*, October 15th, 1922, p. 288) endeavoured to determine the biological effect on the organism of the administration of carbohydrates. For this purpose they made up 1 per cent. solutions of certain sugars—glucose, lactose, saccharose, maltose, dextrin, and glycogen—and injected them intravenously once a week into rabbits. Two animals were used for each sugar. Eight days after the fourth injection they were bled, the serum collected, inactivated by heating at 60 C. for half an hour, and preserved with 0.5 per cent. phenol. Agglutination tests were put up, starting at a dilution of 1 in 20, against heated saline suspensions of typhoid, paratyphoid, colon, dysentery, and cholera bacilli. With the exception of the typhoid strain, all the bacilli gave negative results. The *B. typhosus*, however, was agglutinated up to a titre of 1 in 1280 by the glucose and glycogen serums, and to a lower titre by the others. The ability of this typhoid strain to fix complement in the presence of the various serums was then tested, and was found to be positive in the case of the glucose and glycogen serums. A certain bacteriolytic action in respect to *B. typhosus* was demonstrated with these two serums, though the results were not very convincing. The effect on the cellular constitution of the blood resulting from the injection of 2 per cent. glucose solution was found to be a leucocytosis, while rabbits subjected to the injection of typhoid bacilli developed a leucopenia. The authors find it difficult to draw any definite conclusions from the foregoing experiments. Whether the immune bodies produced are to be considered as specific for *B. typhosus*, or whether they are of a different nature, has not yet been determined.

EPITOME OF CURRENT MEDICAL LITERATURE.

MEDICINE.

499. Myocardial Degeneration in Progressive Muscular Dystrophy.

JOSEPH H. GLOBUS (*Journ. of Nervous and Mental Disease*, September, 1922, p. 236), at the New York Neurological Society, described changes found in a number of cases of this disease, in which the patient's condition had remained apparently unchanged for a long period, when suddenly pulmonary oedema, hydrothorax, and hydropericardium occurred and terminated fatally within twenty-four hours of the onset. He does not accept the theory that in such cases death is due to paralysis of the diaphragm, but considers there is another cause—namely, cardio-vascular disturbance. He states that he has found definite changes in the heart muscle entirely similar to those in skeletal muscle. He discusses the views of Oppenheimer (who recorded these lesions as a disease of the central nervous system) and of many other observers, who interpreted them as myopathic in character. Clinical reports have described enlargement of the heart, irregularity, tachycardia, and palpitation on exertion. Of eleven cases since 1879 in which the heart was examined, the above described myocardial changes were found in eight, and in the remaining three there were changes in colour, consistence, and invasion of subepicardial fat. In the case of a boy, aged 10, the autopsy showed that the muscles, including the diaphragm, were infiltrated with fat; no hydrothorax; several small pneumonic areas in the lower lobes, which were oedematous. The heart was pale, yellowish-red, flabby, and friable; the left ventricular wall showed many irregular translucent patches, apparently of fibrosis, unconnected with blood vessels. The thymus was large, solid, and rich in lymphoid tissue, and the liver showed marked fatty infiltration. Microscopically the heart showed many connective tissue scars, muscle fibres in various forms of degeneration, surrounded by large bundles of connective tissue containing fat, which also surrounded blood vessels. There was a small round-cell infiltration, and muscle fibres showed oedema, atrophy, hyaline changes, and fragmentation. Globus concludes that the changes are less marked than in skeletal muscles, but that the heart does not escape myopathic processes in progressive muscular dystrophy. The heart plays an important part in causing death from this disease, and he considers that it should be studied more systematically during life and after death. In the subsequent discussion several speakers described cases in which no myocardial disease was observed, others had found changes in the cells of the anterior cornua. One patient, aged 82, had no sign of myocardial disease, nor was it found in fourteen of his descendants (in three generations). The consensus of opinion appeared to be that there were various types of progressive muscular dystrophy.

500. Treatment of Leukaemia by Sodium Cinnamate.

R. LAUTIER (*Bull. Soc. de Thér.*, October 11th, 1922, p. 209) states that there is an increasing tendency to regard leukaemias as a group of morbid manifestations due to tuberculous infection. It therefore occurred to him to try if the action of sodium cinnamate, which he had found so beneficial in pulmonary tuberculosis, would not furnish a further proof of the tuberculous nature of leukaemias. He records two cases in which improvement in the blood picture and in the general condition, as well as a diminution in size of the spleen and the lymph glands, took place after treatment by sodium cinnamate, which was given intravenously three times a week. The dose, which was at first 1 mg., was increased by 1 mg. at each subsequent injection. A careful watch was kept on the patient's reaction to the drug, a sense of fatigue or a slight rise of temperature being an indication to reduce the dose by a few milligrams, and not to increase it until two or three more injections had been given. The highest dose should not exceed 20 to 25 mg. When this dose is reached, it should be continued for a few weeks and then a return should be made to the initial dose, which is subsequently progressively increased.

501. A Triad of Symptoms in Nervous Dyspepsia.

I. BOAS (*Deut. med. Woch.*, October 20th, 1922, p. 1405) draws attention to a triad of symptoms which are commonly found in nervous dyspepsia. They are (1) a sense of pressure in the abdomen; (2) globus (not the so-called globus hystericus; and (3) nausea. With regard to (1) it is often more or less constant, and it possesses certain well-defined characteristics. It is independent of extraneous factors such as the quality and quantity of the food. The sense of pressure often begins early in the morning, when the stomach is empty, and it usually lasts throughout the day. It is unaccompanied by pain, but as patients are apt to confuse a sense of pressure in the abdomen with actual pain when they are describing their symptoms it is well to interrogate them closely as to whether the sensation is painful or not. With regard to (2) the author distinguishes it from ordinary globus hystericus because his patients showed no other sign of hysteria. Nausea—the third symptom of the triad—is, like (1), independent of extraneous factors such as the quality and quantity of the food. The subjects of this condition are usually women between the ages of 30 and 50, but men also suffer from it, and the author has found it to be very common in Germany as the result of the extra physical and mental strain thrown on the nation by the war. When other diseases can be eliminated, the treatment for this condition is to discard every dietetic restriction and to encourage the patient to thrust her symptoms into the background. To save her from operative meddling is also an important task.

502. Factors in Dyspepsia.

F. W. PALFREY (*Boston Med. and Surg. Journ.*, October 12th, 1922, p. 527) classifies five common types of dyspepsia, the first due to an irritable hyperaemic mucosa resulting from improper diet, drugs, alcohol, or catarrhal inflammations, with symptoms of mild pyrosis or vomiting on the ingestion of food. In the second type there is depression or inhibition of the secretory and motor functions from reflex or psychic influences, in which the main symptoms are anorexia, epigastric weight, nausea and vomiting of undigested food proportionate to the duration of retention in the stomach. A third type, with symptoms of fullness, pain, and vomiting of an acid fluid, is due to hypersecretion or gastro-succorrhoea, with probably pylorospasm. The fourth type includes those cases usually attributed to hyperacidity, but in reality due to the rate of pyloric discharge into the duodenum not keeping pace with the acid secretion of the stomach, whether this latter is increased or merely normal, such insufficiency in the rate of discharge being due possibly to deficiency in the neutralizing fluids of the duodenum. Symptomatically heartburn, acid regurgitation, a sense of prolonged retention, and vomiting which relieves are present, due to irritation, hyperaemia, erosion, or ulceration at the pyloric end of the stomach. The fifth group is evidenced by a sense of epigastric pressure, not easily relieved by belching, and due probably to the fact that the oesophagus, by approaching the stomach obliquely behind rather than above the fundus, is liable to lateral pressure or kinking. Treatment of the first type consists in allaying irritation by rest and starvation, with, if necessary, a preliminary washing out or encouragement of vomiting. In the second type change of air and mental and physical improvement are needed, with regular, moderate meals preceded by a mixture containing nux vomica and dilute hydrochloric acid. In hypersecretion with pylorospasm slow moderate eating is essential, with avoidance of special articles which stimulate acid secretion. In hyperacidity with suspicions of ulceration, rest and special dietary are needed, and preparations of ox bile to increase the flow of bile are indicated. In cases of valvular cardiac orifice with difficult eructation attempts thereat should be restrained, while the diet should aim at smallness in bulk, the day's total being divided between six meals instead of only three.

503. Umbilical Colic in Children.

H. L. COOPMAN (*Nederl. Tijdschr. v. Geneesk.*, October 21st, 1922, p. 1825) states that the medical profession in Holland is not so familiar with umbilical colic in children as it should be. On the other hand, there is a considerable foreign literature on the subject, especially in Germany. The condition consists in repeated attacks of colic at longer or shorter intervals, usually accompanied by vomiting. Physicians and surgeons differ widely from each other in the interpretation of the symptoms; the former, of whom Moro and Friedjung are representatives, regard it as a neurosis, while the latter, especially Kuttner and Mühsam, who operated on their own children, consider that it is almost always due to masked appendicitis. Coopman records a case in a girl aged 8 in whom the symptoms were at first attributed to neurosis, and subsequently found to be due to a faecal concretion in the appendix, on removal of which they

disappeared. Coopman states that th only objective sign of umbilical colic is a pressure point 1 or 2 cm. below and to the right of the navel, and known as "Kümmell's point," from the surgeon who described it in 1921. On the other hand, if no pressure point is present, and the pain is equally severe on both sides, and the temperature is normal, the condition may be regarded as a neurosis and treated accordingly.

504. Pernicious Anaemia due to Stricture of the Intestines.

E. MEULENGRACHT (*Ugeskrift for Laeger*, October 19th, 1922, p. 1401) regards stricture of the intestines as a very important cause of pernicious anaemia, on a level with bothriocephalus anaemia in importance. In both cases the anaemia is probably induced by the absorption through the injured gut of toxic bodies which normally pass through the gastro-intestinal system without being absorbed. The relation of pernicious anaemia to strictures of the intestines could best be demonstrated if after resection of the intestine and restoration of its normal functions the anaemia could be cured. The author records two cases of pernicious anaemia associated with strictures, and in one case he hoped to establish the relationship of the one condition to the other by resection of the gut. The patient was a woman, aged 64, whose blood picture was characteristic of pernicious anaemia. She also suffered from signs of intestinal obstruction, and laparotomy revealed three tuberculous strictures of the upper part of the ileum. Though intestinal anastomosis was successfully established after resection of the constricted portions death occurred within twelve hours of the operation. No amoebae or worms were found in the intestines, the lining of which was much altered above the strictures.

505. Treatment of Coryza in Infants.

KOETTLITZ (*Le Scalpel*, September 23rd, 1922, p. 926) observes that common colds or influenzal coryza in young infants are particularly worthy of attention, as they are often the exciting cause of otitis, bronchitis, and even of bronchopneumonia; if not causing such serious results, coryza produces dyspnoea and serious interference with suckling. He recommends a 10 per cent. solution of argyrol as being painless and non-irritant, introduced into the nasal fossae by the lacrymal ducts. Half the contents of an eye-dropper pipette is allowed to fall into both eyes, in mild cases two or three times a day, every three hours in more serious cases. When the nose is blocked it is difficult to spray with oily solutions, while menthol is dangerous for very young children, in whom it sometimes causes fatal laryngeal spasm. In coryza the lacrymal ducts remain permeable and allow the argyrol solution to filter through drop by drop; it arrives thus in the nasal fossae. Two or three days at the most suffice to dry up an acute coryza and to avoid infective complications —otitis, pneumonia, etc.

506. Classification of Pulmonary Tuberculosis.

E. MARCHIAFAVA (*Il Policlinico*, Sez. Prat., September 25th, 1922, p. 1257) has adopted the following classification of the varieties of pulmonary tuberculosis: I. Acute and subacute tuberculosis with a duration of weeks or months: (*a*) Haematogenous miliary tuberculosis, the infection being conveyed directly by the blood vessels or indirectly by the thoracic duct from chronic tuberculous lesions in other organs, especially the lymphatic glands; (*b*) caseous tuberculous pneumonia—(i) lobar or pseudo-lobar type, sometimes ending in ulcerative phthisis and rarely in resolution; (ii) a disseminated bronchopneumonic type which may be nodular and ulcerative or mixed. The anatomical process in acute and subacute tuberculosis is the formation of nodular or diffuse tuberculous granulation tissue including epithelioid endoalveolar proliferation. These productive processes are associated in various degrees with exudative processes. II. Chronic tuberculosis, lasting for years, of variable extent, either unilateral or bilateral, with predominance in one lung; apical or lobar in distribution, and sclerotic, ulcerative, or mixed in character. The anatomical lesions in this group consist of a mixture of productive and exudative processes with a tendency to fibrous transformation and new formation of connective tissue which retards or arrests the progress of the tuberculous process. III. Tuberculosis of very chronic character lasting for many years, its distribution being the same as in the second group. The predominant anatomical feature is the new formation of sclerotic connective tissue containing tubercles. Hypertrophy of the right ventricle is a complication of this type of pulmonary tuberculosis.

SURGERY.

507. Tonsillectomy in Certain Systemic Diseases.

N. WHITTON (*Journ. Laryngol. and Otol.*, November, 1922, p. 552) reviews the results obtained by tonsillectomy in chorea, epilepsy, goitre, and rheumatism. While septic tonsils are sometimes undoubtedly a source of focal infection and marked improvement follows upon their removal, there is no doubt that the operation does not always effect a cure of the disease for which it is undertaken, and possibly too much importance is placed upon the tonsil as a focus of sepsis. In the diseases studied for which tonsillectomy was performed with a view to cure or relief an interval of seven years was allowed to elapse after operation in order better to ascertain the results. Of 11 cases of chorea 3 were quite cured, and in the remaining 8 the disease was still present, though 4 have improved, so that the results, while too small for any general deductions to be made, are not very encouraging. In 6 cases of genuine epilepsy 4 became entirely free from fits, and the attacks in the other 2 were less frequent and severe. Five of these were under 12 years of age, and the only adult, though improved, was not cured. Of 15 cases of goitre 7 were simple, and 8 showed exophthalmic symptoms. Of the 7 simple cases 1 was cured, 2 were improved, and 4 showed no improvement, so that as a curative measure tonsillectomy does not afford good results in such cases. Of the 8 ophthalmic cases, 2 were improved, 4 were unchanged, but 2 severe "toxic" ones were cured, showing that in this variety the operation may be useful. The results in rheumatism were more encouraging, since of 23 cases, including acute, chronic, muscular, and rheumatoid arthritis, 14 were cured, 3 improved, and 6 unimproved. The three that showed improvement only had been cases of rheumatic fever, and in these there was no recurrence of acute symptoms, though pains were complained of in wet weather. In one case in which the rheumatism was complicated by flat-foot cure of both conditions resulted, the cure of the latter probably being due to the toning up of the muscles and ligaments consequent on using the foot freely again.

508. Frequency of Congenital Club-foot and Dislocation of the Hip.

QUIRIN (*Zentralbl. f. Chir.*, September 22nd, 1922, p. 1414) states that Phelps and Blencke and Schanz (see EPITOME, November 12th, 1921, No. 451) found that congenital club-foot had decidedly increased in frequency since the war, while the frequency of congenital dislocation of the hip had diminished. Quirin has drawn up the following statistics of cases treated at the Orthopaedic Institute at Zwickau in Saxony. From 1906 to 1921 inclusive there were 914 cases of congenital dislocation of the hip and 495 of congenital club-foot among 18,965 patients; from 1906 to 1914 inclusive there were 372 cases of congenital dislocation of the hip (4 per cent.) and 221 of congenital club-foot (2.3 per cent.) among 9,772 patients; from 1915 to 1921 there were 542 cases of congenital dislocation of the hip (5.88 per cent.) and 274 of club-foot (2.98 per cent.) among 9,193 patients. These figures show a distinct increase in the percentage of congenital dislocation of the hip, and to less extent of congenital club foot. During the last year 52 cases of congenital dislocation of the hip have been reduced at the Zwickau orthopaedic clinic, 24 being bilateral and 28 unilateral; 43 were in girls and 9 in boys; 8 children were over 4 years of age. Twelve cases of congenital dislocation of the hip were also treated in the cripples' home at Zwickau. Successful results were obtained in almost all cases.

509. Sarcoma of the Clavicle.

LUSSANA (*Archiv. Ital. di Chirurg.*, August, 1922, p. 621) publishes two cases of sarcoma of the clavicle. (1) A man, aged 66, without any syphilitic or tuberculous history, while undressing five days previously noticed a creaking in his right collar-bone, accompanied by severe pain and inability to raise the arm. On admission an irregular fusiform swelling was noted in the external third of the right clavicle, and on moving crepitus could be felt; the skin over the swelling was normal and freely movable; no enlarged glands were felt. The Wassermann and tuberculin reactions were negative. The radiogram showed spontaneous fracture of the bone. There was no history of injury. The clavicle and growth were removed on October 30th, and on November 20th the patient left the hospital in good condition, but unfortunately died of bronchopneumonia a few months later. Examination of the growth showed it to be a central round-celled sarcoma. (2) A woman, aged 64, accustomed to carrying heavy weights, had complained for about two months of wandering pains in the right shoulder, and a week before admission noticed a painless swelling in the

clavicle; the skin over the swelling was normal; pressure caused pain but no appreciable movement or crepitus. The radiogram showed a fracture of the middle third. The clavicle was excised on January 19th, 1921, and when last seen, in January, 1922, the woman was quite well and showed no sign of return of the growth. Examination of the growth showed it to be a spindle-celled periosteal sarcoma.

510. Primary Tumours of the Spleen.

F. VIGI (*Pathologica*, October 15th, 1922, p. 639) states that primary tumours of the spleen are of special interest, not only on account of their rarity but also on account of the relative frequency of metastases due to the structure and situation of the organ. Apart from the rare cases of benign tumours of the spleen, such as fibroma, chondroma, and osteoma, and a few of sarcoma and endothelioma (Buntig, Foix-Roemelle, Guyot, Moppert, Risel, and Simon), it may be said that the only splenic tumours which remain to be considered are cysts and angiomata. The nosological entity of the cysts varies, because they are sometimes not really tumours, but simple serous cavities invested with peritoneum and sometimes blood cysts following trauma, or mere dilatation of the lymphatic system or true lymphangiomata. Haemangiomata, and especially the cavernous variety, are of special interest, both clinically and pathologically—clinically because the increase in size of the spleen may render an operation necessary, and pathologically because the question has arisen whether the term "tumour" is applicable to these forms, or whether they should not be regarded as malformations or amartomata. Vigi records a case in a man, aged 53, whose death was due to apoplexy, in whom at the autopsy a large solitary nodule was found in the spleen which on naked-eye examination presented all the characteristics of a primary tumour, but differed from it by its microscopical features, which were those of an amartoma.

511. Meningitis following Spinal Anaesthesia.

SERIOUS complications following spinal anaesthesia are of somewhat rare occurrence. P. WERTHEIMER (*Lyon Chirurgical*, July–August, 1922, p. 387) records a case of acute aseptic meningitis occurring twenty-four hours after spinal anaesthesia, which was induced for an operation for acute appendicitis. The anaesthesia was satisfactory and the appendix was removed. The following day the patient had a raised temperature, rapid pulse, and severe headache; Kernig's sign was positive. Lumbar puncture was performed, but no bacilli were found. Antimeningococcic serum was administered. The patient later exhibited all the signs of acute meningitis, but the spinal fluid contained no organisms. He subsequently made a slow but satisfactory recovery. This case was one of several to whom a spinal anaesthetic was administered, and alone showed any ill effects. In this patient intravenous injections of a 30 per cent. glucose solution relieved the symptoms, and the patient felt considerably improved, whereas lumbar puncture did not produce any result. It is therefore suggested that the injections provide a sure means of reducing the tension of the cerebro-spinal fluid.

512. Renal Calculus.

QUIGNON (*Le Scalpel*, September 9th, 1922, p. 881) reports (with photograph) the case of a woman, aged 44, who had suffered for the last fifteen or sixteen months from wandering pains in the loins, more marked on the right side. In 1917 she had haematuria lasting three days but no colic, no passage of stones or gravel. For the last few months she had complained of frequent micturition, every quarter of an hour during the day and twelve or fifteen times at night. The urine was fetid and occasionally bloody. Owing to the stoutness of the patient it was impossible to make out the size of the kidney. Cystoscopy showed the bladder to be healthy, of weak capacity (holding only 100 c.cm.), and the right ureteral orifice red and swollen. Radiography showed calculus shadows on the right side. The right kidney was removed and found to contain no less than 360 calculi (besides some lost) composed of tricalcic phosphate. The patient did well.

513. Effect of Hyperpyrexia upon Early Gonorrhoea.

K. SCHREIBER (*Deut. med. Woch.*, September 29th, 1922, p. 1313) has observed that intercurrent inflammatory processes may profoundly influence the course of early gonorrhoea, forcing it to assume an abortive and comparatively benign character. With a view to exploiting this phenomenon, and on the assumption that it is the element of hyperpyrexia in intercurrent inflammatory processes which exerts a beneficial action on gonorrhoea, the author recommends the intragluteal injection of 10 c.cm. of sterilized milk. The case with which he illustrates his thesis was that of a man whose last sexual intercourse with a woman, suffering from gonorrhoea, was on January 26th. On February 1st he developed an acute staphylococcal infection of the tonsils, and it was not till February 10th that urethral symptoms appeared. Gonococci were found the next day in the urethral discharge. On February 17th the sterilized milk was injected; the temperature rose rapidly, and after February 19th no gonococci could be found in spite of repeated and careful search. Even provocative injections of milk and arthigon could not induce a reappearance of the gonococci.

514. Scapular Crepitation.

P. JACOBY (*Ugeskrift for Laeger*, August 24th, 1922, p. 1071) has examined 100 men at a surgical hospital, and, though none of them suffered from disease of the shoulders, as many as 23 exhibited scapular crepitation. In most cases this was slight, but in some it was fairly loud. It was demonstrable on both sides in 7 cases, in 8 on the right side, and in the remaining 8 on the left. In extreme cases the crepitation may be audible more than a metre away, as well as being palpable. Its genesis depends on a variety of factors, including bony changes in the scapula and ribs, and abnormalities of the muscles and bursae. Being about twice as common in men as in women, it is probably often an occupational condition, and the author has found scapular crepitation in 5 healthy young adults, all of whom had led athletic lives. In some cases operative interference may be necessary owing to the pain and disability provoked, but in none of the 23 cases referred to had the condition given rise to pain or other symptoms. In such cases scapular crepitation may yet be of importance because it may be mistaken for adventitious sounds in the lungs. To avoid this mistake, the hand belonging to the side examined by auscultation should be laid on the shoulder of the opposite side so as to immobilize the scapula. The frequency of this condition is great, according to Bassompierre, who found it in 52 out of 72 muscular and healthy young men. But Lotheisen found it only once among 47,000 persons in whom this condition was specifically sought.

OBSTETRICS AND GYNAECOLOGY.

515. Treatment of Hydatidiform Mole.

E. A. SCHUMANN (*Amer. Journ. Obstet. and Gynec.*, October, 1922) points out that various observers have recorded a mortality following hydatidiform mole of 15 to 25 per cent. The treatment conducted in the cases concerned has been on the usual lines of curettage of the uterus, with particular care against perforation, and packing in the event of severe haemorrhage, the patient being subsequently observed for from two to three years in order to guard against the development of chorion-epithelioma. The causes of death are given as sepsis, haemorrhage, peritonitis, and chorion-epithelioma. Extremely divergent views have been advanced with regard to the frequency of the last named, and according to Symers considerable reserve should be exercised in forming a diagnosis of chorion-epithelioma even as a result of microscopic examination of tissues removed at operation, for placental remnants may live in the uterus for a considerable time after termination of pregnancy, syncytial cells may wander widely in normal circumstances, and mechanically displaced chorionic villi may sometimes be found in the uterine, pelvic, and vaginal veins after severe labour. In view of the high mortality mentioned above—the highest death rate following any obstetric complication except puerperal sepsis and premature placental detachment—Schumann advocates that every hydatidiform mole should be regarded clinically as a malignant tumour calling for radical treatment. Diagnosis being made, the abdomen is opened, and after the uterus has been isolated by gauze packs the mole is inspected *in situ* after hysterotomy. If it is limited in attachment to the decidua the tumour may be shelled out and the uterine wound closed after the cavum has been disinfected with iodine. Should, however, invasion of the uterine muscle be present, showing macroscopically as little haemorrhagic areas (and this is found in the majority of cases), supravaginal hysterectomy is performed; an exception may be made in the case of a primipara to whom the risks of conservative treatment have been explained. Treatment on somewhat less radical lines has been recommended by other authors, especially when the bleeding is profuse, the cervix rigid, and the patient near the climacteric. Schumann records three illustrative cases treated by hysterectomy, in which macroscopic (confirmed by the microscope) examination of the mole and uterus showed that curettage would probably have failed to eradicate syncytial elements which had already deeply invaded the uterine muscle.

516. Treatment of Perineal Tears.

F. LEYNEN (*Arch. méd. Belges*, October, 1922, p. 983) draws attention to the important part played by the levator ani muscles in supporting the pelvic organs, and says that in the treatment of perineal tears produced at labour it is necessary (1) to coapt the torn muscular fibres of this muscle; (2) to prescribe, after suture, exercises for its preservation in good condition. The two halves of the levator ani are felt as cord-like structures, passing downwards and backwards one on each side; when they have been identified by outward pressure of a finger introduced two-thirds of the way in the vagina, they are sutured to each other by catgut before the skin edges are united. Exercise of the levator ani is secured by instructing the patient to make voluntary contractions of the sphincter ani twenty times daily for fifteen days after labour; a contraction of the levator accompanies each movement of the sphincter, as may be verified by vaginal examination.

517. Prevention of Puerperal Sepsis.

LOUROS (*Zentralbl. f. Gynäk.*, October 21st, 1922, p. 1681) advocates, on the following lines, immunization of expectant mothers against streptococcus infection. Those treated during the ninth month of pregnancy are given a polyvalent streptococcus vaccine (750 million killed organisms). Those coming to treatment immediately before or shortly after the onset of labour are given a combined treatment, endeavour being made (1) to induce active immunity by injection of 500 million dead streptococci, (2) at the same time to confer a passive immunity by injection of 50 c.cm. of anti-streptococcus serum. The combined treatment is essential for protecting at term: the serum contains antibodies which compensate for the negative phase ensuing on administration of the vaccine. Three hundred and fifty cases immunized on these lines showed a minimal incidence of blood infection. P. ZWEIFEL (*Deut. med. Woch.*, 1922, 23), as the result of thirty-four years' experience at the Leipzig clinic, concludes that the most important factor in prevention of puerperal fever is the avoidance of contamination by pus, either (1) from wounds or fistulæ of the patient (which should be carefully bound up during labour) or (2) by reason of those attending or conducting the labour having been in contact with other sources of infection. Patients having a purulent discharge during pregnancy should be systematically douched with lactic acid. In the material of the clinic the introduction of rubber gloves led to no diminution of the mortality from puerperal fever; this, however, was notably reduced when protection by gloves was combined with strong antiseptic measures. Zweifel recommends that it should be made compulsory for midwives to wear thick rubber gloves.

PATHOLOGY.

518. The Wassermann Reaction in Non-luetic Cases.

T. MCKEAN DOWNS (*Amer. Journ. Med. Sci.*, October, 1922, p. 514) records the case of a seaman, aged 19, who contracted malaria five months prior to admission to hospital for a relapse of tertian malaria; he denied any venereal disease, and no symptoms of syphilis were observed; the blood was loaded with tertian parasites and the Wassermann reaction was weakly positive. The author quotes numerous authorities. Osler and Churchman (*Modern Medicine*, 1914) say that the reaction is positive in syphilis, tubercular leprosy, and fresh malaria. Lespinasse states that the reaction is not absolutely specific, but may occur in yaws, tubercular leprosy, some cases of relapsing fever, malaria (in the febrile stage), some cases of trypanosomiasis, and beri-beri. Connor confirms this, and says that false positives may occur in diabetes with acidosis. Downs comments on the absence of any standardized technique for the test and the large possibilities of error. Müller found a positive reaction in 88 per cent. of cases of yaws. Bohn found it in 35 per cent. of cases of malaria, the reaction disappearing when the malaria was cured. Müller found positive reactions in 3 per cent. of cases of advanced tuberculosis and 19 per cent. in cases of tubercular leprosy, but the anæsthetic form was always negative. Kolmer states that the cerebro-spinal fluid is much less subject to error than blood serum. He found it positive only in yaws and leprosy, in addition to syphilis. Craig observes that tuberculosis is more commonly associated with syphilis than any other disease, and that syphilis of the lung is not infrequently called tuberculosis. "If syphilis be excluded tuberculosis does not give a positive reaction. If the positive Wassermann in malaria persists after disappearance of all fever syphilis is a complication." Downs details the experience of the Philadelphia General Hospital and of the Pennsylvania Hospital in cases of malaria and of tuberculosis subjected to the test, including six cases of advanced tuberculosis in which the reaction was positive with cholesterinized antigen but negative with all others. He concludes as follows: (1) The Wassermann reaction is invariably positive at some time during the course of syphilis. (2) It is but rarely positive in non-luetic diseases. (3) It is unusual for it to be positive in malaria; if so it is only weak or doubtful (Craig) while fever is rising, becoming negative between paroxysms. (4) It is rarely positive in tuberculosis, and is then weak or doubtful (that is, not diagnostic of lues in absence of history or signs). Downs has found it positive only in far advanced cases. (5) It is not positive in uncomplicated hyperthyroidism. (6) The cholesterinized antigen is probably too delicate to be of value alone in diagnosing lues in the absence of history and symptoms. It is invaluable in following the course of known syphilis under treatment by reason of its delicacy.

519. Experimental Rickets.

A GOOD summary is given by PAUZAT (*Gaz. hebdom. des Sci. méd. de Bordeaux*, November 26th, 1922, p. 567) of the work which has been carried out during the past two years by Pappenheimer and his associates on the production of rickets in animals. Rats 4 weeks old were chosen, and a diet was found which was uniformly successful in giving rise to rickets. This consisted of purified flour, calcium lactate, sodium chloride, and iron citrate. After four weeks on this regimen the animals had developed definite rickets, characterized macroscopically by costal nodes and typhosis, and microscopically by decalcification of the ribs. Now this dietary, though high in its calcium content, was poor in phosphorus, and it was discovered that the simple addition of 3 or 4 per cent. potassium phosphate sufficed to prevent the appearance of rickets. The elimination of calcium from the diet did not lead to the development of rickets, so long as plenty of phosphorus was given, though troubles in osteogenesis of non-rachitic nature did arise. The importance of vitamin A was now investigated. In the original dietary 5 per cent. of the flour was replaced by fresh butter, which is rich in this principle. The results showed that though the rats were protected from xerophthalmia they still developed rickets. He therefore inclines to the belief that rickets cannot be considered as an avitaminosis at all. In this connexion, however, it is difficult to understand, from the data given, exactly where he draws the dividing line between rickets and xerophthalmia, for in the latter disease he finds definite lesions in the bones, which he considers as non-rachitic. With regard to the cure of his rats, he states that the administration of cod-liver oil brought about a progressive recalcification of the ribs, as was expected. Further, however, by submitting the oil to a process of continuous oxidation he succeeded in destroying the antixerophthalmic properties while leaving the antirachitic properties intact. From this he concludes that the antirachitic principle in cod-liver oil is not identical with the vitamin A encountered in food. Finally, he showed that a rat which had developed rickets could be cured by exposure to the sun for fifteen minutes a day, or to a quartz lamp for one and a half minutes. That the ultra-violet rays were responsible for this action was proved by filtering them off by a glass screen—a procedure which deprived the light of its therapeutic effect.

520. Influence of Antityphoid Vaccination on the Enteric Fevers.

AN interesting analysis is given by P. HÉBERT and M. BLOCH (*Rev. d'Hygiène*, November, 1922, p. 969) relating to the condition with regard to antityphoid vaccination of 2,334 cases of enteric fever from whom a positive blood culture was obtained. The study was conducted at a military hospital and lasted from July, 1916, to January, 1919. Altogether there were 431 cases of typhoid, 1,598 of paratyphoid A, and 305 of paratyphoid B. Of the typhoid cases 91 per cent. occurred amongst patients who had either not been vaccinated or who had been insufficiently vaccinated; of the paratyphoid A cases 75.9 per cent. belonged to these two classes, and of the paratyphoid B cases 85 per cent. Of the total 2,334 cases it may therefore be said that only 20.1 per cent. occurred amongst patients who had been fully vaccinated with T.A.B. within the previous year, or who had been revaccinated within that period. Studying the period elapsing between the last injection and the development of the disease, it was found that the majority of the cases of paratyphoid A and B occurred from six to nine months after vaccination, while the greater number of cases of typhoid fell between the fifteenth and twenty-first months. From this it would appear that during the first year following vaccination immunity is strongest against typhoid, while during the second year it is stronger against paratyphoid A and B. With regard to mortality, 77 per cent. of the fatal cases were contributed by patients who had not been vaccinated or whose vaccination was incomplete, while 23 per cent. were furnished by the fully vaccinated. Several other interesting points are dealt with which will repay study.

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